



FCC Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : WCDMA/LTE Multi-mode Digital
Mobile Phone
BRAND NAME : ZTE
MODEL NAME : Z836F
FCC ID : SRQ-Z836F
STANDARD : FCC 47 CFR FCC Part 15 Subpart B
CLASSIFICATION : Certification

The product was completed on Feb. 23, 2017. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2014 and has been in 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.

Prepared by: James Huang / Manager

Approved by: Jones Tsai / Manager



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



TABLE OF CONTENTS

REVISION HISTORY.....3

SUMMARY OF TEST RESULT4

1. GENERAL DESCRIPTION5

 1.1. Applicant.....5

 1.2. Manufacturer5

 1.3. Product Feature of Equipment Under Test5

 1.4. Product Specification of Equipment Under Test6

 1.5. Modification of EUT7

 1.6. Test Location7

 1.7. Applicable Standards7

2. TEST CONFIGURATION OF EQUIPMENT UNDER TEST.....8

 2.1. Test Mode8

 2.2. Connection Diagram of Test System 10

 2.3. Support Unit used in test configuration and system..... 12

 2.4. EUT Operation Test Setup 12

3. TEST RESULT.....13

 3.1. Test of AC Conducted Emission Measurement13

 3.2. Test of Radiated Emission Measurement21

4. LIST OF MEASURING EQUIPMENT27

5. UNCERTAINTY OF EVALUATION28

APPENDIX A. SETUP PHOTOGRAPHS



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC692313-02	Rev. 01	Initial issue of report	Feb. 28, 2017



SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.107	ICES003 Section 6.1	AC Conducted Emission	< 15.107 limits < ICES003 6.1 limits	PASS	Under limit 7.32 dB at 0.464 MHz
3.2	15.109	ICES003 Section 6.2	Radiated Emission	< 15.109 limits < ICES003 6.2 limits	PASS	Under limit 1.24 dB at 42.150 MHz for Quasi-Peak



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. Product Feature of Equipment Under Test

Product Feature	
Equipment	WCDMA/LTE Multi-mode Digital Mobile Phone
Brand Name	ZTE
Model Name	Z836F
FCC ID	SRQ-Z836F
IC	错误!未找到引用源。
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/ HSPA+ (16QAM uplink is not supported)/LTE/ WLAN 2.4GHz 802.11b/g/n HT20/HT40 Bluetooth v3.0 + EDR/ Bluetooth v4.0 LE/ Bluetooth v4.1 LE / Bluetooth v4.2 LE
IMEI Code	Conduction: 864356030001672 Radiation: 864356030001870
HW Version	Z836FHWV1.0
SW Version	Z836FV1.0.0B01
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. Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV : 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 5 : 824.7 MHz ~ 848.3 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 66 : 1710.7 MHz ~ 1779.3 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Rx Frequency	GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band V: 871.4 MHz ~ 891.6 MHz WCDMA Band IV : 2112.4 MHz ~ 2152.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 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 LTE Band 66 : 2110.7 MHz~ 2179.3 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz GPS : 1.57542 GHz Glonass : 1602 MHz + n× 0.5625MHz (n=-7, -6, -5, ... 0, ..., 6)
Antenna Type	WWAN : PIFA Antenna WLAN : PIFA Antenna Bluetooth : PIFA Antenna GPS/Glonass : PIFA Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA : BPSK (Uplink) HSDPA : QPSK (Uplink) HSUPA : QPSK (Uplink) HSPA+ : 16QAM (16QAM uplink is not supported) LTE: QPSK / 16QAM 802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : $\pi/4$ -DQPSK Bluetooth (3Mbps) : 8-DPSK GPS/Glonass : BPSK



1.5. Modification of EUT

No modifications are made to the EUT during all test items.

1.6. Test Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO01-KS	03CH02-KS	418269/4086E

Note: The test site complies with ANSI C63.4 2014 requirement.

1.7. Applicable 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 C63.4-2014
- ♦ IC ICES-003 Issue 6
- ♦ IC RSS-Gen Issue 4

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

2. Test Configuration of Equipment Under Test

2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 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).

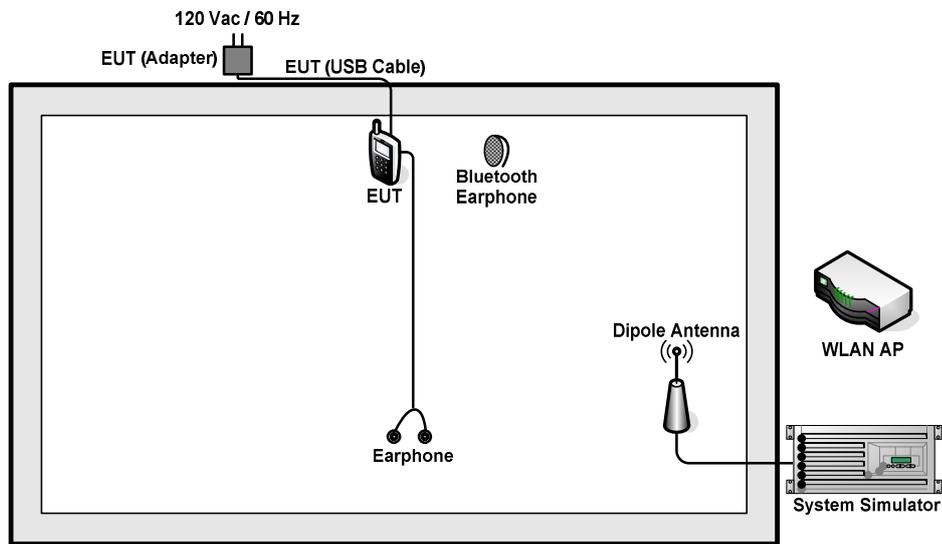
Test Items	Function Type
AC Conducted Emission	Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 1) + Battery 1 + Earphone + Camera (Rear) <Fig.1> Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 2) + Battery 2 + Earphone + Camera (Front) <Fig.1> Mode 3: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 3) + Battery 3 + Earphone + MPEG4<Fig.1> Mode 4: LTE Band 2 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 3) + Battery 3 + Earphone + Glonass Rx<Fig.2> Mode 5: LTE Band 4 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + Battery 3 + Earphone + GPS Rx<Fig.3>
Radiated Emissions < 1GHz	Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 1) + Battery 1 + Earphone + Camera (Rear) <Fig.1> Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 2) + Battery 2 + Earphone + Camera (Front) <Fig.1> Mode 3: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 3) + Battery 3 + Earphone + MPEG4<Fig.1> Mode 4: LTE Band 2 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 2) + Battery 2 + Earphone + Glonass Rx<Fig.2> Mode 5: LTE Band 4 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + Battery 2 + Earphone + GPS Rx<Fig.3>
Radiated Emissions ≥ 1GHz	Mode 1: GSM1900 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 2) + Battery 2 + Earphone + Camera (Front) <Fig.1> Mode 2: LTE Band 4 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + Battery 2 + Earphone + GPS Rx<Fig.3>



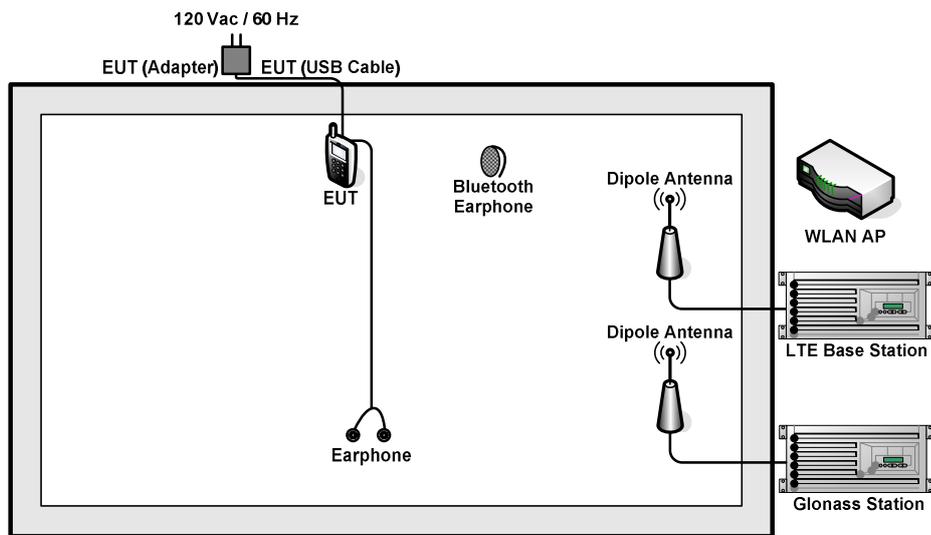
Remark:

1. The worst case of AC is mode 3; and the USB link mode of AC is mode 5, the test data of this mode was reported.
2. The worst case of RE < 1G is mode 2; and the USB link mode of RE is mode 5, the test data of this mode was reported.
3. Data Link with Notebook means data application transferred mode between EUT and Notebook.

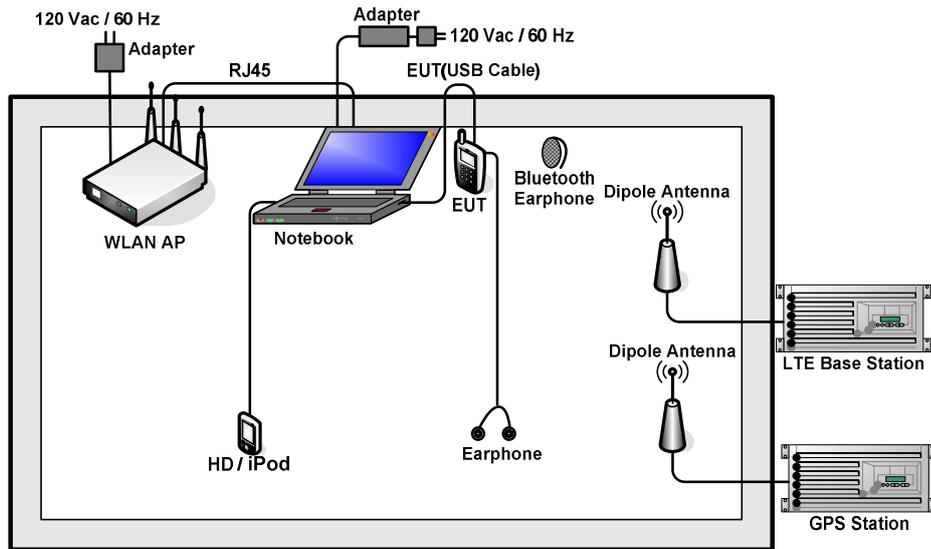
2.2. Connection Diagram of Test System



<Fig.1>



<Fig.2>



<Fig.3>

2.3. Support Unit used in test configuration and system

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.	GPS Station	ADIVIC	MP9000	N/A	N/A	Unshielded, 1.8 m
4.	Glonass Station	RACELOGIC	RLLS03-2RP	N/A	N/A	Unshielded, 1.8 m
5.	WLAN AP	TP-Link	TL-WDR5600	N/A	N/A	Unshielded, 1.8 m
6.	WLAN AP	Linksys	WRT600N	Q87-WRT600NV11	N/A	Unshielded, 1.2 m
7.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
8.	Notebook	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
9.	Notebook	Dell	Latitude3440	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
10.	Bluetooth Earphone	Lenovo	LBH301	N/A	N/A	N/A
11.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A
12.	iPod	Apple	A1199	FCC DoC	Unshielded, 1.2 m	N/A
13.	Hard Disk	Lenovo	F310	DoC	Shielded, 0.5m	N/A

2.4. EUT Operation Test Setup

The EUT was in GSM or WCDMA 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 EUT was attached to the Bluetooth earphone or WLAN AP, and the following programs installed in the EUT were programmed during the test.

1. Data application is transferred between Notebook and EUT via USB cable.
2. Turn on GPS/Glonass function to make the EUT receive continuous signals from GPS/Glonass station.
3. Execute "Video player" to play MPEG4 files.
4. Turn on camera to capture images.



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

The measuring equipment is listed in the section 4 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 (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

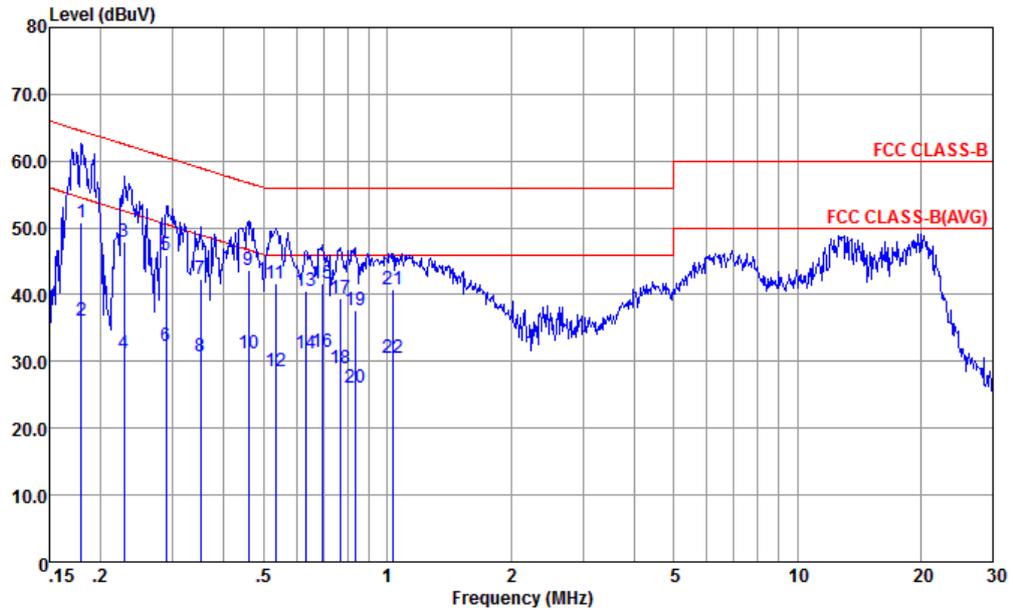
3.1.4 Test Setup





3.1.5 Test Result of AC Conducted Emission

Test Mode :	Mode 3	Temperature :	20~22°C
Test Engineer :	Peter Wei	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 3) + Battery 3 + Earphone + MPEG4		

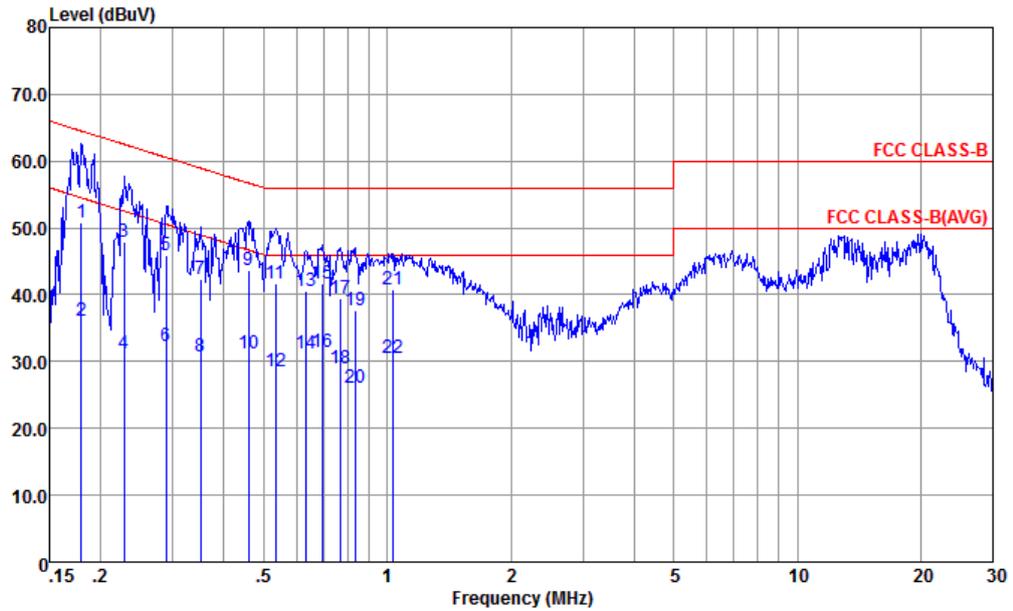


Site : CO01-KS
 Condition : FCC CLASS-B LISN-L-20151024 LINE
 Project : (FC) 692313-02
 Mode : Mode 3
 IMEI : 864356030001672

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.180	50.79	-13.71	64.50	40.09	0.34	10.36	QP
2	0.180	35.99	-18.51	54.50	25.29	0.34	10.36	Average
3	0.228	47.93	-14.59	62.52	37.40	0.22	10.31	QP
4	0.228	31.13	-21.39	52.52	20.60	0.22	10.31	Average
5	0.289	45.89	-14.65	60.54	35.41	0.22	10.26	QP
6	0.289	32.29	-18.25	50.54	21.81	0.22	10.26	Average
7	0.350	42.35	-16.61	58.96	31.90	0.23	10.22	QP
8	0.350	30.65	-18.31	48.96	20.20	0.23	10.22	Average
9 *	0.459	43.62	-13.09	56.71	33.20	0.23	10.19	QP
10	0.459	31.22	-15.49	46.71	20.80	0.23	10.19	Average
11	0.535	41.62	-14.38	56.00	31.20	0.23	10.19	QP
12	0.535	28.52	-17.48	46.00	18.10	0.23	10.19	Average
13	0.634	40.52	-15.48	56.00	30.10	0.24	10.18	QP
14	0.634	31.22	-14.78	46.00	20.80	0.24	10.18	Average
15	0.697	41.62	-14.38	56.00	31.20	0.24	10.18	QP
16	0.697	31.32	-14.68	46.00	20.90	0.24	10.18	Average
17	0.767	39.52	-16.48	56.00	29.11	0.24	10.17	QP



Test Mode :	Mode 3	Temperature :	20~22°C
Test Engineer :	Peter Wei	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 3) + Battery 3 + Earphone + MPEG4		

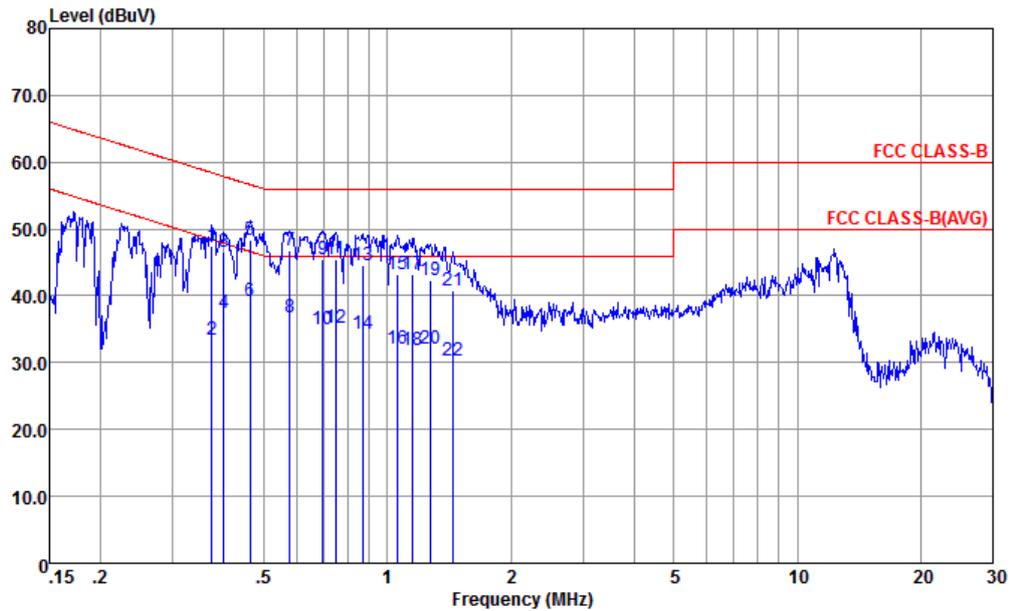


Site : CO01-KS
 Condition : FCC CLASS-B LISN-L-20151024 LINE
 Project : (FC) 692313-02
 Mode : Mode 3
 IMEI : 864356030001672

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
18	0.767	29.02	-16.98	46.00	18.61	0.24	10.17	Average
19	0.835	37.72	-18.28	56.00	27.30	0.24	10.18	QP
20	0.835	26.12	-19.88	46.00	15.70	0.24	10.18	Average
21	1.032	40.74	-15.26	56.00	30.30	0.25	10.19	QP
22	1.032	30.54	-15.46	46.00	20.10	0.25	10.19	Average



Test Mode :	Mode 3	Temperature :	20~22°C
Test Engineer :	Peter Wei	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 3) + Battery 3 + Earphone + MPEG4		

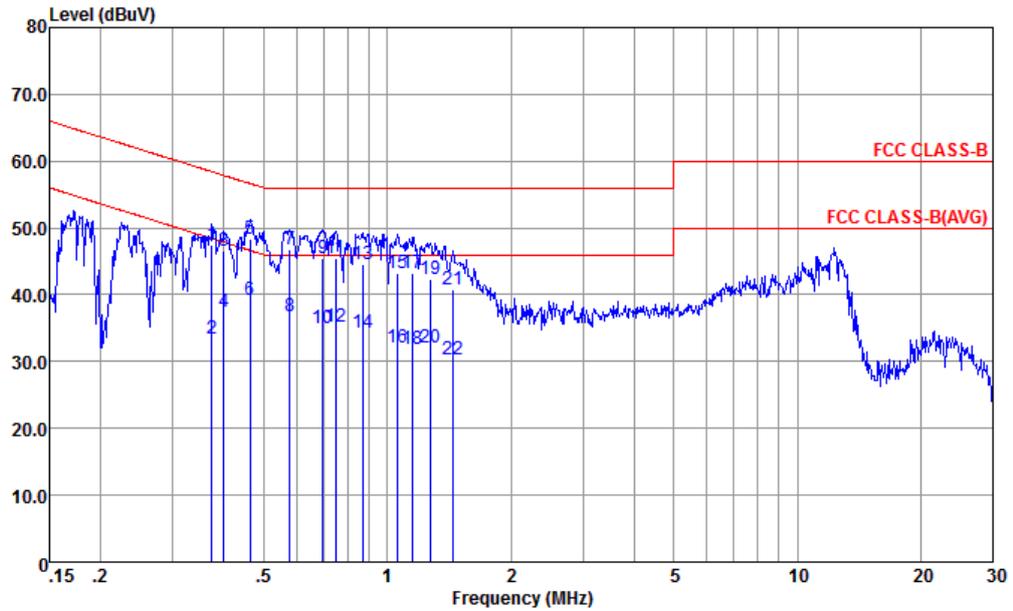


Site : CO01-KS
 Condition : FCC CLASS-B LISN-N-20151024 NEUTRAL
 Project : (FC) 692313-02
 Mode : Mode 3
 IMEI : 864356030001672

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.373	47.43	-11.00	58.43	36.90	0.32	10.21	QP
2	0.373	33.43	-15.00	48.43	22.90	0.32	10.21	Average
3	0.400	46.62	-11.24	57.86	36.10	0.32	10.20	QP
4	0.400	37.42	-10.44	47.86	26.90	0.32	10.20	Average
5	0.464	48.41	-8.22	56.63	37.90	0.32	10.19	QP
6 *	0.464	39.31	-7.32	46.63	28.80	0.32	10.19	Average
7	0.579	46.71	-9.29	56.00	36.20	0.33	10.18	QP
8	0.579	36.71	-9.29	46.00	26.20	0.33	10.18	Average
9	0.697	45.42	-10.58	56.00	34.90	0.34	10.18	QP
10	0.697	34.92	-11.08	46.00	24.40	0.34	10.18	Average
11	0.747	45.42	-10.58	56.00	34.89	0.35	10.18	QP
12	0.747	35.12	-10.88	46.00	24.59	0.35	10.18	Average
13	0.871	44.64	-11.36	56.00	34.10	0.36	10.18	QP
14	0.871	34.34	-11.66	46.00	23.80	0.36	10.18	Average
15	1.060	43.16	-12.84	56.00	32.60	0.37	10.19	QP
16	1.060	32.16	-13.84	46.00	21.60	0.37	10.19	Average
17	1.153	43.16	-12.84	56.00	32.60	0.37	10.19	QP



Test Mode :	Mode 3	Temperature :	20~22°C
Test Engineer :	Peter Wei	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 3) + Battery 3 + Earphone + MPEG4		

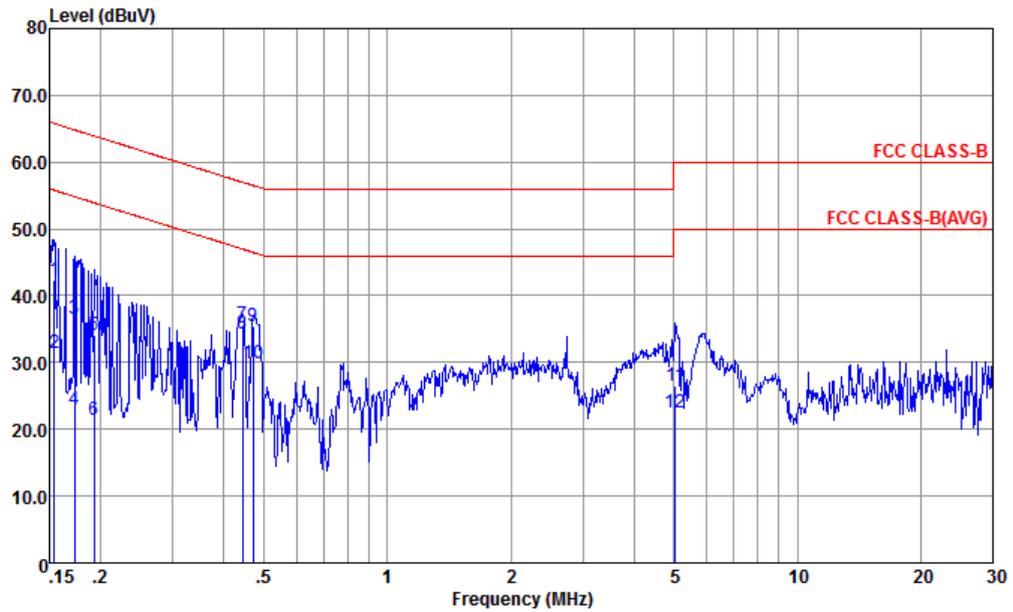


Site : CO01-KS
 Condition : FCC CLASS-B LISN-N-20151024 NEUTRAL
 Project : (FC) 692313-02
 Mode : Mode 3
 IMEI : 864356030001672

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
18	1.153	31.86	-14.14	46.00	21.30	0.37	10.19	Average
19	1.276	42.26	-13.74	56.00	31.70	0.37	10.19	QP
20	1.276	32.06	-13.94	46.00	21.50	0.37	10.19	Average
21	1.441	40.76	-15.24	56.00	30.19	0.38	10.19	QP
22	1.441	30.26	-15.74	46.00	19.69	0.38	10.19	Average



Test Mode :	Mode 5	Temperature :	20~22°C
Test Engineer :	Peter Wei	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	LTE Band 4 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + Battery 3 + Earphone + GPS Rx		

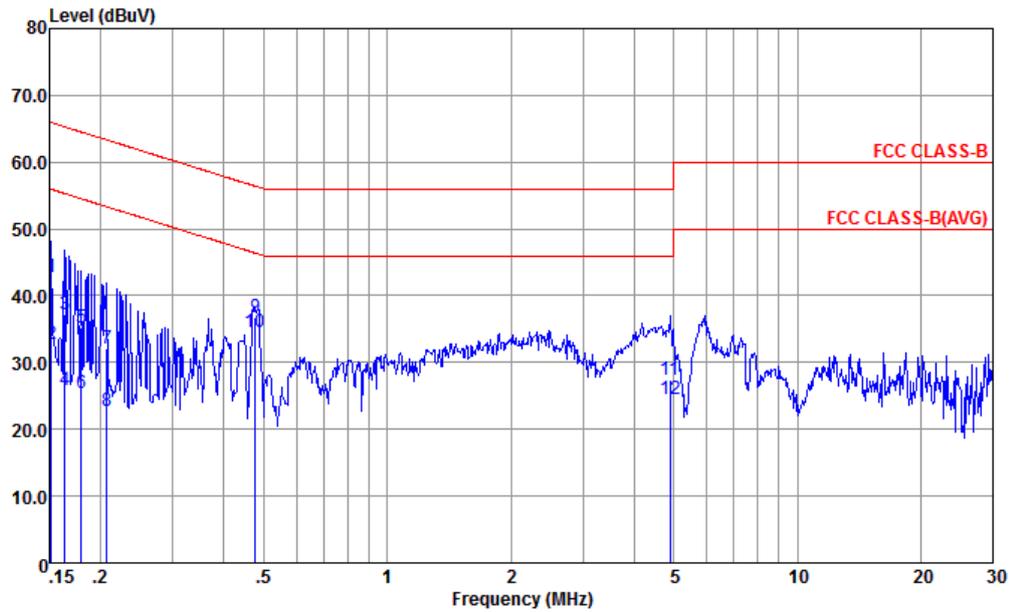


Site : CO01-KS
 Condition : FCC CLASS-B LISN-L-20151024 LINE
 Project : (FC) 692313-02
 Mode : Mode 5
 IMEI : 864356030001672

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.154	42.39	-23.39	65.78	31.50	0.50	10.39	QP
2	0.154	31.49	-24.29	55.78	20.60	0.50	10.39	Average
3	0.173	36.64	-28.17	64.81	25.90	0.38	10.36	QP
4	0.173	23.04	-31.77	54.81	12.30	0.38	10.36	Average
5	0.192	34.20	-29.73	63.93	23.60	0.26	10.34	QP
6	0.192	21.30	-32.63	53.93	10.70	0.26	10.34	Average
7	0.444	35.62	-21.36	56.98	25.20	0.23	10.19	QP
8 *	0.444	34.42	-12.56	46.98	24.00	0.23	10.19	Average
9	0.471	35.42	-21.07	56.49	25.00	0.23	10.19	QP
10	0.471	29.92	-16.57	46.49	19.50	0.23	10.19	Average
11	5.031	26.54	-33.46	60.00	16.11	0.19	10.24	QP
12	5.031	22.54	-27.46	50.00	12.11	0.19	10.24	Average



Test Mode :	Mode 5	Temperature :	20~22°C
Test Engineer :	Peter Wei	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	LTE Band 4 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + Battery 3 + Earphone + GPS Rx		



Site : CO01-KS
 Condition : FCC CLASS-B LISN-N-20151024 NEUTRAL
 Project : (FC) 692313-02
 Mode : Mode 5
 IMEI : 864356030001672

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.152	42.79	-23.12	65.91	32.10	0.30	10.39	QP
2	0.152	32.79	-23.12	55.91	22.10	0.30	10.39	Average
3	0.163	37.18	-28.12	65.30	26.50	0.30	10.38	QP
4	0.163	25.88	-29.42	55.30	15.20	0.30	10.38	Average
5	0.180	35.26	-29.24	64.50	24.59	0.31	10.36	QP
6	0.180	25.46	-29.04	54.50	14.79	0.31	10.36	Average
7	0.207	32.14	-31.18	63.32	21.50	0.31	10.33	QP
8	0.207	22.74	-30.58	53.32	12.10	0.31	10.33	Average
9	0.476	36.81	-19.60	56.41	26.30	0.32	10.19	QP
10 *	0.476	34.51	-11.90	46.41	24.00	0.32	10.19	Average
11	4.900	27.50	-28.50	56.00	16.90	0.36	10.24	QP
12	4.900	24.50	-21.50	46.00	13.90	0.36	10.24	Average



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

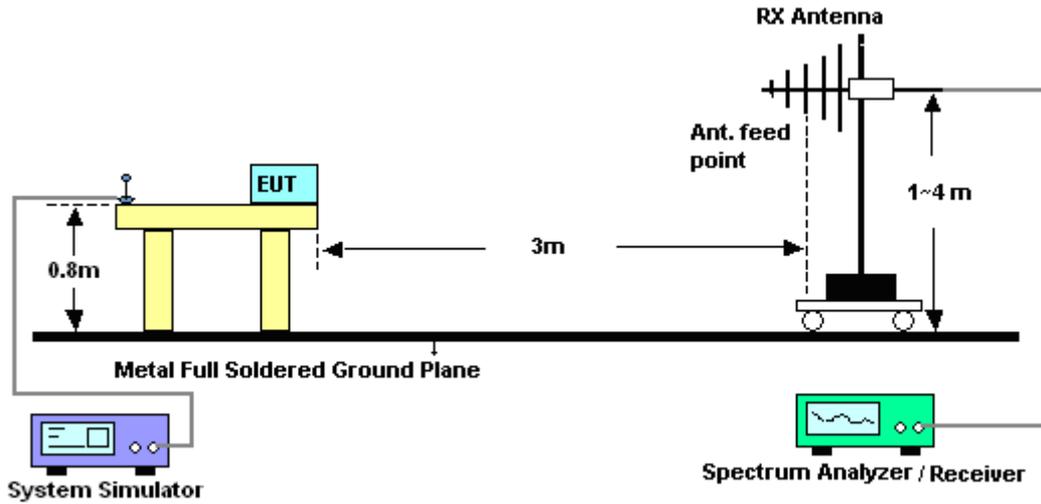
The measuring equipment is listed in the section 4 of this test report.

3.2.3. Test Procedures

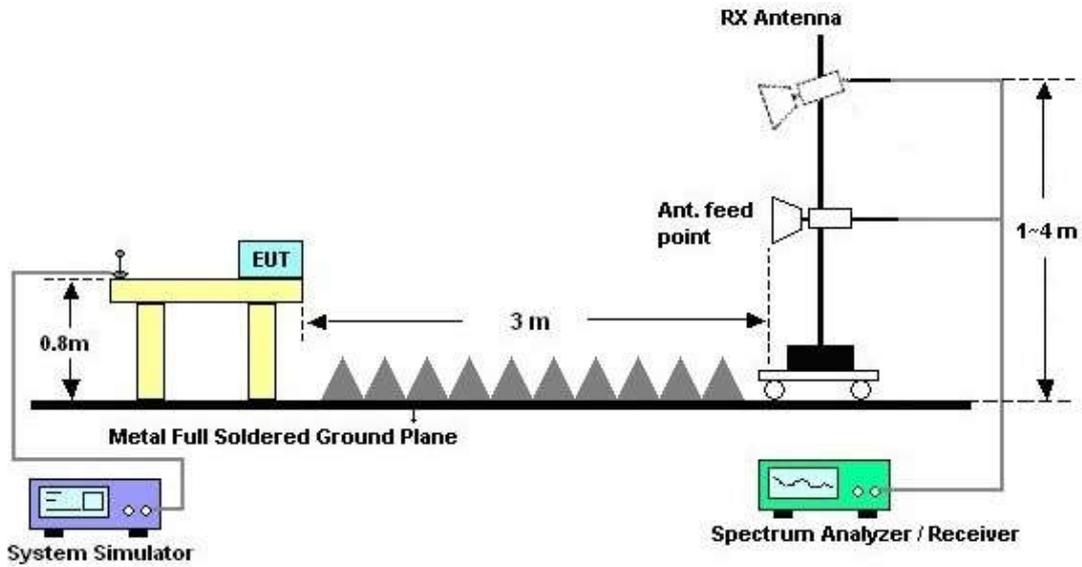
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna 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 (RBW=120kHz/VBW=300kHz for frequency below 1GHz; RBW=1MHz VBW=3MHz (Peak), RBW=1MHz/VBW=10Hz (Average) for frequency above 1GHz).
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 (dBµV/m) = 20 log Emission level (µV/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



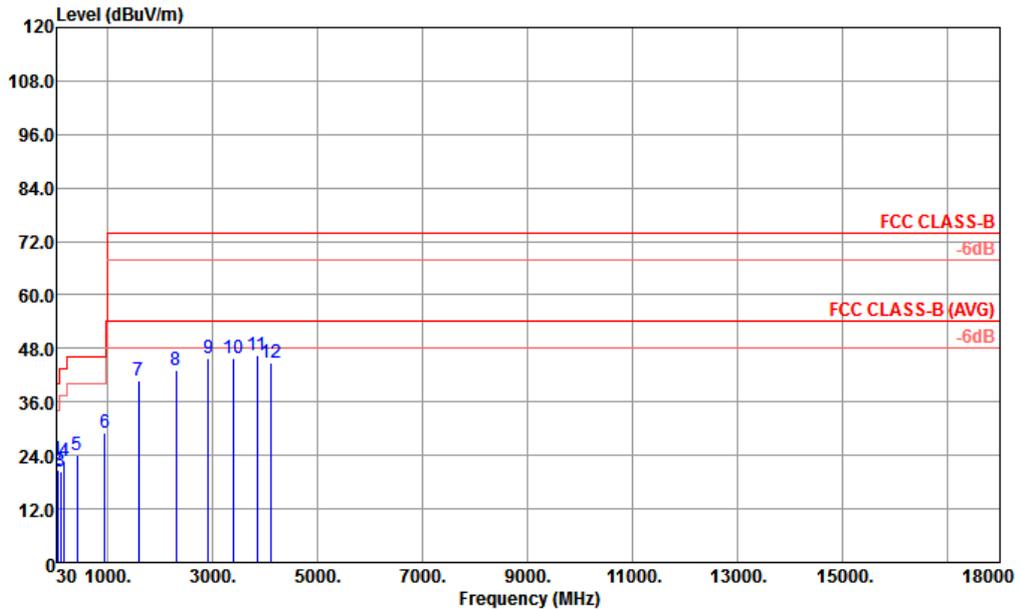
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

Test Mode :	Mode 2	Temperature :	21~22°C
Test Engineer :	Carl Ni	Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 2) + Battery 2 + Earphone + Camera (Front)		

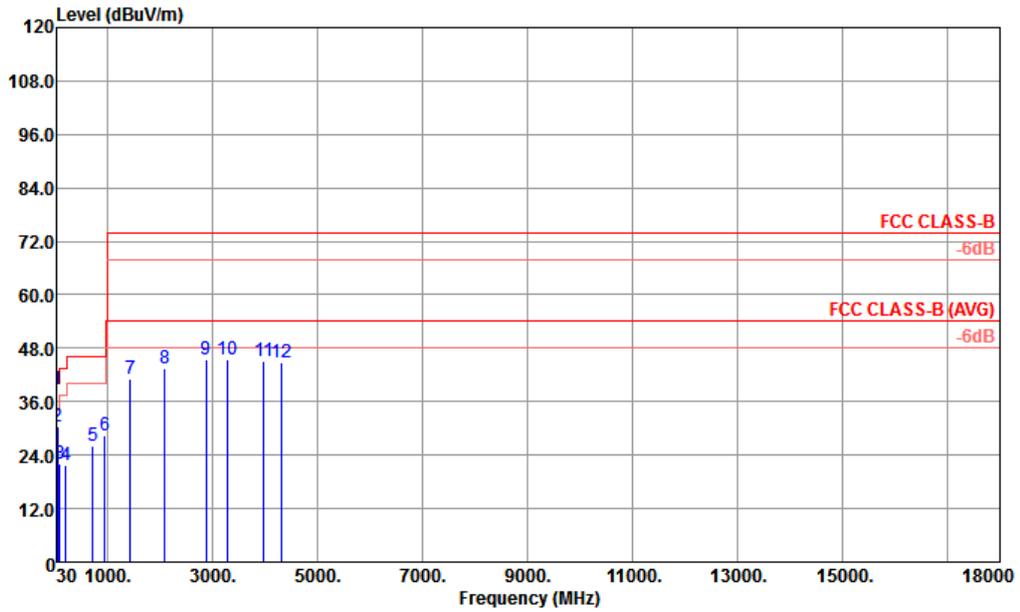


Site : 03CH02-KS
 Condition : FCC CLASS-B 3m 966-02 LF ANT HORIZONTAL
 Project : (FC) 692313-02
 Mode : 2
 IMEI : 864356030001870 #9

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	41.88	23.14	-16.86	40.00	33.76	21.10	0.13	31.85	100	0 Peak
2	55.11	20.79	-19.21	40.00	38.35	13.90	0.15	31.61	---	Peak
3	104.52	20.52	-22.98	43.50	33.57	18.24	0.24	31.53	---	Peak
4	184.44	22.80	-20.70	43.50	37.99	15.99	0.39	31.57	---	Peak
5	425.30	24.13	-21.87	46.00	28.40	24.88	0.93	30.08	---	Peak
6	958.00	29.04	-16.96	46.00	25.09	28.61	1.75	26.41	---	Peak
7	1596.00	40.71	-33.29	74.00	43.87	28.94	4.13	36.23	---	Peak
8	2308.00	43.28	-30.72	74.00	40.06	31.31	5.67	33.76	---	Peak
9	2916.00	45.66	-28.34	74.00	38.60	32.39	2.95	28.28	---	Peak
10	3396.00	45.64	-28.36	74.00	36.99	33.66	5.93	30.94	---	Peak
11	3855.00	46.55	-27.45	74.00	36.97	34.64	6.53	31.59	---	Peak
12	4116.00	44.77	-29.23	74.00	35.22	35.00	6.39	31.84	---	Peak



Test Mode :	Mode 2	Temperature :	21~22°C
Test Engineer :	Carl Ni	Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Vertical
Function Type :	GSM1900 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter 2) + Battery 2 + Earphone + Camera (Front)		

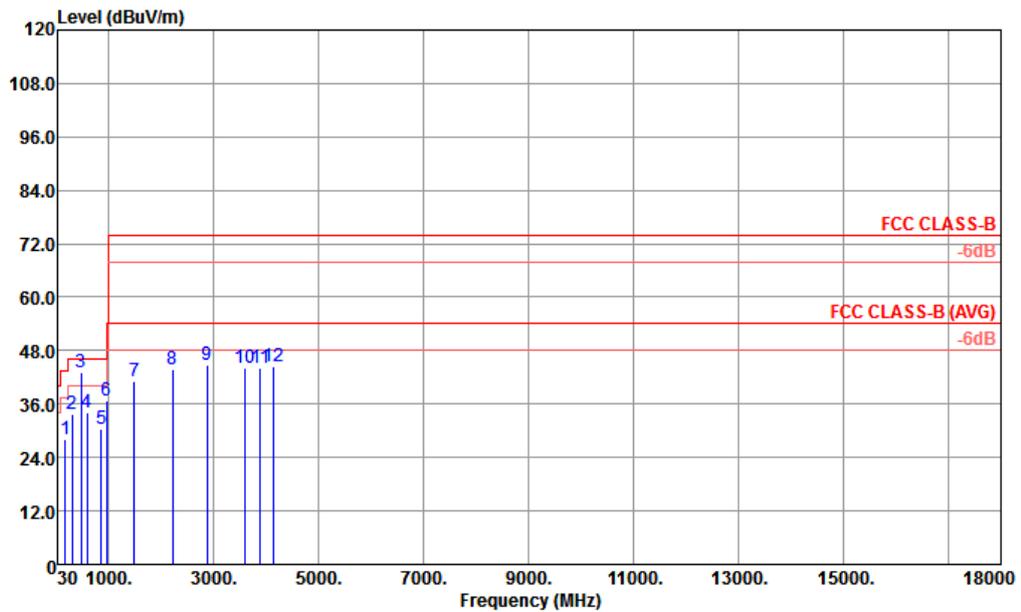


Site : 03CH02-KS
 Condition : FCC CLASS-B 3m 966-02 LF ANT VERTICAL
 Project : (FC) 692313-02
 Mode : 2
 IMEI : 864356030001870 #9

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 !	42.15	38.76	-1.24	40.00	49.80	20.70	0.13	31.87	100	0 QP
2	54.30	30.47	-9.53	40.00	47.82	14.12	0.15	31.62	---	Peak
3	88.86	22.15	-21.35	43.50	36.84	16.75	0.21	31.65	---	Peak
4	203.88	21.63	-21.87	43.50	36.74	15.46	0.42	30.99	---	Peak
5	728.40	26.18	-19.82	46.00	26.55	26.45	1.28	28.10	---	Peak
6	945.40	28.53	-17.47	46.00	25.03	28.32	1.71	26.53	---	Peak
7	1436.00	41.23	-32.77	74.00	45.12	28.66	3.53	36.08	---	Peak
8	2088.00	43.59	-30.41	74.00	42.26	30.79	5.05	34.51	---	Peak
9	2874.00	45.63	-28.37	74.00	38.46	32.27	2.85	27.95	---	Peak
10	3282.00	45.55	-28.45	74.00	37.08	33.51	6.01	31.05	---	Peak
11	3975.00	45.21	-28.79	74.00	35.97	34.81	6.14	31.71	---	Peak
12	4308.00	44.71	-29.29	74.00	35.54	35.18	5.55	31.56	---	Peak



Test Mode :	Mode 5	Temperature :	21~22°C
Test Engineer :	Carl Ni	Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	LTE Band 4 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + Battery 2 + Earphone + GPS Rx		

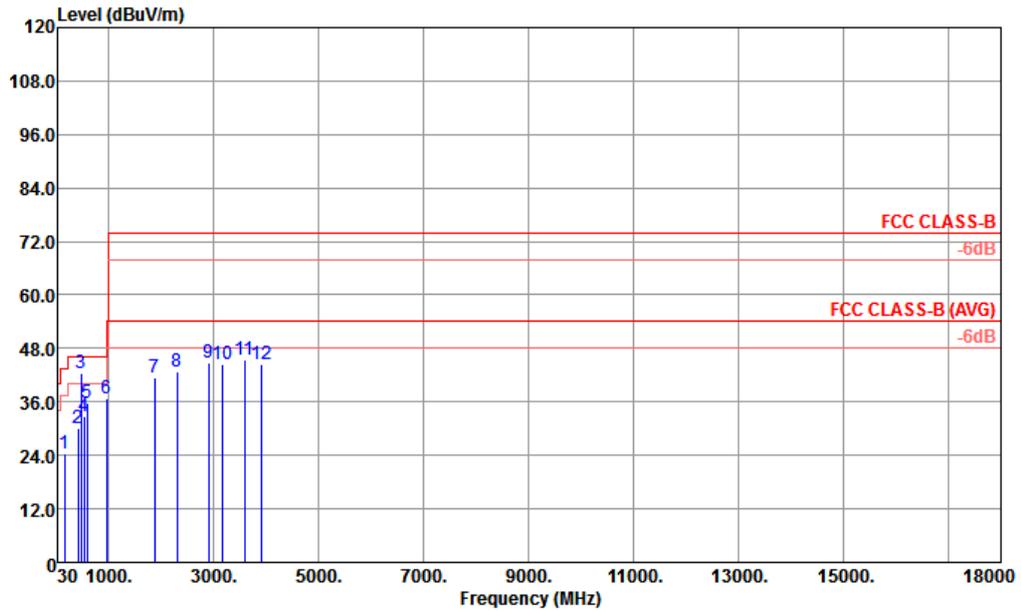


Site : 03CH02-KS
 Condition : FCC CLASS-B 3m 966-02 LF ANT HORIZONTAL
 Project : (FC) 692313-02
 Mode : 5
 IMEI : 864356030001870 #9

	Freq	Level	Over Limit	Limit Line	ReadAntenna 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	173.56	28.07	-15.43	43.50	42.70	16.54	0.37	31.54	---	---	Peak
2	314.21	33.91	-12.09	46.00	45.39	18.55	0.63	30.66	---	---	Peak
3	480.08	42.98	-3.02	46.00	48.39	23.37	0.92	29.70	100	0	Peak
4	600.36	34.13	-11.87	46.00	37.78	24.34	0.90	28.89	---	---	Peak
5	862.26	30.55	-15.45	46.00	28.96	27.30	1.45	27.16	---	---	Peak
6	960.23	36.77	-17.23	54.00	32.75	28.66	1.75	26.39	---	---	Peak
7	1500.00	40.98	-33.02	74.00	44.59	28.76	3.79	36.16	---	---	Peak
8	2222.00	43.87	-30.13	74.00	41.04	31.22	5.78	34.17	---	---	Peak
9	2874.00	44.91	-29.09	74.00	37.74	32.27	2.85	27.95	---	---	Peak
10	3597.00	44.01	-29.99	74.00	35.06	33.90	6.09	31.04	---	---	Peak
11	3900.00	44.27	-29.73	74.00	34.72	34.72	6.47	31.64	---	---	Peak
12	4140.00	44.59	-29.41	74.00	34.87	35.05	6.53	31.86	---	---	Peak



Test Mode :	Mode 5	Temperature :	21~22°C
Test Engineer :	Carl Ni	Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Vertical
Function Type :	LTE Band 4 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + Battery 2 + Earphone + GPS Rx		



Site : 03CH02-KS
 Condition : FCC CLASS-B 3m 966-02 LF ANT VERTICAL
 Project : (FC) 692313-02
 Mode : 5
 IMEI : 864356030001870 #9

	Freq	Level	Over Limit	Limit Line	ReadAntenna 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	165.80	24.41	-19.09	43.50	38.59	16.91	0.35	31.44	---	---	Peak
2	418.97	30.14	-15.86	46.00	34.34	25.00	0.94	30.14	---	---	Peak
3	480.08	42.54	-3.46	46.00	47.95	23.37	0.92	29.70	100	0	Peak
4	540.22	32.77	-13.23	46.00	36.97	24.36	0.88	29.44	---	---	Peak
5	600.36	35.86	-10.14	46.00	39.51	24.34	0.90	28.89	---	---	Peak
6	960.23	36.92	-17.08	54.00	32.90	28.66	1.75	26.39	---	---	Peak
7	1874.00	41.54	-32.46	74.00	42.91	29.47	4.54	35.38	---	---	Peak
8	2302.00	42.79	-31.21	74.00	39.57	31.31	5.67	33.76	---	---	Peak
9	2902.00	44.75	-29.25	74.00	37.73	32.35	2.95	28.28	---	---	Peak
10	3177.00	44.41	-29.59	74.00	36.23	33.33	5.73	30.88	---	---	Peak
11	3600.00	45.52	-28.48	74.00	36.57	33.90	6.09	31.04	---	---	Peak
12	3906.00	44.50	-29.50	74.00	34.95	34.72	6.47	31.64	---	---	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	Apr. 29, 2016	Feb. 10, 2017	Apr. 28, 2017	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2016	Feb. 10, 2017	Oct. 12, 2017	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 13, 2016	Feb. 10, 2017	Oct. 12, 2017	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP0000008 11	AC 0V~300V, 45Hz~1000Hz	Oct. 13, 2016	Feb. 10, 2017	Oct. 12, 2017	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Aug. 09, 2016	Feb. 23, 2017	Aug. 08, 2017	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150208	10Hz~44GHz, MAX 30dB	Apr. 22, 2016	Feb. 23, 2017	Apr. 21, 2017	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30MHz~2GHz	Aug. 20, 2016	Feb. 23, 2017	Aug. 19, 2017	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 22, 2016	Feb. 23, 2017	Oct. 21, 2017	Radiation (03CH02-KS)
Amplifier	com-power	PA-103A	161069	1kHz~1000MHz / 32 dB	Apr. 22, 2016	Feb. 23, 2017	Apr. 21, 2017	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A02384	1-26.5GHz Gain 30dB	Oct. 13, 2016	Feb. 23, 2017	Oct. 12, 2017	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	61601000247 3	N/A	NCR	Feb. 23, 2017	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Feb. 23, 2017	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Feb. 23, 2017	NCR	Radiation (03CH02-KS)

NCR: No Calibration Required



5. Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.3dB
---	-------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2dB
---	-------

Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.7dB
---	-------