



# EMC TEST REPORT

**Applicant** Huawei Device Co., Ltd.  
**FCC ID** 2ATEYCTR-LX3  
**Product** Smart phone  
**Model** CTR-LX3  
**Report No.** R2205A0419-E1  
**Issue Date** June 14, 2022

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC Code CFR47 Part15B (2021)/ ANSI C63.4-2014**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

*Wei Liu*

Prepared by: Wei Liu

*Guangchang Fan*

Approved by: Guangchang Fan

---

**TA Technology (Shanghai) Co., Ltd.**

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000



## Table of Contents

1	Test Laboratory.....	4
1.1	Notes of the Test Report.....	4
1.2	Test facility.....	4
1.3	Testing Location.....	4
2	General Description of Equipment under Test.....	5
2.1	Applicant and Manufacturer Information.....	5
2.2	General information.....	5
2.3	Applied Standards.....	8
2.4	Test Mode.....	9
3	Test Case Results.....	10
3.1	Radiated Emission.....	10
3.2	Conducted Emission.....	16
4	Main Test Instruments.....	19
	ANNEX A: The EUT Appearance.....	20
	ANNEX B: Test Setup Photos.....	21



### Summary of measurement results

Number	Test Case	Clause in FCC Rules	Conclusion
1	Radiated Emission	FCC Part15.109, ANSI C63.4-2014	PASS
2	Conducted Emission	FCC Part15.107, ANSI C63.4-2014	PASS
Date of Testing: May 26, 2022 ~ May 27, 2022			
Date of Sample Received: May 17, 2022			
Note: All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

# 1 Test Laboratory

## 1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

## 1.2 Test facility

### **FCC (Designation number: CN1179, Test Firm Registration Number: 446626)**

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

### **A2LA (Certificate Number: 3857.01)**

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

## 1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.  
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China  
City: Shanghai  
Post code: 201201  
Country: P. R. China  
Contact: Fan Guangchang  
Telephone: +86-021-50791141/2/3  
Fax: +86-021-50791141/2/3-8000  
Website: <http://www.ta-shanghai.com>  
E-mail: [fanguangchang@ta-shanghai.com](mailto:fanguangchang@ta-shanghai.com)

## 2 General Description of Equipment under Test

### 2.1 Applicant and Manufacturer Information

<b>Applicant</b>	Huawei Device Co., Ltd.
<b>Applicant address</b>	No.2 of Xincheng Road, Songshan Lake Zone, Dongguan, Guangdong 523808, People's Republic of China
<b>Manufacturer</b>	Huawei Device Co., Ltd.
<b>Manufacturer address</b>	No.2 of Xincheng Road, Songshan Lake Zone, Dongguan, Guangdong 523808, People's Republic of China

### 2.2 General information

EUT Description			
Device Type	Portable Device		
Model	CTR-LX3		
SN	A7F6R22423000346		
HW Version	LLDM599		
SW Version	12.0.1.108(C900E105R1P1)		
Power Rating	Input: 5.0/9.0/10.0Vdc (USB of computer or external adapter); 3.88Vdc (by rechargeable battery)		
Connecting I/O Port(s)	Please refer to the User's Manual.		
Antenna Type	Internal Antenna		
Frequency	Band	Tx (MHz)	Rx (MHz)
	GSM 850	824 ~ 849	869 ~ 894
	GSM 1900	1850 ~ 1910	1930 ~ 1990
	WCDMA Band II	1850 ~ 1910	1930 ~ 1990
	WCDMA Band IV	1710 ~ 1755	2110 ~ 2155
	WCDMA Band V	824 ~ 849	869 ~ 894
	LTE Band 2	1850 ~ 1910	1930 ~ 1990
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 5	824 ~ 849	869 ~ 894
	LTE Band 7	2500 ~ 2570	2620 ~ 2690
	LTE Band 13	777 ~ 787	746 ~ 756
	LTE Band 26	814 ~ 849	859 ~ 894
	LTE Band 38	2570 ~ 2620	2570 ~ 2620
	LTE Band 66	1710 ~ 1780	2110 ~ 2180
Bluetooth	2400 ~ 2483.5	2400 ~ 2483.5	



	Wi-Fi 2.4G	2400 ~ 2483.5	2400 ~ 2483.5
	Wi-Fi 5G(U-NII-1)	5150 ~ 5250	5150 ~ 5250
	Wi-Fi 5G(U-NII-2A)	5250 ~ 5350	5250 ~ 5350
	Wi-Fi 5G(U-NII-2C)	5470 ~ 5725	5470 ~ 5725
	Wi-Fi 5G(U-NII-3)	5725 ~ 5850	5725 ~ 5850
EUT Accessory			
Accessory	Model	Manufacture	No.
Adapter	HW-100400E01	Huawei Technologies Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	1
	HW-100400B01	Huawei Technologies Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	2
		Huawei Technologies Co., Ltd. (Manufacturer: HUIZHOU BYD ELECTRONIC CO., LTD.)	3
	HW-100400U01	Huawei Technologies Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	4
	HW-100400E02	Huawei Device Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	5
	HW-100400B02	Huawei Device Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	6
	HW-100400U02	Huawei Device Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	7
Battery	HB496493EGW	Dongguan NVT Technology Co., Ltd.	1
		Shenzhen Sunwoda Intelligence Technology Co., Ltd.	2
Earphone	MEND1532B528A 11	Jiangxi Lianchuang Hongsheng Electronic Co., LTD.	1
	1293-3283-3.5mm -339	Boluo County Quancheng Electronic Co.,ltd.	2
	EPAB542-2WH05- DH	FOXCONN INTERCONNECT TECHNOLOGY LIMITED	3
USB Cable	WA0046	GUANGXI BROAD TELECOMMUNICATION CO.,LTD	1
	AU2-CHO006HF	FREEPORTR RESOURCES ENTERPRISES (JIANGXI) CO.,LTD	2
	213-00989-0	DONGGUAN MINGJI ELECTRONICS TECHNOLOGY GROUP CO.,LTD	3
	L99UC138-CS-H	LUXSHARE PRECISION INDUSTRY CO.,LTD	4
Auxiliary test equipment			
PC	PC Manufacturer: Microsoft Corporation Model: L20170076		
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.			
2. There is more than Adapter/Battery/ Earphone /USB cable, each one should be applied throughout the compliance test respectively, and however, only the worst case (Adapter 4/ Battery 2/ Earphone 2/			



USB cable 3) for RE, (Adapter 5/ Battery 2/ Earphone 1/ USB cable 1) for CE will be recorded in this report.



## 2.3 Applied Standards

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

### Test standards

**FCC Code CFR47 Part15B (2021)**

**ANSI C63.4-2014**



## 2.4 Test Mode

Test Mode	
Mode 1:	Adapter +USB cable+ earphone + Front camera On + GSM/WCDMA/LTE/Bluetooth/WLAN receiver
Mode 2:	Adapter +USB cable+ earphone + Front camera On + GSM/WCDMA/LTE/Bluetooth/WLAN Traffic
Mode 3:	Adapter +USB cable+ earphone + Rear camera On + GSM/WCDMA/LTE/Bluetooth/WLAN receiver
Mode4:	Adapter +USB cable+ earphone + Rear camera On + GSM/WCDMA/LTE/Bluetooth/WLAN Traffic
Mode 5:	Adapter + USB cable + earphone + Mp4
Mode 6:	Adapter + USB cable + earphone + GSM/WCDMA/LTE/GPS/ Bluetooth/ WLAN receiver
Mode 7:	Adapter + USB cable + earphone + GSM/WCDMA/LTE/GPS/ Bluetooth/ WLAN Traffic
Mode 8:	USB Copy(EUT with PC) + USB cable + earphone
Mode 9:	Front Camera On +earphone + GSM/WCDMA/LTE/Bluetooth/WLAN receiver
Mode 10:	Front Camera On +earphone + GSM/WCDMA/LTE/Bluetooth/WLAN Traffic
Mode 11:	Rear camera On +earphone + GSM/WCDMA/LTE/Bluetooth/WLAN receiver
Mode 12:	Rear camera On +earphone + GSM/WCDMA/LTE/Bluetooth/WLAN Traffic
Mode 13:	Earphone + MP4
Mode 14:	Earphone + GSM/WCDMA/LTE/Bluetooth/WLAN receiver
Mode 15:	Earphone + GSM/WCDMA/LTE/Bluetooth/WLAN Traffic

During the test, the preliminary test was performed in all modes with all adapters, earphones, USB Cables and batteries; mode 8 is selected as the worst condition. The test data of the worst-case condition was recorded in this report.

### 3 Test Case Results

#### 3.1 Radiated Emission

##### Ambient condition

Temperature	Relative humidity	Pressure
15°C~35°C	30%~60%	101.5kPa

##### Methods of Measurement

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 3 meters. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated signal level.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. During the test, the EUT is worked at maximum output power.

Set the spectrum analyzer in the following:

Below 1GHz:

RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz:

(a) PEAK Detector: RBW=1MHz / VBW=3MHz / Sweep=AUTO

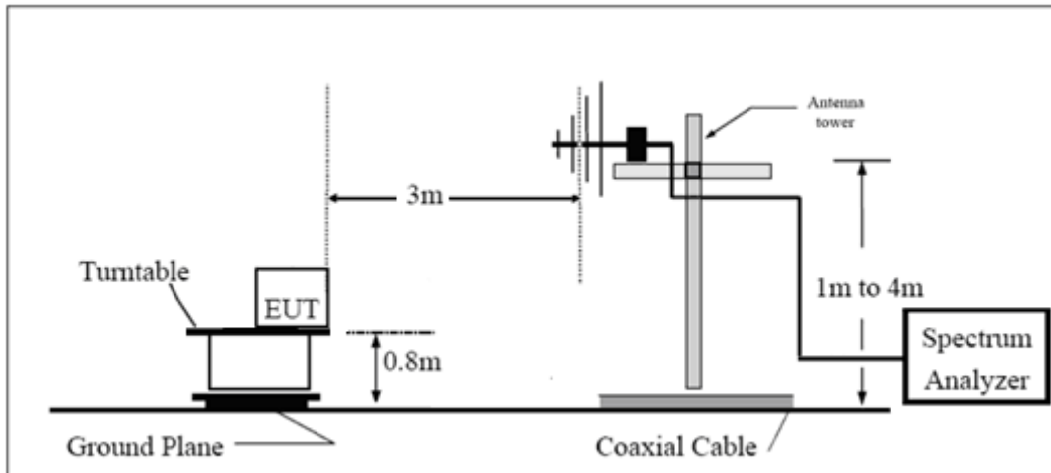
(b) AVERAGE Detector: RBW=1MHz / VBW=3MHz / Sweep=AUTO

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

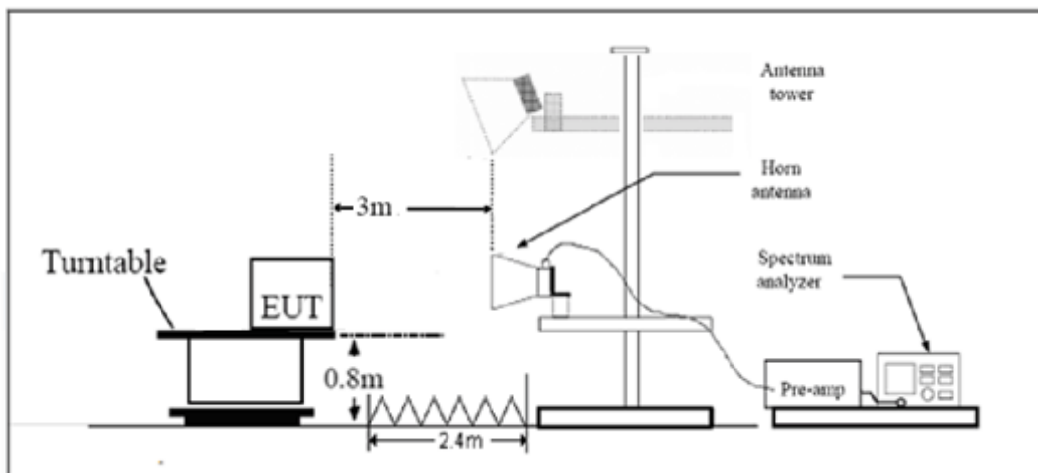
During the test, EUT is connected to a laptop via a USB cable in the case of Transfer Data mode. The EUT is used as the peripheral equipment of the PC. The data is transferred from EUT to PC;

**Test Setup**

**Below 1GHz**



**Above 1GHz**



Note: Area side: 2.4mX3.6m

Antenna Tower meets ANSI C63.4 requirements for measurements above 1 GHz by keeping the antenna aimed at the EUT during the antenna's ascent/ descent along the antenna mast.

**Limits****Class B**

Frequency (MHz)	Field Strength (dB $\mu$ V/m)	Detector
30 -88	40.0	Quasi-peak
88-216	43.5	Quasi-peak
216 – 960	46.0	Quasi-peak
960-1000	54.0	Quasi-peak
1000-5 <sup>th</sup> harmonic of the highest frequency or 40GHz, which is lower	54 74	Average Peak

**Measurement Uncertainty**

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

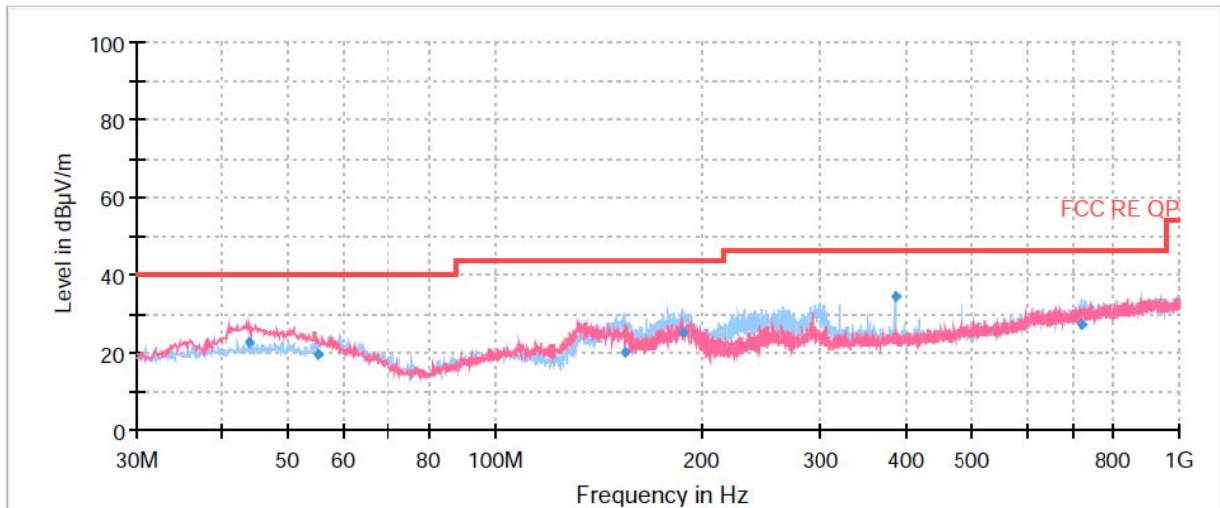
Frequency	Uncertainty
30MHz~200MHz	4.17 dB
200MHz~1000MHz	4.84 dB
1GHz~18GHz	4.35 dB
18GHz~26.5GHz	5.90 dB
26.5GHz~40GHz	5.92 dB

**Test Results**

Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier.

The following graphs display the maximum values of horizontal and vertical by software.

For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

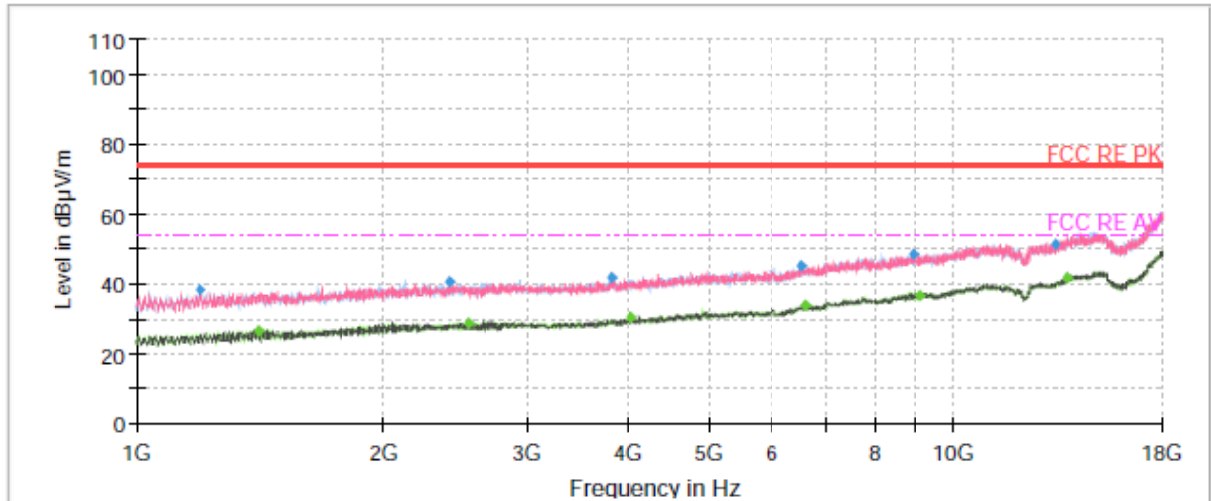


Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
43.82	22.52	40.00	17.48	1000.00	105.0	V	287.00	14
55.09	19.62	40.00	20.38	1000.00	221.0	V	280.00	14
154.80	20.11	43.50	23.39	1000.00	175.0	H	48.00	9
188.07	25.14	43.50	18.36	1000.00	125.0	H	229.00	12
384.01	34.57	46.00	11.43	1000.00	100.0	H	1.00	17
720.88	27.39	46.00	18.61	1000.00	125.0	H	316.00	23

**Remark: 1. Correction Factor = Antenna factor + Insertion loss(cable loss+amplifier gain)**

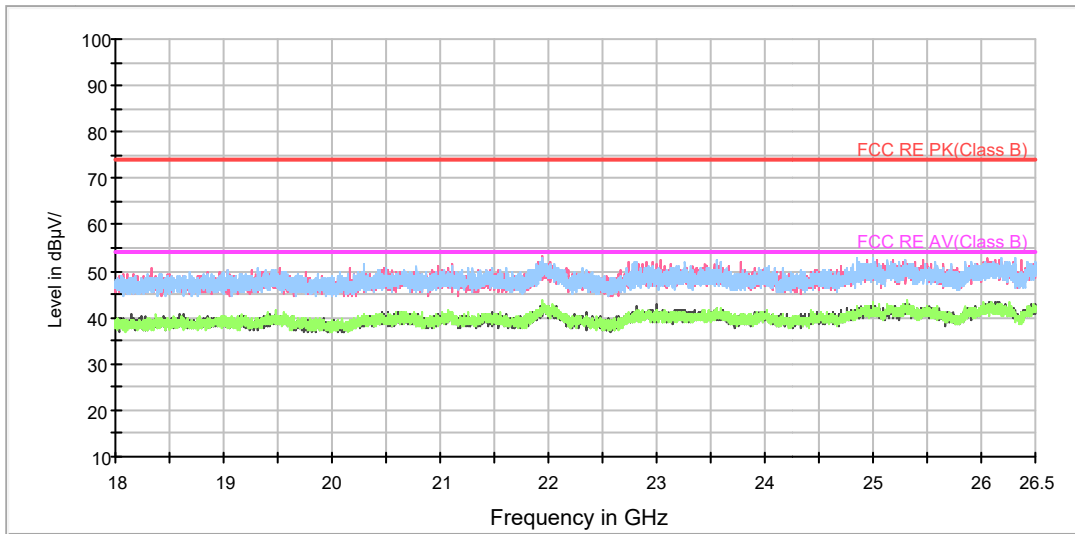
**2. Margin = Limit – Quasi-Peak**



Radiated Emission from 1GHz to 18GHz

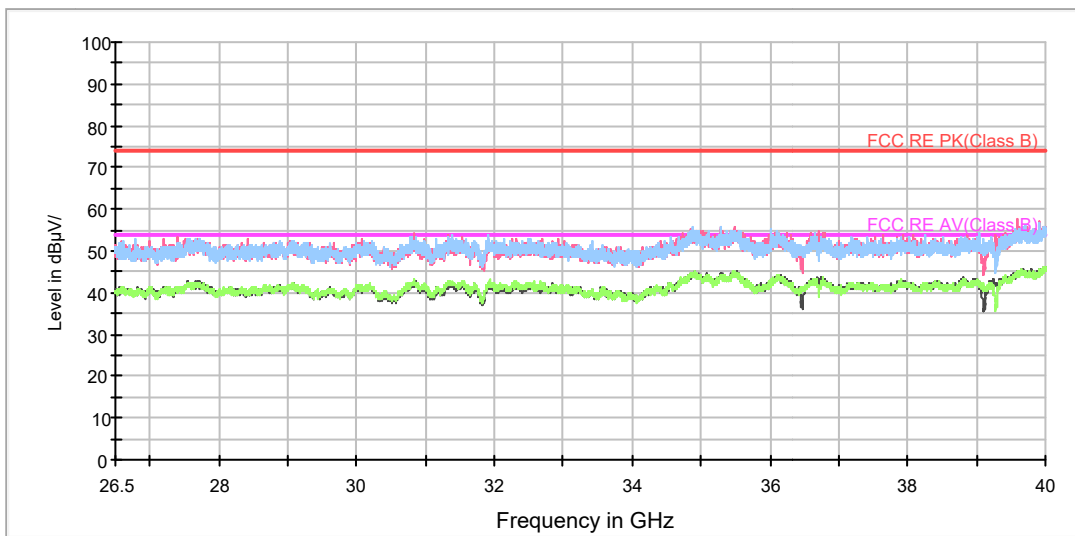
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1197.63	38.29	---	74.00	35.71	500.00	100.0	H	310.00	-19
1410.13	---	26.67	54.00	27.33	500.00	200.0	H	185.00	-17
2413.13	40.36	---	74.00	33.64	500.00	100.0	V	340.00	-14
2542.75	---	28.96	54.00	25.04	500.00	100.0	V	340.00	-14
3809.25	41.98	---	74.00	32.02	500.00	100.0	V	1.00	-12
4019.63	---	30.29	54.00	23.71	500.00	100.0	V	318.00	-11
6503.75	44.97	---	74.00	29.03	500.00	200.0	H	80.00	-4
6576.00	---	33.97	54.00	20.03	500.00	100.0	H	26.00	-4
8915.63	48.64	---	74.00	25.36	500.00	200.0	V	2.00	-3
9070.75	---	36.89	54.00	17.11	500.00	100.0	H	241.00	-2
13276.13	51.42	---	74.00	22.58	500.00	100.0	V	266.00	3
13739.38	---	41.53	54.00	12.47	500.00	200.0	V	31.00	4

RE 18-26.5GHz PK+AV



Radiated Emission from 18GHz to 26.5GHz

RE 26.5-40GHz PK+AV



Radiated Emission from 26.5GHz to 40GHz

### 3.2 Conducted Emission

#### Ambient condition

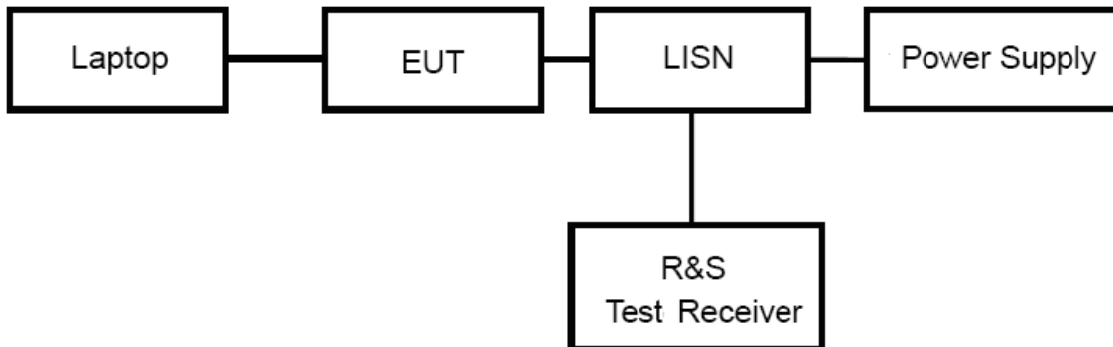
Temperature	Relative humidity	Pressure
15°C~35°C	30%~60%	101.5kPa

#### Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

During the test, EUT is connected to a laptop via a USB cable in the case of Transfer Data mode. The EUT is used as the peripheral equipment of the PC. The data is transferred from EUT to PC;

#### Test Setup



Note: Power Supply is AC Power source and it is used to change the voltage 120V/60Hz.

#### Limits

Frequency (MHz)	Conducted Limits(dBμV)	
	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.

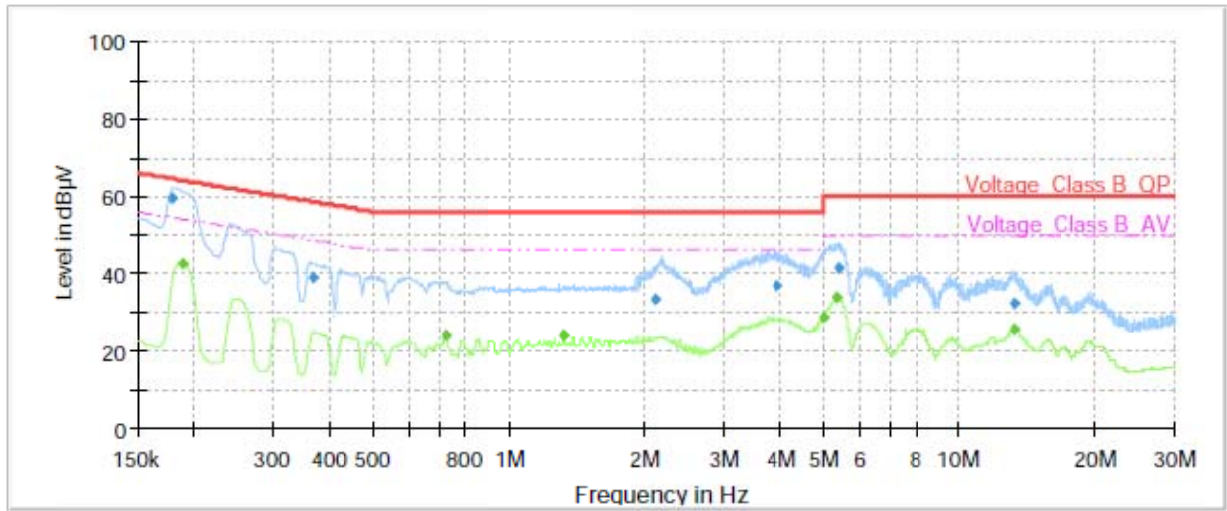
#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .  $U = 2.57$  dB.



**Test Results**

Following plots, Blue trace uses the peak detection; Green trace uses the average detection.

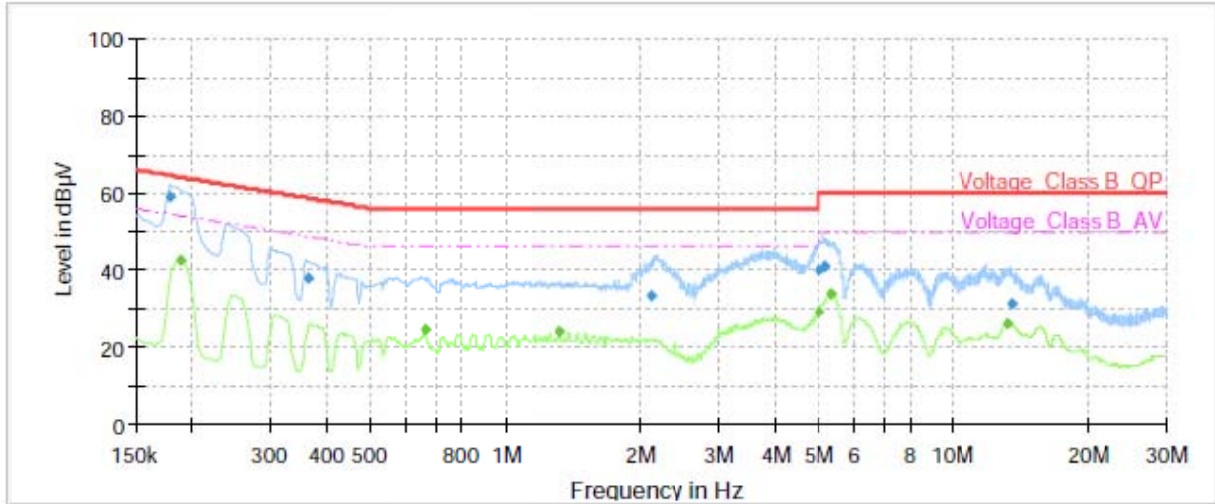


Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.18	59.24	---	64.52	5.28	1000.00	9.000	L1	ON	21
0.19	---	42.69	54.11	11.42	1000.00	9.000	L1	ON	21
0.37	38.74	---	58.54	19.80	1000.00	9.000	L1	ON	21
0.72	---	24.15	46.00	21.85	1000.00	9.000	L1	ON	20
1.32	---	23.96	46.00	22.04	1000.00	9.000	L1	ON	20
2.12	33.26	---	56.00	22.74	1000.00	9.000	L1	ON	20
3.95	37.05	---	56.00	18.95	1000.00	9.000	L1	ON	19
4.99	---	28.80	46.00	17.20	1000.00	9.000	L1	ON	19
5.35	---	33.78	50.00	16.22	1000.00	9.000	L1	ON	19
5.38	41.67	---	60.00	18.33	1000.00	9.000	L1	ON	19
13.16	32.25	---	60.00	27.75	1000.00	9.000	L1	ON	20
13.19	---	25.61	50.00	24.39	1000.00	9.000	L1	ON	20

**Remark: Correct factor=cable loss + LISN factor**

L line

Conducted Emission from 150 KHz to 30 MHz



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.18	58.80	---	64.52	5.72	1000.00	9.000	N	ON	21
0.19	---	42.35	54.11	11.76	1000.00	9.000	N	ON	21
0.36	37.91	---	58.64	20.73	1000.00	9.000	N	ON	21
0.66	---	24.38	46.00	21.62	1000.00	9.000	N	ON	20
1.32	---	24.03	46.00	21.97	1000.00	9.000	N	ON	20
2.11	33.24	---	56.00	22.76	1000.00	9.000	N	ON	20
4.99	39.83	---	56.00	16.17	1000.00	9.000	N	ON	19
4.99	---	29.17	46.00	16.83	1000.00	9.000	N	ON	19
5.16	40.93	---	60.00	19.07	1000.00	9.000	N	ON	19
5.35	---	33.70	50.00	16.30	1000.00	9.000	N	ON	19
13.23	---	26.31	50.00	23.69	1000.00	9.000	N	ON	20
13.52	31.51	---	60.00	28.49	1000.00	9.000	N	ON	20

Remark: Correct factor=cable loss + LISN factor

N line

Conducted Emission from 150 KHz to 30 MHz

## 4 Main Test Instruments

Name of Equipment	Manufacturer	Type/Model	Serial Number	Calibration Date	Expiration Time
Radiated Emission					
EMI Test Receiver	R&S	ESR	101667	2022-05-25	2023-05-24
Signal Analyzer	R&S	FSV40	101297	2021-12-12	2022-12-11
TRILOG Broadband Antenna	SCHWARZBECK	9163	1023	2020-05-05	2023-05-04
Horn Antenna	Schwarzbeck	BBHA 9120D	430	2021-07-26	2024-07-25
Horn Antenna	ETS-Lindgren	3160-09	00102643	2021-10-10	2024-10-09
Horn Antenna	STEATITE	QSH-SL-26-40-K-15	16779	2019-12-24	2022-12-23
Software	R&S	EMC32	9.26.01	/	/
Conducted Emission					
Artificial main network	R&S	ENV216	102191	2020-12-13	2022-12-12
EMI Test Receiver	R&S	ESR	101667	2022-05-25	2023-05-24
Software	R&S	EMC32	10.35.10	/	/

\*\*\*\*\*END OF REPORT \*\*\*\*\*



## **ANNEX A: The EUT Appearance**

The EUT Appearance are submitted separately.



## **ANNEX B: Test Setup Photos**

**The Test Setup Photos are submitted separately.**