

Technical Compliance Statement

EMC Test Report

For the following information

Ref. File No.: C1M1711393

Product : LCD Monitor
Model Number : (1)PA271Q-BK (2)PA271Q
Brand Name : NEC
Applicant : Compal Electronics, Inc.
Manufacturer : Compal Display electronics (Kunshan) Co., Ltd.
Standards :

EN 55032:2012 +AC:2013 (CISPR 32:2012), Class B
AS/NZS CISPR 32:2013 (CISPR 32:2012)
EN 61000-3-2:2014 and EN 61000-3-3:2013
EN 55024:2010 +A1:2015 (CISPR 24: 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 +A1:2017)

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-E171162**.

Signature



Alex Deng/Deputy Manager
Date: 2017. 12. 29

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: (1)PA271Q-BK (2)PA271Q
Brand: NEC

Applicant for:

Compal Electronics, Inc.
No. 581 & 581-1, 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. : C1M1711393
Report No. : EM-E171162
Date of Report : 2017. 12. 29

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 : (1)PA271Q-BK (2)PA271Q
(3) Brand : NEC
(4) Power Rating : AC 100-240V, 50/60Hz

Applicable Standards:

EN 55032:2012 +AC:2013 (CISPR 32:2012), Class B
AS/NZS CISPR 32:2013 (CISPR 32:2012)
EN 61000-3-2:2014 and EN 61000-3-3:2013
EN 55024:2010 +A1:2015 (CISPR 24: 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 +A1:2017)

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. All of the tests were requested by the applicant and the results thereof based upon the information that the applicant provided to us. We, 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. 12. 29

Reviewed by:



(Harper Lee/Administrator)

Approved by:



(Alex Deng/Deputy Manager)

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APPENDIX I (Photos of EUT)

1. Revision of Test Report

Issued Date	Revision Summary	Report Number
2017. 12. 29	Original Report.	EM-E171162

2. Summary of Test Result

2.1. Test Result

Emission			
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 4.15dB at 0.151MHz
Asymmetric mode conducted emissions at wired network port	EN 55032:2012 +AC:2013 (CISPR 32:2012)	Class B	Pass
			Margin 21.55dB at 15.388MHz
Asymmetric mode conducted emissions at broadcast receiver tuner 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
Radiated emissions (30 – 1000MHz)	EN 55032:2012 +AC:2013 (CISPR 32:2012)	Class B	Pass
			Margin 6.75dB at 214.30MHz
Radiated emissions (1 – 6GHz)	EN 55032:2012 +AC:2013 (CISPR 32:2012)	Class B	Pass
			Margin 8.30dB at 2060.28MHz
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 4. The EN 55032 emission measurement results are deemed satisfactory evidence of compliance with AS/NZS CISPR 32 regulations.			

Immunity				
Test Item	Basic Standard	Standard Criteria	EUT Criteria	Result
Electrostatic discharge	EN 55024:2010+ A1:2015 (IEC 61000-4-2:2008)	B	A	Pass
Radiated, Radio-frequency, electromagnetic field	EN 55024:2010+ A1:2015 (IEC 61000-4-3:2010)	A	A	Pass
Electrical fast transient/burst	EN 55024:2010+ A1:2015 (IEC 61000-4-4:2012)	B	A	Pass
Surge at AC power port	EN 55024:2010+ A1:2015 (IEC 61000-4-5:2014)	B	A	Pass
Surge at Telecommunication port	EN 55024:2010+ A1:2015 (IEC 61000-4-5:2014)	C	N/A	N/A
Immunity to conducted disturbances, induced by radio-frequency fields	EN 55024:2010+ A1:2015 (IEC 61000-4-6:2013)	A	A	Pass
Power frequency magnetic field	EN 55024:2010+ A1:2015 (IEC 61000-4-8:2009)	A	A	Pass
Voltage dips, >95% reduction	EN 55024:2010+ A1:2015 (IEC 61000-4-11:2004 +A1:2017)	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 Criteria	
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.
Criterion B	Screen disturbances during the application of the test are permissible if they self-recover after removal of the external disturbance.
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.
Note: Hardware failures are not acceptable for any level of performance criteria above.	

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: attemc_report@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. 7 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 & 581-1, 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)PA271Q-BK (2)PA271Q The difference of above models is in sales area.

3.2. Description of the EUT

Test Model	PA271Q-BK
Serial Number	N/A
Power Rating	AC 100-240V, 50/60Hz
Firmware Version	N/A
Sample Status	Production
Date of Receipt	2017. 11. 24
Data of Test	2017. 12. 22 ~ 28
I/O Ports List	Back View: • Two USB-downstream ports • One USB Type-C port • Two DP ports • One Earphone ports • One LAN port • One AC In port Side View: • Two HDMI ports • One mini DP port • Four USB-upstream ports
Accessories	• Mini DP to DP Cable • DP Cable • USB 3.0 Cable • AC Power Cord (3C)

3.3. Highest Frequency within EUT

The highest frequency is above 108MHz of EUT.

3.4. List of Key Components of EUT

Item	Supplier/Brand	Model	Specification
LCD Panel	Panasonic	VVX27T160H00	Max. Resolution: DP/mini DP: 2560*1440/60Hz HDMI: 1920*1080/60Hz
Power board	HUNTKEY	HKM150SL32-3A	---
Converter board	HUNTKEY	HKL32N6408-6I	---
Touch key board	Sunjet	SJT0112C	---
Backlight Sensor board	Comapl	VS-2712	---
Human sensor board	Comapl	VS-2218	---
Main board	Comapl	VL-2712	---

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	USB Type-C	Input Port	Resolution & Frequency
Conducted emissions at AC mains power port	AC 110V/60Hz	0°	HDD	HDMI 1	1920*1080/60Hz
				HDMI 2	1920*1080/60Hz
				DP 1	2560*1440/60Hz
				DP 2	2560*1440/60Hz
				Mini DP-DP	2560*1440/60Hz
				LAN	---
		90°	PC	USB Type-C	2560*1440/60Hz
			Charge (20V,1A)	HDMI 1	1280*1024/60Hz
	AC 230V/50Hz	0°	Charge (5V,3A)	HDMI 1	640*480/60Hz
			HDD	HDMI 1	1080*1920/60Hz
Asymmetric mode conducted emissions at wired network port	AC 230V/50Hz	0°	HDD	HDMI 1	1920*1080/60Hz
				LAN	Speed: 10M
				LAN	Speed: 100M
	AC 110V/60Hz			LAN	Speed: 1G
Radiated Emission Measurement (30 – 1000MHz & Above 1GHz)	AC 110V/60Hz	0°	HDD	LAN	Speed: 100M
				LAN	Speed: 100M
				LAN	Speed: 100M
				LAN	Speed: 100M
				LAN	Speed: 100M
				LAN	Speed: 100M
		90°	HDD	LAN	Speed: 100M
				LAN	Speed: 100M
				LAN	Speed: 100M
				LAN	Speed: 100M
	AC 230V/50Hz	0°	HDD	LAN	Speed: 100M
				LAN	Speed: 100M

Test Item	Test Voltage	Panel Angle	USB Type-C	Input Port	Resolution & Frequency
Harmonics current emission	AC 230V/50Hz	0°	HDD	HDMI 1	1920*1080/60Hz
Voltage fluctuations & flicker	AC 230V/50Hz	0°	HDD	HDMI 1	1920*1080/60Hz
Electrostatic discharge & Radiated, Radio-frequency, electromagnetic field	AC 230V/50Hz	0°	HDD	HDMI 1	1920*1080/60Hz
				HDMI 2	1920*1080/60Hz
				DP 1	2560*1440/60Hz
				DP 2	2560*1440/60Hz
				Mini DP-DP	2560*1440/60Hz
				LAN	---
		90°	PC	USB Type-C	2560*1440/60Hz
			Charge (20V,1A)	HDMI 1	1280*1024/60Hz
			HDD	HDMI 1	1080*1920/60Hz
Other Immunity tests	AC 230V/50Hz	0°	HDD	HDMI 1	1920*1080/60Hz

3.6. Final Test Configuration Mode

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

Test Item	Test Voltage	Panel Angle	USB Type-C	Input Port	Resolution & Frequency
Conducted emissions at AC mains power port	AC 230V/50Hz	0°	HDD	HDMI 1	1920*1080/60Hz
Asymmetric mode conducted emissions at wired network port	AC 230V/50Hz	0°	HDD	LAN	Speed: 100M
Radiated Emission Measurement (30 – 1000MHz & Above 1GHz)	AC 230V/50Hz	0°	HDD	HDMI 1	1920*1080/60Hz
Harmonics current emission	AC 230V/50Hz	0°	HDD	HDMI 1	1920*1080/60Hz
Voltage fluctuations & flicker	AC 230V/50Hz	0°	HDD	HDMI 1	1920*1080/60Hz
All Immunity tests	AC 230V/50Hz	0°	HDD	HDMI 1	1920*1080/60Hz

4. Measurement Arrangement

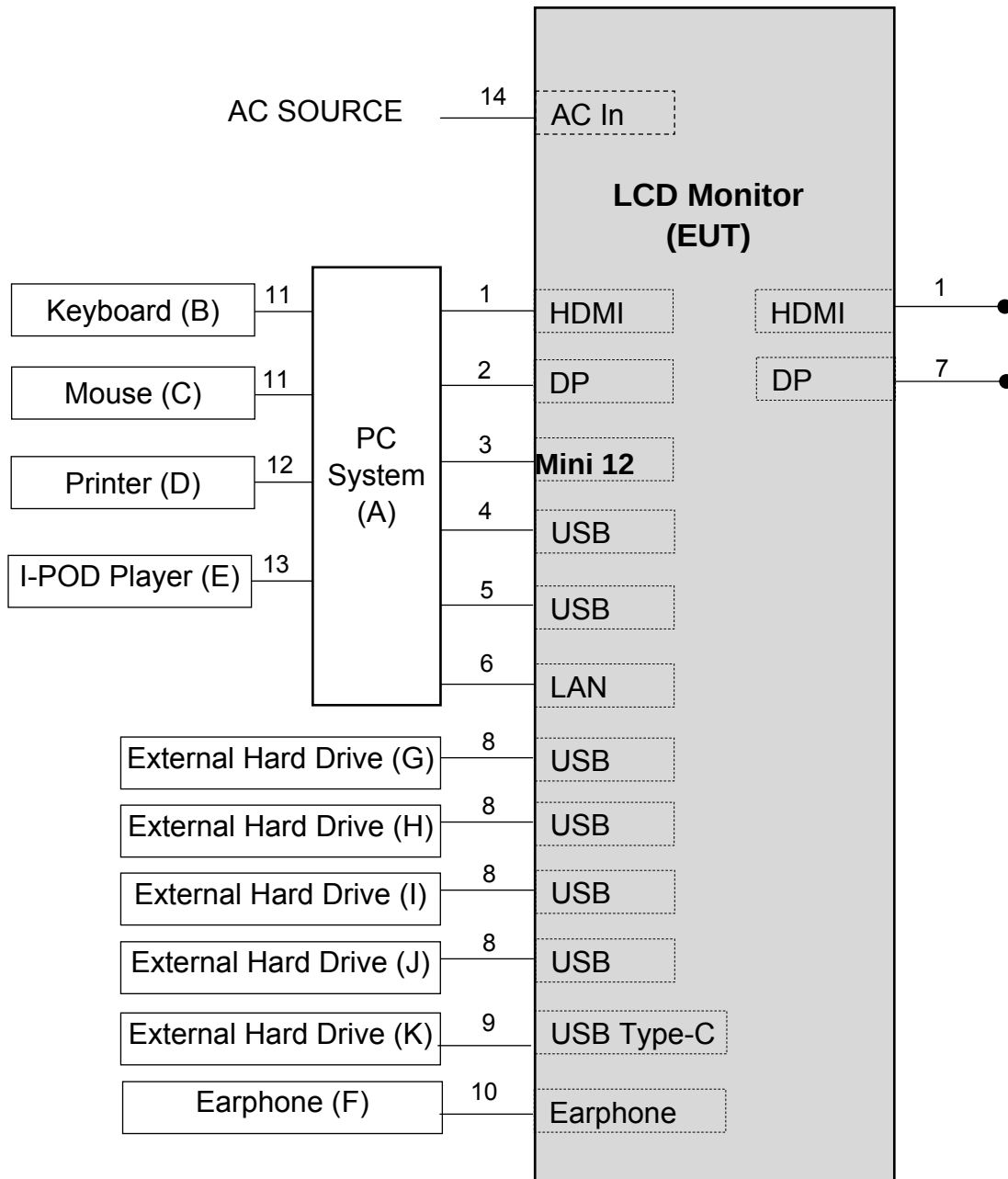
4.1. Equipment and cables arrangement

- Connection Diagram of EUT and Peripheral Devices

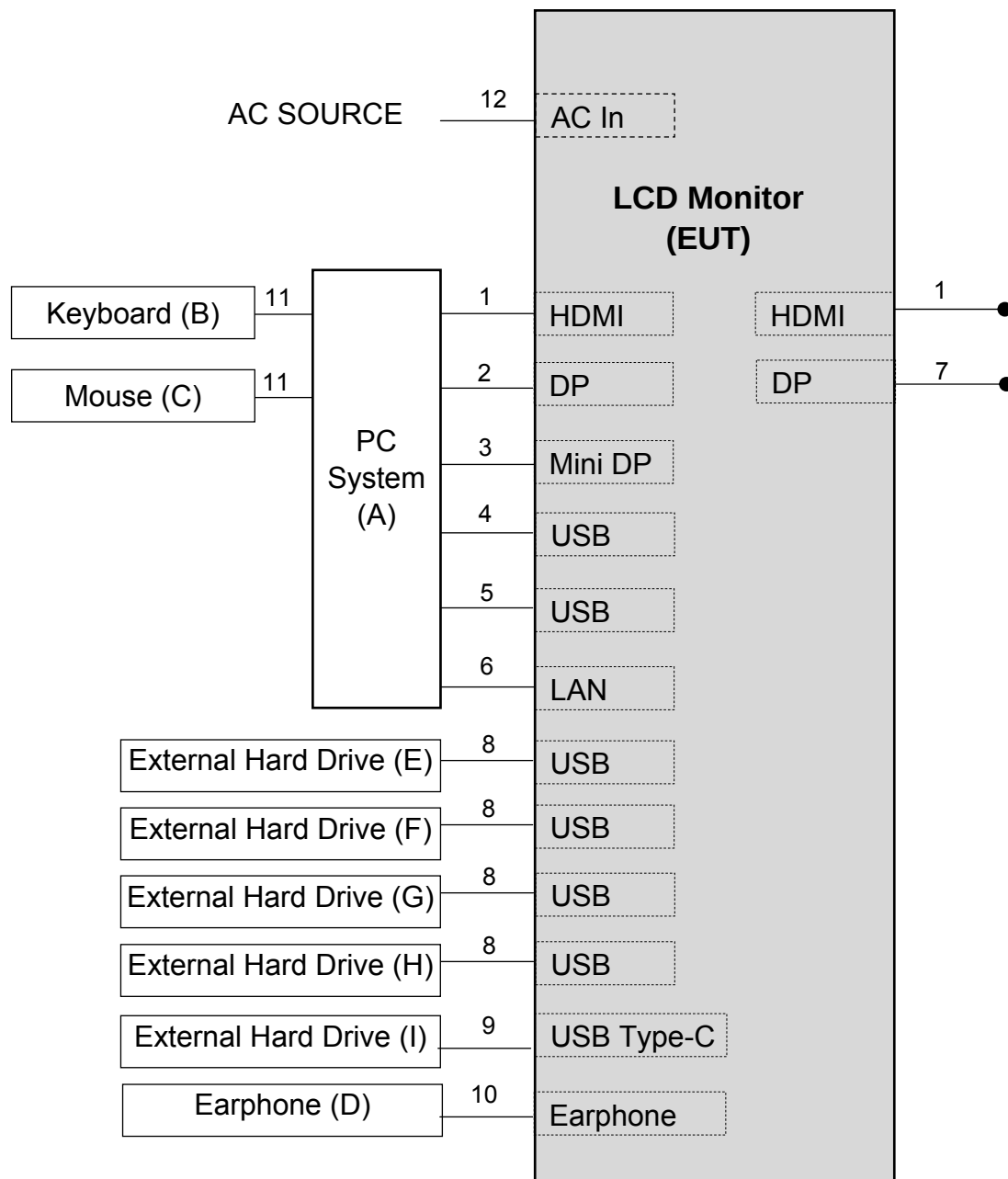
The EUT and peripherals were arranged as the requirement of CISPR 32 Annex D.

For Conducted & Radiated

****Worst Mode****



- Connection Diagram of EUT and Peripheral Devices
For harmonics, flicker and immunity tests
****Worst Mode****



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", "Windows Media Player", "BurnIn"
Video Signal (Display Image)	Standard Color bars with moving picture element (signal according to ITU-R BT 1729)
Audio Signal	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 and EN 61000-3-2/-3 were used.

Operating System	Windows 7 of PC system
Test Program	"Windows Media Player", "BurnIn"
Video Signal (Display Image)	Scrolling H characters
Wired Network	Transmitting 10/100/1000Base-T ethernet traffic
Audio Signal	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
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 Key-board	Lenovo	SK-8825	0056462	By DoC
C	USB Mouse	Lenovo	45J4886	N/A	By DoC
D	Printer	SAMSUNG	ML-1630	4561B1CP600023X	A3LML 1630
E	I-POD Player	APPLE	A1204	4H722TNUVTE	By DoC
F	Earphone	APPLE	N/A	N/A	N/A
G	External Hard Drive#1	SONY	HD-E1	3GDL0T155151A12	By DoC
H	External Hard Drive#2	SONY	HD-E1	3GDL0T155151FFA	By DoC
I	External Hard Drive#3	SONY	HD-E1	3GDL0T155151A04	By DoC
J	External Hard Drive#4	SONY	HD-E1	BBW3DEK78041FE8	By DoC
K	External Hard Drive#5	AKITIO	SK2-U31AS-AKT	SK21D1549X0006	By DoC
For Harmonic, Flicker and Immunity Tests					
A	PC System	Lenovo	RK4	PBFK914	By DoC
B	USB Key-board	Lenovo	SK-8825	0056462	By DoC
C	USB Mouse	Lenovo	45J4886	N/A	By DoC
D	Earphone	APPLE	N/A	N/A	N/A
E	External Hard Drive#1	SONY	HD-E1	3GDL0T155151A12	By DoC
F	External Hard Drive#2	SONY	HD-E1	3GDL0T155151FFA	By DoC
G	External Hard Drive#3	SONY	HD-E1	3GDL0T155151A04	By DoC
H	External Hard Drive#4	SONY	HD-E1	BBW3DEK78041FE8	By DoC
I	External Hard Drive#5	AKITIO	SK2-U31AS-AKT	SK21D1549X0006	By DoC

4.4. List of Used Cables under Test

Item	Type	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remark
1	HDMI Cable	2	1.8	Yes	0	Provided by LAB
2	DP Cable	1	1.8	Yes	0	Accessory of EUT
3	Mini DP-DP Cable	1	2.0	Yes	0	Accessory of EUT
4	USB Cable	1	1.8	Yes	0	Accessory of EUT
5	USB Cable	1	1.8	Yes	0	Provided by LAB
6	LAN Cable	1	1.8	Yes	0	Provided by LAB
7	DP Cable	1	1.8	Yes	0	Provided by LAB
8	USB Cable	4	0.5	Yes	0	Provided by LAB
9	USB Type-C Cable	1	0.3	Yes	0	Provided by LAB
10	Earphone	1	0.9	No	0	Provided by LAB
11	USB Cable	2	1.8	Yes	0	Provided by LAB
12	USB Cable	1	1.5	Yes	0	Provided by LAB
13	USB Cable	1	1.0	Yes	0	Provided by LAB
14	AC Power Cord (3C)	1	1.8	No	0	Accessory of EUT
15	AC Power Cord	2	1.8	No	0	Provided by LAB for above supported units

5. Measurement of Conducted Emissions

5.1. List of Test Instruments

- For AC mains power port use

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Test Receiver	R&S	ESCI	101276	2017. 03. 23	1 Year
2	A.M.N.	R&S	ESH2-Z5	100366	2017. 07. 20	1 Year
3	L.I.S.N.	Kyoritsu	KNW-407	8-1539-3	2017. 01. 13	1 Year
4	Pulse Limiter	R&S	ESH3-Z2	101495	2017. 01. 16	1 Year
5	Signal Cable	Thermax/CDT	RG-142	CE-07	2017. 05. 25	1 Year
6	Digital Ther-mo-Hygro Me-ter	iMax	HTC-1	No.7 S/R	2017. 04. 21	1 Year
7	Test Software	Audix	e3	V.120619C	N.C.R.	N.C.R.

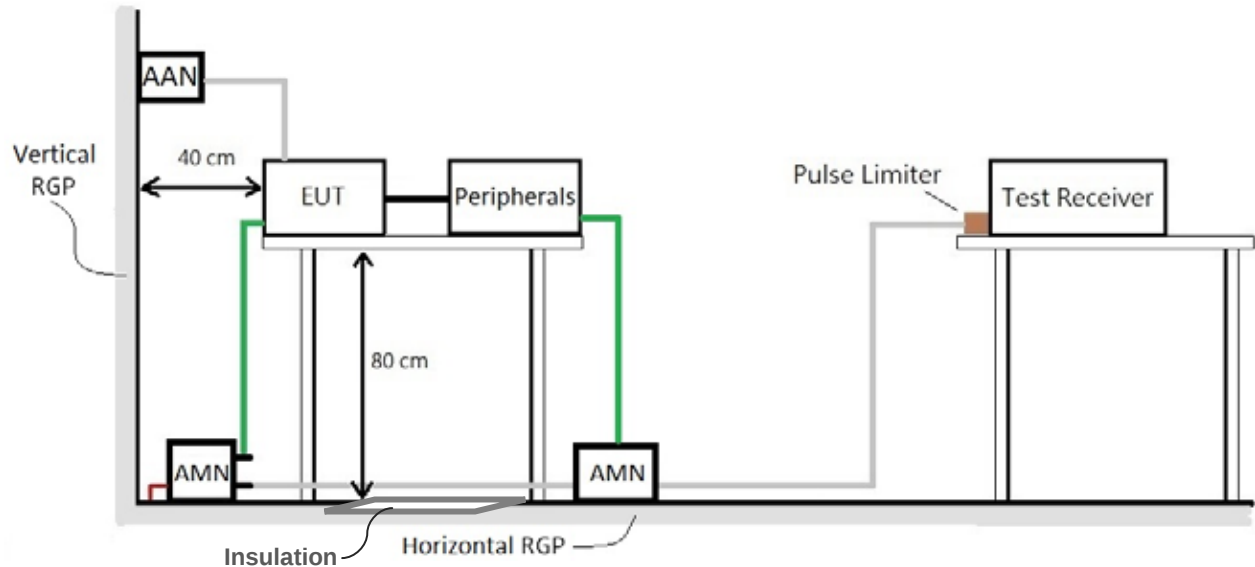
- For wired network port use (Asymmetric mode)

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Test Receiver	R & S	ESCI	101276	2017. 03. 23	1 Year
2	A.M.N.	R&S	ESH2-Z5	100366	2017. 07. 20	1 Year
3	L.I.S.N.	Kyoritsu	KNW-407	8-1539-3	2017. 01. 21	1 Year
4	Pulse Limiter	R & S	ESH3-Z2	101495	2017. 01. 16	1 Year
5	Signal Cable	Therax/CDT	RG-142	CE-07	2017. 05. 25	1 Year
6	Impedance Sta-bilization Net-work	TESEQ	ISN T800	39157	2017. 04. 09	1 Year
7	Test Software	Audix	e3	V.120619C	N.C.R.	N.C.R.

5.2. Test Setup

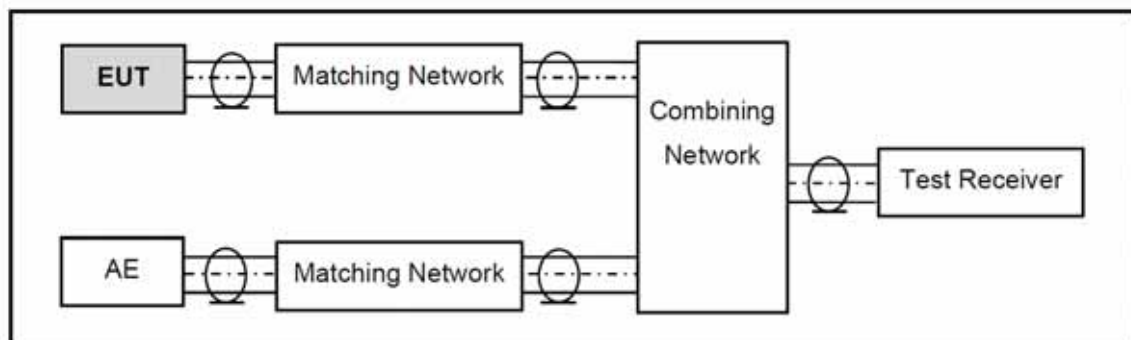
The EUTs and test equipment were configured in accordance with the requirement of EN 55032 (CISPR 32) Annex C, D:

- 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 80cm

- For TV broadcast receiver tuner port, differential voltage



5.3. Applicable Limits

- For conducted emissions from the AC mains power ports

Frequency Range (MHz)	Coupling Device	Detector Type / Bandwidth	Class A Limit dB(μ V)	Class B Limit dB(μ V)
0.15 – 0.5	AMN	Quasi Peak / 9 kHz	79	66 – 56
0.5 – 5.0			73	56
5.0 – 30			73	60
0.15 – 0.5	AMN	Average / 9 kHz	66	56 – 46
0.5 – 5.0			60	46
5.0 – 30			60	50

- For asymmetric mode conducted emissions

Applicable to:

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

Frequency Range (MHz)	Coupling Device	Detector Type / Bandwidth	Class A Voltage Limit dB(μV)	Class A Current Limit dB(μA)
0.15 – 0.5	AAN	Quasi Peak / 9 kHz	79 – 87	n/a
0.5 – 30			87	
0.15 – 0.5	AMN	Average / 9 kHz	84 – 74	
0.5 – 30			74	
0.15 – 0.5	CVP and current probe	Quasi Peak / 9 kHz	79 – 87	53 – 43
0.5 – 30			87	43
0.15 – 0.5	CVP and current probe	Average / 9 kHz	84 – 74	40 – 30
0.5 – 30			74	30
0.15 – 0.5	Current Probe	Quasi Peak / 9 kHz	n/a	53 – 43
0.5 – 30				43
0.15 – 0.5	Current Probe	Average / 9 kHz		40 – 30
0.5 – 30				30

Frequency Range (MHz)	Coupling Device	Detector Type / Bandwidth	Class B Voltage Limit dB(μV)	Class B Current Limit dB(μA)
0.15 – 0.5	AAN	Quasi Peak / 9 kHz	84 – 74	n/a
0.5 – 30			74	
0.15 – 0.5	AMN	Average / 9 kHz	74 – 64	
0.5 – 30			64	
0.15 – 0.5	CVP and current probe	Quasi Peak / 9 kHz	84 – 74	40 – 30
0.5 – 30			74	30
0.15 – 0.5	CVP and current probe	Average / 9 kHz	74 – 64	30 – 20
0.5 – 30			64	20
0.15 – 0.5	Current Probe	Quasi Peak / 9 kHz	n/a	40 – 30
0.5 – 30				30
0.15 – 0.5	Current Probe	Average / 9 kHz		30 – 20
0.5 – 30				20

● For conducted differential voltage emissions

Applicable to:

- (1) TV broadcast receiver tuner ports with an accessible connector
- (2) RF modulator output ports
- (3) FM broadcast receiver tuner ports with an accessible connector

Frequency Range (MHz)	Detector Type / Bandwidth	Class B Limit dB(μ V) 75 Ω			Applicability
		Other	Local Oscillator Fundamental	Local Oscillator Harmonics	
30 – 950	For frequencies ≤ 1 GHz Quasi Peak / 120 k	46	46	46	See ^a
950 – 2150		46	54	54	
950 – 2150		46	54	54	See ^b
30 – 300	For frequencies ≥ 1 GHz Peak / 1MHz	46	54	50	See ^c
300 – 1000				52	
30 – 300		46	66	59	See ^d
300 – 1000				52	
30 – 950		46	76	46	See ^e
950 – 2150			n/a	54	

^a Television receivers (analogue or digital), video recorders and PC TV broadcast receiver tuner cards working in channels between 30 MHz and 1 GHz, and digital audio receivers.

^b Tuner units (not the LNB) for satellite signal reception

^c Frequency modulation audio receivers and PC tuner cards.

^d Frequency modulation car radio.

^e Applicable to EUTs with RF modulator output ports (for example DVD equipment, video recorders, camcorders and decoders etc.) designed to connect to TV broadcast receiver tuner ports. Limits specified for the LO are for the RF modulator carrier signal and harmonics.

5.4. Measurement Procedure

For AC mains power port

The method of EN 55032 (CISPR 32) clause 6.3 was used.

- Setup the EUTs 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 as section 5.3 defined.
- 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 :
- $\text{Emission Level} = \text{Reading (Receiver)} + \text{Factor (A.M.N)} + \text{Insertion Loss (Pulse Limiter)} + \text{Cable Loss}$
- 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 EUTs 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 as section 5.3 defined.
- 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 EUTs 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.

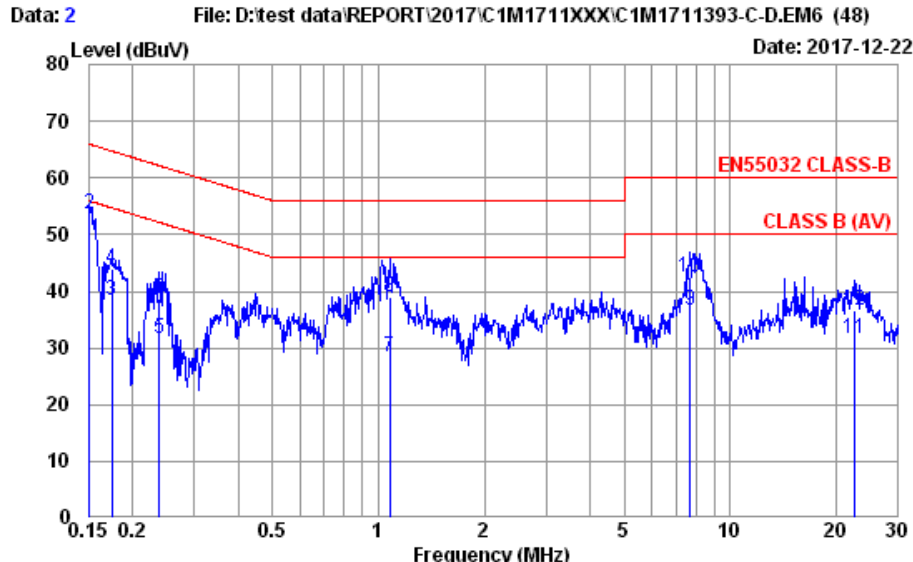
- The EUT and test equipment was set-up as section 4.1 and 5.2.
- The resolution bandwidth of the test receiver was at 120kHz (Quasi Peak) for frequencies below 1GHz or 1MHz (Peak) for frequencies above 1GHz.
- The antenna input terminal of EUT was connected to the test receiver via 75-50 ohm matching pad and T-Pad. The EUT and TV Pattern Generator or USB Compact Modulator 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

The following data are the worst emissions based on the prescan measurement result.

● Result for AC Mains Power Port

Test Date	2017. 12. 22	Environment	22°C, 44%
Input Power	AC 230V, 50Hz	Test Phase	Neutral
Tested By	Nick Du	Test Result	Pass
Test Mode	HDMI 1, 1920*1080/60Hz	Test Model	PA271Q-BK

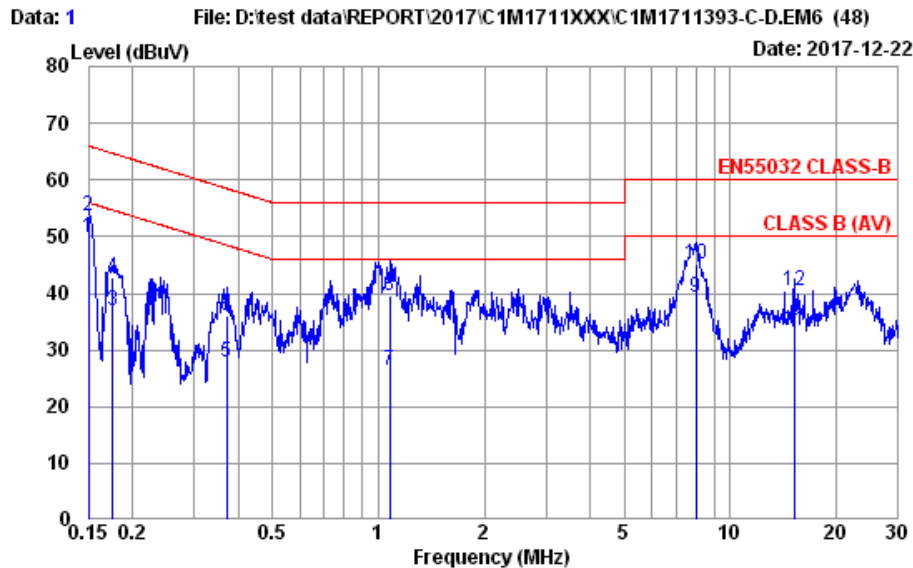


Site no. : No.7 Shielded Room Data no. : 2
Condition : ESH2-Z5 366(ADAPTER) L1SN Phase : NEUTRAL
Limit : EN55032 CLASS-B
Env. / Ins. : 22°C / 44% ESCI (1276) Engineer : Nick Du
EUT : PA271Q-BK
Power Rating : 230Vac/50Hz
Test Mode : 1920*1080/60Hz HDMI 1
Type c HDD

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.151	0.19	0.03	9.86	41.73	51.81	55.96	4.15	Average
2	0.151	0.19	0.03	9.86	43.43	53.51	65.96	12.45	QP
3	0.175	0.18	0.04	9.86	28.33	38.41	54.72	16.31	Average
4	0.175	0.18	0.04	9.86	33.82	43.90	64.72	20.82	QP
5	0.238	0.18	0.04	9.86	21.48	31.56	52.17	20.61	Average
6	0.238	0.18	0.04	9.86	28.63	38.71	62.17	23.46	QP
7	1.077	0.22	0.05	9.86	18.28	28.41	46.00	17.59	Average
8	1.077	0.22	0.05	9.86	28.87	39.00	56.00	17.00	QP
9	7.687	0.47	0.21	9.88	26.09	36.65	50.00	13.35	Average
10	7.687	0.47	0.21	9.88	31.93	42.49	60.00	17.51	QP
11	22.416	0.96	0.31	9.96	20.41	31.64	50.00	18.36	Average
12	22.416	0.96	0.31	9.96	25.31	36.54	60.00	23.46	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. 12. 22	Environment	22°C, 44%
Input Power	AC 230V, 50Hz	Test Phase	Line
Tested By	Nick Du	Test Result	Pass
Test Mode	HDMI 1, 1920*1080/60Hz	Test Model	PA271Q-BK



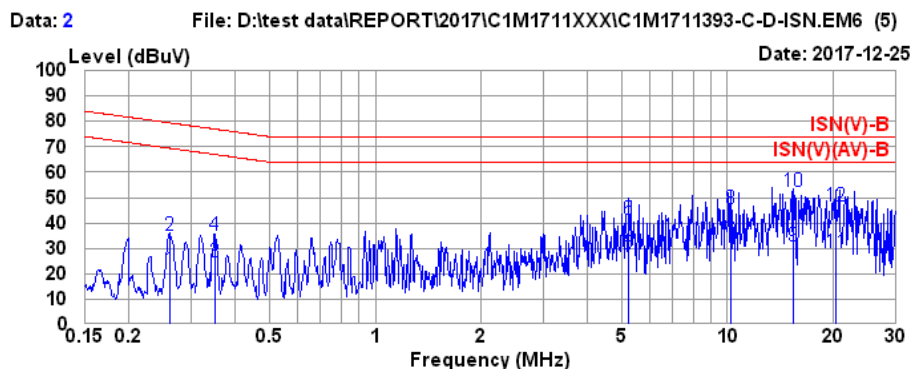
Site no. : No.7 Shielded Room Data no. : 1
Condition : ESH2-Z5 366(ADAPTER) LISN Phase : LINE
Limit : EN55032 CLASS-B
Env. / Ins. : 22°C / 44% ESCI (1276) Engineer : Nick Du
EUT : PA271Q-BK
Power Rating : 230Vac/50Hz
Test Mode : 1920*1080/60Hz HDMI 1
Type c HDD

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.150	0.18	0.03	9.86	39.77	49.84	55.99	6.15	Average
2	0.150	0.18	0.03	9.86	43.63	53.70	65.99	12.29	QP
3	0.176	0.17	0.04	9.86	26.90	36.97	54.68	17.71	Average
4	0.176	0.17	0.04	9.86	32.85	42.92	64.68	21.76	QP
5	0.371	0.18	0.04	9.86	17.65	27.73	48.47	20.74	Average
6	0.371	0.18	0.04	9.86	25.87	35.95	58.47	22.52	QP
7	1.077	0.21	0.05	9.86	16.18	26.30	46.00	19.70	Average
8	1.077	0.21	0.05	9.86	29.55	39.67	56.00	16.33	QP
9	7.977	0.51	0.21	9.88	28.81	39.41	50.00	10.59	Average
10	7.977	0.51	0.21	9.88	34.50	45.10	60.00	14.90	QP
11	15.226	0.90	0.28	9.92	22.20	33.30	50.00	16.70	Average
12	15.226	0.90	0.28	9.92	29.43	40.53	60.00	19.47	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.

● Result for Wired Network Port

Test Date	2017. 12. 25	Environment	24°C, 52%
Input Power	AC 230V, 50Hz	Test Result	Pass
Tested By	Nick Du	Test Model	PA271Q-BK
Test Mode	LAN (Speed : 100M)		



Site no. : No.7 Shielded Room Data no. : 2
 Condition : T8 CAT.6 Phase :
 Limit : ISN(V)-B
 Env. / Ins. : 24°C / 52% ESCI (1276) Engineer : Nick Du
 EUT : PA271Q-BK
 Power Rating : 230Vac/50Hz
 Test Mode : LAN (100M)

	Freq. (MHz)	ISN. Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.260	9.95	0.04	9.86	1.88	21.73	69.42	47.69	Average
2	0.260	9.95	0.04	9.86	15.01	34.86	79.42	44.56	QP
3	0.350	9.86	0.04	9.86	4.64	24.40	66.96	42.56	Average
4	0.350	9.86	0.04	9.86	15.51	35.27	76.96	41.69	QP
5	5.249	9.51	0.18	9.87	8.05	27.61	64.00	36.39	Average
6	5.249	9.51	0.18	9.87	21.67	41.23	74.00	32.77	QP
7	10.233	9.49	0.23	9.89	13.46	33.07	64.00	30.93	Average
8	10.233	9.49	0.23	9.89	25.99	45.60	74.00	28.40	QP
9	15.388	9.50	0.28	9.92	11.34	31.04	64.00	32.96	Average
10	15.388	9.50	0.28	9.92	32.75	52.45	74.00	21.55	QP
11	20.270	9.51	0.30	9.94	8.37	28.12	64.00	35.88	Average
12	20.270	9.51	0.30	9.94	27.12	46.87	74.00	27.13	QP

Remarks: 1. Emission Level= ISN. 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

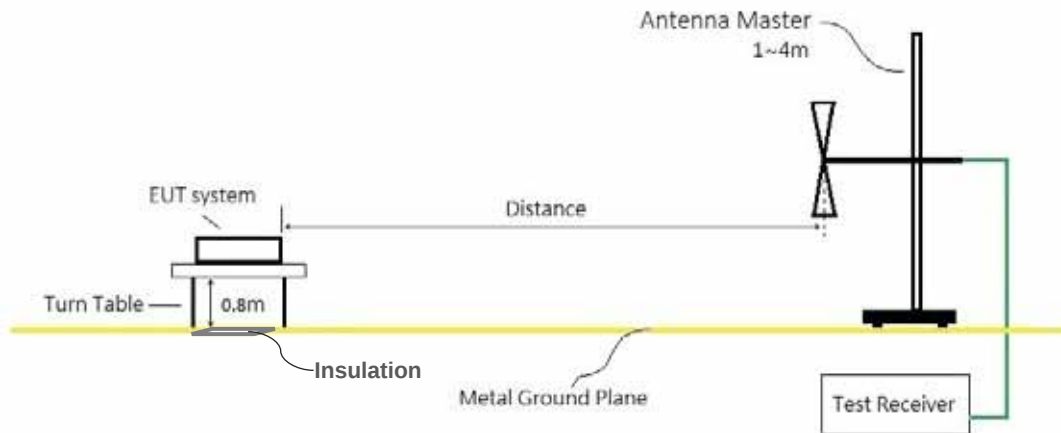
Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Spectrum Analyzer	Agilent	N9010A-503	MY51250850	2017. 03. 08	1 Year
2	Spectrum Analyzer	Agilent	N9010A-503	MY52220119	2017. 12. 15	1 Year
3	Test Receiver	R&S	ESCI7	100922	2017. 05. 15	1 Year
4	Amplifier	Sonoma	310N	187158	2017. 03. 06	1 Year
5	Amplifier	Sonoma	310N	187159	2017. 03. 14	1 Year
6	Bilog Antenna	Schwarzbeck	VULB 9168	711	2017. 07. 20	1 Year
7	Bilog Antenna	Schwarzbeck	VULB 9168	712	2017. 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	Digital Ther-mo-Hygro Meter	iMax	HTC-1	No.1 10m A/C	2017. 04. 21	1 Year
11	Test Software	Audix	e3	V.6.1206197	N.C.R.	N.C.R.

- For measurement of above 1GHz frequency range

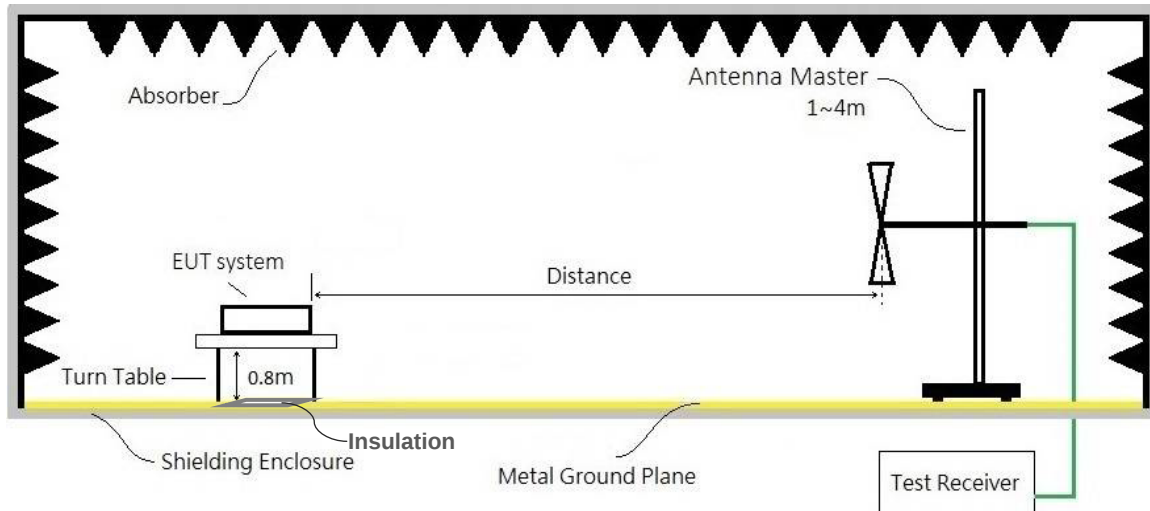
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Spectrum Analyzer	Agilent	N9010A-526	MY51250943	2017. 02. 16	1 Year
2	Microwave Preamplifier	Agilent	8449B	3008A02681	2017. 03. 14	1 Year
3	Double-Ridged Waveguide Horn	ETS-Lindgren	3117	00114403	2017. 03. 27	1 Year
4	Signal Cable	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	Digital Ther-mo-Hygro Meter	iMax	HTC-1	No.1 10m A/C	2017. 04. 21	1 Year

6.2. Test Setup

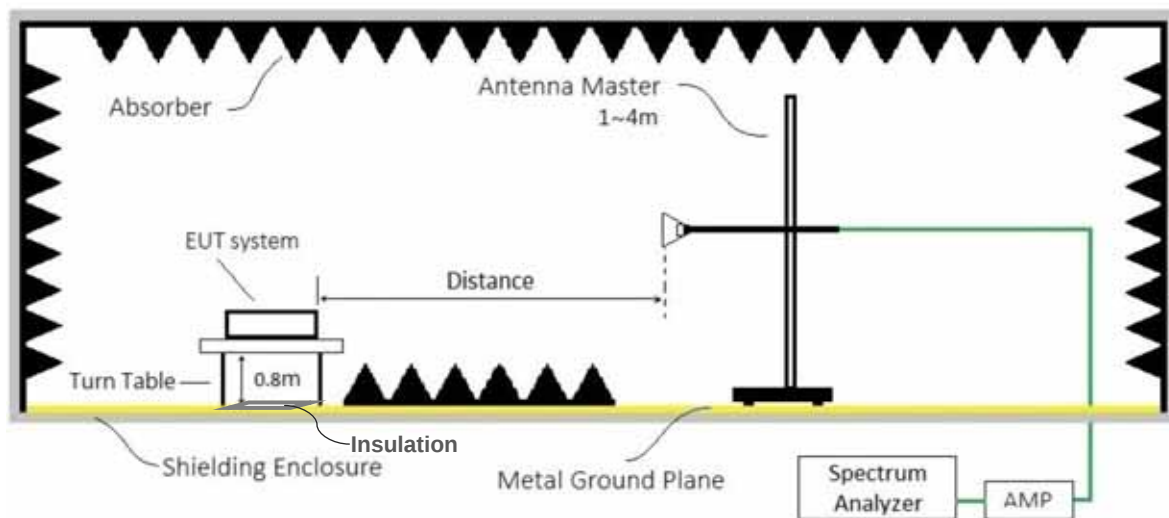
- For frequency range 30 to 1000MHz (at Open Area Test Site)



- For frequency range 30 to 1000MHz (at Semi-Anechoic Chamber)



- For frequency range 1 to 6GHz (at Semi-Anechoic Chamber)



6.3. Applicable Limits

- For radiated emissions at frequencies up to 1GHz

Frequency Range (MHz)	Measurement			Class A Limits dB(μV/m)	Class B Limits dB(μV/m)
	Facility	Distance (m)	Detector Type/ Bandwidth		
30 – 230	OATS/ SAC	10	Quasi Peak/ 120 kHz	40	30
230 – 1000				47	37
30 – 230		3		50	40
230 – 1000				57	47

- For radiated emissions at frequencies above 1GHz

Frequency Range (MHz)	Measurement			Class A Limits dB(μ V/m)	Class B Limits dB(μ V/m)
	Facility	Distance (m)	Detector Type/ Bandwidth		
1000 – 3000	FSOATS	3	Average/ 1 MHz	56	50
3000 – 6000				60	54
1000 – 3000			Peak/ 1 MHz	76	70
3000 – 6000				80	74

- For radiated emissions at frequencies from FM receivers

Frequency Range (MHz)	Measurement			Class B Limits dB(μV/m)		
	Facility	Distance (m)	Detector Type/ Bandwidth	Fundamental	Harmonics	
30 – 230	OATS/ SAC	10	Quasi Peak/ 120 kHz	50	42	
230 – 300					42	
300 – 1000					46	
30 – 230	OATS/ SAC	3		Quasi Peak/ 120 kHz	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 6.3 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 or OATS 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 set as section 6.3 defined.
- 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)

Emission Level = Reading (Receiver) + Cable Loss + Antenna Factor

(Above 1GHz)

Emission Level = Reading (Spectrum) + Cable Loss + Antenna Factor – Preamp Gain

- The 3dB bandwidth of the horn antenna is minimum 52 degree (w=2.93m at 3m distance) for 1~6 GHz.

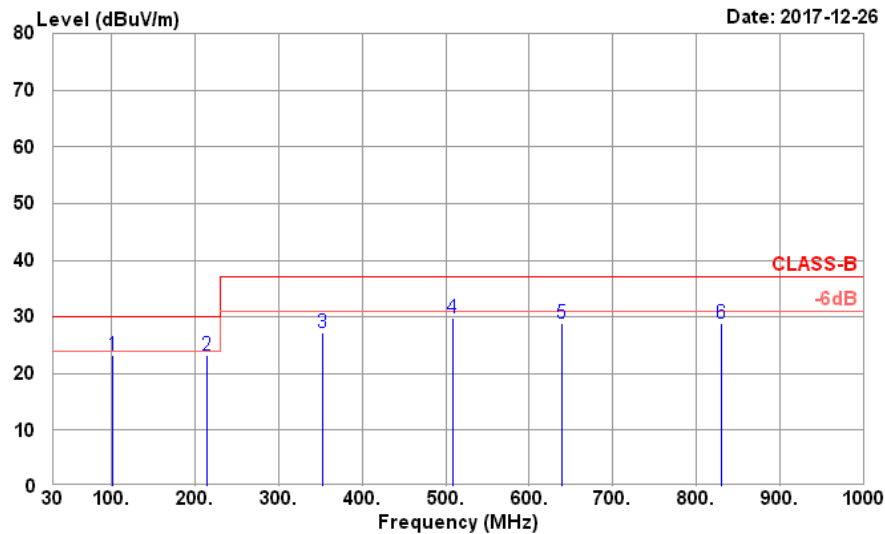
6.5. Measurement Result

The following data are the worst emissions based on the prescan measurement result.

- For frequency range 30 – 1000MHz

Test Date	2017. 12. 26	Environment	25°C, 50%
Input Power	AC 230V, 50Hz	Ant. Polarity	Horizontal
Tested By	Ken Yang	Test Result	Pass
Test Mode	HDMI 1, 1920*1080/60Hz	Test Model	PA271Q-BK

Data: 6 File: D:\TEST DATA\REPORT\2017\1C1M1711XXX\1C1M1711393\1C1M1711393-10M.EM6 (2



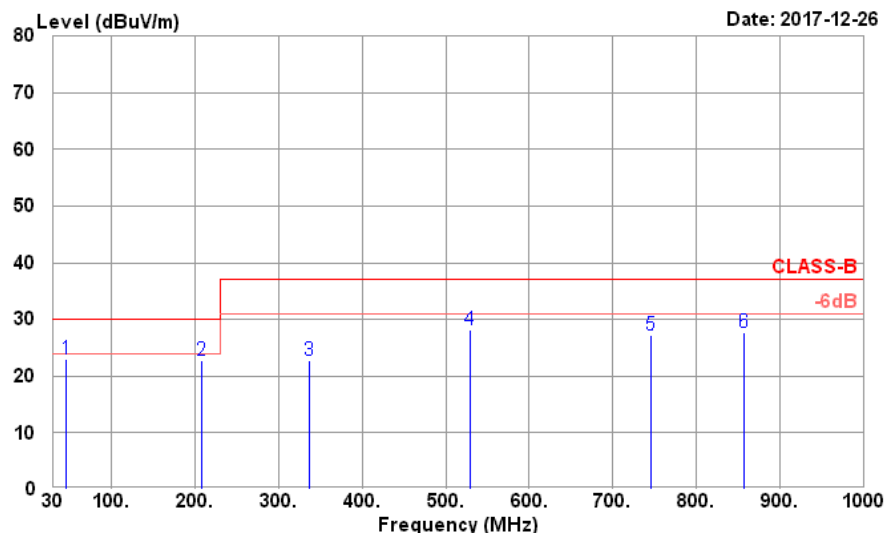
Site no. : NO.1 10M Chamber Data no. : 6
 Dis. / Ant. : 10m VULB 9168 712 Ant. pol. : HORIZONTAL
 Limit : CLASS-B
 Env. / Ins. : 25°C / 50% ESCI 7 (0922) Engineer : Ken Yang
 EUT : PA271Q-BK
 Power Rating : 230Vac/50Hz
 Test Mode : 1920*1080/60Hz HDMI 1

	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	101.78	14.90	1.57	33.14	39.90	23.23	30.00	6.77	QP
2	214.30	16.32	2.37	33.06	37.62	23.25	30.00	6.75	QP
3	352.04	20.42	3.10	33.00	36.69	27.21	37.00	9.79	QP
4	508.21	23.51	3.86	33.04	35.44	29.77	37.00	7.23	QP
5	639.16	25.86	4.37	33.07	31.62	28.78	37.00	8.22	QP
6	830.25	27.94	5.14	32.62	28.35	28.81	37.00	8.19	QP

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

Test Date	2017. 12. 26	Environment	25°C, 50%
Input Power	AC 230V, 50Hz	Ant. Polarity	Vertical
Tested By	Ken Yang	Test Result	Pass
Test Mode	HDMI 1, 1920*1080/60Hz	Test Model	PA271Q-BK

Data: 5 File: D:\TEST DATA\REPORT\2017\1C1M1711XXX\1C1M1711393\1C1M1711393-10M.EM6 (2



Site no. : NO.1 10M Chamber Data no. : 5
Dis. / Ant. : 10m VULB 9168 711 Ant. pol. : VERTICAL
Limit : CLASS-B
Env. / Ins. : 25°C / 50% ESCI 7 (0922) Engineer : Ken Yang
EUT : PA271Q-BK
Power Rating : 230Vac/50Hz
Test Mode : 1920*1080/60Hz HDMI 1

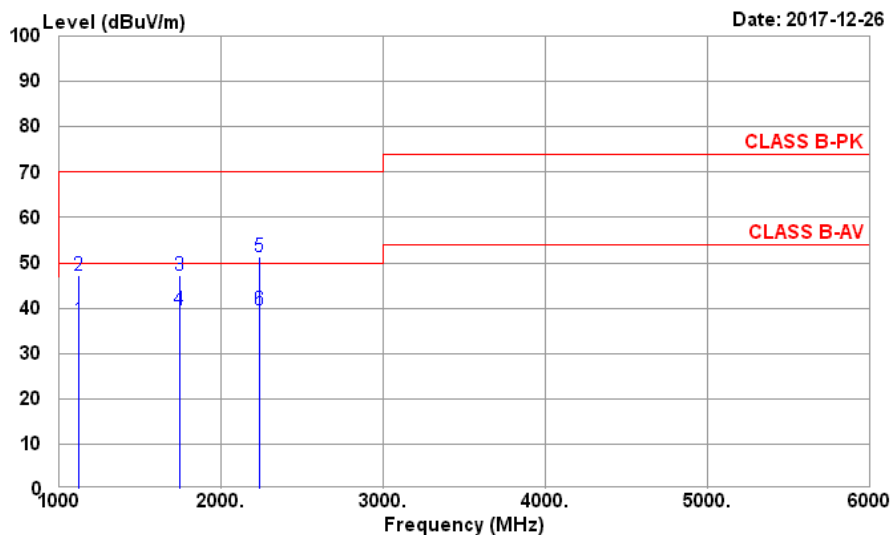
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	45.52	19.42	0.81	32.66	35.51	23.08	30.00	6.92	QP
2	207.51	16.04	1.83	32.55	37.34	22.66	30.00	7.34	QP
3	336.52	20.11	2.35	32.43	32.79	22.82	37.00	14.18	QP
4	529.55	23.82	3.08	32.38	33.60	28.12	37.00	8.88	QP
5	745.86	27.11	3.73	32.30	28.78	27.32	37.00	9.68	QP
6	857.41	28.35	4.00	32.00	27.42	27.77	37.00	9.23	QP

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

● For frequency range Above 1GHz

Test Date	2017. 12. 26	Environment	25°C, 50%
Input Power	AC 230V, 50Hz	Ant. Polarity	Horizontal
Tested By	Ken Yang	Test Result	Pass
Test Mode	HDMI 1, 1920*1080/60Hz	Test Model	PA271Q-BK

Data: 16 File: D:\TEST DATA\REPORT\2017\1M1711XXX\1M1711393\1M1711393-10M.EM6 (2



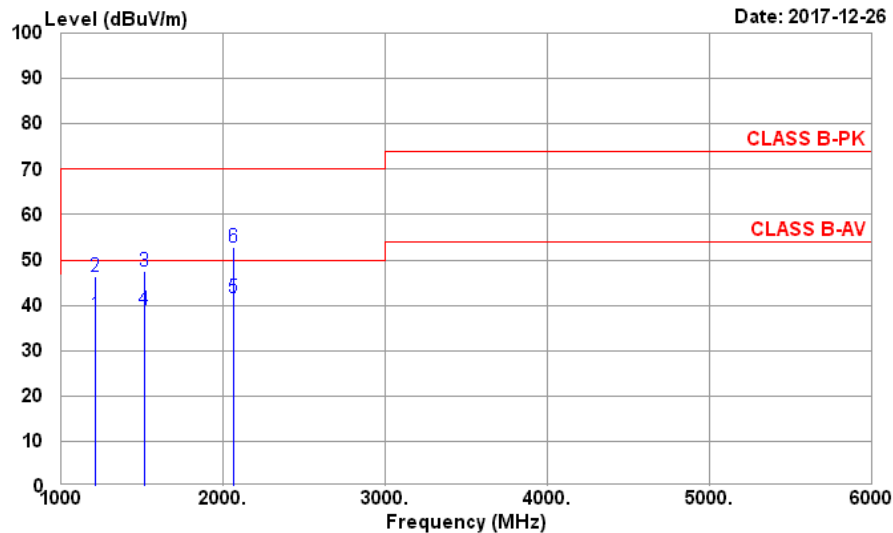
Site no. : No.1 10m Chamber Data no. : 16
 Dis. / Ant. : 3m 3117 14403 Ant. pol. : HORIZONTAL
 Limit : CLASS B-PK
 Env. / Ins. : 25°C / 50% N9010A (0943) Engineer : Ken Yang
 EUT : PA271Q-BK
 Power Rating : 230Vac/50Hz
 Test Mode : 1920*1080/60Hz HDMI 1

	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	1118.65	27.58	1.85	36.14	44.00	37.29	50.00	12.71	Average
2	1118.77	27.58	1.85	36.14	53.83	47.12	70.00	22.88	Peak
3	1740.38	29.72	2.34	35.57	50.66	47.15	70.00	22.85	Peak
4	1740.61	29.72	2.34	35.57	43.06	39.55	50.00	10.45	Average
5	2240.27	31.91	2.67	35.54	52.30	51.34	70.00	18.66	Peak
6	2240.52	31.91	2.67	35.54	40.46	39.50	50.00	10.50	Average

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

Test Date	2017. 12. 26	Environment	25°C, 50%
Input Power	AC 230V, 50Hz	Ant. Polarity	Vertical
Tested By	Ken Yang	Test Result	Pass
Test Mode	HDMI 1, 1920*1080/60Hz	Test Model	PA271Q-BK

Data: 15 File: D:\TEST DATA\REPORT\2017\1C1M1711XXX\1C1M1711393\1C1M1711393-10M.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. : 25°C / 50% N9010A (0943) Engineer : Ken Yang
EUT : PA271Q-BK
Power Rating : 230Vac/50Hz
Test Mode : 1920*1080/60Hz HDMI 1

	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	1210.37	27.64	1.94	36.02	44.29	37.85	50.00	12.15	Average
2	1210.72	27.64	1.94	36.02	52.71	46.27	70.00	23.73	Peak
3	1512.08	27.91	2.20	35.68	53.01	47.44	70.00	22.56	Peak
4	1512.31	27.91	2.20	35.68	44.55	38.98	50.00	11.02	Average
5	2060.28	31.60	2.53	35.47	43.04	41.70	50.00	8.30	Average
6	2060.31	31.60	2.53	35.47	54.10	52.76	70.00	17.24	Peak

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

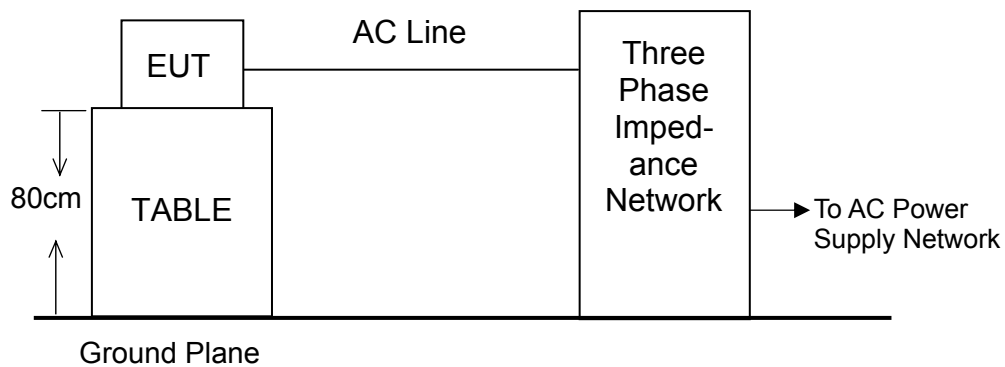
7. Measurement of Harmonics Current Emissions

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 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	Profling AC Switching Unit	TESEQ	NSG 2200-3	EK 22713	2016. 07. 01	2 Years
5	Digital Thermo-Hygro Meter	iMax	HTC-1	No.2 Harmonics Room	2017. 04. 21	1 Year

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.

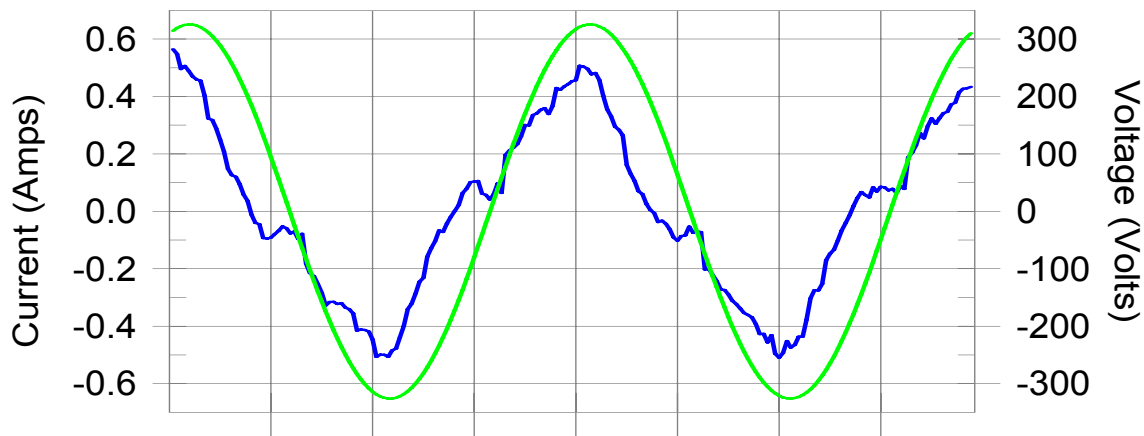
7.5. Measurement Result

Test Date	2017. 12. 27	Environment	25°C, 40%
Input Power	AC 230V, 50Hz	Test Result	Pass (Class D)
Tested By	Minxiang Yang	Test Model	PA271Q-BK
Test Mode	HDMI 1, 1920*1080/60Hz		

Test Result: N/L

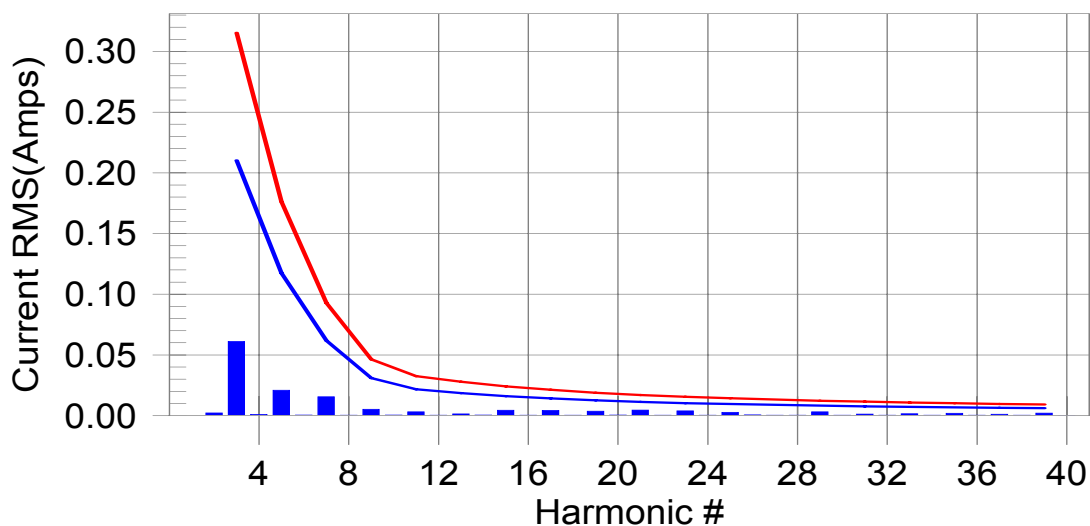
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class D limit line

European Limits



Test result: N/L Worst harmonic was #3 with 19.6% 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):	230.333	Frequency(Hz):	50.00
I_Peak (Amps):	0.564	I_RMS (Amps):	0.296
I_Fund (Amps):	0.283	Crest Factor:	1.957
Power (Watts):	61.9	Power Factor:	0.908

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	0.000	N/A	0.003	0.000	N/A	Pass
3	0.061	0.210	N/A	0.062	0.315	N/A	Pass
4	0.001	0.000	N/A	0.001	0.000	N/A	Pass
5	0.021	0.118	N/A	0.021	0.176	N/A	Pass
6	0.000	0.000	N/A	0.001	0.000	N/A	Pass
7	0.015	0.062	N/A	0.016	0.093	N/A	Pass
8	0.000	0.000	N/A	0.001	0.000	N/A	Pass
9	0.005	0.031	N/A	0.006	0.046	N/A	Pass
10	0.001	0.000	N/A	0.001	0.000	N/A	Pass
11	0.003	0.022	N/A	0.004	0.032	N/A	Pass
12	0.000	0.000	N/A	0.001	0.000	N/A	Pass
13	0.001	0.019	N/A	0.002	0.028	N/A	Pass
14	0.001	0.000	N/A	0.001	0.000	N/A	Pass
15	0.004	0.016	N/A	0.005	0.024	N/A	Pass
16	0.000	0.000	N/A	0.001	0.000	N/A	Pass
17	0.004	0.014	N/A	0.005	0.021	N/A	Pass
18	0.000	0.000	N/A	0.001	0.000	N/A	Pass
19	0.004	0.013	N/A	0.004	0.019	N/A	Pass
20	0.001	0.000	N/A	0.001	0.000	N/A	Pass
21	0.005	0.011	N/A	0.005	0.017	N/A	Pass
22	0.000	0.000	N/A	0.001	0.000	N/A	Pass
23	0.004	0.010	N/A	0.005	0.015	N/A	Pass
24	0.000	0.000	N/A	0.000	0.000	N/A	Pass
25	0.003	0.010	N/A	0.003	0.014	N/A	Pass
26	0.001	0.000	N/A	0.001	0.000	N/A	Pass
27	0.000	0.009	N/A	0.001	0.013	N/A	Pass
28	0.000	0.000	N/A	0.001	0.000	N/A	Pass
29	0.003	0.008	N/A	0.003	0.012	N/A	Pass
30	0.000	0.000	N/A	0.001	0.000	N/A	Pass
31	0.001	0.008	N/A	0.001	0.012	N/A	Pass
32	0.000	0.000	N/A	0.001	0.000	N/A	Pass
33	0.002	0.007	N/A	0.002	0.011	N/A	Pass
34	0.000	0.000	N/A	0.001	0.000	N/A	Pass
35	0.002	0.007	N/A	0.002	0.010	N/A	Pass
36	0.000	0.000	N/A	0.001	0.000	N/A	Pass
37	0.001	0.006	N/A	0.001	0.010	N/A	Pass
38	0.000	0.000	N/A	0.001	0.000	N/A	Pass
39	0.002	0.006	N/A	0.003	0.009	N/A	Pass
40	0.000	0.000	N/A	0.000	0.000	N/A	Pass

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

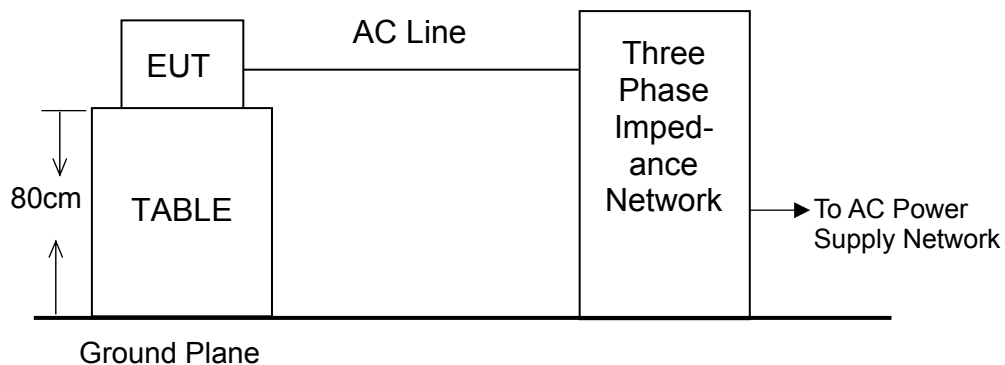
8. Measurement of Voltage Fluctuations and Flicker Emissions

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	Profling AC Switching Unit	TESEQ	NSG 2200-3	EK 22713	2016. 07. 01	2 Years
5	Digital Thermo-Hygro Meter	iMax	HTC-1	No.2 Harmonics Room	2017. 04. 21	1 Year

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.
- If the maximum r.m.s input current (including inrush current) does not exceed 20A, and the supply current after inrush is within a variation band of 1.5A, it's not applicable to test the manual switching.

8.5. Measurement Result

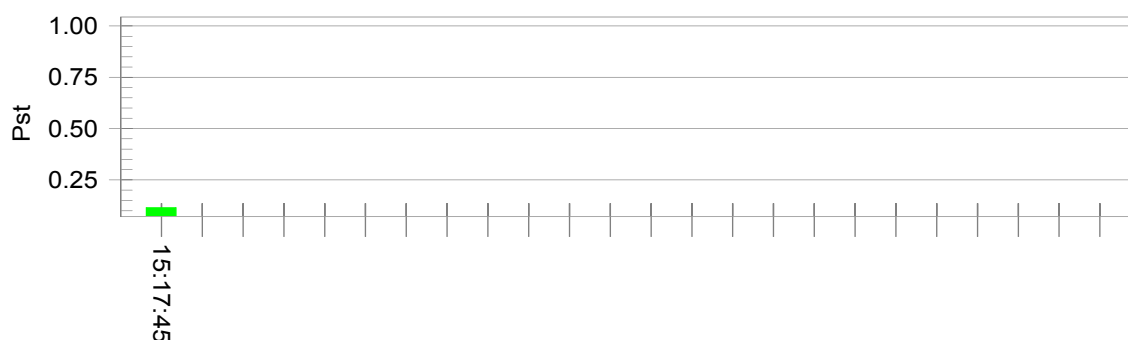
Test Date	2017. 12. 27	Environment	25°C, 40%
Input Power	AC 230V, 50Hz	Test Result	Pass
Tested By	Minxaing Yang	Test Model	PA271Q-BK
Test Mode	HDMI 1, 1920*1080/60Hz		

Test Result: Pass

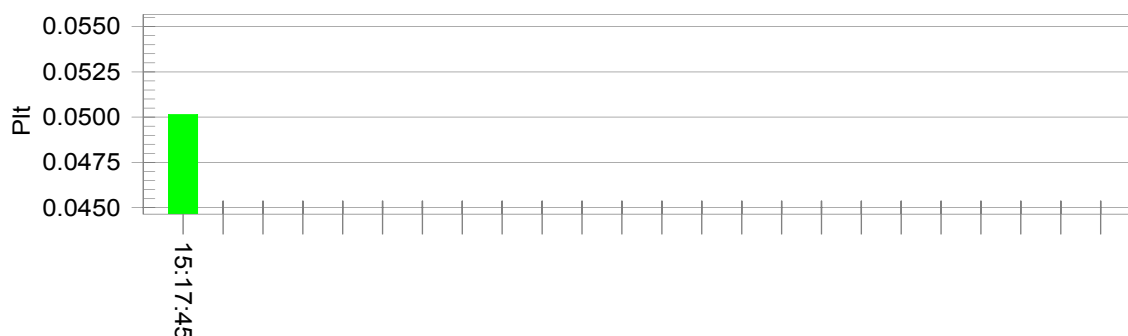
Status: Test Completed

Pst and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	230.18		
Highest dt (%):	0.00	Test limit (%):	N/A
T-max (mS):	0.0	Test limit (mS):	500.0
Highest dc (%):	0.00	Test limit (%):	3.30
Highest dmax (%):	0.05	Test limit (%):	4.00
Highest Pst (10 min. period):	0.115	Test limit:	1.000

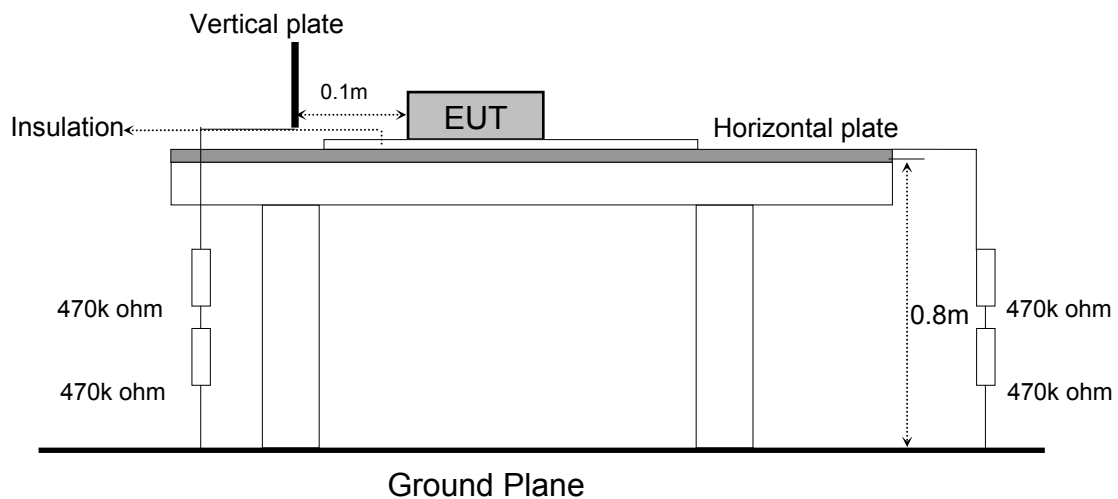
9. Electrostatic Discharge Immunity Test

9.1. List of Test Instruments

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	ESD Simulator	TESEQ	NSG 437	1057	2017. 11. 10	1 Year
2	Digital Ther-mo-Hygro meter	CUSTOM	WF-301	01780	2017. 10. 20	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 $\pm 8\text{kV}$	

- Deviation from applicable standard
No deviation

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 is same as foregoing subclause. 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. 12. 26	Environment	20°C, 45%, 99KPa
Input Power	AC 230V, 50Hz	Test Result	Pass
Tested By	Sam Yan	Test Model	PA271Q-BK
Test Mode	HDMI 1, 1920*1080/60Hz		

Air Discharge	Voltage kV Level / Discharge per polarity 10 / Result										
Test Location	+2	-2	+4	-4	+8	-8					Comments
Screen*4(1~4)	ND	ND	ND	ND	A	A					
LED(5)	ND	ND	ND	ND	ND	ND					
Seam*9(6~10) (30~33)	ND	ND	ND	ND	ND	ND					
Seam*3(11~13)	ND	ND	ND	ND	A	A					
USB(14)	ND	ND	ND	ND	A	A					
HDMI*2(15,16)	ND	ND	ND	ND	A	A					
MiniDP(17)	ND	ND	ND	ND	A	A					
USB3.0*3(18~20)	ND	ND	ND	ND	A	A					
Switch(21)	ND	ND	ND	ND	A	A					
AC IN(22)	ND	ND	ND	ND	ND	ND					
Contact Discharge	Voltage kV Level / Discharge per polarity 25 / Result										
Test Location	+2	-2	+4	-4							Comments
USB3.0*2 (23,24)	A	A	A	A							
Type C(25)	A	A	A	A							
DP*2(26,27)	A	A	A	A							
Audio(28)	A	A	A	A							
LAN(29)	A	A	A	A							
Indirect Contact	Voltage kV Level / Discharge per polarity 25 / 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 after test.											

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 (Test Level)		Performance Criteria
Frequency Range	80-1000MHz	A
Field Strength	3V/m (unmodulated, r.m.s)	
Modulation & Signal	80%, 1kHz AM	

- Deviation from applicable standard
No deviation

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. 12. 27	Environment	20°C, 50%
Input Power	AC 230V, 50Hz	Test Result	Pass
Tested By	Jason Chou	Test Model	PA271Q-BK
Test Mode	HDMI 1, 1920*1080/60Hz		

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.				

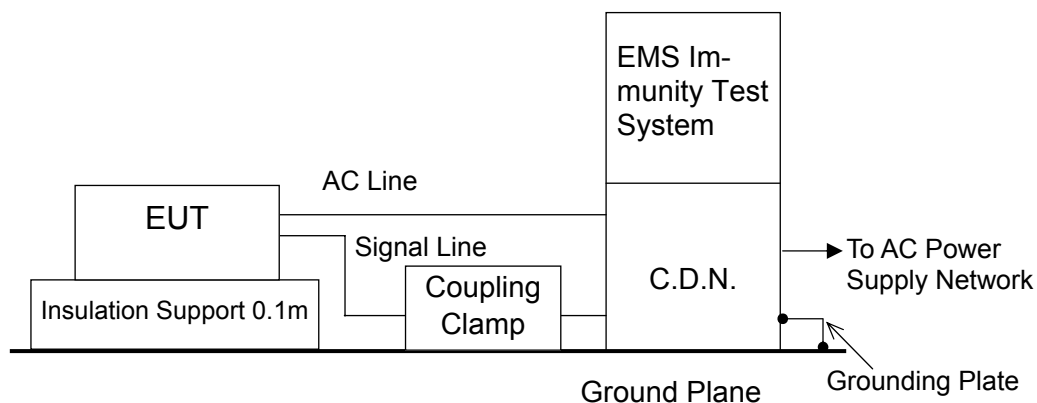
11. Electrical fast transient/burst Immunity Test

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	2017. 07. 21	1 Year
2	C.D.N.	TESEQ	CDN 3063	2074	2017. 07. 21	1 Year
3	Burst/EFT Data-line Coupling Clamp	TESEQ	CDN 3425	1717	2017. 07. 21	1 Year
4	Digital Ther-mo-Hygro Meter	iMax	HTC-1	No.2 EFT/SURGE	2017. 04. 01	1 Years

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 (Test Level)	Performance Criteria
Signal and control ports : $\pm 0.5\text{kV}$	B
AC mains power input ports : $\pm 1\text{kV}$	
Tr/Th : 5/50ns	
Repetition frequency : 5kHz	

- Deviation from applicable standard
- No deviation

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 I/O interface cable of the EUT is connected to its simulator through a capacitive coupling clamp that is 1 meter long. The capacitive coupling clamp is impressed with burst noise for 1min and indirectly couples burst to I/O interface cable.

[Remark: Applicable only to cables which according to the manufacturer's specification supports communication on cable lengths greater than 3 m.]

- For DC input and DC output power ports

The DC power cable of the EUT is connected to the DC power source by using a coupling device which couples the EFT interference signal to DC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test can't less than 2min

[Remark: Applicable only to DC power ports when the EUT supports this ports.]

11.5. Test Result

Test Date	2017. 12. 28	Environment	25°C, 52%
Input Power	AC 230V, 50Hz	Test Result	Pass
Tested By	Fans Lee	Test Model	PA271Q-BK
Test Mode	HDMI 1, 1920*1080/60Hz		

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
Inject Place: I/O Cable					
LAN	+	0.5	60	Clamp	A
LAN	-	0.5	60	Clamp	A
Remark: No error occurred.					

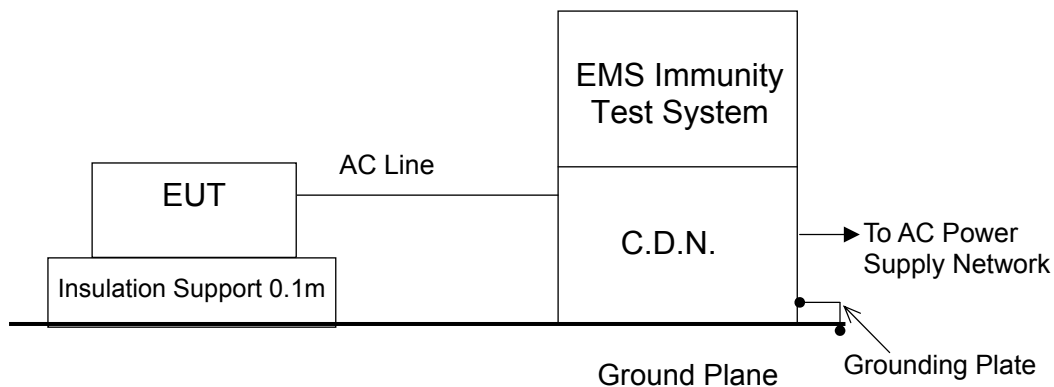
12. Surge Immunity Test

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	2017. 07. 21	1 Year
2	CDN	TESEQ	CDN 3063	2074	2017. 07. 21	1 Year
3	Digital Ther-mo-Hygro Meter	iMax	HTC-1	No.2 EFT/Surge	2017. 04. 21	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 (Test Level)	Performance Criteria
Telecommunication ports : $\pm 1\text{kV}$	C
AC input and output power ports --line to line : $\pm 1\text{kV}$ --line to earth: $\pm 2\text{kV}$	B
Power port: 1.2/50 (8/20) Tr/Th μs Wired network ports: 10/700Tr/Th μs (*) or 1.2/50 (8/20) Tr/Th μs .	
(*)Where the coupling network for the 10/700 μs waveform affects the functioning of high speed data ports, the test shall be carried out using a 1,2/50 (8/20) μs waveform and appropriate coupling network.	

- Deviation from applicable standard
No deviation

12.4.Measurement Procedure

For Input and Output AC Power Port

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

- Setup the EUTs and associated equipment described as clause 4.1.
- For line to line coupling mode, provided a 0.5/1kV 1.2/50 μ s current surge (at open-circuit condition) and 8/20 μ s 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.

For Telecommunication Port

- Setup the EUTs and associated equipment described as clause 4.1.
- For Off Line Mode: The waveform is an open-circuit voltage front time of 10 μ s, and an open-circuit voltage time to half value of 700 μ s.
- For On Line mode: The waveform is an open-circuit voltage front time of 1.2 μ s, and an open-circuit voltage time to half value of 50 μ s.
- In the case of shielded line, the surge is applied to direct application.

12.5. Test Result

Test Date	2017. 12. 28	Environment	25°C, 52%
Input Power	AC 230V, 50Hz	Test Result	Pass
Tested By	Fans Lee	Test Model	PA271Q-BK
Test Mode	HDMI 1, 1920*1080/60Hz		

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

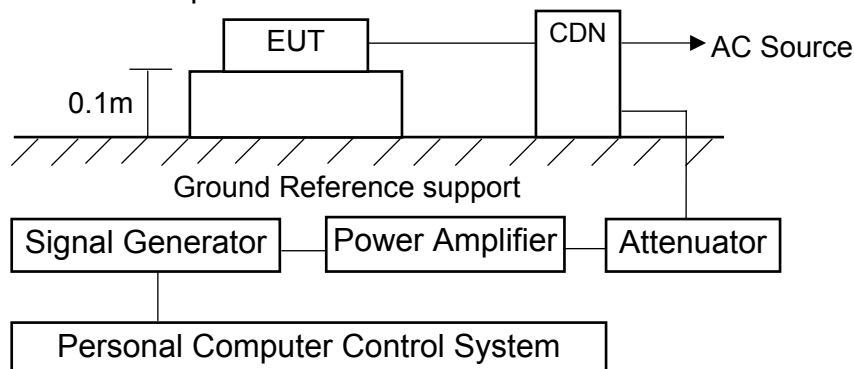
13.1. List of Test Instruments

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Signal Generator	R&S	SMC100A	101402	2017. 05. 06	1 Year
2.	Power Amplifier	A/R	100A250A	0330351	N.C.R.	N.C.R.
3.	Attenuator	Weinschel	40-6-34	NB538	2017. 04. 24	1 Year
4.	CDN	Fischer	FCC-801-M3-25A	9961	2017. 03. 06	1 Year
5.	Digital Ther-mo-Hygrometer	TEST	608-H1	30128573	2017. 03. 31	1 Year
6.	Power Meter	Agilent	N1913A	MY52070009	2017. 01. 18	1 Year
7.	Injection Clamp	Fischer	F-203I-23MM	332	2017. 06. 01	1 Year
8.	RF Current Probe	Fischer	F-33-2	506	2017. 05. 01	1 Year

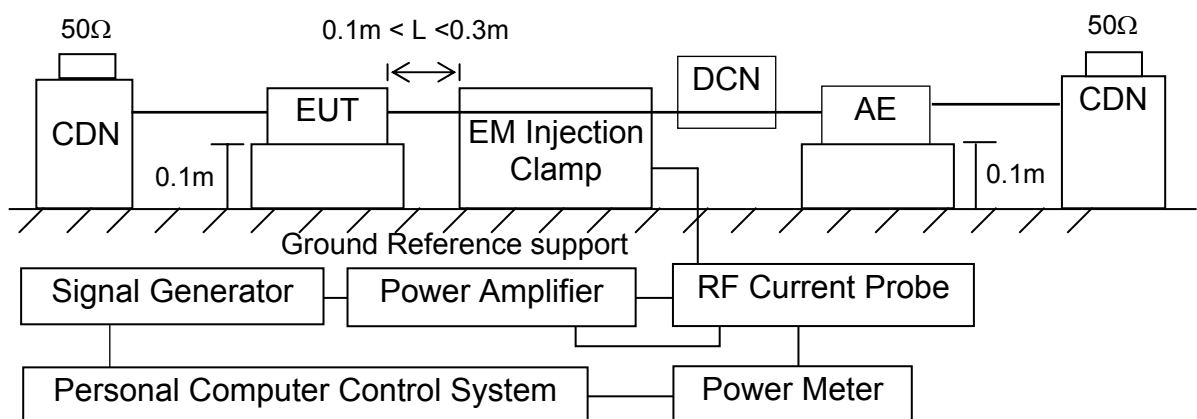
13.2. Test Setup

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

● Common Mode Test Setup



● EM Clamp Mode Test Setup



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 (Test Level)		Performance Criteria
Signal and telecommunication ports, AC Input and Output Power Ports		
Frequency Range	0.15-80MHz	A
Field Strength	3V (unmodulated, r.m.s)	
Modulation	80% AM (1kHz)	

- Deviation from applicable standard
No deviation

13.4.Measurement Procedure

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

**** For AC Power Line ****

- Setup the EUT 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 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.
- The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- The frequency range was swept from 0.15 to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
- The rate of sweep shall not exceed 1.5×10^3 decades/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.
- Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

**** For Signal Port ****

- The EUT and supporting equipment were placed on an insulating support 0.1m high above a ground reference plane. EM Injection Clamp (coupling and decoupling device) was placed on the ground plane making contact with it at about 0.1-0.3m from EUT. Cables between EM Injection Clamp and EUT were as short as possible.
- The CDN was placed on between AE and EUT. The EUT and AE of power through CDN, CDN terminated with 50Ω at the RF disturbance input port.
- The disturbance signal described below was injected to EUT through EM Injection Clamp.

13.5. Test Result

Test Date	2017. 12. 26	Environment	22°C, 53%
Input Power	AC 230V, 50Hz	Test Result	Pass
Tested By	Joe Huang	Test Model	PA271Q-BK
Test Mode	HDMI 1, 1920*1080/60Hz		

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

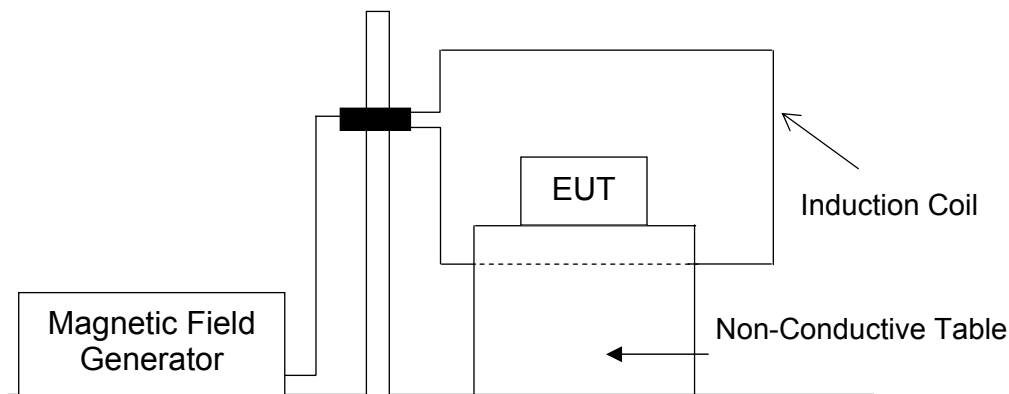
14. Power Frequency Magnetic Field Immunity Test

14.1. List of Test Instruments

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Magnetic Field Generator	Narda S.T.S. / PMM	PMM1008	0100X30101	2017. 11. 18	1 Year
2	Digital Ther-mo-Hygro Meter	iMax	HTC-1	No.2 Mag-netic Room	2017. 04. 21	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 (Test Level)		Performance Criteria
Power Frequency	50Hz or 60Hz	A
Magnetic Field Strength	1A/m (rms)	

- Deviation from applicable standard
No deviation

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. 12. 27	Environment	22°C, 52%
Input Power	AC 230V, 50Hz	Test Result	Pass
Tested By	Minxaing Yang	Test Model	PA271Q-BK
Test Mode	HDMI 1, 1920*1080/60Hz		

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.

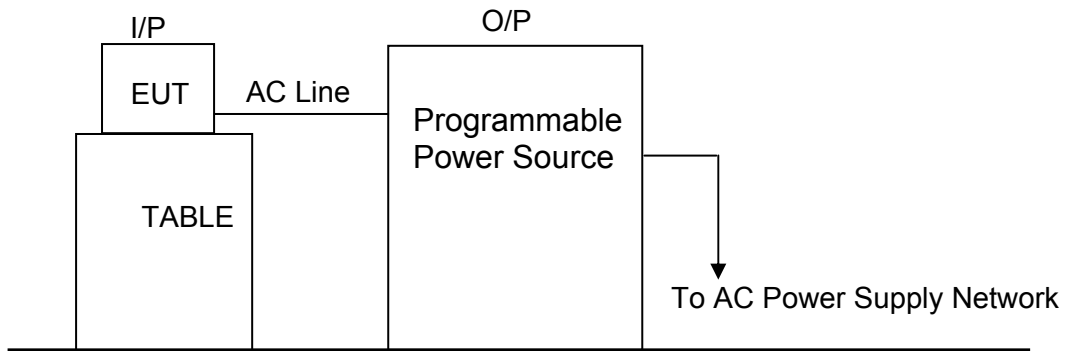
15. Voltage Dips and Interruptions Immunity Test

15.1. List of Test Instruments

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Programmable Power Source	TESEQ	NSG1007-45	1248A04038	2016. 01. 29	2 Years
2	Digital Ther-mo-Hygro Meter	iMax	HTC-1	No.2 Har-monics Room	2017. 04. 21	1 Year

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 (Test Level)		Performance Criteria
Voltage dips	>95% reduction, 0.5period	B
	30% reduction , 25period	C
Voltage interruptions	>95% reduction , 250period	C

- Deviation from applicable standard
No deviation

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. 12. 27	Environment	22°C, 51%
Input Power	AC 100-240V, 50/60Hz	Test Result	Pass
Tested By	Minxaing Yang	Test Model	PA271Q-BK
Test Mode	HDMI 1, 1920*1080/60Hz		

Type of Test	Test Voltage	Phase Angle (°)	Reduction (%)	Cycle	Results & Performance Criterion
Voltage Dips	100V 240V	0, 45, 90, 135, 180, 225, 270, 315	>95	0.5	Pass, A
		0, 45, 90, 135, 180, 225, 270, 315	30	25	Pass, A
Voltage Interruptions	100V 240V	0, 45, 90, 135, 180, 225, 270, 315	>95	250	Pass B, Note
Note: Criterion B, The screen of EUT was stopped during the test, but it's self-recoverable after test.					

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
Radiated emissions (No.4 3m Chamber)	30MHz-200MHz, 3m, Horizontal	±4.1dB
	200MHz-1000MHz, 3m, Horizontal	±4.4dB
	30MHz-200MHz, 3m, Vertical	±4.2dB
	200MHz-1000MHz, 3m, Vertical	±5.0dB
	1GHz-6GHz, 3m	±4.4dB
	6GHz-18GHz, 3m	±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

- For AC Mains Power Port



Front View of Conducted Measurement



Back View of Conducted Measurement

- For Wired Network Port, Asymmetric Mode



Front View of Conducted Measurement



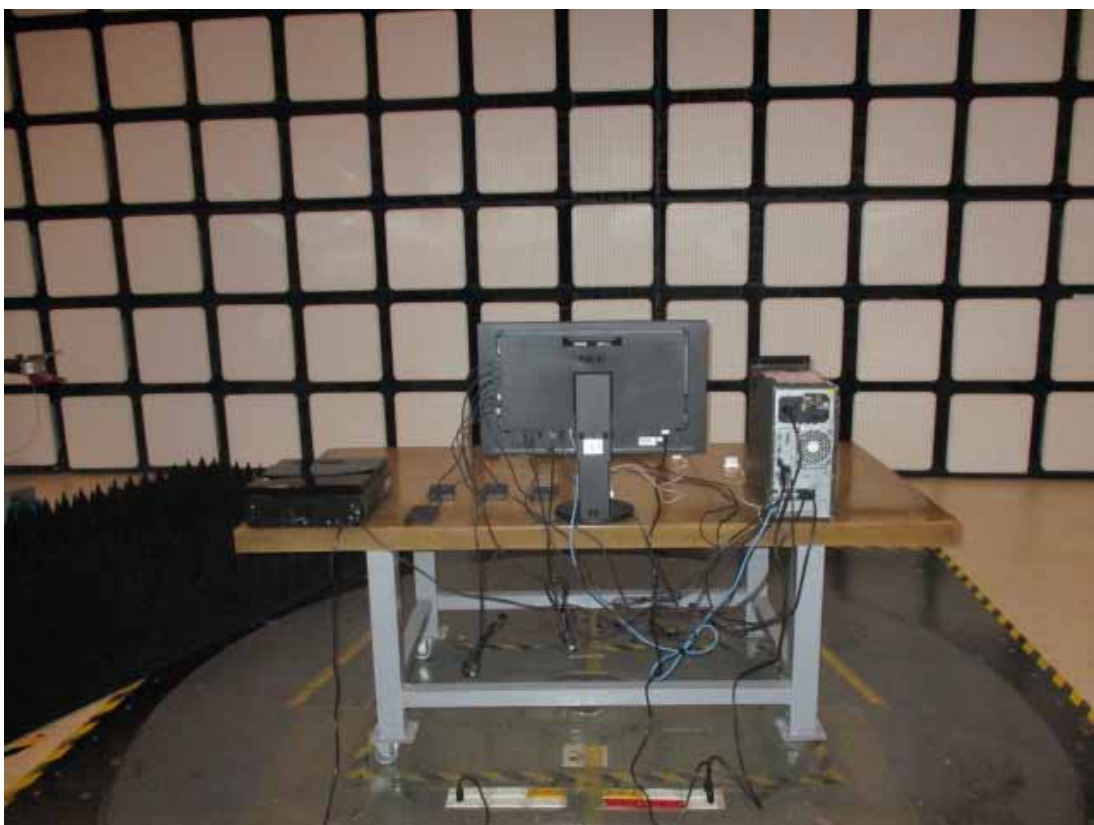
Back View of Conducted Measurement

17.2. Radiated Emissions Measurement

- For Frequency Range 30 – 1000MHz

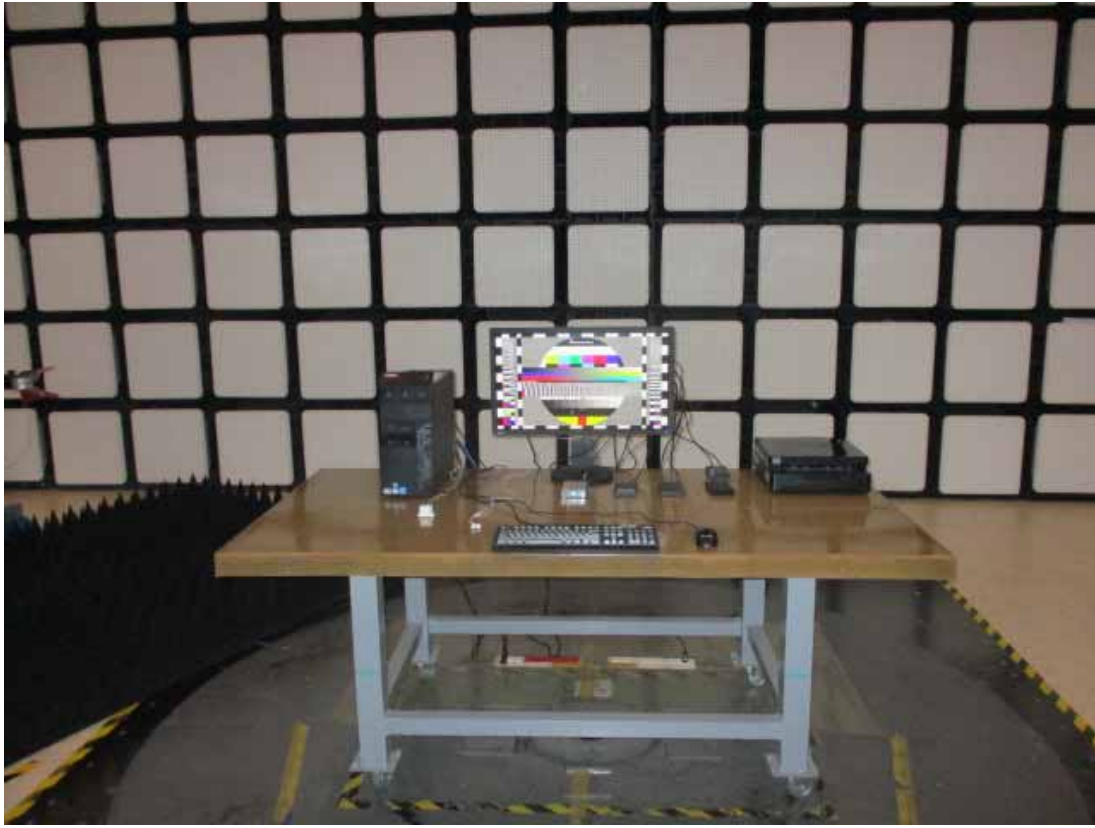


Front View of Radiated Measurement



Back View of Radiated Measurement

- For Frequency Range Above 1GHz



Front View of Radiated Measurement

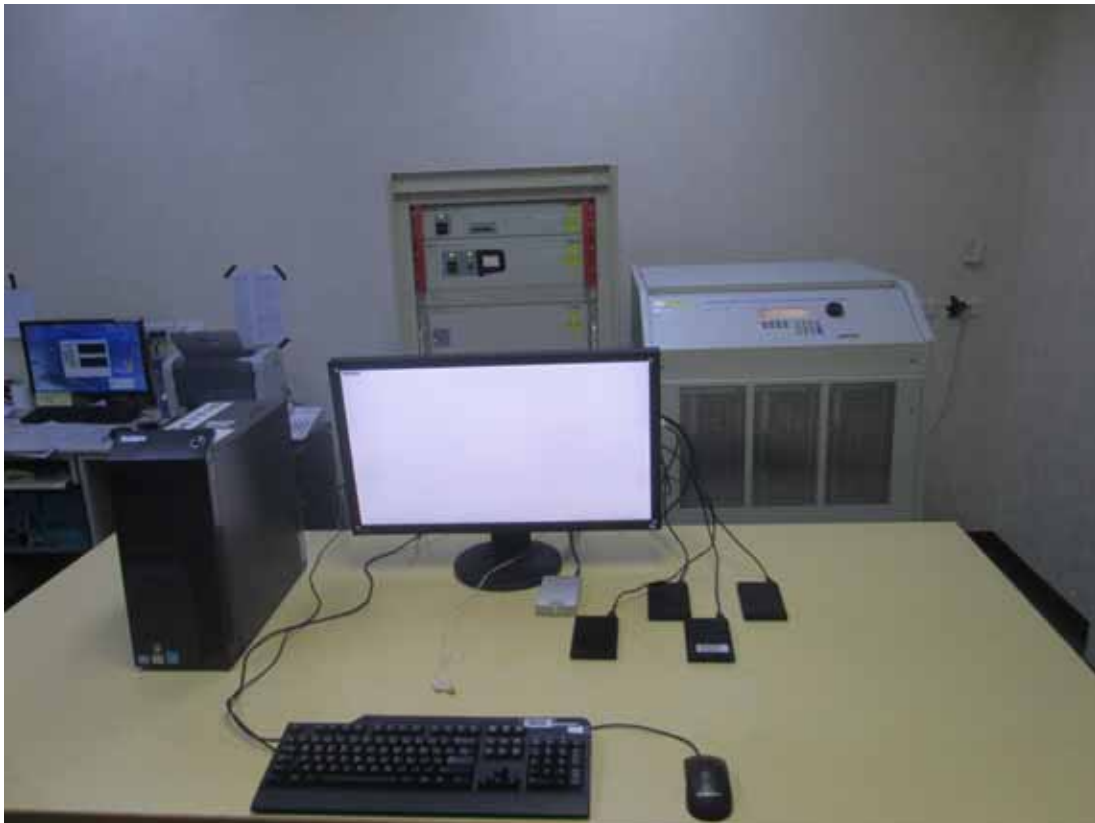


Back View of Radiated Measurement

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



- ESD Test Points



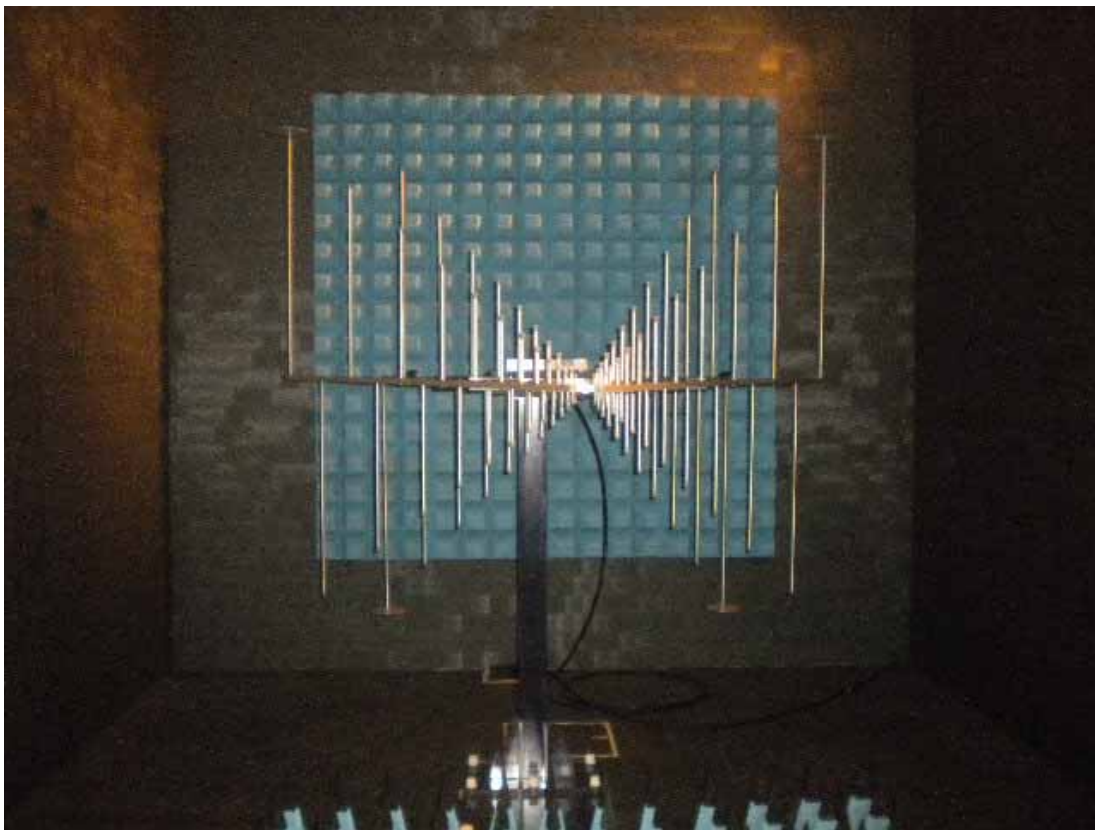
- ESD Test Points



- ESD Test Points



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



17.7. Electrical Fast Transient/Burst Immunity Test

- Injection Position: Power Supply Line



- Injection Position: I/O Cable



17.8.Surge Immunity Test



17.9. Immunity to Conducted Disturbances Induced by RF Fields

- Injection Position: Power Supply Line



- Injection Position: I/O Cable



17.10.Power Frequency Magnetic Field Immunity Test



17.11.Voltage Dips and Interruptions Immunity Test



APPENDIX I

(Photos of EUT)

(Total Page: 6 Pages)

Figure 1
General Appearance, Panel Angle: 0° (Front View)



Figure 2
General Appearance, Panel Angle: 0° (Back View)



Figure 3
General Appearance, Panel Angle: 90° (Front & Side View)



Figure 4
General Appearance, Panel Angle: 90° (Back & Side View)



Figure 5
General Appearance (Bottom View)



Figure 6
Appearance (Back I/O Ports View)



Figure 7
Appearance (Side I/O Ports View)



Figure 8
Mini DP to DP Cable



Figure 9
DP Cable



Figure 10
USB 3.0 Cable



Figure 11
AC Power Cord

