Verification of Compliance

Product Name	:	**Nuvo-3000 Series**
Main Model Number	:	**Nuvo-3005E-I7QC**
Series Model Number	:	**Nuvo-3005P-I7QC, Nuvo-3005E-I5DC, Nuvo-3005P-I5DC**
Applicant	:	**Neousys Technology Inc.**
Address	:	**15F, No. 868-3, Zhongzheng Rd., Zhonghe Dist., New Taipei City, 23586, Taiwan (R.O.C.)**
Report Number	:	**F-U070-1307-322**
Issue Date	:	**August 15, 2013**

Applicable Standards : **FCC Part 15, Subpart B Class A ITE**
ANSI C63.4:2009
Industry Canada ICES-003 Issue 5
CSA-IEC CISPR22-10 Class A ITE

One sample of the designated product has been tested in our laboratory and found to be in compliance with the FCC rules cited above.

NVLAP LAB CODE 200575-0

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

Central Research Technology Co.
EMC Test Laboratory
11, Lane 41, Fushuen St., Jungshan Chiu,
Taipei, Taiwan, 104, R.O.C.
Tel : 886-2-25984568
Fax: 886-2-25984546

J. Y.

(Tsun-Yu Shih/ General Manager)

Date: August 15, 2013

Declaration of Conformity (DoC)

Per 47 CFR §2.1077(a) & §15.19(a)(3)

The following device is herewith confirmed to comply with Part 15 of the FCC Rules.

Product Name : Nuvo-3000 Series

Main Model No. : Nuvo-3005E-I7QC

Series Model No. : Nuvo-3005P-I7QC, Nuvo-3005E-I5DC, Nuvo-3005P-I5DC

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.

The characteristics of electromagnetic emission has been evaluated by Central Research Technology Co. (NVLAP Lab. Code：200575-0), and the results are shown in the test report. (Report No. : F-U070-1307-322, issued in 2013)

It is understood that each unit marketed is identical to the device as tested, and any changes to the device that could adversely affect the emission characteristics will require retest.

The following importer/manufacturer is responsible for this declaration:

Company Name : _____

Company Address : _____
(in U.S.)

_____

Telephone : _____ Fax : _____

The person to be responsible for marking this declaration:

_____ _____

Name (Full name) Position/Title

_____ _____

Legal Signature Date

FCC Test Report

for

Nuvo-3000 Series

Main Model No.	**:**	**Nuvo-3005E-I7QC**
Series Model No.	**:**	**Nuvo-3005P-I7QC, Nuvo-3005E-I5DC, Nuvo-3005P-I5DC**
Report Number	**:**	**F-U070-1307-322**
Date of Receipt	**:**	**July 31, 2013**
Date of Report	**:**	**August 15, 2013**

Prepared for

Neousys Technology Inc.

15F, No. 868-3, Zhongzheng Rd., Zhonghe Dist., New Taipei City, 23586, Taiwan (R.O.C.)

Prepared by

Central Research Technology Co.
EMC Test Laboratory

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

NVLAP LAB CODE 200575-0

Verification of Compliance

Equipment Under Test	:	Nuvo-3000 Series
Main Model No.	:	Nuvo-3005E-I7QC
Series Model No.	:	Nuvo-3005P-I7QC, Nuvo-3005E-I5DC, Nuvo-3005P-I5DC
Applicant	:	Neousys Technology Inc.
Address	:	15F, No. 868-3, Zhongzheng Rd., Zhonghe Dist., New Taipei City, 23586, Taiwan (R.O.C.)
Applicable Standards	:	**FCC Part 15, Subpart B Class A ITE** **ANSI C63.4:2009** **Industry Canada ICES-003 Issue 5** **CSA-IEC CISPR22-10 Class A ITE**
Date of Testing	:	July 31~August 7, 2013
Deviation	:	N/A
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 : Iris Chen (Iris Chen/System Executive) , **DATE :** Aug. 15, 2013

APPROVED BY : J. Y. Shih (Tsun-Yu Shih/General Manager) , **DATE :** Aug. 15, 2013

Contents

1. General Description

1.1 General Description of EUT

Equipment Under Test	:	Nuvo-3000 Series		
Main Model No.	:	Nuvo-3005E-I7QC		
Series Model No.	:	Nuvo-3005P-I7QC, Nuvo-3005E-I5DC, Nuvo-3005P-I5DC		
Power in	:	Supplied by the power adapter.		
Power adapter specification	:	Trade Name	:	MEAN WELL
		Model No.	:	GS160A20
		Input	:	100-240Vac, 50/60Hz, 2.0A
		Output	:	20Vdc, 8A, 160W MAX.
Highest Operating Frequency	:	3.3GHz from the test specification		
Manufacturer	:	Neousys Technology Inc.		
Function Description	:			

The EUT is an engineering sample of the Nuvo-3000 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	PS/2 port	1
2	D-Sub port	1
3	USB port	4
4	Com. port	2
5	LAN port	5
6	Audio output port	1
7	USB 3.0 port	4
8	DVI/HDMI port (White)	1
9	DVI/HDMI port (Blue)	1
10	Mic. port	1
11	CFast slot	1
12	AUX I/O port	1
13	DC input port	2 set
14	ON/OFF Ctrl Status Output port	1

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

Nuvo-3000 Series Specifications

System Core	
Processor	Intel® Core™ i7-3610QE (2.3/3.3 GHz, 6 MB cache) Intel® Core™ i5-3610ME (2.7/3.3 GHz, 3 MB cache) Intel® Celeron™ 1020E (2.2 GHz, 2 MB cache)
Chipset	Intel® HM76 Platform Controller Hub
Graphics	Integrated Intel® HD Graphics 4000 Controller (i7/i5) Integrated Intel® HD Graphics Controller (Celeron)
Memory	2x 204-pin SO-DIMM sockets, up to 16 GB DDR3 1333/1600 MHz SDRAM
I/O Interface	
Ethernet	Up to 5x Gigabit Ethernet ports by Intel® I210
Video Port	1x DB-15 connector for analog RGB, supporting 2048x1536 resolution 2x DVI-I connectors for DP/HDMI/DVI outputs, supporting 2560x1600 (DP) 1920x1080 (DVI/HDMI) resolution
USB	4x USB 3.0 ports and 4x USB 2.0 ports
Serial Port	2x software-programmable RS-232/422/485 (COM1 & COM2)
Isolated DIO	8x isolated digital input channels with COS interrupt and 8x isolated digital output channels
KB/MS	1x 6-pin mini-DIN connector for PS/2 keyboard/mouse
Audio	1x mic-in and 1x speaker-out
Storage Interface	
SATA HDD	1x Internal SATA port for 2.5" HDD/SSD installation
CFast	1x CFast socket

Expansion Bus	
Mini PCI-E	1x internal mini PCI Express socket with USIM socket 1x internal mini PCI Express socket
PCI/PCI Express	1x PCI slot in **Cassette** (Nuvo-3003P/3005P) 1x PCIe x8 slot via x16 connector in **Cassette** (Nuvo-3003E/3005E)
Power Supply & Ignition Control	
DC Input	1x 4-pin power connector for 8~25V DC input
Ignition Control	1x 3-pin pluggable terminal block for ignition signal input (IGN/GND/V+)
Remote Ctrl. & Status Output	1x 10-pin (2x5) wafer connector for remote on/off control and status LED output
Mechanical	
Dimension	240 mm (W) x 225 mm (D) x 90 mm (H)
Weight	4.4 Kg (including 2.5" HDD and DDR3 SODIMM)
Mounting	Wall-mounting (standard) or DIN-Rail mounting (optional)
Environmental	
Operating Temperature	-25°C ~ 70°C */** (with i5-3610ME & Celeron 1020E) -25°C ~ 60°C */** (with i7-3610QE)
Storage	-40°C ~85°C
Humidity	10%~90% , non-condensing
Vibration	Operating, 5 Grms, 5-500 Hz, 3 Axes (w/ SSD, according to IEC60068-2-64)
Shock	Operating, 50 Grms, Half-sine 11 ms Duration (w/ SSD, according to IEC60068-2-27)
EMC	CE/FCC Class A, according to EN 55022 & EN 55024
MTBF	93,732 hours

** 100% 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 DVI/HDMI ports (White & Blue). According to the preliminary test result to find that DVI/HDMI (White) 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+ DVI 1920x1200 @60Hz.

1.3 Applied standards

According to the specifications of the manufacturer and the requirements set in 47CFR Part 15, the applied standards to evaluate the compliance of the EUT are as following, and the measurement procedures specified in ANSI C63.4: 2009 are performed.

According to 47CFR Part 15 Section 15.33(b), the test frequency range of radiated emission measurements are listed below and the EUT herein shall be tested as:

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 1.705	30
☐	1.705 - 108	1000
☐	108 - 500	2000
☐	500 - 1000	5000
☑	Above 1000	5^{th} harmonic of the highest frequency or 40GHz, whichever is lower

All the test items are as following:

Applied Standards	**Test Items**	**Results**
FCC Part 15, Subpart B Class A ITE	☑ Conducted Emission Measurement	PASS
	☑ Radiated Emission Measurement	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 monitors, which fills the whole screen of it.
e. The EUT sends messages to the modem.
f. The EUT reads/writes messages from/to the USB 3.0 HDD/USB Flash Disk and CFast Card continually.
g. The EUT sends 1kHz audio signal to the earphone.
h. The Cameras keep shooting and transmitting the images to the LCD Monitor through the LAN port by the EUT.
i. Another PC sends/ receives messages to/ from the EUT through a Hub by executing the command of “PING”.
j. 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 7.1
Monitor		
USB Flash Disk		
Modem		
USB 3.0 HDD		

1.5 The Support Units

Conducted Emission Test

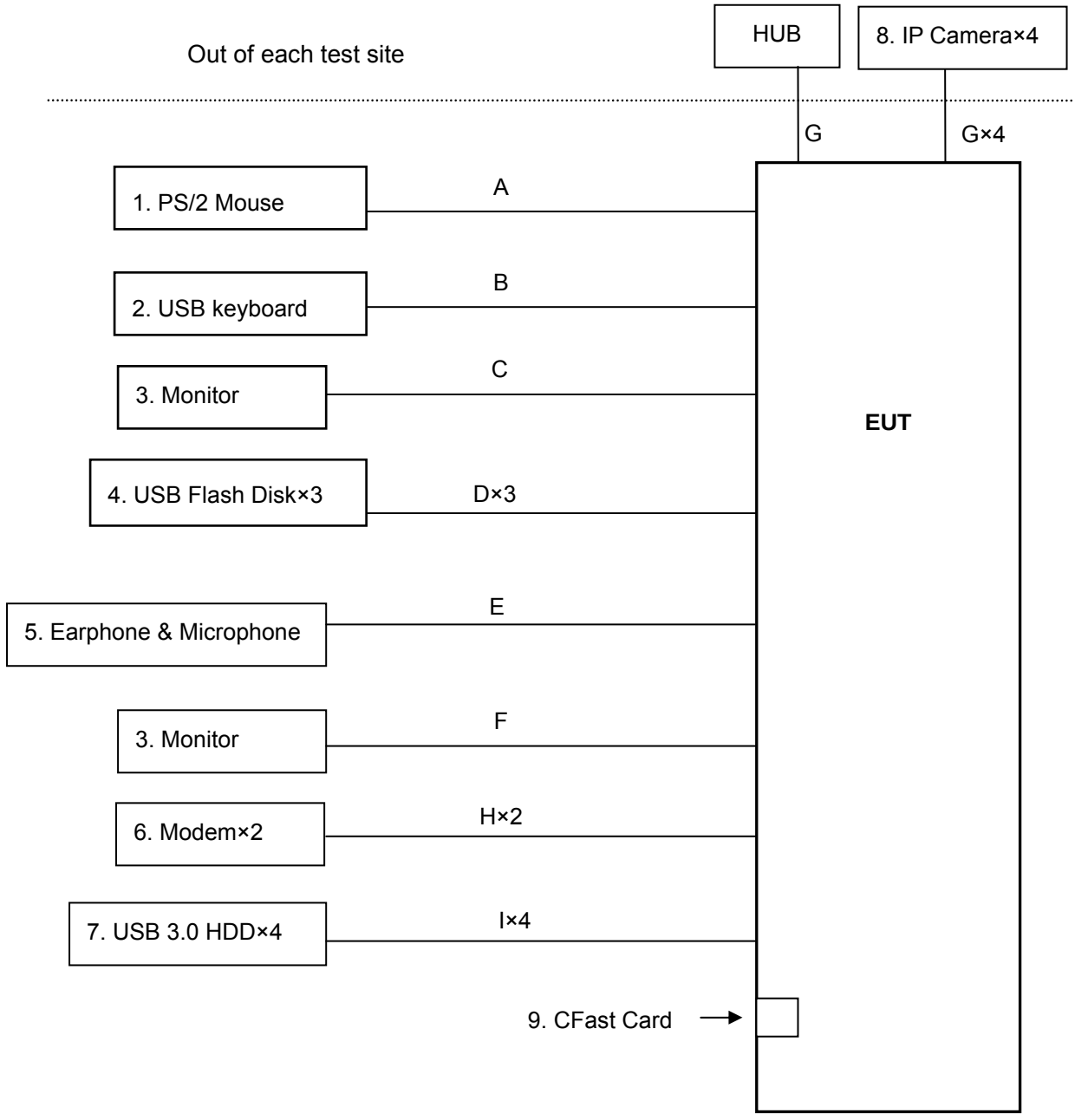
No.	Unit	Model No.	FCC ID	Trade Name	Power Cord	Supported by lab.
1	PS/2 Mouse	MO71KC	DoC	DELL	N/A	✓
2	USB Keyboard	SK-8115	DoC	DELL	N/A	✓
3	Monitor	U2410	DoC	DELL	1.8m	✓
		2408WFP	DoC	DELL	1.8m	✓
4	USB Flash Disk	U172	DoC	PQI	N/A	✓
5	Earphone & Microphone	CW-010M.V	N/A	i-Acom	N/A	✓
6	Modem	DM-1414	IFAXDH1414	ACEEX	1.8m	✓
7	USB 3.0 HDD	HD-PCTU3	DoC	BUFFALO	N/A	✓
		My Passport Essential	DoC	WD	N/A	✓
8	IP Camera	N/A	N/A	N/A	1.8m	
9	CFast Card (16GB)	N/A	N/A	apacer	N/A	

Radiated Emission Test

No.	Unit	Model No.	FCC ID	Trade Name	Power Cord	Supported by lab.
1	PS/2 Mouse	MO71KC	DoC	DELL	N/A	✓
2	USB Keyboard	SK-8115	DoC	DELL	N/A	✓
3	Monitor	U2410	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	1.8m	✓
7	USB 3.0 HDD	FreeAgent Goflex	DoC	Seagate	N/A	✓
		My Passport Essential	DoC	WD	N/A	✓
8	IP Camera	N/A	N/A	N/A	1.8m	
9	CFast Card (16GB)	N/A	N/A	apacer	N/A	

1.6 Layout of the Setup

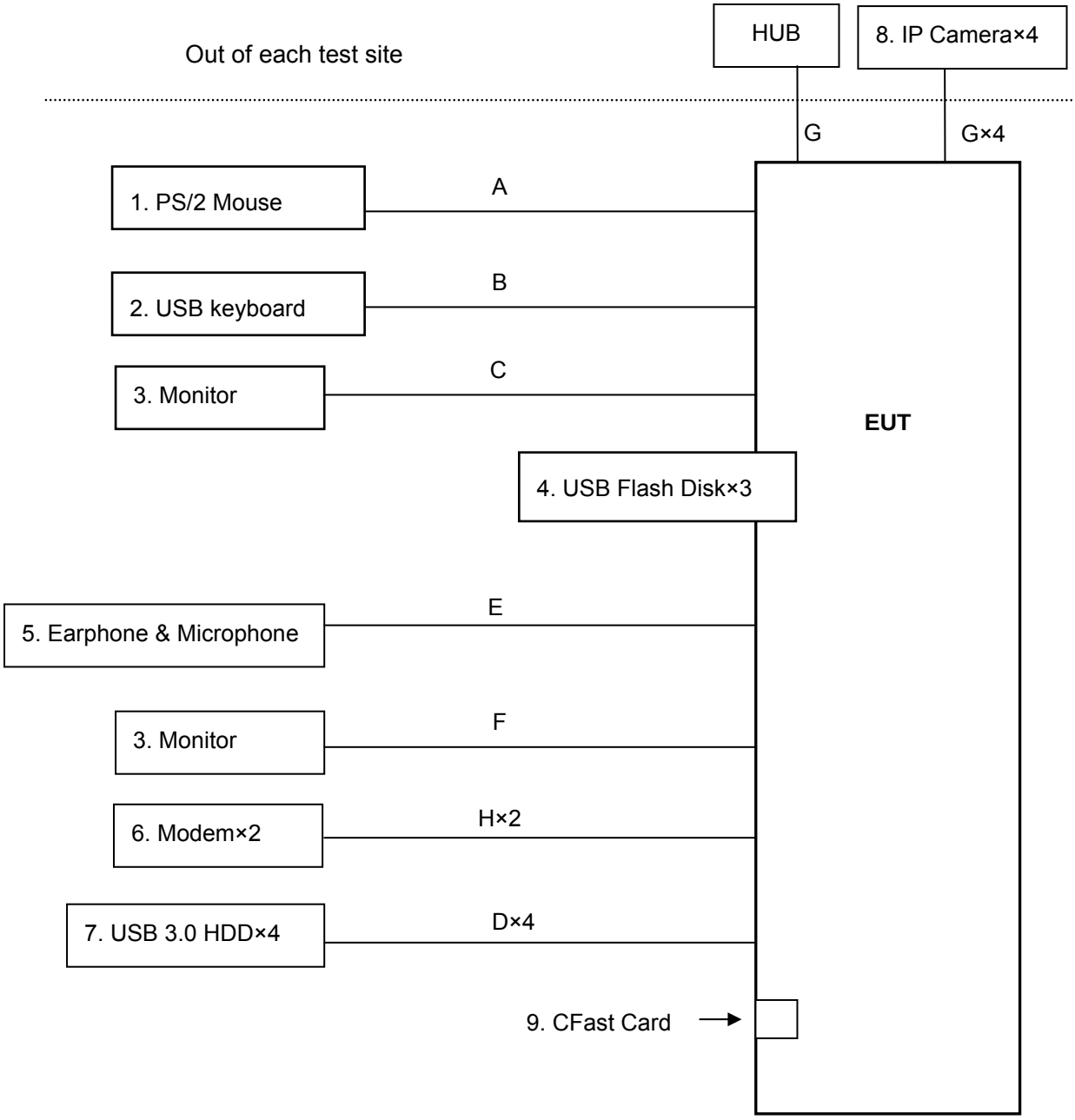
Conducted Emission Test



Connecting Cables :

No.	Cable	Length	Shielded	Core	Shielded Backshell	Supported by lab.	Note
A	PS/2 Mouse Cable	1.8m	✓			✓	
B	USB Keyboard Cable	2.0m	✓			✓	
C	D-sub Cable	1.7m	✓	✓		✓	2 Cores
D	USB Cable	1.0m	✓			✓	
E	Earphone & Microphone Cable	1.8m	✓			✓	
F	DVI Cable	1.8m	✓	✓		✓	2 Cores
G	LAN Cable	>3m				✓	
H	Modem Cable	1.8m	✓	✓		✓	2 Cores
I	USB 3.0 Cable	1.0m	✓			✓	

Radiated Emission Test



Connecting Cables :

No.	Cable	Length	Shielded	Core	Shielded Backshell	Supported by lab.	Note
A	PS/2 Mouse Cable	1.8m	✓			✓	
B	USB Keyboard Cable	2.0m	✓			✓	
C	D-sub Cable	1.7m	✓	✓		✓	2 Cores
D	USB 3.0 Cable	1.0m	✓			✓	
E	Earphone & Microphone Cable	1.8m	✓			✓	
F	DVI Cable	1.8m	✓	✓		✓	2 Cores
G	LAN Cable	>3m				✓	
H	Modem Cable	1.8m	✓	✓		✓	2 Cores

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 and ANSI C63.4: 2009.

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 ANSI C63.4: 2009. 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 in documents CISPR 22 for the radiated emission measurement.
TR5	Shielding Room (8m × 5m × 4m)	For the conducted emission measurement.
TR4	Shielding Room (5m×3m×3m)	

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.

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/ 880669/039	March 15, 2013	March 15, 2014
2nd LISN	R&S	ENV4200/ 833209/010	March 29, 2013	March 29, 2014
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

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 non-conducted 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 of 12 millimeters above the reference ground plane.

c. Connect the EUT's power source to the appropriate power mains through the LISN.

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

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

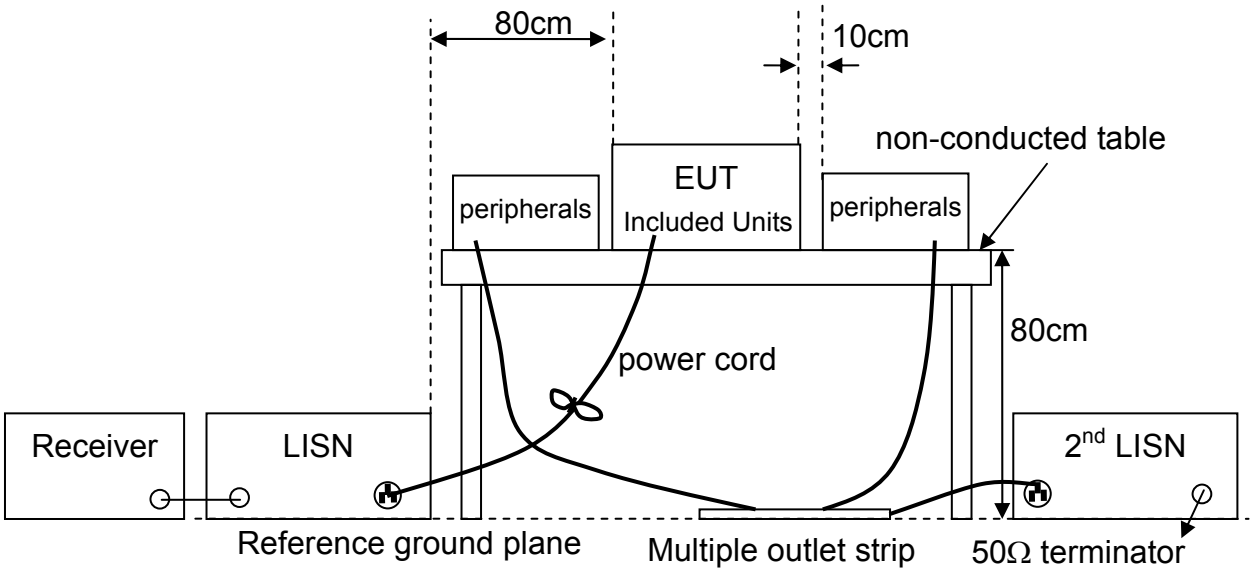
f. Measure the conducted emissions on each power line (Neutral Line and Line 1 – Hot side) of the EUT's power source by using the test receiver connected to the coupling RF output port of LISN.

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.

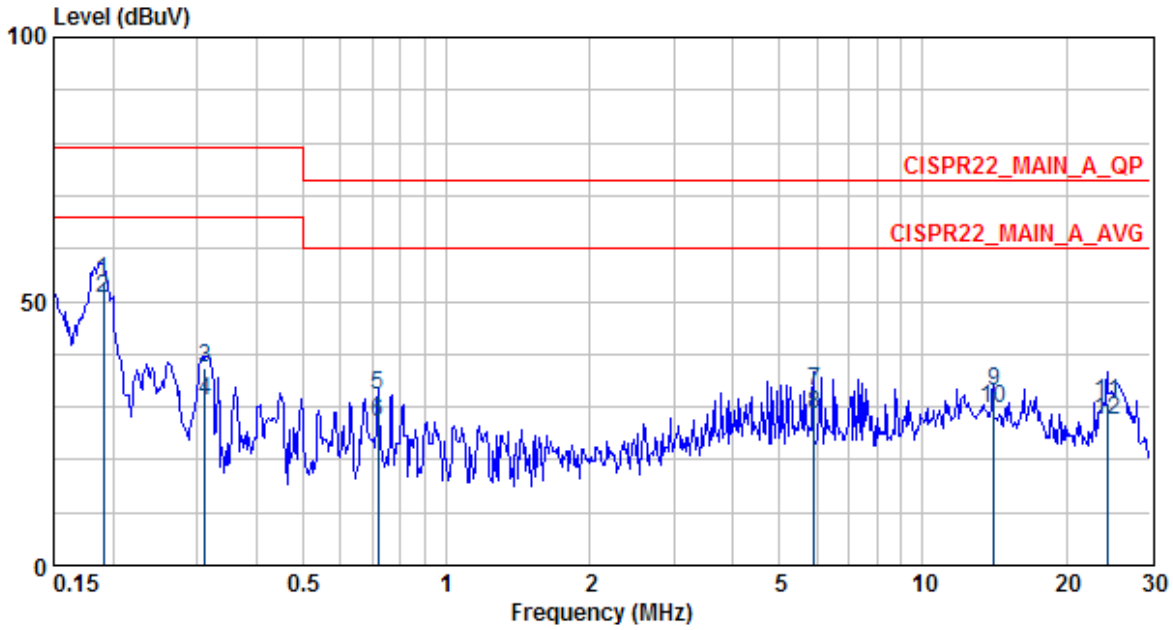
2.4 Test Configurations



2.5 Photographs of the Test Configurations

2.6 Test Results

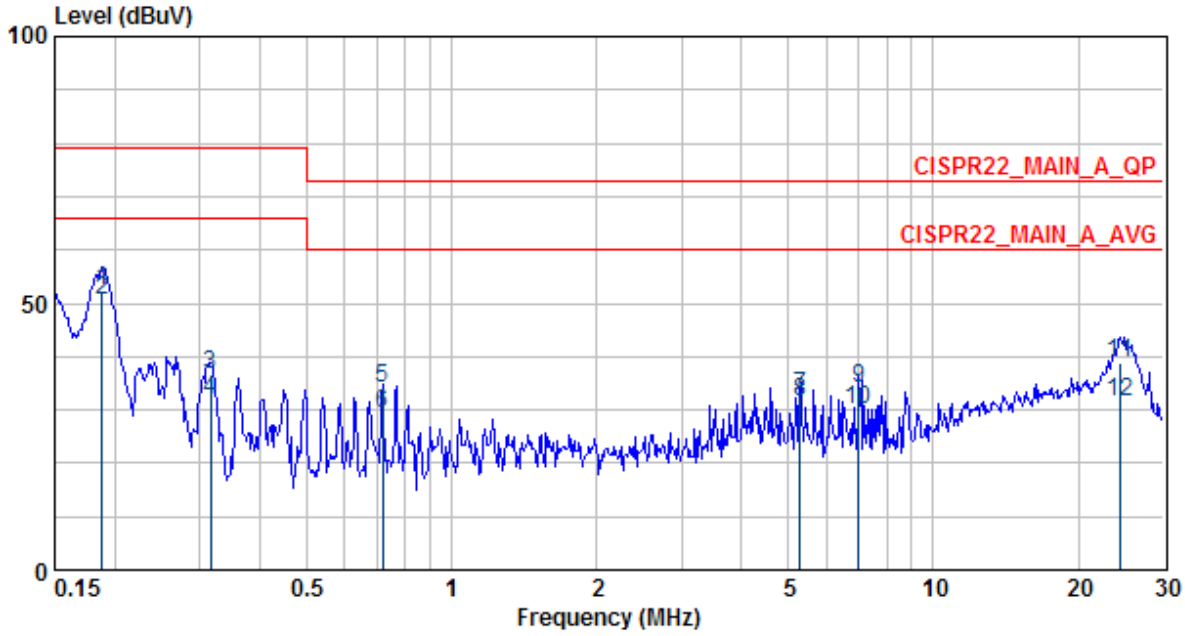
Test Mode	:	Normal			
Test Voltage	:	120V/60Hz to the power adapter			
Tester	:	Kent	**Temperature**	:	27°C
Humidity	:	68%RH	**Frequency Range**	:	150kHz~30MHz
IF Bandwidth	:	9kHz	**Phase**	:	**Line**



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.190	53.69	0.28	53.41	79.00	-25.31	LINE	QP
2	0.190	50.45	0.28	50.17	66.00	-15.55	LINE	AVERAGE
3	0.312	37.18	0.30	36.88	79.00	-41.82	LINE	QP
4	0.312	31.28	0.30	30.98	66.00	-34.72	LINE	AVERAGE
5	0.720	32.24	0.33	31.91	73.00	-40.76	LINE	QP
6	0.720	27.00	0.33	26.67	60.00	-33.00	LINE	AVERAGE
7	5.916	32.96	0.54	32.42	73.00	-40.04	LINE	QP
8	5.916	28.42	0.54	27.88	60.00	-31.58	LINE	AVERAGE
9	14.087	32.87	0.69	32.18	73.00	-40.13	LINE	QP
10	14.087	29.74	0.69	29.05	60.00	-30.26	LINE	AVERAGE
11	24.399	30.66	0.49	30.17	73.00	-42.34	LINE	QP
12	24.399	27.39	0.49	26.90	60.00	-32.61	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.

Test Mode	:	Normal			
Test Voltage	:	120V/60Hz to the power adapter			
Tester	:	Kent	**Temperature**	:	27°C
Humidity	:	68%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	0.188	52.20	0.17	52.03	79.00	-26.80	NEUTRAL	QP
2	0.188	50.66	0.17	50.49	66.00	-15.34	NEUTRAL	AVERAGE
3	0.317	36.51	0.18	36.33	79.00	-42.49	NEUTRAL	QP
4	0.317	31.92	0.18	31.74	66.00	-34.08	NEUTRAL	AVERAGE
5	0.721	34.22	0.22	34.00	73.00	-38.78	NEUTRAL	QP
6	0.721	29.45	0.22	29.23	60.00	-30.55	NEUTRAL	AVERAGE
7	5.282	32.49	0.45	32.04	73.00	-40.51	NEUTRAL	QP
8	5.282	31.33	0.45	30.88	60.00	-28.67	NEUTRAL	AVERAGE
9	6.984	34.12	0.53	33.59	73.00	-38.88	NEUTRAL	QP
10	6.984	30.15	0.53	29.62	60.00	-29.85	NEUTRAL	AVERAGE
11	24.529	38.98	1.24	37.74	73.00	-34.02	NEUTRAL	QP
12	24.529	31.39	1.24	30.15	60.00	-28.61	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.

3. Radiated Emission Measurement

Test Result : PASS

3.1 Limits for Emission Measurement

☑ Limits for radiated disturbances below 1000MHz

Frequency (MHz)	Class A Equipment (10m distance)	Class B Equipment (3m distance)
	Quasi-peak (dBμV/m)	Quasi-peak (dBμV/m)
30 to 88	39.1	40
88 to 216	43.5	43.5
216 to 960	46.4	46
960 to 1000	49.5	54
Note 1- The lower limit shall apply at the transition frequency. Note 2- Additional provisions may be required for cases where interference occurs. Note 3- According to 15.109(g), as an alternative to the radiated emission limits shown above, digital devices may be shown to comply with the standards (CISPR), Pub. 22 shown as below.		
30 to 230	40	30
230 to 1000	47	37

☑ Limits for radiated disturbances above 1000MHz 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 40	80	60	74	54

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 27, 2013	March 27, 2014
Broadband Antenna	R&S	HL-562/ 830547/010	April 30, 2013	April 30, 2014
Pre-Amplifier	Mini Circuit	ZKL-2/ 001	July 15, 2013	Jan. 15, 2014
Pre-Amplifier	Mini Circuit	ZKL-2/ 002	July 15, 2013	Jan. 15, 2014
Spectrum Analyzer	R&S	FSP40/ 100031	July 15, 2013	July 15, 2014
Spectrum Analyzer	R&S	FSP7/ 100384	Jan. 3, 2013	Jan. 3, 2014
RF Cable	JYEBAO	0214/ C0049	July 15, 2013	Jan. 15, 2014
RF Cable	JYEBAO	0214/ C0050	July 15, 2013	Jan. 15, 2014
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 15, 2013	July 15, 2014
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
TR11(3m)	Horizontal	3.8dB	4.1dB
	Vertical	3.3dB	3.7dB

Test Site (Measuring distance)	**Polarization**	**Frequency Range**
		1GHz ~18GHz
TR1(3m)	Horizontal	4.0dB
	Vertical	3.9dB

3.3 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 non-conducted table with a height of 0.8 meters above the reference ground plane in the semi-anechoic chamber. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 12 millimeters above the reference ground plane in the semi-anechoic chamber.

c. For the measurement of frequency below 1000MHz, the EUT was set 10m away from the interference receiving antenna for the limit of Class A equipment or CISPR 22. For Class B equipment and the measurement of frequency above 1000MHz, the EUT was set 3m away from the interference receiving antenna.

d. Rapidly sweep the signal in the test frequency range 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. For measurement of frequency above 1000MHz, the beamwidth of receiving horn antenna should keep covering EUT when the receiving horn antenna height varied.

g. 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.

h. Finely tune the antenna and turntable around the recorded position of each frequency found from step f.

i. For measurement of frequency below 1000MHz, set the receiver detector to be Quasi-Peak per CISPR 16-1 to find out the maximum level occurred.

j. For measurement of frequency above 1000MHz, set the spectrum detector to be Peak or Average to find out the maximum level occurred, if any.

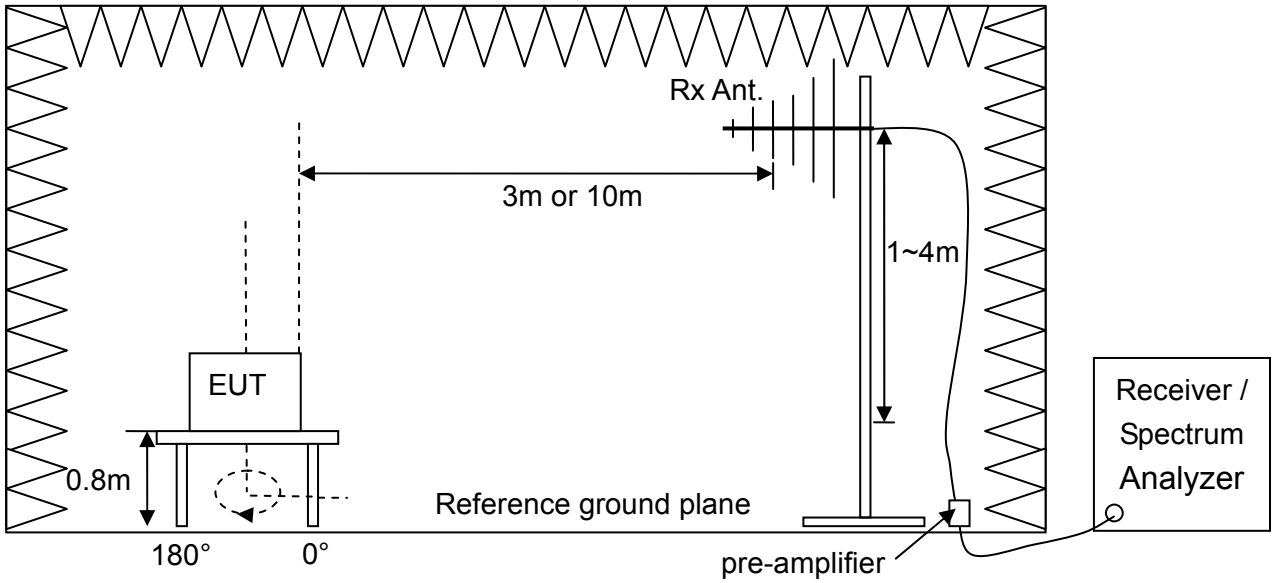
k. Record frequency, azimuth angle of the turntable, height, and polarization of the receiving antenna and compare the maximum level with the required limit.

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

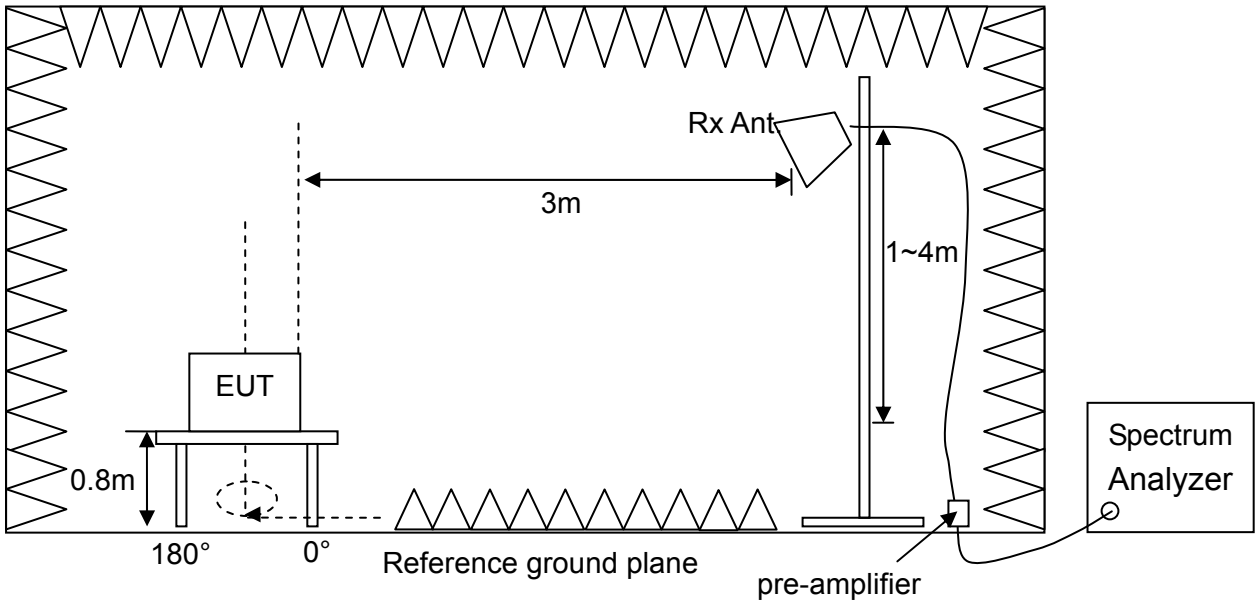
m. If the peak emission level measured from step e. is 4dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate Q.P. value will be measured and presented.

3.4 Test Configurations

Radiated Emission Measurement below 1000MHz



Radiated Emission Measurement above 1000MHz

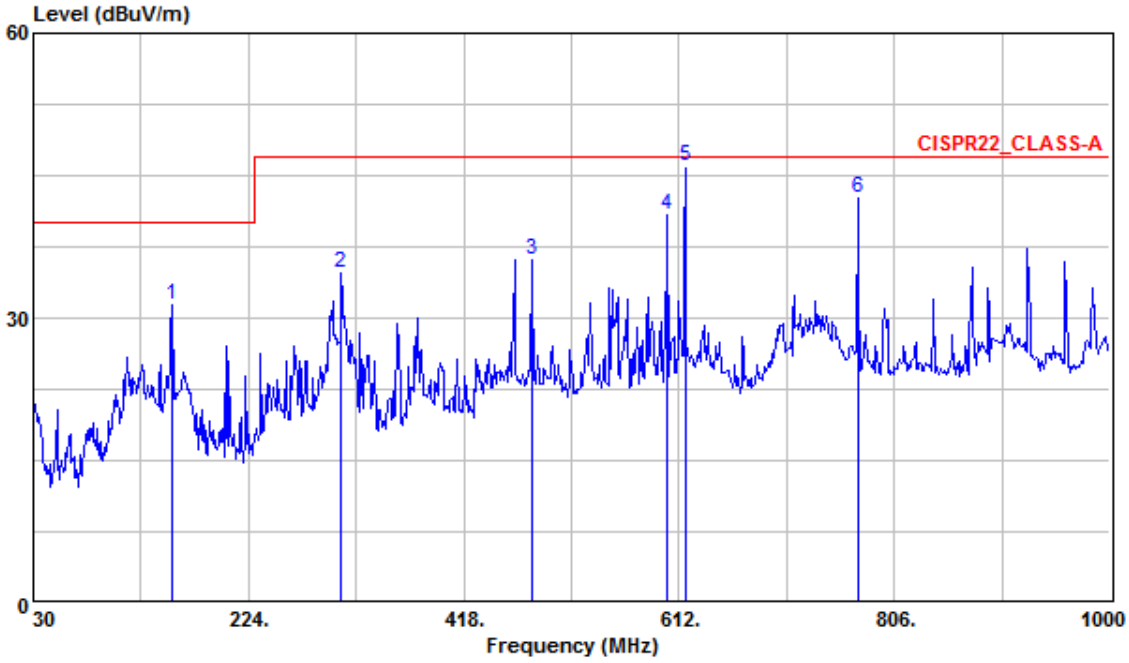


3.5 Photographs of the Test Configurations

3.6 Test Results

Radiated Emission Measurement below 1000MHz

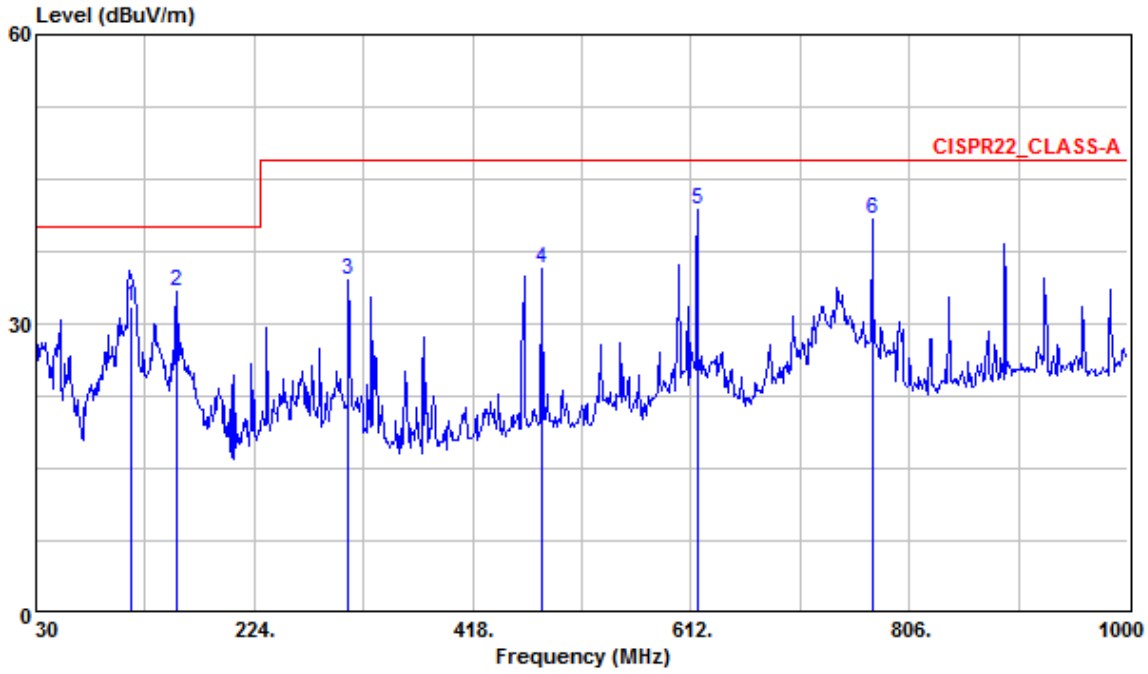
Test Mode	:	Normal			
Test Voltage	:	120V/60Hz to the power adapter			
Tester	:	Carl	**Temperature**	:	27°C
Humidity	:	67%RH	**Frequency Range**	:	30MHz~1GHz
IF Bandwidth	:	120kHz	**Polarization**	:	**Horizontal**



	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	155.130	31.39	52.72	-21.33	40.00	-8.61	---	---	HORIZONTAL	Peak
2	307.420	34.77	50.50	-15.73	47.00	-12.23	---	---	HORIZONTAL	Peak
3	479.110	36.08	46.88	-10.80	47.00	-10.92	---	---	HORIZONTAL	Peak
4	601.330	40.76	49.10	-8.34	47.00	-6.24	---	---	HORIZONTAL	Peak
5 @	617.993	45.95	54.04	-8.09	47.00	-1.05	166	14	HORIZONTAL	QP
6 @	773.020	42.71	48.62	-5.91	47.00	-4.29	---	---	HORIZONTAL	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.

Test Mode	:	Normal			
Test Voltage	:	120V/60Hz to the power adapter			
Tester	:	Carl	**Temperature**	:	27°C
Humidity	:	67%RH	**Frequency Range**	:	30MHz~1GHz
IF Bandwidth	:	120kHz	**Polarization**	:	**Vertical**

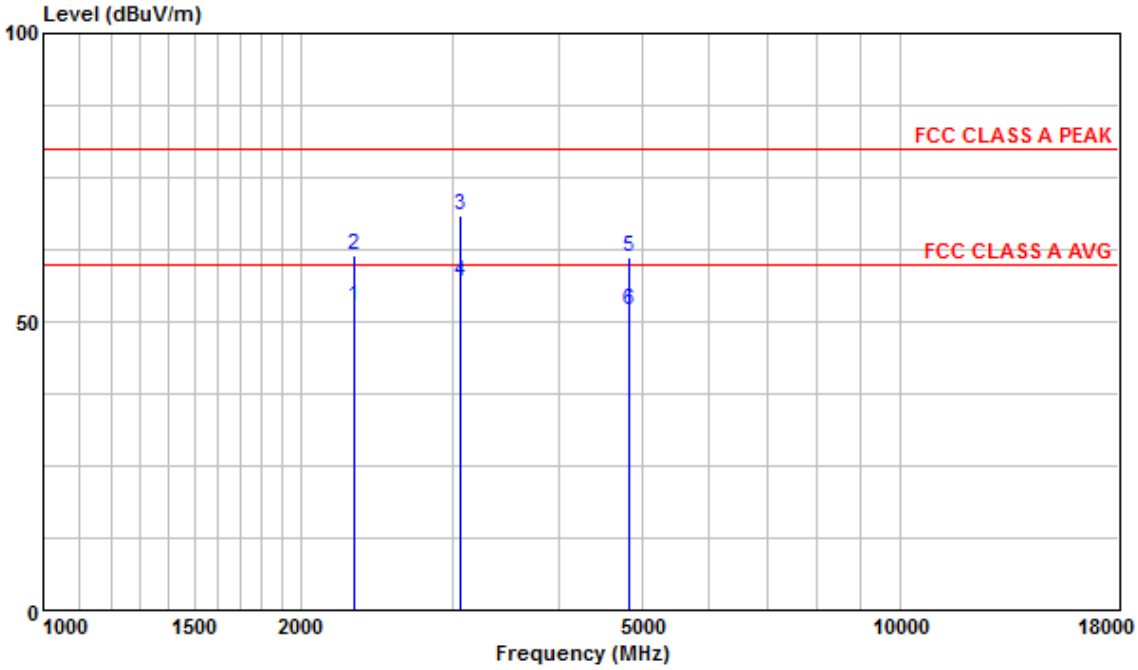


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	113.740	31.80	50.71	-18.91	40.00	-8.20	108	15	VERTICAL	QP
2	155.130	33.30	53.95	-20.65	40.00	-6.70	---	---	VERTICAL	Peak
3	307.420	34.45	49.99	-15.54	47.00	-12.55	---	---	VERTICAL	Peak
4	479.110	35.72	45.76	-10.04	47.00	-11.28	---	---	VERTICAL	Peak
5 @	617.820	41.76	48.78	-7.02	47.00	-5.24	---	---	VERTICAL	Peak
6	773.020	40.95	45.72	-4.77	47.00	-6.05	---	---	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

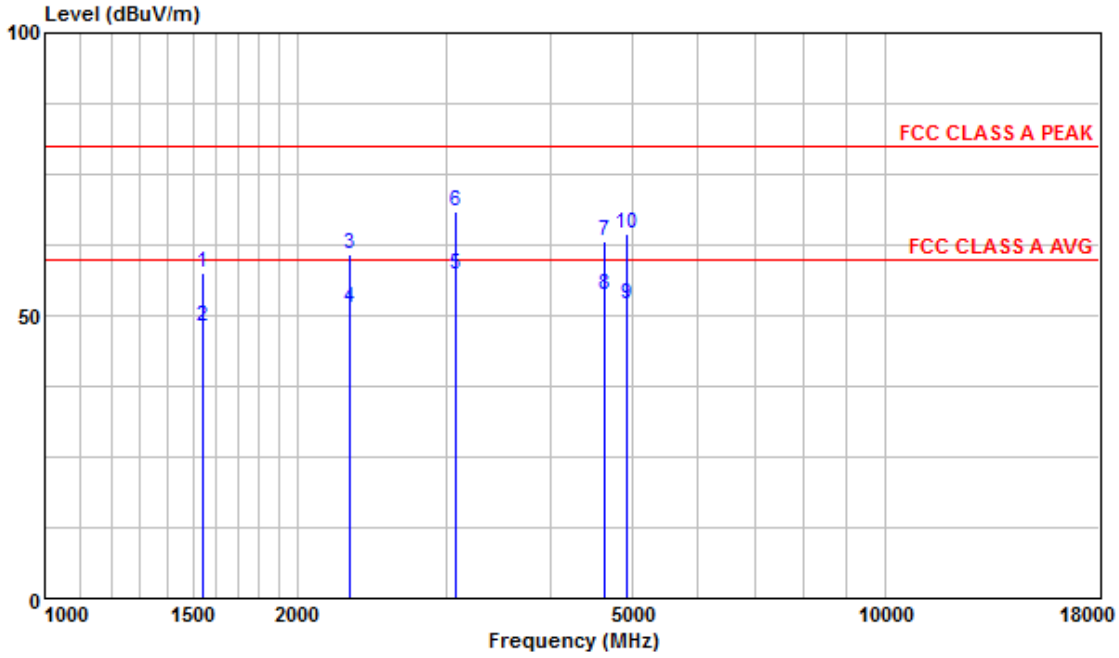
Test Mode	:	Normal			
Test Voltage	:	120V/60Hz to the power adapter			
Tester	:	Carl	**Temperature**	:	28°C
Humidity	:	62%RH	**Frequency Range**	:	1GHz~18GHz
IF Bandwidth	:	1MHz	**Polarization**	:	**Horizontal**



	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	2308.400	52.50	87.50	-35.00	60.00	-7.50	303	355	HORIZONTAL	Average
2	2309.140	61.52	96.52	-35.00	80.00	-18.48	300	358	HORIZONTAL	Peak
3	3074.350	68.42	102.34	-33.92	80.00	-11.58	140	241	HORIZONTAL	Peak
4	3075.700	56.77	90.70	-33.93	60.00	-3.23	144	241	HORIZONTAL	Average
5	4825.310	61.03	92.39	-31.36	80.00	-18.97	271	301	HORIZONTAL	Peak
6	4826.800	51.94	83.30	-31.36	60.00	-8.06	273	303	HORIZONTAL	Average

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

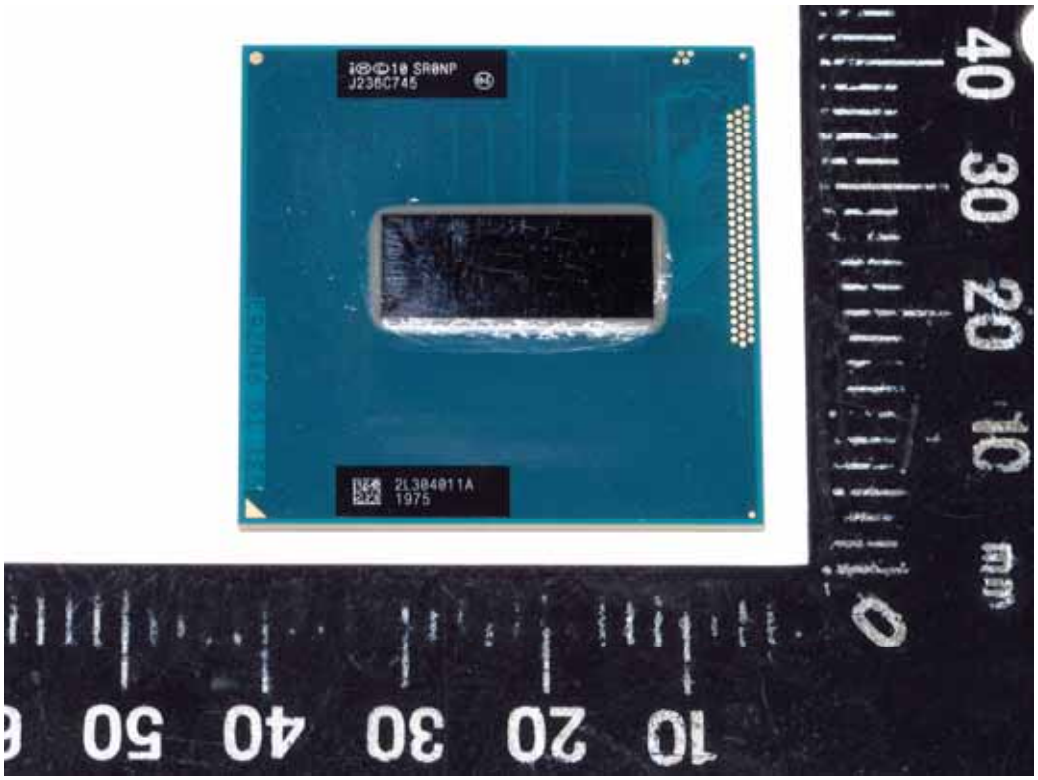
Test Mode	:	Normal			
Test Voltage	:	120V/60Hz to the power adapter			
Tester	:	Carl	**Temperature**	:	28°C
Humidity	:	62%RH	**Frequency Range**	:	1GHz~18GHz
IF Bandwidth	:	1MHz	**Polarization**	:	**Vertical**



		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		1544.150	57.55	97.17	-39.62	80.00	-22.45	281	53	VERTICAL	Peak
2		1545.300	48.09	87.70	-39.61	60.00	-11.91	284	55	VERTICAL	Average
3		2309.360	60.85	95.85	-35.00	80.00	-19.15	303	360	VERTICAL	Peak
4		2309.360	51.30	86.30	-35.00	60.00	-8.70	300	356	VERTICAL	Average
5	@	3090.087	57.29	91.27	-33.98	60.00	-2.71	241	30	VERTICAL	Average
6		3090.087	68.29	102.27	-33.98	80.00	-11.71	240	27	VERTICAL	Peak
7		4638.150	63.28	94.57	-31.29	80.00	-16.72	260	186	VERTICAL	Peak
8		4639.600	53.52	84.80	-31.28	60.00	-6.48	264	190	VERTICAL	Average
9		4927.210	52.03	83.40	-31.37	60.00	-7.97	188	5	VERTICAL	Average
10		4927.210	64.43	95.80	-31.37	80.00	-15.57	186	1	VERTICAL	Peak

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

Attachment 1
Photographs of EUT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J236C745
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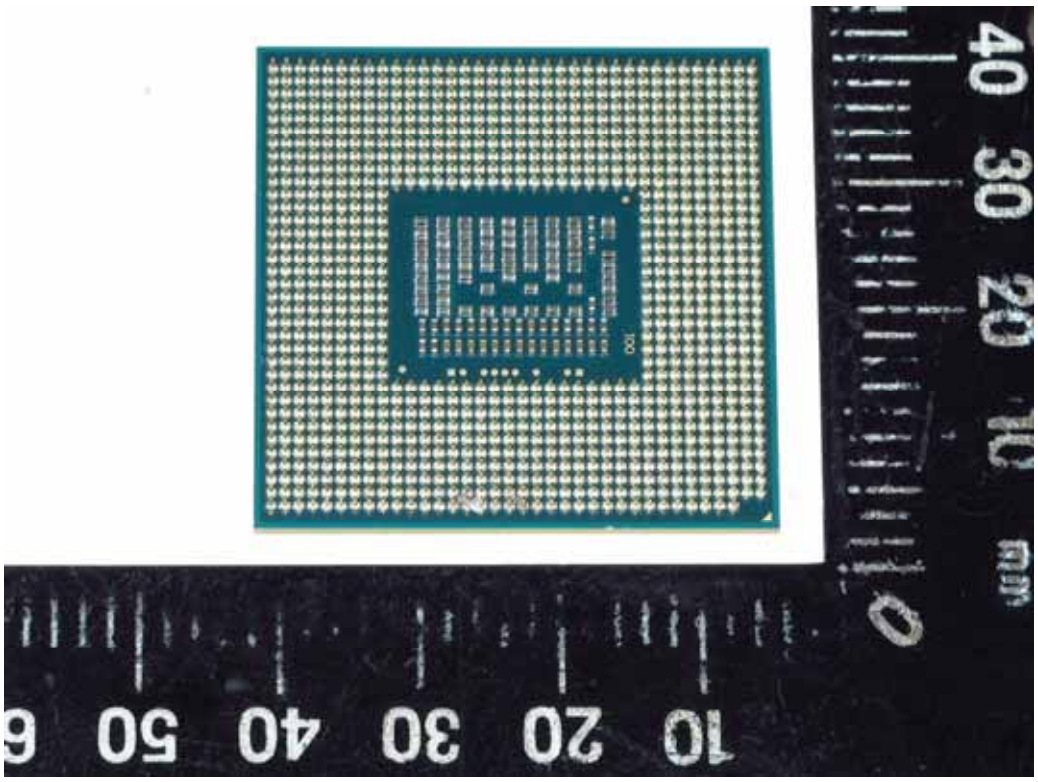
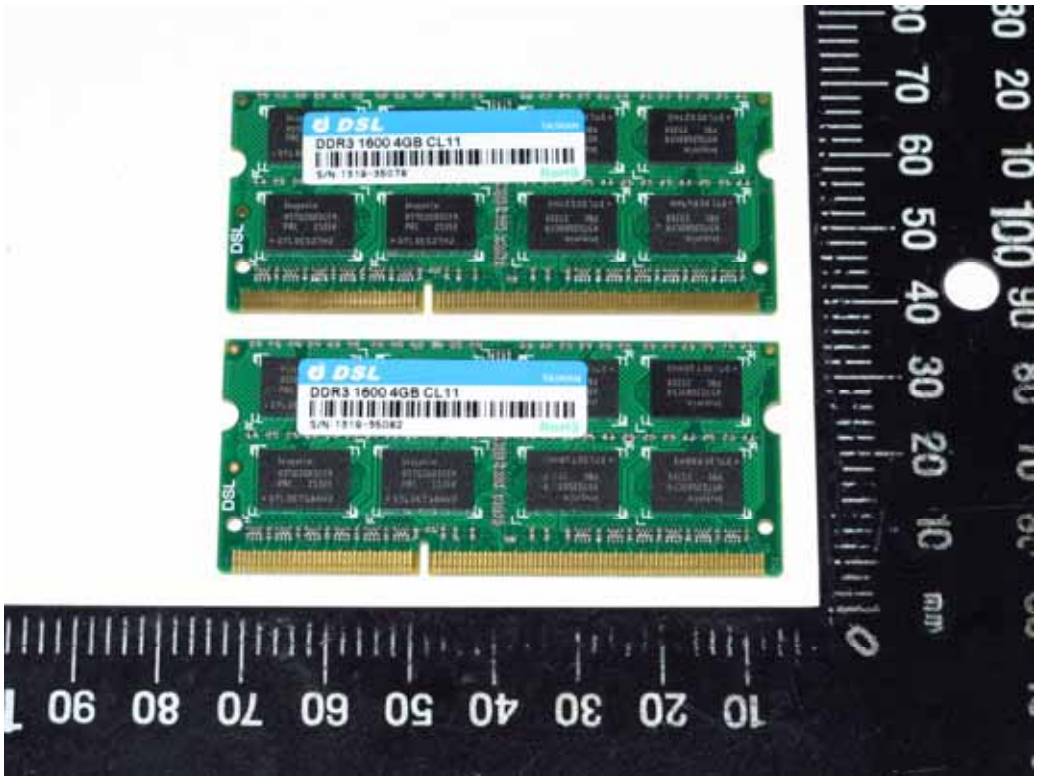
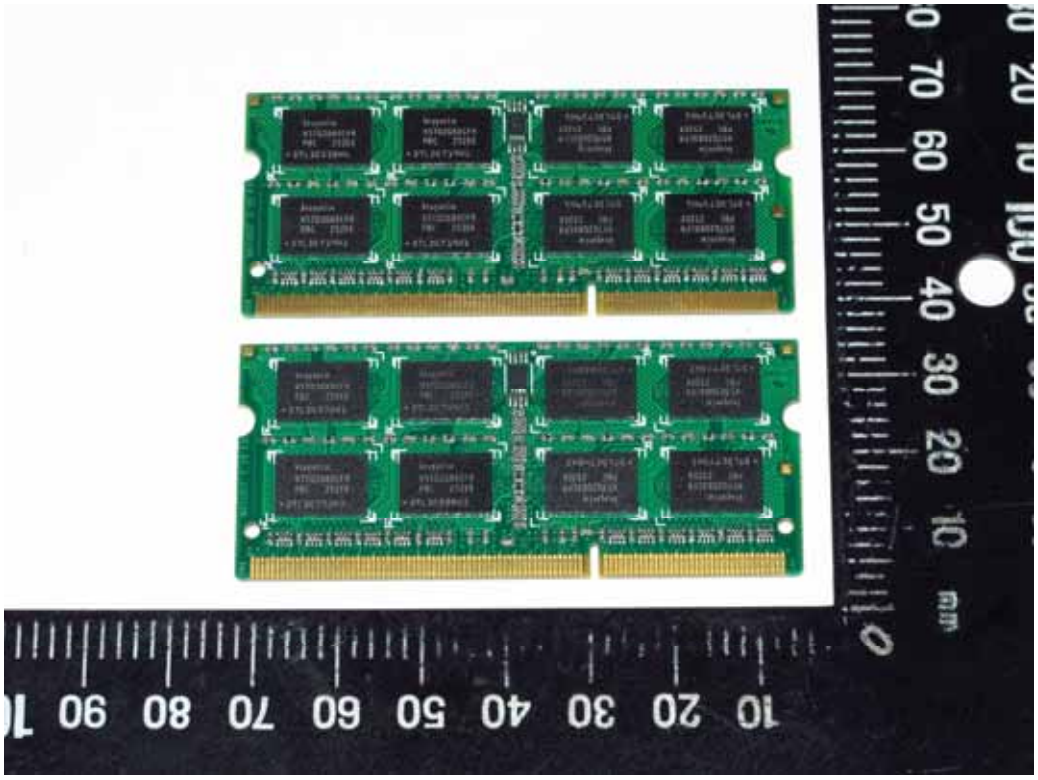
1975




DSL
DDR3 1600 4GB CL11
DSL
DSL
DDR3 1600 4GB CL11
DSL




Apacer
CFast
16GB


CFast SATA
Keep away from electrostatic sources or magnetic fields
Do not bend, drop or impact the card
Avoid heat, water, and direct sunlight
P/N: 81:3CD40.A856B
M/N: APCFA016GQAHS-CCM
881305403242
RoHS HF

Power Adapter


Order No.:
GS160A20-R7B
CAUTION
DO NOT OPEN RISK
OF ELECTRIC SHOCK
ATTENTION:
S/N:

Attachment 2
Modifications of EUT

Statement of the EUT Modifications

According to the rules of ANSI C63.4-2009 clause 10.2.13, the following equipment (EUT):

Equipment Under Test	**:**	Nuvo-3000 Series
Main Model No.	**:**	Nuvo-3005E-I7QC
Series Model No.	**:**	Nuvo-3005P-I7QC, Nuvo-3005E-I5DC, Nuvo-3005P-I5DC
Applicant	**:**	Neousys Technology Inc.
Address	**:**	15F, No. 868-3, Zhongzheng Rd., Zhonghe Dist., New Taipei City, 23586, Taiwan (R.O.C.)

☐ should be **without** any modifications made

☐ should be **with** some modifications made

to bring the EUT into compliance with the appropriate specifications (47CFR Part 15, Subpart B). If any, the details of the modifications including the complete descriptions, reasons and so on are described in next page of this report.

We , **Neousys Technology Inc.** hereby ensure that the product specified above will have all of the modifications incorporated in the product when manufactured and placed on the market.

The following importer or manufacturer is responsible for this statement:

Company Name : _____

Company Address : _____

Telephone : _____ E-mail : _____

Legal Signature of the responsible personal:

_____ _____

Title / Name (full name) Date

The details of the modifications:

Item	Solution Component	Specifications	Manufacturer	Quantity	Reasons
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

If needed, some modification items are shown in the photographs in the following.