TEST REPORT

APPLICANT	:	OnePlus Technology (Shenzhen) Co., Ltd.
PRODUCT NAME	:	Mobile Phone
MODEL NAME	:	CPH2647
BRAND NAME	:	Oneplus
FCC ID	:	2ABZ2-OP23869
STANDARD(S)	:	47 CFR Part 15 Subpart B
RECEIPT DATE	:	2024-07-29
TEST DATE	:	2024-08-13 to 2024-09-06
ISSUE DATE	:	2024-11-21

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Xiao Xiong(Supervisor)

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Change History		
Version	**Date**	**Reason for Change**
1.0	2024-11-21	First edition

1. Technical Information

Note: Provide by applicant

1.1. Applicant and Manufacturer Information

Applicant:	OnePlus Technology (Shenzhen) Co., Ltd.
Applicant Address:	18C02, 18C03, 18C04, and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen, Guangdong, P.R. China.
Manufacturer:	OnePlus Technology (Shenzhen) Co., Ltd.
Manufacturer Address:	18C02, 18C03, 18C04, and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen, Guangdong, P.R. China.

1.2. Equipment Under Test (EUT) Description

Product Name:	Mobile Phone
EUT No.:	12#, 16#, 17#
Hardware Version:	11
Software Version:	OxygenOS 15.0
Tx Frequency:	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 18: 815 MHz ~ 830 MHz LTE Band 19: 830 MHz ~ 845 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz

	LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n12: 699 MHz ~ 716 MHz 5G NR n25: 1850 MHz ~ 1915 MHz 5G NR n26: 814 MHz ~ 849 MHz 5G NR n30: 2305 MHz ~ 2315 MHz 5G NR n38: 2570 MHz ~ 2620 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n48: 3550 MHz ~ 3700 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n71: 663 MHz ~ 698 MHz 5G NR n77: 3300 MHz ~ 4200 MHz 5G NR n78: 3300 MHz ~ 3800 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n/ac/ax/be: 2412 MHz ~ 2462 MHz 802.11a/ac/n/ax/be: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz; 5745 MHz ~ 5825 MHz 802.11ax/be: 5925 MHz ~ 6425 MHz; 6425 MHz ~ 6525 MHz; 6525 MHz ~ 6875 MHz; 6875 MHz ~ 7125 MHz NFC: 13.56 MHz
Rx Frequency:	GSM850: 869 MHz ~ 894 MHz GSM1900: 1930 MHz ~ 1990 MHz WCDMA Band II: 1930 MHz ~ 1990 MHz WCDMA Band IV: 2110 MHz ~ 2155 MHz WCDMA Band V: 869 MHz ~ 894 MHz LTE Band 2: 1930 MHz ~ 1990 MHz LTE Band 4: 2110 MHz ~ 2155 MHz LTE Band 5: 869 MHz ~ 894 MHz LTE Band 7: 2620 MHz ~ 2690 MHz LTE Band 12: 729 MHz ~ 746 MHz LTE Band 13: 746 MHz ~ 756 MHz LTE Band 17: 734 MHz ~ 746 MHz LTE Band 18: 860 MHz ~ 875 MHz LTE Band 19: 875 MHz ~ 890 MHz LTE Band 25: 1930 MHz ~ 1995 MHz LTE Band 26: 859 MHz ~894 MHz

	LTE Band 30: 2350 MHz ~ 2360 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550MHz–3700MHz LTE Band 66: 2110 MHz ~ 2200 MHz LTE Band 71: 617 MHz ~ 652 MHz 5G NR n2: 1930 MHz ~ 1990 MHz 5G NR n5: 869 MHz ~ 894 MHz 5G NR n7: 2620 MHz ~ 2690 MHz 5G NR n12: 729 MHz ~ 746 MHz 5G NR n25: 1930 MHz ~ 1995 MHz 5G NR n26: 859 MHz ~ 894 MHz 5G NR n30: 2350 MHz ~ 2360 MHz 5G NR n38: 2570 MHz ~ 2620 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n48: 3550 MHz ~ 3700 MHz 5G NR n66: 2110 MHz ~ 2200 MHz 5G NR n71: 617 MHz ~ 652 MHz 5G NR n77: 3300 MHz ~ 4200 MHz 5G NR n78: 3300 MHz ~ 3800 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n/ac/ax/be: 2412 MHz ~ 2462 MHz 802.11a/ac/n/ax/be: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz; 5745 MHz ~ 5825 MHz 802.11ax/be: 5925 MHz ~ 6425 MHz; 6425 MHz ~ 6525 MHz; 6525 MHz ~ 6875 MHz; 6875 MHz ~ 7125 MHz NFC: 13.56 MHz Galileo (E1)/GLONASS (G1)/GPS (L1): 1559 MHz ~ 1610 MHz Galileo (E5a)/GPS (L5): 1164 MHz ~ 1215 MHz
LTE CA_UL:	2A-4A, 2A-5A, 2A-7A, 2A-12A, 2A-13A, 2A-66A, 2A-71A, 4A-5A, 4A-12A, 4A-13A, 4A-17A, 4A-71A, 5A-7A, 5A-30A, 5A-66A, 7A-12A, 12A-30A, 12A-66A, 13A-66A, 66A-71A, 12B, 66B, 7C, 38C, 41C, 48C, 66C
NR CA_UL:	n2A-n77A, n5A-n77A, n5A-n78A, n7A-n78A, n25A-n41A, n41A-n66A
EN_DC:	2A-n5A, 2A-n7A, 2A-n38A, 2A-n41A, 2A-n66A, 2A-n71A, 2A-n77A, 2A-n78A, 4A-n2A, 4A-n7A, 4A-n38A, 4A-n41A, 4A-n78A, 5A-n2A, 5A-n7A, 5A-n38A, 5A-n66A, 5A-n77A, 5A-n78A, 7A-n2A, 7A-n5A, 7A-n25A, 7A-n66A, 7A-n71A, 7A-n77A, 7A-n78A, 12A-n2A,

	12A-n7A, 12A-n25A, 12A-n38A, 12A-n41A, 12A-n66A, 12A-n77A, 12A-n78A, 13A-n2A, 13A-n7A, 13A-n25A, 13A-n66A, 13A-n77A, 13A-n78A, 25A-n41A, 25A-n77A, 25A-n78A, 26A-n25A, 26A-n41A, 30A-n2A, 30A-n5A, 30A-n66A, 30A-n77A, 38A-n78A, 41A-n77A, 41A-n78A, 48A-n5A, 48A-n66A, 66A-n2A, 66A-n5A, 66A-n7A, 66A-n25A, 66A-n38A, 66A-n41A, 66A-n71A, 66A-n77A, 66A-n78A, 71A-n2A, 71A-n38A, 71A-n41A, 71A-n66A, 71A-n78A	
Accessory:	**AC Adapter**	
	Brand Name:	N/A
	Model No.:	VCB8OAUH
	Serial No.:	(N/A, marked #1 by test site)
	Rated Input:	100-240V~50/60Hz, 2.0A
	Rated Output:	5V⎓2A, 5-11V⎓5A, 5-11V⎓7.3A
	Manufacturer 1:	Dongguan Aohai Technology Co.,Ltd.
	Manufacturer 2:	Huizhou Golden Lake Industrial Co., Ltd.
	Battery	
	Brand Name:	N/A
	Model No.:	BLPB25
	Serial No.:	(N/A, marked #1 by test site)
	Capacity:	5860mAh
	Rated Voltage:	3.93V
	Charge Limit:	4.53V
	Manufacturer:	Sunwoda Electronic CO.,LTD.

Note:

1. For a more detailed description, please refer to specification or user's manual supplied by the applicant and/or manufacturer.

2. Test Results

2.1. Applied Reference Documents

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart B:

No.	Identity	Document Title
1	47 CFR Part 15	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result	Method Determination Remark
1	15.107	Conducted Emission	2024.08.13 to 2024.09.06	Fan Shengquan	PASS	No deviation
2	15.109	Radiated Emission	2024.08.15 to 2024.08.16	Yuan Zihong	PASS	No deviation

Note 1: The tests were performed according to the method of measurements prescribed in ANSI C63.4-2014.

Note 2: Additions to, deviation, or exclusions from the method shall be judged in the “method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

Note 3: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

2.2. EUT Setup and Operating Conditions

Note: All of the following test modes are tested in all the test items.

Test Item	
Radiated Emission	
Mode 1 :	EUT + GSM850 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 2 :	EUT + GSM1900 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 3 :	EUT + WCDMA Band II Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 4 :	EUT + WCDMA Band IV Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 5 :	EUT + WCDMA Band V Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 6 :	EUT + LTE Band 2 Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 7 :	EUT + LTE Band 4 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 8 :	EUT + LTE Band 5 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 9 :	EUT + LTE Band 7 Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 10 :	EUT + LTE Band 12 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 11 :	EUT + LTE Band 13 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 12 :	EUT + LTE Band 17 Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 13 :	EUT + LTE Band 18 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 14 :	EUT + LTE Band 19 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 15 :	EUT + LTE Band 25 Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 16 :	EUT + LTE Band 26 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card

Mode 17 :	EUT + LTE Band 30 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 18 :	EUT + LTE Band 38 Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 19 :	EUT + LTE Band 41 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 20 :	EUT + LTE Band 48 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 21 :	EUT + LTE Band 66 Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 22 :	EUT + LTE Band 71 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 23 :	EUT + 5G NR n2 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 24 :	EUT + 5G NR n5 Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 25 :	EUT + 5G NR n7 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 26 :	EUT + 5G NR n12 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 27 :	EUT + 5G NR n25 Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 28 :	EUT + 5G NR n26 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 29 :	EUT + 5G NR n30 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 30 :	EUT + 5G NR n38 Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 31 :	EUT + 5G NR n41 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 32 :	EUT + 5G NR n48 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 33 :	EUT + 5G NR n66 Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 34 :	EUT + 5G NR n71 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 35 :	EUT + 5G NR n77 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card

Mode 36 :	EUT + 5G NR n78 Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 37 :	EUT + 2A-4A Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 38 :	EUT + 2A-5A Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 39 :	EUT + 2A-7A Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 40 :	EUT + 2A-12A Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 41 :	EUT + 2A-13A Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 42 :	EUT + 2A-66A Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 43 :	EUT + 2A-71A Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 44 :	EUT + 4A-17A Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 45 :	EUT + 5A-30A Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 46 :	EUT + 12B Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 47 :	EUT + 66B Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 48 :	EUT + 7C Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 49 :	EUT + 38C Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 50 :	EUT + 41C Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 51 :	EUT + 48C Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 52 :	EUT + 66C Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 53 :	EUT + n2A-n77A Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 54 :	EUT + n5A-n78A Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card

Mode 55 :	EUT + n25A-n41A Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 56 :	EUT + n41A-n66A Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 57 :	EUT + 2A-n5A Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 58 :	EUT + 2A-n7A Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 59 :	EUT + 2A-n38A Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 60 :	EUT + 2A-n41A Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 61 :	EUT + 2A-n66A Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 62 :	EUT + 2A-n71A Idle + Bluetooth Idle + 5G WLAN Idle + Galileo (E1) Rx + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 63 :	EUT + 2A-n77A Idle + Bluetooth Idle + 6G WLAN Idle + GLONASS (G1)Rx + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 64 :	EUT + 2A-n78A Idle + Bluetooth Idle + 2.4G WLAN Idle + GPS (L1) Rx + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 65 :	EUT + 4A-n2A Idle + Bluetooth Idle + 5G WLAN Idle + Galileo (E5a) Rx + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 66 :	EUT + 7A-n25A Idle + Bluetooth Idle + 6G WLAN Idle + GPS (L5) Rx + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card
Mode 67 :	**EUT + NFC + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card + NFC Card + NFC Mode**
Mode 68 :	EUT + LTE Band 2 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card + Play 1kHz Audio Color Bar Video
Mode 69 :	EUT + LTE Band 7 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card + Rear Camera Mode
Mode 70 :	EUT + LTE Band 17 Idle + Bluetooth Idle + 6G WLAN Idle + Battery + AC Adapter + USB Cable (Charging from Adapter) + SIM Card + Front Camera Mode
Mode 71 :	EUT + LTE Band 25 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + USB Cable + SIM Card + PC + Data Transmission Mode
Mode 72 :	**EUT + LTE Band 38 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + USB Cable + SIM Card + PC + PC Adapter + Indirect Power Supply Mode**

Remark:
The above test mode in boldface (Mode 72) was the worst case of conducted emission test, only the test data of this mode was reported. The above test mode in boldface (Mode 67) was the worst case of radiated emission test, only the test data of this mode was reported.

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 - 60
Atmospheric Pressure (kPa):	86 - 106

3. 47 CFR Part 15B Requirements

3.1. Conducted Emission

3.1.1. Requirement

According to FCC section 15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency Range (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

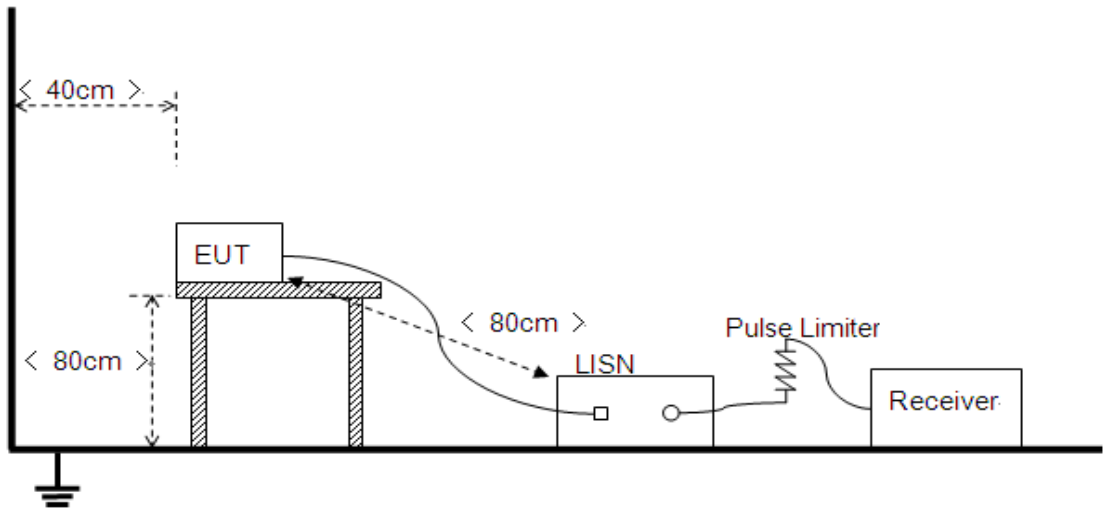
a) The limit subjects to the Class B digital device.

b) The lower limit shall apply at the band edges.

c) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

3.1.2. Test Setup

Please refer to Annex A for the photographs of the Test Configuration.



The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

The power strip or extension cord has been investigated to make sure that the LISN integrity inma intained with respect to the impedance characteristics as prescribed in ANSI C63.4-2014 at Clause 4.3.

3.1.3. Test Result

Set RBW=9 kHz, VBW=30 kHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. All test modes are considered, refer to recorded points and plots below.

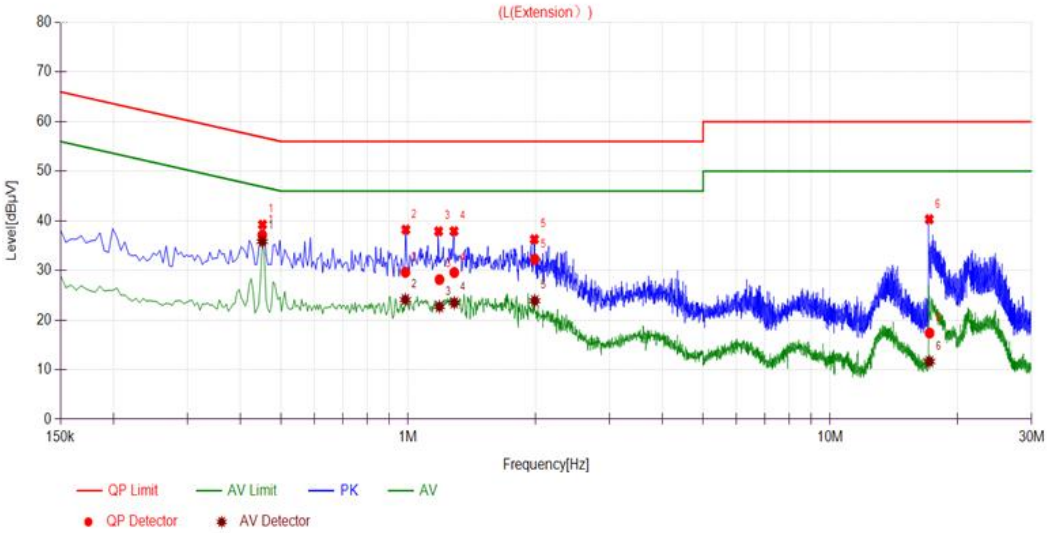
The measurement results are obtained as below:
E [dBμV] =U_R[dBμV] + $L_{Cable\ loss}$ [dB] + A_{Factor} [dB]
U_R: Receiver Reading
A_{Factor}: Voltage Division Factor of LISN
$L_{Cable\ loss}$: Correction Factor Contains Pulse Limiter and Cable

During the test, the total correction Factor $L_{Cable\ loss}$ and A_{Factor} were built in test software.

A. Test Plot and Suspicious Points:

Start of Test: 2024-08-13 15:40:50

Test Graph

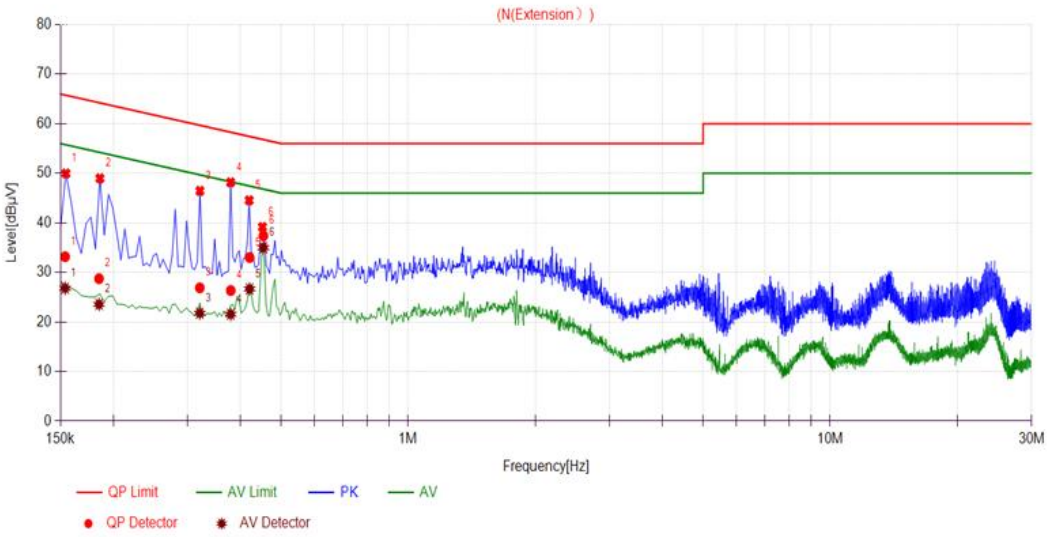


(Plot A: L Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quasi-peak	Average	Quasi-peak	Average		
1	0.4510	37.12	35.84	56.86	46.86	Line	PASS
2	0.9847	29.63	24.11	56.00	46.00		PASS
3	1.1859	28.16	22.71	56.00	46.00		PASS
4	1.2856	29.58	23.48	56.00	46.00		PASS
5	1.9948	32.26	23.88	56.00	46.00		PASS
6	17.1944	17.38	11.64	60.00	50.00		PASS

Start of Test: 2024-08-13 15:45:32

Test Graph



(Plot B: N Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quasi-peak	Average	Quasi-peak	Average		
1	0.1538	33.17	26.80	65.79	55.79	Neutral	PASS
2	0.1851	28.74	23.55	64.25	54.25		PASS
3	0.3207	26.89	21.76	59.69	49.69		PASS
4	0.3797	26.34	21.55	58.29	48.29		PASS
5	0.4210	33.01	26.66	57.43	47.43		PASS
6	0.4538	37.40	34.99	56.81	46.81		PASS

3.2. Radiated Emission

3.2.1. Requirement

According to FCC section 15.109 (a), the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency Range (MHz)	Field Strength Limitation at 3m Measurement Dist	
	(μV/m)	(dBμV/m)
30.0 - 88.0	100	20log 100
88.0 - 216.0	150	20log 150
216.0 - 960.0	200	20log 200
Above 960.0	500	20log 500

As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

Note:

1) The tighter limit shall apply at the boundary between two frequency range.
2) Limitation expressed indBμV/m is calculated by 20log Emission Level(μV/m).

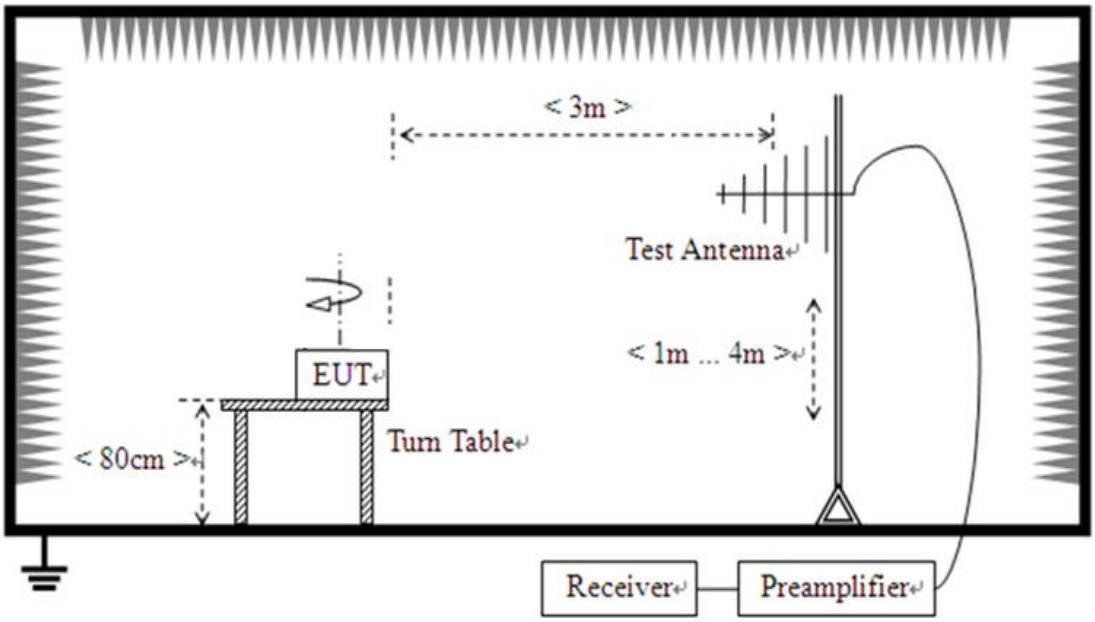
3.2.2. Frequency Range of Measurement

According to 15.33(b)(1), the frequency range of radiated measurement for the EUT is listed in the following table:

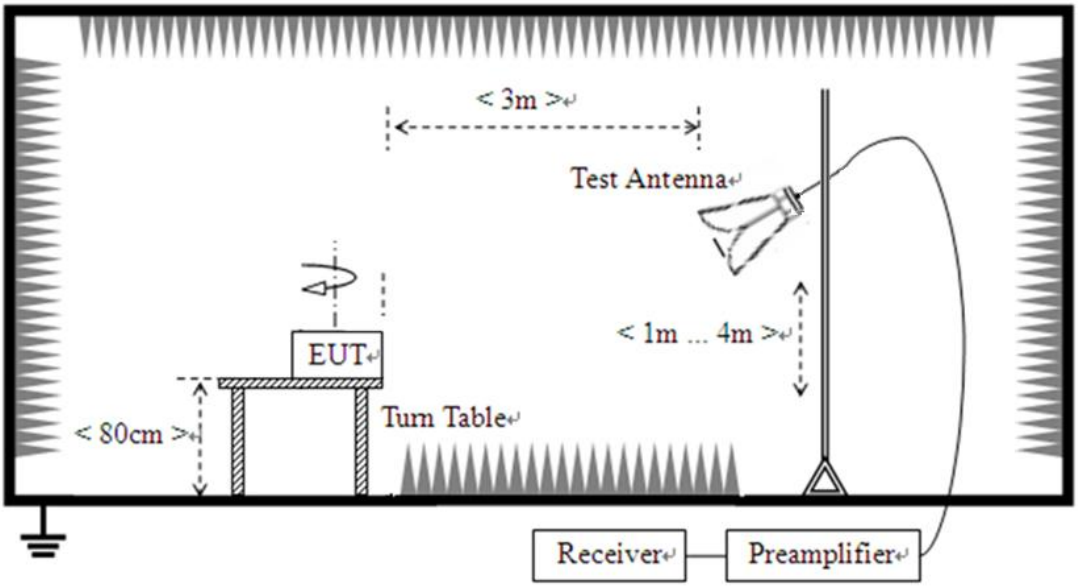
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30.
1.705–108	1000.
108–500	2000.
500–1000	5000.
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

3.2.3. Test Setup

1) For radiated emissions from 30MHz to1GHz



2) For radiated emissions above 1GHz



The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on variable-height antenna master tower.

For the test Antenna:

In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz)are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.

For measurements below 1GHz the resolution bandwidth is set to 120 kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video bandwidth is set to 3MHz for peak measurements and as applicable for average measurements.

3.2.4. Test Result

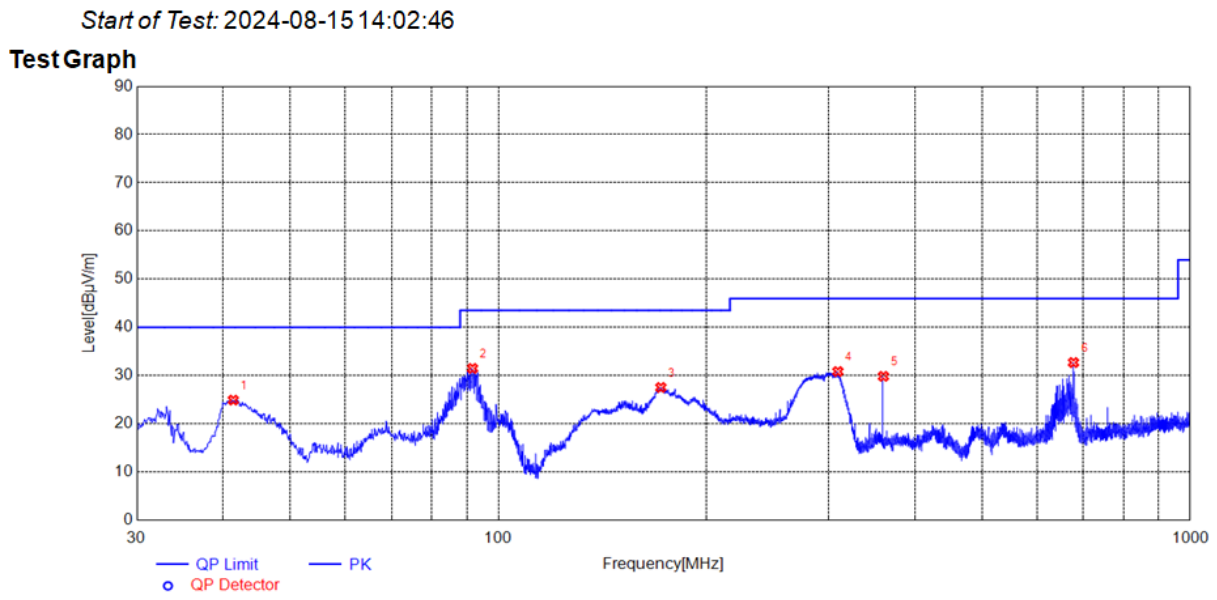
The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

The amplitude of emissions which (6GHz-40GHz) are attenuated more than 20 dB below the permissible value need not be reported.

The measurement results are obtained as below:
E [dBμV/m] $=U_R$ [dBμV] + A_T[dB] + A_{Factor} [dB]; $A_T = L_{Cable\ loss}$ [dB] - G_{preamp} [dB]
A_T: Total correction Factor except Antenna
U_R: Receiver Reading
G_{preamp}: Preamplifier Gain
A_{Factor}: Antenna Factor at 3m

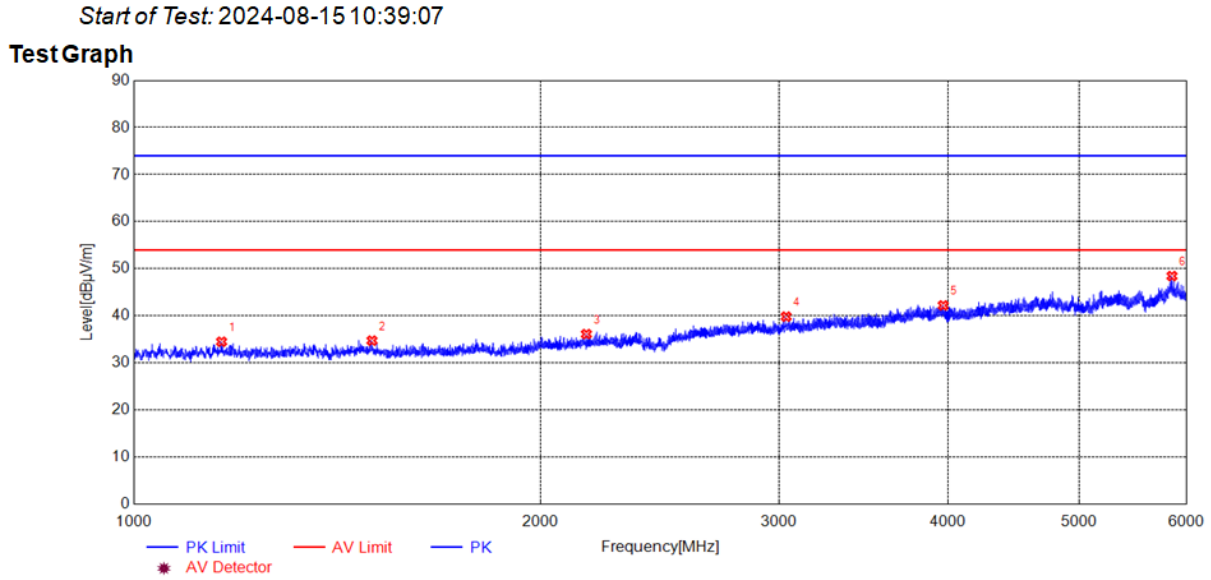
During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.



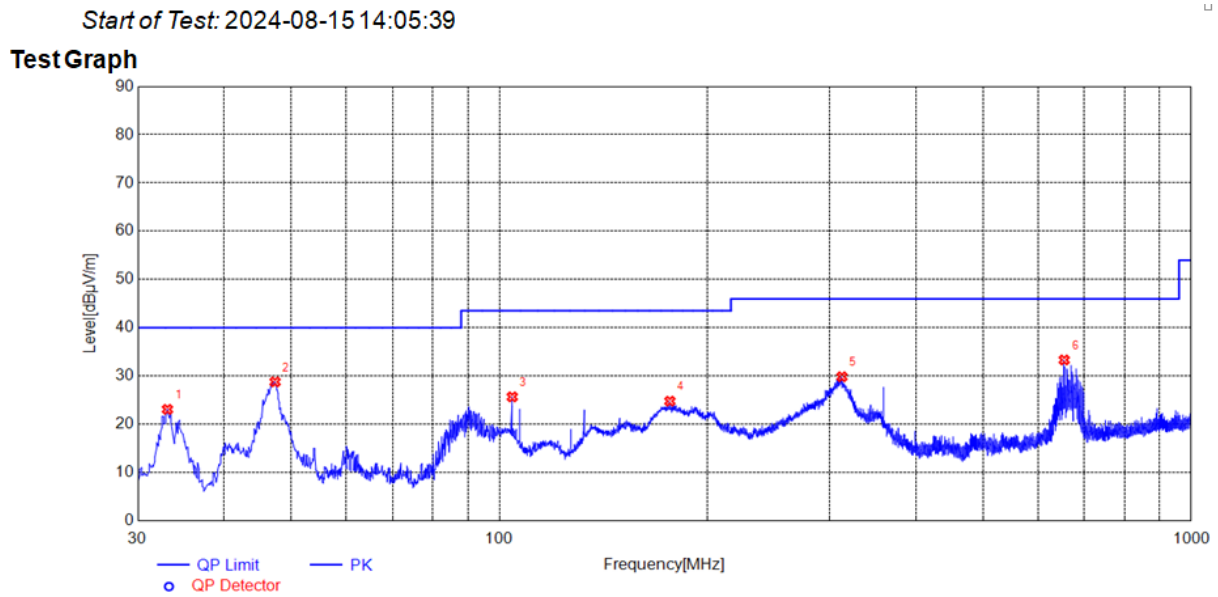
(Plot A: ANT-Vertical, 30MHz - 1GHz)

No.	Fre. MHz	PK dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	41.3501	24.92	N.A	N.A	N.A	40.00	N.A	V	PASS
2	91.6982	31.49	N.A	N.A	N.A	43.50	N.A	V	PASS
3	171.6342	27.54	N.A	N.A	N.A	43.50	N.A	V	PASS
4	309.3879	30.85	N.A	N.A	N.A	46.00	N.A	V	PASS
5	360.0270	29.85	N.A	N.A	N.A	46.00	N.A	V	PASS
6	677.8308	32.71	N.A	N.A	N.A	46.00	N.A	V	PASS



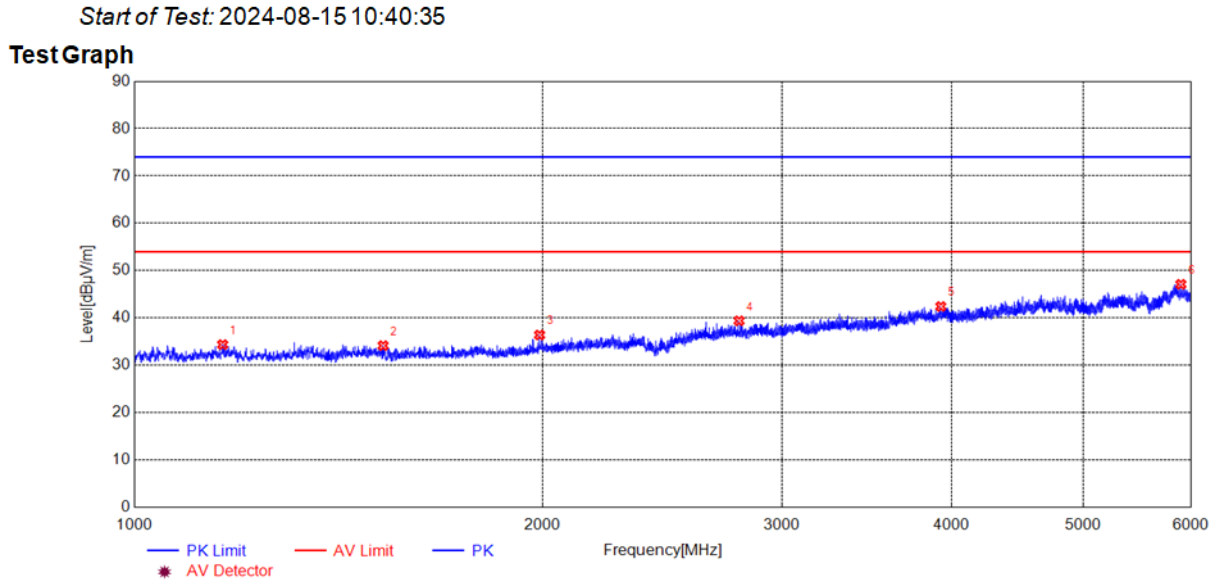
(Plot B: ANT-Vertical, 1GHz - 6GHz)

No.	Fre. MHz	PK dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	1161.5000	34.51	N.A	N.A	74.00	N.A	54.00	V	PASS
2	1500.5000	34.74	N.A	N.A	74.00	N.A	54.00	V	PASS
3	2161.5000	36.13	N.A	N.A	74.00	N.A	54.00	V	PASS
4	3037.0000	39.84	N.A	N.A	74.00	N.A	54.00	V	PASS
5	3968.0000	42.22	N.A	N.A	74.00	N.A	54.00	V	PASS
6	5857.5000	48.46	N.A	N.A	74.00	N.A	54.00	V	PASS



(Plot C: ANT- Horizontal, 30MHz - 1GHz)

No.	Fre. MHz	PK dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	33.1043	23.09	N.A	N.A	N.A	40.00	N.A	H	PASS
2	47.3647	28.79	N.A	N.A	N.A	40.00	N.A	H	PASS
3	104.3094	25.68	N.A	N.A	N.A	43.50	N.A	H	PASS
4	176.2906	24.79	N.A	N.A	N.A	43.50	N.A	H	PASS
5	312.5893	29.85	N.A	N.A	N.A	46.00	N.A	H	PASS
6	655.0335	33.33	N.A	N.A	N.A	46.00	N.A	H	PASS



(Plot D: ANT- Horizontal, 1GHz - 6GHz)

No.	Fre. MHz	PK dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	1162.0000	34.38	N.A	N.A	74.00	N.A	54.00	H	PASS
2	1525.5000	34.16	N.A	N.A	74.00	N.A	54.00	H	PASS
3	1989.0000	36.41	N.A	N.A	74.00	N.A	54.00	H	PASS
4	2790.0000	39.40	N.A	N.A	74.00	N.A	54.00	H	PASS
5	3928.5000	42.43	N.A	N.A	74.00	N.A	54.00	H	PASS
6	5902.5000	47.12	N.A	N.A	74.00	N.A	54.00	H	PASS

Annex A Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Uncertainty of Conducted Emission Measurement

Measuring Uncertainty for a Level of Confidence of 95%(U=2Uc(y))	9kHz-150kHz	±3.3dB
	150kHz-30MHz	±2.8dB

Uncertainty of Radiated Emission Measurement

Measuring Uncertainty for a Level of Confidence of 95%(U=2Uc(y))	30MHz-200MHz	±5.06dB
	200MHz-1000MHz	±5.04dB
	1GHz-6GHz	±5.18dB
	6GHz-18GHz	±5.48dB

Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Accreditation Certificate

Accredited Testing Laboratory:	The FCC designation number is CN1192. Test firm registration number is 226174. (Shenzhen Morlab Communications Technology Co., Ltd.)

4. Test Software Utilized

Model	Version Number	Producer
TS+ -[JS32-RE]	Version 2.5.0.6	Tonscend
TS+ -[JS32-CE]	Version 2.5.0.0	Tonscend

5. Test Equipments Utilized

Description	Model	Serial No.	Manufacturer	Cal. Date	Due. Date
Bi-Log Antenna	VULB 9163	9163-519	SCHWARZBECK	2024/6/22	2025/6/21
Horn Antenna	BBHA 9120D	01774	SCHWARZBECK	2024/6/22	2025/6/21
Horn Antenna	BBHA9170	BBHA9170 #773	SCHWARZBECK	2024/6/22	2025/6/21
Receiver	N9038A	MY56400093	KEYSIGHT	2024/1/25	2025/1/24
6db Attenuator	BW-N6W5+	E191001	Mini-circuits	2023/9/19	2024/9/18
Preamplifier	S020180L3203	61171/61172	LUCIX CORP.	2024/5/30	2025/5/29
Preamplifier	S10M100L3802	46732	LUCIX CORP.	2024/5/30	2025/5/29
Preamplifier	DCLNA0118-40C-S	DS77209	Decentest	2024/5/30	2025/5/29
RF Coaxial Cable	PE330	MRE001	Pasternack	N/A	N/A
RF Coaxial Cable	CLU18	MRE002	Pasternack	N/A	N/A
RF Coaxial Cable	CLU18	MRE003	Pasternack	N/A	N/A
RF Coaxial Cable	QA360-40-KK-0.5	22290045	Qualwave	N/A	N/A
RF Coaxial Cable	QA360-40-KKF-2	22290046	Qualwave	N/A	N/A
RF Coaxial Cable	QA500-18-NN-5	22120181	Qualwave	N/A	N/A
RF Coaxial Cable	BNC	MRE04	Qualwave	N/A	N/A
Receiver	ESPI	101052	R&S	2024/6/3	2025/6/2
LISN	NSLK 8127	8127449	Schwarzbeck	2024/2/2	2025/2/1
10dB Pulse Limiter	VTSD 9561-F	VTSD 9561 F-B #206	SCHWARZBECK	2024/5/30	2025/5/29
System Simulator	CMW500	152038	R&S	2023/9/19	2024/9/18
System Simulator	MT8000A	6262148249	anritsu	2024/6/30	2025/6/29
System Simulator	MT8821C	6261830572	anritsu	2024/1/25	2025/1/24

6. Ancillary Equipment Utilized

Description	Model	Serial No.	Manufacturer
PC	N/A	N/A	APPLE
PC	P144G	20210357	DELL
PC Adapter	HA65NM190	N/A	DELL
NFC card	N/A	N/A	N/A

END OF REPORT