TEST REPORT

Application No.:	KSCR2408001587AT
FCC ID:	2BDGO-HSFTOOL2
Name of Testing Laboratory preparing the Report:	Compliance Certification Services (Kunshan) Inc.
Address of Testing Laboratory preparing the Report:	No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.
Applicant:	CARVE VIET NAM TECHNOLOGY COMPANY LIMITED
Address of Applicant:	No. 5 VSIP II, No. 7 Street, Vietnam- Singapore Industrial park II, Hoa Phu Ward, Thu Dau Mot City, Binh Duong Province, Vietnam
Manufacturer:	CARVE VIET NAM TECHNOLOGY COMPANY LIMITED
Address of Manufacturer:	No. 5 VSIP II, No. 7 Street, Vietnam- Singapore Industrial park II, Hoa Phu Ward, Thu Dau Mot City, Binh Duong Province, Vietnam
Equipment Under Test (EUT):	
EUT Name:	Pocket Thermal Camera
Model No.:	P2W
Standard(s) :	47 CFR Part 15, Subpart E 15.407
Date of Receipt:	2024-08-21
Date of Test:	2024-10-15 to 2024-10-23
Date of Issue:	2024-10-25
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

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Member of the SGS Group (SGS SA)

Revision Record			
Version	**Description**	***Date***	***Remark***
00	Original	2024-10-25	/

Authorized for issue by:				
Tested By		Eric Liu **Eric_Liu/Project Engineer**		
Approved By		Terry Hou **Terry Hou /Reviewer**		

2 Test Summary

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
Antenna Requirement	47 CFR Part 15, Subpart E 15.407	N/A	47 CFR Part 15, Subpart C 15.203	Pass
Transmission in the Absence of Data		N/A	47 CFR Part 15, Subpart E 15.407 (c)	Pass

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart E 15.407	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207 & Subpart E 15.407 b(9)	Pass
Maximum Conducted output power		KDB 789033 D02 II E	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Radiated Emissions (Below 1GHz)		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	Pass
Radiated Emissions (Above 1GHz)		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	Pass
Radiated Emissions which fall in the restricted bands		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	Pass
Channel Move Time		KDB 905462 D02 Section 7.8.3	KDB 905462 D02 Section 5.1	Pass
Duty Cycle		KDB 789033 D02 II B 1	KDB 789033 D02 II B 1	Pass
99% Bandwidth		KDB 789033 D02 II D	N/A	Pass
26dB Emission bandwidth		KDB 789033 D02 II C 1	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Minimum 6 dB bandwidth (5.725-5.85 GHz band)		KDB 789033 D02 II C 2	47 CFR Part 15, Subpart E 15.407 (e)	Pass
Peak Power spectrum density		KDB 789033 D02 II F	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Frequency Stability		ANSI C63.10 (2013) Section 6.8	47 CFR Part 15, Subpart E 15.407 (g)	Pass

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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 5V by Battery Model: HM-3821DC Rated Voltage: 3.85V Rated Capacity: 2100mAh/8.085Wh
Operation Frequency/Number of channels (20MHz):	U-NII-1: 5180-5240MHz (4 Channels); U-NII-2A: 5260-5320MHz (4 Channels); U-NII-2C: 5500-5700MHz (11 Channels); U-NII-3: 5745-5825MHz (5 Channels)
Operation Frequency/Number of channels/(40MHz):	U-NII-1: 5190-5230MHz (2 Channels); U-NII-2A: 5270-5310MHz (2 Channels); U-NII-2C: 5510-5670MHz (5 Channels); U-NII-3: 5755-5795MHz (2 Channels)
Operation Frequency/Number of channels (80MHz):	U-NII-1: 5210MHz (1 Channel); U-NII-2A: 5290MHz (1 Channels); U-NII-2C: 5530-5610MHz (2 Channels); U-NII-3: 5775MHz (1 Channel)
Modulation Type:	802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM); 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Spacing:	802.11a/n/ac 20: 20MHz; 802.11n/ac40: 40MHz; 802.11ac80: 80MHz
DFS Function:	Slave without Radar detection
TPC Function:	Without TPC function
Antenna Type:	FPC Antenna
Antenna Gain:	Band1: -0.40dBi, Band2: 1.55dBi, Band3: 2.54dBi, Band4: 2.51dBi

4.2 Power level setting using in test

Channel	802.11a	802.11ac(VHT20)	
36	16	17	
40	16	17	
48	16	17	
52	16	16	
60	16	16	
64	15	16	
100	13	14	
116	13	13	
140	15	15	
149	15	15	
157	16	16	
165	16	17	
Channel	802.11ac40(VHT40)	Channel	802.11ac(VHT80)
38	13	42	11
46	16	58	11
54	16	106	13
62	13	122	13
102	13	155	15

110	13		
134	14		
151	15		
159	16		

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
AC Adapter	DVE	DSA-12G-12FEU	/
Notebook	LENOVO	K27	EB24537645

4.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4×10^{-8}
2	Timeout	2s
3	Duty Cycle	0.37%
4	Occupied Bandwidth	3%
5	RF Conducted Power	0.6dB
6	RF Power Density	2.9dB
7	Conducted Spurious Emissions	0.75dB
8	RF Radiated Power	5.2dB (Below 1GHz)
		5.9dB (Above 1GHz)
9	Radiated Spurious Emission Test	4.2dB (Below 30MHz)
		4.5dB (30MHz-1GHz)
		5.1dB (1GHz-18GHz)
		5.4dB (Above 18GHz)
10	Temperature Test	1°C
11	Humidity Test	3%
12	Supply Voltages	1.5%
13	Time	3%
Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.		

4.5 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).
3. Sample source: sent by customer.

4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• A2LA

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

• FCC

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

• ISED

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 2324E

• VCCI

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

5 Equipment List

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date
Conducted Emission at Mains Terminals						
1	EMI Test Receive	R&S	ESCI	KS301101	01/15/2024	01/14/2025
2	LISN	R&S	ENV216	KS301197	01/15/2024	01/14/2025
3	LISN	Schwarzbeck	NNLK 8129	KS301091	01/15/2024	01/14/2025
4	Pulse Limiter	R&S	ESH3-Z2	KUS1902E001	01/15/2024	01/14/2025
5	CE test Cable	Thermax	/	CZ301102	01/15/2024	01/14/2025
6	Test Software	ESE	E3_V 6.111221a	/	N.C.R	N.C.R
RF Conducted Test						
1	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	08/01/2024	07/31/2025
2	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	08/01/2024	07/31/2025
3	Spectrum Analyzer	Keysight	N9030B	KSEM021-1	01/15/2024	01/14/2025
4	Signal Generator	R&S	SMBV100B	KSEM032	03/19/2024	03/18/2025
5	Signal Generator	R&S	SMW200A	KSEM020-1	08/02/2024	08/01/2025
6	Signal Generator	Agilent	N5182A	KUS2001M001-1	08/01/2024	07/31/2025
7	Signal Generator	Agilent	E8257C	KS301066	08/06/2024	08/05/2025
8	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	08/01/2024	07/31/2025
9	Radio Communication Analyzer	Anritsu	MT8821C	KSEM002-1	03/19/2024	03/18/2025
10	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	08/12/2024	08/11/2025
11	Switcher	TST	FY562	KUS2001M001-4	01/15/2024	01/14/2025
12	Conducted Test Cable	Thermax	RF01-RF04	CZ301111-CZ301120	01/15/2024	01/14/2025
13	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KS301190	08/26/2024	08/25/2025
14	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-5	03/19/2024	03/18/2025
15	Software	BST	TST-PASS	/	NCR	NCR
RF Radiated Test						
1	Spectrum Analyzer	R&S	FSV40	KUS1806E003	08/06/2024	08/05/2025
2	Universal Radio Communication Tester	R&S	CMW500	KSEM009-1	03/19/2024	03/18/2025
4	Loop Antenna	COM-POWER	AL-130R	KUS1806E001	03/18/2023	03/17/2025
5	Bilog Antenna	TESEQ	CBL 6112D	KUS1806E005	06/29/2023	06/28/2025
6	Bilog Antenna	TESEQ	CBL 6112D	KUS1806E006	03/19/2024	03/18/2025
7	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	KS301079	03/23/2024	08/22/2026
8	Horn-antenna(1-18GHz)	ETS-LINDGREN	3117	KS301186	04/07/2023	04/06/2025
9	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	CZ301058	01/07/2024	01/06/2026
10	Amplifier(30MHz~18GHz)	PANSHAN TECHNOLOGY	LNA:1~18G	KSEM010-1	01/15/2024	01/14/2025
11	Amplifier(18~40GHz)	PANSHAN TECHNOLOGY	LNA180400G40	KSEM038	08/12/2024	08/11/2025
12	RE Test Cable	REBES MICROWAVE	/	CZ301097	08/12/2024	08/11/2025
13	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-4	03/21/2024	03/20/2025
14	Software	Faratronic	EZ_EMC-v 3A1	/	NCR	NCR
15	Software	ESE	E3_V 6.111221a	/	NCR	NCR

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

6.1.2 Conclusion

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

The antenna is FPC Antenna and no consideration of replacement. The best case gain of the Antenna is: Band1: -0.40dBi, Band2: 1.55dBi, Band3: 2.54dBi, Band4: 2.51dBi.

Antenna location: Refer to internal photo.

6.2 Transmission in the Absence of Data

6.2.1 Test Requirement:

47 CFR Part 15, Subpart E 15.407 (c)

6.2.2 Conclusion

Conclusion

Standard Requirement:

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals.

Applicants shall include in their application for equipment authorization a description of how this requirement is met.

EUT Details:

WIFI chip support automatically discontinue transmission in case of either absence of information to transmit or operational failure, if the chip detect absence of information to transmit or operational failure, it will be automatically shut off.

7 Radio Spectrum Matter Test Results

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207 & Subpart E 15.407 b(9)
Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency.		

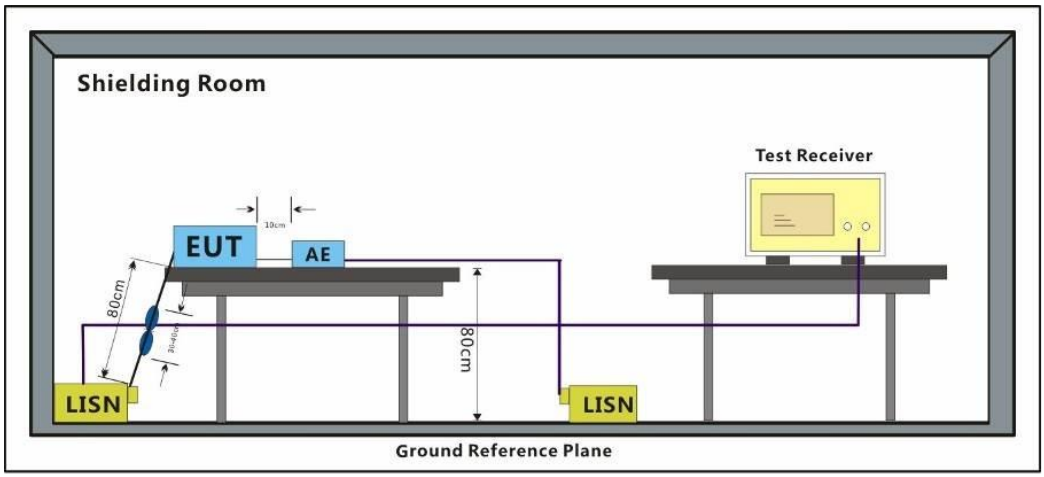
7.1.1 E.U.T. Operation

Operating Environment:
Temperature: 20.5 °C Humidity: 46.9 % RH Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Pre-scan	03	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Pre-scan	04	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Pre-scan	05	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.

7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

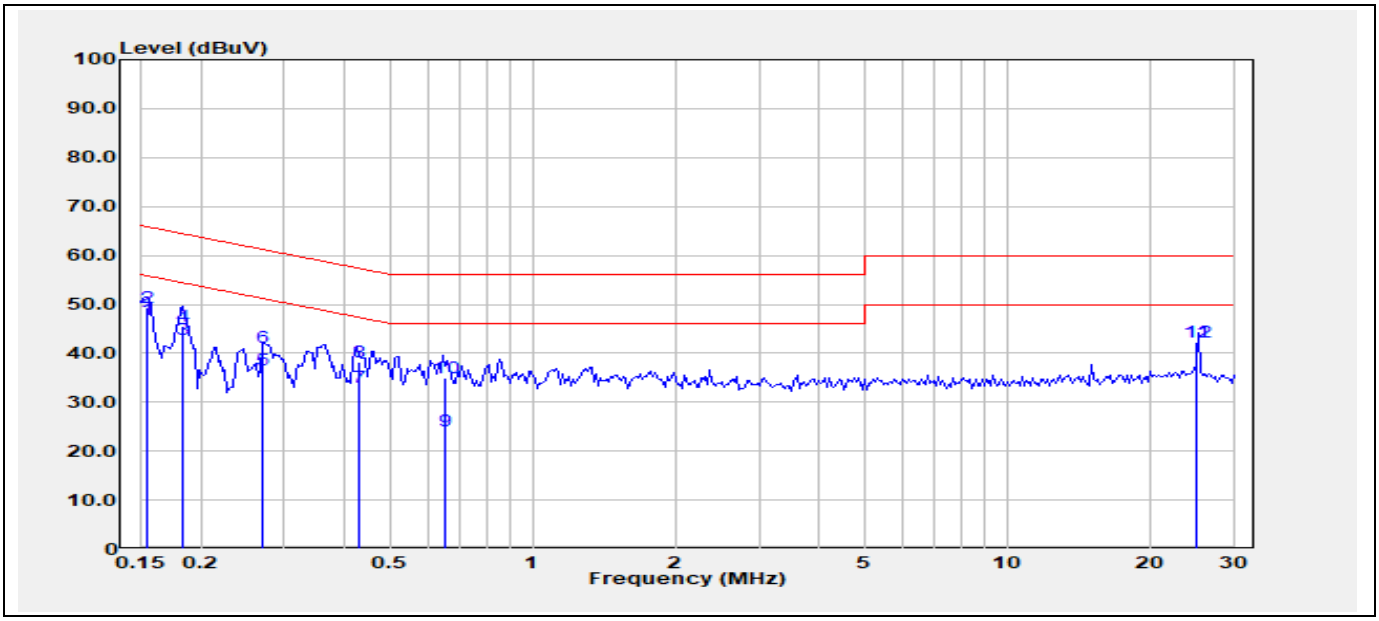
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

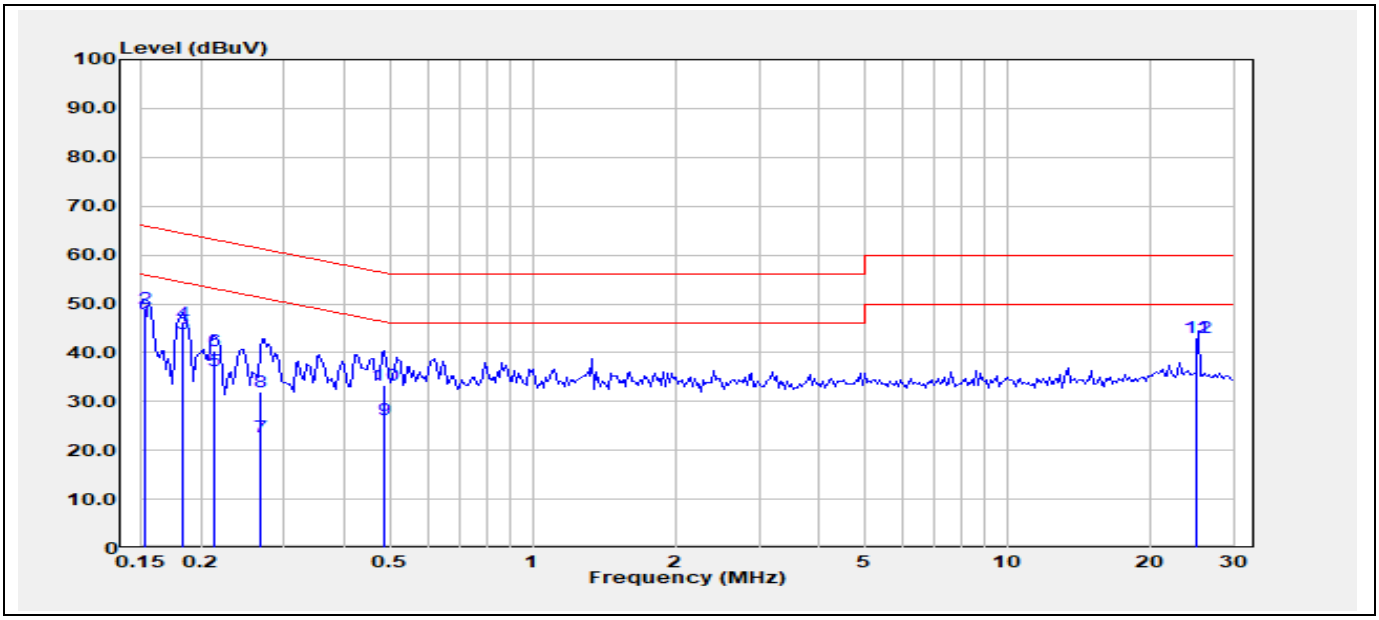
Remark: Level=Read Level+ Cable Loss+ LISN Factor

Test Mode: 00; Line: Live line



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1534	26.71	20.24	46.95	55.81	-8.86	Average
2	0.1534	29.19	20.24	49.43	65.81	-16.38	QP
3	0.1836	22.71	20.11	42.82	54.32	-11.50	Average
4	0.1836	25.34	20.11	45.45	64.32	-18.87	QP
5	0.2689	16.61	20.07	36.68	51.15	-14.47	Average
6	0.2689	21.00	20.07	41.07	61.15	-20.08	QP
7	0.4295	12.96	20.05	33.01	47.26	-14.25	Average
8	0.4295	18.23	20.05	38.28	57.26	-18.98	QP
9	0.6519	4.43	19.82	24.25	46.00	-21.75	Average
10	0.6519	15.04	19.82	34.86	56.00	-21.14	QP
11	25.0720	22.51	19.77	42.28	50.00	-7.72	Average
12	25.0720	22.61	19.77	42.38	60.00	-17.62	QP

Test Mode: 00; Line: Neutral Line



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1530	26.27	20.18	46.45	55.84	-9.39	Average
2	0.1530	28.79	20.18	48.97	65.84	-16.87	QP
3	0.1832	23.89	20.14	44.03	54.34	-10.31	Average
4	0.1832	25.83	20.14	45.97	64.34	-18.37	QP
5	0.2133	16.13	20.11	36.24	53.08	-16.84	Average
6	0.2133	20.17	20.11	40.28	63.08	-22.80	QP
7	0.2670	2.54	20.09	22.63	51.21	-28.58	Average
8	0.2670	11.98	20.09	32.07	61.21	-29.14	QP
9	0.4852	6.40	19.96	26.36	46.25	-19.89	Average
10	0.4852	13.34	19.96	33.30	56.25	-22.95	QP
11	25.0720	23.24	19.81	43.05	50.00	-6.95	Average
12	25.0720	23.33	19.81	43.14	60.00	-16.86	QP

7.2 Maximum Conducted output power

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)

Test Method: KDB 789033 D02 II E

Limit:

Frequency band(MHz)	Limit
5150-5250	≤1W(30dBm) for master device
	≤250mW(24dBm) for client device
5250-5350	≤250mW(24dBm) or 11dBm+10logB*
5470-5725	≤250mW(24dBm) or 11dBm+10logB*
5725-5850	≤1W(30dBm)
Remark:	* Where B is the 26dB emission bandwidth in MHz. The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 20.5 °C Humidity: 46.9 % RH Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	03	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.

7.2.3 Test Setup Diagram

7.2.4 Measurement Procedure and Data

Note: Since the verify power the same operating range bandwidth and smaller power can be covered by the higher power.

Please Refer to Appendix for Details

7.3 Radiated Emissions (Below 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)
Test Method: KDB 789033 D02 II G
Measurement Distance: 3M

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
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
960-1000	500	3

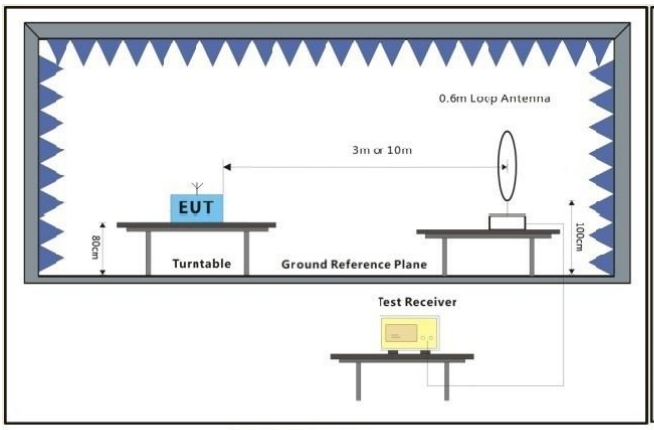
7.3.1 E.U.T. Operation

Operating Environment:
Temperature: 23.3 °C Humidity: 45.2 % RH Atmospheric Pressure: 1010 mbar

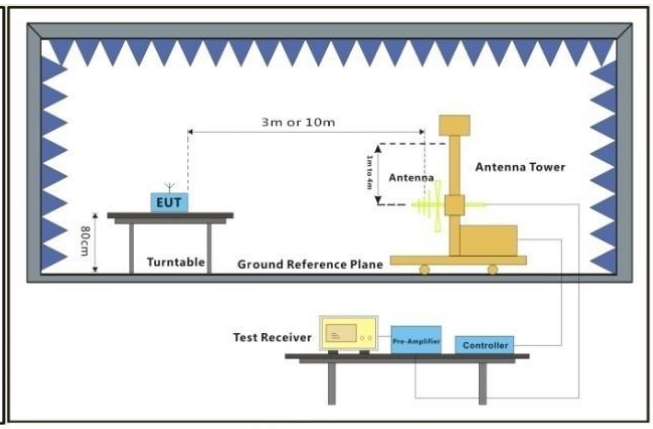
7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Pre-scan	03	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Pre-scan	04	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Pre-scan	05	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.

7.3.3 Test Setup Diagram



Below 30MHz



30MHz-1GHz

7.3.4 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna height 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.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel, the middle channel, the Highest channel.

h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

i. Repeat above procedures until all frequencies measured was complete.

Remark:

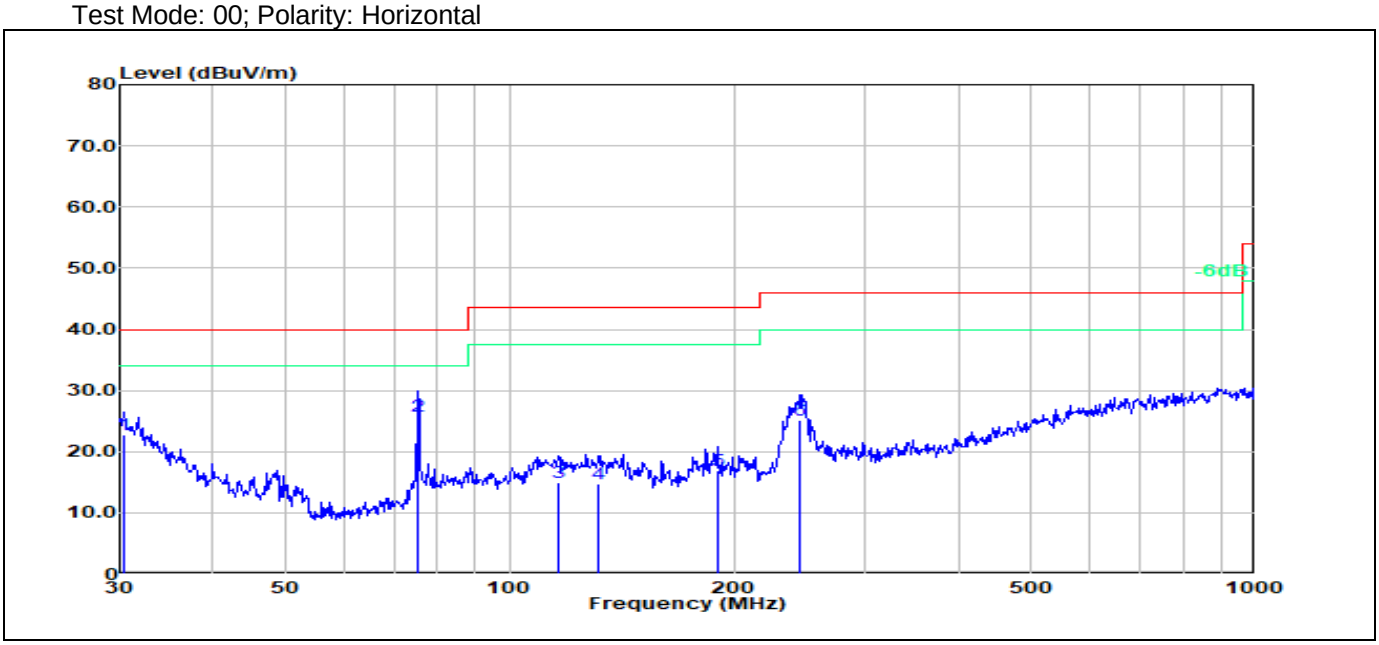
1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

2. For emission below 1GHz, through the pre-scan found the worst case is the lowest channel of 802.11a. Only the worst case is recorded in the report.

3. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

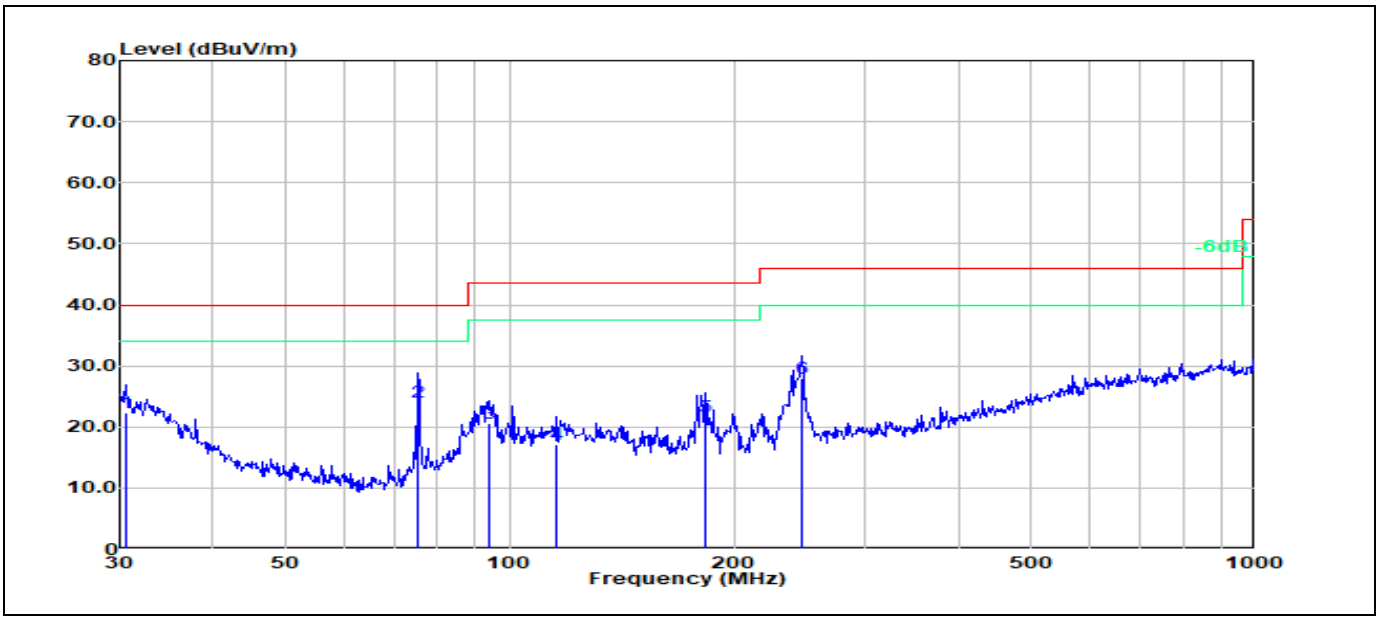
4. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

Test Mode: 00; Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.4240	3.61	19.08	22.69	40.00	-17.31	100	360	QP
2	75.4460	16.51	9.20	25.71	40.00	-14.29	100	332	QP
3	116.1320	1.62	13.41	15.03	43.50	-28.47	100	357	QP
4	131.7580	0.13	14.51	14.64	43.50	-28.86	100	106	QP
5	189.7390	5.01	11.81	16.82	43.50	-26.68	100	313	QP
6	245.0900	11.43	13.68	25.11	46.00	-20.89	100	0	QP

Test Mode: 00; Polarity: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	30.5310	3.37	19.00	22.37	40.00	-17.63	100	360	QP
2	75.4460	14.96	9.20	24.16	40.00	-15.84	100	283	QP
3	93.7680	8.36	12.19	20.55	43.50	-22.95	100	151	QP
4	115.3210	3.29	13.75	17.04	43.50	-26.46	100	356	QP
5	183.2010	9.08	12.50	21.58	43.50	-21.92	100	163	QP
6	246.8150	14.12	13.84	27.96	46.00	-18.04	100	330	QP

7.4 Radiated Emissions (Above 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)
Test Method: KDB 789033 D02 II G
Measurement Distance: 3M

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
Above 1GHz	500	3

*(1) 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.

(2) 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.

(3) 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.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) 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.

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

7.4.1 E.U.T. Operation

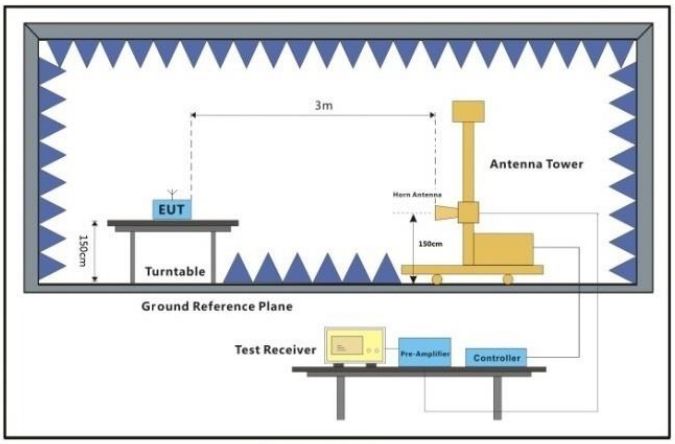
Operating Environment:
Temperature: 23.3 °C Humidity: 45.2 % RH Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	03	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and

		found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.

7.4.3 Test Setup Diagram



Above 1GHz

7.4.4 Measurement Procedure and Data

a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna height 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.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel, the middle channel, the Highest channel.

h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

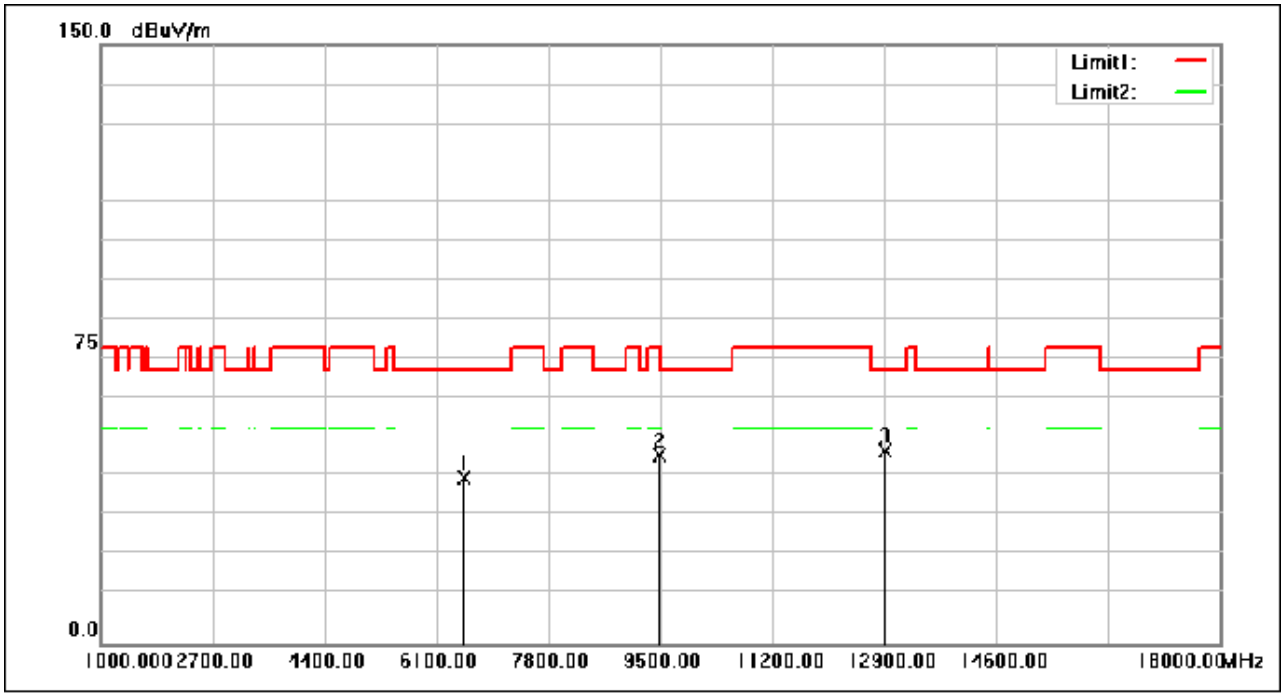
2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

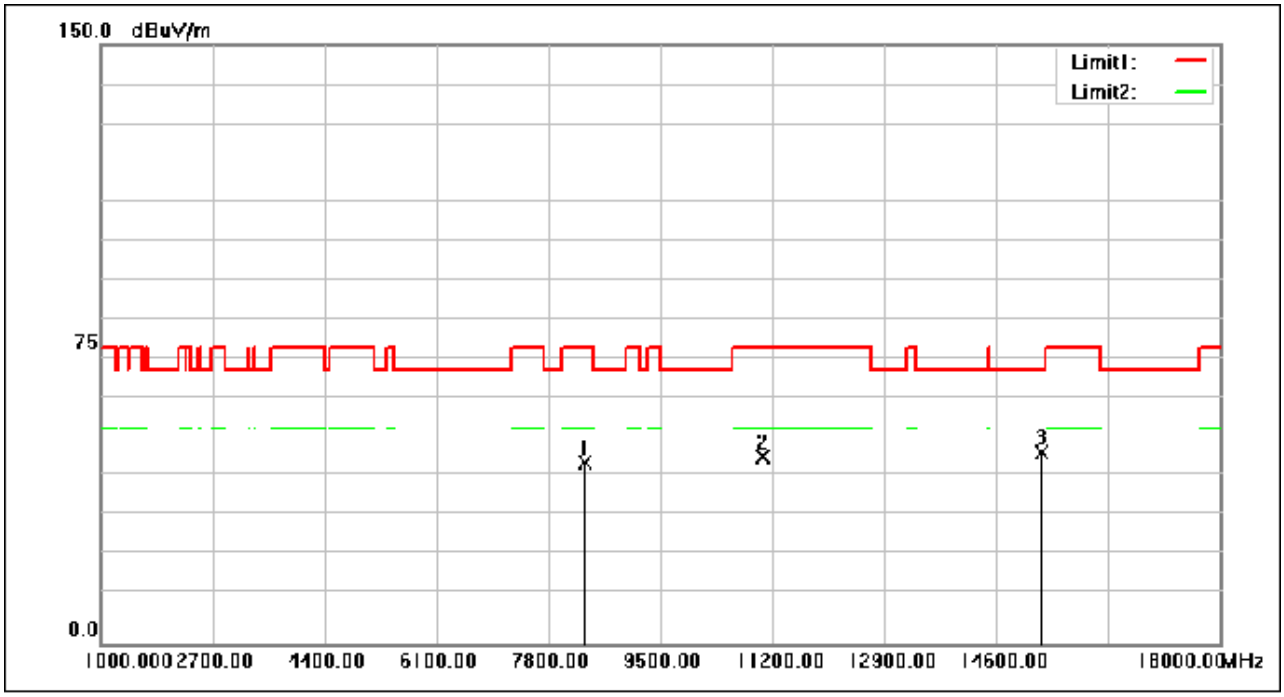
5. For devices with multiple operating modes, measurements on the middle channel is used to determine the worst-case mode(s). Only the worst case mode with the highest output power and the mode with the highest output power spectral density for each modulation family (e.g., OFDM and direct sequence spread spectrum) is recorded in the test report.

Test Mode: 02; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



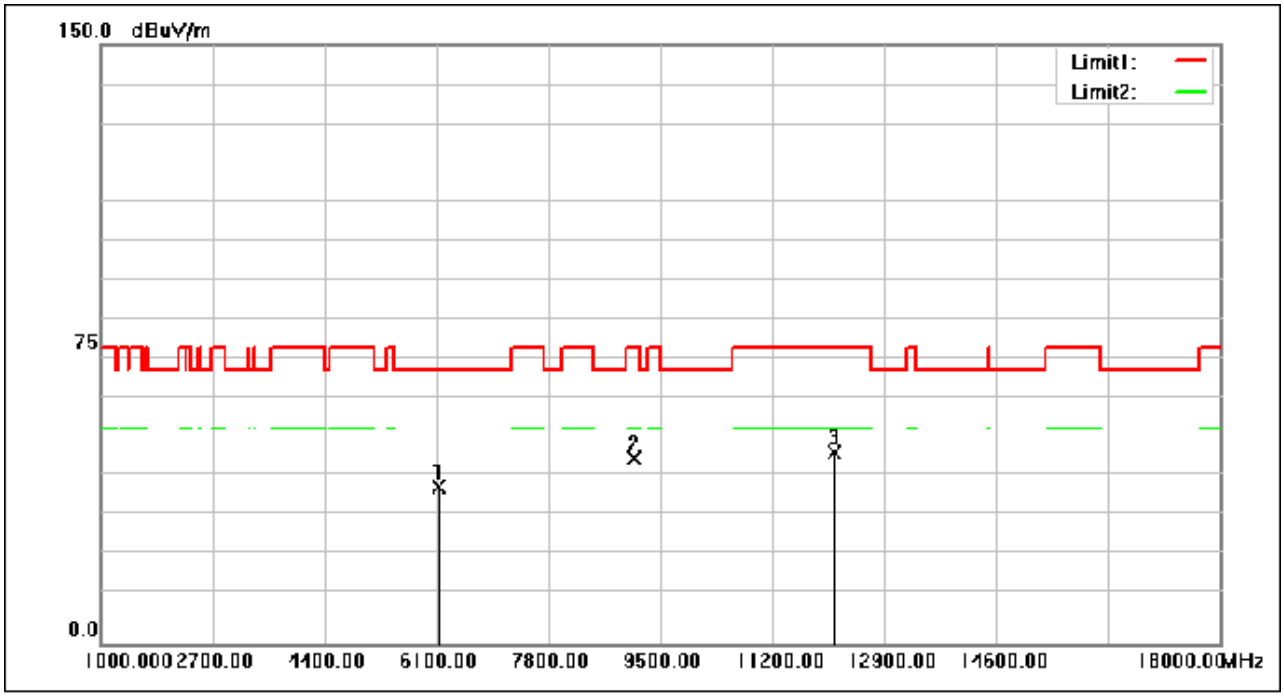
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6537.750	54.29	-13.03	41.26	68.30	-27.04	peak
2	9486.400	55.06	-7.98	47.08	74.00	-26.92	peak
3	12907.650	54.57	-6.30	48.27	68.30	-20.03	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



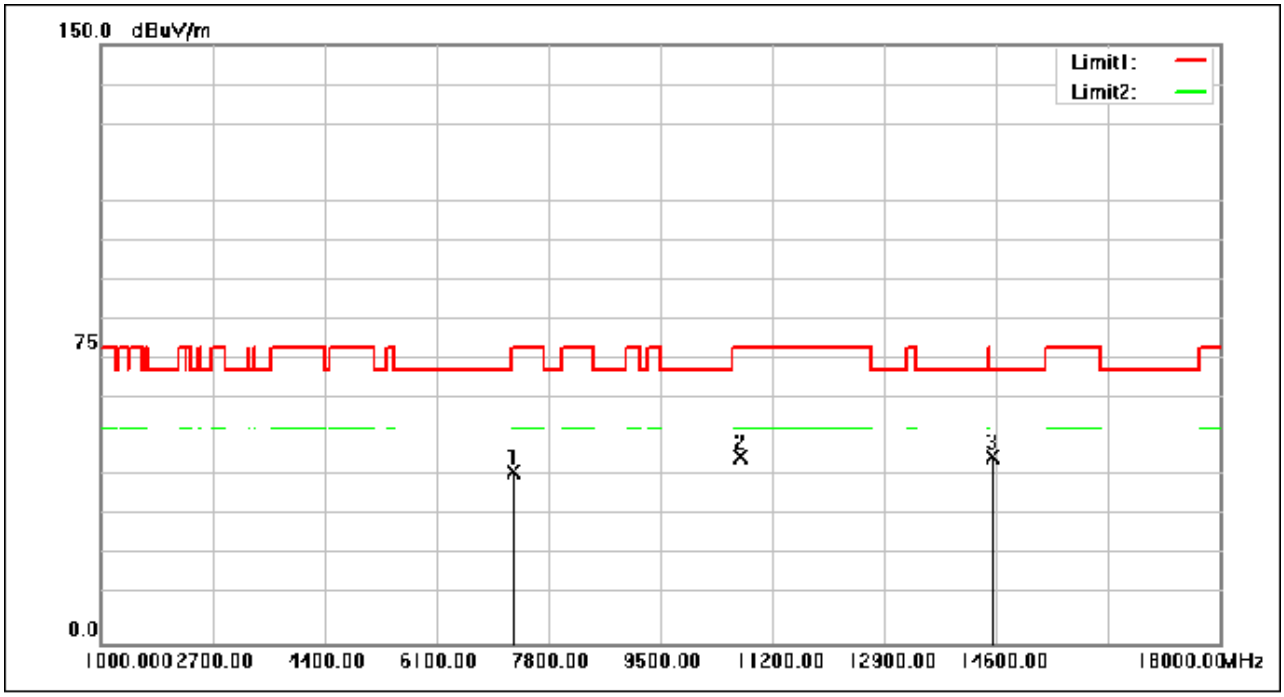
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8377.150	55.02	-9.96	45.06	74.00	-28.94	peak
2	11058.050	53.38	-6.71	46.67	74.00	-27.33	peak
3	15298.700	52.59	-4.83	47.76	68.30	-20.54	peak

Test Mode: 02; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



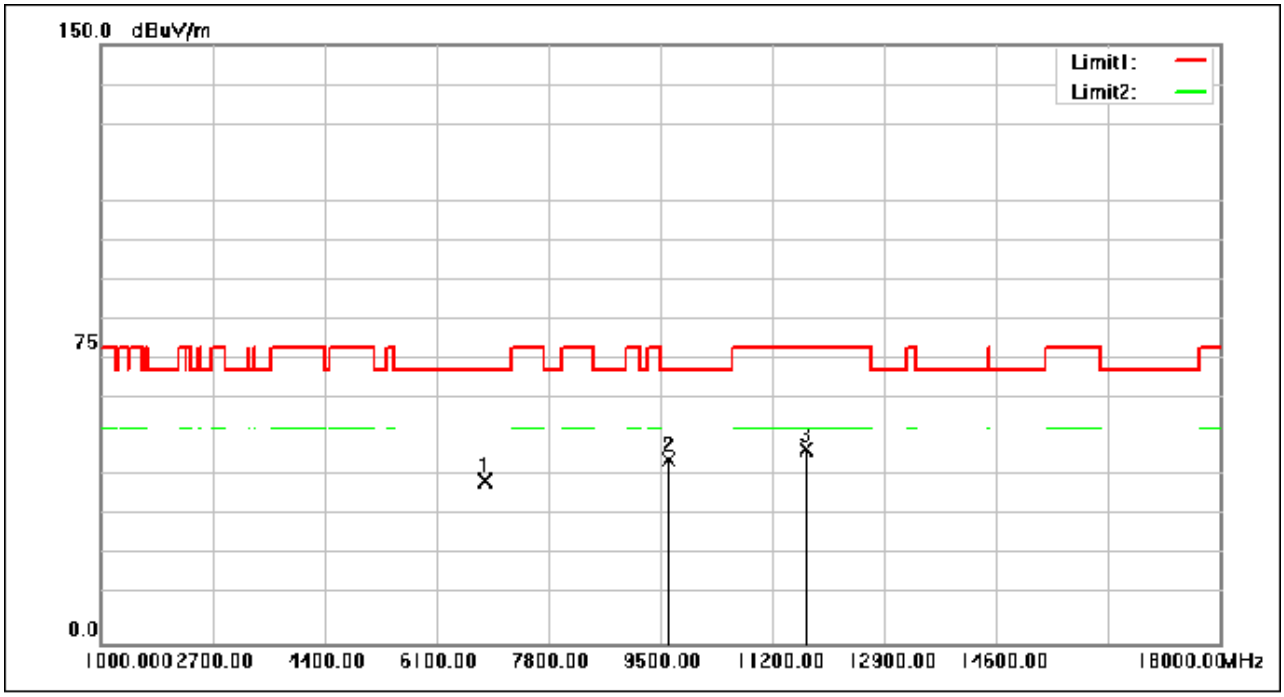
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6147.600	54.43	-15.07	39.36	68.30	-28.94	peak
2	9113.250	55.14	-8.68	46.46	74.00	-27.54	peak
3	12143.500	53.82	-5.95	47.87	74.00	-26.13	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



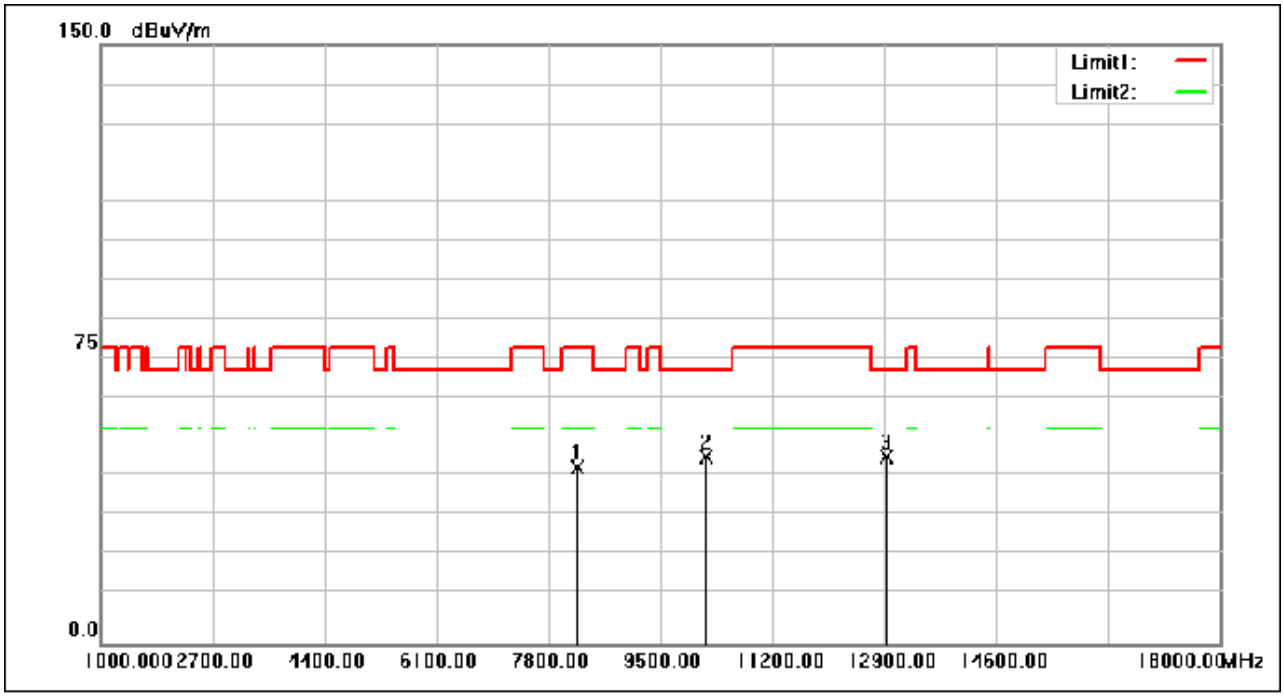
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7286.600	54.39	-11.44	42.95	74.00	-31.05	peak
2	10716.350	53.72	-6.92	46.80	74.00	-27.20	peak
3	14532.850	52.49	-5.89	46.60	68.30	-21.70	peak

Test Mode: 02; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



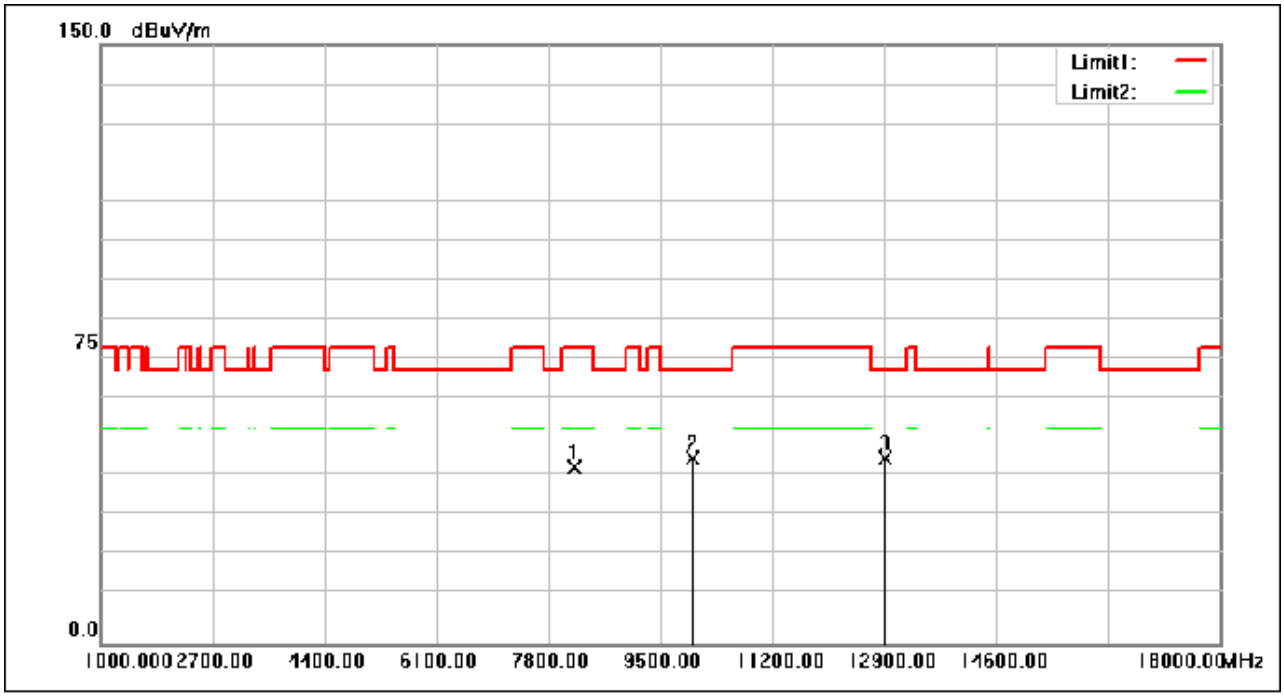
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6838.650	52.67	-11.85	40.82	68.30	-27.48	peak
2	9635.150	53.53	-7.70	45.83	68.30	-22.47	peak
3	11711.700	54.65	-6.19	48.46	74.00	-25.54	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



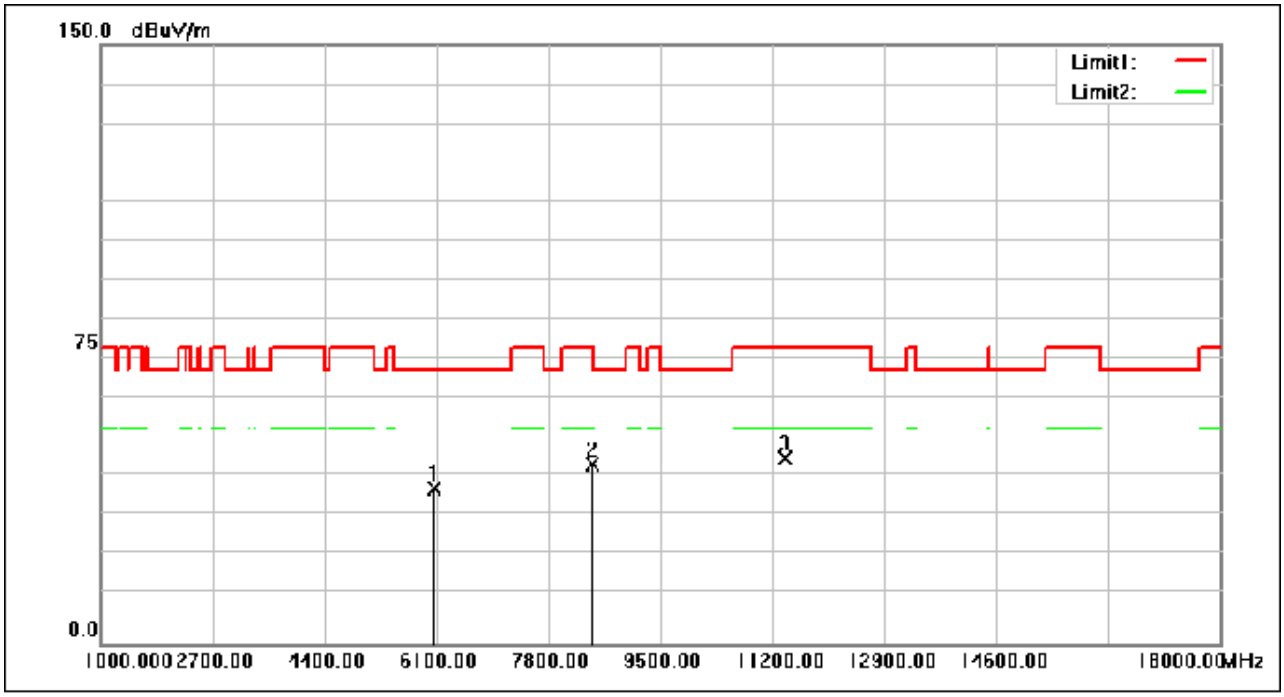
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8246.250	54.24	-10.18	44.06	74.00	-29.94	peak
2	10194.450	54.00	-7.21	46.79	68.30	-21.51	peak
3	12945.050	53.11	-6.32	46.79	68.30	-21.51	peak

Test Mode: 03; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



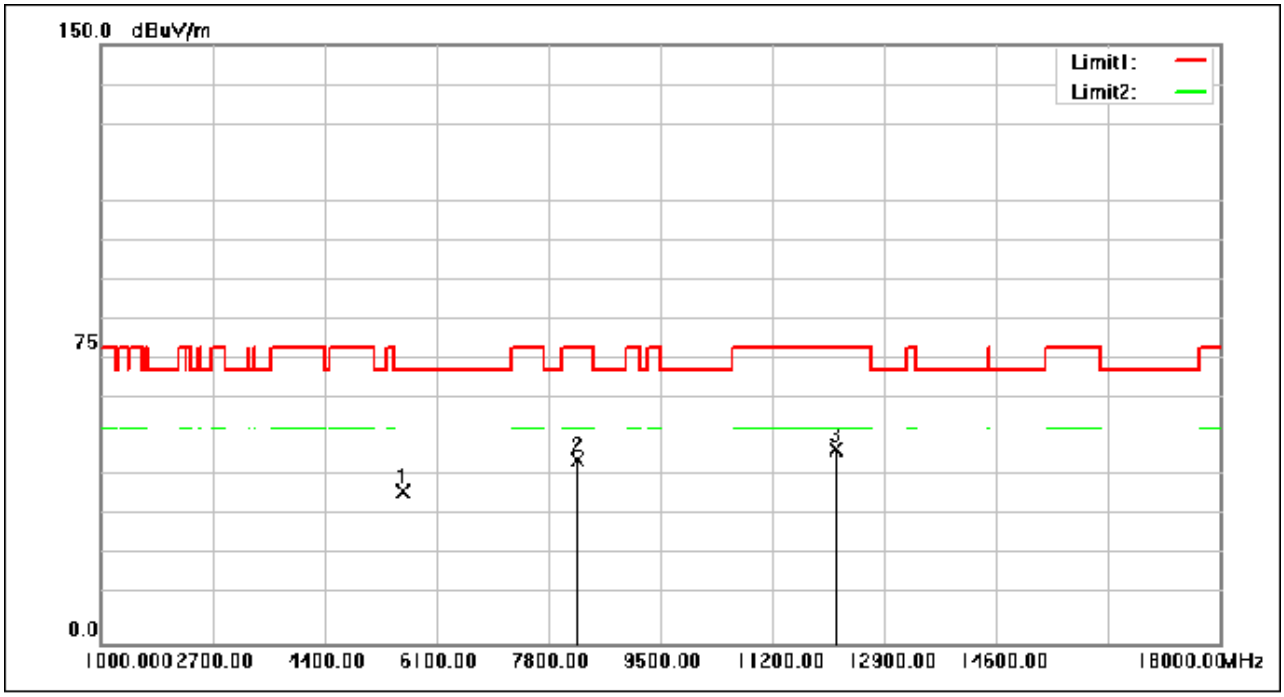
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8206.300	54.40	-10.24	44.16	74.00	-29.84	peak
2	9998.950	53.48	-7.33	46.15	68.30	-22.15	peak
3	12911.050	52.68	-6.30	46.38	68.30	-21.92	peak

Test Mode: 03; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



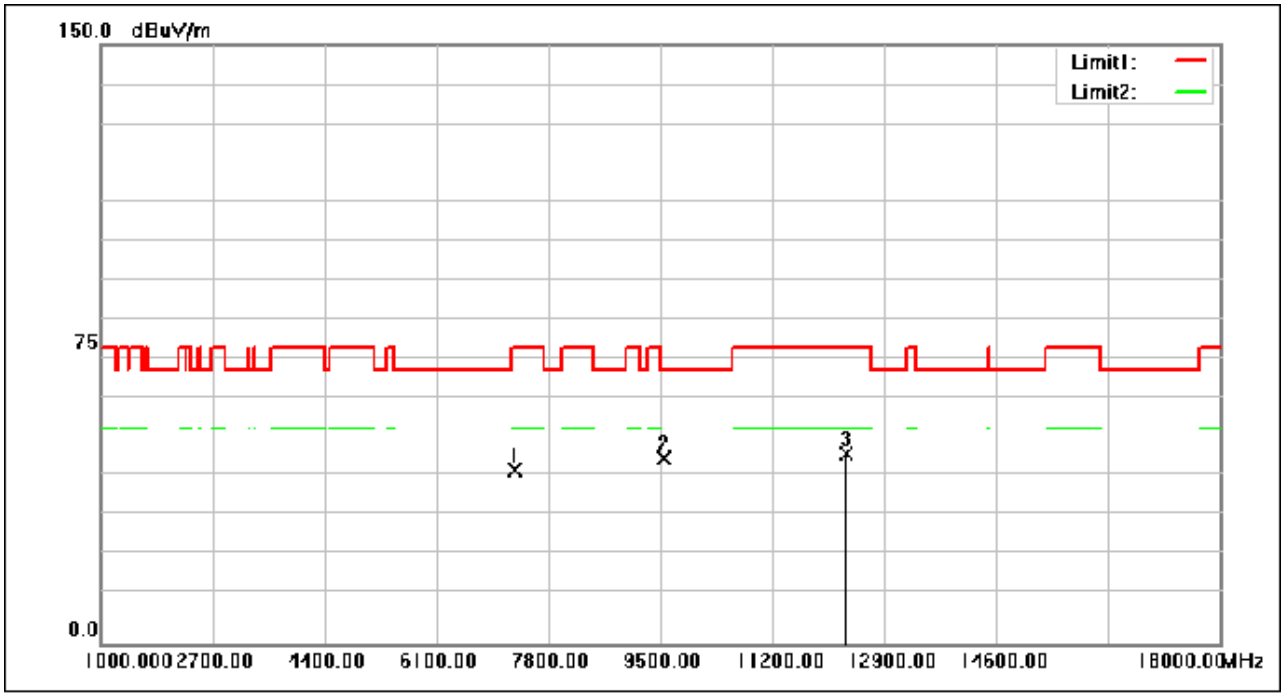
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6068.550	54.20	-15.45	38.75	68.30	-29.55	peak
2	8472.350	54.71	-9.80	44.91	74.00	-29.09	peak
3	11387.000	52.90	-6.45	46.45	74.00	-27.55	peak

Test Mode: 03; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



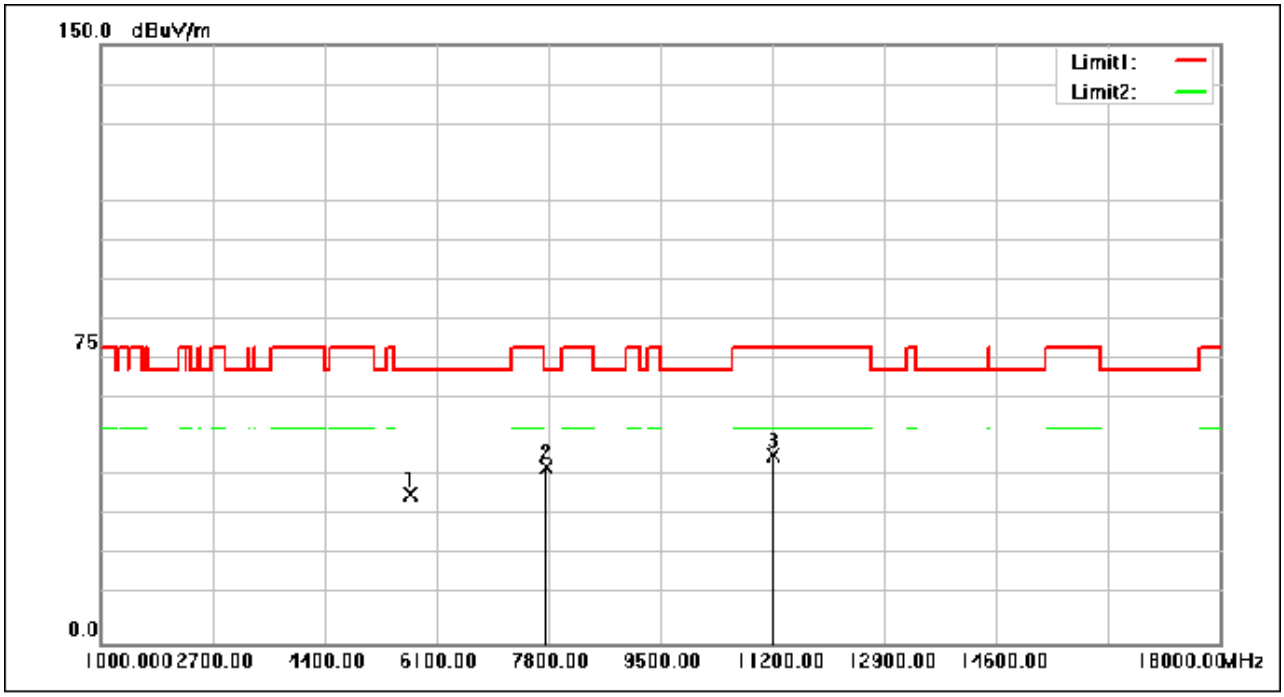
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5604.450	55.44	-17.42	38.02	68.30	-30.28	peak
2	8252.200	56.28	-10.16	46.12	74.00	-27.88	peak
3	12178.350	54.45	-5.97	48.48	74.00	-25.52	peak

Test Mode: 03; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



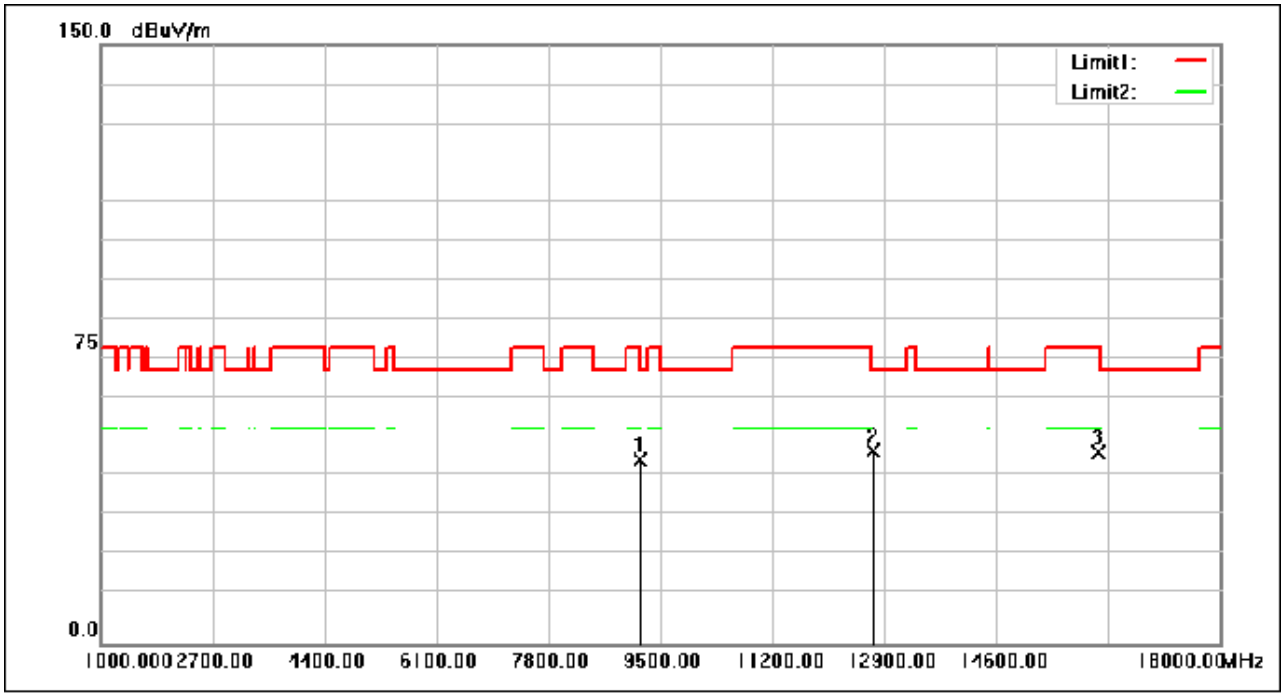
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7294.250	54.78	-11.44	43.34	74.00	-30.66	peak
2	9566.300	54.28	-7.83	46.45	68.30	-21.85	peak
3	12329.650	53.45	-6.03	47.42	74.00	-26.58	peak

Test Mode: 03; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



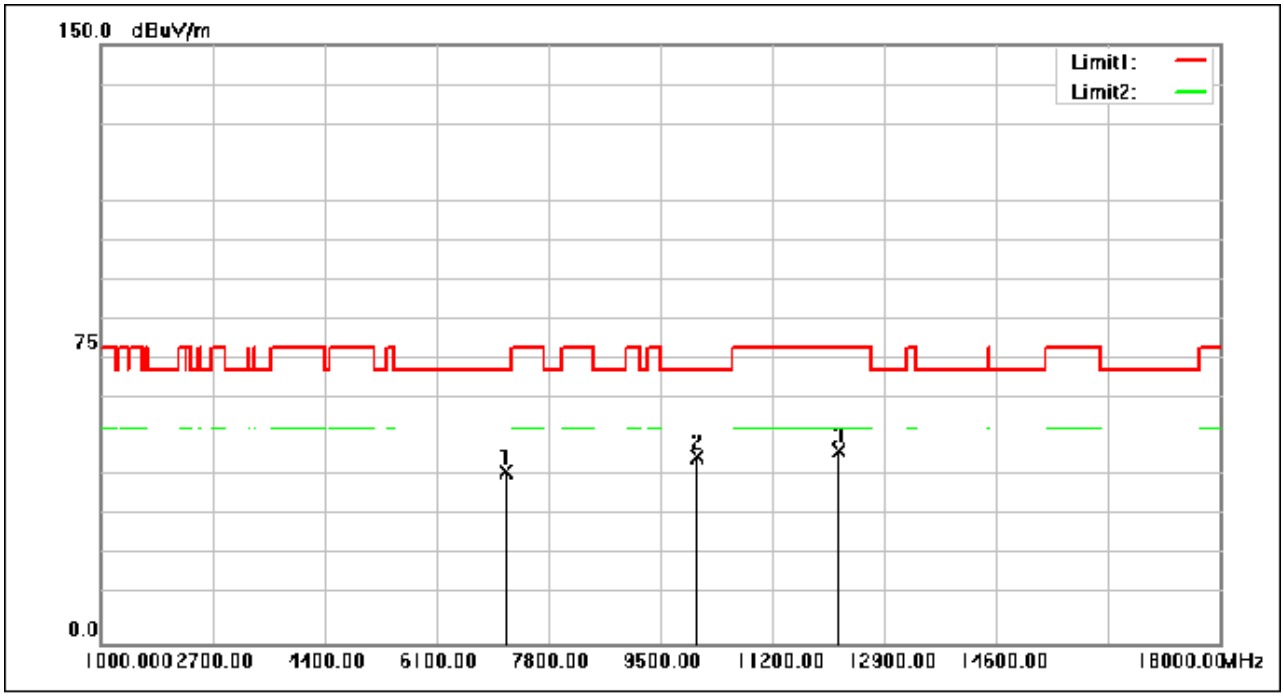
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5692.000	54.34	-17.05	37.29	68.30	-31.01	peak
2	7766.850	55.03	-10.90	44.13	68.30	-24.17	peak
3	11217.000	53.52	-6.58	46.94	74.00	-27.06	peak

Test Mode: 03; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



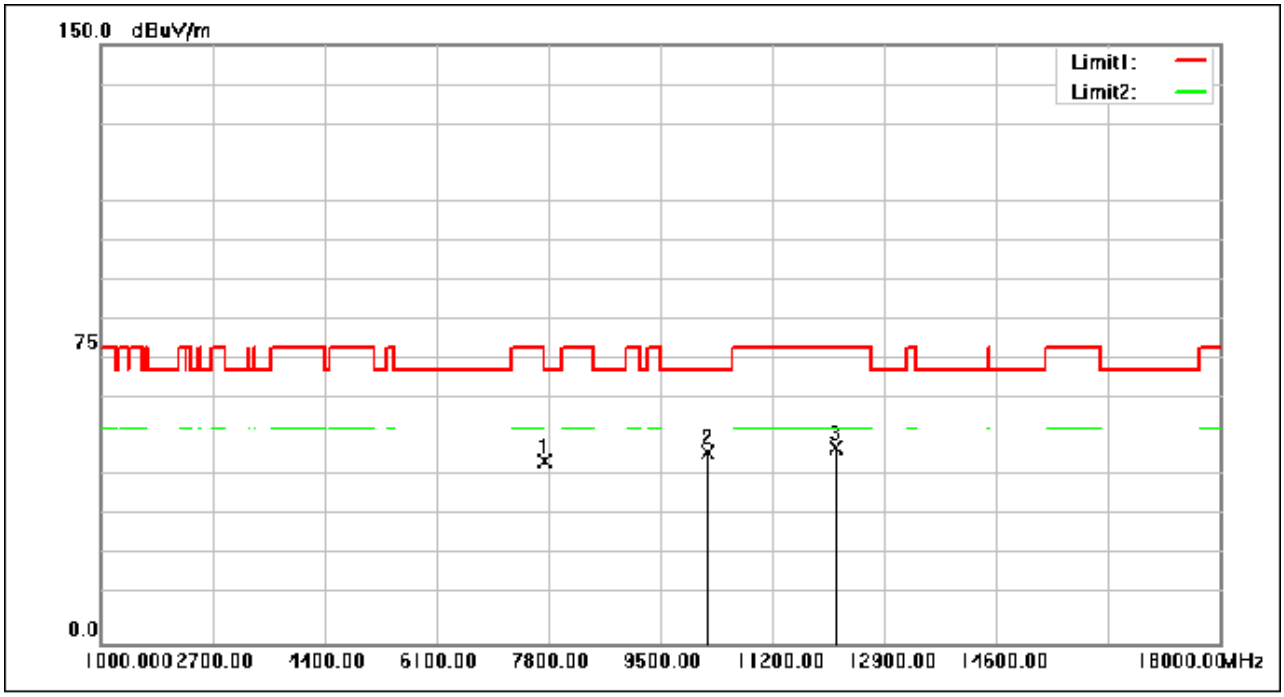
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9207.600	54.35	-8.51	45.84	68.30	-22.46	peak
2	12736.800	54.38	-6.22	48.16	68.30	-20.14	peak
3	16163.150	51.73	-3.95	47.78	74.00	-26.22	peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



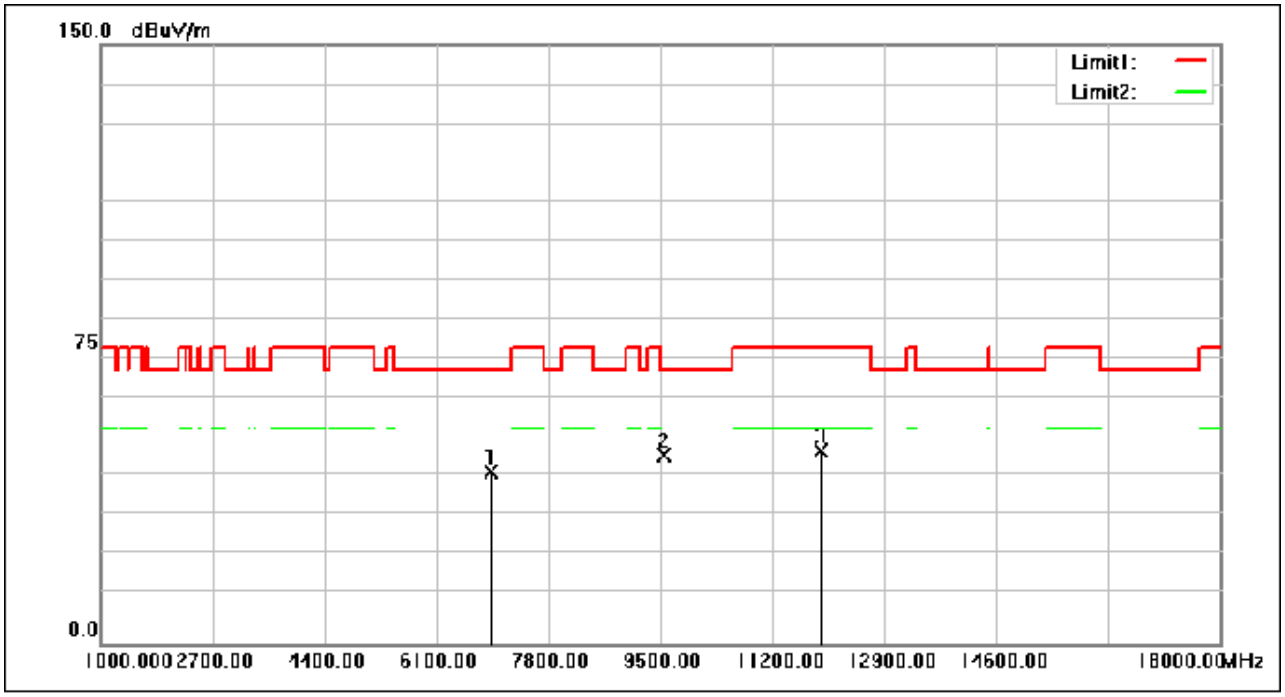
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7154.000	54.26	-11.50	42.76	68.30	-25.54	peak
2	10070.350	54.02	-7.29	46.73	68.30	-21.57	peak
3	12208.950	54.00	-5.98	48.02	74.00	-25.98	peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



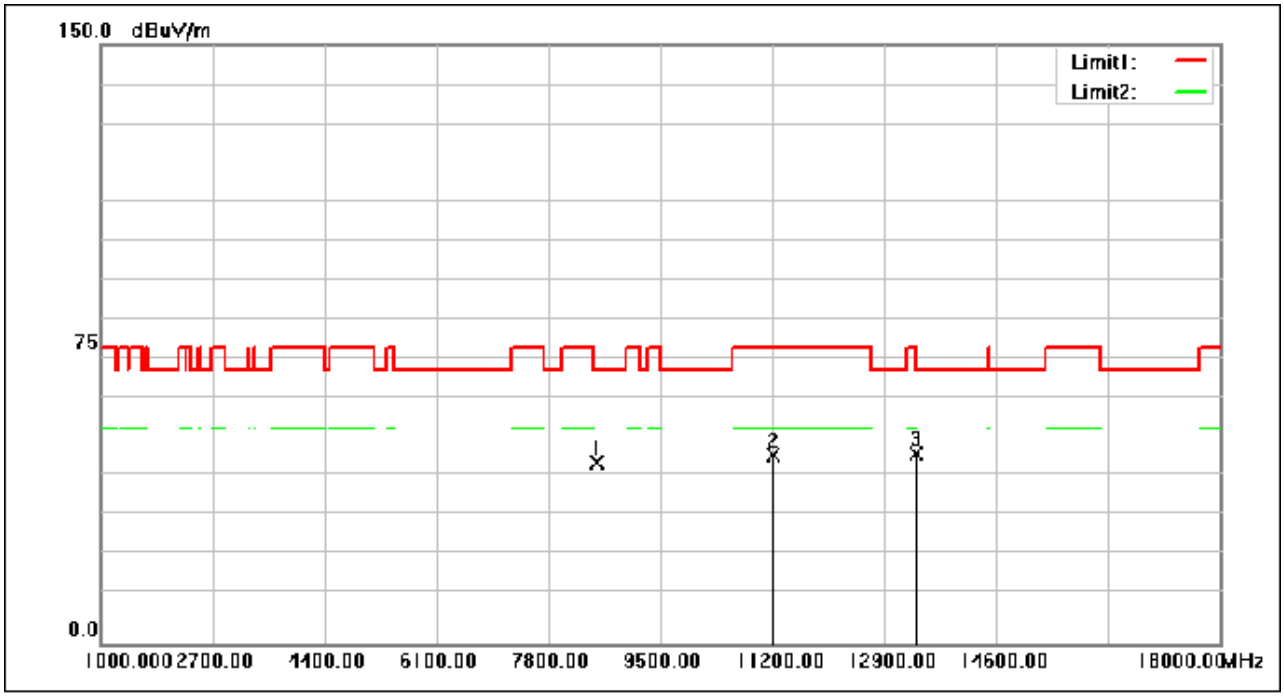
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7752.400	56.44	-10.93	45.51	68.30	-22.79	peak
2	10224.200	55.01	-7.20	47.81	68.30	-20.49	peak
3	12169.000	54.92	-5.97	48.95	74.00	-25.05	peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



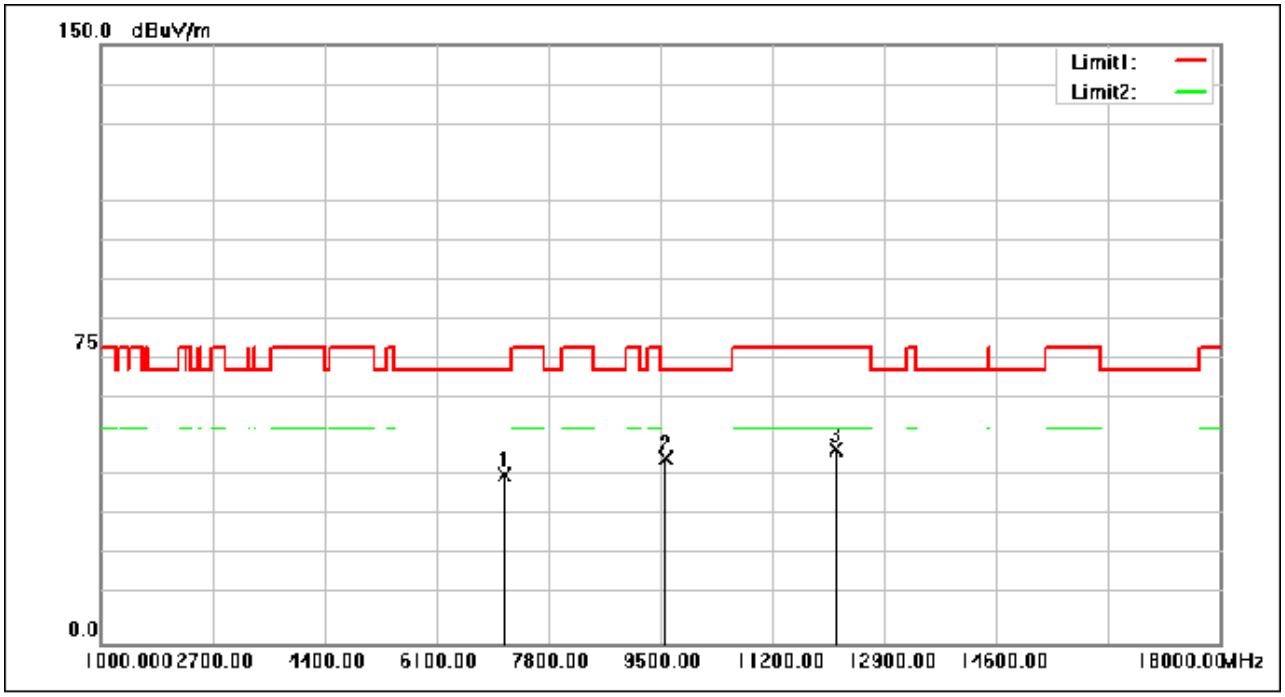
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6920.250	54.72	-11.71	43.01	68.30	-25.29	peak
2	9562.900	54.93	-7.84	47.09	68.30	-21.21	peak
3	11938.650	54.32	-5.99	48.33	74.00	-25.67	peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



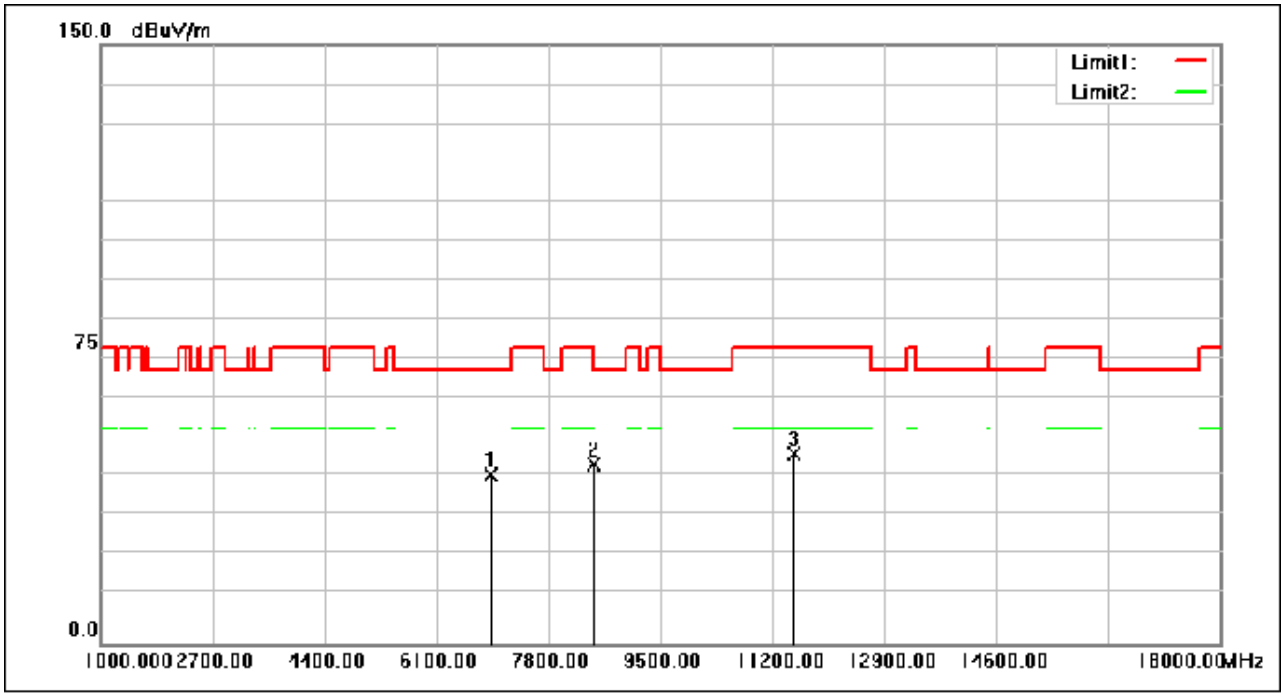
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8533.550	54.72	-9.70	45.02	68.30	-23.28	peak
2	11224.650	53.76	-6.59	47.17	74.00	-26.83	peak
3	13406.600	53.94	-6.32	47.62	68.30	-20.68	peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



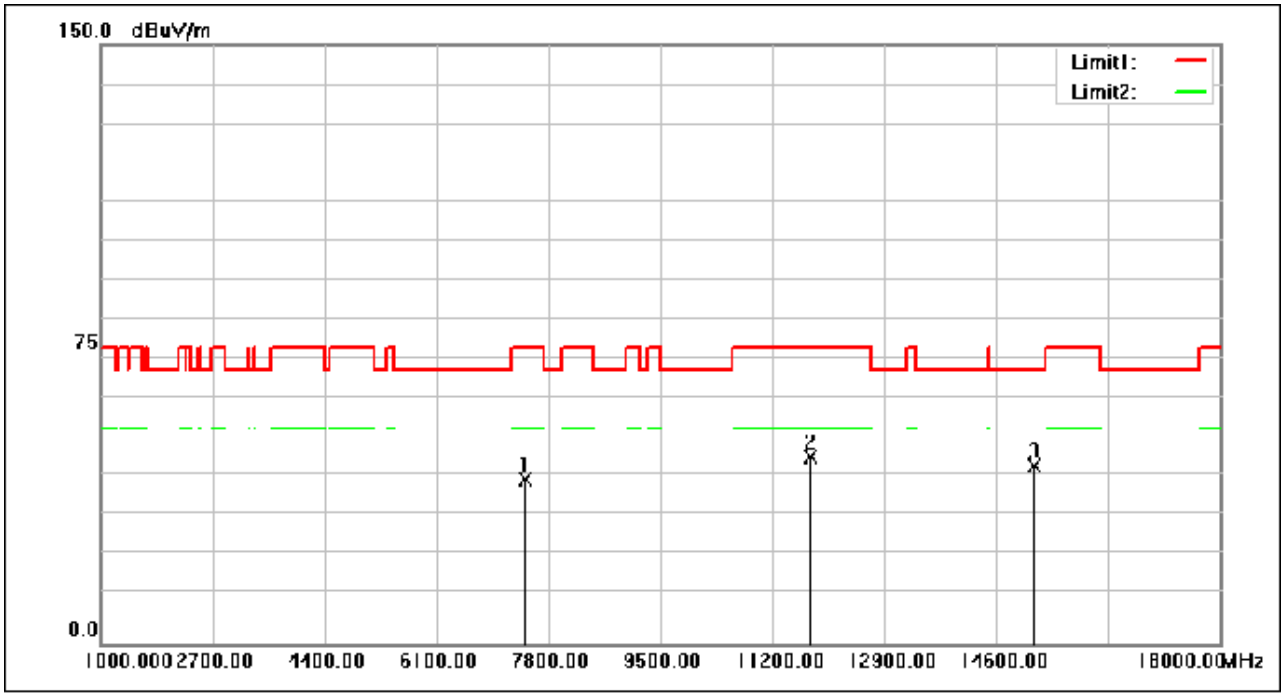
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7146.350	53.65	-11.50	42.15	68.30	-26.15	peak
2	9582.450	54.03	-7.80	46.23	68.30	-22.07	peak
3	12155.400	54.35	-5.96	48.39	74.00	-25.61	peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



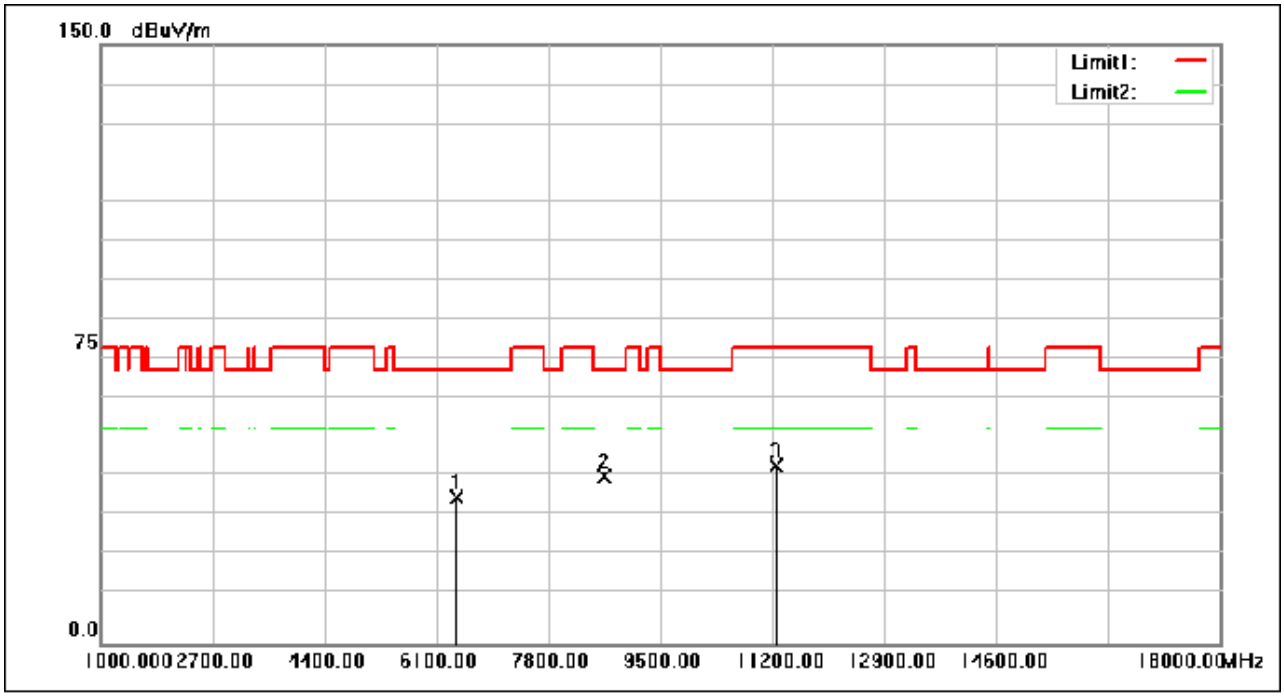
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6925.350	54.03	-11.69	42.34	68.30	-25.96	peak
2	8497.850	54.46	-9.76	44.70	74.00	-29.30	peak
3	11531.500	53.66	-6.34	47.32	74.00	-26.68	peak

Test Mode: 05; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



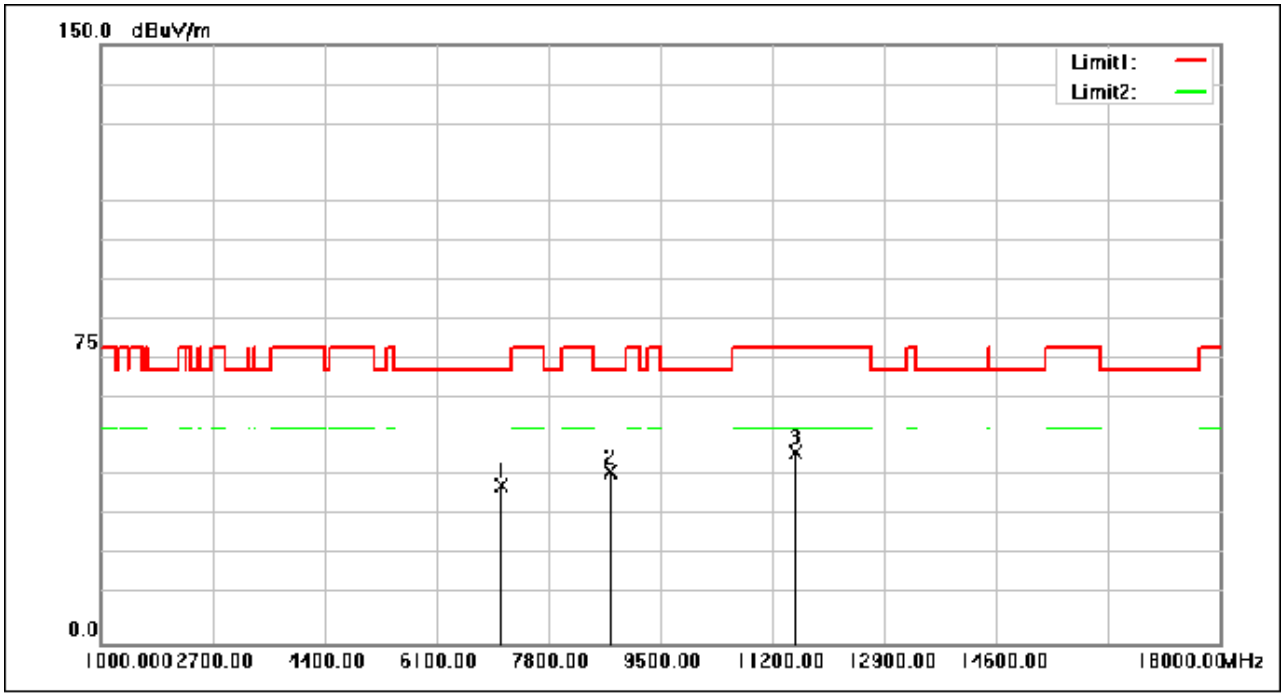
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7448.950	52.35	-11.33	41.02	74.00	-32.98	peak
2	11781.400	52.83	-6.13	46.70	74.00	-27.30	peak
3	15194.150	49.48	-4.92	44.56	68.30	-23.74	peak

Test Mode: 05; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



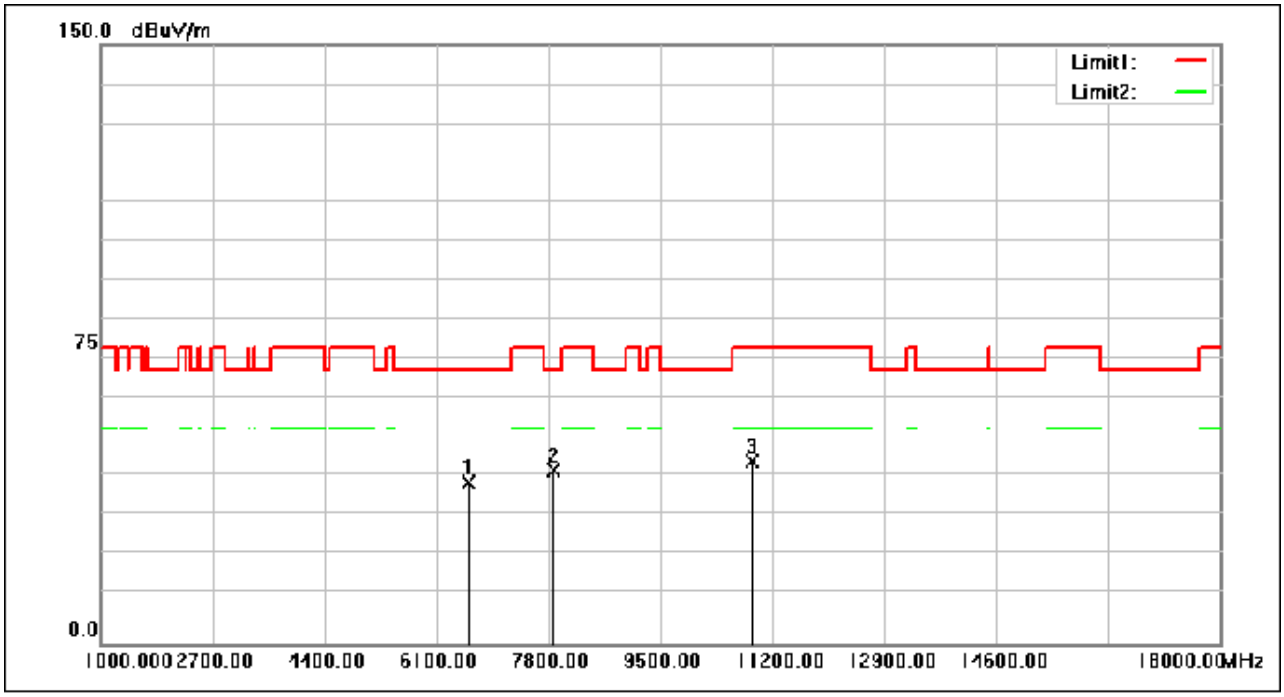
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6408.550	50.12	-13.70	36.42	68.30	-31.88	peak
2	8664.450	51.32	-9.48	41.84	68.30	-26.46	peak
3	11263.750	50.81	-6.55	44.26	74.00	-29.74	peak

Test Mode: 05; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



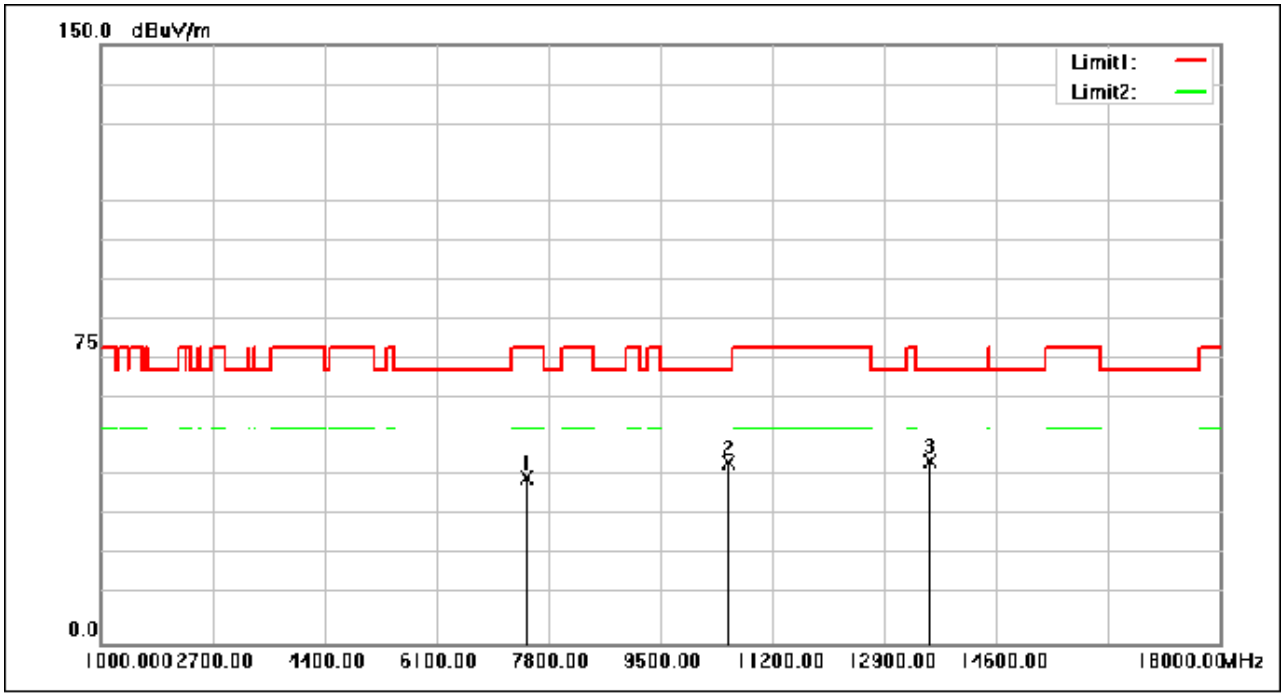
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7089.400	51.23	-11.53	39.70	68.30	-28.60	peak
2	8740.950	52.21	-9.36	42.85	68.30	-25.45	peak
3	11560.400	53.94	-6.31	47.63	74.00	-26.37	peak

Test Mode: 05; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



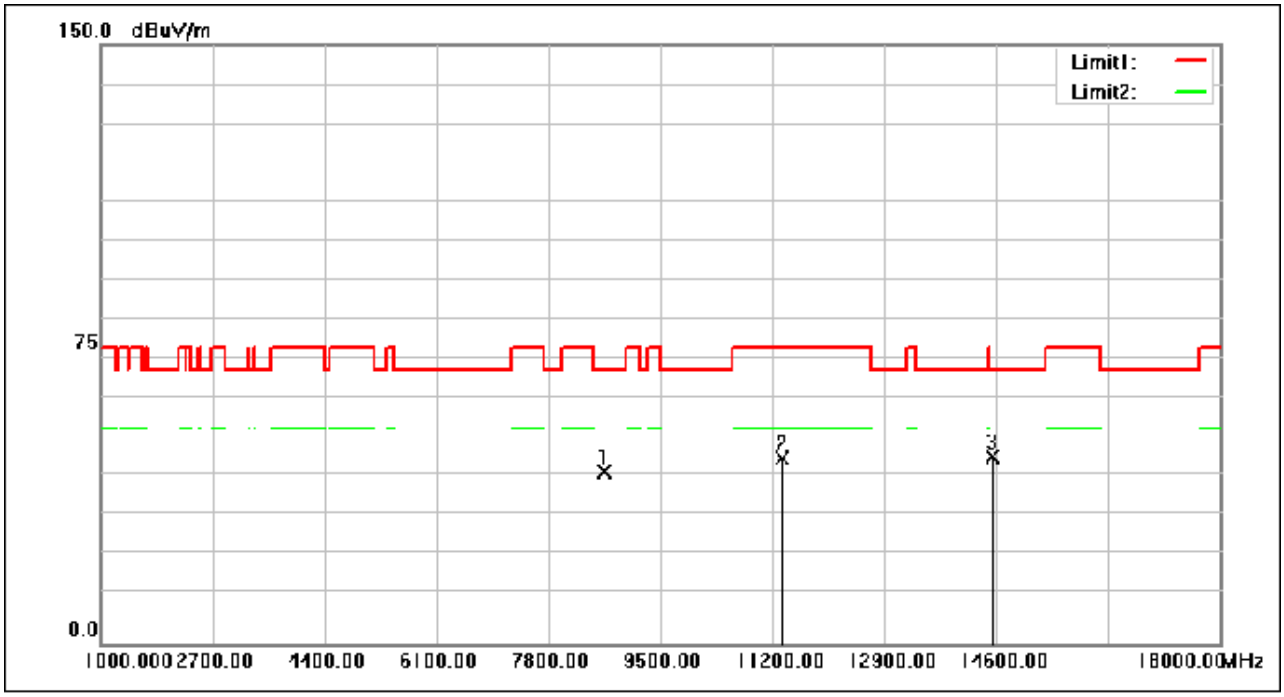
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6605.750	52.93	-12.67	40.26	68.30	-28.04	peak
2	7893.500	54.03	-10.74	43.29	68.30	-25.01	peak
3	10898.250	52.42	-6.81	45.61	74.00	-28.39	peak

Test Mode: 05; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7488.050	52.78	-11.28	41.50	74.00	-32.50	peak
2	10553.150	52.05	-7.01	45.04	68.30	-23.26	peak
3	13610.600	51.94	-6.36	45.58	68.30	-22.72	peak

Test Mode: 05; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8663.600	52.29	-9.48	42.81	68.30	-25.49	peak
2	11353.850	52.67	-6.48	46.19	74.00	-27.81	peak
3	14549.000	52.44	-5.86	46.58	68.30	-21.72	peak

7.5 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)
Test Method: KDB 789033 D02 II G
Measurement Distance: 3M

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
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

*(1) 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.

(2) 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.

(3) 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.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) 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.

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

7.5.1 E.U.T. Operation

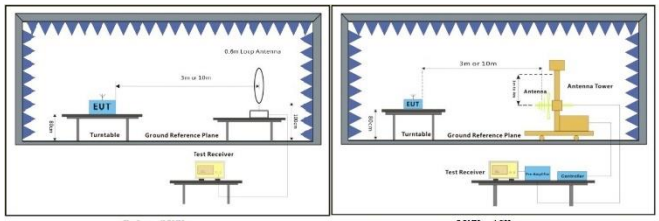
Operating Environment:
Temperature: 23.3 °C Humidity: 45.2 % RH Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description

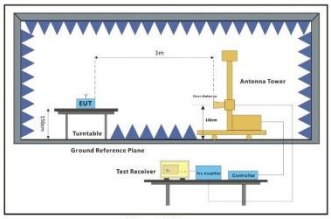
Final test	02	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	03	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.

7.5.3 Test Setup Diagram



Below 30MHz

30MHz-1GHz



Above 1GHz

7.5.4 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. The antenna height 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.

e. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

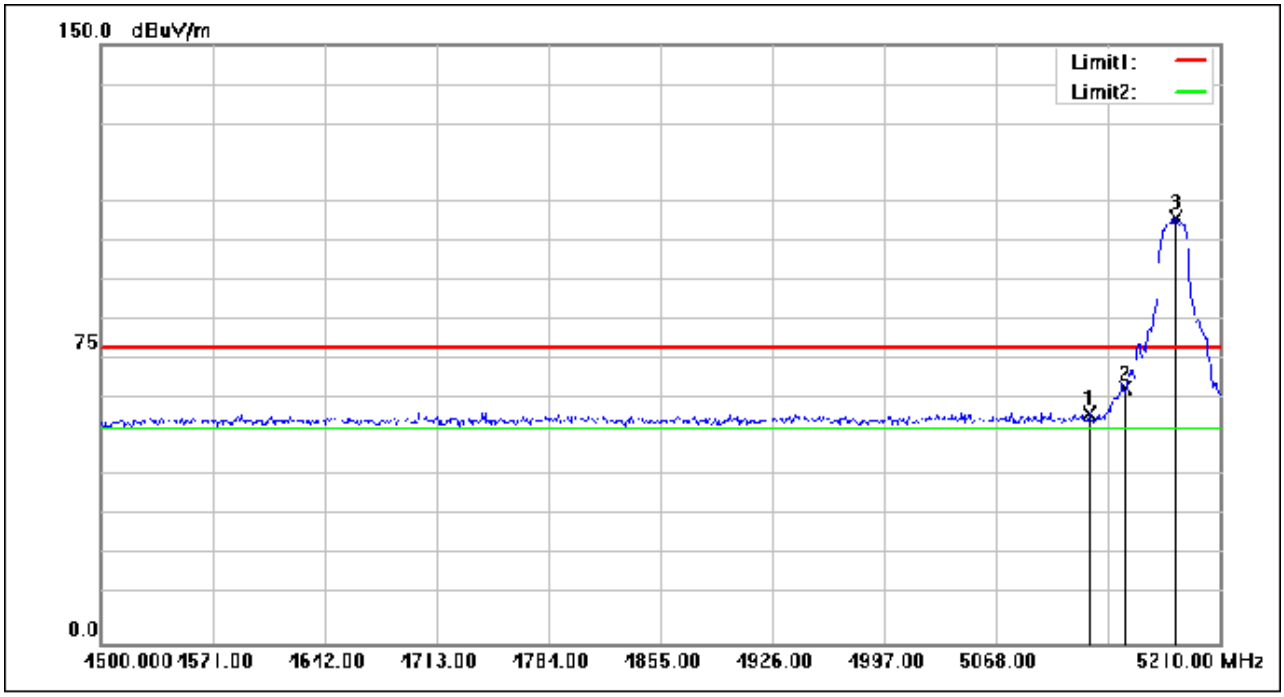
h. Test the EUT in the lowest channel, the middle channel, the Highest channel.

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j. Repeat above procedures until all frequencies measured was complete.

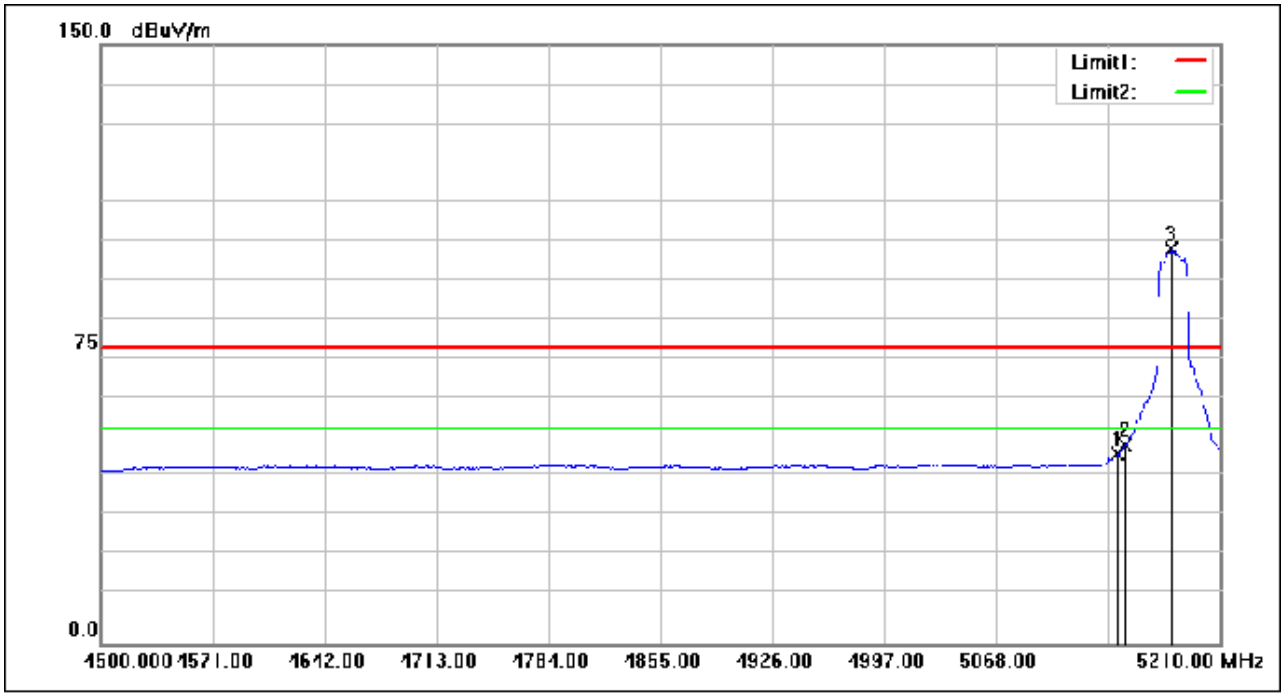
Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Test Mode: 02; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



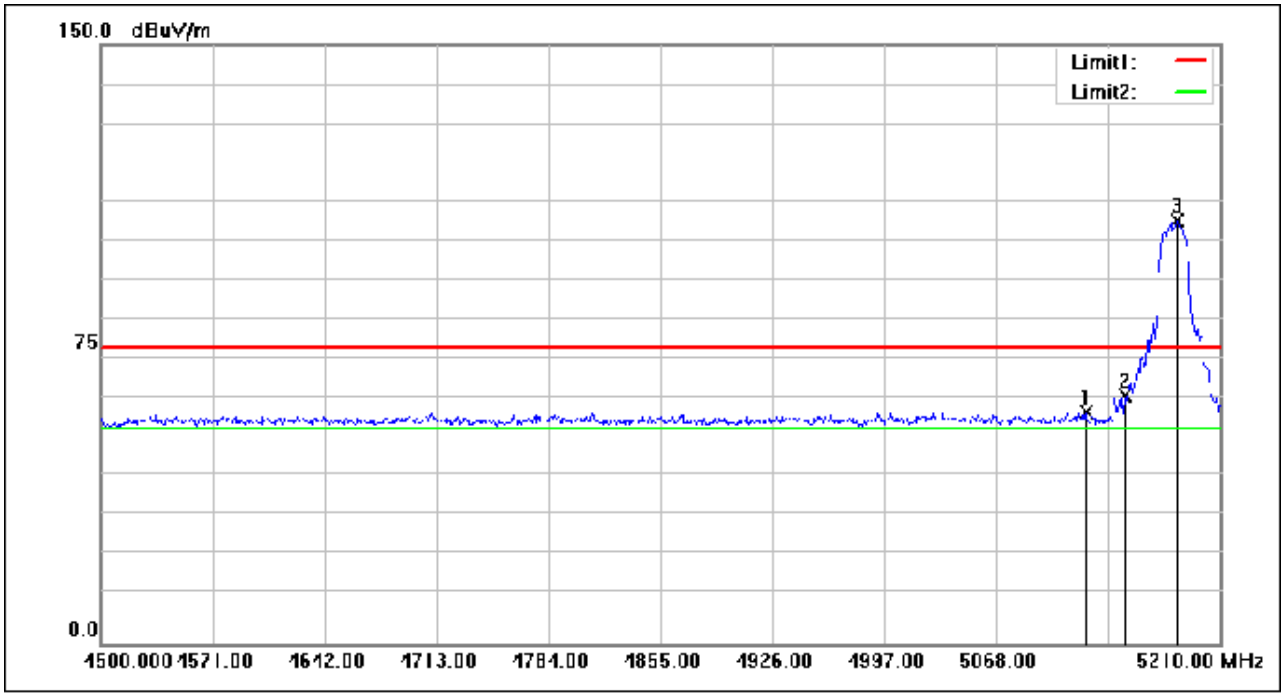
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5126.930	75.76	-18.25	57.51	74.00	-16.49	peak
2	5150.000	82.16	-18.21	63.95	74.00	-10.05	peak
3	5182.310	125.00	-18.17	106.83	74.00	32.83	peak

Test Mode: 02; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



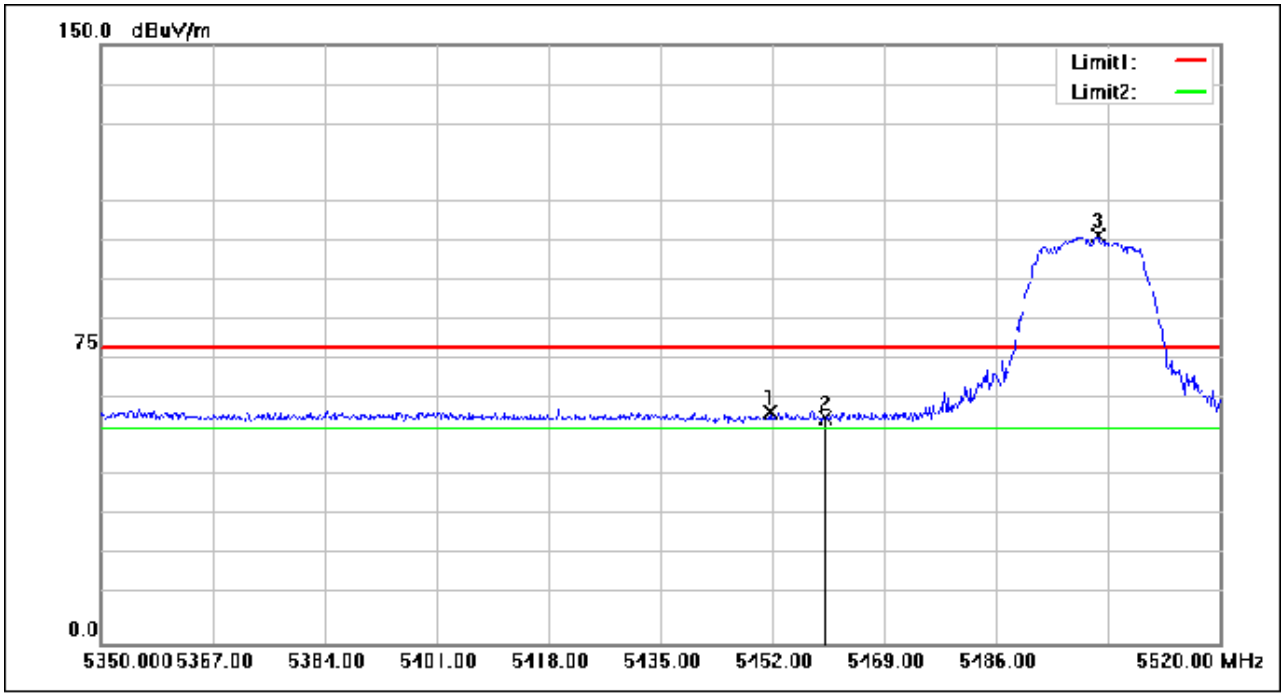
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5145.390	65.52	-18.22	47.30	54.00	-6.70	AVG
2	5150.000	68.06	-18.21	49.85	54.00	-4.15	AVG
3	5179.470	116.87	-18.17	98.70	54.00	44.70	AVG

Test Mode: 02; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



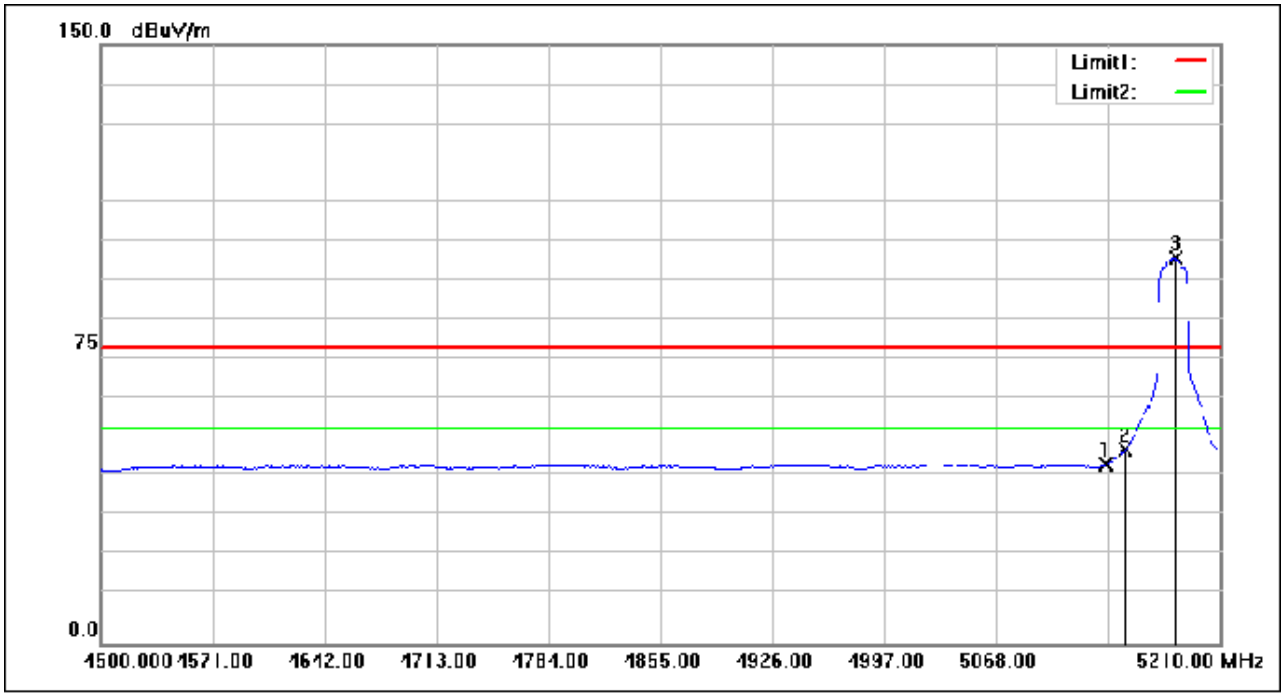
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5124.800	76.24	-18.25	57.99	74.00	-16.01	peak
2	5150.000	80.24	-18.21	62.03	74.00	-11.97	peak
3	5183.020	123.93	-18.16	105.77	74.00	31.77	peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



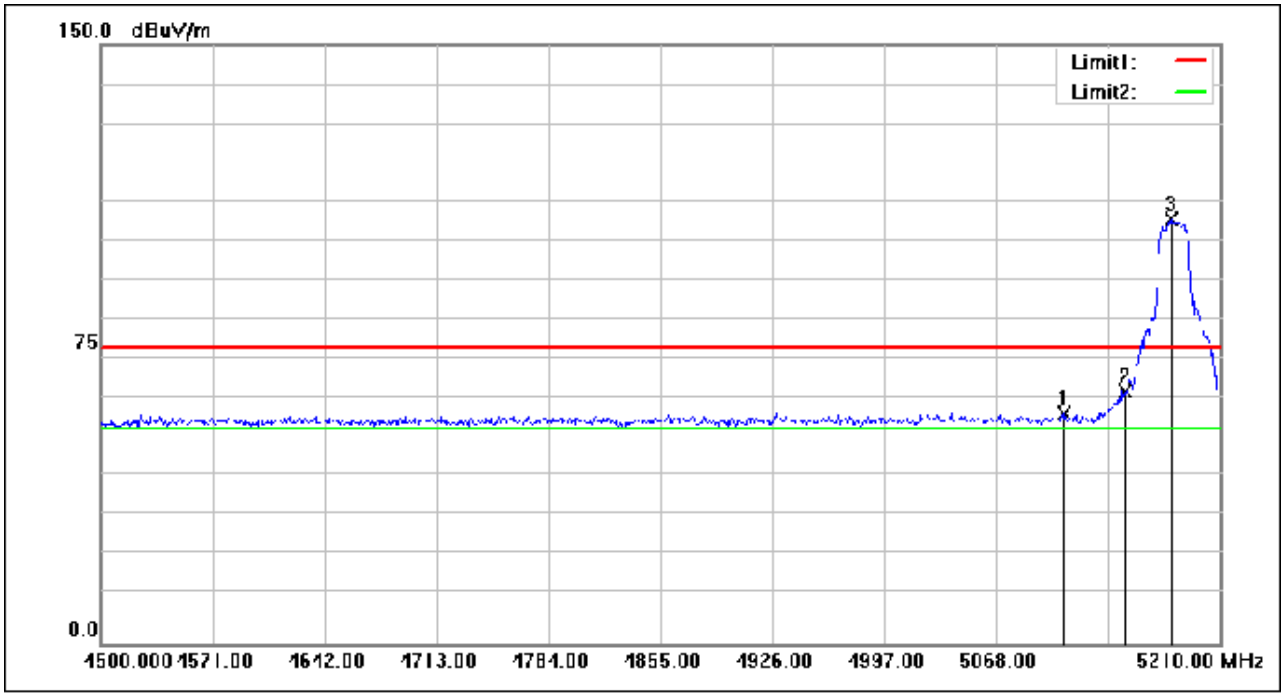
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5451.660	75.60	-17.76	57.84	74.00	-16.16	peak
2	5460.000	74.34	-17.76	56.58	74.00	-17.42	peak
3	5501.470	119.77	-17.70	102.07	74.00	28.07	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



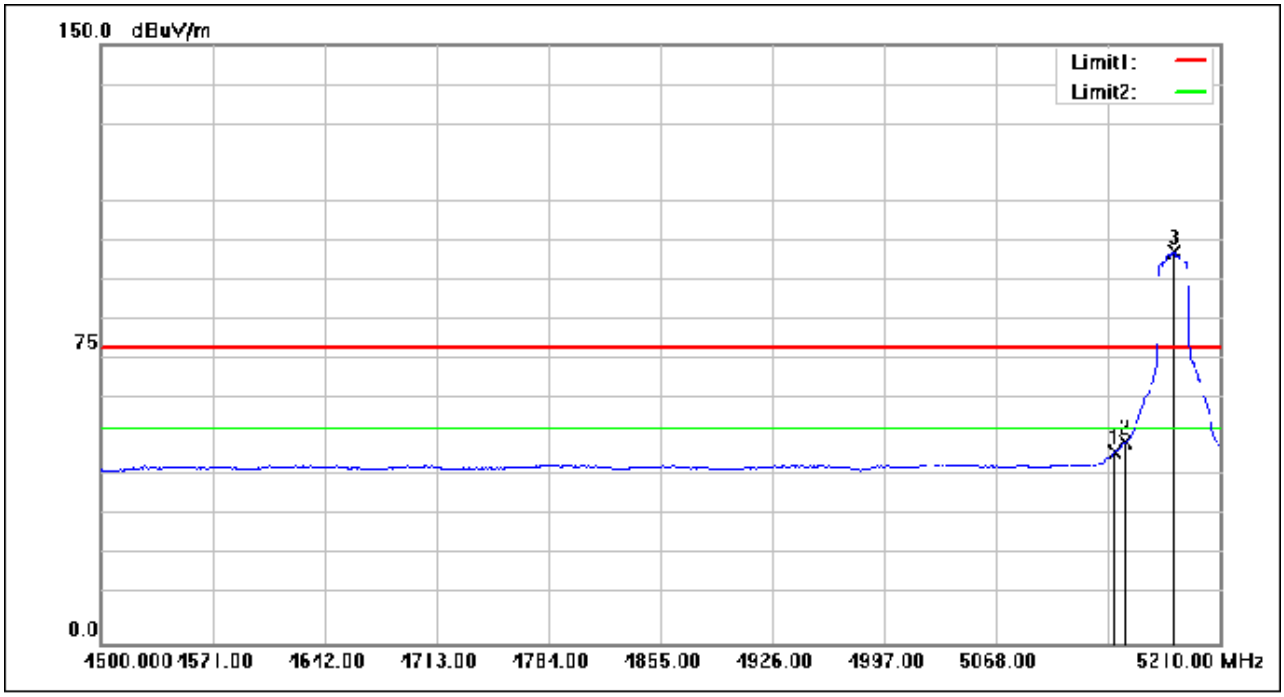
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5137.580	63.22	-18.23	44.99	54.00	-9.01	AVG
2	5150.000	66.69	-18.21	48.48	54.00	-5.52	AVG
3	5181.600	114.82	-18.17	96.65	54.00	42.65	AVG

Test Mode: 02; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



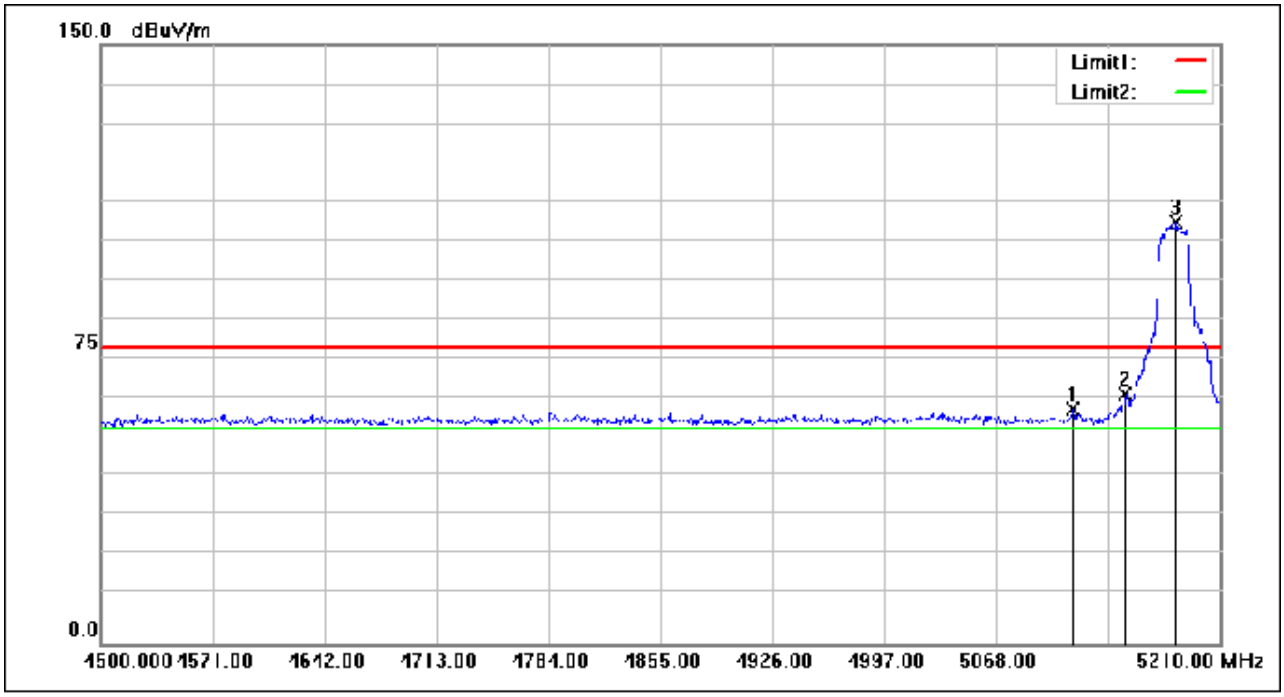
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5110.600	76.00	-18.27	57.73	74.00	-16.27	peak
2	5150.000	81.24	-18.21	63.03	74.00	-10.97	peak
3	5178.760	124.44	-18.17	106.27	74.00	32.27	peak

Test Mode: 02; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



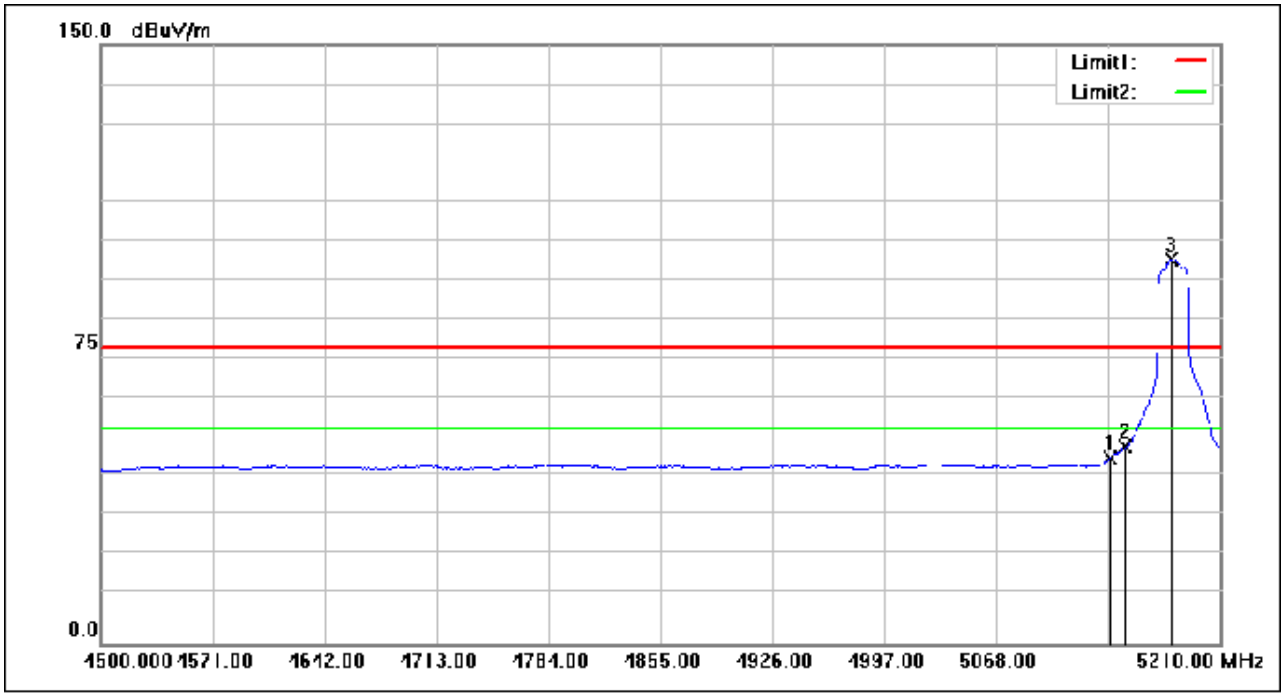
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5143.260	66.13	-18.22	47.91	54.00	-6.09	AVG
2	5150.000	68.83	-18.21	50.62	54.00	-3.38	AVG
3	5180.890	116.40	-18.17	98.23	54.00	44.23	AVG

Test Mode: 02; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



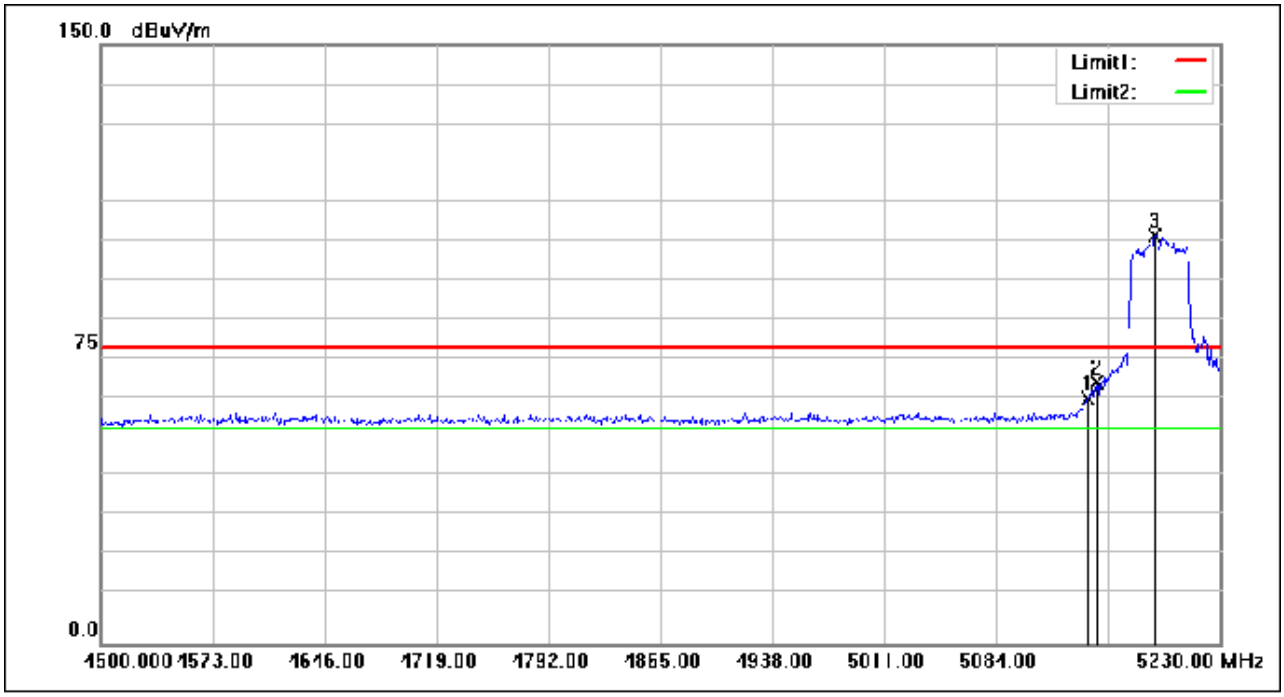
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5116.990	76.84	-18.26	58.58	74.00	-15.42	peak
2	5150.000	80.65	-18.21	62.44	74.00	-11.56	peak
3	5182.310	123.75	-18.17	105.58	74.00	31.58	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



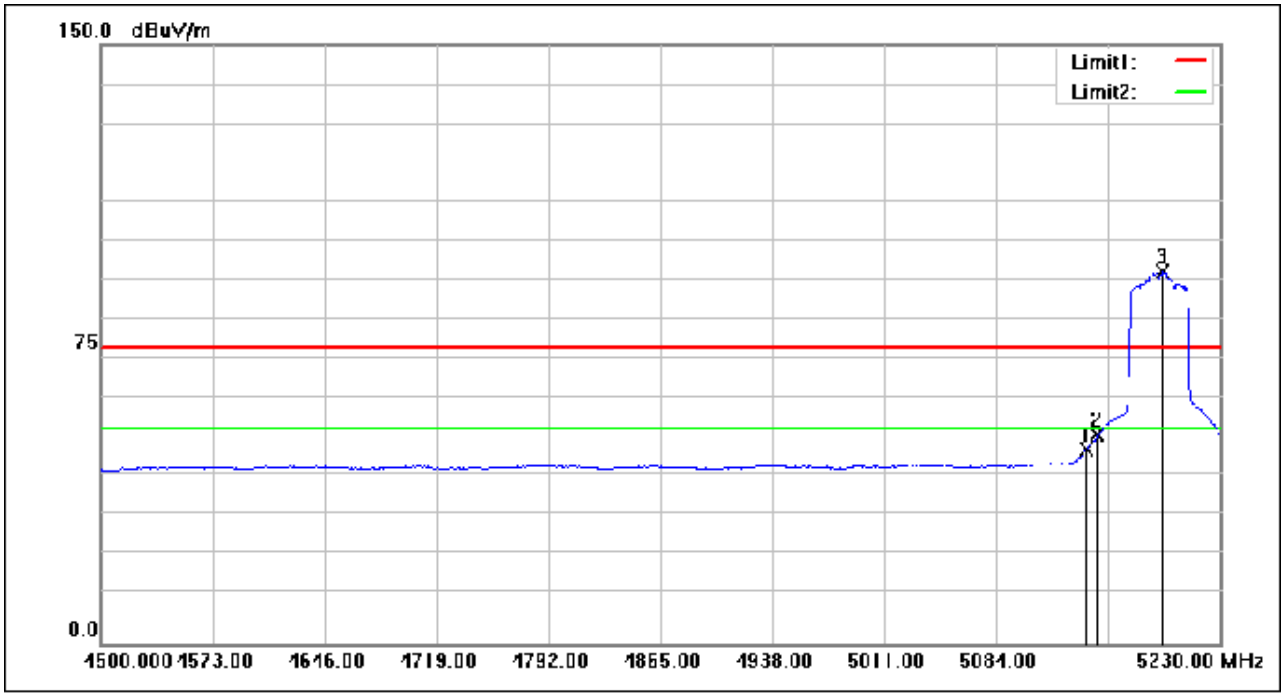
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5140.420	64.47	-18.23	46.24	54.00	-7.76	AVG
2	5150.000	67.69	-18.21	49.48	54.00	-4.52	AVG
3	5179.470	114.45	-18.17	96.28	54.00	42.28	AVG

Test Mode: 02; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



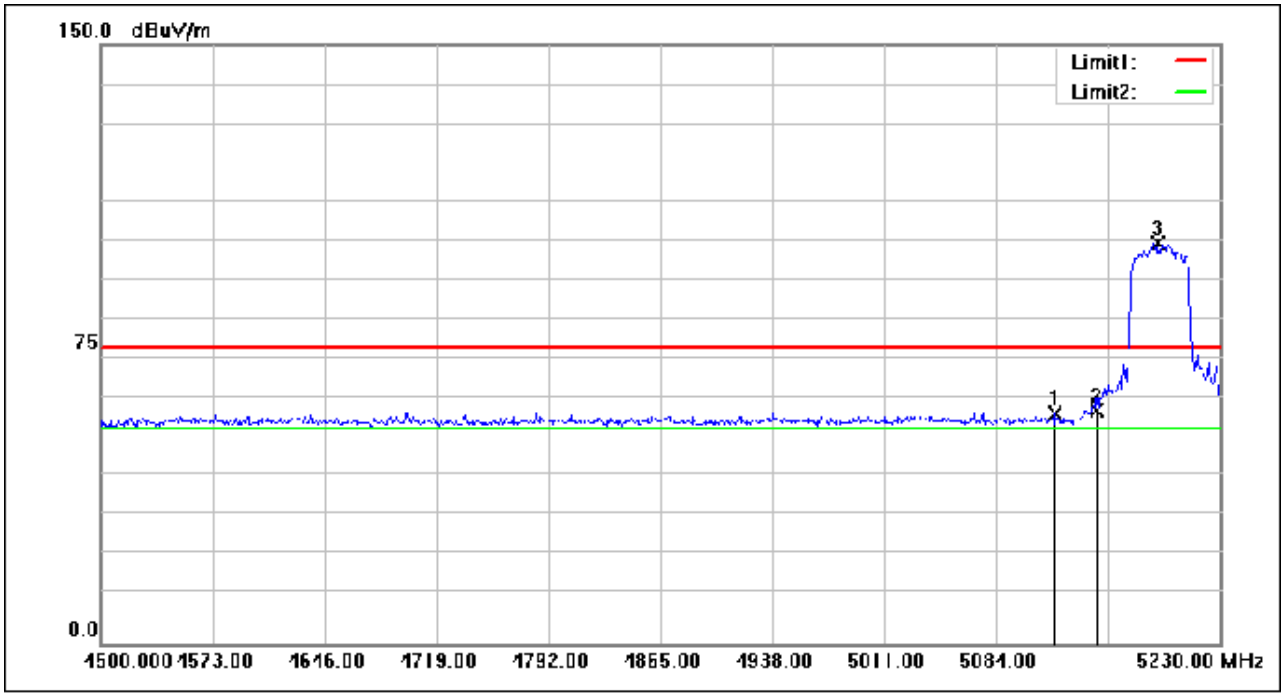
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5143.860	79.57	-18.22	61.35	74.00	-12.65	peak
2	5150.000	83.49	-18.21	65.28	74.00	-8.72	peak
3	5187.660	120.38	-18.16	102.22	74.00	28.22	peak

Test Mode: 02; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



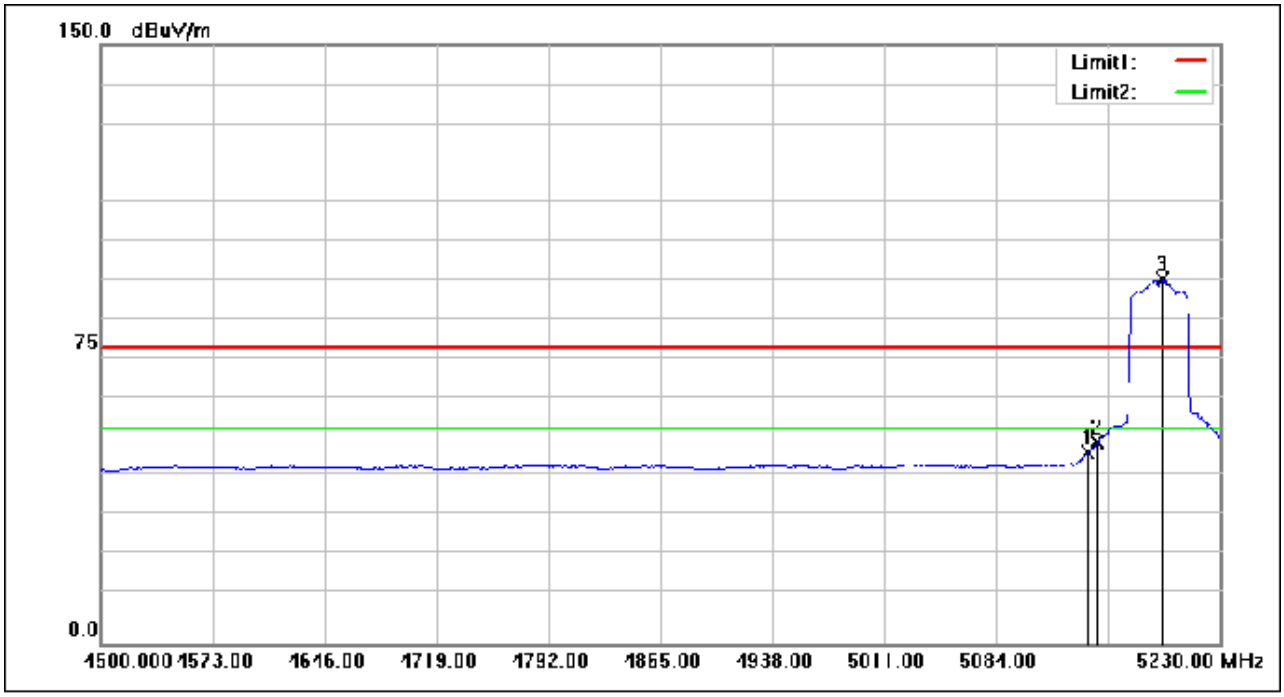
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5143.130	66.75	-18.22	48.53	54.00	-5.47	AVG
2	5150.000	70.34	-18.21	52.13	54.00	-1.87	AVG
3	5192.040	111.40	-18.15	93.25	54.00	39.25	AVG

Test Mode: 02; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



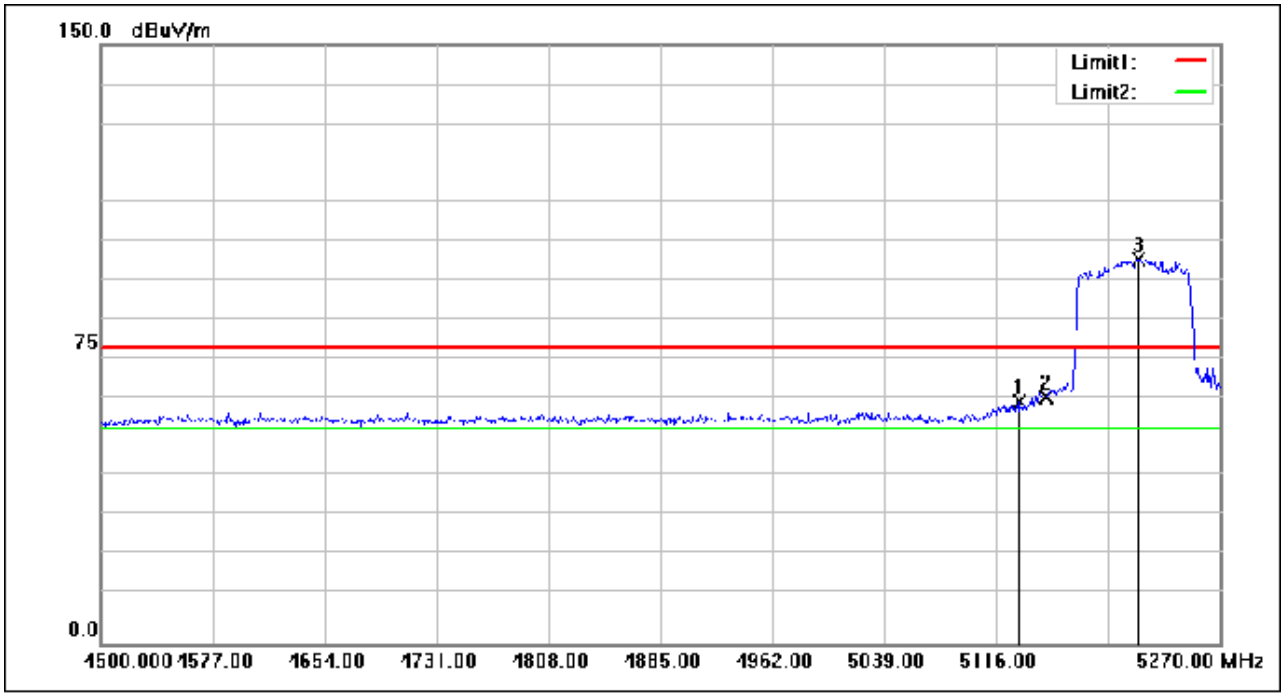
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5121.960	75.94	-18.25	57.69	74.00	-16.31	peak
2	5150.000	76.63	-18.21	58.42	74.00	-15.58	peak
3	5189.120	118.56	-18.16	100.40	74.00	26.40	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



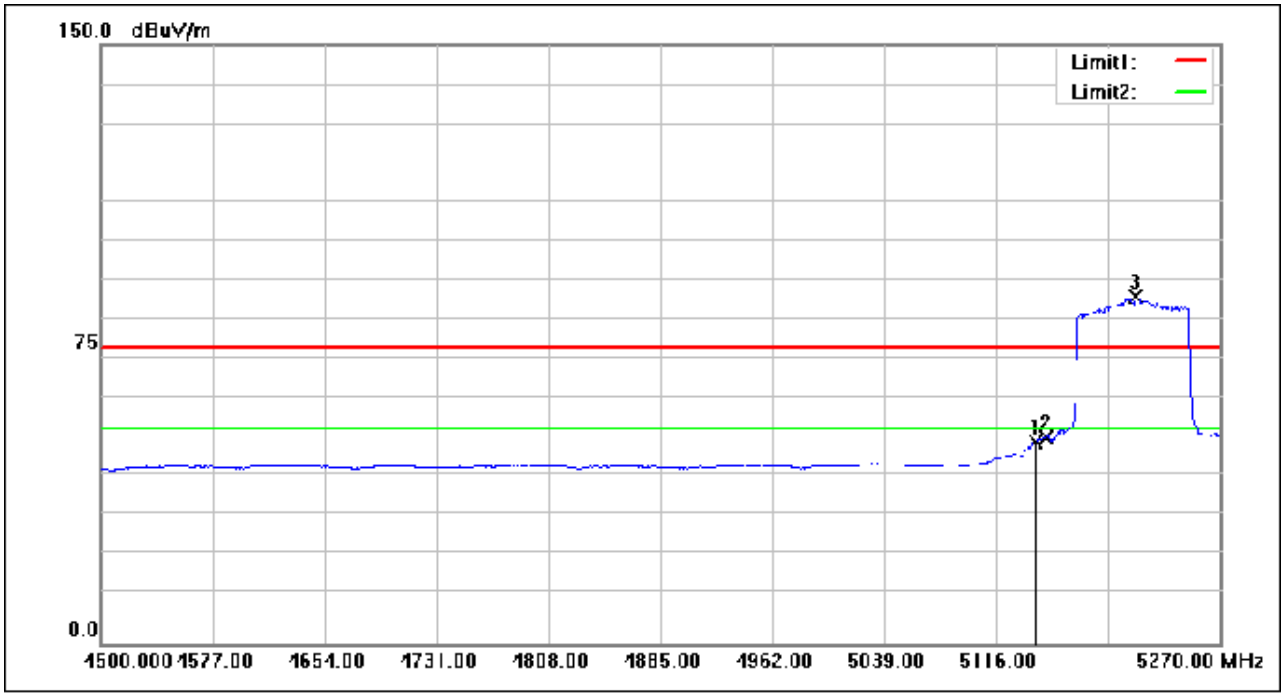
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5143.860	65.87	-18.22	47.65	54.00	-6.35	AVG
2	5150.000	68.72	-18.21	50.51	54.00	-3.49	AVG
3	5192.040	109.42	-18.15	91.27	54.00	37.27	AVG

Test Mode: 02; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



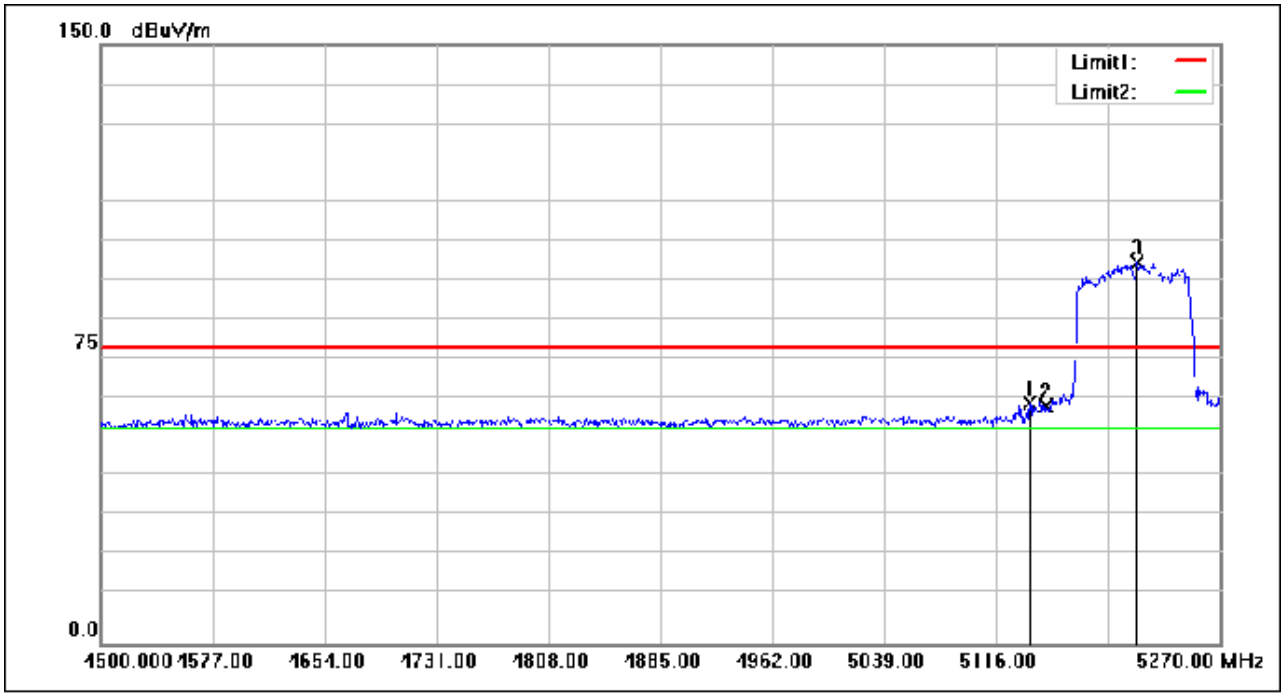
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5131.400	78.72	-18.23	60.49	74.00	-13.51	peak
2	5150.000	80.01	-18.21	61.80	74.00	-12.20	peak
3	5213.790	114.42	-18.11	96.31	74.00	22.31	peak

Test Mode: 02; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



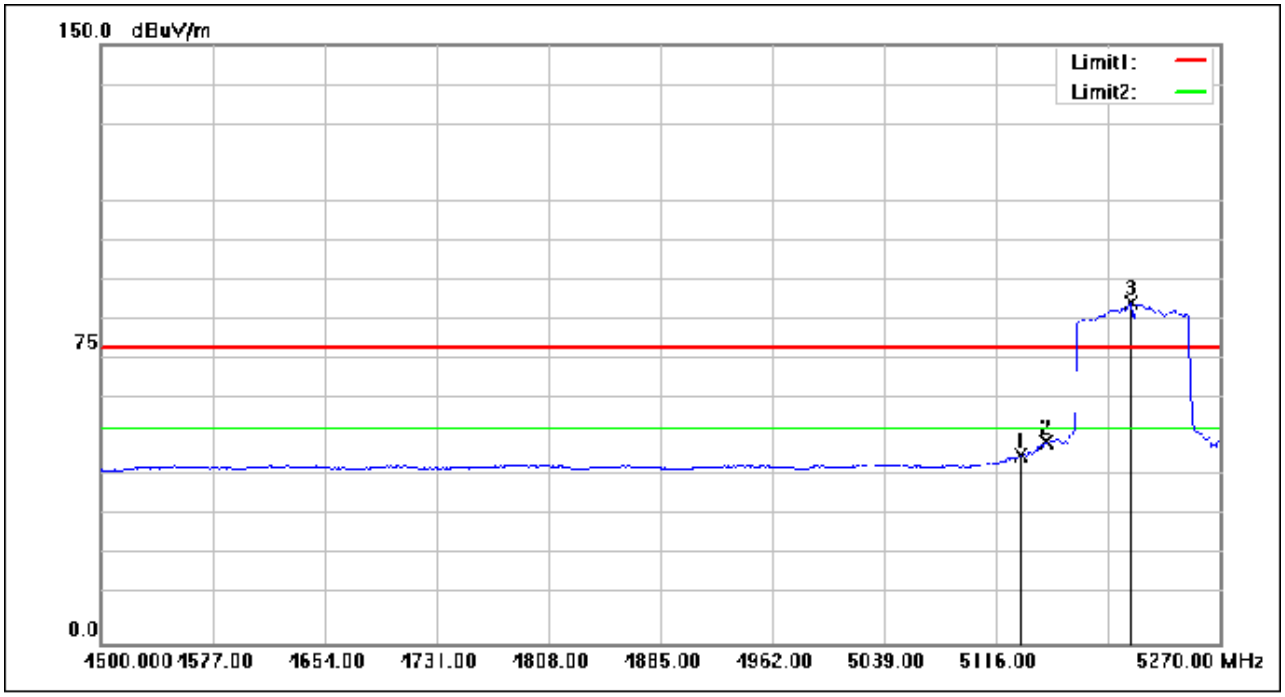
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5142.950	68.84	-18.22	50.62	54.00	-3.38	AVG
2	5150.000	69.79	-18.21	51.58	54.00	-2.42	AVG
3	5211.480	104.92	-18.12	86.80	54.00	32.80	AVG

Test Mode: 02; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



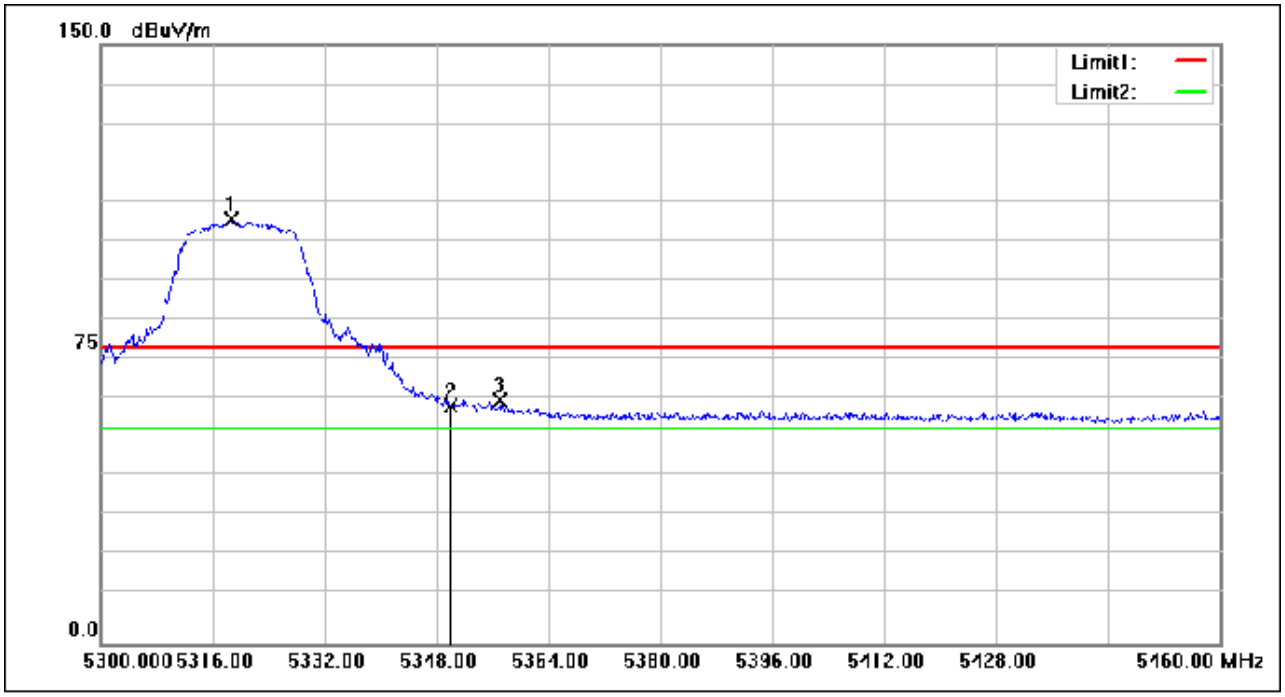
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5139.100	78.28	-18.23	60.05	74.00	-13.95	peak
2	5150.000	77.59	-18.21	59.38	74.00	-14.62	peak
3	5213.020	113.65	-18.12	95.53	74.00	21.53	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



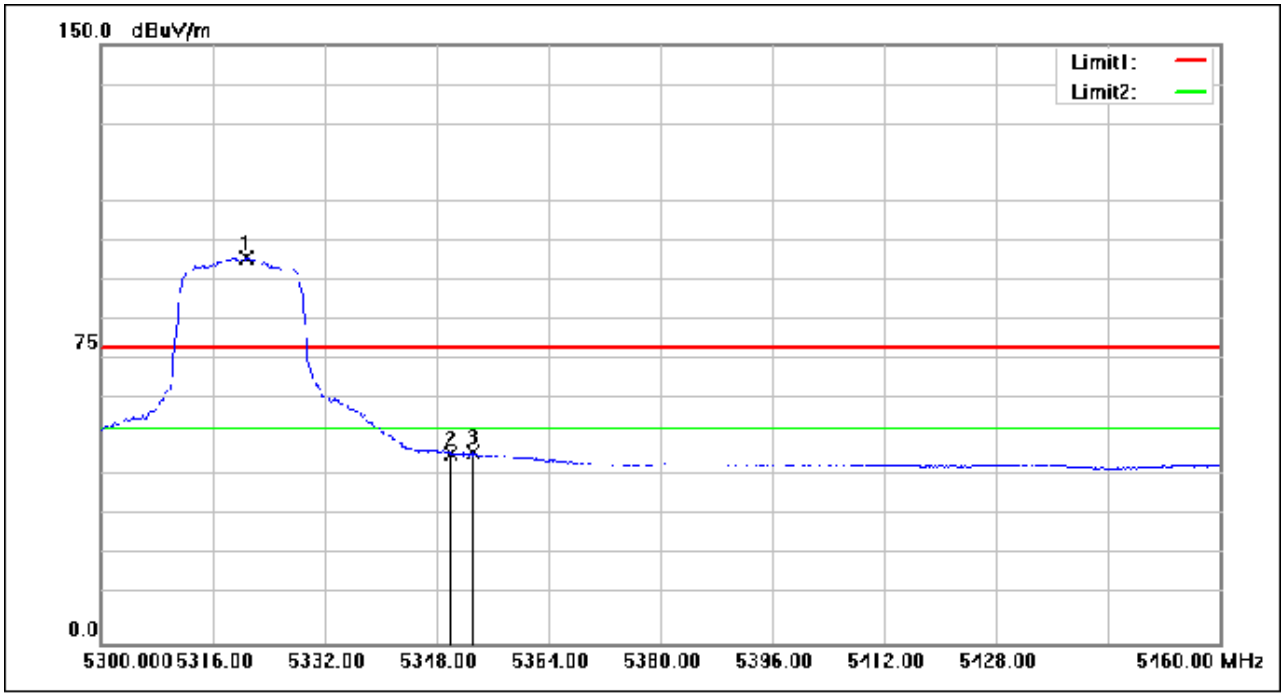
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5132.940	65.29	-18.23	47.06	54.00	-6.94	AVG
2	5150.000	68.57	-18.21	50.36	54.00	-3.64	AVG
3	5208.400	103.55	-18.13	85.42	54.00	31.42	AVG

Test Mode: 03; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



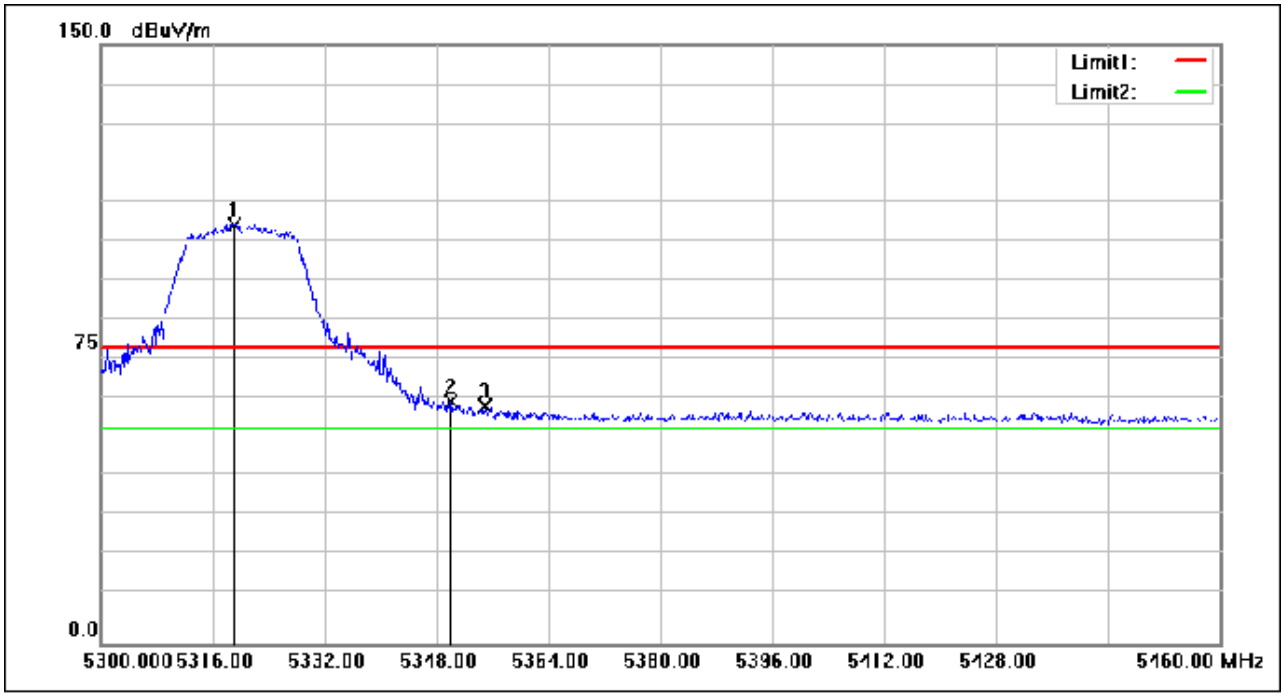
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5318.720	124.15	-17.96	106.19	74.00	32.19	peak
2	5350.000	77.54	-17.92	59.62	74.00	-14.38	peak
3	5357.120	78.79	-17.91	60.88	74.00	-13.12	peak

Test Mode: 03; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



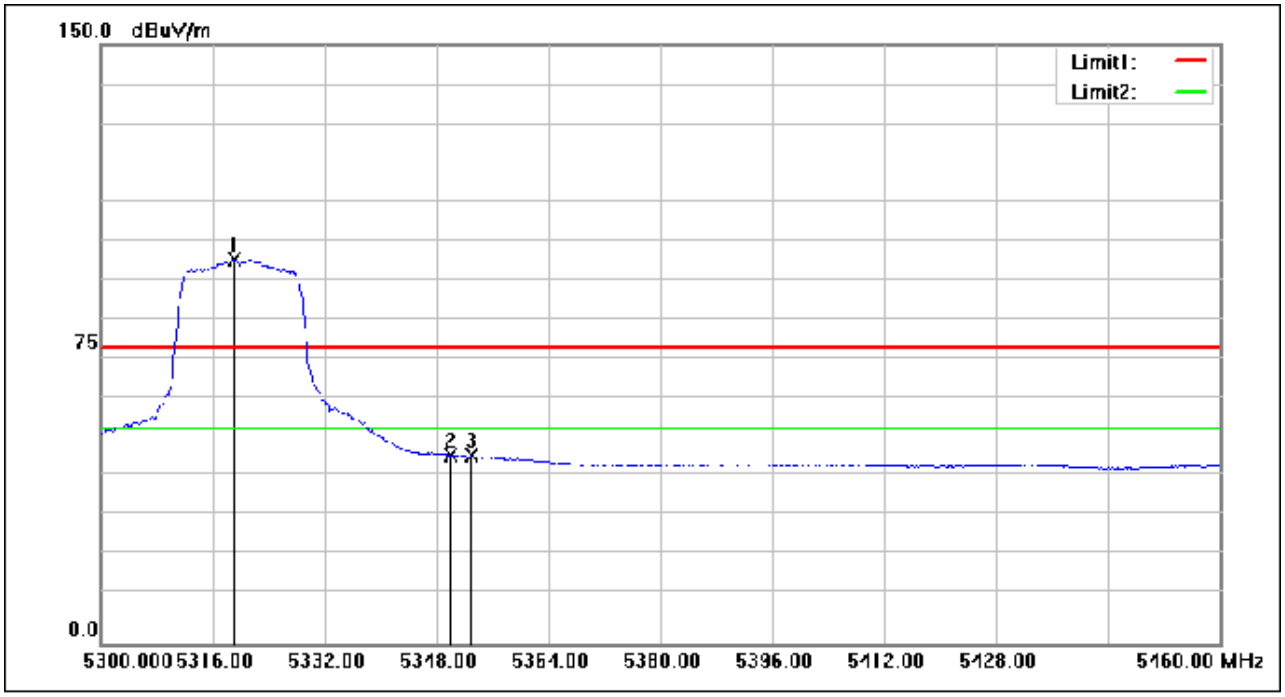
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5320.800	114.59	-17.96	96.63	54.00	42.63	AVG
2	5350.000	65.35	-17.92	47.43	54.00	-6.57	AVG
3	5353.120	65.54	-17.91	47.63	54.00	-6.37	AVG

Test Mode: 03; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



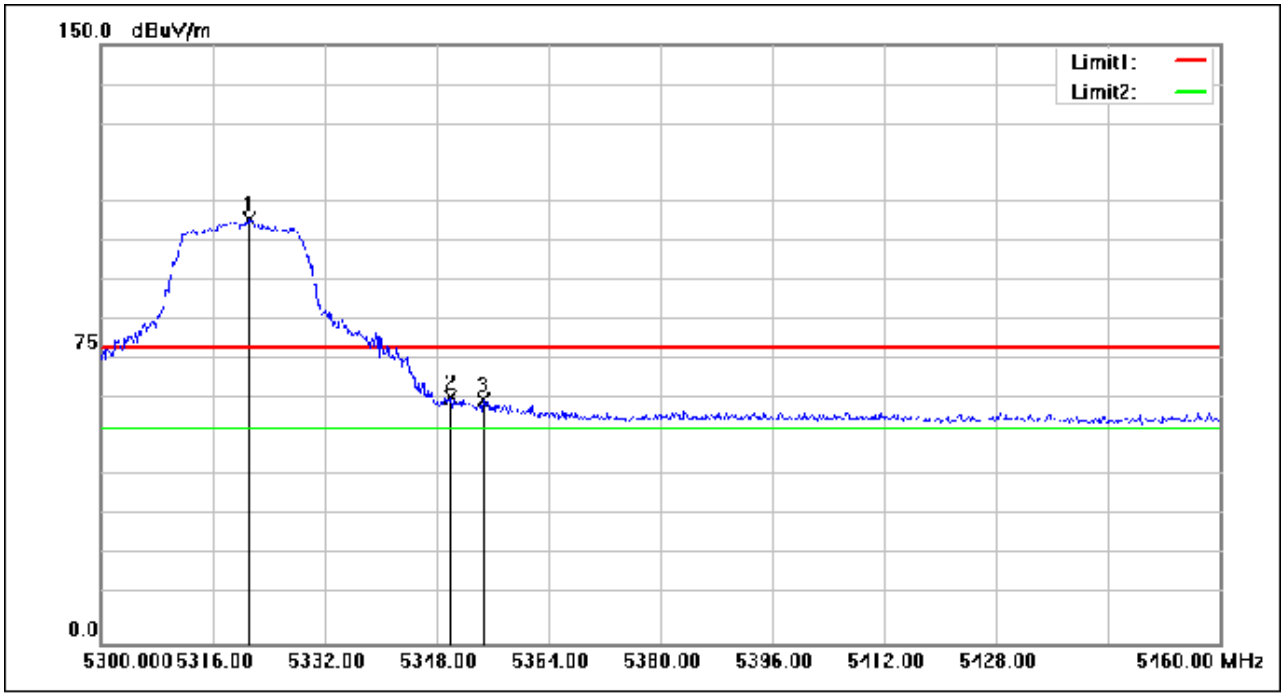
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5319.040	122.92	-17.96	104.96	74.00	30.96	peak
2	5350.000	78.31	-17.92	60.39	74.00	-13.61	peak
3	5354.880	77.45	-17.91	59.54	74.00	-14.46	peak

Test Mode: 03; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



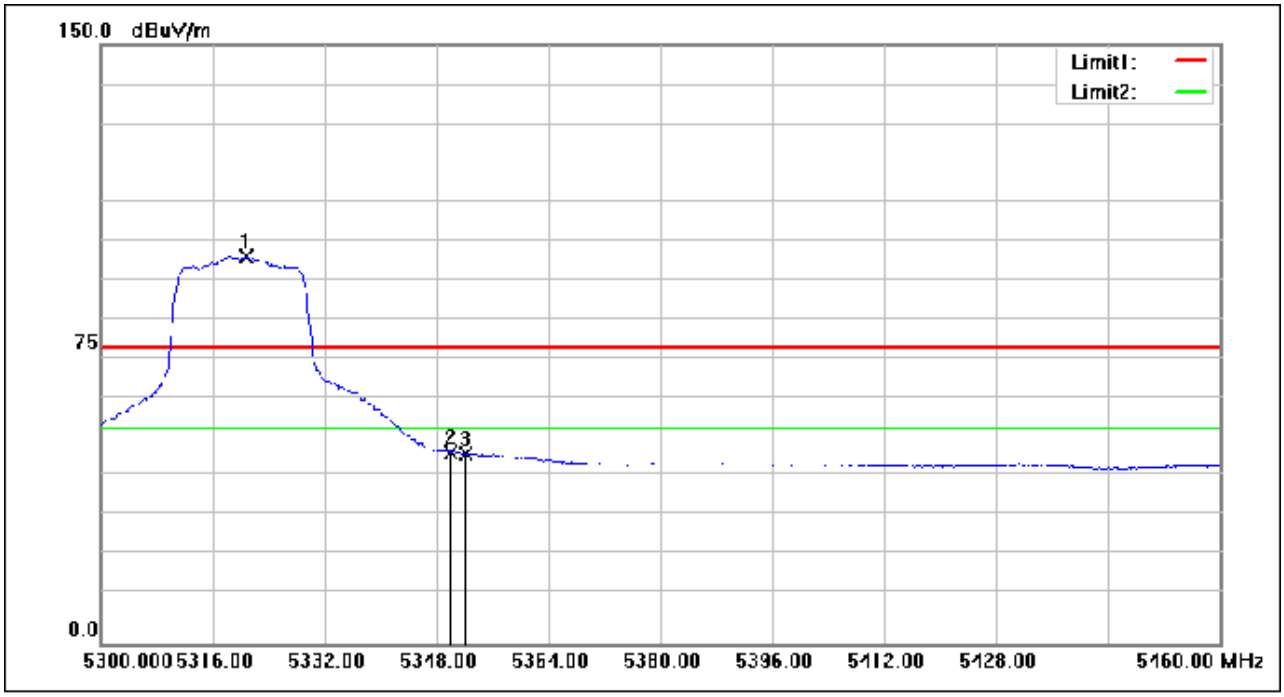
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5319.040	114.29	-17.96	96.33	54.00	42.33	AVG
2	5350.000	64.97	-17.92	47.05	54.00	-6.95	AVG
3	5352.960	64.81	-17.91	46.90	54.00	-7.10	AVG

Test Mode: 03; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



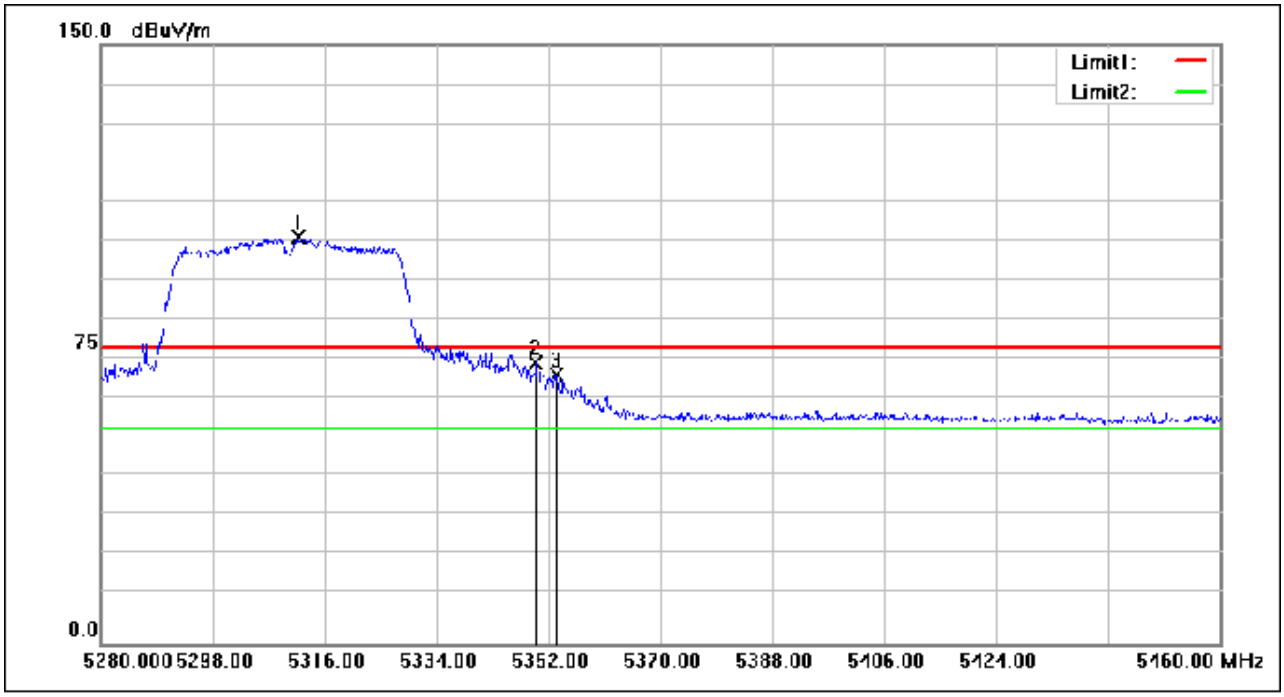
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5321.280	124.15	-17.96	106.19	74.00	32.19	peak
2	5350.000	79.55	-17.92	61.63	74.00	-12.37	peak
3	5354.720	78.83	-17.91	60.92	74.00	-13.08	peak

Test Mode: 03; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5320.800	114.99	-17.96	97.03	54.00	43.03	AVG
2	5350.000	65.57	-17.92	47.65	54.00	-6.35	AVG
3	5352.160	65.53	-17.91	47.62	54.00	-6.38	AVG

Test Mode: 03; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5311.680	119.76	-17.97	101.79	74.00	27.79	peak
2	5350.000	88.17	-17.92	70.25	74.00	-3.75	peak
3	5353.260	85.38	-17.91	67.47	74.00	-6.53	peak

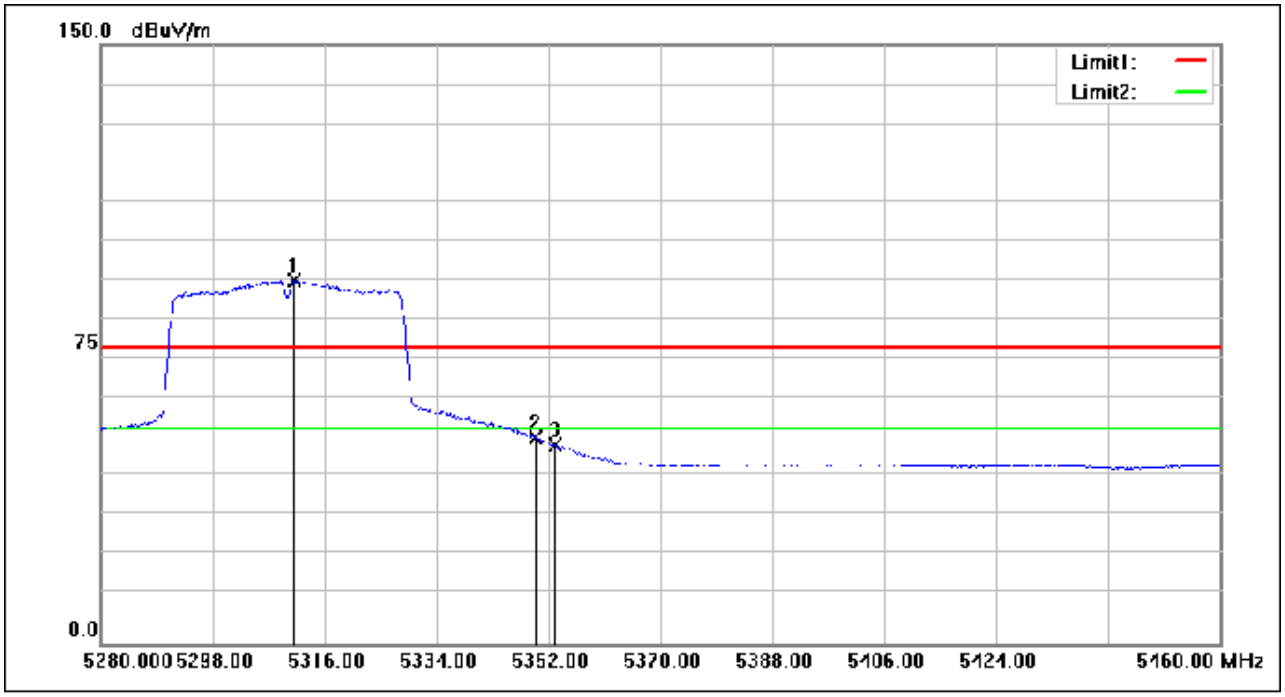
Test Mode: 03; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:High

No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5311.680	110.17	-17.97	92.20	54.00	38.20	AVG
2	5350.000	70.10	-17.92	52.18	54.00	-1.82	AVG
3	5352.360	69.20	-17.91	51.29	54.00	-2.71	AVG

Test Mode: 03; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:High

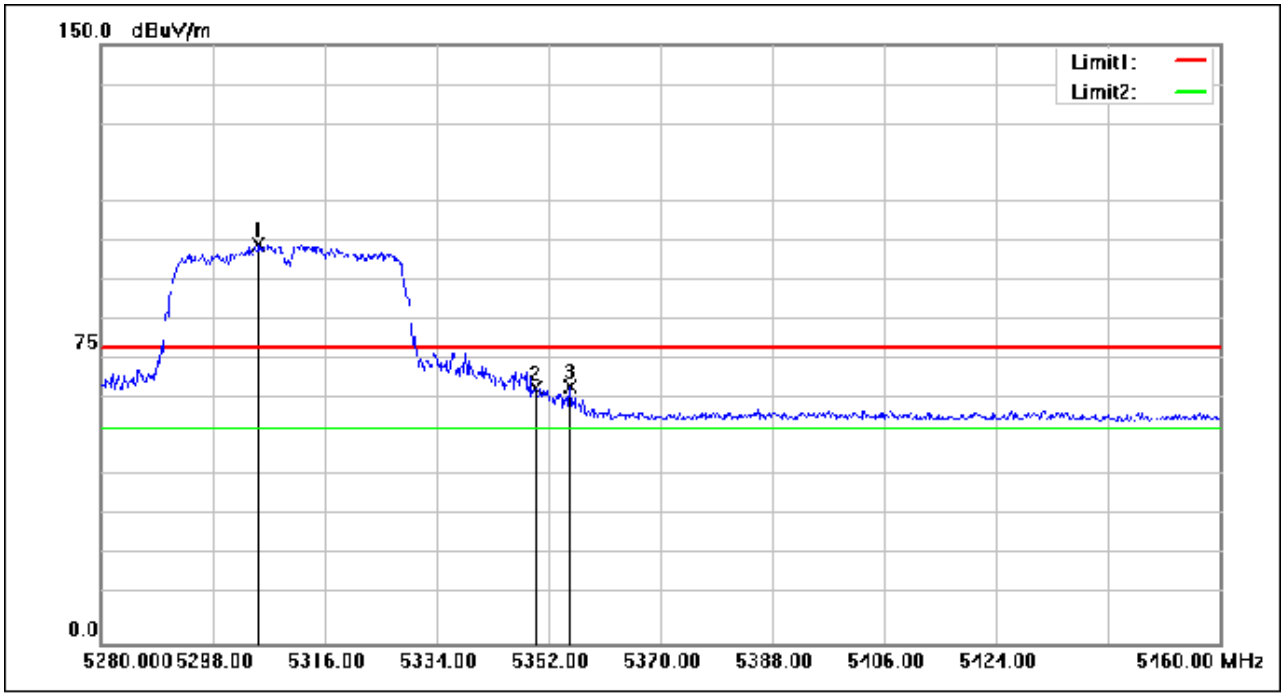
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5313.120	118.50	-17.97	100.53	74.00	26.53	peak
2	5350.000	81.34	-17.92	63.42	74.00	-10.58	peak
3	5357.940	79.00	-17.91	61.09	74.00	-12.91	peak

Test Mode: 03; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



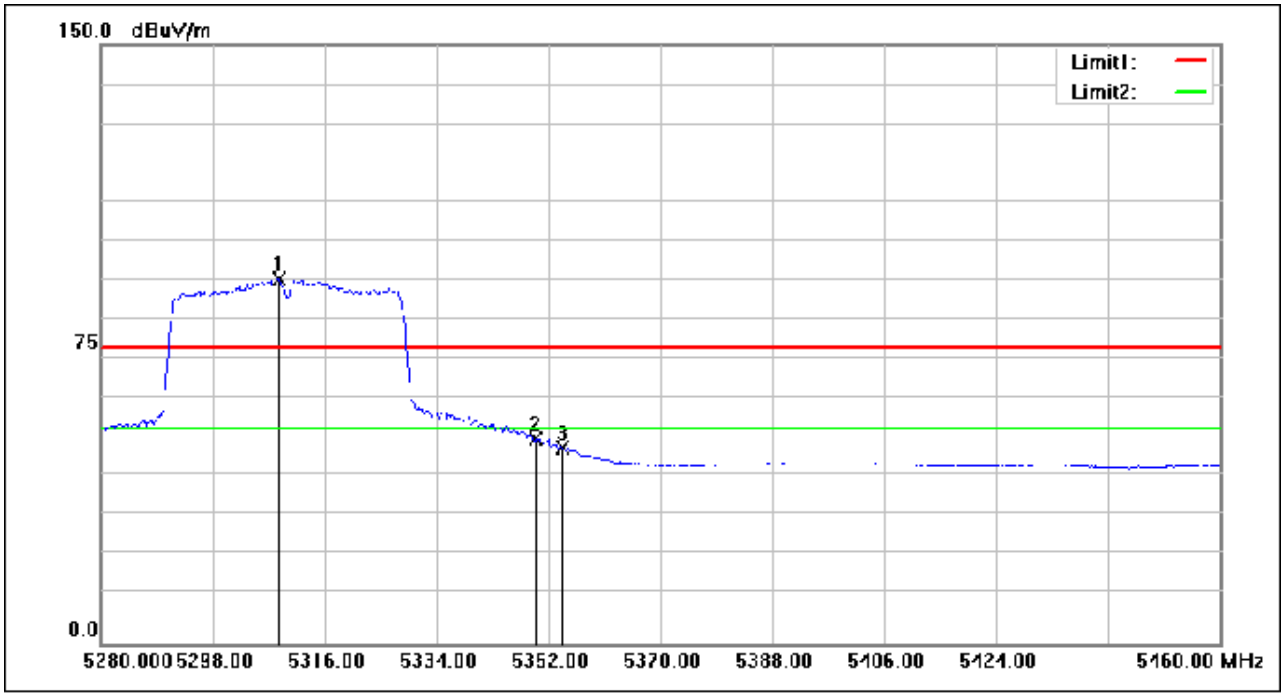
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5311.140	108.92	-17.97	90.95	54.00	36.95	AVG
2	5350.000	69.34	-17.92	51.42	54.00	-2.58	AVG
3	5353.080	67.75	-17.91	49.84	54.00	-4.16	AVG

Test Mode: 03; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



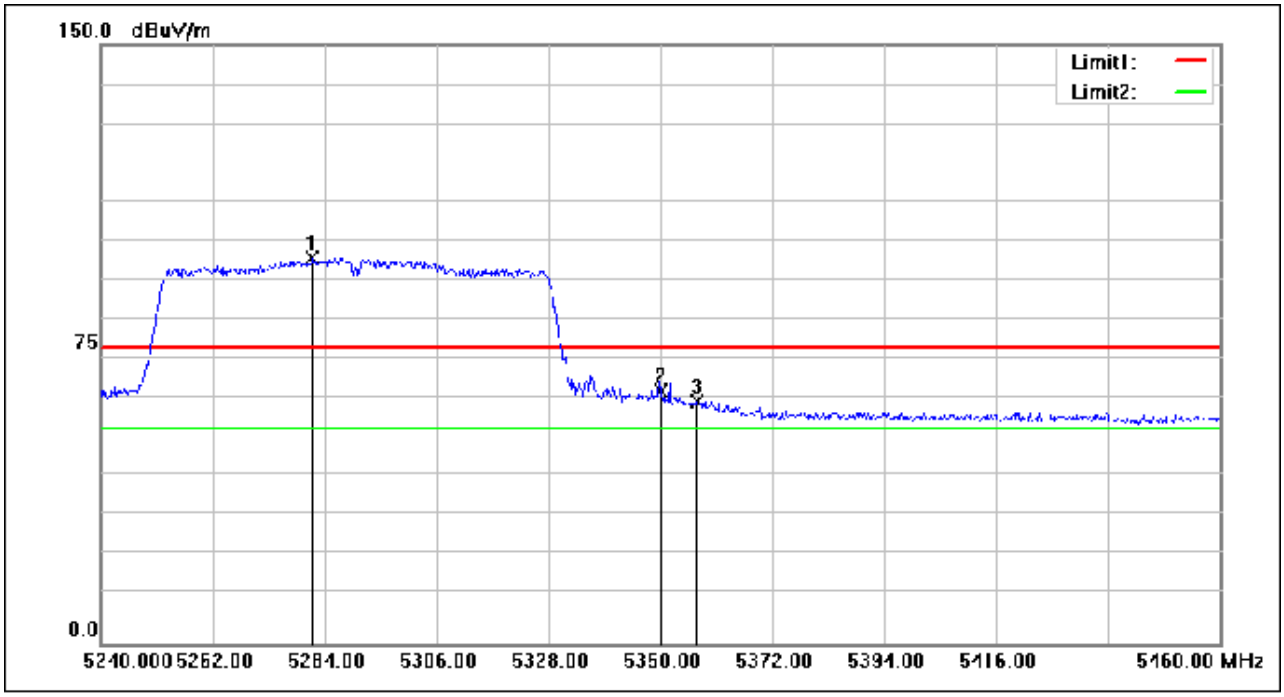
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5305.380	118.05	-17.99	100.06	74.00	26.06	peak
2	5350.000	81.85	-17.92	63.93	74.00	-10.07	peak
3	5355.420	82.14	-17.91	64.23	74.00	-9.77	peak

Test Mode: 03; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



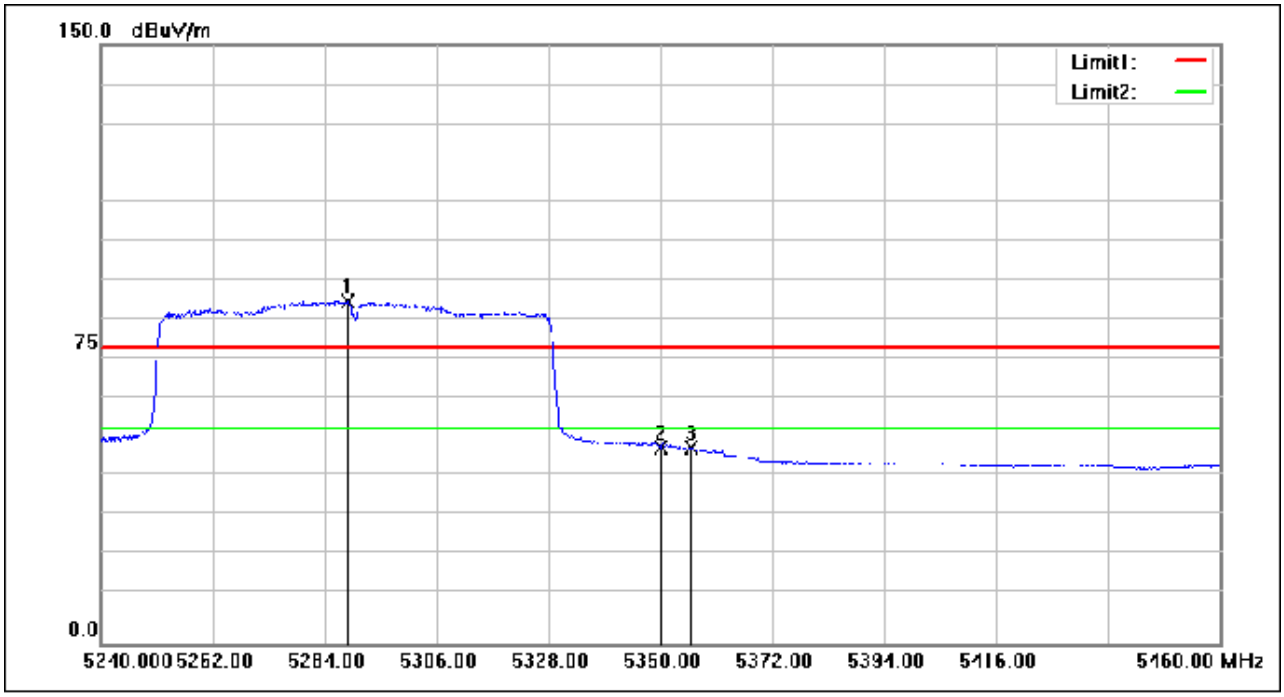
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5308.620	109.24	-17.98	91.26	54.00	37.26	AVG
2	5350.000	69.15	-17.92	51.23	54.00	-2.77	AVG
3	5354.340	66.95	-17.91	49.04	54.00	-4.96	AVG

Test Mode: 03; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:High



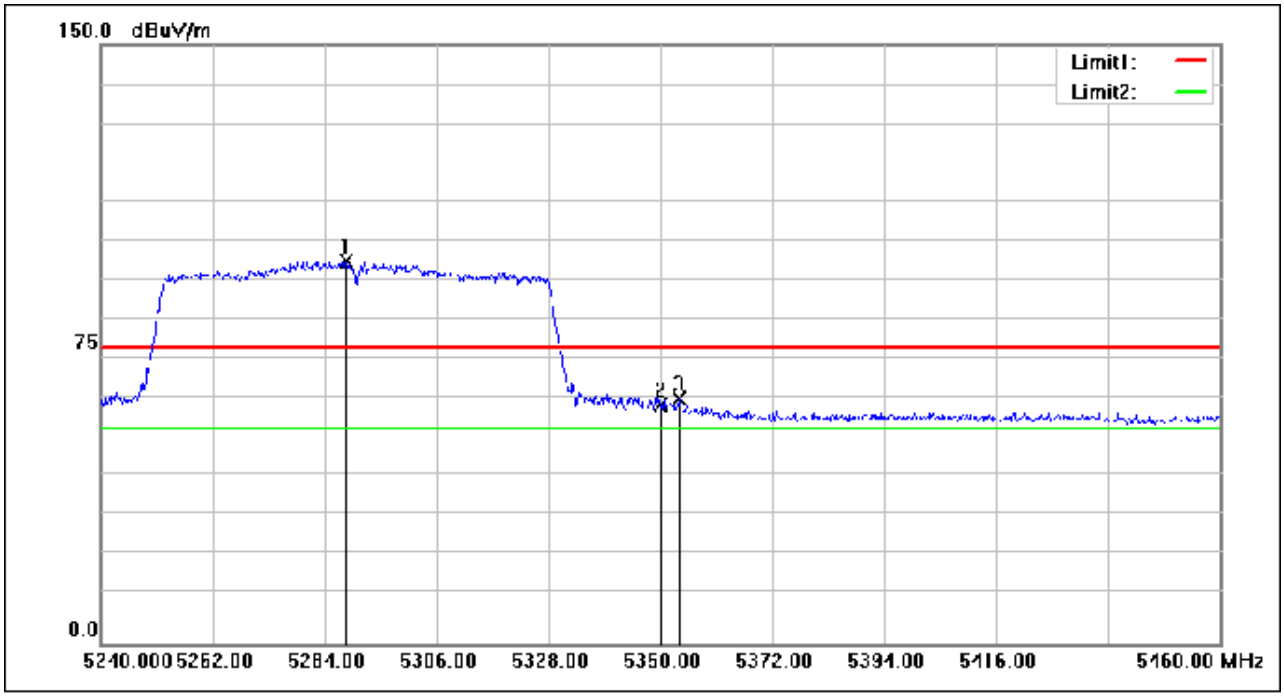
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5281.580	114.65	-18.02	96.63	74.00	22.63	peak
2	5350.000	81.07	-17.92	63.15	74.00	-10.85	peak
3	5357.040	78.51	-17.91	60.60	74.00	-13.40	peak

Test Mode: 03; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:High



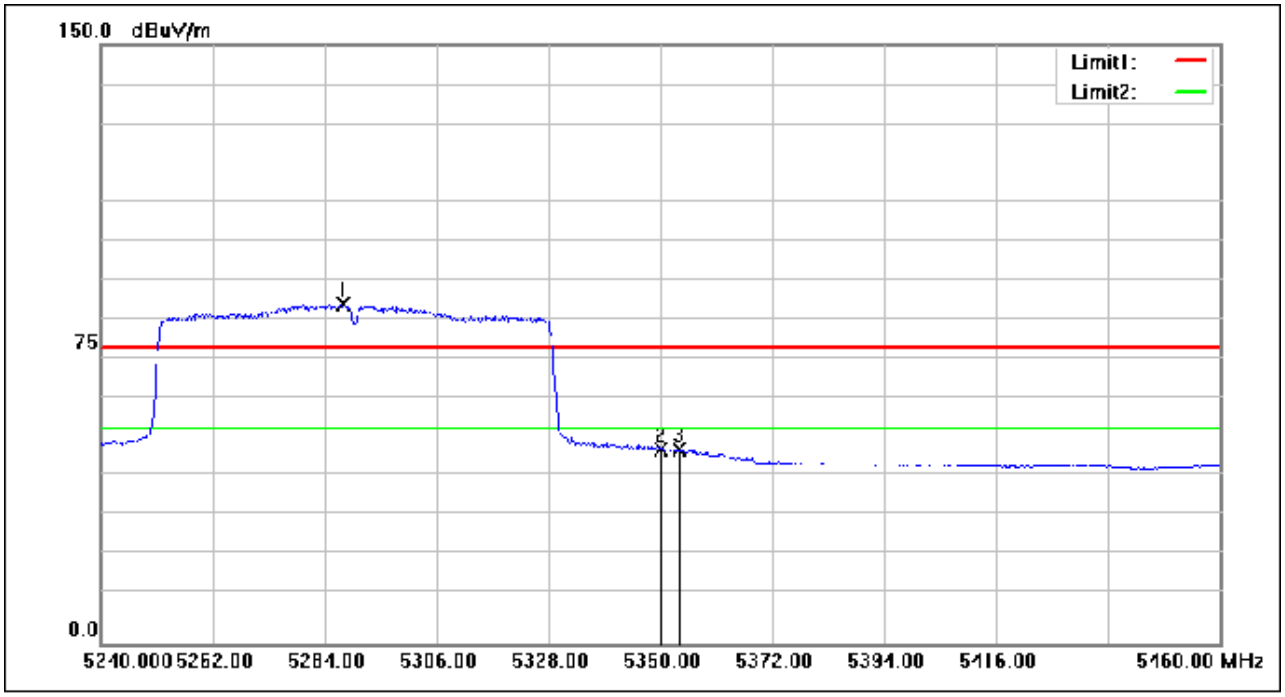
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5288.620	103.83	-18.01	85.82	54.00	31.82	AVG
2	5350.000	67.03	-17.92	49.11	54.00	-4.89	AVG
3	5355.940	66.75	-17.91	48.84	54.00	-5.16	AVG

Test Mode: 03; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:High



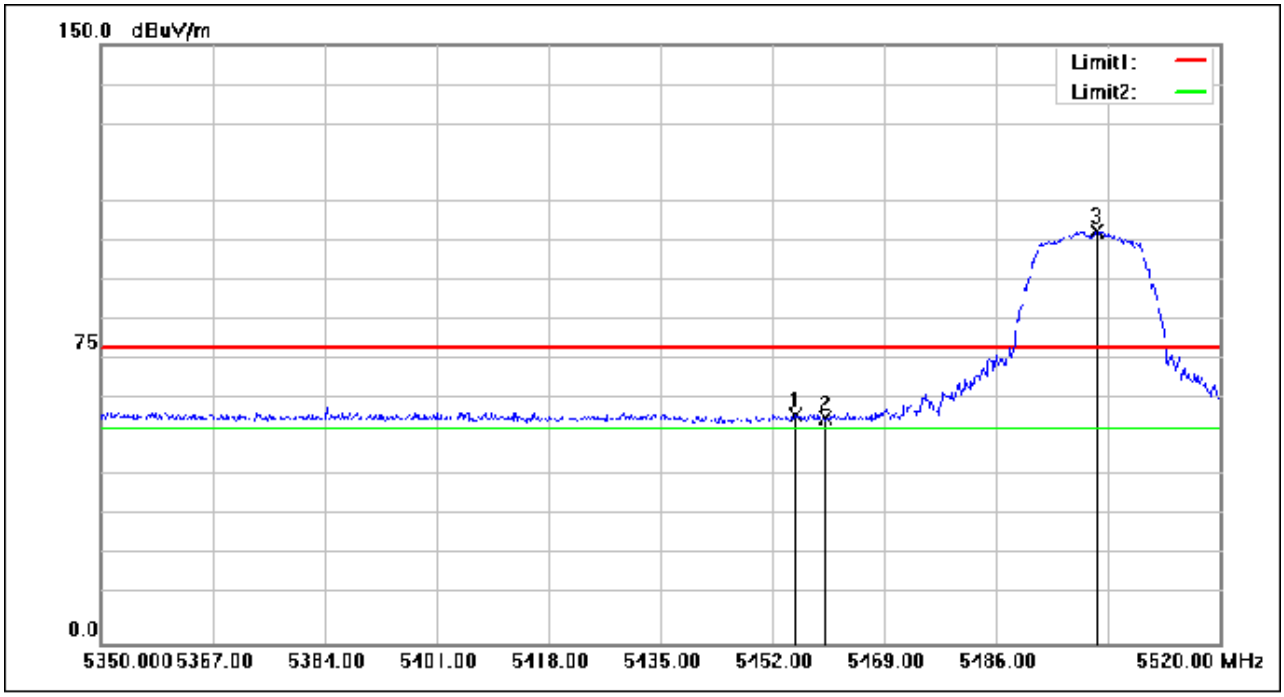
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5288.180	113.92	-18.01	95.91	74.00	21.91	peak
2	5350.000	77.84	-17.92	59.92	74.00	-14.08	peak
3	5353.520	79.32	-17.91	61.41	74.00	-12.59	peak

Test Mode: 03; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:High



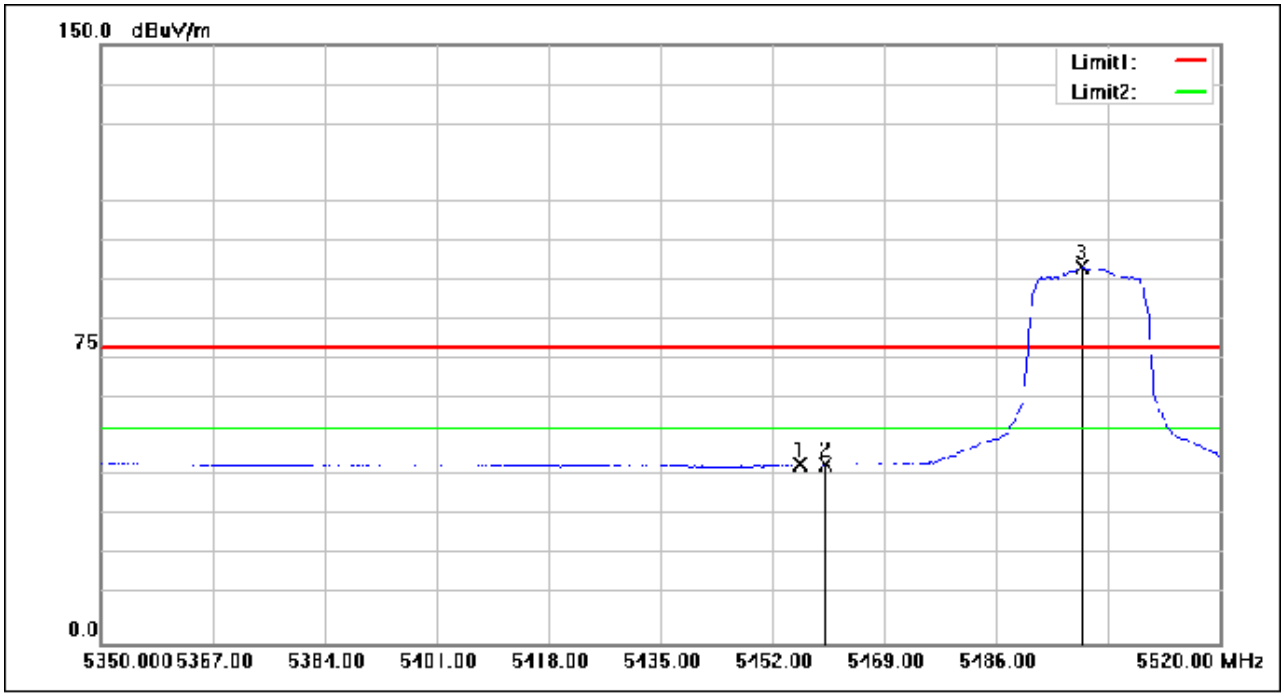
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5287.740	102.97	-18.01	84.96	54.00	30.96	AVG
2	5350.000	66.44	-17.92	48.52	54.00	-5.48	AVG
3	5353.520	66.52	-17.91	48.61	54.00	-5.39	AVG

Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



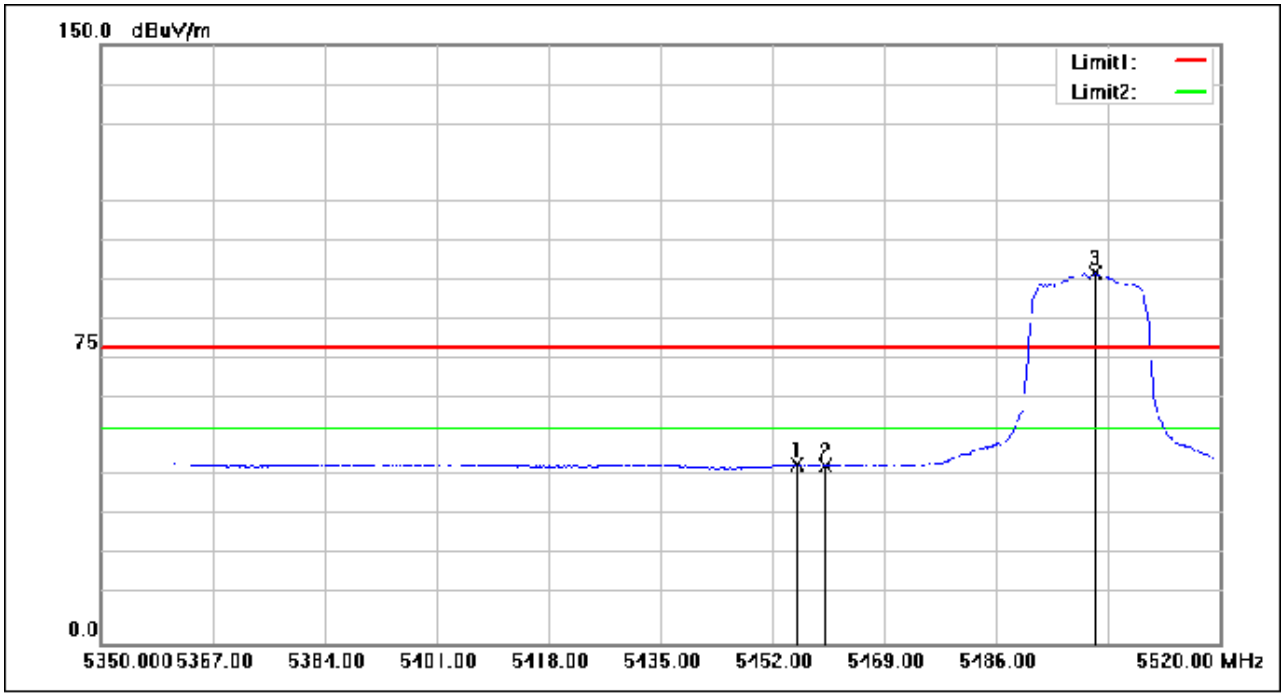
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5455.570	75.12	-17.76	57.36	74.00	-16.64	peak
2	5460.000	74.03	-17.76	56.27	74.00	-17.73	peak
3	5501.300	121.06	-17.70	103.36	74.00	29.36	peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



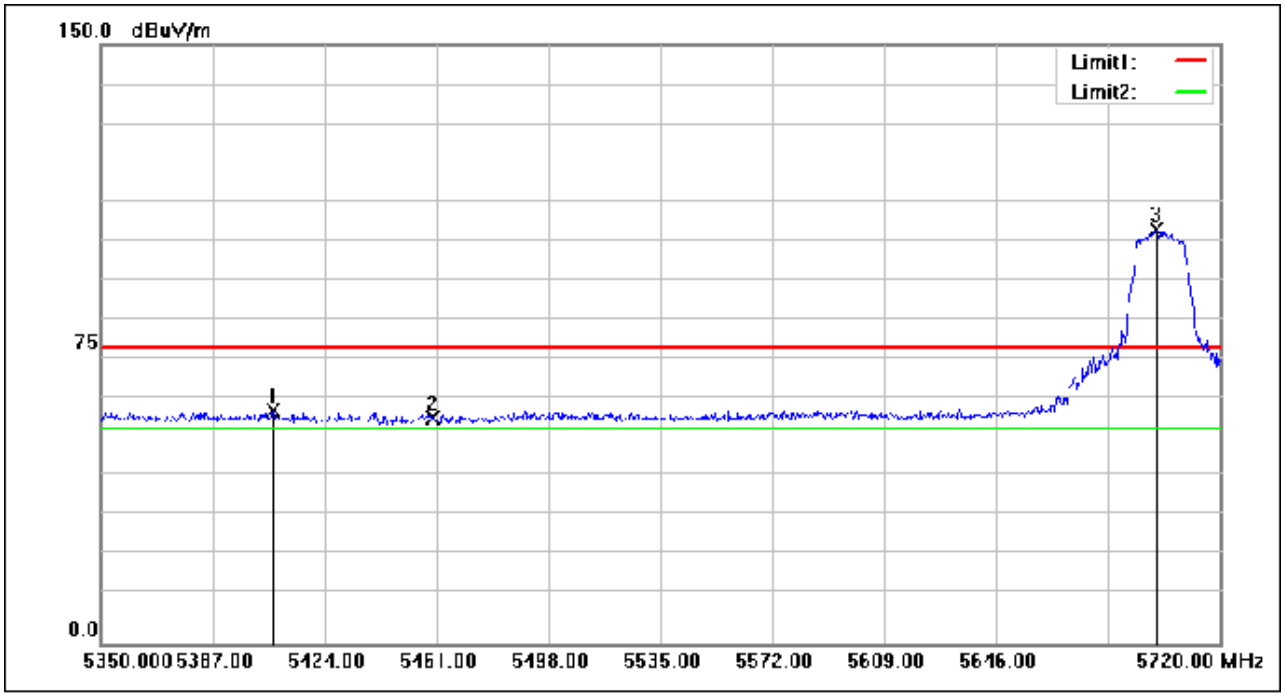
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5456.250	62.59	-17.76	44.83	54.00	-9.17	AVG
2	5460.000	62.41	-17.76	44.65	54.00	-9.35	AVG
3	5499.090	111.97	-17.70	94.27	54.00	40.27	AVG

Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



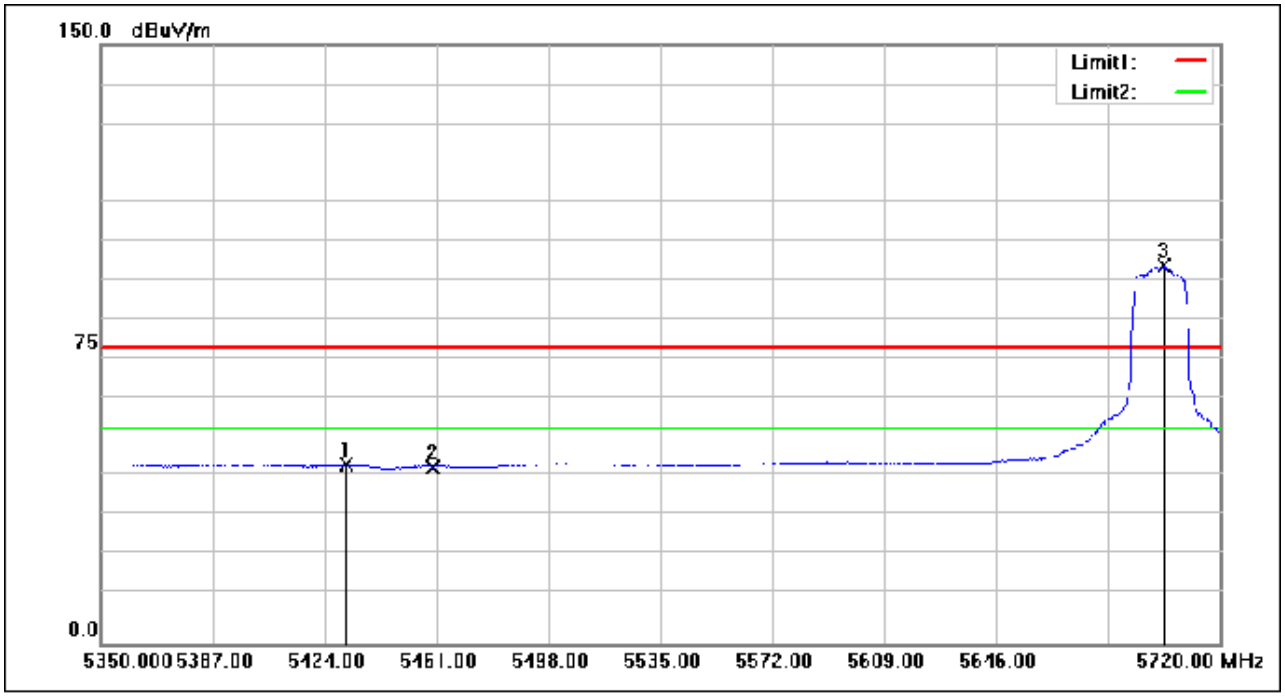
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5455.740	62.52	-17.76	44.76	54.00	-9.24	AVG
2	5460.000	62.24	-17.76	44.48	54.00	-9.52	AVG
3	5500.960	110.41	-17.70	92.71	54.00	38.71	AVG

Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



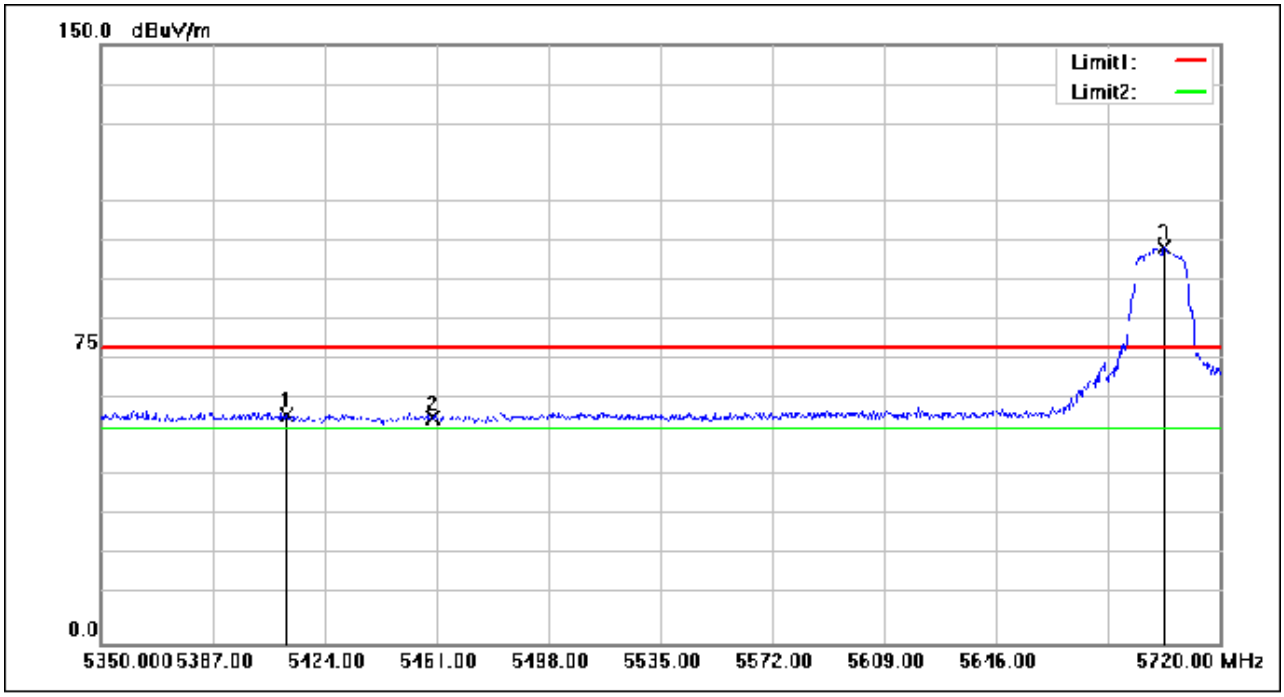
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5406.980	76.03	-17.84	58.19	74.00	-15.81	peak
2	5460.000	74.14	-17.76	56.38	74.00	-17.62	peak
3	5698.910	120.80	-17.03	103.77	74.00	29.77	peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



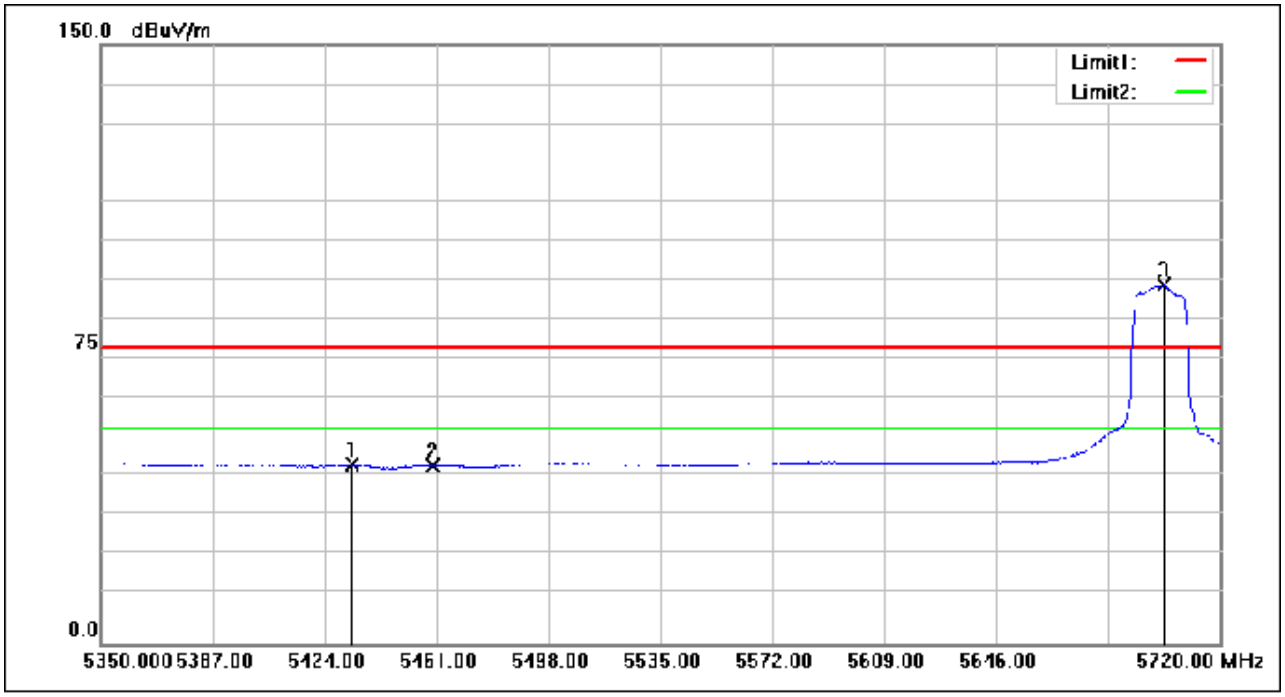
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5431.030	62.50	-17.79	44.71	54.00	-9.29	AVG
2	5460.000	61.97	-17.76	44.21	54.00	-9.79	AVG
3	5701.500	111.67	-17.02	94.65	54.00	40.65	AVG

Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



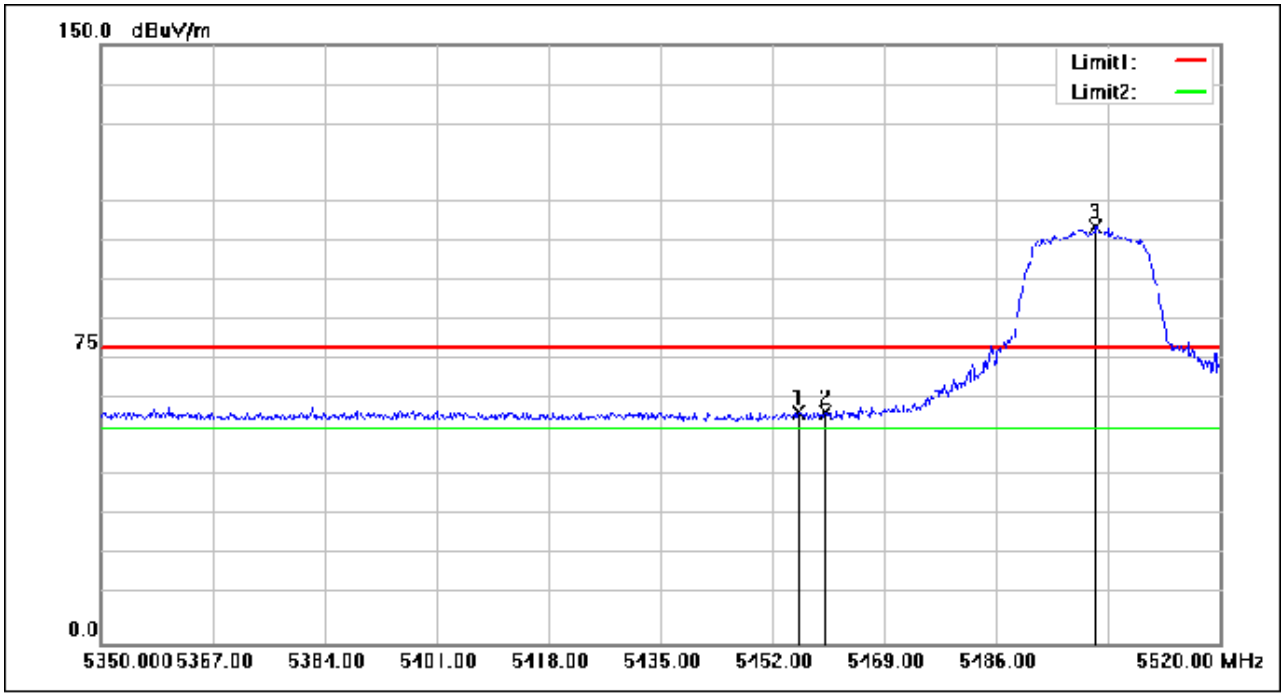
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5411.420	75.09	-17.82	57.27	74.00	-16.73	peak
2	5460.000	74.21	-17.76	56.45	74.00	-17.55	peak
3	5701.500	116.12	-17.02	99.10	74.00	25.10	peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



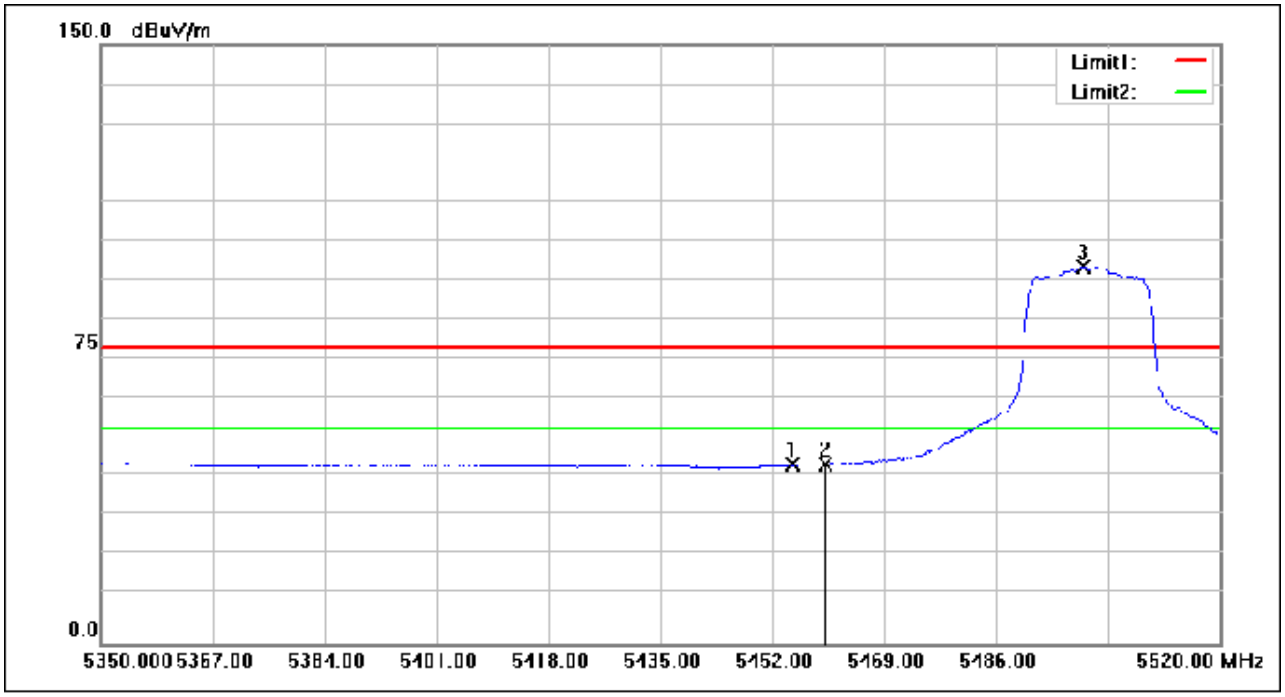
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5433.250	62.52	-17.79	44.73	54.00	-9.27	AVG
2	5460.000	62.13	-17.76	44.37	54.00	-9.63	AVG
3	5701.500	106.68	-17.02	89.66	54.00	35.66	AVG

Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



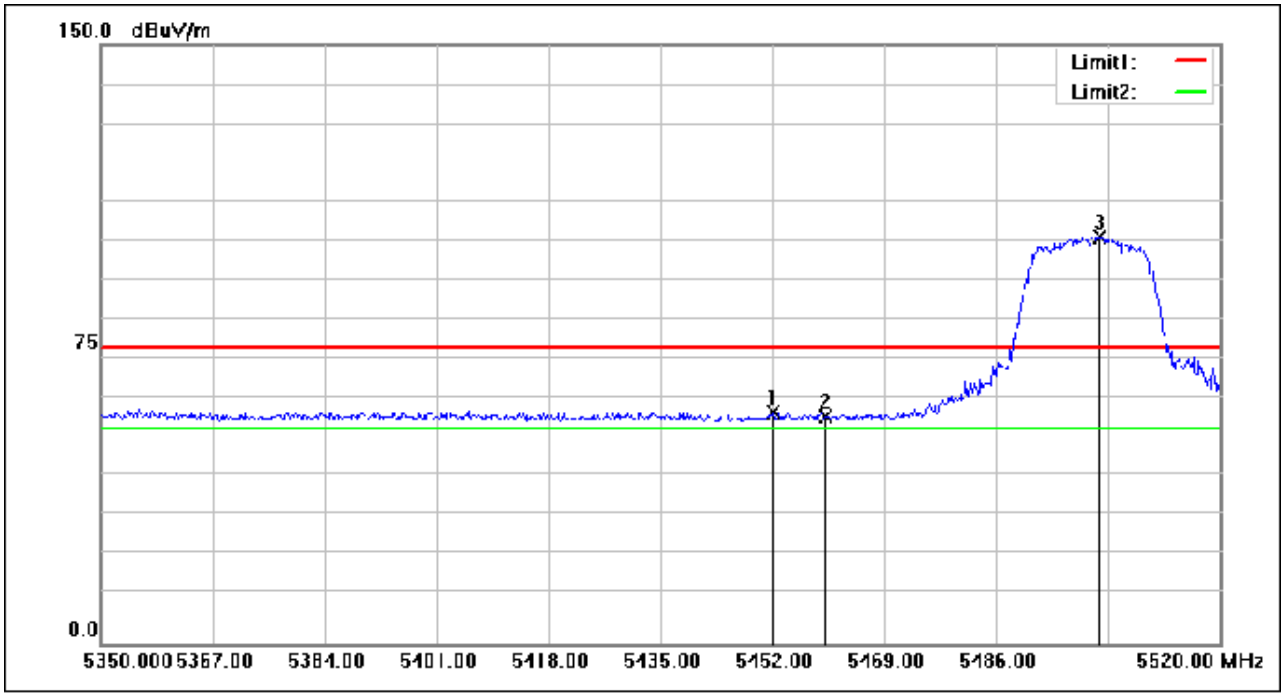
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5455.910	75.62	-17.76	57.86	74.00	-16.14	peak
2	5460.000	75.62	-17.76	57.86	74.00	-16.14	peak
3	5501.130	122.01	-17.70	104.31	74.00	30.31	peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



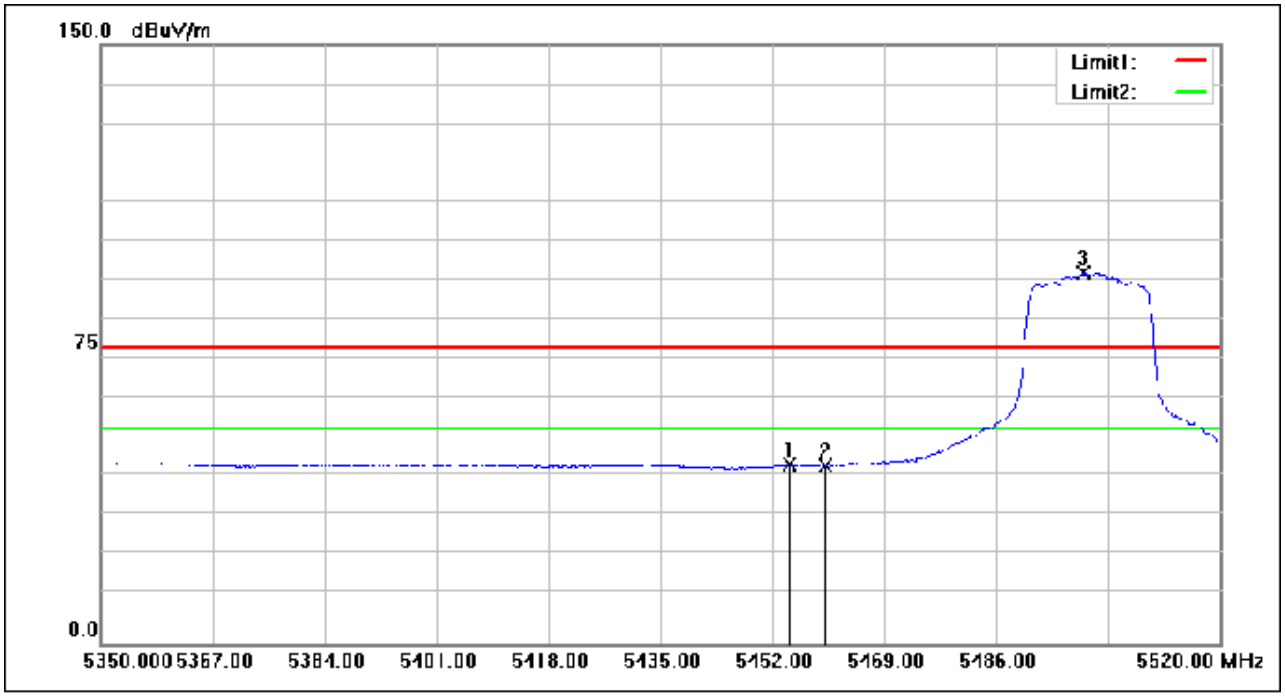
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5455.060	62.46	-17.76	44.70	54.00	-9.30	AVG
2	5460.000	62.59	-17.76	44.83	54.00	-9.17	AVG
3	5499.260	112.15	-17.70	94.45	54.00	40.45	AVG

Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



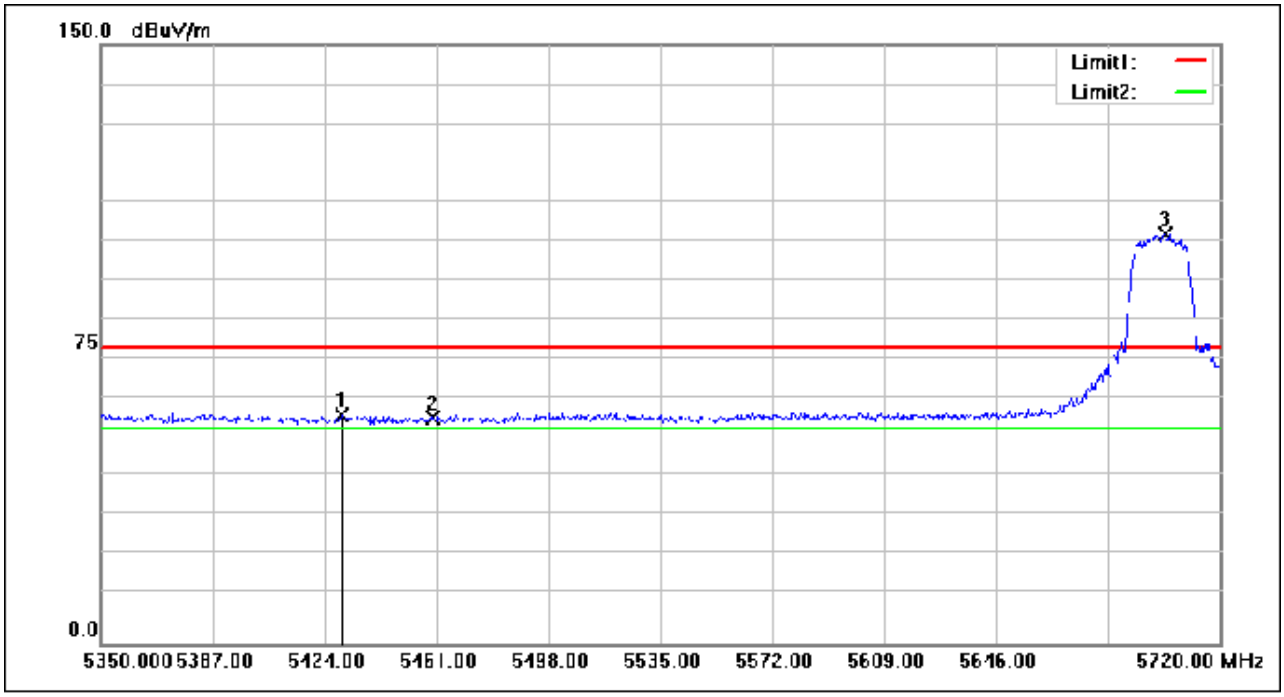
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5452.170	75.82	-17.76	58.06	74.00	-15.94	peak
2	5460.000	74.53	-17.76	56.77	74.00	-17.23	peak
3	5501.640	119.70	-17.70	102.00	74.00	28.00	peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



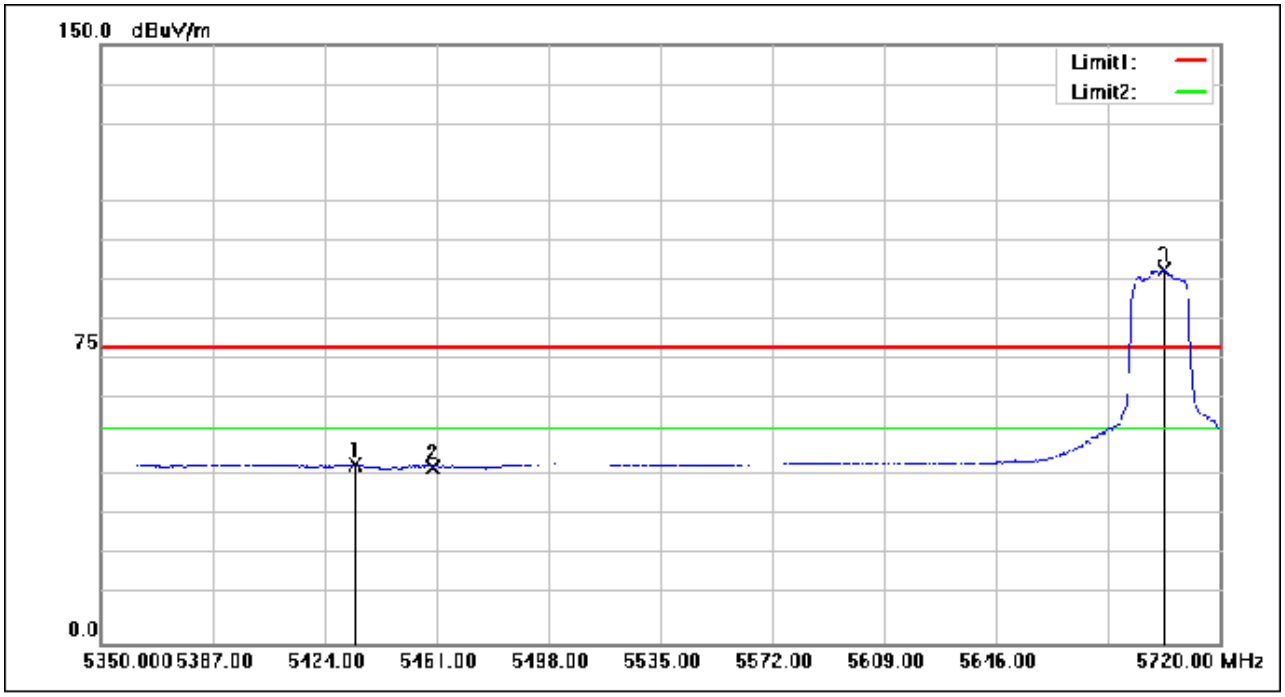
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5454.550	62.45	-17.76	44.69	54.00	-9.31	AVG
2	5460.000	62.15	-17.76	44.39	54.00	-9.61	AVG
3	5499.260	110.62	-17.70	92.92	54.00	38.92	AVG

Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



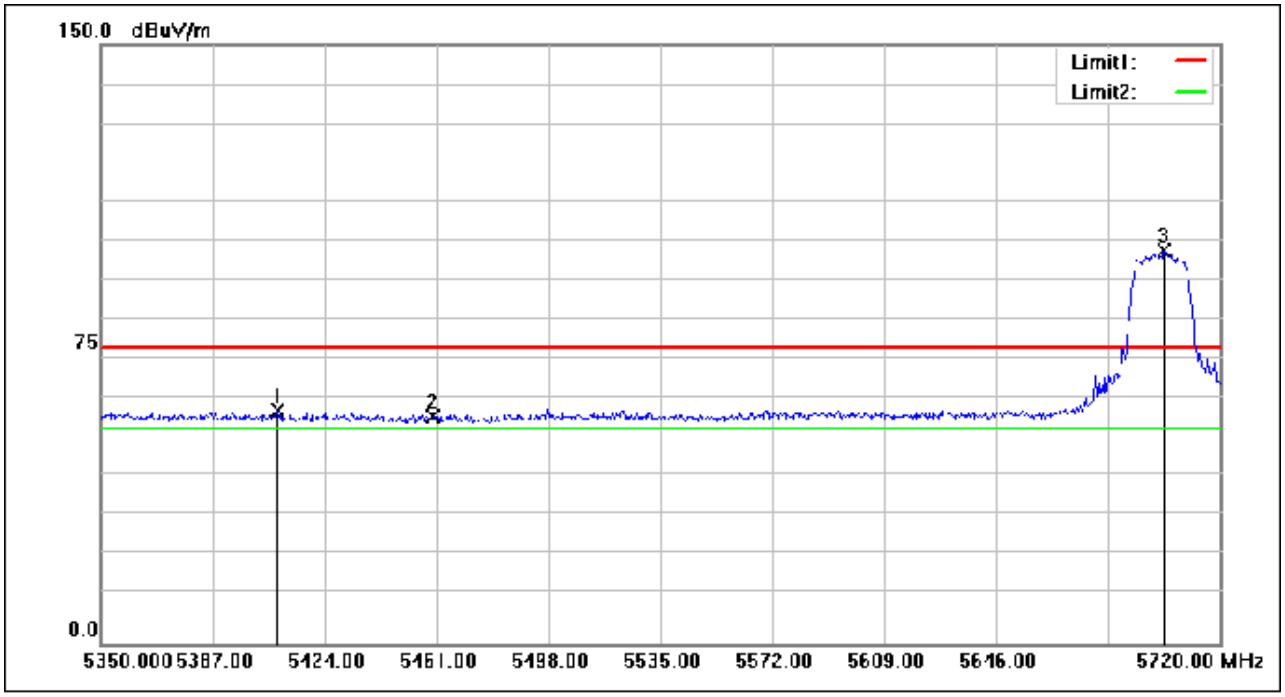
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5429.550	74.84	-17.81	57.03	74.00	-16.97	peak
2	5460.000	74.11	-17.76	56.35	74.00	-17.65	peak
3	5701.870	119.59	-17.02	102.57	74.00	28.57	peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



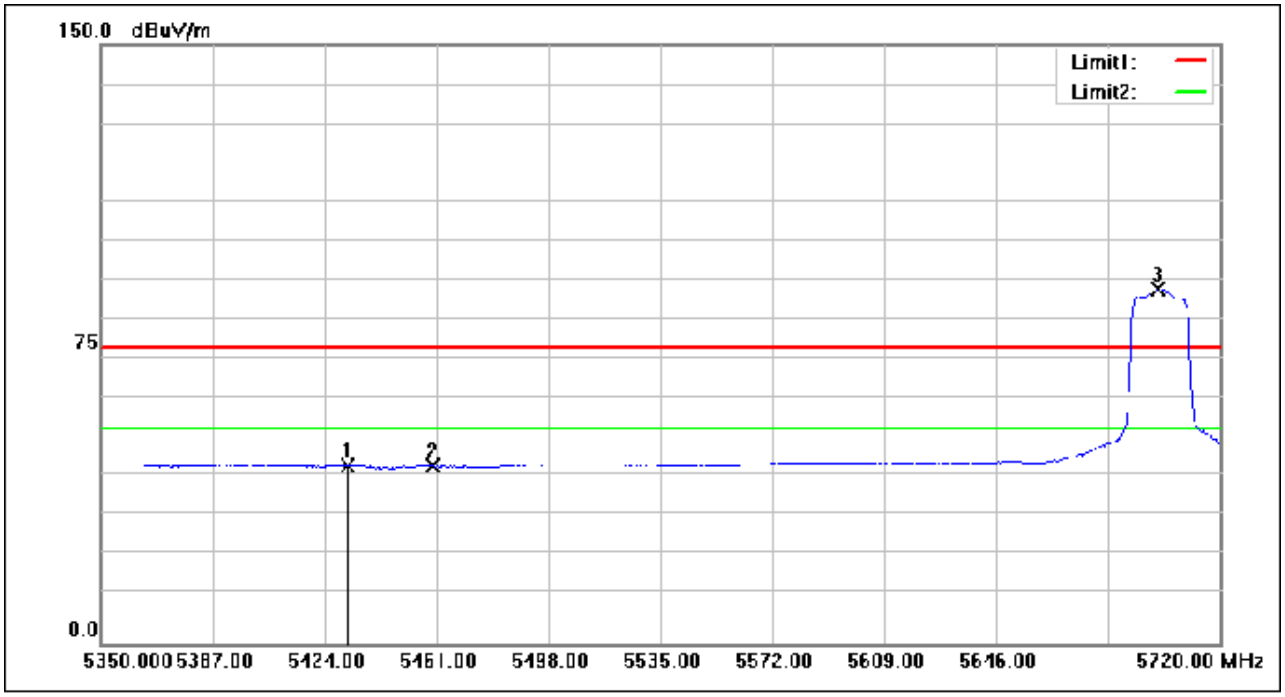
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5433.990	62.45	-17.79	44.66	54.00	-9.34	AVG
2	5460.000	62.01	-17.76	44.25	54.00	-9.75	AVG
3	5701.500	110.60	-17.02	93.58	54.00	39.58	AVG

Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



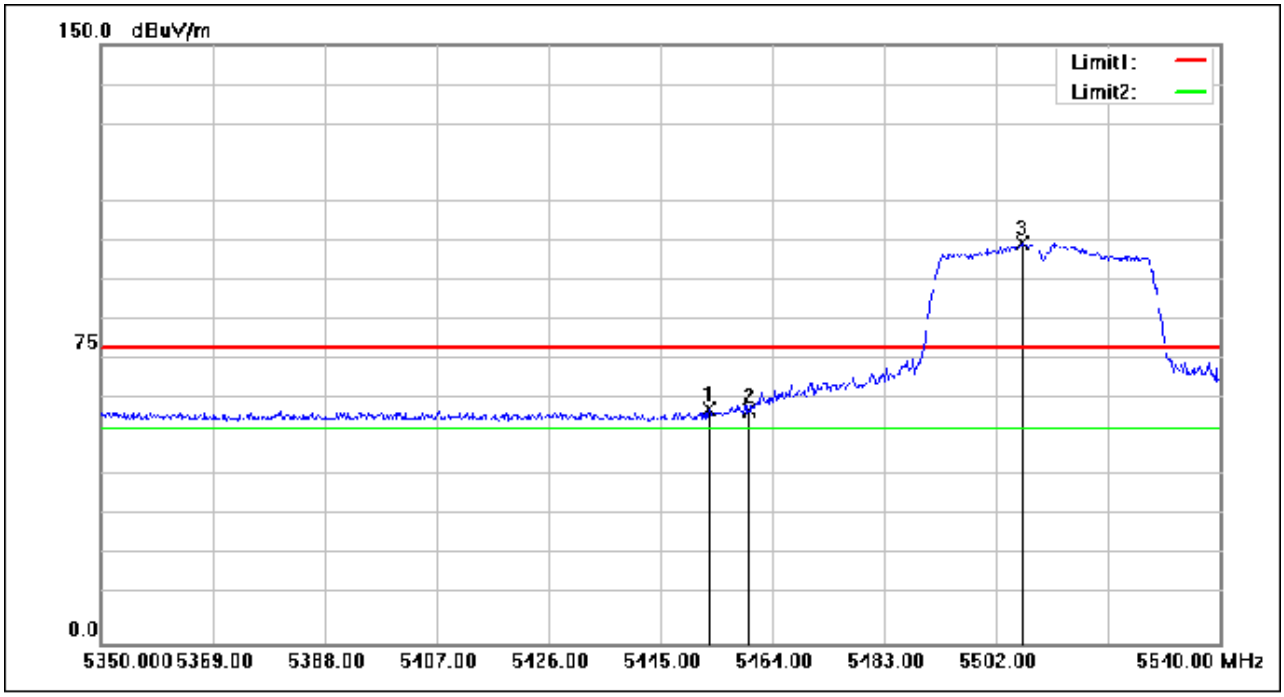
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5408.460	75.98	-17.84	58.14	74.00	-15.86	peak
2	5460.000	74.64	-17.76	56.88	74.00	-17.12	peak
3	5701.500	115.47	-17.02	98.45	74.00	24.45	peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



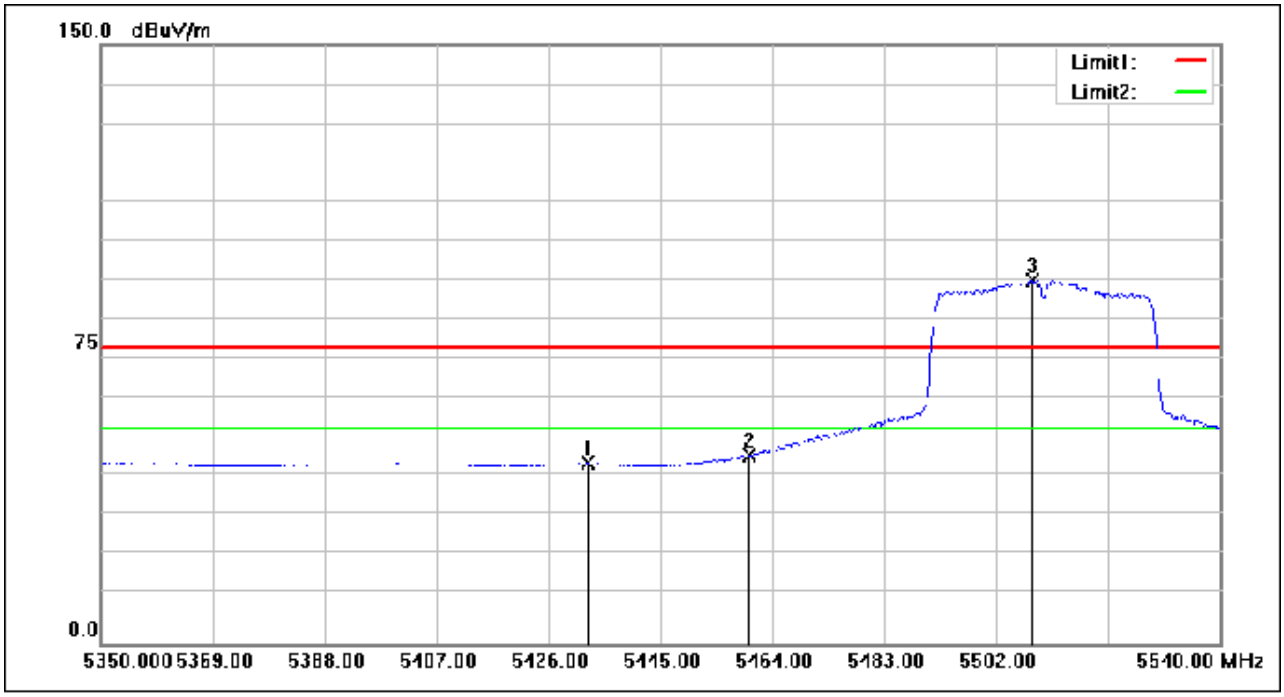
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5431.770	62.41	-17.79	44.62	54.00	-9.38	AVG
2	5460.000	62.08	-17.76	44.32	54.00	-9.68	AVG
3	5699.280	105.85	-17.03	88.82	54.00	34.82	AVG

Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



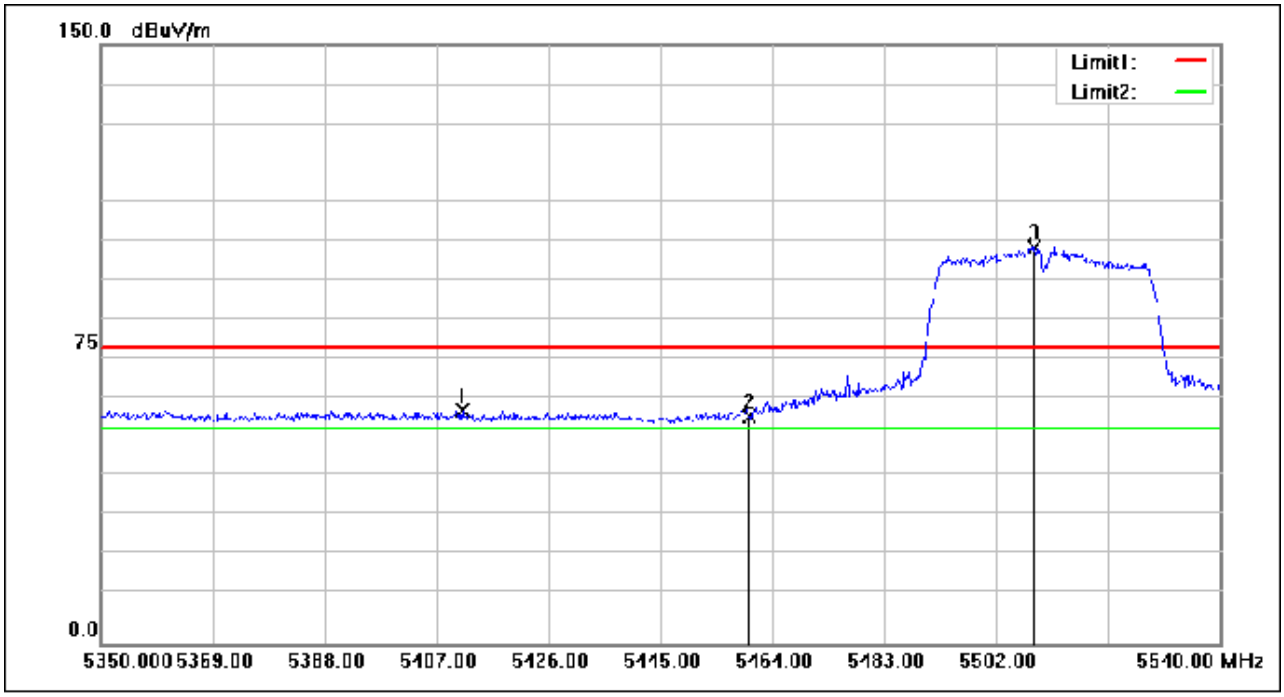
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5453.170	76.34	-17.76	58.58	74.00	-15.42	peak
2	5460.000	76.20	-17.76	58.44	74.00	-15.56	peak
3	5506.370	117.97	-17.69	100.28	74.00	26.28	peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



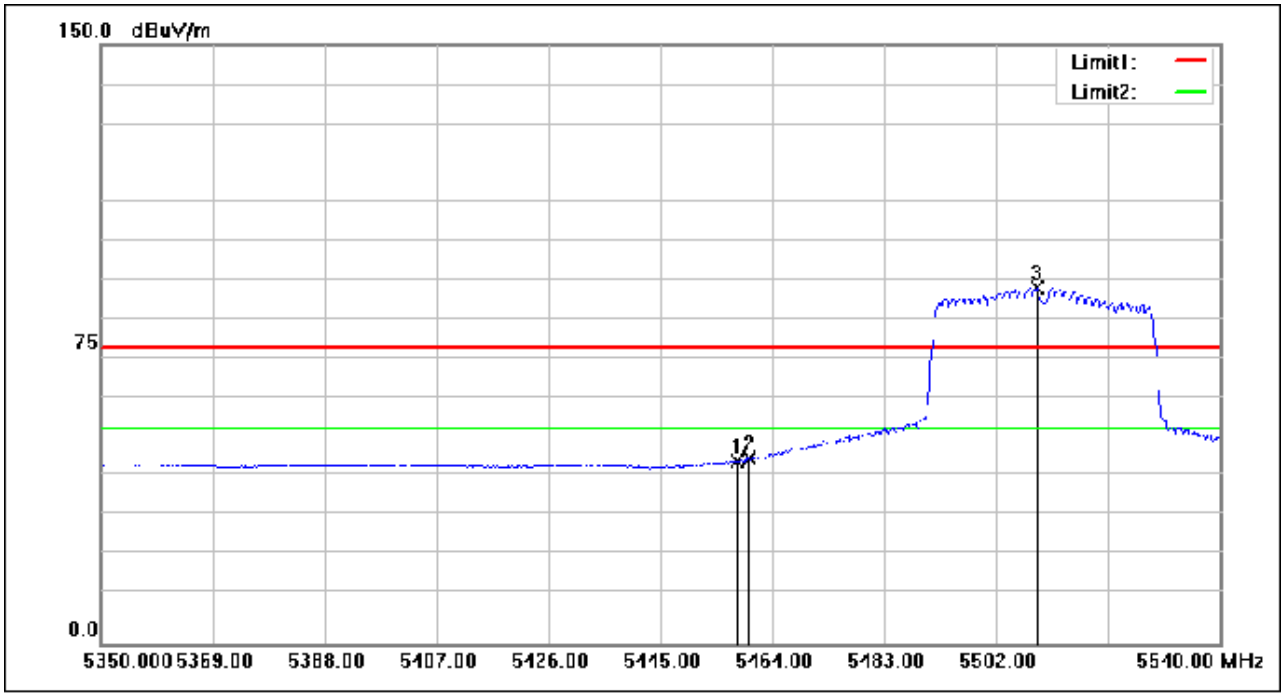
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5432.650	62.86	-17.79	45.07	74.00	-28.93	peak
2	5460.000	65.00	-17.76	47.24	74.00	-26.76	peak
3	5508.080	108.63	-17.69	90.94	74.00	16.94	peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



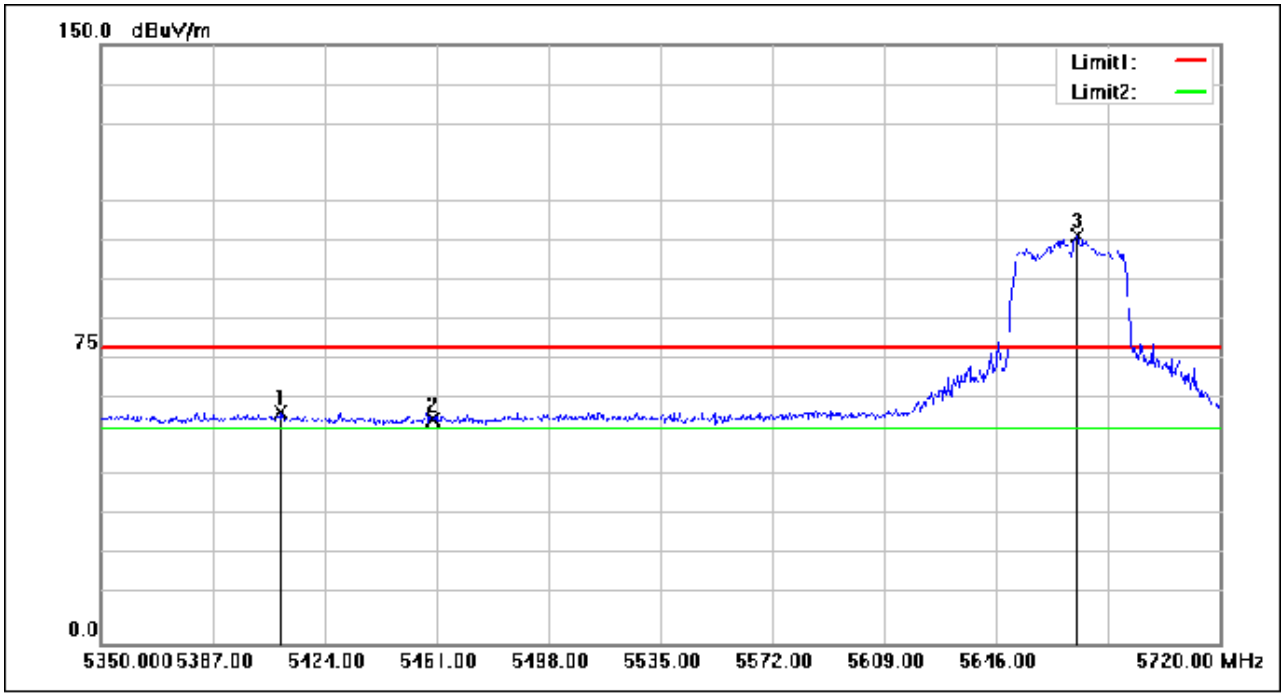
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5411.370	76.05	-17.82	58.23	74.00	-15.77	peak
2	5460.000	74.63	-17.76	56.87	74.00	-17.13	peak
3	5508.460	116.94	-17.69	99.25	74.00	25.25	peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



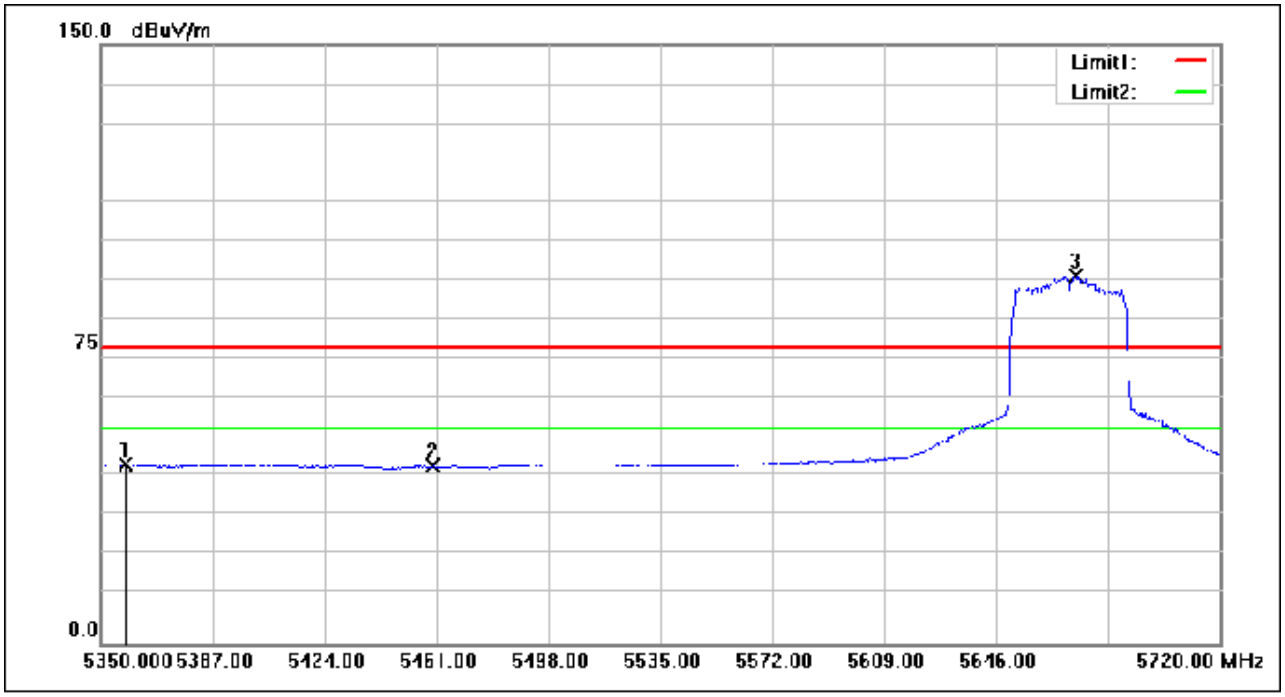
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5458.110	63.43	-17.76	45.67	54.00	-8.33	AVG
2	5460.000	63.92	-17.76	46.16	54.00	-7.84	AVG
3	5508.840	106.70	-17.69	89.01	54.00	35.01	AVG

Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



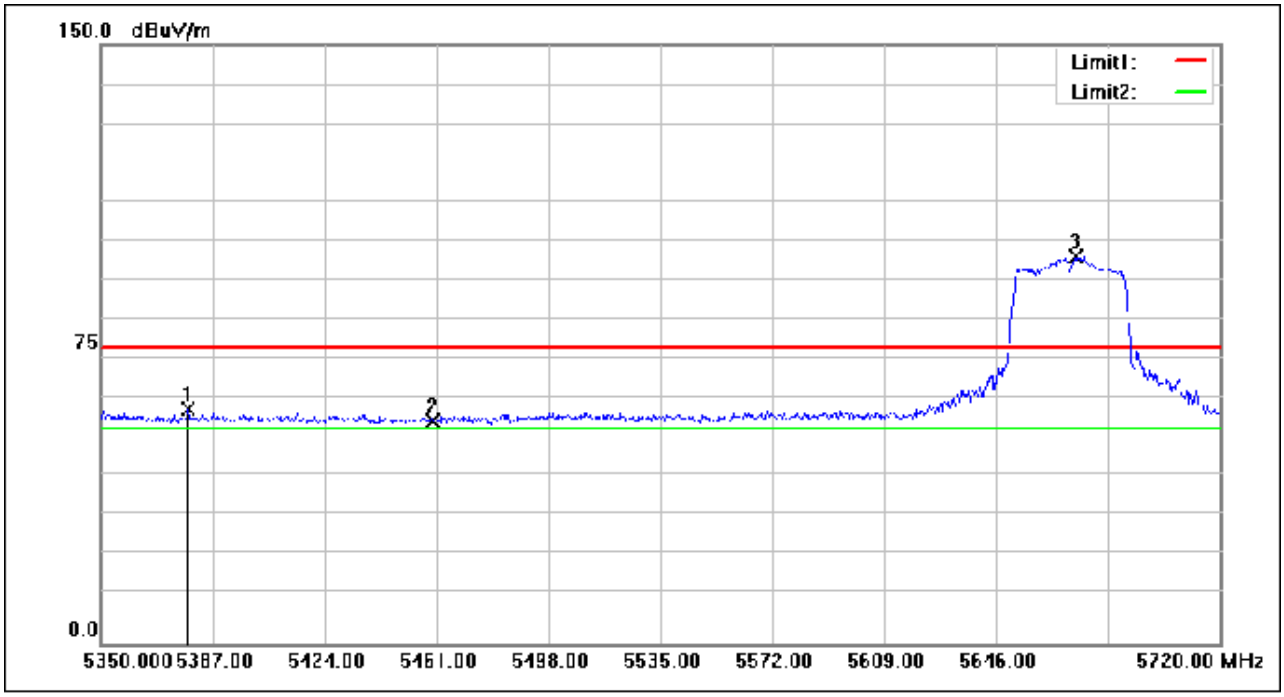
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5409.570	75.87	-17.83	58.04	74.00	-15.96	peak
2	5460.000	73.72	-17.76	55.96	74.00	-18.04	peak
3	5672.640	119.27	-17.14	102.13	74.00	28.13	peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



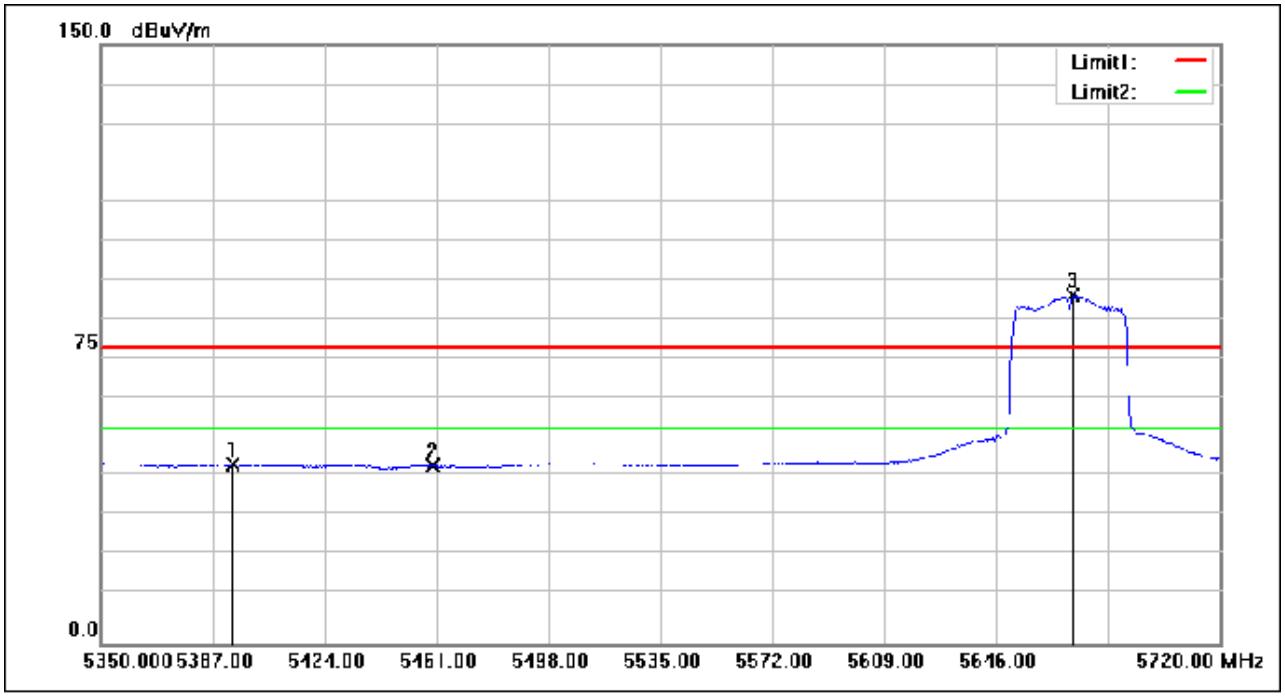
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5358.140	62.82	-17.90	44.92	54.00	-9.08	AVG
2	5460.000	62.03	-17.76	44.27	54.00	-9.73	AVG
3	5672.270	109.23	-17.14	92.09	54.00	38.09	AVG

Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



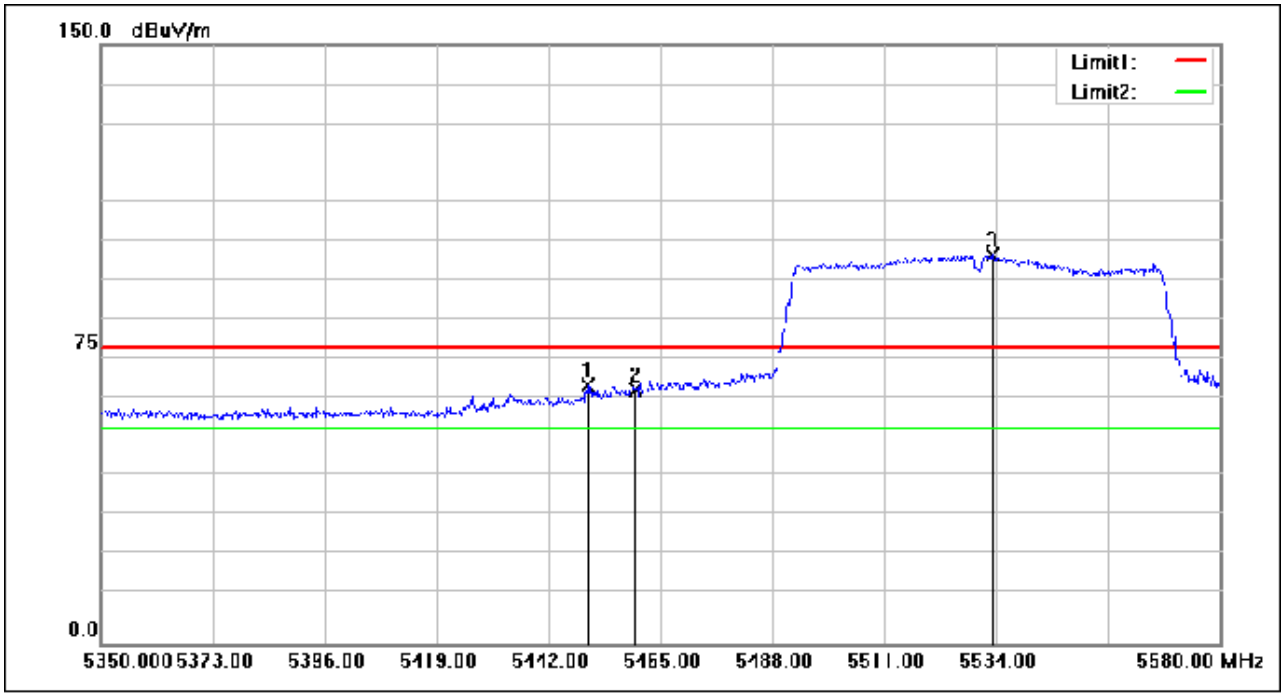
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5378.860	76.54	-17.87	58.67	74.00	-15.33	peak
2	5460.000	73.51	-17.76	55.75	74.00	-18.25	peak
3	5672.270	113.98	-17.14	96.84	74.00	22.84	peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



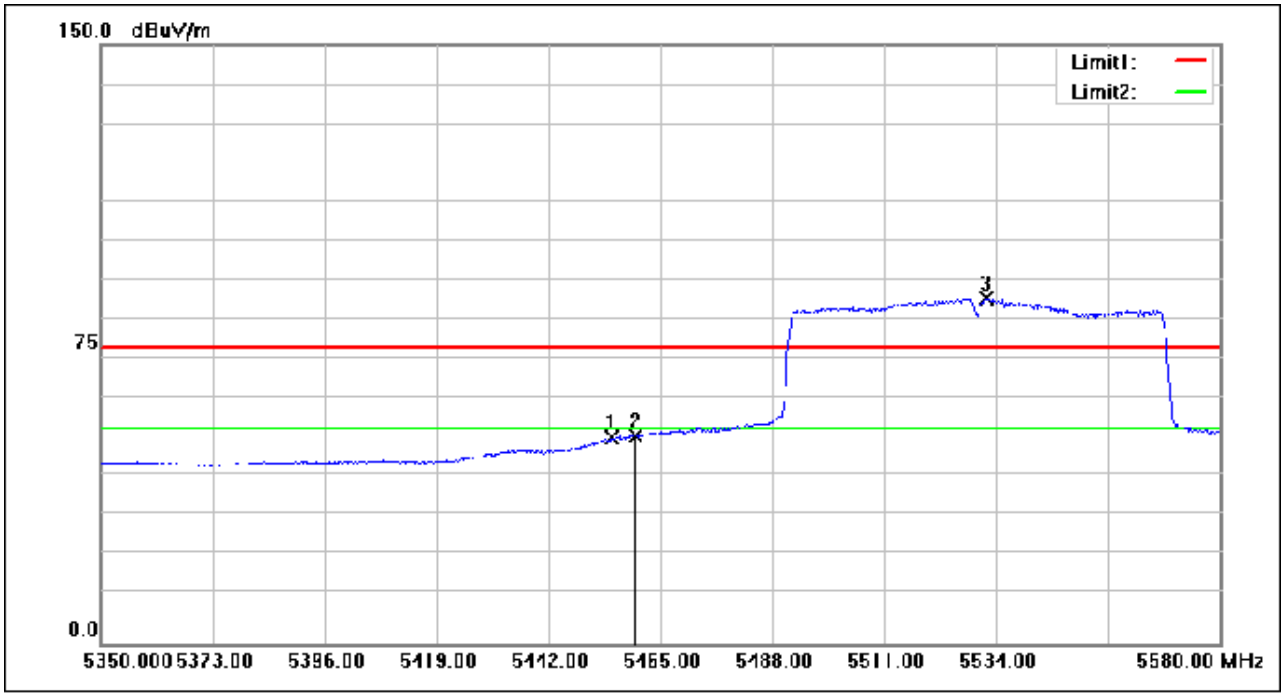
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5393.660	62.66	-17.85	44.81	54.00	-9.19	AVG
2	5460.000	62.07	-17.76	44.31	54.00	-9.69	AVG
3	5671.530	104.40	-17.14	87.26	54.00	33.26	AVG

Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



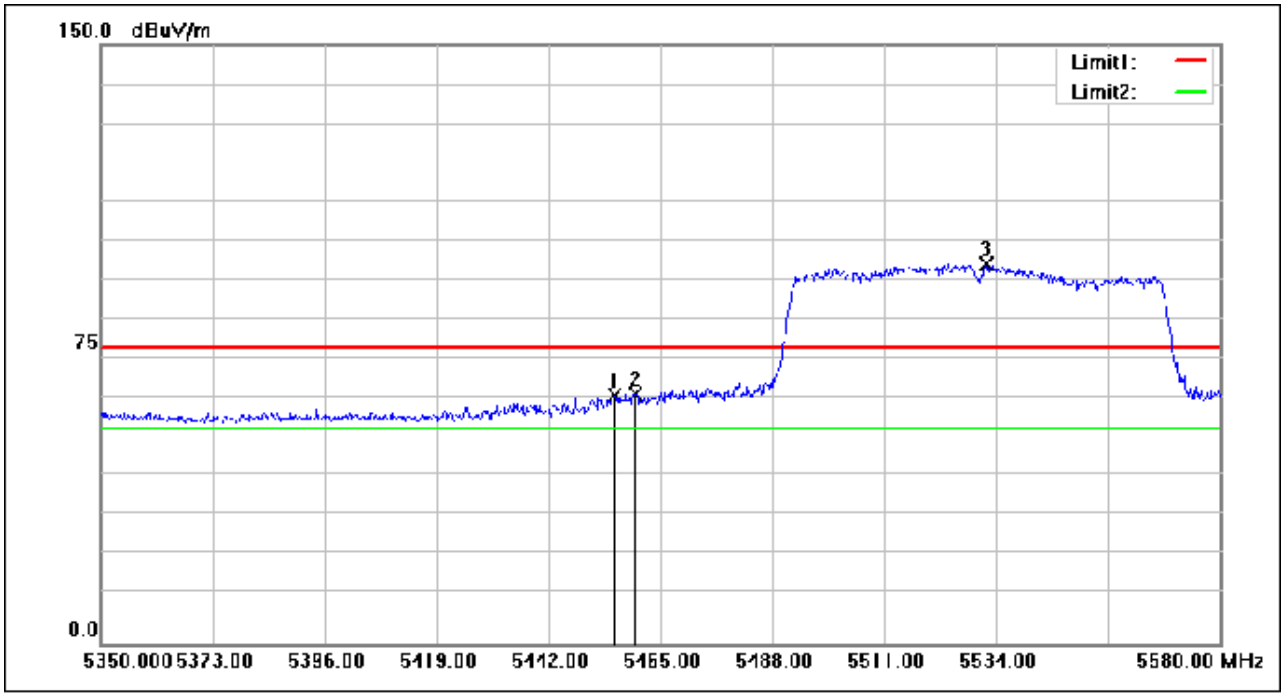
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5450.050	82.43	-17.77	64.66	74.00	-9.34	peak
2	5460.000	81.18	-17.76	63.42	74.00	-10.58	peak
3	5533.080	114.86	-17.65	97.21	74.00	23.21	peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



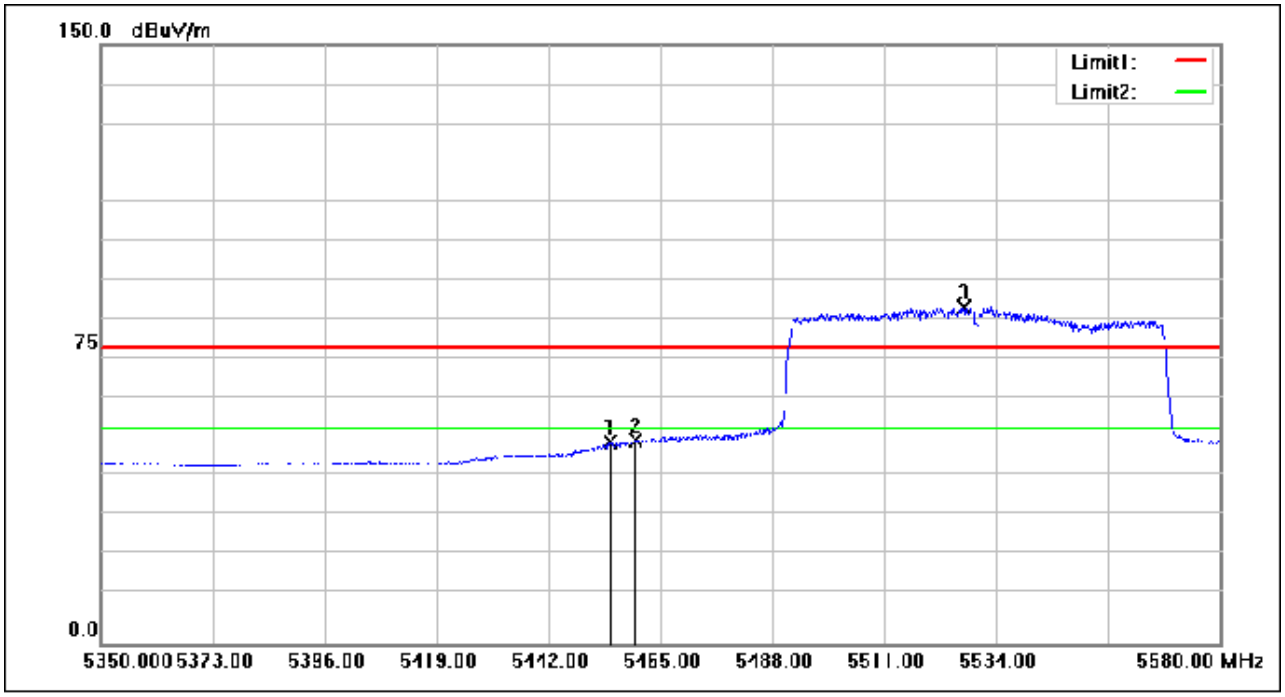
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5454.880	69.14	-17.76	51.38	54.00	-2.62	AVG
2	5460.000	69.86	-17.76	52.10	54.00	-1.90	AVG
3	5531.930	104.15	-17.65	86.50	54.00	32.50	AVG

Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



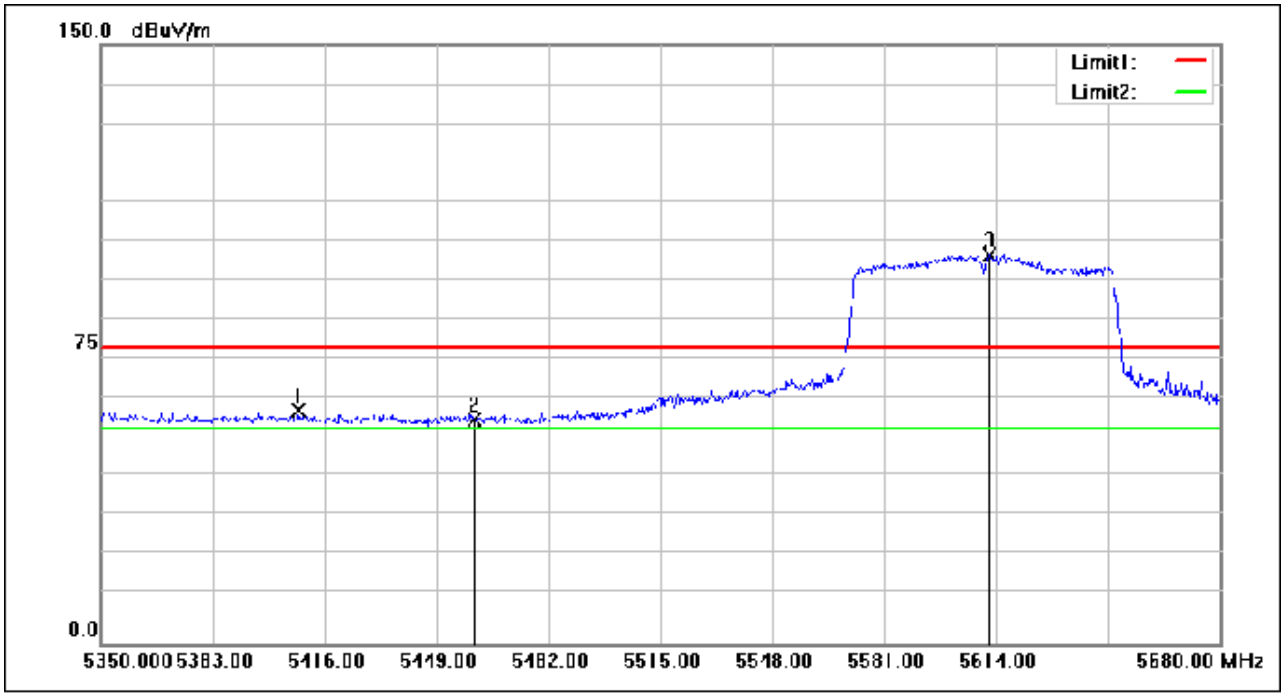
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5455.570	79.97	-17.76	62.21	74.00	-11.79	peak
2	5460.000	80.13	-17.76	62.37	74.00	-11.63	peak
3	5531.930	112.69	-17.65	95.04	74.00	21.04	peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



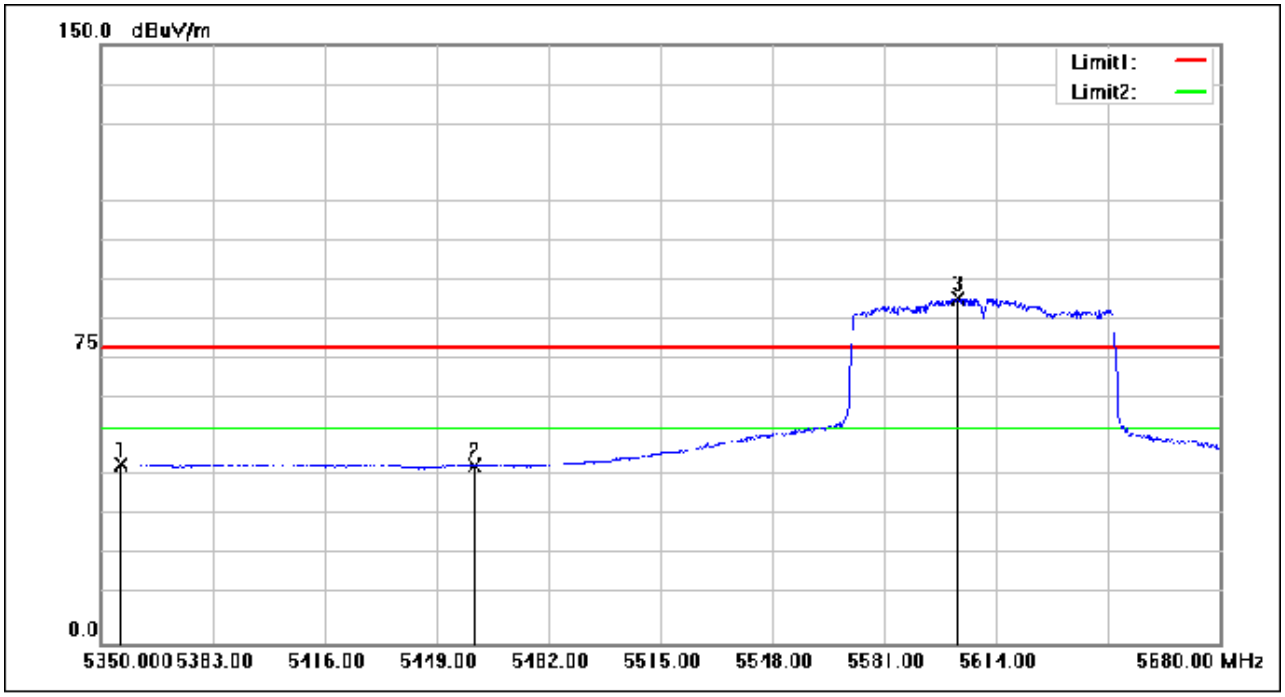
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5454.650	68.02	-17.76	50.26	54.00	-3.74	AVG
2	5460.000	68.72	-17.76	50.96	54.00	-3.04	AVG
3	5527.330	101.77	-17.66	84.11	54.00	30.11	AVG

Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:High



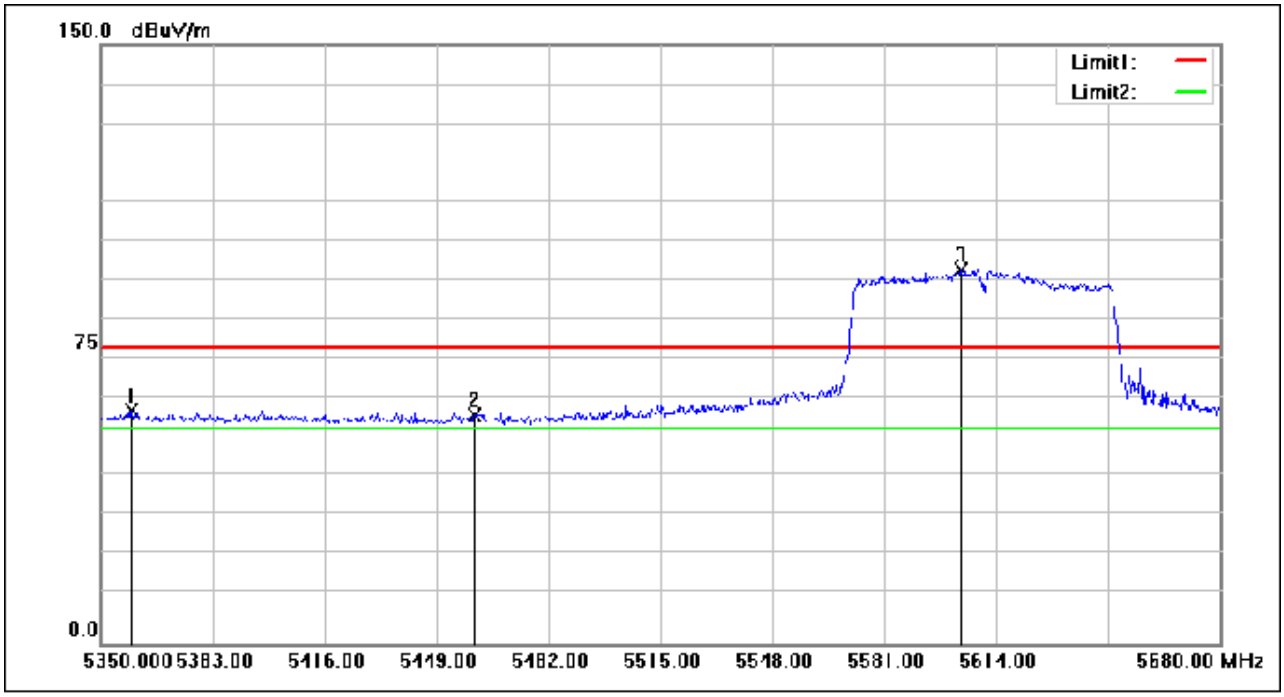
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5408.080	76.10	-17.84	58.26	74.00	-15.74	peak
2	5460.000	73.64	-17.76	55.88	74.00	-18.12	peak
3	5612.020	114.55	-17.39	97.16	74.00	23.16	peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:High



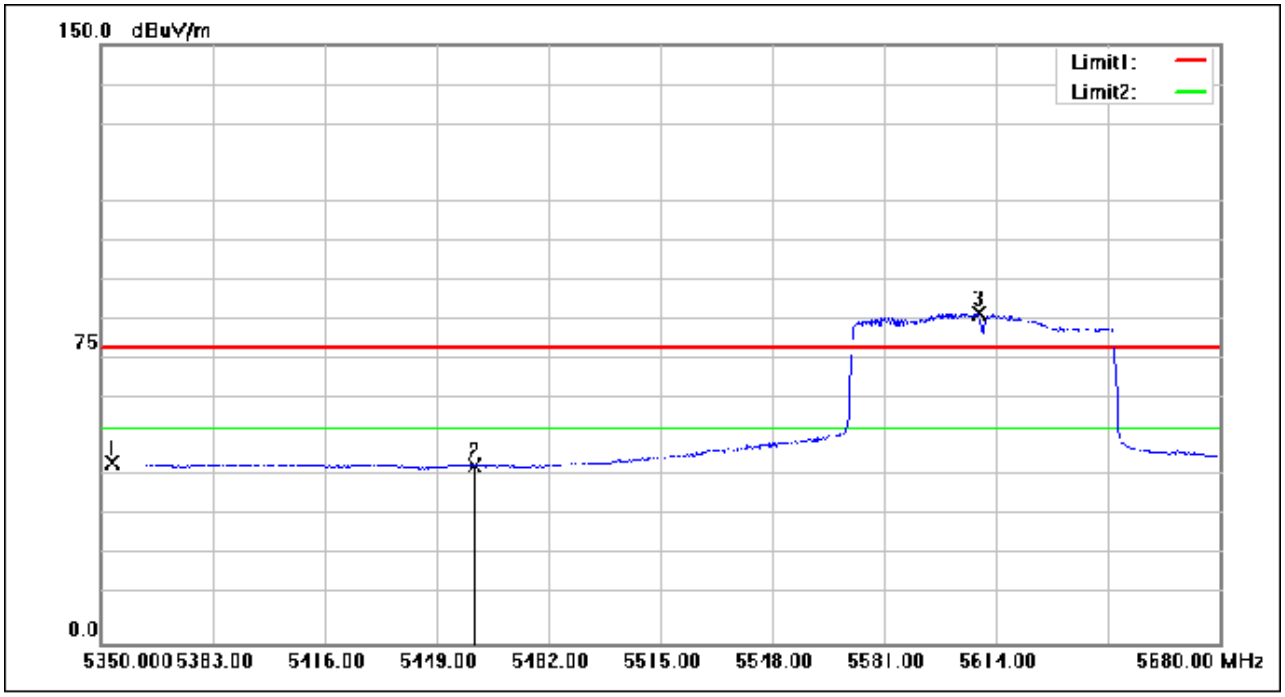
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5355.940	62.87	-17.91	44.96	54.00	-9.04	AVG
2	5460.000	62.24	-17.76	44.48	54.00	-9.52	AVG
3	5602.780	103.99	-17.43	86.56	54.00	32.56	AVG

Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:High



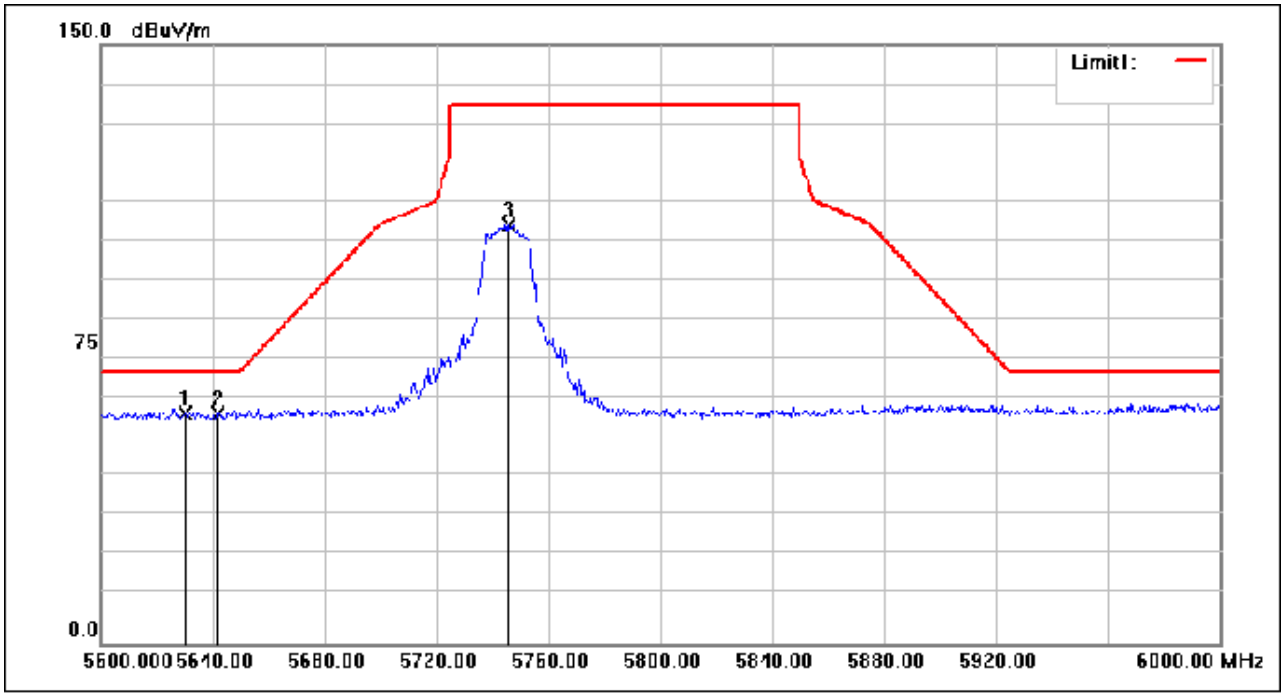
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5358.910	76.28	-17.90	58.38	74.00	-15.62	peak
2	5460.000	74.97	-17.76	57.21	74.00	-16.79	peak
3	5603.770	111.08	-17.43	93.65	74.00	19.65	peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:High



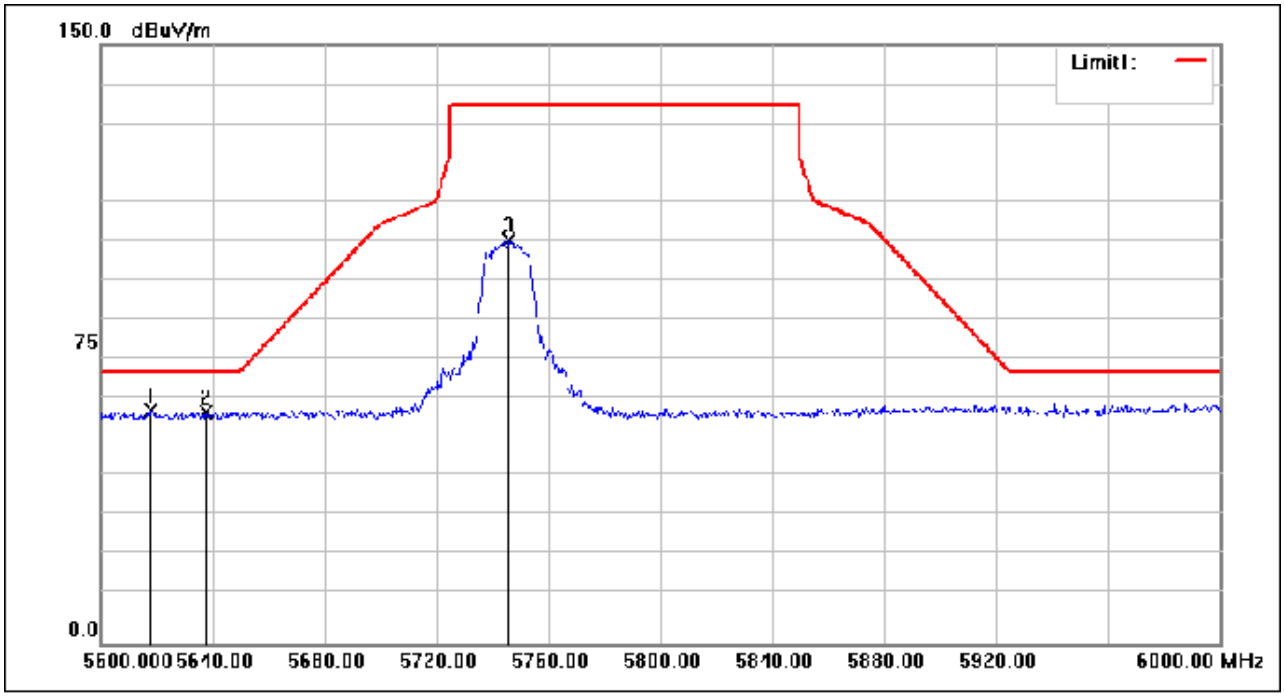
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5353.300	62.99	-17.91	45.08	54.00	-8.92	AVG
2	5460.000	62.26	-17.76	44.50	54.00	-9.50	AVG
3	5608.720	100.12	-17.41	82.71	54.00	28.71	AVG

Test Mode: 05; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



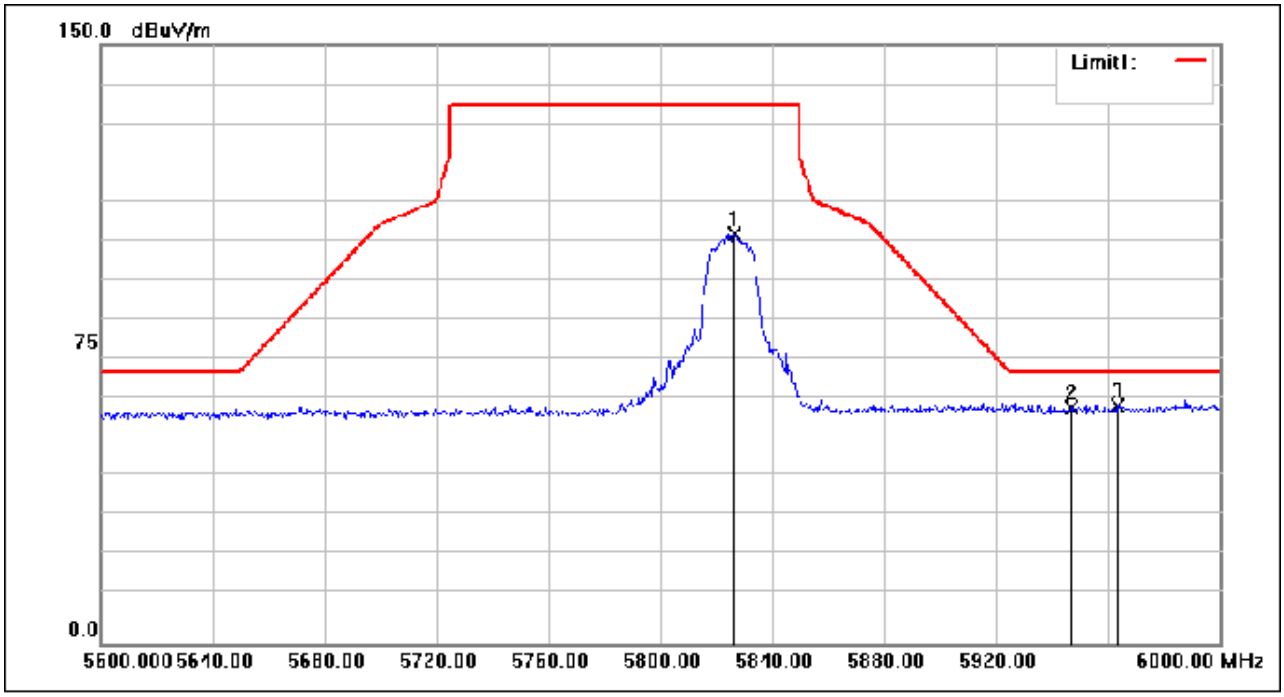
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5630.000	74.98	-17.32	57.66	68.20	-10.54	peak
2	5642.000	74.74	-17.27	57.47	68.20	-10.73	peak
3	5746.000	121.72	-16.84	104.88	135.00	-30.12	peak

Test Mode: 05; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



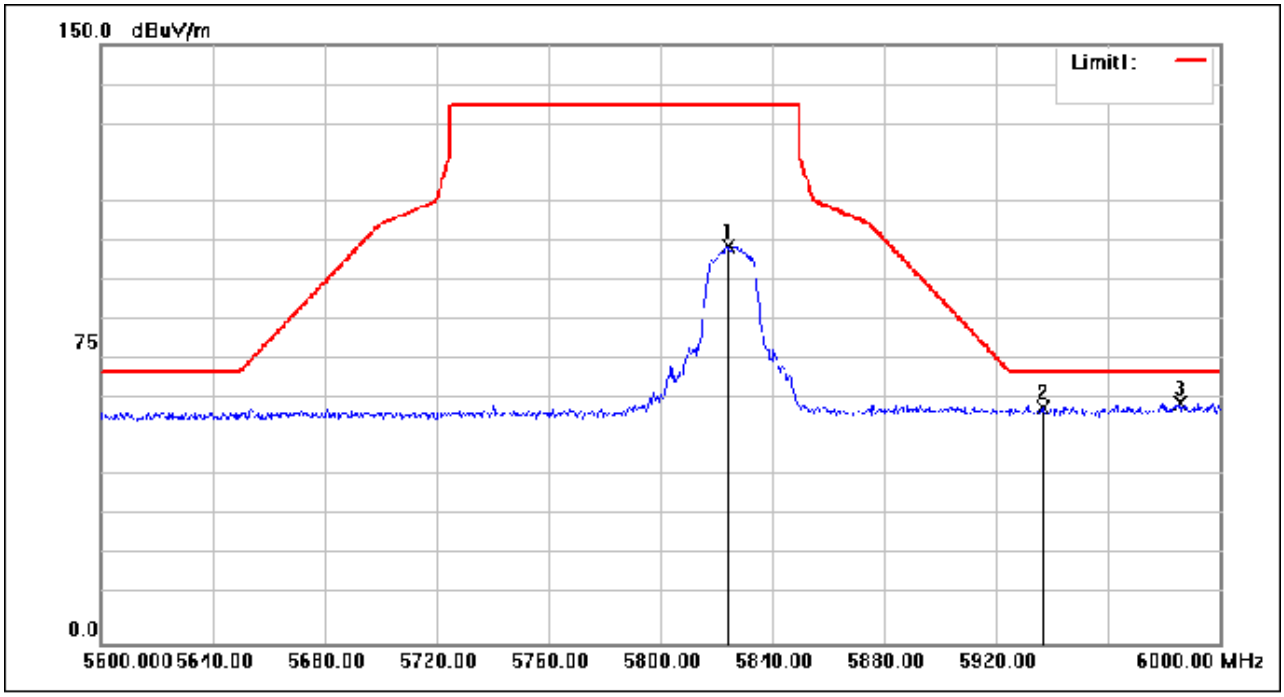
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5618.000	75.80	-17.36	58.44	68.20	-9.76	peak
2	5637.600	75.34	-17.28	58.06	68.20	-10.14	peak
3	5746.000	117.79	-16.84	100.95	135.00	-34.05	peak

Test Mode: 05; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



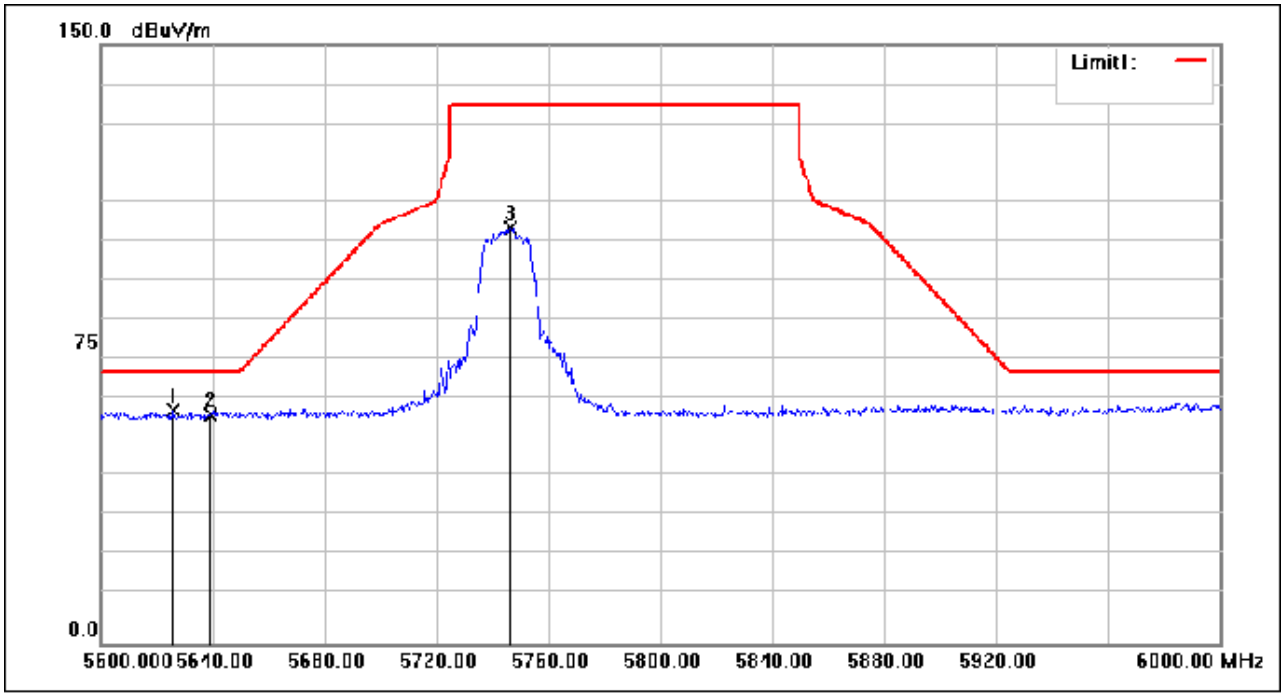
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5826.400	119.23	-16.50	102.73	135.00	-32.27	peak
2	5946.800	75.20	-16.00	59.20	68.20	-9.00	peak
3	5963.600	75.47	-15.93	59.54	68.20	-8.66	peak

Test Mode: 05; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



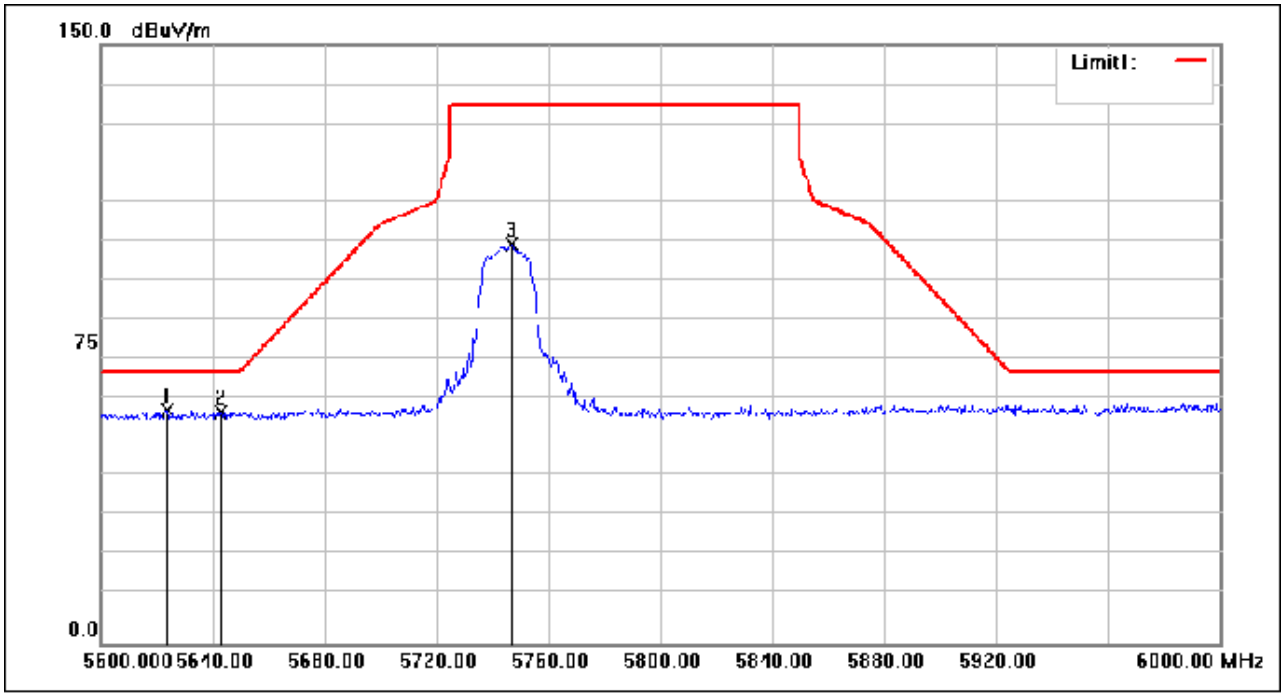
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5824.000	115.89	-16.51	99.38	135.00	-35.62	peak
2	5936.800	75.28	-16.04	59.24	68.20	-8.96	peak
3	5986.000	75.96	-15.84	60.12	68.20	-8.08	peak

Test Mode: 05; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



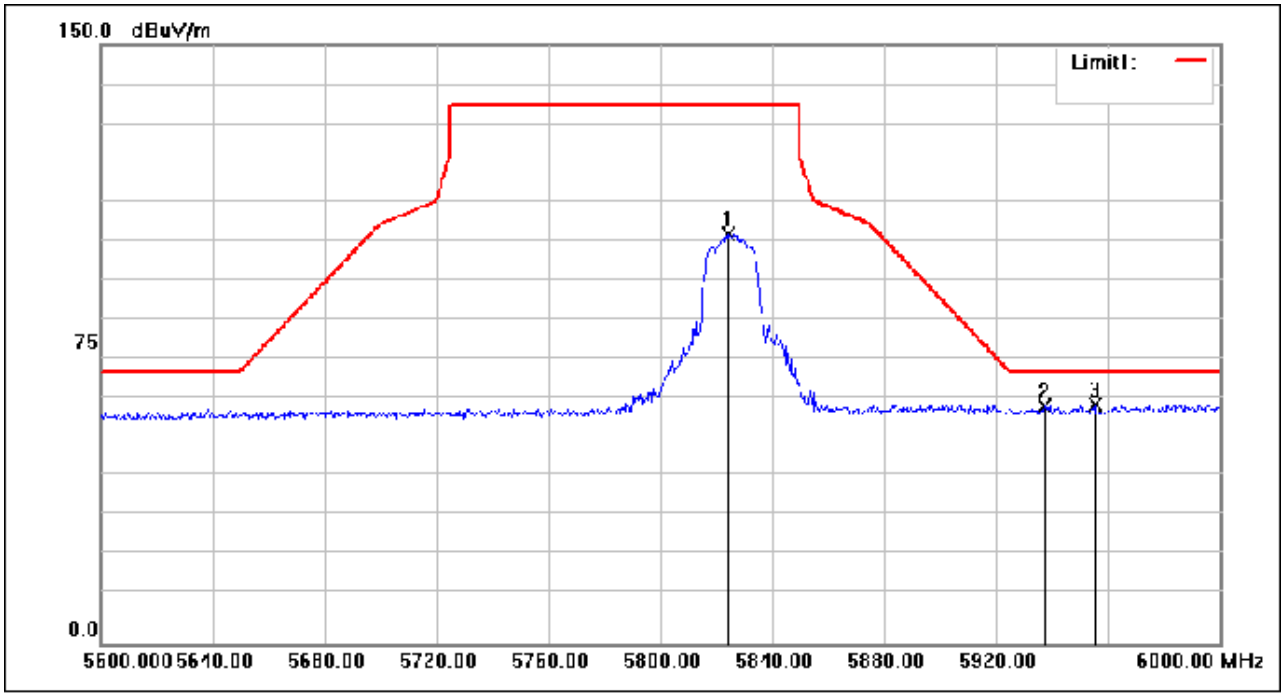
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5626.000	75.76	-17.34	58.42	68.20	-9.78	peak
2	5639.200	74.49	-17.28	57.21	68.20	-10.99	peak
3	5746.400	120.97	-16.84	104.13	135.00	-30.87	peak

Test Mode: 05; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



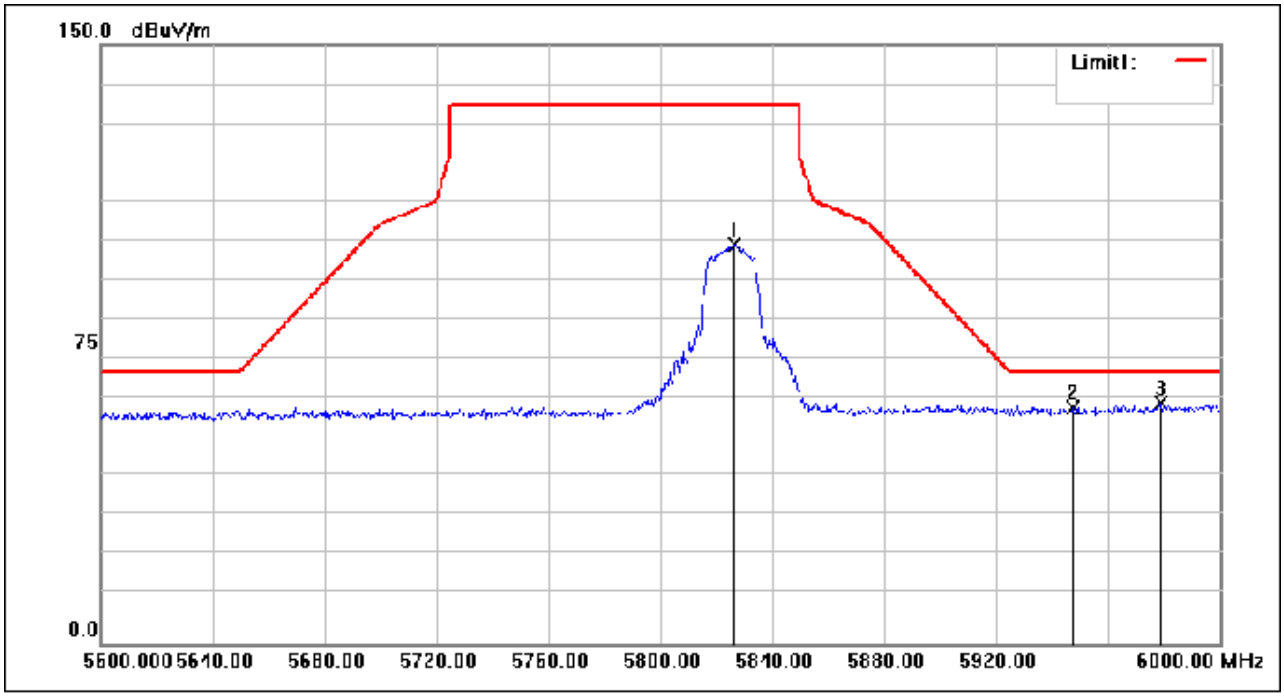
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5623.600	75.59	-17.34	58.25	68.20	-9.95	peak
2	5642.800	75.04	-17.26	57.78	68.20	-10.42	peak
3	5746.800	116.87	-16.83	100.04	135.00	-34.96	peak

Test Mode: 05; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



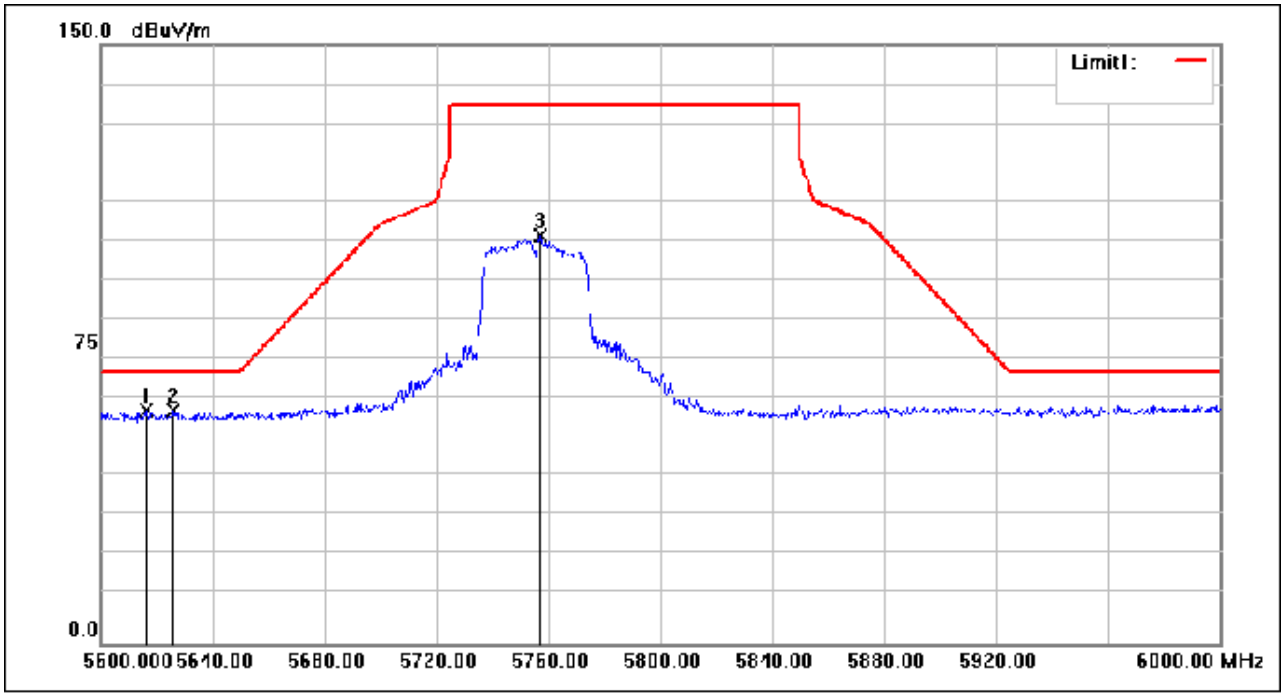
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5824.000	119.06	-16.51	102.55	135.00	-32.45	peak
2	5937.200	75.45	-16.04	59.41	68.20	-8.79	peak
3	5955.200	75.59	-15.96	59.63	68.20	-8.57	peak

Test Mode: 05; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



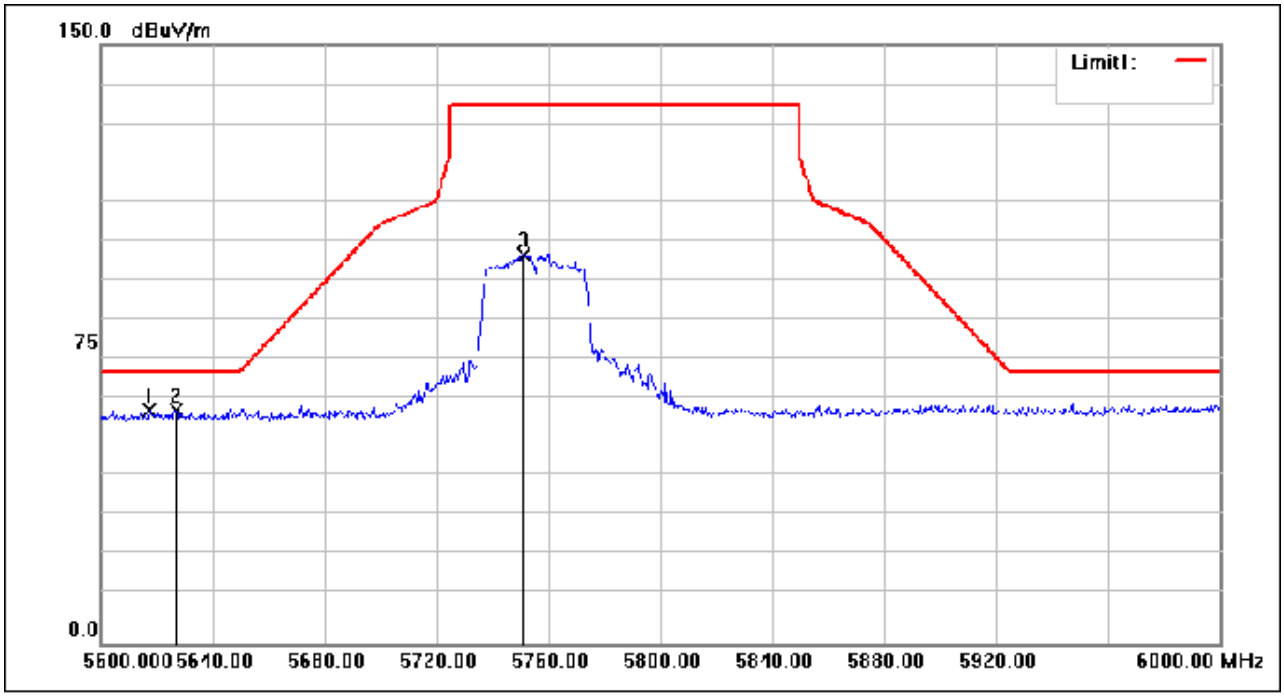
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5826.400	116.52	-16.50	100.02	135.00	-34.98	peak
2	5947.200	74.96	-16.00	58.96	68.20	-9.24	peak
3	5978.800	75.95	-15.87	60.08	68.20	-8.12	peak

Test Mode: 05; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



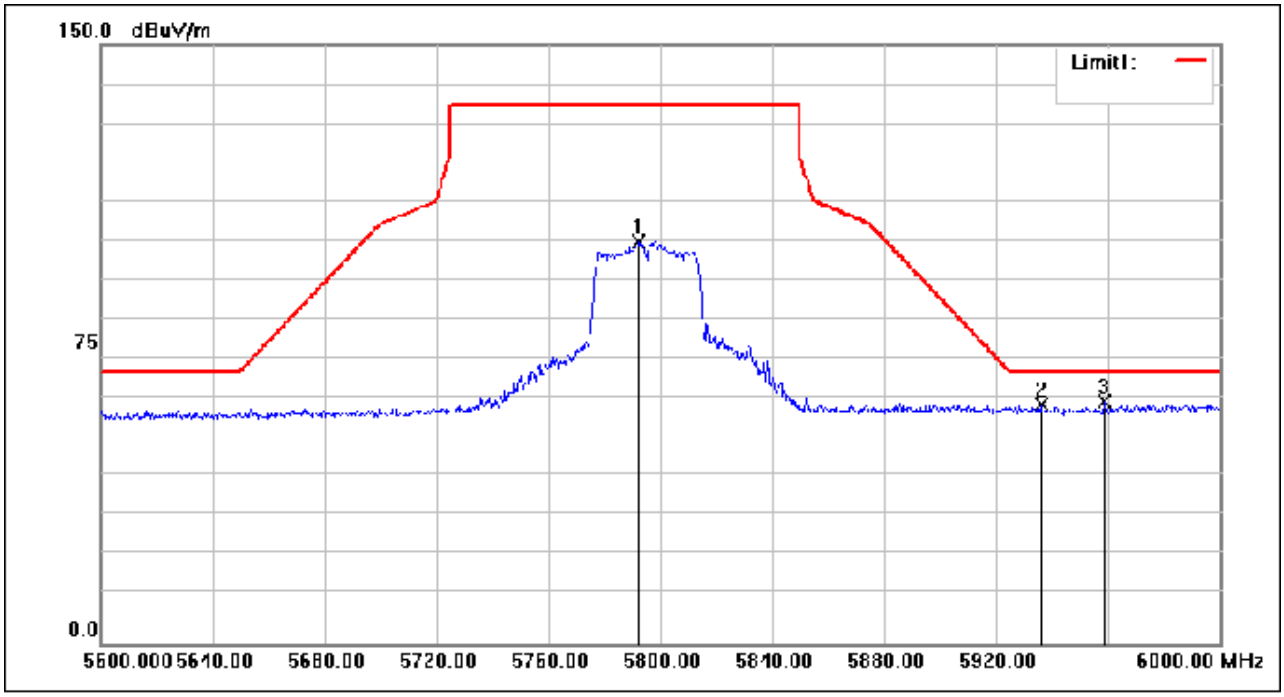
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5616.000	75.54	-17.37	58.17	68.20	-10.03	peak
2	5626.000	75.72	-17.34	58.38	68.20	-9.82	peak
3	5757.200	119.10	-16.79	102.31	135.00	-32.69	peak

Test Mode: 05; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



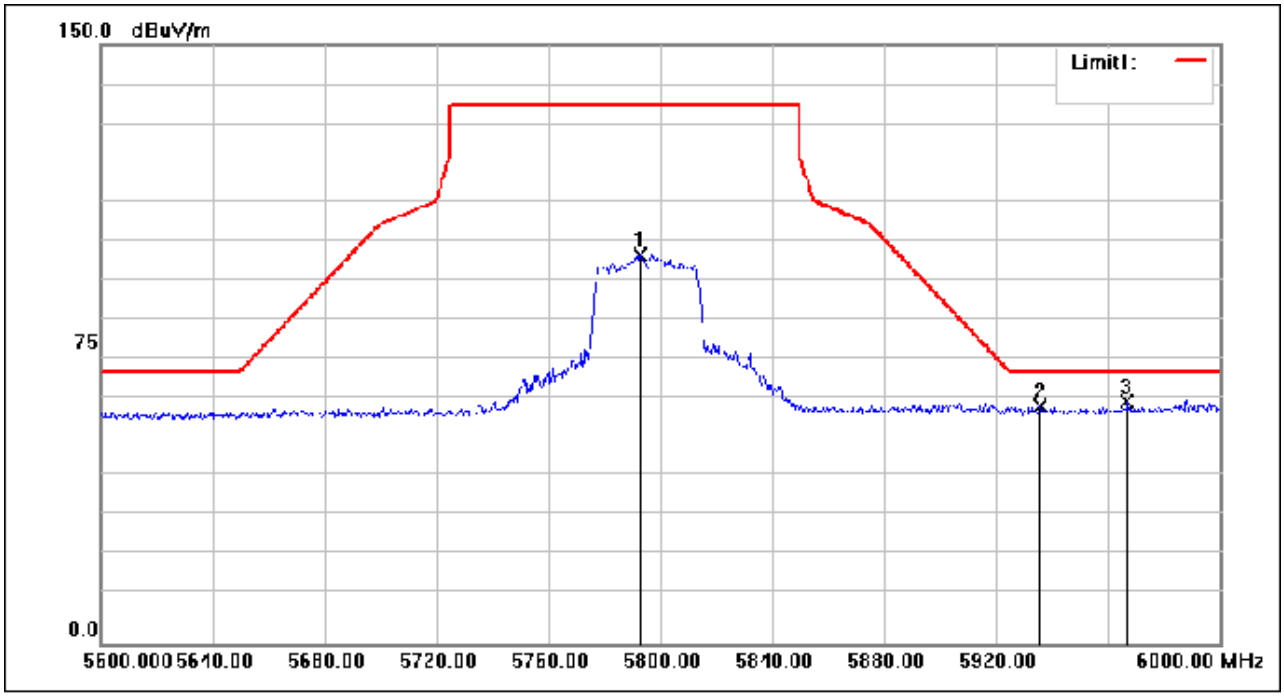
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5617.200	75.71	-17.37	58.34	68.20	-9.86	peak
2	5626.800	75.82	-17.33	58.49	68.20	-9.71	peak
3	5751.200	113.96	-16.81	97.15	135.00	-37.85	peak

Test Mode: 05; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



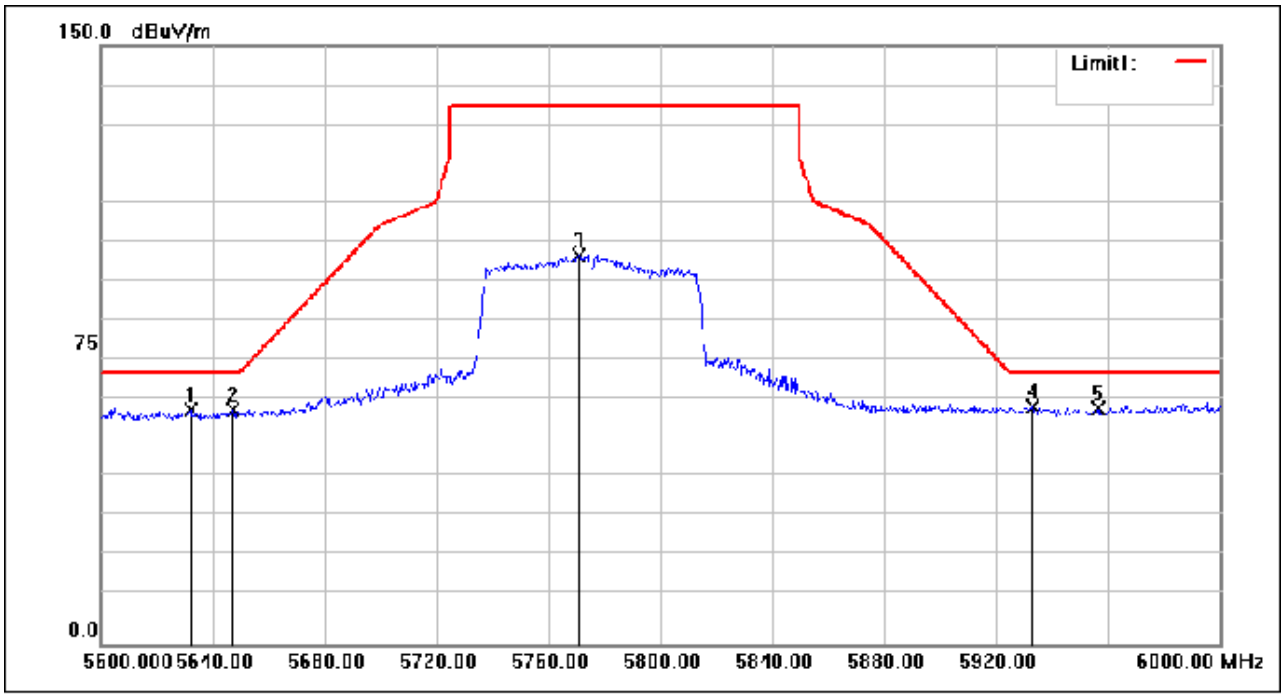
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5792.400	117.24	-16.64	100.60	135.00	-34.40	peak
2	5936.000	75.71	-16.04	59.67	68.20	-8.53	peak
3	5958.800	76.36	-15.95	60.41	68.20	-7.79	peak

Test Mode: 05; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



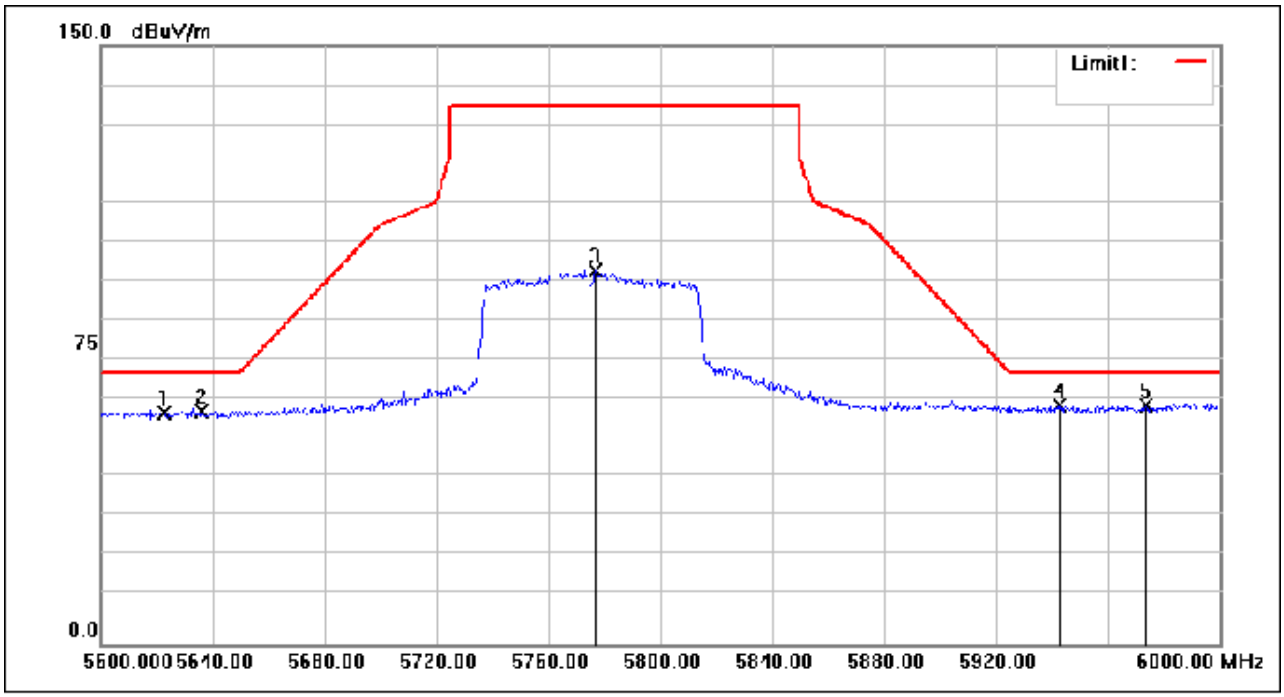
No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5792.800	113.98	-16.64	97.34	135.00	-37.66	peak
2	5935.600	75.44	-16.05	59.39	68.20	-8.81	peak
3	5966.800	76.46	-15.92	60.54	68.20	-7.66	peak

Test Mode: 05; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5632.000	75.82	-17.30	58.52	68.20	-9.68	peak
2	5647.200	75.77	-17.25	58.52	68.20	-9.68	peak
3	5770.800	114.09	-16.73	97.36	135.00	-37.64	peak
4	5933.200	75.34	-16.05	59.29	68.20	-8.91	peak
5	5956.400	75.10	-15.96	59.14	68.20	-9.06	peak

Test Mode: 05; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV/m)	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5622.800	75.46	-17.35	58.11	68.20	-10.09	peak
2	5636.000	75.69	-17.29	58.40	68.20	-9.80	peak
3	5776.800	110.22	-16.70	93.52	135.00	-41.48	peak
4	5942.400	75.75	-16.02	59.73	68.20	-8.47	peak
5	5973.600	75.80	-15.89	59.91	68.20	-8.29	peak

7.6 Channel Move Time

Test Requirement KDB 905462 D02 Section 5.1
Test Method: KDB 905462 D02 Section 7.8.3

Limit:

Test item	Limit	Applicability	
		Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required

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.

7.6.1 E.U.T. Operation

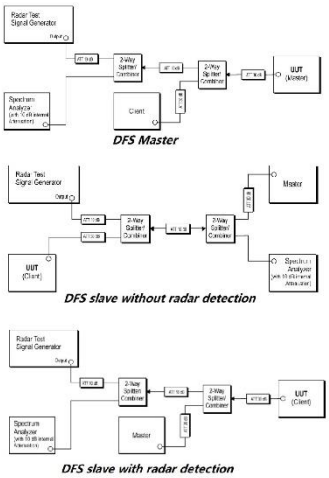
Operating Environment:

Temperature: 20.5 °C Humidity: 46.9 % RH Atmospheric Pressure: 1010 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	06	Normal operating_Keep the EUT communication with the companion device.

7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data

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 with a 1us pulse width and a 1428us PRI is used for the testing.

2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port 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) EUT will associate with the master at channel. The file “iperf.exe” specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.

5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.

6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.

7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details

7.7 Duty Cycle

Test Requirement KDB 789033 D02 II B 1
Test Method: KDB 789033 D02 II B 1

7.7.1 E.U.T. Operation

Operating Environment:
Temperature: 20.5 °C Humidity: 46.9 % RH Atmospheric Pressure: 1010 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	03	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.

7.7.3 Test Setup Diagram

7.7.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.8 99% Bandwidth

Test Requirement N/A

Test Method: KDB 789033 D02 II D

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 20.5 °C Humidity: 46.9 % RH Atmospheric Pressure: 1010 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	03	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.

7.8.3 Test Setup Diagram

7.8.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.9 26dB Emission bandwidth

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)
Test Method: KDB 789033 D02 II C 1

7.9.1 E.U.T. Operation

Operating Environment:
Temperature: 20.5 °C Humidity: 46.9 % RH Atmospheric Pressure: 1010 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	03	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.

7.9.3 Test Setup Diagram

7.9.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.10 Minimum 6 dB bandwidth (5.725-5.85 GHz band)

Test Requirement 47 CFR Part 15, Subpart E 15.407 (e)
Test Method: KDB 789033 D02 II C 2

Limit:

Frequency band(MHz)	Limit
5725-5850	⩾500 kHz

7.10.1 E.U.T. Operation

Operating Environment:
Temperature: 20.5 °C Humidity: 46.9 % RH Atmospheric Pressure: 1010 mbar

7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	05	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.

7.10.3 Test Setup Diagram

7.10.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.11 Peak Power spectrum density

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)
Test Method: KDB 789033 D02 II F

Limit:

Frequency band(MHz)	Limit
5150-5250	≤17dBm in 1MHz for master device
	≤11dBm in 1MHz for client device
5250-5350	≤11dBm in 1MHz for client device
5470-5725	≤11dBm in 1MHz for client device
5725-5850	≤30dBm in 500 kHz
Remark:	The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.

7.11.1 E.U.T. Operation

Operating Environment:

Temperature: 20.5 °C Humidity: 46.9 % RH Atmospheric Pressure: 1010 mbar

7.11.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	03	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.

7.11.3 Test Setup Diagram

7.11.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.12 Frequency Stability

Test Requirement 47 CFR Part 15, Subpart E 15.407 (g)
Test Method: ANSI C63.10 (2013) Section 6.8

7.12.1 E.U.T. Operation

Operating Environment:
Temperature: 20.5 °C Humidity: 46.9 % RH Atmospheric Pressure: 1010 mbar

7.12.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	03	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax/be 20/40/80, Only the data of worst case is recorded in the report.

7.12.3 Test Setup Diagram

7.12.4 Measurement Procedure and Data

Please Refer to Appendix for Details

8 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2408001587AT

9 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for KSCR2408001587AT

10 Appendix

1. Duty Cycle

1.1 Test Result

1.1.1 Ant1

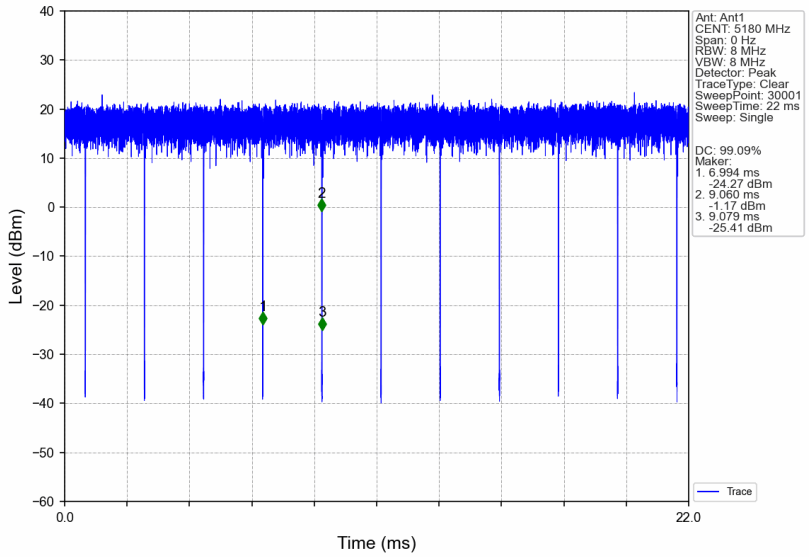
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11a	SISO	5180	2.066	2.085	99.09	0.04	0.04
		5200	2.066	2.086	99.04	0.04	0.04
		5240	2.066	2.086	99.04	0.04	0.04
		5260	2.066	2.086	99.04	0.04	0.04
		5300	2.066	2.085	99.09	0.04	0.04
		5320	2.066	2.086	99.04	0.04	0.04
		5500	2.066	2.086	99.04	0.04	0.04
		5580	2.066	2.086	99.04	0.04	0.04
		5700	2.066	2.085	99.09	0.04	0.04
		5745	2.065	2.085	99.04	0.04	0.04
		5785	2.065	2.084	99.09	0.04	0.00
		5825	2.066	2.086	99.04	0.04	0.04
802.11ac (VHT20)	SISO	5180	1.934	2.033	95.13	0.22	0.00
		5200	1.934	2.033	95.13	0.22	0.00
		5240	1.935	2.034	95.13	0.22	0.00
		5260	1.933	2.033	95.08	0.22	0.04
		5300	1.935	2.035	95.09	0.22	0.03
		5320	1.934	2.034	95.08	0.22	0.06
		5500	1.934	2.034	95.08	0.22	0.07
		5580	1.933	2.033	95.08	0.22	0.07
		5700	1.934	2.035	95.04	0.22	0.03
		5745	1.933	2.033	95.08	0.22	0.07
		5785	1.934	2.034	95.08	0.22	0.07
		5825	1.934	2.034	95.08	0.22	0.03
802.11ac (VHT40)	SISO	5190	0.955	1.054	90.61	0.43	0.07
		5230	0.956	1.054	90.70	0.42	0.03
		5270	0.955	1.054	90.61	0.43	0.03
		5310	0.955	1.053	90.69	0.42	0.03
		5510	0.956	1.054	90.70	0.42	0.03
		5550	0.956	1.053	90.79	0.42	0.00
		5670	0.955	1.054	90.61	0.43	0.03
		5755	0.956	1.054	90.70	0.42	0.07

		5795	0.955	1.054	90.61	0.43	0.03
802.11ac (VHT80)	SISO	5210	0.464	0.562	82.56	0.83	0.16
		5290	0.463	0.561	82.53	0.83	0.04
		5530	0.463	0.561	82.53	0.83	0.04
		5610	0.462	0.561	82.35	0.84	0.04
		5775	0.463	0.561	82.53	0.83	0.03

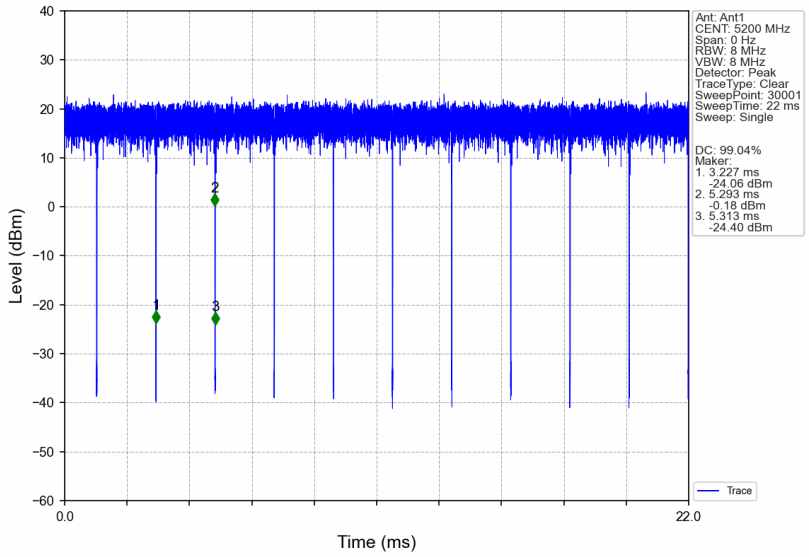
1.2 Test Graph

1.2.1 Ant1

802.11a_LCH_5180MHz_Ant1_NTNV



802.11a_MCH_5200MHz_Ant1_NTNV



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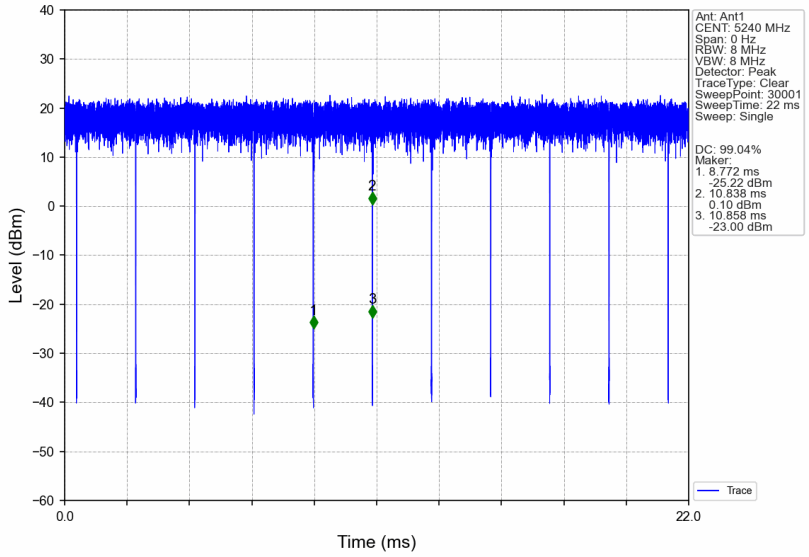
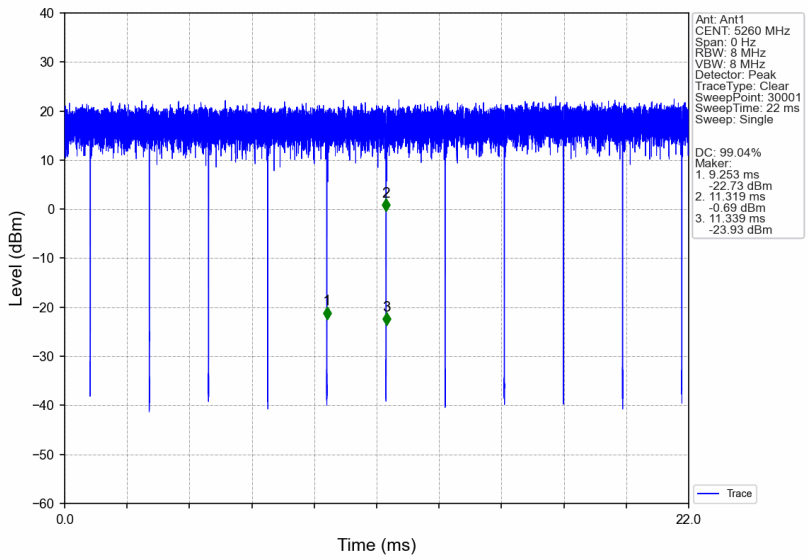
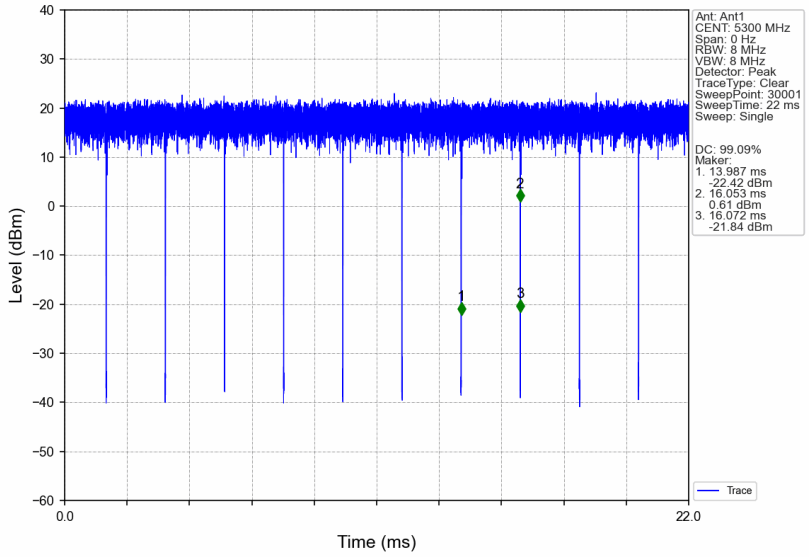


802.11a_LCH_5260MHz_Ant1_NTNV



802.11a_MCH_5300MHz_Ant1_NTNV



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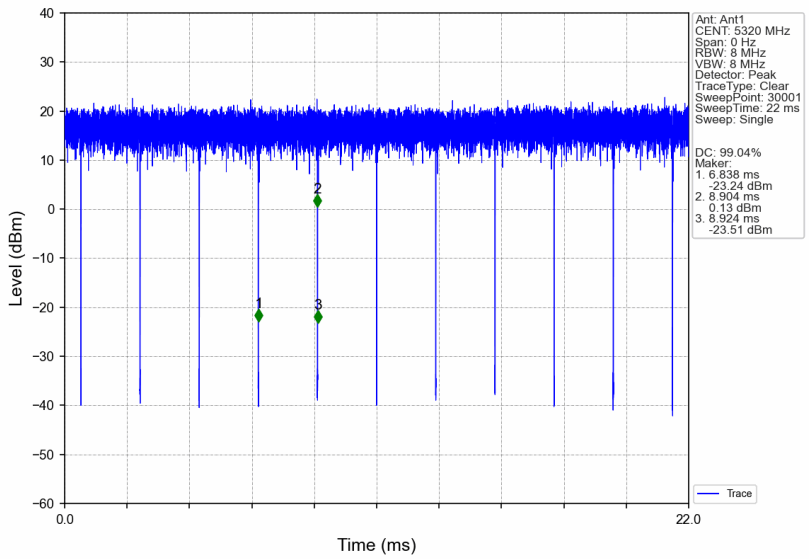
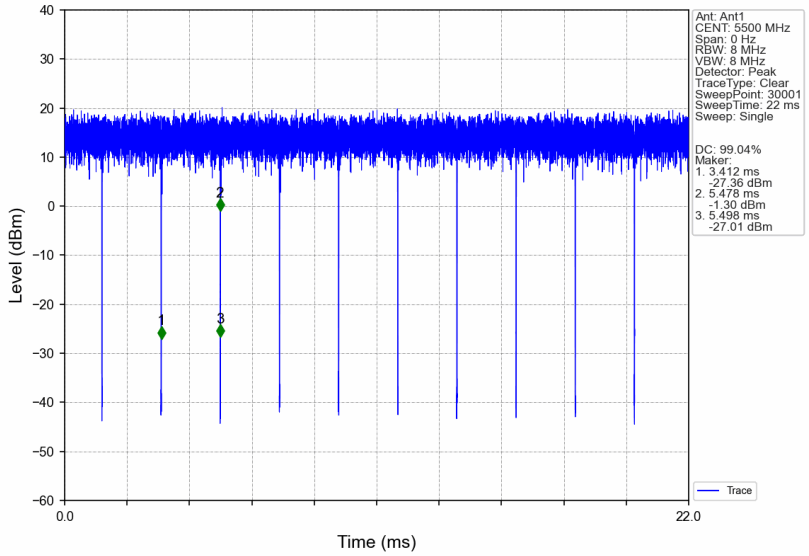


802.11a_LCH_5500MHz_Ant1_NTNV



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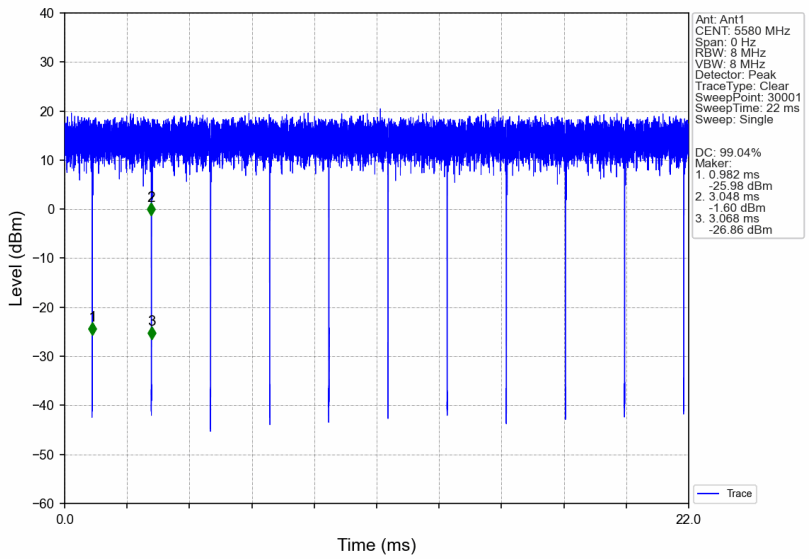
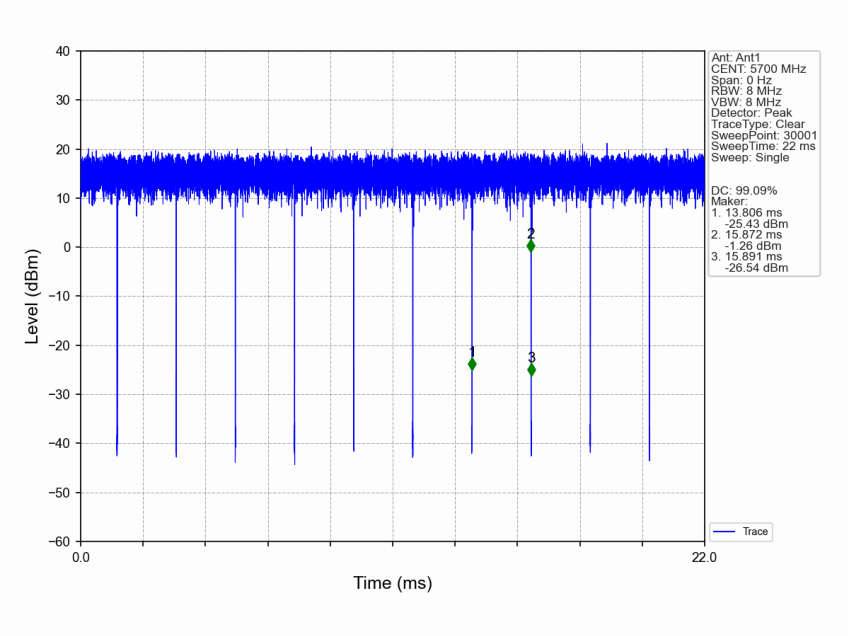
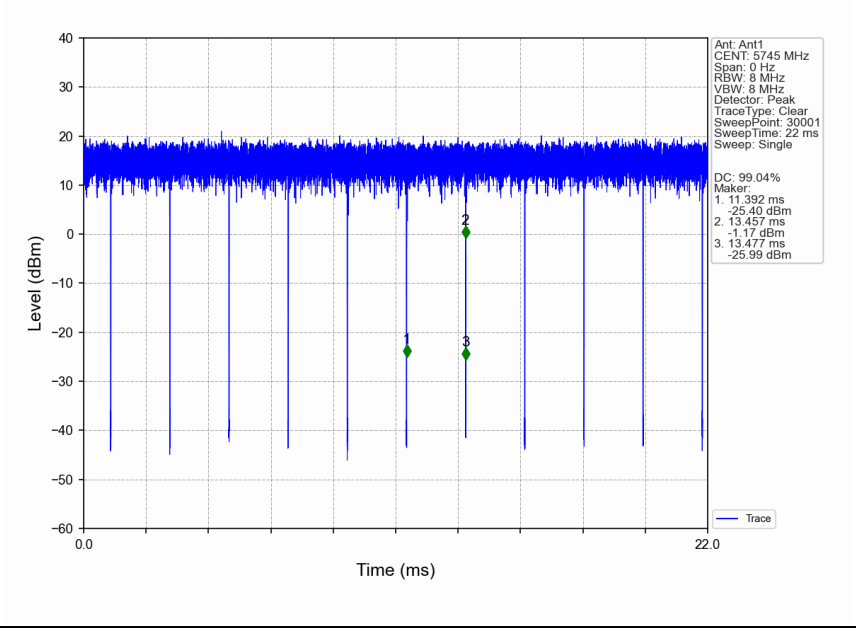


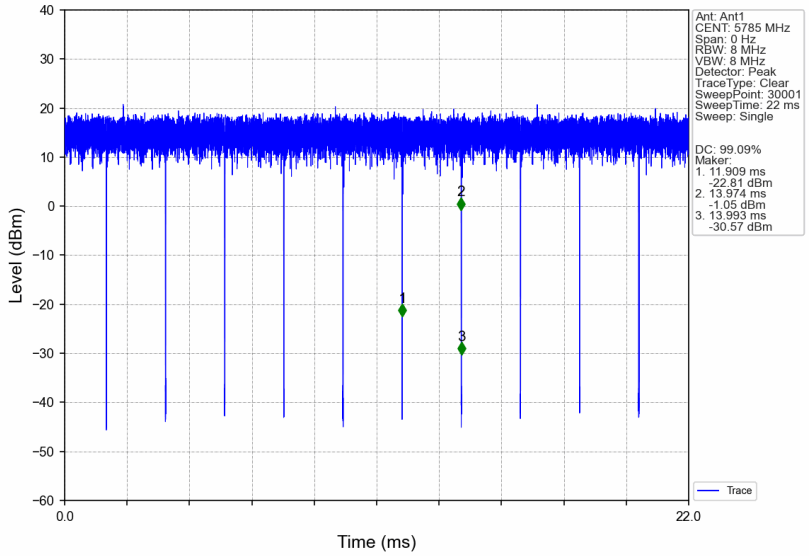
802.11a_HCH_5700MHz_Ant1_NTNV



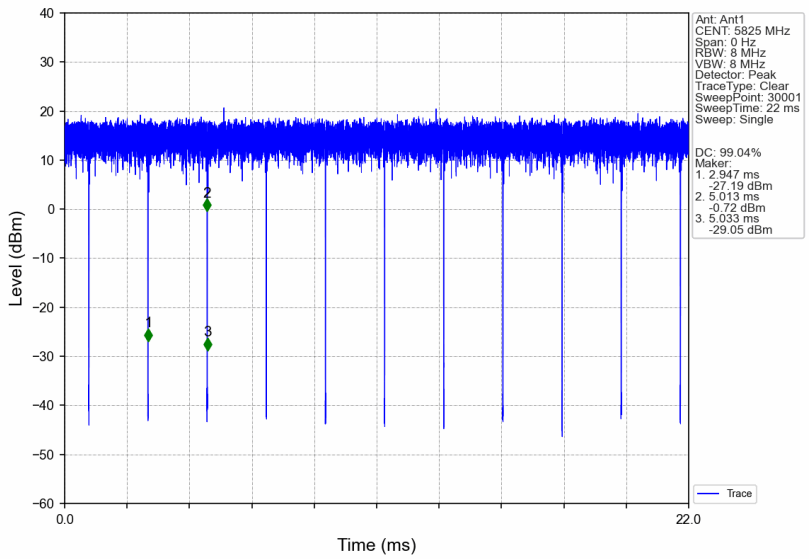
802.11a_LCH_5745MHz_Ant1_NTNV



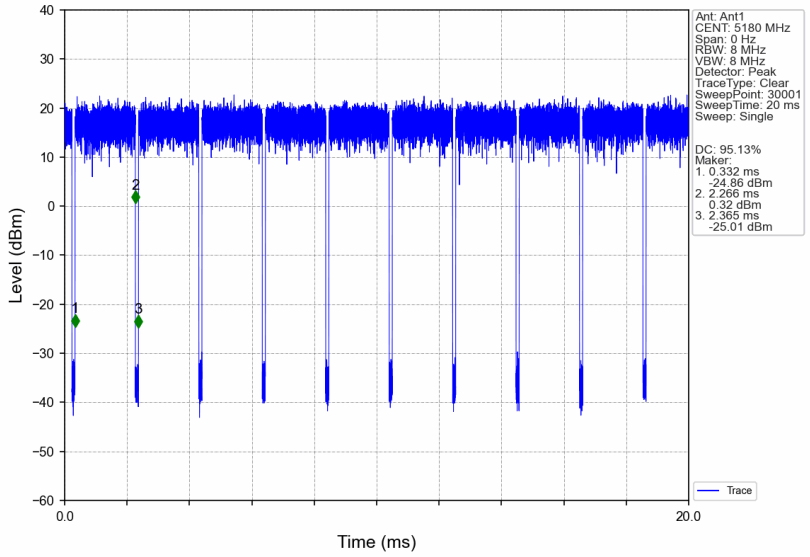
802.11a_MCH_5785MHz_Ant1_NTNV



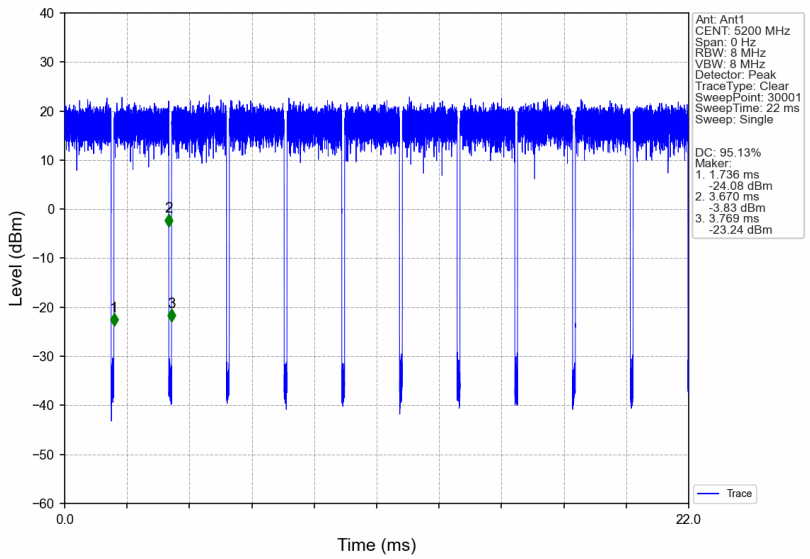
802.11a_HCH_5825MHz_Ant1_NTNV



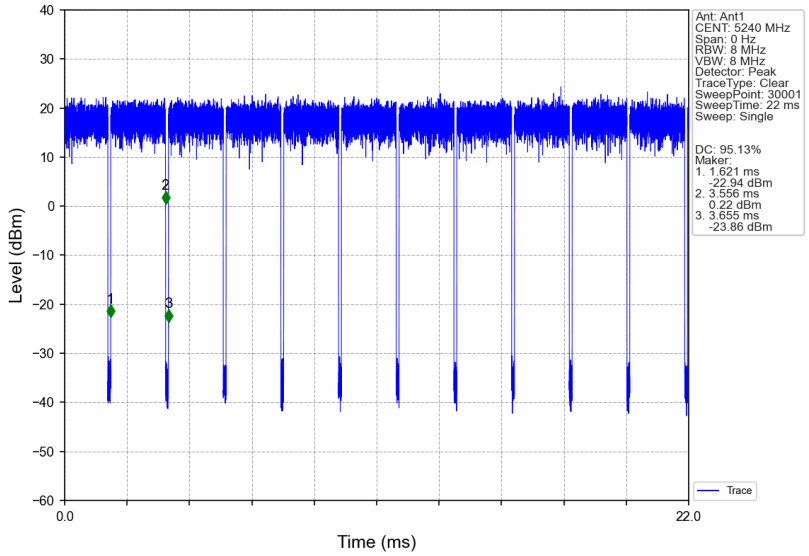
802.11ac(VHT20)_LCH_5180MHz_Ant1_NTNV



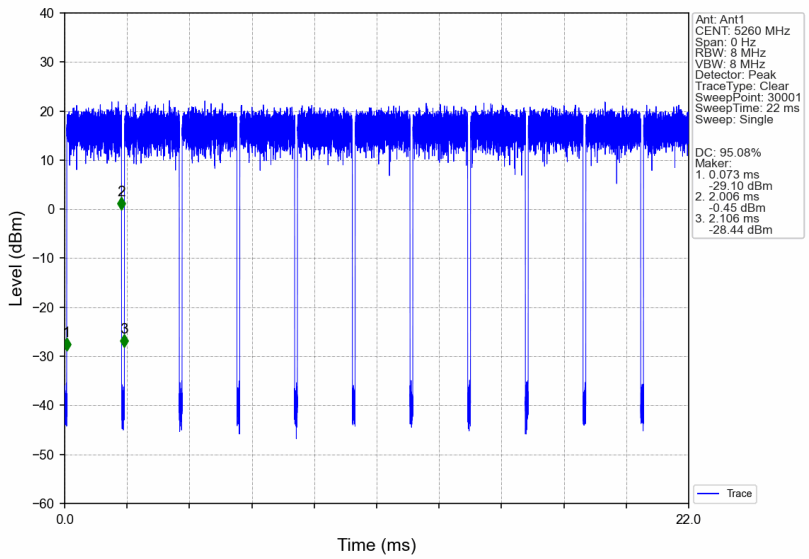
802.11ac(VHT20)_MCH_5200MHz_Ant1_NTNV



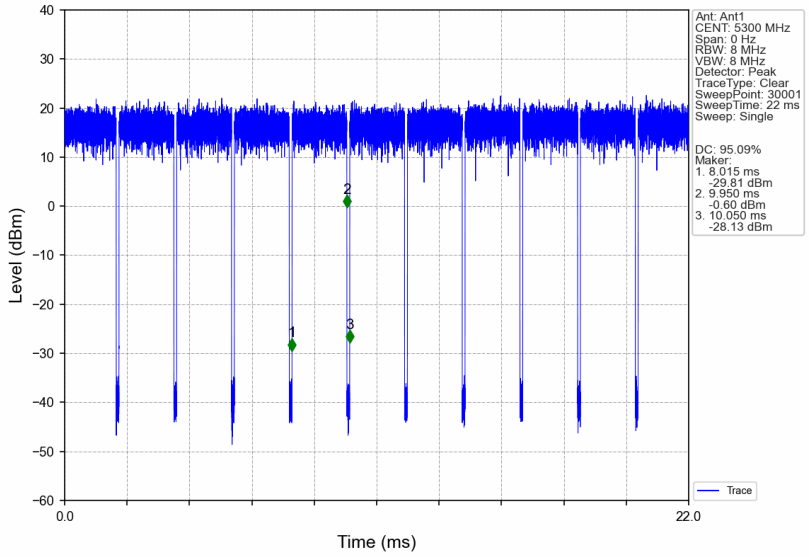
802.11ac(VHT20)_HCH_5240MHz_Ant1_NTNV



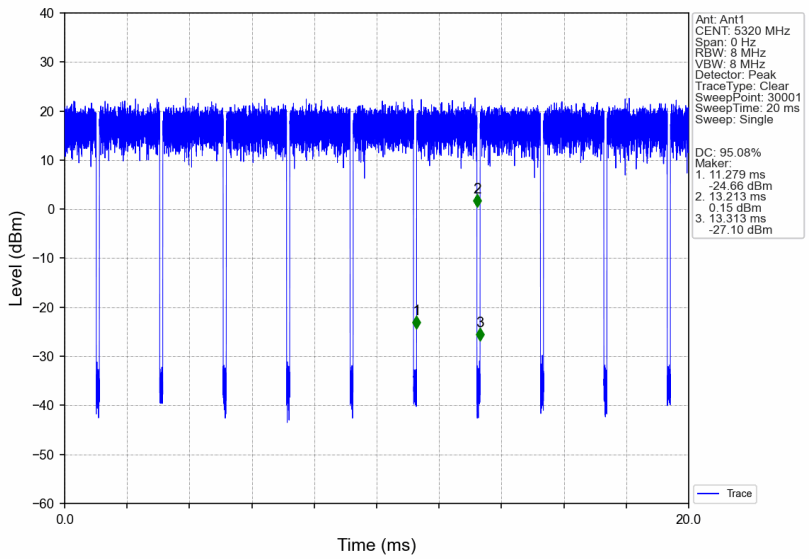
802.11ac(VHT20)_LCH_5260MHz_Ant1_NTNV



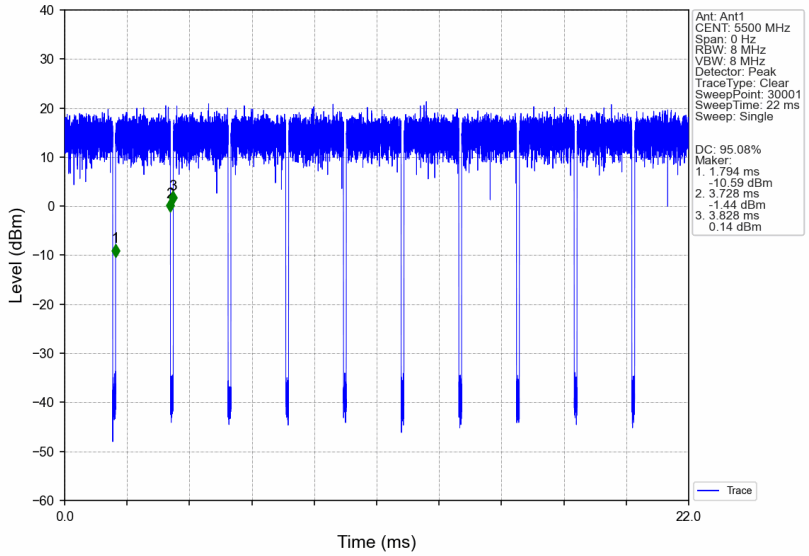
802.11ac(VHT20)_MCH_5300MHz_Ant1_NTNV



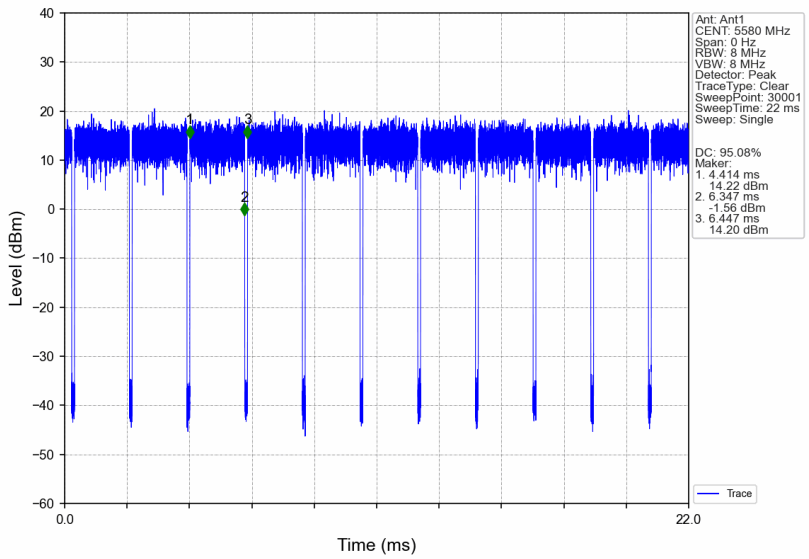
802.11ac(VHT20)_HCH_5320MHz_Ant1_NTNV



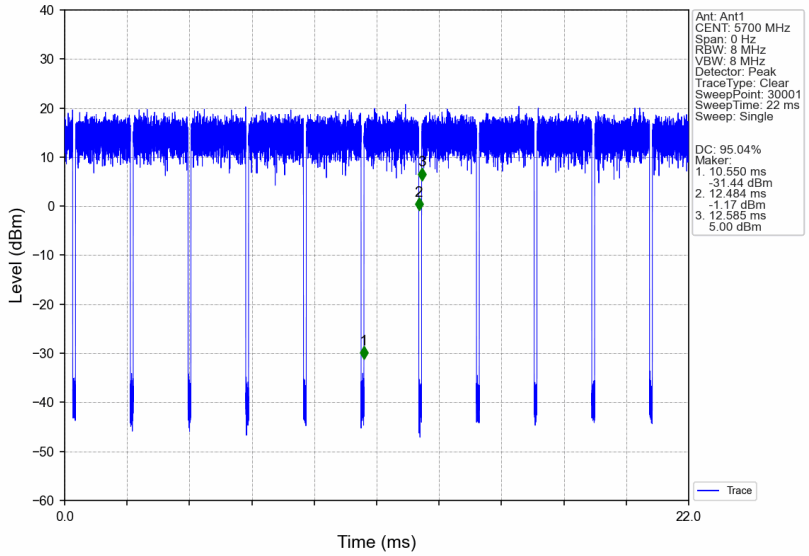
802.11ac(VHT20)_LCH_5500MHz_Ant1_NTNV



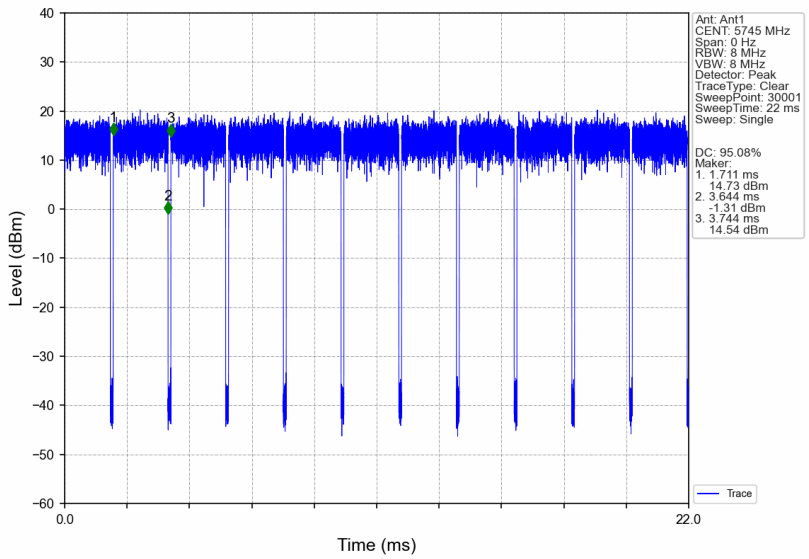
802.11ac(VHT20)_MCH_5580MHz_Ant1_NTNV



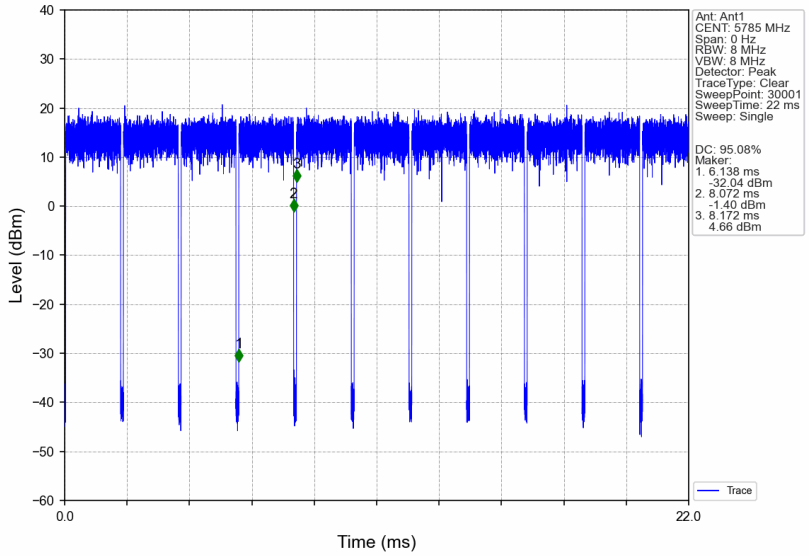
802.11ac(VHT20)_HCH_5700MHz_Ant1_NTNV



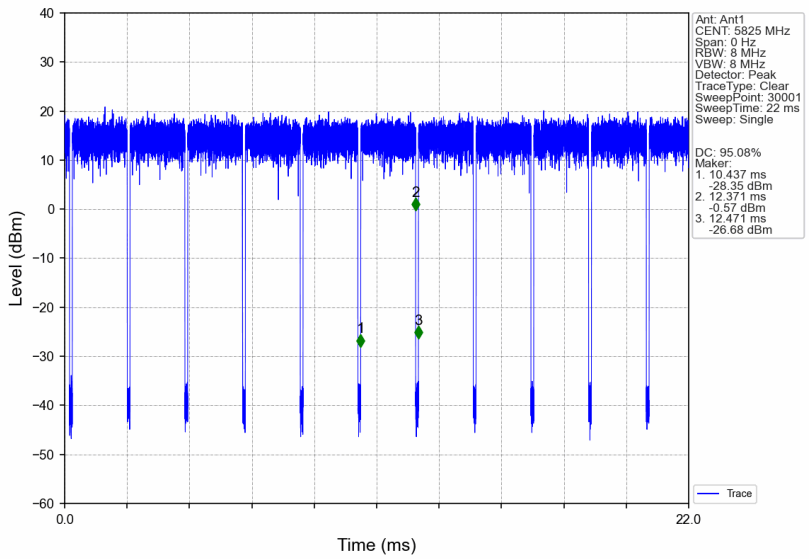
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



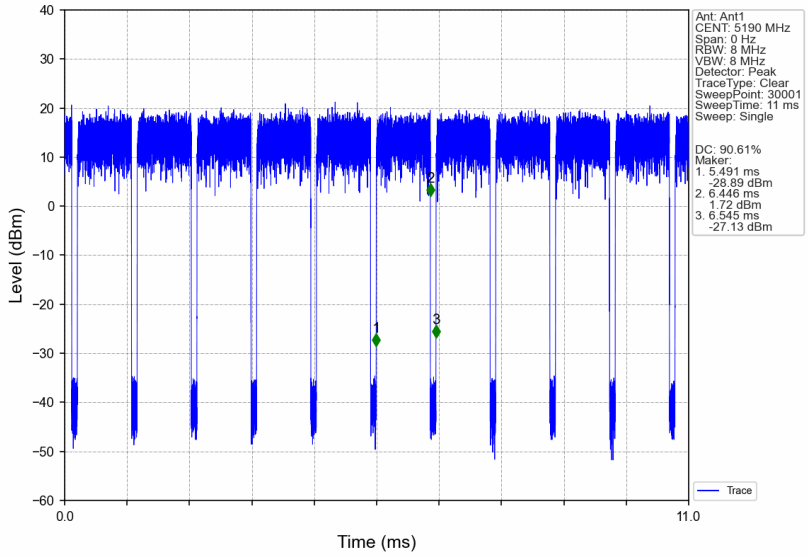
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



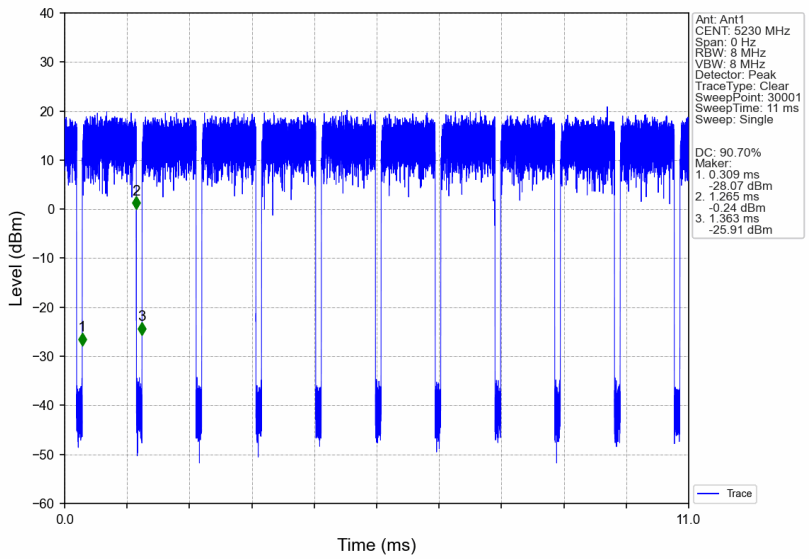
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



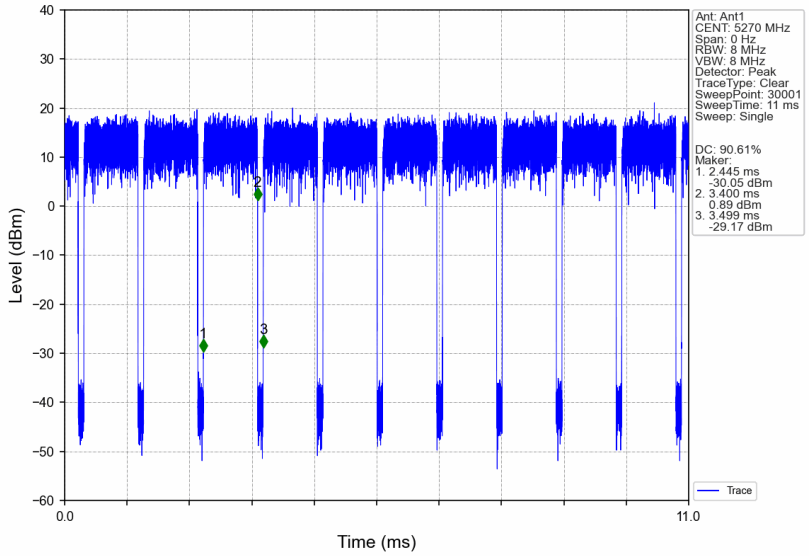
802.11ac(VHT40)_LCH_5190MHz_Ant1_NTNV



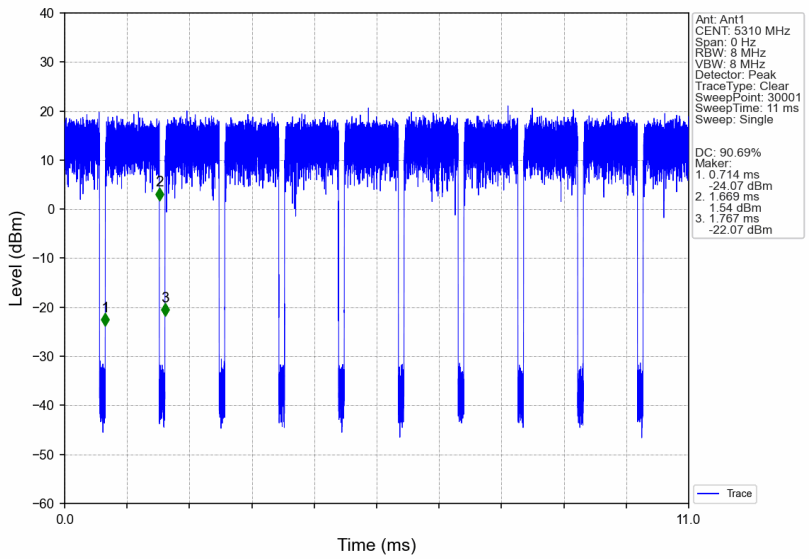
802.11ac(VHT40)_HCH_5230MHz_Ant1_NTNV



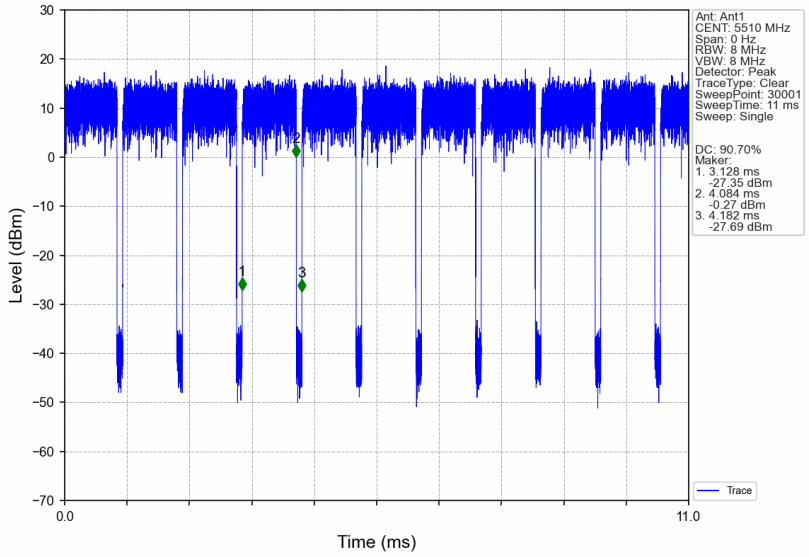
802.11ac(VHT40)_LCH_5270MHz_Ant1_NTNV



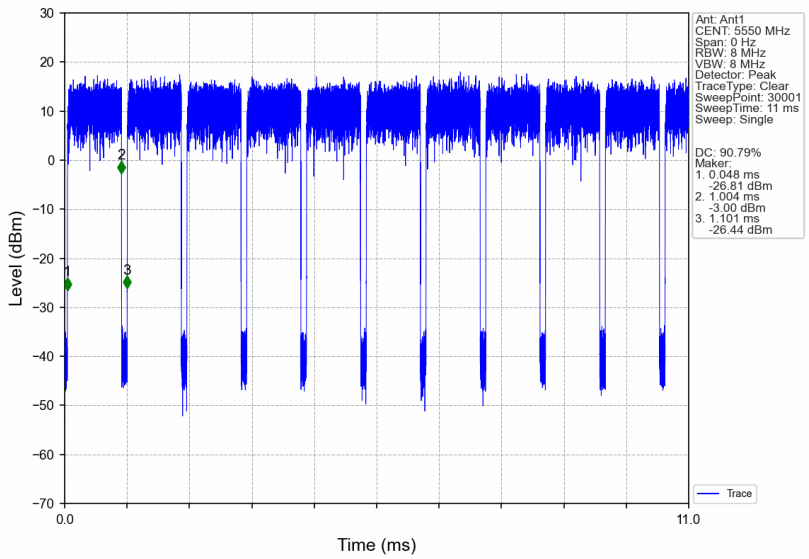
802.11ac(VHT40)_HCH_5310MHz_Ant1_NTNV



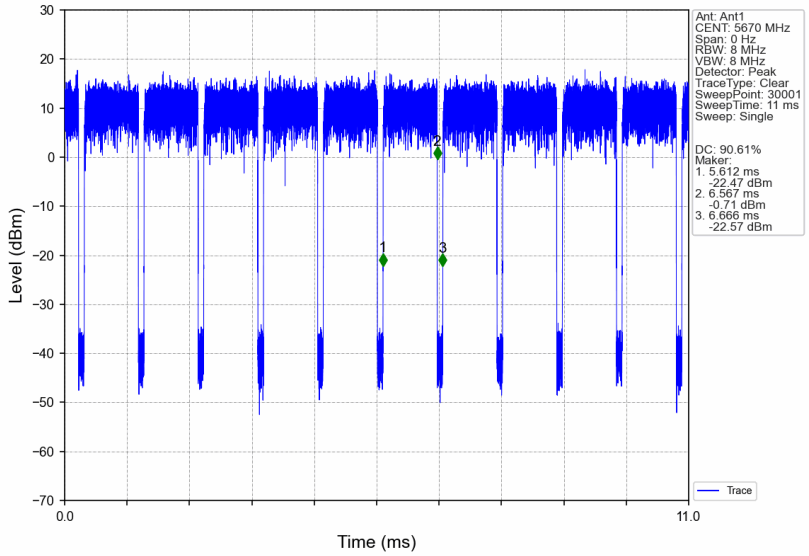
802.11ac(VHT40)_LCH_5510MHz_Ant1_NTNV



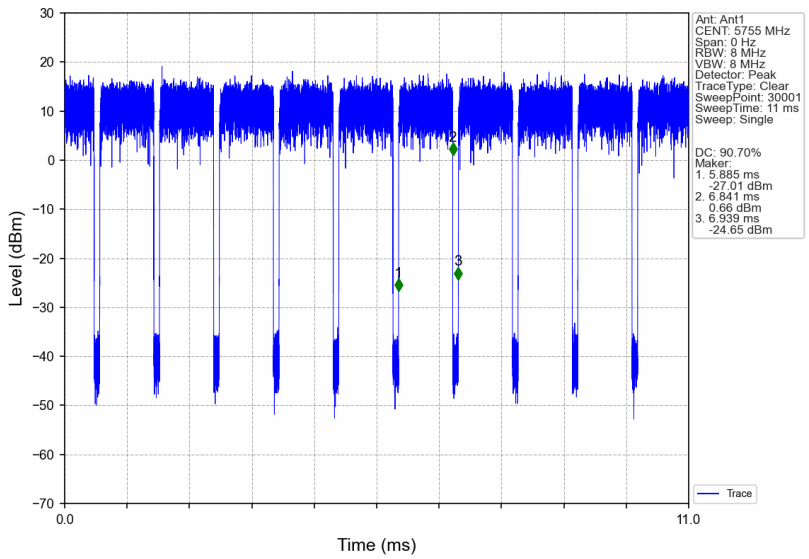
802.11ac(VHT40)_MCH_5550MHz_Ant1_NTNV



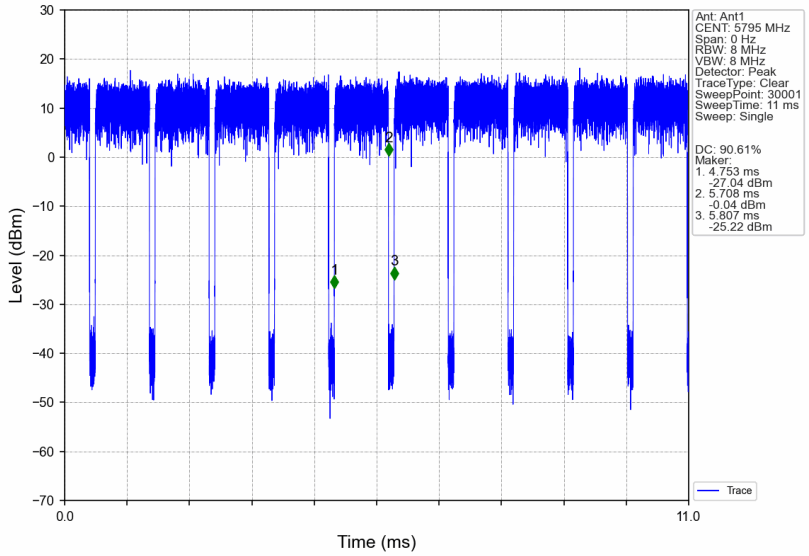
802.11ac(VHT40)_HCH_5670MHz_Ant1_NTNV



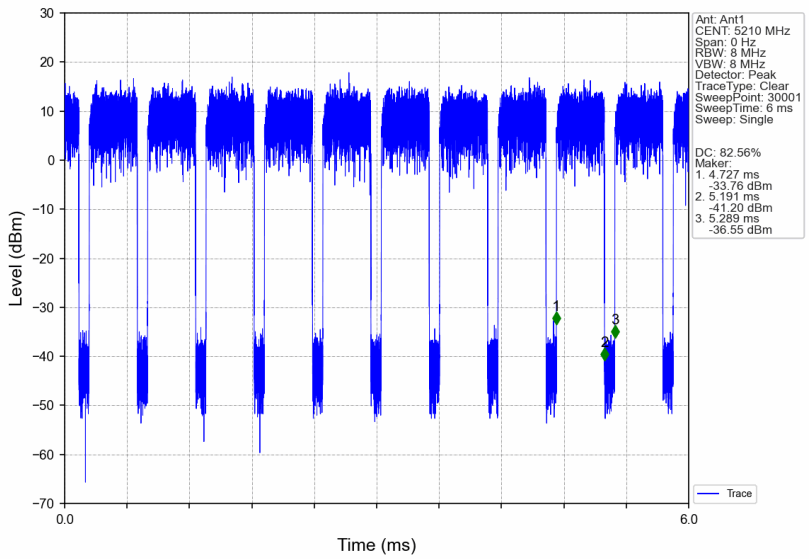
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



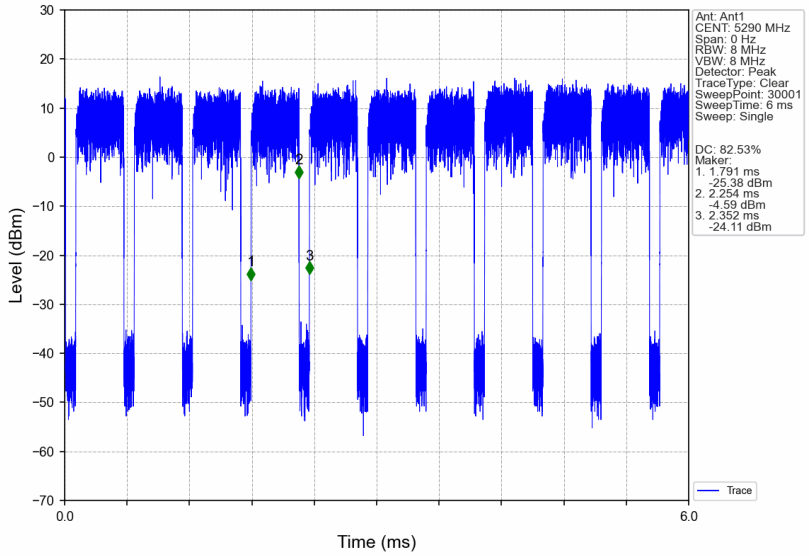
802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



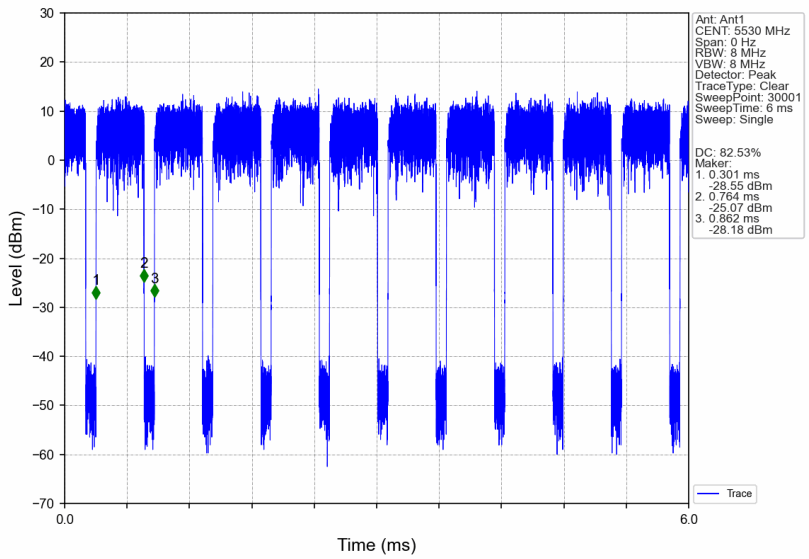
802.11ac(VHT80)_MCH_5210MHz_Ant1_NTNV



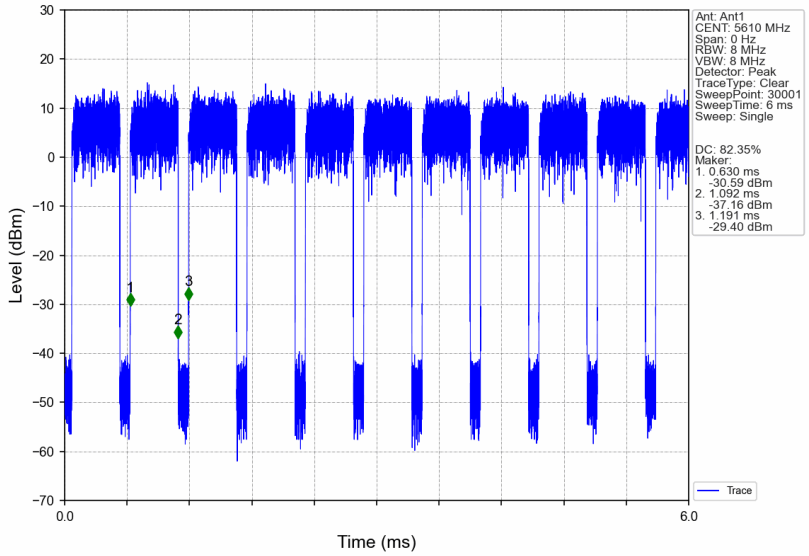
802.11ac(VHT80)_MCH_5290MHz_Ant1_NTNV



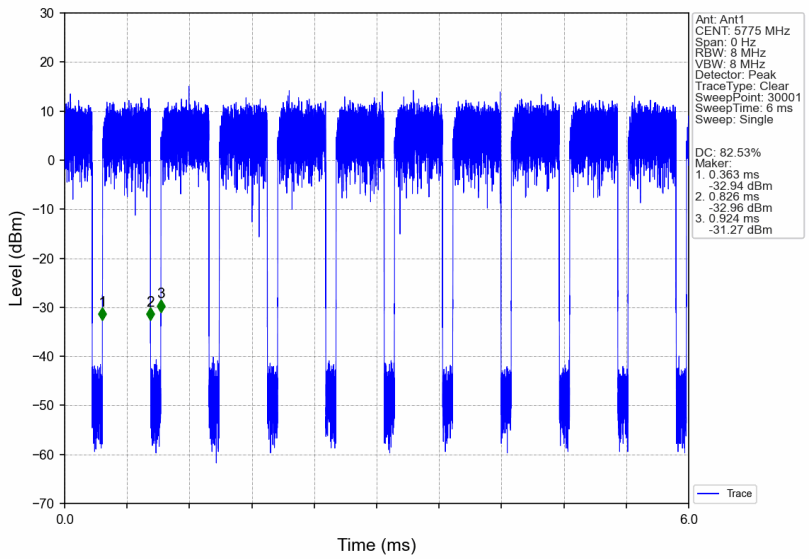
802.11ac(VHT80)_LCH_5530MHz_Ant1_NTNV



802.11ac(VHT80)_HCH_5610MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



2. Bandwidth

2.1 Test Result

2.1.1 OBW

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5180	1	18.207	/	Pass
		5200	1	18.123	/	Pass
		5240	1	18.164	/	Pass
		5260	1	18.071	/	Pass
		5300	1	18.183	/	Pass
		5320	1	18.052	/	Pass
		5500	1	17.962	/	Pass
		5580	1	17.948	/	Pass
		5700	1	17.962	/	Pass
		5745	1	18.100	/	Pass
		5785	1	18.270	/	Pass
		5825	1	18.223	/	Pass
802.11ac (VHT20)	SISO	5180	1	19.059	/	Pass
		5200	1	19.164	/	Pass
		5240	1	19.118	/	Pass
		5260	1	19.002	/	Pass
		5300	1	19.012	/	Pass
		5320	1	18.962	/	Pass
		5500	1	18.839	/	Pass
		5580	1	18.807	/	Pass
		5700	1	18.868	/	Pass
		5745	1	18.963	/	Pass
		5785	1	19.025	/	Pass
		5825	1	19.030	/	Pass
802.11ac (VHT40)	SISO	5190	1	37.161	/	Pass
		5230	1	36.943	/	Pass
		5270	1	37.000	/	Pass
		5310	1	36.981	/	Pass
		5510	1	36.700	/	Pass
		5550	1	36.711	/	Pass
		5670	1	36.748	/	Pass
		5755	1	36.949	/	Pass
		5795	1	36.993	/	Pass
802.11ac (VHT80)	SISO	5210	1	76.385	/	Pass
		5290	1	76.578	/	Pass

		5530	1	75.820	/	Pass
		5610	1	76.017	/	Pass
		5775	1	76.205	/	Pass

2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5745	1	16.360	>=0.5	Pass
		5785	1	16.357	>=0.5	Pass
		5825	1	16.356	>=0.5	Pass
802.11ac (VHT20)	SISO	5745	1	17.306	>=0.5	Pass
		5785	1	17.086	>=0.5	Pass
		5825	1	17.542	>=0.5	Pass
802.11ac (VHT40)	SISO	5755	1	35.845	>=0.5	Pass
		5795	1	35.730	>=0.5	Pass
802.11ac (VHT80)	SISO	5775	1	75.229	>=0.5	Pass

2.1.3 26dB BW

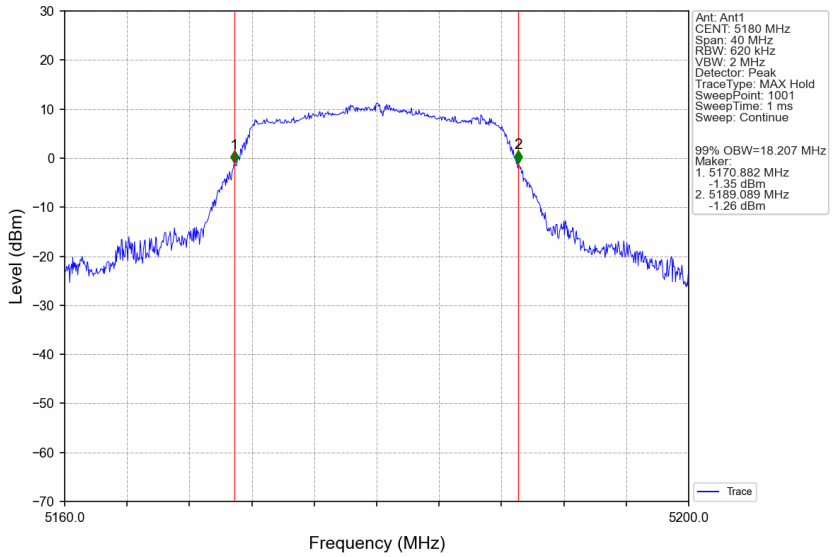
Mode	TX Type	Frequency (MHz)	ANT	26dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5180	1	21.371	/	Pass
		5200	1	21.486	/	Pass
		5240	1	21.537	/	Pass
		5260	1	21.377	/	Pass
		5300	1	21.070	/	Pass
		5320	1	20.992	/	Pass
		5500	1	21.043	/	Pass
		5580	1	21.081	/	Pass
		5700	1	20.955	/	Pass
802.11ac (VHT20)	SISO	5180	1	24.277	/	Pass
		5200	1	25.921	/	Pass
		5240	1	24.112	/	Pass
		5260	1	21.473	/	Pass
		5300	1	24.844	/	Pass
		5320	1	22.581	/	Pass
		5500	1	21.513	/	Pass
		5580	1	21.529	/	Pass
		5700	1	21.564	/	Pass
802.11ac (VHT40)	SISO	5190	1	45.166	/	Pass
		5230	1	44.541	/	Pass
		5270	1	46.958	/	Pass
		5310	1	51.425	/	Pass

		5510	1	39.886	/	Pass
		5550	1	39.874	/	Pass
		5670	1	39.969	/	Pass
802.11ac (VHT80)	SISO	5210	1	85.432	/	Pass
		5290	1	99.206	/	Pass
		5530	1	81.003	/	Pass
		5610	1	81.147	/	Pass

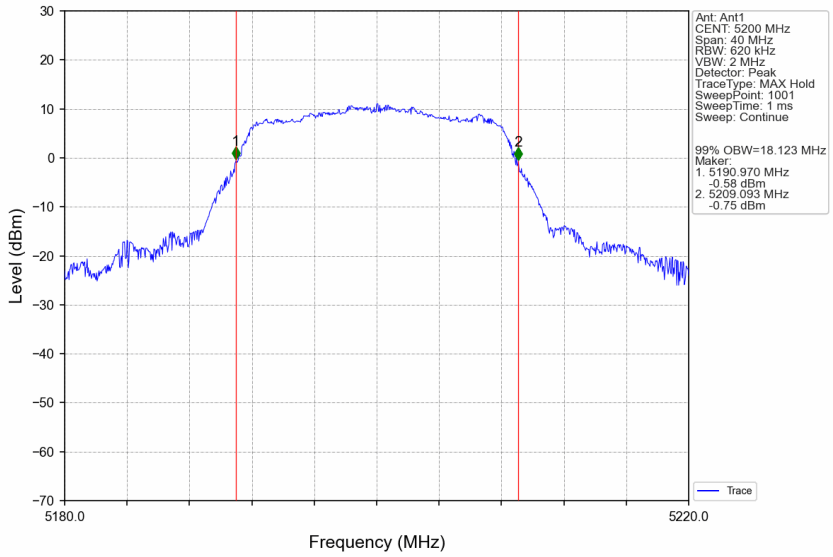
2.2 Test Graph

2.2.1 OBW

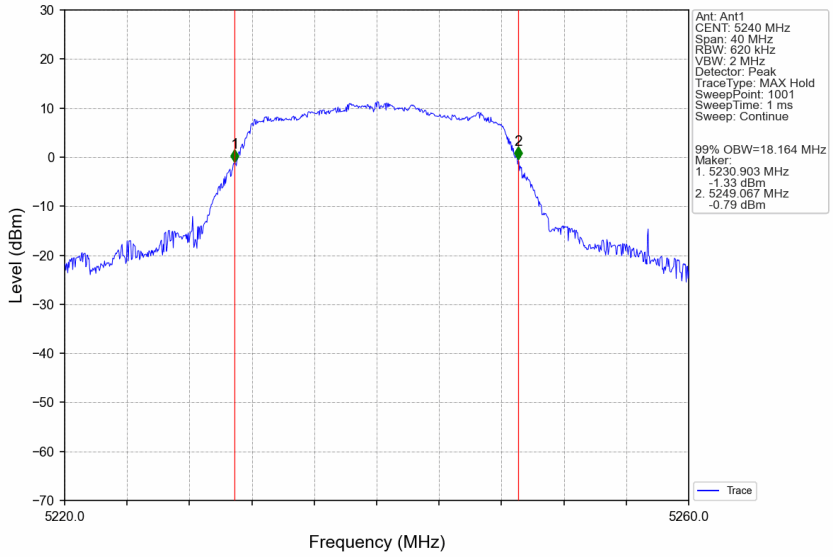
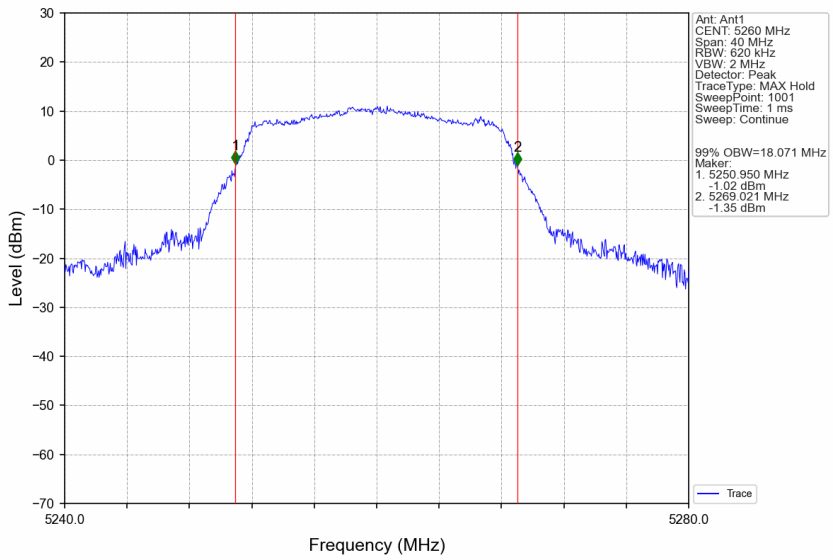
802.11a_LCH_5180MHz_Ant1_NTNV



802.11a_MCH_5200MHz_Ant1_NTNV



802.11a_HCH_5240MHz_Ant1_NTNV



802.11a_LCH_5260MHz_Ant1_NTNV