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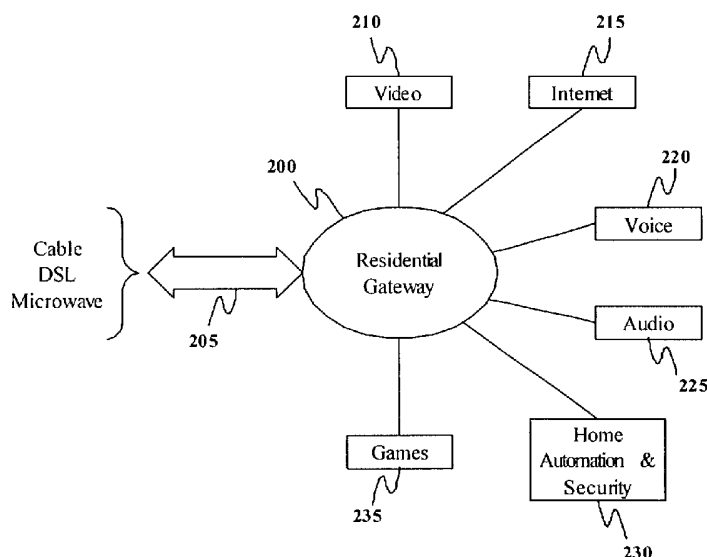
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(US).
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- (88) Date of publication of the international search report:
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(54) Title: ULTRA WIDE BANDWIDTH NOISE CANCELLATION MECHANISM AND METHOD



(57) Abstract: A mechanism and method are provided for self-canceling noise generated in a UWB receiver and for providing multi-mode operation for the receiver. Noise is canceled by generating a first set of wavelets in a same phase as an incoming signal, and a second set of wavelets with an opposite phase as the incoming signal. The received signal and the generated wavelets are mixed and the result integrated such that the integrated output tends to zero. The multiple modes of operation allow the receiver to process multiple types of waveforms. The modes may be chosen by a user-selected switch, a waveform-detection based switch, or the like.



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.

INTERNATIONAL SEARCH REPORT

 International Application No
 PCT/US 01/31587

 A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 H04L27/00 H04B1/69

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 H04L H04B

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, WPI Data, PAJ, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 35278 A (TELEDIFFUSION FSE ;ALARD MICHEL (FR); FRANCE TELECOM (FR); MICHEL) 7 November 1996 (1996-11-07) page 22, line 12 -page 23, line 16 claims 1,2,7,9 figure 10 --- -/--	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 March 2003

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/31587

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WIN M Z ET AL: "ULTRA-WIDE BANDWIDTH TIME-HOPPING SPREAD-SPECTRUM IMPULSE RADIO FOR WIRELESS MULTIPLE-ACCESS COMMUNICATIONS" IEEE TRANSACTIONS ON COMMUNICATIONS, IEEE INC. NEW YORK, US, vol. 48, no. 4, April 2000 (2000-04), pages 679-691, XP000932191 ISSN: 0090-6778 page 680, right-hand column, line 34 -page 681, right-hand column, line 20 figures 1,2 ---	1-9
A	LUISE M ET AL: "CLOCK SYNCHRONIZATION FOR WAVELET-BASED MULTIRATE TRANSMISSIONS" IEEE TRANSACTIONS ON COMMUNICATIONS, IEEE INC. NEW YORK, US, vol. 48, no. 6, June 2000 (2000-06), pages 1047-1054, XP000954431 ISSN: 0090-6778 page 1047, right-hand column, line 19 -page 1048, left-hand column, line 4 page 1048, right-hand column, line 17 - last line figures 1,3 ---	1-9
A	US 4 979 186 A (FULLERTON LARRY W) 18 December 1990 (1990-12-18) column 8, line 34 - line 54 figure 3 -----	1,9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/31587

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.:

1-9

Remark on Protest

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

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. Claims: 1-9

Ultra-wide band receiver

2. Claims: 10-25

Mode selection mechanism

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/31587

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
WO 9635278	A	07-11-1996	FR	2733869 A1	08-11-1996
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