



# FCC Test Report

APPLICANT : OnePlus Technology (Shenzhen) Co., Ltd.  
EQUIPMENT : Smart Phone  
BRAND NAME : ONEPLUS  
MODEL NAME : LE2127  
FCC ID : 2ABZ2-EF14A  
STANDARD : 47 CFR Part 15 Subpart B  
CLASSIFICATION : Certification

The product was received on Oct. 27, 2020 and testing was completed on Dec. 21, 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 ..... 8

    1.7. Test Software ..... 8

    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 ..... 11

    2.3. Support Unit used in test configuration and system ..... 12

    2.4. EUT Operation Test Setup ..... 12

**3. TEST RESULT ..... 13**

    3.1. Test of AC Conducted Emission Measurement ..... 13

    3.2. Test of Radiated Emission Measurement ..... 17

**4. LIST OF MEASURING EQUIPMENT ..... 22**

**5. UNCERTAINTY OF EVALUATION ..... 23**

**APPENDIX A. SETUP PHOTOGRAPHS**



### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC002703-02	Rev. 01	Initial issue of report	Feb. 05, 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 9.40 dB at 0.150 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 6.41 dB at 91.110 MHz for Quasi-Peak

<b>Declaration of Conformity:</b>
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
<b>Comments and Explanations:</b>
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	LE2127
FCC ID	2ABZ2-EF14A
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
IMEI Code	Conduction: 990016750028217 Radiation: 990016750028282
HW Version	22
SW Version	11.2.0.0.LE5ACB
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	
<b>Tx Frequency</b>	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 : 2572.5MHz ~ 2617.5MHz 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
<b>Rx Frequency</b>	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 : 2572.5MHz ~ 2617.5MHz          LTE Band 41 : 2498.5 MHz ~ 2687.5 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 ~ 649.5MHz          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          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>
<b>Antenna Type</b>	<p>WWAN : LDS Antenna          WLAN : PIFA Antenna          Bluetooth : PIFA Antenna          GNSS: PIFA Antenna          ANT+: PIFA Antenna          NFC : Loop Antenna          WPT: Loop Antenna</p>
<b>Type of Modulation</b>	<p>GSM: GMSK          GPRS: GMSK          EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK          WCDMA : BPSK (Uplink)          HSDPA/DC-HSDPA : QPSK (Uplink)          HSUPA : QPSK (Uplink)          HSPA+ : 16QAM (Uplink)          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)          Bluetooth LE : GFSK</p>



	Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) :π/4-DQPSK Bluetooth (3Mbps) : 8-DPSK GNSS : BPSK NFC: ASK ANT+: GFSK WPT: ASK
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### 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.

<b>Test Firm</b>	Sporton International (Shenzhen) Inc.		
<b>Test Site Location</b>	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		
<b>Test Site No.</b>	<b>Sporton Site No.</b>	<b>FCC Designation No.</b>	<b>FCC Test Firm Registration No.</b>
	CO01-SZ	CN1256	421272

<b>Test Firm</b>	Sporton International (Shenzhen) Inc.		
<b>Test Site Location</b>	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		
<b>Test Site No.</b>	<b>Sporton Site No.</b>	<b>FCC Designation No.</b>	<b>FCC Test Firm Registration No.</b>
	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

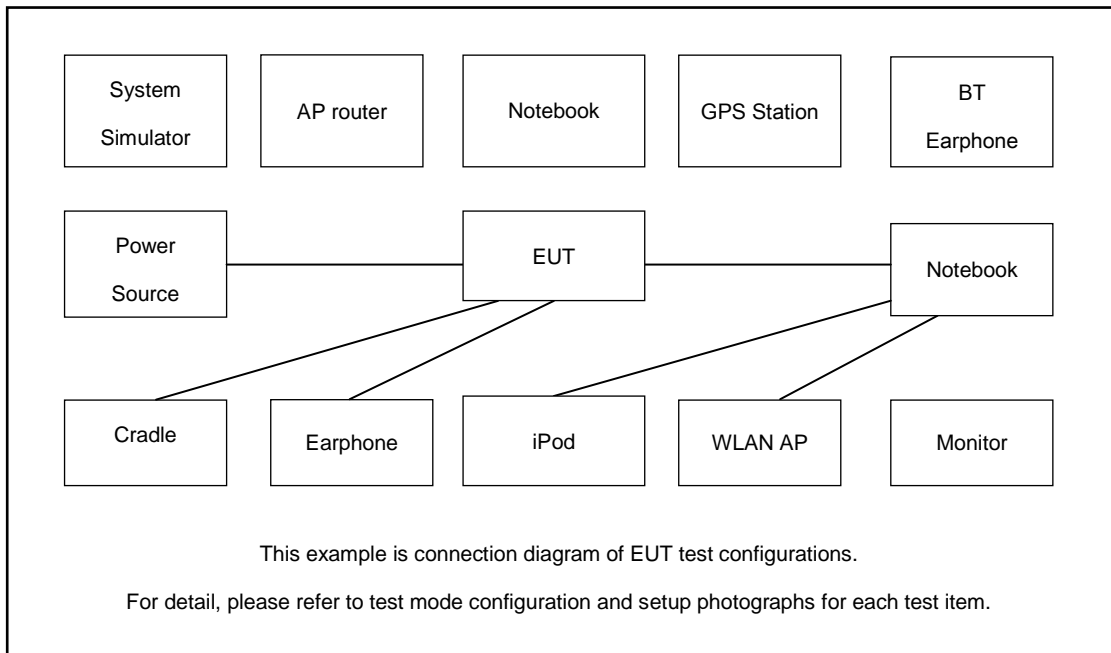
The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

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: GSM 850 Idle(Middle CH) + Battery + Camera(Rear) + USB Cable 1(Charging from Adapter 1) for SIM 1
	Mode 2: CDMA BC10 Idle(High CH) + Battery + Camera(Front) + USB Cable 1(Charging from Adapter 1) for SIM 2
	Mode 3: LTE Band 12 Idle(Low CH) + Battery + MPEG4(Colur bar) + USB Cable 1(Charging from Adapter 1) for SIM 1
	Mode 4: LTE Band 7 Idle(High CH) + Battery + Camera(Rear) + USB Cable 2(Charging from Adapter 1) for SIM 2
	Mode 5: NSA:2A_N5A Idle(Middle CH) + Battery + H-Pattern + USB Cable 1(Data Link with Notebook) for SIM 1
	Mode 6: SA:N71 Idle(Middle CH) + Battery + H-Pattern + USB Cable 2(Data Link with Notebook) for SIM 1
	Mode 7: NSA:2A_N5A Idle(Middle CH) + Battery + H-Pattern + Charging from wireless charging for SIM 1
	Mode 8: GSM 850 Idle(Middle CH) + Battery + Camera(Rear) + USB Cable 1(Charging from Adapter 1) for SIM 1
	Mode 9: GSM 850 Idle(Middle CH) + Battery + Camera(Rear) + USB Cable 1(Charging from Adapter 1) for SIM 1
	Mode 10: GSM 850 Idle(Middle CH) + Battery + Camera(Rear) + USB Cable 1(Charging from Adapter 1) for SIM 1
Radiated Emissions	Mode 1: GSM 850 Idle(Middle CH) + Battery + Camera(Rear) + USB Cable 1(Charging from Adapter 1) for SIM 1
	Mode 2: CDMA BC10 Idle(High CH) + Battery + Camera(Front) + USB Cable 1(Charging from Adapter 1) for SIM 2
	Mode 3: LTE Band 12 Idle(Low CH) + Battery + MPEG4(Colur bar) + USB Cable 1(Charging from Adapter 1) for SIM 1
	Mode 4: LTE Band 7 Idle(High CH) + Battery + MPEG4(Colur bar) + USB Cable 2(Charging from Adapter 1) for SIM 2
	Mode 5: NSA:2A_N5A Idle(Middle CH) + Battery + H-Pattern + USB Cable 1(Data Link with Notebook) for SIM 1
	Mode 6: SA:N71 Idle(Middle CH) + Battery + H-Pattern + USB Cable 2(Data Link with Notebook) for SIM 1
	Mode 7: GSM 850 Idle(Middle CH) + Battery + MP3(Max volume) + Type C

	<p>Earphone for SIM 1</p> <p>Mode 8: LTE Band 12 Idle(Low CH) + Battery + MPEG4(Colur bar) + Charging from wireless charging for SIM 1</p> <p>Mode 9: LTE Band 12 Idle(Low CH) + Battery + MPEG4(Colur bar) + Reverse charge for SIM 1</p>
<p><b>Remark:</b></p> <ol style="list-style-type: none"> <li>1. The worst case of AC is mode 5; only the test data of this mode is reported.</li> <li>2. The worst case of RE is mode 3; only the test data of this mode is reported.</li> <li>3. Mode 8/9/10 of conduction emission is spot check mass production adapter1 in Cold state.</li> <li>4. Mode 9 of Radiation emission reverse charge another mobile phone.</li> <li>5. Data Link with Notebook / PC means data application transferred mode between EUT and Notebook / PC.</li> <li>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.</li> </ol>	

## 2.2.Connection Diagram of Test System



The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application

### 2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded,1.8m
2.	WLAN AP	Dlink	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
3.	IPod	SONY	SBH20	PY7-RD0010	Shielded, 1.0m	N/A
4.	IPod	apple	MC69029/A	N/A	N/A	Unshielded,1.8m
5.	Notebook	Lenovo	E540	FCC DoC	AC I/P : Unshielded, 1.2m DC O/P : Shielded, 1.8m	N/A
6.	Base Station(LTE)	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
7.	Base Station(5G NR)	Keysight	UXM-E7515B	N/A	N/A	Unshielded,1.8m
8.	Earphone	Oneplus	N/A	N/A	N/A	N/A
9.	Mobile phone	Oneplus	N/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.

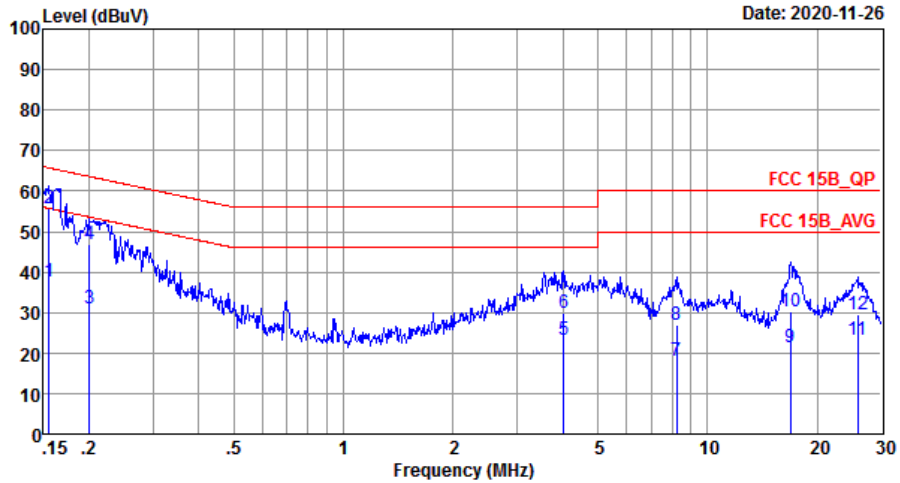
### 3.1.4 Test Setup





3.1.5 Test Result of AC Conducted Emission

Test Engineer :	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.		



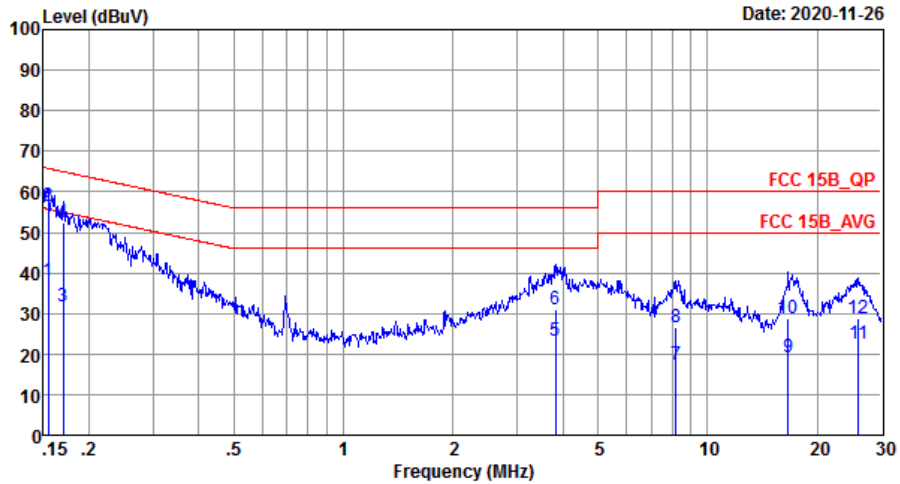
Site : CO01-SZ  
 Condition: FCC 15B\_QP LISN\_20200719\_L LINE

IMEI : 990016750028217

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16	37.74	-17.95	55.69	27.70	0.03	10.01	Average
2 *	0.16	55.64	-10.05	65.69	45.60	0.03	10.01	QP
3	0.20	31.14	-22.44	53.58	21.10	0.03	10.01	Average
4	0.20	46.74	-16.84	63.58	36.70	0.03	10.01	QP
5	4.03	23.11	-22.89	46.00	12.80	0.18	10.13	Average
6	4.03	30.01	-25.99	56.00	19.70	0.18	10.13	QP
7	8.24	18.02	-31.98	50.00	7.50	0.29	10.23	Average
8	8.24	27.02	-32.98	60.00	16.50	0.29	10.23	QP
9	16.93	21.22	-28.78	50.00	10.10	0.83	10.29	Average
10	16.93	30.42	-29.58	60.00	19.30	0.83	10.29	QP
11	25.86	23.43	-26.57	50.00	11.71	1.37	10.35	Average
12	25.86	29.43	-30.57	60.00	17.71	1.37	10.35	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 OP LISN\_20200719\_N NEUTRAL

IMEI : 990016750028217

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15	38.14	-17.60	55.74	28.10	0.03	10.01	Average
2 *	0.15	56.34	-9.40	65.74	46.30	0.03	10.01	QP
3	0.17	31.64	-23.30	54.94	21.60	0.03	10.01	Average
4	0.17	52.24	-12.70	64.94	42.20	0.03	10.01	QP
5	3.82	23.27	-22.73	46.00	13.10	0.05	10.12	Average
6	3.82	31.07	-24.93	56.00	20.90	0.05	10.12	QP
7	8.19	17.44	-32.56	50.00	7.10	0.11	10.23	Average
8	8.19	26.44	-33.56	60.00	16.10	0.11	10.23	QP
9	16.66	19.01	-30.99	50.00	8.30	0.42	10.29	Average
10	16.66	28.91	-31.09	60.00	18.20	0.42	10.29	QP
11	26.00	22.51	-27.49	50.00	11.10	1.06	10.35	Average
12	26.00	28.61	-31.39	60.00	17.20	1.06	10.35	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**

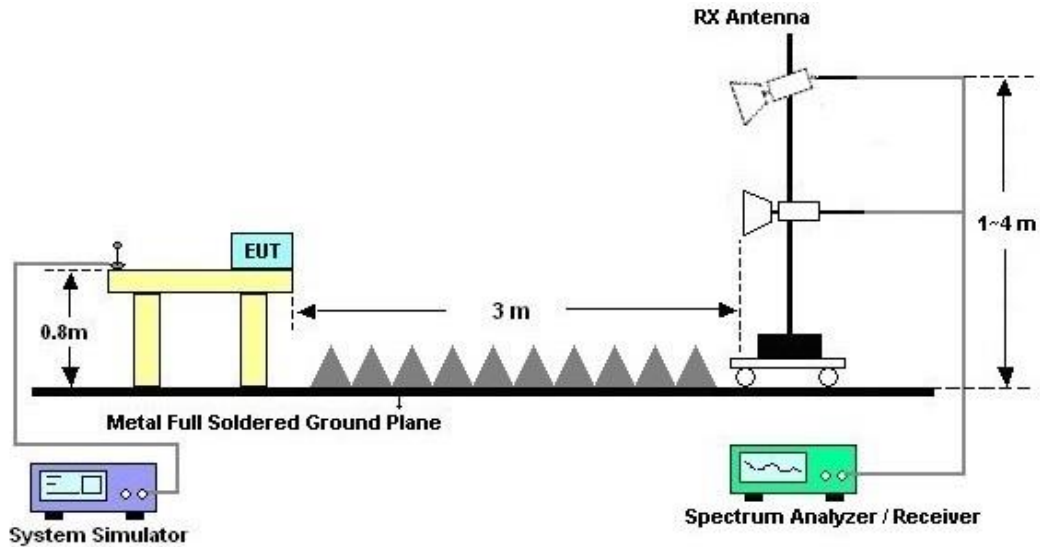
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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



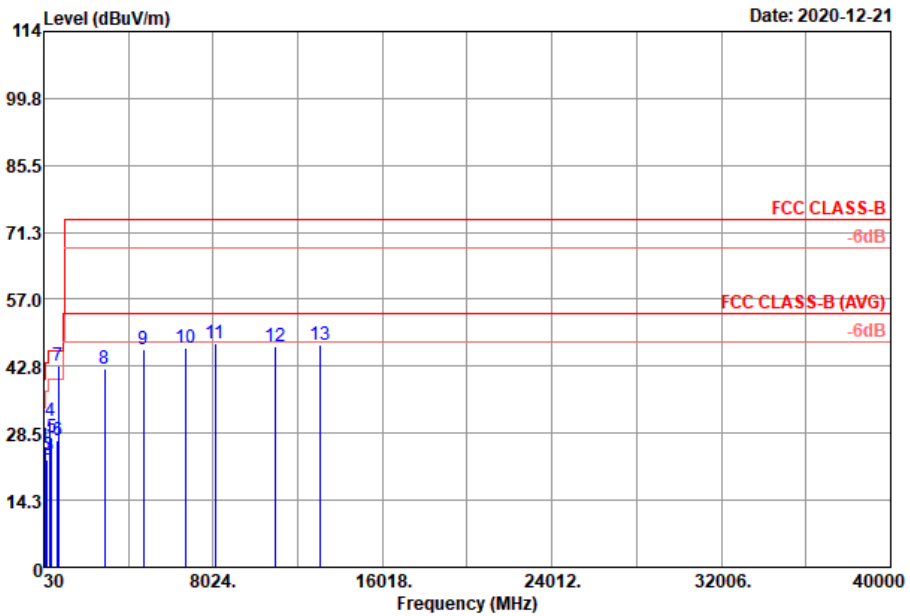
For radiated emissions above 1GHz





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.		



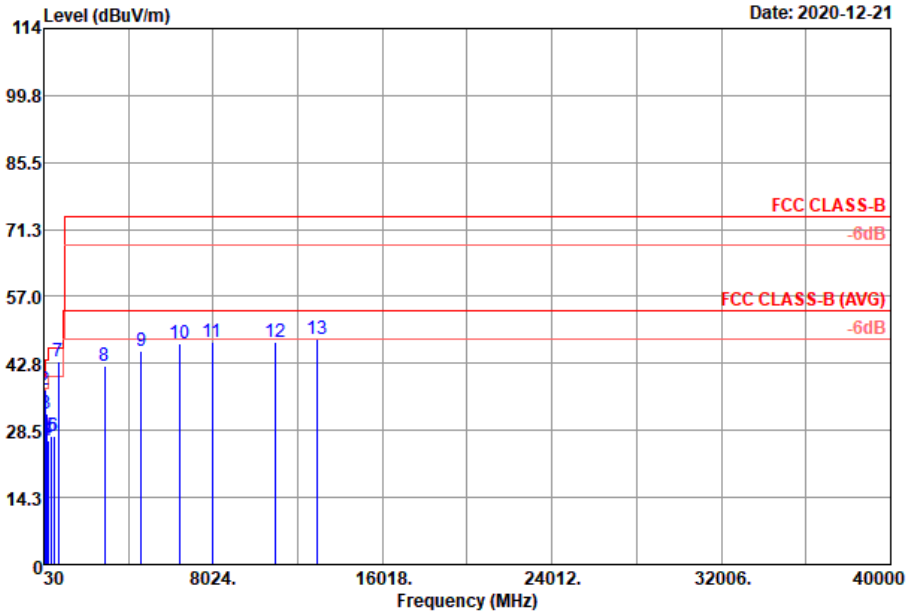
Site : 03CH02-SZ  
 Condition : FCC CLASS-B 3m VULB9168-01001 HORIZONTAL

IMEI : 990016750028282  
 Plane : Y

	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	89.17	25.80	-17.70	43.50	44.60	14.02	2.36	35.18	---	---	Peak
2	136.70	22.96	-20.54	43.50	36.79	18.77	2.53	35.13	---	---	Peak
3	293.84	23.83	-22.17	46.00	35.97	19.62	3.15	34.91	---	---	Peak
4	326.82	31.13	-14.87	46.00	42.35	20.47	3.21	34.90	100	45	Peak
5	391.81	27.47	-18.53	46.00	37.03	21.96	3.30	34.82	---	---	Peak
6	683.78	27.05	-18.95	46.00	30.87	26.70	3.98	34.50	---	---	Peak
7	734.00	42.72			45.73	27.50	3.92	34.43	---	---	Peak
8	2918.00	42.21	-31.79	74.00	54.83	28.64	8.74	50.00	---	---	Peak
9	4730.00	46.38	-27.62	74.00	54.45	31.18	10.30	49.55	---	---	Peak
10	6696.00	46.69	-27.31	74.00	50.09	34.53	11.48	49.41	---	---	Peak
11	8122.00	47.61	-26.39	74.00	47.54	37.38	12.62	49.93	134	154	Peak
12	10968.00	47.08	-26.92	74.00	39.70	40.56	14.85	48.03	---	---	Peak
13	13061.00	47.22	-26.78	74.00	38.39	39.20	16.28	46.65	---	---	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

IMEI : 990016750028282  
Plane : Y

	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	67.83	32.08	-7.92	40.00	46.69	18.19	2.34	35.14	---	---	Peak
2	91.11	37.09	-6.41	43.50	55.95	13.94	2.38	35.18	100	57	QP
3	153.19	31.93	-11.57	43.50	45.18	19.29	2.56	35.10	---	---	Peak
4	238.55	26.28	-19.72	46.00	40.51	17.96	2.83	35.02	---	---	Peak
5	403.45	27.31	-18.69	46.00	36.65	22.14	3.31	34.79	---	---	Peak
6	508.21	27.21	-18.79	46.00	34.38	24.01	3.50	34.68	---	---	Peak
7	734.00	43.10			46.11	27.50	3.92	34.43	---	---	Peak
8	2914.00	42.38	-31.62	74.00	55.02	28.63	8.73	50.00	---	---	Peak
9	4640.00	45.37	-28.63	74.00	53.66	31.06	10.22	49.57	---	---	Peak
10	6422.00	46.91	-27.09	74.00	50.86	33.76	11.21	48.92	---	---	Peak
11	7976.00	47.27	-26.73	74.00	47.37	37.45	12.47	50.02	---	---	Peak
12	10948.00	47.19	-26.81	74.00	39.96	40.53	14.74	48.04	---	---	Peak
13	12941.00	47.88	-26.12	74.00	39.15	39.03	16.35	46.65	100	341	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	Nov. 26, 2020	Dec. 26, 2020	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Dec. 27, 2019	Nov. 26, 2020	Dec. 26, 2020	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Oct. 15, 2020	Nov. 26, 2020	Oct. 14, 2021	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 21, 2020	Nov. 26, 2020	Jul. 20, 2021	Conduction (CO01-SZ)
EMI Test Receiver	R&S	ESR7	101404	9kHz~7GHz	Oct. 16, 2020	Dec. 21, 2020	Oct. 15, 2021	Radiation (03CH02-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Jul. 21, 2020	Dec. 21, 2020	Jul. 20, 2021	Radiation (03CH02-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz~2GHz	Jul. 15, 2020	Dec. 21, 2020	Jul. 14, 2021	Radiation (03CH02-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 25, 2020	Dec. 21, 2020	Jul. 24, 2021	Radiation (03CH02-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Apr. 23, 2020	Dec. 21, 2020	Apr. 22, 2021	Radiation (03CH02-SZ)
LF Amplifier	Burgeon	BPA-530	102211	0.01~3000Mhz	Oct. 16, 2020	Dec. 21, 2020	Oct. 15, 2021	Radiation (03CH02-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1943528	1GHz~18GHz	Oct. 16, 2020	Dec. 21, 2020	Oct. 15, 2021	Radiation (03CH02-SZ)
HF Amplifier	MITEQ	TTA1840-35-H G	1871923	18GHz~40GHz	Jul. 21, 2020	Dec. 21, 2020	Jul. 20, 2021	Radiation (03CH02-SZ)
AC Power Source	Chroma	61601	616010002470	N/A	NCR	Dec. 21, 2020	NCR	Radiation (03CH02-SZ)
Turn Table	Chaintek	T-200	N/A	0~360 degree	NCR	Dec. 21, 2020	NCR	Radiation (03CH02-SZ)
Antenna Mast	Chaintek	MBS-400	N/A	1 m~4 m	NCR	Dec. 21, 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
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

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