



# DDR3 Compliance Report

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## Design Summary

### Design Details

Description	
Project	Pyra_Memory4_DDR3_OMAP5a
Design	Circuit1
Design ID	0
Design Type	Circuit Design
Location	C:/Users/juliano/Desktop/pyra/
Date	10/02/2015 16:19:23
Product Version	Designer 2015.2.0
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]	1066.42	Mbps
Freq(DQSL) [stddev]	18.1116	Mbps
Freq(DQSU) [mean]	1066.42	Mbps
Freq(DQSU) [stddev]	18.1932	Mbps

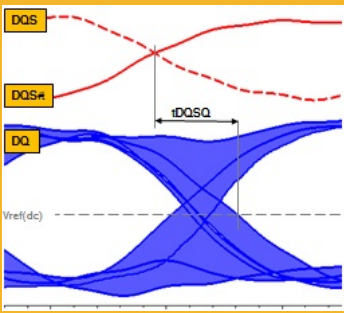
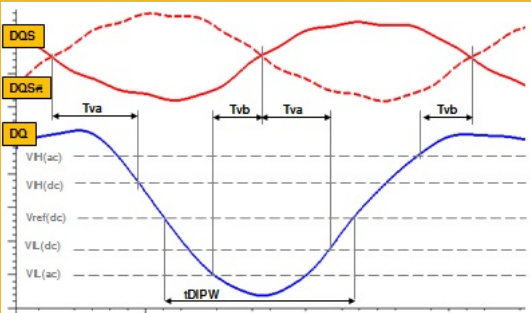
<sup>[a]</sup> JESD79-3F, Section 8.1.2, 8.3

<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)	424.473	349.473	75	ps	PASS
Tvb_DQU(base)	439.302	364.302	75	ps	PASS
Tva_DQL(base)	335.947	235.947	100	ps	PASS
Tva_DQU(base)	326.677	226.677	100	ps	PASS
Tvb_DQL(derated)	365.049	290.049	75	ps	PASS
Tvb_DQU(derated)	368.319	293.319	75	ps	PASS
Tva_DQL(derated)	273.947	173.947	100	ps	PASS
Tva_DQU(derated)	265.677	165.677	100	ps	PASS
tDIPW_DQL	919.811	429.811	490	ps	PASS
tDIPW_DQU	920.109	430.109	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	430.227	455.462	439.247	4.91405	117567	355.227	PASS

DQL	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
1	429.918	455.011	438.792	4.85402	117567	354.918	PASS
2	425.324	450.386	434.184	4.81869	117567	350.324	PASS
3	426.246	451.082	435.316	4.8206	172909	351.246	PASS
4	425.641	451.902	435.293	4.96662	117567	350.641	PASS
5	424.473	450.495	433.934	4.94405	117567	349.473	PASS
6	429.77	454.683	438.679	4.84018	117567	354.77	PASS
7	430.316	455.293	439.31	4.89931	117567	355.316	PASS
DQU	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	465.896	488.037	473.296	3.6532	76304.9	390.896	PASS
1	465.278	487.101	472.524	3.62295	76304.9	390.278	PASS
2	460.319	482.066	467.407	3.58138	109134	385.319	PASS
3	461.423	483.345	468.677	3.65391	76304.9	386.423	PASS
4	440.53	464.841	448.947	4.87395	113828	365.53	PASS
5	439.302	463.52	447.685	4.88589	113828	364.302	PASS
6	464.024	487.107	471.845	3.72415	109134	389.024	PASS
7	465.396	488.301	473.114	3.7241	109134	390.396	PASS

Tva(base) - Timing Metrics

DQL	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	335.977	380.511	359.338	9.72463	1279.9	235.977	PASS
1	336.478	380.966	359.775	9.69025	1279.9	236.478	PASS
2	339.956	384.276	363.342	9.62086	1279.9	239.956	PASS
3	338.3	382.592	361.677	9.60056	1279.9	238.3	PASS
4	338.388	381.442	361.398	9.37784	1279.9	238.388	PASS
5	340.229	383.461	363.332	9.41352	1279.9	240.229	PASS
6	336.641	381.023	359.9	9.67312	1279.9	236.641	PASS
7	335.947	380.443	359.282	9.71771	1279.9	235.947	PASS
DQU	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	344.676	387.253	367.86	9.70267	1291.98	244.676	PASS
1	345.333	387.841	368.517	9.67378	1291.98	245.333	PASS
2	348.341	390.883	371.496	9.64954	1291.98	248.341	PASS
3	346.941	389.563	370.116	9.68483	1291.98	246.941	PASS
4	326.677	370.633	349.654	9.92016	1291.98	226.677	PASS
5	328.537	372.343	351.554	9.88636	1291.98	228.537	PASS
6	345.284	387.854	368.479	9.68307	1291.98	245.284	PASS
7	344.497	387.045	367.681	9.70087	1291.98	244.497	PASS

Tvb(derated) - Timing Metrics

DQL	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	369.459	394.462	378.367	3.69192	76290.9	294.459	PASS
1	368.469	394.011	377.302	3.75057	109121	293.469	PASS
2	365.049	389.386	373.074	3.75127	76290.9	290.049	PASS
3	366.495	391.082	374.676	3.69058	109121	291.495	PASS
4	367.329	389.902	374.923	3.57407	76290.9	292.329	PASS
5	365.197	388.495	373.114	3.63957	109121	290.197	PASS

DQL	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
6	368.432	393.683	377.189	3.66566	109121	293.432	PASS
7	369.549	394.293	378.47	3.67535	76290.9	294.549	PASS
DQU	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	372.896	391.037	378.196	3.09164	76304.9	297.896	PASS
1	372.278	390.101	377.434	3.08973	76304.9	297.278	PASS
2	368.319	387.066	373.857	3.13789	109134	293.319	PASS
3	369.535	388.345	375.247	3.09093	109134	294.535	PASS
4	380.223	401.841	387.377	3.61806	109134	305.223	PASS
5	379.018	400.52	385.755	3.64627	109134	304.018	PASS
6	372.024	390.107	377.325	3.09053	109134	297.024	PASS
7	372.396	391.301	378.354	3.15502	109134	297.396	PASS

Tva(derated) - Timing Metrics

DQL	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	273.977	318.511	299.728	9.60639	1279.9	173.977	PASS
1	274.478	319.966	300.695	9.638	1279.9	174.478	PASS
2	278.956	324.276	304.872	9.45629	1279.9	178.956	PASS
3	277.3	322.592	303.267	9.45899	1279.9	177.3	PASS
4	277.388	321.235	302.928	9.19624	1279.9	177.388	PASS
5	279.229	323.461	304.822	9.25097	1279.9	179.229	PASS
6	274.641	320.023	300.78	9.57028	1279.9	174.641	PASS
7	273.947	318.443	299.732	9.53675	1279.9	173.947	PASS
DQU	Min [ps]	Max [ps]	Mean [ps]	StdDev [ps]	t(worst) [ps]	Margin [ps]	Result
0	275.676	319.253	300.49	9.82364	1291.98	175.676	PASS
1	276.333	319.841	301.267	9.71444	1291.98	176.333	PASS
2	280.341	322.883	304.816	9.68612	1291.98	180.341	PASS
3	278.941	322.452	303.466	9.74907	1291.98	178.941	PASS
4	265.677	309.633	291.074	9.66466	1291.98	165.677	PASS
5	267.537	311.343	292.644	9.62873	1291.98	167.537	PASS
6	276.284	319.854	301.439	9.72565	1291.98	176.284	PASS
7	275.497	319.045	300.431	9.74765	1291.98	175.497	PASS