



# FCC Test Report

**APPLICANT** : Motorola Mobility LLC  
**EQUIPMENT** : Mobile Cellular Phone  
**BRAND NAME** : Motorola  
**MODEL NAME** : XT2087-2  
**FCC ID** : IHDT56ZE2  
**STANDARD** : 47 CFR Part 15 Subpart B  
**CLASSIFICATION** : Certification

The product was received on Jun. 03, 2020 and testing was completed on Jul. 02, 2020. 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.

*Jason Jia*

Reviewed by: Jason Jia / Supervisor

*James Huang*

Approved by: James Huang / Manager



**Sporton International (Kunshan) Inc.**

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300  
People's Republic of China**



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### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC060301-01	Rev. 01	Initial issue of report	Jul. 29, 2020



### 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 6.33 dB at 0.193 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 5.26 dB at 30.000 MHz

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



# 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	XT2087-2
FCC ID	IHDT56ZE2
EUT supports Radios application	GSM/WCDMA/LTE/NFC WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE FM Receiver / GNSS
IMEI Code	Conduction: 355540110033913/355540110033921 Radiation: 355540110034119/355540110034127
HW Version	DVT2
SW Version	QPA30.19
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. This is a variant report for XT2087-2. The change note could be referred to the product equality declaration which is exhibit separately. Based on the similarity between current and previous project, only the related test cases from original report (Sporton Report Number FC060301) were verified for the differences.



### 1.4. Product Specification of Equipment Under Test

Standards-related Product Specification	
<b>Tx Frequency</b>	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 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 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
<b>Rx Frequency</b>	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 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz LTE Band 66 : 2110.7 MHz~ 2199.3 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 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 NFC : 13.56 MHz FM : 88 MHz ~ 108 MHz
<b>Antenna Type</b>	WWAN : PIFA Antenna WLAN : PIFA Antenna Bluetooth : PIFA Antenna GNSS: PIFA Antenna NFC : FPC Antenna FM : External Handset Antenna
<b>Type of Modulation</b>	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 / 64QAM 802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n/ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : $\pi/4$ -DQPSK Bluetooth (3Mbps) : 8-DPSK GNSS : BPSK NFC: ASK FM: FM
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Note : GNSS = Galileo + GLONASS + GPS

### 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	MC-301
AC Adapter 1(EU)	Brand Name	Motorola (Acbel)	Model Name	MC-302
AC Adapter 1(UK)	Brand Name	Motorola (Acbel)	Model Name	MC-303
AC Adapter 1(AR)	Brand Name	Motorola (Acbel)	Model Name	MC-306
AC Adapter 1(AU)	Brand Name	Motorola (Acbel)	Model Name	MC-305
AC Adapter 1(Chile)	Brand Name	Motorola (Acbel)	Model Name	MC-309
AC Adapter 2(US)	Brand Name	Motorola (Salom)	Model Name	MC-301
AC Adapter 2(EU)	Brand Name	Motorola (Salom)	Model Name	MC-302
AC Adapter 2(UK)	Brand Name	Motorola (Salom)	Model Name	MC-303
AC Adapter 2(AR)	Brand Name	Motorola (Salom)	Model Name	MC-306
AC Adapter 2(AU)	Brand Name	Motorola (Salom)	Model Name	MC-305
AC Adapter 2(BR)	Brand Name	Motorola (Salom)	Model Name	MC-307
AC Adapter 3(EU)	Brand Name	Motorola (Chenyang)	Model Name	MC-202
AC Adapter 3(UK)	Brand Name	Motorola (Chenyang)	Model Name	MC-203
AC Adapter 4(EU)	Brand Name	Motorola (Acbel)	Model Name	MC-202
AC Adapter 4(UK)	Brand Name	Motorola (Acbel)	Model Name	MC-203
Battery	Brand Name	Motorola(ATL)	Model Name	MG50
Earphone	Brand Name	Motorola (NLD)	Model Name	NLD-EM301K-06SF
USB Cable 1	Brand Name	Motorola (Cabletech)	Model Name	SC18C37155
USB Cable 2	Brand Name	Motorola (Luxshare)	Model Name	SC18C37156
USB Cable 3	Brand Name	Motorola (Saibao)	Model Name	SC18C37157
USB Cable 4	Brand Name	Motorola (Saibao)	Model Name	SC18C24367
USB Cable 5	Brand Name	Motorola (Luxshare)	Model Name	SC18C24368



## 1.7. Test Location

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

<b>Test Firm</b>	Sporton International (Kunshan) Inc.		
<b>Test Site Location</b>	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
<b>Test Site No.</b>	<b>Sporton Site No.</b>	<b>FCC Designation No.</b>	<b>FCC Test Firm Registration No.</b>
	CO01-KS 03CH02-KS	CN1257	314309

## 1.8. Test Software

Item	Site	Manufacture	Name	Version
1.	03CH02-KS	AUDIX	E3	6.2009-8-24a
2.	CO01-KS	AUDIX	E3	6.2009-8-24

## 1.9. Applicable Standards

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

- 47 CFR 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.

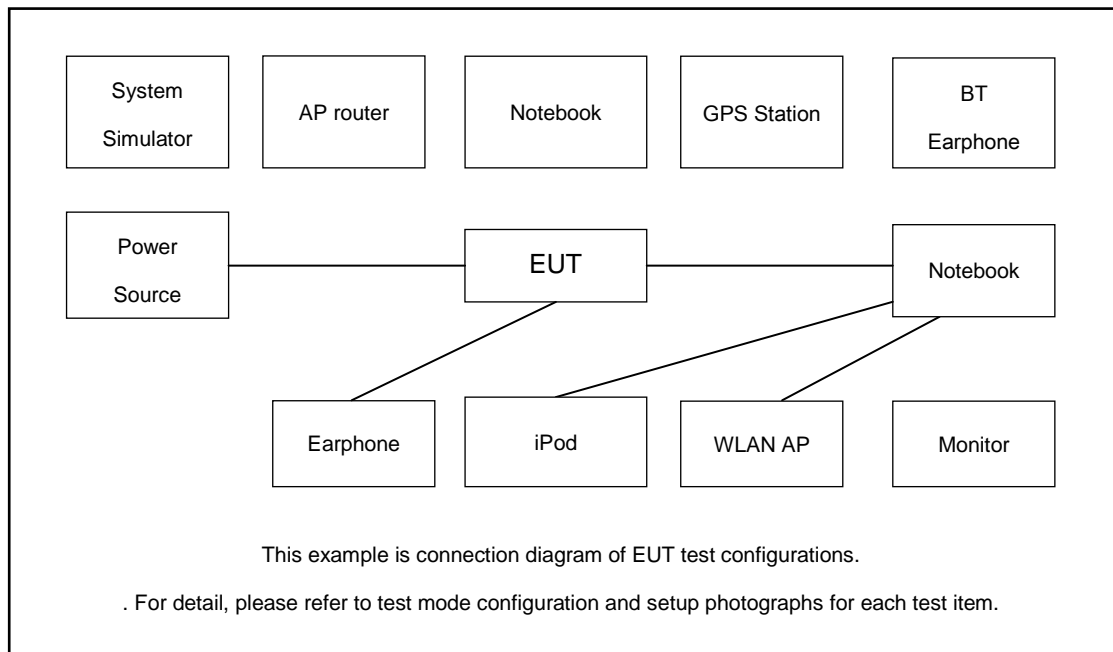
Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
AC Conducted Emission	Mode 1: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN Idle(2.4G) + Earphone + Camera(Rear) + USB Cable 1(Charging from Adapter 1) + SIM1
	Mode 2: WCDMA Band V Rx(High) + Bluetooth Idle + WLAN Idle(5G) + Earphone + Camera(Front) + USB Cable 2(Charging from Adapter 2) + SIM2
	Mode 3: LTE Band 5 Rx(Low) + Bluetooth Idle + WLAN Idle(2.4G) + Earphone + MPEG4 + USB Cable 3(Charging from Adapter 3) + SIM1
	Mode 4: LTE Band 41 Rx(Middle) + Bluetooth Idle + WLAN Idle(5G) + Earphone + FM Rx(98MHz) + USB Cable 4(Charging from Adapter 3) + SIM2
	Mode 5: LTE Band 38 Rx(Low) + Bluetooth Idle + WLAN Idle(2.4G) + Earphone + NFC On + USB Cable 5(Charging from Adapter 4) + SIM1
	Mode 6: LTE Band 2 Rx(Middle) + Bluetooth Idle + WLAN Idle(5G) + Earphone + GNSS Rx + USB Cable 1(Data Link with Notebook) + SIM2
	Mode 7: LTE Band 7 Rx(Low) + Bluetooth Idle + WLAN Idle(2.4G) + Earphone + GNSS Rx + USB Cable 2(Data Link with Notebook) + SIM1
	Mode 8: LTE Band 66 Rx(High) + Bluetooth Idle + WLAN Idle(5G) + Earphone + GNSS Rx + USB Cable 3(Data Link with Notebook) + SIM2
	Mode 9: LTE Band 5 Rx(Low) + Bluetooth Idle + WLAN Idle(2.4G) + Earphone + GNSS Rx + USB Cable 4(Data Link with Notebook) + SIM1
	Mode 10 : LTE Band 5 Rx(Low) + Bluetooth Idle + WLAN Idle(5G) + Earphone + GNSS Rx + USB Cable 5(Data Link with Notebook) + SIM2



Radiated Emissions	<p>Mode 1 : GSM 850 Rx(Middle) + Bluetooth Idle + WLAN Idle(2.4G) + Earphone + Camera(Rear) + USB Cable 1(Charging from Adapter 1) + SIM1</p> <p>Mode 2 : WCDMA Band V Rx(High) + Bluetooth Idle + WLAN Idle(5G) + Earphone + Camera(Front) + USB Cable 2(Charging from Adapter 2) + SIM2</p> <p>Mode 3 : LTE Band 5 Rx(Low) + Bluetooth Idle + WLAN Idle(2.4G) + Earphone + MPEG4 + USB Cable 3(Charging from Adapter 1) + SIM1</p> <p>Mode 4 : LTE Band 41 Rx(Middle) + Bluetooth Idle + WLAN Idle(5G) + Earphone + FM Rx(88MHz) + USB Cable 4(Charging from Adapter 3) + SIM2</p> <p>Mode 5 : LTE Band 38 Rx(Low) + Bluetooth Idle + WLAN Idle(2.4G) + Earphone + NFC On + USB Cable 5(Charging from Adapter 4) + SIM1</p> <p>Mode 6 : LTE Band 2 Rx(Middle) + Bluetooth Idle + WLAN Idle(5G) + Earphone + GNSS Rx + USB Cable 1(Data Link with Notebook) + SIM2</p> <p>Mode 7 : LTE Band 7 Rx(Low) + Bluetooth Idle + WLAN Idle(2.4G) + Earphone + GNSS Rx + USB Cable 2(Data Link with Notebook) + SIM1</p> <p>Mode 8 : LTE Band 66 Rx(High) + Bluetooth Idle + WLAN Idle(5G) + Earphone + GNSS Rx + USB Cable 3(Data Link with Notebook) + SIM2</p> <p>Mode 9 : LTE Band 5 Rx(Low) + Bluetooth Idle + WLAN Idle(2.4G) + Earphone + GNSS Rx + USB Cable 4(Data Link with Notebook) + SIM1</p> <p>Mode 10 : LTE Band 5 Rx(Low) + Bluetooth Idle + WLAN Idle(5G) + Earphone + GNSS Rx + USB Cable 5(Data Link with Notebook) + SIM2</p>
<p><b>Remark:</b></p> <ol style="list-style-type: none"> <li>1. The worst case of AC is mode 3; only the test data of this mode is reported.</li> <li>2. The worst case of RE is mode 3; only the test data of this mode is reported.</li> <li>3. Data Link with Notebook means data application transferred mode between EUT and Notebook.</li> <li>4. Pre-scanned Low/Middle/High channel, the worst channel was recorded in this report.</li> </ol>	

## 2.2.Connection Diagram of Test System



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

### 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,1.8m
2.	Base Station	R&S	CMU 200	N/A	N/A	Unshielded,1.8m
3.	GNSS Station	R&S	SMBV100A	258305	N/A	N/A
4.	WLAN AP	D-link	DIR-655	KA21R655B1	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	Xiaomi	LYEJ02LM	N/A	N/A	N/A
8.	Notebook	Lenovo	G480	QDS-BRCM1050I	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
9.	Notebook	YOGA	S730-13IWL	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
10.	Notebook	Lenovo	V130-141K B001	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
11.	Hard Disk	Lenovo	F310	DoC	Shielded, 1.2m	N/A
12.	Hard disk	KINGSHARE	KSP6120G	Fcc DoC	Shielded, 1.2m	N/A
13.	SD Card	Kingston	8GB	N/A	N/A	N/A
14.	SD Card	SanDisk	Uitra	N/A	N/A	N/A
15.	NFC Card	N/A	N/A	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 camera to capture images.
3. Turn on MPEG4 function.
4. Turn on NFC function
5. Turn on GNSS function to make the EUT receive continuous signals from GNSS station.
6. Turn on FM function to make the EUT receive continuous signals from FM station.



### 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.

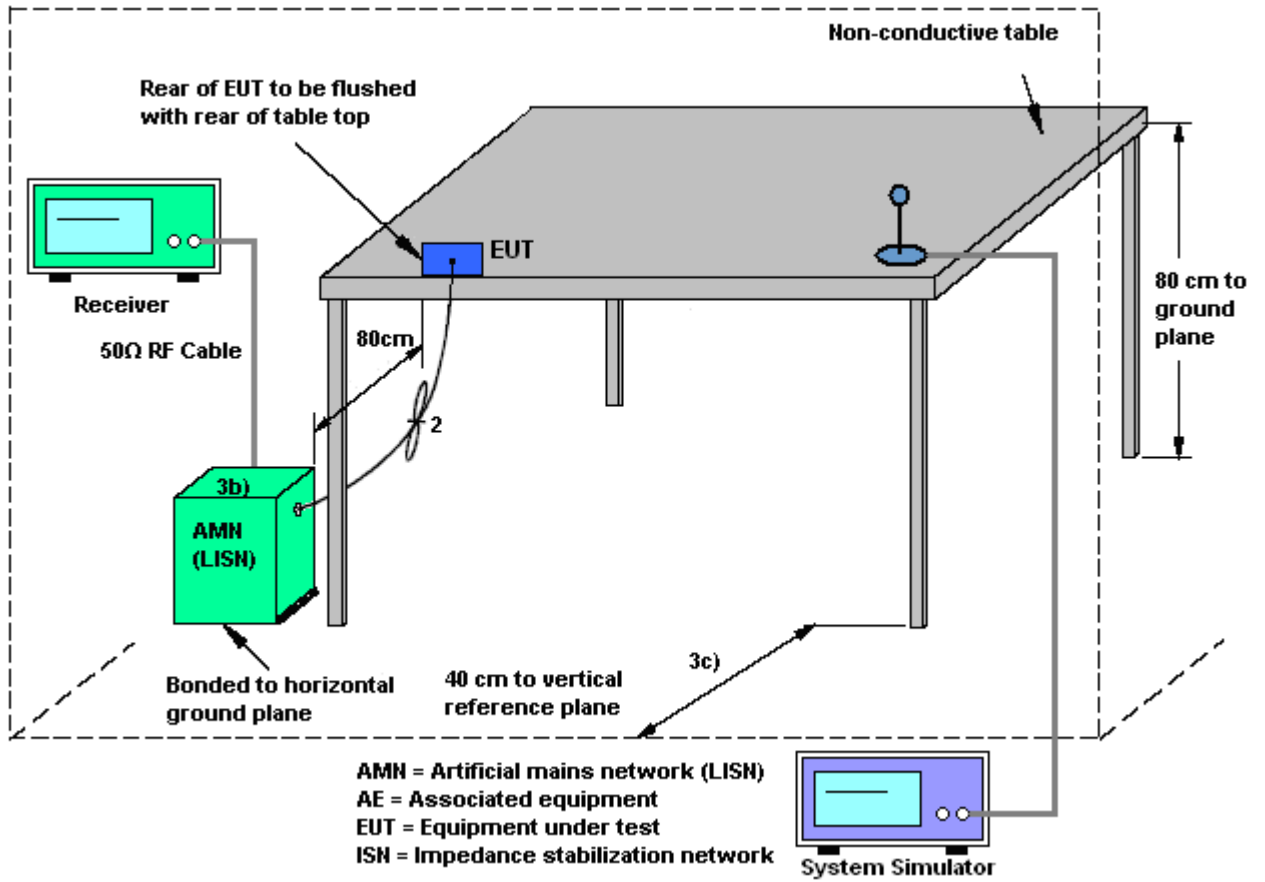
##### 3.1.2 Measuring Instruments

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

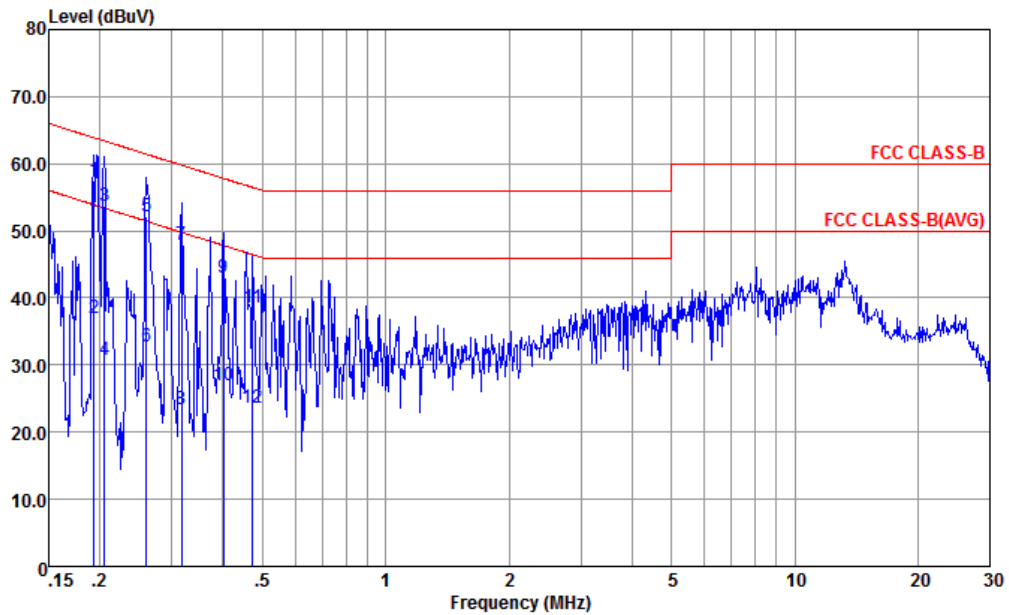






3.1.5 Test Result of AC Conducted Emission

Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

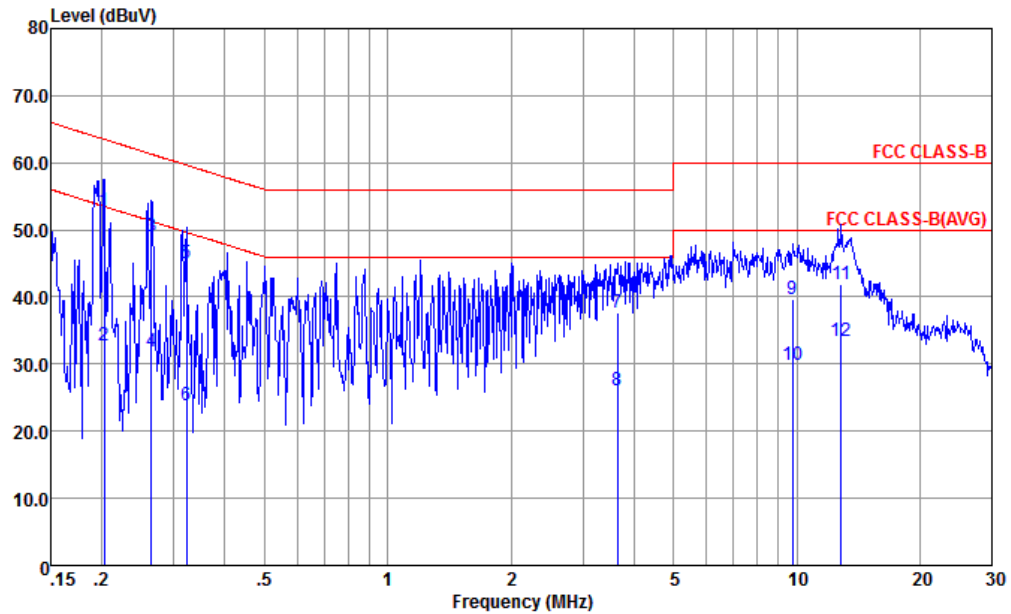


Site : CO01-KS  
 Condition : FCC CLASS-B LISN-L-191028-CN02 LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1 *	0.193	57.56	-6.33	63.89	47.09	0.09	10.38	QP
2	0.193	37.06	-16.83	53.89	26.59	0.09	10.38	Average
3	0.205	53.75	-9.65	63.40	43.30	0.09	10.36	QP
4	0.205	30.75	-22.65	53.40	20.30	0.09	10.36	Average
5	0.260	52.23	-9.19	61.42	41.80	0.10	10.33	QP
6	0.260	32.73	-18.69	51.42	22.30	0.10	10.33	Average
7	0.317	47.91	-11.89	59.80	37.50	0.11	10.30	QP
8	0.317	23.31	-26.49	49.80	12.90	0.11	10.30	Average
9	0.402	42.99	-14.82	57.81	32.60	0.12	10.27	QP
10	0.402	26.99	-20.82	47.81	16.60	0.12	10.27	Average
11	0.474	38.57	-17.88	56.45	28.20	0.13	10.24	QP
12	0.474	23.67	-22.78	46.45	13.30	0.13	10.24	Average



Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-KS  
 Condition : FCC CLASS-B LISN-N-191028-CN02 NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1 *	0.203	52.73	-10.76	63.49	42.20	0.17	10.36	QP
2	0.203	32.83	-20.66	53.49	22.30	0.17	10.36	Average
3	0.264	49.11	-12.18	61.29	38.60	0.19	10.32	QP
4	0.264	31.81	-19.48	51.29	21.30	0.19	10.32	Average
5	0.322	45.00	-14.66	59.66	34.50	0.20	10.30	QP
6	0.322	23.80	-25.86	49.66	13.30	0.20	10.30	Average
7	3.642	37.57	-18.43	56.00	26.60	0.72	10.25	QP
8	3.642	26.17	-19.83	46.00	15.20	0.72	10.25	Average
9	9.757	39.72	-20.28	60.00	28.19	1.19	10.34	QP
10	9.757	29.82	-20.18	50.00	18.29	1.19	10.34	Average
11	12.852	41.92	-18.08	60.00	29.91	1.64	10.37	QP
12	12.852	33.52	-16.48	50.00	21.51	1.64	10.37	Average

Note:

- Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
- Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)



### 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

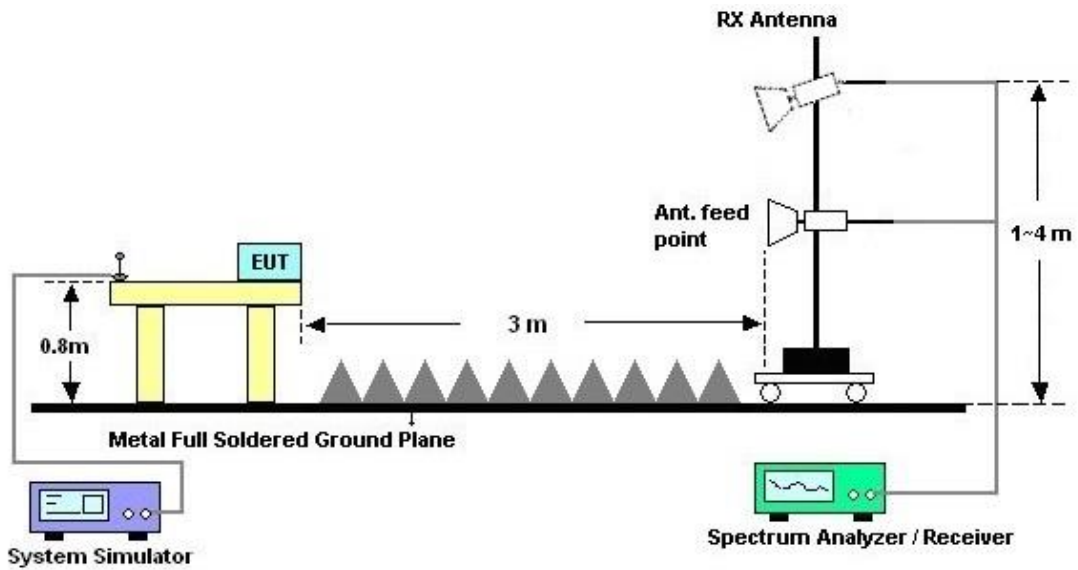
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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



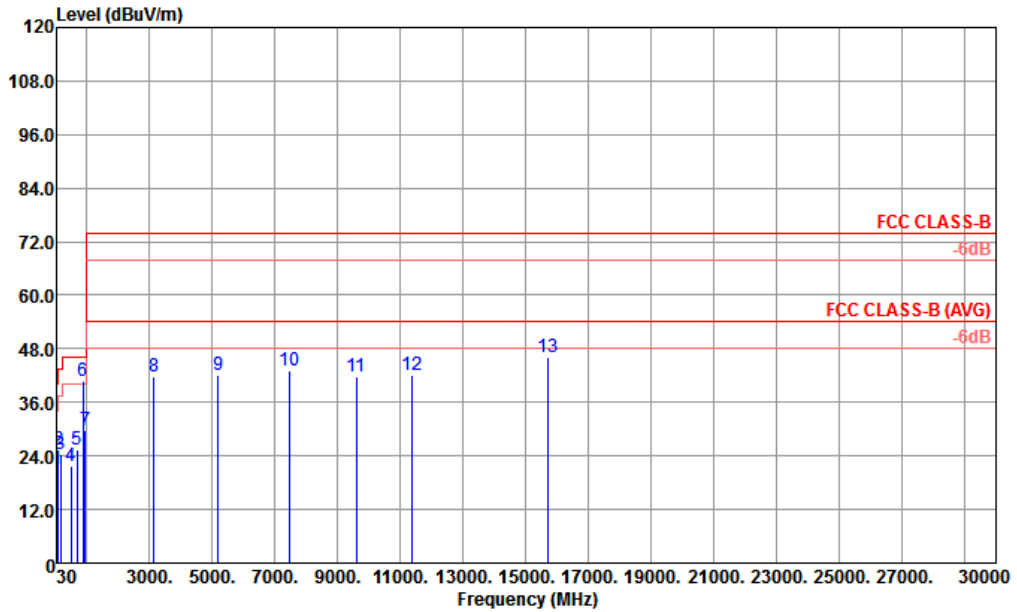
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

Test Engineer :	Jack Guo	Temperature :	21~22°C
		Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Horizontal
Remark :	#6 is system simulator signal which can be ignored.		

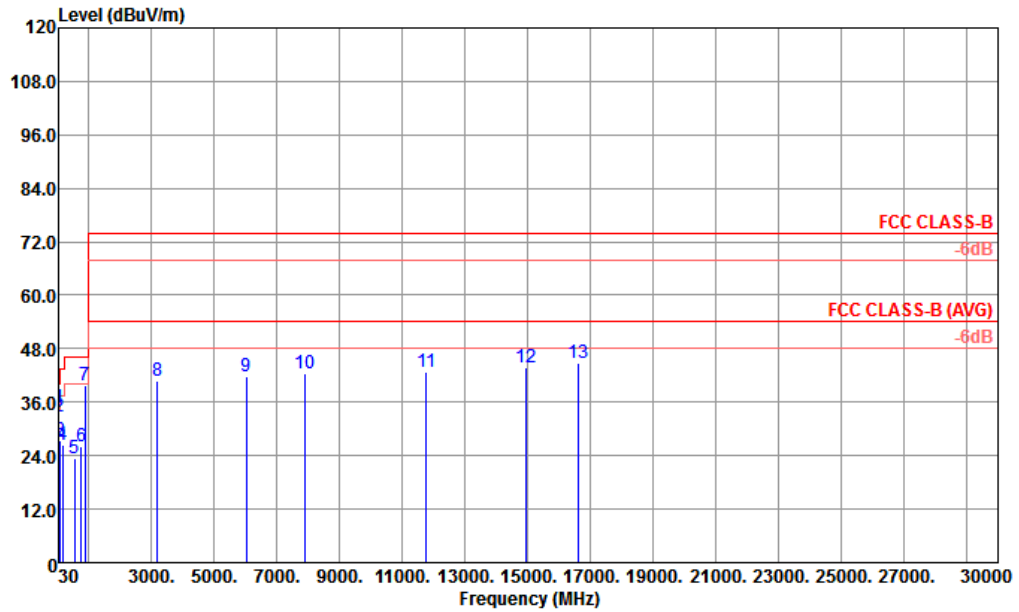


Site : 03CH02-KS  
 Condition : FCC CLASS-B 3m LF 44483-3M HORIZONTAL

	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	30.00	20.97	-19.03	40.00	27.09	25.10	0.76	31.98	---	---	Peak
2	88.20	25.27	-18.23	43.50	41.22	14.56	1.41	31.92	---	---	Peak
3	167.74	24.46	-19.04	43.50	38.57	15.86	1.96	31.93	---	---	Peak
4	491.72	21.73	-24.27	46.00	26.81	23.84	3.33	32.25	---	---	Peak
5	690.57	25.33	-20.67	46.00	27.06	26.66	3.95	32.34	---	---	Peak
6 !	871.96	40.88			38.93	29.21	4.39	31.65	---	---	Peak
7	945.68	29.69	-16.31	46.00	25.31	30.85	4.56	31.03	100	0	Peak
8	3144.00	41.62	-32.38	74.00	60.31	33.09	8.44	60.22	---	---	Peak
9	5192.00	42.10	-31.90	74.00	56.95	34.14	11.04	60.03	---	---	Peak
10	7448.00	43.11	-30.89	74.00	54.60	36.11	13.42	61.02	---	---	Peak
11	9603.00	41.92	-32.08	74.00	51.03	36.88	15.21	61.20	---	---	Peak
12	11349.00	42.08	-31.92	74.00	48.64	37.61	16.70	60.87	---	---	Peak
13	15714.00	46.18	-27.82	74.00	45.05	41.02	20.39	60.28	---	---	Peak



Test Engineer :	Jack Guo	Temperature :	21~22°C
		Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Vertical
Remark :	#7 is system simulator signal which can be ignored.		



Site : 03CH02-KS  
 Condition : FCC CLASS-B 3m LF 44483-3M VERTICAL

	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 !	30.00	34.74	-5.26	40.00	40.86	25.10	0.76	31.98	100	0 Peak	
2	40.67	32.70	-7.30	40.00	44.47	19.31	0.88	31.96	---	---	Peak
3	89.17	27.36	-16.14	43.50	43.18	14.68	1.42	31.92	---	---	Peak
4	170.65	26.38	-17.12	43.50	40.68	15.65	1.97	31.92	---	---	Peak
5	531.49	23.51	-22.49	46.00	27.49	24.88	3.45	32.31	---	---	Peak
6	753.62	26.02	-19.98	46.00	25.98	28.20	4.08	32.24	---	---	Peak
7	871.96	39.69			37.74	29.21	4.39	31.65	---	---	Peak
8	3176.00	40.78	-33.22	74.00	59.29	33.16	8.49	60.16	---	---	Peak
9	6032.00	41.67	-32.33	74.00	54.90	34.98	11.89	60.10	---	---	Peak
10	7904.00	42.51	-31.49	74.00	53.88	36.12	13.56	61.05	---	---	Peak
11	11763.00	42.70	-31.30	74.00	48.02	38.22	17.22	60.76	---	---	Peak
12	14967.00	43.81	-30.19	74.00	44.98	40.25	19.12	60.54	---	---	Peak
13	16605.00	44.72	-29.28	74.00	41.99	40.87	20.89	59.03	---	---	Peak

Note:

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



## 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 30dBm	Oct. 18, 2019	Jul. 02, 2020	Oct. 17, 2020	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55370528	10Hz~44G,MAX 30dB	Oct. 18, 2019	Jul. 02, 2020	Oct. 17, 2020	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz~1GHz	Dec. 30, 2019	Jul. 02, 2020	Dec. 29, 2020	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 10, 2019	Jul. 02, 2020	Nov. 09, 2020	Radiation (03CH02-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Nov. 10, 2019	Jul. 02, 2020	Nov. 09, 2020	Radiation (03CH02-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 08, 2020	Jul. 02, 2020	Jan. 07, 2021	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9KHz~1GHz	Aug. 06, 2019	Jul. 02, 2020	Aug. 05, 2020	Radiation (03CH02-KS)
Amplifier	Keysight	83017A	MY53270316	500MHz~26.5GHz	Oct. 18, 2019	Jul. 02, 2020	Oct. 17, 2020	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Jul. 02, 2020	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Jul. 02, 2020	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Jul. 02, 2020	NCR	Radiation (03CH02-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz;	Apr. 14, 2020	Jun. 28, 2020	Apr. 13, 2021	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 18, 2019	Jun. 28, 2020	Oct. 17, 2020	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Oct. 28, 2019	Jun. 28, 2020	Oct. 27, 2020	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 18, 2019	Jun. 28, 2020	Oct. 17, 2020	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% ( $U = 2Uc(y)$ )	2.9dB
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.9dB
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### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.0dB
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### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

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