

Technical Compliance Statement

Test Report

For the following information

Ref. File No.: C1M1705068

Product	LCD Monitor
Model Name	(1)PA243W (2)PA243W-BK
Brand Name	NEC
Applicant	Compal Electronics, Inc.
Manufacturer	COMPAL DISPLAY ELECTRONICS (KUNSHAN) CO.,LTD
Test Report Number	EM-E170547
Rules and Standards	EN 55032:2012 +AC:2013 EN 61000-3-2:2014 and EN 61000-3-3:2013 EN 55024:2010 +A1:2015 (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 and results are issued on the EMC test report no. **EM-E170547**.

Signature


Ben Cheng/Manager
Date: 2017. 05. 18

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



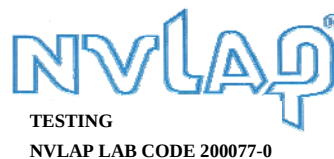
The statement is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.

TEST REPORT

Product: LCD Monitor
Model No.: (1)PA243W (2)PA243W-BK
Brand: NEC

Applicant:
Compal Electronics, Inc.
No. 581, Ruiguang Rd., Neihu District,
Taipei City 11492, Taiwan

Prepared by:
AUDIX Technology Corporation, EMC Department
No. 53-11, Dingfu, Linkou Dist.,
New Taipei City 244, Taiwan



File No. : C1M1705068
Report No. : EM-E170547
Date of Report : 2017. 05. 18

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. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Test Report

Applicant : Compal Electronics, Inc.
Manufacturer : COMPAL DISPLAY ELECTRONICS (KUNSHAN) CO.,LTD.

EUT Description

(1) Product : LCD Monitor
(2) Model No. : (1)PA243W (2)PA243W-BK
(3) Brand : NEC
(4) Power Supply : AC 100-240V, 50/60Hz

Applicable Standards:

EN 55032:2012 +AC:2013

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

EN 55024:2010 +A1:2015

(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 55032 、 EN 61000-3-2, -3 and EN 55024 standards.

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

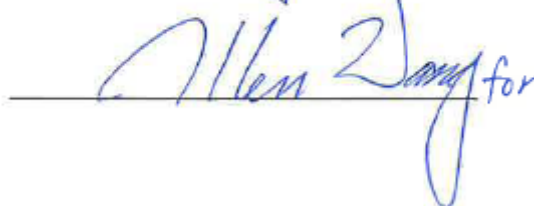
Date of Report: 2017. 05. 18

Reviewed by:



(Kitty Ni/Administrator)

Approved by:



(Ben Cheng/Manager)

Table of Content

1. Revision of Test Report	6
2. Summary of Test Result	7
2.1. Test Result	7
2.2. Description of Performance Criteria.....	9
2.3. Description of Test Firm	10
3. General Information	11
3.1. Description of Application	11
3.2. Description of the EUT	12
3.3. List of Key Components of EUT	13
3.4. Highest Frequency within EUT	13
3.5. Determination of Worse Case Operating Modes	14
3.6. Final Test Configuration	15
4. Measurement Arrangement	16
4.1. Equipment and cables arrangement.....	16
4.2. Method of Exercising EUT	18
4.3. List of Supported Units under Test	19
4.4. List of Used Cables under Test	20
5. Measurement of Conducted Emissions.....	21
5.1. List of Test Instruments	21
5.2. Test Setup	22
5.3. Applicable Limits.....	23
5.4. Measurement Procedure	24
5.5. Measurement Result	28
6. Measurement of Radiated Emissions	30
6.1. List of Test Instruments	30
6.2. Test Setup	31
6.3. Applicable Limits.....	32
6.4. Measurement Procedure	33
6.5. Measurement Result	34
7. Measurement of Harmonics Current Emissions.....	38
7.1. List of Test Instruments	38
7.2. Test Setup	38
7.3. Applicable Standard and Limits	39
7.4. Measurement Procedure	39
7.5. Measurement Result	40
8. Measurement of Voltage Fluctuations and Flicker Emissions	42
8.1. List of Test Instruments	42
8.2. Test Setup	42
8.3. Applicable Standard and Limits	43
8.4. Measurement Procedure	43

8.5. Measurement Result	44
9. Electrostatic Discharge Immunity Test	45
9.1. List of Test Instruments	45
9.2. Test Setup	45
9.3. Applicable Standard and Test Specification	45
9.4. Measurement Procedure	46
9.5. Test Result	47
10. Radiated, Radio-frequency, Electromagnetic Field Immunity Test.....	48
10.1. List of Test Instruments	48
10.2. Test Setup	48
10.3. Applicable Standard and Test Specification	49
10.4. Measurement Procedure	49
10.5. Test Result	50
11. Electrical fast transient/burst Immunity Test.....	51
11.1. List of Test Instruments	51
11.2. Test Setup	51
11.3. Applicable Standard and Test Specification	51
11.4. Measurement Procedure	52
11.5. Test Result	53
12. Surge Immunity Test	54
12.1. List of Test Instruments	54
12.2. Test Setup	54
12.3. Applicable Standard and Test Specification	55
12.4. Measurement Procedure	55
12.5. Test Result	56
13. Immunity to Conducted Disturbances, Induced by Radio-Frequency Field Immunity Test.....	57
13.1. List of Test Instruments	57
13.2. Test Setup	57
13.3. Applicable Standard and Test Specification	58
13.4. Measurement Procedure	58
13.5. Test Result	59
14. Power Frequency Magnetic Field Immunity Test.....	60
14.1. List of Test Instruments	60
14.2. Test Setup	60
14.3. Applicable Standard and Test Specification	60
14.4. Measurement Procedure	61
14.5. Test Result	62
15. Voltage Dips and Interruptions Immunity Test	63
15.1. List of Test Instruments	63
15.2. Test Setup	63
15.3. Applicable Standard and Test Specification	63
15.4. Measurement Procedure	64
15.5. Test Result	65

16. Measurement Uncertainty List	66
17. Photographs	69
17.1. Conducted Emissions Measurement	69
17.2. Radiated Emissions Measurement	70
17.3. Harmonics Current Measurement.....	72
17.4. Voltage Fluctuation and Flicks Measurement.....	72
17.5. Electrostatic Discharge Immunity Test	73
17.6. Radiated, Radio-Frequency, Electromagnetic Field Immunity Test	77
17.7. Electrical Fast Transient/Burst Immunity Test	78
17.8. Surge Immunity Test	78
17.9. Immunity to Conducted Disturbances Induced by RF Fields	79
17.10. Power Frequency Magnetic Field Immunity Test	79
17.11. Voltage Dips and Interruptions Immunity Test.....	80

APPENDIX I (Photos of EUT)

1. Revision of Test Report

Issued Date	Revision Summary	Report Number
2017. 05. 18	Original Report.	EM-E170547

2. Summary of Test Result

2.1. Test Result

Emissions			
Test Item	Referred Standard	Limit	Result
Conducted emissions at AC mains power port	EN 55032:2012 +AC:2013 (CISPR 32:2012)	Class B	Pass
			Margin 3.39dB at 16.312MHz
Asymmetric mode conducted emissions at wired network port	EN 55032:2012 +AC:2013 (CISPR 32:2012)	Class B	N/A
Asymmetric mode conducted emissions at broadcast receiver tuner port	EN 55032:2012 +AC:2013 (CISPR 32:2012)	Class B	N/A
Conducted differential voltage emissions at broadcast receiver tuner port	EN 55032:2012 +AC:2013 (CISPR 32:2012)	Class B	N/A
Radiated emissions (30 – 1000MHz)	EN 55032:2012 +AC:2013 (CISPR 32:2012)	Class B	Pass
			Margin 6.85dB at 741.01MHz
Radiated emissions (1 – 6GHz)	EN 55032:2012 +AC:2013 (CISPR 32:2012)	Class B	Pass
			Margin 11.84dB at 1915.94MHz
Harmonic current emissions	EN 61000-3-2:2014	Class D	Pass
Voltage fluctuations & flicker	EN 61000-3-3:2013	Section 5	Pass
Note : 1. N/A is an abbreviation for Not Applicable. 2. Special measures None 3. Decision and justification not to measure None			

Immunity				
Test Item	Basic Standard	Standard Criteria	EUT Criteria	Result
Electrostatic discharge	IEC 61000-4-2:2008	B	A	Pass
Radiated, Radio-frequency, electromagnetic field	IEC 61000-4-3:2010	A	A	Pass
Electrical fast transient/burst	IEC 61000-4-4:2012	B	A	Pass
Surge at AC power port	IEC 61000-4-5:2014	B	A	Pass
Surge at Telecommunication port	IEC 61000-4-5:2014	C	N/A	N/A
Immunity to conducted disturbances, induced by radio-frequency fields	IEC 61000-4-6:2013	A	A	Pass
Power frequency magnetic field	IEC 61000-4-8:2009	A	A	Pass
Voltage dips, >95% reduction	IEC 61000-4-11:2004	B	A	Pass
Voltage dips, 30% reduction		C	A	Pass
Voltage interruptions, >95% reduction		C	B	Pass
Note : 1. N/A is an abbreviation for Not Applicable 2. Special measures: None 3. Decision and justification not to measure: None				

2.2. Description of Performance Criteria

Performance criterion A

During the test, when seen from the normal viewing distance, the EUT shall operate with no change beyond the manufacturer's specification, in flicker, colour, focus and jitter (except for the power frequency magnetic field test).

Power frequency magnetic field test

For CRT monitors, the following also applies:

The jitter shall be measured when the CRT monitor is immersed in a continuous magnetic field of 1 A/m (r.m.s.) at one of the power frequencies of 50 Hz or 60 Hz.

For displays with pixels having continuous luminance distributions only, jitter may be measured using a measuring microscope of at least 20 power. The movement is determined by visual alignment of the microscope cursor or comparator reticle with the extreme positions of the centroid or edge of a character or test object during the observation period.

For any display type, a special display-measuring device may be used. This device shall determine, on a scan-by-scan basis, the relative location of a character or test object. If a device is used that determines movement along the horizontal and vertical axes only, the extent of the jitter shall be defined as the square root of the sum of the squares of the maximum horizontal and vertical differences.

Observations shall extend for periods of at least 4 s. Measuring devices that sample scans shall accumulate a number of scans equivalent to at least 4 s of continuous observation.

The maximum jitter permitted is given by:

$$J \leq \frac{(C + 0,3) \times 2,5}{33,3}$$

where

J is the jitter (in mm);

C is the character height (in mm).

Alternatively, a field of 50 A/m may be applied, and a transparent graduated mask used to assess the jitter. In this case, the jitter shall not exceed 50 times the value in the above formula.

The EUT shall be tested in two positions, both perpendicular to the magnetic field.

Performance criterion B

Screen disturbances during the application of the test are permissible if they self-recover after removal of the external disturbance.

Performance criterion C

Failures during the test that cannot self-recover after removal of the external disturbance, but which can be recovered after the test to normal operation by reset or reboot are permissible.

2.3. Description of Test Firm

Name of Test Firm	Audix Technology Corporation / EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan Tel: +886-2-26092133 Fax: +886-2-26099301 Website : www.audixtech.com Contact e-mail: sales@audixtech.com
Accreditations	The laboratory is accredited by following organizations under ISO/IEC 17025:2005 (1) NVLAP(USA) NVLAP Lab Code 200077-0 (2) TAF(Taiwan) No. 1724
Test Facilities	(1) No. 8 Shielding Room (2) No. 1 10m Semi-Anechoic Chamber (3) No. 2 EMS Test Room (4) No. 3 EMS Test Room

3. General Information

3.1. Description of Application

Applicant	Compal Electronics, Inc. No. 581, Ruiguang Rd., Neihu District, Taipei City 11492, Taiwan
Manufacturer	COMPAL DISPLAY ELECTRONICS (KUNSHAN) CO., LTD. No. 1881 Liji Road Shipai Bacheng Town, Kunshan, Jiangsu, P.R.China
Product	LCD Monitor
Brand	NEC
Model No.	(1)PA243W (2)PA243W-BK The difference of above models is in sales area.

3.2. Description of the EUT

Test Model	PA243W
Serial Number	N/A
Power Rating	AC 100-240V~ 50/60Hz
Firmware Version	N/A
Sample Status	Production
Date of Receipt	2017. 05. 03
Data of Test	2017. 05. 09 ~ 17
I/O Ports List	Back View: • Two USB-downstream ports • Two USB-upstream ports • One DVI port • One HDMI port • One DP port • One D-Sub port • One Earphone port • One Audio in port • One AC In port Side View: • One USB-downstream port
Accessories	• DP Cable • USB 3.0 Cable • Mini DP-DP Cable • AC Power Cord (3C)

3.3. List of Key Components of EUT

Item	Supplier/Brand	Model	Specification
LCD Panel	LG Display	LM240WU9	Max. Resolution: 1920*1200/60Hz
Power Board	Compal	VP-2327	---
Key Board	Compal	VK-3003	---
Sensor Board	Compal	VS-2327	---
Main Board	Comapl	VL-2327	---

3.4. Highest Frequency within EUT

The highest frequency is above 108MHz of EUT.

3.5. Determination of Worse Case Operating Modes

According to the specification, the EUT was estimated to determine the highest emissions by following configurations:

Test Item	Test Voltage	Panel Angle	Input Port	Resolution & Frequency
Conducted emissions at AC mains power port	AC 230V/50Hz	Horizontal (0°)	D-Sub	640*480/60Hz
				1280*1024/75Hz
				1920*1200/60Hz
			DVI	1920*1200/60Hz
			HDMI	1920*1200/60Hz
			DP	1920*1200/60Hz
			Mini DP-DP	1920*1200/60Hz
	AC 110V/60Hz	Vertical (90°)	D-Sub	1200*1920/60Hz
		Horizontal (0°)	D-Sub	1920*1200/60Hz
Radiated emission (30 – 1000MHz)	AC 230V/50Hz	Horizontal (0°)	D-Sub	1920*1200/60Hz
			DVI	1920*1200/60Hz
			HDMI	640*480/60Hz
				1280*1024/75Hz
				1920*1200/60Hz
			DP	1920*1200/60Hz
			Mini DP-DP	1920*1200/60Hz
	AC 110V/60Hz	Vertical (90°)	HDMI	1200*1920/60Hz
		Horizontal (0°)	HDMI	1920*1200/60Hz
Radiated emission (1 – 6GHz)	AC 230V/50Hz	Horizontal (0°)	HDMI	1920*1200/60Hz
	AC 110V/60Hz	Horizontal (0°)	HDMI	1920*1200/60Hz
Harmonics current emission	AC 230V/50Hz	Horizontal (0°)	HDMI	1920*1200/60Hz
Voltage fluctuations & flicker	AC 230V/50Hz	Horizontal (0°)	HDMI	1920*1200/60Hz
Electrostatic discharge & Radiated, Radio-frequency, electromagnetic field	AC 230V/50Hz	Horizontal (0°)	D-Sub	1920*1200/60Hz
			DVI	1920*1200/60Hz
			HDMI	1920*1200/60Hz
			DP	1920*1200/60Hz
			Mini DP-DP	1920*1200/60Hz
		Vertical (90°)	HDMI	1200*1920/60Hz
Other Immunity tests	AC 230V/50Hz	Horizontal (0°)	HDMI	1920*1200/60Hz

3.6. Final Test Configuration

The final showed as following configuration was tested and recorded in the report.

Test Item	Test Voltage	Panel Angle	Input Port	Resolution & Frequency
Conducted emissions at AC mains power port	AC 230V/50Hz	Horizontal (0°)	D-Sub	1920*1200/60Hz
Radiated emission (30 – 1000MHz)	AC 230V/50Hz	Horizontal (0°)	HDMI	1920*1200/60Hz
Radiated emission (1 – 6GHz)	AC 230V/50Hz	Horizontal (0°)	HDMI	1920*1200/60Hz
Harmonics current emission	AC 230V/50Hz	Horizontal (0°)	HDMI	1920*1200/60Hz
Voltage fluctuations & flicker	AC 230V/50Hz	Horizontal (0°)	HDMI	1920*1200/60Hz
All Immunity tests	AC 230V/50Hz	Horizontal (0°)	HDMI	1920*1200/60Hz

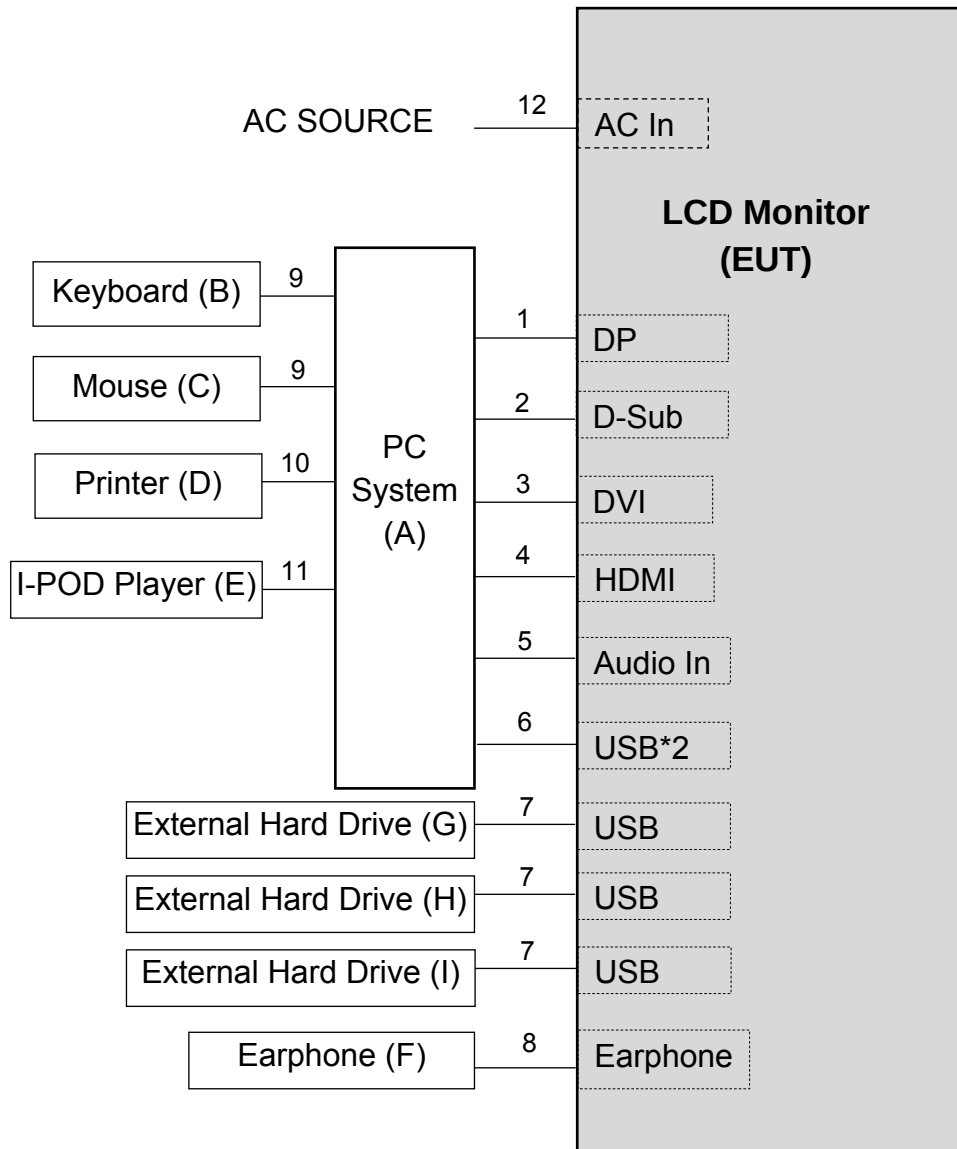
4. Measurement Arrangement

4.1. Equipment and cables arrangement

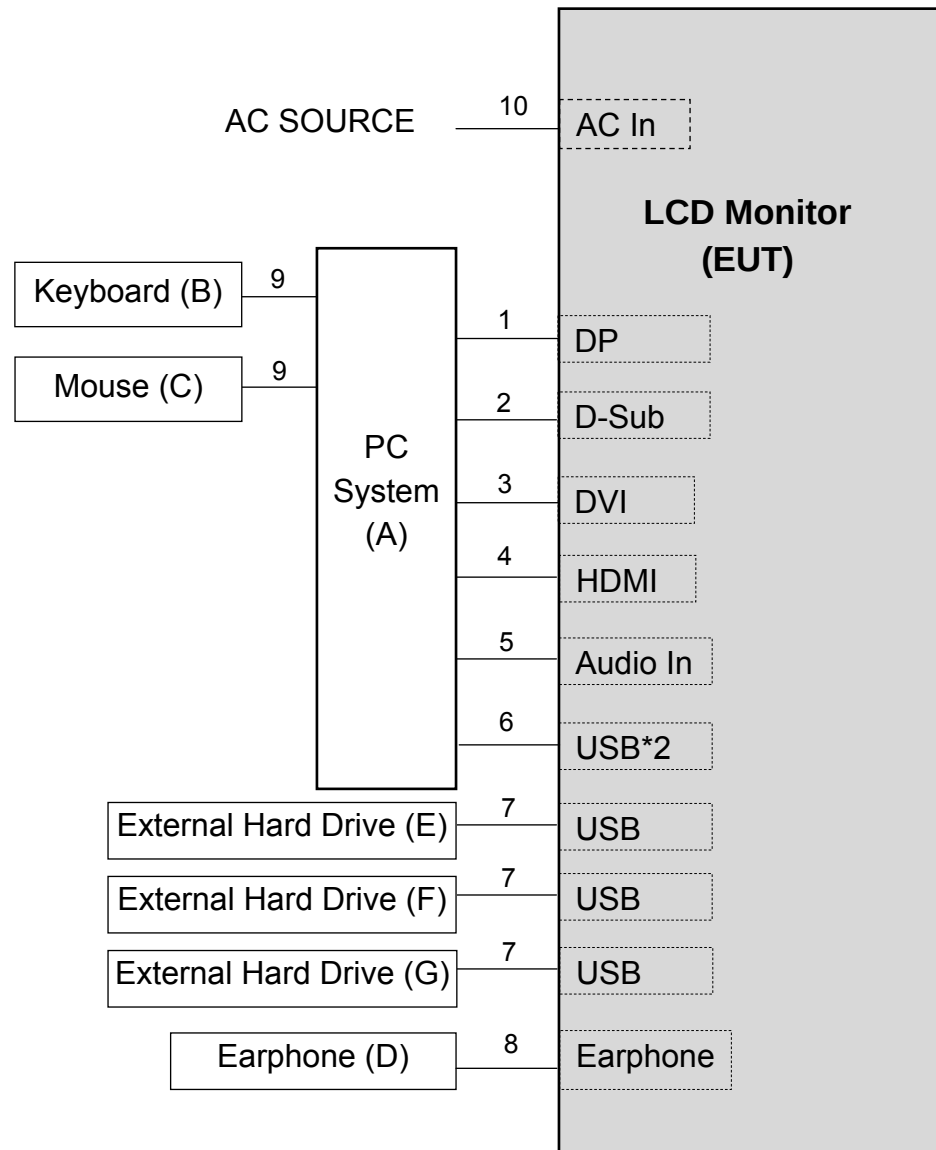
- Connection Diagram of EUT and Peripheral Devices

For conducted and radiated test

The EUT and peripherals were arranged as the requirement of CISPR 32 Annex D.



- Connection Diagram of EUT and Peripheral Devices
For harmonics, flicker and immunity test



4.2. Method of Exercising EUT

The methods for exercising the EUT during the measurement specified in EN 55032 (CISPR 32) Annex B were used.

Operating System	Windows 7 of PC system
Test Program	"ITU-R BT 1729", "IBM Test pat 32", "Windows Media Player"
Video Signal (Display Image)	Standard Color bars with moving picture element
Audio controller	Play 1kHz audio signal
USB Signal	Read/Write operation to External Hard Drive
Other	Other peripheral devices were driven and operated in turn

The methods for exercising the EUT during the measurement specified in EN 55024 were used.

Operating System	Windows 7 of PC system
Test Program	"IBM Test pat 32", "Windows Media Player"
Video Signal (Display Image)	Scrolling H characters
Audio controller	Play 1kHz audio signal
USB Signal	Read/Write operation to External Hard Drive
Other	Other peripheral devices were driven and operated in turn

Display and video parameters

Function	Setting
Hardware acceleration	Maximum
Screen settings	High/Middle/Low effective resolution (including the settings for pixel and frame rate)
Colour quality	Highest colour bit depth
Brightness, contrast, colour saturation	Use either the factory default settings or typical settings
Other	Adjusted to obtain a typical picture using settings giving the highest performance

4.3. List of Supported Units under Test

Item	Product	Brand	Model No.	Serial No.	Approval
For conducted and radiated test					
A	PC System	Lenovo	RK4	PBFK914	By DoC
B	USB Keyboard	Lenovo	KU-0225	3630	By DoC
C	USB Mouse	Lenovo	45J4886	N/A	By DoC
D	Printer	HP	Deskjet 2000	CN25N13K36	By DoC
E	I-POD Player	APPLE	A1204	4H722TNUVTE	By DoC
F	Earphone	LGITON	FS-99	N/A	N/A
G	External Hard Drive#1	SONY	HD-E1	3GDL0T155151C22	By DoC
H	External Hard Drive#2	SONY	HD-E1	3GDL0T1551514AA	By DoC
I	External Hard Drive#3	SONY	HD-E1	3GDL0T155151FFA	By DoC
For harmonic 、 flicker and immunity test					
A	PC System	Lenovo	RK4	PBFK914	By DoC
B	USB Keyboard	Lenovo	KU-0225	3630	By DoC
C	USB Mouse	Lenovo	45J4886	N/A	By DoC
D	Earphone	LGITON	FS-99	N/A	N/A
E	External Hard Drive#1	SONY	HD-E1	3GDL0T155151C22	By DoC
F	External Hard Drive#2	SONY	HD-E1	3GDL0T1551514AA	By DoC
G	External Hard Drive#3	SONY	HD-E1	3GDL0T155151FFA	By DoC

4.4. List of Used Cables under Test

Item	Type	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remark
For conducted and radiated test						
1	DP Cable	1	1.8	Yes	0	Accessory of EUT
	Mini DP-DP Cable	1	2.0	Yes	0	Accessory of EUT
2	D-Sub Cable	1	1.8	Yes	2	Provided by LAB
3	DVI Cable	1	1.8	Yes	2	Provided by LAB
4	HDMI Cable	1	1.8	Yes	0	Provided by LAB
5	Audio Cable	1	1.8	Yes	0	Provided by LAB
6	USB Cable	1	1.8	Yes	0	Accessory of EUT
	USB Cable	1	1.8	Yes	0	Provided by LAB
7	USB Cable	3	0.5	Yes	0	Provided by LAB
8	Earphone	1	1.1	No	0	Provided by LAB
9	USB Cable	2	1.8	Yes	0	Provided by LAB
10	USB Cable	1	1.5	Yes	0	Provided by LAB
11	USB Cable	1	1.0	Yes	0	Provided by LAB
12	AC Power Cord (3C)	1	1.8	No	0	Accessory of EUT
13	AC Power Cord	2	1.8	No	0	Provided by LAB for above supported units
For harmonic , flicker and immunity test						
1	DP Cable	1	1.8	Yes	0	Accessory of EUT
	Mini DP-DP Cable	1	2.0	Yes	0	Accessory of EUT
2	D-Sub Cable	1	1.8	Yes	2	Provided by LAB
3	DVI Cable	1	1.8	Yes	2	Provided by LAB
4	HDMI Cable	1	1.8	Yes	0	Provided by LAB
5	Audio Cable	1	1.8	Yes	0	Provided by LAB
6	USB Cable	1	1.8	Yes	0	Accessory of EUT
	USB Cable	1	1.8	Yes	0	Provided by LAB
7	USB Cable	3	0.5	Yes	0	Provided by LAB
8	Earphone	1	1.1	No	0	Provided by LAB
9	USB Cable	2	1.8	Yes	0	Provided by LAB
10	AC Power Cord (3C)	1	1.8	No	0	Accessory of EUT
11	AC Power Cord	1	1.8	No	0	Provided by LAB for above supported units

5. Measurement of Conducted Emissions

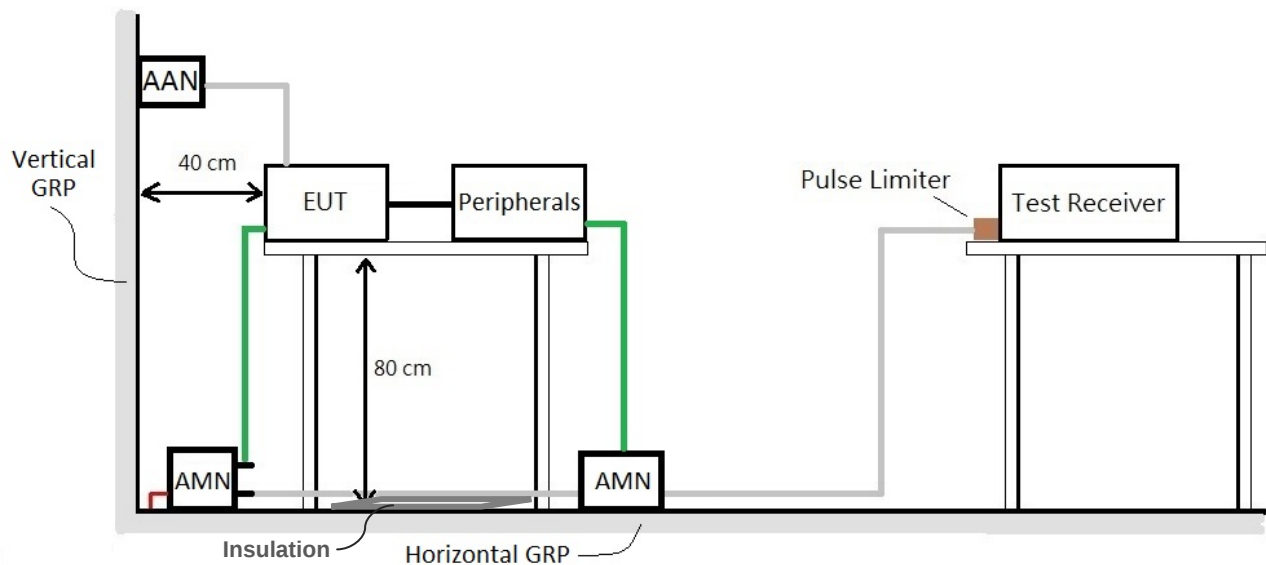
5.1. List of Test Instruments

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Test Receiver	R&S	ESR3	101774	2017. 02. 07	1 Year
2	A.M.N.	R&S	ENV4200	100169	2016. 11. 11	1 Year
3	L.I.S.N.	Kyoritsu	KNW-407	8-855-9	2016. 12. 23	1 Year
4	Pulse Limiter	R&S	ESH3-Z2	100354	2017. 01. 16	1 Year
5	Signal Cable	Yeida	RG/58AU	CE-08	2016. 10. 05	1 Year
6	Test Software	Audix	e3	V.6.120424	N.C.R.	N.C.R.

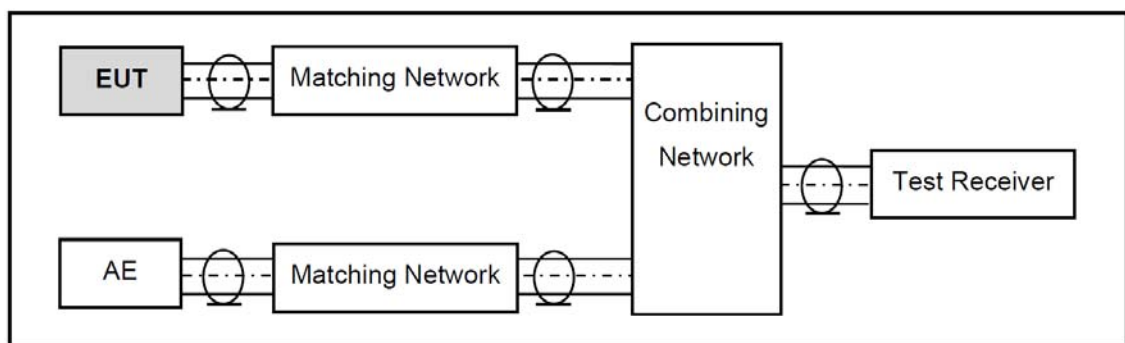
5.2. Test Setup

The EUTs and test equipment were configured in accordance with the requirement of EN 55032 (CISPR 32) Annex C, D:

- For AC mains power port
- For wired network port
- For TV broadcast receiver tuner port, asymmetric mode
- EUT, local AE and associated cabling; and metal surfaces other than the RGP $\geq 80\text{cm}$



- For TV broadcast receiver tuner port, differential voltage



5.3. Applicable Limits

- For conducted emissions from the AC mains power ports (Class B)

Frequency Range (MHz)	Quasi Peak dB(μ V)	Average dB(μ V)
0.15 – 0.50	66 – 56	56 – 46
0.50 – 5.0	56	46
5.0 – 30	60	50

- For asymmetric mode conducted emissions (Class B)

Applicable to:

- Wired network ports
- Optical fibre ports with metallic shield or tension members
- Broadcast receiver tuner ports
- Antenna ports

Frequency Range (MHz)	Voltage limits Quasi Peak dB(μ V)	Voltage limits Average dB(μ V)
0.15 – 0.50	84 – 74	74 – 64
0.50 – 30	74	64

- For conducted differential voltage emissions (Class B)

Applicable to:

- TV broadcast receiver tuner ports with an accessible connector
- RF modulator output ports
- FM broadcast receiver tuner ports with an accessible connector

Frequency Range (MHz)	Limits, dB(μ V) 75 Ω		
	Other	Local Oscillator Fundamental	Local Oscillator Harmonics
30 – 950	46	46	46
950 – 2150	46	54	54

Note:

- The measurement shall cover the entire frequency range.
- Testing is required at only one EUT supply voltage and frequency.
- Applicable to ports listed above and intended to connect to cables longer than 3 m (for asymmetric mode conducted emissions).

5.4. Measurement Procedure

For AC mains power port

The measurement procedure specified in EN 55032 (CISPR 32) clause 6.3 was used.

- Setup the EUT and associated equipment described as clause 4.1, and they were located 40cm from the vertical conducting plane.
- Connect the EUT power cord to the main A.M.N and associated equipment to the second A.M.N. All ports of the A.M.N not connecting to the measuring equipment was terminated into 50 ohm resistive load.
- Connect receiver tuner port to an AAN that is bonded to the RGP.
- Setup the resolution bandwidth of the test receiver at 9kHz (while testing within 0.15 to 30MHz).
- Operate the EUT system as described in clause 4.2.
- For the exploratory measurement, determine the highest emission amplitude relative to the limit on each of the EUT power cord with the peak detector by each of the EUT operation over the specified frequency range and record it, and then
- For final measurement, select the EUT operation mode that produced the highest amplitude in the exploratory measurement to determine the highest emissions with each specified detector and record it. All of the current-carrying conductors of each of the EUT power cords, except the ground conductor, must be measured over the specified frequency range.
- The measurement result was calculated by following formula :
- Emission Level = Reading (Receiver) + Factor (A.M.N) + Insertion Loss (Pulse Limiter) + Cable Loss
- If the average limit is met when using a Quasi-Peak detector receiver, the EUT is deemed to meet both limits and measurement with the average detector is unnecessary.

For Wired network port

The method of EN 55032 (CISPR 32) Annex C 4.1.6.2 was used.

- Setup the EUT and associated equipment described as clause 4.1, and they were located 40cm from the vertical conducting plane.
- Connect wired network port between EUT and AE through the AAN.
- Setup the resolution bandwidth of the test receiver at 9kHz (while testing within 0.15 to 30MHz).
- Operate the EUT system as described in clause 4.2.
- For the exploratory measurement, determine the highest emission amplitude relative to the limit on each of the EUT LAN port with the peak detector by each of the transmission rate over the specified frequency range and record it, and then
- For final measurement, select the worst network port that produced the highest amplitude in the exploratory measurement to determine the highest emissions with each specified detector and record it. All of the transmission rates must be measured over the specified frequency range.
- The measurement result was calculated by following formula :
- Emission Level = Reading (Receiver) + Factor (AAN) + Insertion Loss (Pulse Limiter) + Cable Loss
- If the average limit is met when using a Quasi-Peak detector receiver, the EUT is deemed to meet both limits and measurement with the average detector is unnecessary.

For TV broadcast receiver tuner port, Asymmetric mode

The method of EN 55032 (CISPR 32) Annex C 4.1.6.2 was used.

- Setup the EUT and associated equipment described as clause 4.1, and they were located 40cm from the vertical conducting plane.
- Connect TV broadcast receiver tuner port between EUT and S.G. through the AAN.
- Setup the resolution bandwidth of the test receiver at 9kHz (while testing within 0.15 to 30MHz).
- Operate the EUT system as described in clause 4.2.
- For the exploratory measurement, determine the highest emission amplitude relative to the limit on TV broadcast receiver tuner port with the peak detector by the TV channel over the specified frequency range and record it, and then
- For final measurement, the TV channel that produced the highest amplitude in the exploratory measurement to determine the highest emissions with each specified detector and record it. All of the transmission rates must be measured over the specified frequency range.
- The measurement result was calculated by following formula:
Emission Level =
Reading (Receiver) + Factor (AAN) + Insertion Loss (Pulse Limiter) + Cable Loss
- If the average limit is met when using a Quasi-Peak detector receiver, the EUT is deemed to meet both limits and measurement with the average detector is unnecessary.

For TV broadcast receiver tuner port, Differential voltage

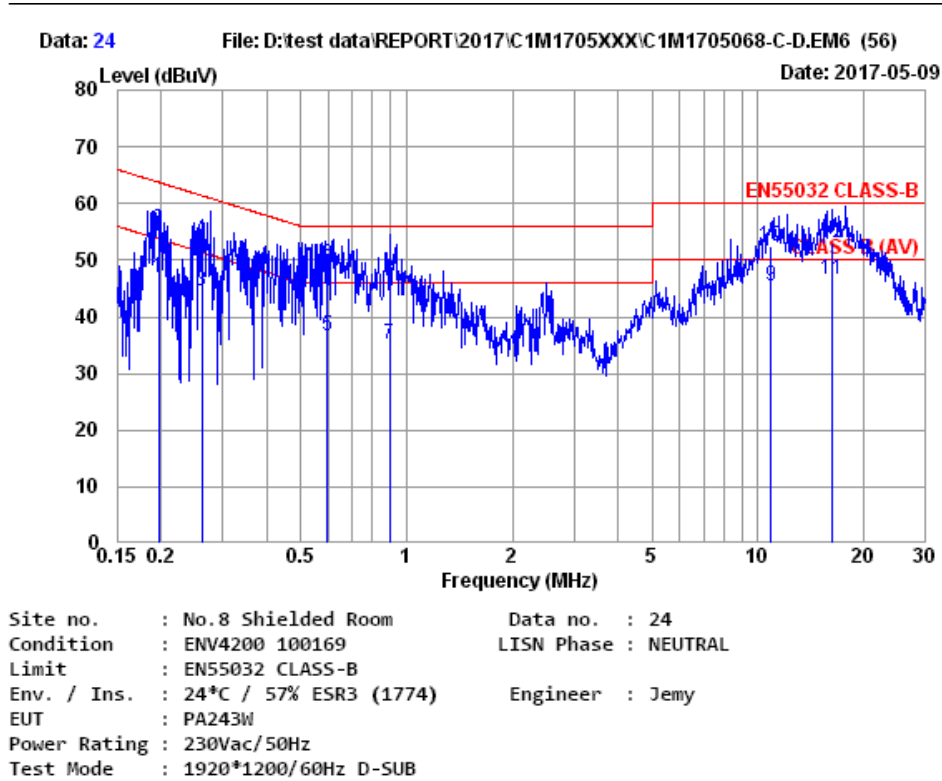
The method of EN 55032 (CISPR 32) Annex C 4.1.6.2 was used.

- The EUT and test equipment was set-up as section 4.1 and 5.2.
- The resolution bandwidth of the test receiver was at 120kHz (Quasi Peak) for frequencies below 1GHz or 1MHz (Peak) for frequencies above 1GHz.
- The antenna input terminal of EUT was connected to the test receiver via 75-50 ohm matching pad and T-Pad. The EUT and TV Pattern Generator or DVB-T signal card (inside PC system) were set to one of the same frequency (channel) specified in following test channel and frequency list, measuring both radiated frequency and disturbance voltage present at antenna input terminal over the frequency range from 30MHz up to at last the second harmonic of the highest local oscillator frequency (2150MHz).
- Record the final readings from test receiver with Quasi-Peak detector.
- The measurement result was calculated by following formula:
Measurement Level =
Factor (Matching Pad Loss + Cable Loss) + Test Receiver Reading

5.5. Measurement Result

● Result for AC Mains Power Port

Test Date	2017. 05. 09	Environment	24°C, 57%
Input Power	AC 230V, 50Hz	Result	Pass
Test Mode	D-Sub, 1920*1200/60Hz, 0°	Tested By	Jemy Wang

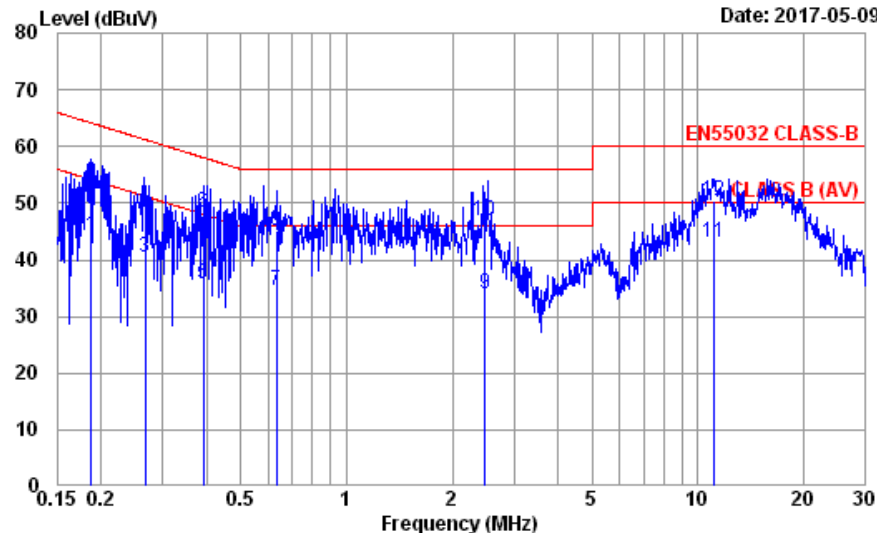


	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.197	11.30	0.03	9.86	25.59	46.78	53.74	6.96	Average
2	0.197	11.30	0.03	9.86	34.12	55.31	63.74	8.43	QP
3	0.261	11.20	0.03	9.86	23.55	44.64	51.39	6.75	Average
4	0.261	11.20	0.03	9.86	32.67	53.76	61.39	7.63	QP
5	0.594	11.04	0.05	9.86	15.82	36.77	46.00	9.23	Average
6	0.594	11.04	0.05	9.86	28.28	49.23	56.00	6.77	QP
7	0.895	11.03	0.06	9.86	14.29	35.24	46.00	10.76	Average
8	0.895	11.03	0.06	9.86	25.65	46.60	56.00	9.40	QP
9	10.905	12.40	0.20	9.88	22.91	45.39	50.00	4.61	Average
10	10.905	12.40	0.20	9.88	30.09	52.57	60.00	7.43	QP
11	16.312	13.66	0.24	9.91	22.80	46.61	50.00	3.39	Average
12	16.312	13.66	0.24	9.91	29.21	53.02	60.00	6.98	QP

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

Test Date	2017. 05. 09	Environment	24°C, 57%
Input Power	AC 230V, 50Hz	Result	Pass
Test Mode	D-Sub, 1920*1200/60Hz, 0°	Tested By	Jemy Wang

Data: 23 File: D:\test data\REPORT\2017\C1M1705XXX\C1M1705068-C-D.EM6 (56) Date: 2017-05-09



Site no. : No.8 Shielded Room Data no. : 23
 Condition : ENV4200 100169 LISN Phase : LINE
 Limit : EN55032 CLASS-B
 Env. / Ins. : 24°C / 57% ESR3 (1774) Engineer : Jemy
 EUT : PA243W
 Power Rating : 230Vac/50Hz
 Test Mode : 1920*1200/60Hz D-SUB

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.187	10.76	0.03	9.86	23.51	44.16	54.15	9.99	Average
2	0.187	10.76	0.03	9.86	32.96	53.61	64.15	10.54	QP
3	0.267	10.70	0.03	9.86	19.73	40.32	51.23	10.91	Average
4	0.267	10.70	0.03	9.86	28.85	49.44	61.23	11.79	QP
5	0.392	10.62	0.04	9.86	15.27	35.79	48.02	12.23	Average
6	0.392	10.62	0.04	9.86	27.90	48.42	58.02	9.60	QP
7	0.631	10.62	0.05	9.86	13.99	34.52	46.00	11.48	Average
8	0.631	10.62	0.05	9.86	24.73	45.26	56.00	10.74	QP
9	2.479	10.63	0.09	9.87	13.45	34.04	46.00	11.96	Average
10	2.479	10.63	0.09	9.87	26.27	46.86	56.00	9.14	QP
11	11.139	11.57	0.20	9.89	21.56	43.22	50.00	6.78	Average
12	11.139	11.57	0.20	9.89	28.61	50.27	60.00	9.73	QP

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

6. Measurement of Radiated Emissions

6.1. List of Test Instruments

- For measurement of 30 to 1000MHz frequency range

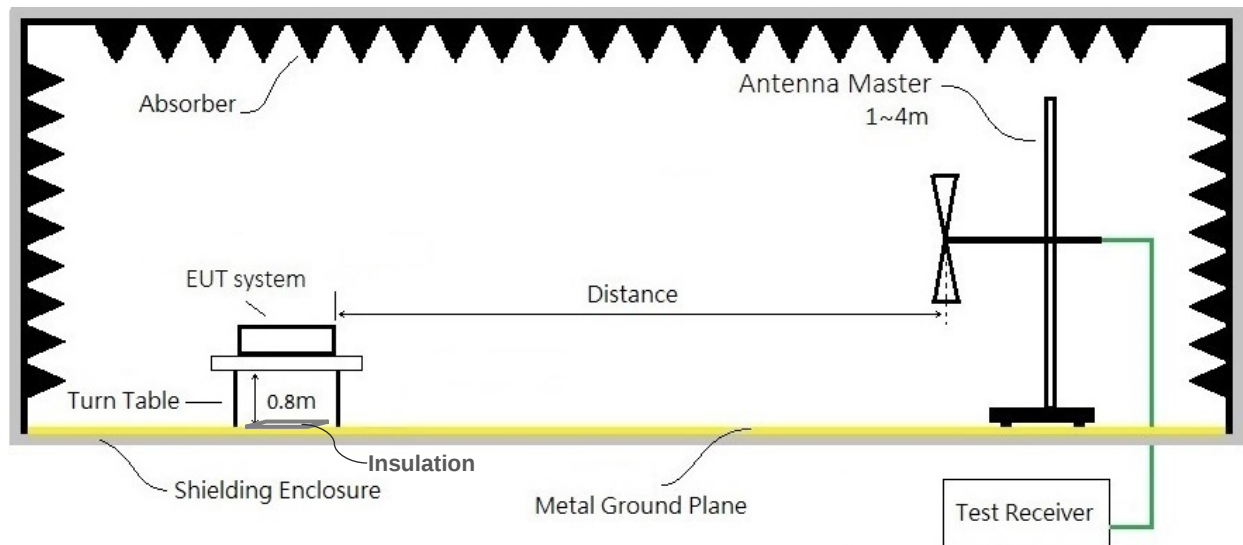
Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Spectrum Analyzer	Agilent	N9010A-503	MY51250850	2017. 03. 08	1 Year
2	Spectrum Analyzer	Agilent	N9010A-503	MY52220119	2016. 12. 21	1 Year
3	Test Receiver	R&S	ESCI	100557	2017. 03. 23	1 Year
4	Amplifier	Sonoma	310N	187158	2017. 03. 06	1 Year
5	Amplifier	Sonoma	310N	187159	2017. 03. 14	1 Year
6	Bilog Antenna	Schwarzbeck	VULB 9168	711	2016. 07. 20	1 Year
7	Bilog Antenna	Schwarzbeck	VULB 9168	712	2016. 07. 20	1 Year
8	Signal Cable	HUBER+SUHNER	S07212BD	10m ACC3CL (10mA)	2017. 02. 17	1 Year
9	Signal Cable	HUBER+SUHNER	S07212BD	10m ACC3CL (10mB)	2017. 02. 17	1 Year
10	Test Software	Audix	e3	V.6.1206197	N.C.R.	N.C.R.

- For measurement of above 1GHz frequency range

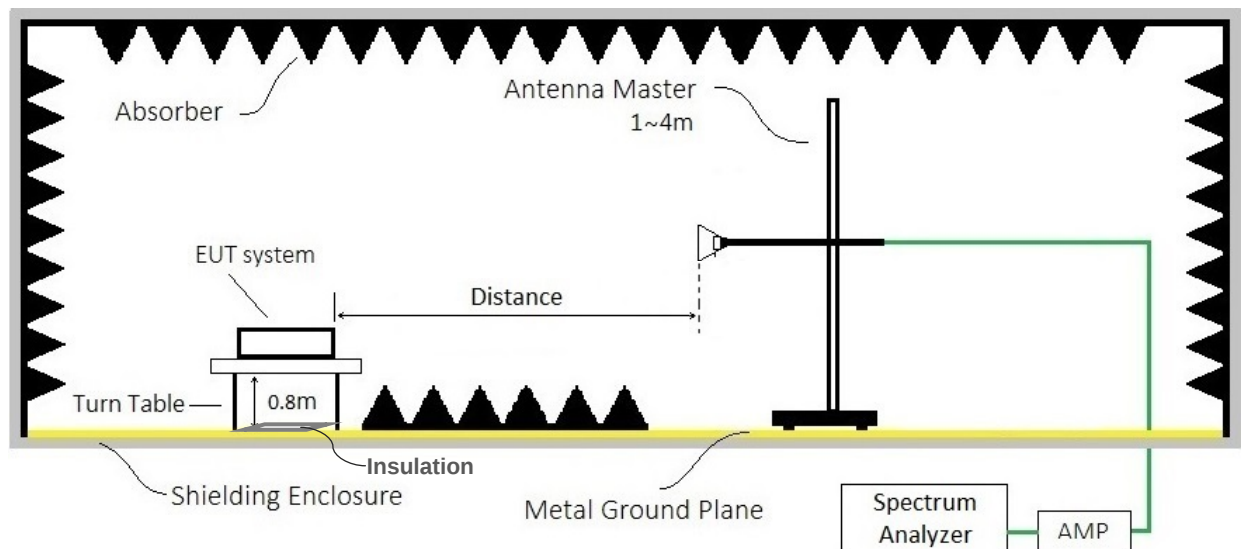
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Spectrum Analyzer	Agilent	N9010A-526	MY51250943	2017. 02. 16	1 Year
2	Amplifier	Agilent	8449B	3008A02681	2017. 03. 14	1 Year
3	Horn Antenna	ETS-Lindgren	3117	00114403	2017. 03. 27	1 Year
4	Signal Cable	HUBER+SUHNER	SUCOFLEX 104	10m ACCL 1-18G	2017. 04. 23	1 Year
5	Test Software	Audix	e3	V.6.1206197	N.C.R.	N.C.R.

6.2. Test Setup

- For frequency range 30 to 1000MHz



- For frequency range 1 to 6GHz



6.3. Applicable Limits

- For radiated emissions at frequencies up to 1GHz (Class B)

Frequency Range (MHz)	Distance (meter)	Quasi-Peak [dB(μV/m)] (OATS/SAC)
30 – 230	10	30
230 – 1000		37
30 – 230	3	40
230 – 1000		47

- For radiated emissions at frequencies above 1GHz (Class B)

Frequency Range (MHz)	Distance (meter)	Peak [dB(μV/m)] (FSOATS)	Average [dB(μV/m)] (FSOATS)
1000 – 3000	3	70	50
3000 – 6000		74	54

- For radiated emissions at frequencies from FM receivers (Class B)

Frequency Range (MHz)	Distance (meter)	Fundamental Quasi-Peak [dB(μV/m)] (FSOATS)	Harmonics Quasi-Peak [dB(μV/m)] (FSOATS)
30 – 230	10	50	42
230 – 300			42
300 – 1000			46
30 – 230	3	60	52
230 – 300			52
300 – 1000			56

Required highest frequency for radiated measurement

Highest frequency generated or used in the EUT or on which the EUT operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	Up to 5 times of the highest frequency or 6GHz, whichever is less

- For FM and TV broadcast receivers, Fx is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies.
- For outdoor units of home satellite receiving systems highest measured frequency shall be 18 GHz.

6.4. Measurement Procedure

The measurement procedure specified in EN 55032 (CISPR 32) clause was performed.

- The EUT and peripherals were placed on the rotatable non-conduction table, which is 0.8meters above the ground reference plane at the semi-anechoic chamber as described in section 4.1 and 6.2.
- The measurement distance is set as specified in section 6.3. The specified distance is between the horizontal projection onto the ground plane of the closest periphery of the EUT and the projection onto the ground plane of the center of the axis of the elements of the receiving antenna.
- The resolution bandwidth of the test receiver was at 120kHz (testing from 30 to 1000MHz) or 1MHz (testing above 1000MHz).
- For the exploratory measurement, determine the highest emission amplitude relative to the limit on each of antenna polarization with the peak detector by each of the EUT operations over the specified frequency range and record it, and then
- For final measurement, select the EUT operation mode that produced the highest amplitude in the exploratory measurement to determine the highest emissions with each specified detector and record it.
- In order to determine the maximum emission level, must rotate the table in 360 degree and move the receiving antenna between 1~4m height above the ground reference plane.
- Both polarizations of receiving antenna were determined.
- The measurement result was calculated by following formulas:
(30 – 1000MHz)
$$\text{Emission Level} = \text{Reading (Receiver)} + \text{Cable Loss} + \text{Antenna Factor} - \text{Pre-Amp Factor}$$

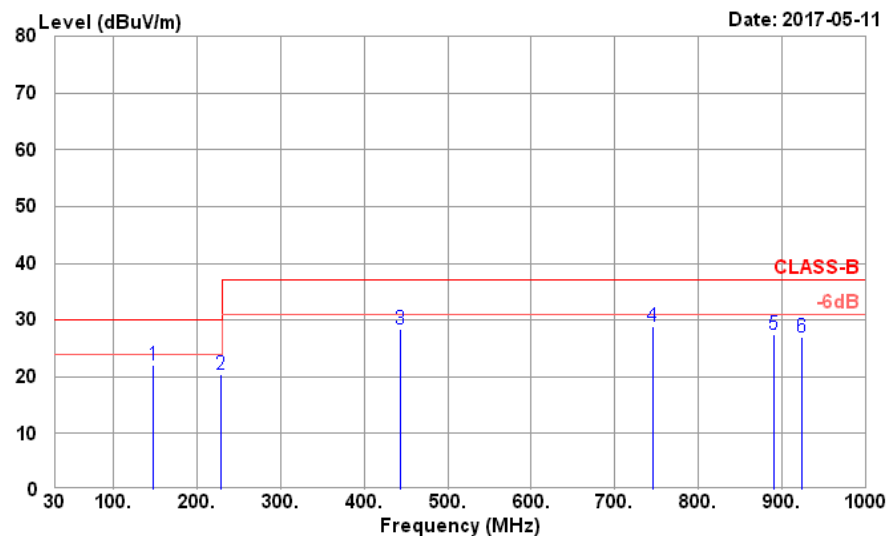
(Above 1GHz)
$$\text{Emission Level} = \text{Reading (Spectrum)} + \text{Cable Loss} + \text{Antenna Factor} - \text{Pre-Amp Factor}$$
- The 3dB bandwidth of the horn antenna is minimum 52 degree (or w=2.93m at 3m distance) for 1~6 GHz.

6.5. Measurement Result

- For frequency range 30 – 1000MHz

Test Date	2017. 05. 11	Environment	22°C, 53%
Input Power	AC 230V, 50Hz	Result	Pass
Test Mode	HDMI, 1920*1200/60Hz, 0°	Tested By	Mike Yu

Data: 6 File: D:\TEST DATA\REPORT\2017\1M1705XXX\1M1705068\1M1705068-10M.EM6 (2



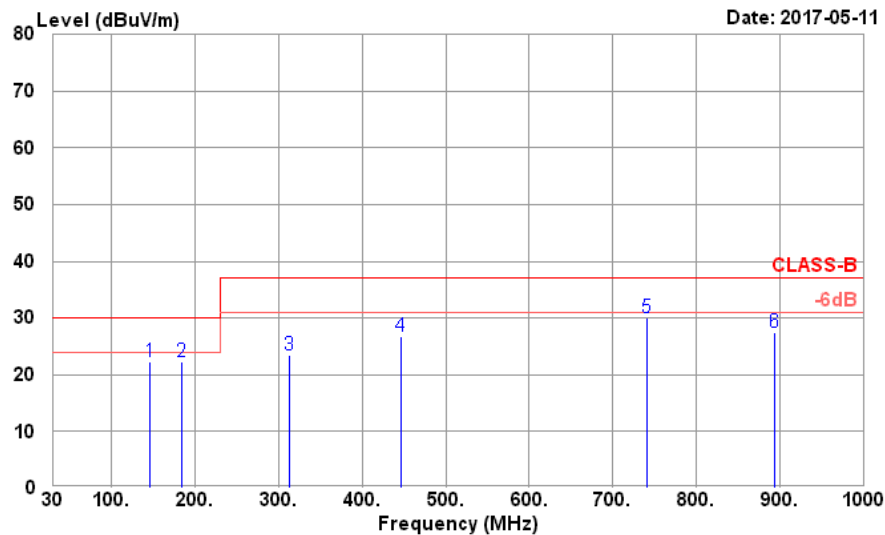
Site no. : NO.1 10M Chamber Data no. : 6
 Dis. / Ant. : 10m VULB 9168 712 Ant. pol. : HORIZONTAL
 Limit : CLASS-B
 Env. / Ins. : 22°C / 53% ESCI(0557) Engineer : Mike Yu
 EUT : PA243W
 Power Rating : 230Vac/50Hz
 Test Mode : 1920*1200/60Hz HDMI

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	147.37	19.13	1.93	33.08	34.12	22.10	30.00	7.90	QP
2	227.88	16.19	2.45	33.03	34.85	20.46	30.00	9.54	QP
3	443.22	22.69	3.57	33.01	35.11	28.36	37.00	8.64	QP
4	744.89	27.87	4.79	32.93	29.25	28.98	37.00	8.02	QP
5	890.39	28.74	5.37	32.33	25.72	27.50	37.00	9.50	QP
6	924.34	29.41	5.50	32.07	24.04	26.88	37.00	10.12	QP

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

Test Date	2017. 05. 11	Environment	22°C, 53%
Input Power	AC 230V, 50Hz	Result	Pass
Test Mode	HDMI, 1920*1200/60Hz, 0°	Tested By	Mike Yu

Data: 5 File: D:\TEST DATA\REPORT\2017\1C1M1705XXX\1C1M1705068\1C1M1705068-10M.EM6 (2



Site no. : NO.1 10M Chamber Data no. : 5
Dis. / Ant. : 10m WULB 9168 711 Ant. pol. : VERTICAL
Limit : CLASS-B
Env. / Ins. : 22°C / 53% ESCI(0557) Engineer : Mike Yu
EUT : PA243W
Power Rating : 230Vac/50Hz
Test Mode : 1920*1200/60Hz HDMI

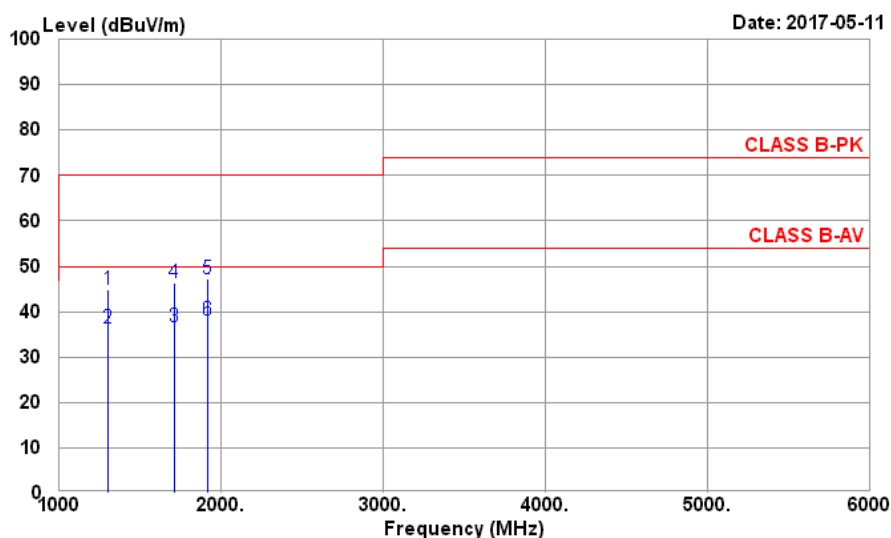
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	146.40	18.99	1.50	32.59	34.45	22.35	30.00	7.65	QP
2	184.23	16.97	1.72	32.58	36.27	22.38	30.00	7.62	QP
3	313.24	19.50	2.27	32.48	34.29	23.58	37.00	13.42	QP
4	447.10	22.73	2.82	32.45	33.64	26.74	37.00	10.26	QP
5	741.01	27.56	3.73	32.36	31.22	30.15	37.00	6.85	QP
6	893.30	28.77	4.09	31.86	26.55	27.55	37.00	9.45	QP

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

- For frequency range 1 – 6 GHz

Test Date	2017. 05. 11	Environment	22°C, 53%
Input Power	AC 230V, 50Hz	Result	Pass
Test Mode	HDMI, 1920*1200/60Hz, 0°	Tested By	Mike Yu

Data: 16 File: D:\TEST DATA\REPORT\2017\1M1705XXX\1M1705068\1M1705068-10M.EM6 (2



Site no. : NO.1 10M Chamber
 Dis. / Ant. : 3m 3117 14403
 Limit : CLASS B-PK
 Env. / Ins. : 22°C / 53% N9010A(0943)
 EUT : PA243W
 Power Rating : 230Vac/50Hz
 Test Mode : 1920*1200/60Hz HDMI

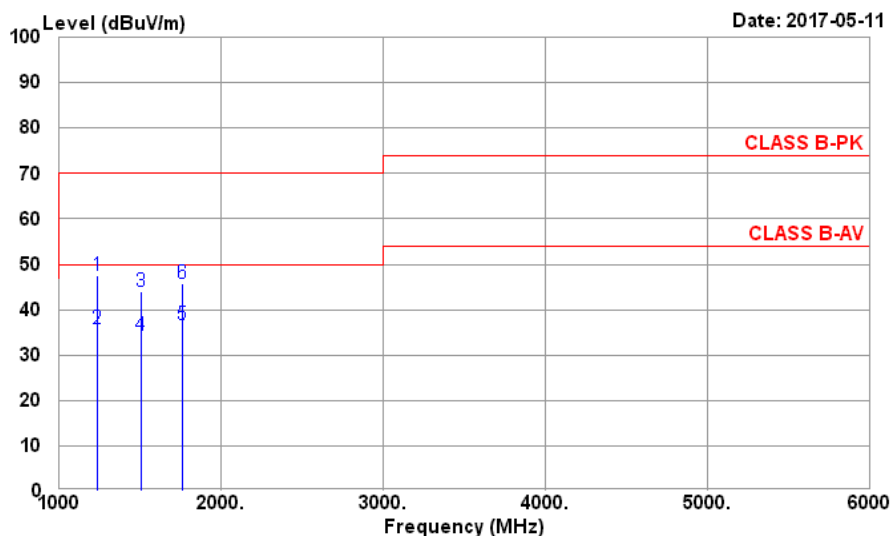
Data no. : 16
 Ant. pol. : HORIZONTAL
 Engineer : Mike Yu

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	1302.25	27.70	1.96	35.95	51.24	44.95	70.00	25.05	Peak
2	1302.32	27.70	1.96	35.95	42.55	36.26	50.00	13.74	Average
3	1708.15	29.43	2.33	35.63	40.64	36.77	50.00	13.23	Average
4	1708.86	29.43	2.33	35.63	50.24	46.37	70.00	23.63	Peak
5	1915.64	31.03	2.45	35.54	49.36	47.30	70.00	22.70	Peak
6	1915.94	31.03	2.45	35.54	40.22	38.16	50.00	11.84	Average

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

Test Date	2017. 05. 11	Environment	22°C, 53%
Input Power	AC 230V, 50Hz	Result	Pass
Test Mode	HDMI, 1920*1200/60Hz, 0°	Tested By	Mike Yu

Data: 15 File: D:\TEST DATA\REPORT\2017\1C1M1705XXX\1C1M1705068\1C1M1705068-10M.EM6 (2



Site no. : NO.1 10M Chamber Data no. : 15
Dis. / Ant. : 3m 3117 14403 Ant. pol. : VERTICAL
Limit : CLASS B-PK
Env. / Ins. : 22°C / 53% N9010A(0943) Engineer : Mike Yu
EUT : PA243W
Power Rating : 230Vac/50Hz
Test Mode : 1920*1200/60Hz HDMI

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	1232.22	27.70	1.92	36.02	53.83	47.43	70.00	22.57	Peak
2	1232.23	27.70	1.92	36.04	42.14	35.72	50.00	14.28	Average
3	1503.25	27.83	2.05	35.73	49.86	44.01	70.00	25.99	Peak
4	1503.65	27.83	2.05	35.74	40.23	34.37	50.00	15.63	Average
5	1761.13	29.83	2.34	35.61	40.14	36.70	50.00	13.30	Average
6	1761.89	29.83	2.34	35.60	49.22	45.79	70.00	24.21	Peak

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

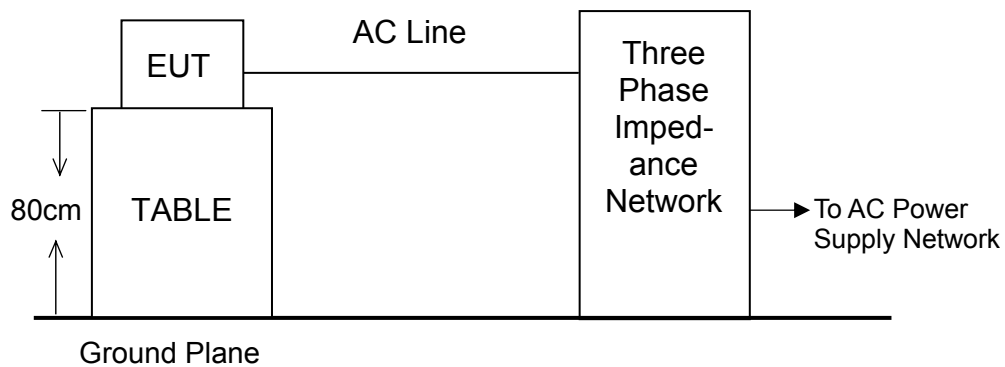
7. Measurement of Harmonics Current Emissions

7.1. List of Test Instruments

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	AC Power Source	TESEQ	NSG 1007-45	1248A04038	2016. 01. 29	2 Years
2	Signal Condition- ing Unit	TESEQ	CCN 1000-3	1234A03680	2016. 01. 29	2 Years
3	Three Phase Im- pedance Network	TESEQ	INA 2197	1234A03681	2016. 01. 29	2 Years
4	Profling AC Switching Unit	TESEQ	NSG 2200-3	EK 22713	2016. 07. 01	2 Years

7.2. Test Setup

The EUT and test equipment were configured in accordance with the requirement of EN 61000-3-2.



7.3. Applicable Standard and Limits

Limits for Class D Equipment

Class D is classified according to section 5 of EN 61000-3-2

Harmonic order n	Maximum permissible harmonic current per watt mA/W	Maximum permissible harmonic current A
Odd Harmonics Only		
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
13	0.30	0.21
$15 \leq n \leq 39$	$3.85/n$	$0.15 \times 15/n$

Note:

According to section 7 of EN 61000-3-2, the above limits for all equipment except for lighting equipment having an active input power > 75 W and no limits apply for equipment with an active input power up to and including 75 W.

7.4. Measurement Procedure

The measurement procedure specified in EN 61000-3-2 clause 6.2 was used.

- Setup the EUT and associated equipment described as clause 4.1.
- The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.
- Apply a 230V/50Hz rated test voltage which shall be maintained within $\pm 2.0\%$ and the frequency within $\pm 0.5\%$ of the nominal value to EUT.
- Let EUT work as stated and through three phase impedance network to measure the EUT to get the harmonic current for Odd & Even harmonics up to 40th.

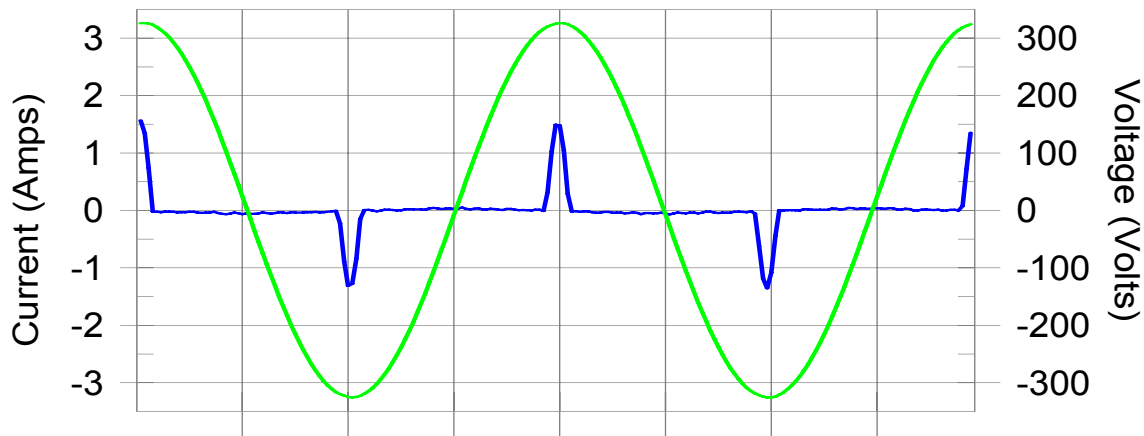
7.5. Measurement Result

Test Date	2017. 05. 15	Environment	23°C, 47%
Input Power	AC 230V, 50Hz	Result	Pass (Class D)
Test Mode	HDMI, 1920*1200/60Hz, 0°	Tested By	Rex Wang

Test Result: N/L

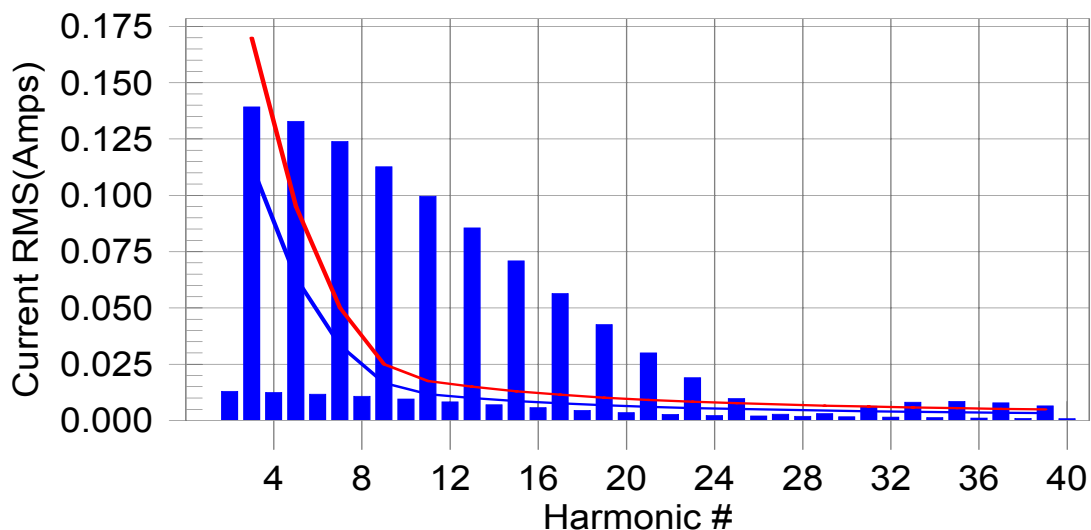
Source qualification: Compensated

Current & voltage waveforms



Harmonics and Class D limit line

European Limits



Test result: N/L Worst harmonic was #11 with 575.2% of the limit.

Test Result: N/L Source qualification: Normal
 THC(A): 0.000 I-THD(%): 0.0 POHC(A): 0.000 POHC Limit(A): 0.000

Highest parameter values during test:

V_RMS (Volts): 230.338 Frequency(Hz): 50.00
 I_Peak (Amps): 1.589 I_RMS (Amps): 0.344
 I_Fund (Amps): 0.147 Crest Factor: 4.660
 Power (Watts): 33.3 Power Factor: 0.421

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.013	0.000	N/A	0.013	0.000	N/A	Pass
3	0.139	0.113	N/A	0.141	0.170	N/A	Pass
4	0.013	0.000	N/A	0.013	0.000	N/A	Pass
5	0.133	0.063	N/A	0.134	0.095	N/A	Pass
6	0.012	0.000	N/A	0.012	0.000	N/A	Pass
7	0.124	0.033	N/A	0.125	0.050	N/A	Pass
8	0.011	0.000	N/A	0.011	0.000	N/A	Pass
9	0.113	0.017	N/A	0.114	0.025	N/A	Pass
10	0.010	0.000	N/A	0.010	0.000	N/A	Pass
11	0.100	0.012	N/A	0.101	0.018	N/A	Pass
12	0.008	0.000	N/A	0.009	0.000	N/A	Pass
13	0.086	0.010	N/A	0.086	0.015	N/A	Pass
14	0.007	0.000	N/A	0.007	0.000	N/A	Pass
15	0.071	0.009	N/A	0.071	0.013	N/A	Pass
16	0.006	0.000	N/A	0.006	0.000	N/A	Pass
17	0.056	0.008	N/A	0.057	0.012	N/A	Pass
18	0.005	0.000	N/A	0.005	0.000	N/A	Pass
19	0.043	0.007	N/A	0.043	0.010	N/A	Pass
20	0.004	0.000	N/A	0.004	0.000	N/A	Pass
21	0.030	0.006	N/A	0.031	0.009	N/A	Pass
22	0.003	0.000	N/A	0.003	0.000	N/A	Pass
23	0.019	0.006	N/A	0.020	0.008	N/A	Pass
24	0.002	0.000	N/A	0.002	0.000	N/A	Pass
25	0.010	0.005	N/A	0.011	0.008	N/A	Pass
26	0.002	0.000	N/A	0.002	0.000	N/A	Pass
27	0.003	0.005	N/A	0.004	0.007	N/A	Pass
28	0.002	0.000	N/A	0.002	0.000	N/A	Pass
29	0.003	0.004	N/A	0.004	0.007	N/A	Pass
30	0.002	0.000	N/A	0.002	0.000	N/A	Pass
31	0.006	0.004	N/A	0.007	0.006	N/A	Pass
32	0.002	0.000	N/A	0.002	0.000	N/A	Pass
33	0.008	0.004	N/A	0.008	0.006	N/A	Pass
34	0.001	0.000	N/A	0.001	0.000	N/A	Pass
35	0.009	0.004	N/A	0.009	0.006	N/A	Pass
36	0.001	0.000	N/A	0.001	0.000	N/A	Pass
37	0.008	0.003	N/A	0.008	0.005	N/A	Pass
38	0.001	0.000	N/A	0.001	0.000	N/A	Pass
39	0.007	0.003	N/A	0.007	0.005	N/A	Pass
40	0.001	0.000	N/A	0.001	0.000	N/A	Pass

Note: The EUT power level is below 75.0 Watts and therefore has no defined limits

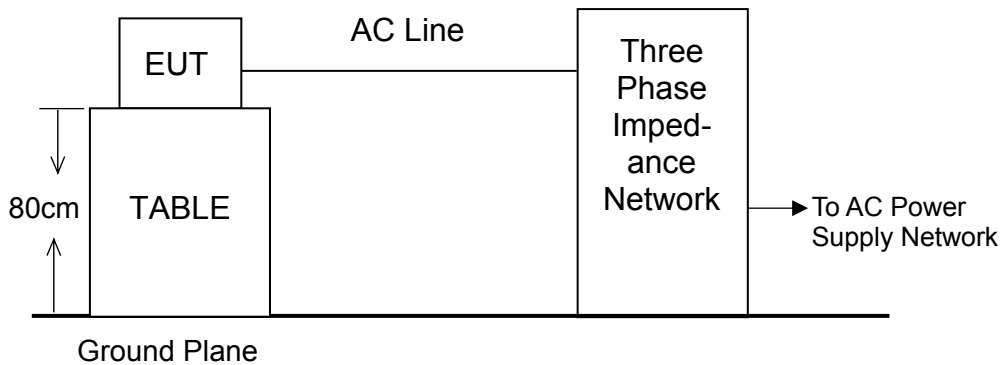
8. Measurement of Voltage Fluctuations and Flicker Emissions

8.1. List of Test Instruments

Item	Equipment	Manufacture	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	Proflin AC Switching Unit	TESEQ	NSG 2200-3	EK 22713	2016. 07. 01	2 Years

8.2. Test Setup

The EUT and test equipment were configured in accordance with the requirement of EN 61000-3-3.



8.3. Applicable Standard and Limits

(1) Limits is according to section 5 of EN 61000-3-3

Tested Items	Description	Limit
P_{st}	Short-term Flicker Indicator	≤ 1.0
P_{lt}	Long-term Flicker Indicator	≤ 0.65
$d_{(t)}$	Voltage change more than 500ms	$\leq 3.3\%$
T_{max}	Maximum time duration during the observation period that the voltage deviation $d_{(t)}$ exceeds the limit for d_c	500ms
d_c	Relative steady-state voltage change	$\leq 3.3\%$
d_{max}	Maximum relative voltage change	$\leq 4\%$
	Maximum relative voltage change	$\leq 6\%$
	Maximum relative voltage change	$\leq 7\%$

8.4. Measurement Procedure

The measurement procedure specified in EN 61000-3-3 clause 6 was used.

- Setup the EUT and associated equipment described as clause 4.1.
- The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.
- The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.
- Apply a 230V/50Hz rated test voltage which shall be maintained within $\pm 2.0\%$ and the frequency within $\pm 0.5\%$ of the nominal value to EUT.

8.5. Measurement Result

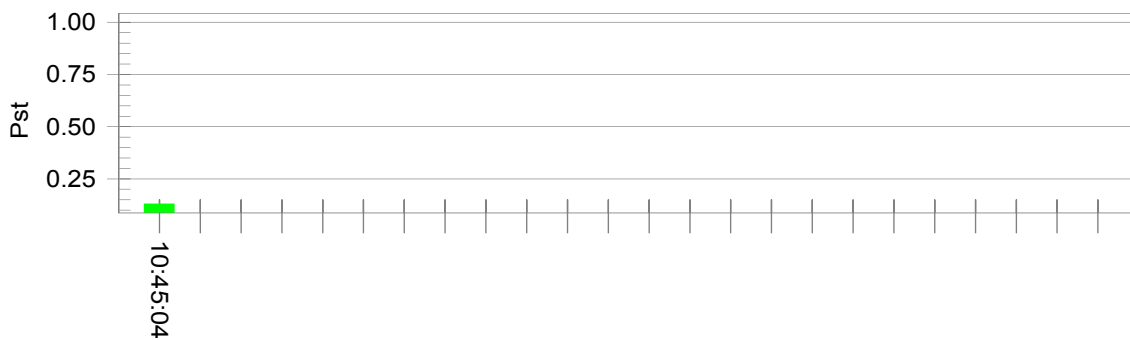
Test Date	2017. 05. 15	Environment	23°C, 47%
Input Power	AC 230V, 50Hz	Result	Pass
Test Mode	HDMI, 1920*1200/60Hz, 0°	Tested By	Rex Wang

Test Result: Pass

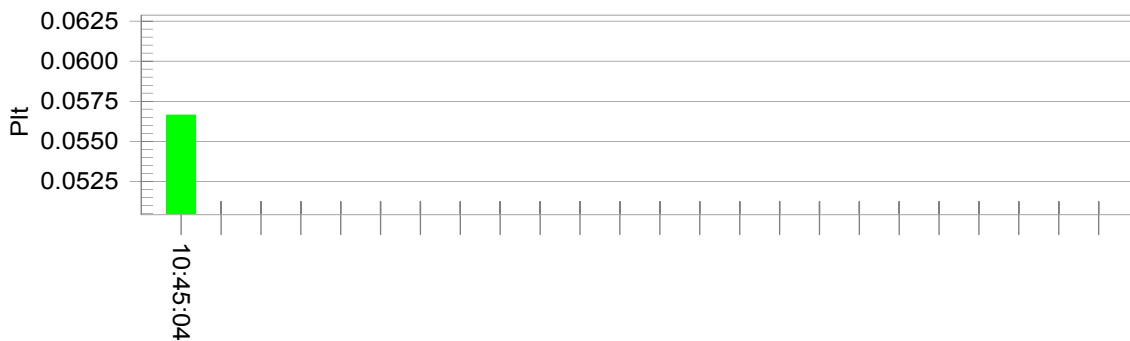
Status: Test Completed

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	230.21	Test limit (%):	N/A	N/A
Highest dt (%):	0.00	Test limit (mS):	500.0	Pass
T-max (mS):	0.0	Test limit (%):	3.30	Pass
Highest dc (%):	0.00	Test limit (%):	4.00	Pass
Highest dmax (%):	0.04	Test limit:	1.000	Pass
Highest Pst (10 min. period):	0.130			

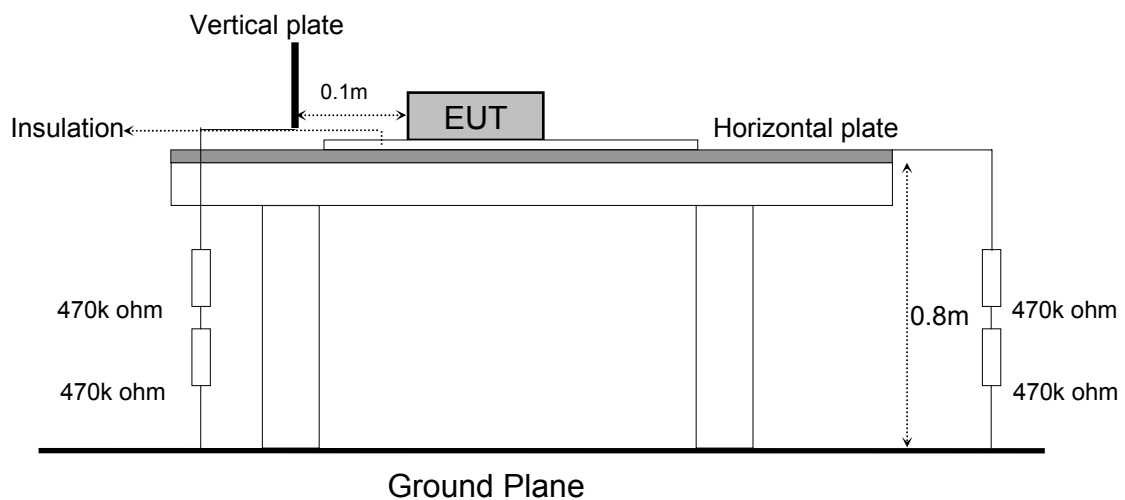
9. Electrostatic Discharge Immunity Test

9.1. List of Test Instruments

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	ESD Simulator	TESEQ	NSG 438	1497	2016. 11. 18	1 Year

9.2. Test Setup

The EUT and test equipment were configured in accordance with the basic standard requirement of IEC 61000-4-2.



9.3. Applicable Standard and Test Specification

Immunity requirement is in accordance with EN 55024 clause 4.2.1

Test specification is in accordance with EN 55024 Table 1.3

Basic standard is in accordance with IEC 61000-4-2

Test Specification		Performance Criterion
Contact Discharge Voltage	$\pm 2\text{kV}$ and $\pm 4\text{kV}$	B
Air Discharge Voltage	$\pm 2\text{kV}$, $\pm 4\text{kV}$ and $\pm 8\text{kV}$	

9.4. Measurement Procedure

The measurement procedure specified in IEC 61000-4-2 clause 8.3.1 and A.5 was used.

- Setup the EUT and associated equipment described as clause 4.1.
- 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 retriggered 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.
- Contact Discharge

All the procedure shall be same as above (3) except that the tip of the discharge electrode shall touch the EUT conductive surfaces & repeated 25 discharges each discharges each at positive and negative polarity for each test point before the discharge switch is operated.
- Indirect discharge for horizontal coupling plane

At least 25 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.
- Indirect discharge for vertical coupling plane

At least 25 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.
- For above tests, the voltage was increased from the minimum to the selected test level.

9.5. Test Result

Test Date	2017. 05. 17	Environment	22°C, 43%
Input Power	AC 230V, 50Hz	Result	Pass
Test Mode	HDMI, 1920*1080/60Hz, 0°	Tested By	Jacky Chen

Air Discharge	Voltage Level kV / Discharge per polarity 10 / Observation Criterion								
Test Location	+2	-2	+4	-4	+8	-8			Comments
Screen (1-4)	ND	ND	ND	ND	A	A			
Seam (5-8)	ND	ND	ND	ND	ND	ND			
Button (9-14)	ND	ND	ND	ND	ND	ND			
Earphone (15)	ND	ND	ND	ND	A	A			
Audio In (16)	ND	ND	ND	ND	A	A			
D-Sub (17)	ND	ND	ND	ND	A	A			
DP (18)	ND	ND	ND	ND	A	A			
HDMI (19)	ND	ND	ND	ND	A	A			
DVI (20)	ND	ND	ND	ND	A	A			
USB (21-25)	ND	ND	ND	ND	A	A			
AC IN (26)	ND	ND	ND	ND	ND	ND			
Contact Discharge	Voltage Level kV / Discharge per polarity 25 / Observation Criterion								
Test Location	+2	-2	+4	-4					Comments
Screw (27)	A	A	A	A					
Indirect Contact	Voltage kV Level / Discharge per polarity 25 / Observation Criterion								
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.									

10. Radiated, Radio-frequency, Electromagnetic Field Immunity Test

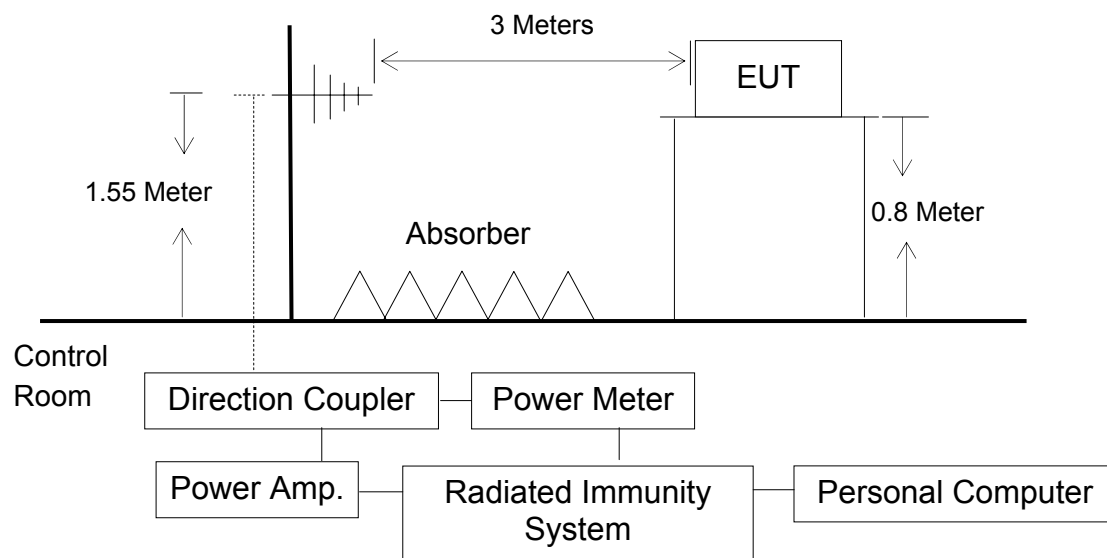
10.1. List of Test Instruments

Item	Equipment	Manufacture	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

10.2. Test Setup

The EUT and test equipment were configured in accordance with the basic standard requirement of IEC 61000-4-3.

Anechoic Chamber



10.3.Applicable Standard and Test Specification

Immunity requirement is in accordance with EN 55024 clause 4.2.3 and 4.2.3.2

Test specification is in accordance with EN 55024 Table 1.2

Basic standard is in accordance with IEC 61000-4-3

Test Specification		Performance Criterion
Frequency Range	80-1000MHz	A
Field Strength	3V/m (unmodulated, r.m.s)	
Amplitude Modulated	80%, 1kHz AM	

10.4.Measurement Procedure

The measurement procedure specified in IEC 61000-4-3 clause 8 was used.

- Setup the EUT and associated equipment described as clause 4.1.
- The EUT was placed on a non-conductive table 0.8 meter above the ground, the EUT and its simulators on the turn table and keep them 3 meters away from the transmitting antenna which is mounted on an antenna tower and fixes at 1.55 meter height.
- The test was performed with the EUT exposed to both horizontally and vertically polarized fields on each of the four sides.
- All the scanning conditions are as follows:

Field Strength:	3 V/m (r.m.s, Unmodulated)
Scanning Frequency:	80-1000MHz
Amplitude Modulated:	AM 1kHz, 80%
Step Size:	1% increments
The Rate of Sweep:	0.0015 decade/s
Dwell Time:	3 sec.
Test Position Angle:	0°, 90°, 180° and 270°
Polarity of Antenna:	H: Horizontal, V: Vertical

10.5. Test Result

Test Date	2017. 05. 15	Environment	24°C, 42%
Input Power	AC 230V, 50Hz	Result	Pass
Test Mode	HDMI, 1920*1200/60Hz, 0°	Tested By	Rex Wang

Frequency Range (MHz)	Position Angle (°)	Polarity (H or V)	Field Strength (V/m)	Observation Criterion
80 - 1000	0	H	3V/m +Modulated	A
80 - 1000	90	H	3V/m +Modulated	A
80 - 1000	180	H	3V/m +Modulated	A
80 - 1000	270	H	3V/m +Modulated	A
80 - 1000	0	V	3V/m +Modulated	A
80 - 1000	90	V	3V/m +Modulated	A
80 - 1000	180	V	3V/m +Modulated	A
80 - 1000	270	V	3V/m +Modulated	A

Remark 1: Modulation Signal: 1kHz 80% AM.

Remark 2: No error occurred.

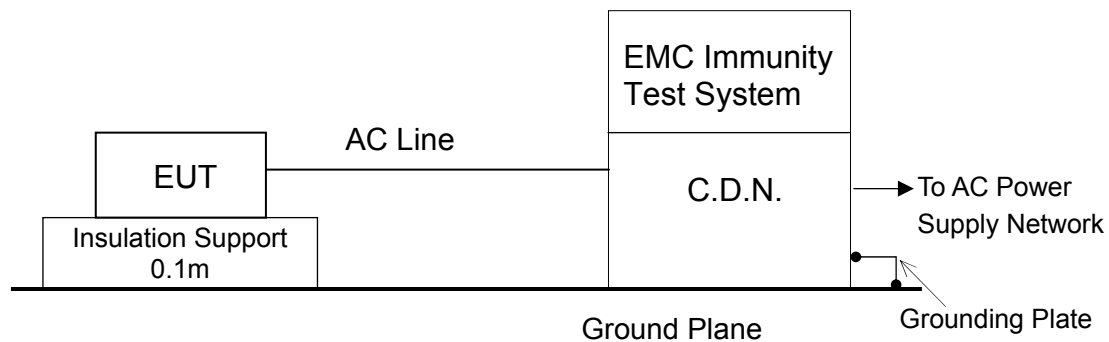
11. Electrical fast transient/burst Immunity Test

11.1. List of Test Instruments

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	EMS Immunity Test System	TESEQ	NSG 3060	1519	2016. 07. 26	1 Year
2	3Phase Burst Coupler	TESEQ	CDN 3063	2074	2016. 07. 26	1 Year

11.2. Test Setup

The EUT and test equipment were configured in accordance with the basic standard requirement of IEC 61000-4-4.



11.3. Applicable Standard and Test Specification

Immunity requirement is in accordance with EN 55024 clause 4.2.2

Test specification is in accordance with EN 55024 Table 2.3 and 4.3

Basic standard is in accordance with IEC 61000-4-4

Test Specification		Performance Criterion
Signal and Telecommunication Ports, Voltage Peak	$\pm 0.5\text{kV}$	B
Input AC Power Ports, Voltage Peak	$\pm 1\text{kV}$	
Wave Shape of Pulse	5/50 Tr/Th ns	
Repetition Frequency	5kHz	

11.4.Measurement Procedure

The measurement procedure specified in IEC 61000-4-4 clause 8 was used.

- Setup the EUT and associated equipment described as clause 4.1.
- The EUT and its simulators was placed 0.1m high above the ground reference plane which was a min. 1m*1m metallic sheet with 0.65mm minimum thickness.
- This reference ground plane is 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.
- 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 0.5m 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.
- For signal lines and control lines ports
The interface cables' length is less than 3m, therefore, it's unnecessary to measure.
- For DC input and DC output power ports
No DC ports. It's unnecessary to measure.

11.5. Test Result

Test Date	2017. 05. 16	Environment	25°C, 52%
Input Power	AC 230V, 50Hz	Result	Pass
Test Mode	HDMI, 1920*1200/60Hz, 0°	Tested By	MinXiang Yang

Input AC Power Port					
Inject Line	Polarity (+/-)	Test Voltage Peak (kV)	Inject Time (s)	Inject Method	Observation Criterion
L	+	0.5, 1	60	Direct	A
L	-	0.5, 1	60	Direct	A
N	+	0.5, 1	60	Direct	A
N	-	0.5, 1	60	Direct	A
PE	+	0.5, 1	60	Direct	A
PE	-	0.5, 1	60	Direct	A
L, N, PE	+	0.5, 1	60	Direct	A
L, N, PE	-	0.5, 1	60	Direct	A
Remark: No error occurred.					

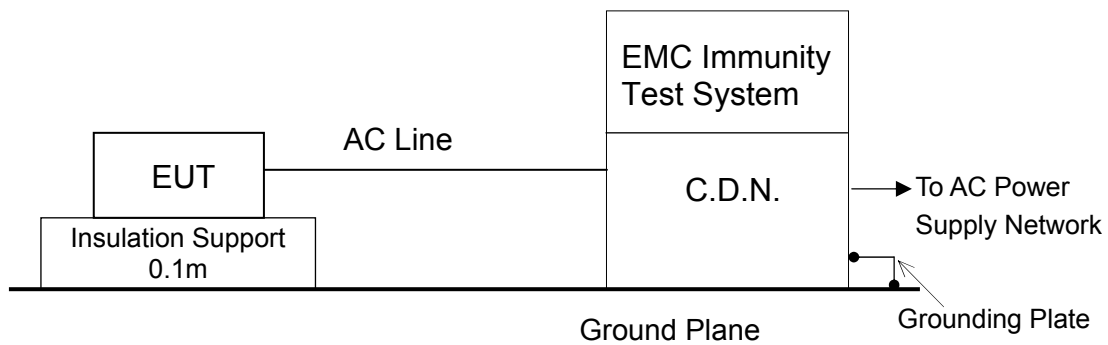
12. Surge Immunity Test

12.1.List of Test Instruments

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	EMS Immunity Test System	TESEQ	NSG 3060	1519	2016. 07. 26	1 Year
2	3Phase Burst Coupler	TESEQ	CDN 3063	2074	2016. 07. 26	1 Year

12.2.Test Setup

The EUT and test equipment were configured in accordance with the basic standard requirement of IEC 61000-4-5.



12.3.Applicable Standard and Test Specification

Immunity requirement is in accordance with EN 55024 clause 4.2.5

Test specification is in accordance with EN 55024 Table 2.2 and 4.4

Basic standard is in accordance with IEC 61000-4-5

Test Specification		Performance Criterion
Signal and Telecom- communication Ports, Open Circuit Voltage	Voltage Peak: $\pm 1\text{kV}$ Voltage Peak (primary protection): $\pm 4\text{kV}$	B
	Waveform: 10/700 Tr/Th μs	
Input AC Power Ports, Open Circuit Voltage	Voltage Peak (line to line): $\pm 1\text{kV}$ Voltage Peak (line to earth): $\pm 2\text{kV}$	
	Waveform: 1.2/50 (8/20) Tr/Th μs	

12.4.Measurement Procedure

The measurement procedure specified in IEC 61000-4-5 clause 8 was used.

- Setup the EUT and associated equipment described as clause 4.1.
- For line to line coupling mode, provided a 0.5/1kV 1.2/50 μs current surge (at open-circuit condition) and 8/20 μs current surge to EUT selected points.
- At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate.
- Different phase angles (at 0°, 90°, 180° and 270°) were done individually.
- Repeat above procedure except the open-circuit test voltages 0.5kV/1kV/2kV for line to earth coupling mode test.

12.5. Test Result

Test Date	2017. 05. 16	Environment	25°C, 52%
Input Power	AC 230V, 50Hz	Result	Pass
Test Mode	HDMI, 1920*1200/60Hz, 0°	Tested By	MinXiang Yang

Input AC Power Port, Open Circuit Voltage					
Location	Polarity (+/-)	Phase Angle (°)	Test Voltage Peak (kV)	No of Pulse	Observation Criterion
L-N	+	0	0.5, 1	5	A
	+	90	0.5, 1	5	A
	+	180	0.5, 1	5	A
	+	270	0.5, 1	5	A
	-	0	0.5, 1	5	A
	-	90	0.5, 1	5	A
	-	180	0.5, 1	5	A
	-	270	0.5, 1	5	A
L-PE	+	0	0.5, 1, 2	5	A
	+	90	0.5, 1, 2	5	A
	+	180	0.5, 1, 2	5	A
	+	270	0.5, 1, 2	5	A
	-	0	0.5, 1, 2	5	A
	-	90	0.5, 1, 2	5	A
	-	180	0.5, 1, 2	5	A
	-	270	0.5, 1, 2	5	A
N-PE	+	0	0.5, 1, 2	5	A
	+	90	0.5, 1, 2	5	A
	+	180	0.5, 1, 2	5	A
	+	270	0.5, 1, 2	5	A
	-	0	0.5, 1, 2	5	A
	-	90	0.5, 1, 2	5	A
	-	180	0.5, 1, 2	5	A
	-	270	0.5, 1, 2	5	A
Remark: No error occurred.					

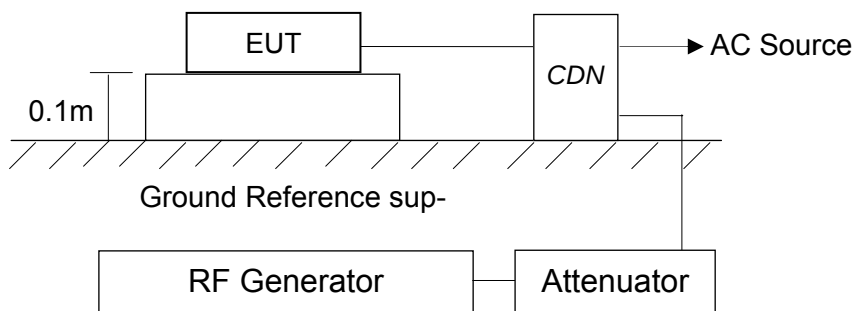
13. Immunity to Conducted Disturbances, Induced by Radio-Frequency Field Immunity Test

13.1. List of Test Instruments

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	RF Generator	R & S	SMC100A	101402	2017. 05. 06	1 Year
2	Power Amplifier	A/R	100A250A	0330351	N.C.R.	1 Year
3	CDN	Fischer	FCC-801-M3-25A	9961	2017. 03. 06	1 Year

13.2. Test Setup

The EUT and test equipment were configured in accordance with the basic standard requirement of IEC 61000-4-6.



13.3.Applicable Standard and Test Specification

Immunity requirement is in accordance with EN 55024 clause 4.2.3 and 4.2.3.3

Test specification is in accordance with EN 55024 Table 2.1 and 4.1

Basic standard is in accordance with IEC 61000-4-6

Test Specification		Performance Criterion
Signal and Telecommunication Ports and Input AC Power Port		
Frequency Range	0.15-80MHz	A
Voltage Level	3V (unmodulated, r.m.s)	
Amplitude Modulated	80%, 1kHz AM	

13.4.Measurement Procedure

The measurement procedure specified in IEC 61000-4-6 clause 8 was used.

- Setup the EUTs and associated equipment described as clause 4.1.
- The EUT and supporting equipment were placed on an insulating support 0.1m high. above a ground reference 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.
- The disturbance signal described below was injected to EUT through CDN.
- One CDN shall be connected to the port intended to be tested and one CDN with 50 Ω termination shall be connected to another port. Decoupling networks shall be installed on all other ports to which cables are attached.
- The frequency range is swept from 150 kHz to 80 MHz, using the signal level established during the setting process and with a disturbance signal of 80 % amplitude. The signal is modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or the switch coupling devices as necessary. Where the frequency is swept incrementally, the step size shall not exceed 1 % of the preceding frequency value.
- The dwell time of the amplitude modulated carrier at each frequency shall not be less than the time necessary for the EUT to be exercised and to respond, but shall in no case be less than 0,5 s. The sensitive frequencies (e.g. clock frequencies) shall be analyzed separately.
- Attempts should be made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility.

13.5. Test Result

Test Date	2017. 05. 17	Environment	22°C, 42%
Input Power	AC 230V, 50Hz	Result	Pass
Test Mode	HDMI, 1920*1200/60Hz, 0°	Tested By	Jacky Chen

Frequency Range (MHz)	Injected Position	Voltage Level	Observation Criterion
0.15 - 80MHz	Main (Input AC Power Line)	3V(rms) + Modulated	A
Remark 1: Modulation Signal: 1kHz 80% AM. Remark 2: No error occurred.			

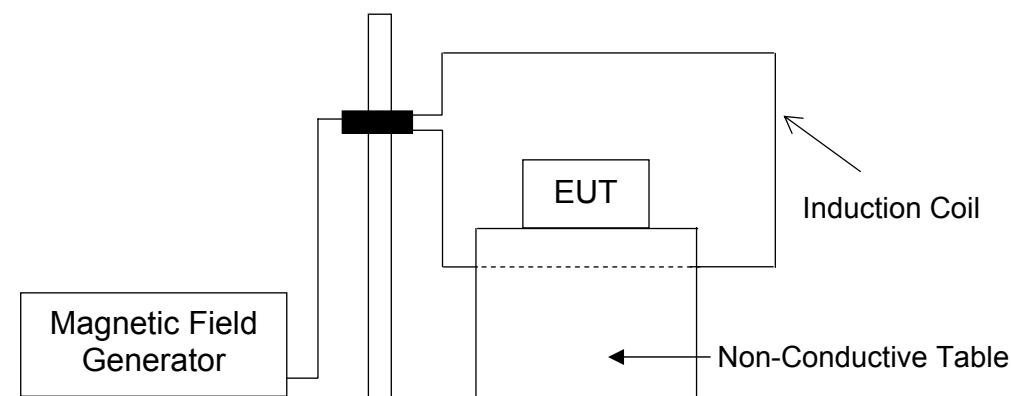
14. Power Frequency Magnetic Field Immunity Test

14.1. List of Test Instruments

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Magnetic Field Generator	NARDA	PMM 1008	0100X30101	2016. 11. 18	1 Year

14.2. Test Setup

The EUT and test equipment were configured in accordance with the basic standard requirement of IEC 61000-4-8.



14.3. Applicable Standard and Test Specification

Immunity requirement is in accordance with EN 55024 clause 4.2.4

Test specification is in accordance with EN 55024 Table 1.1

Basic standard is in accordance with IEC 61000-4-8

Test Specification		Performance Criterion
Power Frequency	50Hz or 60Hz	A
Magnetic Field Strength	1A/m (rms)	

14.4.Measurement Procedure

The measurement procedure specified in IEC 61000-4-8 clause 8 was used.

- Setup the EUT and associated equipment described as clause 4.1.
- The equipment cabinets which can be earthed shall be connected to the safety earth directly on the GRP or via the earth terminal to PE.
- The EUT was 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 (at X-axis, Y-axis and X-axis).
- The power supply, input and output circuits shall be connected to the sources of power supply, control and signal.
- All cables of EUT exposed to magnetic field for 1m of their length.
- The preferential range of test levels, respectively for continuous of the magnetic field, applicable to distribution networks at 50 Hz or 60 Hz.

14.5. Test Result

Test Date	2017. 05. 15	Environment	23°C, 47%
Input Power	AC 230V, 50Hz	Result	Pass
Test Mode	HDMI, 1920*1200/60Hz, 0°	Tested By	Rex Wang

Power Frequency	Magnetic Field Strength	Coil Orientation	Testing Duration	Observation Criterion
50Hz	1A/m	X-axis	1 Min	A
50Hz	1A/m	Y-axis	1 Min	A
50Hz	1A/m	Z-axis	1 Min	A

Remark: No error occurred.

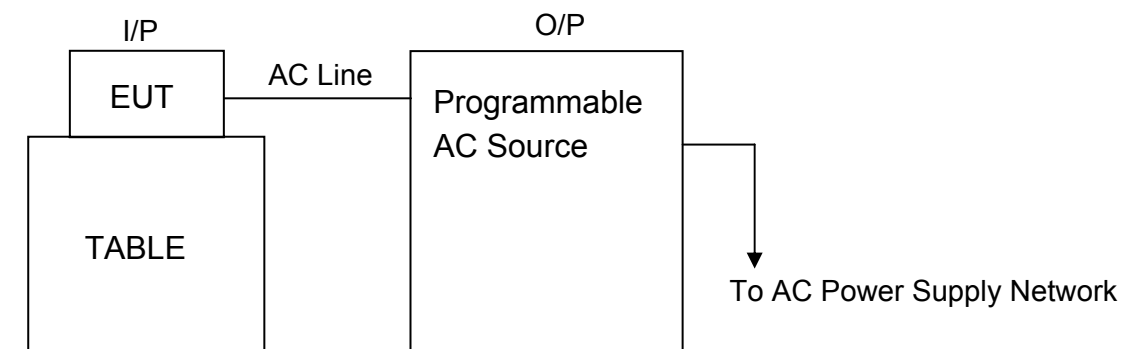
15. Voltage Dips and Interruptions Immunity Test

15.1.List of Test Instruments

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	AC Power Source	TESEQ	NSG 1007-45	1248A04038	2016. 01. 29	2 Years

15.2.Test Setup

The EUT and test equipment were configured in accordance with the basic standard requirement of IEC 61000-4-11.



15.3.Applicable Standard and Test Specification

Immunity requirement is in accordance with EN 55024 clause 4.2.6

Test specification is in accordance with EN 55024 Table 4.2 and 4.3

Basic standard is in accordance with IEC 61000-4-11

Test Specification		Performance Criterion
Voltage Dips	>95% reduction, 0.5period	B
Voltage Dips	30% reduction , 25period	C
Voltage Interruptions	>95% reduction , 250period	C

15.4.Measurement Procedure

The measurement procedure specified in IEC 61000-4-11 clause 8 was used.

- Setup the EUT and associated equipment described as clause 4.1.
- During the tests, the mains voltage for testing shall be monitored within an accuracy of 2 %.
- The EUT shall be tested for each selected combination of test level and duration with a sequence of three dips/interruptions with intervals of 10 s minimum (between each test event). Each representative mode of operation shall be tested.
- For voltage dips, changes in supply voltage shall occur at zero crossings of the voltage, and at additional angles considered critical by product committees or individual product specifications preferably selected from 45°, 90°, 135°, 180°, 225°, 270° and 315° on each phase.
- For short interruptions, the angle shall be defined by the product committee as the worst case. In the absence of definition, it is recommended to use 0° for one of the phases.
- For each test, any degradation of performance shall be recorded. The monitoring equipment should be capable of displaying the status of the operational mode of the EUT during and after the tests. After each group of tests, a full functional check shall be performed.

15.5. Test Result

Test Date	2017. 05. 15	Environment	23°C, 47%
Input Power	AC 100-240V, 50/60Hz	Result	Pass
Test Mode	HDMI, 1920*1200/60Hz, 0°	Tested By	Rex Wang

Type of Test	Test Voltage	Phase Angle (°)	Voltage Reduction (%)	Duration (Period)	Observation Criterion
Voltage Interruptions	100V 240V	0	> 95	250	B (Note)
		45	> 95	250	B (Note)
		90	> 95	250	B (Note)
		135	> 95	250	B (Note)
		180	> 95	250	B (Note)
		225	> 95	250	B (Note)
		270	> 95	250	B (Note)
		315	> 95	250	B (Note)
Voltage Dips	100V 240V	0	30	25	A
		45	30	25	A
		90	30	25	A
		135	30	25	A
		180	30	25	A
		225	30	25	A
		270	30	25	A
		315	30	25	A
		0	> 95	0.5	A
		45	> 95	0.5	A
		90	> 95	0.5	A
		135	> 95	0.5	A
		180	> 95	0.5	A
		225	> 95	0.5	A
		270	> 95	0.5	A
		315	> 95	0.5	A

Note: Performance Criterion B: The EUT was stopped operating during the test.
It was self-recovering after the interference was stopped.

16. 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	$\pm 4.5\text{dB}$
	200MHz-1000MHz, 3m, Horizontal	$\pm 4.4\text{dB}$
	30MHz-200MHz, 3m, Vertical	$\pm 4.4\text{dB}$
	200MHz-1000MHz, 3m, Vertical	$\pm 4.0\text{dB}$
	30MHz-200MHz, 10m, Horizontal	$\pm 4.5\text{dB}$
	200MHz-1000MHz, 10m, Horizontal	$\pm 4.2\text{dB}$
	30MHz-200MHz, 10m, Vertical	$\pm 4.3\text{dB}$
	200MHz-1000MHz, 10m, Vertical	$\pm 4.0\text{dB}$
Radiated emissions (No.5 OATS)	30MHz-200MHz, 3m, Horizontal	$\pm 4.2\text{dB}$
	200MHz-1000MHz, 3m, Horizontal	$\pm 4.7\text{dB}$
	30MHz-200MHz, 3m, Vertical	$\pm 4.4\text{dB}$
	200MHz-1000MHz, 3m, Vertical	$\pm 4.4\text{dB}$
	30MHz-200MHz, 10m, Horizontal	$\pm 4.2\text{dB}$
	200MHz-1000MHz, 10m, Horizontal	$\pm 4.6\text{dB}$
	30MHz-200MHz, 10m, Vertical	$\pm 4.4\text{dB}$
	200MHz-1000MHz, 10m, Vertical	$\pm 4.4\text{dB}$
Radiated emissions (No.6 OATS)	30MHz-200MHz, 3m, Horizontal	$\pm 4.3\text{dB}$
	200MHz-1000MHz, 3m, Horizontal	$\pm 4.4\text{dB}$
	30MHz-200MHz, 3m, Vertical	$\pm 4.5\text{dB}$
	200MHz-1000MHz, 3m, Vertical	$\pm 4.1\text{dB}$
	30MHz-200MHz, 10m, Horizontal	$\pm 4.3\text{dB}$
	200MHz-1000MHz, 10m, Horizontal	$\pm 4.2\text{dB}$
	30MHz-200MHz, 10m, Vertical	$\pm 4.4\text{dB}$
	200MHz-1000MHz, 10m, Vertical	$\pm 4.1\text{dB}$
Radiated emissions (No.7 OATS)	30MHz-200MHz, 3m, Horizontal	$\pm 3.9\text{dB}$
	200MHz-1000MHz, 3m, Horizontal	$\pm 4.5\text{dB}$
	30MHz-200MHz, 3m, Vertical	$\pm 4.6\text{dB}$
	200MHz-1000MHz, 3m, Vertical	$\pm 4.5\text{dB}$
	30MHz-200MHz, 10m, Horizontal	$\pm 3.9\text{dB}$
	200MHz-1000MHz, 10m, Horizontal	$\pm 4.3\text{dB}$
	30MHz-200MHz, 10m, Vertical	$\pm 4.6\text{dB}$
	200MHz-1000MHz, 10m, Vertical	$\pm 4.5\text{dB}$
Radiated emissions (No.8 OATS)	30MHz-200MHz, 3m, Horizontal	$\pm 4.5\text{dB}$
	200MHz-1000MHz, 3m, Horizontal	$\pm 4.3\text{dB}$
	30MHz-200MHz, 3m, Vertical	$\pm 4.6\text{dB}$
	200MHz-1000MHz, 3m, Vertical	$\pm 4.1\text{dB}$
	30MHz-200MHz, 10m, Horizontal	$\pm 4.7\text{dB}$
	200MHz-1000MHz, 10m, Horizontal	$\pm 4.2\text{dB}$
	30MHz-200MHz, 10m, Vertical	$\pm 4.6\text{dB}$
	200MHz-1000MHz, 10m, Vertical	$\pm 4.0\text{dB}$

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	Ucurrent= 7.3% Uvoltage= 1.0% Utime = 9.0%
	Ditto	Ucurrent = 4.0% Uvoltage = 2.0% Utime = 3.0%
	MZ-15/EC	Ucurrent = 10.0% Uvoltage = 1.8% Utime = 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	Uvoltage = 1.0% Utime = 4.0%
	Signal port	Uvoltage = 4.0% Utime = 3.0%
Surge	Open-circuit output voltage 0.5kV-6kV (1.2us/50us)	Uvoltage = 4.0%
	Open-circuit output voltage 0.5kV-6kV (10us/700us)	Uvoltage = 4.0%
	Rise time (30%-90%) x 1.67: 0.5kV-6kV (1.2us/50us)	Utime = 3.0%
	Rise time (30%-90%) x 1.67: 0.5kV-6kV (10us/700us)	Utime = 3.0%
	Duration time: 0.5kV-6kV (1.2us/50us)	Utime = 3.0%
	Duration time: 0.5kV-6kV (10us/700us)	Utime = 3.0%
	Short-circuit output current 0.25KA-3KA (8us / 20us)	Ucurrent = 3.0%
	Rise time (10%-90%) x 1.25: (8us/20us)	Utime = 3.0%
	Duration time: (8us/20us)	Utime = 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	Uvoltage = 0.1% Ucurrent = 0.2%

17. Photographs

17.1. Conducted Emissions Measurement



Front View of Conducted Measurement



Back View of Conducted Measurement

17.2. Radiated Emissions Measurement

- For Frequency Range 30 – 1000MHz

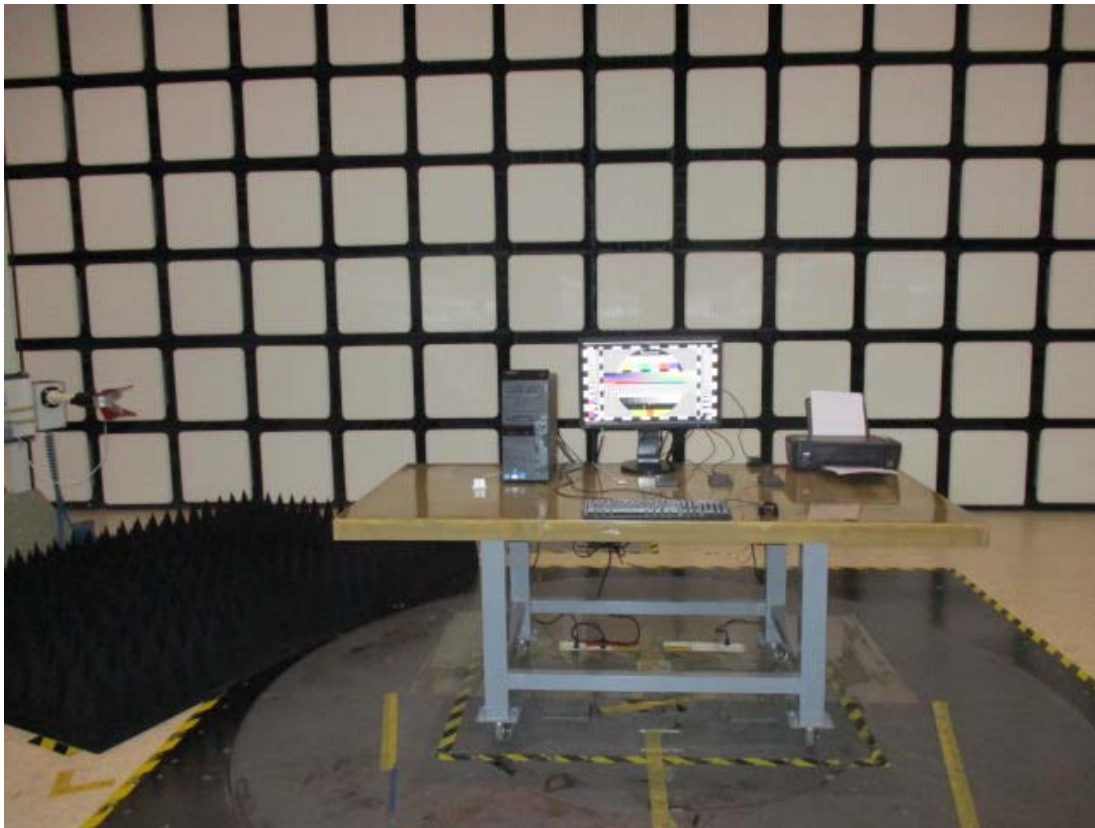


Front View of Radiated Measurement

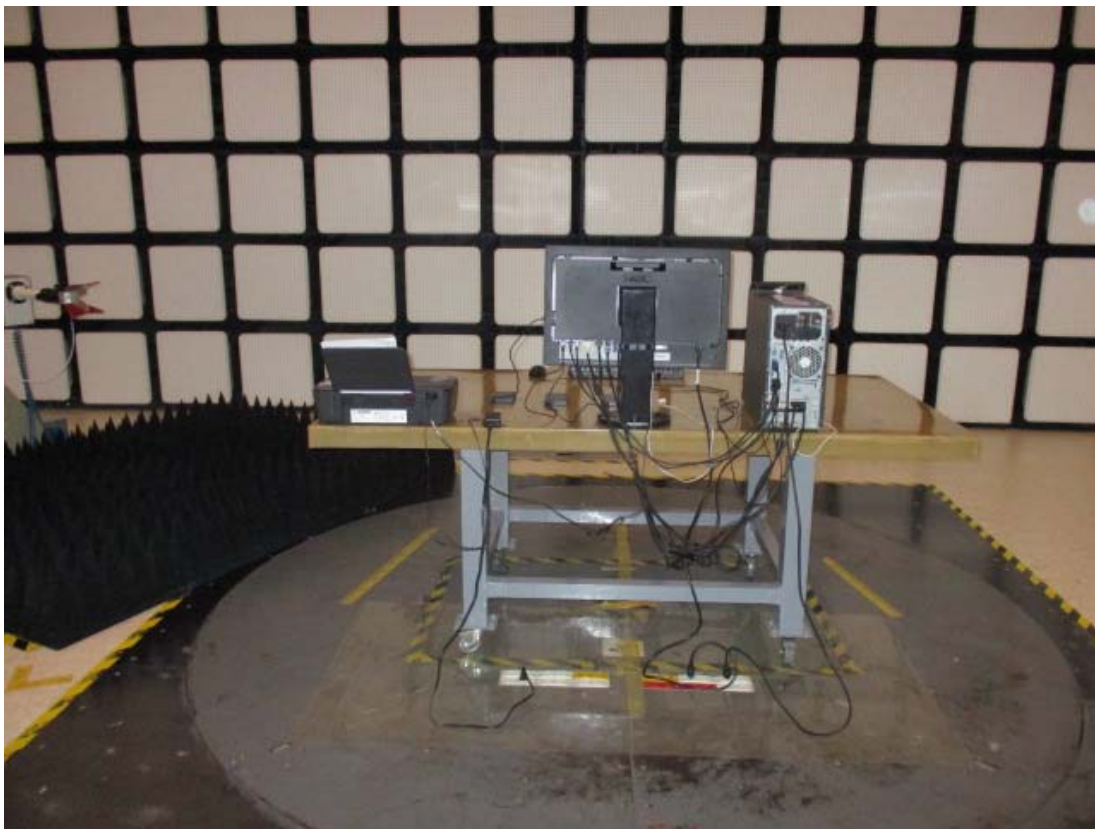


Back View of Radiated Measurement

- For Frequency Rang 1 – 6GHz



Front View of Radiated Measurement



Back View of Radiated Measurement

17.3. Harmonics Current Measurement



17.4. Voltage Fluctuation and Flicks Measurement



17.5. Electrostatic Discharge Immunity Test

- Air & Contact Discharge



- HCP & VCP



- ESD Test Points



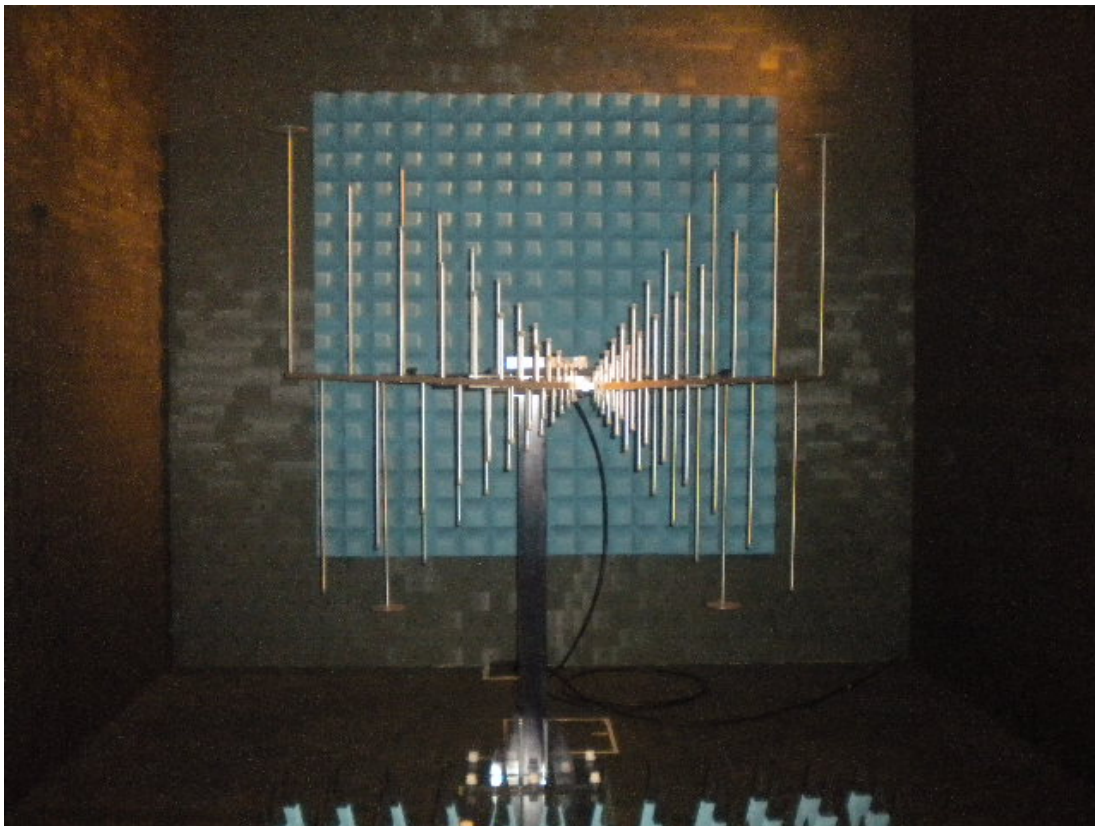
- ESD Test Points



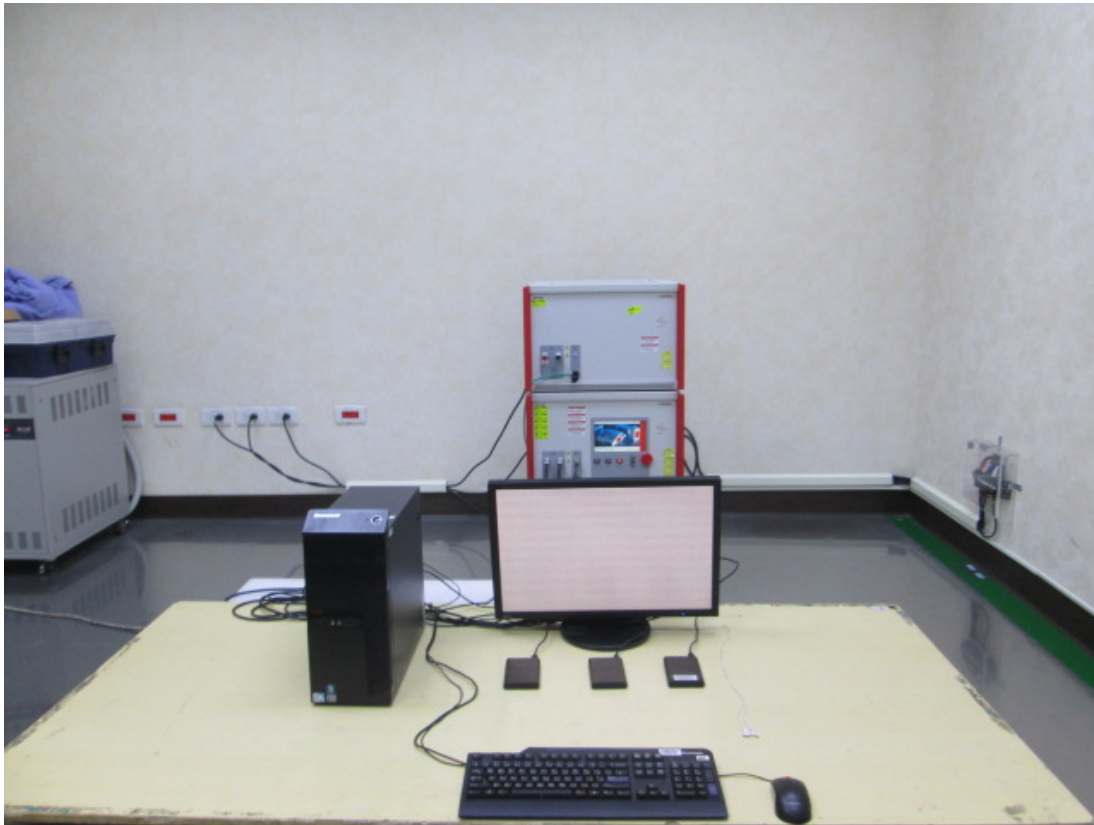
- ESD Test Points



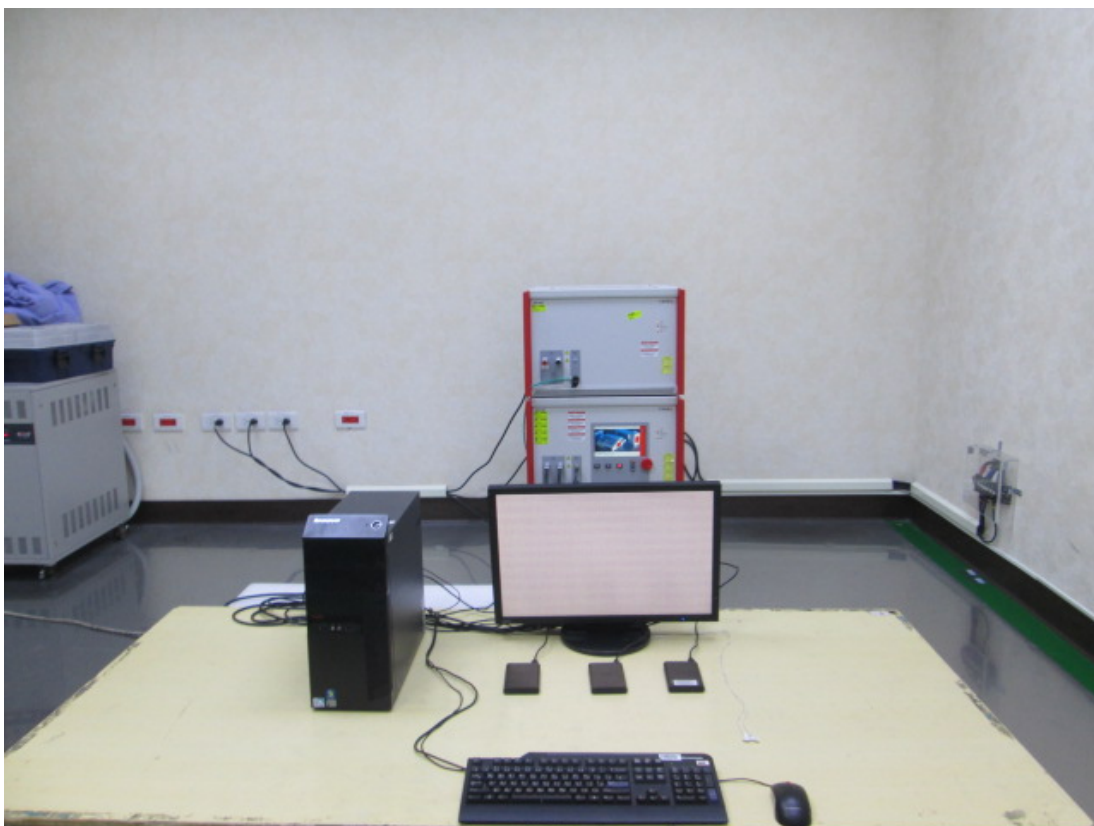
17.6. Radiated, Radio-Frequency, Electromagnetic Field Immunity Test



17.7. Electrical Fast Transient/Burst Immunity Test



17.8. Surge Immunity Test



17.9. Immunity to Conducted Disturbances Induced by RF Fields



17.10. Power Frequency Magnetic Field Immunity Test



17.11.Voltage Dips and Interruptions Immunity Test



APPENDIX

(Photos of EUT)

(Total Pages: 5 Pages)

Figure 1
General Appearance, 0° (Front View)



Figure 2
General Appearance, 0° (Back View)



Figure 3
General Appearance, 90° (Front View)



Figure 4
General Appearance, 90° (Back View)



Figure 5
Appearance (I/O Ports)



Figure 6
Appearance (AC Inlet Port)



Figure 7
Appearance (USB Port)



Figure 8
DP Cable



Figure 9
USB Cable



Figure 10
Mini DP-DP Cable

