Technical Compliance Statement
CE EMC Test Report

For the following information **Ref. File No.: C1M1612196 (C1M1602169)**

Product	:	(1)Circuit Tester with Nixie Display (2)Digital LCD Circuit Tester (3)Digital Circuit Tester with 2 piercing test probes
Model Number	:	(1)9DC243 (2)9DC242 (3)9DC242A
Applicant	:	King Tony Tools Co., Ltd.
Manufacturer	:	King Tony Tools Co., Ltd.
Standards	:	

Emission: EN 61000-6-3: 2007 +A1:2011 +AC:2012
Immunity: EN 61000-6-1:2007
(EN 61000-4-2:2008, EN 61000-4-3:2010, EN 61000-4-8:2009)

We hereby certify that the above product has been tested by us with the listed standards and found in compliance with the council EMC directive 2014/30/EU. The test data and results are issued on the EMC test report no. EM-E160913.

Signature

Alex Deng/Deputy Manager
Date: 2016. 12. 13

Test Laboratory:
AUDIX Technology Corporation, EMC Department
TAF Accreditation No.: 1724
Web Site: www.audixtech.com

Testing Laboratory
1724

The statement is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.

EMC TEST REPORT

for

King Tony Tools Co., Ltd.

(1)Circuit Tester with Nixie Display (2)Digital LCD Circuit Tester
(3)Digital Circuit Tester with 2 piercing test probes

Model No.: (1)9DC243 (2)9DC242 (3)9DC242A

Prepared for : King Tony Tools Co., Ltd.
No 11, 150 Alley, 516 Lane, 2 Sec.
Hsi Nan Rd. Wu-Jih Shiang,
Taichung Hsien Taiwan

Prepared by : AUDIX Technology Corporation
EMC Department
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File Number	:	C1M1612196 (C1M1602169)
Report Number	:	EM-E160913
Date of Test	:	2016. 02. 24 ~ 03. 04
Date of Report	:	2016. 12. 13

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TEST REPORT VERIFICATION

Applicant	:	King Tony Tools Co., Ltd.
Manufacturer	:	King Tony Tools Co., Ltd.
EUT Description	:	(1)Circuit Tester with Nixie Display (2)Digital LCD Circuit Tester (3)Digital Circuit Tester with 2 piercing test probes
(A) Model No.	:	(1)9DC243 (2)9DC242 (3)9DC242A
(B) Serial No.	:	N/A
(C) Power Supply	:	(1)DC 0.3-60V (2)(3)DC 5-28V
(D) Test Voltage	:	DC 12V (Via Battery)

Measurement Standard Used:

Emission: EN 61000-6-3: 2007 +A1:2011 +AC:2012

Immunity: EN 61000-6-1:2007

(EN 61000-4-2:2008, EN 61000-4-3:2010, EN 61000-4-8:2009)

The device described above was tested by AUDIX Technology Corporation to determine the maximum emission levels emanating from the device, its ensured severity levels, and performance criterion. This test report contains the measurement results, and AUDIX Technology Corporation assumes full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT is technically compliant with the requirements of EN 61000-6-3 and EN 61000-6-1 standards.

Other emission & relevant immunity tests in EN 61000-6-3 and EN 61000-6-1 are omitted and regarded as compliance due to the EUT uses DC power.

This report applies to above tested sample only and shall not be reproduced in part without written approval of AUDIX Technology Corporation.

Date of Test: 2016. 02. 24 ~ 03. 04 Date of Report: 2016. 12. 13

Producer: Harper Lee
(Harper Lee/Assistant Administrator)

Signatory: Alex Deng
(Alex Deng/Deputy Manager)

1. DESCRIPTION OF VERSION

Edition No.	Date of Revision	Revision Summary	Report Number
0	2016. 12. 13	Original Report.	EM-E160913

2. SUMMARY OF STANDARDS AND RESULTS

2.1. Description of Standards and Results

The EUT has been tested according to the applicable standards as referenced below.

EMISSION (EN 61000-6-3)			
Description of Test Item	**Standard**	**Limits**	**Results**
Conducted disturbance at main terminal	EN 61000-6-3:2007 +A1:2011 +AC:2012	Class B	N/A
Conducted common mode disturbance at telecommunication port	EN 61000-6-3:2007 +A1:2011 +AC:2012	N/A	N/A
Radiated disturbance	EN 61000-6-3:2007 +A1:2011 +AC:2012	Class B	PASS
		Margin 6.81dB at 182.950MHz	
Harmonic current emissions	EN 61000-3-2:2014	Section 5	N/A
Voltage fluctuations & flicker	EN 61000-3-3:2013	Class B	N/A
IMMUNITY (EN 61000-6-1)			
Description of Test Item	**Basic Standard**	**Performance Criteria**	**Results**
Electrostatic discharge (ESD)	EN 61000-4-2:2008	B	PASS
Radio-frequency, Continuous radiated disturbance	EN 61000-4-3:2006 +A1:2008 +A2:2010	A	PASS
Electrical fast transient (EFT)	EN 61000-4-4:2012	B	N/A
Surge	EN 61000-4-5:2014	B	N/A
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6:2014	A	N/A
Power frequency magnetic field	EN 61000-4-8:2010	A	PASS
Voltage dips, 0% reduction voltage	EN 61000-4-11:2004	B	N/A
Voltage dips, 70% reduction voltage		C	
Voltage interruptions		C	
Above items shown N/A are not applicable in this report and regarded as compliance due to EUT uses DC power.			

2.2. Description of Performance Criteria

The variety and the diversity of the apparatus within the scope of this standard makes it difficult to define precise criteria for the evaluation of the immunity test results.

If, as a result of the application of the tests defined in this standard, the apparatus becomes dangerous or unsafe, the apparatus shall be deemed to have failed the test.

A functional description and a definition of performance criteria, during or as a consequence of the EMC testing, shall be provided by the manufacturer and noted in the test report, based on the following criteria:

2.2.1. Performance criterion A

The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

2.2.2. Performance criterion B

The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

2.2.3. Performance criterion C

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

3. GENERAL INFORMATION

3.1. Description of Device (EUT)

Description : (1)Circuit Tester with Nixie Display (2)Digital LCD Circuit Tester (3)Digital Circuit Tester with 2 piercing test probes

Model Number : (1)9DC243 (2)9DC242 (3)9DC242A

Model No.	9DC243	9DC242	9DC242A
Description	Circuit Tester with Nixie Display	Digital LCD Circuit Tester	Digital Circuit Tester with 2 piercing test probes
Display	Nixie Display	LCD Backlight	LCD Backlight
Range	0.3-60V DC	5-28V DC	5-28V DC
System voltage	12-24-36-48V	6-12-24V	6-12-24V
Cable	Coil cord stretches to 12-ft.		
Buzzer	Tester will light and buzz when a positive voltage is detected.	x	x
Testing current	<10mA	<10mA	<10mA
probe	Different		
Appearance	Different		

The Models 9DC243 and 9DC242A were tested in this report.

Applicant : King Tony Tools Co., Ltd.
No 11, 150 Alley, 516 Lane, 2 Sec.
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Taichung Hsien Taiwan

Manufacturer : King Tony Tools Co., Ltd.
No 11, 150 Alley, 516 Lane, 2 Sec.
Hsi Nan Rd. Wu-Jih Shiang,
Taichung Hsien Taiwan

Cable : Unshielded, Undetachable, 0.5m

Date of Receipt of Sample : 2016. 02. 22

Date of Test : 2016. 02. 24 ~ 03. 04

3.2. Tested Supporting System Details

3.2.1. Support Peripheral Unit

No.	Product	Brand	Model No.	Serial No.	Approval
For Radiated Disturbance Measurements					
1	BATTERY	YUASA	YTX7A-BS	N/A	N/A
For ESD、RS and PFMF Immunity Tests					
1	BATTERY	LEPO	115E41R	N/A	N/A

3.2.2. Cable List

No.	Cable Description Of The Above Support Units
For Radiated Disturbance Measurements	
1	Cable: Unshielded, Detachable, 0.3m
For ESD、RS and PFMF Immunity Tests	
1	Cable: Unshielded, Detachable, 0.3m

3.3. Description of Test Facility

Name of Firm	:	**AUDIX Technology Corporation** **EMC Department** No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan
Test Site	:	**No. 8 Open Area Test Site** No. 67-4, Dingfu, Linkou Dist., New Taipei City 244, Taiwan **Immunity Test Site** No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan
NVLAP Lab. Code	:	200077-0
TAF Accreditation No	:	1724

4. CONDUCTED DISTURBANCE MEASUREMENT

The conducted disturbance voltage limits are not required for EUT which only employ DC power for operation.

5. RADIATED DISTURBANCE MEASUREMENT

5.1. Test Equipment

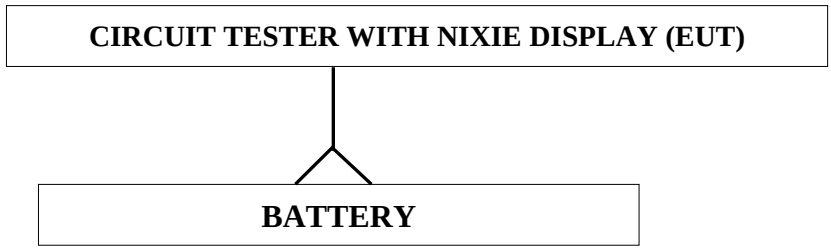
The following test equipment was used during the radiated disturbance measurement：
(At No. 8 Open Area Test Site)

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A-507	MY51250907	2015. 04. 13	1 Year
2.	Test Receiver	R & S	ESCI	100558	2015. 10. 30	1 Year
3.	Amplifier	HP	8447D	2944A06891	NCR	NCR
4.	Bilog Antenna	Schaffner	CBL6112B	2735	2015. 02. 27	1 Year

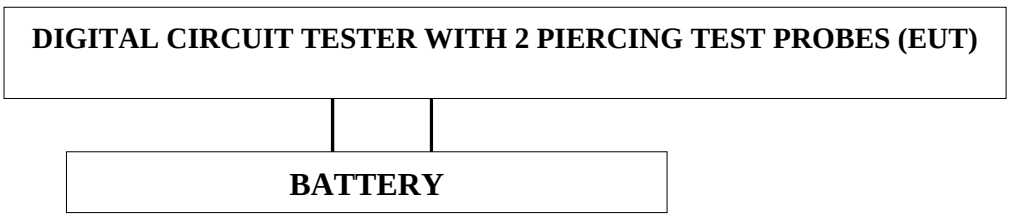
5.2. Block Diagram of Test Setup

5.2.1. Block Diagram of connection between EUT and simulators

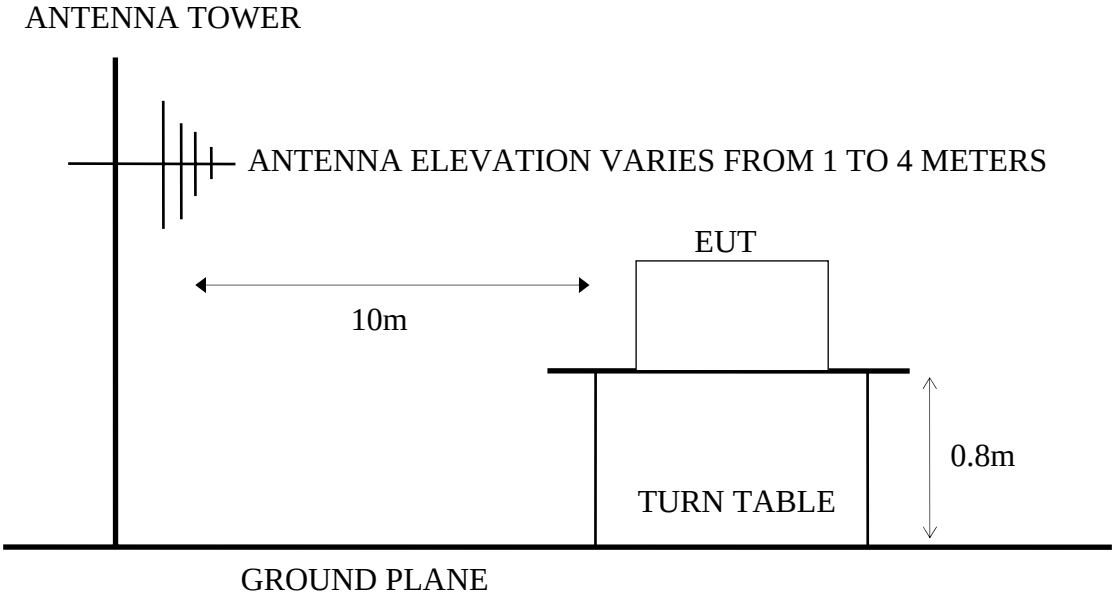
(1)Test Model：9DC243



(2)Test Model：9DC242A



5.2.2. Open Area Test Site (10m) Setup Diagram



5.3. Limits for Radiated Disturbance (EN 61000-6-3)

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dBμV/m)
30 ~ 230	10	30
230 ~ 1000	10	37

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the E.U.T.

5.4. Operating Condition of EUT

5.4.1. Set up the **EUT** and simulator as shown on 5.2.

5.4.2. To turn on the power of all equipment.

5.4.3. The **EUT** was on normal function during all testing.

5.5. Test Procedure

The EUT and its simulator were placed on a turn table which was 0.8 meter above ground. The turn table rotate 360 degrees to determine the position of the maximum emission level. EUT was set to 10 meters away from the receiving antenna which were mounted on an antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna was used as a receiving antenna. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to EN 61000-6-3 (CISPR 16-2-3) regulation.

The bandwidth of the R & S Test Receiver ESCI7 was set at 120 kHz.

The frequency range from 30MHz to 1000MHz was checked with Peak detector and all final readings of measurement were with Quasi-Peak detector at open area test site.

5.6.Radiated Disturbance Measurement Results

PASSED. All emissions not reported below are too low against the prescribed limits.

For 30MHz~1000MHz frequency range:

The EUT was performed during this section testing and all the test results are attached in next pages.

EUT：Circuit Tester with Nixie Display、
Digital Circuit Tester with 2 piercing test probes

M/N：9DC243、9DC242A

Test Date：2016. 02. 24 Temperature：25℃ Humidity：58%

The detail of test mode as follows：

Mode	Test Model	Test Mode	Reference Test Data No.	
			Horizontal	Vertical
1.	9DC243	Operating	# 6	# 5
2.	9DC242A		# 4	# 3

For above 1GHz frequency range:

Due to the EUT's highest frequency generated is less than 108MHz, therefore the above 1GHz frequency is no need to measure.

(According to section Table Clause 1.4 of EN 61000-6-3: 2007 +A1:2011 +AC:2012 standard)

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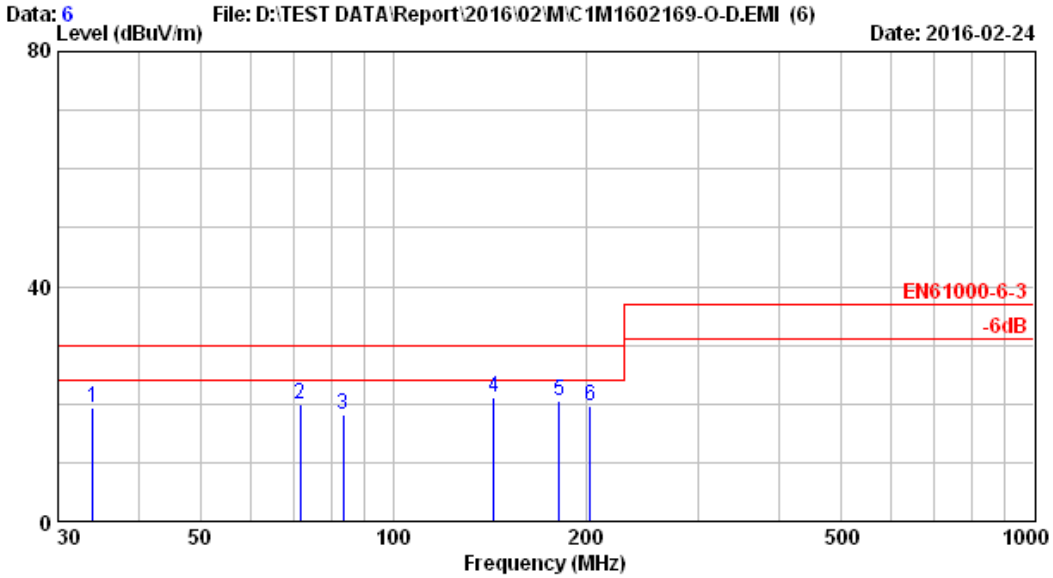

Site no. : OATS NO.8 Data no. : 6
Dis. / Ant. : 10m CBL6112B(2735) Ant. pol. : HORIZONTAL
Limit : EN61000-6-3
Env. / Ins. : 25*C/58% ESCI (558) Engineer : Gary Tsai
EUT : **9DC243**
Power Rating : DC 12V
Test Mode : Operating

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	33.950	17.16	0.90	1.28	19.33	30.00	10.67	QP
2	71.590	6.89	1.34	11.62	19.85	30.00	10.15	QP
3	83.560	7.99	1.47	8.65	18.10	30.00	11.90	QP
4	143.840	11.29	2.01	7.84	21.13	30.00	8.87	QP
5	181.950	9.31	2.36	8.75	20.41	30.00	9.59	QP
6	203.390	9.36	2.53	7.86	19.74	30.00	10.26	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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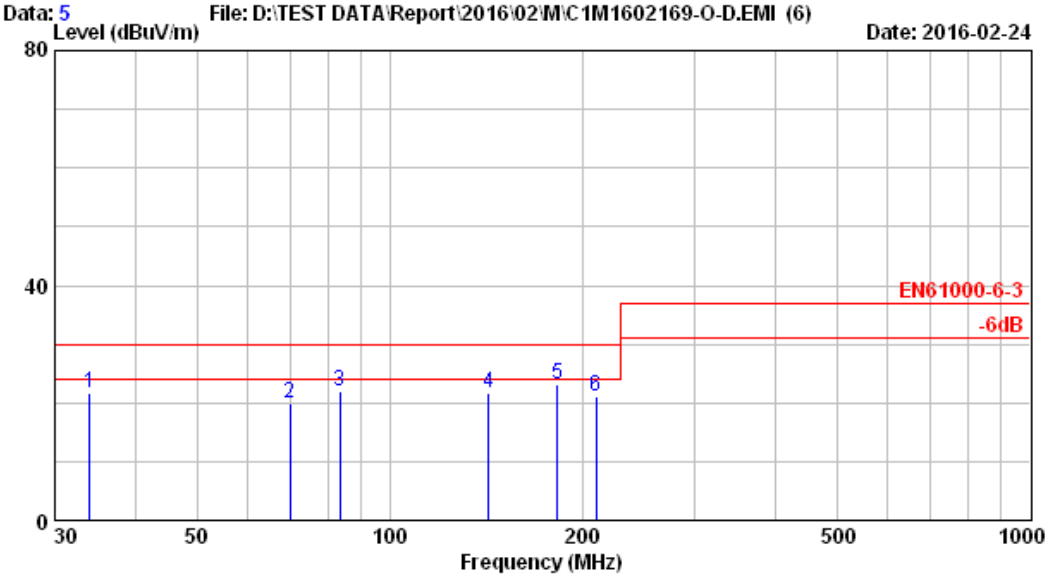

Site no. : OATS NO.8
Dis. / Ant. : 10m CBL6112B(2735)
Limit : EN61000-6-3
Env. / Ins. : 25*C/58% ESCI (558)
EUT : **9DC243**
Power Rating : DC 12V
Test Mode : Operating

Data no. : 5
Ant. pol. : VERTICAL
Engineer : Gary Tsai

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	33.950	17.16	0.90	3.52	21.57	30.00	8.43	QP
2	69.840	6.79	1.32	11.75	19.85	30.00	10.15	QP
3	83.510	7.99	1.47	12.54	21.99	30.00	8.01	QP
4	142.950	11.34	2.00	8.27	21.61	30.00	8.39	QP
5	182.950	9.29	2.37	11.53	23.19	30.00	6.81	QP
6	209.860	9.82	2.57	8.75	21.14	30.00	8.86	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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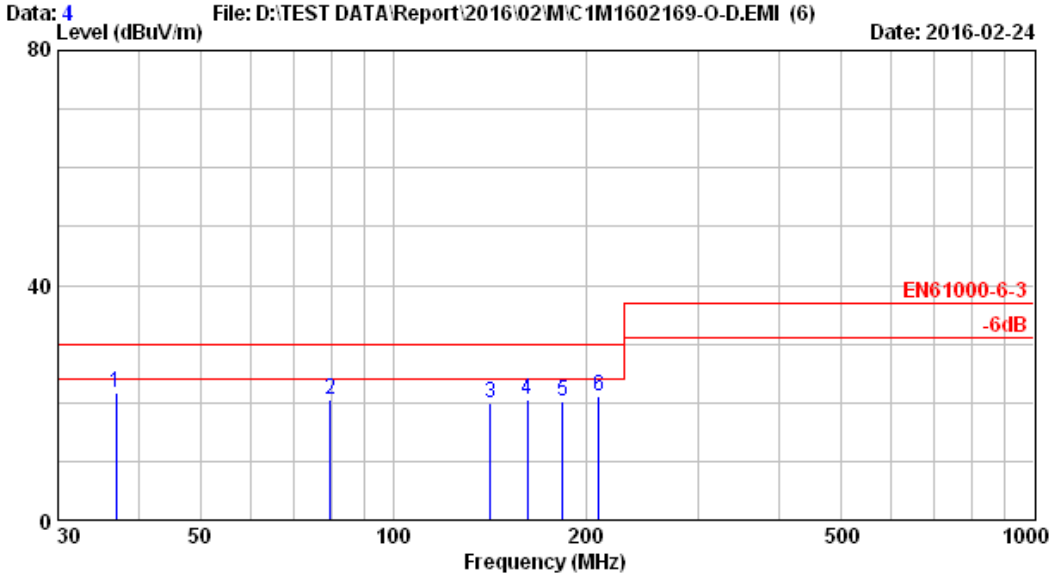

Site no. : OATS NO.8 Data no. : 4
Dis. / Ant. : 10m CBL6112B(2735) Ant. pol. : HORIZONTAL
Limit : EN61000-6-3
Env. / Ins. : 25*C/58% ESCI (558) Engineer : Gary Tsai
EUT : **9DC242A**
Power Rating : DC 12V
Test Mode : Operating

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	36.950	15.22	0.94	5.58	21.73	30.00	8.27	QP
2	79.860	7.42	1.43	11.54	20.39	30.00	9.61	QP
3	141.760	11.40	1.99	6.62	20.01	30.00	9.99	QP
4	161.950	10.32	2.17	7.96	20.45	30.00	9.55	QP
5	183.950	9.28	2.37	8.65	20.31	30.00	9.69	QP
6	209.650	9.77	2.57	8.85	21.19	30.00	8.81	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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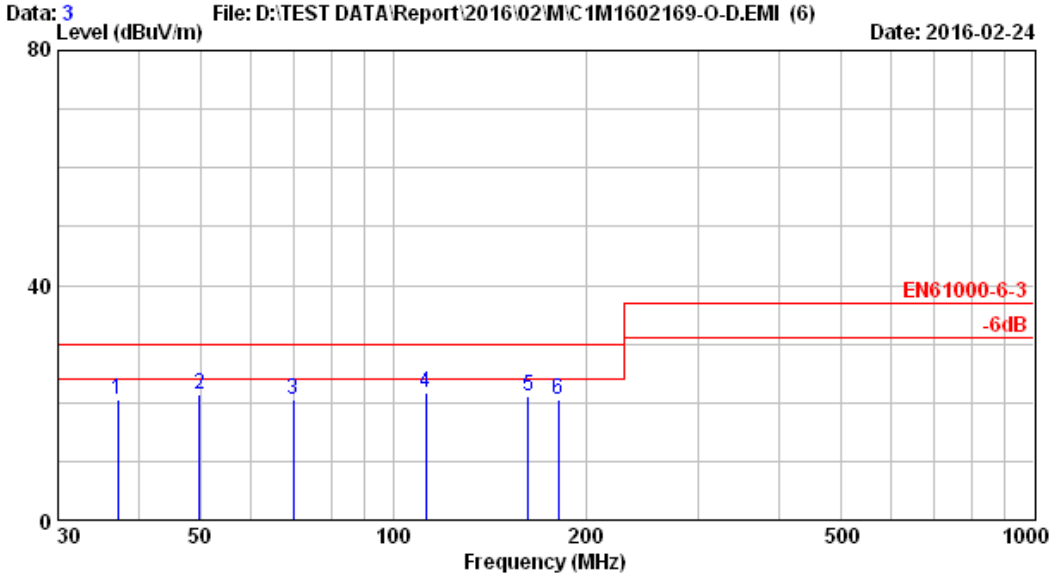


Site no. : OATS NO.8 Data no. : 3
Dis. / Ant. : 10m CBL6112B(2735) Ant. pol. : VERTICAL
Limit : EN61000-6-3
Env. / Ins. : 25*C/58% ESCI (558) Engineer : Gary Tsai
EUT : **9DC242A**
Power Rating : DC 12V
Test Mode : Operating

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	37.138	15.02	0.94	4.65	20.61	30.00	9.39	QP
2	49.965	9.80	1.10	10.56	21.46	30.00	8.54	QP
3	69.850	6.79	1.32	12.35	20.45	30.00	9.55	QP
4	112.427	12.06	1.74	7.95	21.75	30.00	8.25	QP
5	162.350	10.29	2.18	8.59	21.05	30.00	8.95	QP
6	181.025	9.31	2.35	8.91	20.58	30.00	9.42	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

6. ELECTROSTATIC DISCHARGE IMMUNITY TEST

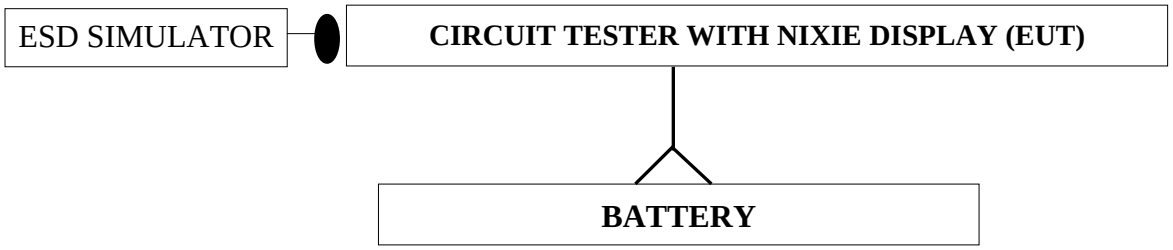
6.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	ESD Simulator	TESEQ	NSG 437	316	2015. 03. 24	1 Year

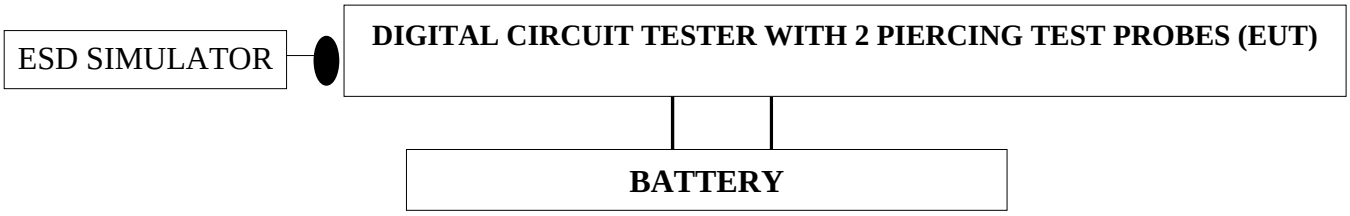
6.2. Block Diagram of Test Setup

6.2.1. Test Step Diagram (1)

(1)Test Model：9DC243

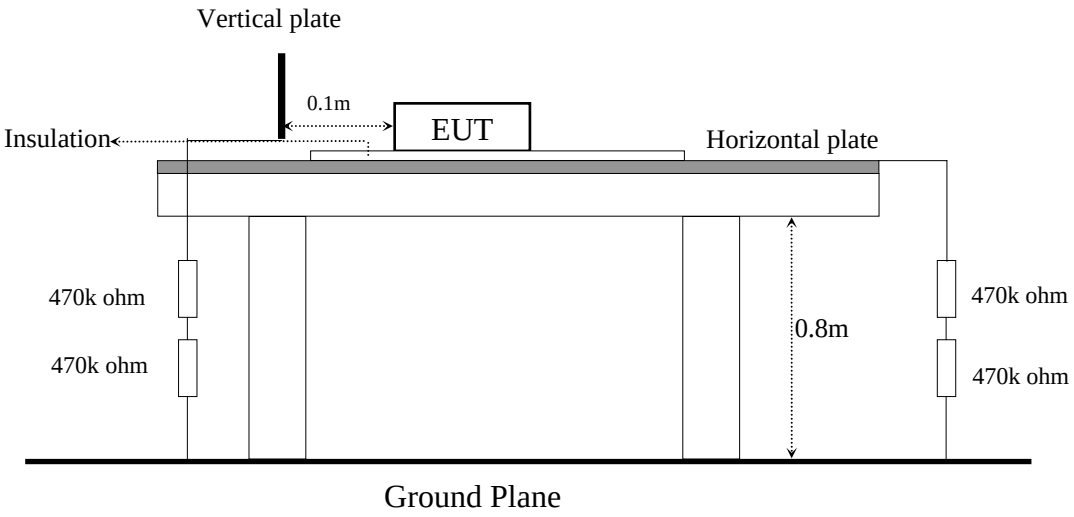


(2)Test Model：9DC242A



: AIR/CONTACT DISCHARGE

6.2.2. Test Setup Diagram (2)



6.3. Test Standard

EN 61000-6-1:2007
【EN 61000-4-2:2008, Test Level **:** Contact: ±4kV, Air: ±8kV】

6.4. Severity Levels and Performance Criterion

6.4.1. Severity levels

Level	Test Voltage Contact Discharge (kV)	Test Voltage Air Discharge (kV)
1.	2	2
2.	4	4
3.	6	8
4.	8	15
X	Special	Special

6.4.2. Performance criterion : **B**

6.5. Operating Condition of EUT

Same as radiated disturbance measurement which is listed in 5.4 except the test set up replaced by section 6.2.

6.6. Test Procedure

6.6.1. Air Discharge：

This test is done on a non-conductive surfaces. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the ESD generator discharge electrode shall be removed from the EUT. The generator is then retrigged for a new single discharge and repeated 10 discharges each at positive and negative polarity for each preselected test point. This procedure shall be repeated until all the air discharge completed.

6.6.2. Contact Discharge：

All the procedure shall be same as 6.6.1. except that the tip of the discharge electrode shall touch the EUT conductive surfaces & repeated 10 discharges each at positive and negative polarity for each test point before the discharge switch is operated.

6.6.3. Indirect discharge for horizontal coupling plane：

At least 10 discharges each at positive and negative polarity shall be applied to the horizontal coupling plane, at points on each side of the EUT. The ESD generator positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

6.6.4. Indirect discharge for vertical coupling plane：

At least 10 discharges each at positive and negative polarity shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

6.6.5. For above tests, the voltage was increased from the minimum to the selected test level.

6.7. Test Results

PASSED. (Complied with Criterion A)

The EUT with following test mode was performed during this section testing and all the test results are attached in next page.

The details are as follows：

Mode	Test Model	Test Mode
1.	9DC243	Operating
2.	9DC242A	

Electrostatic Discharge Immunity Test Results

AUDIX TECHNOLOGY CORPORATION

Applicant：King Tony Tools Co., Ltd.	*Test Date：2016. 03. 02*
EUT： Circuit Tester with "Nixie" Display M/N 9DC243	*Temperature：20 ℃*
Power Supply： DC 12V (Via Battery)	*Humidity：43 %*
Engineer： Sam Yan	*Atmospheric Pressure：99 kPa*
	Test Modes: See Section 6.7.

Air Discharge	***Voltage kV Level / Discharge per polarity 10 / Result***						
Test Location	*+2*	*-2*	*+4*	*-4*	*+8*	*-8*	*Comments*
SEAM (1)	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	
Contact Discharge	***Voltage kV Level / Discharge per polarity 10 / Result***						
Test Location	*+2*	*-2*	*+4*	*-4*			*Comments*
Metal(2~4)	*A*	*A*	*A*	*A*			
Indirect Contact:	***Voltage kV Level / Discharge per polarity 10 / Result***						
Test Location	*+2*	*-2*	*+4*	*-4*			*Comments*
VCP Front	*A*	*A*	*A*	*A*			
VCP Right	*A*	*A*	*A*	*A*			
VCP Left	*A*	*A*	*A*	*A*			
VCP Back	*A*	*A*	*A*	*A*			
HCP Bottom	*A*	*A*	*A*	*A*			
Additional Notes:							
Measurement Points	***Please refer to the Photos of ESD Test Points***						

ND=No Discharge; Meets criteria but unable to obtain an electrostatic discharge (ESD) at this test point.

Electrostatic Discharge Immunity Test Results

AUDIX TECHNOLOGY CORPORATION

Applicant：King Tony Tools Co., Ltd.	*Test Date：2016. 03. 02*
EUT： Digital Circuit Tester with 2 piercing test probes M/N 9DC242A	*Temperature：20 ℃*
Power Supply： DC 12V (Via Battery)	*Humidity：43 %*
Engineer： Sam Yan	*Atmospheric Pressure：99 kPa*
	Test Modes: See Section 6.7.

Air Discharge	***Voltage kV Level / Discharge per polarity 10 / Result***						
Test Location	*+2*	*-2*	*+4*	*-4*	*+8*	*-8*	*Comments*
SEAM (1,2)	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	
Contact Discharge	***Voltage kV Level / Discharge per polarity 10 / Result***						
Test Location	*+2*	*-2*	*+4*	*-4*			*Comments*
Metal(3,4)	*A*	*A*	*A*	*A*			
Indirect Contact:	***Voltage kV Level / Discharge per polarity 10 / Result***						
Test Location	*+2*	*-2*	*+4*	*-4*			*Comments*
VCP Front	*A*	*A*	*A*	*A*			
VCP Right	*A*	*A*	*A*	*A*			
VCP Left	*A*	*A*	*A*	*A*			
VCP Back	*A*	*A*	*A*	*A*			
HCP Bottom	*A*	*A*	*A*	*A*			
Additional Notes:							
Measurement Points	***Please refer to the Photos of ESD Test Points***						

ND=No Discharge; Meets criteria but unable to obtain an electrostatic discharge (ESD) at this test point.

7. RF FIELD STRENGTH IMMUNITY TEST

7.1. Test Equipment

7.1.1. For 80MHz ~ 1000MHz

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Radiated Immunity System	TESEQ	ITS 6006	033009	2015. 09. 24	1 Year
2.	Power Amplifier	TESEQ	CBA 1G-275	T44214	NCR	NCR
3.	Power Meter	TESEQ	PM 6006	073364	2015. 09. 26	1 Year
4.	Power Antenna	Schwarzbeck	STLP 9128 E	9128E084	NCR	NCR
5.	Direction Coupler	WERLATONE	C5982-10	98618	2015. 08. 12	1 Year

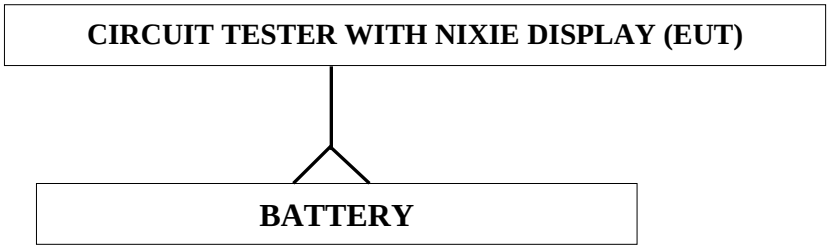
7.1.2. For 1GHz ~ 2.7GHz

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Radiated Immunity System	TESEQ	ITS 6006	033009	2015. 09. 24	1 Year
2.	Power Amplifier	TESEQ	CBA 1G-275	T44215	NCR	NCR
3.	Power Meter	TESEQ	PM 6006	073363	2015. 09. 26	1 Year
4.	Power Antenna	Schwarzbeck	STLP 9149	9149-185	NCR	NCR
5.	Direction Coupler	TESEQ	C6187-10	98619	2015. 08. 12	1 Year

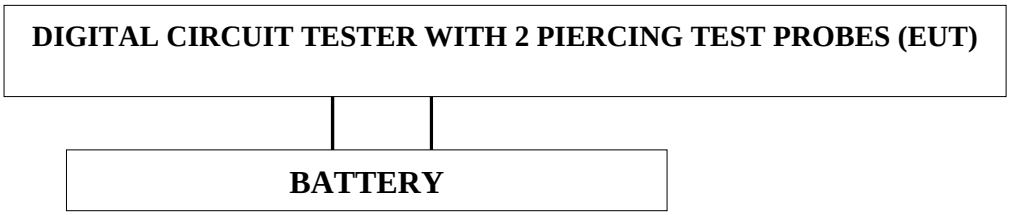
7.2. Block Diagram of Test Setup

7.2.1. Test Setup Diagram

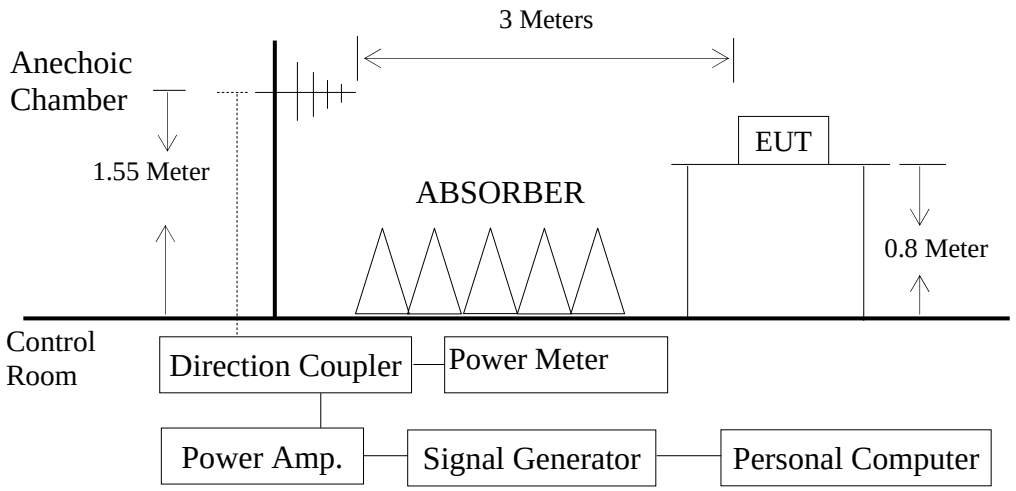
(1)Test Model：9DC243



(2)Test Model：9DC242A



7.2.2. R/S Test Setup



7.3. Test Standard

EN 61000-6-1:2007
【EN 61000-4-3:2010, Test Level：3V/m or 1V/m, 80% AM (1kHz)】

7.4. Severity Levels and Performance Criterion

7.4.1. Severity levels

Level	Field Strength V/m
1.	1
2.	3
3	10
X.	Special

7.4.2. Performance criterion : **A**

7.5. Operating Condition of EUT

Same as radiated disturbance measurement which is listed in 5.4 except the test set up replaced by section 7.2.

7.6. Test Procedure

The field sensor is placed on the EUT table (0.8 meter above the ground) which is 3 meters away from the transmitting antenna. Through the signal generator, power amplifier and transmitting antenna to produce a uniformity field strength (1V/m measured by field sensor) around the EUT table from frequency range 80MHz to 1000MHz、1.4GHz-2.0GHz、2.0GHz-2.7GHz and records the signal generator's output level at the same time for whole measured frequency range. Then, put EUT and its simulators on the EUT turn table and keep them 3 meter away from the transmitting antenna which is mounted on an antenna tower and fixes at 1.55 meter height above the ground. Using the recorded signal generator's output level to measure the EUT from frequency range 80MHz to 1000MHz、1.4GHz-2.0GHz、2.0GHz-2.7GHz and both horizontal & vertical polarization of antenna must be set and measured. Each of the four sides of EUT must be faced this transmitting antenna and measures individually.
A CCD camera was put inside the chamber and through its display to monitor the EUT operational situation to judge the EUT Compliance criterion during measurement.

All the scanning conditions are as follows:

Condition of Test	Remarks
1. Field Strength	3V/m, 1V/m
2. Amplitude Modulated	1kHz, 80%AM
3. Scanning Frequency	80MHz – 1000MHz 1.4GHz – 2.0GHz 2.0GHz – 2.7GHz
4. Step Size	1% increments
5. The Rate of Sweep	0.0015 decade/s
6. Dwell Time	3 Sec.

7.7. Test Results

PASSED. (Complied with Criterion A)

The EUT with following test mode was performed during this section testing and all the test results are attached in next page.

The details are as follows：

Mode	Test Model	Test Mode
1.	9DC243	Operating
2.	9DC242A	

RF Field Strength Immunity Test Results

AUDIX TECHNOLOGY CORPORATION

Applicant: King Tony Tools Co., Ltd.

Test Date : *2016. 03. 04*

EUT : *Circuit Tester with "Nixie" Display、Digital Circuit Tester with 2 piercing test probes M/N 9DC243、9DC242A*

Temperature : *21 ℃*

Power Supply: *DC 12V (Via Battery)*

Humidity : *51 %*

Working Condition: *See Section 5.4.*

Test Modes: *See Section 7.7.*

Engineer : *Xar Zhuo*

Frequency Range (MHz)	*Position (Angle)*	*Polarity (H or V)*	*Field Strength (V/m)*	*Results*	*Performance Criterion*
80 ~ 1000	*0°*	*H*	*3V/m+Modulated*	***Pass***	***A***
80 ~ 1000	*90°*	*H*	*3V/m+Modulated*	***Pass***	***A***
80 ~ 1000	*180°*	*H*	*3V/m+Modulated*	***Pass***	***A***
80 ~ 1000	*270°*	*H*	*3V/m+Modulated*	***Pass***	***A***
80 ~ 1000	*0°*	*V*	*3V/m+Modulated*	***Pass***	***A***
80 ~ 1000	*90°*	*V*	*3V/m+Modulated*	***Pass***	***A***
80 ~ 1000	*180°*	*V*	*3V/m+Modulated*	***Pass***	***A***
80 ~ 1000	*270°*	*V*	*3V/m+Modulated*	***Pass***	***A***
1.4 ~ 2GHz	*0°*	*H*	*3V/m+Modulated*	***Pass***	***A***
1.4 ~ 2GHz	*90°*	*H*	*3V/m+Modulated*	***Pass***	***A***
1.4 ~ 2GHz	*180°*	*H*	*3V/m+Modulated*	***Pass***	***A***
1.4 ~ 2GHz	*270°*	*H*	*3V/m+Modulated*	***Pass***	***A***
1.4 ~ 2GHz	*0°*	*V*	*3V/m+Modulated*	***Pass***	***A***
1.4 ~ 2GHz	*90°*	*V*	*3V/m+Modulated*	***Pass***	***A***
1.4 ~ 2GHz	*180°*	*V*	*3V/m+Modulated*	***Pass***	***A***
1.4 ~ 2GHz	*270°*	*V*	*3V/m+Modulated*	***Pass***	***A***
2 ~ 2.7GHz	*0°*	*H*	*1V/m+Modulated*	***Pass***	***A***
2 ~ 2.7GHz	*90°*	*H*	*1V/m+Modulated*	***Pass***	***A***
2 ~ 2.7GHz	*180°*	*H*	*1V/m+Modulated*	***Pass***	***A***
2 ~ 2.7GHz	*270°*	*H*	*1V/m+Modulated*	***Pass***	***A***
2 ~ 2.7GHz	*0°*	*V*	*1V/m+Modulated*	***Pass***	***A***
2 ~ 2.7GHz	*90°*	*V*	*1V/m+Modulated*	***Pass***	***A***
2 ~ 2.7GHz	*180°*	*V*	*1V/m+Modulated*	***Pass***	***A***
2 ~ 2.7GHz	*270°*	*V*	*1V/m+Modulated*	***Pass***	***A***

Remark: No error occurred.

8. POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST

8.1. Test Equipment

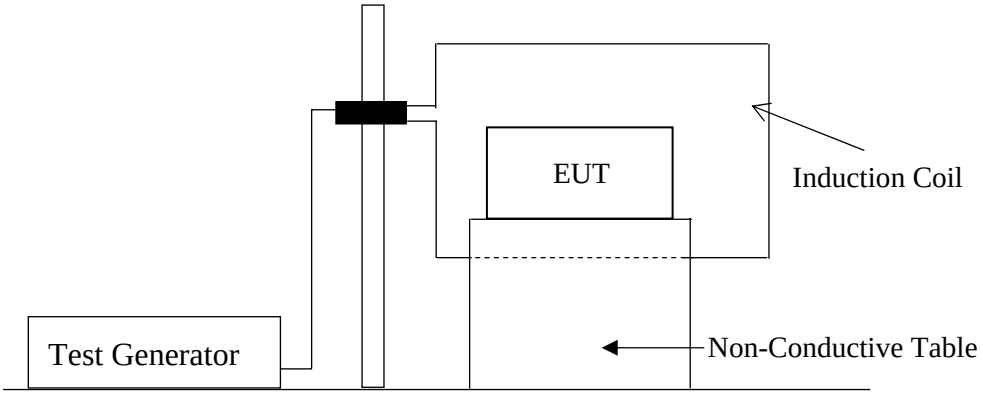
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Magnetic field generator	Narda S.T.S. / PMM	PMM1008	0100X30101	2015. 11. 19	1 Year

8.2. Block Diagram of Test Setup

8.2.1. Block Diagram of connection between EUT and simulators.

Same as section 7.2.1.

8.2.2. Test Setup



8.3. Test Standard

EN 61000-6-1:2007
【EN 61000-4-8:2009, Test Level：50/60Hz, 3A/m (r.m.s.)】

8.4. Severity Levels and Performance Criterion

8.4.1. Severity level

Level	Magnetic Field Strength Continuous Field A/m
1.	1
2.	3
3.	10
4.	30
5.	100
X	Special

8.4.2. Performance criterion：**A**

8.5. Operating Condition of EUT

Same as radiated disturbance measurement which is listed in 5.4 except the test set up replaced by section 8.2.

8.6. Test Procedure

The EUT placed on 0.8m high table. And subjected to the test magnetic field by using the induction coil of standard dimensions (1m x 2.6m). The induction coil rotated by 90 degrees in order to expose the EUT to the test field with different orientations. All cables of EUT exposed to magnetic field for 1m of their length.

8.7. Test Results

PASSED. (Complied with Criterion A)

The EUT with following test mode was performed during this section testing and all the test results are attached in next page.

The details are as follows：

Mode	Test Model	Test Mode
1.	9DC243	Operating
2.	9DC242A	

Power Frequency Magnetic Field Immunity Test Results

AUDIX TECHNOLOGY CORPORATION

Applicant: King Tony Tools Co., Ltd.	Test Date : 2016. 03. 04
EUT： Circuit Tester with "Nixie" Display、Digital Circuit Tester with 2 piercing test probes M/N 9DC243、9DC242A	Temperature： 20 ℃
Power Supply: DC 12V (Via Battery)	Humidity： 46 %
Working Condition: See Section 5.4.	Test Modes: See Section 8.7.
Engineer： Jacky Chen	

Power Frequency Magnetic Field	Testing Duration	Coil Orientation	Test Result & Performance Criterion	Remark
50/60Hz, 3A/m	1 Min	X-axis	**Pass, A**	
50/60Hz, 3A/m	1 Min	Y-axis	**Pass, A**	
50/60Hz, 3A/m	1 Min	Z-axis	**Pass, A**	

Remark: No error occurred.

9. MEASUREMENT UNCERTAINTY LIST

The measurement uncertainty was estimated for test on the EUT according to CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage of K=2.

The uncertainties value is not used in determining the PASS/FAIL results.

Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
Conducted emissions at AC mains power port	9kHz-150kHz	±3.7dB
	150kHz-30MHz	±3.5dB
Conducted emissions at wired network port	150kHz-30MHz	±3.5dB
Conducted emissions at broadcast receiver tuner port	150kHz-30MHz	±3.5dB
Conducted emissions Power Clamp	30MHz-300MHz	±4.4dB
Radiated electromagnetic	9kHz-30MHz	±0.5dB
Radiated emissions (10m Chamber)	30MHz-200MHz, 3m, Horizontal	±4.3dB
	200MHz-1000MHz, 3m, Horizontal	±4.3dB
	30MHz-200MHz, 3m, Vertical	±4.4dB
	200MHz-1000MHz, 3m, Vertical	±3.9dB
	30MHz-200MHz, 10m, Horizontal	±4.3dB
	200MHz-1000MHz, 10m, Horizontal	±4.1dB
	30MHz-200MHz, 10m, Vertical	±4.3dB
	200MHz-1000MHz, 10m, Vertical	±3.8dB
	1GHz-6GHz, 3m	±5.1dB
	6GHz-18GHz, 3m	±5.5dB
Radiated emissions (No.1 3m Chamber)	30MHz-200MHz, 3m, Horizontal	±3.9dB
	200MHz-1000MHz, 3m, Horizontal	±4.3dB
	30MHz-200MHz, 3m, Vertical	±4.5dB
	200MHz-1000MHz, 3m, Vertical	±4.1dB
	1GHz-6GHz, 3m	±5.1dB
	6GHz-18GHz, 3m	±5.5dB
Radiated emissions (No.2 3m Chamber)	30MHz-200MHz, 3m, Horizontal	±4.3dB
	200MHz-1000MHz, 3m, Horizontal	±4.3dB
	30MHz-200MHz, 3m, Vertical	±4.4dB
	200MHz-1000MHz, 3m, Vertical	±3.9dB
	1GHz-6GHz, 3m	±5.2dB
	6GHz-18GHz, 3m	±5.2dB
Radiated emissions (No.3 3m Chamber)	30MHz-200MHz, 3m, Horizontal	±4.7dB
	200MHz-1000MHz, 3m, Horizontal	±4.5dB
	30MHz-200MHz, 3m, Vertical	±4.3dB
	200MHz-1000MHz, 3m, Vertical	±4.1dB

Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
Radiated emissions (No.3 OATS)	30MHz-200MHz, 3m, Horizontal	±4.5dB
	200MHz-1000MHz, 3m, Horizontal	±4.4dB
	30MHz-200MHz, 3m, Vertical	±4.4dB
	200MHz-1000MHz, 3m, Vertical	±4.0dB
	30MHz-200MHz, 10m, Horizontal	±4.5dB
	200MHz-1000MHz, 10m, Horizontal	±4.2dB
	30MHz-200MHz, 10m, Vertical	±4.3dB
	200MHz-1000MHz, 10m, Vertical	±4.0dB
Radiated emissions (No.5 OATS)	30MHz-200MHz, 3m, Horizontal	±4.2dB
	200MHz-1000MHz, 3m, Horizontal	±4.7dB
	30MHz-200MHz, 3m, Vertical	±4.4dB
	200MHz-1000MHz, 3m, Vertical	±4.4dB
	30MHz-200MHz, 10m, Horizontal	±4.2dB
	200MHz-1000MHz, 10m, Horizontal	±4.6dB
	30MHz-200MHz, 10m, Vertical	±4.4dB
	200MHz-1000MHz, 10m, Vertical	±4.4dB
Radiated emissions (No.6 OATS)	30MHz-200MHz, 3m, Horizontal	±4.3dB
	200MHz-1000MHz, 3m, Horizontal	±4.4dB
	30MHz-200MHz, 3m, Vertical	±4.5dB
	200MHz-1000MHz, 3m, Vertical	±4.1dB
	30MHz-200MHz, 10m, Horizontal	±4.3dB
	200MHz-1000MHz, 10m, Horizontal	±4.2dB
	30MHz-200MHz, 10m, Vertical	±4.4dB
	200MHz-1000MHz, 10m, Vertical	±4.1dB
Radiated emissions (No.7 OATS)	30MHz-200MHz, 3m, Horizontal	±3.9dB
	200MHz-1000MHz, 3m, Horizontal	±4.5dB
	30MHz-200MHz, 3m, Vertical	±4.6dB
	200MHz-1000MHz, 3m, Vertical	±4.5dB
	30MHz-200MHz, 10m, Horizontal	±3.9dB
	200MHz-1000MHz, 10m, Horizontal	±4.3dB
	30MHz-200MHz, 10m, Vertical	±4.6dB
	200MHz-1000MHz, 10m, Vertical	±4.5dB
Radiated emissions (No.8 OATS)	30MHz-200MHz, 3m, Horizontal	±4.5dB
	200MHz-1000MHz, 3m, Horizontal	±4.3dB
	30MHz-200MHz, 3m, Vertical	±4.6dB
	200MHz-1000MHz, 3m, Vertical	±4.1dB
	30MHz-200MHz, 10m, Horizontal	±4.7dB
	200MHz-1000MHz, 10m, Horizontal	±4.2dB
	30MHz-200MHz, 10m, Vertical	±4.6dB
	200MHz-1000MHz, 10m, Vertical	±4.0dB

Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
Harmonic current	NSG 1007-45	±0.7%
Voltage fluctuations & flicker	NSG 1007-45	±0.2%
Electrostatic discharge (ESD)	NSG 437	$U_{current}$ = 7.3% $U_{voltage}$ = 1.0% U_{time} = 9.0%
	Ditto	$U_{current}$ = 4.0% $U_{voltage}$ = 2.0% U_{time} = 3.0%
	MZ-15/EC	$U_{current}$ = 10.0% $U_{voltage}$ = 1.8% U_{time} = 20.0%
Radio-frequency electromagnetic field, Continuous radiated disturbances (RS)	80MHz-200MHz	±1.7dB
	200MHz-1000MHz	±1.8dB
	1GHz-6GHz	±1.7dB
Electrical fast transient/burst (EFT)	AC power port	$U_{voltage}$ = 1.0% U_{time} = 4.0%
	Signal port	$U_{voltage}$ = 4.0% U_{time} = 3.0%
Surge	Open-circuit output voltage 0.5kV-6kV (1.2us/50us)	$U_{voltage}$ = 4.0%
	Open-circuit output voltage 0.5kV-6kV (10us/700us)	$U_{voltage}$ = 4.0%
	Rise time (30%-90%) x 1.67: 0.5kV-6kV (1.2us/50us)	U_{time} = 3.0%
	Rise time (30%-90%) x 1.67: 0.5kV-6kV (10us/700us)	U_{time} = 3.0%
	Duration time: 0.5kV-6kV (1.2us/50us)	U_{time} = 3.0%
	Duration time: 0.5kV-6kV (10us/700us)	U_{time} = 3.0%
	Short-circuit output current 0.25KA-3KA (8us / 20us)	$U_{current}$ = 3.0%
	Rise time (10%-90%) x 1.25: (8us/20us)	U_{time} = 3.0%
	Duration time: (8us/20us)	U_{time} = 3.0%
Radio-frequency, continuous conducted disturbances (CS)	CDN (AC power port)	1.5 dB
	EM-Clamp (Signal port)	3.3 dB
Power-frequency magnetic field (PFMF)	MAG100.1	4%
	PMM1008	2%
Voltage dips	TESEQ	$U_{voltage}$ = 0.1% $U_{current}$ = 0.2%

10. PHOTOGRAPHS

10.1. Photos of Radiated Disturbance Measurement at Open Area Test Site

Test Model: 9DC243

FRONT VIEW OF RADIATED MEASUREMENT

BACK VIEW OF RADIATED MEASUREMENT

Test Model: 9DC242A

FRONT VIEW OF RADIATED MEASUREMENT

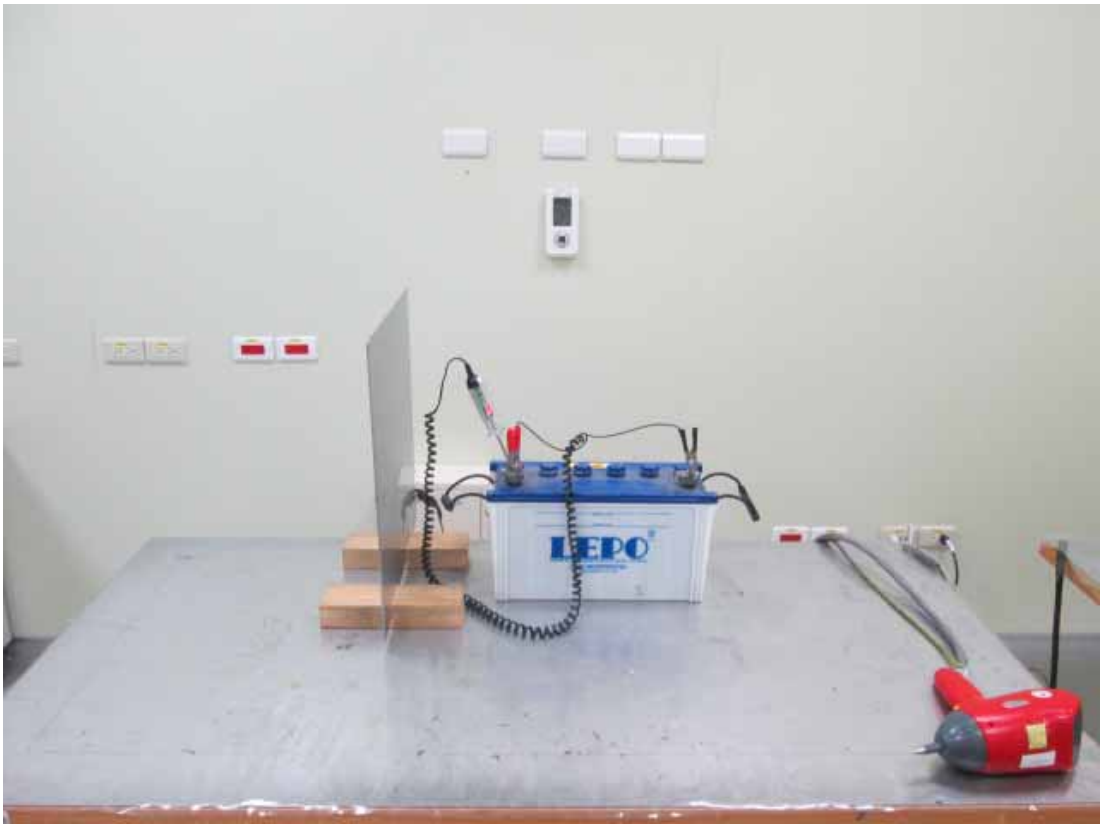
BACK VIEW OF RADIATED MEASUREMENT

10.2. Photos of Electrostatic Discharge Immunity Test

Test Model: 9DC243

Air & Contact Discharge

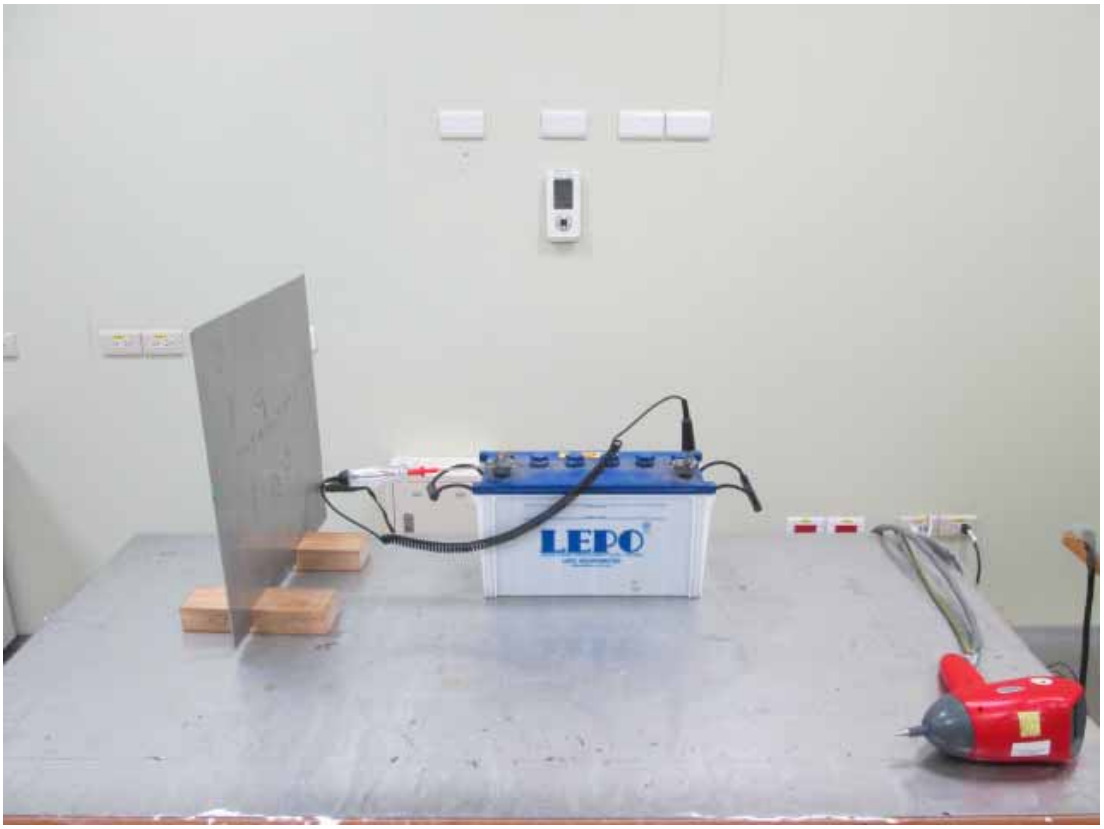
HCP & VCP



Test Model: 9DC242A

Air & Contact Discharge

HCP & VCP



Test Model: 9DC243

Photo of ESD Test Points

Photo of ESD Test Points

Test Model: 9DC242A

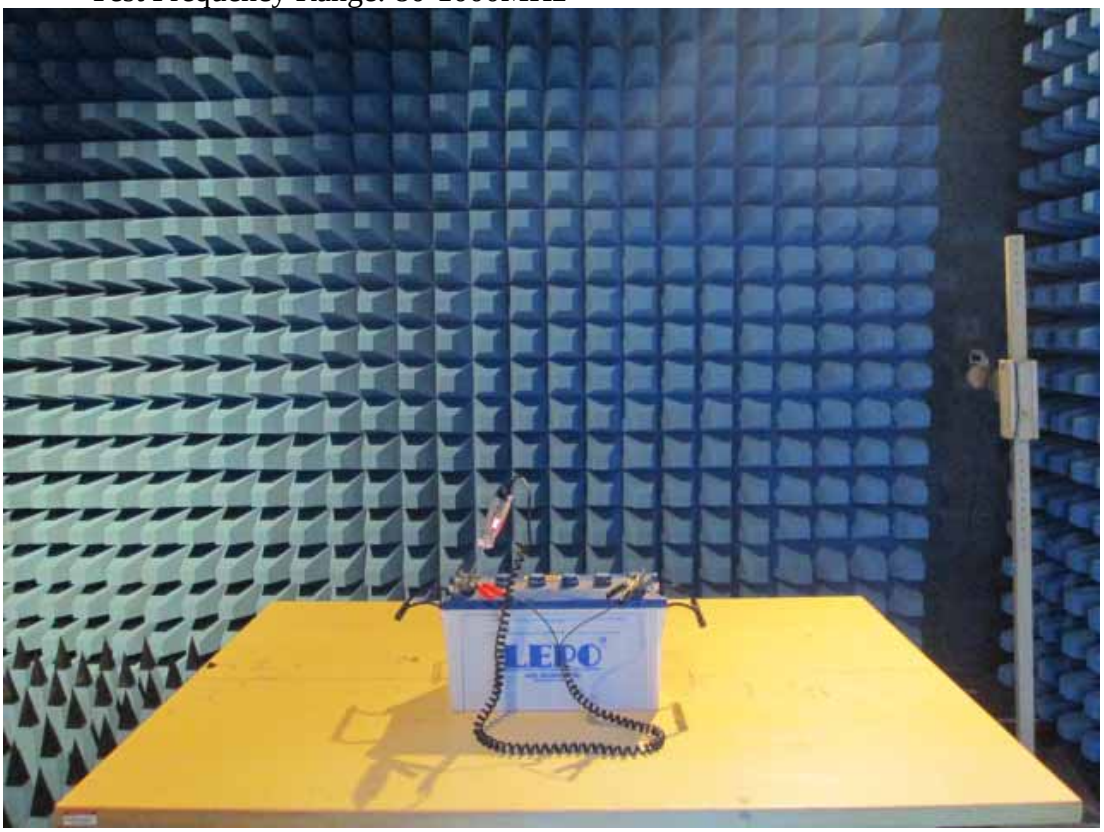
Photo of ESD Test Points

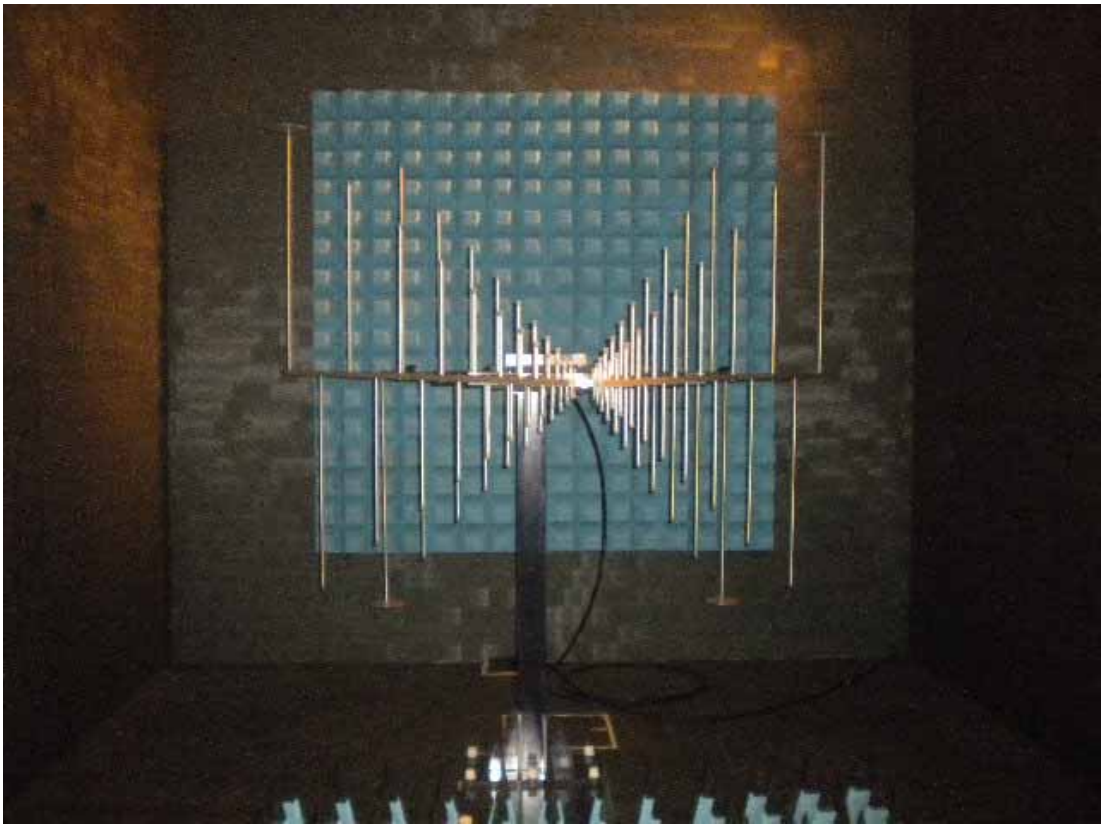
Photo of ESD Test Points

10.3. Photos of RF Strength Immunity Test

Test Model: 9DC243

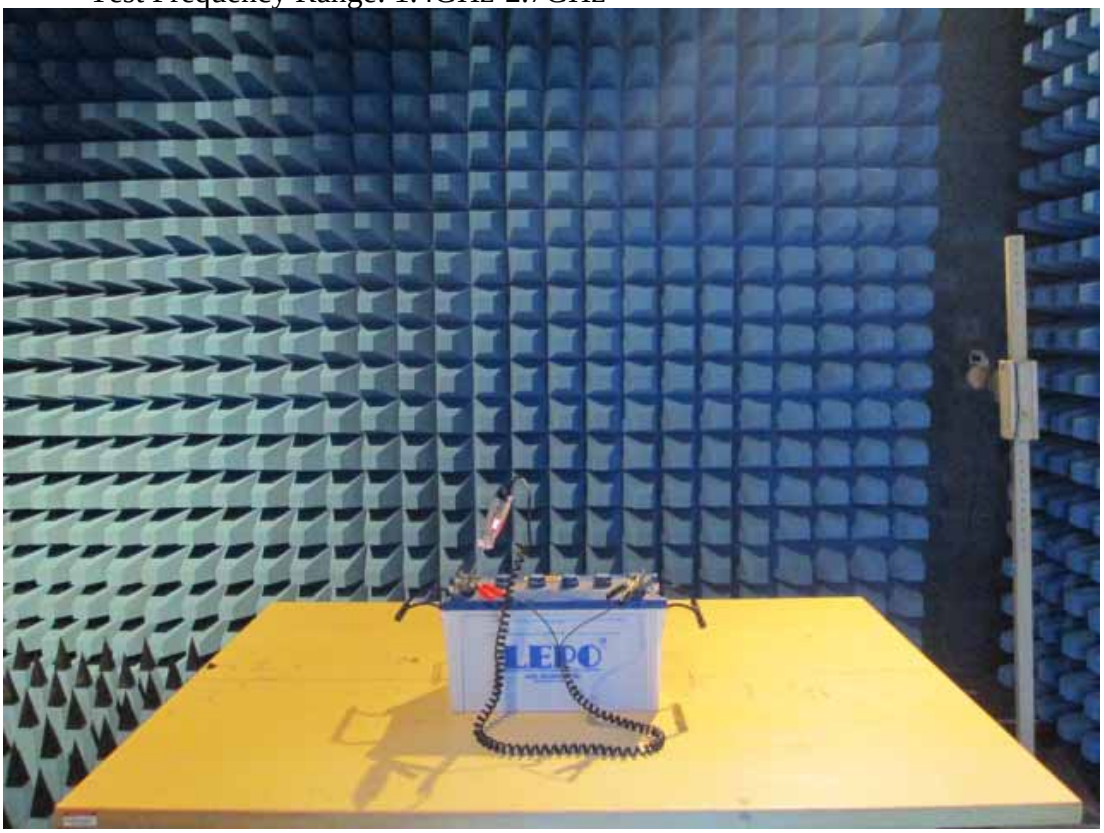
Test Frequency Range: 80-1000MHz

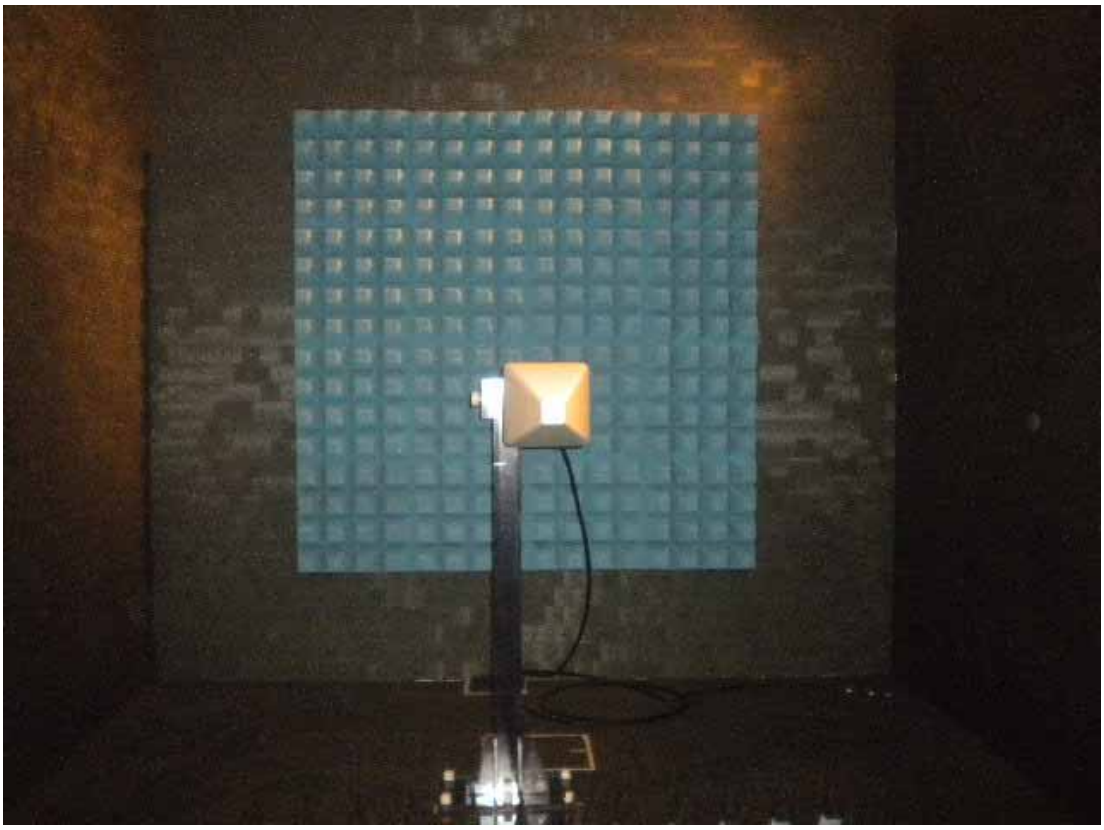




Test Model: 9DC243

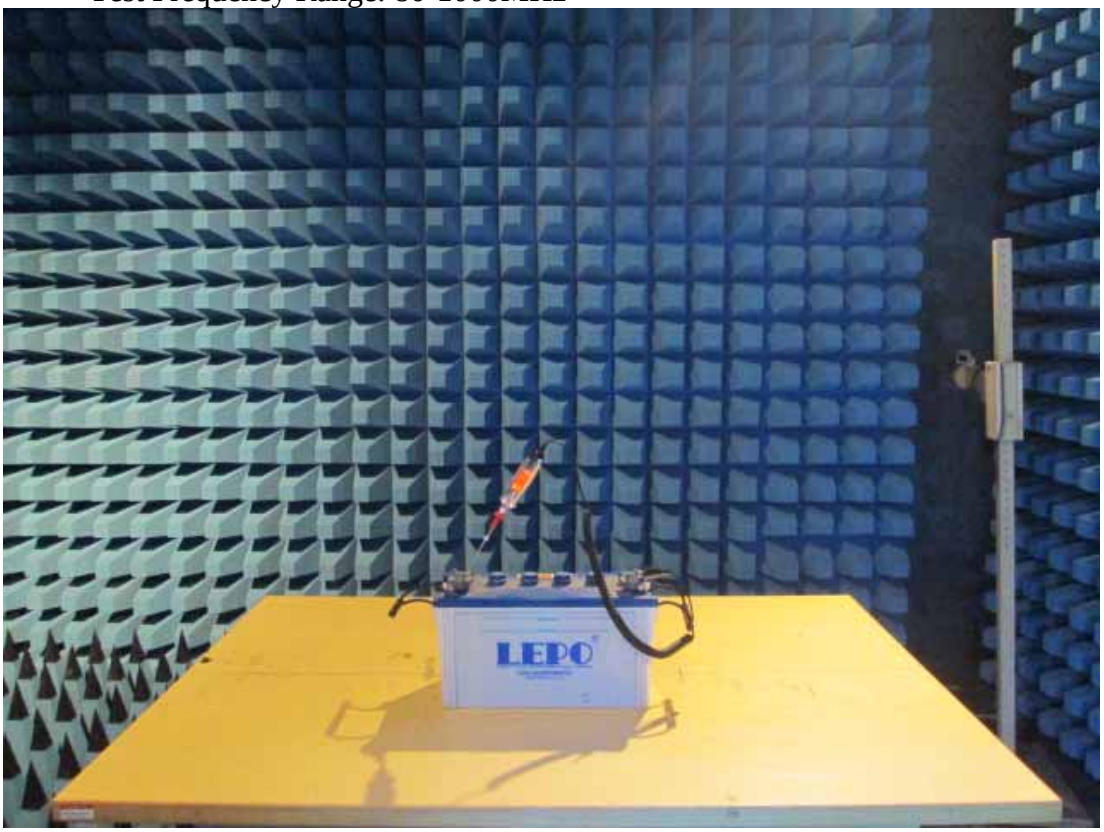
Test Frequency Range: 1.4GHz-2.7GHz

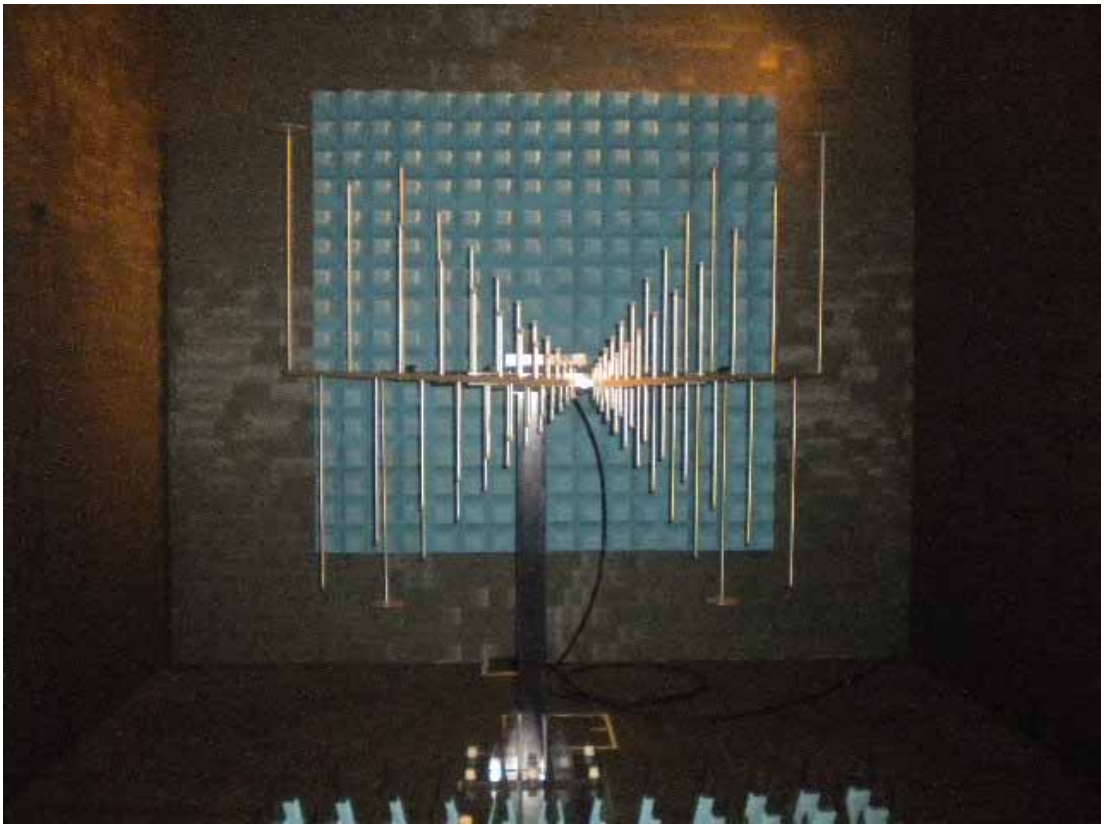




Test Model: 9DC242A

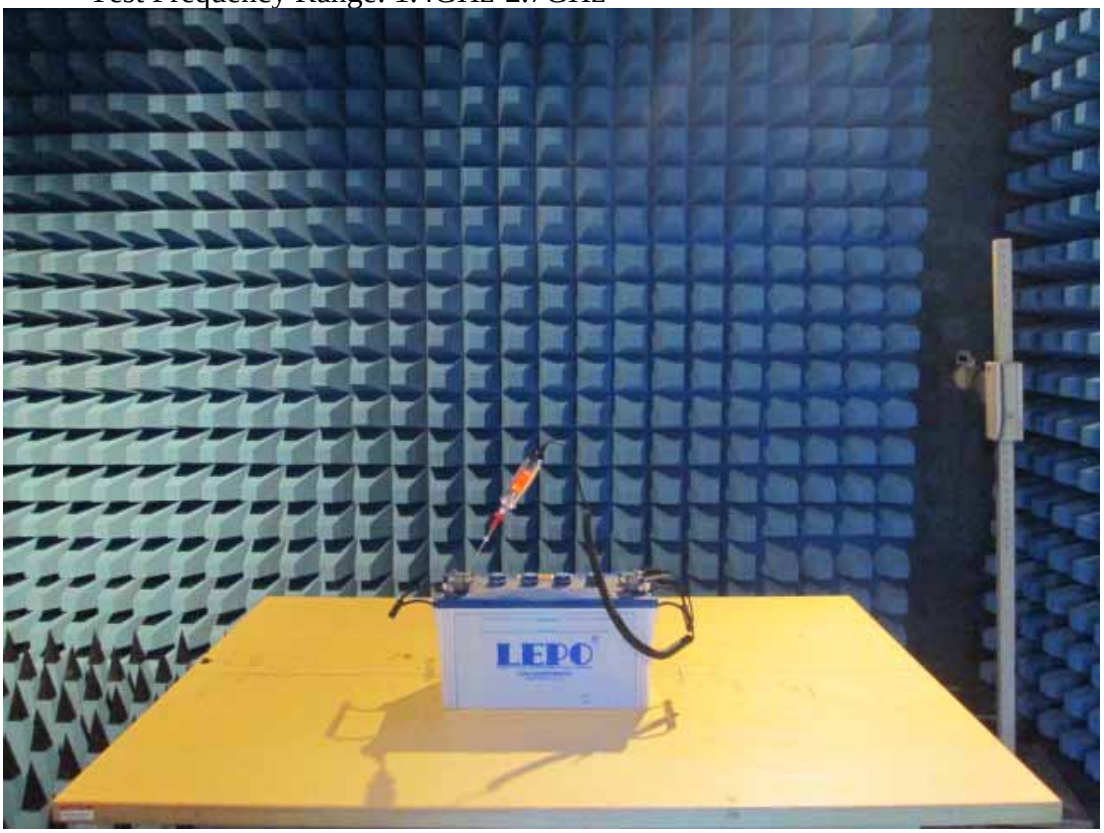
Test Frequency Range: 80-1000MHz

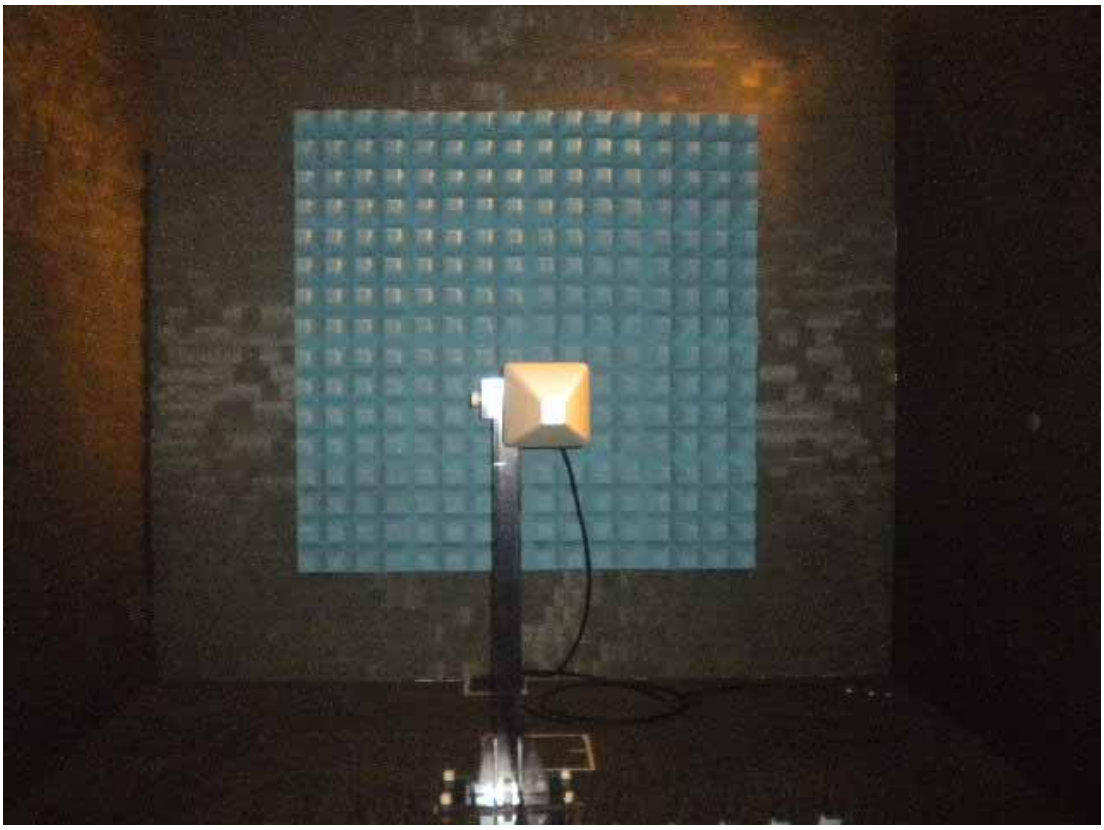




Test Model: 9DC242A

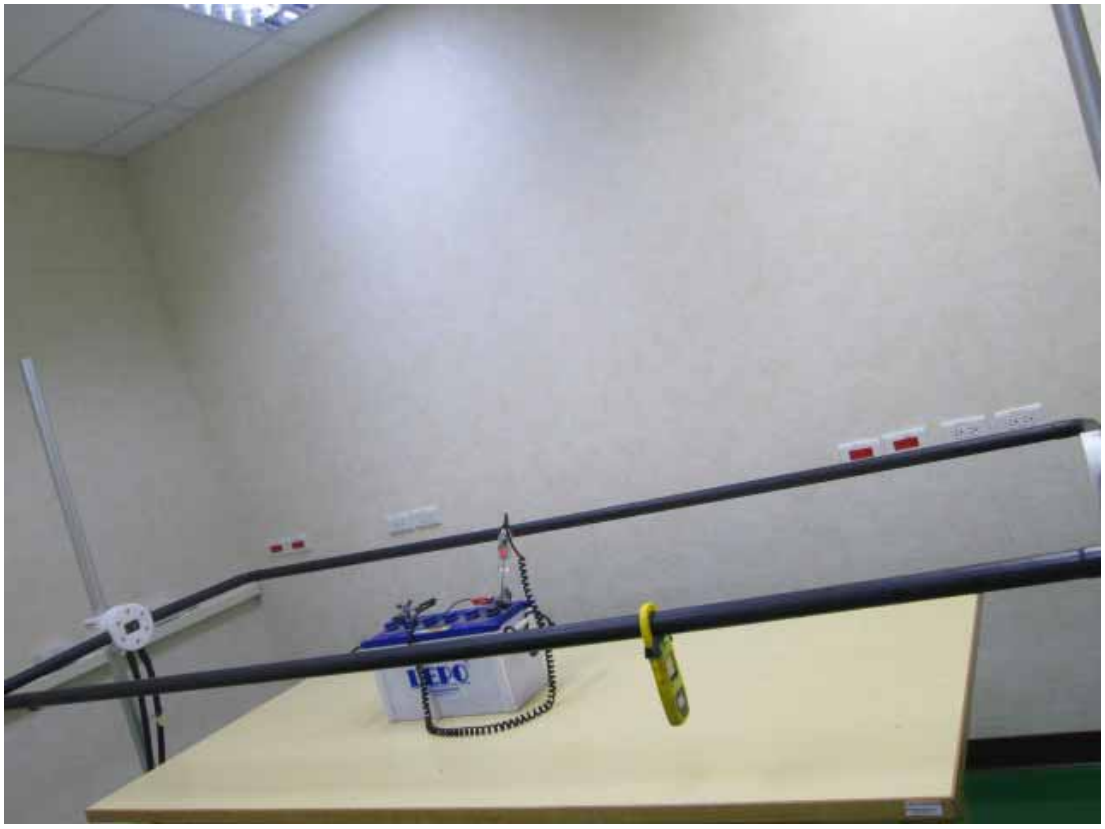
Test Frequency Range: 1.4GHz-2.7GHz





10.4. Photo of Power Frequency Magnetic Field Immunity Test

Test Model: 9DC243



Test Model: 9DC242A

APPENDIX
(Photos of EUT)

Total Pages: 9 Pages

M/N 9DC243, Figure 1 ~ 6
Figure 1
General Appearance

Figure 2
General Appearance (Front & Side View)

Figure 3
General Appearance (Back & Side View)

Figure 4
Internal View (Removed Cover)

Figure 5
Internal View (Internal Board, Front View)

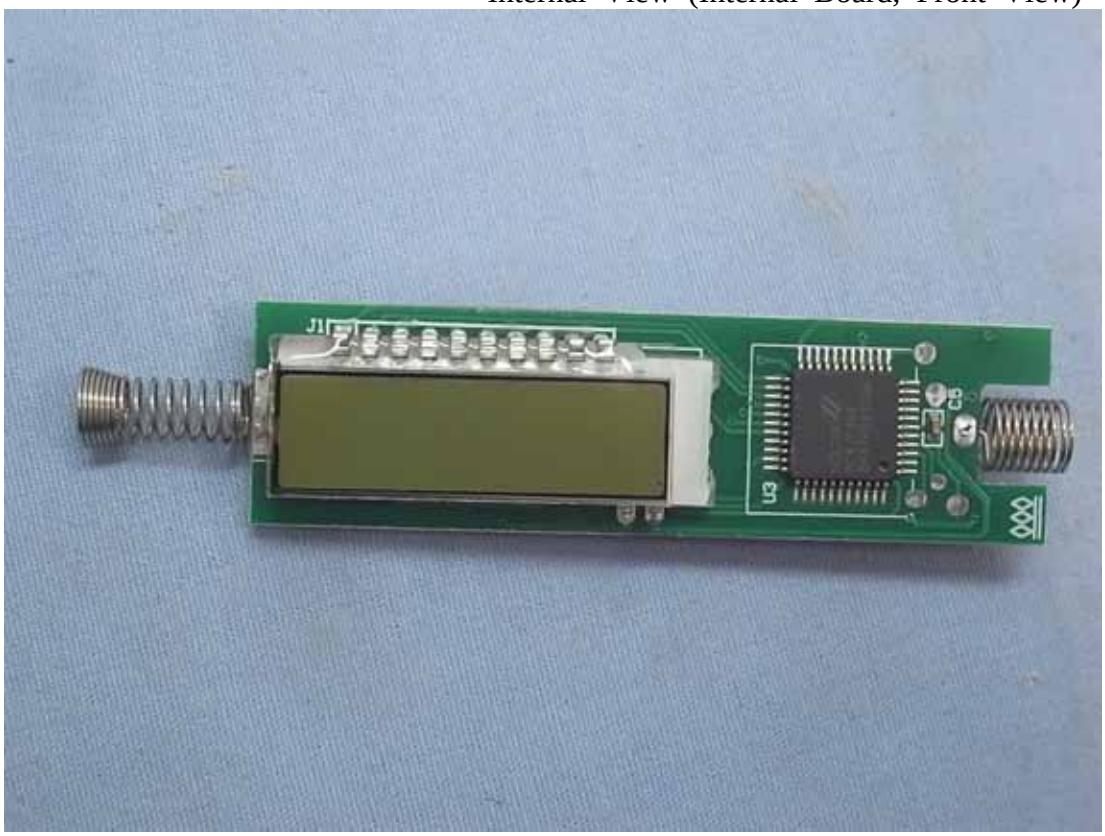


Figure 6
Internal View (Internal Board, Back View)

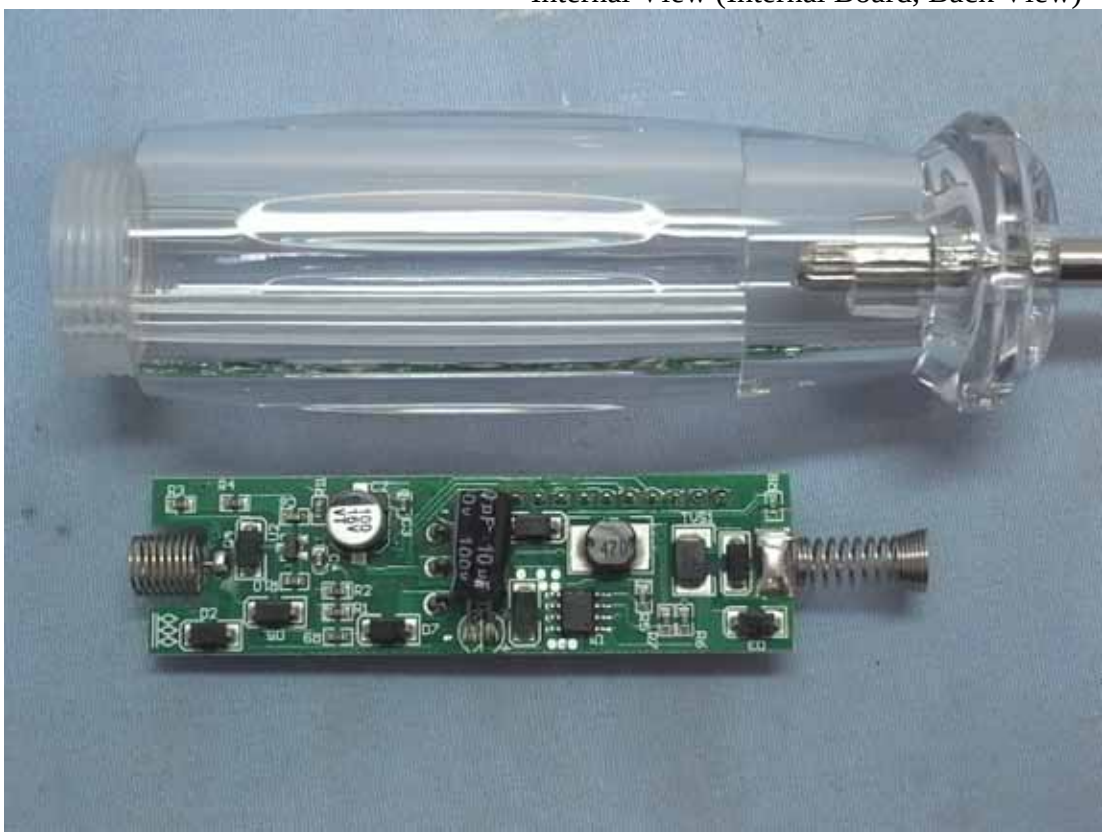


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Figure 7
General Appearance, Type A

Figure 8
General Appearance (Front & Side View) , Type A

Figure 9
General Appearance (Back & Side View) , Type A

Figure 10
General Appearance, Type B

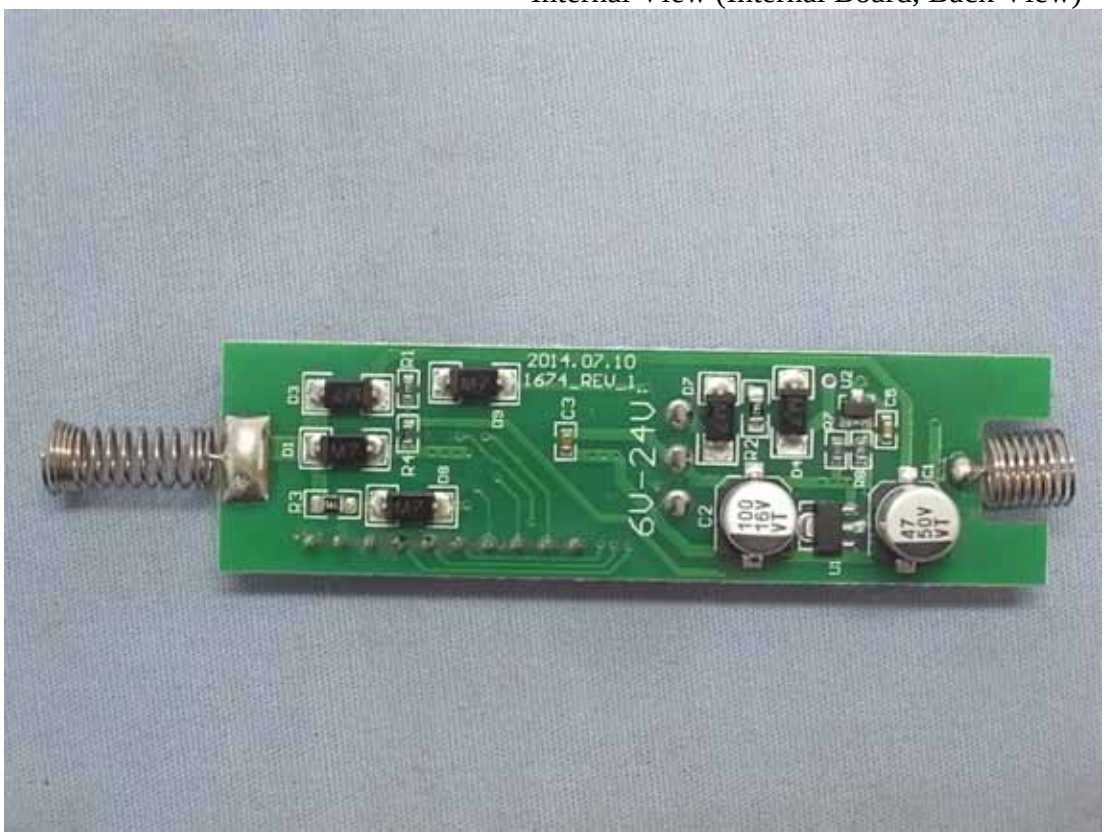
Figure 11
General Appearance (Front & Side View) , Type B

Figure 12
General Appearance (Back & Side View) , Type B

Figure 13
Internal View (Removed Cover)

Figure 14
Internal View (Internal Board, Front View)

Figure 15
Internal View (Internal Board, Back View)



M/N 9DC242, Figure 16 ~ 18
Figure 16
General Appearance

Figure 17
General Appearance (Front & Side View)

Figure 18
General Appearance (Back & Side View)