

Exhibit 1



US008149727B2

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

(10) **Patent No.:** **US 8,149,727 B2**
(45) **Date of Patent:** **Apr. 3, 2012**

(54) **RADIO TRANSMISSION APPARATUS, AND
RADIO TRANSMISSION METHOD**

(75) Inventors: **Sadaki Futagi**, Ishikawa (JP); **Daichi Imamura**, Kanagawa (JP); **Atsushi Matsumoto**, Ishikawa (JP); **Takashi Iwai**, Ishikawa (JP)

(73) Assignee: **Panasonic Corporation**, Osaka (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 633 days.

(21) Appl. No.: **12/088,641**

(22) PCT Filed: **Sep. 29, 2006**

(86) PCT No.: **PCT/JP2006/319550**

§ 371 (c)(1),
(2), (4) Date: **Mar. 28, 2008**

(87) PCT Pub. No.: **WO2007/037412**

PCT Pub. Date: **Apr. 5, 2007**

(65) **Prior Publication Data**

US 2010/0188984 A1 Jul. 29, 2010

(30) **Foreign Application Priority Data**

Sep. 30, 2005 (JP) 2005-288300

(51) **Int. Cl.**
H04L 12/26 (2006.01)

(52) **U.S. Cl.** **370/252**

(58) **Field of Classification Search** 370/252,
370/329, 203, 204, 241, 310, 328; 375/298,
375/302, 308, 224, 225, 295, 299; 455/69,
455/67.11, 102, 450, 452.2, 29, 42, 61, 68

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2003/0008683	A1 *	1/2003	Nanao et al.	455/561
2003/0083088	A1 *	5/2003	Chang et al.	455/522
2004/0001472	A1 *	1/2004	Kwak et al.	370/342
2005/0099992	A1	5/2005	Sato	
2005/0164644	A1 *	7/2005	Shinoi et al.	455/69

(Continued)

FOREIGN PATENT DOCUMENTS

JP 2003-174485 6/2003

(Continued)

OTHER PUBLICATIONS

International Search Report dated Oct. 31, 2006.
3GPP TS 25.211 v6.5.0 (Jun. 2005), "Physical channels and mapping of transport channels onto physical channels (FDD)," Release 6, Jun. 2005, pp. 1-49.

(Continued)

Primary Examiner — Derrick Ferris

Assistant Examiner — Omar Ghowrwal

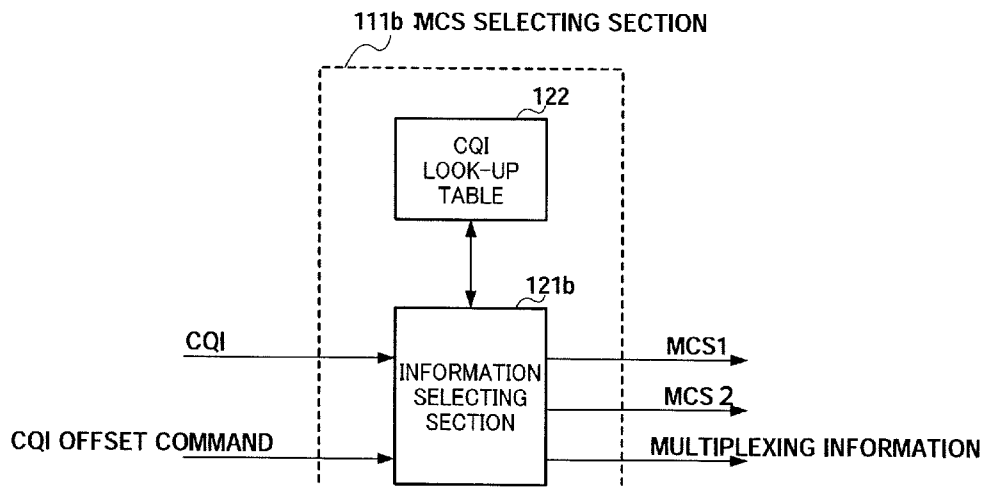
(74) *Attorney, Agent, or Firm* — Seed IP Law Group PLLC

(57)

ABSTRACT

Provided is a communication device, which is enabled to improve the throughput of a communication system by reducing the difference of a transmission power between an SCCH and an SDCH thereby to satisfy the required quality of a PAPR. In this device, an MCS selection unit (111) of a transmission unit (110) decides, with reference to a CQI lookup table, an MCS pattern (MCS1) of the SDCH, an MCS pattern (MCS2) of the SCCH and information (multiplex information) on multiplex positions on the time axes of those two channels, on the basis of the CQI information. On the basis of the MCS2 and the MCS1, encoding modulation units (112 and 113) perform encoding and modulating operations. According to the multiplex information, a channel multiplexing unit (114) time-division multiplexes the SCCH and the SDCH thereby to generate a transmission signal.

4 Claims, 13 Drawing Sheets



U.S. PATENT DOCUMENTS

2005/0208973 A1* 9/2005 Iochi 455/561
2005/0229073 A1 10/2005 Sudo
2008/0123601 A1* 5/2008 Malladi et al. 370/335
2008/0253404 A1* 10/2008 Lampin et al. 370/498
2010/0185777 A1* 7/2010 Kim et al. 709/231

FOREIGN PATENT DOCUMENTS

JP 2004-153640 5/2004
JP 2004-173019 6/2004
RU 2003125611 A 2/2005
WO 9912281 A1 3/1999

OTHER PUBLICATIONS

TSG-RAN WG1 Ad Hoc on LTE, "Text Proposal: Principles for the Evolved UTRA," R1-050679, Jun. 2005, 7 pages total.
Hwang et al., "Clarification of H-ARQ Operation with Reduced AAS Private Map," IEEE C802.16e-05/071, Jan. 11, 2005, 5 pages.
English Language translation of Russian Office Action dated Jun. 24, 2010, related to Russian Patent Application No. 2008112140/09 (013127), 2 pages.
Russian Office Action dated Jun. 24, 2010, related to Russian Patent Application No. 2008112140/09 (013127), 4 pages.

* cited by examiner

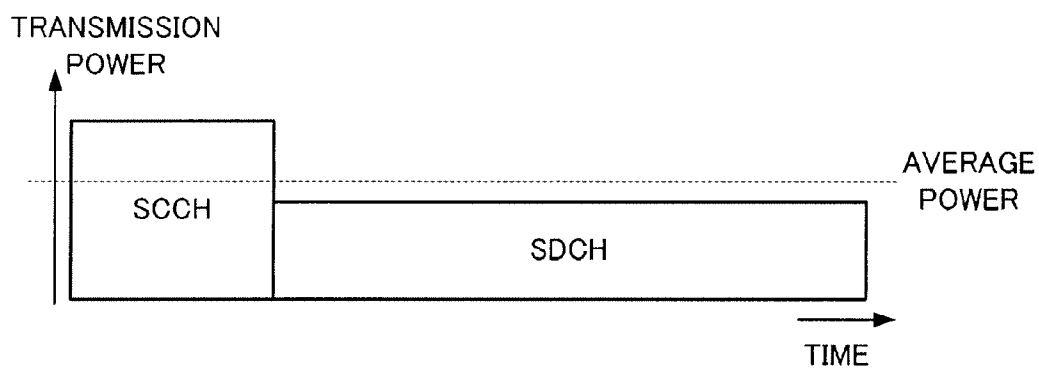


FIG.1

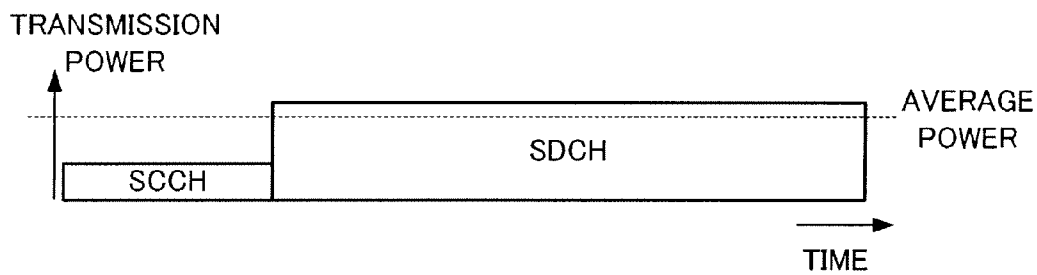


FIG.2

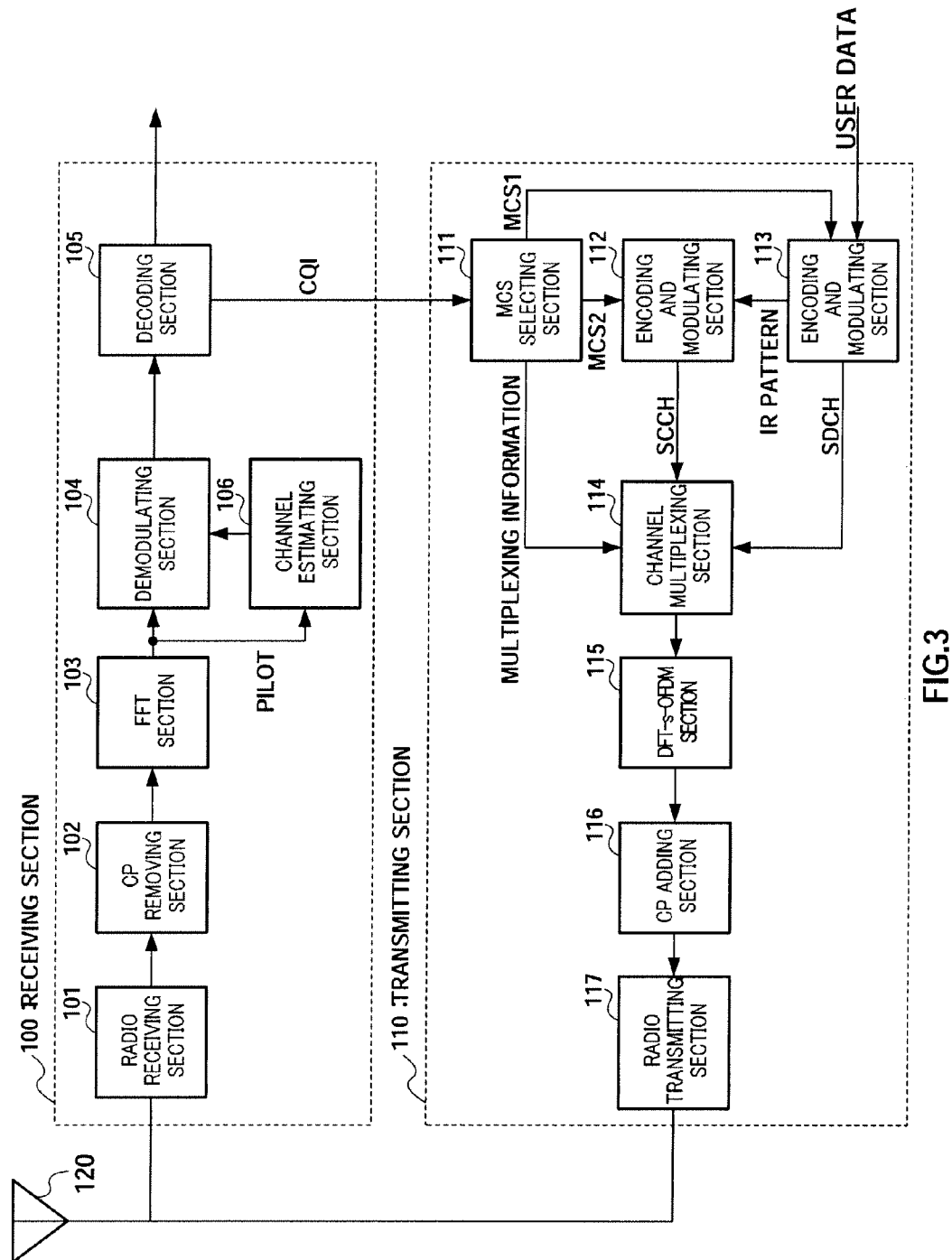


FIG.3

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.