

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
13 May 2004 (13.05.2004)

PCT

(10) International Publication Number  
WO 2004/040887 A3

- (51) International Patent Classification:  
H04Q 7/38 (2006.01) H04M 1/725 (2006.01)  
H04B 7/26 (2006.01)
- (21) International Application Number:  
PCT/JP2003/013863
- (22) International Filing Date: 29 October 2003 (29.10.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
2002-313894 29 October 2002 (29.10.2002) JP  
2002-328042 12 November 2002 (12.11.2002) JP
- (71) Applicant: MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD. [JP/JP]; 1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8501 (JP).
- (72) Inventors: NITTA, Koji; 1-9-4, Kashiwara, Minami-Ku, Fukuoka-shi,, Fukuoka, 811-1353 (JP). NAKAGAWA, Katsumi; 785-1, Kamisirouzu, Kasuga-shi, Fukuoka, 816-0844 (JP). FUKUDA, Shinji; 4-7-21, Minamikatae, Jounan-Ku, Fukuoka-shi,, Fukuoka, 814-0143 (JP). TAKEHISA, Yoshihiro; 2-46-14, Nakao, Minami-Ku, Fukuoka-shi, Fukuoka, 811-1364 (JP). ITO, Takat-sugu; 158-718, Zokumyouin, Chikushino-shi, Fukuoka 818-0067 (JP).

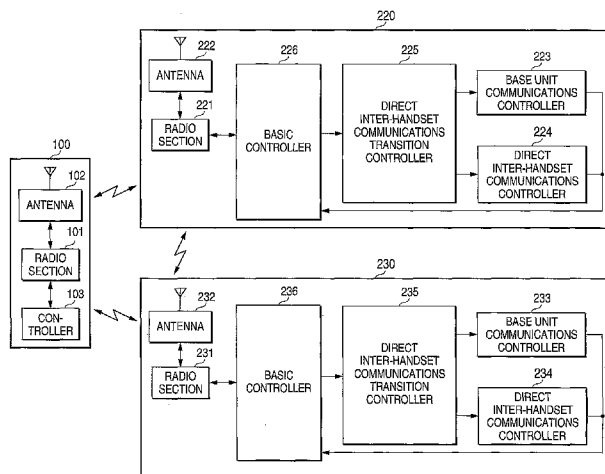
- (74) Agents: OGURI, Shohei et al.; Eikoh Patent Office, 28th Floor, ARK Mori Building, 12-32, Akasaka 1-chome, Minato-ku, Tokyo 107-6028 (JP).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:  
— with international search report

(88) Date of publication of the international search report:  
18 October 2007

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: DIGITAL RADIO COMMUNICATIONS APPARATUS



(57) Abstract: For the purpose of being capable of performing direct inter-handset communications while maintaining inter-handset communications via a base unit, smoothly making a transition from inter-handset communications via a base unit to direct inter-handset communications, and switching to inter-handset communications via a base unit without releasing the communications even in case direct inter-handset communications cannot be established, a local handset includes a direct inter-handset communications controller and a direct inter-handset communications transition controller for making control to establish direct inter-handset communications while maintaining communications with a base unit as well as transmitting control channels for direct inter-handset communications in vacant slots in the receiving time zones for communications with the base unit, while a distant handset includes a direct inter-handset communications controller and a direct inter-handset communications transition controller for scanning control channels for direct inter-handset communications in the time zones other than the slots occupied by communications with the base unit 100.

WO 2004/040887 A3

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP 03/13863

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 H04Q7/38 H04B7/26 H04M1/725

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

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04M H04Q

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

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

EPO-Internal, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 713 345 A (IBM) 22 May 1996 (1996-05-22)	3,4
A	column 4, line 25 - column 14, line 12; figures 1-3 column 17, line 57 - column 20, line 3; figures 3,6	1,2,5-7
Y	----- PATENT ABSTRACTS OF JAPAN vol. 1997, no. 03, 31 March 1997 (1997-03-31) & JP 8 289361 A (TOSHIBA CORP & NTT CORP.), 1 November 1996 (1996-11-01) abstract	3,4
A	----- EP 0 921 668 A (SAMSUNG ELECTRONICS CO LTD) 9 June 1999 (1999-06-09) column 5, line 7 - column 10, line 6; figures 3-7 ----- -/--	1-7

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

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

"E" earlier document but published on or after the international filing date

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search

27 February 2004

Date of mailing of the international search report

11 JUN 2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Delangue, P

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP 03/13863

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>PATENT ABSTRACTS OF JAPAN vol. 1997, no. 01, 31 January 1997 (1997-01-31) &amp; JP 8 251653 A (TOSHIBA CORP), 27 September 1996 (1996-09-27) abstract</p> <p>-----</p>	1-7

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/JP 03/13863

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-7

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7

Digital radio communication system to establish direct mode communication between two mobile units by scanning and selecting vacant channels not involved in a communication with the base unit while maintaining a synchronisation link with the base unit to resume communication via the base unit if the direct mode fails

---

2. claims: 8-12

Digital radio communication system to enable direct mode communication between two mobile units by checking their communication compatibility defined by attribute information stored in each unit and exchanged between the two units via the base unit to determine if a direct mode communication is possible.

---

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP 03/13863

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0713345	A	22-05-1996	US 5515366 A	07-05-1996
			CA 2158305 A1	18-05-1996
			CN 1123993 A ,B	05-06-1996
			EP 0713345 A2	22-05-1996
			JP 3118168 B2	18-12-2000
			JP 8204683 A	09-08-1996
			KR 150354 B1	02-11-1998
-----				
JP 8289361	A	01-11-1996	JP 3226751 B2	05-11-2001
-----				
EP 0921668	A	09-06-1999	KR 228911 B1	01-11-1999
			DE 69820208 D1	15-01-2004
			EP 0921668 A2	09-06-1999
			US 6205338 B1	20-03-2001
-----				
JP 8251653	A	27-09-1996	JP 3382049 B2	04-03-2003
			CN 1136752 A	27-11-1996
			KR 232669 B1	01-12-1999
			US 5748621 A	05-05-1998
-----				