FCC Test Report

APPLICANT	:	**Lenovo(Shanghai) Electronics Technology Co., Ltd.**
EQUIPMENT	:	**Portable Tablet Computer**
BRAND NAME	:	**Lenovo**
MODEL NAME	:	**Lenovo TB-X505L**
FCC ID	:	**O57TBX505L**
STANDARD	:	**47 CFR Part 15 Subpart B**
CLASSIFICATION	:	**Certification**

The product was received on Jan. 25, 2019 and testing was completed on Mar. 24, 2019. We, Sporton International (Kunshan) 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 (Kunshan) Inc., the test report shall not be reproduced except in full.

James Huang

NVLAP® TESTING NVLAP LAB CODE 600155-0

Approved by: James Huang / Manager

Sporton International (Kunshan) Inc.
No. 1098, Pengxi North Road, Kunshan Economic Development Zone,
Jiangsu Province 215335, China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC912504-01	Rev. 01	Initial issue of report	Apr. 29, 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 10.58 dB at 0.489 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 3.09 dB at 240.490 MHz

1. General Description

1.1. Applicant

Lenovo(Shanghai) Electronics Technology Co., Ltd.
NO.68 BUILDING, 199 FENJU RD, 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-X505L
FCC ID	O57TBX505L
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 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR / EDR / LE FM Receiver/GNSS
IMEI Code	Conduction: 865781040011057 for Sample 1 865781040007683 for Sample 2 865781040010364 for Sample 3 865781040007022 for Sample 4 865781040005828 for Sample 5 865781040006669 for Sample 6 865781040005364 for Sample 7 Radiation: 865781040013244 for Sample 1 865781040007683 for Sample 2 865781040010364 for Sample 3 865781040007022 for Sample 4 865781040005828 for Sample 5 865781040006669 for Sample 6 865781040005364 for Sample 7
HW Version	Lenovo Tablet TB-X505L
SW Version	TB-X505L_RF01_190118
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or

user's manual for more detailed description.

2. There are seven types of EUT, the differences of them described on operate description submitted separately. According to the difference, we choose the sample 1 to full test and the sample 2/3/4/5/6/7 are verified the difference with the sample 1.

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 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: 2572.5 MHz ~ 2617.5 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
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 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: 2572.5 MHz ~ 2617.5 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 FM : 88 MHz ~ 108 MHz
Antenna Type	WWAN : Fixed Internal Antenna WLAN : FPC Antenna Bluetooth : FPC Antenna GNSS: FPC Antenna FM : External Handset 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 (16QAM uplink is not supported)

	DC-HSDPA : 64QAM LTE: QPSK / 16QAM 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 GNSS : BPSK FM

Note: GNSS=BDS+GLONASS+GPS

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(US)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-41
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 1(EU)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-42
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 1(UK)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-43
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 1(IN)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-44
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 1(AU)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-45
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 1(AR)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-46
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 1(KR)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-49
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 2(US)	**Brand Name**	Lenovo (Acbel)	**Model Name**	SC-41
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 2(EU)	**Brand Name**	Lenovo (Acbel)	**Model Name**	SC-42
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 2(UK)	**Brand Name**	Lenovo (Acbel)	**Model Name**	SC-43
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 2(AU)	**Brand Name**	Lenovo (Acbel)	**Model Name**	SC-45
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		

AC Adapter 2(AR)	**Brand Name**	Lenovo (Acbel)	**Model Name**	SC-46
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
Battery 1	**Brand Name**	Lenovo (NVT+ATL)	**Model Name**	L18D1P32
	Power Rating	3.85Vdc,4850mAh	**Type**	Li-ion, Polymer
Battery 2	**Brand Name**	Lenovo (Suwnoda + Liwnon)	**Model Name**	L18D1P32
	Power Rating	3.85Vdc,4850mAh	**Type**	Li-ion, Polymer
USB Cable 1	**Brand Name**	Lenovo (LiQI)	**Model Name**	Lqc0350083
	Signal Line Type	0.7 meter, shielded cable, without ferrite core		
USB Cable 2	**Brand Name**	Lenovo (JIEYE)	**Model Name**	JY-C003-292
	Signal Line Type	0.7 meter, shielded cable, without ferrite core		

1.7. Test Location

Sporton International (Kunshan) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0).

Test Site	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone, Jiangsu Province 215335, China TEL : 86-512-57900158 FAX : 86-512-57900958		
Test Site No.	**Sporton Site No.**	**FCC designation No.**	**FCC Test Firm Registration No.**
	CO01-KS 03CH02-KS	CN5013	630927

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).

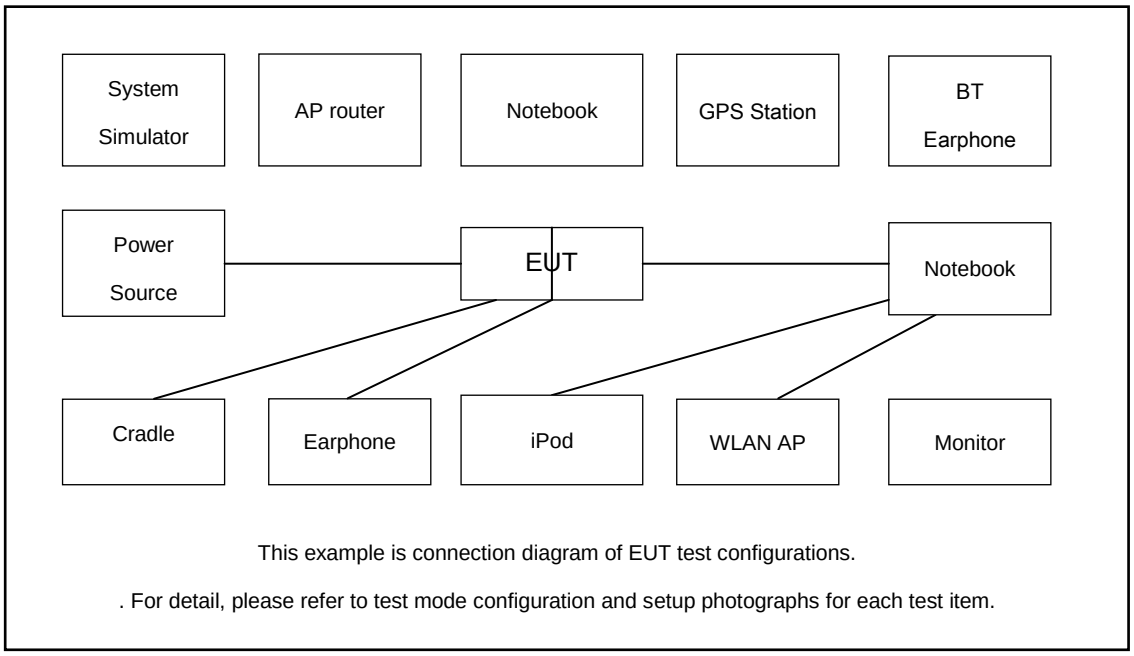
Test Items	Function Type
AC Conducted Emission	Mode 1 : GSM850 (GPRS 8) (Middle) Rx + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Earphone + Battery 1 + USB Cable 1(Charging from Adapter 1) for Sample 1
	Mode 2 : GSM1900 (GPRS 8) Rx + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Earphone + Battery 1 + USB Cable 2(Charging from Adapter 2) for Sample 1
	Mode 3 : WCDMA Band V(Low) Rx + Bluetooth Idle + WLAN (2.4G) Idle + MPEG4(Run Color Bar) + Earphone + Battery 1 + USB Cable 1(Charging from Adapter 1) for Sample 1
	Mode 4 : LTE Band 5(High) Rx + Bluetooth Idle + WLAN (5G) Idle + FM RX(98MHz) + Earphone + Battery 1 + USB Cable 1(Charging from Adapter 1) for Sample 1
	Mode 5 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 1 + USB Cable 1(Data Link with Notebook) for Sample 1
	Mode 6 : LTE Band 7 Rx + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Earphone + Battery 1 + USB Cable 2(Data Link with Notebook) for Sample 1
	Mode 7 : GSM850 (GPRS 8) (Middle) Rx + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Earphone + Battery 2 + USB Cable 1(Charging from Adapter 1) for Sample 2
	Mode 8 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 2 + USB Cable 1(Data Link with Notebook) for Sample 2
	Mode 9 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 1 + USB Cable 1(Data Link with Notebook) for Sample 3
	Mode 10 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 1 + USB Cable 1(Data Link with Notebook) for Sample 4
	Mode 11 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 2 + USB Cable 1(Data Link with Notebook) for Sample 5
	Mode 12 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 1 + USB Cable 1(Data Link with Notebook) for Sample 6
	Mode 13 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 2 + USB Cable 1(Data Link with Notebook) for Sample 7

Radiated Emissions	Mode 1 : GSM850 (GPRS 8) (Middle) Rx + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Earphone + Battery 1 + USB Cable 1(Charging from Adapter 1) for Sample 1 Mode 2 : GSM1900 (GPRS 8) Rx + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Earphone + Battery 1 + USB Cable 2(Charging from Adapter 2) for Sample 1 Mode 3 : WCDMA Band V(Low) Rx + Bluetooth Idle + WLAN (2.4G) Idle + MPEG4(Run Color Bar) + Earphone + Battery 1 + USB Cable 2(Charging from Adapter 2) for Sample 1 Mode 4 : LTE Band 5(High) Rx + Bluetooth Idle + WLAN (5G) Idle + FM RX(88MHz) + Earphone + Battery 1 + USB Cable 2(Charging from Adapter 2) for Sample 1 Mode 5 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 1 + USB Cable 1(Data Link with Notebook) for Sample 1 Mode 6 : LTE Band 7 Rx + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Earphone + Battery 1 + USB Cable 2(Data Link with Notebook) for Sample 1 Mode 7 : WCDMA Band II Rx + Bluetooth Idle + WLAN (2.4G) Idle + OTG Cable(Data Link with U Disk) + Earphone + Battery 1 for Sample 1 Mode 8 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Front) + Earphone + Battery 2 + USB Cable 1(Charging from Adapter 2) for Sample 2 Mode 9 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 2 + USB Cable 1(Data Link with Notebook) for Sample 2 Mode 10 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 1 + USB Cable 1(Data Link with Notebook) for Sample 3 Mode 11 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 1 + USB Cable 1(Data Link with Notebook) for Sample 4 Mode 12 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 2 + USB Cable 1(Data Link with Notebook) for Sample 5 Mode 13 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 1 + USB Cable 1(Data Link with Notebook) for Sample 6 Mode 14 : LTE Band 4 Rx + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone + Battery 2 + USB Cable 1(Data Link with Notebook) for Sample 7

Remark:

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 7; only the test data of this mode is reported.
3. Data Link with Notebook / U disk means data application transferred mode between EUT and Notebook / U disk.
4. Pre-scanned Low/Middle/High channel for GSM/WCDMA/LTE Band 5, FM Rx, the worst channel was recorded in this report.

2.2. Connection Diagram of Test System



This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

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.	Vector Signal Generator	R&S	SMBV100A	258305	N/A	Unshielded,1.8m
3.	Signal Generator	R&S	GSS7000	N/A	N/A	Unshielded,1.8m
4.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded,1.8m
5.	WLAN AP	TP-LINK	TL-WDR5600	N/A	N/A	Unshielded,1.8m
6.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A
7.	Bluetooth Earphone	Lenovo	LYEJ02LM	N/A	N/A	N/A
8.	Earphone	Lenovo	P121	N/A	Unshielded,1.2m	N/A
9.	Notebook	Lenovo	G480	N/A	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
10.	Notebook	DELL	MT320	N/A	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
11.	SD Card	Kingston	8GB	N/A	N/A	N/A
12.	SD Card	SanDisk	Uitra	N/A	N/A	N/A
13.	iPod	Apple	A1199	N/A	Unshielded,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/U disk and EUT via USB cable/OTG cable.
2. Turn on camera to capture images.
3. Turn on MPEG4 function.
4. Turn on FM 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.

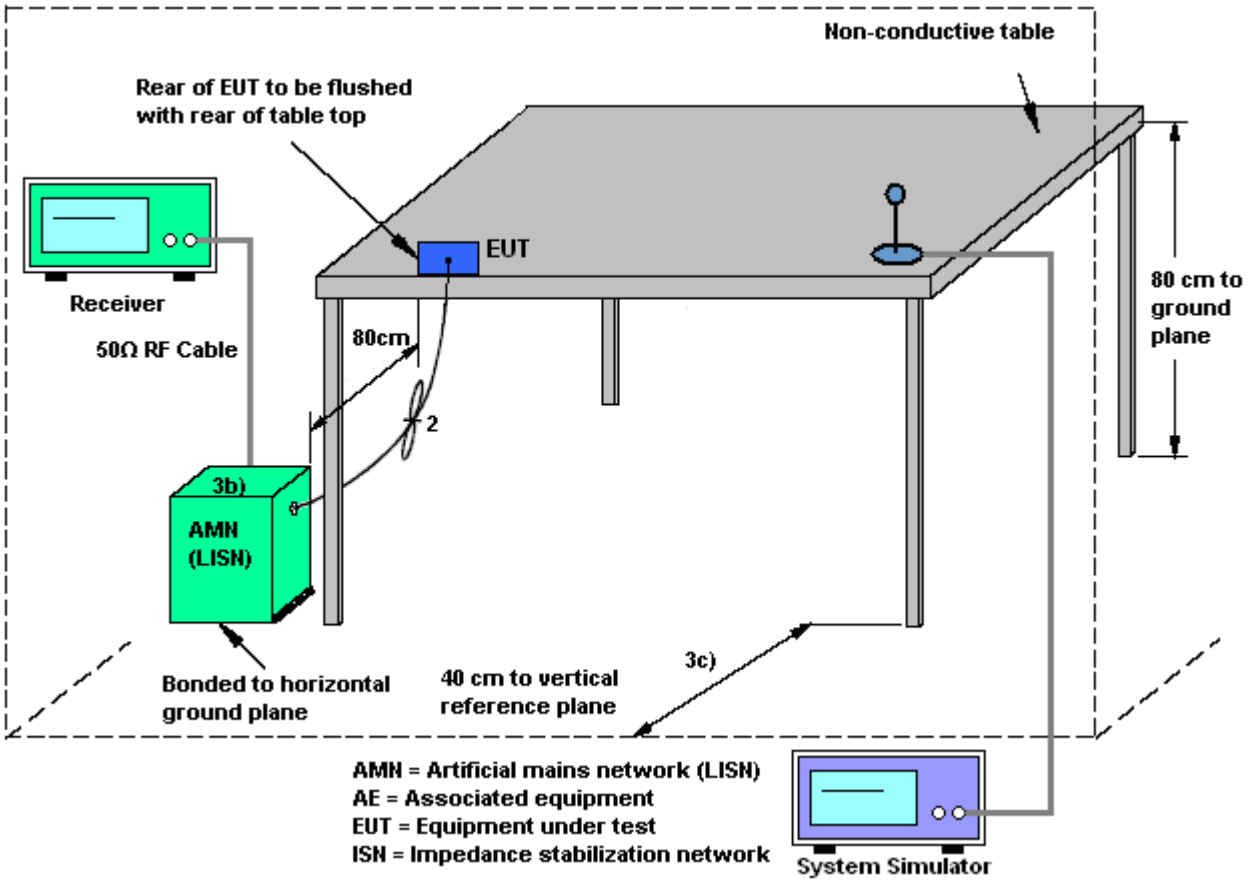
3.1.2 Measuring Instruments

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

3.1.3 Test Procedure

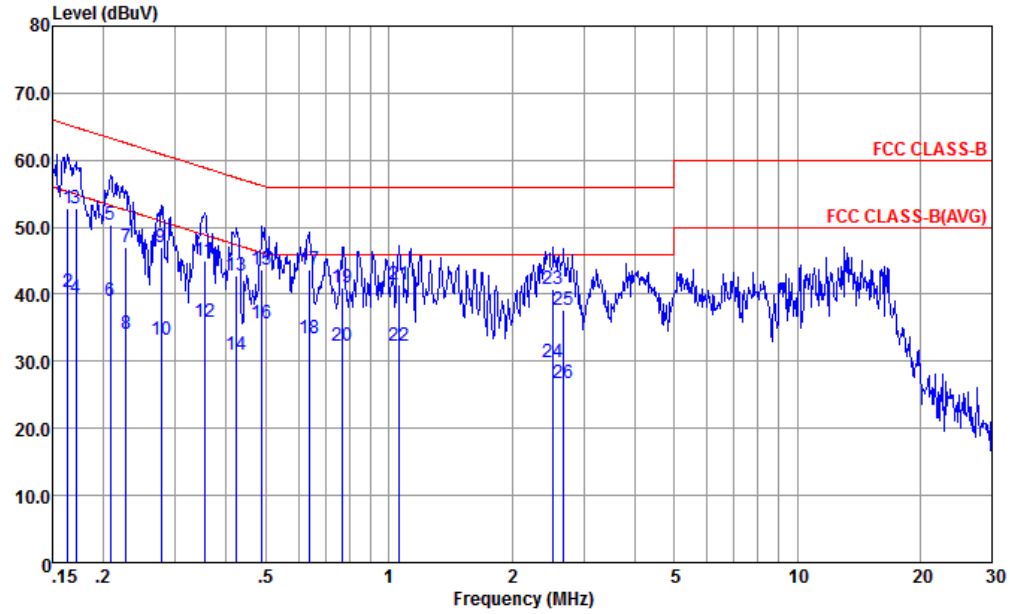
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
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 :	Amos Zhang	**Temperature :**	25.3~26.2℃
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line

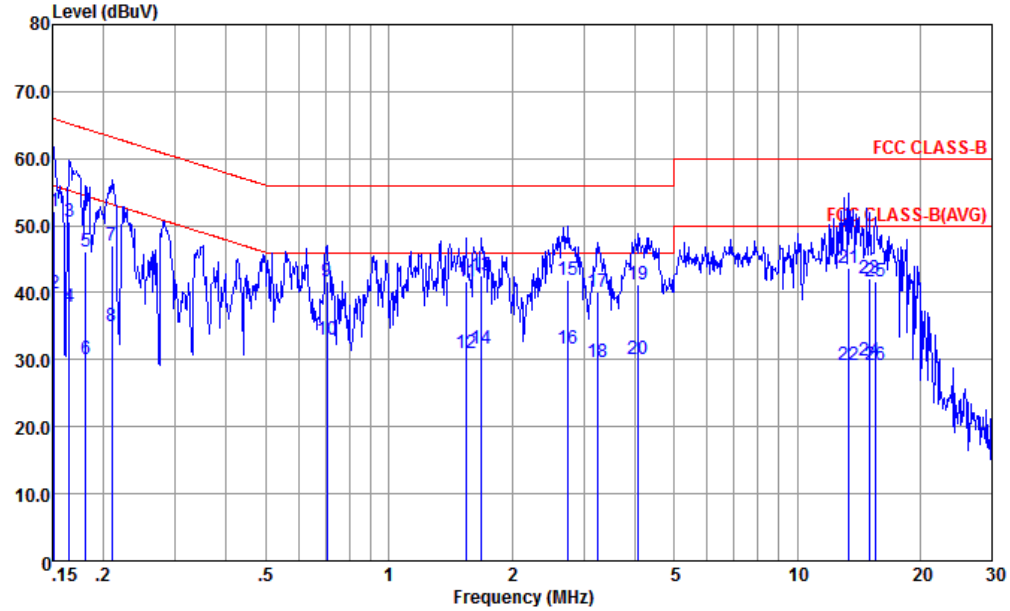


Site : CO01-KS
Condition : FCC CLASS-B LISN-L-181119-060105 LINE
Project : (FC) 912504-01

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.163	52.74	-12.56	65.30	42.19	0.10	10.45	QP
2		0.163	40.44	-14.86	55.30	29.89	0.10	10.45	Average
3		0.171	52.73	-12.17	64.90	42.20	0.10	10.43	QP
4		0.171	39.43	-15.47	54.90	28.90	0.10	10.43	Average
5		0.208	50.38	-12.89	63.27	39.90	0.12	10.36	QP
6		0.208	39.08	-14.19	53.27	28.60	0.12	10.36	Average
7		0.227	47.07	-15.50	62.57	36.59	0.13	10.35	QP
8		0.227	34.07	-18.50	52.57	23.59	0.13	10.35	Average
9		0.277	47.06	-13.84	60.90	36.60	0.14	10.32	QP
10		0.277	33.26	-17.64	50.90	22.80	0.14	10.32	Average
11		0.354	45.03	-13.84	58.87	34.60	0.15	10.28	QP
12		0.354	35.93	-12.94	48.87	25.50	0.15	10.28	Average
13		0.424	42.72	-14.65	57.37	32.30	0.16	10.26	QP
14		0.424	31.02	-16.35	47.37	20.60	0.16	10.26	Average
15		0.489	43.61	-12.58	56.19	33.20	0.17	10.24	QP
16	*	0.489	35.61	-10.58	46.19	25.20	0.17	10.24	Average
17		0.637	43.62	-12.38	56.00	33.20	0.18	10.24	QP

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
18	0.637	33.32	-12.68	46.00	22.90	0.18	10.24	Average
19	0.771	41.03	-14.97	56.00	30.60	0.19	10.24	QP
20	0.771	32.33	-13.67	46.00	21.90	0.19	10.24	Average
21	1.060	41.54	-14.46	56.00	31.11	0.20	10.23	QP
22	1.060	32.34	-13.66	46.00	21.91	0.20	10.23	Average
23	2.527	40.76	-15.24	56.00	30.29	0.23	10.24	QP
24	2.527	29.76	-16.24	46.00	19.29	0.23	10.24	Average
25	2.678	37.67	-18.33	56.00	27.20	0.23	10.24	QP
26	2.678	26.77	-19.23	46.00	16.30	0.23	10.24	Average

Test Engineer :	Amos Zhang	**Temperature :**	25.3~26.2℃
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral



Site : CO01-KS
Condition : FCC CLASS-B LISN-N-181119-060105 NEUTRAL
Project : (FC) 912504-01

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.152	52.26	-13.65	65.91	41.60	0.18	10.48	QP
2		0.152	39.96	-15.95	55.91	29.30	0.18	10.48	Average
3		0.165	50.52	-14.69	65.21	39.90	0.18	10.44	QP
4		0.165	37.82	-17.39	55.21	27.20	0.18	10.44	Average
5		0.181	46.08	-18.38	64.46	35.50	0.18	10.40	QP
6		0.181	30.18	-24.28	54.46	19.60	0.18	10.40	Average
7		0.209	47.13	-16.10	63.23	36.60	0.17	10.36	QP
8		0.209	35.03	-18.20	53.23	24.50	0.17	10.36	Average
9		0.705	41.58	-14.42	56.00	31.20	0.14	10.24	QP
10	*	0.705	32.98	-13.02	46.00	22.60	0.14	10.24	Average
11		1.552	41.57	-14.43	56.00	31.20	0.14	10.23	QP
12		1.552	30.97	-15.03	46.00	20.60	0.14	10.23	Average
13		1.689	42.67	-13.33	56.00	32.29	0.15	10.23	QP
14		1.689	31.67	-14.33	46.00	21.29	0.15	10.23	Average
15		2.750	42.00	-14.00	56.00	31.60	0.16	10.24	QP
16		2.750	31.60	-14.40	46.00	21.20	0.16	10.24	Average
17		3.241	40.01	-15.99	56.00	29.60	0.17	10.24	QP

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
18	3.241	29.71	-16.29	46.00	19.30	0.17	10.24	Average
19	4.092	41.33	-14.67	56.00	30.91	0.17	10.25	QP
20	4.092	30.03	-15.97	46.00	19.61	0.17	10.25	Average
21	13.408	43.71	-16.29	60.00	33.20	0.13	10.38	QP
22	13.408	29.11	-20.89	50.00	18.60	0.13	10.38	Average
23	15.066	42.12	-17.88	60.00	31.60	0.12	10.40	QP
24	15.066	29.82	-20.18	50.00	19.30	0.12	10.40	Average
25	15.552	41.73	-18.27	60.00	31.20	0.12	10.41	QP
26	15.552	29.13	-20.87	50.00	18.60	0.12	10.41	Average

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

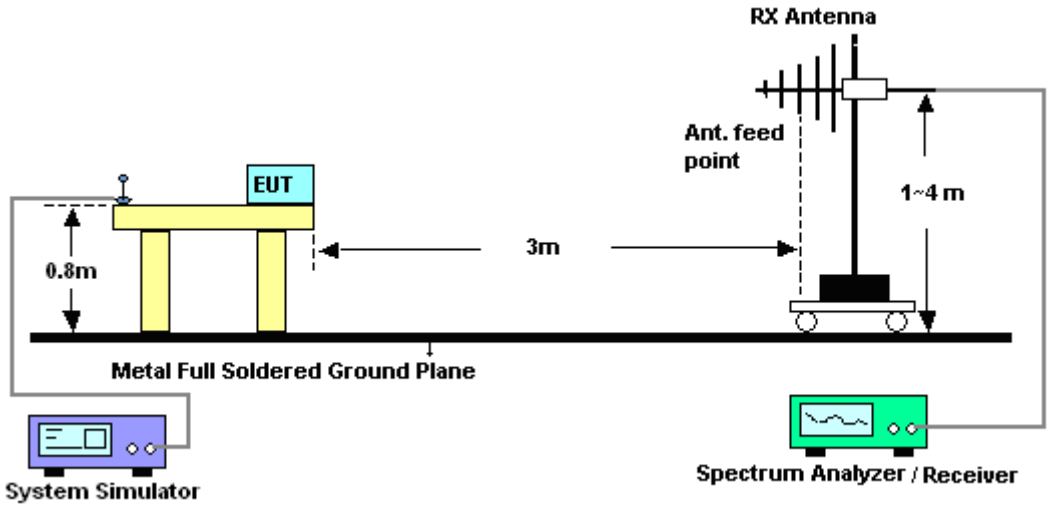
The measuring equipment is listed in the section 4 of this test report.

3.2.3. Test Procedures

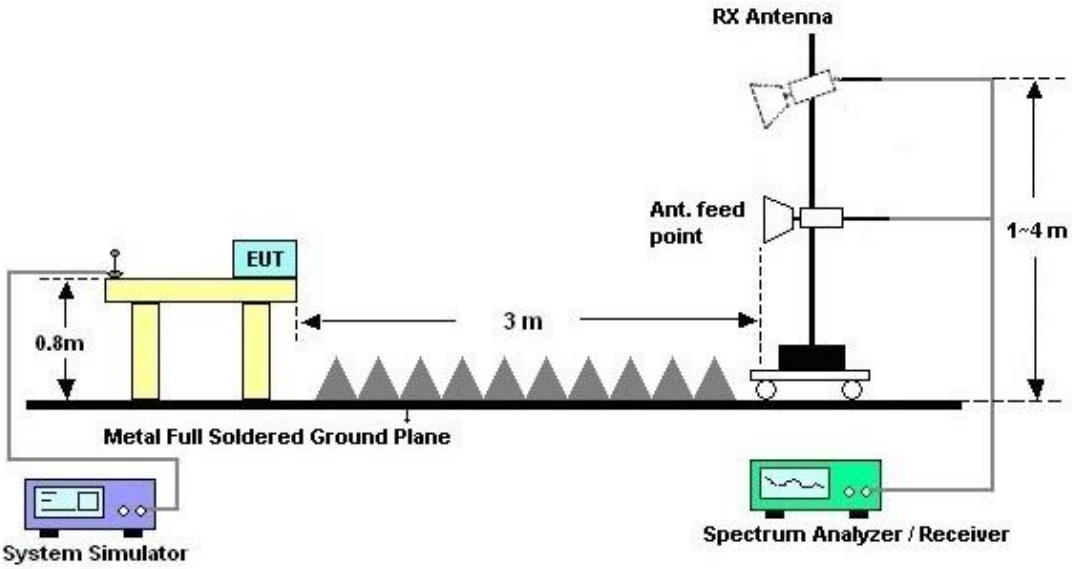
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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

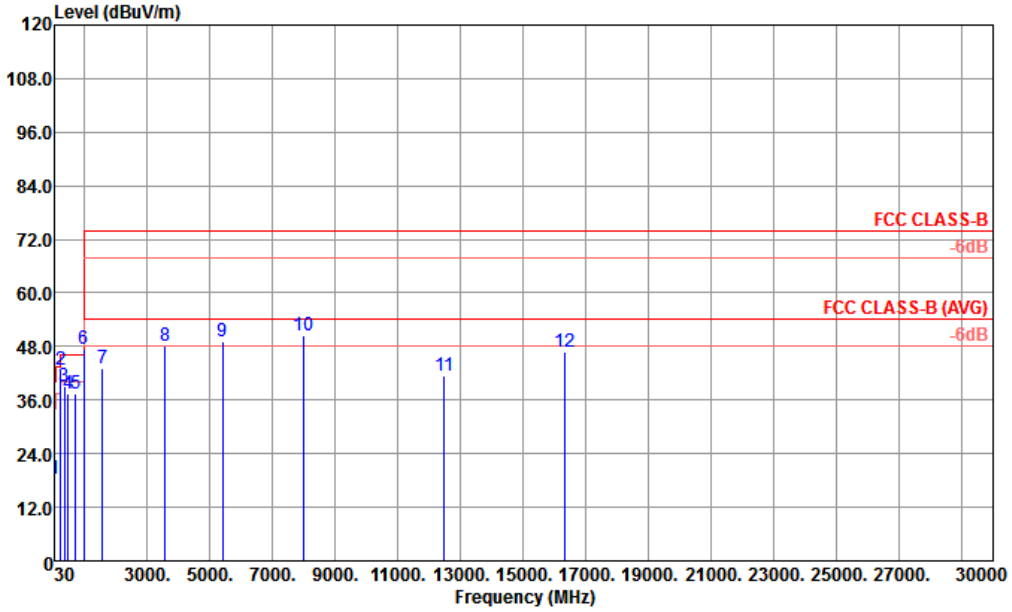


For radiated emissions above 1GHz



3.2.5. Test Result of Radiated Emission

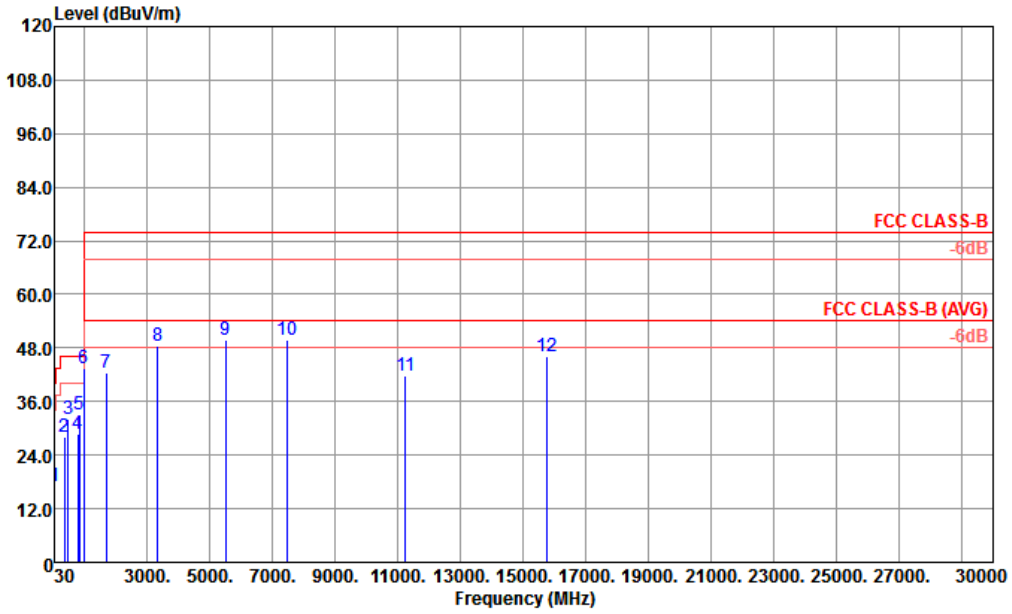
Test Engineer :	Jack Guo	Temperature :	21~22°C
		Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Horizontal



Site : 03CH02-KS
Condition : FCC CLASS-B 3m LF 23182-3M HORIZONTAL
Project : (FC)912504-01
Mode : 7

	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	30.97	18.54	-21.46	40.00	27.44	22.42	0.66	31.98	---	---	Peak
2 !	240.49	42.91	-3.09	46.00	55.40	17.64	1.82	31.95	100	0	Peak
3	359.80	39.04	-6.96	46.00	48.43	20.57	2.13	32.09	---	---	Peak
4	480.08	37.47	-8.53	46.00	44.20	23.02	2.49	32.24	---	---	Peak
5	719.67	37.33	-8.67	46.00	41.22	25.35	3.07	32.31	---	---	Peak
6	960.23	47.47	-6.53	54.00	47.49	27.31	3.56	30.89	---	---	Peak
7	1568.00	43.06	-30.94	74.00	47.13	28.88	4.49	37.44	---	---	Peak
8	3576.00	48.16	-25.84	74.00	44.41	33.37	7.06	36.68	---	---	Peak
9	5392.00	49.13	-24.87	74.00	41.72	35.18	8.68	36.45	---	---	Peak
10	8000.00	50.60	-23.40	74.00	40.99	35.80	10.99	37.18	---	---	Peak
11	12483.00	41.54	-32.46	74.00	25.37	38.50	14.07	36.40	---	---	Peak
12	16326.00	46.82	-27.18	74.00	25.60	40.83	16.76	36.37	---	---	Peak

Test Engineer :	Jack Guo	**Temperature :**	21~22°C
		Relative Humidity :	41~42%
Test Distance :	3m	**Polarization :**	Vertical



Site : 03CH02-KS
Condition : FCC CLASS-B 3m LF 23182-3M VERTICAL
Project : (FC)912504-01
Mode : 7

	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	30.00	17.21	-22.79	40.00	25.75	22.80	0.64	31.98	---	---	Peak
2	345.25	28.09	-17.91	46.00	37.88	20.19	2.09	32.07	---	---	Peak
3	480.08	32.02	-13.98	46.00	38.75	23.02	2.49	32.24	---	---	Peak
4	779.81	28.89	-17.11	46.00	31.88	25.96	3.22	32.17	---	---	Peak
5	839.95	33.21	-12.79	46.00	35.33	26.40	3.33	31.85	---	---	Peak
6	960.23	43.34	-10.66	54.00	43.36	27.31	3.56	30.89	100	0	Peak
7	1680.00	42.34	-31.66	74.00	45.54	29.40	4.64	37.24	---	---	Peak
8	3336.00	48.41	-25.59	74.00	45.79	32.91	6.75	37.04	---	---	Peak
9	5496.00	49.75	-24.25	74.00	42.15	35.23	8.79	36.42	---	---	Peak
10	7480.00	49.69	-24.31	74.00	40.76	35.39	10.26	36.72	---	---	Peak
11	11241.00	41.68	-32.32	74.00	27.29	37.82	13.48	36.91	---	---	Peak
12	15759.00	46.25	-27.75	74.00	25.39	40.88	16.59	36.61	---	---	Peak

4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 19, 2018	Mar. 24, 2019	Apr. 18, 2019	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 12, 2018	Mar. 24, 2019	Oct. 11, 2019	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Nov. 19, 2018	Mar. 24, 2019	Nov. 18, 2019	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2018	Mar. 24, 2019	Oct. 11, 2019	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Aug. 06, 2018	Mar. 24, 2019	Aug. 05, 2019	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150208	10Hz-44G,MAX 30dB	Apr. 17, 2018	Mar. 24, 2019	Apr. 16, 2019	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	23182	30MHz-2GHz	Dec. 29, 2018	Mar. 24, 2019	Dec. 28, 2019	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 27, 2019	Mar. 24, 2019	Jan. 26, 2020	Radiation (03CH02-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2019	Mar. 24, 2019	Jan. 04, 2020	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Aug. 06, 2018	Mar. 24, 2019	Aug. 05, 2019	Radiation (03CH02-KS)
Amplifier	Keysight	83017A	MY53270203	500MHz~26.5GHz	Apr. 18, 2018	Mar. 24, 2019	Apr. 17, 2019	Radiation (03CH02-KS)
Amplifier	MITEQ	TTA1840-35-HG	1887435	18~40GHz	Jan. 14, 2019	Mar. 24, 2019	Jan. 13, 2020	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Mar. 24, 2019	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Mar. 24, 2019	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Mar. 24, 2019	NCR	Radiation (03CH02-KS)

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))	**2.9 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.8 dB**

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.2 dB**

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 40000 MHz)

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