



# FCC Test Report

**APPLICANT** : OnePlus Technology (Shenzhen) Co., Ltd  
**EQUIPMENT** : Smart Phone  
**BRAND NAME** : ONEPLUS  
**MODEL NAME** : HD1905  
**FCC ID** : 2ABZ2-EE133  
**STANDARD** : 47 CFR Part 15 Subpart B  
**CLASSIFICATION** : Certification

The product was received on Jul. 04, 2019 and testing was completed on Sep. 05, 2019. 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.

*Derreck Chen*

Reviewed by: Derreck Chen / Supervisor

*Eric Shih*

Approved by: Eric Shih / Manager



**Sporton International (ShenZhen) Inc.**

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 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 6.40 dB at 0.230 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 10.47 dB at 291.900 MHz



# 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	
<b>Equipment</b>	Smart Phone
<b>Brand Name</b>	ONEPLUS
<b>Model Name</b>	HD1905
<b>FCC ID</b>	2ABZ2-EE133
<b>EUT supports Radios application</b>	CDMA/EVDO/GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/HSPA+ /LTE 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
<b>IMEI Code</b>	Conduction/Radiation: 660000310019675/660000310019667
<b>HW Version</b>	14
<b>SW Version</b>	Oxygen OS 10.0.HD65AA
<b>EUT Stage</b>	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: 824.2 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 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Rx Frequency	GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band V: 871.4 MHz ~ 891.6 MHz WCDMA Band IV : 2112.4 MHz ~ 2152.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 5 : 869.7 MHz ~ 893.3 MHz LTE Band 7 : 2622.5 MHz ~ 2687.5 MHz LTE Band 12 : 729.7 MHz ~ 745.3 MHz LTE Band 13 : 748.5 MHz ~ 753.5 MHz LTE Band 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 29 : 718.5 MHz ~ 726.5 MHz LTE Band 30 : 2352.5 MHz ~ 2357.5 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz LTE Band 46 : 5150 MHz ~ 5925 MHz LTE Band 48 : 3552.5 MHz ~ 3697.5 MHz LTE Band 66 : 2110.7 MHz~ 2199.3 MHz



	<p>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          802.11b/g/n: 2412 MHz ~ 2462 MHz          802.11a/n/ac: 5180 MHz ~ 5240 MHz;                            5260 MHz ~ 5320 MHz;                            5500 MHz ~ 5720 MHz                            5745 MHz ~ 5825 MHz          Bluetooth: 2402 MHz ~ 2480 MHz          GNSS : 1559 MHz ~ 1610 MHz;                    1164 MHz -1215 MHz;          NFC : 13.56 MHz</p>
<b>Antenna Type</b>	<p>WWAN : PIFA Antenna          WLAN : PIFA Antenna          Bluetooth : PIFA Antenna          GNSS: PIFA Antenna          NFC : 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          CDMA2000 1xRTT: QPSK          CDMA2000 1xEV-DO: QPSK/8PSK          802.11b : DSSS (DBPSK / DQPSK / CCK)          802.11a/g/n/ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)          Bluetooth LE : GFSK          Bluetooth (1Mbps) : GFSK          Bluetooth (2Mbps) : <math>\pi/4</math>-DQPSK          Bluetooth (3Mbps) : 8-DPSK          GNSS : BPSK          NFC: ASK</p>

GNSS = BDS + Galileo + GLONASS + 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.

<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>	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan Shenzhen, 518055 People's Republic of China 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>
	03CH04-SZ	CN1256	421272

### 1.7. 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.

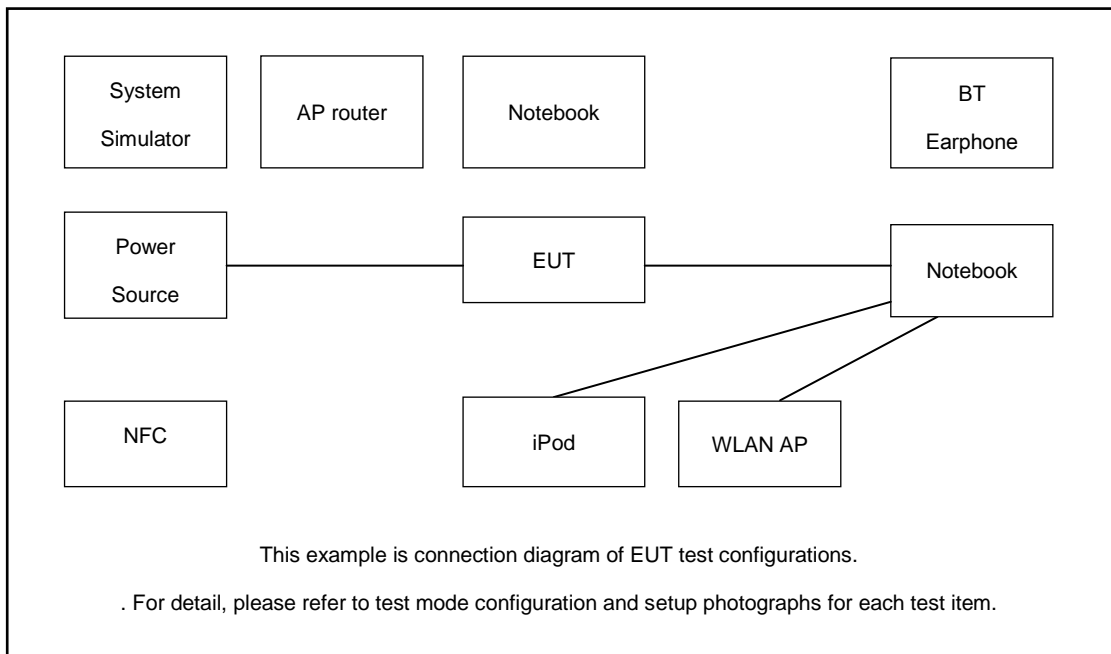
Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
AC Conducted Emission	Mode 1: GSM 850 Idle(Middle CH) +USB Cable 1 (Charging from Adapter ) + BT Idle + WLAN Idle(2.4G) + Camera(Rear) + SIM 1
	Mode 2: CDMA BC 10 Idle(Middle CH) +USB Cable 1(Charging from Adapter ) + BT Idle + WLAN Idle(5G) + Camera(Front) + SIM 2
	Mode 3: LTE Band 12 Idle(Low CH) +USB Cable 1(Charging from Adapter ) + BT Idle + WLAN Idle(2.4G) + MPEG4(Colour bar) + SIM 1
	Mode 4: LTE Band 13 Idle(High CH) +USB Cable 1(Charging from Adapter ) + BT Idle + WLAN Idle(5G) + NFC On + SIM 2
	Mode 5: LTE Band 17 Idle(Middle CH) +USB Cable 1(Charging from Adapter ) + BT Idle + WLAN Idle(2.4G) + H-Pattern + SIM 1
	Mode 6: LTE Band 26 Idle(High CH) +USB Cable 1(Charging from Adapter ) + BT Idle + WLAN Idle(5G) + GNSS RX + SIM 2
	Mode 7: LTE Band 71 Idle(Low CH) +USB Cable 1(Data Link with Notebook) + BT Idle + WLAN Idle(2.4G) + SIM 1
	Mode 8: LTE Band 29 Idle(Middle CH) +USB Cable 2(Charging from Adapter ) + BT Idle + WLAN Idle(2.4G) + Camera(Rear) + SIM 2
	Mode 9: GSM 850 Idle(Middle CH) +USB Cable 3 (Charging from Adapter ) + BT Idle + WLAN Idle(2.4G) + Camera(Rear) + SIM 1
	Mode 10 : GSM 850 Idle(Middle CH) +USB Cable 1 (Charging from Adapter ) + BT Idle + WLAN Idle(2.4G) + Camera(Rear) + SIM 1
	Mode 11 : GSM 850 Idle(Middle CH) +USB Cable 1 (Charging from Adapter ) + BT Idle + WLAN Idle(2.4G) + Camera(Rear) + SIM 1
	Mode 12 : GSM 850 Idle(Middle CH) +USB Cable 1 (Charging from Adapter ) + BT Idle + WLAN Idle(2.4G) + Camera(Rear) + SIM 1



Radiated Emissions	<p>Mode 1 : GSM 850 Idle(Middle CH) +USB Cable1 (Charging from Adapter ) + BT Idle + WLAN Idle(2.4G) + Camera(Rear) + SIM 1</p> <p>Mode 2 : CDMA BC 10 Idle(Middle CH) +USB Cable1 (Charging from Adapter ) + BT Idle + WLAN Idle(5G) + Camera(Front) + SIM 2</p> <p>Mode 3 : LTE Band 12 Idle(Low CH) +USB Cable1 (Charging from Adapter ) + BT Idle + WLAN Idle(2.4G) + MPEG4(Colur bar) + SIM 1</p> <p>Mode 4 : LTE Band 13 Idle(High CH) +USB Cable1 (Charging from Adapter ) + BT Idle + WLAN Idle(5G) + NFC On + SIM 2</p> <p>Mode 5 : LTE Band 17 Idle(Middle CH) +USB Cable1 (Charging from Adapter ) + BT Idle + WLAN Idle(2.4G) + H-Pattern + SIM 1</p> <p>Mode 6 : LTE Band 26 Idle(High CH) +USB Cable1 (Charging from Adapter ) + BT Idle + WLAN Idle(5G) + GNSS RX + SIM 2</p> <p>Mode 7 : GSM 850 Idle(Middle CH) + USB Cable2 (Charging from Adapter ) + BT Idle + WLAN Idle(2.4G) + Camera(Rear) + SIM 1</p> <p>Mode 8 : GSM 850 Idle(Middle CH) + USB Cable3 (Charging from Adapter ) + BT Idle + WLAN Idle(2.4G) + Camera(Rear) + SIM 1</p> <p>Mode 9 : LTE Band 71 Idle(Low CH) +USB Cable1 (Data Link with Notebook) + BT Idle + WLAN Idle(2.4G) + SIM 1</p> <p>Mode 10 :LTE Band 71 Idle(Low CH) +USB Cable2(Data Link with Notebook) + BT Idle + WLAN Idle(2.4G) + SIM 2</p> <p>Mode 11 :LTE Band 71 Idle(Low CH) +USB Cable 3(Data Link with Notebook) + BT Idle + WLAN Idle(2.4G) + SIM 1</p> <p>Mode 12 : LTE Band 29 Idle(Middle CH) + Type C Earphone + BT Idle + WLAN Idle(2.4G) + MP3 + SIM 1</p>
<p><b>Remark:</b></p> <ol style="list-style-type: none"> <li>1. The worst case of AC is mode 12; only the test data of this mode is reported.</li> <li>2. The worst case of RE is mode 11; only the test data of this mode is reported.</li> <li>3. Data Link with Notebook / PC means data application transferred mode between EUT and Notebook / PC.</li> <li>4. Conduction Emission: Mode 10-12 for sampling test, select three of the same kinds of chargers for validation test.</li> </ol>	

## 2.2. Connection Diagram of Test System



## 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(LTE)	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
2.	Bluetooth Earphone	Samsung	EO-MG900	PYAHS-107W	N/A	N/A
3.	Bluetooth Earphone	Samsung	HS3000	A3LHS3000	N/A	N/A
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.	Labsat	RACELOGIC	18645	N/A	N/A	Unshielded,1.8m
7.	FM Station	R&S	SMB100A	N/A	N/A	Unshielded,1.8m
8.	IPod	Apple	MC525 ZP/A	Fcc DoC	Shielded, 1.0m	N/A
9.	IPod	Apple	MC69029/A	Fcc DoC	Shielded, 1.0m	N/A
10.	Notebook	Lenovo	E540	Fcc DoC	N/A	shielded cable DC O/P 1.8m Unshielded AC I/P cable 1.8m
11.	LABSAT Simulator	GPS RACELOGIC	RLLS03-2P	Fcc DoC	N/A	Unshielded,1.8m



## **2.4. EUT Operation Test Setup**

The EUT was in GSM 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 camera to capture images.
3. Turn on NFC Function.
4. Turn on MPEG4 function.
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.

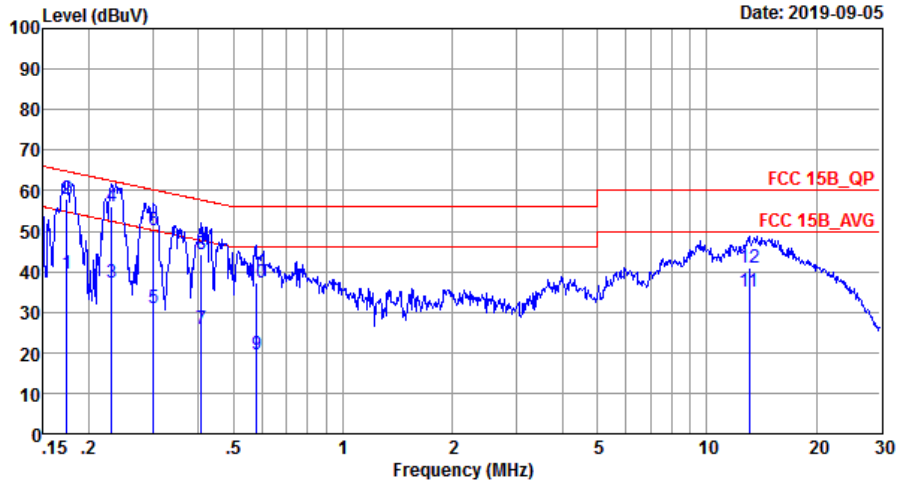
### 3.1.4 Test Setup





3.1.5 Test Result of AC Conducted Emission

Test Engineer :	LiuDaLin	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.		



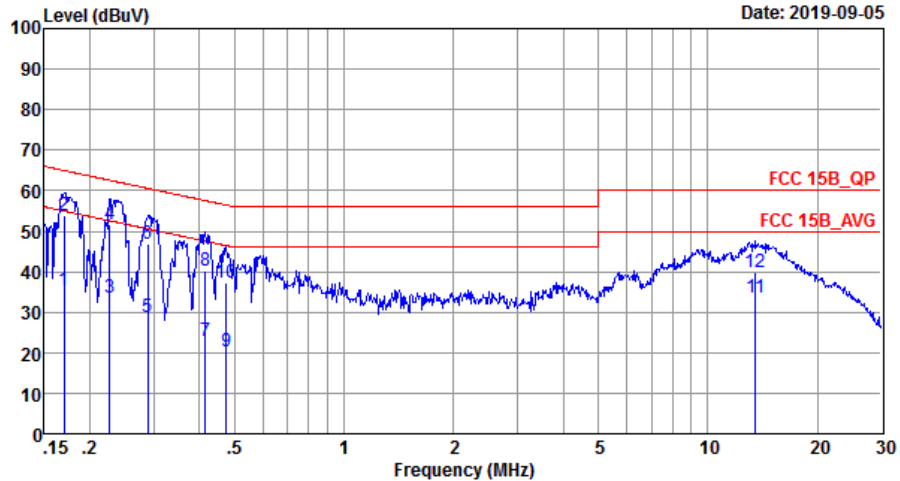
Site : C001-SZ  
 Condition: FCC 15B\_QP LISN\_20190719\_L LINE

Mode : mode 12  
 IMEI : 660000310019675/660000310019667

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17	39.49	-15.28	54.77	29.30	0.03	10.16	Average
2	0.17	57.89	-6.88	64.77	47.70	0.03	10.16	QP
3	0.23	37.19	-15.20	52.39	27.00	0.03	10.16	Average
4 *	0.23	55.99	-6.40	62.39	45.80	0.03	10.16	QP
5	0.30	31.00	-19.19	50.19	20.80	0.03	10.17	Average
6	0.30	50.20	-9.99	60.19	40.00	0.03	10.17	QP
7	0.41	25.90	-21.78	47.68	15.70	0.03	10.17	Average
8	0.41	44.20	-13.48	57.68	34.00	0.03	10.17	QP
9	0.58	19.60	-26.40	46.00	9.40	0.02	10.18	Average
10	0.58	37.10	-18.90	56.00	26.90	0.02	10.18	QP
11	13.06	34.92	-15.08	50.00	24.19	0.46	10.27	Average
12	13.06	41.12	-18.88	60.00	30.39	0.46	10.27	QP



Test Engineer :	LiuDaLin	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\_20190719\_N NEUTRAL

Mode : mode 12  
 IMEI : 660000310019675/660000310019667

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17	35.39	-19.55	54.94	25.20	0.03	10.16	Average
2	0.17	53.79	-11.15	64.94	43.60	0.03	10.16	QP
3	0.23	33.49	-19.08	52.57	23.30	0.03	10.16	Average
4 *	0.23	51.49	-11.08	62.57	41.30	0.03	10.16	QP
5	0.29	28.80	-21.74	50.54	18.60	0.03	10.17	Average
6	0.29	46.80	-13.74	60.54	36.60	0.03	10.17	QP
7	0.41	22.99	-24.56	47.55	12.80	0.02	10.17	Average
8	0.41	40.39	-17.16	57.55	30.20	0.02	10.17	QP
9	0.47	20.39	-26.06	46.45	10.20	0.02	10.17	Average
10	0.47	37.39	-19.06	56.45	27.20	0.02	10.17	QP
11	13.55	33.75	-16.25	50.00	23.19	0.29	10.27	Average
12	13.55	39.95	-20.05	60.00	29.39	0.29	10.27	QP





### 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

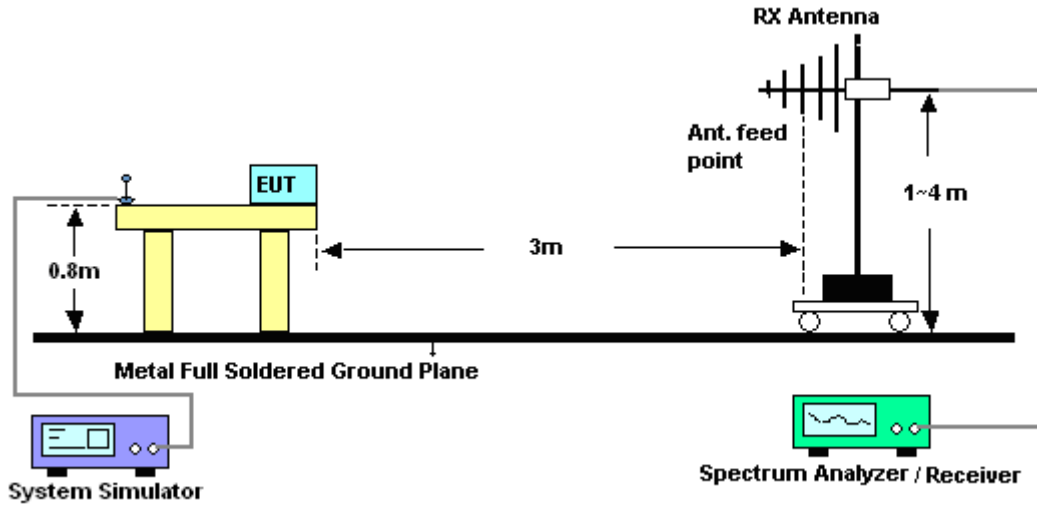
The measuring equipment is listed in the section 4 of this test report.

#### 3.2.3. Test Procedures

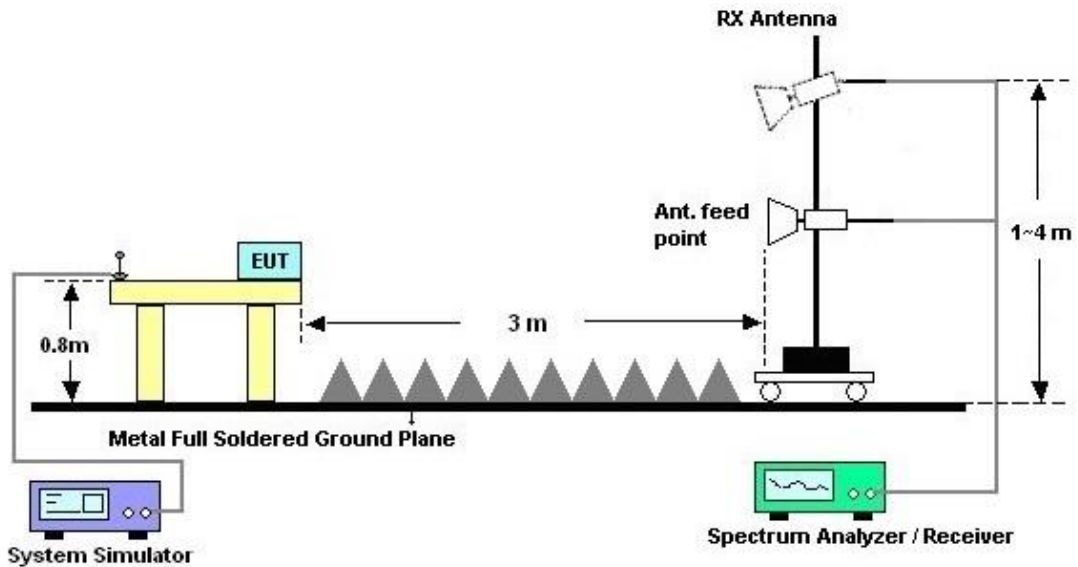
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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



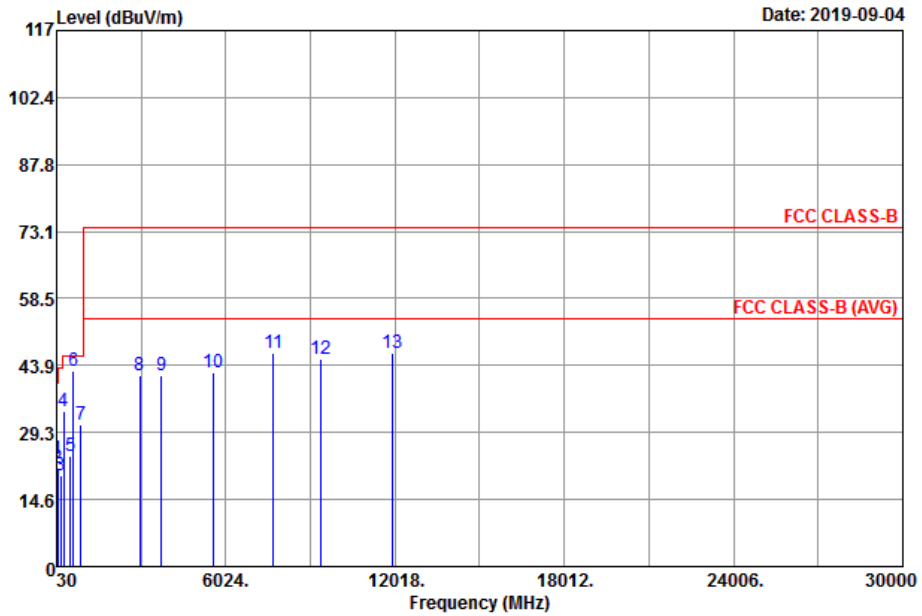
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

Test Engineer :	Zhang Xu	Temperature :	24~25°C
		Relative Humidity :	48~49%
Test Distance :	3m	Polarization :	Horizontal
Remark :	#6 is system simulator signal which can be ignored.		

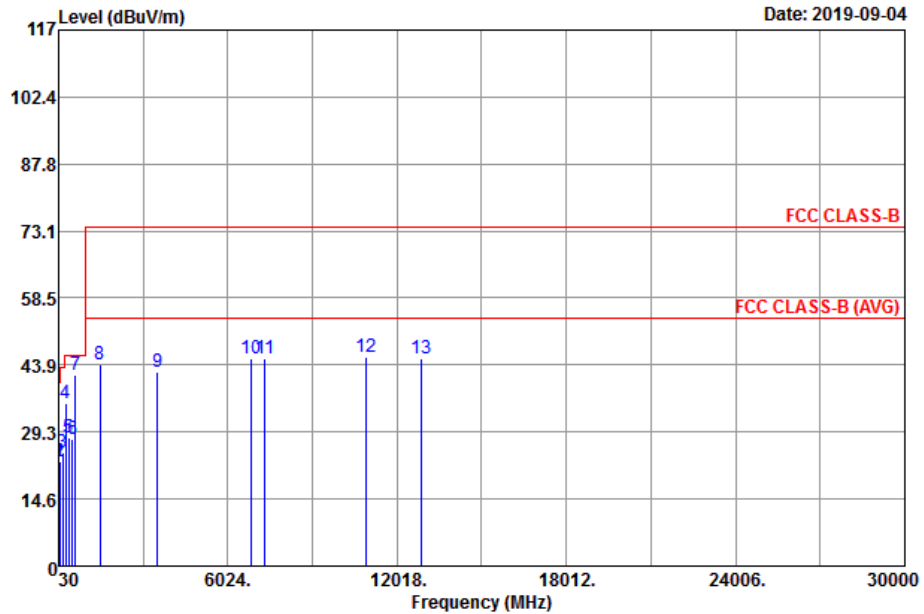


Site : 03CH04-SZ  
 Condition : FCC CLASS-B 3m LF\_ANT41909\_18 HORIZONTAL

	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	30.00	23.42	-16.58	40.00	30.14	24.80	0.58	32.10	---	---	Peak
2	66.86	21.53	-18.47	40.00	39.72	12.36	0.85	31.40	---	---	Peak
3	162.89	19.91	-23.59	43.50	34.21	16.20	1.33	31.83	---	---	Peak
4	291.90	33.90	-12.10	46.00	44.92	19.24	1.77	32.03	100	200	Peak
5	510.15	24.04	-21.96	46.00	29.93	24.08	2.36	32.33	---	---	Peak
6	622.00	42.54			45.71	25.99	2.59	31.75	---	---	Peak
7	896.21	31.05	-14.95	46.00	29.93	28.98	3.15	31.01	---	---	Peak
8	2988.00	41.67	-32.33	74.00	66.06	28.56	4.37	57.32	---	---	Peak
9	3750.00	41.59	-32.41	74.00	66.01	29.60	5.02	59.04	---	---	Peak
10	5578.00	42.21	-31.79	74.00	61.11	32.38	6.22	57.50	---	---	Peak
11	7702.00	46.69	-27.31	74.00	58.73	37.44	7.20	56.68	100	89	Peak
12	9412.00	45.40	-28.60	74.00	53.25	38.64	8.68	55.17	---	---	Peak
13	11938.00	46.44	-27.56	74.00	52.24	39.30	9.60	54.70	---	---	Peak



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



Site : 03CH04-SZ  
 Condition : FCC CLASS-B 3m LF\_ANT41909\_18 VERTICAL

	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	30.00	22.87	-17.13	40.00	29.59	24.80	0.58	32.10	---	---	Peak
2	61.04	22.95	-17.05	40.00	42.26	11.88	0.81	32.00	---	---	Peak
3	162.89	24.80	-18.70	43.50	39.10	16.20	1.33	31.83	---	---	Peak
4	291.90	35.53	-10.47	46.00	46.55	19.24	1.77	32.03	100	171	Peak
5	386.96	28.02	-17.98	46.00	36.47	21.50	2.05	32.00	---	---	Peak
6	515.97	27.69	-18.31	46.00	33.40	24.20	2.38	32.29	---	---	Peak
7	622.00	41.63			44.80	25.99	2.59	31.75	---	---	Peak
8	1502.00	44.07	-29.93	74.00	73.07	25.96	3.73	58.69	---	---	Peak
9	3530.00	42.21	-31.79	74.00	66.47	29.45	4.82	58.53	---	---	Peak
10	6842.00	45.35	-28.65	74.00	61.87	35.15	6.97	58.64	---	---	Peak
11	7348.00	45.27	-28.73	74.00	58.85	37.01	7.23	57.82	---	---	Peak
12	10904.00	45.53	-28.47	74.00	53.49	38.75	9.36	56.07	100	263	Peak
13	12874.00	45.34	-28.66	74.00	53.30	39.82	9.85	57.63	---	---	Peak



## 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. 23, 2018	Sep. 05, 2019	Dec. 22, 2019	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Oct. 18, 2018	Sep. 05, 2019	Oct. 17, 2019	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Dec. 23, 2018	Sep. 05, 2019	Dec. 22, 2019	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 23, 2019	Sep. 04, 2019	Jul. 22, 2020	Conduction (CO01-SZ)
EMI Test Receiver	R&S	ESR7	101404	9kHz~7GHz	Apr. 18, 2019	Sep. 04, 2019	Apr. 17, 2020	Radiation (03CH04-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Apr. 18, 2019	Sep. 04, 2019	Apr. 17, 2020	Radiation (03CH04-SZ)
Bilog Antenna	TeseQ	CBL6111D	41909	30MHz~1GHz	Aug. 27, 2019	Sep. 04, 2019	Aug. 26, 2020	Radiation (03CH04-SZ)
LF Amplifier	Burgeon	BPA-530	102211	0.01~3000Mhz	Oct. 18, 2018	Sep. 04, 2019	Oct. 17, 2019	Radiation (03CH04-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1474	1GHz~18GHz	Feb. 07, 2019	Sep. 04, 2019	Feb. 06, 2020	Radiation (03CH04-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 18, 2018	Sep. 04, 2019	Oct. 17, 2019	Radiation (03CH04-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 22, 2019	Sep. 04, 2019	Jul. 21, 2020	Radiation (03CH04-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz~40GHz	Mar. 30, 2019	Sep. 04, 2019	Mar. 29, 2020	Radiation (03CH04-SZ)
AC Power Source	Chroma	61601	N/A	N/A	NCR	Sep. 04, 2019	NCR	Radiation (03CH04-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Sep. 04, 2019	NCR	Radiation (03CH04-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Sep. 04, 2019	NCR	Radiation (03CH04-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% ( $U = 2Uc(y)$ )	2.6dB
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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% ( $U = 2Uc(y)$ )	4.8dB
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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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