

# ESD (HUMAN BODY MODE) TEST REPORT

Company : RAIO Technology Inc.  
 Model Name : RA8871M  
 Date Received : APR 05, 2017  
 Date Tested : APR 06, 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	Chris Huang	<i>Chris Huang</i>	Apr 11, 2017
Manager	Even Lin	<i>Even Lin</i>	Apr 11, 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 param 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.





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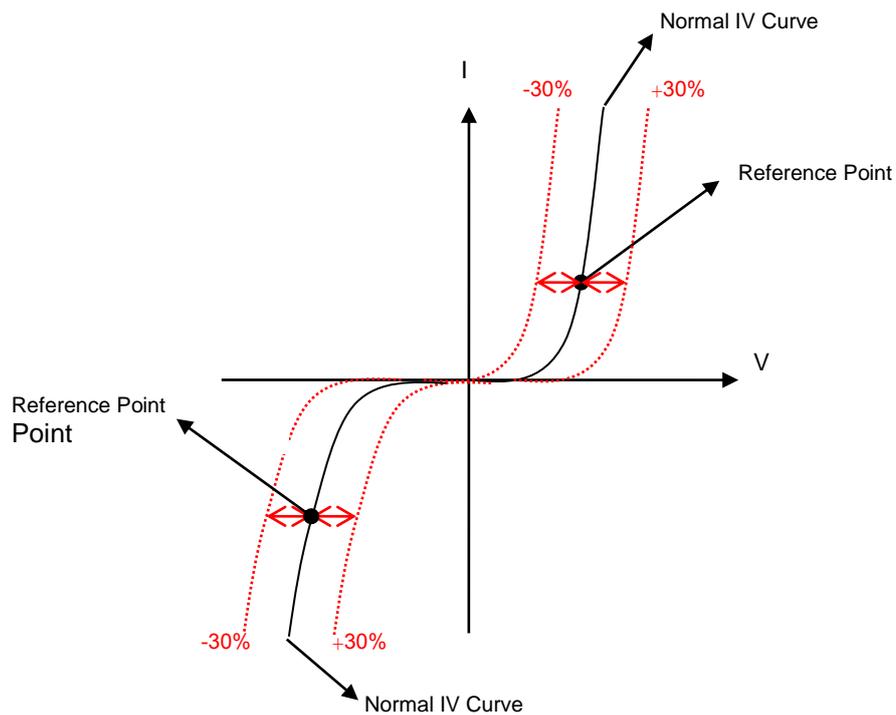
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## 1. GENERAL INFORMATION

### 1.1 DESCRIPTION OF UNIT

MANUFACTURER : RAIO Technology Inc.  
DEVICE NAME : RA8871M  
PACKAGE / PIN COUNT : LQFP-128  
REFERENCE DOCUMENT : MIL-STD-883G Method 3015.7  
TEST VOLTAGE : 2000V ~ 5000V ( $\pm$ ), Step: 1000V ( $\pm$ )  
SAMPLE QUANTITY : 18 ea  
FAILURE CRITERIA ( Reference Only ) :  $\pm 30\%$  voltage shift at reference point before/after zapping

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



## 2. ESD (HUMAN BODY MODE) TEST

### 2.1 TEST EQUIPMENT

Test Equipment	Equipment Number	Tester
KEYTEK ZAPMASTER	#9	12020

### 2.2 LABORATORY AMBIENCE CONDITION

Temperature : 25 °C ± 5 °C

Relative humidity : 55 % ± 10 % (RH)

### 2.3 REFERENCE DOCUMENT

The test method refers to MIL-STD-883G Method 3015.7

### 2.4 TEST CONDITION

ALL – VSS (+)

ALL – VSS (-)

ALL – VCC (+)

ALL – VCC (-)

VCC – VSS (+)

VCC – VSS (-)

### 2.5 SUMMARY OF TEST

Test Model : HBM	ESD Sensitivity Passed : <u>±4000V</u>		MIL-STD Classification Class : <u>3A</u>
Test condition	Sample Quantity	Passed Volts	
ALL – VSS (+)	3	+5000V	Class 0 : < 250V. Class 1A : ≥ 250V , < 499V Class 1B : ≥ 500V , < 999V Class 1C : ≥ 1000V , < 1999V Class 2 : ≥ 2000V , < 3999V Class 3A : ≥ 4000V , < 7999V Class 3B : ≥ 8000V
ALL – VSS (-)	3	-5000V	
ALL – VCC (+)	3	+5000V	
ALL – VCC (-)	3	-5000V	
VCC – VSS (+)	3	+5000V	
VCC – VSS (-)	3	-4000V	

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

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

## 2.6 CONTENTS OF TEST

ALL – VSS (+) (UNIT:V)									
Test Pin	FAIL VOLTAGE	#19	#20	#21	Test Pin	FAIL VOLTAGE	#19	#20	#21
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	#22	#23	#24	Test Pin	FAIL VOLTAGE	#22	#23	#24
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	#25	#26	#27	Test Pin	FAIL VOLTAGE	#25	#26	#27
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	#28	#29	#30	Test Pin	FAIL VOLTAGE	#28	#29	#30
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

VCC – VSS (+)									
(UNIT:V)									
Test Pin	FAIL VOLTAGE	#31	#32	#33	Test Pin	FAIL VOLTAGE	#31	#32	#33
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	121		PASS	PASS	PASS
63		PASS	PASS	PASS	111		PASS	PASS	PASS

VCC – VSS (-)									
(UNIT:V)									
Test Pin	FAIL VOLTAGE	#34	#35	#36	Test Pin	FAIL VOLTAGE	#34	#35	#36
3		PASS	PASS	PASS	75		PASS	PASS	PASS
4		PASS	PASS	PASS	88		PASS	PASS	PASS
23		-5000	-5000	-5000	97		PASS	PASS	PASS
42		PASS	PASS	PASS	109		PASS	PASS	PASS
62		PASS	PASS	PASS	121		PASS	PASS	PASS
63		PASS	PASS	PASS	111		PASS	PASS	PASS

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