EMC Test Report

Report No.: STS2508054E01

Issued for

Raythink Technology Co.,Ltd.

No.5, Wanshoushan Road, Yantai, Shandong, P.R.China

Product Name:	CX20 Series Handheld Thermal Camera
Brand Name:	Raythink
Model Name:	CX20 Ultra
Series Model(s):	CX20 Pro, CX20
FCC ID:	2BPTH-CX20
Test Standards:	FCC 47 CFR Part 15: Subpart B

TEST REPORT

Applicant's Name.....: Raythink Technology Co.,Ltd.

Address .....: No.5, Wanshoushan Road, Yantai, Shandong, P.R.China

Manufacturer's Name.....: Raythink Technology Co.,Ltd.

Address .....: No.5, Wanshoushan Road, Yantai, Shandong, P.R.China

Product description

Product Name.....: CX20 Series Handheld Thermal Camera

Brand Name.....: Raythink

Model Name .....: CX20 Ultra

Series Model(s).....: CX20 Pro, CX20

Test Standards .....: FCC 47 CFR Part 15: Subpart B

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.

Date of Test .....:

Date of Receipt of Test Item .....: 11 Aug. 2025

Date (s) of performance of Tests .....: 11 Aug. 2025 ~15 Aug. 2025

Date of Issue .....: 15 Aug. 2025

Test Result.....: **Pass**

Testing Engineer : Stan · Deng

(Star Deng)

Technical Manager : Brave Wu

(Brave Wu)

Authorized Signatory : Bovey Yang

(Bovey Yang)

SHENZHEN STS TEST SERVICES CO., LTD. TESTING APPROVAL

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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	15 Aug. 2025	STS2508054E01	ALL	Initial Issue

1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission			
Standard	Test Item	Result	Remark
FCC 47 CFR Part 15: Subpart B	Conducted Emission	PASS	Meet Class B limit
	Radiated Emissions	PASS	Meet Class B limit

Note:

(1) "N/A" denotes test is not applicable in this Test Report

1.1 TEST FACTORY

Company Name:	Shenzhen STS Test Services Co. Ltd.
Address:	101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai Sub-District, Bao'an District, Shenzhen, Guang Dong, China
Telephone:	+86-755 3688 6288
Fax:	+86-755 3688 6277
Registration No.:	FCC test Firm Registration Number: 625569
	IC test Firm Registration Number: 12108A
	A2LA Certificate No.: 4338.01

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**, where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately **95 %**.

No.	Item	Uncertainty
1	Conducted Emission (9KHz-150KHz)	±2.32dB
2	Conducted Emission (150KHz-30MHz)	±3.06dB
3	All emissions, radiated(<1G) 30MHz-1000MHz	±4.23dB
4	All emissions, radiated(>1G) 1GHz-6GHz	±5.13dB
5	All emissions, radiated(>1G) 6GHz-18GHz	±5.37dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product Name	CX20 Series Handheld Thermal Camera	
Brand Name	Raythink	
Model Name	CX20 Ultra	
Series Model(s)	CX20 Pro, CX20	
Model Difference	The difference between CX20 Ultra and CX20 Pro/CX20 is the FOV. The CX20 does not have laser function, the CX20 Pro has laser pointer, the CX20 Ultra has laser pointer and laser ranging. All models have the same technical structure including circuit diagram, PCB Layout, components and component layout, etc. The differences do not affect the test results.	
Product Description	The EUT is a CX20 Series Handheld Thermal Camera ITE equipment having a primary function of either (or a combination of) entry, storage, display, retrieval, transmission, processing, switching, or control of data and/or telecommunication messages and which may be equipped with one or more ports typically for information transfer.	
Frequency Bands	5.2G WLAN	802.11a/n/ac (20MHz): 5180~5240MHz 802.11n /ac(40MHz):5190~5230MHz 802.11ac (80MHz):5210MHz
	5.8G WLAN	802.11a/n/ac (20MHz): 5745~5825MHz 802.11n /ac(40MHz):5755~5795MHz 802.11ac (80MHz):5775MHz
Modulation Mode	5.2/5.8G WLAN	802.11a(OFDM):BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM):BPSK,QPSK,16-QAM,64-QAM 802.11ac(OFDM):BPSK,QPSK,16-QAM, 64-QAM,256-QAM
Rating	N/A	
Battery	Model: B293-1 Brand: N/A Rated Voltage: 3.6V Capacity: 5000mAh/18Wh	
Adapter	Model: LX18AA-120300-ZX Manufacturer: Shenzhen LvXiangYuan Technology Co., Ltd. Brand: N/A Input: 100-240VAC 50/60Hz 0.7A Output: 5.0V 3.0A 9.0V 2.0A 12.0V 1.5A	
Hardware version number	V1_1	
Software version number	106	

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	PC+ USB Transmitting
Mode 2	Charging + Working+ WLAN Link

For Conducted Test	
Final Test Mode	Description
Mode 2	Charging + Working+ WLAN Link

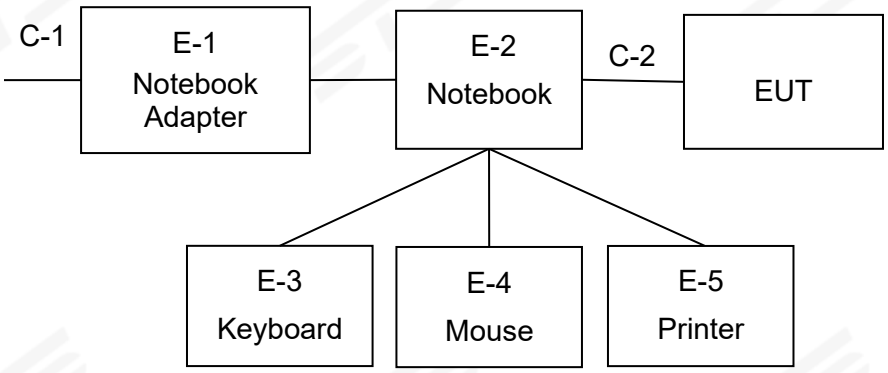
For Radiated Test	
Final Test Mode	Description
Mode 1	PC+ USB Transmitting

Note:

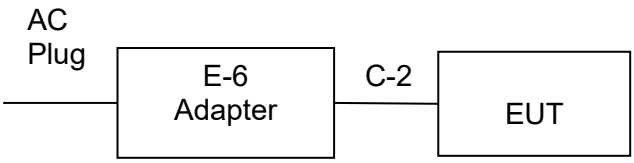
1. In the conducted disturbance test, Mode 2 is the minimum margin mode, and this report only shows the minimum margin mode test data.
2. In the radiation disturbance test, Mode 1 is the minimum margin mode, and this report only shows the minimum margin mode test data.

2.3 DESCRIPTION OF TEST SETUP

Mode1



Mode2



2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Note
E-1	Notebook Adapter	DELL	HSTNN-CA15	N/A
E-2	Notebook	DELL	Inspiron 3501	N/A
E-3	Keyboard	HP	PR1101U	N/A
E-4	Mouse	MOTOSPEED	F66	N/A
E-5	Printer	LENOVO	LJ2400L	N/A
E-6	Adapter	N/A	HJ0502000-US	N/A

Item	Equipment	Ferrite Core	Length	Note
C-1	AC Cable	NO	150cm	N/A
C-2	USB Cable	NO	100cm	N/A

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 MEASUREMENT INSTRUMENTS LIST

2.5.1 CONDUCTED TEST SITE

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
EMI Test Receiver	R&S	ESCI	101427	2024.9.23	2025.9.22
LISN	R&S	AiT-F01220	8130179	2024.9.23	2025.9.22
Absorbing Clamp	R&S	MDS-21	100668	2025.2.24	2026.2.23
CE Cable	N/A	C01	N/A	2024.9.23	2025.9.22
Temperature & Humidity	Anymetre	JR900	240686	2024.10.15	2025.10.14
Testing Software	EZ-EMC(Ver.STSLAB-03A1 CE)				

2.5.2 RADIATED TEST SITE

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
EMI Test Receiver	R&S	ESCI	101427	2024.9.23	2025.9.22
Bi-log Antenna	TESEQ	CBL6111D	45873	2024.9.28	2025.9.27
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1343	2024.9.28	2025.9.27
Pre-amplifier(1G-26.5G)	Agilent	HP8449B	3008A02383	2025.2.22	2026.2.21
Pre-amplifier(0.1M-3GHz)	EM	EM330	060665	2025.2.22	2026.2.21
Spectrum Analyzer	Agilent	N9020A	MY49100060	2024.9.23	2025.9.22
RE Cable (9K-1G)	N/A	R01	N/A	2024.9.23	2025.9.22
RE Cable (1G-26G)	N/A	R02	N/A	2024.9.23	2025.9.22
Temperature & Humidity	Mieo	HH660	N/A	2024.9.26	2025.9.25
SAC	ChengYu	9*6*6	N/A	2023.9.05	2026.9.06
Testing Software	EZ-EMC(Ver.STSLAB-03A1 RE)				

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

FREQUENCY (MHz)	☐Class A (dBμV)		☒Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 ~ 0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.5 ~ 5	73.00	60.00	56.00	46.00
5 ~ 30	73.00	60.00	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

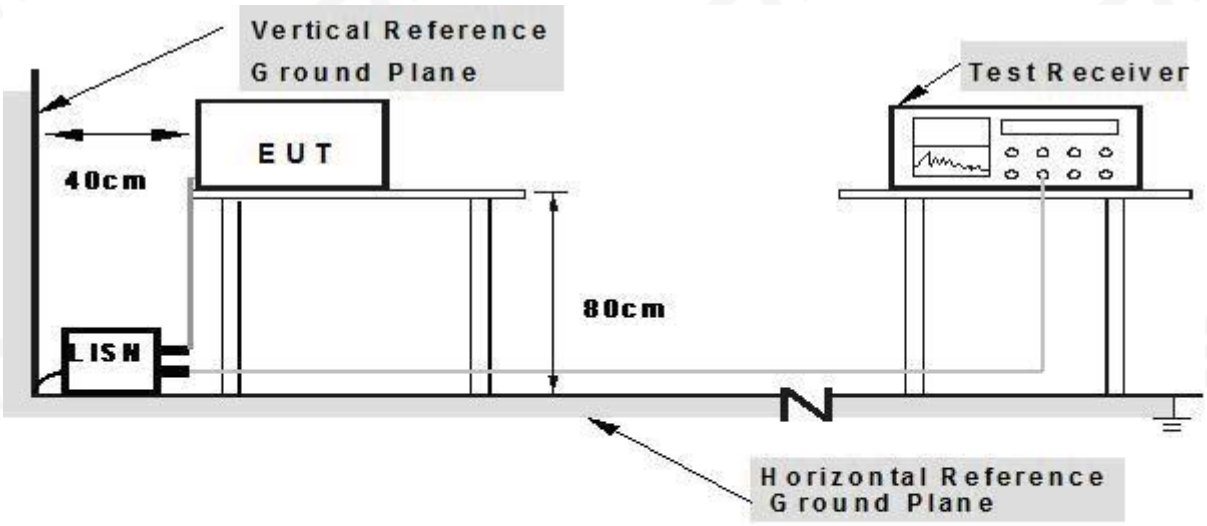
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

d. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

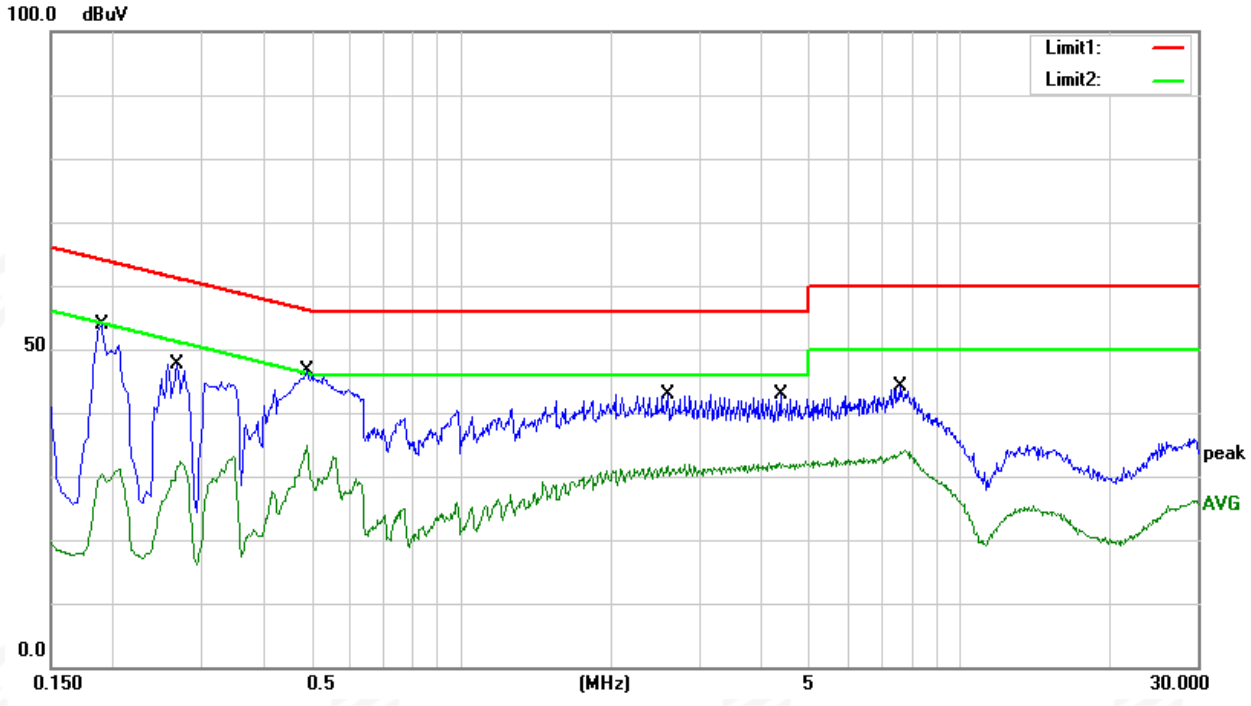
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

Temperature:	25.1℃	Relative Humidity:	59%
Phase:	L	Test Mode:	Mode 2
Test Voltage:	DC 5V from Adapter	Test Date:	2025.08.14

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1900	34.11	19.89	54.00	64.04	-10.04	QP
2	0.1900	11.28	19.89	31.17	54.04	-22.87	AVG
3	0.2700	27.82	19.87	47.69	61.12	-13.43	QP
4	0.2700	12.39	19.87	32.26	51.12	-18.86	AVG
5	0.4900	26.71	19.82	46.53	56.17	-9.64	QP
6	0.4900	13.88	19.82	33.70	46.17	-12.47	AVG
7	2.6020	23.02	19.81	42.83	56.00	-13.17	QP
8	2.6020	12.04	19.81	31.85	46.00	-14.15	AVG
9	4.3700	22.96	19.82	42.78	56.00	-13.22	QP
10	4.3700	12.20	19.82	32.02	46.00	-13.98	AVG
11	7.6020	24.27	19.83	44.10	60.00	-15.90	QP
12	7.6020	14.24	19.83	34.07	50.00	-15.93	AVG

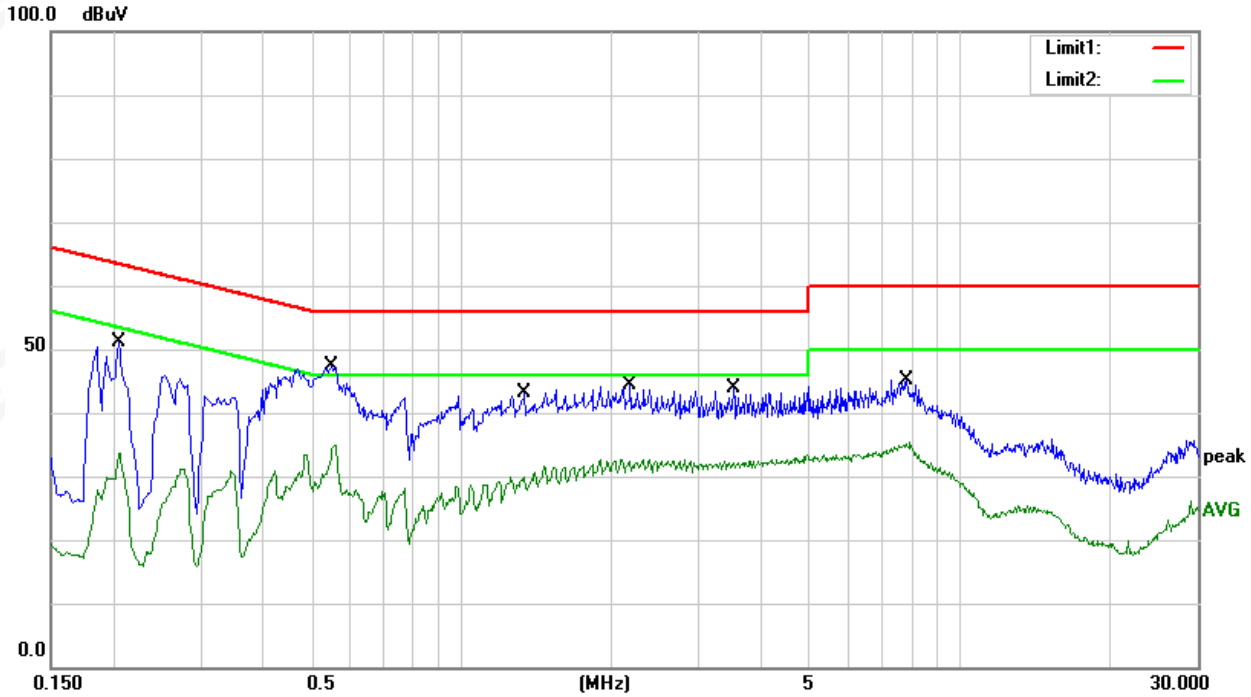
Remark:
1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result =Reading + Factor)–Limit.
3. Factor = Insertion loss + Cable loss.



Temperature:	25.1℃	Relative Humidity:	59%
Phase:	N	Test Mode:	Mode 2
Test Voltage:	DC 5V from Adapter	Test Date:	2025.08.14

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2060	31.35	19.82	51.17	63.37	-12.20	QP
2	0.2060	13.87	19.82	33.69	53.37	-19.68	AVG
3	0.5500	27.48	19.80	47.28	56.00	-8.72	QP
4	0.5500	15.03	19.80	34.83	46.00	-11.17	AVG
5	1.3380	23.31	19.80	43.11	56.00	-12.89	QP
6	1.3380	11.75	19.80	31.55	46.00	-14.45	AVG
7	2.1820	24.69	19.78	44.47	56.00	-11.53	QP
8	2.1820	12.91	19.78	32.69	46.00	-13.31	AVG
9	3.5260	23.95	19.82	43.77	56.00	-12.23	QP
10	3.5260	12.76	19.82	32.58	46.00	-13.42	AVG
11	7.8220	25.25	19.83	45.08	60.00	-14.92	QP
12	7.8220	15.66	19.83	35.49	50.00	-14.51	AVG

Remark:
1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result =Reading + Factor)–Limit.
3. Factor = Insertion loss + Cable loss.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Below 1 GHz
Measurement Method and Applied Limits:
ANSI C63.4:

Frequency (MHz)	☐Class A	☒Class B	
	Field strength (dBuV/m) (at 3m)	Field strength (dBuV/m) (at 10m)	Field strength (dBuV/m) (at 3m)
30 ~ 88	49.5	30	40
88 ~ 216	54	33.5	43.5
216 ~ 960	56.9	36	46
Above 960	60	44	54

Above 1 GHz
Measurement Method and Applied Limits:
ANSI C63.4:

Frequency (MHz)	☐Class A		☒Class B			
	(dBuV/m) (at 3m)		(dBuV/m) (at 10m)		(dBuV/m) (at 3m)	
	Peak	Average	Peak	Average	Peak	Average
Above 1000	80	60	64	44	74	54

Frequency Range of Radiated Disturbance Measurement

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	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

Note:

(1) The limit for radiated test was performed in the following: FCC PART 15B.

(2) The tighter limit applies at the band edges

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

3.2.2 TEST PROCEDURE

a. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. EUT as the center to the edge of the auxiliary device, the distance from the maximum edge to the center of the antenna is 3 meter.
c. The height of antenna is varied from 1 meter to 4 meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meter and the rotatable table was turned from 0 degrees to 360 degree to find the maximum reading.
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

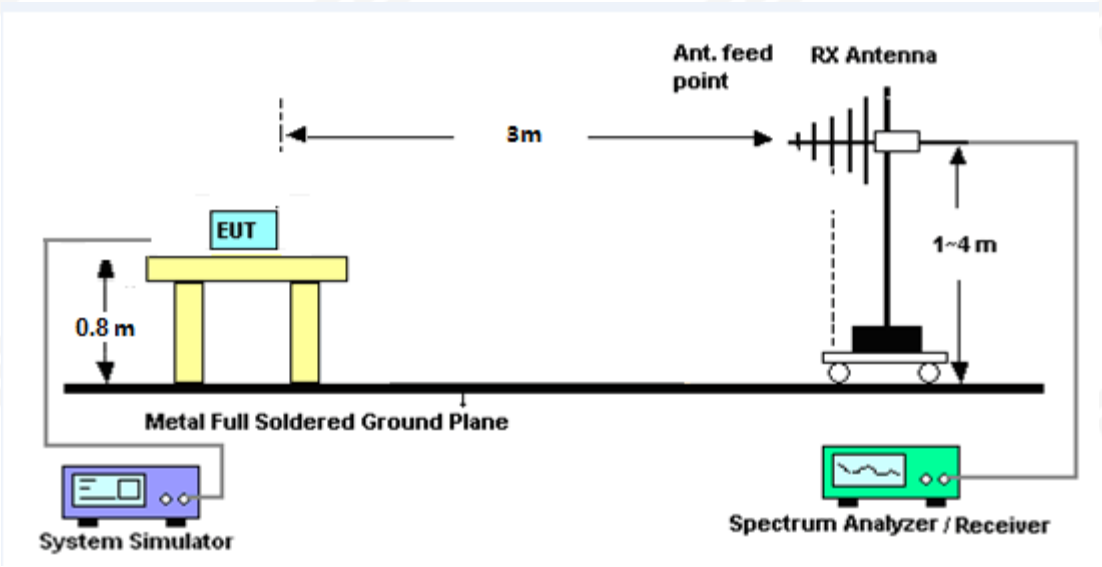
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

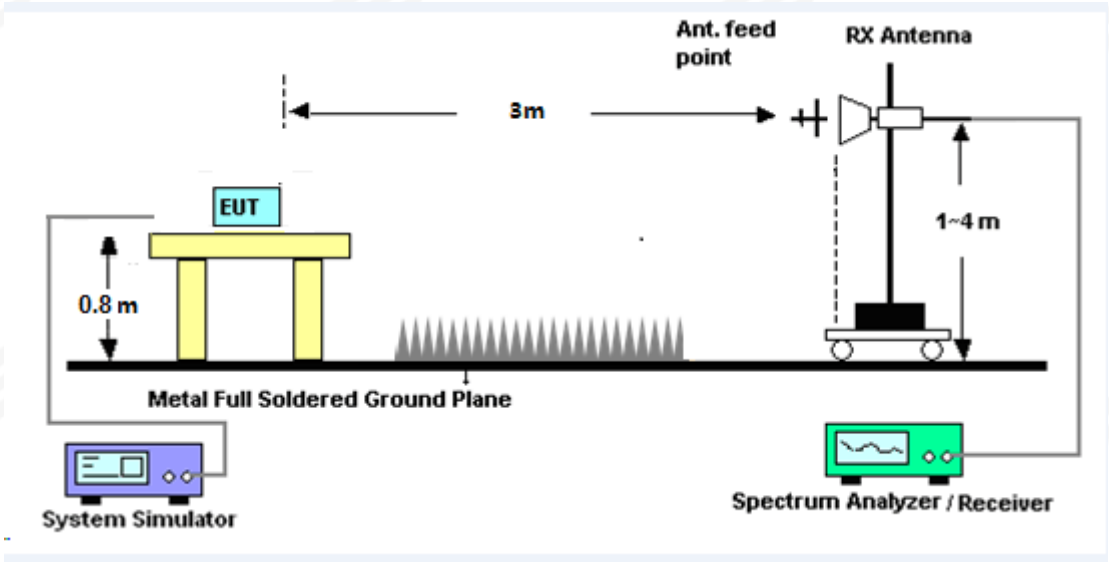
No deviation

3.2.4 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS

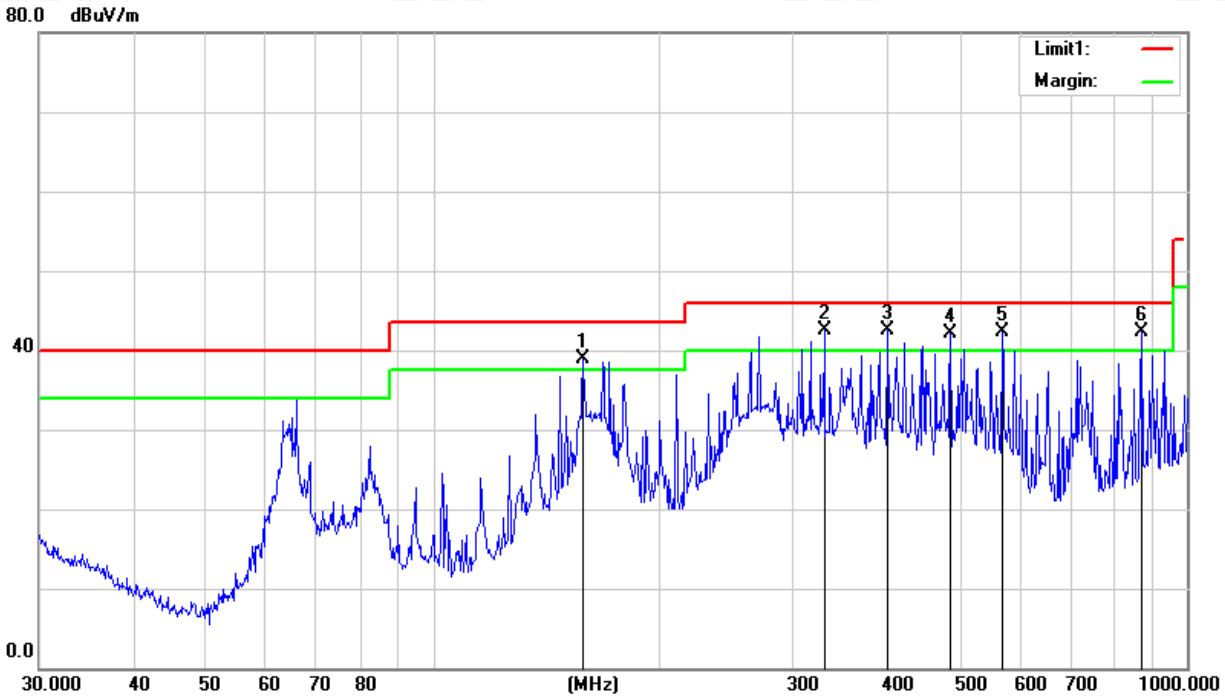
The EUT tested system was configured as the statements of **2.3** described unless otherwise a special operating condition is specified in the following during the testing.

3.2.6 TEST RESULTS (30MHz-1000MHz)

Temperature:	25.3℃	Relative Humidity:	43%
Phase:	Horizontal	Test Mode:	Mode 1
Test Voltage:	DC 5V from PC	Test Date:	2025.08.12

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	158.1123	57.44	-18.56	38.88	43.50	-4.62	QP
2	330.1950	57.70	-15.24	42.46	46.00	-3.54	QP
3	400.4318	55.65	-13.17	42.48	46.00	-3.52	QP
4	485.6093	53.03	-10.84	42.19	46.00	-3.81	QP
5	568.6127	50.50	-8.27	42.23	46.00	-3.77	QP
6	872.1832	46.82	-4.60	42.22	46.00	-3.78	QP

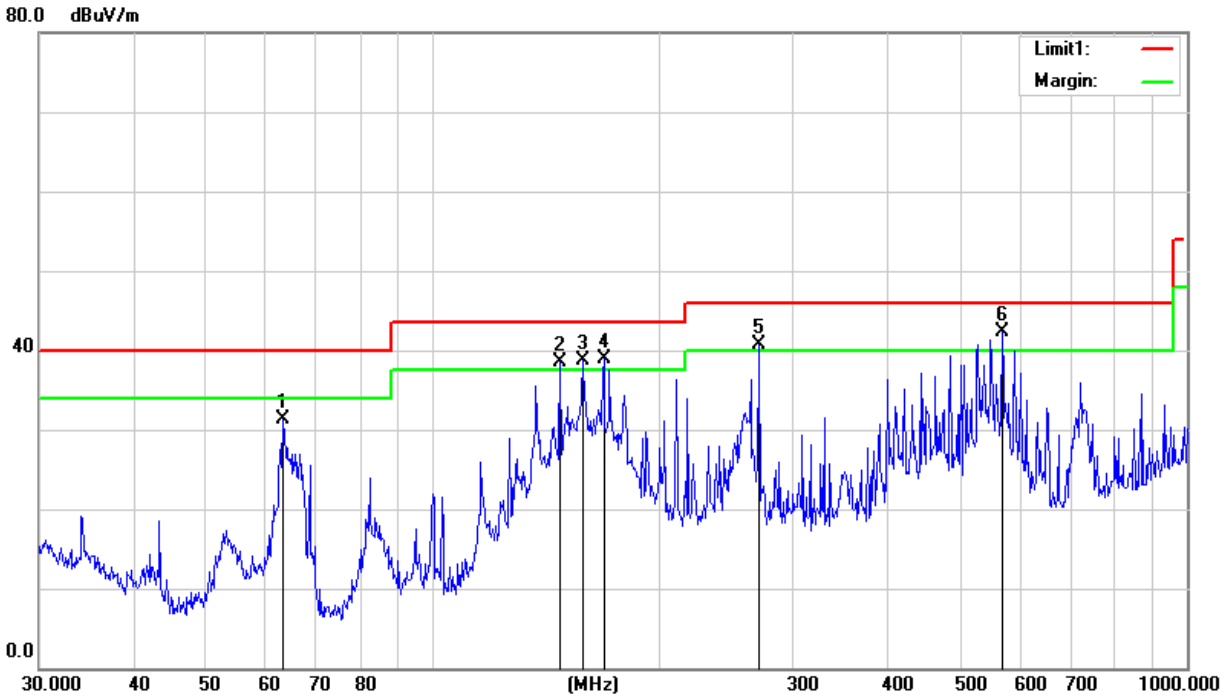
Remark:
1. All readings are Quasi-Peak.
2. Margin = Result (Result =Reading + Factor)–Limit.
3. Factor= Cable Loss +Antenna Factor-Amplifier Gain.



Temperature:	25.3℃	Relative Humidity:	43%
Phase:	Vertical	Test Mode:	Mode 1
Test Voltage:	DC 5V from PC	Test Date:	2025.08.12

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	63.0915	57.32	-25.94	31.38	40.00	-8.62	QP
2	147.4036	56.75	-18.25	38.50	43.50	-5.00	QP
3	158.1123	57.33	-18.56	38.77	43.50	-4.73	QP
4	168.4138	58.63	-19.68	38.95	43.50	-4.55	QP
5	270.3747	56.81	-16.19	40.62	46.00	-5.38	QP
6	568.6127	50.51	-8.27	42.24	46.00	-3.76	QP

Remark:
1. All readings are Quasi-Peak.
2. Margin = Result (Result =Reading + Factor)–Limit.
3. Factor= Cable Loss +Antenna Factor-Amplifier Gain.

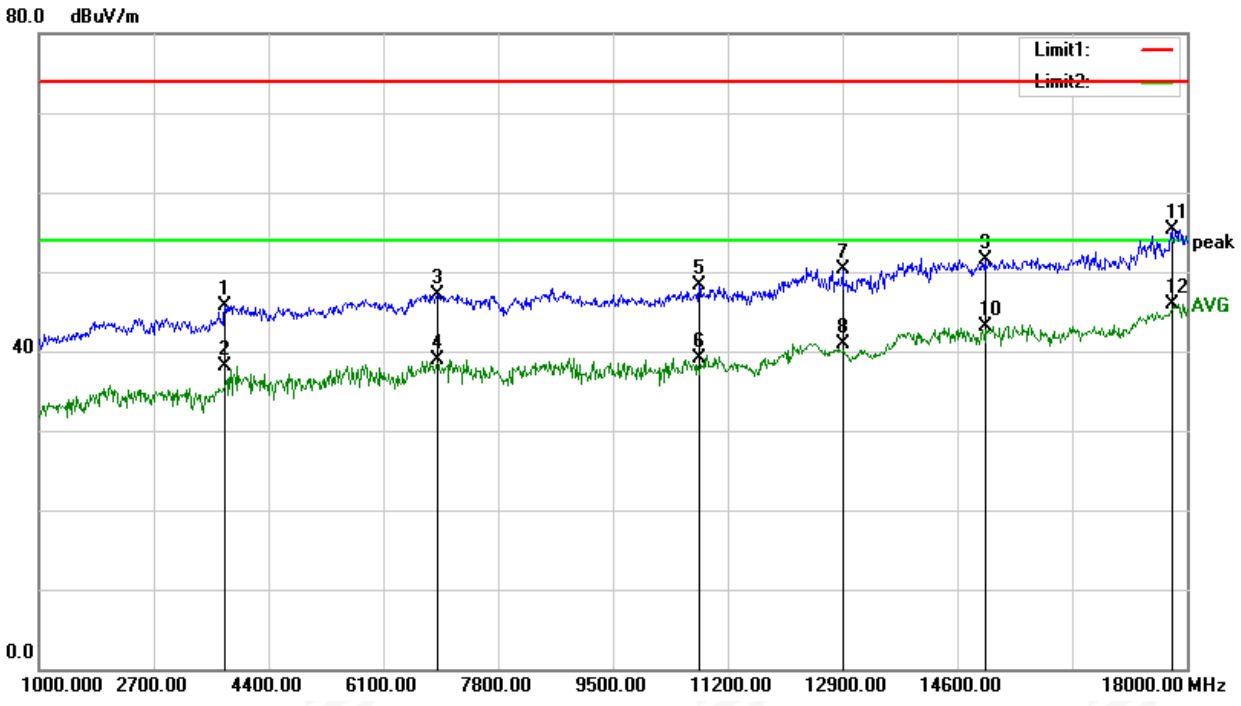


3.2.7 TEST RESULT (1000-18000 MHz)

Temperature:	25.3℃	Relative Humidity:	43%
Phase:	Horizontal	Test Mode:	Mode 1
Test Voltage:	DC 5V from PC	Test Date:	2025.08.12

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	3762.500	41.95	3.74	45.69	74.00	-28.31	peak
2	3762.500	34.28	3.74	38.02	54.00	-15.98	AVG
3	6907.500	36.51	10.57	47.08	74.00	-26.92	peak
4	6907.500	28.32	10.57	38.89	54.00	-15.11	AVG
5	10775.000	34.33	14.03	48.36	74.00	-25.64	peak
6	10775.000	25.01	14.03	39.04	54.00	-14.96	AVG
7	12900.000	34.90	15.37	50.27	74.00	-23.73	peak
8	12900.000	25.60	15.37	40.97	54.00	-13.03	AVG
9	15016.500	33.78	17.80	51.58	74.00	-22.42	peak
10	15016.500	25.36	17.80	43.16	54.00	-10.84	AVG
11	17787.500	31.14	24.24	55.38	74.00	-18.62	peak
12	17787.500	21.74	24.24	45.98	54.00	-8.02	AVG

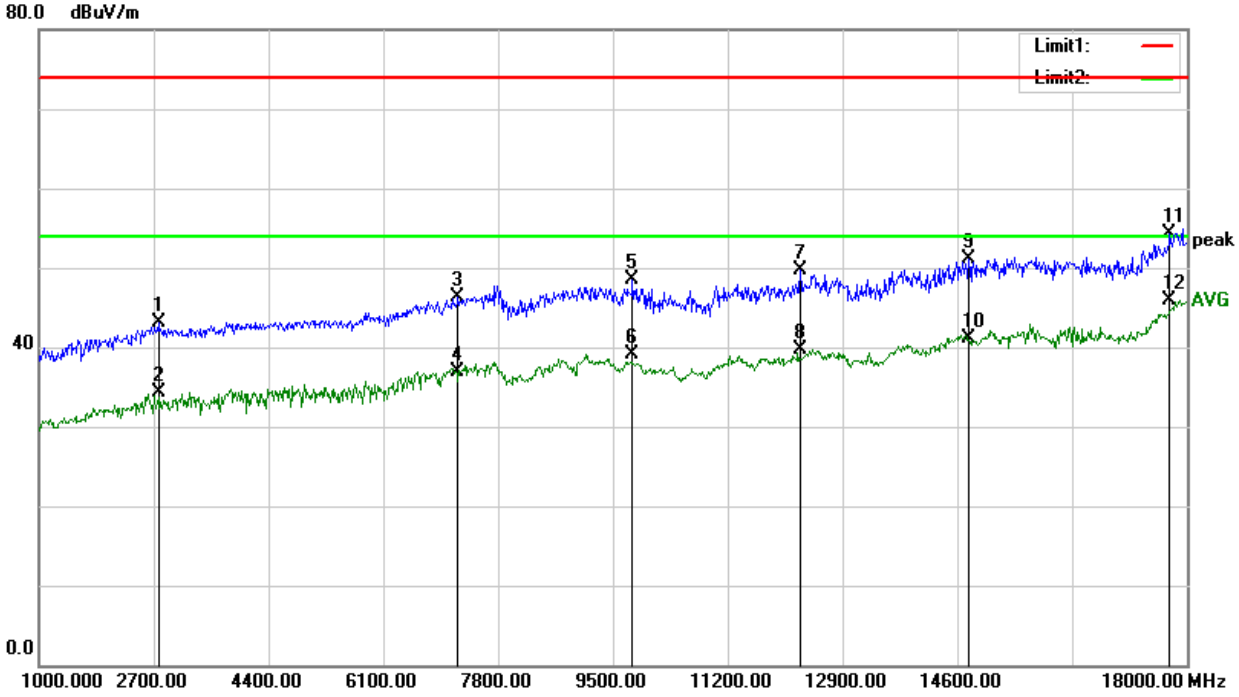
Remark:
1. All readings are Quasi-Peak.
2. Margin = Result (Result =Reading + Factor)–Limit.
3. Factor= Cable Loss +Antenna Factor-Amplifier Gain.



Temperature:	25.3℃	Relative Humidity:	43%
Phase:	Vertical	Test Mode:	Mode 1
Test Voltage:	DC 5V from PC	Test Date:	2025.08.12

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	2768.000	42.15	1.05	43.20	74.00	-30.80	peak
2	2768.000	33.32	1.05	34.37	54.00	-19.63	AVG
3	7205.000	35.09	11.27	46.36	74.00	-27.64	peak
4	7205.000	25.71	11.27	36.98	54.00	-17.02	AVG
5	9797.500	34.89	13.57	48.46	74.00	-25.54	peak
6	9797.500	25.48	13.57	39.05	54.00	-14.95	AVG
7	12279.500	34.44	15.20	49.64	74.00	-24.36	peak
8	12279.500	24.49	15.20	39.69	54.00	-14.31	AVG
9	14778.500	33.11	17.99	51.10	74.00	-22.90	peak
10	14778.500	23.11	17.99	41.10	54.00	-12.90	AVG
11	17753.500	30.72	23.68	54.40	74.00	-19.60	peak
12	17753.500	22.21	23.68	45.89	54.00	-8.11	AVG

Remark:
1. All readings are Quasi-Peak.
2. Margin = Result (Result =Reading + Factor)–Limit.
3. Factor= Cable Loss +Antenna Factor-Amplifier Gain.

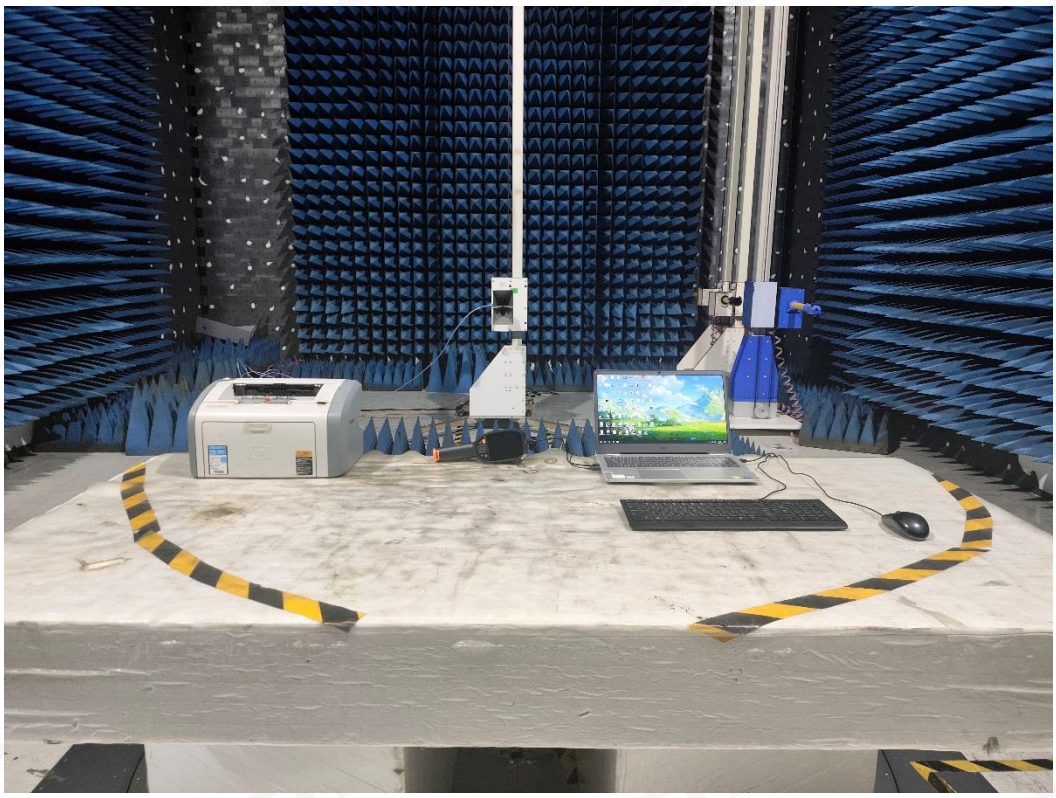


Notes:
1. Measuring frequencies from 1 GHz to 18GHz
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak and average detector mode of the emission shown in Actual FS column.
3. The frequency emission of 18-40GHz is at least 20dB lower than the limit, and the frequency emission mainly comes from environmental noise.

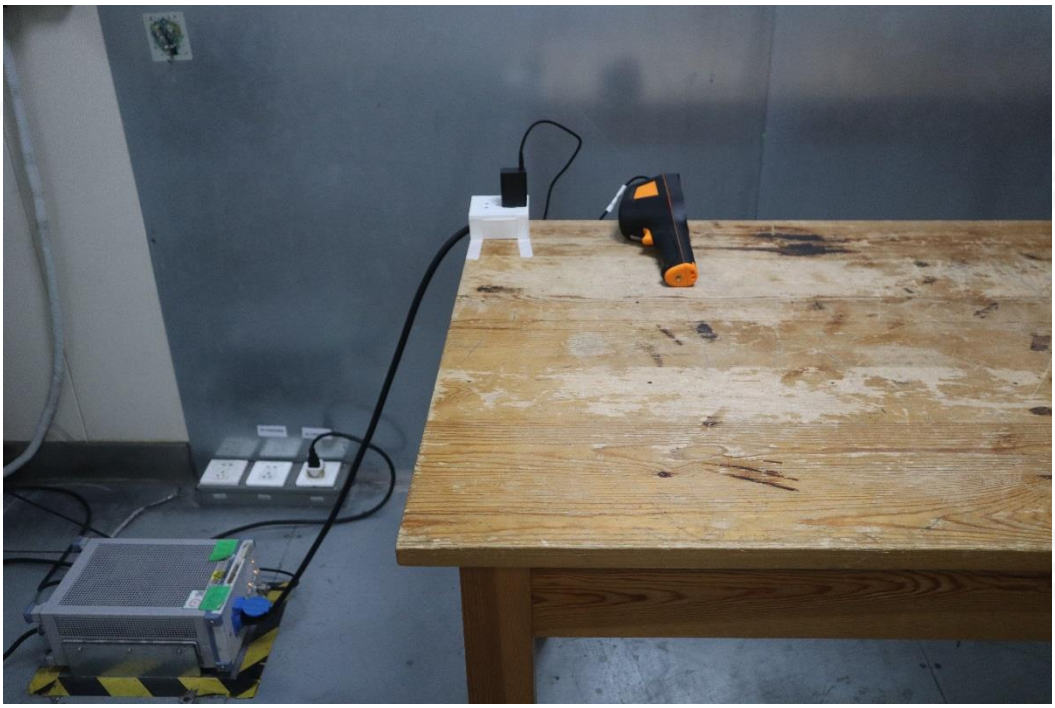
APPENDIX 1-PHOTO TEST OF EUT

RE (Below 1GHz)

RE (Above 1GHz)



CE



※※※※※END OF THE REPORT※※※※※