

DDR3 Sample Point Analyzer Quick Start

About this Quick Start Guide

This guide will walk through the basic steps for using Nexus Technology DDR3 Sample Point Analyzer (SPA) to configure a Tektronix Logic Analyzer (TLA) for acquiring valid DDR3 data from a target.

NOTE: To properly function, the DDR3 SPA requires Tektronix TLA7BB4 modules, TLA software V5.4.044 or later. For best operation, TLA software version V5.5.108 or later is highly recommended.

NOTE: Before utilizing the DDR3 SPA, a Nexus Technology DDR3 Support must be loaded on the module selected.

1. Trigger on a Mode Register Set from target.

Set the TLA to trigger on an MRS cycle:

Clause Definition - B_DDR3UF_2A State 1.1	
lf	
Group 🗸 Control 🗸 = 🗸	REGISTER SET" 🗸
	"MRS - S0# MODE REGISTER SE "RD - S0# READ" "ACT - S0# BANKACTIVATE" (XX "ACT - S1# BANKACTIVATE" (X1 "DES - DEVICE DESELECT" (X1X "DES - DEVICE DESELECT" (X1 "MRS - S0# MODE REGISTER SE "MRS - S1# MODE REGISTER SE "NOP - S0# NO OPERATION" (XX
Then Trigger All Modules	"NOP - S1# NO OPERATION" (X1 "PRE - S0# SINGLE BANK PREC "PRE - S1# SINGLE BANK PREC "PREA - S0# PRECHARGE ALL B "PREA - S1# PRECHARGE ALL B "RD - S0# READ" (XX110XXXXX
OK Cancel Add	Delete Help

2. Run the TLA.

Click the Run button.



3. Determine the configuration parameter values.

Locate the following parameter values (needed for Step 7):

- CAS Latency
- CAS Write Latency
- CAS Additive Latency
- Burst Length
- Registered or Unregistered



Trigger on Read or Write data from target.

Set the TLA to trigger on a Read or a Write burst:

Clause Definition - B_DDR3UF_2A State 1.1		
lf		
Group 🗸 Control 🗸 = 🗸 "RD - S0# READ" 🗸		
J Then Group Badix		
	Sumbol File	
	Jymborr lie	
Symbol File c:\pi	\b_ddr3uf_2a_ctrl.tsf 💌	
)	
Event Name (anti-	-0	
	Help	
	Tielp	

Data Requirements: To properly locate data eyes, the DDR3 SPA requires that alternating Read and Write commands are issued against all active Chip Selects.

4. Run the TLA.

Click the Run button.



5. Review data acquired. Ensure data transitions exist within the burst for all groups.

🗳 TLA [off-line] - [Waveform 2]			
🚟 Eile Edit View Data	<u>System Tools Window H</u> elp _	ēΧ	
🛃 🖶 🚔 📰 🔤	1 😨 😨 🛛 😰 💦 🛄 Setup 🖳 Trigger 📈 Waveform 👫 1010 Listing Status Idle 🛛 🔍 🕬 🕂	Tel	
🔁 र्म्ट 🗣 🧩 🖧 🖻	💢 🔤 🚰 🥃 wiew 🥌 MagniVu I Activity OF Value 🔍 🍳 Time/Div: 1ns 🕑 🔶 🕅 🔶 Search	~	
Δt Cursor 1 to	Cursor 2 🔻 = 7.539ns		
ž			
Waveform 8	30ns 10.980ns 12.980ns 14.980ns 16.980ns 18.980ns 20.980ns	<u>. </u>	
MagniVu: Sample	8.984 ns 22.969	ns A	
🕀 Magnivu: Address	05A7A 05A82		
🕑 MagniVia: Control	DES - DEVICE DESELECT DES - DEVICE DESELECT		
🕑 MagniVu: Misc	0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	1	
🕀 gnivu: DataMasks			
lagnivu: DDRCK0			
MagniVu: DQS7			
🕀 agniviu: DataByte?	00	4	
MagniViu: DQS6	والماني والساري الفاري المريب المريب الساري الساري المعا		
🗈 agniVu: DataByte6	00 20 01 7F 00 80 5B 2A 61 6A 20 X		
NagniVix DQS5	والأرجني الأرجني الأرجني الأرجني الأرجني الأحما		
🕀 əgnivlu: DətəByte5		16 👘	
Magnivu: DQS4			
🕀 agniviu: DataByte4	00 D0 FF 00 28 69 61 A1 40 8F	Ж	
MagniVix DQS3			
🕀 əgniVu: DətəByte3	00 65 44 3F FF 3D 3F SF FF 00 44	X	
MagniVu: DQS2			
🕀 agniVu: DataByte2	00 10 50 05 61 6A 20 B3 7F 00 51	05	
NagniVix DQS1			
🕀 agniVu: DataByte1	00 01 04 02 61 0E E5 C2 FF 00 AC	46	
MagniVu: DQS0			
🕀 agniVu: DataByte0		47	
🕀 MagniViu: Orphans	4		
For Help, press F1	Tektror	iix	

6. Run SPA and enter configuration parameters.

Double click the icon to start.

🖀 DDR3 Sample Point Analyzer			
Settings Advanced About			
Load System			
File Final Acquisition the			
File: Initiancquisition.tia			
Load Magr	niVu data		
Module: B DDR3UE 4A	•		
DDR3 Support Information			
NEX/4 DDP2 1600 F			
Detail: INEXVI DDRS 1800 L	TK X6 ODIMIMIE (76X4)		
CAS Latency: 9 💌	Burst Length: 8		
CAS Write Latency: 8 💌	Clock: CLK0 🗨		
CAS Additive Latency: 0 💌	Write Enables: No Effect 💌		
Registered: No 💌			
CS: S1,S0	Include ECC		
Analysis Settings			
Inter-module Offset is from pri	imary to secondary module:		
Inter-module Offset: 0.000 Insec			
Select one or more Samp	ble # below for Analysis		
Type Sample #	TimeStamp Command		
₩ 383	-1118.008 WRITE S1~		
W 637	-1113.047 WRITE S1~		
W 1149	-1103.047 WRITE S1~		
YY 1596	-1094.316 WRITE SU*		
W 2000	1040.006 WRITEST		
B 4345	-1040.625 READ S0~		
4345	-1035 586 BEAD S0~		
r 4858	-1030.605 BEAD S0~		
r 5114	-1025.605 READ S0~		
<			
None All Read	All Write All		
Analyze Acquisition Data			

Set:

- CAS Latency
- CAS Write Latency
- CAS Additive Latency
- Burst Length
- Registered

The default values supplied for Inter-Module Offset and Active Chip Selects are acceptable for most configurations. Click the Analyze Data... button.

7. Verify the data.

Verify valid values are displayed for all groups and click the Set Sample Points... button.

🖀 Sample Points				
Sample Point Type:				
		• Group C	Channel	
	Name	Sample Point (nS)	Width (pS)	
	RdADatB0	-1.641	+605	
	RdADatB1	-1.523	+527	
	RdADatB2	-1.406	+605	
	RdADatB3	-1.348	+527	
	RdADatB4	-1.211	+527	
	RdADatB5	-1.289	+488	
	RdADatB6	-1.445	+430	
	RdADatB7	-1.680	+566	
	RdBDatB0	-2.520	+508	
	RdBDatB1	-2.422	+527	
	RdBDatB2	-2.305	+566	
	RdBDatB3	-2.246	+586	
	RdBDatB4	-2.148	+547	
	RdBDatB5	-2.168	+566	
	RdBDatB6	-2.402	+527	
	RdBDatB7	-2.598	+605	
	WrADatB0	-0.742	+605	
	WrADatB1	-0.566	+566	
	WrADatB2	-0.488	+586	
	WrADatB3	-0.391	+664	
	WrADatB4	-0.234	+586	
	WrADatB5	-0.313	+586	
	WrADatB6	-0.469	+469	
	WrADatB7	-0.723	+625	
	WrBDatB0	-1.680	+586	
	WrBDatB1	-1.484	+605	
	WrBDatB2	-1.406	+625	
	WrBDatB3	-1.309	+645	
	WrBDatB4	-1.152	+664	
	WrBDatB5	-1.211	+625	
	WrBDatB6	-1.426	+605	
	WrBDatB7	-1.660	+605	
Indeterminate values are shown on a yellow background.				
Double-click entry Name to edit				
Indicates substitution or invalid value.				
L	Cancel Setting	Adjust Thresholds	Set Sample Points	

Congratulations, you are now ready to acquire valid DDR3 data from your target!

If the Sample Points that were displayed in the results dialog were invalid, additional tuning to your target may be necessary. Refer to the DDR3 SPA Tuning Guide and the DDR3 Sample Point Analyzer User's Manual Appendices C and D for details on additional tuning features.

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