

## FCC - TEST REPORT

Report Number : **68.950.23.0067.01** Date of Issue: **2023-03-17**

Model/HVIN : **ILR-1200-2**

Product Type : INFIRAY LASER RANGEFINDER

Applicant : IRay Technology Co., Ltd.

Address : 11Guiyang Street, YANTAI Economic and Technological  
Development Area, 264006 Yantai,  
PEOPLE'S REPUBLIC OF CHINA

Manufacturer : IRay Technology Co., Ltd.

Address : 11Guiyang Street, YANTAI Economic and Technological  
Development Area, 264006 Yantai,  
PEOPLE'S REPUBLIC OF CHINA

Factory : IRay Technology Co., Ltd.

Address : 11Guiyang Street, YANTAI Economic and Technological  
Development Area, 264006 Yantai,  
PEOPLE'S REPUBLIC OF CHINA

Test Result :  **Positive**  **Negative**

Total pages including  
Appendices : **37**

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4.



# 1 Table of Contents

1	Table of Contents .....	2
2	Details about the Test Laboratory .....	3
3	Description of the Equipment Under Test .....	4
4	Summary of Test Standards .....	5
5	Summary of Test Results .....	6
6	General Remarks .....	7
7	Test Setups .....	8
8	Systems Test Configuration .....	9
9	Technical Requirement .....	10
9.1	Conducted Peak Output Power & EIRP .....	10
9.2	Power Spectral Density .....	13
9.3	6 dB Bandwidth and 99% Occupied Bandwidth.....	15
9.4	Spurious RF Conducted Emissions .....	18
9.5	Band Edge.....	23
9.6	Spurious Radiated Emissions for Transmitter.....	25
10	Test Equipment List.....	36
11	System Measurement Uncertainty .....	37

## 2 Details about the Test Laboratory

### Details about the Test Laboratory

#### Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch  
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu,  
Nantou, Nanshan District,  
Shenzhen, Guangdong, China

Telephone: 86 755 8828 6998

Fax: 86 755 8828 5299

FCC Registration No.: 514049

FCC Designation Number: CA5009

IC Registration No.: 10320A

### 3 Description of the Equipment Under Test

Product:	INFIRAY LASER RANGEFINDER
Model no.:	ILR-1200-2
Brand name:	InfiRay
FCC ID:	2AYGT-33-02
Options and accessories:	N/A
Rating:	5.0 V DC the power by battery
RF Transmission Frequency:	2405MHz-2480MHz
No. of Operated Channel:	16
Modulation:	GFSK
Antenna Type:	Integrated antenna
Antenna 1	Gain: 2.5dBi
Description of the EUT:	The Equipment Under Test (EUT) is a INFIRAY LASER RANGEFINDER which support ZigBee function operated at 2.4GHz. Only Zigbee included in this report.

NOTE 1: The above EUT's information is declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

## 4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2021 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to KDB 558074 D01 15.247 Meas Guidance v05r02 Measurement Guidance and ANSI C63.10 (2013).

## 5 Summary of Test Results

Technical Requirements			
FCC Part 15 Subpart C			
Test Condition		Pages	Test Result
§15.207	Conducted emission AC power port	/	N/A
§15.247(b)(3)	Conducted peak output power	10	Pass
§15.247(e)	Power spectral density	13	Pass
§15.247(a)(2)	6dB bandwidth and 99% Occupied Bandwidth	15	Pass
§15.247(a)(1)	20dB bandwidth and 99% Occupied Bandwidth	--	N/A
§15.247(a)(1)	Min. of Hopping Channel Carrier Frequency Separation	--	N/A
§15.247(a)(1)(iii)	Min number of hopping frequencies	--	N/A
§15.247(a)(1)(iii)	Dwell Time - Average Time of Occupancy	--	N/A
§15.247(d)	Spurious RF conducted emissions	18	Pass
§15.247(d)	Band edge	23	Pass
§15.247(d) & §15.209 & RSS-247 5.5	Spurious radiated emissions for transmitter	25	Pass
§15.203 & RSS-Gen 6.8	Antenna requirement	See note 2	Pass

Note 1: N/A=Not Applicable.

Note 2: The EUT uses an external antenna and manufacturer will stick it down with glue, which gain is 2.5 dBi. In accordance to §15.203 & RSS-Gen 6.8, it is considered sufficiently to comply with the provisions of this section.

## 6 General Remarks

### Remarks

This submittal(s) (test report) is intended for FCC ID: 2AYGT-33-02, complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C rules.

### SUMMARY:

All tests according to the regulations cited on page 5 were

- Performed

- **Not** Performed

The Equipment under Test

- **Fulfills** the general approval requirements.

- **Does not** fulfill the general approval requirements.

Sample Received Date: 2023-01-03

Testing Start Date: 2023-01-03

Testing End Date: 2023-03-05

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch -

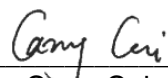
Reviewed by:

  
\_\_\_\_\_  
John Zhi  
Section Manager

Prepared by:

  
  
\_\_\_\_\_  
Warlen Song  
Project Engineer

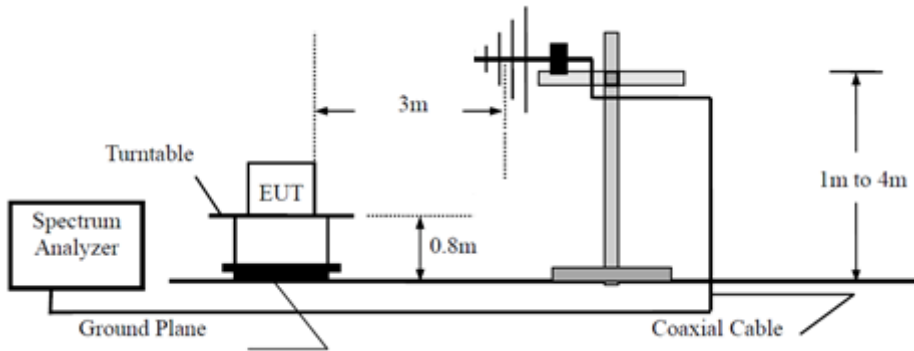
Tested by:

  
\_\_\_\_\_  
Carry Cai  
Test Engineer

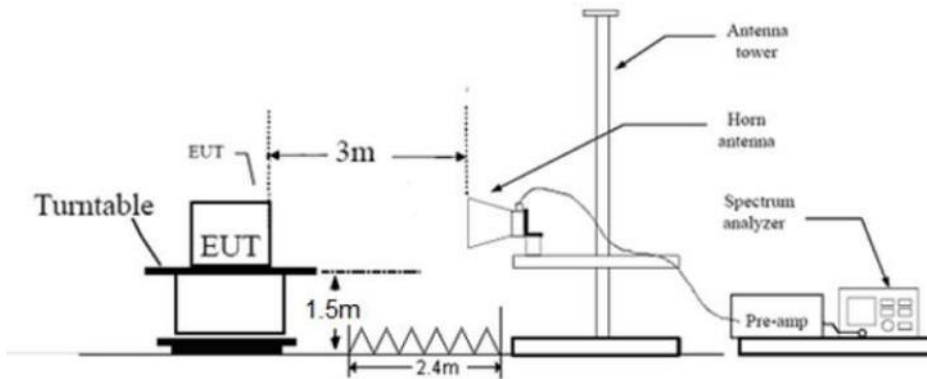
## 7 Test Setups

### 7.1 Radiated test setups

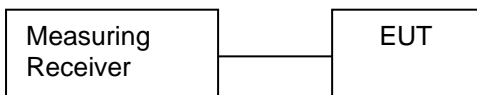
Below 1GHz



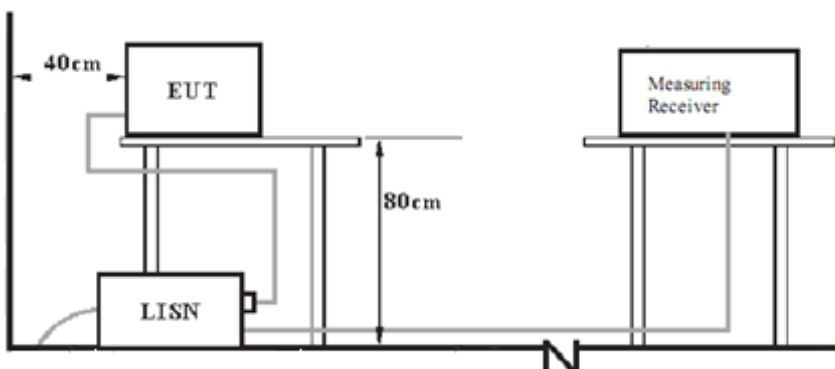
### Above 1GHz



### 7.2 Conducted RF test setups



### 7.3 AC Power Line Conducted Emission test setups





## 8 Systems Test Configuration

### Auxiliary Equipment Used during Test:

Description	Manufacturer	Model NO.	S/N
Notebook	LENOVO	X220	---

### Cables Used During Test:

Cable	Length	Shielded/unshielded	With / without ferrite
---	---	---	---

The system was configured to hopping mode and non-hopping mode.

## 9 Technical Requirement

### 9.1 Conducted Peak Output Power & EIRP

#### Test Method

1. The RF output of EUT was connected to the power meter by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Use the following test receiver settings:  
Span = approximately 5 times the 6dB bandwidth, centered on a hopping channel  
RBW > the 6dB bandwidth of the emission being measured, VBW $\geq$ 3RBW,  
Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power and record the results in the test report.
5. Repeat above procedures until all frequencies measured were complete.

#### Limits

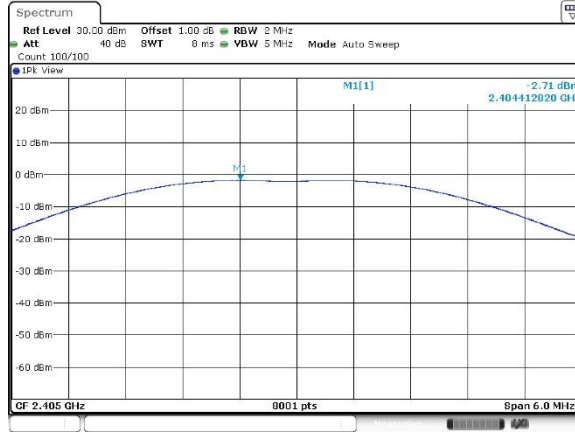
According to §15.247 (b) (3) conducted peak output power limit as below:

Frequency Range MHz	Limit W	Limit dBm
2400-2483.5	$\leq 1$	$\leq 30$

**Conducted Peak Output Power**

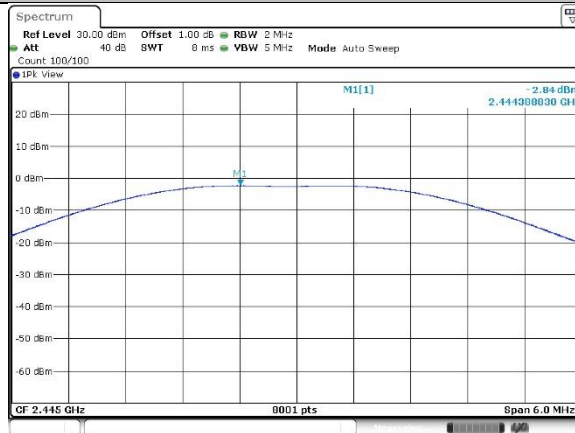
<b>Frequency</b> <b>MHz</b>	<b>Conducted Peak</b> <b>Output Power</b> <b>dBm</b>	<b>Antenna</b> <b>Gain</b> <b>dBi</b>	<b>Result</b>
Bottom channel 2405MHz	-2.71	2.5	Pass
Middle channel 2445MHz	-2.84	2.5	Pass
Top channel 2480MHz	-3.29	2.5	Pass

Ant1\_2405



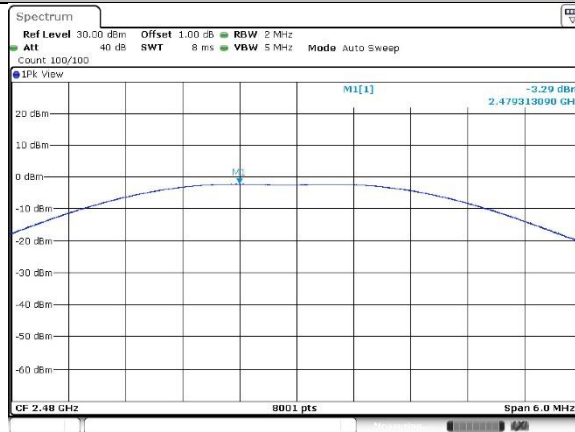
Date: 28.FEB.2023 11:33:42

Ant1\_2445



Date: 28.FEB.2023 11:33:16

Ant1\_2480



Date: 28.FEB.2023 11:36:32

## 9.2 Power Spectral Density

### Test Method

1. The RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Set analyzer center frequency to DTS channel center frequency. RBW=3kHz, VBW $\geq$ 3RBW, Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power and record the results in the test report.
5. Repeat above procedures until other frequencies measured were completed.

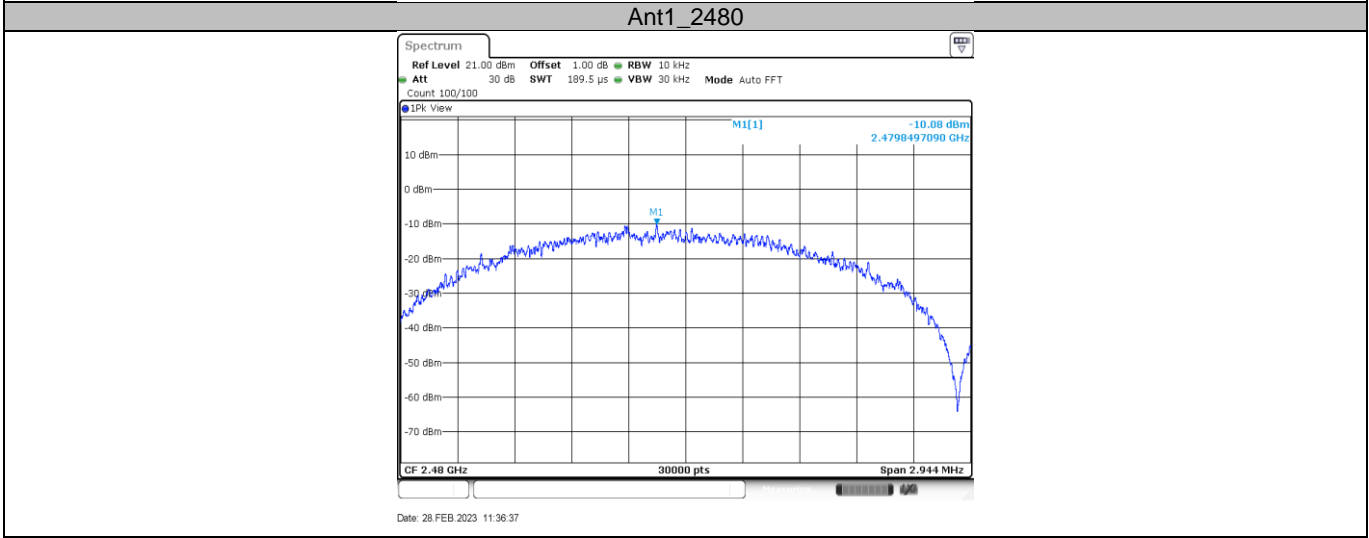
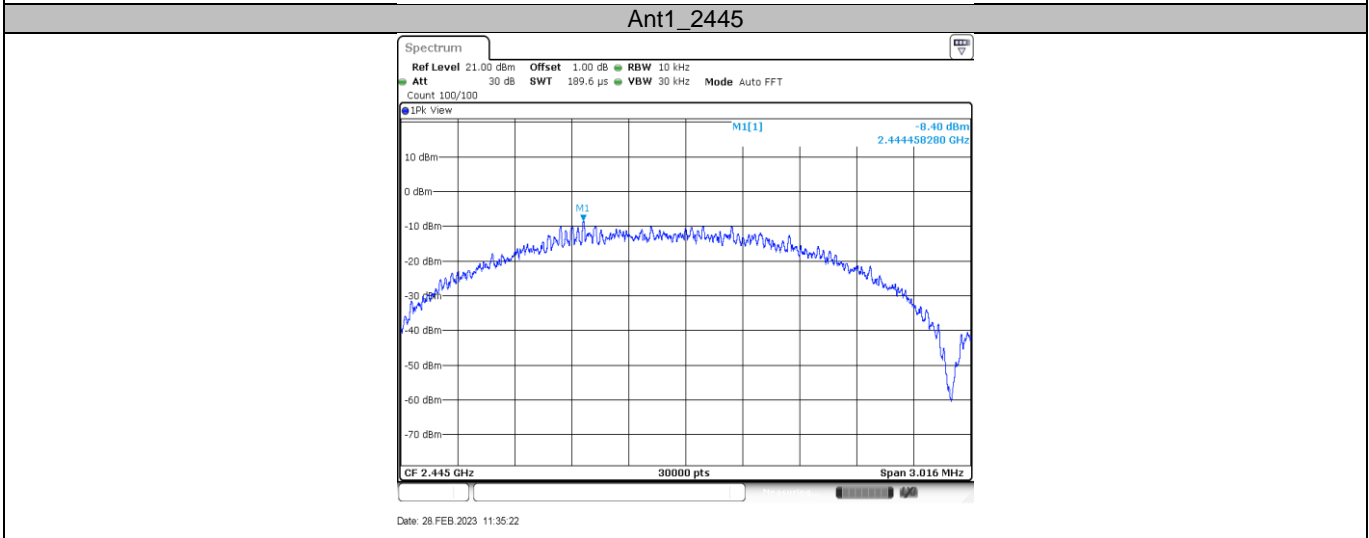
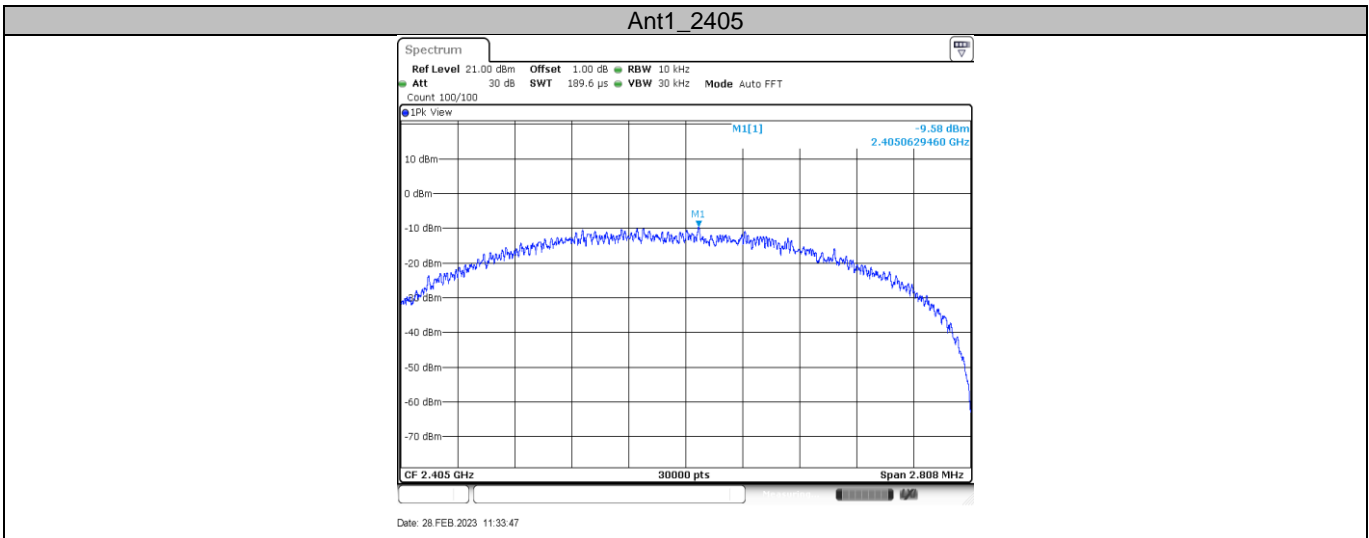
### Limit

Limit [dBm dBm/3KHz]

≤8

### Test result

Frequency MHz	Power spectral density dBm/3KHz	Result
Bottom channel 2405MHz	-9.58	Pass
Middle channel 2445MHz	-8.40	Pass
Top channel 2480MHz	-10.08	Pass



### 9.3 6 dB Bandwidth and 99% Occupied Bandwidth

#### Test Method

1. The RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following test receiver settings:  
 Span = approximately 5 times the 6dB bandwidth, centered on a hopping channel  
 RBW =100KHz, VBW≥3RBW,  
 Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth. Record the results.
5. Repeat above procedures until all frequencies measured were complete.

#### Limit

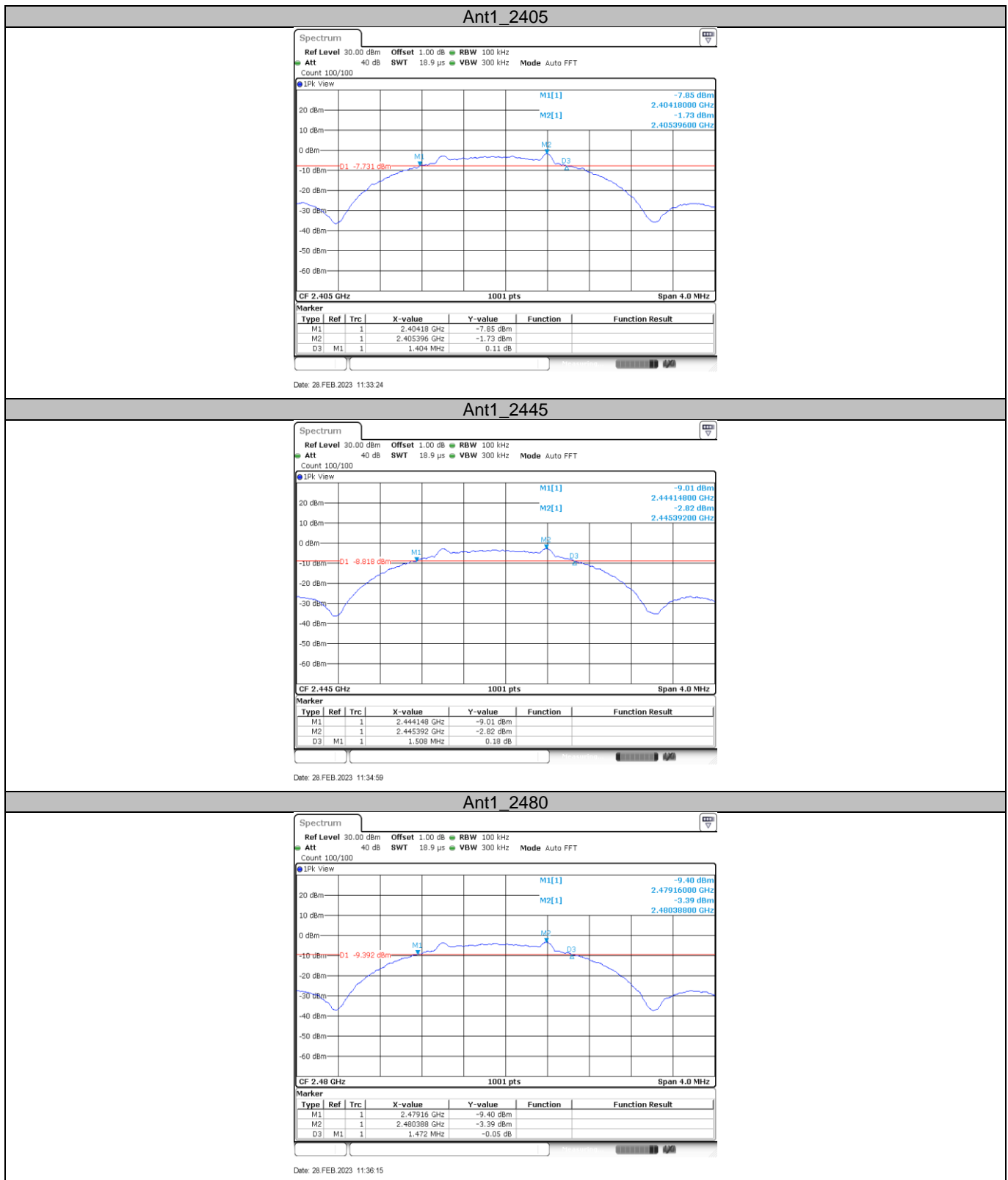
Limit [kHz]

≥500

#### Test result

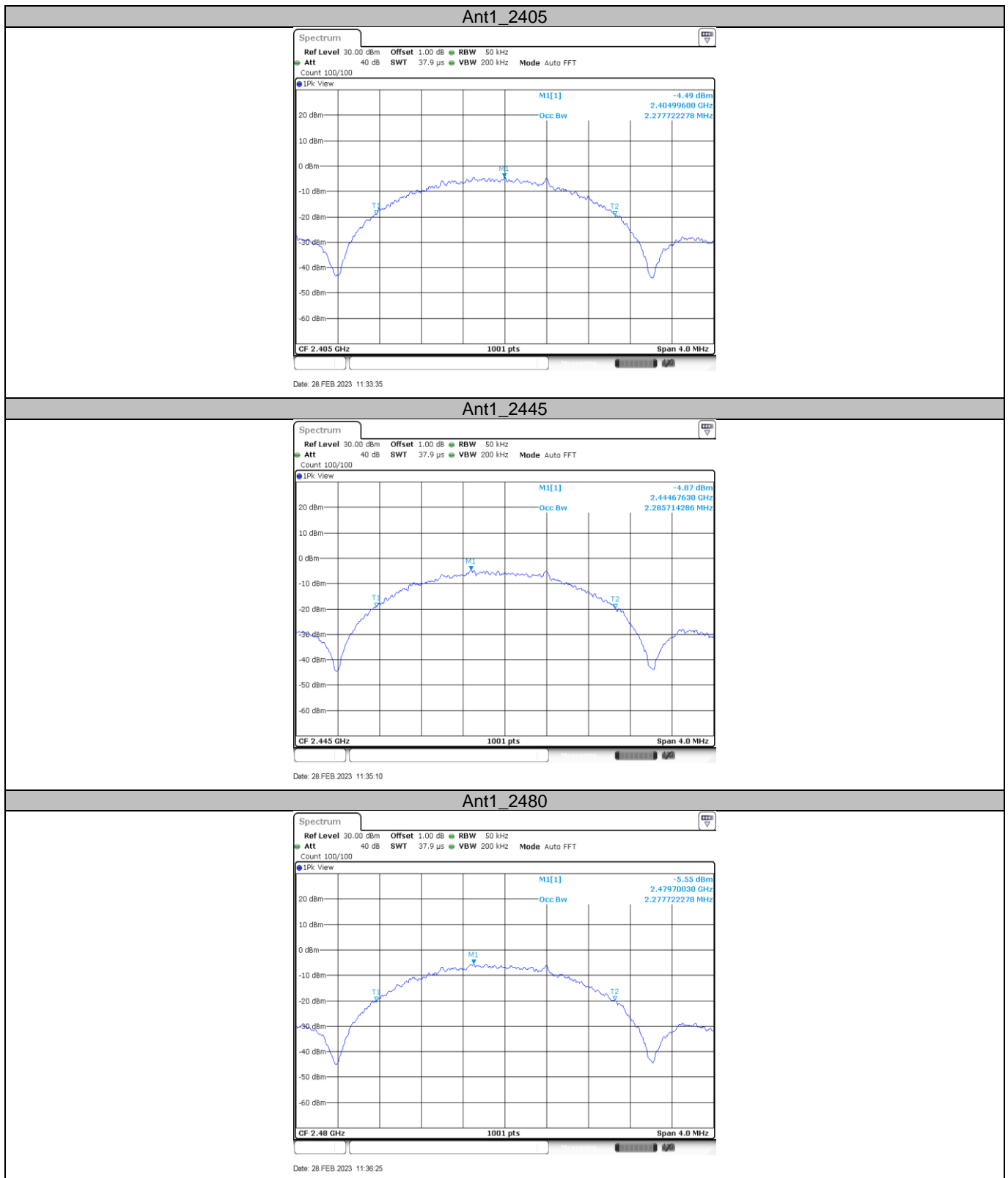
Frequency MHz	6dB bandwidth MHz	99% bandwidth MHz	Result
Bottom channel 2405MHz	1.404	2.278	Pass
Middle channel 2445MHz	1.508	2.286	Pass
Top channel 2480MHz	1.472	2.278	Pass

### 6 dB Bandwidth





### 99% Bandwidth



## 9.4 Spurious RF Conducted Emissions

### Test Method

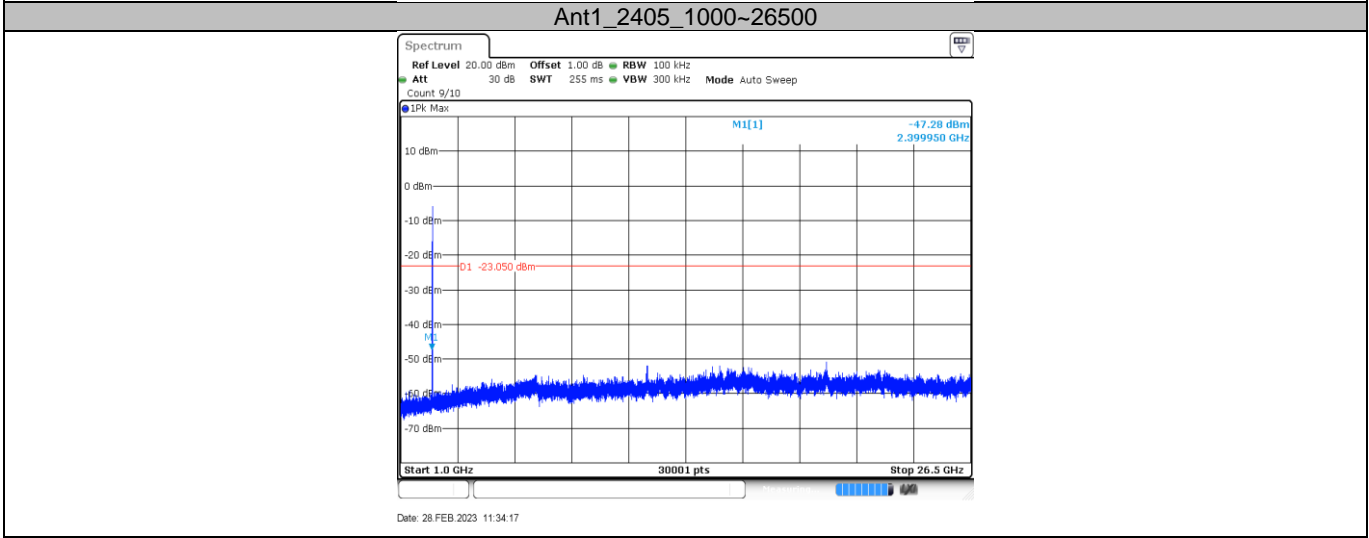
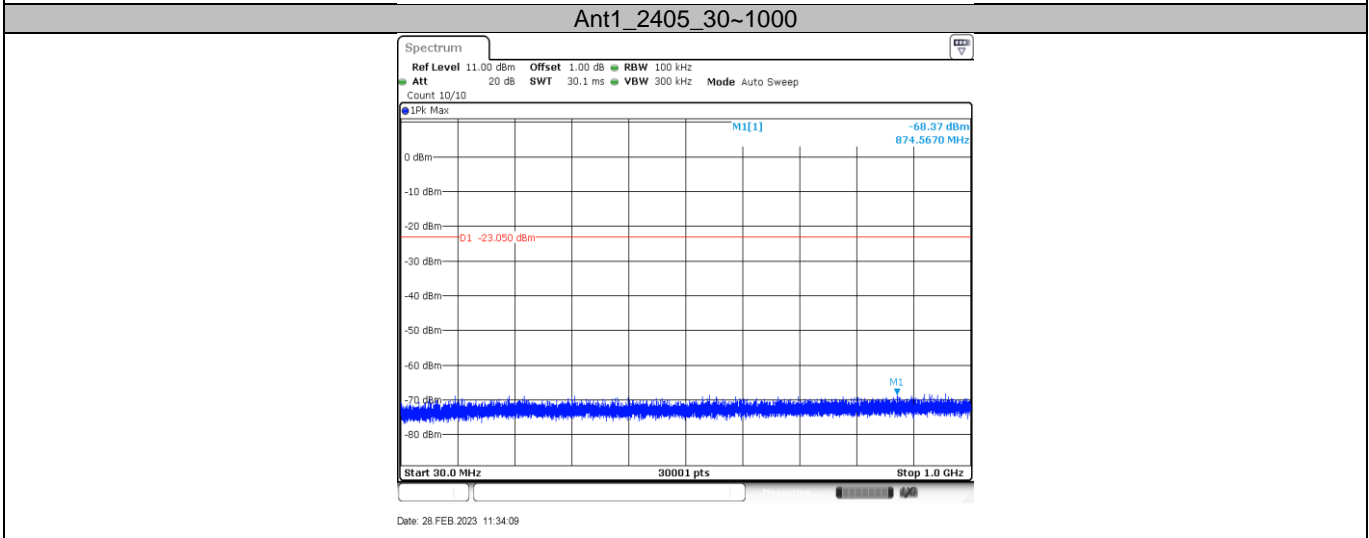
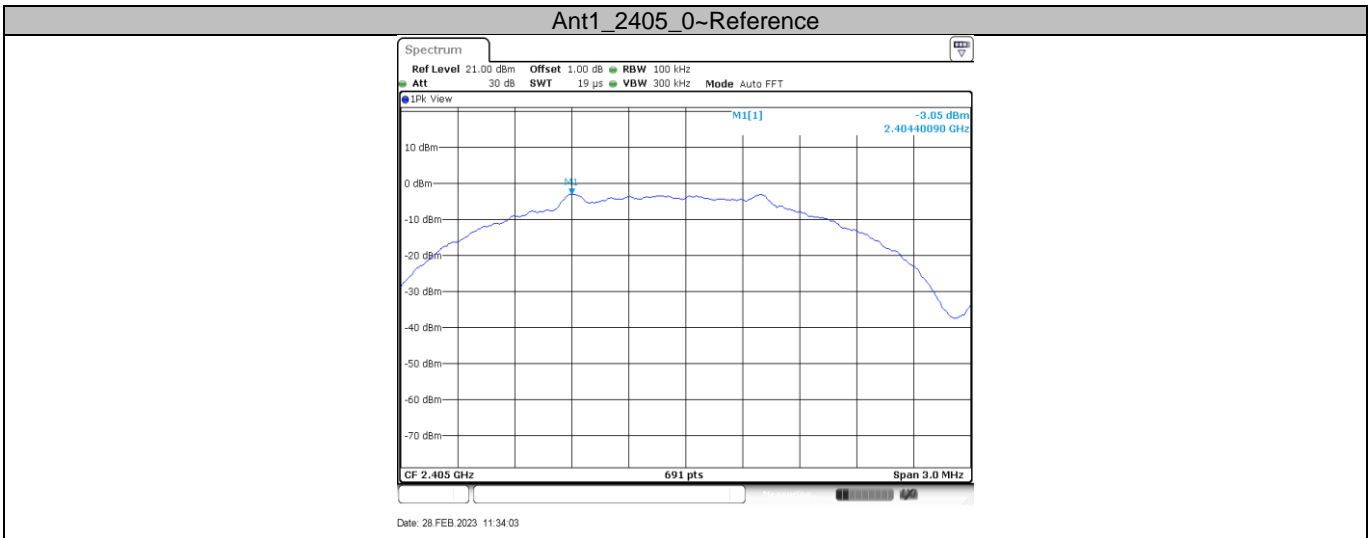
1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
4. Measure and record the results in the test report.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency

### Limit

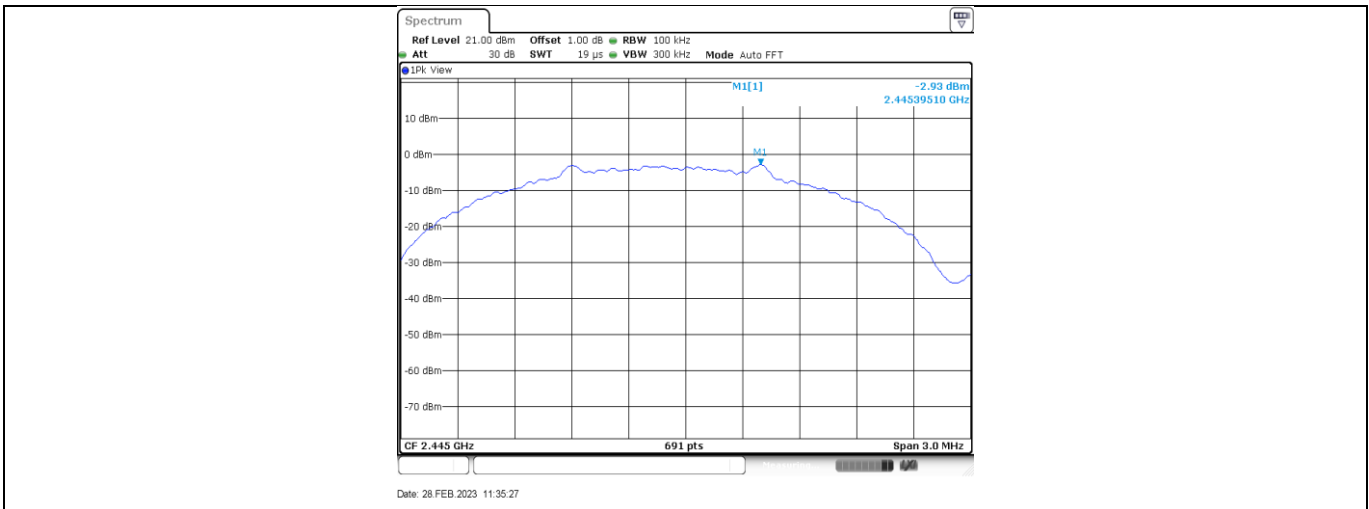
Frequency Range MHz	Limit (dBc)
30-25000	-20

### Spurious RF conducted emissions

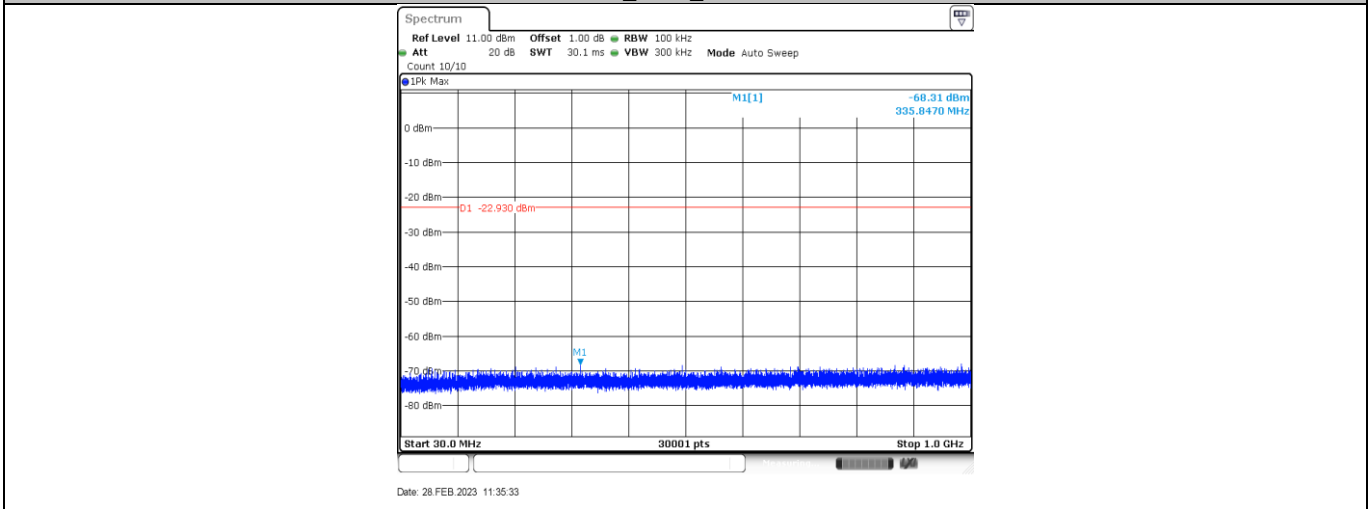
Antenna	Channel (MHz)	Frequency Range (MHz)	Result (dBm)	Limit (dBm)	Verdict
Ant0	2405	Reference	-3.05	---	PASS
		30~1000	-68.37	<=-23.05	PASS
		1000~26500	-47.28	<=-23.05	PASS
	2445	Reference	-2.93	---	PASS
		30~1000	-68.31	<=-22.93	PASS
		1000~26500	-52.3	<=-22.93	PASS
	2480	Reference	-4.18	---	PASS
		30~1000	-67.81	<=-24.18	PASS
		1000~26500	-48.6	<=-24.18	PASS



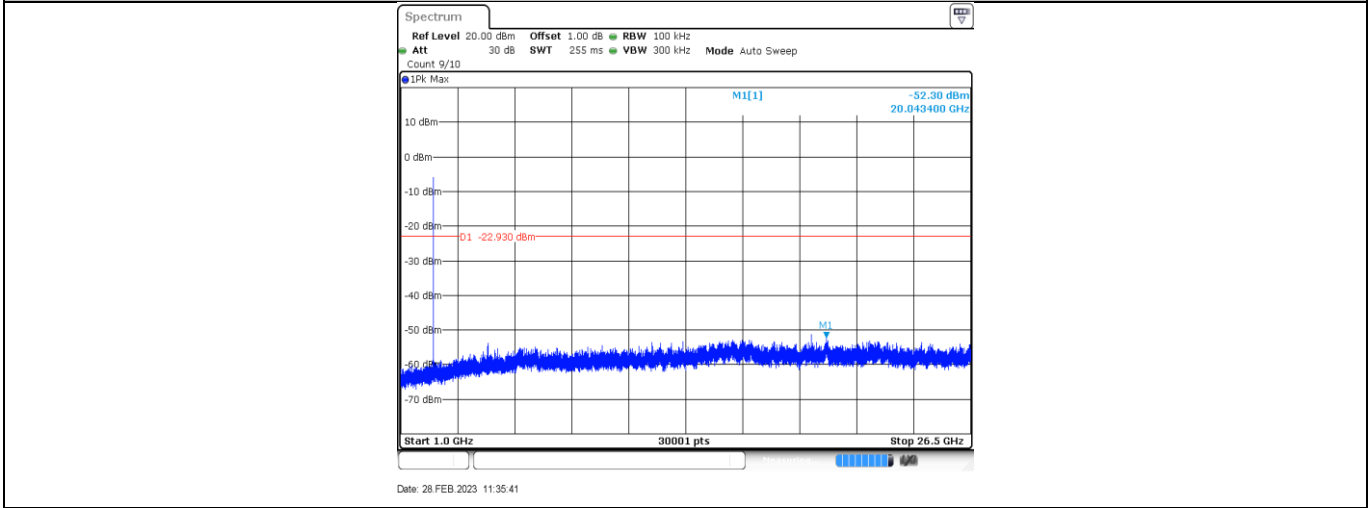
### Ant1\_2445\_0~Reference



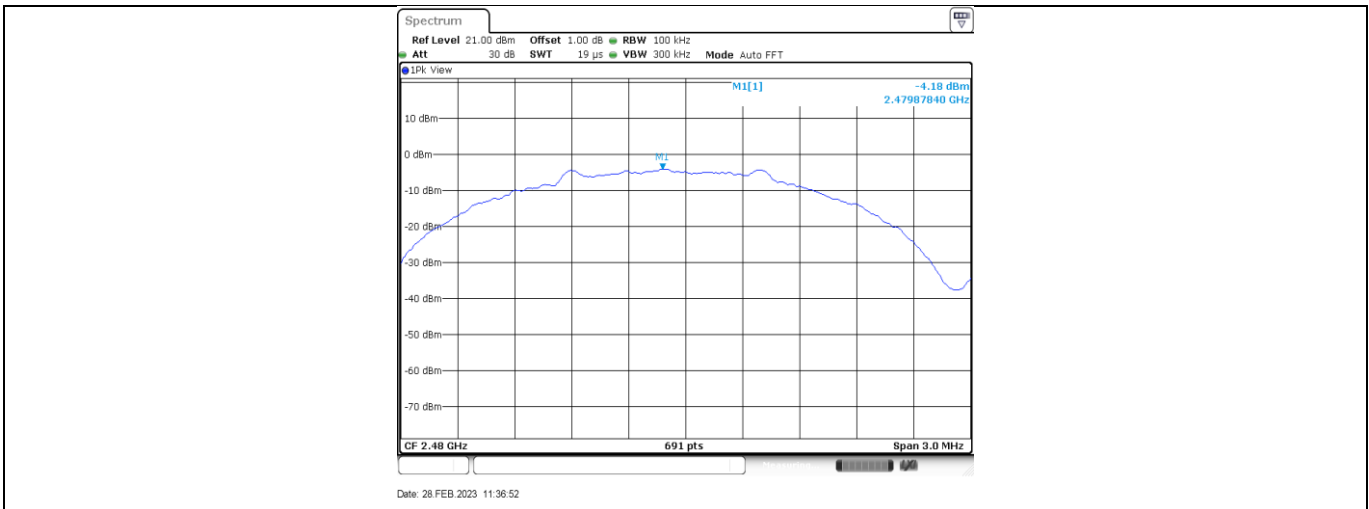
Ant1\_2445\_30~1000



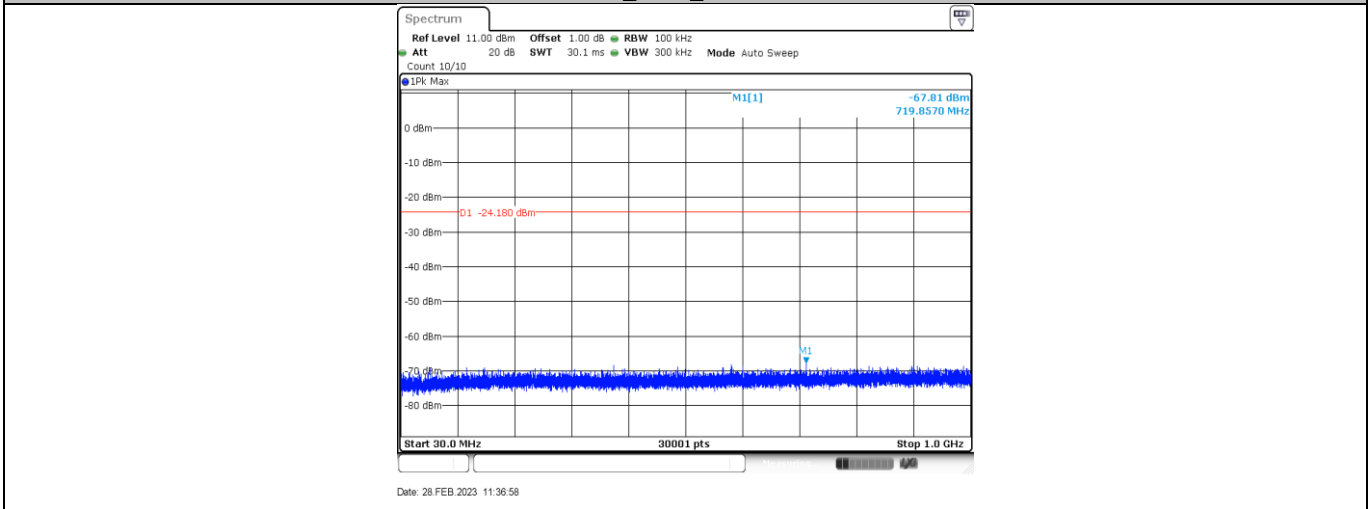
Ant1\_2445\_1000~26500



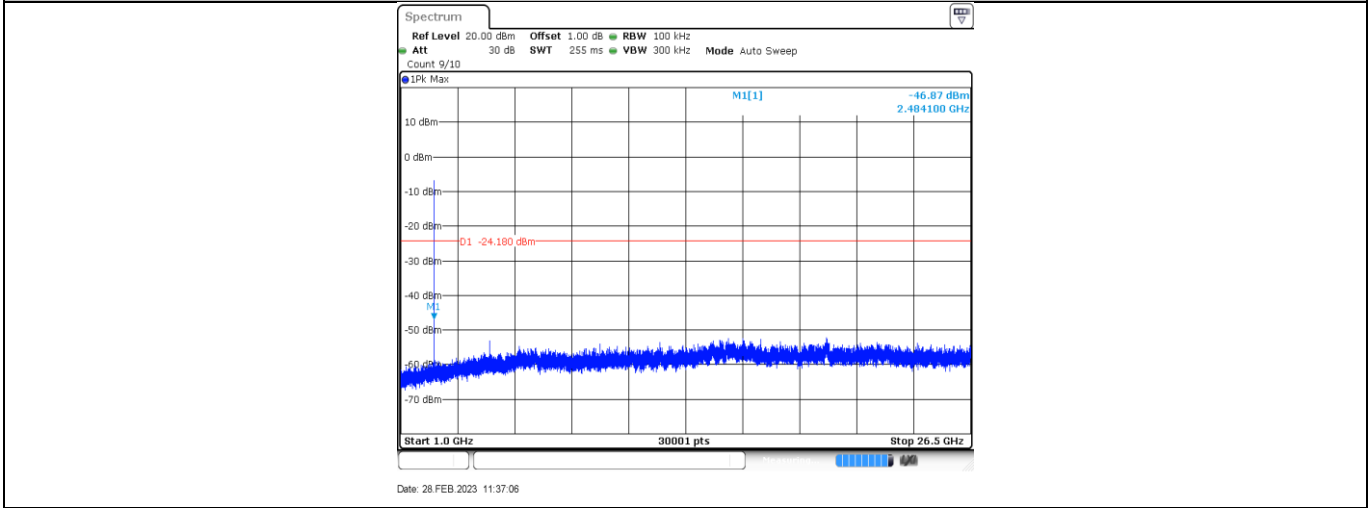
Ant1\_2480\_0~Reference



Ant1\_2480\_30~1000



Ant1\_2480\_1000~26500



## 9.5 Band Edge

### Test Method

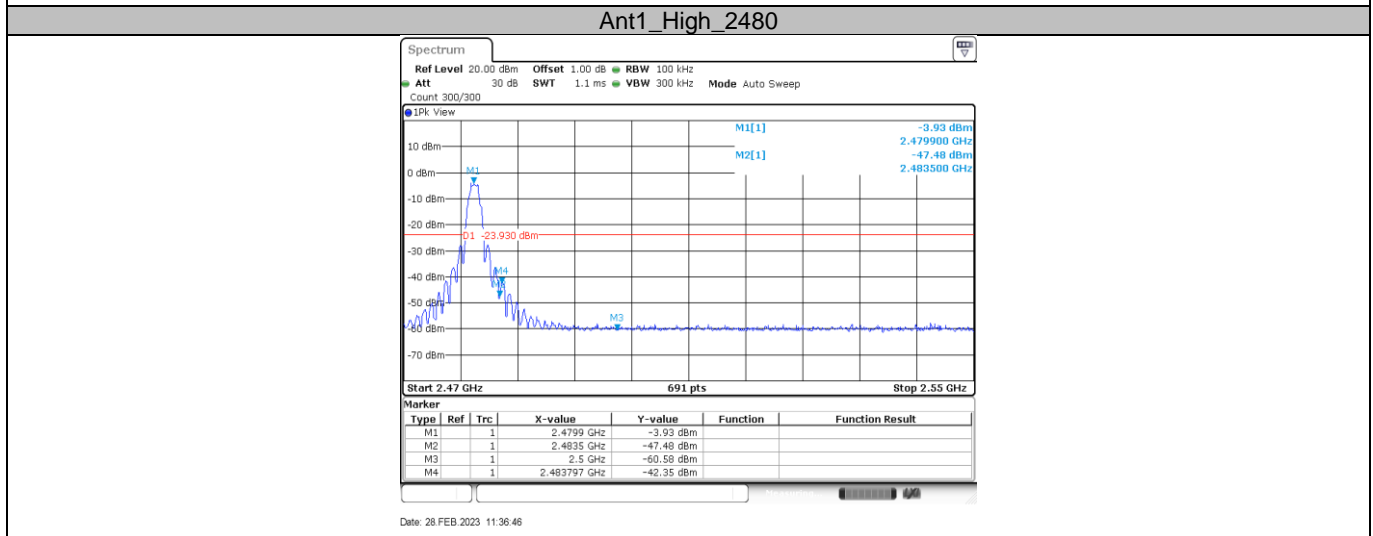
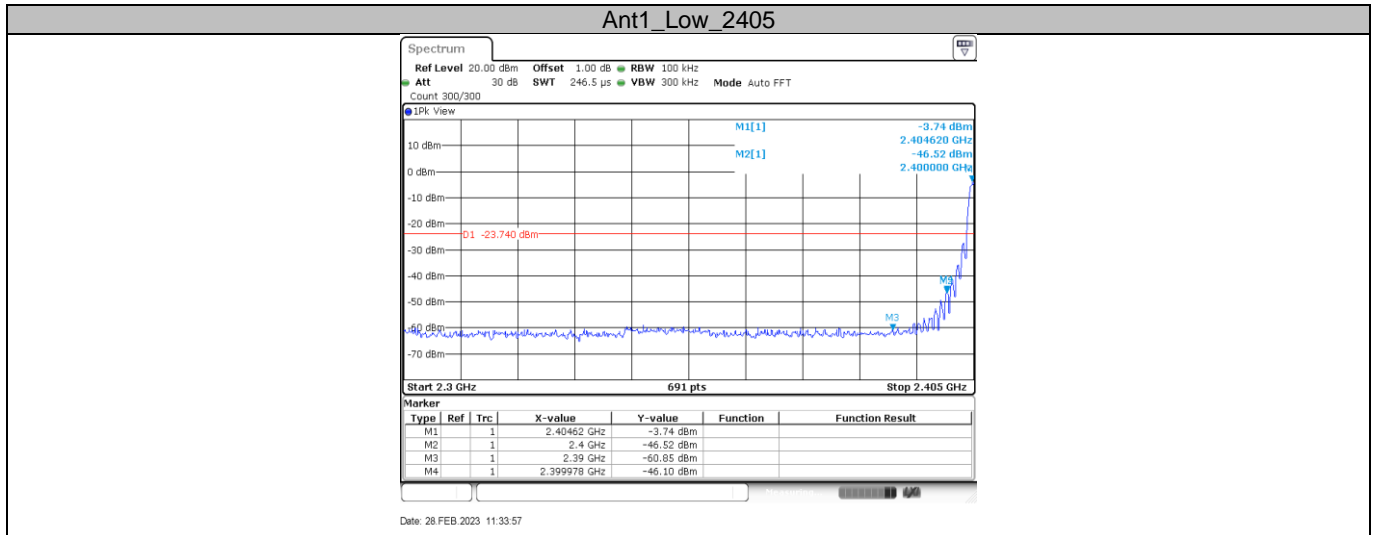
1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
4. Measure and record the results in the test report.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency
6. Set to the maximum power setting and enable the EUT hopping mode, repeat the test.

### Limit

Frequency Range MHz	Limit (dBc)
30-25000	-20

### Band edge testing

Antenna	Channel	Channel (MHz)	Reference Level (dBm)	Result (dBm)	Limit (dBm)	Verdict
Ant0	Low	2405	-3.74	-46.1	<=-23.74	PASS
	High	2480	-3.93	-42.35	<=-23.93	PASS
Ant0	Low	2405	-1.29	-39.14	<=-21.29	PASS
	High	2480	-0.19	-57.89	<=-20.19	PASS





## 9.6 Spurious Radiated Emissions for Transmitter

### Test Method

1. The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meters chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
4. The height of antenna is varied from one meter to four meters 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.
5. 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 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
6. Use the following spectrum analyzer settings According to C63.10:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz, VBW= 300kHz for  $f < 1$  GHz; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW=1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for peak measurement.For average measurement:
  - VBW = 10 Hz, when duty cycle is no less than 98 percent.
  - VBW  $\geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
7. Repeat above procedures until all frequencies measured were complete.

### Note:

- 1: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Quasi-peak detection (QP) at frequency below 1GHz.
- 2: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for peak detection (PK) at frequency above 1GHz.
- 3: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average ((duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ( $20\log(1/\text{duty cycle})$ ).
- 4: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.

## Spurious radiated emissions for transmitter

### Limit

The radio emission outside the operating frequency band shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Radiated emissions which fall in the restricted bands, as defined in section 15.205 & RSS-GEN 8.10, must comply with the radiated emission limits specified in section 15.209 & RSS-Gen 6.13.

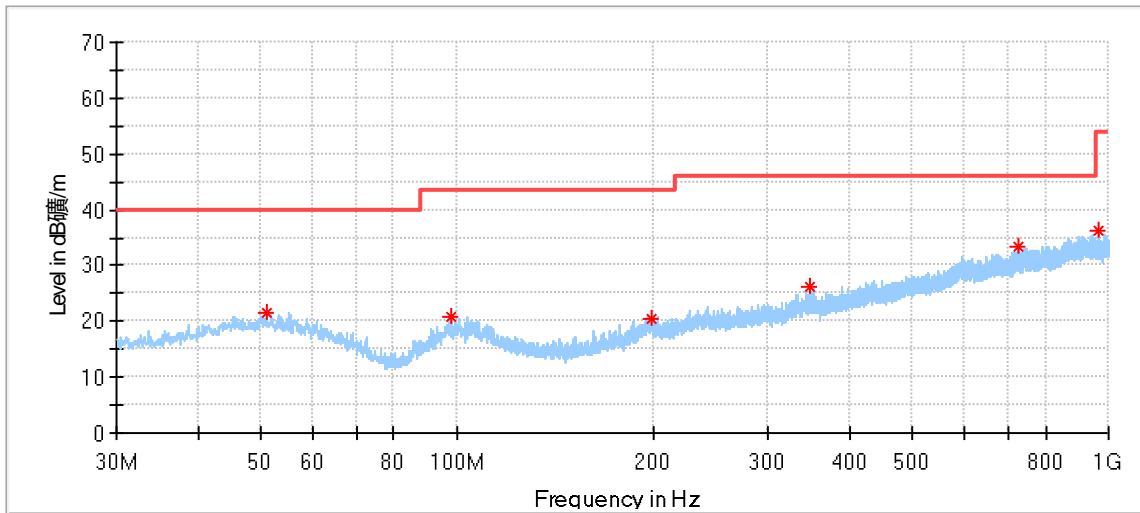
Frequency MHz	Field Strength $\mu\text{V/m}$	Field Strength $\text{dB}\mu\text{V/m}$	Detector
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK

### Spurious radiated emissions for transmitter

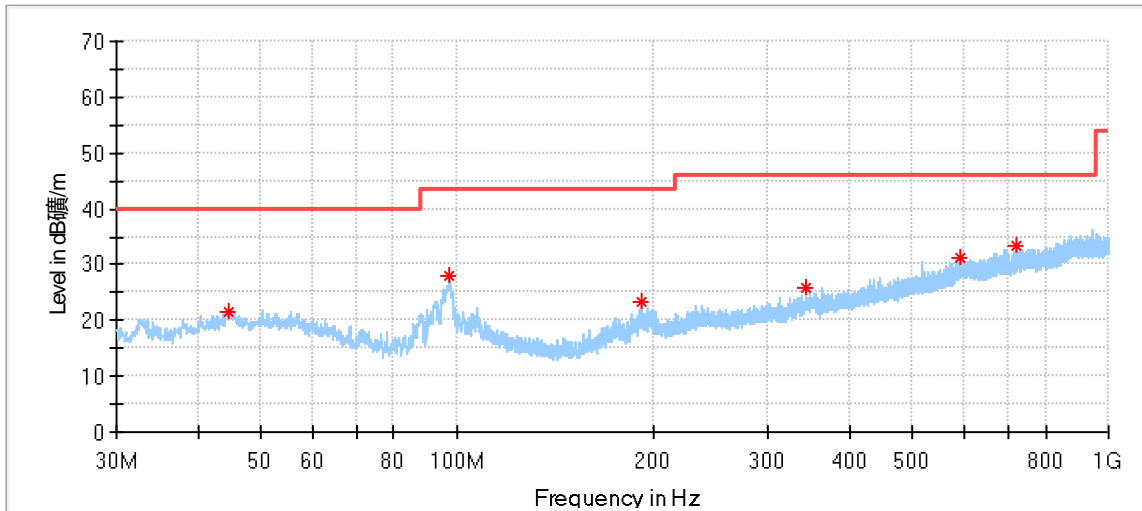
According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

### Transmitting spurious emission test result as below:

Test data\_30MHz to 1000MHz

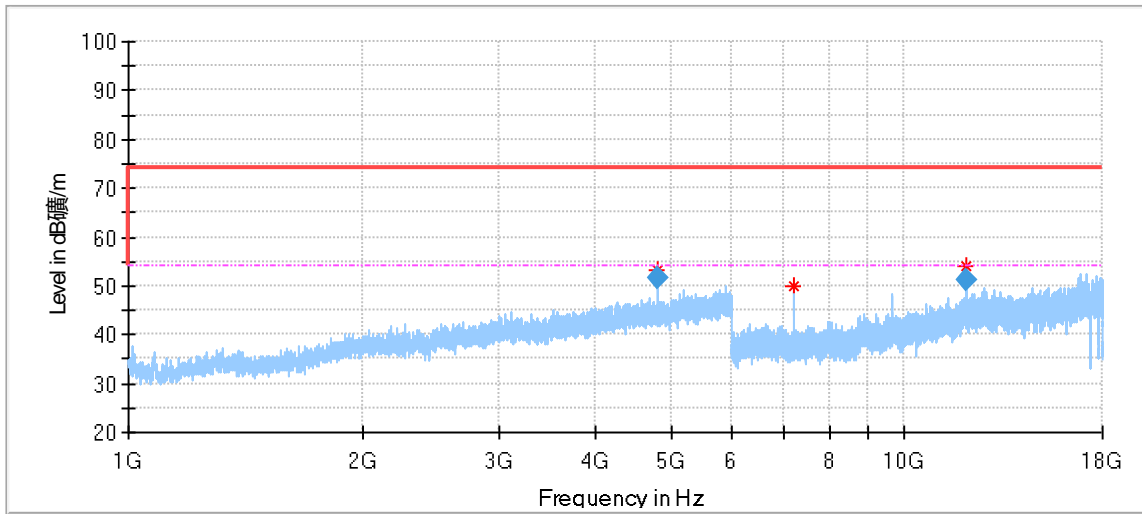


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
51.070556	21.57	40.00	18.43	100.0	H	157.0	20.62
97.900000	20.86	43.50	22.64	200.0	H	0.0	18.48
198.887778	20.58	43.50	22.92	200.0	H	175.0	19.05
347.944444	26.10	46.00	19.91	100.0	H	138.0	22.97
725.490000	33.54	46.00	12.46	200.0	H	267.0	28.95
965.241667	36.13	54.00	17.87	200.0	H	258.0	31.68

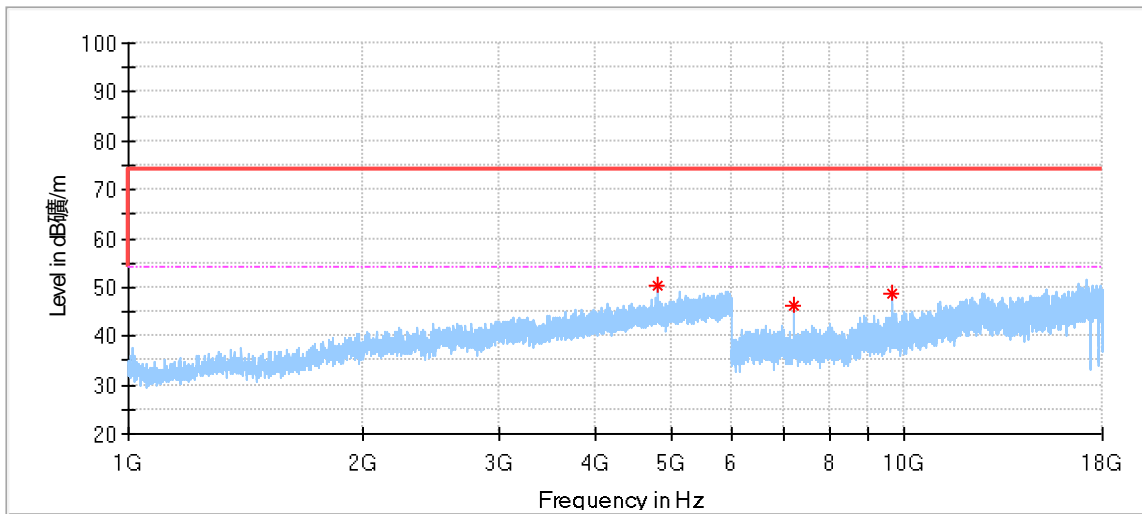


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
44.496111	21.38	40.00	18.62	100.0	V	260.0	20.06
97.522778	27.91	43.50	15.59	100.0	V	356.0	18.40
191.936111	23.30	43.50	20.20	100.0	V	145.0	18.21
343.471667	25.85	46.00	20.15	100.0	V	102.0	22.68
591.145000	31.25	46.00	14.75	100.0	V	352.0	27.65
721.879444	33.40	46.00	12.60	100.0	V	37.0	28.87

Test data 1GHz to 18GHz:  
Low Channel:

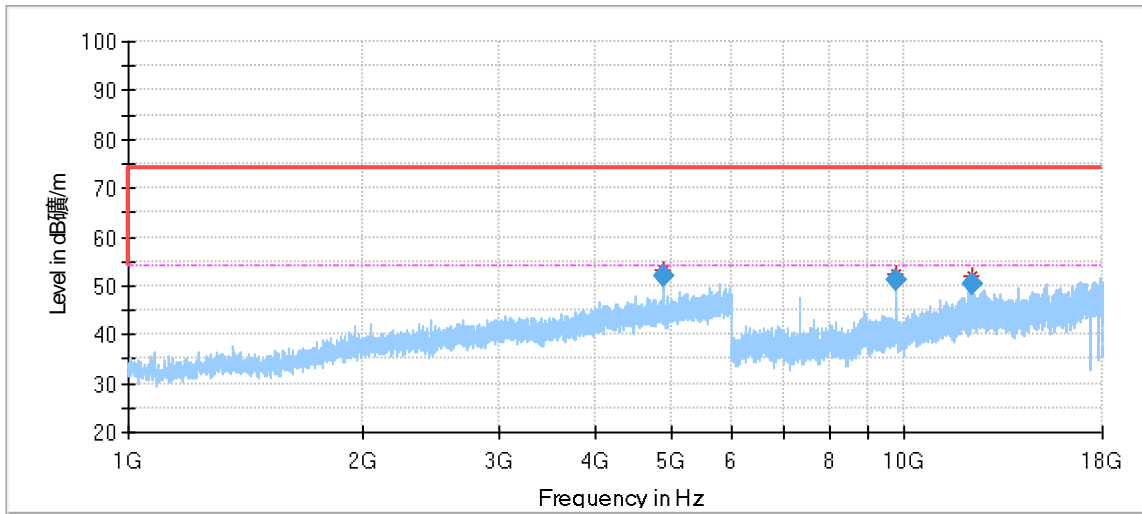


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4809.500000*	53.04	74.00	20.96	150.0	H	266.0	3.75
7213.000000	50.15	74.00	23.85	150.0	H	231.0	9.29
12027.000000*	53.98	74.00	20.02	150.0	H	116.0	17.34
Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4809.500000*	51.42	54.00	2.58	150.0	H	266.0	3.75
12027.000000*	51.26	54.00	2.74	150.0	H	116.0	17.34

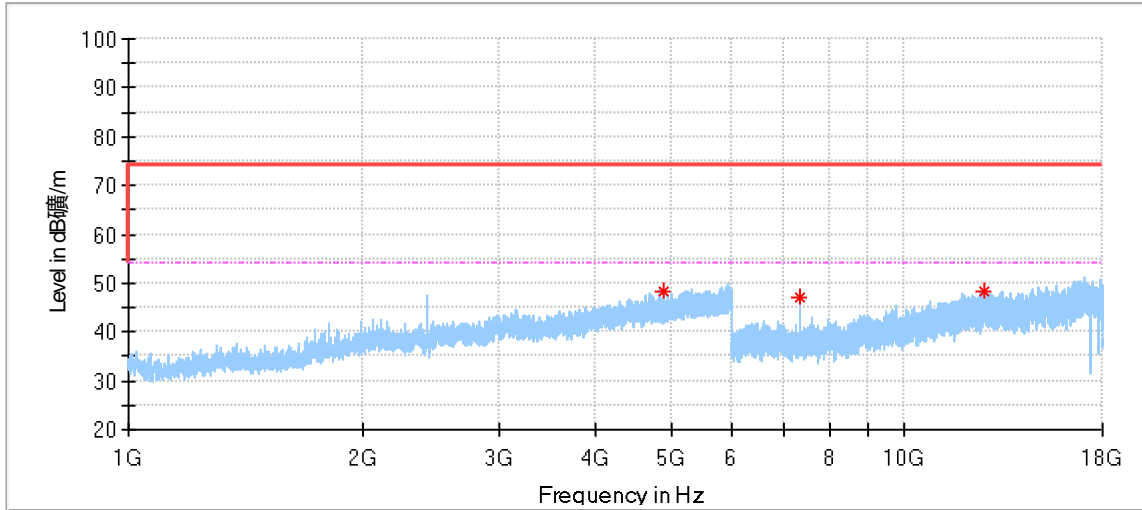


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4809.500000*	50.35	74.00	23.65	150.0	V	358.0	3.75
7213.000000	46.20	74.00	27.80	150.0	V	272.0	9.29
9618.000000	48.85	74.00	25.15	150.0	V	188.0	13.19

Middle Channel:

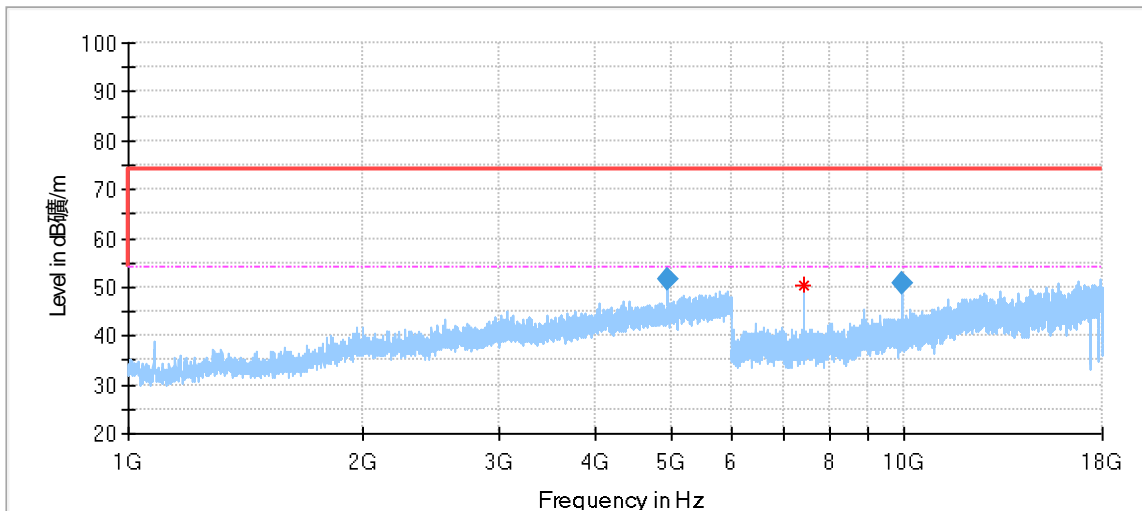


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4889.500000*	53.11	74.00	20.89	150.0	H	213.0	3.88
9778.000000	52.27	74.00	21.73	150.0	H	216.0	13.53
12227.000000*	51.82	74.00	22.18	150.0	H	188.0	17.29
Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4889.500000*	51.89	54.00	2.11	150.0	H	213.0	3.88
9778.000000	51.02	54.00	2.98	150.0	H	216.0	13.53
12227.000000*	50.28	54.00	3.72	150.0	H	188.0	17.29

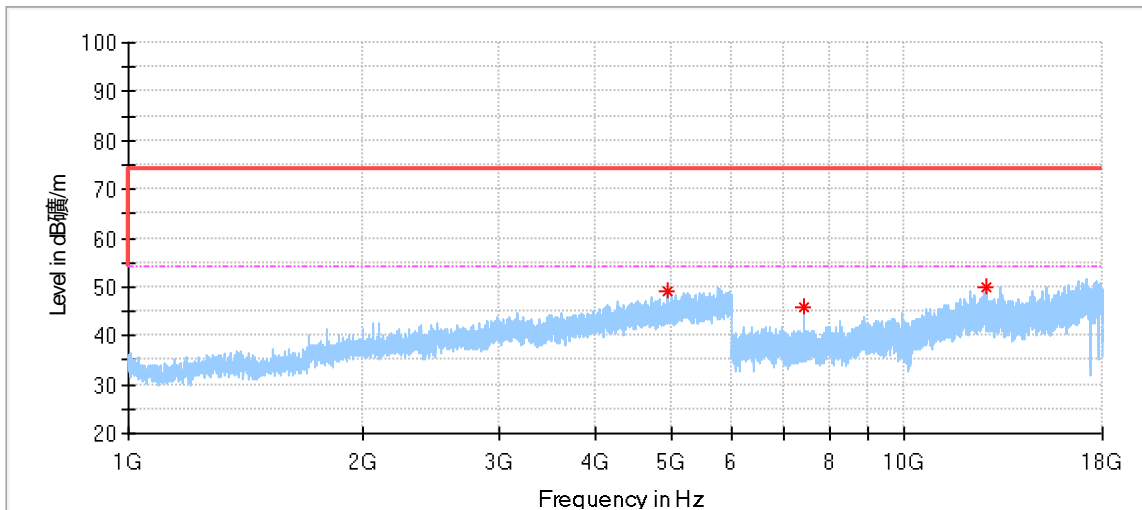


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4891.000000*	48.11	74.00	25.89	150.0	V	157.0	3.88
7333.500000*	47.15	74.00	26.85	150.0	V	185.0	9.64
12643.500000*	48.44	74.00	25.56	150.0	V	185.0	18.65

High Channel:

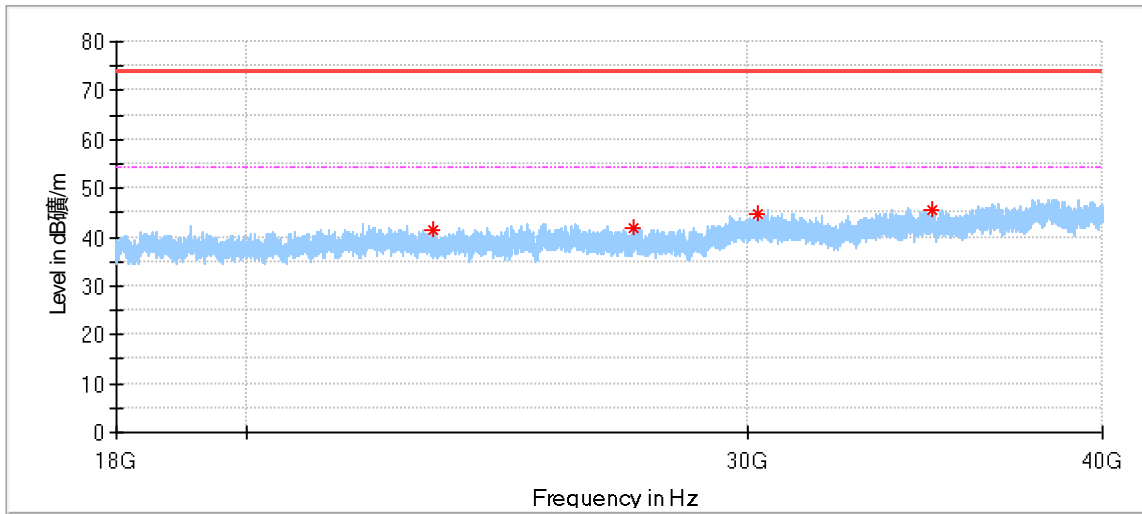


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4961.000000*	52.13	74.00	21.87	150.0	H	240.0	4.23
7441.000000*	50.51	74.00	23.49	150.0	H	188.0	9.65
9918.000000	51.25	74.00	22.75	150.0	H	216.0	13.14

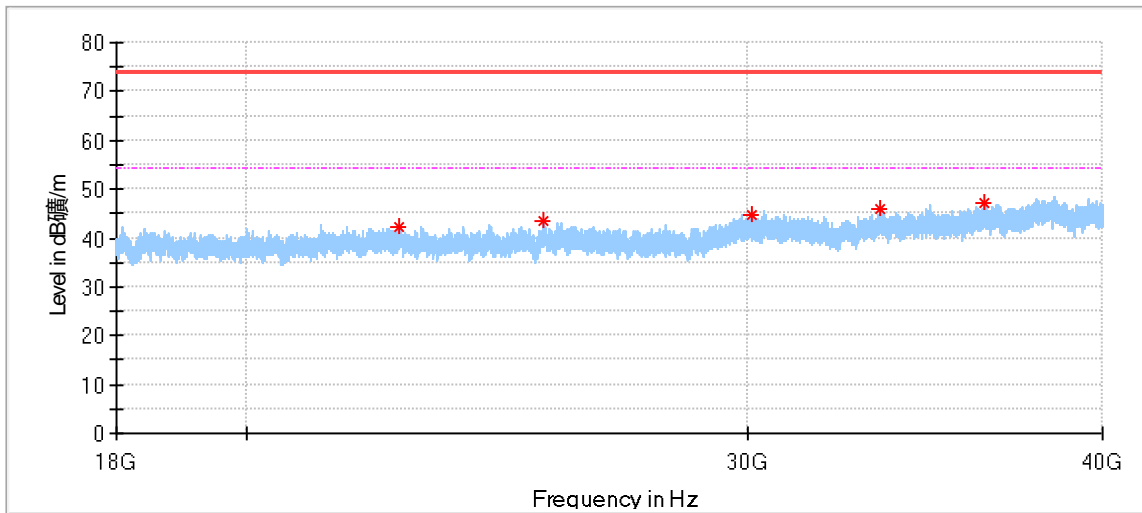


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4961.000000*	48.99	74.00	25.01	150.0	V	166.0	4.23
7441.000000*	46.05	74.00	27.95	150.0	V	188.0	9.65
12714.500000	50.06	74.00	23.94	150.0	V	29.0	17.74

Test data 18GHz to 40GHz:  
Low Channel:



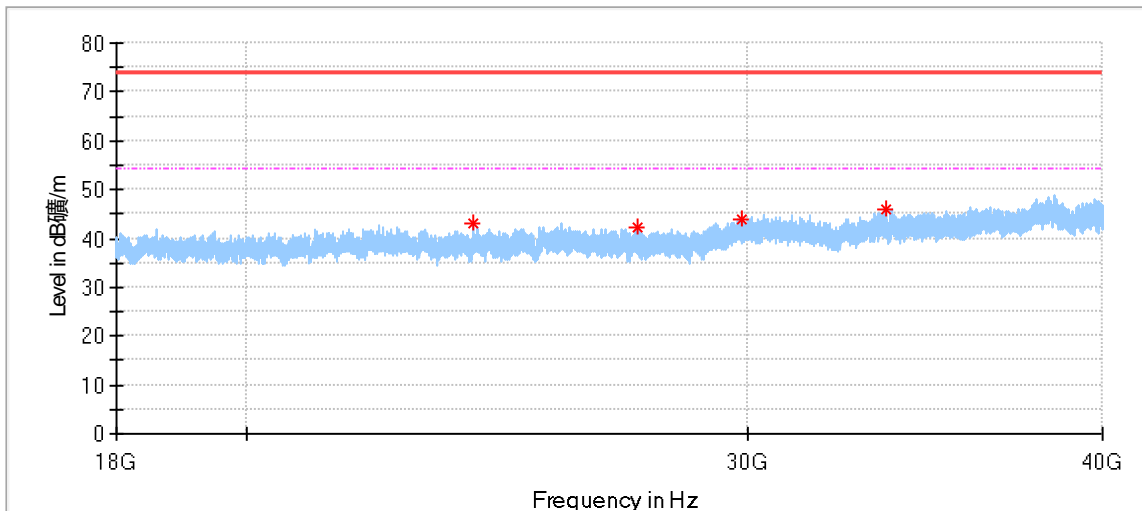
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
23275.875000	41.38	74.00	32.62	150.0	H	0.0	0.08
27366.500000	41.87	74.00	32.13	150.0	H	158.0	1.76
30232.687500	44.90	74.00	29.10	150.0	H	112.0	2.11
34825.875000	45.50	74.00	28.50	150.0	H	295.0	3.73



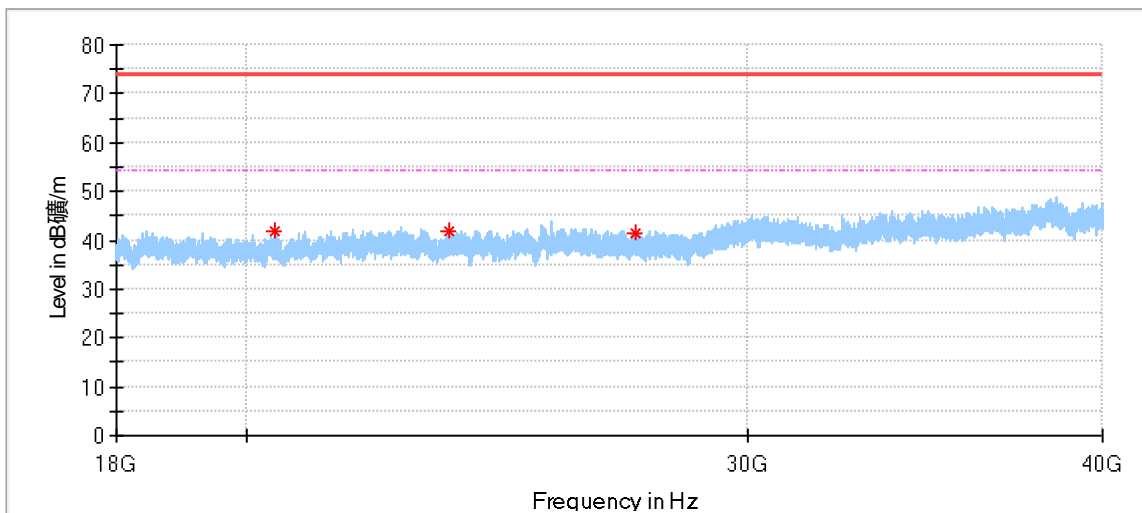
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
22637.187500	42.24	74.00	31.76	150.0	V	80.0	0.33
25420.875000	43.52	74.00	30.48	150.0	V	280.0	1.37
30086.250000	44.63	74.00	29.37	150.0	V	65.0	2.05
33422.687500	45.76	74.00	28.24	150.0	V	80.0	2.65
36334.937500	47.08	74.00	26.92	150.0	V	280.0	4.26



Middle Channel:

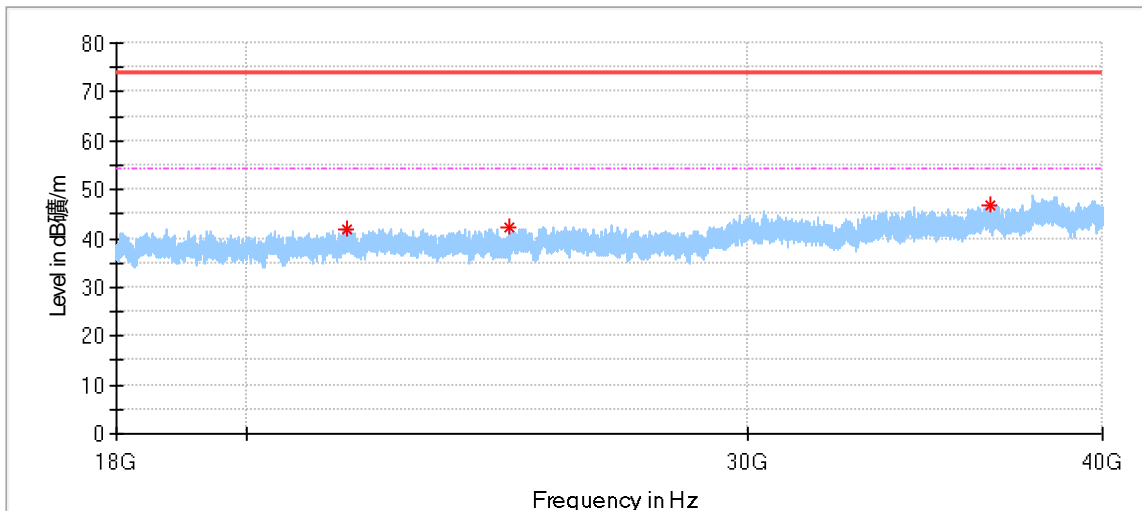


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
24018.375000	42.91	74.00	31.09	150.0	H	0.0	0.65
27444.875000	42.29	74.00	31.71	150.0	H	131.0	1.67
29843.562500	44.04	74.00	29.96	150.0	H	329.0	2.00
33558.125000	45.95	74.00	28.05	150.0	H	222.0	2.88

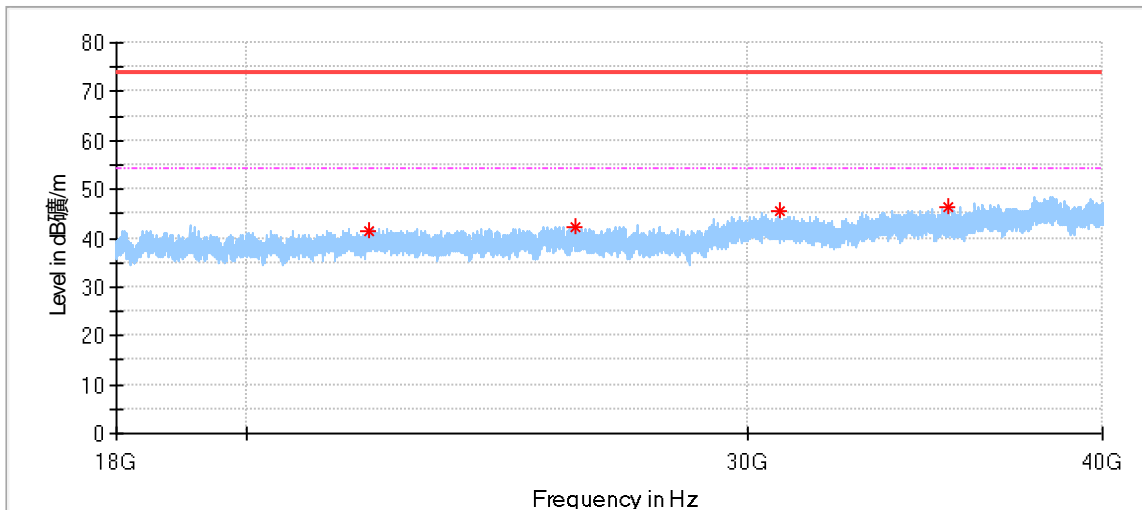


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
20451.625000*	41.83	74.00	32.17	150.0	V	219.0	-1.50
23566.000000	41.98	74.00	32.02	150.0	V	329.0	0.29
27397.437500	41.59	74.00	32.41	150.0	V	0.0	1.76

High Channel:



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
21692.562500	41.88	74.00	32.12	150.0	H	207.0	-0.22
24754.000000	42.17	74.00	31.83	150.0	H	4.0	0.66
36545.312500	46.81	74.00	27.19	150.0	H	0.0	4.37



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
22096.125000*	41.60	74.00	32.40	150.0	V	249.0	0.11
26096.687500	42.15	74.00	31.85	150.0	V	249.0	1.55
30793.687500	45.45	74.00	28.55	150.0	V	280.0	1.79
35272.750000	46.34	74.00	27.66	150.0	V	51.0	3.73

Remark:

- (1) “\*” means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.
- (2) Data of measurement within frequency range 9kHz-30MHz are the noise floor or attenuated more than 20dB below the permissible limits or the field strength is too small to be measured, so test data does not present in this report.
- (3) Corrected Amplitude = Read level + Corrector factor  
Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain  
Below 1GHz: Corrector factor = Antenna Factor + Cable Loss  
(The Reading Level is recorded by software which is not shown in the sheet)

## 10 Test Equipment List

### List of Test Instruments

#### Radiated Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	68-4-74-14-002	101269	1	2023-5-28
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9162	68-4-80-19-003	284	1	2023-7-12
Wave Guide Antenna	ETS	3117	68-4-80-19-001	00218954	1	2023-5-9
Pre-amplifier	Rohde & Schwarz	SCU 18F	68-4-29-19-001	100745	1	2023-5-28
Pre-amplifier	Rohde & Schwarz	SCU 18F	68-4-29-19-002	100746	1	2023-5-28
Sideband Horn Antenna	Q-PAR	QWH-SL-18-40-K-SG	68-4-80-14-008	12827	1	2023-7-12
Pre-amplifier	Rohde & Schwarz	SCU 40A	68-4-29-14-002	100432	1	2023-7-27
Attenuator	Mini-circuits	UNAT-6+	68-4-81-21-002	15542	1	2023-5-27
3m Semi-anechoic chamber	TDK	SAC-3 #2	68-4-90-19-006	----	2	2023-5-28
Test software	Rohde & Schwarz	EMC32	68-4-90-19-006-A01	Version10.35.02	N/A	N/A

#### Conducted Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	68-4-74-19-002	102590	1	2023-5-27
LISN	Rohde & Schwarz	ENV216	68-4-87-19-001	102472	1	2023-5-27
Attenuator	Shanghai Huaxiang	TS2-26-3	68-4-81-16-003	080928189	1	2023-5-27
Test software	Rohde & Schwarz	EMC32	68-4-90-19-005-A01	Version10.35.02	N/A	N/A
Shielding Room	TDK	CSR #2	68-4-90-19-005	----	3	2025-10-15

## 11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Conducted Emission 150kHz-30MHz (for test using AMN ENV432 or ENV4200)	3.57dB
Uncertainty for Radiated Emission in new 3m chamber (68-4-90-19-006) 30MHz-1000MHz	Horizontal: 4.59dB; Vertical: 4.75dB
Uncertainty for Radiated Emission in new 3m chamber (68-4-90-19-006) 1000MHz-18000MHz	Horizontal: 5.08dB; Vertical: 5.09dB;
Uncertainty for Radiated Emission 18000MHz-40000MHz	Horizontal: 4.52dB; Vertical: 4.51dB
Uncertainty for Conducted RF test	RF Power Conducted: 1.31dB Frequency test involved: 0.6×10 <sup>-8</sup> or 1%

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2007, clause 4.4.3 and 4.5.1.

---

THE END