Partial FCC RF Test Report

APPLICANT	:	Getac Technology Corporation
EQUIPMENT	:	Notebook PC
BRAND NAME	:	Getac
MODEL NAME	:	B300
FCC ID	:	QYL3X03
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	Digital Spread Spectrum (DSS)

This is a partial report which is only valid combined with the Integrated Bluetooth Module (Brand name: CastleNet / Model name: BTC04R, FCC ID: RK9-BTC04R) Report.

The product was received on May 25, 2010 and completely tested on Jun. 21, 2010. 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:

Roy Wu / 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.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR052506-04C	Rev. 01	Initial issue of report	Mar. 04, 2010

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
3.2	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 3.6 dB at 23.998 MHz
3.3	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.58 dB at 47.82 MHz
3.4	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Getac Technology Corporation

5F., Building A, No. 209, Sec. 1, Nangang Rd., Nangang Dist., Taipei City 11568, Taiwan, R.O.C.

1.2 Manufacturer

GeTAC Technology (Kunshan) LTD.

No. 269, 2nd Road, Export Processing Zone, Changjiang South Road, Kunshan, Jiangsu, P.R.C.

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Notebook PC
Brand Name	Getac
Model Name	B300
FCC ID	QYL3X03
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	79
Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78
Channel Spacing	1 MHz
Maximum Output Power to Antenna	Bluetooth (1Mbps) : 2.68 dBm (0.002 W) Bluetooth EDR (2Mbps) : 0.99 dBm (0.001 W) Bluetooth EDR (3Mbps) : 1.22 dBm (0.001 W)
Antenna Type	PIFA Antenna with gain 2.75 dBi
HW Version	R0A
SW Version	R0.05.070520
Type of Modulation	Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : π /4-DQPSK Bluetooth EDR (3Mbps) : 8-DPSK
EUT Stage	Identical Prototype

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Digital Spread Spectrum (DSS).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Testing 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: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH05-HY	TW1022/4086B-1

1.5 Applied Standards

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

- FCC Part 15 Subpart C §15.247
- FCC Public Notice DA 00-705
- ANSI C63.4-2003
- IC RSS-210 Issue 8

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (DoC), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
5.	Earphone	Ergotech	ET-E200	FCC DoC	Unshielded, 1.8 m	N/A
6.	LCD Monitor	Acer	H223HQ	FCC DoC	N/A	Unshielded, 1.8 m
7.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
8.	Modem	ACEEX	DM1414	IFAXDM1414	Shielded, 1.15 m	N/A
9.	Mouse	State	MS-303	FCC DoC	Shielded, 1.3 m	N/A
10.	Exchange	Sun Moon Star	SMS-4 PLUS	95180108	Shielded, 1.6 m	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Output Power

Preliminary tests were performed in different data rate and recorded the RF output power in the following table:

Channel	Frequency	Bluetooth RF Output Power		
		Data Rate / Modulation		
		GFSK	π /4-DQPSK	8-DPSK
		1Mbps	2Mbps	3Mbps
Ch00	2402MHz	**2.68 dBm**	0.99 dBm	1.22 dBm
Ch39	2441MHz	1.69 dBm	-0.46 dBm	0.04 dBm
Ch78	2480MHz	0.03 dBm	-2.28 dBm	-1.99 dBm

Remark:

1. The data rate was set in 1Mbps for all the test items due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.

2.2 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 (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Pre-scanned tests were conducted to determine the final configuration from all possible combinations. The following tables are showing the test modes as the worst cases and recorded in this report.

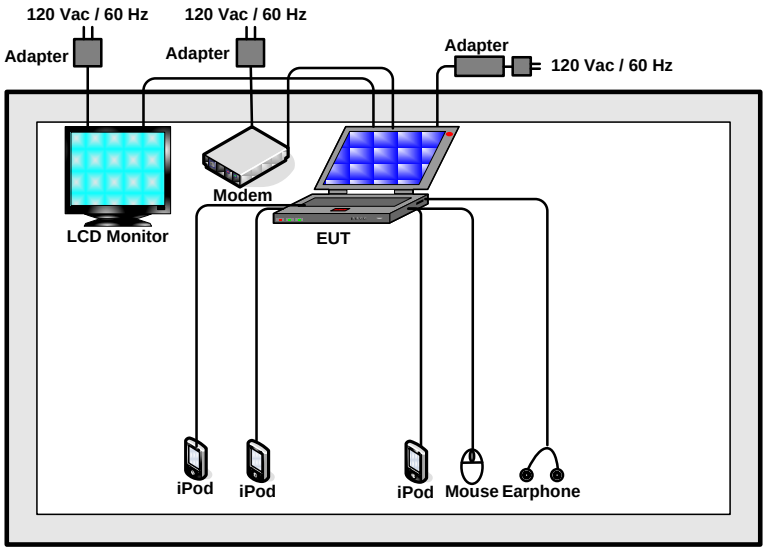
Test Cases	
Test Item	**Data Rate / Modulation**
	Bluetooth 1Mbps (Modulation : GFSK)
Radiated TCs	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz
AC Conducted Emission	Mode 1 :WLAN Link + Bluetooth Link + TC + Adapter 1

Remark:

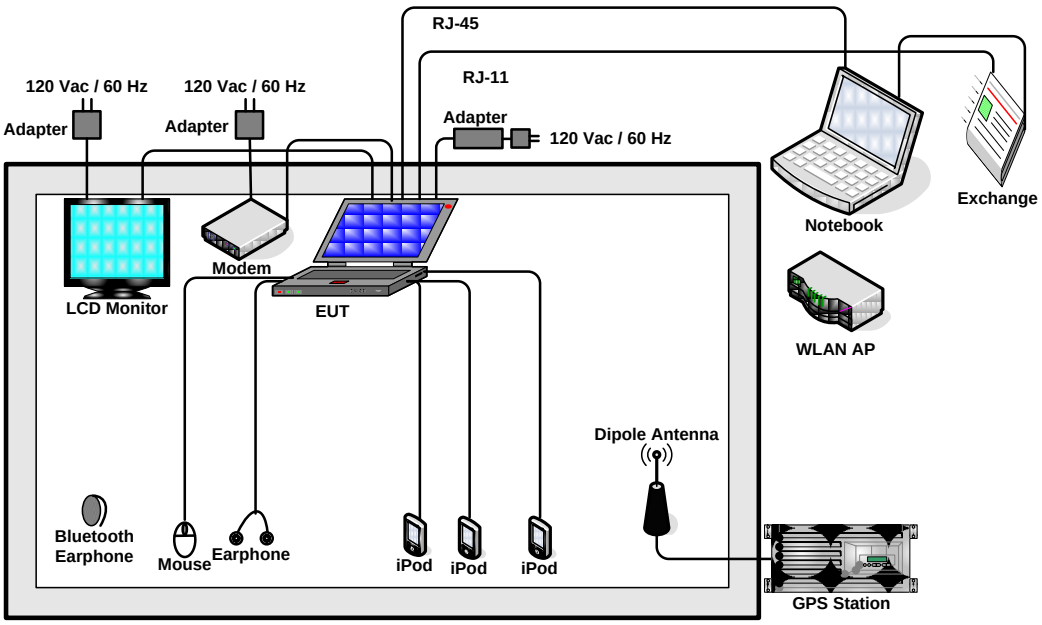
1. TC stands for Test Configuration, and consists of GPS Rx, LCD monitor, modem, i-Pod, mouse, earphone, RJ-45, and RJ-11.
2. For radiated TCs, the data rate was set in 1Mbps due to the highest RF output power; only the data of these modes was reported.
3. Only the radiated emission and conducted emission tests were performed in this report and the conducted test cases can be referred to the Bluetooth module (Brand name: CastleNet / Model name: BTC04R, FCC ID: RK9-BTC04R, ADT Report Number: RF970806A01) report.

2.3 Connection Diagram of Test System

<Bluetooth Tx Mode>



<EUT with TC Mode>



2.4 RF Utility

For Bluetooth function, the RF utility, “BlueTest3” was installed in EUT which was programmed in order to make the EUT transmitting and receiving signals continuously.

3 Test Result

3.1 Band Edges Measurement

3.1.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

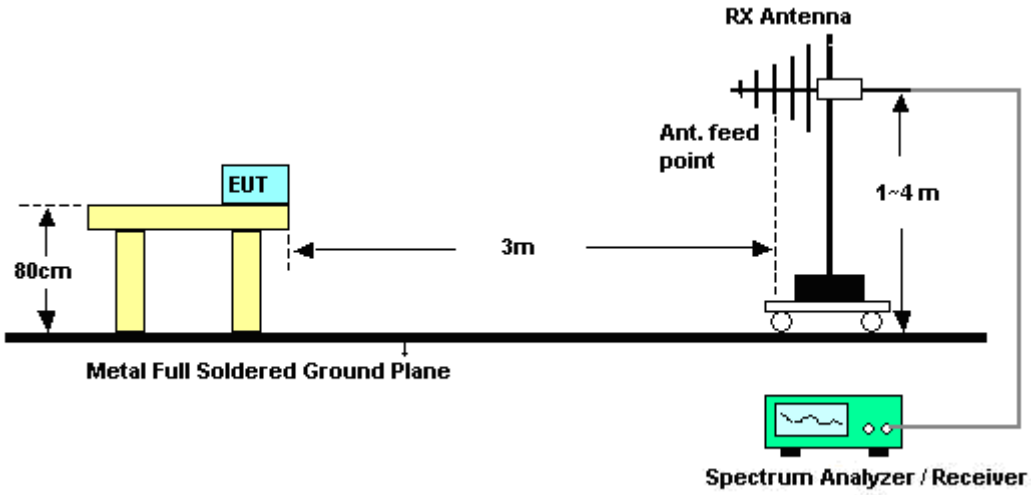
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.4-2003 and FCC Public Notice DA 00-705 Measurement Guidelines.
2. RF antenna conducted test: Set RBW = 300kHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 300k Hz RBW. Note: If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. Radiated emission test: Applies to band edge emissions that fall in the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurements above 1 GHz, set RBW = 1MHz, VBW = 1MHz, Sweep: Auto for Peak; set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto for Average. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation. See FCC Section 15.35(b) and (c).
4. In case the emission is fail due to the used RBW / VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

3.1.4 Test Setup



3.1.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	23~25°C
Test Channel :	00	Relative Humidity :	49~52%
		Test Engineer :	Cona Huang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2382.01	47.02	-26.98	74.00	46.80	31.83	4.47	36.08	126	117	Peak
2382.01	36.49	-17.51	54.00	36.27	31.83	4.47	36.08	126	117	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2375.93	45.43	-28.57	74.00	45.20	31.83	4.47	36.07	100	90	Peak
2375.93	34.39	-19.61	54.00	34.16	31.83	4.47	36.07	100	90	Average

Test Mode :	Mode 3	Temperature :	23~25°C
Test Channel :	78	Relative Humidity :	49~52%
		Test Engineer :	Cona Huang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	57.35	-16.65	74.00	56.88	31.98	4.59	36.10	121	126	Peak
2483.50	48.47	-5.53	54.00	48.00	31.98	4.59	36.10	121	126	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	52.79	-21.21	74.00	52.32	31.98	4.59	36.10	100	95	Peak
2483.50	44.82	-9.18	54.00	44.35	31.98	4.59	36.10	100	95	Average

3.2 AC Conducted Emission Measurement

3.2.1 Limit 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.

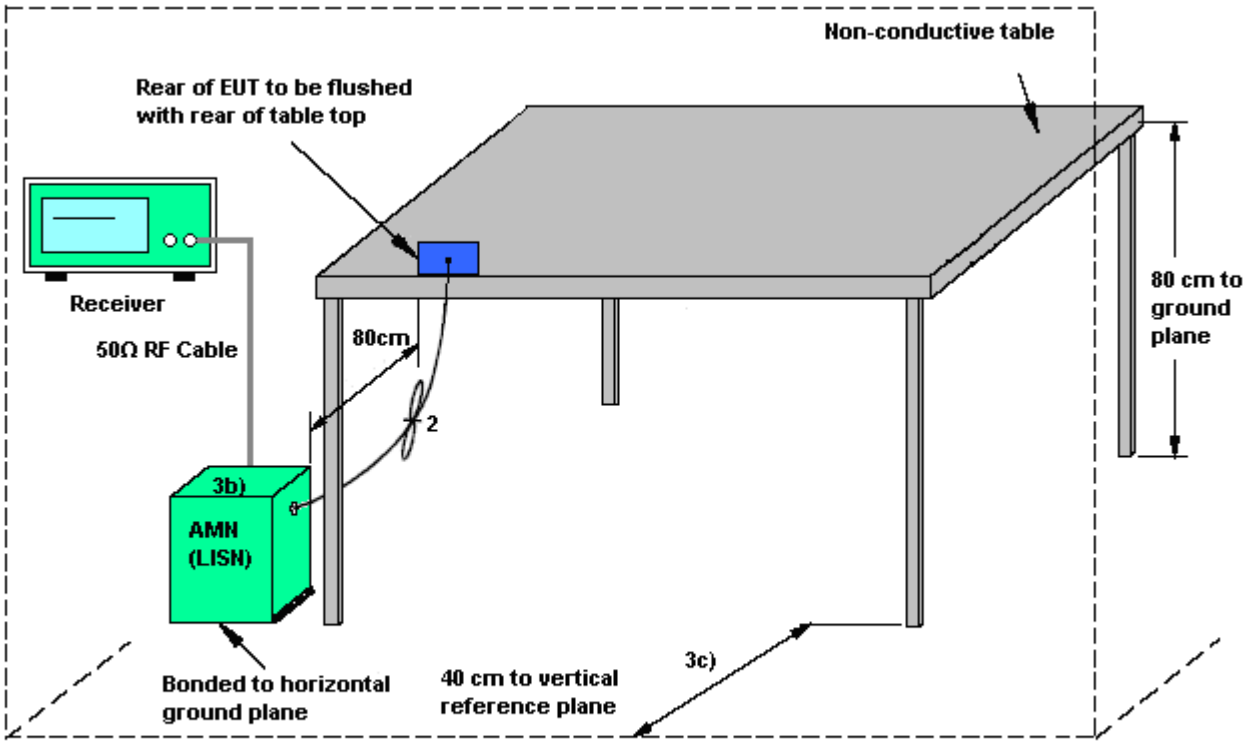
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. Please follow the guidelines in ANSI C63.4-2003.
2. 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.
1. Connect EUT to the power mains through a line impedance stabilization network (LISN).
2. All the support units are connecting to the other LISN.
3. The LISN provides 50 ohm coupling impedance for the measuring instrument.
4. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

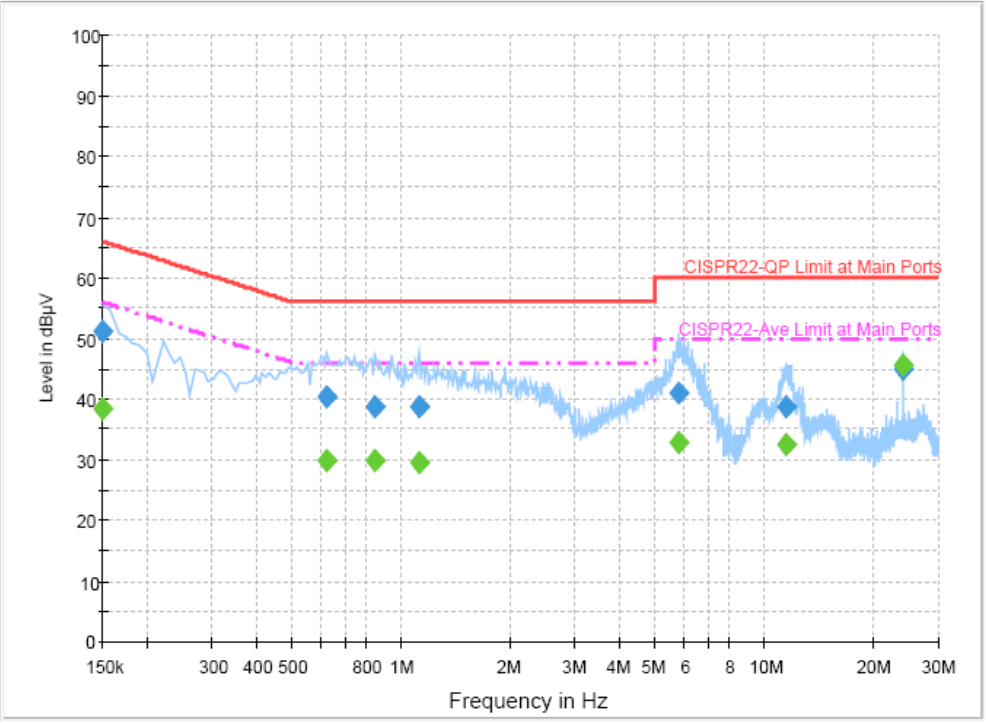
3.2.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.2.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	**Temperature :**	20~22℃
Test Engineer :	Novic Jiang	**Relative Humidity :**	40~42%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	WLAN Link + Bluetooth Link + TC + Adapter 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



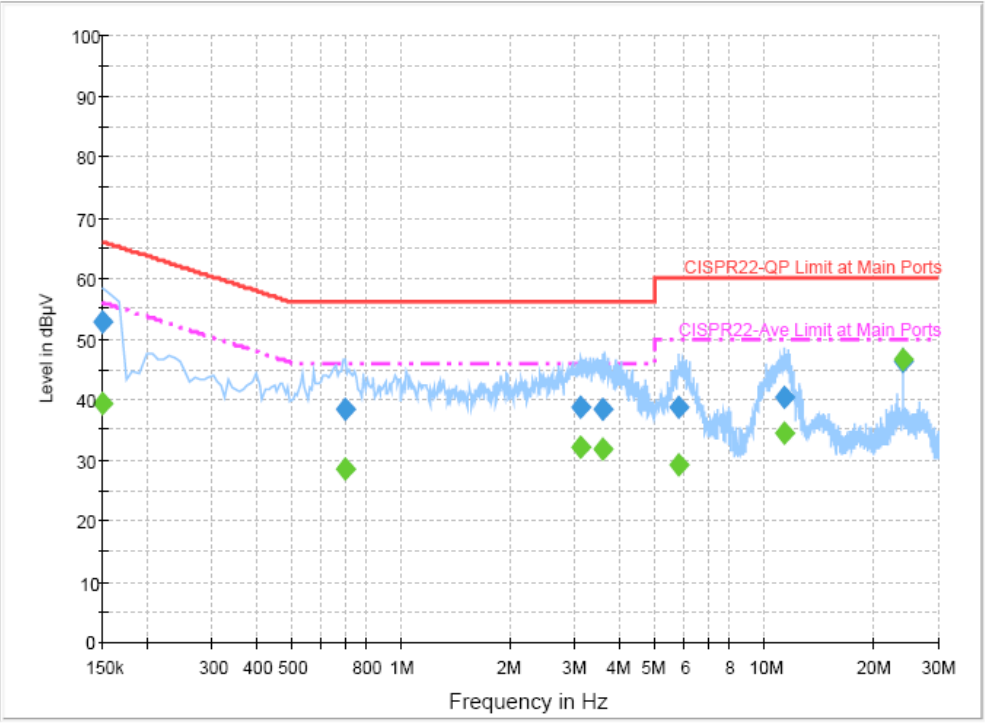
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	51.0	Off	L1	19.5	15.0	66.0
0.622000	40.4	Off	L1	19.5	15.6	56.0
0.846000	38.8	Off	L1	19.5	17.2	56.0
1.118000	38.8	Off	L1	19.5	17.2	56.0
5.782000	41.0	Off	L1	19.5	19.0	60.0
11.430000	38.6	Off	L1	19.6	21.4	60.0
23.998000	45.1	Off	L1	19.7	14.9	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	38.4	Off	L1	19.5	17.6	56.0
0.622000	29.7	Off	L1	19.5	16.3	46.0
0.846000	29.9	Off	L1	19.5	16.1	46.0
1.118000	29.4	Off	L1	19.5	16.6	46.0
5.782000	32.6	Off	L1	19.5	17.4	50.0
11.430000	32.3	Off	L1	19.6	17.7	50.0
23.998000	45.5	Off	L1	19.7	4.5	50.0

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Novic Jiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + Bluetooth Link + TC + Adapter 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	52.6	Off	N	19.5	13.4	66.0
0.702000	38.4	Off	N	19.5	17.6	56.0
3.102000	38.8	Off	N	19.5	17.2	56.0
3.574000	38.3	Off	N	19.5	17.7	56.0
5.790000	38.6	Off	N	19.5	21.4	60.0
11.366000	40.2	Off	N	19.6	19.8	60.0
23.998000	46.1	Off	N	19.9	13.9	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	39.5	Off	N	19.5	16.5	56.0
0.702000	28.7	Off	N	19.5	17.3	46.0
3.102000	32.2	Off	N	19.5	13.8	46.0
3.574000	31.9	Off	N	19.5	14.1	46.0
5.790000	29.1	Off	N	19.5	20.9	50.0
11.366000	34.4	Off	N	19.6	15.6	50.0
23.998000	46.4	Off	N	19.9	3.6	50.0

3.3 Radiated Emission Measurement

3.3.1 Limit of Radiated Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

3.3.2 Measuring Instruments

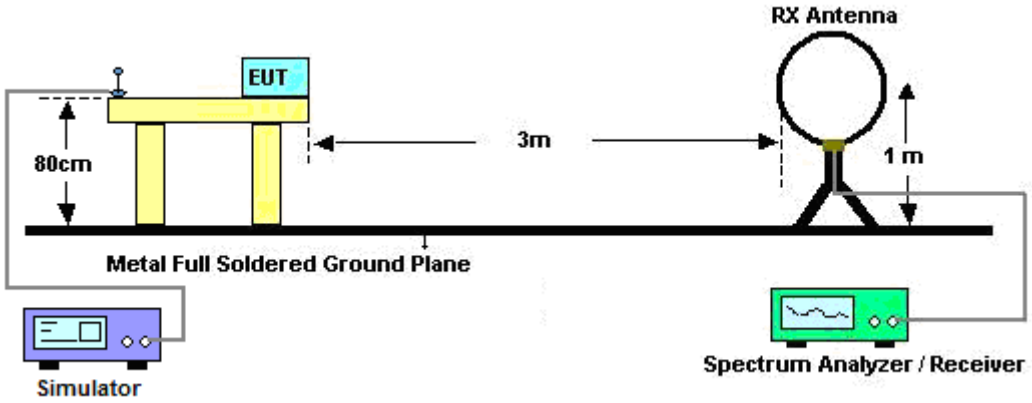
See list of measuring instruments of this test report.

3.3.3 Test Procedures

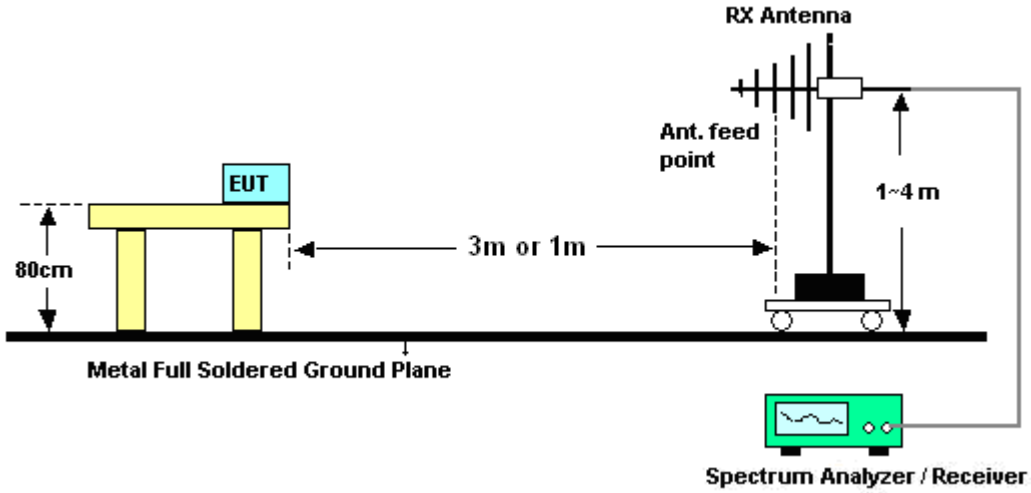
1. The testing follows the guidelines in FCC Public Notice DA 00-705 Measurement Guidelines.
2. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
   (2) Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.
   Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB)
3. Follow the guidelines in ANSI C63.4-2003 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

3.3.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Test Engineer :	Cona Huang	Temperature :	23~25°C
		Relative Humidity :	49~52%

Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

3.3.6 Test Result of Radiated Emission (30 MHz ~ 10th Harmonic)

Test Mode :	Mode 1	Temperature :	23~25°C
Test Channel :	00	Relative Humidity :	49~52%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	2402 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
40.53	27.19	-12.81	40.00	45.96	12.17	0.58	31.52	-	-	Peak
135.57	25.29	-18.21	43.50	43.82	11.91	1.07	31.51	-	-	Peak
240.06	35.53	-10.47	46.00	54.02	11.68	1.34	31.51	100	36	Peak
304.20	34.11	-11.89	46.00	50.10	13.73	1.55	31.27	-	-	Peak
335.00	33.33	-12.67	46.00	48.35	14.65	1.63	31.30	-	-	Peak
478.50	32.01	-13.99	46.00	43.27	17.87	1.98	31.11	-	-	Peak
2382.01	36.49	-17.51	54.00	36.27	31.83	4.47	36.08	126	117	Average
2382.01	47.02	-26.98	74.00	46.80	31.83	4.47	36.08	126	117	Peak
2402.00	85.50	-	-	85.22	31.86	4.50	36.08	126	117	Average
2402.00	98.20	-	-	97.90	31.88	4.50	36.08	126	117	Peak
2492.00	41.94	-32.06	74.00	41.42	32.00	4.62	36.10	126	117	Peak
2492.00	30.15	-23.85	54.00	29.63	32.00	4.62	36.10	126	117	Average
4804.00	52.77	-21.23	74.00	48.55	33.90	6.42	36.10	102	98	Peak
4804.00	46.69	-7.31	54.00	42.47	33.90	6.42	36.10	102	98	Average
8286.00	52.05	-21.95	74.00	43.94	35.74	9.03	36.66	100	256	Peak
8286.00	40.23	-13.77	54.00	32.12	35.74	9.03	36.66	100	256	Average

Test Mode :	Mode 1	Temperature :	23~25°C
Test Channel :	00	Relative Humidity :	49~52%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	2402 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
41.61	34.79	-5.21	40.00	53.99	11.75	0.58	31.53	100	193	Peak
84.81	33.07	-6.93	40.00	55.56	8.22	0.84	31.55	-	-	Peak
107.22	34.71	-8.79	43.50	53.25	12.04	0.95	31.53	-	-	Peak
335.00	32.59	-13.41	46.00	47.61	14.65	1.63	31.30	-	-	Peak
528.20	34.43	-11.57	46.00	44.56	18.78	2.10	31.01	-	-	Peak
799.80	34.55	-11.45	46.00	41.77	20.75	2.57	30.54	-	-	Peak
2375.93	34.39	-19.61	54.00	34.16	31.83	4.47	36.07	100	90	Average
2375.93	45.43	-28.57	74.00	45.20	31.83	4.47	36.07	100	90	Peak
2402.00	78.92	-	-	78.64	31.86	4.50	36.08	100	90	Average
2402.00	92.96	-	-	92.66	31.88	4.50	36.08	100	90	Peak
2500.00	41.95	-32.05	74.00	41.43	32.00	4.62	36.10	100	90	Peak
2500.00	30.67	-23.33	54.00	30.15	32.00	4.62	36.10	100	90	Average
8244.00	52.82	-21.18	74.00	44.75	35.75	8.97	36.65	100	147	Peak
8244.00	40.25	-13.75	54.00	32.18	35.75	8.97	36.65	100	147	Average

Test Mode :	Mode 2	Temperature :	23~25°C
Test Channel :	39	Relative Humidity :	49~52%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	2441 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
46.74	32.93	-7.07	40.00	54.08	9.68	0.73	31.56	104	214	Peak
166.62	23.89	-19.61	43.50	44.44	9.84	1.14	31.53	-	-	Peak
240.06	34.97	-11.03	46.00	53.46	11.68	1.34	31.51	-	-	Peak
335.00	35.35	-10.65	46.00	50.37	14.65	1.63	31.30	-	-	Peak
478.50	31.15	-14.85	46.00	42.41	17.87	1.98	31.11	-	-	Peak
780.20	31.30	-14.70	46.00	38.56	20.74	2.54	30.54	-	-	Peak
2342.00	43.34	-30.66	74.00	43.19	31.78	4.44	36.07	125	120	Peak
2342.00	33.23	-20.77	54.00	33.08	31.78	4.44	36.07	125	120	Average
2441.00	97.68	-	-	97.28	31.93	4.56	36.09	125	120	Peak
2441.00	84.29	-	-	83.89	31.93	4.56	36.09	125	120	Average
2494.00	42.45	-31.55	74.00	41.93	32.00	4.62	36.10	125	120	Peak
2494.00	30.49	-23.51	54.00	29.97	32.00	4.62	36.10	125	120	Average
4882.00	56.67	-17.33	74.00	52.38	33.90	6.49	36.10	104	105	Peak
4882.00	49.83	-4.17	54.00	45.54	33.90	6.49	36.10	104	105	Average
8328.00	52.18	-21.82	74.00	44.06	35.73	9.06	36.67	110	154	Peak
8328.00	40.63	-13.37	54.00	32.51	35.73	9.06	36.67	110	154	Average

Test Mode :	Mode 2	Temperature :	23~25°C
Test Channel :	39	Relative Humidity :	49~52%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	2441 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
47.82	36.42	-3.58	40.00	57.98	9.27	0.73	31.56	100	56	Peak
129.90	31.68	-11.82	43.50	49.75	12.38	1.07	31.52	-	-	Peak
240.06	30.41	-15.59	46.00	48.90	11.68	1.34	31.51	-	-	Peak
335.00	32.19	-13.81	46.00	47.21	14.65	1.63	31.30	-	-	Peak
528.20	34.50	-11.50	46.00	44.63	18.78	2.10	31.01	-	-	Peak
799.80	34.61	-11.39	46.00	41.83	20.75	2.57	30.54	-	-	Peak
2342.00	30.58	-23.42	54.00	30.43	31.78	4.44	36.07	100	93	Average
2342.00	42.75	-31.25	74.00	42.60	31.78	4.44	36.07	100	93	Peak
2441.00	92.99	-	-	92.59	31.93	4.56	36.09	100	93	Peak
2441.00	79.53	-	-	79.13	31.93	4.56	36.09	100	93	Average
2486.00	42.78	-31.22	74.00	42.31	31.98	4.59	36.10	100	93	Peak
2486.00	30.71	-23.29	54.00	30.24	31.98	4.59	36.10	100	93	Average
4882.00	54.29	-19.71	74.00	50.00	33.90	6.49	36.10	139	234	Peak
4882.00	46.02	-7.98	54.00	41.73	33.90	6.49	36.10	139	234	Average
8259.00	52.54	-21.46	74.00	44.44	35.75	9.00	36.65	100	78	Peak
8259.00	40.56	-13.44	54.00	32.46	35.75	9.00	36.65	100	78	Average

Test Mode :	Mode 3	Temperature :	23~25°C
Test Channel :	78	Relative Humidity :	49~52%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	2480 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
44.58	27.05	-12.95	40.00	47.37	10.51	0.73	31.56	-	-	Peak
166.62	23.85	-19.65	43.50	44.40	9.84	1.14	31.53	-	-	Peak
240.06	34.39	-11.61	46.00	52.88	11.68	1.34	31.51	100	68	Peak
335.00	33.32	-12.68	46.00	48.34	14.65	1.63	31.30	-	-	Peak
478.50	31.32	-14.68	46.00	42.58	17.87	1.98	31.11	-	-	Peak
780.20	33.47	-12.53	46.00	40.73	20.74	2.54	30.54	-	-	Peak
2382.00	42.31	-31.69	74.00	42.09	31.83	4.47	36.08	121	126	Peak
2382.00	30.15	-23.85	54.00	29.93	31.83	4.47	36.08	121	126	Average
2480.00	97.14	-	-	96.67	31.98	4.59	36.10	121	126	Peak
2480.00	85.17	-	-	84.70	31.98	4.59	36.10	121	126	Average
2483.50	48.47	-5.53	54.00	48.00	31.98	4.59	36.10	121	126	Average
2483.50	57.35	-16.65	74.00	56.88	31.98	4.59	36.10	121	126	Peak
4960.00	56.13	-17.87	74.00	51.74	33.90	6.59	36.10	100	123	Peak
4960.00	49.36	-4.64	54.00	44.97	33.90	6.59	36.10	100	123	Average
8274.00	52.31	-21.69	74.00	44.22	35.74	9.00	36.65	103	311	Peak
8274.00	40.28	-13.72	54.00	32.19	35.74	9.00	36.65	103	311	Average

Test Mode :	Mode 3	Temperature :	23~25°C
Test Channel :	78	Relative Humidity :	49~52%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	2480 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
41.61	35.66	-4.34	40.00	54.86	11.75	0.58	31.53	110	260	Peak
106.41	29.96	-13.54	43.50	48.63	11.92	0.95	31.54	-	-	Peak
129.90	31.37	-12.13	43.50	49.44	12.38	1.07	31.52	-	-	Peak
335.00	32.67	-13.33	46.00	47.69	14.65	1.63	31.30	-	-	Peak
528.20	34.36	-11.64	46.00	44.49	18.78	2.10	31.01	-	-	Peak
799.80	34.41	-11.59	46.00	41.63	20.75	2.57	30.54	-	-	Peak
2350.00	42.15	-31.85	74.00	42.00	31.78	4.44	36.07	100	95	Peak
2350.00	30.38	-23.62	54.00	30.23	31.78	4.44	36.07	100	95	Average
2480.00	92.66	-	-	92.19	31.98	4.59	36.10	100	95	Peak
2480.00	79.38	-	-	78.91	31.98	4.59	36.10	100	95	Average
2483.50	44.82	-9.18	54.00	44.35	31.98	4.59	36.10	100	95	Average
2483.50	52.79	-21.21	74.00	52.32	31.98	4.59	36.10	100	95	Peak
4960.00	56.66	-17.34	74.00	52.27	33.90	6.59	36.10	112	148	Peak
4960.00	48.74	-5.26	54.00	44.35	33.90	6.59	36.10	112	148	Average
8217.00	52.39	-21.61	74.00	44.35	35.76	8.93	36.65	100	291	Peak
8217.00	40.71	-13.29	54.00	32.67	35.76	8.93	36.65	100	291	Average

3.4 Antenna Requirements

3.4.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.4.2 Antenna Connected Construction

The antennas type used in this product is PIFA Antenna without connector and it is considered to meet antenna requirement.

3.4.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 05, 2009	Aug. 04, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz~30MHz	Nov. 30, 2009	Nov. 29, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz~30MHz	Nov. 23, 2009	Nov. 22, 2010	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
GPS Station	T&E	GS-50	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Spectrum Analyzer	R&S	FSP40	100057	9KHz-40GHz	Oct. 20, 2009	Oct. 19, 2010	Radiation (03CH05-HY)
Amplifier	COM-POWER	PA-103	161069	1KHz - 1GHz	Mar. 29, 2010	Mar. 28, 2011	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2727C	30 MHz - 1 GHz	Aug. 12, 2009	Aug. 11, 2010	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Nov. 11, 2009	Nov. 10, 2010	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 - 360 degree	N/A	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m - 4 m	N/A	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	00066584	1GHz ~ 18GHz	Aug. 05, 2009	Aug. 04, 2010	Radiation (03CH05-HY)
Horn Antenna	Training Research	AH-0801	95119	8GHz~18GHz	Nov. 02, 2009	Nov. 01, 2010	Radiation (03CH05-HY)

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 EP052506-04 as below.