8004368

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

June 10, 2019

THIS IS TO CERTIFY THAT ANNEXED IS A TRUE COPY FROM THE RECORDS OF THIS OFFICE OF THE FILE WRAPPER AND CONTENTS OF:

APPLICATION NUMBER: *14/948,927*
FILING DATE: *November 23, 2015*
PATENT NUMBER: *9716853*
ISSUE DATE: *July 25, 2017*

Certified by

Under Secretary of Commerce
for Intellectual Property
and Director of the United States
Patent and Trademark Office

PTO/AIA/80 (07-12)
Approved for use through 11/30/2014. OMB 0651-0035
U.S. Patent and Trademark Office; U S DEPARTMENT OF COMMERCE

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒ Practitioners associated with Customer Number: 34018

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☒ The address associated with Customer Number: 34018

OR

☐	Firm or Individual Name			
	Address			
	City		State	Zip
	Country			
	Telephone		Email	

Assignee Name and Address: UNIVERSAL ELECTRONICS INC.
201 E. Sandpointe Avenue, 8th Floor
Santa Ana, California 92707

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record
The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	Jeremy Black	Date	2/7/, 2013
Name	Jeremy Black	Telephone	(714) 918-9691
Title	Vice President and Associate General Counsel		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL
First Named Inventor/Applicant Name:	Paul D. Arling
Filer:	Gary R. Jarosik/Gladys Negron-Munoz
Attorney Docket Number:	81230.155US9

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	1600

Electronic Acknowledgement Receipt

EFS ID:	24163389
Application Number:	14948927
International Application Number:	
Confirmation Number:	2406
Title of Invention:	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL
First Named Inventor/Applicant Name:	Paul D. Arling
Customer Number:	34018
Filer:	Gary R. Jarosik/Gladys Negron-Munoz
Filer Authorized By:	Gary R. Jarosik
Attorney Docket Number:	81230.155US9
Receipt Date:	23-NOV-2015
Filing Date:	
Time Stamp:	15:11:32
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1600
RAM confirmation Number	1690
Deposit Account	502428
Authorized User	JAROSIK, GARY R
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	UtilityTransmittal_81230_155US9.pdf	103748 1ca197e82271ac3e128c58e30262540a513da666	no	1
Warnings:					
Information:					
2	Application Data Sheet	ADS_81230_155US9.pdf	1064519 1d31f37ec7fe094b1ce209a7b8f98405f5579f0ba	no	7
Warnings:					
Information:					
3		Spec_81230_155US9.pdf	132201 f28593fa39f64c3aac88aeeb2497d570f5a336e0	yes	31

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	27
Claims	28	30
Abstract	31	31

Warnings:					
Information:					
4	Drawings-only black and white line drawings	Drawings_81230_155US9.pdf	542150 bc94385b0c59bf5300699809a36fdb8cc6d3e402	no	13
Warnings:					
Information:					
5	Oath or Declaration filed	Declaration_81230_155US9.pdf	317711 5831e06a9ad3d6e98580055c71a026546858 9bb8	no	5
Warnings:					
Information:					
6	Assignee showing of ownership per 37 CFR 3.73	Stat73c_81230_155us9.pdf	1665693 3493fe607348234de12f2fe373b1357e6c98d728	no	7

Warnings:					
Information:					
7	Power of Attorney	UElexecutedPOA.pdf	869668 1a1d77a316b90935e91a0bdd08952c362973a1d3	no	1
Warnings:					
Information:					
8	Fee Worksheet (SB06)	fee-info.pdf	35329 017173f8168cdaa5c489d892914a9cbee08caaf31	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	4731019		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/15 (07-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office. U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	81230.155US9
First Inventor	Paul D. Arling
Title	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL
Express Mail Label No.	Filed via EFS-Web

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☐ **Fee Transmittal Form.** (PTO/SB/17 or equivalent)
2. ☐ **Applicant claims small entity status.** See 37 CFR 1.27.
3. ☑ **Specification.** [*Total Pages* 31] Both the claims and abstract must start on a new page *(For information on the preferred arrangement, see MPEP § 608.01(a))*
4. ☑ **Drawing(s).** *(35 U.S.C. 113)* [*Total Sheets* 13]
5. **Inventor's Oath or Declaration.** [*Total Sheets* 5] *(including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e))*
   a. ☐ Newly executed (original or copy)
   b. ☑ A copy from a prior application (37 CFR 1.63(d))
6. ☑ **Application Data Sheet.** **See Note below.* See 37 CFR 1.76 (PTO/AIA/14 or equivalent)
7. ☐ **CD-ROM or CD-R.** in duplicate, large table or Computer Program *(Appendix)*
   ☐ Landscape Table on CD
8. **Nucleotide and/or Amino Acid Sequence Submission.** *(if applicable, items a. – c. are required)*
   a. ☐ Computer Readable Form (CRF)
   b. ☐ Specification Sequence Listing on:
      i. ☐ CD-ROM or CD-R (2 copies); or
      ii. ☐ Paper
   c. ☐ Statements verifying identity of above copies

ADDRESS TO:

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

ACCOMPANYING APPLICATION PARTS

9. ☐ **Assignment Papers.** (cover sheet & document(s))
   Name of Assignee UNIVERSAL ELECTRONICS INC.
10. ☑ **37 CFR 3.73(c) Statement.** ☑ **Power of Attorney.** *(when there is an assignee)*
11. ☐ **English Translation Document.** *(If applicable)*
12. ☐ **Information Disclosure Statement.** (PTO/SB/08 or PTO-1449)
    ☐ Copies of citations attached
13. ☐ **Preliminary Amendment.**
14. ☐ **Return Receipt Postcard.** *(MPEP § 503) (Should be specifically itemized)*
15. ☐ **Certified Copy of Priority Document(s).** *(if foreign priority is claimed)*
16. ☐ **Nonpublication Request.** Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
17. ☑ **Other:** ELECTRONIC FEE CALCULATION SHEET

***Note:** (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).
(2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

18. CORRESPONDENCE ADDRESS

☑ The address associated with Customer Number: 34018 ***OR*** ☐ Correspondence address below

Name					
Address					
City		State		Zip Code	
Country		Telephone		Email	

Signature	/Gary R. Jarosik/	Date	November 23, 2015
Name (Print/Type)	Gary R. Jarosik	Registration No. (Attorney/Agent)	35,906

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/14 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	81230.155US9
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Paul	D.	Arling	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Irvine	State/Province	CA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	32 Prairie Grass		
Address 2			
City	Irvine	State/Province	CA
Postal Code	92603	Country i	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Ramzi		Ammari	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Newport Coast	State/Province	CA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	6 Seyne		
Address 2			
City	Newport Coast	State/Province	CA
Postal Code	92657	Country i	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Arsham		Hatambeiki	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

PTO/AIA/14 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	81230.155US9
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL	

City	Irvine	State/Province	CA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	2429 WaterMarke Place		
Address 2			
City	Irvine	State/Province	CA
Postal Code	90630	Country i	US

Inventor 4 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Graham		Williams	

Residence Information (Select One) (•) US Residency ( ) Non US Residency ( ) Active US Military Service

City	Corona Del Mar	State/Province	CA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	606 Marguerite Avenue		
Address 2			
City	Corona Del Mar	State/Province	CA
Postal Code	92625	Country i	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	34018		
Email Address	chiipmail@gtlaw.com	Add Email	Remove Email

Application Information:

Title of the Invention	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL		
Attorney Docket Number	81230.155US9	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	13	Suggested Figure for Publication (if any)	

PTO/AIA/14 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	81230.155US9
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL	

Publication Information:

☐	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐	**Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	34018		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	13933877	2013-07-02
Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13933877	Continuation of	13657176	2012-10-22
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13657176	non provisional of	61552857	2011-10-28
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13657176	non provisional of	61680876	2012-08-08

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

PTO/AIA/14 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	81230.155US9
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL	

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).

Remove

Application Number	Country i	Filing Date (YYYY-MM-DD)	Priority Claimed
			○ Yes ◉ No

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Authorization to Permit Access:

☐ Authorization to Permit Access to the Instant Application by the Participating Offices

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

PTO/AIA/14 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	81230.155US9
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL	

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Remove

(•) Assignee	( ) Legal Representative under 35 U.S.C. 117
( ) Person to whom the inventor is obligated to assign.	( ) Person who shows sufficient proprietary interest

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Assignee is an Organization check here. [X]

Organization Name	Universal Electronics Inc.

Mailing Address Information:

Address 1	201 East Sandpointe Avenue		
Address 2	8th Floor		
City	Santa Ana	**State/Province**	CA
Country [i]	US	Postal Code	92707
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications

Signature	/Gary R. Jarosik/			Date (YYYY-MM-DD)	2015-11-23
First Name	Gary R.	Last Name	Jarosik	Registration Number	35906

Additional Signature may be generated within this form by selecting the Add button. Add

PTO/AIA/14 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	81230.155US9
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL	

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL

RELATED APPLICATION INFORMATION

This application claims the benefit of and is a continuation of U.S. Application No. 13/933,877, filed on July 2, 2013, which application claims the benefit of and is a continuation of U.S. Application No. 13/657,176, filed on October 22, 2012, which application claims the benefit of U.S. Provisional Application No. 61/552,857, filed October 28, 2011, and U.S. Provisional Application No. 61/680,876, filed August 8, 2012, the disclosures of which are incorporated herein by reference in their entirety.

This application is also related to U.S. Patent Application No. 12/621,277, filed on November 18, 2009 and entitled "System and Method for Reconfiguration of an Entertainment System Controlling Device," which in turn is a continuation-in-part of U.S. Patent Application No. 12/569,121 (now U.S. Patent 8,243,207), filed on September 29, 2009 and entitled "System and Method for Activity Based Configuration of an Entertainment System," the disclosures of which are incorporated herein by reference in their entirety.

This application is also related to U.S. Patent Application No. 13/198,072, filed on August 4, 2011 and entitled "System and Method for Configuring the Remote Control Functionality of a Portable Device," the disclosure of which is incorporated herein by reference in its entirety.

This application is also related to U.S. Patent Application No. 13/240,604, filed on September 22, 2011 and entitled "System and Method for Configuring Controlling Device Functionality," the disclosure of which is incorporated herein by reference in its entirety.

BACKGROUND

Controlling devices, for example remote controls, for use in issuing commands to entertainment and other appliances, and the features and functionality provided by such controlling devices are well known in the art. In order to facilitate such functionality, various communication protocols, command formats, and interface methods have been implemented by appliance manufacturers to enable operational control of entertainment and other appliances, also as well known in the art. In particular, the recent proliferation of wireless and wired communication and/or digital interconnection methods such as WiFi, Bluetooth, HDMI, etc., amongst and between appliances has resulted in a corresponding proliferation of such communication protocols and command formats. While many of these newer methods may offer improved performance and/or reliability when compared to previous control protocols, appliance manufacturer adoption of such newer methods remains inconsistent and fragmented. This, together with the large installed base of prior generation appliances, may cause confusion, mis-operation, or other problems when a user or manufacturer of a controlling device, such as a remote control, attempts to take advantage of the enhanced features and functionalities of these new control methods.

SUMMARY OF THE INVENTION

This invention relates generally to enhanced methods for appliance control via use of a controlling device, such as a remote control, smart phone, tablet computer, etc., and in particular to methods for taking advantage of improved appliance control communication methods and/or command formats in a reliable manner which is largely transparent to a user and/or seamlessly integrated with legacy appliance control technology.

To this end, the instant invention comprises a modular hardware and software solution, hereafter referred to as a Universal Control Engine (UCE), which is adapted to provide device control across a variety of available control methodologies and communication media, such as for example various infrared (IR) remote control protocols; Consumer Electronic Control (CEC) as may be implemented over a wired HDMI connection; internet protocol (IP), wired or wireless; RF4CE wireless; Bluetooth (BT) wireless personal area network(s); UPnP protocol utilizing wired USB connections; or any other available standard or proprietary appliance command methodology. Since each individual control paradigm may have its own strengths and weaknesses, the UCE may be adapted to combine various control methods in order to realize the best control option for each individual command for each individual device.

The UCE itself may be adapted to receive commands from a controlling device, for example a conventional remote control or a remote control app resident on a smart device such as a phone or tablet, etc., utilizing any convenient protocol and command structure (IR, RF4CE, BT, proprietary RF, etc.) As will become apparent, the controlling device may range from a very simple unidirectional IR device to a fully functional WiFi enabled smart phone or the like. The UCE may receive command requests from such a controlling device and apply the optimum methodology to propagate the command function(s) to each intended target appliance, such as for example a TV, AV receiver, DVD player, etc. In this manner the UCE may enable a single controlling device to command the operation of all appliances in a home theater system while coordinating available methods of controlling each particular appliance in order to select the best and most reliable method for issuing each command to each given device. By way of example without limitation, a UCE may utilize IR commands

to power on an AV receiver appliance while CEC commands or another method may be used to select inputs or power down the same AV receiver appliance; or CEC commands may be used to power on and select inputs on a TV appliance while IR commands may be used to control the volume on the same TV appliance.

As will become apparent, a UCE may comprise modular hardware and software which may be embodied in a standalone device suitable for use in an existing home theater equipment configuration, or may be incorporated into any one of the appliances such as a STB, TV, AV receiver, HDMI switch etc. Further, when incorporated into an appliance, UCE functionality may be provisioned as a separate hardware module or may be incorporated together with other hardware functionality, e.g., as part of an HDMI interface IC or chip set, etc.

A better understanding of the objects, advantages, features, properties and relationships of the invention will be obtained from the following detailed description and accompanying drawings which set forth illustrative embodiments and which are indicative of the various ways in which the principles of the invention may be employed.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the various aspects of the invention, reference may be had to preferred embodiments shown in the attached drawings in which:

Figures 1 and 2 illustrate exemplary systems in which a standalone UEC device may be utilized to command operation of several appliances;

Figures 3 and 4 illustrate exemplary systems in which UEC functionality may be incorporated into an appliance which is part of a home entertainment system;

Figure 5 illustrates a block diagram of an exemplary UEC device;

Figure 6 illustrates a graphical representation of an exemplary UCE-based control environment;

Figure 7 illustrates an exemplary preferred command matrix for use in a UCE-based control environment, for example as illustrated in Figure 6;

Figure 8 illustrates a block diagram of an exemplary smart device which may support a remote control app and a setup method for use in configuring a UCE;

Figure 9 illustrates an exemplary series of steps which may be performed in order to set up and configure an exemplary UCE;

Figure 10 illustrates an exemplary series of steps which may be performed in order to define to a UCE an appliance configuration which corresponds to a user activity;

Figure 11 illustrates exemplary activity configuration matrices such as may be defined during the steps of Figure 10;

Figure 12 illustrates an exemplary current appliance state matrix which may be maintained by a UCE for use in determining the commands necessary to invoke one of the states defined by the matrix of Figure 11;

Figure 13 illustrates an exemplary series of steps which may be performed by a UCE in issuing a function command to an appliance; and

Figure 14 illustrates an exemplary series of steps which may be performed by a UCE in establishing appliance states matching a desired activity defined in one of the matrices of Figure 11.

DETAILED DESCRIPTION

With reference to Figure 1, there is illustrated an exemplary system in which a UCE device 100 may be used to issue commands to control various controllable appliances, such as a television 106, a cable set top box combined with a digital video recorder ("STB/DVR") 110, a DVD player 108, and an AV receiver 120. While illustrated in the context of a television 106, STB/DVR 110, a DVD player 108, and an AV receiver 120, it is to be understood that controllable appliances may include, but need not be limited to, televisions, VCRs, DVRs, DVD players, cable or satellite converter set-top boxes ("STBs"), amplifiers, CD players, game consoles, home lighting, drapery, fans, HVAC systems, thermostats, personal computers, etc. In the illustrative example of Figure 1, appliance commands may be issued by UCE 100 in response to infrared ("IR") request signals 116 received from a remote control device 102, radio frequency ("RF") request signals 118 received from an app 124 resident on a smart device 104, or any other device from which UCE 100 may be adapted to receive requests, using any appropriate communication method. As illustrated, transmission of the requested appliance commands from the UCE to appliances 106,108,112,120 may take the form of wireless IR signals 114 or CEC commands issued over a wired HDMI interface 112, as appropriate to the capabilities of the particular appliance to which each command may be directed. In particular, in the exemplary system illustrated, AV receiver 120 may not support HDMI inputs, being connected to audio source appliances 108,110 via, for example S/PDIF interfaces 122. Accordingly UCE 100 may be constrained to transmit all commands destined for AV receiver 120 exclusively as IR signals, while commands destined for the other appliances 106 through 110 may take the form of either CEC or IR signals as

appropriate for each command. By way of example without limitation, certain TV manufacturers may elect not to support volume adjustment via CEC. If the illustrative TV 106 is of such manufacture, UCE 100 may relay volume adjustment requests to TV 106 as IR signals 114, while other requests such as power on/off or input selections may be relayed in the form of CEC commands over HDMI connection 112.

It will however be appreciated that while illustrated in the context of IR, RF, and wired CEC signal transmissions, in general, transmissions to and from UCE device 100 may take the form of any convenient IR, RF, hardwired, point-to-point, or networked protocol, as necessary for a particular embodiment. Further, while wireless communications 116, 118, etc., between exemplary devices are illustrated herein as direct links, it should be appreciated that in some instances such communication may take place via a local area network or personal area network, and as such may involve various intermediary devices such as routers, bridges, access points, etc. Since these items are not necessary for an understanding of the instant invention, they are omitted from this and subsequent Figures for the sake of clarity.

Since smart device remote control apps such as that contemplated in the illustrative device 104 are well known, for the sake of brevity the operation, features, and functions thereof will not be described in detail herein. Nevertheless, if a more complete understanding of the nature of such apps is desired, the interested reader may turn to, for example, the before mentioned U.S. Patent Application No. 12/406,601 or U.S. Patent Application No. 13/329,940, entitled "Graphical User Interface and Data Transfer Methods in a Controlling Device," both of common ownership and incorporated herein by reference in their entirety.

Turning now to Figure 2, in a further illustrative embodiment, UCE 100 may receive wireless request signals from a remote control 200 and/or an app resident on a tablet computer 202. As before, command transmissions to appliances 106,108,110 may take the form of wired CEC commands or wireless IR commands. However, in this example remote control 200 may be in bi-directional communication 208 with UCE 100 and accordingly the UCE may delegate the transmission of IR commands 210 to the remote control device 200, i.e., use remote control 200 as a relay device for those commands determined to be best executed via IR transmissions. As also generally illustrated in Figure 2, a setup app 214 executing on a smart device such as tablet computer 202 may be utilized in conjunction with an Internet (212,204) accessible server 206 and associated database 207 to initially configure UCE 100 for operation with the specific group of appliances to be controlled, i.e., to communicate to UCE 100 a matching command code set and capability profile for each particular appliance to be controlled, for example based on type, manufacture, model number, etc., as will be described in greater detail hereafter.

With reference to Figure 3, in a yet further illustrative embodiment UCE functionality 100' may be embedded in an appliance, for example STB/DVR 310. In this example, remote control 102 and/or smart device 104 may transmit wireless request signals directly to STB/DVR 310 for action by the built-in UCE function 100', which actions may, as before, comprise CEC command transmissions via HDMI connection 112 or IR command transmissions 114, originating in this instance from an IR blaster provisioned to the STB/DVR appliance 310. In this configuration, a set up application resident in STB/DVR 310 may be utilized to configure UEC 100', using for example an Internet connection 304 accessible through a cable modem and/or cable distribution system headend.

In the further illustrative embodiment of Figure 4, UCE functionality 100' may be embedded in an AV receiver 420 which may serve as an HDMI switch between various content sources such as a STB/DVR 110 or a DVD player 108 and a rendering device such as TV 106. In addition to HDMI inputs, AV receiver 420 may also support various other input formats, for example analog inputs such as the illustrative 404 from CD player 408; composite or component video; S/PDIF coaxial or fiberoptic; etc. In this embodiment, request signals 406 may be directed to AV receiver 420, for example from remote control 402, for action by UCE function 100'. As before, resulting appliance commands may be transmitted using CEC signals transmitted over HDMI connections 112, or via IR signals 114 transmitted from an associated IR blaster. As appropriate for a particular embodiment, initial configuration of UCE 100' to match the equipment to be controlled may be performed by an Internet-connected app resident in AV receiver 420, or by an app resident in tablet computer 202 or other smart device, as mentioned previously in conjunction with Figure 2.

As will be appreciated, various other configurations are also possible without departing from the underlying UCE concept, for example UCE function 100' may be incorporated into an Internet-capable TV, an HDMI switch, a game console, etc.; appliance command set and capability database 207 may be located at a cable system headend, may be stored locally (in all or in part), which local storage may take the form of internal memory within the UCE itself or in an appliance such as a TV, STB or AV receiver, or may take the form of a memory stick or the like attachable to a smart device or appliance; etc.

With reference to Figure 5, an exemplary UCE device 100 (whether stand alone or an appliance supporting UCE functionality) may include, as needed for a particular application, a processor 500 coupled to a memory 502 which memory may comprise a combination of

ROM memory, RAM memory, and/or non-volatile read/write memory and may take the form of a chip, a hard disk, a magnetic disk, an optical disk, a memory stick, etc., or any combination thereof. It will also be appreciated that some or all of the illustrated memory may be physically incorporated within the same IC chip as the processor 500 (a so called "microcontroller") and, as such, it is shown separately in Fig. 5 only for the sake of clarity. Interface hardware provisioned as part of the exemplary UCE platform may include IR receiver circuitry 504 and IR transmitter circuitry 506; an HDMI interface 508; a WiFi transceiver and interface 510; an Ethernet interface 512; and any other wired or wireless I/O interface(s) 514 as appropriate for a particular embodiment, by way of example without limitation Bluetooth, RF4CE, USB, Zigbee, Zensys, X10/Insteon, HomePlug, HomePNA, etc. The electronic components comprising the exemplary UCE device 100 may be powered by an external power source 516. In the case of a standalone UCE device such as illustrated in Figures 1 or 2, this may comprise for example a compact AC adapter "wall wart," while integrated UCE devices such as illustrated in Figures 3 or 4 may draw operating power from the appliance into which they are integrated. It will also be appreciated that in the latter case, in certain embodiments processor 500 and/or memory 502 and/or certain portions of interface hardware items 504 through 514 may be shared with other functionalities of the host appliance.

As will be understood by those skilled in the art, some or all of the memory 502 may include executable instructions that are intended to be executed by the processor 500 to control the operation of the UCE device 100 (collectively, the UCE programming) as well as data which serves to define the necessary control protocols and command values for use in transmitting command signals to controllable appliances (collectively, the command data).

In this manner, the processor 500 may be programmed to control the various electronic components within the exemplary UCE device 100, e.g., to monitor the communication means 504,510 for incoming request messages from controlling devices, to cause the transmission of appliance command signals, etc. To cause the UCE device 100 to perform an action, the UCE device 100 may be adapted to be responsive to events, such as a received request message from remote control 102 or smart device 104, changes in connected appliance status reported over HDMI interface 508, WiFi interface 510, or Ethernet interface 512, etc. In response to an event, appropriate instructions within the UCE programming may be executed. For example, when a command request is received from a smart phone 104, the UCE device 100 may retrieve from the command data stored in memory 502 a preferred command transmission medium (e.g., IR, CEC over HDMI, IP over WiFi, etc.) and a corresponding command value and control protocol to be used in transmitting that command to an intended target appliance, e.g., TV 106, in a format recognizable by that appliance to thereby control one or more functional operations of that appliance. By way of further example, the status of connected appliances, e.g., powered or not powered, currently selected input, playing or paused, etc., as may be discerned from interfaces 508 through 514, may be monitored and/or tabulated by the UCE programming in order to facilitate adjustment of appliance settings to match user-defined activity profiles, e.g. "Watch TV", "View a movie", etc.

An overview of an exemplary UCE control environment is presented in Figure 6. The UCE programming of an exemplary UCE device 100 may comprise a universal control engine core 650 together with a series of scalable software modules 652 through 660, each module supporting a particular appliance command protocol or method and provisioned as

appropriate for a particular embodiment. By way of example, the illustrative embodiment of Figure 6 may include an internet protocol (IP) module 652, a CEC over HDMI module 654, a Bluetooth module 656, an IR module 660, and other modules(s) 658, as appropriate for the particular application. The appliances to be controlled may include an IP enabled AV receiver 620, an IP enabled STB/DVR 610, TV 106, DVD player 108, and CD player 408. As illustrated, certain of these devices may be interconnected via HDMI 112 and/or Ethernet 670 interfaces. (In this regard, it should be appreciated that the illustrative interconnections 112 and 670 of Figure 6 are intended to depict logical topography only, and accordingly details of exact physical cabling structure and/or the presence of any necessary switches, routers, hubs, repeaters, interconnections, etc., are omitted for the sake of clarity.)

The preferred method/protocol/medium for issuance of commands to the exemplary appliances of Figure 6 may vary by both appliance and by the function to be performed. By way of example, volume control and analog input selection commands 622 targeted to AV receiver 620 may be required to be issued via IR transmissions, while power on/off and HDMI input selection functionality commands 624 may be better communicated via CEC commands and advanced functionality commands 626 such as sound field configuration may be best communicated via an Ethernet connection. In a similar manner, the various operational functions of the other appliances may best commanded via a mixture of mediums, methods, and protocols, as illustrated. As will be appreciated, in some instances a particular appliance may support receipt of an operational command via more than one path, for example the power on/off function of AV receiver 620 may be available not only as a CEC command, but also via an IR command. In such instances, the UCE preferred command format may be that which has been determined to offer the greatest reliability, for

example in the above instance the CEC command may be preferred since this form of command is not dependent on line-of-sight and also permits confirmation that the action has been performed by the target appliance.

In order to determine the optimum method for each configured appliance type and command, the exemplary UCE core program 650 may be provisioned with a preferred command matrix 700, as illustrated in Figure 7. Exemplary preferred command matrix 700 may comprise a series of data cells or elements, e.g. cells 712, each corresponding to a specific command 702 and a specific one of the appliances to be controlled 704. The data content of such a cell or element may comprise identification of a form of command/transmission to be used and a pointer to the required data value and formatting information for the specific command. By way of example, the data element 712 corresponding to the "Input 2" command 706 for the configured TV appliance 708, may comprise an indicator that a CEC command is to be used, i.e., an indicator of the transmission device that is to be used to communicate the command to the intended target appliance, together with a pointer to the appropriate command data value and HDMI-CEC bus address; while data element 714 corresponding to the same command function for the configured AV receiver 710 may comprise an indicator that an IR command is to be used, together with a pointer to appropriate command data and formatting information within an IR code library stored elsewhere in UCE memory 502 . In certain embodiments one or more secondary command matrices 716 may also be provisioned, allowing for the use of alternate command methods in the event it is determined by the UCE programming that a preferred command was unsuccessful. Command matrix 700 may also contain null entries, for example 718, where a particular function is not available on or not supported by a specific

appliance. In an exemplary embodiment, command matrix 700 may be created and loaded into the memory 502 of UCE 100 during an initialization and set-up process, as will now be described in further detail.

In order to perform initial configuration of a UCE device, a setup application may be provided. In some embodiments, such a set up application may take the form of programming to be executed on any convenient device with a suitable user interface and capable of establishing communication with the UCE, such as without limitation a smart phone, tablet computer, personal computer, set top box, TV, etc., as appropriate for a particular embodiment. In other embodiments such a set up application may be incorporated into the UCE programming itself, utilizing for example a connected TV screen and an associated controlling device as the user interface. Regardless of the exact form and location of the programming and user interface means, the series of steps which may be performed by a UCE set up application when configuring a UCE device for operation with a specific set of appliances remains similar. Accordingly, it will be appreciated that the methods comprising the illustrative UCE set up application presented below in conjunction with Figures 8 and 9 may be generally applied, mutatis mutandis, to various alternative set up application embodiments.

With reference to Figure 8, as known in the art a tablet computer such as the exemplary device 202 of Figure 2 may comprise, as needed for a particular application, a processor 800 memory 802 which memory may comprise a combination of ROM memory, RAM memory, and/or non-volatile read/write memory and may take the form of a chip, a hard disk, a magnetic disk, an optical disk, a memory stick, etc., or any combination thereof. In some embodiments, provision may also be made for attachment of external memory 804

which may take the form of an SD card, memory stick, or the like. Hardware provisioned as part of an exemplary tablet computer platform may include an LCD touchscreen 810 with associated display driver 806 and touch interface 808; hard keys 812 such as for example a power on/off key; a USB port 816; WiFi transceiver and interface 818; a Bluetooth transceiver and interface 820; a camera 822; and various other features 824 as appropriate for a particular embodiment, for example an accelerometer, GPS, ambient light sensor, near field communicator; etc. The electronic components comprising the exemplary tablet computer device 202 may be powered by a battery-based internal power source 814, rechargeable for example via USB interface 816.

Memory 802 may include executable instructions that are intended to be executed by the processor 800 to control the operation of the tablet computer device 202 and to implement various functionalities such as Web browsing, game playing, video streaming, etc. As is known in the art, programming comprising additional functionalities (referred to as "apps") may be downloaded into tablet computer 202 via, for example, WiFi interface 818, USB 816, external memory 804, or any other convenient method. As discussed previously, one such app may comprise a remote control app, for example as that described in co-pending U.S. Patent Application No. 13/329,940 of like assignee and incorporated herein by reference in its entirety, which app may be for use in commanding the operation of appliances 106, 108, 110 and/or 120 via UCE device 100. In order to initially configure UCE device 100 to match the appliances to be controlled and to establish an appropriate command matrix, tablet computer 202 may also be provisioned with a setup app 214, either as part of a remote control app or as separately downloadable item.

With reference now to Figure 9 such a setup app, upon being invoked at step 902 may initially request that the user place all of the appliances to be controlled into a known state, e.g., powered on, in order to enable the appliance detection and/or testing steps which follow. Next, at step 904 the setup app may determine the identity of those appliances which are CEC-enabled. This may be accomplished by communicating a request to the associated UCE, which at step 906 which may cause the UCE programming to scan connected HDMI devices for appliances which are CEC-enabled and/or identifiable via interaction over the HDMI interface, for example as described in co-pending U.S. Patent Application No. 13/198,072, of like assignee and incorporated herein by reference in its entirety, and communicate such appliance identities to the setup application. Thereafter, at step 904 the setup application may determine if additional non-CEC appliances are connected to the UCE device via the HDMI interface. This may be accomplished by requesting the UCE programming to scan for any further HDMI connections at step 910 and communicate the findings back to the setup application. Though not illustrated, it will be appreciated that where appropriate for a particular embodiment the UCE programming may conduct similar scans to in order to discover appliances connected via Ethernet, USB, Bluetooth, RF4CE, WiFi etc., where such interfaces may be provisioned to a UCE.

Thereafter, at step 912 the setup application may display a listing of detected appliances (both identified and not yet identified) to the user. At step 914, the user may be prompted to enter appliance identifying information for those HDMI or otherwise connected appliances which were detected but not identified, as well as identifying information regarding any additional appliances which may form part of the system to be controlled but are not discoverable as described above (for example appliances such as AV receiver 120 or

CD player 408 which may be responsive only to unidirectional IR commands). Without limitation, such identifying information may take the form of user-entered data such as an appliance type, brand and model number, or a setup code from a listing in a user guide; or may take the form of scanned or electronic information such as a digital picture of the appliance itself or of a bar code, QR code, or the like associated with appliance; near field acquisition of RFID tag data; etc.; or any combination thereof as appropriate for a particular embodiment.

Once appropriate identifying information has been acquired, at step 916 the setup app may communicate that information to a database server, for example server 206, for performance of step 918, comprising identification of and retrieval of command codeset and capability data corresponding to the identified appliances from a database 207, and provision of this data to the setup application for processing and ultimate transfer to the UCE device. As will be appreciated, the transferred codeset data may comprise complete command data values and formatting information, may comprise pointers to command data values and formatting information already stored in the memories 502 and/or 802/804 of the UCE or the device upon which the setup application is currently resident, or a combination thereof. Where necessary, for example when database 207 may contain alternate codesets for an identified appliance, or where uncertainty exists regarding a particular appliance model number, etc., at steps 920, 922, and 924 various control paradigms and/or command data sets may be tested against the appliances to be controlled. Such testing may take the form of soliciting user response to effects observable commands, monitoring of HDMI interface status changes as described for example in U.S. Patent Application No. 13/240,604, of like assignee and incorporated herein by reference in its entirety, or any other method as

convenient for a particular application. Once appropriate codesets have been fully determined, at steps 926,928 and 930 a suitable preferred command matrix, for example as illustrated in Figure 7, may be constructed and stored into the memory 502 of exemplary UCE device 100, the matrix being constructed by considering the communication capabilities and functionalities of the devices identified via the above-described processes.

In order to select the optimum command method for each function of each configured appliance any suitable method may be utilized, for example a system-wide prioritization of command media and methods by desirability (e.g. apply IP, CEC, IR in descending order); appliance-specific command maps by brand and/or model; function-specific preference and/or priority maps (e.g. all volume function commands via IR where available); etc.; or any combination thereof. The exact selection of command method priorities or mapping may take into account factors such connection reliability, e.g. wired versus wireless, bidirectional versus unidirectional communication, etc.; speed of command transmission or execution; internal priorities within an appliance, e.g. received IP received packets processed before CEC packets, etc.; type of protocol support (e.g. error correction versus error detection; ack/nak, etc.); or any other factors which may applied in order to achieve optimum performance of a particular embodiment.

As will be appreciated, the construction of said preferred command matrix may be performed at the database server or within the setup application, or a combination thereof, depending on the particular embodiment. Once a preferred command matrix has been finalized and stored in the UCE device, at step 932 a series of desired appliance configurations associated with specific user activities may be configured and stored into the UCE device, as will be now be described.

Upon completion and storage of a preferred command matrix, an exemplary setup application may subsequently guide a user through a series of steps in order to establish the desired appliance configurations for a series of possible activities. With reference to Figure 10, at step 1002, the user may be presented with a list of possible activities, e.g., "Watch TV", "Watch a movie", "Listen to music", etc. In some embodiments, the user may also be able to edit activity titles and/or create additional user defined activities. At step 1004 a user may select a particular activity for configuration, for example "Watch TV". At step 1006, the user may be prompted to identify the content source for the activity being configured, for example cable STB/DVR 110 for the exemplary "Watch TV" activity. Such a prompt may take the form of a listing of eligible appliances as determined during the foregoing appliance set up steps; explicit user entry of an appliance type; etc. Next, at steps 1008 the user may be prompted in a similar manner to select video and audio rendering appliances for use in this activity, for example TV 106 and AVR receiver 120 respectively. Depending upon the system topography and the interfaces in use (i.e. HDMI/CEC, IP, analog, etc.) the set up application in concert with UCE programming may be able to ascertain which input port of each rendering appliance is attached to the content source appliance identified for this activity and/or if any intermediate switching appliance is in use (for example AV receiver 420 of the system illustrated in Figure 4). Where such information is obtainable, the set up application may automatically create all or part of an appropriate rendering device input selection for the activity being configured. If not, at steps 1008 and 1010, the user may be additionally requested to identify the applicable content route(s) to the rendering appliances, e.g., input port numbers, presence of intermediate switches, etc. During or upon conclusion of steps 1004 through 1010, the set up application may construct an activity matrix, for

example as illustrated in Figure 11. By way of example, activity matrix 1100 for a "Watch TV" activity may comprise a series of cells, for example 1110 or 1112, each corresponding to a desired configuration of a particular state 1106 or function 1108 of a specific appliance 1104 during the specified activity. By way of example, cell 1110 may indicate that the input of AV receiver 120 is to be set to "S/PDIF2", while cells 1112 and 1114 may indicate that transport function commands (e.g., "play", "pause", "fast forward" etc.) are to be directed to STB/DVR 110 and not to DVD 114. In this regard, it will be appreciated that while in some embodiments the assignment of functions such as, for example, volume control, to specific appliances during a particular activity may be performed within an individual controlling device, i.e., the controlling device may determine the appliance to which volume control commands are to be directed, in a preferred embodiment this assignment may be performed within the UCE, thereby ensuring consistency across each activity when multiple controlling devices are present in an environment, for example devices 102 and 104 of the environment illustrated in Figure 1.

Returning now to Figure 10, at steps 1014 and 1016 the newly-constructed activity matrix 1100 may be tested by causing the UCE programming, utilizing preferred command matrix 700, to issue the commands necessary to place the identified appliances into the desired state and thereafter receiving verification at step 1018 that the desired activity was successfully initiated. It will be appreciated that such verification may comprise, for example, detection and reporting of HDMI or other content streams and/or appliance status by UCE programming by directly monitoring CEC status or by using methods such as described for example in U.S. Patent Application No. 13/240,604; solicitation of user input confirming correct operation; monitoring for presence or absence of analog input signals;

recording of appliance status or error messages; etc.; or any combination thereof as appropriate for a particular embodiment.

If testing is unsuccessful, at step 1018 the set up application may return to step 1002 to allow reconfiguration of that activity and/or definition of alternative activities. If testing was successful, at steps 1020 and 1022 the completed activity matrix, for example 1100 as illustrated in Figure 11, may be transferred to the UCE 100 for storage in UCE memory 502. Thereafter, at step 1024 the user may be offered the opportunity to return to step 1002 to define additional activity configurations, for example 1101,1102 as illustrated in Figure 11, or to exit the activity configuration process.

With reference now to Figure 13, the series of steps performed by the UCE programming in order to convey a function command to an appliance in accordance with a command request 1300 received from a controlling device such as remote control 102 or 200, smart device 104 or 202, etc., or in accordance with an internally generated requirement resulting from receipt of an activity request (as will be described hereafter) may initially comprise retrieval from a preferred command matrix that data element which corresponds to the requested command and target appliance. By way of specific example, receipt of a "TV power on" request from remote control 102 or the like at a UEC provisioned with the preferred command matrices illustrated in Figure 7 may cause retrieval of data element 720, indicating that the command is to be communicated to the TV appliance, e.g., television 106, using an HDMI CEC command. At step 1304, the UCE programming may determine if the retrieved value constitutes a null element. If so, the referenced appliance does not support the requested command and accordingly at step 1314 an error message may be generated and the process thereafter terminated. As will be appreciated, the exact nature of such an error

message may depend upon the particular embodiment and/or the requesting controlling device: for example, if the request originated from a controlling device which is in bidirectional communication with the UCE the error may be communicated back to the requesting device for action, i.e., display to the user, illuminate a LED, activate a buzzer, etc. as appropriate. Alternatively, in those embodiments where a UCE is incorporated into an appliance, that appliance's front panel display may be utilized.

If the retrieved preferred command matrix element data is valid, at step 1306 the UCE may communicate the corresponding function command to the target appliance using the indicated command value and transmission method, e.g., for the exemplary data element 720 this may comprise issuing a CEC "power on" command to CEC logical device address zero (TV) via the UCE HDMI interface 508. Once the command has been issued, at step 1308 the UCE programming may determine if the communication interface and protocol used in issuing the command provides for any confirmation mechanism, i.e., explicit acknowledgement of receipt, monitoring of HDMI status on an interface, detection of a media stream or HDCP handshake, etc. If not, for example the command was issued using a unidirectional IR signal and no other confirmation means such as power or input signal monitoring is available, the UCE programming may simply assume that the command was successful and processing is complete. If however confirmation means exists, at step 1310 the UCE programming may wait to determine if the command was successfully executed. Once positive confirmation is received, processing is complete. If no confirmation or a negative confirmation is received, at step 1312 the UCE programming may determine if an alternative method is available to communicate the command to the target appliance. Returning to the specific example presented above this may comprise accessing a secondary

command matrix 716 in order to determine if an alternative communication method is available for the specific function, e.g., "TV power on." If an alternative does exist, at step 1316 the substitute command value and transmission method may be retrieved and processing may return to step 1306 to initiate an alternative attempt. Returning again to the specific example, if the CEC "power on" command corresponding to data element 720 of matrix 700 issued to TV 106 cannot be confirmed, an IR "power on" command encoded according to SIRCS (Sony Infrared Control System) in correspondence with the equivalent data element in secondary matrix 716 may be attempted as a substitute.

In addition to relaying individual command requests as described above, an exemplary UCE may also support activity selection, whereby receipt of a single user request from a controlling device may cause a series of commands to be issued to various appliances in order to configure a system appropriately for a particular user activity, such as for example, watching television. To this end a set of matrices defining desired equipment states suitable to various activities, for example as illustrated at 1100 through 1102 of Figure 11, may be stored in UCE memory 502 for access by UCE programming when executing such a request. As illustrated in Figure 12, in some embodiments the programming of an exemplary UCE may maintain an additional matrix 1200 representative of the current state of the controlled appliances, arranged for example by appliance 1202 and by operational state 1204. By way of example, data elements 1206 and 1208 in the illustrative table 1200 may indicate that TV 106 is currently powered on (1208) with HDMI port number 2 selected as the input (1206). The data contents of the elements in such a table may be maintained in any convenient manner as appropriate to a particular embodiment, for example without limitation retrieval of HDMI/CEC status; monitoring input media streams and/or HDCP status;

measuring power consumption; construction of a simulated appliance state such as described for example in U.S. Patent 6,784,805; etc.; or any combination thereof. In the case of certain appliances, such as for example AV receiver 120 which may be controllable only via unidirectional IR, the current state of the appliance may not be discernible. In such cases, a null data element 1210 maybe entered into exemplary matrix 1200 to indicate that this appliance may require configurion using discrete commands only and/or user interaction. As will be appreciated, in some embodiments the data contents of the illustrative table may be maintained in memory 502 on an ongoing basis by UCE programming, while in other embodiments this data may be gathered "on the fly" at the time the activity request is being processed. Combinations of these methods may also be used, for example "on the fly" gathering for appliances connected via an HDMI bus combined with maintenance of a simulated state for appliances controlled via IR signals.

In order to configure a group of appliances for a desired activity, UCE programming may compare a desired state matrix, for example 1100, to a current state matrix, for example 1200, element by element, issuing commands as necessary to bring appliances to the desired state. By way of example, an exemplary series of steps which may be performed by the programming of a UCE in order to effect a "Watch TV" activity configuration will now be presented in conjunction with Figure 14. For the purposes of this example, the reader may also wish to reference the equipment configuration of Figure 1 and the activity and current state matrices 1100 and 1200 of Figures 11 and 12.

Upon receipt of a "Watch TV" request 1400, at step 1402 the exemplary UCE programming may access an applicable appliance state matrix 1100. Next, at step 1404 it may be determined by the UCE programming whether the present "power" state of TV 106

as indicated by current state matrix 1200 matches the desired state stored in the corresponding data element of matrix 1100. If the states match, processing may continue at step 1408. If the states do not match, at step 1406 a "power on" command may be communicated to TV 106. As will be appreciated from the earlier discussion in conjunction with Figure 13 and inspection of exemplary preferred command matrix 700, in the illustrative system communication of the "power on" command to TV 106 may comprise a CEC command issued over HDMI connection 112. Next, at step 1408 a "mute" command may be communicated to TV 106, since element 1116 of illustrative matrix 1100 indicates that TV106 is not the primary audio rendering appliance. In accordance with preferred command matrix 700, communication of the "mute" command to TV 106 may comprise an IR transmission 114. Thereafter, at steps 1410,1412 the active input of TV 106 may be set to "HDMI1" via a CEC command, and at steps 1414,1416 a CEC "power on" command may be communicated to STB/DVR 110 if that appliance is not already powered on. At step 1418, the exemplary UCE programming may set an internal status to indicate that future transport command requests (e.g., play, pause, FF, etc.) should be routed to STB/DVR 110, as indicated by element 1112 of matrix 1100. Thereafter, at steps 1420,1422 a CEC "power off" command may be communicated to STB/DVR 108 if that appliance is not already powered off. Thereafter, at steps 1424 and 1426 "power on" and "input S/PDIF2" commands may be communicated to AV receiver 120 via IR signals. As will be appreciated, it may not be possible to determine the current status of AV receiver 120, as indicated for example by elements 1210 and 1220 of matrix 1200, and accordingly so-called "discrete," or explicit, function commands may be issued which may establish the desired status regardless of the current state of the appliance. Finally, at step 1428 the exemplary UCE programming

may set an internal status to indicate that future volume control command requests (e.g. volume up/down, mute) should be routed to AV receiver 120, as indicated by element 1118 of matrix 1100, whereafter processing of the activity request is complete.

* * * * *

While various concepts have been described in detail, it will be appreciated by those skilled in the art that various modifications and alternatives to those concepts could be developed in light of the overall teachings of the disclosure. For example, in an alternate embodiment of UCE functionality, in place of a preferred command matrix such as illustrated in Figure 7, the programming of an exemplary UCE may utilize a command prioritization list, for example a prioritization list "IP, CEC, IR" may cause the UCE programming to first determine if the requested command can be issued using Internet Protocol, only if not, then determine if the requested command can be issued using a CEC command over the HDMI interface, and only if not, then attempt to issue the requested command via an infrared signal. Such a prioritization reflects an exemplary preference of using bi-directional communication protocols over uni-directional communication protocols over line of sight communication protocols, e.g., IR, when supported by the intended target appliance.

Further, while described in the context of functional modules and illustrated using block diagram format, it is to be understood that, unless otherwise stated to the contrary, one or more of the described functions and/or features may be integrated in a single physical device and/or a software module, or one or more functions and/or features may be implemented in separate physical devices or software modules. It will also be appreciated that a detailed discussion of the actual implementation of each module is not necessary for an

enabling understanding of the invention. Rather, the actual implementation of such modules would be well within the routine skill of an engineer, given the disclosure herein of the attributes, functionality, and inter-relationship of the various functional modules in the system. Therefore, a person skilled in the art, applying ordinary skill, will be able to practice the invention set forth in the claims without undue experimentation. It will be additionally appreciated that the particular concepts disclosed are meant to be illustrative only and not limiting as to the scope of the invention which is to be given the full breadth of the appended claims and any equivalents thereof.

All patents cited within this document are hereby incorporated by reference in their entirety.

CLAIMS

What is claimed is:

1. A universal control engine, comprising:

a processing device; and

a memory device having stored thereon instructions executable by the processing device, the instructions, when executed by the processing device, causing the universal control engine to respond to a detected presence of an intended target appliance within a logical topography of controllable appliances which includes the universal control engine by using an identity associated with the intended target appliance to create a listing comprised of at least a first communication method and a second communication method different than the first communication method for use in controlling each of at least a first functional operation and a second functional operation of the intended target appliance and to respond to a received request from a controlling device intended to cause the intended target appliance to perform a one of the first and second functional operations by causing a one of the first and second communication methods in the listing of communication methods that has been associated with the requested one of the first and second functional operations to be used to transmit to the intended target appliance a command for controlling the requested one of the first and second functional operations of the intended target appliance.

2. The universal control engine as recited in claim 1, wherein the instructions cause the universal control engine to respond to the request by causing a highest prioritized one of the first and second communication methods in the listing of communication methods that has been associated with the requested one of the first and second functional operations to be

used to transmit to the intended target appliance a command for controlling the requested one of the first and second functional operations of the intended target appliance.

3. The universal control engine as recited in claim 1, wherein the instructions cause the universal control engine to initiate a detection of the presence of the intended target appliance within the logical topography of controllable appliances.

4. The universal control engine as recited in claim 1, wherein data obtained from a communication exchanged via use of a Bluetooth communication protocol is used by the universal control engine to detect the presence of the intended target appliance within the logical topography of controllable appliances.

5. The universal control engine as recited in claim 1, wherein the instruction cause the universal control engine to cause a prompt to be displayed in a display associated with the universal control engine in response to a detected presence of the intended target appliance within a logical topography of controllable appliances, the prompt requesting a user to provide data indicative of the identity associated with the intended target appliance.

6. The universal control engine as recited in claim 2, wherein the instructions cause the universal control engine to use at least one characteristic associated with each of the plurality of communication methods in the listing to prioritize the first and second communication methods in the listing.

7. The universal control engine as recited in claim 1, wherein the instructions cause the universal control engine to initiate an interrogation of the intended target appliance to determine which of a plurality of communication methods are supported by the appliance for use in receiving a command for controlling at least one of the first and second functional operations and using results obtained from the interrogation to create the listing.

8. The universal control engine as recited in claim 1, wherein the instructions cause the universal control engine to initiate a transmission of a test communication for controlling at least one of the first and second functional operations of the intended target appliance via use of at least one test communication method and to cause the universal control engine to omit the at least one test communication method from the listing of communication methods for use in controlling the at least one of the first and second plurality of functional operations of the intended target appliance when the at least one test communication method fails to elicit a performance by the intended target appliance of the at least one of the first and second functional operations.

ABSTRACT

A device receives a request from a controlling device, such as a remote control, smart phone, or the like, where the request is intended to have one or more target devices perform one or more functional operations. The device responds to the request by applying the optimum methodology to propagate one or more commands to each intended target appliance to cause each intended target appliance to perform the intended one or more functional operations.

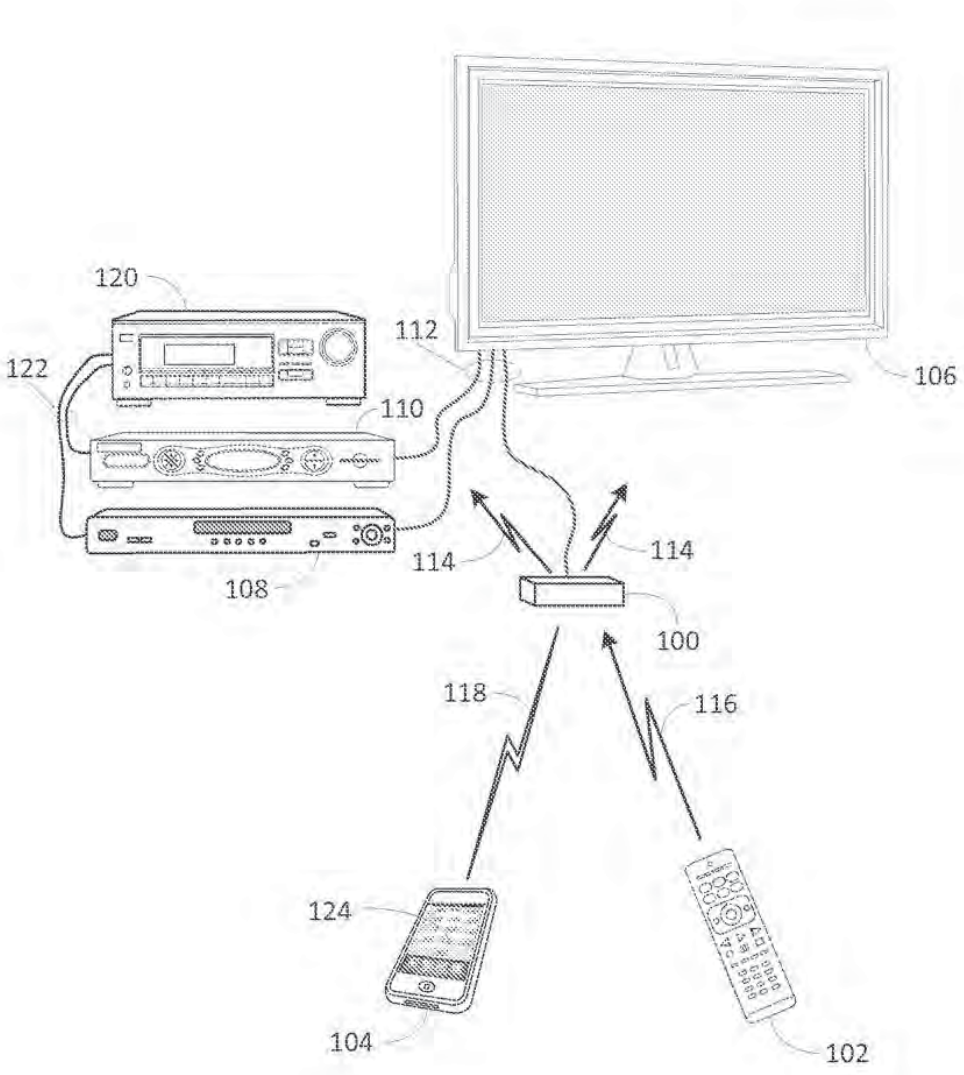


Figure 1

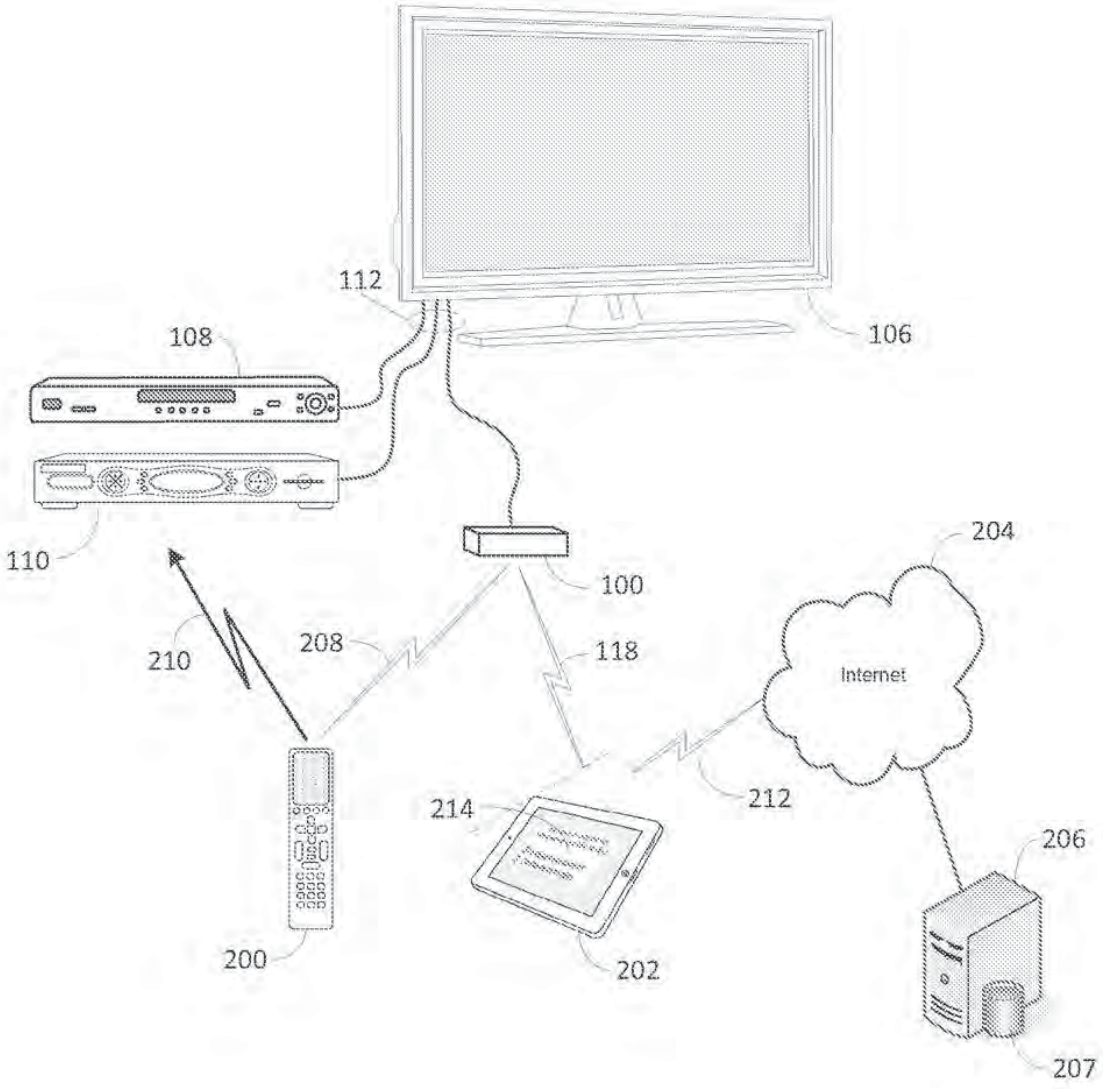

112
108
106
110
100
204
210
208
118
Internet
214
212
206
200
202
207

Figure 2

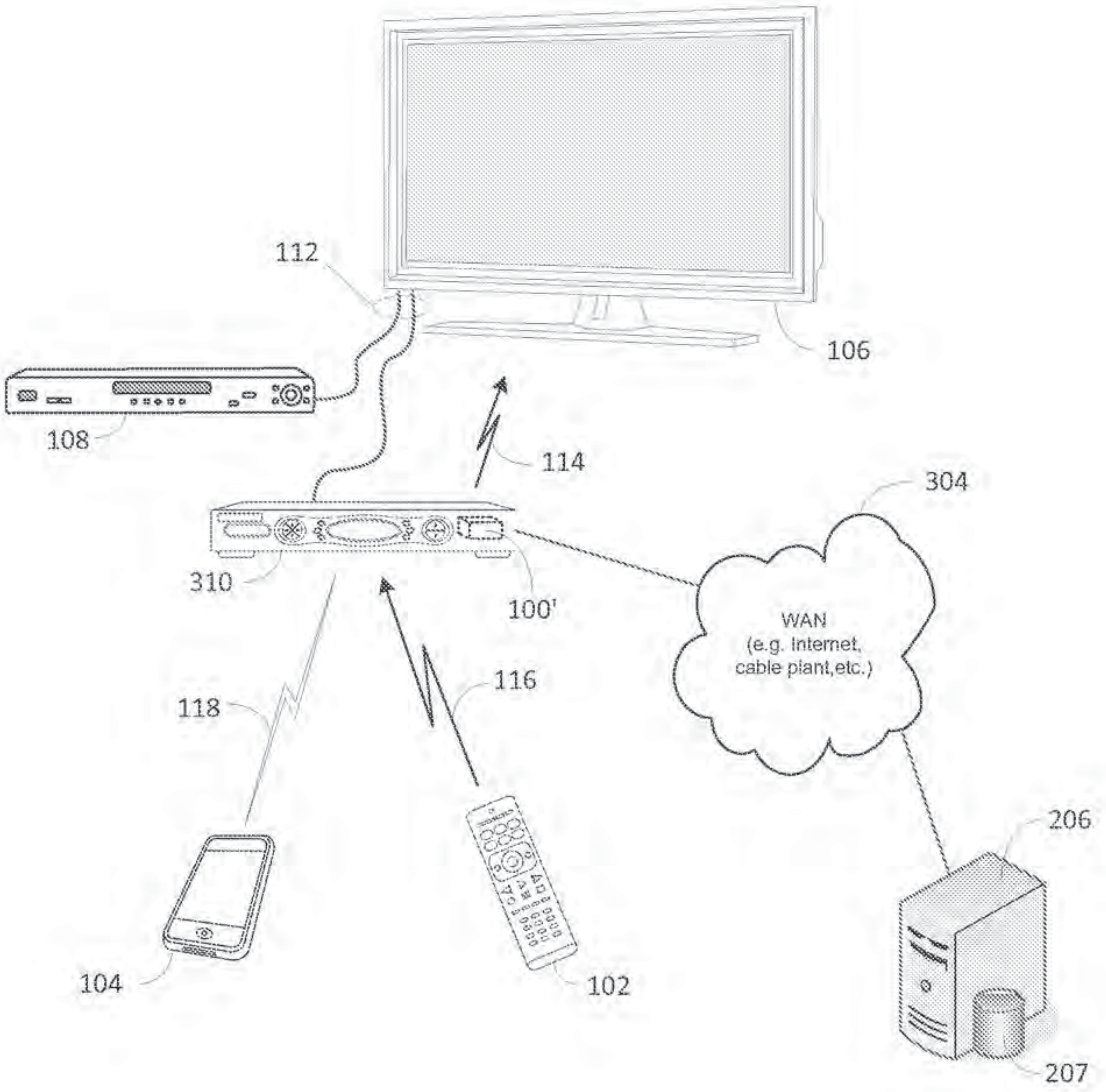

112
106
108
114
304
310
100'
WAN
(e.g. Internet,
cable plant,etc.)
118
116
206
104
102
207

Figure 3

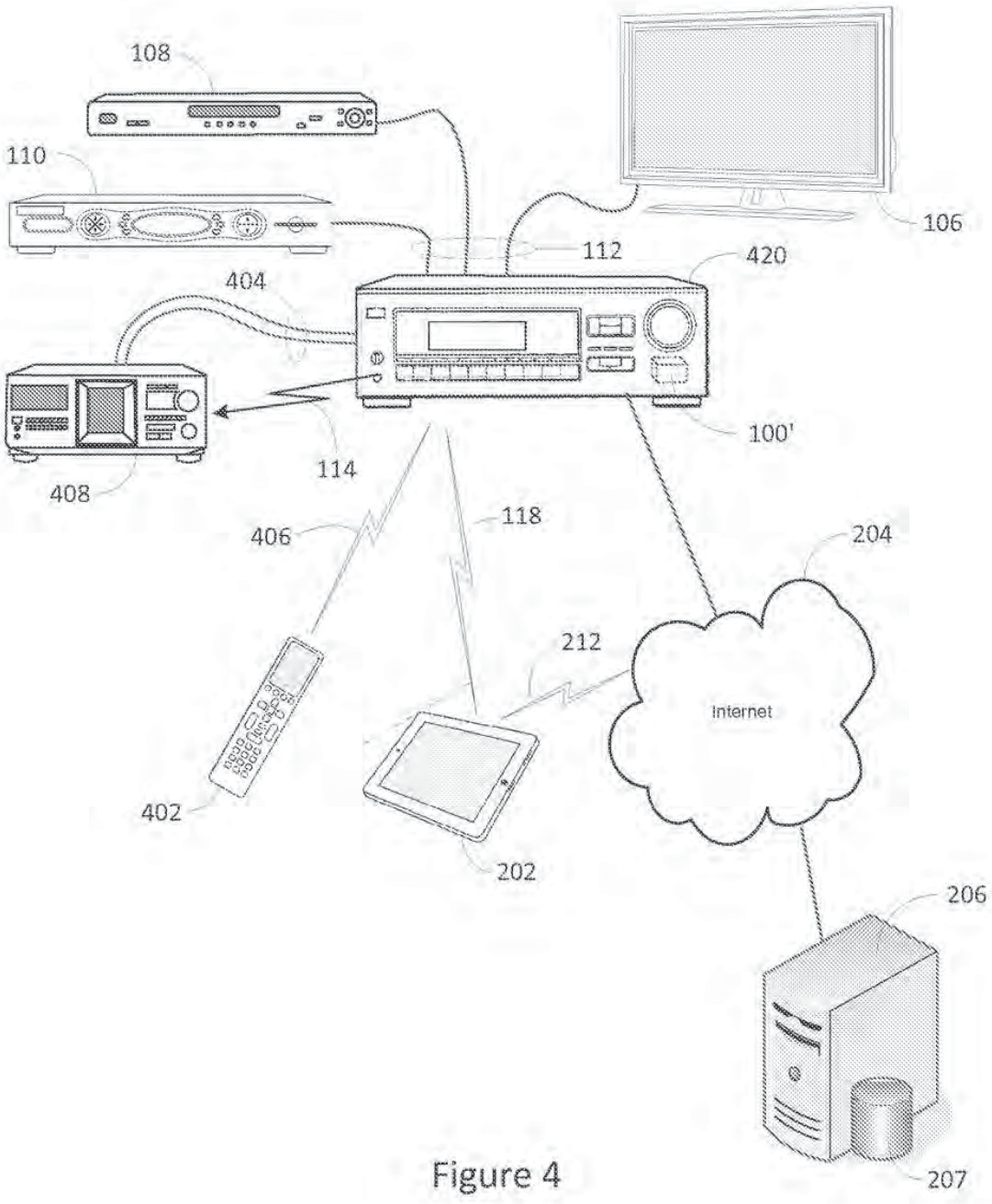

108
110
106
112
420
404
100'
114
408
406
118
204
212
Internet
402
202
206
207

Figure 4

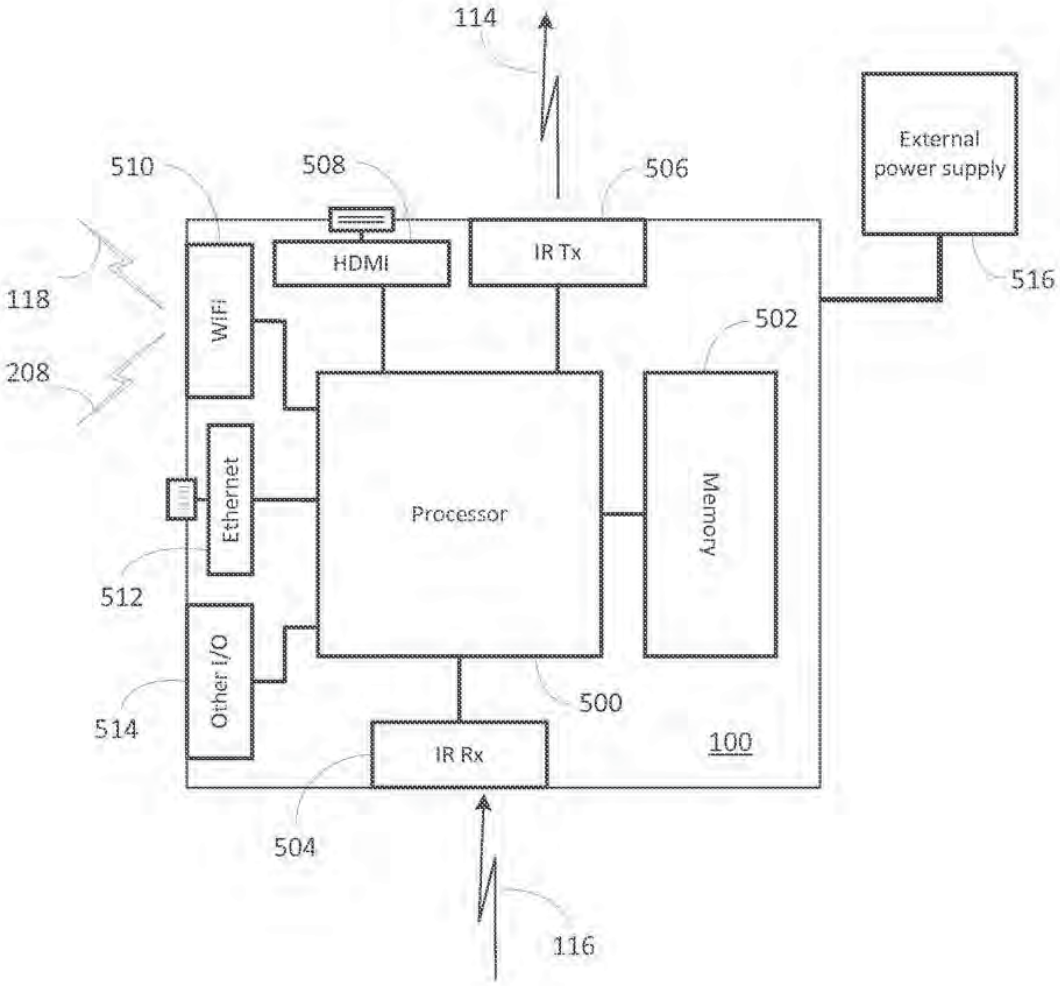

114
External power supply
510
508
506
516
HDMI
IR Tx
118
WiFi
502
208
Ethernet
Processor
Memory
512
Other I/O
500
514
100
IR Rx
504
116

Figure 5

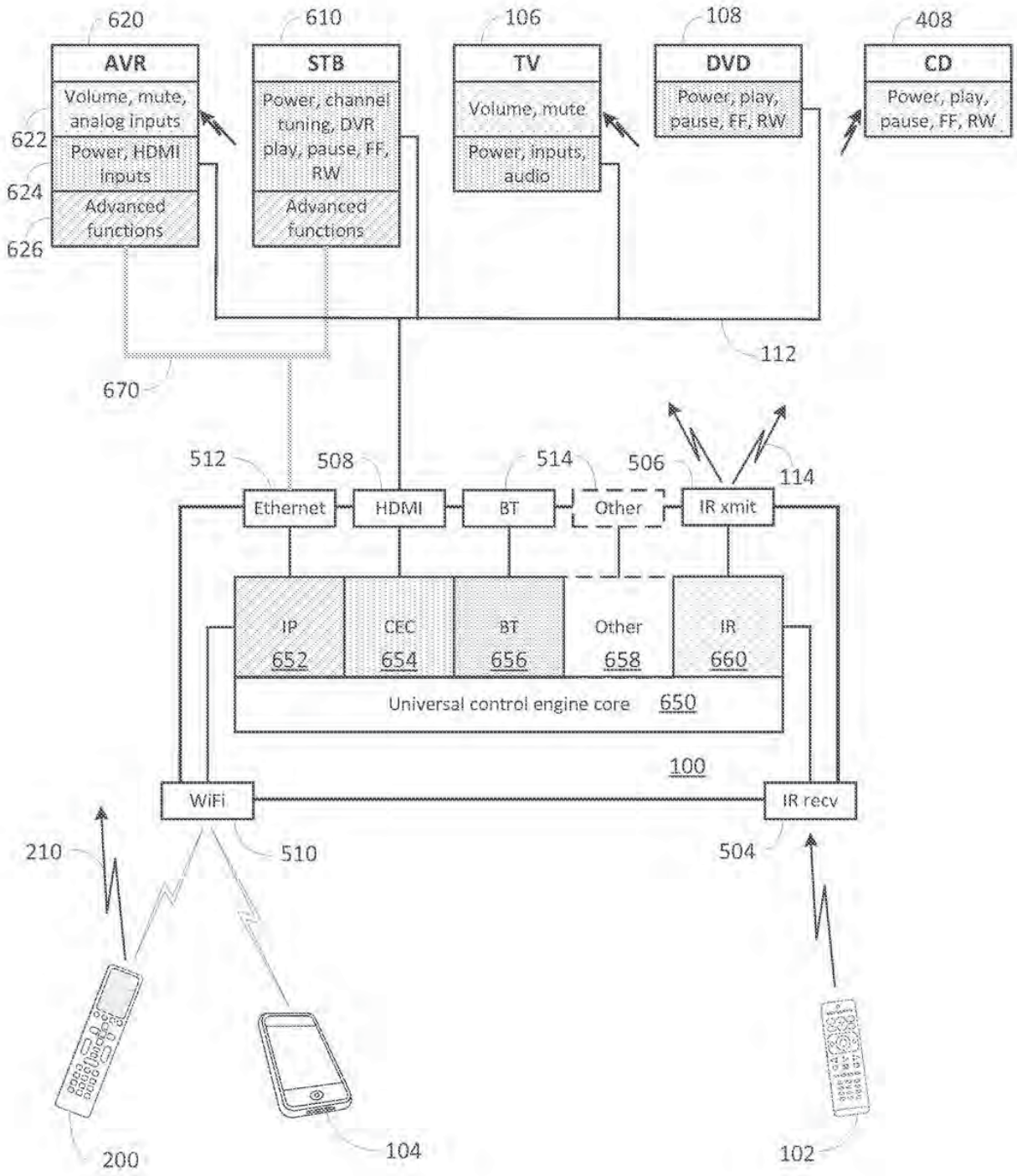

620
610
106
108
408
AVR
STB
TV
DVD
CD
Volume, mute, analog inputs
Power, channel tuning, DVR play, pause, FF, RW
Volume, mute
Power, play, pause, FF, RW
Power, play, pause, FF, RW
622
Power, HDMI inputs
Power, inputs, audio
624
Advanced functions
Advanced functions
626
112
670
512
508
514
506
114
Ethernet
HDMI
BT
Other
IR xmit
IP
652
CEC
654
BT
656
Other
658
IR
660
Universal control engine core 650
100
WiFi
IR recv
210
510
504
200
104
102

Figure 6

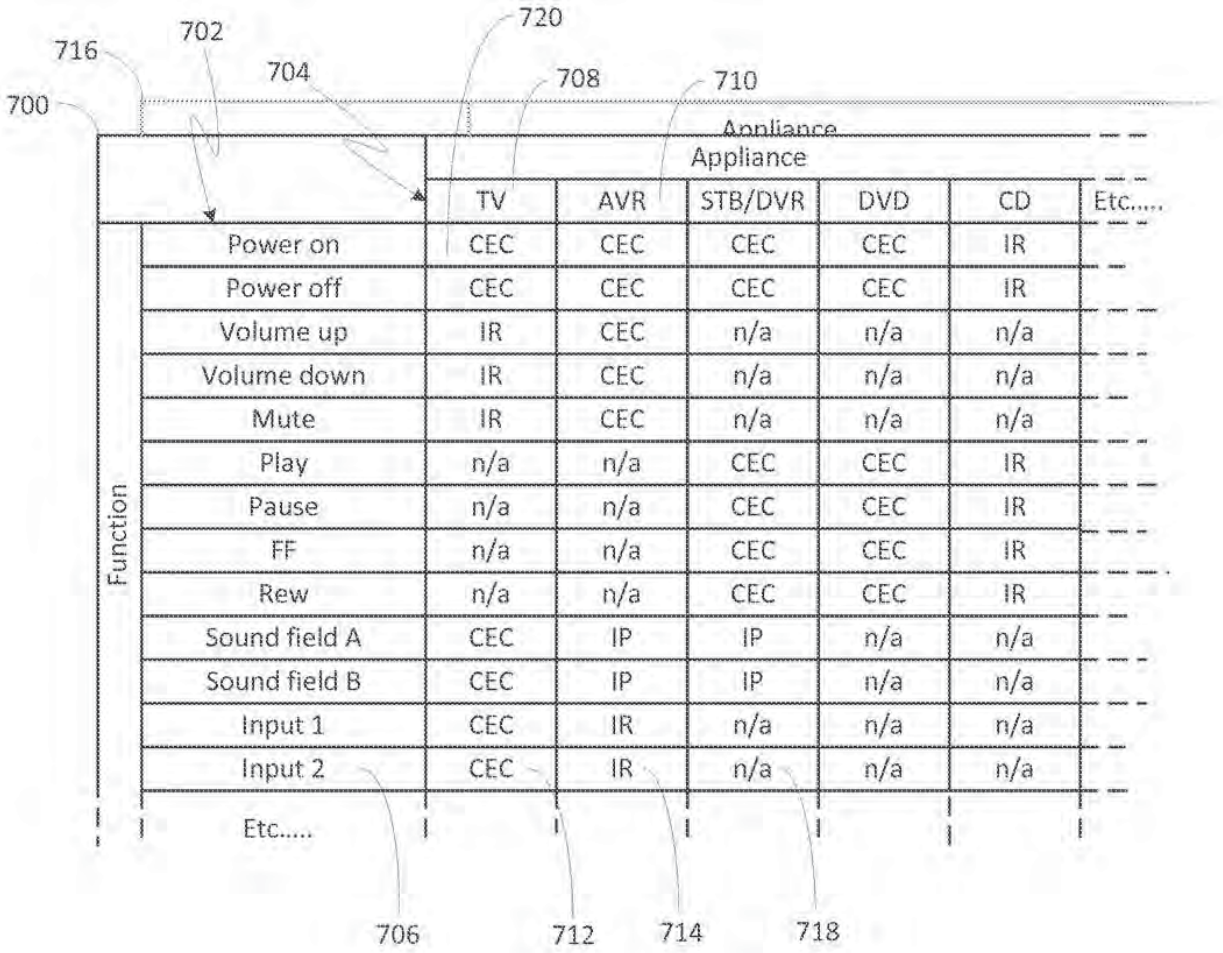

700
716
702
704
720
708
710
Appliance
Appliance
TV
AVR
STB/DVR
DVD
CD
Etc.....
Function
Power on
Power off
Volume up
Volume down
Mute
Play
Pause
FF
Rew
Sound field A
Sound field B
Input 1
Input 2
Etc.....
CEC
IR
IP
n/a
706
712
714
718

Figure 7

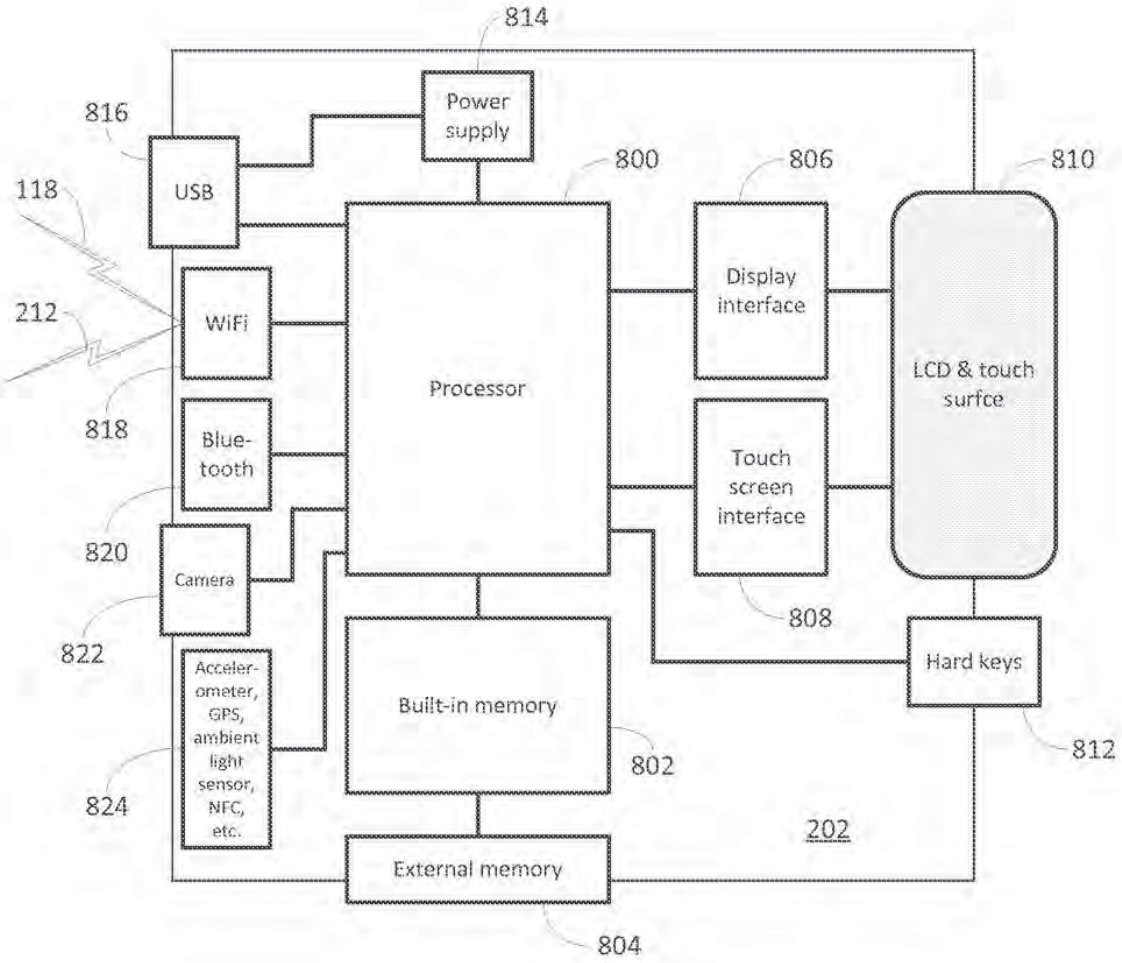

814
Power supply
816
USB
800
806
810
118
Display interface
LCD & touch surfce
212
WiFi
Processor
818
Blue-tooth
Touch screen interface
820
Camera
808
822
Hard keys
Acceler-ometer, GPS, ambient light sensor, NFC, etc.
Built-in memory
812
802
824
202
External memory
804

Figure 8

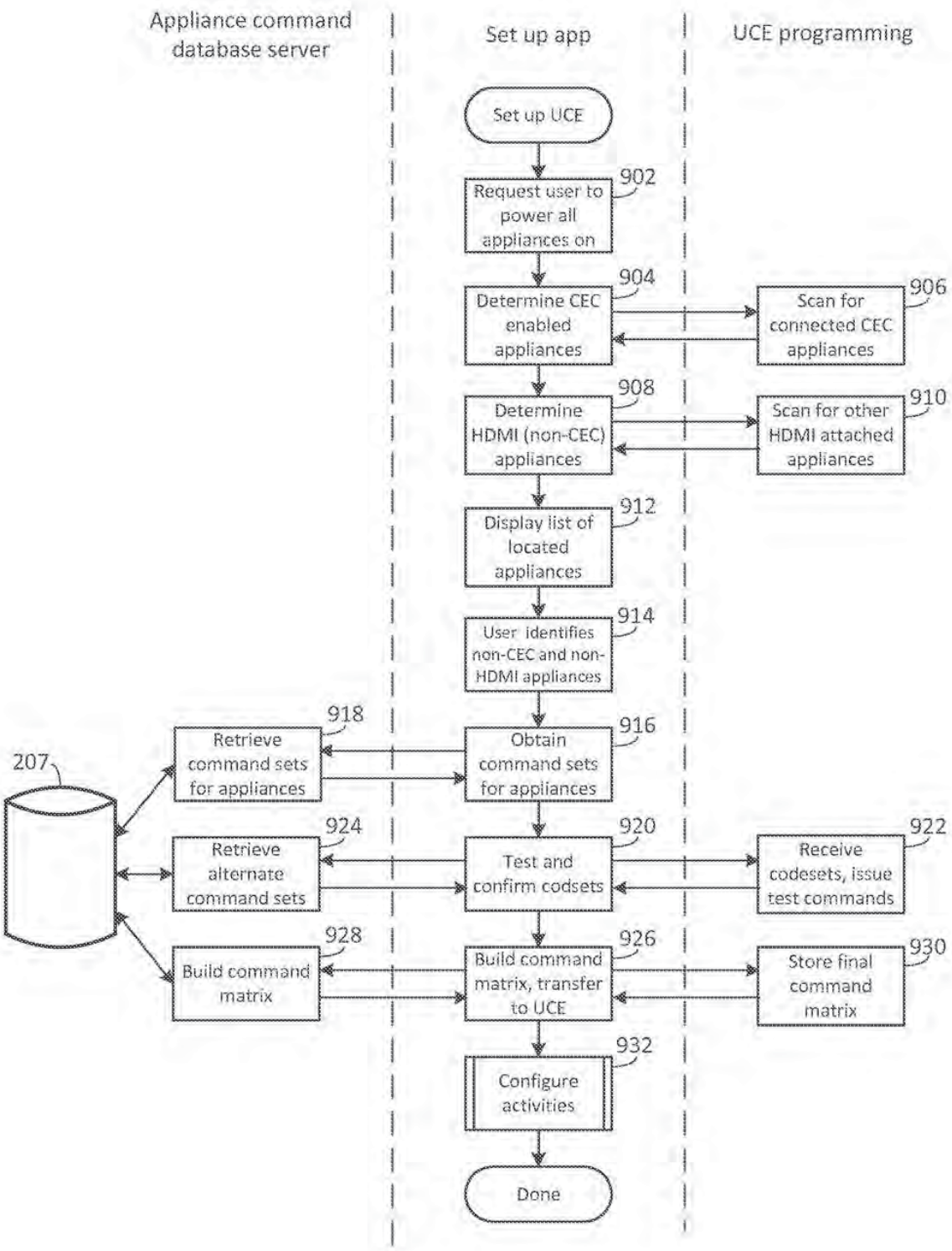

Appliance command database server
Set up app
UCE programming
Set up UCE
902
Request user to power all appliances on
904
Determine CEC enabled appliances
906
Scan for connected CEC appliances
908
Determine HDMI (non-CEC) appliances
910
Scan for other HDMI attached appliances
912
Display list of located appliances
914
User identifies non-CEC and non-HDMI appliances
918
Retrieve command sets for appliances
916
Obtain command sets for appliances
207
924
Retrieve alternate command sets
920
Test and confirm codsets
922
Receive codesets, issue test commands
928
Build command matrix
926
Build command matrix, transfer to UCE
930
Store final command matrix
932
Configure activities
Done

Figure 9

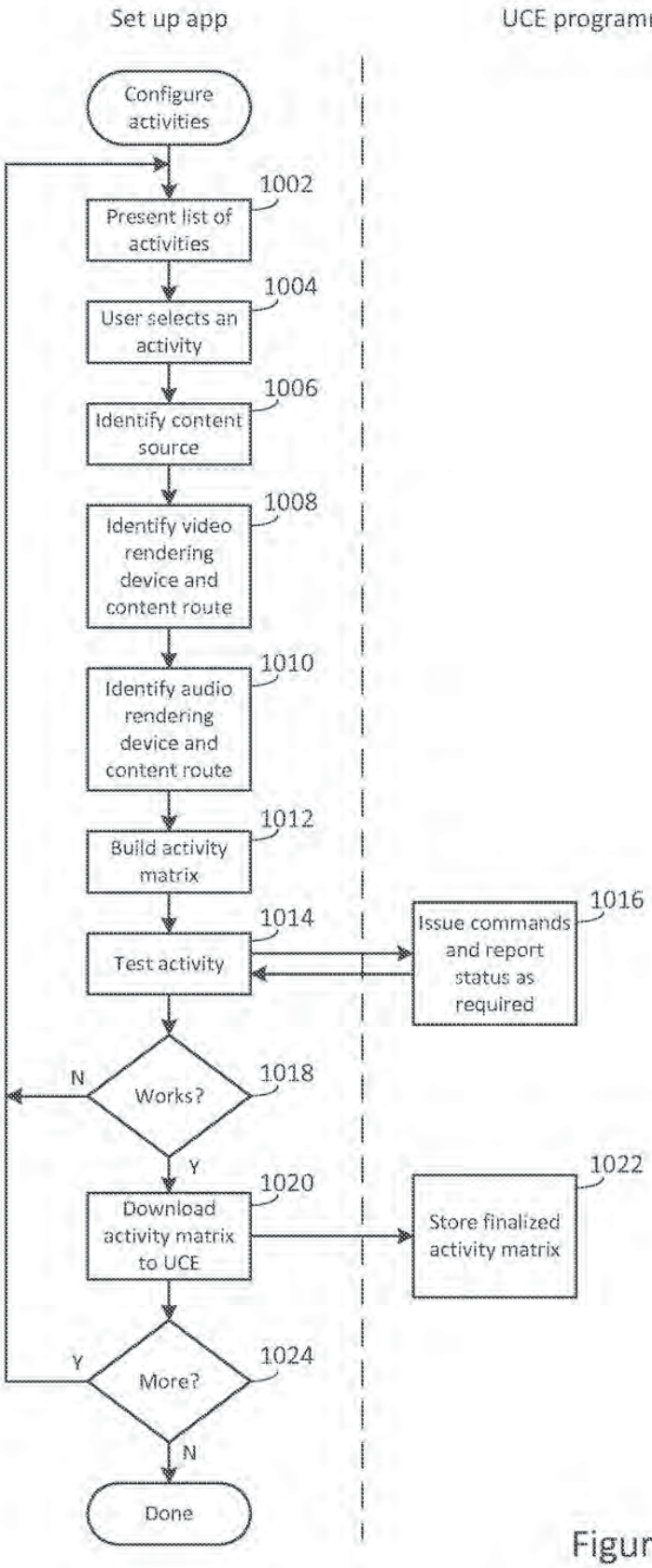

Set up app
UCE programming
Configure activities
1002
Present list of activities
1004
User selects an activity
1006
Identify content source
1008
Identify video rendering device and content route
1010
Identify audio rendering device and content route
1012
Build activity matrix
1014
Test activity
1016
Issue commands and report status as required
N
Works?
1018
Y
1020
Download activity matrix to UCE
1022
Store finalized activity matrix
Y
More?
1024
N
Done

Figure 10

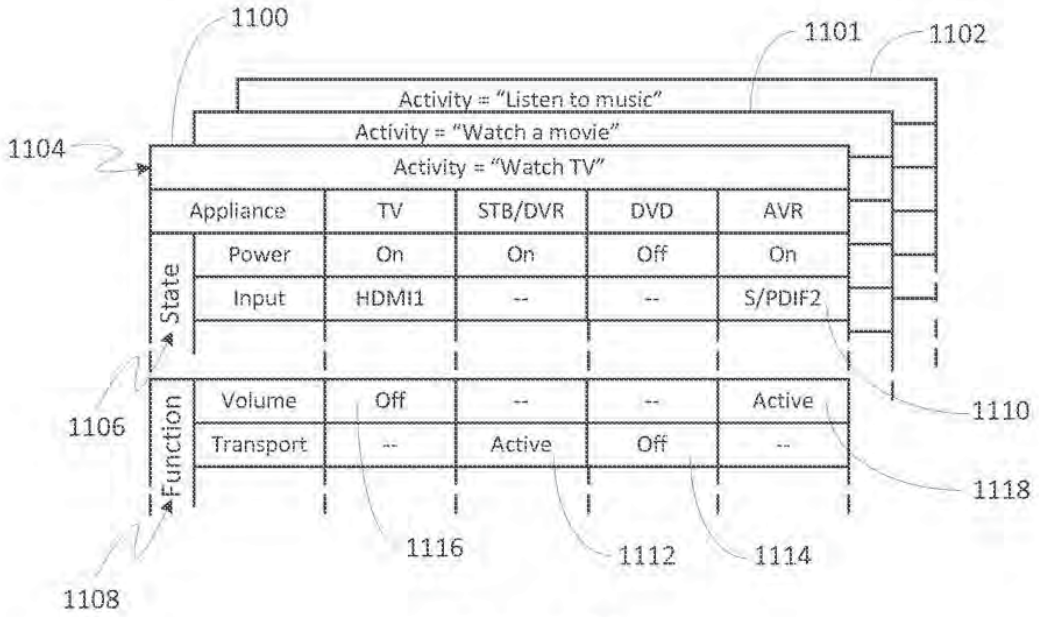


Figure 11

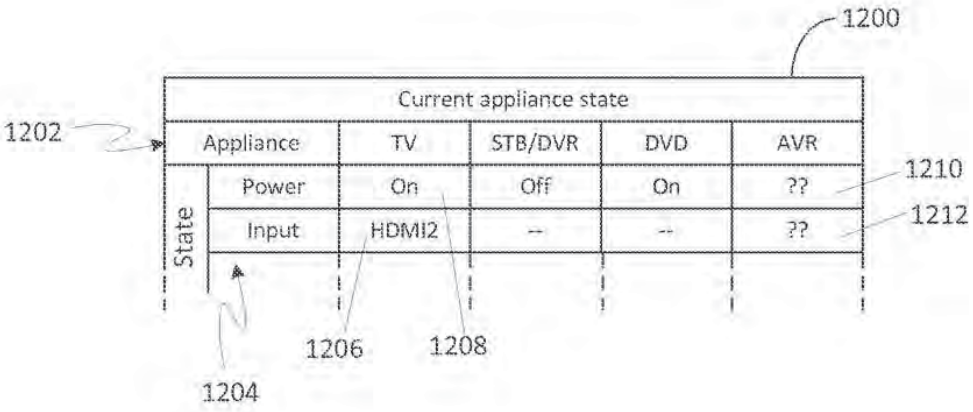


Figure 12

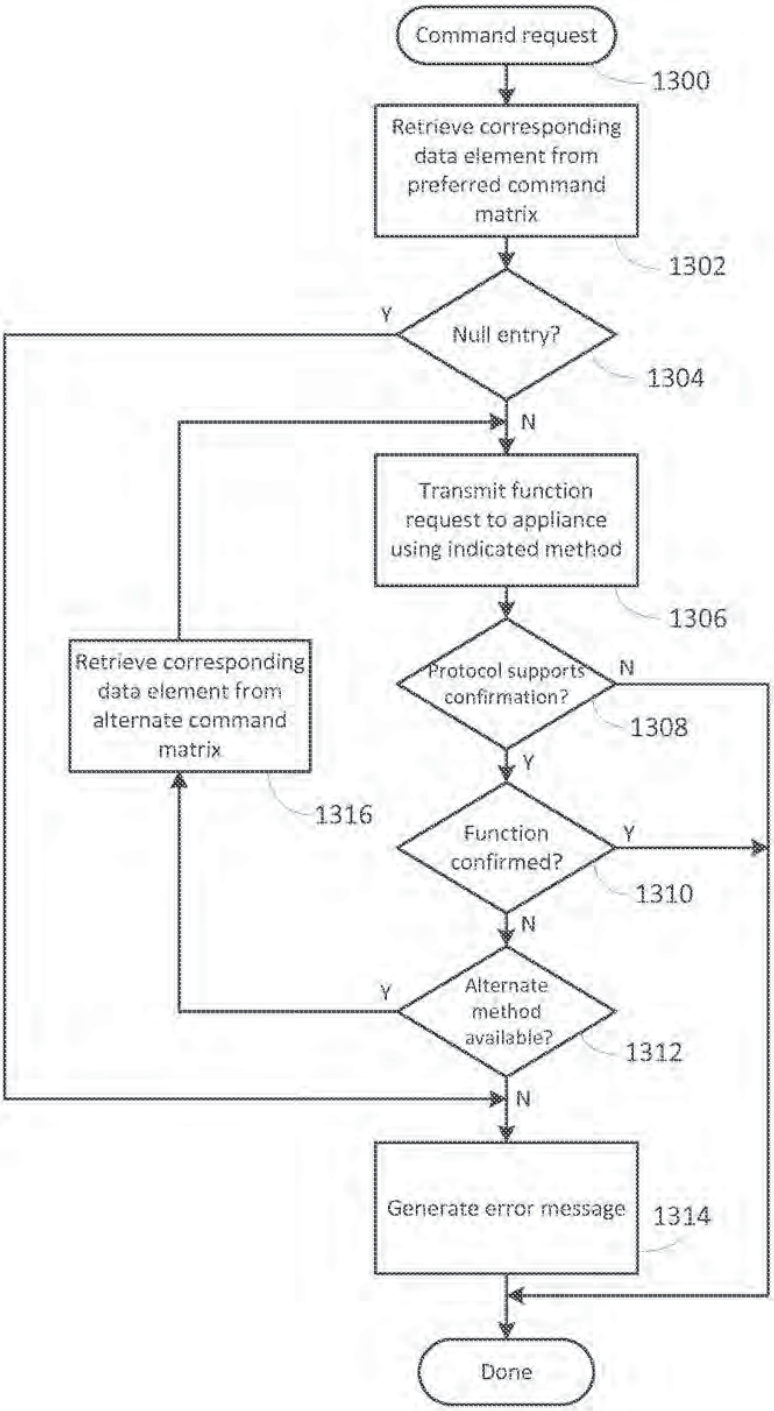

Command request
1300
Retrieve corresponding data element from preferred command matrix
1302
Null entry?
Y
1304
N
Transmit function request to appliance using indicated method
1306
Protocol supports confirmation?
N
1308
Y
Function confirmed?
Y
1310
N
Alternate method available?
Y
1312
N
Retrieve corresponding data element from alternate command matrix
1316
Generate error message
1314
Done

Figure 13

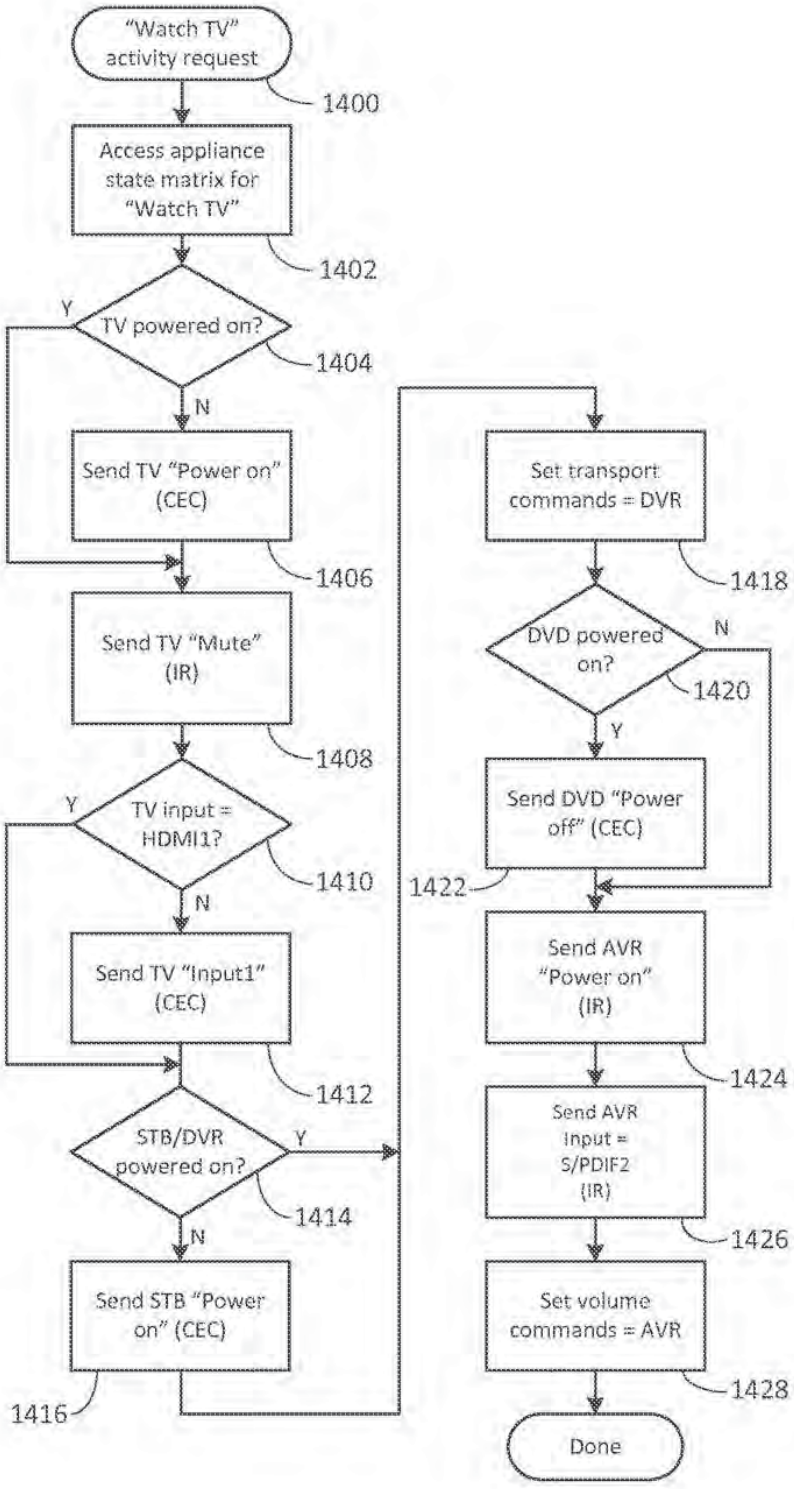

"Watch TV" activity request
1400
Access appliance state matrix for "Watch TV"
1402
TV powered on?
Y
N
1404
Send TV "Power on" (CEC)
1406
Send TV "Mute" (IR)
1408
TV input = HDMI1?
Y
N
1410
Send TV "Input1" (CEC)
1412
STB/DVR powered on?
Y
N
1414
Send STB "Power on" (CEC)
1416
Set transport commands = DVR
1418
DVD powered on?
N
Y
1420
Send DVD "Power off" (CEC)
1422
Send AVR "Power on" (IR)
1424
Send AVR Input = S/PDIF2 (IR)
1426
Set volume commands = AVR
1428
Done

Figure 14

PATENT ASSIGNMENT AND DECLARATION

For good and valuable consideration, receipt of which is hereby acknowledged, we, **Paul D. Arling** of 32 Prairie Grass, Irvine, California 92603; **Ramzi Ammari** of 6 Seyne, Newport Coast, California 92657; **Arsham Hatambeiki** of 2429 WaterMarke Place, Irvine, California 90630; and **Graham Williams** of 606 Marguerite Avenue, Corona Del Mar, California 92625; hereby sell and assign to **Universal Electronics Inc., ("Assignee")**, a Delaware corporation, having its principal place of business at 201 East Sandpointe Avenue, 8th Floor, Santa Ana, California 92707, U.S.A., its successors, assigns, nominees, or other legal representatives, the entire right, title, and interest in and to the invention in **SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL,** invented by us, which has been assigned application number **13/933,877**, and the application for United States patent therefor, the declaration, and all original and reissued patents granted therefor, and all divisions and continuations thereof, including the subject-matter of any and all claims which may be obtained in every such patent, and the right to apply for and obtain patents and Utility Model Registrations which may be granted thereon in such foreign countries, and authorize and request the Commissioner of Patents and Trademarks of the United States, and any official of any other country or countries foreign to the United States whose duty it is to issue patents on applications as aforesaid, to issue said Letters Patent or Utility Model Registration to the said Assignee, its successor, assigns, nominees, or other legal representatives, as assignee of the entire interest herein assigned. We covenant that we have not executed and will not execute any agreement in conflict herewith and agree that we will communicate to said Assignee, its successors, assigns, nominees, or other legal representatives, all facts known to us respecting said invention, whenever requested, and testify in any legal proceedings, sign all lawful papers, execute all divisional, continuing, and reissue applications, make all rightful oaths, and do all lawful acts requisite for the application for such divisional, continuing, or reissue applications, or the procuring thereof, and that if and when said Assignee, its successors, assigns, nominees, or other legal representatives desire to file a disclaimer relating thereto, we will, upon request, sign all lawful papers requisite for the filing of such disclaimer. We further covenant and agree that we will, at any time upon request, do everything legally possible to aid said Assignee, its successors, assignees, nominees, or other legal representatives, either in its or their own names, to apply for, obtain, and enforce proper patent and/or Utility Model protection for said invention in all countries, all without further consideration but at the expense of said Assignee, its successors, assigns, nominees, or other legal representatives.

Inventor 1

As the below named inventor, I hereby declare that:

This declaration is directed to:

____ the attached application, or

__x__ United States application or PCT international application number **13/933,877** filed on **July 2, 2013**.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims; and I am aware of the duty to disclose to the U.S. Patent and Trademark Office all information known by me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 16th day of July, 2013.

Paul D. Arling (signature)

NOTARIAL CERTIFICATE

State of California

County of Orange

Subscribed and sworn to (or affirmed) before me on this 16th day of July, 2013, by Paul D. Arling proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

WITNESS my hand and official seal.

Notary Public

SHELLY TELLEZ
Commission # 1887983
Notary Public - California
Orange County
My Comm. Expires May 2, 2014

Inventor 2

As the below named inventor, I hereby declare that:

This declaration is directed to:

____ the attached application, or

__x__ United States application or PCT international application number **13/933,877** filed on **July 2, 2013.**

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims; and I am aware of the duty to disclose to the U.S. Patent and Trademark Office all information known by me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 23rd day of July, 2013.

Ramzi Ammari (signature)

NOTARIAL CERTIFICATE

State of California

County of Orange

Subscribed and sworn to (or affirmed) before me on this 23rd day of July, 2013, by Ramzi Ammari proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

WITNESS my hand and official seal.

Notary Public

VALERIE JEANNE BALLARD
Commission # 2014905
Notary Public - California
Orange County
My Comm. Expires Mar 25, 2017

Inventor 3

As the below named inventor, I hereby declare that:

This declaration is directed to:

____ the attached application, or

__x__ United States application or PCT international application number **13/933,877** filed on **July 2, 2013**.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims; and I am aware of the duty to disclose to the U.S. Patent and Trademark Office all information known by me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 5th day of August, 2013.

Arsham Hatambeiki (signature)

NOTARIAL CERTIFICATE

State of California

County of Orange

Subscribed and sworn to (or affirmed) before me on this 5th day of August, 2013, by Arsham Hatambeiki proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

WITNESS my hand and official seal.

Notary Public

SHELLY TELLEZ
Commission # 1987983
Notary Public - California
Orange County
My Comm. Expires May 2, 2014

Inventor 4

As the below named inventor, I hereby declare that:

This declaration is directed to:

____ the attached application, or

__x__ United States application or PCT international application number **13/933,877** filed on **July 2, 2013**.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims; and I am aware of the duty to disclose to the U.S. Patent and Trademark Office all information known by me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 19TH day of July, 2013.

Graham Williams (signature)

NOTARIAL CERTIFICATE

State of California

County of Orange

Subscribed and sworn to (or affirmed) before me on this 19th day of July, 2013, by Graham Williams proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

WITNESS my hand and official seal.

Notary Public

VALERIE JEANNE BALLARD
Commission # 2014905
Notary Public - California
Orange County
My Comm. Expires Mar 25, 2017

CHI 63619015v8

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Universal Electronics Inc.

Application No./Patent No.: filed herewith Filed/Issue Date: filed herewith

Title: SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL

Universal Electronics Inc., a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose one of options 1, 2, 3 or 4 below):

1. [x] The assignee of the entire right, title, and interest.

2. [ ] An assignee of less than the entire right, title, and interest (check applicable box):

   [ ] The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   [ ] There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. [ ] The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. [ ] The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose one of options A or B below):

A. [x] An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. [ ] A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

   1. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

   2. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Gary R. Jarosik/	November 23, 2015
Signature	Date
Gary R. Jarosik	35,906
Printed or Typed Name	Title or Registration Number

81230.156US6

PATENT ASSIGNMENT AND DECLARATION

For good and valuable consideration, receipt of which is hereby acknowledged, we, **Paul D. Arling** of 32 Prairie Grass, Irvine, California 92603; **Ramzi Ammari** of 6 Seyne, Newport Coast, California 92657; **Arsham Hatambeiki** of 2429 WaterMarke Place, Irvine, California 90630; and **Graham Williams** of 606 Marguerite Avenue, Corona Del Mar, California 92625; hereby sell and assign to **Universal Electronics Inc.**, ("**Assignee**"), a Delaware corporation, having its principal place of business at 201 East Sandpointe Avenue, 8th Floor, Santa Ana, California 92707, U.S.A., its successors, assigns, nominees, or other legal representatives, the entire right, title, and interest in and to the invention in **SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL**, invented by us, which has been assigned application number **13/933,877**, and the application for United States patent therefor, the declaration, and all original and reissued patents granted therefor, and all divisions and continuations thereof, including the subject-matter of any and all claims which may be obtained in every such patent, and the right to apply for and obtain patents and Utility Model Registrations which may be granted thereon in such foreign countries, and authorize and request the Commissioner of Patents and Trademarks of the United States, and any official of any other country or countries foreign to the United States whose duty it is to issue patents on applications as aforesaid, to issue said Letters Patent or Utility Model Registration to the said Assignee, its successor, assigns, nominees, or other legal representatives, as assignee of the entire interest herein assigned. We covenant that we have not executed and will not execute any agreement in conflict herewith and agree that we will communicate to said Assignee, its successors, assigns, nominees, or other legal representatives, all facts known to us respecting said invention, whenever requested, and testify in any legal proceedings, sign all lawful papers, execute all divisional, continuing, and reissue applications, make all rightful oaths, and do all lawful acts requisite for the application for such divisional, continuing, or reissue applications, or the procuring thereof, and that if and when said Assignee, its successors, assigns, nominees, or other legal representatives desire to file a disclaimer relating thereto, we will, upon request, sign all lawful papers requisite for the filing of such disclaimer. We further covenant and agree that we will, at any time upon request, do everything legally possible to aid said Assignee, its successors, assignees, nominees, or other legal representatives, either in its or their own names, to apply for, obtain, and enforce proper patent and/or Utility Model protection for said invention in all countries, all without further consideration but at the expense of said Assignee, its successors, assigns, nominees, or other legal representatives.

Inventor 1

As the below named inventor, I hereby declare that:

This declaration is directed to:

____ the attached application, or

__x__ United States application or PCT international application number **13/933,877** filed on **July 2, 2013.**

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims; and I am aware of the duty to disclose to the U.S. Patent and Trademark Office all information known by me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 16th day of July, 2013.

Paul D. Arling (signature)

NOTARIAL CERTIFICATE

State of California

County of Orange

Subscribed and sworn to (or affirmed) before me on this 16th day of July, 2013, by Paul D. Arling, proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

WITNESS my hand and official seal.

Notary Public

SHELLY TELLEZ
Commission # 1987983
Notary Public - California
Orange County
My Comm. Expires May 2, 2014

Inventor 2

As the below named inventor, I hereby declare that:

This declaration is directed to:

____ the attached application, or

__x__ United States application or PCT international application number **13/933,877** filed on **July 2, 2013.**

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims; and I am aware of the duty to disclose to the U.S. Patent and Trademark Office all information known by me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 23rd day of July, 2013.

Ramzi Ammari (signature)

NOTARIAL CERTIFICATE

State of California

County of Orange

Subscribed and sworn to (or affirmed) before me on this 23rd day of July, 2013, by Ramzi Ammari proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

WITNESS my hand and official seal.

Notary Public

VALERIE JEANNE BALLARD
Commission # 2014805
Notary Public - California
Orange County
My Comm. Expires Mar 25, 2017

Inventor 3

As the below named inventor, I hereby declare that:

This declaration is directed to:

____ the attached application, or

__X__ United States application or PCT international application number **13/933,877** filed on **July 2, 2013**.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims; and I am aware of the duty to disclose to the U.S. Patent and Trademark Office all information known by me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 5th day of August, 2013.

Arsham Hatambeiki (signature)

NOTARIAL CERTIFICATE

State of California

County of Orange

Subscribed and sworn to (or affirmed) before me on this 5th day of August, 2013, by Arsham Hatambeiki proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

WITNESS my hand and official seal.

Notary Public

SHELLY TELLEZ
Commission # 1997983
Notary Public - California
Orange County
My Comm. Expires May 2, 2014

Inventor 4

As the below named inventor, I hereby declare that:

This declaration is directed to:

____ the attached application, or

__x__ United States application or PCT international application number **13/933,877** filed on **July 2, 2013.**

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims; and I am aware of the duty to disclose to the U.S. Patent and Trademark Office all information known by me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 19TH day of July, 2013.

Graham Williams (signature)

NOTARIAL CERTIFICATE

State of California

County of Orange

Subscribed and sworn to (or affirmed) before me on this 19th day of July, 2013, by Graham Williams proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

WITNESS my hand and official seal.

Notary Public

VALERIE JEANNE BALLARD
Commission # 2014805
Notary Public - California
Orange County
My Comm. Expires Mar 25, 2017

CHI 6361901 5v8

DocCode - SCORE

SCORE Placeholder Sheet for IFW Content

Application Number: 14948927 Document Date: 11/23/2015

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

- Drawings – Other than Black and White Line Drawings

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

To access the documents in the SCORE database, refer to instructions below.

At the time of document entry (noted above):

- Examiners may access SCORE content via the eDAN interface.
- Other USPTO employees can bookmark the current SCORE URL (http://Score.uspto.gov/ScoreAccessWeb/).
- External customers may access SCORE content via the Public and Private PAIR interfaces.

Form Revision Date: September 30, 2013

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/948,927	11/23/2015	2833	1600	81230.155US9	8	1

CONFIRMATION NO. 2406

FILING RECEIPT

34018
GREENBERG TRAURIG, LLP
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732

OC000000079135480

Date Mailed: 12/08/2015

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Paul D. Arling, Irvine, CA;
Ramzi Ammari, Newport Coast, CA;
Arsham Hatambeiki, Irvine, CA;
Graham Williams, Corona Del Mar, CA;

Applicant(s)

Universal Electronics Inc., Santa Ana, CA;

Power of Attorney: The patent practitioners associated with Customer Number 34018

Domestic Priority data as claimed by applicant

This application is a CON of 13/933,877 07/02/2013 PAT 9219874
which is a CON of 13/657,176 10/22/2012 PAT 9215394
which claims benefit of 61/552,857 10/28/2011
and claims benefit of 61/680,876 08/08/2012

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: No

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 12/04/2015

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/948,927**

Projected Publication Date: 03/17/2016

Non-Publication Request: No

Early Publication Request: No

Title

SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL

Preliminary Class

200

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/948,927

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	8 minus 20 =	*			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1600

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/948,927	11/23/2015	Paul D. Arling	81230.155US9

CONFIRMATION NO. 2406

34018
GREENBERG TRAURIG, LLP
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732

PUBLICATION NOTICE

OC000000081482673

Title:SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL

Publication No.US-2016-0080679-A1
Publication Date:03/17/2016

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	14948927
Filing Date	2015-11-23
First Named Inventor	Paul D. Arling
Art Unit	2687
Examiner Name	Aziz, Adnan
Attorney Docket Number	81230.155US9

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7379778	B2	2008-05-27	Hayes et al.	
	2	7589642	B1	2009-09-15	Mui	
	3	8373556		2013-02-12	LaLonde et al.	
	4	6529556		2003-03-04	Perdue et al.	
	5	7519393		2009-04-14	Bahl et al.	
	6	6968399		2005-11-22	Noda et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14948927
	Filing Date	2015-11-23
	First Named Inventor	Paul D. Arling
	Art Unit	2687
	Examiner Name	Aziz, Adnan
	Attorney Docket Number	81230.155US9

	1	20100134317	A1	2010-06-03	Breuil et al.	
	2	20120330943		2012-12-27	Weber et al.	
	3	20120291128		2012-11-15	Jayawardena et al.	
	4	20110273287		2011-11-10	LaLonde et al.	
	5	20110289113		2011-11-24	Arling et al.	
	6	20100138764		2010-06-03	Hatambeiki et al.	
	7	20120242526		2012-09-27	Perez et al.	
	8	20040210933		2004-10-21	Dresti et al.	
	9	20030095156		2003-05-22	Klein et al.	
	10	20080005764		2008-01-03	Arling et al.	
	11	20060168618	A1	2006-07-27	Choi	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14948927
	Filing Date	2015-11-23
	First Named Inventor	Paul D. Arling
	Art Unit	2687
	Examiner Name	Aziz, Adnan
	Attorney Docket Number	81230.155US9

	12	20090239587		2009-09-24	Negron et al.		
	13	20120249890		2012-10-04	Chardon et al.		
	14	20120274547		2012-11-01	Raeber et al.		
	15	20120278693		2012-11-01	Black et al.		
	16	20140085059	A1	2014-03-27	Chen et al.		
	17	20060227032	A1	2006-10-12	Vidal		
	18	20130107131	A1	2013-05-02	Barnett et al.		
	19	20040163073	A1	2004-08-19	Krzyzanowski et al.		

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	1722341	EP	A1	2006-11-15	Netac Technology Co Ltd		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14948927
	Filing Date	2015-11-23
	First Named Inventor	Paul D. Arling
	Art Unit	2687
	Examiner Name	Aziz, Adnan
	Attorney Docket Number	81230.155US9

	2	2011/053008	WO	A2	2011-05-05	Samsung Electronics Co Ltd		

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	ISA/US, Int. Search Report and Written Opinion of the Int. Searching Authority issued on Int. Appln. No. PCT/US12/62161, received Jan. 23, 2013, 12 pages	
	2	ISA/US, Int. Search Report and Written Opinion of the Int. Searching Authority issued on Int. Appln. No. PCT/US14/38151, received June 27, 2014, 10 pages	
	3	EUROPEAN PATENT OFFICE, extended European Search Report issued on European patent application number 12844121.9, dated March 5, 2015, 6 pages	
	4	EUROPEAN PATENT OFFICE, extended European Search Report issued on European patent application number 14801064.8, dated 4/16/2016, 8 pages	

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14948927
	Filing Date	2015-11-23
	First Named Inventor	Paul D. Arling
	Art Unit	2687
	Examiner Name	Aziz, Adnan
	Attorney Docket Number	81230.155US9

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

X That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Gary R. Jarosik/	Date (YYYY-MM-DD)	2016-04-29
Name/Print	Gary R. Jarosik	Registration Number	35906

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

European Patent Office
80298 MUNICH
GERMANY

Questions about this communication ?
Contact Customer Services at www.epo.org/contact

Cordina, Kevin John
Olswang LLP
90 High Holborn
London WC1V 6XX
ROYAUME UNI

Date
05.03.15

Reference	Application No./Patent No.
17949.116	12844121.9 - 1855 / 2771828 PCT/US2012062161

Applicant/Proprietor
Universal Electronics, Inc.

Communication

The extended European search report is enclosed.

The extended European search report includes, pursuant to Rule 62 EPC, the supplementary European search report (Art. 153(7) EPC) and the European search opinion.

Copies of documents cited in the European search report are attached.

☑ 0 additional set(s) of copies of such documents is (are) enclosed as well.

Refund of the search fee
If applicable under Article 9 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.

Should you wish to further prosecute this application in the examination phase, your attention is drawn to the provisions of Rule 70a EPC. An invitation to respond to the extended European search report will be issued shortly (R. 70(2) EPC).

Europäisches Patentamt · European Patent Office · Office européen des brevets

The examination is being carried out on the **following application documents**

Description, Pages

1-19 as published

Claims, Numbers

1-15 filed with entry into the regional phase before the EPO

Drawings, Sheets

1/13-13/13 as published

1. Reference is made to the following documents; the numbering will be adhered to in the rest of the procedure.

D1: US 2006/168618 A1 (CHOI DONG-WOOK [KR]) 27 July 2006 (2006-07-27)

D2: EP 1 722 341 A1 (NETAC TECHNOLOGY CO LTD [CN]) 15 November 2006 (2006-11-15)

2. The present application does not meet the requirements of Article 52(1) EPC, because the subject-matter of claims 1 and 8 is not new (Article 54(1) and (2) EPC).

2.1 Document **D1** discloses (the references in parentheses applying to **D1**):

A method for controlling functional operations of an intended target appliance (**600, 700, 900, 1000, 1100**), comprising:
receiving by a Universal Control Engine (**100**) a request from a controlling device (**400, 500**) intended to cause the intended target appliance (**600, 700, 900, 1000, 1100**) to perform at least one of a plurality of functional operations (**paragraphs 0026 - 0040**); and
causing the Universal Control Engine (**100**) to use at least one of a plurality of communication methods that has been associated with the at least one of the plurality of functional operations to transmit to the intended target appliance (**600, 700, 900,**

1000, 1100) at least one command wherein the at least one command is appropriate for controlling the at least one functional operation of the intended target appliance (**600, 700, 900, 1000, 1100**) and wherein at least two of the plurality of functional operations of the intended target appliance (**600, 700, 900, 1000, 1100**) are each associated with at least a different one or more of the plurality of communication methods (**paragraphs 0041 - 0051**).

Therefore, the subject-matter of **claim 1** is not new (Article 54(1) and (2) EPC).

2.2 Similar objections can also be raised based on document **D2** (paragraphs 0018 - 0024, 0032 - 0037, 0042 - 0058, 0067 - 0073). The subject-matter of **claim 1** is therefore not new (Article 54(1) and (2) EPC).

2.3 Document **D1** also discloses (the references in parentheses applying to **D1**):

A method for controlling functional operations of a plurality of intended target appliances (**600, 700, 900, 1000, 1100**), comprising:
receiving by a Universal Control Engine (**100**) a request from a controlling device (**400, 500**) intended to cause at least one of the plurality of intended target appliances (**600, 700, 900, 1000, 1100**) to perform at least one functional operation (**paragraphs 0026 - 0040**); and
causing the Universal Control Engine (**100**) to use at least one of a plurality of communication methods that has been associated with the at least one of the plurality of intended target appliances (**600, 700, 900, 1000, 1100**) to transmit to the at least one of the plurality of intended target appliances (**600, 700, 900, 1000, 1100**) at least one command wherein the at least one command is appropriate for controlling the at least one functional operation of the at least one of the plurality of intended target appliances (**600, 700, 900, 1000, 1100**) and wherein at least two of the plurality of intended target appliances (**600, 700, 900, 1000, 1100**) are each associated with at least a different one or more of the plurality of communication methods (**paragraphs 0041 - 0051**).

Therefore, the subject-matter of **claim 8** is not new (Article 54(1) and (2) EPC).

3. Dependent claims 2, 5 - 7 and 9 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the EPC with respect to novelty and/or inventive step. The subject-matter of these dependent claims either relates to features which are already known from the prior art (see documents **D1 - D2**) or to obvious design options which come

within the scope of the customary practice followed by persons skilled in the art.

4. Should a new set of claims be filed, then the attention of the applicant is also drawn to the following matters.

4.1 To meet the requirements of Rule 43(1) EPC, any independent claim should be correctly cast in the **two-part** form, with those features which in combination are part of the prior art (see documents **D1 - D2**) being placed in the preamble. The characterising portion of any new independent claim should be preceded by the expression "characterised in that" or "characterised by".

4.2 The features of the claims should be provided with **reference signs** placed in parentheses to increase the intelligibility of the claims (Rule 43(7) EPC). This applies to both the preamble and characterising portion (see Guidelines F-IV, 4.19).

4.3 To meet the requirements of Rule 42(1)(b) EPC, documents **D1 - D2** should be identified in the description and the relevant background art disclosed therein should be briefly discussed.

4.4 When filing amended claims the applicant should at the same time bring the **description into conformity with the amended claims**. Care should be taken during revision, especially of the introductory portion and any statements of problem or advantage, not to add subject-matter which extends beyond the content of the application as originally filed (Article 123(2) EPC).

4.5 The attention of the applicant is drawn to the fact that the application may not be amended in such a way that it contains subject-matter which extends beyond the content of the application as filed (Article 123(2) EPC).

4.6 In order to facilitate the examination of the conformity of the amended application with the requirements of Article 123(2) EPC, the applicant is requested to clearly identify the amendments carried out, **irrespective of whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based.**

Europäisches Patentamt
European Patent Office
Office européen des brevets

SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application Number
EP 12 84 4121

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2006/168618 A1 (CHOI DONG-WOOK [KR]) 27 July 2006 (2006-07-27) * paragraph [0026] - paragraph [0051] *	1,2,8,9	INV. G06F19/00 G06F7/00 G08C17/02
X	EP 1 722 341 A1 (NETAC TECHNOLOGY CO LTD [CN]) 15 November 2006 (2006-11-15) * paragraph [0018] - paragraph [0024] * * paragraph [0032] - paragraph [0037] * * paragraph [0042] - paragraph [0058] * * paragraph [0067] - paragraph [0073] *	1,2,5-7	G08C23/04

TECHNICAL FIELDS SEARCHED (IPC)

G08C

The supplementary search report has been based on the last set of claims valid and available at the start of the search

Place of search	Date of completion of the search	Examiner
The Hague	26 February 2015	Pham, Phong

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 12 84 4121

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

26-02-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006168618 A1	27-07-2006	CN 1768554 A	03-05-2006
		EP 1609333 A1	28-12-2005
		JP 2006522556 A	28-09-2006
		KR 20040085822 A	08-10-2004
		US 2006168618 A1	27-07-2006
		WO 2004089035 A1	14-10-2004
EP 1722341 A1	15-11-2006	CN 1661643 A	31-08-2005
		EP 1722341 A1	15-11-2006
		JP 2007529918 A	25-10-2007
		US 2007165555 A1	19-07-2007
		WO 2005083650 A1	09-09-2005

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

Europäisches Patentamt
European Patent Office
Office européen des brevets

European Patent Office
80298 MUNICH
GERMANY

Questions about this communication ?
Contact Customer Services at www.epo.org/contact

Cordina, Kevin John
Olswang LLP
90 High Holborn
London WC1V 6XX
ROYAUME UNI

Date
18.04.16

Reference	Application No./Patent No.
17949.137	14801064.8 - 1855 / 3000007 PCT/US2014038151
Applicant/Proprietor	
Universal Electronics, Inc.	

Communication

The extended European search report is enclosed.

The extended European search report includes, pursuant to Rule 62 EPC, the supplementary European search report (Art. 153(7) EPC) and the European search opinion.

Copies of documents cited in the European search report are attached.

☑ 0 additional set(s) of copies of such documents is (are) enclosed as well.

Refund of the search fee
If applicable under Article 9 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.

Should you wish to further prosecute this application in the examination phase, your attention is drawn to the provisions of Rule 70a EPC. An invitation to respond to the extended European search report will be issued shortly (R. 70(2) EPC).

Europäisches Patentamt • European Patent Office • Office européen des brevets •

The examination is being carried out on the **following application documents**

Description, Pages

1-22 as published

Claims, Numbers

1-13 as published

Drawings, Sheets

1/14-14/14 as published

1. Reference is made to the following documents; the numbering will be adhered to in the rest of the procedure.

D1 WO 2011/053008 A2 (SAMSUNG ELECTRONICS CO LTD [KR]) 5 May 2011 (2011-05-05)

D2 US 2014/085059 A1 (CHEN TE-SHENG [TW] ET AL) 27 March 2014 (2014-03-27); & CN 102 882 751 A (HON HAI PRECISION IND CO LTD) 16 January 2013 (2013-01-16)

D3 US 2006/227032 A1 (VIDAL ALBERTO [US]) 12 October 2006 (2006-10-12)

D4 US 2013/107131 A1 (BARNETT BRIAN [US] ET AL) 2 May 2013 (2013-05-02)

D5 US 2004/163073 A1 (KRZYZANOWSKI PAUL [US] ET AL) 19 August 2004 (2004-08-19)

2. The present application does not meet the requirements of Article 52(1) EPC because the subject-matter of claim 1 is not new within the meaning of Article 54(1) and (2) EPC.

D1 discloses a method for configuring a user interface of a controlling device application of a smart device, comprising:

receiving at the smart device from a Universal Control Engine (home network gateway 103 in figure 1) in communication with smart device and a controllable appliance (see figure 3: the home network gateway 103 is in communication with both mobile terminal 101 as home devices 104) information retrieved from the controllable appliance by the Universal Control Engine (see paragraph 40, step 306), the information comprising data for use in causing an icon representative of the controllable appliance to be added to the user interface of the controlling device application (see paragraph 32 and step 301: the gateway receives the description of the appliance, which is information used for causing an icon to be added to the user interface of the mobile terminal 101);

using the information received from the Universal Control Engine by the smart device to cause an icon representative of the controllable appliance to be automatically added to the user interface of the controlling device application (see paragraph 41, step307), the added icon being selectable to provide further access via use of the user interface of the controlling device application to user interface elements which are selectable to initiate control of one or more controllable functions of the controllable appliance via one or more communications issued from the smart device to the Universal Control Engine (see paragraph 43).

Also D2 discloses the complete subject matter of claim 1: a method for configuring a user interface of a controlling device application of a smart device, comprising:

receiving at the smart device (see figure 1: control device 40) from a Universal Control Engine (see figure 1: Smart gateway 20) in communication with smart device and a controllable appliance information (see paragraph 0048: "The control device 40 displays the control interface 60 according to the mapping list stored in the smart gateway 20") retrieved from the controllable appliance by the Universal Control Engine (see paragraph 0038: "the configuration information of the home devices 30"; this information is used to generate the control interface 60), the information comprising data for use in causing an icon representative of the controllable appliance to be added to the user interface of the controlling device application (see paragraph 0048 "control interface 60");

using the information received from the Universal Control Engine by the smart device to cause an icon representative of the controllable appliance to be automatically added to the user interface of the controlling device application (see again paragraph 0048 "control interface 60"), the added icon being selectable to provide further access via use of the user interface of the controlling device application to user interface elements which are selectable to initiate control of one or more controllable functions of the controllable appliance via one or more communications issued from the smart device to the Universal Control Engine (see paragraph 0048: "and the smart gateway 20 receives control signals for controlling target home devices from the control device 40, and sends the control signals to the target home devices").

The subject-matter of claim 1 is therefore not new (Article 54(1) and (2) EPC).

3. Notwithstanding the above objection, the present application does not meet the requirements of Article 52(1) EPC because the subject-matter of claim 1 does not involve an inventive step within the meaning of Article 56 EPC.

D3 discloses a method for configuring a user interface of a controlling device application of a smart device, comprising:

receiving at the smart device from ~~a Universal Control Engine in communication with smart device and~~ a controllable appliance (see paragraph 0034) information retrieved from the controllable appliance ~~by the Universal Control Engine~~, the information comprising data for use in causing an icon representative of the controllable appliance to be added to the user interface of the controlling device application (see paragraph 0034 and paragraph 0036 "icon");

using the information received ~~from the Universal Control Engine~~ by the smart device to cause an icon representative of the controllable appliance to be automatically added to the user interface of the controlling device application (see paragraph 0036), the added icon being selectable to provide further access via use of the user interface of the controlling device application to user interface elements which are selectable to initiate control of one or more controllable functions of the controllable appliance (see paragraph 0038 and 0051) ~~via one or more communications issued from the smart device to the Universal Control Engine~~.

The subject-matter of claim 1 therefore differs from this known method in that there is a Universal Control Engine used as relay for passing the information back and forth between the smart device and the controllable appliance.

The problem to be solved by the present invention may therefore be regarded as providing a control method wherein there is a single gateway access for the smart device.

The solution proposed in claim 1 of the present application cannot be considered to involve an inventive step (Articles 52(1) and 56 EPC).

The Universal Control Engine is described in D4 as providing the same advantages as in the present application (see e.g. figure 6 and corresponding description). The skilled person would therefore regard it as a normal option to include this feature in the method described in D3 in order to solve the problem posed.

4. Dependent claims 2-13 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the EPC with respect to novelty and/or inventive step.

claims 2-4: not novel, see D1, paragraph 32 and step 301: the gateway receives the description of the appliance, which is metadata used for causing an icon to be added to the user interface of the mobile terminal 101;

claim 5: not novel, see D1, paragraph 42: "Such a sub application may be downloaded through the Internet.";

claim 6: not novel, see D1, paragraph 43, steps 314-317: the user interface for performing a control operation comprises elements for placing the controllable appliance into a desired state for use in connection with an activity, as broadly claimed.

claims 7-13: lack of inventive step; D5 discloses the automatic generation of a macro command in a server, see paragraph 0105 and 0142-0147. It would be obvious for the person to apply the teaching thereof to the method of D1, thereby obtaining the subject matter of claims 7-13.

5.1 The only contribution of the present application over D4 (which is a previous application of the applicant) is the embodiment shown in figure 15 and described on page 18, line 25-page 21, line 15. The examples shown in figures 9-14 are already disclosed in D4.

So, the subject-matter shown in figures 9-14 does not fall within the scope of the claims. This inconsistency between the claims and the description leads to doubt concerning the matter for which protection is sought, thereby rendering the claims unclear (Article 84 EPC). The inconsistency should be removed by indicating in the description that the embodiments concerned do not form part of the invention but represent background art that is useful for understanding the invention (see Guidelines F-IV, 4.3(iii)).

5.2 Claim 12 is a mere repetition of claim 10, upon which it is dependent, resulting in a lack of conciseness (Article 84 EPC).

5.3 "data metadata" in claim 2, last line is not clear (Article 84 EPC).

5.4 It appears that dependent claims 7-13 are not supported by the description as required by Article 84 EPC. The part of description on page 18, line 25-page 21, line 15, which as explained in section 5.1 herein above, is the contribution of the present application over D3, appears not to disclose the subject matter of dependent claims 7-13. If the applicant decides to maintain claims 7-13, he is requested to indicate for each of them the support in the description.

6. The applicant is requested to delete the term "incorporated by reference", which is used in numerous occasions throughout the description, as the application should be self contained (see GL F-III 8).

7. It is not at present apparent which part of the application could serve as a basis for a new, allowable claim. Should the applicant nevertheless regard some particular matter as patentable, an independent claim should be filed taking account of Rule 43 (1) EPC, i.e. **using the two-part form** with those features known in combination from the prior art D1 being placed in the preamble (Rule 43(1)(a) EPC) and the remaining features being included in the characterising part (Rule 43(1)(b) EPC).The applicant should also indicate how the subject-matter of the new claim differs from the state of the art and the significance thereof.

In order to comply with the requirements of Rule 137(4) EPC, the applicant should clearly identify the amendments made, irrespective of whether they concern amendments by addition, replacement or deletion, and indicate the passages of the application as filed on which these amendments are based (see Guidelines H III, 2.1).

Amendments should be made by filing replacement pages. Unnecessary recasting of the description should be avoided. An amended abstract is not required. The applicant should also take account of the requirements of Rule 50(1) EPC. According to Rule 50 (1) in conjunction with Rule 49(8) EPC, amendments shall be typed or printed. Handwritten amendments may only be made in documents other than those replacing application documents (Rule 50(2) EPC); they may, for example, be used to fulfil the requirements of Rule 137(4) EPC (identifying amendments and indicating basis for them).

When filing amended claims the applicant should at the same time bring the description into conformity with the amended claims. Care should be taken during revision, especially of the introductory portion and of any statements of problem or advantage, not to add subject-matter which extends beyond the content of the application as originally filed (Article 123(2) EPC).

The features of the claims should be provided with reference signs placed in parentheses to increase the intelligibility of the claims (Rule 43(7) EPC). This applies to both the preamble and characterising portion (see Guidelines F-IV, 4.19).

To meet the requirements of Rule 42(1)(b) EPC, D1-D2 and D4 should be identified in the description and the relevant background art disclosed therein should be briefly discussed.

Europäisches Patentamt
European Patent Office
Office européen des brevets

SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application Number
EP 14 80 1064

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	WO 2011/053008 A2 (SAMSUNG ELECTRONICS CO LTD [KR]) 5 May 2011 (2011-05-05) * paragraph [0022] - paragraph [0047] *	1-6 7-13	INV. G06C19/00
X,P	US 2014/085059 A1 (CHEN TE-SHENG [TW] ET AL) 27 March 2014 (2014-03-27) * paragraph [0014] - paragraph [0048] *	1-6	
X	& CN 102 882 751 A (HON HAI PRECISION IND CO LTD) 16 January 2013 (2013-01-16) * the whole document *	1-6	
Y	US 2006/227032 A1 (VIDAL ALBERTO [US]) 12 October 2006 (2006-10-12) * paragraph [0032] - paragraph [0052] *	1-6	
Y	US 2013/107131 A1 (BARNETT BRIAN [US] ET AL) 2 May 2013 (2013-05-02) * paragraph [0024] - paragraph [0051] *	1-6	
Y	US 2004/163073 A1 (KRZYZANOWSKI PAUL [US] ET AL) 19 August 2004 (2004-08-19) * paragraph [0105] * * paragraph [0142] - paragraph [0147] *	7-13	

TECHNICAL FIELDS SEARCHED (IPC)
G08C

The supplementary search report has been based on the last set of claims valid and available at the start of the search

Place of search	Date of completion of the search	Examiner
The Hague	8 April 2016	Baas, Gert-Jan

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C09)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 14 80 1064

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-04-2016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2011053008 A2	05-05-2011	CN 102668592 A	12-09-2012
		EP 2471273 A2	04-07-2012
		KR 20110047764 A	09-05-2011
		US 2011106279 A1	05-05-2011
		WO 2011053008 A2	05-05-2011
US 2014085059 A1	27-03-2014	CN 102882751 A	16-01-2013
		TW 201414226 A	01-04-2014
		US 2014085059 A1	27-03-2014
US 2006227032 A1	12-10-2006	NONE	
US 2013107131 A1	02-05-2013	CN 103999137 A	20-08-2014
		EP 2771828 A1	03-09-2014
		US 2013107131 A1	02-05-2013
		US 2014022462 A1	23-01-2014
		US 2014043541 A1	13-02-2014
		US 2016066029 A1	03-03-2016
		US 2016080679 A1	17-03-2016
		WO 2013063421 A1	02-05-2013
US 2004163073 A1	19-08-2004	CA 2550783 A1	21-07-2005
		EP 1700206 A2	13-09-2006
		KR 20060129344 A	15-12-2006
		KR 20120047997 A	14-05-2012
		US 2004163073 A1	19-08-2004
		WO 2005065148 A2	21-07-2005

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: Gary R. Jarosik
Greenberg Traurig, LLP
77 W. Wacker Drive
Suite 3100
Chicago, IL 60601-1732
United States of America

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)* 18 JAN 2013
Applicant's or agent's file reference 81230155PCT	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US12/62161	International filing date *(day/month/year)* 26 October 2012 (26.10.2012)
Applicant Universal Electronics Inc.	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46).

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes, 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.003 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 ☒ Facsimile No. 571-273-3201	Authorized officer Shane Thomas PCT Helpdesk: 571-272-4300 Telephone No. PCT OSP: 571-272-7774

Form PCT/ISA/220 (July 2010)

GT - CSI
DUE DATE: 3/18/13 - Art. 19 Am't
DEADLINE:
DOCKETED: 4/18/13 - Resp to Writ Op.
BY (INITIALS):

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 81230155PCT	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US12/62161	International filing date *(day/month/year)* 26 October 2012 (26.10.2012)	(Earliest) Priority Date *(day/month/year)* 28 October 2011 (28.10.2011)
Applicant Universal Electronics Inc.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 21 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed.

☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III)

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the drawings to be published with the abstract is Figure No. 1

☐ as suggested by the applicant.

☒ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US12/62161

A CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 19/00, 7/00 (2012.01)
USPC - 340/12.28, 12.23, 12.22
According to International Patent Classification (IPC) or to both national classification and IPC

B FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8): G06F 19/00, 7/00; G08C 19/28; G08B 19/18, 15/02, 11/01 (2012.01); USPC: 340/12.28, 12.23, 12.22, 12.28, 5.5

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
MicroPatent (US-G, US-A, EP-A, EP-B, WO, JP-bib, DE-C,B, DE-A, DE-T, DE-U, GB-A, FR-A), DialogPro (Global Patents/ General Research) (Derwent, INSPEC, NTIS, PASCAL, Current Contents Search, Dissertation Abstracts Online, Inside Conferences); ip.com (patents/NPL), Google Scholar; universal, remote, control, program*, learning, smart phone, appliance, media, macro

C DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7379778 B2 (HAYES, P et al.) May 27, 2008, column 2, lines 5-15, figure 7, column 4, lines 9-15, column 8, lines 14-26	1-23
A	US 2010/0134317 A1 (BREUIL, C et al.) June 3, 2010, entire document	1, 8, 16

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 December 2012 (14.12.2012)	18 JAN 2013
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: Gary R. Jarosik
Greenberg Traurig, LLP
77 W. Wacker Drive
Suite 3100
Chicago, IL 60601-1732
United States of America

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	18 JAN 2013
Applicant's or agent's file reference 81230166PCT	FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US12/62161	26 October 2012 (26.10.2012)	28 October 2011 (28.10.2011)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - G06F 19/00, 7/00 (2012.01)
USPC - 340/12.28, 12.23, 12.22

Applicant Universal Electronics Inc.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1 *bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	14 December 2012 (14.12.2012)	Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2011)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No
PCT/US12/62161

Box No. 1 Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:

☒ the international application in the language in which it was filed

☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43.6bis.1(a)).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

a. (means)

☐ on paper

☐ in electronic form

b. (time)

☐ in the international application as filed

☐ together with the international application in electronic form

☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US12/62161

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	NONE	YES
	Claims	1-23	NO
Inventive step (IS)	Claims	NONE	YES
	Claims	1-23	NO
Industrial applicability (IA)	Claims	1-23	YES
	Claims	NONE	NO

2. Citations and explanations

Claims 1-23 lacks novelty under PCT Article 33(2) as being anticipated by US 7,379,778 B2 Hayes et al. (hereinafter 'Hayes').

As to claim 1, Hayes discloses a method for controlling a functional operation of an intended target appliance (methods for control and operation of appliances in the networked home control and automation environment, column 2, lines 9-15), comprising: receiving by a Universal Control Engine (one or more of the above described control features in the networked control and automation system (Universal Control Engine), a control device 14 is described, column 6, lines 31-33) a request from a controlling device intended to cause the intended target appliance to perform the functional operation (abovementioned transmitter 58, receiver 54, and/or input/output means 64 may be used to connect control device 14 to one or more networked appliances, content servers, computers, the Internet, or other devices and appliances of a networked home control environment, column 7, lines 4-9); and causing the Universal Control engine to respond to the request (when a remote control location is outside of the home the remote is connected to the home network (networked control and automation system (Universal Control Engine) via the Internet and a prompt may be sent to the remote to make the position determination, column 8, lines 27-37) by using a highest prioritized one of a plurality of communication methods in a listing of communication methods that has been associated with the functional operation to transmit to the intended target appliance a command for controlling the functional operation of the intended target appliance (the remote control in an environment (network controlled environment), only those appliance within a specified proximity to the remote control may be caused to report their function and state data, or commands transmitted from the remote control may be prioritized for appliances that are determined to be in close proximity to the remote control at any given time, column 8, lines 14-26).

As to claim 2, Hayes discloses the method as recited in claim 1, wherein the Universal Control Engine (one or more of the above described control features in the networked control and automation system (Universal Control Engine), a control device 14 is described, column 6, lines 31-33) is caused to use at least a next highest prioritized one of the plurality of communication methods in the listing to transmit a further command for controlling the functional operation of the intended target appliance when performance of the functional operation by the intended target appliance in response to transmission of a command via the highest prioritized one of the communication methods in the listing is unconfirmed (a second location (next highest prioritized) containing the second entertainment system, the remote control or control pod may be configured to automatically save the current states from the appliances of the first location (highest prioritized), effectively generate a new macro command for the appliances in the second location, and cause appropriate commands (including complex macro commands if necessary) to be transmitted for commanding the same song to continue playing from the same position within the track on the Audio Receiver in the second location, with the volume increased incrementally from the saved volume state of the first Audio Receiver, column 16, lines 44-58).

As to claim 3, Hayes discloses the method as recited in claim 1, comprising using at least one characteristic associated with each of the plurality of communication methods in the listing to prioritize the plurality of communication methods in the listing (the IR code or other similar identifying characteristics (serial number, HEX), barcode, make, model, etc.) gleaned from the legacy appliance may be referenced with an existing device database, such as an IR code library or model/feature list located locally or at a remote location and accessed via the network, to determine feature, state, and other information, column 9, lines 53-58).

As to claim 4, Hayes discloses the method as recited in claim 1, comprising providing a bi-directional communication method in the listing (two way communication between the remote device and method of address translation, column 16, lines 39-47) with a priority that is higher than a uni-directional communication method (the translation and command passing server may be configured such that it supports multiple redundant communication paths into the home, for example both internet and direct dial, together with automatic routing algorithms to select the best available route based on for example, message/command urgency, data volume to be transferred, column 15, lines 18-26).

As to claim 5, Hayes discloses the method as recited in claim 1, wherein a plurality of controllable functional operations of the intended target appliance are each associated with a prioritized listing of one or more communication methods (methods that function to enable advanced home control features such as location based control setup and operation, network enabled legacy appliances and system integration, save and recall capabilities for appliance and media states, generic command based appliance controls, dynamic/portable macro command generation, and Internet based control capabilities from remote locations, column 2, lines 5-15).

-**-Continued Within the Next Supplemental Box-**-

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US12/62161

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:
-***-Continued from Box No. V: Citations and Explanations-***-.

As to claim 6, Hayes discloses the method as recited in claim 1, comprising interrogating the intended target appliance to determine which of a plurality of communication methods are supported by the appliance for use in receiving a command for controlling the functional operation and using results obtained from the interrogation to create the listing (remote control 10, may periodically interrogate the RFID tags of fixed goods or appliances in its immediate vicinity in order to keep track of its present location by matching the responses to a known mapping of equipment within a home or office, column 20, lines 49-53).

As to claim 7, Hayes discloses the method as recited in claim 1, wherein the Universal Control Engine (one or more of the above described control features in the networked control and automation system (Universal Control Engine), a control device 14 is described, column 6, lines 31-33) performs the steps of interrogating the intended target appliance and using results obtained from the interrogation to create the listing (an RFID reading enabled portable controlling device, for example remote control 10 (remote control 10 communicates through associated control device 14, figure 1, column 2, lines 52-67), may periodically interrogate the RFID tags of fixed goods or appliances in its immediate vicinity in order to keep track of its present location by matching the responses to a known mapping of equipment within a home or office, column 20, lines 49-53).

As to claims 8 and 16, Hayes discloses a method for controlling functional operations of an intended target appliance, comprising: receiving by a Universal Control Engine (when a remote control location is outside of the home the remote is connected to the home network (networked control and automation system (Universal Control Engine)) via the internet and a prompt may be sent to the remote to make the position determination, column 6, lines 27-37) a request from a controlling device intended to cause the intended target appliance to perform at least one of a plurality of functional operations (identify home appliances by type and make (and sometimes model) such that the remote control device 10 is adapted to transmit recognizable command codes in the format appropriate for such identified appliances 12, data may be entered into the universal remote control device 10, figure 7, column 4, lines 9-15)) and causing the Universal Control Engine (one or more of the above described control features in the networked control and automation system (Universal Control Engine), a control device 14 is described, column 6, lines 31-33) to use at least one of a plurality of communication methods that has been associated with the at least one of the plurality of functional operations to transmit to the intended target appliance at least one command wherein the at least one command is appropriate for controlling the at least one functional operation of the intended target appliance (identify home appliances by type and make (and sometimes model) such that the remote control device 10 is adapted to transmit recognizable command codes in the format appropriate for such identified appliances 12, data may be entered into the universal remote control device 10, figure 7, column 4, lines 9-15) and wherein at least two of the plurality of functional operations of the intended target appliance are each associated with at least a different one or more of the plurality of communication methods (specific commands to individual appliances, via an appropriate transport medium (e.g., IR, RF, X-10, SDP commands, etc.) These commands may be in the form of individual commands or may be preprogrammed or user definable macro commands., column 13, lines 19-24).

As to claims 9 and 17, Hayes discloses the method as recited in claims 8 and 16, comprising storing in a memory of the Universal Control Engine (one or more of the above described control features in the networked control and automation system (Universal Control Engine), a control device 14 is described, column 6, lines 31-33) the association between each of the plurality of controllable functional operations of the intended target appliance (the remote control 10 is adapted to be responsive to events, such as a sensed user interaction with the key matrix 28, receipt of a transmission, etc. In response to an event, appropriate instructions within the memory 36 may be executed, column 4, lines 24-28) and the at least one of the plurality of communication methods to be used when transmitting a command for controlling the corresponding one of the plurality of functional operations of the intended target appliance (various methods for control and operation of appliances in the networked home control and automation environment, column 2, lines 5-7).

As to claims 10 and 18, Hayes discloses the method as recited in claims 8 and 16, comprising interrogating the intended target appliance to determine which one or more of the plurality of communication methods are supported by the appliance for use in receiving a command for controlling a corresponding one of the plurality of functional operations of the intended target appliance (remote control 10, may periodically interrogate the RFID tags of fixed goods or appliances in its immediate vicinity in order to keep track of its present location by matching the responses to a known mapping of equipment within a home or office, column 20, lines 49-53) and using results obtained from the interrogation to create the association between each of the plurality of controllable functional operations of the intended target appliance and the at least one of the plurality of communication methods to be used when transmitting a command for controlling the corresponding one of the plurality of functional operations of the intended target appliance (one or more wireless remote controls, a plurality of appliances, associated control central devices, and associated control central devices column 1, line 61 - column 2, line 4).

As to claims 11 and 19, Hayes discloses the method as recited in claims 10 and 18, wherein the Universal Control Engine (one or more of the above described control features in the networked control and automation system (Universal Control Engine), a control device 14 is described, column 6, lines 31-33) performs the steps of interrogating the intended target appliance and using results obtained from the interrogation to create the association between each of the plurality of controllable functional operations of the intended target appliance and the at least one of the plurality of communication methods to be used when transmitting a command for controlling the corresponding one of the plurality of functional operations of the intended target appliance (remote control 10, may periodically interrogate the RFID tags of fixed goods or appliances in its immediate vicinity in order to keep track of its present location by matching the responses to a known mapping of equipment within a home or office, column 20, lines 49-53).

As to claims 12 and 20, Hayes discloses the method as recited in claims 8 and 16, comprising prioritizing the one or more of the plurality of communication methods to be used when transmitting a command for controlling the corresponding one of the functional operations of the intended target appliance (the remote control may be prioritized for appliances that are determined to be in close proximity to the remote control, column 8, lines 17-19).

-***-Continued Within the Next Supplemental Box-***-

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:
-***-Continued from Previous Supplemental Box-***-

As to claims 13 and 21, Hayes discloses the method as recited in claims 12 and 20, wherein the Universal Control Engine responds to the request from the controlling device intended to cause the intended target appliance to perform the at least one of the plurality of functional operations (abovementioned transmitter 55, receiver 54, and/or input/output means 64 may be used to connect control device 14 to one or more networked appliances, content servers, computers, the Internet, or other devices and appliances of a networked home control environment, column 7, lines 4-9) by using a highest prioritized one of the communication methods that has been associated with the at least one of the plurality of functional operations to transmit to the intended target appliance at least one command for controlling the corresponding at least one of the plurality of functional operations of the intended target appliance (the remote control in an environment, only those appliance within a specified proximity to the remote control may be caused to report their function and state data, or commands transmitted from the remote control may be prioritized for appliances that are determined to be in close proximity to the remote control at any given time, column 8, lines 14-26).

As to claims 14 and 22, Hayes discloses the method as recited in claims 13 and 20, comprising causing the Universal Control Engine (one or more of the above described control features in the networked control and automation system (Universal Control Engine), a control device 14 is described, column 5, lines 31-33) to use a next highest prioritized one of the communication methods that has been associated with the at least one of the plurality of functional operations to transmit to the intended target appliance at least one further command for controlling the at least one of the plurality of functional operations of the intended target appliance when performance of the corresponding at least one of the plurality of functional operations by the intended target appliance in response to transmission of the at least one command via use of the highest prioritized one of the communication methods is unconfirmed (a second location (next highest prioritized) containing the second entertainment system, the remote control or control pod may be configured to automatically save the current states from the appliances of the first location (highest prioritized), effectively generate a new macro command for the appliances in the second location, and cause appropriate commands (including complex macro commands if necessary) to be transmitted for commanding the same song to continue playing from the same position within the track on the Audio Receiver in the second location, with the volume increased incrementally from the saved volume state of the first Audio Receiver, column 16, lines 44-55).

As to claims 15 and 23, Hayes discloses the method as recited in claims 12 and 18, comprising using at least one characteristic associated with each of the plurality of communication methods to be used when transmitting a command for controlling the corresponding one of the plurality of functional operations of the intended target appliance to prioritize the one or more communication methods to be used when transmitting a command for controlling the corresponding one of the plurality of functional operations of the intended target appliance (identifying characteristics (serial number, RFID, barcode, make, model, etc.) gleaned from the legacy appliance may be referenced with an existing device database, such as an IR code library or model/feature list located locally or at a remote location and accessed via the network, to determine feature, state, and other information. Once stored within network enablement device 70, the feature and state information for each legacy appliance may be broadcast to other devices on the networked control environment, column 9, lines 54-62).

Claims 1-23 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

PCT Recordation of Search History

Case/PCT Application Number: PCT/US12/62161

CLIN Number/Technical Field of PCT Application: 5

Date(s) during which the search was conducted: 13 December 2012

Date of Completion of Recordation of Search History Form: 14 December 2012

Research Analyst Initials: ADD

Search Approval Official (SAO) Initials: GA

Field of Search/Classification Information:

IPC(8) Classification(s): G06F 19/00, 7/00; G08C 19/28; G05B 19/18, 15/02, 11/01 (2012.01)

USPC Classification(s): 340/12.28, 12.23, 12.22, 12.29, 5.5

Database(s) Searched (Patent and Non-Patent Literature (NPL), Including Sub-Databases and Files Searched):

MicroPatent (US-G, US-A, EP-A, EP-B, WO, JP-bib, DE-C,B, DE-A, DE-T, DE-U, GB-A FR-A); DialogPro (Global Patents/ General Research) (Derwent, INSPEC, NTIS, PASCAL, Current Contents Search, Dissertation Abstracts Online, Inside Conferences); ip.com (patents/NPL); Google Scholar

Search Terms Used:

Universal, remote, control, program*, learning, smart phone, appliance, media, macro

Database Search String Recordation, Including Dates of Searches):

Patent Database Search Strategy/Results:

#	results	criteria	last run

17	59 hits	Combined query	3 and 16	2012-12-14
		Issue/Publication Date	<20111028	
16	1502 hits	Title or Abstract	(appliance* or (media adj center) or (home adj theater)) and (remot adj control)	2012-12-14
		Databases	USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA	
		Years	1971-2012	
15	94 hits	Combined query	3 and 14	2012-12-14
		Issue/Publication Date	<20111028	
14	88731 hits	Title or Abstract	(appliance* or (media adj center) or (home adj theat	2012-12-14
		Databases	USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA	
		Years	1971-2012	
13	12 hits	Combined query	3 and 12	2012-12-14
		Claims, Title or Abstract	(remote adj control) and media and program* and appliance*	
12	165 hits	Issue/Publication Date	<20111028	2012-12-14
		Databases	USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA	
		Years	1971-2012	
		Issue/Publication Date	<20111028	
11	180 hits	Title or Abstract	(remote adj control) and media and program*	2012-12-13
		Databases	USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA	
		Years	1971-2012	
		Full patent spec.	(universal adj remote adj control) and prioritize* and interrogat*	
10	21 hits	Issue/Publication Date	<20111028	2012-12-13
		Databases	USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA	
		Years	1971-2012	
		Full patent spec.	(universal adj remote adj control) and prioritize*	
9	110 hits	Issue/Publication Date	<20111028	2012-12-13
		Databases	USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA	
		Years	1971-2012	
		Issue/Publication Date	<20111028	
8	4 hits	Title or Abstract	(universal adj remote adj control) and prior*	2012-12-13
		Databases	USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA	
		Years	1971-2012	
7	58 hits	Combined query	3 and 6	2012-12-13
		Issue/Publication Date	<20111028	
6	502 hits	Title or Abstract	(universal adj remote adj control)	2012-12-13
		Databases	USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA	
		Years	1971-2012	
5	18 hits	Full patent spec.	((universal adj remote adj control) or (programmable adj remote adj control) or (learning adj remote adj control)) and (smart adj phone) and (appliance* or (media adj center) or (home adj theater)) and prioritize*	2012-12-13
		Issue/Publication Date	<20111028	
		Databases	USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA	
		Years	1971-2012	

4	1 hit	Combined query	2 and 3	2012-12-13
		Issue/Publication Date	<20111028	
3	1074 hits	Current US Class	34001228 or 34001223 or 34001222 or 34001229 or 34000505	2012-12-13
		Databases	USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA	
		Years	1971-2012	
2	141 hits	Full patent spec.	((universal adj remote adj control) or (programmable adj remote adj control) or (learning adj remote adj control)) and (smart adj phone) and (appliance* or (media adj center) or (home adj theater))	2012-12-13
		Issue/Publication Date	<20111028	
		Databases	USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA	
		Years	1971-2012	
1	4 hits	Issue/Publication Date	<20111028	
		Title or Abstract	((universal adj remote adj control) or (programmable adj remote adj control) or (learning adj remote adj control)) and (smart adj phone) and (appliance* or (media adj center) or (home adj theater))	2012-12-13
		Databases	USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA	
		Years	1971-2012	

DialogPro (Global Patents) (Derwent, INSPEC, NTIS, PASCAL, Current Contents Search, Dissertation Abstracts Online, Inside Conferences):

universal(w)remote(w)control - 463 hits

(universal(w)remote(w)control) and (appliance* or (media(w)center) or (home(w)theater)) -128 hits

(universal(w)remote(w)control) and (appliance? or (media(w)center) or (home(w)theater)) and prioritize? -- 0 hits

(universal(w)remote(w)control) and (appliance? or (media(w)center) or (home(w)theater)) and target? - 33 hits

IP com (Patents):

universal w/1 remote w/1 control -- 505879 hits

universal w/1 remote w/1 control and appliance* - 67086 hits

(universal w/1 remote w/1 control) and appliance* and prioritize* - 6068

Non-Patent Literature (NPL) Search Strategy/Results:

DialogPro (General Research) (Derwent, INSPEC, NTIS, PASCAL, Current Contents Search, Dissertation Abstracts Online, Inside Conferences):

Universal(w)remote(w)control

(universal(w)remote(w)control) and (appliance* or (media(w)center) or (home(w)theater))

(universal(w)remote(w)control) and (appliance? or (media(w)center) or (home(w)theater)) and prioritize?

(universal(w)remote(w)control) and (appliance? or (media(w)center) or (home(w)theater)) and target?

Ip.com (NPL):

universal w/1 remote w/1 control

universal w/1 remote w/1 control and appliance*

(universal w/1 remote w/1 control) and appliance* and prioritize*

Google Scholar:

Universal remote control

Universal remote control and appliance

Universal remote control and appliance and prioritize

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
GREENBERG TRAURIG, LLP (CHI)
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732
USA

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing (*day/month/year*) 23 JUN 2014
Applicant's or agent's file reference 81230155PCT4	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US14/38151	International filing date (*day/month/year*) 15 May 2014 (15.05.2014)
Applicant UNIVERSAL ELECTRONICS INC.	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 338.82.70.

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004-9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Ken Wieder Telephone No. 571-272-2986

Form PCT/ISA/220 (July 2010)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 81230155PCT4	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US14/38151	International filing date (*day/month/year*) 15 May 2014 (15.05.2014)	(Earliest) Priority Date (*day/month/year*) 22 May 2013 (22.05.2013)
Applicant UNIVERSAL ELECTRONICS INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 9 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the Report**
   a. With regard to the **language**, the international search was carried out on the basis of:
      ☒ the international application in the language in which it was filed.
      ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))
   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 Rule 43.6 *bis(a)*
   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.
2. ☐ **Certain claims were found unsearchable** (See Box No. II)
3. ☐ **Unity of invention is lacking** (See Box No. III)
4. With regard to the **title**,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,
   a. the figure of the **drawings** to be published with the abstract is Figure No. _____
      ☐ as suggested by the applicant.
      ☐ as selected by this Authority, because the applicant failed to suggest a figure.
      ☐ as selected by this Authority, because this figure better characterizes the invention.
   b. ☒ none of the figures is to be published with the abstract.

Form PCT/ISA/210 (first sheet) (April 2007)

INTERNATIONAL SEARCH REPORT	International application No. PCT/US14/38151

A. CLASSIFICATION OF SUBJECT MATTER
IPC: **G06C 19/00**(2006.01)

USPC: 340/12.22
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 340/12.22, 12.53, 12.28, 12.23, 19.29., 5.5; 707/769, E17,014; 341/176

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2011/0289113 A1 (ARLING et al.) 24 November 2011 (11.24.2011), entire document.	1-13
Y	US 2010/0138764 A1 (HATAMBEIKI et al.) 03 June 2010 (06.03.2010), entire document.	1-13
A	US 7,589,642 B1 (MUI) 15 September 2009 (09.15.2009).	1-13
A	US 2008/0005764 A1 (ARLING et al.) 03 January 2008 (01.03.2008).	1-13

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 June 2014 (18.06.2014)	23 JUN 2014
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Ken Wieder Telephone No. 571-272-2986

Form PCT/ISA/210 (second sheet) (April 2007)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
GREENBERG TRAURIG, LLP (CHI)
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732
USA

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	23 JUN 2014
Applicant's or agent's file reference 81230155PCT4	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US14/38151	15 May 2014 (15.05.2014)	22 May 2013 (22.05.2013)

International Patent Classification (IPC) or both national classification and IPC

IPC: **G08C 19/00**(2006.01)
USPC: 340/12.22

Applicant

UNIVERSAL ELECTRONICS INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I — Basis of the opinion
- ☐ Box No. II — Priority
- ☐ Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV — Lack of unity of invention
- ☒ Box No. V — Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI — Certain documents cited
- ☐ Box No. VII — Certain defects in the international application
- ☐ Box No. VIII — Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(*b*) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	18 June 2014 (18.06.2014)	Ken Wieder Telephone No. 571-272-2986

Form PCT/ISA/237 (cover sheet) (April 2007)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY	International application No. PCT/US14/38151

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:

   a. type of material

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic form.

      ☐ furnished subsequently to this Authority for the purposes of search.

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY	International application No. PCT/US14/38151

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-13	YES
	Claims NONE	NO
Inventive step (IS)	Claims NONE	YES
	Claims 1-13	NO
Industrial applicability (IA)	Claims 1-13	YES
	Claims NONE	NO

2. Citations and explanations:

Please See Continuation Sheet

Form PCT/ISA/237 (Box No. V) (April 2007)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY	International application No. PCT/US14/38151

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

V. 2. Citations and Explanations:

Claims 1-13 lack inventive step under PCT Article 33(3) as being obvious over Arling et al. (U.S Pre-Grant Publication No. 2011/0289113), hereafter referred to **as Arling, in view of Hatambeiki et al. (U.S Pre-Grant Publication No. 2010/0138764), hereinafter Hatambeiki.**

As per claim 1, Arling discloses a method for configuring a user interface of a controlling device application of a smart device (paragraphs [0003-0004]), comprising:

receiving at the smart device (figs. Ia, 1 b, 2; *smart device 100)* from a Universal Control Engine (fig. 2; *Universal Control Engine is incorporated in the appliance [TV 106] as CEC switch)* in communication with smart device and a controllable appliance information retrieved from the controllable appliance by the Universal Control Engine (paragraph [0012]), the information comprising data representative of the controllable appliance to be added to the user interface of the controlling device application (paragraphs [0004], [0013-0014], [0026], *the information comprising data may include command data, device identification data, appliance input port numbers, pointers or index into a library of codesets to which each of the controlled appliances is responsive;*

such data may then be utilized by a smart device remote control app to configure activity macros and used in localization of smart app displayed labels and menus);

using the information received from the Universal Control Engine by the smart device representative of the controllable appliance to be automatically added to the user interface of the controlling device application (paragraph [0026], *macro configuration may be completely automatic, or may require user input, for example where multiple media playback appliances are detected in a configuration (e.g., both a DVD player and Vudu streaming video on demand box) a user may be prompted to select which appliance is to be used for a "Watch movie" activity),* the information being selectable to provide further access via use of the user interface of the controlling device application to initiate control of one or more controllable functions of the controllable appliance via one or more communications issued from the smart device to the Universal Control Engine (paragraphs [0012-0013], [0026).

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY	International application No. PCT/US14/38151

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

Arling does not specifically disclose an icon representative of the controllable appliance to be added to the user interface of the controlling device application and the added icon being selectable to provide further access via use of the user interface of the controlling device application to user interface elements which are selectable to initiate control of one or more controllable functions of the controllable appliance via one or more communications issued from the smart device.

However, in the same field of endeavor, Hatambeiki teaches:

an icon representative of the controllable appliance to be added to the user interface of the controlling device application (paragraphs [0008], [0037]),

the added icon being selectable to provide further access via use of the user interface of the controlling device application to user interface elements which are selectable to initiate control of one or more controllable functions of the controllable appliance via one or more communications issued from the smart device (abstract, paragraph [0037]).

Arling and Hatambeiki are considered to be analogous art because they relate to remote control systems and, more particularly, to the user interface of smart devices for improved appliance control communication. Therefore, it would have been obvious to someone of ordinary skill in the art at the time of the claimed invention to implement the user interface of a controlling device application of a smart device of Arling by adding a known icon to the user interface of the smart device app representative of the controllable appliance information data such as taught by Hatambeiki, so that the added icon may be conveniently selected to perform a function, such as to transmit a command to an appliance (Hatambeiki, paragraph [0008]).

As per claim 2, claim 1 is incorporated and Arling discloses: wherein the data representative of the controllable appliance to be added to the user interface of the controlling device application comprises data metadata (paragraphs [0004], [0013-0014], [0026], *the information comprising data may include command data, device identification data, appliance input port numbers, pointers or index into a library of codesets to which each of the controlled appliances is responsive; such data may then be utilized by a smart device remote control app to configure activity macros and used in localization of smart app displayed labels and menus).*

Arling does not specifically disclose an icon representative of the controllable appliance to be added to the user interface. However, Hatambeiki teaches:

causing an icon representative of the controllable appliance to be added to the user interface (paragraphs [0008], [0037]).

Arling and Hatambeiki are considered to be analogous art because both relate to remote control systems and, more particularly, to the user interface of smart devices for improved appliance control communication. Therefore, it would have been obvious to someone of ordinary skill in the art at the time of the claimed invention to implement the user interface of a controlling device application of a smart device of Arling by adding a known icon to the user interface of the smart device app representative of the controllable appliance information data such as taught by Hatambeiki, so that the added icon may be conveniently selected to perform a function, such as to transmit a command to an appliance (Hatambeiki, paragraph [0008]).

As per claim 2, claim 1 is incorporated and Arling discloses: wherein the data representative of the controllable appliance to be added to the user interface of the controlling device application comprises data metadata (paragraphs [0004], [0013-0014], [0026], *the information comprising data may include command data, device identification data, appliance input port numbers, pointers or index into a library of codesets to which each of the controlled appliances is responsive; such data may then be utilized by a smart device remote control app to configure activity macros and used in localization of smart app displayed labels and menus).*

Arling does not specifically disclose an icon representative of the controllable appliance to be added to the user interface. However, Hatambeiki teaches:

causing an icon representative of the controllable appliance to be added to the user interface (paragraphs [0008], [0037]).

Arling and Hatambeiki are considered to be analogous art because both relate to remote control systems and, more particularly, to the user interface of smart devices for improved appliance control communication. Therefore, it would have been obvious to someone of ordinary skill in the art at the time of the claimed invention

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY	International application No. PCT/US14/38151

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

to implement the user interface of a controlling device application of a smart device of Arling by adding a known icon to the user interface of the smart device app representative of the controllable appliance information data such as taught by Hatambeiki, so that the added icon may be conveniently selected to perform a function, such as to transmit a command to an appliance (Hatambeiki, paragraph [0008]).

As per claim 3, claim 2 is incorporated and Arling discloses: wherein the smart device uses the metadata to create activity macros representative of the controllable appliance added to the user interface of the controlling device application (paragraph [0004]).

Arling does specifically disclose smart device creating an icon representative of the controllable appliance added to the user interface of the controlling device application. However, Hatambeiki teaches:

smart device creating an icon representative of the controllable appliance to be added to the user interface (paragraphs [0008], [0037]).

It would have been obvious to someone of ordinary skill in the art at the time of the claimed invention to implement the user interface for controlling device application of a smart device of Arling by configuring the smart device app to create a known icon representative of the controllable appliance information data such as taught by Hatambeiki, so that the created icon may be added to the user interface and made available to be selected to perform a function, such as to transmit a command to an appliance (Hatambeiki, paragraph [0008]).

As per claim 4, claim 3 is incorporated and Arling discloses: wherein the smart device uses data stored in a memory of the smart device to create from the metadata activity macros representative of the controllable appliance added to the user interface of the controlling device application (paragraph [0013]).

Arling does specifically disclose smart device creating an icon representative of the controllable appliance added to the user interface of the controlling device application. However, Hatambeiki teaches:

smart device creating an icon representative of the controllable appliance to be added to the user interface (paragraphs [0008], [0037]).

It would have been obvious to someone of ordinary skill in the art at the time of the claimed invention to implement the user interface for controlling device application of a smart device of Arling by configuring the smart device app to create a known icon representative of the controllable appliance information data such as taught by Hatambeiki, so that the created icon may be added to the user interface and made available to be selected to perform a function, such as to transmit a command to an appliance (Hatambeiki, paragraph [0008]).

As per claim 5, claim 3 is incorporated and Arling discloses: wherein the smart device communicates the metadata to a server device (fig. 2, *server200),* the server device uses the metadata to create activity macros representative of the controllable appliance, the server device communicates the created activity macros to the smart device, and the smart device automatically adds the created activity macros to the user interface of the remote control application of the smart device (paragraphs [0014], [0024-0026]).

Arling does specifically disclose creating an icon representative of the controllable appliance added to the user interface of the controlling device application. However, Hatambeiki teaches:

creating an icon representative of the controllable appliance to be added to the user interface (paragraphs [0008], [0037]).

It would have been obvious to someone of ordinary skill in the art at the time of the claimed invention to implement the user interface for controlling device application of a smart device of Arling by configuring the smart device app to create a known icon representative of the controllable appliance information data such as taught by Hatambeiki, so that the created icon may be added to the user interface and made available to be selected to perform a function, such as to transmit a command to an appliance (Hatambeiki, paragraph [0008]).

As per claim 6, claim 1 is incorporated and Arling discloses: wherein the user interface elements which are selectable to initiate control of one or more controllable functions of the controllable appliance via one or more communications issued from the smart device to the Universal Control Engine made available in response to a selection of the added activity macros to the user interface of the remote control application of the smart device comprises user interface elements for placing at least the controllable appliance into a desired state for use in connection with an activity (paragraphs [0004], [0012-0013], [0026]).

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY	International application No. PCT/US14/38151

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

Arling does not specifically disclose an icon representative of the controllable appliance to be added to the user interface. However, Hatambeiki teaches:

an icon representative of the controllable appliance to be added to the user interface (paragraphs [0008], [0037]).

It would have been obvious to someone of ordinary skill in the art at the time of the claimed invention to implement the user interface for controlling a device application of a smart device of Arling by adding a known icon to the user interface of the smart device app representative of the controllable appliance information data such as taught by Hatambeiki, so that the added icon may be conveniently selected to perform a function, such as to transmit a command to an appliance (Hatambeiki, paragraph [0008]).

As per claim 7, claim 6 is incorporated and Arling in the combination with Hatambeiki teaches: wherein the information retrieved from the controllable appliance by the Universal Control Engine further comprises data representative of a capability supported by the controllable appliance and wherein the smart device causes a user interface element for an activity that uses the capability of the controllable appliance to be automatically added to the user interface of the controlling device application of the smart device (Arling, paragraphs [0004], [0026]).

As per claim 8, claim 7 is incorporated and Arling in the combination with Hatambeiki teaches: wherein the smart device causes a macro command sequence to be automatically created for the activity that uses the capability of the controllable appliance automatically added to the user interface of the controlling device application of the smart device, the macro command sequence being executed in response to a selection of the user interface element for the activity (Arling, paragraph [0026], *macro configuration may be completely automatic, or may require user input, for example where multiple media playback appliances are detected in a configuration (e.g., both a DVD player and Vudu streaming video on demand box) a user may be prompted to select which appliance is to be used for a "Watch movie" activity).*

As per claim 9, claim 8 is incorporated and Arling in the combination with Hatambeiki teaches: wherein the smart device uses data stored in a memory of the smart device and the data representative of a capability supported by the controllable appliance to automatically create the macro command sequence for the activity that uses the capability of the controllable appliance (Arling, paragraphs [0013], [0026]).

As per claim 10, claim 8 is incorporated and Arling in the combination with Hatambeiki teaches: wherein the macro command sequence is executed by the Universal Control Engine (Arling, paragraphs [0014-0015], *database to determine an appropriate command codeset for control of appliance may be resident in an appliance such as TV 106 of fig. 2 with CEC switch incorporated therein).*

As per claim 11, claim 8 is incorporated and Arling in the combination with Hatambeiki teaches: wherein the smart device communicates the data representative of a capability supported by the controllable appliance to a server device (fig. 2, *server 200),* the server device uses the data representative of a capability supported by the controllable appliance to automatically create the macro command sequence for the activity that uses the capability of the controllable appliance, and the server device communicates the created macro command sequence to the smart device whereupon the created macro command sequence is available for execution in response to a selection of the user interface element (Arling, paragraphs [0014], [0024-0026]).

Claim 12 is repetitive of claim 10 and is rejected for the same reasons as claim 10.

As per claim 13, claim 7 is incorporated and Arling in the combination with Hatambeiki teaches: wherein the data representative of a capability supported by the controllable appliance comprises data representative of an interface connection type of the controllable appliance (paragraphs [0004], [0026], *the information comprising data may include command data, device identification data, appliance input port numbers, etc.).*

Claims 1-13 meet the criteria set out in PCT Article 33(4) for industrial applicability because the claimed invention can be made and/or used in industry.

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 722 341 A1

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 158(3) EPC

(43) Date of publication:
15.11.2006 Bulletin 2006/46

(21) Application number: **05714775.3**

(22) Date of filing: **28.02.2005**

(51) Int Cl.:
G08C 17/02 *(2006.01)*

(86) International application number:
PCT/CN2005/000244

(87) International publication number:
WO 2005/083650 (09.09.2005 Gazette 2005/36)

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR

(30) Priority: **29.02.2004 CN 200410015523**

(71) Applicant: **Netac Technology Co., Ltd.**
Shenzhen,
Guangdong 518057 (CN)

(72) Inventors:
- **DENG, Guoshun,**
  China Academy Science & Tech. Dev.
  Shezhen,
  Guangdong 518057 (CN)
- **CHENG, Xiaohua**
  China Academy Science & Tech. Dev.
  Shezhen,
  Guangdong 518057 (CN)
- **XIANG, Feng**
  China Academy Science & Tech. Dev.
  Shezhen,
  Guangdong 518057 (CN)
- **KANG, Guanlin**
  China Academy Science & Tech. Dev.
  Shezhen,
  Guangdong 518057 (CN)

(74) Representative: **Price, Nigel John King**
J.A. KEMP & CO.
14 South Square
Gray's Inn
London WC1R 5JJ (GB)

(54) **A SYSTEM FOR CONTROLLING HOUSEHOLD DIGITAL EQUIPMENT BASED OF WIRELESS**

(57) The invention discloses a system for controlling household digital equipment based on wireless. The system comprises a remote device and receiving devices. The remote device sends controlling commands in wireless mode and provides at least two kinds of wireless communication modes. The receiving devices can communicate in the said wireless communication mode, can receive the controlling commands, which are sent by the remote device and can make the household digital equipment perform the controlling commands. The remote device selects the corresponding wireless communication mode according to the controlling commands and communicates with the receiving devices by the selected wireless communication mode.

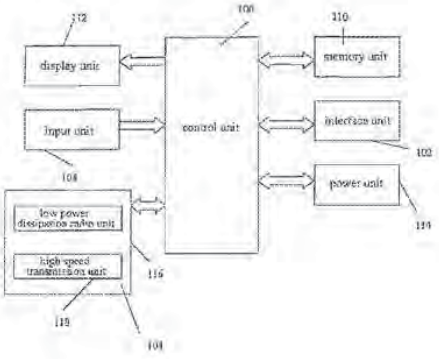


Fig. 2

EP 1 722 341 A1

Description

Field of Invention

[0001] The invention relates to wireless control systems for digital household appliance.

Background Art

[0002] Digital household appliance including devices like digital TVs, digital refrigerators, digital audios, digital set-top boxes or the like, have been developed as digital technologies associated with household appliance evolve. The digital devices which are capable of providing intelligent control show much stronger functions than those of the conventional household appliance, which enable the life of the public to be convenient and colorful. For example, digital TVs may provide a picture having a higher resolution and a function of video-on-demand. With developments of wireless networks and information technologies, various devices of household appliance, each of which works independently, can no longer satisfy the people's requirements. It is desirable to form a digital household network so as to enable various devices to communicate with each other. For example, video and/or picture file stored in a computer may be displayed on a computer, an audio file stored in the computer may be played by a digital Audio, and a remote control may be realized via an internet.

[0003] The relevant technology associated with a remote controller, which is one of necessary components of household devices like TVs, is matured and well known in the art. An existing remote controller typically comprises a key unit, an encoding unit, a radio transmitter unit and a power unit. However, a remote controller is designed to execute some dedicate functions in respect of relevant device. For example, a conventional TV remote controller should implement functions like channel-selection, auto-search, timing-shutdown, listen-only mode, brightness-adjustment, chrominance-adjustment, and volume-adjustment, etc. If a plurality of devices should be controlled, multiple remote controllers are needed. An universal remote controller was developed to operate as a control center in a digital household network so that various devices can be controlled through a wireless communication protocol. Each device in the digital household network includes a radio unit which always stays at a standby state, regardless of transmission of data, so as to determine whether a data packet was sent from other station site according to strength variations of signals in a monitoring channel (in a physical channel, data is transmitted by a carrier signal). Thus, the radio unit will continuously consume power even though nothing is transmitted. Therefore, it is desirable to reduce power consumption of digital household appliance.

Summary of Invention

[0004] Accordingly, the object of the present invention is to provide a wireless control system for digital household appliance with lower power consumption.

[0005] The above object is achieved by providing a wireless control system for digital household appliance including at least one device, comprising: a remote controller operationable at least two wireless communication modes for wirelessly transmitting control commands; a receiver or a household device for receiving or executing the control commands transmitted by the remote controller, and wherein the remote controller selects one wireless communication mode from the at least two wireless communication modes according to the control commands to wirelessly communicate with said device or said receiver.

[0006] The remote controller may comprise a power unit; a input unit; a radio unit for providing at least two wireless communication modes; and a control unit for selecting one of the at least two wireless communication modes, wherein the control unit selects one wireless communication mode from the at least two wireless communication modes according to control commands selected by a user and transmits the control commands to the devices so as to control operations of the devices.

[0007] Compared with the conventional art, the wireless control system for digital household appliance according to the invention may select and switch wireless communication modes based on control commands to be executed so as to avoid any waster of wireless communication resource and save power.

Brief Description of Drawings

[0008] Fig. 1 depicts a digital household network according to the invention;

[0009] Fig. 2 illustrates a block diagram of a remote controller for a wireless control system for digital household appliance according to the invention;

[0010] Fig. 3 is a block diagram of the control unit of a remote controller according to the wireless control system of the present invention;

[0011] Fig. 4 is a block diagram of the receiver according to the invention;

[0012] Fig.5 is a block diagram of a radio unit having lower power-consumption of a remote controller according to the invention;

[0013] Fig. 6 is a block diagram of a radio unit having lower power-consumption of a receiver according to the invention;

[0014] Fig. 7 schematically illustrates a structure of a wireless local network in an Ad-doc mode;

[0015] Fig. 8 schematically illustrates a structure of a wireless local network with access points in an Infrastructure mode;

[0016] Fig. 9 is a flowchart showing that the digital household appliance is wirelessly controlled according

to the invention; and

[0017] Fig. 10 is a flowchart showing that a receiver according to the present invention works.

Embodiments of Invention

[0018] A wireless control system for digital household appliance including at least one device according to the invention comprises a remote controller 10 for transmitting radio control commands, and a receiver 20 for receiving the radio control commands from the remote controller 10 and controlling the device to operate under the control of the control commands. The at least one device of digital household appliance may be PCs, digital TVs, digital audios and etc. The remote controller 10 and the device equipped with the receiver 20 form a digital household network, as shown in Fig. 1, through which the device will be wirelessly controlled by using the remote controller 10 and receiver 20. For example, video files and audio files stored in a computer can be displayed on a digital TV and played on a digital audio, respectively, by means of exchanging data through the network under the control of the remote controller 10.

[0019] Referring to Fig. 2, the remote controller 10 comprises a control unit 106, a radio unit 104, an interface unit 102, an input unit 108, a display unit 112, memory unit 110 and a power unit 114, wherein all of the radio unit 104, the interface unit 102, the input unit 108, the display unit 112, the memory unit 110 and the power unit 114 are connected to the control unit 106, respectively. The radio unit 104 includes a low power dissipation radio unit 116 and a high speed transmission unit 1168.

[0020] The control unit 106 is a kernel part of the remote controller 10 and responsible for processing data and controlling the operation of the system. The control unit 106 includes a controller which can be implemented with an ARM chip having MMU (memory management unit) function, such as ARM 720T, StrongARM, ARM920T, and ARM922T or the like. The control unit 106 operates the operating system of the remote controller 10, wherein the operating system may be a WinCE, a VxWorks, and an embedded Linux.

[0021] The memory unit 110 is adapted to store a big volume of data in order to function as a data source used for the digital household appliance. The memory unit 110 may be implemented by hard disks, semiconductor memory media, magnetic memory media and optical memory media, such as Flash Memory FRAM, MRAM, DRAM, SDRAM, EEPOM, SRAM, EPPOM or Millipedes.

[0022] The interface unit 102 provides an interface for connecting a memory device, a PC and other host device. The interface may be one of interfaces like CF, SM, MMC, SD, MS, MD, X-D, and PCMCIA. The interface may further include USB, IEEE1394, serial ATA, IDE/SCSI, HiperLAN, Bluetooth, IrDA, HomeRF, IEEE802.11x, IEEE802.11a, IEEE802.11, IEEE802.11d, IEEE-802.11.g, IEEE802.15, IEEE802.16, IEEE802.3, RS232, RS485, USB-OTG, UWB, POI and URAT, but also include one or more of GSM, GPRS, CDMA, 2.5G, 3G interfaces and parallel interfaces. Via the interface unit 102, the remote controller 10 is able to read data stored in an external memory device or to download data from a PC and other host device, and store the obtained data into the memory unit 110.

[0023] The radio unit 104 includes a low power dissipation radio unit 116 and a high speed transmission unit 118 for executing wireless communication among digital devices having the receiver 20, such as PCs, digital TVs, digital Audios, or the like, within the digital household network. The unit 116 may adopt communication protocols like Bluetooth, Zigbee, IrDA, etc. The unit 118 may adopt one or more wireless communication protocols including but limited to HomeRF, UWB, IEEE802.11x, IEEE802.11a, IEEE802.11b, IEEE802.11d, IEEE-802.11g, IEEE802.15, IEEE802.16, IEEE 802.3, GSM, GPRS, CDMA, 2.5G and 3G The control unit 106 can switch between the low power dissipation radio unit 116 and the high speed transmission unit 118. In a default mode, the low power dissipation radio unit 116 is ON and the high speed transmission unit 118 is OFF. For a purpose of illustration, the low power dissipation radio unit 116 is exemplified by an infrared module, and the high speed transmission unit 118 is exemplified by an IEEE802.11 communication module.

[0024] The input unit 108 is connected to an input terminal device, such as a keyboard, a voice-input device, a touch screen or the like, for receiving commands from a user.

[0025] The display unit 112 displays an interface of the operating system for the remote controller 10 for users' operation. A displayer like LCD, CRT, VFD, LCM, LED, and OLED, etc. may be connected to the display unit 112.

[0026] The power unit 114 supplies a power to the remote controller 10. Batteries like lithium batteries may be used for powering the remote controller 10. Alternatively, AC from an external AC power supply could be converted by an A/D converter (not shown in Fig. 2) to power the remote controller 10, similar with the manner of power supply for PDAs and Notebook PCs.

[0027] Referring to Fig. 3 now, the control unit 106 of the remote controller 10 comprises a main control unit 1061, a buffer unit 1062, an interface control unit 1063, a voltage adjustment unit 1064 and an EEPROM 1065, all of which are connected to a BUS. The main control unit 1061 is connected to the buffer unit 1062 and the interface control unit 1063, respectively. The interface control unit 1063 is connected to the interface unit 102.

[0028] The main control unit 1061 controls the interface unit 102 and carries out exchange of data, commands, addresses, status information among the buffer unit 1062, the EEPROM 1065 and the interface control unit 1063. The main control unit 106 includes programming codes to be run, the operating system of the remote controller 10, and a control information database of the digital household appliance like PCs, digital TVs, digital Audios, etc. The programming codes are extensible ac-

cording to the actual requirements so as to introduce new functions into the system. The software of the remote controller could be upgraded by means of e.g. obtaining upgraded software from an external device via the interface unit 102.

[0029] The buffer unit 1062 is employed to buffer data and may be implemented with a SRAM, a SDRAM, a DDRAM and a RDRAM or the like.

[0030] The program instructions and preset information like interface identifying codes and command sets provided by a manufacturer to be run in the main control unit 1061 and the interface control unit 1063 are fixed into the EEPROM 1065.

[0031] The voltage adjustment unit 1064 is employed to adjust the voltage of the remote controller 10 so as to satisfy the voltage requirements of various operation modes.

[0032] Referring to Fig. 4 now, the receiver 20 includes a control unit 202, a memory unit 210, a power management unit 214, a radio unit 204 and a control interface unit 212. The memory unit 210, the radio unit 204, the power management unit 214 and the control interface unit 212 are connected to the control unit 202.

[0033] If the receiver 20 is integrated into the digital household appliance, the power management unit 214 may receive a current from the appliance so as to supply a work voltage to the receiver 20. If the receiver 20 is an independent device from household appliance, the power management unit 214 may have a separate power supply to supply a voltage to the receiver 20.

[0034] The control unit 202 is a kernel part of the receiver 20 and responsible for processing data and controlling the operation of the system.

[0035] The memory unit 210 is employed to store programming codes and intermediate data to be run on or used by the control unit 202.

[0036] The radio unit 204 can conduct wireless communication over any of available wireless networks. Specifically, the radio unit 204 is employed to wirelessly communicate with the radio unit 104 of the remote controller 10. The radio unit 204 further includes a low power dissipation radio unit 216 and a high speed transmission unit 218. The low power dissipation radio unit 216 communicates with the low power dissipation radio unit 118 of the remote controller 10 by a way of low power dissipation communications according to wireless communication protocols including but limited to Bluetooth, Zigbee, and IrDA. The high speed transmission unit 218 communicates with the high speed transmission unit 118 of the remote controller 10 by a way of high speed wireless communication according to wireless communication protocols including but not limited to one or more of HomeRF, UWB, IEEE802.11x, IEEE802.11a, IEEE802.11b, IEEE802.11d, IEEE802.11g, IEEE 802.15, IEEE 802.16, IEEE 802.3, GSM, GPRS, CDMA, 2.5G and 3G

[0037] The control interface unit 212 is employed to change the control commands received by the receiver 20 from the remote controller 10 into control signals which are identified by the devices for operation.

[0038] Referring now to Fig. 5, the low power dissipation radio unit 116 of the remote controller 10 according to the embodiment includes an interface unit 1162, an encoding unit 1164, a modulating unit 1166 and a transmitting unit 1168. The interface unit 1162 receives binary control commands from the control unit 106 and inputs the received binary control commands to the encoding unit 1164. The encoding unit 1164 encodes the received binary control commands and transmits encoded pulse signals to the modulating unit 1166. The modulating unit 1166 receives and modulates the pulse signals, and transmits the modulated pulse signals to the transmitting unit 1168 in which one or more infrared LEDs are enabled to change the modulated pulse signals into infrared signals for transmission.

[0039] Referring now to Fig.6, the low power dissipation radio unit 216 of the remote controller 10 according to the embodiment includes a receiving unit 2162, a demodulating unit 2164, a decoding unit 2166 and an interface unit 2168. The receiving unit 2162 receives infrared signals from the remote controller 10, changes the received infrared signal into electric signals, and transmits the electric signals to the demodulating unit 2164. The demodulating unit 2164 receives the electric signals, demodulates the received electric signals into a coded pulse signals, and transmits the coded pulse signal to the decoding unit 2166 which in turn decodes the coded pulse signals into binary digital signals and transmits the same to the interface unit 2168. The interface unit 2168 transmits the binary digital signals to the control unit 202.

[0040] When the high speed transmission unit 118 of the remote controller 10 and the high speed transmission unit 218 of the receiver 20 are ON, the remote controller 10 and various household devices having the receiver 20 form a wireless digital household network by virtue of one or more wireless communication protocols such as IEEE802.11 protocol, UWB protocol, GSM protocol, GPRS protocol, CDMA protocol, 2.5G protocol or 3G protocol. The devices may be PCs, digital TVs, digital Audios, etc. For a purpose of illustration, the digital household network formed by the remote controller 10 and the devices follows e.g. IEEE802.11 communication protocol. The IEEE802.11 communication protocol specifies two wireless local network operating modes, namely, Ad-doc mode and Infrastructure mode.

[0041] Referring to Fig.7, which is a schematic diagram for showing a wireless local network in an Ad-doc mode. Each of work stations within the network can communicate with each other equally. In the embodiment, the remote controller 10 is set as an initial work station to initialize the wireless local network. Meanwhile, the remote controller 10 and the devices including e.g. PCs, digital TVs, digital Audios, etc. form a digital household network. The remote controller 10 equally communicates with each of devices of the network, respectively. The remote controller 10 operates as a control center to control these

devices of the network.

[0042] Referring to Fig. 8, which is a schematic diagram for showing the configuration of a wireless local network in an Infrastructure mode. In this case, the remote controller 10 operates as an access point (AP), and devices of the network such as PCs, digital TVs, digital Audios, etc. operate as work stations. The remote controller 10 and these devices constitute a digital household network with a star-shaped topology, as shown in Fig. 8.

[0043] In the Infrastructure mode, PCs, digital TVs, digital Audios, etc. cannot communicate with each other directly. Instead, communication signals among devices are relayed by the AP, i.e. the remote controller. The remote controller 10 manages the communications among various devices of the network. To this end, a MAC frame should comprise a source address, a destination address and an access point address. The access point address is the MAC address of the remote controller 10. A bridge connection table is established in the remote controller 10. When a device (source station) in the network intends to communicate with another one (destination station), a data frame is firstly transmitted to the remote controller 10. The remote controller 10 receives the data frame, retrieves the MAC address of the destination station from the data frame, and transmits the retrieved MAC address by conducting a search in the bridge connection table.

[0044] In the digital household network, the remote controller 10 provides not only a bridge connection among the devices of the network, but also a connection to a cable local network. The digital household network can also be connected to an Internet so that a PC may access a local network or Internet, or request some services like network printing, etc. In addition, resources of the Internet may be browsed on a digital TV.

[0045] Due to formation of the digital household network, devices of the network can communicate each other, without needing additional means except for the remote controller 10. Information on each device within the network can be retrieved by the remote controller 10. Therefore, within the coverage of the remote controller 10, all devices can work effectively, which could save a lot of resource, expand the network by adding new devices, and increase the working distance of the remote controller.

[0046] Please refer to Fig. 9. When the remote controller 10 is powered up, the control unit 106 is initialized and the operating system is loaded at step 701. A user interface of the operating system will be displayed on a display terminate connected to the display unit 112.

[0047] Step 703 is to await control commands which are input by users through an input means connected to the input unit 108. First, a user may select by means of the input means an icon representing one device f to be controlled. The control unit 106 displays all operations regarding the selected device on the user interface. The user may utilize the input means to select one of the operations. The input unit 108 sends an interrupt request to the operating system based on the selected operation.

[0048] The process goes to step 705 after the operating system receives the interrupt request. At step 705, the operating system determines whether or not to actuate the high speed transmission unit 118 of the remote controller 10 and the high speed transmission unit 218 of the receiver 20 based on the user's selection.

[0049] Whether to actuate the high speed transmission unit 118 of the remote controller 10 and the high speed transmission unit 218 of the receiver 20 depends on characteristics of data to be transmitted by the radio unit 104. If there is not a big number of data to be transmitted for some operations such as operation for adjusting channels, volume and picture color of a TV, there is no need to actuate the high speed transmission unit 118 and the high speed transmission unit 218.

[0050] If the high speed transmission unit 118 and the high speed transmission unit 218 are not actuated, the process goes to step 719 in which the control unit 106 controls the low power dissipation radio unit 116 to transmit corresponding control commands to carry out selected operations. In detail, the interface unit 1162 of the low power dissipation radio unit 116 receives binary control commands from the control unit 106, and then inputs the received binary control commands to the encoding unit 1164. The encoding unit 1164 encodes the received binary control commands, and then transmits an encoded pulse signals to the modulating unit 1166. The modulating unit 1166 receives and modulates the pulse signals and then transmits the modulated signals to the transmitting unit 1168. The transmitting unit 1168 receives the modulated signals and actuates one or more infrared LEDs so as to change the modulated signals into infrared signals, and transmits the infrared signals. The process then goes to step 717 to determine whether data frames are transmitted successfully.

[0051] If the radio unit is actuated, the process goes to step 706. At step 706, the remote controller 10 actuates the high speed transmission unit 118, and transmits an actuation command to the receiver 20 by means of the low power dissipation radio unit 116 to actuate the high speed transmission unit 218.

[0052] The process goes to step 707 to start a sub-process.

[0053] At step 709, the sub-process accesses a device control information database to retrieve the corresponding device control code information.

[0054] At step 711, the control code information is processed by the control unit 106, and then transmitted to the radio unit 104.

[0055] At step 713, the high speed transmission unit 118 packets the control code information as data frames.

[0056] At step 715, the data frames are transmitted to the high speed transmission unit 218 of the corresponding receiver 20 via a physic layer interface of the high speed transmission unit 118.

[0057] At step 717, it is determined whether the data frames are transmitted successfully.

[0058] If it is successful, the sub-process then returns to step 723. At step 723, the radio unit 104 sends an interrupt request to the control unit 106 to execute an interruption.

[0059] At step 725, the operating system, according to addresses of an interruption program set by a driver program of the radio unit 104, recalls the driver program to execute corresponding interruption.

[0060] Then, at step 727, the operating system displays, on the user interface, information for indicating the success of the operation. The process then returns to step 703 for awaiting control commands. In this case, the user interface returns to a status for awaiting control commands.

[0061] If the transmission is not successful (at step 717) the radio unit 104 sends an interrupt request to the control unit 106 at step 722.

[0062] At step 724, the operating system, according to addresses of an interrupt program set by a driver program of the radio unit 104, recalls the driver program to execute corresponding interruption.

[0063] At step 726, the operating system displays, on the user interface, information for indicating the failure of the operation. The process then returns to step 703 to wait for control commands, and the user interface returns to a status of awaiting control commands.

[0064] Hereafter is to illustrate the work process of the receiver 20.

[0065] If the remote controller 10 transmits control commands at step 719 (namely, the transmission is done through the low power dissipation radio unit 116 in this embodiment), the receiver 20 receives the control commands by virtue of the low power dissipation radio unit 216. Specifically, the receiving unit 2162 receives the infrared signals from the low power dissipation radio unit 116 of the remote controller 10, and changes the received infrared signals into electric signals which are in turn transmitted to the demodulating unit 2164. The demodulating unit 2164 receives and demodulates the received electric signals into coded pulse signals, and transmits the coded pulse signals to the decoding unit 2166. The decoding unit 2166 decodes the coded pulse signals into binary digital signals which are in turn transmitted to the interface unit 2168. The interface unit 2168 transmits the binary digital signals to the control unit 202 for further use. The control unit 202 controls the digital household appliance to operate as per the control commands.

[0066] If the remote controller 10 transmits control commands by the low power dissipation radio unit 116 to control the receiver 20 to actuate the high speed transmission unit 218, the high speed transmission unit 118 is also actuated to transmit the data frames. In this case, the receiver 20 operates as following.

[0067] Please refer to Fig. 10. After the digital household appliance with the receiver 20 receives control commands transmitted from the remote controller 10, the process starts at step 800.

[0068] At step 800, the low power dissipation radio unit 216 receives actuation commands from the low power dissipation radio unit 116 of the remote controller 10, and then transmits received actuation commands to the control unit 202 which in turn actuates the high speed transmission unit 218.

[0069] Then, at step 801, the high speed transmission unit 218 receives data frames transmitted by the high speed transmission unit 118 of the remote controller 10.

[0070] At step 803, the high speed transmission unit 218 di-packets the received data frames, and transmits payloads derived from the non-packeted data frames to the control unit 202 for further use.

[0071] At step 805, the control unit 202 processes the received payloads to obtain control information, and transmits the obtained control information to the control interface unit 212.

[0072] Then, at step 807, the control unit 202 changes the control information so as to be identified by the digital household appliance.

[0073] At last, the control unit 202 controls the digital household appliance to operate as per the corresponding control information at step 809.

[0074] The remote controller 10 and the receiver 20 carry out above processes to control all the functions of the digital household appliance in the digital household network. For example, the remote controller 10 controls digital TVs to switch channels, adjust volume and so on, the remote controller 10 provides a data resource for the digital household appliance so that picture or text filed stored in the user memory unit 110 may be showed on digital TVs, or data from a PC may be stored into the memory unit 110 or a memory device connected to the interface unit 102.

[0075] How the remote controller controls digital TVs to switch channels and adjust volume is well known for those skilled in the art, and will not be described in detail herein. A process for exchanging data between the remote controller 10 and the digital household appliance is now described. This embodiment is to show a process for displaying data stored in the memory unit 110 on a digital TV, and a process for storing data wirelessly received from a PC into the memory unit 110.

[0076] The following illustration relates to such a process that the remote controller 10 reads the data which are stored in a memory device connected to the interface unit 102, and stores the read data into the memory unit 110.

[0077] When an external memory device is connected to the interface unit 102, the interface control unit 1063 detects and identifies the communication protocol to which the memory device follows and electric characteristics of the memory device. If the identification fails, the interface control unit 1063 sends an interrupt request to the main control unit 1061 which in turn informs the control unit 106 of the failure of the connection. The control unit 106 displays corresponding error information on the user interface of the display unit 112. If the identification is successful, the main control unit 1061 sends control

commands to the voltage adjustment unit 1064 which in turn supplies an operating voltage to the memory device. Once the memory device is powered up, the memory device is in a read-only state.

[0078] Meanwhile, the user may utilize the input terminal device connected to the input unit 108 to operate the remote controller 10 so as to select commands for displaying contents of the memory device. The control unit 106 of the remote controller 10 translates the selected commands into specific control signals, which are in turn transmitted to the main control unit 1061 of the control unit 106. The main control unit 1061, upon the received control signal, transmits control commands to the interface control unit 1063. The data stored in the memory unit is then read and transmitted to the main control unit 1061 by the interface control unit 1063. The main control unit 1061 stores the data into the memory unit 110 and requests the operating system carrying out an interrupt process. The operating system then carries out an interrupt program to translate the data into user-identifiable document information which is then displayed on the user interface of the display terminal device.

[0079] Hereinafter, a process for displaying the data stored in the memory unit 110 or a memory device connected to the interface unit 102 on digital TVs will be discussed.

[0080] The user utilizes the input terminal device of the remote controller 10 to select the data stored in the memory unit 110 to be displayed. The display unit 112 of the remote controller 10 displays the user-identifiable document information stored in the memory unit 110 by means of the user interface of the operating system. The user may also utilize the input terminal device of the remote controller 10 to select documents to be transmitted to and displayed on a digital TV, and select an icon of digital TV which will display the documents.

[0081] Upon the above selection, the operating system determines whether to actuate the high speed transmission unit 118 of the remote controller 10 and the high speed transmission unit 218 of the receiver 20 to carry out the selected operations. If it is the case, the high speed transmission unit 118 is actuated and actuation commands for actuating the high speed transmission unit 218 are transmitted to the receiver 20 by the low power dissipation radio unit 116. The operating system accesses the device control information database to obtain control code information for the digital TV to be controlled. The control code information is processed by the control unit 106, and then transmitted to the high speed transmission unit 118 which in turn packets the control code information into data frames. The data frames are then transmitted to the high speed transmission unit 218 of the receiver 20 of the digital TV via the physical interface layer of the high speed transmission unit 118. The high speed transmission unit 218 dipackets the received data frames, and transmits payloads derived from the dipacketed data frames to the control unit 202. The control unit 202 processes the received payloads to achieve control information which in turn is transmitted to the control interface unit 212. The control unit 212 changes the control information to control signals to be identified by the digital household appliance so as to enable the digital TV to receive the data transmitted from the remote controller 10.

[0082] Subsequently, the data stored in the memory unit 110 or the memory device connected to the interface unit 102 is read by the control unit 116 of the remote controller 10. Data frames are then wirelessly transmitted to the high speed transmission unit 218 of the receiver 20 of the digital TV from the high speed transmission unit 118 of the remote controller 10. The high speed transmission unit 218 dipackets the received data frames and transmits payloads derived from the dipacketed data frames to the control unit 202. The control unit 202 further processes the received payloads to buffer the data information contained in the payloads into the memory unit 210. The buffered data information is then displayed on the screen of the digital TV.

[0083] The data information may also be wirelessly transmitted and then displayed on an analog TV by the remote controller 10 via a top-set box, the processes of which are similar to those used for displaying contents stored in the memory unit 110 on the digital TV, and will not be described in detail herein.

[0084] Hereinafter, the processes for wirelessly obtaining data from a PC and storing the obtained data into the memory unit 110 or the memory device connected to the interface unit 102 will be discussed.

[0085] The user utilizes the input terminal device of the remote controller 10 to select an icon for a PC on the user interface of the operating system. The user interface then displays all icons for documents which are read from the PC. After the user utilizes the input terminal device to select a document icon (that is used to select and store corresponding document into the memory unit 110) to select commands for obtaining the corresponding document from the PC and storing the corresponding document into the memory unit 110 or the memory device connected to the interface unit 102, the operating system actuates the high speed transmission unit 118 of the remote controller 10, and then transmits an actuation command to control the receiver 10 via the low power dissipation radio unit 116 so that the high speed transmission unit 218 is actuated. The operating system of the remote controller 10 then accesses the device controlling information database to obtain corresponding control code information. The control code information is processed by the control unit 106, and then transmitted to the radio unit 104 which in turn packets the control code information into data frames. The data frames are then transmitted to the radio unit 204 of the receiver 20 of the PC via a physical interface layer. The radio unit 204 un-packets the received data frames, and transmits payloads derived from the dipacketed data frames to the control unit 202 of the receiver 20 to make further use. The controlling information contained in the payloads is obtained and

processed by the control unit 202 so that the data of the selected document is processed and transmitted to the high speed transmission unit 218 which in turn packets the data into data frames for transmission. The high speed transmission unit 118 of the remote controller 10 receives and un-packets the data frames to transmit payloads contained therein to the main control unit 106 to make further process so that the main control unit 106 stores the document into the memory unit 110 or the memory device connected to the interface unit 102.

[0086] In addition, the remote controller 10 may also be used to control a printer to print documents stored in the memory unit 110 of the remote controller 10 or stored in the memory device connected to the interface unit 102. To this end, it is necessary for the printer to have a radio unit to act as a wireless network server so that the printer may work as a wireless network printer. The specific printing processes is similar to those used for displaying a document on the digital TV, and will not be described in detail herein.

[0087] While prefer embodiments has been described above, it is understand for those skilled in the art that various modifications and improvements may be made thereto without departing from the sprit and scope of the invention.

Claims

1. A remote controller for controlling digital household devices, including a power unit and an input unit, the remote controller further comprising:

   a radio unit for operating at least two wireless communication modes;
   a control unit for selecting one of the at least two wireless communication modes; and
   wherein the control unit selects one wireless communication mode from the at least two wireless communication modes according to control commands selected by a user and transmits the control commands to the devices for controlling operations of the devices.

2. A remote controller according to claim 1, wherein the radio unit comprises a low power dissipation radio unit and a high speed transmission unit.

3. A remote controller according to claim 2, wherein the low power dissipation radio unit adopts one of wireless commutation protocols including but not limited to Bluetooth protocol, Zigbee protocol and IrDA infrared protocol.

4. A remote controller according to claim 2, wherein the high speed transmission unit adopts one of wireless communication protocols including but not limited to HomeRF protocol, UWB protocol, IEEE802.11x protocol, IEEE802.11a protocol, IEEE802.11b protocol, IEEE802.11d protocol, IEEE802.11.g protocol, IEEE802.15 protocol, IEEE802.16 protocol, IEEE802.3 protocol, GSM protocol, GPRS protocol, CDMA protocol, 2.5G protocol and 3G protocol.

5. A remote controller according to claim 2, wherein the operation of the low power dissipation radio unit is preset as a default mode.

6. A remote controller according to claim 1, wherein the control unit selects one corresponding communication mode from the at least two wireless communication modes according to the control commands inputted by the user and/or characteristics of data transmitted by the radio unit.

7. A wireless control system for digital household devices, comprising:

   a remote controller operationable at least two wireless communication modes for wirelessly transmitting control commands;
   a receiver or one of the household devices for receiving or executing the control commands transmitted by the remote controller, and
   wherein the remote controller selects one wireless communication mode from the at least two wireless communication modes according to the control commands to wirelessly communicate with said device or said receiver.

8. The system according to claim 7, wherein the remote controller implements said at least two wireless communication modes by providing and operating a low power dissipation radio unit and a high speed transmission unit.

9. The system according to claim 8, wherein the low power dissipation radio unit and the high speed transmission unit are switchable under the control of a control unit.

10. The system according to claim 8, wherein the low power dissipation radio unit adopts one of wireless commutation protocols including but not limited to Bluetooth protocol, Zigbee protocol and IrDA infrared protocol.

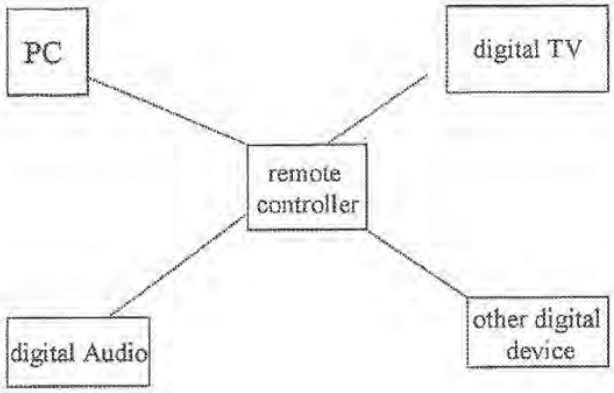

PC
digital TV
remote controller
digital Audio
other digital device

Fig. 1

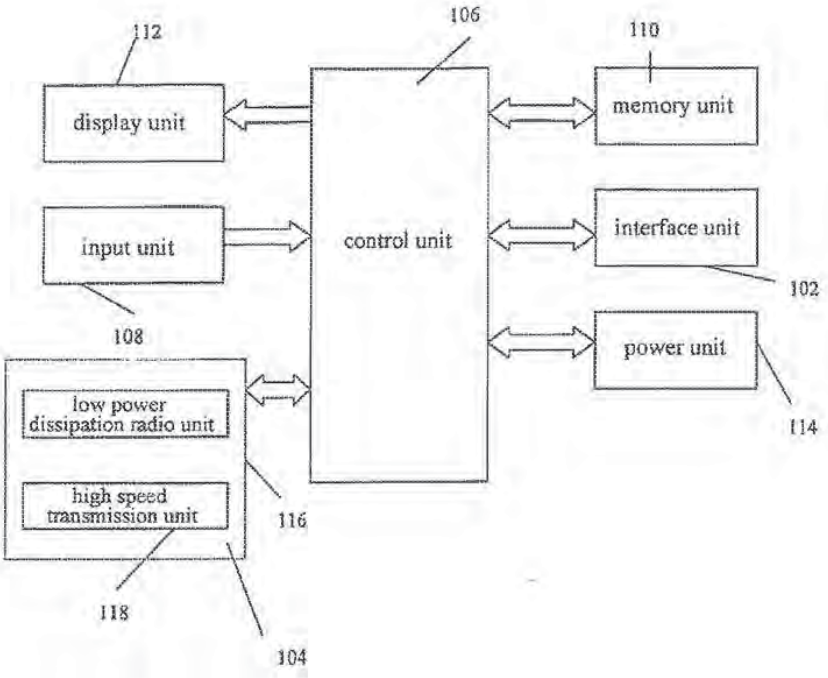

112
106
110
display unit
memory unit
input unit
control unit
interface unit
102
108
power unit
low power dissipation radio unit
114
high speed transmission unit
116
118
104

Fig. 2

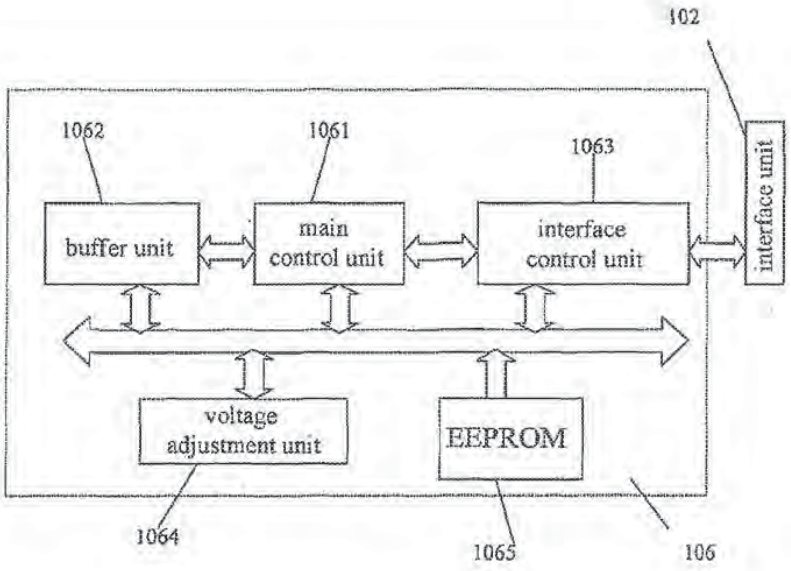

102
1062
1061
1063
buffer unit
main control unit
interface control unit
interface unit
voltage adjustment unit
EEPROM
1064
1065
106

Fig. 3

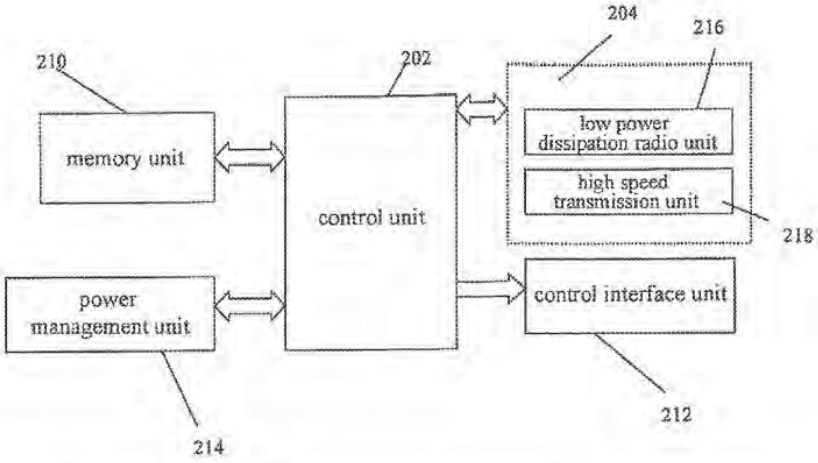

204
216
210
202
low power dissipation radio unit
memory unit
high speed transmission unit
control unit
218
power management unit
control interface unit
212
214

Fig. 4

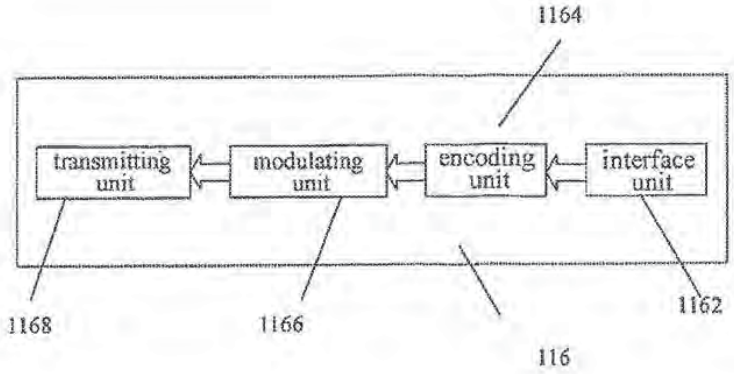

1164
transmitting unit
modulating unit
encoding unit
interface unit
1168
1166
1162
116

Fig. 5

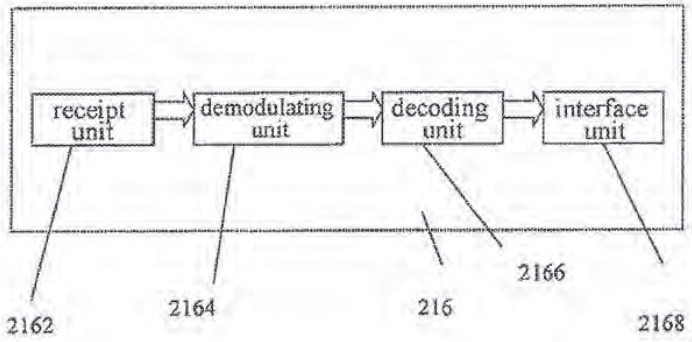

receipt unit
demodulating unit
decoding unit
interface unit
2162
2164
216
2166
2168

Fig. 6

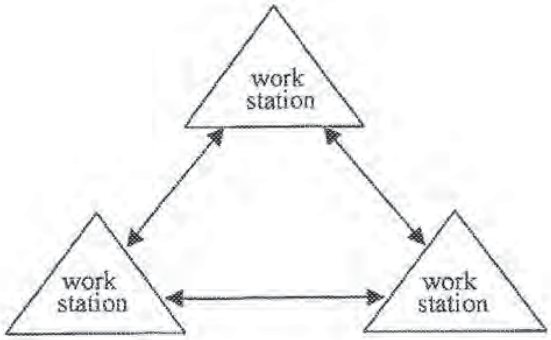

work station
work station
work station

Fig. 7

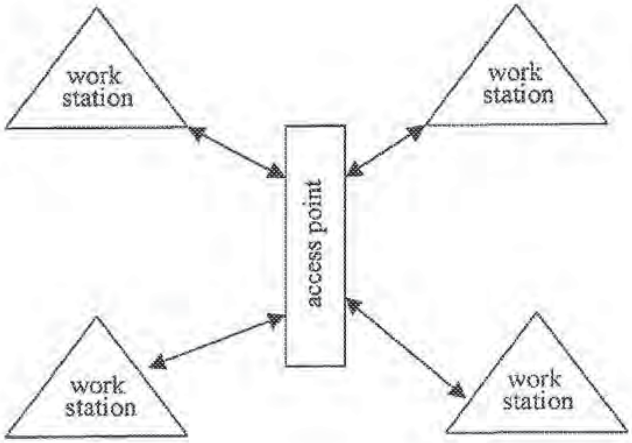

work station
work station
access point
work station
work station

Fig. 8

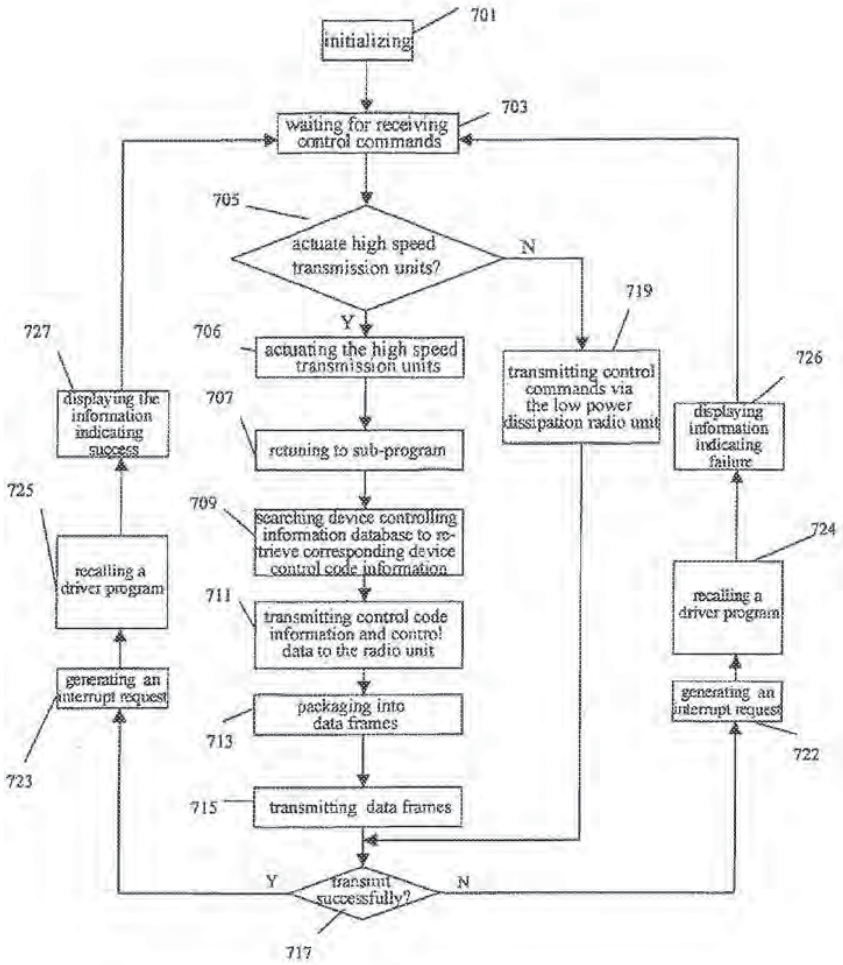

initializing
701
waiting for receiving control commands
703
actuate high speed transmission units?
705
N
Y
actuating the high speed transmission units
706
retuning to sub-program
707
searching device controlling information database to retrieve corresponding device control code information
709
transmitting control code information and control data to the radio unit
711
packaging into data frames
713
transmitting data frames
715
transmit successfully?
717
Y
N
transmitting control commands via the low power dissipation radio unit
719
displaying information indicating failure
726
recalling a driver program
724
generating an interrupt request
722
displaying the information indicating success
727
recalling a driver program
725
generating an interrupt request
723

Fig. 9

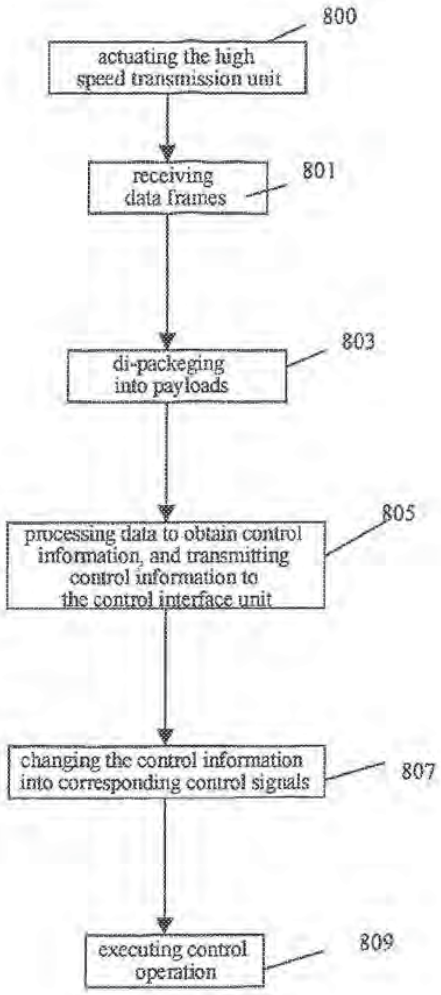

800
actuating the high speed transmission unit
801
receiving data frames
803
di-packeging into payloads
805
processing data to obtain control information, and transmitting control information to the control interface unit
807
changing the control information into corresponding control signals
809
executing control operation

Fig. 10

INTERNATIONAL SEARCH REPORT

International application No
PCT/CN2005/000244

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7: G08C17/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7: G08C+ H04M+

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNPAT: 遥控 家用 家庭 模式 方式 切换 选择 开关 转换 无线

PAJ, WPI, EPODOC: remot+ hous+ famil+ mod+ switch+ select+ wireless+ radio+ tele+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN, Y, 2572690 (YUNNAN BEIJIGUANG DIGITAL SCI TECH CO LTD) 10.SEP.2003 (10.09.03) the whole document	1-10
Y	CN, Y, 2174813 (PENG Nan) 17.AUG.1994 (17.08.94) the whole document	1-10

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim (S) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24.MAY.2005 (24.05.05)	09 · JUN 2005 (09 · 06 · 2005)

Name and mailing address of the ISA/CN	Authorized officer
The State Intellectual Property Office, the P.R.China 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451	ZHANG Xiaoxia Telephone No. (86-10)62085838

Form PCT/ISA/210 (second sheet) (April 2005)

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
5 May 2011 (05.05.2011)

PCT

(10) International Publication Number
WO 2011/053008 A2

(51) International Patent Classification:
H04Q 9/00 (2006.01) *H04M 11/00* (2006.01)
H04B 1/40 (2006.01)

(21) International Application Number:
PCT/KR2010/007466

(22) International Filing Date:
28 October 2010 (28.10.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10-2009-0104518 30 October 2009 (30.10.2009) KR

(71) Applicant *(for all designated States except US)*: **SAMSUNG ELECTRONICS CO., LTD.** [KR/KR], 416, Maetan-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do 442-742 (KR).

(72) Inventors: **CHO, Hyung-Rae**; #303, 69-1, Samjeon-dong, Songpa-gu, Seoul 138-838 (KR). **KIM, Sun-Ae**; #201-105, Songpa Hyundai Hometown APT., 511, Pungnap-dong, Songpa-gu, Seoul 138-040 (KR). **KWAHK, Ji-Young**; #722, Trapalace, Sunae-dong, Bundang-gu, Seongnam-si, Gyeonggi-do 463-873 (KR). **OH, Hyun-Joo**; 395-185, Seogyo-dong, Mapo-gu, Seoul 121-840 (KR).

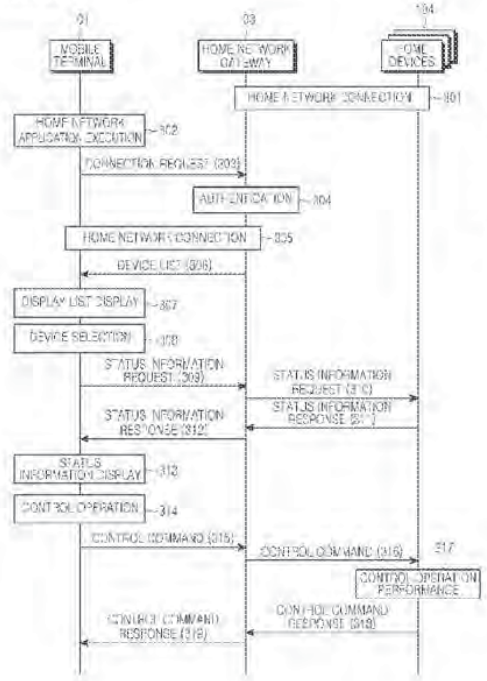
(74) Agent: **LEE, Keon-Joo**; Mihwa Bldg. 110-2, Myeongryun-dong 4-ga, Chongro-gu, Seoul 110-524 (KR).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR CONTROLLING HOME NETWORK SYSTEM USING MOBILE TERMINAL

[Fig. 3]



(57) Abstract: A method for controlling a home network system using a mobile terminal is provided, which includes the mobile terminal connecting to a gateway of a home network through a communication network, the mobile terminal receiving a list of devices which are connected to the home network from the gateway of the home network, the mobile terminal displaying the devices connected to the home network, if one of the displayed devices is selected, requesting the status information of the selected device from the selected device status information of the selected device through the gateway, receiving the status information of the selected device from the selected device, and displaying the received status information and a user interface for controlling the selected device.

WO 2011/053008 A2

(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*

Description

Title of Invention: METHOD AND APPARATUS FOR CONTROLLING HOME NETWORK SYSTEM USING MOBILE TERMINAL

Technical Field

[1] The present invention relates to home device control of a home network system, and more particularly to a method and apparatus for observing the status of devices in a home network system, managing and controlling the operation of the devices using a mobile terminal.

Background Art

[2] A home network is the next-generation IT (Information Technology) technology that has been recently attracting a lot of attention, and is an aggregate of technologies that can maximize convenience in life in combination with the Internet based on the control, management, integration, and interlocking of information home appliances. The home network is divided into a lower network technology for physical data transmission, a middleware technology for interlocking with upper applications, and an information home technology that is applied to respective home appliances. At present, the home network has been combined with broadband communication, wireless Internet, sensor technology, and the like, and has extended to ubiquitous computing.

[3] In such a home network system, research for a home network middleware that corresponds to an interface between a lower network layer and an application layer for controlling and managing information home appliances has been conducted. At present, diverse types of home network middleware, such as Universal Plug and Play (UPnP), Jini technology), Phone Service Gateway Initiative (PSGi), Home Audio/Video Interoperability (HAVi), and the like, have been provided and coexisted in a state where none of them has the superiority in technique.

[4] Although home network systems, which have recently started to be installed at home around apartments, provide various services through wired/wireless appliances connected therein around a single home gateway, they cannot get out of the existing home automation level, except for services using external Internet, and run short of practicality due to the nonexistence of applications.

Disclosure of Invention

Technical Problem

[5] Accordingly, the present invention has been made to solve the above-mentioned problems occurring in the prior art, and the present invention provides a method and

apparatus for conveniently observing, managing, and controlling the status of devices in a home network system from the outside using a mobile terminal.

Solution to Problem

[6] In accordance with an aspect of the present invention, there is provided a method for controlling a home network system using a mobile terminal, which includes the mobile terminal connecting to a gateway of a home network through a communication network; the mobile terminal receiving a list of devices which are connected to the home network from the gateway of the home network; the mobile terminal displaying the devices connected to the home network; if one of the displayed devices is selected, requesting the status information of the selected device from the selected device through the gateway; receiving the status information of the selected device from the selected device; and displaying the received status information and a user interface for controlling the selected device.

[7] The method for controlling a home network system using a mobile terminal according to an embodiment of the present invention may further include transferring a control command to the gateway of the home network if the control command is input through the user interface for controlling the selected device.

[8] In accordance with another aspect of the present invention, there is provided a mobile terminal for controlling a home network system, which includes a display unit displaying various kinds of display content and messages; an input unit provided with a plurality of numeral keys and function keys to output key input data that corresponds to a key pressed by a user; a storage unit storing programs and data which are used when the mobile terminal operates; a communication unit performing wireless communication with a mobile communication base station and performing communication with a home network system gateway for controlling home devices of the home network system; and a control unit controlling operations of other constituent units, connecting to the home network, receiving a list of the devices connected to the home network from the home network gateway, displaying the devices connected to the home network, if one of the displayed devices is selected, requesting the status information of the selected device from the selected device through the gateway, receiving the status information of the selected device from the selected device, and displaying the received status information and a user interface for controlling the selected device.

Advantageous Effects of Invention

[9] According to the present invention, a user can observe, manage, and control the status of devices of a home network system using an application of a mobile communication terminal from the outside of the house. That is, a user can grasp the current

status of home appliances or control devices by connecting to a home network through the mobile communication terminal from the outside of the house, and can easily control or manipulate the home appliances or control devices connected to the home network through the application of the mobile communication terminal.

Brief Description of Drawings

[10] The above and other aspects, features and advantages of the present invention will be more apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

[11] FIG. 1 is a diagram illustrating the configuration of a home network system and a mobile terminal connected thereto according to an embodiment of the present invention;

[12] FIG. 2 is a diagram illustrating the configuration of a mobile terminal according to an embodiment of the present invention;

[13] FIG. 3 is a diagram illustrating an operational flow for controlling home devices of a home network system according to an embodiment of the present invention;

[14] FIG. 4 is a diagram illustrating a display example of an application selection screen for a mobile terminal to control home devices of a home network system when the mobile terminal controls the home devices of the home network system according to an embodiment of the present invention;

[15] FIG. 5 is a diagram illustrating a display example of a mobile terminal when an application for controlling home devices of a home network system is selected on the screen of FIG. 4;

[16] FIG. 6 is a diagram illustrating a display example of a mobile terminal when a Television (TV) is selected on the screen of FIG. 5;

[17] FIG. 7 is a diagram illustrating a display example of a mobile terminal when a security camera is selected on the screen of FIG. 5;

[18] FIG. 8 is a diagram illustrating a display example of a mobile terminal when illumination is selected on the screen of FIG. 5; and

[19] FIG. 9 is a diagram illustrating a display example of a mobile terminal when a printer is selected on the screen of FIG. 5.

[20] Throughout the drawings, the same drawing reference numerals will be understood to refer to the same elements, features and structures.

Mode for the Invention

[21] Hereinafter, embodiments of the present invention will be described with reference to the accompanying drawings. In the following description, the same elements will be designated by the same reference numerals although they are shown in different drawings. Further, various specific definitions found in the following description are

provided only to help general understanding of the present invention, and it is apparent to those skilled in the art that the present invention can be implemented without such definitions. Further, in the following description of the present invention, a detailed description of known functions and configurations incorporated herein will be omitted when it may make the subject matter of the present invention rather unclear.

[22] FIG. 1 is a diagram illustrating the configuration of a home network system and a mobile terminal connected thereto according to an embodiment of the present invention. As illustrated in FIG. 1, a home network system according to an embodiment of the present invention includes a home network gateway 103 which operates as a server and is connectable with an external communication network 102, and home devices 104 which are client appliances connected thereto. The home devices 104 are devices which are connected to a home network and can be controlled or can perform data transmission/reception, such as a printer, TV, refrigerator, air conditioner, security camera, facsimile machine, illumination, DVD, doorway, phone set, washing machine, and the like. On the other hand, the home network gateway 103 may be implemented in the form of an electronic frame or a Personal Computer (PC), and operates as a home device 104 to transfer status information to an external mobile terminal 101 or to be controlled.

[23] The home devices 104 can provide their status information to the external communication network 102 through the home network gateway 103. In the present invention, the external mobile terminal 101 connected to the external communication network 102 receives the status information, and controls the home devices 104 by transferring a command for controlling the home devices 104 through the gateway 103. Here, the external communication network 102 may be a general mobile communication network, 3G network, or wireless Internet.

[24] The home network system as configured above supports home network middleware. Accordingly, from a viewpoint of a home application for home services, communication becomes possible even without considering the detailed items of the devices that support the home network middleware, and even from a viewpoint of an individual device, connection to all service applications that support the home network middleware becomes possible.

[25] FIG. 2 is a diagram illustrating the configuration of a mobile terminal according to an embodiment of the present invention. Referring to FIG. 2, a mobile terminal 101 includes a communication unit 202, an input unit 204, a display unit 203, a storage unit 205, and a control unit 201.

[26] The control unit 201 performs a general communication function such as calling, data transmission/reception, or the like, and controls other constituent units. Also, the control unit 201 connects to a home network, receives a list of devices connected to the

home network from the gateway of the home network, and displays the devices connected to the home network through the display unit 203. If one of the displayed devices is selected by a user, the control unit 201 requests the selected device status information of the selected device through the gateway, receives the status information from the selected device, and displays the received status information and a means for controlling the selected device through the display unit 203.

[27] The display unit 203 displays various kinds of display content and messages under the control of the control unit 201. The display unit 203 may be provided through a Liquid Crystal Display (LCD), Thin Film Transistor (TFT), organic Electroluminescence (EL), or the like.

[28] The input unit 204 is provided with a plurality of numeral keys and function keys, and outputs key input data that corresponds to the key pressed by a user to the control unit 201. If the display unit 203 is composed of a touch screen, the display unit 203 operates also as the input unit 204.

[29] The storage unit 205 is composed of a Read Only Memory (ROM) and a Random Access Memory (RAM) for storing programs and data which are used when the mobile terminal operates. Also, the storage unit 205 stores data of a home network application 206 in the mobile terminal. The application data 206 includes information that is used to execute the home network application and information on sub applications including a user interface for displaying the status information and controlling the operations of the home devices 104 of FIG. 1 connected to the home network.

[30] The mobile terminal typically performs wireless communication with a base station, and for this, the communication unit 202 transmits/receives an RF signal to/from the base station through an antenna. Also, the communication unit 202 performs communication with a home network system gateway for controlling the home devices of the home network system.

[31] FIG. 3 is a diagram illustrating an operational flow for controlling home devices of a home network system according to an embodiment of the present invention. FIG. 3 shows processes in which the mobile communication terminal 101 enters into the home network, grasps the status information of the home devices connected to the home network, and controls the operations of the home devices.

[32] Referring to FIG. 3, first in step 301, the home devices 104 are connected to the home network of the gateway 103. In the case where UPnP home network middleware is used step 103 can be performed through processes in which the gateway 103 finds the home device 104 on the network, allocates an address thereto, discovers the appliance, confirms the description of the appliance, and performs event, control and presentation operations.

[33] The UPnP that is the middleware exemplified in the respective processes is an

Internet Protocol based network, and thus an Internet Protocol address (IP)is used for each device connected to the network. Accordingly, IP allocation, i.e. address allocation, is first performed. If IPs have been assigned to the respective devices through address allocation, it is used to discover the devices to be controlled. For this, the controller (gateway) discovers the devices using a protocol called Simple Service Discovery Protocol (SSDP). In this case, the controller searches for a concerned device, and a controlled device (home device) responds to this. Also, if the controlled device connects to the network, it automatically informs other devices of the connection, and then periodically informs other devices whether the connection continues.

[34] If the device is discovered, it is required to know which services the respective devices could perform. For this, if the controller finds the controlled device, the controlled device sends a Uniform Resource Locator (URL) which contains description of the device to the controller, and the controller brings the description of the device that is in the form of an Extensible Markup Language (XML) document from the controlled device. This document includes manufacturer information, product information (model, serial number, and the like), a service list, and the like.

[35] Then, the controller brings the description of the device from the controlled device, analyzes the service of the device described therein, and sends an appropriate action, also referred to as a control command, to the device to control the controlled device. The protocol that is used in that transaction is XMLLanguage)/ Simple Object Access Protocol (SOAP).

[36] Also, in the home network, the status of the device is frequently changed according to a surrounding environment. Since such change may be important information to a user, the UPnP defines the event. The controller observes such change of the status of the controlled device, and the controlled device transfers an event message, also referred to as the event, to the controller when its status is changed. The event is composed of a pair (name, value), and the protocol that is used for the event is an XML type Generic Event Notification Architecture (GENA). Also, the controller can read a Hyper Text Markup Language (HTML) page of the controlled device. This HTML page shows a user interface related to the use of equipment, also referred to as presentation, and through this, the equipment is controlled or the status is shown. As described above, in the home network system, a user can perform systematic connection through the networking for the individual home devices at home using the UPnP, and can receive diverse services accordingly.

[37] As described above, although the home network construction according to the present invention has been described on the basis of the UPnP middleware, the home network according to the present invention can be implemented using diverse types of

home network middleware, such as OSGi, HAVi, and the like.

[38] Referring again to FIG. 3, if the external mobile terminal 101 performs the application for connecting to the home network in step 302 after the home network connection is performed through the above-described procedure in step 301, the mobile terminal transmits a connection request to the gateway 103 of the home network in step 303. Such a connection request may include user authentication information of the mobile terminal 101 (e.g. user authentication card information, user ID, secret number, and the like) and information on the mobile terminal 101.

[39] FIG. 4 is a diagram illustrating a display example of an application selection screen for a mobile terminal to control home devices of a home network system when the mobile terminal controls the home devices of the home network system according to an embodiment of the present invention. In step 302, the user can select and execute an application for connecting to the home network indicated in the form of an icon through a screen as illustrated in FIG. 4.

[40] In step 304, the gateway performs an authentication procedure through the user authentication information of the mobile terminal 101. Then, in step 305, the mobile terminal connects to the home network. In step 306, the gateway 103 provides list information on the home devices 104 connected to the home network to the mobile terminal 101. The list information on the home devices 104 may include basic information of the home devices 104, such as names, types, and the like.

[41] Next, the mobile terminal 101, in step 307, displays a list of devices connected to the home network using the received device list information. FIG. 5 is a diagram illustrating a display example of a mobile terminal when an application for controlling home devices of a home network system is selected on the screen of FIG. 4. In step 307, the user can see the list of devices 104 connected to the home network displayed in the form of an icon through the screen as shown in FIG. 5, and can select a specified device 104.

[42] On the other hand, the list of the home devices 104 displayed on the application can be automatically added or deleted according to the home device 104 currently connected to the home network, and the shapes of icons may be set by the user. Also, the user interface that displays the status information of the home devices 104 or kinds and types of control buttons is received through the gateway 103 or is directly received from the corresponding home device 104 through the gateway 103. Accordingly, if there is a new home device 104 not stored in the home network application of the storage unit, connected to the home network during execution of the application, the user can download a dedicated sub application of the corresponding home device 104 that includes a user interface for displaying and controlling the status information of the corresponding home device 104. Such a sub application may be downloaded

through the Internet.

[43] Accordingly, if the specified device 104 is selected by the user in step 308, a signal for requesting the current status information of the selected device 104 is transferred to the gateway 103 in step 309. The status information of the device includes at least one of a power on/off state of the device, a current operation state, and a component or material status. In step 310, the gateway 103 transfers a signal for requesting the status information (UPnP action) from the selected device to the corresponding device 104, and in step 311, receives the status information from the corresponding device 104. In step 312, the gateway 103 transfers the received status information to the mobile terminal 101 through the external communication network, and in step 313, the mobile terminal 101outputs a screen for displaying the status information of the device selected by the user and the user interface for performing a control operation such as a control button using the received status information. Then, in step 314, if a control operation such as pressing of a control button by the user or a like input, the mobile terminal 101, in step 315, transfers the control command to the gateway 103, and the gateway 103, in step 316, transfers the control command (UPnP action) to the corresponding device 104 of the home network. in step 317, the device 104 performs the operation according to the control command. Then, in step 318, the home device 104 transfers the result of performing the operation to the gateway 103 as a response to the control command, and in step 319, the gateway 103 transfers the control command response to the mobile terminal 101.

[44] Examples of the screen display, in which the user selects one of the devices connected to the home network in step 313 are shown in FIGS. 6, 7, 8, and 9. FIG. 6 is a diagram illustrating a display example of a mobile terminal when a TV is selected on the screen of FIG. 5. As shown in FIG. 6, the user can easily see the status information, such as whether the power of the TV is in a turned-on state, selected channel, use time, volume, and the like, through a status information window, and can remotely control the power on/off, use locking, and the like, through the control button positioned below the status information window.

[45] FIG. 7 is a diagram illustrating a display example of a mobile terminal when a security camera is selected on the screen of FIG. 5. As shown in FIG. 7, the user can see the currently captured image of streamed security camera through the status information window, and can remotely control the power on/off or an operation for viewing captured images of other security cameras through the control button positioned below the status information window.

[46] FIG. 8 is a diagram illustrating a display example of a mobile terminal when illumination is selected on the screen of FIG. 5. As shown in FIG. 8, the user can see the current illumination state of the house through the status information window, and can

set the illumination on oroff or vary the intensity a direct touch of the status information window or another manipulation button or a user interface.

[47] FIG. 9 is a diagram illustrating a display example of a mobile terminal when a printer is selected on the screen of FIG. 5. As shown in FIG. 9, the user can grasp the power on/off state, output state, cartridge or paper state of the printer, and can control the power on/off and the output of the printer.

[48] In addition, although not illustrated in the drawing, even in the case of a refrigerator, the user can grasp the current temperature of the refrigerator, set temperature, the amount of loaded food as compared with a reference amount of food, existence/nonexistence of ice, and the like, through a status display window, and can remotely control the set temperature or power on/off through a user interface such as a control button or touch screen.

[49] Also, even in the case of a washing machine, status information, such as the current operation state of the washing machine, the amount of washing water, start/end time, the necessary time, and the like, can be displayed through a status display window, and the user can control the operation of the washing machine through a user interface such as a control button, touch screen, and the like.

[50] Even in the case of an air conditioner or a boiler, status information such as the current temperature, set temperature, reserved setting, and the like, can be displayed through a status display window, and the user can perform temperature setting, reserved setting, and the like, through a user interface such as a control button, touch screen, and the like.

[51] While the operation and configuration of the method and apparatus for controlling a home network system using a mobile terminal have been shown and described with reference to certain embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

Claims

[Claim 1] A method for controlling a home network system using a mobile terminal, comprising the steps of:
the mobile terminal connecting to a gateway of a home network through a communication network;
the mobile terminal receiving a list of devices which are connected to the home network from the gateway of the home network;
the mobile terminal displaying the devices connected to the home network;
if one of the displayed devices is selected, requesting the status information of the selected device from the selected device through the gateway;
receiving the status information of the selected device from the selected device; and
displaying the received status information and a user interface for controlling the selected device.

[Claim 2] The method for controlling a home network system using a mobile terminal as claimed in claim 1, further comprising the step of transferring a control command to the gateway of the home network if the control command is input through the user interface for controlling the selected device.

[Claim 3] The method for controlling a home network system using a mobile terminal as claimed in one of claims 1 to 2, wherein the home network is constructed using UPnP (Universal Plug and Play) middleware.

[Claim 4] The method for controlling a home network system using a mobile terminal as claimed in one of claims 1 to 3, wherein the step of the mobile terminal connecting to the home network is performed by executing an application for observing the status information of the devices of the home network and controlling the operation of the devices.

[Claim 5] The method for controlling a home network system using a mobile terminal as claimed in one of claims 1 to 4, wherein the step of the mobile terminal displaying the devices connected to the home network comprises the steps of:
determining whether a device that is not stored in an application of the mobile terminal exists among the devices connected to the home network;

if the device that is not stored in the application of the mobile terminal exists, receiving through the gateway a sub application that includes a user interface for displaying the status information of the device that is not stored in the application of the mobile terminal and executing a control operation; and

the mobile terminal displaying a list of the devices connected to the home network in the form of an icon.

[Claim 6] The method for controlling a home network system using a mobile terminal as claimed in one of claims 1 to 5, wherein the status information of the device includes at least one of a power on/off state of the device, a current operation state, and a component or material status.

[Claim 7] The method for controlling a home network system using a mobile terminal as claimed in one of claims 1 to 6, wherein the step of displaying the received status information and the user interface for controlling the selected device is performed by displaying the received status information on a status information window and displaying a control button for controlling the selected device.

[Claim 8] A mobile terminal for controlling a home network system, comprising:

a display unit displaying various kinds of display content and messages;

an input unit provided with a plurality of numeral keys and function keys to output key input data that corresponds to a key pressed by a user;

a storage unit storing programs and data which are used when the mobile terminal operates;

a communication unit performing wireless communication with a mobile communication base station and performing communication with a home network system gateway for controlling home devices of the home network system; and

a control unit controlling operations of other constituent units, connecting to the home network, receiving a list of the devices connected to the home network from the home network gateway, displaying the devices connected to the home network, if one of the displayed devices is selected, requesting the status information of the selected device from the selected device through the gateway, receiving the status information of the selected device from the selected device, and displaying the received status information and a user interface for

controlling the selected device.

[Claim 9] The mobile terminal for controlling a home network system as claimed in claim 8, wherein the storage unit stores a home network application for enabling the mobile terminal to grasp the status of the home devices of the home network and to easily control the home devices.

[Claim 10] The mobile terminal for controlling a home network system as claimed in one of claims 8 to 9, wherein the control unit transfers a control command to the gateway of the home network if the control command is input through the user interface for controlling the selected device.

[Claim 11] The mobile terminal for controlling a home network system as claimed in one of claims 8 to 10, wherein the home network is constructed using UPnP (Universal Plug and Play) middleware.

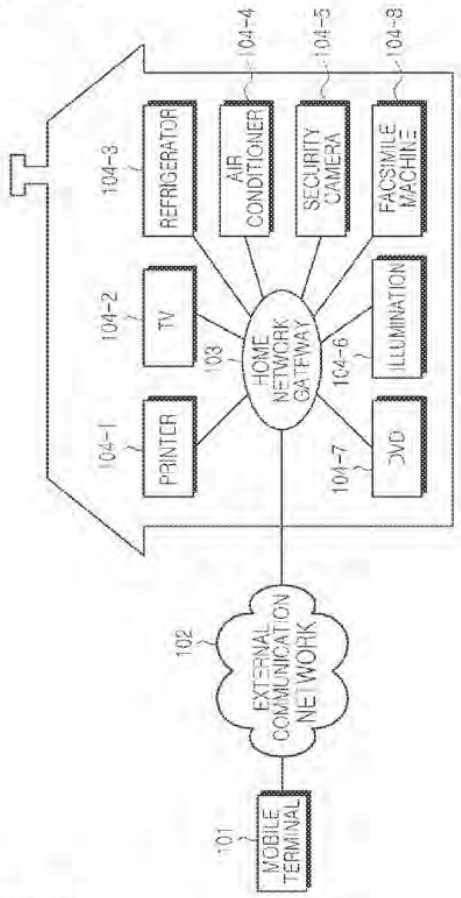
[Claim 12] The mobile terminal for controlling a home network system as claimed in one of claims 8 to 11, wherein the connection of the mobile terminal to the home network is performed by executing an application for observing the status information of the devices of the home network and controlling the operation of the devices.

[Claim 13] The mobile terminal for controlling a home network system as claimed in claim 12, wherein a display of the devices connected to the home network includes determining whether a device that is not stored in an application of the mobile terminal exists among the devices connected to the home network; if the device that is not stored in the application of the mobile terminal exists, receiving through the gateway a sub application that includes a user interface for displaying the status information of the device that is not stored in the application of the mobile terminal and executing a control operation; and the mobile terminal displaying a list of the devices connected to the home network in the form of an icon.

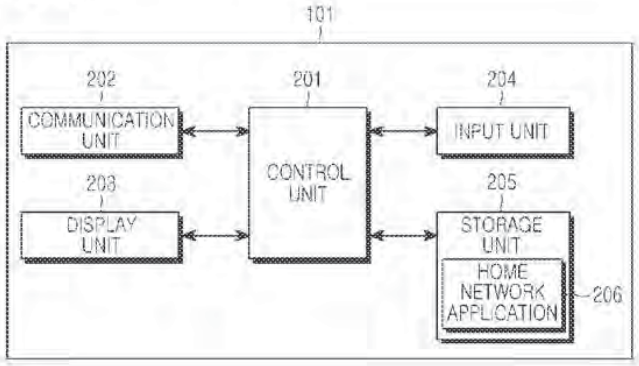
[Claim 14] The mobile terminal for controlling a home network system as claimed in one of claims 8 to 13, wherein the status information of the device includes at least one of a power on/off state of the device, a current operation state, and a component or material status.

[Claim 15] The mobile terminal for controlling a home network system as claimed in one of claims 8 to 14, wherein a display of the received status information and the user interface for controlling the selected device is a process of displaying the received status information on a status information window and displaying a control button for controlling the selected device.

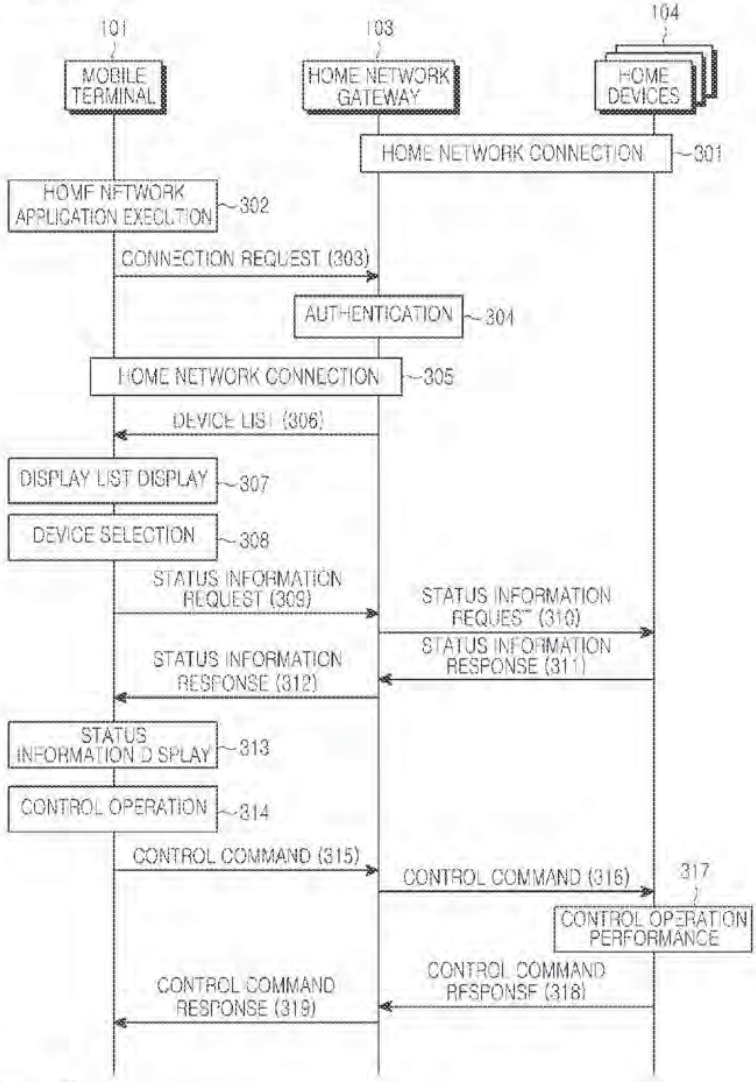
[Fig. 1]


104-4
104-5
104-8
104-3
REFRIGERATOR
AIR CONDITIONER
SECURITY CAMERA
FACSIMILE MACHINE
104-2
TV
103
HOME NETWORK GATEWAY
104-6
ILLUMINATION
104-1
PRINTER
104-7
DVD
102
EXTERNAL COMMUNICATION NETWORK
101
MOBILE TERMINAL

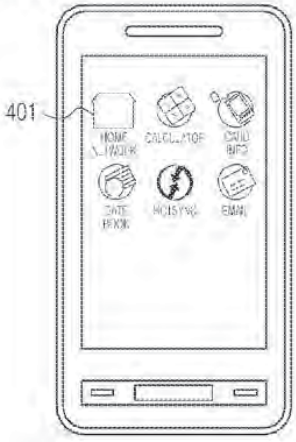
[Fig. 2]


101
202
COMMUNICATION UNIT
201
CONTROL UNIT
204
INPUT UNIT
203
DISPLAY UNIT
205
STORAGE UNIT
HOME NETWORK APPLICATION
206

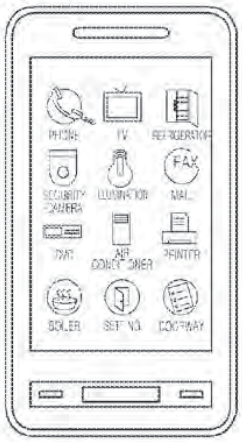
[Fig. 3]


101
MOBILE TERMINAL
103
HOME NETWORK GATEWAY
104
HOME DEVICES
HOME NETWORK CONNECTION
301
HOME NETWORK APPLICATION EXECUTION
302
CONNECTION REQUEST (303)
AUTHENTICATION
304
HOME NETWORK CONNECTION
305
DEVICE LIST (306)
DISPLAY LIST DISPLAY
307
DEVICE SELECTION
308
STATUS INFORMATION REQUEST (309)
STATUS INFORMATION REQUEST (310)
STATUS INFORMATION RESPONSE (311)
STATUS INFORMATION RESPONSE (312)
STATUS INFORMATION DISPLAY
313
CONTROL OPERATION
314
CONTROL COMMAND (315)
CONTROL COMMAND (316)
317
CONTROL OPERATION PERFORMANCE
CONTROL COMMAND RESPONSE (318)
CONTROL COMMAND RESPONSE (319)

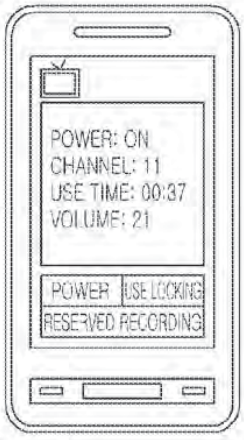
[Fig. 4]


401

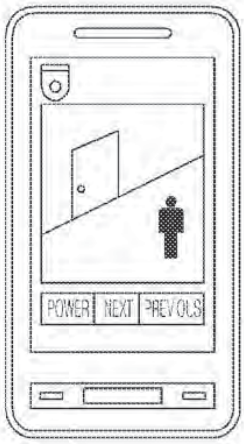
[Fig. 5]



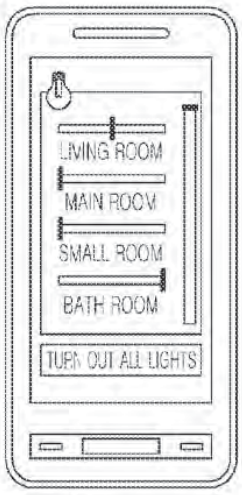
[Fig. 6]



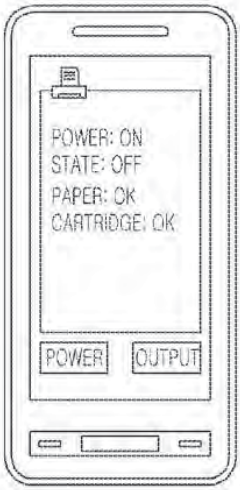
[Fig. 7]



[Fig. 8]


LIVING ROOM
MAIN ROOM
SMALL ROOM
BATH ROOM
TURN OUT ALL LIGHTS

[Fig. 9]


POWER: ON
STATE: OFF
PAPER: OK
CARTRIDGE: OK
POWER
OUTPUT

Electronic Acknowledgement Receipt

EFS ID:	25635381
Application Number:	14948927
International Application Number:	
Confirmation Number:	2406
Title of Invention:	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL
First Named Inventor/Applicant Name:	Paul D. Arling
Customer Number:	34018
Filer:	Gary R. Jarosik/Gladys Negron-Munoz
Filer Authorized By:	Gary R. Jarosik
Attorney Docket Number:	81230.155US9
Receipt Date:	29-APR-2016
Filing Date:	23-NOV-2015
Time Stamp:	12:08:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	TransmittalForm_14948927.pdf	146234 60898373c971352097c563c55564d2f04ec132b	no	1
Warnings:					
Information:					

2	Information Disclosure Statement (IDS) Form (SB08)	IDS_14948927.pdf	613387 86b900134f0bd7936f1cb6b90ccecea0cf612d8f	no	6
Warnings:					
Information:					
3	Non Patent Literature	NPL_extSR_155EP1.pdf	1757401 38a3a8f18edc87b526324eca0c7f4e032858 46a2	no	6
Warnings:					
Information:					
4	Non Patent Literature	NPL_extSR_155EP4.pdf	1861907 c1dcd6ae942ff27c10fc8412f97c5ef4691 4d0e6	no	8
Warnings:					
Information:					
5	Non Patent Literature	NPL_isrWO_62161_155pct.pdf	2215951 9db32962837e2178295c4e3f2789ca31170 7cec2	no	12
Warnings:					
Information:					
6	Non Patent Literature	NPL_isrWO38151.pdf	4322104 15b5524fc6d09821f412ce1a50349b9252b 0e773	no	10
Warnings:					
Information:					
7	Foreign Reference	ForeignRef_EP1722341.pdf	18387030 bb51bafc65ad4a9ca2ad192fa7451fceb2f86 2e0	no	17
Warnings:					
Information:					
8	Foreign Reference	ForeignRef_WO2011053008A2.pdf	18219864 41c2be612f40a7619391c4c8ff5da745f32d 5b22	no	18
Warnings:					
Information:					
		Total Files Size (in bytes):	47523878		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: TRAN.LET

Document Description: Transmittal Letter

PTO/SB/21 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	14/948,927
Filing Date	11/23/2015
First Named Inventor	Paul D. Arling
Art Unit	2687
Examiner Name	Aziz, Adnan
Attorney Docket Number	81230.155US9

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☑ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) _____
  - ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☑ Other Enclosure(s) (please identify below):
  - NPLs
  - foreign references

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Greenberg Traurig, LLP - Customer No. 34018		
Signature	/Gary R. Jarosik/		
Printed name	Gary R. Jarosik		
Date	April 29, 2016	Reg. No.	35,906

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature	/Gladys Negron-Munoz/		
Typed or printed name	Gladys Negron-Munoz	Date	April 29, 2016

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc Code: DIST.E.FILE **Document Description: Electronic Terminal Disclaimer - Filed**	PTO/SB/25 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A PROVISIONAL DOUBLE PATENTING REJECTION OVER A PENDING "REFERENCE" APPLICATION**
Application Number	14948927
Filing Date	23-Nov-2015
First Named Inventor	Paul Arling
Attorney Docket Number	81230.155US9
Title of Invention	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
Universal Electronics Inc.	100%

The owner(s) of percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending reference Application Number(s)

13657176 filed on 10/22/2012

13933877 filed on 07/02/2013

14036449 filed on 09/25/2013

as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the reference application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term of any patent granted on said reference application, "as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application," in the event that any such patent granted on the pending reference application: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as shortened by any terminal disclaimer filed prior to its grant.

◉ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request. ○ I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.	
Applicant claims the following fee status: ○ Small Entity ○ Micro Entity ◉ Regular Undiscounted I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.	
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◉ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application Registration Number 35906 ○ A sole inventor ○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ○ A joint inventor; all of whom are signing this request	
Signature	/Gary R. Jarosik/
Name	Gary R. Jarosik

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	14948927
Filing Date:	23-Nov-2015
Title of Invention:	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL
First Named Inventor/Applicant Name:	Paul D. Arling
Filer:	Gary R. Jarosik/Gladys Negron-Munoz
Attorney Docket Number:	81230.155US9

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	1814	1	160	160
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**160**

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 14948927

Filing Date: 23-Nov-2015

Applicant/Patent under Reexamination: Arling et al.

Electronic Terminal Disclaimer filed on October 19, 2016

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt	
EFS ID:	27261932
Application Number:	14948927
International Application Number:	
Confirmation Number:	2406
Title of Invention:	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL
First Named Inventor/Applicant Name:	Paul D. Arling
Customer Number:	34018
Filer:	Gary R. Jarosik/Gladys Negron-Munoz
Filer Authorized By:	Gary R. Jarosik
Attorney Docket Number:	81230.155US9
Receipt Date:	19-OCT-2016
Filing Date:	23-NOV-2015
Time Stamp:	15:05:09
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$160
RAM confirmation Number	102016INTEFSW00001613502428
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Electronic Terminal Disclaimer-Filed	eTerminal-Disclaimer.pdf	35212 f36b36bb4f96460456882497177330c733603e1dd4	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30433 32be984ad90ea27f7cae438ab40ee7e0019335790	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	65645		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/948,927	11/23/2015	Paul D. Arling	81230.155US9	2406

34018 7590 11/04/2016

GREENBERG TRAURIG, LLP
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732

EXAMINER
AZIZ, ADNAN

ART UNIT	PAPER NUMBER
2687	

NOTIFICATION DATE	DELIVERY MODE
11/04/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jarosikg@gtlaw.com
chiipmail@gtlaw.com
escobedot@gtlaw.com

Office Action Summary	Application No. 14/948,927	Applicant(s) ARLING ET AL.	
	Examiner ADNAN AZIZ	Art Unit 2687	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 November 2015*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-8* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-8* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *23 November 2015* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

4) ☐ Other: _____.

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

This office action is in response to application filed on 11/23/2015. Claims 1-8 are pending in the application.

Continuity Information

This application is a continuation of U.S. Application No. 13/933,877 filed on July 2, 2013 (now Patent No. 9,219,874), which claims the benefit of and is a continuation of U.S. Application No. 13/657,176, filed on October 22, 2012 (now Patent No. 9,215,394), which claims the benefit of U.S. Provisional Application No. 61/552,857, filed October 28, 2011, and U.S. Provisional Application No. 61/680,876, filed August 8, 2012.

Terminal Disclaimer

The terminal disclaimer filed on 10/19/2016 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of patent granted on Application No. 13657176 (filed on 10/22/2012), Application No. 13933877 (filed on 07/02/2013), and Application No. 14036449 (filed on 09/25/2013) has been reviewed and is accepted. The terminal disclaimer has been recorded.

Information Disclosure Statement

The Information Disclosure Statement (IDS) submitted on 04/29/2016, is in compliance with the provisions of 37 CFR 1.97 and has been considered.

Notice re prior art available under both pre-AIA and AIA

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 3-5 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Hayes et al. (U.S Patent No. 7,379,778 hereinafter "Hayes"), in view of Deng et al. (U.S Publication No. 2007/0165555 hereinafter referred to as "Deng").

As per claim 1, Hayes teaches a universal control engine (fig. 1: **control centric devices 14**; fig. 6: **control pod 650**), comprising: a processing device (fig. 2:

processor 24); and a memory device having stored thereon instructions executable by the processing device (fig. 2: **memory device [such as ROM memory 26, RAM memory 27, and/or a non-volatile memory 34]**),

the instructions, when executed by the processing device, causing the universal control engine to respond to a detected presence of an intended target appliance (fig. 1: **appliances 12 such as televisions, VCRs, DVRs, DVD players, game consoles etc.**) within a logical topography of controllable appliances (fig. 1: col. 2, line 52 to col. 3, line 62) which includes the universal control engine by using an identity associated with the intended target appliance to create a listing comprised of at least a first communication method and a second communication method different than the first communication method for use in controlling each of at least a first functional operation and a second functional operation of the controllable appliances (col. 7, line 19 to col. 8, line 26: **commands transmitted from the remote control may be prioritized for appliances that are determined to be in close proximity to the remote control**) and to respond to a received request from a controlling device (fig. 1, **remote controls 10**; fig. 6, **portable device 600**) intended to cause the intended target appliance to perform a one of the first and second functional operations (col. 5, line 64 to col. 6, line 30) by causing a one of a plurality of communication methods in the listing of communication methods to be used to transmit to the intended target appliance a command for controlling the requested one of the first and second functional operations of the intended target appliance. (col. 6, lines 17-54; col. 13, line 6 to col. 14, line 47; col. 15, line 40 to col. 16, line 55: **the remote control [or control pod or other control device]**

may utilize IR, RF, X-10, SCP or other communication protocols to send commands to the target appliances).

Hayes does not specifically disclose that the universal control engine causes a one of the first and second communication methods in the listing of communication methods that has been associated with the requested one of the first and second functional operations to be used to transmit to the intended target appliance a command for controlling the requested one of the first and second functional operations of the intended target appliance. In other words, Hayes does not disclose using one of the first and second communication method (e.g., via IR, RF, X-10, SCP, etc.) for controlling a corresponding one of the first and second functional operations (e.g., power off, volume up, adjusting channels, etc.) of a single intended target appliance. However, in the same field of endeavor, Deng teaches: a remote control causes a one of the first and second communication methods that has been associated with the requested one of the first and second functional operations to be used to transmit to the intended target appliance a command for controlling the requested one of the first and second functional operations of the intended target appliance (para. [0021], [0046-0048] and [0078-0079]: **activation of low power radio unit 116 exemplified by an infrared module [i.e., a first communication method] and high power transmitting unit 118 exemplified by an IEEE802.11 communication module [i.e., a second communication method] depends on characteristics of data to be transmitted by the radio unit 104. If there is not a big number of data to be transmitted for some operations such as operation for adjusting channels, volume and picture color of**

a TV [i.e., one of the first and second functional operations of the intended target appliance], there is no need to actuate the high speed transmission unit 118. In this case, the low power radio unit 116 [i.e., a first communication method] would be utilized to transmit corresponding control command to carry out the selected operation).

Hayes and Deng are considered to be analogous art because they relate to improved appliance control communication methods. Therefore, it would have been obvious to someone of ordinary skill in the art at the time of the claimed invention to modify the control centric device (universal control engine) of Hayes by including the feature of utilizing a plurality of communication methods to transmit the associated commands to a single intended target appliance such as taught by Deng, so that when the intended target appliance supports a plurality of communication methods/protocols, the control device may utilize an optimal communication method/protocol to perform communication with the intended target appliance.

As per claim 3, claim 1 is incorporated and the combination of Hayes and Deng teaches: wherein the instructions cause the universal control engine to initiate a detection of the presence of the intended target appliance within the logical topography of controllable appliances (Hayes, col. 7, line 19 to col. 8, line 26).

As per claim 4, claim 1 is incorporated and the combination of Hayes and Deng teaches: wherein data obtained from a communication exchanged via use of a

Bluetooth communication protocol is used by the universal control engine to detect the presence of the intended target appliance within the logical topography of controllable appliances (Hayes, col. 3, line 43 to col. 4, line 13; col. 14, lines 11-34 and col. 16, lines 23-40: **RF protocol such as Bluetooth**).

As per claim 5, claim 1 is incorporated and the combination of Hayes and Deng teaches: wherein the instruction cause the universal control engine to cause a prompt to be displayed in a display associated with the universal control engine in response to a detected presence of the intended target appliance within a logical topography of controllable appliances, the prompt requesting a user to provide data indicative of the identity associated with the intended target appliance (Hayes, col. 13, lines 6-64; fig. 6 and col. 14, line 48 to col. 15, line 15).

Claims 2 and 6-8 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Hayes in view of Deng, and further in view of Noda et al. (U.S Patent No. 6,968,399 hereinafter referred to as "Noda").

As per claim 2, claim 1 is incorporated and the combination of Hayes and Deng fails to teach using a highest prioritized one of the first and second communication methods in the listing of communication methods to transmit to the intended target appliance the command for controlling the requested one of the first and second functional operations of the intended target appliance. However, in the same field of

endeavor, Noda teaches: wherein an electronic device (figs. 1, 6, 8, 10: **device 1**) uses a highest prioritized one of the first and second communication methods in the listing of communication methods that has been associated with the requested one of the first and second functional operations to be used to transmit to the intended target appliance a command for controlling the requested one of the first and second functional operations of the intended target appliance (col. 5, line 2 to col. 6, line 32; col. 7, line 60 to col. 8, line 20; col. 19, lines 25-65).

Hayes, Deng and Noda are considered to be analogous art because they relate to improved appliance control communication methods. Therefore, it would have been obvious to someone of ordinary skill in the art at the time of the claimed invention to modify the invention taught by Hayes in view of Deng by including the feature of using a highest prioritized one of a communication method/protocol among the plurality of communication methods/protocols in transmitting the associated command to the target appliance such as taught by Noda, so that when the target appliance supports a plurality of communication protocols, by stating the order of priority thereof, the optimal communication protocol can be used to perform communication (Noda, col. 8, lines 16-20).

As per claim 6, claim 2 is incorporated and the combination of Hayes, Deng and Noda teaches: wherein the instructions cause the universal control engine to use at least one characteristic associated with each of the plurality of communication methods

in the listing to prioritize the first and second communication methods in the listing (Noda, col. 5, line 43 to col. 6, line 5).

As per claim 7, claim 1 is incorporated and the combination of Hayes and Deng fails to teach interrogating the intended target appliance to determine which of a plurality of communication methods are supported by the appliance to create the listing. However, Noda teaches initiating an interrogation of the intended target appliance to determine which of a plurality of communication methods are supported by the appliance for use in receiving a command for controlling at least one of the first and second functional operations and using results obtained from the interrogation to create the listing (Noda, fig. 7 and col. 7, line 41 to col. 8, line 20). It would have been obvious to someone of ordinary skill in the art at the time of the claimed invention to modify the invention taught by Hayes in view of Deng by including the feature of interrogating the intended target appliance to determine which of a plurality of communication methods are supported by the appliance to create the listing of communication methods such as taught by Noda, so that on determining (based on the result of interrogation) that the target appliance supports a plurality of communication protocols, a prioritized list of communication methods may be created for the intended target appliance and one of the optimal communication protocols may be subsequently used to send commands for controlling one of the functional operations of the intended target appliance (Noda, col. 8, lines 16-20).

As per claim 8, claim 1 is incorporated and the combination of Hayes and Deng fails to teach initiating a test communication with the intended target appliance via use of at least one test communication method and omitting the at least one test communication method from the listing of communication methods when the at least one test communication method fails to elicit a performance by the intended target appliance of the at least one of the first and second functional operations. However, Noda teaches initiating a transmission of a test communication for controlling at least one of the first and second functional operations of the intended target appliance via use of at least one test communication method and to cause the device to omit the at least one test communication method from the listing of communication methods for use in controlling the at least one of the first and second plurality of functional operations of the intended target appliance when the at least one test communication method fails to elicit a performance by the intended target appliance of the at least one of the first and second functional operations (col. 7, line 41 to col. 8, line 10 and col. 19, lines 18-53). It would have been obvious to someone of ordinary skill in the art at the time of the claimed invention to modify the invention taught by Hayes in view of Deng by including the feature of performing a test communication with the intended target appliance such as taught by Noda, so that based on the result of the test communication, the control device may determine the communication methods/protocols supported by the target device and may subsequently use one of the supported protocols while sending the command for controlling one of the functional operations of the target device.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to PTO-892, Notice of References Cited for a listing of analogous art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADNAN AZIZ whose telephone number is (571) 270-7536, (Fax: 571-270-8536). The examiner can normally be reached on Monday - Friday (9am - 6pm Eastern Time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, FIRMIN BACKER can be reached on 571-272-6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ADNAN AZIZ/
Examiner, Art Unit 2687

/FIRMIN BACKER/
Supervisory Patent Examiner, Art Unit 2687

Examiner-Initiated Interview Summary	Application No.	Applicant(s)	
	14/948,927	ARLING ET AL.	
	Examiner	Art Unit	
	ADNAN AZIZ	2687	

All participants (applicant, applicant's representative, PTO personnel):

(1) *ADNAN AZIZ*. (3)_____,

(2) *Gary Jarosik*. (4)_____,

Date of Interview: *18 October 2016*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *none*.

Identification of prior art discussed: *n/a*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

The Examiner contacted Applicant's representative to discuss a potential nonstatutory obviousness-type double patenting rejection in this application and requested to file a terminal disclaimer disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of patent granted on Application No. 13657176 (filed on 10/22/2012), Application No. 13933877 (filed on 07/02/2013), and Application No. 14036449 (filed on 09/25/2013). It is noted that an electronic terminal disclaimer has been filed on 10/19/2016. The terminal disclaimer has been accepted and recorded.

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/ADNAN AZIZ/ Examiner, Art Unit 2687	/FIRMIN BACKER/ Supervisory Patent Examiner, Art Unit 2687

Notice of References Cited	Application/Control No. 14/948,927	Applicant(s)/Patent Under Reexamination ARLING ET AL.	
	Examiner ADNAN AZIZ	Art Unit 2687	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2007/0165555 A1	07-2007	Deng; Guoshun	G08C23/04	370/318
*	B	US-2006/0116148 A1	06-2006	Bahl; Pradeep	H04W28/18	455/517
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Receipt date: 04/29/2016 14948927 - GAU: 2687

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	14948927
Filing Date	2015-11-23
First Named Inventor	Paul D. Arling
Art Unit	2687
Examiner Name	Aziz, Adnan
Attorney Docket Number	81230.155US9

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7379778	B2	2008-05-27	Hayes et al.	
	2	7589642	B1	2009-09-15	Mui	
	3	8373556		2013-02-12	LaLonde et al.	
	4	6529556		2003-03-04	Perdue et al.	
	5	7519393		2009-04-14	Bahl et al.	
	6	6968399		2005-11-22	Noda et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.A./

EFS Web 2.1.0

Receipt date: 04/29/2016	Application Number	14948927	14948927 - GAU: 2687
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Filing Date	2015-11-23	
(Not for submission under 37 CFR 1.99)	First Named Inventor	Paul D. Arling	
	Art Unit	2687	
	Examiner Name	Aziz, Adnan	
	Attorney Docket Number	81230.155US9	

	1	20100134317	A1	2010-06-03	Breuil et al.	
	2	20120330943		2012-12-27	Weber et al.	
	3	20120291128		2012-11-15	Jayawardena et al.	
	4	20110273287		2011-11-10	LaLonde et al.	
	5	20110289113		2011-11-24	Arling et al.	
	6	20100138764		2010-06-03	Hatambeiki et al.	
	7	20120242526		2012-09-27	Perez et al.	
	8	20040210933		2004-10-21	Dresti et al.	
	9	20030095156		2003-05-22	Klein et al.	
	10	20080005764		2008-01-03	Arling et al.	
	11	20060168618	A1	2006-07-27	Choi	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.A./

Ex. Initials

Receipt date: 04/29/2016

14948927 - GAU: 2687

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	14948927
Filing Date	2015-11-23
First Named Inventor	Paul D. Arling
Art Unit	2687
Examiner Name	Aziz, Adnan
Attorney Docket Number	81230.155US9

	12	20090239587		2009-09-24	Negron et al.	
	13	20120249890		2012-10-04	Chardon et al.	
	14	20120274547		2012-11-01	Raeber et al.	
	15	20120278693		2012-11-01	Black et al.	
	16	20140085059	A1	2014-03-27	Chen et al.	
	17	20060227032	A1	2006-10-12	Vidal	
	18	20130107131	A1	2013-05-02	Barnett et al.	
	19	20040163073	A1	2004-08-19	Krzyzanowski et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number3	Country Code2 i	Kind Code4	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T5
	1	1722341	EP	A1	2006-11-15	Netac Technology Co Ltd		

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.A./

Receipt date: 04/29/2016	Application Number	14948927 14948927 - GAU: 2687
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Filing Date	2015-11-23
(Not for submission under 37 CFR 1.99)	First Named Inventor	Paul D. Arling
	Art Unit	2687
	Examiner Name	Aziz, Adnan
	Attorney Docket Number	81230.155US9

	2	2011/053008	WO	A2	2011-05-05	Samsung Electronics Co Ltd		

If you wish to add additional Foreign Patent Document citation information please click the Add button **Add**

NON-PATENT LITERATURE DOCUMENTS **Remove**

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T5
	1	ISA/US, Int. Search Report and Written Opinion of the Int. Searching Authority issued on Int. Appln. No. PCT/US12/62161, received Jan. 23, 2013, 12 pages	
	2	ISA/US, Int. Search Report and Written Opinion of the Int. Searching Authority issued on Int. Appln. No. PCT/US14/38151, received June 27, 2014, 10 pages	
	3	EUROPEAN PATENT OFFICE, extended European Search Report issued on European patent application number 12844121.9, dated March 5, 2015, 6 pages	
	4	EUROPEAN PATENT OFFICE, extended European Search Report issued on European patent application number 14801064.8, dated 4/16/2016, 8 pages	

If you wish to add additional non-patent literature document citation information please click the Add button **Add**

EXAMINER SIGNATURE

Examiner Signature	/Adnan Aziz/ (10/26/2016)	Date Considered	10/26/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.A./

Receipt date: 04/29/2016	Application Number	14948927	14948927 - GAU: 2687
INFORMATION DISCLOSURE STATEMENT BY APPLICANT **(Not for submission under 37 CFR 1.99)**	Filing Date	2015-11-23	
	First Named Inventor	Paul D. Arling	
	Art Unit	2687	
	Examiner Name	Aziz, Adnan	
	Attorney Docket Number	81230.155US9	

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

X That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Gary R. Jarosik/	Date (YYYY-MM-DD)	2016-04-29
Name/Print	Gary R. Jarosik	Registration Number	35906

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.A./

EFS Web 2.1.17

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.A./

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	30	((Brian) near2 (Barnett)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 14:58
S2	194	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 14:59
S3	129	S2 and ((remote adj control) (universal adj remote adj control) with (plurality multiple different) with (communication adj method$1) with (prioritiz$3))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:10
S4	1	S3 and ((communication adj method$1) with (prioritized adj list$4))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:12
S5	58	S3 and ((interrogat$3) near10 (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:15
S6	2	S5 and (prioritiz$3 with list$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:15
S7	721	(Universal adj Electronics adj Inc).AS.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:25
S8	600	S7 and ((remote adj control) (universal adj remote adj control) with (plurality multiple different) with (communication adj method$1) with (prioritiz$3))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:26
S9	275	S8 and ((interrogat$3) near10 (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:26
S10	1	S9 and (prioritiz$3 with list$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:26

S11	13	S9 and (prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:29
S12	295	(340/12.53).ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:35
S13	1	S12 and ((universal adj remote adj control) (programmable adj remote adj control) (universal adj control adj engine) (UCE)) and (smart adj phone) (control$6 adj deice) and (appliance or (media adj center) or (home adj theater)) and prioritiz$3	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:39
S14	348	((universal adj remote adj control) (programmable adj remote adj control) (universal adj control adj engine) (UCE)) and (smart adj phone) (control$6 adj deice) and (appliance or (media adj center) or (home adj theater)) and prioritiz$3	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:40
S15	12	S14 and ((codeset$1) (codeset adj data) (codeset adj identifier) with (command adj data))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:41
S16	9100	(340/572.1).ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:43
S17	341	S16 and ((remote adj control) (universal adj remote adj control) with (plurality multiple different) with (communication adj method$1) with (prioritiz$3))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:43
S18	16	S17 and ((interrogat$3) near10 (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:44
S19	99	("20030076240" | "20040203592" | "20050035846" | "20050138785" | "20050242167" | "4623887" | "4894789" | "4959810" | "5005084" | "5101191" | "5109222" | "5293357" | "5307055" | "5410326" | "5481256" | "5552806" | "5565888" | "5574964" | "5614906" | "5635989" | "5642303" | "5648760" | "5652613" | "5671267" | "5710605" | "5724106" | "5751372" | "5761606" | "5767919" | "5793438" | "5801787" | "5828419" | "5835864" | "5838775" | "5855006" | "5900875" | "5901366" | "5910776" | "5915026" | "5938757" | "5956025" | "5959751" | "5970206" | "5974222" | "6002394" | "6002450" | "6014092" | "6018372" |	US-PGPUB; USPAT; USOCR	OR	ON	2014/04/26 15:47

		"6020881" | "6028599" | "6040829" | "6097441" | "6104334" | "6127941" | "6130726" | "6133909" | "6137549" | "6151059" | "6172674" | "6177931" | "6195589" | "6211856" | "6219694" | "6225938" | "6256019" | "6278499" | "6285357" | "6341374" | "6369840" | "6408435" | "6437836" | "6448886" | "6463463" | "6466971" | "6532589" | "6563430" | "6577350" | "6587067" | "6753790" | "6774811" | "6792323" | "6823188" | "6832251" | "6996402").PN. OR ("7379778").URPN.				
S20	14	S19 and ((interrogat$3) near10 (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:48
S21	0	S20 and (prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:48
S22	78	S19 and ((remote adj control) (universal adj remote adj control) with (plurality multiple different) with (communication adj method$1) with (prioritiz$3))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:48
S23	13	S22 and ((interrogat$3) near10 (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:49
S24	386366	((remote adj control) (universal adj remote adj control) with (wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI) with (transmit$4) with (command$1) with (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:04
S25	6715	S24 and (prioritiz$3) (highest adj prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:04
S26	553	S25 and ((wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:05
S27	29	S26 and interrogat$3	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:05
S28	29	S27 and prioritiz$3	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:06

S29	7691	(340/10.1).ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:12
S30	346	S29 and ((remote adj control) (universal adj remote adj control) with (wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI) with (transmit$4) with (command$1) with (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:12
S31	407	S30 and (prioritiz$3) (highest adj prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:12
S32	5	S31 and ((wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:13
S33	2780	(348/734).ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:15
S34	2223	S33 and ((remote adj control) (universal adj remote adj control) with (wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI) with (transmit$4) with (command$1) with (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:16
S35	247	S34 and ((wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:16
S36	2	S35 and (highest adj prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:16
S37	8	S35 and (prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:17
S38	420	(348/E05.096).ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:22
S39	19	S38 and ((wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO;	OR	ON	2014/04/26 16:23

			DERWENT			
S40	347	((universal adj remote adj control) (programmable adj remote adj control) (universal adj control adj engine) (UCE)) and (smart adj phone) (control$6 adj deice) and (appliance or (media adj center) or (home adj theater)) and interrogat$3 same prioritiz$3	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:24
S41	73	S40 and ((wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:24
S42	9	S41 and (prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:26
S43	47	universal adj remote adj control and appliance$1 and prioritize$1	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:29
S44	6	S43 and ((wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:30
S45	7	((remote adj control) with (transmit$3) with (command$1) with (prioritize$1) with (appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:34
S46	5	((remote adj control) with (macro adj command$1) with (multiple adj command adj protocol$1) with (control$4) with (appliance$1) with (function$1) (functional adj operation$1) with (prioritiz$3))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 17:33
S47	7	((remote adj control$1) with (macro adj command$1) and (multiple adj command adj protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 17:37
S48	3792	(G08C2201/20) or (G08C2201/21) or (G08C2201/33) or (G08C2201/40) or (G08C2201/41) or (G08C2201/91).cpc.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:22
S49	216	S48 and ((remote adj control$1) with (multiple plural$3 different) with(command) (communication) with (protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:33
S50	32	S49 and (macro near5 command$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:34

S51	5	S50 and (prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:34
S52	12809	(H04L12/281) or (H04L12/282) or (H04L12/2814) or (H04L12/2818) or (H04L12/2803) or (H04L12/2809).cpc.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:40
S53	1105	S52 and ((remote adj control$1) with (multiple plural$3 different) with(command) (communication) with (protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:40
S54	37	S53 and (macro near5 command$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:40
S55	5	S54 and (prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:41
S56	1242	S52 and ((remote adj control) (universal adj remote adj control) with (wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI) with (transmit$4) with (command$1) with (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:41
S57	69	S56 and ((bi-directional) (bi adj directional) near10 (communication adj protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:45
S58	0	S57 and ((prioritiz$5) with (list matrix protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:46
S59	8	S57 and (prioritiz$5)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:46
S60	179921	((bi-directional) (bi adj directional) near10 (communication adj protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:50
S61	1062	S60 and ((prioritiz$5) with (list matrix protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:50
S62	1062	S61 and (prioritiz$5)	US-PGPUB; USPAT;	OR	ON	2014/04/30 12:51

			FPRS; EPO; JPO; DERWENT			
S63	3	S62 and (macro near5 command$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:51
S64	612	S62 and ((remote adj control$1) with (multiple plural$3 different) with(command) (communication) with (protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:52
S65	174	S64 and ((remote adj control) (universal adj remote adj control) with (wireless adj IR) (IR adj signal$1) (infrared) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI) with (transmit$4) with (command$1) with (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:55
S66	174	S65 and ((bi-directional) (bi adj directional) with (communication adj protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:56
S67	174	S66 and (prioritiz$5)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:56
S68	2	S67 and (macro near5 command$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 13:07
S69	73043	(G08C17/02) or (G08C19/28) or (G08C23/04) or (G05B15/02).cpc.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 13:09
S70	433	S69 and ((bi-directional) (bi adj directional) near10 (communication adj protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 13:11
S71	115	S70 and ((remote adj control$1) with (multiple plural$3 different) with(command) (communication) with (protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 13:11
S72	19	S71 and (prioritiz$5)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 13:12
S73	37	((Brian) near2 (Barnett)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO;	OR	ON	2014/11/10 16:32

			DERWENT			
S74	223	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 16:52
S75	21	S74 and ((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 17:10
S76	19	S75 and (multiple plural$3 different appropriate) same ((command) (communication) near10 (protocol$1 format$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 17:18
S77	162	((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 17:30
S78	120	S77 and (multiple plural$3 different appropriate) same ((command) (communication) near10 (protocol$1 format$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 17:31
S79	101	S78 not S74	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 17:31
S80	96	S79 and (@ad<"20111028" @rlad<"20111028")	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 17:33
S81	10	S80 and (prioritiz$5)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 18:30
S82	162	((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/12 11:35
S83	2	S82 and ((interrogat$3 poll$3 quer$3 inquir$3) near10 (target intended controllable) near4 (appliance$1 device$1)) same ((command communication) near12 (protocol$1 format$1 method$1 technique$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/12 11:35
S84	1	((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device)) same((interrogat$3 poll$3 quer$3 inquir$3) near10 (target intended controllable) near4	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/12 11:39

		(appliance$1 device$1)) same ((command communication) near12 (protocol$1 format$1 method$1 technique$1))				
S85	68	((control$4 smart portable remote) near3 (device apparatus control)) same ((interrogat$3 poll$3 quer$3 inquir$3) near10 (target intended controllable) near4 (appliance$1 device$1)) same ((command communication) near12 (protocol$1 format$1 method$1 technique$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/12 11:41
S86	136	protocol near2 list$4 same protocol near5 priority	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/12 17:40
S87	4	S86 and (remote near2 control$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/12 17:40
S88	234	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 16:32
S89	24	S88 and ((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 16:34
S90	15	((Ramzi) near2 (Ammari)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 17:12
S91	71	((Arsham) near2 (Hatambeiki)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 17:17
S92	5	S91 and ((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 17:47
S93	2609	((Graham) near2 (Williams)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 17:51
S94	1	S93 and ((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 17:51

S95	247	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/05/22 17:08
S96	895	((Patrick) near2 (Hayes)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/05/22 17:17
S97	35	S96 and ((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device) (UCE) (universal adj control adj engine))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/05/22 17:18
S98	2	"8154381".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2015/06/14 22:19
S99	18	("20020089427" | "20020194596" | "20040070491" | "20040148632" | "20050102699" | "20060041655" | "20060161865" | "20070229465" | "4623887" | "4774511" | "4959810" | "7102616" | "7155305" | "7167122" | "7394451").PN. OR ("8154381").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/06/14 22:19
S100	14	S99 and (multiple plural$3 different various several many appropriate) same ((command) (communication) near10 (protocol$1 format$1 method$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2015/06/14 22:23
S101	69	((select$4) near6 (command$1 or operation$1)) with ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/06 19:02
S102	1	("2004/0255056").URPN.	USPAT	OR	ON	2015/07/06 19:03
S103	38	("20020120874" | "20020124094" | "20030099286" | "20030128669" | "20030204606" | "20040071101" | "20040255056" | "5068838" | "5375018" | "5430727" | "5491691" | "5887263" | "5889470" | "6396531" | "6532229" | "6535504" | "6564066" | "6594715" | "6650658" | "6668041" | "6801570" | "6876725" | "6952430" | "6970501" | "6987754" | "7027405" | "7203725" | "7212536" | "7263174" | "7302698" | "7359434" | "7388945" | "7391780" | "7418513" | "7478031" | "7584295" | "7668959" | "8108500").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/07/06 19:03
S104	1	((bridge control$4 relay intermediate)	US-PGPUB;	OR	ON	2015/07/21

		near6 (device engine)) same ((select$4 choos$3 pick$2 elect$4) near6 (command$1 or operation$1)) with ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	USPAT; FPRS; EPO; JPO; DERWENT			22:42
S105	19	((bridge control$4 relay intermediate) near6 (device engine)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) with ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 22:47
S106	305	((bridge control$4 relay intermediate) near6 (device engine)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 23:02
S107	171	S106 and (priori$8 or priorit$3 or prefer$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 23:03
S108	23	S106 and ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 23:03
S109	84	((bridge control$4 relay intermediate) near6 (device engine)) same ((select$4) near6 (command$1 or operation$1)) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 23:11
S110	61	((bridge control$4 relay intermediate) near6 (device engine)) same (issue transmit$4 select$4) with ((both) near6 (IR and RF))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 23:21
S111	0	(issue transmit$4 select$4) with ((both) near6 (IR and RF)) same ((single intended) near4 (appliance target adj appliance))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 23:38
S112	12	(issue transmit$4 select$4) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 23:40

		one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1)) same ((single intended) near4 (appliance target adj appliance))				
S113	1	(remote adj control$4) with ((select$4) near6 (command$1 or operation$1)) with ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/08/06 23:26
S128	24	((volume) near8 (IR CEC)) same ((power) near8 (RF CEC HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/08/07 14:57
S129	269	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2015/12/01 20:44
S130	34	S129 and ((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/12/01 20:44
S131	50	((Brian) near2 (Barnett)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2015/12/01 20:47
S132	60	((Dan) near2 (McKay)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2015/12/01 20:50
S141	323	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:11
S142	45	S141 and ((bridge control$4 relay intermediate set-top set adj top) near8 (device engine appliance box unit)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) same ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:13

S143	13	S141 and ((volume) near8 (IR CEC)) same ((power) near8 (RF CEC HDMI))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:29
S144	18	((Ramzi) near2 (Ammari)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:38
S145	118	((Arsham) near2 (Hatambeiki)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:40
S146	10	S145 and ((bridge control$4 relay intermediate set-top set adj top) near8 (device engine appliance box unit)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) same ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:41
S147	2895	((Graham) near2 (Williams)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:44
S148	3	S147 and ((bridge control$4 relay intermediate set-top set adj top) near8 (device engine appliance box unit)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) same ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:44
S149	25	("20030095156" | "20040163073" | "20040210933" | "20060168618" | "20060227032" | "20080005764" | "20090239587" | "20100134317" | "20100138764" | "20110273287" | "20110289113" | "20120242526" | "20120249890" | "20120274547" | "20120278693" | "20120291128" | "20120330943" | "20130107131" | "20140085059" | "6529556" | "6968399" | "7379778" | "7519393" | "7589642" | "8373556").PN.	US-PGPUB; USPAT	OR	ON	2016/10/26 18:58
S150	120	((bridge control$4 relay intermediate settop set-top set adj top) near8	US-PGPUB; USPAT;	OR	ON	2016/10/26 19:22

		(device engine appliance box unit)) same (issue transmit$4 select$4) with (both) with IR with RF	USOCR; FPRS; EPO; JPO; DERWENT			

10/28/2016 5:37:07 PM
C:\Users\aaziz\Documents\EAST\Workspaces\Case56-13657176-S&M for Optimized Appliance Ctrl.wsp

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 2406

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/948,927	11/23/2015 RULE	340	2687	81230.155US9

APPLICANTS
Universal Electronics Inc., Santa Ana, CA;

INVENTORS
Paul D. Arling, Irvine, CA;
Ramzi Ammari, Newport Coast, CA;
Arsham Hatambeiki, Irvine, CA;
Graham Williams, Corona Del Mar, CA;

**** CONTINUING DATA ***************************
This application is a CON of 13/933,877 07/02/2013 PAT 9219874
which is a CON of 13/657,176 10/22/2012 PAT 9215394
which claims benefit of 61/552,857 10/28/2011
and claims benefit of 61/680,876 08/08/2012

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****
12/04/2015

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /ADNAN AZIZ/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CA	13	8	1

ADDRESS
GREENBERG TRAURIG, LLP
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732
UNITED STATES

TITLE
SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL

FILING FEE RECEIVED		
1600	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14948927	ARLING ET AL.
	Examiner	**Art Unit**
	ADNAN AZIZ	2687

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/28/2016								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14948927	ARLING ET AL.
	Examiner	Art Unit
	ADNAN AZIZ	2687

CPC- SEARCHED		
Symbol	Date	Examiner
G08C2201/20,21,33,40,41,91	04/30/2014	AA
H04L12/281,282,2814,2818,2803,2809	04/30/2014	AA

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
inventor name search (updated from parent App. No 13933877 and 13657176)	10/26/2016	AA
east search notes attached (updated from parent App. No 13933877 and 13657176)	10/26/2016	AA

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

/A.A./ Examiner.Art Unit 2687	

UNITED STATES PATENT AND TRADEMARK OFFICE
COMMISSIONER FOR PATENTS
P.O.BOX 1450
ALEXANDRIA VA 22313-1451

PRESORTED
FIRST-CLASS MAIL
U.S. POSTAGE PAID
POSTEDIGITAL
NNNNN

GREENBERG TRAURIG, LLP
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732

Courtesy Reminder for
Application Serial No: 14/948,927

Attorney Docket No: 81230.155US9
Customer Number: 34018
Date of Electronic Notification: 11/04/2016

This is a courtesy reminder that new correspondence is available for this application. If you have not done so already, please review the correspondence. The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

An email notification regarding the correspondence was sent to the following email address(es) associated with your customer number:

jarosikg@gtlaw.com
chiipmail@gtlaw.com
escobedot@gtlaw.com

To view your correspondence online or update your email addresses, please visit us anytime at **https://sportal.uspto.gov/secure/myportal/privatepair.** If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov or call 1-866-217-9197.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Arling	) Examiner:	Aziz, Adnan
		)	
Application No.:	14/948,927	) Attny Doc.:	81230.155US9
		)	
Filing Date:	November 23, 2015	) Art Unit:	2687
		)	
Title:	System And Method For Optimized Appliance Control	)	

RESPONSE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action dated November 4, 2016, please consider the Remarks which begin on page 2 of this paper.

The Commissioner is authorized to charge any fee deficiency to deposit account number 50-2428 in the name of Greenberg Traurig, LLP.

Certificate of Electronic Transmission: I hereby certify that this document and its attachments are being electronically transmitted to the U.S. Patent and Trademark Office via EFS-Web on this 31st day of January, 2017.

/Gladys Negron-Munoz/
Gladys Negron-Munoz

CHI 67918269v1

REMARKS

In the application claims 1-8 remain pending.

The pending claims stand rejected under 35 U.S.C. § 103 as being unpatentable over Hayes (US 7,379,778) in view of Deng (US 2007/0165555).

The reconsideration of this rejection is requested.

In the Office Action it was asserted that Hayes discloses "using an identity associated with the intended target appliance to create a listing comprised of at least a first communication method and a second communication method different than the first communication method for use in controlling each of at least a first functional operation and a second functional operation of the controllable appliance." Based upon this purported disclosure within Hayes, it was asserted that the claims are rendered obvious under 35 U.S.C. § 103.

Turning now to Hayes, it is respectfully submitted that Hayes does not disclose, teach, or suggest using an identity associated with an intended target appliance to create a listing comprised of at least a first communication method and a second communication method different than the first communication method for use in controlling each of at least a first functional operation and a second functional operation of the controllable appliance as relied upon in rejecting the claims at issue.

As correctly noted in the Office Action, Hayes discloses a system in which a remote control uses location data to determine which command code sets to use when transmitting commands to one or more appliances. Specifically, Hayes discloses that commands transmitted from the remote control may be prioritized for appliances [in the plural] that are determined to be in close proximity to the remote control at any given time. (Col. 8, lines 13-26). Nowhere does Hayes disclose, teach, or suggest that the identity of an appliance is used to create a listing

wherein a first communication method and a second communication method are identified for use in controlling *each of* a first functional operation and a second functional operation of that identified appliance as claimed. That Hayes fails to disclose this claimed "creation" aspect is particularly evidenced by the acknowledgement in the Office Action that Hayes does not disclose using a created listing such that a one of the first and second communication methods that has been associated with the requested one of the first and second functional operations is used to transmit to the intended target appliance a command for controlling the requested one of the first and second functional operations. (OA, pg. 5). In short, while Hayes may generally disclose that the remote control may use one of first and second communication protocols, such as IR, RF, X-10, SCP, etc., to transmit commands to appliances as asserted, Hayes does not disclose, teach, or suggest *using an identify of an appliance to create a listing* wherein at least two of such communication protocols, such as IR, RF, X-10, SCP, etc, are identified for use in controlling each of first and second functional operations of the identified appliance as claimed.

Thus, because Hayes does not disclose using an identify of an appliance to create the claimed listing as relied upon in rejecting the claims at issue, it is respectfully submitted that the rejection of the claims under 35 U.S.C. § 103 must be withdrawn.

Turning now to Deng, it is respectfully submitted that Deng also fails to disclose, teach, or suggest using an identify of an appliance to create a listing as claimed. Rather, Deng describes that a remote control may transmit communications to any appliance using one of a low power unit or a high power unit. In Deng, the one of the low power unit or the high power unit is selected for use based upon a characteristic of the data to be transmitted without regard to any identity of the intended target device. (¶¶ 0021, 0046-0048, 0078, and 0079). Thus, because Deng also fails to disclose, teach, or suggest using an identity of an appliance *to create a listing*

as claimed, it is respectfully submitted that nothing within Deng can be said to suggest modifying Hayes to arrive at the exact invention claimed. For this further reason it is respectfully submitted that the rejection of the claims under 35 U.S.C. § 103 must be withdrawn.

Conclusion

Based upon the foregoing, it is respectfully submitted that the rejection of the claims under 35 U.S.C. § 103 must be withdrawn.

Applicant reserves the right to argue that one or more of the dependent claims are also allowable over the art of record. Such arguments have not been presented herein for the sake of brevity as it is believed that independent claim 1 should be found to allowable in the first instance.

Respectfully Submitted;

/Gary Jarosik/

Date: January 31, 2017

By: Gary R. Jarosik, Reg. No. 35,906
Greenberg Traurig, LLP
77 West Wacker Drive, Suite 3100
Chicago, Illinois 60601
(312) 456-8449

Electronic Acknowledgement Receipt

EFS ID:	28220035
Application Number:	14948927
International Application Number:	
Confirmation Number:	2406
Title of Invention:	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL
First Named Inventor/Applicant Name:	Paul D. Arling
Customer Number:	34018
Filer:	Gary R. Jarosik/Gladys Negron-Munoz
Filer Authorized By:	Gary R. Jarosik
Attorney Docket Number:	81230.155US9
Receipt Date:	31-JAN-2017
Filing Date:	23-NOV-2015
Time Stamp:	15:15:46
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	TransmittalForm_14948927.pdf	186508 3a99253fa8a89fde85e2a38c9162ea7fce1d da06	no	2

Warnings:

Information:					
2		RespOA_uei_155us9_14948927.pdf	120419 e62282f1c6c31ec7b9ccc565e7f29e47d5910e4	yes	4

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Applicant Arguments/Remarks Made in an Amendment	2	4

Warnings:	
Information:	
Total Files Size (in bytes):	306927

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: TRAN.LET

Document Description: Transmittal Letter

PTO/SB/21 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	14/948,927
Filing Date	11/23/2015
First Named Inventor	Paul D. Arling
Art Unit	2687
Examiner Name	Aziz, Adnan
Attorney Docket Number	81230.155US9

Total Number of Pages in This Submission

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☑ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) _____
  - ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☐ Other Enclosure(s) (please identify below):

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Greenberg Traurig, LLP - Customer No. 34018		
Signature	/Gary R. Jarosik/		
Printed name	Gary R. Jarosik		
Date	January 31, 2017	Reg. No.	35,906

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature	/Gladys Negron-Munoz/		
Typed or printed name	Gladys Negron-Munoz	Date	January 31, 2017

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Doc Code: DIST.E.FILE Document Description: Electronic Terminal Disclaimer - Filed	PTO/SB/25 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A PROVISIONAL DOUBLE PATENTING REJECTION OVER A PENDING "REFERENCE" APPLICATION**
Application Number	14948927
Filing Date	23-Nov-2015
First Named Inventor	Paul Arling
Attorney Docket Number	81230.155US9
Title of Invention	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
Universal Electronics Inc.	100%

The owner(s) of percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending reference Application Number(s)

14936977 filed on 11/10/2015

as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the reference application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term of any patent granted on said reference application, "as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application," in the event that any such patent granted on the pending reference application: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as shortened by any terminal disclaimer filed prior to its grant.

◉ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.

○ I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.	
Applicant claims the following fee status: ○ Small Entity ○ Micro Entity ◉ Regular Undiscounted I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.	
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◉ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application Registration Number 35906 ○ A sole inventor ○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ○ A joint inventor; all of whom are signing this request	
Signature	/Gary R. Jarosik/
Name	Gary R. Jarosik

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	14948927
Filing Date:	23-Nov-2015
Title of Invention:	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL
First Named Inventor/Applicant Name:	Paul D. Arling
Filer:	Gary R. Jarosik/Gladys Negron-Munoz
Attorney Docket Number:	81230.155US9

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	1814	1	160	160
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	160

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 14948927

Filing Date: 23-Nov-2015

Applicant/Patent under Reexamination: Arling

Electronic Terminal Disclaimer filed on March 10, 2017

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt	
EFS ID:	28598290
Application Number:	14948927
International Application Number:	
Confirmation Number:	2406
Title of Invention:	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL
First Named Inventor/Applicant Name:	Paul D. Arling
Customer Number:	34018
Filer:	Gary R. Jarosik/Gladys Negron-Munoz
Filer Authorized By:	Gary R. Jarosik
Attorney Docket Number:	81230.155US9
Receipt Date:	10-MAR-2017
Filing Date:	23-NOV-2015
Time Stamp:	15:53:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$160
RAM confirmation Number	031317INTEFSW00002390502428
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Electronic Terminal Disclaimer-Filed	eTerminal-Disclaimer.pdf	33941 7951b78587363a7440a34d9ed708dd5cef89e4ef	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30429 0d2de45206da4c707fb601d88dbb20e99b78ac6b	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	64370		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

34018 7590 03/21/2017

GREENBERG TRAURIG, LLP
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732

EXAMINER	
AZIZ, ADNAN	
ART UNIT	PAPER NUMBER
2687	

DATE MAILED: 03/21/2017

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/948,927	11/23/2015	Paul D. Arling	81230.155US9	2406

TITLE OF INVENTION: SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	06/21/2017

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

34018 7590 03/21/2017
GREENBERG TRAURIG, LLP
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/948,927	11/23/2015	Paul D. Arling	81230.155US9	2406

TITLE OF INVENTION: SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	06/21/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
AZIZ, ADNAN	2687	340-012530

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee
❑ Publication Fee (No small entity discount permitted)
❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.
❑ Payment by credit card. Form PTO-2038 is attached.
❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29
NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/948,927	11/23/2015	Paul D. Arling	81230.155US9	2406

34018 7590 03/21/2017

GREENBERG TRAURIG, LLP
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732

EXAMINER	
AZIZ, ADNAN	

ART UNIT	PAPER NUMBER
2687	

DATE MAILED: 03/21/2017

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 14/948,927	Applicant(s) ARLING ET AL.	
	Examiner ADNAN AZIZ	Art Unit 2687	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *amendment filed 01/31/2017*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-8*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/ADNAN AZIZ/	/FIRMIN BACKER/
Examiner, Art Unit 2687	Supervisory Patent Examiner, Art Unit 2687

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

This office action is in response to the Response/Amendment filed 01/31/2017.

In the instant amendment, no claims were cancelled, added or amended. Claims 1-8 have been examined and are pending, where claim 1 is the independent claim.

Terminal Disclaimer

The terminal disclaimer filed on 10/19/2016 and 03/10/2017 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of patent granted on Application No. 13657176 (filed on 10/22/2012, now PAT 9,215,394), Application No. 13933877 (filed on 07/02/2013, now PAT 9,219,874), Application No. 14036449 (filed on 09/25/2013, now PAT 9,307,178), and Application No. 14936977 (filed on 11/10/2015) has been reviewed and is accepted. The terminal disclaimer has been recorded.

Allowable Subject Matter

Claims 1-8 are allowed.

The following is an examiner's statement of reasons for allowance:

Independent claim is allowable based on the remark presented on 01/31/2017 and in view of the claim language.

None of the previously cited closest prior art(s) by Hayes, Deng, either singularly or in combination would result in a proper rejection under 35 USC 102 or 103.

Regarding independent claim 1, all of the cited prior art of record, whether singularly or in combination, fails to disclose the feature limitation a memory device *inter alia* "using an identity associated with the intended target appliance to create a listing comprised of at least a first communication method and a second communication method different than the first communication method for use in controlling each of at least a first functional operation and a second functional operation of the intended target appliance".

Hayes discloses that commands transmitted from the remote control may be prioritized for appliances [in the plural] that are determined to be in close proximity to the remote control at any given time (Hayes, col. 8, lines 13-26). However, Hayes fails to disclose, teach, or suggest that the identity of an appliance is used to create a listing wherein a first communication method and a second communication method different than the first communication method are identified for use in controlling each of a first functional operation and a second functional operation of that identified appliance as claimed. Further, Deng describes that a remote control may transmit communications to any appliance using one of a low power unit or a high power unit where the one of the low power unit or high power unit is selected based upon a characteristic of the data to be transmitted without regard to any identity of the intended target device (Deng, para. [0021], [0046-0048] and [0078-0079]). Therefore, Deng also fails to disclose, teach, or suggest using an identity of an appliance to create a listing wherein a plurality of communication methods are identified for controlling each of a plurality of functional operations of the identified appliance as claimed.

Hayes and Deng in combination with other cited prior art documents fail to teach the inventive concept of independent claim 1 where an identity associated with an intended target appliance is used to create a listing comprised of at least a first communication method and a second communication method different than the first communication method for use in controlling each of at least a first functional operation and a second functional operation of the controllable/intended target appliance. When a request is received from a controlling device intended to cause the intended target appliance to perform a one of the plurality of functional operations, the identified one of the first and second communication methods in the created listing that have been associated with the requested one of the first and second functional operations of the [intended] target appliance is used to transmit to the intended target appliance a command for controlling the requested one of the first and second functional operations of the intended target appliance.

Additional search does not yield suitable references that reasonably, either singularly or in combination with previous cited references, would result in a proper rejection under 35 USC 102 or 103.

Claims 2-8 depend on, and further limit independent claim 1. Therefore, claims 2-8 are considered allowable for the same reasons as independent claim 1 above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to PTO-892, Notice of References Cited for a listing of analogous art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADNAN AZIZ whose telephone number is (571) 270-7536, FAX: 571-270-8536. The examiner can normally be reached on Monday - Friday (9am - 6pm Eastern Time).

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, FIRMIN BACKER can be reached on 571-272-6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ADNAN AZIZ/
Examiner, Art Unit 2687

/FIRMIN BACKER/
Supervisory Patent Examiner, Art Unit 2687

Examiner-Initiated Interview Summary	Application No.	Applicant(s)	
	14/948,927	ARLING ET AL.	
	Examiner	Art Unit	
	ADNAN AZIZ	2687	

All participants (applicant, applicant's representative, PTO personnel):

(1) *ADNAN AZIZ*. (3)_____.

(2) *Gary Jarosik*. (4)_____.

Date of Interview: *10 March 2017*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1, 2*.

Identification of prior art discussed: *n/a*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

The Examiner contacted Applicant's representative to discuss the need for filing a TD for the copending Application No.14936977 (filed on 11/10/2015) in order to avoid a non-statutory obviousness type double patenting rejection of the instant claims. An electronic Terminal Disclaimer has been filed and accepted on 03/10/2017.

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/ADNAN AZIZ/ Examiner, Art Unit 2687	/FIRMIN BACKER/ Supervisory Patent Examiner, Art Unit 2687

Notice of References Cited	Application/Control No. 14/948,927	Applicant(s)/Patent Under Reexamination ARLING ET AL.	
	Examiner ADNAN AZIZ	Art Unit 2687	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2007/0225828 A1	09-2007	Huang; Steve LanPing	G08C17/00	700/11
	B	US-				
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14948927	ARLING ET AL.
	Examiner	Art Unit
	ADNAN AZIZ	2687

CPC- SEARCHED		
Symbol	Date	Examiner
G08C2201/20,21,33,40,41,91	04/30/2014	AA
H04L12/281,282,2814,2818,2803,2809	04/30/2014	AA

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
inventor name search (updated from parent App. No 13933877 and 13657176)	10/26/2016	AA
east search notes attached (updated from parent App. No 13933877 and 13657176)	10/26/2016	AA
updated inventor name search	3/10/2017	AA
east search notes attached (updated from parent App. No 13933877 and 13657176)	3/10/2017	AA
interference search (updated from parent App. No 13933877 and 13657176)	3/10/2017	AA

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
all	.CLM. limited text search of US PGPUBS	3/10/2017	AA

/A.A./ Examiner.Art Unit 2687	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14948927	ARLING ET AL.
	Examiner	**Art Unit**
	ADNAN AZIZ	2687

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/28/2016	03/10/2017							
1	1	✓	=							
2	2	✓	=							
3	3	✓	=							
4	4	✓	=							
5	5	✓	=							
6	6	✓	=							
7	7	✓	=							
8	8	✓	=							

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	30	((Brian) near2 (Barnett)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 14:58
S2	194	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 14:59
S3	129	S2 and ((remote adj control) (universal adj remote adj control) with (plurality multiple different) with (communication adj method$1) with (prioritiz$3))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:10
S4	1	S3 and ((communication adj method$1) with (prioritized adj list$4))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:12
S5	58	S3 and ((interrogat$3) near10 (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:15
S6	2	S5 and (prioritiz$3 with list$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:15
S7	721	(Universal adj Electronics adj Inc).AS.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:25
S8	600	S7 and ((remote adj control) (universal adj remote adj control) with (plurality multiple different) with (communication adj method$1) with (prioritiz$3))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:26
S9	275	S8 and ((interrogat$3) near10 (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:26
S10	1	S9 and (prioritiz$3 with list$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:26
S11	13	S9 and (prioritiz$3)	US-PGPUB; USPAT;	OR	ON	2014/04/26 15:29

			FPRS; EPO; JPO; DERWENT			
S12	295	(340/12.53).ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:35
S13	1	S12 and ((universal adj remote adj control) (programmable adj remote adj control) (universal adj control adj engine) (UCE)) and (smart adj phone) (control$6 adj deice) and (appliance or (media adj center) or (home adj theater)) and prioritiz$3	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:39
S14	348	((universal adj remote adj control) (programmable adj remote adj control) (universal adj control adj engine) (UCE)) and (smart adj phone) (control$6 adj deice) and (appliance or (media adj center) or (home adj theater)) and prioritiz$3	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:40
S15	12	S14 and ((codeset$1) (codeset adj data) (codeset adj identifier) with (command adj data))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:41
S16	9100	(340/572.1).ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:43
S17	341	S16 and ((remote adj control) (universal adj remote adj control) with (plurality multiple different) with (communication adj method$1) with (prioritiz$3))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:43
S18	16	S17 and ((interrogat$3) near10 (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:44
S19	99	("20030076240" | "20040203592" | "20050035846" | "20050138785" | "20050242167" | "4623887" | "4894789" | "4959810" | "5005084" | "5101191" | "5109222" | "5293357" | "5307055" | "5410326" | "5481256" | "5552806" | "5565888" | "5574964" | "5614906" | "5635989" | "5642303" | "5648760" | "5652613" | "5671267" | "5710605" | "5724106" | "5751372" | "5761606" | "5767919" | "5793438" | "5801787" | "5828419" | "5835864" | "5838775" | "5855006" | "5900875" | "5901366" | "5910776" | "5915026" | "5938757" | "5956025" | "5959751" | "5970206" | "5974222" | "6002394" | "6002450" | "6014092" | "6018372" | "6020881" | "6028599" | "6040829" | "6097441" | "6104334" | "6127941" | "6130726" | "6133909" | "6137549" | "6151059" | "6172674" | "6177931" | "6195589" | "6211856" | "6219694" | "6225938" | "6256019" | "6278499" | "6285357" | "6341374" | "6369840" | "6408435" | "6437836" | "6448886" | "6463463" | "6466971" | "6532589" | "6563430" | "6577350" | "6587067" | "6753790" | "6774811" | "6792323" | "6823188" | "6832251" | "6996402").PN. OR ("7379778").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2014/04/26 15:47
S20	14	S19 and ((interrogat$3) near10 (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:48

S21	0	S20 and (prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:48
S22	78	S19 and ((remote adj control) (universal adj remote adj control) with (plurality multiple different) with (communication adj method$1) with (prioritiz$3))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:48
S23	13	S22 and ((interrogat$3) near10 (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 15:49
S24	386366	((remote adj control) (universal adj remote adj control) with (wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI) with (transmit$4) with (command$1) with (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:04
S25	6715	S24 and (prioritiz$3) (highest adj prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:04
S26	553	S25 and ((wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:05
S27	29	S26 and interrogat$3	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:05
S28	29	S27 and prioritiz$3	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:06
S29	7691	(340/10.1).ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:12
S30	346	S29 and ((remote adj control) (universal adj remote adj control) with (wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI) with (transmit$4) with (command$1) with (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:12
S31	407	S30 and (prioritiz$3) (highest adj prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:12
S32	5	S31 and ((wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:13
S33	2780	(348/734).ccls.	US-PGPUB; USPAT;	OR	ON	2014/04/26 16:15

			FPRS; EPO; JPO; DERWENT			
S34	2223	S33 and ((remote adj control) (universal adj remote adj control) with (wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI) with (transmit$4) with (command$1) with (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:16
S35	247	S34 and ((wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:16
S36	2	S35 and (highest adj prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:16
S37	8	S35 and (prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:17
S38	420	(348/E05.096).ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:22
S39	19	S38 and ((wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:23
S40	347	((universal adj remote adj control) (programmable adj remote adj control) (universal adj control adj engine) (UCE)) and (smart adj phone) (control$6 adj deice) and (appliance or (media adj center) or (home adj theater)) and interrogat$3 same prioritiz$3	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:24
S41	73	S40 and ((wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:24
S42	9	S41 and (prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:26
S43	47	universal adj remote adj control and appliance$1 and prioritize$1	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:29
S44	6	S43 and ((wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 16:30
S45	7	((remote adj control) with (transmit$3) with (command$1) with (prioritize$1) with (appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO;	OR	ON	2014/04/26 16:34

			DERWENT			
S46	5	((remote adj control) with (macro adj command$1) with (multiple adj command adj protocol$1) with (control$4) with (appliance$1) with (function$1) (functional adj operation$1) with (prioritiz$3))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 17:33
S47	7	((remote adj control$1) with (macro adj command$1) and (multiple adj command adj protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/26 17:37
S48	3792	(G08C2201/20) or (G08C2201/21) or (G08C2201/33) or (G08C2201/40) or (G08C2201/41) or (G08C2201/91).cpc.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:22
S49	216	S48 and ((remote adj control$1) with (multiple plural$3 different) with(command) (communication) with (protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:33
S50	32	S49 and (macro near5 command$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:34
S51	5	S50 and (prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:34
S52	12809	(H04L12/281) or (H04L12/282) or (H04L12/2814) or (H04L12/2818) or (H04L12/2803) or (H04L12/2809).cpc.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:40
S53	1105	S52 and ((remote adj control$1) with (multiple plural$3 different) with(command) (communication) with (protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:40
S54	37	S53 and (macro near5 command$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:40
S55	5	S54 and (prioritiz$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:41
S56	1242	S52 and ((remote adj control) (universal adj remote adj control) with (wireless adj IR) (IR adj signal$1) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI) with (transmit$4) with (command$1) with (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:41
S57	69	S56 and ((bi-directional) (bi adj directional) near10 (communication adj protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:45
S58	0	S57 and ((prioritiz$5) with (list matrix protocol$1))	US-PGPUB;	OR	ON	2014/04/30

			USPAT; FPRS; EPO; JPO; DERWENT			12:46
S59	8	S57 and (prioritiz$5)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:46
S60	179921	((bi-directional) (bi adj directional) near10 (communication adj protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:50
S61	1062	S60 and ((prioritiz$5) with (list matrix protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:50
S62	1062	S61 and (prioritiz$5)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:51
S63	3	S62 and (macro near5 command$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:51
S64	612	S62 and ((remote adj control$1) with (multiple plural$3 different) with(command) (communication) with (protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:52
S65	174	S64 and ((remote adj control) (universal adj remote adj control) with (wireless adj IR) (IR adj signal$1) (infrared) with (CEC adj command$1) (CEC) (HDMI adj interface) (HDMI) with (transmit$4) with (command$1) with (target appliance$1) (control$6 adj appliance$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:55
S66	174	S65 and ((bi-directional) (bi adj directional) with (communication adj protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:56
S67	174	S66 and (prioritiz$5)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 12:56
S68	2	S67 and (macro near5 command$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 13:07
S69	73043	(G08C17/02) or (G08C19/28) or (G08C23/04) or (G05B15/02).cpc.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 13:09
S70	433	S69 and ((bi-directional) (bi adj directional) near10 (communication adj protocol$1))	US-PGPUB; USPAT; FPRS;	OR	ON	2014/04/30 13:11

			EPO; JPO; DERWENT			
S71	115	S70 and ((remote adj control$1) with (multiple plural$3 different) with(command) (communication) with (protocol$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 13:11
S72	19	S71 and (prioritiz$5)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/04/30 13:12
S73	37	((Brian) near2 (Barnett)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 16:32
S74	223	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 16:52
S75	21	S74 and ((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 17:10
S76	19	S75 and (multiple plural$3 different appropriate) same ((command) (communication) near10 (protocol$1 format$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 17:18
S77	162	((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 17:30
S78	120	S77 and (multiple plural$3 different appropriate) same ((command) (communication) near10 (protocol$1 format$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 17:31
S79	101	S78 not S74	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 17:31
S80	96	S79 and (@ad<"20111028" @rlad<"20111028")	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 17:33
S81	10	S80 and (prioritiz$5)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/10 18:30
S82	162	((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/12 11:35

S83	2	S82 and ((interrogat$3 poll$3 quer$3 inquir$3) near10 (target intended controllable) near4 (appliance$1 device$1)) same ((command communication) near12 (protocol$1 format$1 method$1 technique$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/12 11:35
S84	1	((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device)) same((interrogat$3 poll$3 quer$3 inquir$3) near10 (target intended controllable) near4 (appliance$1 device$1)) same ((command communication) near12 (protocol$1 format$1 method$1 technique$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/12 11:39
S85	68	((control$4 smart portable remote) near3 (device apparatus control)) same ((interrogat$3 poll$3 quer$3 inquir$3) near10 (target intended controllable) near4 (appliance$1 device$1)) same ((command communication) near12 (protocol$1 format$1 method$1 technique$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/12 11:41
S86	136	protocol near2 list$4 same protocol near5 priority	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/12 17:40
S87	4	S86 and (remote near2 control$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2014/11/12 17:40
S88	234	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 16:32
S89	24	S88 and ((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 16:34
S90	15	((Ramzi) near2 (Ammari)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 17:12
S91	71	((Arsham) near2 (Hatambeiki)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 17:17
S92	5	S91 and ((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 17:47
S93	2609	((Graham) near2 (Williams)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 17:51
S94	1	S93 and ((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/01/20 17:51
S95	247	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT;	OR	ON	2015/05/22 17:08

			FPRS; EPO; JPO; DERWENT			
S96	895	((Patrick) near2 (Hayes)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/05/22 17:17
S97	35	S96 and ((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device) (UCE) (universal adj control adj engine))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/05/22 17:18
S98	2	"8154381".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2015/06/14 22:19
S99	18	("20020089427" | "20020194596" | "20040070491" | "20040148632" | "20050102699" | "20060041655" | "20060161865" | "20070229465" | "4623887" | "4774511" | "4959810" | "7102616" | "7155305" | "7167122" | "7394451").PN. OR ("8154381").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/06/14 22:19
S100	14	S99 and (multiple plural$3 different various several many appropriate) same ((command) (communication) near10 (protocol$1 format$1 method$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2015/06/14 22:23
S101	69	((select$4) near6 (command$1 or operation$1)) with ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/06 19:02
S102	1	("2004/0255056").URPN.	USPAT	OR	ON	2015/07/06 19:03
S103	38	("20020120874" | "20020124094" | "20030099286" | "20030128669" | "20030204606" | "20040071101" | "20040255056" | "5068838" | "5375018" | "5430727" | "5491691" | "5887263" | "5889470" | "6396531" | "6532229" | "6535504" | "6564066" | "6594715" | "6650658" | "6668041" | "6801570" | "6876725" | "6952430" | "6970501" | "6987754" | "7027405" | "7203725" | "7212536" | "7263174" | "7302698" | "7359434" | "7388945" | "7391780" | "7418513" | "7478031" | "7584295" | "7668959" | "8108500").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/07/06 19:03
S104	1	((bridge control$4 relay intermediate) near6 (device engine)) same ((select$4 choos$3 pick$2 elect$4) near6 (command$1 or operation$1)) with ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 22:42
S105	19	((bridge control$4 relay intermediate) near6 (device engine)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) with ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 22:47
S106	305	((bridge control$4 relay intermediate) near6 (device engine)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3	US-PGPUB; USPAT; FPRS; EPO; JPO;	OR	ON	2015/07/21 23:02

		variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	DERWENT			
S107	171	S106 and (priori$8 or priorit$3 or prefer$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 23:03
S108	23	S106 and ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 23:03
S109	84	((bridge control$4 relay intermediate) near6 (device engine)) same ((select$4) near6 (command$1 or operation$1)) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 23:11
S110	61	((bridge control$4 relay intermediate) near6 (device engine)) same (issue transmit$4 select$4) with ((both) near6 (IR and RF))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 23:21
S111	0	(issue transmit$4 select$4) with ((both) near6 (IR and RF)) same ((single intended) near4 (appliance target adj appliance))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 23:38
S112	12	(issue transmit$4 select$4) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1)) same ((single intended) near4 (appliance target adj appliance))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/07/21 23:40
S113	1	(remote adj control$4) with ((select$4) near6 (command$1 or operation$1)) with ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/08/06 23:26
S128	24	((volume) near8 (IR CEC)) same ((power) near8 (RF CEC HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/08/07 14:57
S129	269	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2015/12/01 20:44
S130	34	S129 and ((appliance) near6 (control$4)) same ((control$4 smart portable remote) near3 (device apparatus control)) with ((bridge adj device) (control adj engine) (relay adj device) (intermediate adj device))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2015/12/01 20:44
S131	50	((Brian) near2 (Barnett)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2015/12/01 20:47

			DERWENT; IBM_TDB			
S132	60	((Dan) near2 (McKay)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2015/12/01 20:50
S141	323	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:11
S142	45	S141 and ((bridge control$4 relay intermediate set-top set adj top) near8 (device engine appliance box unit)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) same ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:13
S143	13	S141 and ((volume) near8 (IR CEC)) same ((power) near8 (RF CEC HDMI))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:29
S144	18	((Ramzi) near2 (Ammari)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:38
S145	118	((Arsham) near2 (Hatambeiki)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:40
S146	10	S145 and ((bridge control$4 relay intermediate set-top set adj top) near8 (device engine appliance box unit)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) same ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:41
S147	2895	((Graham) near2 (Williams)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:44
S148	3	S147 and ((bridge control$4 relay intermediate set-top set adj top) near8 (device engine appliance box unit)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) same ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 17:44

S149	25	("20030095156" | "20040163073" | "20040210933" | "20060168618" | "20060227032" | "20080005764" | "20090239587" | "20100134317" | "20100138764" | "20110273287" | "20110289113" | "20120242526" | "20120249890" | "20120274547" | "20120278693" | "20120291128" | "20120330943" | "20130107131" | "20140085059" | "6529556" | "6968399" | "7379778" | "7519393" | "7589642" | "8373556").PN.	US-PGPUB; USPAT	OR	ON	2016/10/26 18:58
S150	120	((bridge control$4 relay intermediate settop set-top set adj top) near8 (device engine appliance box unit)) same (issue transmit$4 select$4) with (both) with IR with RF	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2016/10/26 19:22
S151	325	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/11/19 20:09
S152	13	S151 and ((control$4 smart portable remote) near6 (device apparatus control)) same ((bridge adj device) (control adj engine) (relay adj device) (intermediat$4 adj device) (UCE) (universal adj control adj engine) (entertainment adj device) (set-top adj box) (function$1 adj device)) same ((target control$5 electronic consumer) near6 (device$1 appliance$1)) and (HDMI same IR) same (volume)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2016/11/19 20:16
S153	62	((Brian) near2 (Barnett)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/11/19 20:17
S154	6	S153 and ((control$4 smart portable remote) near6 (device apparatus control)) same ((bridge adj device) (control adj engine) (relay adj device) (intermediat$4 adj device) (UCE) (universal adj control adj engine) (entertainment adj device) (set-top adj box) (function$1 adj device)) same ((target control$5 electronic consumer) near6 (device$1 appliance$1)) and (HDMI same IR) same (volume)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2016/11/19 20:17
S155	6	S153 and HDMI same IR same volume	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2016/11/19 20:18
S156	62	((Dan) near2 (McKay)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/11/19 20:18
S157	3	S156 and HDMI same IR same volume	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2016/11/19 20:19
S158	3	S156 and HDMI same IR same volume	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2016/11/19 20:19

S159	3	S156 and ((control$4 smart portable remote) near6 (device apparatus control)) same ((bridge adj device) (control adj engine) (relay adj device) (intermediat$4 adj device) (UCE) (universal adj control adj engine) (entertainment adj device) (set-top adj box) (function$1 adj device)) same ((target control$5 electronic consumer) near6 (device$1 appliance$1)) and (HDMI same IR) same (volume)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2016/11/19 20:19
S160	17801	(H04N21/4222,42204,42208,42219,42221,42224,42225).cpc.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2016/11/19 20:22
S161	100	S160 and (HDMI HDMI-CEC) same IR and volume	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2016/11/19 20:25
S162	15	S161 and (identify look-up look adj up database table look-up adj table) same (codeset$1 IR adj codeset$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2016/11/19 20:27
S163	35	("20010043145" | "20080231762" | "20100037264" | "20100039282" | "20100118193" | "20110018693" | "20120071989" | "4626848" | "4746919" | "5255313" | "5410326" | "5438325" | "5452291" | "5519457" | "5537104" | "5552917" | "5689663" | "5726645" | "5839097" | "5909183" | "5949351" | "5959539" | "5990884" | "6133847" | "6148241" | "6157319" | "6160491" | "6781518" | "6791467" | "7259696" | "7429932" | "7554614" | "7653212" | "7907222" | "8068184").PN. OR ("9350850").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2016/11/19 20:30
S164	3	S163 and (HDMI HDMI-CEC HDMI adj CEC) same IR and volume	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2016/11/19 20:33
S165	14	("20040215816" | "20060161865" | "20060238373" | "20070296552" | "20080003993" | "20080022206" | "20090167555" | "20100313169" | "6559866" | "7266777" | "RE39059").PN. OR ("8151211").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2016/11/19 20:36
S166	0	S165 and (HDMI HDMI-CEC HDMI adj CEC) same IR and volume	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2016/11/19 20:41
S167	0	S165 and (HDMI HDMI-CEC HDMI adj CEC) same IR	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2016/11/19 20:41
S168	334	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2017/02/19 20:44
S169	14	S168 and ((control$4 smart portable remote) near6 (device apparatus control)) same ((bridge adj device) (control adj engine) (relay adj device) (intermediat$4 adj device) (UCE) (universal adj control adj engine) (entertainment adj device) (set-top adj box) (function$1 adj device)) same ((target control$5 electronic consumer) near6 (device$1 appliance$1)) and (HDMI same IR) same (volume)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2017/02/19 20:46
S170	63	((Brian) near2 (Barnett)).inv.	US-PGPUB;	OR	ON	2017/02/19

			USPAT; FPRS; EPO; JPO; DERWENT			20:48
S171	6	S170 and ((control$4 smart portable remote) near6 (device apparatus control)) same ((bridge adj device) (control adj engine) (relay adj device) (intermediat$4 adj device) (UCE) (universal adj control adj engine) (entertainment adj device) (set-top adj box) (function$1 adj device)) same ((target control$5 electronic consumer) near6 (device$1 appliance$1)) and (HDMI same IR) same (volume)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2017/02/19 20:48
S172	6	S170 and HDMI same IR same volume	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2017/02/19 20:49
S173	60	((volume) near10 (IR CEC)) same ((power) near10 (RF CEC HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2017/02/19 21:03
S178	1	"7379778".pn.	US-PGPUB; USPAT	OR	ON	2017/03/09 21:20
S179	335	((Paul) near2 (Arling)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2017/03/10 11:25
S180	48	S179 and ((bridge control$4 relay intermediate set-top set adj top) near8 (device engine appliance box unit)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) same ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2017/03/10 11:27
S181	14	S179 and ((control$4 smart portable remote) near6 (device apparatus control)) same ((bridge adj device) (control adj engine) (relay adj device) (intermediat$4 adj device) (UCE) (universal adj control adj engine) (entertainment adj device) (set-top adj box) (function$1 adj device)) same ((target control$5 electronic consumer) near6 (device$1 appliance$1)) and (HDMI same IR) same (volume)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2017/03/10 11:30
S182	20	((Ramzi) near2 (Ammari)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/03/10 11:39
S183	126	((Arsham) near2 (Hatambeiki)).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/03/10 11:40
S184	12	S183 and ((bridge control$4 relay intermediate set-top set adj top) near8 (device engine appliance box unit)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) same ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2017/03/10 11:40

S185	2701	((Graham) near2 (Williams)).inv.	US-PGPUB; USPAT; FPRS; EPO; DERWENT	OR	ON	2017/03/10 11:41
S186	3	S185 and ((bridge control$4 relay intermediate set-top set adj top) near8 (device engine appliance box unit)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) same ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2017/03/10 11:41
S187	3	S185 and ((control$4 smart portable remote) near6 (device apparatus control)) same ((bridge adj device) (control adj engine) (relay adj device) (intermediat$4 adj device) (UCE) (universal adj control adj engine) (entertainment adj device) (set-top adj box) (function$1 adj device)) same ((target control$5 electronic consumer) near6 (device$1 appliance$1)) and (HDMI same IR) same (volume)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2017/03/10 11:42
S188	3	S185 and HDMI same IR same volume	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2017/03/10 11:43
S189	1	((volume) near20 (IR CEC)) same ((power) near20 (RF CEC HDMI)).ab.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2017/03/10 11:50
S190	96	((volume) near20 (IR CEC)) same ((power) near20 (RF CEC HDMI))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2017/03/10 12:13

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S115	94	(G08C2201/20) or (G08C2201/21) or (G08C2201/33) or (G08C2201/40) or (G08C2201/41) or (G08C2201/91).cpc. and ((select$4) near6 (command$1 or operation$1 or functional adj operation$1)) with ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1))	US-PGPUB; USPAT	OR	ON	2015/08/07 00:03
S116	1539	(H04L12/281) or (H04L12/282) or (H04L12/2814) or (H04L12/2818) or (H04L12/2803) or (H04L12/2809).cpc.	US-PGPUB; USPAT	OR	ON	2015/08/07 00:05
S117	1	S116 and ((stor$3) near10 (list$4)) same (command$1 or operation$1 or functional adj operation$1) with (protocol$1 or communication adj protocol$1 or communication adj method$1)	US-PGPUB; USPAT	OR	ON	2015/08/07 00:08
S118	0	((stor$4) near8 (memory)) same ((plural$3 many different multiple) near10 (functional adj operations or commands or operations) near10 (appliance or target adj appliance)) with ((associated respective) near8 (protocol$1 or communication adj protocol$1 or communication adj method$1)).clm.	US-PGPUB; USPAT	OR	ON	2015/08/07 00:17
S119	4	((plural$3 many different multiple) near10 (functional adj operations or commands or operations) near10 (appliance or target adj appliance)) with ((associated respective) near8 (protocol$1 or communication adj protocol$1 or communication adj method$1)).clm.	US-PGPUB; USPAT	OR	ON	2015/08/07 00:18

S120	17	((select$4) near6 (command$1 or operation$1)) with ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1)).clm.	US-PGPUB; USPAT	OR	ON	2015/08/07 00:20
S121	9135	(H04N21/4403,4222,42204,43615,43615,42208,42224).cpc.	US-PGPUB; USPAT	OR	ON	2015/08/07 00:30
S122	3	S121 and ((bridge control$4 relay intermediate) near6 (device engine)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1)).clm.	US-PGPUB; USPAT	OR	ON	2015/08/07 00:33
S123	1	S121 and ((bridge control$4 relay intermediate) near6 (device engine)) same ((select$4) near6 (command$1 or operation$1)) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1)).clm.	US-PGPUB; USPAT	OR	ON	2015/08/07 00:35
S124	6777	(H04L69/18,24) or (H04W84/12) or (H04W28/18).cpc.	US-PGPUB; USPAT	OR	ON	2015/08/07 00:43
S125	0	S124 and ((select$4) near6 (command$1 or operation$1)) with ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1)).clm.	US-PGPUB; USPAT	OR	ON	2015/08/07 00:43
S126	36	S124 and ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1)).clm.	US-PGPUB; USPAT	OR	ON	2015/08/07 00:44
S127	7	S124 and (select$4) with ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1)).clm.	US-PGPUB; USPAT	OR	ON	2015/08/07 00:45
S133	9557	(H04N21/4403,4222,42204,43615,43615,42208,42224).cpc.	US-PGPUB; USPAT	OR	ON	2015/12/01 20:53
S134	3	S133 and ((bridge control$4 relay intermediate) near6 (device engine)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1)).clm.	US-PGPUB; USPAT	OR	ON	2015/12/01 20:53
S135	454	(G08C2201/20) or (G08C2201/21) or (G08C2201/33) or (G08C2201/40) or (G08C2201/41) or (G08C2201/91).cpc.	US-PGPUB; USPAT	OR	ON	2015/12/01 20:55
S136	6	S135 and ((bridge control$4 relay intermediate) near6 (device engine)) same ((issue transmit$4 select$4) near6 (command$1 or operation$1)) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1)).clm.	US-PGPUB; USPAT	OR	ON	2015/12/01 20:55
S137	8	(issue transmit$4 select$4) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1)) same ((single intended) near4 (appliance target adj appliance)).clm.	US-PGPUB; USPAT	OR	ON	2015/12/01 20:56
S138	9	(issue transmit$4 select$4) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3	US-PGPUB;	OR	ON	2015/12/01 21:02

		distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1 or transmission adj medium or transmission adj method$1)) same ((single intended) near4 (appliance target adj appliance)).clm.	USPAT			
S139	0	((volume) near8 (IR CEC)) same ((power) near8 (RF CEC HDMI)).clm.	US-PGPUB; USPAT	OR	ON	2015/12/01 21:06
S140	26	((volume) near8 (IR CEC)) same ((power) near8 (RF CEC HDMI))	US-PGPUB; USPAT	OR	ON	2015/12/01 21:06
S174	7	((plural$3 many different multiple) near10 (functional adj operations or commands or operations) near10 (appliance or target adj appliance)) with ((associated respective) near8 (protocol$1 or communication adj protocol$1 or communication adj method$1)).clm.	US-PGPUB; USPAT	OR	ON	2017/02/19 20:51
S175	11	(issue transmit$4 select$4) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one var$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1)) same ((single intended) near4 (appliance target adj appliance)).clm.	US-PGPUB; USPAT	OR	ON	2017/02/19 20:52
S176	0	((volume) near8 (IR CEC)) same ((power) near8 (RF CEC HDMI)).clm.	US-PGPUB; USPAT	OR	ON	2017/02/19 21:02
S177	0	((volume) near20 (IR CEC)) same ((power) near20 (RF CEC HDMI)).clm.	US-PGPUB; USPAT	OR	ON	2017/02/19 21:03
S191	19	((select$4) near6 (command$1 or operation$1)) with ((priori$8 or priorit$3 or prefer$4) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1)).clm.	US-PGPUB; USPAT	OR	ON	2017/03/10 11:47
S192	13	(issue transmit$4 select$4) with ((several plurality multiple numerous many multitudinous multitudinal plural$3 differ$3 distinct$3 variet$3 various or divers$3 more adj than adj one varied) near6 (protocol$1 or communication adj protocol$1 or communication adj method$1 or transmission adj medium or transmission adj method$1)) same ((single intended) near4 (appliance target adj appliance)).clm.	US-PGPUB; USPAT	OR	ON	2017/03/10 11:49
S193	0	((volume) near20 (IR CEC)) same ((power) near20 (RF CEC HDMI)).clm.	US-PGPUB; USPAT	OR	ON	2017/03/10 11:50

3/10/2017 7:07:46 PM
C:\Users\aaziz\Documents\EAST\Workspaces\Case56-13657176-S&M for Optimized Appliance Ctrl.wsp

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14948927	ARLING ET AL.
	Examiner	**Art Unit**
	ADNAN AZIZ	2687

CPC					
Symbol				**Type**	**Version**
H04N		5	/ 4403	F	2013-01-01
G08C		17	/ 02	I	2013-01-01
G08C		23	/ 04	I	2013-01-01
G08C		2201	/ 40	A	2013-01-01
H04B		1	/ 205	I	2013-01-01
H04N		21	/ 42204	I	2013-01-01
H04N		21	/ 4222	I	2013-01-01
H04N		21	/ 43615	I	2013-01-01
G08C		2201	/ 92	A	2013-01-01
H04N		2005	/ 4442	A	2013-01-01
H04N		5	/ 60	I	2013-01-01
H04N		2005	/ 4426	A	2013-01-01
H04N		2005	/ 4435	A	2013-01-01
			/		
			/		

CPC Combination Sets						
Symbol			**Type**	**Set**	**Ranking**	**Version**
		/				
		/				

/ADNAN AZIZ/ Examiner.Art Unit 2687	03/10/2017	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	8	
/FIRMIN BACKER/ Supervisory Patent Examiner.Art Unit 2687	03/15/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14948927	ARLING ET AL.
	Examiner	**Art Unit**
	ADNAN AZIZ	2687

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
340	12.53	G	0	5	B	11 / 01 (2006.01.01)						
CROSS REFERENCE(S)		H	0	4	N	5 / 44 (2011.01.01)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)											

/ADNAN AZIZ/ Examiner.Art Unit 2687	03/10/2017	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	8	
/FIRMIN BACKER/ Supervisory Patent Examiner.Art Unit 2687	03/15/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14948927	ARLING ET AL.
	Examiner	**Art Unit**
	ADNAN AZIZ	2687

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1														
2	2														
3	3														
4	4														
5	5														
6	6														
7	7														
8	8														

/ADNAN AZIZ/ Examiner.Art Unit 2687	03/10/2017	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	8	
/FIRMIN BACKER/ Supervisory Patent Examiner.Art Unit 2687	03/15/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

UNITED STATES PATENT AND TRADEMARK OFFICE
COMMISSIONER FOR PATENTS
P.O.BOX 1450
ALEXANDRIA VA 22313-1451

PRESORTED
FIRST-CLASS MAIL
U.S. POSTAGE PAID
POSTEDIGITAL
NNNNN

GREENBERG TRAURIG, LLP
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732

Courtesy Reminder for
Application Serial No: 14/948,927

Attorney Docket No: 81230.155US9
Customer Number: 34018
Date of Electronic Notification: 03/21/2017

This is a courtesy reminder that new correspondence is available for this application. If you have not done so already, please review the correspondence. The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

An email notification regarding the correspondence was sent to the following email address(es) associated with your customer number:

jarosikg@gtlaw.com
chiipmail@gtlaw.com
escobedot@gtlaw.com

To view your correspondence online or update your email addresses, please visit us anytime at **https://sportal.uspto.gov/secure/myportal/privatepair.** If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov or call 1-866-217-9197.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

34018 7590 03/21/2017
GREENBERG TRAURIG, LLP
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Cynthia Tapia	(Depositor's name)
/Cynthia Tapia/	(Signature)
June 21, 2017	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/948,927	11/23/2015	Paul D. Arling	81230.155US9	2406

TITLE OF INVENTION: SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	06/21/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
AZIZ, ADNAN	2687	340-012530

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Greenberg Traurig, LLP
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Universal Electronics Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Santa Ana, CA

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- XX Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- XX The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 50-2428 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
  NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
  NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ☐ Applicant changing to regular undiscounted fee status.
  NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Gary R. Jarosik/ Date June 21, 2017

Typed or printed name Gary R. Jarosik Registration No. 35,906

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Electronic Patent Application Fee Transmittal

Application Number:	14948927
Filing Date:	23-Nov-2015
Title of Invention:	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL
First Named Inventor/Applicant Name:	Paul D. Arling
Filer:	Gary R. Jarosik/Cynthia Tapia
Attorney Docket Number:	81230.155US9

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	1501	1	960	960

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**960**

Electronic Acknowledgement Receipt	
EFS ID:	29560516
Application Number:	14948927
International Application Number:	
Confirmation Number:	2406
Title of Invention:	SYSTEM AND METHOD FOR OPTIMIZED APPLIANCE CONTROL
First Named Inventor/Applicant Name:	Paul D. Arling
Customer Number:	34018
Filer:	Gary R. Jarosik/Cynthia Tapia
Filer Authorized By:	Gary R. Jarosik
Attorney Docket Number:	81230.155US9
Receipt Date:	21-JUN-2017
Filing Date:	23-NOV-2015
Time Stamp:	11:18:23
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$960
RAM confirmation Number	062117INTEFSW00009589502428
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	81230_155US9IssueFeeTrans.pdf	108352 54560da94be3046b52000ef6530527297a00c008	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30640 897ff2c18d455a7b95395d3f2f7d96bf5cf057d4	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	138992		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/948,927	07/25/2017	9716853	81230.155US9	2406

34018 7590 07/03/2017

GREENBERG TRAURIG, LLP
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Universal Electronics Inc., Santa Ana, CA;
Paul D. Arling, Irvine, CA;
Ramzi Ammari, Newport Coast, CA;
Arsham Hatambeiki, Irvine, CA;
Graham Williams, Corona Del Mar, CA;

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Central District of California on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
18-cv-01580	9/5/2018	Central District of California

PLAINTIFF	DEFENDANT
UNIVERSAL ELECTRONICS INC., a Delaware Company	ROKU, INC., a Delaware Company

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	7,589,642	9/15/2009	Universal Electronics Inc.
2	8,004,389	8/23/2011	Universal Electronics Inc.
3	9,911,325	3/6/2018	Universal Electronics Inc.
4	9,716,853	7/25/2017	Universal Electronics Inc.
5	7,782,309	8/24/2010	Universal Electronics Inc.

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Central District of California on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
18-cv-01580	9/5/2018	Central District of California

PLAINTIFF	DEFENDANT
UNIVERSAL ELECTRONICS INC., a Delaware Company	ROKU, INC., a Delaware Company

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	7,821,504	10/26/2010	Universal Electronics Inc.
2	7,821,505	10/26/2010	Universal Electronics Inc.
3	7,895,532	2/22/2011	Universal Electronics Inc.
4	8,015,446	9/6/2011	Universal Electronics Inc.
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy