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**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))
- of inventorship (Rule 4.17(iv))

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:  
19 February 2009

(54) Title: MEMORY COMPRISING : CLOCK GENERATOR, CLOCK CIRCUIT, VOLTAGE REGULATOR

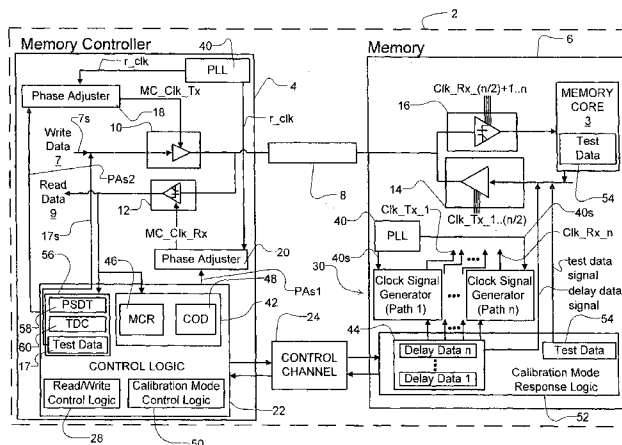


FIG 1

(57) Abstract: A system is provided with clock skew measurement and correction technology. A first circuit or memory controller 4 includes measuring circuits to measure relative timing or phase offsets of multiple clock signals of a second circuit or memory 6. One measuring circuit is configured for incremental changing of the phase of a transmitted test data sequence to measure and correct timing of a memory receiver circuit's quadrature clocks based on results of a data comparison of transmitted and received test data. Another measuring circuit is configured to scan a received test data sequence for data transitions to measure and correct timing of a memory transmitter circuit's quadrature clocks based on spacing or timing between detected transitions. Individual memory clock generators 30 are controlled with adjustable delay circuits 44 for changing phase of different clock signals of the memory to set the clock signals based on the measurements of the controller.

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# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2008/005858

**A. CLASSIFICATION OF SUBJECT MATTER**  
INV. H03L1/00

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)  
H03L

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

<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/168255 A1 (GAUTHIER CLAUDE R [US] ET AL) 4 August 2005 (2005-08-04) paragraph [0023] - paragraph [0050]	1-25, 28-37
X	US 6 201 754 B1 (OOISHI TSUKASA [JP] ET AL) 13 March 2001 (2001-03-13) column 5, line 5 - column 6, line 66	1-12, 28-32
Y	US 7 132 903 B1 (JOHNSON PHILLIP [US] ET AL) 7 November 2006 (2006-11-07) column 3, line 1 - column 4, line 32	1, 28
Y	US 2003/117864 A1 (HAMPEL CRAIG E [US] ET AL) 26 June 2003 (2003-06-26) cited in the application paragraph [0135] - paragraph [0162] paragraph [0223] - paragraph [0232]	1, 28
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> See patent family annex.		
<p>* Special categories of cited documents :</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p><b>"A"</b> document defining the general state of the art which is not considered to be of particular relevance</p> <p><b>"E"</b> earlier document but published on or after the international filing date</p> <p><b>"L"</b> 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><b>"O"</b> document referring to an oral disclosure, use, exhibition or other means</p> <p><b>"P"</b> document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p><b>"T"</b> 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><b>"X"</b> 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><b>"Y"</b> 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><b>"&amp;"</b> document member of the same patent family</p> </td> </tr> </table>		<p><b>"A"</b> document defining the general state of the art which is not considered to be of particular relevance</p> <p><b>"E"</b> earlier document but published on or after the international filing date</p> <p><b>"L"</b> 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><b>"O"</b> document referring to an oral disclosure, use, exhibition or other means</p> <p><b>"P"</b> document published prior to the international filing date but later than the priority date claimed</p>	<p><b>"T"</b> 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><b>"X"</b> 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><b>"Y"</b> 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><b>"&amp;"</b> document member of the same patent family</p>
<p><b>"A"</b> document defining the general state of the art which is not considered to be of particular relevance</p> <p><b>"E"</b> earlier document but published on or after the international filing date</p> <p><b>"L"</b> 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><b>"O"</b> document referring to an oral disclosure, use, exhibition or other means</p> <p><b>"P"</b> document published prior to the international filing date but later than the priority date claimed</p>	<p><b>"T"</b> 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><b>"X"</b> 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><b>"Y"</b> 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><b>"&amp;"</b> document member of the same patent family</p>		
Date of the actual completion of the international search	Date of mailing of the international search report		
4 December 2008	11/12/2008		
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Villafuerte Abrego		

# INTERNATIONAL SEARCH REPORT

International application No

PCT/US2008/005858

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 5 764 110 A (ISHIBASHI ATSUHIKO [JP]) 9 June 1998 (1998-06-09) the whole document -----	1-25, 28-37

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2008/005858

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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 No. III Observations where unity of invention is lacking (Continuation of item 3 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 allsearchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
  
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.:  
  
1-25, 28-37
  
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 and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- 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: 1-12, 28-32

Memory device and method comprising:

- a clock generator;
- a voltage regulator;
- a clock circuit.

2. claims: 13-25, 33-37

Memory device and method comprising:

- a clock generator;
- a register with clock offset values;
- a clock control circuit using the offset values.

3. claims: 26-27

An apparatus comprising a circuit description of a memory device.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2008/005858
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005168255	A1	04-08-2005	NONE
US 6201754	B1	13-03-2001	JP 2001076484 A 23-03-2001 KR 20010030218 A 16-04-2001 TW 456106 B 21-09-2001
US 7132903	B1	07-11-2006	NONE
US 2003117864	A1	26-06-2003	NONE
US 5764110	A	09-06-1998	NONE