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Declarations under Rule 4.17:

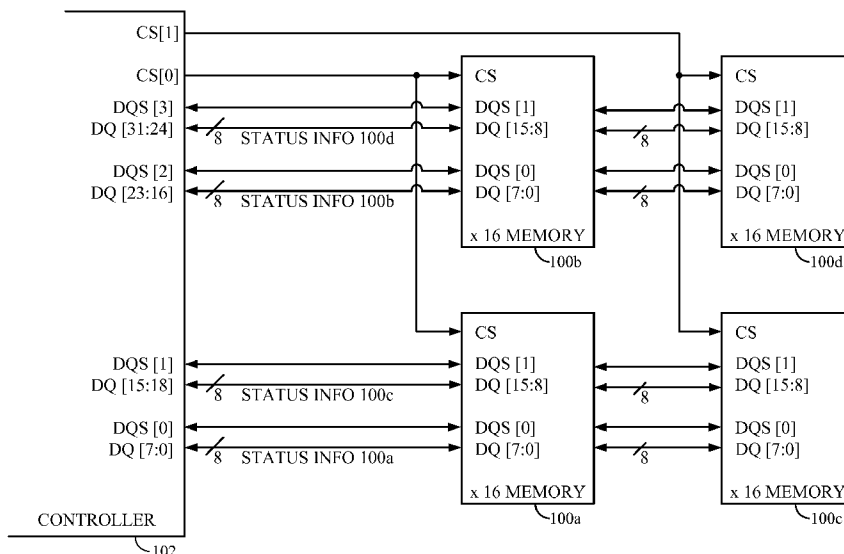
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
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[Continued on next page]

(54) **Title:** CONCURRENT READING OF STATUS REGISTERS



(57) **Abstract:** Status information comprising data not stored in a memory array is efficiently read from a plurality of parallel memory devices sharing an N-bit data bus by configuring each memory device to drive the status information on a different subset M of the N bits, and tri-state the remaining N-M bits. Each memory device is additionally configured to drive zero, one or more data strobes associated with the subset M, and tri-state the remaining data strobes. A memory controller may simultaneously read status information from two or more memory devices in parallel, with each memory device driving a separate subset M of the N-bit bus. Each memory device may serialize the status information, and drive it on the subset M of the bus in burst form. Each memory device may include a configuration register initialized by a memory controller to define its subset M.

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A. CLASSIFICATION OF SUBJECT MATTER

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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.
A	US 2005/027959 A1 (LABERGE PAUL A [US] ET AL) 3 February 2005 (2005-02-03) paragraph [0024]; figure 3	1-34
A	US 5 216 672 A (TATOSIAN DAVID A [US] ET AL) 1 June 1993 (1993-06-01) column 3, line 64 - column 4, line 15; figure 1	1-34
A	US 2001/011318 A1 (DALVI VISHRAM P [US] ET AL) 2 August 2001 (2001-08-02) paragraph [0047]; figure 3	1-34
A	US 5 963 482 A (ZHENG HUA [US]) 5 October 1999 (1999-10-05) column 1, line 46 - column 2, line 31; figures 1,2	1-34
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 Further documents are listed in the continuation of Box C. See patent family annex.

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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 2002/112119 A1 (HALBERT JOHN B [US] ET AL) 15 August 2002 (2002-08-15) paragraphs [0031] - [0036]; figure 4 -----	1-34

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2007/080779

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005027959 A1	03-02-2005	US 2004034755 A1	19-02-2004
US 5216672 A	01-06-1993	NONE	
US 2001011318 A1	02-08-2001	US 2002095545 A1 US 2005024954 A1	18-07-2002 03-02-2005
US 5963482 A	05-10-1999	NONE	
US 2002112119 A1	15-08-2002	NONE	