ELECTROSTATIC DISCHARGE (ESD) TESTING REPORT

Applicant/Department: RAIO TECHNOLOGY INC.	**Product:** RA8876L4N
Case NO: B150428021	**Quantity:** 18 ea
Test Item: Machine Model (MM)	**Package/Pin Count:** QFP_128(14*14)
Application Date: 2015/04/28	**Date Finished:** 2015/04/29
Reference: JESD22-A115C	**Temperature:** 25 ± 5 °C **Humidity:** 55 ± 5%
Test Instrument: JB_ZAP-C	**Test Voltage:** (+)100V ~ (+)400V Step: (+)100V (-)100V ~ (-)400V Step: (-)100V
Failure Criteria: After testing, DUT no longer fulfills requirements of ± 30% voltage drift at ± 1uA reference current and compliance within 10% V+I envelope around REFERENCE I-V curve (pre-zap).	
File Name of Raw Data: D:50428E_E	
ESD Testing Result: Minimum Pass Level = ±300V	

NOTE 1: ESD/latch-up test is employed as one of qualification tests for electronic products. However, the pass / fail results of this test can NOT be taken as go/no-go criteria for IC tape-out and mass production. Before and after ESD/latch-up test(s), complete parametric and functional testing (F/T) are essential for determining pass/fail of the tested products. (References: Page 9, AEC-Q100-003-Rev-E-2003; and Page 15, ESDA-JEDEC JS-001-2011).

NOTE 2: MA-tek sample storage policy is 14 days after the test data delivery. Prolonged storage can be arranged per client's request.

WE HEREBY CERTIFY THAT:

The test(s) was/were conducted according to test conditions provided by customer.Testing was performed on calibrated and JEDEC-ESDA qualified ESD instruments.The quality and comprehensiveness of this test(s) were delivered by qualified personnel.

Tested by	Reviewed by	Approved by
yu kang	Jia Ming Lin	Edward Hu

CERTIFICATE of APPROVAL INDEPENDENT TESTING LABORATORY:

ISO9001:2008 Certificate Registration No. 20001845 QM08, issued by UL DQS Inc. IEC/IECQ17025 Certificate No. IECQ-L ULTW 09.0009, approved by Certification Body (CB): UL Registered Firm

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1. TEST SUMMARY

	Pin Combination	Sample	Pass Level
Sensitivity Pass: ±300V	IO(+)-Power	3	+400V
	IO(-)-Power	3	-300V
	IO(+)-Ground	3	+400V
	IO(-)-Ground	3	-300V
Class-B	Power(+)-Ground	3	+400V
JESD22-A115C	Power(-)-Ground	3	-400V
Class-A : 0 V - < 200 V			
Class-B : 200 V - < 400 V			
Class-C : >= 400 V			

* DUT failed at the first level of test condition, defined by client.

NOTE: Red color in raw data indicates failed pins, if any.

2. Pin ASSIGNMENT

Pin Group	PAD Pins
IO	1 , 2 , 6 , 7 , 8 , 9 , 10 , 11 , 12 , 13 , 14 , 15 , 16 , 17 , 18 , 19 , 20 , 21 , 22 , 25 , 26 , 27 , 28 , 29 , 30 , 31 , 32 , 33 , 34 , 35 , 36 , 37 , 38 , 39 , 40 , 41 , 44 , 45 , 46 , 47 , 48 , 49 , 50 , 51 , 52 , 53 , 54 , 55 , 56 , 57 , 58 , 59 , 60 , 61 , 65 , 66 , 67 , 68 , 69 , 70 , 71 , 72 , 73 , 74 , 77 , 78 , 79 , 80 , 81 , 82 , 83 , 84 , 85 , 86 , 87 , 90 , 91 , 92 , 93 , 94 , 95 , 96 , 99 , 100 , 101 , 102 , 103 , 104 , 105 , 106 , 107 , 108 , 112 , 113 , 114 , 115 , 116 , 117 , 118 , 119 , 120 , 123 , 124 , 125 , 126 , 127 , 128
Ground	5 , 24 , 43 , 64 , 76 , 89 , 98 , 110 , 122
LDO_CAP12	4 , 63 , 111
VDD33	3 , 23 , 42 , 62 , 75 , 88 , 97 , 109 , 121
	Ground=VSS
	Power=VDD33,LDO_CAP12

3. ESD TEST CONDITIONS

ESD Zap Interval: **≧ 500 mS** **Zap:** **1 pulse.**

Testing Combinations

IO(+)-Power
IO(-)-Power
IO(+)-Ground
IO(-)-Ground
Power(+)-Ground
Power(-)-Ground

4. Raw Data - 2

IO(+)-Power(Unit: V)											
Test Pin Fail Voltage			#01	#02	#03	Test Pin Fail Voltage			#01	#02	#03
1	XI	1	Pass	Pass	Pass	2	XO	2	Pass	Pass	Pass
6	XTEST[2:0]	6	Pass	Pass	Pass	7	XTEST[2:0]	7	Pass	Pass	Pass
8	XTEST[2:0]	8	Pass	Pass	Pass	9	XPS[2:0]	9	Pass	Pass	Pass
10	XPS[2:0]	10	Pass	Pass	Pass	11	XPS[2:0]	11	Pass	Pass	Pass
12	XnRST	12	Pass	Pass	Pass	13	XnCS	13	Pass	Pass	Pass
14	XnRD_EN	14	Pass	Pass	Pass	15	XnWR_RWN	15	Pass	Pass	Pass
16	XA0	16	Pass	Pass	Pass	17	XnWAIT	17	Pass	Pass	Pass
18	XDB[0:4]	18	Pass	Pass	Pass	19	XDB[0:4]	19	Pass	Pass	Pass
20	XDB[0:4]	20	Pass	Pass	Pass	21	XDB[0:4]	21	Pass	Pass	Pass
22	XDB[0:4]	22	Pass	Pass	Pass	25	XDB[5:15]	25	Pass	Pass	Pass
26	XDB[5:15]	26	Pass	Pass	Pass	27	XDB[5:15]	27	Pass	Pass	Pass
28	XDB[5:15]	28	Pass	Pass	Pass	29	XDB[5:15]	29	Pass	Pass	Pass
30	XDB[5:15]	30	Pass	Pass	Pass	31	XDB[5:15]	31	Pass	Pass	Pass
32	XDB[5:15]	32	Pass	Pass	Pass	33	XDB[5:15]	33	Pass	Pass	Pass
34	XDB[5:15]	34	Pass	Pass	Pass	35	XDB[5:15]	35	Pass	Pass	Pass
36	XnINTR	36	Pass	Pass	Pass	37	XnSFCS[0:1]	37	Pass	Pass	Pass
38	XnSFCS[0:1]	38	Pass	Pass	Pass	39	XSCK	39	Pass	Pass	Pass
40	XMOSI	40	Pass	Pass	Pass	41	XMISO	41	Pass	Pass	Pass
44	XMBA[1:0]	44	Pass	Pass	Pass	45	XMBA[1:0]	45	Pass	Pass	Pass
46	XMA[12:0]	46	Pass	Pass	Pass	47	XMA[12:0]	47	Pass	Pass	Pass
48	XMA[12:0]	48	Pass	Pass	Pass	49	XMA[12:0]	49	Pass	Pass	Pass
50	XMA[12:0]	50	Pass	Pass	Pass	51	XMA[12:0]	51	Pass	Pass	Pass
52	XMA[12:0]	52	Pass	Pass	Pass	53	XMA[12:0]	53	Pass	Pass	Pass
54	XMA[12:0]	54	Pass	Pass	Pass	55	XMA[12:0]	55	Pass	Pass	Pass
56	XMA[12:0]	56	Pass	Pass	Pass	57	XMA[12:0]	57	Pass	Pass	Pass
58	XMA[12:0]	58	Pass	Pass	Pass	59	XNMCS	59	Pass	Pass	Pass
60	XMCKE	60	Pass	Pass	Pass	61	XMCLK	61	Pass	Pass	Pass
65	XnMCAS	65	Pass	Pass	Pass	66	XnMRAS	66	Pass	Pass	Pass
67	XnMWR	67	Pass	Pass	Pass	68	XMDQM0	68	Pass	Pass	Pass
69	XMD[0:5]	69	Pass	Pass	Pass	70	XMD[0:5]	70	Pass	Pass	Pass
71	XMD[0:5]	71	Pass	Pass	Pass	72	XMD[0:5]	72	Pass	Pass	Pass
73	XMD[0:5]	73	Pass	Pass	Pass	74	XMD[0:5]	74	Pass	Pass	Pass
77	XMD[6:7]	77	Pass	Pass	Pass	78	XMD[6:7]	78	Pass	Pass	Pass
79	XMDQM1	79	Pass	Pass	Pass	80	XMD[8:15]	80	Pass	Pass	Pass
81	XMD[8:15]	81	Pass	Pass	Pass	82	XMD[8:15]	82	Pass	Pass	Pass
83	XMD[8:15]	83	Pass	Pass	Pass	84	XMD[8:15]	84	Pass	Pass	Pass
85	XMD[8:15]	85	Pass	Pass	Pass	86	XMD[8:15]	86	Pass	Pass	Pass
87	XMD[8:15]	87	Pass	Pass	Pass	90	XPWM[0:1]	90	Pass	Pass	Pass
91	XPWM[0:1]	91	Pass	Pass	Pass	92	XKIN0	92	Pass	Pass	Pass
93	XVSYNC	93	Pass	Pass	Pass	94	XHSYNC	94	Pass	Pass	Pass
95	XDE	95	Pass	Pass	Pass	96	XPCLK	96	Pass	Pass	Pass
99	XPDAT[0:9]	99	Pass	Pass	Pass	100	XPDAT[0:9]	100	Pass	Pass	Pass
101	XPDAT[0:9]	101	Pass	Pass	Pass	102	XPDAT[0:9]	102	Pass	Pass	Pass
103	XPDAT[0:9]	103	Pass	Pass	Pass	104	XPDAT[0:9]	104	Pass	Pass	Pass
105	XPDAT[0:9]	105	Pass	Pass	Pass	106	XPDAT[0:9]	106	Pass	Pass	Pass

4. Raw Data - 2

IO(+)-Power(Unit: V)											
Test Pin Fail Voltage			#01	#02	#03	Test Pin Fail Voltage			#01	#02	#03
107	XPDAT[0:9]	107	Pass	Pass	Pass	108	XPDAT[0:9]	108	Pass	Pass	Pass
112	XPDAT[10:18]	112	Pass	Pass	Pass	113	XPDAT[10:18]	113	Pass	Pass	Pass
114	XPDAT[10:18]	114	Pass	Pass	Pass	115	XPDAT[10:18]	115	Pass	Pass	Pass
116	XPDAT[10:18]	116	Pass	Pass	Pass	117	XPDAT[10:18]	117	Pass	Pass	Pass
118	XPDAT[10:18]	118	Pass	Pass	Pass	119	XPDAT[10:18]	119	Pass	Pass	Pass
120	XPDAT[10:18]	120	Pass	Pass	Pass	123	XPDAT[19:23]	123	Pass	Pass	Pass
124	XPDAT[19:23]	124	Pass	Pass	Pass	125	XPDAT[19:23]	125	Pass	Pass	Pass
126	XPDAT[19:23]	126	Pass	Pass	Pass	127	XPDAT[19:23]	127	Pass	Pass	Pass
128	XKOUT0	128	Pass	Pass	Pass						

4. Raw Data - 2

IO(-)-Power(Unit: V)											
Test Pin Fail Voltage			#01	#02	#03	Test Pin Fail Voltage			#01	#02	#03
1	XI	1	Pass	Pass	Pass	2	XO	2	Pass	Pass	Pass
6	XTEST[2:0]	6	Pass	Pass	Pass	7	XTEST[2:0]	7	Pass	Pass	Pass
8	XTEST[2:0]	8	Pass	Pass	Pass	9	XPS[2:0]	9	Pass	Pass	Pass
10	XPS[2:0]	10	Pass	Pass	Pass	11	XPS[2:0]	11	Pass	Pass	Pass
12	XnRST	12	Pass	Pass	Pass	13	XnCS	13	Pass	Pass	Pass
14	XnRD_EN	14	Pass	Pass	Pass	15	XnWR_RWN	15	Pass	Pass	Pass
16	XA0	16	Pass	Pass	Pass	17	XnWAIT	17	Pass	Pass	Pass
18	XDB[0:4]	18	Pass	Pass	Pass	19	XDB[0:4]	19	Pass	Pass	Pass
20	XDB[0:4]	20	Pass	Pass	Pass	21	XDB[0:4]	21	Pass	Pass	Pass
22	XDB[0:4]	22	Pass	Pass	Pass	25	XDB[5:15]	25	Pass	Pass	Pass
26	XDB[5:15]	26	Pass	Pass	Pass	27	XDB[5:15]	27	Pass	Pass	Pass
28	XDB[5:15]	28	Pass	Pass	Pass	29	XDB[5:15]	29	Pass	Pass	Pass
30	XDB[5:15]	30	Pass	Pass	Pass	31	XDB[5:15]	31	Pass	Pass	Pass
32	XDB[5:15]	32	Pass	Pass	Pass	33	XDB[5:15]	33	Pass	Pass	Pass
34	XDB[5:15]	34	Pass	Pass	Pass	35	XDB[5:15]	35	Pass	Pass	Pass
36	XnINTR	36	Pass	Pass	Pass	37	XnSFCS[0:1]	37	Pass	Pass	Pass
38	XnSFCS[0:1]	38	Pass	Pass	-400	39	XSCK	39	Pass	Pass	Pass
40	XMOSI	40	Pass	Pass	Pass	41	XMISO	41	Pass	Pass	Pass
44	XMBA[1:0]	44	Pass	Pass	Pass	45	XMBA[1:0]	45	Pass	Pass	Pass
46	XMA[12:0]	46	-400	Pass	-400	47	XMA[12:0]	47	Pass	Pass	-400
48	XMA[12:0]	48	Pass	Pass	-400	49	XMA[12:0]	49	Pass	Pass	Pass
50	XMA[12:0]	50	Pass	Pass	Pass	51	XMA[12:0]	51	Pass	Pass	Pass
52	XMA[12:0]	52	Pass	Pass	Pass	53	XMA[12:0]	53	Pass	Pass	Pass
54	XMA[12:0]	54	Pass	Pass	Pass	55	XMA[12:0]	55	Pass	Pass	Pass
56	XMA[12:0]	56	Pass	Pass	Pass	57	XMA[12:0]	57	Pass	Pass	Pass
58	XMA[12:0]	58	Pass	Pass	Pass	59	XNMCS	59	Pass	Pass	-400
60	XMCKE	60	Pass	Pass	-400	61	XMCLK	61	Pass	Pass	Pass
65	XnMCAS	65	Pass	Pass	Pass	66	XnMRAS	66	Pass	Pass	Pass
67	XnMWR	67	Pass	Pass	Pass	68	XMDQM0	68	Pass	Pass	-400
69	XMD[0:5]	69	Pass	Pass	Pass	70	XMD[0:5]	70	-400	Pass	Pass
71	XMD[0:5]	71	Pass	Pass	Pass	72	XMD[0:5]	72	Pass	Pass	Pass
73	XMD[0:5]	73	Pass	Pass	Pass	74	XMD[0:5]	74	Pass	Pass	Pass
77	XMD[6:7]	77	Pass	Pass	Pass	78	XMD[6:7]	78	Pass	Pass	Pass
79	XMDQM1	79	Pass	Pass	Pass	80	XMD[8:15]	80	Pass	Pass	Pass
81	XMD[8:15]	81	Pass	Pass	Pass	82	XMD[8:15]	82	Pass	Pass	Pass
83	XMD[8:15]	83	Pass	Pass	Pass	84	XMD[8:15]	84	Pass	Pass	Pass
85	XMD[8:15]	85	Pass	Pass	Pass	86	XMD[8:15]	86	Pass	Pass	Pass
87	XMD[8:15]	87	Pass	Pass	Pass	90	XPWM[0:1]	90	Pass	Pass	Pass
91	XPWM[0:1]	91	Pass	Pass	Pass	92	XKIN0	92	Pass	-400	Pass
93	XVSYNC	93	Pass	Pass	Pass	94	XHSYNC	94	Pass	-400	Pass
95	XDE	95	Pass	Pass	Pass	96	XPCLK	96	Pass	Pass	Pass
99	XPDAT[0:9]	99	Pass	-400	Pass	100	XPDAT[0:9]	100	Pass	Pass	-400
101	XPDAT[0:9]	101	Pass	-400	-400	102	XPDAT[0:9]	102	Pass	Pass	Pass
103	XPDAT[0:9]	103	Pass	Pass	Pass	104	XPDAT[0:9]	104	Pass	Pass	-400
105	XPDAT[0:9]	105	Pass	Pass	-400	106	XPDAT[0:9]	106	Pass	Pass	Pass

4. Raw Data - 2

IO(-)-Power(Unit: V)											
Test Pin Fail Voltage			#01	#02	#03	Test Pin Fail Voltage			#01	#02	#03
107	XPDAT[0:9]	107	Pass	Pass	Pass	108	XPDAT[0:9]	108	Pass	Pass	-400
112	XPDAT[10:18]	112	Pass	Pass	Pass	113	XPDAT[10:18]	113	Pass	Pass	Pass
114	XPDAT[10:18]	114	Pass	Pass	Pass	115	XPDAT[10:18]	115	Pass	Pass	Pass
116	XPDAT[10:18]	116	Pass	Pass	Pass	117	XPDAT[10:18]	117	Pass	Pass	Pass
118	XPDAT[10:18]	118	Pass	Pass	Pass	119	XPDAT[10:18]	119	Pass	Pass	Pass
120	XPDAT[10:18]	120	Pass	Pass	Pass	123	XPDAT[19:23]	123	Pass	Pass	Pass
124	XPDAT[19:23]	124	Pass	Pass	Pass	125	XPDAT[19:23]	125	Pass	Pass	Pass
126	XPDAT[19:23]	126	Pass	Pass	Pass	127	XPDAT[19:23]	127	Pass	Pass	Pass
128	XKOUT0	128	Pass	Pass	Pass						

4. Raw Data - 2

IO(+)-Ground(Unit: V)											
Test Pin Fail Voltage			#01	#02	#03	Test Pin Fail Voltage			#01	#02	#03
1	XI	1	Pass	Pass	Pass	2	XO	2	Pass	Pass	Pass
6	XTEST[2:0]	6	Pass	Pass	Pass	7	XTEST[2:0]	7	Pass	Pass	Pass
8	XTEST[2:0]	8	Pass	Pass	Pass	9	XPS[2:0]	9	Pass	Pass	Pass
10	XPS[2:0]	10	Pass	Pass	Pass	11	XPS[2:0]	11	Pass	Pass	Pass
12	XnRST	12	Pass	Pass	Pass	13	XnCS	13	Pass	Pass	Pass
14	XnRD_EN	14	Pass	Pass	Pass	15	XnWR_RWN	15	Pass	Pass	Pass
16	XA0	16	Pass	Pass	Pass	17	XnWAIT	17	Pass	Pass	Pass
18	XDB[0:4]	18	Pass	Pass	Pass	19	XDB[0:4]	19	Pass	Pass	Pass
20	XDB[0:4]	20	Pass	Pass	Pass	21	XDB[0:4]	21	Pass	Pass	Pass
22	XDB[0:4]	22	Pass	Pass	Pass	25	XDB[5:15]	25	Pass	Pass	Pass
26	XDB[5:15]	26	Pass	Pass	Pass	27	XDB[5:15]	27	Pass	Pass	Pass
28	XDB[5:15]	28	Pass	Pass	Pass	29	XDB[5:15]	29	Pass	Pass	Pass
30	XDB[5:15]	30	Pass	Pass	Pass	31	XDB[5:15]	31	Pass	Pass	Pass
32	XDB[5:15]	32	Pass	Pass	Pass	33	XDB[5:15]	33	Pass	Pass	Pass
34	XDB[5:15]	34	Pass	Pass	Pass	35	XDB[5:15]	35	Pass	Pass	Pass
36	XnINTR	36	Pass	Pass	Pass	37	XnSFCS[0:1]	37	Pass	Pass	Pass
38	XnSFCS[0:1]	38	Pass	Pass	Pass	39	XSCK	39	Pass	Pass	Pass
40	XMOSI	40	Pass	Pass	Pass	41	XMISO	41	Pass	Pass	Pass
44	XMBA[1:0]	44	Pass	Pass	Pass	45	XMBA[1:0]	45	Pass	Pass	Pass
46	XMA[12:0]	46	Pass	Pass	Pass	47	XMA[12:0]	47	Pass	Pass	Pass
48	XMA[12:0]	48	Pass	Pass	Pass	49	XMA[12:0]	49	Pass	Pass	Pass
50	XMA[12:0]	50	Pass	Pass	Pass	51	XMA[12:0]	51	Pass	Pass	Pass
52	XMA[12:0]	52	Pass	Pass	Pass	53	XMA[12:0]	53	Pass	Pass	Pass
54	XMA[12:0]	54	Pass	Pass	Pass	55	XMA[12:0]	55	Pass	Pass	Pass
56	XMA[12:0]	56	Pass	Pass	Pass	57	XMA[12:0]	57	Pass	Pass	Pass
58	XMA[12:0]	58	Pass	Pass	Pass	59	XNMCS	59	Pass	Pass	Pass
60	XMCKE	60	Pass	Pass	Pass	61	XMCLK	61	Pass	Pass	Pass
65	XnMCAS	65	Pass	Pass	Pass	66	XnMRAS	66	Pass	Pass	Pass
67	XnMWR	67	Pass	Pass	Pass	68	XMDQM0	68	Pass	Pass	Pass
69	XMD[0:5]	69	Pass	Pass	Pass	70	XMD[0:5]	70	Pass	Pass	Pass
71	XMD[0:5]	71	Pass	Pass	Pass	72	XMD[0:5]	72	Pass	Pass	Pass
73	XMD[0:5]	73	Pass	Pass	Pass	74	XMD[0:5]	74	Pass	Pass	Pass
77	XMD[6:7]	77	Pass	Pass	Pass	78	XMD[6:7]	78	Pass	Pass	Pass
79	XMDQM1	79	Pass	Pass	Pass	80	XMD[8:15]	80	Pass	Pass	Pass
81	XMD[8:15]	81	Pass	Pass	Pass	82	XMD[8:15]	82	Pass	Pass	Pass
83	XMD[8:15]	83	Pass	Pass	Pass	84	XMD[8:15]	84	Pass	Pass	Pass
85	XMD[8:15]	85	Pass	Pass	Pass	86	XMD[8:15]	86	Pass	Pass	Pass
87	XMD[8:15]	87	Pass	Pass	Pass	90	XPWM[0:1]	90	Pass	Pass	Pass
91	XPWM[0:1]	91	Pass	Pass	Pass	92	XKIN0	92	Pass	Pass	Pass
93	XVSYNC	93	Pass	Pass	Pass	94	XHSYNC	94	Pass	Pass	Pass
95	XDE	95	Pass	Pass	Pass	96	XPCLK	96	Pass	Pass	Pass
99	XPDAT[0:9]	99	Pass	Pass	Pass	100	XPDAT[0:9]	100	Pass	Pass	Pass
101	XPDAT[0:9]	101	Pass	Pass	Pass	102	XPDAT[0:9]	102	Pass	Pass	Pass
103	XPDAT[0:9]	103	Pass	Pass	Pass	104	XPDAT[0:9]	104	Pass	Pass	Pass
105	XPDAT[0:9]	105	Pass	Pass	Pass	106	XPDAT[0:9]	106	Pass	Pass	Pass

4. Raw Data - 2

IO(+)-Ground(Unit: V)											
Test Pin Fail Voltage			#01	#02	#03	Test Pin Fail Voltage			#01	#02	#03
107	XPDAT[0:9]	107	Pass	Pass	Pass	108	XPDAT[0:9]	108	Pass	Pass	Pass
112	XPDAT[10:18]	112	Pass	Pass	Pass	113	XPDAT[10:18]	113	Pass	Pass	Pass
114	XPDAT[10:18]	114	Pass	Pass	Pass	115	XPDAT[10:18]	115	Pass	Pass	Pass
116	XPDAT[10:18]	116	Pass	Pass	Pass	117	XPDAT[10:18]	117	Pass	Pass	Pass
118	XPDAT[10:18]	118	Pass	Pass	Pass	119	XPDAT[10:18]	119	Pass	Pass	Pass
120	XPDAT[10:18]	120	Pass	Pass	Pass	123	XPDAT[19:23]	123	Pass	Pass	Pass
124	XPDAT[19:23]	124	Pass	Pass	Pass	125	XPDAT[19:23]	125	Pass	Pass	Pass
126	XPDAT[19:23]	126	Pass	Pass	Pass	127	XPDAT[19:23]	127	Pass	Pass	Pass
128	XKOUT0	128	Pass	Pass	Pass						

4. Raw Data - 2

IO(-)-Ground(Unit: V)											
Test Pin Fail Voltage			#01	#02	#03	Test Pin Fail Voltage			#01	#02	#03
1	XI	1	Pass	Pass	Pass	2	XO	2	Pass	Pass	Pass
6	XTEST[2:0]	6	Pass	Pass	Pass	7	XTEST[2:0]	7	Pass	Pass	Pass
8	XTEST[2:0]	8	Pass	Pass	Pass	9	XPS[2:0]	9	Pass	Pass	Pass
10	XPS[2:0]	10	Pass	Pass	Pass	11	XPS[2:0]	11	Pass	Pass	Pass
12	XnRST	12	Pass	Pass	Pass	13	XnCS	13	Pass	Pass	Pass
14	XnRD_EN	14	Pass	Pass	Pass	15	XnWR_RWN	15	Pass	Pass	Pass
16	XA0	16	Pass	Pass	Pass	17	XnWAIT	17	Pass	Pass	Pass
18	XDB[0:4]	18	Pass	Pass	Pass	19	XDB[0:4]	19	Pass	Pass	Pass
20	XDB[0:4]	20	Pass	Pass	Pass	21	XDB[0:4]	21	Pass	Pass	Pass
22	XDB[0:4]	22	Pass	Pass	Pass	25	XDB[5:15]	25	Pass	Pass	Pass
26	XDB[5:15]	26	Pass	Pass	Pass	27	XDB[5:15]	27	Pass	Pass	Pass
28	XDB[5:15]	28	Pass	Pass	Pass	29	XDB[5:15]	29	Pass	Pass	Pass
30	XDB[5:15]	30	Pass	Pass	Pass	31	XDB[5:15]	31	Pass	Pass	Pass
32	XDB[5:15]	32	Pass	Pass	Pass	33	XDB[5:15]	33	Pass	Pass	Pass
34	XDB[5:15]	34	Pass	Pass	Pass	35	XDB[5:15]	35	Pass	Pass	Pass
36	XnINTR	36	Pass	Pass	Pass	37	XnSFCS[0:1]	37	Pass	Pass	Pass
38	XnSFCS[0:1]	38	Pass	Pass	Pass	39	XSCK	39	Pass	Pass	Pass
40	XMOSI	40	Pass	Pass	Pass	41	XMISO	41	Pass	Pass	Pass
44	XMBA[1:0]	44	Pass	Pass	Pass	45	XMBA[1:0]	45	Pass	Pass	Pass
46	XMA[12:0]	46	Pass	Pass	Pass	47	XMA[12:0]	47	Pass	Pass	Pass
48	XMA[12:0]	48	Pass	Pass	Pass	49	XMA[12:0]	49	Pass	Pass	Pass
50	XMA[12:0]	50	Pass	Pass	Pass	51	XMA[12:0]	51	Pass	Pass	Pass
52	XMA[12:0]	52	Pass	Pass	Pass	53	XMA[12:0]	53	Pass	Pass	Pass
54	XMA[12:0]	54	Pass	Pass	Pass	55	XMA[12:0]	55	Pass	Pass	Pass
56	XMA[12:0]	56	Pass	Pass	Pass	57	XMA[12:0]	57	Pass	Pass	Pass
58	XMA[12:0]	58	Pass	Pass	Pass	59	XNMCS	59	Pass	Pass	Pass
60	XMCKE	60	Pass	Pass	Pass	61	XMCLK	61	Pass	Pass	Pass
65	XnMCAS	65	Pass	Pass	Pass	66	XnMRAS	66	Pass	Pass	Pass
67	XnMWR	67	Pass	Pass	Pass	68	XMDQM0	68	Pass	Pass	Pass
69	XMD[0:5]	69	Pass	Pass	Pass	70	XMD[0:5]	70	Pass	Pass	Pass
71	XMD[0:5]	71	Pass	Pass	Pass	72	XMD[0:5]	72	Pass	Pass	Pass
73	XMD[0:5]	73	Pass	Pass	Pass	74	XMD[0:5]	74	Pass	Pass	Pass
77	XMD[6:7]	77	Pass	Pass	Pass	78	XMD[6:7]	78	Pass	Pass	Pass
79	XMDQM1	79	Pass	Pass	Pass	80	XMD[8:15]	80	Pass	Pass	Pass
81	XMD[8:15]	81	Pass	Pass	Pass	82	XMD[8:15]	82	Pass	Pass	Pass
83	XMD[8:15]	83	Pass	Pass	Pass	84	XMD[8:15]	84	Pass	Pass	Pass
85	XMD[8:15]	85	Pass	Pass	Pass	86	XMD[8:15]	86	Pass	Pass	Pass
87	XMD[8:15]	87	Pass	Pass	Pass	90	XPWM[0:1]	90	Pass	Pass	Pass
91	XPWM[0:1]	91	Pass	Pass	Pass	92	XKIN0	92	Pass	Pass	Pass
93	XVSYNC	93	Pass	Pass	Pass	94	XHSYNC	94	Pass	Pass	Pass
95	XDE	95	Pass	Pass	Pass	96	XPCLK	96	Pass	Pass	Pass
99	XPDAT[0:9]	99	Pass	Pass	Pass	100	XPDAT[0:9]	100	Pass	Pass	Pass
101	XPDAT[0:9]	101	Pass	Pass	Pass	102	XPDAT[0:9]	102	Pass	Pass	Pass
103	XPDAT[0:9]	103	Pass	Pass	Pass	104	XPDAT[0:9]	104	Pass	Pass	Pass
105	XPDAT[0:9]	105	Pass	Pass	Pass	106	XPDAT[0:9]	106	Pass	Pass	Pass

4. Raw Data - 2

IO(-)-Ground(Unit: V)											
Test Pin Fail Voltage			#01	#02	#03	Test Pin Fail Voltage			#01	#02	#03
107	XPDAT[0:9]	107	Pass	Pass	Pass	108	XPDAT[0:9]	108	Pass	Pass	Pass
112	XPDAT[10:18]	112	Pass	Pass	Pass	113	XPDAT[10:18]	113	Pass	Pass	Pass
114	XPDAT[10:18]	114	Pass	Pass	Pass	115	XPDAT[10:18]	115	Pass	Pass	Pass
116	XPDAT[10:18]	116	Pass	Pass	Pass	117	XPDAT[10:18]	117	Pass	Pass	Pass
118	XPDAT[10:18]	118	Pass	Pass	Pass	119	XPDAT[10:18]	119	Pass	Pass	Pass
120	XPDAT[10:18]	120	Pass	Pass	Pass	123	XPDAT[19:23]	123	Pass	Pass	-400
124	XPDAT[19:23]	124	Pass	Pass	Pass	125	XPDAT[19:23]	125	Pass	Pass	Pass
126	XPDAT[19:23]	126	Pass	Pass	Pass	127	XPDAT[19:23]	127	Pass	Pass	Pass
128	XKOUT0	128	Pass	Pass	Pass						

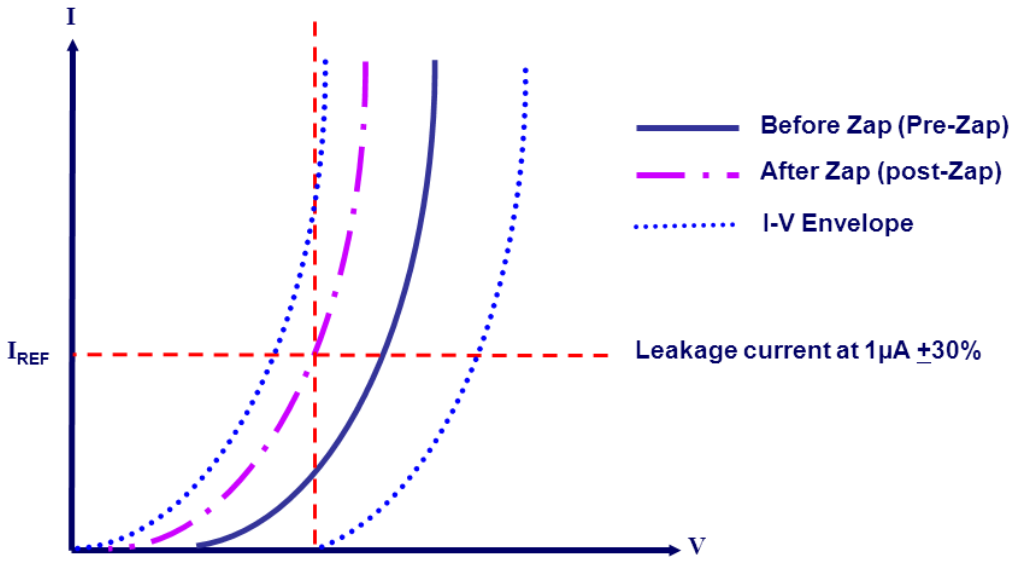
4. Raw Data - 2

Power(+)-Ground(Unit: V)											
Test Pin Fail Voltage			#01	#02	#03	Test Pin Fail Voltage			#01	#02	#03
3	VDD33	3	Pass	Pass	Pass	4	LDO_CAP12	4	Pass	Pass	Pass
23	VDD33	23	Pass	Pass	Pass	42	VDD33	42	Pass	Pass	Pass
62	VDD33	62	Pass	Pass	Pass	63	LDO_CAP12	63	Pass	Pass	Pass
75	VDD33	75	Pass	Pass	Pass	88	VDD33	88	Pass	Pass	Pass
97	VDD33	97	Pass	Pass	Pass	109	VDD33	109	Pass	Pass	Pass
111	LDO_CAP12	111	Pass	Pass	Pass	121	VDD33	121	Pass	Pass	Pass

Power(-)-Ground(Unit: V)											
Test Pin Fail Voltage			#01	#02	#03	Test Pin Fail Voltage			#01	#02	#03
3	VDD33	3	Pass	Pass	Pass	4	LDO_CAP12	4	Pass	Pass	Pass
23	VDD33	23	Pass	Pass	Pass	42	VDD33	42	Pass	Pass	Pass
62	VDD33	62	Pass	Pass	Pass	63	LDO_CAP12	63	Pass	Pass	Pass
75	VDD33	75	Pass	Pass	Pass	88	VDD33	88	Pass	Pass	Pass
97	VDD33	97	Pass	Pass	Pass	109	VDD33	109	Pass	Pass	Pass
111	LDO_CAP12	111	Pass	Pass	Pass	121	VDD33	121	Pass	Pass	Pass

5. APPENDIX-1 (PASS/FAIL CRITERIA)

FAILURE CRITERIA	**After testing, DUT no longer fulfills requirements of ± 30% voltage drift at ± 1uA reference current and compliance within 10% V+I envelope around REFERENCE I-V curve (pre-zap).**
Note	**For custom designed ESD testing customers may select variation in Idd, and leakage current as criteria to determine pass/fail results of ESD testing.**



Pass/Fail Criteria:
Variation of Leakage Current and I-V Shift in Pre-Zap and Post-Zap curves

6. APPENDIX-2 (ESD INSTRUMENTATION AT MA-TEK)

No.	Test Tools	Vendors	System Specification
1	Zapmaster	Thermo Keytek	256 Pin Count, ESD Pulse 50 V to 8 KV
2	MK2	Thermo Keytek	768 Pin Count, ESD Pulse 10 V to 8 KV
3	MK1	Thermo Scientific	256 Pin Count, ESD Pulse 10 V to 8 KV
4	CDM Tester	Oryx Orion	100 V to 2 KV
5	ESD Gun	Noiseken	Voltage = 1 V to 1 KV, Current = 10 nA to 20 A
6	High Temp. Test Module	Thermonics	Maximum temperature = 150°C.
7	TLP Tester	Thermo Scientific	Voltage = 1 V to 1 KV, Current = 10 nA to 20 A

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