



RF MEASUREMENT REPORT

FCC ID: 2A46G-RD24412
Applicant: Guangzhou Xaircraft Technology CO.,LTD
Product: 4D Imaging Radar
Model No.: RD24412
FCC Classification: Part 15 Low Power Communication Device Transmitter (DXX)
FCC Rule Part(s): Part 15.249
Test Procedure(s): ANSI C63.10 - 2013
Result: Complies
Test Date: 2022-08-08 ~ 2022-08-14

Reviewed By:

Sunny Sun

Approved By:

Robin Wu



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2208RSU005-U1	Rev. 01	Initial Report	2022-08-19	Valid

CONTENTS

Description	Page
1. General Information	5
1.1. Applicant	5
1.2. Manufacturer	5
1.3. Testing Facility	5
1.4. Product Information	6
1.5. Radio Specification	6
2. Test Configuration	7
2.1. Test Mode	7
2.2. Test Configuration	7
2.3. Test Environment Condition	7
3. Antenna Requirements	8
4. Measuring Instrument.....	9
5. Measurement Uncertainty	10
6. Test Result	11
6.1. Summary	11
6.2. AC Conducted Emissions Measurement.....	12
6.2.1. Test Limit	12
6.2.2. Test Setup	12
6.2.3. Test Result	12
6.3. Radiated Emission.....	13
6.3.1. Test Limit	13
6.3.2. Test Procedure	14
6.3.3. Test Setting	14
6.3.4. Test Setup	16
6.3.5. Test Result	18
6.4. Radiated Restricted Band Edge Measurement	23
6.4.1. Test Limit	23
6.4.2. Test Procedure	24
6.4.3. Test Setting	24
6.4.4. Test Setup	25
6.4.5. Test Result	26
6.5. 20dB Spectrum Bandwidth Measurement.....	30
6.5.1. Test Limit	30
6.5.2. Test Procedure	30
6.5.3. Test Setting	30
6.5.4. Test Setup	30
6.5.5. Test Result	31

Appendix A - Test Setup Photograph 32
Appendix B - EUT Photograph 33

1.4. Product Information

Product Name	4D Imaging Radar
Model No.	RD24412
EUT Identification No.	20220801Sample#12
Temperature	-20°C ~ 85°C
Power Supply	DC 48V
Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Radio Specification

Frequency Range	24.00 ~ 24.25GHz
Type of Modulation	FMCW
Antenna Type	Integrated Antenna
Antenna Gain	12.4dBi
Max. Declared EIRP	20 dBm

2. Test Configuration

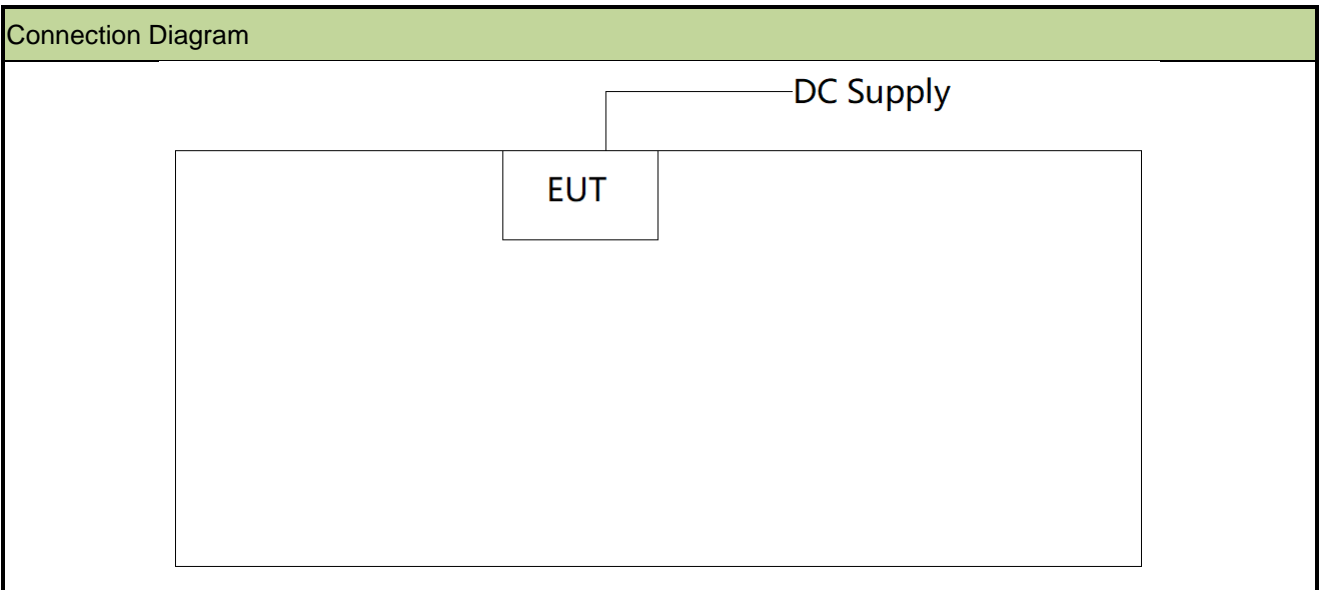
2.1. Test Mode

Mode 1: Transmitter (Tx) and Receiver (Rx) Work Simultaneously at 24GHz

Note: The test sample was provided by the manufacturer, which was configured into Collocated Tx/Rx mode after power on.

2.2. Test Configuration

This device was tested per the guidance ANSI C63.10:2013 was used to reference the appropriate EUT setup for radiated emissions testing.



2.3. Test Environment Condition

Ambient Temperature	15 ~ 35°C
Relative Humidity	20 ~ 75%RH

3. Antenna Requirements

Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- The antenna of the device is **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

This unit complies with the requirement of §15.203.

4. Measuring Instrument

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
Anechoic Chamber	RIKEN	SIP-AC1	MRTSUE06554	1 year	2022-12-23	SIP-AC1
Horn Antenna	R&S	HF907	MRTSUE06610	1 year	2023-07-13	SIP-AC1
Preamplifier	EMCI	EMC051845SE	MRTSUE06600	1 year	2022-11-08	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06616	1 year	2022-11-02	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06620	1 year	2022-11-28	SIP-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2023-06-01	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06623	1 year	2022-11-28	SIP-AC2
Thermohygrometer	testo	608-H1	MRTSUE06624	1 year	2022-11-28	SIP-AC2
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06647	1 year	2023-07-13	SIP-AC2
Anechoic Chamber	RIKEN	SIP-AC2	MRTSUE06781	1 year	2022-12-23	SIP-AC2
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2022-12-29	SIP-AC2
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2023-06-08	SIP-AC3
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06598	1 year	2022-11-09	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06619	1 year	2022-11-02	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06622	1 year	2022-11-28	SIP-AC3
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2022-12-23	SIP-AC3
Signal Analyzer	Keysight	N9010B	MRTSUE06603	1 year	2022-10-31	SIP-AC3
Waveguide Harmonic Mixer	Keysight	M1970V	MRTSUE06271	N/A ^{Note 1}	N/A	SIP-TR2
Waveguide Harmonic Mixer	Keysight	M1970W	MRTSUE06272	N/A ^{Note 1}	N/A	SIP-TR2
mmWave Antenna	MI-WWAVE	261U-25/383	MRTSUE06273	N/A ^{Note 2}	N/A	SIP-TR2
mmWave Antenna	A-INFO	LB-15-25-A	MRTSUE06409	N/A ^{Note 2}	N/A	SIP-TR2
mmWave Antenna	A-INFO	LB-10-25-A	MRTSUE06410	N/A ^{Note 2}	N/A	SIP-TR2
Thermohygrometer	testo	622	MRTSUE06628	1 year	2023-01-06	SIP-TR2
Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2023-07-08	SIP-TR2

Note 1: Before testing, the read value of the mixer and spectrum was verified, which was consistent with the read value of the power meter through the transmit link. Make sure the mixer functions properly.

Note 2: Standard gain horns need not be periodically calibrated. Antenna appearance and connector were checked and no damage.

Software	Version	Function
EMI V3	V 3.0.0	EMI Test Software
Controller_MF 7802BS	1.02	RE Antenna & turntable
MotorContor	V 2	mmw

5. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

AC Conducted Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 9kHz~150kHz: 3.74dB 150kHz~30MHz: 3.44dB
Radiated Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB

6. Test Result

6.1. Summary

FCC Part Section(s)	Test Description	Test Condition	Verdict
15.207	AC Conducted Emissions 150kHz - 30MHz	Line Conducted	N/A
15.209 15.249	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Radiated	Pass
15.215(c)	20dB Spectrum Bandwidth	Radiated	Pass

Notes:

1. The radiation measurements are performed in X, Y, Z axis positioning. The test results shown in the following sections represent the worst-case emissions.
2. The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
3. "N/A" means that this item is not applicable, and the detail information refer to relevant section.

6.2. AC Conducted Emissions Measurement

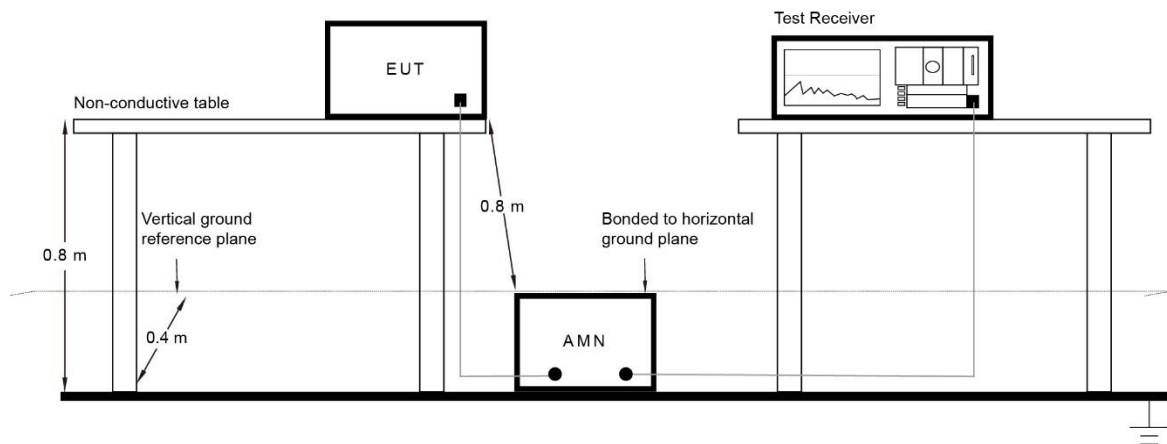
6.2.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dB μ V)	Average (dB μ V)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

6.2.2. Test Setup



6.2.3. Test Result

The EUT is powered by internal DC power supply, so this requirement does not apply.

6.3. Radiated Emission

6.3.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.249		
Fundamental Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (μ V/m)
902 ~ 928	50	500
2400 ~ 2483.5	50	500
5725 ~ 5875	50	500
24000 ~ 24250	250	2500

Note: FCC Part 15.249 (d), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Field Strength (μ V/m)	Measurement Distance (m)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Note 3: E field strength (dB μ V/m) = 20 log E field strength (μ V/m).

6.3.2. Test Procedure

ANSI C63.10-2013 Section 6.3

ANSI C63.10-2013 Section 6.4

ANSI C63.10-2013 Section 6.5

ANSI C63.10-2013 Section 6.6

6.3.3. Test Setting

Measurement of harmonic and spurious emissions above 40 GHz

1. Connect the test antenna covering the appropriate frequency range to a spectrum analyzer via an external mixer.
2. Set spectrum analyzer RBW = 1MHz, VBW = 3MHz, peak & average detector.
3. Maximize all observed emissions. Note the maximum power indicated on the spectrum analyzer. Adjust this reading, if necessary, by the conversion loss of the external mixer used at the frequency under investigation and the external mixer IF cable loss.
4. Calculate the maximum field strength of the emission at the measurement distance.
5. Calculate the power density at the distance specified by the limit from the field strength at the distance specified by the limit.
6. Repeat the preceding sequence for every emission observed in the frequency band under investigation.

Measurement of harmonic and spurious emissions below 40 GHz

Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in Table 1
3. VBW = 3 x RBW
4. Detector = Peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Table 1 - RBW as a function of frequency

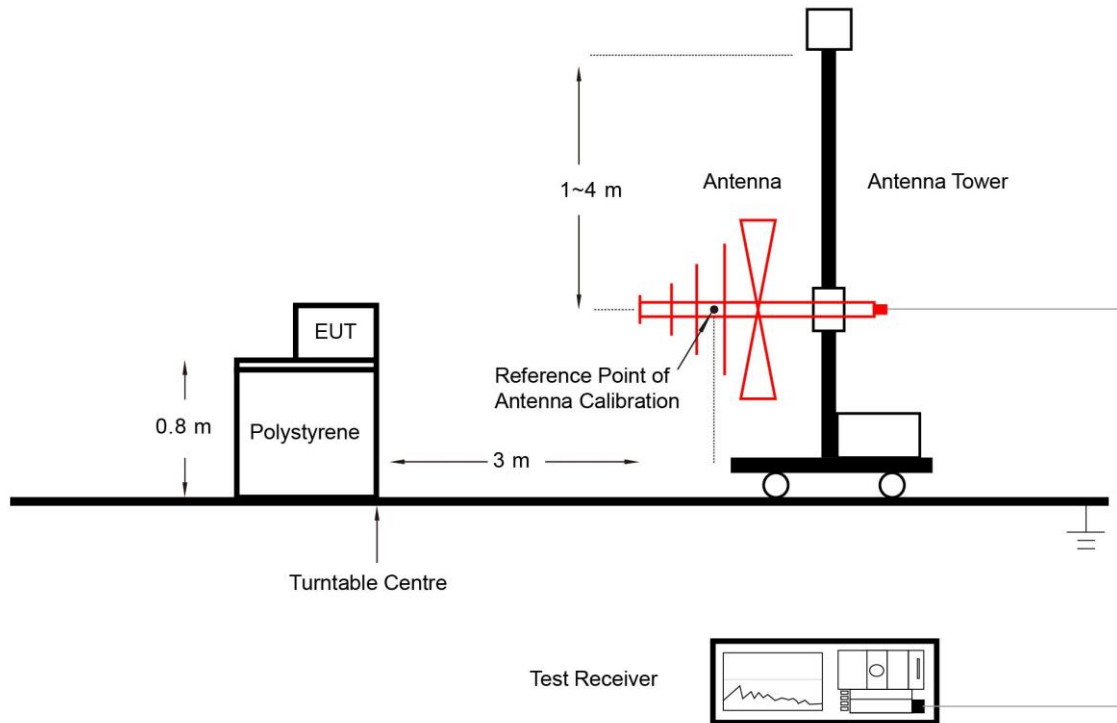
Frequency	RBW
9 ~ 150 kHz	200 Hz
0.15 ~ 30 MHz	9 kHz
30 ~ 1000 MHz	120 kHz
> 1000 MHz	1 MHz

Average Field Strength Measurements

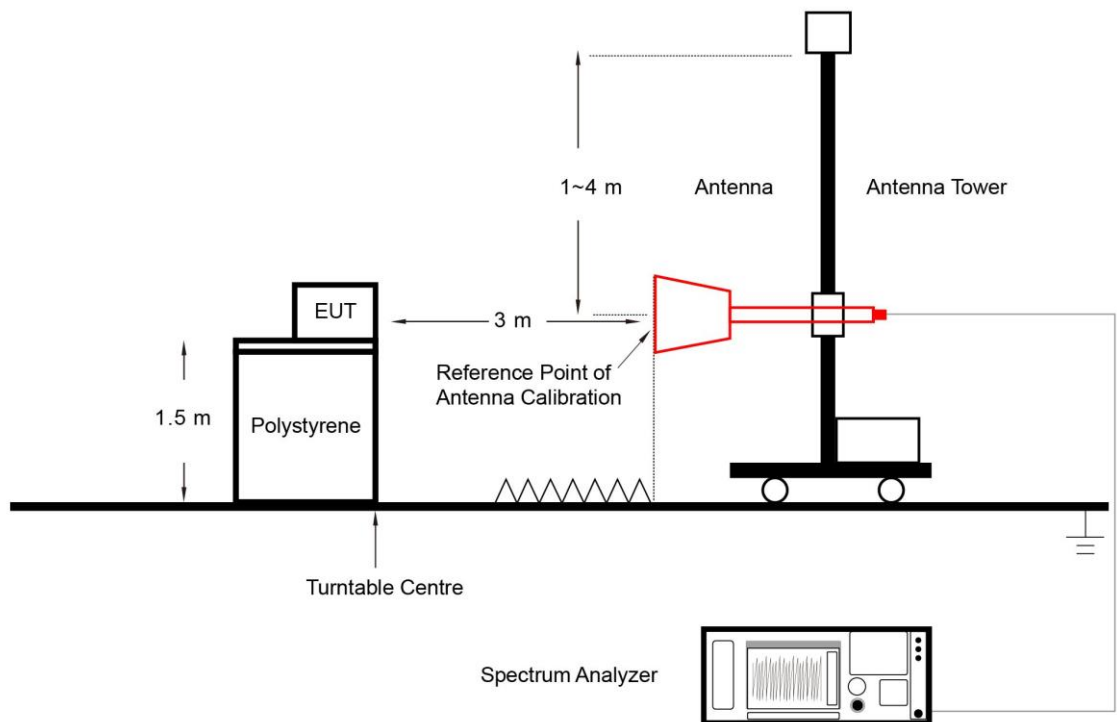
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW \geq 1/T
4. As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode
5. Detector = Peak
6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

6.3.4. Test Setup

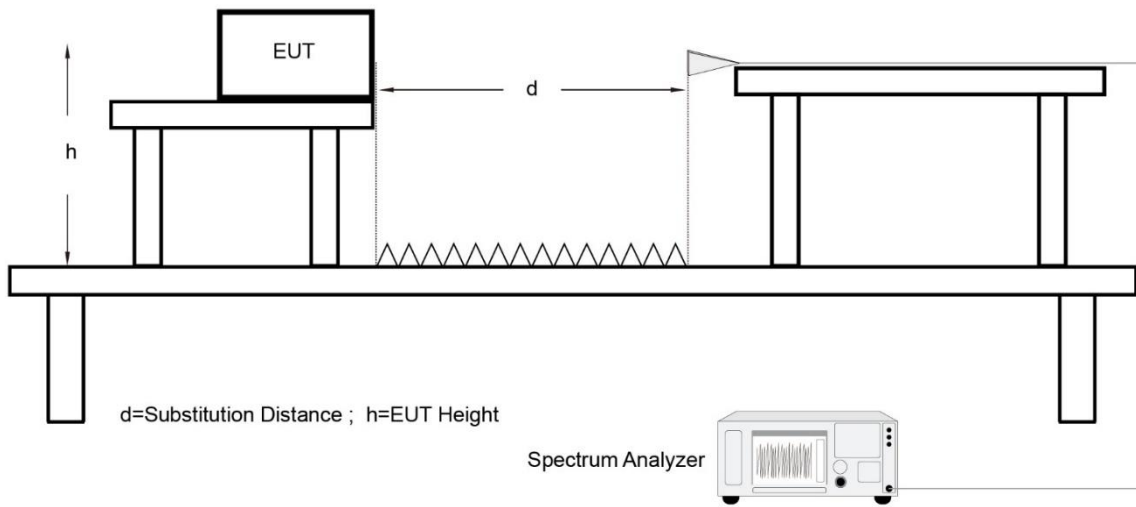
Below 1GHz Test Setup:



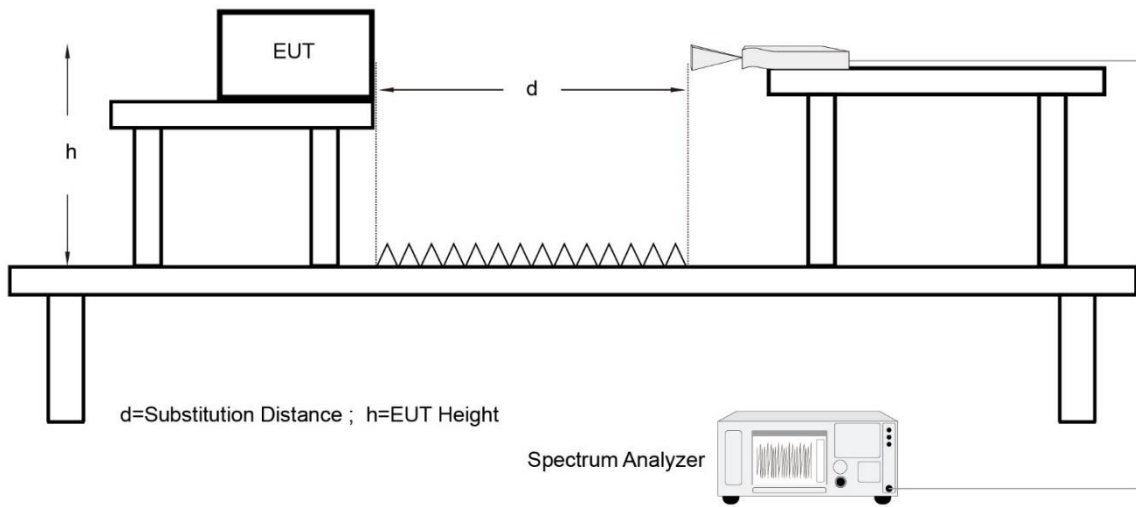
1GHz ~ 40GHz Test Setup:



40GHz ~ 50GHz Test Setup:



Above 50GHz Test Setup:



6.3.5. Test Result

Test Site	SIP-AC3	Test Date	2022/08/08
Test Engineer	Yien Qian	Test Mode	Mode 1

Frequency Band (GHz)	Reading Level (dB μ V)	Factor (dB/m)	Measure Level @3m (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Result
Fundamental Radiated Emission							
24.00 ~ 24.25	122.265	-8.783	113.482	128	-14.518	Peak	Pass
	106.125	-8.761	97.364	108	-10.636	Average	Pass

Notes:

- Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)
Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)
- The Vertical and Horizontal polarization were evaluated, only the worst-case test results are shown in the table.

Test Site	SIP-AC2	Test Date	2022/08/08
Test Engineer	Yien Qian	Test Mode	Mode 1

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB/m)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
Between 30MHz ~ 1GHz							
55.2	3.5	18.3	21.8	40.0	-18.2	Peak	Horizontal
73.2	2.7	16.2	18.9	40.0	-21.1	Peak	Horizontal
151.3	2.0	17.9	19.9	43.5	-23.6	Peak	Horizontal
455.3	2.0	22.6	24.6	46.0	-21.4	Peak	Horizontal
725.0	2.4	27.9	30.3	46.0	-15.7	Peak	Horizontal
925.8	2.2	30.4	32.6	46.0	-13.4	Peak	Horizontal
53.8	14.1	18.4	32.5	40.0	-7.5	Peak	Vertical
58.6	15.3	18.1	33.4	40.0	-6.6	Peak	Vertical
67.3	11.2	17.2	28.4	40.0	-11.6	Peak	Vertical
153.2	7.1	18.0	25.1	43.5	-18.4	Peak	Vertical
324.9	5.1	19.4	24.5	46.0	-21.5	Peak	Vertical
732.8	2.5	28.1	30.6	46.0	-15.4	Peak	Vertical

Note:

- Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)
Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)
- The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.
- QP measurement was not performed when peak measure level was lower than the QP limit.

Test Site	SIP-AC1&SIP-AC3	Test Date	2022/08/08
Test Engineer	Yien Qian	Test Mode	Mode 1

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB/m)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
Between 1GHz ~ 40GHz							
7239.0	49.0	-6.2	42.8	74.0	-31.2	Peak	Horizontal
10494.5	47.1	-3.5	43.6	74.0	-30.4	Peak	Horizontal
16929.0	43.7	6.8	50.5	74.0	-23.5	Peak	Horizontal
5777.0	50.9	-9.2	41.7	74.0	-32.3	Peak	Vertical
10520.0	48.7	-3.8	44.9	74.0	-29.1	Peak	Vertical
16946.0	43.8	6.8	50.6	74.0	-23.4	Peak	Vertical
21564.0	66.4	-9.2	57.2	74.0	-16.8	Peak	Horizontal
21564.0	53.5	-9.2	44.3	54.0	-9.7	Average	Horizontal
27944.0	68.0	-8.2	59.8	74.0	-14.2	Peak	Horizontal
27944.0	53.8	-8.2	45.6	54.0	-8.4	Average	Horizontal
32234.0	69.9	-8.8	61.1	74.0	-12.9	Peak	Horizontal
32234.0	55.7	-8.8	46.9	54.0	-7.1	Average	Horizontal
20618.0	67.9	-10.1	57.8	74.0	-16.2	Peak	Vertical
20618.0	53.5	-10.1	43.4	54.0	-10.6	Average	Vertical
33862.0	69.9	-7.5	62.4	74.0	-11.6	Peak	Vertical
33862.0	55.8	-7.5	48.3	54.0	-5.7	Average	Vertical
39648.0	64.0	0.7	64.7	74.0	-9.3	Peak	Vertical
39648.0	51.0	0.7	51.7	54.0	-2.3	Average	Vertical

Notes:

- Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)
 Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre-Amplifier Gain (dB)
- Average measurement was not performed when the peak level lower than average limit.

Test Site	SIP-TR2	Test Date	2022/08/14
Test Engineer	Alisa Deng	Test Mode	Mode 1

Frequency (GHz)	Reading Level @1m (dB μ V)	Factor (dB/m)	Measure Level @1m (dB μ V/m)	Measure Level @3m (dB μ V/m)	Limit @3m (dB μ V/m)	Margin (dB)	Detector	Result
Between 40 ~ 50GHz								
50.0	27.1	46.6	73.7	64.2	74.0	-9.8	Peak	Pass
50.0	14.5	46.6	61.1	51.6	54.0	-2.4	Average	Pass

Notes:

- Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)
 Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)
- Measure Level @3m = Measure Level @1.0m + 20 * log(1.0m / 3m)
- The Vertical and Horizontal polarization were evaluated, only the worst-case test results are shown in the table.
- The distance of testing is 1m and the height of testing is 1.25m.

Test Site	SIP-TR2	Test Date	2022/08/14
Test Engineer	Alisa Deng	Test Mode	Mode 1

Frequency (GHz)	Reading Level @0.75m (dBμV)	Factor (dB/m)	Measure Level @0.75m (dBμV/m)	Measure Level @3m (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)	Detector	Result
Between 50 ~ 100GHz								
72.4	35.2	42.7	77.9	65.9	88.0	-22.1	Peak	Pass
72.4	24.1	42.7	66.8	54.8	68.0	-13.2	Average	Pass
96.6	38.6	44.9	83.5	71.5	88.0	-16.5	Peak	Pass
96.6	28.2	44.9	73.1	61.1	68.0	-6.9	Average	Pass

Notes:

- Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)
 Above 50GHz:
 Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) + Mixer Conversion Loss (dB)
- Above 50GHz:
 Measure Level @3m = Measure Level @0.75m + 20 * log(0.75m / 3m)
- The Vertical and Horizontal polarization were evaluated, only the worst-case test results are shown in the table.
- The distance of testing is 0.75m and the height of testing is 1.25m.

6.4. Radiated Restricted Band Edge Measurement

6.4.1. Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41	--	--	--

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [$\mu\text{V}/\text{m}$]	Measured Distance [Meter]
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

6.4.2. Test Procedure

ANSI C63.10-2013 Section 6.3

ANSI C63.10-2013 Section 6.6

ANSI C63.10-2013 Section 6.10

6.4.3. Test Setting

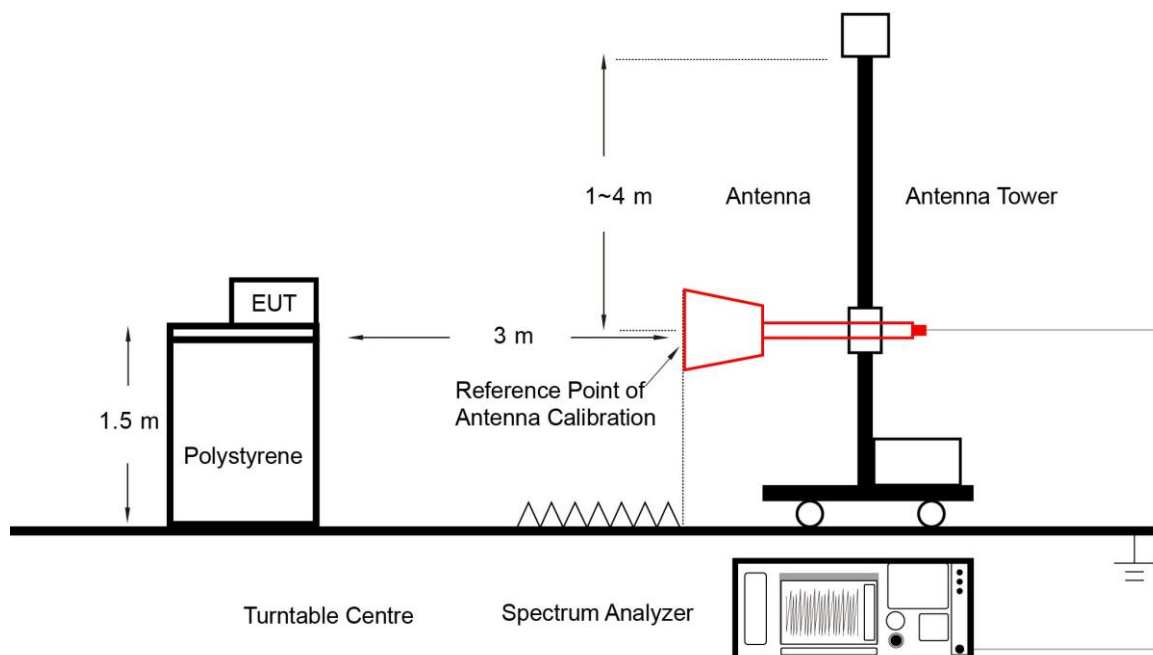
Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Field Strength Measurements

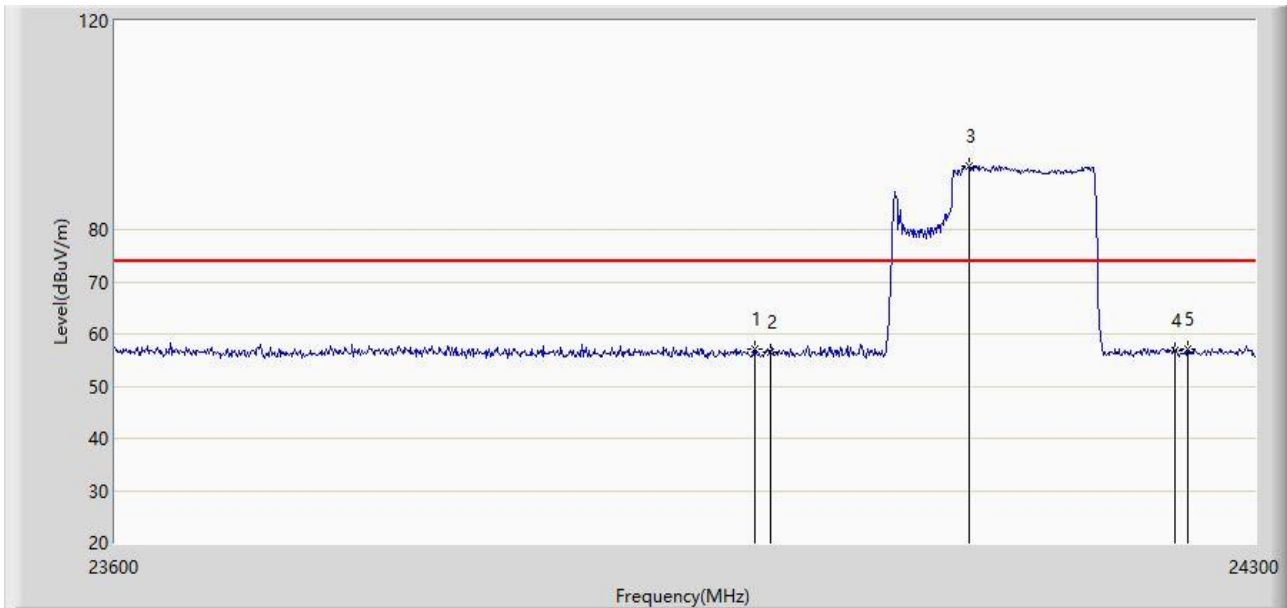
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW $\geq 1/T$
4. As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode
5. Detector = Peak
6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

6.4.4. Test Setup



6.4.5. Test Result

Site: SIP-AC3	Test Date: 2022/08/08
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: BBHA 9170_00935_18-40GHz	Polarity: Vertical
EUT: 4D Imaging Radar	Power: DC 48V
Test Mode 1	



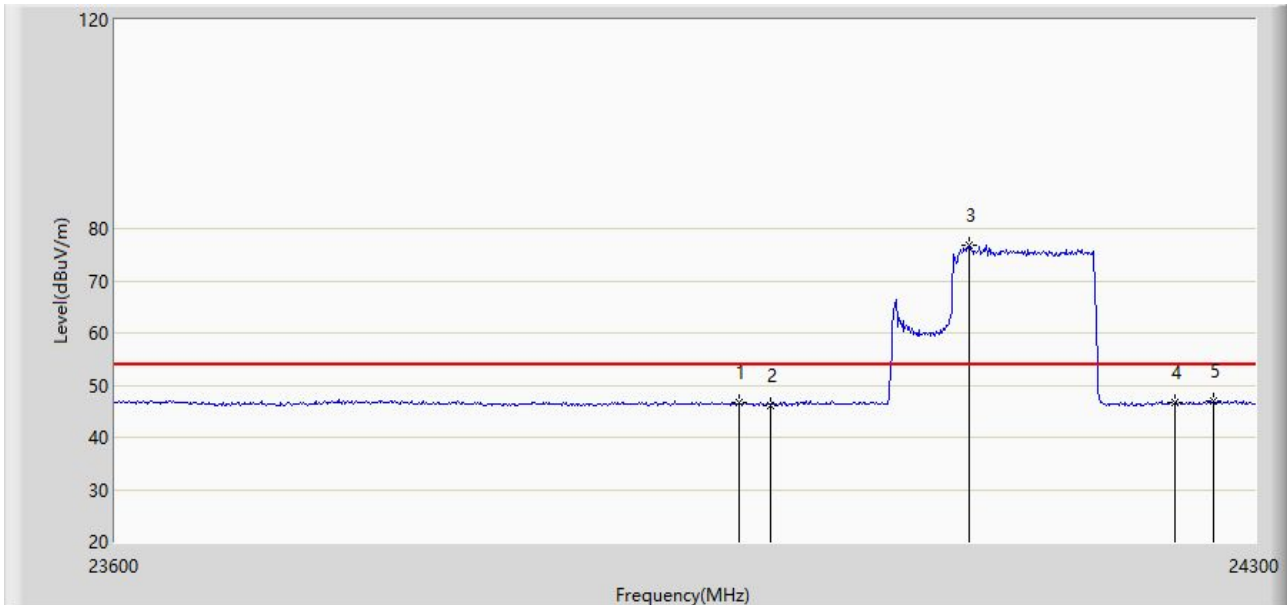
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	23990.600	57.065	65.896	-16.935	74.000	-8.832	PK
2		24000.000	56.549	65.435	-17.451	74.000	-8.886	PK
3		24122.199	92.247	101.028	N/A	N/A	-8.781	PK
4		24250.000	56.803	65.376	-17.197	74.000	-8.572	PK
5		24258.000	57.009	65.560	-16.991	74.000	-8.550	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

Site: SIP-AC3	Test Date: 2022/08/08
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: BBHA 9170_00935_18-40GHz	Polarity: Vertical
EUT: 4D Imaging Radar	Power: DC 48V
Test Mode 1	



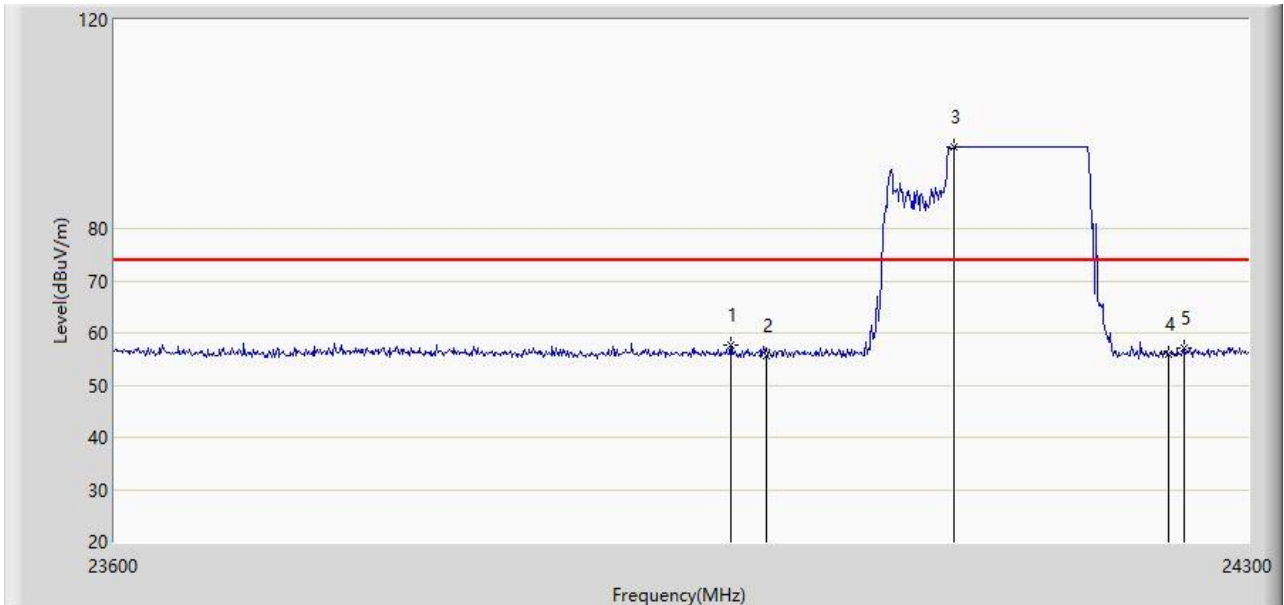
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1		23980.801	46.781	55.570	-7.219	54.000	-8.789	AV
2		24000.000	46.231	55.117	-7.769	54.000	-8.886	AV
3		24122.199	76.698	85.479	N/A	N/A	-8.781	AV
4		24250.000	46.546	55.119	-7.454	54.000	-8.572	AV
5	*	24274.100	47.079	55.597	-6.921	54.000	-8.518	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

Site: SIP-AC3	Test Date: 2022/08/08
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: BBHA 9170_00935_18-40GHz	Polarity: Horizontal
EUT: 4D Imaging Radar	Power: DC 48V
Test Mode 1	



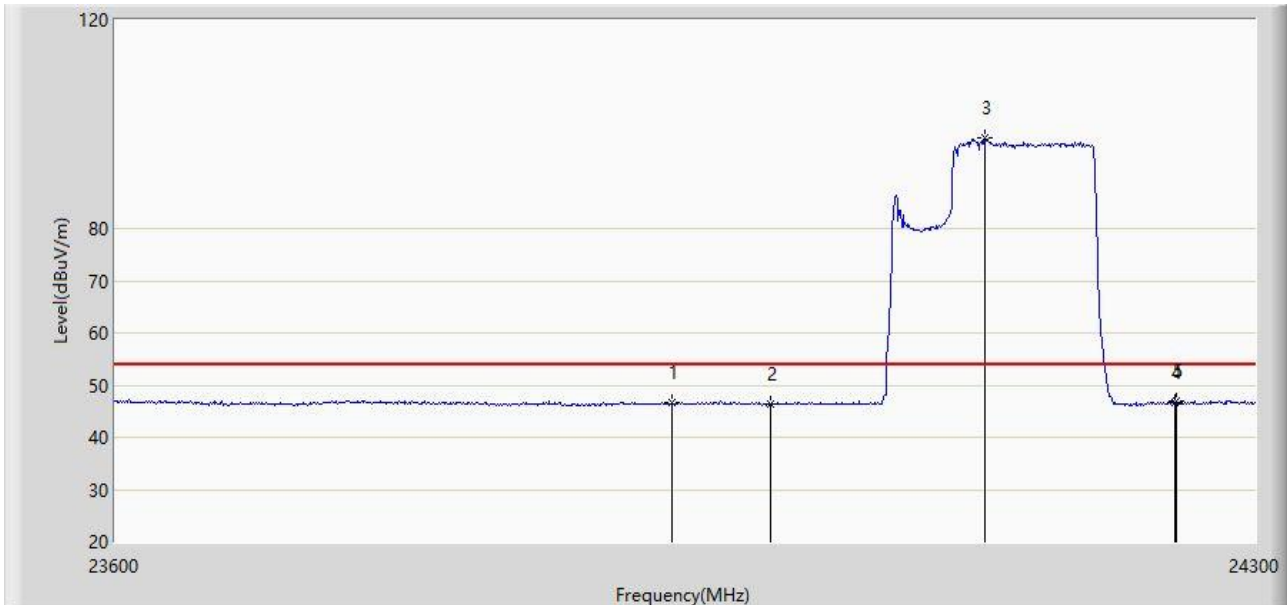
No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	*	23978.000	57.789	66.574	-16.211	74.000	-8.785	PK
2		24000.000	55.607	64.493	-18.393	74.000	-8.886	PK
3		24116.600	95.638	104.430	N/A	N/A	-8.792	PK
4		24250.000	56.044	64.617	-17.956	74.000	-8.572	PK
5		24260.100	57.181	65.726	-16.819	74.000	-8.546	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

Site: SIP-AC3	Test Date: 2022/08/08
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: BBHA 9170_00935_18-40GHz	Polarity: Horizontal
EUT: 4D Imaging Radar	Power: DC 48V
Test Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1		23939.500	46.799	55.405	-7.201	54.000	-8.606	AV
2		24000.000	46.249	55.135	-7.751	54.000	-8.886	AV
3		24132.699	97.524	106.285	N/A	N/A	-8.761	AV
4		24250.000	46.557	55.130	-7.443	54.000	-8.572	AV
5	*	24251.000	47.073	55.643	-6.927	54.000	-8.571	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

6.5. 20dB Spectrum Bandwidth Measurement

6.5.1. Test Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emission in the specific band.

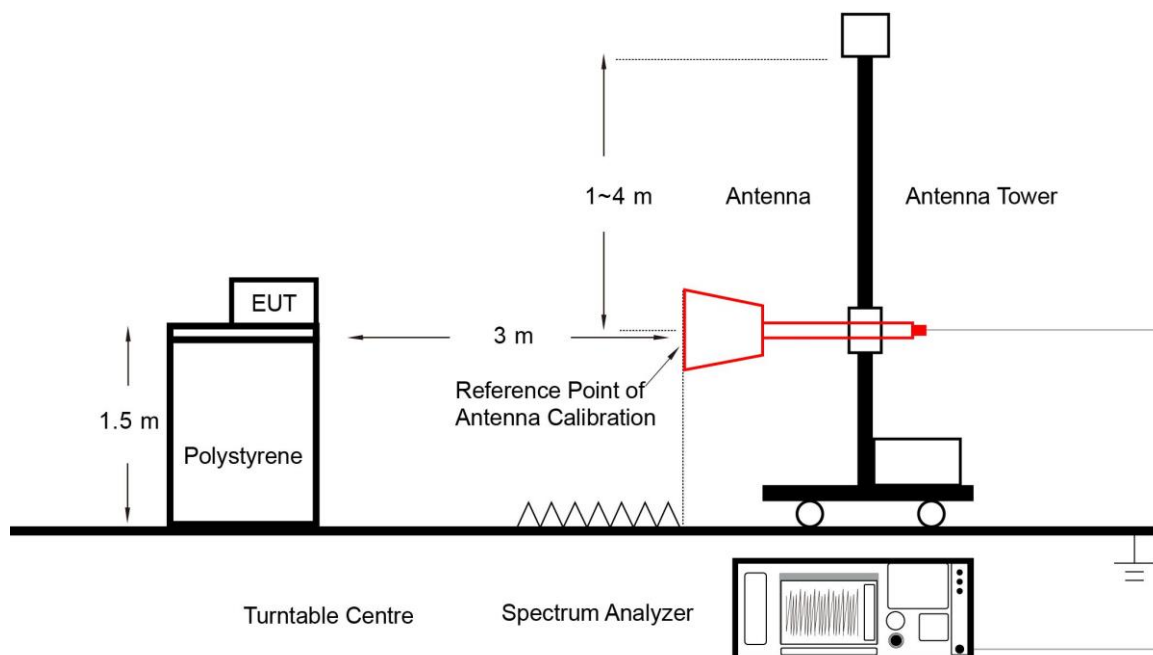
6.5.2. Test Procedure

ANSI C63.10-2013 Clause 6.9.2

6.5.3. Test Setting

1. Set the spectrum span range to overlap the nominal center frequency
2. Set RBW = 1% ~ 5% of the OBW
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize and marker the highest level
8. Use Occupied BW function to determine two frequencies, one at the lowest frequency and the other at the highest frequency

6.5.4. Test Setup



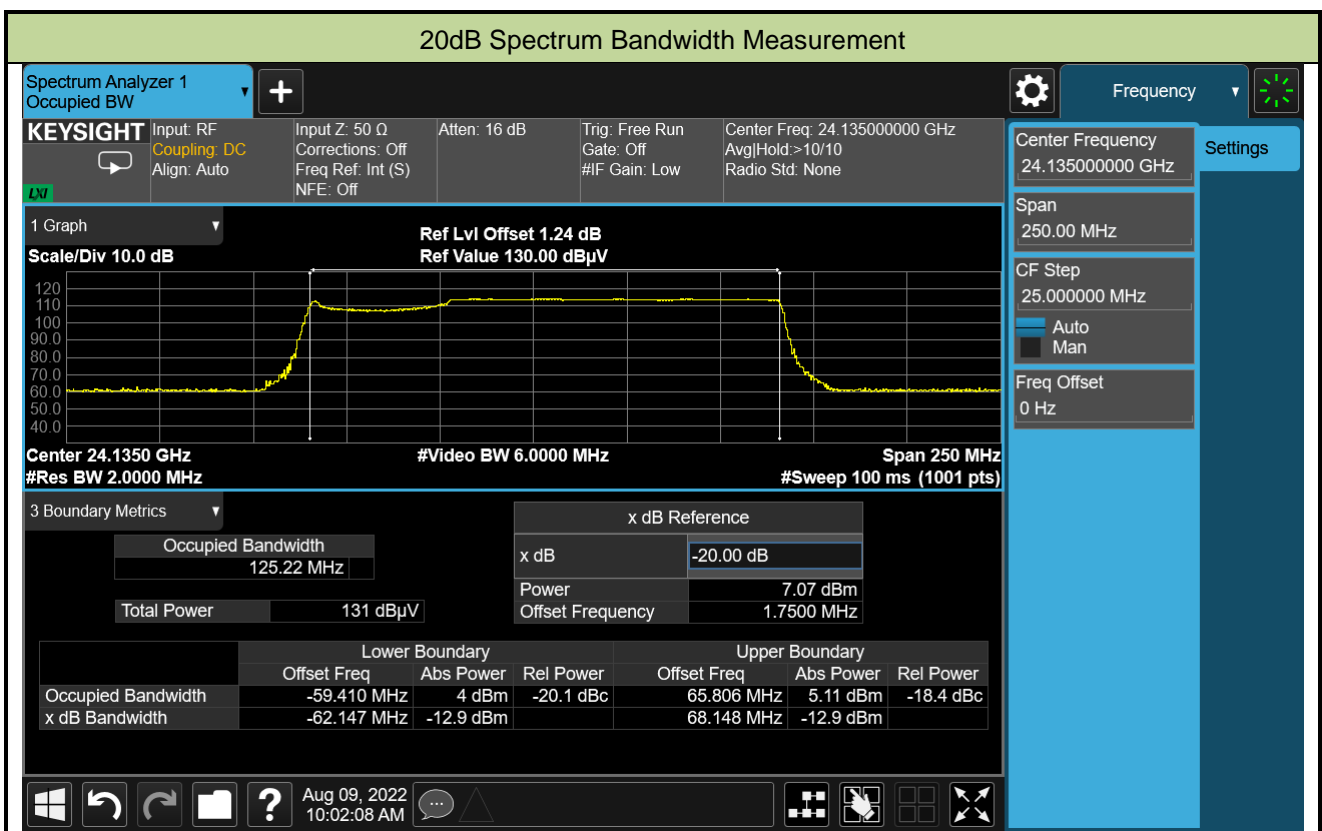
6.5.5. Test Result

Test Site	SIP-AC3	Test Date	2022/08/08
Test Engineer	Yien Qian		

20dB Bandwidth (MHz)	f _L (MHz)	f _L Limit (MHz)	f _H (MHz)	f _H Limit (MHz)	Result
130.295	24072.853	≥ 24000	24203.148	≤ 24250	Pass

Note: Low Frequency (F_L) F_L = Center Frequency + Lower Boundary;

High Frequency (F_H) F_H = Center Frequency + Upper Boundary



Appendix A - Test Setup Photograph

Refer to "2208RSU005-UT" file.

Appendix B - EUT Photograph

Refer to "2208RSU005-UE" file.