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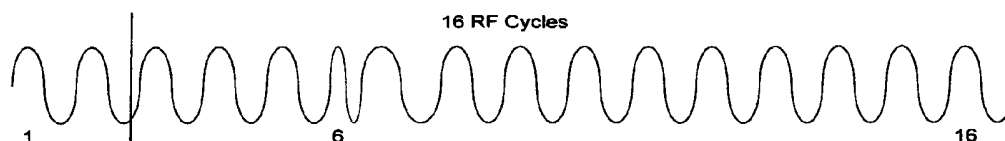
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(54) Title: NUMERICAL CONTROL OF SIDEBAND ENERGY AND MODULATION COMPRESSION METHOD FOR THE RADIO FREQUENCY TRANSMISSION OF HIGH SPEED DATA



(57) Abstract: A bandwidth control of sideband energy and compression method applied to the integer cycle methods of modulation, is now disclosed called X padding. Radio Frequency (RF) sine waves are grouped into frames of N cycles (divide-by ratio) where N is a variable power of 2 (i.e. 2, 4, 8, 16, 32, 64, 128, 256, 512, etc). This system is flexible wherein N can equal any one of these values. In the frame of N cycles, two alternate cycles are changed to the modulating frequencies. The other cycles remain precisely at the carrier frequency. The position of the alternate modulated cycles in a frame of N-cycles determines the exact binary bits that are being transmitted. This means that by sending only one modulation event where N=16, four (4) bits are transferred. For example, in a frame of 16 cycles (i.e. N=16) where the positions of the alternate modulated cycle is 6, then the four binary bits of information transmitted are 0110. X padding is used to set the pulse repetition rate to fit particular Power Spectrum Density (PSD) needs. This is done by inserting X number of un-modulated RF cycles to the beginning and to the end of the N Frame.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
 IPC: **H04B 1/02(2006.01)**

USPC: 455/91,114.1,114.2,113,295,95,63.1,67.11,108,110,313,317;375/295,316,271,272,273,276,303
 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. : 455/91,114.1,114.2,113,295,95,63.1,67.11,108,110,313,317;375/295,316,271,272,273,276,303

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)
 USPGPUB, USPAT, DERWENT,JPO,EPO,IBM_TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
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| A | US 5,789,991A1 A (ISHII) 04 AUGUST 1998, abstract, Fig. 5, Fig. 3, column 6, lines 38-53. | 1-14 |
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| A | US 6,656,849 B2 (OGINO ET AL.) 02 DECEMBER 2003, abstract, Fig. 2-3, Fig. 8, col. 4, lines 11-22, col. 4, lines 36-44 & col. 5, lines 3-11. | 1-14 |
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