



FCC Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT2113-2,XT2113-5
FCC ID : IHDT56ZF2
STANDARD : 47 CFR Part 15 Subpart B
CLASSIFICATION : Certification

The product was received on Aug. 24, 2020 and testing was completed on Sep. 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.

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People's Republic of China**



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC082402	Rev. 01	Initial issue of report	Sep. 30, 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 6.91 dB at 0.647 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 16.07 dB at 104.69 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	XT2113-2,XT2113-5
FCC ID	IHDT56ZF2
EUT supports Radios application	CDMA/GSM/WCDMA/LTE/5G NR/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 and GNSS
IMEI Code	Conduction: 351505880002855 Radiation: 351505880002806
HW Version	DVT2
SW Version	QZK30.Q4-16
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. Different model name correspond to different carriers.



1.4. Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	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 12 : 699.7 MHz ~ 715.3 MHz LTE Band 13 : 779.5 MHz ~ 784.5 MHz LTE Band 14: 790.5 MHz ~ 795.5 MHz LTE Band 17 : 706.5 MHz ~ 713.5 MHz LTE Band 25 : 1850.7 MHz ~ 1914.3 MHz LTE Band 26 : 814.7 MHz ~ 848.3 MHz LTE Band 30 : 2307.5 MHz ~ 2312.5 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 LTE Band 71: 665.5 MHz ~ 695.5MHz 5G NR n2: 1852.5 MHz ~ 1907.5 MHz 5G NR n5: 826.5 MHz ~ 846.5 MHz 5G NR n25: 1852.5 MHz ~ 1912.5 MHz 5G NR n41: 2506.02 MHz ~ 2679.99 MHz 5G NR n66: 1712.5 MHz ~ 1777.5 MHz 5G NR n71: 665.5 MHz ~ 695.5MHz CDMA2000 BC0: 824.70 MHz ~ 848.31 MHz CDMA2000 BC1: 1851.25 MHz ~ 1908.75 MHz CDMA2000 BC10: 817.9 MHz ~ 823.1 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Rx Frequency	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 12 : 729.7 MHz ~ 745.3 MHz LTE Band 13 : 748.5 MHz ~ 753.5 MHz LTE Band 14 : 760.5 MHz ~ 765.5 MHz LTE Band 17 : 736.5 MHz ~ 743.5 MHz LTE Band 25 : 1930.7 MHz ~ 1994.3 MHz LTE Band 26 : 859.7 MHz ~ 893.3 MHz



	<p>LTE Band 29 : 718.5 MHz ~ 726.5 MHz LTE Band 30 : 2352.5 MHz ~ 2357.5 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 LTE Band 71: 619.5 MHz ~ 649.5MHz 5G NR n2: 1932.5 MHz ~ 1987.5 MHz 5G NR n5: 871.5 MHz ~ 891.5 MHz 5G NR n25: 1932.5 MHz ~ 1992.5 MHz 5G NR n41: 2506.02 MHz ~ 2679.99 MHz 5G NR n66: 2112.5 MHz~ 2197.5 MHz 5G NR n71: 619.5 MHz ~ 649.5 MHz CDMA2000 BC0: 869.70 MHz ~ 893.31 MHz CDMA2000 BC1: 1931.25 MHz ~ 1988.75 MHz CDMA2000 BC10: 862.9 MHz ~ 868.1 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz GNSS : 1559 MHz ~ 1610 MHz NFC : 13.56 MHz FM : 88 MHz ~ 108 MHz</p>
Antenna Type	<p>WWAN: Fixed Internal Antenna WLAN 2.4GHz Ant 1: Loop Antenna WLAN 2.4GHz Ant 2: IFA Antenna WLAN 5GHz : IFA Antenna Bluetooth : Loop Antenna GNSS: Loop Antenna NFC : Loop Antenna FM : External Headset Antenna</p>
Type of Modulation	<p>GSM: GMSK GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA : BPSK HSDPA/DC-HSDPA : QPSK HSUPA : QPSK HSPA+ : 16QAM(Uplink not supported) DC-HSDPA : 64QAM LTE: QPSK / 16QAM / 64QAM 5G NR: CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CDMA2000 1xRTT: QPSK CDMA2000 1xEV-DO: QPSK/8PSK 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) :π/4-DQPSK Bluetooth (3Mbps) : 8-DPSK GNSS : BPSK</p>



	NFC: ASK 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	Brand Name	Motorola (Chenyang)	Model Name	MC-101
AC Adapter 2	Brand Name	Motorola (Salcomp)	Model Name	MC-101
Battery	Brand Name	Motorola (Amperex)	Model Name	MK50
USB Cable 1	Brand Name	Motorola (Saibao)	Model Name	SC18C24367
USB Cable 2	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.

Test Firm	Sporton International (Kunshan) Inc.		
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	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)+ Adapter 1+USB Cble 1+ Earphone + Battery + Bluetooth Idle + WLAN Idle(2.4G) + Camera(Rear)
	Mode 2: WCDMA 1900 Rx+Adapter 2+USB Cable 2+Earphone+Battery1+BT Idle+WLAN Idle(5G)+Camera(Front)
	Mode 3: CDMA BC10 Rx(Low)+Adapter 1+USB Cable 1+Earphone+Battery 1 BT Idle WLAN Idle(2.4G)+MP4
	Mode 4: LTE Band 13 Rx(High)+Adapter 1+USB Cable 1+Earphone+Battery 1+BT Idle+WLAN Idle(5G)+NFC On
	Mode 5: LTE Band 14 Rx(High)+Adapter 1+USB Cable 1+Earphone+Battery 1+BT Idle+WLAN Idle(2.4G)+FM Rx(98)
	Mode 6: LTE Band 26 Rx(Low)+Adapter 1+USB Cable 1+Earphone +Battery 1+BT Idle+WLAN Idle(5G)+GNSS Rx
	Mode 7: LTE Band 12 Rx(Middle)+USB Link(Data link with Notebook)+USB Cable 1+Earphone+Battery 1+BT Idle+WLAN Idle(2.4G)+GNSS Rx
	Mode 8: LTE Band 71 Rx(Middle)+USB Link(Data link with Notebook)+USB Cable 2+Earphone+Battery 1+BT Idle+WLAN Idle(5G)+GNSS Rx
	Mode 9: EN-DC 2A_n5A Rx(Middle)+ Adapter 1+USB Cable 1+ Earphone + Battery 1+ BT Idle+WLAN Idle(5G)+GNSS Rx

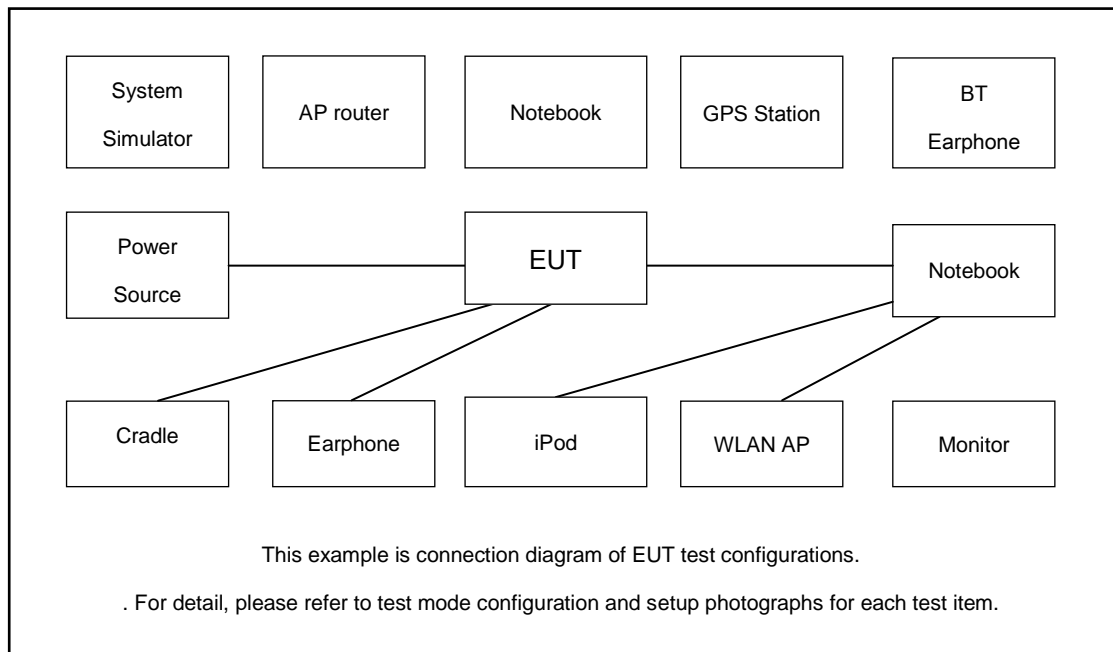


Radiated Emissions	<p>Mode 1: GSM 850 Rx(Middle)+Adapter 1+USB Cble 1+Earphone+Battery 1+BT Idle+WLAN Idle(2.4G)+Camera(Rear)</p> <p>Mode 2: WCDMA 1900 Rx+Adapter 2+USB Cable 2+Earphone+Battery1+BT Idle+WLAN Idle(5G)+Camera(Front)</p> <p>Mode 3: CDMA BC10 Rx(Low)+Adapter 1+USB Cable 1+Earphone+Battery 1 BT Idle WLAN Idle(2.4G)+MP4</p> <p>Mode 4: LTE Band 13 Rx(High)+Adapter 1+USB Cable 1+Earphone+Battery 1+BT Idle+WLAN Idle(5G)+NFC On</p> <p>Mode 5: LTE Band 14 Rx(High)+Adapter 1+USB Cable 1+Earphone+Battery 1+BT Idle+WLAN Idle(2.4G)+FM Rx(98)</p> <p>Mode 6: LTE Band 26 Rx(Low)+Adapter 1+USB Cable 1+Earphone +Battery 1+BT Idle+WLAN Idle(5G)+GNSS Rx</p> <p>Mode 7: LTE Band 12 Rx(Middle)+USB Link(Data link with Notebook)+USB Cable 1+Earphone+Battery 1+BT Idle+WLAN Idle(2.4G)+GNSS Rx</p> <p>Mode 8: LTE Band 71 Rx(Middle)+USB Link(Data link with Notebook)+USB Cable 2+Earphone+Battery 1+BT Idle+WLAN Idle(5G)+GNSS Rx</p> <p>Mode 9: EN-DC 2A_n5A Rx(Middle)+ Adapter 1+USB Cable 1+ Earphone + Battery 1+ BT Idle+WLAN Idle(5G)+GNSS Rx</p>
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Remark:

1. The worst case of AC is mode 6; only the test data of this mode is reported.
2. The worst case of RE is mode 2; only the test data of this mode is reported.
3. Data Link with Notebook means data application transferred mode between EUT and Notebook.
4. Pre-scanned Low/Middle/High channel of all the below 1G frequency band, the worst channel was recorded in this report.

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	MT8821C	N/A	N/A	Unshielded,1.8m
2.	5G NR Base Station	Anritus	MT8000A	N/A	N/A	Unshielded,1.8m
3.	LTE Base Station	Anritus	MT8820C	N/A	N/A	Unshielded,1.8m
4.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A
5.	Notebook	Lenovo	G480	QDS-BRCM1050	N/A	Unshielded,1.8m
6.	Base Station	R&S	CMU 200	N/A	N/A	Unshielded,1.8m
7.	Router	D-link	DIR-655	KA21R655B1	N/A	Unshielded,1.8m
8.	Signal Generator	R&S	SMBV100A	258305	N/A	N/A
9.	Hard Disk	Lenovo	F310	DoC	Shielded, 1.2m	N/A
10.	SD Card	Kingston	8GB	N/A	N/A	N/A
11.	Notebook	Dell	Latitude3440	N/A	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
12.	SD Card	SanDisk	Uitra	N/A	N/A	N/A
13.	Bluetooth Earphone	Xiaomi	LYEJ02LM	N/A	N/A	N/A
14.	Hard disk	KINGSHARE	KSP6120G	Fcc DoC	Shielded, 1.2m	N/A
15.	LTE Base Station	Anritus	MT8820C	N/A	N/A	Unshielded,1.8m
16.	Router	TP-Link	TL-WDR5600	N/A	N/A	Unshielded,1.8m
17.	Signal Generator	R&S	SMBV100A	N/A	N/A	Unshielded,1.8m



2.4. EUT Operation Test Setup

The EUT was in GSM or WCDMA or CDMA or LTE idle or 5G NR 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 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.

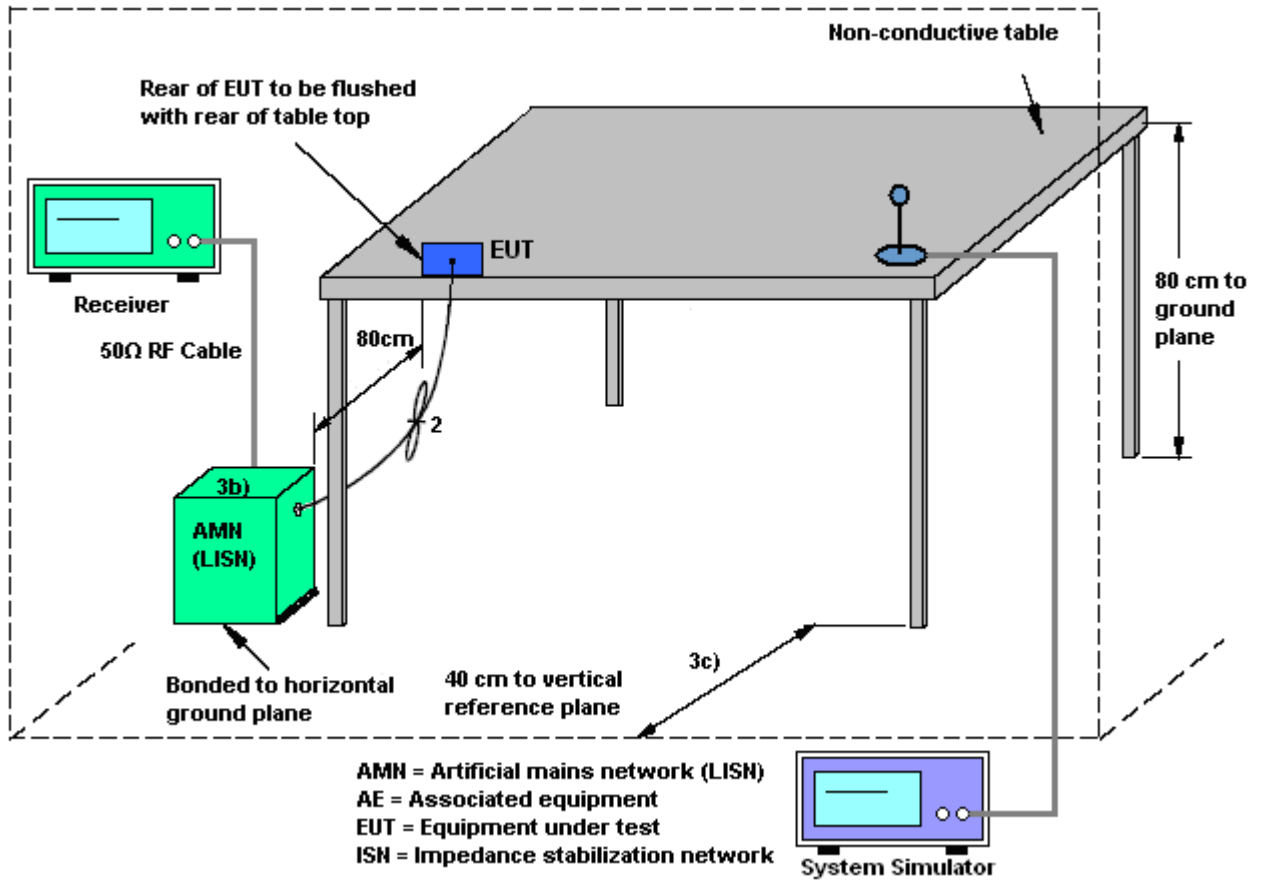
3.1.2 Measuring Instruments

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.

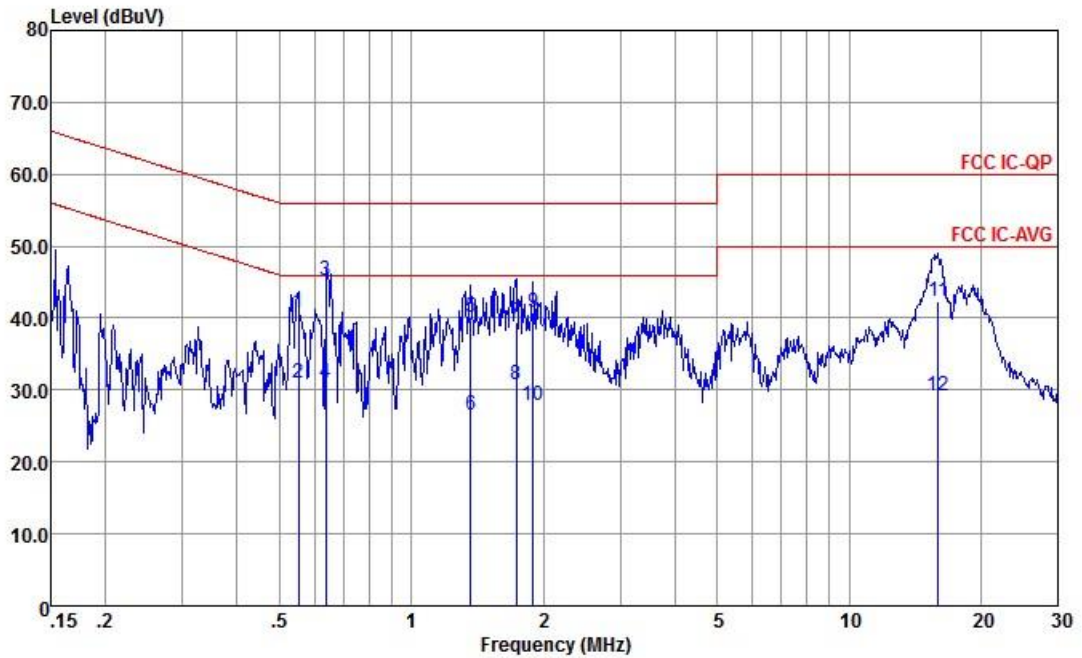
3.1.4 Test Setup





Test Result of AC Conducted Emission

Test Engineer :	Amos	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.		

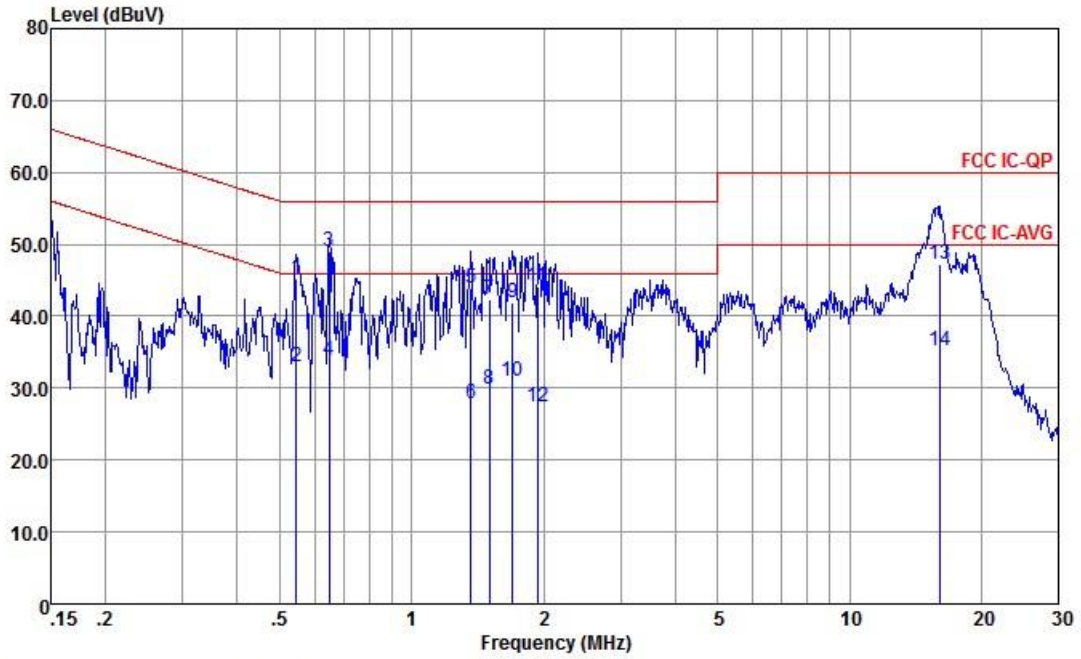


Site : CO01-KS
 Condition : FCC IC-QP LISN-L-191028-CN02 LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.552	40.87	-15.13	56.00	30.49	0.14	10.24	QP
2	0.552	30.97	-15.03	46.00	20.59	0.14	10.24	Average
3 *	0.637	45.28	-10.72	56.00	34.89	0.15	10.24	QP
4	0.637	30.88	-15.12	46.00	20.49	0.15	10.24	Average
5	1.367	40.11	-15.89	56.00	29.60	0.28	10.23	QP
6	1.367	26.61	-19.39	46.00	16.10	0.28	10.23	Average
7	1.734	39.48	-16.52	56.00	28.90	0.35	10.23	QP
8	1.734	30.68	-15.32	46.00	20.10	0.35	10.23	Average
9	1.898	40.71	-15.29	56.00	30.10	0.38	10.23	QP
10	1.898	27.91	-18.09	46.00	17.30	0.38	10.23	Average
11	15.970	42.29	-17.71	60.00	30.19	1.68	10.42	QP
12	15.970	29.29	-20.71	50.00	17.19	1.68	10.42	Average



Test Engineer :	Amos	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-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	0.546	45.27	-10.73	56.00	34.79	0.24	10.24	QP
2	0.546	33.07	-12.93	46.00	22.59	0.24	10.24	Average
3 *	0.647	49.09	-6.91	56.00	38.60	0.25	10.24	QP
4	0.647	33.79	-12.21	46.00	23.30	0.25	10.24	Average
5	1.367	43.82	-12.18	56.00	33.20	0.39	10.23	QP
6	1.367	27.82	-18.18	46.00	17.20	0.39	10.23	Average
7	1.503	42.26	-13.74	56.00	31.60	0.43	10.23	QP
8	1.503	29.96	-16.04	46.00	19.30	0.43	10.23	Average
9	1.698	41.90	-14.10	56.00	31.20	0.47	10.23	QP
10	1.698	31.00	-15.00	46.00	20.30	0.47	10.23	Average
11	1.939	44.04	-11.96	56.00	33.30	0.51	10.23	QP
12	1.939	27.34	-18.66	46.00	16.60	0.51	10.23	Average
13	16.140	47.18	-12.82	60.00	34.60	2.16	10.42	QP
14	16.140	35.18	-14.82	50.00	22.60	2.16	10.42	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

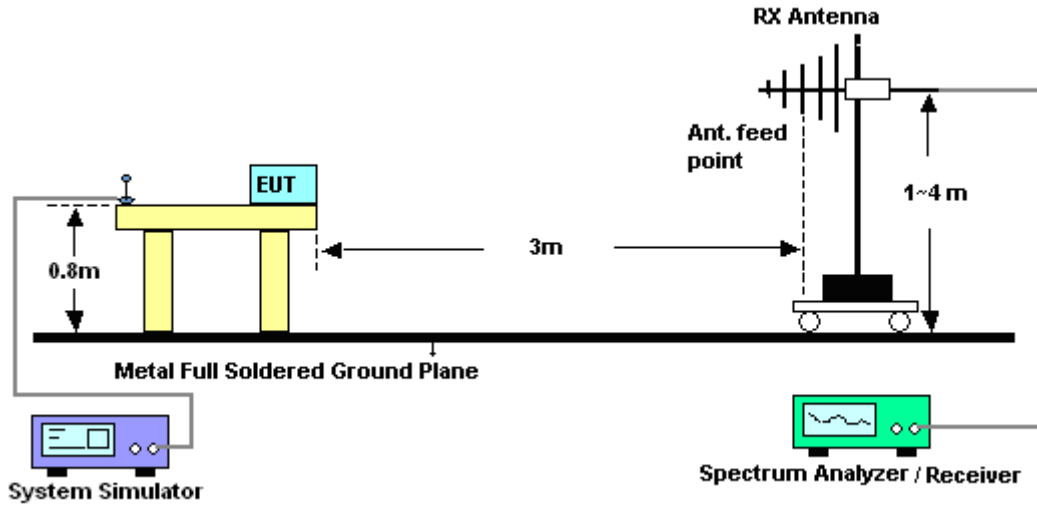
The measuring equipment is listed in the section 4 of this test report.

3.2.3. Test Procedures

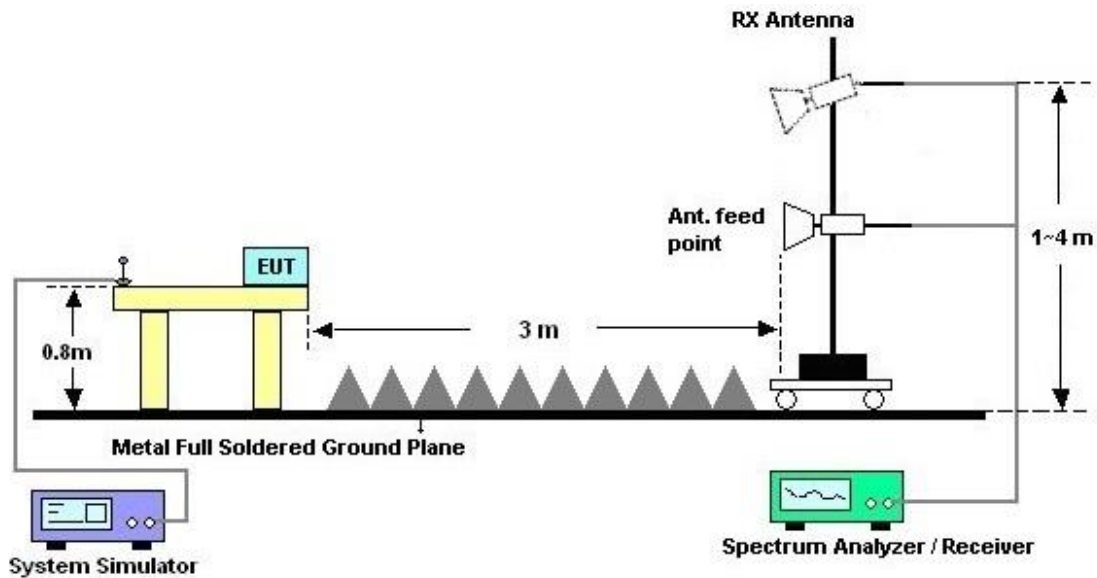
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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



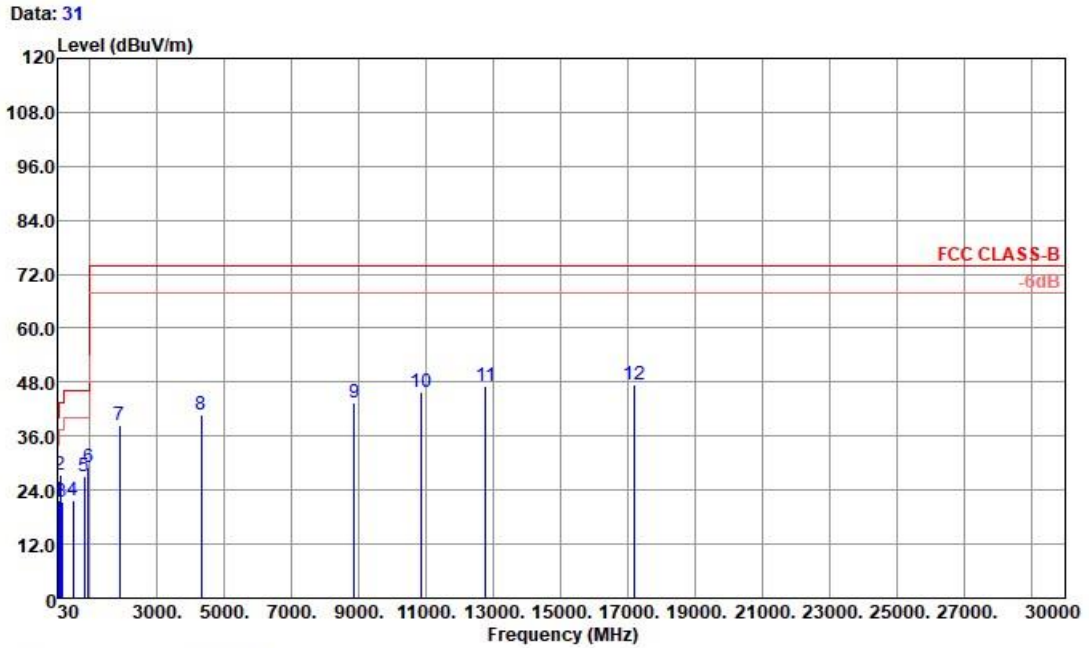
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

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



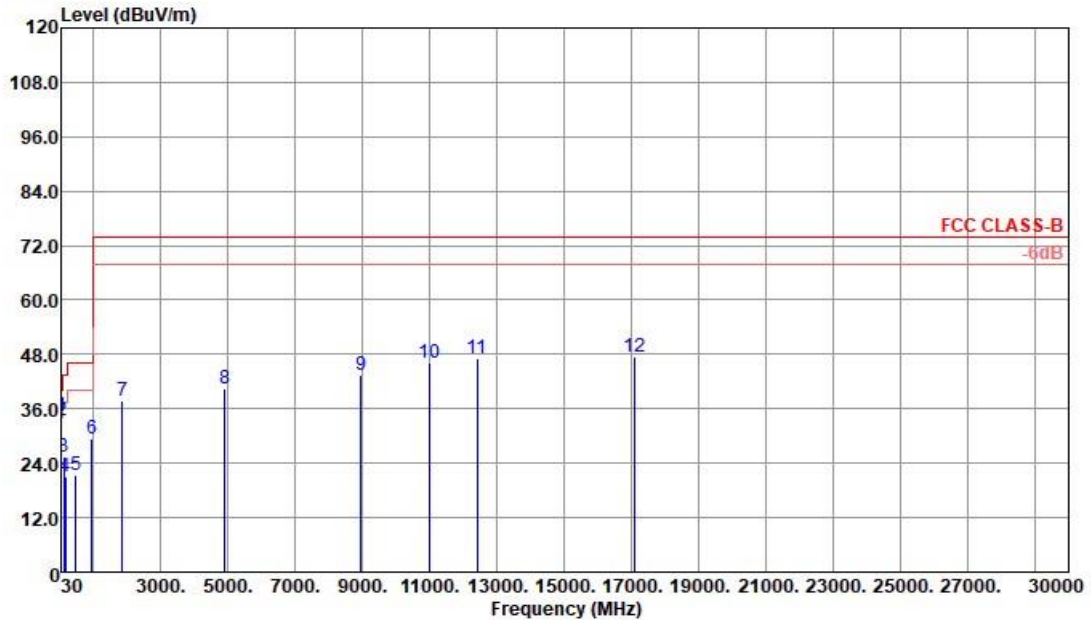
Site : 03CH02-KS
 Condition : FCC CLASS-B 3m LF 6111D SN44483 HORIZONTAL
 Project : (FC)082402

: worse										
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	65.89	-18.36	40.00	40.67	12.26	1.83	33.12	---	---	Peak
2	104.69	-16.07	43.50	41.68	16.55	2.31	33.11	100	0	Peak
3	170.65	-21.97	43.50	36.13	15.65	2.95	33.20	---	---	Peak
4	492.69	-24.42	46.00	25.53	23.86	5.00	32.81	---	---	Peak
5	825.40	-18.78	46.00	24.26	28.76	6.45	32.25	---	---	Peak
6	938.89	-16.81	46.00	23.74	30.59	6.88	32.02	---	---	Peak
7	1888.00	-35.71	74.00	27.80	31.44	8.20	29.15	---	---	Peak
8	4296.00	-33.10	74.00	20.35	35.39	12.56	27.40	---	---	Peak
9	8864.00	-30.52	74.00	14.06	38.53	18.34	27.45	---	---	Peak
10	10827.00	-28.34	74.00	12.47	39.43	20.48	26.72	---	---	Peak
11	12753.00	-26.97	74.00	8.98	40.40	23.05	25.40	---	---	Peak
12	17181.00	-26.56	74.00	4.13	43.31	26.57	26.57	---	---	Peak



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

Data: 32



Site : 03CH02-KS
 Condition : FCC CLASS-B 3m LF 6111D SN44483 VERTICAL
 Project : (FC)082402

	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	31.94	34.39	-5.61	40.00	42.33	24.04	1.28	33.26	100	0	Peak
2	41.64	33.30	-6.70	40.00	46.14	18.82	1.46	33.12	---	---	Peak
3	102.75	25.41	-18.09	43.50	39.85	16.37	2.29	33.10	---	---	Peak
4	162.89	21.17	-22.33	43.50	35.22	16.26	2.89	33.20	---	---	Peak
5	482.02	21.51	-24.49	46.00	25.74	23.67	4.94	32.84	---	---	Peak
6	943.74	29.31	-16.69	46.00	23.64	30.78	6.90	32.01	---	---	Peak
7	1856.00	37.86	-36.14	74.00	27.71	31.17	8.12	29.14	---	---	Peak
8	4912.00	40.61	-33.39	74.00	18.41	35.57	13.52	26.89	---	---	Peak
9	8952.00	43.58	-30.42	74.00	13.69	38.76	18.55	27.42	---	---	Peak
10	10980.00	45.98	-28.02	74.00	12.38	39.49	20.64	26.53	---	---	Peak
11	12402.00	47.14	-26.86	74.00	10.06	40.28	22.58	25.78	---	---	Peak
12	17109.00	47.53	-26.47	74.00	4.17	43.27	26.50	26.41	---	---	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	Sep. 02, 2020	Oct. 17, 2020	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55370528	10Hz-44G,MAX 30dB	Oct. 18, 2019	Sep. 02, 2020	Oct. 17, 2020	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz-1GHz	Dec. 30, 2019	Sep. 02, 2020	Dec. 29, 2020	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 10, 2019	Sep. 02, 2020	Nov. 09, 2020	Radiation (03CH02-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Nov. 10, 2019	Sep. 02, 2020	Nov. 09, 2020	Radiation (03CH02-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 08, 2020	Sep. 02, 2020	Jan. 07, 2021	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Jan. 02, 2020	Sep. 02, 2020	Jan. 3, 2021	Radiation (03CH02-KS)
Amplifier	Keysight	83017A	MY53270316	500MHz~26.5GHz	Oct. 18, 2019	Sep. 02, 2020	Oct. 17, 2020	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Sep. 02, 2020	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Sep. 02, 2020	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Sep. 02, 2020	NCR	Radiation (03CH02-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz;	Apr. 14, 2020	Sep. 02, 2020	Apr. 13, 2021	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 18, 2019	Sep. 02, 2020	Oct. 17, 2020	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Oct. 28, 2019	Sep. 02, 2020	Oct. 27, 2020	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 18, 2019	Sep. 02, 2020	Oct. 17, 2020	Conduction (CO01-KS)



5. Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.94
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.9
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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
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