



# FCC Test Report

**APPLICANT** : Motorola Mobility LLC  
**EQUIPMENT** : Mobile Cellular Phone  
**BRAND NAME** : Motorola  
**MODEL NAME** : XT1970-3  
**FCC ID** : IHDT56XT2  
**STANDARD** : 47 CFR Part 15 Subpart B  
**CLASSIFICATION** : Certification

The product was received on Dec. 20, 2018 and testing was completed on Feb. 26, 2019. 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. 1098, Pengxi North Road, Kunshan Economic Development Zone,**  
**Jiangsu Province 215335, China**



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### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC8D2002-01	Rev. 01	Initial issue of report	Mar. 15, 2019



### 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 3.99 dB at 13.560 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 3.63 dB at 84.320 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	XT1970-3
FCC ID	IHDT56XT2
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 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC/GNSS/FM Receiver
IMEI Code	Conduction: Sample 1: 352172100008771/352172100008789 Radiation: Sample 1: 352172100008771/352172100008789 Sample 2: 352172100015958
HW Version	DVT2
SW Version	PSA29.76
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, sample 1 is dual SIM slot, sample 2 is single SIM slot. According to the difference, we choose sample 1 to perform full test and the sample 2 to verify the worst case of sample 1 for radiation.



### 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 II: 1852.4 MHz ~ 1907.6 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 : 2537.5 MHz ~ 2652.5 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 II: 1932.4 MHz ~ 1987.6 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 : 2537.5 MHz ~ 2652.5 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 : Fixed Internal Antenna WLAN : PIFA Antenna Bluetooth : PIFA Antenna GNSS: PIFA Antenna NFC : Coil 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(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
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### 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 (Salom)	Model Name	SC-51
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
AC Adapter 1(EU)	Brand Name	Motorola (Salom)	Model Name	SC-52
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
AC Adapter 1(UK)	Brand Name	Motorola (Salom)	Model Name	SC-53
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
AC Adapter 1(IN)	Brand Name	Motorola (Salom)	Model Name	SC-54
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
AC Adapter 1(AU)	Brand Name	Motorola (Salom)	Model Name	SC-55
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
AC Adapter 1(AR)	Brand Name	Motorola (Salom)	Model Name	SC-56
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
AC Adapter 1(BR)	Brand Name	Motorola (Salom)	Model Name	SC-57
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		



AC Adapter 1(PRC)	Brand Name	Motorola (Salom)	Model Name	SC-58
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
AC Adapter 1 (Chile)	Brand Name	Motorola (Salom)	Model Name	SC-52
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
AC Adapter 2(US)	Brand Name	Motorola (Chenyang)	Model Name	SC-51
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
AC Adapter 2(EU)	Brand Name	Motorola (Chenyang)	Model Name	SC-52
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
AC Adapter 2(UK)	Brand Name	Motorola (Chenyang)	Model Name	SC-53
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
AC Adapter 2(AU)	Brand Name	Motorola (Chenyang)	Model Name	SC-55
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
AC Adapter 2(AR)	Brand Name	Motorola (Chenyang)	Model Name	SC-56
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
AC Adapter 2(PRC)	Brand Name	Motorola (Chenyang)	Model Name	SC-58
	Power Rating	I/P: 100-240 Vac, 600mA O/P: 5Vdc,3000mA; 9Vdc,2000mA; 12Vdc,1500mA		
Battery	Brand Name	Motorola (ATL)	Model Name	KR40
	Power Rating	3.8Vdc,3500mAh	Type	Li-ion, Polymer
Earphone 1	Brand Name	Motorola (Lyand)	Model Name	SH38C37773
	Signal Line Type	1.1 meter, non-shielded cable, without ferrite core		
Earphone 2	Brand Name	Motorola (jiahe)	Model Name	SH38C44959
	Signal Line Type	1.1 meter, non-shielded cable, without ferrite core		
USB Cable 1	Brand Name	Motorola (LiQi)	Model Name	L32B-053000100/L32B-053000100L
	Signal Line Type	1.0 meter, shielded cable, without ferrite core		
USB Cable 2	Brand Name	Motorola (Saibao)	Model Name	S32B-053000100/S32B-053000100L
	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).

<b>Test Site</b>	Sporton International (Kunshan) Inc.		
<b>Test Site Location</b>	No. 1098, Pengxi North Road, Kunshan Economic Development Zone, Jiangsu Province 215335, 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	CN5013	630927

### 1.8. 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).

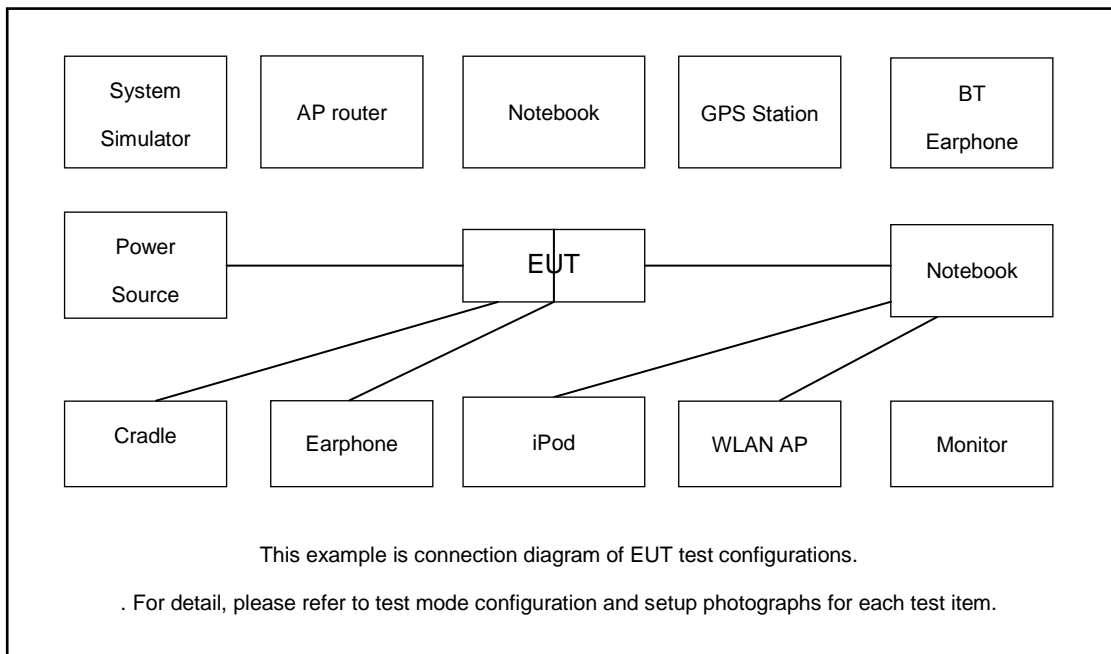
Test Items	Function Type
AC Conducted Emission	Mode 1: GSM850 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + USB Cable 1(Charging from Adapter 1) + Earphone 1 for Sample 1
	Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + USB Cable 2(Charging from Adapter 2) + Earphone 2 for Sample 1
	Mode 3: WCDMA Band V Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + MPEG4+ USB Cable 2(Charging from Adapter 2) + Earphone 2 for Sample 1
	Mode 4: LTE Band 5 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + NFC On + USB Cable 2(Charging from Adapter 2) + Earphone 2 for Sample 1
	Mode 5: WCDMA Band V Rx(Low) + Bluetooth Idle + WLAN (2.4G) Idle + FM Rx(98MHz) + USB Cable 2(Charging from Adapter 2) + Earphone 2 for Sample 1
	Mode 6: LTE Band 38 Idle + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + USB Cable 1(Data Link with Notebook) + Earphone 2 for Sample 1
	Mode 7: LTE Band 7 Idle + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + USB Cable 2(Data Link with Notebook) + Earphone 2 for Sample 1
Radiated Emissions	Mode 1: GSM850 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + USB Cable 1(Charging from Adapter 1) + Earphone 1 for Sample 1
	Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + USB Cable 1(Charging from Adapter 1) + Earphone 1 for Sample 1
	Mode 3: WCDMA Band V Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + MPEG4+ USB Cable 1(Charging from Adapter 1) + Earphone 1 for Sample 1
	Mode 4: LTE Band 5 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + NFC On + USB Cable 1(Charging from Adapter 1) + Earphone 1 for Sample 1
	Mode 5: WCDMA Band V Rx(Low) + Bluetooth Idle + WLAN (2.4G) Idle + FM Rx(88MHz) + USB Cable 1(Charging from Adapter 1) + Earphone 1 for Sample 1
	Mode 6: LTE Band 38 Idle + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + USB Cable 1(Data Link with Notebook) + Earphone 1 for Sample 1
	Mode 7: LTE Band 7 Idle + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + USB Cable 1(Data Link with Notebook) + Earphone 1 for Sample 1
	Mode 8: LTE Band 38 Idle + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + USB Cable 1(Data Link with Notebook) + Earphone 1 for Sample 2



**Remark:**

1. The worst case of AC is mode 4; only the test data of this mode is reported.
2. The worst case of RE is mode 8; only the test data of this mode is reported.
3. Data Link with Notebook means data application transferred mode between EUT and Notebook.
4. GNSS Rx = BDS + GLONASS + GPS
5. Pre-scanned Low/Middle/High channel for GSM/WCDMA/LTE Band 5, FM Rx, the worst channel was recorded in this report.

## 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	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8m
2.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8m
3.	Vector Signal Generator	R&S	SMBV100A	N/A	N/A	N/A
4.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	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	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
9.	Notebook	DELL	MT320	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
10.	SD Card	Kingston	8GB	N/A	N/A	N/A
11.	SD Card	SanDisk	Uitra	N/A	N/A	N/A
12.	Hard Disk	Lenovo	F310	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. Turn on camera to capture images.
4. Turn on MPEG4 function.
5. Turn on FM receiver function to make the EUT receive continuous signals from FM station
6. Turn on NFC function.



### 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.

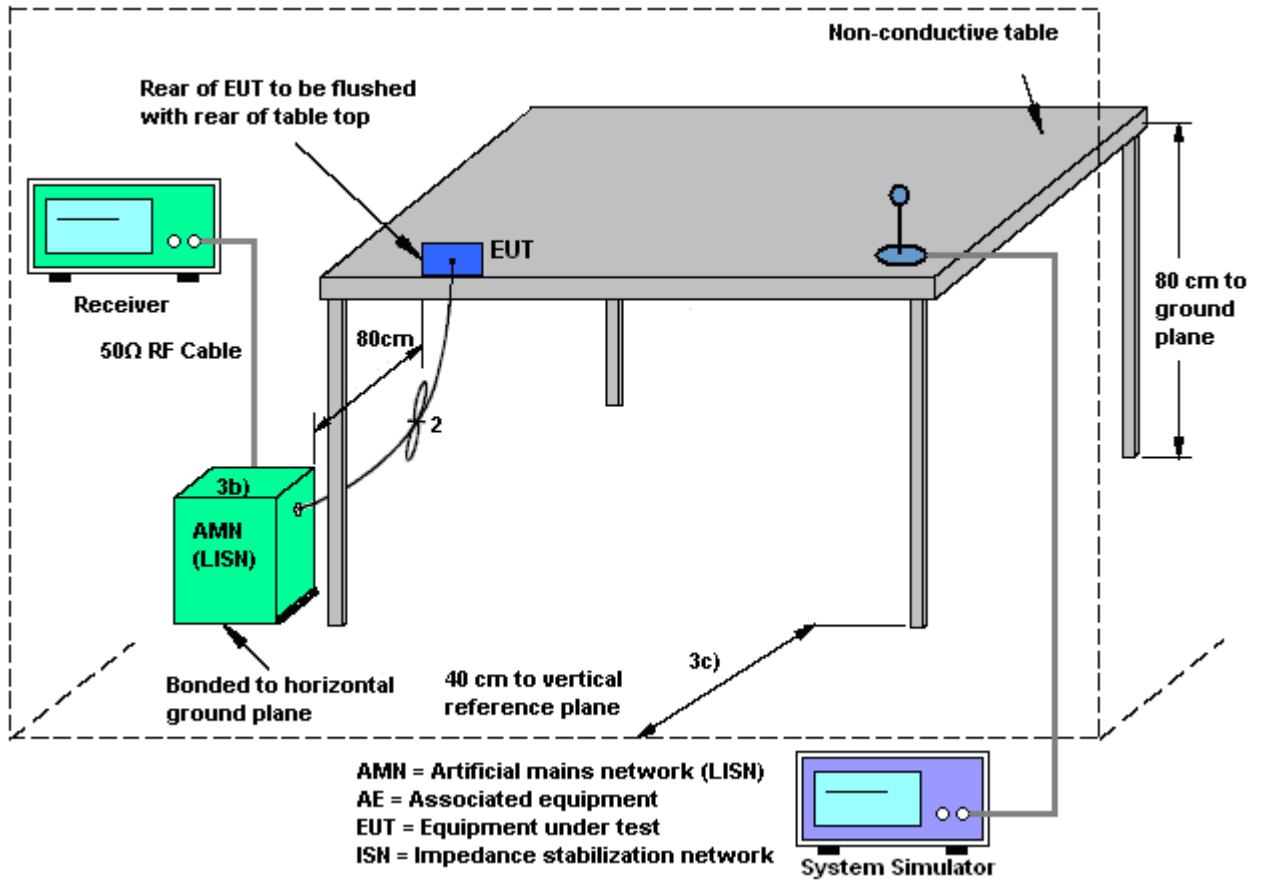
##### 3.1.2 Measuring Instruments

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.

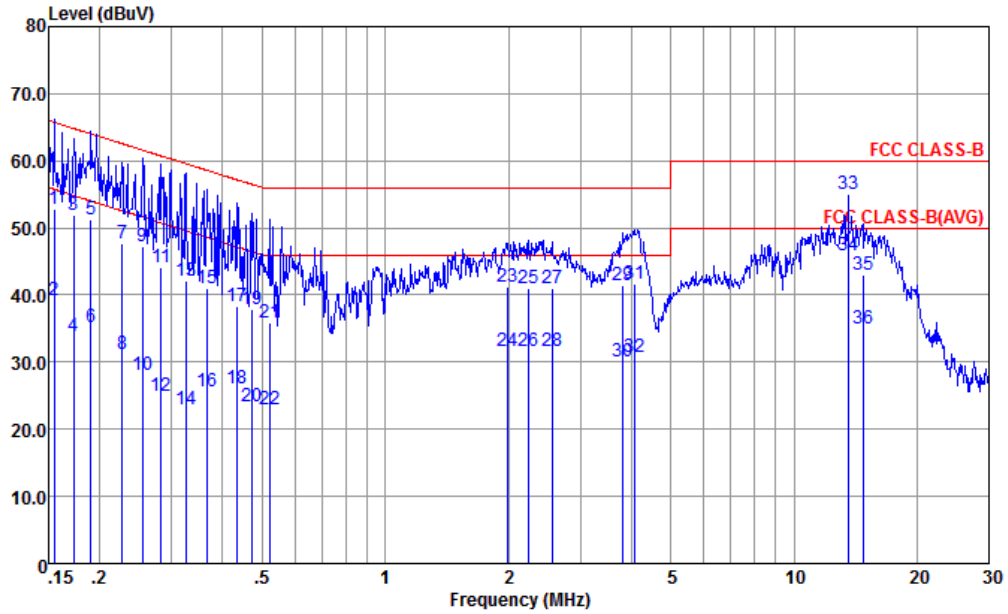
### 3.1.4 Test Setup





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



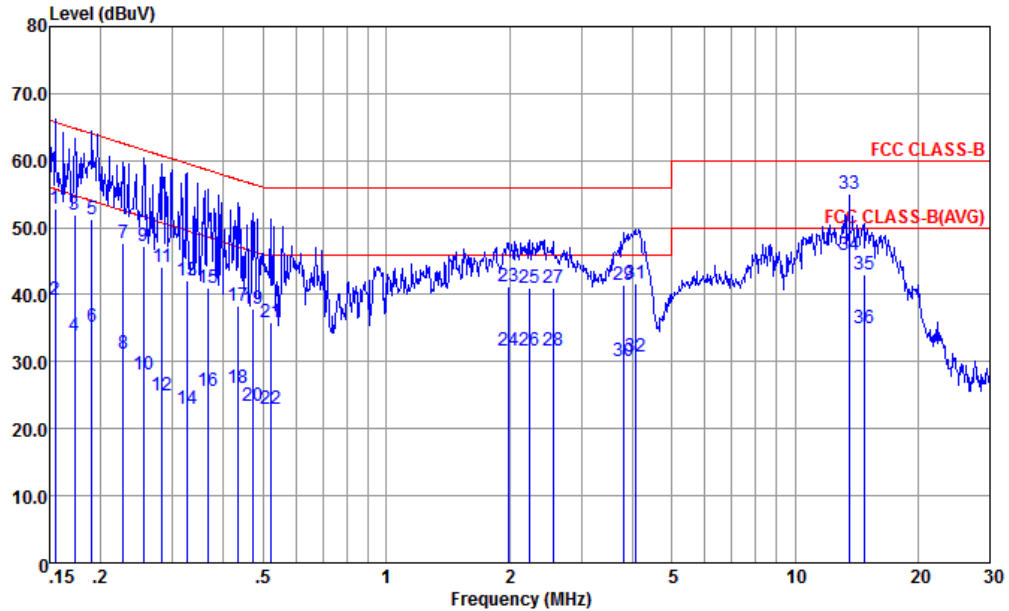
Site : CO01-KS  
 Condition : FCC CLASS-B LISN-L-181013-060103 LINE  
 Project : (FC) 8D2002-01  
 mode : Mode 4  
 : 352172100008771/352172100008789 #3

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.155	52.89	-12.85	65.74	42.19	0.23	10.47	QP
2	0.155	39.29	-16.45	55.74	28.59	0.23	10.47	Average
3	0.173	51.85	-12.96	64.81	41.20	0.23	10.42	QP
4	0.173	33.95	-20.86	54.81	23.30	0.23	10.42	Average
5	0.190	51.21	-12.81	64.02	40.61	0.22	10.38	QP
6	0.190	35.21	-18.81	54.02	24.61	0.22	10.38	Average
7	0.227	47.77	-14.80	62.57	37.20	0.22	10.35	QP
8	0.227	31.17	-21.40	52.57	20.60	0.22	10.35	Average
9	0.255	47.15	-14.45	61.60	36.60	0.22	10.33	QP
10	0.255	28.05	-23.55	51.60	17.50	0.22	10.33	Average
11	0.283	44.14	-16.58	60.72	33.60	0.22	10.32	QP
12	0.283	25.04	-25.68	50.72	14.50	0.22	10.32	Average
13	0.325	42.02	-17.55	59.57	31.49	0.23	10.30	QP
14	0.325	23.02	-26.55	49.57	12.49	0.23	10.30	Average
15	0.365	41.01	-17.60	58.61	30.50	0.23	10.28	QP
16	0.365	25.71	-22.90	48.61	15.20	0.23	10.28	Average
17	0.435	38.28	-18.87	57.15	27.80	0.23	10.25	QP





Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line

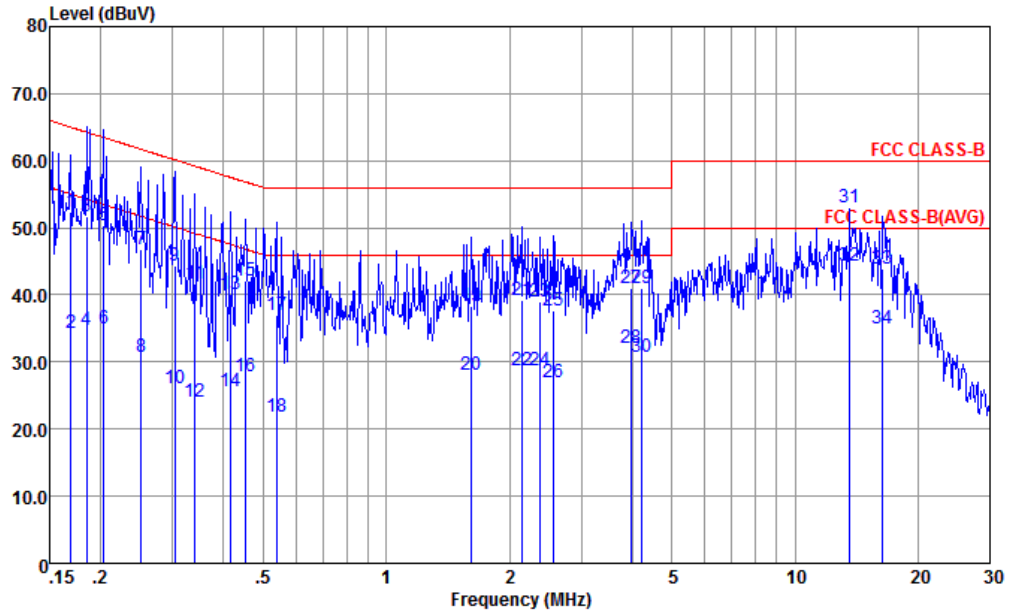


Site : CO01-KS  
 Condition : FCC CLASS-B LISN-L-181013-060103 LINE  
 Project : (FC) 8D2002-01  
 mode : Mode 4  
 : 352172100008771/352172100008789 #3

Freq	Level	Over Limit	Limit	Read	LISN	Cable	Loss	Remark
MHz	dBuV		dB	dBuV	dB		dB	
18	0.435	26.08	-21.07	47.15	15.60	0.23	10.25	Average
19	0.471	37.97	-18.52	56.49	27.50	0.23	10.24	QP
20	0.471	23.37	-23.12	46.49	12.90	0.23	10.24	Average
21	0.521	35.97	-20.03	56.00	25.50	0.23	10.24	QP
22	0.521	22.97	-23.03	46.00	12.50	0.23	10.24	Average
23	1.991	41.29	-14.71	56.00	30.80	0.26	10.23	QP
24	1.991	31.69	-14.31	46.00	21.20	0.26	10.23	Average
25	2.249	41.09	-14.91	56.00	30.60	0.26	10.23	QP
26	2.249	31.69	-14.31	46.00	21.20	0.26	10.23	Average
27	2.554	41.00	-15.00	56.00	30.50	0.26	10.24	QP
28	2.554	31.70	-14.30	46.00	21.20	0.26	10.24	Average
29	3.820	41.42	-14.58	56.00	30.90	0.27	10.25	QP
30	3.820	30.12	-15.88	46.00	19.60	0.27	10.25	Average
31	4.070	41.72	-14.28	56.00	31.20	0.27	10.25	QP
32	4.070	30.72	-15.28	46.00	20.20	0.27	10.25	Average
33	13.560	55.11	-4.89	60.00	44.40	0.33	10.38	QP
34 *	13.560	46.01	-3.99	50.00	35.30	0.33	10.38	Average
35	14.750	42.95	-17.05	60.00	32.21	0.35	10.39	QP
36	14.750	34.95	-15.05	50.00	24.21	0.35	10.39	Average



Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral

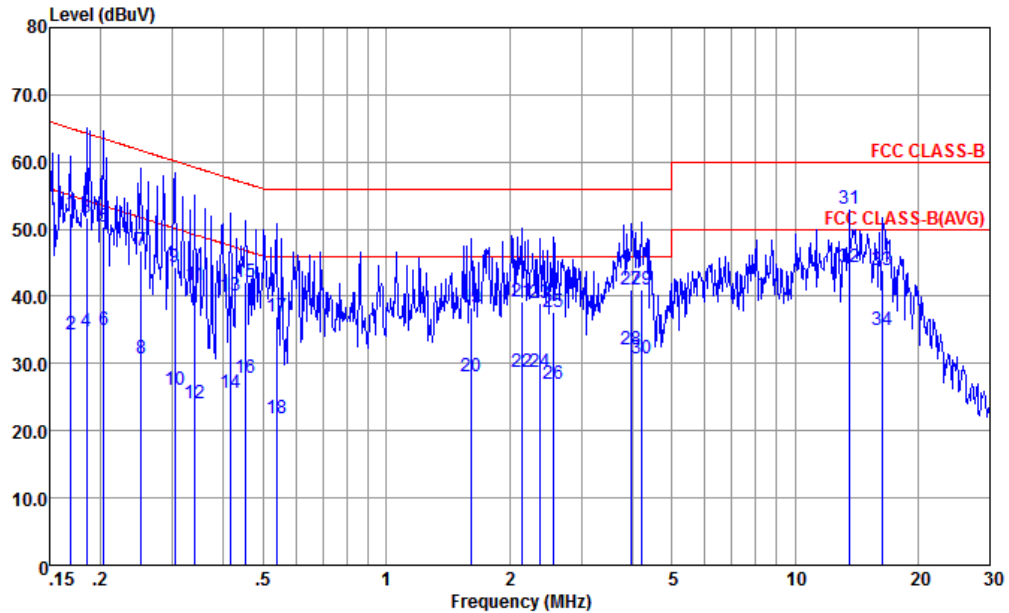


Site : CO01-KS  
 Condition : FCC CLASS-B LISN-N-181013-060103 NEUTRAL  
 Project : (FC) 8D2002-01  
 mode : Mode 4  
 : 352172100008771/352172100008789 #3

	Freq	Level	Over Limit	Limit	Read	LISN	Cable	
	MHz	dBuV		dB	dBuV	dB	dB	Remark
1	0.169	52.44	-12.55	64.99	41.80	0.21	10.43	QP
2	0.169	34.24	-20.75	54.99	23.60	0.21	10.43	Average
3	0.184	51.70	-12.58	64.28	41.10	0.20	10.40	QP
4	0.184	34.80	-19.48	54.28	24.20	0.20	10.40	Average
5	0.204	50.46	-12.99	63.45	39.90	0.20	10.36	QP
6	0.204	35.06	-18.39	53.45	24.50	0.20	10.36	Average
7	0.251	46.73	-15.00	61.73	36.20	0.20	10.33	QP
8	0.251	30.73	-21.00	51.73	20.20	0.20	10.33	Average
9	0.303	44.30	-15.85	60.15	33.79	0.20	10.31	QP
10	0.303	26.10	-24.05	50.15	15.59	0.20	10.31	Average
11	0.341	41.68	-17.50	59.18	31.20	0.19	10.29	QP
12	0.341	23.98	-25.20	49.18	13.50	0.19	10.29	Average
13	0.417	40.05	-17.46	57.51	29.60	0.19	10.26	QP
14	0.417	25.65	-21.86	47.51	15.20	0.19	10.26	Average
15	0.454	42.04	-14.76	56.80	31.60	0.19	10.25	QP
16	0.454	27.94	-18.86	46.80	17.50	0.19	10.25	Average
17	0.538	37.03	-18.97	56.00	26.60	0.19	10.24	QP



Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Site : CO01-KS  
 Condition : FCC CLASS-B LISN-N-181013-060103 NEUTRAL  
 Project : (FC) 8D2002-01  
 mode : Mode 4  
 : 352172100008771/352172100008789 #3

Freq	Level	Over Limit	Limit	Read	LISN	Cable	Loss	Remark
MHz	dBuV		dB	dBuV	dBuV	dB	dB	
18	0.538	21.93	-24.07	46.00	11.50	0.19	10.24	Average
19	1.610	38.35	-17.65	56.00	27.90	0.22	10.23	QP
20	1.610	28.05	-17.95	46.00	17.60	0.22	10.23	Average
21	2.144	39.25	-16.75	56.00	28.80	0.22	10.23	QP
22	2.144	28.75	-17.25	46.00	18.30	0.22	10.23	Average
23	2.384	39.05	-16.95	56.00	28.60	0.22	10.23	QP
24	2.384	28.65	-17.35	46.00	18.20	0.22	10.23	Average
25	2.567	37.66	-18.34	56.00	27.20	0.22	10.24	QP
26	2.567	27.06	-18.94	46.00	16.60	0.22	10.24	Average
27	3.985	41.07	-14.93	56.00	30.60	0.22	10.25	QP
28	3.985	32.07	-13.93	46.00	21.60	0.22	10.25	Average
29	4.202	40.98	-15.02	56.00	30.50	0.22	10.26	QP
30	4.202	30.68	-15.32	46.00	20.20	0.22	10.26	Average
31	13.560	53.04	-6.96	60.00	42.40	0.26	10.38	QP
32 *	13.560	44.44	-5.56	50.00	33.80	0.26	10.38	Average
33	16.398	43.92	-16.08	60.00	33.19	0.30	10.43	QP
34	16.398	34.92	-15.08	50.00	24.19	0.30	10.43	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

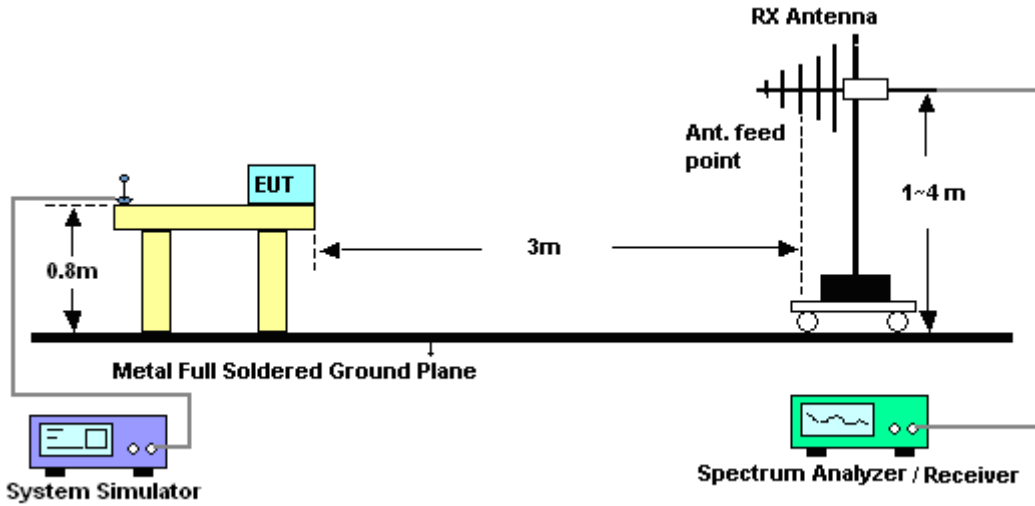
The measuring equipment is listed in the section 4 of this test report.

#### 3.2.3. Test Procedures

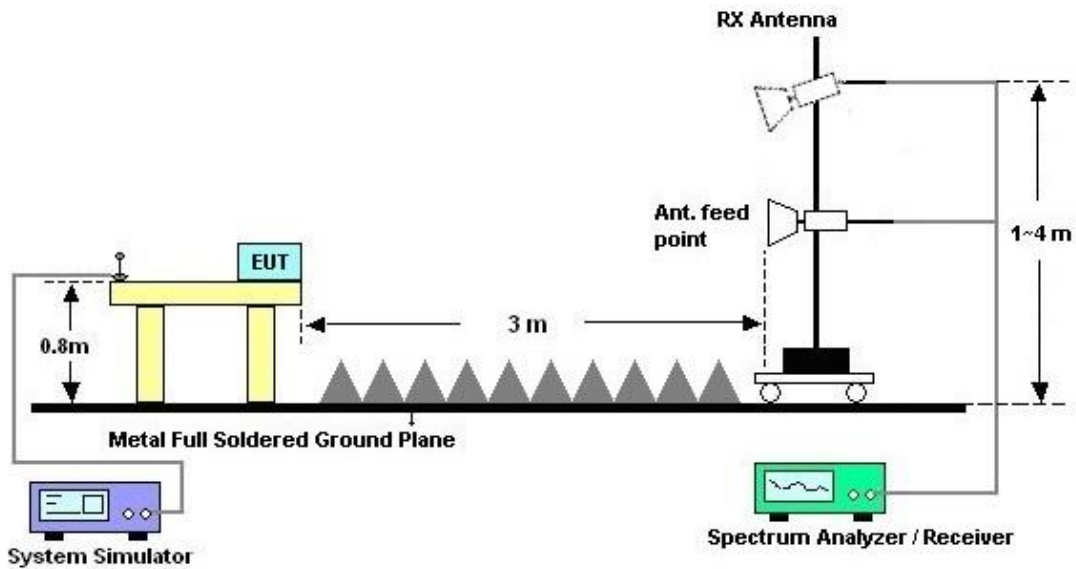
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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

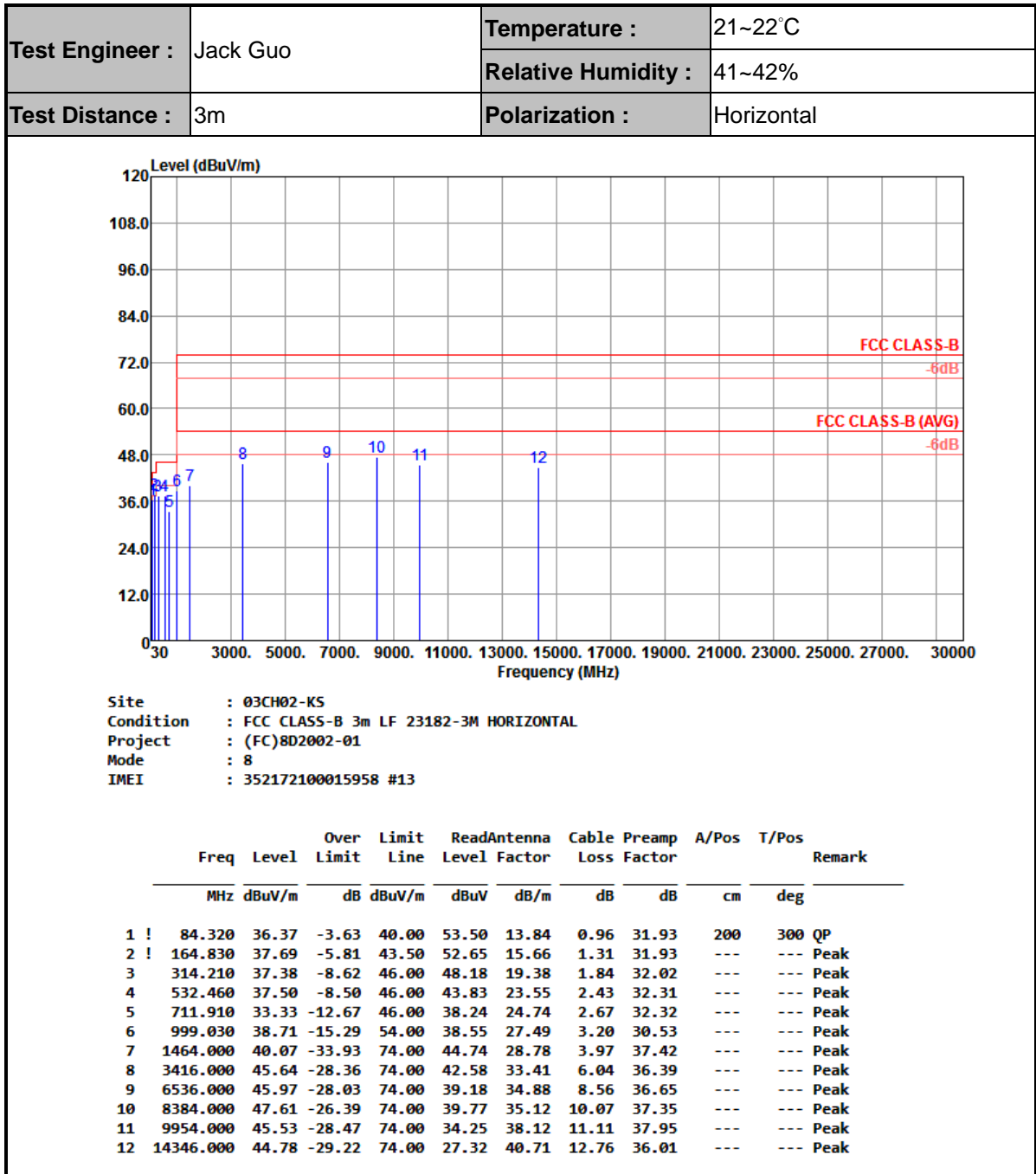


For radiated emissions above 1GHz



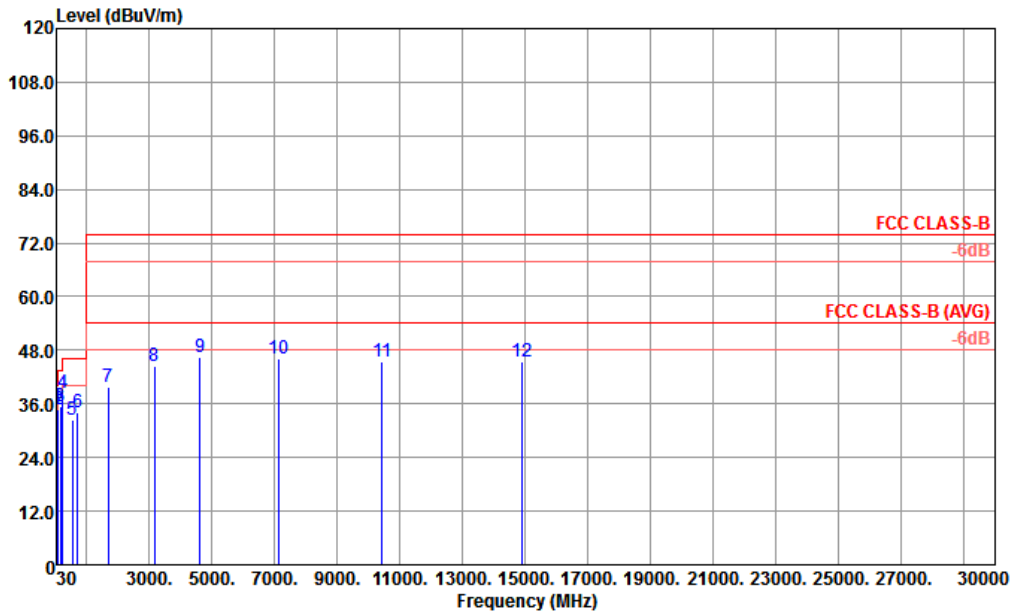


3.2.5. Test Result of Radiated Emission





Test Engineer :	Jack Guo	Temperature :	21~22°C
		Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Vertical



Site : 03CH02-KS  
 Condition : FCC CLASS-B 3m LF 23182-3M VERTICAL  
 Project : (FC)8D2002-01  
 Mode : 8  
 IMEI : 352172100015958 #13

	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 !	43.580	35.10	-4.90	40.00	49.36	16.98	0.71	31.95	100	142 QP
2 !	84.320	34.91	-5.09	40.00	52.04	13.84	0.96	31.93	---	Peak
3	165.800	35.49	-8.01	43.50	50.48	15.63	1.31	31.93	---	Peak
4	239.520	38.41	-7.59	46.00	51.38	17.30	1.68	31.95	---	Peak
5	530.520	32.46	-13.54	46.00	38.82	23.53	2.42	32.31	---	Peak
6	712.880	34.09	-11.91	46.00	38.99	24.75	2.67	32.32	---	Peak
7	1680.000	39.68	-34.32	74.00	43.48	29.10	4.19	37.09	---	Peak
8	3160.000	44.49	-29.51	74.00	42.30	33.01	6.12	36.94	---	Peak
9	4616.000	46.39	-27.61	74.00	39.52	35.81	7.87	36.81	---	Peak
10	7144.000	46.11	-27.89	74.00	38.06	35.78	9.13	36.86	---	Peak
11	10422.000	45.33	-28.67	74.00	33.40	38.51	11.28	37.86	---	Peak
12	14913.000	45.51	-28.49	74.00	28.14	41.21	12.88	36.72	---	Peak



### 4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz;	Apr. 19, 2018	Feb. 01, 2019	Apr. 18, 2019	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 12, 2018	Feb. 01, 2019	Oct. 11, 2019	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Nov. 22, 2018	Feb. 01, 2019	Nov. 21, 2019	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2018	Feb. 01, 2019	Oct. 11, 2019	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max x 30dBm	Aug. 08, 2018	Feb. 26, 2019	Aug. 07, 2019	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150208	10Hz-44G,MAX 30dB	Oct. 10, 2018	Feb. 26, 2019	Oct. 09, 2019	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	23182	30MHz-2GHz	Dec. 29, 2018	Feb. 26, 2019	Dec. 28, 2019	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 27, 2019	Feb. 26, 2019	Jan. 26, 2020	Radiation (03CH02-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Jan. 05, 2019	Feb. 26, 2019	Jan. 04, 2020	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Aug. 06, 2018	Feb. 26, 2019	Aug. 05, 2019	Radiation (03CH02-KS)
Amplifier	Keysight	83017A	MY53270203	500MHz~26.5G Hz	Apr. 18, 2018	Feb. 26, 2019	Apr. 17, 2019	Radiation (03CH02-KS)
Amplifier	MITEQ	TTA1840-35-HG	2014749	18~40GHz	Feb. 04, 2019	Feb. 26, 2019	Feb. 03, 2020	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Feb. 26, 2019	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Feb. 26, 2019	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Feb. 26, 2019	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% ( $U = 2Uc(y)$ )	2.9 dB
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.8 dB
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### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.2 dB
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### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.0 dB
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