



FCC Test Report

APPLICANT : Huawei Technologies Co., Ltd.
EQUIPMENT : Smart Phone
BRAND NAME : HUAWEI
MODEL NAME : GLK-LX1U
FCC ID : QISGLK-LX1U
STANDARD : 47 CFR Part 15 Subpart B
CLASSIFICATION : Certification

The product was received on Mar. 28, 2019 and testing was completed on Apr. 20, 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.



Approved by: Eric Shih / Manager

Sporton International (Shenzhen) Inc.

**1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen City,
Guangdong Province 518055, China**



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC932820	Rev. 01	Initial issue of report	Apr. 30, 2019



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 6.45 dB at 0.150 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 6.10 dB at 960.000 MHz for Quasi-Peak



1. General Description

1.1. Applicant

Huawei Technologies Co., Ltd.

Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

1.2. Manufacturer

Huawei Technologies Co., Ltd.

Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	Smart Phone
Brand Name	HUAWEI
Model Name	GLK-LX1U
FCC ID	QISGLK-LX1U
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/HSPA+(1 6QAM Uplink is not supported)/LTE/NFC WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE FM Receiver/GNSS
IMEI Code	Conduction: 867285040001637/867285040004151 Radiation: 867285040040809/867285040042052
HW Version	HL7SEMEM
SW Version	9.1.0.102(C900E102R1P1)

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 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 38 : 2572.5MHz ~ 2617.5MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 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 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 38 : 2572.5MHz ~ 2617.5MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz GNSS : 1559 MHz ~ 1610 MHz NFC : 13.56 MHz
Antenna Type	WWAN : Internal Antenna WLAN : Internal Antenna Bluetooth : Internal Antenna GNSS: Fixed Internal Antenna NFC : Fixed Internal Antenna FM : Fixed Internal Antenna
Type of Modulation	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 (16QAM uplink is not supported) DC-HSDPA : 64QAM LTE: QPSK / 16QAM / 64QAM 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
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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 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0).

Test Site	Sporton International (Shenzhen) Inc.		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen City, Guangdong Province 518055, China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595		
Test Site No.	Sporton Site No.	FCC designation No.	FCC Test Firm Registration No.
	CO01-SZ	CN5018	337463

Test Site	Sporton International (Shenzhen) Inc.		
Test Site Location	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan District, Shenzhen City, Guangdong Province 518055, China TEL: +86-755- 3320-2398		
Test Site No.	Sporton Site No.	FCC designation No.	FCC Test Firm Registration No.
	03CH01-SZ	CN5019	577730



1.7. Specification of Accessory

AC Adapter 1	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200U02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: Salcomp	SN	
AC Adapter 2	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200U02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: BYD	SN	
AC Adapter 3	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200U02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: HUNTKEY	SN	
AC Adapter 4	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200U02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: PHIHONG	SN	
AC Adapter 5	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200E02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: Salcomp	SN	
AC Adapter 6	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200E02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: BYD	SN	
AC Adapter 7	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200E02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: HUNTKEY	SN	
AC Adapter 8	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200E02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: PHIHONG	SN	
AC Adapter 9	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200B02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: Salcomp	SN	
AC Adapter 10	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200B02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: BYD	SN	
AC Adapter 11	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200B02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: HUNTKEY	SN	
AC Adapter 12	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200B02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: PHIHONG	SN	
AC Adapter 13	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200A02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: Salcomp	SN	
AC Adapter 14	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-050200A02
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>500</u> mA, O/P: <u>5</u> Vdc, <u>2000</u> mA		
	Manufacturer	Manufacturer: BYD	SN	
USB Cable 1	Brand Name	Ningbo Broad Telecommunication Co., Ltd	Model Name	WA0020
	Signal Line	<u>1</u> meter, non-shielded cable, with w/o ferrite core		



USB Cable 2	Brand Name	Dongguan Mingji Electronics Technology Group Co.,Ltd	Model Name	203-1572-0
	Signal Line	_1_ meter, non-shielded cable, with w/o ferrite core		
USB Cable 3	Brand Name	Freeport Resources Enterprises (Jiangxi) Co.,Ltd	Model Name	18-93C2CHO-001HF
	Signal Line	_1_ meter, non-shielded cable, with w/o ferrite core		
USB Cable 4	Brand Name	HONGFUJIN PRECISION INDUSTRIAL(SHENZHEN).LTD	Model Name	CUDU01B-HC295-EH
	Signal Line	_1_ meter, non-shielded cable, with w/o ferrite core		
USB Cable 5	Brand Name	LUXSHARE Precision Industry Co., Ltd.	Model Name	L99UC131-CS-H
	Signal Line	_1_ meter, non-shielded cable, with w/o ferrite core		
USB Cable 6	Brand Name	HUIZHOU DEHONG TECHNOLOGY CO.,LTD.	Model Name	330-50507
	Signal Line	_1_ meter, non-shielded cable, with w/o ferrite core		
Earphone 1	Brand Name	HONGFUJIN PRECISION INDUSTRIAL(SHENZHEN).LTD	Model Name	EPAB542-2WH06-DH
	Signal Line	_1.1_ meter, non-shielded cable, with w/o ferrite core		
Earphone 2	Brand Name	HONGFUJIN PRECISION INDUSTRIAL(SHENZHEN).LTD	Model Name	EPAB542-2WH05-DH
	Signal Line	_1.1_ meter, non-shielded cable, with w/o ferrite core		
Earphone 3	Brand Name	Boluo County Quancheng Electronic Co., Ltd.	Model Name	1293-3283-3.5MM-322
	Signal Line	_1.1_ meter, non-shielded cable, with w/o ferrite core		
Earphone 4	Brand Name	Jiangxi Lianchuang Hongsheng Electronic Co., LTD.	Model Name	MEND1532B528A02
	Signal Line	_1.1_ meter, non-shielded cable, with w/o ferrite core		
Earphone 5	Brand Name	Jiangxi Lianchuang Hongsheng Electronic Co., LTD.	Model Name	MEND1532B528B00
	Signal Line	_1.1_ meter, non-shielded cable, with w/o ferrite core		
Battery	Brand Name	HuaweiTechnologies Co., Ltd.	Model Name	HB446486ECW
	Power Rating	_3.82_ Vdc, _3900_ mAh	Type	Li-ion, <u>Yes</u>

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).

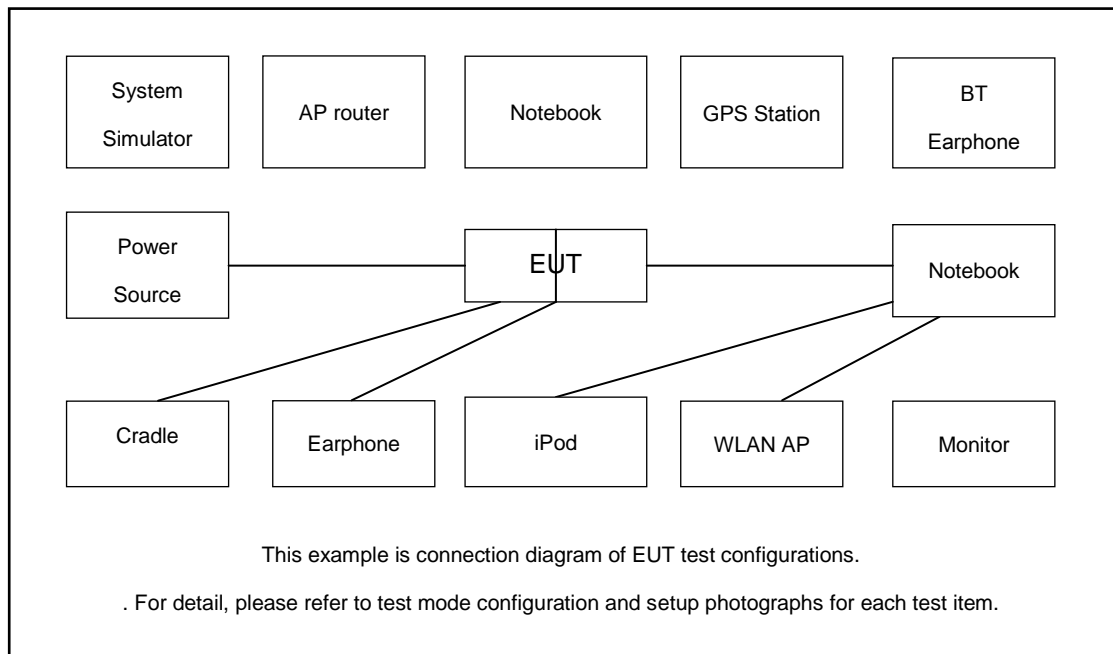


Test Items	Function Type
AC Conducted Emission	Mode 1: GSM 850 Idle + Bluetooth Idle + WLAN (2.4G) Idle + Camera (Rear) + Earphone 1 + USB cable 1(Charging from Adapter 1) + SIM 1
	Mode 2: PCS1900 Idle + Bluetooth Idle + WLAN (5G) Idle + Camera (Front) + Earphone 2 + USB cable 2(Charging from Adapter 2) + SIM 1
	Mode 3: WCDMA850 Idle + Bluetooth Idle + WLAN (2.4G) Idle + Color Bar (EMP4) + Earphone 3 + USB cable 3(Charging from Adapter 3) + SIM 1
	Mode 4: WCDMA1900 Idle + Bluetooth Idle + WLAN (5G) Idle + NFC On + Earphone 4 + USB cable 4(Charging from Adapter 4) + SIM 1
	Mode 5: WCDMA 1700 Idle + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone 5 + USB cable 5(Charging from Adapter 5) + SIM 1
	Mode 6: LTE Band 4 Idle + Bluetooth Idle + WLAN (5G) Idle + H-Pattan + Earphone 1 + USB cable 6(Charging from Adapter 6) + SIM 1
	Mode 7: LTE Band 5 Idle + Bluetooth Idle + WLAN (2.4G) Idle + FM Rx (98MHz) + Earphone 1 + USB cable 1(Charging from Adapter 7) + SIM 1
	Mode 8: LTE Band 7 Idle + Bluetooth Idle + WLAN (5G) Idle + Camera (Rear) + Earphone 1 + USB cable 1(Charging from Adapter 8) + SIM 1
	Mode 9: GSM 850 Idle + Bluetooth Idle + WLAN (2.4G) Idle + Camera (Rear) + Earphone 1 + USB cable 1(Notebook USB Data Link to EUT) + SIM 1
	Mode 10 : GSM 850 Idle + Bluetooth Idle + WLAN (5G) Idle + Camera (Rear) + Earphone 1 + USB cable 1(EUT USB Data Link to Notebook) + SIM 1
	Mode 11 : GSM 850 Idle + Bluetooth Idle + WLAN (2.4G) Idle + Camera (Rear) + Earphone 1 + USB cable 1(Notebook USB Data Link to SD Card) + SIM 1
	Mode 12 : GSM 850 Idle + Bluetooth Idle + WLAN (5G) Idle + Camera (Rear) + Earphone 1 + USB cable 1(SD Card USB Data Link to Notebook) + SIM 1
	Mode 13 : GSM 850 Idle + Bluetooth Idle + WLAN (2.4G) Idle + Camera (Rear) + Earphone 1 + USB cable 2(EUT USB Data Link to Notebook) + SIM 1
	Mode 14 : GSM 850 Idle + Bluetooth Idle + WLAN (5G) Idle + Camera (Rear) + Earphone 1 + USB cable 3(EUT USB Data Link to Notebook) + SIM 1
	Mode 15 : GSM 850 Idle + Bluetooth Idle + WLAN (2.4G) Idle + Camera (Rear) + Earphone 1 + USB cable 4(EUT USB Data Link to Notebook) + SIM 1
	Mode 16 : GSM 850 Idle + Bluetooth Idle + WLAN (5G) Idle + Camera (Rear) + Earphone 1 + USB cable 5(EUT USB Data Link to Notebook) + SIM 1
	Mode 17 : GSM 850 Idle + Bluetooth Idle + WLAN (2.4G) Idle + Camera (Rear) + Earphone 1 + USB cable 6(EUT USB Data Link to Notebook) + SIM 1



Radiated Emissions	<p>Mode 1: GSM 850 Idle + Bluetooth Idle + WLAN (2.4G) Idle + Camera (Rear) + Earphone 1 + USB cable 1(Charging from Adapter 1) + SIM 1</p> <p>Mode 2: PCS1900 Idle + Bluetooth Idle + WLAN (5G) Idle + Camera (Front) + Earphone 2 + USB cable 2(Charging from Adapter 2) + SIM 1</p> <p>Mode 3: WCDMA850 Idle + Bluetooth Idle + WLAN (2.4G) Idle + Play (MPEG4) + Earphone 3 + USB cable 3(Charging from Adapter 3) + SIM 1</p> <p>Mode 4: WCDMA1900 Idle + Bluetooth Idle + WLAN (5G) Idle + NFC On + Earphone 4 + USB cable 4(Charging from Adapter 4) + SIM 1</p> <p>Mode 5: WCDMA 1700 Idle + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone 5 + USB cable 5(Charging from Adapter 5) + SIM 1</p> <p>Mode 6: LTE Band 4 Idle + Bluetooth Idle + WLAN (5G) Idle + H-Pattan + Earphone 5 + USB cable 6(Charging from Adapter 6) + SIM 1</p> <p>Mode 7: LTE Band 5 Idle + Bluetooth Idle + WLAN (2.4G) Idle + FM Rx (98MHz) + Earphone 5 + USB cable 5(Charging from Adapter 7) + SIM 1</p> <p>Mode 8: WCDMA 1700 Idle + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone 5 + USB cable 5(Charging from Adapter 5) + SIM 1</p> <p>Mode 9: WCDMA 1700 Idle + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone 5 + USB cable 1(Notebook USB Data Link to EUT) + SIM 1</p> <p>Mode 10 : WCDMA 1700 Idle + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Earphone 5 + USB cable 1(EUT USB Data Link to Notebook) + SIM 1</p> <p>Mode 11 : WCDMA 1700 Idle + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone 5 + USB cable 1(Notebook USB Data Link to SD Card) + SIM 1</p> <p>Mode 12 : WCDMA 1700 Idle + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Earphone 5 + USB cable 1(SD Card USB Data Link to Notebook) + SIM 1</p> <p>Mode 13 : WCDMA 1700 Idle + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone 5 + USB cable 2(EUT USB Data Link to Notebook) + SIM 1</p> <p>Mode 14 : WCDMA 1700 Idle + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Earphone 5 + USB cable 3(EUT USB Data Link to Notebook) + SIM 1</p> <p>Mode 15 : WCDMA 1700 Idle + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone 5 + USB cable 4(EUT USB Data Link to Notebook) + SIM 1</p> <p>Mode 16 : WCDMA 1700 Idle + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Earphone 5 + USB cable 5(EUT USB Data Link to Notebook) + SIM 1</p> <p>Mode 17 : WCDMA 1700 Idle + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone 5 + USB cable 6(EUT USB Data Link to Notebook) + SIM 1</p>
<p>Remark:</p> <ol style="list-style-type: none"> 1. The worst case of AC is mode 1; only the test data of this mode is reported. 2. The worst case of RE is mode 17; only the test data of this mode is reported. 3. Data Link with Notebook / PC means data application transferred mode between EUT and Notebook / PC. 	

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.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8m
2.	LABS ATGPS Simulator	RACELOGIC	RLLS03-2P	Fcc DoC	N/A	Unshielded, 1.8m
3.	Labsat	RACELOGIC	18645	N/A	N/A	Unshielded, 1.8m
4.	FM Base Station	R&S	SMB100A	Fcc DoC	N/A	Shielded, 1.5m
5.	WLAN AP	Dlink	DIR-820L	KA2IR820LA1	N/A	Unshielded, 1.8m
6.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8m
7.	Bluetooth Earphone	Samsung	EO-MG900	PYAHS-107W	N/A	N/A
8.	Notebook	Lenovo	E540	FCC DoC	N/A	AC I/P : Unshielded, 1.2m DC O/P : Shielded, 1.8m
9.	SD Card	N/A	MicroSD HC	FCC DoC	N/A	N/A
10.	iPod nano 8GB	Apple	MC690ZP/A	FCC DoC	Shielded, 1.2m	N/A
11.	iPod	Apple	MC525 ZP/A	DoC	Shielded, 1.0m	N/A



2.4. EUT Operation Test Setup

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

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

1. Data application is transferred between notebook and EUT via USB cable.
2. Turn on camera to capture images.
3. Turn on NFC Function.
4. Turn on FM Function.
5. Turn on MPEG4 function.
6. 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.

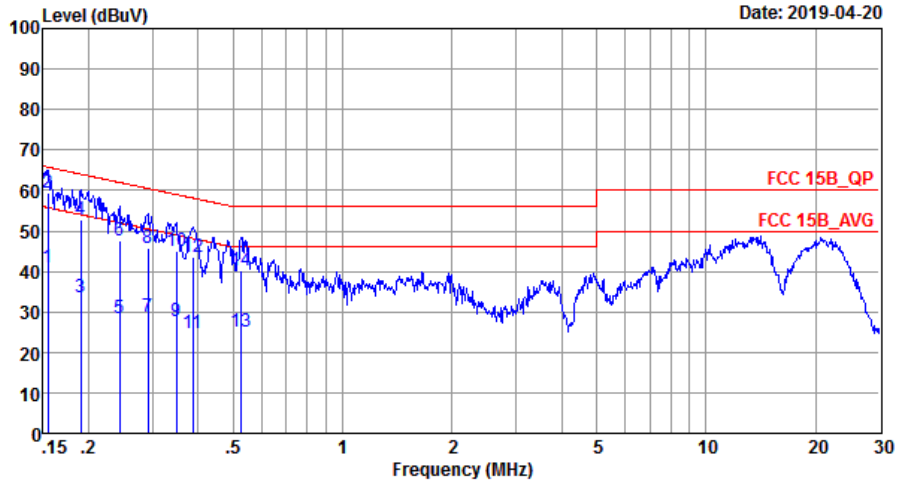
3.1.4 Test Setup





3.1.5 Test Result of AC Conducted Emission

Test Engineer :	Jeff Yao	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.		



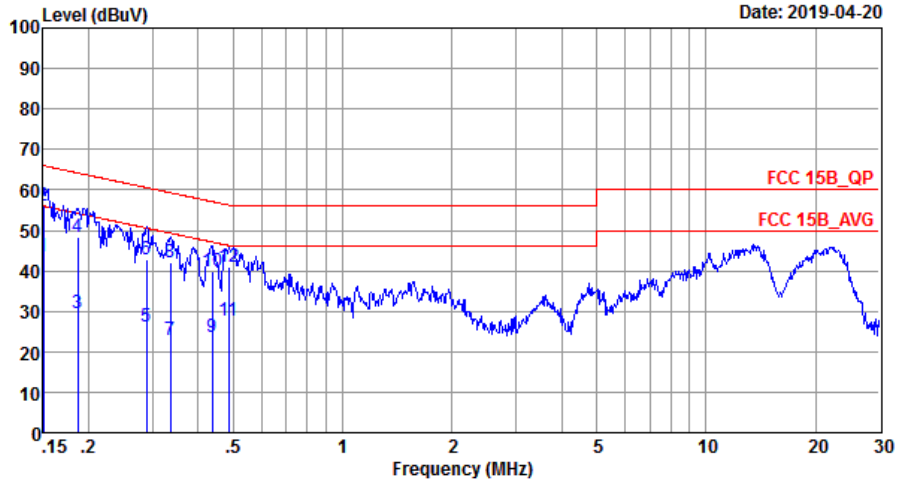
Site : C001-SZ
 Condition: FCC 15B_QP LISN_20180719_L LINE

Mode : Mode 1
 IMEI : 867285040001637/867285040004151

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15	41.09	-14.65	55.74	30.90	0.03	10.16	Average
2 *	0.15	59.29	-6.45	65.74	49.10	0.03	10.16	QP
3	0.19	33.59	-20.43	54.02	23.40	0.03	10.16	Average
4	0.19	52.69	-11.33	64.02	42.50	0.03	10.16	QP
5	0.24	28.59	-23.41	52.00	18.40	0.03	10.16	Average
6	0.24	47.49	-14.51	62.00	37.30	0.03	10.16	QP
7	0.29	28.90	-21.60	50.50	18.70	0.03	10.17	Average
8	0.29	45.80	-14.70	60.50	35.60	0.03	10.17	QP
9	0.35	27.60	-21.40	49.00	17.40	0.03	10.17	Average
10	0.35	45.10	-13.90	59.00	34.90	0.03	10.17	QP
11	0.39	24.90	-23.22	48.12	14.70	0.03	10.17	Average
12	0.39	43.50	-14.62	58.12	33.30	0.03	10.17	QP
13	0.53	25.09	-20.91	46.00	14.90	0.02	10.17	Average
14	0.53	40.39	-15.61	56.00	30.20	0.02	10.17	QP



Test Engineer :	Jeff Yao	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_20180719_N NEUTRAL

Mode : Mode 1
 IMEI : 867285040001637/867285040004151

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15	43.49	-12.51	56.00	33.30	0.03	10.16	Average
2 *	0.15	56.19	-9.81	66.00	46.00	0.03	10.16	QP
3	0.19	29.69	-24.51	54.20	19.50	0.03	10.16	Average
4	0.19	48.29	-15.91	64.20	38.10	0.03	10.16	QP
5	0.29	26.10	-24.44	50.54	15.90	0.03	10.17	Average
6	0.29	42.90	-17.64	60.54	32.70	0.03	10.17	QP
7	0.34	22.90	-26.41	49.31	12.70	0.03	10.17	Average
8	0.34	41.90	-17.41	59.31	31.70	0.03	10.17	QP
9	0.44	23.59	-23.52	47.11	13.40	0.02	10.17	Average
10	0.44	39.79	-17.32	57.11	29.60	0.02	10.17	QP
11	0.49	27.79	-18.44	46.23	17.60	0.02	10.17	Average
12	0.49	40.79	-15.44	56.23	30.60	0.02	10.17	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

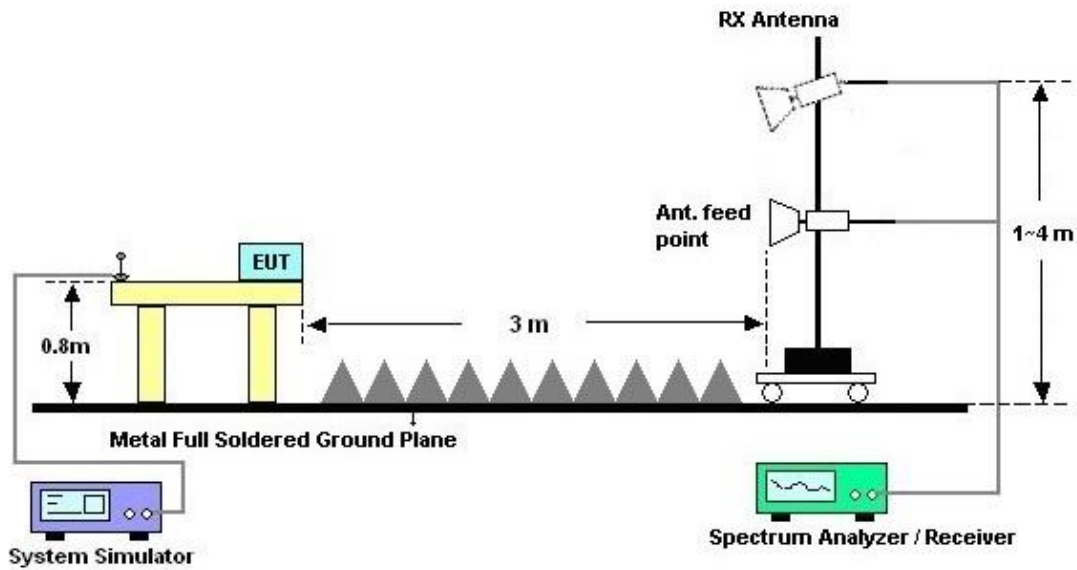
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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



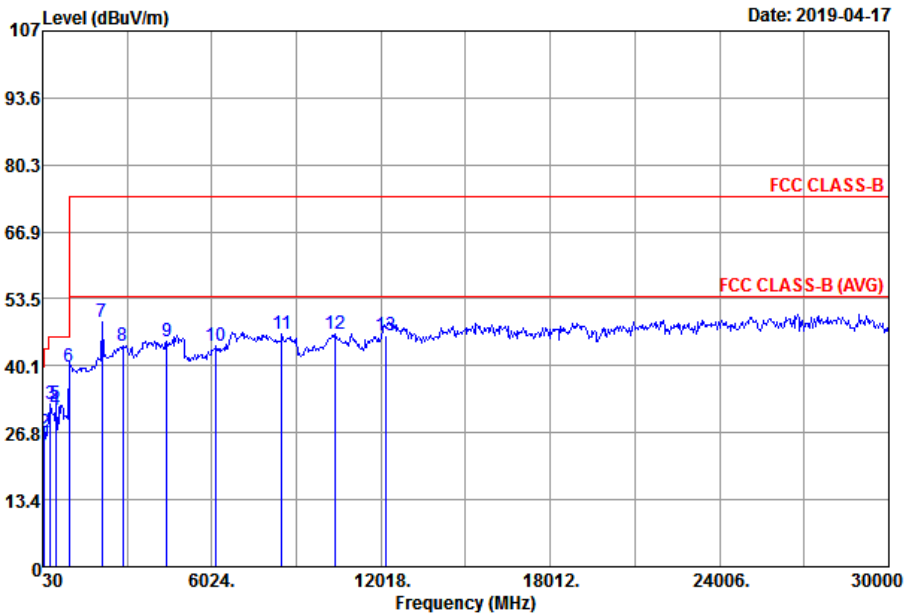
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

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

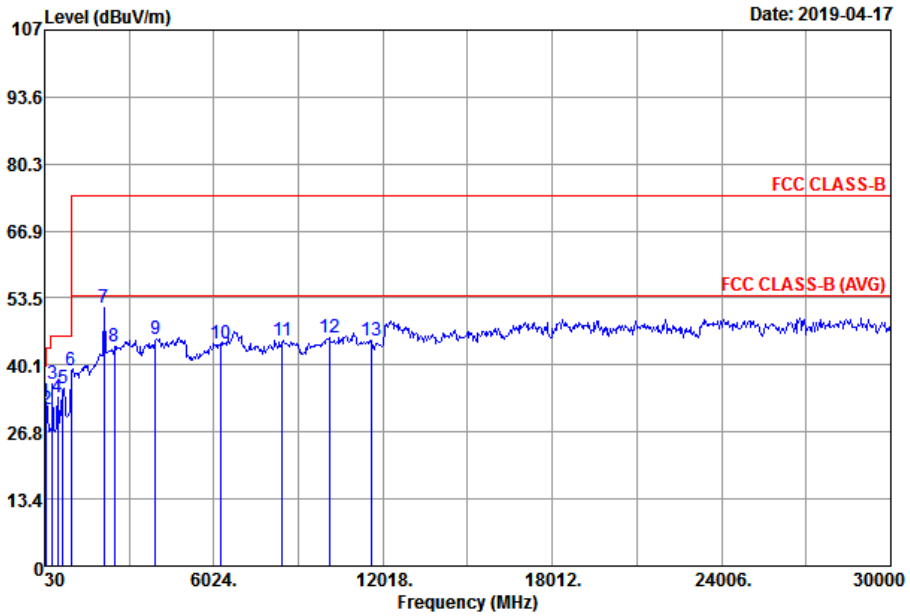


Site : 03CH01-SZ
 Condition : FCC CLASS-B 3m LF_ANT(35408)_6 HORIZONTAL

	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	30.00	24.25	-15.75	40.00	30.19	24.40	0.96	31.30	---	---	Peak
2	99.84	26.97	-16.53	43.50	40.09	16.70	1.78	31.60	---	---	Peak
3	299.66	32.35	-13.65	46.00	41.46	19.20	3.09	31.40	---	---	Peak
4	480.08	31.36	-14.64	46.00	35.72	23.04	3.91	31.31	---	---	Peak
5	497.54	32.39	-13.61	46.00	36.28	23.35	3.98	31.22	---	---	Peak
6	960.00	39.90	-6.10	46.00	38.62	27.04	5.52	31.28	100	83	QP
7	2132.60	49.02			69.17	31.47	6.29	57.91	---	---	Peak
8	2884.00	44.06	-29.94	74.00	61.10	32.29	8.05	57.38	---	---	Peak
9	4418.00	44.90	-29.10	74.00	57.81	33.79	10.50	57.20	---	---	Peak
10	6162.00	44.22	-29.78	74.00	53.61	34.62	13.79	57.80	---	---	Peak
11	8488.00	46.38	-27.62	74.00	57.20	35.70	12.59	59.11	---	---	Peak
12	10364.00	46.49	-27.51	74.00	53.85	37.02	14.61	58.99	100	46	Peak
13	12184.00	46.29	-27.71	74.00	50.05	38.54	15.03	57.33	---	---	Peak



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



Site : 03CH01-SZ
 Condition : FCC CLASS-B 3m LF_ANT(35408)_6 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	46.49	32.86	-7.14	40.00	47.42	15.74	1.23	31.53	---	---	Peak
2	99.84	31.28	-12.22	43.50	44.40	16.70	1.78	31.60	---	---	Peak
3	299.66	36.38	-9.62	46.00	45.49	19.20	3.09	31.40	---	---	Peak
4	480.08	33.71	-12.29	46.00	38.07	23.04	3.91	31.31	---	---	Peak
5	666.32	35.59	-10.41	46.00	37.72	24.76	4.60	31.49	---	---	Peak
6	960.00	39.03	-6.97	46.00	37.75	27.04	5.52	31.28	100	29	Peak
7	2132.60	51.64			71.79	31.47	6.29	57.91	---	---	Peak
8	2498.00	43.87	-30.13	74.00	62.69	31.93	6.91	57.66	---	---	Peak
9	3958.00	45.41	-28.59	74.00	58.79	33.45	10.08	56.91	---	---	Peak
10	6252.00	44.47	-29.53	74.00	53.39	34.68	14.31	57.91	---	---	Peak
11	8458.00	44.89	-29.11	74.00	55.69	35.70	12.61	59.11	---	---	Peak
12	10112.00	45.52	-28.48	74.00	53.36	36.87	14.56	59.27	100	73	Peak
13	11604.00	44.99	-29.01	74.00	49.84	37.87	14.91	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	Apr. 20, 2019	Dec. 22, 2019	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Oct. 18, 2018	Apr. 20, 2019	Oct. 17, 2019	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Dec. 23, 2018	Apr. 20, 2019	Dec. 22, 2019	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 18, 2018	Apr. 20, 2019	Jul. 17, 2019	Conduction (CO01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Aug. 30, 2018	Apr. 17, 2019	Aug. 29, 2019	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz~40GHz	Mar. 30, 2019	Apr. 17, 2019	Mar. 29, 2020	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz~2GHz	Jun. 05, 2018	Apr. 17, 2019	Jun. 04, 2019	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	119436	1GHz~18GHz	Jun. 28, 2018	Apr. 17, 2019	Jun. 27, 2019	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 20, 2018	Apr. 17, 2019	Apr. 19, 2019	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1707137	1GHz~18GHz	Oct. 19, 2018	Apr. 17, 2019	Oct. 18, 2019	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270104	0.5GHz~26.5GHz	Dec. 22, 2018	Apr. 17, 2019	Dec. 21, 2019	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 17, 2018	Apr. 17, 2019	Jul. 16, 2019	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Apr. 17, 2019	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Apr. 17, 2019	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Apr. 17, 2019	NCR	Radiation (03CH01-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% ($U = 2Uc(y)$)	2.6 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.8 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.3 dB
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