



FCC Test Report

APPLICANT : OnePlus Technology (Shenzhen) Co., Ltd.
EQUIPMENT : Smart Phone
BRAND NAME : ONEPLUS
MODEL NAME : CPH2389
FCC ID : 2ABZ2-AA272
STANDARD : 47 CFR Part 15 Subpart B
CLASSIFICATION : Certification
TEST DATE(S) : Feb. 28, 2022 ~ Mar. 03, 2022

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

Jason Jia



Approved by: Jason Jia

Sporton International Inc. (ShenZhen)

1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055

People's Republic of China



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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 6.51 dB at 9.50 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 6.17 dB at 32.91 MHz for QP

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

OnePlus Technology (Shenzhen) Co., Ltd.

18C02, 18C03, 18C04, and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen, Guangdong, P.R. China

1.2. Manufacturer

OnePlus Technology (Shenzhen) Co., Ltd.

18C02, 18C03, 18C04, and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen, Guangdong, P.R. China

1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	Smart Phone
Brand Name	ONEPLUS
Model Name	CPH2389
FCC ID	2ABZ2-AA272
EUT supports Radios application	GSM/ WCDMA/LTE/5G NR WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ac VHT20/VHT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE GNSS / NFC
IMEI Code	Conduction: 867188060043069 Radiation: 867188060043390
HW Version	11
SW Version	CPH2389_11_A.02
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



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 25 : 1850 MHz ~ 1915 MHz LTE Band 26 : 814 MHz ~ 849 MHz LTE Band 38 : 2570 MHz ~ 2620 MHz LTE Band 41 : 2496 MHz ~ 2690 MHz LTE Band 66 : 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n71: 663 MHz ~ 698 MHz 5G NR n77: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz 802.11b/g/n/ac: 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 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 25 : 1930 MHz ~ 1995 MHz LTE Band 26 : 859 MHz ~ 894 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41 : 2496 MHz ~ 2690 MHz LTE Band 66 : 2110 MHz~ 2200 MHz LTE Band 71: 617 MHz ~ 652 MHz 5G NR n2 : 1930 MHz ~ 1990 MHz 5G NR n25 : 1930 MHz ~ 1995 MHz



	5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n66 : 2110 MHz~ 2200 MHz 5G NR n71: 617 MHz ~ 652 MHz 5G NR n77: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz 802.11b/g/n/ac: 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 NFC : 13.56 MHz GNSS : 1559 MHz ~ 1610 MHz
Antenna Type	WWAN : Fixed Internal Antenna WLAN : Fixed Internal Antenna Bluetooth : Fixed Internal Antenna GNSS: Fixed Internal Antenna NFC: Loop Antenna
Type of Modulation	GSM/GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA : BPSK HSDPA/DC-HSDPA : QPSK HSUPA : QPSK HSPA+ : 16QAM DC-HSDPA : 64QAM LTE: QPSK / 16QAM / 64QAM 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/ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : $\pi/4$ -DQPSK Bluetooth (3Mbps) : 8-DPSK GNSS : BPSK NFC: ASK

1.5. Modification of EUT

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

1.6. Test Location

Sporton International Inc. (Shenzhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (Shenzhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CO01-SZ	CN1256	421272

Test Firm	Sporton International Inc. (Shenzhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City Guangdong Province China 518103 TEL: +86-755-33202398		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH05-SZ	CN1256	421272

1.7. Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH05-SZ	AUDIX	E3	6.2009-8-24
2.	CO01-SZ	AUDIX	E3	6.120613b

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.

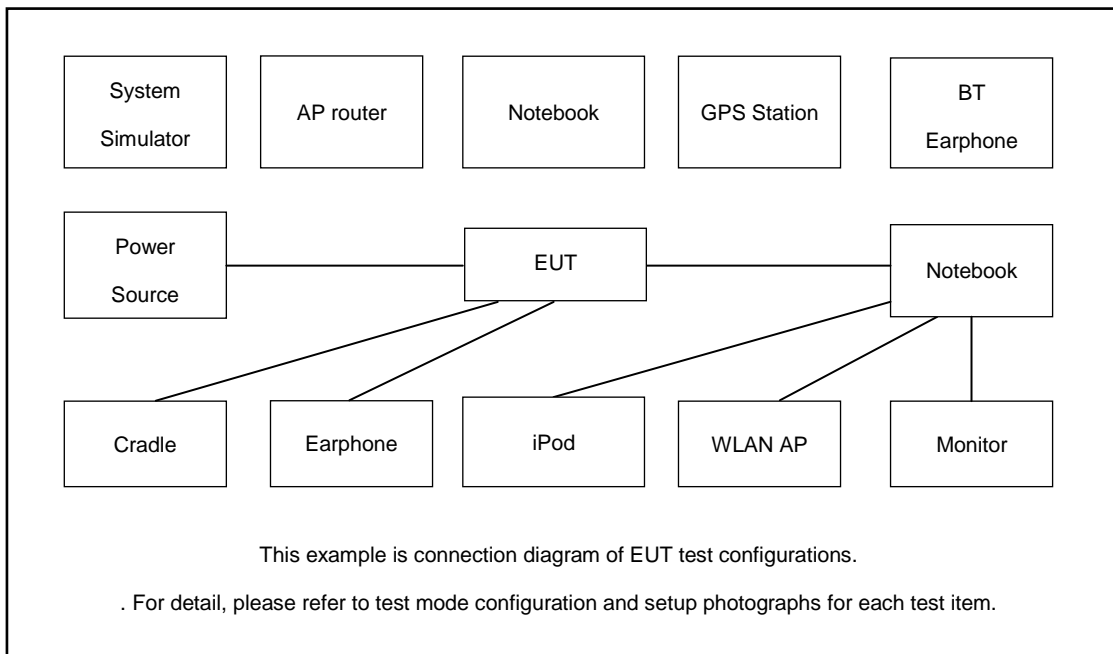
Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (30MHz to the 5th harmonic of the highest frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
AC Conducted Emission	Mode 1: GSM 850 Idle(Middle CH) + USB Cable 1(Charging from Adapter 1) + Earphone + Camera(Rear) + SD Card(Load) + Battery 1 + SIM 1
	Mode 2: WCDMA Band V Idle(Low CH) + USB Cable 1(Charging from Adapter 1) + Earphone + Camera(Front) + SD Card(Load) + Battery 1 + SIM 1
	Mode 3: LTE Band 12 Idle(Middle CH) + USB Cable 1(Charging from Adapter 1) + Earphone + MPEG4(Colur bar) + SD Card(Link) + Battery 1 + SIM 1
	Mode 4: LTE Band 41 Idle(High CH) + USB Cable 1(Charging from Adapter 2) + Earphone + MPEG4(Colur bar) + SD Card(Link) + Battery 1 + SIM 1
	Mode 5: SA:N71 Idle(High CH) + USB Cable 1(Charging from Adapter 3) + Earphone + MPEG4(Colur bar) + SD Card(Link) + Battery 1 + SIM 1
	Mode 6: GSM 850 Idle(Middle CH) + USB Cable 1(Charging from Adapter 1) + Earphone + Camera(Rear) + SD Card(Load) + Battery 1 + SIM 1
	Mode 7 WCDMA Band V Idle(Low CH) + USB Cable 1(Charging from Adapter 1) + Earphone + Camera(Front) + SD Card(Load) + Battery 1 + SIM 1
	Mode 8: LTE Band 12 Idle(Middle CH) + USB Cable 1(Charging from Adapter 1) + Earphone + MPEG4(Colur bar) + SD Card(Link) + Battery 1 + SIM 1
	Mode 9: LTE Band 41 Idle(High CH) + USB Cable 1(Charging from Adapter 2) + Earphone + MPEG4(Colur bar) + SD Card(Link) + Battery 1 + SIM 1
	Mode 10 : SA:N71 Idle(High CH) + USB Cable 1(Charging from Adapter 3) + Earphone + MPEG4(Colur bar) + SD Card(Link) + Battery 1 + SIM 1
	Mode 11 : NSA:2A_N71A Idle(Middle CH) + USB Cable 1 (Data Link with Notebook) + Earphone + H-Pattern + SD Card(Link) + Battery 1 + SIM 1



Radiated Emissions	<p>Mode 1: GSM 850 Idle(Middle CH) + USB Cable 1(Charging from Adapter 1) + Earphone + Camera(Rear) + SD Card(Load) + Battery 1 + SIM 1</p> <p>Mode 2: WCDMA Band V Idle(Low CH) + USB Cable 1(Charging from Adapter 1) + Earphone + Camera(Front) + SD Card(Load) + Battery 1 + SIM 1</p> <p>Mode 3: LTE Band 12 Idle(Middle CH) + USB Cable 1(Charging from Adapter 1) + Earphone + MPEG4(Colur bar) + SD Card(Link) + Battery 1 + SIM 1</p> <p>Mode 4: LTE Band 41 Idle(High CH) + USB Cable 1(Charging from Adapter 2) + Earphone + MPEG4(Colur bar) + SD Card(Link) + Battery 1 + SIM 1</p> <p>Mode 5: SA:N71 Idle(High CH) + USB Cable 1(Charging from Adapter 3) + Earphone + MPEG4(Colur bar) + SD Card(Link) + Battery 1 + SIM 1</p> <p>Mode 6: NSA:2A_N71A Idle(Middle CH) + USB Cable 1 (Data Link with Notebook) + Earphone + H-Pattern + SD Card(Link) + Battery 1 + SIM 1</p>
Remark:	
<ol style="list-style-type: none"> 1. For AC conduction item, Mode 1~5 are tested as soon as the EUT powered on (cold status), Mode 6~10 are tested after EUT charged for two minutes (warm status). 2. The worst case of AC is mode 4; only the test data of this mode is reported. 3. The worst case of RE is mode 3; only the test data of this mode is reported. 4. Data Link with Notebook means data application transferred mode between EUT and Notebook 5. Pre-scanned Low/Middle/High channel for GSM 850/WCDMA Band V/LTE Band 12 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.	Base Station(5G)	Anritsu	MT8000A	N/A	N/A	Unshielded,1.8m
2.	Base Station(LTE)	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
3.	Base Station	Anritsu	MT8821C	N/A	N/A	Unshielded,1.8m
4.	WLAN AP	Dlink	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
5.	WLAN AP	ASUSTek	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded,2.7m with Core
6.	SD Card	N/A	MicroSD HC	FCC DoC	N/A	N/A
7.	Earphone	Apple	N/A	N/A	N/A	N/A
8.	Notebook	DELL	Inspiron 15-7570	Fcc DoC	N/A	shielded cable DC O/P 1.8m Unshielded AC I/P cable 1.8m
9.	NOTE BOOK	Lenovo	E540	FCC DoC	N/A	AC I/P : Unshielded, 1.2m DC O/P : Shielded, 1.8m
10.	IPod	Apple	MC525 ZP/A	Fcc DoC	Shielded, 1.0m	N/A
11.	IPod	apple	MC69029/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 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. Execute "H Pattern" to show H Pattern via USB Cable on the Notebook.
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.

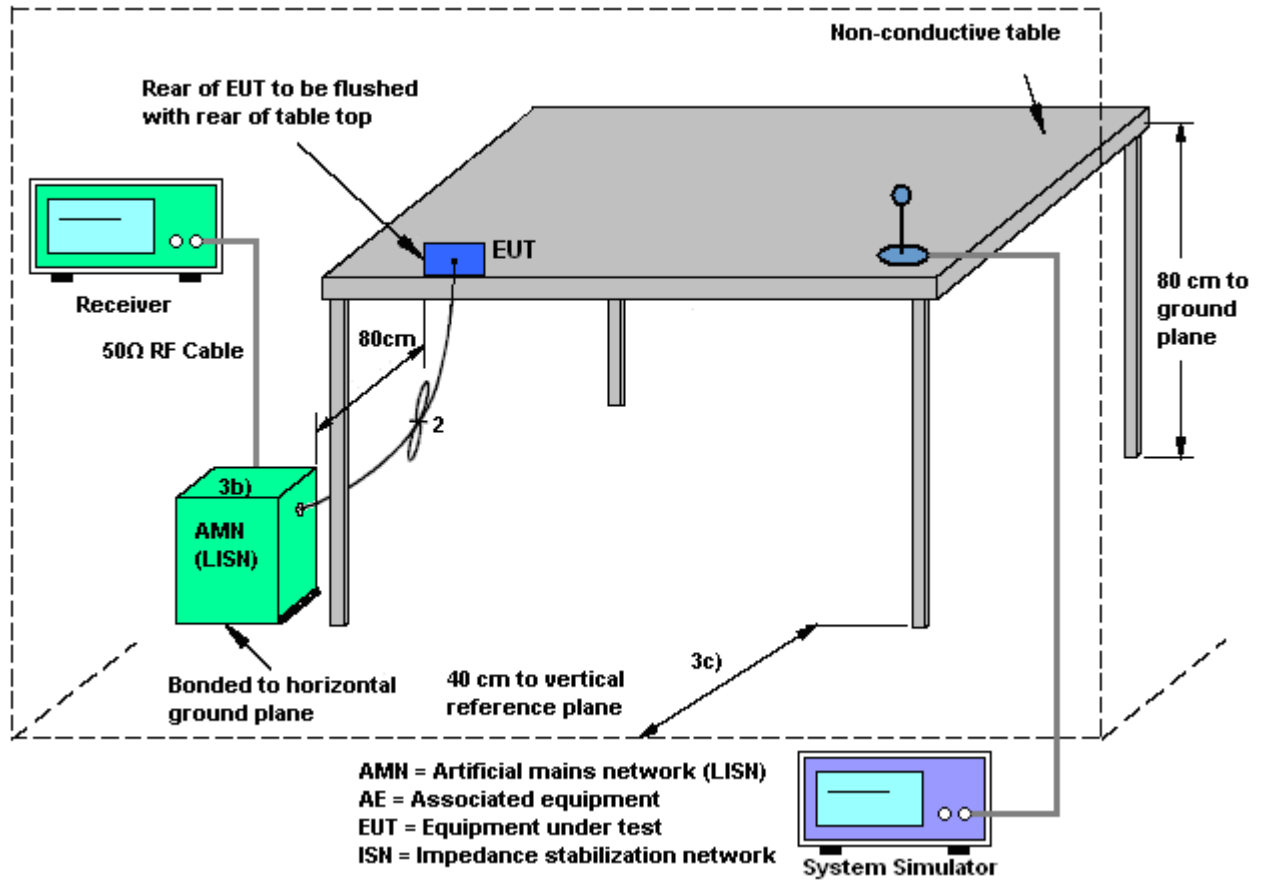
3.1.2 Measuring Instruments

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.

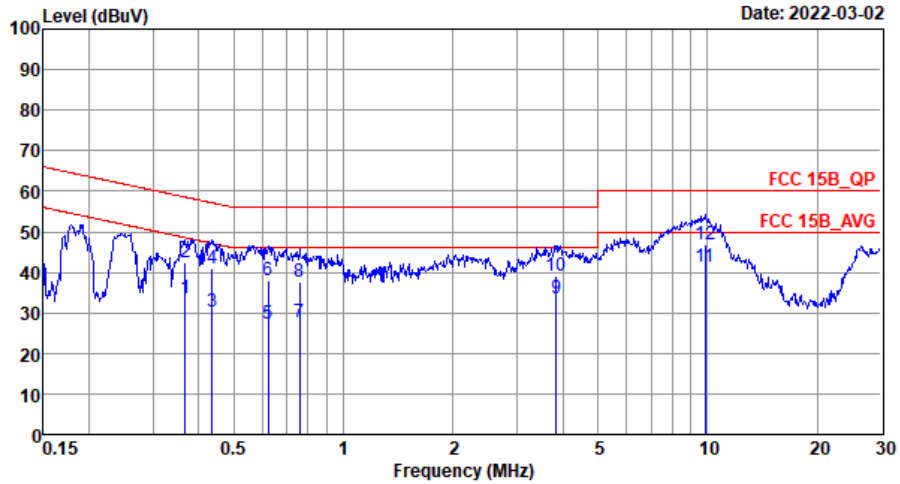
3.1.4 Test Setup





3.1.5 Test Result of AC Conducted Emission

Test Engineer :	Xie YuQiang	Temperature :	22~25°C
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

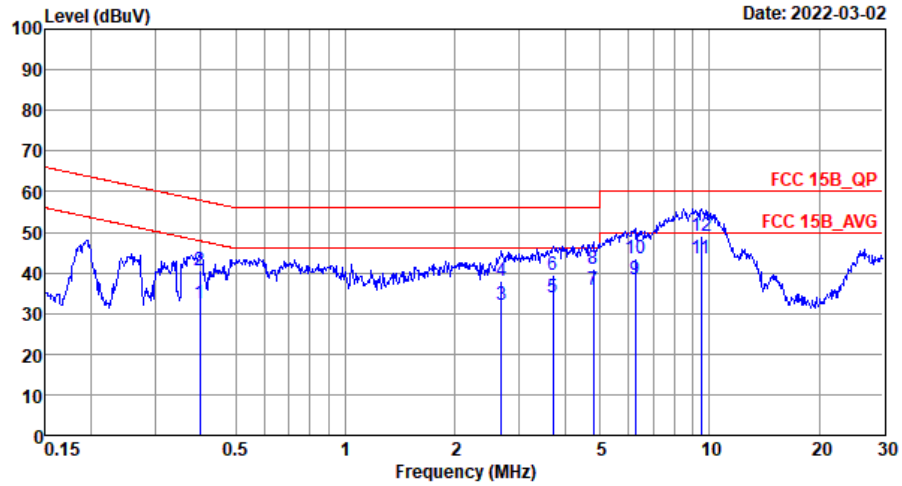


Site : CO01-SZ
 Condition: FCC 15B_QP LISN_20210901_L LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.37	33.57	-14.99	48.56	12.20	10.09	11.28	Average
2	0.37	42.37	-16.19	58.56	21.00	10.09	11.28	QP
3	0.44	30.41	-16.74	47.15	8.70	10.11	11.60	Average
4	0.44	41.01	-16.14	57.15	19.30	10.11	11.60	QP
5	0.62	27.36	-18.64	46.00	5.90	10.11	11.35	Average
6	0.62	37.96	-18.04	56.00	16.50	10.11	11.35	QP
7	0.76	27.61	-18.39	46.00	6.61	10.13	10.87	Average
8	0.76	37.61	-18.39	56.00	16.61	10.13	10.87	QP
9	3.84	33.65	-12.35	46.00	13.40	10.01	10.24	Average
10	3.84	38.95	-17.05	56.00	18.70	10.01	10.24	QP
11 *	9.86	41.22	-8.78	50.00	21.09	9.83	10.30	Average
12	9.86	46.72	-13.28	60.00	26.59	9.83	10.30	QP



Test Engineer :	Xie YuQiang	Temperature :	22~25°C
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
 Condition: FCC 15B_QP LISN_20210901_N NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.40	32.43	-15.47	47.90	10.80	10.19	11.44	Average
2	0.40	40.43	-17.47	57.90	18.80	10.19	11.44	QP
3	2.68	31.99	-14.01	46.00	11.60	10.15	10.24	Average
4	2.68	37.99	-18.01	56.00	17.60	10.15	10.24	QP
5	3.72	33.89	-12.11	46.00	13.50	10.15	10.24	Average
6	3.72	39.59	-16.41	56.00	19.20	10.15	10.24	QP
7	4.80	35.67	-10.33	46.00	15.30	10.13	10.24	Average
8	4.80	41.07	-14.93	56.00	20.70	10.13	10.24	QP
9	6.25	38.32	-11.68	50.00	18.00	10.06	10.26	Average
10	6.25	43.62	-16.38	60.00	23.30	10.06	10.26	QP
11 *	9.50	43.49	-6.51	50.00	23.20	9.99	10.30	Average
12	9.50	48.99	-11.01	60.00	28.70	9.99	10.30	QP

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.

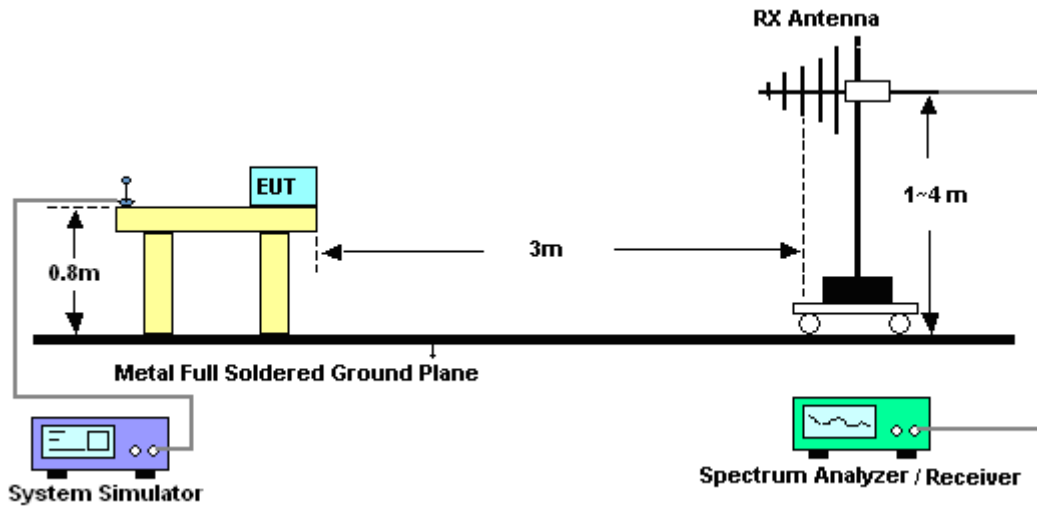
3.2.3. Test Procedures

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

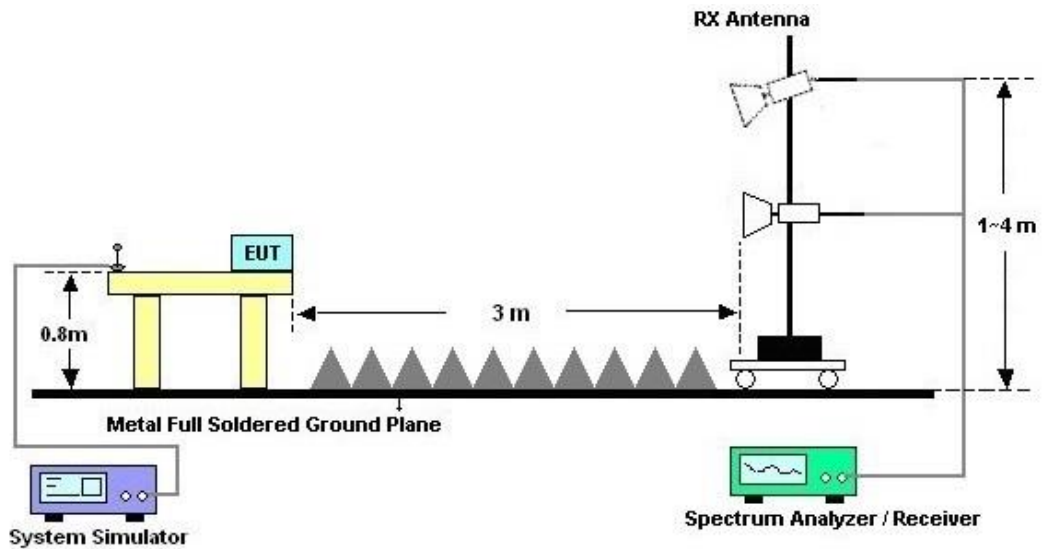
10. Exploratory radiated emissions testing of handheld and/or body-worn devices shall include rotation of the EUT through three orthogonal axes (X/Y/Z Plane) to determine the orientation (attitude) that maximizes the emissions.

3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz



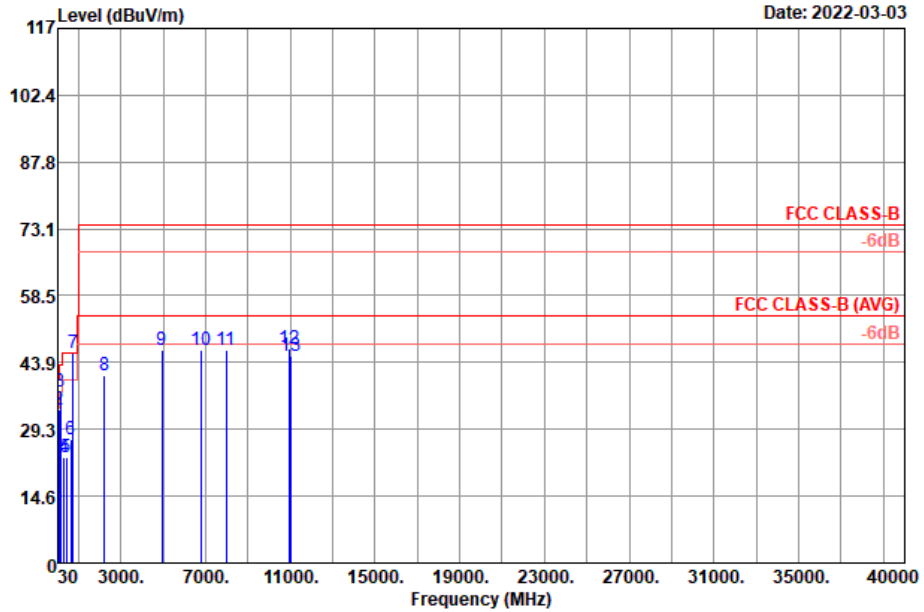
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

Test Engineer :	Zhicheng Li	Temperature :	24~25°C
		Relative Humidity :	48~49%
Test Distance :	3m	Polarization :	Horizontal
Remark :	#7 is system simulator signal which can be ignored.		

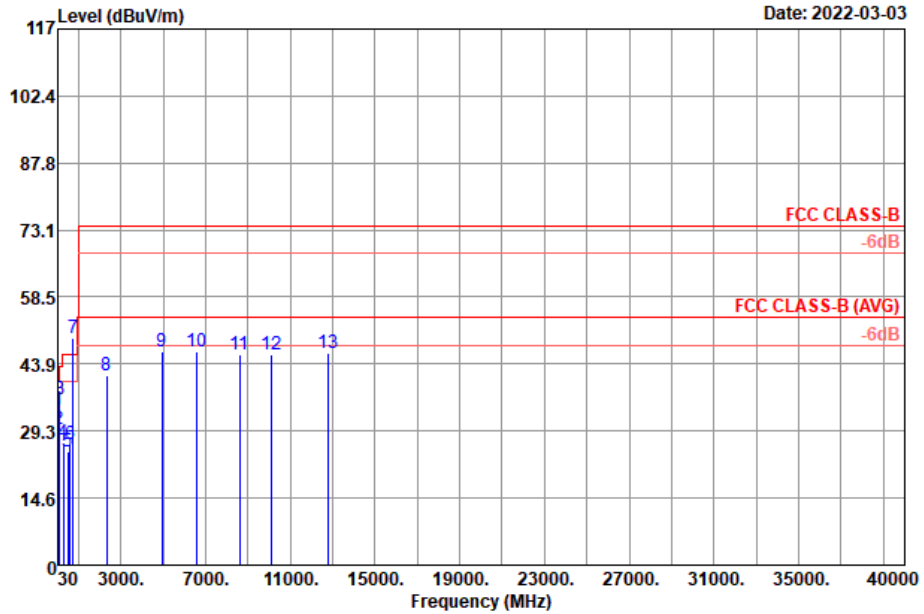


Site : 03CH05-SZ
 Condition : FCC CLASS-B 3m VULB9168-01001 HORIZONTAL

	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	32.91	26.32	-13.68	40.00	40.37	19.02	1.93	35.00	---	---	Peak
2	97.90	33.63	-9.87	43.50	51.91	14.45	2.47	35.20	---	---	Peak
3	138.64	37.50	-6.00	43.50	51.13	18.96	2.53	35.12	---	---	Peak
4	331.67	23.12	-22.88	46.00	34.19	20.61	3.22	34.90	---	---	Peak
5	420.91	23.14	-22.86	46.00	32.11	22.48	3.31	34.76	---	---	Peak
6	632.37	26.98	-19.02	46.00	31.41	26.18	3.89	34.50	---	---	Peak
7 *	737.13	45.90			48.82	27.59	3.92	34.43	---	---	Peak
8	2246.00	40.93	-33.07	74.00	55.64	28.01	7.63	50.35	---	---	Peak
9	4950.00	46.59	-27.41	74.00	54.10	31.50	10.50	49.51	---	---	Peak
10	6764.00	46.73	-27.27	74.00	50.09	34.68	11.55	49.59	---	---	Peak
11	7988.00	46.47	-27.53	74.00	46.52	37.48	12.48	50.01	---	---	Peak
12	10968.00	46.91	-27.09	74.00	39.53	40.56	14.85	48.03	---	---	Peak
13	11030.00	45.32	-28.68	74.00	37.74	40.59	14.98	47.99	---	---	Peak



Test Engineer :	Zhicheng Li	Temperature :	24~25°C
		Relative Humidity :	48~49%
Test Distance :	3m	Polarization :	Vertical
Remark :	#7 is system simulator signal which can be ignored.		



Site : 03CH05-SZ
 Condition : FCC CLASS-B 3m VULB9168-01001 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	32.91	33.83	-6.17	40.00	47.88	19.02	1.93	35.00	100	131 QP	
2	71.71	29.79	-10.21	40.00	45.32	17.29	2.32	35.14	---	---	Peak
3	135.73	36.28	-7.22	43.50	50.22	18.67	2.52	35.13	100	143 QP	
4	288.99	26.83	-19.17	46.00	39.09	19.54	3.12	34.92	---	---	Peak
5	509.18	24.70	-21.30	46.00	31.85	24.03	3.50	34.68	---	---	Peak
6	594.54	26.34	-19.66	46.00	31.30	25.69	3.86	34.51	---	---	Peak
7 *	737.50	49.46			52.39	27.59	3.91	34.43	---	---	Peak
8	2324.00	41.37	-32.63	74.00	56.09	27.95	7.72	50.39	---	---	Peak
9	4946.00	46.67	-27.33	74.00	54.20	31.48	10.50	49.51	---	---	Peak
10	6562.00	46.48	-27.52	74.00	49.95	34.24	11.35	49.06	---	---	Peak
11	8598.00	45.88	-28.12	74.00	45.39	37.14	13.01	49.66	---	---	Peak
12	10088.00	46.05	-27.95	74.00	43.03	39.16	12.84	48.98	---	---	Peak
13	12815.00	46.33	-27.67	74.00	38.41	38.88	15.79	46.75	---	---	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	ESR7	101630	9kHz~7GHz;	Mar. 08, 2021	Mar. 01, 2022 ~Mar. 02, 2022	Mar. 07, 2022	Conduction (CO01-SZ)
AC LISN	R&S	ENV216	100063	9kHz~30MHz	Sep. 01, 2021	Mar. 01, 2022 ~Mar. 02, 2022	Aug. 31, 2022	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Oct. 28, 2021	Mar. 01, 2022 ~Mar. 02, 2022	Oct. 27, 2022	Conduction (CO01-SZ)
EMI Test Receiver	R&S	ESR7	102261	9kHz~7GHz	May. 21, 2021	Feb. 28, 2022 ~Mar. 03, 2022	May. 20, 2022	Radiation (03CH05-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY59071191	10Hz~44GHz	Apr. 07, 2021	Feb. 28, 2022 ~Mar. 03, 2022	Apr. 06, 2022	Radiation (03CH05-SZ)
Log-periodic Antenna	SCHWARZBE CK	VULB 9168	01001	20MHz~1.5GHz	Mar. 25, 2021	Feb. 28, 2022 ~Mar. 03, 2022	Mar. 24, 2022	Radiation (03CH05-SZ)
Amplifier	EM Electronics	EM330	060756	0.01Hz ~3000MHz	Apr. 07, 2021	Feb. 28, 2022 ~Mar. 03, 2022	Apr. 06, 2022	Radiation (03CH05-SZ)
Double Ridge Horn Antenna	SCHWARZBE CK	BBHA9120D	9120D-2206	1GHz~18GHz	Apr. 11, 2021	Feb. 28, 2022 ~Mar. 03, 2022	Apr. 10, 2022	Radiation (03CH05-SZ)
HF Amplifier	EM Electronics	EM01G18GA	060781	1GHz~18GHz	Apr. 07, 2021	Feb. 28, 2022 ~Mar. 03, 2022	Apr. 06, 2022	Radiation (03CH05-SZ)
HF Amplifier	EM Electronics	EM18G40G	060778	18GHz~40GHz	Apr. 07, 2021	Feb. 28, 2022 ~Mar. 03, 2022	Apr. 06, 2022	Radiation (03CH05-SZ)
Horn Antenna	SCHWARZBE CK	BBHA9170	00983	15GHz~40GHz	Apr. 11, 2021	Feb. 28, 2022 ~Mar. 03, 2022	Apr. 10, 2022	Radiation (03CH05-SZ)
AC Power Source	APC	AFV-S-600	F119050013	N/A	NCR	Feb. 28, 2022 ~Mar. 03, 2022	NCR	Radiation (03CH05-SZ)
Turn Table	EMEC	T-200-S-1	060925-T	0~360 degree	NCR	Feb. 28, 2022 ~Mar. 03, 2022	NCR	Radiation (03CH05-SZ)
Antenna Mast	EMEC	MBS-400-1	060927	1 m~4 m	NCR	Feb. 28, 2022 ~Mar. 03, 2022	NCR	Radiation (03CH05-SZ)



5. Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.2dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.2dB
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Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1dB
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Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.1dB
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