



FCC RF Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT1922-6, XT1922-7, XT1922-9
FCC ID : IHDT56XB1
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Mar. 20, 2018 and testing was completed on May 04, 2018. We, Sporton International (Shenzhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures 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 (Shenzhen) Inc., the test report shall not be reproduced except in full.



Approved by: Eric Shih / Manager

Sporton International (Shenzhen) Inc.
1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City
Guangdong Province 518055 China



TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer	5
1.3 Product Feature of Equipment Under Test	5
1.4 Product Specification of Equipment Under Test	6
1.5 Specification of Accessory	7
1.6 Modification of EUT	7
1.7 Testing Location	8
1.8 Applicable Standards	9
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	10
2.1 Carrier Frequency Channel	10
2.2 Test Mode	11
2.3 Connection Diagram of Test System	12
2.4 Support Unit used in test configuration and system	13
2.5 EUT Operation Test Setup	13
3 TEST RESULT	14
3.1 Maximum Conducted Output Power Measurement	14
3.2 Unwanted Radiated Emission Measurement	16
3.3 AC Conducted Emission Measurement	22
4 LIST OF MEASURING EQUIPMENTS	26
5 UNCERTAINTY OF EVALUATION	27
APPENDIX A. CONDUCTED TEST RESULTS	
APPENDIX B. RADIATED SPURIOUS EMISSION	
APPENDIX C. DUTY CYCLE PLOTS	
APPENDIX D. SETUP PHOTOGRAPHS	
APPENDIX E. PRODUCT EQUALITY DECLARATION	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR832002D	Rev. 01	Initial issue of report	May 31, 2018

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
-	2.1049 15.403(i)	26dB & 99% Bandwidth	-	Not Required	-
3.1	15.407(a)	Maximum Conducted Output Power	FCC ≤ 24 dBm (depend on band)	Pass	-
-	15.407(a)	Power Spectral Density	FCC ≤ 11 dBm (depend on band)	Not Required	-
3.2	15.407(b)	Unwanted Emissions	15.407(b) 15.209(a)	Pass	Under limit 3.85 dB at 5725.000 MHz
3.3	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 14.30 dB at 0.590 MHz
-	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Not Required	-
-	15.203 & 15.407(a)	Antenna Requirement	N/A	Not Required	-

Remark: Not Required means the changes does not affect the test result.



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	XT1922-6, XT1922-7, XT1922-9
FCC ID	IHDT56XB1
EUT supports Radios application	CDMA/EVDO/GSM/GPRS/EGPRS/WCDMA/HSPA/ DC-HSDPA/HSPA+(16QAM uplink is not supported)/LTE/ WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 Bluetooth v3.0+EDR/ Bluetooth v4.0 LE Bluetooth v4.1 LE/Bluetooth v4.2 LE
IMEI Code	Conduction: 351864090041819 Radiation: 351864090040753
HW Version	DVT2
SW Version	jeter_oem_userdebug_8.0.0_OPP27.34_970_intcfg-test-key s_oem
EUT Stage	Identical Prototype

Remark:

1. For XT1922-6, XT1922-7, XT1922-9, they are the same product except model name different for market segment.
2. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
3. This is a variant report for XT1922-6, XT1922-7, XT1922-9. The product equality declaration could be referred to Appendix E. According to the difference, only the conducted power and the test cases from original test report (Sporton Report Number FR7D1310D) were verified for the differences with the sample 1.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5700 MHz
Maximum Output Power to Antenna	<5180 MHz ~ 5240 MHz> 802.11a : 18.08 dBm / 0.0643 W 802.11n HT20 : 17.93 dBm / 0.0621 W 802.11n HT40 : 17.12 dBm / 0.0515 W <5260 MHz ~ 5320 MHz> 802.11a : 17.94 dBm / 0.0622 W 802.11n HT20 : 17.92 dBm / 0.0619 W 802.11n HT40 : 17.21 dBm / 0.0526 W <5500 MHz ~ 5700 MHz > 802.11a : 16.58 dBm / 0.0455 W 802.11n HT20 : 16.28 dBm / 0.0425 W 802.11n HT40 : 16.34 dBm / 0.0431 W
Antenna Gain / Gain	<5180 MHz ~ 5240 MHz> IFA Antenna with gain -3.00 dBi <5260 MHz ~ 5320 MHz> IFA Antenna with gain -3.00 dBi <5500 MHz ~ 5700 MHz> IFA Antenna with gain -3.00 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

Note: WLAN operation in 5600 MHz ~ 5650 MHz is notched.

1.5 Specification of Accessory

Specification of Accessory				
AC Adapter 1	Brand Name	Motorola (Acbel)	Model Name	C-P35 SPN5945A
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc,2000mA		
AC Adapter 2	Brand Name	Motorola (Salom)	Model Name	SSW-2919UMTJ C-P35 SPN5945A
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc,2000mA		
Battery(sample 1/3)	Brand Name	Lenovo (SCUD)	Model Name	BL270
	Power Rating	3.85/4.4Vdc,4000mAh	Type	Li-ion
Battery(sample 2/4)	Brand Name	Lenovo (ATL)	Model Name	BL270
	Power Rating	3.85/4.4Vdc,4000mAh	Type	Li-ion
USB Cable 1	Brand Name	Motorola (Saibao)	Model Name	SLQ-A077A
	Signal Line Type	1.0 meter, shielded cable, without ferrite core		
USB Cable 2	Brand Name	Motorola (Saibao)	Model Name	SLQ-A077A
	Signal Line Type	1.0 meter, shielded cable, without ferrite core		

1.6 Modification of EUT

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



1.7 Testing Location

Sporton International (Shenzhen) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0) and the FCC designation No. are CN5018 and CN5019.

Test Site	Sporton International (Shenzhen) Inc.		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City Guangdong Province 518055 China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595		
Test Site No.	Sporton Site No.		FCC Test Firm Registration No.
	TH01-SZ	CO01-SZ	251365

Test Site	Sporton International (Shenzhen) Inc.		
Test Site Location	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan District Shenzhen City Guangdong Province 518055 China TEL: +86-755-3320-2398		
Test Site No.	Sporton Site No.		FCC Test Firm Registration No.
	03CH04-SZ		577730

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 Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01
- ♦ ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases were recorded in this report.

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5180-5240 MHz Band 1 (U-NII-1)	36	5180	44	5220
	38*	5190	46*	5230
	40	5200	48	5240
	-	-	-	-

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5260-5320 MHz Band 2 (U-NII-2A)	52	5260	60	5300
	54*	5270	62*	5310
	56	5280	64	5320
	-	-	-	-

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5500-5700 MHz Band 3 (U-NII-2C)	100	5500	112	5560
	102*	5510	116	5580
	104	5520	132	5660
	-	-	134*	5670
	108	5540	136	5680
	110*	5550	140	5700

Note: The above Frequency and Channel in "*" were 802.11n HT40.

2.2 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

Modulation	Data Rate
802.11n HT20	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : WCDMA Band II Idle + Bluetooth Link + WLAN Link (5G) + USB Cable 2(Charging from Adapter 2) + Earphone + Camera(Front) + SD card load for Sample 1

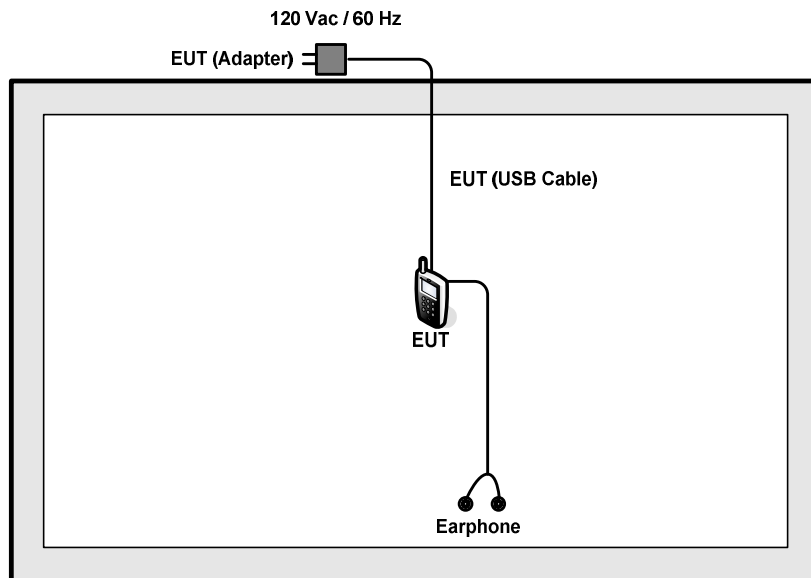
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11n HT20	802.11n HT20	802.11n HT20
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

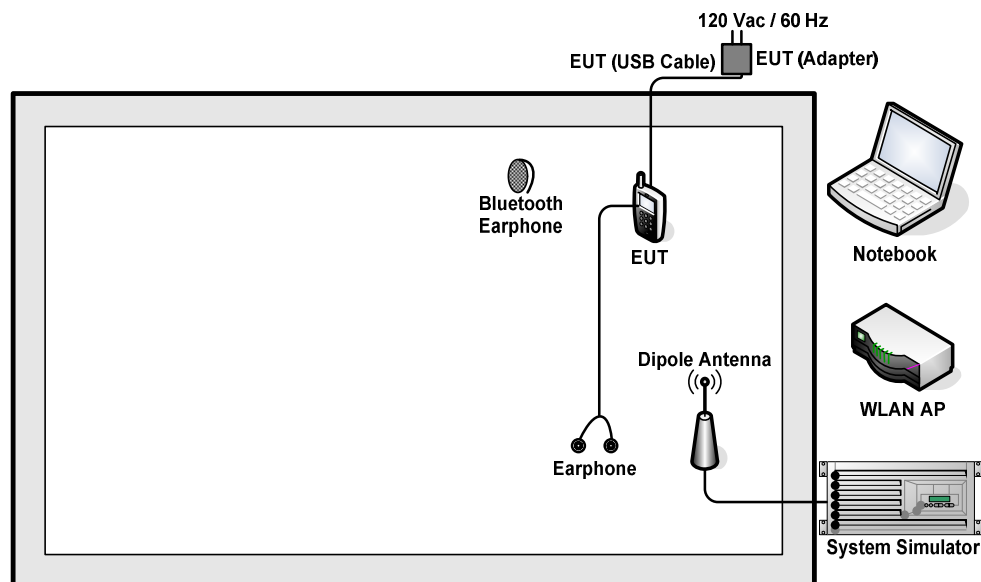
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5700MHz
		802.11n HT40	802.11n HT40	802.11n HT40
L	Low	38	54	102
M	Middle	-	-	110
H	High	46	62	134

2.3 Connection Diagram of Test System

<Radiated Emission Mode>



<AC Conducted Emission Mode>



2.4 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.	WLAN AP	D-Link	DIR-820L	KA2IR820LA1	N/A	Unshielded, 1.8 m
3.	Notebook	Lenovo	E540	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Samsung	EO-MG900	PYAHS-107W	N/A	N/A
5.	Earphone	Moto	Ashley ROW	N/A	Unshielded, 1.2m	N/A

2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuously transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

3 Test Result

3.1 Maximum Conducted Output Power Measurement

3.1.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW.

For the 5.25–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

3.1.2 Measuring Instruments

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

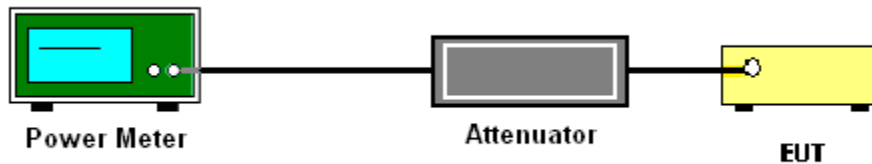
3.1.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.

3.1.4 Test Setup



3.1.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.2 Unwanted Radiated Emission Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.2.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5725MHz band: all emissions outside of the 5470-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

- (2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

Note: The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts)}$$

EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27	68.2

(3) KDB789033 D01 v02r01 G)2)c)

- (i) Section 15.407(b)(1) to (b)(3) specify the unwanted emission limits for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz.³
- (ii) Section 15.407(b)(4) specifies the unwanted emission limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are in terms of a Peak detector. An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the devices using the alternative limit.⁴

Note 3: An out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit.

Note 4: Only devices with antenna gains of 10 dBi or less may be approved using the emission limits specified in Section 15.247(d) till March 2, 2018; all other devices operating in this band must use the mask specified in Section 15.407(b)(4)(i).

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 testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Section G) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- RBW = 1 MHz
- VBW $\geq$ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

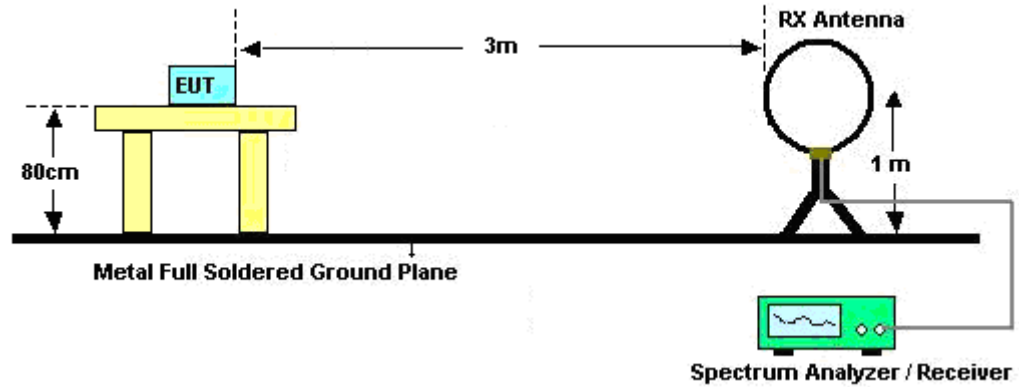
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.



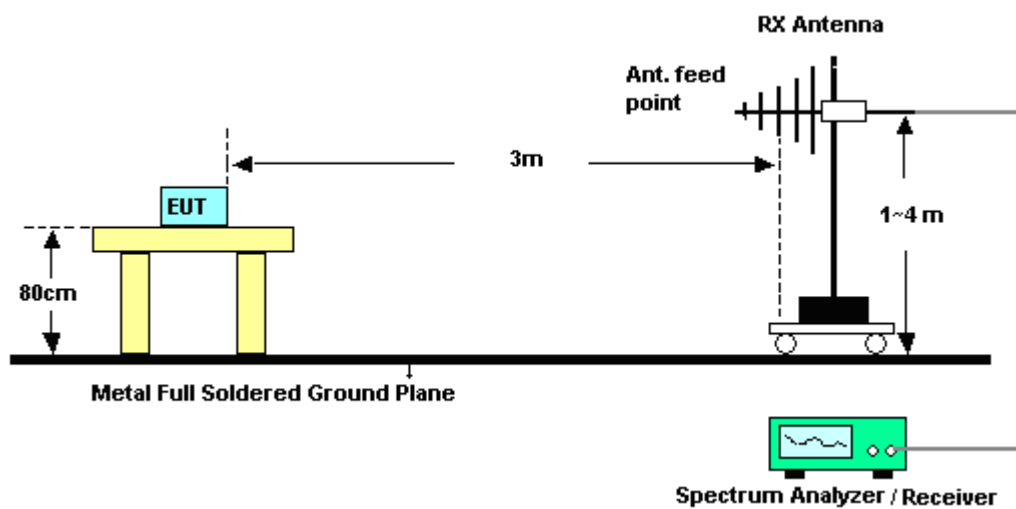
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and 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 adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.2.4 Test Setup

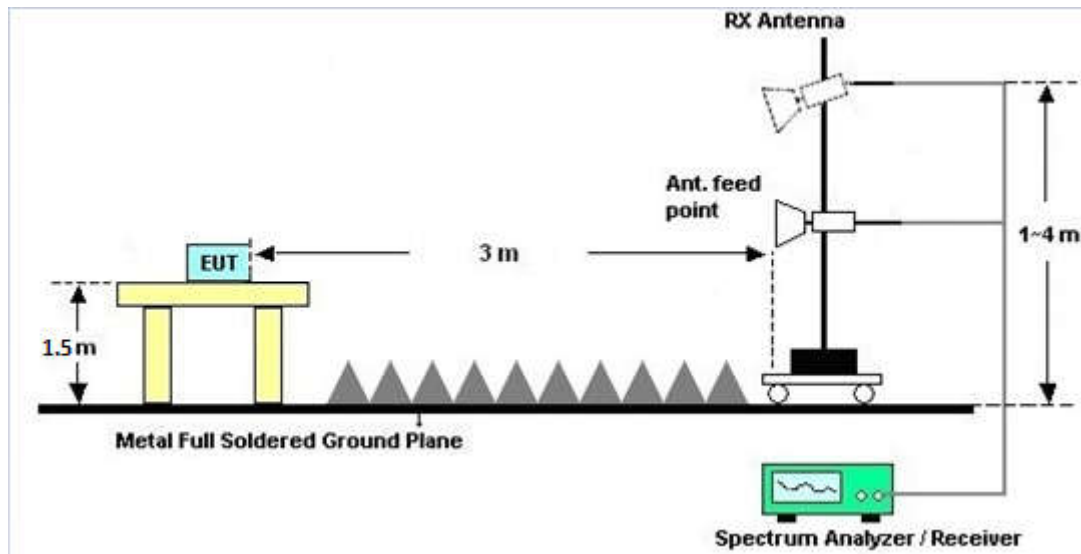
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.2.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B.

3.2.7 Duty Cycle

Please refer to Appendix C.

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

Please refer to Appendix B.

3.3 AC Conducted Emission Measurement

3.3.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	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.

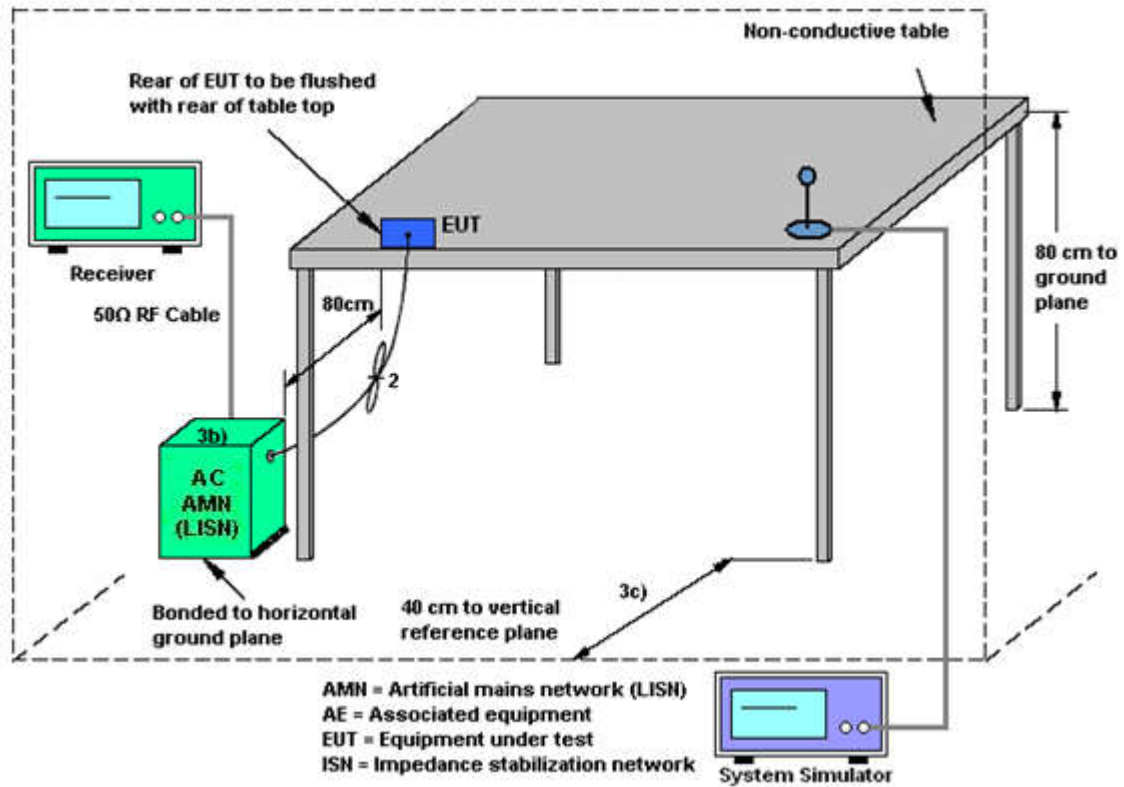
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

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.

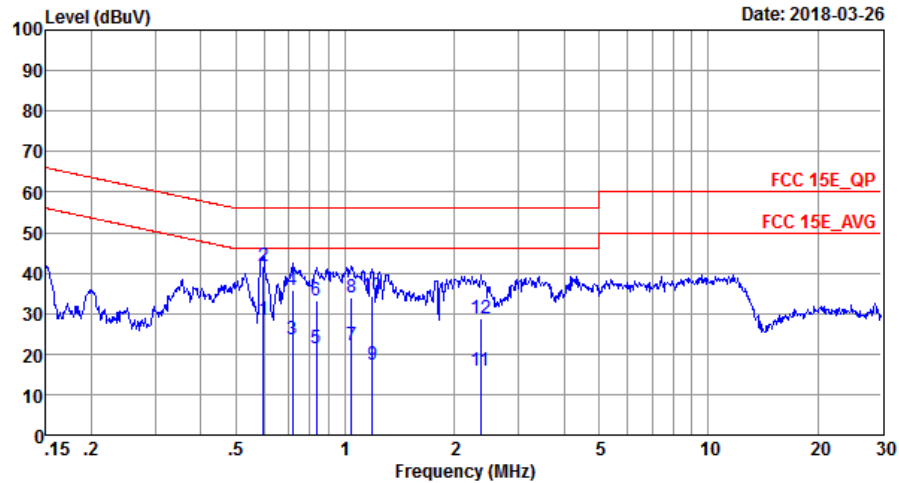
3.3.4 Test Setup





3.3.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	23~25℃
Test Engineer :	Lion Gao	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band II Idle + Bluetooth Link + WLAN Link (5G) + USB Cable 2(Charging from Adapter 2) + Earphone + Camera(Front) + SD card load for Sample 1		



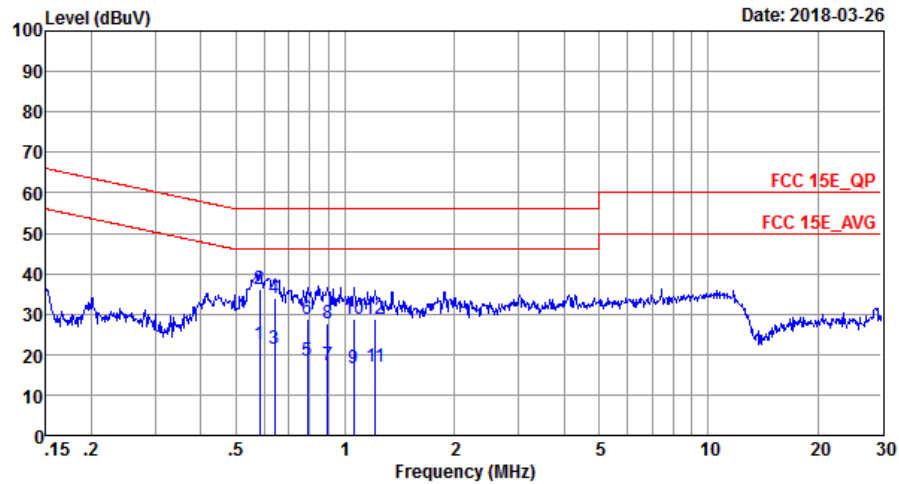
Site : C001-SZ
Condition: FCC 15E_QP LISN_20170907_L LINE

Mode : Mode 1
IMEI : 351864090041819

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.59	28.30	-17.70	46.00	18.20	0.02	10.08	Average
2 *	0.59	41.70	-14.30	56.00	31.60	0.02	10.08	QP
3	0.72	23.70	-22.30	46.00	13.60	0.02	10.08	Average
4	0.72	35.90	-20.10	56.00	25.80	0.02	10.08	QP
5	0.83	21.43	-24.57	46.00	11.30	0.04	10.09	Average
6	0.83	33.23	-22.77	56.00	23.10	0.04	10.09	QP
7	1.04	22.06	-23.94	46.00	11.90	0.07	10.09	Average
8	1.04	33.96	-22.04	56.00	23.80	0.07	10.09	QP
9	1.19	17.17	-28.83	46.00	7.00	0.08	10.09	Average
10	1.19	34.17	-21.83	56.00	24.00	0.08	10.09	QP
11	2.36	15.95	-30.05	46.00	5.70	0.13	10.12	Average
12	2.36	28.65	-27.35	56.00	18.40	0.13	10.12	QP



Test Mode :	Mode 1	Temperature :	23~25℃
Test Engineer :	Lion Gao	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band II Idle + Bluetooth Link + WLAN Link (5G) + USB Cable 2(Charging from Adapter 2) + Earphone + Camera(Front) + SD card load for Sample 1		



Site : CO01-SZ
Condition: FCC 15E_QP LISN_20170907_N NEUTRAL

Mode : Mode 1
IMEI : 351864090041819

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.58	22.50	-23.50	46.00	12.40	0.02	10.08	Average
2 *	0.58	36.10	-19.90	56.00	26.00	0.02	10.08	QP
3	0.64	21.40	-24.60	46.00	11.30	0.02	10.08	Average
4	0.64	33.90	-22.10	56.00	23.80	0.02	10.08	QP
5	0.79	18.31	-27.69	46.00	8.20	0.03	10.08	Average
6	0.79	28.81	-27.19	56.00	18.70	0.03	10.08	QP
7	0.89	17.43	-28.57	46.00	7.30	0.04	10.09	Average
8	0.89	27.53	-28.47	56.00	17.40	0.04	10.09	QP
9	1.05	16.74	-29.26	46.00	6.60	0.05	10.09	Average
10	1.05	28.74	-27.26	56.00	18.60	0.05	10.09	QP
11	1.21	16.94	-29.06	46.00	6.80	0.05	10.09	Average
12	1.21	28.84	-27.16	56.00	18.70	0.05	10.09	QP



4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Pulse Power Sensor	Anritsu	MA2411B	1207253	30MHz~40GHz	Dec. 26, 2017	May 04, 2018	Dec. 25, 2018	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Dec. 26, 2017	May 04, 2018	Dec. 25, 2018	Conducted (TH01-SZ)
EMI Test Receiver	R&S	ESR7	101404	9kHz~7GHz	Apr. 20, 2017	Apr. 05, 2018	Apr. 19, 2018	Radiation (03CH04-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Apr. 20, 2017	Apr. 05, 2018	Apr. 19, 2018	Radiation (03CH04-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 14, 2017	Apr. 05, 2018	May 13, 2018	Radiation (03CH04-SZ)
Bilog Antenna	TeseQ	CBL6111D	41909	30MHz~1GHz	May 16, 2017	Apr. 05, 2018	May 15, 2018	Radiation (03CH04-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1285	1GHz~18GHz	Dec. 13, 2017	Apr. 05, 2018	Dec. 12, 2018	Radiation (03CH04-SZ)
Horn Antenna	SCHWARZBECK	BBHA9170	9170#679	15GHz~40GHz	May 17, 2017	Apr. 05, 2018	May 16, 2018	Radiation (03CH04-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz ~3000MHz	Oct. 19, 2017	Apr. 05, 2018	Oct. 18, 2018	Radiation (03CH04-SZ)
HF Amplifier	MITEQ	AMF-7D-001 01800-30-10 P-R	1989346	1GHz~18GHz	Jul. 27, 2017	Apr. 05, 2018	Jul. 26, 2018	Radiation (03CH04-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1988315	18GHz~40GHz	Jul. 27, 2017	Apr. 05, 2018	Jul. 26, 2018	Radiation (03CH04-SZ)
Amplifier	Agilent Technologies	83017A	MY53270156	500MHz~26.5G Hz	Apr. 20, 2017	Apr. 05, 2018	Apr. 19, 2018	Radiation (03CH04-SZ)
AC Power Source	Chroma	61601	N/A	N/A	NCR	Apr. 05, 2018	NCR	Radiation (03CH04-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Apr. 05, 2018	NCR	Radiation (03CH04-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Apr. 05, 2018	NCR	Radiation (03CH04-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Dec. 26, 2017	Mar. 26, 2018	Dec. 25, 2018	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Dec. 26, 2017	Mar. 26, 2018	Dec. 25, 2018	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	MessTec	3816/2SH	00103892	9kHz~30MHz	Nov. 01, 2017	Mar. 26, 2018	Oct. 31, 2018	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	6160200008 91	100Vac~250Vac	Jul. 19, 2017	Mar. 26, 2018	Jul. 18, 2018	Conduction (CO01-SZ)

NCR: No Calibration Required

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.6dB
---	-------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1dB
---	-------

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.8dB
---	-------

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1dB
---	-------



Appendix A. Conducted Test Results

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Wilson Chen	Temperature:	21~25	°C
Test Date:	2018/5/4	Relative Humidity:	51~55	%

TEST RESULTS DATA
Average Power Table

FCC Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6Mbps	1	36	5180	0.58	18.08	24.00	-3.00		Pass
11a	6Mbps	1	44	5220	0.58	17.90	24.00	-3.00		Pass
11a	6Mbps	1	48	5240	0.58	17.83	24.00	-3.00		Pass
HT20	MCS0	1	36	5180	0.62	17.86	24.00	-3.00		Pass
HT20	MCS0	1	44	5220	0.62	17.93	24.00	-3.00		Pass
HT20	MCS0	1	48	5240	0.62	17.90	24.00	-3.00		Pass
HT40	MCS0	1	38	5190	1.19	17.00	24.00	-3.00		Pass
HT40	MCS0	1	46	5230	1.19	17.12	24.00	-3.00		Pass

TEST RESULTS DATA
Average Power Table

FCC Band II										
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6M bps	1	52	5260	0.58	17.91	23.98	-3.00	26.99	Pass
11a	6M bps	1	60	5300	0.58	17.94	23.98	-3.00	26.99	Pass
11a	6M bps	1	64	5320	0.58	17.85	23.98	-3.00	26.99	Pass
HT20	MCS 0	1	52	5260	0.62	17.74	23.98	-3.00	26.99	Pass
HT20	MCS 0	1	60	5300	0.62	17.92	23.98	-3.00	26.99	Pass
HT20	MCS 0	1	64	5320	0.62	17.87	23.98	-3.00	26.99	Pass
HT40	MCS 0	1	54	5270	1.19	17.21	23.98	-3.00	26.99	Pass
HT40	MCS 0	1	62	5310	1.19	17.08	23.98	-3.00	26.99	Pass

TEST RESULTS DATA
Average Power Table

FCC Band III										
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6M bps	1	100	5500	0.58	15.74	23.98	-3.00	26.99	Pass
11a	6M bps	1	116	5580	0.58	16.30	23.98	-3.00	26.99	Pass
11a	6M bps	1	140	5700	0.58	16.58	23.98	-3.00	26.99	Pass
HT20	MCS 0	1	100	5500	0.62	15.72	23.98	-3.00	26.99	Pass
HT20	MCS 0	1	116	5580	0.62	16.18	23.98	-3.00	26.99	Pass
HT20	MCS 0	1	140	5700	0.62	16.28	23.98	-3.00	26.99	Pass
HT40	MCS 0	1	102	5510	1.19	15.73	23.98	-3.00	26.99	Pass
HT40	MCS 0	1	110	5550	1.19	16.24	23.98	-3.00	26.99	Pass
HT40	MCS 0	1	134	5670	1.19	16.34	23.98	-3.00	26.99	Pass



Appendix B. Radiated Spurious Emission

Band 3 - 5470~5725MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 140 5700MHz	*	5700	104.95	-	-	93.16	32.45	6.22	26.88	114	41	P	H
	*	5700	98.54	-	-	86.75	32.45	6.22	26.88	114	41	A	H
		5725.08	58.4	-15.6	74	46.59	32.48	6.22	26.89	114	41	P	H
		5725	50.15	-3.85	54	38.34	32.48	6.22	26.89	114	41	A	H
	*	5700	100.85	-	-	89.06	32.45	6.22	26.88	122	33	P	V
	*	5700	93.52	-	-	81.73	32.45	6.22	26.88	122	33	A	V
		5725	56.27	-17.73	74	44.46	32.48	6.22	26.89	122	33	P	V
		5725	46.47	-7.53	54	34.66	32.48	6.22	26.89	122	33	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 - 5470~5725MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		11400	49.67	-24.33	74	56.47	39.21	9.48	55.49	152	285	P	H
HT20		17100	50.78	-23.22	74	50.34	42.16	14.66	56.38	165	298	P	H
CH 140		11400	47.93	-26.07	74	54.73	39.21	9.48	55.49	152	285	P	V
5700MHz		17100	50.14	-23.86	74	49.7	42.16	14.66	56.38	165	298	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

WIFI 802.11n HT20 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 LF		32.91	22.08	-17.92	40	30.24	23.49	0.32	31.97	-	-	P	H
		267.65	21.33	-24.67	46	30.93	19.87	1.76	31.23	-	-	P	H
		351.07	23.88	-22.12	46	32.3	20.69	2.1	31.21	-	-	P	H
		791.45	30.73	-15.27	46	30.42	28.34	3.14	31.17	-	-	P	H
		851.59	31.46	-14.54	46	30.48	28.91	3.26	31.19	-	-	P	H
		950.53	32.71	-13.29	46	30.67	29.91	3.47	31.34	100	52	P	H
		43.58	23.99	-16.01	40	37.35	18.13	0.48	31.97	-	-	P	V
		263.77	20.93	-25.07	46	30.28	20.13	1.75	31.23	-	-	P	V
		754.59	30.14	-15.86	46	30.62	27.68	3.04	31.2	-	-	P	V
		820.55	30.56	-15.44	46	29.87	28.66	3.2	31.17	-	-	P	V
		942.77	31.92	-14.08	46	29.96	29.81	3.46	31.31	100	0	P	V
		989.33	32.48	-21.52	54	29.9	30.37	3.54	31.33	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

**Note symbol**

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	P eak or A verage
H/V	H orizontal or V ertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

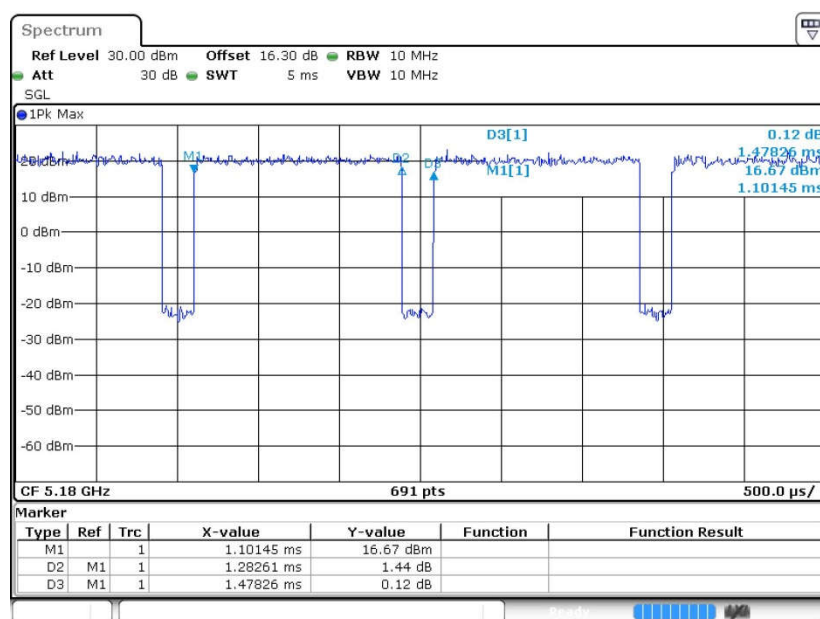
= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.

Appendix C. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11n HT20	86.76	1.283	0.779	1kHz

802.11n HT20





Appendix E. Product Equality Declaration

Motorola Mobility LLC.

222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

Product Equality Declaration

We, Motorola Mobility LLC. declare on our sole responsibility for the product of XT1922-6/XT1922-7/XT1922-9.

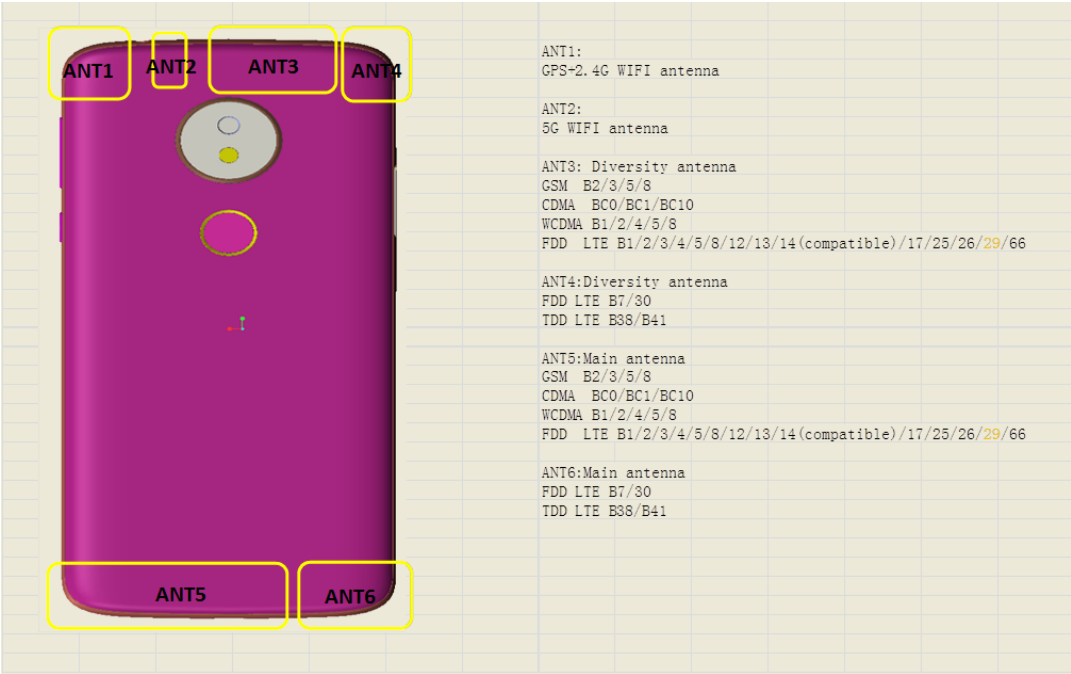
The detail differences between variant and original as below:

◆ Add 2nd source suppliers component

component	Original Sample	Variant Sample 1	Variant Sample 2	Variant Sample 3	Variant Sample 4
CPU	Qualcomm MSM-8920-9-720BNSP- TR-00-0-AA	Qualcomm MSM-8953-2-857NSP-T R-01-0-AB	Qualcomm MSM-8953-2-857NSP-T R-01-0-AB	Qualcomm MSM-8953-2-857NSP-T R-01-0-AB	Qualcomm MSM-8953-2-857NSP-TR -01-0-AB
Front Camera	Kingcome 06B5-L3100FF	Kingcome 06B5-L3100FF	Holitech PLQ8816M	Kingcome 06B5-L3100FF	Holitech PLQ8816M
Rear Camera	Truly CMC958-B13BA-E	Truly CMC958-B13BA-E	Holitech TLQ8817M	Truly CMC958-B13BA-E	Holitech TLQ8817M
Memory	Samsung KMGX6001BM-B514	Samsung KMGX6001BM-B514	Hynix H9TQ26ADFTBCUR-KUM	Samsung KMQE60013M-B318	Micron MT29TZZZ5D6DKFRL-10 7W.9A6
Battery	SCUD BL270 3.85V 4000mAh	SCUD BL270 3.85V 4000mAh	ATL BL270 3.85V 4000mAh	SCUD BL270 3.85V 4000mAh	ATL BL270 3.85V 4000mAh
PCB	EEK LLDM311B6-5	EEK LLDM311B6-5	MEIKO LLDM311B6-5	EEK LLDM311B6-5	MEIKO LLDM311B6-5
LCM	Tianma TM057JVSS12-00	Tianma TM057JVSS12-00	DJN 98-03057-6483B-H	Tianma TM057JVSS12-00	DJN 98-03057-6483B-H
Motor	AWA FS-3032	AWA FS-3032	DMEGC CHENJI DM-YX416-2	AWA FS-3032	DMEGC CHENJI DM-YX416-2
FPS	O-film ETW-0898-03	O-film ETW-0898-03	Kerr 9111-040006201	O-film ETW-0898-03	Kerr 9111-040006201

◆ Antenna difference

Sample 1 and 3 in the variant 4 Sample files are different from 5G WiFi Pattern, but others are the same as the original ones.



Except listings above, the others are all the same.

Should you have any questions or comments regarding this matter, please have my best attention.

Sincerely yours,

Dai Lihua

Contact Person: Dai Lihua
COMPANY: Motorola Mobility LLC.
Tel:86-18150396535
E-Mail: dailh@lenovo.com