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Declaration under Rule 4.17:

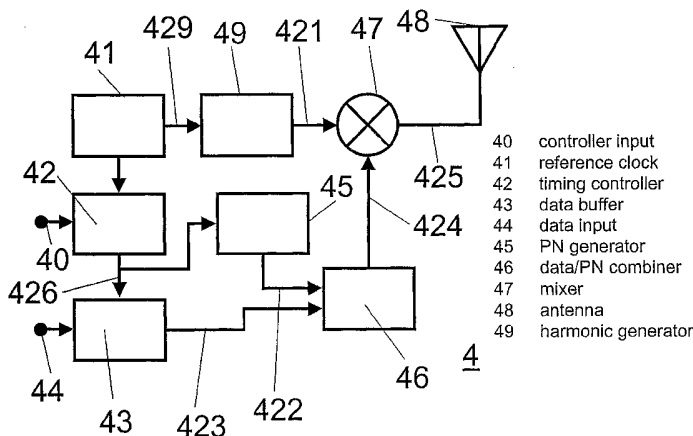
— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

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[Continued on next page]

(54) Title: ULTRA-WIDEBAND HIGH DATA-RATE COMMUNICATION APPARATUS AND ASSOCIATED METHODS



(57) Abstract: An RF transmitter includes a reference signal generator, a signal generator, and a mixer. The reference signal generator provides a reference signal that has a prescribed or desired frequency. The signal generator provides an operating signal in response to a selection signal. The operating signal has a frequency that equals the frequency of the reference signal multiplied by a number. The mixer mixes the operating signal with another signal to generate a transmission signal. An RF receiver includes a first mixer, a second mixer, an integrator/sampler, and a signal generator. The first mixer receives as its inputs an input RF signal and a second input signal, and mixes its input signals to generate a mixed signal. The integrator/sampler receives the mixed signal and processes it to provide an output signal. The signal generator provides an operating signal in response to a selection signal. The operating signal has a frequency equal to the frequency of a reference signal, multiplied by a number. The second mixer mixes the operating signal with a template signal to generate the second input signal of the first mixer.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/15060

A. CLASSIFICATION OF SUBJECT MATTER
 IPC: **H04L 27/04(2006.01),27/12(2006.01),27/20(2006.01)**

 USPC: **375/295**
 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)
 U.S. : 375/295, 259, 261, 271, 279, 280, 281, 219, 223, 298, 300, 302, 308: 455/91, 73

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 practicable, search terms used)
 IEEE Xplore

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	U.S. 5,592,131 A (LABRECHE et al.) 7 January 1997 (07.01.1997), Figures 1, 4, 5B; col. 4: lines 49-59; col. 5: lines 22-31; col. 5: lines 53-56	1, 2, and 15-17
Y,P	U.S. 6,668,008 B1 (PANASIK) 23 December 2003 (23.12.2003), Fig. 6.	3-11
Y, P	U.S. 6,026,125 A (LARRICK, JR. et al.) 15 February 2000 (15.02.2000); Fig. 1; col. 6: lines 36-38; col. 7: line 25-49.	4-9, 11-12
Y, P	U.S. 6,603,818 B1 (DRESS, JR. et al.) 5 August 2003 (05.08.2003); Fig. 10; col. 3: lines 26-35; col. 9: lines 17-32.	5-8
Y, P	U.S. 6,356,647 B1 (BOBER et al.) 12 March 2002 (12.03.2002) Fig. 2; col. 4: lines 53-57.	4

Further documents are listed in the continuation of Box C. See patent family annex.

<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p>
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/15060

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Group I - claims 1-17, drawn to a radio-frequency (RF) transmitter apparatus.
Group II - claims 18-37, drawn to a receiver apparatus.

The inventions listed as Groups II and I do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Comparing independent claim 1 from Group I and independent claim 18 from Group 2, it is clear that the two claims apparatus have distinct special technical features: Claimed transmitter apparatus in Group I has distinct and special technical feature: "reference signal generator" which is not present in Group II. Claimed receiver apparatus in Group II has distinct and special technical features: "a second mixer" and "an integrator/sampler" which are not present in Group I. The common component "Mixer" is known in the art.

Because these inventions are distinct for the reason given above and have acquired a separate status in the art because of their recognized divergent subject matter, inventions lack unity.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.