FCC RF Test Report

APPLICANT	:	ZTE CORPORATION
EQUIPMENT	:	CDMA 1X-EVDO Digital Mobile Phone
BRAND NAME	:	ZTE
MODEL NAME	:	ZTE N861
FCC ID	:	Q78-ZTEN861
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

The product was received on Sep. 17, 2012 and completely tested on Oct. 12, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai

Jones Tsai / Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR251502-04C	Rev. 01	Initial issue of report	Oct. 12, 2012

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)(1)	A8.1(b)	Peak Output Power	≤ 30dBm	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm	Pass	-
3.4	15.247(d)	A8.5	Conducted Band Edges and Spurious Emission	≤ 20dBc	Pass	-
3.5	15.247(d)	A8.5	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.32 dB at 2483.500 MHz
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 8.55 dB at 0.380 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.2 Manufacturer

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	CDMA 1X-EVDO Digital Mobile Phone
Brand Name	ZTE
Model Name	ZTE N861
FCC ID	Q78-ZTEN861
EUT supports Radios application	CDMA/EV-DO/WLAN 11bgn/Bluetooth 2.0 EDR/Bluetooth4.0 – LE
HW Version	c7xB
SW Version	N861V1.0.0B05
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.

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Number of Channels	40
Carrier Frequency of Each Channel	40 Channel(37 hopping + 3 advertising channel)
Maximum Output Power to Antenna	Bluetooth 4.0 - LE : 7.68 dBm (0.0059 W)
Antenna Type	PIFA Antenna with gain -1.50 dBi
Type of Modulation	Bluetooth 4.0 - LE : GFSK

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.			
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958			
Test Site No.	Sporton Site No.			FCC/IC Registration No.
	TH01-KS	CO01-KS	03CH01-KS	149928/4086E-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 KDB Publication No. 558074 D01 DTS Meas. Guidance v02
- FCC TCB Workshop 2012, April
- ANSI C63.4-2003
- IC RSS-210 Issue 8
- IC RSS-Gen Issue 3

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, recorded in a separate test report.

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.	WLAN AP	D-link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	P08S	QDS-BRCM1030	N/A	AC I/P: Unshielded, 0.9 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-106	QTLBH-106	N/A	N/A
5.	DC Power Supply	TOPWARD	GPS-3030D	N/A	N/A	Unshielded, 1.8 m

2 Test Configuration of Equipment Under Test

2.1 RF Output Power

The RF output power was recorded in the following table:

Channel	Frequency	Bluetooth 4.0 – LE RF Output Power
		Data Rate / Modulation
		GFSK
		1Mbps
Ch00	2402MHz	6.69 dBm
Ch19	2440MHz	7.57 dBm
Ch39	2480MHz	**7.68 dBm**

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, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

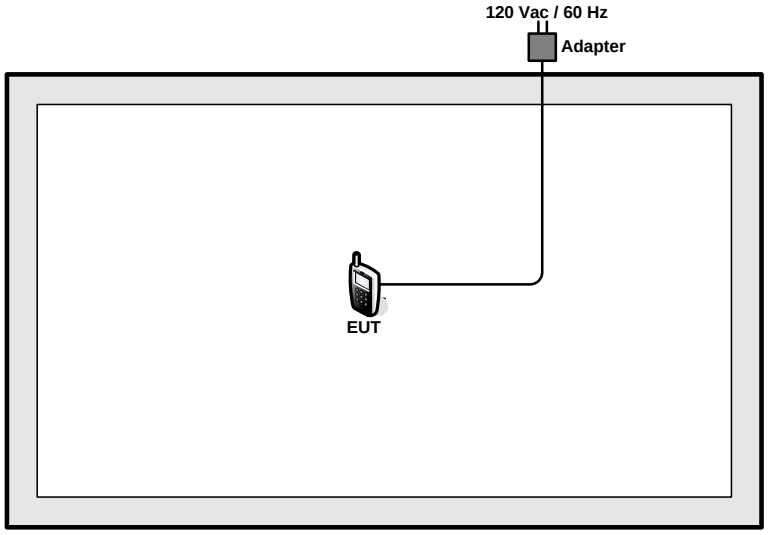
The following tables are showing the test modes as the worst cases (X plane) and recorded in this report.

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

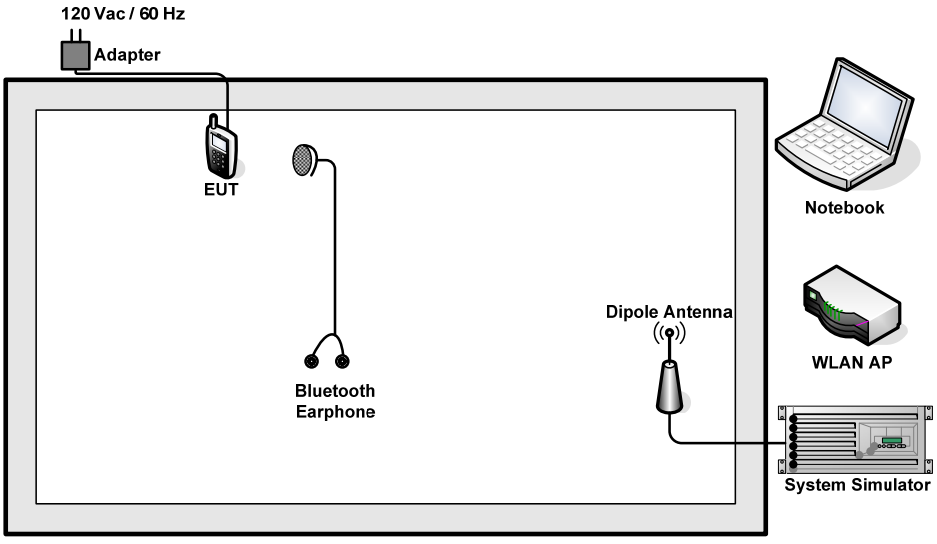
Test Cases	
Test Item	**Data Rate / Modulation**
	Bluetooth 4.0 – LE / GFSK
Conducted TCs	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps
Radiated TCs	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps
AC Conducted Emission	Mode 1 :CDMA2000 BC1 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter)

2.3 Connection Diagram of Test System

<Bluetooth 4.0 – LE Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

For Bluetooth function, the EUT was connected with PC. Then, the EUT will get into the USB debugging modes to contact with WLAN AP for continuous transmitting and receiving signals.

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 KHz.

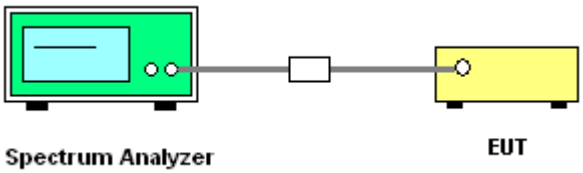
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.

3.1.4 Test Setup

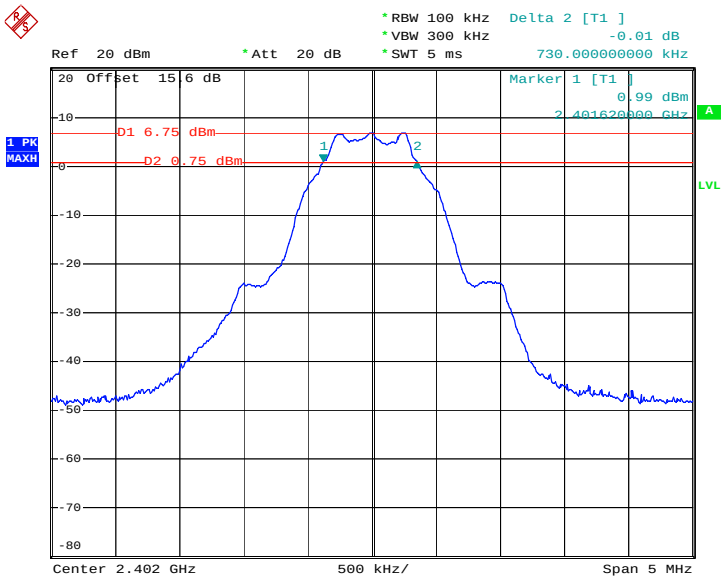


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Bluetooth 4.0 - LE	Temperature :	21~22℃
Test Engineer :	Fei Xu	Relative Humidity :	41~42%

Channel	Frequency (MHz)	6dB Bandwidth (MHz)
00	2402	0.73
19	2440	0.71
39	2480	0.73

6 dB Bandwidth Plot on Channel 00



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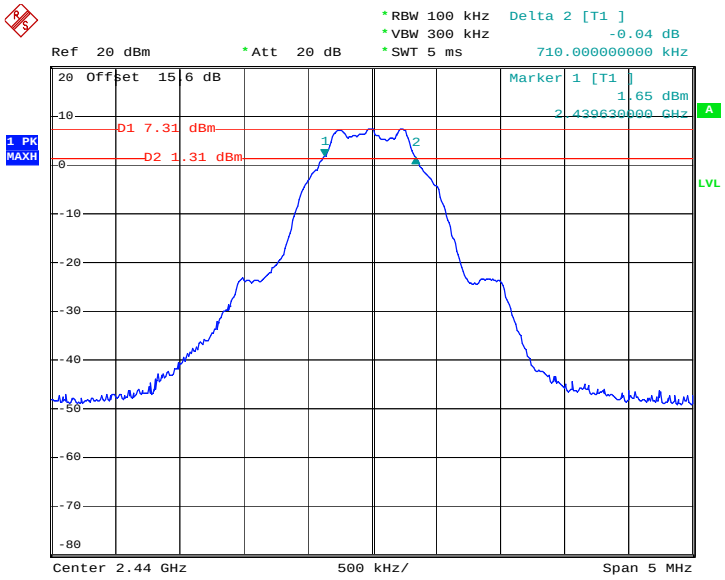
6 dB Bandwidth Plot on Channel 19



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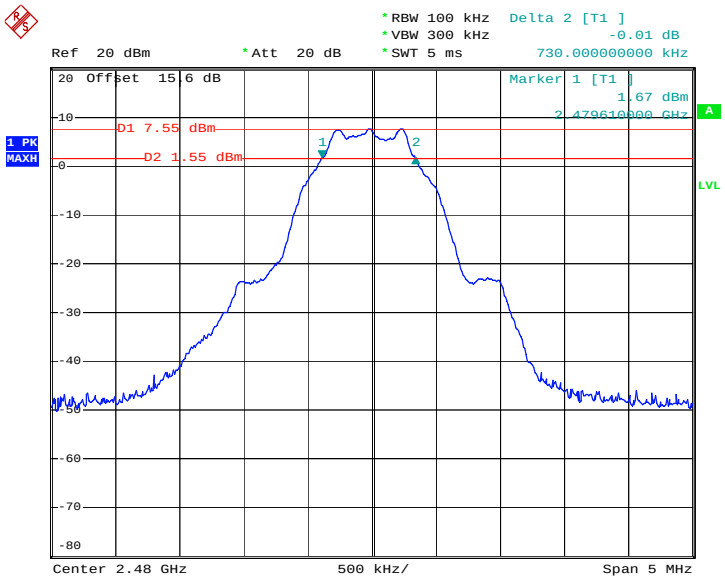
6 dB Bandwidth Plot on Channel 39



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3.2 Peak Output Power Measurement

3.2.1 Limit of Peak Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

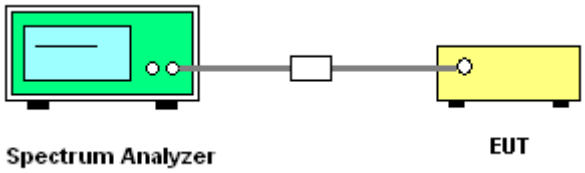
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance and TCB Workshop 2012, April.
2. The RF output of EUT was connected to the power meter by a low loss cable
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup

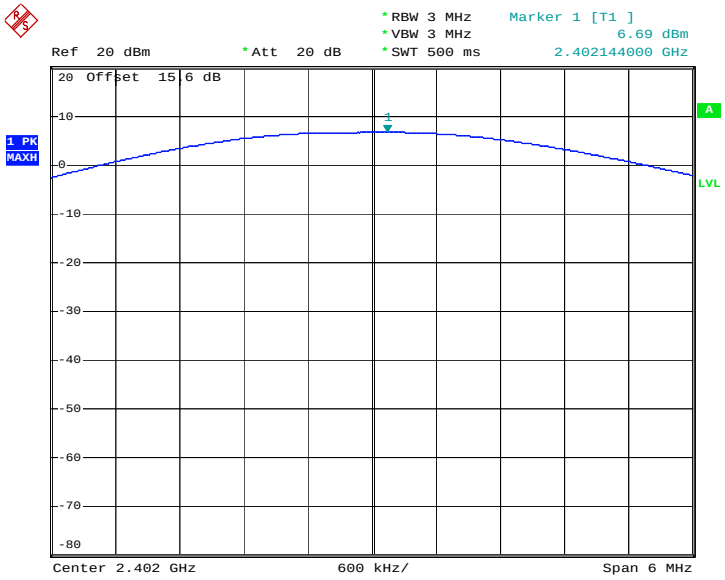


3.2.5 Test Result of Peak Output Power

Test Mode :	Bluetooth 4.0 - LE	Temperature :	21~22℃
Test Engineer :	Fei Xu	Relative Humidity :	41~42%

Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	6.69	30.00	Pass
19	2440	7.57	30.00	Pass
39	2480	7.68	30.00	Pass

Peak Output Power Plot on Channel 00



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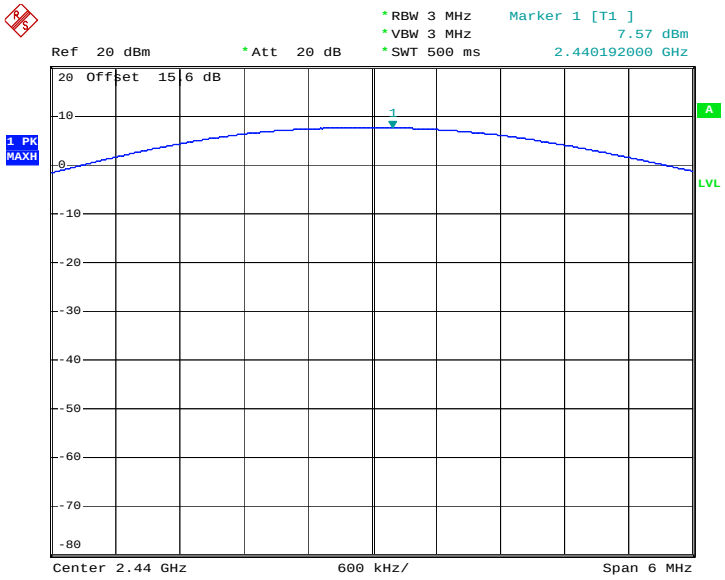
Peak Output Power Plot on Channel 19



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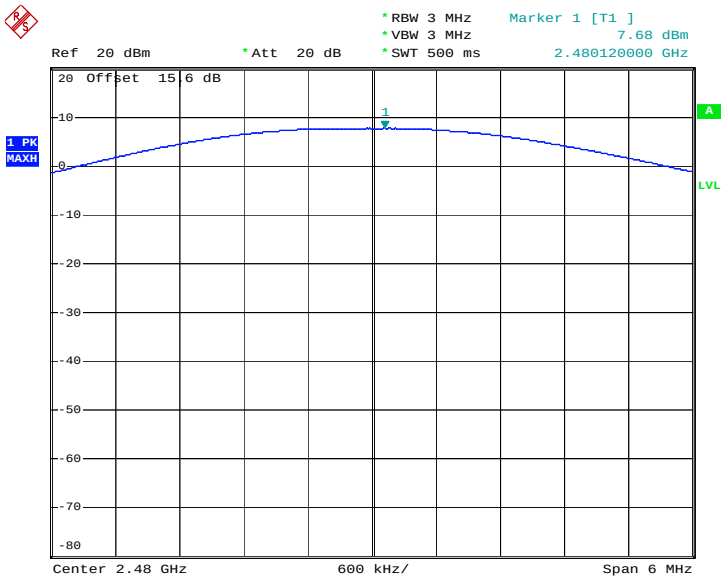
Peak Output Power Plot on Channel 39



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3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3KHz band at any time interval of continuous transmission.

3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Record the measurement data derived from spectrum analyzer.

3.3.4 Test Setup

3.3.5 Test Result of Power Spectral Density

Test Mode :	Bluetooth 4.0 - LE	Temperature :	21~22℃
Test Engineer :	Fei Xu	Relative Humidity :	41~42%

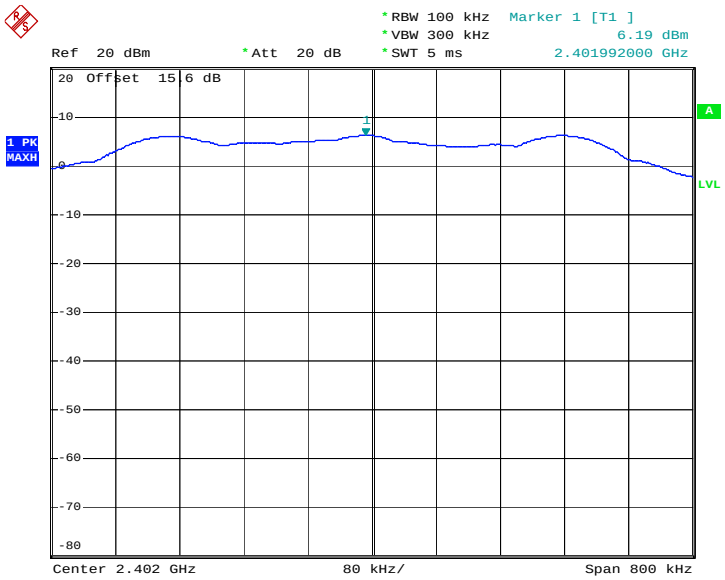
Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	6.19	-6.96	8	Pass
06	2437	6.63	-6.49	8	Pass
11	2462	6.74	-6.36	8	Pass

Note:

1. *Measured power density (dBm) has offset with cable loss.*
2. *Measured power density (dBm)/ 100KHz is for 20dBc reference only*

3.3.6 Test Result of Power Spectral Density Plots (100KHz)

PSD 100kHz Plot on Channel 00



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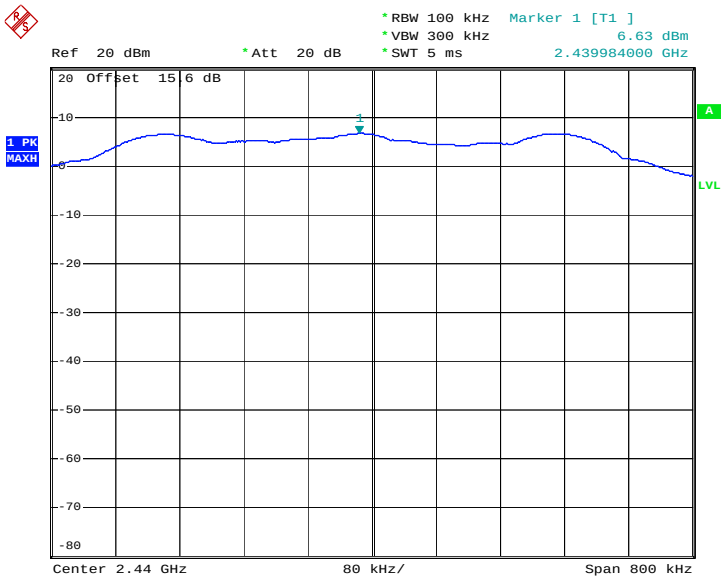
PSD 100kHz Plot on Channel 19



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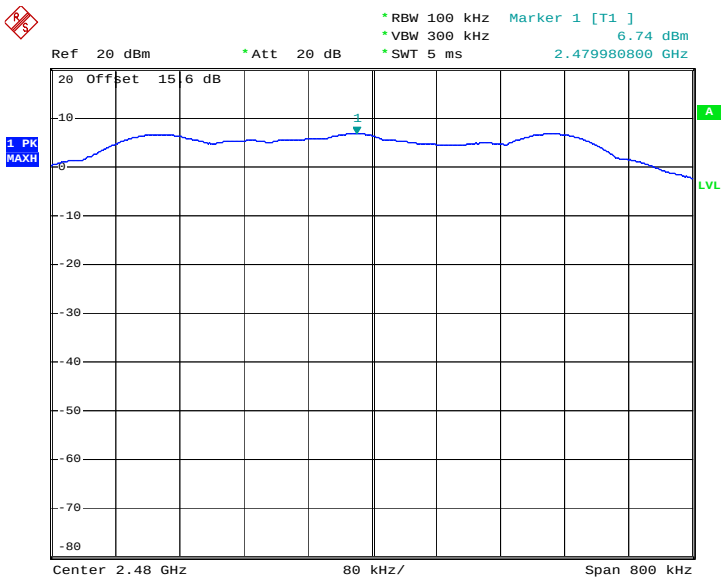
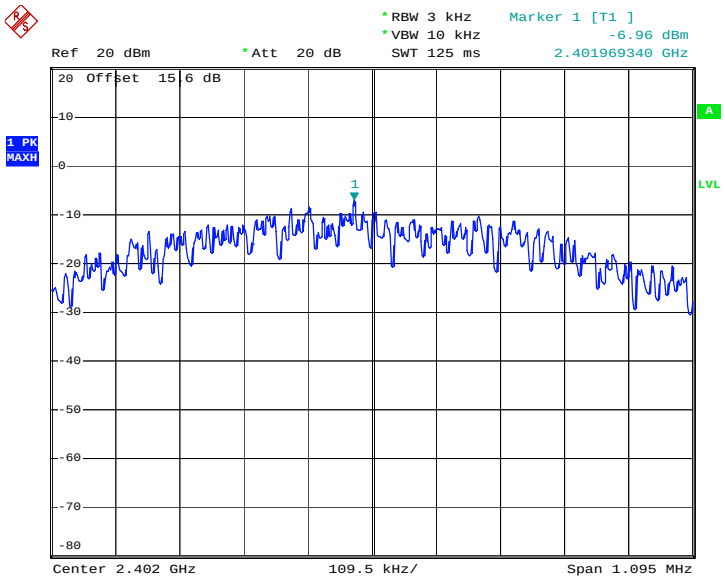
PSD 100kHz Plot on Channel 39



Date: 9.OCT.2012 21:07:37

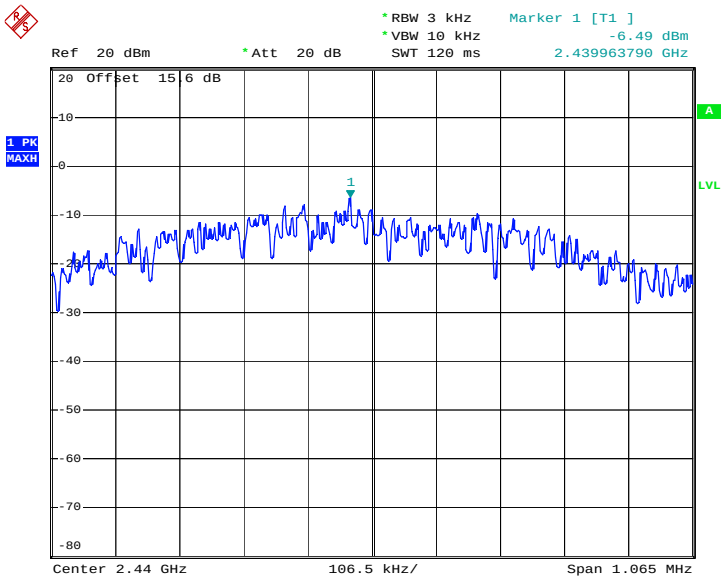
3.3.7 Test Result of Power Spectral Density Plots (3KHz)

PSD 3kHz Plot on Channel 00



Date: 12.OCT.2012 09:38:24

PSD 3kHz Plot on Channel 19



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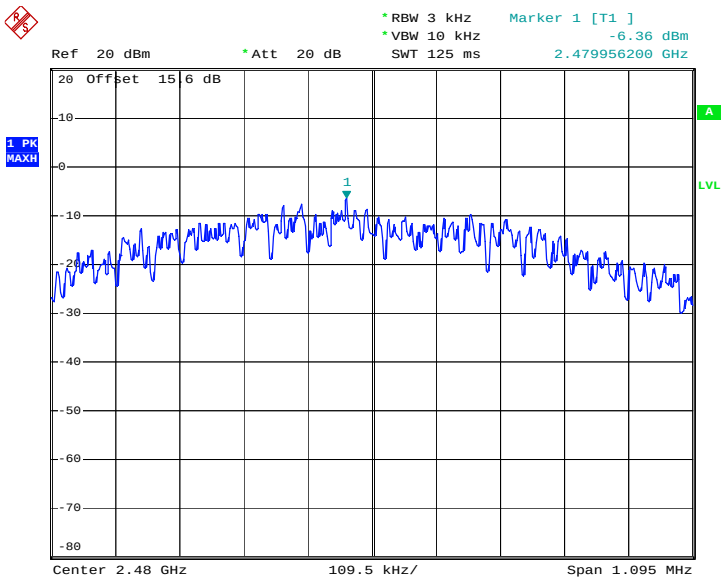
PSD 3kHz Plot on Channel 39



Date: 12.OCT.2012 09:36:53

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

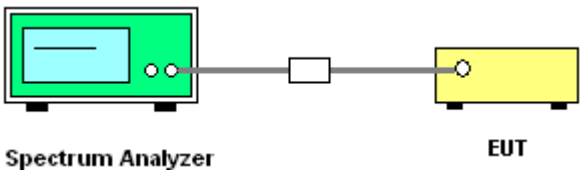
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

1. The testing follows the guidelines in ANSI C63.4-2003 and the Measurement Procedure of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02.
2. The transmitter output was connected to the spectrum analyzer via a low lose cable.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 KHz, Video bandwidth (VBW) ≥ RBW. Out of the authorized frequency band emissions must be at least 20 dB lower than the highest emission level within the authorized band as measured with a 100 KHz RBW. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).

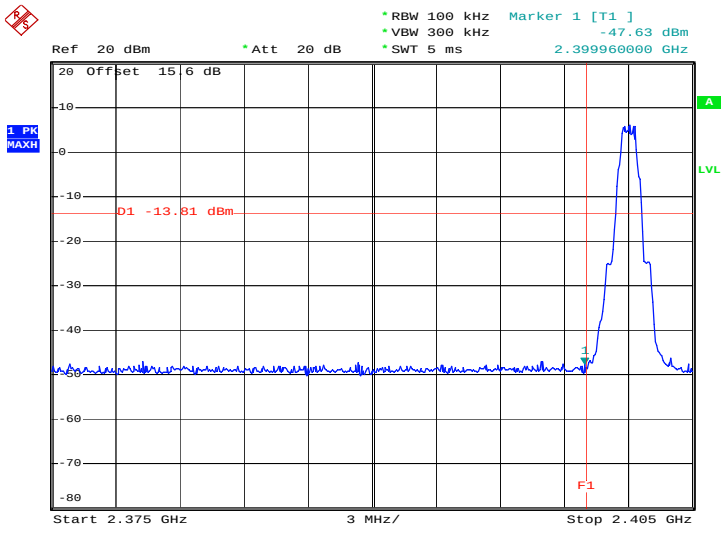
3.4.4 Test Setup



3.4.5 Test Result of Conducted Band Edges

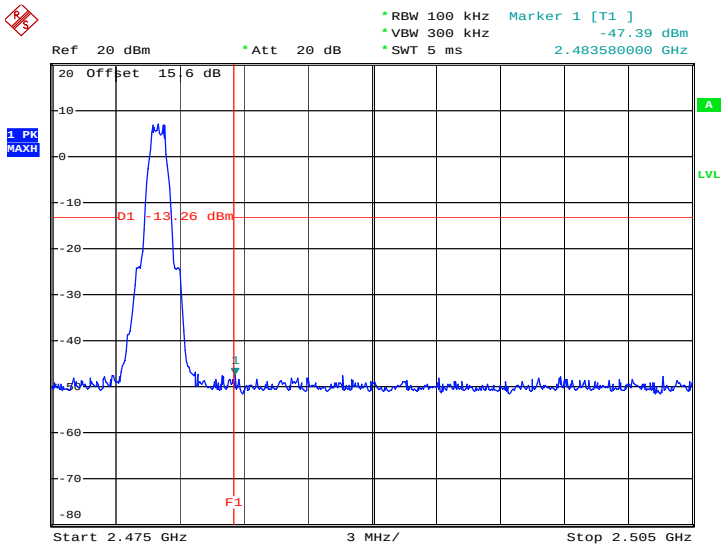
Test Mode :	Bluetooth 4.0 - LE	Temperature :	21~22℃
Test Channel :	00 and 39	Relative Humidity :	41~42%
		Test Engineer :	Fei Xu

Low Band Edge Plot on Channel 00



Date: 12.OCT.2012 20:05:45

High Band Edge Plot on Channel 39



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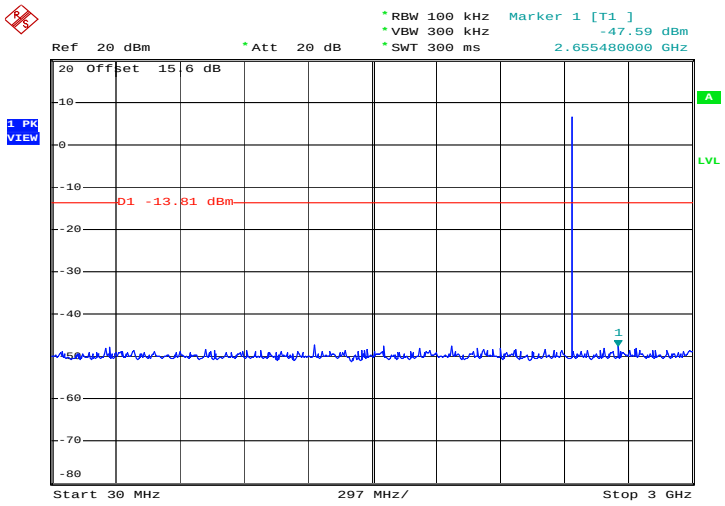
3.4.6 Test Result of Conducted Spurious Emission

Test Mode :	Bluetooth 4.0 - LE	Temperature :	21~22℃
Test Channel :	00	Relative Humidity :	41~42%
		Test Engineer :	Fei Xu

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps

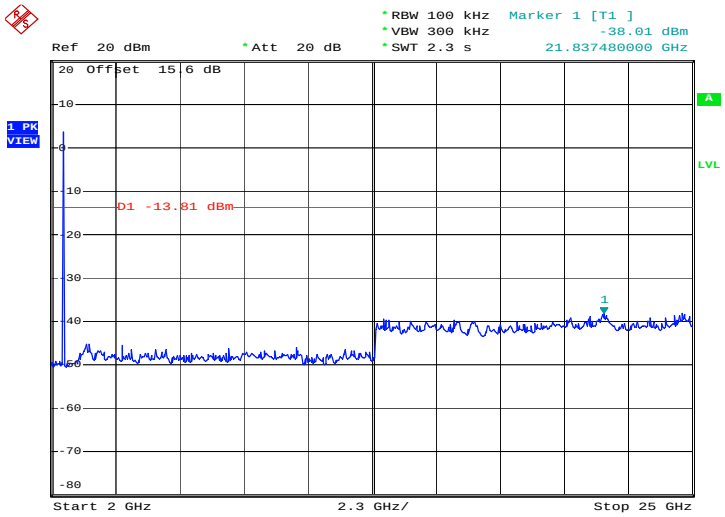
GFSK Channel 00



Date: 12.OCT.2012 20:11:23

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps

GFSK Channel 00

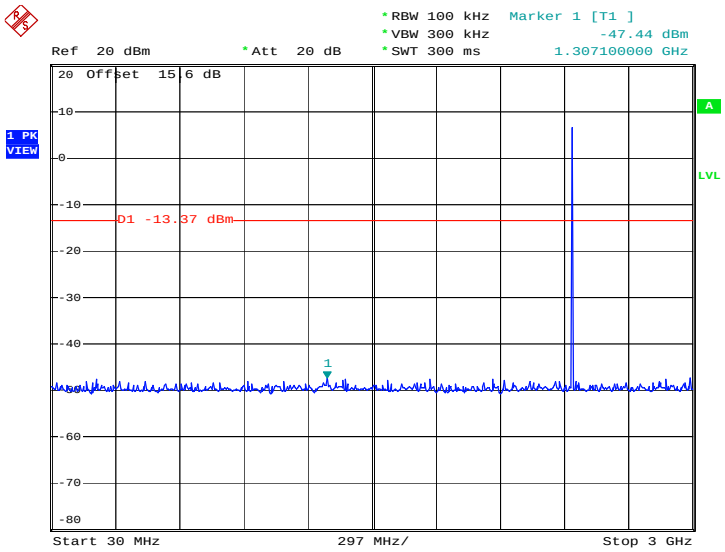


Date: 12.OCT.2012 20:11:55

Test Mode :	Bluetooth 4.0 - LE	Temperature :	21~22℃
Test Channel :	19	Relative Humidity :	41~42%
		Test Engineer :	Fei Xu

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps

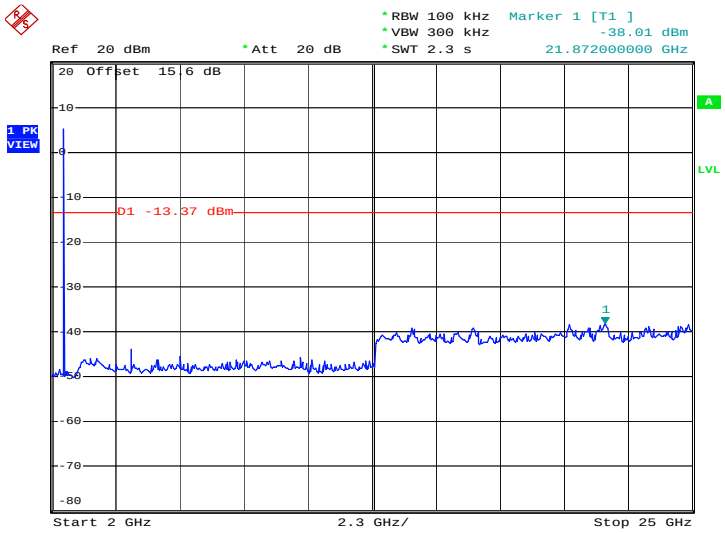
GFSK Channel 19



Date: 9.OCT.2012 21:32:49

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps

GFSK Channel 19

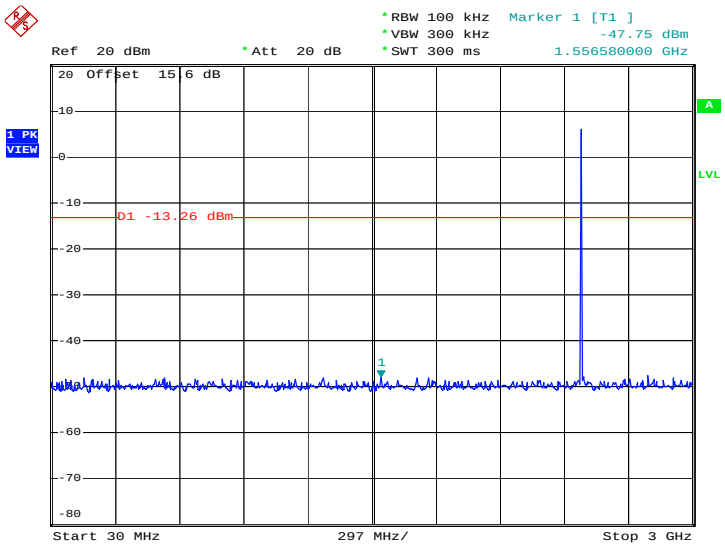


Date: 9.OCT.2012 21:34:04

Test Mode :	Bluetooth 4.0 - LE	Temperature :	21~22℃
Test Channel :	39	Relative Humidity :	41~42%
		Test Engineer :	Fei Xu

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps

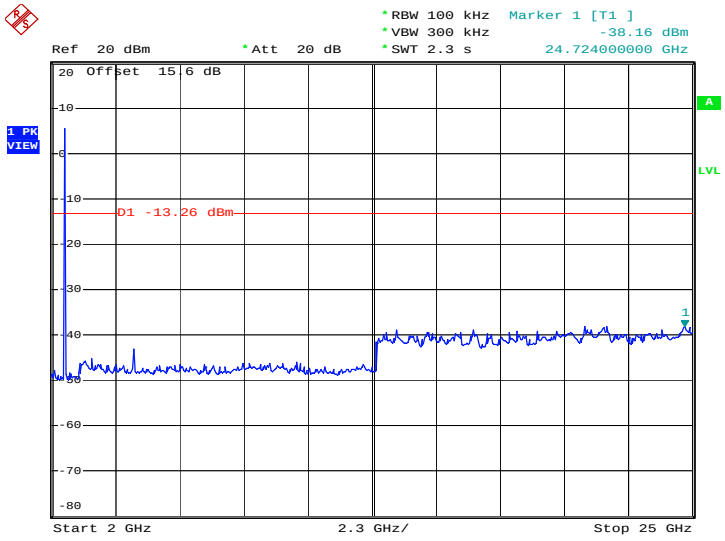
GFSK Channel 39



Date: 9.OCT.2012 21:36:01

Conducted Spurious Emission Plot on Bluetooth LE 1Mbps

GFSK Channel 39



Date: 9.OCT.2012 21:37:17

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated Band Edges and Spurious 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

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows the guidelines in ANSI C63. 10-2009
2. 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. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;

(2) Set RBW=100 KHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;

(3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.

For average measurement:

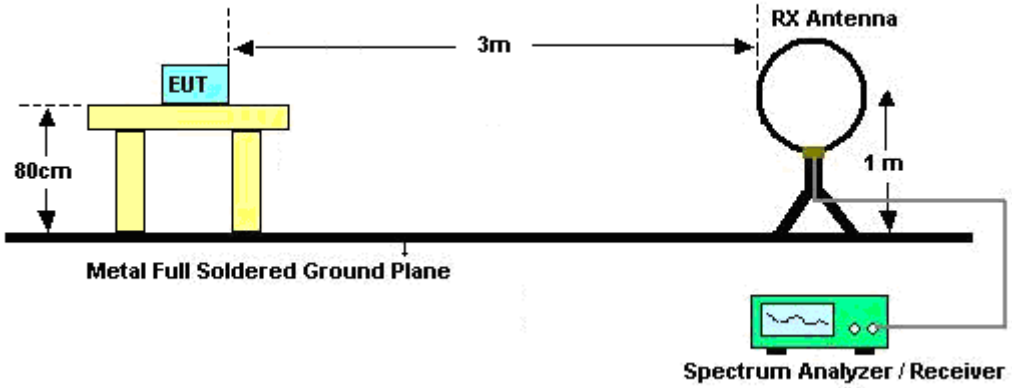
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(ms)	1/T(KHz)	VBW Setting
Bluetooth 4.0 - LE	61.78	0.388	2.577	3KHz

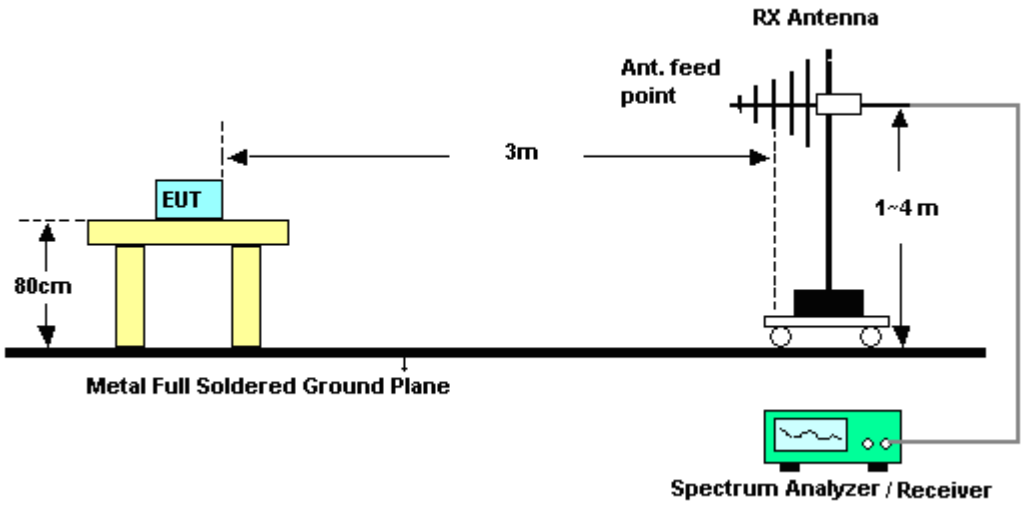
Note: For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

3.5.4 Test Setup

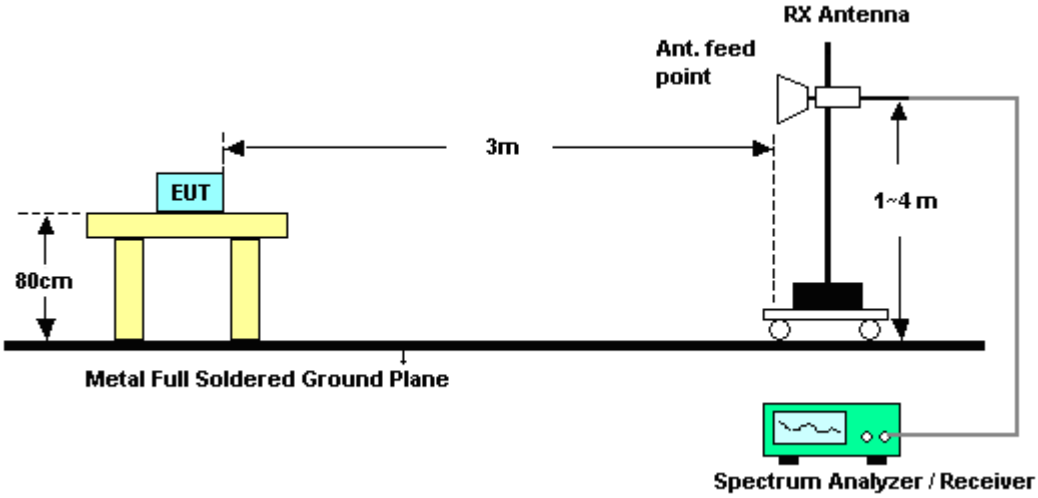
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 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.

3.5.6 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	20~21°C
Test Channel :	00	Relative Humidity :	41~42%
		Test Engineer :	Jack Li

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
2318.91	53.04	-20.96	74	45.29	32.76	4.19	29.2	100	354	Peak
2384.43	40.58	-13.42	54	32.61	32.83	4.22	29.08	100	351	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
2340.33	53.15	-20.85	74	45.34	32.78	4.2	29.17	133	41	Peak
2376.87	40.47	-13.53	54	32.52	32.83	4.22	29.1	112	44	Average

Test Mode :	Mode 3	Temperature :	20~21°C
Test Channel :	39	Relative Humidity :	41~42%
		Test Engineer :	Jack Li

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
2483.5	56.18	-17.82	74	47.88	33.01	4.29	29	100	350	Peak
2483.5	50.68	-3.32	54	42.38	33.01	4.29	29	100	353	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
2485.16	53.54	-20.46	74	45.24	33.01	4.29	29	137	360	Peak
2483.5	45.41	-8.59	54	37.11	33.01	4.29	29	132	318	Average

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

Test Mode :	Mode 1	Temperature :	20~21°C
Test Channel :	00	Relative Humidity :	41~42%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	2402 MHz is fundamental signal 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
30.638	25.56	-14.44	40	38.1	17.29	0.25	30.08	115	217	Peak
89.59	25.48	-18.02	43.5	46.47	8.61	0.39	29.99	-	-	Peak
184.49	23.72	-19.78	43.5	44.61	8.44	0.57	29.9	-	-	Peak
228.49	31.31	-14.69	46	49.75	10.83	0.64	29.91	-	-	Peak
252.063	27.12	-18.88	46	44.27	12.03	0.67	29.85	-	-	Peak
948.761	29.98	-16.02	46	37.46	20.73	1.33	29.54	-	-	Peak
2402	82.78	-	-	74.75	32.86	4.23	29.06	100	352	Average
2402	93.36	-	-	85.33	32.86	4.23	29.06	100	352	Peak

Test Mode :	Mode 1	Temperature :	20~21°C
Test Channel :	00	Relative Humidity :	41~42%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	2402 MHz is fundamental signal 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
32.179	25.09	-14.91	40	38.39	16.55	0.24	30.09	-	-	Peak
59.649	36.37	-3.63	40	60.9	5.3	0.31	30.14	200	0	Peak
81.783	21.62	-18.38	40	44.44	6.87	0.35	30.04	-	-	Peak
226.099	26.49	-19.51	46	45.21	10.59	0.63	29.94	-	-	Peak
389.355	22.35	-23.65	46	35.62	15.74	0.84	29.85	-	-	Peak
948.761	29.25	-16.75	46	36.73	20.73	1.33	29.54	-	-	Peak
2402	77.51	-	-	69.48	32.86	4.23	29.06	200	50	Average
2402	87.84	-	-	79.81	32.86	4.23	29.06	200	50	Peak

Test Mode :	Mode 2	Temperature :	20~21°C
Test Channel :	19	Relative Humidity :	41~42%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	2440 MHz is fundamental signal 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
30.105	25.29	-14.71	40	37.11	18	0.26	30.08	-	-	Peak
86.503	24.95	-15.05	40	46.7	7.89	0.37	30.01	-	-	Peak
157.007	22.93	-20.57	43.5	42.65	9.71	0.52	29.95	-	-	Peak
184.49	23.9	-19.6	43.5	44.79	8.44	0.57	29.9	-	-	Peak
226.894	31.53	-14.47	46	50.16	10.67	0.63	29.93	200	0	Peak
948.761	31.11	-14.89	46	38.59	20.73	1.33	29.54	-	-	Peak
2440	83.28	-	-	75.11	32.95	4.25	29.03	100	349	Average
2440	93.23	-	-	85.06	32.95	4.25	29.03	100	349	Peak

Test Mode :	Mode 2	Temperature :	20~21°C
Test Channel :	19	Relative Humidity :	41~42%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	2440 MHz is fundamental signal 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
30.105	25.38	-14.62	40	37.2	18	0.26	30.08	102	31	Peak
33.211	25.27	-14.73	40	39.08	16.04	0.24	30.09	-	-	Peak
80.927	22.65	-17.35	40	45.47	6.87	0.35	30.04	-	-	Peak
226.099	26.93	-19.07	46	45.65	10.59	0.63	29.94	-	-	Peak
875.247	24.46	-21.54	46	32.26	20.48	1.29	29.57	-	-	Peak
948.761	30.1	-15.9	46	37.58	20.73	1.33	29.54	-	-	Peak
2440	78.02	-	-	69.85	32.95	4.25	29.03	162	46	Average
2440	88.33	-	-	80.16	32.95	4.25	29.03	162	46	Peak

Test Mode :	Mode 3	Temperature :	20~21°C
Test Channel :	39	Relative Humidity :	41~42%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	2480 MHz is fundamental signal 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
30.105	24.73	-15.27	40	36.55	18	0.26	30.08	-	-	Peak
85.898	25.36	-14.64	40	47.11	7.89	0.37	30.01	-	-	Peak
157.559	22.28	-21.22	43.5	42.03	9.67	0.53	29.95	-	-	Peak
184.49	23.15	-20.35	43.5	44.04	8.44	0.57	29.9	-	-	Peak
226.099	33.56	-12.44	46	52.28	10.59	0.63	29.94	200	24	Peak
948.761	30.13	-15.87	46	37.61	20.73	1.33	29.54	-	-	Peak
2480	81.78	-	-	73.48	33.01	4.29	29	100	351	Average
2480	93.22	-	-	84.92	33.01	4.29	29	100	351	Peak

Test Mode :	Mode 3	Temperature :	20~21°C
Test Channel :	39	Relative Humidity :	41~42%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	2480 MHz is fundamental signal 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
30.853	24.3	-15.7	40	36.84	17.29	0.25	30.08	-	-	Peak
33.328	22.91	-17.09	40	36.72	16.04	0.24	30.09	-	-	Peak
81.212	22.08	-17.92	40	44.9	6.87	0.35	30.04	-	-	Peak
86.503	21.52	-18.48	40	43.27	7.89	0.37	30.01	-	-	Peak
226.894	27.38	-18.62	46	46.01	10.67	0.63	29.93	-	-	Peak
948.761	30.49	-15.51	46	37.97	20.73	1.33	29.54	154	344	Peak
2480	77.29	-	-	68.99	33.01	4.29	29	132	312	Average
2480	88.21	-	-	79.91	33.01	4.29	29	132	312	Peak

3.6 AC Conducted Emission Measurement

3.6.1 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.

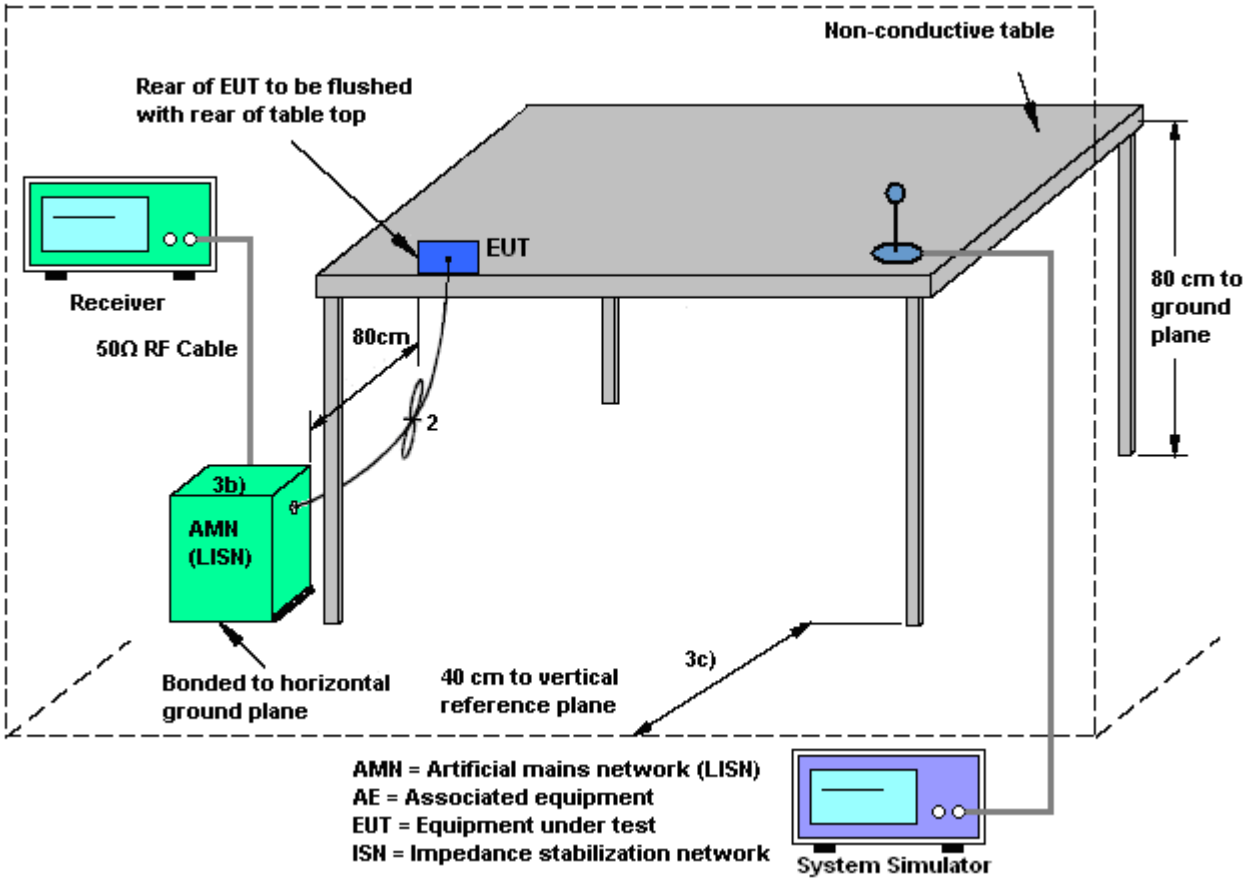
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

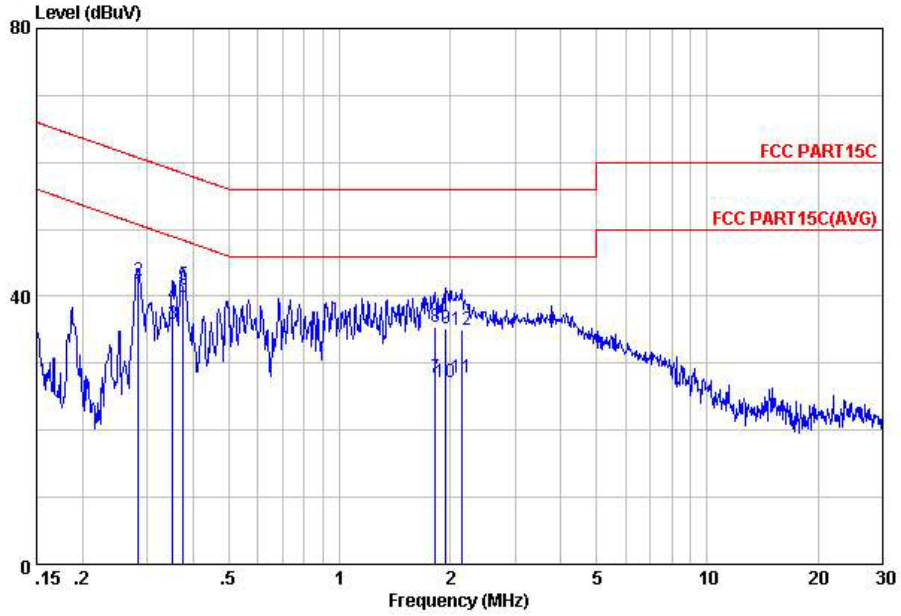
1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 kHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

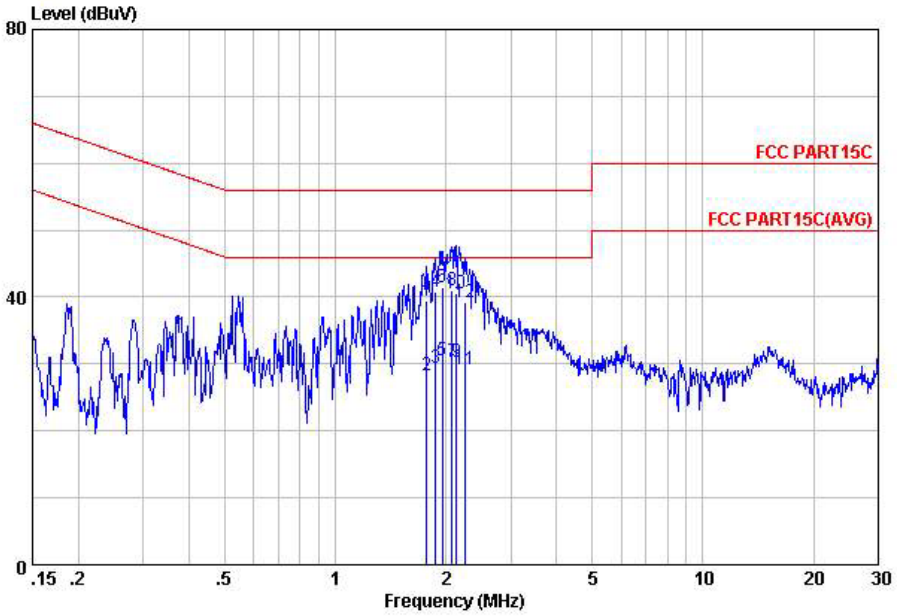
Test Mode :	Mode 1	**Temperature :**	19~20℃
Test Engineer :	Tom Wang	**Relative Humidity :**	39~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	CDMA2000 BC1 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
Condition: FCC PART15C LISN-111230 LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.28	40.29	-10.43	50.72	29.80	-0.07	10.56	Average
2	0.28	42.39	-18.33	60.72	31.90	-0.07	10.56	QP
3	0.35	35.83	-13.08	48.91	25.30	-0.08	10.61	Average
4	0.35	38.73	-20.18	58.91	28.20	-0.08	10.61	QP
5	0.38	41.64	-16.75	58.39	31.11	-0.08	10.61	QP
6	0.38	39.84	-8.55	48.39	29.31	-0.08	10.61	Average
7	1.82	27.89	-18.11	46.00	17.30	-0.11	10.70	Average
8	1.82	35.39	-20.61	56.00	24.80	-0.11	10.70	QP
9	1.95	35.19	-20.81	56.00	24.60	-0.11	10.70	QP
10	1.95	27.29	-18.71	46.00	16.70	-0.11	10.70	Average
11	2.14	27.90	-18.10	46.00	17.30	-0.11	10.71	Average
12	2.14	34.90	-21.10	56.00	24.30	-0.11	10.71	QP

Test Mode :	Mode 1	Temperature :	19~20℃
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	CDMA2000 BC1 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-KS
Condition: FCC PART15C LISN-111230 NEUTRAL

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	1.77	39.49	-16.51	56.00	28.91	-0.11	10.69	QP
2	1.77	28.39	-17.61	46.00	17.81	-0.11	10.69	Average
3	1.88	29.39	-16.61	46.00	18.80	-0.11	10.70	Average
4	1.88	40.69	-15.31	56.00	30.10	-0.11	10.70	QP
5	1.96	30.59	-15.41	46.00	20.00	-0.11	10.70	Average
6	1.96	41.49	-14.51	56.00	30.90	-0.11	10.70	QP
7	2.08	30.39	-15.61	46.00	19.80	-0.11	10.70	Average
8	2.08	40.99	-15.01	56.00	30.40	-0.11	10.70	QP
9	2.13	30.30	-15.70	46.00	19.70	-0.11	10.71	Average
10	2.13	40.60	-15.40	56.00	30.00	-0.11	10.71	QP
11	2.25	29.10	-16.90	46.00	18.50	-0.11	10.71	Average
12	2.25	39.20	-16.80	56.00	28.60	-0.11	10.71	QP

3.7 Antenna Requirements

3.7.1 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.

3.7.2 Antenna Connected Construction

Non-standard connector used.

3.7.3 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	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Oct. 09, 2012~ Oct. 12, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 23, 2011	Oct. 09, 2012~ Oct. 12, 2012	Aug. 22, 2012	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 23, 2011	Oct. 09, 2012~ Oct. 12, 2012	Aug. 22, 2012	Conducted (TH01-KS)
DC Power Supply	TOPWARD	GPS-3030D	E1884515	N/A	Aug. 23, 2011	Oct. 09, 2012~ Oct. 12, 2012	Aug. 22, 2012	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Oct. 09, 2012	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Oct. 09, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Oct. 09, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 03, 2012	Oct. 09, 2012	Jul. 02, 2014	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Oct. 09, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 30, 2011	Oct. 09, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Oct. 09, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 07, 2011	Oct. 09, 2012	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Oct. 11, 2011	Oct. 09, 2012	Oct.10, 2012	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 01, 2012	Oct. 10, 2012	May 31, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	Oct. 10, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	Oct. 10, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 16, 2011	Oct. 10, 2012	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 30, 2011	Oct. 10, 2012	Dec. 29, 2012	Conduction (CO01-KS)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**

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

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 EP251502-04 as below.