



FCC Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT1920-18, XT1920-19
FCC ID : IHDT56XH2
STANDARD : FCC CFR Title 47 Part 15 Subpart B
CLASSIFICATION : Certification

The product was received on Apr. 12, 2018 and testing was completed on Apr. 28, 2018. 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.
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China



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC841203	Rev. 01	Initial issue of report	May 24, 2018



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 4.69 dB at 0.156 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 4.06 dB at 43.580 MHz for Quasi-Peak



1. General Description

1.1. Applicant

Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.2. Manufacturer

Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT1920-18, XT1920-19
FCC ID	IHDT56XH2
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/ HSPA+ (16QAM uplink is not supported)/LTE WLAN 2.4GHz 802.11b/g/n HT20 Bluetooth v3.0 + EDR/ Bluetooth v 4.0 LE/ Bluetooth v4.1 LE/ Bluetooth v4.2 LE
IMEI Code	Conduction: 355534090027391/355534090027409 for Sample 1 Radiation: 355534090027797/355534090027805 for Sample 1 355535090007002 for Sample 2
HW Version	DVT2
SW Version	OPG28.25
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. There are two types of EUT sample 1 and sample 2, the differences between two samples are only for SIM slot, the sample 1(XT1920-19) is dual SIM slot, the sample 2(XT1920-18) is single SIM slot. We only choose dual SIM sample to perform full tests and the sample 2 verify worse case of the sample 1 for Radiation.



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 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 7 : 2622.5 MHz ~ 2687.5 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz GNSS : 1559 MHz ~ 1610 MHz FM : 88 MHz ~ 108 MHz
Antenna Type	WWAN : PIFA Antenna Bluetooth/WLAN/GNSS : PIFA Antenna FM: External headset Antenna
Type of Modulation	GSM/GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA : BPSK (Uplink) HSDPA/DC-HSDPA : QPSK (Uplink) HSUPA : QPSK (Uplink) HSPA+ : 16QAM (uplink is not supported) DC-HSDPA : 64QAM 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 GNSS : BPSK FM

GNSS Rx = GPS Rx + Glonass Rx

1.5. Modification of EUT

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



1.6. Specification of Accessory

Specification of Accessory				
AC Adapter 1(US)	Brand Name	Motorola (Acbel)	Model Name	C-P56 SPN5947A
	Power Rating	I/P: 100-240 Vac, 130mA, O/P: 5Vdc,1000mA		
AC Adapter 1(EU)	Brand Name	Motorola (Acbel)	Model Name	C-P57 SPN5948A
	Power Rating	I/P: 100-240 Vac, 130mA, O/P: 5Vdc,1000mA		
AC Adapter 1(AR)	Brand Name	Motorola (Acbel)	Model Name	C-P60 SPN5951A
	Power Rating	I/P: 100-240 Vac, 130mA, O/P: 5Vdc,1000mA		
AC Adapter 2(US)	Brand Name	Motorola(Chenyang)	Model Name	C-P56 SPN5987A
	Power Rating	I/P: 100-240 Vac, 130mA, O/P: 5Vdc,1000mA		
AC Adapter 2(EU)	Brand Name	Motorola(Chenyang)	Model Name	C-P57 SPN5985A
	Power Rating	I/P: 100-240 Vac, 130mA, O/P: 5Vdc,1000mA		
AC Adapter 2(AR)	Brand Name	Motorola(Chenyang)	Model Name	C-P60 SPN5984A
	Power Rating	I/P: 100-240 Vac, 130mA, O/P: 5Vdc,1000mA		
AC Adapter 3(BR)	Brand Name	Motorola(Salcomp)	Model Name	S11D38LNA
	Power Rating	I/P: 100-240 Vac, 450mA, O/P: 5Vdc,2000mA		
AC Adapter 4(BR)	Brand Name	Motorola(Salom)	Model Name	SSW-2865BR
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,2000mA		
AC Adapter 5(BR)	Brand Name	Motorola(Cliptech)	Model Name	S010BFD0500200
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,2000mA		
Battery	Brand Name	Amperex (Motorola)	Model Name	JE30
	Power Rating	3.8Vdc,2000/2120mAh	Type	Li-ion, ATL355763
Earphone 1	Brand Name	Motorola(JuWei)	Model Name	711411000731
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
Earphone 2	Brand Name	Motorola(New leader)	Model Name	711411000711
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
Earphone 3	Brand Name	Motorola(Lianyun)	Model Name	TS910A-38AMS01WHR-M
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
Earphone 4	Brand Name	Motorola	Model Name	LS118
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
USB Cable 1	Brand Name	Motorola (SAIBAO)	Model Name	711310002261
	Signal Line Type	1.0 meter, shielded cable, without ferrite core		
USB Cable 2	Brand Name	Motorola (I-SHENG)	Model Name	SKN6471A
	Signal Line Type	1.0 meter, shielded cable, without ferrite core		



1.7. Test Location

Sporton International (Kunshan) Inc. 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.

1.8. Applicable Standards

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

- ♦ FCC CFR Title 47 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 emission (150 kHz to 30 MHz), radiation emission (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 1(Charging from Adapter 1) + Earphone 1 + Camera (Rear) + SIM 1 for Sample 1
	Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle + USB Cable 1(Charging from Adapter 1) + Earphone 1 + Camera(Front) + SIM 2 for Sample 1
	Mode 3: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable 1(Charging from Adapter 1) + Earphone 1 + MPEG4 + SIM 1 for Sample 1
	Mode 4: LTE Band 4 Idle + Bluetooth Idle + WLAN Idle + USB Cable 1(Data Link with Notebook) + Earphone 1 + GNSS Rx + SIM 2 for Sample 1
	Mode 5: LTE Band 7 Idle + Bluetooth Idle + WLAN Idle + USB Cable 2(Data Link with Notebook) + Earphone 1 + GNSS Rx + SIM 2 for Sample 1
	Mode 6: USB Cable 1(Charging from Adapter 1) + Earphone 1 + FM Rx (88MHz) for Sample 1
	Mode 7: USB Cable 1(Charging from Adapter 1) + Earphone 1 + FM Rx (98MHz) for Sample 1
	Mode 8: USB Cable 1(Charging from Adapter 1) + Earphone 1 + FM Rx (108MHz) for Sample 1
	Mode 9: GSM850 Idle + Bluetooth Idle + WLAN Idle + USB Cable 1(Charging from Adapter 2) + Earphone 2 + Camera (Rear) + SIM 1 for Sample 1
	Mode 10 : GSM850 Idle + Bluetooth Idle + WLAN Idle + USB Cable 1(Charging from Adapter 3) + Earphone 3 + Camera (Rear) + SIM 1 for Sample 1
	Mode 11 : GSM850 Idle + Bluetooth Idle + WLAN Idle + USB Cable 1(Charging from Adapter 4) + Earphone 4 + Camera (Rear) + SIM 1 for Sample 1
	Mode 12 : GSM850 Idle + Bluetooth Idle + WLAN Idle + USB Cable 1(Charging from Adapter 5) + Earphone 1 + Camera (Rear) + SIM 1 for Sample 1

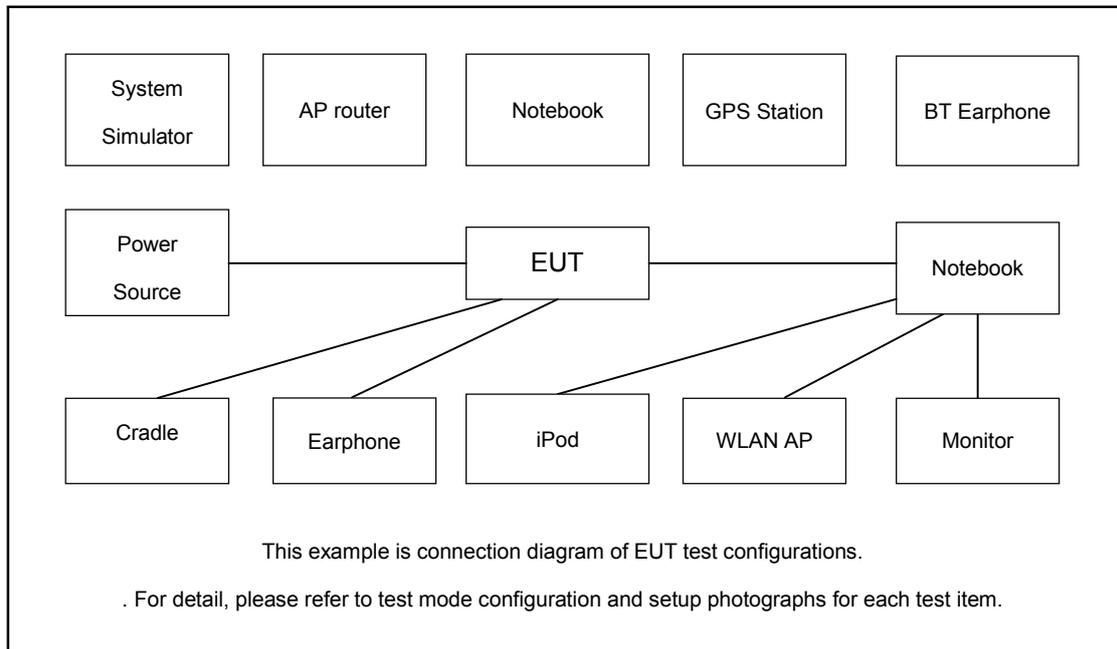


Radiated Emissions	<p>Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + USB Cable 1(Charging from Adapter 1) + Earphone 1 + Camera (Rear) + SIM 1 for Sample 1</p> <p>Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle + USB Cable 1(Charging from Adapter 1) + Earphone 1 + Camera(Front) + SIM 2 for Sample 1</p> <p>Mode 3: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable 1(Charging from Adapter 1) + Earphone 1 + MPEG4 + SIM 1 for Sample 1</p> <p>Mode 4: LTE Band 4 Idle + Bluetooth Idle + WLAN Idle + USB Cable 1(Data Link with Notebook) + Earphone 1 + GNSS Rx + SIM 2 for Sample 1</p> <p>Mode 5: LTE Band 7 Idle + Bluetooth Idle + WLAN Idle + USB Cable 2(Data Link with Notebook) + Earphone 1 + GNSS Rx + SIM 2 for Sample 1</p> <p>Mode 6: USB Cable 1(Charging from Adapter 1) + Earphone 1 + FM Rx (88MHz) for Sample 1</p> <p>Mode 7: USB Cable 1(Charging from Adapter 1) + Earphone 1 + FM Rx (98MHz) for Sample 1</p> <p>Mode 8: USB Cable 1(Charging from Adapter 1) + Earphone 1 + FM Rx (108MHz) for Sample 1</p> <p>Mode 9: USB Cable 1(Charging from Adapter 2) + Earphone 2 + FM Rx (88MHz) for Sample 1</p> <p>Mode 10 : USB Cable 1(Charging from Adapter 3) + Earphone 3 + FM Rx (88MHz) for Sample 1</p> <p>Mode 11 : USB Cable 1(Charging from Adapter 4) + Earphone 4 + FM Rx (88MHz) for Sample 1</p> <p>Mode 12 : USB Cable 1(Charging from Adapter 5) + Earphone 1 + FM Rx (88MHz) for Sample 1</p> <p>Mode 13 : USB Cable 1(Charging from Adapter 5) + Earphone 1 + FM Rx (88MHz) for Sample 2</p>
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Remark:

1. The worst case of AC is mode 1; only the test data of this mode is reported.
2. The worst case of RE is mode 13; only the test data of this mode is reported.
3. Data Link with Notebook means data application transferred mode between EUT and Notebook.

2.2. Connection Diagram of Test System



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, 1.8m
3.	GNSS Station	ADIVIC	MP9000	N/A	N/A	Unshielded, 1.8 m
4.	GNSS Station	RACELOGIC	RLLS03-2RP	N/A	N/A	Unshielded, 1.8 m
5.	FM Generator	R&S	SMBV100A	N/A	N/A	Unshielded, 1.8 m
6.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8m
7.	WLAN AP	TP-LINK	TL-WDR5600	N/A	N/A	Unshielded, 1.8m
8.	Notebook	Lenovo	G480	FCC DoC	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	LBH308	N/A	N/A	N/A
11.	Hard Disk	Lenovo	F310	DoC	Shielded, 1.2m	N/A
12.	SD Card	Kingston	8GB	N/A	N/A	N/A
13.	SD Card	SanDisk	Ultra	N/A	N/A	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 GNSS function 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.
5. The EUT was turned to Radio frequency channels, FM88 MHz, FM98 MHz and FM108 MHz, from FM Generator.



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.

<Class B Limit>

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.

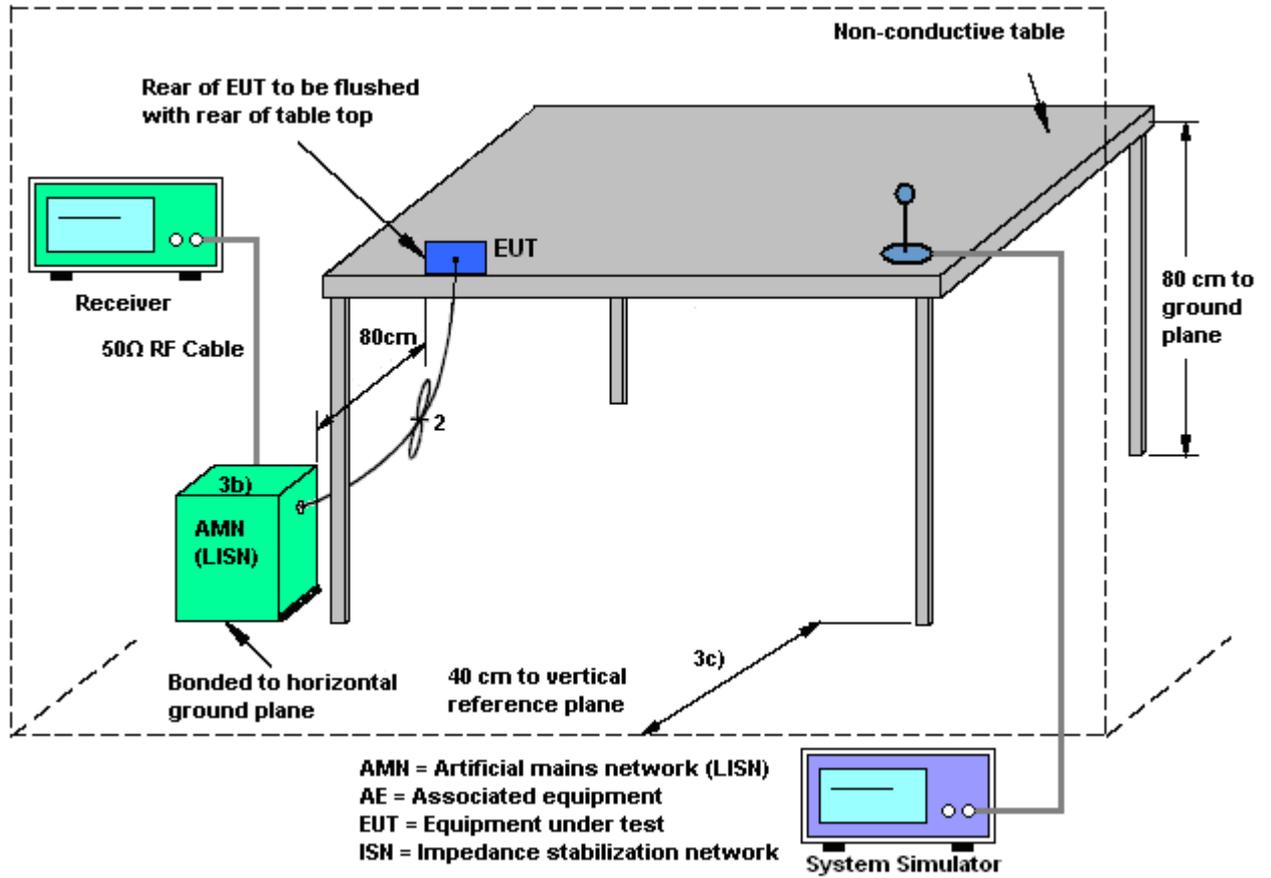
3.1.2 Measuring Instruments

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.

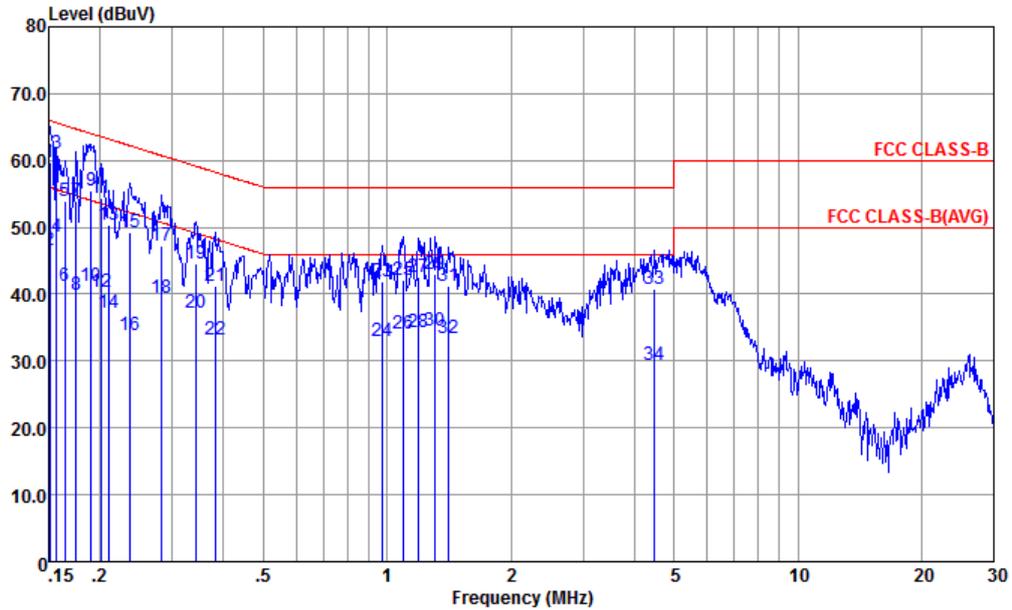
3.1.4 Test Setup





3.1.5 Test Result of AC Conducted Emission

Test Engineer :	Amos Zhang	Temperature :	21.2~22.3°C
		Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line

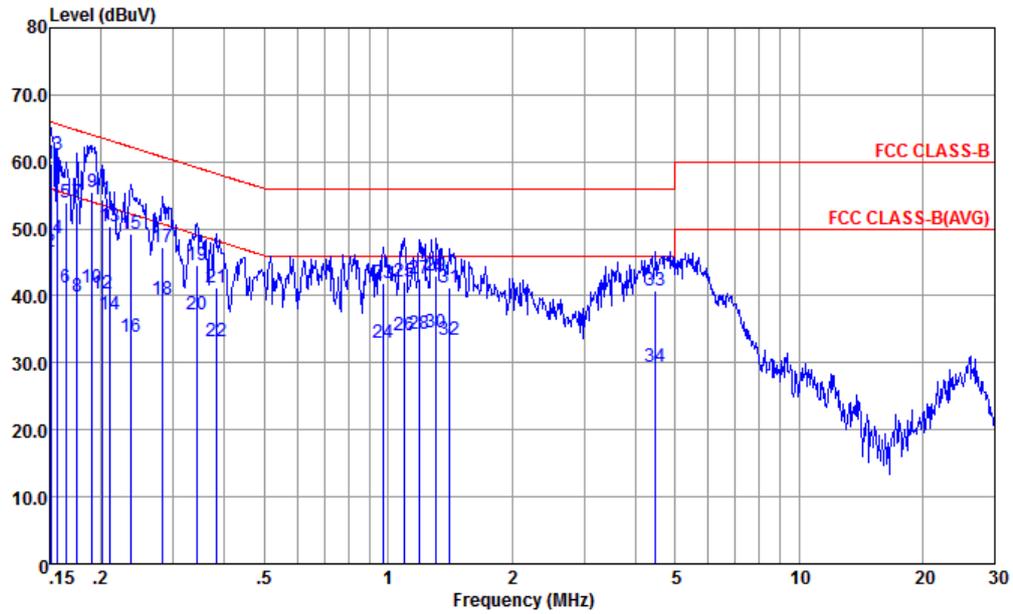


Site : CO01-KS
 Condition : FCC CLASS-B LISN-L-171013-060103 LINE
 Project : (FC) 841203
 mode : Mode 1
 : 355534090027391/355534090027409 #11

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.151	59.68	-6.28	65.96	48.90	0.16	10.62	QP
2	0.151	46.58	-9.38	55.96	35.80	0.16	10.62	Average
3 *	0.156	60.96	-4.69	65.65	50.20	0.17	10.59	QP
4	0.156	48.56	-7.09	55.65	37.80	0.17	10.59	Average
5	0.164	53.94	-11.31	65.25	43.20	0.17	10.57	QP
6	0.164	41.14	-14.11	55.25	30.40	0.17	10.57	Average
7	0.175	54.01	-10.71	64.72	43.30	0.18	10.53	QP
8	0.175	39.91	-14.81	54.72	29.20	0.18	10.53	Average
9	0.190	55.48	-8.54	64.02	44.81	0.19	10.48	QP
10	0.190	41.28	-12.74	54.02	30.61	0.19	10.48	Average
11	0.201	54.46	-9.12	63.58	43.81	0.20	10.45	QP
12	0.201	40.26	-13.32	53.58	29.61	0.20	10.45	Average
13	0.211	50.26	-12.92	63.18	39.61	0.20	10.45	QP
14	0.211	37.26	-15.92	53.18	26.61	0.20	10.45	Average
15	0.237	49.25	-12.97	62.22	38.60	0.21	10.44	QP
16	0.237	33.95	-18.27	52.22	23.30	0.21	10.44	Average
17	0.282	47.25	-13.51	60.76	36.60	0.22	10.43	QP



Test Engineer :	Amos Zhang	Temperature :	21.2~22.3°C
		Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line

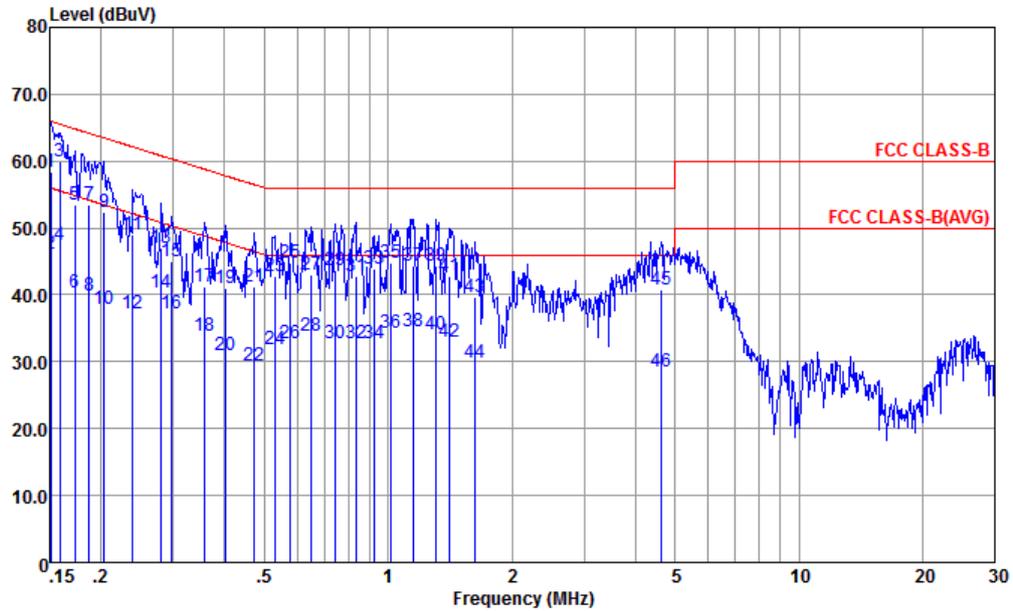


Site : CO01-KS
 Condition : FCC CLASS-B LISN-L-171013-060103 LINE
 Project : (FC) 841203
 mode : Mode 1
 : 355534090027391/355534090027409 #11

Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
MHz	dBuV	dB	dBuV	dBuV	dB	dB	
18	0.282	39.55 -11.21	50.76	28.90	0.22	10.43	Average
19	0.343	44.55 -14.58	59.13	33.89	0.24	10.42	QP
20	0.343	37.25 -11.88	49.13	26.59	0.24	10.42	Average
21	0.381	41.25 -17.00	58.25	30.60	0.24	10.41	QP
22	0.381	33.15 -15.10	48.25	22.50	0.24	10.41	Average
23	0.974	41.87 -14.13	56.00	31.50	0.26	10.11	QP
24	0.974	32.97 -13.03	46.00	22.60	0.26	10.11	Average
25	1.094	42.18 -13.82	56.00	31.80	0.26	10.12	QP
26	1.094	33.98 -12.02	46.00	23.60	0.26	10.12	Average
27	1.191	42.60 -13.40	56.00	32.21	0.26	10.13	QP
28	1.191	34.30 -11.70	46.00	23.91	0.26	10.13	Average
29	1.310	43.02 -12.98	56.00	32.60	0.27	10.15	QP
30	1.310	34.62 -11.38	46.00	24.20	0.27	10.15	Average
31	1.411	41.33 -14.67	56.00	30.90	0.27	10.16	QP
32	1.411	33.33 -12.67	46.00	22.90	0.27	10.16	Average
33	4.478	40.76 -15.24	56.00	30.20	0.36	10.20	QP
34	4.478	29.46 -16.54	46.00	18.90	0.36	10.20	Average



Test Engineer :	Amos Zhang	Temperature :	21.2~22.3°C
		Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral

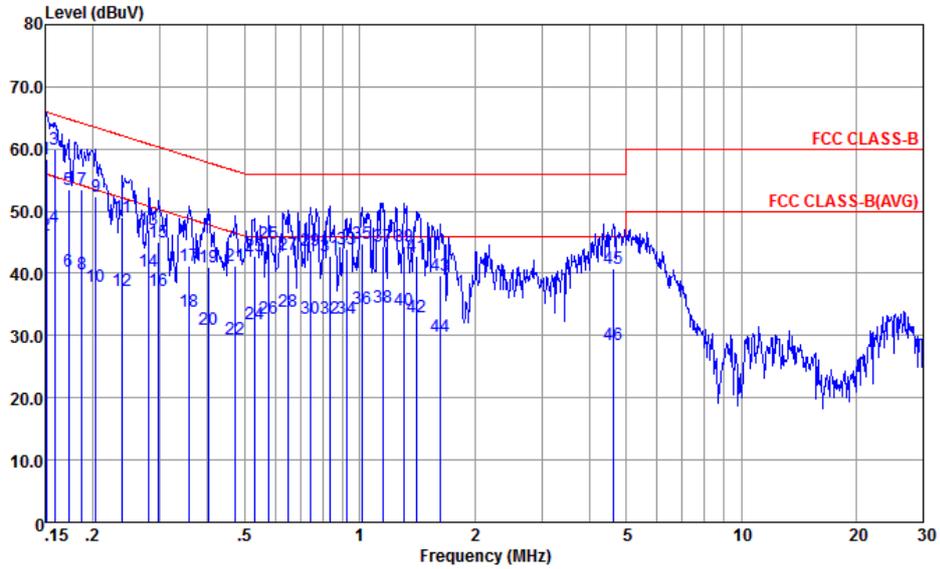


Site : CO01-KS
 Condition : FCC CLASS-B LISN-N-171013-060103 NEUTRAL
 Project : (FC) 841203
 mode : Mode 1
 : 355534090027391/355534090027409 #11

	Freq	Level	Over Limit	Limit	Read	LISN	Cable	Loss	Remark
	MHz	dBuV		dB	dBuV	dBuV	dB	dB	
1	0.151	58.40	-7.56	65.96	47.50	0.28	10.62	QP	
2	0.151	46.10	-9.86	55.96	35.20	0.28	10.62	Average	
3 *	0.159	59.97	-5.55	65.52	49.10	0.28	10.59	QP	
4	0.159	47.47	-8.05	55.52	36.60	0.28	10.59	Average	
5	0.173	53.42	-11.39	64.81	42.60	0.28	10.54	QP	
6	0.173	40.42	-14.39	54.81	29.60	0.28	10.54	Average	
7	0.187	53.37	-10.78	64.15	42.60	0.28	10.49	QP	
8	0.187	39.97	-14.18	54.15	29.20	0.28	10.49	Average	
9	0.204	52.33	-11.12	63.45	41.60	0.28	10.45	QP	
10	0.204	37.93	-15.52	53.45	27.20	0.28	10.45	Average	
11	0.239	48.92	-13.21	62.13	38.20	0.28	10.44	QP	
12	0.239	37.32	-14.81	52.13	26.60	0.28	10.44	Average	
13	0.280	46.92	-13.89	60.81	36.21	0.28	10.43	QP	
14	0.280	40.32	-10.49	50.81	29.61	0.28	10.43	Average	
15	0.297	44.91	-15.41	60.32	34.20	0.28	10.43	QP	
16	0.297	37.31	-13.01	50.32	26.60	0.28	10.43	Average	
17	0.356	41.30	-17.53	58.83	30.59	0.29	10.42	QP	



Test Engineer :	Amos Zhang	Temperature :	21.2~22.3°C
		Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Site : CO01-KS
 Condition : FCC CLASS-B LISN-N-171013-060103 NEUTRAL
 Project : (FC) 841203
 mode : Mode 1
 : 355534090027391/355534090027409 #11

Over	Limit	Read	LISN	Cable				
Level	Limit	Level	Factor	Loss	Remark			
Freq	Level	Limit	Line	Level	Factor	Loss		
MHz	dBuV	dB	dBuV	dBuV	dB	dB		
18	0.356	33.90	-14.93	48.83	23.19	0.29	10.42	Average
19	0.402	40.89	-16.92	57.81	30.20	0.29	10.40	QP
20	0.402	30.99	-16.82	47.81	20.30	0.29	10.40	Average
21	0.474	41.22	-15.23	56.45	30.60	0.29	10.33	QP
22	0.474	29.52	-16.93	46.45	18.90	0.29	10.33	Average
23	0.532	42.77	-13.23	56.00	32.20	0.29	10.28	QP
24	0.532	31.77	-14.23	46.00	21.20	0.29	10.28	Average
25	0.576	44.74	-11.26	56.00	34.20	0.29	10.25	QP
26	0.576	32.84	-13.16	46.00	22.30	0.29	10.25	Average
27	0.647	43.09	-12.91	56.00	32.59	0.30	10.20	QP
28	0.647	33.79	-12.21	46.00	23.29	0.30	10.20	Average
29	0.743	43.64	-12.36	56.00	33.21	0.30	10.13	QP
30	0.743	32.74	-13.26	46.00	22.31	0.30	10.13	Average
31	0.835	42.71	-13.29	56.00	32.31	0.30	10.10	QP
32	0.835	32.71	-13.29	46.00	22.31	0.30	10.10	Average
33	0.928	43.91	-12.09	56.00	33.49	0.31	10.11	QP
34	0.928	32.71	-13.29	46.00	22.29	0.31	10.11	Average
35	1.016	44.72	-11.28	56.00	34.30	0.31	10.11	QP
36	1.016	34.32	-11.68	46.00	23.90	0.31	10.11	Average
37	1.153	44.34	-11.66	56.00	33.90	0.31	10.13	QP
38	1.153	34.64	-11.36	46.00	24.20	0.31	10.13	Average
39	1.310	44.36	-11.64	56.00	33.90	0.31	10.15	QP
40	1.310	34.06	-11.94	46.00	23.60	0.31	10.15	Average
41	1.411	42.78	-13.22	56.00	32.31	0.31	10.16	QP
42	1.411	33.08	-12.92	46.00	22.61	0.31	10.16	Average
43	1.628	39.70	-16.30	56.00	29.20	0.32	10.18	QP
44	1.628	29.80	-16.20	46.00	19.30	0.32	10.18	Average
45	4.622	40.85	-15.15	56.00	30.30	0.34	10.21	QP
46	4.622	28.45	-17.55	46.00	17.90	0.34	10.21	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:

<Class B Limit>

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

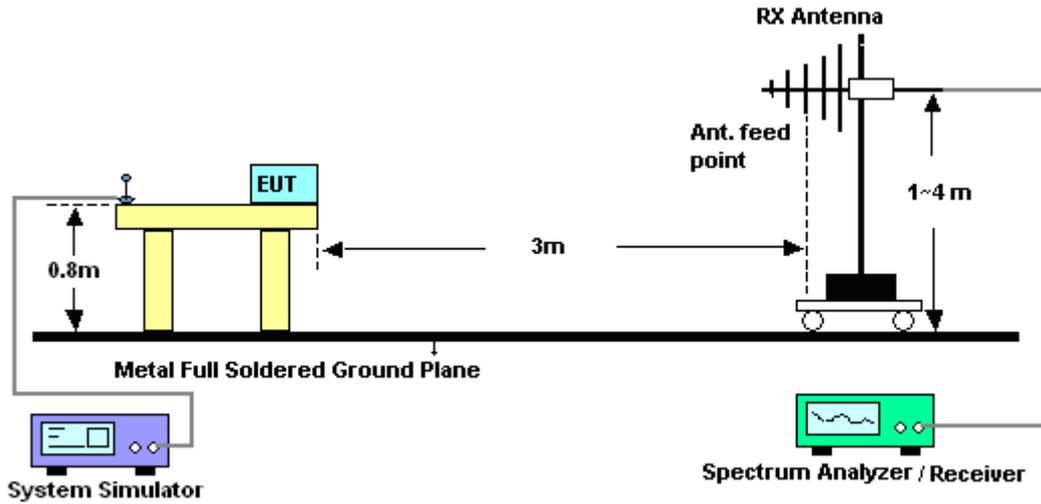
The measuring equipment is listed in the section 4 of this test report.

3.2.3. Test Procedures

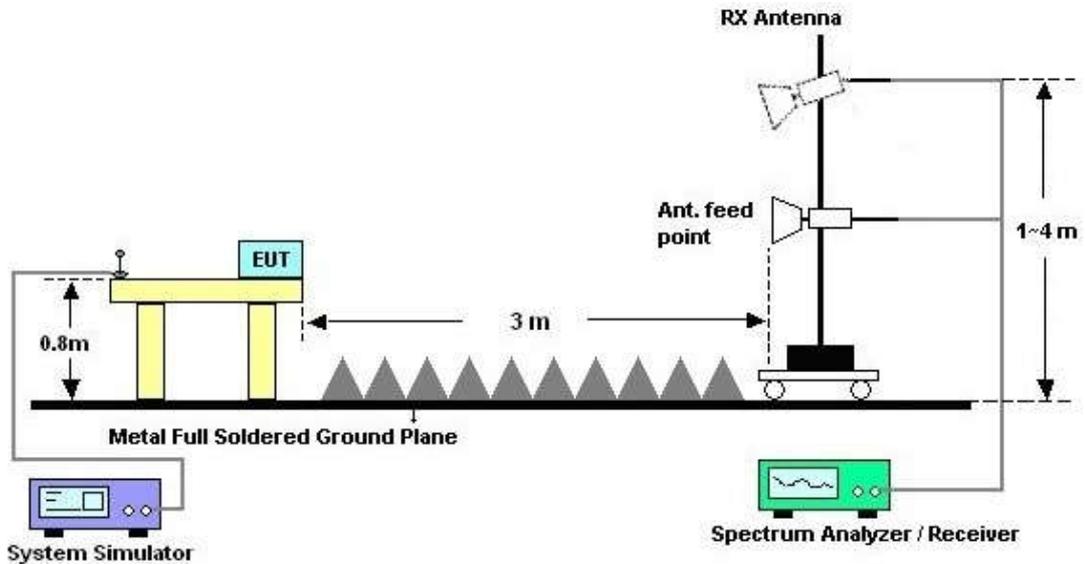
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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



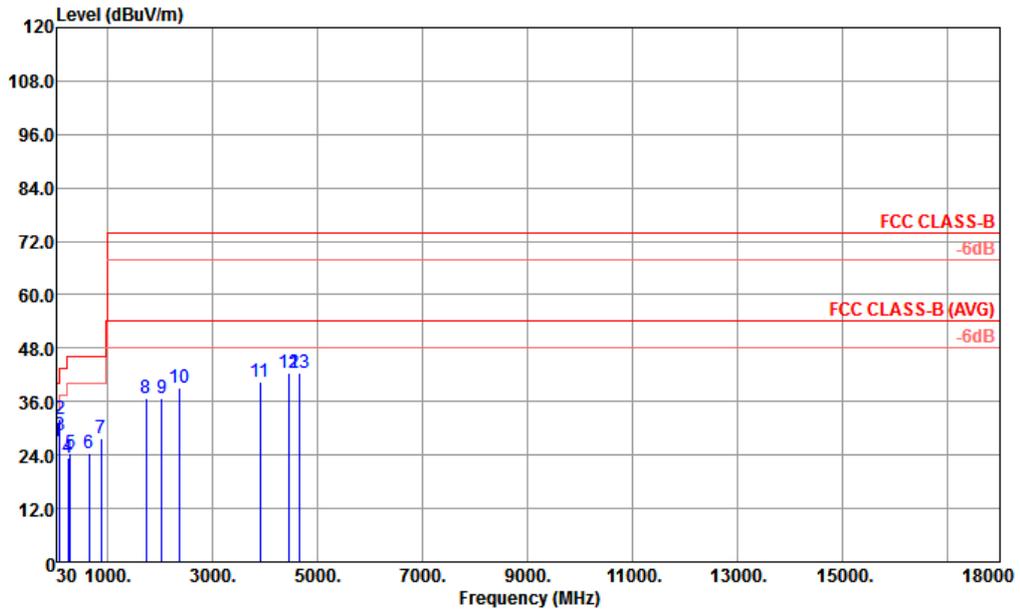
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

Test Engineer :	Rock Shi	Temperature :	21~22°C
		Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Horizontal
Remark :	#2 is Base station (FM option) signal which can be ignored.		

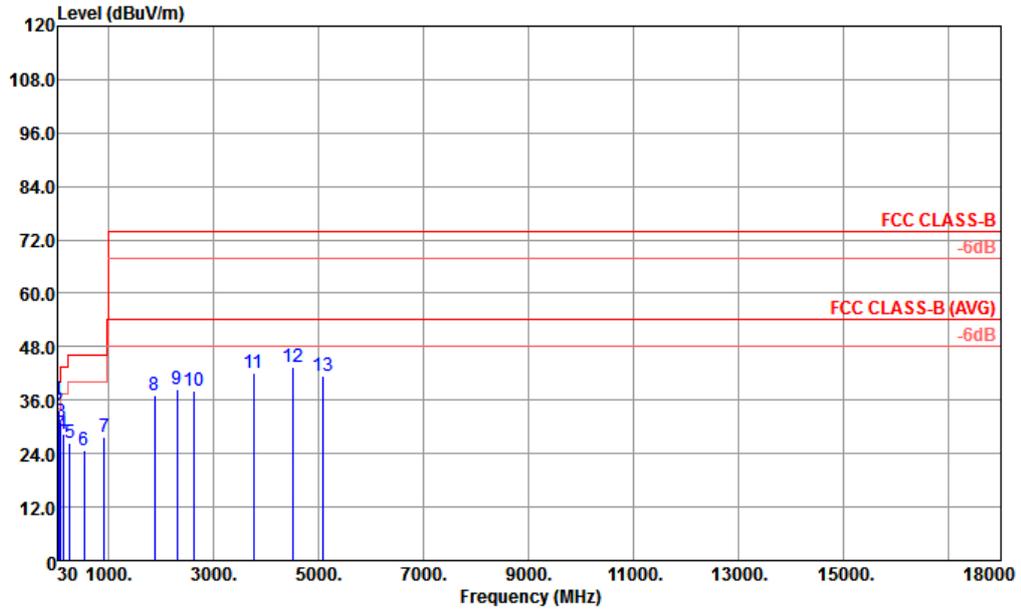


Site : 03CH02-KS
 Condition : FCC CLASS-B 3m LF 47610 HORIZONTAL
 Project : (FC)841203
 Mode : 13
 IMEI : 355535090007002 #4

	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	42.61	27.10	-12.90	40.00	41.07	17.46	0.65	32.08	100	0 Peak	
2	88.20	32.12			48.64	14.54	0.97	32.03	---	---	Peak
3	94.99	28.47	-15.03	43.50	43.64	15.85	0.98	32.00	---	---	Peak
4	256.01	23.52	-22.48	46.00	34.01	19.24	1.77	31.50	---	---	Peak
5	293.84	24.30	-21.70	46.00	34.49	19.08	1.90	31.17	---	---	Peak
6	653.71	24.51	-21.49	46.00	26.11	25.00	2.69	29.29	---	---	Peak
7	880.69	27.59	-18.41	46.00	25.70	26.48	3.08	27.67	---	---	Peak
8	1730.00	36.63	-37.37	74.00	67.18	29.20	4.35	64.10	---	---	Peak
9	2042.00	36.90	-37.10	74.00	65.60	30.42	4.67	63.79	---	---	Peak
10	2382.00	39.20	-34.80	74.00	65.97	31.27	5.14	63.18	---	---	Peak
11	3915.00	40.38	-33.62	74.00	63.12	34.95	6.67	64.36	---	---	Peak
12	4458.00	42.52	-31.48	74.00	63.53	35.82	7.26	64.09	---	---	Peak
13	4665.00	42.39	-31.61	74.00	63.27	35.77	7.66	64.31	---	---	Peak



Test Engineer :	Rock Shi	Temperature :	21~22°C
		Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Vertical
Remark :	#3 is Base station (FM option) signal which can be ignored.		



Site : 03CH02-KS
 Condition : FCC CLASS-B 3m LF 47610 VERTICAL
 Project : (FC)841203
 Mode : 13
 IMEI : 355535090007002 #4

	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 !	43.58	35.94	-4.06	40.00	50.50	16.88	0.66	32.10	100	220 QP	
2	52.31	33.62	-6.38	40.00	51.14	13.84	0.74	32.10	---	---	Peak
3	88.20	31.19			47.71	14.54	0.97	32.03	---	---	Peak
4	140.58	28.28	-15.22	43.50	41.61	17.32	1.21	31.86	---	---	Peak
5	260.86	26.37	-19.63	46.00	36.33	19.72	1.78	31.46	---	---	Peak
6	537.31	24.65	-21.35	46.00	27.66	24.54	2.51	30.06	---	---	Peak
7	917.55	27.65	-18.35	46.00	25.19	26.71	3.13	27.38	---	---	Peak
8	1874.00	37.11	-36.89	74.00	67.11	29.47	4.50	63.97	---	---	Peak
9	2308.00	38.29	-35.71	74.00	65.39	31.16	5.04	63.30	---	---	Peak
10	2626.00	37.95	-36.05	74.00	63.97	31.71	5.42	63.15	---	---	Peak
11	3765.00	42.17	-31.83	74.00	65.25	34.73	6.59	64.40	---	---	Peak
12	4506.00	43.32	-30.68	74.00	64.09	35.90	7.39	64.06	---	---	Peak
13	5076.00	41.38	-32.62	74.00	62.90	35.45	7.81	64.78	---	---	Peak



4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max x 30dBm	Aug. 08, 2017	Apr. 28, 2018	Aug. 07, 2018	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150208	10Hz-44G,MAX 30dB	Apr. 17, 2018	Apr. 28, 2018	Apr. 16, 2019	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	23182	30MHz-2GHz	Jan. 29, 2018	Apr. 28, 2018	Jan. 28, 2019	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 21, 2017	Apr. 28, 2018	Oct. 20, 2018	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Aug. 07, 2017	Apr. 28, 2018	Aug. 06, 2018	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A02384	1-26.5GHz Gain 30dB	Oct. 12, 2017	Apr. 28, 2018	Oct. 11, 2018	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Apr. 28, 2018	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Apr. 28, 2018	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Apr. 28, 2018	NCR	Radiation (03CH02-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz;	Apr. 19, 2018	Apr. 26, 2018	Apr. 18, 2019	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2017	Apr. 26, 2018	Oct. 12, 2018	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 13, 2017	Apr. 26, 2018	Oct. 12, 2018	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2017	Apr. 26, 2018	Oct. 11, 2018	Conduction (CO01-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% ($U = 2Uc(y)$)	4.2dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.2dB
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