

# ESD (MACHINE MODE) TEST REPORT

Company : RAIO Technology Inc.

Model Name : RA8873M

Date Received : APR 05, 2017

Date Tested : APR 10, 2017

## TESTING LABORATORY IS ACCREDITED BY:

IEC/IECQ 17025 certificate of independent test laboratory approval

 Certificate No. : 1.72.0031

ISO 9001 certificate is approved by TUV CERT certification body of TUV NORD Cert GmbH

## WE HEREBY CERTIFY THAT:

The test(s) shown in the attachment were conducted according to the indicating procedures. We assume full responsibility for the accuracy and completeness of these tests and vouch for the qualifications of all personnel performing them.

	Name	Signature	Date
Test Engineer	Yenyu Liu	<i>Yenyu Liu</i>	Apr 10, 2017
Manager	Even Lin	<i>Even Lin</i>	Apr 10, 2017

## **Note :**

1. This report will be invalid if reproduced in whole or in part.
2. This report refers only to the specimen(s) submitted to test, and is invalid if used separately.
3. This report is ONLY valid with the examination seal and signature of the 股份
4. The tested specimen(s) will only be preserved for thirty days from the date issued, if not collected by the applicant.
5. The failure criteria of all ESD tests should be based on the result of parallel and functional testing conducted by the customer, which follows the statement of international standards. Thus, the judgment of the curve traces provided in this report is for reference ONLY.





## TABLE OF CONTENTS

### 1. GENERAL INFORMATION

1.1 DESCRIPTION OF UNIT .....	2
-------------------------------	---

### 2. ESD (MACHINE MODE) TEST

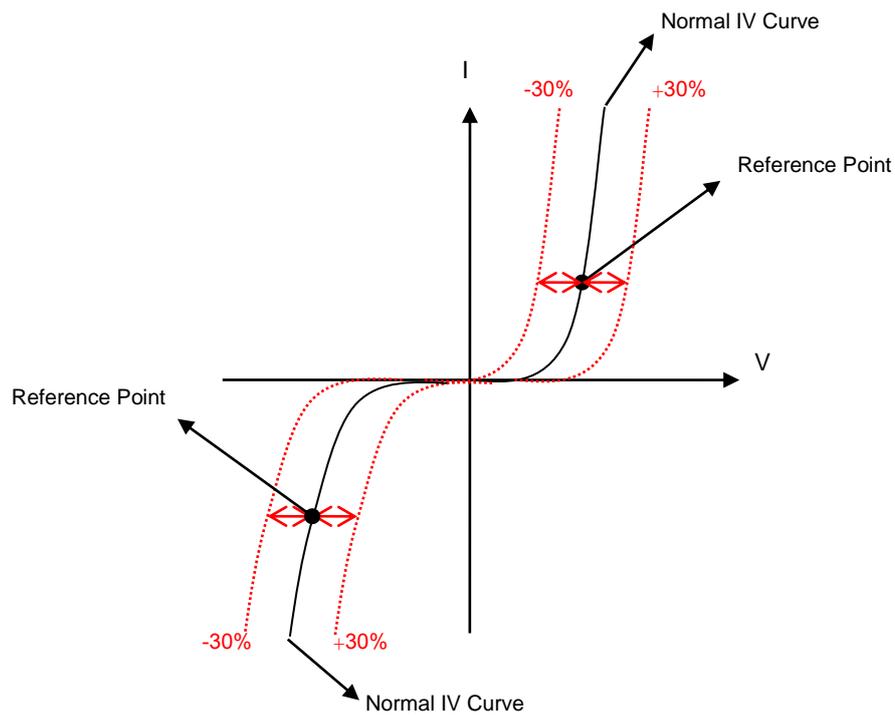
2.1 TEST EQUIPMENT .....	3
2.2 LABORATORY AMBIENCE CONDITION .....	3
2.3 REFERENCE DOCUMENT .....	3
2.4 TEST CONDITION .....	3
2.5 SUMMARY OF TEST .....	3
2.6 CONTENTS OF TEST .....	4

## 1. GENERAL INFORMATION

### 1.1 DESCRIPTION OF UNIT

MANUFACTURER : RAIO Technology Inc.  
DEVICE NAME : RA8873M  
PACKAGE / PIN COUNT : LQFP-128  
REFERENCE DOCUMENT : JEDEC EIA/JESD22-A115  
TEST VOLTAGE : 200V ~ 400V ( $\pm$ ), Step: 100V ( $\pm$ )  
SAMPLE QUANTITY : 18 ea  
FAILURE CRITERIA :  $\pm 30\%$  voltage shift at reference point before/after zapping  
( Reference Only )

※ Failure Judgment: Voltage shift over  $\pm 30\%$  at reference point.



## 2. ESD (MACHINE MODE) TEST

### 2.1 TEST EQUIPMENT

Test Equipment	Equipment Number	Tester
KEYTEK ZAPMASTER	#5	07039

### 2.2 LABORATORY AMBIENCE CONDITION

Temperature : 25 °C ± 5 °C

Relative humidity : 55 % ± 10 % (RH)

### 2.3 REFERENCE DOCUMENT

The test method refers to JEDEC EIA/JESD22-A115

### 2.4 TEST CONDITION

ALL – VSS (+)

ALL – VSS (-)

ALL – VCC (+)

ALL – VCC (-)

VCC – VSS (+)

VCC – VSS (-)

### 2.5 SUMMARY OF TEST

Test Model : MM	ESD Sensitivity Passed: <u>±300V</u>		JEDEC Classification Class : <u> B </u>
Test condition	Sample Quantity	Passed Volts	Class A : < 200V Class B : ≥200V , < 400V Class C : ≥400V
ALL – VSS (+)	3	+400V	
ALL – VSS (-)	3	-300V	
ALL – VCC (+)	3	+400V	
ALL – VCC (-)	3	-300V	
VCC – VSS (+)	3	+400V	
VCC – VSS (-)	3	-400V	

ALL:1-2,6-22,25-41,90-96,99-108,112-120,  
123-128

NC:44-61,65-74,77-87

VCC:3-4,23,42,62-63,75,88,97,109,111,121  
VSS:5,24,43,64,76,89,98,110,122

## 2.6 CONTENTS OF TEST

ALL – VSS (+) (UNIT:V)									
Test Pin	FAIL VOLTAGE	#1	#2	#3	Test Pin	FAIL VOLTAGE	#1	#2	#3
1		PASS	PASS	PASS	40		PASS	PASS	PASS
2		PASS	PASS	PASS	41		PASS	PASS	PASS
6		PASS	PASS	PASS	90		PASS	PASS	PASS
7		PASS	PASS	PASS	91		PASS	PASS	PASS
8		PASS	PASS	PASS	92		PASS	PASS	PASS
9		PASS	PASS	PASS	93		PASS	PASS	PASS
10		PASS	PASS	PASS	94		PASS	PASS	PASS
11		PASS	PASS	PASS	95		PASS	PASS	PASS
12		PASS	PASS	PASS	96		PASS	PASS	PASS
13		PASS	PASS	PASS	99		PASS	PASS	PASS
14		PASS	PASS	PASS	100		PASS	PASS	PASS
15		PASS	PASS	PASS	101		PASS	PASS	PASS
16		PASS	PASS	PASS	102		PASS	PASS	PASS
17		PASS	PASS	PASS	103		PASS	PASS	PASS
18		PASS	PASS	PASS	104		PASS	PASS	PASS
19		PASS	PASS	PASS	105		PASS	PASS	PASS
20		PASS	PASS	PASS	106		PASS	PASS	PASS
21		PASS	PASS	PASS	107		PASS	PASS	PASS
22		PASS	PASS	PASS	108		PASS	PASS	PASS
25		PASS	PASS	PASS	112		PASS	PASS	PASS
26		PASS	PASS	PASS	113		PASS	PASS	PASS
27		PASS	PASS	PASS	114		PASS	PASS	PASS
28		PASS	PASS	PASS	115		PASS	PASS	PASS
29		PASS	PASS	PASS	116		PASS	PASS	PASS
30		PASS	PASS	PASS	117		PASS	PASS	PASS
31		PASS	PASS	PASS	118		PASS	PASS	PASS
32		PASS	PASS	PASS	119		PASS	PASS	PASS
33		PASS	PASS	PASS	120		PASS	PASS	PASS
34		PASS	PASS	PASS	123		PASS	PASS	PASS
35		PASS	PASS	PASS	124		PASS	PASS	PASS
36		PASS	PASS	PASS	125		PASS	PASS	PASS
37		PASS	PASS	PASS	126		PASS	PASS	PASS
38		PASS	PASS	PASS	127		PASS	PASS	PASS
39		PASS	PASS	PASS	128		PASS	PASS	PASS

ALL – VSS (-)									
(UNIT:V)									
Test Pin	FAIL VOLTAGE	#1	#2	#3	Test Pin	FAIL VOLTAGE	#1	#2	#3
1	PASS	PASS	PASS	PASS	40	-400	-400	-400	-400
2	-400	-400	-400	-400	41	PASS	-400	-400	-400
6	-400	-400	-400	-400	90	PASS	PASS	-400	-400
7	-400	PASS	-400	-400	91	-400	-400	-400	-400
8	PASS	-400	-400	-400	92	-400	-400	-400	-400
9	PASS	PASS	-400	-400	93	-400	-400	-400	-400
10	-400	-400	-400	-400	94	PASS	-400	-400	-400
11	PASS	PASS	PASS	PASS	95	-400	-400	-400	-400
12	-400	PASS	-400	-400	96	-400	-400	-400	-400
13	-400	-400	-400	-400	99	-400	-400	-400	-400
14	-400	-400	-400	-400	100	-400	-400	-400	-400
15	-400	-400	-400	-400	101	-400	-400	-400	-400
16	-400	PASS	-400	-400	102	-400	-400	-400	-400
17	-400	-400	-400	-400	103	-400	-400	-400	-400
18	-400	-400	-400	-400	104	-400	-400	-400	-400
19	PASS	-400	-400	-400	105	-400	-400	-400	-400
20	PASS	-400	-400	-400	106	-400	PASS	PASS	PASS
21	PASS	-400	PASS	PASS	107	-400	-400	-400	-400
22	-400	-400	-400	-400	108	PASS	-400	-400	-400
25	-400	PASS	-400	-400	112	-400	-400	-400	-400
26	-400	PASS	-400	-400	113	-400	-400	-400	-400
27	-400	-400	-400	-400	114	PASS	-400	-400	-400
28	-400	-400	-400	-400	115	-400	-400	-400	-400
29	-400	-400	-400	-400	116	-400	-400	-400	-400
30	PASS	-400	-400	-400	117	-400	PASS	-400	-400
31	PASS	-400	-400	-400	118	-400	PASS	-400	-400
32	-400	-400	-400	-400	119	-400	-400	-400	-400
33	-400	-400	-400	-400	120	-400	-400	-400	-400
34	-400	-400	-400	-400	123	-400	-400	-400	-400
35	-400	-400	-400	-400	124	-400	PASS	-400	-400
36	-400	-400	-400	-400	125	-400	-400	-400	-400
37	-400	PASS	-400	-400	126	PASS	-400	-400	-400
38	-400	PASS	-400	-400	127	-400	-400	-400	-400
39	-400	-400	-400	-400	128	-400	-400	-400	-400

ALL – VCC (+)									
(UNIT:V)									
Test Pin	FAIL VOLTAGE	#1	#2	#3	Test Pin	FAIL VOLTAGE	#1	#2	#3
1		PASS	PASS	PASS	40		PASS	PASS	PASS
2		PASS	PASS	PASS	41		PASS	PASS	PASS
6		PASS	PASS	PASS	90		PASS	PASS	PASS
7		PASS	PASS	PASS	91		PASS	PASS	PASS
8		PASS	PASS	PASS	92		PASS	PASS	PASS
9		PASS	PASS	PASS	93		PASS	PASS	PASS
10		PASS	PASS	PASS	94		PASS	PASS	PASS
11		PASS	PASS	PASS	95		PASS	PASS	PASS
12		PASS	PASS	PASS	96		PASS	PASS	PASS
13		PASS	PASS	PASS	99		PASS	PASS	PASS
14		PASS	PASS	PASS	100		PASS	PASS	PASS
15		PASS	PASS	PASS	101		PASS	PASS	PASS
16		PASS	PASS	PASS	102		PASS	PASS	PASS
17		PASS	PASS	PASS	103		PASS	PASS	PASS
18		PASS	PASS	PASS	104		PASS	PASS	PASS
19		PASS	PASS	PASS	105		PASS	PASS	PASS
20		PASS	PASS	PASS	106		PASS	PASS	PASS
21		PASS	PASS	PASS	107		PASS	PASS	PASS
22		PASS	PASS	PASS	108		PASS	PASS	PASS
25		PASS	PASS	PASS	112		PASS	PASS	PASS
26		PASS	PASS	PASS	113		PASS	PASS	PASS
27		PASS	PASS	PASS	114		PASS	PASS	PASS
28		PASS	PASS	PASS	115		PASS	PASS	PASS
29		PASS	PASS	PASS	116		PASS	PASS	PASS
30		PASS	PASS	PASS	117		PASS	PASS	PASS
31		PASS	PASS	PASS	118		PASS	PASS	PASS
32		PASS	PASS	PASS	119		PASS	PASS	PASS
33		PASS	PASS	PASS	120		PASS	PASS	PASS
34		PASS	PASS	PASS	123		PASS	PASS	PASS
35		PASS	PASS	PASS	124		PASS	PASS	PASS
36		PASS	PASS	PASS	125		PASS	PASS	PASS
37		PASS	PASS	PASS	126		PASS	PASS	PASS
38		PASS	PASS	PASS	127		PASS	PASS	PASS
39		PASS	PASS	PASS	128		PASS	PASS	PASS

ALL – VCC (-)									
(UNIT:V)									
Test Pin	FAIL VOLTAGE	#1	#2	#3	Test Pin	FAIL VOLTAGE	#1	#2	#3
1	PASS	PASS	PASS	PASS	40	-400	-400	-400	-400
2	-400	-400	-400	-400	41	-400	-400	-400	-400
6	-400	-400	-400	-400	90	-400	-400	-400	-400
7	PASS	PASS	PASS	PASS	91	-400	-400	-400	-400
8	PASS	-400	-400	-400	92	-400	-400	-400	-400
9	-400	PASS	PASS	PASS	93	-400	-400	-400	-400
10	-400	PASS	-400	-400	94	-400	-400	-400	-400
11	PASS	-400	-400	-400	95	-400	-400	-400	-400
12	PASS	PASS	PASS	PASS	96	-400	-400	-400	-400
13	PASS	PASS	PASS	PASS	99	-400	-400	-400	-400
14	PASS	PASS	PASS	PASS	100	-400	-400	-400	-400
15	PASS	PASS	PASS	PASS	101	-400	-400	-400	-400
16	-400	PASS	PASS	PASS	102	-400	-400	-400	-400
17	PASS	PASS	PASS	PASS	103	-400	-400	-400	-400
18	-400	-400	-400	-400	104	-400	-400	-400	-400
19	-400	-400	-400	-400	105	-400	-400	-400	-400
20	PASS	PASS	PASS	PASS	106	-400	-400	-400	-400
21	-400	-400	-400	-400	107	-400	-400	-400	-400
22	-400	-400	-400	-400	108	-400	-400	-400	-400
25	-400	-400	-400	-400	112	-400	-400	-400	-400
26	-400	-400	-400	-400	113	-400	-400	PASS	-400
27	-400	-400	-400	-400	114	-400	PASS	-400	-400
28	-400	-400	-400	-400	115	-400	-400	-400	-400
29	-400	-400	-400	-400	116	-400	-400	-400	-400
30	-400	-400	-400	-400	117	-400	-400	PASS	-400
31	-400	-400	-400	-400	118	-400	-400	-400	-400
32	-400	-400	-400	-400	119	PASS	PASS	PASS	PASS
33	-400	-400	-400	-400	120	-400	-400	PASS	PASS
34	-400	-400	-400	-400	123	-400	-400	PASS	PASS
35	-400	-400	-400	-400	124	-400	-400	PASS	PASS
36	-400	-400	-400	-400	125	PASS	PASS	PASS	PASS
37	-400	-400	-400	-400	126	PASS	PASS	PASS	PASS
38	-400	-400	-400	-400	127	-400	PASS	PASS	PASS
39	-400	-400	-400	-400	128	PASS	PASS	PASS	PASS

VCC – VSS (+)									(UNIT:V)
Test Pin	FAIL VOLTAGE	#1	#2	#3	Test Pin	FAIL VOLTAGE	#1	#2	#3
3		PASS	PASS	PASS	75		PASS	PASS	PASS
4		PASS	PASS	PASS	88		PASS	PASS	PASS
23		PASS	PASS	PASS	97		PASS	PASS	PASS
42		PASS	PASS	PASS	109		PASS	PASS	PASS
62		PASS	PASS	PASS	111		PASS	PASS	PASS
63		PASS	PASS	PASS	121		PASS	PASS	PASS

VCC – VSS (-)									(UNIT:V)
Test Pin	FAIL VOLTAGE	#1	#2	#3	Test Pin	FAIL VOLTAGE	#1	#2	#3
3		PASS	PASS	PASS	75		PASS	PASS	PASS
4		PASS	PASS	PASS	88		PASS	PASS	PASS
23		PASS	PASS	PASS	97		PASS	PASS	PASS
42		PASS	PASS	PASS	109		PASS	PASS	PASS
62		PASS	PASS	PASS	111		PASS	PASS	PASS
63		PASS	PASS	PASS	121		PASS	PASS	PASS

<< The Following Blank >>