



# FCC Test Report

APPLICANT : Lenovo (Shanghai) Electronics Technology Co., Ltd.  
EQUIPMENT : Portable Tablet Computer  
BRAND NAME : Lenovo  
MODEL NAME : TB321FU  
FCC ID : O57TB321FU  
STANDARD : 47 CFR Part 15 Subpart B  
CLASSIFICATION : Certification  
TEST DATE(S) : Aug. 23, 2024 ~ Sep. 02, 2024

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



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### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC473104	Rev. 01	Initial issue of report	Sep. 19, 2024



## 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 4.00 dB at 0.510 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 4.28 dB at 106.63 MHz

**Conformity Assessment Condition:**

The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account. Please refer to each test results in the section "Measurement Uncertainty".

**Disclaimer:**

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.



# 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	TB321FU
FCC ID	O57TB321FU
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ac VHT20/VHT40 WLAN 2.4GHz 802.11ax HE20/HE40 WLAN 2.4GHz 802.11be (EHT20/ EHT40) WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/VHT160 WLAN 5GHz 802.11ax HE20/HE40/HE80/HE160 WLAN 5GHz 802.11be (EHT20/EHT40/EHT80/EHT160) WLAN 6GHz 802.11ax HE20/HE40/HE80/HE160 WLAN 6GHz802.11be(EHT20/EHT40/EHT80/EHT160/EHT320) Bluetooth BR/EDR/LE
SN Code	Conduction: HA21JBX3 for Sample 1 HA21H9F1 for Sample 2 HA21GA0S for Sample 3 HA21DG5Y for Sample 4 Radiation: HA21DG5Y for Sample 1 HA21GA0S for Sample 2 HA21H9F1 for Sample 3 HA21JBX3 for Sample 4
HW Version	TB321FU
SW Version	TB321FU_RF01_240905
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 four types of EUT, the differences could be referred to the TB321FU\_Operational



Description of Product Equality Declaration which is exhibit separately. According to the difference, we choose sample 1 to full test and the sample 2/3/4 is verified for the difference.

### 1.4. Product Specification of Equipment Under Test

Standards-related Product Specification	
<b>Tx Frequency</b>	802.11 b/g/n/ac/ax/be: 2400 MHz ~ 2483.5 MHz 802.11 a/n/ac/ax/be: 5150 MHz ~ 5250 MHz; 5250 MHz ~ 5350 MHz; 5470 MHz ~ 5725 MHz 5725 MHz ~ 5850 MHz 802.11ax/be: 5925 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
<b>Rx Frequency</b>	802.11 b/g/n/ac/ax/be: 2400 MHz ~ 2483.5 MHz 802.11 a/n/ac/ax/be: 5150 MHz ~ 5250 MHz; 5250 MHz ~ 5350 MHz; 5470 MHz ~ 5725 MHz 5725 MHz ~ 5850 MHz 802.11ax/be: 5925 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
<b>Antenna Type</b>	WLAN : PIFA Antenna Bluetooth : PIFA 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) 802.11be: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM / 4096QAM) Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : π/4-DQPSK Bluetooth (3Mbps) : 8-DPSK

### 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		
<b>Test Site No.</b>	<b>Sporton Site No.</b>	<b>FCC Designation No.</b>	<b>FCC Test Firm Registration No.</b>
	CO01-KS 03CH07-KS	CN1257	314309

### 1.7. Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH07-KS	AUDIX	E3	210616
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.

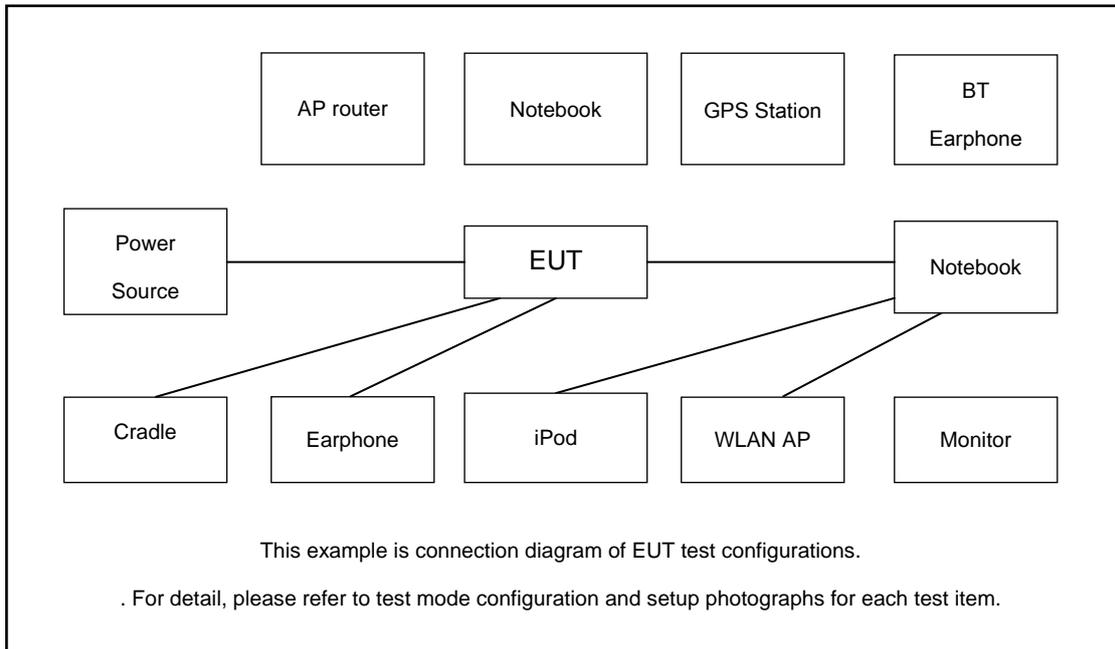
Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (30MHz to the 5th harmonic of the highest frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
AC Conducted Emission	Mode 1: Pen + Keyboard + Bluetooth Idle + WLAN 2.4G Idle + Camera (Rear) + Earphone( Type C2) + Battery 1 + USB Cable (Charging from Adapter 1) (Type C1)) for Sample 1
	Mode 2: Pen + Keyboard + Bluetooth Idle + WLAN 5G Idle + Camera (Front) + Earphone( Type C1) + Battery 1 + USB Cable (Charging from Adapter 1) (Type C2)) for Sample 1
	Mode 3: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + DP OUT With Monitor With Type C1 + Battery 1 + (use C to HDMI OR c to DP Cable) + USB Cable (Charging from Adapter 1) (Type C2) for Sample 1
	Mode 4: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + Battery 1 + USB Cable (Charging from Adapter 1) (Type C1) + OTG Cable (Data Link with U DISK) read /write (Type C2)) for Sample 1
	Mode 5: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + Earphone( Type C2) + (Data Link with Notebook)(EUT TO NB) + Cable (Data Link with Notebook) (Type C1)) for Sample 1
	Mode 6: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + Earphone( Type C2) + (Data Link with Notebook)(NB TO EUT) + USB Cable (Data Link with Notebook)(Type C1) for Sample 1
	Mode 7: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + Earphone( Type C2) + (Data Link with Notebook)(NB TO EUT) + USB Cable (Data Link with Notebook)(Type C2) for Sample 1
	Mode 8: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + Battery 2 + USB Cable (Charging from Adapter 1) (Type C1) + OTG Cable (Data Link with U DISK) read /write (Type C2) for Sample 2
	Mode 9: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + Battery 1 + USB Cable (Charging from Adapter 1) (Type C1) + OTG Cable (Data Link with U DISK) read /write (Type C2) for Sample 3
	Mode 10 : Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + Battery 2 + USB Cable (Charging from Adapter 1) (Type C1) + OTG Cable (Data Link with U DISK) read /write (Type C2) for Sample 4
	Mode 11 : Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + DP OUT With Monitor With Type C1 + Battery 2 + use C to HDMI OR c to DP Cable + USB Cable (Charging from Adapter 1) (Type C2) for Sample 2
	Mode 12 : Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + DP OUT With Monitor With Type C1 + Battery 1 + use C to HDMI OR c to DP Cable + USB Cable (Charging from Adapter 2) (Type C2) for Sample 1



Radiated Emissions	<p>Mode 1: Pen + Keyboard + Bluetooth Idle + WLAN 2.4G Idle + Camera (Rear) + Earphone( Type C2) + Battery 1 + USB Cable (Charging from Adapter 1) (Type C1)) for Sample 1</p> <p>Mode 2: Pen + Keyboard + Bluetooth Idle + WLAN 5G Idle + Camera (Front) + Earphone( Type C1) + Battery 1 + USB Cable (Charging from Adapter 1) (Type C2) for Sample 1</p> <p>Mode 3: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + DP OUT With Monitor With Type C1 + Battery 1 + use C to HDMI OR c to DP Cable + USB Cable (Charging from Adapter 1) (Type C2) for Sample 1</p> <p>Mode 4: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + USB Cable 1 (Data Link with Notebook) (Type C2) + Battery 1 + (Data Link with Notebook)(NB TO EUT) + USB Cable 1(Charging from Adapter 1) (Type C1) for Sample 1</p> <p>Mode 5: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + USB Cable 1 (Data Link with Notebook) (Type C2) + Battery 1 + (Data Link with Notebook) (EUT TO NB) + USB Cable 1(Charging from Adapter 1) (Type C1) for Sample 1</p> <p>Mode 6: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + Earphone( Type C2) + Battery 1 + USB Cable 1 (Data Link with Notebook) (Type C1) for Sample 1</p> <p>Mode 7: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + USB Cable 1 (Data Link with Notebook) (Type C2) + Battery 2 + (Data Link with Notebook)(EUT TO NB) + USB Cable 1 (Data Link with Notebook) (Type C1) for Sample 2</p> <p>Mode 8: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + USB Cable 1 (Data Link with Notebook) (Type C2) + Battery 1 + (Data Link with Notebook)(EUT TO NB) + USB Cable 1 (Data Link with Notebook) (Type C1) for Sample 3</p> <p>Mode 9: Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + USB Cable 1 (Data Link with Notebook) (Type C2) + Battery 2 + (Data Link with Notebook)(EUT TO NB) + USB Cable 1 (Data Link with Notebook) (Type C1) for Sample 4</p> <p>Mode 10 : Pen + Keyboard + Bluetooth Idle + WLAN 6E Idle + MPEG4 (Run Color Bar) + DP OUT With Monitor With Type C1 + Battery 2 + use C to HDMI OR c to DP Cable + USB Cable 1 (Charging from Adapter 1) (Type C2) for Sample 2</p> <p>Mode 11 : Battery 1 + USB Cable 1 (Charging from Adapter 2) (Type 2)for Sample 1</p> <p>Mode 12 : Pen Charging from EUT Type-C 1(OTG) + Pen Charging from EUT Type-C 2(OTG) + WLAN 6E Idle + MPEG4 (Run Color Bar) + Battery 1 for Sample 1</p>
<p><b>Remark:</b></p> <ol style="list-style-type: none"> <li>1. The worst case of AC is mode 12; only the test data of this mode is reported.</li> <li>2. The worst case of RE is mode 3; 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> <li>4. HDMI Cable means media application transferred between EUT and external display.</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.	Notebook	Lenovo	V130-15IKB005	N/A	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
2.	Notebook	HONOR	N/A	N/A	N/A	N/A
3.	WLAN AP	TP-Link	TL-WDR5600	N/A	N/A	N/A
4.	WLAN AP	D-link	DIR-655	KA21R655B1	N/A	Unshielded,1.8m
5.	SD Card	Kingston	8GB	N/A	N/A	N/A
6.	U Disk	SanDisk	SDCZ50-008G	N/A	N/A	N/A
7.	Monitor	Philips	275E9	N/A	N/A	N/A
8.	Earphone	MOTO	LYEJ02LM	N/A	N/A	N/A
9.	Hard disk	Ultra	WD	N/A	N/A	N/A



## **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.



### 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.

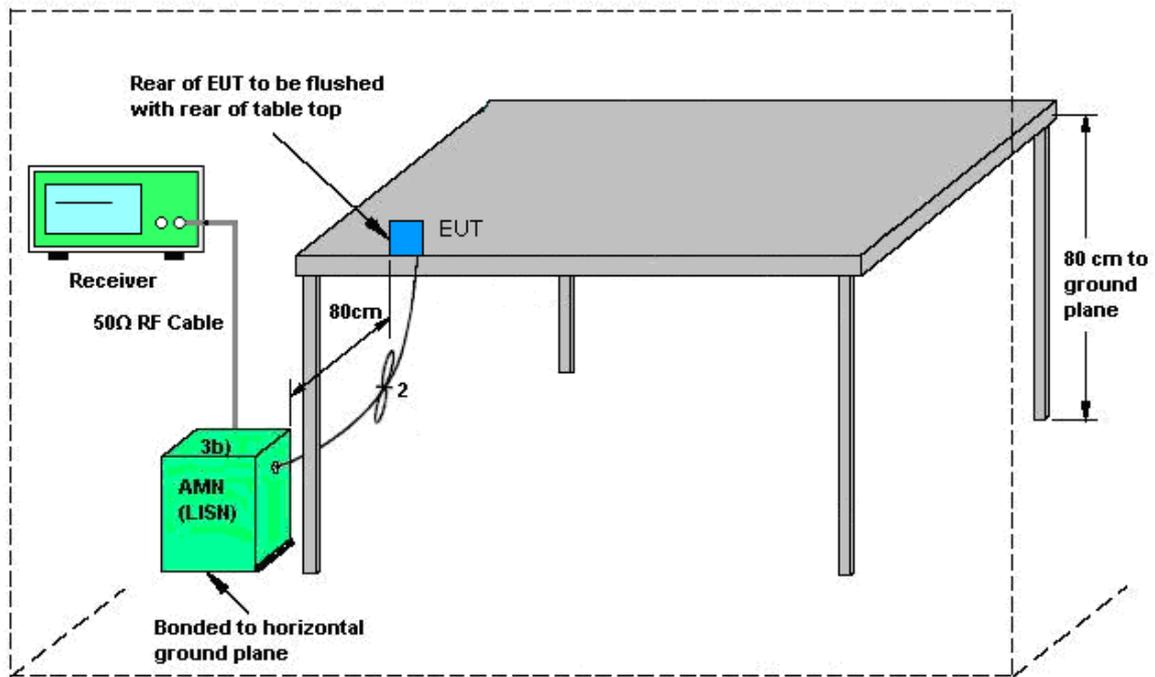
##### 3.1.2 Measuring Instruments

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

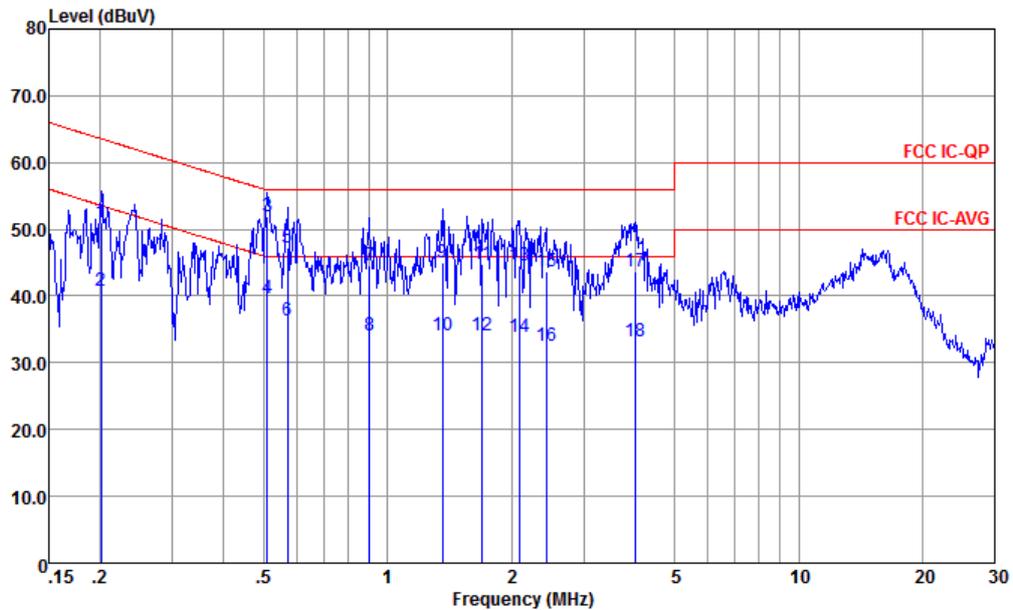


AMN = Artificial mains network (LISN)  
 AE = Associated equipment  
 EUT = Equipment under test  
 ISN = Impedance stabilization network



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.		

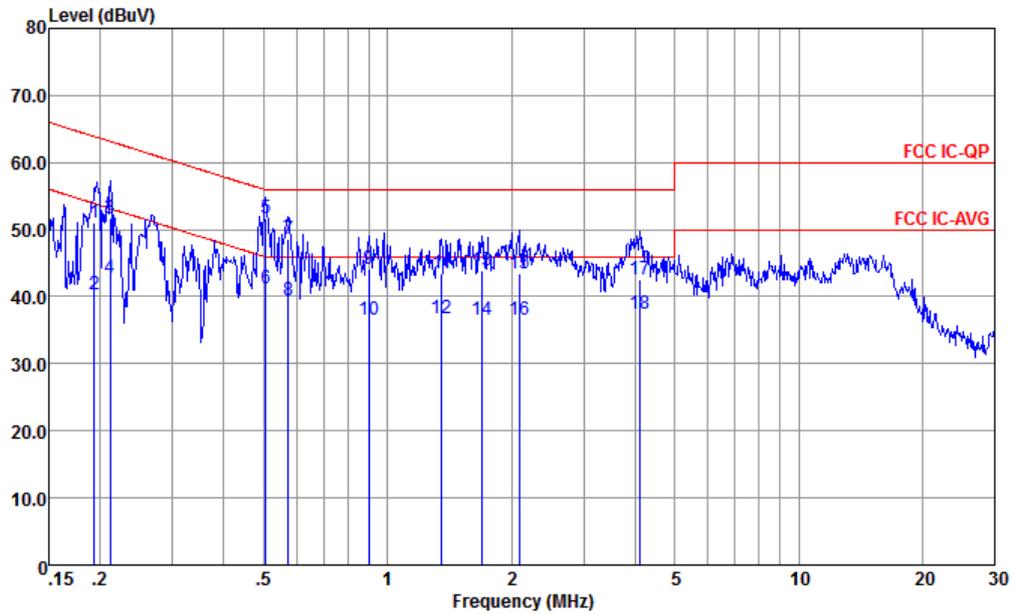


Site : CO01-KS  
 Condition : FCC IC-QP LISN-060105-L 2024 LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.201	51.09	-12.49	63.58	40.60	0.08	10.41	QP
2	0.201	40.79	-12.79	53.58	30.30	0.08	10.41	Average
3 *	0.510	52.00	-4.00	56.00	41.89	-0.11	10.22	QP
4	0.510	39.70	-6.30	46.00	29.59	-0.11	10.22	Average
5	0.570	47.26	-8.74	56.00	37.20	-0.13	10.19	QP
6	0.570	36.26	-9.74	46.00	26.20	-0.13	10.19	Average
7	0.904	44.53	-11.47	56.00	34.60	-0.17	10.10	QP
8	0.904	34.13	-11.87	46.00	24.20	-0.17	10.10	Average
9	1.359	45.09	-10.91	56.00	35.21	-0.20	10.08	QP
10	1.359	33.99	-12.01	46.00	24.11	-0.20	10.08	Average
11	1.698	44.77	-11.23	56.00	34.90	-0.21	10.08	QP
12	1.698	34.07	-11.93	46.00	24.20	-0.21	10.08	Average
13	2.099	44.66	-11.34	56.00	34.79	-0.21	10.08	QP
14	2.099	33.76	-12.24	46.00	23.89	-0.21	10.08	Average
15	2.435	43.78	-12.22	56.00	33.90	-0.19	10.07	QP
16	2.435	32.48	-13.52	46.00	22.60	-0.19	10.07	Average
17	4.006	43.77	-12.23	56.00	33.90	-0.19	10.06	QP
18	4.006	33.17	-12.83	46.00	23.30	-0.19	10.06	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-N 2024 NEUTRAL

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.193	51.14	-12.75	63.89	40.60	0.13	10.41	QP
2	0.193	40.44	-13.45	53.89	29.90	0.13	10.41	Average
3	0.212	51.59	-11.55	63.14	41.10	0.09	10.40	QP
4	0.212	42.69	-10.45	53.14	32.20	0.09	10.40	Average
5 *	0.505	51.67	-4.33	56.00	41.60	-0.15	10.22	QP
6	0.505	41.17	-4.83	46.00	31.10	-0.15	10.22	Average
7	0.573	48.63	-7.37	56.00	38.60	-0.16	10.19	QP
8	0.573	39.33	-6.67	46.00	29.30	-0.16	10.19	Average
9	0.899	44.12	-11.88	56.00	34.20	-0.18	10.10	QP
10	0.899	36.52	-9.48	46.00	26.60	-0.18	10.10	Average
11	1.352	43.50	-12.50	56.00	33.60	-0.18	10.08	QP
12	1.352	36.80	-9.20	46.00	26.90	-0.18	10.08	Average
13	1.698	43.79	-12.21	56.00	33.90	-0.19	10.08	QP
14	1.698	36.49	-9.51	46.00	26.60	-0.19	10.08	Average
15	2.088	43.38	-12.62	56.00	33.49	-0.19	10.08	QP
16	2.088	36.48	-9.52	46.00	26.59	-0.19	10.08	Average
17	4.114	42.65	-13.35	56.00	32.80	-0.21	10.06	QP
18	4.114	37.35	-8.65	46.00	27.50	-0.21	10.06	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.

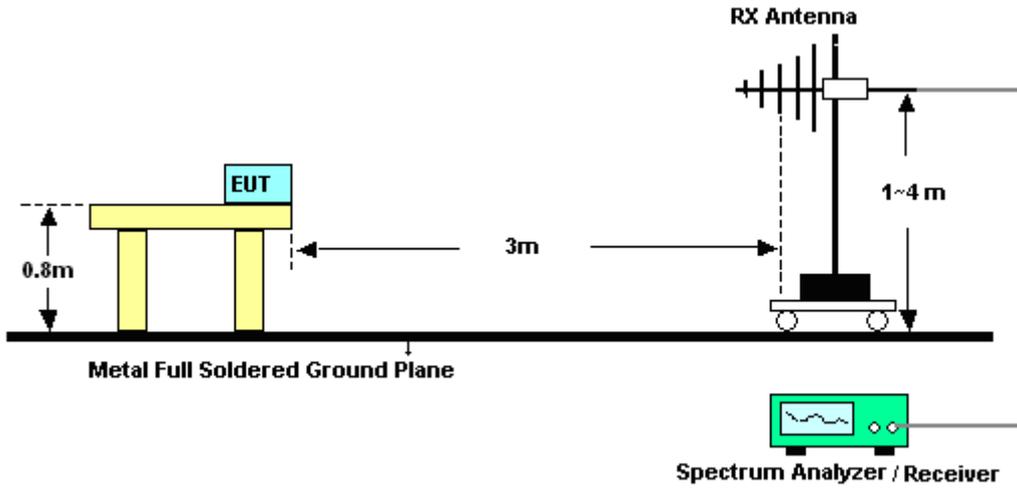


### 3.2.3. Test Procedures

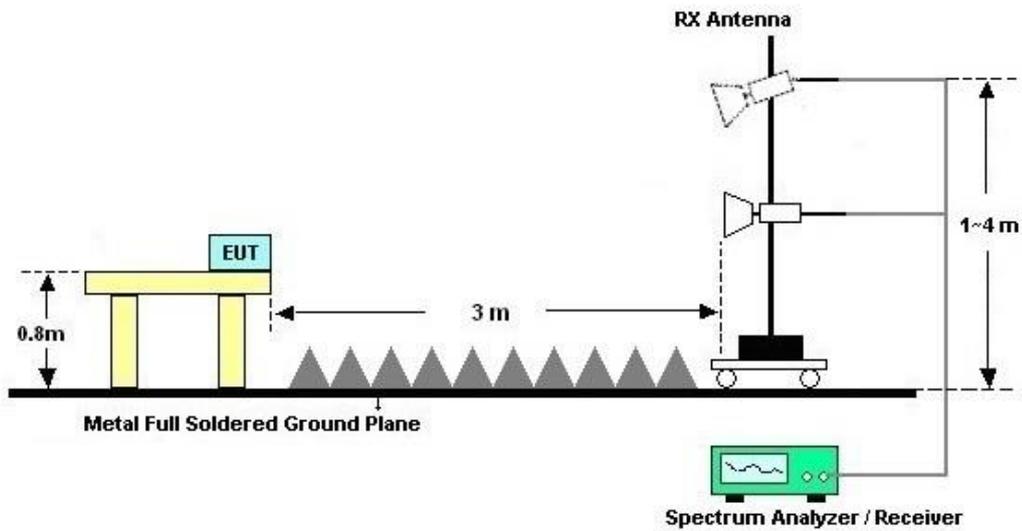
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest radiation.
5. 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.
6. 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.
7. 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).
8. 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.
9. Emission level (dB $\mu$ V/m) = 20 log Emission level ( $\mu$ V/m)
10. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
11. 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



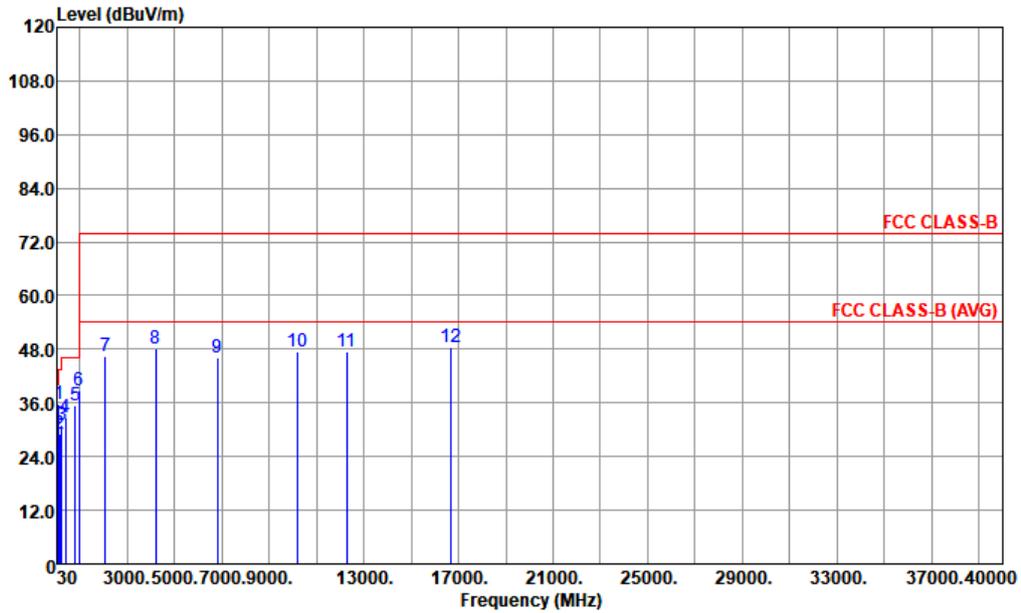
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

Test Engineer :	Levi Zhuo	Temperature :	21~22°C
		Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Horizontal

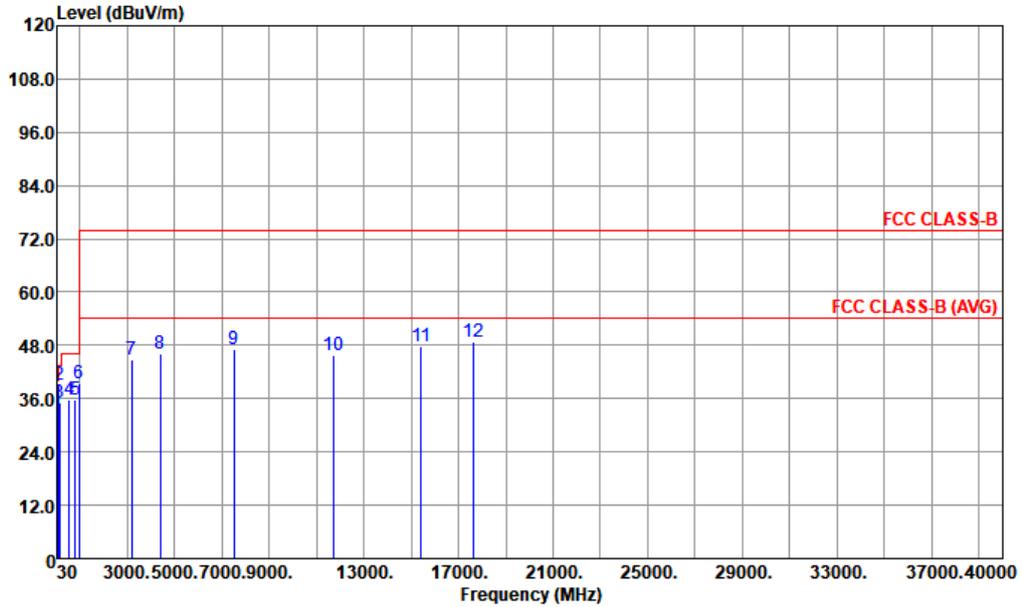


Site : 03CH07-KS  
 Condition : FCC CLASS-B 3m 3117 00240132 HORIZONTAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	A/Pos	T/Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	108.57	35.71	-7.79	43.50	49.43	16.81	1.51	32.04	---	---	Peak
2	135.73	29.20	-14.30	43.50	42.00	17.57	1.68	32.05	---	---	Peak
3	247.28	30.95	-15.05	46.00	42.54	18.18	2.29	32.06	---	---	Peak
4	408.30	32.63	-13.37	46.00	39.65	22.14	2.95	32.11	---	---	Peak
5	811.82	35.44	-10.56	46.00	34.35	28.77	4.14	31.82	---	---	Peak
6 p	953.44	38.71	-7.29	46.00	33.95	31.19	4.49	30.92	---	---	Peak
7	2088.00	46.47	-27.53	74.00	69.89	31.73	7.33	62.48	---	---	Peak
8	4196.00	47.99	-26.01	74.00	66.03	33.50	12.32	63.86	---	---	Peak
9	6814.00	46.19	-27.81	74.00	61.23	35.53	13.53	64.10	---	---	Peak
10	10214.00	47.36	-26.64	74.00	55.32	37.42	16.74	62.12	---	---	Peak
11	12288.00	47.32	-26.68	74.00	50.83	39.18	18.37	61.06	---	---	Peak
12	16691.00	48.30	-25.70	74.00	47.55	41.77	21.74	62.76	---	---	Peak



Test Engineer :	Levi Zhuo	Temperature :	21~22°C
		Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Vertical



Site : 03CH07-KS  
 Condition : FCC CLASS-B 3m 3117 00240132 VERTICAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	A/Pos	T/Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	46.49	32.92	-7.08	40.00	48.11	16.20	0.72	32.11	---	---	Peak
2 p	106.63	39.22	-4.28	43.50	53.10	16.66	1.50	32.04	100	234	Peak
3	135.73	35.24	-8.26	43.50	48.04	17.57	1.68	32.05	---	---	Peak
4	547.98	35.66	-10.34	46.00	39.49	25.05	3.40	32.28	---	---	Peak
5	794.36	35.67	-10.33	46.00	34.94	28.55	4.10	31.92	---	---	Peak
6	953.44	39.56	-6.44	46.00	34.80	31.19	4.49	30.92	---	---	Peak
7	3176.00	44.79	-29.21	74.00	65.66	33.00	9.18	63.05	---	---	Peak
8	4383.00	46.18	-27.82	74.00	64.05	33.63	12.42	63.92	---	---	Peak
9	7528.00	47.17	-26.83	74.00	60.67	35.87	14.53	63.90	---	---	Peak
10	11693.00	45.85	-28.15	74.00	50.76	38.40	17.92	61.23	---	---	Peak
11	15416.00	47.84	-26.16	74.00	49.51	40.20	20.75	62.62	---	---	Peak
12	17643.00	48.97	-25.03	74.00	47.90	41.40	22.47	62.80	---	---	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	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Oct. 11, 2023	Aug. 23, 2024	Oct. 10, 2024	Radiation (03CH07-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55370528	10Hz-44G,MAX 30dB	Oct. 11, 2023	Aug. 23, 2024	Oct. 10, 2024	Radiation (03CH07-KS)
Bilog Antenna	TeseQ	CBL6111D	59913	30MHz-1GHz	Aug. 19, 2024	Aug. 23, 2024	Aug. 18, 2025	Radiation (03CH07-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 23, 2023	Aug. 23, 2024	Oct. 22, 2024	Radiation (03CH07-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Oct. 15, 2023	Aug. 23, 2024	Oct. 14, 2024	Radiation (03CH07-KS)
Amplifier	EM	EM18G40GGA	060851	18~40GHz	Jan. 03, 2024	Aug. 23, 2024	Jan. 02, 2025	Radiation (03CH07-KS)
Amplifier	SONOMA	310N	413740	9KHz-1GHz	Jan. 03, 2024	Aug. 23, 2024	Jan. 02, 2025	Radiation (03CH07-KS)
Amplifier	EM	EM01G18GA	060834	1Ghz-18Ghz	Oct. 11, 2023	Aug. 23, 2024	Oct. 10, 2024	Radiation (03CH07-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Aug. 23, 2024	NCR	Radiation (03CH07-KS)
Turn Table	EM	EM 1000-T	N/A	0~360 degree	NCR	Aug. 23, 2024	NCR	Radiation (03CH07-KS)
Antenna Mast	EM	EM 1000-A	N/A	1 m~4 m	NCR	Aug. 23, 2024	NCR	Radiation (03CH07-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz;	Apr 18, 2024	Sep. 02, 2024	Apr 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 11, 2023	Sep. 02, 2024	Oct. 10, 2024	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr 18, 2024	Sep. 02, 2024	Apr 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 11, 2023	Sep. 02, 2024	Oct. 10, 2024	Conduction (CO01-KS)

NCR: No Calibration Required



### 5. Measurement Uncertainty

**Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)**

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.84 dB
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**Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)**

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.06 dB
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**Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)**

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.16 dB
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**Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)**

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.28 dB
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