

U.S. Patent No. 8,265,096 – ASUS Products - IEEE 802.11ac and 802.11ax



(12) **United States Patent**
Zheng et al.

(10) **Patent No.:** US 8,265,096 B2
(45) **Date of Patent:** Sep. 11, 2012

(54) **METHOD FOR CONSTRUCTING FRAME STRUCTURES**

(75) **Inventors:** Yan-Xiu Zheng, Shalin (TW); Ren-Jr Chen, Hsinchu (TW); Chang-Lung Hsiao, Hsinchu (TW); Pang-An Ting, Fengyuan (TW)

(73) **Assignee:** Industrial Technology Research Institute, Hsinchu (TW)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 385 days.

(21) **Appl. No.:** 12/168,855

(22) **Filed:** Jul. 7, 2008

(65) **Prior Publication Data**
US 2009/0016371 A1 Jan. 15, 2009

Related U.S. Application Data

(60) Provisional application No. 60/929,798, filed on Jul. 12, 2007; provisional application No. 60/973,157, filed on Sep. 17, 2007.

(51) **Int. Cl.**
H04L 3/24 (2006.01)

(52) **U.S. CL.** 370/473; 370/474; 370/476; 455/448

(58) **Field of Classification Search** 370/329; 370/478; 491; 349; 469; 473; 474; 476; 338; 375/148; 354
See application file for complete search history.

(56) **References Cited**
U.S. PATENT DOCUMENTS
5,491,531 A * 2/1996 Adams et al. 375/354
6,904,559 B2 6/2005 Sibean et al.

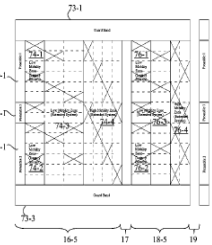
7,110,350 B2 9/2006 Li et al.
7,586,887 B2 * 9/2009 Trachewsky 370/338
7,809,020 B2 * 10/2010 Dwiglis et al. 370/474
8,077,592 B2 12/2011 Webster et al.
2002/0034172 A1 * 3/2002 Ho 370/338
2004/0224878 A1 * 11/2004 Fischer et al. 370/338
2005/0063345 A1 3/2005 Wu et al.
2005/0111529 A1 * 5/2005 Bradley 375/148
2005/0180461 A1 8/2005 Kao et al.
2006/0182759 A1 1/2006 Agrawal et al.
2006/0227778 A1 10/2006 Jia et al.
2007/0097946 A1 * 5/2007 Mujaba 370/349
2007/0155115 A1 7/2007 Lee et al.
2007/0189149 A1 * 8/2007 Terabe 370/491
2008/0095105 A1 * 4/2008 Ahmadi et al. 370/478
2008/0285513 A1 * 11/2008 Jung et al. 370/329
2009/0016371 A1 1/2009 Zheng et al.
2009/0166835 A1 * 5/2009 Economy et al.
2011/0222504 A1 9/2011 Ma et al.
2012/0140750 A1 * 6/2012 Marks et al.

FOREIGN PATENT DOCUMENTS
WO WO/2006/092852 * 9/2006
* cited by examiner

Primary Examiner — Jeffrey M Rutkowski
(74) Attorney, Agent, or Firm — Alston & Bird LLP

(57) **ABSTRACT**
A method of constructing a frame structure for data transmission, the method comprising generating a first section comprising data configured in a first format compatible with a first communication system, generating a second section following the first section, the second section comprising data configured in a second format compatible with a second communication system, wherein the second format is different from the first format, generating at least one non-data section containing information describing an aspect of data in at least one of the first section and the second section, and combining the first section, the second section and the at least one non-data section to form the frame structure.

43 Claims, 6 Drawing Sheets



Title: METHOD FOR CONSTRUCTING FRAME STRUCTURES

Priority Date of all Asserted Claims: Jul. 12, 2007

Filing Date: Jul. 7, 2008

Issue Date: Sept. 11, 2012

Expiration Date: Jul. 27, 2029

Inventors: Yan-Xiu Zheng; Ren-Jr Chen; Chang-Lung Hsiao; Pang-An Ting

Asserted Claims: 1, 3, 4, 6, and 8

Asserted Claims

Claim 1

A method of constructing a frame structure for data transmission, the method comprising:
generating a first section comprising data configured in a first format compatible with a first communication system using symbols;
generating a second section following the first section,
the second section comprising data configured in a second format compatible with a second communication system using symbols,
wherein the first communication system's symbols and the second communication system's symbols co-exist in one transmission scheme and
wherein: the second format is compatible with the second communication system configured to support higher mobility than the first communication system,
wherein each symbol in the second communication system has a shorter symbol period than that in the first communication system;
generating at least one non-data section containing information describing an aspect of data in at least one of the first section and the second section; and
combining the first section, the second section and the at least one non-data section to form the frame structure.

Claim 3

The method of claim 1, wherein the non-data section comprises at least one of a preamble, a frame control header (FCH), a burst, and a map of at least one of the first section and the second section.

Claim 4

The method of claim 3, wherein the second section follows the first section in at least one of time sequence and frequency spectrum.

Claim 6

The method of claim 1, wherein each of the first section and the second section carries at least one of uplink and downlink data.

Claim 8

A method of constructing a frame structure for data transmission, the method comprising:
generating a first section comprising data configured in a first format compatible with a first communication system using symbols;
generating a second section following the first section,
the second section comprising data configured in a second format compatible with a second communication system using symbols,
wherein the first communication system's symbols and the second communication system's symbols co-exist in one transmission scheme and
wherein the second communication system has pilot symbols that are denser than those in the first communication system;
generating at least one non-data section containing information describing an aspect of data in at least one of the first section and the second section; and
combining the first section, the second section and the at least one non-data section to form the frame structure.

The Accused Instrumentalities include at least the following:

Products		
AC1200: RP-AC56	ROG Strix Scar III	ROG Strix 570-E
AC1300: PCE-AC56	ROG Zephyrus G14	ROG Strix 570-I
AC1300: USB-AC53 Nano	ROG Zephyrus G15	ROG Strix B460-I
AC1300: USB-AC55	ROG Zephyrus S	ROG Strix B500-I
AC1300: USB-AC56	ROG Zephyrus S17	Rog Strix B550-E
AC1300: USB-AC56R	TUF FX505GT	ROG Strix B550-F
AC1750: RP-AC66	TUF Gaming A15	ROG Strix H470-I
AC1800: EA-AC87	TUF Gaming FX505D	ROG Strix TRX40-E
AC1900: PCE-AC68	TUF Gaming Laptop	ROG Strix X299-E
AC1900: RP-AC68U	VivoBook 14	ROG Strix X490-I
AC1900: USB-AC68	VivoBook 14 S433	Rog Strix Z390-E
AC3100: PCE-AC88	VivoBook 17	ROG Strix Z390-I
AC600: USB-AC51	VivoBook F510QA	ROG Strix Z490-E
AC750: PCE-AC51	VivoBook F512	ROG Strix Z490-G
AC750: RP-AC52	VivoBook S13	ROG X570 Crosshair VIII Hero
Lyra AC2200	VivoBook S15	ROG Zenith II Extreme Alpha
Lyra Trio AC1750	VivoBook S15 S533	TUF Gaming B460M-Plus
Rapture GT-AX11000	VivoBook S17	TUF Gaming B550M-Plus
ROG GT-AC2900	VivoBook S512	TUF Gaming H470-Pro
Chromebook C101	X509	TUF Gaming X570-Plus
Chromebook C200	ZenBook 13	TUF Gaming Z490-Plus
Chromebook C202	ZenBook 14	TUF Z390-Plus
Chromebook C300	ZenBook 15	ROG Phone
Chromebook C302	ZenBook Duo UX481	ROG Phone II
Chromebook CT100PA	ZenBook Pro Duo UX581	ROG Phone 3
Chromebook Flip C434	ZenBook UX434FLC-XH77	ZenFone 2
Chromebook Flip C436	Prime B550M-A	ZenFone 3
Chromebook Tablet CT100	Prime X299	ZenFone 3 Deluxe
ZenPad 3S 10	Prime X299-Delux	ZenFone 3 Laser
ExpertBook B9450	ROG Crosshair VIII Impact	ZenFone 4
ExpertBook P5440	ROG Maximus XI Hero	ZenFone 5
ROG Strix G	ROG Maximus XII Apex	ZenFone 6
ROG Strix G17	ROG Maximus XII Extreme	ZenFone AR
ROG Strix Hero Edition	ROG Maximus XII Formula	ZenFone Zoom
ROG Strix Hero III	ROG Maxmus XII Hero	Travelair AC
ROG Strix Scar 15	ROG Rampage VI Extreme	

U.S. Patent No. 8,265,096 – ASUS Products - IEEE 802.11ac and 802.11ax

The Accused Instrumentalities include at least the following:

The Accused Instrumentalities are all configured to operate on or with the IEEE 802.11ac wireless local area networking standard. For example, the following exemplary product discloses IEEE 802.11ac on its technical specification page as disclosed by ASUS.

802.11ac Dual-Band Wireless-AC1750 Gigabit Router

- 5th generation **802.11ac** chipset gives you concurrent dual-band 2.4GHz/5GHz for up to super-fast 1.75Gbps
- ASUS AiCloud service: Access, stream, share, sync – all on the go with unlimited storage expansion!
- Gigabit Ethernet ports for fast and reliable internet performance
- AiRadar optimizes wireless coverage with detachable high-powered antennas
- Enjoy the ASUSWRT dashboard UI for 3 steps easy setup, signal monitoring, and network application control
- Download Master for wireless data storage and access to your router-connected USB storage devices
- File sharing, printer sharing, and 3G sharing via two multi-functional built-in USB ports

[Add to comparison](#)



Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.