FCC Test Report

APPLICANT	:	Lenovo(Shanghai) Electronics Technology Co., Ltd.
EQUIPMENT	:	Portable Tablet Computer
BRAND NAME	:	Lenovo
MODEL NAME	:	Lenovo TB-X704L
FCC ID	:	O57TBX704L
STANDARD	:	FCC 47 CFR FCC Part 15 Subpart B
CLASSIFICATION	:	Certification

The product was was completed on Jul. 28, 2017. 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.

Eric Shih

TESTING
NVLAP LAB CODE 600156-0

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

TABLE OF CONTENTS

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC771306	Rev. 01	Initial issue of report	Aug. 21, 2017

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 6.06 dB at 0.150 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 4.34 dB at 400.100 MHz

1. General Description

1.1. Applicant

Lenovo(Shanghai) Electronics Technology Co., Ltd.
NO.68 BUILDING, 199 FENJU RD, China (Shanghai) Pilot Free Trade Zone, 200131, CHINA

1.2. Manufacturer

Lenovo PC HK Limited
23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong

1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	Portable Tablet Computer
Brand Name	Lenovo
Model Name	Lenovo TB-X704L
FCC ID	O57TBX704L
EUT supports Radios application	GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/ HSPA+ (16QAM uplink is not supported)/LTE WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth v3.0 + EDR/Bluetooth v4.0 LE/ Bluetooth v4.1 LE/Bluetooth v4.2 LE
IMEI Code	Conduction/ Radiation: 86383803007719/86383803003809
HW Version	Lenovo Tablet TB-X704L
SW Version	TB-X704L_RF01_ 20170331
EUT Stage	Identical Prototype

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	GSM 850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8MHz WCDMA Band V: 826.4 MHz ~ 846.6 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 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 ~ 5580 MHz and 5660 MHz ~ 5700 MHz ; 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Rx Frequency	GSM 850: 869.2 MHz ~ 893.8 MHz GSM 1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band V: 871.4 MHz ~ 891.6 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 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 ~ 5580 MHz and 5660 MHz ~ 5700 MHz ; 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz GPS : 1.57542 GHz Glonass: 1602 MHz + n× 0.5625MHz (n=−7,−6,−5,...0,...,6) FM : 87.5 MHz ~ 108 MHz
Antenna Type	WWAN : PIFA Antenna WLAN : PIFA Antenna Bluetooth : PIFA Antenna GPS/Glonass: PIFA Antenna FM: External headset Antenna
Type of Modulation	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 is not supported) DC-HSDPA : 64QAM LTE: QPSK/16QAM/64QAM(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) : π /4-DQPSK Bluetooth (3Mbps) : 8-DPSK GPS/Glonass : BPSK FM

1.5. Modification of EUT

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

1.6. Specification of Accessory

Specification of Accessory				
AC Adapter 1	**Brand Name**	Lenovo (AcBel)	**Model Name**	C-P35
	Power Rating	I/P: 100-240Vac, 300mA, O/P: 5.2Vdc, 2000mA		
AC Adapter 2	**Brand Name**	Lenovo (huntkey)	**Model Name**	C-P35
	Power Rating	I/P: 100-240Vac, 500mA, O/P: 5.2Vdc, 2000mA		
Battery 1	**Brand Name**	Lenovo(SCUD)	**Model Name**	L16D2P31
	Power Rating	3.85Vdc,7000mAh	**Type**	Li-ion
Battery 2	**Brand Name**	Lenovo(Celxpert)	**Model Name**	L16D2P31
	Power Rating	3.85Vdc,7000mAh	**Type**	Li-ion
USB Cable 1	**Brand Name**	Lenovo(LI QI)	**Model Name**	N/A
	Signal Line Type	1.0 meter, shielded cable, without core		
USB Cable 2	**Brand Name**	Lenovo(saibao)	**Model Name**	N/A
	Signal Line Type	1.0 meter, shielded cable, without core		

1.7. Component List

Note: There are four types of EUT, sample 1, sample 2, sample 3 and sample 4, please refer to the following table for the differences between them. According to the differences, only choose the worse configuration sample 1 and sample 2 to perform test. The sample 2 is verified worse case of the sample 1.

Component	Sample 1	Sample 2
CPU	Qualcomm MSM-8953-2-857NSP-TR-01-0-AB	Qualcomm MSM-8953-2-857NSP-TR-01-0-AB
BT/WIFI Module	Qualcomm WCN-3680B-0-79BWLNSP-TR-05-1	Qualcomm WCN-3680B-0-79BWLNSP-TR-05-1
RAM/EMMC	4G+64G Samsung KMRC10014M-B809 MCP_64GB-eMMC_32Gb-LPDDR3	4G+64G Hynix H9TQ52ACLTMCUR-KUM MCP_64GB-eMMC_32Gb-LPDDR3
Camera front	Hua quan: G7P2-A6500FHQ	Hua quan: G7P2-A6500FHQ
Camera rear	Q Tech: FX219BH	film: L8856A10
LCD	BOE: TV101WUM-NL1	INX: P101KDA-AF0
Battery	SCUD L16D2P31 3.85V/7000mAh	Celxpert L16D2P31 3.85V/7000mAh

Component	Sample 3	Sample 4
CPU	Qualcomm MSM-8953-2-857NSP-TR-01-0-AB	Qualcomm MSM-8953-2-857NSP-TR-01-0-AB
BT/WIFI Module	Qualcomm WCN-3680B-0-79BWLNSP-TR-05-1	Qualcomm WCN-3680B-0-79BWLNSP-TR-05-1
RAM/EMMC	3G+16G Samsung KMRE1000BM-B512 MCP_16GB-eMMC_24Gb-LPDDR3	3G+16G Hynix H9TQ17ADFTACUR-KUM MCP_EMMC-16 GB_LPDDR3-3 GB
Camera front	Hua quan: G7P2-A6500FHQ	Hua quan: G7P2-A6500FHQ
Camera rear	Q Tech: FX219BH	film: L8856A10
LCD	BOE: TV101WUM-NL1	INX: P101KDA-AF0
Battery	SCUD L16D2P31 3.85V/7000mAh	Celxpert L16D2P31 3.85V/7000mAh

1.8. Test Location

Sporton Lab is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0) and the FCC designation No are CN5018 and CN5019.

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 Test Firm Registration No.**
	CO01-SZ	251365

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 Test Firm Registration No.**
	03CH03-SZ	577730

Note: The test site complies with ANSI C63.4 2014 requirement.

1.9. Applicable Standards

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

- FCC 47 CFR FCC 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 (150 kHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

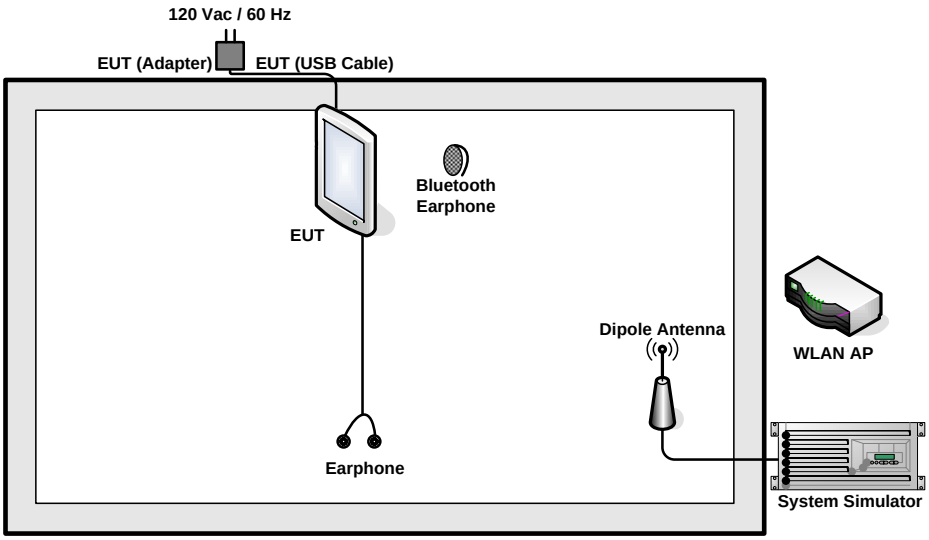
Test Items	Function Type
AC Conducted Emission	Mode 1: GPRS850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable1 (Charging from Adapter1) + Earphone + Camera(Rear) for Sample 1<Fig.1> Mode 2: GPRS1900 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable1 (Charging from Adapter2) + Earphone + Camera(Front) for Sample 1<Fig.1> Mode 3: WCDMA Band II Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable2 (Charging from Adapter1) + Earphone + MPEG4 for Sample 1<Fig.1> Mode 4: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable2 (Charging from Adapter1) + Earphone + Glonass Rx for Sample 1<Fig.2> Mode 5: LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable1 (Data Link with Notebook) + Earphone + GPS RX for Sample 1<Fig.3> Mode 6: LTE Band 4 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable2 (Data Link with Notebook) + Earphone + GPS RX for Sample 1<Fig.3> Mode 7: GPRS850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable1 (Charging from Adapter1) + Earphone + Camera(Rear) for Sample 2<Fig.1>

Radiated Emissions < 1GHz	Mode 1: GPRS850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable1 (Charging from Adapter1) + Earphone + Camera(Rear) for Sample 1<Fig.1> Mode 2: GPRS1900 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable1 (Charging from Adapter2) + Earphone + Camera(Front) for Sample 1<Fig.1> Mode 3: WCDMA Band II Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable2 (Charging from Adapter1) + Earphone + MPEG4 for Sample 1<Fig.1> Mode 4: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable2 (Charging from Adapter1) + Earphone + Glonass Rx for Sample 1<Fig.2> Mode 5: LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable1 (Data Link with Notebook) + Earphone + GPS RX for Sample 1<Fig.3> Mode 6: LTE Band 4 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable2 (Data Link with Notebook) + Earphone + GPS RX for Sample 1<Fig.3> Mode 7: GPRS850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable1 (Charging from Adapter1) + Earphone + Camera(Rear) for Sample 2<Fig.1>
Radiated Emissions ≥ 1GHz	Mode 1: GPRS850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable1 (Charging from Adapter1) + Earphone + Camera(Rear) for Sample 1<Fig.1> Mode 2 LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable1 (Data Link with Notebook) + Earphone + GPS RX for Sample 1

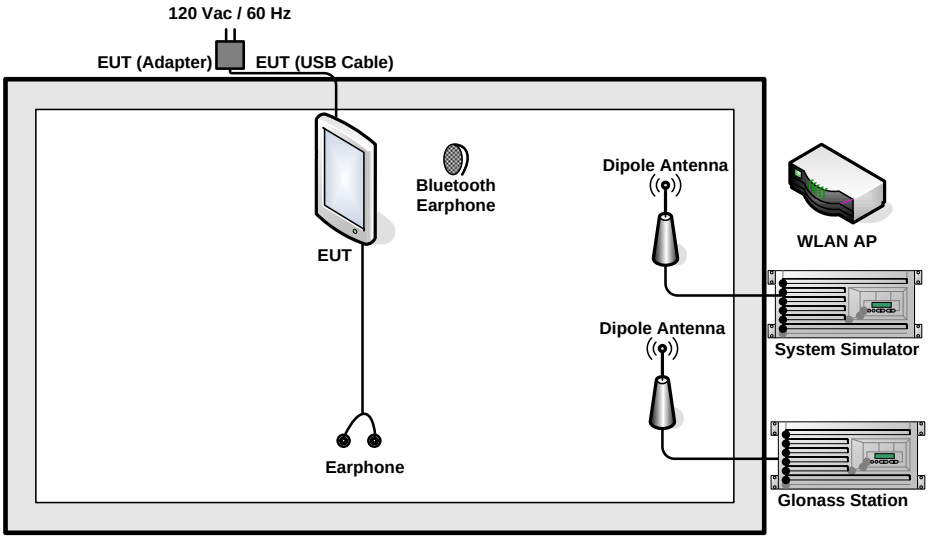
Remark:

1. The worst case of AC is mode 1; and the USB Link worse mode is mode 5, the test data of this mode was reported.
2. The worst case of RE < 1G is mode 1; and the USB Link worse mode is mode 5, the test data of this mode was reported.
3. Data Link with Notebook means data application transferred mode between EUT and Notebook.

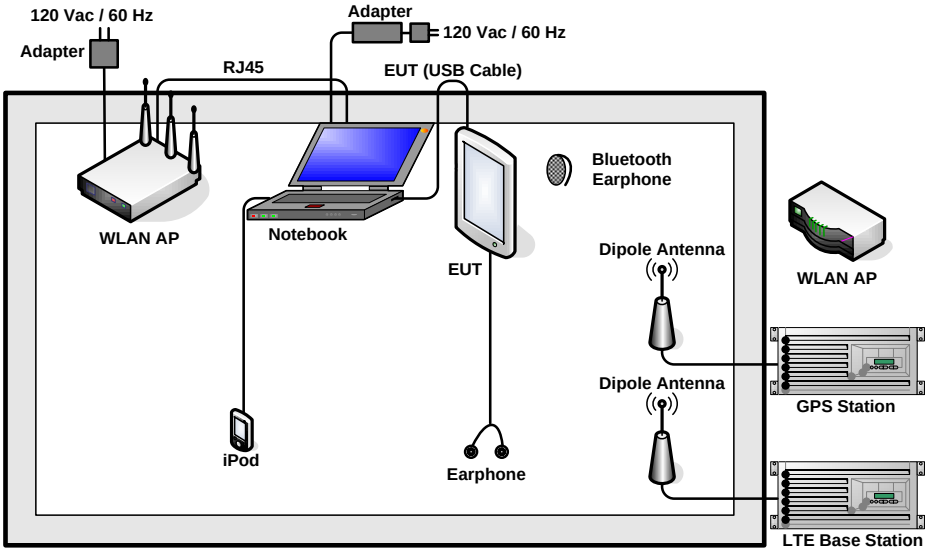
2.2. Connection Diagram of Test System



<Fig.1>



<Fig.2>



<Fig.3>

2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
3.	GPS Station	ADIVIE	MP9000	N/A	N/A	Unshielded,1.8m
4.	Glonass Station	RACELOGIC	18645	N/A	N/A	Unshielded,1.8m
5.	WLAN AP	Dlink	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
6.	Bluetooth Earphone	Nokia	BH-108	PYAHS-107W	N/A	N/A
7.	Bluetooth Earphone	Samsung	HS3000	A3LHS3000	N/A	N/A
8.	NOTE BOOK	Lenovo	E450	FCC DoC	N/A	AC I/P：Unshielded, 1.2m DC O/P：Shielded, 1.8m
9.	Earphone	Lenovo	SH100	N/A	Unshielded,1.2m	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
12.	SD Card	N/A	MicroSD HC	FCC DoC	N/A	N/A
13.	SD Card	Kingston	MicroSD HC	FCC DoC	N/A	N/A

2.4. EUT Operation Test Setup

The EUT was in GPRS 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 GPS/Glonass function to make the EUT receive continuous signals from GPS/Glonass station.
3. Execute "Video player" to play MPEG4 files.
4. Turn on camera to capture images.

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.

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.

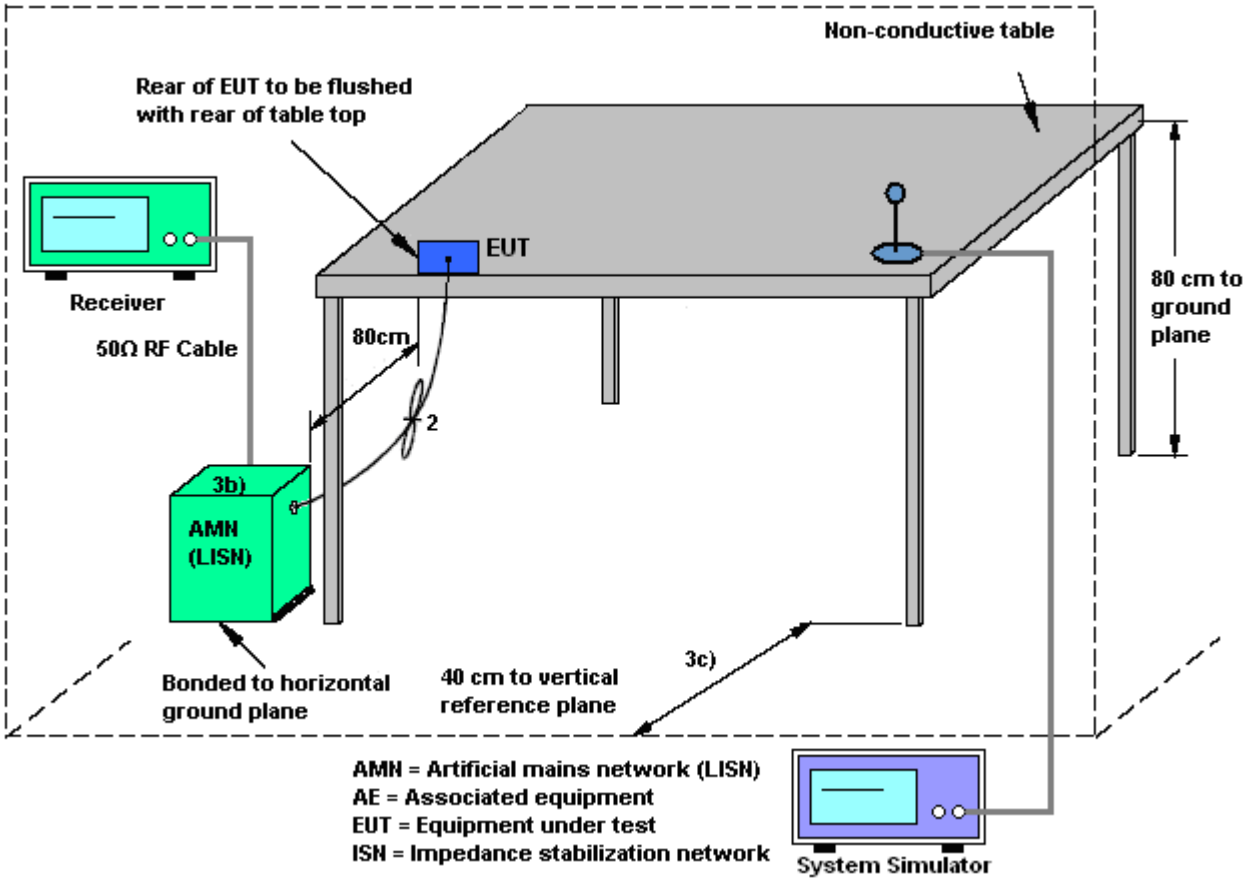
3.1.2 Measuring Instruments

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

3.1.3 Test Procedure

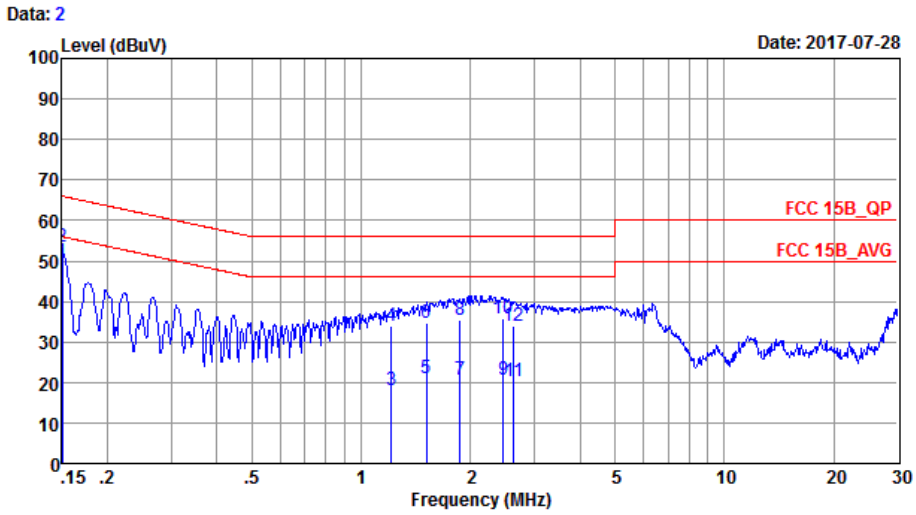
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
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 Mode :	Mode 1	**Temperature :**	22~25℃
Test Engineer :	HaoHai YE	**Relative Humidity :**	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	GPRS850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable1 (Charging from Adapter1) + Earphone + Camera(Rear) for Sample 1		

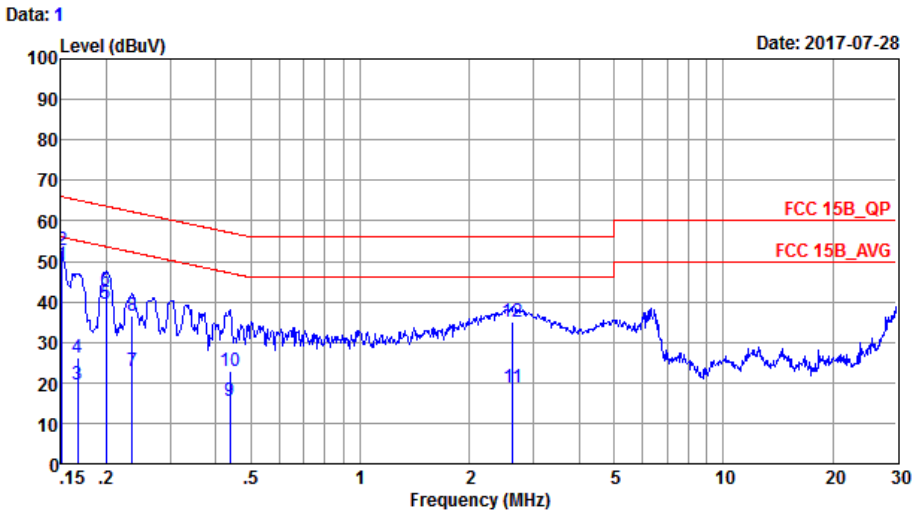


Site : CO01-SZ
Condition: FCC 15B_QP LISN_20170301_L LINE

Mode : Mode 1

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	*	0.15	49.94	-6.06	56.00	39.50	0.03	10.41	Average
2		0.15	53.64	-12.36	66.00	43.20	0.03	10.41	QP
3		1.21	18.03	-27.97	46.00	7.80	0.08	10.15	Average
4		1.21	33.93	-22.07	56.00	23.70	0.08	10.15	QP
5		1.51	21.05	-24.95	46.00	10.80	0.09	10.16	Average
6		1.51	34.65	-21.35	56.00	24.40	0.09	10.16	QP
7		1.87	20.77	-25.23	46.00	10.50	0.11	10.16	Average
8		1.87	35.37	-20.63	56.00	25.10	0.11	10.16	QP
9		2.46	20.65	-25.35	46.00	10.32	0.14	10.19	Average
10		2.46	35.62	-20.38	56.00	25.29	0.14	10.19	QP
11		2.64	20.44	-25.56	46.00	10.10	0.14	10.20	Average
12		2.64	34.04	-21.96	56.00	23.70	0.14	10.20	QP

Test Mode :	Mode 1	**Temperature :**	22~25℃
Test Engineer :	HaoHai YE	**Relative Humidity :**	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	GPRS850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable1 (Charging from Adapter1) + Earphone + Camera(Rear) for Sample 1		

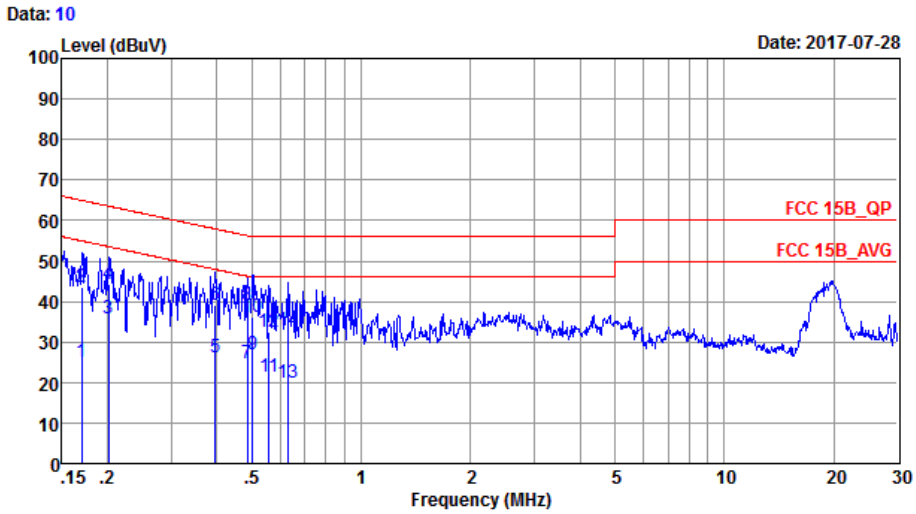


Site : CO01-SZ
Condition: FCC 15B QP LISN_20170301_N NEUTRAL

Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.15	49.14	-6.82	55.96	38.70	0.03	10.41	Average
2	0.15	52.74	-13.22	65.96	42.30	0.03	10.41	QP
3	0.17	19.67	-35.45	55.12	9.30	0.03	10.34	Average
4	0.17	26.07	-39.05	65.12	15.70	0.03	10.34	QP
5	0.20	39.55	-14.07	53.62	29.30	0.03	10.22	Average
6	0.20	42.75	-20.87	63.62	32.50	0.03	10.22	QP
7	0.24	23.05	-29.21	52.26	12.80	0.03	10.22	Average
8	0.24	36.65	-25.61	62.26	26.40	0.03	10.22	QP
9	0.44	15.51	-31.60	47.11	5.30	0.02	10.19	Average
10	0.44	22.71	-34.40	57.11	12.50	0.02	10.19	QP
11	2.64	18.93	-27.07	46.00	8.69	0.04	10.20	Average
12	2.64	34.93	-21.07	56.00	24.69	0.04	10.20	QP

Test Mode :	Mode 5	**Temperature :**	22~25℃
Test Engineer :	HaoHai YE	**Relative Humidity :**	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable1 (Data Link with Notebook) + Earphone + GPS RX for Sample 1		

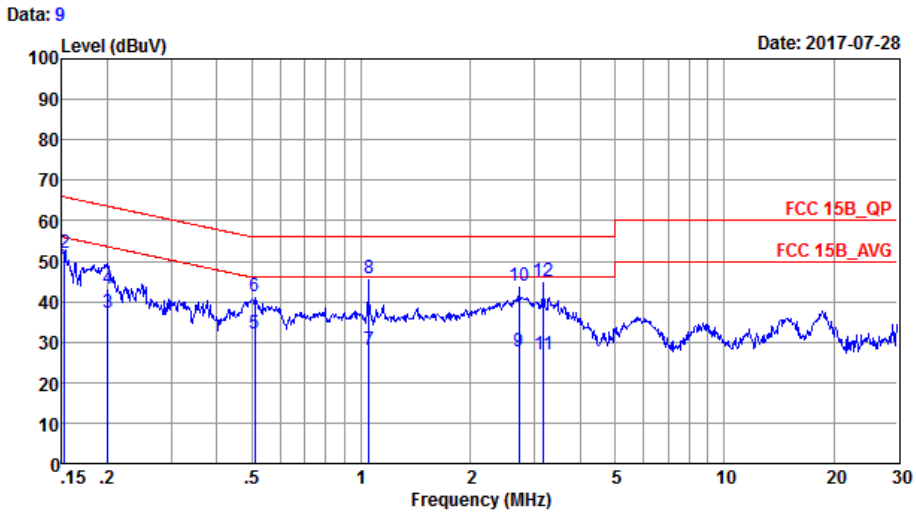


Site : CO01-SZ
Condition: FCC 15B QP LISN_20170301_L LINE

Mode : Mode 5

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17	25.06	-29.88	54.94	14.70	0.03	10.33	Average
2	0.17	43.56	-21.38	64.94	33.20	0.03	10.33	QP
3	0.20	35.65	-17.89	53.54	25.40	0.03	10.22	Average
4	0.20	44.15	-19.39	63.54	33.90	0.03	10.22	QP
5	0.40	26.22	-21.73	47.95	16.00	0.03	10.19	Average
6	0.40	39.12	-18.83	57.95	28.90	0.03	10.19	QP
7	0.49	24.90	-21.33	46.23	14.70	0.02	10.18	Average
8 *	0.49	39.20	-17.03	56.23	29.00	0.02	10.18	QP
9	0.50	27.00	-19.00	46.00	16.80	0.02	10.18	Average
10	0.50	36.00	-20.00	56.00	25.80	0.02	10.18	QP
11	0.56	21.40	-24.60	46.00	11.20	0.02	10.18	Average
12	0.56	32.50	-23.50	56.00	22.30	0.02	10.18	QP
13	0.63	19.89	-26.11	46.00	9.70	0.02	10.17	Average
14	0.63	32.69	-23.31	56.00	22.50	0.02	10.17	QP

Test Mode :	Mode 5	**Temperature :**	22~25℃
Test Engineer :	HaoHai YE	**Relative Humidity :**	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable1 (Data Link with Notebook) + Earphone + GPS RX for Sample 1		



Site : CO01-SZ
Condition: FCC 15B_QP LISN_20170301_N NEUTRAL

Mode : Mode 5

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.15	48.43	-7.44	55.87	38.00	0.03	10.40	Average
2	0.15	52.03	-13.84	65.87	41.60	0.03	10.40	QP
3	0.20	37.35	-16.23	53.58	27.10	0.03	10.22	Average
4	0.20	43.35	-20.23	63.58	33.10	0.03	10.22	QP
5	0.51	32.00	-14.00	46.00	21.80	0.02	10.18	Average
6	0.51	41.50	-14.50	56.00	31.30	0.02	10.18	QP
7	1.05	28.00	-18.00	46.00	17.80	0.05	10.15	Average
8	1.05	45.80	-10.20	56.00	35.60	0.05	10.15	QP
9	2.72	27.83	-18.17	46.00	17.60	0.03	10.20	Average
10	2.72	43.93	-12.07	56.00	33.70	0.03	10.20	QP
11	3.17	26.85	-19.15	46.00	16.60	0.03	10.22	Average
12	3.17	44.85	-11.15	56.00	34.60	0.03	10.22	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:

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

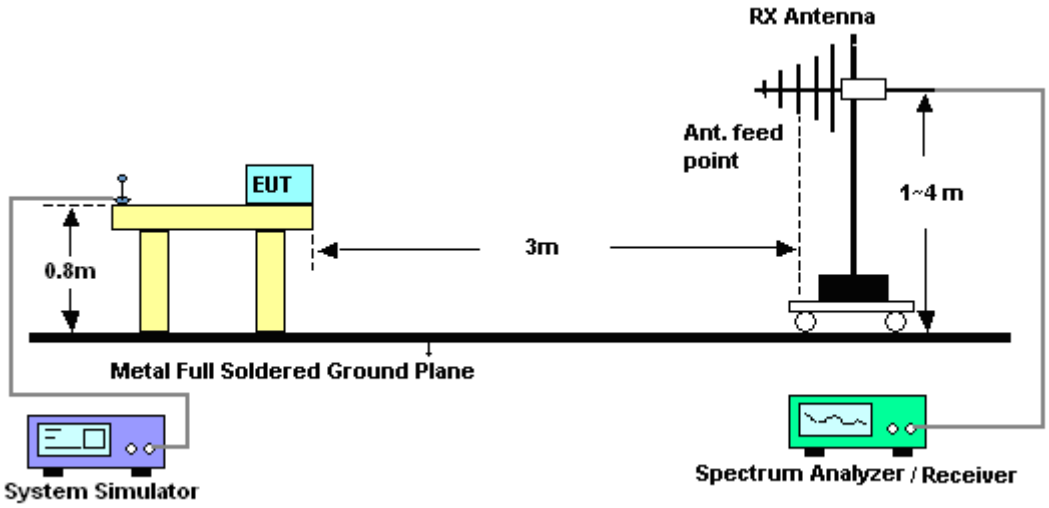
The measuring equipment is listed in the section 4 of this test report.

3.2.3. Test Procedures

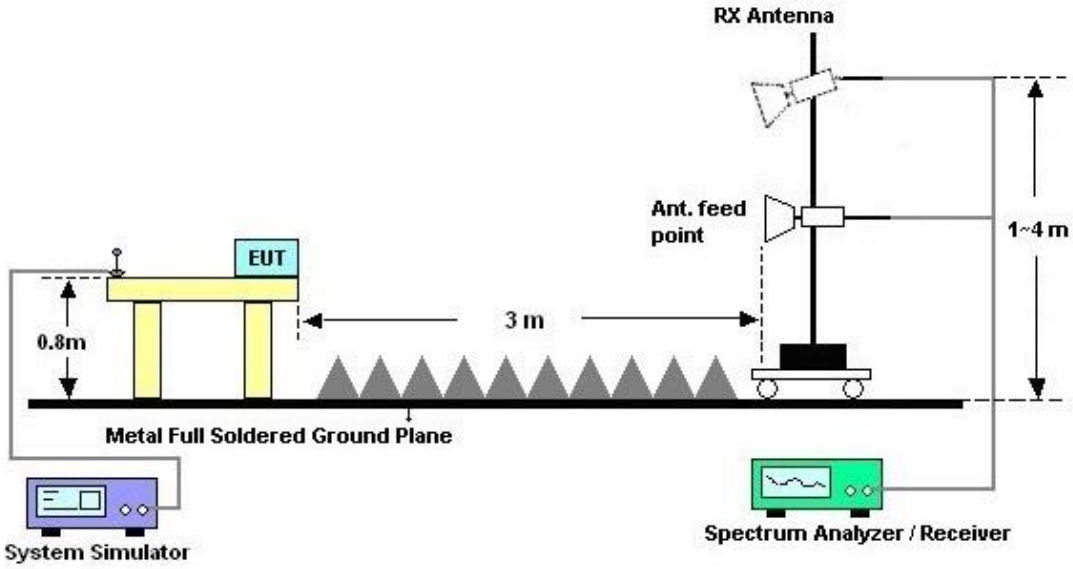
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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

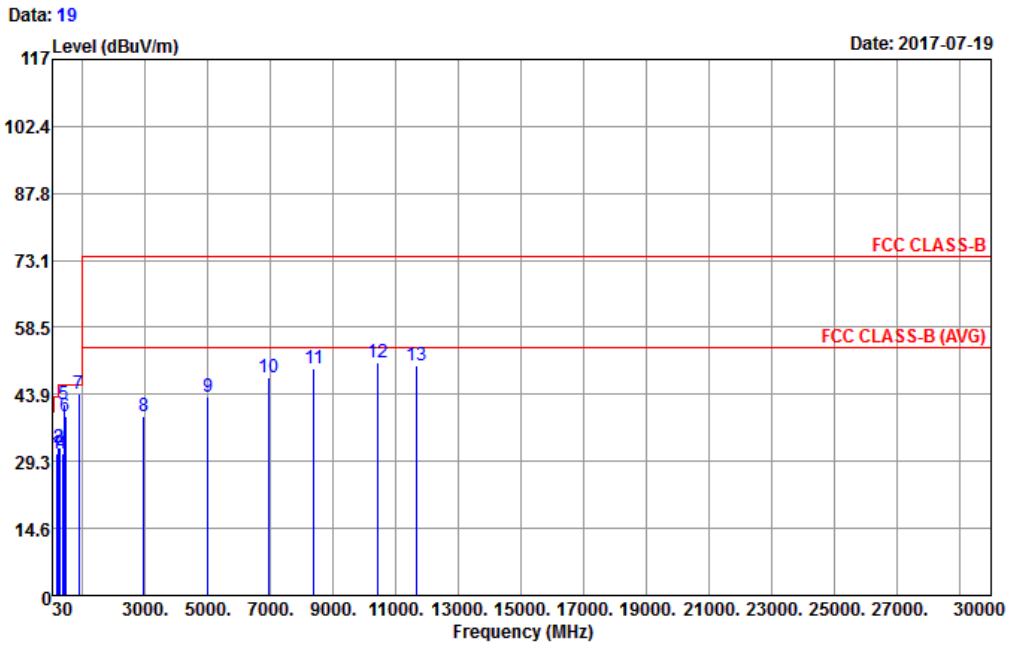


For radiated emissions above 1GHz



3.2.5. Test Result of Radiated Emission

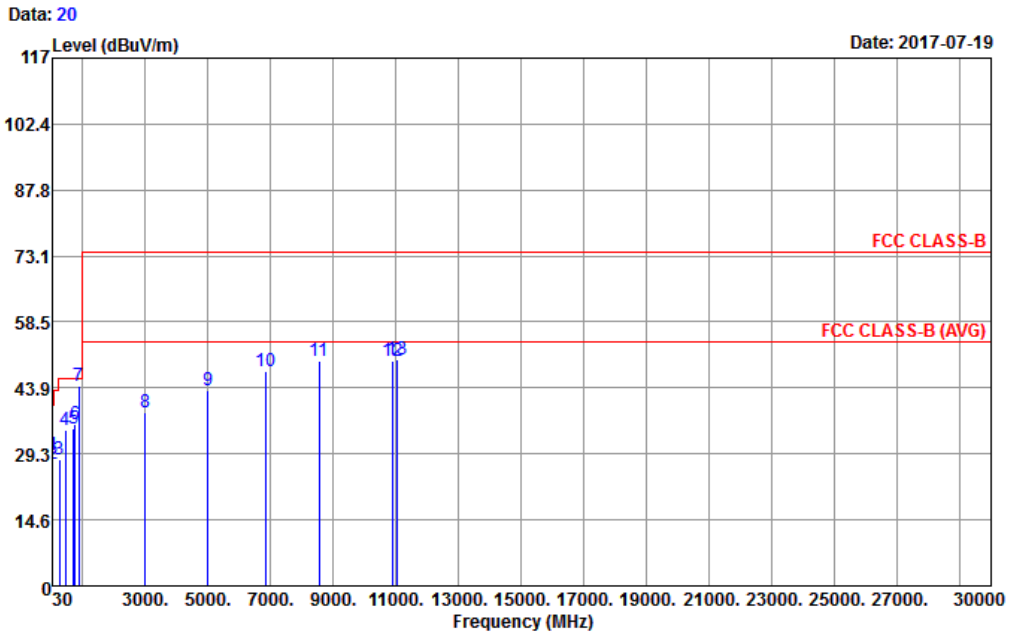
Test Mode :	Mode 1	**Temperature :**	24~25℃
Test Engineer :	LiangliangLu	**Relative Humidity :**	48~49%
Test Distance :	3m	**Polarization :**	Horizontal
Function Type :	GPRS850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable1 (Charging from Adapter1) + Earphone + Camera(Rear) for Sample 1		
Remark :	#7 is system simulator signal which can be ignored.		



Site : 03CH03-SZ
Condition : FCC CLASS-B 3m LF35408CBL6112D_6 HORIZONTAL

	Freq	Level	Over Limit	Limit Line	Read 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	149.88	30.87	-12.63	43.50	43.31	17.80	1.28	31.52	---	---	Peak
2	242.76	32.41	-13.59	46.00	44.53	17.63	1.63	31.38	---	---	Peak
3	250.05	32.11	-13.89	46.00	43.84	18.00	1.66	31.39	---	---	Peak
4	349.70	30.98	-15.02	46.00	39.87	20.40	1.98	31.27	---	---	Peak
5	400.10	41.66	-4.34	46.00	44.81	25.98	2.12	31.25	115	60	Peak
6	449.80	39.11	-6.89	46.00	43.10	24.90	2.26	31.15	---	---	Peak
7	881.00	44.10			43.69	28.35	3.27	31.21	---	---	Peak
8	2942.00	39.06	-34.94	74.00	62.85	28.51	6.34	58.64	---	---	Peak
9	4986.00	43.48	-30.52	74.00	61.19	31.96	8.65	58.32	---	---	Peak
10	6942.00	47.48	-26.52	74.00	60.94	35.69	10.06	59.21	---	---	Peak
11	8378.00	49.49	-24.51	74.00	61.17	37.32	10.71	59.71	---	---	Peak
12	10402.00	50.90	-23.10	74.00	61.27	38.82	11.64	60.83	100	360	Peak
13	11662.00	50.19	-23.81	74.00	58.59	39.18	12.10	59.68	---	---	Peak

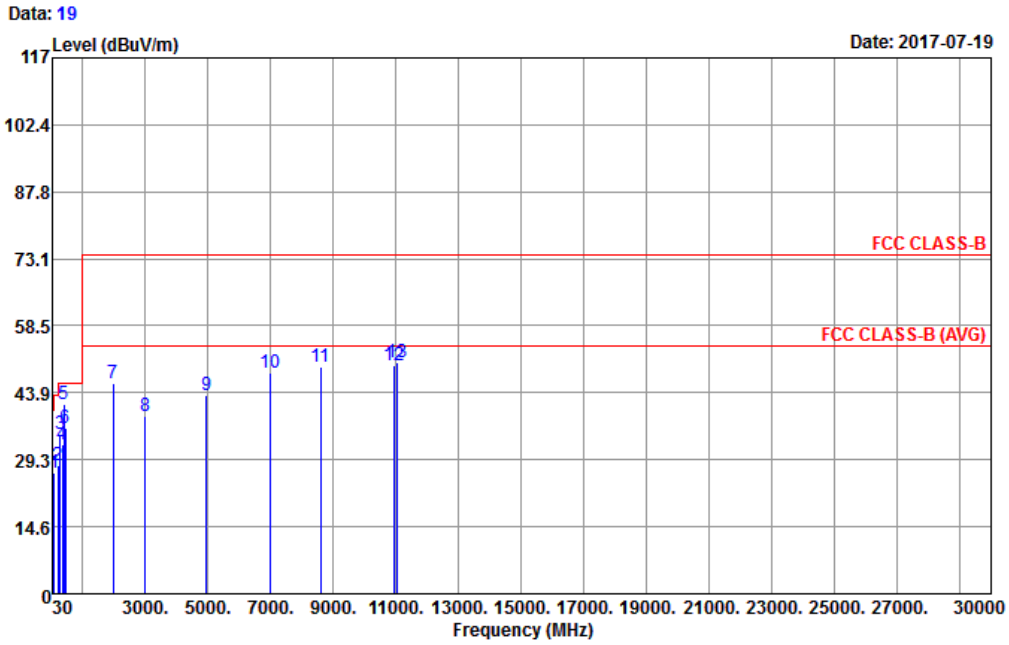
Test Mode :	Mode 1	**Temperature :**	24~25°C
Test Engineer :	LiangliangLu	**Relative Humidity :**	48~49%
Test Distance :	3m	**Polarization :**	Vertical
Function Type :	GPRS850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable1 (Charging from Adapter1) + Earphone + Camera(Rear) for Sample 1		
Remark :	#7 is system simulator signal which can be ignored.		



Site : 03CH03-SZ
Condition : FCC CLASS-B 3m LF35408CBL6112D_6 VERTICAL

	Freq	Level	Over Limit	Limit Line	ReadLevel	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	28.98	-11.02	40.00	33.72	26.70	0.56	32.00	---	---	Peak
2	47.28	27.16	-12.84	40.00	40.53	17.90	0.70	31.97	---	---	Peak
3	250.05	27.89	-18.11	46.00	39.62	18.00	1.66	31.39	---	---	Peak
4	449.80	34.64	-11.36	46.00	38.63	24.90	2.26	31.15	---	---	Peak
5	699.70	34.86	-11.14	46.00	35.60	27.65	2.86	31.25	---	---	Peak
6	750.10	35.82	-10.18	46.00	36.77	27.30	2.98	31.23	130	200	Peak
7	881.00	44.38			43.97	28.35	3.27	31.21	---	---	Peak
8	2986.00	38.54	-35.46	74.00	62.07	28.58	6.55	58.66	---	---	Peak
9	4994.00	43.37	-30.63	74.00	61.04	32.00	8.65	58.32	---	---	Peak
10	6836.00	47.64	-26.36	74.00	61.58	35.21	10.03	59.18	---	---	Peak
11	8542.00	50.02	-23.98	74.00	61.55	37.34	10.80	59.67	---	---	Peak
12	10906.00	49.93	-24.07	74.00	58.22	39.73	11.83	59.85	---	---	Peak
13	11056.00	50.19	-23.81	74.00	58.14	39.82	11.89	59.66	100	0	Peak

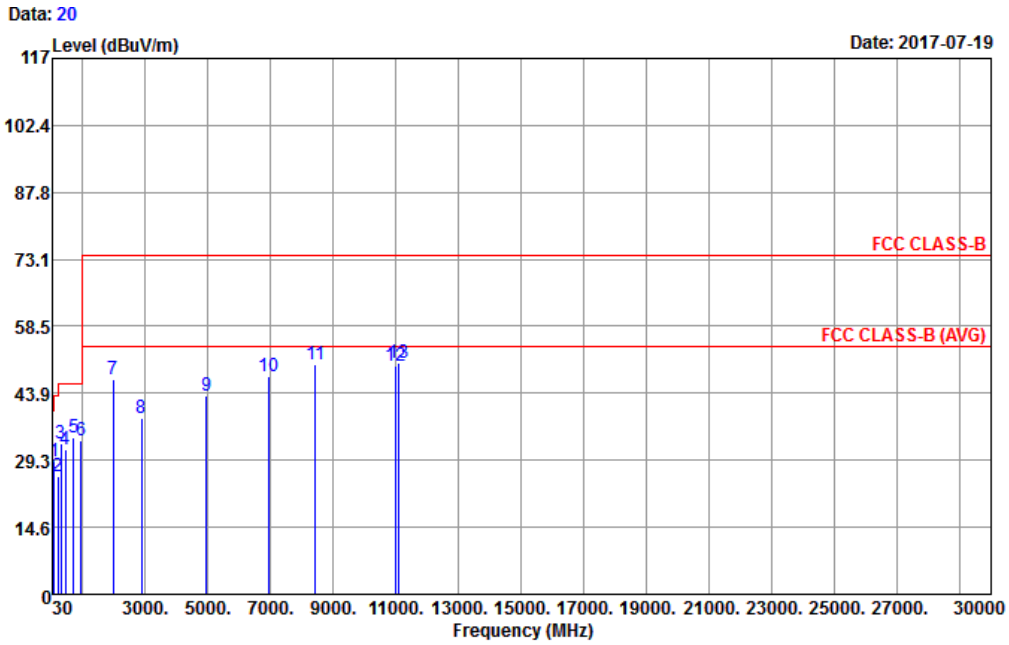
Test Mode :	Mode 5	**Temperature :**	24~25°C
Test Engineer :	LiangliangLu	**Relative Humidity :**	48~49%
Test Distance :	3m	**Polarization :**	Horizontal
Function Type :	LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable1 (Data Link with Notebook) + Earphone + GPS RX for Sample 1		
Remark :	#7 is system simulator signal which can be ignored.		



Site : 03CH03-SZ
Condition : FCC CLASS-B 3m LF35408CBL6112D_6 HORIZONTAL

	Freq	Level	Over Limit	Limit Line	ReadLevel	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	99.93	26.38	-17.12	43.50	38.29	18.80	1.03	31.74	---	---	Peak
2	200.10	28.10	-15.40	43.50	42.36	15.60	1.47	31.33	---	---	Peak
3	279.48	34.94	-11.06	46.00	45.91	18.65	1.75	31.37	---	---	Peak
4	349.70	32.49	-13.51	46.00	41.38	20.40	1.98	31.27	---	---	Peak
5	400.10	41.54	-4.46	46.00	44.69	25.98	2.12	31.25	155	80	Peak
6	449.80	36.21	-9.79	46.00	40.20	24.90	2.26	31.15	---	---	Peak
7	1972.00	45.96			74.00	25.95	4.55	58.54	---	---	Peak
8	2988.00	38.69	-35.31	74.00	62.22	28.58	6.55	58.66	---	---	Peak
9	4950.00	43.41	-30.59	74.00	61.22	31.88	8.64	58.33	---	---	Peak
10	6990.00	48.21	-25.79	74.00	61.50	35.83	10.10	59.22	---	---	Peak
11	8594.00	49.49	-24.51	74.00	60.96	37.38	10.84	59.69	---	---	Peak
12	10920.00	49.80	-24.20	74.00	58.02	39.76	11.83	59.81	---	---	Peak
13	11026.00	50.42	-23.58	74.00	58.35	39.86	11.87	59.66	165	30	Peak

Test Mode :	Mode 5	**Temperature :**	24~25°C
Test Engineer :	LiangliangLu	**Relative Humidity :**	48~49%
Test Distance :	3m	**Polarization :**	Vertical
Function Type :	LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable1 (Data Link with Notebook) + Earphone + GPS RX for Sample 1		
Remark :	#7 is system simulator signal which can be ignored.		



Site : 03CH03-SZ
Condition : FCC CLASS-B 3m LF35408CBL6112D_6 VERTICAL

	Freq	Level	Over Limit	Limit Line	Read 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	99.66	29.09	-14.41	43.50	41.01	18.80	1.03	31.75	---	---	Peak
2	199.29	25.62	-17.88	43.50	39.88	15.60	1.47	31.33	---	---	Peak
3	298.65	33.07	-12.93	46.00	43.53	19.08	1.82	31.36	---	---	Peak
4	449.80	31.70	-14.30	46.00	35.69	24.90	2.26	31.15	---	---	Peak
5	699.70	34.34	-11.66	46.00	35.08	27.65	2.86	31.25	120	30	Peak
6	950.30	33.53	-12.47	46.00	31.92	29.42	3.39	31.20	---	---	Peak
7	1972.50	46.87			74.91	25.95	4.55	58.54	---	---	Peak
8	2882.00	38.30	-35.70	74.00	62.58	28.44	5.91	58.63	---	---	Peak
9	4938.00	43.50	-30.50	74.00	61.31	31.88	8.64	58.33	---	---	Peak
10	6958.00	47.62	-26.38	74.00	61.06	35.69	10.08	59.21	---	---	Peak
11	8434.00	50.04	-23.96	74.00	61.65	37.31	10.77	59.69	---	---	Peak
12	10986.00	50.01	-23.99	74.00	57.98	39.87	11.86	59.70	---	---	Peak
13	11096.00	50.40	-23.60	74.00	58.37	39.78	11.90	59.65	170	140	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;	Jan. 06, 2017	Jul. 28, 2017	Jan. 05, 2018	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Jan. 05, 2017	Jul. 28, 2017	Jan. 04, 2018	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	MessTec	3816/2SH	00103892	9kHz~30MHz	Jan. 05, 2017	Jul. 28, 2017	Jan. 04, 2018	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 19, 2017	Jul. 28, 2017	Jul. 18, 2018	Conduction (CO01-SZ)
Pulse Limiter	COM-POWER	LIT-153 Transient Limiter	53139	150kHz~30MHz	Oct. 11, 2016	Jul. 28, 2017	Oct. 10, 2017	Conduction (CO01-SZ)
RF Cable	Woken	B0720#0001	CO01SZ0007	150kHz~30MHz	Oct. 08, 2016	Jul. 28, 2017	Oct. 07, 2017	Conduction (CO01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 20, 2017	Jul. 19, 2017~ Jul. 21, 2017	Apr. 19, 2018	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 20, 2017	Jul. 19, 2017~ Jul. 21, 2017	Apr. 19, 2018	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	May 14, 2017	Jul. 19, 2017~ Jul. 21, 2017	May 13, 2018	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1285	1GHz~18GHz	Jul. 09, 2017	Jul. 19, 2017~ Jul. 21, 2017	Jul. 08, 2018	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz-40GHz	Aug. 10, 2016	Jul. 19, 2017~ Jul. 21, 2017	Aug. 09, 2017	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz ~3000MHz	Oct. 11, 2016	Jul. 19, 2017~ Jul. 21, 2017	Oct. 10, 2017	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 11, 2016	Jul. 19, 2017~ Jul. 21, 2017	Oct. 10, 2017	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1988315	18GHz~40GHz	Jul. 28, 2016	Jul. 19, 2017~ Jul. 21, 2017	Jul. 27, 2017	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Jul. 19, 2017~ Jul. 21, 2017	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jul. 19, 2017~ Jul. 21, 2017	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jul. 19, 2017~ Jul. 21, 2017	NCR	Radiation (03CH03-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))	2.5dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.1dB

Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

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

Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

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