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PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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))

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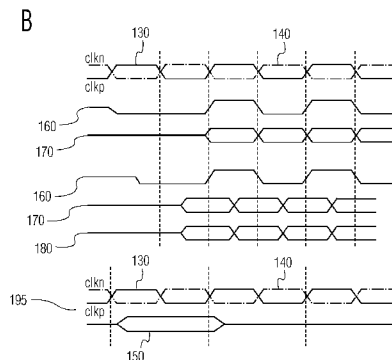
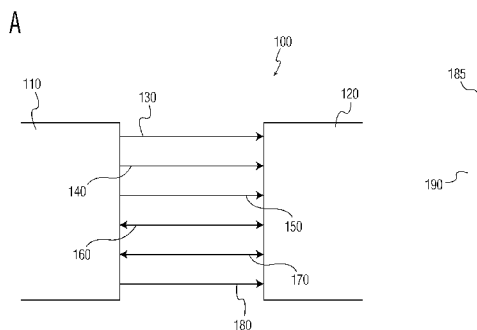
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: LATENCY OPTIMIZED RESYNCHRONIZATION SOLUTION FOR DDR/DDR2 SDRAM READ PATH



(57) Abstract: An apparatus for synchronizing memory data signals is provided. The apparatus comprises a first interface circuit (110) that is configured to generate a differential clock signal in a strobe domain and to convey a data signal to a data bus (110), a second interface circuit (120) in a clock domain that is configured to receive the data signal (170) from the data bus and a synchronization circuit that is configured to adjust the data signal (170) between the strobe domain and the clock domain such that integrity of information encoded by the data signal is preserved. Methods of using the apparatus are also disclosed.

# INTERNATIONAL SEARCH REPORT

International application No  
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## A. CLASSIFICATION OF SUBJECT MATTER

INV. G11C7/10 G11C7/22 G11C11/4076 G11C11/4093 G11C11/4096

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)  
G11C

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

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/24184 A (SILICON GRAPHICS INC [US]) 5 April 2001 (2001-04-05) page 9, column 28 - page 15, column 27; figures 4,5	1-19
X	US 5 999 458 A (NISHIMURA KOICHI [JP] ET AL) 7 December 1999 (1999-12-07) the whole document	1-19
X	US 6 920 526 B1 (SIKKINK MARK RONALD [US] ET AL) 19 July 2005 (2005-07-19) the whole document	1-19



Further documents are listed in the continuation of Box C.



See patent family annex.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0124184	A	05-04-2001	EP 1224667 A1	24-07-2002
			JP 3856696 B2	13-12-2006
			JP 2003510732 T	18-03-2003
			US 6279073 B1	21-08-2001
US 5999458	A	07-12-1999	JP 11176158 A	02-07-1999
US 6920526	B1	19-07-2005	NONE	