



FCC Test Report

APPLICANT : Xiaomi Communications Co., Ltd.
EQUIPMENT : Mobile Phone
BRAND NAME : XIAOMI
MODEL NAME : 2109119DG
FCC ID : 2AFZZ119DG
STANDARD : 47 CFR Part 15 Subpart B
CLASSIFICATION : Certification
TEST DATE(S) : Jul. 08, 2021 ~ Jul. 11, 2021

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

Alex Wang

Approved by: Alex Wang / Manager



Sporton International (Kunshan) Inc.

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



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC162118	Rev. 01	Initial issue of report	Aug. 02, 2021



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 6.52 dB at 0.194 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 6.93 dB at 538.280 MHz for Quasi-Peak

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	XIAOMI
Model Name	2109119DG
FCC ID	2AFZZ119DG
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 Bluetooth BR/EDR/LE NFC/GNSS
IMEI Code	Conduction: 865950050029271/865950050029289 for sample 1 865950050057312/865950050057140 for sample 2 865950050056290/865950050056308 for sample 3 865950050039056/865950050039064 for sample 4 Radiation: 865950050022839/865950050022847 for sample 1 865950050057132/865950050057140 for sample 2 865950050056290/865950050056308 for sample 3 865950050039056/865950050039064 for sample 4
HW Version	P2
SW Version	MIUI12.5
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 types of EUT, sample 1: memory(6+128G) with battery1, sample 2: memory(6+128G) with battery2, sample 3: memory(8+128G) with battery1, sample 4: memory(8+256G) with battery1.



According to the differences, we choose sample 1 to perform full test and sample 2/3/4 to verify the difference.

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 17 : 704 MHz ~ 716 MHz LTE Band 26 : 814 MHz ~ 849 MHz LTE Band 38 : 2570 MHz ~ 2620 MHz LTE Band 41 : 2496 MHz ~ 2690 MHz LTE Band 42 : 3450 MHz ~ 3550 MHz LTE Band 66 : 1710 MHz ~ 1780 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n77: 3450 MHz ~3550MHz; 3700~3980MHz 5G NR n78: 3450 MHz ~3550MHz; 3700~3800MHz 802.11b/g/n/ax: 2400 MHz ~ 2483.5 MHz 802.11a/n/ac/ax: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz 5745 MHz ~ 5825 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 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 17 : 734 MHz ~ 746 MHz LTE Band 26 : 859 MHz ~ 894 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41 : 2496 MHz ~ 2690 MHz



	<p>LTE Band 42 : 3450 MHz ~ 3550 MHz LTE Band 66 : 2110 MHz~ 2200 MHz 5G NR n5 : 869 MHz ~ 894 MHz 5G NR n7 : 2620 MHz ~ 2690 MHz 5G NR n38: 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n66 : 2110 MHz~ 2200 MHz 5G NR n77: 3450 MHz ~3550MHz; 3700~3980MHz 5G NR n78: 3450 MHz ~3550MHz; 3700~3800MHz 802.11b/g/n/ax: 2400 MHz ~ 2483.5 MHz 802.11a/n/ac/ax: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC : 13.56 MHz GNSS : 1559 MHz ~ 1610 MHz ; 1164 MHz ~ 1215 MHz</p>
Antenna Type	<p>WWAN : PIFA Antenna WLAN : PIFA Antenna Bluetooth : PIFA Antenna GNSS: PIFA Antenna NFC : Coil Antenna</p>
Type of Modulation	<p>GSM/GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA : BPSK HSDPA/DC-HSDPA : QPSK HSUPA : QPSK HSPA+ : 16QAM (uplink is not supported) DC-HSDPA : 64QAM LTE: QPSK / 16QAM / 64QAM / 256QAM(256QAM downlink only) 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</p>

1.5. Modification of EUT

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

1.6. 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

1.7. 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

1.8. 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.

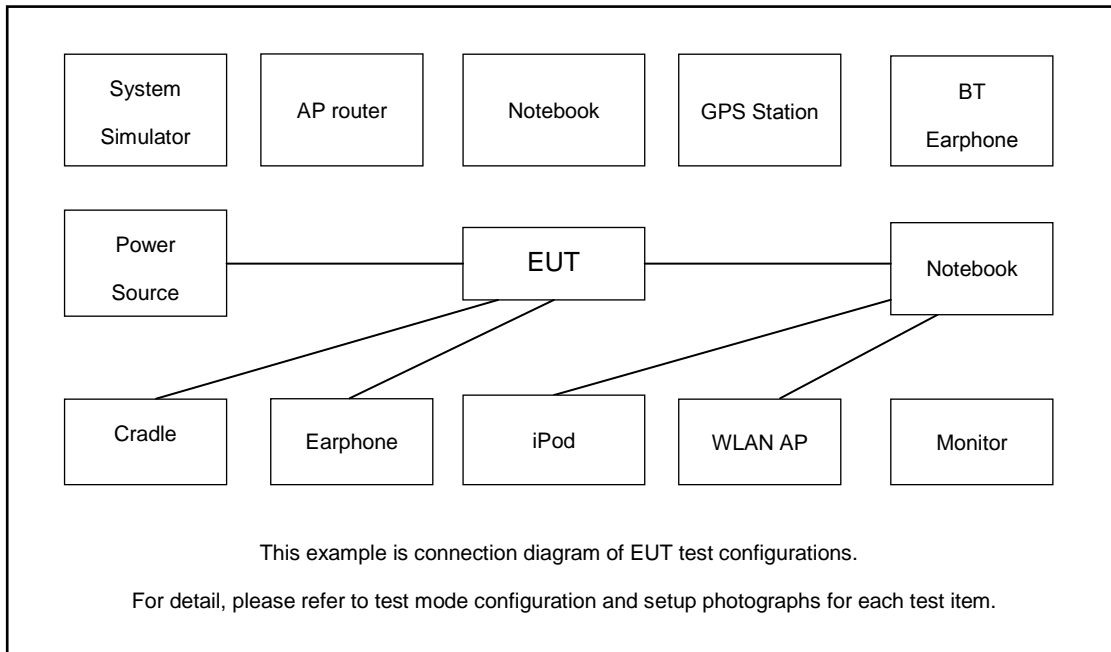
Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
AC Conducted Emission	Mode 1: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle+ Battery + USB Cable 1(Charging from Adapter) + Camera(Rear) + ANT 1 + SIM 1 for Sample 1
	Mode 2: WCDMA 850 Rx(High) + Bluetooth Idle + WLAN (5G) Idle + Battery + USB Cable 2(Charging from Adapter) + Camera(Front) + ANT 4 + SIM 2 for Sample 1
	Mode 3: LTE Band 5 Rx(Low) + Bluetooth Idle + WLAN (2.4G) Idle + Battery + USB Cable 1(Charging from Adapter) + MPEG4(Run Color Bar) + ANT 1 + SIM 1 for Sample 1
	Mode 4: LTE Band 12 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + Battery + USB Cable 1(Charging from Adapter) + NFC On + ANT 4 + SIM 2 for Sample 1
	Mode 5: LTE Band 13 Rx(Low) + Bluetooth Idle + WLAN (2.4G) Idle + Battery + USB Cable 1(Charging from Adapter) + GNSS Rx + ANT 1 + SIM 1 for Sample 1
	Mode 6: LTE Band 17 Rx(Low) + Bluetooth Idle + WLAN (5G) Idle + Battery + USB Cable 1(Data Link with Notebook) + GNSS Rx + ANT 4 + SIM 2 for Sample 1
	Mode 7: LTE Band 26 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + Battery + USB Cable 2(Data Link with Notebook) + GNSS Rx + ANT 1 + SIM 1 for Sample 1
	Mode 8: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + Battery + USB Cable 1(Data Link with Notebook) + GNSS Rx + ANT 1 + SIM 2 for Sample 2
	Mode 9: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + Battery + USB Cable 1(Data Link with Notebook) + GNSS Rx + ANT 1 + SIM 1 for Sample 3
	Mode 10: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + Battery + USB Cable 1(Charging from Adapter) + Camera(Rear) + ANT 1+ SIM 1 for Sample 4



Radiated Emissions	<p>Mode 1: GSM 850 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle+ Battery + USB Cable 1(Charging from Adapter) + Camera(Rear) + ANT 1 + SIM 1 for Sample 1</p> <p>Mode 2: WCDMA 850 Rx(High) + Bluetooth Idle + WLAN (5G) Idle + Battery + USB Cable 2(Charging from Adapter) + Camera(Front) + ANT 4 + SIM 2 for Sample 1</p> <p>Mode 3: LTE Band 5 Rx(Low) + Bluetooth Idle + WLAN (2.4G) Idle + Battery + Earphone + MPEG4(Run Color Bar) + ANT 1 + SIM 1 for Sample 1</p> <p>Mode 4: LTE Band 12 Rx(Middle) + Bluetooth Idle + WLAN (5G) Idle + Battery + USB Cable 1(Charging from Adapter) + NFC On + ANT 4 + SIM 2 for Sample 1</p> <p>Mode 5: LTE Band 13 Rx(Low) + Bluetooth Idle + WLAN (2.4G) Idle + Battery + USB Cable 1(Charging from Adapter) + GNSS Rx + ANT 1 + SIM 1 for Sample 1</p> <p>Mode 6: LTE Band 17 Rx(Low) + Bluetooth Idle + WLAN (5G) Idle + Battery + USB Cable 1(Data Link with Notebook) + GNSS Rx + ANT 4 + SIM 2 for Sample 1</p> <p>Mode 7: LTE Band 26 Rx(Middle) + Bluetooth Idle + WLAN (2.4G) Idle + Battery + USB Cable 2(Data Link with Notebook) + GNSS Rx + ANT 1 + SIM 1 for Sample 1</p> <p>Mode 8: LTE Band 17 Rx(Low) + Bluetooth Idle + WLAN (5G) Idle + Battery + USB Cable 1(Data Link with Notebook) + GNSS Rx + ANT 4 + SIM 2 for Sample 2</p> <p>Mode 9: LTE Band 17 Rx(Low) + Bluetooth Idle + WLAN (2.4G) Idle + Battery + USB Cable 1(Data Link with Notebook) + GNSS Rx + ANT 4 + SIM 1 for Sample 3</p> <p>Mode 10 : LTE Band 17 Rx(Low) + Bluetooth Idle + WLAN (2.4G) Idle + Battery + USB Cable 1(Data Link with Notebook) + GNSS Rx + ANT 4 + SIM 1 for Sample 4</p>
<p>Remark:</p> <ol style="list-style-type: none"> 1. The worst case of AC is mode 1; only the test data of this mode is reported. 2. The worst case of RE is mode 10; 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, 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	Anritsu	MT8821C	N/A	N/A	Unshielded,1.8m
2.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
3.	WLAN AP	D-link	DIR-655	KA21R655B1	N/A	Unshielded,1.8m
4.	WLAN AP	TP-Link	TL-WDR5600	N/A	N/A	Unshielded,1.8m
5.	Bluetooth Earphone	Xiaomi	LYEJ02LM	N/A	N/A	N/A
6.	Notebook	Lenovo	G480	QDS-BRCM1050I	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
7.	Notebook	Lenovo	S730-13IWL	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
8.	GNSS Station	R&S	SMBV100A	258305	N/A	N/A
9.	Hard Disk	Lenovo	F310	DoC	Shielded, 1.2m	N/A
10.	Hard disk	KINGSHARE	KSP6120G	Fcc DoC	Shielded, 1.2m	N/A
11.	NFC Card	N/A	N/A	N/A	N/A	N/A



2.4. EUT Operation Test Setup

The EUT was in GSM or WCDMA or LTE idle mode during the testing. The EUT was synchronized to the BCCH, and is in continuous receiving mode by setting system simulator's paging reorganization.

At the same time, the EUT was attached to the Bluetooth earphone or WLAN AP, and the following programs installed in the EUT were programmed during the test.

1. Data application is transferred between notebook and EUT via USB cable.
2. Turn on MPEG4 function.
3. Turn on camera to capture images.
4. Turn on GNSS function to make the EUT receive continuous signals from GNSS station.
5. 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.

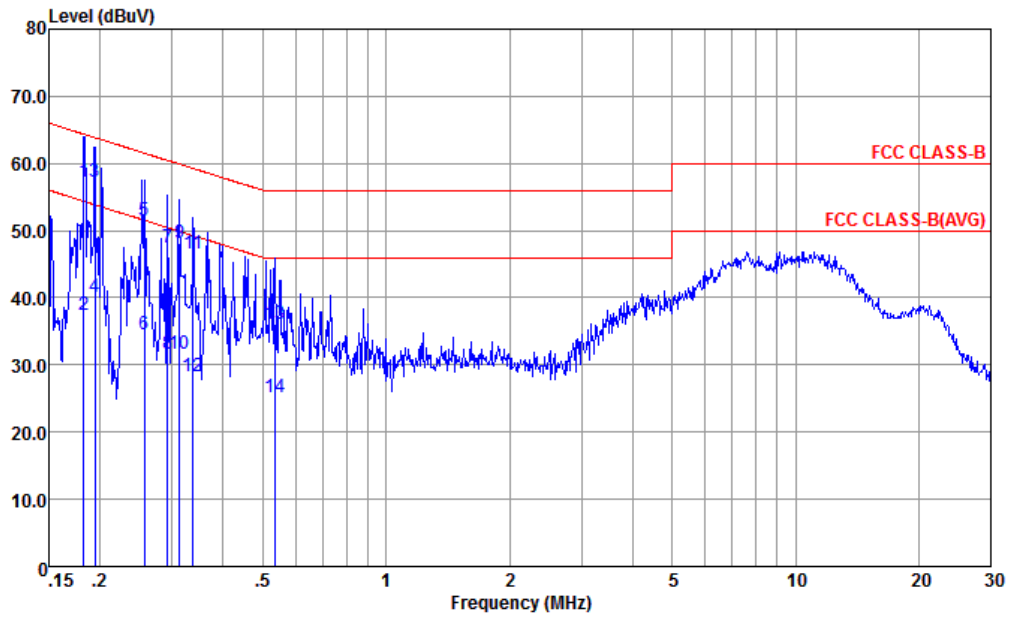
3.1.4 Test Setup





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
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

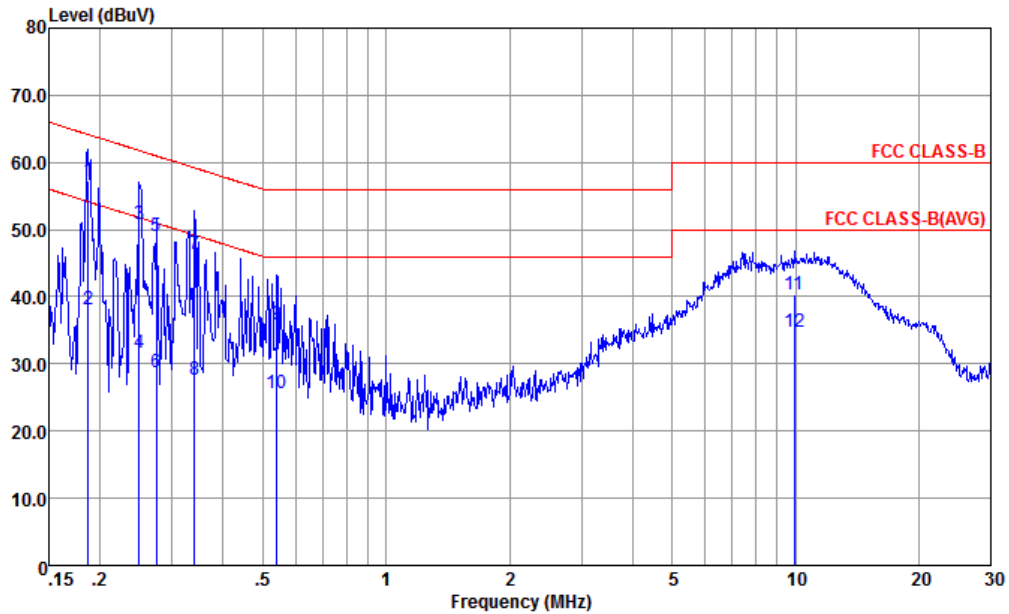


Site : CO01-KS
 Condition : FCC CLASS-B TWO-LISN-CN02-L LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.182	57.24	-7.13	64.37	37.20	9.64	10.40	QP
2	0.182	37.34	-17.03	54.37	17.30	9.64	10.40	Average
3 *	0.194	57.32	-6.52	63.84	37.31	9.64	10.37	QP
4	0.194	40.22	-13.62	53.84	20.21	9.64	10.37	Average
5	0.256	51.47	-10.09	61.56	31.50	9.64	10.33	QP
6	0.256	34.47	-17.09	51.56	14.50	9.64	10.33	Average
7	0.292	47.45	-13.01	60.46	27.50	9.64	10.31	QP
8	0.292	31.55	-18.91	50.46	11.60	9.64	10.31	Average
9	0.313	48.14	-11.74	59.88	28.20	9.64	10.30	QP
10	0.313	31.54	-18.34	49.88	11.60	9.64	10.30	Average
11	0.337	46.53	-12.74	59.27	26.60	9.64	10.29	QP
12	0.337	28.23	-21.04	49.27	8.30	9.64	10.29	Average
13	0.535	36.09	-19.91	56.00	16.20	9.65	10.24	QP
14	0.535	25.09	-20.91	46.00	5.20	9.65	10.24	Average



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



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

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1 *	0.187	57.16	-6.99	64.15	36.90	9.87	10.39	QP
2	0.187	38.06	-16.09	54.15	17.80	9.87	10.39	Average
3	0.249	50.77	-11.01	61.78	30.60	9.84	10.33	QP
4	0.249	31.67	-20.11	51.78	11.50	9.84	10.33	Average
5	0.274	48.93	-12.05	60.98	28.80	9.81	10.32	QP
6	0.274	28.73	-22.25	50.98	8.60	9.81	10.32	Average
7	0.341	46.26	-12.92	59.18	26.19	9.78	10.29	QP
8	0.341	27.66	-21.52	49.18	7.59	9.78	10.29	Average
9	0.541	35.81	-20.19	56.00	15.84	9.73	10.24	QP
10	0.541	25.56	-20.44	46.00	5.59	9.73	10.24	Average
11	9.913	40.38	-19.62	60.00	19.50	10.54	10.34	QP
12	9.913	34.68	-15.32	50.00	13.80	10.54	10.34	Average

Note:

1. Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
2. 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

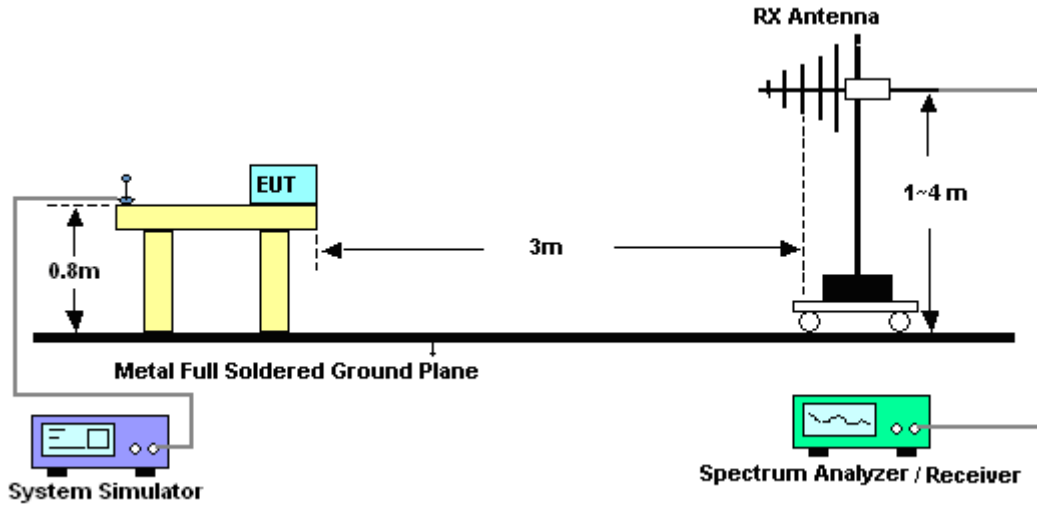
The measuring equipment is listed in the section 4 of this test report.

3.2.3. Test Procedures

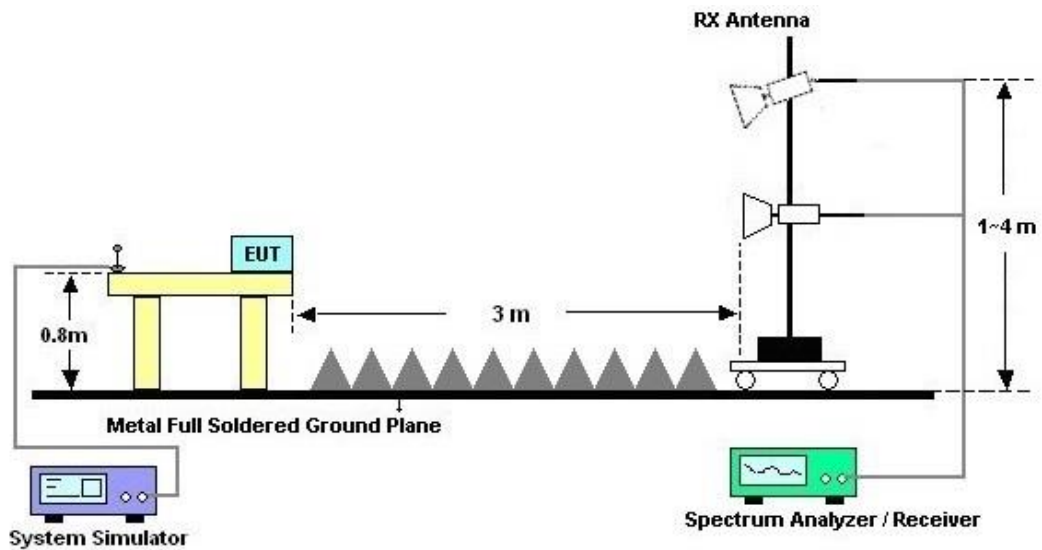
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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



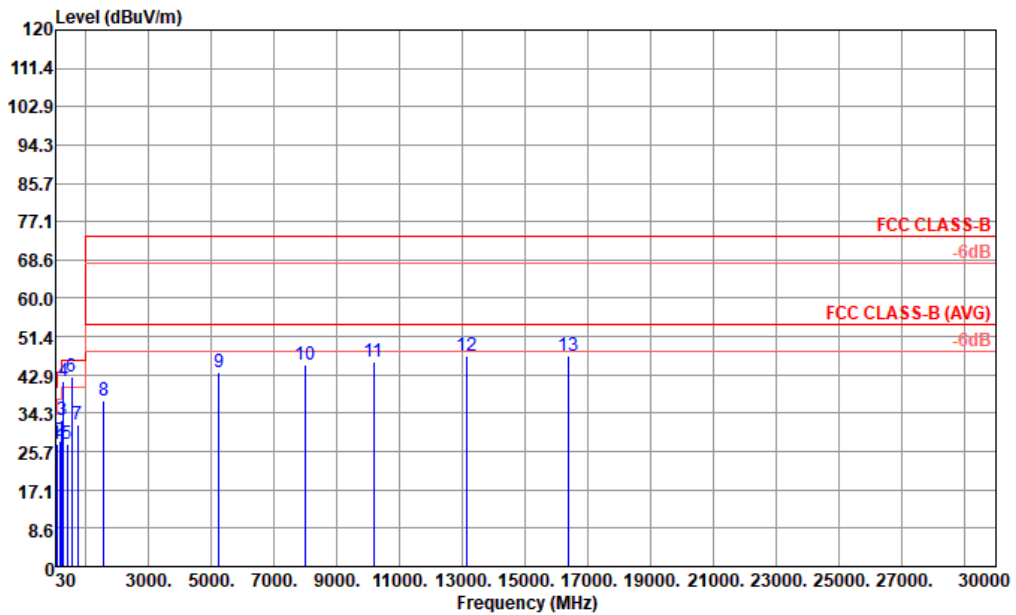
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

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

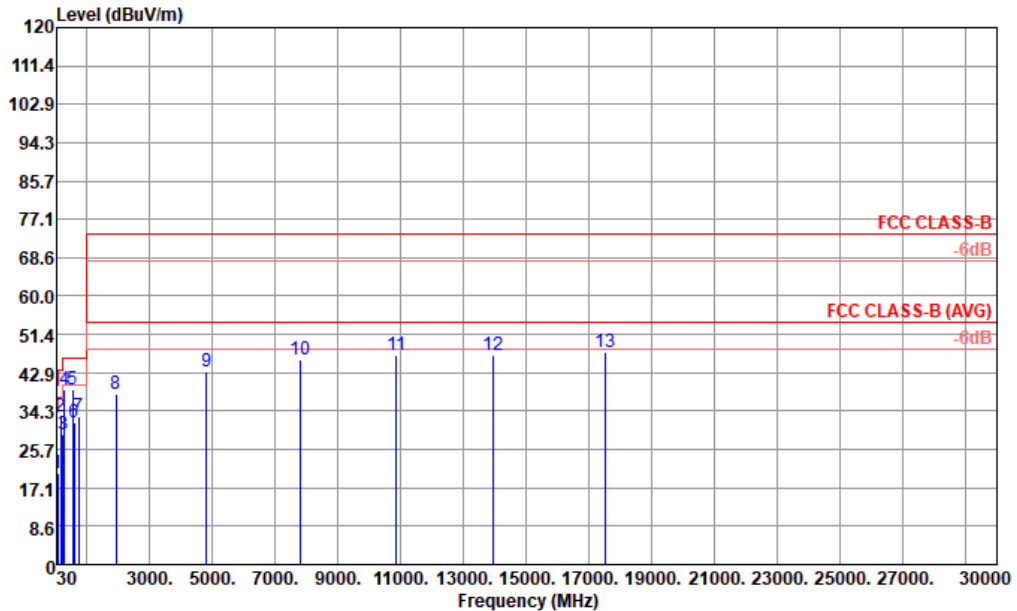


Site : 03CH02-KS
 Condition : FCC CLASS-B 3m LF 6111D SN44483 HORIZONTAL

	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	67.830	27.44	-12.56	40.00	45.82	12.38	1.40	32.16	---	---	Peak
2	166.770	27.97	-15.53	43.50	41.88	15.94	2.25	32.10	---	---	Peak
3	239.520	32.59	-13.41	46.00	44.57	17.50	2.70	32.18	---	---	Peak
4	268.620	41.51	-4.49	46.00	51.01	19.80	2.86	32.16	---	---	Peak
5	408.300	27.46	-18.54	46.00	34.10	22.11	3.53	32.28	---	---	Peak
6	538.280	42.40	-3.60	46.00	45.61	25.07	4.04	32.32	200	0	Peak
7	740.000	31.87			31.51	27.91	4.73	32.28	---	---	Peak
8	1576.000	36.97	-37.03	74.00	36.31	28.98	6.95	35.27	---	---	Peak
9	5224.000	43.52	-30.48	74.00	27.56	35.56	12.65	32.25	---	---	Peak
10	8008.000	44.99	-29.01	74.00	26.49	37.30	15.88	34.68	---	---	Peak
11	10170.000	45.94	-28.06	74.00	23.68	39.37	18.12	35.23	---	---	Peak
12	13140.000	47.01	-26.99	74.00	21.53	40.50	20.53	35.55	---	---	Peak
13	16362.000	47.22	-26.78	74.00	16.02	43.11	23.24	35.15	---	---	Peak



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



Site : 03CH02-KS
 Condition : FCC CLASS-B 3m LF 6111D SN44483 VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	cm	deg	
1	67.830	20.27	-19.73	40.00	38.65	12.38	1.40	32.16	---	Peak
2	167.740	33.04	-10.46	43.50	47.02	15.86	2.26	32.10	---	Peak
3	239.520	29.06	-16.94	46.00	41.04	17.50	2.70	32.18	---	Peak
4	268.620	39.03	-6.97	46.00	48.53	19.80	2.86	32.16	---	Peak
5	538.280	39.07	-6.93	46.00	42.28	25.07	4.04	32.32	200	60 QP
6	600.360	31.65	-14.35	46.00	33.89	25.80	4.26	32.30	---	Peak
7	740.000	33.12			32.76	27.91	4.73	32.28	---	Peak
8	1920.000	38.03	-35.97	74.00	33.77	31.72	7.67	35.13	---	Peak
9	4808.000	43.09	-30.91	74.00	27.78	35.54	12.19	32.42	---	Peak
10	7784.000	45.72	-28.28	74.00	26.58	37.69	15.60	34.15	---	Peak
11	10854.000	46.95	-27.05	74.00	24.05	39.44	18.63	35.17	---	Peak
12	13941.000	46.93	-27.07	74.00	19.86	41.02	21.18	35.13	---	Peak
13	17496.000	47.61	-26.39	74.00	15.27	43.49	24.05	35.20	---	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 Receiver	R&S	ESC17	100768	9kHz~7GHz;	Apr. 21, 2021	Jul. 08, 2021	Apr. 20, 2022	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 17, 2020	Jul. 08, 2021	Oct. 16, 2021	Conduction (CO01-KS)
AC LISN	R&S	ENV216	100334	9kHz~30MHz	Oct. 17, 2020	Jul. 08, 2021	Oct. 16, 2021	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 17, 2020	Jul. 08, 2021	Oct. 16, 2021	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Oct. 17, 2020	Jul. 11, 2021	Oct. 16, 2021	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55370528	10Hz-44G,MAX 30dB	Oct. 17, 2020	Jul. 11, 2021	Oct. 16, 2021	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz-1GHz	Jan. 26, 2021	Jul. 11, 2021	Jan. 25, 2022	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 01, 2020	Jul. 11, 2021	Oct. 31, 2021	Radiation (03CH02-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Nov. 06, 2020	Jul. 11, 2021	Nov. 05, 2021	Radiation (03CH02-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 06, 2021	Jul. 11, 2021	Jan. 05, 2022	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Apr. 12, 2021	Jul. 11, 2021	Apr. 11, 2022	Radiation (03CH02-KS)
Amplifier	Keysight	83017A	MY53270316	500MHz~26.5GHz	Oct. 17, 2020	Jul. 11, 2021	Oct. 16, 2021	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Jul. 11, 2021	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Jul. 11, 2021	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Jul. 11, 2021	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% ($U = 2Uc(y)$)	2.9dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

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

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

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