



FCC Test Report

APPLICANT : Sonim Technologies, Inc.
EQUIPMENT : LTE Phone
BRAND NAME : Sonim
MODEL NAME : XP5800(PC2111)
FCC ID : WYPPC2100
STANDARD : FCC 47 CFR FCC Part 15 Subpart B
CLASSIFICATION : Certification

The product was received on Sep. 21, 2017 and testing was completed on Nov. 20, 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.



Approved by: James Huang / Manager

Sporton International (Kunshan) Inc.

**No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335
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 EUT8

 1.6. Test Location8

 1.7. Applicable Standards8

2. TEST CONFIGURATION OF EQUIPMENT UNDER TEST.....9

 2.1. Test Mode9

 2.2. Connection Diagram of Test System10

 2.3. Support Unit used in test configuration and system.....11

 2.4. EUT Operation Test Setup11

3. TEST RESULT.....12

 3.1. Test of AC Conducted Emission Measurement12

 3.2. Test of Radiated Emission Measurement18

4. LIST OF MEASURING EQUIPMENT22

5. UNCERTAINTY OF EVALUATION23

APPENDIX A. SETUP PHOTOGRAPHS



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.107	AC Conducted Emission	< 15.107 limits	PASS	Under limit 7.32 dB at 0.164 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 1.74 dB at 344.28 MHz for Quasi-Peak



1. General Description

1.1. Applicant

Sonim Technologies, Inc.
1825 S. Grant St., Suite 200., San Mateo, CA, 94402

1.2. Manufacturer

Sonim Technologies (Shenzhen) Limited
2nd Floor, No. 2 Building Phase B, Daqian Industrial park, Longchang Road, 67 District, Baoan, Shenzhen, P. R. China

1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	LTE Phone
Brand Name	Sonim
Model Name	XP5800(PC2111)
FCC ID	WYPPC2100
EUT supports Radios application	CDMA/EV-DO/GSM/GPRS/EGPRS/WCDMA/HSPA/ DC-HSDPA/HSPA+(16QAM uplink is not supported)/LTE WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 Bluetooth v3.0 + EDR/Bluetooth v4.0 LE /Bluetooth v4.2 LE
IMEI Code	Conduction: 001080001912444/001080001912451 Radiation: 001080001912824/0010800001912832
HW Version	A
SW Version	5SA.0.0-00-7.1.2-00.25.01
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 7 : 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13 : 779.5 MHz ~ 784.5 MHz LTE Band 14 : 790.5 MHz ~ 795.5 MHz LTE Band 25 : 1850.7 MHz ~ 1914.3 MHz LTE Band 26 : 814.7 MHz ~ 848.3 MHz LTE Band 30 : 2307.5 MHz ~ 2312.5 MHz LTE Band 38 : 2572.5 MHz ~ 2617.5 MHz LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz LTE Band 66 : 1710.7 MHz ~ 1779.3 MHz CDMA2000 BC0 : 824.70 MHz ~ 848.31 MHz CDMA2000 BC1 : 1851.25 MHz ~ 1908.75 MHz CDMA2000 BC10 : 817.9 MHz ~ 823.1 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz ; 5745 MHz ~ 5825 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 7 : 2622.5 MHz ~ 2687.5 MHz LTE Band 12 : 729.7 MHz ~ 745.3 MHz LTE Band 13 : 748.5 MHz ~ 753.5 MHz LTE Band 14 : 760.5 MHz ~ 765.5 MHz LTE Band 25 : 1930.7 MHz ~ 1994.3 MHz LTE Band 26 : 859.7 MHz ~ 893.3 MHz LTE Band 30 : 2352.5 MHz ~ 2357.5 MHz LTE Band 38 : 2572.5 MHz ~ 2617.5 MHz LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz LTE Band 66 : 2110.7 MHz ~ 2179.3 MHz CDMA2000 BC0 : 869.70 MHz ~ 893.31 MHz CDMA2000 BC1 : 1931.25 MHz ~ 1988.75 MHz CDMA2000 BC10 : 862.9 MHz ~ 868.1 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz ; 5745 MHz ~ 5825 MHz



	Bluetooth: 2402 MHz ~ 2480 MHz GNSS : 1559 MHz ~ 1610 MHz FM : 88 MHz ~ 108 MHz
Antenna Type	WWAN: PIFA Antenna WLAN: PIFA Antenna Bluetooth: PIFA Antenna GNSS: IFA Antenna FM: External headset Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA : BPSK (Uplink) HSDPA/DC-HSDPA : QPSK (Uplink) HSUPA : QPSK (Uplink) HSPA+ : 16QAM (16QAM uplink is not supported) DC-HSDPA : 64QAM LTE: QPSK / 16QAM CDMA2000 : QPSK CDMA2000 1xEV-DO : QPSK / 8PSK 802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : $\pi/4$ -DQPSK Bluetooth (3Mbps) : 8-DPSK GNSS : BPSK FM



1.5. Modification of EUT

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

1.6. Test Location

Sporton Lab is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0) and the FCC designation No. is CN5013.

Test Site	Sporton International (Kunshan) Inc.		
Test Site Location	No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335 China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.		FCC Test Firm Registration No.
	CO01-KS	03CH02-KS	630927

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

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

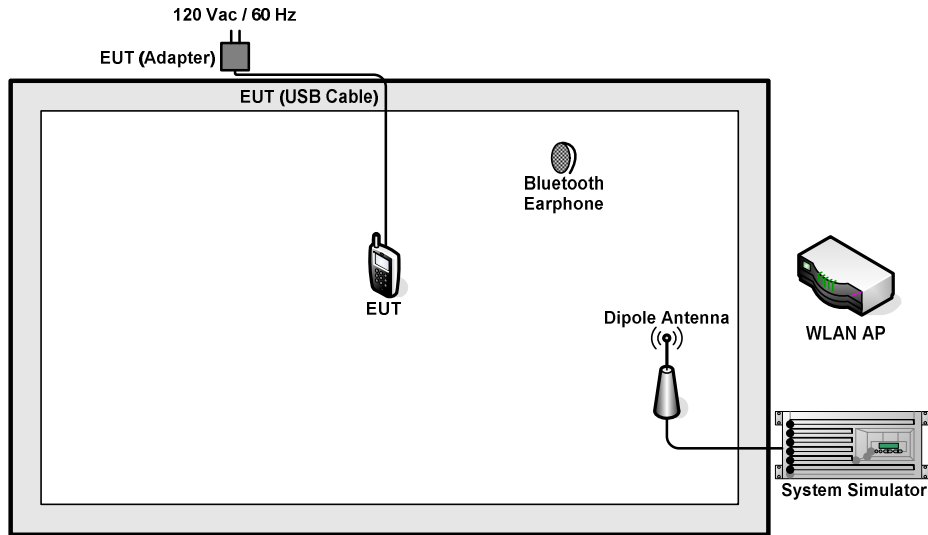
2.1. Test Mode

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.

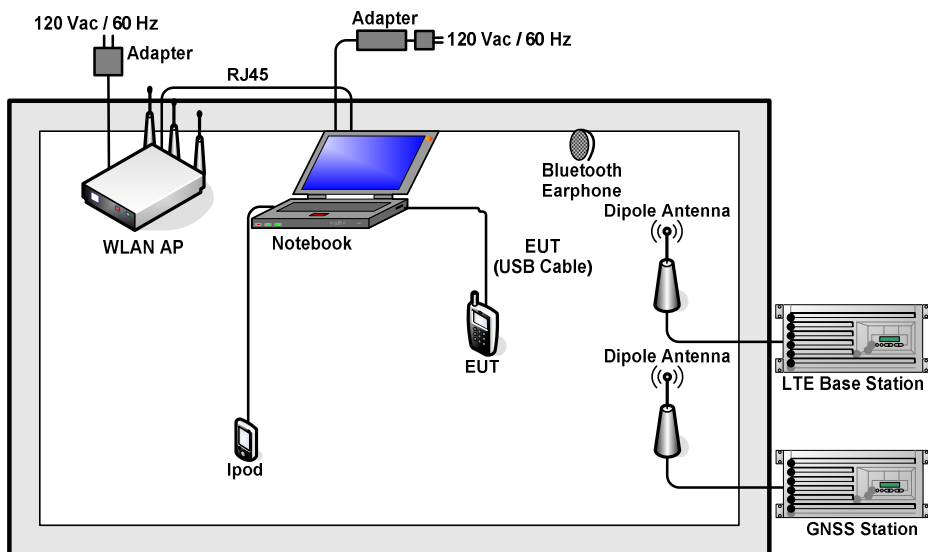
Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
AC Conducted Emission	Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable 1(Charging from Adapter) + Camera + SIM 1 <Fig. 1>
	Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable 1(Charging from Adapter) + Camera + SIM 2 <Fig. 1>
	Mode 3: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable 1(Charging from Adapter) + MPEG4 + SIM 1 <Fig. 1>
	Mode 4: LTE Band4 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable 1(Data Link with Notebook) + GNSS RX + SIM2 <Fig. 2>
	Mode 5: LTE Band4 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable 2(Data Link with Notebook) + GNSS RX + SIM2<Fig. 2>
	Mode 6: GSM850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable 2(Charging from Adapter) + Camera + SIM 1<Fig. 1>
Radiated Emissions	Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable 1(Charging from Adapter) + Camera(Rear) + SIM 1 <Fig. 1>
	Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable 1(Charging from Adapter) + Camera(Rear) + SIM 2 <Fig. 1>
	Mode 3: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable 1(Charging from Adapter) + MPEG4 + SIM 1 <Fig. 1>
	Mode 4: LTE Band4 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable 1(Data Link with Notebook) + GNSS RX + SIM2 <Fig. 2>
	Mode 5: LTE Band4 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable 2(Data Link with Notebook) + GNSS RX + SIM2<Fig. 2>
	Mode 6: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable 2(Charging from Adapter) + MPEG4 + SIM 1
Remark:	
<ol style="list-style-type: none"> The worst case of AC is mode 1; and the worst case of USB Link mode is mode 4, the test data of these modes were reported. The worst case of RE is mode 4, only the test data of this mode was reported. Data Link with Notebook means data application transferred mode between EUT and Notebook. 	

2.2. Connection Diagram of Test System



<Fig. 1>



<Fig. 2>

2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	System Simulator	R&S	CMU200	N/A	N/A	Unshielded, 1.8 m
3.	LABSAT GPS Simulator	RACELOGIC	RLLS03-2RP	N/A	N/A	Unshielded, 1.8 m
4.	WLAN AP	LINKSYS	WRT600N	Q87-WRT600NV11	N/A	Unshielded, 1.8m
5.	WLAN AP	TP-Link	TL-WDR5600	N/A	N/A	Unshielded, 1.8m
6.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A
7.	Bluetooth Earphone	Lenovo	LBH301	N/A	N/A	N/A
8.	Notebook	DELL	Latitude3440	N/A	N/A	AC I/P : Unshielded, 1.8m DC O/P : Shielded, 1.8m
9.	Notebook	Lenovo	G480	N/A	N/A	AC I/P : Unshielded, 1.8m DC O/P : Shielded, 1.8m
10.	SD Card	Kingston	4GB	N/A	N/A	N/A
11.	SD Card	SanDisk	Uitra	N/A	N/A	N/A
12.	iPod	Apple	A1199	FCC DoC	Shielded, 1.2m	N/A

2.4. EUT Operation Test Setup

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. Execute "GPS Test" to make the EUT receive continuous signals from GNSS 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.

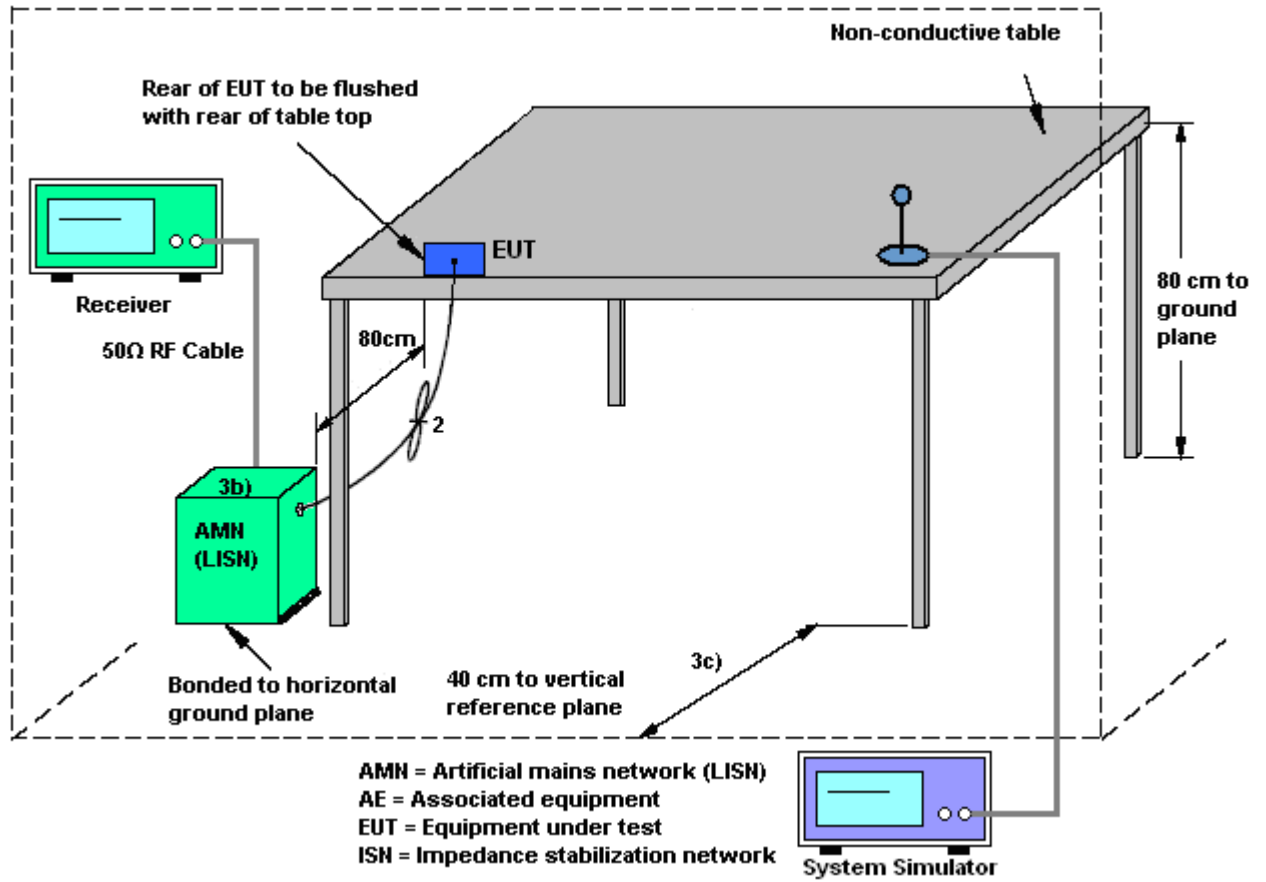
3.1.2 Measuring Instruments

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.

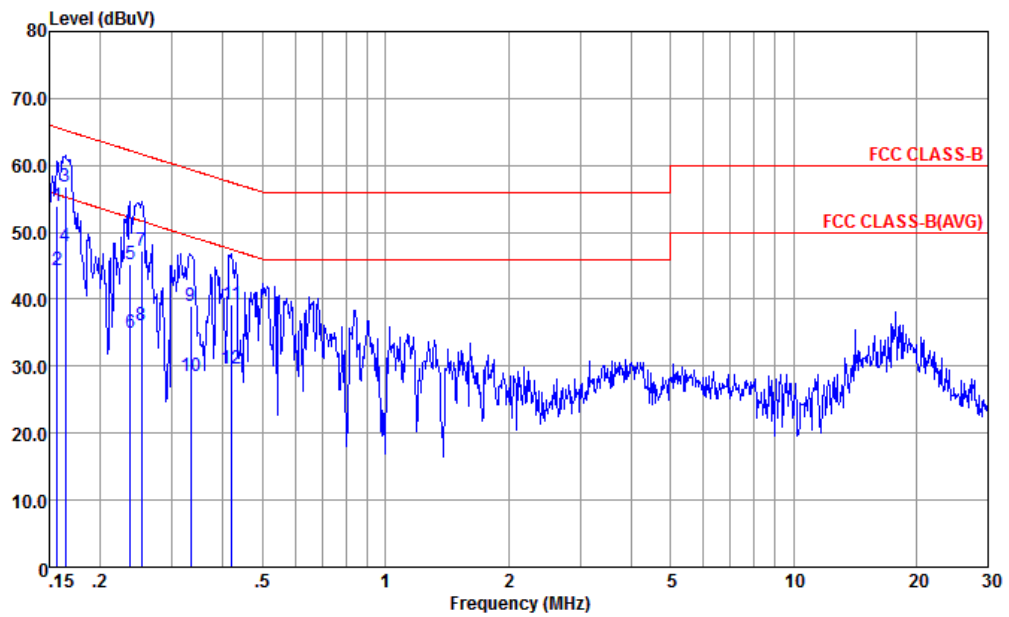
3.1.4 Test Setup





3.1.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Amos Zhang	Relative Humidity :	42~46%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable 1(Charging from Adapter) + Camera + SIM 1		

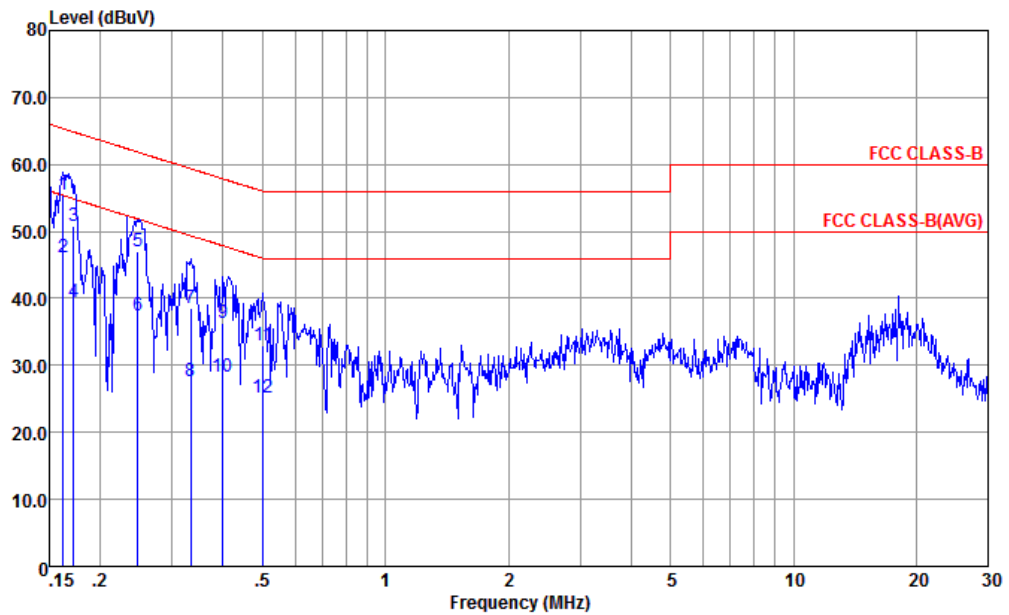


Site : CO01-KS
 Condition : FCC CLASS-B LISN-L-161017-060103 LINE
 Project : (FC) 792101
 mode : Mode 1
 : 001080001912444/001080001912451

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.156	54.00	-11.65	65.65	42.90	0.51	10.59	QP
2	0.156	44.30	-11.35	55.65	33.20	0.51	10.59	Average
3	0.164	56.83	-8.42	65.25	45.80	0.46	10.57	QP
4 *	0.164	47.93	-7.32	55.25	36.90	0.46	10.57	Average
5	0.237	45.21	-17.01	62.22	34.50	0.27	10.44	QP
6	0.237	34.91	-17.31	52.22	24.20	0.27	10.44	Average
7	0.252	47.31	-14.38	61.69	36.60	0.27	10.44	QP
8	0.252	36.21	-15.48	51.69	25.50	0.27	10.44	Average
9	0.334	38.99	-20.36	59.35	28.30	0.27	10.42	QP
10	0.334	28.49	-20.86	49.35	17.80	0.27	10.42	Average
11	0.419	39.26	-18.20	57.46	28.60	0.27	10.39	QP
12	0.419	29.56	-17.90	47.46	18.90	0.27	10.39	Average



Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Amos Zhang	Relative Humidity :	42~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable 1(Charging from Adapter) + Camera + SIM 1		



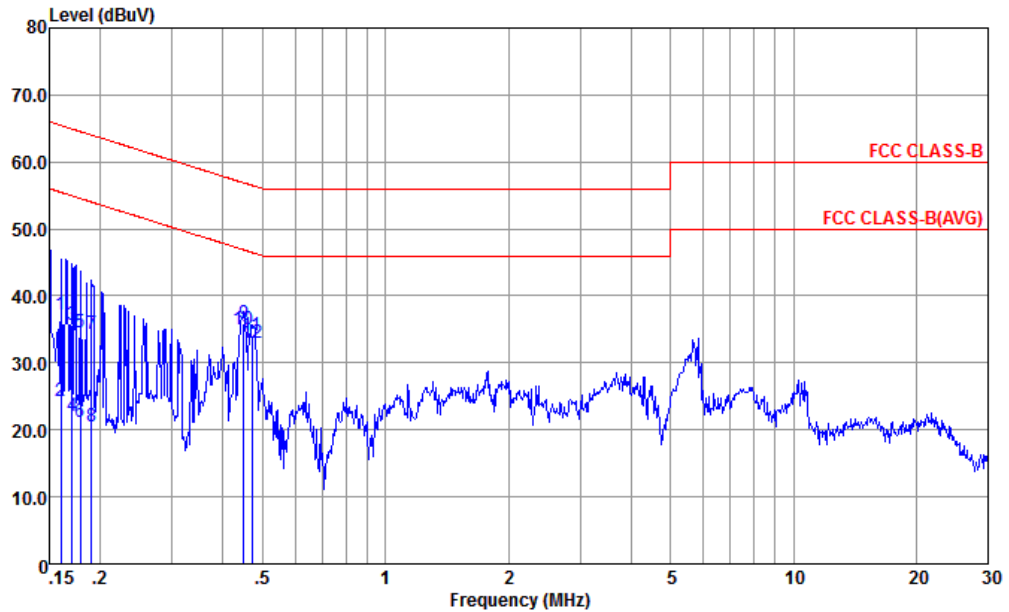
Site : CO01-KS
 Condition : FCC CLASS-B LISN-N-161017-060103 NEUTRAL
 Project : (FC) 792101
 mode : Mode 1

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	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.162	55.41	-9.93	65.34	44.50	0.34	10.57	QP
2 *	0.162	46.21	-9.13	55.34	35.30	0.34	10.57	Average
3	0.172	50.78	-14.08	64.86	39.90	0.34	10.54	QP
4	0.172	39.38	-15.48	54.86	28.50	0.34	10.54	Average
5	0.247	47.08	-14.78	61.86	36.30	0.34	10.44	QP
6	0.247	37.38	-14.48	51.86	26.60	0.34	10.44	Average
7	0.334	38.58	-20.77	59.35	27.80	0.36	10.42	QP
8	0.334	27.68	-21.67	49.35	16.90	0.36	10.42	Average
9	0.400	36.38	-21.48	57.86	25.60	0.37	10.41	QP
10	0.400	28.41	-19.45	47.86	17.63	0.37	10.41	Average
11	0.502	32.98	-23.02	56.00	22.30	0.38	10.30	QP
12	0.502	25.28	-20.72	46.00	14.60	0.38	10.30	Average



Test Mode :	Mode 4	Temperature :	22~24°C
Test Engineer :	Amos Zhang	Relative Humidity :	42~46%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	LTE Band4 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable 1(Data Link with Notebook) + GNSS RX + SIM2		

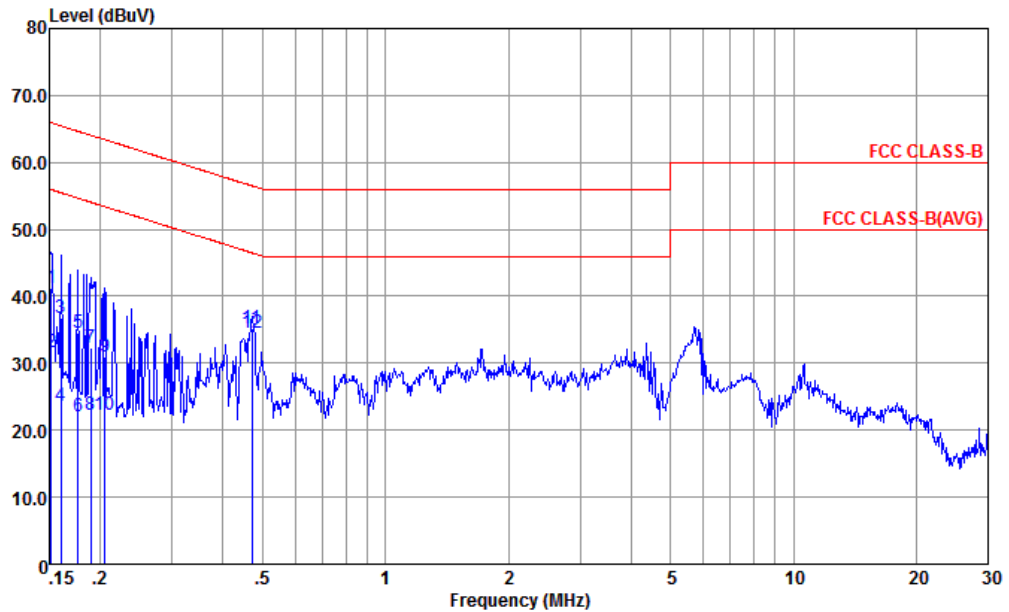


Site : CO01-KS
 Condition : FCC CLASS-B LISN-L-161017-060103 LINE
 Project : (FC) 792101
 mode : Mode 4
 : 001080001912444/001080001912451

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.160	37.27	-28.20	65.47	26.20	0.49	10.58	QP
2	0.160	24.27	-31.20	55.47	13.20	0.49	10.58	Average
3	0.170	35.57	-29.37	64.94	24.60	0.42	10.55	QP
4	0.170	22.17	-32.77	54.94	11.20	0.42	10.55	Average
5	0.179	34.50	-30.05	64.55	23.60	0.38	10.52	QP
6	0.179	21.20	-33.35	54.55	10.30	0.38	10.52	Average
7	0.190	34.40	-29.62	64.02	23.60	0.32	10.48	QP
8	0.190	20.40	-33.62	54.02	9.60	0.32	10.48	Average
9	0.449	35.83	-21.06	56.89	25.20	0.27	10.36	QP
10 *	0.449	35.03	-11.86	46.89	24.40	0.27	10.36	Average
11	0.471	34.20	-22.29	56.49	23.60	0.27	10.33	QP
12	0.471	32.90	-13.59	46.49	22.30	0.27	10.33	Average



Test Mode :	Mode 4	Temperature :	22~24°C
Test Engineer :	Amos Zhang	Relative Humidity :	42~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	LTE Band4 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable 1(Data Link with Notebook) + GNSS RX + SIM2		



Site : CO01-KS
 Condition : FCC CLASS-B LISN-N-161017-060103 NEUTRAL
 Project : (FC) 792101
 mode : Mode 4
 : 001080001912444/001080001912451

	Freq	Level	Over Limit	Limit	Read	LISN	Cable	
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	Remark
1	0.152	41.25	-24.66	65.91	30.30	0.34	10.61	QP
2	0.152	31.75	-24.16	55.91	20.80	0.34	10.61	Average
3	0.160	36.72	-28.75	65.47	25.80	0.34	10.58	QP
4	0.160	23.52	-31.95	55.47	12.60	0.34	10.58	Average
5	0.177	34.46	-30.18	64.64	23.60	0.33	10.53	QP
6	0.177	22.06	-32.58	54.64	11.20	0.33	10.53	Average
7	0.189	32.42	-31.64	64.06	21.60	0.33	10.49	QP
8	0.189	22.32	-31.74	54.06	11.50	0.33	10.49	Average
9	0.205	31.08	-32.32	63.40	20.30	0.33	10.45	QP
10	0.205	22.38	-31.02	53.40	11.60	0.33	10.45	Average
11	0.471	35.31	-21.18	56.49	24.60	0.38	10.33	QP
12 *	0.471	34.61	-11.88	46.49	23.90	0.38	10.33	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

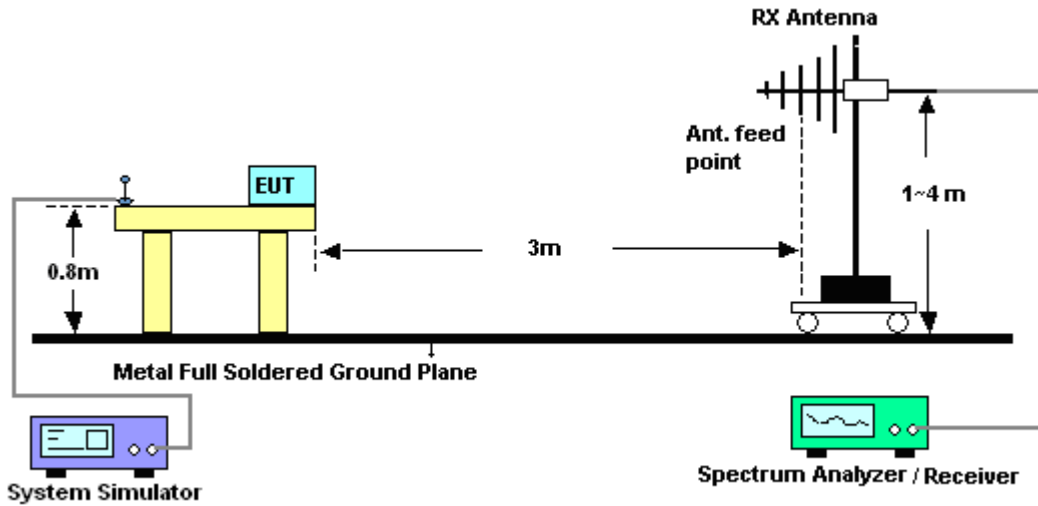
The measuring equipment is listed in the section 4 of this test report.

3.2.3. Test Procedures

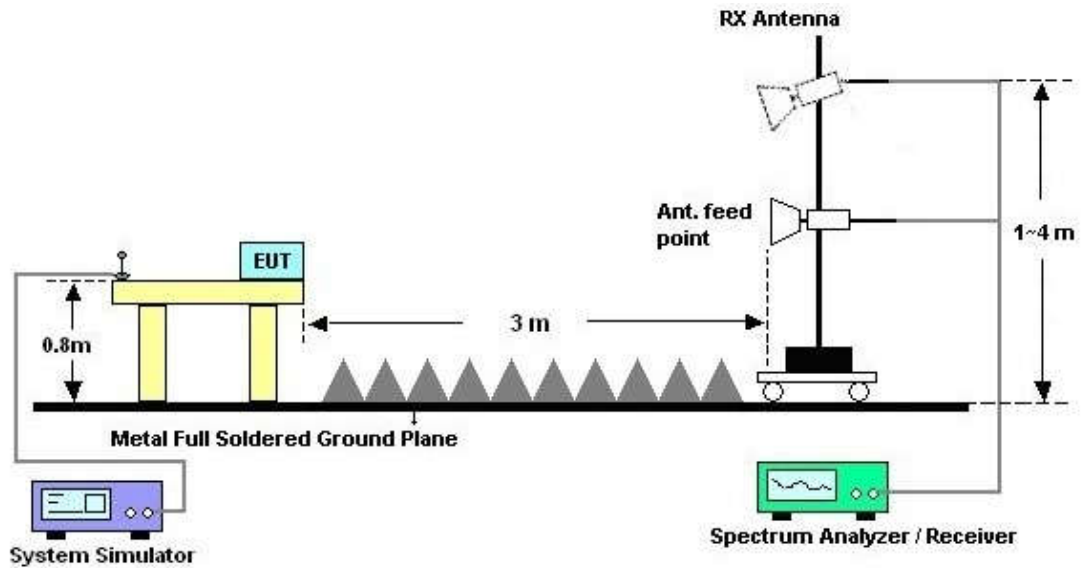
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna 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



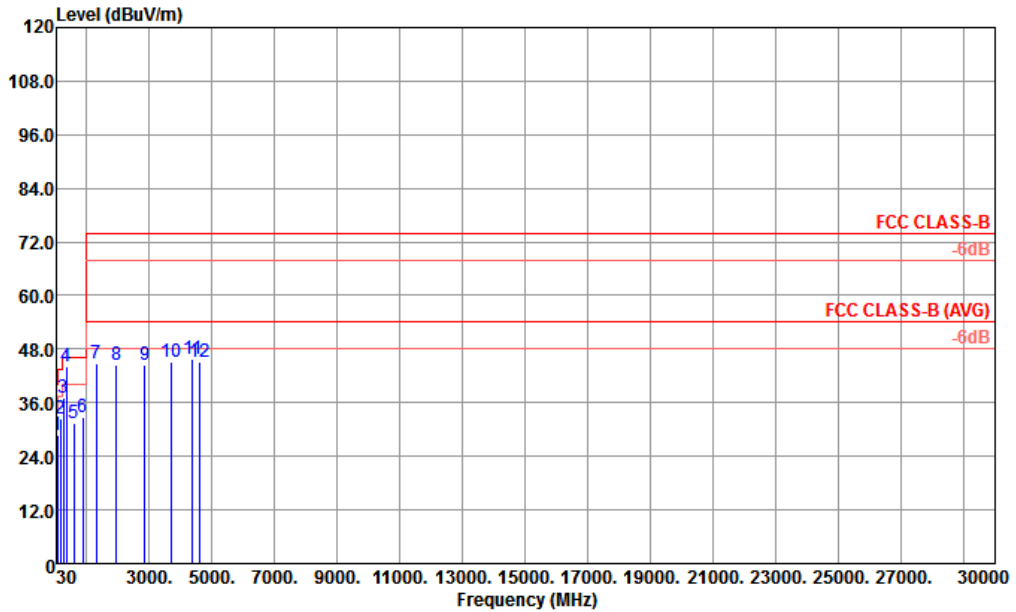
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

Test Mode :	Mode 4	Temperature :	21~22°C
Test Engineer :	Carl Ni	Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	LTE Band4 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable 1(Data Link with Notebook) + GNSS RX + SIM2		

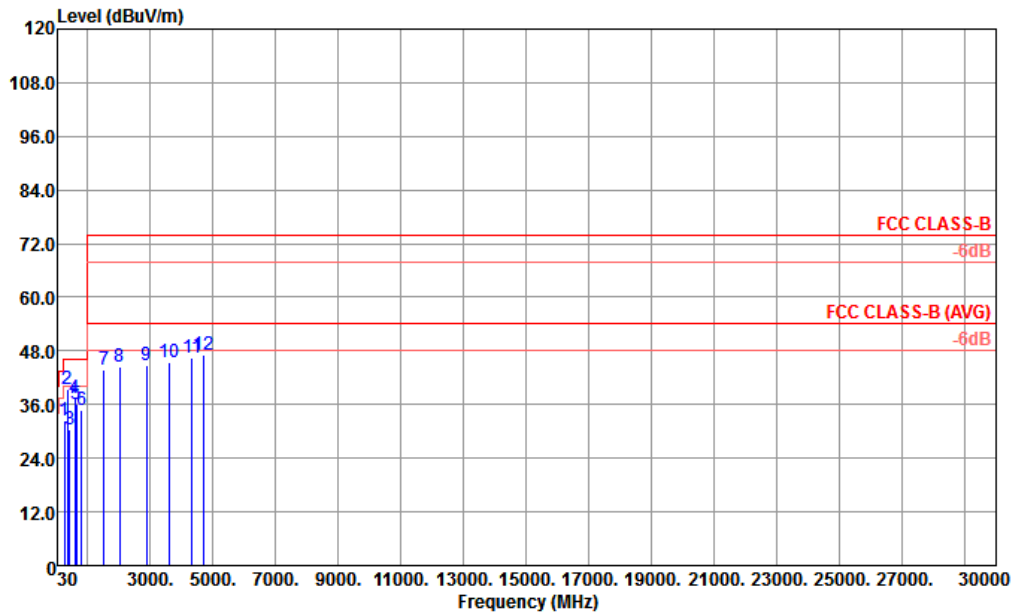


Site : 03CH02-KS
 Condition : FCC CLASS-B 3m 02 LF ANT HORIZONTAL
 Project : (FC) 792101
 Mode : 4
 IMEI : 001080001912824 001080001912832 #6

	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	67.83	28.58	-11.42	40.00	46.93	12.85	0.85	32.05	---	---	Peak
2	165.80	32.42	-11.08	43.50	45.93	16.96	1.32	31.79	---	---	Peak
3	254.07	37.09	-8.91	46.00	49.85	17.00	1.76	31.52	---	---	Peak
4	344.28	44.26	-1.74	46.00	53.61	19.67	1.91	30.93	100	247	QP
5	598.42	31.41	-14.59	46.00	33.86	24.60	2.62	29.67	---	---	Peak
6	869.05	32.70	-13.30	46.00	30.14	27.25	3.07	27.76	---	---	Peak
7	1302.00	44.70	-29.30	74.00	47.86	28.50	3.78	35.44	---	---	Peak
8	1956.00	44.41	-29.59	74.00	42.92	29.96	4.59	33.06	---	---	Peak
9	2856.00	44.51	-29.49	74.00	36.39	32.15	5.87	29.90	---	---	Peak
10	3699.00	45.11	-28.89	74.00	34.32	34.37	6.53	30.11	---	---	Peak
11	4383.00	45.65	-28.35	74.00	34.05	35.72	7.15	31.27	---	---	Peak
12	4590.00	45.06	-28.94	74.00	33.44	35.83	7.64	31.85	---	---	Peak



Test Mode :	Mode 4	Temperature :	21~22°C
Test Engineer :	Carl Ni	Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Vertical
Function Type :	LTE Band4 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable 1(Data Link with Notebook) + GNSS RX + SIM2		



Site : 03CH02-KS
 Condition : FCC CLASS-B 3m 02 LF ANT VERTICAL
 Project : (FC) 792101
 Mode : 4
 IMEI : 001080001912824 001080001912832 #6

	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	255.04	32.33	-13.67	46.00	45.07	17.00	1.77	31.51	---	---	Peak
2	344.28	39.39	-6.61	46.00	48.74	19.67	1.91	30.93	100	0	Peak
3	426.73	30.57	-15.43	46.00	33.93	25.13	2.13	30.62	---	---	Peak
4	600.36	37.30	-8.70	46.00	39.71	24.63	2.62	29.66	---	---	Peak
5	644.01	35.94	-10.06	46.00	37.31	25.31	2.68	29.36	---	---	Peak
6	796.30	34.80	-11.20	46.00	33.98	26.52	2.65	28.35	---	---	Peak
7	1514.00	43.74	-30.26	74.00	45.98	28.85	4.05	35.14	---	---	Peak
8	2012.00	44.44	-29.56	74.00	42.20	30.36	4.63	32.75	---	---	Peak
9	2886.00	44.75	-29.25	74.00	36.29	32.25	5.90	29.69	---	---	Peak
10	3591.00	45.47	-28.53	74.00	35.44	33.67	6.45	30.09	---	---	Peak
11	4335.00	46.46	-27.54	74.00	34.83	35.64	7.19	31.20	---	---	Peak
12	4698.00	47.03	-26.97	74.00	35.92	35.74	7.67	32.30	---	---	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. 20, 2017	Oct. 16, 2017	Apr. 19, 2018	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2017	Oct. 16, 2017	Oct. 12, 2018	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 13, 2017	Oct. 16, 2017	Oct. 12, 2018	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP0000008 11	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2017	Oct. 16, 2017	Oct. 11, 2018	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Aug. 08, 2017	Nov. 20, 2017	Aug. 07, 2018	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150208	10Hz~44GHz, MAX 30dB	Apr. 18, 2017	Nov. 20, 2017	Apr. 17, 2018	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	23182	30MHz~2GHz	Jan. 22, 2017	Nov. 20, 2017	Jan. 21, 2018	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 21, 2017	Nov. 20, 2017	Oct. 20, 2018	Radiation (03CH02-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Feb. 15, 2017	Nov. 20, 2017	Feb. 14, 2018	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9kHz~1GHz	Aug. 07, 2017	Nov. 20, 2017	Aug. 06, 2018	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A02384	1GHz~26.5GHz	Oct. 12, 2017	Nov. 20, 2017	Oct. 11, 2018	Radiation (03CH02-KS)
Amplifier	MITEQ	TTA1840-35-H G	1887435	18GHz~40GHz	Oct. 12, 2017	Nov. 20, 2017	Oct. 11, 2018	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	61601000247 3	N/A	NCR	Nov. 20, 2017	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Nov. 20, 2017	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Nov. 20, 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
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.7dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.3dB
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