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- (71) **Applicant (for all designated States except US):** **ALTERA CORPORATION** [US/US]; 101 Innovation Drive, San Jose, California 95134 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **DING, Weiqi** [US/US]; 101 Innovation Drive, San Jose, California 95134 (US). **SHUMARAYEV, Sergey** [US/US]; 101 Innovation Drive, San Jose, California 95134 (US). **WONG, Wilson** [US/US]; 101 Innovation Drive, San Jose, California 95134 (US). **HOANG, Tim Tri** [US/US]; 101 Innovation Drive, San Jose, California 95134 (US). **KE, Yanjing** [US/US]; 101 Innovation Drive, San Jose, California 95134 (US).
- (74) **Agent:** **CAHILL, Steven**; P.O. Box 779, Menlo Park, California 94026-0779 (US).

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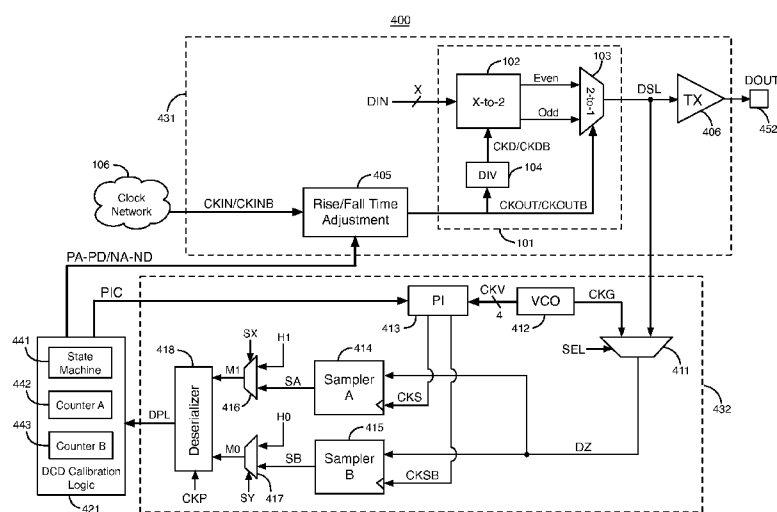


FIG. 1

(57) **Abstract:** A transmitter circuit is operable to provide an output signal in response to a first periodic signal. A multiplexer circuit is operable to provide a second periodic signal as a selected signal during a first phase of operation. The multiplexer circuit is operable to provide the output signal of the transmitter circuit as the selected signal during a second phase of operation. A sampler circuit is operable to generate first samples of the selected signal during the first phase of operation. The sampler circuit is operable to generate second samples of the selected signal during the second phase of operation. A duty cycle control circuit is operable to adjust a duty cycle of the first periodic signal based on the first and the second samples.

## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2012/030753****A. CLASSIFICATION OF SUBJECT MATTER*****H04B 1/04(2006.01)i, H03L 7/00(2006.01)i***

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)

H04B 1/04; H04B 17/00; H04B 15/00; H04B 3/46; G06F 11/00

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) &amp; Keywords: multiplexer, duty cycle control, phase

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                             | Relevant to claim No. |
|-----------|----------------------------------------------------------------------------------------------------------------|-----------------------|
| A         | US 2008-0025383 A1 (GABRIEL LI) 31 January 2008<br>See the abstract; paragraphs [0043]-[0065] and figures 3-6. | 1-21                  |
| A         | US 2010-0093282 A1 (MARTIKKALA RISTO et al.) 15 April 2010<br>See the abstract and claim 1.                    | 1-21                  |
| A         | US 2008-0240212 A1 (SATOU TSUTOMU) 02 October 2008<br>See paragraphs [0099]-[0101] and figure 27.              | 1-21                  |



Further documents are listed in the continuation of Box C.



See patent family annex.

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Authorized officer

Bok, Sang Moon

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Information on patent family members

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| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)                              | Publication<br>date                    |
|-------------------------------------------|---------------------|---------------------------------------------------------|----------------------------------------|
| US 2008-0025383 A1                        | 31.01.2008          | US 7809052 B2<br>WO 2008-014129 A2<br>WO 2008-014129 A3 | 05.10.2010<br>31.01.2008<br>08.05.2008 |
| US 2010-0093282 A1                        | 15.04.2010          | US 8045926 B2                                           | 25.10.2011                             |
| US 2008-0240212 A1                        | 02.10.2008          | JP 2008-109634 A<br>US 8040940 B2                       | 08.05.2008<br>18.10.2011               |