

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

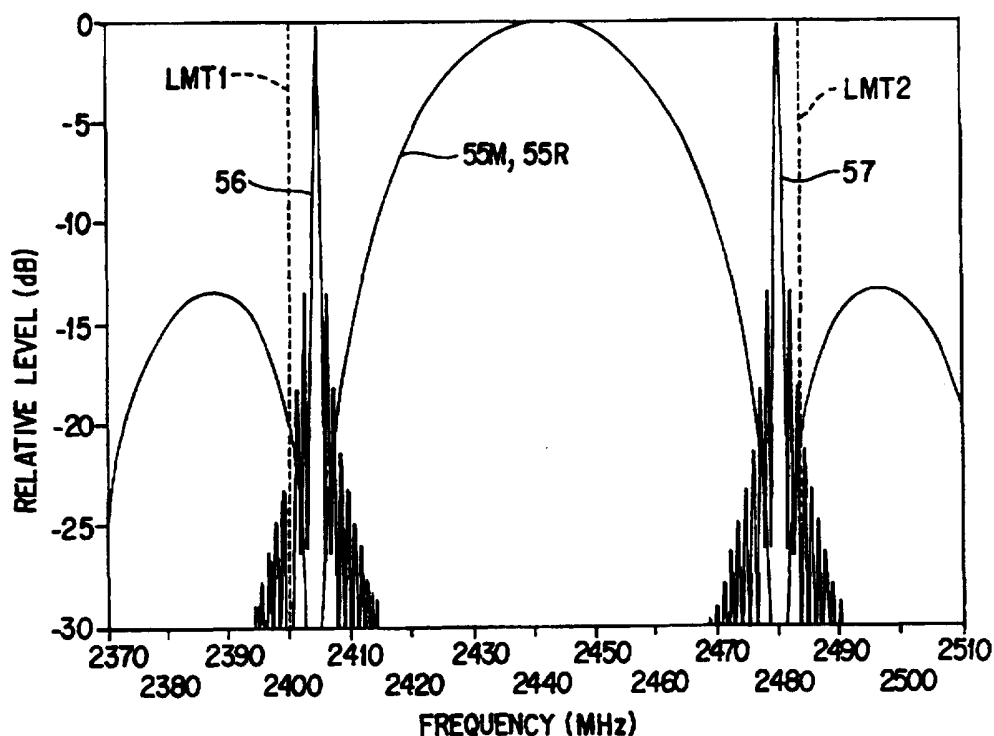
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : H04B 1/707, H04L 12/28		A3	(11) International Publication Number: WO 96/13907
			(43) International Publication Date: 9 May 1996 (09.05.96)
(21) International Application Number: PCT/US95/13625			(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT, UA, UG, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ, UG).
(22) International Filing Date: 20 October 1995 (20.10.95)			
(30) Priority Data: 08/331,925 31 October 1994 (31.10.94) US			
(71) Applicant: RADIO CONNECT CORPORATION [US/US]; 6041 Bristol Parkway, Culver City, CA 90230 (US).			
(74) Agent: GRAY, Edward; P.O. Box 66629, 3865 Grand View Boulevard, Mar Vista, CA 90066 (US).			
Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>			
(88) Date of publication of the international search report: 29 August 1996 (29.08.96)			

(54) Title: WIRELESS DSSS TDMA COMMUNICATIONS SYSTEM**(57) Abstract**

A protocol for wireless direct user-to-user DSSS TDMA digital communication at a data rate of the order of one to several megabits per second in the 902-928 MHz, 2400-2483.5 MHz or 5725-5850 MHz band includes a sequence of transactions, each transaction consisting of a predetermined sequence of subpackets, and each subpacket consisting of a predetermined number of bytes preallocated to a subpacket element or element portion. Network communications among a plurality of stationary and/or mobile users such as personal computers, each equipped with a (Remote Unit) transceiver, are organized and directed by a Master Unit transceiver. Master Unit and Remote Unit transceivers have identical circuitry. Using a first pseudorandom code sequence

(M-code), the Master Unit intermittently transmits a DSSS signal enabling Remote Units to synchronize to the Master Unit and so receive scheduling directives. A Remote Unit, while maintaining synchronization with the Master Unit, sends information by transmitting a DSSS signal using a second pseudorandom code sequence (R-code). To facilitate synchronization, the Master Unit also transmits a continuously running DSSS signal using a third pseudorandom code sequence (P-code) which is code-locked and phase-locked to the M-code. A transceiver implementing the protocol in the 2400-2483.5 MHz band includes a microprocessor, external data RAM, Control Logic Section, Analog Section, and Radiofrequency Section.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

INTERNATIONAL SEARCH REPORT

Int. .onal Application No
PCT/US 95/13625

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04B1/707 H04L12/28

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 6 H04B H04L

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US,A,5 313 457 (HOSTETTER ET AL.) 17 May 1994 see column 3, line 3 - line 25 see column 7, line 38 - line 45 see column 12, line 67 - column 13, line 49 see column 17, line 44 - line 49; table VI ---	1,9
Y	HEWLETT-PACKARD JOURNAL, vol. 38, no. 5, May 1987, PALO ALTO (US), pages 35-40, XP002007994 R. PIETY: "INTRABUILDING DATA TRANSMISSION USING POWER-LINE WIRING" see page 38, left-hand column, line 9 - line 25 --- -/--	1,9

☒ 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

10 July 1996

Date of mailing of the international search report

1 8. 07. 96

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

Holper, G

INTERNATIONAL SEARCH REPORT

Int. l. Application No
PCT/US 95/13625

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US,A,5 177 765 (HOLLAND ET AL.) 5 January 1993 cited in the application see column 3, line 18 - line 24 see column 6, line 55 - column 7, line 9 see column 20, line 7 - line 27 ---	1,9
A	39TH IEEE VEHICULAR TECHNOLOGY CONFERENCE (IEEE CAT. NO.89CH2739-1), SAN FRANCISCO, CA, USA, 1-3 MAY 1989, 1989, NEW YORK, NY, USA, IEEE, USA, pages 780-787 vol.2, XP002007995 HOLDEN T P ET AL: "A spread spectrum based system technique for synchronization of digital mobile communication systems" see page 783, left-hand column, last paragraph - right-hand column, line 26 ---	2
Y	US,A,5 276 703 (BUDIN ET AL.) 4 January 1994 cited in the application	18
A	see column 8, line 21 - line 25 see column 9, line 37 - line 47 see column 10, line 32 - line 49 see column 12, line 43 - line 52 see column 14, line 32 - line 47 see column 21, line 3 - line 28 ---	31
Y	EP,A,0 615 364 (ATT) 14 September 1994 see column 8, line 34 - column 12, line 9; figure 12 ---	18 31
A	EP,A,0 597 640 (NCR) 18 May 1994 see column 3, line 25 - line 34; figures 1,3 ---	18
A	DATA COMMUNICATIONS, vol. 22, no. 10, July 1993, NEW YORK, pages 49-50, XP000383330 SAUNDERS: "WIRELESS LAN USERS: TAKE A HIKE" see page 49, right-hand column, line 14 - page 50, right-hand column, line 11 -----	18

INTERNATIONAL SEARCH REPORT

I. national application No.

PCT/US 95/ 13625

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:

1. claims 1-17,37-39: DSSS-TDMA communication with special initialization of PRDS and receiver SYNC
2. claims 18-36: DSSS-TDMA network with master unit and remote unit where RUs establish a direct communication

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.:

Remark on Protest

- ☒ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 95/13625

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A-5313457	17-05-94	US-A- 5450395	12-09-95
US-A-5177765	05-01-93	NONE	
US-A-5276703	04-01-94	AU-B- 3441493 WO-A- 9314580	03-08-93 22-07-93
EP-A-615364	14-09-94	JP-A- 7058688	03-03-95
EP-A-597640	18-05-94	JP-A- 7312597 US-A- 5339316	28-11-95 16-08-94