Technical Compliance Statement

CE EMC Test Report

For the following information **Ref. File No.: C1S1608052**

Product	:	Mini Pro 300V Power Supply
Model Number	:	(1)Mini-300 (2)NANOPAC-300 (3)57068 (4)E0304 (5)NANOPAC-300P
Brand	:	(1)Major Science (2)Cleaver (3)Lonza (4)Labent or VWR (5)Cleaver or Lonza
Applicant	:	Major Science Co., Ltd.
Manufacturer	:	Major Science Co., Ltd.

EN 61326-1:2013
EN 61326-2-2:2013
Emission: CISPR 11:2009 +A1:2010, Class B
EN 61000-3-2:2014 and EN 61000-3-3:2013
Immunity: IEC 61000-4-2:2008, IEC 61000-4-3:2010, IEC 61000-4-4:2012, IEC 61000-4-5:2014, IEC 61000-4-6:2013, IEC 61000-4-8:2009, IEC 61000-4-11:2004

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 & results are issued on the EMC test report no. **EM-E1000367C**.

Signature

Alex Deng/Deputy Manager
Date: 2016. 11. 04

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

Major Science Co., Ltd.

Mini Pro 300V Power Supply

Model No.: (1)Mini-300 (2)NANOPAC-300 (3)57068 (4)E0304 (5)NANOPAC-300P

Brand: (1)Major Science (2)Cleaver (3)Lonza (4)Labent or VWR (5)Cleaver or Lonza

Prepared for : Major Science Co., Ltd.
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New Taipei City 248, Taiwan

Prepared by : AUDIX Technology Corporation
EMC Department
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File Number	:	C1S1608052
Report Number	:	EM-E1000367C
Date of Test of Rev. C	:	2016. 10. 28 ~ 11. 04
Date of Report of Rev. C	:	2016. 11. 04

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APPENDIX I (Photos of EUT)

TEST REPORT VERIFICATION

Applicant	:	Major Science Co., Ltd.
Manufacturer	:	Major Science Co., Ltd.
EUT Description	:	Mini Pro 300V Power Supply
(A) Model No.	:	(1)Mini-300 (2)NANOPAC-300 (3)57068 (4)E0304 (5)NANOPAC-300P
(B) Serial No.	:	N/A
(C) Brand	:	(1)Major Science (2)Cleaver (3)Lonza (4)Labent or VWR (5)Cleaver or Lonza
(D) Power Supply	:	AC 100-240V, 50-60Hz
(E) Test Voltage	:	AC 230V, 50Hz

Measurement Standard Used:

EN 61326-1:2013
EN 61326-2-2:20013
Emission: CISPR 11:2009 +A1:2010, Class B
EN 61000-3-2:2014 and EN 61000-3-3:2013
Immunity: IEC 61000-4-2:2008, IEC 61000-4-3:2010, IEC 61000-4-4:2012, IEC 61000-4-5:2014, IEC 61000-4-6:2013, IEC 61000-4-8:2009, IEC 61000-4-11:2004

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 compliance with the requirements of EN 61326-1 and EN 61326-2-2 standard.

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

This report is based on report of EM-E1000367, EM-E1000367A, EM-E1000367B.

Date of Test or Rev. C : 2016. 10. 28 ~ 11. 04 Date of Report of Rev. C: 2016. 11. 04

Producer : _____
(Kitty Ni/Administrator)

Signatory : _____
(Alex Deng/Deputy Manager)

1. DESCRIPTION OF VERSION

Edition No.	Date of Rev.	Revision Summary	Report No.
0	2011. 10. 03	Original Report.	EM-E1000367
Rev. A	2012. 04. 03	To add two new model no. “NANOPAC-300” and “57068” for brand “Cleaver” and “Lonza”.	EM-E1000367A
Rev. B	2012. 12. 25	1. To add a new model no. “E0304” for brand “Labent” and “VWR”, the difference with original model is in plastic case, size and appearance. 2. To update standards from EN 61000-3-2:2006 to EN 61000-3-2:2006 +A1:2009 +A2:2009. 3. To update immunity standards from IEC 61000-4-3:2008 to IEC 61000-4-3:2010, from IEC 61000-4-4:2004 +Corr.1: 2006 +Corr.2: 2007 to IEC 61000-4-4:2011. 4. Supplementary test data are recorded in this report.	EM-E1000367B
Rev. C	**2016. 11. 04**	**1. To update EMC standard.** **2. To update EMC directive.** **3. To revise input rating.** **4. To revise secondary circuit.** **5. To add a new model number.**	**EM-E1000367C**

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.

<table>
<tr><th colspan="4">EMISSION</th></tr>
<tr><th>Description of Test Item</th><th>Basic Standard</th><th>Limits</th><th>Results</th></tr>
<tr><td rowspan="2">Conducted disturbance</td><td rowspan="2">CISPR 11:2009 +A1:2010</td><td>Class B</td><td>PASS</td></tr>
<tr><td colspan="2">Minimum passing margin is 8.49dB at 0.272MHz</td></tr>
<tr><td rowspan="2">Radiated disturbance</td><td rowspan="2">CISPR 11:2009 +A1:2010</td><td>Class B</td><td>PASS</td></tr>
<tr><td colspan="2">Minimum passing margin is 2.10dB at 66.364MHz</td></tr>
<tr><td>Harmonic distortion</td><td>EN 61000-3-2:2014</td><td>Class A</td><td>PASS</td></tr>
<tr><td>Voltage fluctuations and flicker</td><td>EN 61000-3-3:2013</td><td>Section 5</td><td>PASS</td></tr>
<tr><th colspan="4">IMMUNITY (EN 61326-1) (EN 61326-2-2)</th></tr>
<tr><th>Description of Test Item</th><th>Basic Standard</th><th>Performance Criteria</th><th>Results</th></tr>
<tr><td>Electrostatic discharge (ESD)</td><td>IEC 61000-4-2:2008</td><td>B</td><td>PASS</td></tr>
<tr><td>Radiated RF electromagnetic fields</td><td>IEC 61000-4-3:2010</td><td>A</td><td>PASS</td></tr>
<tr><td>Electrical fast transients and bursts</td><td>IEC 61000-4-4:2012</td><td>B</td><td>PASS</td></tr>
<tr><td>Surge</td><td>IEC 61000-4-5:2014</td><td>B</td><td>PASS</td></tr>
<tr><td>Conducted disturbances, induced by RF fields</td><td>IEC 61000-4-6:2013</td><td>A</td><td>PASS</td></tr>
<tr><td>Power frequency magnetic fields</td><td>IEC 61000-4-8:2009</td><td>A</td><td>PASS</td></tr>
<tr><td>Voltage dips, 0% during 0.5cycle</td><td rowspan="4">IEC 61000-4-11:2004</td><td>B</td><td>PASS</td></tr>
<tr><td>Voltage dips, 0% during 1cycle</td><td>B</td><td>PASS</td></tr>
<tr><td>Voltage dips, 70% during 25/30 cycle</td><td>C</td><td>PASS</td></tr>
<tr><td>Short Interruptions,
0% during 250/300 cycle</td><td>C</td><td>PASS</td></tr>
<tr><td colspan="4">N/A is an abbreviation for Not Applicable.</td></tr>
</table>

2.1. Description of Performance Criteria (EN 61326-1)

The general principles (performance criteria) for the evaluation of the immunity test results are the following.

Performance criterion A

The equipment 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 equipment is used as intended. The performance level may be replaced by a permissible loss of performance. 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 equipment if used as intended.

Performance criterion B

The equipment 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 equipment 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 equipment if used as intended.

EXAMPLE 1 A data transfer is controlled/checked by parity check or by other means. In the case of malfunctioning, such as caused by a lightning strike, the data transfer will be repeated automatically. The reduced data transfer rate at this time is acceptable.

EXAMPLE 2 During testing, an analogue function value may deviate. After the test, the deviation vanishes.

EXAMPLE 3 In the case of a monitor used only for man-machine monitoring, it is acceptable that some degradation takes place for a short time, such as flashes during the burst application.

EXAMPLE 4 An intended change of the operating state is allowed if self-recoverable.

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.

EXAMPLE 1 In the case of an interruption in the mains longer than the specified buffer time, the power supply unit of the equipment is switched off. The switch-on may be automatic or carried out by the operator.

EXAMPLE 2 After a programme interruption caused by a disturbance, the processor functions of the equipment stops at a defined position and is not left in a "crashed state". The operator's decision prompts may be necessary.

EXAMPLE 3 The test results in an opening of an over-current protection device that is replaced or reset by the operator.

2.2. Description of Performance Criteria (EN 61326-2-2)

During testing, normal performance within the specification limits. This includes that variations are allowed outside the maximum intrinsic error documented in the technical data of the user's manual. The variations shall be limited to five times the intrinsic error but not more than ±20% of the measured value when measured at between 50% and 100% of full scale

3. GENERAL INFORMATION

3.1. Description of Device (EUT)

Description	:	Mini Pro 300V Power Supply
Model Number	:	(1)Mini-300 (4)E0304
Serial Number	:	N/A
Brand	:	(1)Major Science (2)Cleaver (3)Lonza (4)Labent or VWR (5)Cleaver or Lonza
Applicant	:	Major Science Co., Ltd. No.37, Wuquan 5th Rd., Wugu Dist., New Taipei City 248, Taiwan
Manufacturer	:	Major Science Co., Ltd. No.37, Wuquan 5th Rd., Wugu Dist., New Taipei City 248, Taiwan
Input	:	100-240Vac, 50-60Hz, 2A
Output	:	300Vdc, 400mA, Max. 60W
DC Fan	:	(1)MB40101V2-0000-A99 (2)FD124010ML
Date of Receipt of Sample of Rev. C	:	2016. 09. 30
Date of Test of Rev. C	:	2016. 10. 28 ~ 11. 04

Remark for Rev. C：

1. The EUT is an additional version with original report number EM-E1000367.
   The difference with original report are:
   (a) to update EMC standard from EN 61326-1:2006 to EN 61326-1:2013.
   (b) to update EMC standard from EN 61326-2-2:2006 to EN 61326-2-2:2013.
   (c) to update EMC directive from 2004/108/EC to 2014/30/EU.
   (d) to update standard from CISPR 11:2003 +A1:2004 +A2:2006 to CISPR 11:2009 +A1:2010.
   (e) to update standard from EN 61000-3-2:2006 +A1:2009 +A2:2009 to EN 61000-3-2:2014.
   (f) to update standard from EN 61000-3-3:2008 to EN 61000-3-3:2013.
   (g) to update standard from IEC 61000-4-4:2011 to IEC 61000-4-4:2012.
   (h) to update standard from IEC 61000-4-5:2005 to IEC 61000-4-5:2014.
   (i) to update standard from IEC 61000-4-6:2008 to IEC 61000-4-6:2013.
   (j) to revised the input rating of EUT from AC 100-240V, 47-60Hz to AC 100-240V, 50-60Hz.
   (k) to revised the secondary circuit.
   (l) to add a new model no. “NANOPAC-300P” for brand “Cleaver” and “Lonza”.
2. Depending on all additions, the **EUT with original worst test mode** was re-tested to comply with the EMC standards requirements. The supplementary test data are recorded in this report of EM-E1000367C.
3. This report is based on report of EM-E1000367, EM-E1000367A, EM-E1000367B.
   The difference list for all models are as follows：

No.	M/N	Brand	Plastic case, size, appearance
1.	Mini-300	Major Science	The same
2.	NANOPAC-300	Cleaver	
3.	57068	Lonza	
4.	E0304	(1)Labent (2)VWR	Different
5.	**NANOPAC-300**	**(1)Cleaver (2)Lonza**	**The same with original model**

3.1.Tested Supporting System Details

3.1.1. Support Peripheral Unit

No.	Product	Brand	Model No.	Serial No.	Approval
For Conducted、Radiated Disturbance Measurements					
1	Load (60W)	N/A	N/A	N/A	N/A
No.	**Product**	**Brand**	**Model No.**	**Serial No.**	**Approval**
For Harmonic、Flicker Measurements And EMS Immunity Tests					
1	Load (60W)	N/A	N/A	N/A	N/A
2	Digital Meter	Agilent	34401A	N/A	N/A

3.1.2. Cable List

No.	Cable Description Of The Above Support Units
For Conducted、Radiated Disturbance Measurements	
1	Power Cable*2: Unshielded, Detachable, 1.0m AC Power Cord: Unshielded, Detachable, 1.8m
2	AC Power Cord: Unshielded, Detachable, 1.8m (3C)
For Harmonic、Flicker Measurements And EMS Immunity Tests	
1	Power Cable*2: Unshielded, Detachable, 1.0m AC Power Cord: Unshielded, Detachable, 1.8m
2	Power Wire*2: Unshielded, Detachable, 1.0m AC Power Cord: Unshielded, Detachable, 1.8m
3	AC Power Cord: Unshielded, Detachable, 1.8m (3C)

3.2. 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. 3 Shielded Room &** **No. 5 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

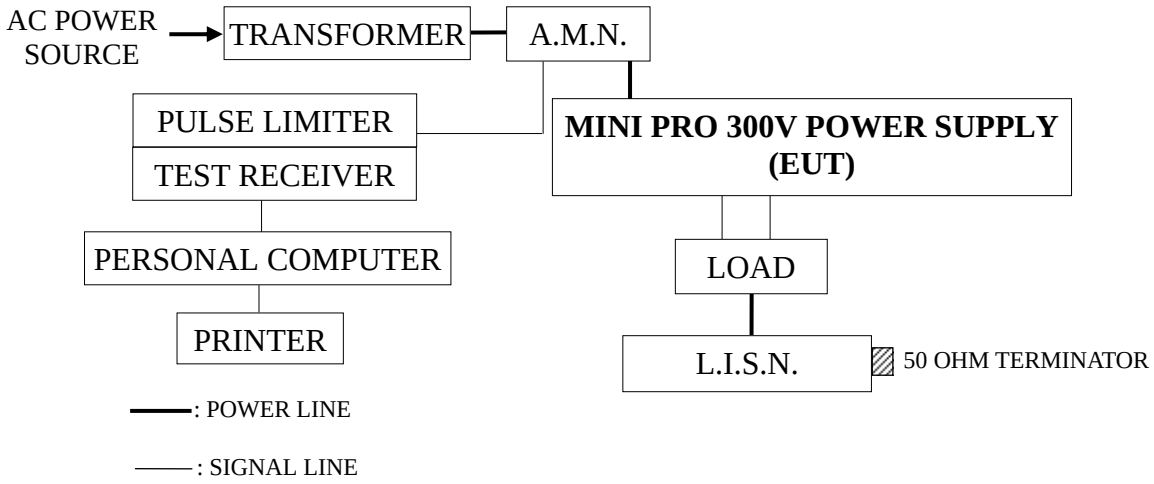
4. CONDUCTED DISTURBANCE MEASUREMENT

4.1. Test Equipment

The following test equipment was used during the conducted disturbance measurement: (No. 3 Shielded Room)

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Test Receiver	R & S	ESR3	101772	2016. 01. 29	1 Year
2.	A.M.N.	Kyoritsu	KNW-244C	8-1373-5	2016. 04. 01	1 Year
3.	L.I.S.N.	Kyoritsu	KWN-407	8-1370-9	2016. 02. 26	1 Year
4.	Pulse Limiter	R & S	ESH3-Z2	100041	2016. 01. 17	1 Year

4.2. Block Diagram of Test Setup



4.3. Limits for Conducted Disturbance Voltage (CISPR 11, Class B)

Frequency	Maximum RF Line Voltage, dB(μV)	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dBμV	56 ~ 46 dBμV
500kHz ~ 5MHz	56 dBμV	46 dBμV
5MHz ~ 30MHz	60 dBμV	50 dBμV

Remark: 1. If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary.
2. The lower limit applies at the band edges.

4.4. Operating Condition of EUT

4.4.1. Set up the EUT (Mini Pro 300V Power Supply) and simulator as shown on 4.2.

4.4.2. Operating the Mini Pro 300V Power Supply (EUT) was linked to load and tested in full load mode during the testing.

4.5. Test Procedure

The EUT was put on table which was above the ground by 80cm and its power cord connected to the power mains through a line impedance stabilization network (A.M.N.). The peripheral devices power cord connected to the power mains through another line impedance stabilization network (L.I.S.N.). This provided a 50ohm coupling impedance for the tested equipments. (Please refer to the block diagram of the test setup and photographs.) Both sides of A.C. line were checked to find out the maximum conducted emission according to CISPR 11 Class B regulations during conducted disturbance measurement.

The bandwidth of R&S Test Receiver ESR3 was set at 9kHz.

The frequency range from 150kHz to 30MHz was pre-scanned with a peak detector.

All the final readings from Test Receiver were measured with the Quasi-Peak detector and Average detector. (Remark: If the Average limit is met when using a Quasi-Peak detector, the Average detector is unnecessary)

4.6. Conducted Disturbance Measurement Results

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

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

EUT：Mini Pro 300V Power Supply M/N：Mini-300

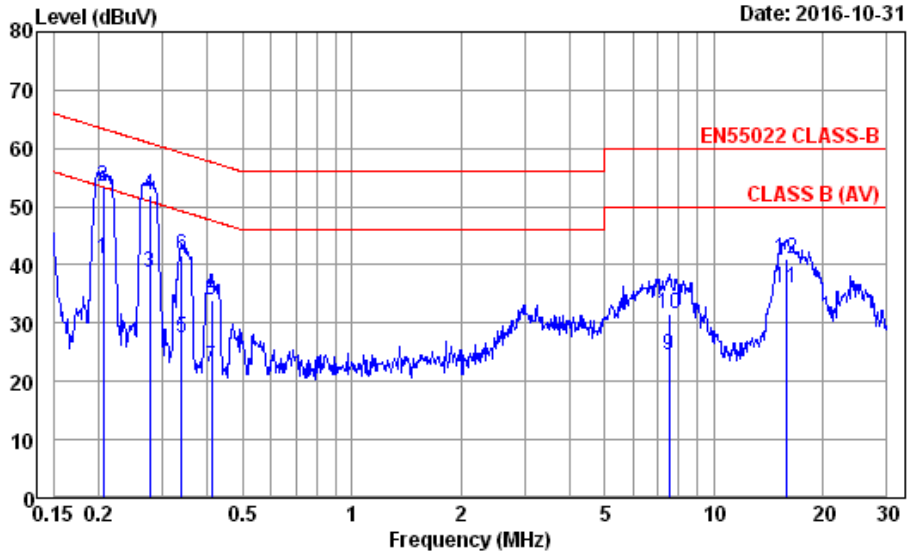
Test Date：2016. 10. 31 Temperature：23℃ Humidity：52%

The details are as follows：

Mode	DC Fan	Reference Test Data No.	
		Neutral	Line
1.	MB40101V2-0000-A99	# 2	# 1

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Data: 2 File: D:\test-data\Report\2016\C1S1608XXX\C1S1608052-C-D.EM6 (4)



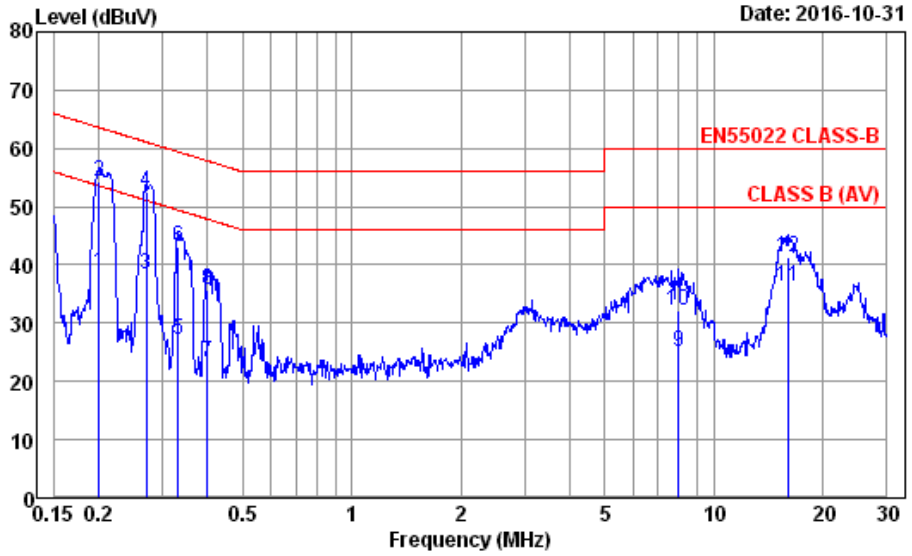
Site no. : No.3 Shielded Room Data no. : 2
Condition : KNW-244C 8-1373-5 LISN Phase : NEUTRAL
Limit : EN55022 CLASS-B
Env. / Ins. : 23°C / 52% ESR3 (101772) Engineer : Fate
EUT : Mini-300
Power Rating : 230Vac / 50Hz
Test Mode : FULL LOAD

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.206	0.15	0.01	9.88	30.87	40.91	53.36	12.45	Average
2	0.206	0.15	0.01	9.88	43.39	53.43	63.36	9.93	QP
3	0.277	0.16	0.01	9.88	28.57	38.62	50.90	12.28	Average
4	0.277	0.16	0.01	9.88	42.01	52.06	60.90	8.84	QP
5	0.339	0.17	0.01	9.89	17.25	27.32	49.22	21.90	Average
6	0.339	0.17	0.01	9.89	31.61	41.68	59.22	17.54	QP
7	0.410	0.17	0.01	9.89	12.28	22.35	47.64	25.29	Average
8	0.410	0.17	0.01	9.89	24.01	34.08	57.64	23.56	QP
9	7.526	0.41	0.10	9.89	13.99	24.39	50.00	25.61	Average
10	7.526	0.41	0.10	9.89	21.25	31.65	60.00	28.35	QP
11	15.885	0.68	0.16	9.90	25.27	36.01	50.00	13.99	Average
12	15.885	0.68	0.16	9.90	30.37	41.11	60.00	18.89	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

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Data: 1 File: D:\test-data\Report\2016\C1S1608XXX\C1S1608052-C-D.EM6 (4)



Site no. : No.3 Shielded Room Data no. : 1
Condition : KMH-244C 8-1373-5 LISN Phase : LINE
Limit E0304 CLASS-B
Env. / Ins. : 23°C / 52% ESR3 (101772) Engineer : Fate
EUT : Mini-300
Power Rating : 230Vac / 50Hz
Test Mode : FULL LOAD

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.201	0.17	0.01	9.88	28.53	38.59	53.58	14.99	Average
2	0.201	0.17	0.01	9.88	44.17	54.23	63.58	9.35	QP
3	0.272	0.16	0.01	9.88	28.19	38.24	51.07	12.83	Average
4	0.272	0.16	0.01	9.88	42.53	52.58	61.07	8.49	QP
5	0.332	0.16	0.01	9.89	17.16	27.22	49.40	22.18	Average
6	0.332	0.16	0.01	9.89	33.07	43.13	59.40	16.27	QP
7	0.400	0.16	0.01	9.89	13.16	23.22	47.86	24.64	Average
8	0.400	0.16	0.01	9.89	25.73	35.79	57.86	22.07	QP
9	7.977	0.48	0.10	9.89	14.74	25.21	50.00	24.79	Average
10	7.977	0.48	0.10	9.89	21.85	32.32	60.00	27.68	QP
11	15.970	0.59	0.16	9.90	25.63	36.28	50.00	13.72	Average
12	15.970	0.59	0.16	9.90	30.61	41.26	60.00	18.74	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

5. RADIATED DISTURBANCE MEASUREMENT

5.1. Test Equipment

The following test equipment was used during the radiated disturbance measurement: (No. 5 Open Area Test Site)

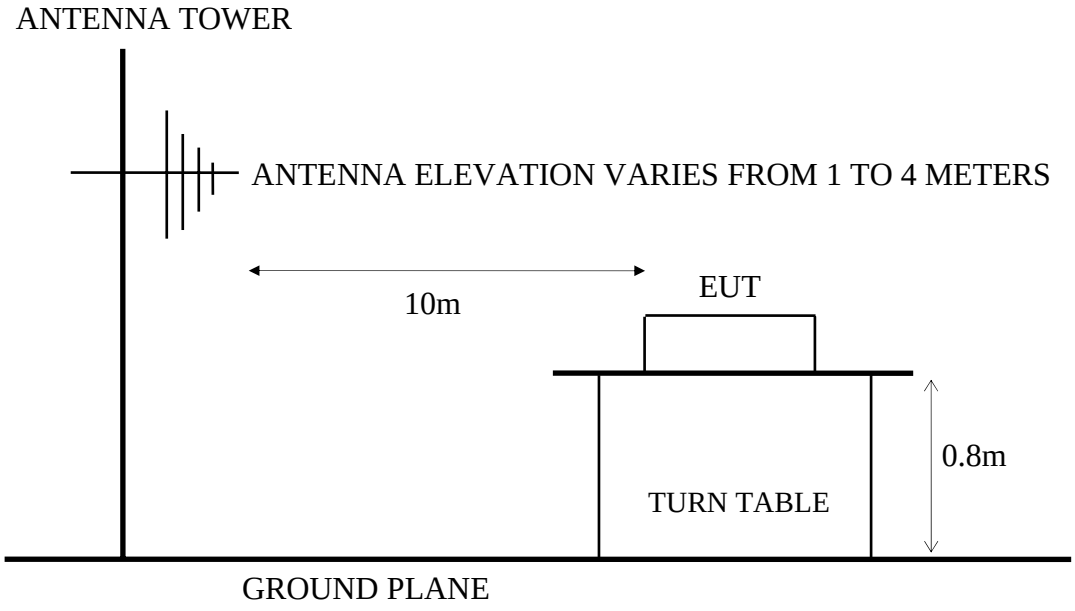
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Test Receiver	R & S	ESCS30	100337	2016. 05. 06	1 Year
2.	Spectrum Analyzer	Agilent	N9010A-503	MY54430212	2015. 11. 30	1 Year
3.	Amplifier	HP	8447D	2944A07185	N.C.R.	N.C.R.
4.	LogPeriodic Antenna	CHASE	UPA6109	1061	2016. 02. 26	1 Year
5.	Biconical Antenna	CHASE	VBA6106A	1262	2016. 02. 26	1 Year

5.2. Block Diagram of Test Setup

5.2.1. Block Diagram of connection between EUT and simulators



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



5.3. Limits for Radiated Disturbance

(CISRP 11, Class B)

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dBμV/m)
30 ~ 230	10	30
230 ~ 1000	10	37

Note： (1) The tighter limit applies 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

Same as conducted measurement which is listed in 4.4. except the test set up replaced by section 5.2.

5.5. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set to 10 meters away from the receiving antenna which was mounted on an antenna tower. The antenna could be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antennas were used as receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to CISPR 11 Class B requirements.

The bandwidth of the R&S Test Receiver ESCS30 was set at 120kHz.

The frequency range from 30MHz to 1000MHz was pre-scanned with Peak detector and all the final readings of measurement were with Quasi-Peak detector.

5.6. Radiated Disturbance Measurement Results

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

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

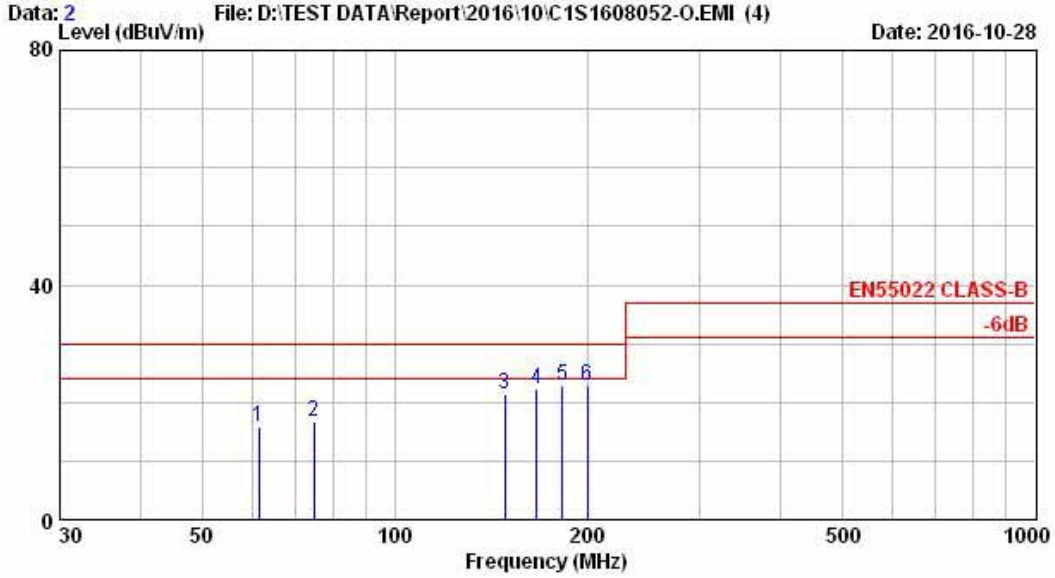
EUT：Mini Pro 300V Power Supply M/N：Mini-300

Test Date：2016. 10. 28 Temperature：26℃ Humidity：54%

The details are as follows：

Mode	DC Fan	Reference Test Data No.	
		Horizontal	Vertical
1.	MB40101V2-0000-A99	# 2	# 1

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244 , Taiwan, R.O.C.
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E-mail: emc@audixtech.com

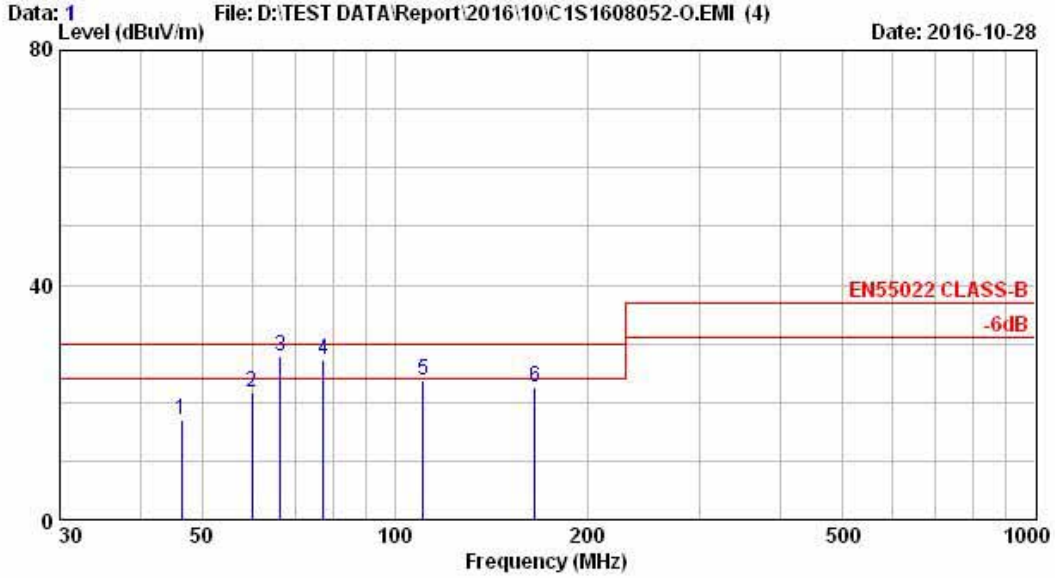


Site no. : OATS NO.5 Data no. : 2
Dis. / Ant. : 10m VBA6106A/UPA6109 Ant. pol. : HORIZONTAL
Limit : EN55022 CLASS-B
Env. / Ins. : 26*C/54% ESCS 30 (337) Engineer : Edward
EUT M/N : Mini-300
Power Rating : 230Vac/50Hz
Test Mode : Full Load

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	61.400	13.80	1.24	0.86	15.90	30.00	14.10	QP
2	74.710	14.41	1.37	0.89	16.67	30.00	13.33	QP
3	148.600	22.21	2.00	-2.84	21.37	30.00	8.63	QP
4	166.460	22.88	2.13	-2.79	22.21	30.00	7.79	QP
5	182.600	23.36	2.24	-2.88	22.71	30.00	7.29	QP
6	200.210	23.54	2.35	-2.96	22.93	30.00	7.07	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emissions not reported are 20 dB lower than the specified limit.

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E-mail: emc@audixtech.com



Site no. : OATS NO.5 Data no. : 1
Dis. / Ant. : 10m VBA6106A/UPA6109 Ant. pol. : VERTICAL
Limit : EN55022 CLASS-B
Env. / Ins. : 26*C/54% ESCS 30 (337) Engineer : Edward
EUT M/N : Mini-300
Power Rating : 230Vac/50Hz
Test Mode : Full Load

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	46.500	18.02	1.07	-2.18	16.90	30.00	13.10	QP
2	59.800	13.94	1.22	6.56	21.73	30.00	8.27	QP
3	66.364	13.50	1.29	13.04	27.82	30.00	2.18	QP
4	77.424	14.99	1.40	10.78	27.17	30.00	2.83	QP
5	110.660	19.22	1.70	2.83	23.74	30.00	6.26	QP
6	165.600	22.83	2.12	-2.52	22.43	30.00	7.57	QP

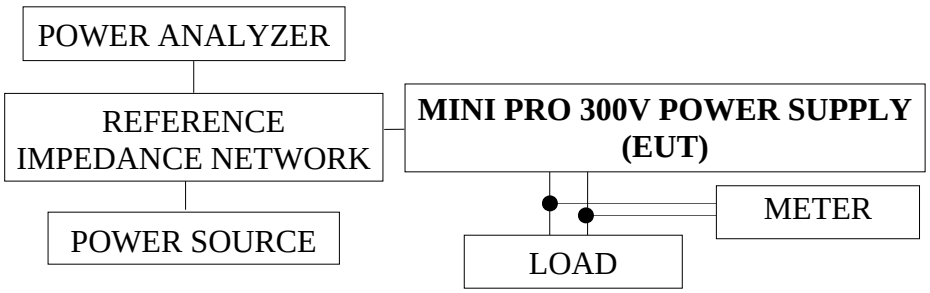
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emissions not reported are 20 dB lower than the specified limit.

6. POWER HARMONIC & FLICKER MEASUREMENT

6.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	AC Power Source	TESEQ	NSG 1007-45	1248A04038	2016. 01. 29	2 Years
2.	Signal Conditioning Unit	TESEQ	CCN 1000-3	1234A03680	2016. 01. 29	2 Years
3.	Three Phase Impedance Network	TESEQ	INA 2197	1234A03681	2016. 01. 29	2 Years
4.	Profline AC Switching Unit	TESEQ	NSG 2200-3	EK 22713	2016. 07. 01	2 Years

6.2. Block Diagram of Test Setup



6.3. Test Standard

EN 61000-3-2:2014 and EN 61000-3-3:2013

6.4. Operating Condition of EUT

Same as conducted measurement which is listed in 4.4 except the test set up replaced by section 6.2.

6.5. Test Results

PASSED. (Complied with Class A limit)
The EUT with following test mode was measured during this section testing and all the test results are attached in next page.

The details are as follows：

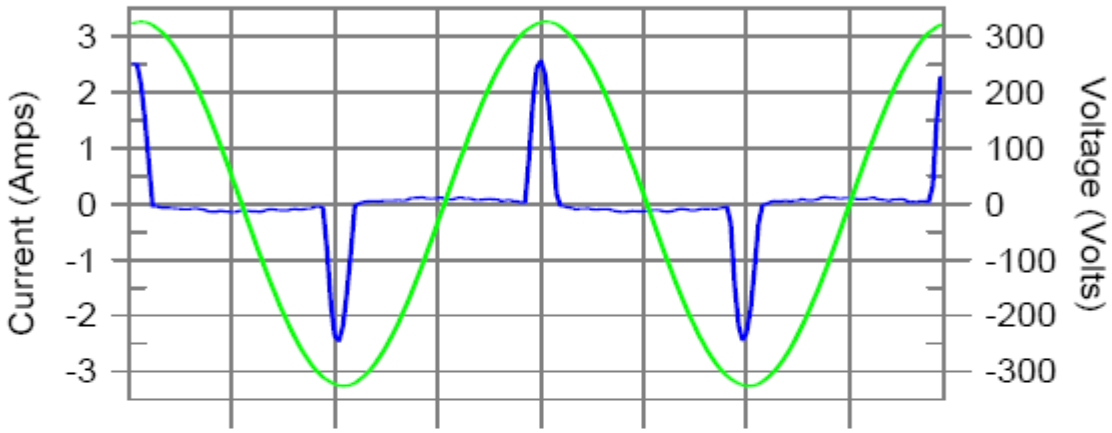
Mode	DC Fan
1.	MB40101V2-0000-A99

Harmonics – Class-A per Ed. 4.0 (2014)(Run time)

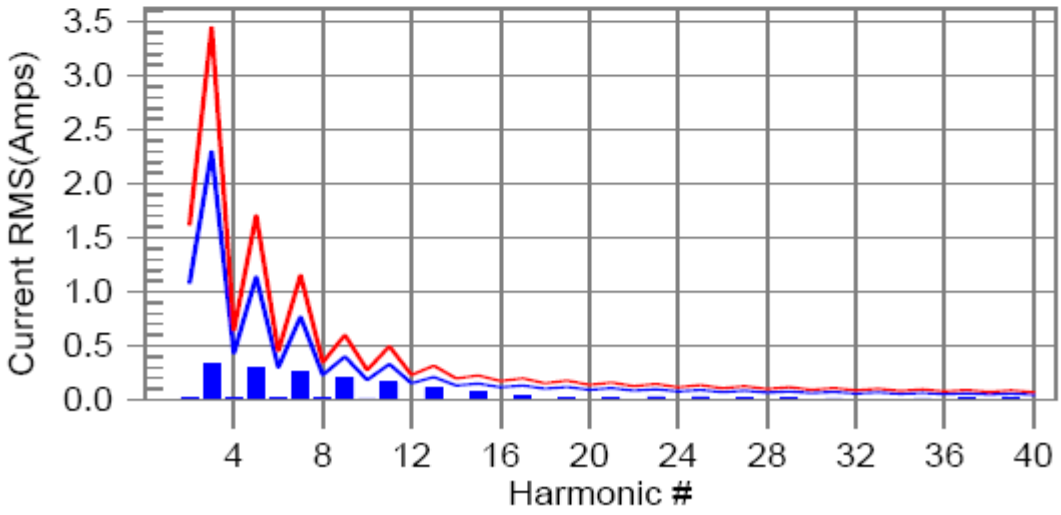
EUT: Mini-300 Tested by: Fans Lee
Test category: Class-A per Ed. 4.0 (2014) (European limits) Test Margin: 100
Test date: 2016/11/2
Test duration (min): 2.5 Data file name: CTSMXL_H-000199.cts_data
Comment: Full Load

Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line European Limits



Test result: Pass Worst harmonic was #13 with 37.5% of the limit.

Current Test Result Summary (Run time)

EUT: Mini-300 Tested by: Fans Lee
Test category: Class-A per Ed. 4.0 (2014) (European limits) Test Margin: 100
Test date: 2016/11/2
Test duration (min): 2.5 Data file name: CTSMXL_H-000199.cts_data
Comment: Full Load

Test Result: Pass Source qualification: Normal
THC(A): 0.591 I-THD(%): 165.7 POHC(A): 0.052 POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts):	230.253	Frequency(Hz):	50.00
I_Peak (Amps):	2.630	I_RMS (Amps):	0.708
I_Fund (Amps):	0.360	Crest Factor:	3.743
Power (Watts):	80.2	Power Factor:	0.522

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.014	1.080	1.3	0.015	1.620	0.9	Pass
3	0.326	2.300	14.2	0.330	3.450	9.6	Pass
4	0.013	0.430	2.9	0.013	0.645	2.1	Pass
5	0.296	1.140	26.0	0.302	1.710	17.7	Pass
6	0.011	0.300	3.6	0.012	0.450	2.6	Pass
7	0.256	0.770	33.3	0.262	1.155	22.7	Pass
8	0.009	0.230	3.9	0.010	0.345	2.8	Pass
9	0.209	0.400	52.2	0.216	0.600	36.0	Pass
10	0.007	0.184	3.7	0.008	0.276	2.8	Pass
11	0.158	0.330	48.0	0.167	0.495	33.8	Pass
12	0.005	0.153	3.4	0.006	0.230	2.6	Pass
13	0.110	0.210	52.2	0.118	0.315	37.5	Pass
14	0.004	0.131	N/A	0.005	0.197	N/A	Pass
15	0.066	0.150	43.9	0.074	0.225	33.1	Pass
16	0.004	0.115	N/A	0.004	0.173	N/A	Pass
17	0.031	0.132	23.5	0.038	0.198	19.4	Pass
18	0.004	0.102	N/A	0.004	0.153	N/A	Pass
19	0.013	0.118	11.2	0.020	0.178	11.5	Pass
20	0.003	0.092	N/A	0.004	0.138	N/A	Pass
21	0.019	0.107	18.1	0.028	0.161	17.3	Pass
22	0.003	0.084	N/A	0.003	0.125	N/A	Pass
23	0.026	0.098	26.7	0.028	0.147	19.2	Pass
24	0.002	0.077	N/A	0.003	0.115	N/A	Pass
25	0.026	0.090	29.2	0.027	0.135	20.2	Pass
26	0.002	0.071	N/A	0.002	0.107	N/A	Pass
27	0.021	0.083	25.8	0.024	0.125	19.0	Pass
28	0.002	0.066	N/A	0.002	0.099	N/A	Pass
29	0.014	0.078	18.0	0.017	0.116	14.6	Pass
30	0.002	0.061	N/A	0.002	0.092	N/A	Pass
31	0.007	0.073	9.3	0.009	0.109	8.4	Pass
32	0.002	0.058	N/A	0.002	0.086	N/A	Pass
33	0.004	0.068	N/A	0.010	0.102	N/A	Pass
34	0.002	0.054	N/A	0.002	0.081	N/A	Pass
35	0.007	0.064	11.5	0.011	0.096	11.3	Pass
36	0.001	0.051	N/A	0.002	0.077	N/A	Pass
37	0.010	0.061	15.7	0.010	0.091	11.5	Pass
38	0.001	0.048	N/A	0.001	0.073	N/A	Pass
39	0.009	0.058	16.2	0.010	0.087	11.6	Pass
40	0.001	0.046	N/A	0.001	0.069	N/A	Pass

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

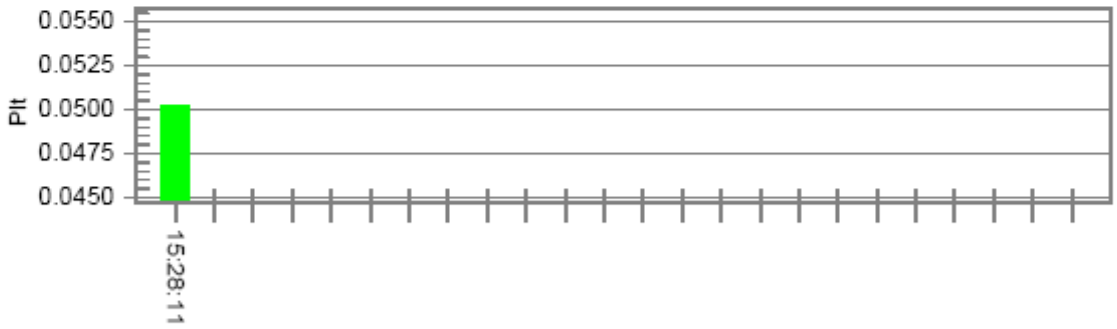
EUT: Mini-300 Tested by: Fans Lee
Test category: dt,dmax,dc and Pst (European limits) Test Margin: 100
Test date: 2016/11/2
Test duration (min): 10 Data file name: CTSMXL_F-000201.cts_data
Comment: Full Load

Test Result: Pass Status: Test Completed

Pst_i and limit line European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	230.07			
Highest dt (%):	0.00	Test limit (%):	N/A	N/A
T-max (mS):	0.0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.05	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.115	Test limit:	1.000	Pass

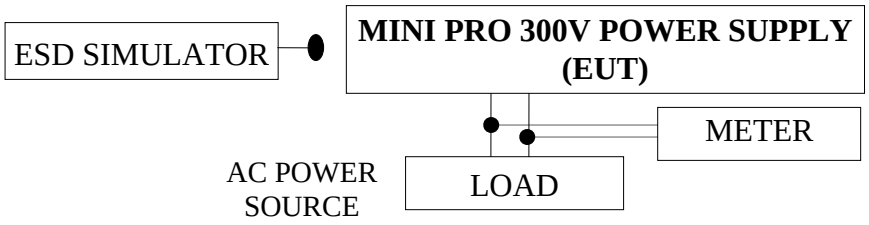
7. ELECTROSTATIC DISCHARGE IMMUNITY TEST

7.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	ESD Simulator	EM TEST	dito	V0503100055	2016. 04. 22	1 Year

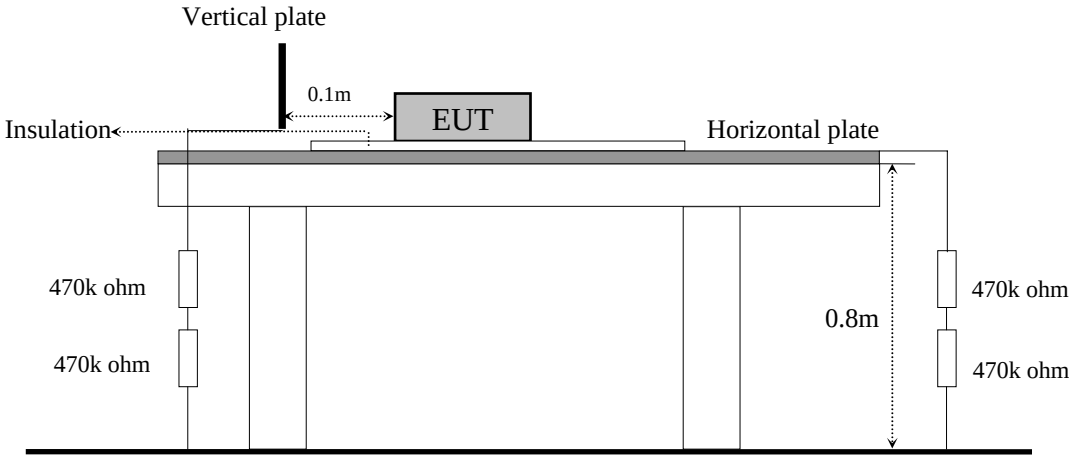
7.2. Block Diagram of Test Setup

7.2.1. Test Setup Diagram (1)



● : AIR/CONTACT DISCHARGE

7.2.2. Test Setup Diagram (2)



Ground Plane

7.3. Test Standard

EN 61326-1:2013 & EN 61326-2-2:2013
【IEC 61000-4-2:2008, Severity Level: Contact: ±4kV, Air: ±8kV】

7.4. Test Levels and Performance Criterion

7.4.1. Test 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

7.4.2. Performance criterion：**B**

7.5. Operating Condition of EUT

Same as conducted measurement which is listed in 4.4 except the test set up replaced by section 7.2.

7.6. Test Procedure

7.6.1. 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.

7.6.2. Contact Discharge：

All the procedure shall be same as 7.6.1. except that the tip of the discharge electrode shall touch the EUT conductive surfaces & repeated 25 discharges each at positive and negative polarity for each test point before the discharge switch is operated.

7.6.3. 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.

7.6.4. 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.

7.7. Test Results

PASSED. (Complied with Criterion A)

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

The details are as follows：

Mode	DC Fan
1.	MB40101V2-0000-A99

Electrostatic Discharge Immunity Test Results

AUDIX TECHNOLOGY CORPORATION

Applicant： Major Science Co., Ltd.	Test Date： 2016. 11. 04
EUT：Mini Pro 300V Power Supply, M/N Mini-300	Temperature： 23 ℃
Power Supply： AC 230V, 50Hz	Humidity： 46 %
Working Condition： See section 4.4.	Atmospheric pressure： 101kpa
Engineer： Jason Chou	Test Modes: See Section 7.6.

Air Discharge	**Voltage kV Level / Discharge per polarity 10 / Result**						
Test Location	+2	-2	+4	-4	+8	-8	**Comments**
Hole (1-4)	ND	ND	ND	ND	A	A	
Button (5-10)	ND	ND	ND	ND	ND	ND	
Screen (11)	ND	ND	ND	ND	ND	ND	
LED (12)	ND	ND	ND	ND	ND	ND	
AC In (13)	ND	ND	ND	ND	ND	ND	
Switch (14)	ND	ND	ND	ND	ND	ND	
Contact Discharge	**Voltage kV Level / Discharge per polarity 10 / Result**						
Test Location	+2	-2	+4	-4			**Comments**
Screw (15-16)	A	A	A	A			
Metal (17)	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.

8. RF FIELD STRENGTH IMMUNITY TEST

8.1. Test Equipment

8.1.1. For 80MHz-1000MHz

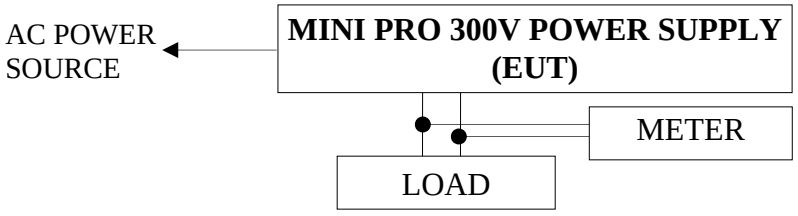
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Radiated Immunity System	TESEQ	ITS 6006	033009	2016. 09. 21	1 Year
2.	Power Amplifier	TESEQ	CBA 1G-275	T44214	N.C.R.	N.C.R.
3.	Power Meter	TESEQ	PM 6006	073364	2016. 09. 21	1 Year
4.	Power Antenna	Schwarzbeck	STLP 9128 E	9128E084	N.C.R.	N.C.R.
5.	Direction Coupler	WERLATONE	C5982-10	98618	2016. 08. 11	1 Year

8.1.2. For 1.4GHz-2.7GHz

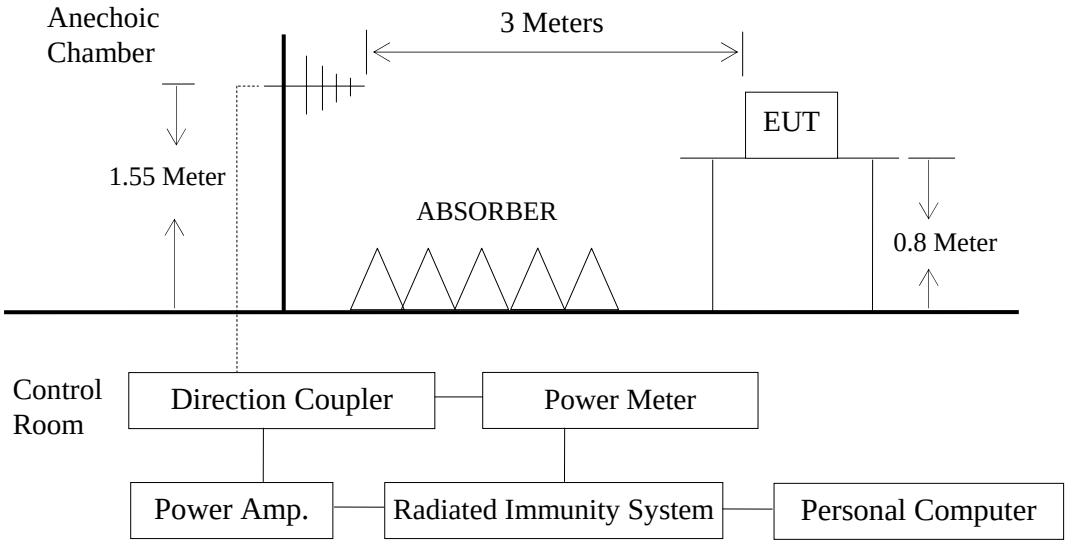
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Radiated Immunity System	TESEQ	ITS 6006	033009	2016. 09. 21	1 Year
2.	Power Amplifier	TESEQ	CBA 3G-050	T44215	N.C.R.	NCR
3.	Power Meter	TESEQ	PM 6006	07363	2016. 09. 21	1 Year
4.	Power Antenna	Schwarzbeck	STLP 9149	9149-185	N.C.R.	NCR
5.	Direction Coupler	WERLATONE	C5982-10	98619	2016. 08. 11	1 Year

8.2. Block Diagram of Test Setup

8.2.1. Test Setup Diagram



8.2.2. R/S Test Setup



8.3. Test Standard

EN 61326-1:2013 & EN 61326-2-2:2013
【IEC 61000-4-3:2010, Severity Level：80-1000MHz: 3V/m Field Strength, 1.4GHz-2.0GHz: 3V/m Field Strength, 2.0GHz-2.7GHz: 1V/m Field Strength; 80% AM (1kHz)】

8.4. Test Levels and Performance Criterion

8.4.1. Severity levels

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

8.4.2. Performance criterion：**A**

8.5. Operating Condition of EUT

Same as conducted measurement which is listed in 4.4. except the test set up replaced by section 8.2.

8.6. 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 (3V/m or 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.

8.7. Test Results

PASSED. (Complied with Criterion A)

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

The details are as follows：

Mode	DC Fan
1.	MB40101V2-0000-A99

RF Field Strength Immunity Test Results

AUDIX TECHNOLOGY CORPORATION

Applicant： Major Science Co., Ltd.	Test Date： 2016. 11. 04
EUT：Mini Pro 300V Power Supply, M/N Mini-300	Temperature： 25 ℃
Power Supply： AC 230V, 50Hz	Humidity： 45 %
Working Condition： See Section 4.4.	Engineer： Sam Yan

Frequency Range (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/M)	Test Results
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.

9. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

9.1. Test Equipment

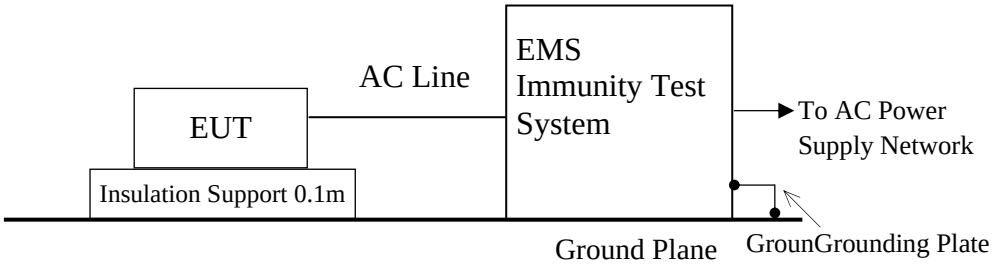
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	EMS Immunity Test System	TESEQ	NSG 3060	1519	2016. 07. 26	1 Year
2.	C.D.N	TESEQ	CDN 3063	2074	2016. 07. 26	1 Year

9.2. Block Diagram of Test Setup

9.2.1. Block Diagram of connection between EUT and simulators.

Same as Section 8.2.1.

9.2.2. EFT Test Setup



9.3. Test Standard

EN 61326-1:2013 & EN 61326-2-2:2013
【IEC 61000-4-4:2012, Severity Level : AC Power Port - ±1kV, Repetition Rate: 5kHz】

9.4. Test Levels and Performance Criterion

9.4.1. Severity levels

Open circuit output test voltage and repetition rate of the impulses				
Level	On power port, PE		On I/O (input/output) signal, data and control ports	
	Voltage peak kV	Repetition rate kHz	Voltage peak kV	Repetition rate kHz
1.	0.5	5 or 100	0.25	5 or 100
2.	1	5 or 100	0.5	5 or 100
3.	2	5 or 100	1	5 or 100
4.	4	5 or 100	2	5 or 100
X[a]	Special	Special	Special	Special
Note 1 : Use of 5kHz repetition rates is traditional; however, 100kHz is closer to reality. Product committees should determine which frequencies are relevant for specific products or product types. Note 2 : With some products, there may be no clear distinction between power ports and I/O ports, in which case it is up to product committees to make this determination for test purposes.				
[a] "X" is an open level. The level has to be specified in the dedicated equipment specification.				

9.4.2. Performance criterion：**B**

9.5. Operating Condition of EUT

Same as conducted measurement which is listed in 4.4. except the test set up replaced by section 9.2.

9.6. Test Procedure

The EUT was placed and insulated from ground plane which was a min. 1m*1m metallic sheet with 0.65mm minimum thickness. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

9.6.1. For input and output AC power ports：

The EUT was connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines, and the length of the power line between the coupling device and the EUT shall be 1m or less. Both polarities of the test voltage should be applied during compliance test and the duration of the test can‘t less than 1min.

9.6.2. For signal lines and control lines ports：

No interface cables. It‘s unnecessary to measure.

9.6.3. For DC input and DC output power ports：

No DC ports. It‘s unnecessary to measure.

9.7. Test Results

PASSED. (Complied with Criterion A)

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

The details are as follows：

Mode	DC Fan
1.	MB40101V2-0000-A99

Electrical Fast Transient/Burst Immunity Test Results

AUDIX TECHNOLOGY CORPORATION

Applicant： Major Science Co., Ltd.	Test Date： 2016. 11. 03
EUT： Mini Pro 300V Power Supply, M/N Mini-300	Temperature： 25 ℃
Power Supply： AC 230V, 50Hz	Humidity： 52 %
Working Condition： See Section 4.4.	Engineer： MinXaing Yang

Inject Place: Power Supply Line					Inject Place : I/O Cable				
Inject Line	Voltage kV	Inject Time(s)	Inject Method	Results	Inject Line	Voltage kV	Inject Time(s)	Inject Method	Results
L	+0.5 ; 1	60	Direct	**Pass, A**					
L	−0.5 ; 1	60	Direct	**Pass, A**					
N	+0.5 ; 1	60	Direct	**Pass, A**					
N	−0.5 ; 1	60	Direct	**Pass, A**					
PE	+0.5 ; 1	60	Direct	**Pass, A**					
PE	−0.5 ; 1	60	Direct	**Pass, A**					
L, N, PE	+0.5 ; 1	60	Direct	**Pass, A**					
L, N, PE	−0.5 ; 1	60	Direct	**Pass, A**					

Remark: No error occurred.

10. SURGE IMMUNITY TEST

10.1. Test Equipment

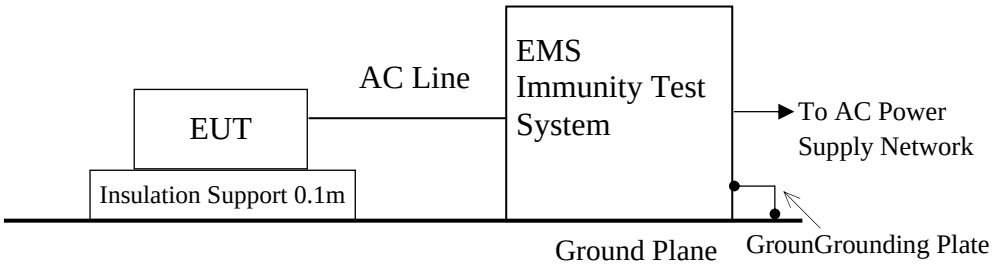
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	EMS Immunity Test System	TESEQ	NSG 3060	1519	2016. 07. 26	1 Year
2.	C.D.N	TESEQ	CDN 3063	2074	2016. 07. 26	1 Year

10.2. Block Diagram of Test Setup

10.2.1. Block Diagram of connection between EUT and simulators.

Same as Section 8.2.1.

10.2.2. Test Setup



10.3. Test Standard

EN 61326-1:2013 & EN 61326-2-2:2013

【IEC 61000-4-5:2014, Severity Level: line to line - ± 0.5kV, line to earth - ± 1kV, 1.2/50 (8/20) Tr/Thμs.】

10.4. Test Levels and Performance Criterion

10.4.1. Severity Levels

Level	Open-circuit test Voltage +/- 10%, kV
1.	0.5
2.	1.0
3.	2.0
4.	4.0
X	Special

10.4.2. Performance Criterion：**B**

10.5. Operating Condition of EUT

Same as conducted measurement which is listed in 4.4. except the test set up replaced by section 10.2.

10.6. Test Procedure

10.6.1. Set up the EUT and test generator as shown on section 10.2.

10.6.2. For line to line coupling mode, provided a 0.5kV 1.2/50μs current surge (at open-circuit condition) and 8/20μs current surge to EUT selected points.

10.6.3. At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate were conducted during test.

10.6.4. Different phase angles were done individually.

10.6.5. Repeat procedures 10.6.2 to 10.6.4 except the open-circuit test voltage change from 0.5kV/1kV for line to earth coupling mode test.

10.6.6. Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

10.7. Test Results

PASSED. (Complied with Criterion A)

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

The details are as follows：

Mode	DC Fan
1.	MB40101V2-0000-A99

Surge Immunity Test Results

AUDIX TECHNOLOGY CORPORATION

Applicant： Major Science Co., Ltd.	Test Date： 2016. 11. 03
EUT： Mini Pro 300V Power Supply, M/N Mini-300	Temperature： 25 ℃
Power Supply： AC 230V, 50Hz	Humidity： 52 %
Working Condition： See Section 4.4.	Engineer： MinXaing Yang

Input And Output AC Power Port

Location	Polarity	Phase Angle	No of Pulse	Pulse Voltage (kV)	Results
L-N	+	0	5	0.5kV	**Pass, A**
	+	90	5	0.5kV	**Pass, A**
	+	180	5	0.5kV	**Pass, A**
	+	270	5	0.5kV	**Pass, A**
	-	0	5	0.5kV	**Pass, A**
	-	90	5	0.5kV	**Pass, A**
	-	180	5	0.5kV	**Pass, A**
	-	270	5	0.5kV	**Pass, A**
L-PE	+	0	5	0.5kV, 1kV	**Pass, A**
	+	90	5	0.5kV, 1kV	**Pass, A**
	+	180	5	0.5kV, 1kV	**Pass, A**
	+	270	5	0.5kV, 1kV	**Pass, A**
	-	0	5	0.5kV, 1kV	**Pass, A**
	-	90	5	0.5kV, 1kV	**Pass, A**
	-	180	5	0.5kV, 1kV	**Pass, A**
	-	270	5	0.5kV, 1kV	**Pass, A**
N-PE	+	0	5	0.5kV, 1kV	**Pass, A**
	+	90	5	0.5kV, 1kV	**Pass, A**
	+	180	5	0.5kV, 1kV	**Pass, A**
	+	270	5	0.5kV, 1kV	**Pass, A**
	-	0	5	0.5kV, 1kV	**Pass, A**
	-	90	5	0.5kV, 1kV	**Pass, A**
	-	180	5	0.5kV, 1kV	**Pass, A**
	-	270	5	0.5kV, 1kV	**Pass, A**

Remark: No error occurred.

11. CONDUCTED DISTURBANCE IMMUNITY TEST

11.1. Test Equipment

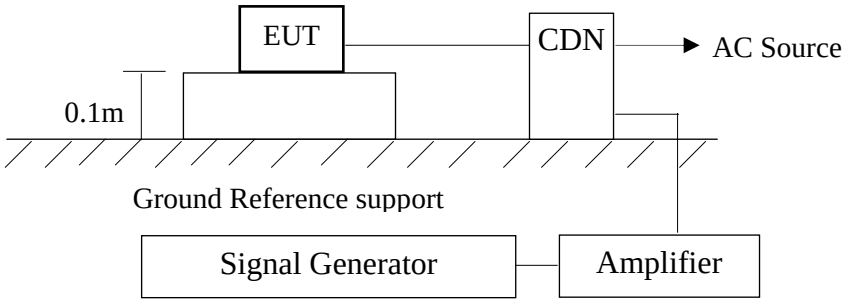
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Signal Generator	R&S	SMC100A	101402	2016. 05. 04	1 Year
2.	Power Amplifier	A/R	100A250A	0330351	N.C.R.	N.C.R.
3.	CDN	Fischer	FCC-801-M3-25A	9961	2016. 03. 07	1 Year

11.2. Block Diagram of Test Setup

11.2.1. Block Diagram of connection between EUT and simulators.

Same as Section 8.2.1.

11.2.2. Test Setup



11.3. Test Standard

EN 61326-1:2013 & EN 61326-2-2:2013
【IEC 61000-4-6:2013, Severity Level**:** 0.15-80MHz, 3V, 80%AM (1kHz)】

11.4. Test Levels and Performance Criterion

11.4.1. Severity levels

Frequency range 0.15MHz - 80MHz		
Level	Voltage level (e.m.f.)	
	U_0 dB(μV)	U_0 V
1.	120	1
2.	130	3
3.	140	10
X[a]	Special	
[a] X is an open level.		

11.4.2. Performance criterion：**A**

11.5. Operating Condition of EUT

Same as conducted measurement which is listed in 4.4. except the test set up replaced by section 11.2.

11.6. Test Procedure

11.6.1. Set up the EUT, CDN and test generators as shown on section 11.2.

11.6.2. The EUT was placed and insulated from ground plane. CDN (coupling and decoupling device) was placed on the ground plane making direct contact with it at about 0.1-0.3m from EUT. Cables between CDN and EUT were as short as possible.

11.6.3. The disturbance signal described below was injected to EUT through CDN.

11.6.4. The EUT operates within its operational mode(s) under intended climatic conditions after power on.

11.6.5. The frequency range was swept from 150kHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sinewave.

11.6.6. The rate of sweep shall not exceed 1.5*10^3decades/s. Where the frequency was swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

11.6.7. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

11.7. Test Results

PASSED. (Complied with Criterion A)

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

The details are as follows：

Mode	DC Fan
1.	MB40101V2-0000-A99

Conducted Disturbance Immunity Test Results

AUDIX TECHNOLOGY CORPORATION

Applicant： Major Science Co., Ltd.	Test Date： 2016. 11. 03
EUT： Mini Pro 300V Power Supply, M/N Mini-300	Temperature： 22 ℃
Power Supply： AC 230V, 50Hz	Humidity： 49 %
Working Condition： See Section 4.4.	Engineer： Xar Zhuo

Frequency Range (MHz)	Injected Position	Strength	Results
0.15MHz ~ 80MHz	Main (AC Power Line)	3V(rms) Modulated	**Pass, A**

Remark : 1. No error occurred.
2. Modulation Signal**:**1kHz 80% AM.

12. POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST

12.1. Test Equipment

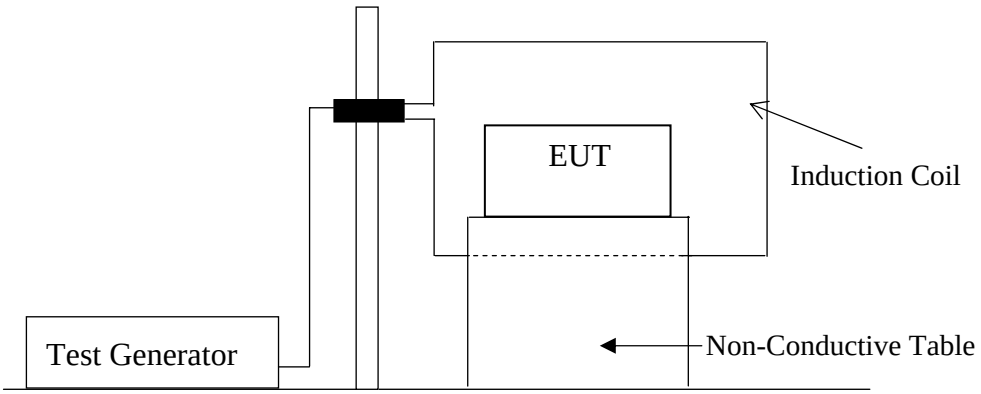
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Magnetic Field Tester	Narda S.T.S. / PMM	PMM1008	0100X30101	2015. 11. 19	1 Year

12.2. Block Diagram of Test Setup

12.2.1. Block Diagram of connection between EUT and simulators.

Same as Section 8.2.1.

12.2.2. Test Setup



12.3. Test Standard

EN 61326-1:2013 & EN 61326-2-2:2013
【IEC 61000-4-8:2009, Test Level：50/60Hz, 3A/m (r.m.s.)】

12.4. Severity Levels and Performance Criterion

12.4.1. Severity level

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

12.4.2. Performance criterion：**A**

12.5. Operating Condition of EUT

Same as conducted measurement which is listed in 4.4. except the test set up replaced by section 12.2.

12.6. 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.

12.7. Test Results

PASSED. (Complied with Criterion A)
The EUT with following test mode was measured during this section testing and all the test results are attached in next page.

The details are as follows：

Mode	DC Fan
1.	MB40101V2-0000-A99

Power Frequency Magnetic Field Immunity Test Results

AUDIX TECHNOLOGY CORPORATION

Applicant： *Major Science Co., Ltd.*	*Test Date：* *2016. 11. 02*
EUT： *Mini Pro 300V Power Supply, M/N Mini-300*	*Temperature：* *23* *℃*
Power Supply： *AC 230V, 50Hz*	*Humidity：* *46* *%*
Working Condition： *See Section 4.4.*	*Engineer：* *Fans Lee*

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

Remark: No error occurred.

13. VOLTAGE DIPS IMMUNITY TEST

13.1. Test Equipment

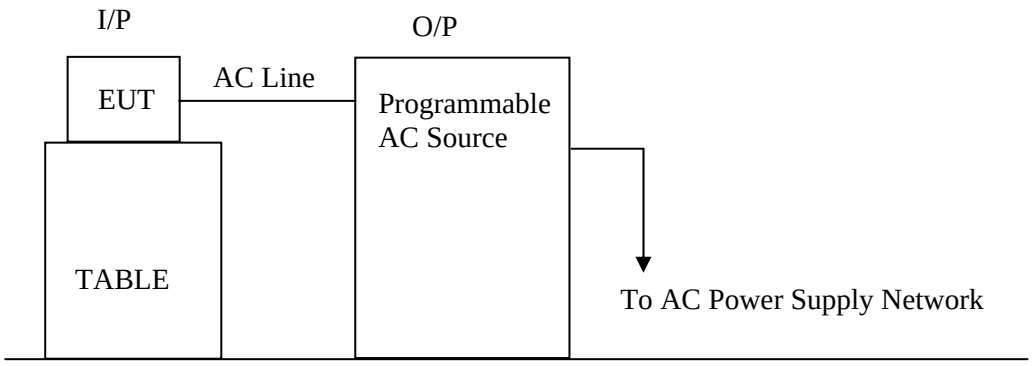
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	AC Power Source	TESEQ	NSG1007	1248A04038	2016. 01. 29	2 Years

13.2. Block Diagram of Test Setup

13.2.1. Block Diagram of connection between EUT and simulators.

Same as Section 8.2.1.

13.2.2. Test Setup



13.3. Test Standard

EN 61326-1:2013 & EN 61326-2-2:2013

【IEC 61000-4-11:2004, Severity Level: Voltage dips : 0% reduction, 0.5 period; 0% reduction, 1 period; 70% reduction, 25/30 period; Short interruptions : 0% reduction , 250/300 period】

13.4. Test Levels and Performance Criterion

13.4.1. Preferred severity levels and durations for voltage dips

Class[a]	**Test level and durations for voltage dips (t_s) (50Hz/60Hz)**				
Class 1	Case-by-case according to the equipment requirements				
Class 2	0% during ½ cycle	0% during 1 cycle	70% during 25/30[c] cycles		
Class 3	0% during ½ cycle	0% during 1 cycle	40% during 10/12[c] cycles	70% during 25/30[c] cycles	80% during 250/300[c] cycles
Class X[b]	X	X	X	X	X

[a] Classes as per IEC 61000-2-4.
[b] To be defined by product committee. For equipment connected directly or indirectly to the public network, the levels must not be less severe than Class 2.
[c] "25/30 cycles" means "25 cycles for 50Hz test" and "30 cycles for 60Hz test".

13.4.2. Preferred severity levels and durations for short interruptions

Class[a]	**Test level and durations for short interruptions (t_s) (50Hz/60Hz)**
Class 1	Case-by-case according to the equipment requirements
Class 2	0% during 250/300[c] cycles
Class 3	80% during 250/300[c] cycles
Class X[b]	X

[a] Classes as per IEC 61000-2-4.
[b] To be defined by product committee. For equipment connected directly or indirectly to the public network, the levels must not be less severe than Class 2.
[c] "250/300 cycles" means "250 cycles for 50Hz test" and "300 cycles for 60Hz test".

13.4.3. Performance criterion:

1) Voltage dips 0% reduction, 0.5 period performance criterion **B.**

2) Voltage dips 0% reduction, 1 period performance criterion **B.**

3) Voltage dips 70% reduction, 25/30 period performance criterion **C.**

4) Short interruption 0% reduction, 250/300 performance criterion **C.**

13.5. Operating Condition of EUT

Same as conducted measurement which is listed in 4.4. except the test set up replaced by section 13.2.

13.6. Test Procedure

13.6.1. Set up the EUT and test generator as shown on section 13.2.

13.6.2. The interruptions was introduced at selected phase angles with specified duration. There was a 10s minimum interval between each test event.

13.6.3. After each test a full functional check was performed before the next test.

13.6.4. Repeat procedures 13.6.2. & 13.6.3. for voltage dips, only the test level and duration was changed.

13.6.5. Record any degradation of Compliance.

13.7. Test Results

PASSED. (Complied with Criterion C in Voltage Interruption & Criterion A in Voltage Dips)

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

The details are as follows：

Mode	DC Fan
1.	MB40101V2-0000-A99

Voltage Dips And Interruptions Immunity Test Results

AUDIX TECHNOLOGY CORPORATION

Applicant： Major Science Co., Ltd.	Test Date： 2016. 11. 02
EUT： Mini Pro 300V Power Supply, M/N Mini-300	Temperature： 25 ℃
Power Supply： AC 100-240V~, 50-60Hz	Humidity： 41 %
Working Condition： See Section 4.4.	Engineer： Fans Lee

Single Test Voltage

Type of Test	Test Voltage	Phase Angle	% Reduction	Period		Test Results & Performance Criterion
				50Hz	60Hz	
Voltage Dips	100/240	0	0 %	0.5	0.5	**Pass, A**
		45	0 %	0.5	0.5	**Pass, A**
		90	0 %	0.5	0.5	**Pass, A**
		135	0 %	0.5	0.5	**Pass, A**
		180	0 %	0.5	0.5	**Pass, A**
		225	0 %	0.5	0.5	**Pass, A**
		270	0 %	0.5	0.5	**Pass, A**
		315	0 %	0.5	0.5	**Pass, A**
	100/240	0	0 %	1	1	**Pass, A**
		45	0 %	1	1	**Pass, A**
		90	0 %	1	1	**Pass, A**
		135	0 %	1	1	**Pass, A**
		180	0 %	1	1	**Pass, A**
		225	0 %	1	1	**Pass, A**
		270	0 %	1	1	**Pass, A**
		315	0 %	1	1	**Pass, A**
	100/240	0	70 %	25	30	**Pass, A**
		45	70 %	25	30	**Pass, A**
		90	70 %	25	30	**Pass, A**
		135	70 %	25	30	**Pass, A**
		180	70 %	25	30	**Pass, A**
		225	70 %	25	30	**Pass, A**
		270	70 %	25	30	**Pass, A**
		315	70 %	25	30	**Pass, A**
Short Interruptions	100/240	0	0 %	250	300	**Pass, C, Note**
		45	0 %	250	300	**Pass, C, Note**
		90	0 %	250	300	**Pass, C, Note**
		135	0 %	250	300	**Pass, C, Note**
		180	0 %	250	300	**Pass, C, Note**
		225	0 %	250	300	**Pass, C, Note**
		270	0 %	250	300	**Pass, C, Note**
		315	0 %	250	300	**Pass, C, Note**

Note : Performance Criterion C, The EUT was “power failure” during the voltage interruption >95%reduction test. It can be restored by the operation of the controls by the user in accordance with the manufacturer’s instruction after test.

14. 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	±5.5dB
	6GHz-18GHz, 3m	±4.8dB
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%

15. PHOTOGRAPHS

15.1. Photos of Conducted Disturbance Measurement



FRONT VIEW OF CONDUCTED MEASUREMENT

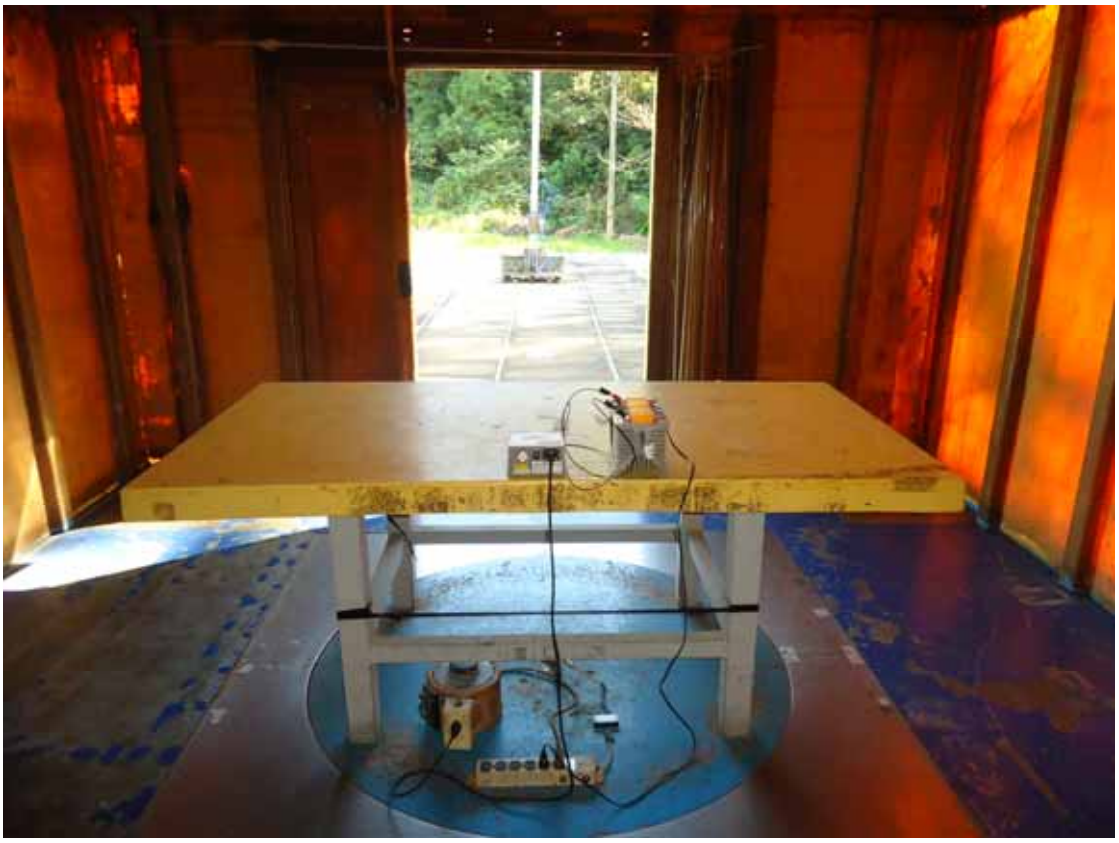


BACK VIEW OF CONDUCTED MEASUREMENT

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



FRONT VIEW OF RADIATED MEASUREMENT



BACK VIEW OF RADIATED MEASUREMENT

15.3.Photo of Harmonic & Flicker Measurement



15.4. Photos of Electrostatic Discharge Immunity Test

Contact Discharge & Air Discharge Test



VCP & HCP Discharge

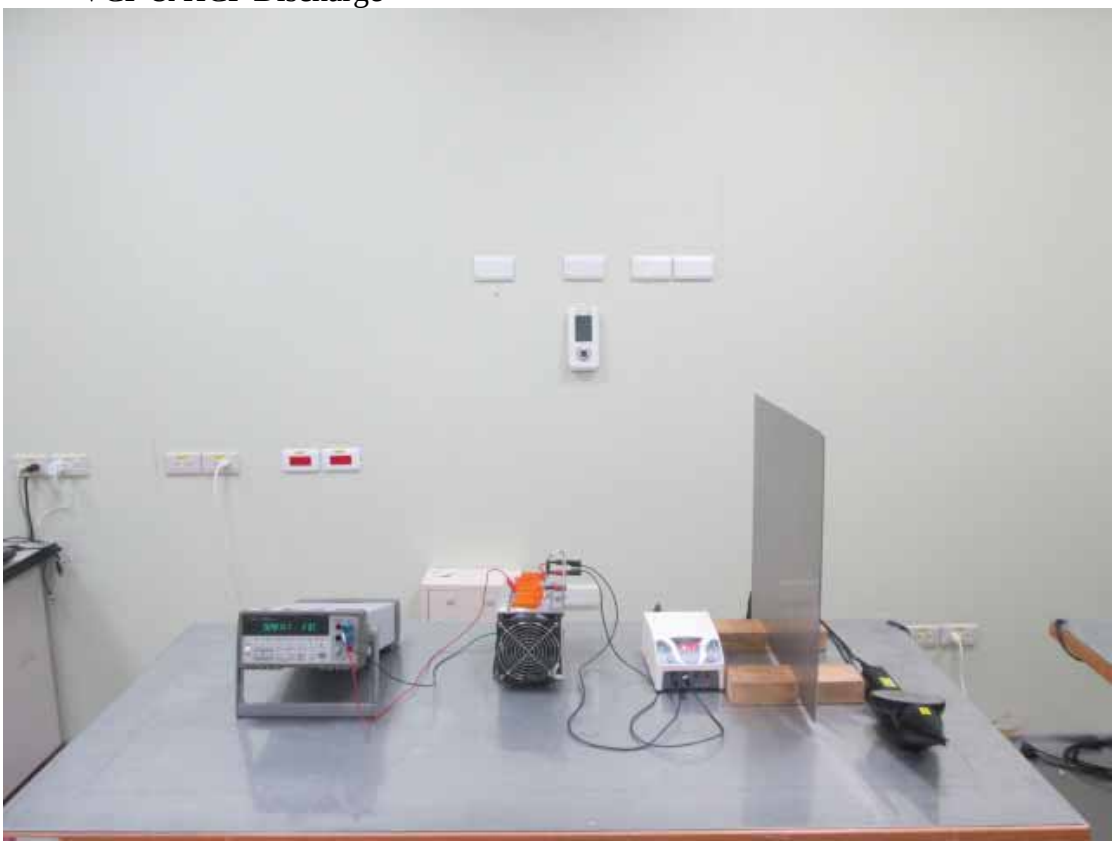


Photo of ESD Test Points (Front View)



Photo of ESD Test Points (Top View)

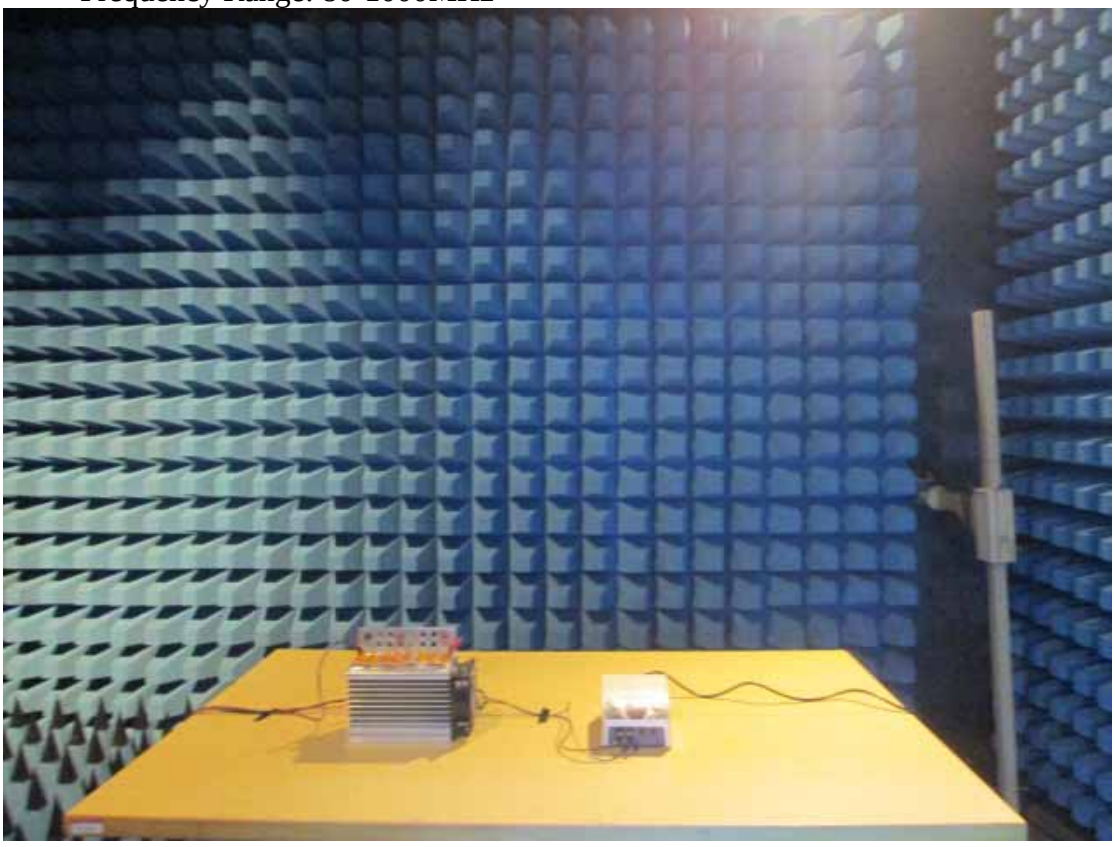


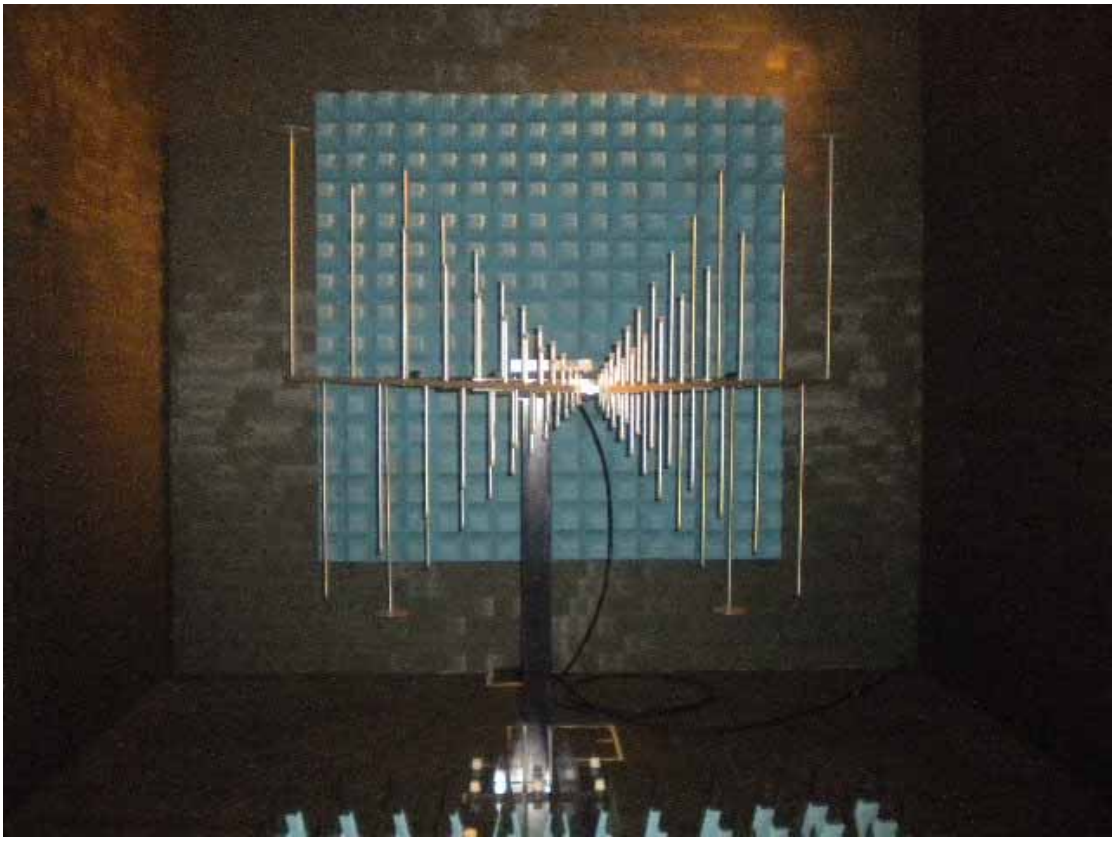
Photo of ESD Test Points (Back View)



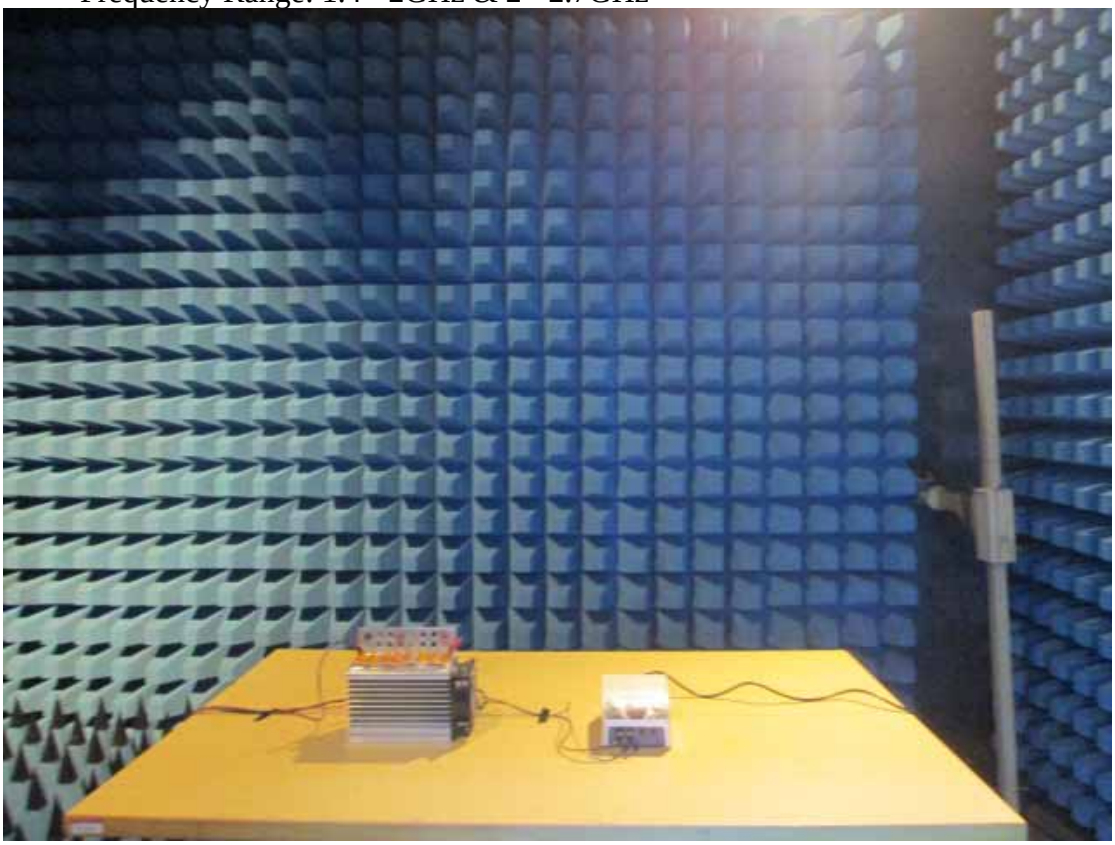
15.5. Photos of RF Field Strength Immunity Test

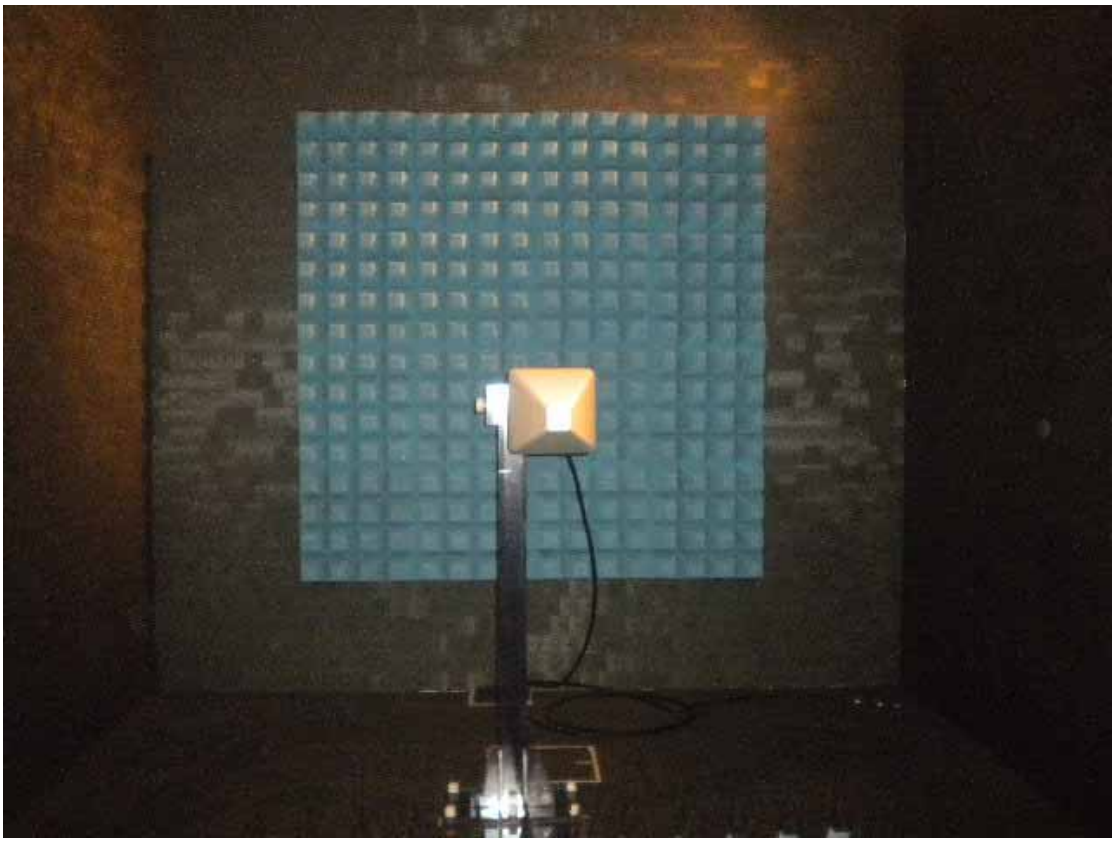
Frequency Range: 80-1000MHz



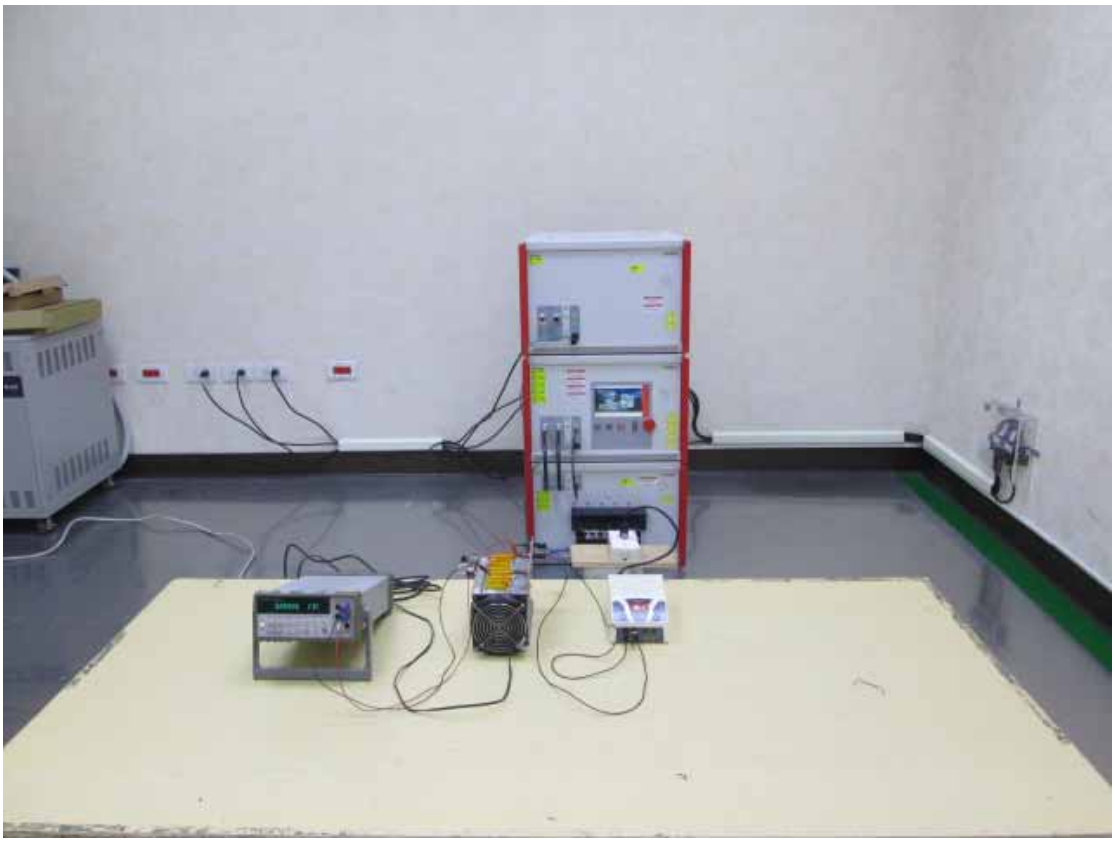


Frequency Range: 1.4 - 2GHz & 2 - 2.7GHz





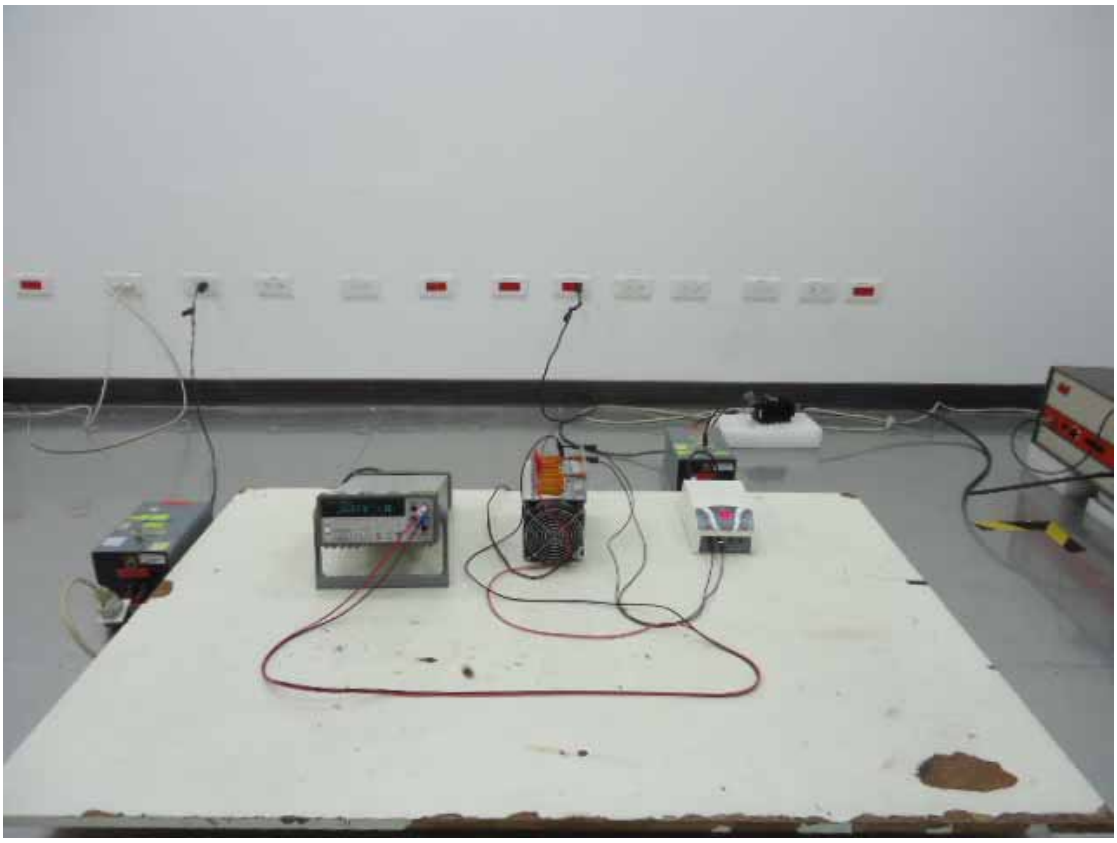
15.6.Photo of Electrical Fast Transient/Burst Immunity Test



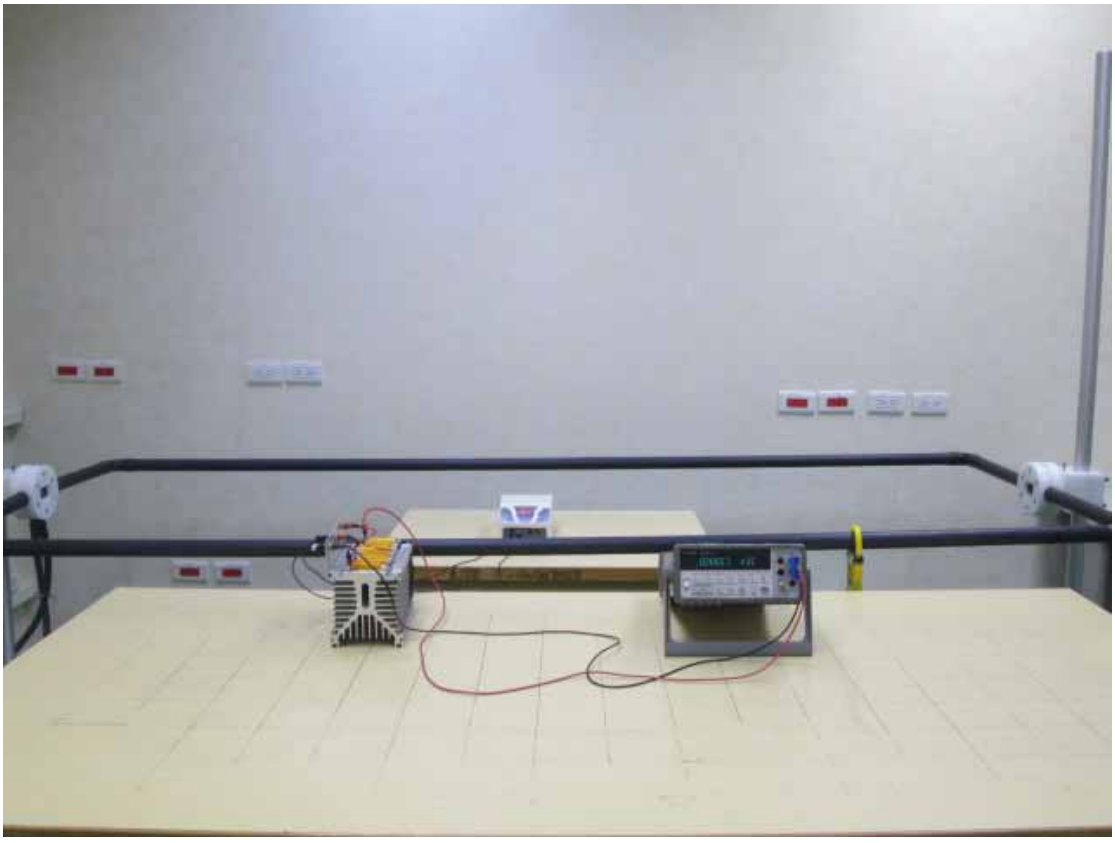
15.7.Photo of Surge Immunity Test



15.8.Photo of Conducted Disturbance Immunity Test



15.9.Photo of Power Frequency Magnetic Field Immunity Test



15.10.Photo of Voltage Dips & Short Interruptions Immunity Test



APPENDIX I

(Photos of EUT)

Total Pages: 1 Page

Figure 1
Internal View (CPU_Display Board/Front & Back View)

