

FCC Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : LTE AND CDMA mobile hotspot
BRAND NAME : ZTE
MODEL NAME : EuFi891
FCC ID : Q78-EUFI891
STANDARD : FCC 47 CFR FCC Part 15 Subpart B
CLASSIFICATION : Certification

The product was received on Jun. 19, 2012 and completely tested on Nov. 20, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:



Jones Tsai / Manager



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



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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 11.86 dB at 0.460 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 10.13 dB at 59.100 MHz



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	LTE AND CDMA mobile hotspot
Brand Name	ZTE
Model Name	EuFi891
FCC ID	Q78-EUFI891
EUT supports Radios application	CDMA/EV-DO/LTE/WLAN 11bgn
HW Version	xh7C_V1.0
SW Version	USCC_EuFi891V1.0.0B02
Test Sample	Sample 1: SN 001 Sample 2: SN 002 Sample number is lab. internal controlled.
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. The 2nd sample is electrically identical with sample 1 for all U.S. operating bands, and devices are tested and found compliance with FCC standard.

Product Specification subjective to this standard	
Tx Frequency	CDMA2000 BC0: 824.70 MHz ~ 848.31 MHz CDMA2000 BC1: 1815.25 MHz ~ 1908.75 MHz CDMA2000 BC15 : 1711.25 ~ 1753.75 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz
Rx Frequency Range	CDMA2000 BC0: 869.70 MHz ~ 893.31 MHz CDMA2000 BC1: 1931.25 MHz ~ 1988.75 MHz CDMA2000 BC15 : 2111.25 ~ 2153.75 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 5: 869.7 MHz ~ 893.3 MHz LTE Band 12: 729.7 MHz ~ 745.3 MHz
Antenna Type	WWAN : IFA Antenna WLAN : PCB Antenna LTE : IFA Antenna
Type of Modulation	CDMA2000 : QPSK 802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) LTE : QPSK / 16QAM (Uplink)

1.4. Test 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.
	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 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.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
3.	Monitor	Dell	E1910Hc	FCC DoC	Shielded, 1.2 m	Unshielded, 1.8 m
4.	(USB)Keyboard	Dell	SK-8115	FCC DoC	Shielded, 1.5 m	N/A
5.	(USB) Mouse	Dell	N231	FCC DoC	Shielded, 1.8 m	N/A
6.	iPod	Apple	A1199	FCC DoC	Shielded, 1.2 m	N/A
7.	Printer	HP	Laser Jet 1018	FCC DoC	Shielded, 1.8 m	Unshielded, 1.8 m
8.	PC	Dell	MT380	FCC DoC	N/A	Unshielded, 1.8 m
9.	Notebook	Dell	PP42L	N/A	N/A	AC I/P: Unshielded, 0.8 m DC O/P: Shielded, 1.8 m
10.	Notebook	DELL	VOSTRO 1450	PPD-AR5B195	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m

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)	☒	☒	Note 1
2.	Charging Mode (EUT with PC)	☒	☒	☒

Abbreviations:

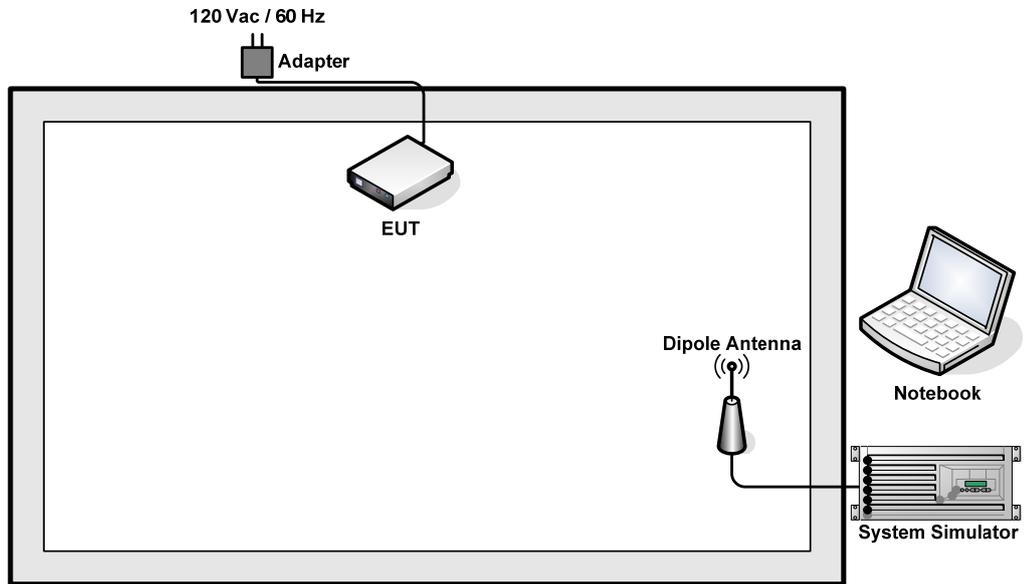
- EMI AC: AC conducted emissions
- EMI RE ≥ 1G: EUT radiated emissions ≥ 1GHz
- EMI RE < 1G: EUT radiated emissions < 1GHz

Note 1: Testing for this mode is not required or not the worst case.

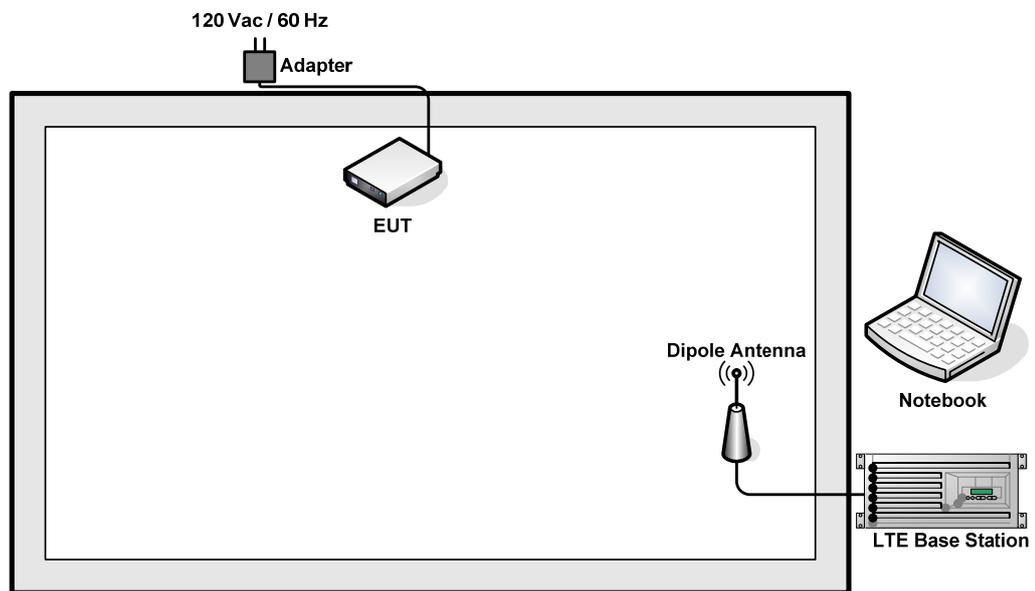
Remark: For signal above 1GHz, the worst case was test item 2.

Test Items	EUT Configure Mode	Function Type
AC Conducted Emission	1/2	Mode 1: CDMA2000 BC0 Idle + WLAN Idle + Adapter <Fig. 1> Mode 2: CDMA2000 BC1 Idle + WLAN Idle + Adapter <Fig. 1> Mode 3: CDMA2000 BC15 Idle + WLAN Idle + Adapter <Fig. 1> Mode 4: LTE Band 2 Idle + WLAN Idle + Adapter <Fig. 2> Mode 5: LTE Band 4 Idle + WLAN Idle + Adapter <Fig. 2> Mode 6: LTE Band 5 Idle + WLAN Idle + Adapter <Fig. 2> Mode 7: LTE Band 12 Idle + WLAN Idle + USB Cable (Charging from PC) <Fig. 3>
Radiated Emissions < 1GHz	1/2	Mode 1: CDMA2000 BC0 Idle + WLAN Idle + Adapter <Fig. 1> Mode 2: CDMA2000 BC1 Idle + WLAN Idle + Adapter <Fig. 1> Mode 3: CDMA2000 BC15 Idle + WLAN Idle + Adapter <Fig. 1> Mode 4: LTE Band 2 Idle + WLAN Idle + Adapter <Fig. 2> Mode 5: LTE Band 4 Idle + WLAN Idle + Adapter <Fig. 2> Mode 6: LTE Band 5 Idle + WLAN Idle + Adapter <Fig. 2> Mode 7: LTE Band 12 Idle + WLAN Idle + USB Cable (Charging from PC) <Fig. 3>
Radiated Emissions ≥ 1GHz	2	Mode 1: LTE Band 12 Idle + WLAN Idle + USB Cable (Charging from PC) <Fig. 3>
Remark: <ol style="list-style-type: none"> The worst case of AC Conducted Emission is mode 6; only the test data of this mode was reported. The worst case of RE < 1G is mode 7; only the test data of this mode was reported. 		

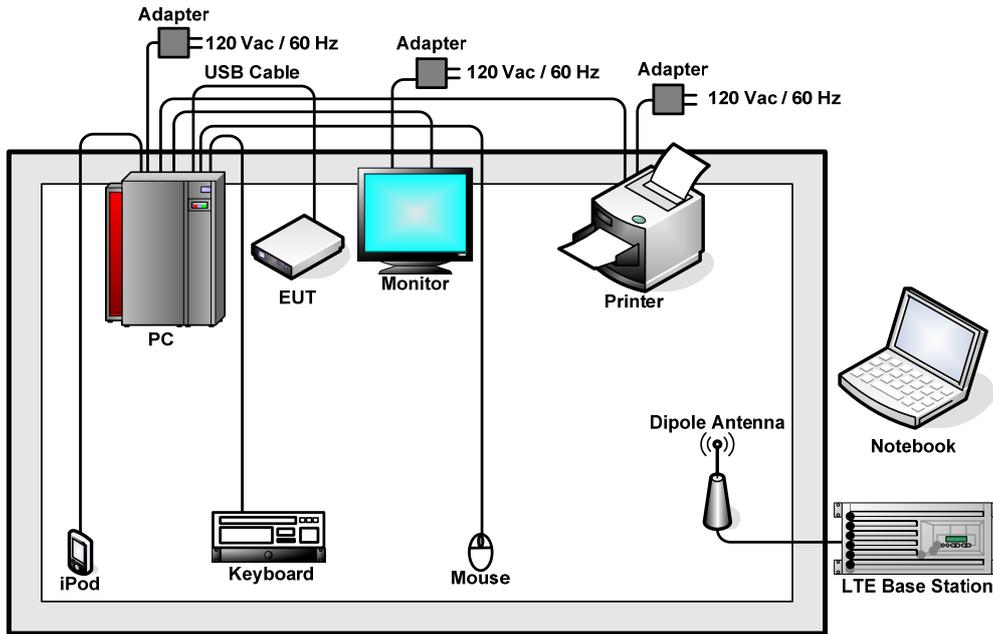
2.2. Connection Diagram of Test System



<Fig. 1>



<Fig. 2>



<Fig. 3>

2.3. Test Software

The EUT was in CDMA2000 or LTE 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 notebook was attached to the EUT via WLAN 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.

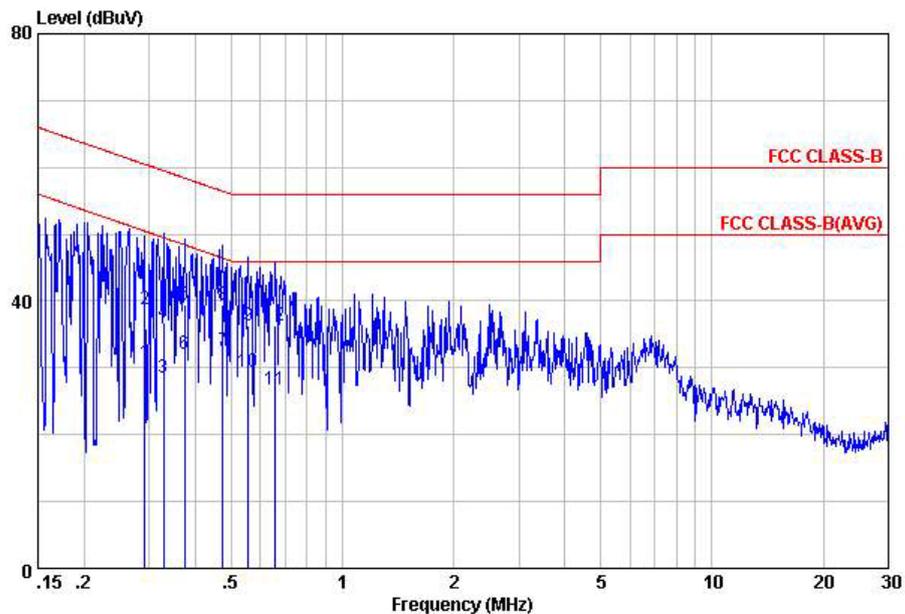
3.1.3 Test Procedure

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.



3.1.5 Test Result of AC Conducted Emission

Test Mode :	Mode 6	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	LTE Band 5 Idle + WLAN Idle + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

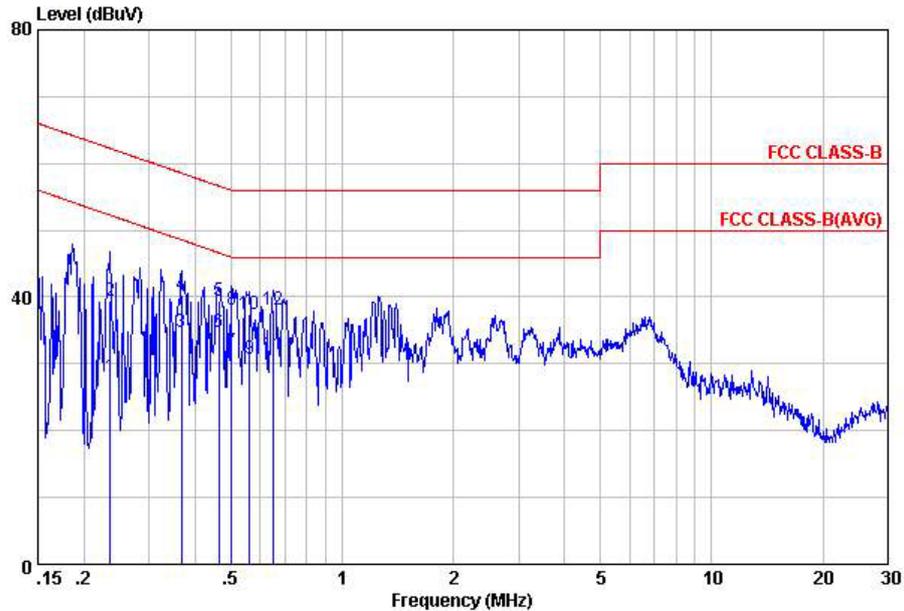


Site : C001-KS
 Condition: FCC CLASS-B LISN-111230 LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.29	30.76	-19.70	50.46	20.59	-0.07	10.24	Average
2	0.29	38.86	-21.60	60.46	28.69	-0.07	10.24	QP
3	0.33	28.57	-20.92	49.49	18.41	-0.08	10.24	Average
4	0.33	36.67	-22.82	59.49	26.51	-0.08	10.24	QP
5	0.37	39.37	-19.06	58.43	29.20	-0.08	10.25	QP
6	0.37	32.07	-16.36	48.43	21.90	-0.08	10.25	Average
7	0.47	32.47	-13.98	46.45	22.30	-0.08	10.25	Average
8	0.47	39.37	-17.08	56.45	29.20	-0.08	10.25	QP
9	0.56	36.28	-19.72	56.00	26.10	-0.08	10.26	QP
10	0.56	29.48	-16.52	46.00	19.30	-0.08	10.26	Average
11	0.66	26.68	-19.32	46.00	16.50	-0.09	10.27	Average
12	0.66	36.28	-19.72	56.00	26.10	-0.09	10.27	QP



Test Mode :	Mode 6	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	LTE Band 5 Idle + WLAN Idle + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
 Condition: FCC CLASS-B LISN-111230 NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.24	28.15	-24.11	52.26	18.00	-0.07	10.22	Average
2	0.24	39.35	-22.91	62.26	29.20	-0.07	10.22	QP
3	0.37	34.87	-13.69	48.56	24.70	-0.08	10.25	Average
4	0.37	40.37	-18.19	58.56	30.20	-0.08	10.25	QP
5	0.46	39.37	-17.26	56.63	29.20	-0.08	10.25	QP
6	0.46	34.77	-11.86	46.63	24.60	-0.08	10.25	Average
7	0.50	31.77	-14.23	46.00	21.60	-0.08	10.25	Average
8	0.50	38.17	-17.83	56.00	28.00	-0.08	10.25	QP
9	0.56	30.68	-15.32	46.00	20.50	-0.08	10.26	Average
10	0.56	37.48	-18.52	56.00	27.30	-0.08	10.26	QP
11	0.65	31.48	-14.52	46.00	21.29	-0.08	10.27	Average
12	0.65	38.08	-17.92	56.00	27.89	-0.08	10.27	QP

3.2. Test of Radiated Emission Measurement

3.2.1. Limit of Radiated Emission

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

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.2.2. Measuring Instruments

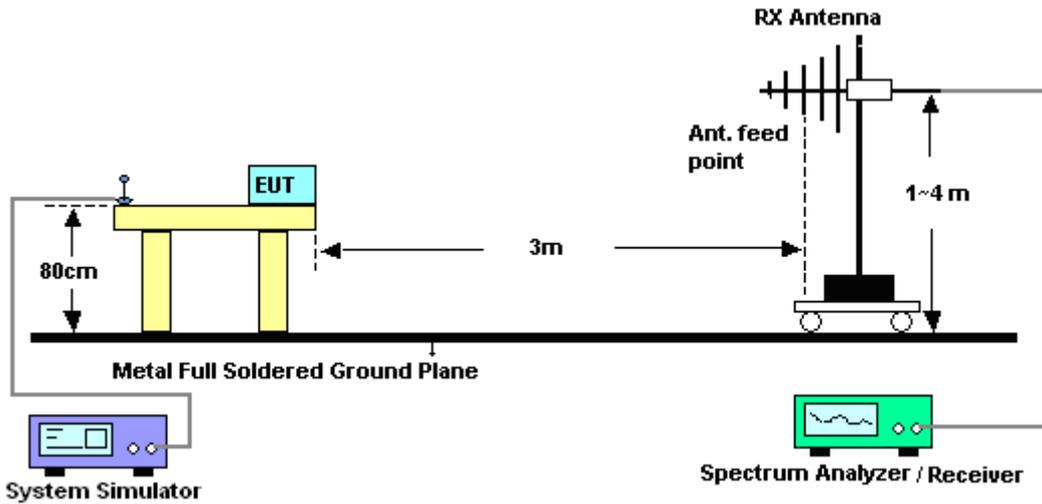
See list of measuring instruments of this test report.

3.2.3. Test Procedures

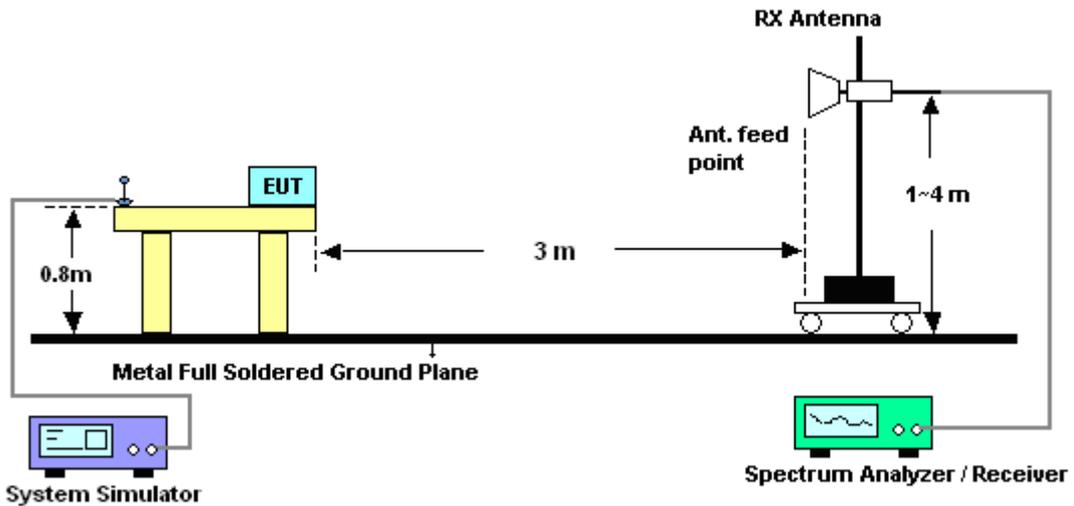
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one to 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, peak values of EUT will be reported. Otherwise, the emission will be repeated by 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 from 30MHz to 1GHz

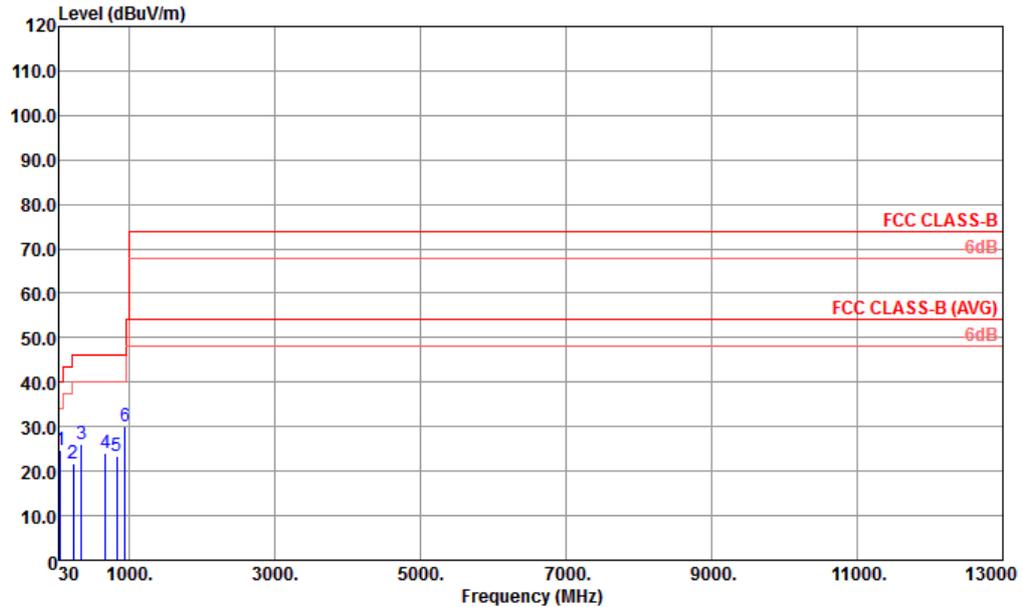


For radiated emissions above 1GHz



3.2.5. Test Result of Radiated Emission

Test Mode :	Mode 7	Temperature :	21~22°C
Test Engineer :	Chenmy Cheng	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	LTE Band 12 Idle + WLAN Idle + USB Cable (Charging from PC)		

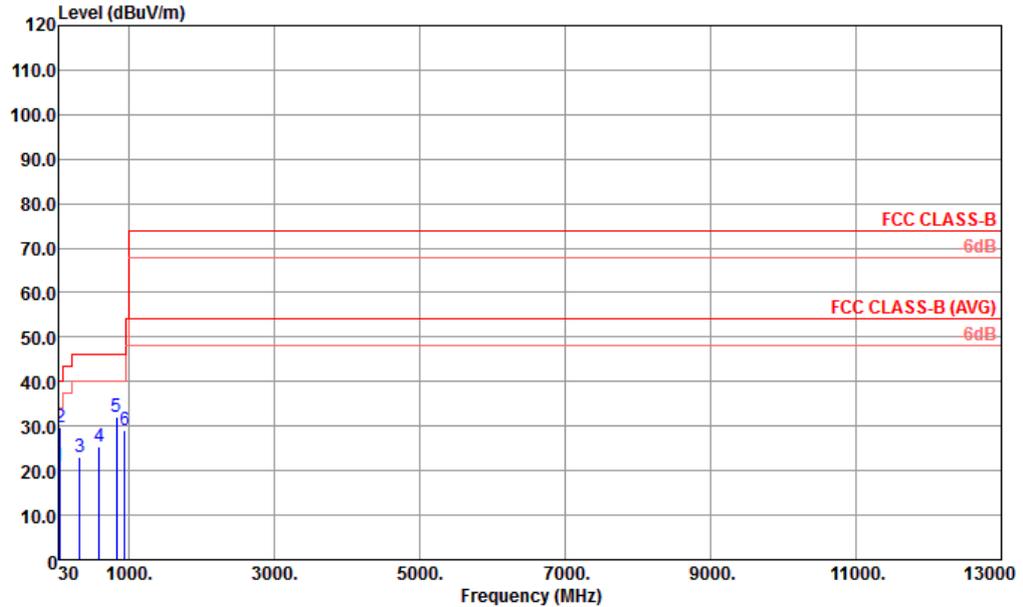


Site : 03CH01-KS
 Condition : FCC CLASS-B 3m LF_ANT_100803 HORIZONTAL

	Freq	Level	Over	Limit	ReadAntenna	Preamp	A/Pos	T/Pos	Remark		
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB/m	cm	deg	
1	59.10	24.58	-15.42	40.00	52.24	5.44	33.58	-27.66	100	56	Peak
2	234.67	21.87	-24.13	46.00	43.22	11.23	33.47	-21.35	---	---	Peak
3	344.28	26.16	-19.84	46.00	44.06	14.37	33.36	-17.90	---	---	Peak
4	669.23	24.07	-21.93	46.00	36.49	19.04	32.93	-12.42	---	---	Peak
5	829.28	23.42	-22.58	46.00	34.22	20.25	32.69	-10.80	---	---	Peak
6	944.71	30.11	-15.89	46.00	40.09	20.71	32.44	-9.98	---	---	Peak



Test Mode :	Mode 7	Temperature :	21~22°C
Test Engineer :	Chenmy Cheng	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Vertical
Function Type :	LTE Band 12 Idle + WLAN Idle + USB Cable (Charging from PC)		



Site : 03CH01-KS
 Condition : FCC CLASS-B 3m LF_ANT_100803 VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Preamp		A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	43.58	20.90	-19.10	40.00	44.08	10.03	33.62	---	---	Peak
2	59.10	29.87	-10.13	40.00	57.53	5.44	33.58	100	268	Peak
3	324.88	23.14	-22.86	46.00	41.71	13.75	33.37	---	---	Peak
4	594.54	25.31	-20.69	46.00	38.29	18.59	32.96	---	---	Peak
5	829.28	32.09	-13.91	46.00	42.89	20.25	32.69	---	---	Peak
6	946.65	29.05	-16.95	46.00	39.02	20.72	32.44	---	---	Peak

4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 01, 2012	Jul. 17, 2012~ Nov. 19, 2012	May 31, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	Jul. 17, 2012~ Nov. 19, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	Jul. 17, 2012~ Nov. 19, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 16, 2011	Jul. 17, 2012	Nov. 15, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 15, 2012	Nov. 19, 2012	Nov. 14, 2013	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Jul. 17, 2012	Nov. 08, 2012	Radiation (03CH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 08, 2012	Nov. 20, 2012	Nov. 07, 2013	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Jul. 17, 2012~ Nov. 20, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Jul. 17, 2012~ Nov. 20, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Jul. 17, 2012~ Nov. 20, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060007	30MHz~2GHz	Dec. 30, 2011	Jul. 17, 2012~ Nov. 20, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Jul. 17, 2012~ Nov. 20, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 30, 2011	Jul. 17, 2012~ Nov. 20, 2012	Dec. 29, 2012	-
LTE Base Station	Anritsu	MT8820C	6201074235	LTE_FDD full band	Nov. 30, 2011	Jul. 17, 2012~ Nov. 20, 2012	Nov. 29, 2012	-

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.54
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.72
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Appendix A. Photographs of EUT

Please refer to Sporton report number EP261903-02 as below.