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June 10, 2019

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APPLICATION NUMBER: 15/153,905
FILING DATE: May 13, 2016
PATENT NUMBER: 9911325
ISSUE DATE: March 06, 2018



Certified by

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UTILITY PATENT APPLICATION TRANSMITTAL

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

Attorney Docket No.	81230.708US4
First Inventor	Daniel SauFu Mui
Title	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE
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 24]
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 4]
5. **Inventor's Oath or Declaration.** [Total Sheets _____]
(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	May 13, 2016
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.**

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	81230.708US4
		Application Number	
Title of Invention	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE		
<p>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.</p>			

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
	Daniel	SauFu	Mui	
Residence Information (Select One) <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service				
City	San Jose	State/Province	CA	Country of Residence
				US
Mailing Address of Inventor:				
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Address 2				
City	San Jose	State/Province	CA	
Postal Code	95129	Country	US	
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.				Add

Correspondence Information:

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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	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE		
Attorney Docket Number	81230.708US4	Small Entity Status Claimed	<input type="checkbox"/>
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	4	Suggested Figure for Publication (if any)	

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	81230.708US4
		Application Number	
Title of Invention	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE		

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

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:	<input checked="" type="radio"/> Customer Number	<input type="radio"/> US Patent Practitioner	<input type="radio"/> 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, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim 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.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending	<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	13068820	2011-05-21

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	81230.708US4		
		Application Number			
Title of Invention	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE				
Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13068820	Continuation of	12462526	2009-08-04	8004389	2011-08-23
Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12462526	Continuation of	10737029	2003-12-16	7589642	2009-09-15
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.					Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. 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. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

				Remove
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)	
Additional Foreign Priority Data may be generated within this form by selecting the Add button.				
				Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	81230.708US4
	Application Number	
Title of Invention	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is 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 State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

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NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	81230.708US4
	Application Number	
Title of Invention	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE	

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.

Applicant	1	<input type="button" value="Remove"/>
<p>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.</p>		
<input type="button" value="Clear"/>		
<input checked="" type="radio"/> Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
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:		
<div style="border: 1px solid black; height: 20px; width: 100%;"></div>		
Name of the Deceased or Legally Incapacitated Inventor: <input type="text"/>		
If the Applicant is an Organization check here. <input checked="" type="checkbox"/>		
Organization Name	Universal Electronics Inc.	
Mailing Address Information For Applicant:		
Address 1	201 E. Sandpointe Avenue	
Address 2	8th Floor	
City	Santa Ana	State/Province CA
Country	US	Postal Code 92707
Phone Number		Fax Number
Email Address		
Additional Applicant Data may be generated within this form by selecting the Add button. <input type="button" value="Add"/>		

Assignee Information including Non-Applicant Assignee Information:

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	81230.708US4
	Application Number	
Title of Invention	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE	

Assignee	1
-----------------	---

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here.

Prefix	Given Name	Middle Name	Family Name	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1				
Address 2				
City		State/Province		
Country i		Postal Code		
Phone Number		Fax Number		
Email Address				

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Signature:

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This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Gary R. Jarosik/		Date (YYYY-MM-DD)	2016-05-13	
First Name	Gary R.	Last Name	Jarosik	Registration Number	35906

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	81230.708US4
	Application Number	
Title of Invention	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE	

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.**

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

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- 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).
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- 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.

RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application is a continuation of and claims the benefit of US Application No. 13/068,820, filed on May 21, 2011, which application is a continuation of and claims the benefit of US Application No. 12/462,526, filed on August 4, 2009, which application is a continuation of and claims the benefit of US Application No. 10/737,029, filed on December 16, 2003, each of which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present invention relates generally to remote control devices and, more specifically, to relaying key code signals through a remote control device to operate an electronic consumer device.

BACKGROUND

[0003] Most households today possess multiple types of electronic consumer devices, such as televisions, stereo radios, digital video disk players, video cassette recorders, set-top cable television boxes and set-top satellite boxes. Manufacturers of such electronic devices typically supply a remote control device along with each electronic device. It is, therefore, common for a consumer who has multiple electronic devices to have multiple remote control devices.

[0004] A remote control device typically controls a selected electronic consumer device by transmitting infrared key code signals to the selected electronic consumer device. The infrared signals contain key codes of a codeset associated with the selected

electronic consumer device. Each key code corresponds to a function of the selected electronic device, such as power on, power off, volume up, volume down, play, stop, select, channel up, channel down, etc. In order to avoid the situation where a remote control device unintentionally operates an electronic consumer device that is associated with a different remote control device, manufacturers sometimes use distinct codesets for the communication between various electronic consumer devices and their associated remote control devices. The codesets can differ from each other not only by the bit patterns assigned to various functions of the associated electronic consumer device, but also by the timing information that describes how the key codes should be modulated onto carrier signals to generate key code signals.

[0005] Consumers may find it inconvenient to operate their electronic devices using multiple remote control devices. Thus, a consumer may wish to operate multiple electronic consumer devices using a single remote control device. A single remote control device can store many codesets so that the remote control device can control a corresponding large number of different electronic consumer devices. There are, however, thousands of codesets in use in electronic consumer devices today.

Manufacturers of remote control devices, however, may wish to limit the memory on their remote control devices to a size that is insufficient to store the thousands of existing codesets.

[0006] A system is sought for enabling a remote control device to control a selected one of multiple different electronic consumer devices without requiring the codeset associated with the selected electronic consumer device to be stored on the remote control device.

SUMMARY

[0007] A system for relaying a key code through a remote control device to an electronic consumer device allows the electronic consumer device to be controlled without storing the associated codeset on the remote control device. Upon receiving a keystroke indicator signal from a remote control device, a key code generator device, such as a set-top box, identifies the particular codeset usable to communicate with the selected electronic consumer device. The keystroke indicator signal contains an indication of a key on the remote control device that was pressed, which corresponds to a function of the selected electronic consumer device. Using the identified codeset and the indication of the pressed key, the key code generator device generates a key code and modulates that key code onto a radio frequency carrier signal, thereby generating a first key code signal. The remote control device receives the first key code signal from the key code generator device and modulates the key code onto an infrared frequency carrier signal, thereby generating a second key code signal. The remote control device relays the key code to the selected electronic consumer device in the second key code signal. The key code causes the selected electronic consumer device to perform the desired function. The key code is not stored on the remote control device in a permanent manner, but rather the key code is relayed through the remote control device.

[0008] In another embodiment, a third key code signal (which may, for example, be a radio frequency signal) is communicated directly from the key code generator device to an electronic consumer device. A key code contained in the third key code signal causes the electronic consumer device to perform a desired function.

[0009] In yet another embodiment, the system automatically determines which codeset is usable to communicate with a selected electronic consumer device. The key

code generator device sends key codes for one particular function from among a series of codesets one-by-one to the selected electronic consumer device. When the key code from one of the codesets causes the electronic consumer device to perform the desired function, electromagnetic noise is introduced into electrical power wiring through which both the electronic consumer device and the key code generator device receive power. When the key code generator device detects this noise on the electrical power wiring, the key code generator device identifies the codeset corresponding to the last transmitted key code to be the codeset usable to communicate with the selected electronic consumer device.

[0010] Other embodiments and advantages are described in the detailed description below. This summary does not purport to define the invention. The invention is defined by the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The accompanying drawings, where like numerals indicate like components, illustrate embodiments of the invention.

[0012] Figure 1 is a schematic diagram of a system for relaying key code signals through a remote control device.

[0013] Figure 2 is a flowchart of a method for relaying key code signals through a remote control device.

[0014] Figure 3 is an illustration of a key code transmitted within a key code signal.

[0015] Figure 4 is a waveform diagram of a first example of a key code signal transmitted by a remote control device in the system of figure 1.

[0016] Figure 5 is a waveform diagram of a second example of a key code signal transmitted by a remote control device in the system of figure 1.

[0017] Figure 6A is an illustration of a modulated digital zero and digital one within the key code signal of figure 5.

[0018] Figure 6B is a more detailed illustration of a mark of a modulated digital zero within the key code signal of figure 5.

DETAILED DESCRIPTION

[0019] Reference will now be made in detail to some embodiments of the invention, examples of which are illustrated in the accompanying drawings.

[0020] Figure 1 is a diagram of a system 10 for relaying a key code through a remote control device 11 to an electronic consumer device in accordance with the present invention. Figure 2 is a flowchart that illustrates a method of operation of system 10. System 10 includes a key code generator device 12, remote control device 11, a first electronic consumer device 13 and a second electronic consumer device 14. In this example, second electronic consumer device 14 is a television set.

[0021] In a first step (step 100), key code generator device 12 determines the appropriate codeset that controls the type, brand and model of the particular electronic consumer device that is to be controlled. A user uses remote control device 11 to respond to an on-screen display 15 on the screen of television set 14 to step through a sequence of menu screens to identify the codeset corresponding to the device that is to be controlled. The user does this by identifying, on on-screen display 15, the type, brand and model of the particular electronic consumer device. In this example, the user is identifying first electronic consumer device 13, which is a video cassette recorder (VCR) manufactured

by Sony with model number 8000. In figure 1, the user is identifying the device type by highlighting the choice “VCR” on the on-screen display. In another example, subsequent to controlling VCR 13, the user may wish to control television set 14, which is a “Gold” model manufactured by RCA. In that case, the user begins identifying television set 14 by highlighting the choice “TV”.

[0022] In the present example, key code generator device 12 is a set-top box. Key code generator device 12 generates the on-screen displays and communicates with television set 14 such that key code generator device 12 identifies one of a plurality of codesets that corresponds to one of the electronic consumer devices identified by the user, such as VCR 13 or television set 14. System 10 uses the appropriate codeset to enable remote control device 11 to communicate with VCR 13 and television set 14.

[0023] Next (step 101), the user presses a key on remote control device 11. This key is associated with a function that the user wants performed by an electronic consumer device. For example, the function may be to turn on the power of VCR 13. When the user presses the “VCR power-on” key on remote control device 11, remote control device 11 transmits a keystroke indicator signal 16 from a radio frequency (RF) transmitter 17 on remote control device 11. Alternatively, two or more keys on remote control device 11 may be associated with a single function, such as turning on the power of VCR 13. In that case, the user presses a “VCR” key and then a “power-on” key to cause remote control device 11 to transmit keystroke indicator signal 16. Keystroke indicator signal 16 is transmitted as a signal in a radio frequency band to an RF receiver 18 on key code generator device 12.

[0024] There are multiple forms in which an indication of the pressed key, as well as the identity of the electronic consumer device that is to perform the associated function,

can be communicated in keystroke indicator signal 16 from remote control device 11 to key code generator device 12. In one embodiment, the indication of the pressed key is a key code comprised of a standardized system code and standardized key data. In the present example, the standardized system code identifies the type of electronic consumer device that is to be controlled, such as a TV, a VCR, a DVD player, a stereo amplifier, a satellite receiver or a cable receiver. The standardized system code and key data are part of a commonly used codeset that is stored on remote control device 11. Remote control device 11 uses any one of a number of commonly used modulation techniques to modulate the system code and key data to form keystroke indicator signal 16. For example, a microcontroller on remote control device 11 uses timing information associated with the commonly used codeset to generate a pulse width modulated keystroke indicator signal 16.

[0025] In another embodiment, the indication of the pressed key includes a proprietary identification code identifying the pressed key, as well as a proprietary identification code corresponding to the type of the electronic consumer device that is to be controlled. The proprietary identification codes are understood by key code generator device 12, but are not standardized codes that are understood by electronic consumer devices. Remote control device 11 uses any one of a number of commonly used modulation techniques to modulate the proprietary identification codes onto keystroke indicator signal 16.

[0026] Whether remote control device 11 communicates with key code generator device 12 through a standardized codeset or through proprietary identification codes, codes may be included that do not correspond to pressed keys or functions that are to be performed on electronic consumer devices. For example, in response to receiving any

signal from remote control device 11, key code generator device 12 may return a code to remote control device 11 causing a light emitting diode (LED) display on remote control device 11 to turn on.

[0027] Next (step 102), key code generator device 12 determines which key code of the codeset previously identified in step 100 corresponds to the pressed key.

[0028] Figure 3 illustrates one example of a key code from a commonly used codeset. The key code is comprised of a standardized system code and standardized key data. Both the system code and the key data are digital values. The 12-bit key code includes a 4-bit system code [0101] and 8-bit key data [00011100]. In the present example, the key code is the key code in the identified codeset that corresponds to the “VCR power-on” key of remote control device 11.

[0029] Next (step 103), key code generator device 12 modulates the key code for the power-on function of VCR 13 onto a first carrier signal, thereby generating a first key code signal 19. In this example, the first carrier signal is an RF signal. An RF signal for purposes of this patent document is an electromagnetic signal having a frequency between thirty hertz and three hundred gigahertz.

[0030] Figure 4 and figure 5 illustrate key code signal 19 in two specific embodiments. In both embodiments, the key code is transmitted as a stream of digital values 010100011100, where the system code is transmitted first immediately followed by the key data without any place holders between them. The standardized system code determined in step 102 need not identify the brand or model of VCR 13, but only the fact that first electronic consumer device 13 is a VCR. The key code is modulated in step 103 using timing information associated with the codeset for VCR 13. Thus, the particular

brand and model of VCR 13 is able to understand the key code modulated using the appropriate timing information.

[0031] In the embodiment of figure 4, key code signal 19 is a 15-bit binary transmission whose bit pattern appears as a universal asynchronous receiver and transmitter (UART) type communication. The binary transmission begins with a start bit and ends with a parity bit and a stop bit. The parity bit is calculated based on the 12-bit key code within the binary transmission. In this example, the value of the parity bit is a digital zero. An intermediary signal is transmitted over the first carrier signal at an intermediary frequency (for example, 100 kHz) to communicate a digital one. The absence of the intermediary signal indicates a digital zero. The intermediary signal has a lower frequency than the first carrier signal.

[0032] In the embodiment of figure 5, the 12-bit key code is modulated onto key code signal 19 using pulse width modulation. Digital ones and zeros are characterized by pairs of marks and spaces. The period between successive leading edges of the bursts in a mark is the period of an intermediary signal. The intermediary signal has an intermediary frequency. In a space, there are no bursts.

[0033] Figure 6A shows a digital zero and a digital one in key code signal 19 of figure 5 in more detail. A “mark/space” pair represents a digital zero and another “mark/space” pair represents a digital one. The marks and spaces of each pair have predetermined lengths. In the embodiment of figure 5, the mark length of a digital zero is 490 microseconds, and the mark length of a digital one is 3940 microseconds. The space length of a digital zero is 950 microseconds, and the space length of a digital one is 2000 microseconds.

[0034] Figure 6B shows the bursts of the first carrier signal that comprise the intermediary signal in more detail. In the embodiment of figure 5, the bursts that comprise the intermediary signal occur every ten microseconds, resulting in an intermediary frequency of 100 kilohertz. The duty cycle of the intermediary signal is characterized by an “on time” of four microseconds and an “off time” of six microseconds. There are forty-nine bursts of the carrier signal within each mark length of 490 microseconds.

[0035] Timing information other than that shown in the embodiment of figure 5 can also be used. For example, one common form of pulse width modulation uses an intermediary signal having a frequency of about 38.5 kilohertz. Each period of the intermediary signal has an “on time” of ten microseconds and an “off time” of sixteen microseconds. If such an intermediary signal were used to generate a 490 microsecond mark length of a digital zero shown in figure 6A, there would be 19 bursts of the intermediary signal in the mark. Similarly, if such an intermediary signal were used to generate a 3940 microsecond mark length of a digital one shown in figure 6A, there would be 151 bursts of the intermediary signal in the mark.

[0036] Next (step 104), an RF transmitter 20 of key code generator device 12 transmits first key code signal 19 in the form of an RF transmission to an RF receiver 21 on remote control device 11.

[0037] Next (step 105), remote control device 11 receives first key code signal 19 and relays the key code communicated by first key code signal 19 to VCR 13 in the form of a second key code signal 22. Remote control device 11 is a slave to key code generator device 12. Remote control device 11 relays the key code by receiving first key code signal 19 in RF form and translating the communicated key code so that the key code is

modulated onto a second carrier signal resulting in second key code signal 22. In this example, the second carrier signal is an infrared signal with a frequency in the range between three hundred gigahertz and three hundred terahertz. Second key code signal 22 is transmitted by an IR transmitter 23 on remote control device 11 to VCR 13. In the embodiment of figure 5, key code signal 19 is converted into key code signal 22 by forming the bursts of the intermediary signal using the second carrier signal with an infrared frequency in the place of the first carrier signal with a radio frequency. For both key code signal 19 and key code signal 22, digital ones and digital zeros are modulated using the same timing for “mark/space” pairs. The waveform diagram of key code signal 22 appears the same as the waveform diagram shown in figure 5 for key code signal 19; only the frequency of the carrier signal that forms the bursts is different.

[0038] Next (step 106), second key code signal 22 is received onto electronic consumer device (VCR) 13 by an IR receiver 24.

[0039] Next (step 107), IR receiver 24 on VCR 13 recovers the key code from second key code signal 22. VCR 13 is thereby instructed to perform the function desired by the user. In this example, the function is to power on VCR 13. Other key codes, however, correspond to other functions, such as power off, channel advance, channel back, volume up, volume down, cursor up, cursor down, cursor right, cursor left, select, play, record, stop, forward, rewind and pause.

[0040] In a second example, an electronic consumer device is controlled by an RF key code signal transmitted from key code generator device 12. Subsequent to controlling VCR 13, the user wishes to control second electronic consumer device 14, which is a “Gold” model RCA television set. In the second example, the user uses the on-screen display 15 to identify the type (TV), brand (RCA) and model (Gold) of second

electronic consumer device 14. Key code generator device 12 determines the appropriate codeset that controls television set 14. The user then presses a key on remote control device 11 associated with a function that the user wants performed by television set 14. For example, the function is to advance the channel of television set 14. When the user presses the channel advance key on remote control device 11, an indication of the pressed key is transmitted in an RF keystroke indicator signal from remote control device 11 to key code generator device 12.

[0041] Key code generator device 12 then determines which key code of the identified codeset corresponds to the pressed key. Key code generator device 12 modulates the key code for the channel advance function onto an RF carrier signal, thereby generating a third key code signal 25. Key code generator device 12 uses the same modulation technique to generate both third key code signal 25 and first key code signal 19. Third key code signal 25 is modulated using timing information associated with the codeset that controls RCA Gold television set 14.

[0042] In this second example, television set 14 has an RF receiver 26 and is capable of receiving RF key code signals. RF transmitter 20 of key code generator device 12 transmits third key code signal 25 directly to television set 14. Third key code signal 25 is received onto television set 14 by RF receiver 26, and RF receiver 26 recovers the key code from third key code signal 25. Television set 14 is thereby instructed to advance the channel.

[0043] Although remote control device 11 in the first example stores either a proprietary codeset or a standardized codeset and uses that codeset to generate keystroke indicator signal 16, remote control device 11 stores only that single codeset. This codeset is the codeset used by key code generator device 12 to receive communications from

remote control device 11. Remote control device 11 can therefore be made inexpensively and may contain a relatively small amount of memory. The memory may, for example, be read only memory (ROM) on a microcontroller integrated circuit (for example, a Z8 microcontroller available from Zilog, Inc. of San Jose, CA.)

[0044] Even though remote control device 11 stores only a single codeset, system 10 of figure 1 nevertheless allows remote control device 11 to control the desired electronic consumer device 13, which may use any one of thousands of different codesets. Key code generator device 12 may, for example, include a hard disk or other mass storage device that stores thousands of possible codesets. The user may use remote control device 11 to select any one of those codesets for communication with the particular electronic consumer device 13. In comparison to some conventional systems where codesets are downloaded into a universal remote control device from a personal computer or other device that is not normally part of an entertainment system, system 10 uses preexisting hardware of the entertainment system (such as the on-screen display functionality, data storage capability, and wireless communication ability of the set-top box) to source and identify codesets.

[0045] Although the specific embodiments of figures 1 and 2 are explained above in connection with the codesets being identified to the key code generator device 12 using an on-screen display, the codeset usable to communicate with an electronic consumer device may be identified to key code generator device 12 in other ways in other embodiments. In one embodiment, for example, the key code generator device includes autoscan functionality. Key code generator device 12 includes an EMI detector 27 that detects electromagnetic interference (EMI) or noise on power cord 28. Power cord 28 is a power cord through which key code generator device 12 receives electrical power from

a wall socket 29. Similarly, television set 14 receives power from another wall socket 30 via a power cord 31. VCR 13 receives power from a wall socket 32 via another power cord 33. In accordance with the autoscanner functionality, key code generator device 12 identifies the codeset used to communicate with a particular electronic consumer device by generating and transmitting a sequence of key code signals relayed through remote control device 11 to the electronic consumer device to be controlled (in this case VCR 13). Each of these key code signals contains a different key code corresponding to the same desired function on different device types, brands and models.

[0046] In one example, the desired function is the function of powering on VCR 13. The key code generator device 12 sends the power-on key codes for each of a series of codesets one-by-one to VCR 13. When the key code for one of the codesets causes VCR 13 to perform the desired function (in this case, to power on), VCR 13 introduces noise or other electromagnetic interference via cord 33 into wall socket 32. The power terminal within wall socket 32 is connected through wiring 34 to the power terminal in wall socket 29. The noise generated by VCR 13 is therefore communicated through wiring 34, the power terminal of wall socket 29 and power cord 28 to EMI detector 27 on key code generator device 12. When key code generator device 12 detects the electromagnetic interference on power cord 28, key code generator device 12 automatically identifies the codeset used by VCR 13 as the codeset used to communicate the last key code signal for the power-on function.

[0047] Multiple electronic consumer devices may have the same key data for a particular function, for example, the power-on function. A key code, however, also contains a system code (see figure 3) that corresponds to a particular type of electronic consumer device. For example, the system code used for a television set will typically be

different than the system code used for a video cassette recorder. Thus, different device types that use the same key data for the power-on function will not respond to a key code containing an incorrect system code. Each of the power-on key codes transmitted in this example by key code generator device 12 contains the system code for a video cassette recorder, so television set 14 does not recognize the key codes. Because key code generator device 12 is aware of the system code communicated, key code generator device 12 determines that it was VCR 13 that was powered on and not television 14.

[0048] In another example, the codeset usable to communicate with VCR 13 is identified to key code generator device 12 using autoscanner functionality that does not involve key code generator device 12 having a specialized EMI detection circuit. In that case, the user may be prompted by successive screens of on screen display 15 to push the power-on key on remote control device 11 multiple times. Each time the power-on key is pressed, keystroke indicator signal 16 communicates this to key code generator device 12. Key code generator device 12 in turn generates and transmits a key code signal containing a power-on key code using a different codeset. Each key code signal is relayed through remote control device 11 to the particular electronic consumer device to be controlled. One by one the user is prompted to push the power-on key, and key code generator device 12 in turn generates key codes using different codesets until the electronic consumer device performs a desired function. In this case, first electronic consumer device 13 turns on. The user is prompted not to press the power-on key once the user sees the desired function being performed by first electronic consumer device 13. In the present example, light emitting diodes (LEDs) on the face of VCR 13 may be illuminated to indicate to the user that VCR 13 has powered on. When the user stops

pressing the power-on key, then the key code generator device 12 identifies the codeset of the last transmitted key code to be the codeset used by the electronic consumer device.

[0049] In another example, the user presses keys on remote control device 11 to communicate to key code generator device 12 a 3-digit codeset identification number identifying the codeset. The user may determine this codeset identification number by looking up the codeset identification number in a booklet supplied along with the electronic consumer device to be controlled. Alternatively, a table of manufacturers, model numbers and their associated codesets may be used to lookup the codeset identification number.

[0050] In an embodiment where key code generator device 12 is a set-top box, the set-top box receives a video input signal 35 from a cable television coaxial cable 36. Video input signal 35 is ultimately delivered to television set 14 through cables 37. Coaxial cable 36 is also used to provide networking connectivity between the set-top box and a network 38. Network 38 may, for example, be or include the Internet. A database of codesets 39 is maintained at a remote location. As new electronic consumer devices are introduced onto the market, new codesets may be necessary to communicate with these new devices. So that one such new codeset can be distributed from database of codesets 39 when a new electronic consumer device is introduced into the market, this new codeset is communicated via network 38 and coaxial cable 36 to key code generator device 12. The new codeset is then stored on a mass storage hard disk within the set-top box. In this way, the pre-existing and inexpensive remote control device 11 can be used to control a new electronic consumer device whose required codeset did not exist at the time remote control device 11 and key code generator device 12 were delivered to the user.

[0051] In yet another embodiment, remote control device 11 is a learning remote control device that includes an IR detector 40. In accordance with one method, the learning remote control device 11 is placed so that IR detector 40 can receive an IR transmission from an IR transmitter of another remote control device. Keys corresponding to key codes to be learned are pressed on the other remote control device such that successive key code signals are transmitted from the IR transmitter of the other remote control device to IR detector 40 of the learning remote control device 11. Learning remote control device 11 detects when the envelope of the bursts of the received IR signal changes from low to high and high to low. The time duration between each successive transition is stored such that a key code signal is recorded as timing information for a series of mark lengths and space lengths. As the various keys of the remote control device to be learned are pressed, learning remote control device 11 records successive strings of timing information. The resulting strings of timing information, once collected on learning remote control device 11, are automatically transmitted from learning remote control device 11 in the form of RF signals to key code generator device 12. Key code generator device 12 in turn communicates the captured strings of timing information through coaxial cable 36 and network 38 to database of codesets 39. Personnel maintaining database of codesets 39 then analyze the timing information and generate a codeset that describes the key codes captured by learning remote control device 11. In this way, a new codeset containing key data, systems codes and timing information is added to database of codesets 39. Rather than storing the information as a new codeset that includes separate key codes and timing information, the information for each keystroke can be stored in database of codesets 39 in the form of interval times.

[0052] A single system 10 is therefore described that can support numerous different types of electronic consumer devices that can use multiple different codesets. The remote control device 11 of the system need not include a large memory and stored many codesets. Rather, the remote control device 11 need only relay individual key codes. Remote control device 11 can therefore be a relatively inexpensive device that includes only a small amount of memory. In addition to requiring only a small amount of memory, the very same remote control device 11 can control an electronic consumer device that uses a codeset or protocol that was not in existence at the time the remote control device 11 was delivered to the user. The amount of writable memory (for example, random access memory (RAM) or flash memory) on the remote control device 11 may be so little that it may not be adequate to store a conventional codeset. The bulk of the memory of the remote control device 11 may be relatively inexpensive mask-programmable read only memory (ROM). By reducing the amount of writable memory on remote control device 11, the cost of remote control device 11 is reduced.

[0053] Although the present invention has been described in connection with certain specific embodiments for instructional purposes, the present invention is not limited thereto. Although the method is described above in connection with an inexpensive remote control device whose primary purpose is to control an electronic consumer device, the method can be employed in connection with other types of devices. Due to the limited amount of memory and intelligence required of the remote control device in the present method, the functionality of remote control device 11 can be incorporated into an RF-enabled device (such as a cell phone or RF-enabled personal digital assistant (PDA) or RF-enabled wrist watch or RF-enabled keyboard) without significantly increasing the cost of the device. The first carrier signal used to communicate between

the remote control device and the key code generator device need not be an RF signal, and the second carrier signal used to communicate between the remote control device and the electronic consumer device need not be an IR signal. Both the first and second carrier signals can be the same type of signals, for example IR signals. The key code generator device can transmit key codes to the electronic consumer device to be controlled via a hardwired connection rather than a wireless link. The type of key code signal relayed through the remote control device is not limited to any particular protocol.

[0054] Although key code generator device 12 is a set-top box in the embodiment of figure 1 above, in other embodiments the key code generator device 12 is another type of electronic consumer device such as, for example, a television, a stereo radio, a digital video disk player, a video cassette recorder, a personal computer, a set-top cable television box or a set-top satellite box. Although the keystroke indicator signal can be an indication of a pressed key where there is a one-to-one relationship between the key and a function to be performed, in other embodiments a keystroke indicator signal indicates a selected function that is not associated with a specific key on the remote control device. For example, a function can be selected choosing a function from a menu that is displayed on the remote control device. Accordingly, various modifications, adaptations, and combinations of various features of the described embodiments can be practiced without departing from the scope of the invention as set forth in the claims.

CLAIMS

What is claimed is:

1. A first device for transmitting a command to control a functional operation of a second device, the first device comprising:
 - a receiver;
 - a transmitter;
 - a processing device coupled to the receiver and the transmitter; and
 - a memory storing instructions executable by the processing device, the instructions causing the processing device to:
 - generate a key code using a keystroke indicator received from a third device in communication with first device via use of the receiver, the keystroke indicator having data that indicates an input element of the third device that has been activated;
 - format the key code for transmission to the second device; and
 - transmit the formatted key code to the second device in a key code signal via use of the transmitter;
 - wherein the generated key code is a part of a codeset and wherein the codeset comprises time information that describes a digital one and a digital zero.
2. The first device as recited in claim 1, wherein the receiver comprises an RF receiver.
3. The first device as recited in claim 1, wherein the transmitter comprises an IR transmitter.

4. The first device as recited in claim 1, wherein the formatted key code is transmitted from the first device to the second device via a wired connection between the first device and the second device.

5. The first device as recited in claim 1, wherein the formatted key code is transmitted from the first device to the second device via a wireless connection between the first device and the second device.

6. The first device as recited in claim 1, wherein the first device comprises a further receiver for receiving a media from a fourth device in communication with the first device and wherein the first device is coupled to the second device to provide the media to the second device for display on a display device associated with the second device.

7. The first device as recited in claim 1, wherein the generated key code controls at least one of a power on, power off, volume up, and volume down functional operation of the second device.

8. The first device as recited in claim 1, wherein the first device comprises a further receiver for receiving the codeset from a fourth device in communication with the first device.

9. A first device for transmitting a command to control a functional operation of a second device, the first device comprising:

a receiver;

a first transmitter;

a second transmitter;

a processing device coupled to the receiver, the first transmitter, and the second transmitter; and

a memory storing instructions executable by the processing device, the instructions causing the processing device to:

- generate a key code using a keystroke indicator received from a third device in communication with first device via use of the receiver, the keystroke indicator having data that indicates an input element of the third device that has been activated;
- format the key code for transmission to the second device;
- transmit the formatted key code to the second device in a key code signal via use of the first transmitter and a first communication protocol; and
- transmit the formatted key code to the second device in a keycode signal via use of the second transmitter and a second communication protocol when it is determined that the second device is not responsive to the key code signal transmitted via use of the first transmitter and the first communication protocol.

10. The first device as recited in claim 9, wherein one of the first and second transmitters comprises an IR transmitter and wherein the other of the first and second transmitter comprises an RF transmitter.

11. The first device as recited in claim 9, wherein one of the first and second communication protocols comprises a wired communication protocol and the other of the first and second communication protocols comprises a wireless communication protocol.

12. The first device as recited in claim 9, wherein the formatted key code is transmitted from the first device to the second device via a wired connection between the first device and the second device.

13. The first device as recited in claim 9, wherein the receiver comprises an RF receiver.

14. The first device as recited in claim 9, wherein the first device comprises a further receiver for receiving a media from a fourth device in communication with the first device and wherein the first device is coupled to the second device to provide the media to the second device for display on a display device associated with the second device.

15. The first device as recited in claim 9, wherein the generated key code controls at least one of a power on, power off, volume up, and volume down functional operation of the second device.

16. The first device as recited in claim 1, wherein the first device comprises a further receiver for receiving at least one codeset from a fourth device in communication with the first device and wherein the at least one codeset is used to generate the key code.

ABSTRACT

Upon receiving a keystroke indicator signal from a remote control device, a key code generator device identifies a codeset usable to communicate with a selected consumer device. The keystroke indicator signal contains an indication of a pressed key, which corresponds to a function of the selected consumer device. Using the identified codeset and the key indication, the key code generator device generates a key code and modulates that key code onto a radio frequency carrier signal, thereby generating a first key code signal. The remote control device receives the first key code signal from the key code generator device and modulates the key code onto an infrared frequency carrier signal, thereby generating a second key code signal. The remote control device relays the key code to the selected consumer device in the second key code signal. The key code causes the selected consumer device to perform the desired function.

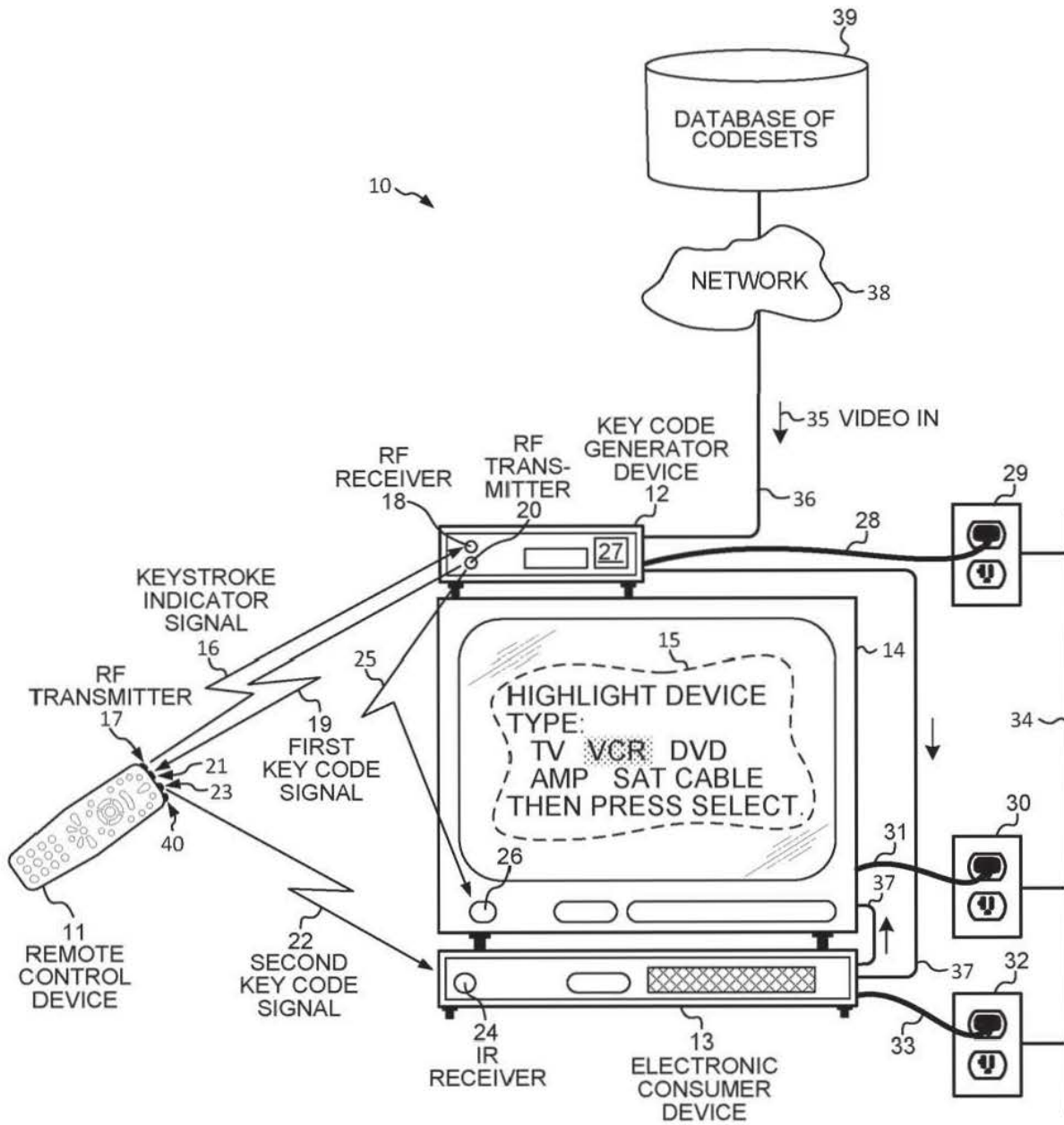


FIG. 1

2/4

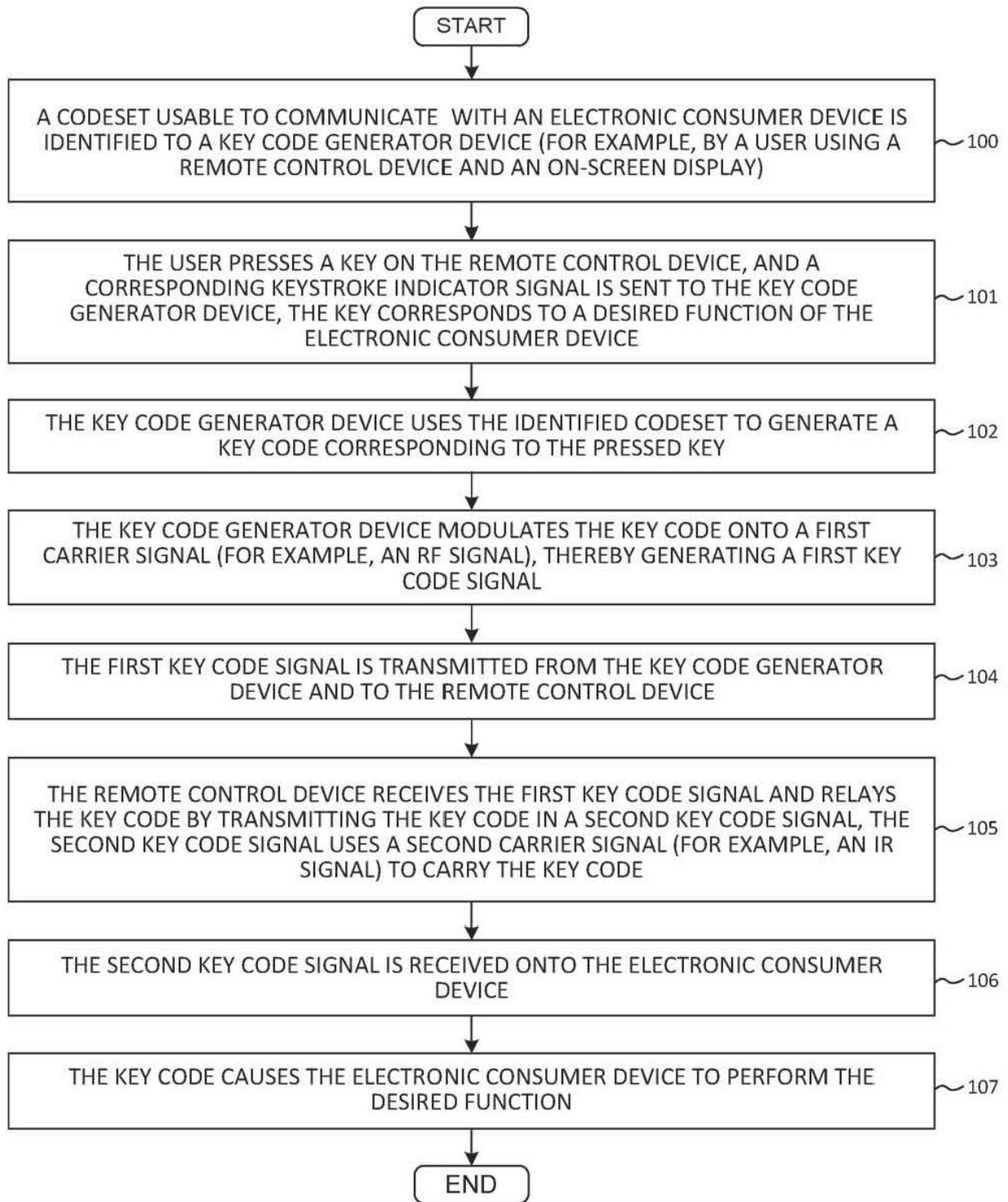
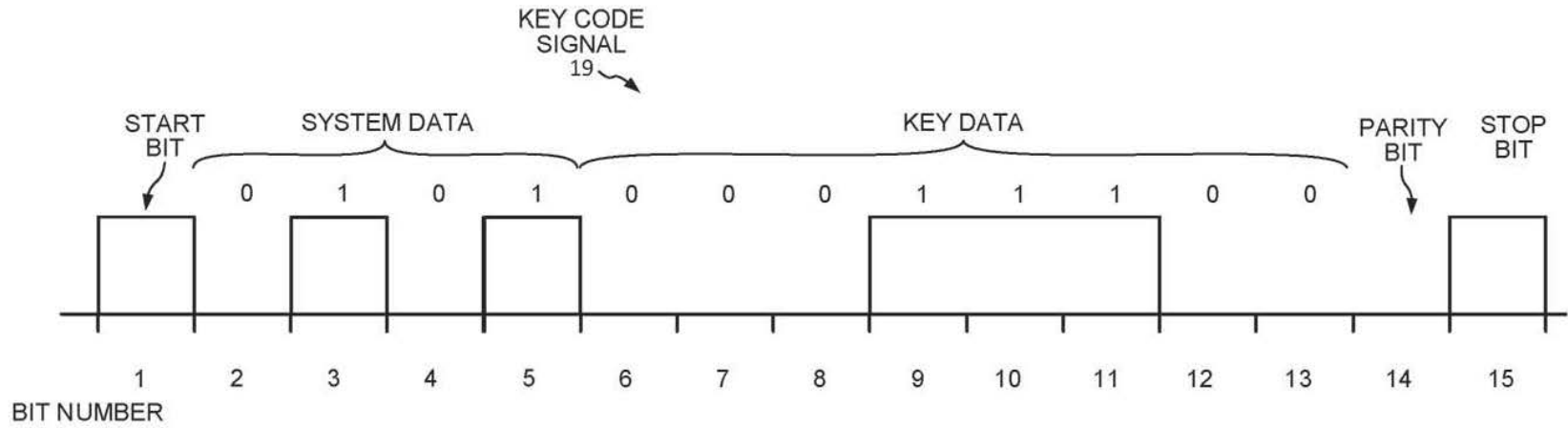
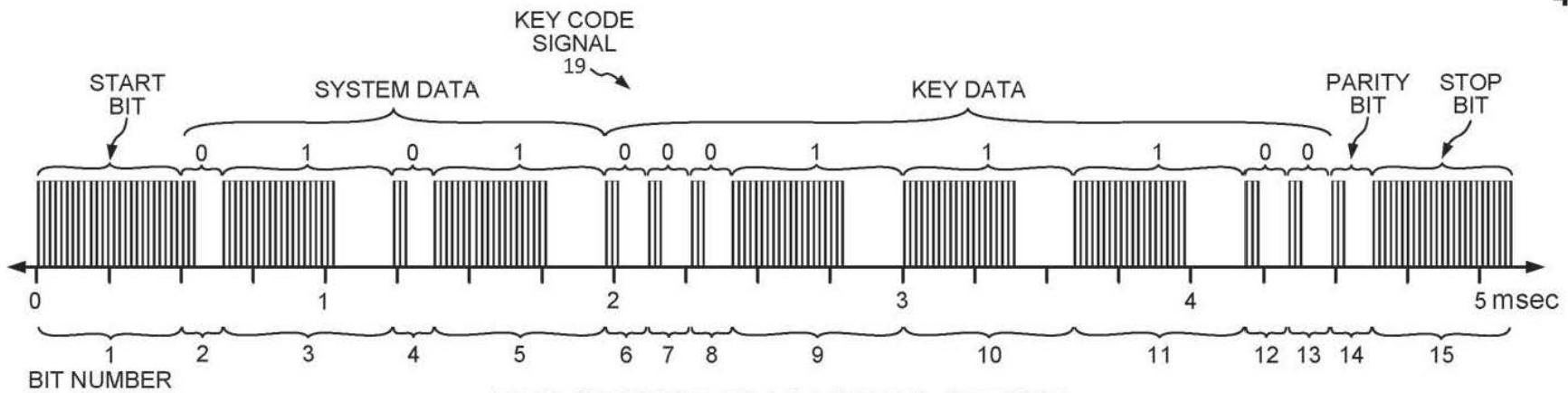


FIG. 2



BINARY TRANSMISSION

FIG. 4



PULSE WIDTH MODULATION

FIG. 5

4/4

0 1 0 1 0 0 0 1 1 1 0 0

SYSTEM CODE KEY DATA

KEY CODE
FIG. 3

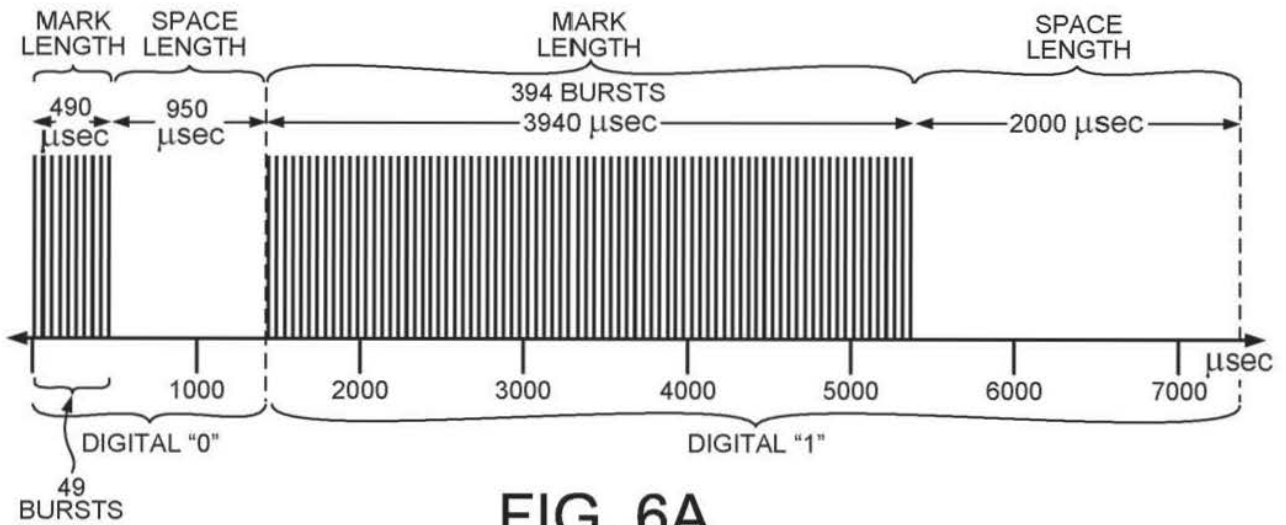


FIG. 6A

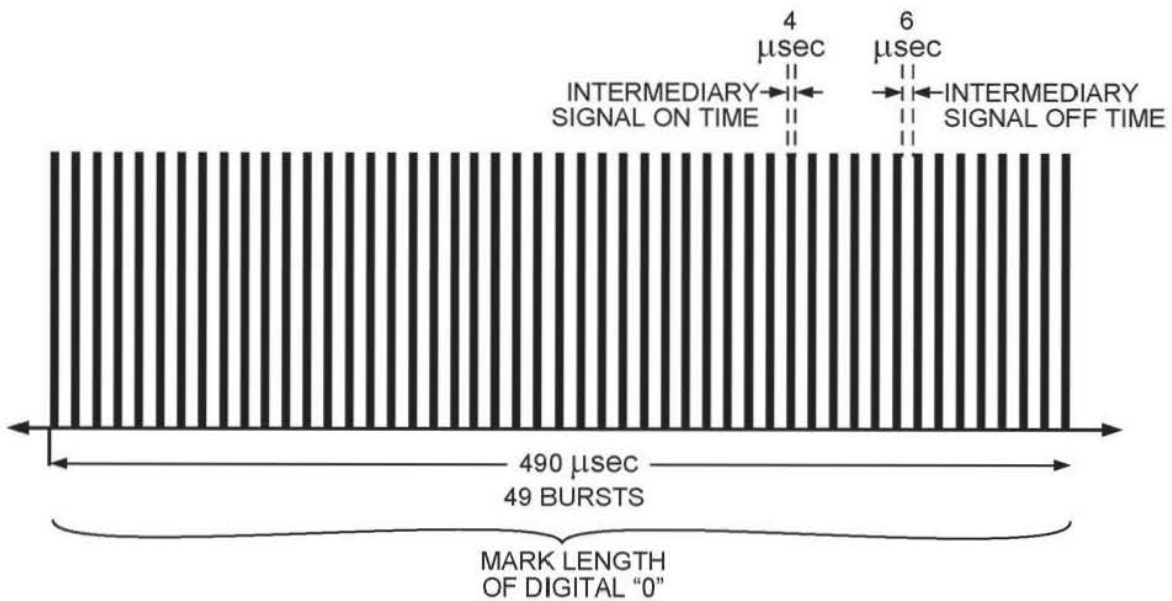


FIG. 6B

Electronic Patent Application Fee Transmittal

Application Number:					
Filing Date:					
Title of Invention:	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE				
First Named Inventor/Applicant Name:	Daniel SauFu Mui				
Filer:	Gary R. Jarosik/Gladys Negron-Munoz				
Attorney Docket Number:	81230.708US4				
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:	25770404
Application Number:	15153905
International Application Number:	
Confirmation Number:	4652
Title of Invention:	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE
First Named Inventor/Applicant Name:	Daniel SauFu Mui
Customer Number:	34018
Filer:	Gary R. Jarosik/Gladys Negrón-Munoz
Filer Authorized By:	Gary R. Jarosik
Attorney Docket Number:	81230.708US4
Receipt Date:	13-MAY-2016
Filing Date:	
Time Stamp:	11:47:36
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	9244
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_708US4.pdf	103109 7f844d062b70f40a5caef094d6ea5a70f6b9e117	no	1
Warnings:					
Information:					
2	Application Data Sheet	ADS_81230_708US4.pdf	1823236 e7574b28db59852dc93f51088b7bd2a2c00a387c	no	8
Warnings:					
Information:					
3		Spec_81230_708US4.pdf	144278 aa2641f13ec9dbf263253460d6ac40e96c5caea3	yes	24
	Multipart Description/PDF files in .zip description				
	Document Description		Start		End
	Specification		1		19
	Claims		20		23
	Abstract		24		24
Warnings:					
Information:					
4	Drawings-only black and white line drawings	Drawings_81230_708US4.pdf	87465 d89f0107520b8a1c8b981ab40c00efdc580e5d3	no	4
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	35176 8415325c48e15d8a5a6fe0fc88007a541f7aa20c	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			2193264		

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.

PATENT APPLICATION FEE DETERMINATION RECORD
Substitute for Form PTO-875

Application or Docket Number
15/153,905

APPLICATION AS FILED - PART I

(Column 1)		(Column 2)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	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))	16	minus 20 = *			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2	minus 3 = *			OR	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

AMENDMENT A	(Column 1)	(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
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))						OR		
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR		
			TOTAL ADD'L FEE			OR	TOTAL ADD'L FEE	
AMENDMENT B	(Column 1)	(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
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))						OR		
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

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

Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY.DOCKET.NO, TOT CLAIMS, IND CLAIMS. Row 1: 15/153,905, 05/13/2016, 2683, 1600, 81230.708US4, 16, 2

CONFIRMATION NO. 4652

FILING RECEIPT



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

Date Mailed: 05/27/2016

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)

Daniel SauFu Mui, San Jose, CA;

Applicant(s)

Universal Electronics Inc., Santa Ana, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 13/068,820 05/21/2011 PAT 9355553
which is a CON of 12/462,526 08/04/2009 PAT 8004389
which is a CON of 10/737,029 12/16/2003 PAT 7589642

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: Yes

Permission to Access Search Results: Yes

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: 05/25/2016

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/153,905**

Projected Publication Date: 09/01/2016

Non-Publication Request: No

Early Publication Request: No
Title

RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE

Preliminary Class

340

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 Assets Control, 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.



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

Table with 4 columns: APPLICATION NUMBER (15/153,905), FILING OR 371(C) DATE (05/13/2016), FIRST NAMED APPLICANT (Daniel SauFu Mui), ATTY. DOCKET NO./TITLE (81230.708US4)

CONFIRMATION NO. 4652

FORMALITIES LETTER



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

Date Mailed: 05/27/2016

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing.

Applicant is given TWO MONTHS from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.
The surcharge is due for any one of:
• late submission of the basic filing fee, search fee, or examination fee,
• late submission of inventor's oath or declaration,
• filing an application that does not contain at least one claim on filing, or
• submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required within TWO MONTHS from the date of this Notice to avoid abandonment is/are itemized below. No entity status discount is in effect. If applicant is qualified for small entity status, a written assertion of small entity status must be submitted to establish small entity status. (See 37 CFR 1.27). If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- \$ 140 surcharge.
• \$(0) previous unapplied payment amount.
• \$ 140 TOTAL FEE BALANCE DUE.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
Daniel SauFu Mui

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice".
<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/nhassani/

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.

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:

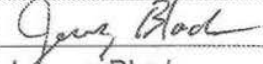
34018

OR

<input type="checkbox"/>	Firm or Individual Name			
<input type="checkbox"/>	Address			
<input type="checkbox"/>	City	State	Zip	
<input type="checkbox"/>	Country			
<input type="checkbox"/>	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		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:	15153905			
Filing Date:	13-May-2016			
Title of Invention:	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE			
First Named Inventor/Applicant Name:	Daniel SauFu Mui			
Filer:	Gary R. Jarosik/Gladys Negron-Munoz			
Attorney Docket Number:	81230.708US4			
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:				
Late Filing Fee for Oath or Declaration	1051	1	140	140
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 (\$)				140

Electronic Acknowledgement Receipt

EFS ID:	26458382
Application Number:	15153905
International Application Number:	
Confirmation Number:	4652
Title of Invention:	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE
First Named Inventor/Applicant Name:	Daniel SauFu Mui
Customer Number:	34018
Filer:	Gary R. Jarosik/Gladys Negron-Munoz
Filer Authorized By:	Gary R. Jarosik
Attorney Docket Number:	81230.708US4
Receipt Date:	26-JUL-2016
Filing Date:	13-MAY-2016
Time Stamp:	14:55:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$140
RAM confirmation Number	072716INTEFSW00001325502428
Deposit Account	502428
Authorized User	Gladys Negron-Munoz

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 Letter	TransmittalForm_15153905.pdf	146510 cb2197de29fa4363c40dcabbcf7e58f6082e3230	no	1
Warnings:					
Information:					
2	Miscellaneous Incoming Letter	RespMissingParts_15153905.pdf	63785 aa5583ca7a7773940ecbfba4aea347c51fd726ec	no	1
Warnings:					
Information:					
3	Miscellaneous Incoming Letter	SubstituteStat_SauFuMui_15153905_708US4.pdf	187761 914b143ce4f2a68a1ae5a537c0e30a7e8650325b	no	2
Warnings:					
Information:					
4	Assignee showing of ownership per 37 CFR 3.73	Stat73c_uei_708us4_15153905.pdf	76663 87c84b9a278b9431ca0f7b4b7f0090e7cf52c825	no	2
Warnings:					
Information:					
5	Power of Attorney	UEIexecutedPOA.pdf	869668 1a3d77a316b90935e91a0bdd08952c362973a1d3	no	1
Warnings:					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	30501 80ed82e0ead748c768c333bc4d4528dd9a22e3cb	no	2
Warnings:					
Information:					

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.

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 <small>(to be used for all correspondence after initial filing)</small>	Application Number	15/153,906
	Filing Date	05/13/2016
	First Named Inventor	Daniel SauFu Mui
	Art Unit	2683
	Examiner Name	not assigned
Total Number of Pages in This Submission	Attorney Docket Number	81230.708US4

ENCLOSURES (Check all that apply)		
<input type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input checked="" type="checkbox"/> Reply to Missing Parts/Incomplete Application <input checked="" type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input checked="" type="checkbox"/> Power of Attorney, Revocation <input checked="" type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD <div style="border: 1px solid black; padding: 2px;">Remarks</div>	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): - Substitute Statement in Lieu of an Oath or Declaration - Statement Under 37 CFR 3.73(c)

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	Greenberg Traurig, LLP - Customer No. 34018		
Signature	/Gary R. Jarosik/		
Printed name	Gary R. Jarosik		
Date	July 26, 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	July 26, 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 and 1.14. 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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: UNIVERSAL ELECTRONICS INC.) Examiner: not assigned
Serial No.: 15/153,905) Group Art Unit: 2683
Filed: 05/13/2016) Docket No.: 81230.708US4
Title: RELAYING KEY CODE SIGNALS)
THROUGH A REMOTE CONTROL)
DEVICE)

RESPONSE TO NOTICE TO FILE MISSING PARTS

FILED VIA EFS-WEB

Mail Stop MISSING PARTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Notice to File Missing Parts mailed on May 27, 2016, attached are the following documents:

- Substitute Statement in Lieu of an Oath or Declaration;
- Power of Attorney;
- Statement Under 37 CFR 3.73(c).

The Commissioner is authorized to charge the \$140.00 surcharge fee, any fee deficiency or credit overpayment to deposit account number 50-2428 in the name of Greenberg Traurig.

Respectfully submitted,

Date: July 26, 2016

By: /Gary R. Jarosik/
Gary R. Jarosik, Reg. No. 35,906
Greenberg Traurig, LLP
77 W. Wacker Drive/Suite 3100
Chicago, Illinois 60601
(312) 456-8400

CHI 63571444v7

Certificate of Electronic Transmission: The undersigned hereby certifies that this document and its attachments are being transmitted electronically to the U.S. Patent and Trademark Office via EFS-Web on July 26, 2016.

By: /Gladys Negron-Munoz/
Name: Gladys Negron-Munoz

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.

SUBSTITUTE STATEMENT IN LIEU OF AN OATH OR DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (35 U.S.C. 115(d) AND 37 CFR 1.64)

Title of Invention	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE		
This statement is directed to:			
<input type="checkbox"/> The attached application,			
OR			
<input checked="" type="checkbox"/> United States application or PCT international application number <u>15/153,905</u> filed on <u>05/13/2016</u>			
LEGAL NAME of inventor to whom this substitute statement applies:			
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)			
Daniel SauFu Mui			
Residence (except for a deceased or legally incapacitated inventor):			
City	State	Country	
San Jose	CA	US	
Mailing Address (except for a deceased or legally incapacitated inventor):			
1625 Brookvale Dr. #3			
City	State	Zip	Country
San Jose	CA	95129	US
I believe the above-named inventor or joint inventor to be the original inventor or an original joint inventor of a claimed invention in the application.			
The above-identified application was made or authorized to be made by me.			
I hereby acknowledge that any willful false statement made in this statement is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.			
Relationship to the inventor to whom this substitute statement applies:			
<input type="checkbox"/> Legal Representative (for deceased or legally incapacitated inventor only),			
<input checked="" type="checkbox"/> Assignee,			
<input type="checkbox"/> Person to whom the inventor is under an obligation to assign,			
<input type="checkbox"/> Person who otherwise shows a sufficient proprietary interest in the matter (petition under 37 CFR 1.46 is required), or			
<input type="checkbox"/> Joint Inventor.			

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute 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.

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.

SUBSTITUTE STATEMENT

Circumstances permitting execution of this substitute statement:

- Inventor is deceased,
- Inventor is under legal incapacity,
- Inventor cannot be found or reached after diligent effort, or
- Inventor has refused to execute the oath or declaration under 37 CFR 1.63.

If there are joint inventors, please check the appropriate box below:

- An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) naming the entire inventive entity has been or is currently submitted.

OR


- An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor information is attached. See 37 CFR 1.64(b).

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

Name: **Jeremy K. Black** Date (Optional):

Signature: 

APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

If the applicant is a juristic entity, list the applicant name and the title of the signer:

UNIVERSAL ELECTRONICS INC.

Applicant Name:

Title of Person Executing This Substitute Statement: **Vice President and Associate General Counsel**

The signer, whose title is supplied above, is authorized to act on behalf of the applicant.

Residence of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent):

City **Santa Ana** State **CA** Country **US**

Mailing Address of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent)

201 E. Sandpointe Avenue
8th Floor

City **Santa Ana** State **CA** Zip **92707** Country **US**

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

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.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: UNIVERSAL ELECTRONICS INC.

Application No./Patent No.: 15/153,905 child of 12/462,526 Filed/Issue Date: 05/13/2016

Titled: RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE

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. 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. 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: Mui, Daniel SauFu To: Zilog, Inc.

The document was recorded in the United States Patent and Trademark Office at Reel 023086, Frame 0176, or for which a copy thereof is attached.

2. From: Zilog, Inc. To: UEI Cayman Inc.

The document was recorded in the United States Patent and Trademark Office at Reel 039218, Frame 0001, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(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.

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.

STATEMENT UNDER 37 CFR 3.73(c)3. From: UEI Cayman Inc. To: C.G. Development LimitedThe document was recorded in the United States Patent and Trademark Office at
Reel 039218, Frame 0071, or for which a copy thereof is attached.4. From: C.G. Development Limited/UEI Cayman Inc. To: Universal Electronics Inc.The document was recorded in the United States Patent and Trademark Office at
Reel 039218, Frame 0186, 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/July 26, 2016

Signature

Date

Gary R. Jarosik35,906

Printed or Typed Name

Title or Registration Number



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

Table with 4 columns: APPLICATION NUMBER (15/153,905), FILING OR 371(C) DATE (05/13/2016), FIRST NAMED APPLICANT (Daniel SauFu Mui), ATTY. DOCKET NO./TITLE (81230.708US4)

CONFIRMATION NO. 4652

PUBLICATION NOTICE

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



Title:RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE

Publication No.US-2016-0253899-A1

Publication Date:09/01/2016

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 Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY.DOCKET.NO, TOT CLAIMS, IND CLAIMS. Row 1: 15/153,905, 05/13/2016, 2636, 1740, 81230.708US4, 16, 2

CONFIRMATION NO. 4652

UPDATED FILING RECEIPT



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

Date Mailed: 10/20/2016

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)

Daniel SauFu Mui, San Jose, 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 13/068,820 05/21/2011 PAT 9355553
which is a CON of 12/462,526 08/04/2009 PAT 8004389
which is a CON of 10/737,029 12/16/2003 PAT 7589642

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: Yes

Permission to Access Search Results: Yes

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: 05/25/2016

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/153,905**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No
Title

RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE

Preliminary Class

398

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 Assets Control, 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
15/153,905

APPLICATION AS FILED - PART I

(Column 1)		(Column 2)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	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))	16	minus 20 = *			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2	minus 3 = *			OR	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

AMENDMENT A	(Column 1)	(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
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))						OR		
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR		
			TOTAL ADD'L FEE			OR	TOTAL ADD'L FEE	
AMENDMENT B	(Column 1)	(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
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))						OR		
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
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/153,905	05/13/2016	Daniel SauFu Mui	81230.708US4

CONFIRMATION NO. 4652

POA ACCEPTANCE LETTER



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

Date Mailed: 10/20/2016

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/26/2016.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/agizaw/



UNITED STATES PATENT AND TRADEMARK OFFICE

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

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
15/153,905 05/13/2016 Daniel SauFu Mui 81230.708US4 4652

34018 7590 04/21/2017
GREENBERG TRAURIG, LLP
77 WEST WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601-1732

Table with 1 column: EXAMINER
BROWN, VERNAL U

Table with 2 columns: ART UNIT, PAPER NUMBER
2686

Table with 2 columns: NOTIFICATION DATE, DELIVERY MODE
04/21/2017 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):

jarosik@gtlaw.com
chiipmail@gtlaw.com
escobedot@gtlaw.com

Office Action Summary	Application No. 15/153,905	Applicant(s) MUI, DANIEL SAUFU	
	Examiner VERNAL BROWN	Art Unit 2686	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 5/13/16.
 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) 1-16 is/are pending in the application.
5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) Claim(s) 9-16 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 5/13/16 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: _____.

Art Unit: 2686

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

The application of Daniel Mui filed 5/13/16 for Relaying Key Code Signals Through a Remote Control Device has been examined. Claims 1-16 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 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, 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 negated by the manner in which the invention was made.

Claim 1, 3, 5, 7, and 8 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pope US Patent 5963624 in view of Lindstedt et al. US Patent 4242664.

Regarding claims 1, 3, 5, Pope teaches a first device for transmitting a command to control a functional operation of a second device, the first device (base unit) comprising:

a receiver (82, fig. 3); a transmitter (87, fig. 3);

a processing device coupled to the receiver and the transmitter (84, fig. 3); and a memory (76, fig. 3) storing instructions executable by the processing device (col. 4 line 62-col. 5 line 14),

the instructions causing the processing device to:

Art Unit: 2686

generate a key code using a keystroke indicator received from a third device in communication with first device via use of the receiver, the keystroke indicator having data that indicates an input element of the third device that has been activated (key code is generated from key stroke indicator signal received from the phone by the base unit, col. 2 lines 45-col. 3 line 40); format the key code for transmission to the second device and transmit the formatted key code to the second device in a key code signal via use of the transmitter (col. 3 lines 35-40). Pope teaches an infrared transmitter that transmit train of pulses with each pulse being about 1.6 microseconds long, indicating a high or low bit (col. 3 lines 42-47) but is silent on teaching codeset comprises time information that describes a digital one and a digital zero. Lindstedt et al. in an analogous art teaches a codeset comprising timing information that describes a digital one and a digital zero (col. 2 lines 30-52).

It would have been obvious to one of ordinary skill in the art to modify the system of Pope as disclosed by Lindstedt et al. because modification improve the reliability of the control system by detecting interference and error signal.

Regarding claim 7, Pope teaches the key code signal causes the consumer device to perform volume control (col. 1 lines 51-63).

Regarding claim 8, Pope teaches a further receiver for receiving codeset from a fourth device over a powerline (col. 5 lines 10-14).

Art Unit: 2686

Claim 2 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pope US Patent 5963624 in view of Lindstedt et al. US Patent 4242664 and further in view of Wouters US Patent 6915109.

Regarding claim 2, Pope is not explicit in teaching the receiver comprises an RF receiver. Wouters in an analogous art teaches a RF receiver receiving a control signal and generating an infrared signal from the received RF signal (col. 4 lines 28-33).

It would have been obvious to one of ordinary skill in the art to modify the system of Pope in view of Lindstedt et al. as disclosed by Wouters because such modification represents the substitution of one type of wireless communication interface for another type of wireless communication interface.

Claim 4 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pope US Patent 5963624 in view of Lindstedt et al. US Patent 4242664 and further in view of and further in view of Autry et al. US Patent 5724106.

Regarding claim 4, Pope in view of Lindstedt is silent on teaching the key code signal is transmitted by hardwired connection. Autry et al. in an analogous art teaches transmitting remote control signal over hardwired means as an alternative to the use of wireless means (col. 6 lines 7-15).

It would have been obvious to one of ordinary skill in the art to modify the system of Pope in view of Lindstedt. Et al. as disclosed by Autry et al. because the system of Pope in view of Lindstedt et al. transmit signal from the remote control using wireless means and wireless means represents an alternative to the wired means.

Art Unit: 2686

Claim 6 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Pope US Patent 5963624 in view of Lindstedt et al. US Patent 4242664 and further in view of Lund et al. US Patent 7266834.

Regarding claim 6, Pope is silent on teaching the first device comprises a further receiver for receiving a media from a fourth device in communication with the first device and wherein the first device is coupled to the second device to provide the media to the second device for display on a display device associated with the second device. Lund et al. in an analogous art teaches receiving a media from a fourth device (television source 22) in communication with the first device (12) and wherein the first device is coupled to the second device to provide the media to the second device for display on a display device (40) associated with the second device (col. 2 lines 9-62).

It would have been obvious to one of ordinary skill in the art to modify the system of Pope in view of Lindstedt. et al. as disclosed by because such modification provide for a more adaptable entertainment system for receiving media content from different sources.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 9-16, the prior art of record fail to teach or suggest transmit the formatted key code to the second device in a keycode signal via use of the second transmitter and a second communication protocol when it is determined that the second device is not responsive

Art Unit: 2686

to the key code signal transmitted via use of the first transmitter and the first communication protocol.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VERNAL BROWN whose telephone number is (571)272-3060. The examiner can normally be reached on 8:30-5:00 M-F.

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, Lim Steven can be reached on 571-270-1210. 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.

Application/Control Number: 15/153,905
Art Unit: 2686

Page 7

/VERNAL BROWN/
Primary Examiner, Art Unit 2686

Notice of References Cited	Application/Control No. 15/153,905	Applicant(s)/Patent Under Reexamination MUI, DANIEL SAUFU	
	Examiner VERNAL BROWN	Art Unit 2686	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-5,963,624 A	10-1999	Pope; Steven M.	H04M11/007	348/734
*	B	US-4,242,664 A	12-1980	Lindstedt; Guenter	H03J9/06	340/12.18
*	C	US-6,915,109 B2	07-2005	Wouters; Johan Agnes Emile	G08C17/02	455/142
*	D	US-5,724,106 A	03-1998	Autry; Sidney David	G06F3/0213	341/176
*	E	US-7,266,834 B1	09-2007	Lund; Arnold M.	H04M1/575	725/106
	F	US-				
	G	US-				
	H	US-				
	I	US-				
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FOREIGN PATENT DOCUMENTS

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	P					
	Q					
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	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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	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. 15153905	Applicant(s)/Patent Under Reexamination MUI, DANIEL SAUFU
	Examiner VERNAL BROWN	Art Unit 2686

CPC- SEARCHED		
Symbol	Date	Examiner
G08C 15/04, G08C 17/02	4/17/17	VB

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
340	13.24	4/17/17	VB

SEARCH NOTES		
Search Notes	Date	Examiner

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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Index of Claims 	Application/Control No. 15153905	Applicant(s)/Patent Under Reexamination MUI, DANIEL SAUFU
	Examiner VERNAL BROWN	Art Unit 2686

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claims renumbered in the same order as presented by applicant
 CPA
 T.D.
 R.1.47

CLAIM		DATE							
Final	Original	04/17/2017							
	1	✓							
	2	✓							
	3	✓							
	4	✓							
	5	✓							
	6	✓							
	7	✓							
	8	✓							
	9	=							
	10	=							
	11	=							
	12	=							
	13	=							
	14	=							
	15	=							
	16	=							

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**Courtesy Reminder for
Application Serial No: 15/153,905**

Attorney Docket No: 81230.708US4

Customer Number: 34018

Date of Electronic Notification: 04/21/2017

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:

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escobedot@gtlaw.com

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Daniel SauFu Maui) Examiner: Brown, Vernal U.
)
Application No.:	15/153,905) Attny Doc.: 81230.708US4
)
Filing Date:	May 13, 2016) Art Unit: 2686
)
Title:	Relaying Key Code Signals)
	Through A Remote Control)
	Device)

RESPONSE

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

Dear Sir:

In response to the Office Action dated April 21, 2017 please enter the Amendment to the Claims which begins on page 2 of this paper and consider the Remarks which begin on page 6 of this paper.

While it is not believed that any fees are due, 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 is being transmitted electronically via EFS-Web to the United States Patent and Trademark Office on this 18th day of July, 2017.

/Gladys Negron-Munoz/
Gladys Negron-Munoz

CHI 68404281v1

AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior listing of claims in the subject application.

Listing of Claims:

1. (Currently Amended) A first device for transmitting a command to control a functional operation of a second device, the first device comprising:

a receiver;

a transmitter;

a processing device coupled to the receiver and the transmitter; and

a memory storing instructions executable by the processing device, the instructions causing the processing device to:

generate a key code using a keystroke indicator received from a third device in communication with first device via use of the receiver, the keystroke indicator having data that indicates an input element of the third device that has been activated;

format the key code for transmission to the second device; and

transmit the formatted key code to the second device in a key code signal via use of the transmitter;

wherein the generated key code ~~is a part of~~ comprises a one of a plurality of key code data stored in a codeset, wherein the one of the plurality of key code data is selected from the codeset as a function of the keystroke indicator received from the third device, wherein each of the plurality of key code data stored in the codeset comprises a series of digital ones and/or digital zeros, and wherein the codeset further comprises time information that describes how a digital one and/or a digital zero within the selected one of the plurality of key code data is to be represented in the key code signal to be transmitted to the second device.

2. (Original) The first device as recited in claim 1, wherein the receiver comprises an RF

receiver.

3. (Original) The first device as recited in claim 1, wherein the transmitter comprises an IR transmitter.

4. (Original) The first device as recited in claim 1, wherein the formatted key code is transmitted from the first device to the second device via a wired connection between the first device and the second device.

5. (Original) The first device as recited in claim 1, wherein the formatted key code is transmitted from the first device to the second device via a wireless connection between the first device and the second device.

6. (Original) The first device as recited in claim 1, wherein the first device comprises a further receiver for receiving a media from a fourth device in communication with the first device and wherein the first device is coupled to the second device to provide the media to the second device for display on a display device associated with the second device.

7. (Original) The first device as recited in claim 1, wherein the generated key code controls at least one of a power on, power off, volume up, and volume down functional operation of the second device.

8. (Original) The first device as recited in claim 1, wherein the first device comprises a further receiver for receiving the codeset from a fourth device in communication with the first device.

9. (Original) A first device for transmitting a command to control a functional operation of a second device, the first device comprising:

a receiver;

a first transmitter;

a second transmitter;

a processing device coupled to the receiver, the first transmitter, and the second transmitter; and

a memory storing instructions executable by the processing device, the instructions causing the processing device to:

generate a key code using a keystroke indicator received from a third device in communication with first device via use of the receiver, the keystroke indicator having data that indicates an input element of the third device that has been activated;

format the key code for transmission to the second device;

transmit the formatted key code to the second device in a key code signal via use of the first transmitter and a first communication protocol; and

transmit the formatted key code to the second device in a keycode signal via use of the second transmitter and a second communication protocol when it is determined that the second device is not responsive to the key code signal transmitted via use of the first transmitter and the first communication protocol.

10. (Original) The first device as recited in claim 9, wherein one of the first and second transmitters comprises an IR transmitter and wherein the other of the first and second transmitter comprises an RF transmitter.

11. (Original) The first device as recited in claim 9, wherein one of the first and second

communication protocols comprises a wired communication protocol and the other of the first and second communication protocols comprises a wireless communication protocol.

12. (Original) The first device as recited in claim 9, wherein the formatted key code is transmitted from the first device to the second device via a wired connection between the first device and the second device.

13. (Original) The first device as recited in claim 9, wherein the receiver comprises an RF receiver.

14. (Original) The first device as recited in claim 9, wherein the first device comprises a further receiver for receiving a media from a fourth device in communication with the first device and wherein the first device is coupled to the second device to provide the media to the second device for display on a display device associated with the second device.

15. (Original) The first device as recited in claim 9, wherein the generated key code controls at least one of a power on, power off, volume up, and volume down functional operation of the second device.

16. (Original) The first device as recited in claim 1, wherein the first device comprises a further receiver for receiving at least one codeset from a fourth device in communication with the first device and wherein the at least one codeset is used to generate the key code.

REMARKS

In the application claims 1-16 remain pending. No claims have been cancelled. Claim 1 has been amended to better define what is regarded as the invention. The claim amendment is fully supported by the application as filed. No new matter has been added.

Pending claims 9-16 have been indicated to be allowable.

Pending claim 1 currently stands rejected under 35 U.S.C. §103 as being unpatentable over Pope (US 5,963,624) in view of Lindstedt (US 4,242,664).

The reconsideration of this rejection is respectfully requested.

It is respectfully submitted that Pope does not disclose, teach, or suggest generating a key code using a keystroke indicator received from a third device in communication with first device via use of the receiver, the keystroke indicator having data that indicates an input element of the third device that has been activated, wherein the generated key code comprises a one of a plurality of key code data stored in a codeset, wherein the one of the plurality of key code data is selected from the codeset as a function of the keystroke indicator received from the third device, wherein each of the plurality of key code data stored in the codeset comprises a series of digital ones and/or digital zeros, and wherein the codeset further comprises time information that describes how a digital one and/or a digital zero within the selected one of the plurality of key code data is to be represented in the key code signal to be transmitted to the second device as claimed.

More specifically, rather than disclose generating a key code in this manner, Pope discloses a system in which the handset includes a memory in which is stored appliance control codes. When a user activates a key of the keypad of the handset, the handset transmits a complete appliance control code (as opposed to a keystroke indicator) to the base station, and the base station then functions to simply *transfer* the received appliance control code to an appliance via use of an infrared signal (Col. 4, lines 34-62). Accordingly, because

Pope does not disclose, teach, or suggest the method for generating a key code as now claimed, and because Lindstedt also fails to disclose the same, it is respectfully submitted that the rejection of claim 1 under 35 U.S.C. § 103 based upon the combination of Pope and Lindstedt must be withdrawn.

Conclusion

It is respectfully submitted that the application is in good and proper form for allowance. Such action on the part of the Examiner is respectfully requested.

Should it be determined, however, that a telephone conference would expedite the prosecution of the subject application, the Examiner is respectfully urged to contact the attorney undersigned.

Respectfully Submitted;

Date: July 18, 2017

By: /Gary Jarosik/
Gary R. Jarosik, Reg. No. 35,906
Greenberg Traurig, LLP
77 West Wacker Drive, Suite 2500
Chicago, Illinois 60601
(312) 456-8449

Electronic Acknowledgement Receipt

EFS ID:	29810178
Application Number:	15153905
International Application Number:	
Confirmation Number:	4652
Title of Invention:	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE
First Named Inventor/Applicant Name:	Daniel SauFu Mui
Customer Number:	34018
Filer:	Gary R. Jarosik/Gladys Negron-Munoz
Filer Authorized By:	Gary R. Jarosik
Attorney Docket Number:	81230.708US4
Receipt Date:	18-JUL-2017
Filing Date:	13-MAY-2016
Time Stamp:	10:35:08
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

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1	Transmittal Letter	TransmittalForm_15153905.pdf	189225 f673944cbfe1f13e5f1ab2c830fbeb0497f61 ac2	no	2

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		Claims	2	5
		Applicant Arguments/Remarks Made in an Amendment	6	7
Warnings:				
Information:				
Total Files Size (in bytes):			295220	
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<h1>TRANSMITTAL FORM</h1> <p>(to be used for all correspondence after initial filing)</p>	Application Number	15/153,906
	Filing Date	05/13/2016
	First Named Inventor	Daniel SauFu Mui
	Art Unit	2686
	Examiner Name	Brown, Vernal U.
Total Number of Pages in This Submission	Attorney Docket Number	81230.708US4

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Signature	/Gary R. Jarosik/		
Printed name	Gary R. Jarosik		
Date	July 18, 2017	Reg. No.	35,906

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Signature	/Gladys Negron-Munoz/		
Typed or printed name	Gladys Negron-Munoz	Date	July 18, 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 and 1.14. 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.

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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/153,905	Filing Date 05/13/2016	<input type="checkbox"/> To be Mailed
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ENTITY: LARGE SMALL MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A		N/A	
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A		N/A	
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A		N/A	
TOTAL CLAIMS <small>(37 CFR 1.16(j))</small>	minus 20 = *	*		X \$ =	
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	minus 3 = *	*		X \$ =	
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	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).				
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>					
				TOTAL	

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II

	(Column 1)	(Column 2)	(Column 3)		RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT	07/18/2017	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
	Total <small>(37 CFR 1.16(j))</small>	* 16	Minus	** 20	= 0	X \$80 = 0
	Independent <small>(37 CFR 1.16(h))</small>	* 2	Minus	***3	= 0	X \$420 = 0
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						
				TOTAL ADD'L FEE	0	

	(Column 1)	(Column 2)	(Column 3)		RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
	Total <small>(37 CFR 1.16(j))</small>	*	Minus	**	=	X \$ =
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=	X \$ =
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						
				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".

LIE
SHEILA D. CHAPMAN

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. 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, 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.**

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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 10/18/2017
Greenberg Traurig, LLP
77 W. Wacker Drive
Suite 3100
CHICAGO, IL 60601-1732

EXAMINER

BROWN, VERNAL U

ART UNIT PAPER NUMBER

2686

DATE MAILED: 10/18/2017

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
15/153,905 05/13/2016 Daniel SauFu Mui 81230.708US4 4652

TITLE OF INVENTION: RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE

Table with 7 columns: 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 01/18/2018

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

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 10/18/2017
Greenberg Traurig, LLP
 77 W. 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.
15/153,905	05/13/2016	Daniel SauFu Mui	81230.708US4	4652

TITLE OF INVENTION: RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE

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	01/18/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
BROWN, VERNAL U	2686	340-013240

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). <input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached. <input type="checkbox"/> "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, _____ 1 (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. _____ 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: <input type="checkbox"/> Issue Fee <input type="checkbox"/> Publication Fee (No small entity discount permitted) <input type="checkbox"/> Advance Order - # of Copies _____	4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above) <input type="checkbox"/> A check is enclosed. <input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached. <input type="checkbox"/> 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

Applicant asserting small entity status. See 37 CFR 1.27

Applicant changing to regular undiscounted fee status.

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.

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.

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. _____



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

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
15/153,905 05/13/2016 Daniel SauFu Mui 81230.708US4 4652

EXAMINER

BROWN, VERNAL U

ART UNIT PAPER NUMBER

2686

DATE MAILED: 10/18/2017

34018 7590 10/18/2017
Greenberg Traurig, LLP
77 W. Wacker Drive
Suite 3100
CHICAGO, IL 60601-1732

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.

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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.
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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. 15/153,905	Applicant(s) MUI, DANIEL SAUFU	
	Examiner VERNAL BROWN	Art Unit 2686	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 7/18/17.
 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 1-16. 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. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Examiner's Amendment/Comment |
| 2. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 7. <input type="checkbox"/> Other _____ |
| 4. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ | |

/VERNAL BROWN/
Primary Examiner, Art Unit 2686

Search Notes 	Application/Control No. 15153905	Applicant(s)/Patent Under Reexamination MUI, DANIEL SAUFU
	Examiner VERNAL BROWN	Art Unit 2686

CPC- SEARCHED		
Symbol	Date	Examiner
G08C 15/04, G08C 17/02	4/17/17	VB
G08C 23/04, G08C 19/28	9/20/17	VB

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
340	13.24	4/17/17	VB

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
update search	9/20/17	VB

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
US PGPUB search in EAST		9/20/17	VB


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 Address: COMMISSIONER FOR PATENTS
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 Alexandria, Virginia 22313-1450
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BIB DATA SHEET
CONFIRMATION NO. 4652

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.		
15/153,905	05/13/2016	340	2686	81230.708US4		
APPLICANTS Universal Electronics Inc., Santa Ana, CA; INVENTORS Daniel SauFu Mui, San Jose, CA; ** CONTINUING DATA ***** This application is a CON of 13/068,820 05/21/2011 PAT 9355553 which is a CON of 12/462,526 08/04/2009 PAT 8004389 which is a CON of 10/737,029 12/16/2003 PAT 7589642 ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 05/25/2016						
Foreign Priority claimed	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initials	CA	4	16	2
Verified and Acknowledged	/VERNAL U BROWN/ Examiner's Signature					
ADDRESS Greenberg Traurig, LLP 77 W. Wacker Drive Suite 3100 CHICAGO, IL 60601-1732 UNITED STATES						
TITLE RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE						
FILING FEE RECEIVED 1740	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:			<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit		

Issue Classification 	Application/Control No. 15153905	Applicant(s)/Patent Under Reexamination MUI, DANIEL SAUFU	
	Examiner VERNAL BROWN	Art Unit 2686	

CPC						
Symbol					Type	Version
G08C		23		04	F	2013-01-01
G08C		17		00	I	2013-01-01
G08C		15		04	I	2013-01-01
G08C		17		02	I	2013-01-01
G08C		19		28	I	2013-01-01

CPC Combination Sets								
Symbol					Type	Set	Ranking	Version

NONE			Total Claims Allowed:	
			16	
(Assistant Examiner)	(Date)		O.G. Print Claim(s)	O.G. Print Figure
/VERNAL BROWN/ Primary Examiner. Art Unit 2686	9/20/17		1	2
(Primary Examiner)	(Date)			

Electronic Patent Application Fee Transmittal

Application Number:	15153905			
Filing Date:	13-May-2016			
Title of Invention:	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE			
First Named Inventor/Applicant Name:	Daniel SauFu Mui			
Filer:	Gary R. Jarosik/Cynthia Tapia			
Attorney Docket Number:	81230.708US4			
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:	31521696
Application Number:	15153905
International Application Number:	
Confirmation Number:	4652
Title of Invention:	RELAYING KEY CODE SIGNALS THROUGH A REMOTE CONTROL DEVICE
First Named Inventor/Applicant Name:	Daniel SauFu Mui
Customer Number:	34018
Filer:	Gary R. Jarosik/Cynthia Tapia
Filer Authorized By:	Gary R. Jarosik
Attorney Docket Number:	81230.708US4
Receipt Date:	17-JAN-2018
Filing Date:	13-MAY-2016
Time Stamp:	11:56:08
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	011718INTEFSW00012399502428
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

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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_708US4IssueFeeTrans.pdf	108390 c1676bb895f7e5052077f07c3f84e19349b5f8f9	no	1

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30653 5dc21bf14265a6e90c905ae2383ccef2c8d1591	no	2
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Warnings:

Information:

Total Files Size (in bytes):	139043
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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.



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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/153,905	03/06/2018	9911325	81230.708US4	4652

34018 7590 02/14/2018
Greenberg Traurig, LLP
77 W. 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):

Daniel SauFu Mui, San Jose, CA;
Universal Electronics Inc., Santa Ana, CA;

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 USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

AO 120 (Rev. 08/10)

TO: <p style="text-align: center;">Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450</p>	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
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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. 18-cv-01580	DATE FILED 9/5/2018	U.S. DISTRICT COURT Central District of California
PLAINTIFF UNIVERSAL ELECTRONICS INC., a Delaware Company		DEFENDANT 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 <input type="checkbox"/> Amendment <input type="checkbox"/> Answer <input type="checkbox"/> Cross Bill <input type="checkbox"/> 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
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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: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
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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

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DOCKET NO. 18-cv-01580	DATE FILED 9/5/2018	U.S. DISTRICT COURT Central District of California
PLAINTIFF UNIVERSAL ELECTRONICS INC., a Delaware Company		DEFENDANT 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 <input type="checkbox"/> Amendment <input type="checkbox"/> Answer <input type="checkbox"/> Cross Bill <input type="checkbox"/> 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
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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