



# FCC Test Report

APPLICANT : Motorola Mobility LLC  
EQUIPMENT : Mobile Cellular Phone  
BRAND NAME : Motorola  
MODEL NAME : XT2321-3, XT2321-5  
FCC ID : IHDT56AJ3  
STANDARD : 47 CFR Part 15 Subpart B  
CLASSIFICATION : Certification  
TEST DATE(S) : Dec. 24, 2022 ~ Jan. 12, 2023

We, Sporton International Inc. (Kunshan), 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 Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



**Sporton International Inc. (Kunshan)**

**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
FC2D0913	Rev. 01	Initial issue of report	Feb. 01, 2023



### 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 4.17 dB at 0.198 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 9.79 dB at 67.83 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	XT2321-3, XT2321-5
FCC ID	IHDT56AJ3
EUT supports Radios application	GSM/WCDMA/LTE/5G NR WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ax HE20/HE40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/VHT160 WLAN 5GHz 802.11ax HE20/HE40/HE80/HE160 WLAN 6GHz 802.11a/ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE GNSS/NFC/WPT
IMEI Code	Conduction: 358041760025975/358041760025983 Radiation: 358041760025637/358041760025645
HW Version	DVT2
SW Version	TTZ 33.50
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. The two model name XT2321-3, XT2321-5 are the same product except model name different for market segment.
3. The EUT has two working states, flip open state and flip close state, we choose the flip open state for all tests and flip close state verify the worst of flip open state.
4. The EUT support single pSIM + eSIM.
5. LTE Band 46 support Rx only.



### 1.4. Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850MHz ~ 1910MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV : 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2 : 1850 MHz ~ 1910 MHz LTE Band 4 : 1710 MHz ~ 1755 MHz LTE Band 5 : 824 MHz ~ 849 MHz LTE Band 7 : 2500 MHz ~ 2570 MHz LTE Band 12 : 699 MHz ~ 716 MHz LTE Band 13 : 777 MHz ~ 787 MHz LTE Band 14 : 788 MHz ~ 798 MHz LTE Band 17 : 704 MHz ~ 716 MHz LTE Band 25 : 1850 MHz ~ 1915 MHz LTE Band 26 : 814 MHz ~ 849 MHz LTE Band 30 : 2305 MHz ~ 2315 MHz LTE Band 38 : 2570 MHz ~ 2620 MHz LTE Band 41 : 2496 MHz ~ 2690 MHz LTE Band 48 : 3550 MHz ~ 3700 MHz LTE Band 66 : 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n13 : 777 MHz ~ 787 MHz 5G NR n14 : 788 MHz ~ 798 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n26 : 814 MHz ~ 849 MHz 5G NR n30 : 2305 MHz ~ 2315 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n48 : 3550 MHz ~ 3700 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n70 : 1695 MHz ~ 1710 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77 : 3450 MHz ~ 3550 MHz; 3700 MHz ~ 3980 MHz; 5G NR n78 : 3450 MHz ~ 3550 MHz; 3700 MHz ~ 3800 MHz; 802.11b/g/n/ax: 2400 MHz ~ 2483.5 MHz 802.11a/n/ac/ax: 5150 MHz ~ 5250 MHz; 5250 MHz ~ 5350 MHz; 5470 MHz ~ 5725 MHz; 5725 MHz ~ 5850 MHz 802.11a/ax: 5925 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC : 13.56 MHz
Rx Frequency	GSM850: 869 MHz ~ 894 MHz GSM1900: 1930 MHz ~ 1990 MHz WCDMA Band II: 1930 MHz ~ 1990 MHz WCDMA Band IV : 2110 MHz ~ 2155 MHz WCDMA Band V: 869 MHz ~ 894 MHz



	<p>LTE Band 2 : 1930 MHz ~ 1990 MHz          LTE Band 4 : 2110 MHz ~ 2155 MHz          LTE Band 5 : 869 MHz ~ 894 MHz          LTE Band 7 : 2620 MHz ~ 2690 MHz          LTE Band 12 : 729 MHz ~ 746 MHz          LTE Band 13 : 746 MHz ~ 756 MHz          LTE Band 14 : 758 MHz ~ 768 MHz          LTE Band 17 : 734 MHz ~ 746 MHz          LTE Band 25 : 1930 MHz ~ 1995 MHz          LTE Band 26 : 859 MHz ~ 894 MHz          LTE Band 29 : 717 MHz ~ 728 MHz          LTE Band 30 : 2350 MHz ~ 2360 MHz          LTE Band 38: 2570 MHz ~ 2620 MHz          LTE Band 41 : 2496 MHz ~ 2690 MHz          LTE Band 46 : 5150 MHz ~ 5925 MHz          LTE Band 48 : 3550 MHz ~ 3700 MHz          LTE Band 66 : 2110 MHz~ 2200 MHz          LTE Band 71 : 617 MHz ~ 652 MHz          5G NR n2 : 1930 MHz ~ 1990 MHz          5G NR n5 : 869 MHz ~ 894 MHz          5G NR n7 : 2620 MHz ~ 2690 MHz          5G NR n12 : 729 MHz ~ 746 MHz          5G NR n13 : 746 MHz ~ 756 MHz          5G NR n14 : 758 MHz ~ 768 MHz          5G NR n25 : 1930 MHz ~ 1995 MHz          5G NR n26 : 859 MHz ~ 894 MHz          5G NR n29 : 717 MHz ~ 728 MHz          5G NR n30 : 2350 MHz ~ 2360 MHz          5G NR n38: 2570 MHz ~ 2620 MHz          5G NR n41 : 2496 MHz ~ 2690 MHz          5G NR n48 : 3550 MHz ~ 3700 MHz          5G NR n66 : 2110 MHz~ 2200 MHz          5G NR n70 : 1995 MHz ~ 2020 MHz          5G NR n71 : 617 MHz ~ 652 MHz          5G NR n77 : 3450 MHz ~ 3550 MHz; 3700 MHz ~ 3980 MHz;          5G NR n78 : 3450 MHz ~ 3550 MHz; 3700 MHz ~ 3800 MHz;          802.11b/g/n/ax: 2400 MHz ~ 2483.5 MHz          802.11a/n/ac/ax: 5150 MHz ~ 5250 MHz;                                            5250 MHz ~ 5350 MHz;                                            5470 MHz ~ 5725 MHz;                                            5725 MHz ~ 5850 MHz          802.11a/ax: 5925 MHz ~ 7125 MHz          Bluetooth: 2400 MHz ~ 2483.5 MHz          NFC : 13.56 MHz          GNSS : 1559 MHz ~ 1610 MHz, 1164 MHz ~ 1215 MHz          WPT: 110kHz~ 148 kHz</p>
<p><b>Antenna Type</b></p>	<p>WWAN : Monopole Antenna(Ant0/1/2), Loop Antenna(Ant3)          Bluetooth/WLAN: IFA Antenna(Ant4/5)          GNSS: IFA Antenna(Ant5/6)          NFC: Coil-loop Antenna          WPT: Coil Antenna</p>
<p><b>Type of Modulation</b></p>	<p>GSM/GPRS: GMSK          EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK          WCDMA : BPSK</p>



	HSPA : QPSK HSPA+ : 16QAM (16QAM uplink is not supported) DC-HSDPA : 64QAM LTE: QPSK / 16QAM / 64QAM / 256QAM 5G NR: DFT-s-OFDM (PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM) CP-OFDM (QPSK / 16QAM / 64QAM / 256QAM) 802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) 802.11ax : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM) Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : $\pi/4$ -DQPSK Bluetooth (3Mbps) : 8-DPSK GNSS : BPSK NFC: ASK WPT: ASK
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### 1.5. Specification of Accessory

Specification of Accessory				
AC Adapter	Brand Name	Motorola (Salom)	Model Name	MC-301
Battery 1	Brand Name	Motorola(ATL)	Model Name	PM29
Battery 2	Brand Name	Motorola(ATL)	Model Name	PM08
USB Cable 1	Brand Name	Motorola (Cabletech)	Model Name	SC18D13216
USB Cable 2	Brand Name	Motorola (Luxshare)	Model Name	SC18D13217
USB Cable 3	Brand Name	Motorola (Saibao)	Model Name	SC18D86732

### 1.6. Modification of EUT

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

### 1.7. Test Location

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

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	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		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CO01-KS 03CH02-KS	CN1257	314309





### 1.8. Test Software

Item	Site	Manufacturer	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

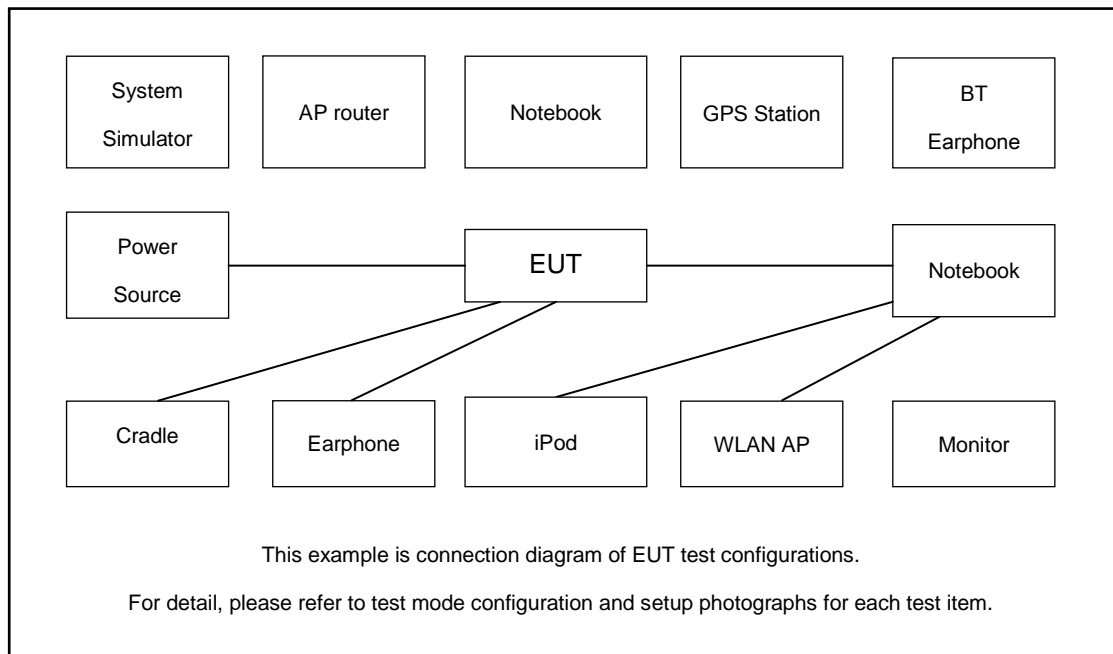
The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

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

Test Items	Function Type
AC Conducted Emission	Mode 1: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Battery + USB Cable 1(Charging from Adapter) + pSIM
	Mode 2: WCDMA Band V Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Battery + USB Cable 2(Charging from Adapter) + eSIM
	Mode 3: LTE Band 17 Rx(Middle) + Bluetooth Idle + WLAN (6E) Idle + MPEG4(Run Color Bar) + Battery + USB Cable 1(EUT (eMMC) USB Data Link to Notebook) + pSIM
	Mode 4: 5G NR n5 Rx(Low) + Bluetooth Idle + WLAN (2.4G) Idle + NFC On + GNSS Rx + Battery + USB Cable 1(Notebook USB Data Link to EUT (eMMC)) + pSIM
	Mode 5: 5G NR n12 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Battery + USB Cable 2(EUT (eMMC) USB Data Link to Notebook) + pSIM
	Mode 6: 5G NR n13 Rx(High) + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Battery + USB Cable 3(EUT (eMMC) USB Data Link to Notebook) + pSIM
	Mode 7: 5G NR n14 Rx(Low) + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Battery + USB Cable 3(Charging from Adapter) + pSIM
	Mode 8: 5G NR n26 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Battery + USB Cable 3(Charging from Adapter) + pSIM
	Mode 9: 5G NR n71 Rx(High) + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Battery + USB Cable 3(Charging from Adapter) + Phone in flip close state + pSIM
	Mode 10 : 5G NR n14 Rx(Low) + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Battery + USB Cable 3(EUT Charging from Wireless charger) + Adapter Connect to Wireless charger + pSIM

Radiated Emissions	<p>Mode 1 : GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Battery + USB Cable 1(Charging from Adapter) + pSIM</p> <p>Mode 2 : WCDMA Band V Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Battery + Earphone + eSIM</p> <p>Mode 3 : LTE Band 17 Rx(Middle) + Bluetooth Idle + WLAN (6E) Idle + MPEG4(Run Color Bar) + Battery + USB Cable 1(EUT (eMMC) USB Data Link to Notebook) + pSIM</p> <p>Mode 4 : 5G NR n5 Rx(Low) + Bluetooth Idle + WLAN (2.4G) Idle + NFC On + GNSS Rx + Battery + USB Cable 1(Notebook USB Data Link to EUT (eMMC)) + pSIM</p> <p>Mode 5 : 5G NR n12 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Battery + USB Cable 2(Notebook USB Data Link to EUT (eMMC)) + pSIM</p> <p>Mode 6 : 5G NR n13 Rx(High) + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Battery + USB Cable 3(Notebook USB Data Link to EUT (eMMC)) + pSIM</p> <p>Mode 7 : 5G NR n14 Rx(Low) + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Battery + EUT Charging to Other Phone by Connecting with Type C Audio Dongle + pSIM</p> <p>Mode 8 : 5G NR n26 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Battery + USB Cable 2(Charging from Adapter) + pSIM</p> <p>Mode 9 : 5G NR n71 Rx(High) + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Battery + USB Cable 3(Charging from Adapter) + pSIM</p> <p>Mode 10 : 5G NR n71 Rx(High) + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Battery + USB Cable 2(Notebook USB Data Link to EUT (eMMC)) + pSIM + Phone in flip close state</p> <p>Mode 11 : 5G NR n12 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Battery + USB Cable 2(EUT Charging from Wireless charger) + Adapter Connect to Wireless charger + pSIM</p>
<b>Remark:</b>	
<ol style="list-style-type: none"> <li>1. The worst case of AC is mode 7; only the test data of this mode is reported.</li> <li>2. The worst case of RE is mode 5; only the test data of this mode is reported.</li> <li>3. Data Link mode means data application transferred 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.	System Simulator	Anritus	MT8820C	N/A	N/A	Unshielded, 1.8m
2.	System Simulator	Anritus	MT8821C	N/A	N/A	Unshielded, 1.8m
3.	System Simulator	Anritus	MT8000A	N/A	N/A	Unshielded, 1.8m
4.	Vector Signal Generator	R&S	SMBV100A	258305	N/A	N/A
5.	WLAN AP	D-link	DIR-655	KA21R655B1	N/A	Unshielded, 1.8m
6.	WLAN AP	TP-Link	TL-WDR5600	N/A	N/A	Unshielded, 1.8m
7.	Bluetooth Earphone	Xiaomi	LYEJ02LM	N/A	N/A	Bluetooth Earphone
8.	Notebook	Lenovo	V130-15IKB005	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
9.	Notebook	Lenovo	V130-14IKB001	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.	Earphone	Lenovo	P121	N/A	N/A	Unshielded, 1.2m
12.	Hard Disk	Lenovo	F310	DoC	Shielded, 1.2m	N/A
13.	Hard Disk	KINGSHARE	KSP6120G	N/A	N/A	N/A
14.	SD Card	SanDisk	Uitra	N/A	N/A	SD Card
15.	Wireless charger	N/A	N/A	N/A	N/A	N/A
16.	Mobile phone	N/A	N/A	N/A	N/A	N/A
17.	Type C Audio Dongle	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 or 5G NR 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 GNSS function to make the EUT receive continuous signals from GNSS station.
5. Turn on NFC function.
6. WPT charging from the Wireless charger.
7. EUT Charging to Other Phone by Connecting with Type C Audio Dongle



### 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.

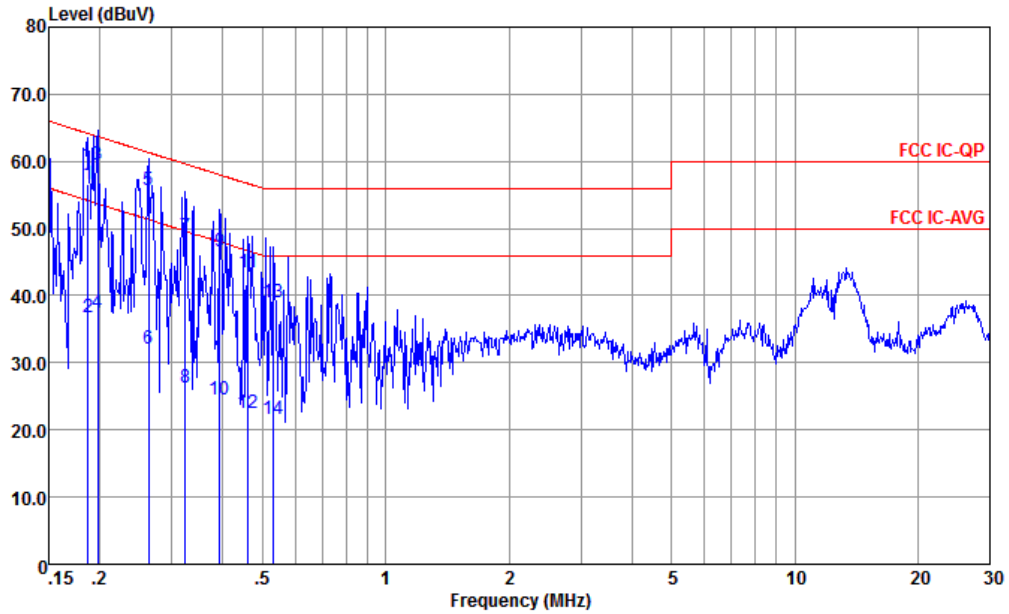
### 3.1.4 Test Setup





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.		



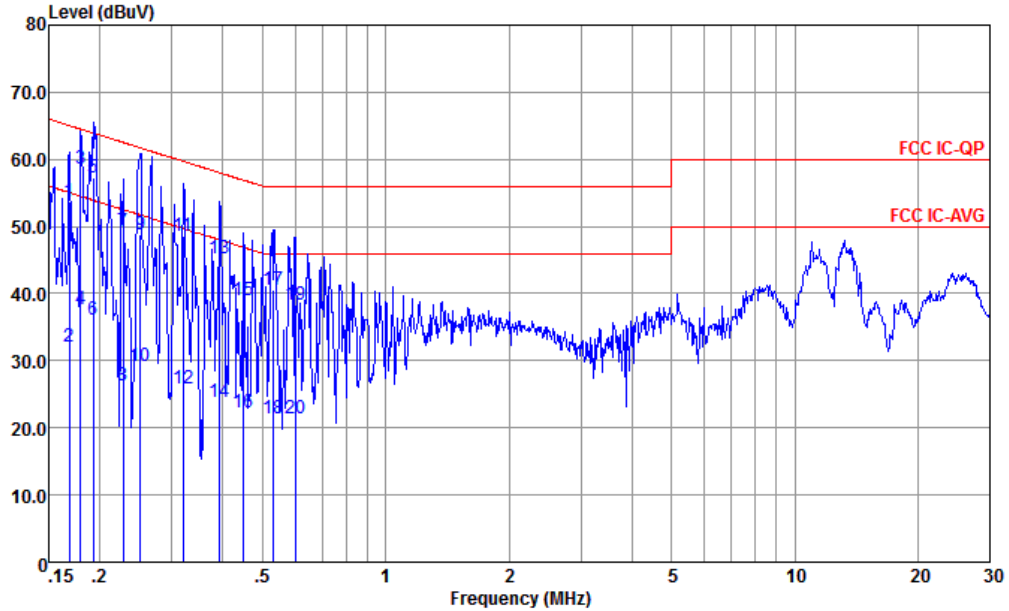
Site : CO01-KS  
 Condition : FCC IC-QP LISN-060105-LINE LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.187	56.65	-7.50	64.15	46.20	0.03	10.42	QP
2	0.187	36.75	-17.40	54.15	26.30	0.03	10.42	Average
3 *	0.198	59.54	-4.17	63.71	49.10	0.02	10.42	QP
4	0.198	37.34	-16.37	53.71	26.90	0.02	10.42	Average
5	0.263	55.62	-5.72	61.34	45.20	0.05	10.37	QP
6	0.263	32.02	-19.32	51.34	21.60	0.05	10.37	Average
7	0.323	48.88	-10.74	59.62	38.49	0.05	10.34	QP
8	0.323	26.28	-23.34	49.62	15.89	0.05	10.34	Average
9	0.393	46.51	-11.48	57.99	36.20	0.01	10.30	QP
10	0.393	24.61	-23.38	47.99	14.30	0.01	10.30	Average
11	0.461	43.53	-13.14	56.67	33.31	-0.02	10.24	QP
12	0.461	22.43	-24.24	46.67	12.21	-0.02	10.24	Average
13	0.532	39.06	-16.94	56.00	28.90	-0.04	10.20	QP
14	0.532	21.66	-24.34	46.00	11.50	-0.04	10.20	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 IC-QP LISN-060105-NEUTRAL NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.169	53.76	-11.27	65.03	43.29	0.04	10.43	QP
2	0.169	32.06	-22.97	55.03	21.59	0.04	10.43	Average
3 *	0.180	58.67	-5.83	64.50	48.21	0.04	10.42	QP
4	0.180	37.77	-16.73	54.50	27.31	0.04	10.42	Average
5	0.192	57.37	-6.56	63.93	46.90	0.05	10.42	QP
6	0.192	36.07	-17.86	53.93	25.60	0.05	10.42	Average
7	0.228	49.22	-13.30	62.52	38.80	0.02	10.40	QP
8	0.228	26.32	-26.20	52.52	15.90	0.02	10.40	Average
9	0.251	48.87	-12.86	61.73	38.50	-0.01	10.38	QP
10	0.251	29.17	-22.56	51.73	18.80	-0.01	10.38	Average
11	0.320	48.48	-11.23	59.71	38.19	-0.05	10.34	QP
12	0.320	25.78	-23.93	49.71	15.49	-0.05	10.34	Average
13	0.393	45.26	-12.73	57.99	35.03	-0.07	10.30	QP
14	0.393	23.84	-24.15	47.99	13.61	-0.07	10.30	Average
15	0.449	38.98	-17.91	56.89	28.80	-0.07	10.25	QP
16	0.449	22.38	-24.51	46.89	12.20	-0.07	10.25	Average
17	0.532	40.62	-15.38	56.00	30.50	-0.08	10.20	QP
18	0.532	21.32	-24.68	46.00	11.20	-0.08	10.20	Average
19	0.601	38.30	-17.70	56.00	28.21	-0.09	10.18	QP
20	0.601	21.30	-24.70	46.00	11.21	-0.09	10.18	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.

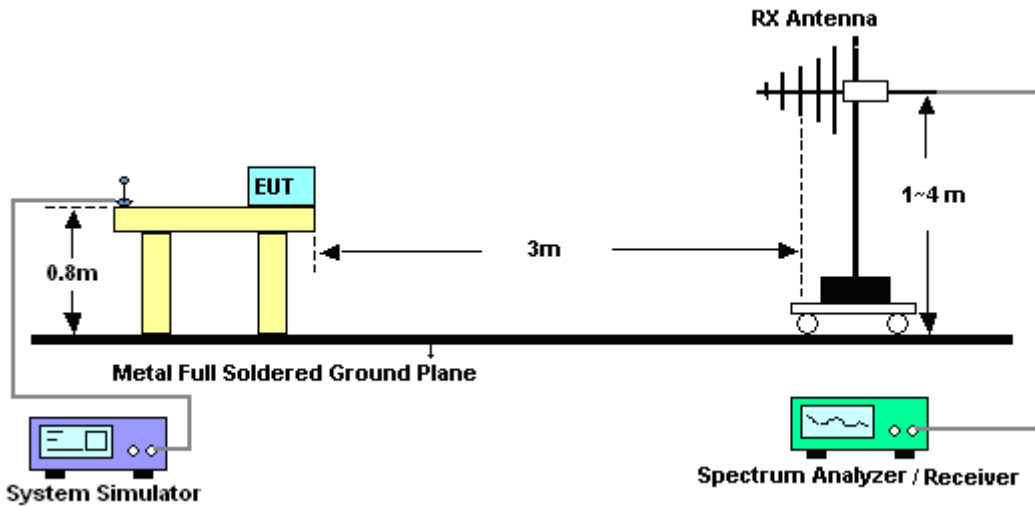
#### 3.2.3. Test Procedures

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

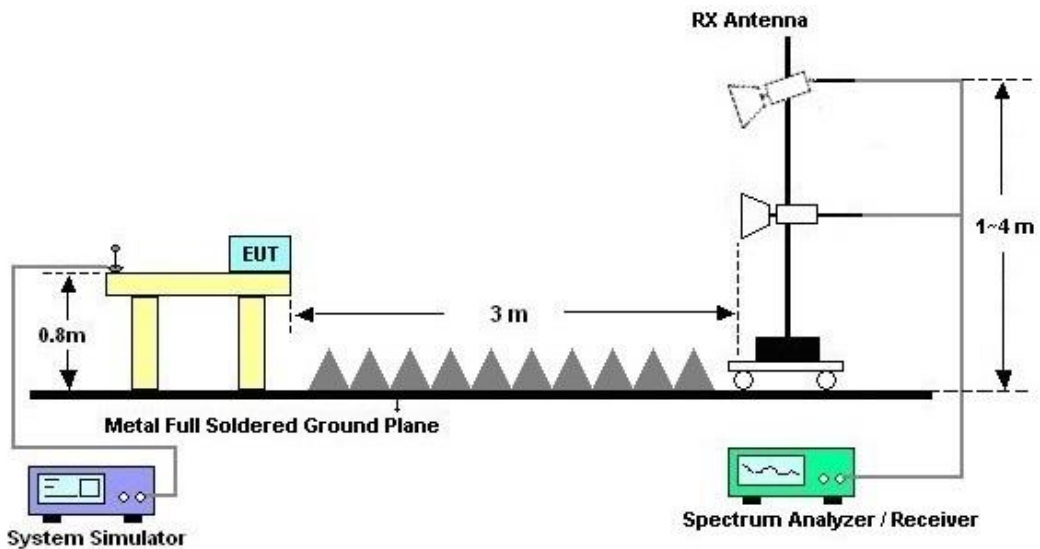
- Exploratory radiated emissions testing of handheld and/or body-worn devices shall include rotation of the EUT through three orthogonal axes (X/Y/Z Plane) to determine the orientation (attitude) that maximizes the emissions.

### 3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz



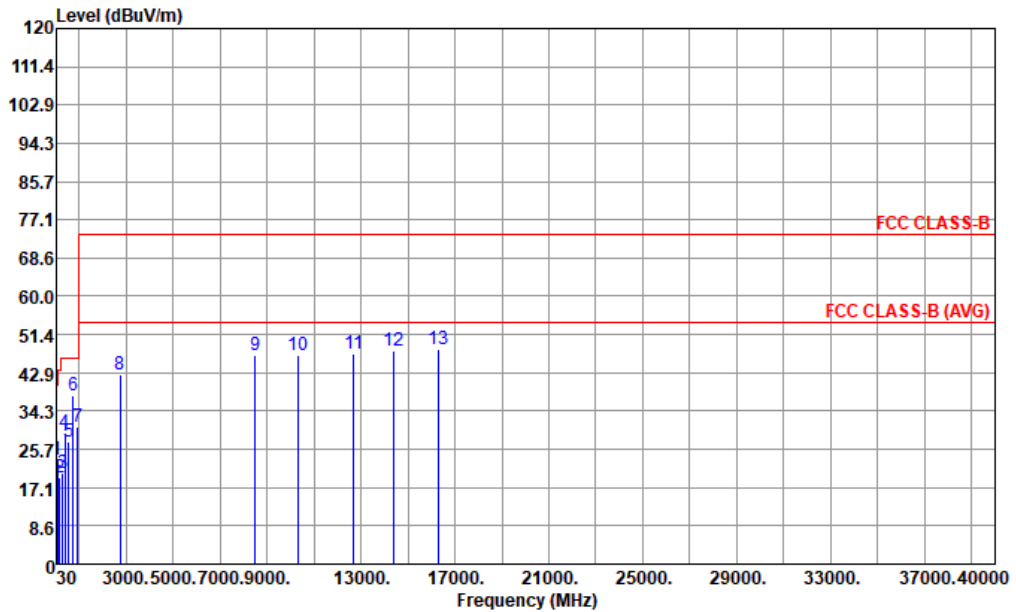
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

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

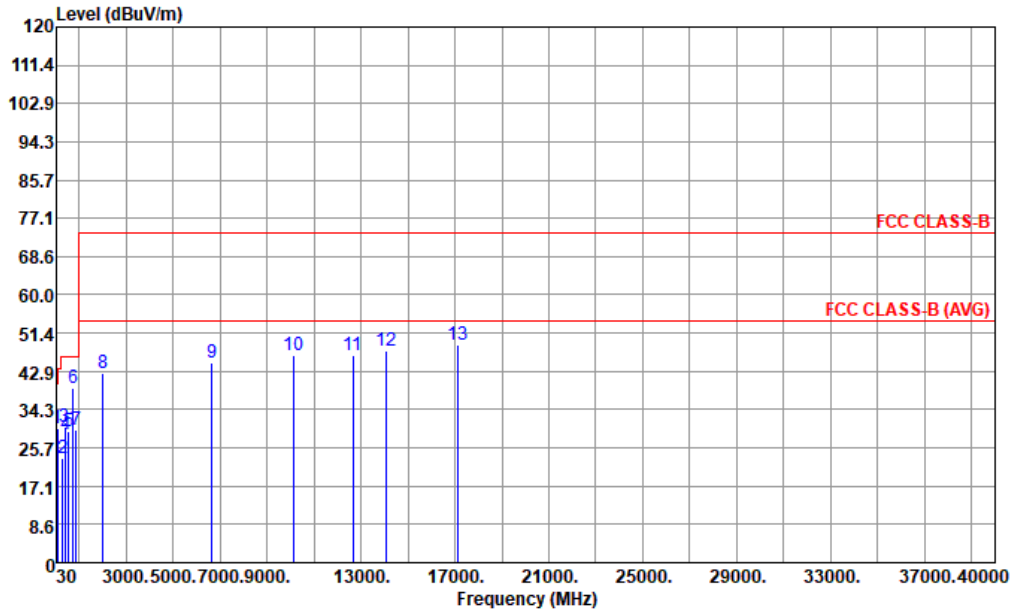


Site : 03CH02-KS  
 Condition : FCC CLASS-B 3m LF 49921 HORIZONTAL

	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	62.01	23.46	-16.54	40.00	41.93	12.83	1.10	32.40	---	---	Peak
2	163.86	19.25	-24.25	43.50	33.54	16.25	1.86	32.40	---	---	Peak
3	298.69	20.50	-25.50	46.00	31.04	19.31	2.55	32.40	---	---	Peak
4	388.90	29.29	-16.71	46.00	37.15	21.60	2.94	32.40	---	---	Peak
5	560.59	27.25	-18.75	46.00	31.03	25.33	3.29	32.40	---	---	Peak
6	737.13	37.76			38.78	27.27	4.04	32.33	---	---	Peak
7	943.74	30.82	-15.18	46.00	27.65	29.75	4.57	31.15	---	---	Peak
8	2734.00	42.57	-31.43	74.00	36.98	31.88	7.93	34.22	---	---	Peak
9	8497.00	46.84	-27.16	74.00	31.48	35.00	14.66	34.30	---	---	Peak
10	10350.00	46.82	-27.18	74.00	27.33	38.46	16.19	35.16	---	---	Peak
11	12696.00	46.99	-27.01	74.00	24.89	39.66	17.98	35.54	---	---	Peak
12	14362.00	47.88	-26.12	74.00	23.14	40.72	19.19	35.17	---	---	Peak
13	16300.00	48.06	-25.94	74.00	21.97	40.71	20.55	35.17	---	---	Peak



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



Site : 03CH02-KS  
 Condition : FCC CLASS-B 3m LF 49921 VERTICAL

	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	67.83	30.21	-9.79	40.00	46.55	14.90	1.16	32.40	---	---	Peak
2	290.93	23.51	-22.49	46.00	34.30	19.14	2.47	32.40	---	---	Peak
3	389.87	30.27	-15.73	46.00	38.10	21.62	2.95	32.40	---	---	Peak
4	431.58	28.82	-17.18	46.00	35.57	22.56	3.09	32.40	---	---	Peak
5	563.50	29.32	-16.68	46.00	33.01	25.40	3.31	32.40	---	---	Peak
6	737.13	39.08			40.10	27.27	4.04	32.33	---	---	Peak
7	868.08	29.66	-16.34	46.00	28.27	28.80	4.34	31.75	---	---	Peak
8	2003.00	42.35	-31.65	74.00	40.43	30.30	6.72	35.10	---	---	Peak
9	6661.00	44.88	-29.12	74.00	29.92	34.90	12.72	32.66	---	---	Peak
10	10112.00	46.62	-27.38	74.00	27.54	38.29	16.04	35.25	---	---	Peak
11	12662.00	46.35	-27.65	74.00	24.24	39.67	17.97	35.53	---	---	Peak
12	14090.00	47.51	-26.49	74.00	23.08	40.48	19.07	35.12	---	---	Peak
13	17116.00	48.77	-25.23	74.00	21.52	41.22	21.07	35.04	---	---	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. 12, 2022	Dec. 24, 2022	Oct. 11, 2023	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55370528	10Hz-44G,MAX 30dB	Oct. 12, 2022	Dec. 24, 2022	Oct. 11, 2023	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz-1GHz	Dec. 21, 2022	Dec. 24, 2022	Dec. 20, 2023	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218642	1GHz~18GHz	Apr. 18, 2022	Dec. 24, 2022	Apr. 17, 2023	Radiation (03CH02-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2022	Dec. 24, 2022	Jan. 04, 2023	Radiation (03CH02-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 05, 2022	Dec. 24, 2022	Jan. 04, 2023	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	413741	9KHz-1GHz	Jan. 05, 2022	Dec. 24, 2022	Jan. 04, 2023	Radiation (03CH02-KS)
Amplifier	EM	EM01G18G	060806	1GHz~18GHz	Oct. 12, 2022	Dec. 24, 2022	Oct. 11, 2023	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Dec. 24, 2022	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Dec. 24, 2022	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Dec. 24, 2022	NCR	Radiation (03CH02-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz;	May 24, 2022	Jan. 12, 2023	May 23, 2023	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2022	Jan. 12, 2023	Oct. 12, 2023	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	May 24, 2022	Jan. 12, 2023	May 23, 2023	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2022	Jan. 12, 2023	Oct. 11, 2023	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% ( $U = 2Uc(y)$ )	2.78 dB
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.0 dB
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### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

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

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