

FCC - TEST REPORT

Report Number : **68.710.24.0280.01** Date of Issue: 2024-09-18

Model : **X1000**

Product Type : Robotic Vacuum Cleaner

Applicant : Zhiyi (Zhongshan) Technology Co., Ltd.

Address : No. 39, Donghui Road, Cuiheng New District, 528400 Zhongshan,
Guangdong, PEOPLE'S REPUBLIC OF CHINA

Manufacturer : Zhiyi (Zhongshan) Technology Co., Ltd.

Address : No. 39, Donghui Road, Cuiheng New District, 528400 Zhongshan,
Guangdong, PEOPLE'S REPUBLIC OF CHINA

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

Total pages including Appendices : **159**

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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: CN5009

3 Description of the Equipment Under Test

Product:	Robotic Vacuum Cleaner
Model no.:	X1000
FCC ID:	2BD8J-X1000
Options and accessories:	<p>ADAPTER: Manufacturer: Dongguan Guanjin Electronics Technology Co., Ltd. Model: K65A320200E2 Input: 100-240V~, 50/60Hz, 1.5A Output: 32.0V===, 2.0A, 64.0W</p> <p>Docking Station: Manufacturer: Zhiyi (Zhongshan) Technology Co., Ltd. Model: X1000 Input: 32V===, 2000mA</p>
Ratings:	<p>Charging Input: 32V===, 2000mA Battery: 25.2V===, 4700mAh</p>
RF Transmission Frequency:	5180MHz – 5320MHz, 5500MHz – 5700MHz, 5745MHz – 5825MHz for 5GHz Wi-Fi
No. of Operated Channel:	43 for 5GHz Wi-Fi
Modulation:	<p>802.11a: BPSK, QPSK, 16-QAM, 64-QAM 802.11n: BPSK, QPSK, 16-QAM, 64-QAM 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM</p>
Antenna Type:	Integrated FPC antenna
Antenna Gain:	2.76 dBi for 5GHz Wi-Fi
Description of the EUT:	<p>The EUT is a Robotic Vacuum Cleaner supports 2.4GHz Wi-Fi and 5GHz U-NII bands Wi-Fi functions: 2412MHz - 2462MHz for 2.4GHz Wi-Fi; 5180MHz – 5320MHz, 5500MHz – 5700MHz, 5745MHz – 5825MHz for 5GHz Wi-Fi.</p>
Remark:	This report is only for 5GHz Wi-Fi.

4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart E, October 1, 2023 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart E - Unlicensed National Information Infrastructure Devices

Test Method:

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

KDB 905462 D03 Client Without DFS New Rules v01r02

ANSI C63.10-2020, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

5 Summary of Test Results

Technical Requirements			
FCC Part 15 Subpart E, October 1, 2023 Edition			
Test Condition	Test Result		
	Pass	Fail	N/A
15.207 Conducted Emission AC Power Port	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.407(e) Emission bandwidth	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.407(a) Maximum Conducted Output Power	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.407(a) Maximum Power Spectral Density	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.407(b)(1), 15.407(b)(2), 15.407(b)(3), 15.407(b)(4), 15.407(b)(8), 15.407(b)(9), 15.209 Unwanted Emissions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.407(g) Frequencies Stability	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.407(h) Dynamic Frequency Selection (DFS) ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.203 Antenna Requirement ^b	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remark: ^a The EUT is Clients Device without Radar Detection.

Remark: ^b The EUT uses an Integrated FPC antenna, the antenna gain is 2.76dBi for 5GHz Wi-Fi. In accordance with §15.203, it is considered sufficiently to comply with the provisions of this section.

6 General Remarks

The conducted emissions of X1000 were tested with a Docking Station, and the input voltage is 120VAC/60Hz; The RF tests of X1000 were tested with battery operation, the battery voltage is 25.2VDC.

This submittal(s) (test report) is intended for FCC ID: 2BD8J-X1000, complies with Section 15.203, 15.205, 15.207, 15.209, 15.407 of the FCC Part 15, Subpart E.

SUMMARY:

All tests according to the regulations cited on page 6 were:

- Performed

- **Not** Performed

The Equipment Under Test

- **Fulfills** the general approval requirements.

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

Sample Received Date: 2024-07-30

Testing Start Date: 2024-08-08

Testing End Date: 2024-09-03

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


Reviewed by:

Prepared by:

Tested by:



 Jessie He
 Project Manager

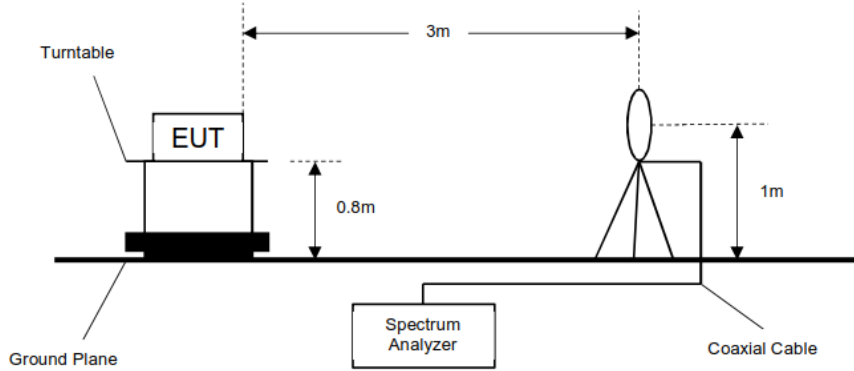

 Myron Yu
 Project Engineer


 Carry Cai
 Test Engineer

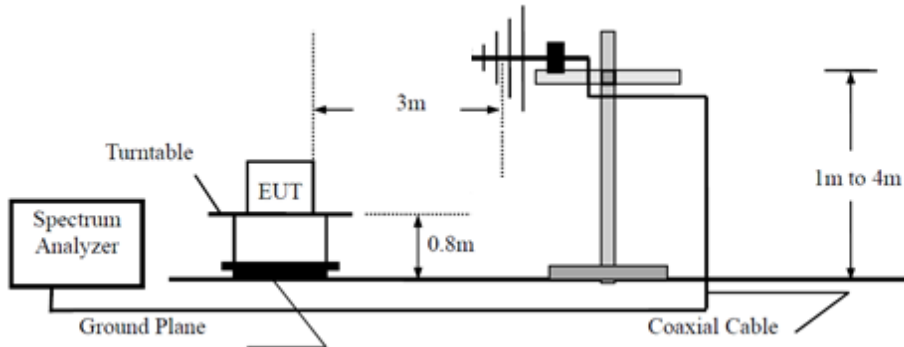
7 Test setups

7.1 Radiated test setups

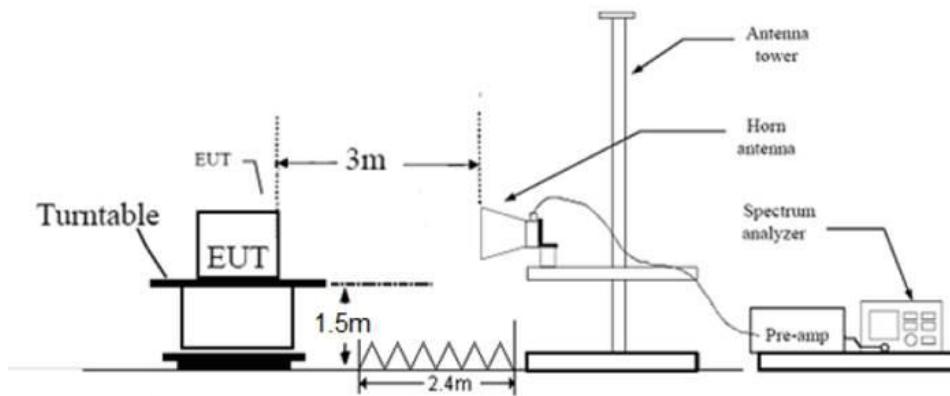
9kHz - 30MHz



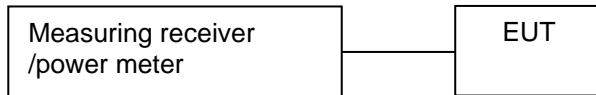
Below 1GHz



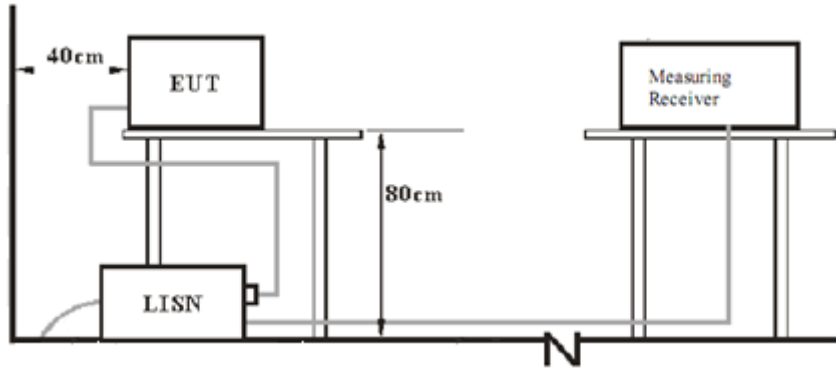
Above 1GHz



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	MODEL NO.	MANUFACTURER	S/N
Laptop	X220	ThinkPad	EMC-158
ADAPTER	K65A320200E2	Zhiyi (Zhongshan) Technology Co., Ltd.	---
Docking Station	X1000	Dongguan Guanjin Electronics Technology Co., Ltd.	---

Test software information:

Test Software Version	Adb tool	
Mode	Setting TX Power	Data Rate
802.11a	Default parameters	11g 6 Mbps
802.11n HT20	Default parameters	MCS0 6.5 Mbps
802.11n HT40	Default parameters	MCS0 13.5 Mbps(40MHz)
802.11ac VHT20	Default parameters	11ac MCS0 NGI 6.5 Mbps(20MHz),
802.11ac VHT40	Default parameters	11ac MCS0 NGI 13.5 Mbps(40MHz)
802.11ac VHT80	Default parameters	11ac MCS0 NGI 29.3 Mbps(80MHz)

The system was configured to channel:

Test Mode	Channel (MHz)		
802.11a, 802.11n HT20 802.11ac VHT20	5G WIFI-Band 1		
	CH36 (5180MHz)	CH40 (5200MHz)	CH48 (5240MHz)
	5G WIFI-Band 2		
	CH52 (5260MHz)	CH56 (5280MHz)	CH64 (5320MHz)
	5G WIFI-Band 3		
	CH100 (5500MHz)	CH116 (5580MHz)	CH140 (5700MHz)
	CH144 (5720MHz)		
	5G WIFI-Band 4		
	CH149 (5745MHz)	CH157(5785MHz)	CH165 (5825MHz)

Test Mode	Channel (MHz)		
802.11n HT40 802.11ac VHT40	5G WIFI-Band 1		
	CH38(5190MHz)	CH46 (5230MHz)	
	5G WIFI-Band 2		
	CH54(5270MHz)	CH62(5310MHz)	
	5G WIFI-Band 3		
	CH102(5510MHz)	CH110(5550MHz)	CH134(5670MHz)
	CH 142 (5710MHz)		
	5G WIFI-Band 4		
	CH151(5755MHz)	CH159(5795MHz)	



Test Mode	Channel (MHz)		
802.11ac VHT80	5G WIFI-Band 1		
	CH42(5210MHz)		
	5G WIFI-Band 2		
	CH58(5290MHz)		
	5G WIFI-Band 3		
	CH106(5530MHz)	CH122(5610MHz)	CH138(5690MHz)
	5G WIFI-Band 4		
	CH155(5775MHz)		

9 Technical Requirement

9.1 Conducted Emission

Test Method

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively

Limit

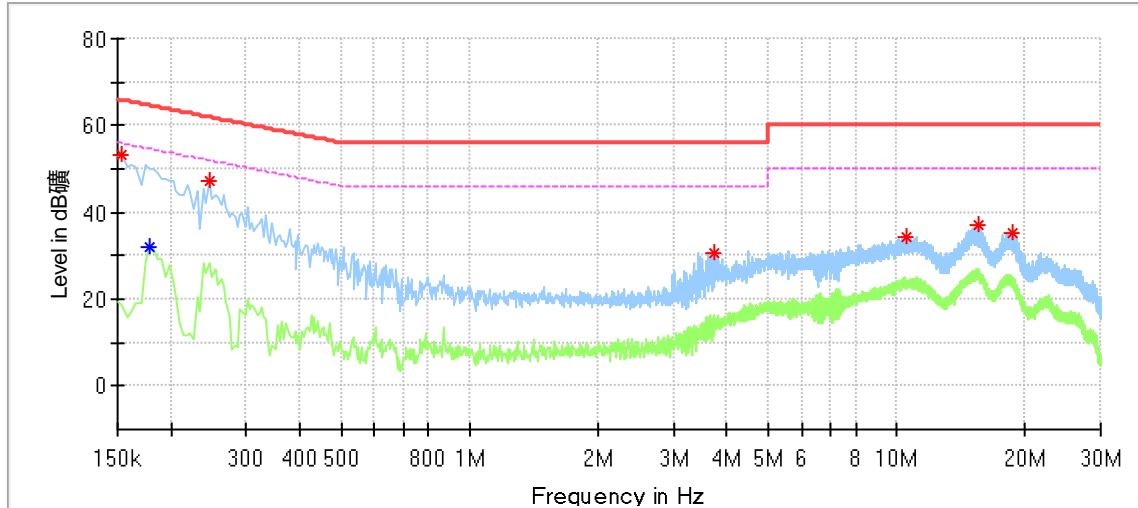
According to §15.207, conducted emissions limit as below:

Frequency MHz	QP Limit dB μ V	AV Limit dB μ V
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Remark: “*” Decreasing linearly with logarithm of the frequency

Conducted Emission

Product Type : Robotic Vacuum Cleaner
 M/N : X1000
 Operating Condition : Charging + WIFI communication mode
 Test Specification : Power Line, Live
 Comment : AC 120V/60Hz

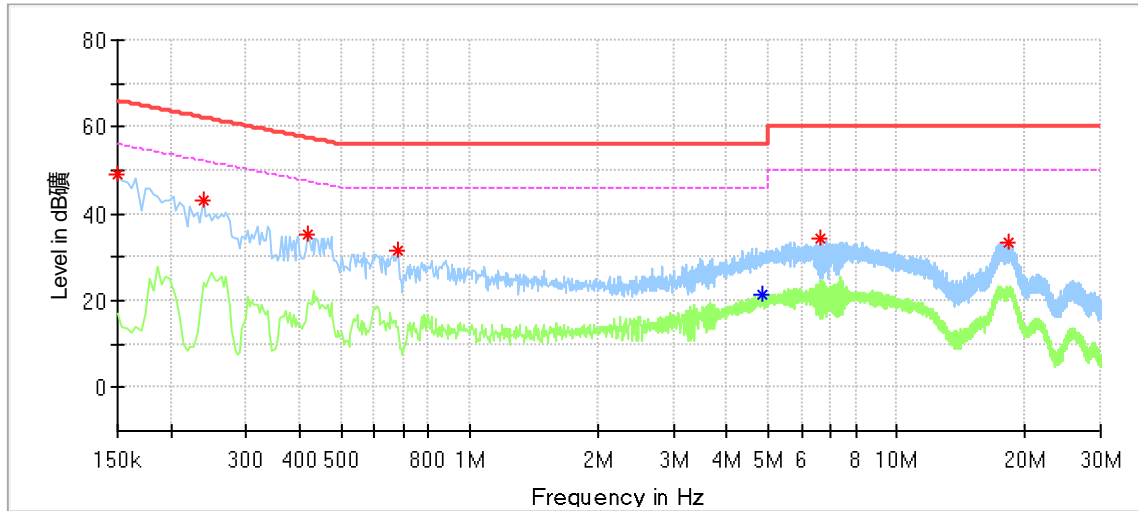


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.154000	53.31	---	65.78	12.47	L1	9.67
0.178000	---	32.04	54.58	22.53	L1	9.67
0.246000	47.22	---	61.89	14.67	L1	9.68
3.742000	30.84	---	56.00	25.16	L1	9.78
10.562000	34.22	---	60.00	25.78	L1	9.93
15.482000	37.30	---	60.00	22.70	L1	9.97
18.562000	35.33	---	60.00	24.67	L1	10.07

Conducted Emission

Product Type : Robotic Vacuum Cleaner
 M/N : X1000
 Operating Condition : Charging + WIFI communication mode
 Test Specification : Power Line, Neutral
 Comment : AC 120V/60Hz



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.150000	49.21	---	66.00	16.79	N	9.66
0.238000	42.86	---	62.17	19.30	N	9.67
0.418000	35.25	---	57.49	22.24	N	9.67
0.682000	31.62	---	56.00	24.38	N	9.68
4.838000	---	21.60	46.00	24.40	N	9.79
6.618000	34.35	---	60.00	25.65	N	9.85
18.326000	33.52	---	60.00	26.48	N	10.11

9.2 Emission bandwidth

The EUT was placed on 0.8m height table, 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.

1、 Test Method of 26dB Bandwidth

According to KDB789033 D02

- a) Set RBW = 1 % to 5 % of the OBW
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Limit: No limit

2、 Test Method of 6dB Bandwidth

According to KDB789033 D02

- a) Set center frequency to the nominal EUT channel center frequency
- b) Set RBW = approximately 1% of the emission bandwidth.
- c) Set the video bandwidth (VBW) $\geq 3 \times$ RBW
- d) Detector = Peak.
- e) Trace mode = max hold.
- f) Sweep = Sweep = No faster than coupled (auto) time.
- g) Allow the trace to stabilize.
- h) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
- i) Record the results in the test report.

Limit: $\geq 500\text{kHz}$

3、 Test Method of 99% Bandwidth

According to KDB789033 D02

- a) Set center frequency to the nominal EUT channel center frequency
- b) Set span = 1.5 times to 5.0 times the OBW.
- c) Set RBW = 1 % to 5 % of the OBW
- d) Set VBW $\geq 3 \cdot$ RBW
- e) Trace mode = max hold.
- f) Sweep = auto couple.
- g) Allow the trace to stabilize.
- h) Use the 99 % power bandwidth function of the instrument.
- i) Record the results in the test report.

Limit: No limit

Test Result: Pass

See Appendix A1&A2&A3 for test data.

9.3 Maximum conducted output power

Test Method

According to C63.10, the EUT was placed on 0.8m height table, the RF output of EUT was connected to the test power meter by RF cable. The path loss was compensated to the results for each measurement.

1. Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the following conditions are satisfied:
The EUT is configured to transmit continuously or to transmit with a consistent duty cycle.
At all times when the EUT is transmitting, it must be transmitting at its maximum power control level. The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
2. If the transmitter does not transmit continuously, measure the duty cycle, x , of the transmitter output signal as described in 12.2 in C63.10-2013.
3. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
4. Adjust the measurement in dBm by adding $10 \log (1/x)$ where x is the duty cycle (e.g., $10 \log (1/0.25)$ if the duty cycle is 25%).

Limits:

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

Note:

1. Maximum Conducted Output Power=Conducted Output Power + Correction Factor

Test Result: Pass

See Appendix B for test data.

9.4 Maximum power spectral density

The EUT was placed on 0.8m height table, 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. (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

1. Measure the duty cycle.
2. Set span to encompass the entire emission bandwidth (EBW) of the signal.
3. Set RBW = 1 MHz.
4. Set VBW \geq 3 MHz.
5. Number of points in sweep \geq 2 Span / RBW.
6. Sweep time = auto.
7. Detector = RMS
8. Trace average at least 100 traces in power averaging mode.
9. Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.

Limit:

The maximum power spectral density shall not exceed 11dBm for the 5.15-5.25GHz, 5.25-5.35GHz, 5.47-5.725 GHz Band in any 1 megahertz band.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500kHz band.

Test Result: Pass

See Appendix C for test data.

9.5 Unwanted emissions

Transmitting spurious emission test result as below:

Radiated Spurious Emission 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 3meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
3. 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.
4. 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
5. Use the following spectrum analyzer settings According to C63.10:
 - 1) Procedure for Unwanted Emissions Measurements Below 1000 MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - 2) For Above 1GHz:
 Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW \geq 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold
 - 3) Procedures for Average Unwanted Emissions Measurements above 1000 MHz
 - a) RBW = 1 MHz.
 - b) VBW \geq [3 \times RBW].
 - c) Detector = Power averaging (rms), if [span / (# of points in sweep)] \leq RBW / 2. Satisfying this condition can require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, then the detector mode shall be set to peak.
 - d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)
 - e) Sweep time = auto.
 - f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of 1 / D, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)
 - g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the

emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:

(1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is $[10 \log (1 / D)]$, where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.

(2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is $[20 \log (1 / D)]$, where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels. If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

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, must comply with the radiated emission limits specified in section 15.209.

Frequency MHz	Field Strength uV/m	Field Strength dBµV/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

According to part 15.407b (1) (2) (3) (4)

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

According to part 15.407b (9), Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

According to part 15.407b (10), The provisions of §15.205 apply to intentional radiators operating under this section.

Note: According to C63.10, the Conversion Factors between E[dBµV/m] and EIRP[dBm] as below:

$E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] + 95.2$, for $d = 3$ meters.

Spurious radiated emissions for transmitter

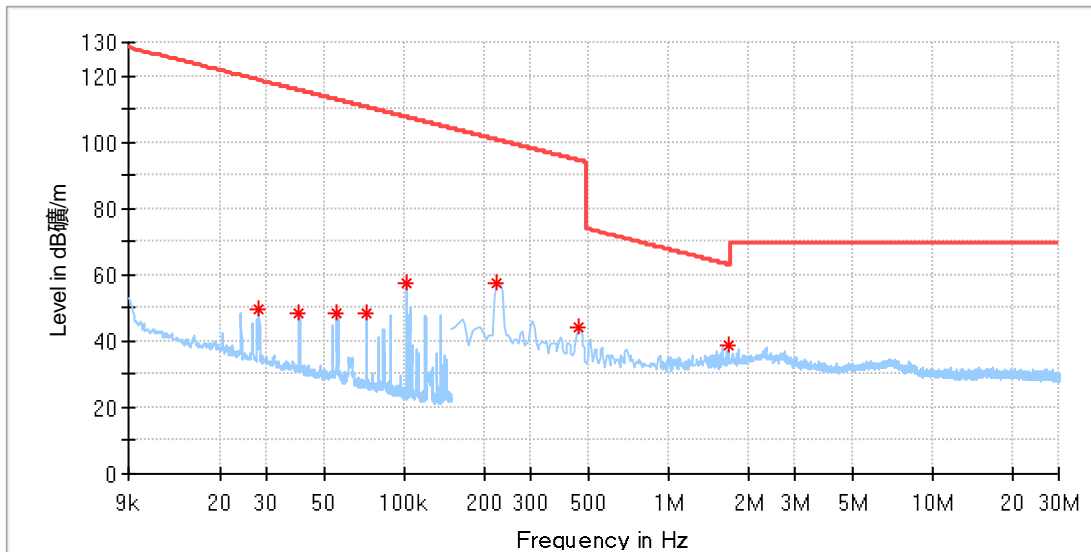
According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Only the worst case (802.11a modulation) test result is listed in the report.

Radiated Mode:

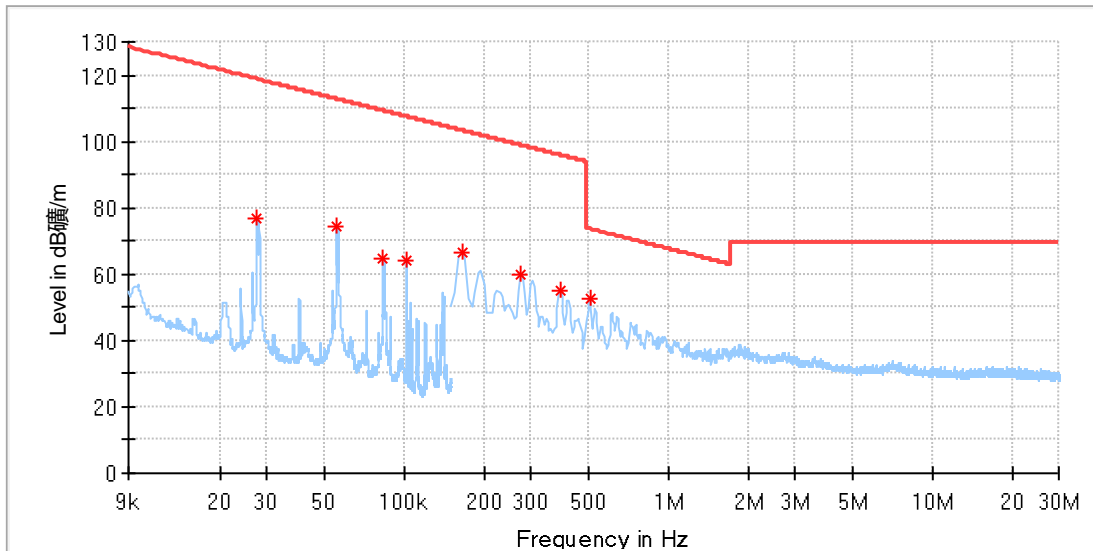
Transmitting spurious emission test result as below:

9kHz-30MHz



Critical Freqs

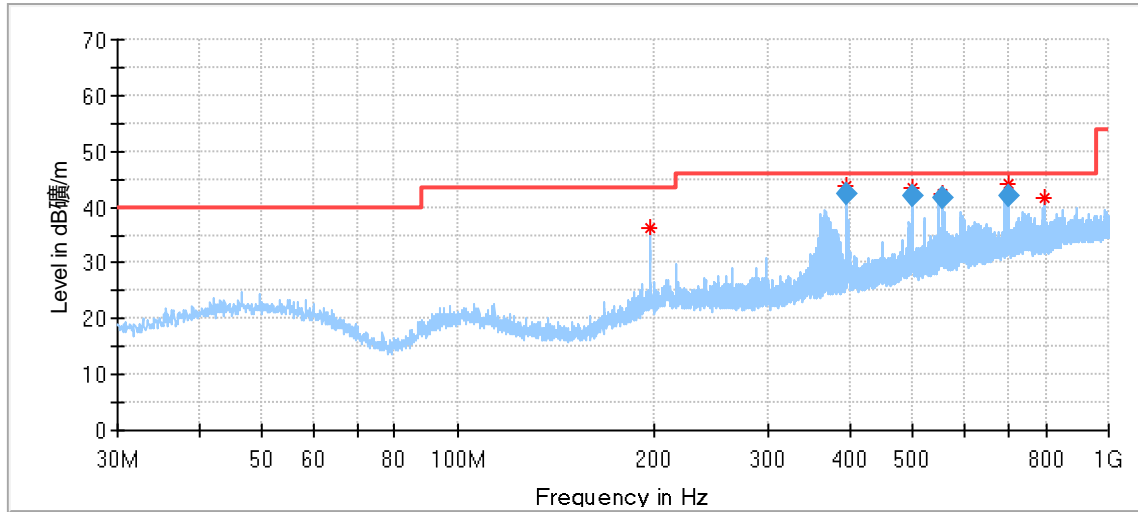
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.028082	49.29	118.62	69.33	H	13.0	19.93
0.039973	48.50	115.56	67.06	H	0.0	19.92
0.055436	48.41	112.72	64.31	H	8.0	19.96
0.071980	48.23	110.45	62.22	H	0.0	19.94
0.101543	57.56	107.46	49.90	H	261.0	19.95
0.224625	57.51	100.57	43.06	H	146.0	19.91
0.453475	44.08	94.47	50.39	H	146.0	19.95
1.682300	38.59	63.09	24.50	H	357.0	20.03



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.027706	76.76	118.74	41.98	V	253.0	19.93
0.055436	74.54	112.72	38.18	V	181.0	19.96
0.083166	64.68	109.20	44.52	V	205.0	19.95
0.101590	64.37	107.46	43.09	V	301.0	19.95
0.164925	66.58	103.25	36.67	V	205.0	19.92
0.274375	59.70	98.83	39.14	V	341.0	19.93
0.388800	54.95	95.81	40.86	V	325.0	19.94
0.503225	52.32	73.57	21.25	V	353.0	19.95

30MHz-1GHz

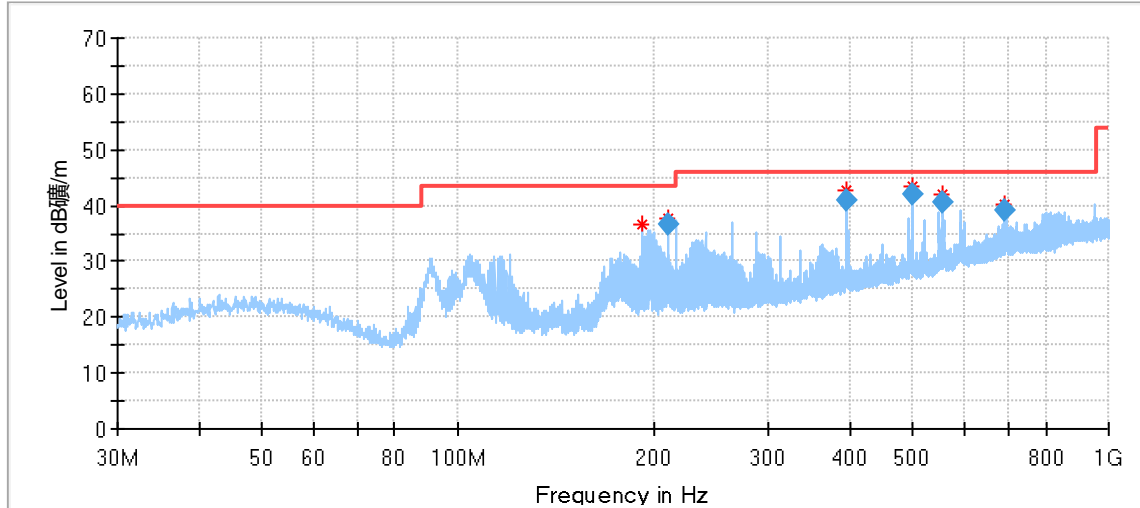


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
197.648333	36.32	43.50	7.18	200.0	H	313.0	16.01
395.312778	43.72	46.00	2.28	200.0	H	203.0	20.80
498.456111	43.50	46.00	2.50	400.0	H	130.0	22.68
556.925556	42.28	46.00	3.72	100.0	H	343.0	23.71
699.623333	44.30	46.00	1.70	200.0	H	86.0	25.94
795.006667	41.65	46.00	4.35	100.0	H	271.0	27.11

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
395.312778	42.49	46.00	3.51	200.0	H	203.0	20.80
498.456111	42.16	46.00	3.84	400.0	H	130.0	22.68
556.925556	41.74	46.00	4.26	100.0	H	343.0	23.71
699.623333	42.16	46.00	3.84	200.0	H	86.0	25.94



Critical Freqs

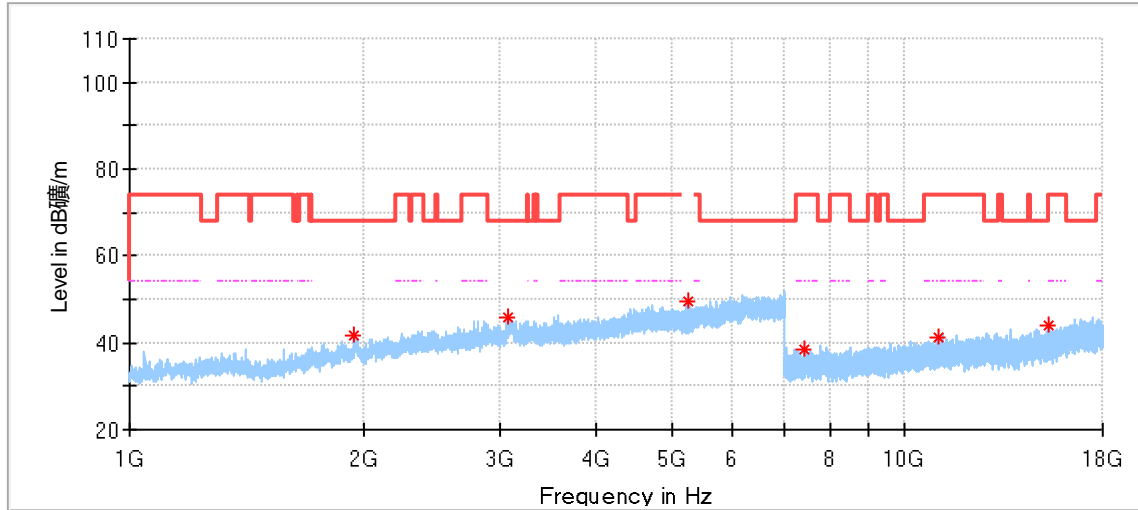
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
191.990000	36.65	43.50	6.85	100.0	V	77.0	15.50
209.988889	37.81	43.50	5.69	100.0	V	0.0	15.50
394.935556	42.59	46.00	3.41	100.0	V	28.0	20.79
498.025000	43.42	46.00	2.58	100.0	V	123.0	22.68
556.979444	41.88	46.00	4.12	200.0	V	0.0	23.71
690.462222	40.13	46.00	5.87	100.0	V	210.0	25.93

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
209.988889	36.67	43.50	6.83	100.0	V	0.0	15.50
394.935556	41.03	46.00	4.97	100.0	V	28.0	20.79
498.025000	42.06	46.00	3.94	100.0	V	123.0	22.68
556.979444	40.52	46.00	5.48	200.0	V	0.0	23.71
690.462222	39.17	46.00	6.83	100.0	V	210.0	25.93

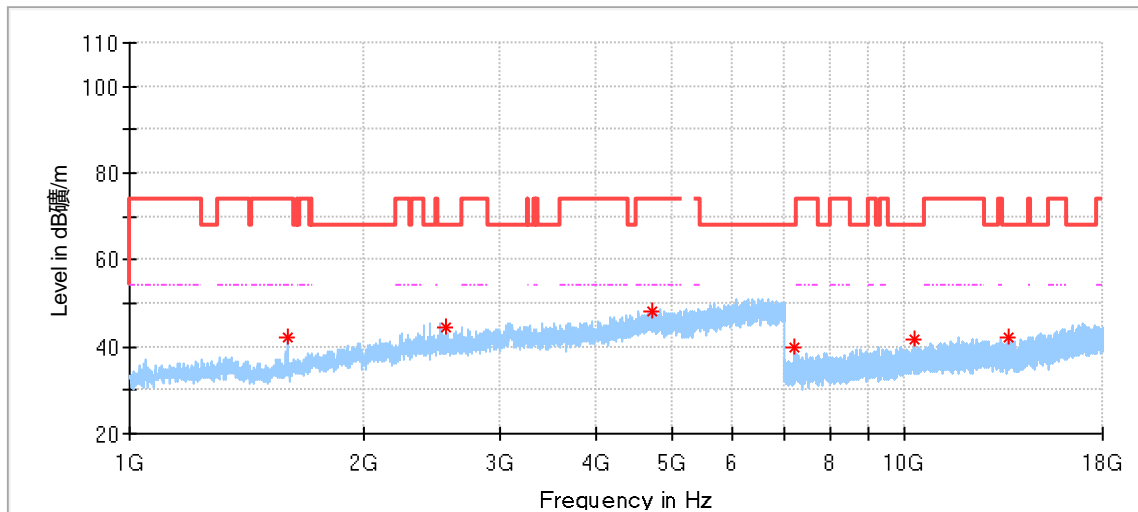
1GHz-18GHz

802.11a Modulation 5180MHz Test Result



Critical Freqs

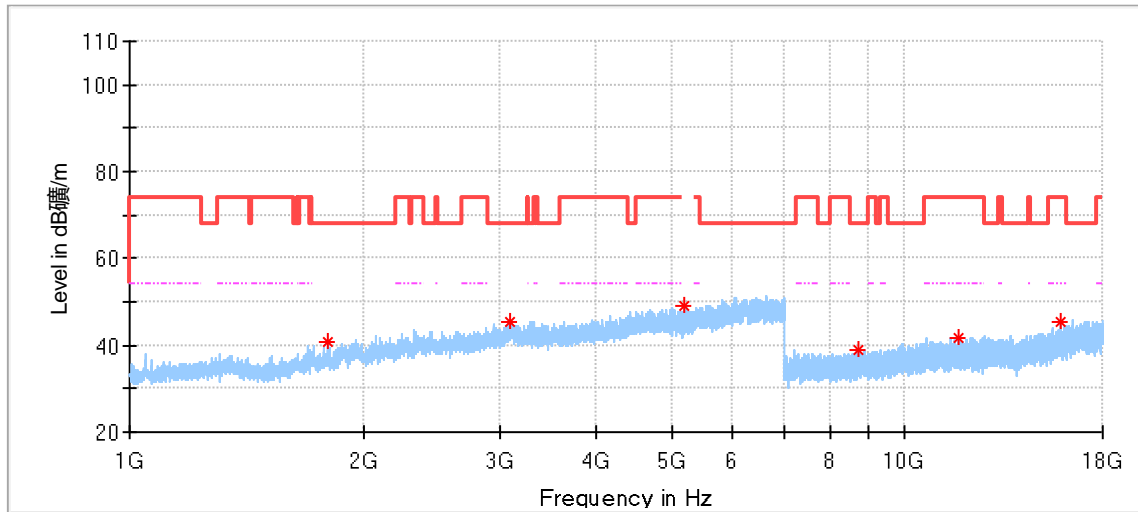
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1950.500000	41.83	68.20	26.37	150.0	H	7.0	-4.14
3075.500000	45.78	68.20	22.42	150.0	H	290.0	0.64
5269.000000	49.51	---	---	150.0	H	106.0	5.21
7433.500000*	38.64	74.00	35.36	150.0	H	252.0	5.83
11034.500000*	41.18	74.00	32.82	150.0	H	91.0	9.65
15326.500000	44.17	68.20	24.03	150.0	H	70.0	13.45



Critical Freqs

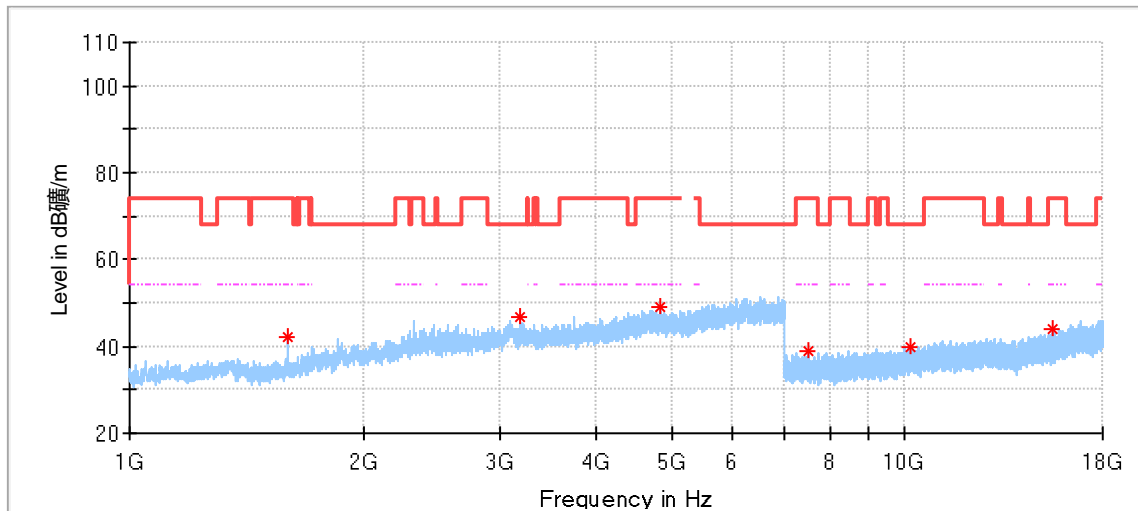
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1600.500000*	42.03	74.00	31.97	150.0	V	38.0	-8.41
2559.500000	44.46	68.20	23.74	150.0	V	0.0	-2.32
4716.000000*	47.97	74.00	26.03	150.0	V	84.0	4.32
7210.000000	39.75	68.20	28.45	150.0	V	94.0	5.36
10263.500000	41.54	68.20	26.66	150.0	V	195.0	8.76
13625.000000	42.09	68.20	26.11	150.0	V	136.0	10.81

802.11a Modulation 5200MHz Test Result



Critical Freqs

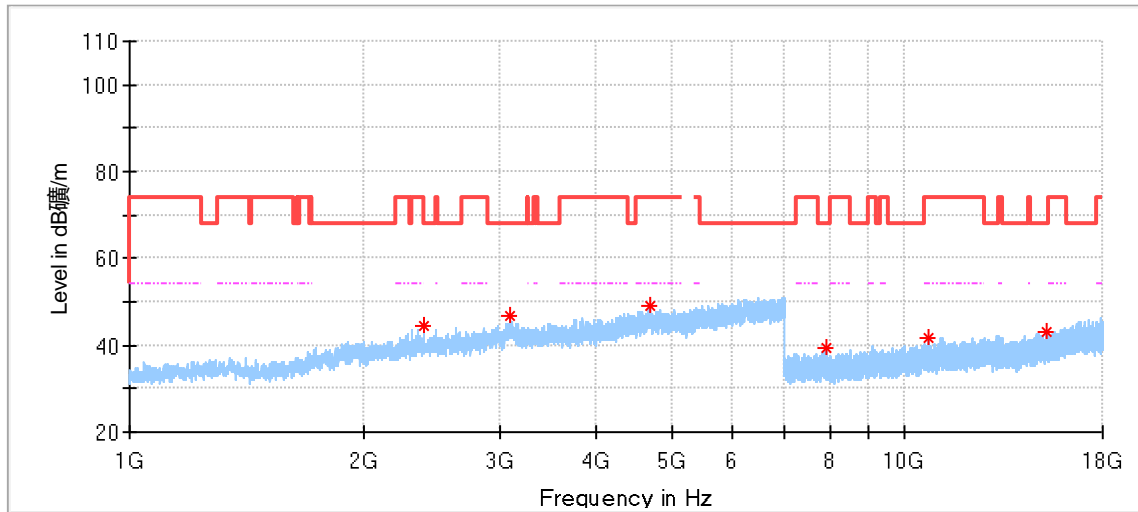
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1801.500000	40.56	68.20	27.64	150.0	H	325.0	-5.65
3100.000000	45.33	68.20	22.87	150.0	H	6.0	1.58
5191.000000	49.07	---	---	150.0	H	71.0	4.99
8736.500000	38.96	68.20	29.24	150.0	H	94.0	7.30
11736.500000*	41.91	74.00	32.09	150.0	H	354.0	10.87
15848.500000*	45.17	74.00	28.83	150.0	H	176.0	14.63



Critical Freqs

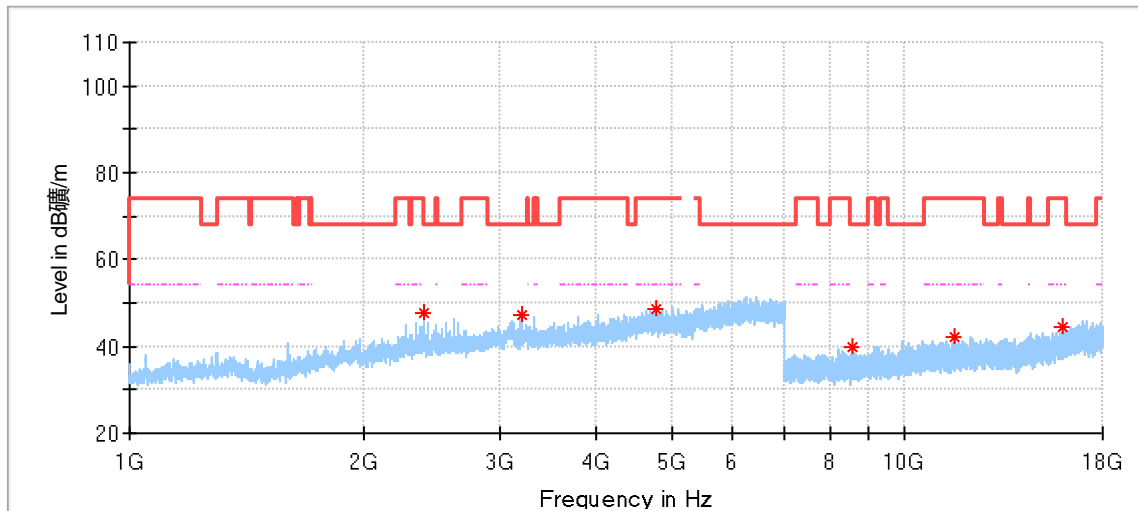
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1600.500000*	42.23	74.00	31.77	150.0	V	27.0	-8.41
3192.500000	46.91	68.20	21.29	150.0	V	330.0	-0.36
4845.500000*	49.16	74.00	24.84	150.0	V	147.0	4.24
7501.500000*	38.81	74.00	35.19	150.0	V	333.0	5.75
10176.500000	39.72	68.20	28.48	150.0	V	313.0	8.58
15536.500000*	43.99	74.00	30.01	150.0	V	211.0	13.75

802.11a Modulation 5240MHz Test Result



Critical Freqs

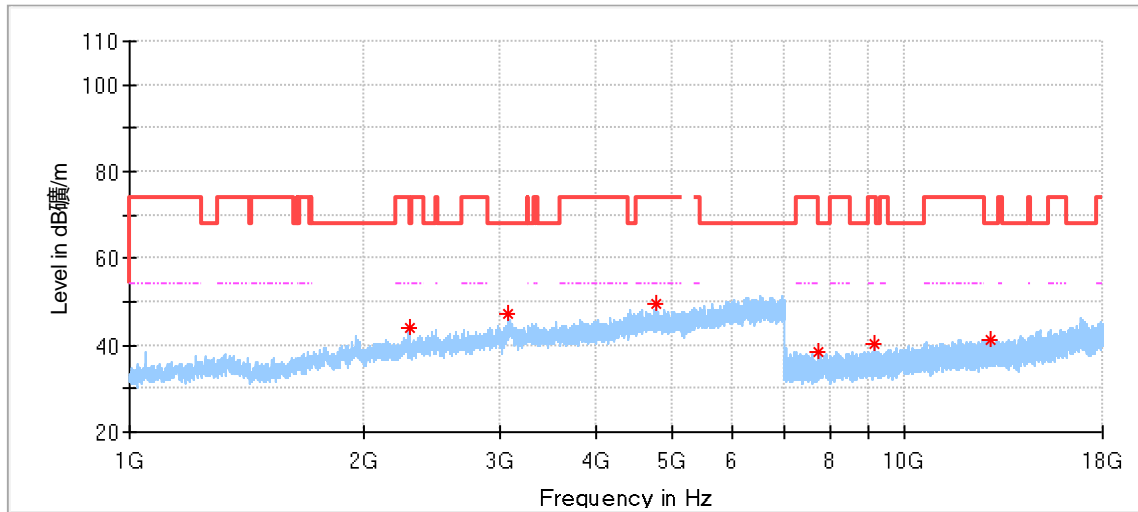
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2393.500000	44.58	68.20	23.62	150.0	H	87.0	-2.47
3102.000000	46.59	68.20	21.61	150.0	H	3.0	1.51
4702.000000*	49.19	74.00	24.81	150.0	H	60.0	4.35
7900.000000	39.31	68.20	28.89	150.0	H	0.0	6.13
10758.000000*	41.49	74.00	32.51	150.0	H	215.0	9.20
15247.500000	43.16	68.20	25.04	150.0	H	0.0	13.35



Critical Freqs

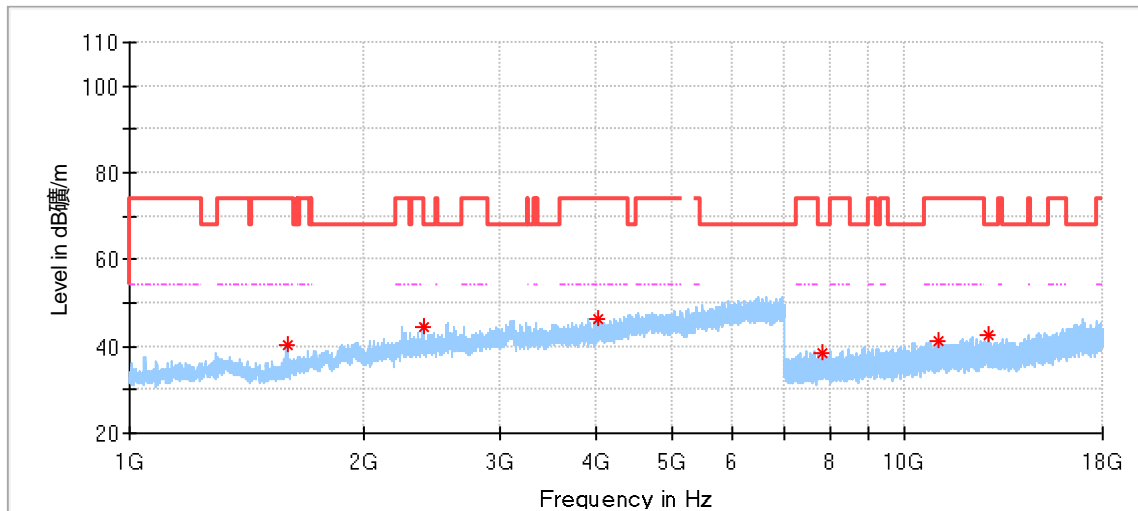
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2394.500000	47.86	68.20	20.34	150.0	V	36.0	-2.46
3200.000000	47.02	68.20	21.18	150.0	V	5.0	-0.36
4781.500000*	48.50	74.00	25.50	150.0	V	250.0	4.24
8549.500000	39.89	68.20	28.31	150.0	V	154.0	6.93
11575.000000*	41.96	74.00	32.04	150.0	V	332.0	10.50
16006.500000*	44.53	74.00	29.47	150.0	V	233.0	15.41

802.11a Modulation 5260MHz Test Result



Critical Freqs

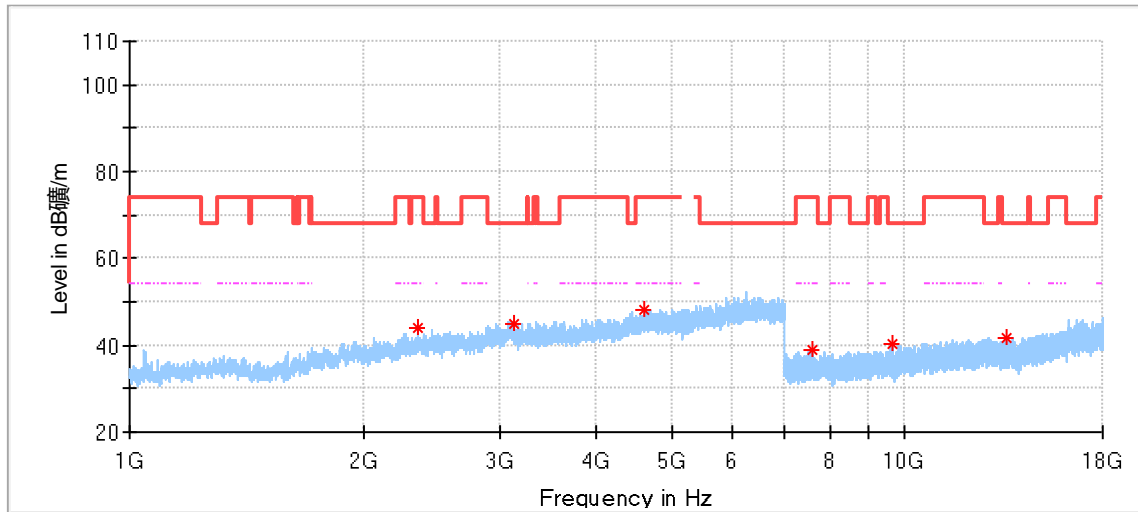
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2293.000000*	44.00	74.00	30.00	150.0	H	312.0	-3.25
3080.500000	47.11	68.20	21.09	150.0	H	289.0	0.82
4775.500000*	49.33	74.00	24.67	150.0	H	3.0	4.26
7757.000000	38.48	68.20	29.72	150.0	H	48.0	5.87
9163.000000*	40.48	74.00	33.52	150.0	H	0.0	7.80
12931.500000	41.44	68.20	26.76	150.0	H	131.0	11.33



Critical Freqs

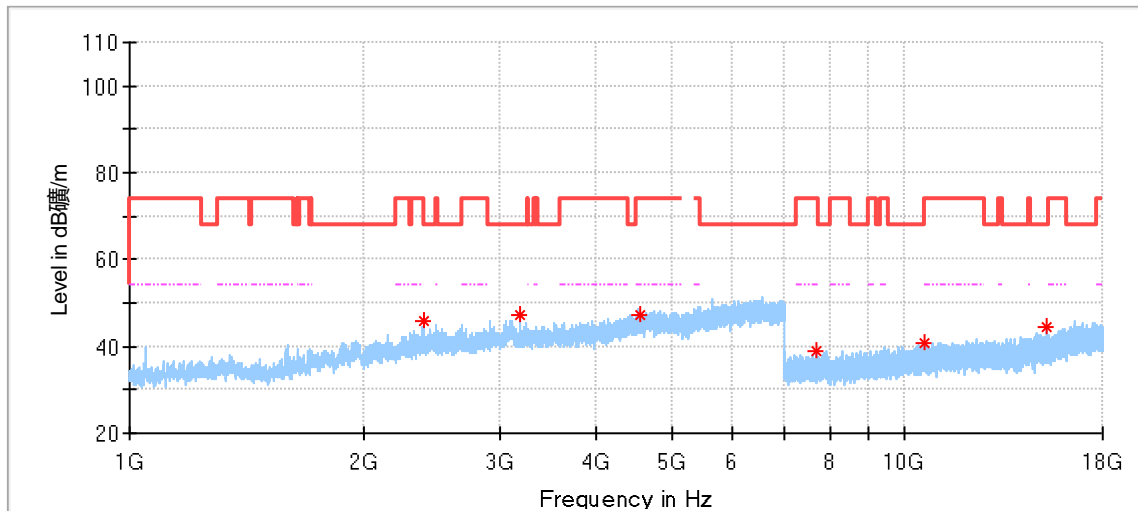
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1595.500000*	40.35	74.00	33.65	150.0	V	184.0	-8.45
2391.500000	44.31	68.20	23.89	150.0	V	30.0	-2.48
4012.500000*	46.25	74.00	27.75	150.0	V	171.0	1.56
7825.500000	38.60	68.20	29.60	150.0	V	170.0	5.97
11046.500000*	41.18	74.00	32.82	150.0	V	190.0	9.71
12796.500000	42.71	68.20	25.49	150.0	V	359.0	11.32

802.11a Modulation 5280MHz Test Result



Critical Freqs

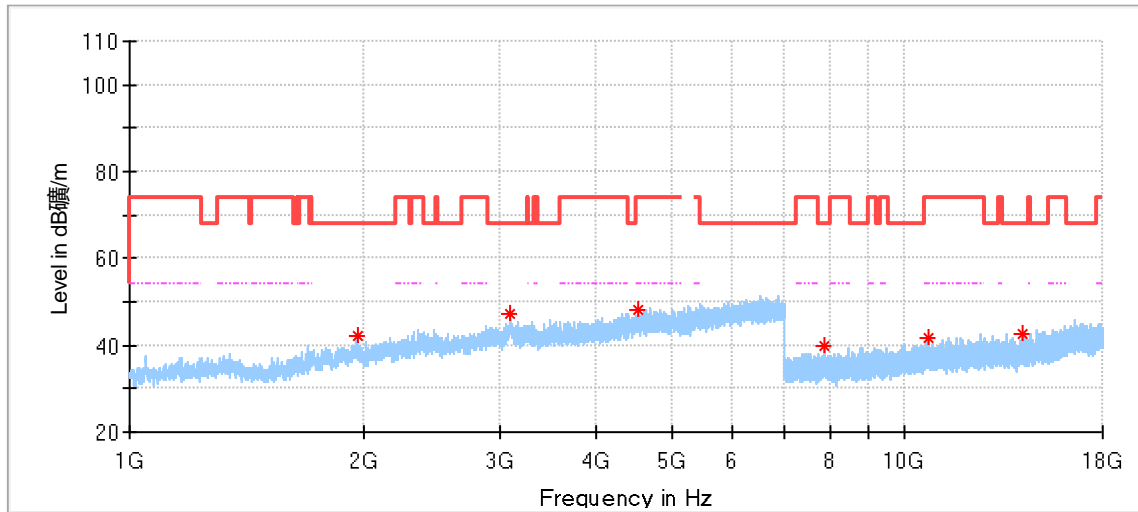
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2356.000000*	44.15	74.00	29.85	150.0	H	143.0	-2.73
3125.500000	45.02	68.20	23.18	150.0	H	203.0	0.59
4624.000000*	48.37	74.00	25.63	150.0	H	5.0	4.16
7609.000000*	38.82	74.00	35.18	150.0	H	332.0	5.84
9631.500000	40.16	68.20	28.04	150.0	H	174.0	8.09
13503.000000	41.63	68.20	26.57	150.0	H	174.0	11.02



Critical Freqs

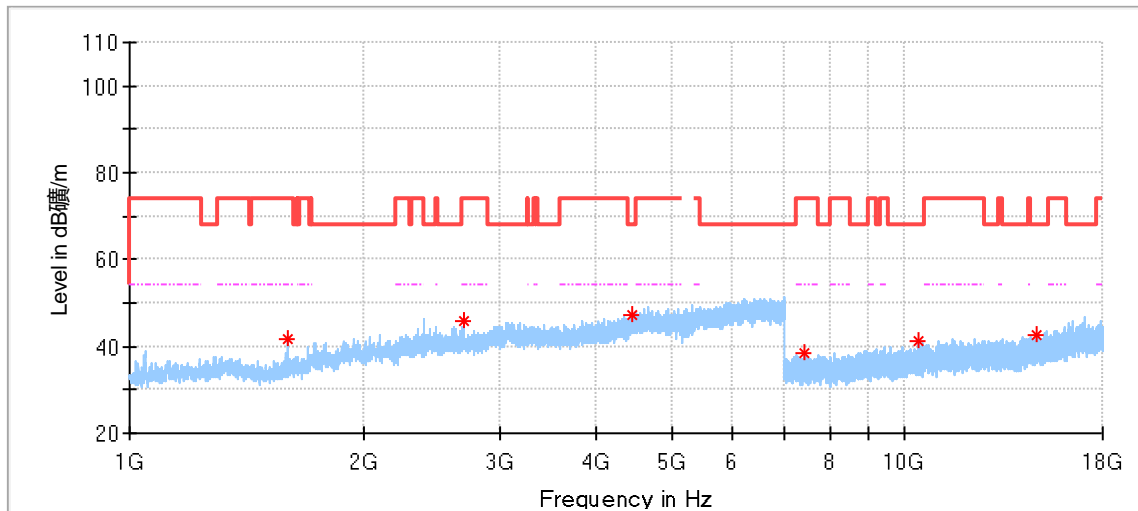
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2393.500000	45.79	68.20	22.41	150.0	V	337.0	-2.47
3194.500000	47.37	68.20	20.83	150.0	V	34.0	-0.36
4551.000000*	47.14	74.00	26.86	150.0	V	34.0	3.76
7696.000000*	38.99	74.00	35.01	150.0	V	191.0	5.89
10623.000000*	40.99	74.00	33.01	150.0	V	132.0	9.07
15280.500000	44.30	68.20	23.90	150.0	V	211.0	13.43

802.11a Modulation 5320MHz Test Result



Critical Freqs

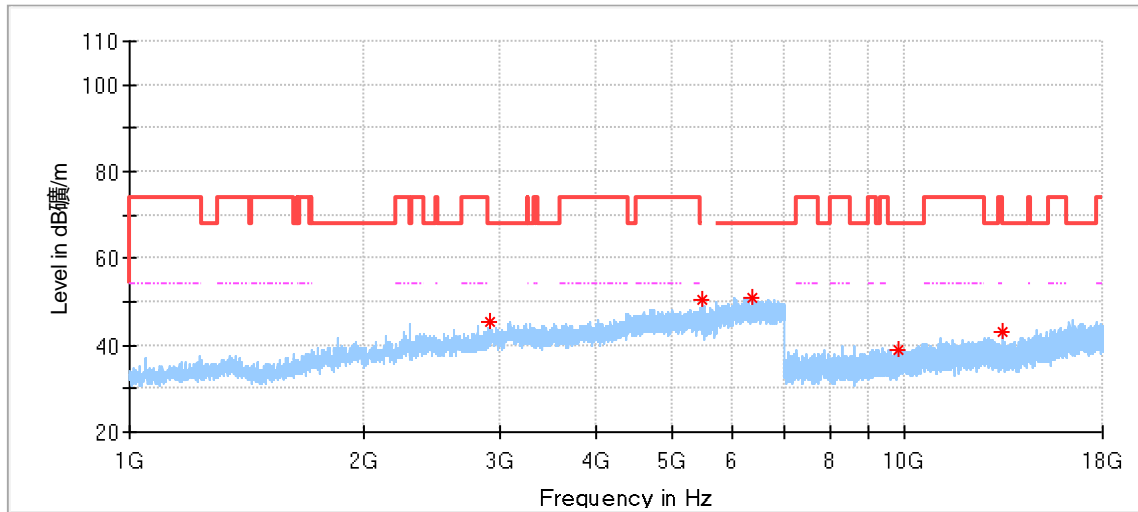
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1967.500000	41.96	68.20	26.24	150.0	H	164.0	-4.19
3097.000000	47.34	68.20	20.86	150.0	H	245.0	1.47
4518.000000*	48.22	74.00	25.78	150.0	H	91.0	3.54
7897.500000	39.63	68.20	28.57	150.0	H	173.0	6.13
10711.500000*	41.48	74.00	32.52	150.0	H	271.0	9.21
14170.000000	42.73	68.20	25.47	150.0	H	212.0	11.46



Critical Freqs

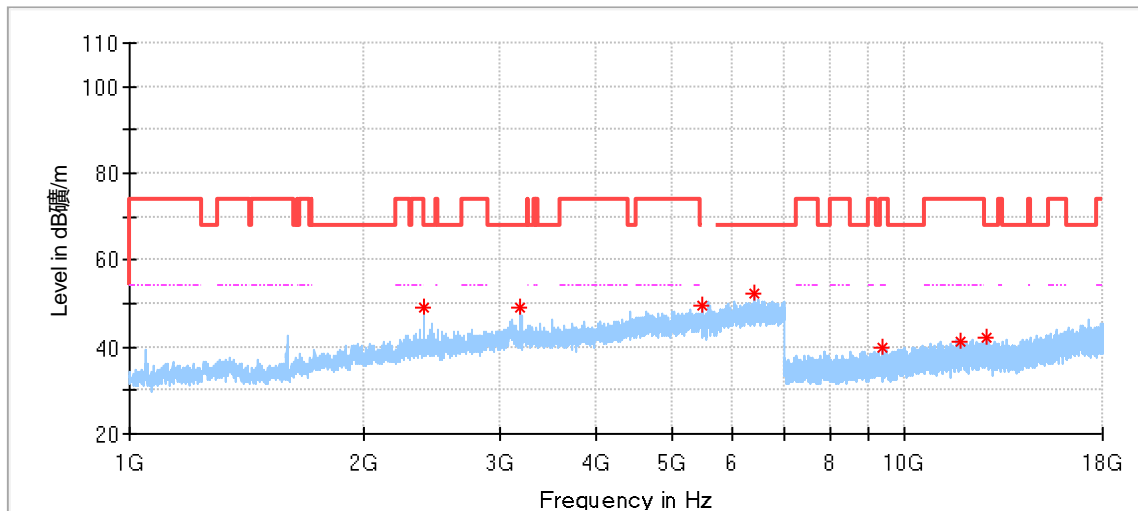
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1597.000000*	41.47	74.00	32.53	150.0	V	0.0	-8.44
2697.000000*	46.03	74.00	27.97	150.0	V	0.0	-2.05
4458.000000	47.12	68.20	21.08	150.0	V	229.0	3.35
7407.500000*	38.42	74.00	35.58	150.0	V	255.0	5.78
10415.000000	41.22	68.20	26.98	150.0	V	295.0	8.97
14778.500000	42.50	68.20	25.70	150.0	V	255.0	12.67

802.11a Modulation 5500MHz Test Result



Critical Freqs

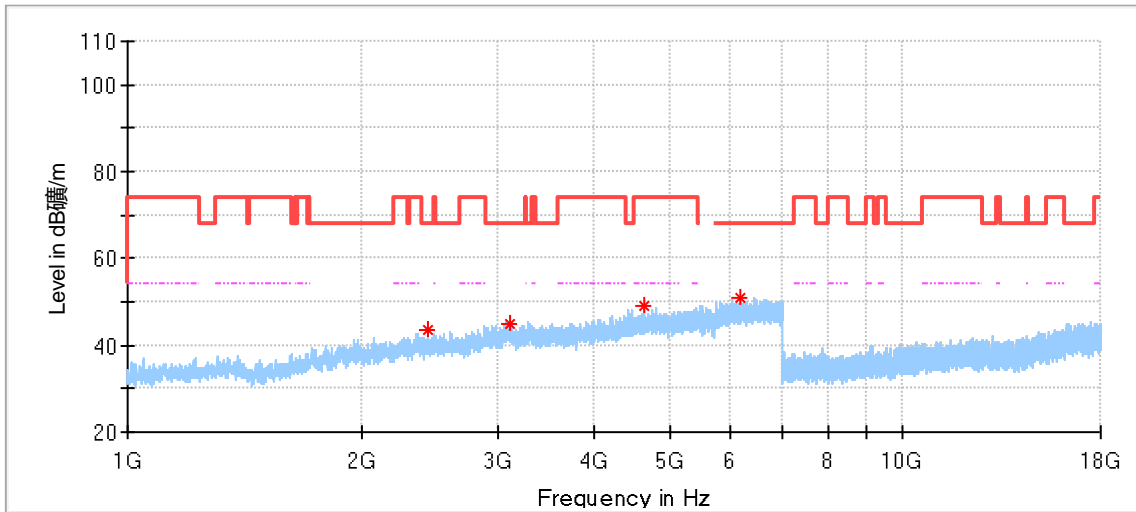
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2910.000000	45.20	68.20	23.00	150.0	H	264.0	-0.81
5493.000000	50.61	---	---	150.0	H	257.0	5.59
6365.500000	51.02	68.20	17.18	150.0	H	317.0	7.80
9820.000000	38.94	68.20	29.26	150.0	H	149.0	8.19
13338.500000*	42.94	74.00	31.06	150.0	H	333.0	11.01



Critical Freqs

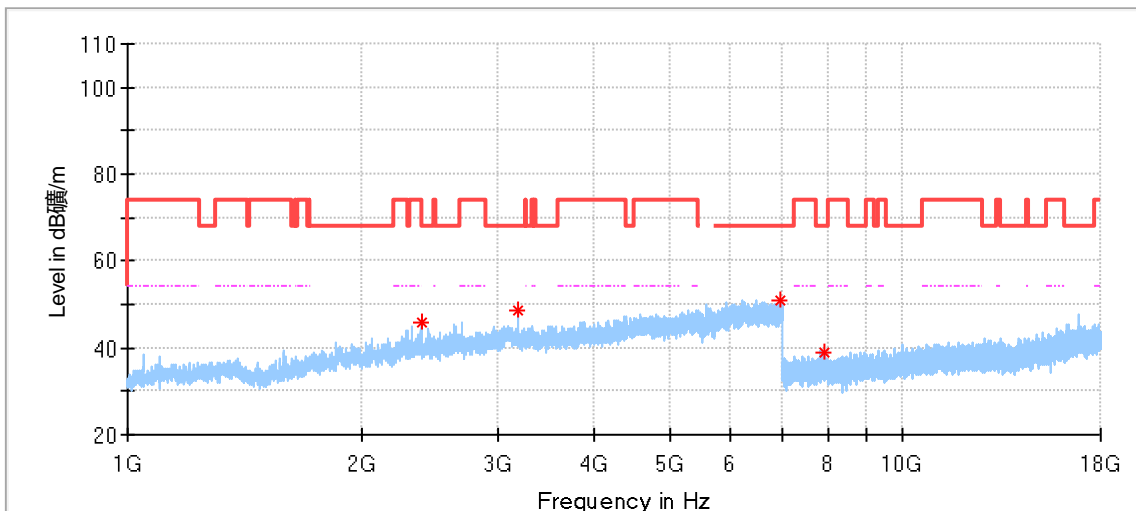
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2399.500000	49.11	68.20	19.09	150.0	V	349.0	-2.42
3189.500000	48.91	68.20	19.29	150.0	V	102.0	-0.36
5492.500000	49.37	---	---	150.0	V	0.0	5.59
6394.500000	52.45	68.20	15.75	150.0	V	42.0	7.80
9361.500000*	39.84	74.00	34.16	150.0	V	28.0	7.94
11806.000000*	41.12	74.00	32.88	150.0	V	206.0	10.91
12715.500000	42.31	68.20	25.89	150.0	V	107.0	11.29

802.11a Modulation 5580MHz Test Result



Critical Freqs

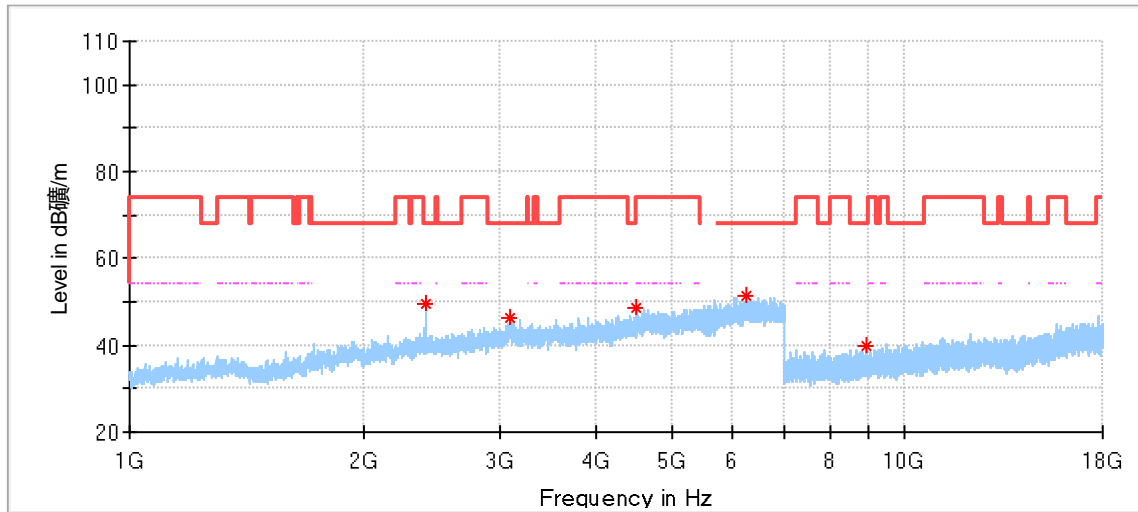
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2436.500000	43.52	68.20	24.68	150.0	H	0.0	-2.27
3122.000000	45.14	68.20	23.06	150.0	H	359.0	0.74
4644.000000*	48.98	74.00	25.02	150.0	H	41.0	4.29
6182.000000	51.02	68.20	17.18	150.0	H	0.0	7.48



Critical Freqs

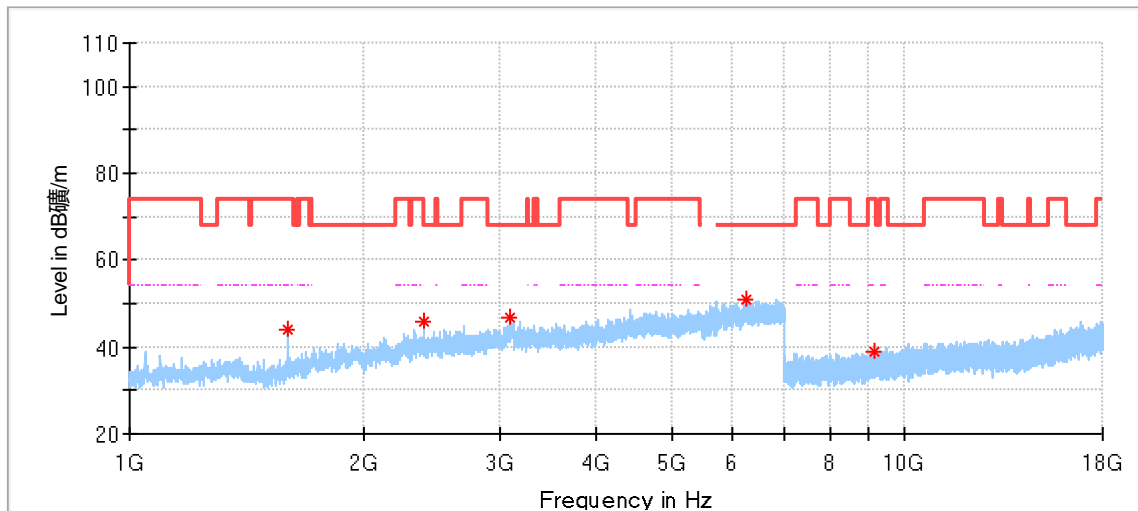
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2390.000000*	45.76	68.20	22.44	150.0	V	338.0	-2.49
3197.000000	48.81	68.20	19.39	150.0	V	37.0	-0.36
6962.000000	51.14	68.20	17.06	150.0	V	265.0	8.23
7905.500000	39.08	68.20	29.12	150.0	V	153.0	6.12

802.11a Modulation 5700MHz Test Result



Critical Freqs

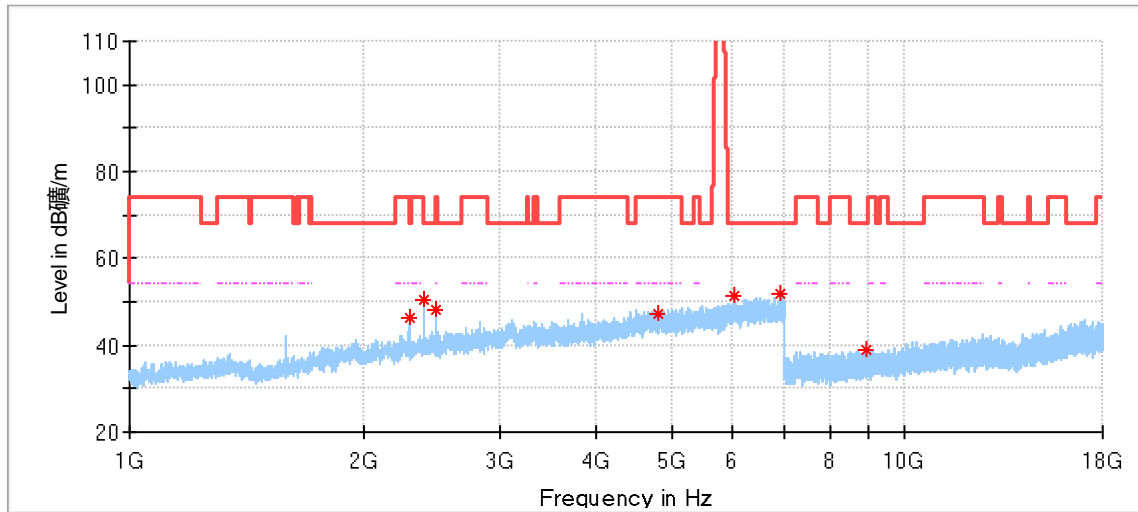
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2412.000000	49.53	68.20	18.67	150.0	H	190.0	-2.36
3092.000000	46.46	68.20	21.74	150.0	H	270.0	1.27
4495.500000	48.45	68.20	19.75	150.0	H	243.0	3.43
6235.500000	51.32	68.20	16.88	150.0	H	123.0	8.28
8924.500000	39.66	68.20	28.54	150.0	H	212.0	7.61



Critical Freqs

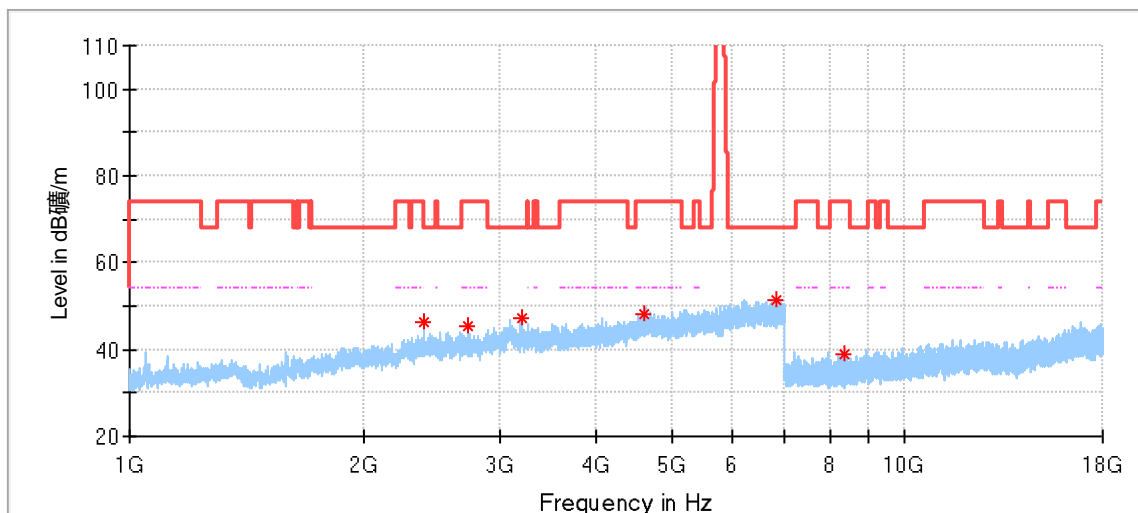
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1597.500000*	43.89	74.00	30.11	150.0	V	20.0	-8.44
2400.000000	46.00	68.20	22.20	150.0	V	47.0	-2.42
3104.000000	46.87	68.20	21.33	150.0	V	141.0	1.44
6239.500000	51.01	68.20	17.19	150.0	V	27.0	8.34
9145.000000*	38.86	74.00	35.14	150.0	V	173.0	7.83

802.11a Modulation 5745MHz Test Result



Critical_Freqs

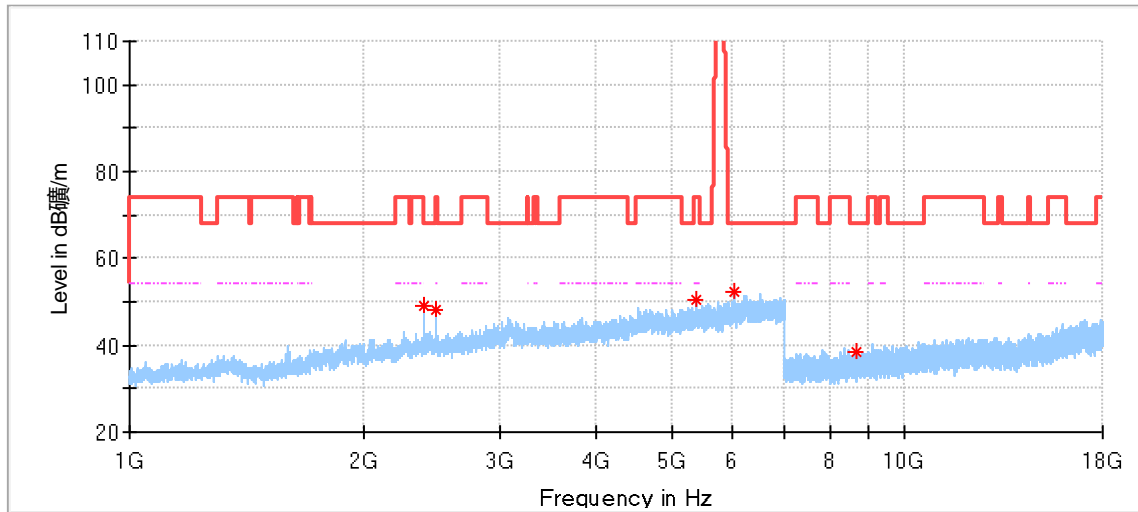
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2293.000000*	46.38	74.00	27.62	150.0	H	76.0	-3.25
2402.000000	50.65	68.20	17.55	150.0	H	355.0	-2.41
2480.000000	48.26	68.20	19.94	150.0	H	355.0	-2.40
4808.000000*	47.37	74.00	26.63	150.0	H	103.0	4.22
6027.500000	51.53	68.20	16.67	150.0	H	177.0	7.28
6919.500000	51.67	68.20	16.53	150.0	H	317.0	8.27
8917.500000	39.13	68.20	29.07	150.0	H	205.0	7.60



Critical_Freqs

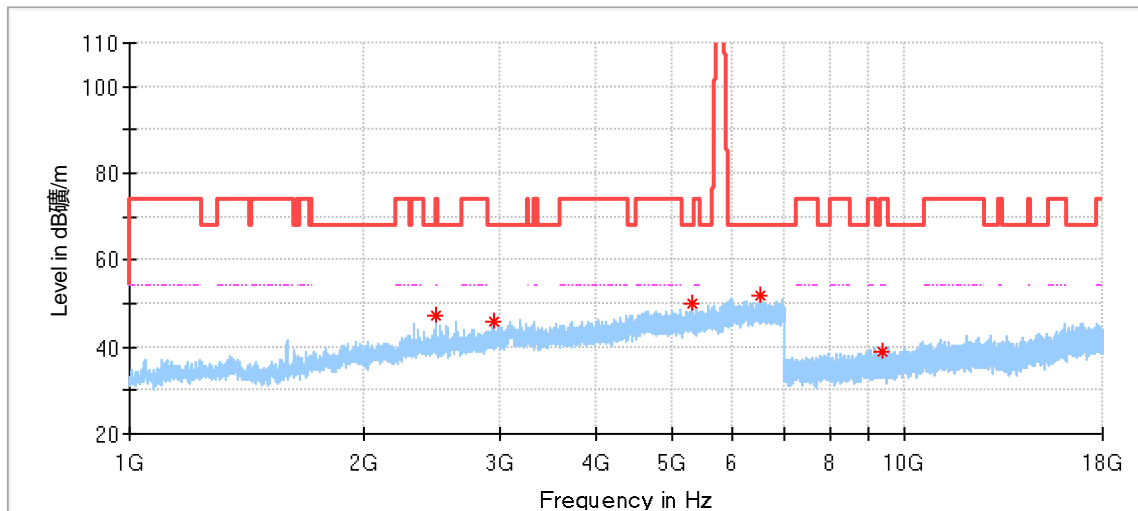
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2395.000000	46.10	68.20	22.10	150.0	V	163.0	-2.45
2736.500000*	45.59	74.00	28.41	150.0	V	0.0	-1.94
3200.500000	47.39	68.20	20.81	150.0	V	350.0	-0.36
4623.000000*	48.11	74.00	25.89	150.0	V	137.0	4.15
6847.500000	51.19	68.20	17.01	150.0	V	358.0	8.22
8375.000000*	38.73	74.00	35.27	150.0	V	144.0	6.57

802.11a Modulation 5785MHz Test Result



Critical Freqs

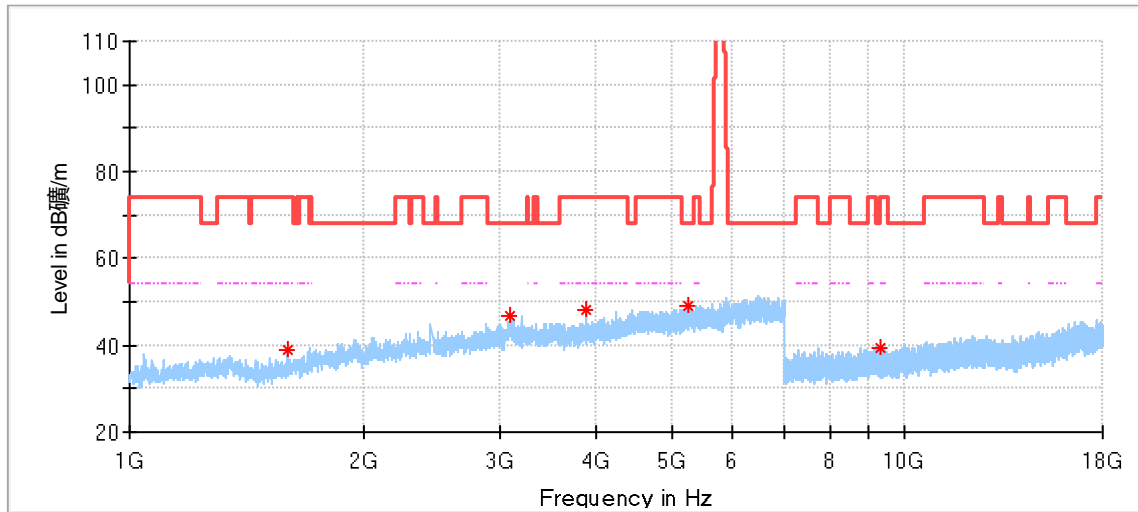
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2402.000000	48.97	68.20	19.23	150.0	H	226.0	-2.41
2480.000000	48.12	68.20	20.08	150.0	H	226.0	-2.40
5393.000000*	50.29	74.00	23.71	150.0	H	83.0	5.46
6029.000000	52.19	68.20	16.01	150.0	H	333.0	7.28
8648.000000	38.25	68.20	29.95	150.0	H	44.0	7.04



Critical Freqs

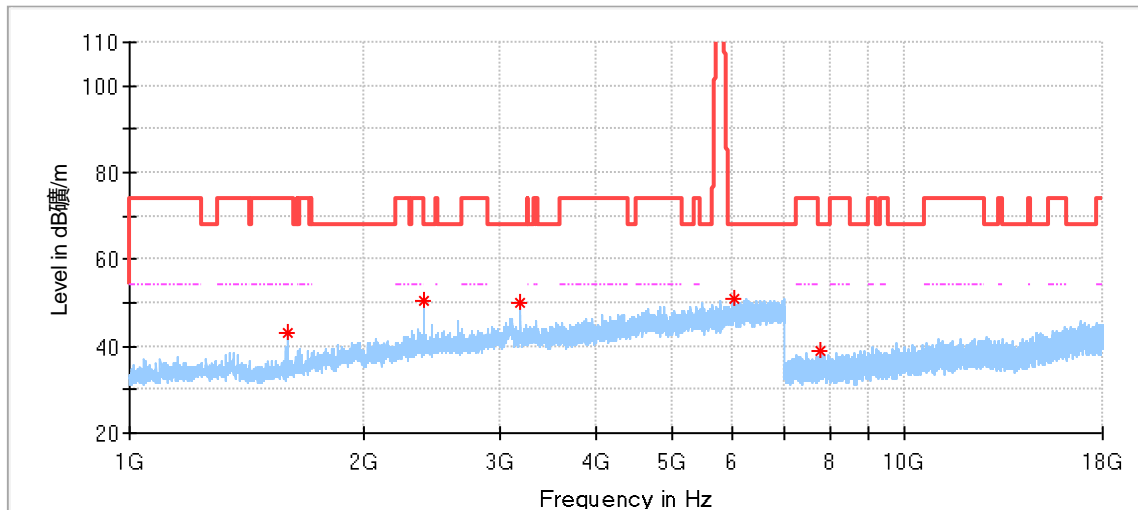
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2488.500000*	47.18	74.00	26.82	150.0	V	346.0	-2.49
2946.000000	45.90	68.20	22.30	150.0	V	259.0	-0.58
5326.500000	49.99	68.20	18.21	150.0	V	233.0	5.27
6494.000000	51.70	68.20	16.50	150.0	V	0.0	8.31
9383.500000*	38.81	74.00	35.19	150.0	V	206.0	7.95

802.11a Modulation 5825MHz Test Result



Critical Freqs

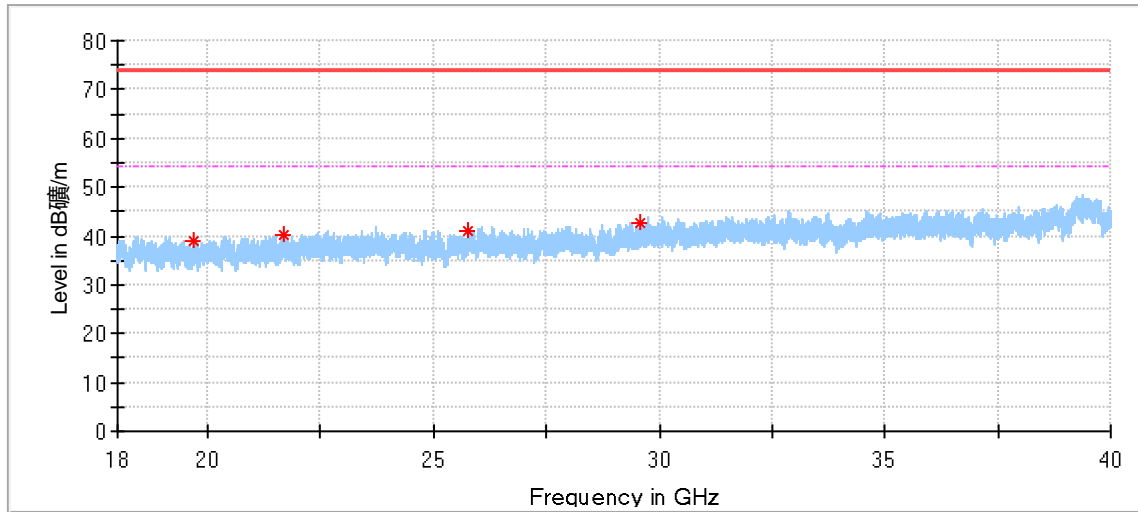
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1598.500000*	38.89	74.00	35.11	150.0	H	110.0	-8.43
3094.500000	46.58	68.20	21.62	150.0	H	170.0	1.37
3883.500000*	48.32	74.00	25.68	150.0	H	56.0	1.30
5241.000000	48.98	68.20	19.22	150.0	H	36.0	5.14
9313.500000*	39.31	74.00	34.69	150.0	H	9.0	7.93



Critical Freqs

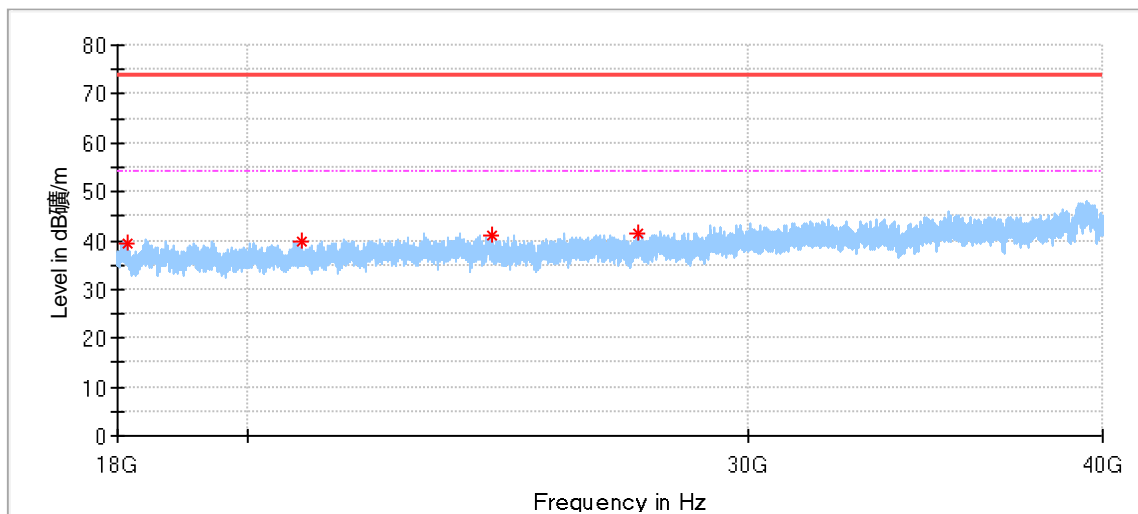
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1599.000000*	43.11	74.00	30.89	150.0	V	4.0	-8.43
2402.500000	50.44	68.20	17.76	150.0	V	317.0	-2.40
3192.500000	49.77	68.20	18.43	150.0	V	30.0	-0.36
6027.000000	51.01	68.20	17.19	150.0	V	23.0	7.27
7779.500000	38.80	68.20	29.40	150.0	V	164.0	5.89

18GHz-40GHz



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
19698.812500	39.17	74.00	34.83	150.0	H	15.0	-4.12
21686.375000	40.26	74.00	33.74	150.0	H	109.0	-1.76
25741.250000	41.12	74.00	32.88	150.0	H	155.0	0.87
29554.812500	42.81	74.00	31.19	150.0	H	15.0	0.62



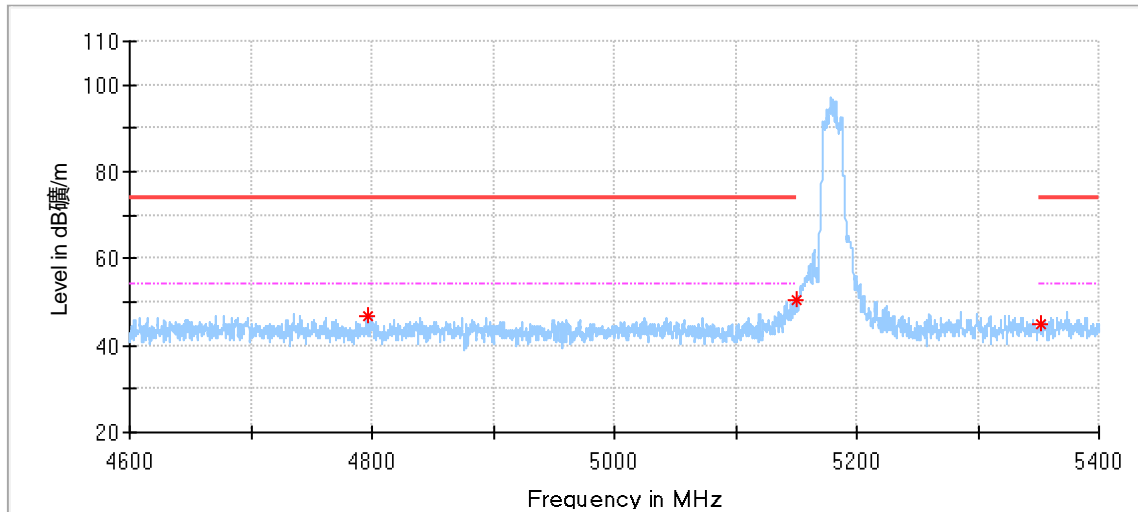
Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18134.062500	39.52	74.00	34.48	150.0	V	295.0	-4.73
20882.687500	39.77	74.00	34.23	150.0	V	109.0	-2.57
24370.375000	41.18	74.00	32.82	150.0	V	217.0	-0.18
27434.562500	41.54	74.00	32.46	150.0	V	109.0	0.97

Remark:

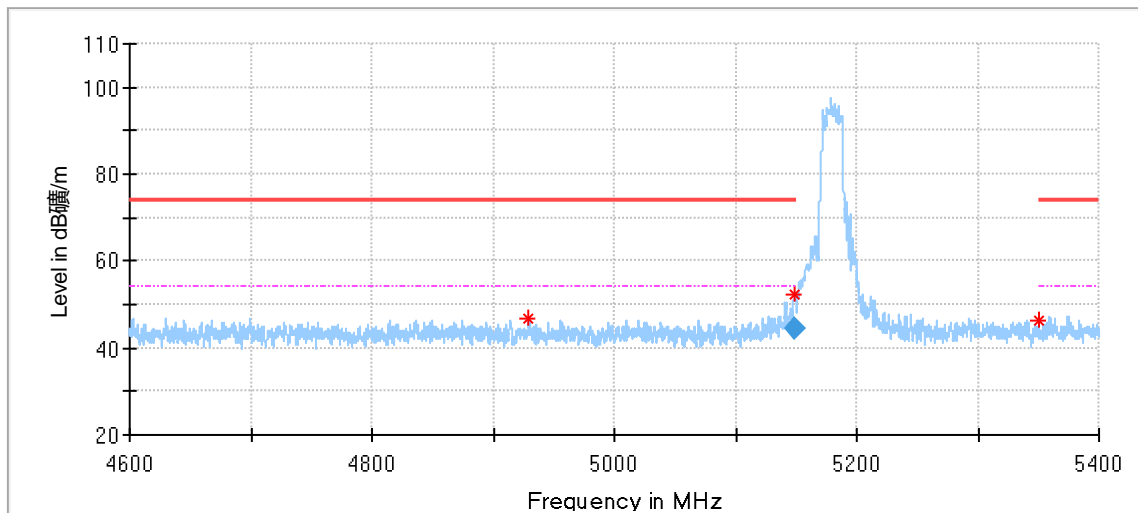
- (1) "*" means the emission(s) appear within the restrict bands shall follow the requirement of § 15.205.
- (2) Level= Reading Level + Correction Factor
- (3) Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain
 Below 1GHz: Corrector factor = Antenna Factor + Cable Loss
 (The Reading Level is recorded by software which is not shown in the sheet)

Restricted-band band-edge test result:
802.11a Modulation 5180MHz



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4796.466667	46.60	74.00	27.40	150.0	H	98.0	3.15
5150.000000	50.59	74.00	23.41	150.0	H	12.0	3.67
5351.866667	44.89	74.00	29.11	150.0	H	304.0	4.26



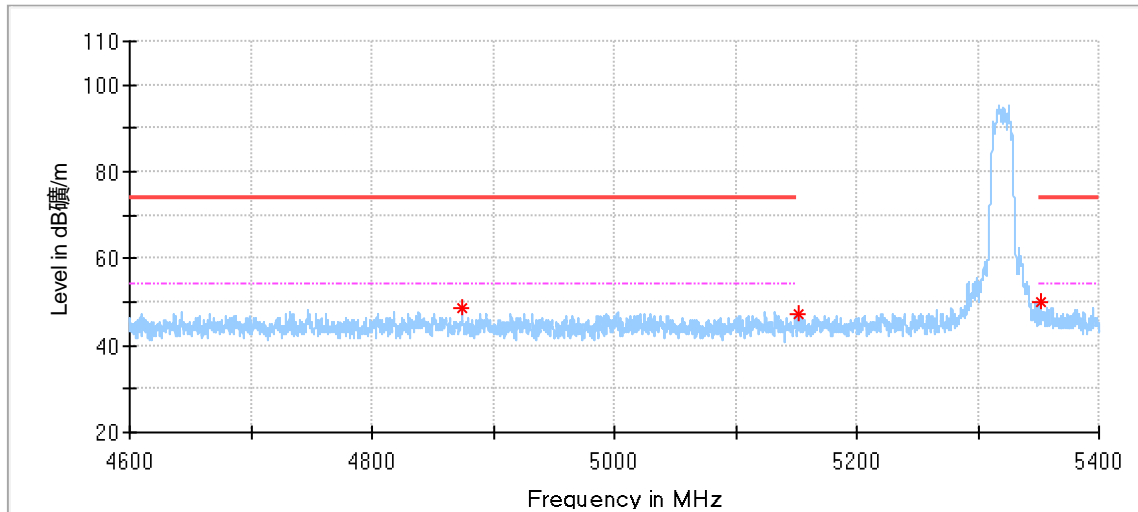
Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4929.666667	46.66	74.00	27.34	150.0	V	203.0	3.33
5149.000000	52.35	74.00	21.65	150.0	V	20.0	3.66
5350.800000	46.30	74.00	27.70	150.0	V	49.0	4.26

Final Result

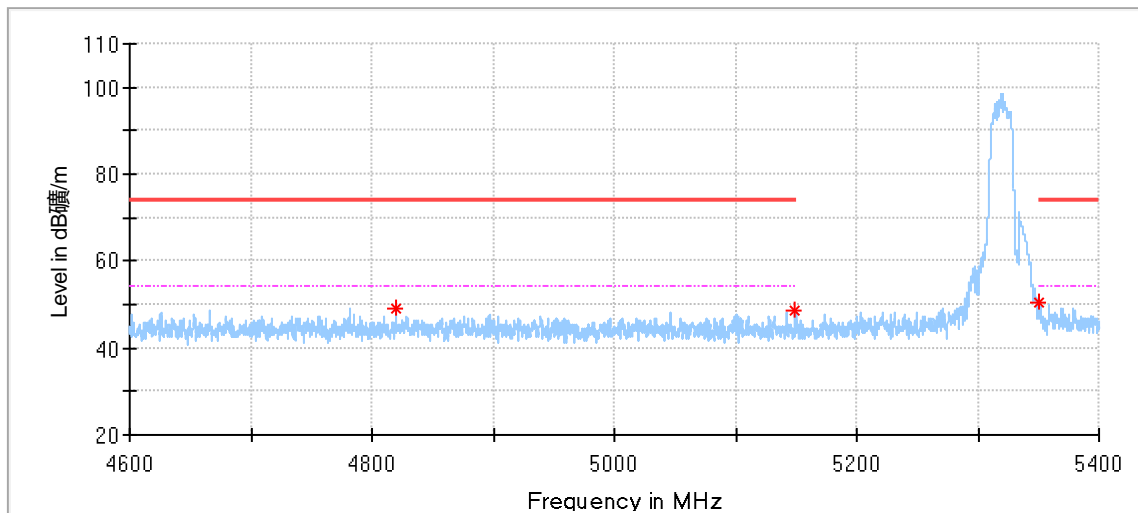
Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5149.000000	44.41	54.00	9.59	150.0	V	20.0	3.66

802.11a Modulation 5320MHz



Critical Freqs

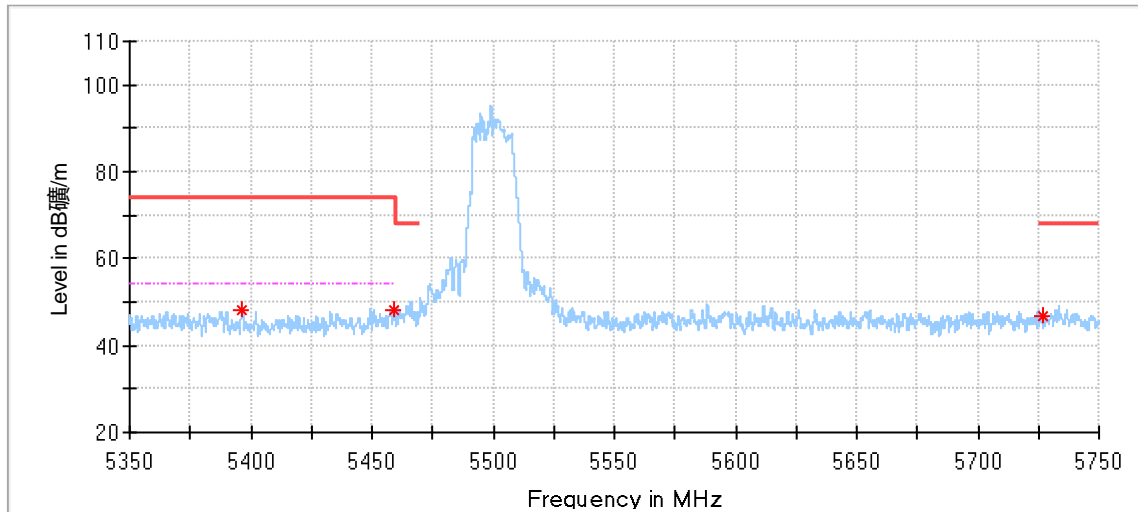
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4874.066667	48.45	74.00	25.55	150.0	H	149.0	3.29
5152.666667	47.07	---	---	150.0	H	289.0	3.68
5351.600000	49.80	74.00	24.20	150.0	H	260.0	4.26



Critical Freqs

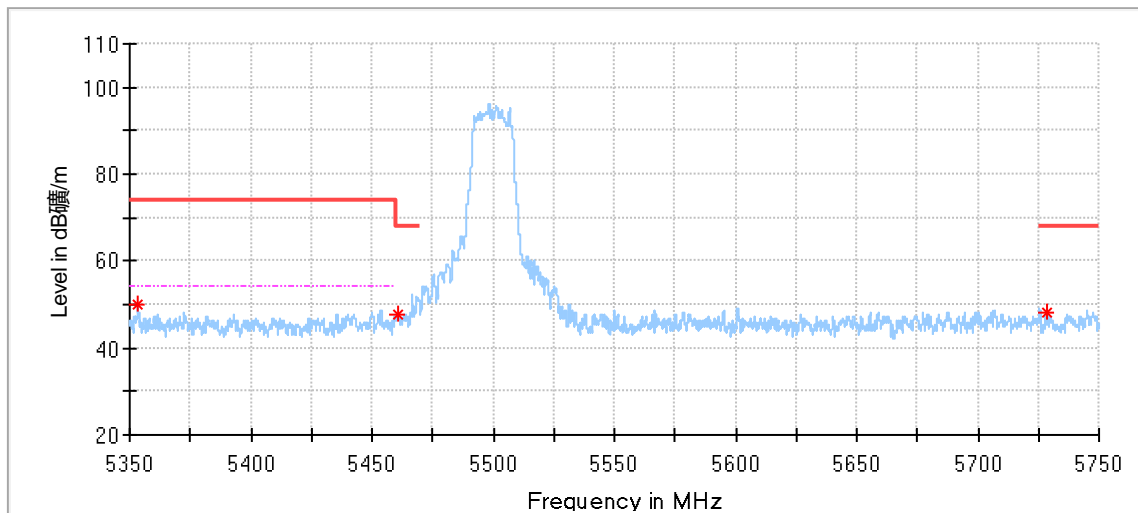
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4819.933333	48.97	74.00	25.03	150.0	V	42.0	3.18
5149.400000	48.43	74.00	25.57	150.0	V	211.0	3.66
5350.800000	50.32	74.00	23.68	150.0	V	166.0	4.26

802.11a Modulation 5500MHz



Critical Freqs

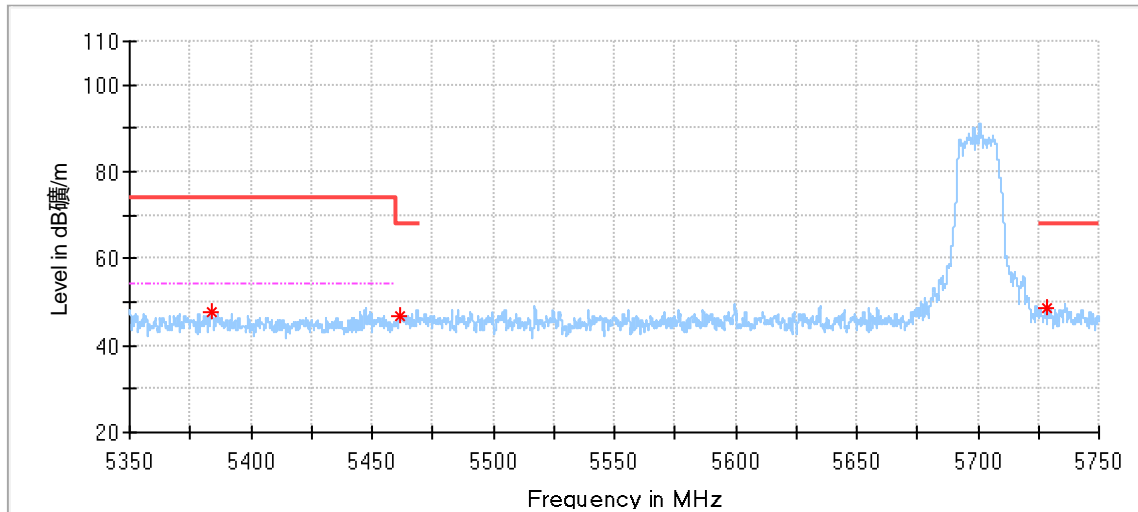
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5396.433333	48.10	74.00	25.90	150.0	H	355.0	4.34
5459.300000	48.21	74.00	25.79	150.0	H	222.0	4.77
5727.266667	46.80	68.20	21.40	150.0	H	344.0	4.80



Critical Freqs

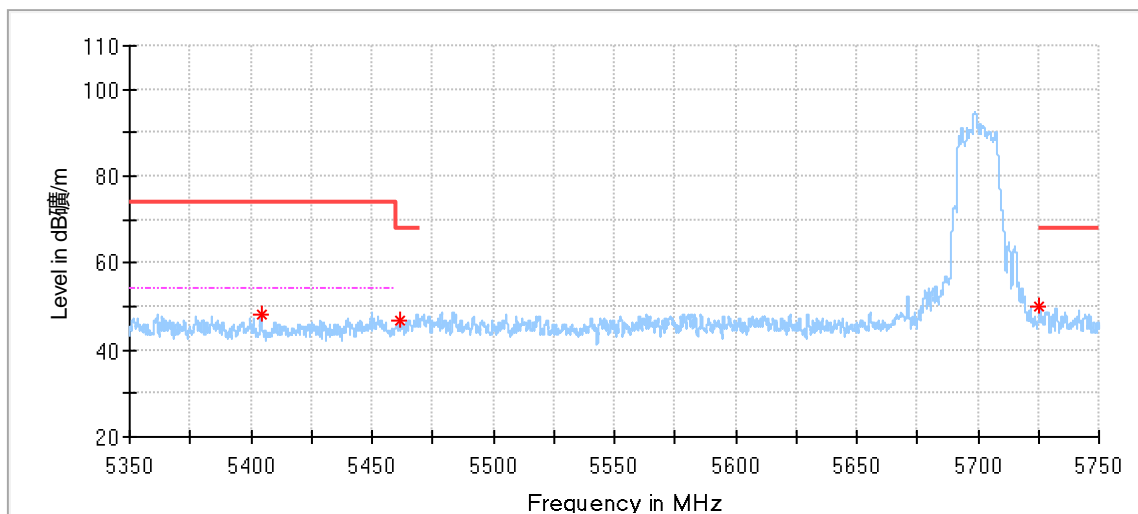
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5353.466667	49.93	74.00	24.07	150.0	V	163.0	4.26
5460.833333	47.57	68.20	20.63	150.0	V	29.0	4.79
5728.633333	48.09	68.20	20.11	150.0	V	168.0	4.80

802.11a Modulation 5700MHz



Critical Freqs

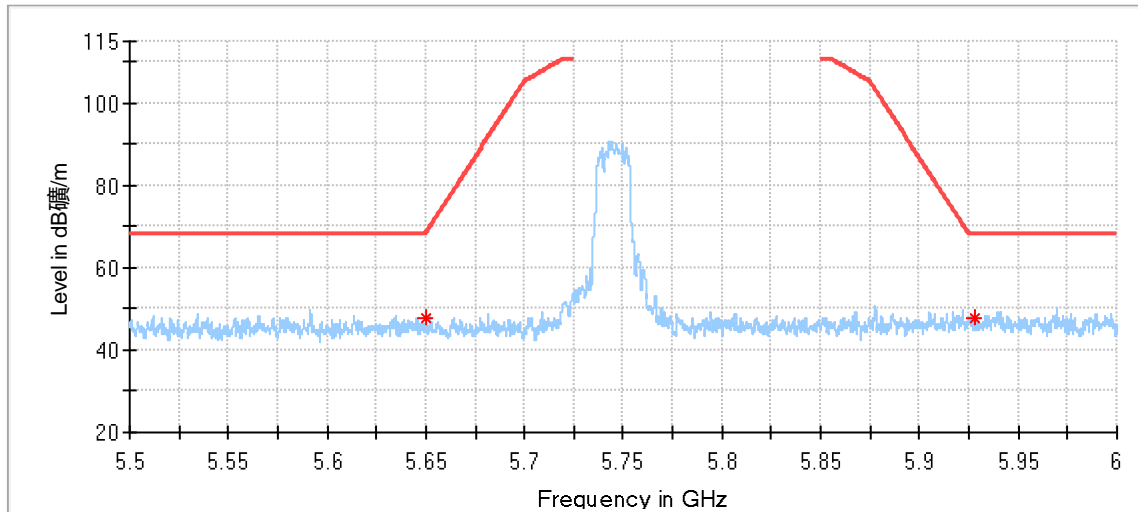
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5383.733333	47.59	74.00	26.41	150.0	H	119.0	4.29
5461.366667	46.86	68.20	21.34	150.0	H	305.0	4.79
5728.866667	48.60	68.20	19.60	150.0	H	124.0	4.80



Critical Freqs

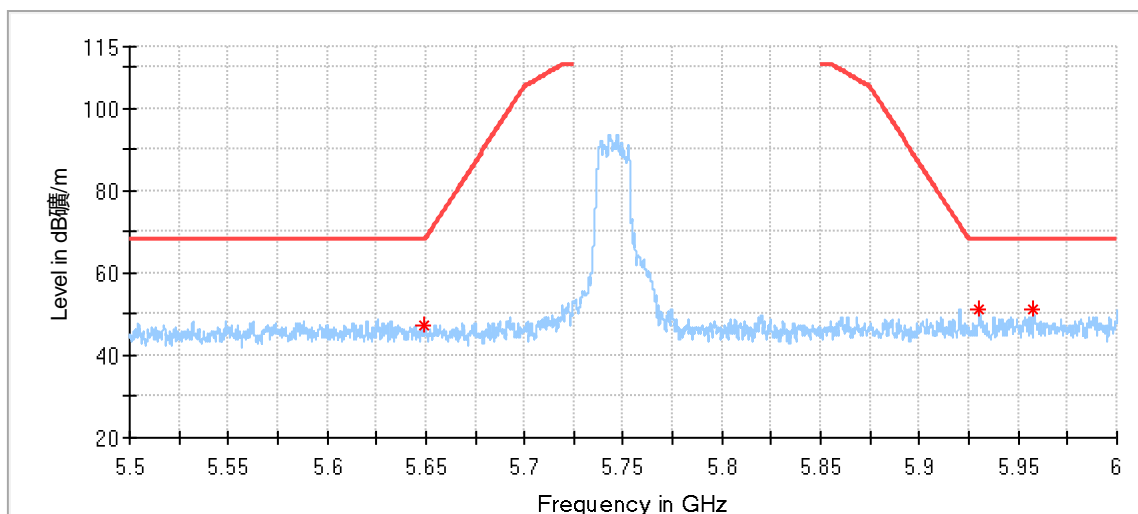
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5404.400000	48.16	74.00	25.84	150.0	V	138.0	4.37
5461.466667	46.61	68.20	21.59	150.0	V	55.0	4.79
5725.366667	50.12	68.20	18.08	150.0	V	167.0	4.80

802.11a Modulation 5745MHz



Critical_Freqs

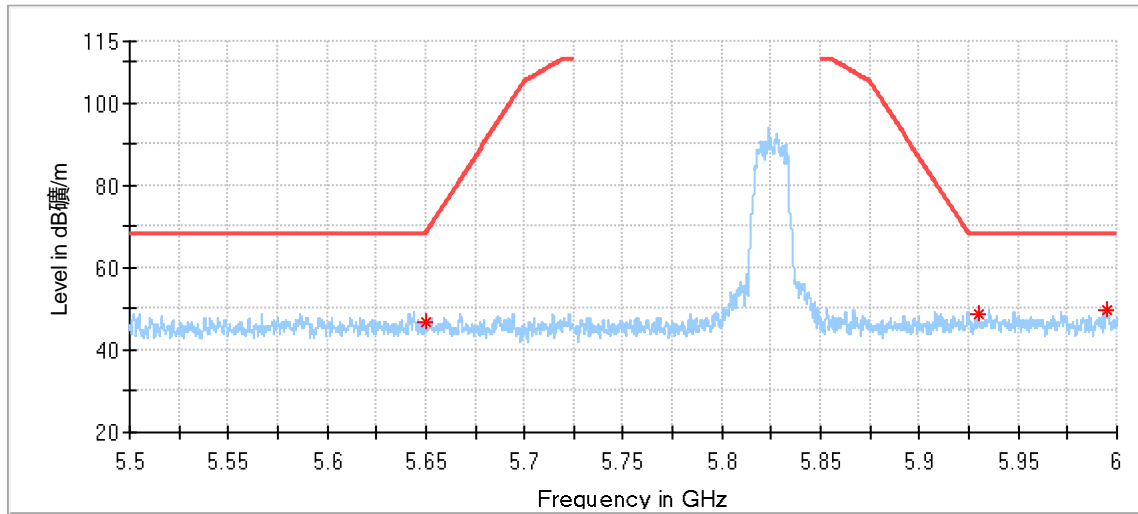
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5649.958333	47.75	68.20	20.45	150.0	H	319.0	4.73
5928.166667	47.76	68.20	20.44	150.0	H	203.0	5.68



Critical_Freqs

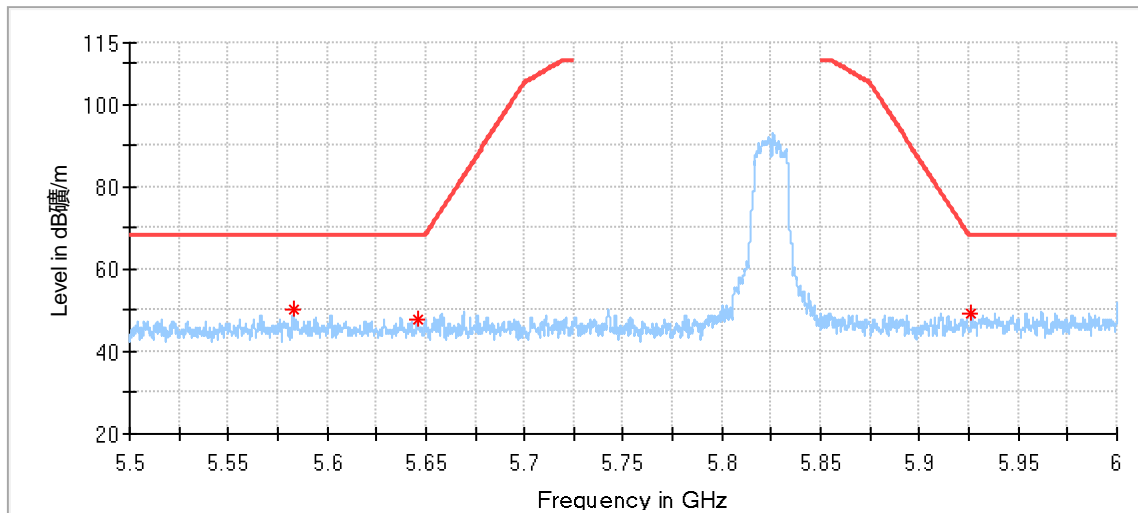
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5649.166667	47.07	68.20	21.13	150.0	V	221.0	4.73
5930.166667	51.01	68.20	17.19	150.0	V	236.0	5.68
5957.625000	51.27	68.20	16.93	150.0	V	280.0	5.76

802.11a Modulation 5825MHz



Critical Freqs

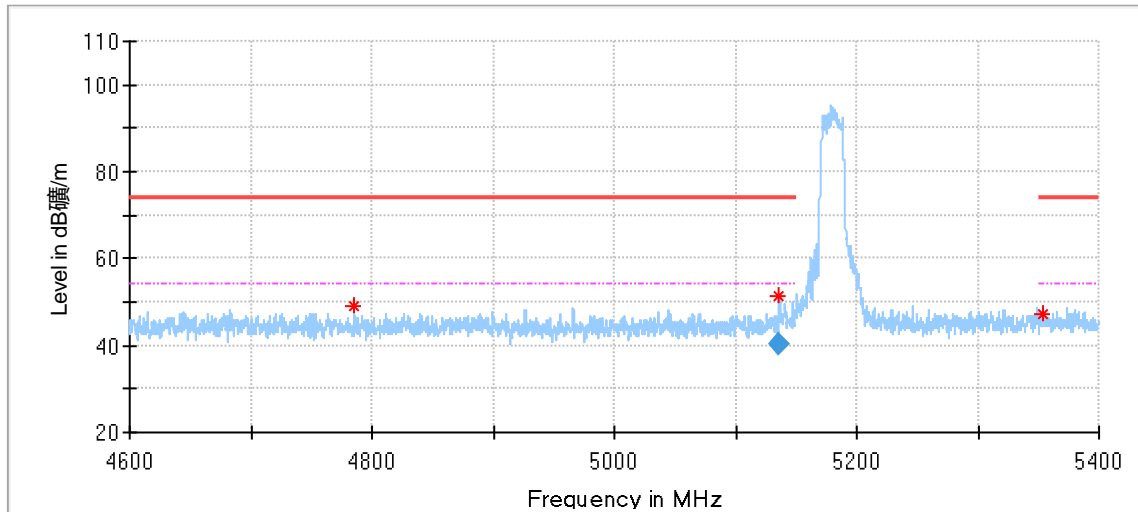
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5649.875000	46.97	68.20	21.23	150.0	H	335.0	4.73
5929.958333	48.89	68.20	19.31	150.0	H	87.0	5.68
5994.666667	49.85	68.20	18.35	150.0	H	0.0	5.91



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5583.000000	50.03	68.20	18.17	150.0	V	0.0	4.70
5645.833333	47.54	68.20	20.66	150.0	V	56.0	4.73
5926.375000	49.20	68.20	19.00	150.0	V	4.0	5.67

802.11ac VHT20 Modulation 5180MHz

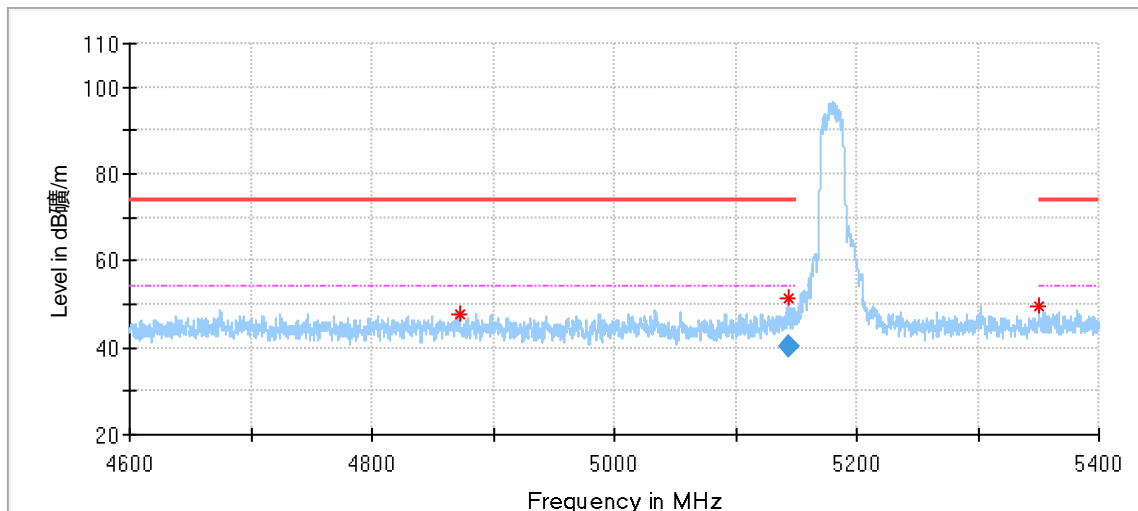


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4785.533333	49.07	74.00	24.93	150.0	H	284.0	3.19
5136.333333	51.26	74.00	22.74	150.0	H	30.0	3.66
5354.133333	47.05	74.00	26.95	150.0	H	125.0	4.26

Final_Result

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5136.333333	40.48	54.00	13.52	150.0	H	30.0	3.66



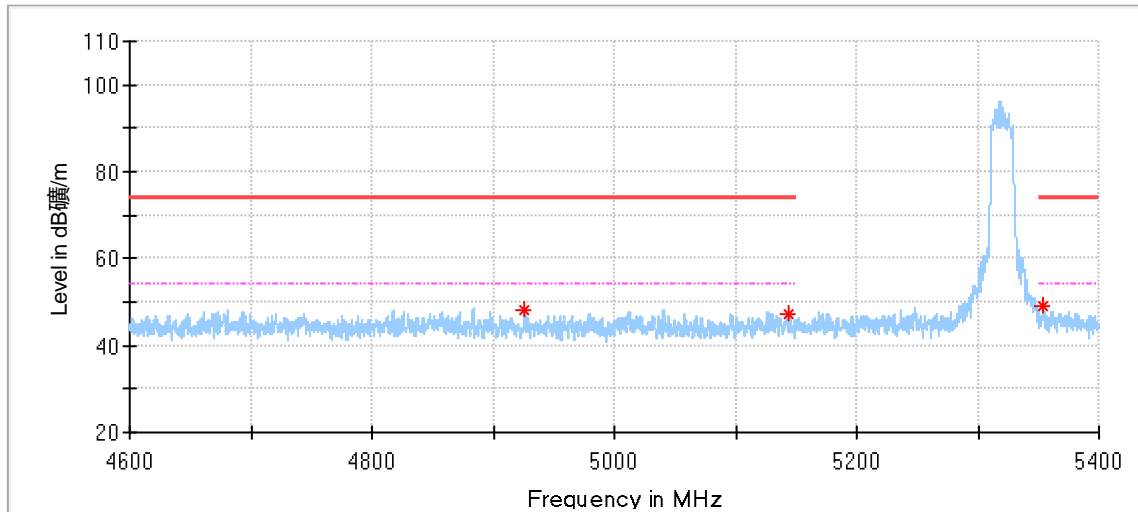
Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4872.533333	47.63	74.00	26.37	150.0	V	164.0	3.29
5143.333333	51.35	74.00	22.65	150.0	V	98.0	3.66
5350.400000	49.54	74.00	24.46	150.0	V	260.0	4.26

Final_Result

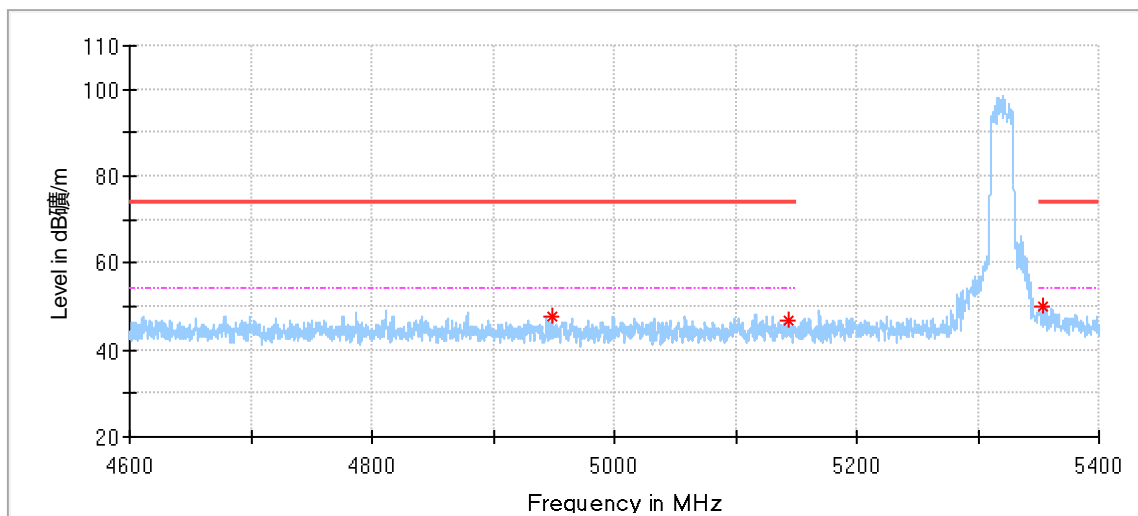
Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5143.333333	40.26	54.00	13.74	150.0	V	98.0	3.66

802.11ac VHT20 Modulation 5320MHz



Critical Freqs

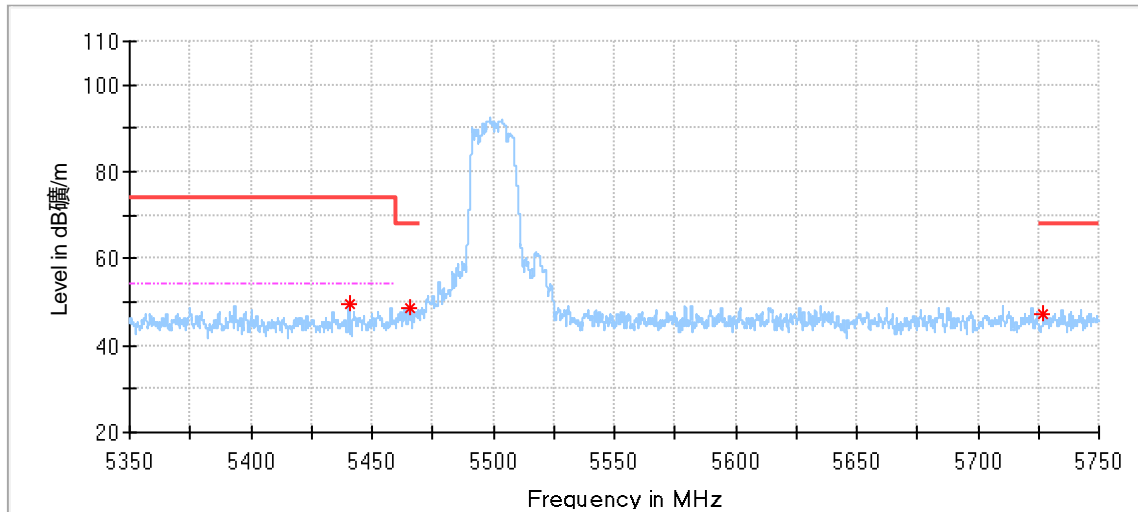
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4926.400000	48.34	74.00	25.66	150.0	H	22.0	3.33
5144.066667	47.11	74.00	26.89	150.0	H	105.0	3.66
5353.466667	49.30	74.00	24.70	150.0	H	245.0	4.26



Critical Freqs

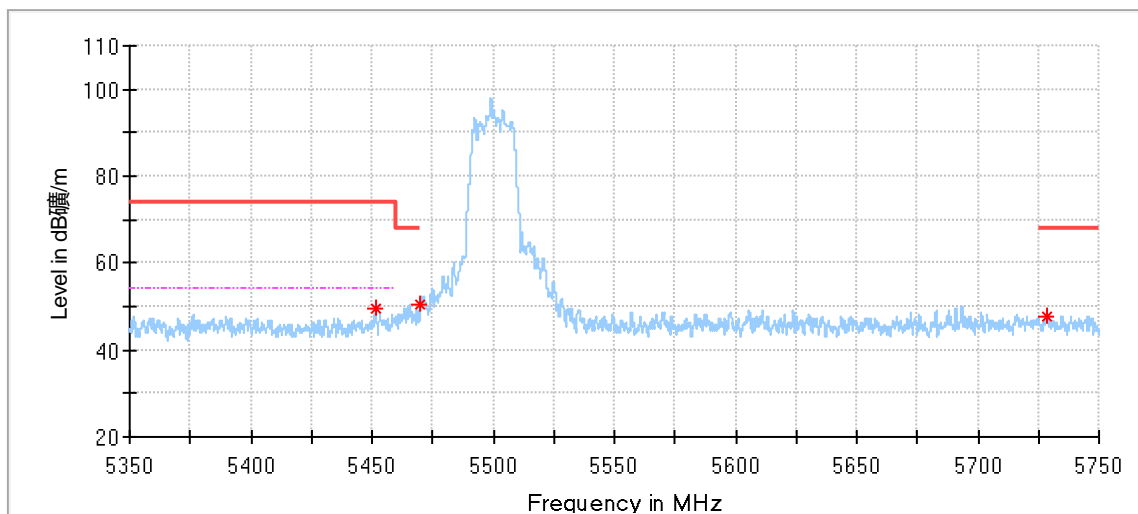
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4948.800000	47.84	74.00	26.16	150.0	V	359.0	3.29
5143.533333	46.55	74.00	27.45	150.0	V	87.0	3.66
5353.266667	50.11	74.00	23.89	150.0	V	241.0	4.26

802.11ac VHT20 Modulation 5500MHz



Critical Freqs

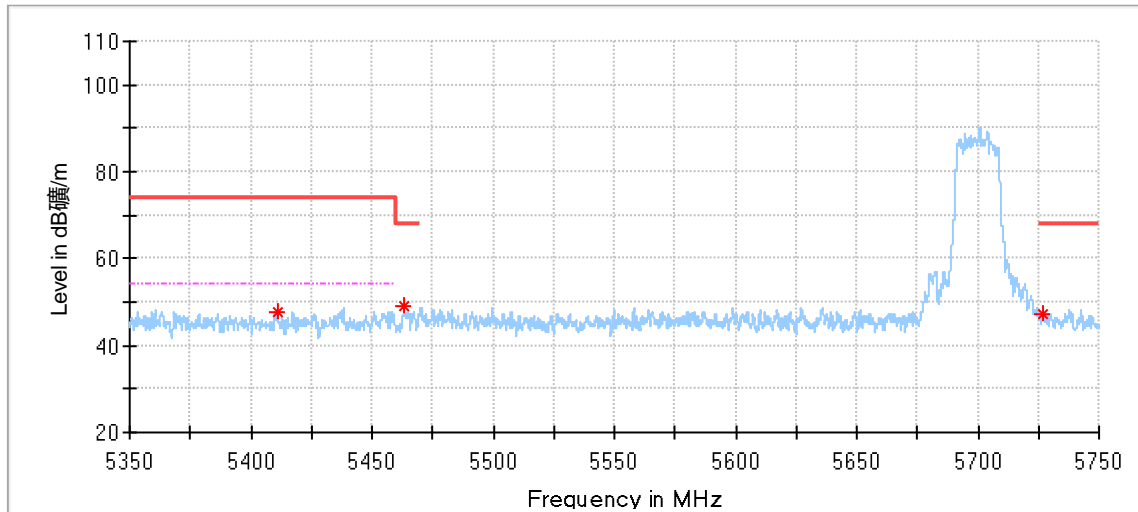
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5440.566667	49.41	74.00	24.59	150.0	H	298.0	4.58
5465.466667	48.58	68.20	19.62	150.0	H	180.0	4.83
5727.033333	47.36	68.20	20.84	150.0	H	242.0	4.80



Critical Freqs

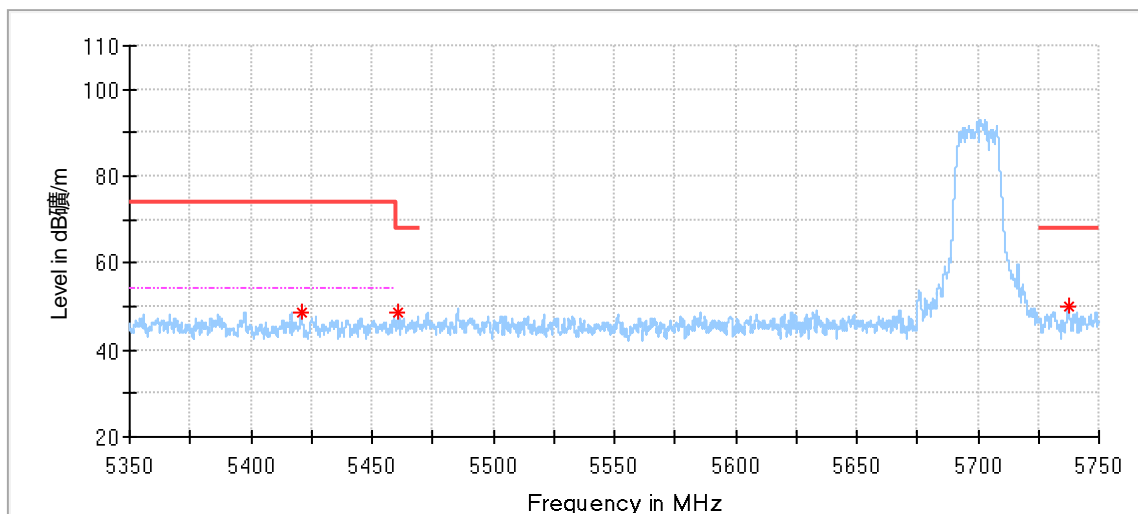
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5451.533333	49.38	74.00	24.62	150.0	V	103.0	4.69
5469.966667	50.56	68.20	17.64	150.0	V	231.0	4.88
5728.466667	47.85	68.20	20.35	150.0	V	195.0	4.80

802.11ac VHT20 Modulation 5700MHz



Critical Freqs

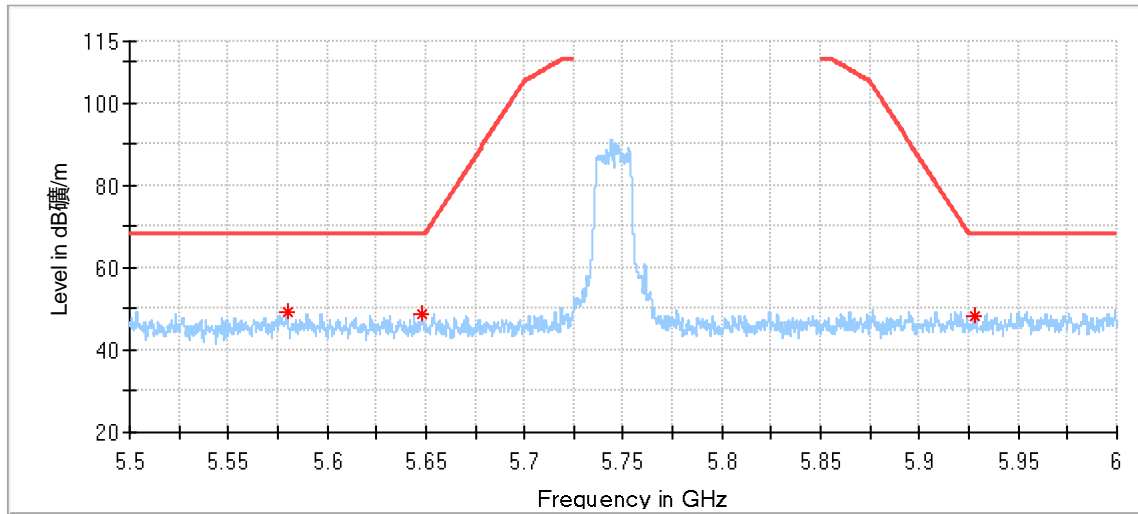
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5411.166667	47.59	74.00	26.41	150.0	H	0.0	4.39
5463.166667	49.01	68.20	19.19	150.0	H	53.0	4.81
5726.866667	47.06	68.20	21.14	150.0	H	107.0	4.80



Critical Freqs

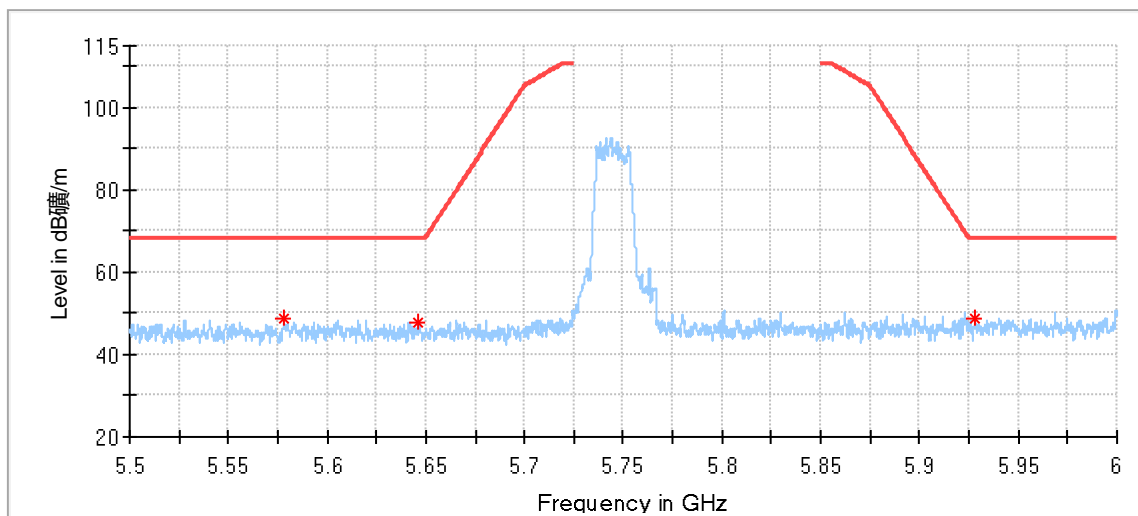
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5420.833333	48.57	74.00	25.43	150.0	V	299.0	4.42
5460.733333	48.41	68.20	19.79	150.0	V	212.0	4.79
5737.400000	49.80	68.20	18.40	150.0	V	342.0	4.81

802.11ac VHT20 Modulation 5745MHz



Critical Freqs

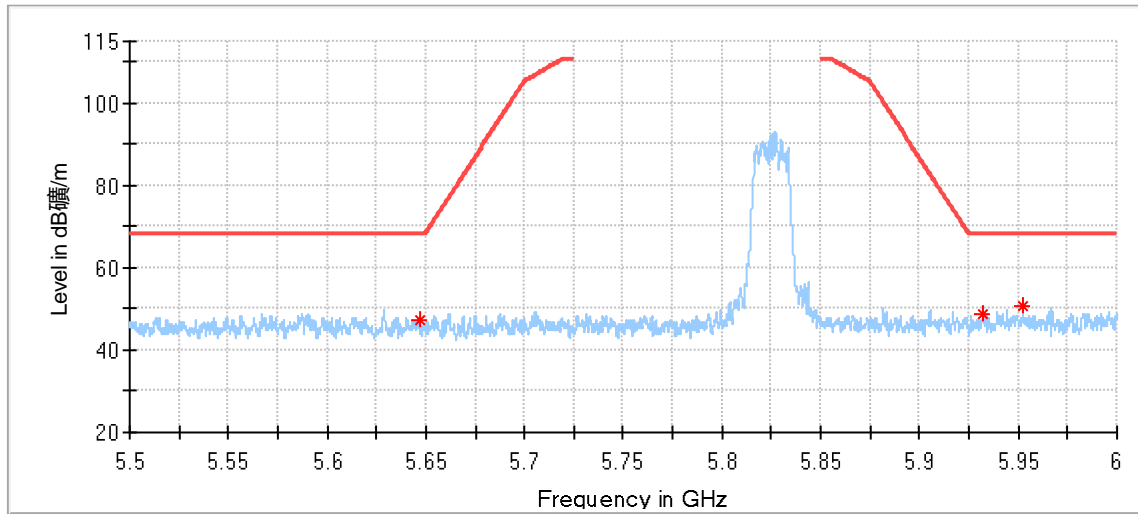
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5579.833333	49.13	68.20	19.07	150.0	H	202.0	4.69
5648.000000	48.58	68.20	19.62	150.0	H	342.0	4.73
5928.375000	48.36	68.20	19.84	150.0	H	347.0	5.68



Critical Freqs

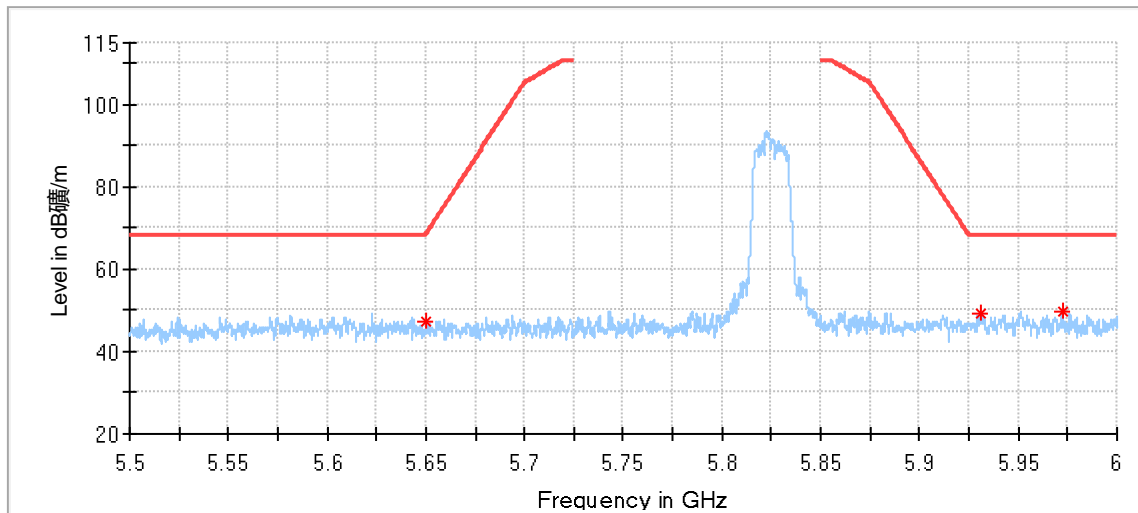
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5578.125000	48.71	68.20	19.49	150.0	V	78.0	4.69
5646.541667	47.75	68.20	20.45	150.0	V	64.0	4.73
5928.083333	48.83	68.20	19.37	150.0	V	271.0	5.68

802.11ac VHT20 Modulation 5825MHz



Critical Freqs

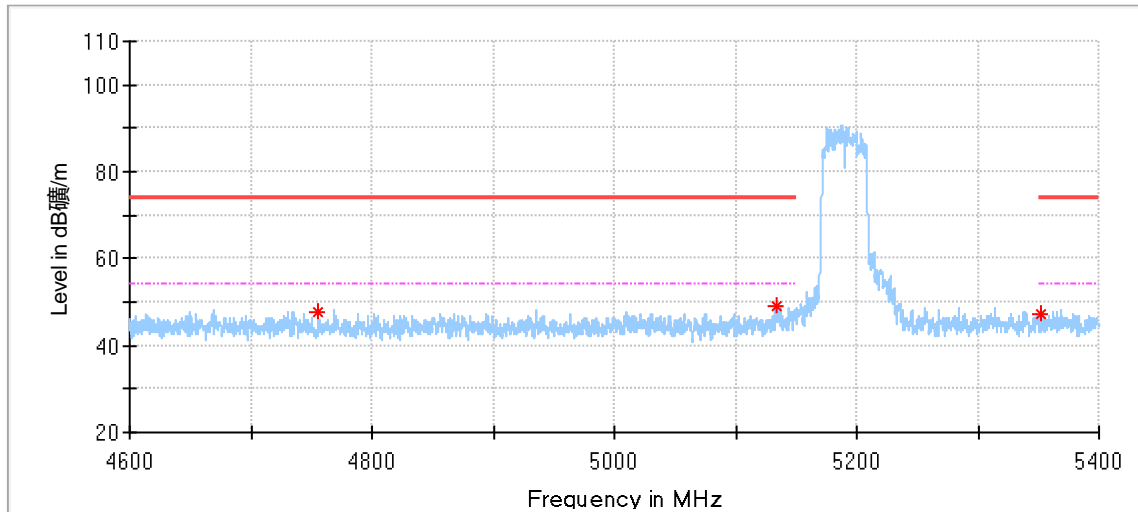
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5646.916667	47.49	68.20	20.71	150.0	H	86.0	4.73
5931.833333	48.62	68.20	19.58	150.0	H	34.0	5.69
5952.250000	50.60	68.20	17.60	150.0	H	56.0	5.74



Critical Freqs

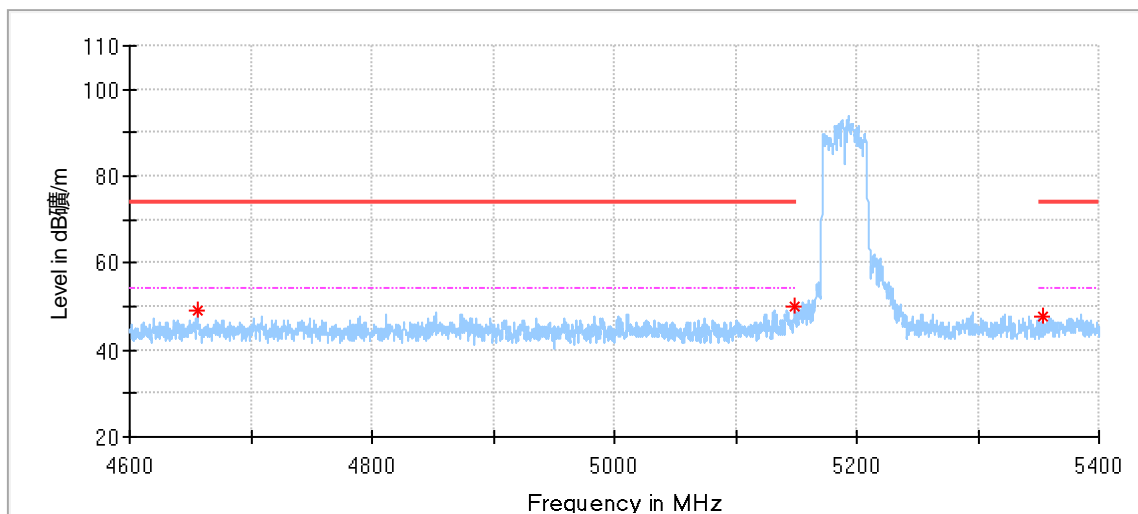
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5650.000000	47.07	68.20	21.13	150.0	V	114.0	4.73
5931.125000	49.18	68.20	19.02	150.0	V	107.0	5.69
5972.125000	49.69	68.20	18.51	150.0	V	291.0	5.82

802.11ac VHT40 Modulation 5190MHz



Critical Freqs

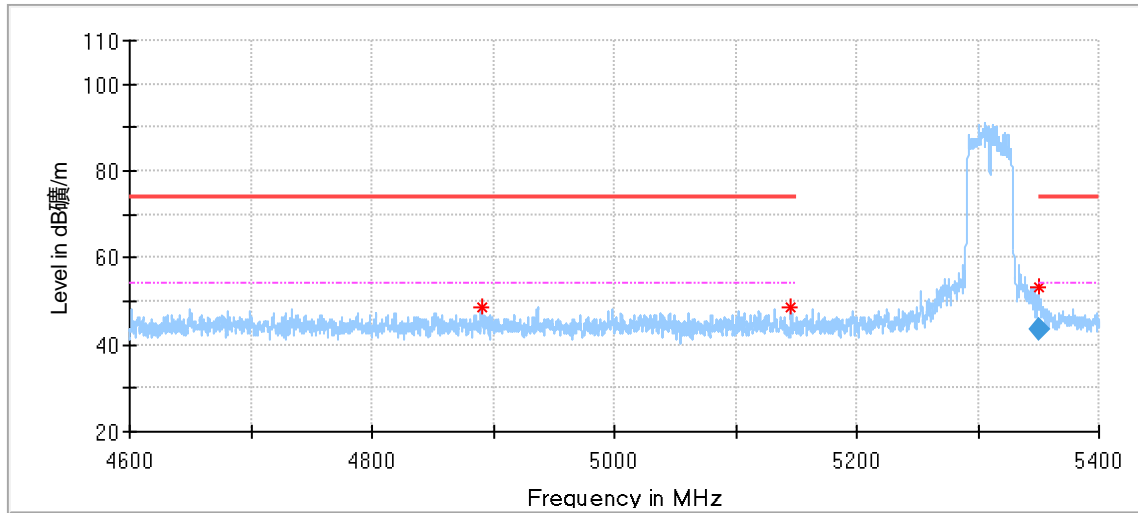
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4755.200000	47.68	74.00	26.32	150.0	H	4.0	3.29
5133.200000	49.12	74.00	24.88	150.0	H	27.0	3.66
5352.666667	47.33	74.00	26.67	150.0	H	0.0	4.26



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4655.800000	49.24	74.00	24.76	150.0	V	231.0	3.29
5148.666667	49.84	74.00	24.16	150.0	V	271.0	3.66
5353.800000	47.83	74.00	26.17	150.0	V	271.0	4.26

802.11ac VHT40 Modulation 5310MHz

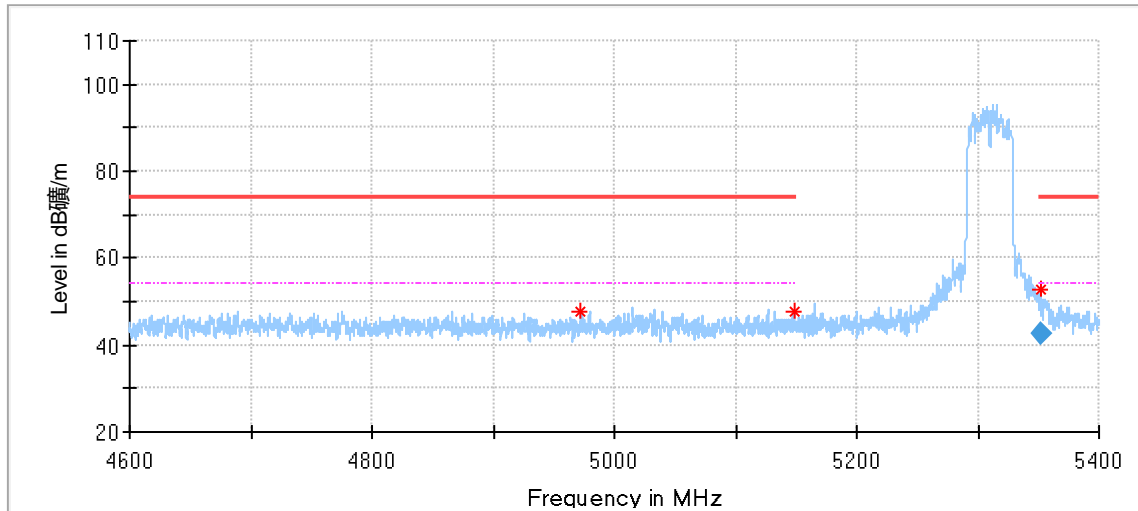


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4890.266667	48.43	74.00	25.57	150.0	H	93.0	3.30
5145.533333	48.60	74.00	25.40	150.0	H	27.0	3.66
5350.066667	53.11	74.00	20.89	150.0	H	199.0	4.26

Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5350.066667	43.42	54.00	11.58	150.0	H	199.0	4.26



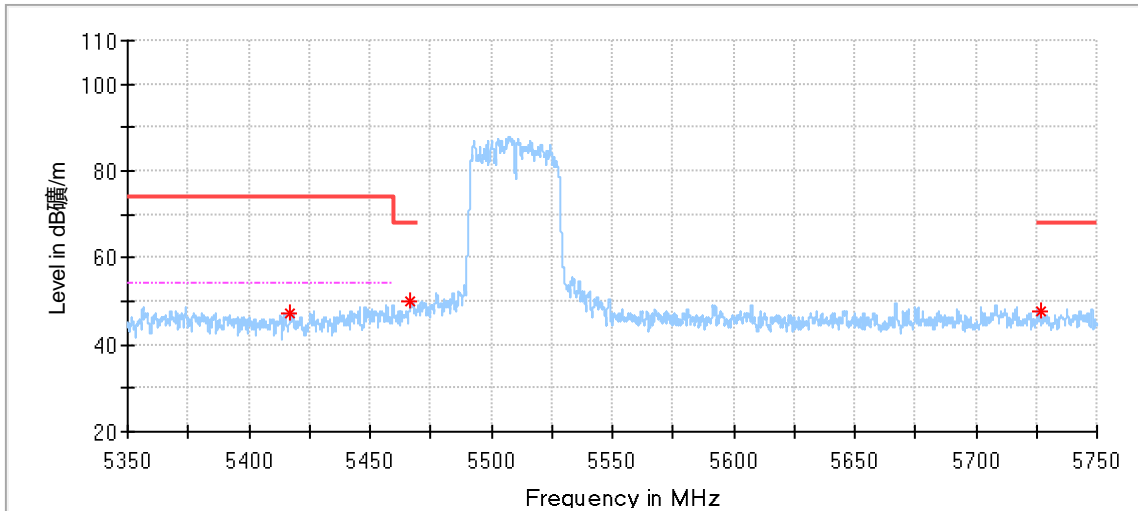
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4972.533333	47.68	74.00	26.32	150.0	V	186.0	3.31
5148.133333	47.62	74.00	26.38	150.0	V	95.0	3.66
5351.533333	52.58	74.00	21.42	150.0	V	252.0	4.26

Final_Result

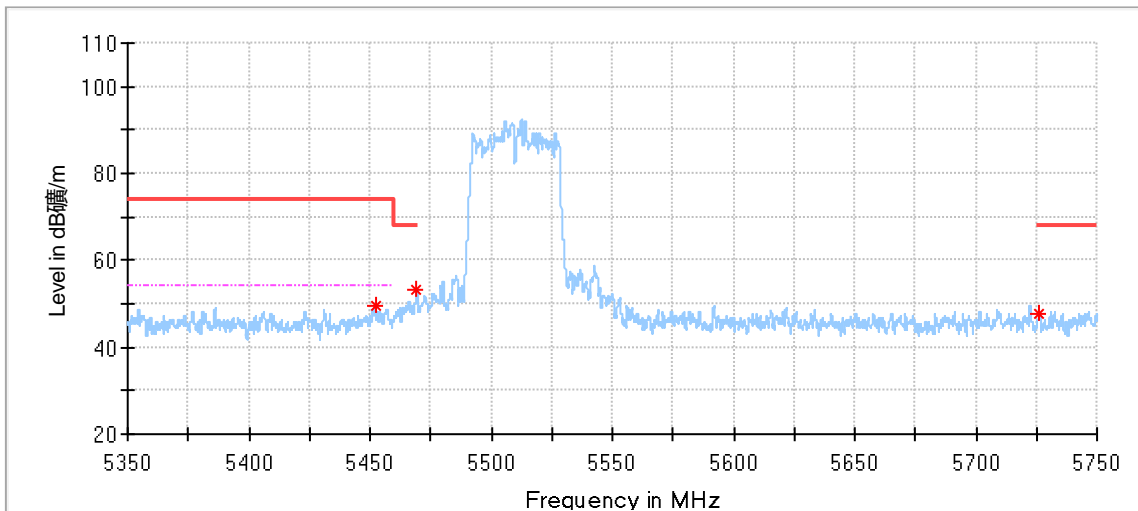
Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5351.533333	42.79	54.00	11.21	150.0	V	252.0	4.26

802.11ac VHT40 Modulation 5510MHz



Critical Freqs

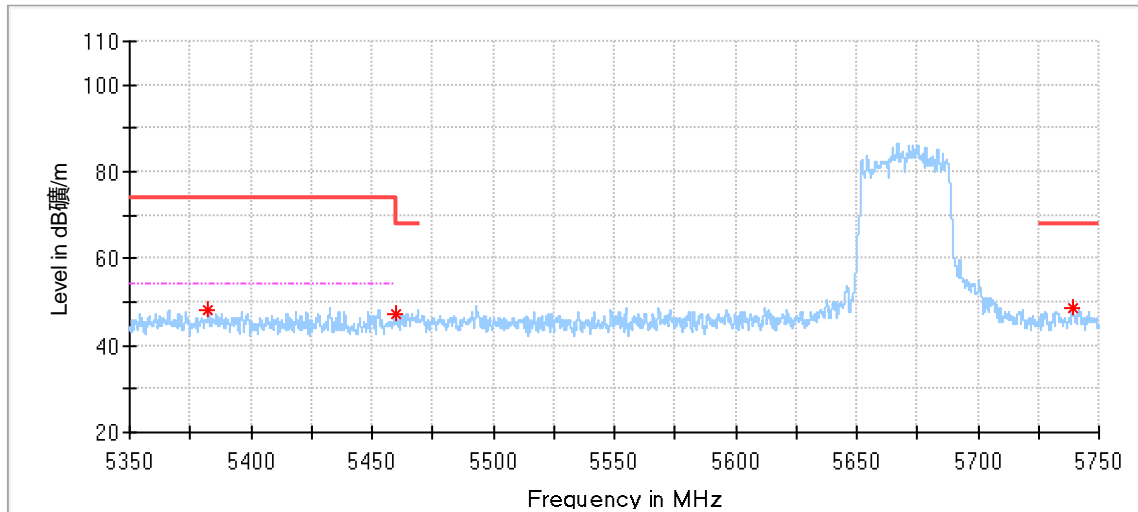
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5416.900000	47.37	74.00	26.63	150.0	H	81.0	4.41
5466.500000	49.92	68.20	18.28	150.0	H	215.0	4.84
5726.500000	47.68	68.20	20.52	150.0	H	23.0	4.80



Critical Freqs

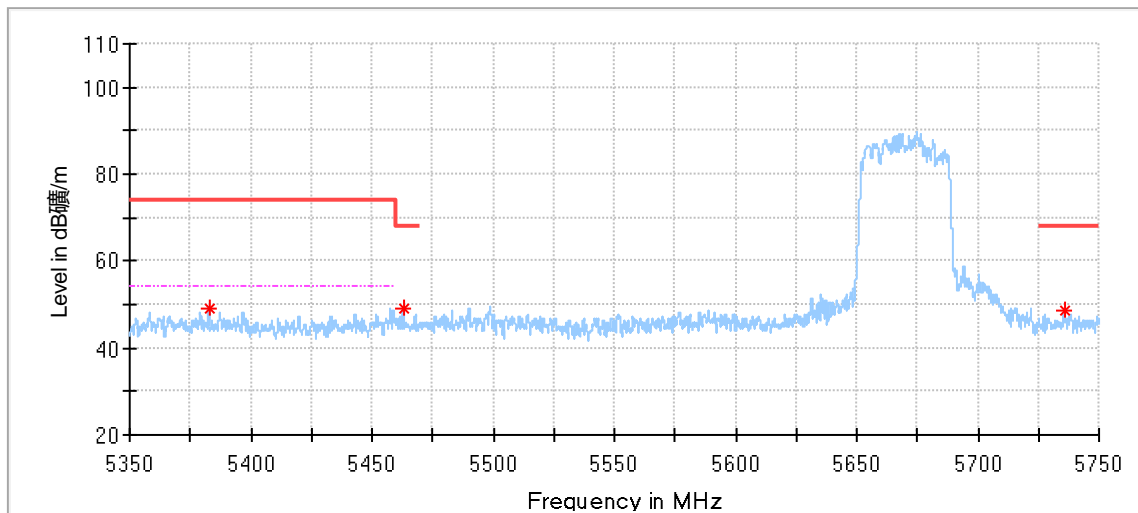
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5452.066667	49.43	74.00	24.57	150.0	V	103.0	4.70
5469.366667	53.08	68.20	15.12	150.0	V	234.0	4.87
5726.200000	47.71	68.20	20.49	150.0	V	4.0	4.80

802.11ac VHT40 Modulation 5670MHz



Critical Freqs

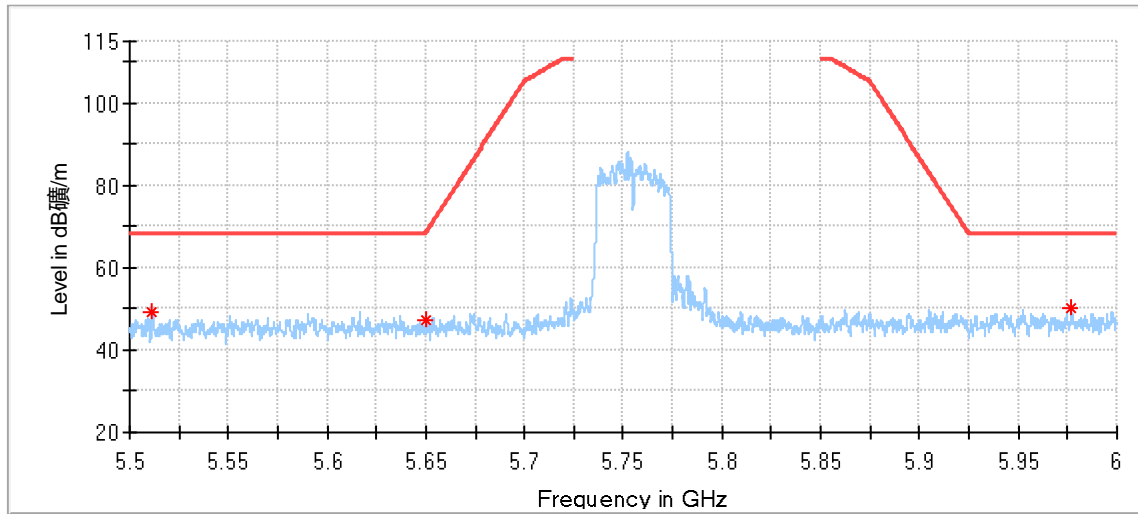
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5382.400000	48.28	74.00	25.72	150.0	H	0.0	4.29
5459.966667	47.11	74.00	26.89	150.0	H	200.0	4.78
5739.033333	48.45	68.20	19.75	150.0	H	84.0	4.82



Critical Freqs

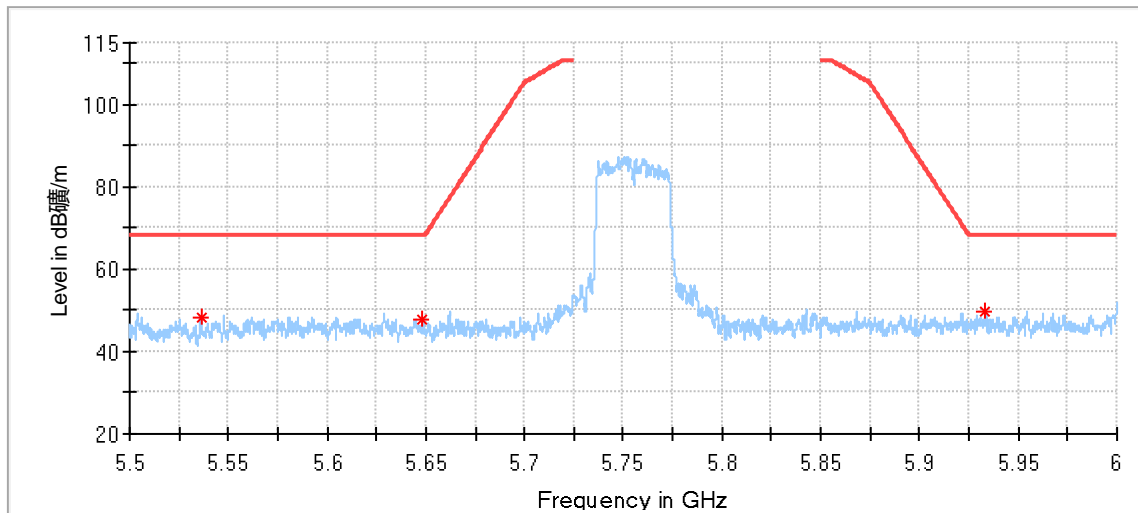
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5382.733333	49.10	74.00	24.90	150.0	V	186.0	4.29
5462.933333	49.12	68.20	19.08	150.0	V	8.0	4.81
5735.733333	48.63	68.20	19.57	150.0	V	276.0	4.81

802.11ac VHT40 Modulation 5755MHz



Critical Freqs

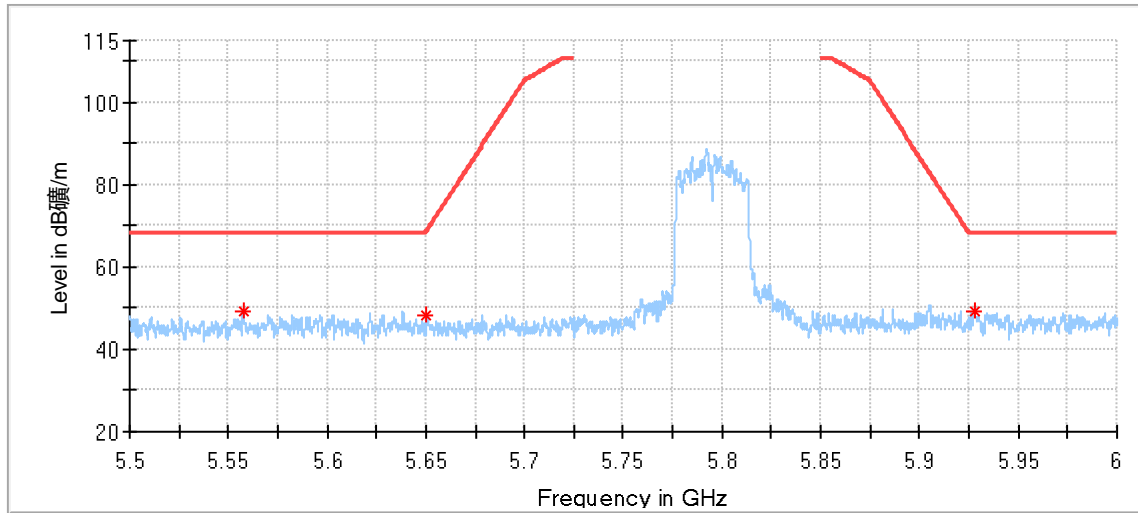
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5511.625000	49.41	68.20	18.79	150.0	H	149.0	4.81
5650.583333	47.32	68.63	21.31	150.0	H	92.0	4.73
5976.875000	50.13	68.20	18.07	150.0	H	278.0	5.84



Critical Freqs

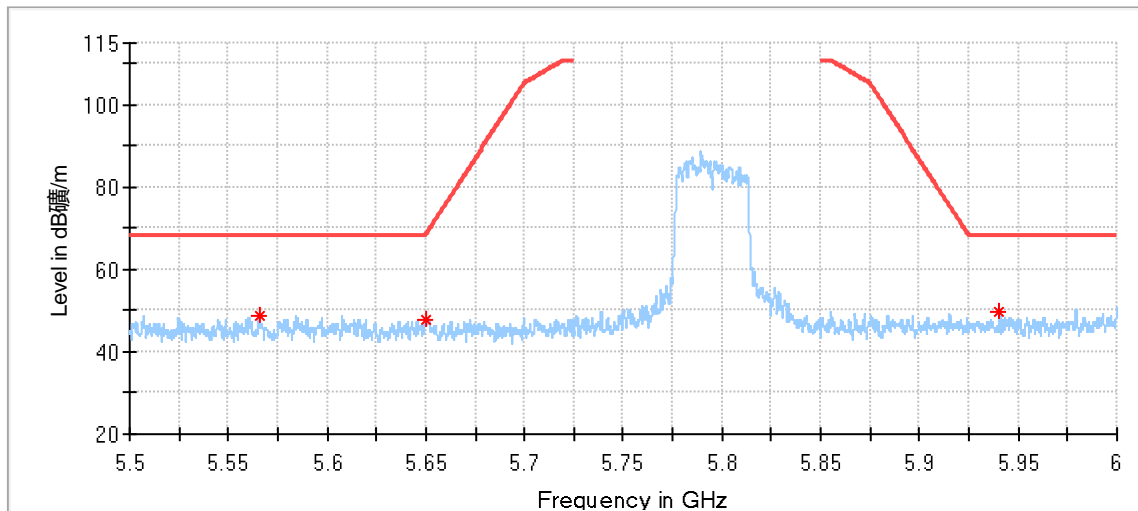
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5536.041667	48.46	68.20	19.74	150.0	V	282.0	4.65
5648.416667	47.76	68.20	20.44	150.0	V	34.0	4.73
5933.375000	49.83	68.20	18.37	150.0	V	174.0	5.69

802.11ac VHT40 Modulation 5795MHz



Critical Freqs

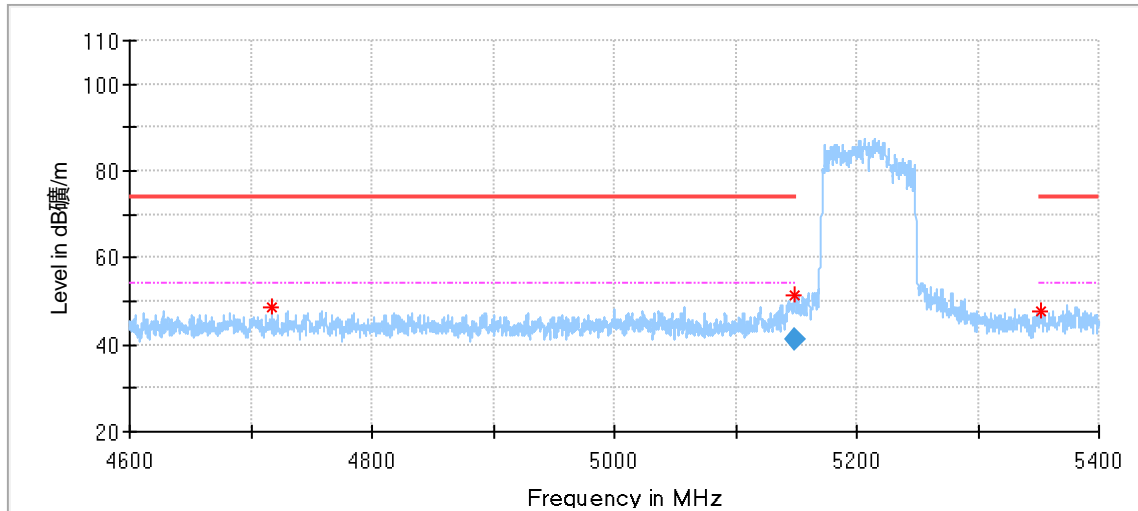
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5557.375000	49.12	68.20	19.08	150.0	H	100.0	4.67
5650.000000	48.25	68.20	19.95	150.0	H	0.0	4.73
5927.833333	49.40	68.20	18.80	150.0	H	166.0	5.68



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5565.458333	48.59	68.20	19.61	150.0	V	117.0	4.68
5649.666667	47.82	68.20	20.38	150.0	V	249.0	4.73
5940.458333	49.94	68.20	18.26	150.0	V	242.0	5.71

802.11ac VHT80 Modulation 5210MHz

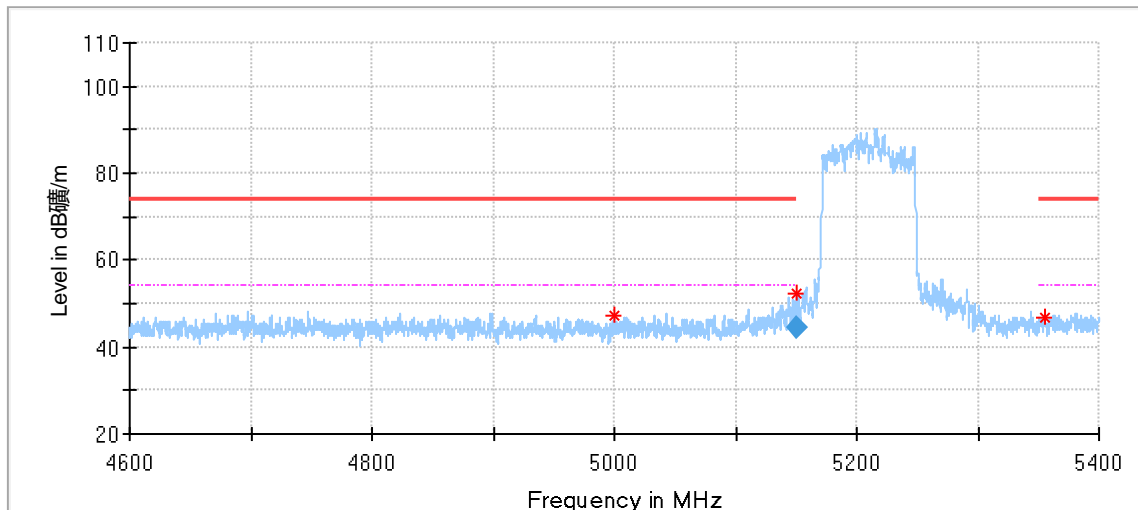


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4717.400000	48.45	74.00	25.55	150.0	H	199.0	3.32
5148.400000	51.46	74.00	22.54	150.0	H	23.0	3.66
5351.600000	47.61	74.00	26.39	150.0	H	309.0	4.26

Final_Result

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5148.400000	41.23	54.00	12.77	150.0	H	23.0	3.66



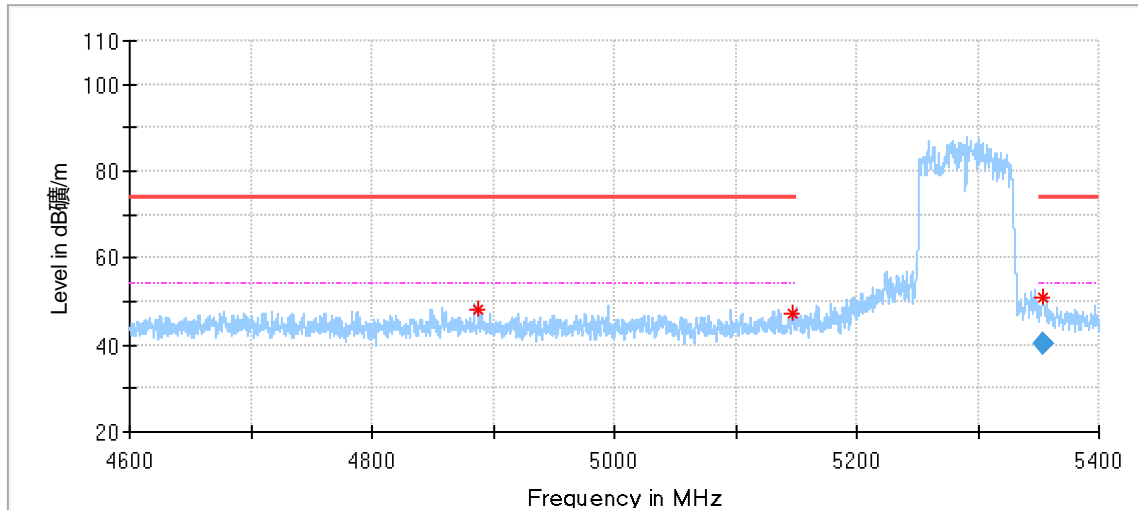
Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4999.333333	47.23	74.00	26.77	150.0	V	16.0	3.43
5150.000000	52.19	74.00	21.81	150.0	V	258.0	3.67
5355.400000	46.84	74.00	27.16	150.0	V	280.0	4.26

Final_Result

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5150.000000	44.59	54.00	9.41	150.0	V	258.0	3.67

802.11ac VHT80 Modulation 5290MHz

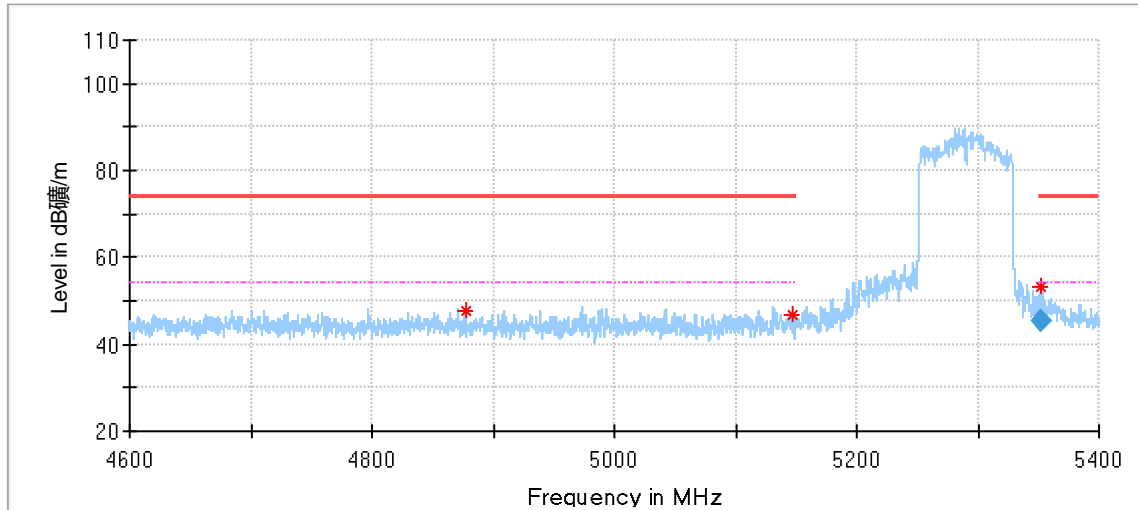


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4888.333333	48.12	74.00	25.88	150.0	H	0.0	3.30
5146.466667	47.35	74.00	26.65	150.0	H	325.0	3.66
5353.333333	51.09	74.00	22.91	150.0	H	266.0	4.26

Final_Result

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5353.333333	40.26	54.00	13.74	150.0	H	266.0	4.26



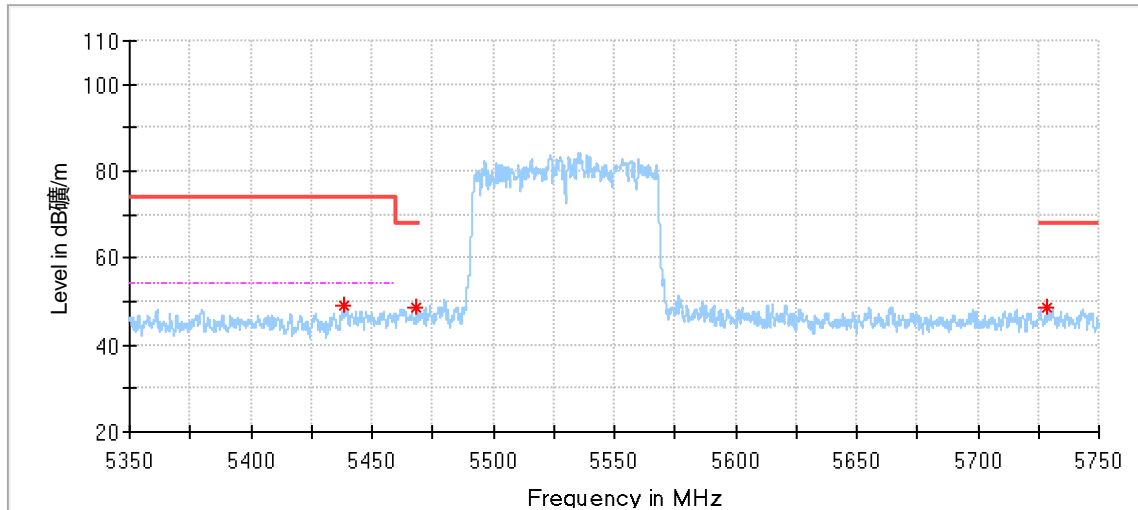
Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4877.000000	47.82	74.00	26.18	150.0	V	10.0	3.29
5147.800000	46.81	74.00	27.19	150.0	V	354.0	3.66
5352.866667	53.02	74.00	20.98	150.0	V	265.0	4.26

Final_Result

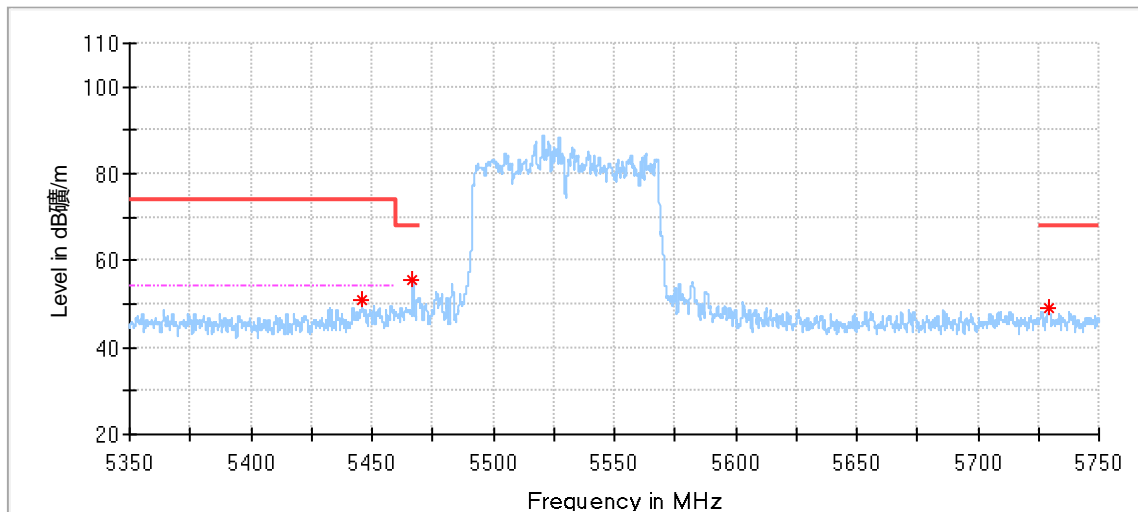
Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5352.866667	45.31	54.00	8.69	150.0	V	265.0	4.26

802.11ac VHT80 Modulation 5530MHz Restricted bandwidth test result



Critical Freqs

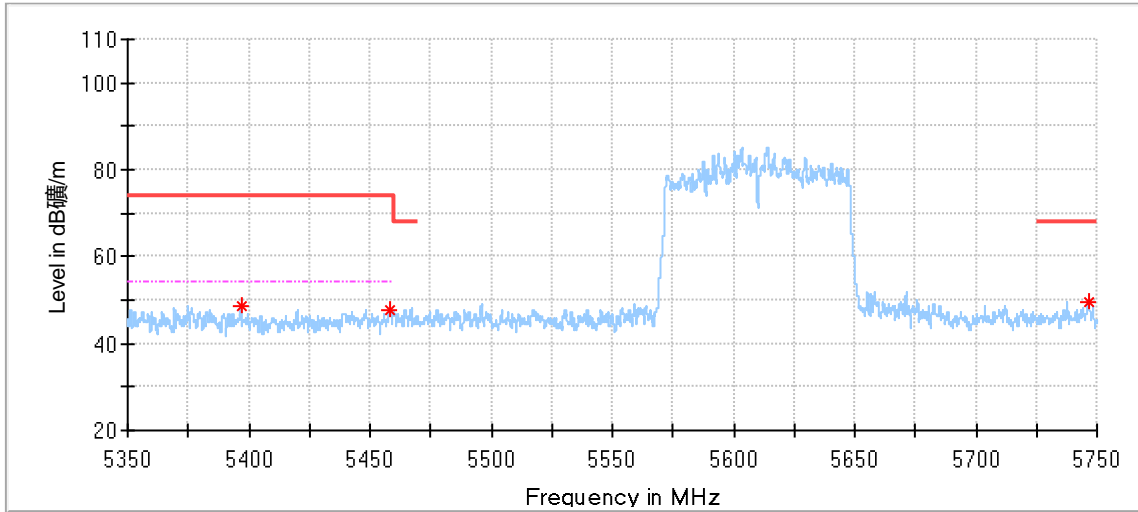
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5438.700000	48.85	74.00	25.15	150.0	H	220.0	4.56
5468.300000	48.81	68.20	19.39	150.0	H	261.0	4.86
5728.800000	48.60	68.20	19.60	150.0	H	0.0	4.80



Critical Freqs

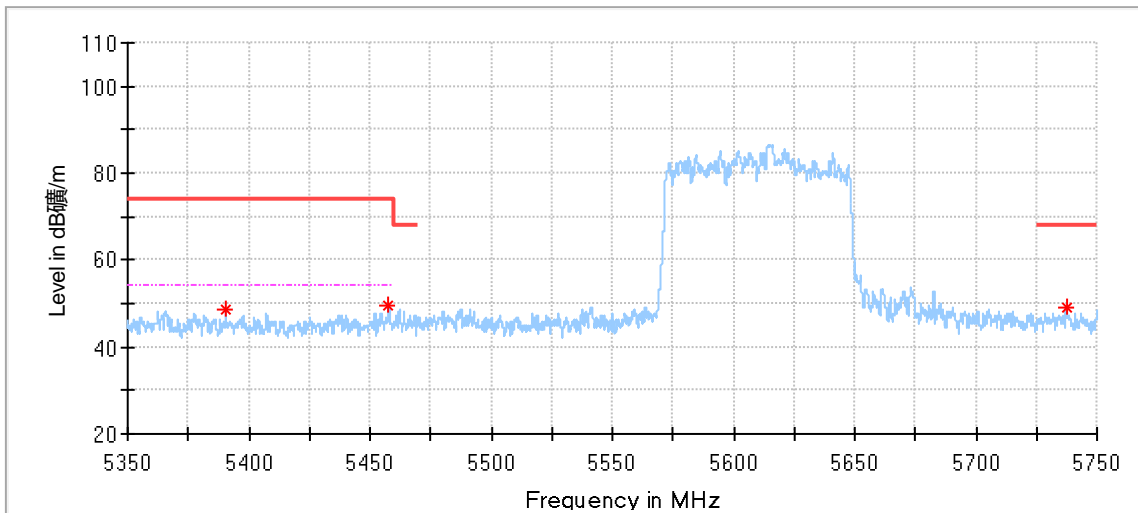
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5445.833333	50.94	74.00	23.06	150.0	V	230.0	4.63
5466.833333	55.45	68.20	12.75	150.0	V	238.0	4.85
5729.266667	48.85	68.20	19.35	150.0	V	322.0	4.80

802.11ac VHT80 Modulation 5610MHz



Critical Freqs

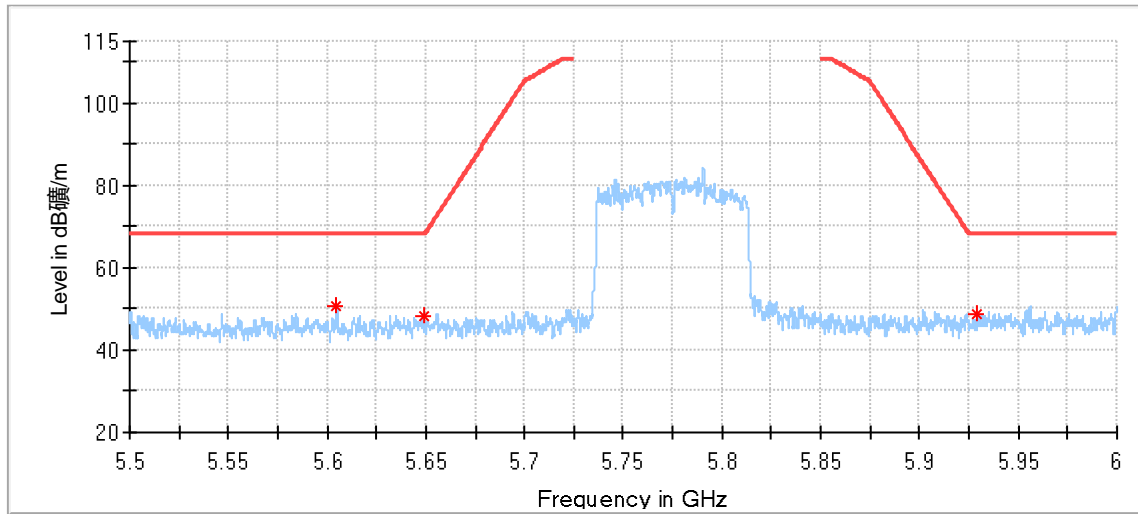
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5396.866667	48.64	74.00	25.36	150.0	H	187.0	4.34
5458.000000	47.66	74.00	26.34	150.0	H	104.0	4.76
5746.500000	49.61	68.20	18.59	150.0	H	267.0	4.83



Critical Freqs

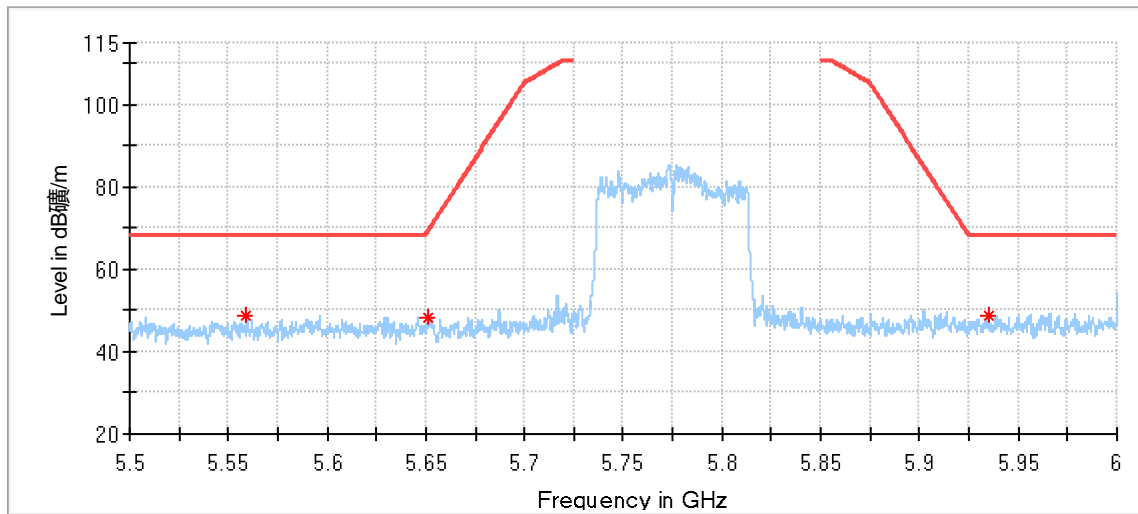
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5390.600000	48.47	74.00	25.53	150.0	V	49.0	4.32
5457.666667	49.56	74.00	24.44	150.0	V	268.0	4.75
5737.200000	48.92	68.20	19.28	150.0	V	0.0	4.81

802.11ac VHT80 Modulation 5775MHz



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5604.750000	50.89	68.20	17.31	150.0	H	352.0	4.71
5648.750000	48.37	68.20	19.83	150.0	H	192.0	4.73
5929.333333	48.87	68.20	19.33	150.0	H	42.0	5.68



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5559.250000	48.96	68.20	19.24	150.0	V	113.0	4.67
5651.416667	48.37	69.25	20.88	150.0	V	6.0	4.73
5934.875000	48.78	68.20	19.42	150.0	V	120.0	5.69

Remark:

- Corrected Amplitude = Read level + Corrector factor
Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain.
(The Reading Level is recorded by software which is not shown in the sheet)
- We test all modes and only the worst case 802.11a recorded in the report.
- Only the worst case of 9kHz-30MHz and 18MHz-26.5MHz spurious emission test data was shown in the report.
- Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are the noise floor or attenuated more than 10dB below the permissible limits or the field strength is too small to be measured.

9.6 Frequencies Stability

Test Method

1. The EUT was placed on 0.8m height table, 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 Centre Frequency of the channel under test.
3. Set Detector PEAK
4. Set RBW: 10KHz, VBW: 3RBW
5. Set Span: Encompass the entire emissions bandwidth (EBW) of the signal.
6. Allow the trace to stabilize, find the peak value of the power envelope and record the frequency, then calculated the frequency drift.

The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.

User manual temperature is 0°C to +40°C, normal Temperature is +25°C.

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

Test Results (All conditions and all modes were performed, only list Worst-Case in the report)

Remark: NV is normal Voltage: 25.2Vdc, HV is High Voltage: 29.0Vdc, LV is Low Voltage: 21.4Vdc, NT is normal Temperature: +25°C.

Test Result: Pass

See Appendix E for test data.

9.7 Dynamic Frequency Selection (DFS)

Mode of Operation:

Parameters of EUT	
Frequency	5250-5350MHz 5470-5600MHz 5650-5725MHz
Operational Mode	<input type="checkbox"/> Master <input checked="" type="checkbox"/> Client without Radar Detection <input type="checkbox"/> Client with Radar Detection
Modulation	OFDM
Channel Bandwidth	20MHz, 40MHz, 80MHz

Working Modes and required Test Items

The manufacturer shall whether the EUT is capable of operating as a master and a client. If the EUT is capable of operating in more than one operating mode then each operating mode shall be tested separately.

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
<i>Non-Occupancy Period</i>	Yes	Not required	Yes
<i>DFS Detection Threshold</i>	Yes	Not required	Yes
<i>Channel Availability Check Time</i>	Yes	Not required	Not required
<i>U-NII Detection Bandwidth</i>	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
<i>DFS Detection Threshold</i>	Yes	Not required
<i>Channel Closing Transmission Time</i>	Yes	Yes
<i>Channel Move Time</i>	Yes	Yes
<i>U-NII Detection Bandwidth</i>	Yes	Not required

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
<i>U-NII Detection Bandwidth and Statistical Performance Check</i>	All BW modes must be tested	Not required
<i>Channel Move Time and Channel Closing Transmission Time</i>	Test using widest BW mode available	Test using the widest BW mode available for the link
<i>All other tests</i>	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

Requirement:

Per KDB 905462 D02 v02 the following are the requirements for client Devices:

- a) A Client Device will not transmit before having received appropriate control signals from a Master Device.
- b) A Client Device will stop all its transmissions whenever instructed by a Master Device to which it is associated and will meet the Channel Move Time and Channel Closing Transmission Time requirements. The Client Device will not resume any transmissions until it has again received control signals from a Master Device.
- c) If a Client Device is performing In-Service Monitoring and detects a Radar Waveform above the DFS Detection Threshold, it will inform the Master Device. This is equivalent to the Master Device detecting the Radar Waveform and d) through f) of section 5.1.1 apply.
- d) Irrespective of Client Device or Master Device detection the Channel Move Time and Channel Closing Transmission Time requirements remain the same.
- e) The client test frequency must be monitored to ensure no transmission of any type has occurred for 30 minutes. Note: If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear.

Table 3: DFS Response Requirement Values

Parameter	Value
<i>Non-occupancy period</i>	Minimum 30 minutes
<i>Channel Availability Check Time</i>	60 seconds
<i>Channel Move Time</i>	10 seconds See Note 1.
<i>Channel Closing Transmission Time</i>	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
<i>U-NII Detection Bandwidth</i>	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.

Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.
Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.
Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

DFS Detection Thresholds Values

Table 4 below provides the DFS Detection Thresholds for Master Devices as well as Client Devices incorporating In-Service Monitoring.

Table 4: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm

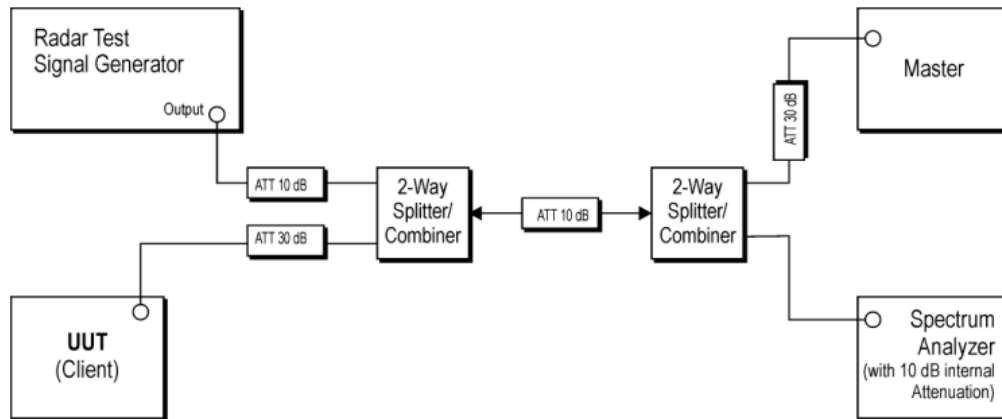
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.
Note 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

Test Procedure

The FCC KDB 905462 D02 v02 describes a radiated test setup and a conducted test setup. A conducted test setup was used for this testing. Figure 1 shows the typical test setup. One channel selected between 5260 and 5350 MHz is chosen for the testing.

Figure 1. Test Setup for DFS

Setup for client with injection at the master.



Channel Closing Transmission Time, Channel Move Time and Non-Occupancy Period.

Block Diagram of test setup test procedure.

- (1) The Radar Pulse generator is setup to provide a pulse at frequency that the master and client are operating, A type 0 radar pulse is used for the testing.
- (2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -62dBm at the antenna of the master device.
- (3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- (4) The Client Device (EUT) is set up per the diagram in Figure 1 and communications between the Master device and the Client is established.
- (5) Iperf software is used to properly load the test channel.
- (6) The real time spectrum analyzer is set to record a 16sec window to any transmissions occurring up to and after 10sec.
- (7) The system is again setup and the monitoring time is shortened in order to capture the Channel Closing Transmission Time. This time is measured to ensure that the Client ceases transmission within 200ms and the aggregate of emissions occurring after 200ms up to 10 sec do not exceed 60ms.
(Note: the channel may be different since the Master and Client have changed channels due to the detection of e initial radar pulse.)
- (8) After the initial radar burst the channel is monitored for 30 minutes to ensure no transmissions or beacons occur. A second monitoring setup is used to verify that the Master and Client have both moved to different channels.

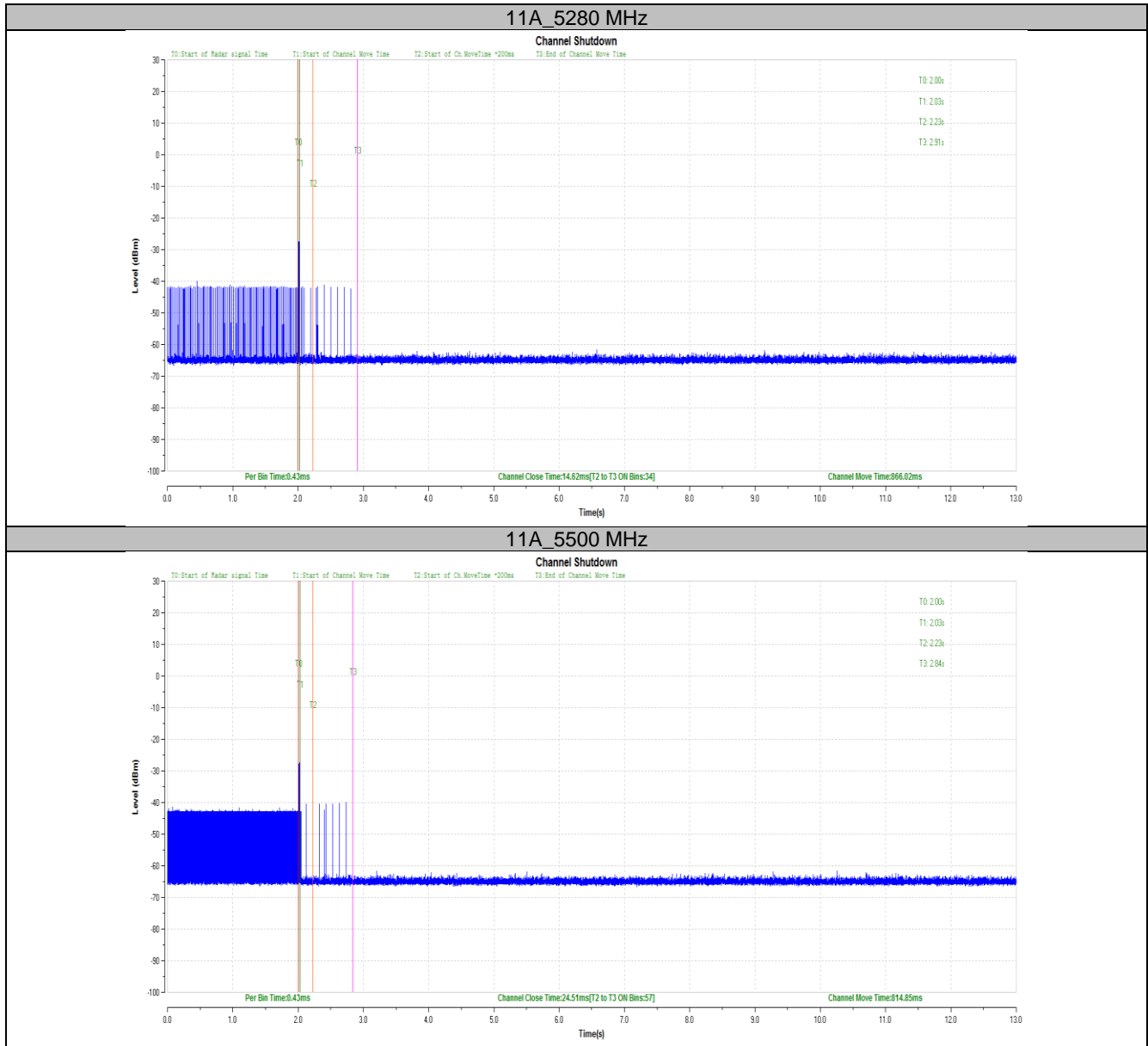
Test Result

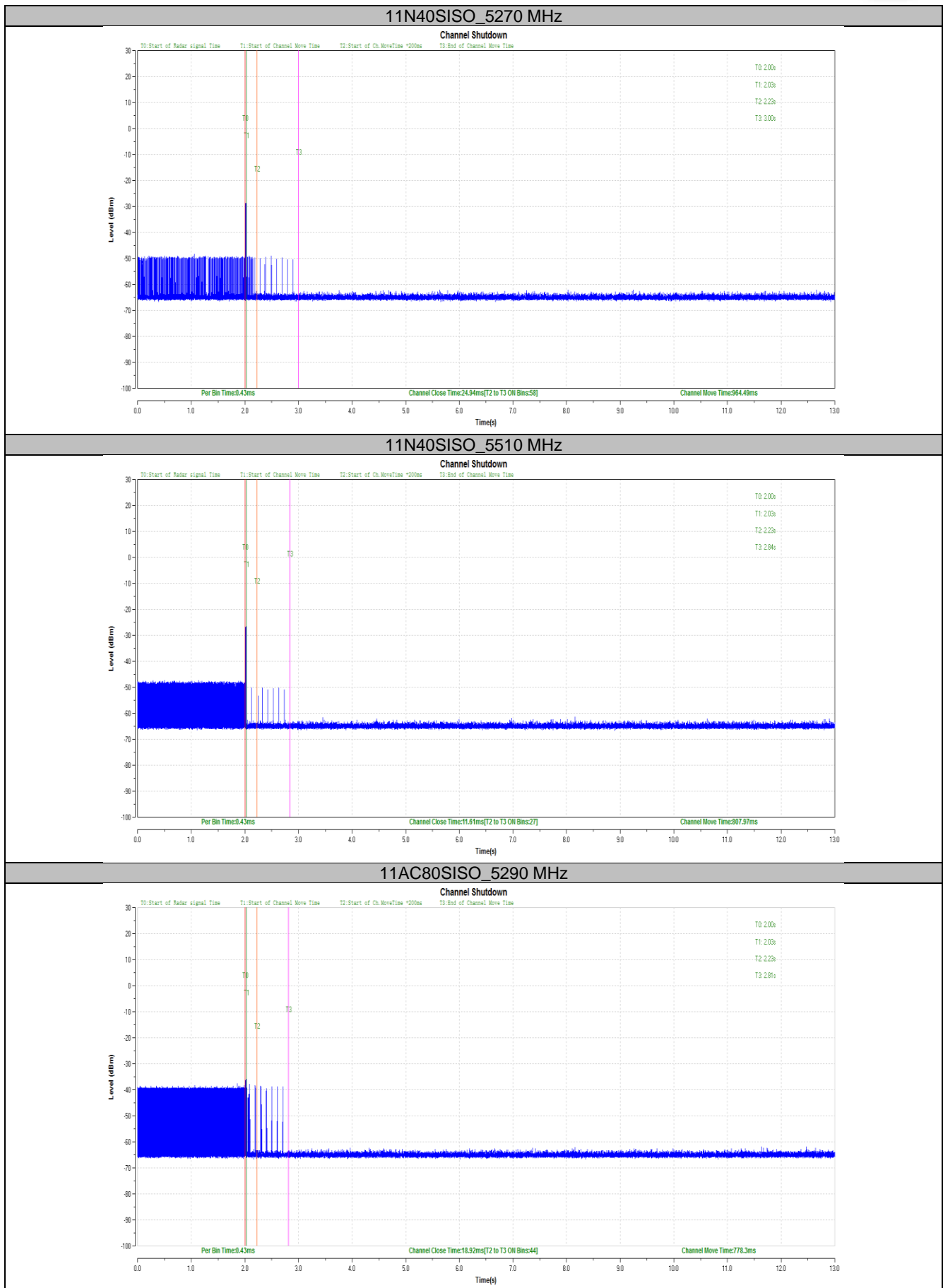
Clause	Test Parameter	Remarks	Pass/Fail
15.407	DFS Detection Threshold	Not Applicable	N/A
15.407	Channel Availability Check time	Not Applicable	N/A
15.407	Channel Move time	Applicable	Pass
15.407	Channel Closing Transmission time	Applicable	Pass
15.407	Non-occupancy Period	Not Applicable	N/A
15.407	Uniform Spreading	Not Applicable	N/A
15.407	U-NII Detection Bandwidth	Not Applicable	N/A

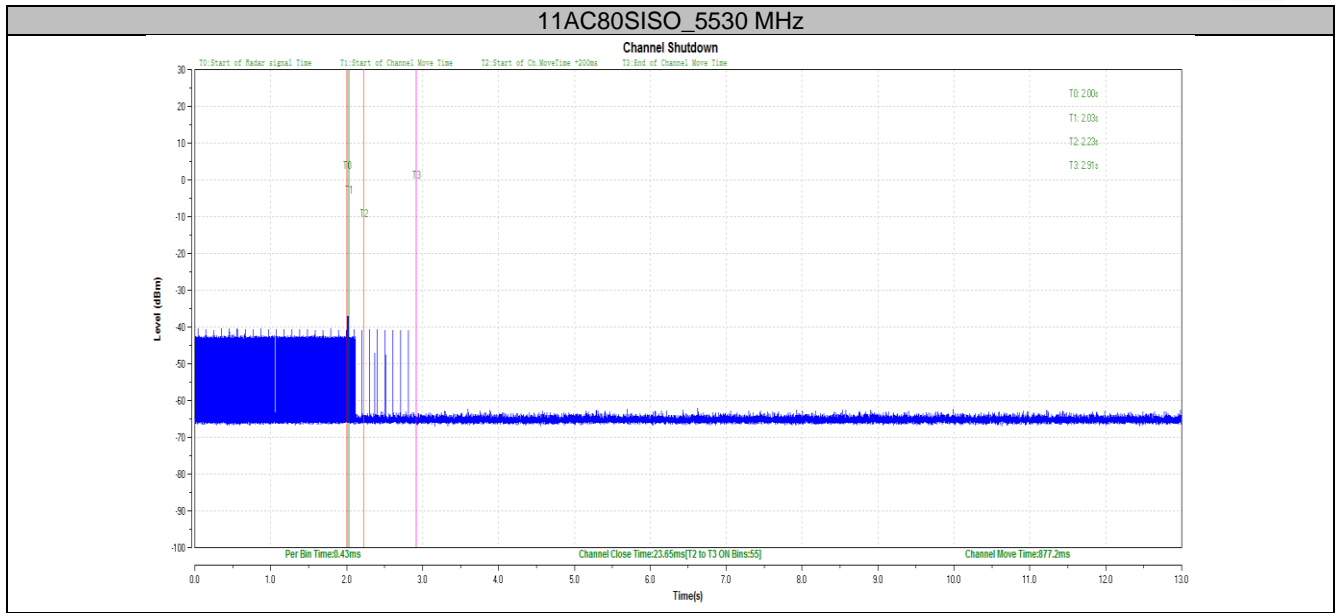
Channel Move Time and Channel Closing Transmission Time:

Test Mode	Channel[MHz]	CCT[ms]	Limit[ms]	CMT[ms]	Limit[ms]	Verdict
11A	5280	14.62	260	866.02	10000	PASS
	5500	24.51	260	814.85	10000	PASS
11N40SISO	5270	23.65	260	963.63	10000	PASS
	5510	11.61	260	807.97	10000	PASS
11AC80SISO	5290	17.63	260	772.71	10000	PASS
	5530	23.65	260	877.2	10000	PASS

Test Graphs







Test Result: Pass

10 Test Equipment List

Conducted Emission Test (AMN)(CSR #2)

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	2025-5-13
LISN	Rohde & Schwarz	ENV216	68-4-87-19-001	102472	1	2025-5-12
LISN	Rohde & Schwarz	ENV4200	68-4-87-14-001	100249	1	2025-5-13
Attenuator	Shanghai Huaxiang	TS2-26-3	68-4-81-16-003	080928189	1	2025-5-11
Cable	OUQIAO	RG142	68-4-90-19-005-A20	----	----	----
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

Radiated Emission Test (9kHz-30MHz) (SAC-3 #1)

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 7	68-4-74-19-001	102176	1	2025-5-13
Loop Antenna	Rohde & Schwarz	HFH2-Z2	68-4-80-14-006	100398	1	2025-7-24
Cable	HUBER-SUHNER	RG214	68-4-90-14-001-A21	----	----	----
3m Semi-anechoic chamber	TDK	SAC-3 #1	68-4-90-14-001	----	3	2026-10-25
Test software	Rohde & Schwarz	EMC32	68-4-90-14-001-A10	Version10.35.02	N/A	N/A

Radiated Emission Test (30MHz-1GHz) (SAC-3 #2)

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	2025-5-13
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9162	68-4-80-19-003	284	1	2025-2-22
Attenuator	Mini-circuits	UNAT-6+	68-4-81-21-002	15542	1	2025-5-11
Cable	OUQIAO	18DLB5-NMNM-7000	68-4-90-19-006-A22	----	----	----
3m Semi-anechoic chamber	TDK	SAC-3 #2	68-4-90-19-006	----	3	2026-10-25
Test software	Rohde & Schwarz	EMC32	68-4-90-19-006-A01	Version10.35.02	N/A	N/A

Radiated Emission Test (1GHz-18GHz) (SAC-3 #2)

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	2025-5-13
Wave Guide Antenna	ETS	3117	68-4-80-19-001	00218954	1	2025-4-10
Pre-amplifier	Rohde & Schwarz	SCU 18F	68-4-29-19-001	100745	1	2025-5-11
Pre-amplifier	Rohde & Schwarz	SCU 18F	68-4-29-19-002	100746	1	2025-5-11
Cable	OUQIAO	18DLB5-NMNM-7000	68-4-90-19-006-A22	----	----	----

3m Semi-anechoic chamber	TDK	SAC-3 #2	68-4-90-19-006	----	3	2026-10-25
Test software	Rohde & Schwarz	EMC32	68-4-90-19-006-A01	Version10.35.02	N/A	N/A

Radiated Emission Test (18GHz-40GHz) (SAC-3 #2)

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	2025-5-13
Sideband Horn Antenna	Q-PAR	QWH-SL-18-40-K-SG	68-4-80-14-008	12827	1	2025-7-2
Pre-amplifier	Rohde & Schwarz	SCU 40A	68-4-29-14-002	100432	1	2025-7-17
Cable	JUNFLON	MWX241	68-4-90-19-006-A21	----	----	----
3m Semi-anechoic chamber	TDK	SAC-3 #2	68-4-90-19-006	----	3	2026-10-25
Test software	Rohde & Schwarz	EMC32	68-4-90-19-006-A01	Version10.35.02	N/A	N/A

RF Test System

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
Vector Signal Generator	Rohde & Schwarz	SMBV100A	68-4-48-18-001	262825	1	2025-5-11
Signal Analyzer	Rohde & Schwarz	FSV40	68-4-74-14-004	101030	1	2025-5-11
RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157W	68-4-93-14-003	101226/100929	1	2025-5-11
10dB Attenuator	R&S	DNF	68-4-81-14-004	DNF-001	1	2025-5-11
10dB Attenuator	R&S	DNF	68-4-81-14-005	DNF-002	1	2025-5-11
RF Meas. and Switch Matrix Unit	TST PASS	TSCB3023R2	68-4-93-23-001	2811685c	1	2025-5-11
Cable	JUNFLON	J12J103539	68-4-90-19-003-A20	----	----	----
Cable	JUNFLON	J12J103539	68-4-90-19-003-A21	----	----	----
Cable	JUNFLON	J12J103539	68-4-90-19-003-A22	----	----	----
Test software	TST PASS	TST PASS	68-4-93-23-001-A03	Version 2.0	N/A	N/A
Test software	Tonscend	JS1120-3	68-4-74-14-006-A13	Version 2.6.77.0518	N/A	N/A

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 in new shielding room (68-4-90-19-005) 150kHz-30MHz (for test using AMN ENV216)	3.15dB
Uncertainty for Radiated Emission in 3m chamber (68-4-90-14-001) 9kHz-30MHz	4.70dB
Uncertainty for Radiated Emission in new 3m chamber (68-4-90-19-006) 30MHz-1000MHz	Horizontal: 4.63dB; Vertical: 4.78dB
Uncertainty for Radiated Emission in new 3m chamber (68-4-90-19-006) 1000MHz-18000MHz	Horizontal: 5.38dB; Vertical: 5.38dB
Uncertainty for Radiated Emission in new 3m chamber (68-4-90-19-006) above 18000MHz	5.29dB
Uncertainty for Conducted RF test with TS 8997	RF Power Conducted: 1.31dB Frequency test involved: 0.6×10^{-8} or 1%

Measurement Uncertainty Decision Rule:

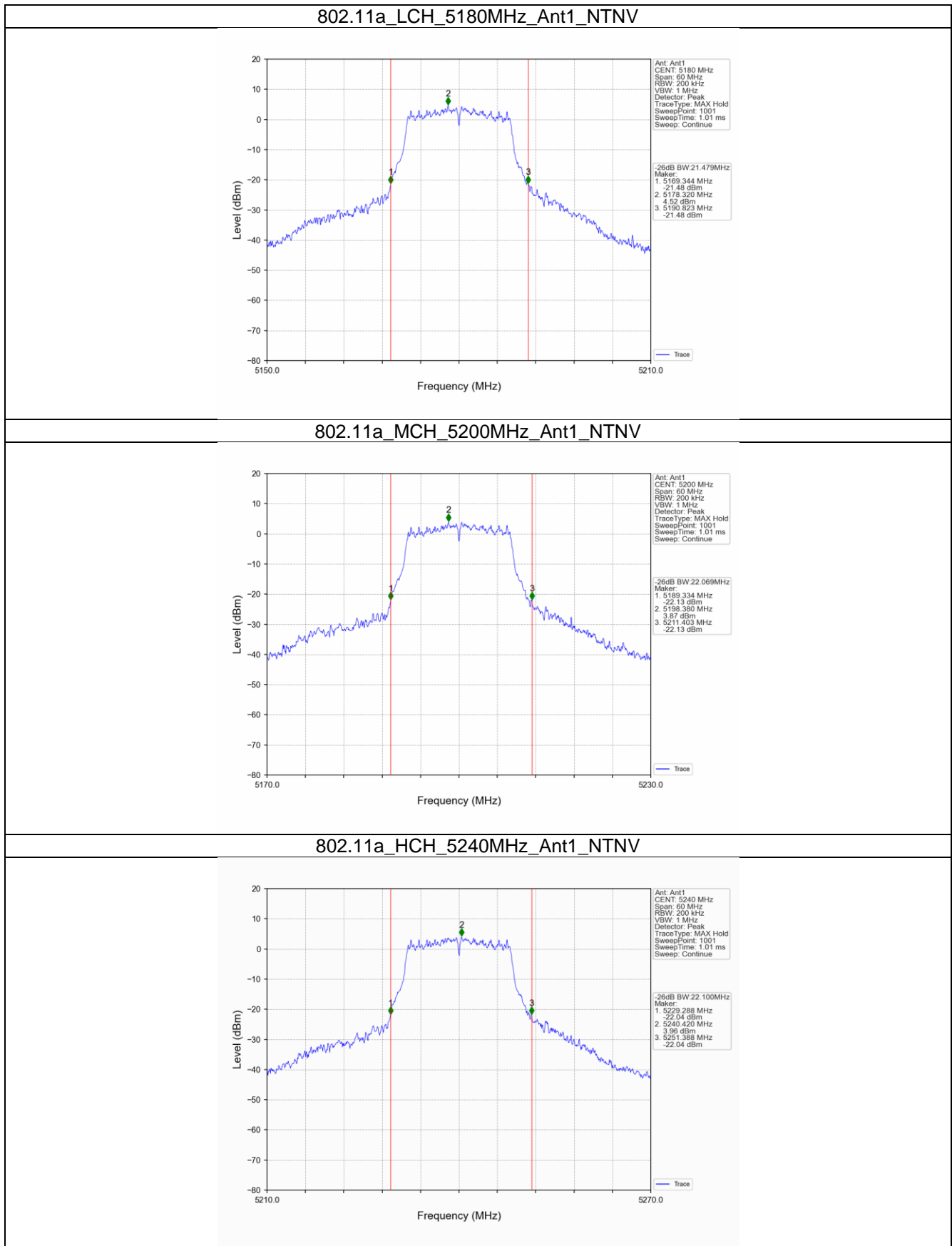
Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2023, clause 4.3.3 and 4.3.4.

Appendix A1: 26dB Bandwidth

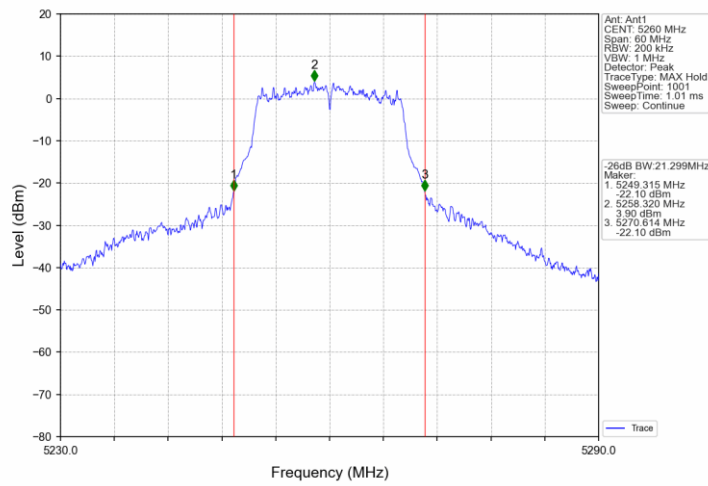
Test Result

Mode	TX Type	Frequency (MHz)	ANT	26dB Bandwidth (MHz)		Verdict
				Results	Limit	
802.11a	SISO	5180	1	21.479	/	Pass
		5200	1	22.069	/	Pass
		5240	1	22.100	/	Pass
		5260	1	21.299	/	Pass
		5300	1	21.199	/	Pass
		5320	1	21.330	/	Pass
		5500	1	21.233	/	Pass
		5580	1	21.169	/	Pass
		5700	1	21.423	/	Pass
802.11n (HT20)	SISO	5180	1	22.353	/	Pass
		5200	1	25.545	/	Pass
		5240	1	22.963	/	Pass
		5260	1	22.050	/	Pass
		5300	1	21.825	/	Pass
		5320	1	21.930	/	Pass
		5500	1	21.677	/	Pass
		5580	1	22.002	/	Pass
		5700	1	21.694	/	Pass
802.11n (HT40)	SISO	5190	1	56.565	/	Pass
		5230	1	45.591	/	Pass
		5270	1	56.528	/	Pass
		5310	1	40.651	/	Pass
		5510	1	47.626	/	Pass
		5550	1	48.879	/	Pass
		5670	1	44.496	/	Pass
		5710	1	40.932	/	Pass
802.11ac (VHT20)	SISO	5180	1	22.463	/	Pass
		5200	1	24.983	/	Pass
		5240	1	23.490	/	Pass
		5260	1	22.376	/	Pass
		5300	1	22.488	/	Pass
		5320	1	22.684	/	Pass
		5500	1	21.858	/	Pass
		5580	1	22.182	/	Pass
		5700	1	22.641	/	Pass
802.11ac (VHT40)	SISO	5180	1	22.463	/	Pass
		5200	1	24.983	/	Pass
		5240	1	23.490	/	Pass
		5260	1	22.376	/	Pass
		5300	1	22.488	/	Pass
		5320	1	22.684	/	Pass
		5500	1	21.858	/	Pass
		5580	1	22.182	/	Pass
802.11ac (VHT80)	SISO	5210	1	81.486	/	Pass
		5290	1	81.826	/	Pass
		5530	1	81.569	/	Pass
		5610	1	82.781	/	Pass
		5690	1	81.904	/	Pass

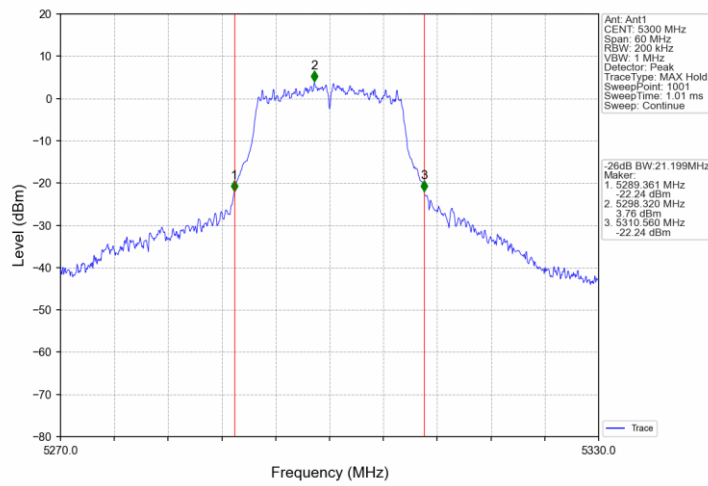
Test Graphs



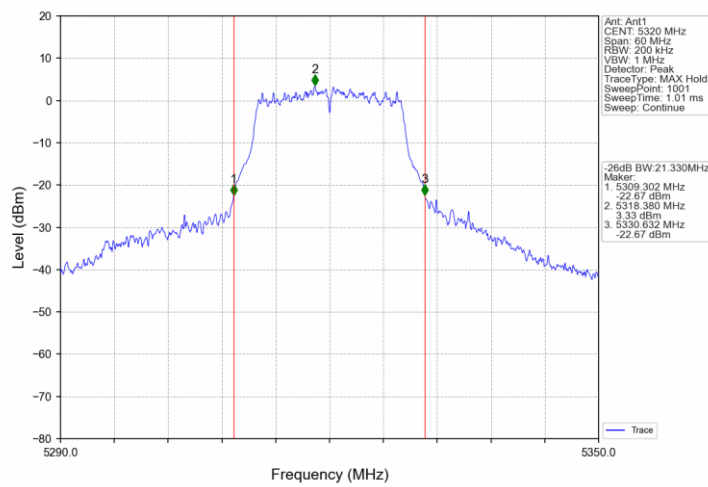
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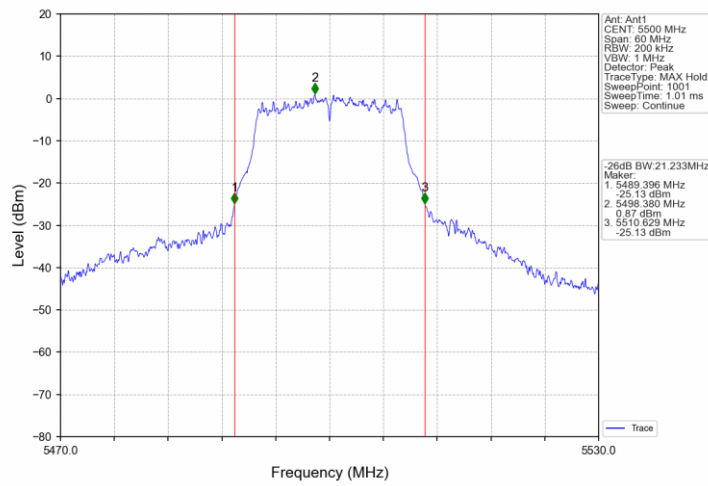
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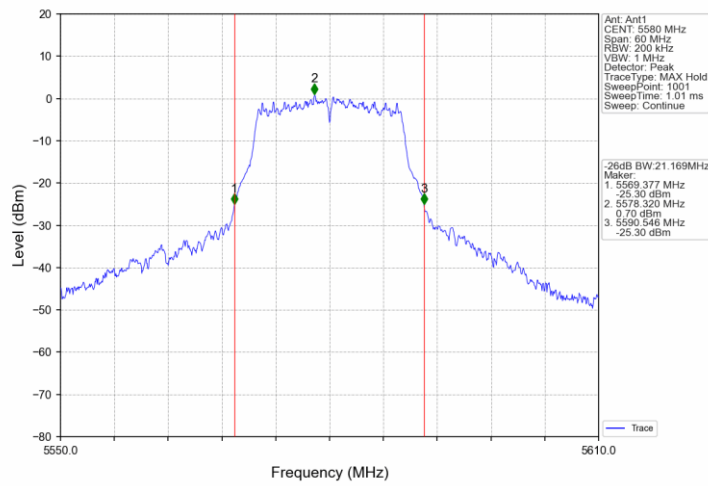
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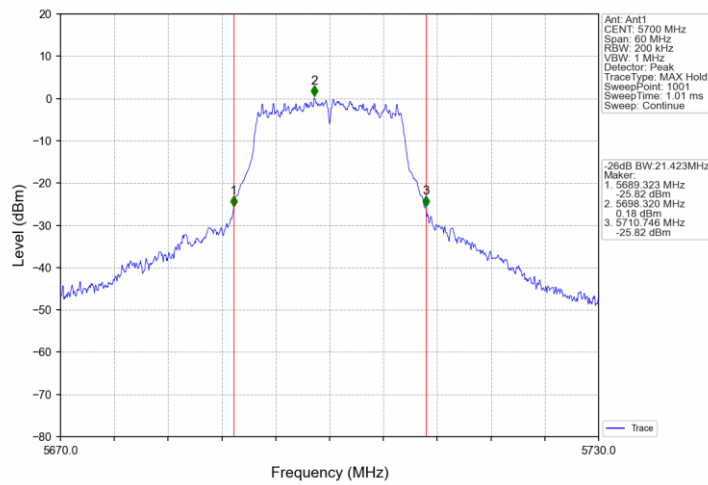
802.11a_LCH_5500MHz_Ant1_NTNV



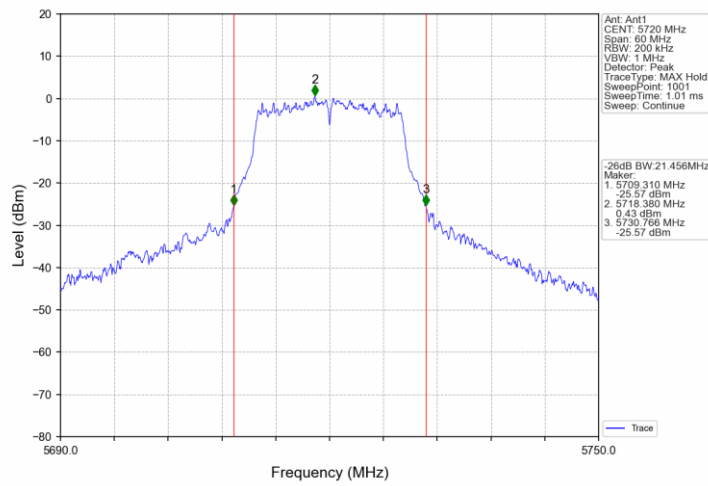
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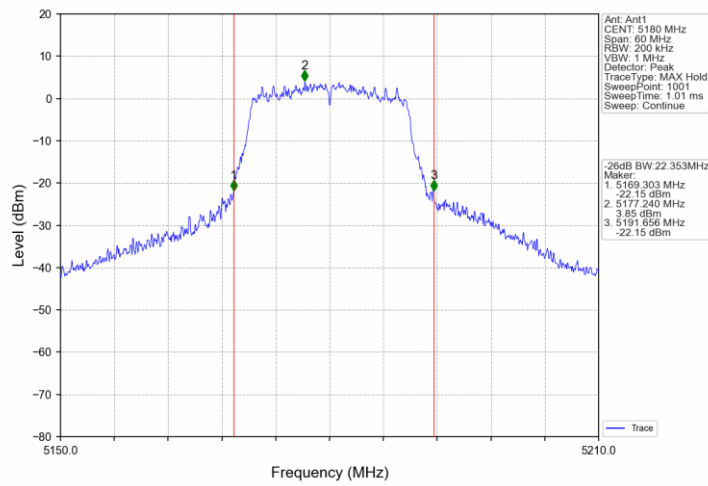
802.11a_HCH_5700MHz_Ant1_NTNV



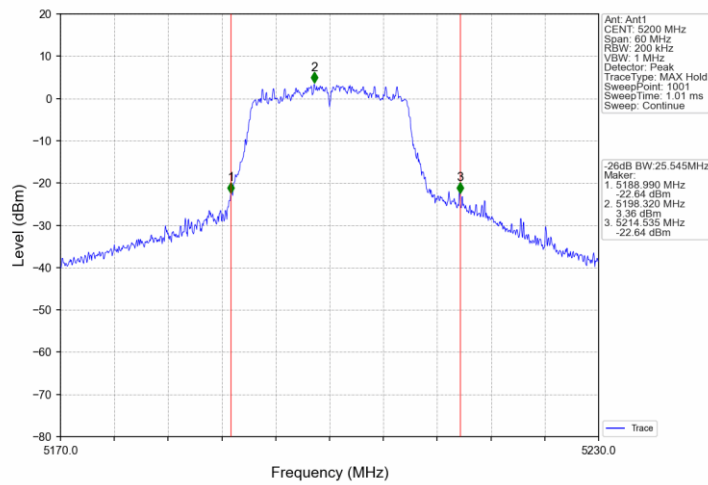
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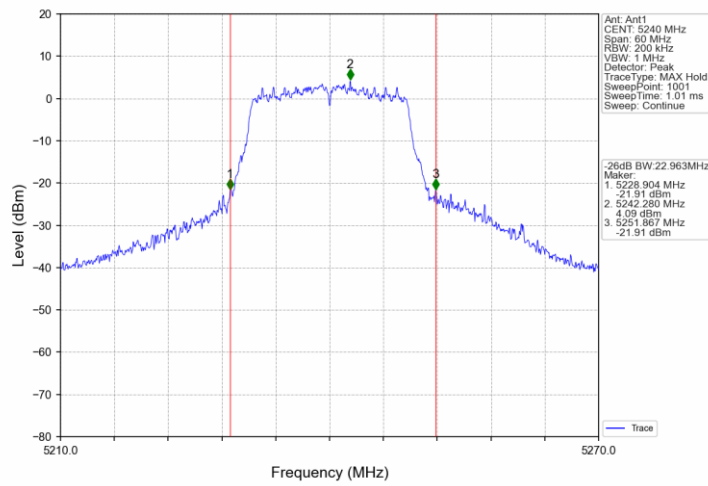
802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



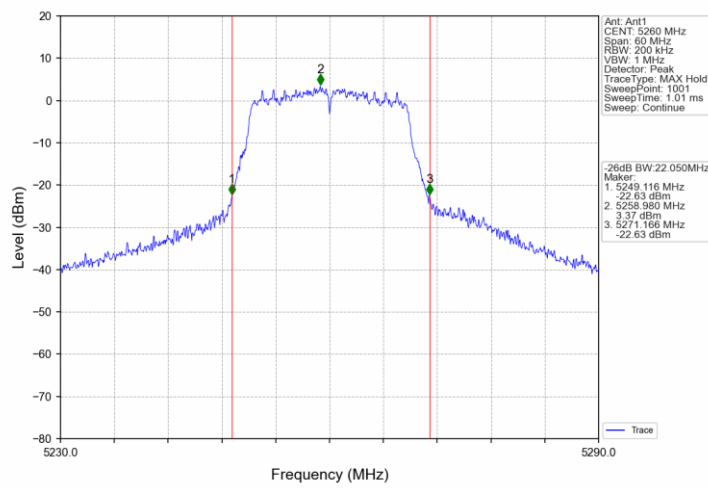
802.11n(HT20)_MCH_5200MHz_Ant1_NTNV



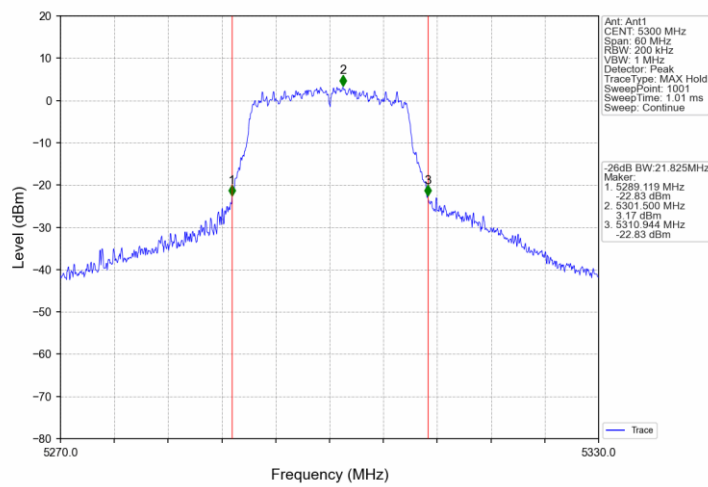
802.11n(HT20)_HCH_5240MHz_Ant1_NTNV



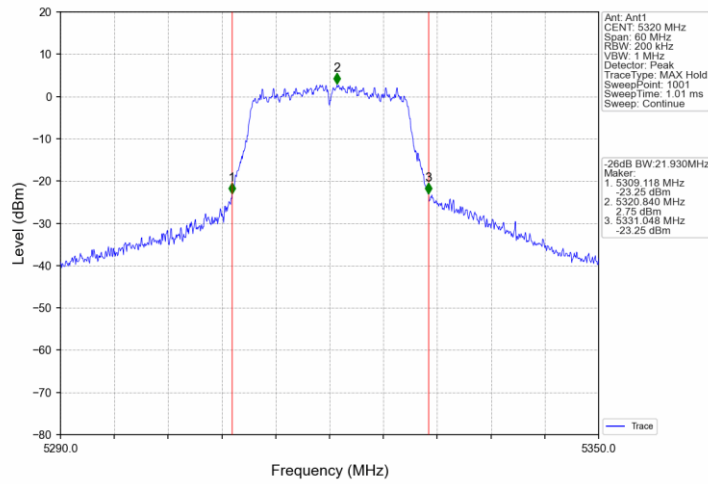
802.11n(HT20)_LCH_5260MHz_Ant1_NTNV



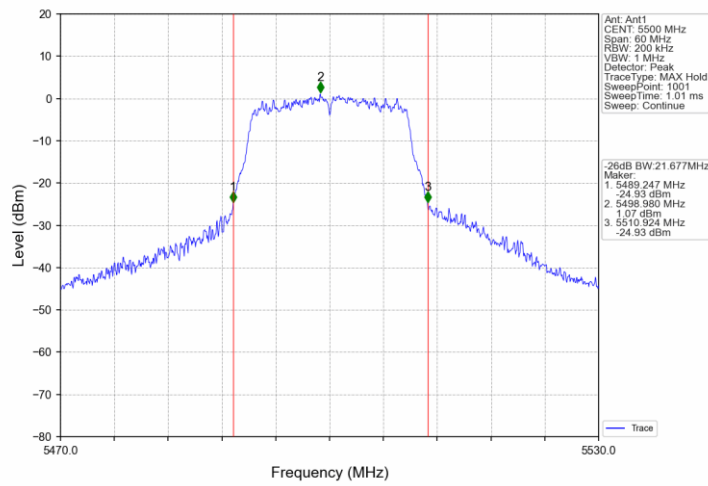
802.11n(HT20)_MCH_5300MHz_Ant1_NTNV



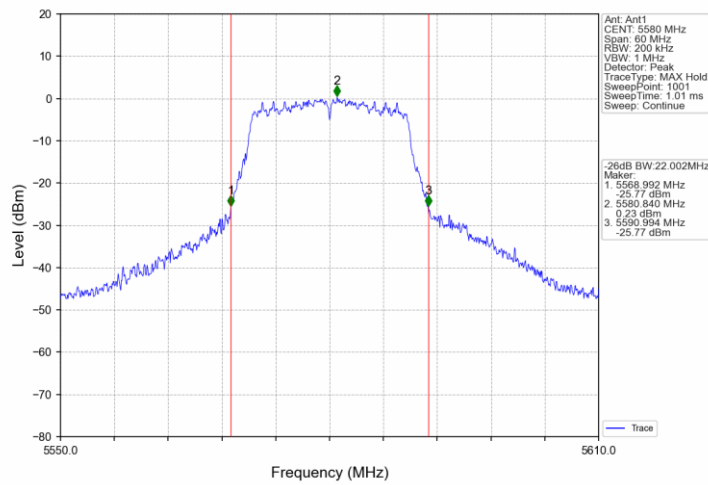
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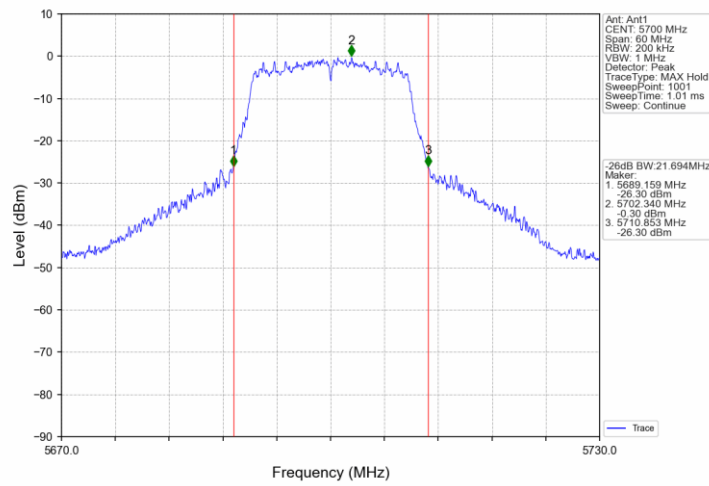
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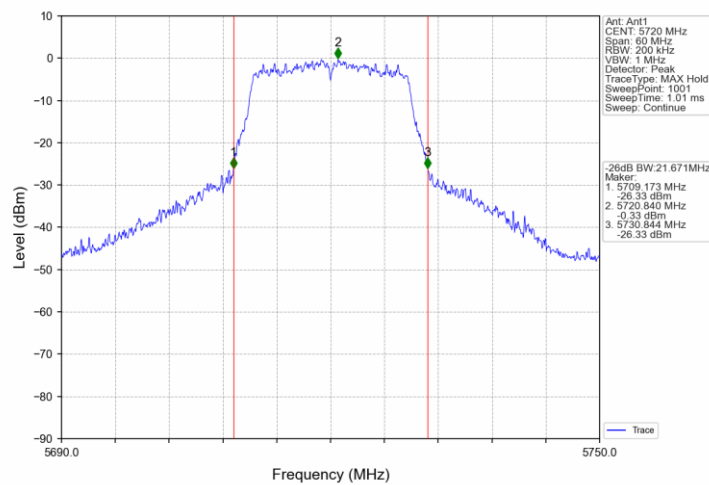
802.11n(HT20)_MCH_5580MHz_Ant1_NTNV



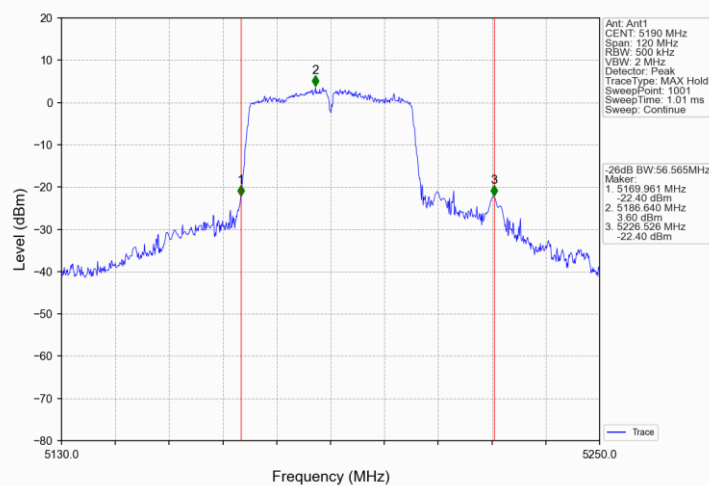
802.11n(HT20)_HCH_5700MHz_Ant1_NTNV



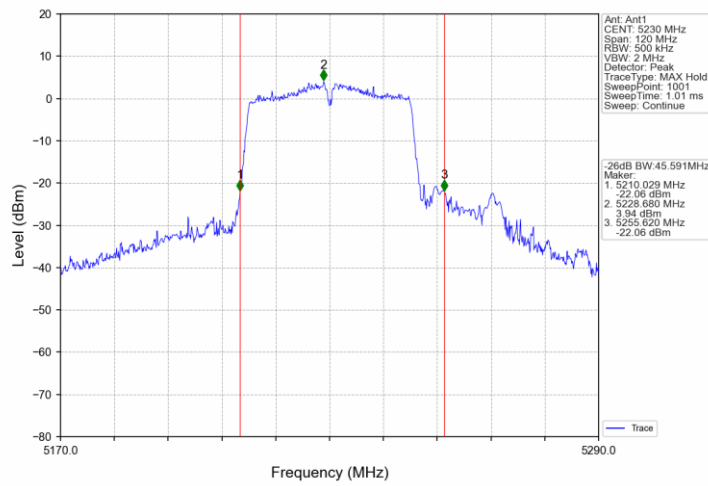
802.11n(HT20)_HCH_5720MHz_Ant1_NTNV



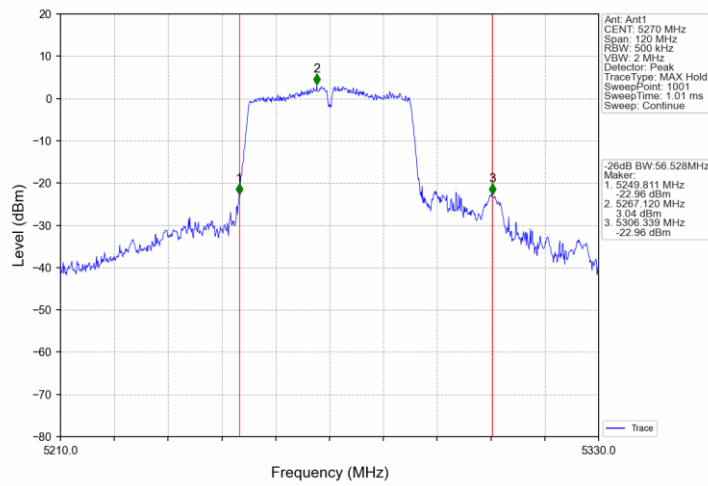
802.11n(HT40)_LCH_5190MHz_Ant1_NTNV



802.11n(HT40)_HCH_5230MHz_Ant1_NTNV



802.11n(HT40)_LCH_5270MHz_Ant1_NTNV



802.11n(HT40)_HCH_5310MHz_Ant1_NTNV

