



FCC Test Report

APPLICANT : OnePlus Technology (Shenzhen) Co., Ltd.
EQUIPMENT : Smart Phone
BRAND NAME : ONEPLUS
MODEL NAME : LE2115
FCC ID : 2ABZ2-EF136
STANDARD : 47 CFR Part 15 Subpart B
CLASSIFICATION : Certification

The product was received on Oct. 28, 2020 and testing was completed on Dec. 18, 2020. We, Sporton International (ShenZhen) 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 (ShenZhen) Inc., the test report shall not be reproduced except in full.

Reviewed by: Derreck Chen / Supervisor

Approved by: Eric Shih / Manager



Sporton International (ShenZhen) Inc.

1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen, 518055
People's Republic of China



TABLE OF CONTENTS

REVISION HISTORY..... 3

SUMMARY OF TEST RESULT 4

1. GENERAL DESCRIPTION 5

 1.1. Applicant..... 5

 1.2. Manufacturer 5

 1.3. Product Feature of Equipment Under Test 5

 1.4. Product Specification of Equipment Under Test 6

 1.5. Modification of EUT 8

 1.6. Test Location 9

 1.7. Test Software 9

 1.8. Applicable Standards 9

2. TEST CONFIGURATION OF EQUIPMENT UNDER TEST 10

 2.1. Test Mode 10

 2.2. Connection Diagram of Test System 12

 2.3. Support Unit used in test configuration and system 12

 2.4. EUT Operation Test Setup 13

3. TEST RESULT 14

 3.1. Test of AC Conducted Emission Measurement 14

 3.2. Test of Radiated Emission Measurement 18

4. LIST OF MEASURING EQUIPMENT 22

5. UNCERTAINTY OF EVALUATION 23

APPENDIX A. SETUP PHOTOGRAPHS



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 9.28 dB at 0.150 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 6.10 dB at 100.810 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

OnePlus Technology (Shenzhen) Co., Ltd.

18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen

1.2. Manufacturer

OnePlus Technology (Shenzhen) Co., Ltd.

18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen

1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	Smart Phone
Brand Name	ONEPLUS
Model Name	LE2115
FCC ID	2ABZ2-EF136
EUT supports Radios application	CDMA/GSM/WCDMA/LTE/5G NR WLAN 2.4GHz 802.11b/g/n/ac HT20/HT40/VHT20/VHT40 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 / ANT+ GNSS/NFC/WPT(Qi)
IMEI Code	Conduction: 990017410025130 Radiation: 990017410026906
HW Version	22
SW Version	Oxygen OS 11.2.LE25AA
EUT Stage	Production Unit

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. This is a variant report for LE2115. For change note, please refer the product equality declaration exhibit separately. Since the test result is not affected by the changes, all the test results are leveraged from original report which can be referred to Sporton Report Number FC002801-02.



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 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 48 : 3552.5 MHz ~ 3697.5 MHz LTE Band 66 : 1710.7 MHz ~ 1779.3 MHz LTE Band 71: 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 5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 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: 3700 MHz ~ 3980 MHz 802.11b/g/n/ac/ax: 2412 MHz ~ 2462 MHz 802.11a/n/ac/ax: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz ANT+ : 2402 MHz ~ 2480 MHz NFC : 13.56 MHz WPT(QI): 100 kHz ~ 148.5 kHz
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



	<p>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 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 46: 5150 MHz ~ 5725 MHz LTE Band 48 : 3552.5 MHz ~ 3697.5 MHz LTE Band 66 : 2110.7 MHz ~ 2199.3 MHz LTE Band 71: 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 5G NR n2: 1930 MHz ~ 1990 MHz 5G NR n5: 869 MHz ~ 894 MHz 5G NR n7: 2620 MHz ~ 2690 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: 3700 MHz ~ 3980 MHz 802.11b/g/n/ac/ax: 2412 MHz ~ 2462 MHz 802.11a/n/ac/ax: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz ANT+ : 2402 MHz ~ 2480 MHz GNSS : 1559 MHz ~ 1610 MHz; 1164 MHz ~ 1215 MHz NFC : 13.56 MHz WPT(QI): 100 kHz ~ 148.5 kHz</p>
<p>Antenna Type</p>	<p>WWAN : LDS Antenna WLAN : PIFA Antenna Bluetooth : PIFA Antenna GNSS: PIFA Antenna ANT+: PIFA Antenna NFC : Loop Antenna WPT: Loop Antenna</p>
<p>Type of Modulation</p>	<p>GSM: GMSK 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 / 256QAM 5G NR: DFT-s-OFDM (Pi/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM) CP-OFDM (QPSK / 16QAM / 64QAM / 256QAM) CDMA2000 1xRTT: QPSK CDMA2000 1xEV-DO: QPSK/8PSK 802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n/ac/ax : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM / 4096QAM)</p>



	Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : $\pi/4$ -DQPSK Bluetooth (3Mbps) : 8-DPSK GNSS : BPSK NFC: ASK ANT+: GFSK WPT: ASK
--	--

Note :

1. GNSS Rx (1559MHz ~ 1610MHz) = GLONASS + GPS + BDS + Galileo + SBAS
2. GNSS Rx (1164MHz ~ 1215MHz) = Galileo + GPS

1.5. Modification of EUT

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



1.6. Test Location

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

Test Firm	Sporton International (Shenzhen) Inc.		
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 (Shenzhen) Inc.		
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.
	03CH02-SZ	CN1256	421272

1.7. Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH02-SZ	AUDIX	E3	6.2009-8-24a
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 fundamental frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
AC Conducted Emission	Mode 1: GSM850 Idle(Middle CH) + Camera(Rear) + USB Cable (Charging from Adapter) + Battery
	Mode 2: CDMA BC10 Idle(High CH) + Camera(Front) + USB Cable (Charging from Adapter) + Battery
	Mode 3: LTE Band 12 Idle(Low CH) + MPEG4(Colour bar) + USB Cable (Charging from Adapter) + Battery
	Mode 4: LTE Band 7 Idle(High CH) + Camera(Rear) + USB Cable (Charging from Adapter) + Battery
	Mode 5: EN-DC_2A_n5A Idle(Middle CH) + H-Pattern + USB Cable (Data Link with Notebook) + Battery
	Mode 6: n71 Idle(Middle CH) + Camera(Rear) + Charging from wireless charging + Battery
	Mode 7: GSM850 Idle(Middle CH) + Camera(Rear) + USB Cable (Charging from Adapter) + Battery
	Mode 8: GSM850 Idle(Middle CH) + Camera(Rear) + USB Cable (Charging from Adapter) + Battery
	Mode 9: GSM850 Idle(Middle CH) + Camera(Rear) + USB Cable (Charging from Adapter) + Battery

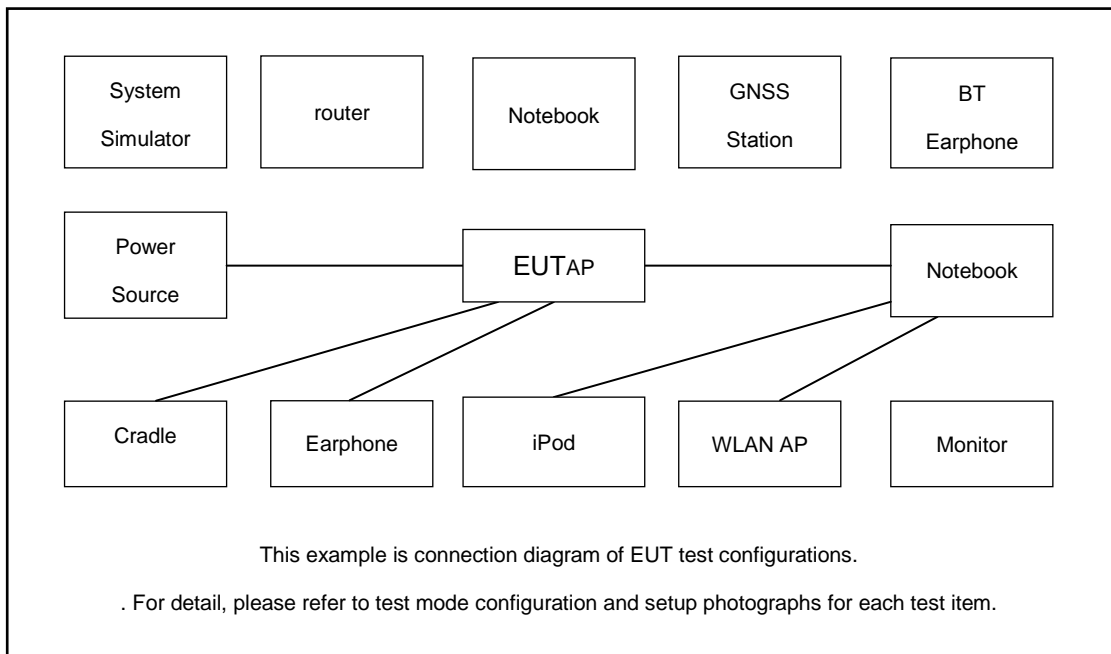


Radiated Emissions	<p>Mode 1: GSM850 Idle(Middle CH) + Camera(Rear) + USB Cable (Charging from Adapter) + Battery</p> <p>Mode 2: CDMA BC10 Idle(High CH) + Camera(Front) + USB Cable (Charging from Adapter) + Battery</p> <p>Mode 3: LTE Band 12 Idle(Low CH) + MPEG4(Colour bar) + USB Cable (Charging from Adapter) + Battery</p> <p>Mode 4: LTE Band 7 Idle(High CH) + Camera(Rear) + USB Cable (Charging from Adapter) + Battery</p> <p>Mode 5: EN-DC_2A_n5A Idle(Middle CH) + H-Pattern + USB Cable (Data Link with Notebook) + Battery</p> <p>Mode 6: GSM850 Idle(Middle CH) + MP3(Max volume) + Type C Earphone + Battery</p> <p>Mode 7: n71 Idle(Middle CH) + Camera(Rear) + Charging from wireless charging + Battery</p> <p>Mode 8: GSM850 Idle(Middle CH) + Camera(Rear) + Reverse charge + Battery</p>
--------------------	--

Remark:

1. The worst case of AC is mode 5; only the test data of this mode is reported.
2. The worst case of RE is mode 1; only the test data of this mode is reported.
3. Mode 7/8/9 of conduction emission is spot check mass production adapter1 in Cold state.
4. Mode 8 of Radiation emission reverse charge another mobile phone.
5. Data Link with Notebook means data application transferred mode between EUT and Notebook.
6. Pre-scanned all Low/Middle/High channel in the frequency bands bellow 1G, the worst frequency band and 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.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Base Station(LTE)	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
3.	Base Station(5G NR)	Keysight	UXM-E7515B	N/A	N/A	Unshielded,1.8m
4.	WLAN AP	D-link	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
5.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded,1.8m
6.	Notebook	Lenovo	E540	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
7.	Earphone	N/A	N/A	N/A	N/A	N/A
8.	Phone	N/A	N/A	N/A	N/A	N/A
9.	Wireless charging	N/A	N/A	N/A	N/A	N/A
10.	iPod	SONY	SBH20	PY7-RD0010	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 LTE or 5G NR or CDMA2000 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 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 and to play MP3 max volume.
3. Turn on MPEG4 function.
4. Turn on camera to capture images.
5. Execute "H Pattern" to show H Pattern on the screen.

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.

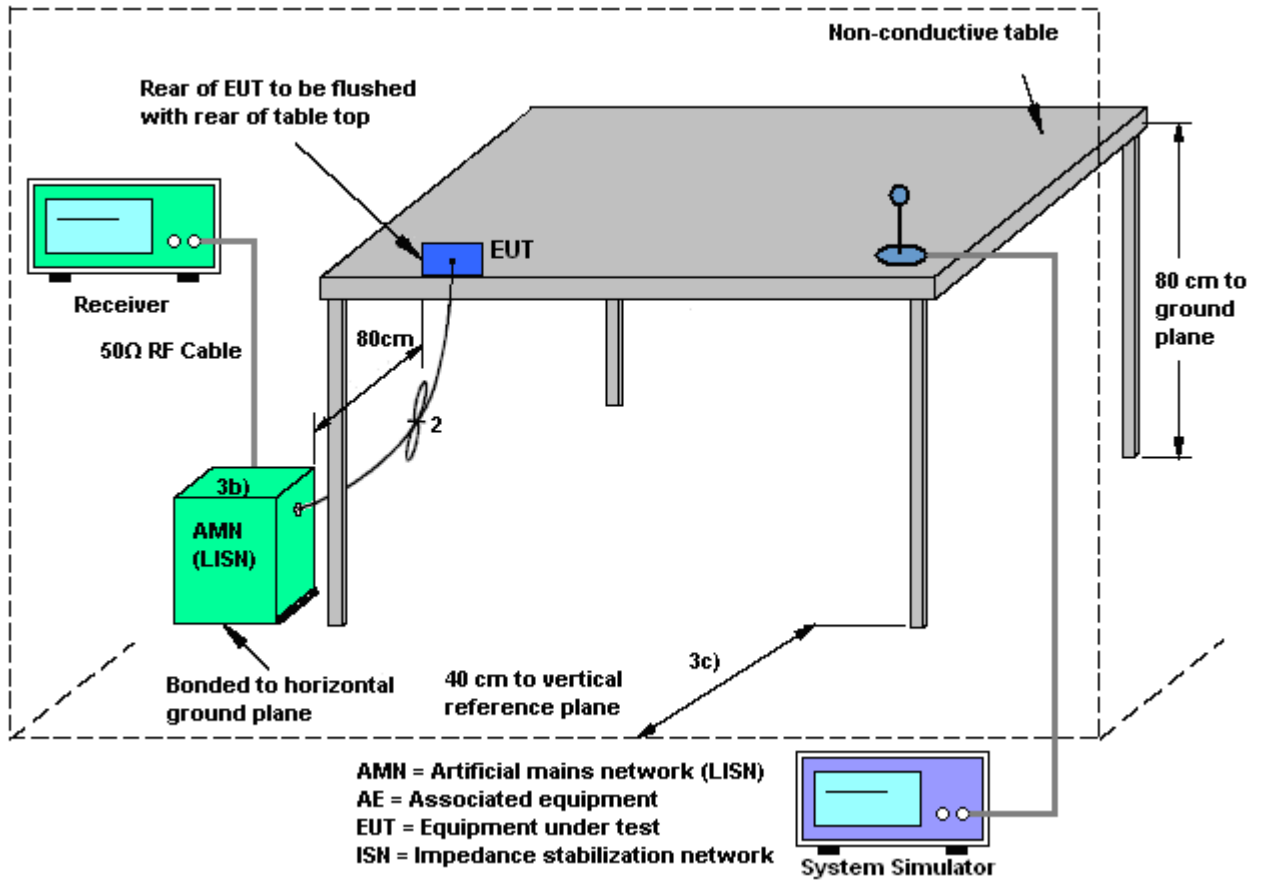
3.1.2 Measuring Instruments

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.

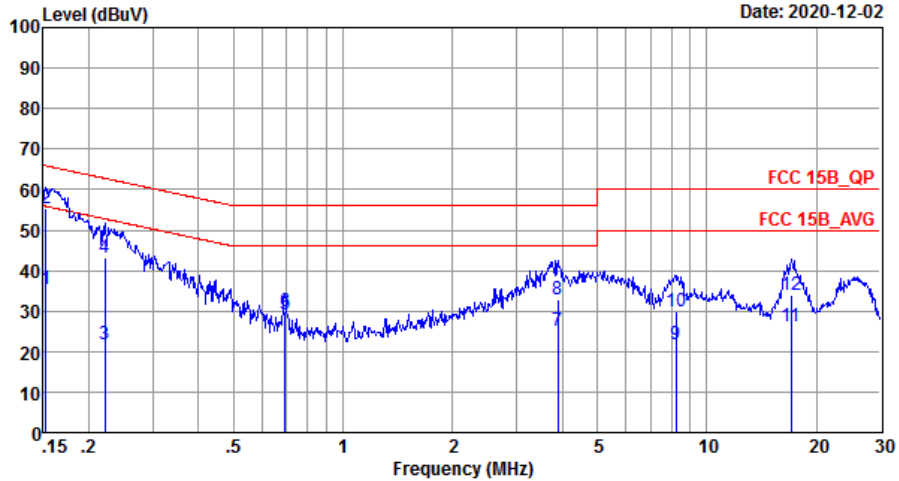
3.1.4 Test Setup





3.1.5 Test Result of AC Conducted Emission

Test Engineer :	YuQiang Xie	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.		

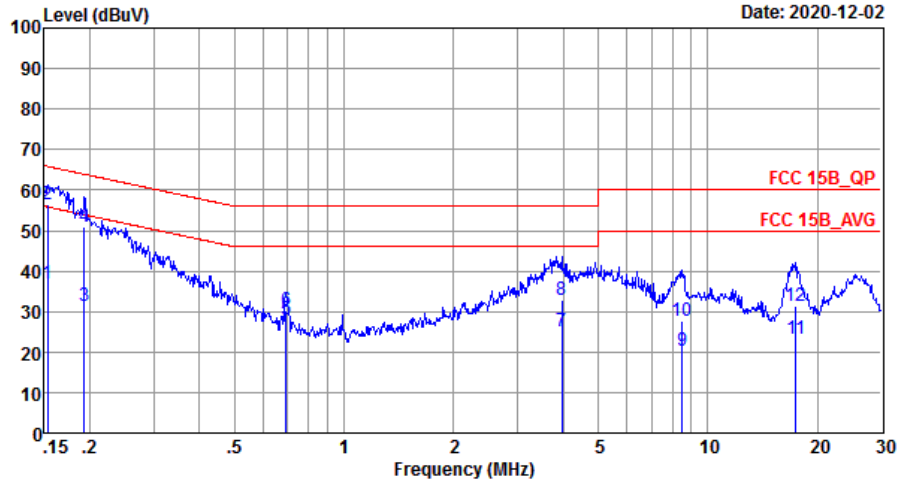


Site : C001-SZ
 Condition: FCC 15B_QP LISN_20200719_L LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15	35.34	-20.53	55.87	25.30	0.03	10.01	Average
2 *	0.15	55.34	-10.53	65.87	45.30	0.03	10.01	QP
3	0.22	21.94	-30.80	52.74	11.90	0.03	10.01	Average
4	0.22	43.04	-19.70	62.74	33.00	0.03	10.01	QP
5	0.69	28.99	-17.01	46.00	18.90	0.02	10.07	Average
6	0.69	29.99	-26.01	56.00	19.90	0.02	10.07	QP
7	3.90	25.00	-21.00	46.00	14.69	0.18	10.13	Average
8	3.90	32.90	-23.10	56.00	22.59	0.18	10.13	QP
9	8.24	21.82	-28.18	50.00	11.30	0.29	10.23	Average
10	8.24	30.02	-29.98	60.00	19.50	0.29	10.23	QP
11	17.02	26.04	-23.96	50.00	14.90	0.85	10.29	Average
12	17.02	34.04	-25.96	60.00	22.90	0.85	10.29	QP



Test Engineer :	YuQiang Xie	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_20200719_N NEUTRAL

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15	37.04	-18.78	55.82	27.00	0.03	10.01	Average
2 *	0.15	56.54	-9.28	65.82	46.50	0.03	10.01	QP
3	0.19	31.34	-22.55	53.89	21.30	0.03	10.01	Average
4	0.19	50.74	-13.15	63.89	40.70	0.03	10.01	QP
5	0.69	28.19	-17.81	46.00	18.10	0.02	10.07	Average
6	0.69	30.39	-25.61	56.00	20.30	0.02	10.07	QP
7	3.96	24.98	-21.02	46.00	14.80	0.05	10.13	Average
8	3.96	32.78	-23.22	56.00	22.60	0.05	10.13	QP
9	8.50	20.25	-29.75	50.00	9.90	0.12	10.23	Average
10	8.50	27.65	-32.35	60.00	17.30	0.12	10.23	QP
11	17.47	23.35	-26.65	50.00	12.60	0.46	10.29	Average
12	17.47	31.45	-28.55	60.00	20.70	0.46	10.29	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

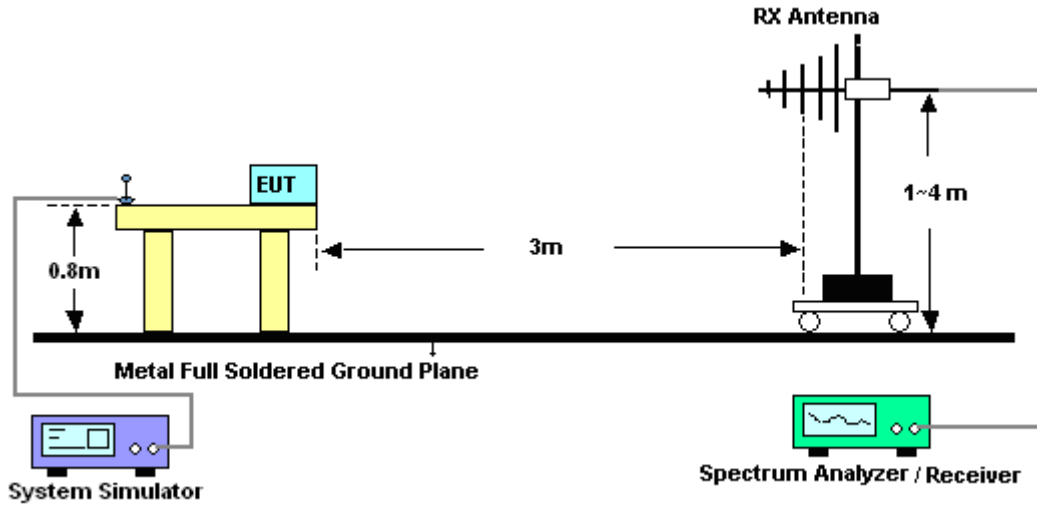
The measuring equipment is listed in the section 4 of this test report.

3.2.3. Test Procedures

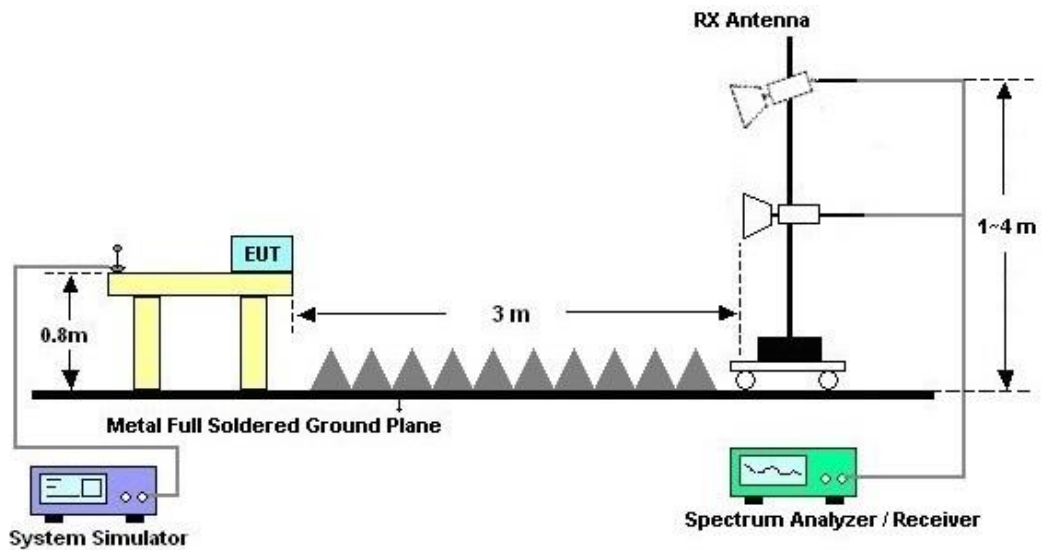
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna 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 (dB μ V/m) = 20 log Emission level (μ V/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



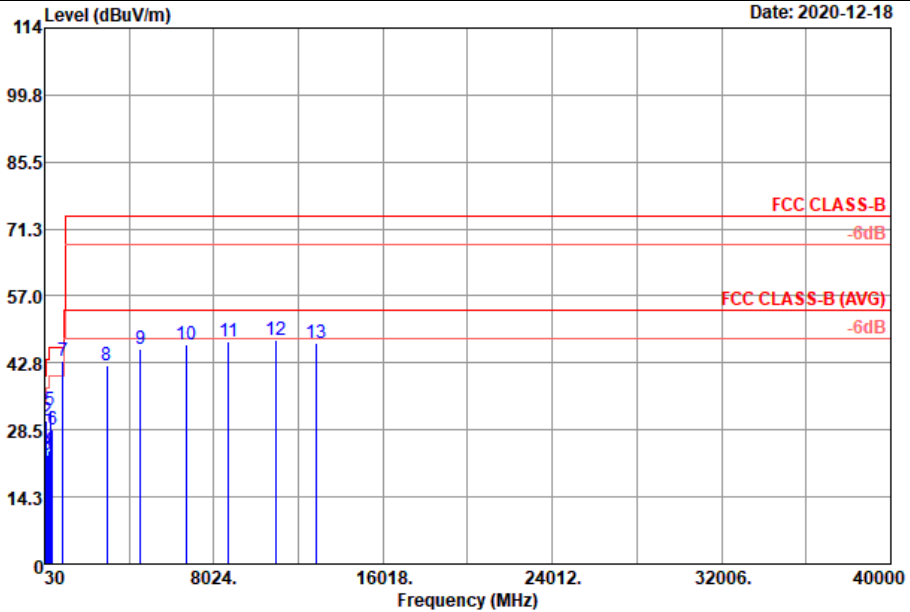
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

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

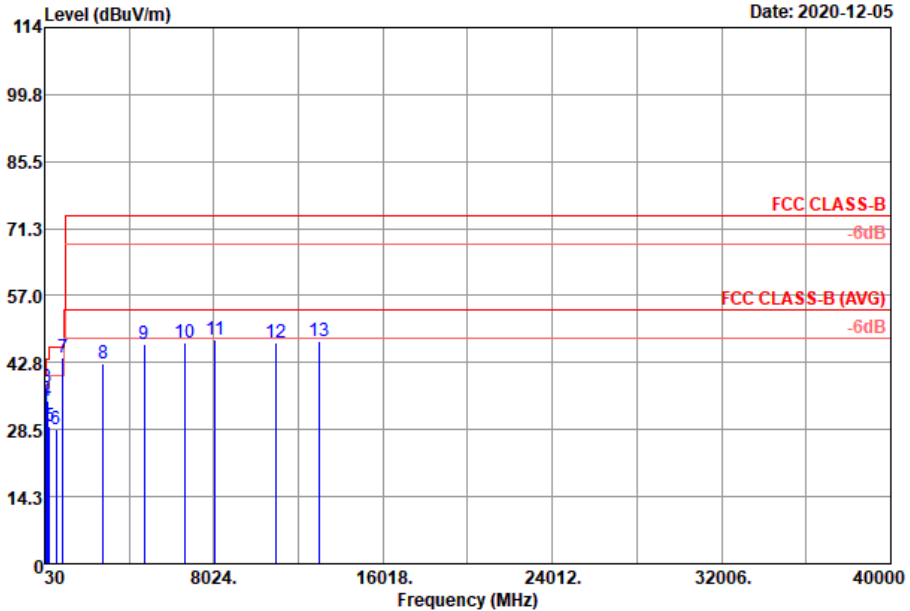


Site : 03CH02-SZ
 Condition : FCC CLASS-B 3m VULB9168-01001 HORIZONTAL

	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	30.97	21.06	-18.94	40.00	35.27	18.91	1.88	35.00	---	---	Peak
2	101.78	30.44	-13.06	43.50	48.09	15.09	2.46	35.20	100	136	Peak
3	168.71	23.20	-20.30	43.50	36.50	19.18	2.62	35.10	---	---	Peak
4	207.51	24.18	-19.32	43.50	39.91	16.58	2.77	35.08	---	---	Peak
5	283.17	32.59	-13.41	46.00	45.01	19.43	3.08	34.93	---	---	Peak
6	411.21	28.53	-17.47	46.00	37.74	22.26	3.31	34.78	---	---	Peak
7	881.66	43.32			44.55	28.88	4.19	34.30	---	---	Peak
8	2978.00	42.30	-31.70	74.00	54.73	28.64	8.86	49.93	---	---	Peak
9	4568.00	45.74	-28.26	74.00	54.34	30.84	10.15	49.59	---	---	Peak
10	6734.00	46.61	-27.39	74.00	49.99	34.61	11.52	49.51	---	---	Peak
11	8708.00	47.46	-26.54	74.00	46.81	37.29	12.98	49.62	---	---	Peak
12	10970.00	47.66	-26.34	74.00	40.26	40.56	14.86	48.02	163	315	Peak
13	12887.00	46.84	-27.16	74.00	38.46	38.96	16.11	46.69	---	---	Peak



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



Site : 03CH02-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	30.00	31.76	-8.24	40.00	46.06	18.85	1.85	35.00	---	---	Peak
2	43.58	29.67	-10.33	40.00	42.54	20.10	2.07	35.04	---	---	Peak
3	100.81	37.40	-6.10	43.50	55.23	14.91	2.46	35.20	100	241	QP
4	166.77	34.61	-8.89	43.50	47.85	19.24	2.62	35.10	---	---	Peak
5	276.38	29.32	-16.68	46.00	42.06	19.18	3.03	34.95	---	---	Peak
6	562.53	28.52	-17.48	46.00	34.32	25.06	3.71	34.57	---	---	Peak
7	881.66	43.95			45.18	28.88	4.19	34.30	---	---	Peak
8	2806.00	42.47	-31.53	74.00	55.87	28.21	8.52	50.13	---	---	Peak
9	4736.00	46.59	-27.41	74.00	54.61	31.22	10.31	49.55	---	---	Peak
10	6656.00	46.99	-27.01	74.00	50.42	34.44	11.44	49.31	---	---	Peak
11	8100.00	47.76	-26.24	74.00	47.71	37.40	12.59	49.94	100	251	Peak
12	10940.00	47.02	-26.98	74.00	39.85	40.52	14.70	48.05	---	---	Peak
13	13031.00	47.35	-26.65	74.00	38.37	39.15	16.45	46.62	---	---	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;	Dec. 27, 2019	Dec. 02, 2020	Dec. 26, 2020	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Dec. 27, 2019	Dec. 02, 2020	Dec. 26, 2020	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Oct. 15, 2020	Dec. 02, 2020	Oct. 14, 2021	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 21, 2020	Dec. 02, 2020	Jul. 20, 2021	Conduction (CO01-SZ)
EMI Test Receiver	R&S	ESR7	101404	9kHz~7GHz	Oct. 16, 2020	Dec. 05, 2020~Dec. 18, 2020	Oct. 15, 2021	Radiation (03CH02-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Jul. 21, 2020	Dec. 05, 2020~Dec. 18, 2020	Jul. 20, 2021	Radiation (03CH02-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	Jul. 15, 2020	Dec. 05, 2020~Dec. 18, 2020	Jul. 14, 2021	Radiation (03CH02-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 25, 2020	Dec. 05, 2020~Dec. 18, 2020	Jul. 24, 2021	Radiation (03CH02-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 23, 2020	Dec. 05, 2020~Dec. 18, 2020	Apr. 22, 2021	Radiation (03CH02-SZ)
LF Amplifier	Burgeon	BPA-530	102211	0.01~3000Mhz	Oct. 16, 2020	Dec. 05, 2020~Dec. 18, 2020	Oct. 15, 2021	Radiation (03CH02-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1943528	1GHz~18GHz	Oct. 16, 2020	Dec. 05, 2020~Dec. 18, 2020	Oct. 15, 2021	Radiation (03CH02-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 21, 2020	Dec. 05, 2020~Dec. 18, 2020	Jul. 20, 2021	Radiation (03CH02-SZ)
AC Power Source	Chroma	61601	616010002470	N/A	NCR	Dec. 05, 2020~Dec. 18, 2020	NCR	Radiation (03CH02-SZ)
Turn Table	Chaintek	T-200	N/A	0~360 degree	NCR	Dec. 05, 2020~Dec. 18, 2020	NCR	Radiation (03CH02-SZ)
Antenna Mast	Chaintek	MBS-400	N/A	1 m~4 m	NCR	Dec. 05, 2020~Dec. 18, 2020	NCR	Radiation (03CH02-SZ)

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% ($U = 2Uc(y)$)	2.7dB
---	-------

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0dB
---	-------

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0dB
---	-------

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0dB
---	-------