



MEASUREMENT REPORT

FCC PART 15.249

FCC ID: 2ADTD-PR160V
Applicant: Hangzhou Hikvision Digital Technology Co., Ltd
Application Type: Certification
Product: Security Radar
Model No.: DS-PRI-60V
Serial Model No.: DS-PRIABCD-EFG, DS-PRI60-VUHK, DS-PRI60-VCKV,
DS-PRI60-VKVO, DS-PRI60-VHUN
Brand Name: HIKVISION
FCC Classification: Part 15 Low Power Communication Device Transmitter
(DXX)
FCC Rule Part(s): Part 15.249
Test Procedure(s): ANSI C63.10 - 2013
Test Date: April 29 ~ July 07, 2021

Reviewed By:

Kevin Guo

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
2104RSU021-U1	Rev. 01	Initial Report	07-17-2021	Valid

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1.4. Product Information

Product Name	Security Radar
Model No.	DS-PR1-60V
Serial Model No.	DS-PRIABCD-EFG, DS-PRI60-VUHK, DS-PRI60-VCKV, DS-PRI60-VKVO, DS-PRI60-VHUN
Frequency Range	24.05~24.20GHz
Temperature	-40°C ~ 65°C
Device Label ID No.	20210408Sample#1
Power Supply	DC 12V or PoE
Remark: 1. The model differences are only for marketing purpose, all the schematics is identical, so choose model DS-PDC10DM-VG3 to test. 2. 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	24.05~24.25GHz
Type of Modulation	FMCW
Antenna Type	Array antenna
Antenna Gain	12.5dBi

1.6. Test Mode

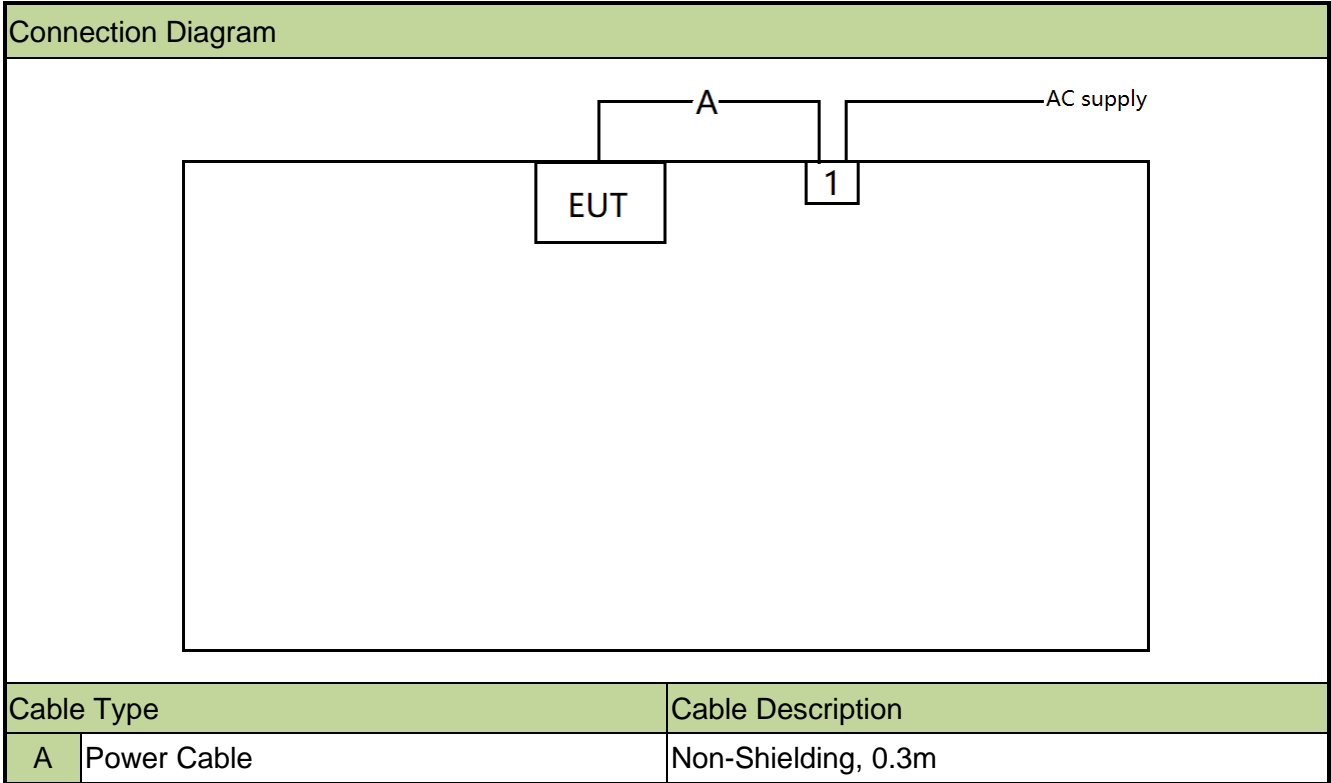
Test Mode	Mode 1: Transmit at 24GHz
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1.7. Test Environment Condition

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

1.8. Test System Connection Diagram

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



1.9. Test System Details

Product	Manufacturer	Model No.
1 Adapter	HONOTO	ADS-24S-12

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

Conclusion:

This unit complies with the requirement of §15.203.

3. Test Equipment Calibration Date

Radiated Test (SIP-AC2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2021/06/25
				1 year	2022/06/24
EXA Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2021/08/30
Bilog Period Antenna	Schwarzbeck	VULB9168	MRTSUE06646	1 year	2021/08/30
Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06648	1 year	2021/11/26
Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06599	1 year	2021/11/26
Microwave System Amplifier	Agilent	83017A	MRTSUE06076	1 year	2021/11/14
Preamplifier	EMCI	EMC051845SE	MRTSUE06644	1 year	2021/11/12
Micro-Wave Antenna	MI-WWAVE	261U-25	MRTSUE06273	N/A	N/A
Micro-Wave Antenna	MI-WWAVE	261E-25	MRTSUE06276	N/A	N/A
Micro-Wave Antenna	MI-WWAVE	261F-25	MRTSUE06275	N/A	N/A
Micro-Wave Antenna	MI-WWAVE	261G	MRTSUE06274	N/A	N/A
Standard Gain Horn Antenna	A-INFOMW	LB-10-25-A	MRTSUE06410	N/A	N/A
Standard Gain Horn Antenna	A-INFOMW	LB-15-25-A	MRTSUE06409	N/A	N/A
Waveguide Harmonic Mixer	Keysight	M1970V	MRTSUE06271	N/A	N/A
Waveguide Harmonic Mixer	Keysight	M1970W	MRTSUE06272	N/A	N/A
RF Signal Generator	Keysight	E8257D	MRTSUE06453	1 year	2021/06/25
				1 year	2022/06/24
SA Extension Module	Keysight	N9029AV06	MRTSUE06368	N/A	N/A
SA Extension Module	Keysight	N9029AV05	MRTSUE06367	N/A	N/A
SA Extension Module	Keysight	N9029AV03	MRTSUE06366	N/A	N/A
Millimeter wave signal source frequency expander	Keysight	E8257DV15	MRTSUE06456	N/A	N/A
Thermal Hygrometer	testo	608-H1	MRTSUE06624	1 year	2021/12/03
Anechoic Chamber	RIKEN	SIP-AC2	MRTSUE06781	1 year	2021/12/24

Conducted Emission (SIP-SR2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2021/06/25
				1 year	2022/06/24
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2021/06/09
				1 year	2022/06/08
Thermal Hygrometer	testo	608-H1	MRTSUE06621	1 year	2021/12/03

Software	Version	Function
EMI Software	V3	EMI Test Software

4. 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

5. Test Result

5.1. Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 5.2
15.209 15.249	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209	Radiated	Pass	Section 5.3 & 5.4
15.215(c)	20dB Spectrum Bandwidth	20 dB bandwidth of the emission in the specific band	Radiated	Pass	Section 5.5

Notes:

1. 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.

5.2. AC Conducted Emissions Measurement

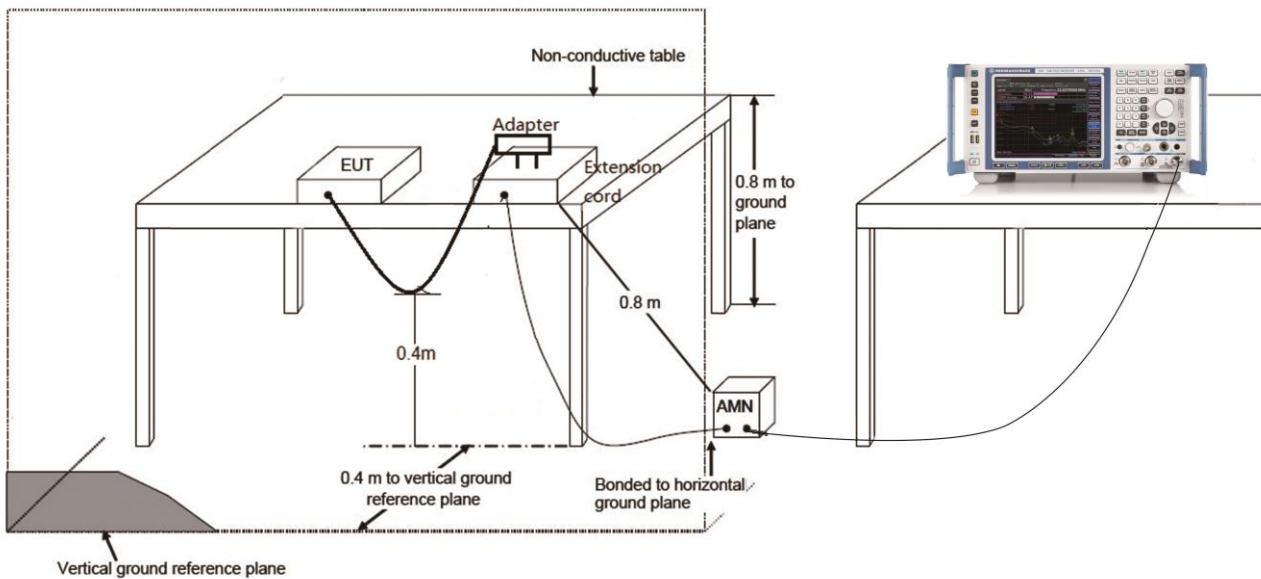
5.2.1. Test Limit

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.

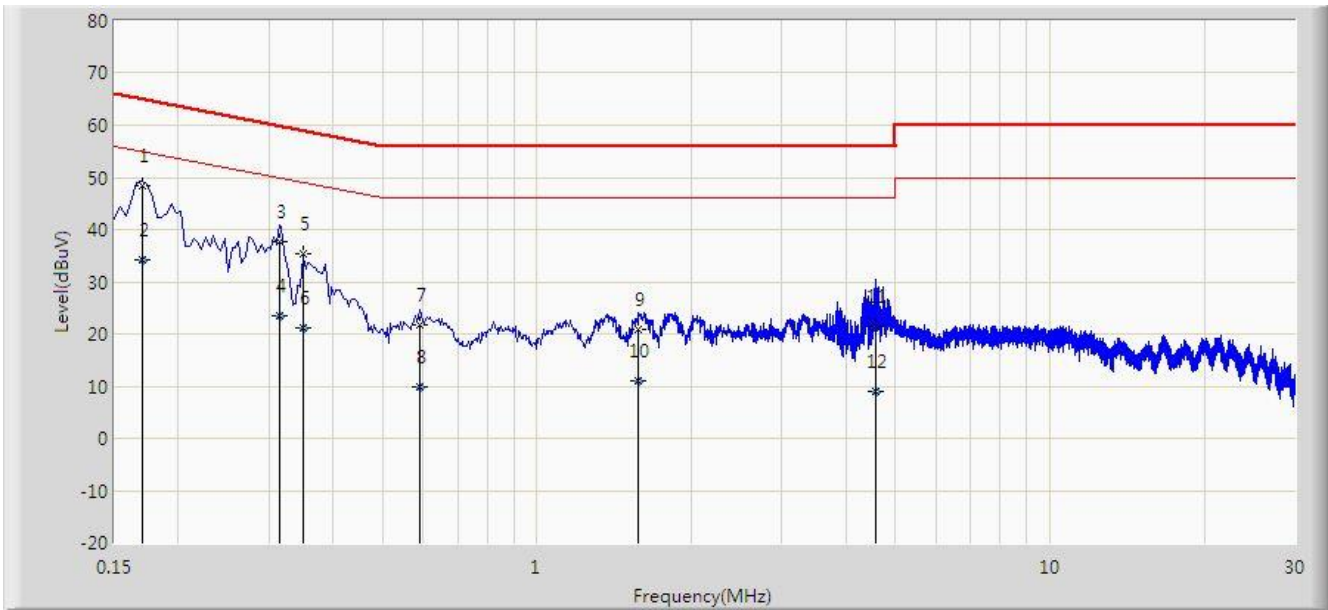
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

5.2.2. Test Setup



5.2.3. Test Result

Site: SIP-SR2	Time: 2021/07/03
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kyrie Xie
Probe: SIP-SR2-ENV216_101684_With Connector	Polarity: Line
EUT: Security Radar	Power: AC 120V/60Hz
Test Mode: Transmit at 24GHz	

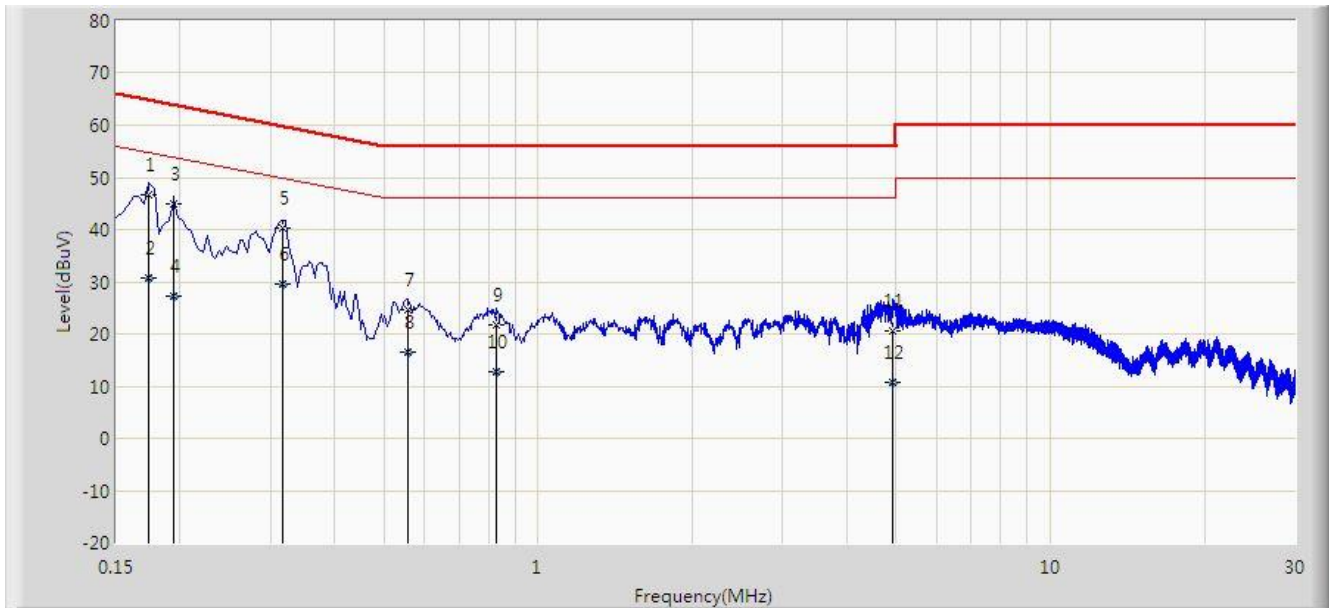


No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV)	Factor (dB)	Type
1		*	0.170	48.388	38.933	-16.573	64.960	9.454	QP
2			0.170	34.255	24.801	-20.705	54.960	9.454	AV
3			0.314	37.569	28.027	-22.295	59.864	9.542	QP
4			0.314	23.393	13.851	-26.471	49.864	9.542	AV
5			0.350	35.507	25.964	-23.456	58.962	9.543	QP
6			0.350	21.030	11.487	-27.933	48.962	9.543	AV
7			0.590	21.604	12.044	-34.396	56.000	9.560	QP
8			0.590	9.958	0.398	-36.042	46.000	9.560	AV
9			1.578	20.799	11.229	-35.201	56.000	9.570	QP
10			1.578	11.100	1.530	-34.900	46.000	9.570	AV
11			4.562	21.540	11.826	-34.460	56.000	9.714	QP
12			4.562	9.029	-0.685	-36.971	46.000	9.714	AV

Note: Measure Level (dBµV) = Reading Level (dBµV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

Site: SIP-SR2	Time: 2021/07/03
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kyrie Xie
Probe: SIP-SR2-ENV216_101684_With Connector	Polarity: Neutral
EUT: Security Radar	Power: AC 120V/60Hz
Test Mode: Transmit at 24GHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1		*	0.174	46.566	37.131	-18.202	64.767	9.435	QP
2			0.174	30.720	21.285	-24.047	54.767	9.435	AV
3			0.194	44.888	35.431	-18.975	63.864	9.458	QP
4			0.194	27.361	17.904	-26.502	53.864	9.458	AV
5			0.318	40.202	30.678	-19.557	59.759	9.524	QP
6			0.318	29.498	19.974	-20.261	49.759	9.524	AV
7			0.558	24.597	15.057	-31.403	56.000	9.540	QP
8			0.558	16.431	6.891	-29.569	46.000	9.540	AV
9			0.826	21.753	12.219	-34.247	56.000	9.534	QP
10			0.826	12.803	3.270	-33.197	46.000	9.534	AV
11			4.930	20.676	10.997	-35.324	56.000	9.679	QP
12			4.930	10.714	1.034	-35.286	46.000	9.679	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

5.3. Radiated Emission

5.3.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.249		
Fundamental Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (uV/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 (uV/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 (dBµV/m) = 20 log E field strength (uV/m).

5.3.2. Test Procedure Used

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

5.3.3. Test Setting

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

Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in Table 1
3. Detector = CISPR quasi-peak (a linear average detector for 9-90 kHz and 110-490 kHz)
4. Sweep time = auto couple
5. Trace was allowed to stabilize

Peak Measurements above 1GHz

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 Measurements above 1GHz (Method VB)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. RBW = 1MHz

3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.

If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.

4. Detector = Peak

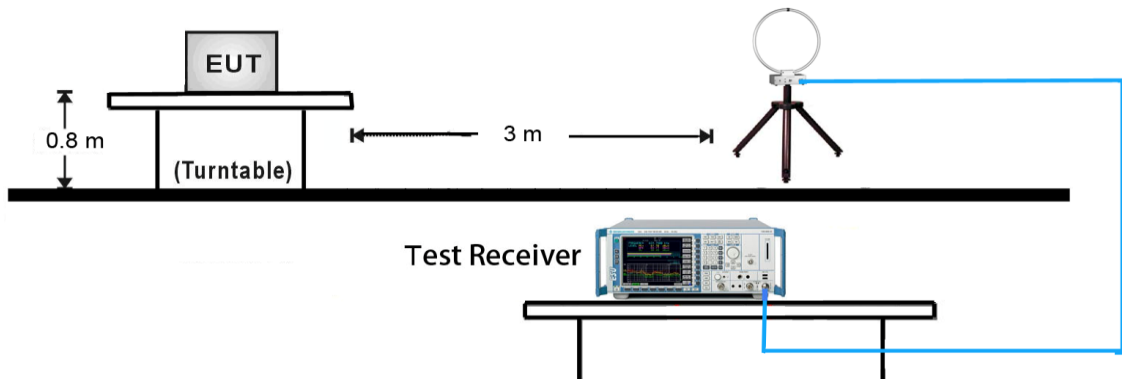
5. Sweep time = auto

6. Trace mode = max hold

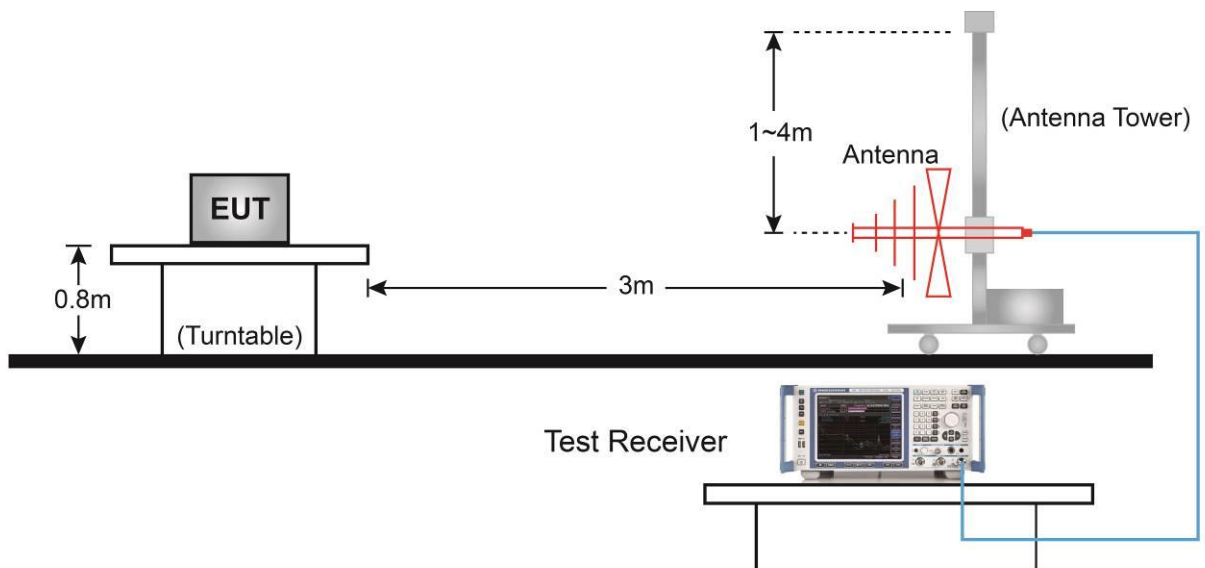
7. Trace was allowed to stabilize

5.3.4. Test Setup

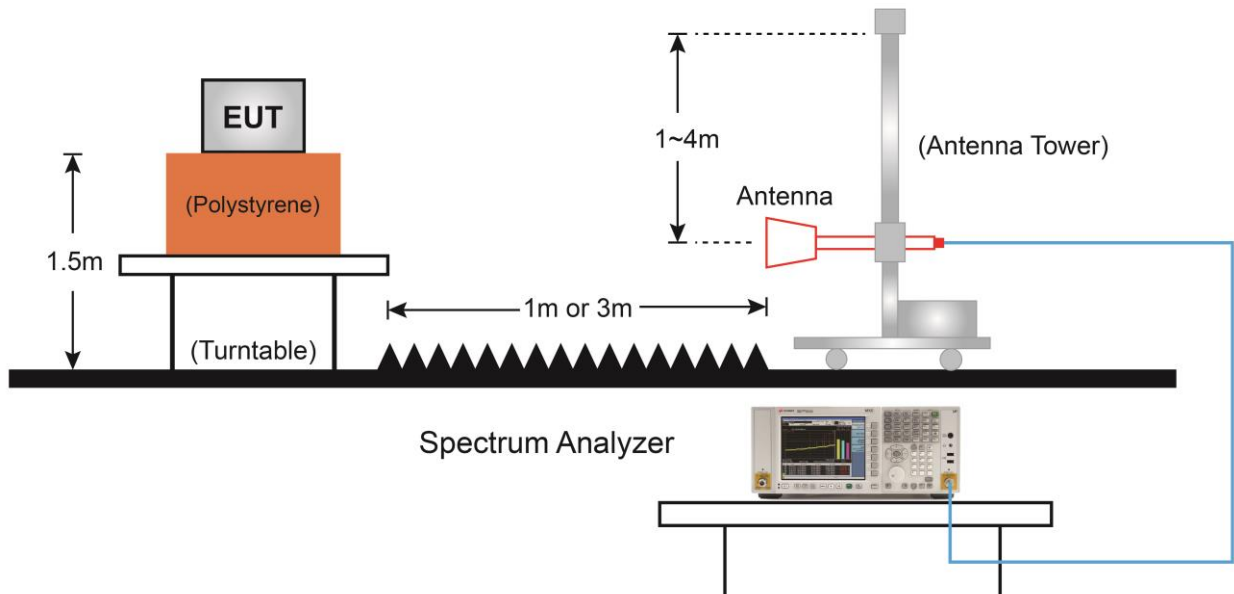
9kHz ~ 30MHz Test Setup:



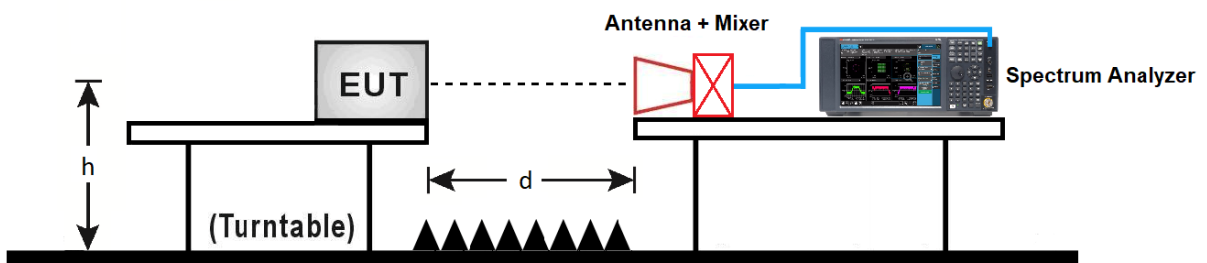
30MHz ~ 1GHz Test Setup:



1GHz ~ 40GHz Test Setup:



Above 40GHz Test Setup:



d = Substitution Distance; h = EUT Height

5.3.5. Test Result

Test Site	SIP-AC2	Test Engineer	Allen Zou
Test Date	2021/05/12		
Test Item	Fundamental Radiated Emission		

Frequency (GHz)	Reading Level (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
24.12	81.6	-9.0	72.6	128	-55.4	Peak	Horizontal
	78.2	-9.0	69.2	108	-38.8	Average	Horizontal
	95.1	-9.0	86.1	128	-41.9	Peak	Vertical
	88.5	-9.0	79.5	108	-28.5	Average	Vertical

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

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Test Site	SIP-AC2	Test Engineer	Allen Zou
Test Date	2021/05/12		
Test Item	Radiated Emission - Below 1GHz		

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
320.1	12.9	18.8	31.7	46.0	-14.3	QP	Horizontal
520.0	13.8	23.2	37.0	46.0	-9.0	QP	Horizontal
560.6	15.8	23.9	39.7	46.0	-6.3	QP	Horizontal
625.6	8.7	25.3	34.0	46.0	-12.0	QP	Horizontal
650.5	8.8	25.7	34.5	46.0	-11.5	QP	Horizontal
750.6	10.5	27.6	38.1	46.0	-7.9	QP	Horizontal
320.2	7.5	18.8	26.3	46.0	-19.7	QP	Vertical
519.1	11.9	23.2	35.1	46.0	-10.9	QP	Vertical
560.6	16.5	23.9	40.4	46.0	-5.6	QP	Vertical
594.7	16.9	24.9	41.8	46.0	-4.2	QP	Vertical
599.5	11.0	25.0	36.0	46.0	-10.0	QP	Vertical
750.3	5.5	27.6	33.1	46.0	-12.9	QP	Vertical

Note:

- Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)
- The test trace is same as the ambient noise (the test frequency range: 9kHz ~ 30MHz), therefore no data appear in the report.

Test Site	SIP-AC2	Test Engineer	Allen Zou
Test Date	2021/05/12		
Test Item	Radiated Emission - 1GHz ~ 18GHz @ 3m		

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
4264.0	55.7	-8.8	46.9	74.0	-27.1	Peak	Horizontal
6032.0	57.6	-7.6	50.0	74.0	-24.0	Peak	Horizontal
8284.5	51.1	-4.1	47.0	74.0	-27.0	Peak	Horizontal
17881.0	47.4	7.2	54.6	74.0	-19.4	Peak	Horizontal
17881.0	40.3	7.2	47.5	54.0	-6.5	Average	Horizontal
6040.5	56.1	-7.5	48.6	74.0	-25.4	Peak	Vertical
6040.5	52.7	-7.5	45.2	54.0	-8.8	Peak	Vertical
12084.0	52.5	-2.2	50.3	74.0	-23.7	Peak	Vertical
17779.0	47.3	7.3	54.6	74.0	-19.4	Peak	Vertical
17779.0	40.7	7.3	48.0	54.0	-6.0	Average	Vertical

Note:

- Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)
 Factor (dB) = 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-AC2	Test Engineer	Allen Zou
Test Date	2021/05/12		
Test Item	Radiated Emission - 18GHz ~ 40GHz @ 3m		

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
22675.0	57.1	-9.2	47.9	74.0	-26.1	Peak	Horizontal
25436.0	57.6	-9.3	48.3	74.0	-25.7	Peak	Horizontal
27823.0	58.3	-8.9	49.4	74.0	-24.6	Peak	Horizontal
31618.0	60.2	-10.7	49.5	74.0	-24.5	Peak	Horizontal
22290.0	56.8	-9.6	47.2	74.0	-26.8	Peak	Vertical
23038.0	57.6	-8.8	48.8	74.0	-25.2	Peak	Vertical
25986.0	57.5	-9.6	47.9	74.0	-26.1	Peak	Vertical
29352.0	57.6	-9.4	48.2	74.0	-25.8	Peak	Vertical

Note:

- Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)
Factor (dB) = 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-AC2	Test Engineer	Allen Zou
Test Date	2021/07/07		
Test Item	Radiated Emission - 40GHz ~ 100GHz @ 1m		

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
48244.0	16.8	46.6	63.3	97.5	-34.2	Peak	Horizontal
48244.0	-11.6	46.6	34.9	77.5	-42.6	Average	Horizontal
48247.0	21.0	46.6	67.6	97.5	-29.9	Peak	Vertical
48247.0	-1.7	46.6	44.8	77.5	-32.7	Average	Vertical
72400.0	31.1	42.7	73.8	97.5	-23.7	Peak	Horizontal
72400.0	23.2	42.7	65.9	77.5	-11.6	Average	Horizontal
72400.0	33.3	42.7	76.0	97.5	-21.5	Peak	Vertical
72400.0	23.0	42.7	65.7	77.5	-11.8	Average	Vertical

Note:

- Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre-Amplifier Gain (dB)
- Limit@1m = $20 \cdot \log(2500 \mu\text{V/m}) + 20 \log(3\text{m}/1\text{m})$ dB μ V/m = 77.5 dB μ V/m (Average detector), and 97.5 dB μ V/m (Peak detector).

5.4. Radiated Restricted Band Edge Measurement

5.4.1. 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

5.4.2. Test Procedure Used

ANSI C63.10-2013 Section 6.3

ANSI C63.10-2013 Section 6.6

ANSI C63.10-2013 Section 6.10

5.4.3. Test Setting

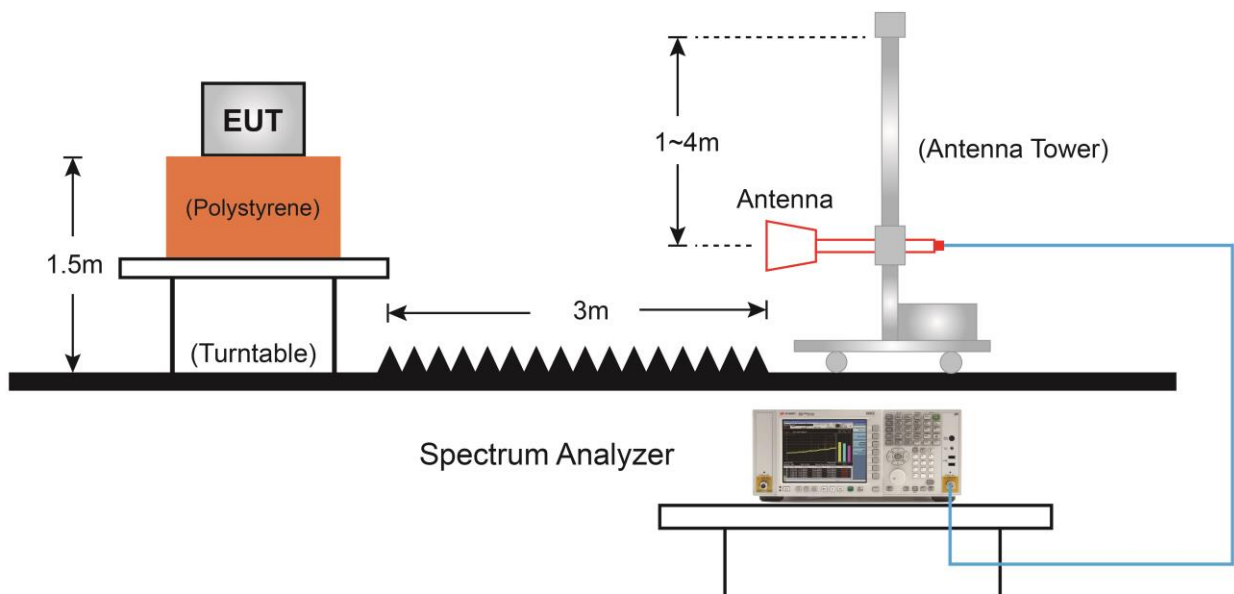
Peak Field Strength Measurements

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

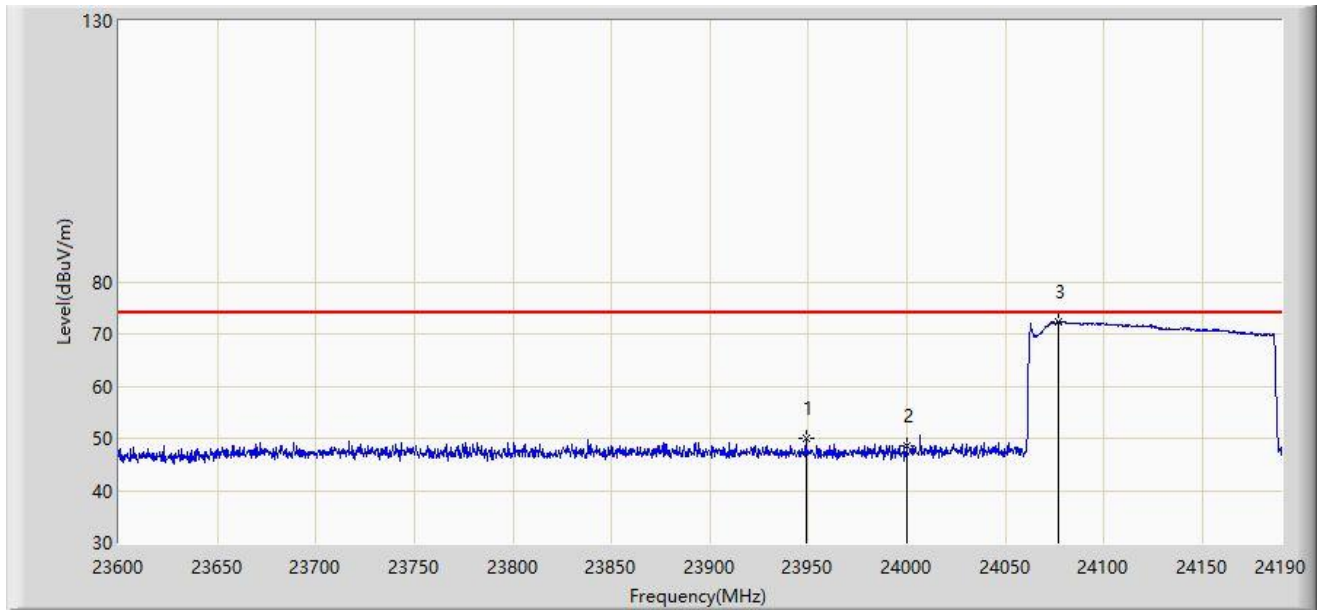
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW $\geq 1/T$
4. As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). 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

5.4.4. Test Setup



5.4.5. Test Result

Site: SIP-AC2	Time: 2021/05/12
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_BBHA9170_18-40GHz	Polarity: Horizontal
EUT: Security Radar	Power: AC 120V/60Hz
Test Mode: Transmit at 24GHz	

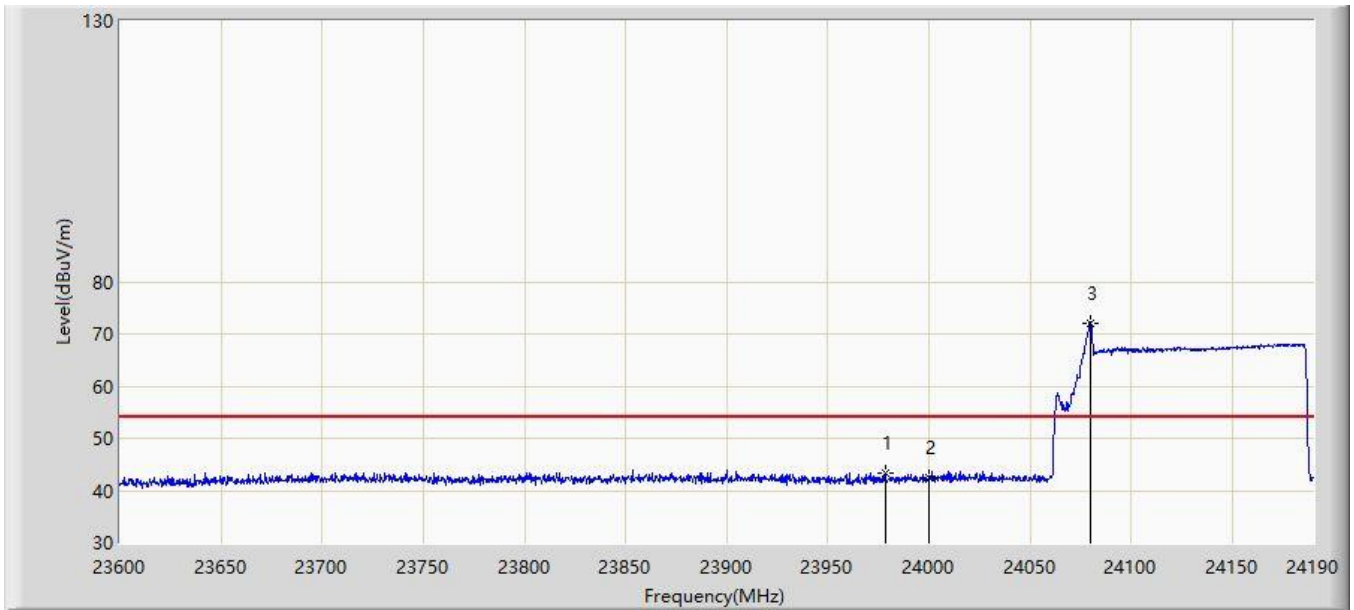


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1			23948.689	49.877	59.183	-24.123	74.000	-9.306	PK
2			24000.000	48.665	57.788	-25.335	74.000	-9.123	PK
3		*	24077.016	72.409	81.582	N/A	N/A	-9.174	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre Amplifier Gain (dB)

Site: SIP-AC2	Time: 2021/05/12
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_BBHA9170_18-40GHz	Polarity: Horizontal
EUT: Security Radar	Power: AC 120V/60Hz
Test Mode: Transmit at channel 24GHz	

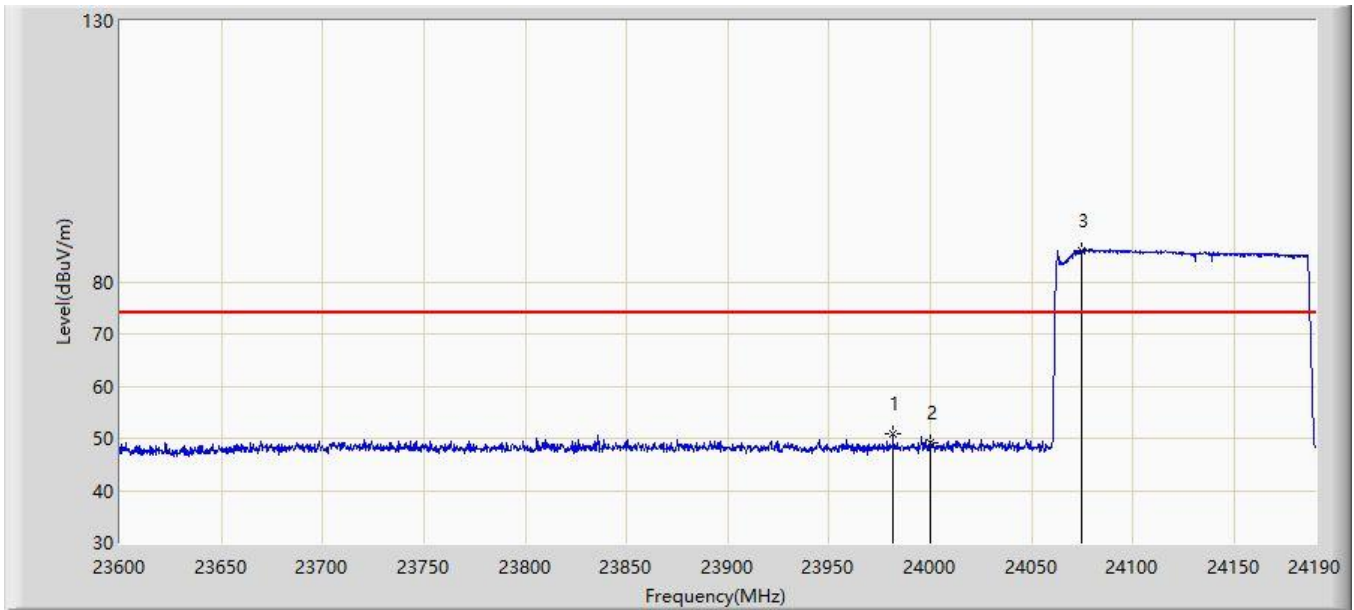


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			23978.189	43.272	52.525	-10.728	54.000	-9.253	AV
2			24000.000	42.414	51.537	-11.586	54.000	-9.123	AV
3		*	24079.670	72.159	81.330	N/A	N/A	-9.171	AV

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

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre Amplifier Gain (dB)

Site: SIP-AC2	Time: 2021/05/12
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_BBHA9170_18-40GHz	Polarity: Vertical
EUT: Security Radar	Power: AC 120V/60Hz
Test Mode: Transmit at channel 24GHz	

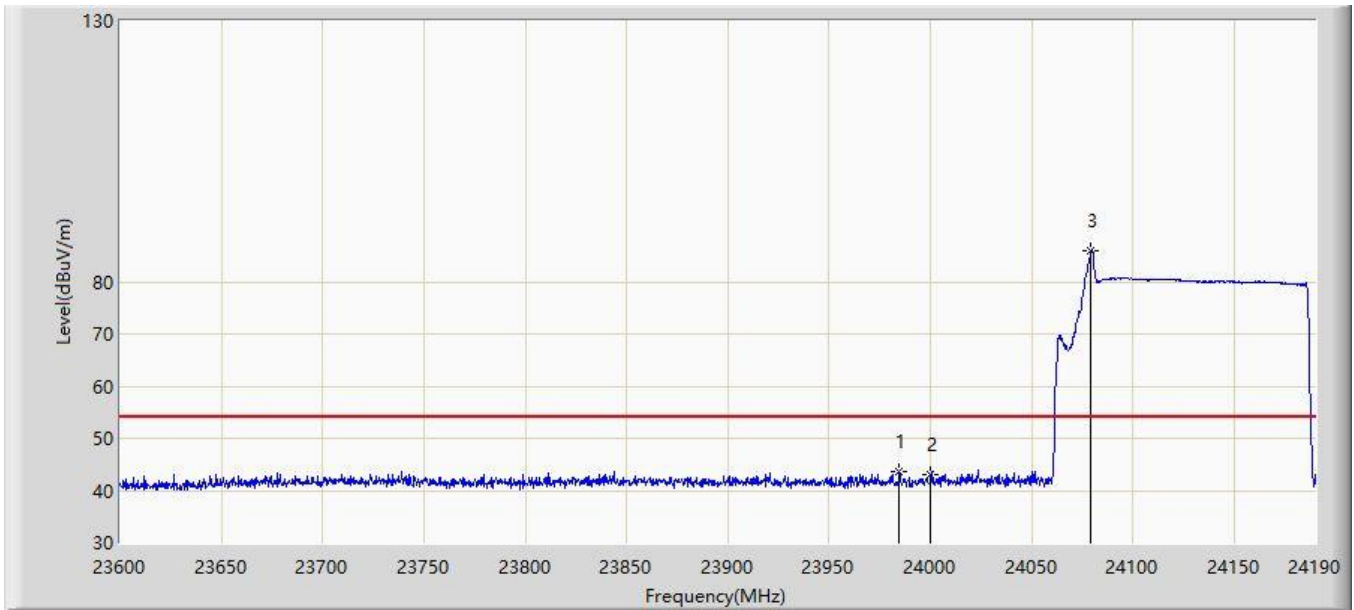


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			23981.436	50.732	59.964	-23.268	74.000	-9.232	PK
2			24000.000	49.251	58.374	-24.749	74.000	-9.123	PK
3		*	24074.949	86.067	95.242	N/A	N/A	-9.175	PK

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

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre Amplifier Gain (dB)

Site: SIP-AC2	Time: 2021/05/12
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_BBHA9170_18-40GHz	Polarity: Vertical
EUT: Security Radar	Power: AC 120V/60Hz
Test Mode: Transmit at channel 24GHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			23984.680	43.722	52.934	-10.278	54.000	-9.212	AV
2			24000.000	43.070	52.193	-10.930	54.000	-9.123	AV
3		*	24079.375	85.865	95.036	N/A	N/A	-9.171	AV

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

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre Amplifier Gain (dB)

5.5. 20dB Spectrum Bandwidth Measurement

5.5.1. Test Limit

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

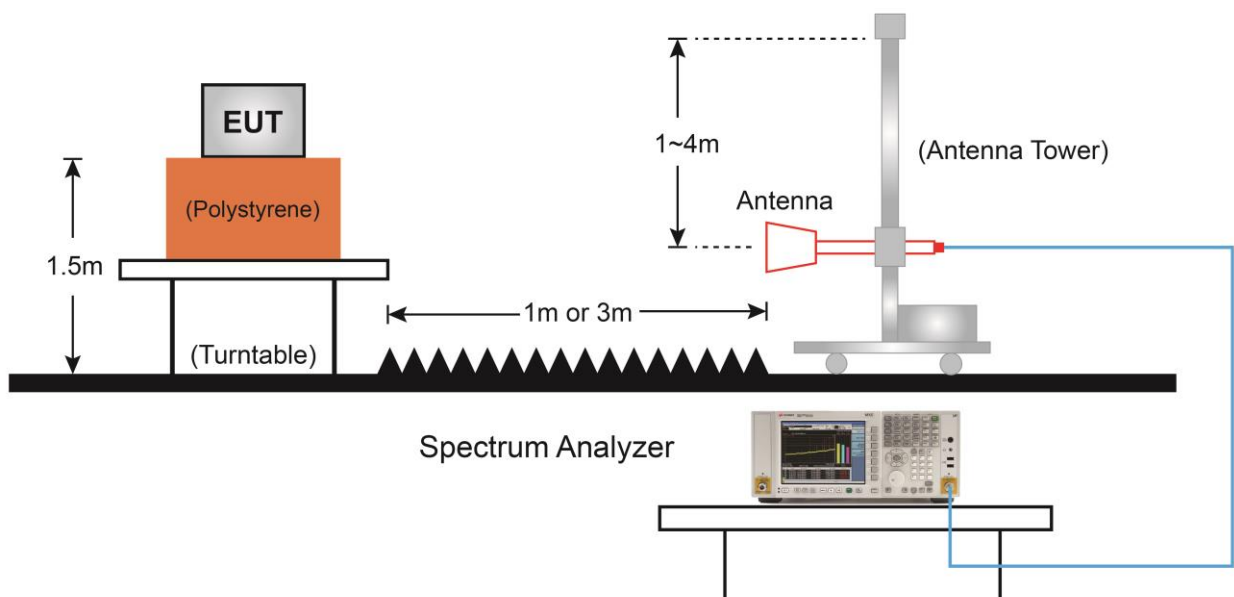
5.5.2. Test Procedure used

ANSI C63.10-2013 Clause 6.9.2

5.5.3. Test Setting

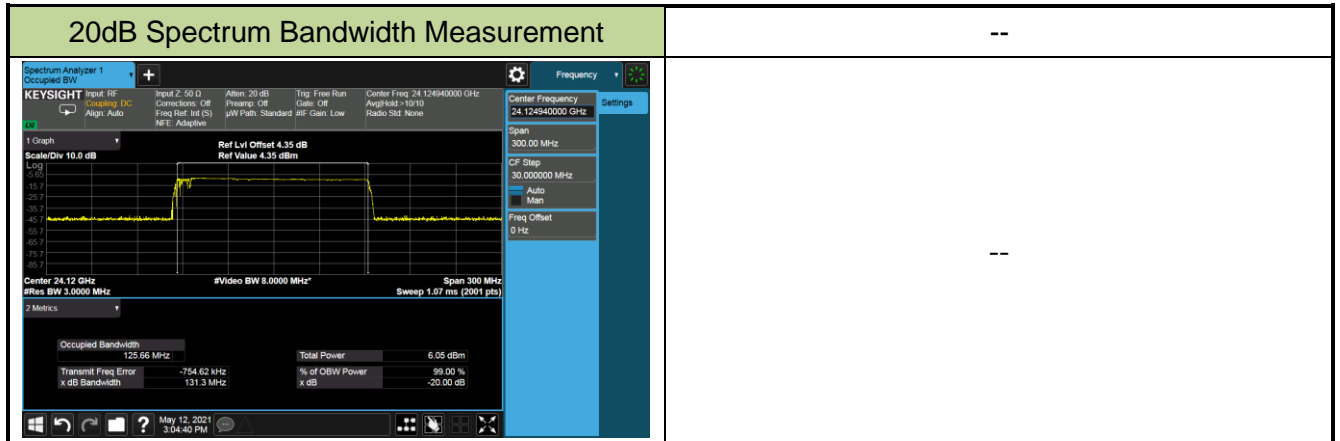
1. Set the spectrum span range to overlap the nominal center frequency
2. Set RBW = 1% ~ 5% of the OBW
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize and marker the highest level
8. Determine the display level (the highest level - 20dB) and place two markers, one at the lowest frequency and the other at the highest frequency

5.5.4. Test Setup



5.5.5. Test Result

Test Site	SIP-AC3	Test Date	2021/05/12
Test Engineer	Allen Zou		



6. CONCLUSION

The data collected relate only the item(s) tested and show that this device is compliance with Part 15.249 of the FCC Rules.

————— The End —————

Appendix A - Test Setup Photograph

Refer to "2104RSU021-UT" file.

Appendix B - EUT Photograph

Refer to "2104RSU021-UE" file.