



# DDR3 Compliance Report

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## Design Summary

### Design Details

Description	
Project	Pyra_Memory2_DDR3_OMAP5
Design	Circuit1
Design ID	0
Design Type	Circuit Design
Location	C:/Users/juliano/Desktop/pyra/
Date	10/02/2015 15:58:27
Product Version	<a href="#">Designer 2015.2.0</a>
UDD Version	DDR3 Compliance Report, 1.0 (R15.0)
User	juliano

## Solution Setup

### Solution Details

Description	
Name	DDR31
UDO	C:\Program Files\AnsysEM\AnsysEM16.2\Win64\ElectronicsDesktop\syslib\UserDefinedOutputs\DDR\DDR3.py
Parameters	
AC DQ Level	AC150
Speed Bin	Auto (from DQS)
CK delay	0ps
DQS delay	0ps
Probes	
A0	UNASSIGNED
A1	UNASSIGNED
A10	UNASSIGNED
A11	UNASSIGNED
A12	UNASSIGNED
A13	UNASSIGNED
A14	UNASSIGNED
A15	UNASSIGNED
A2	UNASSIGNED
A3	UNASSIGNED
A4	UNASSIGNED
A5	UNASSIGNED
A6	UNASSIGNED

Description	
A7	UNASSIGNED
A8	UNASSIGNED
A9	UNASSIGNED
CK	UNASSIGNED
CK#	UNASSIGNED
DM	UNASSIGNED
DML	UNASSIGNED
DMU	UNASSIGNED
DQ0	UNASSIGNED
DQ1	UNASSIGNED
DQ2	UNASSIGNED
DQ3	UNASSIGNED
DQ4	UNASSIGNED
DQ5	UNASSIGNED
DQ6	UNASSIGNED
DQ7	UNASSIGNED
DQL0	V(dq0_out)
DQL1	V(dq1_out)
DQL2	V(dq2_out)
DQL3	V(dq3_out)
DQL4	V(dq4_out)
DQL5	V(dq5_out)
DQL6	V(dq6_out)
DQL7	V(dq7_out)
DQS	UNASSIGNED
DQS#	UNASSIGNED
DQSL	V(dqs0n_out)
DQSL#	V(dqs0p_out)
DQSU	V(dqs2n_out)
DQSU#	V(dqs2p_out)
DQU0	V(dq16_out)
DQU1	V(dq17_out)
DQU2	V(dq18_out)
DQU3	V(dq19_out)
DQU4	V(dq20_out)
DQU5	V(dq21_out)
DQU6	V(dq22_out)
DQU7	V(dq23_out)
VDD	V(Vcc)
Variables	
bitwidth	938ps
pw	bitwidth*2
trf	bitwidth/7

Per-Lane

AC and DC Input Levels<sup>[a]</sup>

Metric	Value	Unit
Vref [avg]	750 <sup>[b]</sup>	mV
VIH(ac) [avg]	900 <sup>[b]</sup>	mV
VIL(ac) [avg]	600 <sup>[b]</sup>	mV
VIH(dc) [avg]	850 <sup>[b]</sup>	mV
VIL(dc) [avg]	650 <sup>[b]</sup>	mV
VIHdiff(ac) [avg]	300 <sup>[b]</sup>	mV
VILdiff(ac) [avg]	-300 <sup>[b]</sup>	mV
Speedbin	1066	
Freq(DQSL) [mean]	1066.67	Mbps
Freq(DQSL) [stddev]	17.7124	Mbps
Freq(DQSU) [mean]	1066.66	Mbps
Freq(DQSU) [stddev]	17.3103	Mbps

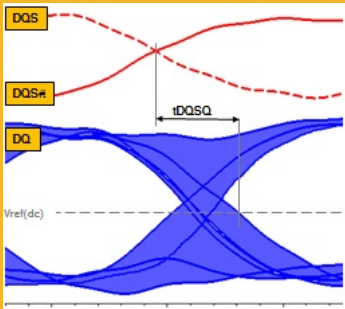
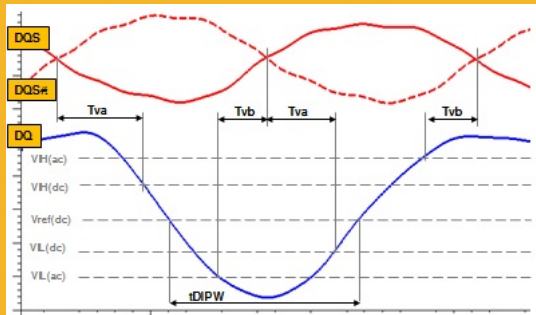
<sup>[a]</sup> JESD79-3F, Section 8.1.2, 8.3

<sup>[b]</sup> Levels reported are average. Actual input levels for per-edge measurements are calculated at each transition.

Data Timing<sup>[a]</sup>

Metric	Worst Actual	Worst Margin	Spec Value	Unit	Result
Tvb_DQL(base)	415.832	340.832	75	ps	PASS
Tvb_DQU(base)	419.969	344.969	75	ps	PASS
Tva_DQL(base)	327.969	227.969	100	ps	PASS
Tva_DQU(base)	334.24	234.24	100	ps	PASS
Tvb_DQL(derated)	378.234	303.234	75	ps	PASS
Tvb_DQU(derated)	369.635	294.635	75	ps	PASS
Tva_DQL(derated)	268.969	168.969	100	ps	PASS
Tva_DQU(derated)	277.24	177.24	100	ps	PASS
tDIPW_DQL	925.866	435.866	490	ps	PASS
tDIPW_DQU	925.209	435.209	490	ps	PASS

<sup>[a]</sup> JESD79-3F, Section 13.1 Data Timing



Per-DQ

Tvb(base) - Timing Metrics

DQL	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	422.554	444.599	433.193	6.6208	60371.8	347.554	PASS

DQL	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
1	422.515	443.616	432.72	6.34252	67876.5	347.515	PASS
2	417.355	439.237	427.913	6.37146	67876.5	342.355	PASS
3	418.283	439.668	428.928	6.34056	67876.5	343.283	PASS
4	416.856	441.872	429.003	6.76006	31294.6	341.856	PASS
5	415.832	440.527	427.588	6.82142	31294.6	340.832	PASS
6	422.663	443.348	432.674	6.29992	60371.8	347.663	PASS
7	422.646	444.42	433.282	6.57635	60371.8	347.646	PASS
DQU	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	467.96	478.061	472.832	3.17445	91331.2	392.96	PASS
1	467.102	477.278	471.936	3.19404	91331.2	392.102	PASS
2	461.617	473.001	466.716	3.32338	67880.4	386.617	PASS
3	462.323	474.374	467.95	3.37993	67880.4	387.323	PASS
4	421.616	441.034	431.327	5.45433	31298.4	346.616	PASS
5	419.969	439.422	429.713	5.53598	31298.4	344.969	PASS
6	466.07	476.631	471.216	3.31052	91331.2	391.07	PASS
7	467.579	477.882	472.638	3.24188	91331.2	392.579	PASS

Tva(base) - Timing Metrics

DQL	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	328.025	365.814	343.928	9.48418	1301.86	228.025	PASS
1	328.407	366.094	344.268	9.42076	1301.86	228.407	PASS
2	331.946	369.592	347.764	9.31484	1301.86	231.946	PASS
3	330.213	367.752	346.046	9.30764	1301.86	230.213	PASS
4	330.365	368.041	345.771	9.5669	1301.86	230.365	PASS
5	332.291	369.983	347.724	9.58187	1301.86	232.291	PASS
6	328.556	366.243	344.407	9.44787	1301.86	228.556	PASS
7	327.969	365.74	343.872	9.50237	1301.86	227.969	PASS
DQU	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	348.013	386.692	363.589	9.15364	1306.73	248.013	PASS
1	348.686	387.291	364.214	9.13806	1306.73	248.686	PASS
2	351.723	390.206	367.284	9.18729	1306.73	251.723	PASS
3	350.369	388.915	365.899	9.2019	1306.73	250.369	PASS
4	334.24	373.028	350.312	9.6915	1306.73	234.24	PASS
5	336.053	374.873	352.133	9.72238	1306.73	236.053	PASS
6	348.697	387.332	364.235	9.15721	1306.73	248.697	PASS
7	347.847	386.574	363.437	9.17179	1306.73	247.847	PASS

Tvb(derated) - Timing Metrics

DQL	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	384.554	397.353	390.396	3.44656	60371.8	309.554	PASS
1	383.093	396.541	389.21	3.5801	31294.6	308.093	PASS
2	378.234	392.237	384.648	3.75432	31294.6	303.234	PASS
3	380.763	393.55	386.554	3.56684	31294.6	305.763	PASS
4	380.161	392.661	386.673	3.3906	60371.8	305.161	PASS
5	378.58	390.527	384.61	3.36561	60371.8	303.58	PASS

DQL	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
6	382.686	395.076	389.035	3.46878	67876.5	307.686	PASS
7	383.978	397.022	390.355	3.47124	67876.5	308.978	PASS
DQU	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	374.235	385.061	379.398	3.02965	34113.2	299.235	PASS
1	373.143	384.278	378.584	3.08611	34113.2	298.143	PASS
2	369.635	381.001	375.021	3.0298	34113.2	294.635	PASS
3	371.307	382.374	376.267	3.06106	60377.5	296.307	PASS
4	373.616	387.532	379.842	3.79411	31298.4	298.616	PASS
5	371.969	386.146	378.221	3.71842	31298.4	296.969	PASS
6	373.139	384.631	378.417	3.15981	67880.4	298.139	PASS
7	374.579	385.187	379.396	3.04376	91331.2	299.579	PASS

Tva(derated) - Timing Metrics

DQL	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	269.025	306.814	285.844	9.64569	1301.86	169.025	PASS
1	270.407	308.094	286.872	9.55584	1301.86	170.407	PASS
2	274.946	312.592	291.285	9.57913	1301.86	174.946	PASS
3	273.213	310.752	289.525	9.38845	1301.86	173.213	PASS
4	273.365	312.041	289	9.73846	1301.86	173.365	PASS
5	275.291	312.983	291.349	9.64188	1301.86	175.291	PASS
6	270.556	308.243	287.011	9.58772	1301.86	170.556	PASS
7	268.969	307.74	285.893	9.7464	1301.86	168.969	PASS
DQU	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	280.013	319.692	298.027	9.27588	1306.73	180.013	PASS
1	280.686	320.291	298.818	9.1915	1306.73	180.686	PASS
2	284.723	324.206	302.326	9.34174	1306.73	184.723	PASS
3	283.369	322.915	301.086	9.3481	1306.73	183.369	PASS
4	277.24	316.028	297.083	9.27759	1306.73	177.24	PASS
5	279.053	317.873	298.675	9.35185	1306.73	179.053	PASS
6	281.697	320.332	298.943	9.23287	1306.73	181.697	PASS
7	279.847	319.574	297.958	9.23134	1306.73	179.847	PASS