FCC Test Report

APPLICANT	:	Acer Incorporated
EQUIPMENT	:	Smart HandHeld
BRAND NAME	:	Acer
MODEL NAME	:	E330
FCC ID	:	HLZDME330NFCCE
STANDARD	:	FCC 47 CFR FCC Part 15 Subpart B
CLASSIFICATION	:	Certification

The product was received on Apr. 20, 2012 and completely tested on May 03, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai

Jones Tsai / Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

TABLE OF CONTENTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC242016	Rev. 01	Initial issue of report	May 10, 2012

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.107	7.2.4	AC Conducted Emission	< 15.107 limits < RSS-Gen table 2 limits	PASS	Under limit 13.10 dB at 0.198 MHz
3.2	15.109	7.2.3.2	Radiated Emission	< 15.109 limits or < RSS-Gen table 1 limits (Section 6)	PASS	Under limit 8.70 dB at 54.030 MHz

1. General Description

1.1. Applicant

Acer Incorporated
8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 22181, Taiwan (R.O.C)

1.2. Manufacturer

Qisda (Suzhou) Co., Ltd.
No. 169, Zhujiang Road, New District, Suzhou, China

1.3. Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Smart HandHeld
Brand Name	Acer
Model Name	E330
FCC ID	HLZDME330NFCCE
Tx Frequency Range	GSM1900 : 1850 MHz ~ 1910 MHz Bluetooth : 2400 MHz ~ 2483.5 MHz WLAN : 2400 MHz ~ 2483.5 MHz NFC : 13.56 MHz
Rx Frequency Range	GSM1900 : 1930 MHz ~ 1990 MHz Bluetooth : 2400 MHz ~ 2483.5 MHz WLAN : 2400 MHz ~ 2483.5 MHz GPS : 1.57542 GHz NFC : 13.56 MHz
Antenna Type	WWAN : PIFA Antenna WLAN : PIFA Antenna Bluetooth : PIFA Antenna NFC : Loop Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK Bluetooth (1Mbps) : GFSK Bluetooth 2.1 EDR (2Mbps) : π/4-DQPSK Bluetooth 2.1 EDR (3Mbps) : 8-DPSK Bluetooth 3.0 EDR (1Mbps) : GFSK, π/4-DQPSK, 8-DPSK 802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) GPS : BPSK NFC : ASK
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4. Test Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH05-HY	722060/4086B-1

1.5. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2003
- IC RSS-Gen Issue 3

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

1.6. Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
3.	GPS Station	Pendulum	GSG-54	N/A	N/A	Unshielded, 1.8 m
4.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
5.	Bluetooth Earphone	Sony Ericsson	MW600	PY70DA2029	N/A	N/A
6.	Notebook	DELL	P20G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
7.	LCD Monitor	Acer	H223HQ	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
8.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
9.	iPod	Apple	A1199	FCC DoC	Shielded, 1.0 m	N/A

2. Test Configuration of Equipment Under Test

2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: conduction (150 KHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The following tables are showing the test modes as the worst cases and recorded in this report.

Item	EUT Configuration	Test Condition		
		EMI AC	EMI RE<1G	EMI RE≥1G
1.	Charging Mode (EUT with adapter)	☒	☒	☒
2.	Data application transferred mode (EUT with Notebook)	☒	☒	☒

Abbreviations:

- EMI AC: AC conducted emissions
- EMI RE ≥ 1G: EUT radiated emissions ≥ 1GHz
- EMI RE < 1G: EUT radiated emissions < 1GHz

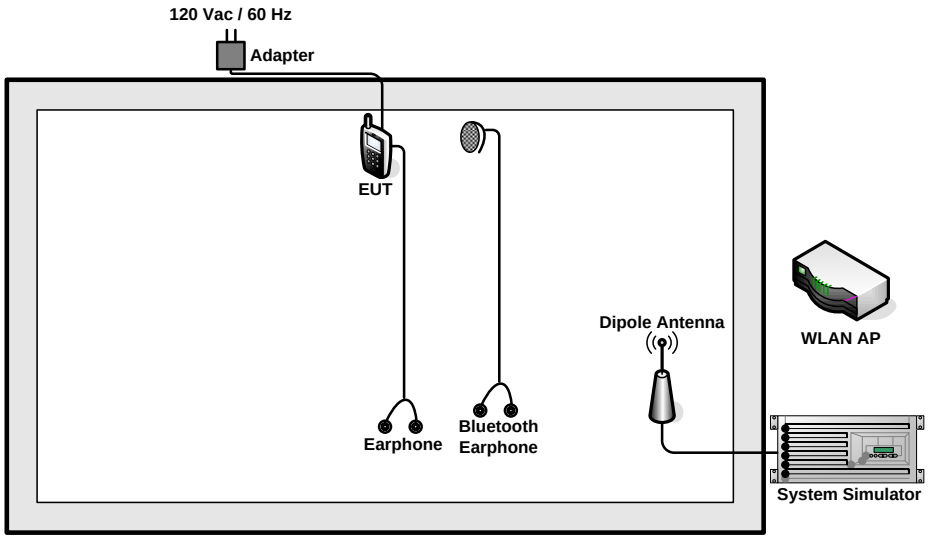
Test Items	EUT Configure Mode	Function Type
AC Conducted Emission	1/2	Mode 1: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + Camera + USB Cable (Charging from Adapter) Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + MPEG4 + USB Cable (Charging from Adapter) Mode 3: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + NFC On + USB Cable (Charging from Adapter) Mode 4: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + GPS Rx + USB Cable (Data Link with Notebook)
Radiated Emissions < 1GHz	1/2	Mode 1: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + Camera + USB Cable (Charging from Adapter) Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + MPEG4 + USB Cable (Charging from Adapter) Mode 3: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + NFC On + USB Cable (Charging from Adapter) Mode 4: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + GPS Rx + USB Cable (Data Link with Notebook)
Radiated Emissions ≥ 1GHz	1/2	Mode 1: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + NFC On + USB Cable (Charging from Adapter) Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + GPS Rx + USB Cable (Data Link with Notebook)

Remark:

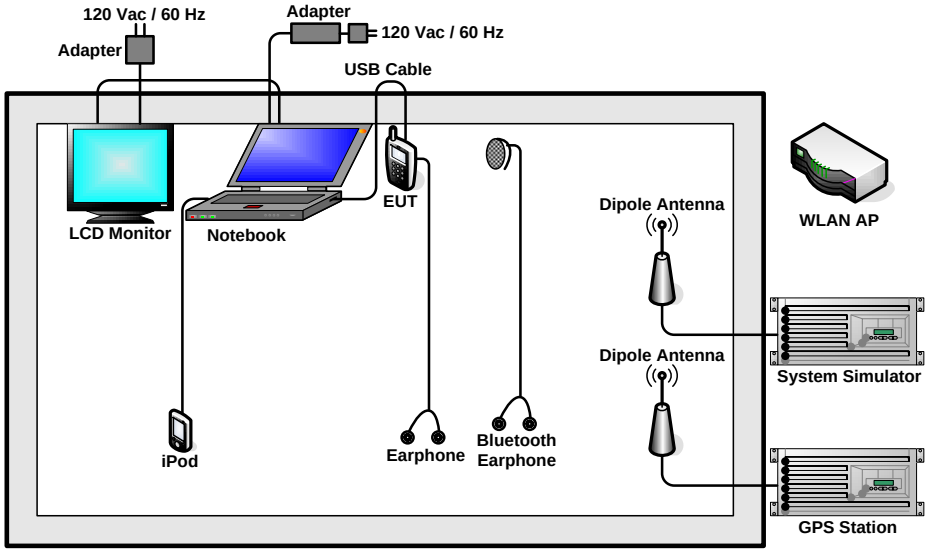
1. The worst case of AC is mode 4; only the test data of this mode was reported.
2. The worst case of RE < 1G is mode 3; the test data of this mode was reported.
3. The USB Link mode of Radiated Emissions < 1G is mode 4; the test data of this mode was reported.
4. Data Link with Notebook means data application transferred mode between EUT and Notebook.

2.2. Connection Diagram of Test System

<EUT with Adapter Mode>



<EUT with USB Cable (Link with Notebook) Mode>



2.3. Test Software

The EUT was in GSM idle mode during the testing. The EUT was synchronized to the BCCH, and is in continuous receiving mode by setting system simulator's paging reorganization.

At the same time, the EUT was attached to the Bluetooth earphone or WLAN AP, and the following programs installed in the EUT were programmed during the test.

1. Execute the program, "Copy Data", installed in notebook for active sync files transfer with EUT via USB cable.
2. Execute "GPS Test" to make the EUT receive continuous signals from GPS station.
3. Execute "Video Player" to play MPEG4 files.
4. Turn on camera to capture images.
5. Turn on the NFC function.

3. Test Result

3.1. Test of AC Conducted Emission Measurement

3.1.1 Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 KHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

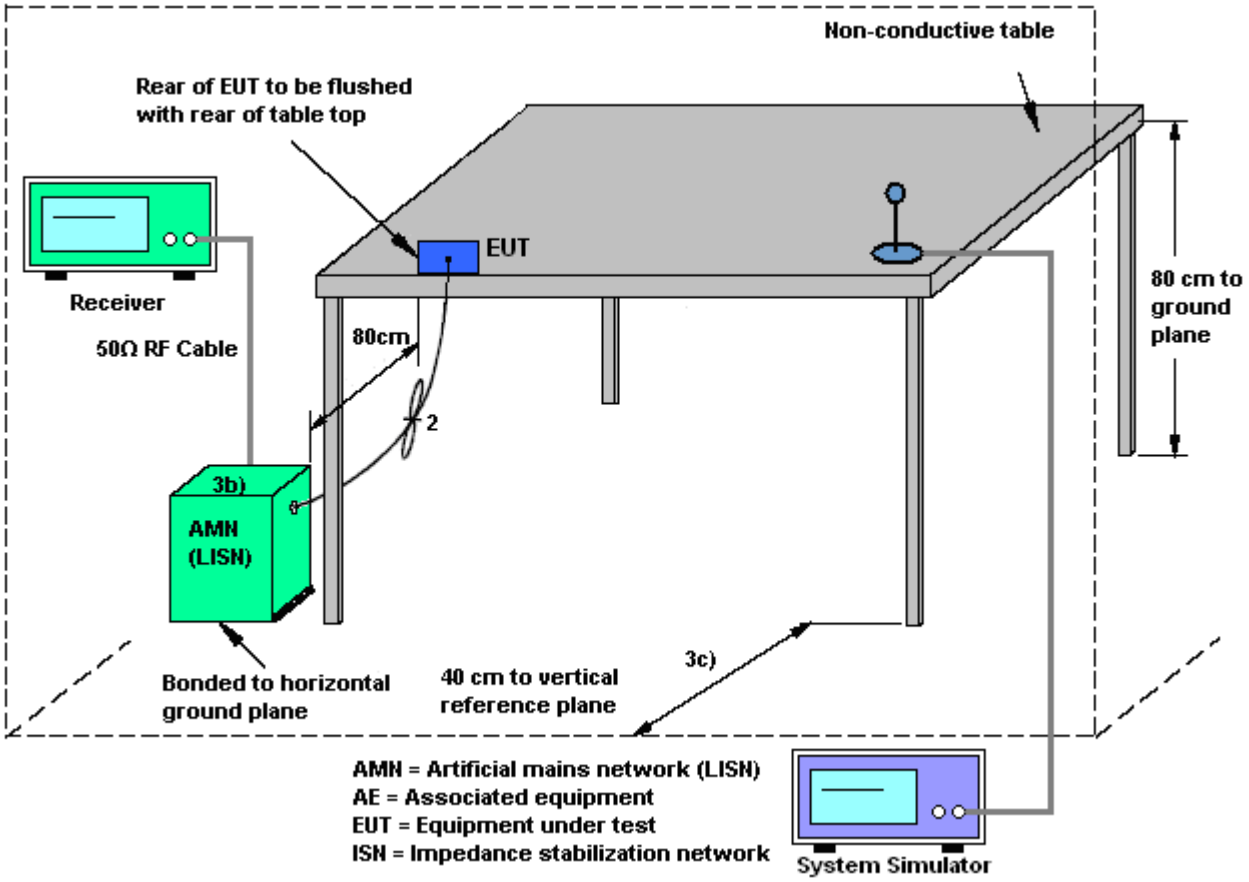
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

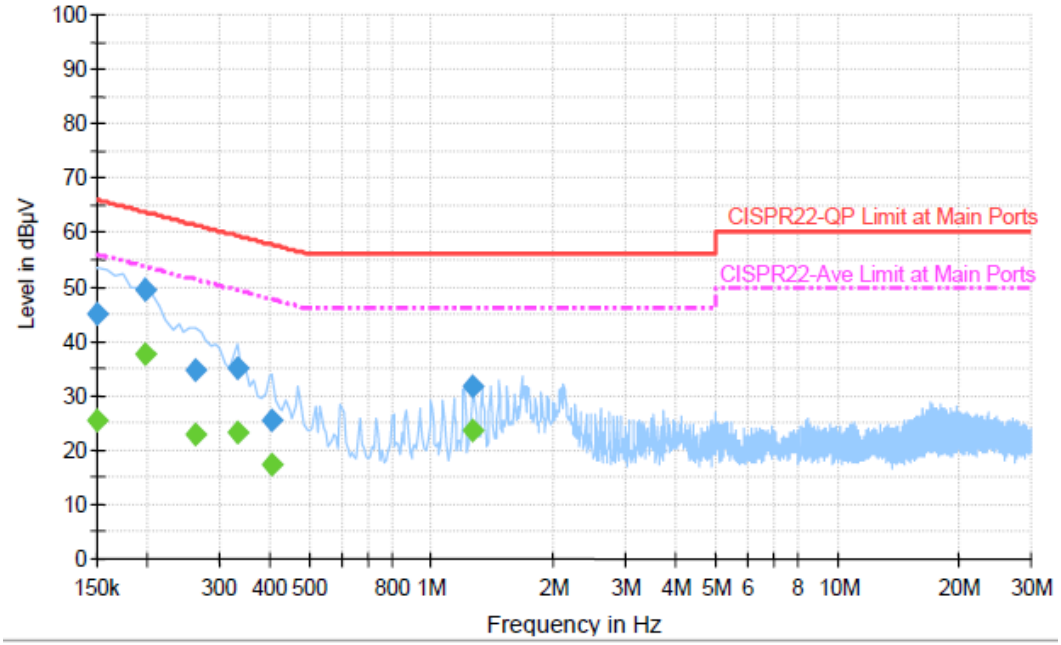
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 KHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.1.4 Test Setup



3.1.5 Test Result of AC Conducted Emission

Test Mode :	Mode 4	**Temperature :**	20~22℃
Test Engineer :	Slash Huang	**Relative Humidity :**	45~47%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + GPS Rx + USB Cable (Data Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



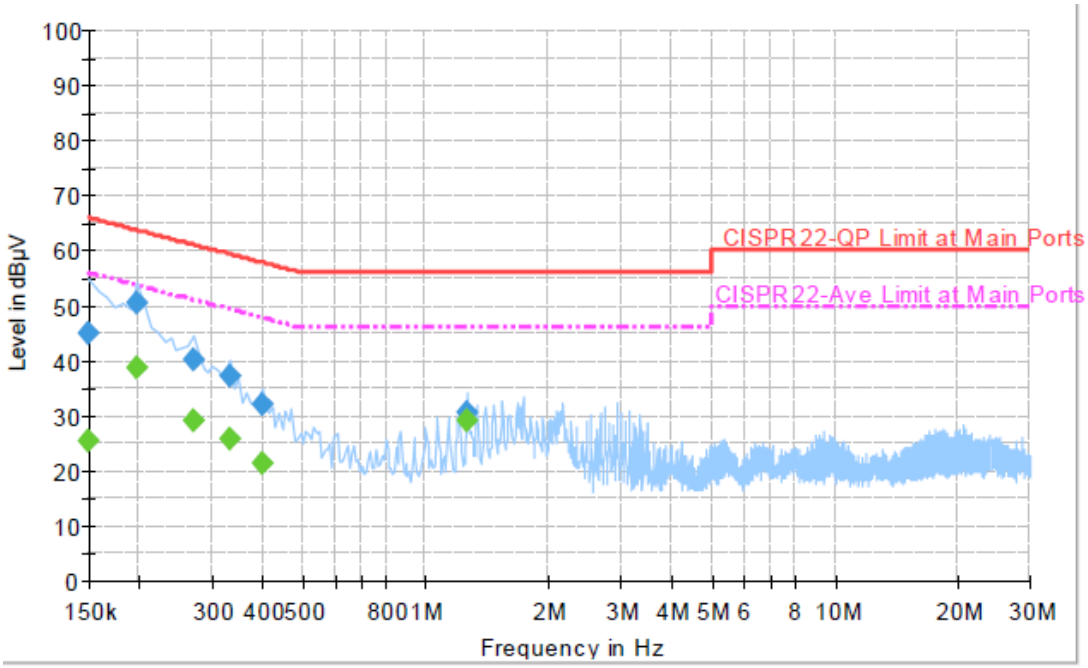
Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	45.0	Off	L1	19.4	21.0	66.0
0.198000	49.6	Off	L1	19.4	14.1	63.7
0.262000	34.8	Off	L1	19.4	26.6	61.4
0.334000	35.2	Off	L1	19.4	24.2	59.4
0.406000	25.6	Off	L1	19.5	32.1	57.7
1.270000	31.6	Off	L1	19.4	24.4	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	25.3	Off	L1	19.4	30.7	56.0
0.198000	37.7	Off	L1	19.4	16.0	53.7
0.262000	22.7	Off	L1	19.4	28.7	51.4
0.334000	23.2	Off	L1	19.4	26.2	49.4
0.406000	17.4	Off	L1	19.5	30.3	47.7
1.270000	23.5	Off	L1	19.4	22.5	46.0

Test Mode :	Mode 4	Temperature :	20~22℃
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + GPS Rx + USB Cable (Data Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	45.1	Off	N	19.4	20.9	66.0
0.198000	50.6	Off	N	19.4	13.1	63.7
0.270000	40.2	Off	N	19.4	20.9	61.1
0.334000	37.5	Off	N	19.4	21.9	59.4
0.398000	31.9	Off	N	19.5	26.0	57.9
1.270000	30.8	Off	N	19.5	25.2	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	25.5	Off	N	19.4	30.5	56.0
0.198000	38.7	Off	N	19.4	15.0	53.7
0.270000	29.1	Off	N	19.4	22.0	51.1
0.334000	25.8	Off	N	19.4	23.6	49.4
0.398000	21.3	Off	N	19.5	26.6	47.9
1.270000	29.1	Off	N	19.5	16.9	46.0

3.2. Test of Radiated Emission Measurement

3.2.1. Limit of Radiated Emission

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(KHz)	300
0.490 – 1.705	24000/F(KHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.2.2. Measuring Instruments

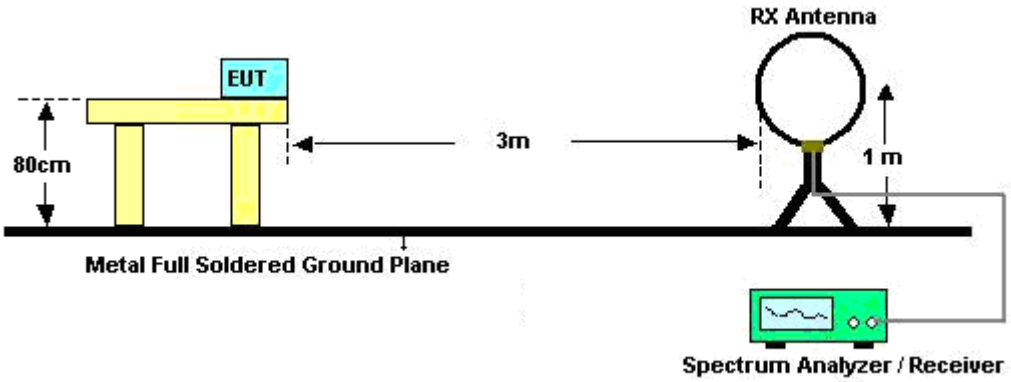
See list of measuring instruments of this test report.

3.2.3. Test Procedures

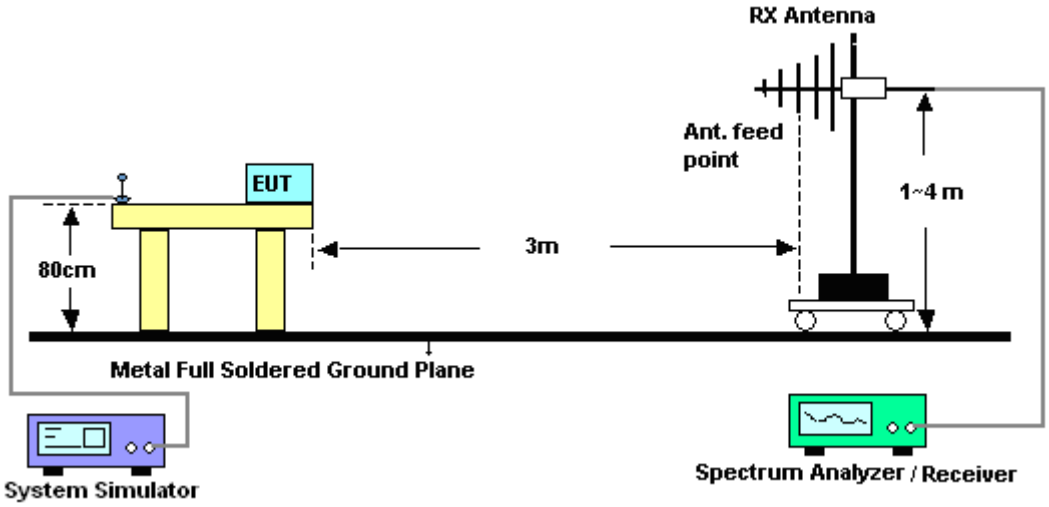
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported
8. Emission level (dBuV/m) = 20 log Emission level (uV/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

3.2.4. Test Setup of Radiated Emission

For radiated emissions below 30MHz



For radiated emissions above 30MHz

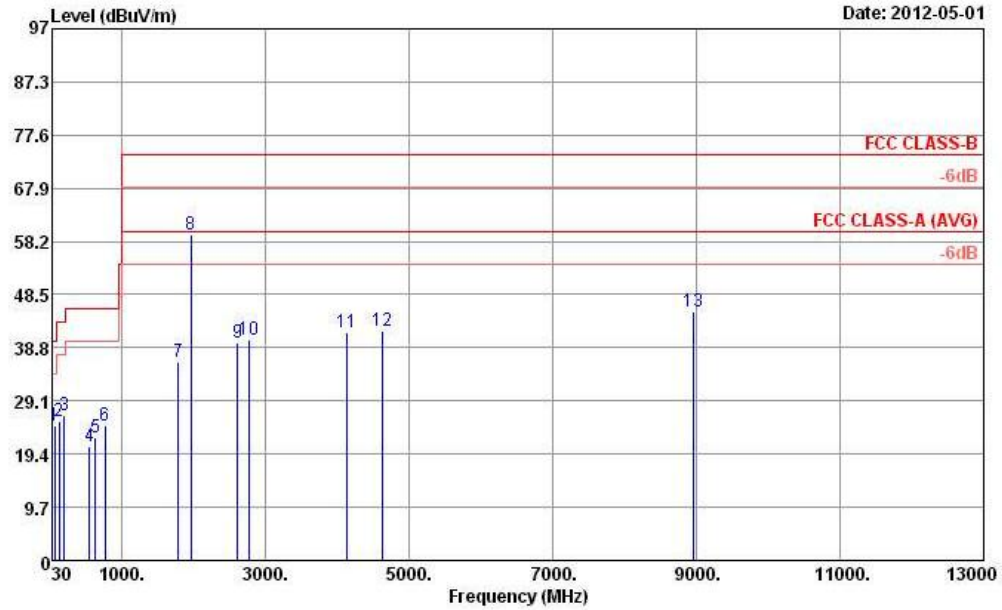


3.2.5. Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.2.6. Test Result of Radiated Emission

Test Mode :	Mode 3	Temperature :	23~24˚C
Test Engineer :	Kai Wang	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + NFC On + USB Cable (Charging from Adapter)		
Remark :	#8 is system simulator signal which can be ignored.		

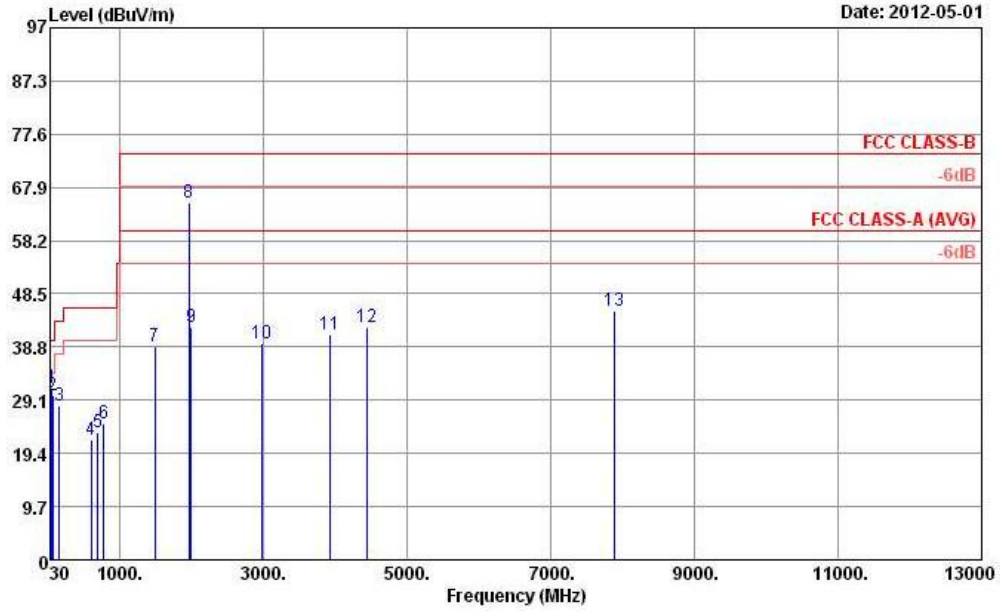


Site : 03CH05-HY
Condition : FCC CLASS-B 3m HF_ANT_110810 HORIZONTAL
Power : 120Vac/60Hz

Mode : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	67.80	24.70	-15.30	40.00	49.19	6.14	0.90	31.53	100	103	Peak
2	128.28	25.38	-18.12	43.50	43.93	11.56	1.22	31.33	---	---	Peak
3	203.07	26.57	-16.93	43.50	47.12	9.13	1.47	31.15	---	---	Peak
4	554.80	20.82	-25.18	46.00	29.43	20.05	2.34	31.00	---	---	Peak
5	637.40	22.55	-23.45	46.00	29.58	20.60	2.55	30.18	---	---	Peak
6	762.70	24.54	-21.46	46.00	29.58	22.28	2.77	30.09	---	---	Peak
7	1792.00	36.30	-37.70	74.00	60.41	30.30	4.00	58.41	---	---	Peak
8	1960.00	59.31			81.98	31.35	4.26	58.28	---	---	Peak
9	2610.00	39.79	-34.21	74.00	60.80	32.26	4.84	58.11	---	---	Peak
10	2776.00	40.31	-33.69	74.00	60.94	32.47	5.11	58.21	---	---	Peak
11	4128.00	41.73	-32.27	74.00	62.12	33.46	6.07	59.92	---	---	Peak
12	4620.00	41.80	-32.20	74.00	61.05	33.88	6.43	59.56	---	---	Peak
13	8966.00	45.44	-28.56	74.00	55.93	36.08	9.46	56.03	100	0	Peak

Test Mode :	Mode 3	Temperature :	23~24°C
Test Engineer :	Kai Wang	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Vertical
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + NFC On + USB Cable (Charging from Adapter)		
Remark :	#8 is system simulator signal which can be ignored.		

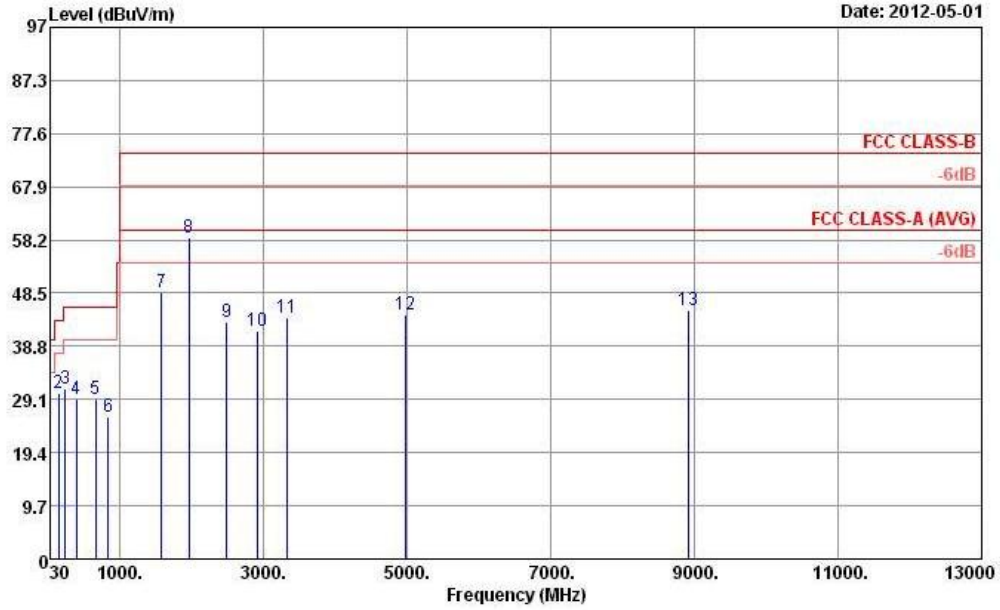


Site : 03CH05-HY
Condition : FCC CLASS-B 3m HF_ANT_110810 VERTICAL
Power : 120Vac/60Hz

Mode : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	54.03	31.30	-8.70	40.00	55.20	6.78	0.83	31.51	100	55	Peak
2	67.80	30.06	-9.94	40.00	54.55	6.14	0.90	31.53	---	---	Peak
3	160.68	28.22	-15.28	43.50	47.66	10.42	1.35	31.21	---	---	Peak
4	603.80	21.95	-24.05	46.00	29.88	20.02	2.43	30.38	---	---	Peak
5	695.50	23.30	-22.70	46.00	30.21	20.65	2.64	30.20	---	---	Peak
6	776.00	24.85	-21.15	46.00	29.92	22.14	2.79	30.00	---	---	Peak
7	1494.00	38.85	-35.15	74.00	65.78	28.20	3.55	58.68	---	---	Peak
8	1960.00	65.05			87.72	31.35	4.26	58.28	---	---	Peak
9	1992.00	42.48	-31.52	74.00	64.84	31.58	4.30	58.24	---	---	Peak
10	2974.00	39.42	-34.58	74.00	59.59	32.75	5.42	58.34	---	---	Peak
11	3928.00	40.98	-33.02	74.00	61.63	33.22	5.93	59.80	---	---	Peak
12	4436.00	42.29	-31.71	74.00	62.04	33.82	6.32	59.89	---	---	Peak
13	7892.00	45.47	-28.53	74.00	59.07	35.68	8.84	58.12	100	0	Peak

Test Mode :	Mode 4	Temperature :	23~24°C
Test Engineer :	Kai Wang	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + GPS Rx + USB Cable (Data Link with Notebook)		
Remark :	#8 is system simulator signal which can be ignored.		

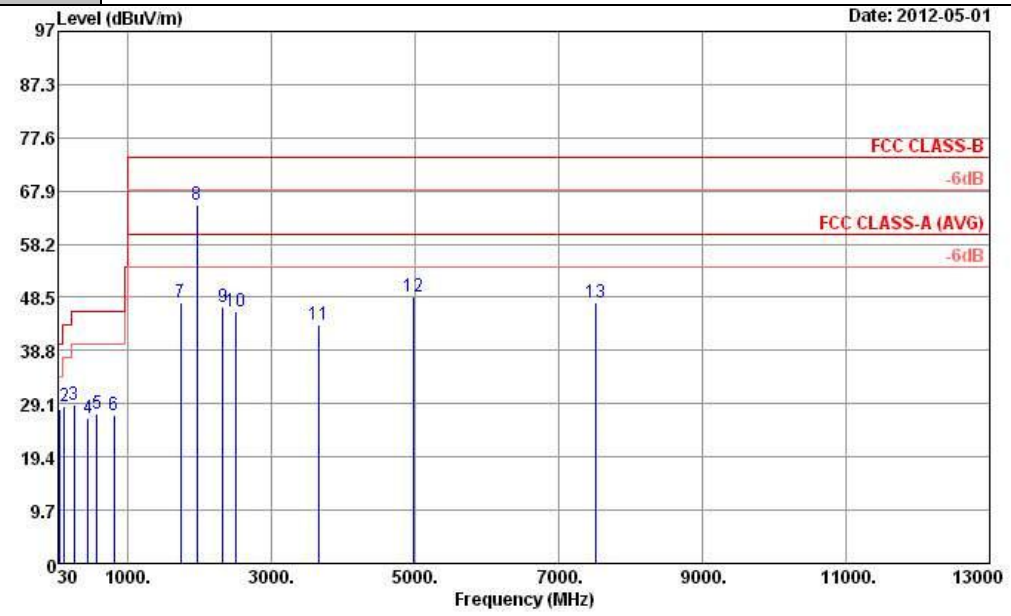


Site : 03CH05-HY
Condition : FCC CLASS-B 3m HF_ANT_110810 HORIZONTAL
Power : From System

Mode : Mode 4

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	33.51	26.20	-13.80	40.00	40.02	17.08	0.73	31.63	---	---	Peak
2	151.50	30.31	-13.19	43.50	49.13	11.14	1.28	31.24	100	32	Peak
3	240.06	31.03	-14.97	46.00	48.85	11.51	1.62	30.95	---	---	Peak
4	400.80	29.21	-16.79	46.00	42.38	16.03	2.01	31.21	---	---	Peak
5	664.70	29.21	-16.79	46.00	36.49	20.25	2.61	30.14	---	---	Peak
6	837.60	26.02	-19.98	46.00	29.58	23.26	2.90	29.72	---	---	Peak
7	1580.00	48.52	-25.48	74.00	74.68	28.78	3.66	58.60	100	0	Peak
8	1960.00	58.54			81.21	31.35	4.26	58.28	---	---	Peak
9	2490.00	43.32	-30.68	74.00	64.61	32.10	4.64	58.03	---	---	Peak
10	2926.00	41.67	-32.33	74.00	61.96	32.68	5.34	58.31	---	---	Peak
11	3326.00	43.92	-30.08	74.00	64.33	32.73	5.61	58.75	---	---	Peak
12	4984.00	44.62	-29.38	74.00	62.85	33.80	6.58	58.61	---	---	Peak
13	8924.00	45.31	-28.69	74.00	55.94	36.05	9.45	56.13	---	---	Peak

Test Mode :	Mode 4	Temperature :	23~24°C
Test Engineer :	Kai Wang	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Vertical
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + Battery + GPS Rx + USB Cable (Data Link with Notebook)		
Remark :	#8 is system simulator signal which can be ignored.		



Site : 03CH05-HY
Condition : FCC CLASS-B 3m HF_ANT_110810 VERTICAL
Power : From System

Mode : Mode 4

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	40.53	28.14	-11.86	40.00	46.25	12.72	0.75	31.58	100	46	Peak
2	116.13	28.73	-14.77	43.50	47.19	11.80	1.18	31.44	---	---	Peak
3	256.53	28.88	-17.12	46.00	44.64	13.51	1.68	30.95	---	---	Peak
4	448.40	26.59	-19.41	46.00	38.29	17.14	2.14	30.98	---	---	Peak
5	573.00	27.21	-18.79	46.00	35.73	19.87	2.37	30.76	---	---	Peak
6	808.20	27.10	-18.90	46.00	31.87	22.18	2.84	29.79	---	---	Peak
7	1734.00	47.46	-26.54	74.00	72.17	29.83	3.93	58.47	---	---	Peak
8	1960.00	65.46			88.13	31.35	4.26	58.28	---	---	Peak
9	2326.00	46.88	-27.12	74.00	68.49	31.96	4.53	58.10	---	---	Peak
10	2496.00	46.03	-27.97	74.00	67.32	32.10	4.64	58.03	---	---	Peak
11	3658.00	43.39	-30.61	74.00	63.98	32.89	5.78	59.26	---	---	Peak
12	4980.00	48.66	-25.34	74.00	66.89	33.80	6.58	58.61	100	0	Peak
13	7524.00	47.63	-26.37	74.00	61.53	35.61	8.77	58.28	---	---	Peak

4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receive	R&S	ESCS 30	100356	9KHz ~ 2.75GHz	Oct. 27, 2011	Apr. 30, 2012~ May 03, 2012	Oct. 26, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 09, 2011	Apr. 30, 2012~ May 03, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 06, 2011	Apr. 30, 2012~ May 03, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Apr. 30, 2012~ May 03, 2012	N/A	Conduction (CO05-HY)
GPS Station	T&E	GS-50	N/A	N/A	N/A	Apr. 30, 2012~ May 03, 2012	N/A	Conduction (CO05-HY)
Spectrum Analyzer	R&S	ESU26	100390	20Hz ~ 26.5GHz	Dec. 22, 2011	Apr. 30, 2012	Dec. 21, 2012	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz ~ 2GHz	Oct. 22, 2011	Apr. 30, 2012	Oct. 21, 2012	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Apr. 30, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Apr. 30, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz ~ 18GHz	Aug. 04, 2011	Apr. 30, 2012	Aug. 03, 2012	Radiation (03CH05-HY)
Pre Amplifier	COM-POWER	PA-103A	161075	10Hz ~ 1000MHz Gain:32dB	Feb. 27, 2012	Apr. 30, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Pre Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	159087	1GHz~18GHz	Feb. 27, 2012	Apr. 30, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz~26.5GHz	Aug. 30, 2011	Apr. 30, 2012	Aug. 29, 2012	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Apr. 30, 2012	Jul. 28, 2012	Radiation (03CH05-HY)
GPS Station	Pendulum	GSG-54	N/A	N/A	N/A	Apr. 30, 2012	N/A	Radiation (03CH05-HY)
System Simulator	R&S	CMU200	117591	N/A	Oct. 21, 2011	Apr. 30, 2012~ May 03, 2012	Oct. 20, 2012	-

5. Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 KHz ~ 30 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty Uc(y)	**1.13**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**		

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**		

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				

Appendix A. Photographs of EUT

Please refer to Sporton report number EP242016 as below.