



# FCC Test Report

APPLICANT : Xiaomi Communications Co., Ltd.  
EQUIPMENT : Mobile Phone  
BRAND NAME : Redmi  
MODEL NAME : 23021RAAEG  
FCC ID : 2AFZZAAEG  
STANDARD : 47 CFR Part 15 Subpart B  
CLASSIFICATION : Certification  
TEST DATE(S) : Dec. 08, 2022 ~ Dec. 12, 2022

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
FC202913	Rev. 01	Initial issue of report	Jan. 06, 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 7.36 dB at 0.151 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 6.26 dB at 30.970 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

Xiaomi Communications Co., Ltd.

#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

## 1.2. Manufacturer

Xiaomi Communications Co., Ltd.

#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

## 1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	Redmi
Model Name	23021RAAEG
FCC ID	2AFZZAAEG
EUT supports Radios application	GSM/WCDMA/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 GNSS/FM
IMEI Code	Radiation/ Conduction: 865480060043807/865480060043815 for Sample 1 865480060045646/865480060045653 for Sample 2 863780060008045/863780060008052 for Sample 3 863780060014340/863780060014357 for Sample 4
HW Version	P1.1
SW Version	MIUI14
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 four samples under test: the sample 1 is 4+128GB capacity, sample 2 is 4+64GB capacity, sample 3 is 8+128GB capacity and sample 4 is 6+128GB capacity. According to the difference, sample 1 full test and sample 2/3/4 verify the worst mode.



### 1.4. Product Specification of Equipment Under Test

Standards-related Product Specification	
<b>Tx Frequency</b>	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850MHz ~ 1910MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 5 : 824 MHz ~ 849 MHz LTE Band 7 : 2500 MHz ~ 2570 MHz LTE Band 38 : 2570 MHz ~ 2620 MHz LTE Band 41 : 2496 MHz ~ 2690 MHz 802.11b/g/n: 2400 MHz ~ 2483.5 MHz 802.11a/n/ac: 5150 MHz ~ 5250 MHz; 5250 MHz ~ 5350 MHz; 5470 MHz ~ 5725 MHz 5725 MHz ~ 5850 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
<b>Rx Frequency</b>	GSM850: 869 MHz ~ 894 MHz GSM1900: 1930 MHz ~ 1990 MHz WCDMA Band V: 869 MHz ~ 894 MHz LTE Band 5 : 869 MHz ~ 894 MHz LTE Band 7 : 2620 MHz ~ 2690 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41 : 2496 MHz ~ 2690 MHz 802.11b/g/n: 2400 MHz ~ 2483.5 MHz 802.11a/n/ac: 5150 MHz ~ 5250 MHz; 5250 MHz ~ 5350 MHz; 5470 MHz ~ 5725 MHz 5725 MHz ~ 5850 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz GNSS : 1559 MHz ~ 1610 MHz FM : 88 MHz ~ 108 MHz
<b>Antenna Type</b>	WWAN : PIFA Antenna WLAN : PIFA Antenna Bluetooth : PIFA Antenna GNSS: PIFA Antenna FM : External Earphone Antenna
<b>Type of Modulation</b>	GSM/GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA : BPSK HSDPA/DC-HSDPA : QPSK HSUPA : QPSK HSPA+ : 16QAM (Downlink only) DC-HSDPA : 64QAM LTE: QPSK / 16QAM / 64QAM / 256QAM (Downlink only) 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 FM



### 1.5. Modification of EUT

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

### 1.6. Test Location

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

<b>Test Firm</b>	Sporton International Inc. (Kunshan)		
<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 03CH08-KS 03CH02-KS	CN1257	314309

### 1.7. Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH02-KS	AUDIX	E3	6.2009-8-24a
2.	03CH08-KS	AUDIX	E3	6.2009-8-24
3.	CO01-KS	AUDIX	E3	6.2009-8-24

### 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 frequency or to 40 GHz, whichever is lower).

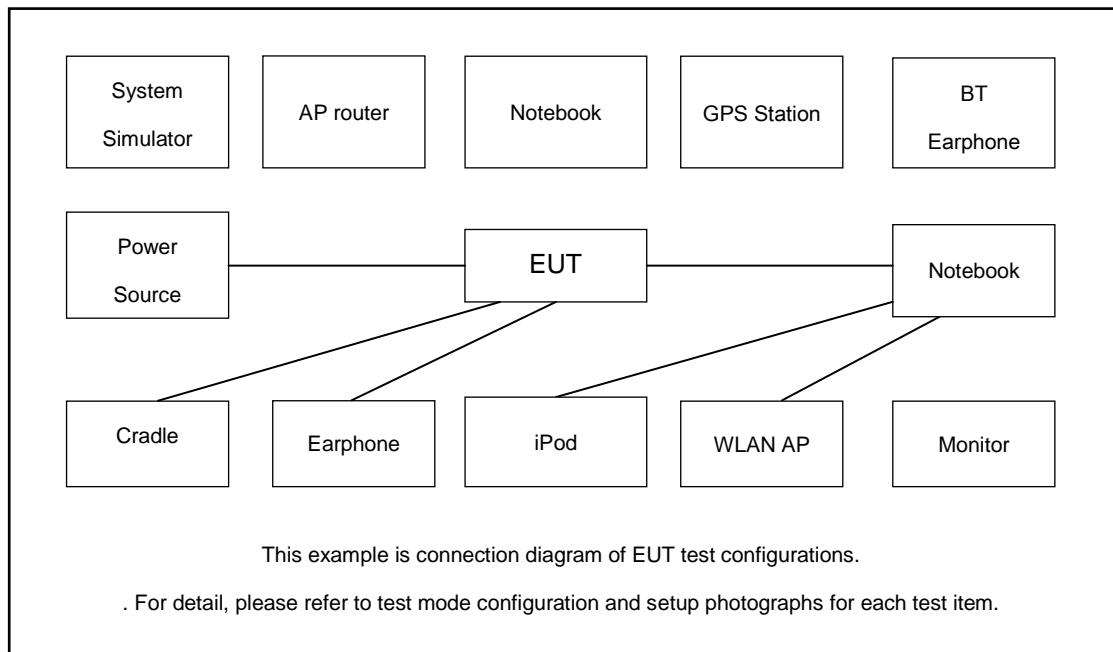
Test Items	Function Type
AC Conducted Emission	Mode 1: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Earphone + Battery + USB Cable 1(Charging from Adapter) + SIM 1 for Sample 1
	Mode 2: LTE Band 5 Rx(High) + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Earphone + Battery + USB Cable 2(Charging from Adapter) + SIM 2 for Sample 1
	Mode 3: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + MPEG4(Run Color Bar) + Earphone + Battery + USB Cable 1(EUT (eMMC) USB Data Link to NB) + SIM 1 for Sample 1
	Mode 4: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Earphone + Battery + USB Cable 1(NB USB Data Link to EUT (eMMC)) + SIM 1 for Sample 1
	Mode 5: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + FM Rx(98)MHz + Earphone + Battery + USB Cable 1(NB USB Data Link to EUT (SD)) + SIM 1 for Sample 1
	Mode 6: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + Earphone + Battery + USB Cable 1(NB USB Data Link to EUT (SD)) + SIM 1 for Sample 1
	Mode 7: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + MPEG4(Run Color Bar) + Earphone + Battery + USB Cable 1(EUT (eMMC) USB Data Link to NB) + SIM 1 for Sample 1
	Mode 8: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + Earphone + Battery + USB Cable 1(EUT (eMMC) USB Data Link to NB) + SIM 1 for Sample 2
	Mode 9: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + Earphone + Battery + USB Cable 1(EUT (eMMC) USB Data Link to NB) + SIM 1 for Sample 3
	Mode 10: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + Earphone + Battery + USB Cable 1(EUT (eMMC) USB Data Link to NB) + SIM 1 for Sample 4





Radiated Emissions	<p>Mode 1 : GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Earphone + Battery + USB Cable 1(Charging from Adapter) + SIM 1 for Sample 1</p> <p>Mode 2 : LTE Band 5 Rx(High) + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Earphone + Battery + USB Cable 2(Charging from Adapter) + SIM 2 for Sample 1</p> <p>Mode 3 : LTE Band 5 Rx(High) + Bluetooth Idle + WLAN (2.4G) Idle + MPEG4(Run Color Bar) + Earphone + Battery + USB Cable 1(EUT (eMMC) USB Data Link to NB) + SIM 2 for Sample 1</p> <p>Mode 4 : LTE Band 5 Rx(High) + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Earphone + Battery + USB Cable 1(NB USB Data Link to EUT (eMMC)) + SIM 2 for Sample 1</p> <p>Mode 5 : LTE Band 5 Rx(High) + Bluetooth Idle + WLAN (2.4G) Idle + FM Rx(88)MHz + Earphone + Battery + USB Cable 1(EUT (SD) USB Data Link to NB) + SIM 2 for Sample 1</p> <p>Mode 6 : LTE Band 5 Rx(High) + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Earphone + Battery + USB Cable 1(NB USB Data Link to EUT (SD)) + SIM 2 for Sample 1</p> <p>Mode 7 : LTE Band 5 Rx(High) + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Front) + Earphone + Battery + USB Cable 2(NB USB Data Link to EUT (SD)) + SIM 2 for Sample 1</p> <p>Mode 8 : LTE Band 5 Rx(High) + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Earphone + Battery + USB Cable 1(NB USB Data Link to EUT (eMMC) + SIM 2 for Sample 2</p> <p>Mode 9 : LTE Band 5 Rx(High) + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Earphone + Battery + USB Cable 1(EUT (eMMC) USB Data Link to NB) + SIM 2 for Sample 3</p> <p>Mode 10 : LTE Band 5 Rx(High) + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Earphone + Battery + USB Cable 1(EUT (eMMC) USB Data Link to NB) + SIM 2 for Sample 4</p>
<b>Remark:</b>	
<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 2; 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 for GSM 850/LTE Band 5 and FM Rx, 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	Anritus	MT8820C	N/A	N/A	N/A
2.	LTE Base Station	Anritus	MT8821C	N/A	N/A	Unshielded,1.8m
3.	GNSS Station	R&S	SMBV100A	N/A	N/A	N/A
4.	FM Station	R&S	SMBV100A	258305	N/A	N/A
5.	WLAN AP	TP-Link	TL-WDR5600	N/A	N/A	N/A
6.	WLAN AP	D-link	DIR-655	KA21R655B1	N/A	Unshielded,1.8m
7.	Bluetooth Earphone	Xiaomi	LYEJ02LM	N/A	N/A	N/A
8.	Notebook	Lenovo	S730-13IWL	N/A	N/A	N/A
9.	Notebook	Lenovo	G480	QDS-BRCM1050I	N/A	N/A
10.	SD Card	Kingston	8GB	N/A	N/A	N/A
11.	Hard Disk	Lenovo	F310	DoC	Shielded, 1.2m	N/A
12.	Earphone	MI	EM023	N/A	N/A	N/A



## **2.4. EUT Operation Test Setup**

The EUT was in GSM 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 FM function to make the EUT receive continuous signals from FM station.
5. Turn on GNSS function to make the EUT receive continuous signals from GNSS 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.

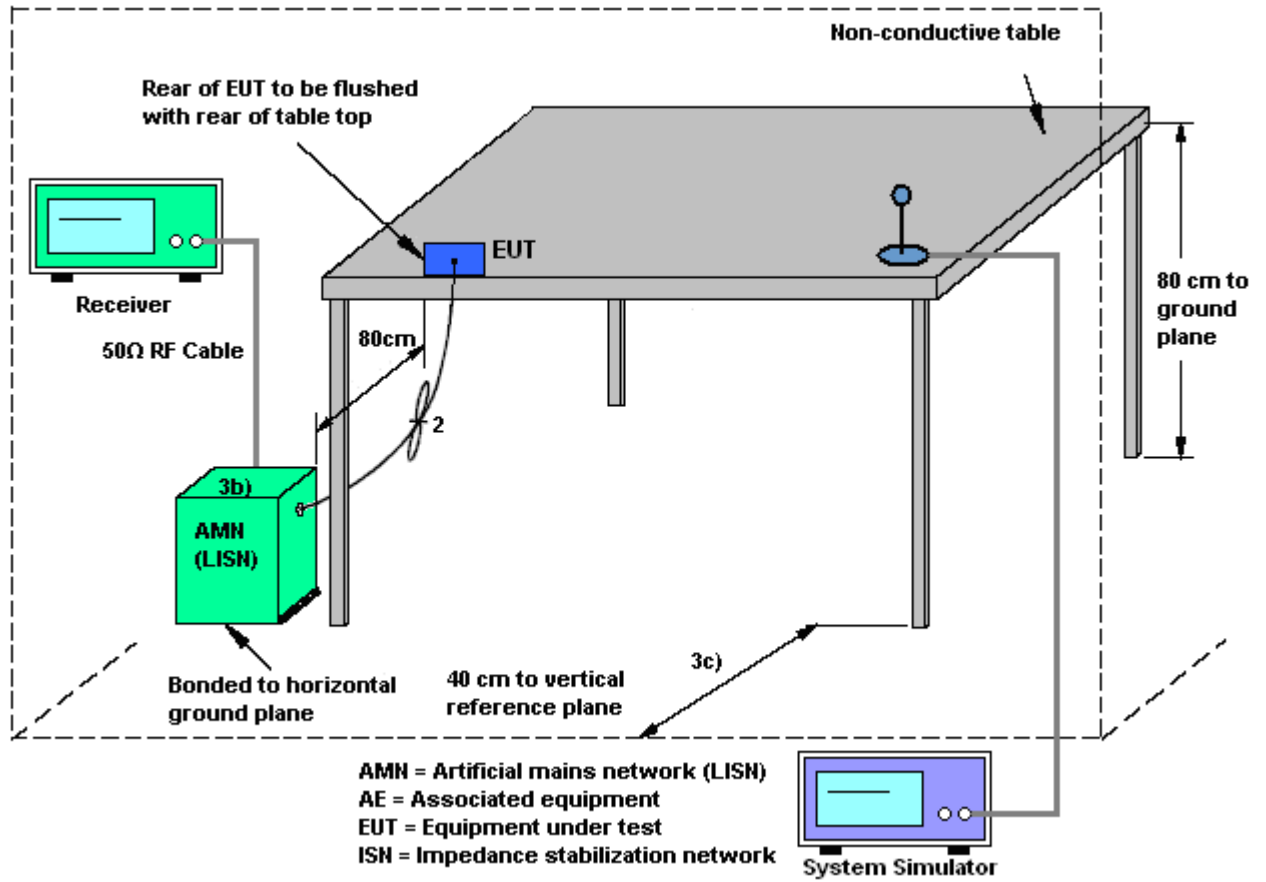
##### 3.1.2 Measuring Instruments

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.

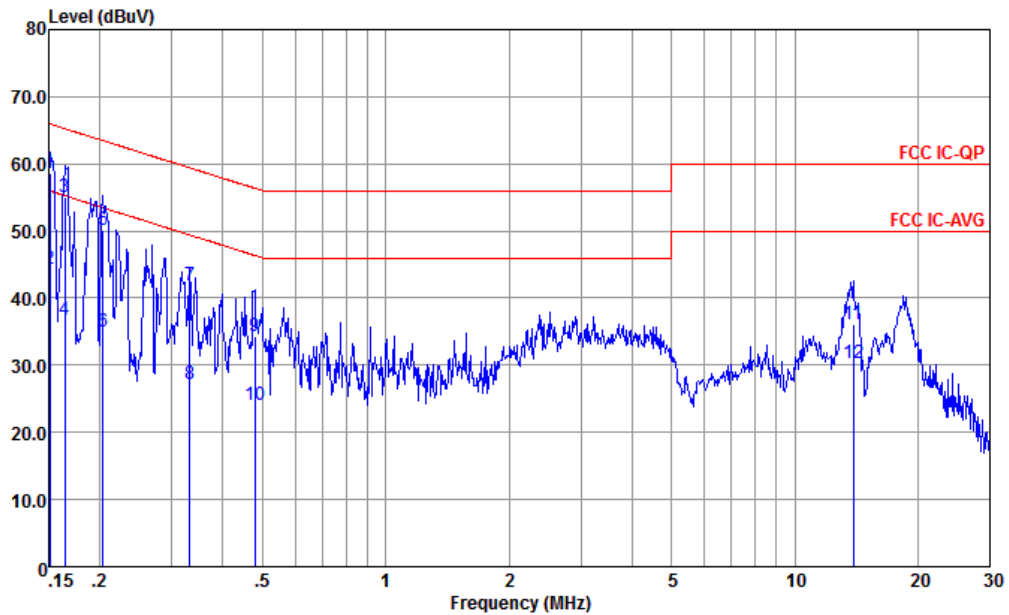
### 3.1.4 Test Setup





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.		

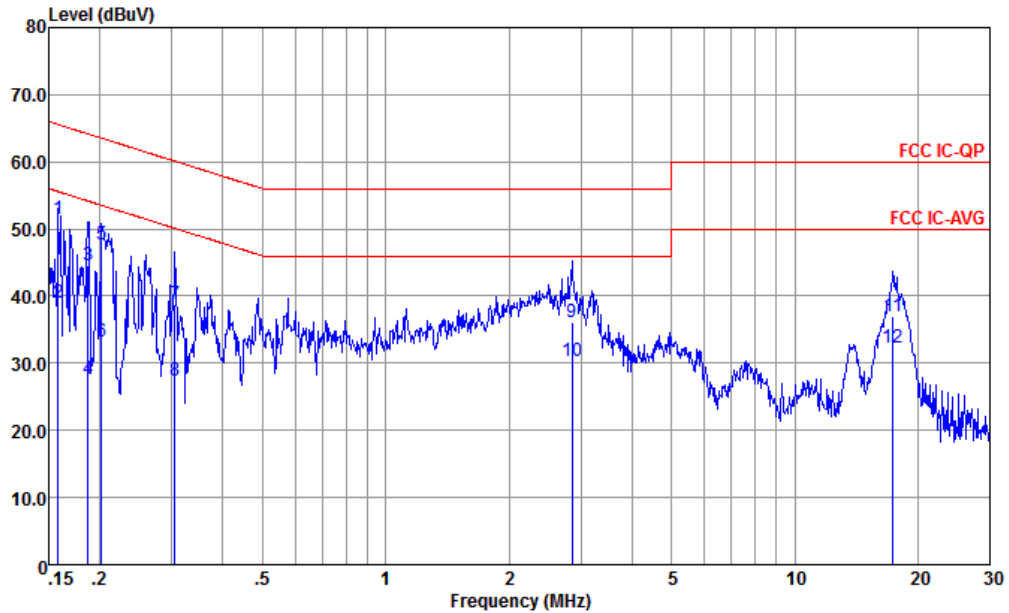


Site : CO01-KS  
Condition : FCC IC-QP LISN-060105-LINE LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1 *	0.151	58.60	-7.36	65.96	48.10	0.07	10.43	QP
2	0.151	44.40	-11.56	55.96	33.90	0.07	10.43	Average
3	0.164	55.08	-10.17	65.25	44.60	0.05	10.43	QP
4	0.164	36.68	-18.57	55.25	26.20	0.05	10.43	Average
5	0.204	50.04	-13.41	63.45	39.60	0.02	10.42	QP
6	0.204	35.04	-18.41	53.45	24.60	0.02	10.42	Average
7	0.332	41.87	-17.53	59.40	31.50	0.04	10.33	QP
8	0.332	27.27	-22.13	49.40	16.90	0.04	10.33	Average
9	0.479	34.40	-21.96	56.36	24.19	-0.02	10.23	QP
10	0.479	24.00	-22.36	46.36	13.79	-0.02	10.23	Average
11	13.915	36.15	-23.85	60.00	25.20	-0.20	11.15	QP
12	13.915	30.25	-19.75	50.00	19.30	-0.20	11.15	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	dB	dBuV	dBuV	dB	dB	
1 *	0.158	51.56	-14.00	65.56	41.10	0.03	10.43	QP
2	0.158	39.06	-16.50	55.56	28.60	0.03	10.43	Average
3	0.187	44.67	-19.48	64.15	34.20	0.05	10.42	QP
4	0.187	27.67	-26.48	54.15	17.20	0.05	10.42	Average
5	0.202	47.67	-15.87	63.54	37.20	0.05	10.42	QP
6	0.202	33.27	-20.27	53.54	22.80	0.05	10.42	Average
7	0.305	38.80	-21.30	60.10	28.50	-0.05	10.35	QP
8	0.305	27.50	-22.60	50.10	17.20	-0.05	10.35	Average
9	2.854	36.13	-19.87	56.00	26.20	-0.13	10.06	QP
10	2.854	30.23	-15.77	46.00	20.30	-0.13	10.06	Average
11	17.383	36.94	-23.06	60.00	25.90	-0.24	11.28	QP
12	17.383	32.24	-17.76	50.00	21.20	-0.24	11.28	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

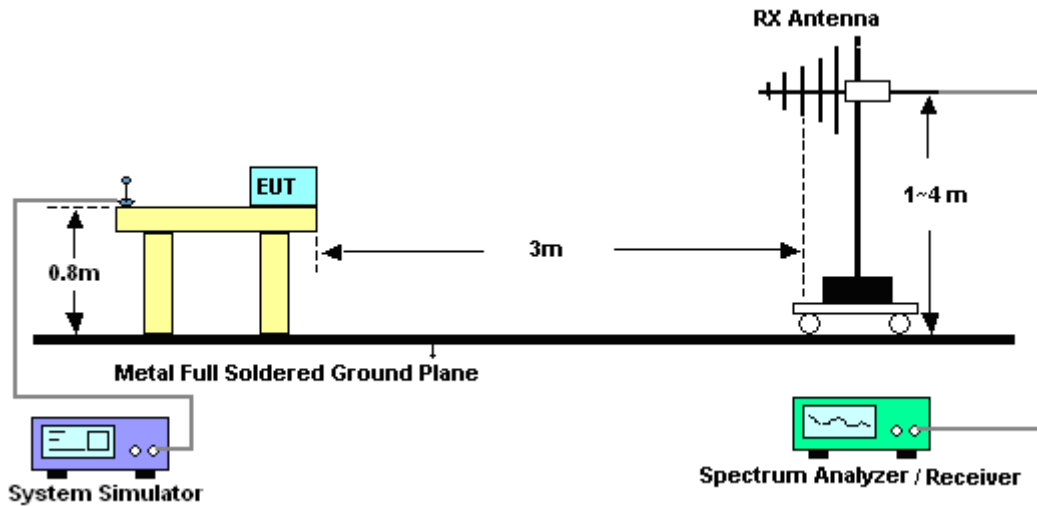
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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



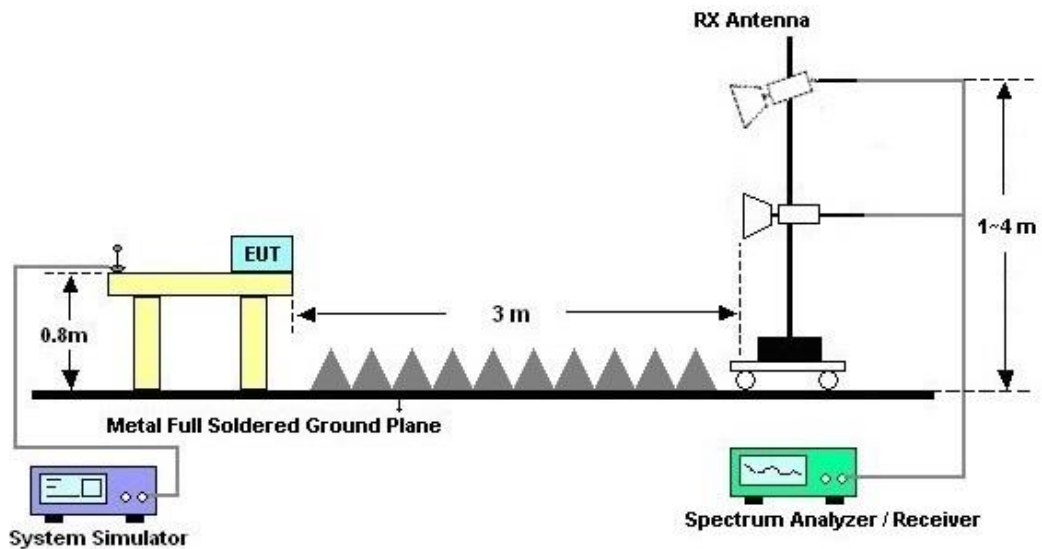
- Exploratory radiated emissions testing of handheld and/or body-worn devices shall include rotation of the EUT through three orthogonal axes (X/Y/Z Plane) to determine the orientation (attitude) that maximizes the emissions.

### 3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz



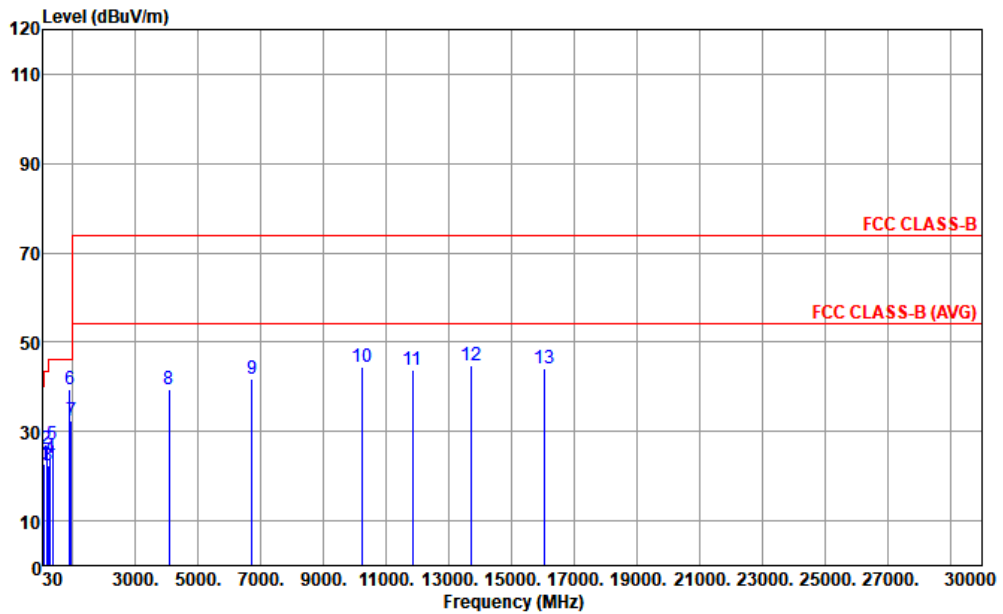
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

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

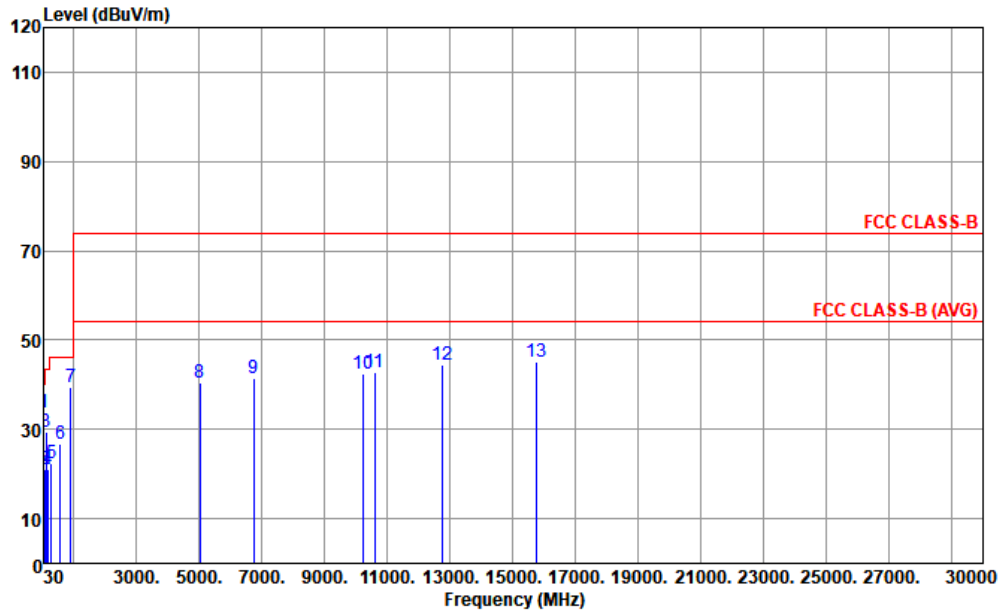


Site : 03CH08-KS  
 Condition : FCC CLASS-B 3m 3117 SN00240138 HORIZONTAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	A/Pos	T/Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	91.11	22.78	-20.72	43.50	38.58	14.73	1.52	32.05	---	---	Peak
2	168.71	26.17	-17.33	43.50	40.54	15.55	2.07	31.99	---	---	Peak
3	216.24	22.37	-23.63	46.00	36.90	15.09	2.36	31.98	---	---	Peak
4	274.44	24.01	-21.99	46.00	34.50	18.84	2.67	32.00	---	---	Peak
5	360.77	27.12	-18.88	46.00	35.51	20.61	3.04	32.04	---	---	Peak
6 p	890.39	39.55			37.07	29.08	4.76	31.36	---	---	Peak
7	947.62	32.55	-13.45	46.00	28.24	30.47	4.90	31.06	---	---	Peak
8	4077.00	39.39	-34.61	74.00	55.11	34.07	11.85	61.64	---	---	Peak
9	6712.00	41.88	-32.12	74.00	54.12	35.84	13.40	61.48	---	---	Peak
10	10231.00	44.30	-29.70	74.00	51.73	37.94	16.75	62.12	---	---	Peak
11	11829.00	43.93	-30.07	74.00	48.27	39.06	18.02	61.42	---	---	Peak
12	13699.00	44.71	-29.29	74.00	47.78	39.10	19.56	61.73	---	---	Peak
13	16028.00	44.04	-29.96	74.00	43.99	40.96	21.26	62.17	---	---	Peak



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



Site : 03CH08-KS  
 Condition : FCC CLASS-B 3m 3117 SN00240138 VERTICAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	A/Pos	T/Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 p	30.97	33.74	-6.26	40.00	40.41	24.55	0.89	32.11	---	---	Peak
2	91.11	20.92	-22.58	43.50	36.72	14.73	1.52	32.05	---	---	Peak
3	113.42	29.47	-14.03	43.50	42.71	17.11	1.69	32.04	---	---	Peak
4	168.71	20.95	-22.55	43.50	35.32	15.55	2.07	31.99	---	---	Peak
5	276.38	22.46	-23.54	46.00	32.97	18.81	2.68	32.00	---	---	Peak
6	554.77	26.86	-19.14	46.00	29.56	25.74	3.76	32.20	---	---	Peak
7	889.42	39.49			37.04	29.07	4.75	31.37	---	---	Peak
8	5029.00	40.60	-33.40	74.00	56.00	34.53	11.75	61.68	---	---	Peak
9	6746.00	41.31	-32.69	74.00	53.56	35.85	13.44	61.54	---	---	Peak
10	10248.00	42.46	-31.54	74.00	49.83	37.95	16.77	62.09	---	---	Peak
11	10605.00	42.76	-31.24	74.00	49.16	38.18	17.06	61.64	---	---	Peak
12	12730.00	44.41	-29.59	74.00	47.86	39.35	18.70	61.50	---	---	Peak
13	15773.00	45.20	-28.80	74.00	45.81	40.59	21.05	62.25	---	---	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. 12, 2022	Oct. 11, 2023	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55370528	10Hz~44G,MAX 30dB	Oct. 12, 2022	Dec. 12, 2022	Oct. 11, 2023	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz~1GHz	Dec. 22, 2021	Dec. 12, 2022	Dec. 21, 2022	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218642	1GHz~18GHz	Apr. 18, 2022	Dec. 12, 2022	Apr. 17, 2023	Radiation (03CH02-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2022	Dec. 12, 2022	Jan. 04, 2023	Radiation (03CH02-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 05, 2022	Dec. 12, 2022	Jan. 04, 2023	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	413741	9KHz~1GHz	Jan. 05, 2022	Dec. 12, 2022	Jan. 04, 2023	Radiation (03CH02-KS)
Amplifier	EM	EM01G18G	060806	1GHz~18GHz	Oct. 12, 2022	Dec. 12, 2022	Oct. 11, 2023	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Dec. 12, 2022	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Dec. 12, 2022	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Dec. 12, 2022	NCR	Radiation (03CH02-KS)
EMI Test Receiver	Keysight	N9038A	MY57290151	3Hz~8.5GHz;Max 30dBm	Jul. 11, 2022	Dec. 12, 2022	Jul. 10, 2023	Radiation (03CH08-KS)
Spectrum Analyzer	R&S	FSV40	101932	10kHz~40GHz; Max 30dBm	Oct. 12, 2022	Dec. 12, 2022	Oct. 11, 2023	Radiation (03CH08-KS)
Bilog Antenna	TESEQ	CBL 6111D	59915	30MHz~1GHz	Aug. 26, 2022	Dec. 12, 2022	Aug. 25, 2023	Radiation (03CH08-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00240138	1GHz~18GHz	Jul. 08, 2022	Dec. 12, 2022	Jul. 07, 2023	Radiation (03CH08-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2022	Dec. 12, 2022	Jan. 04, 2023	Radiation (03CH08-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 05, 2022	Dec. 12, 2022	Jan. 04, 2023	Radiation (03CH08-KS)
Amplifier	SONOMA	310N	413741	9KHz~1GHz	Jan. 13, 2022	Dec. 12, 2022	Jan. 12, 2023	Radiation (03CH08-KS)
Amplifier	EM	EM01G18GA	060834	1Ghz~18Ghz	Jan. 05, 2022	Dec. 12, 2022	Jan. 04, 2023	Radiation (03CH08-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Dec. 12, 2022	NCR	Radiation (03CH08-KS)
Turn Table	EM	EM 1000-T	N/A	0~360 degree	NCR	Dec. 12, 2022	NCR	Radiation (03CH08-KS)
Antenna Mast	EM	EM 1000-A	N/A	1 m~4 m	NCR	Dec. 12, 2022	NCR	Radiation (03CH08-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz;	May 24, 2022	Dec. 08, 2022	May 23, 2023	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2022	Dec. 08, 2022	Oct. 12, 2023	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	May 24, 2022	Dec. 08, 2022	May 23, 2023	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2022	Dec. 08, 2022	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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03CH02-KS

### 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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03CH08-KS

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 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 (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))	5.0 dB
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