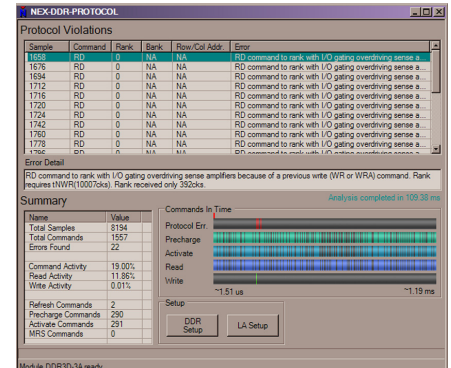


DDR3/DDR2 Protocol Violation

Protocol Violation Analysis for Nexus DDR3/DDR2 Products



There's a BIG difference between protocol decode and protocol violation analysis. Protocol decoding provides a static tabulation of command and address bus activity. This functionality is made available through the logic analyzer listing window using a Nexus Technology DDR3 support package/setup software. Protocol violation analysis analyzes the entire logic analyzer memory, compiling statistical information and error reporting based on every command acquired. This provides a global picture of the activity on the bus and - more importantly - analyzes every command to see that the protocol adheres to the JEDEC specification.



This software is available for all Nexus Technology DDR3 and DDR2 products that support protocol decode. This includes all of our DIMM/SODIMM slot interposers, component interposers, NEXVu VDIMM & SO-VDIMMs, and embedded (midbus) solutions.

Overview

A logic analyzer has the ability to acquire and save millions of cycles of DDR bus traffic with a single acquisition. Analysis of this information is difficult and time consuming. Identifying violations and their frequency and having a global picture of the activity on the bus is typically only done by customers that export the logic analyzer data and create software for custom analysis of the saved data. The NEX-DDR-PROTOCOL, DDR3/DDR2 protocol violation software automates the analysis of your DDR bus to quickly and easily identify protocol violations, their frequency, and also give a global view of the entire logic analyzer memory.

Protocol Violation Analysis

Limited Version

The limited version of this software provides statistical information, summary display of data and protocol error checking of the following protocol errors.

1. Activate command on a refreshing rank
2. Read or write command to an inactive bank row
3. Refresh command to an active bank
4. Bank row X must be precharged before being activated

Full Version

The following list of protocol violations can be reported by this software.

1. Bank Violations Reported
 - a. Active/Read/Write to Precharge in $< t_{RASmin}$
 - b. Active/Read/Write to Auto-Precharge (RDA/WRA) in $< t_{RASmin}$
 - c. Active/Read/Write to Precharge exceeded t_{RASmax}
 - d. Active to Auto-Precharge (RDA/WRA) exceeded t_{RASmax}
 - e. Active to read or write time in $< t_{NARW}$

- f. Precharge to Activate or Precharge in < tRP
 - g. Read burst interrupted by Activate/Read/Write
 - h. Read to Precharge/Auto-Precharge in < tNRP
 - i. Read to Write turn around time in < tNRTW
 - j. Write burst interrupted by Activate/Read/Write
 - k. Write to Precharge/Auto-Precharge in < tNWP
 - l. Write to Read turn around time in < tNWR
 - m. Write to Write time in < tCCD
 - n. Read or Write to an inactive bank row
 - o. Refresh command to an active bank
 - p. Bank row X must be Precharged before being activated
2. Rank Violations Reported
- a. Non-NOP/DES command to a refreshing rank in < tRFC
 - b. Activate command to activate command < tRRD
 - c. Write command to read command < tNWR
 - d. Activate command on a refreshing rank

Product Configuration Table

Nomenclature	Description
NEX-DDR-PROTOCOL	Single Seat License (1-PC or 1-TLA) Note 1
NEX-DDR3P-XXX	Enables full DDR3 protocol violation support for 1-NEX-DDR-PROTOCOL seat and 1-XXX DDR3 protocol decode solution. Note 2
NEX-DDR2P-XXX	Enables full DDR2 protocol violation support for 1-NEX-DDR-PROTOCOL seat and 1-XXX DDR2 protocol decode solution. Note 2

Note 1: Both the NEX-DDR-PROTOCOL seat license and at least one NEX-DDRxP-XXX option are needed for full protocol violation analysis. Multiple NEX-DDRxP-XXX options can be granted for a single NEX-DDR-PROTOCOL seat license.

Note 2: A protocol decode solution is defined as a Nexus Technology DDR3 hardware/software solution. Examples of these solutions include Nexus Technology slot interposers, Nexus Technology NEXVu's, Nexus Technology component interposers, or Nexus Technology midbus embedded solutions.

Tektronix Hardware Requirements

Tektronix TLA Application software V5.1 Service Pack 1 or TLA Application software V5.6 is required.

Further Information

Please contact us by telephone, email or mail as listed below. Email is preferred. Normal business hours are 9:00 - 5:00 EST.

Telephone 877-595-8116

Fax 877-595-8118

Address 78 Northeastern Blvd. Unit 2 Nashua, NH 03062

Technical Support techsupport@nexustechnology.com

Quote Requests quotes@nexustechnology.com

General Information support@nexustechnology.com