Verification of Compliance

Product Name	:	**POC-100 Series**
Model Number	:	**POC-100RK**
Applicant	:	**Neousys Technology Inc.**
Address	:	**15F, No. 868-3, Zhongzheng Rd., Zhonghe Dist., New Taipei City, 23586, Taiwan**
Report Number	:	**C22-U070-1302-289**
Issue Date	:	**June 11, 2013**
Applicable Standards	:	**EN 55022:2010 Class A ITE** **EN 61000-3-2: 2006+A1:2009+A2:2009** **EN 61000-3-3:2008** **EN 55024:2010** EN 61000-4-2:2009 EN 61000-4-3:2006+A1:2008+A2:2010 EN 61000-4-4:2004+A1:2010 EN 61000-4-5:2006 EN 61000-4-6:2009 EN 61000-4-8:2010 EN 61000-4-11:2004

Based on the EMC Directive 2004/108/EC and the specifications of the customer, one sample of the designated product has been tested in our laboratory and found to be in compliance with the EMC standards cited above.

CE

TAF 0905
FCC CAB Code TW1053
NVLAP Lab Code 200575-0
IC Code 4699A
VCCI Accep. No. R-1527, C-1609, T-1441, G-10, T-1334, G-10, G-614

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J. Y. Shih

(Tsun-Yu Shih/ General Manager)

Date: June 11, 2013

CE EMC Test Report

for

POC-100 Series

Model No.	**:**	**POC-100RK**
Report Number	**:**	**C22-U070-1302-289**
Date of Receipt	**:**	**March 4, 2013**
Date of Report	**:**	**June 11, 2013**

Prepared for

Neousys Technology Inc.

15F, No. 868-3, Zhongzheng Rd., Zhonghe Dist., New Taipei City, 23586, Taiwan

Prepared by

Central Research Technology Co.

EMC Test Laboratory

11, Lane 41, Fushuen St., Jungshan Chiu, Taipei, Taiwan, 104, R.O.C.

Verification of Compliance

Equipment Under Test	:	POC-100 Series
Model No.	:	POC-100RK
Applicant	:	Neousys Technology Inc.
Address	:	15F, No. 868-3, Zhongzheng Rd., Zhonghe Dist., New Taipei City, 23586, Taiwan
Applicable Standards	:	**EN 55022:2010 Class A ITE** **EN 61000-3-2:2006+A1:2009+A2:2009** **EN 61000-3-3:2008** **EN 55024:2010** EN 61000-4-2:2009 EN 61000-4-3:2006+A1:2008+A2:2010 EN 61000-4-4:2004+A1:2010 EN 61000-4-5:2006 EN 61000-4-6:2009 EN 61000-4-8:2010 EN 61000-4-11:2004
Date of Testing	:	March 4~May 27, 2013
Deviation	:	The test method and configuration of EMS tests are following the requirement of the applicable standards cited above.
Condition of Test Sample	:	Engineering Sample

We, **Central Research Technology Co**., hereby certify that one sample of the designated product was tested in our facility during the period mentioned above. The test records, data evaluation and Equipment Under Test (EUT) configurations shown in the present report are true and accurate representation of the measurements of the sample's EMC characteristics under the conditions herein specified.

The test results show that the EUT as described in the present report is in compliance with the requirements set forth in the standards mentioned above and apply to the tested sample identified in the present report only. The test report shall not be reproduced, except in its entirety, without the written approval of Central Research Technology Co.

PREPARED BY : Rosa Hsieh , **DATE :** June 11, 2013
(Rosa Hsieh/System Executive)

APPROVED BY : J. Y. Shih , **DATE :** June 11, 2013
(Tsun-Yu Shih/General Manager)

Contents

1. General Description

1.1 General Description of EUT

Equipment Under Test	:	POC-100 Series
Model No.	:	POC-100RK
Power in	:	Supplied by the power adapter.
Power adapter specification	:	Trade Name : LIEN CHANG
		Model No. : LCAP07F
		Input : 100-240Vac, 50-60Hz, 1.0A
		Output : 12Vdc, 3.0A
Highest Operating Frequency	:	1.8GHz from the test specification
Manufacturer	:	Neousys Technology Inc.
Function Description	:	

The EUT is an engineering sample of the POC-100 Series. Please refer to the user's manual for the details.

The I/O ports of EUT are listed below:

No.	I/O Port Type	Quantity
1	D-Sub port	1
2	USB port	3
3	Com. port	2
4	LAN port	2
5	Audio output port	1

The specifications of the EUT (supplied by manufacturer) are listed below:

POC-100 Series Specifications

System Core	
Processor	Intel® Atom™ D525 1.8GHz dual-core processor
Chipset	Intel® ICH8-M I/O Control Hub
Graphics	Integrated Intel® GMA 3150 graphics
Memory	On-board soldered 2GB DDR3 800MHz SDRAM
Panel I/O Interface	
Ethernet	2x Gigabit Ethernet ports by Intel® I210
Video Port	1x DB-15 connector for VGA output, supporting 2048 x 1536 resolution
Serial Port	1x software-programmable RS-232/422/485 (COM1) 1x RS-232 (COM2)
USB	3x USB 2.0 ports
Audio	1x Speaker-out
Internal I/O Interface	
Seriel Port	1x optioanl software-programmable RS-232/422/485 (COM3) 1x optional RS-232 (COM4)
Mini PCIe	1x mini PCI Express slot with USIM socket
LVDS	1x 18-bit LVDS output with backlight control, supporting 1366 x 768 resolution
Storage Interface	
SATA HDD	1x SATA ports with 2.5" HDD/SSD bracket
mSATA	1x mSATA socket

Power Supply	
DC Input	Built-in 8~25 VDC DC input
Input Connector	1x 2-pin pluggable terminal block for DC input(POC-100BK) 1x DC jack (ø2.5) for AC/DC adapter input(POC-100RK)
Mechanical	
Dimension	149mm (W) x 105 mm (H) x 44 mm (D)
Weight	1.0 kg (including one 2.5" HDD)
Mounting	Wall-mounting (standard) or DIN-Rail mounting (optional)
Environmental	
Operating Temperature	-20°C ~ 60°C with SSD or mSATA, 100% CPU loading */** -10°C ~ 50°C with HDD, 100% CPU loading */**
Storage Temperature	-40°C ~85°C
Humidity	10%~90% , non-condensing
Vibration	Operating, 5 Grms, 5-500 Hz, 3 Axes (w/ SSD, w/o add-on card, according to IEC60068-2-64)
Shock	Operating, 50 Grms, Half-sine 11 ms Duration (w/ SSD, w/o add-on card, according to IEC60068-2-27)
EMC	CE/FCC Class A, according to EN 55022 & EN 55024

** The CPU loading is applied using Intel® Thermal Analysis Tool. For detail testing criteria, please contact Neousys Technology*

*** For sub-zero operating temperature, a wide temperature HDD drive or Solid State Disk (SSD) is required.*

1.2 Test Mode

Normal operating as the specification of manufacturer.

The EUT has 2 LAN ports. According to the preliminary test result to find that LAN 1 is worse. It was taken as the representative condition for testing and its data are recorded in the present document.

The EUT was tested with display mode: D-Sub 1024x768 @60Hz.

1.3 Applied standards

According to the specifications of the manufacturer and the requirements set in European Council EMC Directive 2004/108/EC, the applied standards to evaluate the compliance of the EUT are as following:

Applied Standards	Test Items	Results
☑ EN 55022:2010 Class A ITE	Conducted Emission Measurement	PASS
	Radiated Emission Measurement	PASS
☑ EN 61000-3-2:2006+A1:2009+A2:2009	Harmonic Current Emission Measurement	PASS
☑ EN 61000-3-3:2008	Voltage Fluctuation and Flicker Emission Measurement	PASS
☑ EN 55024:2010		
☑ EN 61000-4-2:2009	Electrostatic discharge Test (ESD)	PASS
☑ EN 61000-4-3:2006+A1:2008+A2:2010	Radiated electromagnetic field immunity Test (RS)	PASS
☑ EN 61000-4-4:2004+A1:2010	Electrical fast transient / burst immunity Test (EFT)	PASS
☑ EN 61000-4-5:2006	Surge immunity Test	PASS
☑ EN 61000-4-6:2009	Immunity to conducted disturbances, induced by radio-frequency fields (CS)	PASS
☑ EN 61000-4-8:2010	Power frequency magnetic field immunity Test (PFM)	PASS
☑ EN 61000-4-11:2004	Voltage dips, short interruptions Test	PASS

1.4 Test Setup for the EUT

The EUT is an unique unit connected with other necessary accessories and support units listed in the next section. It has been tested against each standard after the following setup steps:

a. Connect the EUT and all the support units to the appropriate power source.

b. Turn on the EUT and all the accessories and support units.

c. Install an EMC test software into EUT and execute it under the Windows environment.

d. The EUT sends “H” patterns to the monitor, which fills the whole screen of it.

e. The EUT sends messages to the modems.

f. The EUT reads/writes messages from/to the USB 2.0 HDD/USB Flash Disk continually.

g. The EUT sends 1kHz audio signal to the earphone.

h. Another PC sends/ receives messages to/ from the EUT through a Hub by executing the command of “PING”.

i. Repeat and keep the setup steps listed above before and during all tests.

EUT I/O ports / Peripherals	Exerciser Program (software)	Version of Program
EUT	BurnIn Test.exe	V 6.0
Monitor		
USB 2.0 HDD/ USB Flash Disk		
Modem		

1.5 The Support Units

Conducted Emission Test

No.	Unit	Model No.	FCC ID	Trade Name	Power Cord	Supported by lab.
1	USB Mouse	MO56UC	DoC	DELL	N/A	✓
2	USB Keyboard	SK-8115	DoC	DELL	N/A	✓
3	Monitor	U2410	DoC	DELL	1.8m	✓
4	USB 2.0 HDD	320G FreeAgent Go	DoC	Seagate	N/A	✓
5	Earphone & Microphone	CW-010M.V	N/A	i-Acom	N/A	✓
6	Modem	DM-1414	IFAXDH1414	ACEEX	1.9m	✓

Radiated Emission Test

No.	Unit	Model No.	FCC ID	Trade Name	Power Cord	Supported by lab.
1	USB Mouse	MS111-P	N/A	DELL	N/A	✓
2	USB Keyboard	KU-0355	DoC	DELL	N/A	✓
3	Monitor	U2410	DoC	DELL	1.8m	✓
4	USB 2.0 HDD	500G FreeAgent Go	DoC	Seagate	N/A	✓
5	Earphone & Microphone	EPM-662	N/A	i-gota	N/A	✓
6	Modem	DM-1414	IFAXDH1414	ACEEX	1.9m	✓

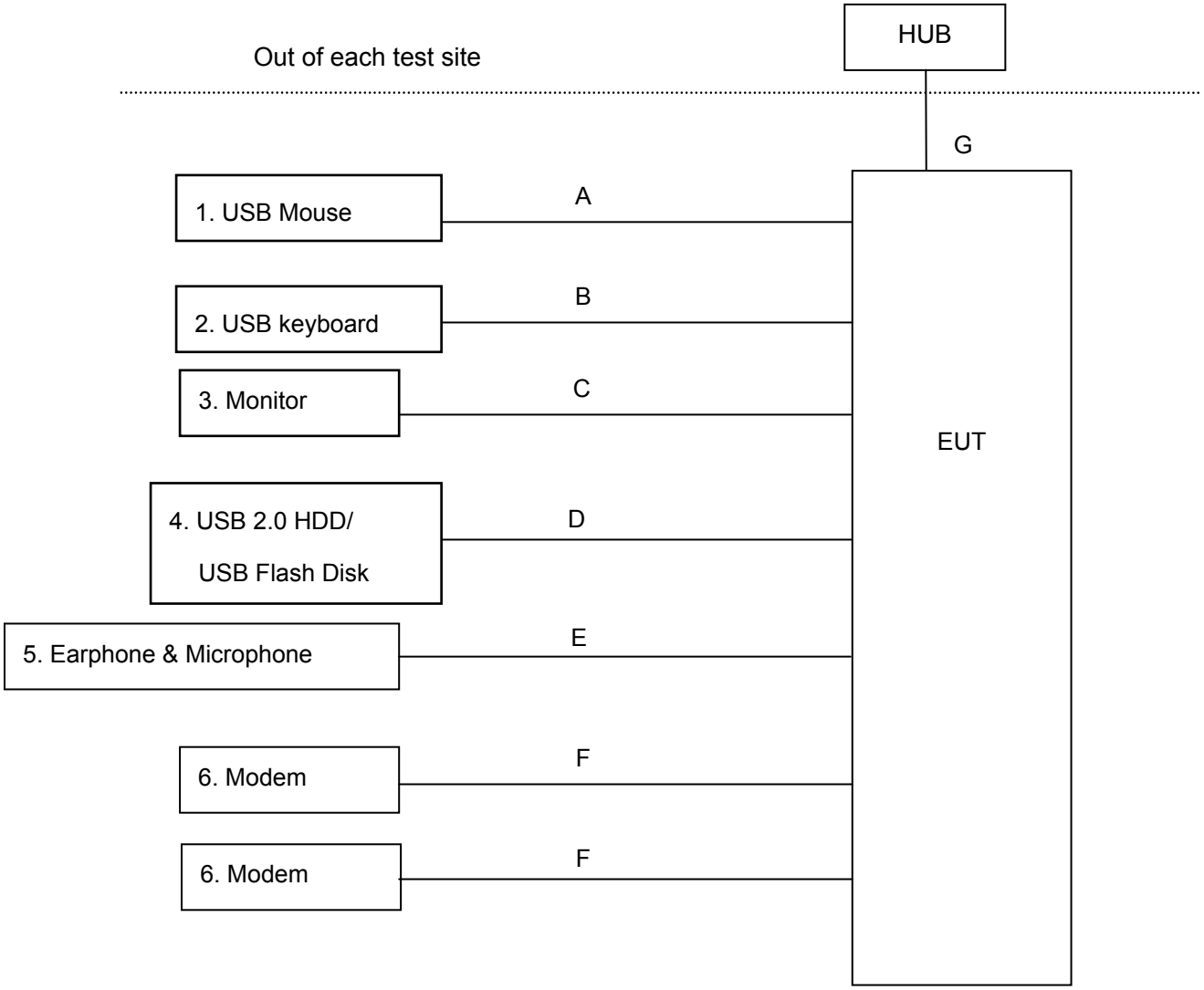
EN 61000-3-2, EN 61000-3-3 and EMS Tests(excluding ESD Test)

No.	Unit	Model No.	FCC ID	Trade Name	Power Cord	Supported by lab.
1	USB Mouse	MO56UC	N/A	DELL	N/A	✓
2	USB Keyboard	SK-8115	DoC	DELL	N/A	✓
3	Monitor	2408WFP	DoC	DELL	1.8m	✓
4	USB Flash Disk	U172	DoC	PQI	N/A	✓
5	Earphone & Microphone	CW-010M.V	N/A	i-Acom	N/A	✓
6	Modem	DM-1414	IFAXDH1414	ACEEX	1.9m	✓

ESD Test

No.	Unit	Model No.	FCC ID	Trade Name	Power Cord	Supported by lab.
1	USB Mouse	MO56UC	N/A	DELL	N/A	✓
2	USB Keyboard	SK-8115	DoC	DELL	N/A	✓
3	Monitor	2408WFP	DoC	DELL	1.8m	✓
4	USB 2.0 HDD	F12-UF	DoC	TeraSys	N/A	✓
5	Earphone & Microphone	CW-010M.V	N/A	i-Acom	N/A	✓
6	Modem	DM-1414	IFAXDH1414	ACEEX	1.9m	✓

1.6 Layout of the Setup



Connecting Cables :

No.	Cable	Length	Shielded	Core	Shielded Backshell	Supported by lab.	Note
A	USB Mouse Cable	1.8m	✓			✓	
B	USB Keyboard Cable	2.0m	✓			✓	
C	VGA Cable	1.7m	✓	✓		✓	2Cores
D	USB Cable	1.2m	✓			✓	
E	Earphone & Microphone Cable	1.8m	✓			✓	
F	Modem Cable	1.8m	✓	✓		✓	2Cores
G	LAN Cable	>3m				✓	floating

1.7 Test Capability

Test Facility

The test facility used for evaluating the conformance of the EUT with each standard in the present report meets what required in CISPR16-1-4, CISPR16-2-3.

Test Room	Type of Test Room	Descriptions
TR1	10m semi-anechoic chamber (23m×14m×9m)	Complying with the NSA and the site VSWR requirements in documents CISPR 22 and CISPR 16-1-4 for the radiated emission measurement.
TR1	3m fullly-anechoic chamber (23m×14m×9m)	
TR11	3m semi-anechoic chamber (9m×6m×6m)	Complying with the NSA requirements set in documents CISPR 22/ EN 55022 for the radiated emission measurement.
TR5	Shielding Room (8m×5m×4m)	For the conducted emission measurement.
TR4	Shielding Room (5m×3m×3m)	
TR2	3m fully-anechoic chamber (7m×3m×3m)	Complying with the field uniformity requirements in standard IEC/ EN 61000-4-3 for the radiated immunity test.
TR7	Shielding Room (5m×3m×3m)	For the Current Harmonic / Voltage Flicker and other immunity tests.
TR8	Shielding Room (5m×3m×3m)	
AR	Shielding Room (3m×3m×3m)	
TR12	Plane Grounding Site (2.4m×3m)	
TR300	3m fully-anechoic chamber (8m×5m×5m)	Complying with the site VSWR requirements set in documents CISPR 16-1-4 for the radiated emission measurement.

Test Laboratory Competence Information

Central Research Technology Co. has been accredited / filed / authorized by the agencies listed in the following table.

Certificate	Nation	Agency	Code	Mark
Accreditation Certificate	USA	NVLAP	200575-0	ISO/IEC 17025
	R.O.C. (Taiwan)	TAF	0905	ISO/IEC 17025
	R.O.C. (Taiwan)	BSMI	SL2-IN-E-0033, SL2-IS-E-0033, SL2-R1/R2-E-0033, SL2-A1-E-0033, SL2-L1-E-0033	ISO/IEC 17025
Site Filing Document	USA	FCC	474046,TW1053	Test facility list & NSA Data
	Canada	IC	4699A-1,-3	Test facility list & NSA Data
	Japan	VCCI	R-1527,C-1609, C-4400, T-1441, T-1334, G-10, G-614	Test facility list & NSA Data
Authorization Certificate	Germany	TUV	10021687	ISO/IEC 17025
	Norway	Nemko	ELA 212	ISO/IEC 17025

The copy of each certificate can be downloaded from our web site: www.crc-lab.com

2. Conducted Emission Measurement

Test Result : PASS

2.1 Limits for Emission Measurement

☑ Limits for conducted disturbances at the power mains

Frequency (MHz)	Class A Equipment		Class B Equipment	
	Quasi-peak (dBμV)	Average (dBμV)	Quasi-peak (dBμV)	Average (dBμV)
0.15 to 0.5	79	66	66 – 56	56 – 46
0.5 to 5	73	60	56	46
5 to 30	73	60	60	50
Note 1- The lower limit shall apply at the transition frequency. Note 2- The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5MHz for Class B equipment.				

☑ Limits for conducted common mode disturbances at telecommunication ports

Frequency (MHz)	Class A Equipment				Class B Equipment			
	Voltage Limits		Current Limits		Voltage Limits		Current Limits	
	Q.P. (dBμV)	Average (dBμV)	Q.P. (dBμA)	Average (dBμA)	Q.P. (dBμV)	Average (dBμV)	Q.P. (dBμA)	Average (dBμA)
0.15 to 0.5	97 - 87	84 – 74	53 – 43	40 – 30	84 – 74	74 - 64	40 – 30	30 - 20
0.5 to 30	87	74	43	30	74	64	30	20
Note 1- The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5MHz. Note 2- The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150Ω to the telecommunication port under test.								

2.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Test Receiver	R&S	ESCS 30/ 836858/021	Jan. 14, 2013	Jan. 14, 2014
LISN	R&S	ESH2-Z5/ 836613/001	June 5, 2012	June 5, 2013
2nd LISN	R&S	ENV4200/ 833209/010	March 29, 2013	March 29, 2014
Balanced TELE. ISN	FCC	☐ FCC-TLISN-T2-02/ 20269	August 8, 2012	August 8, 2013
	FCC	☐ FCC-TLISN-T4-02/ 20270	April 1, 2013	April 1, 2014
	FCC	☑ FCC-TLISN-T8-02/ 20318	Dec. 28, 2012	Dec. 28, 2013
☐ Capacitive Voltage Probe	FCC	F-CVP-1/ 84	Aug. 18, 2012	Aug. 18, 2013
☐ Broadband Current Probe	AH	BCP-511/ 769	Aug. 18, 2012	Aug. 18, 2013
50Ω terminator	N/A	N/A/ 001	Aug. 20, 2012	Aug. 20, 2013
RF Switch	R&S	RSU28/ 338965/002	Feb. 19, 2013	Aug. 19, 2013
RF Cable	N/A	N/A/ C0052 ~ 56	Feb. 19, 2013	Aug. 19, 2013
Test Software	Audix	e3/ Ver. 5.2004-2-19k	NCR	NCR
TR5 shielded room	ETS LINDGREN	TR5/ 15353-F	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

Measurement Uncertainty

The assessed measurement uncertainty with a suitable coverage factor K to ensure 95% confidence level for the normal distribution are shown as below, the values are less than U_{cispr} in table 1 of CISPR 16-4-2.

Equipment	Model Number	Uncertainty Value
LISN	ESH2-Z5	3.1dB
	ENV 4200	2.7dB
ISN	FCC-TLISN-T2-02	3.4dB
	FCC-TLISN-T4-02	3.2dB
	FCC-TLISN-T8-02	3.2dB

2.3 Test Procedures

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters above the reference ground plane and 0.4 meters from the conducting wall of the shielded room. Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height up to 0.15 meters above the reference ground plane.

c. Connect the EUT's power source / telecommunication lines to the appropriate power mains / peripherals through the LISN / ISN.

d. All the other peripherals are connected to the 2nd LISN, if any.

e. The LISN / ISN was placed 0.8 meters from the EUT and at least 0.8 meters from other units and other metal planes.

f. Measure the conducted emissions on each power line (Neutral Line and Line 1 – Hot side) of the EUT's power source by using the test receiver connected to the coupling RF output port of LISN.

g. Rapidly scan the signal from 150kHz to 30MHz by using the receiver through the Maximum-Peak detector to determine those frequencies associated with higher emission levels for each measured line.

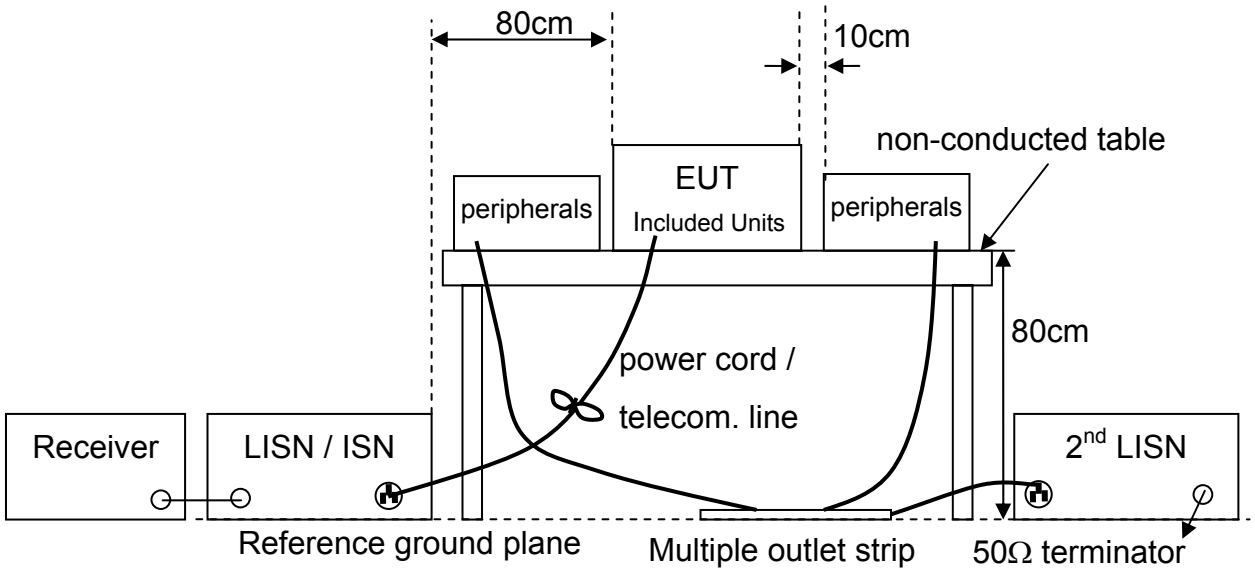
h. Then measure the maximum level of conducted disturbance for each frequency found from step g. by using the receiver through the Quasi-Peak and Average detectors per CISPR 16-1.

i. Record the level for each frequency and compare with the required limit.

j. If required, measure the conducted emissions on telecommunication lines of EUT by using the test receiver connected to the coupling RF output port of ISN and repeat step g. to i.

k. If the peak emission level is lower than the specified Average limit, then the emission values presented will be the peak value only. Otherwise, accurate Q.P. or Average values will be measured and presented.

2.4 Test Configurations

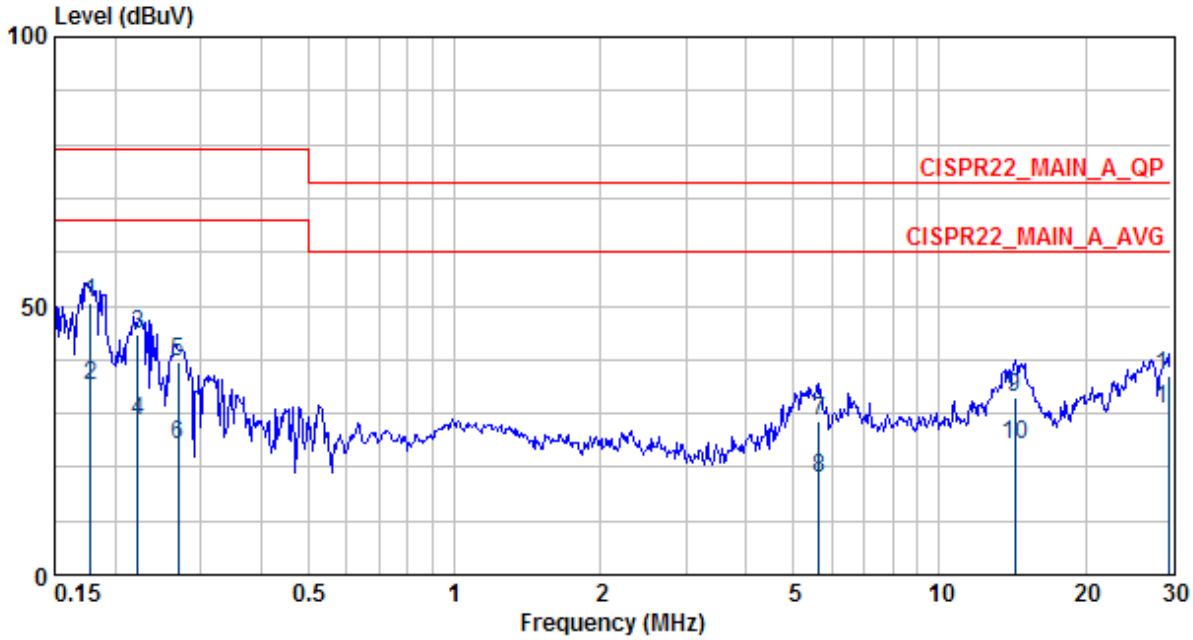


2.5 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

2.6 Test Results

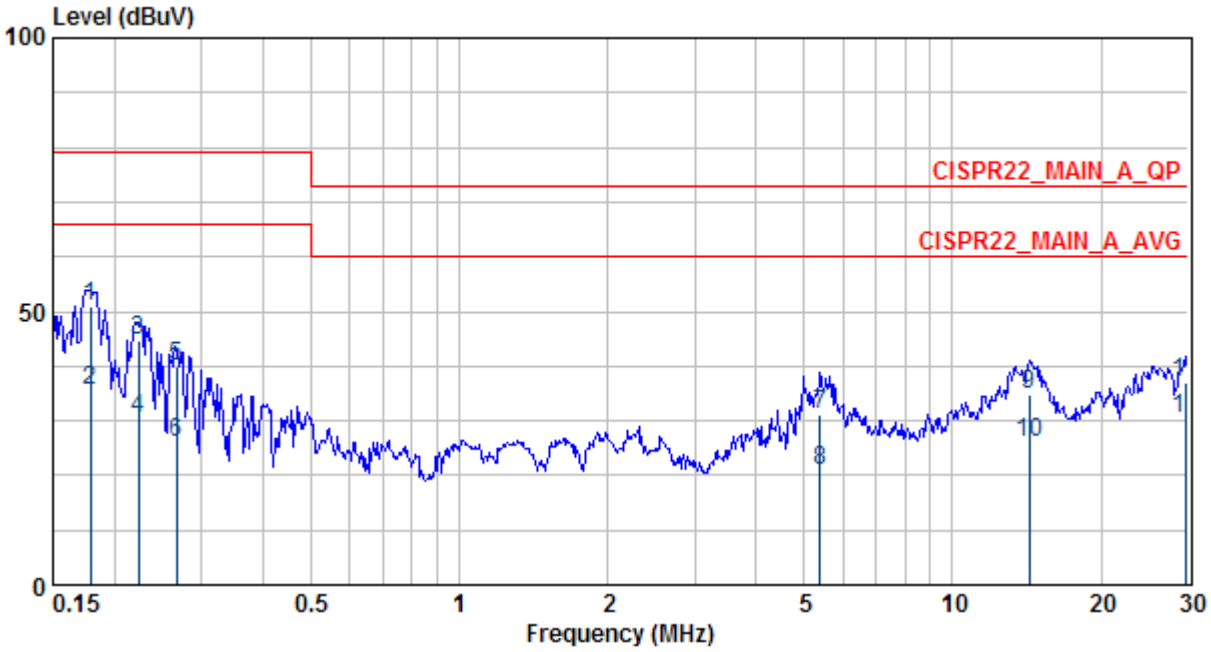
Test Mode	:	Normal			
Test Voltage	:	230V/50Hz to the power adapter			
Tester	:	Mathew	**Temperature**	:	25°C
Humidity	:	71%RH	**Frequency Range**	:	150kHz~30MHz
IF Bandwidth	:	9kHz	**Phase**	:	**Line**



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.178	50.68	0.28	50.40	79.00	-28.32	LINE	QP
2	0.178	35.27	0.28	34.99	66.00	-30.73	LINE	AVERAGE
3	0.222	44.64	0.29	44.35	79.00	-34.36	LINE	QP
4	0.222	28.56	0.29	28.27	66.00	-37.44	LINE	AVERAGE
5	0.269	39.50	0.30	39.20	79.00	-39.50	LINE	QP
6	0.269	24.28	0.30	23.98	66.00	-41.72	LINE	AVERAGE
7	5.653	28.72	0.54	28.18	73.00	-44.28	LINE	QP
8	5.653	17.97	0.54	17.43	60.00	-42.03	LINE	AVERAGE
9	14.288	32.96	0.69	32.27	73.00	-40.04	LINE	QP
10	14.288	24.02	0.69	23.33	60.00	-35.98	LINE	AVERAGE
11	29.684	36.91	0.23	36.68	73.00	-36.09	LINE	QP
12	29.684	30.81	0.23	30.58	60.00	-29.19	LINE	AVERAGE

Note:
1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + insertion loss of LISN.
3. Q.P. is abbreviation of quasi-peak.
4. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the EUT shall be deemed to meet both limits.

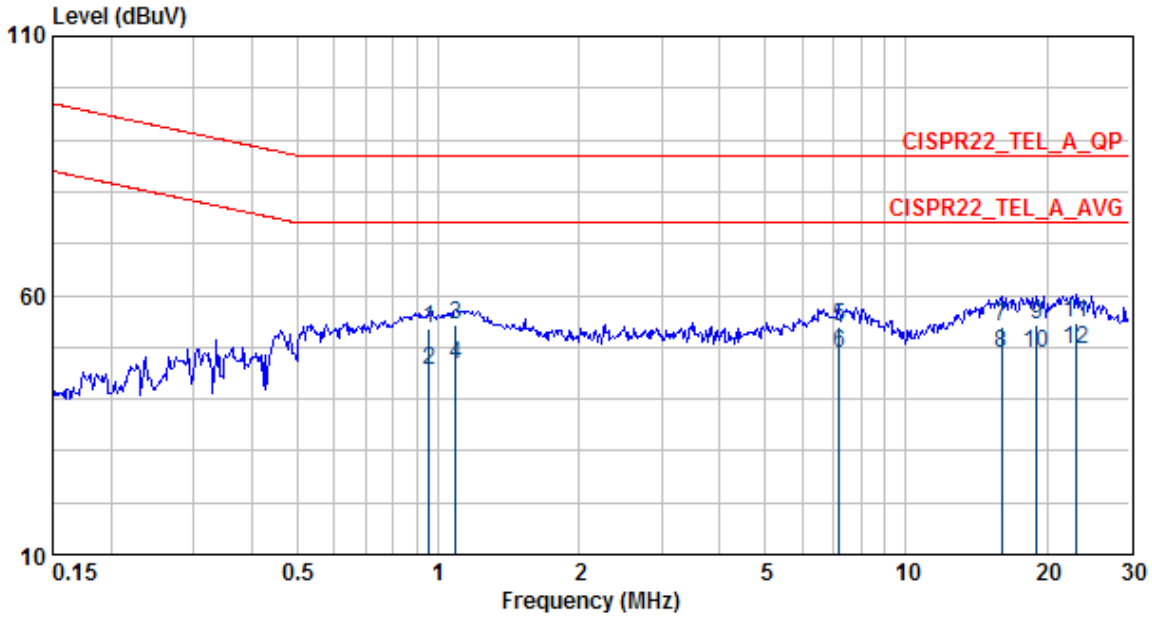
Test Mode	:	Normal			
Test Voltage	:	230V/50Hz to the power adapter			
Tester	:	Mathew	**Temperature**	:	25°C
Humidity	:	71%RH	**Frequency Range**	:	150kHz~30MHz
IF Bandwidth	:	9kHz	**Phase**	:	**Neutral**



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.179	50.93	0.17	50.76	79.00	-28.07	NEUTRAL	QP
2	0.179	35.58	0.17	35.41	66.00	-30.42	NEUTRAL	AVERAGE
3	0.223	44.80	0.17	44.63	79.00	-34.20	NEUTRAL	QP
4	0.223	30.28	0.17	30.11	66.00	-35.72	NEUTRAL	AVERAGE
5	0.267	39.99	0.18	39.81	79.00	-39.01	NEUTRAL	QP
6	0.267	25.92	0.18	25.74	66.00	-40.08	NEUTRAL	AVERAGE
7	5.393	31.31	0.46	30.85	73.00	-41.69	NEUTRAL	QP
8	5.393	20.97	0.46	20.51	60.00	-39.03	NEUTRAL	AVERAGE
9	14.288	34.71	0.91	33.80	73.00	-38.29	NEUTRAL	QP
10	14.288	26.11	0.91	25.20	60.00	-33.89	NEUTRAL	AVERAGE
11	29.684	36.87	1.32	35.55	73.00	-36.13	NEUTRAL	QP
12	29.684	30.42	1.32	29.10	60.00	-29.58	NEUTRAL	AVERAGE

Note:
1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + insertion loss of LISN.
3. Q.P. is abbreviation of quasi-peak.
4. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the EUT shall be deemed to meet both limits.

Test Mode	:	Normal			
Test Voltage	:	230V/50Hz to the power adapter			
Tester	:	Mathew	**Temperature**	:	25°C
Humidity	:	71%RH	**Frequency Range**	:	150kHz~30MHz
IF Bandwidth	:	9kHz	**Phase**	:	**LAN1 for 1Gbps**



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.958	53.54	10.15	43.39	87.00	-33.46	LINE	QP
2	0.958	45.63	10.15	35.48	74.00	-28.37	LINE	AVERAGE
3	1.088	54.21	10.15	44.06	87.00	-32.79	LINE	QP
4	1.088	46.81	10.15	36.66	74.00	-27.19	LINE	AVERAGE
5	7.213	53.96	10.39	43.57	87.00	-33.04	LINE	QP
6	7.213	48.74	10.39	38.35	74.00	-25.26	LINE	AVERAGE
7	15.970	54.04	10.51	43.53	87.00	-32.96	LINE	QP
8	15.970	48.84	10.51	38.33	74.00	-25.16	LINE	AVERAGE
9	19.021	54.34	10.53	43.81	87.00	-32.66	LINE	QP
10	19.021	48.98	10.53	38.45	74.00	-25.02	LINE	AVERAGE
11	23.018	54.72	10.57	44.15	87.00	-32.28	LINE	QP
12 @	23.018	49.58	10.57	39.01	74.00	-24.42	LINE	AVERAGE

Note:
1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + insertion loss of LISN/ISN.
3. Q.P. is abbreviation of quasi-peak.
4. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the EUT shall be deemed to meet both limits.

3. Radiated Emission Measurement

Test Result : PASS

3.1 Limits for Emission Measurement

Type of EUT	Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
☐	Below 108	1000
☐	108 - 500	2000
☐	500 - 1000	5000
☑	Above 1000	5^{th} harmonic of the highest frequency or 6GHz, whichever is lower

☑ Limits for radiated disturbances at a measuring distance of 10m

Frequency (MHz)	Class A Equipment	Class B Equipment
	Quasi-peak (dBμV/m)	Quasi-peak (dBμV/m)
30 to 230	40	30
230 to 1000	47	37
Note 1- The lower limit shall apply at the transition frequency. Note 2- Additional provisions may be required for cases where interference occurs.		

☑ Limits for radiated disturbances at a measuring distance of 3m

Frequency (GHz)	Class A Equipment		Class B Equipment	
	Peak (dBμV/m)	Average (dBμV/m)	Peak (dBμV/m)	Average (dBμV/m)
1 to 3	76	56	70	50
3 to 6	80	60	74	54
Note 1- The lower limit shall apply at the transition frequency.				

3.2 Test Instruments

☑ Below 1GHz measurement

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESCS 30/ 836858/020	Sept. 10, 2012	Sept. 10, 2013
Broadband Antenna	R&S	HL-562/ 360543/007	March 29, 2013	March 29, 2014
Broadband Antenna	R&S	HL-562/ 830547/010	April 30, 2013	April 30, 2014
Pre-Amplifier	Mini Circuit	ZKL-2/ 001	Jan. 15, 2013	July 15, 2013
Pre-Amplifier	Mini Circuit	ZKL-2/ 002	Jan. 15, 2013	July 15, 2013
Spectrum Analyzer	R&S	FSP7/ 100108	June 13, 2012	June 13, 2013
Spectrum Analyzer	R&S	FSP7/ 100384	Jan. 10, 2013	Jan. 10, 2014
RF Cable	JYEBAO	0214/ C0049	Jan. 15, 2013	July 15, 2013
RF Cable	JYEBAO	0214/ C0050	Jan. 15, 2013	July 15, 2013
Test Software	Audix	e3/ Ver. 4.3.714.e	NCR	NCR
TR1 Semi - anechoic Chamber	ETS. LINDGREN	TR1/ 17627-B	May 4, 2013	May 4, 2014

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.
3. The calibration date of the chamber TR1 listed above is the date of NSA measurement.

☑ Above 1GHz measurement

Test Site and Equipment	Manufacturer	Model No./ Serial No.		Last Calibration Date	Calibration Due Date
Horn Antenna	EMCO	3117/ 00082847		March 5, 2013	March 5, 2014
Bore-sight Antenna Mast	Sunol	TLT2/ 051110-5		NCR	NCR
Pre-Amplifier	KMIC	☐	KMA010180A01/ 99056	Oct. 19, 2012	Oct. 19, 2013
	MITEQ	☑	JS4-00101800-28-5A /742229	Dec. 14, 2012	Dec. 14, 2013
			JS4-00101800-28-5A/742309	Dec. 14, 2012	Dec. 14, 2013
Spectrum Analyzer	R&S	FSP40/ 100031		July 11, 2012	July 11, 2013
RF Cable	Suhner	Sucoflex 106P / C0091 + C0092		April 17, 2013	Oct. 17, 2013
Test Software	Audix	e3/ Ver. 4.3.714.e		NCR	NCR
TR1 Fully - anechoic Chamber	ETS. LINDGREN	TR1/ 17627-B		Feb. 23, 2013	Feb. 23, 2014

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.
3. The calibration date of the chamber TR1 listed above is the date of site VSWR measurement.

Measurement Uncertainty

The assessed measurement uncertainty with a suitable coverage factor K to ensure 95% confidence level for the normal distribution are shown as below, the values are less than U_{cispr} in table 1 of CISPR 16-4-2.

Test Site (Measuring distance)	**Polarization**	**Frequency Range**	
		30MHz ~200MHz	200MHz ~1000MHz
TR1(10m)	Horizontal	3.2dB	3.5dB
	Vertical	3.3dB	3.6dB

Test Site (Measuring distance)	**Polarization**	**Frequency Range**
		1GHz ~6GHz
TR1(3m)	Horizontal	3.7dB
	Vertical	3.7dB
TR300(3m)	Horizontal	3.9dB
	Vertical	3.8dB

3.3 Test Procedures

Below 1GHz measurement

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters above the reference ground plane and 10 meters away from the interference receiving antenna in the semi-anechoic chamber.

c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height up to 0.15 meters above the reference ground plane and 10 meters away from the interference-receiving antenna in the semi-anechoic chamber.

d. Rapidly sweep the signal from 30MHz to 1GHz by using the spectrum through the Maximum-peak detector.

e. Rotate the EUT from 0° to 360° and position the receiving antenna at heights from 1 to 4 meters above the reference ground plane continuously to determine at least six frequencies associated with higher emission levels and record them.

f. Then measure each frequency found from step e. by using the spectrum with rotating the EUT and positioning the receiving antenna height to determine the maximum level.

g. Finely tune the antenna and turntable around the recorded position of each frequency found from step f. by using the receiver through the Quasi-Peak detector per CISPR 16-1 to find out where the maximum level occurred.

h. Record frequency, azimuth angle of the turntable, height, and polarization of the receiving antenna and compare the maximum level with the required limit.

i. Change the receiving antenna to another polarization to measure radiated emission by following step d. to h. again.

j. If the peak emission level measured from step e. is 4dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate Q.P. value will be measured and presented.

Above 1GHz measurement

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it should be placed on a non-conducted table with a height of 0.8 meters above the reference ground plane and 3 meters away from the interference receiving antenna in the fully-anechoic chamber.

c. If the EUT is floor-standing equipment, it should be placed on a non-conducted support with a height up to 0.15 meters above the reference ground plane and 3 meters away from the interference-receiving antenna in the fully-anechoic chamber.

d. Rapidly sweep the signal from 1GHz to the upper frequency of measurement range by using the spectrum through the Maximum-peak detector.

e. Rotate the EUT from 0° to 360° continuously and position the receiving antenna at specified height above the reference ground plane to determine the frequencies associated with higher emission levels and record them.

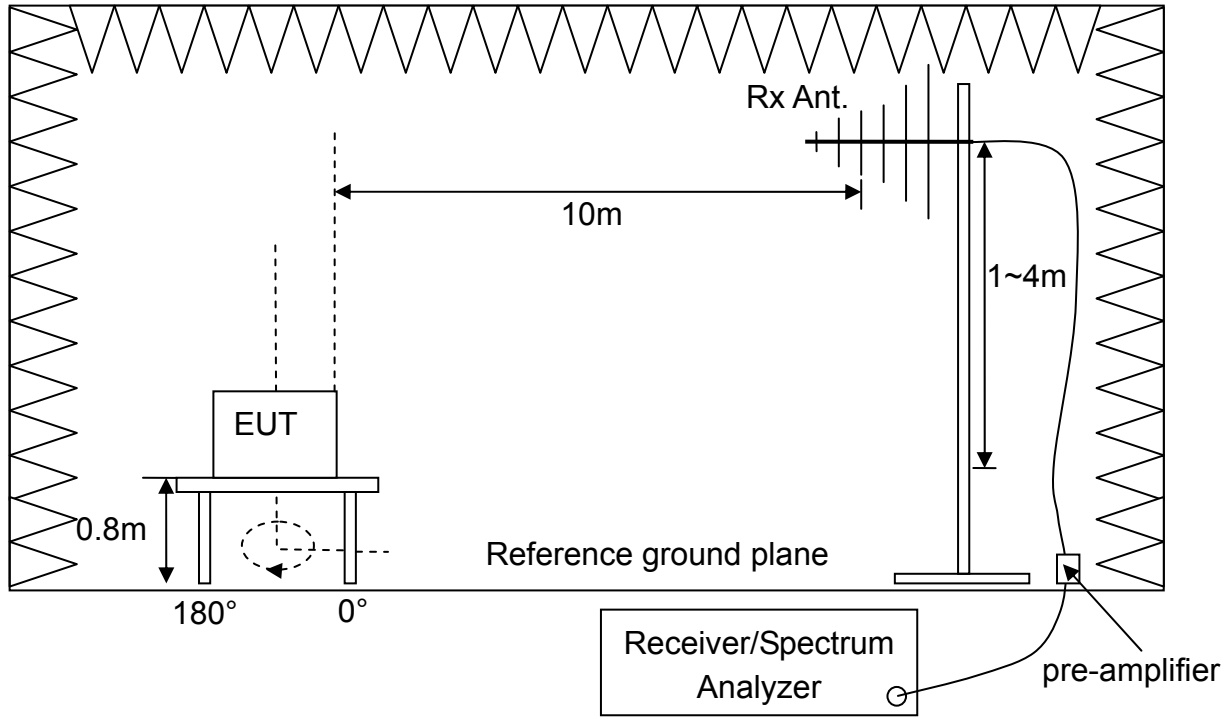
f. Then measure each frequency found from step e. by using the spectrum with rotating the EUT to determine the maximum peak and average level.

g. Record frequency, azimuth angle of the turntable and compare the maximum level with the required limit.

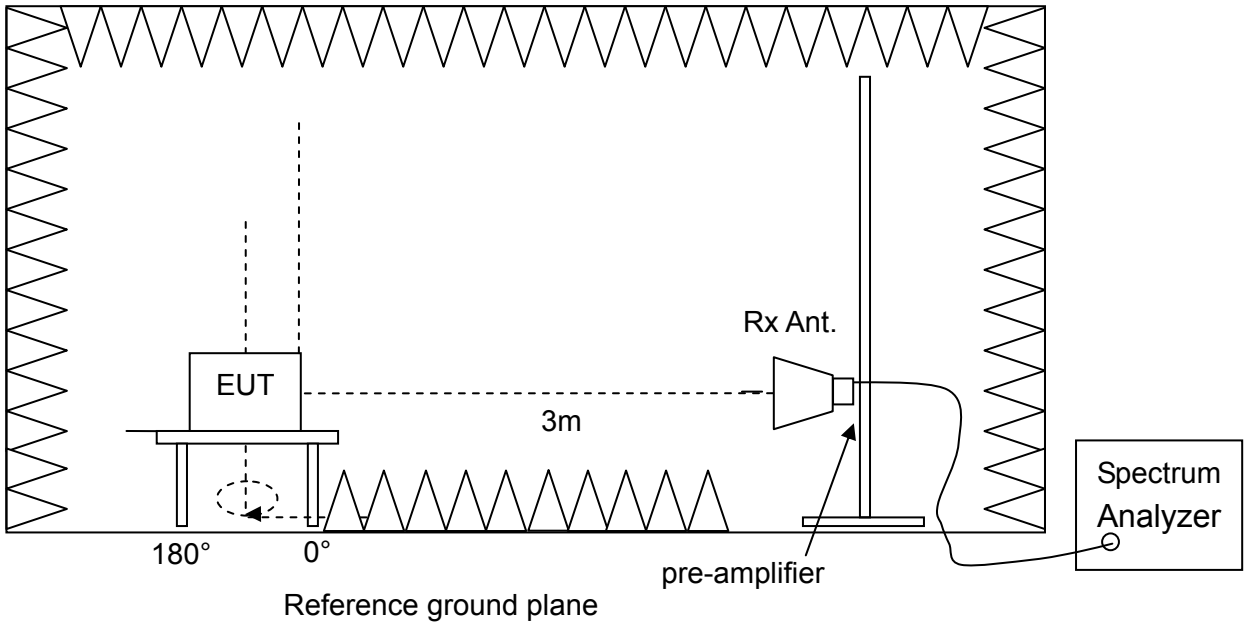
h. Change the receiving antenna to another polarization to measure radiated emission by following step d. to g. again.

3.4 Test Configurations

Below 1GHz measurement



Above 1GHz measurement



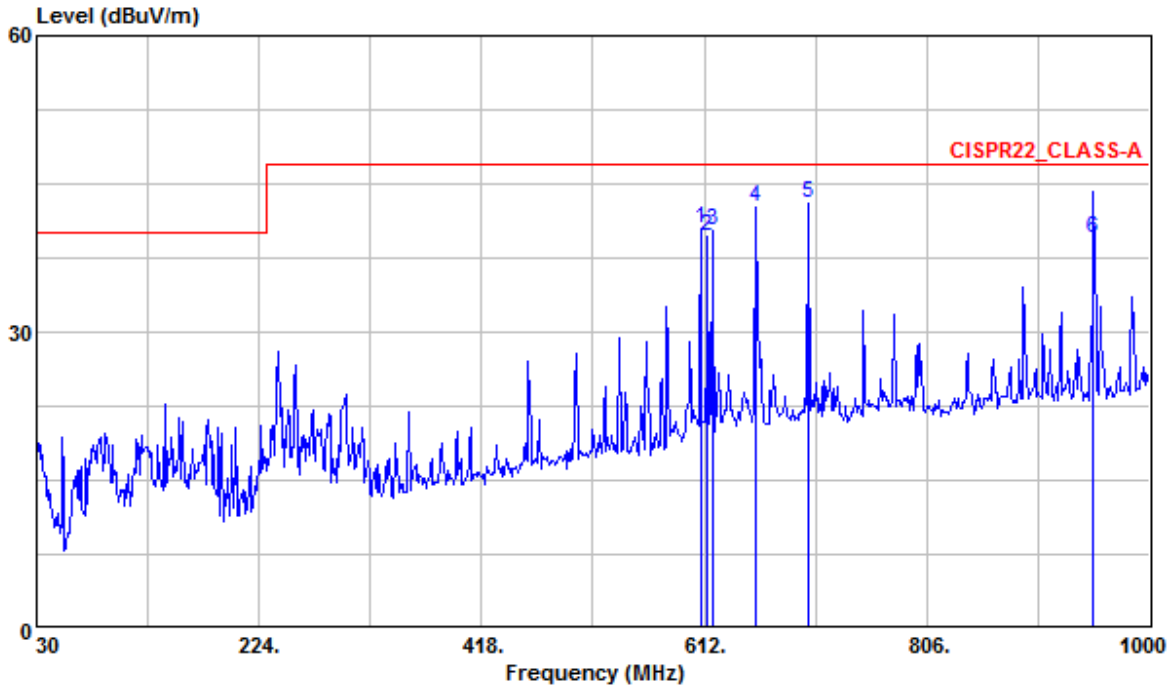
3.5 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

3.6 Test Results

Radiated Emission Measurement below 1000MHz

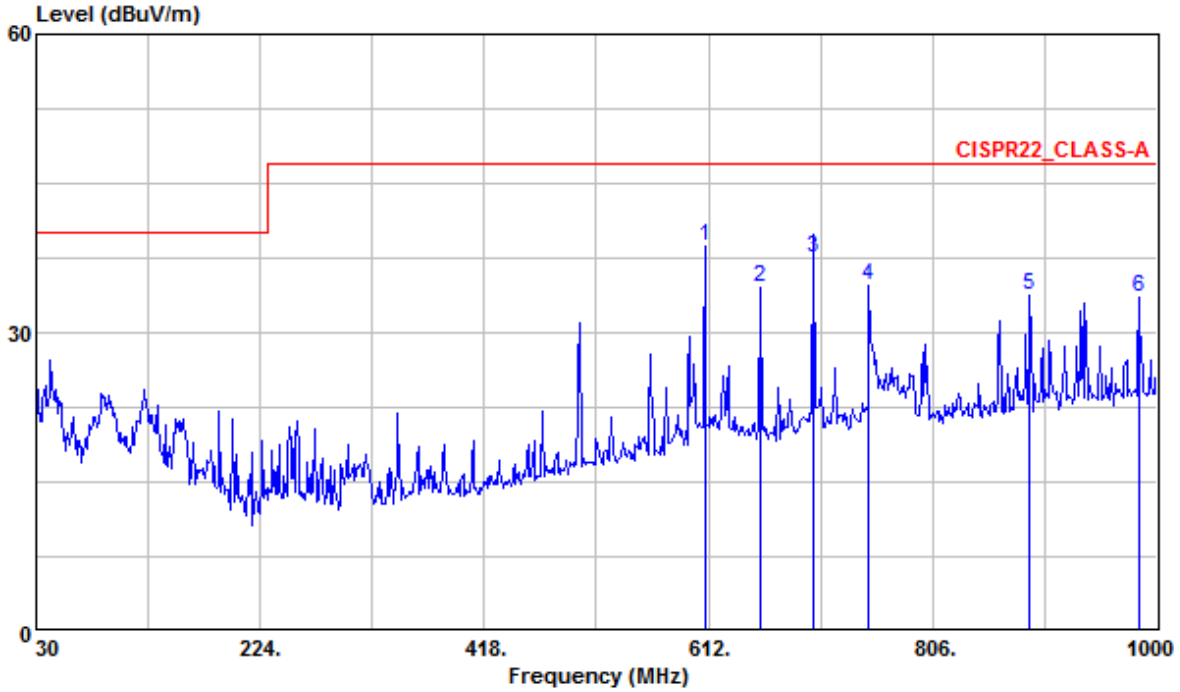
Test Mode	:	Normal			
Test Voltage	:	230V/50Hz to the power adapter			
Tester	:	Carl	**Temperature**	:	25°C
Humidity	:	69%RH	**Frequency Range**	:	30MHz~1GHz
IF Bandwidth	:	120kHz	**Polarization**	:	**Horizontal**



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	609.090	40.40	48.67	-8.27	47.00	-6.60	---	---	HORIZONTAL	Peak
2 @	614.910	39.59	47.76	-8.17	47.00	-7.41	---	---	HORIZONTAL	Peak
3 @	618.790	40.17	48.29	-8.12	47.00	-6.83	---	---	HORIZONTAL	Peak
4 @	657.590	42.59	50.16	-7.57	47.00	-4.41	---	---	HORIZONTAL	Peak
5 @	702.210	42.94	50.08	-7.14	47.00	-4.06	---	---	HORIZONTAL	Peak
6 @	950.400	39.49	43.15	-3.66	47.00	-7.51	135	181	HORIZONTAL	QP

Note:
1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.
3. Q.P is abbreviation of quasi-peak.

Test Mode	:	Normal			
Test Voltage	:	230V/50Hz to the power adapter			
Tester	:	Carl	**Temperature**	:	25°C
Humidity	:	69%RH	**Frequency Range**	:	30MHz~1GHz
IF Bandwidth	:	120kHz	**Polarization**	:	**Vertical**

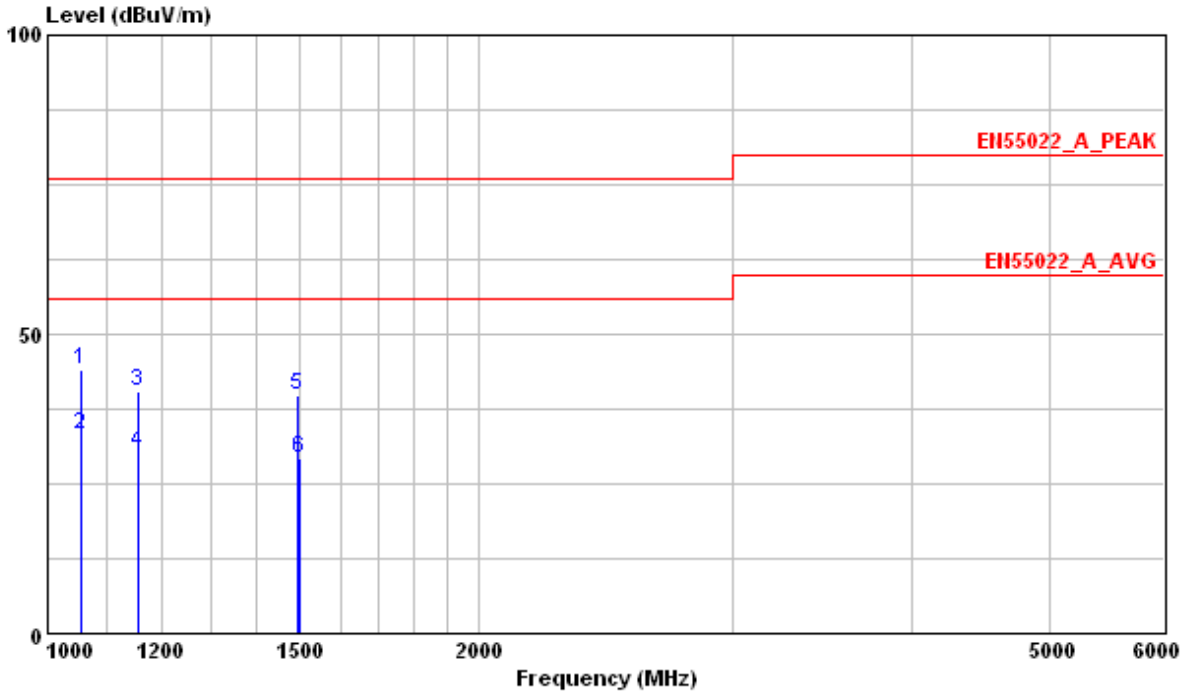


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	609.090	38.72	46.44	-7.72	47.00	-8.28	---	---	VERTICAL	Peak
2	657.590	34.53	41.38	-6.85	47.00	-12.47	---	---	VERTICAL	Peak
3	703.175	37.46	44.00	-6.54	47.00	-9.54	131	28	VERTICAL	QP
4	750.710	34.67	39.97	-5.30	47.00	-12.33	---	---	VERTICAL	Peak
5	890.390	33.70	36.95	-3.25	47.00	-13.30	---	---	VERTICAL	Peak
6	984.480	33.62	35.68	-2.06	47.00	-13.38	---	---	VERTICAL	Peak

Note:
1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.
3. Q.P is abbreviation of quasi-peak.

Radiated Emission Measurement above 1000MHz

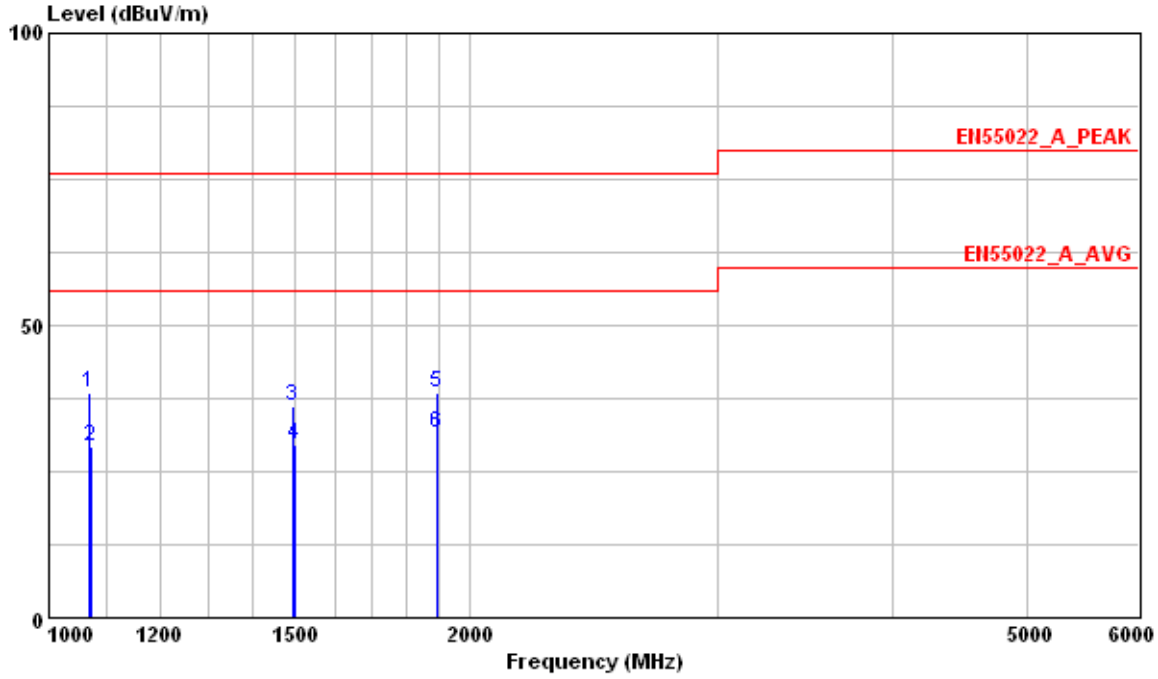
Test Mode	:	Normal			
Test Voltage	:	230V/50Hz to the power adapter			
Tester	:	Carl	**Temperature**	:	26°C
Humidity	:	70%RH	**Frequency Range**	:	1GHz~6GHz
IF Bandwidth	:	1MHz	**Polarization**	:	**Horizontal**



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1055.320	44.12	84.24	-40.12	76.00	-31.88	120	183	HORIZONTAL	Peak
2	1056.300	33.31	73.43	-40.12	56.00	-22.69	120	185	HORIZONTAL	Average
3	1155.270	40.49	80.49	-40.00	76.00	-35.51	120	105	HORIZONTAL	Peak
4	1156.300	30.31	70.31	-40.00	56.00	-25.69	120	108	HORIZONTAL	Average
5	1495.280	39.70	79.75	-40.05	76.00	-36.30	120	22	HORIZONTAL	Peak
6	1496.300	29.15	69.20	-40.05	56.00	-26.85	120	26	HORIZONTAL	Average

Note:
1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.

Test Mode	:	Normal			
Test Voltage	:	230V/50Hz to the power adapter			
Tester	:	Carl	**Temperature**	:	26°C
Humidity	:	70%RH	**Frequency Range**	:	1GHz~6GHz
IF Bandwidth	:	1MHz	**Polarization**	:	**Vertical**



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1070.300	38.63	78.76	-40.13	76.00	-37.37	120	112	VERTICAL	Peak
2	1071.600	29.17	69.30	-40.13	56.00	-26.83	120	114	VERTICAL	Average
3	1495.600	36.23	76.28	-40.05	76.00	-39.77	120	176	VERTICAL	Peak
4	1496.400	29.66	69.71	-40.05	56.00	-26.34	120	174	VERTICAL	Average
5	1890.600	38.62	75.30	-36.68	76.00	-37.38	120	9	VERTICAL	Peak
6	1891.400	31.52	68.20	-36.68	56.00	-24.48	120	5	VERTICAL	Average

Note:
1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.

4. Harmonic Current Emission Measurement

Test Result : PASS

4.1 Limits for Emission Measurement

☑ Limits for Class A equipment

Harmonic order (n) Odd harmonics	Maximum permissible harmonic current (A)	Harmonic order (n) Even Harmonics	Maximum permissible harmonic current (A)
3	2.30	2	1.08
5	1.14	4	0.43
7	0.77	6	0.3
9	0.40	8 ≦ n ≦40	0.23 8/n
11	0.33		
13	0.21		
15 ≦ n ≦ 39	0.15 15/n		

☐ Limits for Class B equipment

It shall not exceed the vales give in calss A multiplied by a factor of 1.5.

☐ Limits for Class C equipment

Harmonic order (n)	Maximum permissible harmonic current expressed as a percentage of the input current at the fundamental frequency %
2	2
3	30·λ (λ is the circuit power factor)
5	10
7	7
9	5
11 ≤ n ≤ 39 (odd harmonics only)	3

☐ Limits for Class D equipment

Harmonic order (n)	Maximum permissible harmonic current per watt (mA/W)	Maximum permissible harmonic current (A)
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 ≤ n ≤ 39 (odd harmonics only)	3.85/n	See class A

4.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Power Source	California Instrument	5001ix-208/ 56619	Oct. 17, 2012	Oct. 17, 2013
Power Analyzer		PACS-1/ 72398	Oct. 17, 2012	Oct. 17, 2013
Test Software	C.I.	CTS 3.0/ Ver. 3.2.0.18	NCR	NCR
TR7 shielded room	ETS. LINDGREN	TR7/ 15353-D	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

4.3 Test Procedures

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters in the shielded room.

c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters in the shielded room.

d. Decide the classification of the EUT as following:

Class A : - balanced three-phase equipment

- household appliances, excluding equipment identified as class D
- tools, excluding portable tools
- dimmers for incandescent lamps
- audio equipment
- equipments not specified in one of the three other classes

Class B : - portable tools

- arc welding equipment which is not professional equipment.

Class C : - lighting equipment

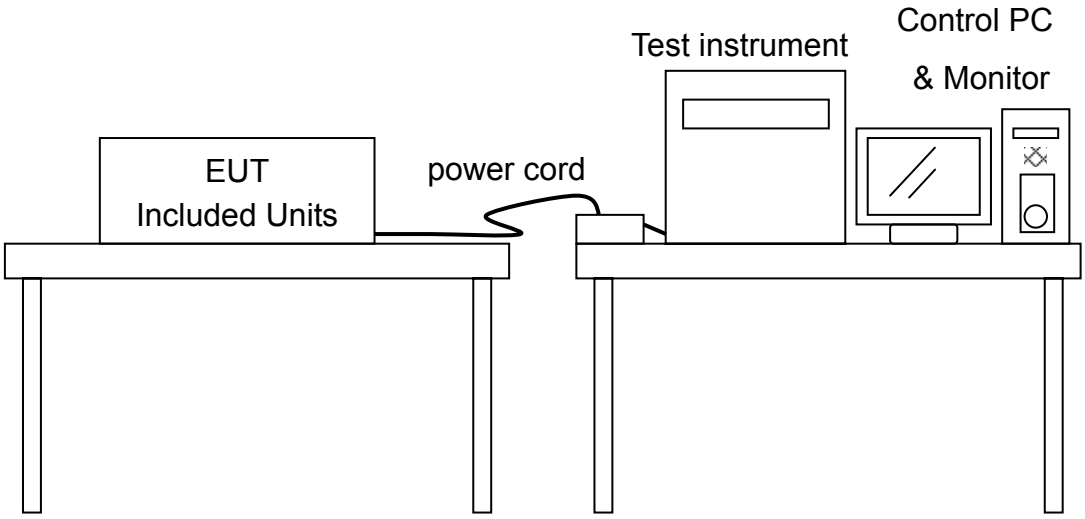
Class D : - Equipment specified power less than or equal to 600W of the following types

- personal computers and personal computer monitors
- television receivers

e. Connects the EUT's power source to the mains power supplied by the test instrument. Turn on the EUT.

f. Operating the EUT as required and measuring the harmonic current emissions on the current carrying lines of EUT's power source.

4.4 Test Configurations



4.5 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

4.6 Test Results

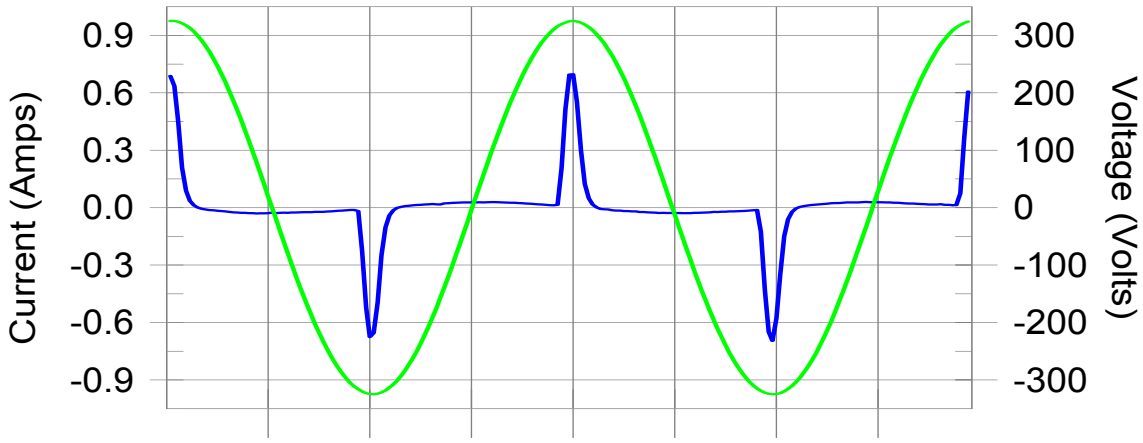
Test Mode : Normal

Tester : Mathew

Temperature : 27°C

Humidity : 73%RH

TEST FREQ	50
TEST VOLTS	230
TEST TIME	10 Minutes
MAX WATTS	19.4 W



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

Test Raw Data:

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	0.1	0.001	1.620	0.09	N/L
3	0.078	2.300	3.4	0.079	3.450	2.29	N/L
4	0.001	0.430	0.2	0.001	0.645	0.17	N/L
5	0.071	1.140	6.2	0.072	1.710	4.21	N/L
6	0.001	0.300	0.2	0.001	0.450	0.16	N/L
7	0.062	0.770	8.1	0.063	1.155	5.48	N/L
8	0.001	0.230	0.2	0.001	0.345	0.18	N/L
9	0.053	0.400	13.2	0.054	0.600	8.94	N/L
10	0.000	0.184	0.3	0.001	0.276	0.21	N/L
11	0.043	0.330	13.1	0.044	0.495	8.85	N/L
12	0.000	0.153	0.3	0.001	0.230	0.27	N/L
13	0.034	0.210	16.2	0.035	0.315	10.95	N/L
14	0.000	0.131	0.0	0.000	0.197	0.23	N/L
15	0.026	0.150	17.2	0.026	0.225	11.62	N/L
16	0.000	0.115	0.0	0.000	0.173	0.24	N/L
17	0.019	0.132	14.2	0.019	0.199	9.49	N/L
18	0.000	0.102	0.0	0.000	0.153	0.28	N/L
19	0.013	0.118	10.8	0.013	0.178	7.26	N/L
20	0.000	0.092	0.0	0.000	0.138	0.22	N/L
21	0.008	0.107	7.5	0.008	0.161	5.11	N/L
22	0.000	0.084	0.0	0.000	0.125	0.21	N/L
23	0.005	0.098	4.7	0.005	0.147	3.25	N/L
24	0.000	0.077	0.0	0.000	0.115	0.22	N/L
25	0.003	0.090	2.9	0.003	0.135	1.97	N/L
26	0.000	0.071	0.0	0.000	0.106	0.20	N/L
27	0.002	0.083	2.7	0.002	0.125	1.83	N/L
28	0.000	0.066	0.0	0.000	0.099	0.23	N/L
29	0.003	0.078	3.4	0.003	0.116	2.33	N/L
30	0.000	0.061	0.0	0.000	0.092	0.27	N/L
31	0.003	0.073	3.9	0.003	0.109	2.68	N/L
32	0.000	0.058	0.0	0.000	0.086	0.23	N/L
33	0.003	0.068	4.1	0.003	0.102	2.80	N/L
34	0.000	0.054	0.0	0.000	0.081	0.20	N/L
35	0.002	0.064	3.9	0.003	0.096	2.63	N/L
36	0.000	0.051	0.0	0.000	0.077	0.21	N/L
37	0.002	0.061	3.3	0.002	0.091	2.27	N/L
38	0.000	0.048	0.0	0.000	0.073	0.20	N/L
39	0.001	0.058	2.6	0.002	0.087	1.76	N/L
40	0.000	0.046	0.0	0.000	0.069	0.22	N/L

5. Voltage Fluctuations and Flickers Emission Measurement

Test Result : PASS

5.1 Limits for Emission Measurement

- the short-term flicker indicator, P_{st}, shall not be greater than 1.0;
- the long-term flicker indicator, P_{lt}, shall not be greater than 0.65;
- the relative steady-state voltage change, d_c, shall not exceed 3.3%;
- the voltage change with time, d(t), during a voltage change shall not exceed 3.3% for more than 500ms.
- the maximum relative voltage change, d_{max}, shall not exceed
  - ☑ a) 4% without additional conditions;
  - ☐ b) 6% for equipment which is switched manually
  - ☐ c) 7% for equipment which is attended whilst in use

5.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Power Source	California Instrument	5001ix-208/ 56619	Oct. 17, 2012	Oct. 17, 2013
Power Analyzer		PACS-1/ 72398	Oct. 17, 2012	Oct. 17, 2013
Test Software	C.I.	CTS 3.0/ Ver. 3.2.0.18	NCR	NCR
TR7 shielded room	ETS. LINDGREN	TR7/ 15353-D	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

5.3 Test Procedures

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters in the shielded room.

c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters in the shielded room.

d. Decide the type of EUT to define the d_{max} limit and its corresponding test methods described in the relative standard.

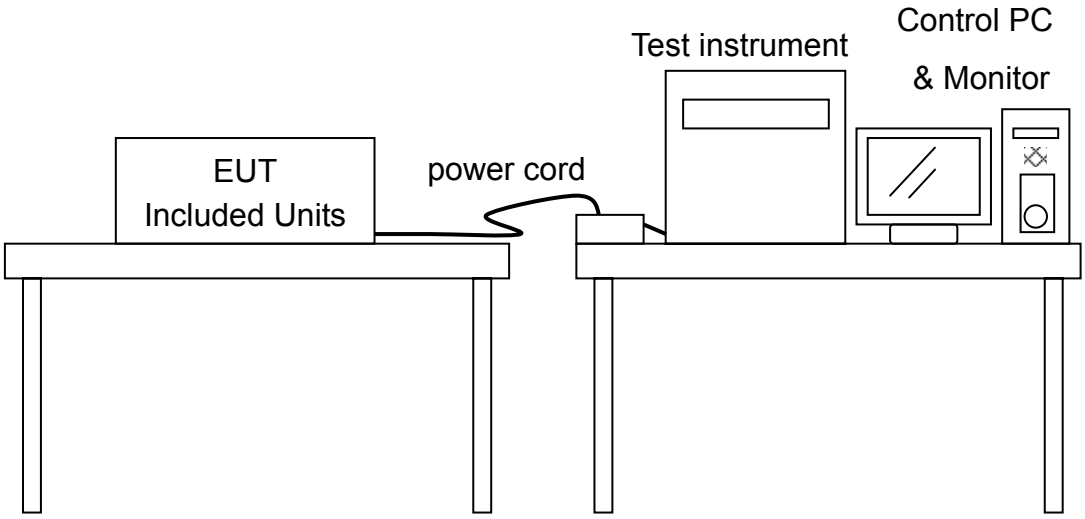
e. Maintain the supply voltage to be ±2% of the EUT's rated voltage and also the frequency to be 50Hz ±0.5%.

f. Connects the EUT's power source to the mains power supplied by the test instrument.

g. Operating the EUT as required and measuring the voltage fluctuation and flickers of EUT's power source.

h. Verify the fluctuations of the test supply voltage to be less than 0.4 before and after the test.

5.4 Test Configurations



5.5 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

5.6 Test Results

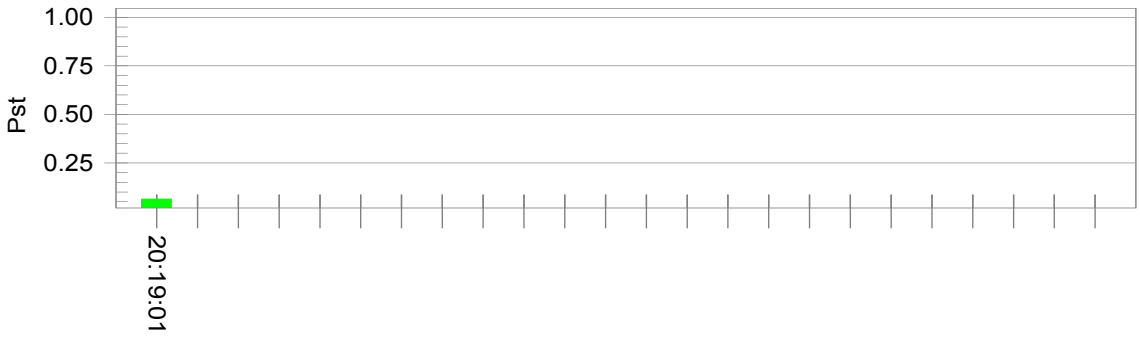
Test Mode : Normal

Tester : Mathew

Temperature : 27°C

Humidity : 73%RH

TEST FREQ	50	
TEST VOLTS	230	
TEST TIME	10 Minutes	
	EUT Data	**Limit**
d(t)>3.3% (ms)	0	500
d_c (%)	0	3.3
d_{max} (%)	0	4
P_{st} max	0.064	1
P_{lt} max	0.028	0.65



6. Electrostatic Discharge (ESD) Immunity Test

Test Result : PASS

6.1 Specifications of Immunity Test Requirement

Product (Generic) Standard	**:**	EN 55024:2010
Basic Standard	**:**	EN 61000-4-2:2009
Required Performance	**:**	B
Test Level	**:**	2 (Contact discharge)
		3 (Air discharge)
Discharge Voltage	**:**	Contact →±4kV (Direct / Indirect discharge)
		Air → ±2kV, ±4kV, ±8kV (Direct discharge)
Time Interval	**:**	1 sec. minimum
Number of discharges	**:**	Minimum 20 times at each test point
Test Voltage	**:**	230V/50Hz to the power adapter
Tester	**:**	Rick
Ambient Temperature	**:**	21°C
Relative Humidity	**:**	48%
Atmospheric Pressure	**:**	1022mbar

6.2 Description of Performance Criteria

Criteria A : normal performance within levels specified by the manufacturer, requestor or purchaser;

Criteria B : temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the EUT recovers its normal performance, without operator intervention;

Criteria C : temporary loss of function or degradation of performance, the correction of which requires operator intervention;

Criteria D : loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data.

6.3 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Electrostatic Generator	EM TEST	DITO/ V1138110834	Dec. 25, 2012	Dec. 25, 2013
TR8 shielded room	ETS. LINDGREN	TR8/ 15353-C	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

6.4 Test Procedures

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters above the ground reference plane in the shielded room. Also a HCP (Horizontal Coupling Plane) which was connected to the ground reference plane via a cable with a 470kΩ resister located at each end was placed on the wooden table and isolated with the EUT by an insulating support 0.5mm thick. The ground reference plane shall project beyond the EUT or HCP by at least 0.5m on all sides.

c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters above the ground reference plane in the shielded room. The ground reference plane shall project beyond the EUT by at least 0.5m on all sides.

d. Keep the EUT 1m away from all other metallic walls in the shielded room as the minimum distance.

e. The static electricity discharges shall be applied only to those points and surfaces of the EUT which are accessible to persons during normal use. Contact discharge is the preferred test method and it is applied to the conductive surfaces of EUT and coupling planes. Air discharge shall be used where contact discharge cannot be performed and it is applied to the insulating surfaces of EUT.

f. The discharge return cable of the generator shall be kept at a distance of at least 0.2m from the EUT whilst the discharge is being applied.

g. The time interval between successive single discharges was at least 1 second.

h. Select appropriate points of the EUT for contact discharge and put marks on it to indicate the tested point(s). Then start the contact discharge with the tip of the discharge electrode to touch the EUT before the discharge switch is operated.

i. Use the round discharge tip of the discharge electrode to scan the EUT to select the points for air discharge. Then start the air discharge by approaching the discharge electrode as fast as possible to touch the EUT. After each discharge, the ESD generator shall be removed from the EUT.

j. The indirect HCP discharge test is applied at the front edge of each HCP opposite the center point of each unit of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

k. The indirect VCP (Vertical Coupling Plane) discharge test is applied to the center of one vertical edge of the coupling plane. The VCP, of dimensions 0.5m×0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. It shall be applied with sufficient different positions such that the four faces of the EUT are completely illuminated.

Special Test Requirements for Information Technology Equipment (ITE)

The discharges shall be applied in two ways as below:

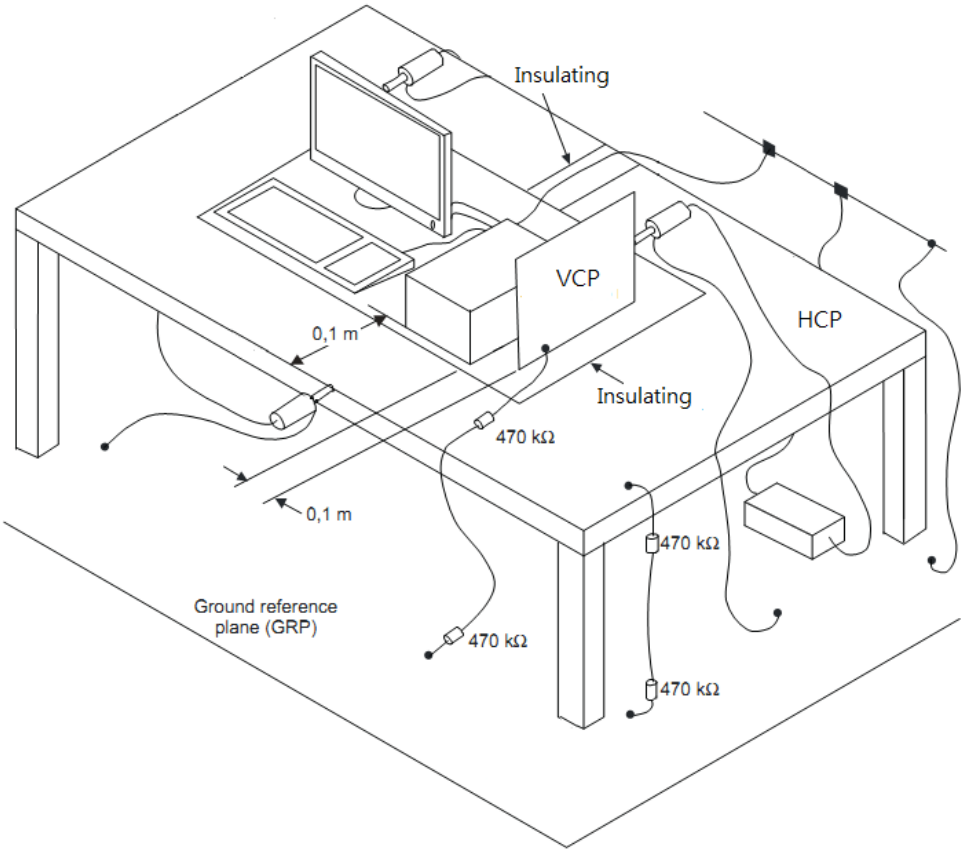
a. Contact discharges to the conductive surfaces and coupling planes:

   The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points. One of the test points shall be subjected to at least 50 indirect discharges to the center of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct contact discharges. If no direct contact test points are available, at least 200 indirect discharges shall be applied in the indirect mode (for use of the VCP).

b. Air discharges at slots and apertures and insulating surfaces:

   A minimum of 10 single air discharges shall be applied to the each selected test point.

6.5 Test Configurations



6.6 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

6.7 Test Results

Test Mode : Normal

Discharge Voltage (kV)	Type of discharge	Label for Dischargeable Points	Performance		Result (Pass/Fail)
			Required	Observation	
±4	Contact	5~9	B	A(1)	**Pass**
±2	Air	1~4	B	A(1)	**Pass**
±4	Air	1~4	B	A(1)	**Pass**
±8	Air	1~4	B	A(1)	**Pass**
±4	HCP-Bottom	Edge of the HCP	B	A(1)	**Pass**
±4	VCP-Front	Center of the VCP	B	A(1)	**Pass**
±4	VCP-Left	Center of the VCP	B	A(1)	**Pass**
±4	VCP-Back	Center of the VCP	B	A(1)	**Pass**
±4	VCP-Right	Center of the VCP	B	A(1)	**Pass**

Observation of Performance during Test

(1) Normal operation condition specified by manufacturer during the test.

Photographs of the Dischargeable Points on the EUT for ESD Test


12V DC
COM1
COM2


NEOUS

7. Radiated Electromagnetic Field (RS) Immunity Test

Test Result : PASS

7.1 Specifications of Immunity Test Requirement

Product (Generic) Standard	**:**	EN 55024:2010
Basic Standard	**:**	EN 61000-4-3:2006+A1:2008+A2:2010
Required Performance	**:**	A
Test Level	**:**	2
Field Strength	**:**	3 V/m
Test Frequency Range	**:**	80MHz ~ 1GHz
Frequency Step	**:**	1% of the momentary frequency
Dwell Time	**:**	Minimum 3 sec. per frequency
Modulation	**:**	1kHz Sine Wave with 80% Amplitude Modulation
Polarization of Antenna	**:**	Horizontal and Vertical
Test Voltage	**:**	230V/50Hz to the power adapter
Tester	**:**	Scott
Ambient Temperature	**:**	28°C
Relative Humidity	**:**	60%
Atmospheric Pressure	**:**	1010mbar

7.2 Description of Performance Criteria

Criteria A : normal performance within levels specified by the manufacturer, requestor or purchaser;

Criteria B : temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the EUT recovers its normal performance, without operator intervention;

Criteria C : temporary loss of function or degradation of performance, the correction of which requires operator intervention;

Criteria D : loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data.

7.3 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Signal Generator	R&S	SML03/ 101676	July 12, 2012	July 12, 2013
Switch Box	AR	SC1000M3/ 309064	NCR	NCR
Dual Directional Coupler	AR	DC6180/ 28730	Jan. 3, 2013	Jan. 3, 2014
	AR	DC 7144A/ 308731	May 7, 2013	May 7, 2014
Power Amplifier	AR	150W1000/ 29167	NCR	NCR
	AR	30S1G3/ 308785	NCR	NCR
Bi-Log Antenna	EMCO	3142B/ 1716	NCR	NCR
	R&S	HL046/ 359132/004	NCR	NCR
	TRC	TRC Horn/ 001	NCR	NCR
Field Monitor	AR	FM7004/ 0336364	NCR	NCR
Electric Field Probe	AR	FL7006/ 0336500	April 16, 2013	April 16, 2014
Probe Positioner	HD	FSM916/ 916/319	NCR	NCR
Controller	HD	HD100/ 100/671	NCR	NCR
Dual Channel Power Meter	R&S	NRVD/ 100499	Jan. 4, 2013	Jan. 4, 2014
Test Software	AR	SW1007/ Ver. 2.0.1	NCR	NCR
TR2 fully-anechoic chamber	ETS. LINDGREN	TR2/ 15353-R	Sept. 16, 2012	Sept. 16, 2013

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.
3. The calibration date of the fully-anechoic chamber listed above is the date of Field Uniformity Calibration measurement.

7.4 Test Procedures

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters and 2.75 meters away from the transmitting antenna in the fully anechoic chamber.

c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters and 2.75 meters away from the transmitting antenna in the fully anechoic chamber. Also if the floor-standing equipment which is capable of being stood on a non-conducting 0.8m high platform may be so arranged.

d. All EUT's individual faces shall be fully enclosed by the "uniform area" and its wires shall be arranged parallel to the uniform area of the field.

e. Before testing the EUT, the intensity of the established field strength is checked by placing the field sensor at a calibration grid point to give the calibrated field strength to measure the EUT.

f. After the calibration has been verified, the test field can be generated using the values obtained from the calibration.

g. Perform the test with the specified immunity level in the test frequency range and with the specified modulation type.

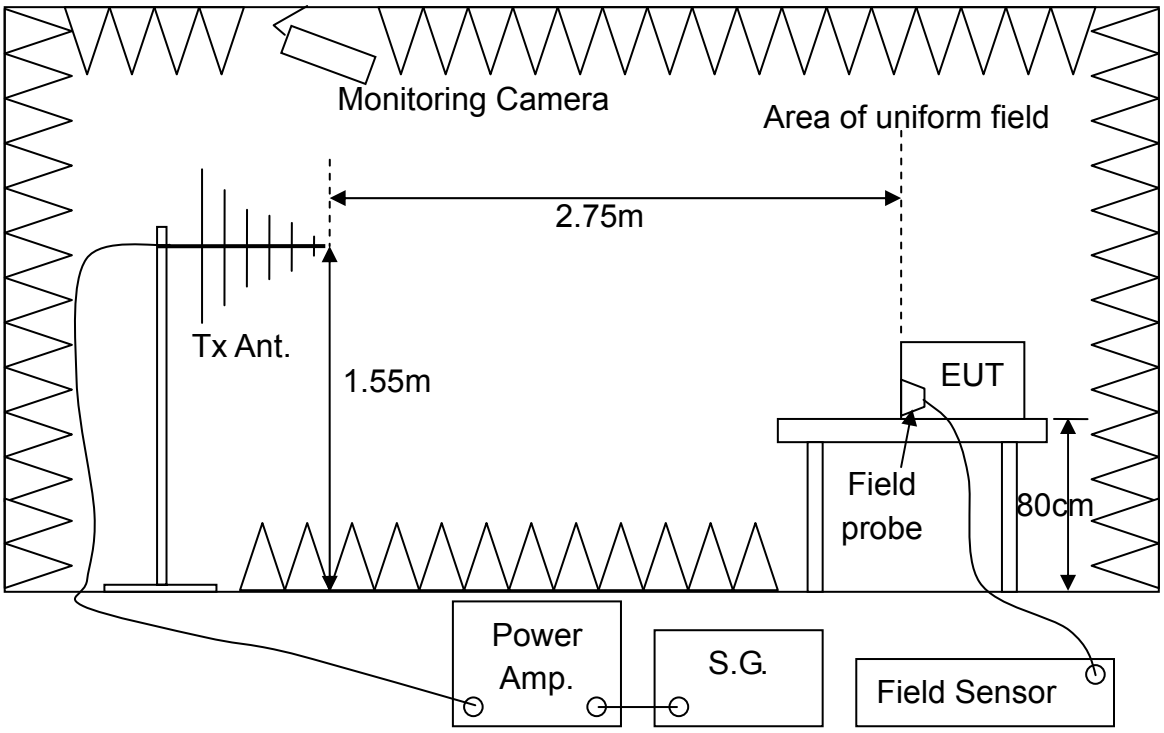
h. The transmitting antenna is normally facing each of the four sides of the EUT with two polarizations (Vertical and Horizontal) to perform the test.

i. The dwell time at each frequency shall be not less than the time necessary for the EUT to be exercised and be able to respond.

j. The sensitive frequencies of EUT shall be analyzed separately, if any.

k. Record the performance of the EUT.

7.5 Test Configurations



7.6 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

7.7 Test Results

Test Mode : Normal

Side of the EUT	Polarization	Performance		Result (Pass/Fail)
		Required	Observation	
Front	H	A	A(1)	**Pass**
	V	A	A(1)	**Pass**
Left	H	A	A(1)	**Pass**
	V	A	A(1)	**Pass**
Back	H	A	A(1)	**Pass**
	V	A	A(1)	**Pass**
Right	H	A	A(1)	**Pass**
	V	A	A(1)	**Pass**

Observation of Performance during Test

(1) Normal operation condition specified by manufacturer during the test.

8. Electrical fast transient / burst (EFT) Immunity Test

Test Result : PASS

8.1 Specifications of Immunity Test Requirement

Product (Generic) Standard	**:**	EN 55024:2010
Basic Standard	**:**	EN 61000-4-4:2004+A1:2010
Required Performance	**:**	B
Test Level	**:**	2
Voltage Peak	**:**	☑ ±1kV (on power supply port)
		☑ ±0.5kV (on I/O signal, data and control port)
Impulse Frequency	**:**	5kHz
Wave Shape of the Pulse (T_r/T_h)	**:**	5ns / 50ns
Burst Duration	**:**	15ms
Burst Period	**:**	300ms
Time Duration	**:**	1 min
Test Voltage	**:**	230V/50Hz to the power adapter
Tester	**:**	Mathew
Ambient Temperature	**:**	27°C
Relative Humidity	**:**	43%
Atmospheric Pressure	**:**	1010mbar

8.2 Description of Performance Criteria

Criteria A : normal performance within levels specified by the manufacturer, requestor or purchaser;

Criteria B : temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the EUT recovers its normal performance, without operator intervention;

Criteria C : temporary loss of function or degradation of performance, the correction of which requires operator intervention;

Criteria D : loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data.

8.3 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
EFT/Burst Simulator	EMC PARTNER	TRA2000IN6/ 870	April 2, 2013	April 2, 2014
Coupling Clamp	EMC PARTNER	CN-EFT1000/ 532	NCR	NCR
Test Software	EMC PARTNER	TEMA/ Ver. 1.86	NCR	NCR
TR7 shielded room	ETS. LINDGREN	TR7/ 15353-D	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

8.4 Test Procedures

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a non-conducted support with a height 0.1 meters above the ground reference plane. Also the ground reference plane is placed on a wooden table with a height of 0.8 meters in the shielded room. The ground reference plane shall project beyond the EUT by at least 0.1m on all sides.

c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters above the ground reference plane in the shielded room. The ground reference plane shall project beyond the EUT by at least 0.1m on all sides.

d. The test generator and the coupling/decoupling network shall be placed directly on, and bonded to, the ground reference plane.

e. All cables to the EUT shall be placed on the insulation support 0.1 m above the ground reference plane. Cables not subject to electrical fast transients shall be routed as far as possible from the cable under test to minimize the coupling between the cables.

f. Keep the EUT 0.5m away from all other conductive structures, except the ground reference plane beneath the EUT as the minimum distance. Also if any, the minimum distance between the coupling clamp and all other conductive structures, except the ground reference plane beneath the coupling clamp and EUT shall be 0.5m.

g. Keep the length of the power and signal lines, if required, between the coupling device and the EUT to be 0.5m. If a non-detachable supply cable more than 0.5m long, the excess length of this cable shall be folded to avoid a flat coil and situated at a distance of 0,1 m above the ground reference plane.

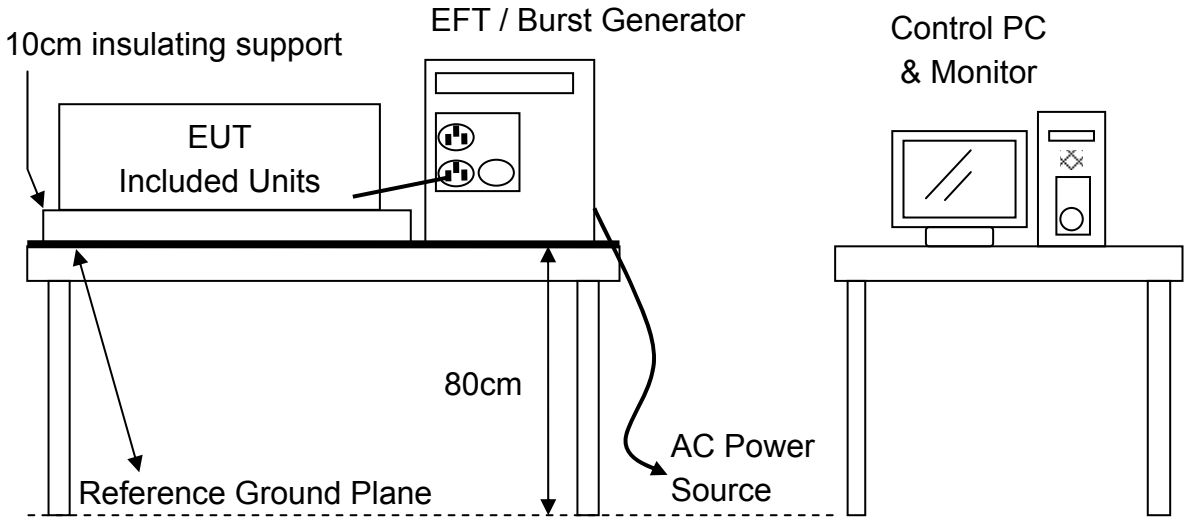
h. Connect the EUT's power source to the appropriate power through the coupling devices and perform the specified test level.

i. If any, connect all the I/O signal, data and control lines between EUT and accessories/support units through the coupling devices and perform the specified test level.

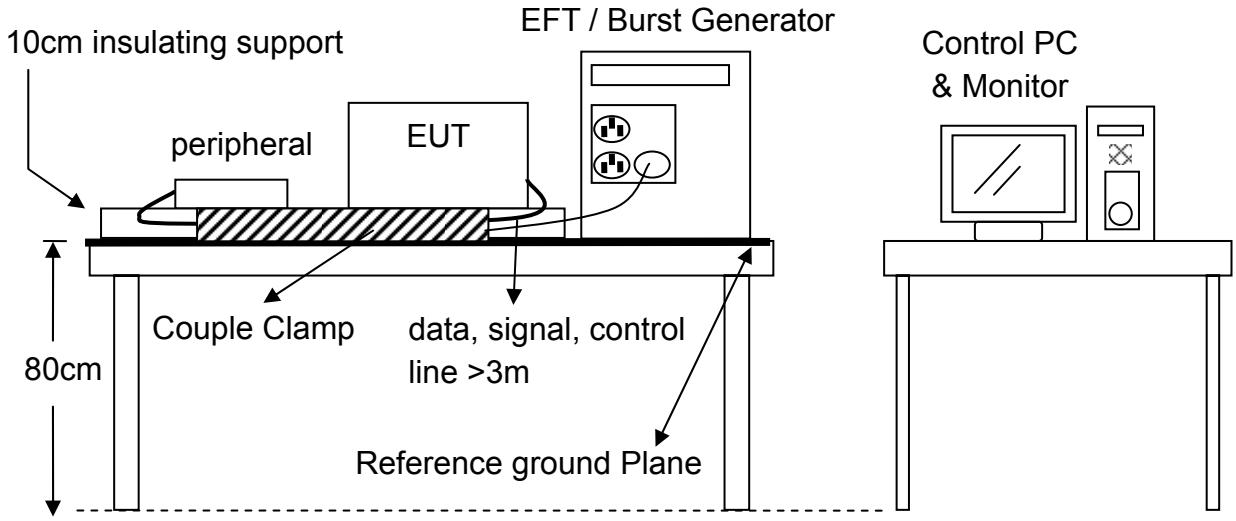
j. Record the performance of the EUT.

8.5 Test Configurations

Power supply port Test



I/O signal, data and control port Test (if any)



8.6 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

8.7 Test Results

Test Mode : Normal

Injected Line	Voltage Peak (kV)	Injected Method	Performance		Result (Pass/Fail)
			Required	Observation	
L1 - L2 - PE	±1.0	Direct	B	A(1)	**Pass**
Data Line (RJ-45)	±0.5	Clamp Coupling	B	A(1)	**Pass**

Observation of Performance during Test

(1) Normal operation condition specified by manufacturer during the test.

9. Surge Immunity Test

Test Result : PASS

9.1 Specifications of Immunity Test Requirement

Product (Generic) Standard	**:**	EN 55024:2010
Basic Standard	**:**	EN 61000-4-5:2006
Required Performance	**:**	B
Test Level	**:**	☑ 2 (line to line on power supply port)
		☑ 3 (line to earth (ground) on power supply port)
		☐ 2 (on I/O signal, data and control port)
Open-circuit Test Voltage	**:**	☑ ±0.5kV, ±1kV (line to line on power supply port)
		☑ ±0.5kV, ±1kV, ±2kV (line to earth (ground) on power supply port)
		☐ ±0.5kV, ±1kV (on I/O signal, data and control port)
CW Waveform (T_r/T_h)	**:**	1.2 / 50μs (open-circuit voltage)
		8 / 20μs (short-circuit current)
Phase Angel / Reference	**:**	0^o, 90^o, 180^o, 270^o / L1
Repetition Rate	**:**	1/min. maximum
Number of Test	**:**	at least 5 positive and 5 negative at selected points
Test Voltage	**:**	230V/50Hz to the power adapter
Tester	**:**	Mathew
Ambient Temperature	**:**	27°C
Relative Humidity	**:**	73%
Atmospheric Pressure	**:**	1010mbar

9.2 Description of Performance Criteria

Criteria A : normal performance within levels specified by the manufacturer, requestor or purchaser;

Criteria B : temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the EUT recovers its normal performance, without operator intervention;

Criteria C : temporary loss of function or degradation of performance, the correction of which requires operator intervention;

Criteria D : loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data.

9.3 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Surge Simulator	EMC PARTNER	TRA2000IN6/ 870	April 2, 2013	April 2, 2014
Telecom Coupler	KeyTek	CM-TELCD/ 0103215	June 9, 2010	June 9, 2013
Test Software	EMC PARTNER	TEMA/ Ver. 1.86	NCR	NCR
TR7 shielded room	ETS. LINDGREN	TR7/ 15353-D	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

9.4 Test Procedures

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters in the shielded room.

c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters above the ground reference plane in the shielded room.

d. For the surge test applied to EUT's power supply and unshielded unsymmetrical interconnection lines, if required, the capacitive coupling network are used.

e. If any, the surge test applied to the unshielded symmetrically interconnection lines of EUT, the gas arrestors coupling network are used.

f. Keep the interconnection line, if required, or power cord between the EUT or its power source and the coupling / decoupling network to be 2m in length (or shorter).

g. The surges have to be applied synchronized to the voltage phase at the zero-crossing and the peak value of the a.c. voltage wave (positive and negative).

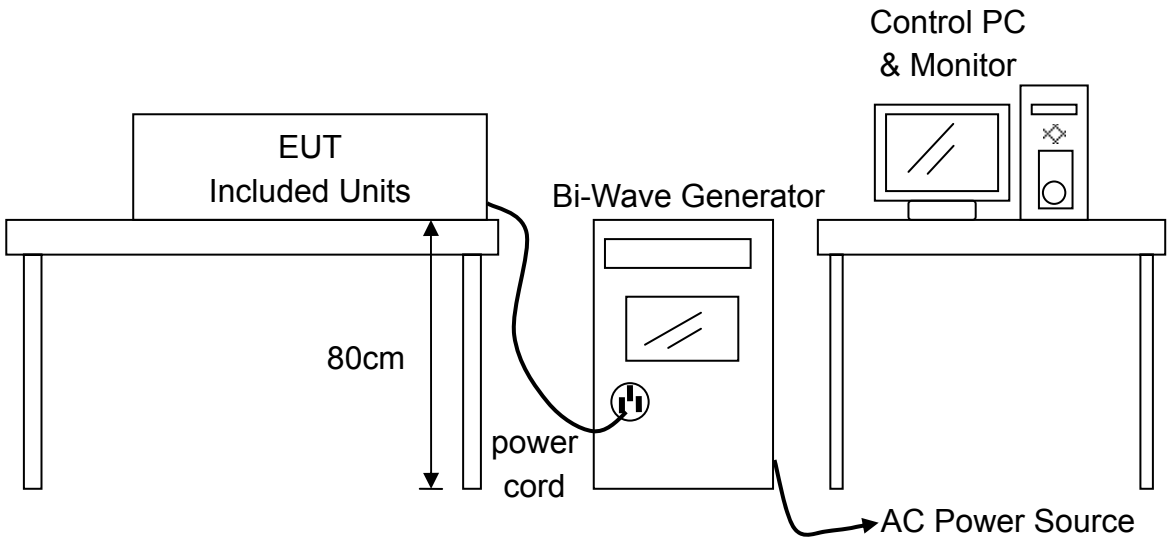
h. All lower levels including the selected test level shall be satisfied and the test voltage has to be increased by steps up to the specified test level.

i. Connect the EUT's power source to the appropriate power through the coupling devices and perform the specified test level.

j. If any, connect all the interconnection lines between EUT and accessories/support units through the coupling devices and perform the specified test level.

k. Record the performance of the EUT.

9.5 Test Configurations



9.6 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

9.7 Test Results

Test Mode : Normal

Coupled Line	Open-circuit Test Voltage (kV)	Performance					Result (Pass/Fail)
		Required	Observation				
			0°	90°	180°	270°	
L1 - PE	±0.5	B	A(1)	A(1)	A(1)	A(1)	**Pass**
L2 - PE	±0.5	B	A(1)	A(1)	A(1)	A(1)	**Pass**
L1 – L2	±0.5	B	A(1)	A(1)	A(1)	A(1)	**Pass**
L1 - PE	±1	B	A(1)	A(1)	A(1)	A(1)	**Pass**
L2 - PE	±1	B	A(1)	A(1)	A(1)	A(1)	**Pass**
L1 – L2	±1	B	A(1)	A(1)	A(1)	A(1)	**Pass**
L1 - PE	±2	B	A(1)	A(1)	A(1)	A(1)	**Pass**
L2 - PE	±2	B	A(1)	A(1)	A(1)	A(1)	**Pass**

Observation of Performance during Test

(1) Normal operation condition specified by manufacturer during the test.

10. Conducted disturbances (CS) Immunity Test

Test Result : PASS

10.1 Specifications of Immunity Test Requirement

Product (Generic) Standard	**:**	EN 55024:2010
Basic Standard	**:**	EN 61000-4-6:2009
Required Performance	**:**	A
Test Level	**:**	2
Voltage Level(e.m.f.)	**:**	3V (e.m.f.)
Test Frequency Range	**:**	150kHz ~ 80MHz
Frequency Step	**:**	1% of the momentary frequency
Dwell Time	**:**	Minimum 3 sec. per frequency
Modulation	**:**	1kHz Sine Wave with 80% Amplitude Modulation
Coupling Devices	**:**	☑ CDN-M3 (on power supply port)
	:	☐ CDN-T2 (on RJ-11 port)
		☐ CDN-T4 (on LAN port)
		☑ CDN-T8 (on LAN port)
		☐ EM Clamp (on I/O signal, data and control port)
Test Voltage	**:**	230V/50Hz to the power adapter
Tester	**:**	Scott
Ambient Temperature	**:**	25°C
Relative Humidity	**:**	66%
Atmospheric Pressure	**:**	1010mbar

10.2 Description of Performance Criteria

Criteria A : normal performance within levels specified by the manufacturer, requestor or purchaser;

Criteria B : temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the EUT recovers its normal performance, without operator intervention;

Criteria C : temporary loss of function or degradation of performance, the correction of which requires operator intervention;

Criteria D : loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data.

10.3 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Signal Generator	R&S	SML03/ 101676	July 12, 2012	July 12, 2013
Dual Directional Coupler	AR	DC2600/ 28834	Jan. 3, 2013	Jan. 3, 2014
Power Amplifier	AR	75A250/ 28845	NCR	NCR
CDN	FCC	☐ FCC-801-M2-16A/ 2032	Jan. 14, 2013	Jan. 14, 2014
		☑ FCC-801-M3-16A/ 2060	Jan. 14, 2013	Jan. 14, 2014
		☐ FCC-801-M5-16A/ 2020	Jan. 14, 2013	Jan. 14, 2014
	FCC	☐ FCC-801-T2/ 2032	Sept. 5, 2012	Sept. 5, 2013
		☐ FCC-801-T4-RJ45/ 08031	Sept. 5, 2012	Sept. 5, 2013
		☑ NCDN-T8-RJ45/ 06016	March 16, 2013	March 16, 2014
EM CLAMP	FCC	FCC-203I-23MM/ 107	Jan. 4, 2013	Jan. 4, 2014
Test Software	AR	SW1006/ Ver. 1.13	NCR	NCR
AR shielded room	ETS. LINDGREN	AR/ 15353-J	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

10.4 Test Procedures

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a non-conducted support with a height 0.1 meters above the ground reference plane. Also the ground reference plane is placed on a wooden table with a height of 0.8 meters in the shielded room.

c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters above the ground reference plane in the shielded room.

d. Decide the injection methods and test points according to the relative standard.

e. All relevant cables shall be provide with the appropriate coupling and decoupling devices at a distance between 0.1m and 0.3m from the projected geometry of the EUT on the ground reference plane.

f. All cables connected to each Auxiliary Equipment (AE), other than those being connected to the EUT, shall not be bundled nor wrapped and shall be kept between 30mm and 50mm above the ground reference plane.

g. The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn while the other non-excited RF input ports of the coupling devices are terminated by a 50Ω load resistor.

h. Perform the test with the specified immunity level in the test frequency range and with the specified modulation type.

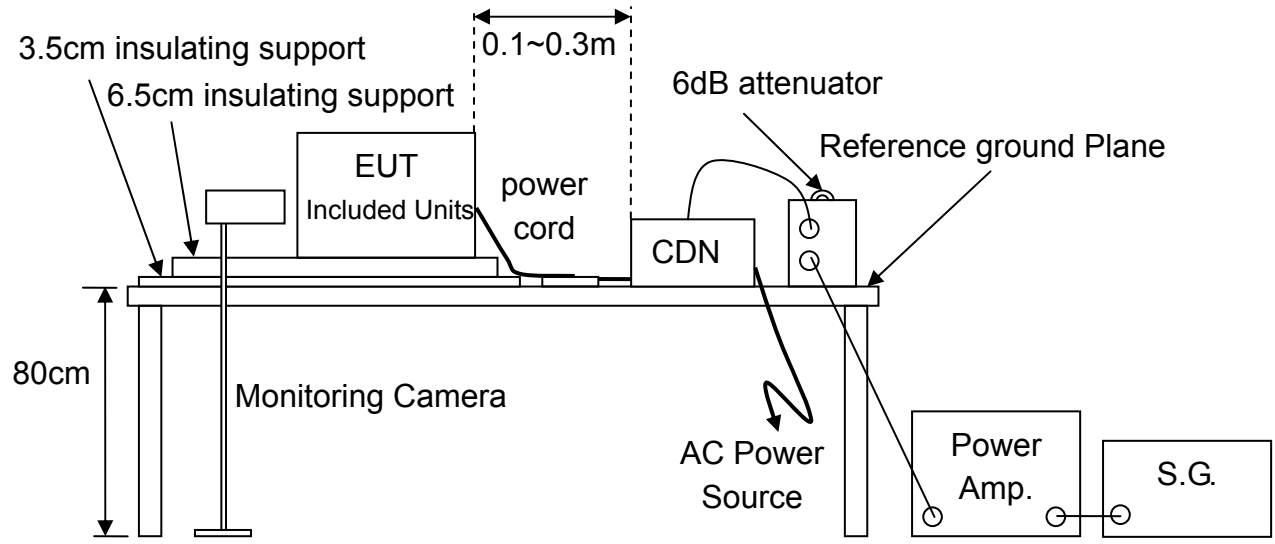
i. The dwell time at each frequency shall be not less than the time necessary for the EUT to be exercised and be able to respond.

j. The sensitive frequencies of EUT and harmonics or frequencies of dominant interest shall be analyzed separately, if any.

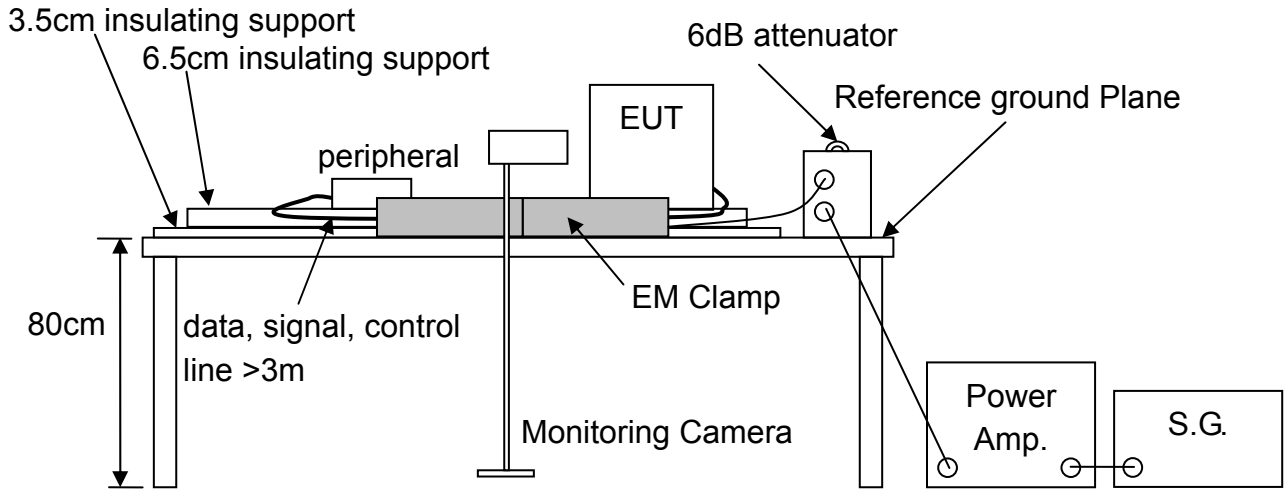
k. Record the performance of the EUT.

10.5 Test Configurations

Power supply and LAN port Test



I/O signal, data and control port Test (if any)



10.6 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

10.7 Test Results

Test Mode : Normal

Injected Line	Coupling Devices	Performance		Result (Pass/Fail)
		Required	Observation	
Power Lines	CDN-M3	A	A(1)	**Pass**
Data Line (RJ-45)	CDN-T8(1Gbps)	A	A(1)	**Pass**

Observation of Performance during Test

(1) Normal operation condition specified by manufacturer during the test.

11. Power frequency magnetic field (PFM) Immunity Test

Test Result : PASS

11.1 Specifications of Immunity Test Requirement

Product (Generic) Standard	**:**	EN 55024:2010
Basic Standard	**:**	EN 61000-4-8:2010
Required Performance	**:**	A
Test Level	**:**	1
Magnetic Field Strength	**:**	1 A/m
Power Frequency	**:**	50 Hz
Test Duration	**:**	1 min.
Magnetic Field Orientation	**:**	X, Y, Z-axis
Test Voltage	**:**	230V/50Hz to the power adapter
Tester	**:**	Mathew
Environment Magnetic Field	**:**	0.05 A/m (< 0.1 A/m (20dB below the test field))
Ambient Temperature	**:**	26°C
Relative Humidity	**:**	69%
Atmospheric Pressure	**:**	1010mbar

11.2 Description of Performance Criteria

Criteria A : normal performance within levels specified by the manufacturer, requestor or purchaser;

Criteria B : temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the EUT recovers its normal performance, without operator intervention;

Criteria C : temporary loss of function or degradation of performance, the correction of which requires operator intervention;

Criteria D : loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data.

11.3 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Current Source	FCC	F-1000-4-8-125A/ 1008	June 25, 2012	June 25, 2013
Coil	FCC	F-1000-4-8-1M/ 1007	June 25, 2012	June 25, 2013
Low Frequency Gauss Meter	CHAUVIN ARNOUX	C.A40/ 150361	July 19, 2012	July 19, 2013
TR12 Plane Grounding Site	CRC	TR12	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

11.4 Test Procedures

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a wooden table with a height 0.8 meters.

c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters above the ground reference plane (minimum size is 1m×1m) in the shielded room.

d. For the tabletop equipment, the induction coil with a square form in 1m side (or diameter) is used and shall enclose the EUT placed at its center. For the floor-standing equipment, the induction coil shall be able to envelop the EUT and made of conductors of relatively small cross-section.

e. The dimensions of induction coil shall be able to keep the magnetic fields over the whole volume of the EUT with an acceptable variation of ±3dB.

f. The test generator shall be placed at less than 3m distance from the induction coil.

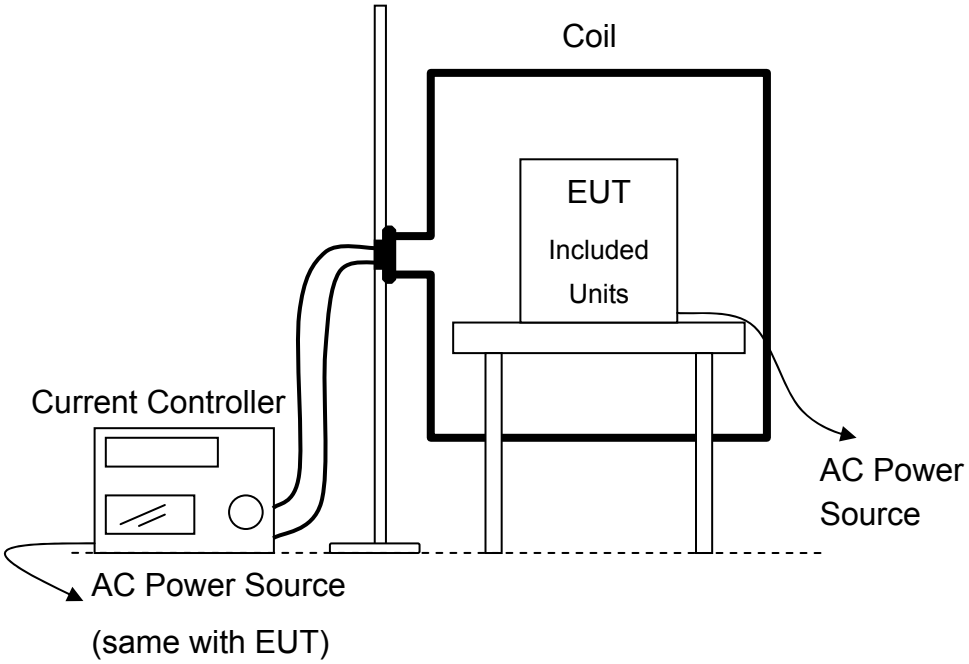
g. Keep all cables of EUT to be exposed to the magnetic field for 1m of their length.

h. Before the test, maintain the electromagnetic field value of the test environment to be at least 20dB lower than the selected test level. Then tune up the currents of the test generator and use the Guass Meter to calibrate the specified test level at the center of the induction coil.

i. Perform the test with the specified magnetic field by rotating the induction coil to three different orientations to generate X, Y and Z directed magnetic field sequentially.

j. Record the performance of the EUT.

11.5 Test Configurations



11.6 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

11.7 Test Results

Test Mode : Normal

Magnetic Field Orientation	Magnetic Field (A/m)	Frequency (Hz)	Performance		Result (Pass/Fail)
			Required	Observation	
X-axis	1	50	A	A(1)	**Pass**
Y-axis	1	50	A	A(1)	**Pass**
Z-axis	1	50	A	A(1)	**Pass**

Observation of Performance during Test

(1) Normal operation condition specified by manufacturer during the test.

12. Voltage dips, short interruptions Immunity Test

Test Result : PASS

12.1 Specifications of Immunity Test Requirement

Product (Generic) Standard	:	EN 55024:2010
Basic Standard	:	EN 61000-4-11:2004
Required Performance	:	☑ B for 0% residual voltage dips with 0.5 cycle
and Test Level		☑ C for 70% residual voltage dips with 25 cycles
		☐ C for 40% residual voltage dips
		☑ C for 0% residual voltage interruptions with 250 cycles
Basis Test Voltage Level (U_T)	:	230V/50Hz to the power adapter
Test Duration	:	Maximum 3 dips/interruptions with a sequence
Time interval	:	10s minimum between each test event
Phase Angle of Abrupt Changes	:	0^o
Tester	:	Mathew
Ambient Temperature	:	27°C
Relative Humidity	:	73%
Atmospheric Pressure	:	1010mbar

12.2 Description of Performance Criteria

Criteria A : normal performance within levels specified by the manufacturer, requestor or purchaser;

Criteria B : temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the EUT recovers its normal performance, without operator intervention;

Criteria C : temporary loss of function or degradation of performance, the correction of which requires operator intervention;

Criteria D : loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data.

12.3 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Voltage DIP Tester	EMC PARTNER	TRA2000IN6/ 870	April 2, 2013	April 2, 2014
Test Software	EMC PARTNER	TEMA/ Ver. 1.86	NCR	NCR
TR7 shielded room	ETS. LINDGREN	TR7/ 15353-D	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

12.4 Test Procedures

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a wooden table with a height 0.8 meters above the ground reference plane in the shielded room.

c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters above the ground reference plane in the shielded room.

d. The test shall be performed with the EUT connected to the test Generator with the shortest power supply cable as specified by the manufacturer.

e. If any, tests on the three-phase EUT are accomplished by using three sets of equipment mutually synchronized.

f. During the tests, the main voltage for testing is monitored within an accuracy of 2% and the zero crossing control of the generators must have an accuracy of $\pm 10^{o}$.

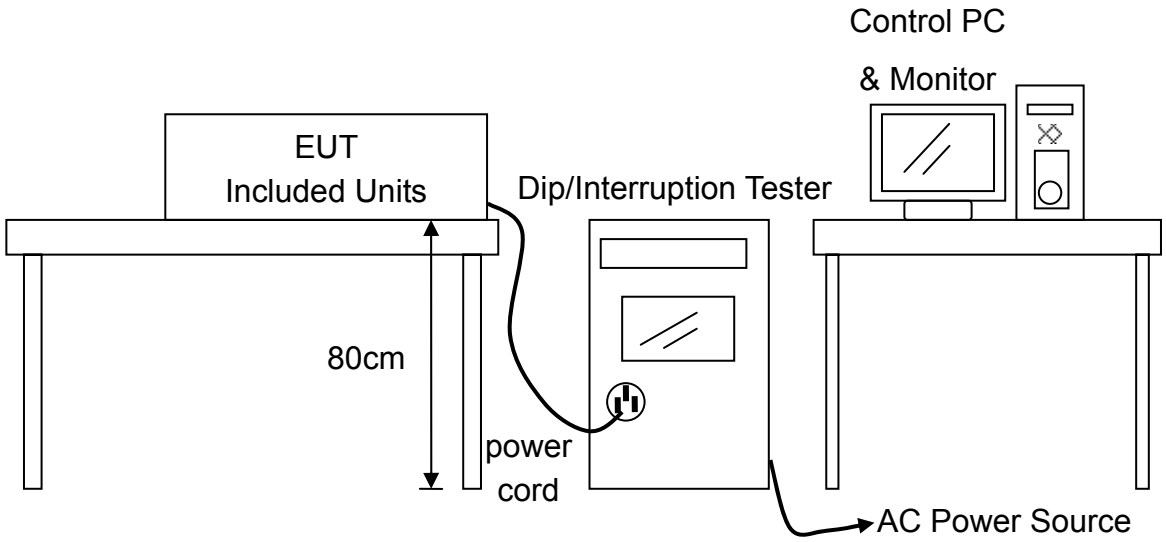
g. The EUT shall be tested for each selected combination of test level and duration with a sequence of three dips/interruptions with intervals of 10 sec. minimum (between each test event). Each representative mode of operation shall be test.

h. Abrupt changes in supply voltage shall occur at zero crossings of the voltage and additional angles preferably selected from 0^{o}, 45^{o}, 90^{o}, 135^{o}, 180^{o}, 225^{o}, 270^{o}, 315^{o} on each phase.

i. Connect the EUT's power source to the appropriate power through the test generator and perform the specified test level.

j. Record the performance of the EUT.

12.5 Test Configurations



12.6 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

12.7 Test Results

Test Mode : Normal

Voltage Dips Test

Test level (% residual voltage)	Reduction Voltage (%)	Duration (cycle)	Performance		Result (Pass/Fail)
			Required	Observation	
0	>95	0.5	B	A(1)	**Pass**
70	30	25	C	A(1)	**Pass**

Voltage Interruption Test

Test level (% residual voltage)	Reduction Voltage (%)	Duration (cycle)	Performance		Result (Pass/Fail)
			Required	Observation	
0	>95	250	C	C(2)	**Pass**

Observation of Performance during Test

(1) Normal operation condition specified by manufacturer during the test.

(2) The EUT shuts down while test is performing, it can be restarted manually after finishing the test.

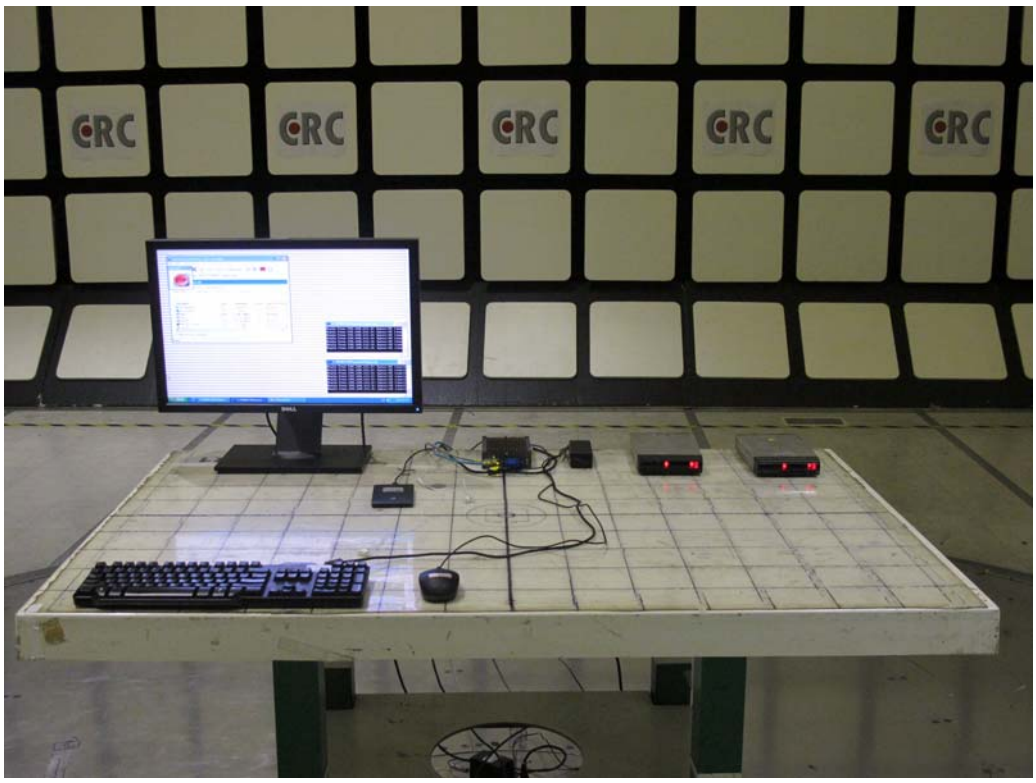
Attachment 1

Photographs of the Test Configurations

Contents

1. Conducted Emission Measurement

2. Radiated Emission Measurement



3. Harmonic Current & Voltage Fluctuations Emission Measurement

4. Electrostatic Discharge (ESD) Immunity Test

5. Radiated Electromagnetic Field (RS) Immunity Test

6. Electrical fast transient / burst (EFT) Immunity Test

Test for LAN port

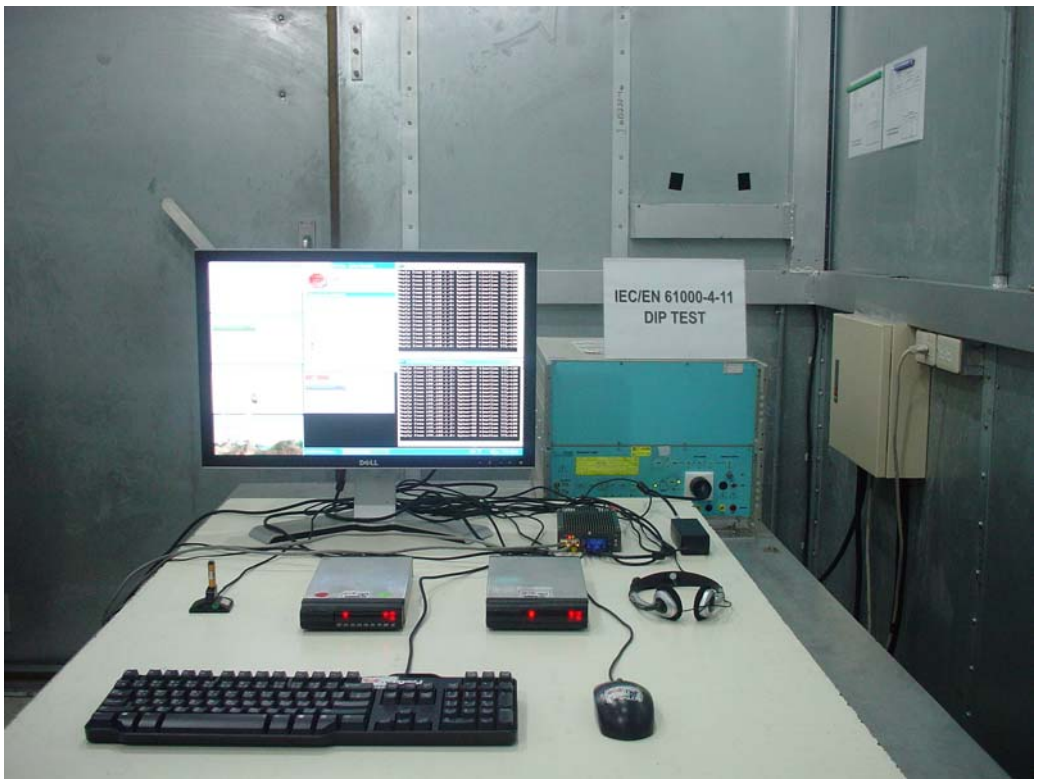
7. Surge Immunity Test

8. Conducted disturbances (CS) Immunity Test

Test for LAN port

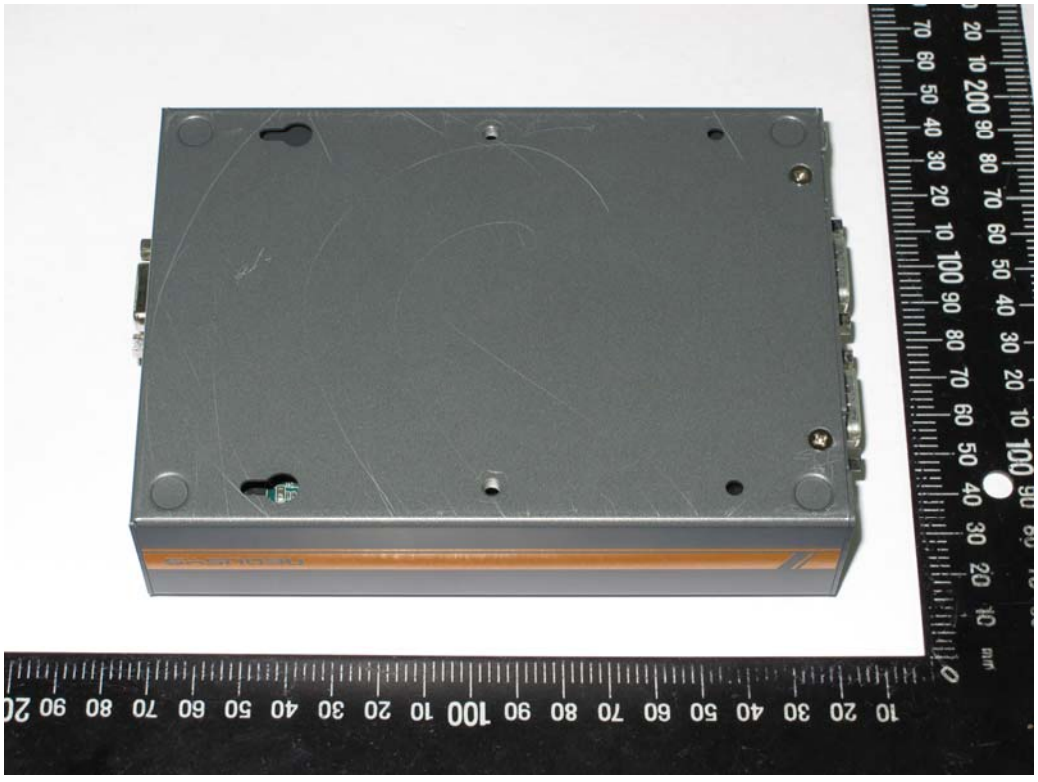
9. Power frequency magnetic field (PFM) Immunity Test

10. Voltage dips, short interruptions Immunity Test

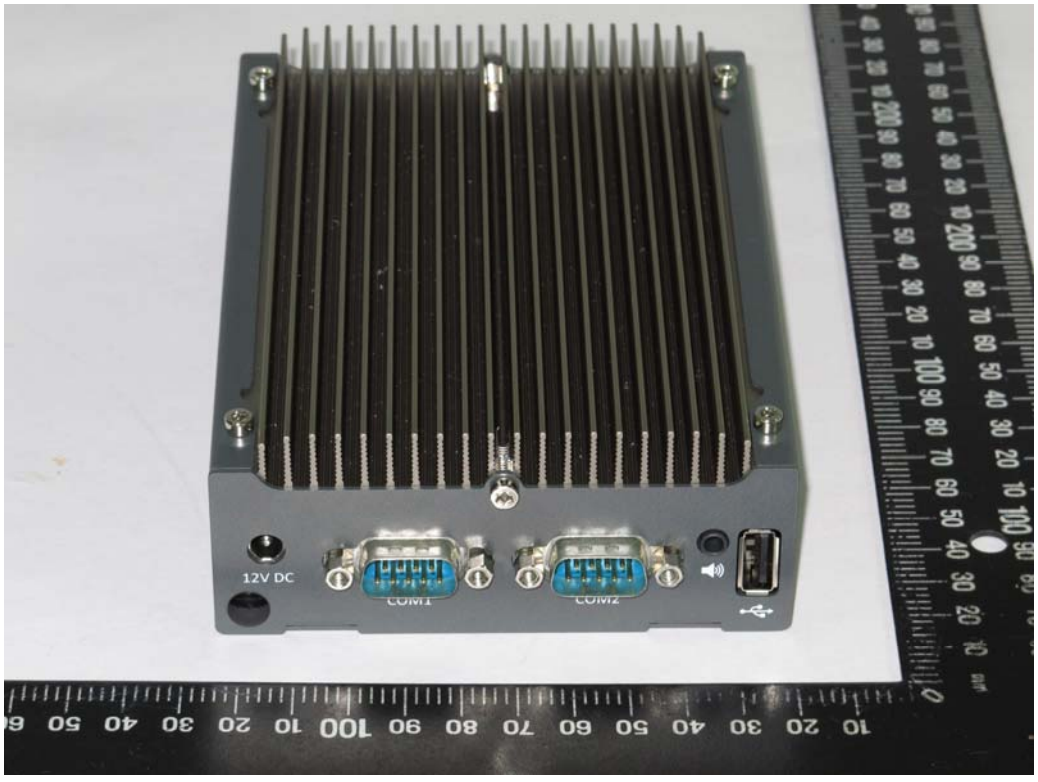


Attachment 2

Photographs of EUT




WDT HDD PWR
RESET
VGA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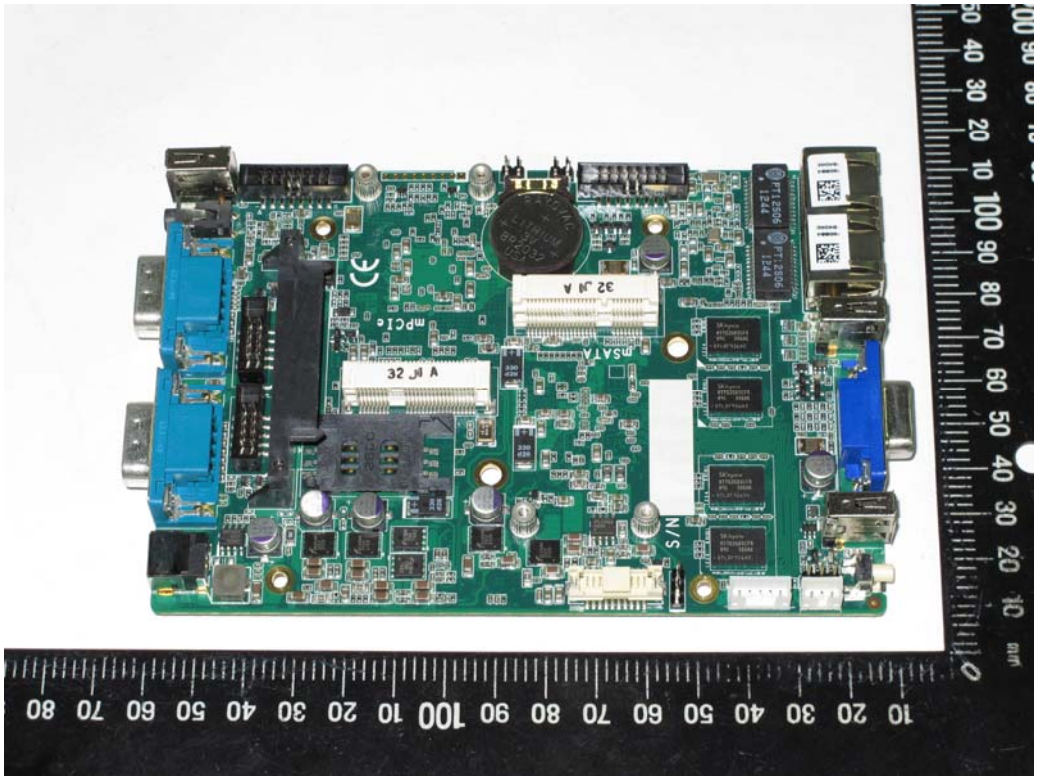
COM1
COM2


SAFD
16GB
Apacer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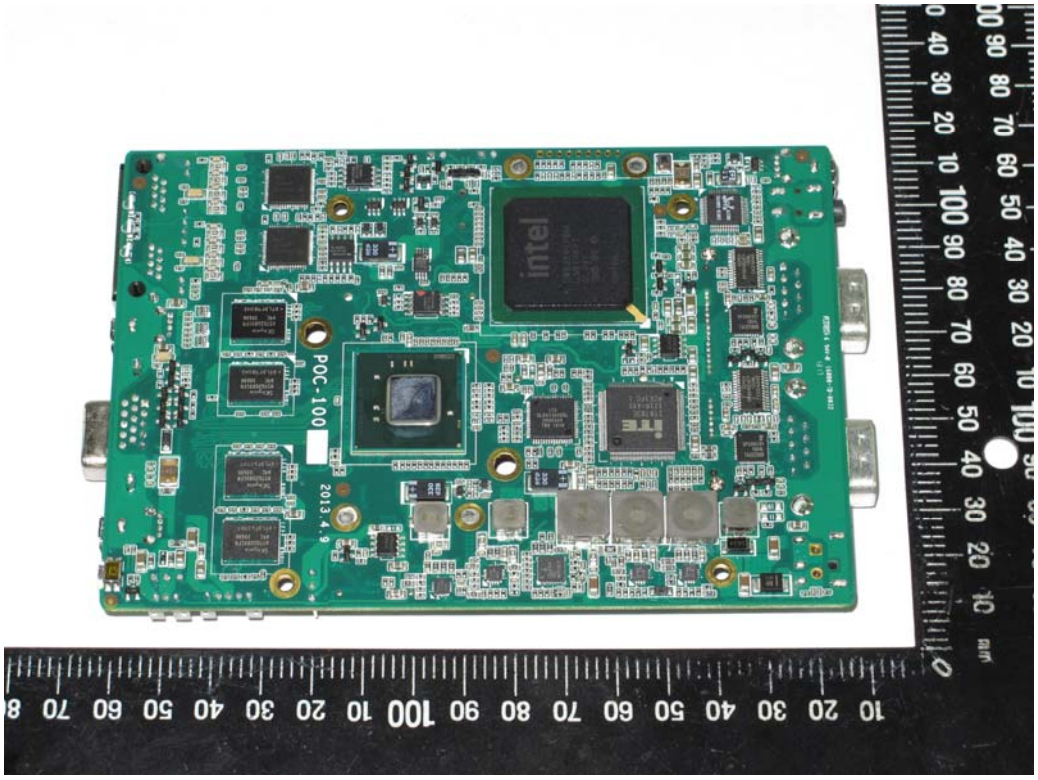
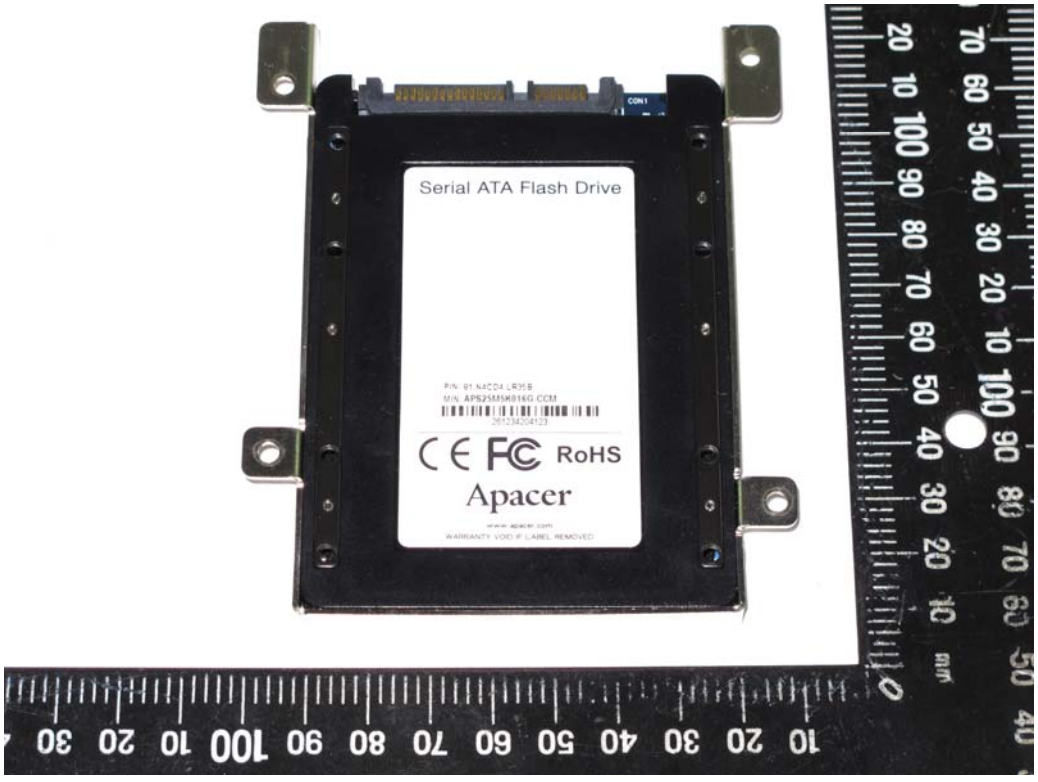
S/N


intel
POC-100
2013.4.9


SAFD
Commercial Serial ATA Flash Drive
16GB
Apacer


Serial ATA Flash Drive
RoHS
Apacer

Adapter


LIEN CHANG
SPS ADAPTOR
电源适配器
Model : 型号: LCAP07F
I/P: 输入 : 100-240V~, 50-60Hz, 1.0A(1,0A) Max
O/P: 输出 : 12V ⎓ 3.0A(3,0A)
LCAP07F
100-240V~ 50/60Hz 1.0A
12V ⎓ 3.0A
A/S 1544-7777
HU10358-9003
SAFETY MARK
090317-11
R33134
BZ02
NOM
NYCE
E161905
LISTED
L.P.S
ITE POWER SUPPLY
This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) this device may not cause harmful interference,and
(2) this device must accept any interference received,
including interference that may cause undesired operation.
EFFICIENCY LEVEL V
Caution: 注意:
36W
Risk of electric shock do not open
For indoor use only.
"Laite on liitettävä suojamaadoituskoskettimilla
varustettuun pistorasiaan "
"Apparatet må tilkoples jordet stikkontakt"
MADE IN CHINA 中国制造