



# FCC Test Report

**APPLICANT** : OnePlus Technology (Shenzhen) Co., Ltd  
**EQUIPMENT** : Smart Phone  
**BRAND NAME** : ONEPLUS  
**MODEL NAME** : AC2003  
**FCC ID** : 2ABZ2-EF014  
**STANDARD** : 47 CFR Part 15 Subpart B  
**CLASSIFICATION** : Certification

The product was received on Apr. 20, 2020 and testing was completed on May 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**



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## REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC042007-02	Rev. 01	Initial issue of report	Jun. 15, 2020



### 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 8.57 dB at 0.470 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 6.30 dB at 480.080 MHz

**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	
<b>Equipment</b>	Smart Phone
<b>Brand Name</b>	ONEPLUS
<b>Model Name</b>	AC2003
<b>FCC ID</b>	2ABZ2-EF014
<b>EUT supports Radios application</b>	GSM/WCDMA/LTE/5G NR 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 / ANT+ GNSS/NFC
<b>IMEI Code</b>	Conduction: 867958040036791/867958040036783 Radiation: 867958040036718/867958040036700
<b>HW Version</b>	14
<b>SW Version</b>	Oxygen OS 10.5.0.AC01BA
<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	
<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 17 : 706.5 MHz ~ 713.5 MHz LTE Band 26 : 814.7 MHz ~ 848.3 MHz LTE Band 38 : 2572.5 MHz ~ 2617.5 MHz LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz LTE Band 66 : 1710.7 MHz ~ 1779.3 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 ANT+ : 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
<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 17 : 736.5 MHz ~ 743.5 MHz LTE Band 26 : 859.7 MHz ~ 893.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz LTE Band 66 : 2110.7 MHz~ 2199.3 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 ANT+ : 2402 MHz ~ 2480 MHz GNSS : 1559 MHz ~ 1610 MHz; 1164 MHz ~ 1215MHz NFC : 13.56 MHz
<b>Antenna Type</b>	WWAN : LDS Antenna WLAN 2.4GHz: Loop Antenna WLAN 5GHz: Monopole Antenna Bluetooth : Loop Antenna



	GNSS: PIFA Antenna ANT+: PIFA Antenna NFC : Integral Antenna
<b>Type of Modulation</b>	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(Downlink only) 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 ANT+: GFSK

Note:

- GNSS Rx (1559MHz ~ 1610MHz) = GLONASS + GPS + BDS + Galileo + SBAS
- 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.

<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>
	03CH01-SZ	CN1256	421272



### 1.7. Test Software

Item	Site	Manufacture	Name	Version
1.	03CH01-SZ	AUDIX	E3	6.2009-8-24
2.	CO01-SZ	AUDIX	E3	6.120613b

### 1.8. Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR Part 15 Subpart B
- ♦ ANSI C63.4-2014

**Remark:** All test items were verified and recorded according to the standards and without any deviation during the test.





## **2. Test Configuration of Equipment Under Test**

### **2.1. Test Mode**

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

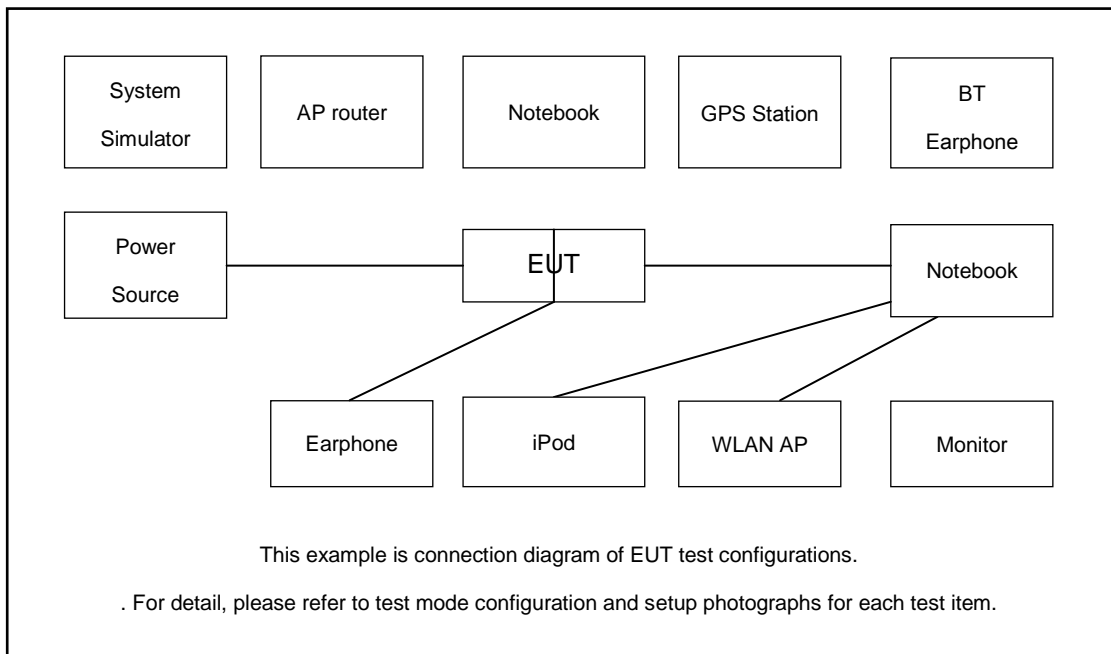
Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).



Test Items	Function Type
AC Conducted Emission	Mode 1: GSM 850 Idle(Middle CH) + USB Cable 1(Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(2.4G) + Camera(Rear)
	Mode 2: GSM 850 Idle(Middle CH) + USB Cable 1(Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(5G) + Camera(Front)
	Mode 3: WCDMA Band V Idle(Low CH) + USB Cable 1 (Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(2.4G) + MPEG4(Colour bar)
	Mode 4: LTE Band 2 Idle(High CH) + USB Cable 1 (Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(5G) + NFC On
	Mode 5: LTE Band 5 Idle(Middle CH) + USB Cable 1 (Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(2.4G) + GNSS RX
	Mode 6: LTE Band 12 Idle(Low CH) + USB Cable 1 (Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(5G) + H-Pattern
	Mode 7: LTE Band 17 Idle(Middle CH) + USB Cable 1 (Data Link with Notebook) + Battery + BT Idle + WLAN Idle(2.4G)
	Mode 8: LTE Band 26 Idle(High CH) + USB Cable 2 (Data Link with Notebook) + Battery + BT Idle + WLAN Idle(2.4G)
	Mode 9: LTE Band 2 Idle(High CH) + USB Cable 2 (Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(5G) + NFC On
	Mode 10 : LTE Band 2 Idle(High CH) + USB Cable 1 (Charging from Adapter 2) + Battery + BT Idle + WLAN Idle(5G) + NFC On
	Mode 11 : LTE Band 2 Idle(High CH) + USB Cable 1 (Charging from Adapter 3) + Battery + BT Idle + WLAN Idle(5G) + NFC On
	Mode 12 : LTE Band 2 Idle(High CH) + USB Cable 1 (Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(5G) + NFC On
	Mode 13 : LTE Band 2 Idle(High CH) + USB Cable 1 (Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(5G) + NFC On
	Mode 14 : LTE Band 2 Idle(High CH) + USB Cable 1 (Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(5G) + NFC On
	Mode 15 : LTE Band 2 Idle(High CH) + USB Cable 1 (Charging from Adapter 2) + Battery + BT Idle + WLAN Idle(5G) + NFC On
	Mode 16 : LTE Band 2 Idle(High CH) + USB Cable 1 (Charging from Adapter 2) + Battery + BT Idle + WLAN Idle(5G) + NFC On
	Mode 17 : LTE Band 2 Idle(High CH) + USB Cable 1 (Charging from Adapter 2) + Battery + BT Idle + WLAN Idle(5G) + NFC On
	Mode 18 : LTE Band 2 Idle(High CH) + USB Cable 1 (Charging from Adapter 3) + Battery + BT Idle + WLAN Idle(5G) + NFC On
	Mode 19 : LTE Band 2 Idle(High CH) + USB Cable 1 (Charging from Adapter 3) + Battery + BT Idle + WLAN Idle(5G) + NFC On
	Mode 20 : LTE Band 2 Idle(High CH) + USB Cable 1 (Charging from Adapter 3) + Battery + BT Idle + WLAN Idle(5G) + NFC On

Radiated Emissions	<p>Mode 1: GSM 850 Idle(Middle CH) + USB Cable 1(Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(2.4G) + Camera(Rear)</p> <p>Mode 2: GSM 850 Idle(Middle CH) + USB Cable 1(Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(5G) + Camera(Front)</p> <p>Mode 3: WCDMA Band V Idle(Low CH) + USB Cable 1 (Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(2.4G) + MPEG4(Colour bar)</p> <p>Mode 4: LTE Band 2 Idle(High CH) + USB Cable 1 (Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(5G) + NFC On</p> <p>Mode 5: LTE Band 5 Idle(Middle CH) + USB Cable 1 (Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(2.4G) + GNSS RX</p> <p>Mode 6: LTE Band 12 Idle(Low CH) + USB Cable 1 (Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(5G) + H-Pattern</p> <p>Mode 7: LTE Band 17 Idle(Middle CH) + USB Cable 1 (Data Link with Notebook) + Battery + BT Idle + WLAN Idle(2.4G) + Camera(Front)</p> <p>Mode 8: LTE Band 26 Idle(High CH) + USB Cable 2 (Data Link with Notebook) + Battery + BT Idle + WLAN Idle(2.4G) + Camera(Front)</p> <p>Mode 9: LTE Band 26 Idle(High CH) + USB Cable 2 (Charging from Adapter 1) + Battery + BT Idle + WLAN Idle(2.4G) + Camera(Front)</p> <p>Mode 10 : LTE Band 26 Idle(High CH) + USB Cable 2 (Charging from Adapter 2) + Battery + BT Idle + WLAN Idle(2.4G) + Camera(Front)</p> <p>Mode 11 : LTE Band 26 Idle(High CH) + USB Cable 2 (Charging from Adapter 3) + Battery + BT Idle + WLAN Idle(2.4G) + Camera(Front)</p> <p>Mode 12 : GSM 850 Idle(Middle CH) + Type C Earphone + Battery + BT Idle + WLAN Idle(2.4G) + MP3</p>
<p><b>Remark:</b></p> <ol style="list-style-type: none"> <li>1. The worst case of AC is mode 13; only the test data of this mode is reported.</li> <li>2. The worst case of RE is mode 8; only the test data of this mode is reported.</li> <li>3. Data Link with Notebook means data application transferred mode between EUT and Notebook</li> <li>4. Pre-scanned Low/Middle/High channel, the worst 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.	Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8m
2.	GNSS Station	RACELOGIC	RLLS03-2P	Fcc DoC	N/A	Unshielded, 1.8m
3.	WLAN AP	D-Link	DIR-820L	KA2IR820LA1	N/A	Unshielded, 1.8m
4.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8m
5.	Bluetooth Earphone	Samsung	EO-MG900	CCAH14LP1680T5	N/A	N/A
6.	NOTE BOOK	Lenovo	E540	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
7.	iPod	Apple	MC525 ZP/A	DoC	Shielded, 1.0m	N/A
8.	Earphone	ONEPLUS	N/A	N/A	Unshielded, 1.2m	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 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

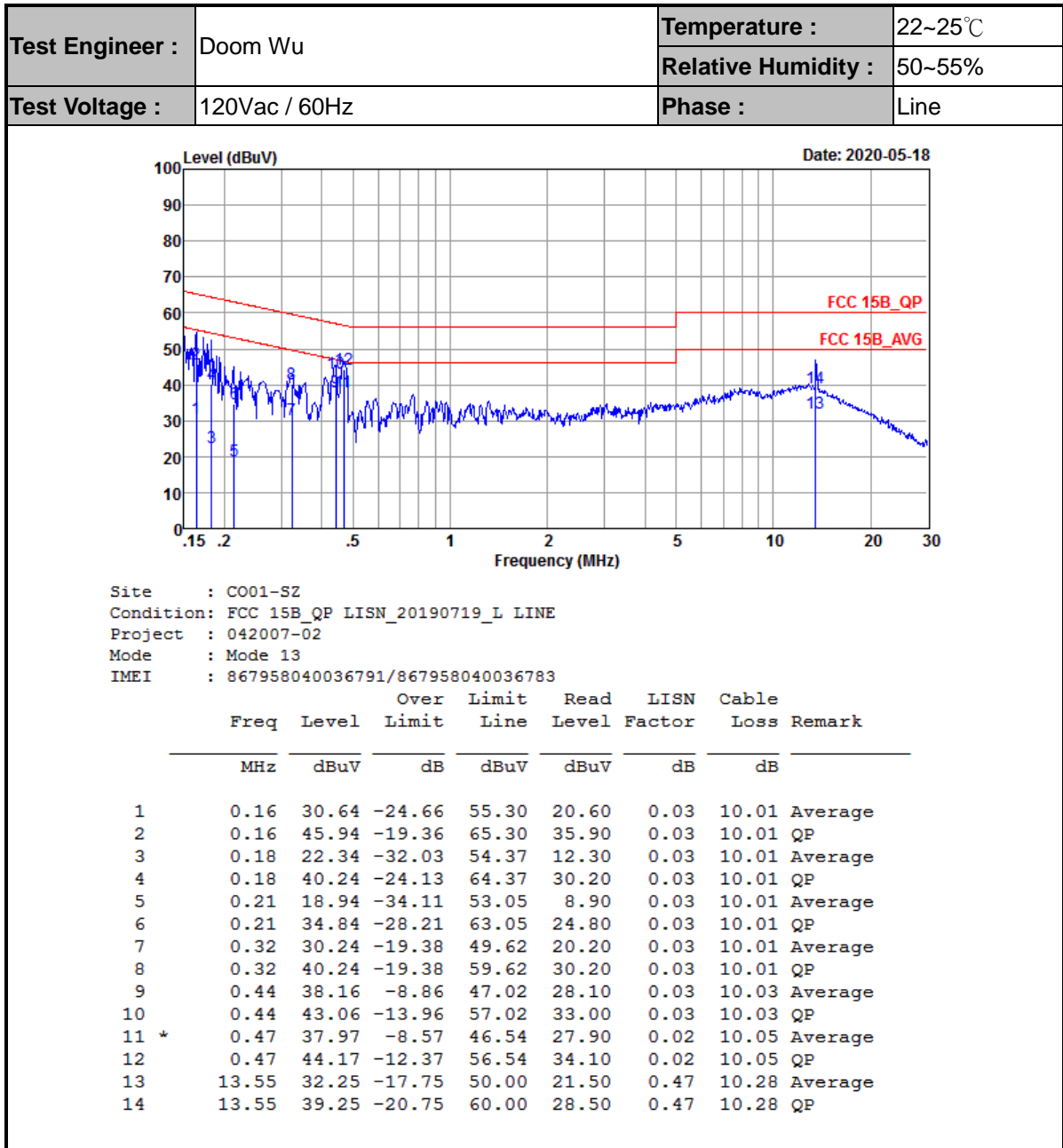
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
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





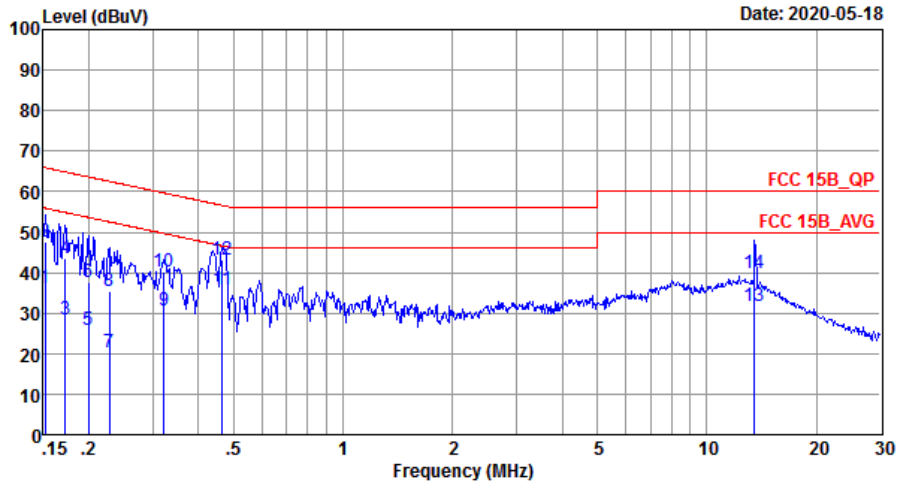
3.1.5 Test Result of AC Conducted Emission







Test Engineer :	Doom Wu	Temperature :	22~25°C
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Site : CO01-SZ  
 Condition: FCC 15B\_QP LISN\_20190719\_N NEUTRAL  
 Project : 042007-02  
 Mode : Mode 13  
 IMEI : 867958040036791/867958040036783

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15	36.34	-19.57	55.91	26.30	0.03	10.01	Average
2	0.15	47.74	-18.17	65.91	37.70	0.03	10.01	QP
3	0.17	28.24	-26.62	54.86	18.20	0.03	10.01	Average
4	0.17	43.54	-21.32	64.86	33.50	0.03	10.01	QP
5	0.20	25.94	-27.68	53.62	15.90	0.03	10.01	Average
6	0.20	37.64	-25.98	63.62	27.60	0.03	10.01	QP
7	0.23	20.34	-32.18	52.52	10.30	0.03	10.01	Average
8	0.23	35.34	-27.18	62.52	25.30	0.03	10.01	QP
9	0.32	30.54	-19.12	49.66	20.50	0.03	10.01	Average
10	0.32	40.24	-19.42	59.66	30.20	0.03	10.01	QP
11 *	0.47	35.76	-10.82	46.58	25.70	0.02	10.04	Average
12	0.47	43.16	-13.42	56.58	33.10	0.02	10.04	QP
13	13.55	31.87	-18.13	50.00	21.30	0.29	10.28	Average
14	13.55	39.87	-20.13	60.00	29.30	0.29	10.28	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**

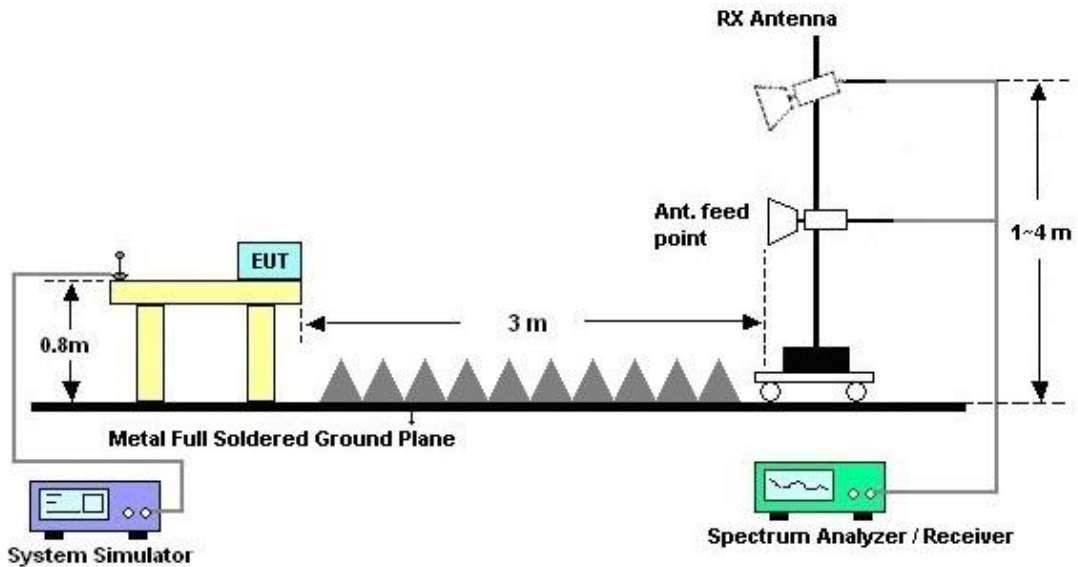
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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



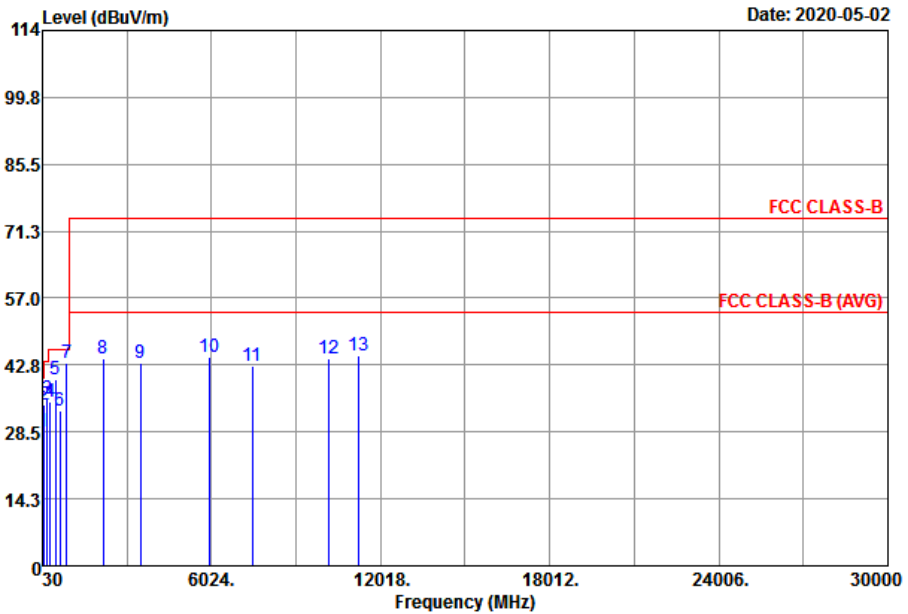
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

Test Engineer :	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.		

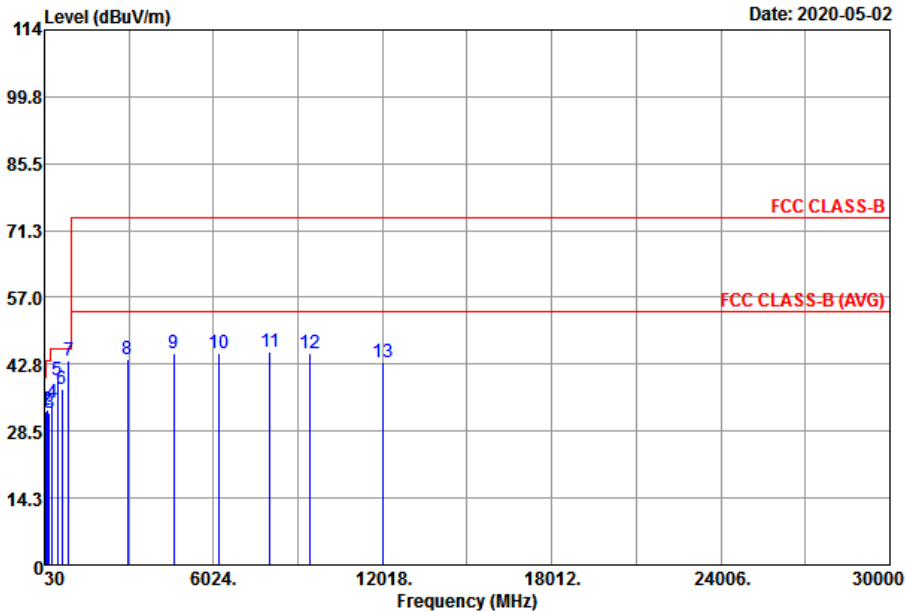


Site : 03CH01-SZ  
 Condition : FCC CLASS-B 3m LF\_ANT(35408)\_2019 HORIZONTAL  
 Project : 042007-02

	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	64.92	28.72	-11.28	40.00	46.19	12.45	1.48	31.40	---	---	Peak
2	99.84	34.28	-9.22	43.50	46.95	17.10	1.83	31.60	---	---	Peak
3	198.78	35.42	-8.08	43.50	48.41	15.75	2.56	31.30	---	---	Peak
4	299.66	34.93	-11.07	46.00	43.91	19.30	3.12	31.40	---	---	Peak
5	480.08	39.70	-6.30	46.00	43.46	23.60	3.95	31.31	172	148	Peak
6	663.41	32.92	-13.08	46.00	34.40	25.36	4.63	31.47	---	---	Peak
7	889.42	43.34			42.77	26.70	5.35	31.48	---	---	Peak
8	2196.00	44.14	-29.86	74.00	60.86	32.69	8.46	57.87	---	---	Peak
9	3518.00	43.25	-30.75	74.00	55.90	33.52	10.92	57.09	---	---	Peak
10	5968.00	44.41	-29.59	74.00	51.83	35.83	14.35	57.60	---	---	Peak
11	7482.00	42.67	-31.33	74.00	50.61	36.11	14.94	58.99	---	---	Peak
12	10182.00	44.21	-29.79	74.00	44.57	38.44	20.39	59.19	---	---	Peak
13	11257.50	44.68	-29.32	74.00	43.40	38.60	20.70	58.02	170	244	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)\_2019 VERTICAL  
 Project : 042007-02  
 Mode : Mode 8  
 IMEI : 867958040036718/867958040036700

	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	64.92	32.67	-7.33	40.00	50.14	12.45	1.48	31.40	---	---	Peak
2	134.76	33.14	-10.36	43.50	44.65	17.85	2.10	31.46	---	---	Peak
3	199.75	32.28	-11.22	43.50	45.21	15.80	2.57	31.30	---	---	Peak
4	298.69	34.74	-11.26	46.00	43.76	19.29	3.11	31.42	---	---	Peak
5	480.08	39.42	-6.58	46.00	43.18	23.60	3.95	31.31	136	251	Peak
6	642.07	37.47	-8.53	46.00	39.03	25.32	4.56	31.44	---	---	Peak
7	889.42	43.35			42.78	26.70	5.35	31.48	---	---	Peak
8	2968.00	43.89	-30.11	74.00	57.85	33.47	9.89	57.32	---	---	Peak
9	4626.00	44.98	-29.02	74.00	54.50	34.75	13.07	57.34	---	---	Peak
10	6196.00	45.19	-28.81	74.00	52.46	36.06	14.51	57.84	---	---	Peak
11	8022.00	45.35	-28.65	74.00	51.94	36.80	15.81	59.20	142	192	Peak
12	9446.00	45.14	-28.86	74.00	46.50	37.46	20.36	59.18	---	---	Peak
13	12037.50	43.26	-30.74	74.00	39.74	39.81	20.93	57.22	---	---	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 Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Jul. 22, 2019	May 02, 2020	Jul. 21, 2020	Radiation (03CH01-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Apr. 17, 2020	May 02, 2020	Apr. 16, 2021	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270104	0.5GHz~26.5GHz	Dec. 27, 2019	May 02, 2020	Dec. 26, 2020	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz~2GHz	Jul. 19, 2019	May 02, 2020	Jul. 18, 2020	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Aug. 27, 2019	May 02, 2020	Aug. 26, 2020	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 17, 2020	May 02, 2020	Apr. 16, 2021	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1943528	1GHz~18GHz	Oct. 18, 2019	May 02, 2020	Oct. 17, 2020	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 22, 2019	May 02, 2020	Jul. 21, 2020	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz~40GHz	Apr. 17, 2020	May 02, 2020	Apr. 16, 2021	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	May 02, 2020	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	May 02, 2020	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	May 02, 2020	NCR	Radiation (03CH01-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Dec. 26, 2019	May 18, 2020	Dec. 25, 2020	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Oct. 17, 2019	May 18, 2020	Oct. 16, 2020	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Oct. 17, 2019	May 18, 2020	Oct. 16, 2020	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 23, 2019	May 18, 2020	Jul. 22, 2020	Conduction (CO01-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% ( $U = 2Uc(y)$ )	4.8dB
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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% ( $U = 2Uc(y)$ )	4.3dB
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