



# FCC Test Report

**APPLICANT** : Lenovo(Shanghai) Electronics Technology Co., Ltd.  
**EQUIPMENT** : Portable Tablet Computer  
**BRAND NAME** : Lenovo  
**MODEL NAME** : TB570FU  
**FCC ID** : O57TB570FU  
**STANDARD** : 47 CFR Part 15 Subpart B  
**CLASSIFICATION** : Certification  
**TEST DATE(S)** : Nov. 16, 2022

We, Sporton International Inc. (Kunshan), 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 Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia



Approved by: Jason Jia

**Sporton International Inc. (Kunshan)**

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300  
People's Republic of China**



# TABLE OF CONTENTS

**REVISION HISTORY..... 3**

**SUMMARY OF TEST RESULT ..... 4**

**1. GENERAL DESCRIPTION ..... 5**

    1.1. Applicant..... 5

    1.2. Manufacturer ..... 5

    1.3. Product Feature of Equipment Under Test ..... 5

    1.4. Product Specification of Equipment Under Test ..... 6

    1.5. Modification of EUT ..... 6

    1.6. Test Location ..... 7

    1.7. Test Software ..... 7

    1.8. Applicable Standards ..... 7

**2. TEST CONFIGURATION OF EQUIPMENT UNDER TEST ..... 8**

    2.1. Test Mode ..... 8

    2.2. Connection Diagram of Test System ..... 10

    2.3. Support Unit used in test configuration and system ..... 10

    2.4. EUT Operation Test Setup ..... 11

**3. TEST RESULT ..... 12**

    3.1. Test of AC Conducted Emission Measurement ..... 12

    3.2. Test of Radiated Emission Measurement ..... 16

**4. LIST OF MEASURING EQUIPMENT ..... 21**

**5. UNCERTAINTY OF EVALUATION ..... 22**

**APPENDIX A. SETUP PHOTOGRAPHS**



### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC201214	Rev. 01	Initial issue of report	Dec. 09, 2022



### 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 4.05 dB at 0.155 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 3.35 dB at 741.98 MHz for Quasi-Peak

<b>Declaration of Conformity:</b>
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
<b>Comments and Explanations:</b>
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

Lenovo(Shanghai) Electronics Technology Co., Ltd.

Section 304-305, Building No. 4, # 222, Meiyue Road, China (Shanghai) Pilot Free Trade Zone

## 1.2. Manufacturer

Lenovo PC HK Limited

23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong, China

## 1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	Portable Tablet Computer
Brand Name	Lenovo
Model Name	TB570FU
FCC ID	O57TB570FU
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ax HE20/HE40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/VHT160 WLAN 5GHz 802.11ax HE20/HE40/HE80/HE160 WLAN 6GHz 802.11ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE GNSS WLC
SN Code	Conduction: HA1R5MJ7 for Sample 1 HA1RGZ9R for Sample 2 HA1RK8TG for Sample 3 Radiation: HA192AC005B for Sample 1 HA1RK8TG for Sample 2 HA1RGZ9R for Sample 3
HW Version	TB570FU
SW Version	TB570FU_RF01_20221124
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 three types of EUT, the differences could be referred to the TB570FU\_Operational Description of Product Equality Declaration which is exhibit separately. According to the difference, we choose sample 1 to full test and the sample 2/3 is verified for the difference.



## 1.4. Product Specification of Equipment Under Test

Standards-related Product Specification	
<b>Tx Frequency</b>	802.11b/g/n/ax: 2400 MHz ~ 2483.5 MHz 802.11a/n/ac/ax/ax: 5150 MHz ~ 5250 MHz; 5250 MHz ~ 5350 MHz; 5470 MHz ~ 5725 MHz; 5725 MHz ~ 5850 MHz WLAN 802.11ax: 5925 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz WLC: 13.56 MHz
<b>Rx Frequency</b>	802.11b/g/n/ax: 2400 MHz ~ 2483.5 MHz 802.11a/n/ac/ax/ax: 5150 MHz ~ 5250 MHz; 5250 MHz ~ 5350 MHz; 5470 MHz ~ 5725 MHz; 5725 MHz ~ 5850 MHz WLAN 802.11ax: 5925 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz WLC: 13.56 MHz GNSS : 1559 MHz ~ 1610 MHz, 1164 MHz ~ 1215 MHz
<b>Antenna Type</b>	WLAN : FPC Antenna Bluetooth : FPC Antenna GNSS: FPC Antenna WLC: FPC Antenna
<b>Type of Modulation</b>	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) 802.11ax : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM) Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : $\pi/4$ -DQPSK Bluetooth (3Mbps) : 8-DPSK GNSS : BPSK WLC: ASK

## 1.5. Modification of EUT

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

### 1.6. Test Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

<b>Test Firm</b>	Sporton International Inc. (Kunshan)		
<b>Test Site Location</b>	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
<b>Test Site No.</b>	<b>Sporton Site No.</b>	<b>FCC Designation No.</b>	<b>FCC Test Firm Registration No.</b>
	CO01-KS 03CH02-KS	CN1257	314309

### 1.7. Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH02-KS	AUDIX	E3	6.2009-8-24a
2.	CO01-KS	AUDIX	E3	6.2009-8-24

### 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 frequency or to 40 GHz, whichever is lower).

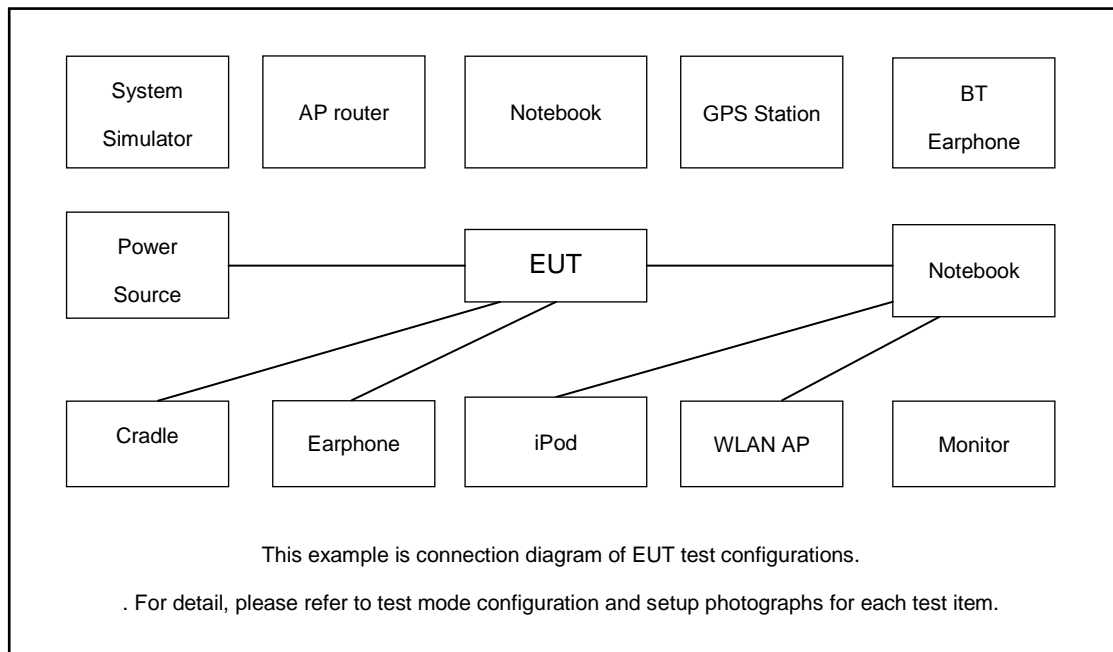
Test Items	Function Type
AC Conducted Emission	Mode 1 : Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Audio Dongle With Earphone( Type C2) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1(Charging from Adapter) (Typc 1) for Sample 1
	Mode 2 : Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Audio Dongle With Earphone( Type C1) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1(Charging from Adapter) (Typc 2) for Sample 1
	Mode 3 : Bluetooth Idle + WLAN (2.4G) Idle + MPEG4(Run Color Bar) + DP In ( Type-c 2) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1(Charging from Adapter) (Typc 1) for Sample 1
	Mode 4 : Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + DP Out ( Type-c 1) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1(Charging from Adapter) (Typc 2) for Sample 1
	Mode 5 : Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Audio Dongle With Earphone( Type C2) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1(Data Link with Notebook) (Typc 1) + EUT (eMMC) USB Data Link to PC/NB for Sample 1
	Mode 6 : Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + Audio Dongle With Earphone( Type C2) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1(Data Link with Notebook) (Typc 1) + PC/NB USB Data Link to EUT (eMMC) for Sample 1
	Mode 7 : Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + Audio Dongle With Earphone( Type C2) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1(Data Link with Notebook) (Typc 1) + EUT (SD) USB Data Link to PC/NB for Sample 1
	Mode 8 : Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + Audio Dongle With Earphone( Type C2) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1(Data Link with Notebook) (Typc 1) + PC/NB USB Data Link to EUT (SD)for Sample 1
	Mode 9 : Bluetooth Idle + WLAN (5G) Idle+ Camera(Rear) OR Camera(Front) + DP Out ( Type-c 1) + Battery 2 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1(Charging from Adapter) (Typc 2) for Sample 2
	Mode 10 : Bluetooth Idle + WLAN (5G) Idle+ MPEG4(Run Color Bar) + Audio Dongle With Earphone( Type C2)+ Battery 2 + Keyboard + Wireless Charging to pen(WLC) +USB Cable 1(Data Link with Notebook) (Typc 1) + EUT (eMMC) USB Data Link to PC/NB for Sample 2
	Mode 11 : Bluetooth Idle + WLAN (5G) Idle+ MPEG4(Run Color Bar) + Audio Dongle With Earphone( Type C2)+ Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1(Data Link with Notebook) (Typc 1) + EUT (eMMC) USB Data Link to PC/NB for Sample 3
	Mode 12 : Bluetooth Idle + WLAN (5G) Idle+ MPEG4(Run Color Bar) + DP Out ( Type-c 1) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 2(Charging from Adapter) (Typc 2) for Sample 1
	Mode 13 : Bluetooth Idle + WLAN (5G) Idle+ MPEG4(Run Color Bar) + Audio Dongle With Earphone( Type C2) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) +USB Cable 2(Data Link with Notebook) (Typc 1) + PC/NB USB Data Link to EUT (SD) for Sample1





Radiated Emissions	<p>Mode 1: Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Audio Dongle With Earphone( Type C2) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1 (Charging from Adapter) (Typc 1)for Sample 1</p> <p>Mode 2: Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Audio Dongle With Earphone( Type C1) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1 (Charging from Adapter) (Typc 2)for Sample 1</p> <p>Mode 3: Bluetooth Idle + WLAN (2.4G) Idle + MPEG4(Run Color Bar) + DP In ( Type-c 2) + Battery 1 Keyboard + Wireless Charging to pen(WLC) + USB Cable 1 (Charging from Adapter) (Typc 1) for Sample 1</p> <p>Mode 4: Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + DP Out ( Type-c 1) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1 (Charging from Adapter) (Typc 2) for Sample 1</p> <p>Mode 5: Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Audio Dongle With Earphone( Type C2) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1 (Data Link with Notebook) (Typc 1) + EUT (eMMC) USB Data Link to PC/NB for Sample 1</p> <p>Mode 6: Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + Audio Dongle With Earphone( Type C2) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1 (Data Link with Notebook) (Typc 1) + PC/NB USB Data Link to EUT (eMMC) for Sample 1</p> <p>Mode 7: Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + Audio Dongle With Earphone( Type C2) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1 (Data Link with Notebook) (Typc 1) + EUT (SD) USB Data Link to PC/NB for Sample 1</p> <p>Mode 8: Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + Audio Dongle With Earphone( Type C2) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1 (Data Link with Notebook) (Typc 1) + PC/NB USB Data Link to EUT (SD) for Sample 1</p> <p>Mode 9: Bluetooth Idle + WLAN (5G) Idle + Camera(Rear) + DP Out ( Type-c 1) + Battery 2 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1 (Charging from Adapter) (Typc 2) for Sample 2</p> <p>Mode 10 : Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + Battery 2 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1(Data Link with Notebook) (Typc 1) + EUT (eMMC) USB Data Link to PC/NB for Sample 2</p> <p>Mode 11 : Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + Audio Dongle With Earphone( Type C2) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 1(Data Link with Notebook) (Typc 1) + EUT (eMMC) USB Data Link to PC/NB for Sample 3</p> <p>Mode 12 : Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + DP Out ( Type-c 1) + Battery 1 + Keyboard + Wireless Charging to pen(WLC) + USB Cable 2(Charging from Adapter) (Typc 2)) for Sample 2</p> <p>Mode 13 : Bluetooth Idle + WLAN (5G) Idle + MPEG4(Run Color Bar) + Audio Dongle With Earphone( Type C2) + Battery 1+ Keyboard + Wireless Charging to pen(WLC) + USB Cable 2(Data Link with Notebook) (Typc 1)) + PC/NB USB Data Link to EUT (SD) for Sample1</p>
<b>Remark:</b>	
<ol style="list-style-type: none"> <li>1. The worst case of AC is mode1; only the test data of this mode is reported.</li> <li>2. The worst case of RE is mode 12; only the test data of this mode is reported.</li> <li>3. Data Link with Notebook / PC means data application transferred mode between EUT and Notebook / PC.</li> </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.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A
2.	Notebook	Lenovo	G480	QDS-BRCM1050I	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
3.	WLAN AP	D-link	DIR-655	KA21R655B1	N/A	Unshielded,1.8m
4.	Vector Signal Generator	R&S	SMBV100A	258305	N/A	N/A
5.	Hard Disk	Lenovo	F310	DoC	Shielded, 1.2m	N/A
6.	SD Card	Kingston	8GB	N/A	N/A	N/A
7.	Monitor	Lenovo	Q24i-10	Fcc DoC	N/A	Unshielded,1.8m
8.	Bluetooth Earphone	Xiaomi	LYEJ02LM	N/A	N/A	Bluetooth Earphone
9.	LTE Base Station	Anritus	MT8820C	N/A	N/A	LTE Base Station
10.	WLAN AP	TP-Link	TL-WDR5600	N/A	N/A	Router
11.	Notebook	Lenovo	V130-14IKB001	N/A	N/A	Notebook
12.	SD Card	SanDisk	Uitra	N/A	N/A	SD Card
13.	Hard disk	KINGSHARE	KSP6120G	N/A	N/A	Hard disk
14.	LTE Base Station	Anritus	MT8820C	N/A	N/A	LTE Base Station
15.	Signal Generator	R&S	SMBV100A	N/A	N/A	Signal Generator



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

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 MPEG4 function.
4. Execute "H Pattern" to show H Pattern via USB Cable on the Notebook.
5. Turn on GNSS function to make the EUT receive continuous signals from GNSS station.
6. Turn on WLC(13.56MHz) function and wireless charging for the pen.

### 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.

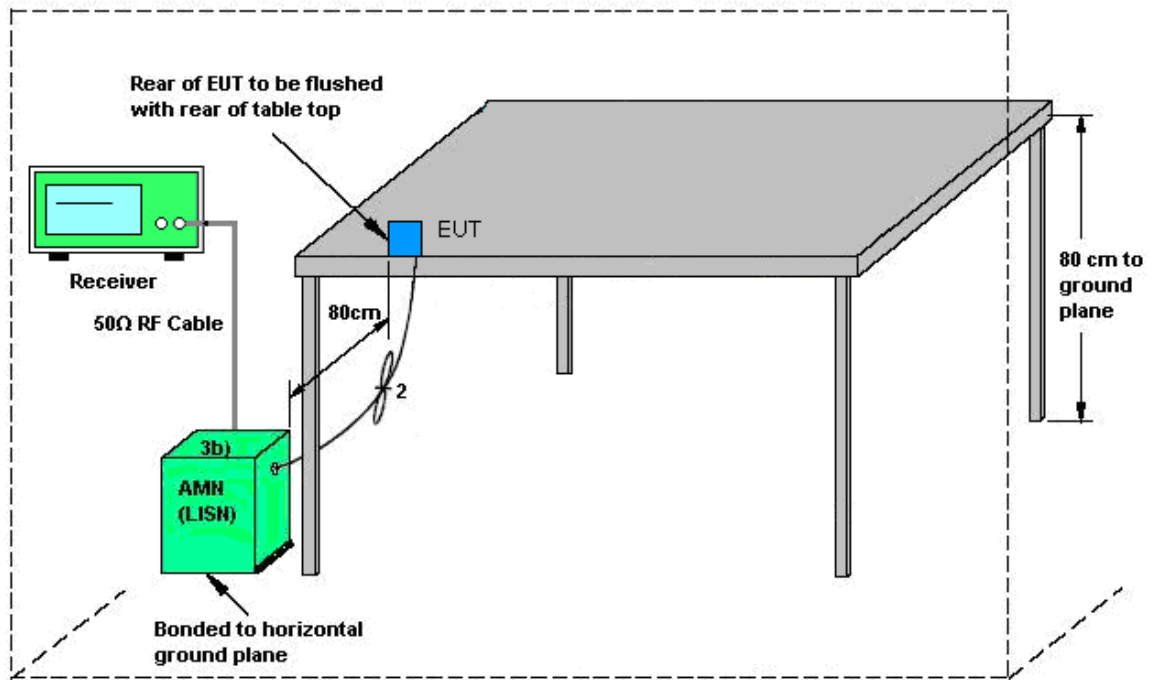
##### 3.1.2 Measuring Instruments

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

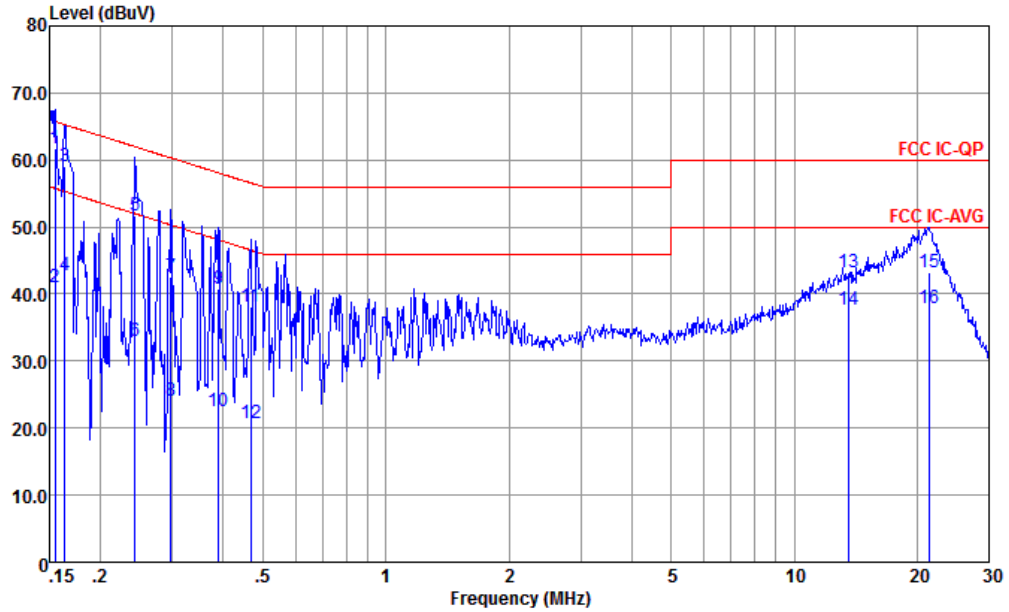


AMN = Artificial mains network (LISN)  
AE = Associated equipment  
EUT = Equipment under test  
ISN = Impedance stabilization network



3.1.5 Test Result of AC Conducted Emission

Test Engineer :	Amos	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

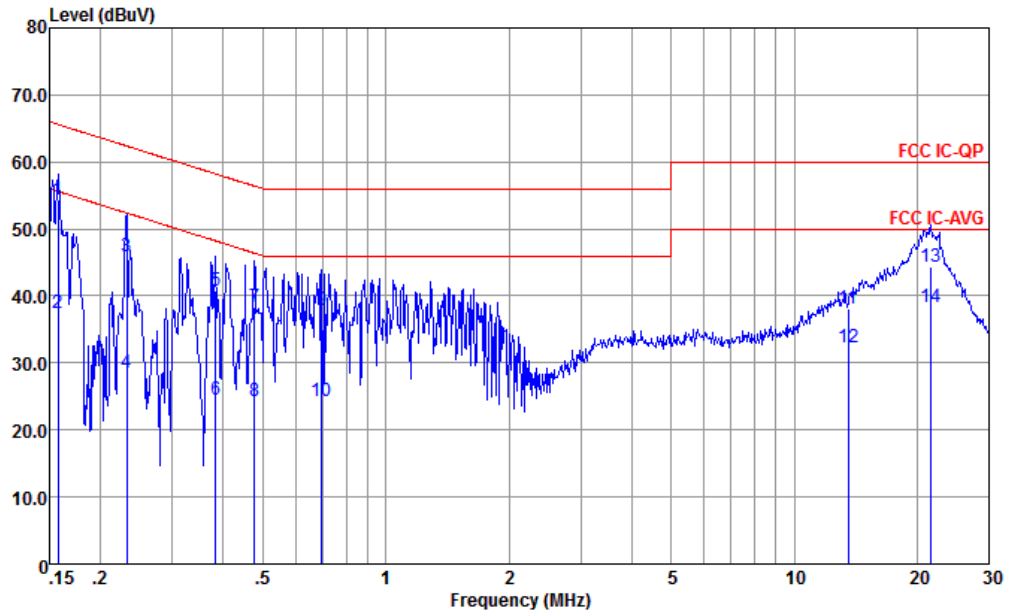


Site : CO01-KS  
 Condition : FCC IC-QP LISN-060105-LINE LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1 *	0.155	61.69	-4.05	65.74	51.20	0.06	10.43	QP
2	0.155	41.09	-14.65	55.74	30.60	0.06	10.43	Average
3	0.163	58.98	-6.32	65.30	48.49	0.06	10.43	QP
4	0.163	42.68	-12.62	55.30	32.19	0.06	10.43	Average
5	0.243	51.63	-10.37	62.00	41.20	0.04	10.39	QP
6	0.243	32.93	-19.07	52.00	22.50	0.04	10.39	Average
7	0.297	42.61	-17.71	60.32	32.20	0.06	10.35	QP
8	0.297	24.01	-26.31	50.32	13.60	0.06	10.35	Average
9	0.389	40.82	-17.26	58.08	30.51	0.01	10.30	QP
10	0.389	22.52	-25.56	48.08	12.21	0.01	10.30	Average
11	0.466	38.12	-18.46	56.58	27.90	-0.02	10.24	QP
12	0.466	20.72	-25.86	46.58	10.50	-0.02	10.24	Average
13	13.560	43.12	-16.88	60.00	32.20	-0.20	11.12	QP
14	13.560	37.62	-12.38	50.00	26.70	-0.20	11.12	Average
15	21.373	43.26	-16.74	60.00	32.21	-0.33	11.38	QP
16	21.373	37.96	-12.04	50.00	26.91	-0.33	11.38	Average



Test Engineer :	Amos	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-KS  
 Condition : FCC IC-QP LISN-060105-NEUTRAL NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1 *	0.157	54.48	-11.12	65.60	44.02	0.03	10.43	QP
2	0.157	37.36	-18.24	55.60	26.90	0.03	10.43	Average
3	0.232	45.91	-16.48	62.39	35.51	0.01	10.39	QP
4	0.232	28.61	-23.78	52.39	18.21	0.01	10.39	Average
5	0.383	40.74	-17.47	58.21	30.49	-0.06	10.31	QP
6	0.383	24.44	-23.77	48.21	14.19	-0.06	10.31	Average
7	0.476	38.35	-18.06	56.41	28.20	-0.08	10.23	QP
8	0.476	24.35	-22.06	46.41	14.20	-0.08	10.23	Average
9	0.697	37.97	-18.03	56.00	27.90	-0.09	10.16	QP
10	0.697	24.27	-21.73	46.00	14.20	-0.09	10.16	Average
11	13.560	38.14	-21.86	60.00	27.20	-0.18	11.12	QP
12	13.560	32.24	-17.76	50.00	21.30	-0.18	11.12	Average
13	21.600	44.39	-15.61	60.00	33.30	-0.30	11.39	QP
14	21.600	38.29	-11.71	50.00	27.20	-0.30	11.39	Average

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.



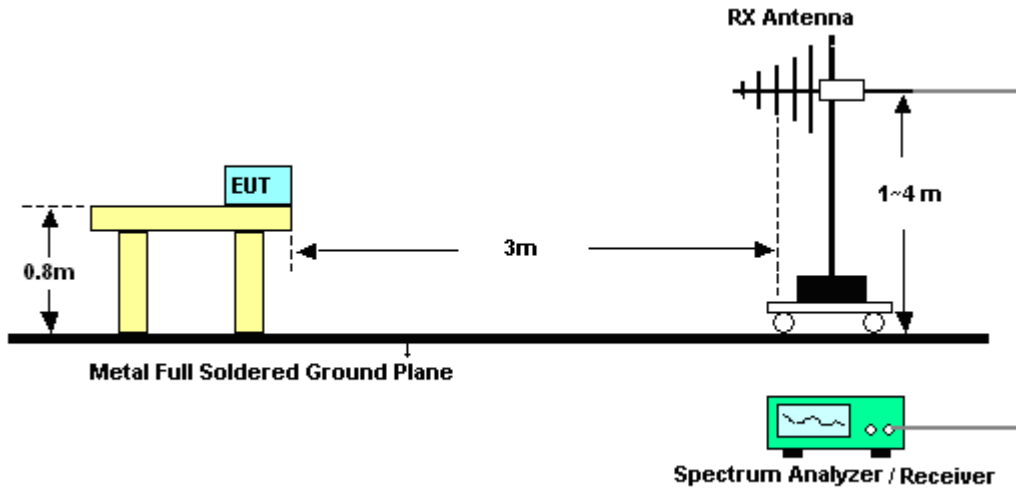


### **3.2.3. Test Procedures**

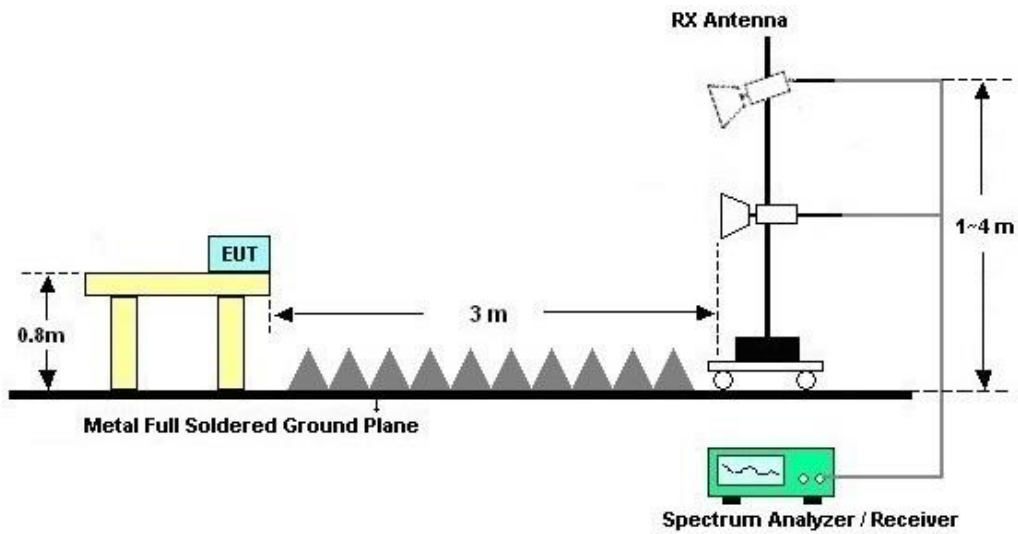
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna 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
10. Exploratory radiated emissions testing of handheld and/or body-worn devices shall include rotation of the EUT through three orthogonal axes (X/Y/Z Plane) to determine the orientation (attitude) that maximizes the emissions.

### 3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz



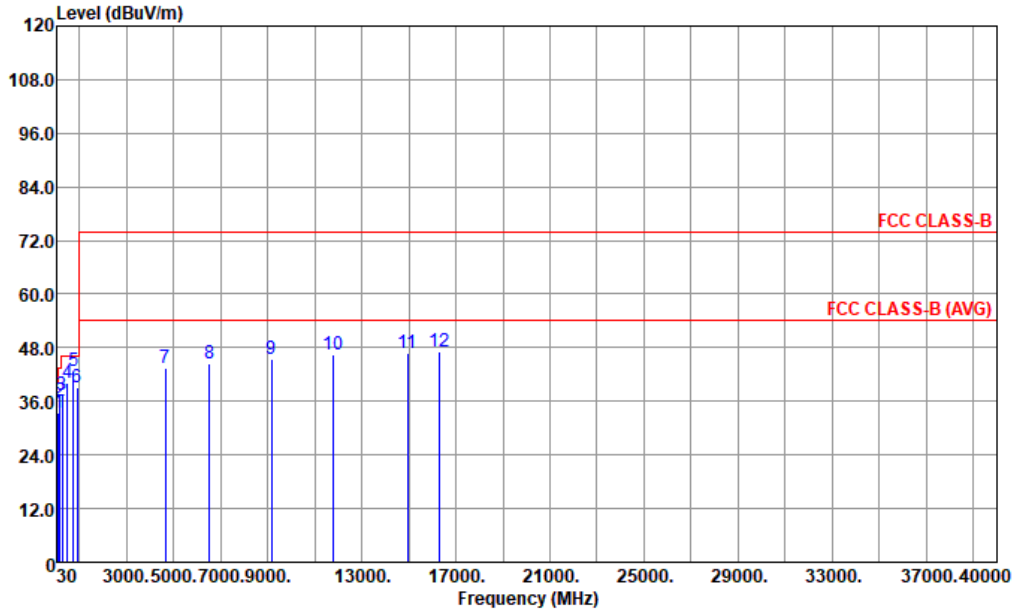
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

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

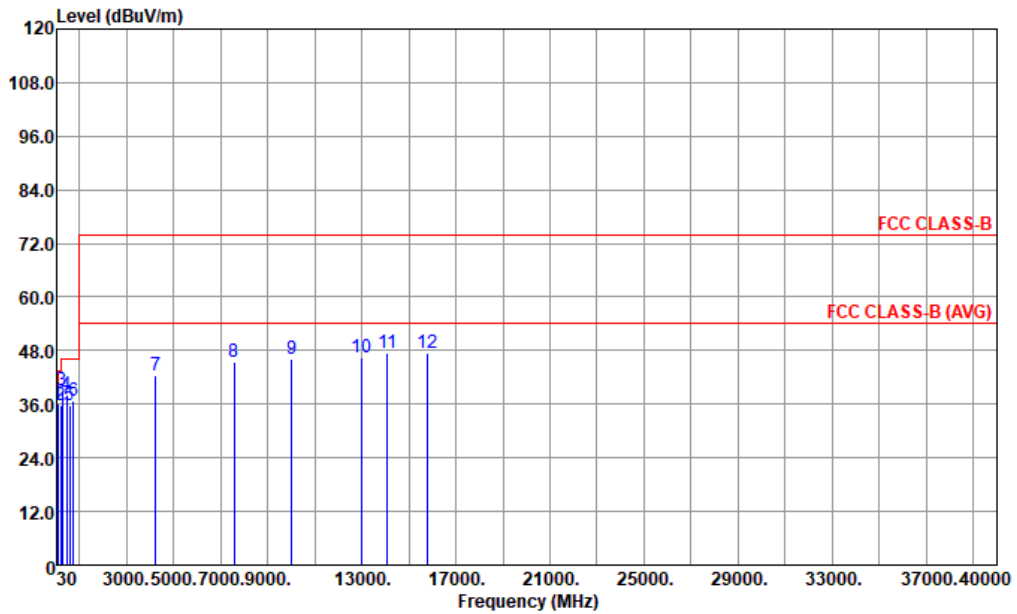


Site : 03CH02-KS  
 Condition : FCC CLASS-B 3m LF 49921 HORIZONTAL

	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	107.60	33.44	-10.06	43.50	47.69	16.62	1.53	32.40	---	---	Peak
2	186.17	36.13	-7.37	43.50	51.47	15.06	2.00	32.40	---	---	Peak
3	273.47	37.59	-8.41	46.00	48.52	19.16	2.31	32.40	---	---	Peak
4	480.08	40.18	-5.82	46.00	45.84	23.60	3.14	32.40	---	---	Peak
5	741.98	42.65	-3.35	46.00	43.58	27.34	4.05	32.32	200	43	QP
6	891.36	39.17	-6.83	46.00	37.29	29.01	4.44	31.57	---	---	Peak
7	4638.00	43.30	-30.70	74.00	60.70	34.47	10.40	62.27	---	---	Peak
8	6525.00	44.56	-29.44	74.00	57.77	35.81	12.64	61.66	---	---	Peak
9	9160.00	45.56	-28.44	74.00	56.13	36.42	15.25	62.24	---	---	Peak
10	11761.00	46.37	-27.63	74.00	52.03	38.56	17.36	61.58	---	---	Peak
11	14940.00	46.73	-27.27	74.00	49.53	39.95	19.43	62.18	---	---	Peak
12	16300.00	47.06	-26.94	74.00	47.08	41.60	20.55	62.17	---	---	Peak



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



Site : 03CH02-KS  
 Condition : FCC CLASS-B 3m LF 49921 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	69.77	36.03	-3.97	40.00	51.66	15.59	1.18	32.40	100	82	Peak
2	202.66	35.68	-7.82	43.50	50.94	15.05	2.09	32.40	---	---	Peak
3	279.29	39.15	-6.85	46.00	50.24	18.95	2.36	32.40	---	---	Peak
4	472.32	38.14	-7.86	46.00	43.97	23.43	3.14	32.40	---	---	Peak
5	593.57	35.73	-10.27	46.00	38.51	26.04	3.58	32.40	---	---	Peak
6	741.98	36.76	-9.24	46.00	37.69	27.34	4.05	32.32	---	---	Peak
7	4230.00	42.29	-31.71	74.00	61.11	33.47	9.99	62.28	---	---	Peak
8	7562.00	45.38	-28.62	74.00	57.61	35.90	13.71	61.84	---	---	Peak
9	10010.00	46.07	-27.93	74.00	54.83	37.31	15.98	62.05	---	---	Peak
10	13019.00	46.62	-27.38	74.00	50.73	39.29	18.17	61.57	---	---	Peak
11	14090.00	47.51	-26.49	74.00	51.15	38.94	19.07	61.65	---	---	Peak
12	15790.00	47.52	-26.48	74.00	49.09	40.63	20.16	62.36	---	---	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 Receiver	R&S	ESC17	100768	9kHz~7GHz;	May 24, 2022	Nov. 16, 2022	May 23, 2023	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2022	Nov. 16, 2022	Oct. 12, 2023	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	May 24, 2022	Nov. 16, 2022	May 23, 2023	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2022	Nov. 16, 2022	Oct. 11, 2023	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Oct. 12, 2022	Nov. 16, 2022	Oct. 11, 2023	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55370528	10Hz-44G,MAX 30dB	Oct. 12, 2022	Nov. 16, 2022	Oct. 11, 2023	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz-1GHz	Dec. 22, 2022	Nov. 16, 2022	Dec. 21, 2023	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 08, 2022	Nov. 16, 2022	Nov. 07, 2023	Radiation (03CH02-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2022	Nov. 16, 2022	Jan. 04, 2023	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	413741	9KHz-1GHz	Jan. 05, 2022	Nov. 16, 2022	Jan. 04, 2023	Radiation (03CH02-KS)
Amplifier	EM	EM01G18G	060806	1GHz~18GHz	Oct. 12, 2022	Nov. 16, 2022	Oct. 11, 2023	Radiation (03CH02-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 05, 2022	Nov. 16, 2022	Jan. 04, 2023	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Nov. 16, 2022	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Nov. 16, 2022	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Nov. 16, 2022	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% ( $U = 2Uc(y)$ )	2.78dB
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.0dB
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### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

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

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