

UNI-TREND TECHNOLOGY (CHINA) CO., LTD.

TEST REPORT

SCOPE OF WORK

EMC TESTING—UTi320V+,UTi320E,UTi260V,UTi260E

REPORT NUMBER

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FCC WIFI 5G-f

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TEST REPORT

Applicant Name & : UNI-TREND TECHNOLOGY (CHINA) CO., LTD.
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Industrial Development Zone, Dongguan, Guangdong Province, China
Manufacturing Site : Same as Applicant
Intertek Report No: 230223049GZU-007
FCC ID: 2APMK-3201204V

Test standards

47 CFR PART 15 Subpart E: 2021 section 15.407

Sample Description

Product : Professional Thermal Imager
Model No. : UTi320V+, UTi320E, UTi260V, UTi260E
Electrical Rating : Powered by 3.7V rechargeable Li-ion battery
Serial No. : Not Labeled
Date Received : 23 February 2023
Date Test : 23 April 2023-08 June 2023
Conducted

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1.0 TEST RESULT SUMMARY

Test Item	Test Requirement	Test Method	Result
Antenna Requirement	FCC PART 15 C clause 15.203	FCC PART 15 C clause 15.247 (c) and clause 15.203	PASS
26 dB Bandwidth / 99% Occupied Bandwidth	FCC PART 15 E clause 15.407(a)	FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04, Clause C&D	PASS
6 dB Bandwidth	FCC PART 15 E clause 15.407(e) Only for band IV	FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04, Clause C	PASS
Maximum Average Conducted Output Power	FCC PART 15 E clause 15.407(a)	FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04, Clause E	PASS
Maximum Peak Power Spectral Density	FCC PART 15 E clause 15.407(a)	FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04, Clause F	PASS
Radiated spurious emission	FCC PART 15 E clause 15.407(b)	FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04, Clause G	PASS
Band Edge	FCC PART 15 E clause 15.407(b)	FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04, Clause G	PASS
Conducted Emissions at Mains Terminals	FCC PART 15 E section 15.207	ANSI C63.10: Clause 6.2	PASS

Remark:

N/A: not applicable. Refer to the relative section for the details.

EUT: In this whole report EUT means Equipment Under Test.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radio Frequency.

ANSI C63.10: the detail version is ANSI C63.10:2013 in the whole report

Model difference:

UTi320E is the same as UTi320V+, except that UTi320V+ has laser distance measurement, UTi320E has not.

UTi260E is the same as UTi260V, except that UTi260V has laser distance measurement, UTi260E has not.

UTi320V+, UTi260V are identical, except for camera board, infrared sensor, resolution, model number and software.

All models use the same wireless module and different camera modules. And model UTi320E UTi260E does not have a laser distance measurement circuit. These differences will not affect the wireless transmission part.

Model UTi320V+ was select to full test. Other models are only tested for 'Radiated spurious emission' and 'Conducted Emissions at Mains Terminals'

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2.0 General Description

2.1 Product Description

Operating Frequency:	Band I 5150 MHz to 5250 MHz and Band IV 5725 MHz to 5850MHz for 802.11a/an(HT20,HT40)/ac(HT20,HT40,HT80)
Type of Modulation:	802.11a: OFDM (BPSK/QPSK/16QAM/64QAM) 802.11an: OFDM (BPSK/QPSK/16QAM/64QAM) 802.11ac: OFDM (BPSK/QPSK/16QAM/64QAM/256QAM)
Transmit Data Rate:	802.11an(HT20): MCS0: 7.2Mbps, MCS1:14.2Mbps, MCS2:21.7Mbps, MCS3:28.9Mbps, MCS4:43.3Mbps, MCS5:57.8Mbps, MCS6:65.0Mbps, MCS7:72.2Mbps 802.11an(HT40): MCS0:15Mbps, MCS1:30Mbps, MCS2:45Mbps, MCS3:60Mbps, MCS4:90Mbps, MCS5:120Mbps, MCS6:135Mbps, MCS7:150Mbps 802.11ac(HT20): MCS0: 7.2Mbps, MCS1:14.2Mbps, MCS2:21.7Mbps, MCS3:28.9Mbps, MCS4:43.3Mbps, MCS5:57.8Mbps, MCS6:65.0Mbps, MCS7:72.2Mbps, MCS8: 86.7Mbps 802.11ac(HT40): MCS0:15Mbps, MCS1:30Mbps, MCS2:45Mbps, MCS3:60Mbps, MCS4:90Mbps, MCS5:120Mbps, MCS6:135Mbps, MCS7:150Mbps, MCS8:180Mbps, MCS9:200Mbps 802.11ac(HT80): MCS0:32.5Mbps, MCS1:65Mbps, MCS2:97.5Mbps, MCS3:130Mbps, MCS4:195Mbps, MCS5:260Mbps, MCS6:292.5Mbps, MCS7:325Mbps, MCS8:390Mbps, MCS9:433.3Mbps
Number of Channels	Band I 5150MHz to 5250MHz 4 Channels for 802.11a/an(HT20)/ac(HT20) 2 Channels for 802.11an(HT40)/ac(HT40) 1 Channels for 802.11ac(HT80) Band IV 5725MHz to 5850MHz 5 Channels for 802.11a/an(HT20)/ac(HT20) 2 Channels for 802.11an(HT40)/ac(HT40) 1 Channels for 802.11ac(HT80)
Channel Separation:	20 MHz
Antenna Type	built in FPC WIFI antenna
Antenna gain:	2.37 dBi
Function:	Professional Thermal Imager with 5 GHz WIFI
EUT Power Supply:	Powered by 3.7V rechargeable Li-ion battery

channels and frequencies list:
Band I 5150 MHz to 5250 MHz

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For 802.11a/an (HT20)/an (HT20): test frequencies are lowest channel 36: 5180 MHz, middle channel 44: 5220 MHz and highest channel 48: 5240.

For 802.11an(HT40)/ac(HT40): test frequencies are lowest channel 38: 5190 MHz and highest channel 46: 5230 MHz

For 802.11ac(HT80): test frequencies is channel 42: 5210 MHz

Band I 5725 MHz to 5850 MHz

For 802.11a/an (HT20)/an (HT20): test frequencies are lowest channel 149: 5745 MHz, middle channel 157: 5785 MHz and highest channel 165: 5825 MHz

For 802.11an(HT40)/ac(HT40): test frequencies are lowest channel 151: 5755 MHz and highest channel 159: 5795 MHz

For 802.11ac(HT80): test frequencies is channel 155: 5775 MHz

For WIFI a(20)/WIFI an(HT 20)/WIFI ac(HT20):

Band I(5150MHz-5250MHz)		Band IV(5725MHz-5850MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	149	5745
40	5200	153	5765
44	5220	157	5785
48	5240	161	5805
		165	5825

For WIFI an(HT 40)/WIFI ac(HT40):

Band I(5150MHz-5250MHz)		Band IV(5725MHz-5850MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	151	5755
46	5230	159	5795

For WIFI ac(HT 80):

Band I(5150MHz-5250MHz)		Band IV(5725MHz-5850MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	155	5775

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2.2 Related Submittal(s) Grants

This is an application for certification of:

Unlicensed National Information Infrastructure Devices (WIFI transmitter portion).

Remaining portions are subject to the following procedures:

1. Receiver portion of WIFI: exempt from technical requirement of this Part.

2.3 Test Methodology

The EUT was performed according to the procedures in FCC Part 15 E, Section 15.203, 15.207, 15.209, 15.407 and ANSI C63.4:2014, method of measurement: reference to FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10:2013. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans and final tests were performed in the semi-anechoic chamber to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise.

2.4 Test Facility

All tests were performed at:

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Room 102/104, No 203, KeZhu Road, Science City, GETDD Guangzhou, China

Except Conducted Emissions was performed at:

Room 02, & 101/E201/E301/E401/E501/E601/E701/E801 of Room 01 1-8/F., No. 7-2. Caipin Road, Science City, GETDD, Guangzhou, Guangdong, China

A2LA Certificate Number 0078.10

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch is accredited by A2LA and Listed in FCC website. FCC accredited test labs may perform both Certification testing under Parts 15 and 18 and Declaration of Conformity testing.

3.0 System Test Configuration

3.1 Justification

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, the Professional Thermal Imager can transmit

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during charging. Both battery powered and AC charging mode were tested, the worst case is AC 120V/60Hz powered mode.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. The spurious emissions more than 20 dB below the permissible value are not reported.

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in the following table:

Frequency range of radiated emission measurements

Lowest frequency generated in the device	Upper frequency range of measurement
9 kHz to below 10 GHz	10th harmonic of highest fundamental frequency or to 40 GHz, whichever is lower
At or above 10 GHz to below 30 GHz	5th harmonic of highest fundamental frequency or to 100 GHz, whichever is lower
At or above 30 GHz	5th harmonic of highest fundamental frequency or to 200 GHz, whichever is lower, unless otherwise specified

Number of fundamental frequencies to be tested in EUT transmit band

Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

3.2 EUT Exercising Software

Description	Manufacturer	Model No.	SN/Version	Supplied by
For normal operation	HP	Compaq 6710b	SN:CNU8240LF9	Intertek
For fixing frequency	Takashi Teranishi	Teraterm	Version:4.9	Applicant

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3.3 Special Accessories

No special accessories used.

3.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	20 dB Bandwidth	2.3%
	6dB Bandwidth	
	99% Bandwidth	
2	Carrier Frequencies Separated	2.3%
3	Dwell Time	1.2%
4	Maximum Peak Conducted Output Power	1.5dB
5	Peak Power Spectral Density	1.5dB
6	Out of Band Conducted Emissions	1.5dB
7	Band edges measurement	1.5dB
8	Radiated Emissions	4.7 dB (25 MHz-1 GHz)
		4.8 dB (1 GHz-18 GHz)
		5.21dB (18GZH-26GHz)
9	Conducted Emissions at Mains Terminals	2.58dB
10	Temperature	0.5 °C
11	Humidity	0.4 %
12	Time	1.2%

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.

Measurement uncertainty is calculated in accordance with ETSI TR 100 028-2001.

The measurement uncertainty is given with a confidence of 95%, k=2.

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

Uncertainty and Compliance – Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value

3.5 Equipment Modification

Any modifications installed previous to testing by UNI-TREND TECHNOLOGY (CHINA) CO., LTD. will be incorporated in each production model sold / leased in the United States.

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No modifications were installed by Intertek Testing Services Shenzhen Ltd. Guangzhou Branch.

3.6 Support Equipment List and Description

This product was tested with corresponding support equipment as below:

Support Equipment

Description	Manufacturer	Model No.	SN/Version	Supplied by
NoteBook	HP	Compaq 6710b	SN:CNU8240LF9	Intertek
Control board	WIK	CNMDIP34	Version:3434	WIK
Adapter	Huawei	HW-200325CP0	C973Y1JAP05052	Intertek

Cable

Description	Model No.	Connector type	Cable length/type	Supplied by
Antenna cable	RF-01	SMA	0.2 m(shielded)	Intertek
USB extension cord	USB-01	USB	1.2 m(shielded)	Intertek
USB charging cable	USB-02	USB C	1.2 m(shielded)	Intertek

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4.0 Measurement Results

4.1 Antenna Requirement

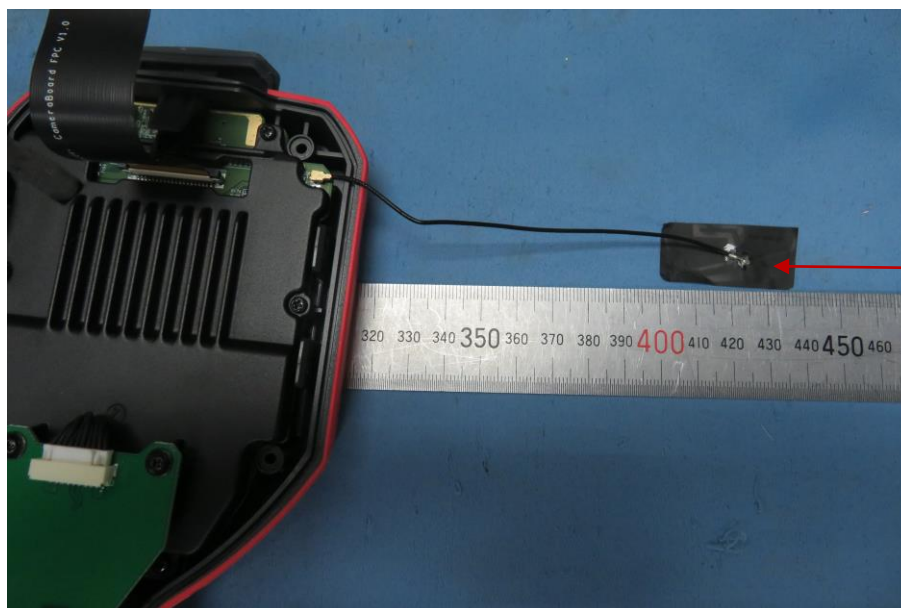
Standard requirement:

15.203 requirement:

For intentional device. According to 15.203 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.

EUT Antenna

The antenna is an integral antenna and no consideration of replacement. The best case gain of the antenna is 2.37 dBi.



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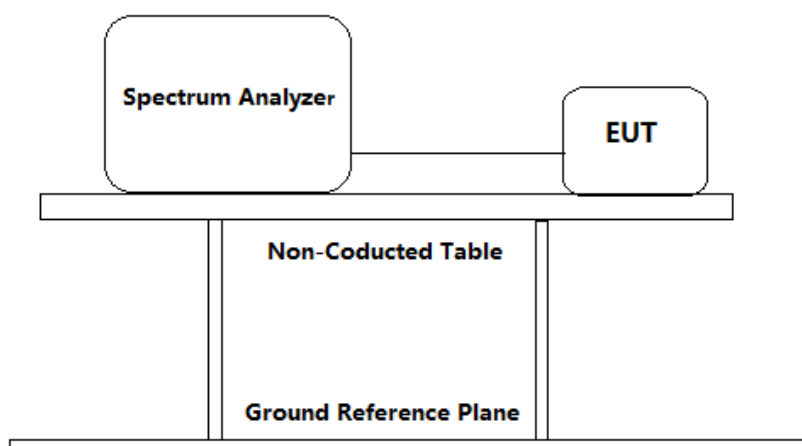
4.2 Duty Cycle

Test Requirement: FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04, Clause B

Test Method: FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04, Clause B

Test Status: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:



Test Procedure:

1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =1 dB, with a 10dB attenuator) from the antenna port to the spectrum.
2. Set the spectrum analyser:
 - a) Set $RBW \geq 1\text{MHz}$
 - b) Set the $VBW \geq [3 \times RBW]$
 - c) Detector =peak
 - d) Span = Zero span
 - e) Sweep time = 100ms
 - f) Trace mode = Free run
3. Repeat until all the test status is investigated.
4. Report the worst case.

Used Test Equipment List

Spectrum Analyzer. Refer to Clause 5 Test Equipment List for details.

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Test result:
Band I (5150MHz-5250MHz)

Channel No.	Frequency (MHz)	Mode	On time (ms)	Period (ms)	Duty Cycle (%)
36	5180	802.11a(20)	0.249	0.328	75.91
36	5180	802.11n (HT20)	0.229	0.328	69.82
38	5190	802.11n (HT40)	0.128	0.229	55.90
36	5180	802.11ac (HT20)	0.197	0.281	70.11
38	5190	802.11ac (HT40)	0.113	0.194	58.25
42	5210	802.11ac (HT80)	0.070	0.139	50.36

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Band IV (5725MHz-5850MHz)

Channel No.	Frequency (MHz)	Mode	On time (ms)	Period (ms)	Duty Cycle (%)
149	5745	802.11a(20)	0.246	0.328	75.00
149	5745	802.11n (HT20)	0.229	0.304	75.33
151	5755	802.11n (HT40)	0.128	0.206	62.14
149	5745	802.11ac (HT20)	0.197	0.307	64.17
151	5755	802.11ac (HT40)	0.110	0.188	58.51
155	5775	802.11ac (HT80)	0.072	0.151	47.68

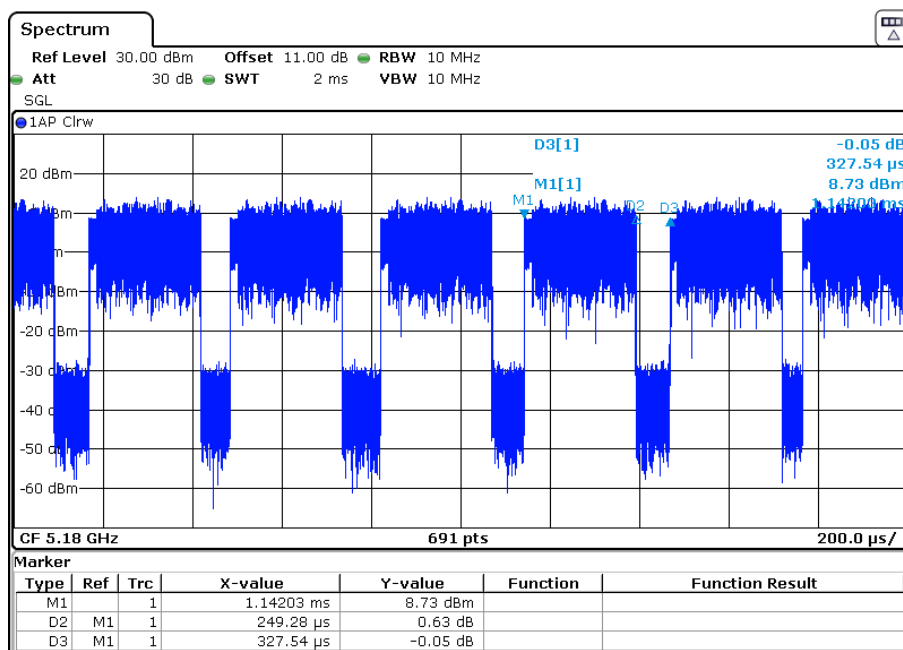
TEST REPORT

Result plot as follows:

Band I 5150 MHz to 5250 MHz

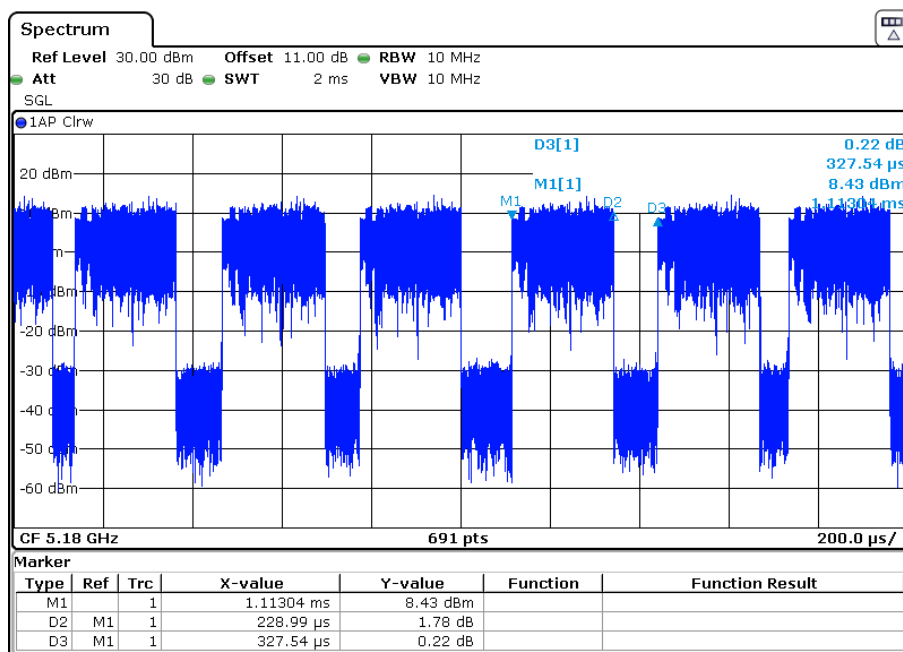
802.11a(20) mode

Channel 36: 5180 MHz:



802.11n(HT 20)

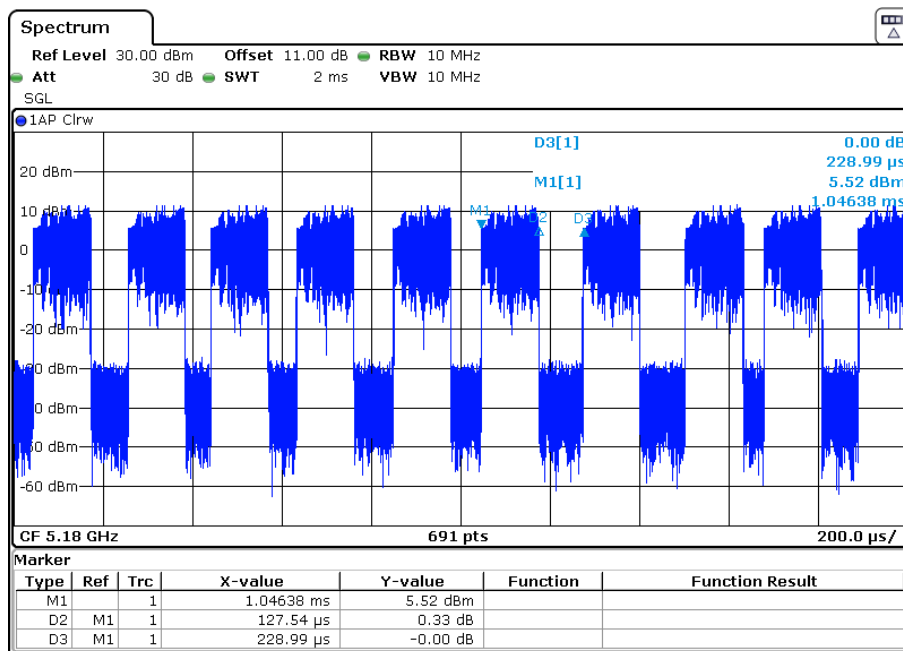
Channel 36: 5180 MHz:



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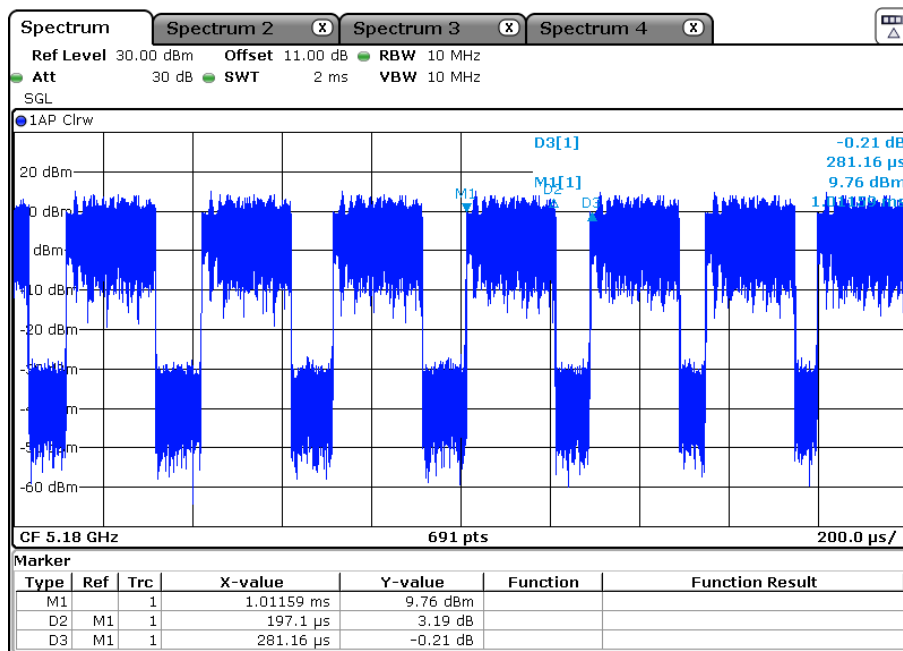
802.11n(HT 40)

Channel 38: 5190 MHz:



802.11ac(HT 20)

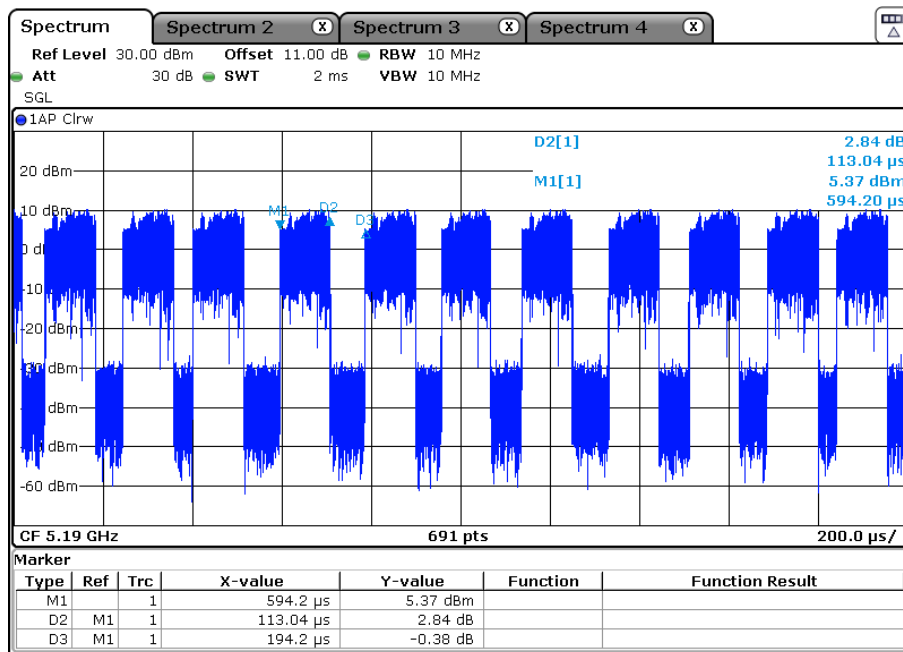
Channel 36: 5180 MHz:



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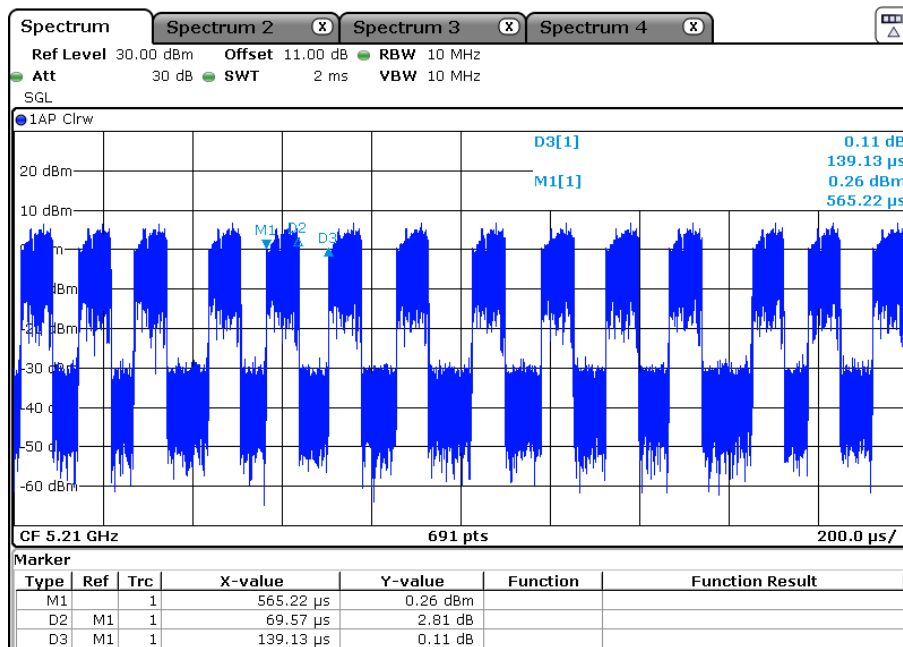
802.11ac(HT 40)

Channel 38: 5190 MHz:



802.11ac(HT 80)

Channel 42: 5210 MHz:



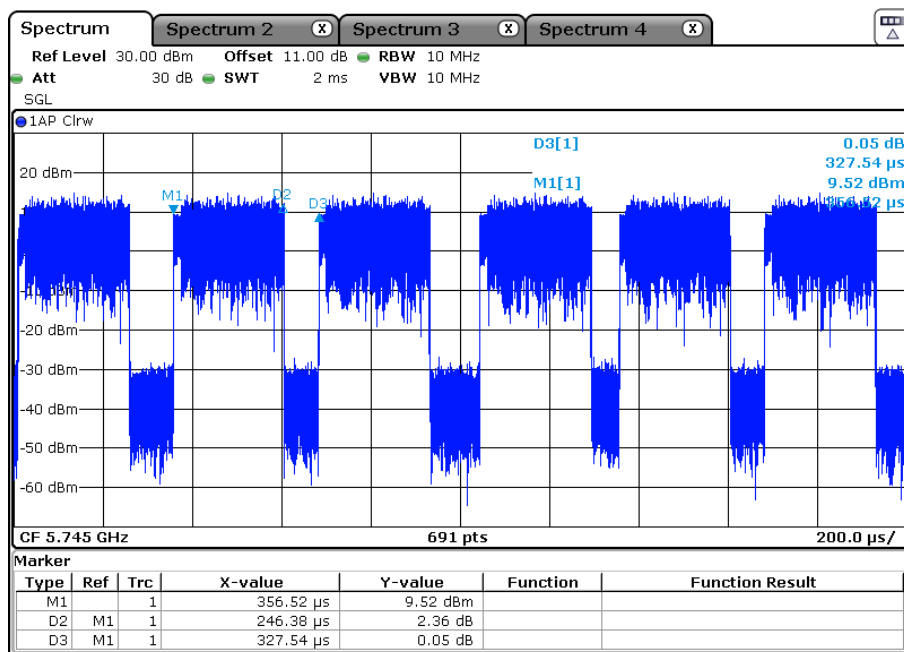
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Result plot as follows:

Band IV 5725 MHz to 5850 MHz

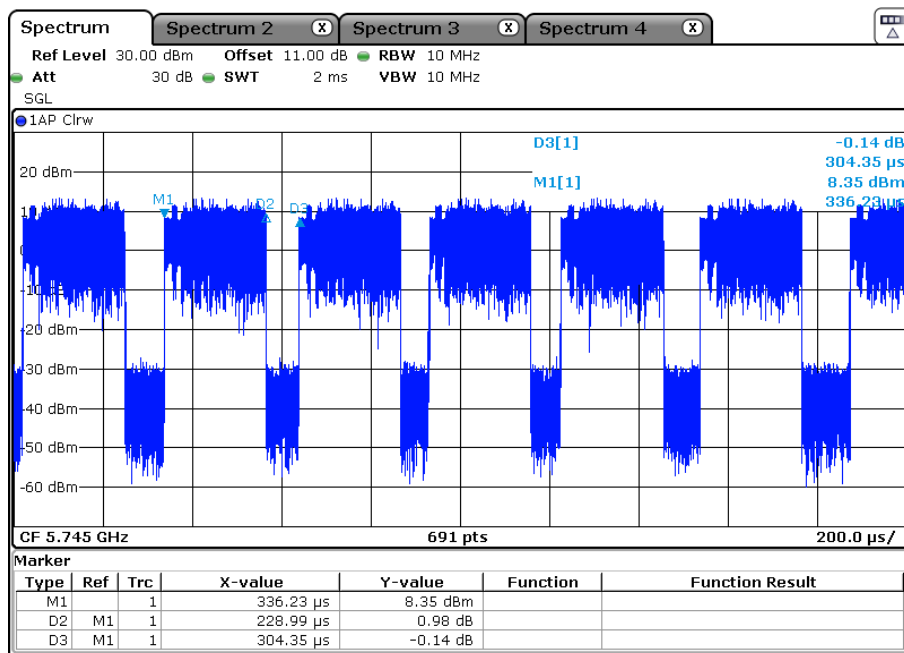
802.11a(20) mode

Channel 149: 5745 MHz:



802.11an(HT 20)

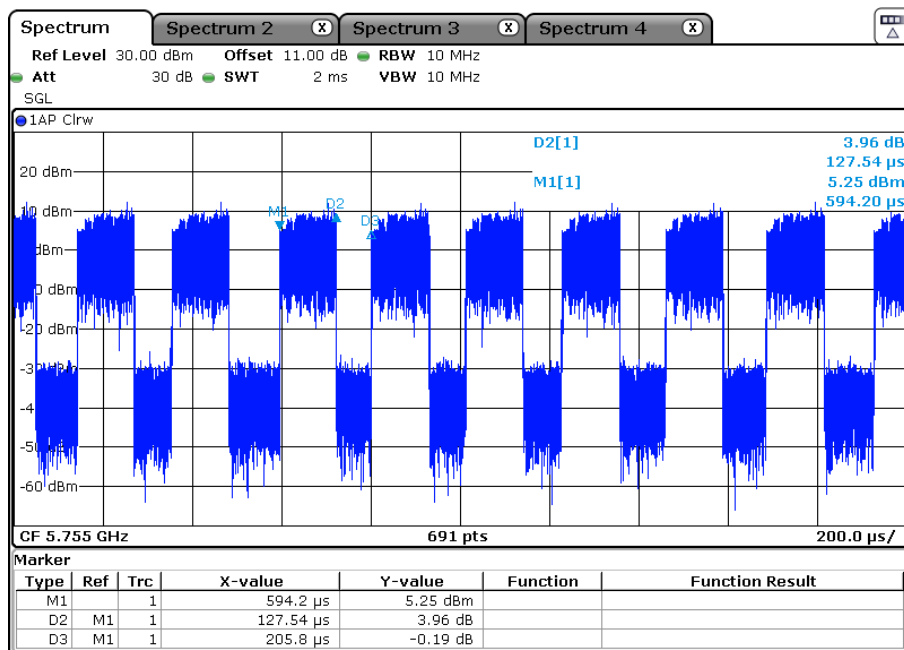
Channel 149: 5745 MHz:



802.11an (HT 40)

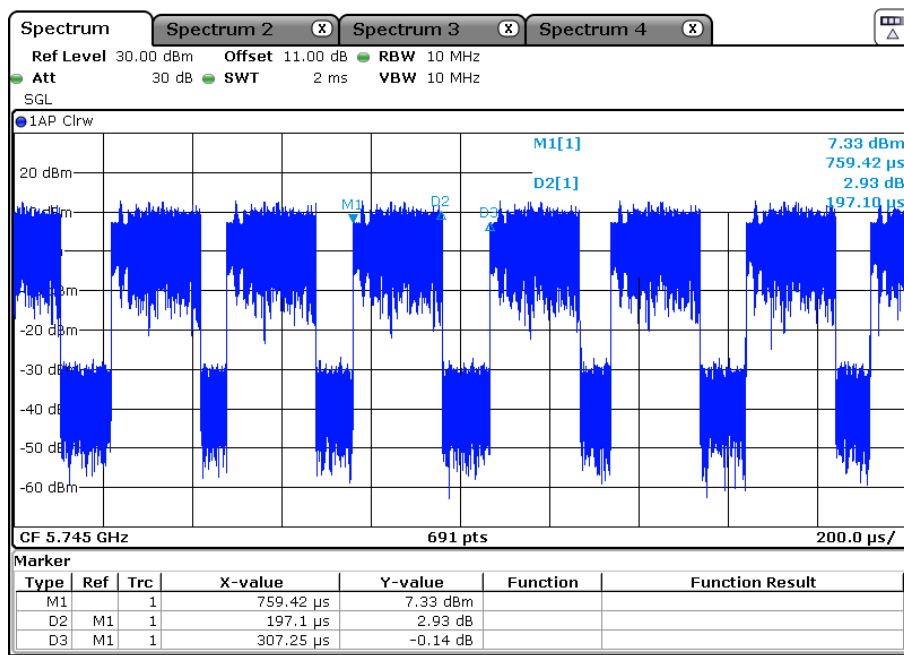
Channel 151: 5755 MHz:

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802.11ac(HT 20)

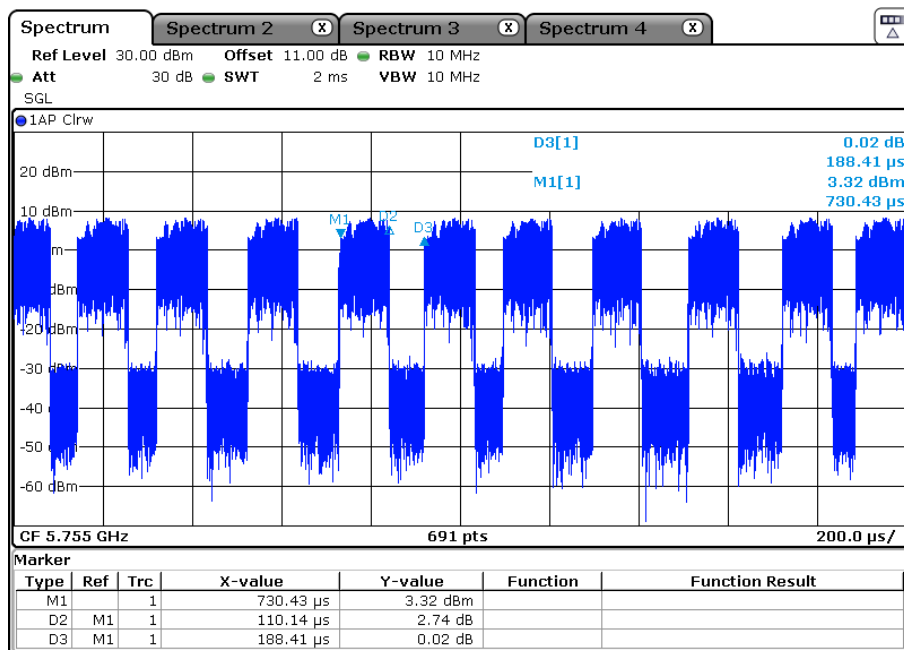
Channel 149: 5745 MHz:



802.11ac(HT 40)

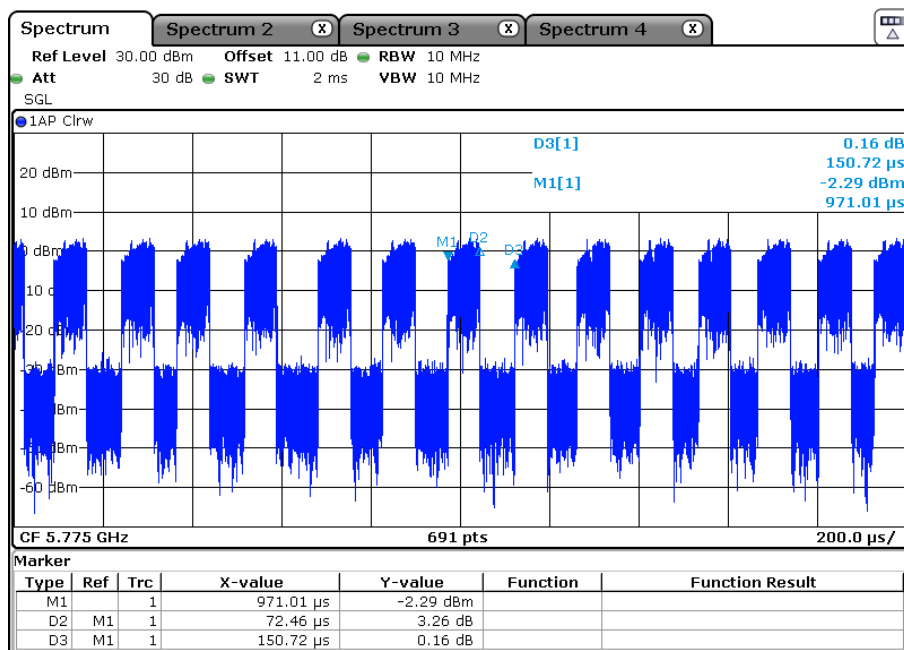
Channel 151: 5755 MHz:

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802.11ac(HT 80)

Channel 155: 5775 MHz:



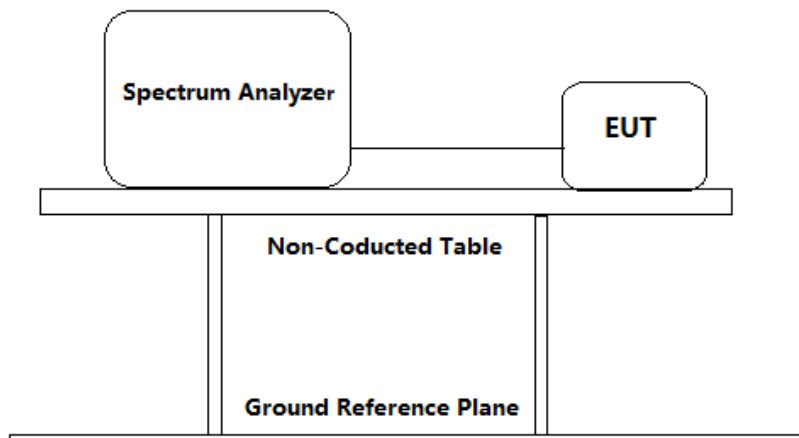
4.3 26 dB Bandwidth

Test Requirement: FCC PART 15 E clause 15.407(a)
 Test Method: FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04, Clause C&D
 Test Status: Pre-Scan has been conducted to determine the worst-case mode

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from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:



Test Procedure:

1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =1 dB, with a 10dB attenuator) from the antenna port to the spectrum.
2. Set the spectrum analyzer:
 - a) Set the RBW = approximately 1% of the emission bandwidth.
 - b) Set the VBW $\geq [3 \times \text{RBW}]$.
 - c) Detector = peak.
 - d) Trace mode = max hold.
 - e) Sweep = auto couple.
 - f) Allow trace to fully stabilize.
 - g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.
3. Repeat until all the test status is investigated.
4. Report the worst case.

Used Test Equipment List

Spectrum Analyzer. Refer to Clause 5 Test Equipment List for details.

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Band I (5150MHz – 5250MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	26dB Bandwidth (MHz)
36	5180	802.11a(20)	6 Mbps	19.8
44	5220		6 Mbps	20.8
48	5240		6 Mbps	20.2
36	5180	802.11an (HT20)	7.2 Mbps	21.0
44	5220		7.2 Mbps	21.0
48	5240		7.2 Mbps	20.8
38	5190	802.11an (HT40)	15 Mbps	39.8
46	5230		15 Mbps	39.6
36	5180	802.11ac (HT20)	7.2 Mbps	21.0
44	5220		7.2 Mbps	21.0
48	5240		7.2 Mbps	20.8
38	5190	802.11ac (HT40)	15 Mbps	40.9
46	5230		15 Mbps	40.5
42	5210	802.11ac (HT80)	32.5 Mbps	80.3

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Band IV (5725MHz – 5850MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	26dB Bandwidth (MHz)
149	5745	802.11a(20)	6 Mbps	20.5
157	5785		6 Mbps	20.7
165	5825		6 Mbps	20.0
149	5745	802.11an (HT20)	7.2 Mbps	20.8
157	5785		7.2 Mbps	21.4
165	5825		7.2 Mbps	20.8
151	5755	802.11an (HT40)	15 Mbps	40.1
159	5795		15 Mbps	40.4
149	5745	802.11ac (HT20)	7.2 Mbps	21.0
157	5785		7.2 Mbps	21.4
165	5825		7.2 Mbps	21.0
151	5755	802.11ac (HT40)	15 Mbps	40.8
159	5795		15 Mbps	40.9
155	5775	802.11ac (HT80)	32.5 Mbps	79.9

Test result: The unit does meet the FCC requirements.

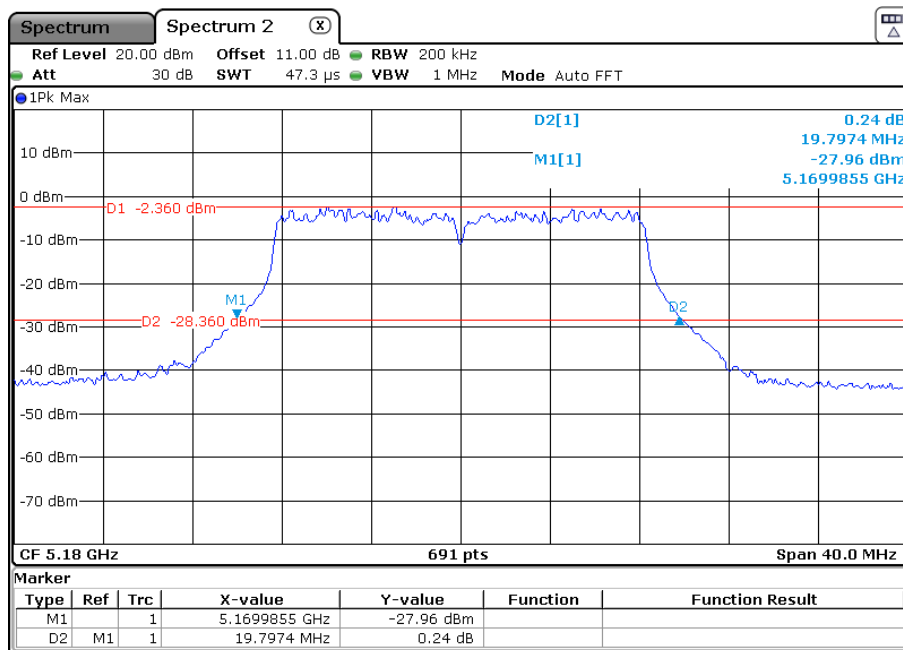
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Result plot as follows:

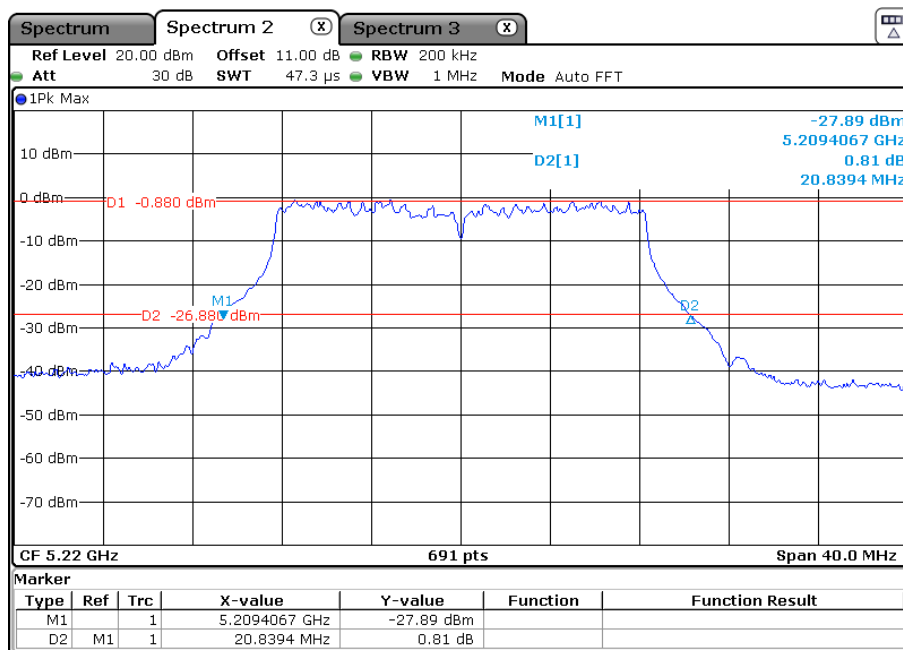
Band I 5150 MHz to 5250 MHz

802.11a(20) mode

Channel 36: 5180 MHz:

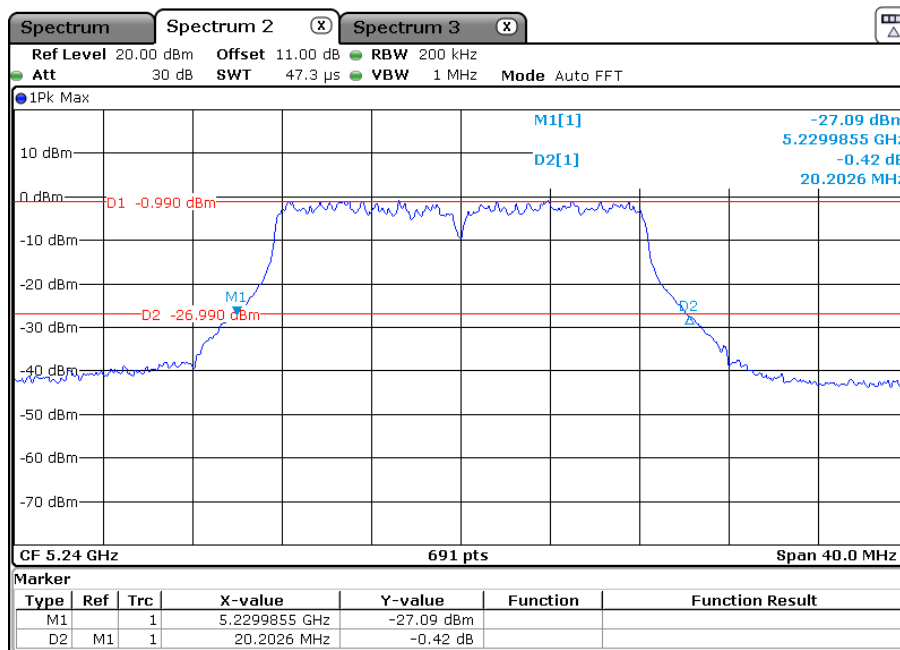


Channel 44: 5220 MHz:



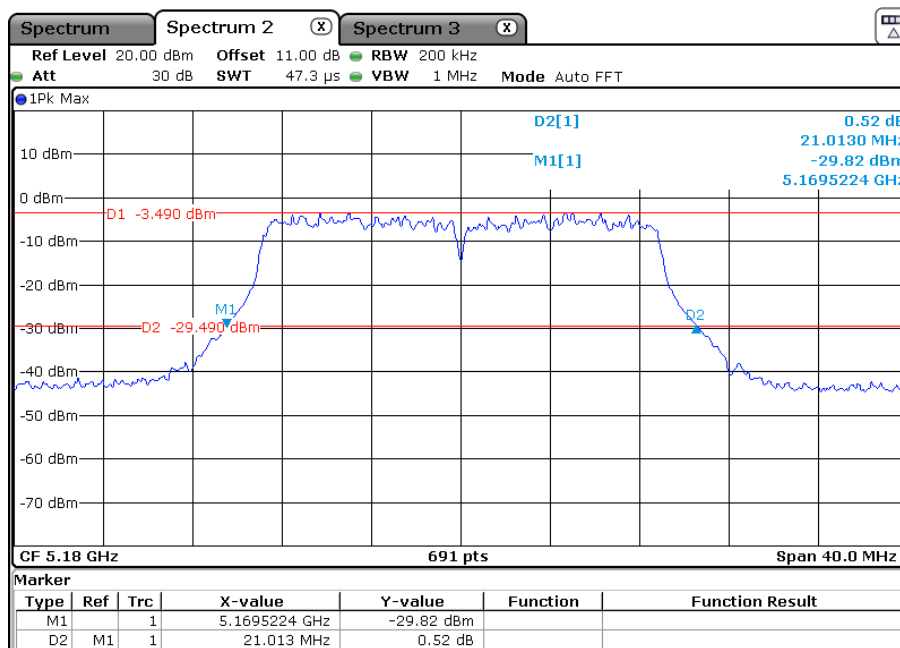
TEST REPORT

Channel 48: 5240 MHz:



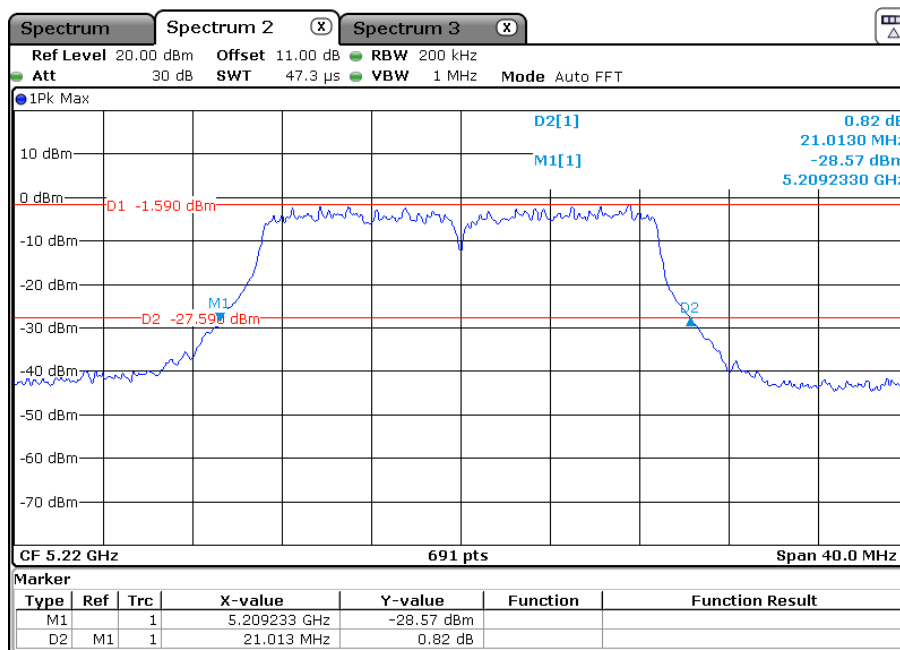
802.11an(HT 20)

Channel 36: 5180 MHz:

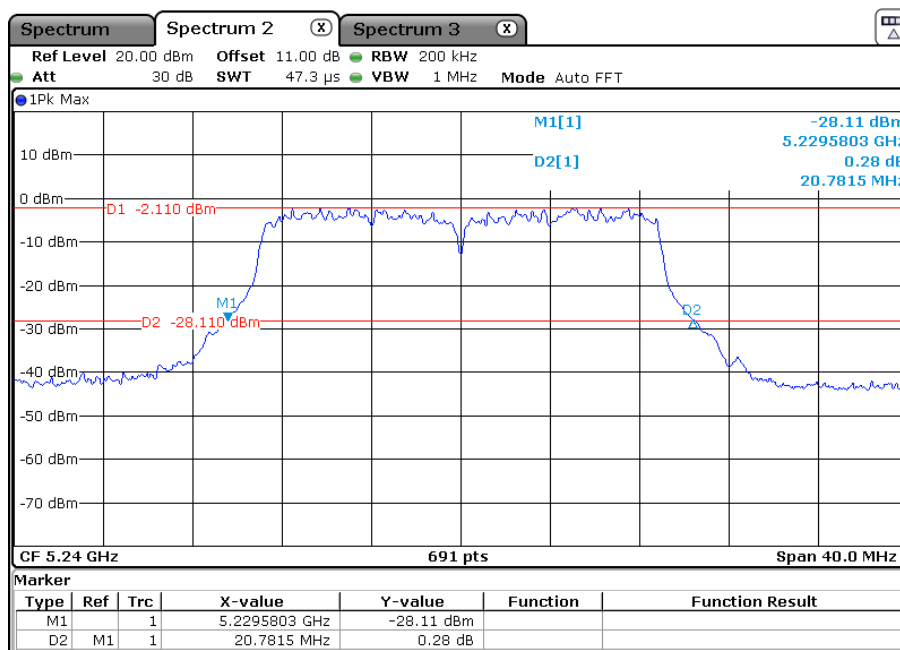


Channel 44: 5220 MHz:

TEST REPORT



Channel 48: 5240 MHz:



802.11ac(HT 20)

Channel 36: 5180 MHz:

The screenshot shows a Spectrum Analyzer window titled 'Spectrum 3'. The top panel displays settings: Ref Level 20.00 dBm, Offset 11.00 dB, RBW 200 kHz, Att 30 dB, SWT 47.3 μs, VBW 1 MHz, and Mode Auto FFT. The main plot area shows a signal spectrum with a blue trace. Two markers are placed on the trace: M1 at -30.56 dBm and D2 at -28.78 dBm. Two horizontal red lines are drawn across the plot: D1 at -2.780 dBm and D2 at -28.78 dBm. The x-axis is labeled 'CF 5.18 GHz' and 'Span 40.0 MHz'. The y-axis is labeled 'dBm' and ranges from -70 to 10. The bottom panel shows a table of markers.

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.1692909 GHz	-30.56 dBm		
D2	M1	1	20.9551 MHz	2.65 dB		

The screenshot shows a Spectrum Analyzer interface with the following settings and data:

- Frequency Range:** CF 5.22 GHz to 5.23 GHz (Span 40.0 MHz)
- Resolution Bandwidth (RBW):** 200 kHz
- Offset:** 11.00 dB
- Attenuation (Att):** 30 dB
- Mode:** Auto FFT
- Signal:** 1Pk Max
- Markers:**
 - M1:** 21.0130 MHz, -29.63 dBm, 1.14 dB
 - D2:** 5.2095224 GHz, -29.63 dBm, 1.14 dB

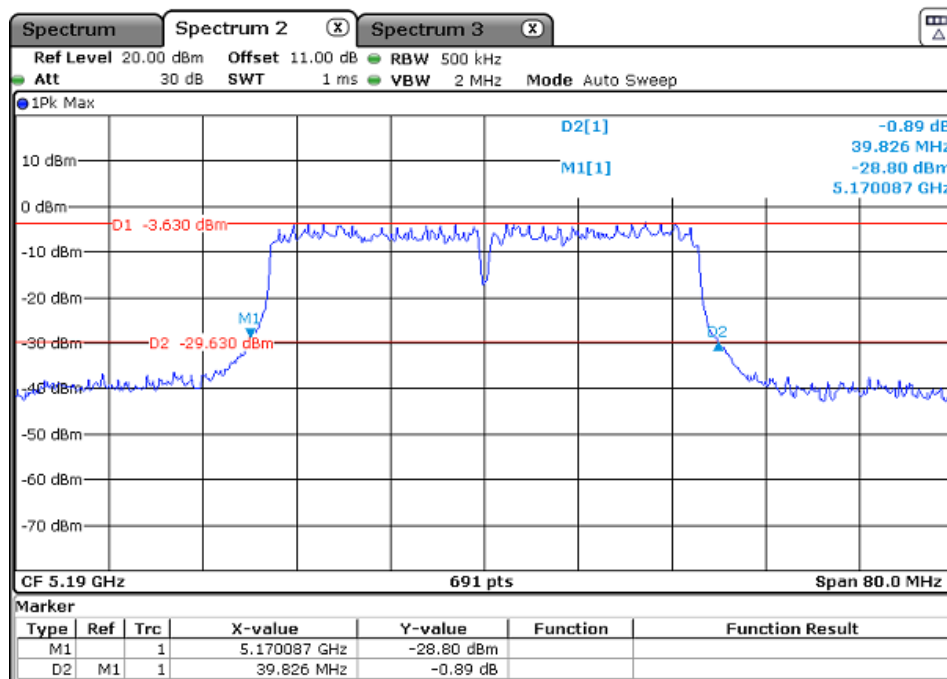
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.2095224 GHz	-29.63 dBm		
D2	M1	1	21.013 MHz	1.14 dB		

FCC WIFI 5G-f

The screenshot displays a Spectrum Analyzer interface. At the top, there are tabs for 'Spectrum 2' and 'Spectrum 3', and a 'Spectrum 4' tab is active. The main display area shows a frequency spectrum plot with a blue trace. The y-axis represents power in dBm, ranging from -70 to 10. The x-axis represents frequency in MHz, with a center frequency (CF) of 5.24 GHz and a span of 40.0 MHz. Two markers are present: D1 at -28.67 dBm and D2 at -28.67 dBm. A table at the bottom provides details for these markers.

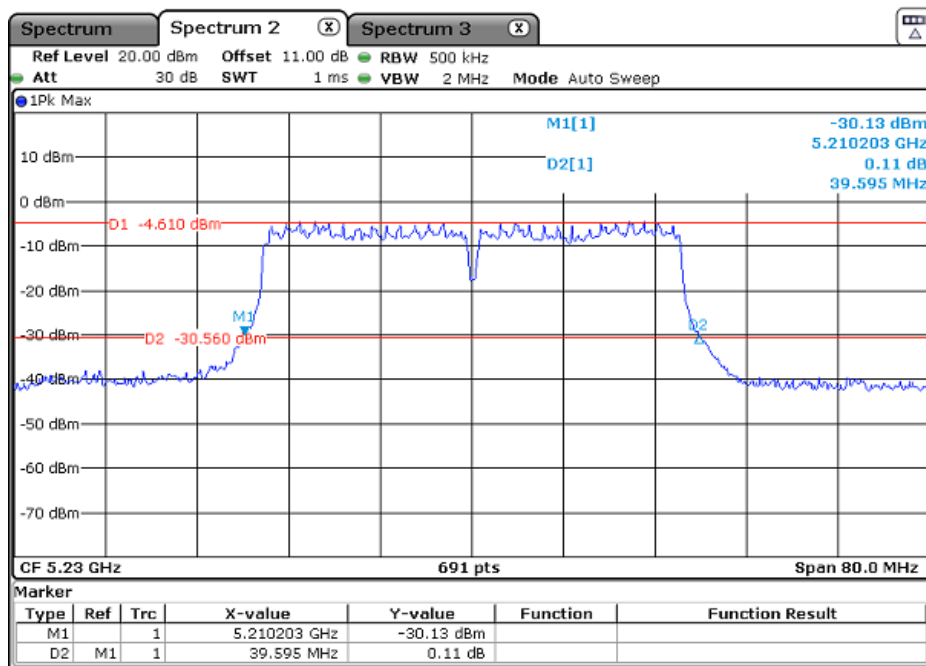
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.2296961 GHz	-28.67 dBm		
D2	M1	1	20.7815 MHz	0.44 dB		

Channel 38: 5190 MHz:



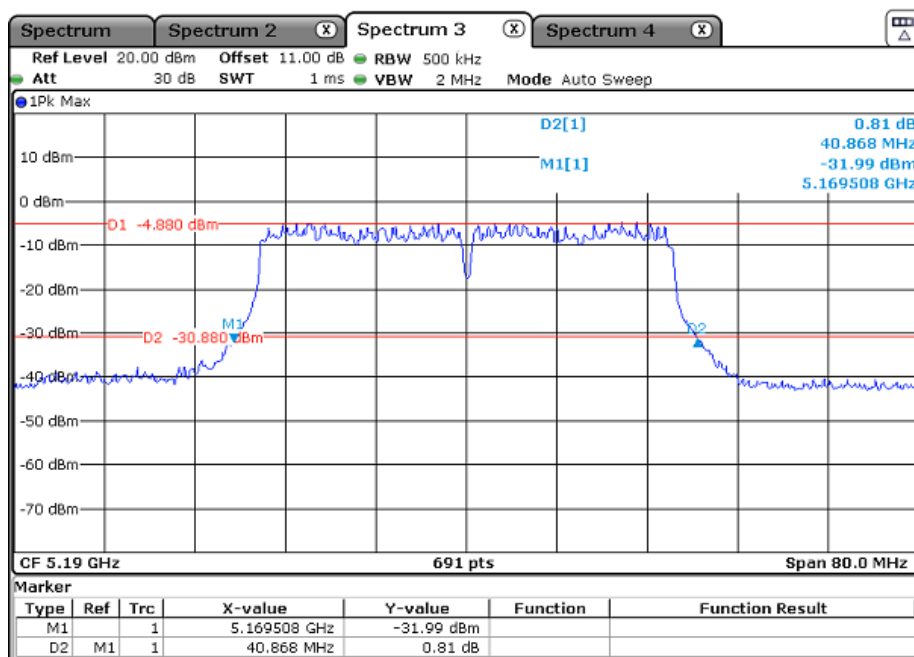
FCC WIFI 5G-f

TEST REPORT



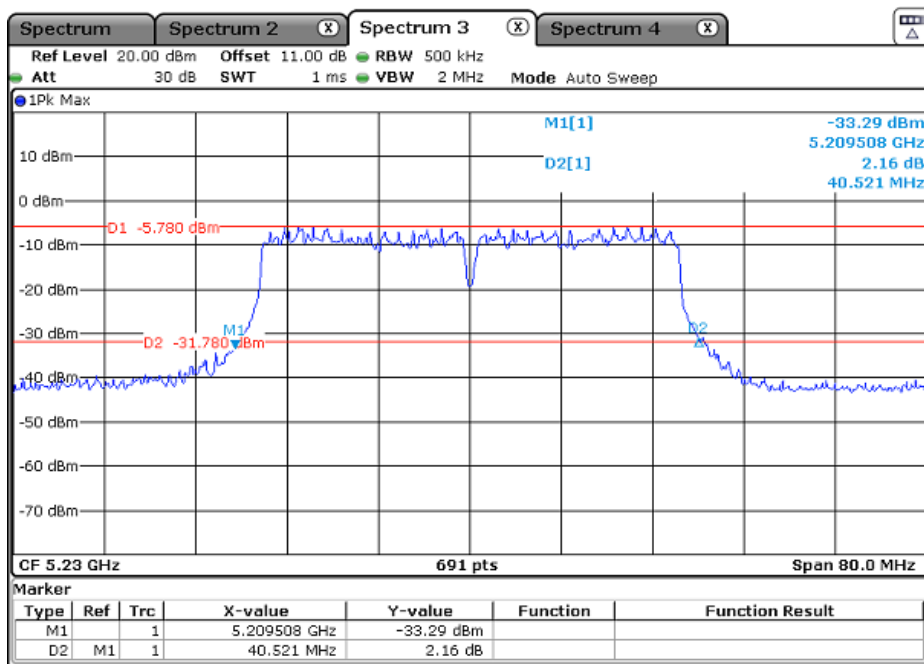
802.11ac(HT 40)

Channel 38: 5190 MHz:



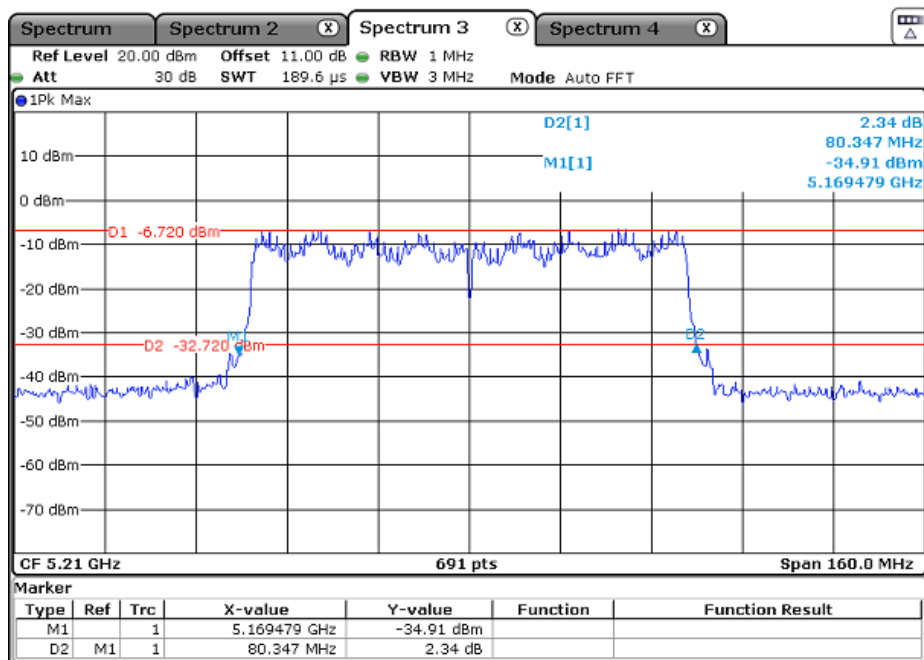
Channel 46: 5230 MHz:

TEST REPORT



802.11ac(HT 80)

Channel 42: 5210 MHz:



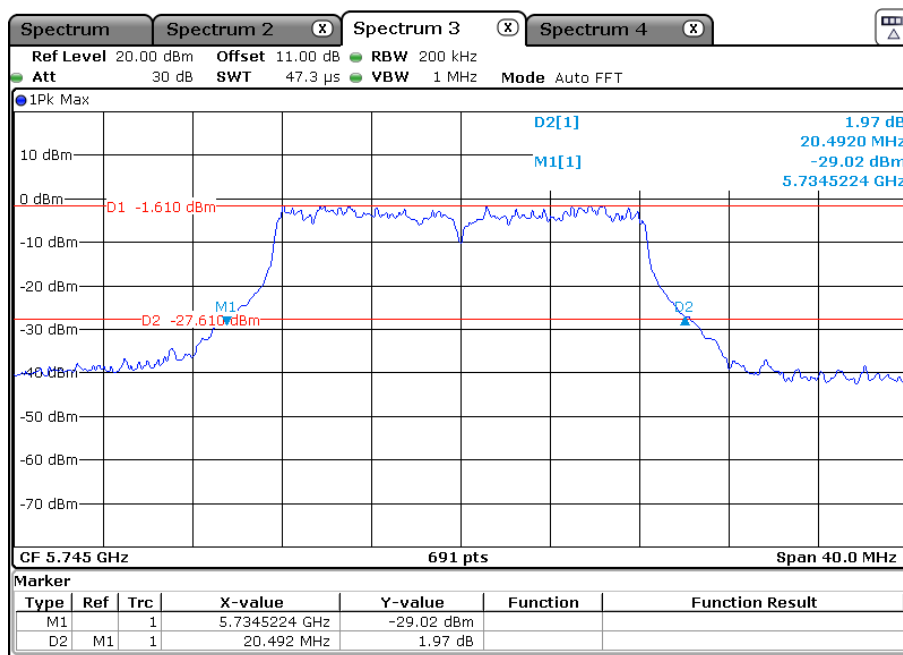
TEST REPORT

Result plot as follows:

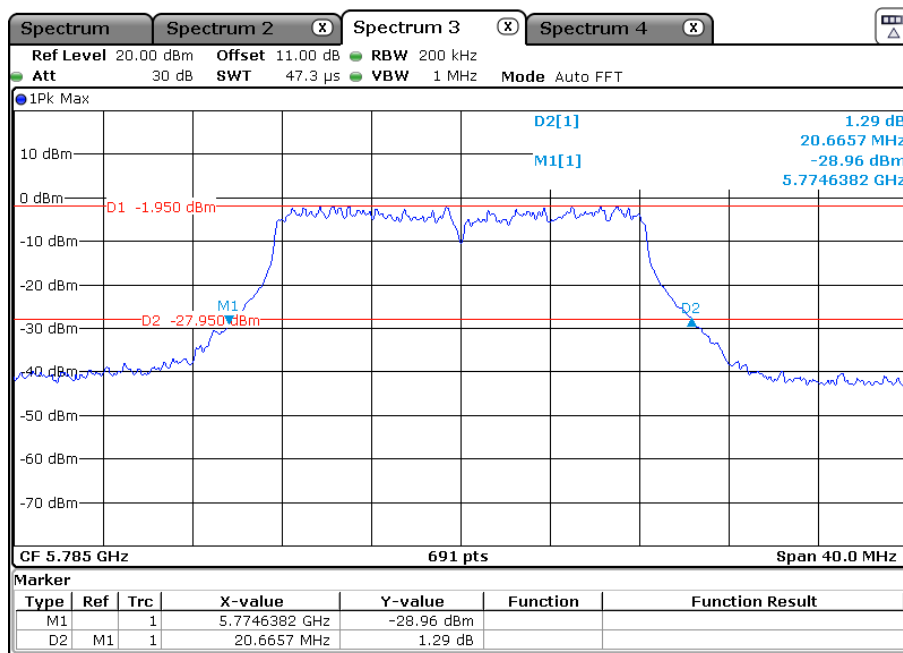
Band IV 5725 MHz to 5850 MHz

802.11a(20) mode

Channel 149: 5745 MHz:

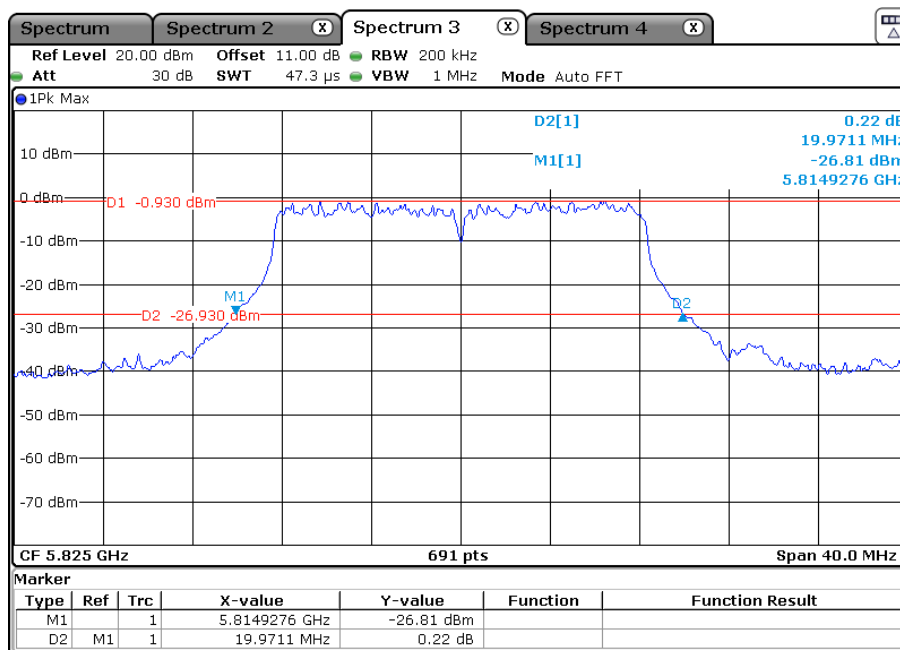


Channel 157: 5785 MHz:



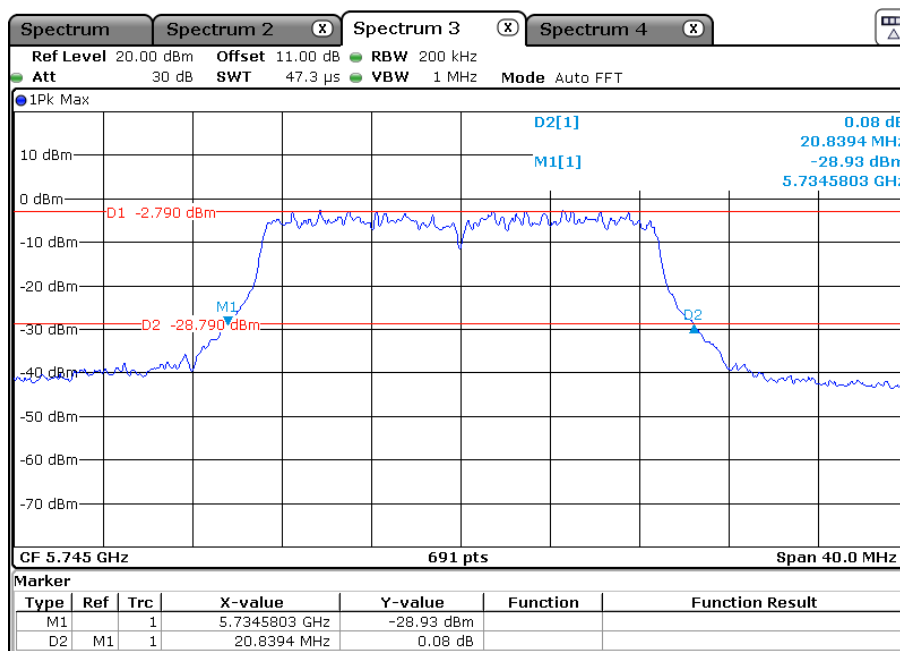
Channel 165: 5825 MHz:

TEST REPORT



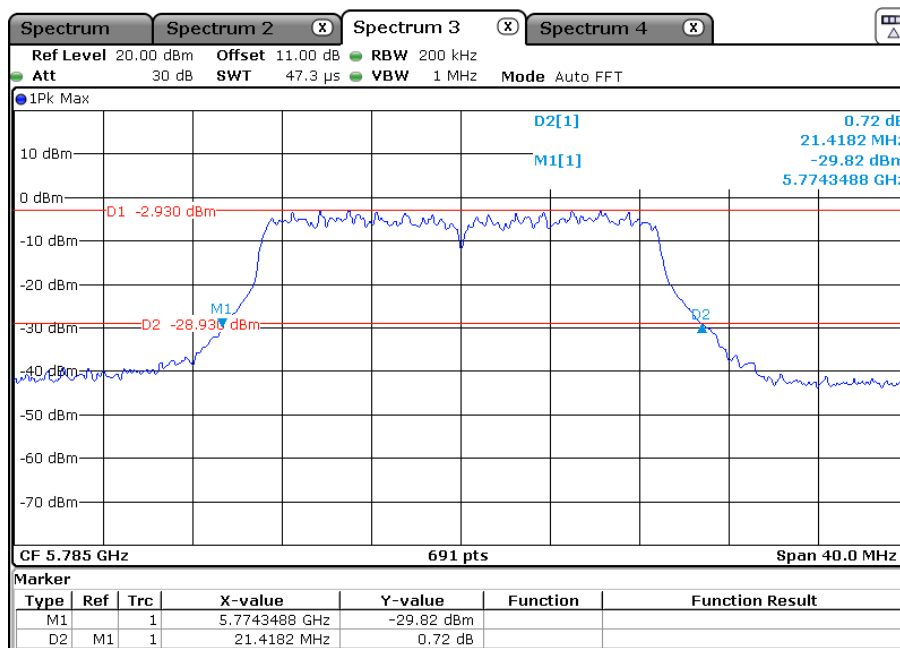
802.11an(HT 20)

Channel 149: 5745 MHz:

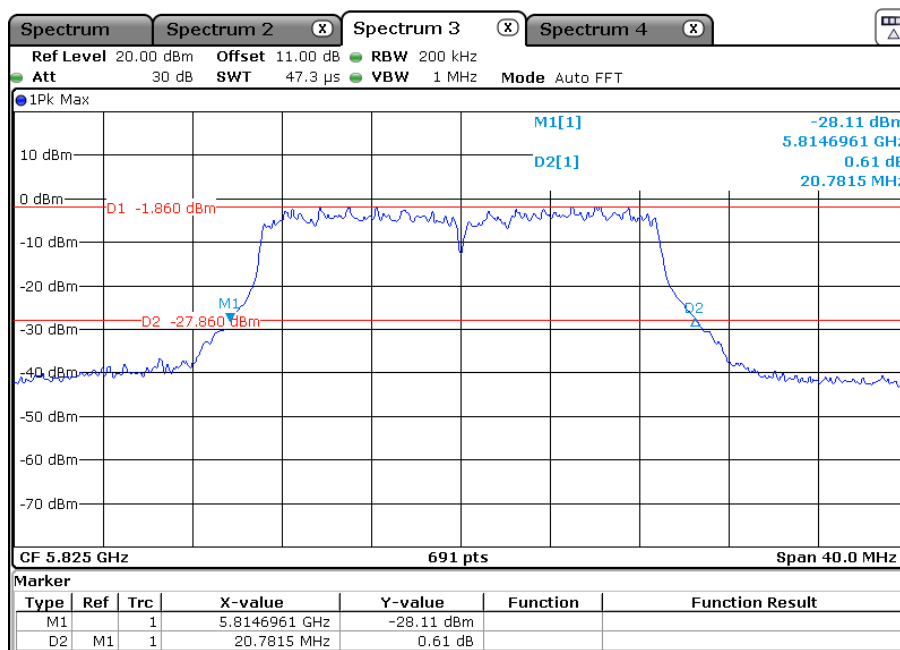


Channel 157: 5785 MHz:

TEST REPORT



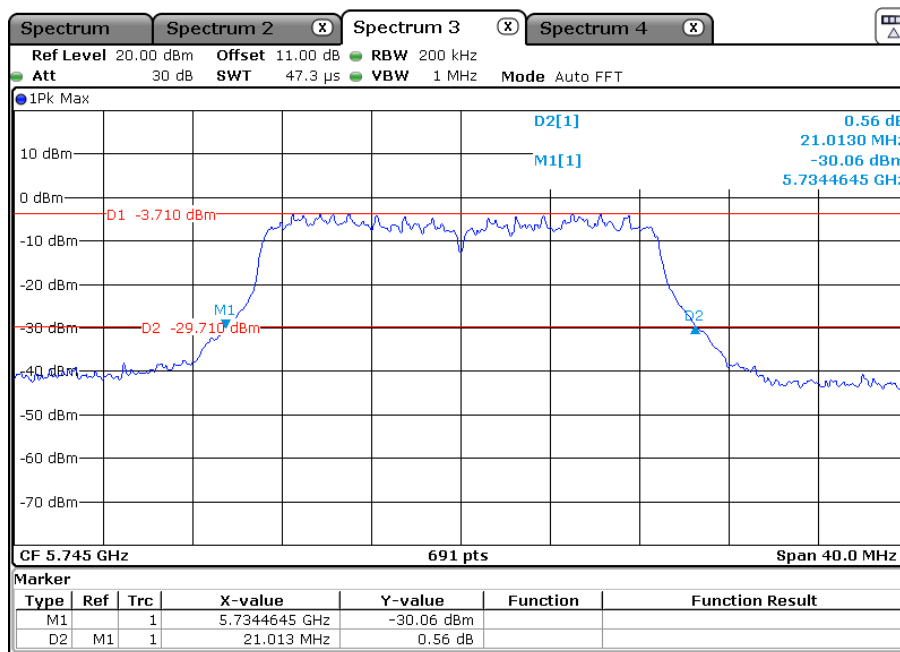
Channel 165: 5825 MHz:



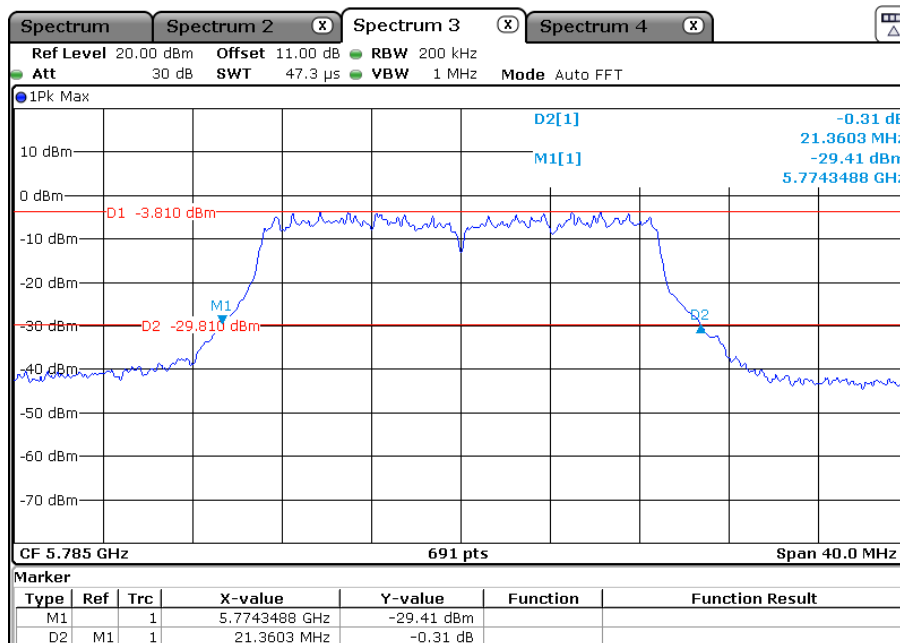
802.11ac(HT 20)

Channel 149: 5745 MHz:

TEST REPORT

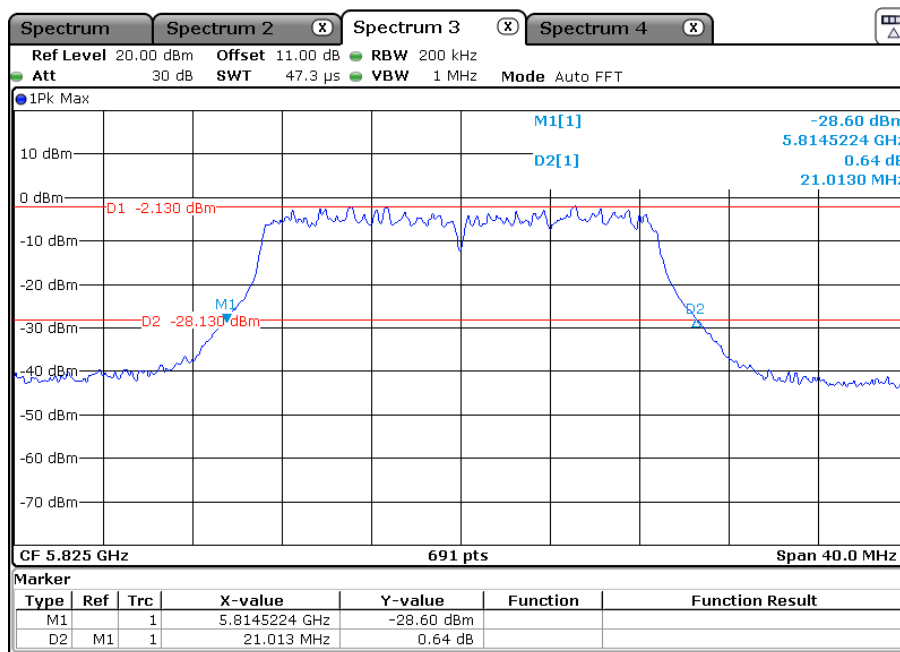


Channel 157: 5785 MHz:



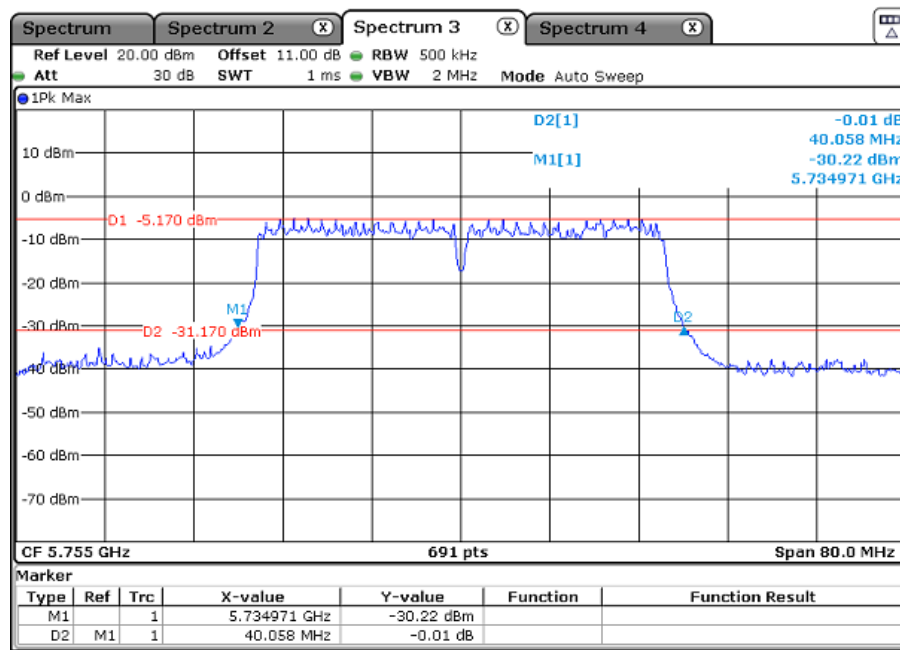
Channel 165: 5825 MHz:

TEST REPORT



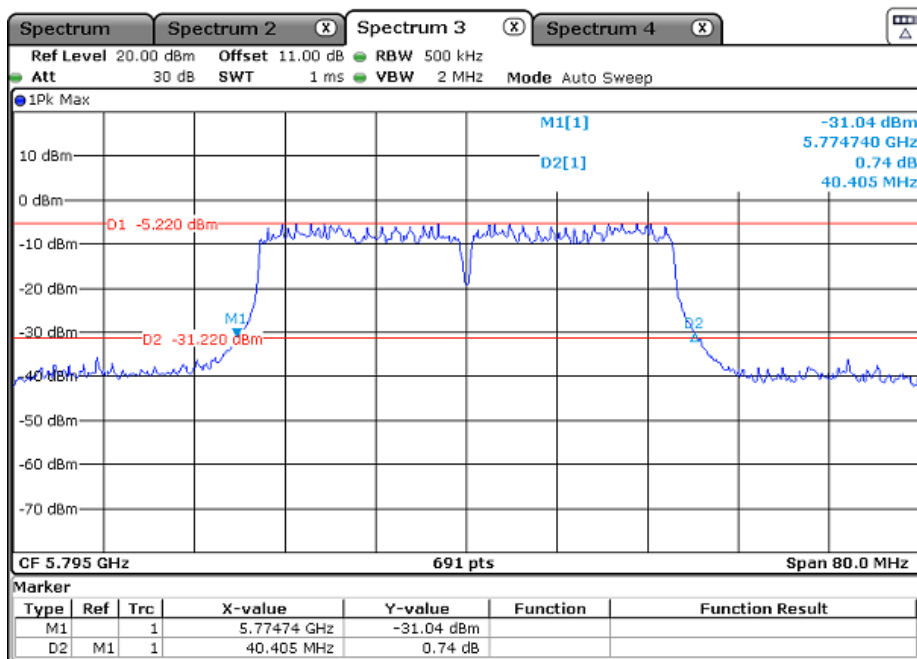
802.11an(HT 40)

Channel 151: 5755 MHz:



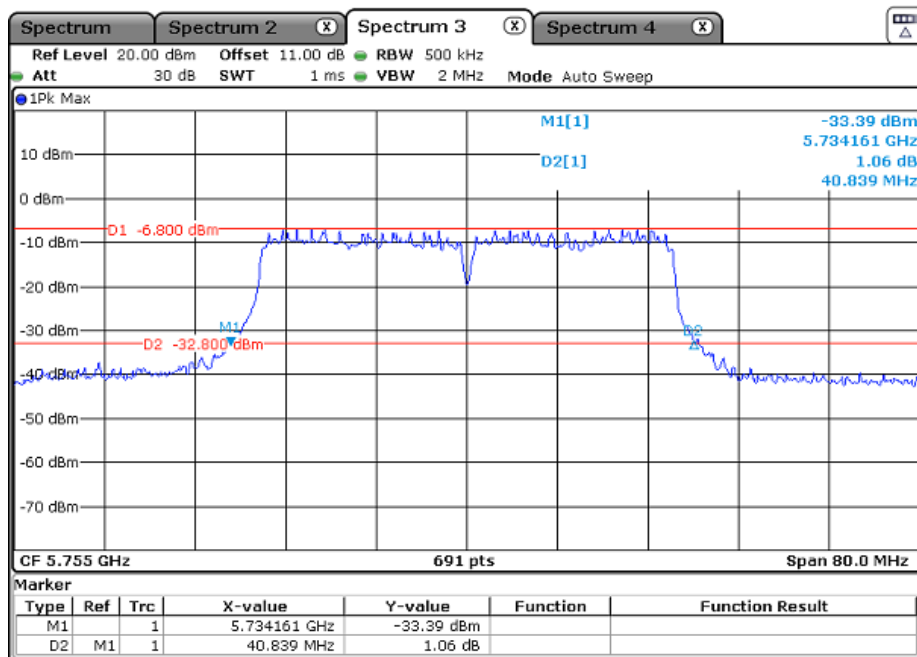
Channel 159: 5795 MHz:

TEST REPORT



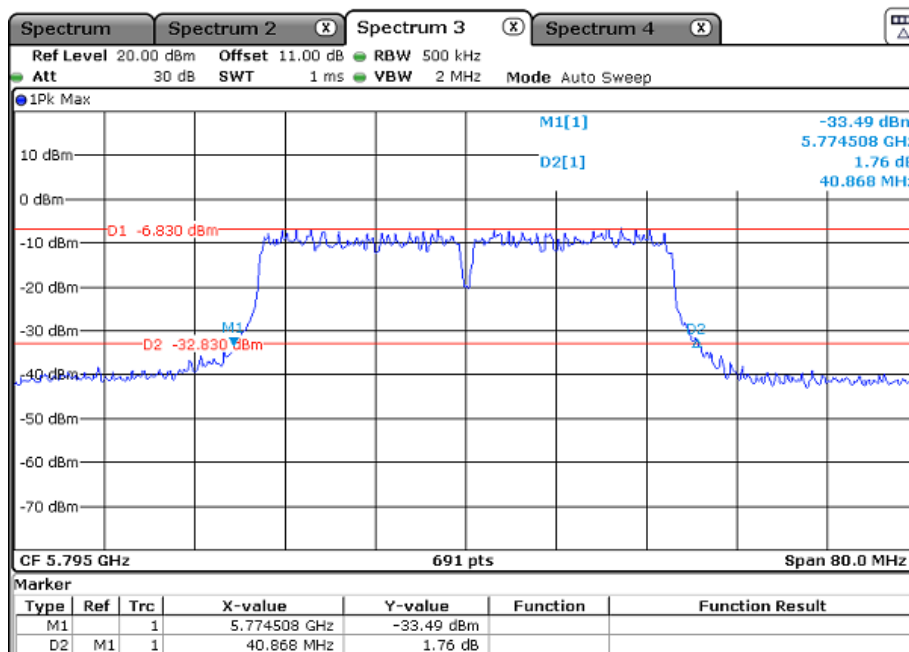
802.11ac(HT 40)

Channel 151: 5755 MHz:



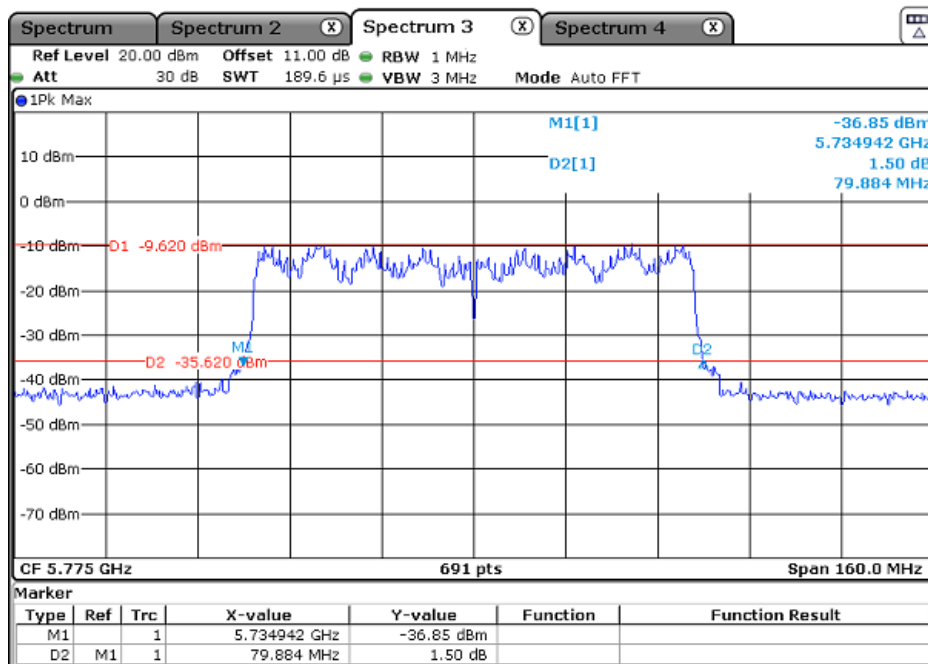
Channel 159: 5795 MHz:

TEST REPORT



802.11ac(HT 80)

Channel 155: 5775 MHz:



4.4 6 dB Bandwidth

Test Requirement: FCC PART 15 E clause 15.407(e)

Within the 5.725–5.85 GHz band the minimum 6 dB bandwidth of

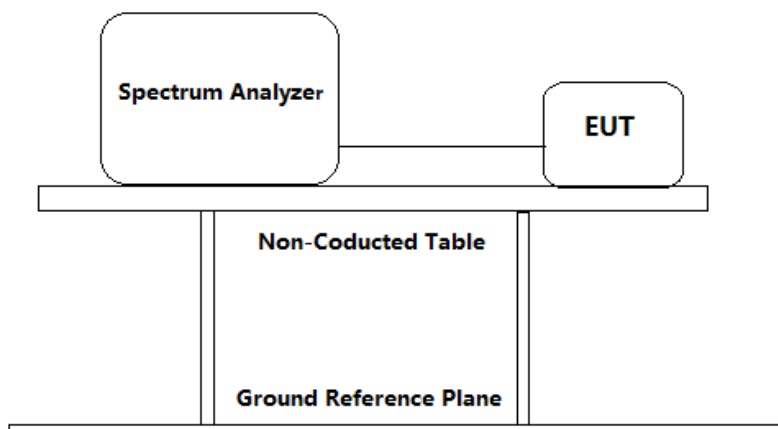
TEST REPORT

U–NII devices shall be at least 500 kHz.

Test Method: FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04, Clause C

Test Status: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:



Test Procedure:

1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =1 dB, with a 10dB attenuator) from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer:
 - a) Set RBW = 100 kHz.
 - b) Set VBW $\geq [3 \times \text{RBW}]$
 - c) Detector = peak.
 - d) Trace mode = max hold.
 - e) Sweep = auto couple.
 - f) Allow the trace to stabilize.
 - g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
 - h) $\text{Span} = 2 \times \text{BW} \sim 5 \times \text{BW}$.
3. Repeat until all the test status is investigated.
4. Report the worst case.

Used Test Equipment List

Spectrum Analyzer. Refer to Clause 5 Test Equipment List for details.

TEST REPORT

Test result:

Channel No.	Frequency (MHz)	Mode	Data Rate	6dB bandwidth (MHz)	Limit	Result
149	5745	802.11a(20)	6 Mbps	16.5	≥500kHz	Pass
157	5785		6 Mbps	16.3		Pass
165	5825		6 Mbps	16.5		Pass
149	5745	802.11an (HT20)	7.2 Mbps	17.1		Pass
157	5785		7.2 Mbps	17.3		Pass
165	5825		7.2 Mbps	17.3		Pass
151	5755	802.11an (HT40)	15 Mbps	36.1		Pass
159	5795		15 Mbps	36.2		Pass
149	5745	802.11ac (HT20)	7.2 Mbps	17.3		Pass
157	5785		7.2 Mbps	17.4		Pass
165	5825		7.2 Mbps	17.5		Pass
151	5755	802.11ac (HT40)	15 Mbps	35.9		Pass
159	5795		15 Mbps	35.8		Pass
155	5775	802.11ac (HT80)	32.5 Mbps	74.6		Pass

Test result: The unit does meet the FCC requirements

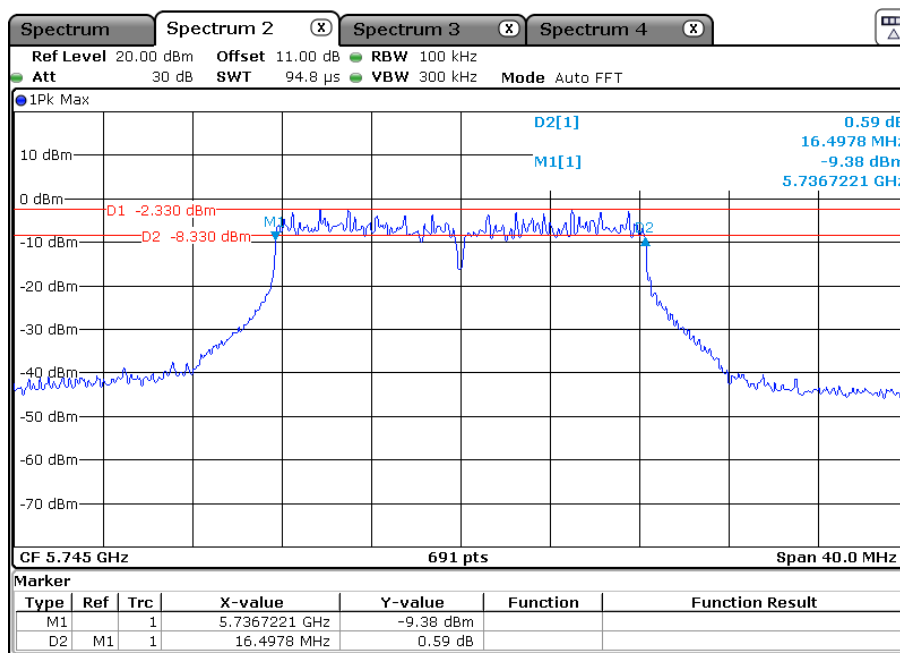
TEST REPORT

Result plot as follows:

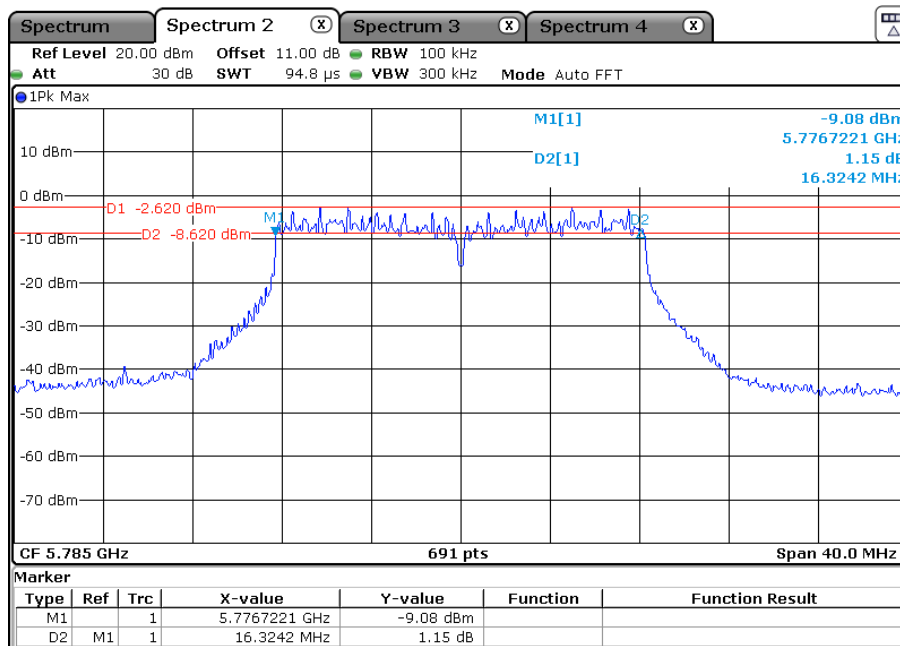
Band IV 5725 MHz to 5850 MHz

802.11a(20) mode

Channel 149: 5745 MHz:

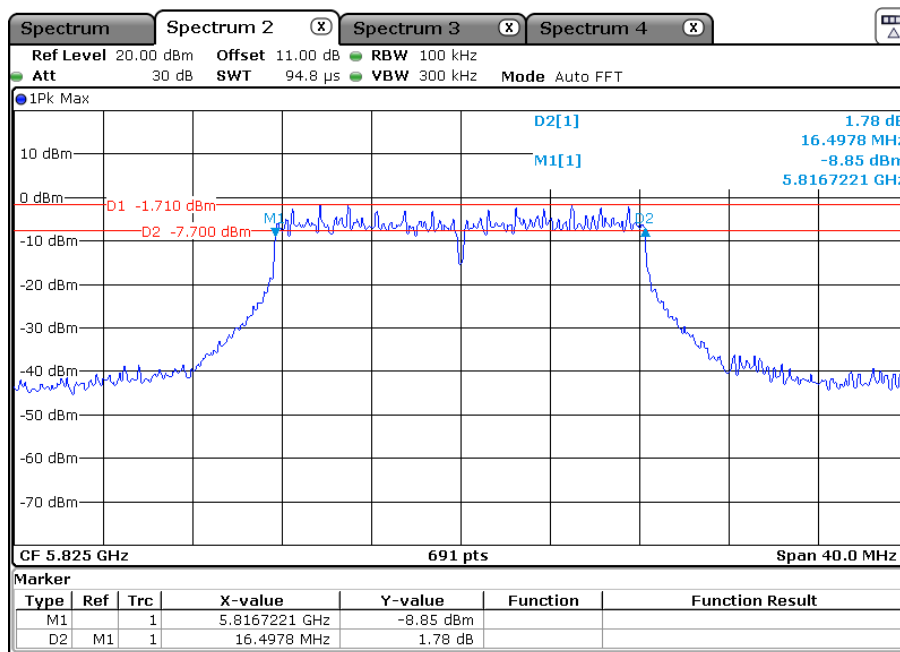


Channel 157: 5785 MHz:



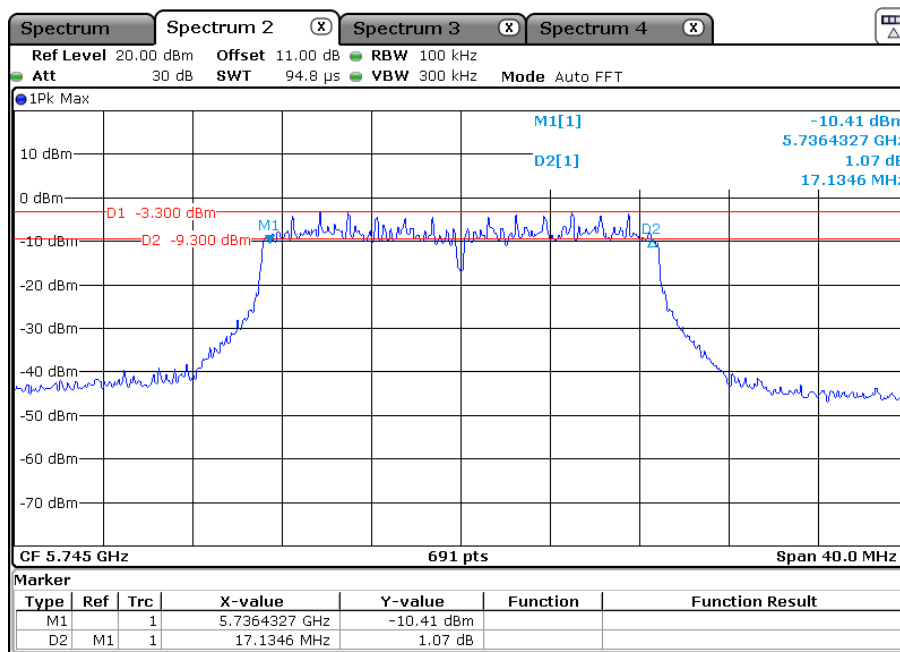
Channel 165: 5825 MHz:

TEST REPORT



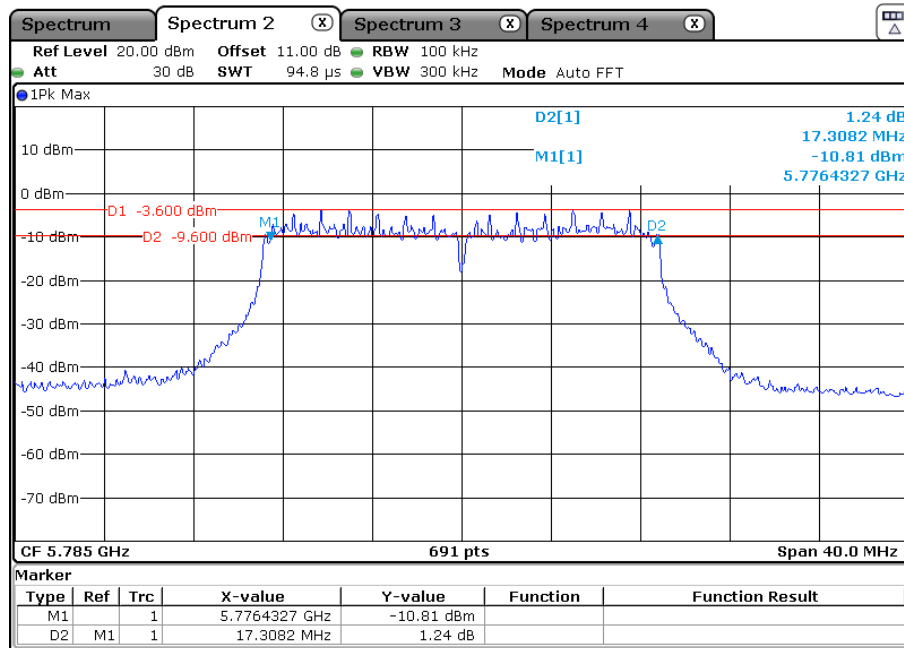
802.11an(HT 20)

Channel 149: 5745 MHz:

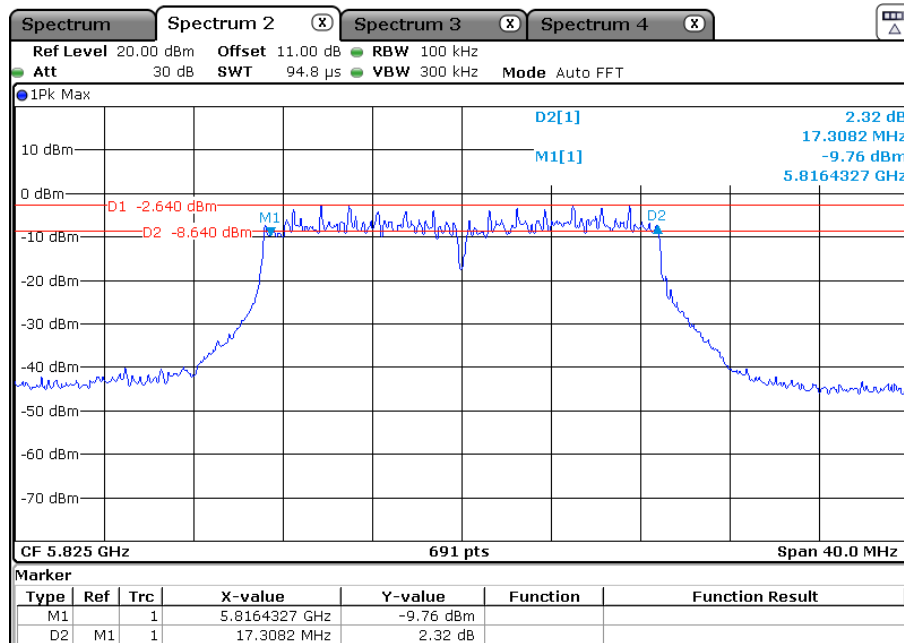


Channel 157: 5785 MHz:

TEST REPORT



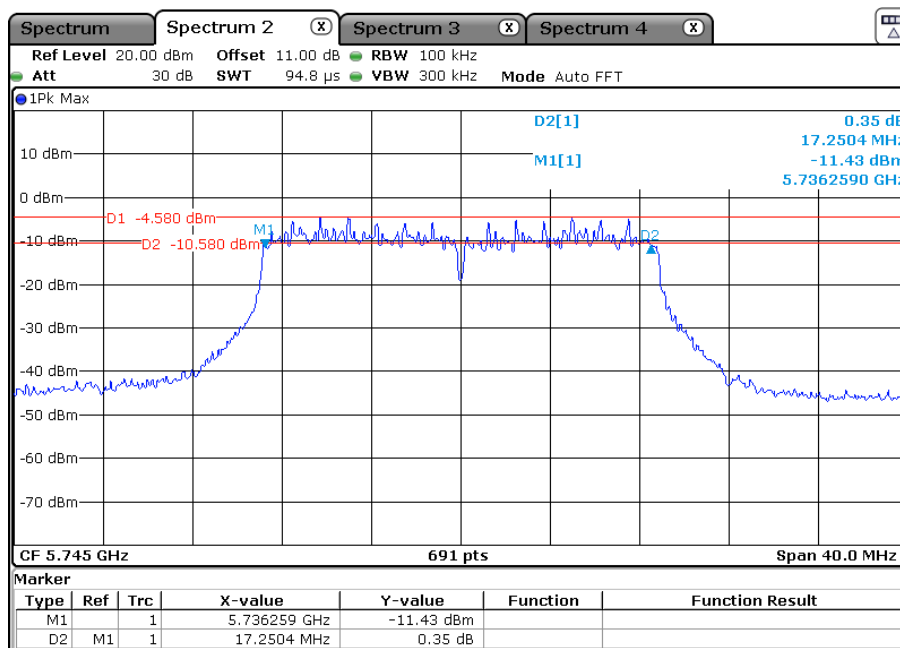
Channel 165: 5825 MHz:



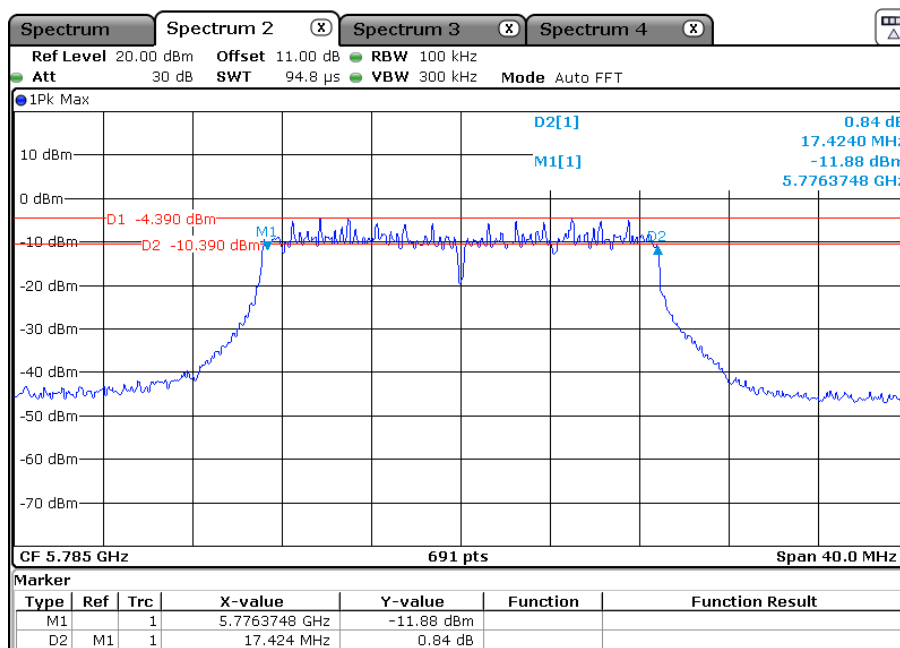
802.11ac(HT 20)

Channel 149: 5745 MHz:

TEST REPORT

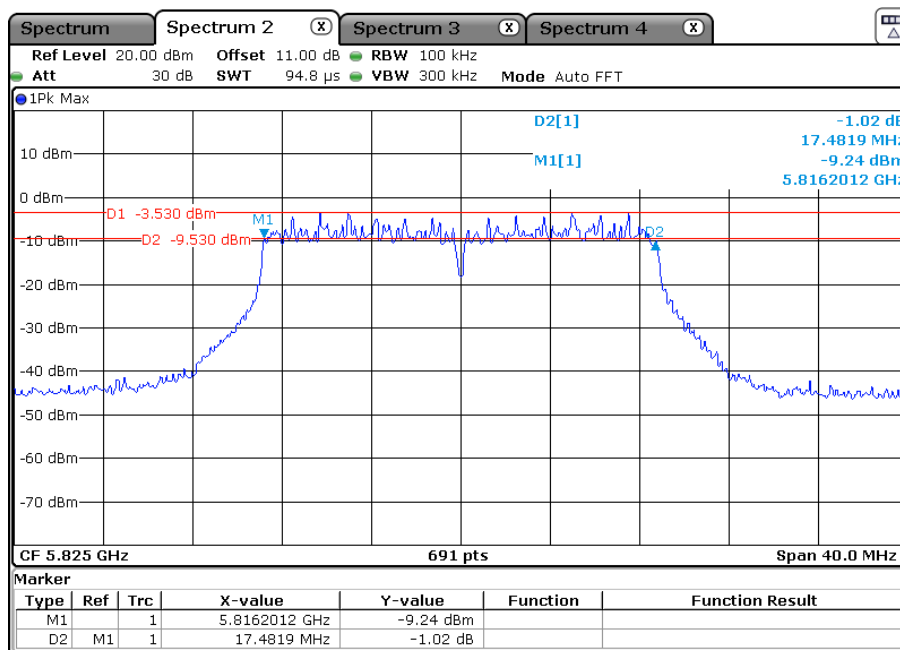


Channel 157: 5785 MHz:



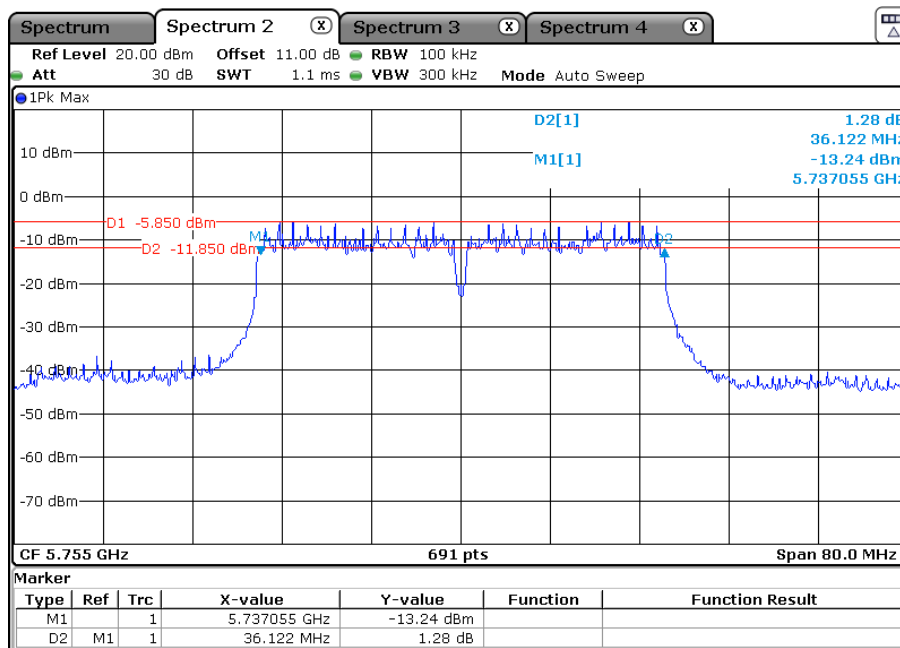
Channel 165: 5825 MHz:

TEST REPORT



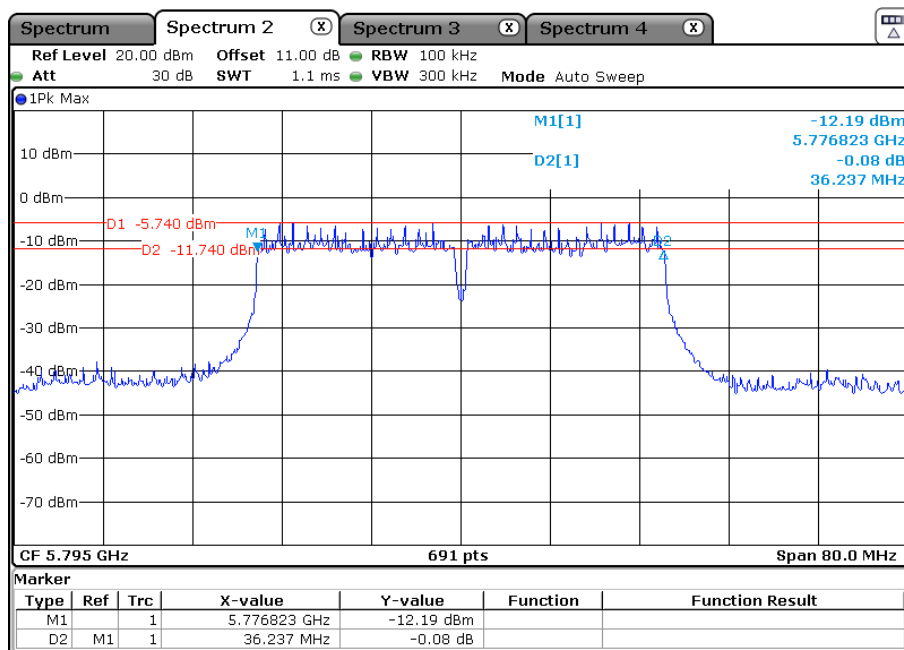
802.11an(HT 40)

Channel 151: 5755 MHz:



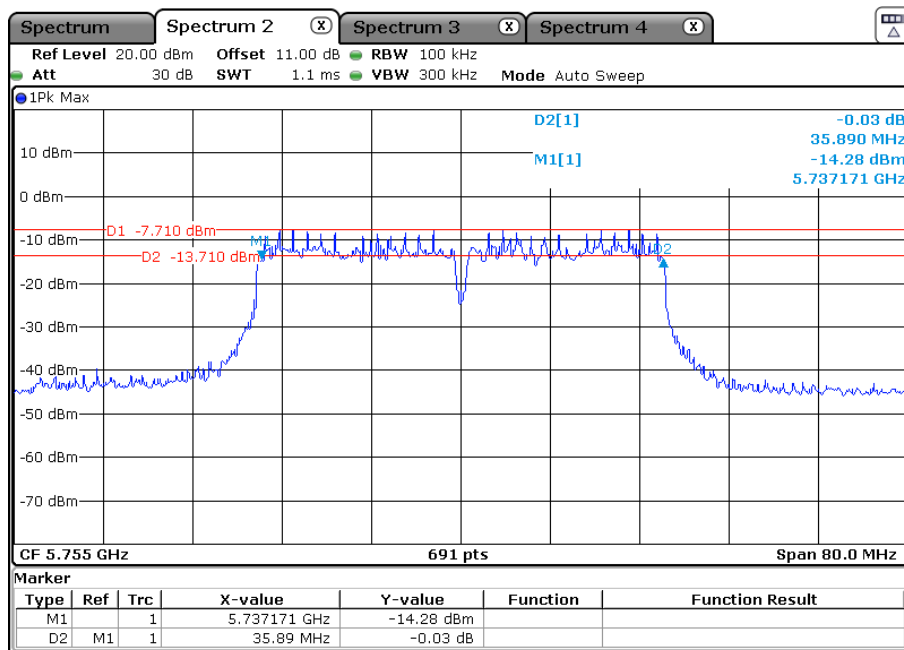
Channel 159: 5795 MHz:

TEST REPORT



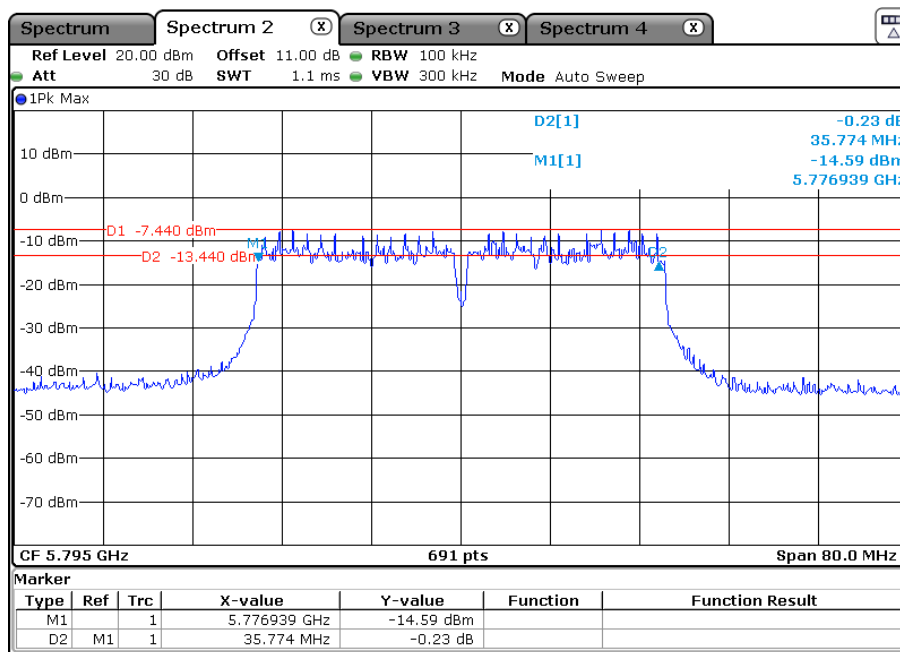
802.11ac(HT 40)

Channel 151: 5755 MHz:



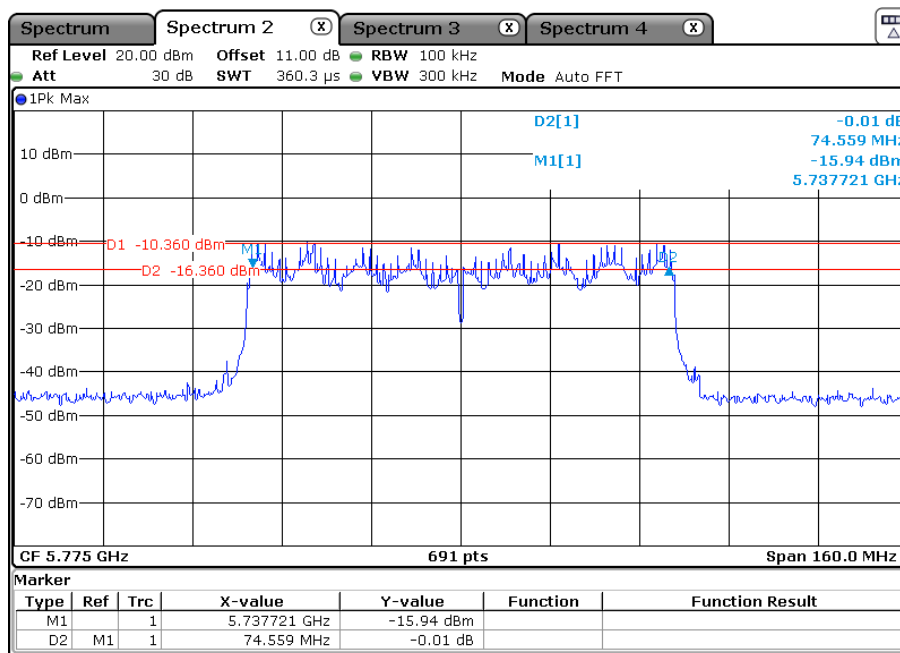
Channel 159: 5795 MHz:

TEST REPORT



802.11ac(HT 80)

Channel 155: 5775 MHz:



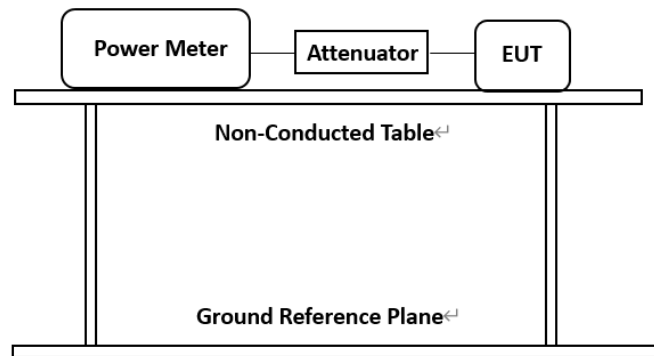
4.5 Maximum Average Conducted Output Power

Test Requirement: FCC Part 15 E clause 15.407(a)
 Test Method: FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04, Clause E
 Test Status: Pre-Scan has been conducted to determine the worst-case mode from

TEST REPORT

all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:



Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable (cable loss =0.5dB, with a 10dB attenuator) from the antenna port to the power meter.
2. The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
3. If the EUT is transmitting at all times, it must be transmitting at its maximum power control level.
4. If the EUT does not transmit continuously, measure the duty cycle and adjust the measurement in dBm by adding $10\log(1/x)$ where x is the duty cycle of transmitter output signal. This measurement is an average over both the ON and OFF periods of the transmitter.
5. Report the worst case.

TEST REPORT

Test result:

Data Rate selection

Band I (5150MHz-5250MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Maximum Conducted output power (dBm)	Limit dBm	Result
36	5180	802.11a(20)	6Mbps	10.03	24	Pass
44	5220		6Mbps	9.94		Pass
48	5240		6Mbps	10.23		Pass
36	5180	802.11an (HT20)	7.2Mbps	9.01		Pass
44	5220		7.2Mbps	8.79		Pass
48	5240		7.2Mbps	8.88		Pass
38	5190	802.11an (HT40)	15Mbps	9.06		Pass
46	5230		15Mbps	8.63		Pass
36	5180	802.11ac (HT20)	7.2Mbps	8.22		Pass
44	5220		7.2Mbps	7.78		Pass
48	5240		7.2Mbps	7.93		Pass
38	5190	802.11ac (HT40)	15Mbps	6.86		Pass
46	5230		15Mbps	6.55		Pass
42	5210	802.11ac (HT80)	32.5Mbps	5.35		Pass

TEST REPORT

Band IV (5725MHz-5850MHz)

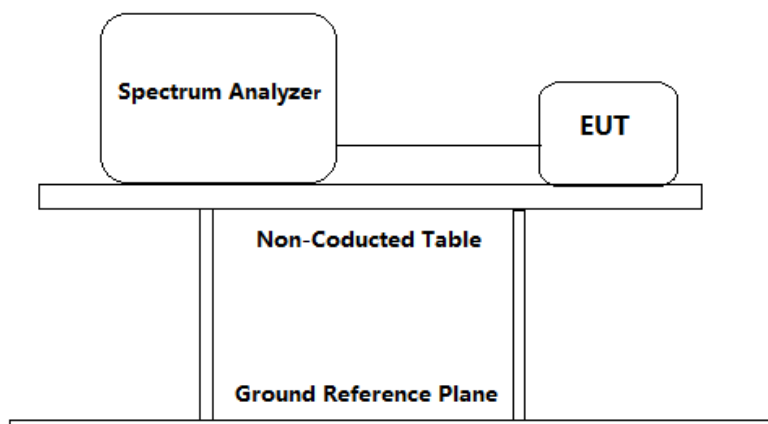
Channel No.	Frequency (MHz)	Mode	Data Rate	Maximum Conducted output power (dBm)	Limit dBm	Result
149	5745	802.11a(20)	6Mbps	9.13	30	Pass
157	5785		6Mbps	8.73		Pass
165	5825		6Mbps	9.73		Pass
149	5745	802.11an (HT20)	7.2Mbps	7.75		Pass
157	5785		7.2Mbps	7.84		Pass
165	5825		7.2Mbps	8.58		Pass
151	5755	802.11an (HT40)	15Mbps	7.82		Pass
159	5795		15Mbps	7.76		Pass
149	5745	802.11ac (HT20)	7.2Mbps	7.23		Pass
157	5785		7.2Mbps	7.13		Pass
165	5825		7.2Mbps	7.53		Pass
151	5755	802.11ac (HT40)	15Mbps	5.78		Pass
159	5795		15Mbps	5.81		Pass
155	5775	802.11ac (HT80)	32.5Mbps	4.95		Pass

Remark: Level = Read Level + Cable Loss (1dB).
The unit does meet the FCC requirements.

TEST REPORT

4.6 Maximum Peak Power Spectral Density

Test Requirement: FCC Part 15 E clause 15.407(a)
 Test Method: FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04, Clause F
 Test Status: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
 Test Configuration:



Test Procedure:

1. Remove the antenna from the EUT and then connect a low attenuation RF cable (cable loss = 1 dB, with a 10dB attenuator) from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer:
 - For Band I (5150MHz-5250MHz)
 - a) Set the RBW = 1MHz.
 - b) Set the VBW $\geq [3 \times \text{RBW}]$.
 - c) Set the span ≥ 26 dB Bandwidth
 - d) Detector = peak
 - e) Sweep time = auto couple.
 - f) Trace mode = max hold.
 - g) Allow trace to fully stabilize.
 - i) Use the peak marker function to determine the maximum amplitude level within the RBW.

- For Band IV (5725MHz-5850MHz)
 - a) Set the RBW = 500kHz.
 - b) Set the VBW $\geq [3 \times \text{RBW}]$.
 - c) Set the span ≥ 26 dB Bandwidth.
 - d) Detector = peak
 - e) Sweep time = auto couple.
 - f) Trace mode = max hold.

TEST REPORT

- g) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW. Measure the Power Spectral Density of the test frequency with special test status.
- 3. Measure the Power Spectral Density of the test frequency with special test status.
- 4. Repeat until all the test status is investigated.
- 5. Report the worst case.

Used Test Equipment List

Spectrum Analyzer. Refer to Clause 5 Test Equipment List for details.

Band I (5150MHz-5250MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Maximum Power Spectral Density (dBm/MHz)	Limit	Result
36	5180	802.11a(20)	6Mbps	7.35	10dBm/ MHz	Pass
44	5220		6Mbps	6.59		Pass
48	5240		6Mbps	6.72		Pass
36	5180	802.11an (HT20)	7.2Mbps	6.25		Pass
44	5220		7.2Mbps	6.34		Pass
48	5240		7.2Mbps	5.30		Pass
38	5190	802.11an (HT40)	15Mbps	3.67		Pass
46	5230		15Mbps	3.31		Pass
36	5180	802.11ac (HT20)	7.2Mbps	6.24		Pass
44	5220		7.2Mbps	5.65		Pass
48	5240		7.2Mbps	4.40		Pass
38	5190	802.11ac (HT40)	15Mbps	2.38		Pass
46	5230		15Mbps	1.05		Pass
42	5210	802.11ac (HT80)	32.5Mbps	-0.04		Pass

Test result: Level = Read Level + Cable Loss(1dB).

The unit does meet the FCC requirements

TEST REPORT

Band IV (5725MHz-5850MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Maximum Power Spectral Density (dBm/500kHz)	Limit	Result
149	5745	802.11a(20)	6Mbps	5.97	30dBm/ 500kHz	Pass
157	5785		6Mbps	5.13		Pass
165	5825		6Mbps	6.82		Pass
149	5745	802.11an (HT20)	7.2Mbps	4.10		Pass
157	5785		7.2Mbps	4.41		Pass
165	5825		7.2Mbps	5.40		Pass
151	5755	802.11an (HT40)	15Mbps	2.00		Pass
159	5795		15Mbps	2.21		Pass
149	5745	802.11ac (HT20)	7.2Mbps	4.44		Pass
157	5785		7.2Mbps	3.33		Pass
165	5825		7.2Mbps	4.99		Pass
151	5755	802.11ac (HT40)	15Mbps	0.39		Pass
159	5795		15Mbps	0.86		Pass
155	5775	802.11ac (HT80)	32.5Mbps	-2.35		Pass

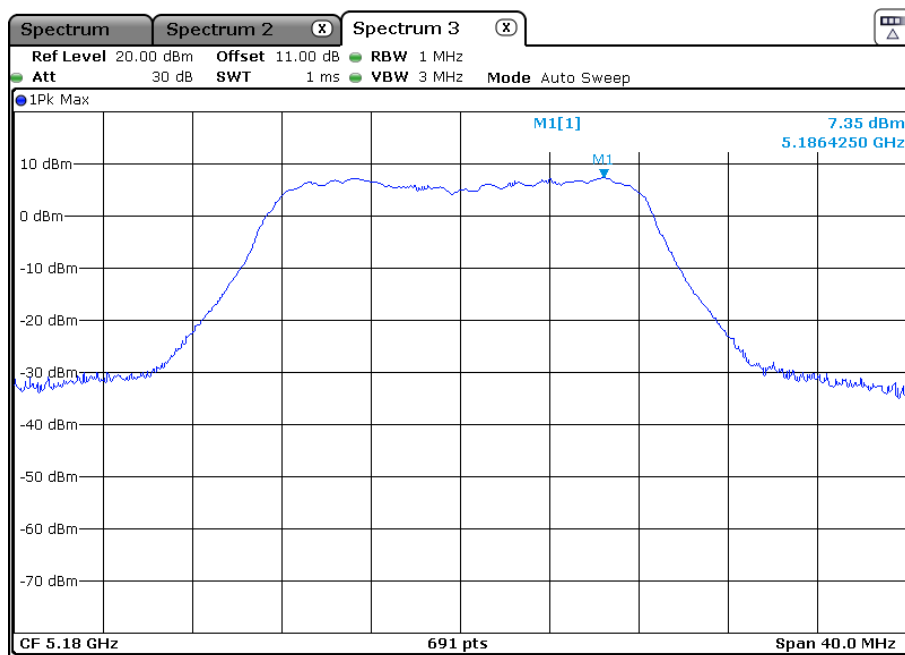
TEST REPORT

Result plot as follows:

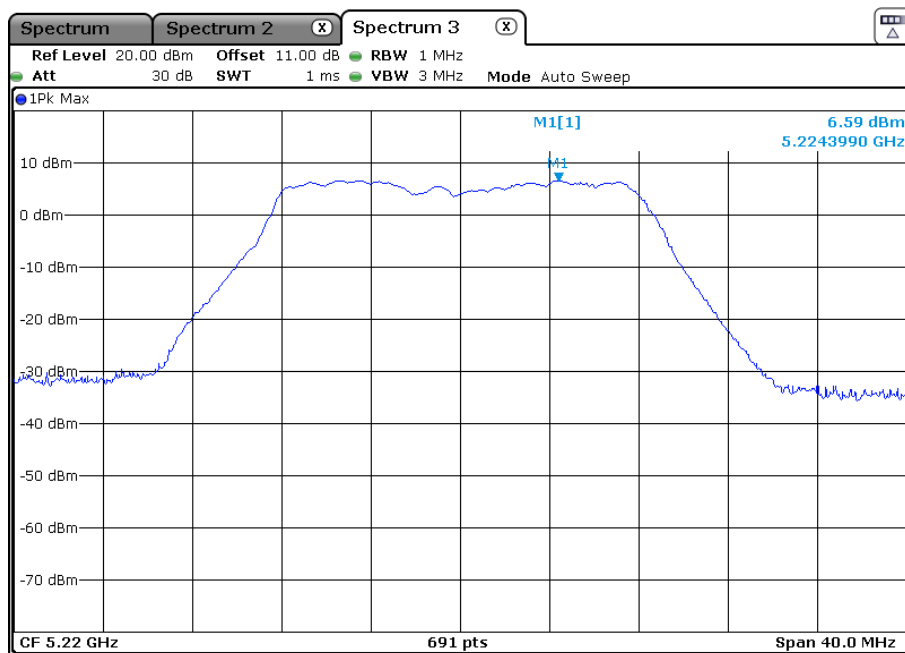
Band I 5150 MHz to 5250 MHz

802.11a(20) mode

Channel 36: 5180 MHz:

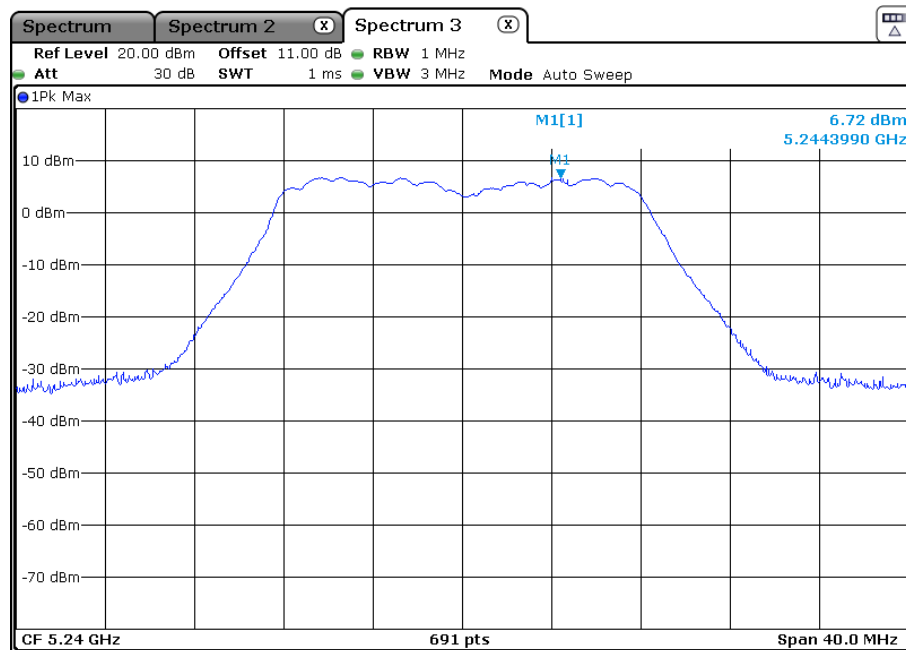


Channel 44: 5220 MHz:



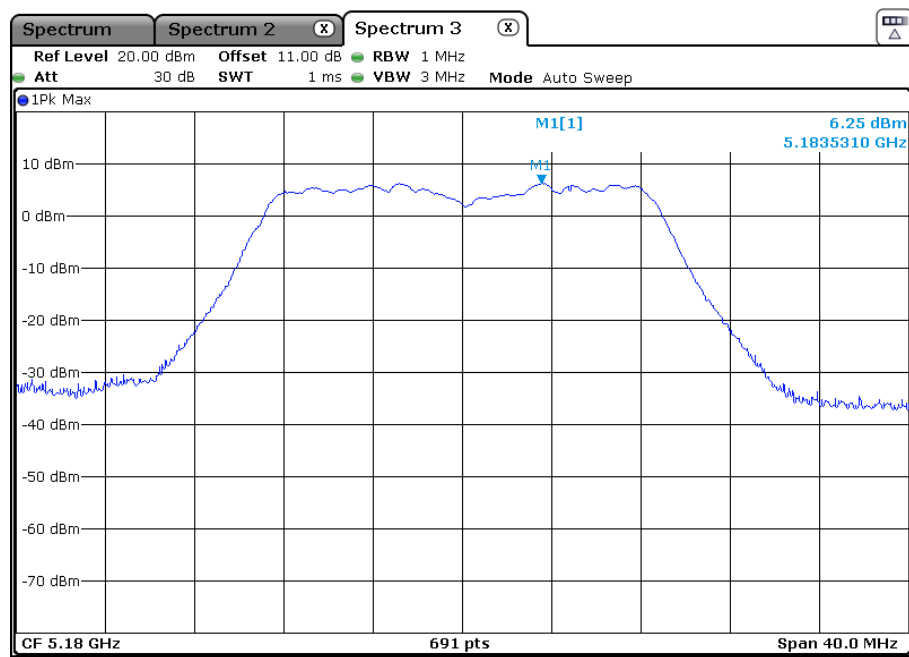
Channel 48: 5240 MHz:

TEST REPORT



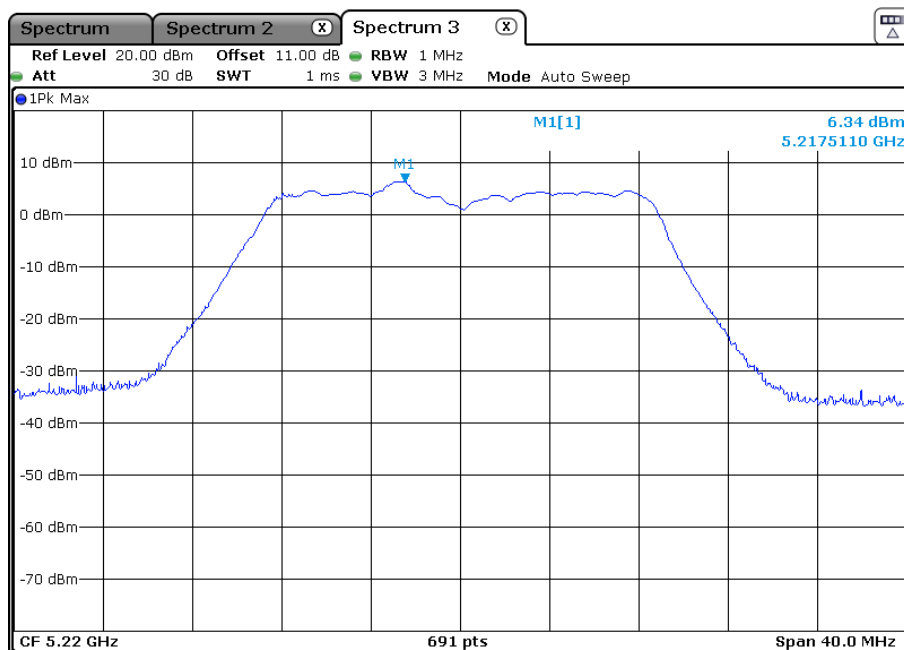
802.11an(HT 20)

Channel 36: 5180 MHz:

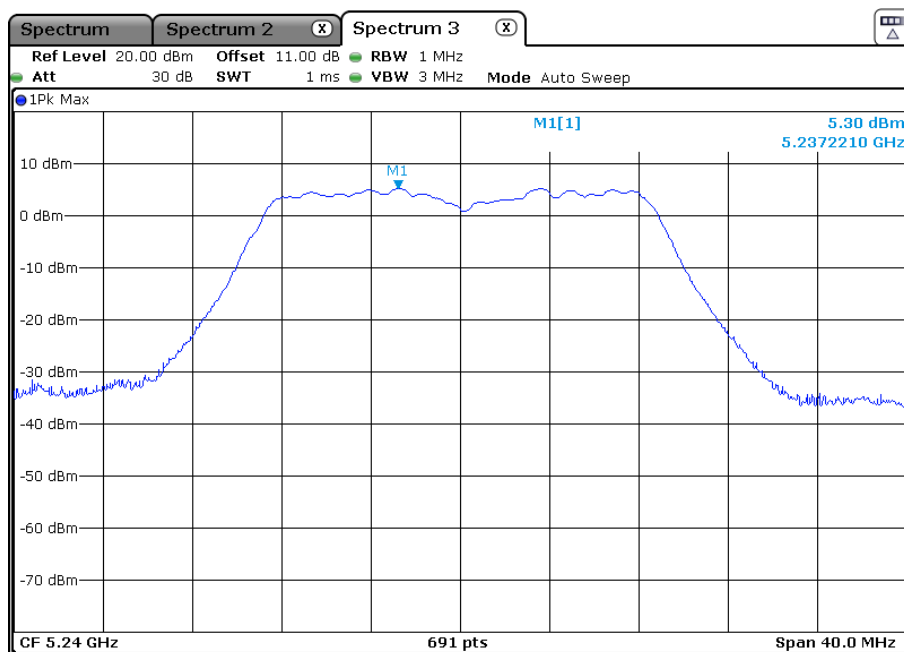


Channel 44: 5220 MHz:

TEST REPORT



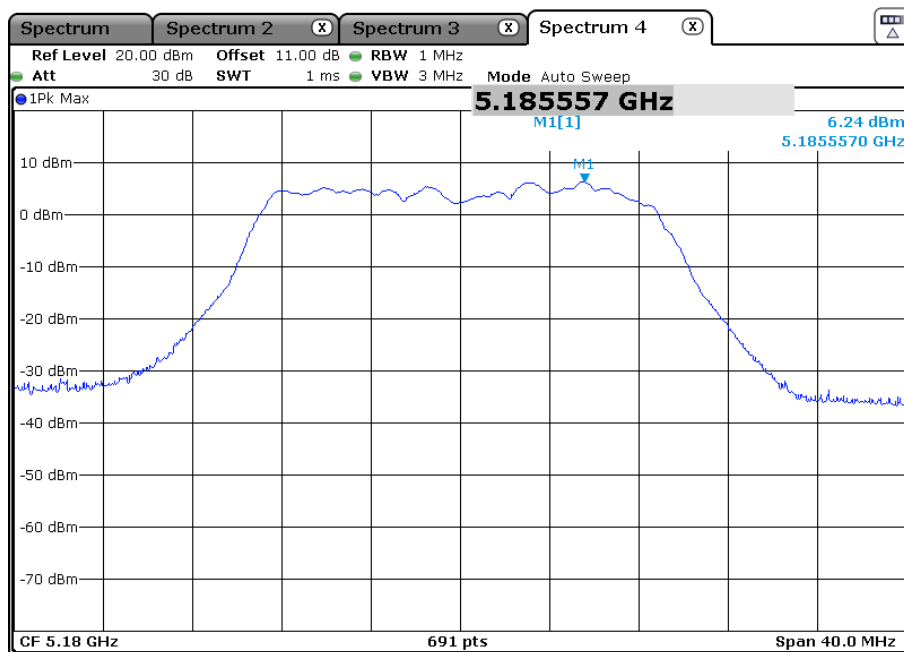
Channel 48: 5240 MHz:



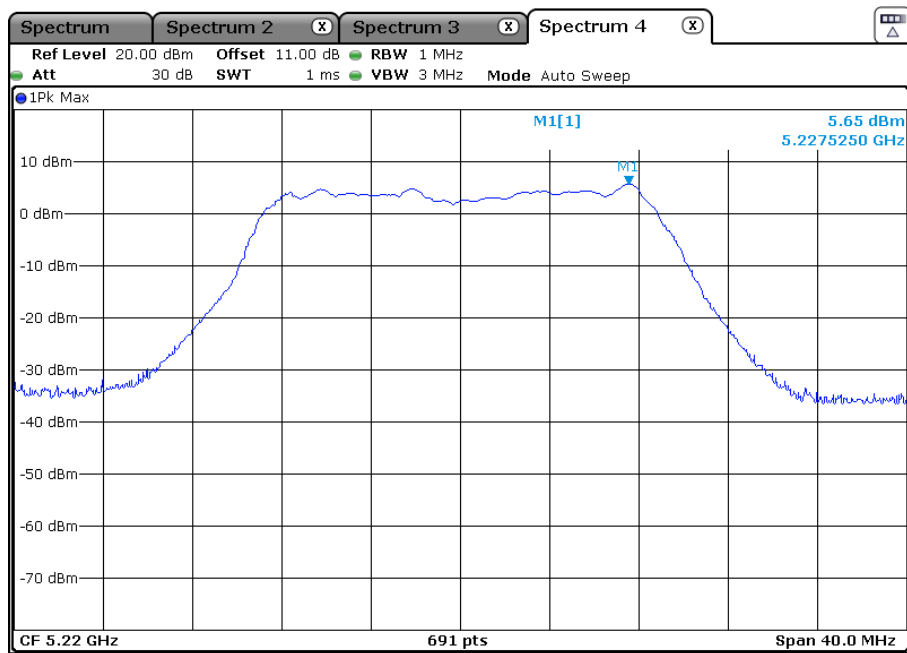
802.11ac(HT 20)

Channel 36: 5180 MHz:

TEST REPORT

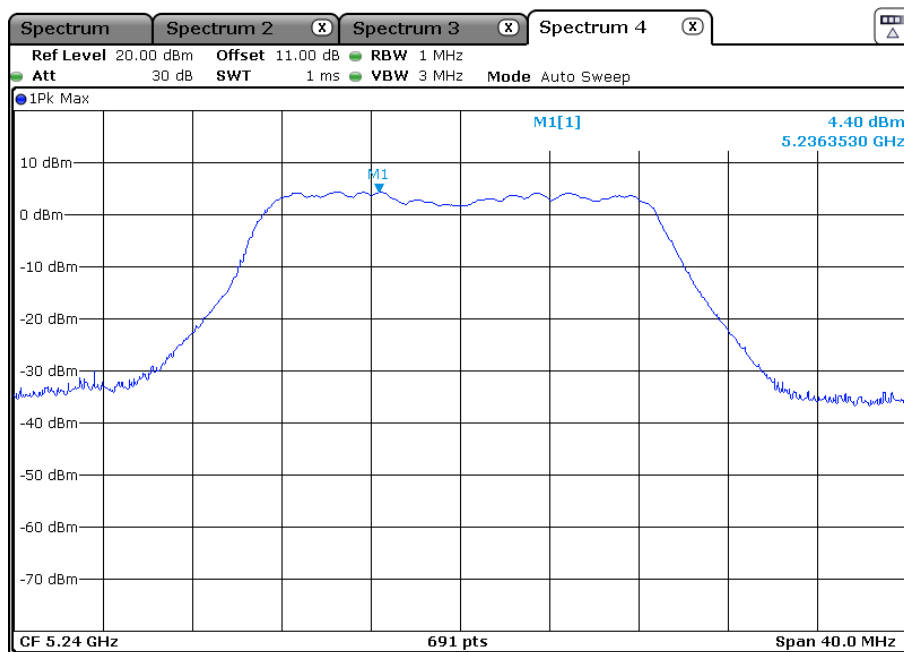


Channel 44: 5220 MHz:



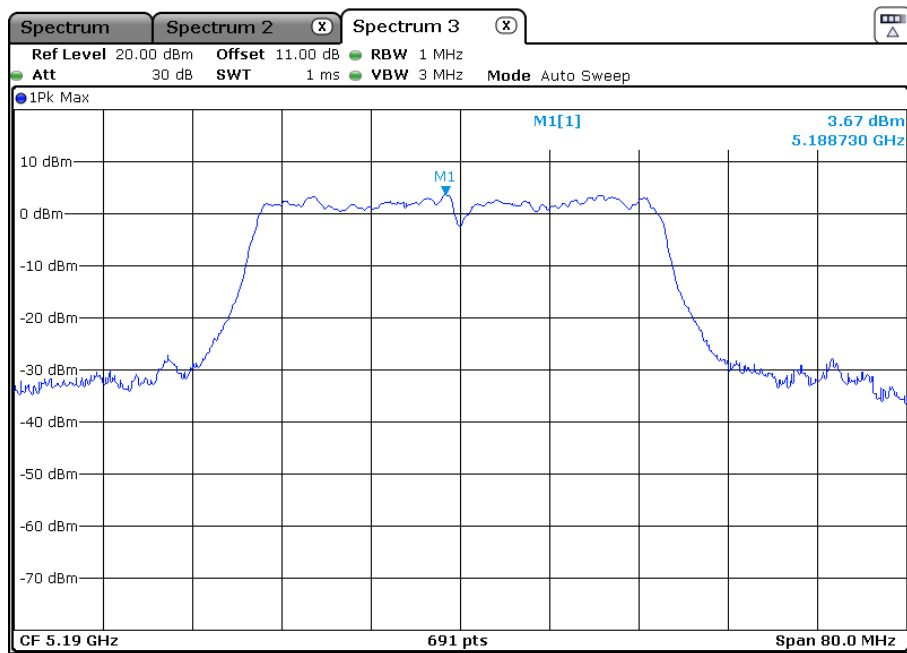
Channel 48: 5240 MHz:

TEST REPORT



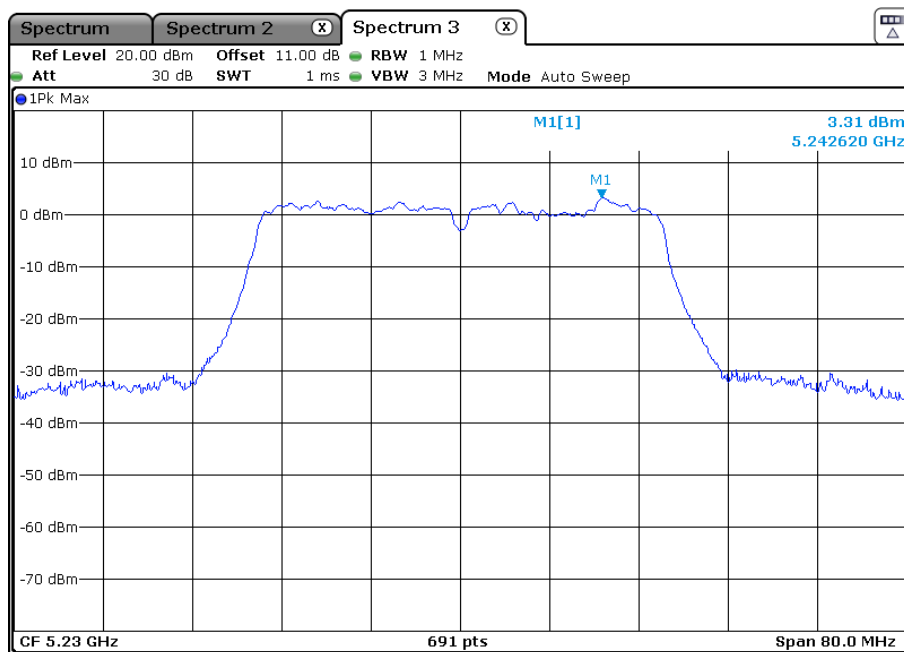
802.11an(HT 40)

Channel 38: 5190 MHz:



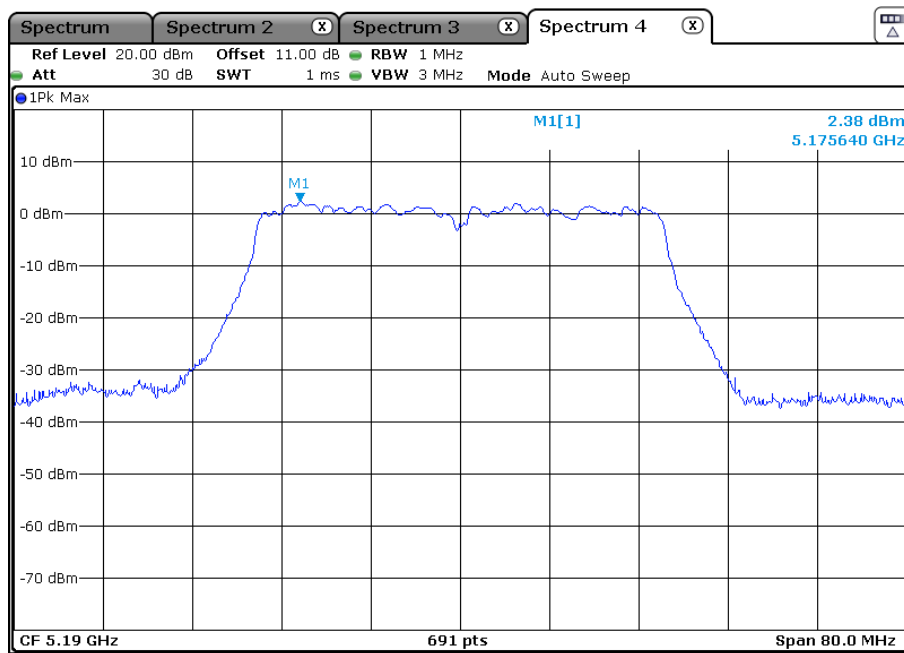
Channel 46: 5230 MHz:

TEST REPORT



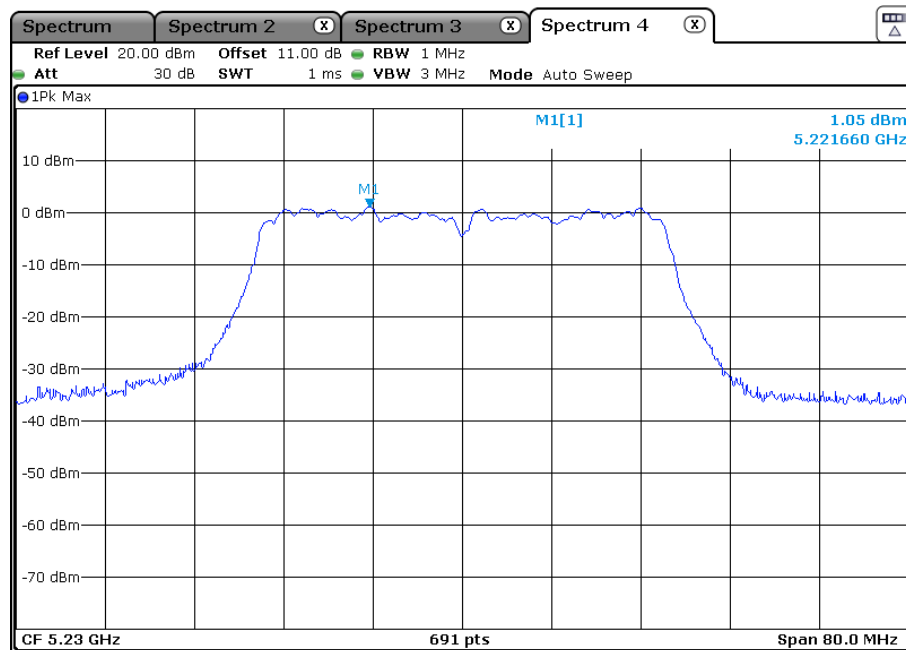
802.11ac(HT 40)

Channel 38: 5190 MHz:



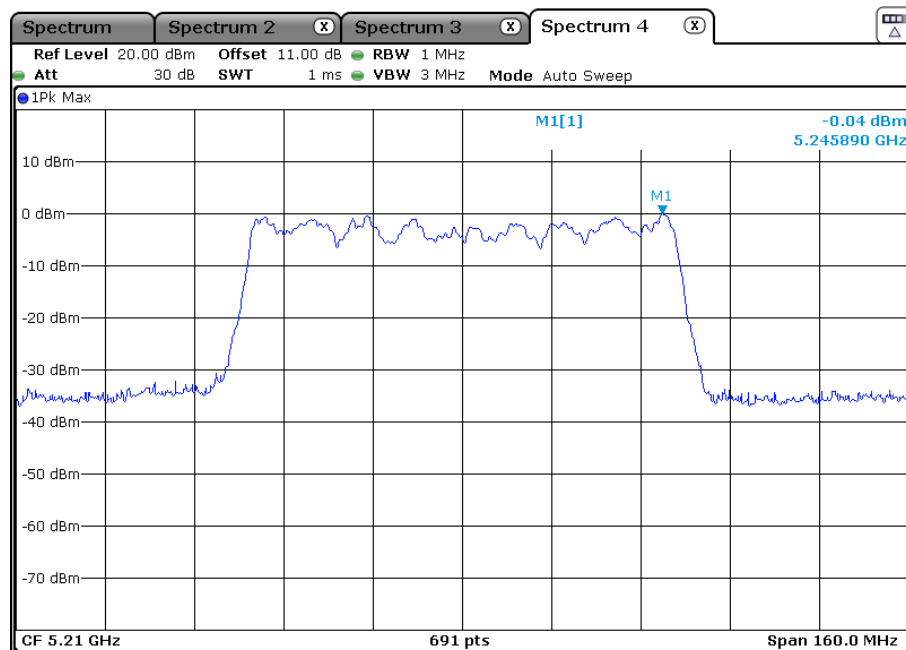
Channel 46: 5230 MHz:

TEST REPORT



802.11ac(HT 80)

Channel 42: 5210 MHz:



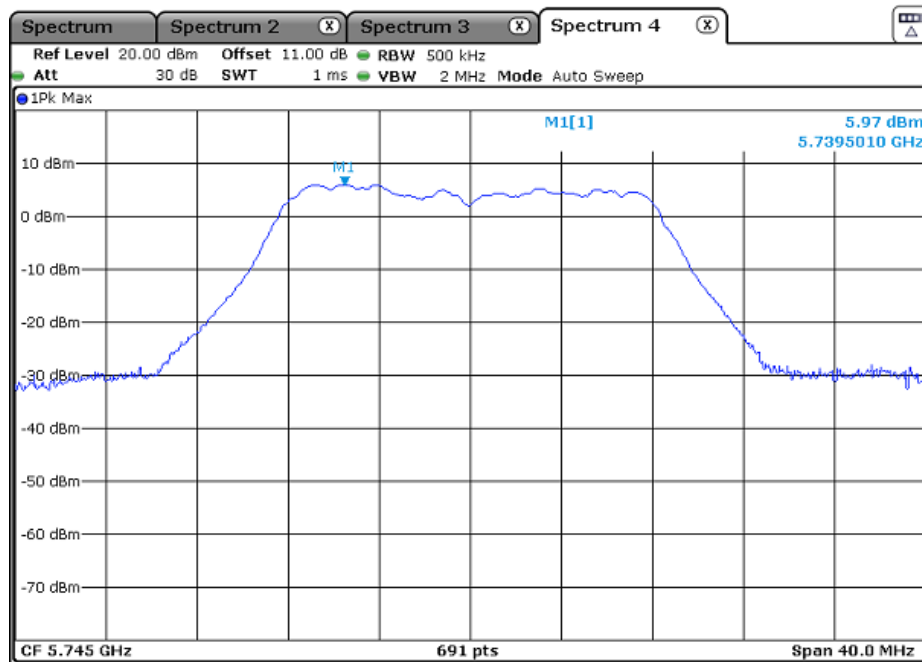
Result plot as follows:

Band IV 5725 MHz to 5850 MHz

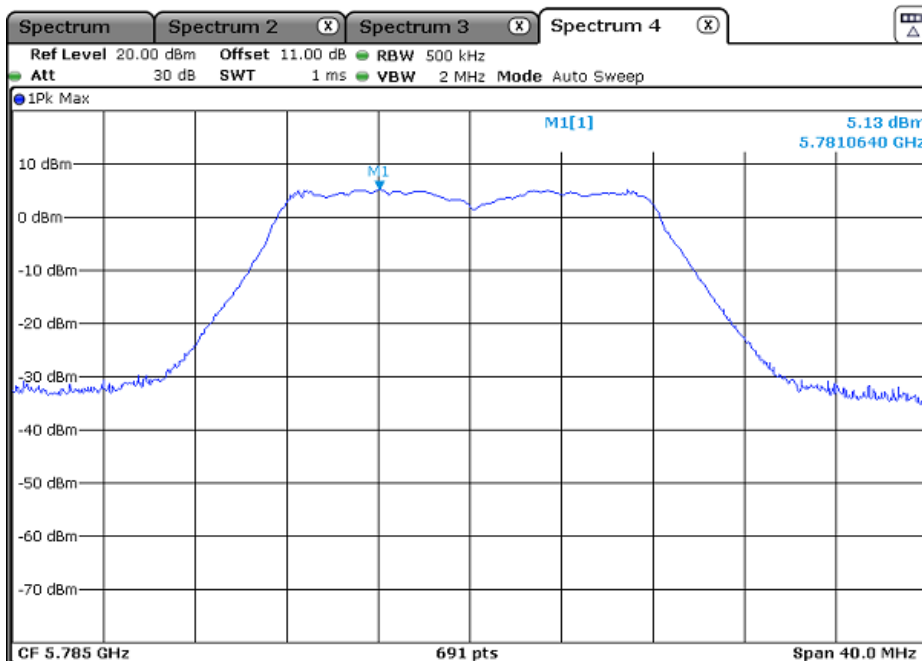
802.11a(20) mode

Channel 149: 5745 MHz:

TEST REPORT

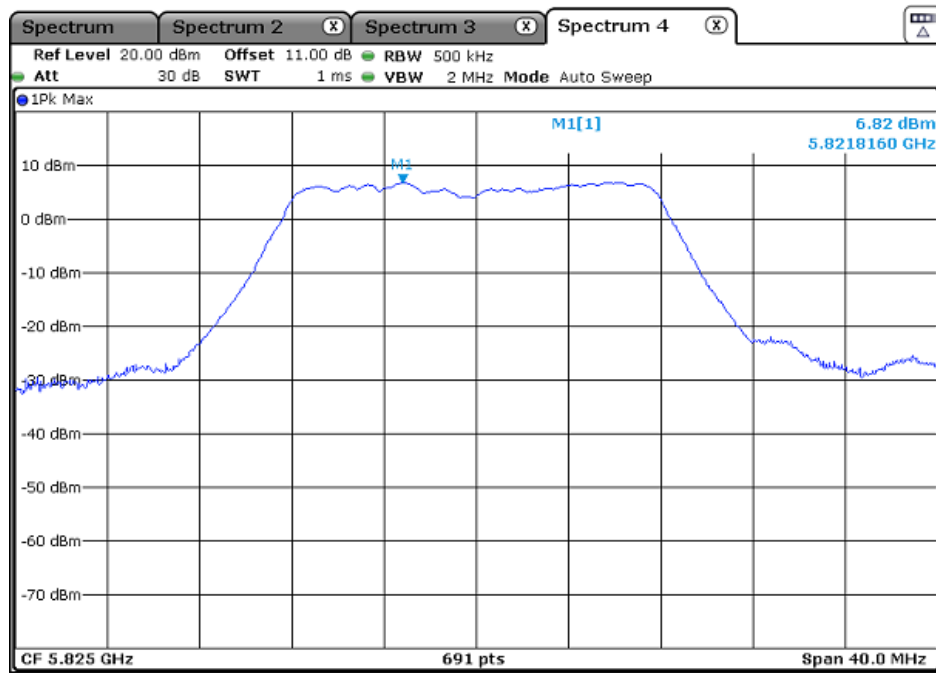


Channel 157: 5785 MHz:



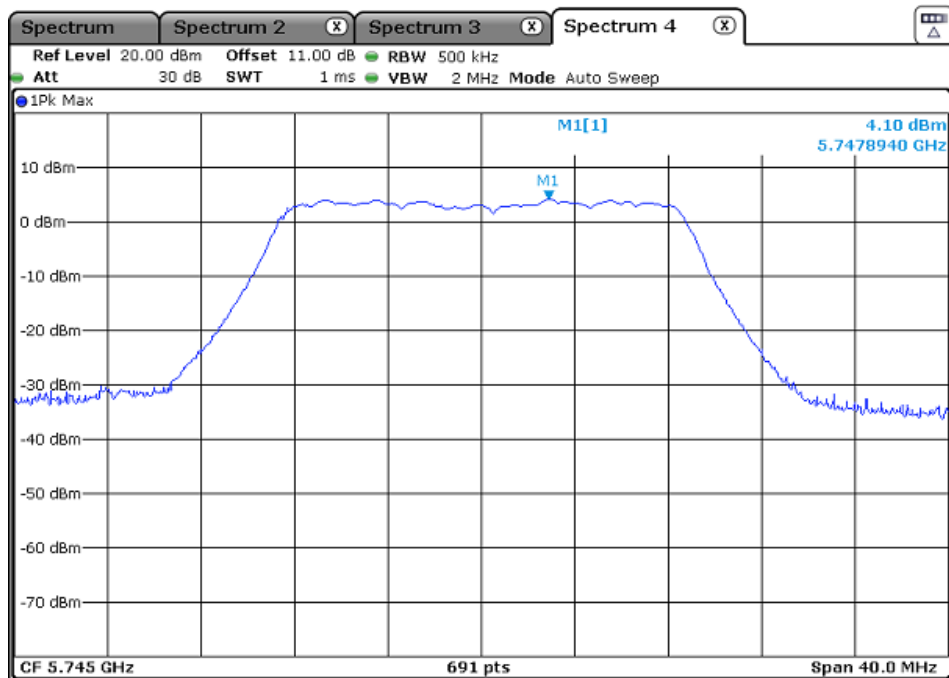
Channel 165: 5825 MHz:

TEST REPORT



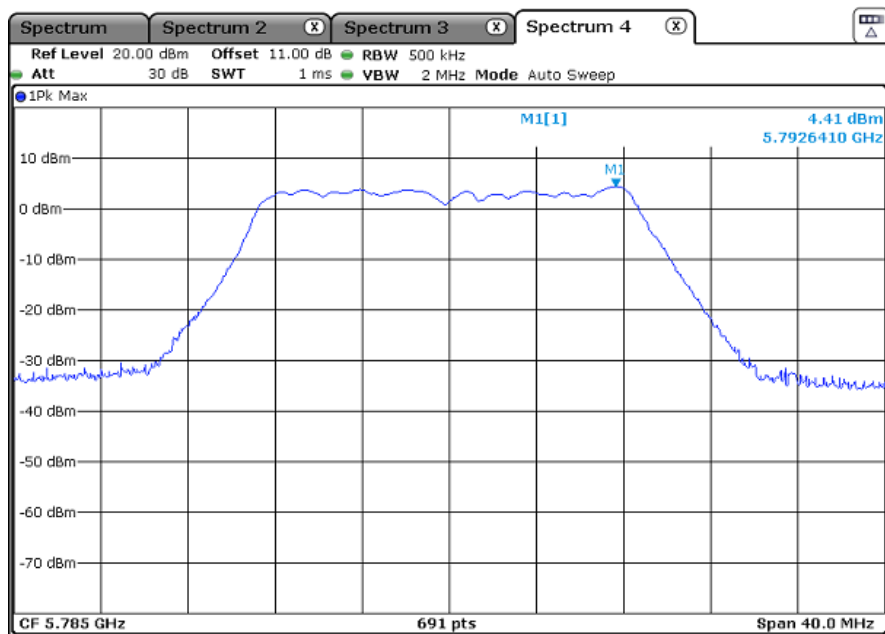
802.11an(HT 20)

Channel 149: 5745 MHz:

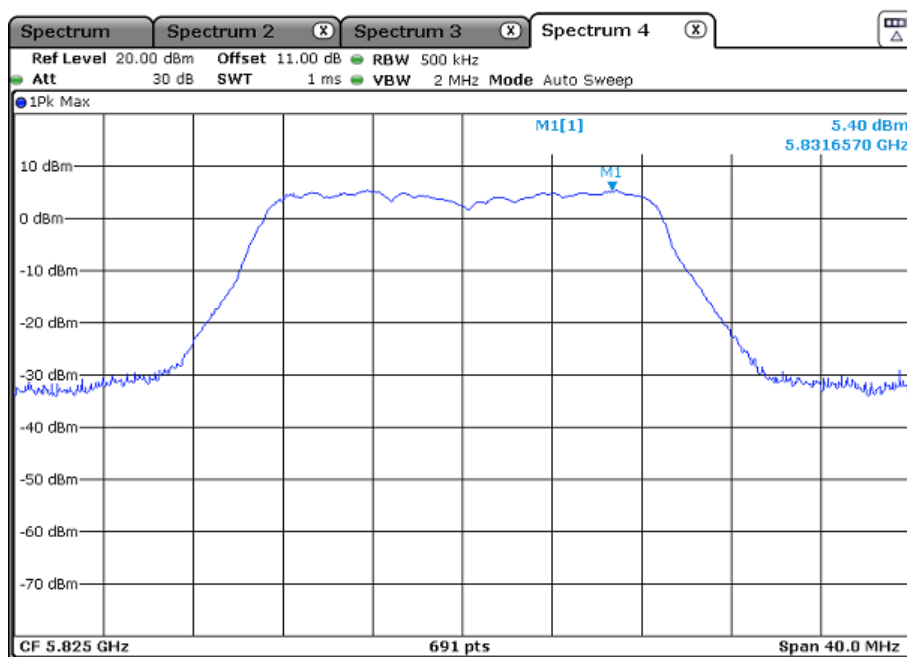


Channel 157: 5785 MHz:

TEST REPORT



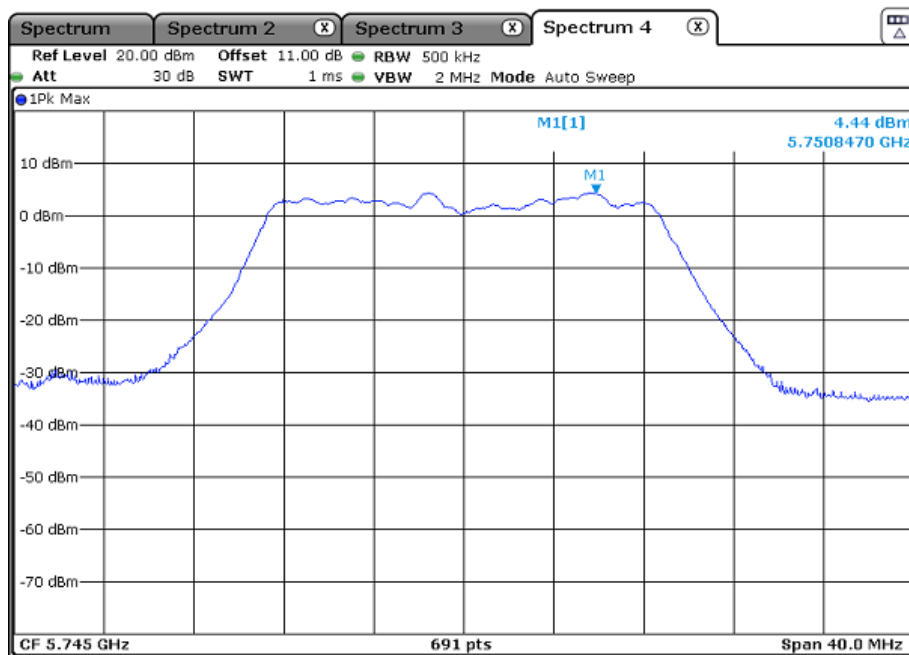
Channel 165: 5825 MHz:



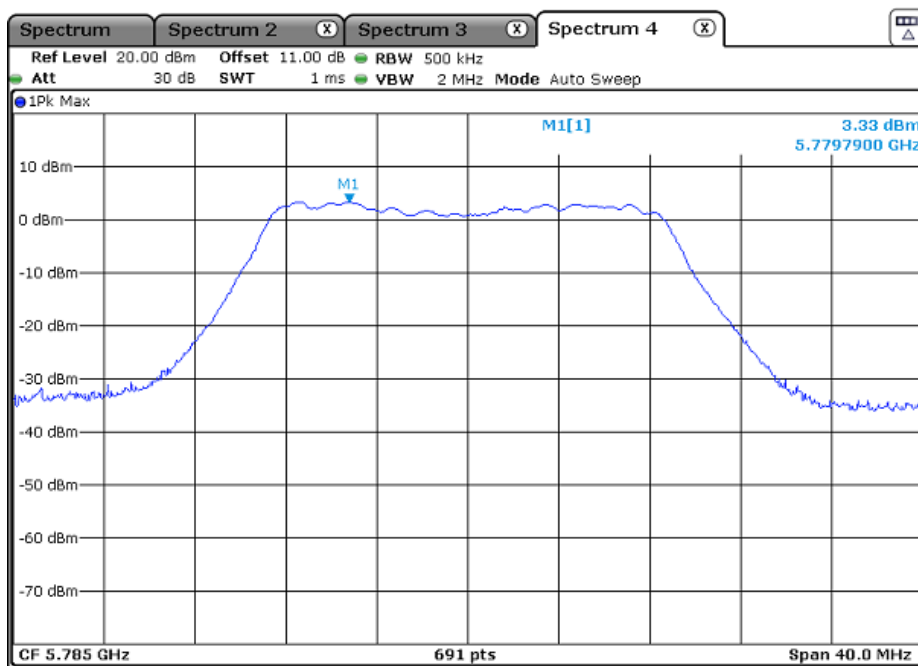
802.11ac(HT 20)

Channel 149: 5745 MHz:

TEST REPORT



Channel 157: 5785 MHz:



Channel 165: 5825 MHz:

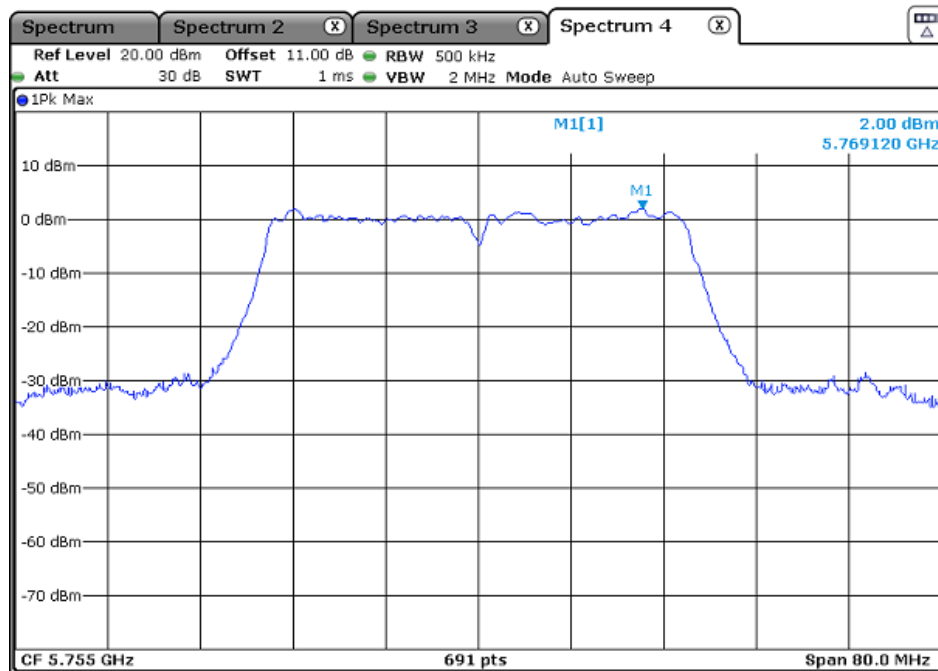
Spectrum Analyzer Settings:

- Ref Level: 20.00 dBm
- Offset: 11.00 dB
- RBW: 500 kHz
- Att: 30 dB
- SWT: 1 ms
- VBW: 2 MHz
- Mode: Auto Sweep

Signal Details:

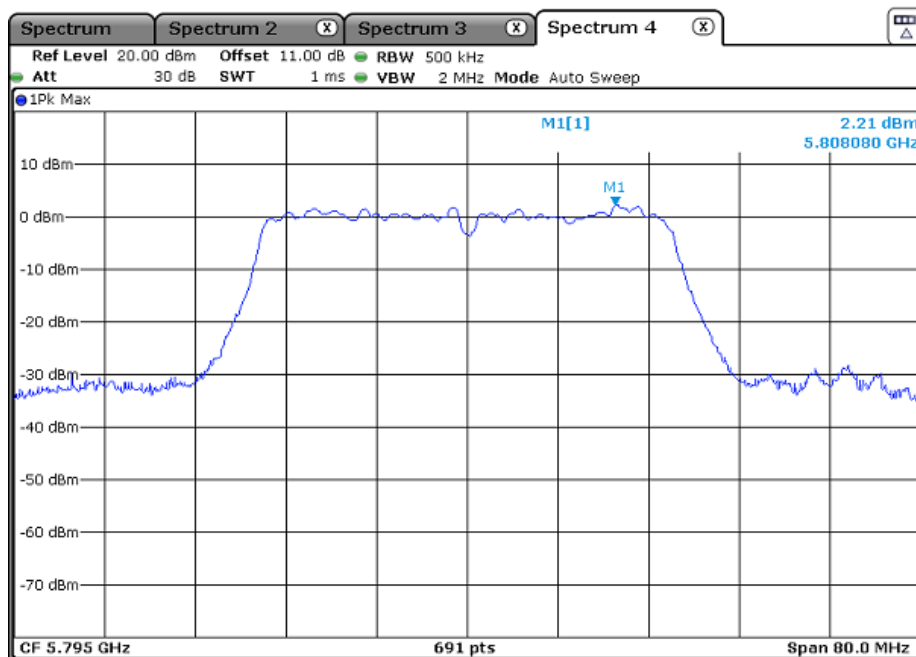
- 1Pk Max
- M1[1]
- 4.99 dBm
- 5.8213530 GHz
- P1
- CF 5.825 GHz
- 691 pts
- Span 40.0 MHz

Channel 151: 5755 MHz:



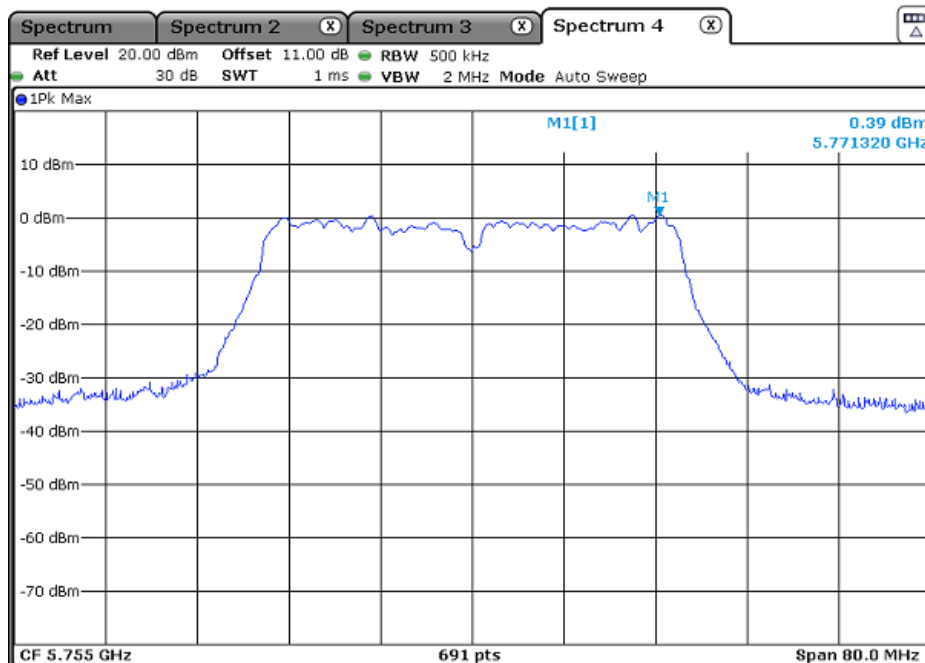
FCC WIFI 5G-f

TEST REPORT



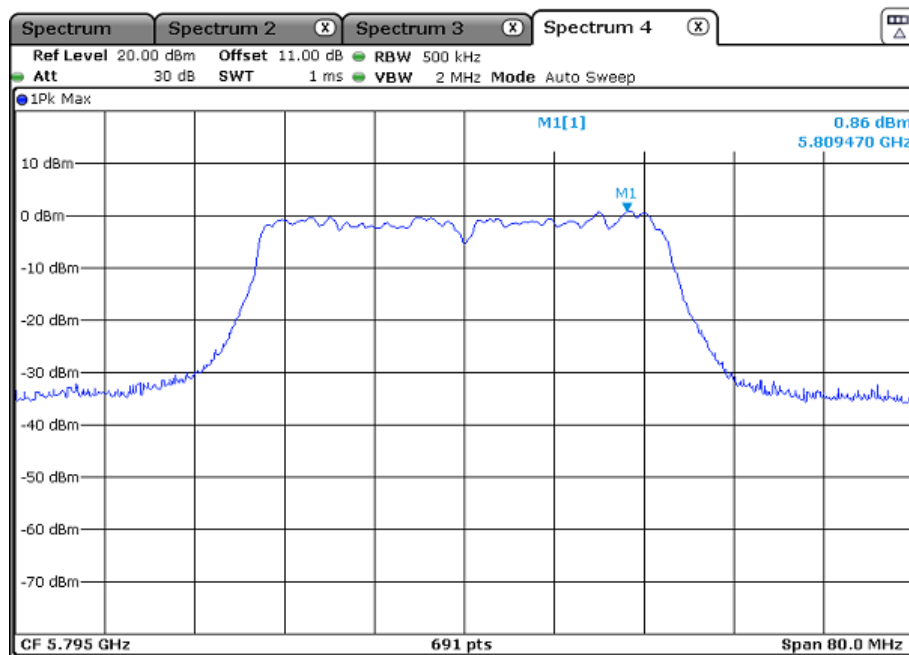
802.11ac(HT 40)

Channel 151: 5755 MHz:



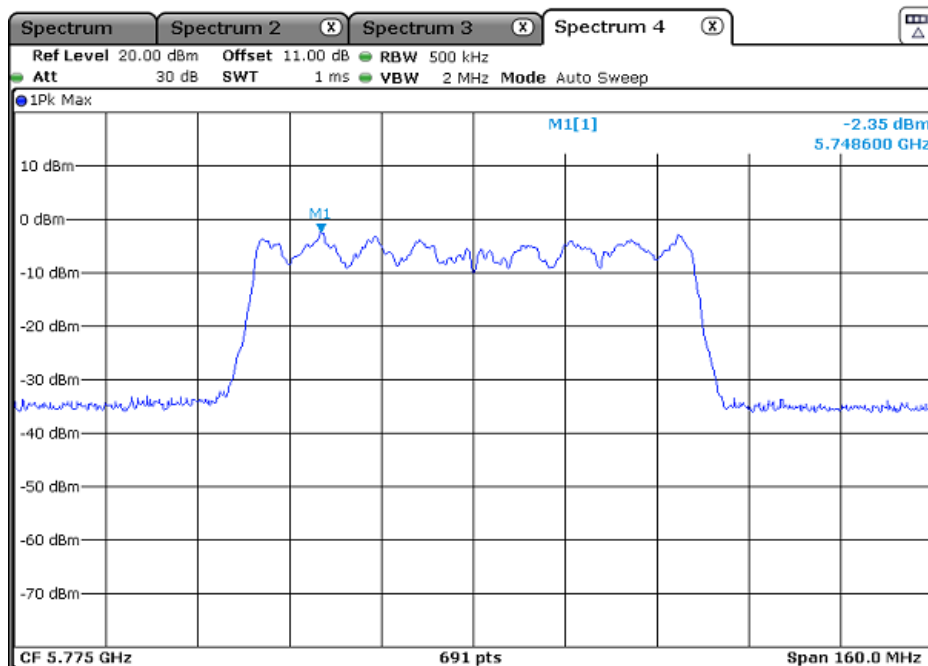
Channel 159: 5795 MHz:

TEST REPORT



802.11ac(HT 80)

Channel 155: 5775 MHz:



4.7 Radiated Spurious Emissions

Test Requirement:

FCC Part 15 E clause 15.407(b)

In addition, radiated emissions which fall in the restricted bands,

TEST REPORT

as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Test Method:

FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04, Clause G

Test Status:

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test site:

Measurement Distance: 3m (Semi-Anechoic Chamber)

Limit:

40.0 dB μ V/m between 30MHz & 88MHz;
43.5 dB μ V/m between 88MHz & 216MHz;
46.0 dB μ V/m between 216MHz & 960MHz;
54.0 dB μ V/m above 960MHz.

Detector:

For Peak and Quasi-Peak value:

RBW =

1 MHz for $f \geq 1$ GHz,
200 Hz for 9 kHz to 150 kHz
9 kHz for 150 kHz to 30 MHz
120 kHz for 30 MHz to 1GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak for $f \geq 1$ GHz, QP for $f < 1$ GHz

Trace = max hold

For AV value:

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW=10 Hz

Sweep = auto

Trace = max hold

Field Strength Calculation:

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below:

FS = RA + AF + CF - AG + PD + AV

FS = RA + Correct Factor + AV

Where:

FS = Field Strength in dB μ V/m

RA = Receiver Amplitude (including preamplifier) in dB μ V

AF = Antenna Factor in dB

CF = Cable Attenuation Factor in dB

AG = Amplifier Gain in dB

PD = Pulse Desensitization in dB

AV = Average Factor in -dB

Correct Factor = AF + CF - AG + PD

TEST REPORT

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD + AV$$

Assume a receiver reading of 62.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dBμV/m.

$$RA = 62.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$PD = 0 \text{ dB}$$

$$AV = -10 \text{ dB}$$

$$\text{Correct Factor} = 7.4 + 1.6 - 29.0 + 0 = -20 \text{ dB}$$

$$FS = 62 + (-20) + (-10) = 32 \text{ dB}\mu\text{V/m}$$

TEST REPORT

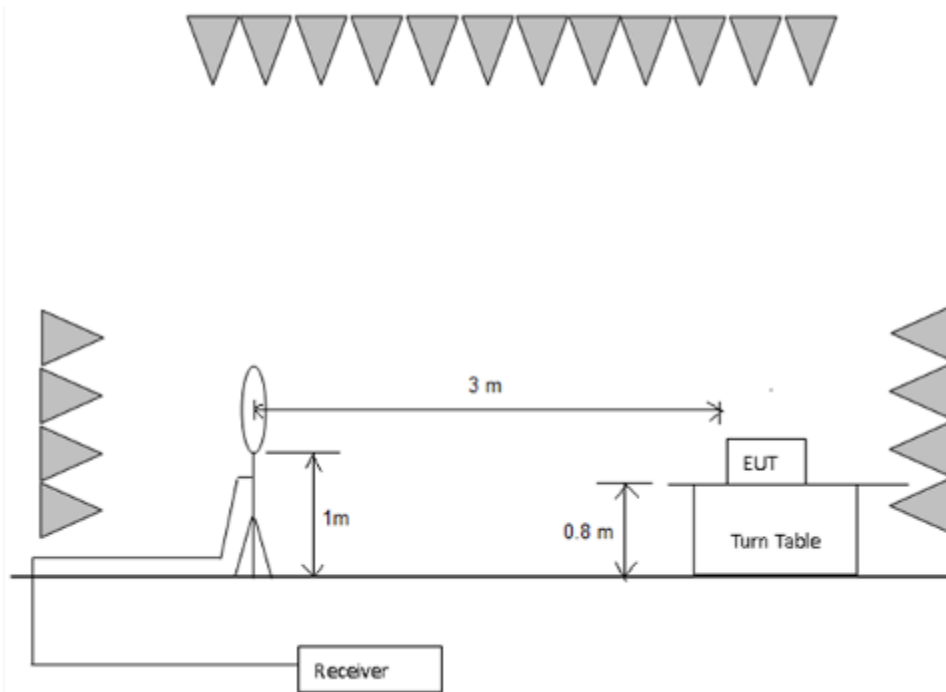
Section 15.205 Restricted bands of operation.

(a) Except as shown in paragraph (d) of this section. Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
10.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	
13.36 - 13.41	322 - 335.4		

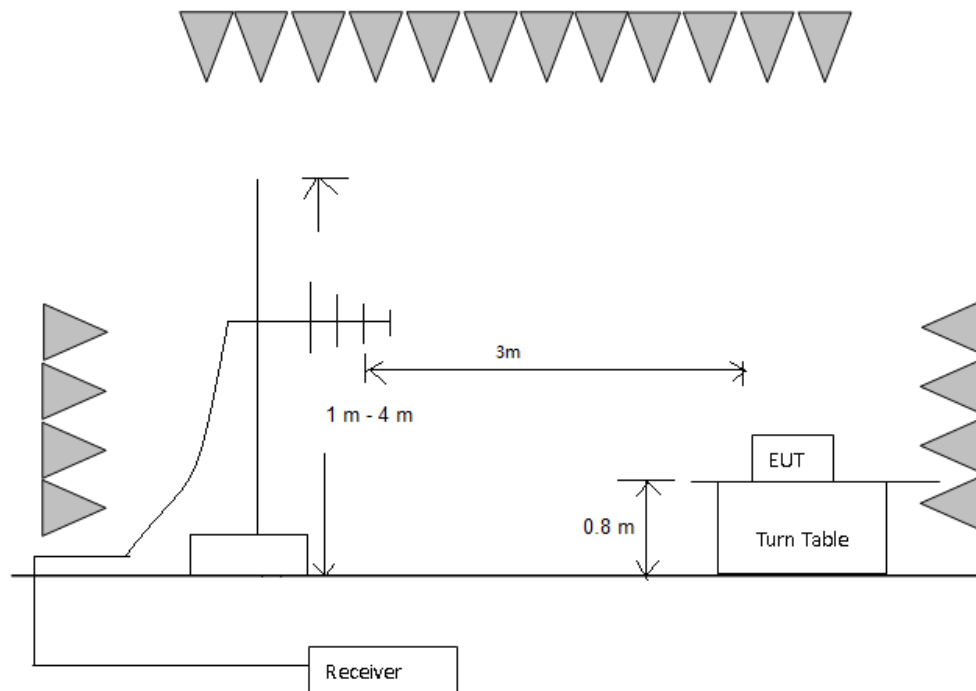
Test Configuration:

1) 9 kHz to 30 MHz emissions:

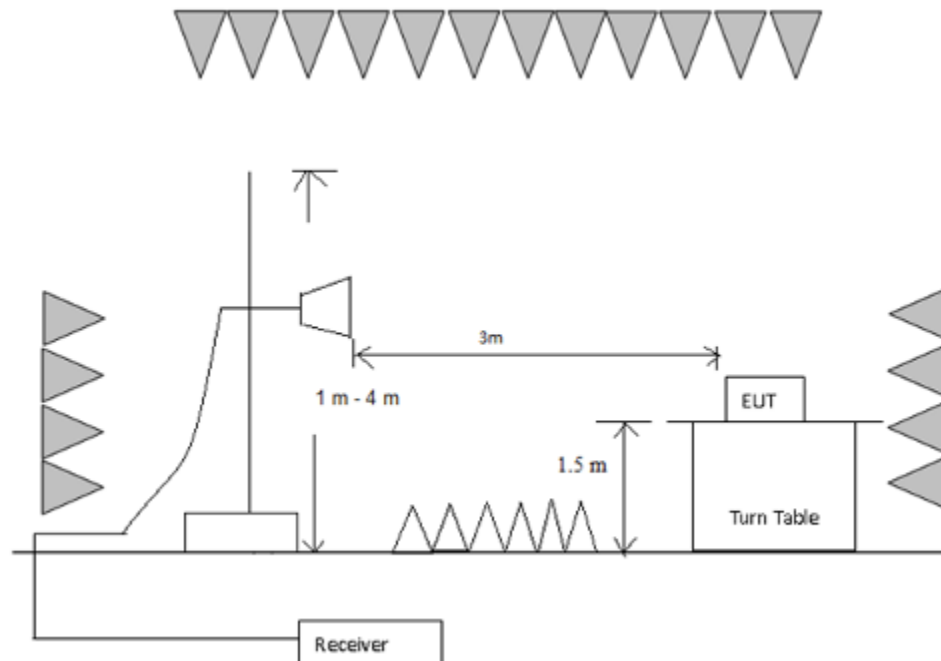


2) 30 MHz to 1 GHz emissions:

TEST REPORT



3) 1 GHz to 40 GHz emissions:



Test Procedure:

Test site with RF absorbing material covering the ground plane that met the site validation criterion called out in CISPR 16-1-4:2010 was used to perform radiated emission test above 1 GHz.

The receiver was scanned from 9 kHz to 25 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators,

TEST REPORT

measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

Used Test Equipment List:

3m Semi-Anechoic Chamber, EMI Test Receiver (9 kHz~7 GHz), Signal and Spectrum Analyzer (10 Hz~40 GHz), Loop antenna (9 kHz-30 MHz). TRILOG Super Broadband test Antenna(30 MHz-3 GHz) (RX), Bouble-Ridged Waveguide Horn Antenna (800 MHz-18 GHz)(RX) and High Frequency Antenna & preamplifier(18 GHz~26.5 GHz) (RX). Refer to Clause 5 Test Equipment List for details.

Pre-test the all model, find worse case in model UTi320V+.

9 kHz~30 MHz Field Strength of Unwanted Emissions for Quasi-Peak Measurement

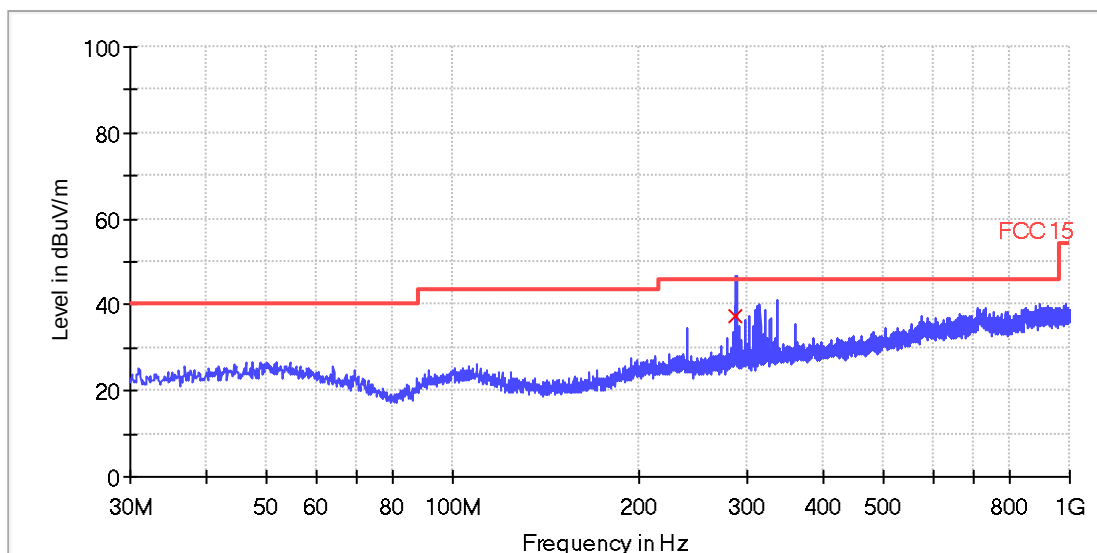
The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

30 MHz~1 GHz Spurious Emissions .Quasi-Peak Measurement.

Pretest on the lowest channel, middle channel and highest channel for each mode of the brand I and brand IV.

The below data test on mode WIFI an (HT20) channel 44: 5220MHz was the worst case of all test record.

Horizontal:



QP

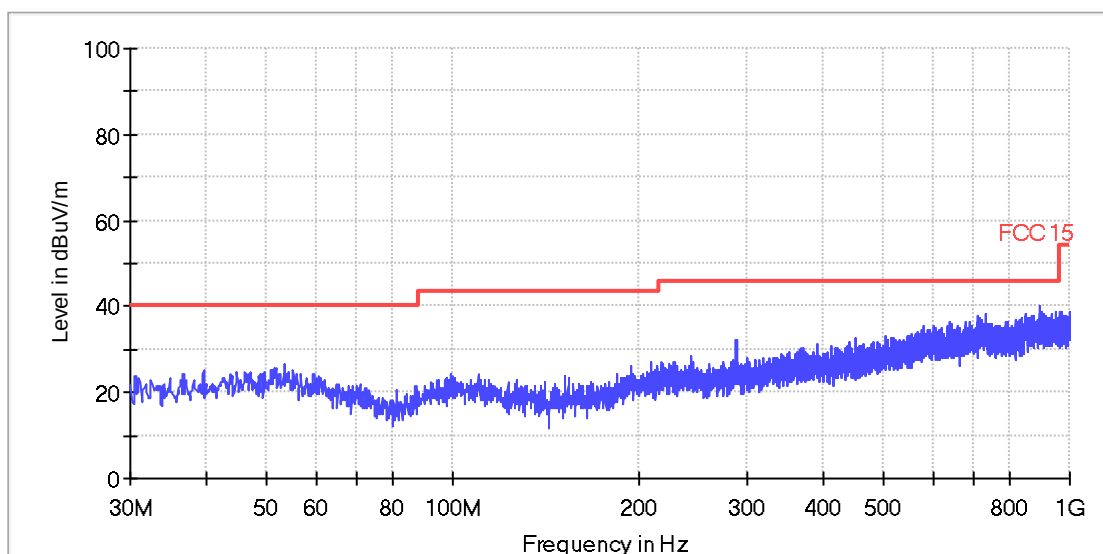
Frequency (MHz)	Quasi Peak (dBuV/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
287.920000	37.6	120.000	H	20.8	8.4	46.0

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Remark:

1. Corr. (dB) = Antenna Factor (dB) + Cable Loss (dB)
2. Quasi Peak (dBμV/m) = Corr. (dB) + Read Level (dBμV)
3. Margin (dB) = Limit QPK (dBμV/m) – Quasi Peak (dBμV/m)

Vertical:



All emission levels are more than 6 dB below the limit.

1~40 GHz Radiated Emissions.

Result follows:

Band I 5150 MHz to 5250 MHz

802.11a(20) mode

Channel 36: 5180 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	58.5	-11.6	46.9	74	H
2377.0	53.8	-8.2	45.6	74	H
1331.5	52.4	-12.8	39.6	74	V
2058.3	49.6	-9.4	40.2	68.2	V

TEST REPORT

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2377.0	--	-8.2	--	54	H
1331.5	--	-12.8	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 44: 5220 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	56.2	-11.6	44.6	74	H
2374.9	53.9	-8.2	45.7	74	H
1665.1	55.2	-11.2	44.0	74	V
2374.9	51.3	-8.2	43.1	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H
1665.1	--	-11.2	--	54	V
2374.9	--	-8.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 48: 5240 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
2374.9	59.3	-8.2	51.1	74	H
10490.3	44.1	6.9	51.0	68.2	H
1665.1	52.9	-11.2	41.7	74	V
10479.6	45.9	6.9	52.8	68.2	V

AV Measurement:

Frequency	AV Reading	Correction	AV Emission	AV	Antenna
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TEST REPORT

(MHz)	Level (dBμV)	factors (dB/m)	Level (dBμV/m)	Limit (dBμV/m)	polarization
2374.9	--	-8.2	--	54	H
1665.1	--	-11.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11an(HT 20)

Channel 36: 5180 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	54.5	-11.6	42.9	74	H
2374.9	55.9	-8.2	47.7	74	H
1584.4	54.1	-11.6	42.5	74	V
2372.8	53.5	-8.2	45.3	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H
1584.4	--	-11.6	--	54	V
2372.8	--	-8.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 44: 5220 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	56.3	-11.6	44.7	74	H
2374.9	54.7	-8.2	46.5	74	H
1582.3	53.2	-11.6	41.6	74	V
10443.5	44.2	6.9	51.1	68.2	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H

TEST REPORT

2374.9	--	-8.2	--	54	H
1582.3	--	-11.6	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 48: 5240 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1707.6	60.6	-10.9	49.7	74	H
2374.9	52.1	-8.2	43.9	74	H
1495.1	54.6	-12.0	42.6	74	V
2385.5	49.5	-8.2	41.3	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1707.6	--	-10.9	--	54	H
2374.9	--	-8.2	--	54	H
1495.1	--	-12.0	--	54	V
2385.5	--	-8.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11ac(HT 20)

Channel 36: 5180 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1741.6	58.5	-10.8	47.7	68.2	H
2374.9	54.1	-8.2	45.9	74	H
1582.3	53.4	-11.6	41.8	74	V
2827.5	47.0	-6.6	40.4	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
2374.9	--	-8.2	--	54	H
1582.3	--	-11.6	--	54	V

TEST REPORT

2827.5	--	-6.6	--	54	V
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Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 44: 5220 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	56.8	-11.6	45.2	74	H
2374.9	52.7	-8.2	44.5	74	H
1663.0	53.0	-11.2	41.8	74	V
1996.6	50.2	-9.7	40.5	68.2	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H
1663.0	--	-11.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 48: 5240 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	56.6	-11.6	45.0	74	H
2377.0	54.9	-8.2	46.7	74	H
1663.0	52.2	-11.2	41.0	74	V
2377.0	49.8	-8.2	41.6	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2377.0	--	-8.2	--	54	H
1663.0	--	-11.2	--	54	V
2377.0	--	-8.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

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802.11an(HT 40)

Channel 38: 5190 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	56.8	-11.6	45.2	74	H
2374.9	51.7	-8.2	43.5	74	H
1584.4	54.5	-11.6	42.9	74	V
2377.0	53.2	-8.2	45.0	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H
1584.4	--	-11.6	--	54	V
2377.0	--	-8.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 46: 5230 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	58.5	-11.6	46.9	74	H
2374.9	56.8	-8.2	48.6	74	H
1665.1	52.7	-11.2	41.5	74	V
2374.9	50.3	-8.2	42.1	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H
1665.1	--	-11.2	--	54	V
2374.9	--	-8.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

TEST REPORT

802.11ac(HT 40)

Channel 38: 5190 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	56.0	-11.6	44.4	74	H
2377.0	52.3	-8.2	44.1	74	H
1656.6	53.3	-11.2	42.1	74	V
2374.9	49.6	-8.2	41.4	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2377.0	--	-8.2	--	54	H
1656.6	--	-11.2	--	54	V
2374.9	--	-8.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 46: 5230 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1737.4	58.0	-10.8	47.2	68.2	H
2360.0	54.6	-8.3	46.3	74	H
1660.9	52.4	-11.2	41.2	74	V
2374.9	49.1	-8.2	40.9	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
2360.0	--	-8.3	--	54	H
1660.9	--	-11.2	--	54	V
2374.9	--	-8.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

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TEST REPORT

Channel 42: 5210 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	57.4	-11.6	45.8	74	H
2374.9	54.7	-8.2	46.5	74	H
1658.8	55.3	-11.2	44.1	68.2	V
2659.6	49.7	-7.2	42.5	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H
2659.6	--	-7.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

TEST REPORT

Result as follows:

Band IV 5725 MHz to 5850 MHz

802.11a(20) mode

Channel 149: 5745 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1737.4	58.4	-10.8	47.6	68.2	H
2370.6	55.4	-8.2	47.2	74	H
1665.1	53.0	-11.2	41.8	74	V
3892.1	44.4	-3.1	41.3	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
2370.6	--	-8.2	--	54	H
1665.1	--	-11.2	--	54	V
3892.1	--	-3.1	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 157: 5785 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1584.4	57.2	-11.6	45.6	74	H
2374.9	57.5	-8.2	49.3	74	H
1665.1	50.1	-11.2	38.9	74	V
2374.9	50.5	-8.2	42.3	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1584.4	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H
1665.1	--	-11.2	--	54	V
2374.9	--	-8.2	--	54	V

TEST REPORT

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 165: 5825 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	57.5	-11.6	45.9	74	H
2370.6	56.1	-8.2	47.9	74	H
1663.0	53.7	-11.2	42.5	74	V
2436.5	48.9	-8.0	40.9	68.2	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2370.6	--	-8.2	--	54	H
1663.0	--	-11.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11an(HT 20)

Channel 149: 5745 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1584.4	58.2	-11.6	46.6	74	H
2374.9	53.2	-8.2	45.0	74	H
1327.3	52.7	-12.8	39.9	74	V
2374.9	50.9	-8.2	42.7	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1584.4	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H
1327.3	--	-12.8	--	54	V
2374.9	--	-8.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

TEST REPORT

Channel 157: 5785 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	57.6	-11.6	46.0	74	H
2374.9	55.9	-8.2	47.7	74	H
1660.9	52.5	-11.2	41.3	74	V
2655.4	49.7	-7.2	42.5	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H
1660.9	--	-11.2	--	54	V
2655.4	--	-7.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 165: 5825 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	58.3	-11.6	46.7	74	H
2374.9	56.7	-8.2	48.5	74	H
1584.3	53.0	-11.6	41.4	74	V
5496.5	45.2	-0.0	45.2	68.2	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H
1584.3	--	-11.6	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11ac(HT 20)

Channel 149: 5745 MHz:

TEST REPORT

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1584.4	60.8	-11.6	49.2	74	H
2372.8	52.5	-8.2	44.3	74	H
1493.0	52.1	-12.0	40.1	74	V
2829.6	48.4	-6.5	41.9	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1584.4	--	-11.6	--	54	H
2372.8	--	-8.2	--	54	H
1493.0	--	-12.0	--	54	V
2829.6	--	-6.5	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 157: 5785 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1584.4	63.1	-11.6	51.5	74	H
2374.9	53.3	-8.2	45.1	74	H
1996.6	50.8	-9.7	41.1	68.2	V
2164.5	50.2	-9.0	41.2	68.4	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1584.4	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 165: 5825 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
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TEST REPORT

1582.3	56.1	-11.6	44.5	74	H
2377.0	53.2	-8.2	45.0	74	H
1582.3	53.7	-11.6	42.1	74	V
2391.9	48.2	-8.2	40.0	68.2	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2377.0	--	-8.2	--	54	H
1582.3	--	-11.6	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11an(HT 40)

Channel 151: 5755 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1584.4	59.7	-11.6	48.1	74	H
2374.9	56.9	-8.2	48.7	74	H
1327.3	52.1	-12.8	39.3	74	V
1660.9	52.8	-11.2	41.6	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1584.4	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H
1327.3	--	-12.8	--	54	V
1660.9	--	-11.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 159: 5795 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization

TEST REPORT

1582.3	58.9	-11.6	47.3	74	H
2368.5	54.7	-8.2	46.5	74	H
1582.3	53.5	-11.6	41.9	74	V
2381.3	51.3	-8.2	43.1	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2368.5	--	-8.2	--	54	H
1582.3	--	-11.6	--	54	V
2381.3	--	-8.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11ac(HT 40)

Channel 151: 5755 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	58.5	-11.6	46.9	74	H
2370.6	53.8	-8.2	45.6	74	H
1996.6	52.3	-9.7	42.6	68.2	V
2821.1	46.2	-6.6	39.6	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2370.6	--	-8.2	--	54	H
2821.1	--	-6.6	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 159: 5795 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1582.3	58.7	-11.6	47.1	74	H

TEST REPORT

2374.9	59.3	-8.2	51.1	74	H
1584.3	52.3	-11.6	40.7	74	V
2164.5	49.0	-9.0	40.0	68.2	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1582.3	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H
1584.3	--	-11.6	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11ac(HT 80)

Channel 155: 5775 MHz:

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
1584.4	58.0	-11.6	46.4	74	H
2374.9	52.0	-8.2	43.8	74	H
1582.3	53.4	-11.6	41.8	74	V
2162.4	49.0	-9.0	40.0	68.2	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
1584.4	--	-11.6	--	54	H
2374.9	--	-8.2	--	54	H
1582.3	--	-11.6	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Remark: When Peak emission level was below AV limit, the AV emission level did not be record.

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Loss – Preamplifier Factor.

As shown in Section, for frequencies above 1000 MHz. the above 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.

TEST REPORT

No any other emissions level which are attenuated less than 20dB below the limit.

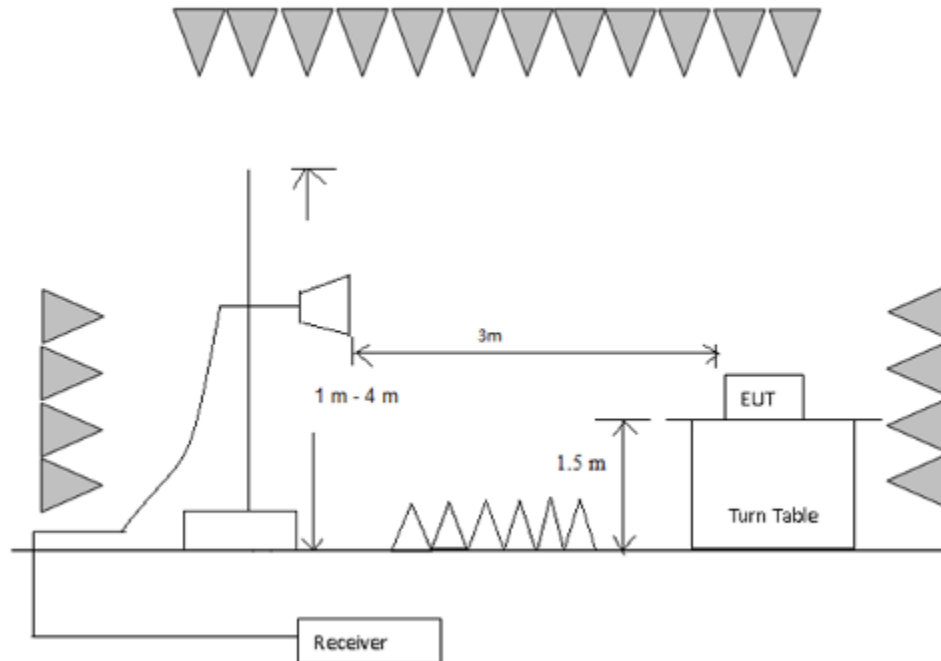
4.8 Band Edges Requirement

Test Requirement:	FCC Part 15 E clause 15.407(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits.
Test Method:	FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01, Clause G
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)
Limit:	(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 5.725–5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

TEST REPORT

Test Configuration:

4) 1 GHz to 40 GHz emissions:

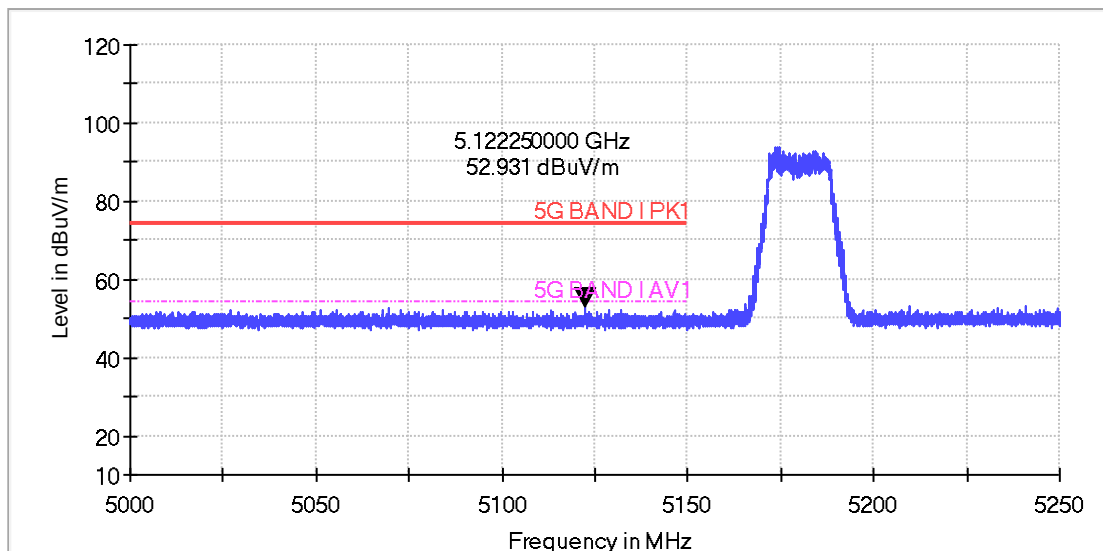


Band I 5150 MHz to 5250 MHz

802.11a(20) mode

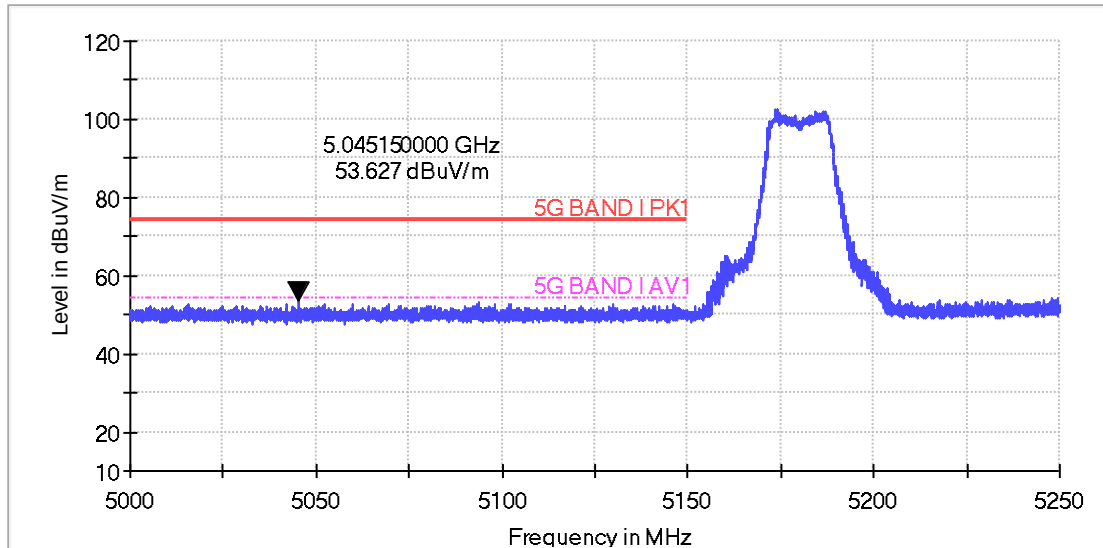
Channel 36: 5180 MHz:

Horizontal



TEST REPORT

Vertical



PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
5122.3	53.5	-0.6	52.9	74	H
5045.2	54.4	-0.8	53.6	74	V

AV Measurement:

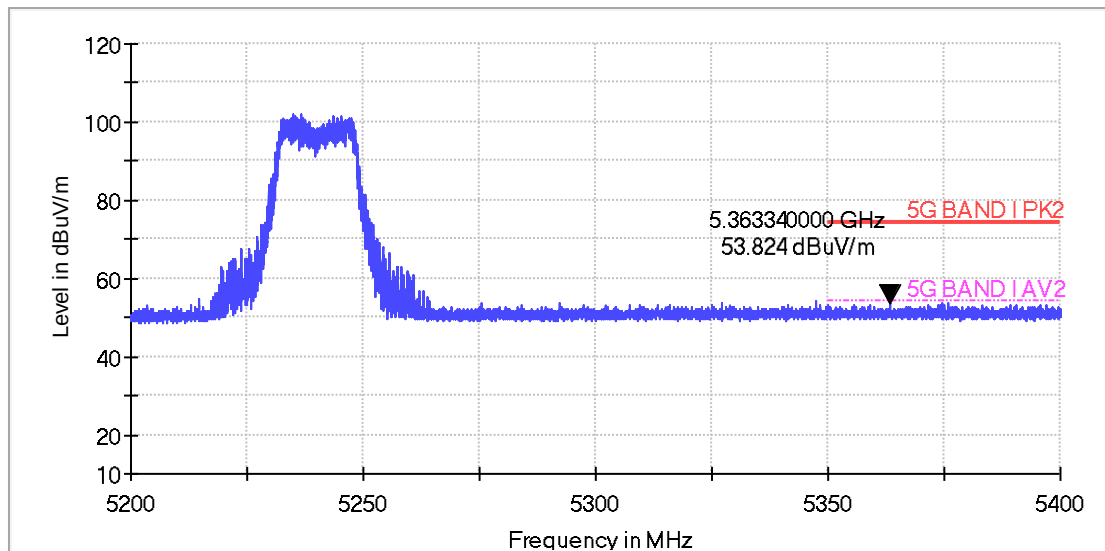
Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
5122.3	--	-0.6	--	54	H
5045.2	--	-0.8	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

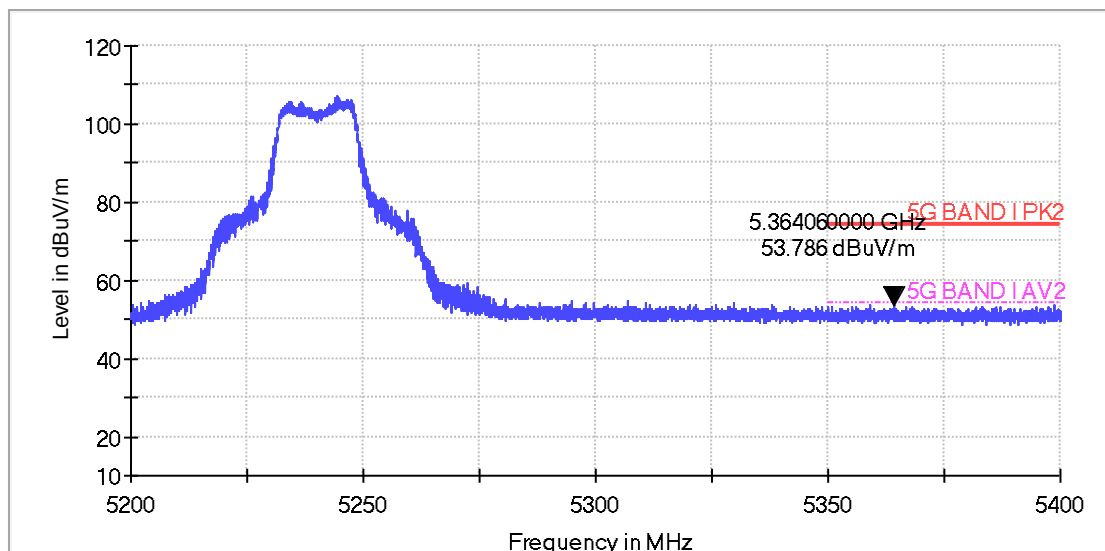
TEST REPORT

Channel 48: 5240 MHz:

Horizontal



Vertical



PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
5363.3	54.0	-0.2	53.8	74	H
5364.1	54.0	-0.2	53.8	74	V

TEST REPORT

AV Measurement:

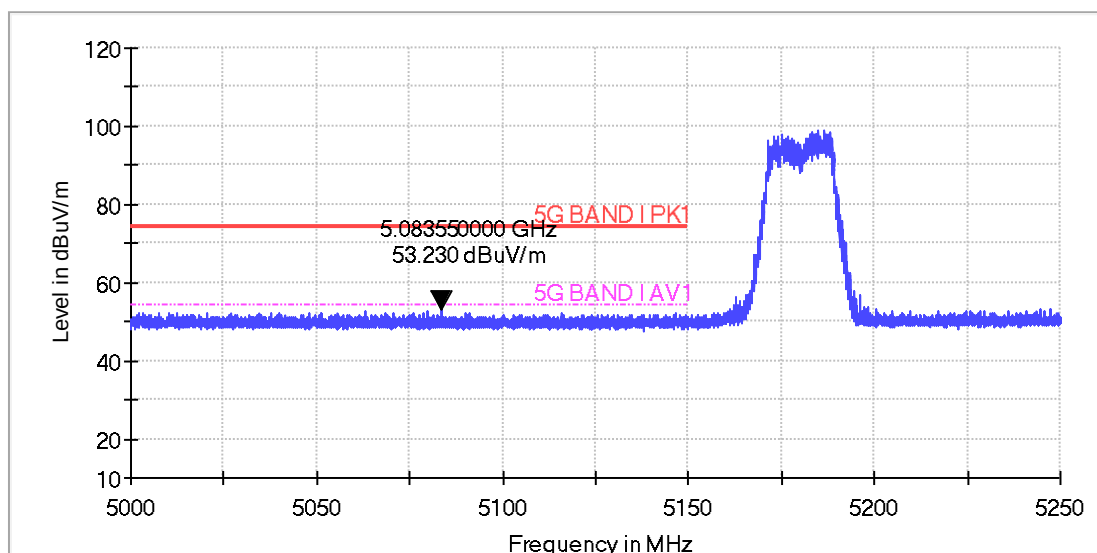
Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
5363.3	--	-0.2	--	54	H
5364.1	--	-0.2	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

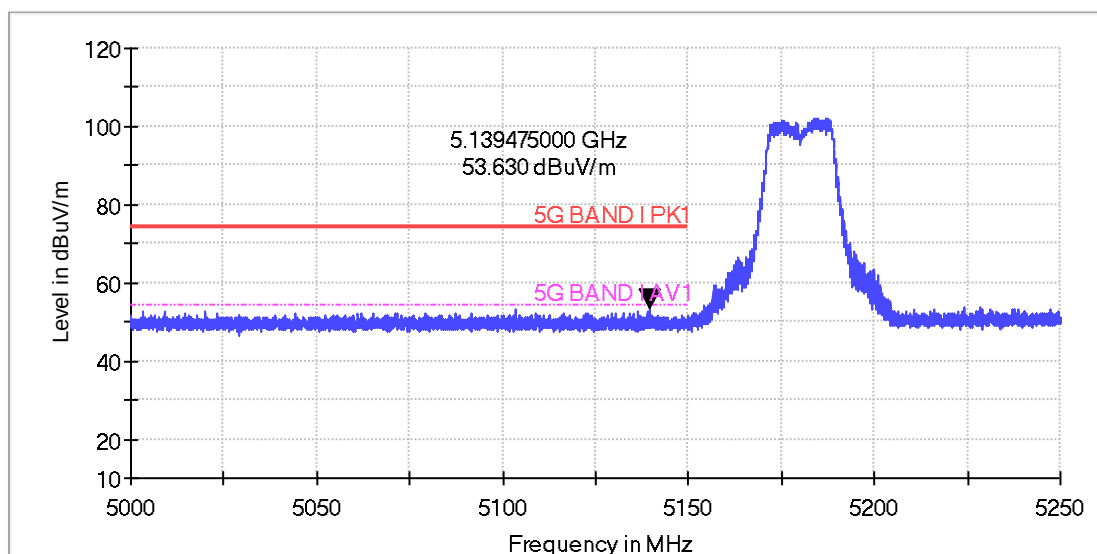
802.11an(HT 20)

Channel 36: 5180 MHz:

Horizontal



Vertical



TEST REPORT

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
5083.6	53.9	-0.7	53.2	74	H
5139.5	54.2	-0.6	53.6	74	V

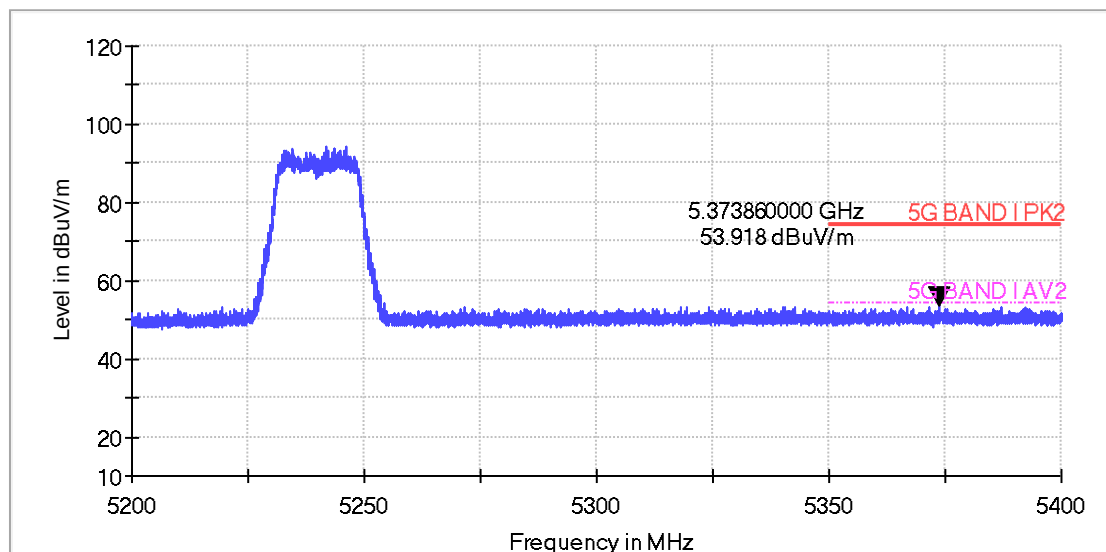
AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
5083.6	--	-0.7	--	54	H
5139.5	--	-0.6	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

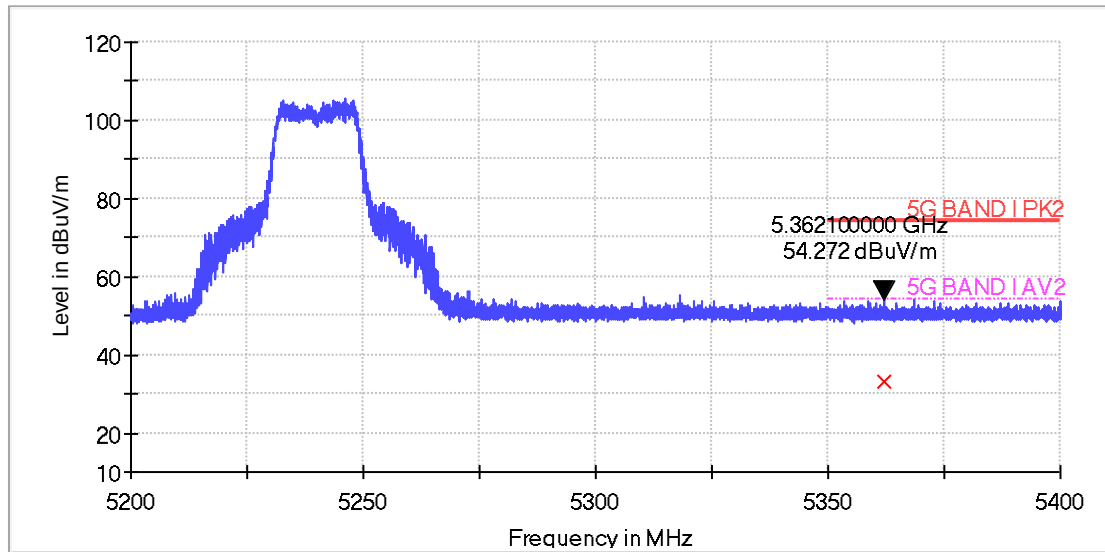
Channel 48: 5240 MHz:

Horizontal



Vertical

TEST REPORT



PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
5373.9	54.1	-0.2	53.9	74	H
5362.1	54.5	-0.2	54.3	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
5373.9	--	-0.2	--	54	H
5362.1	33.3	-0.2	33.1	54	V

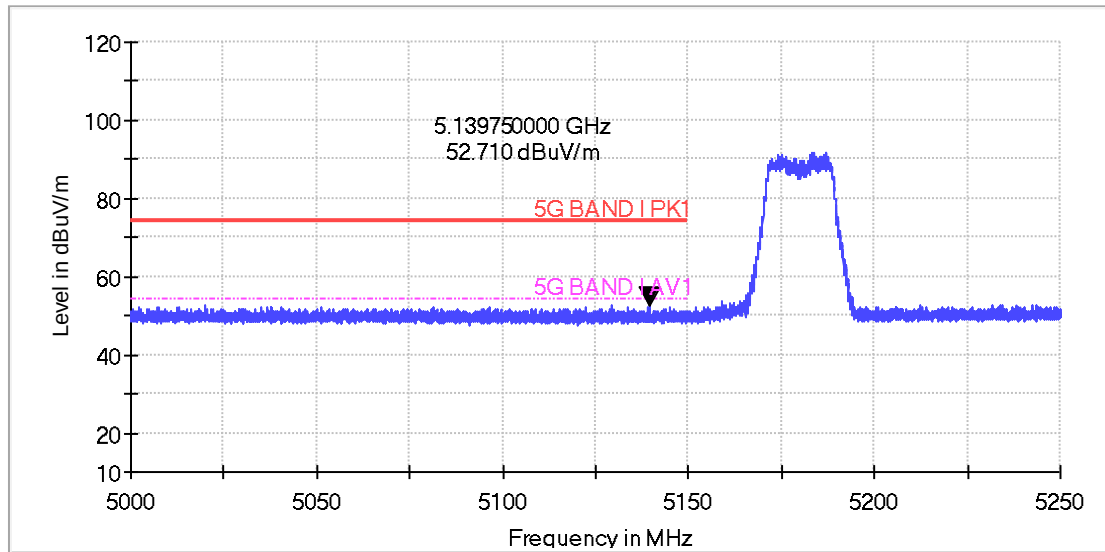
Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11ac(HT 20)

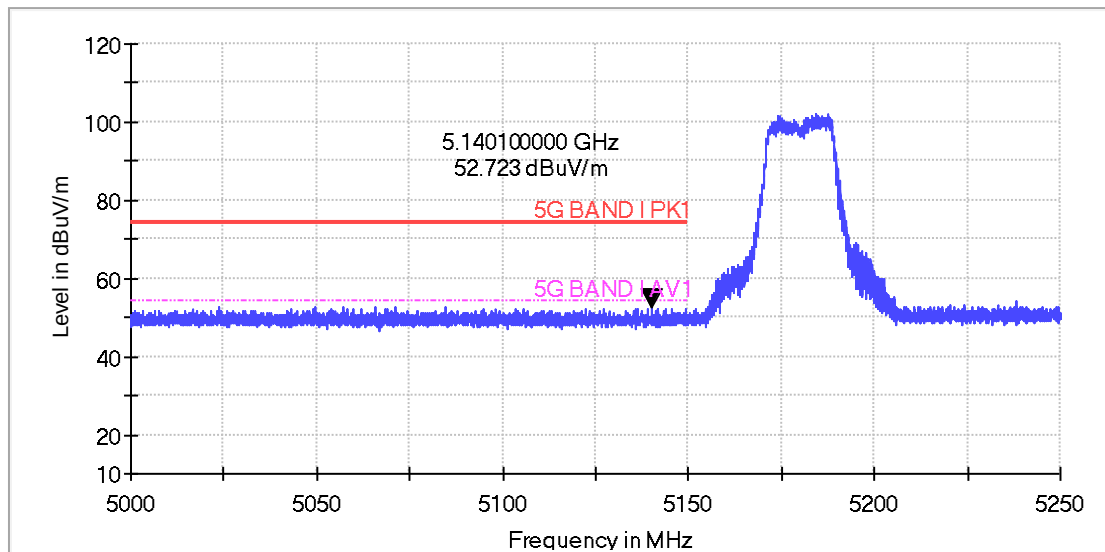
Channel 36: 5180 MHz:

Horizontal

TEST REPORT



Vertical



PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
5139.8	53.3	-0.6	52.7	74	H
5140.1	53.3	-0.6	52.7	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
5139.8	53.3	-0.6	52.7	74	H
5140.1	53.3	-0.6	52.7	74	V

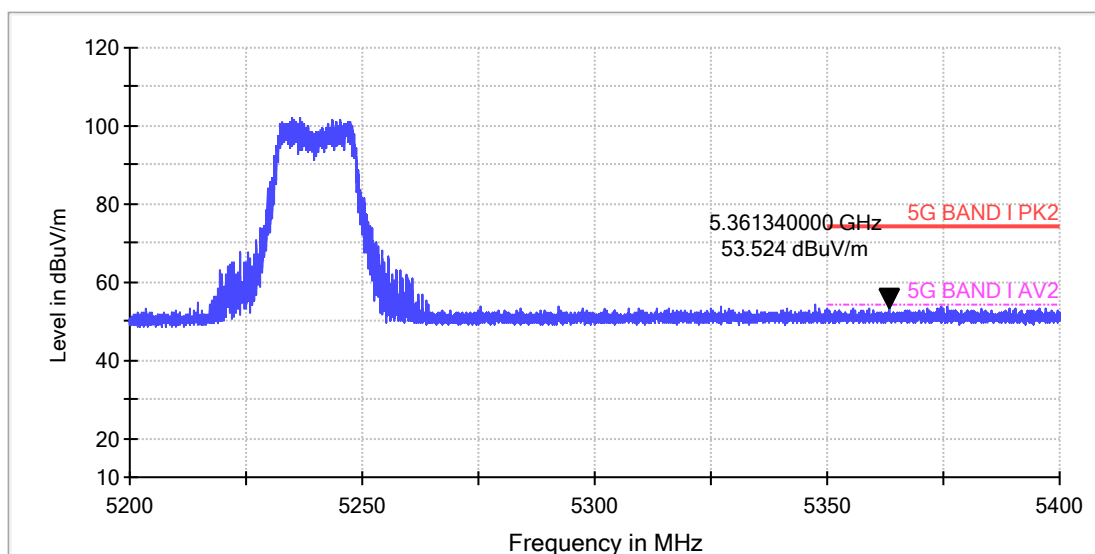
TEST REPORT

5139.8	--	-0.6	--	54	H
5140.1	--	-0.6	--	54	V

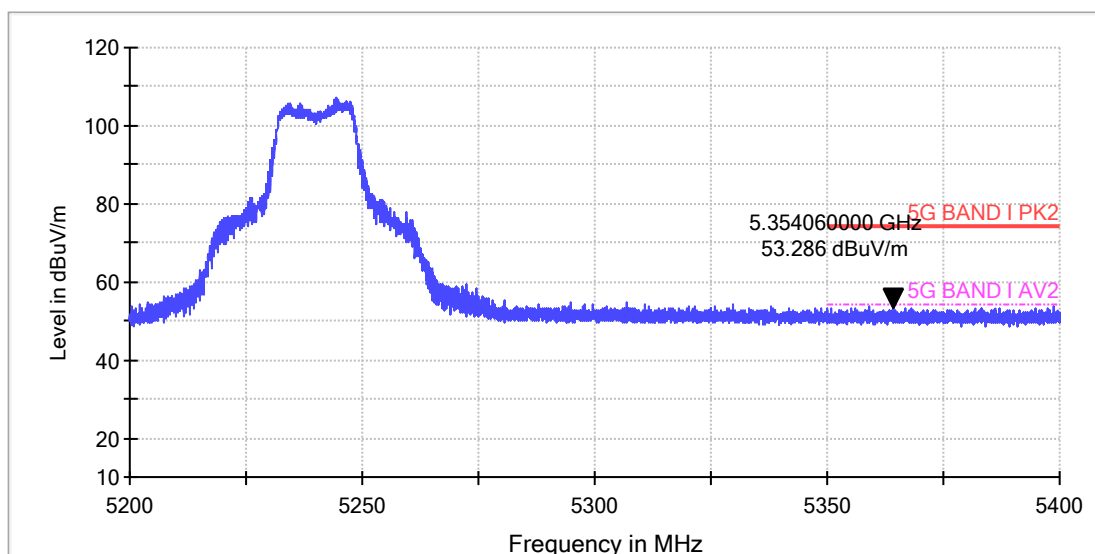
Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Channel 48: 5240 MHz:

Horizontal



Vertical



TEST REPORT

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
5361.3	53.7	-0.2	53.5	74	H
5354.1	53.6	-0.3	53.3	74	V

AV Measurement:

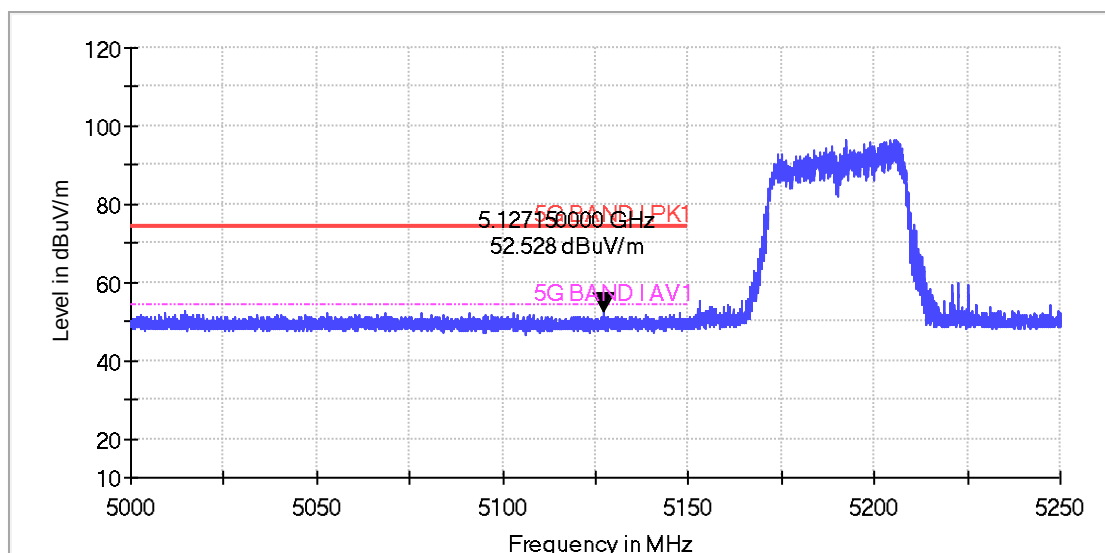
Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
5361.3	--	-0.2	--	54	H
5354.1	--	-0.3	--	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11an(HT 40)

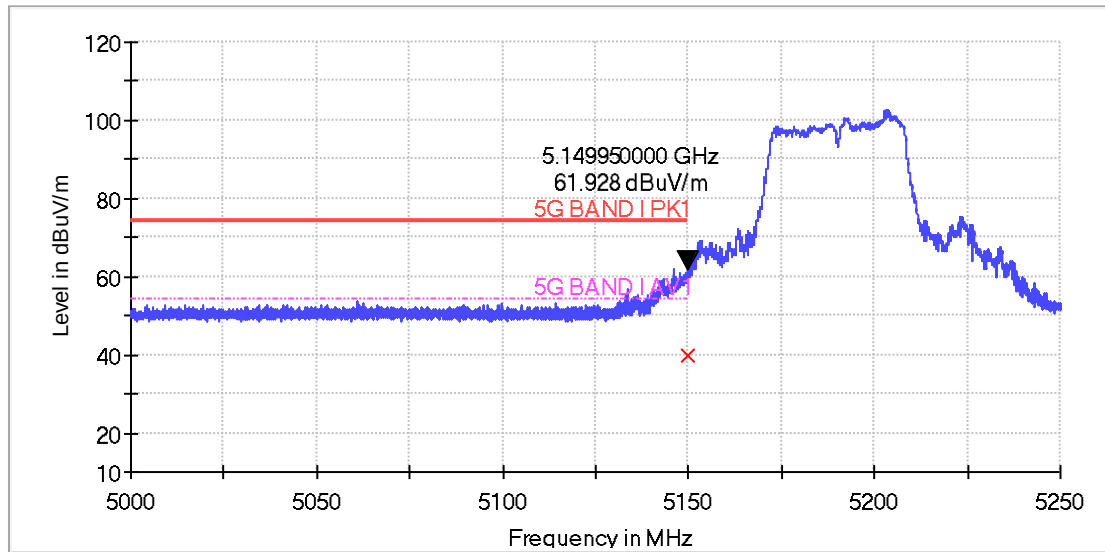
Channel 38: 5190 MHz:

Horizontal



Vertical

TEST REPORT



PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
5127.2	53.1	-0.6	52.5	74	H
5150.0	62.5	-0.6	61.9	74	V

AV Measurement:

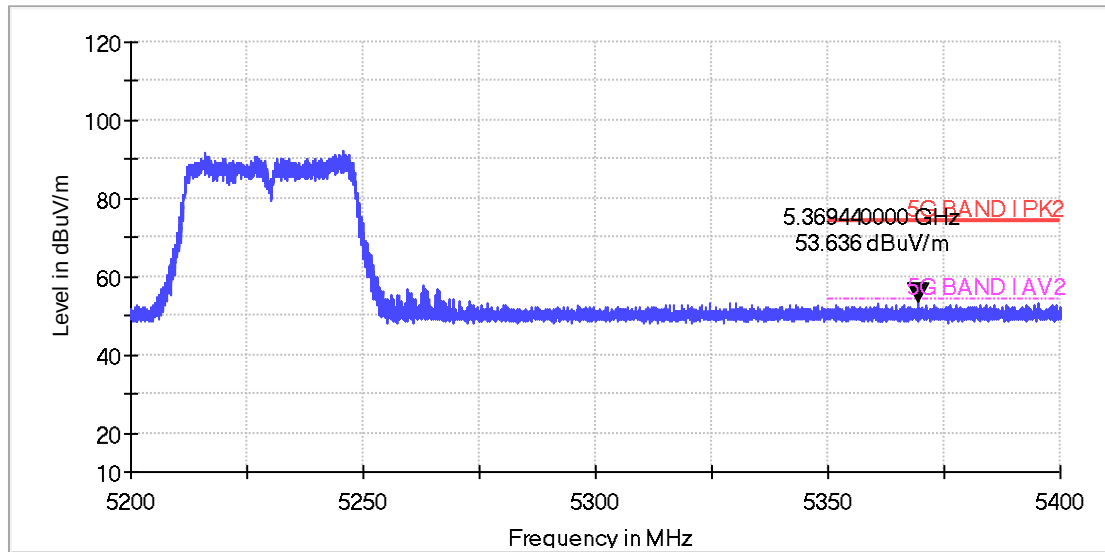
Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
5127.2	--	-0.6	--	54	H
5150.0	40.6	-0.6	40.0	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

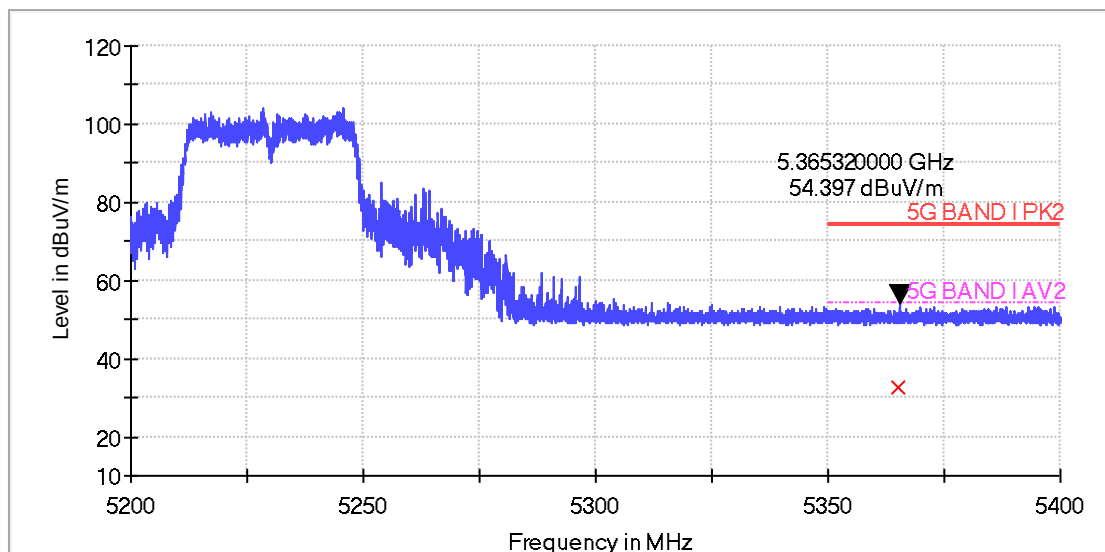
Channel 46: 5230 MHz:

Horizontal

TEST REPORT



Vertical



PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
5369.4	53.8	-0.2	53.6	74	H
5365.3	54.6	-0.2	54.4	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
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TEST REPORT

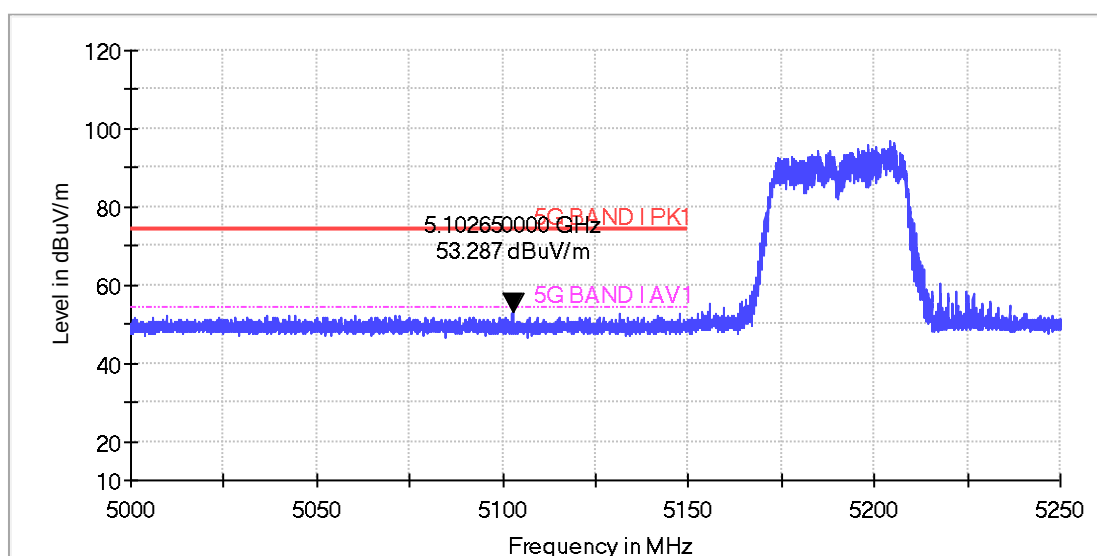
5369.4	--	-0.2	--	54	H
5365.3	32.7	-0.2	32.5	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

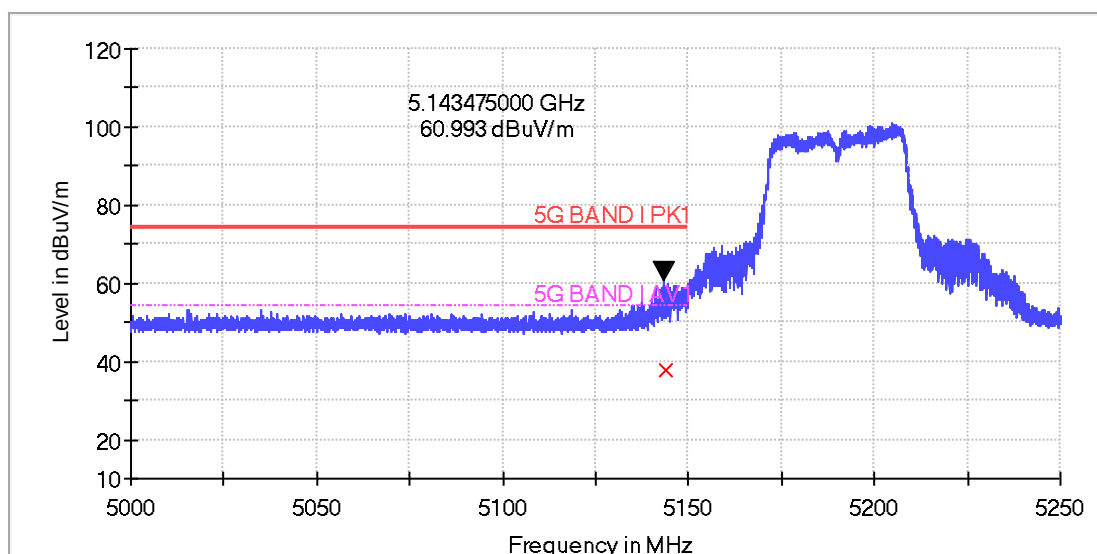
802.11ac(HT 40)

Channel 38: 5190 MHz:

Horizontal



Vertical



TEST REPORT

PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
5102.7	54.0	-0.7	53.3	74	H
5143.5	61.6	-0.6	61.0	74	V

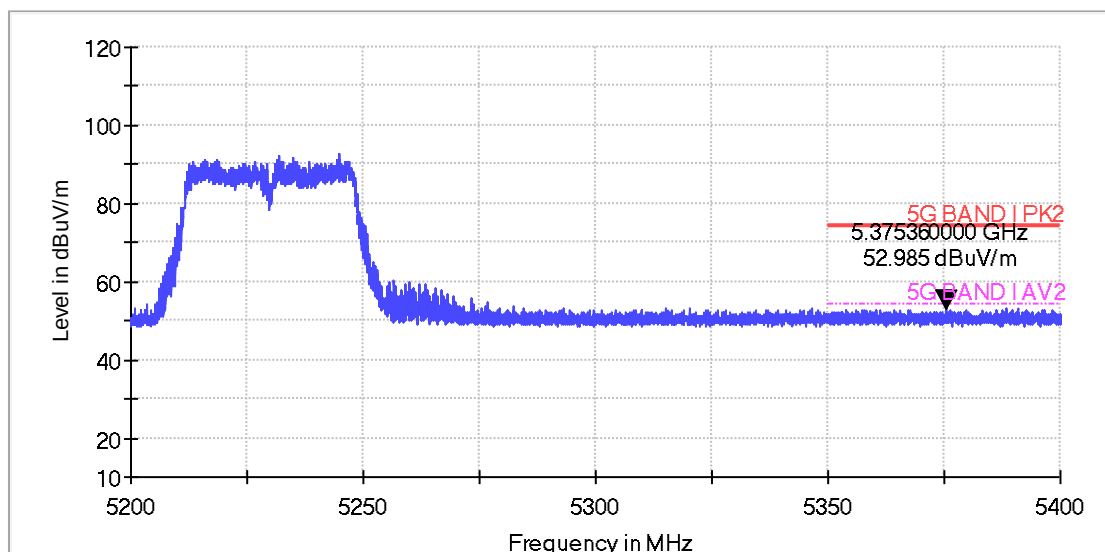
AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
5102.7	--	-0.7	--	54	H
5143.5	38.3	-0.6	37.7	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

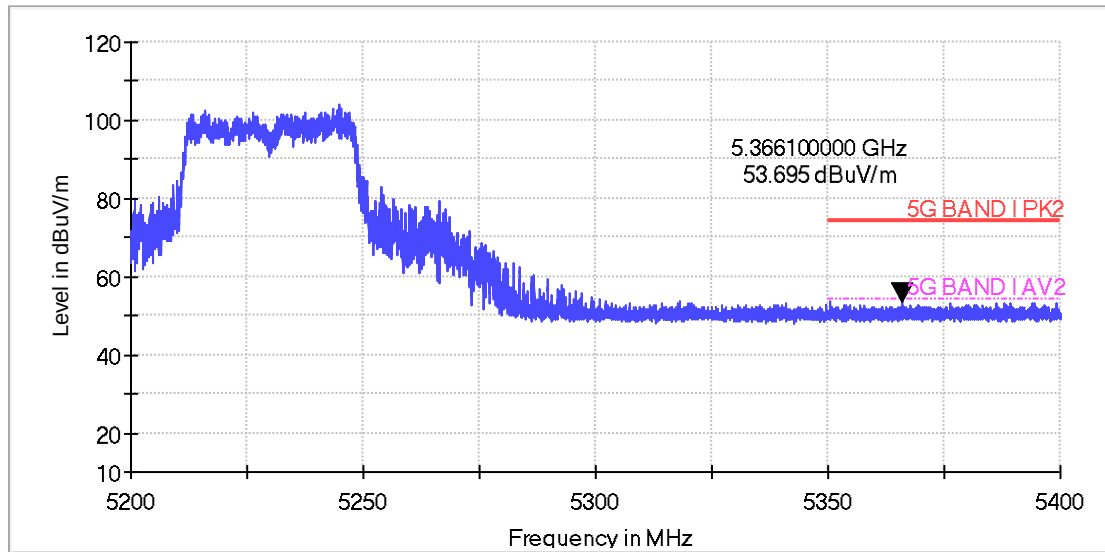
Channel 46: 5230 MHz:

Horizontal



Vertical

TEST REPORT



PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
5375.4	53.2	-0.2	53.0	74	H
5366.1	53.9	-0.2	53.7	74	V

AV Measurement:

Frequency (MHz)	AV Reading Level (dBμV)	Correction factors (dB/m)	AV Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
5375.4	--	-0.2	--	54	H
5366.1	--	-0.2	--	54	V

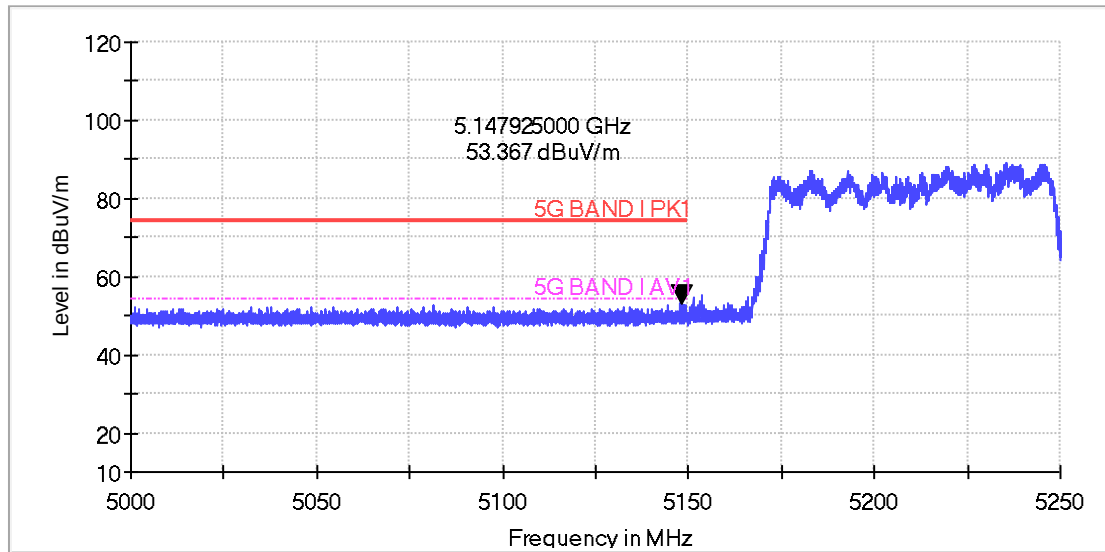
Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11ac(HT 80)

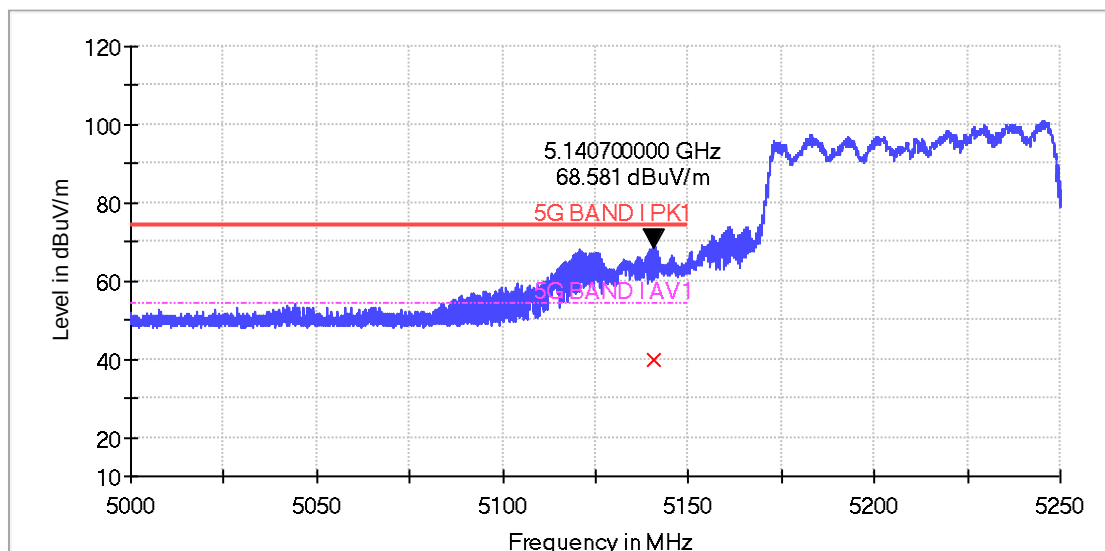
Channel 42: 5210 MHz:

Horizontal

TEST REPORT



Vertical



PK Measurement:

Frequency (MHz)	PK Reading Level (dBμV)	Correction factors (dB/m)	PK Emission Level (dBμV/m)	PK Limit (dBμV/m)	Antenna polarization
5147.9	54.0	-0.6	53.4	74	H
5140.7	69.2	-0.6	68.6	74	V

AV Measurement:

TEST REPORT

Frequency (MHz)	AV Reading Level (dB μ V)	Correction factors (dB/m)	AV Emission Level (dB μ V/m)	AV Limit (dB μ V/m)	Antenna polarization
5147.9	--	-0.6	--	54	H
5140.7	40.6	-0.6	40.0	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

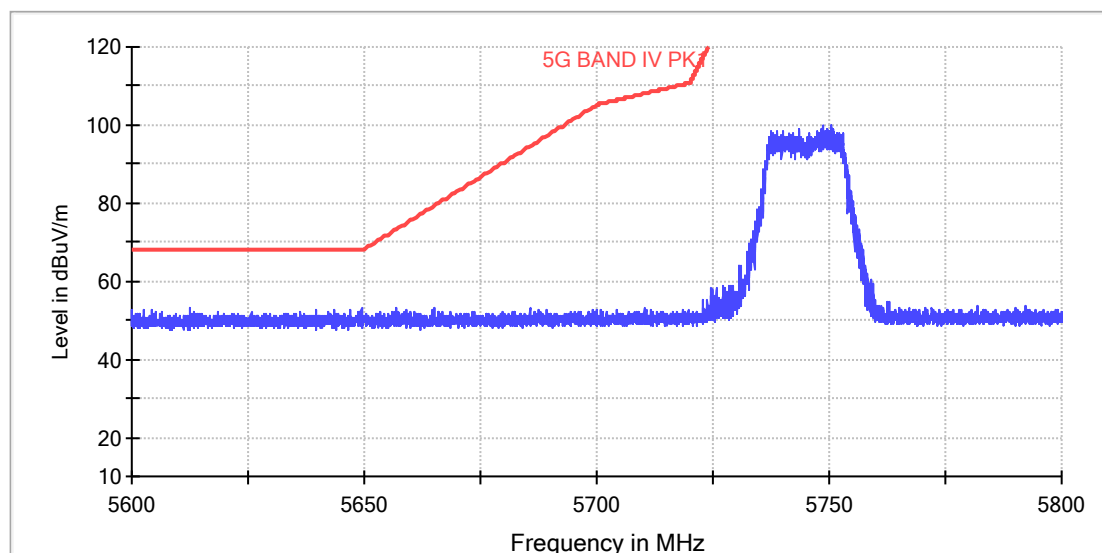
Result as follows:

Band IV 5725 MHz to 5850 MHz

802.11a(20) mode

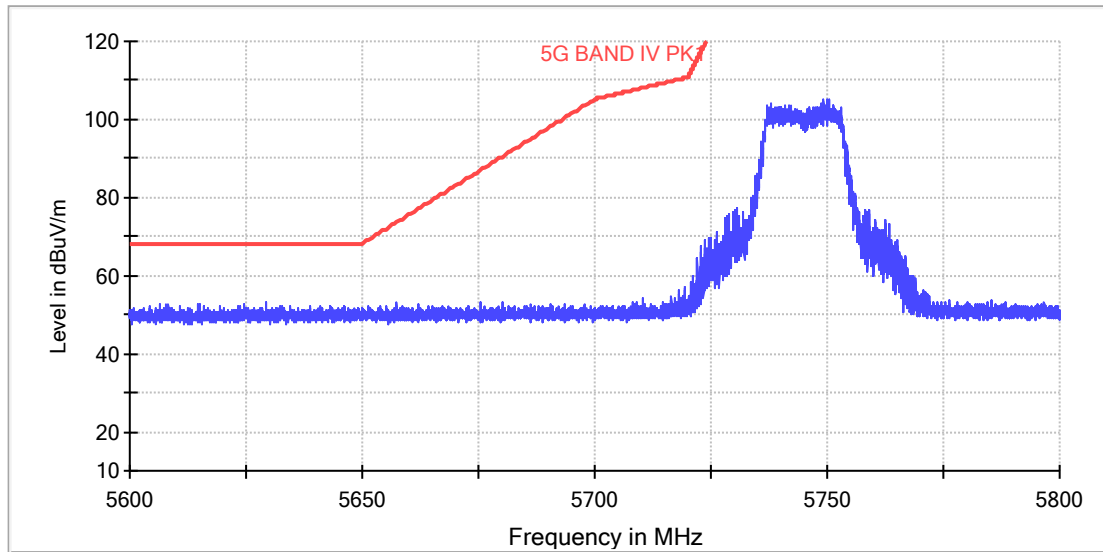
Channel 149: 5745 MHz:

Horizontal



Vertical

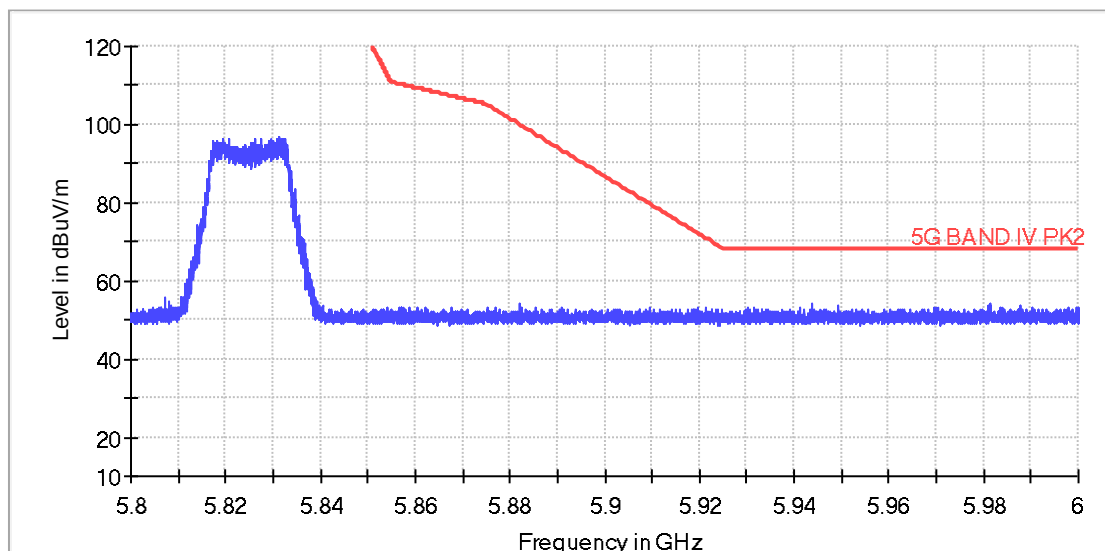
TEST REPORT



All emission levels are more than 6 dB below the limit.

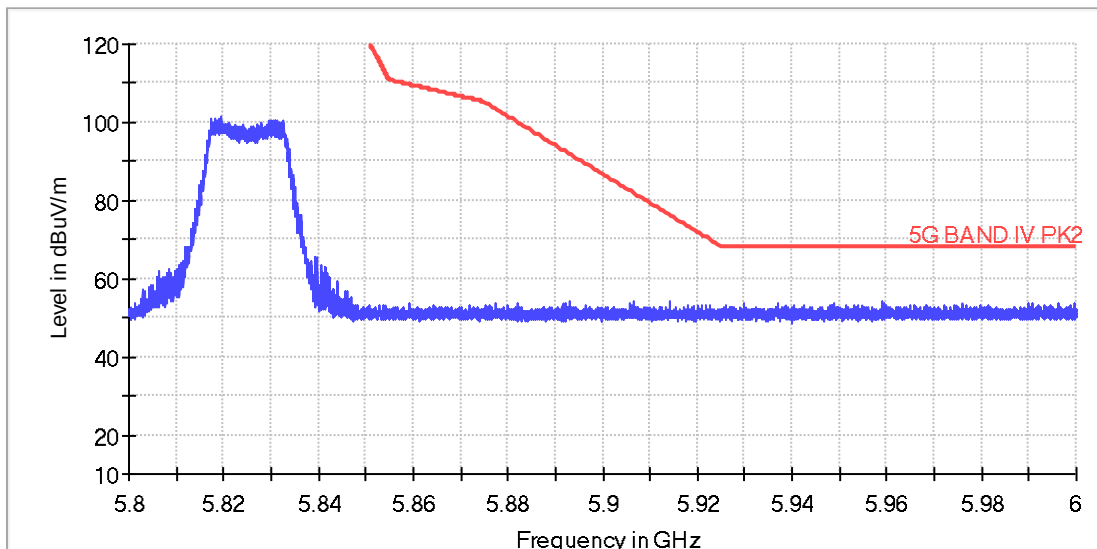
Channel 165: 5825 MHz:

Horizontal



Vertical

TEST REPORT

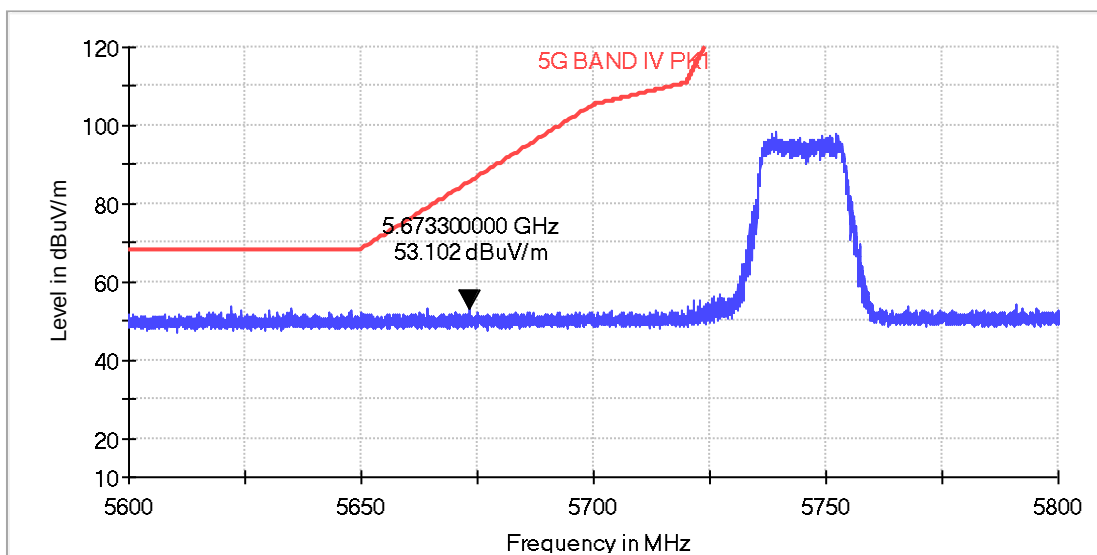


All emission levels are more than 6 dB below the limit.

802.11an(HT 20)

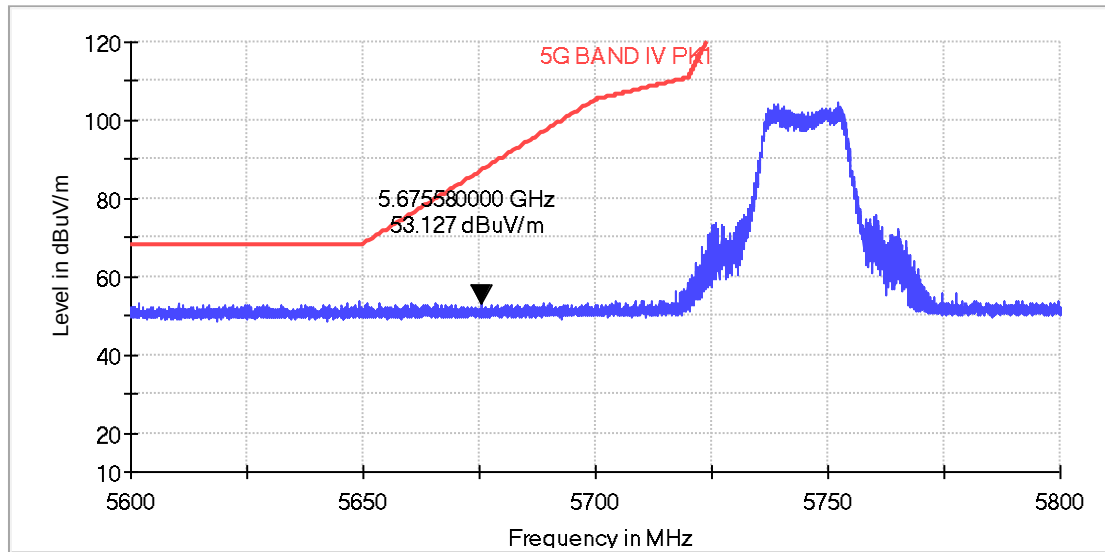
Channel 149: 5745 MHz:

Horizontal



Vertical

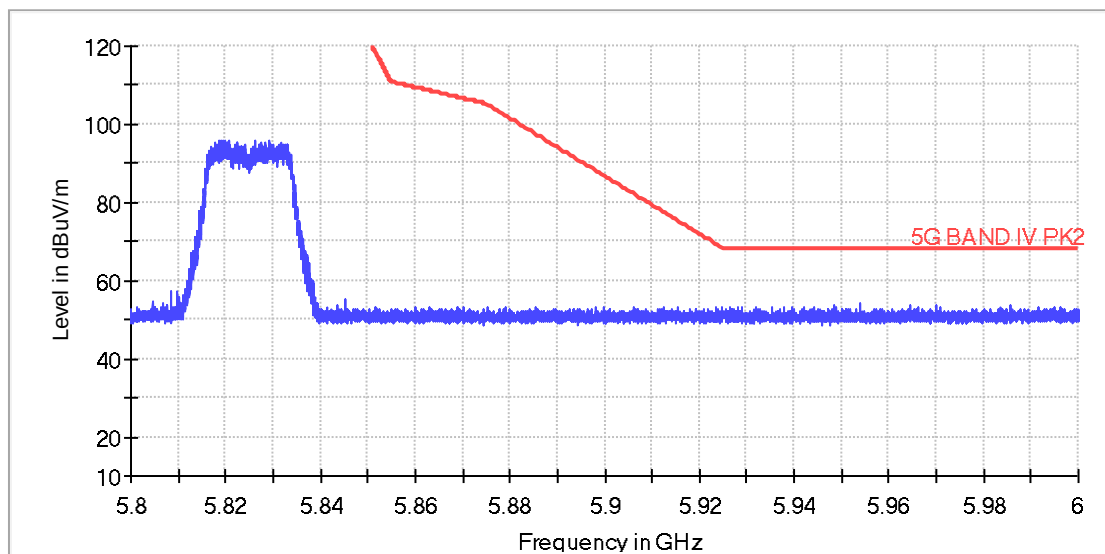
TEST REPORT



All emission levels are more than 6 dB below the limit.

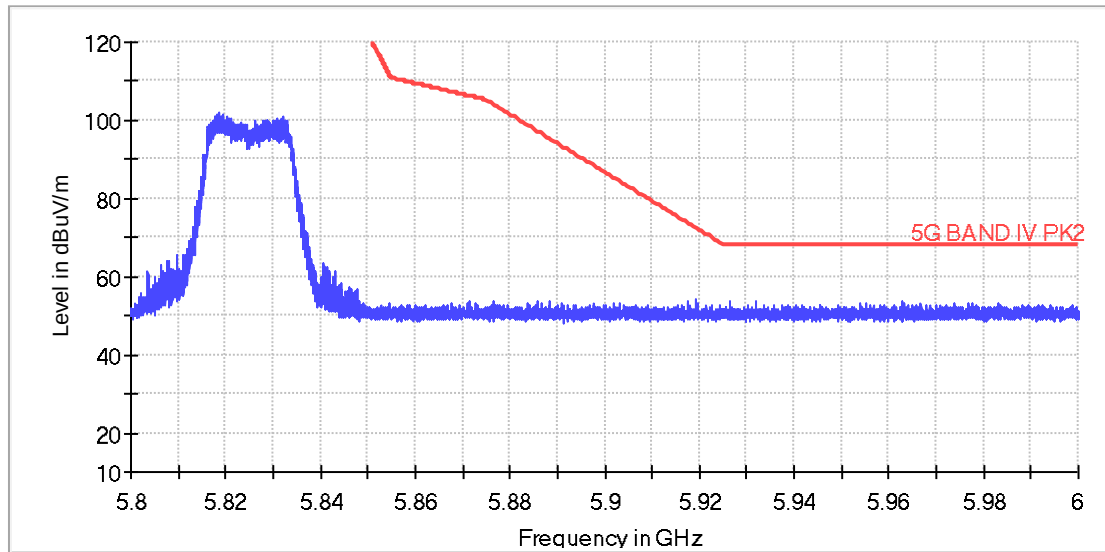
Channel 165: 5825 MHz:

Horizontal



Vertical

TEST REPORT

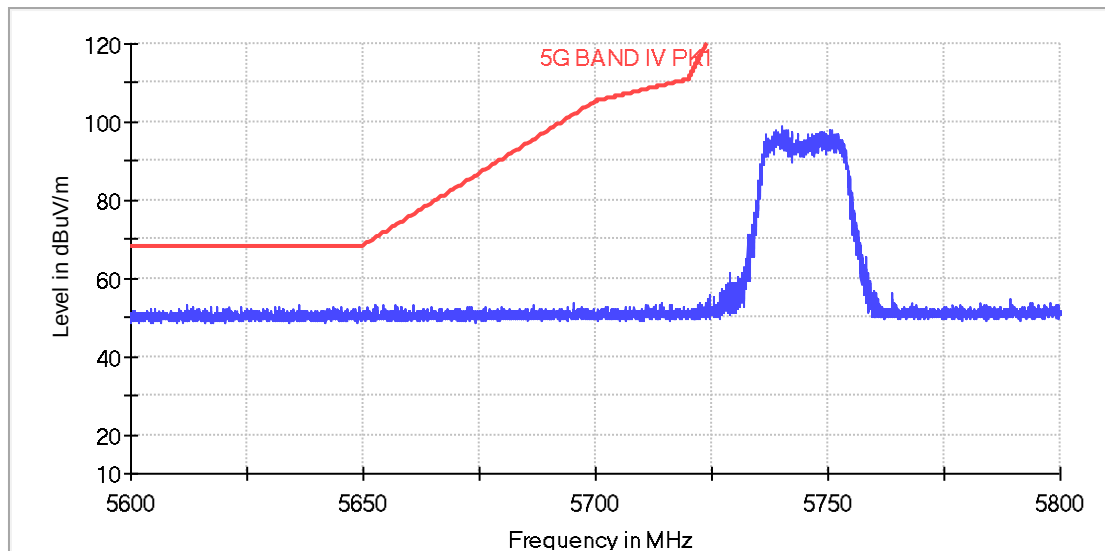


All emission levels are more than 6 dB below the limit.

802.11ac(HT 20)

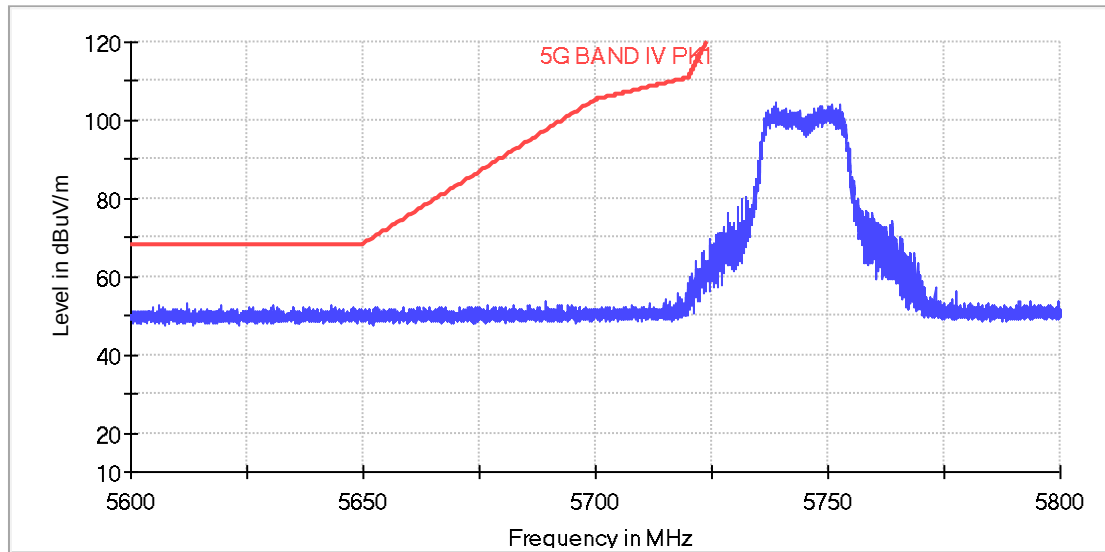
Channel 149: 5745 MHz:

Horizontal



Vertical

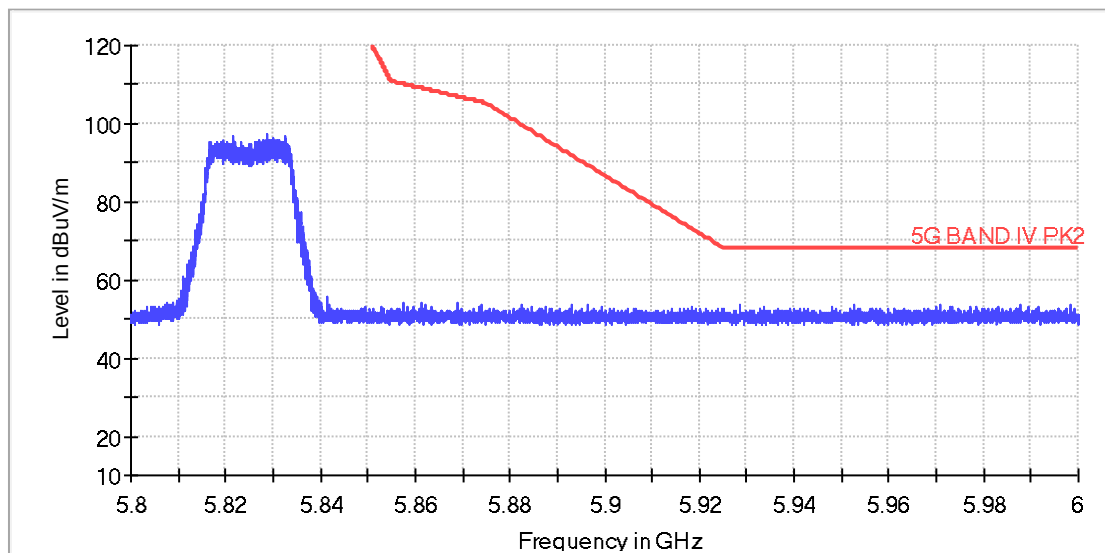
TEST REPORT



All emission levels are more than 6 dB below the limit.

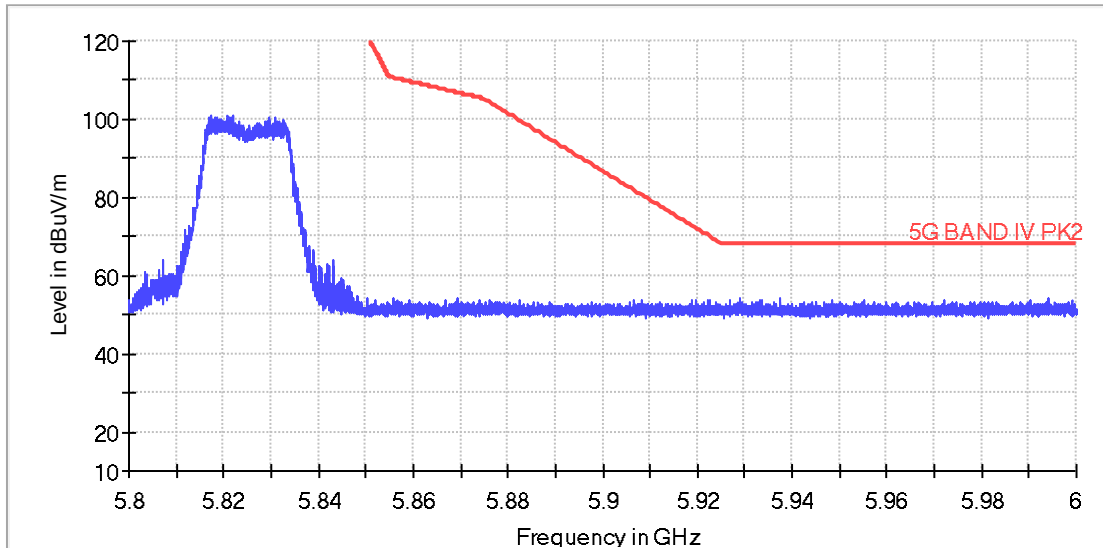
Channel 165: 5825 MHz:

Horizontal



TEST REPORT

Vertical

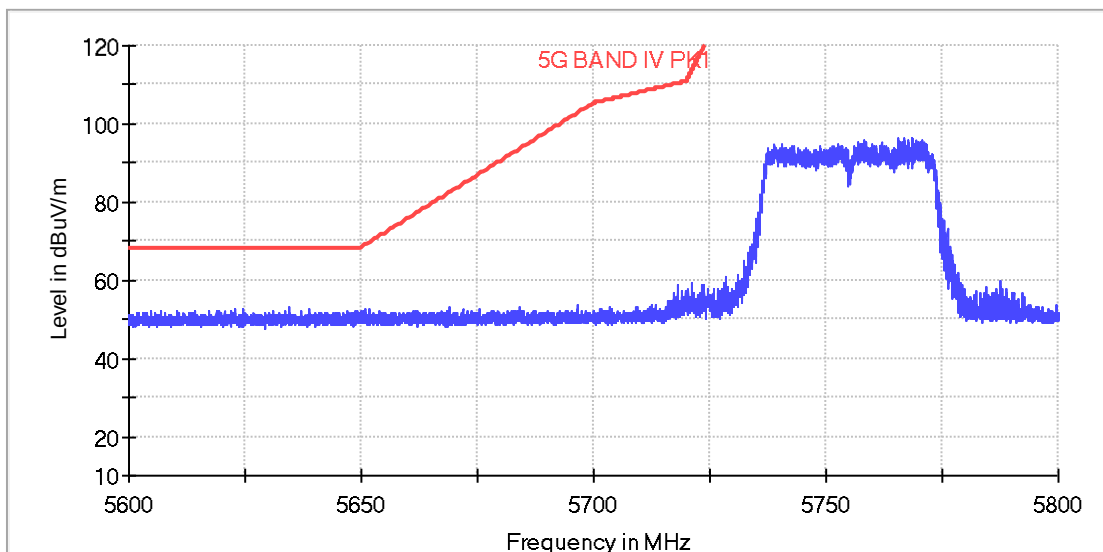


All emission levels are more than 6 dB below the limit.

802.11an(HT 40)

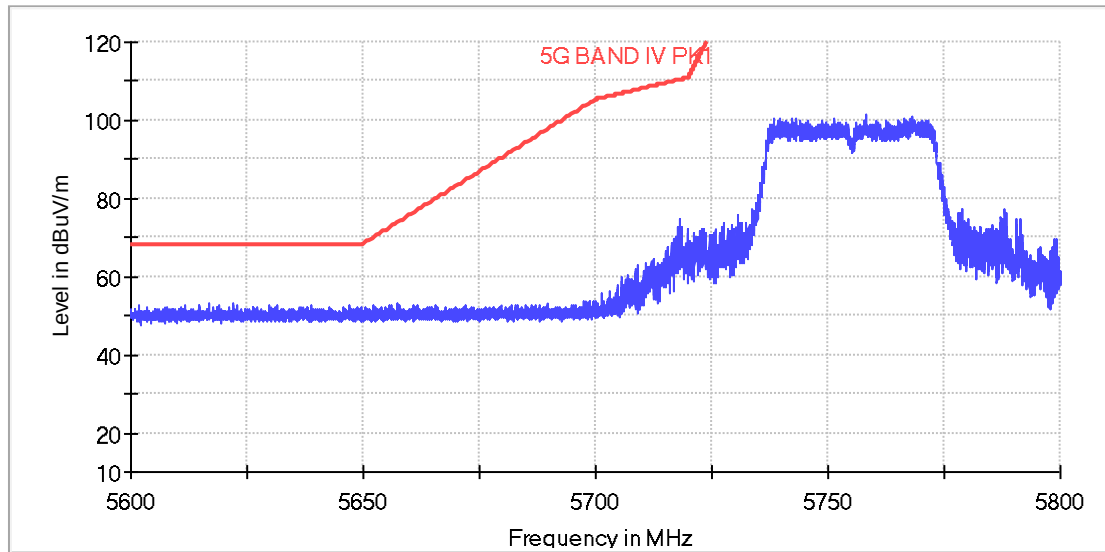
Channel 151: 5755 MHz:

Horizontal



Vertical

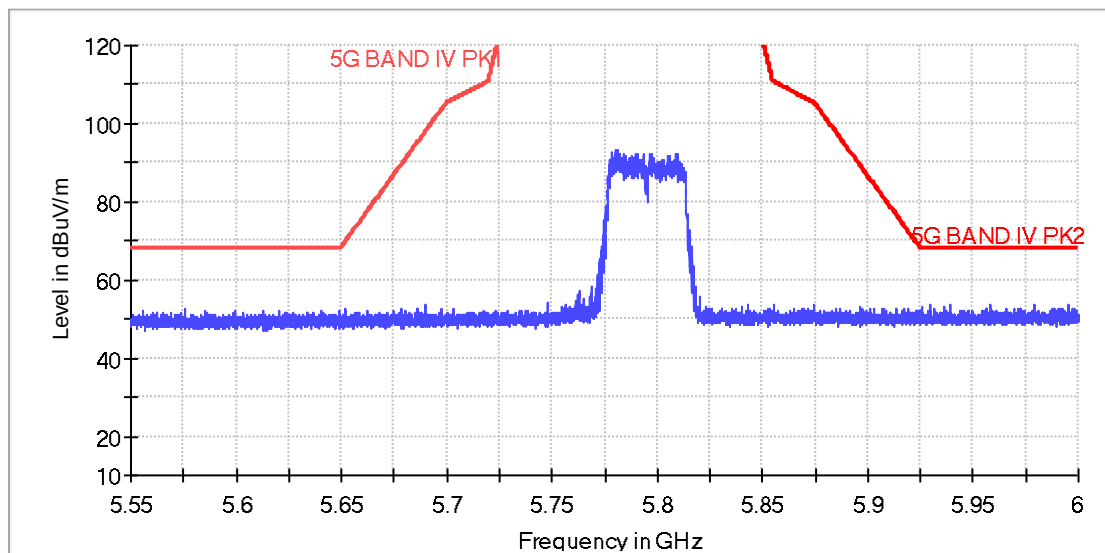
TEST REPORT



All emission levels are more than 6 dB below the limit.

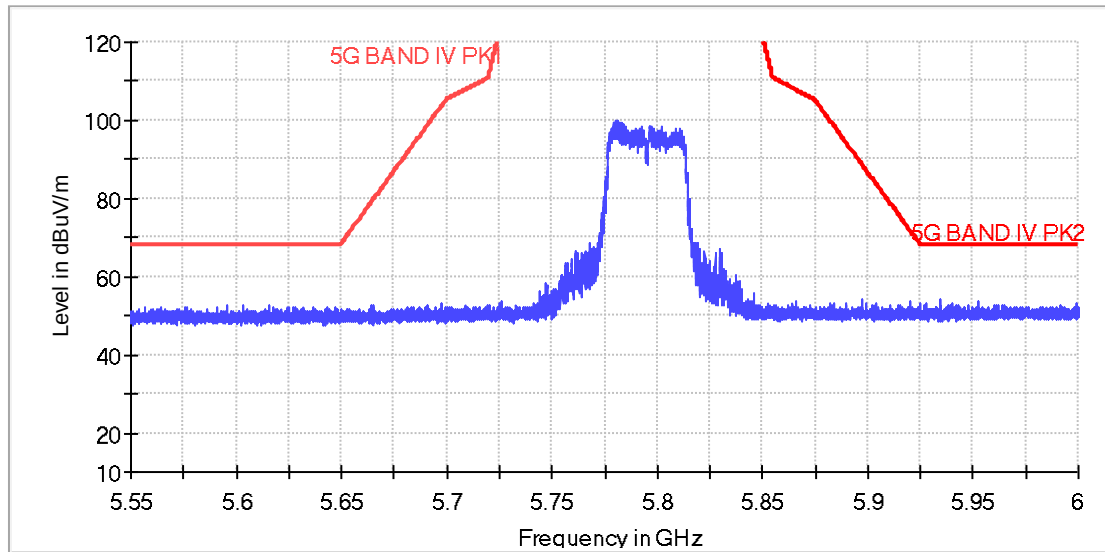
Channel 159: 5795 MHz:

Horizontal



Vertical

TEST REPORT

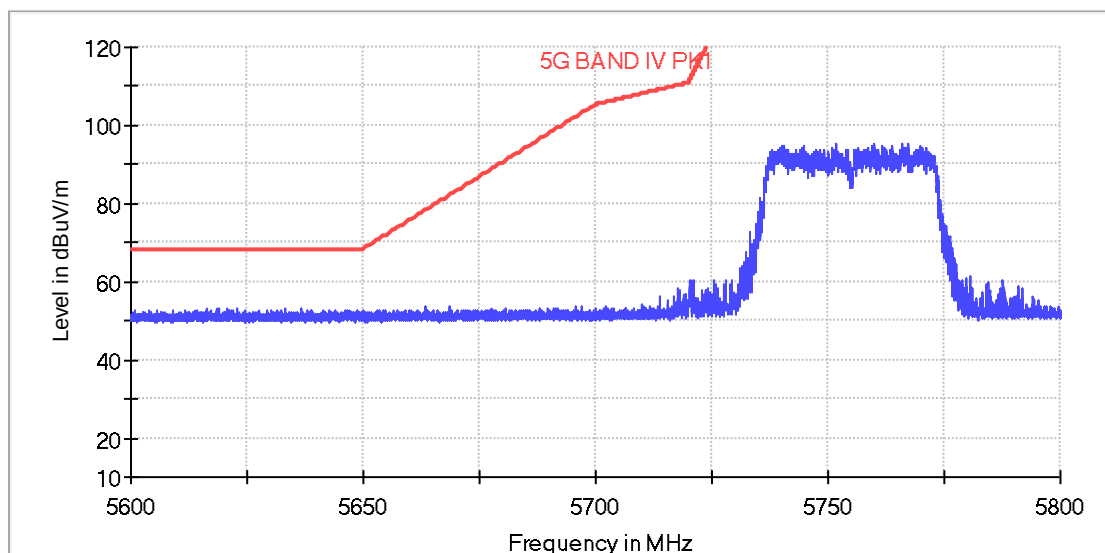


All emission levels are more than 6 dB below the limit.

802.11ac(HT 40)

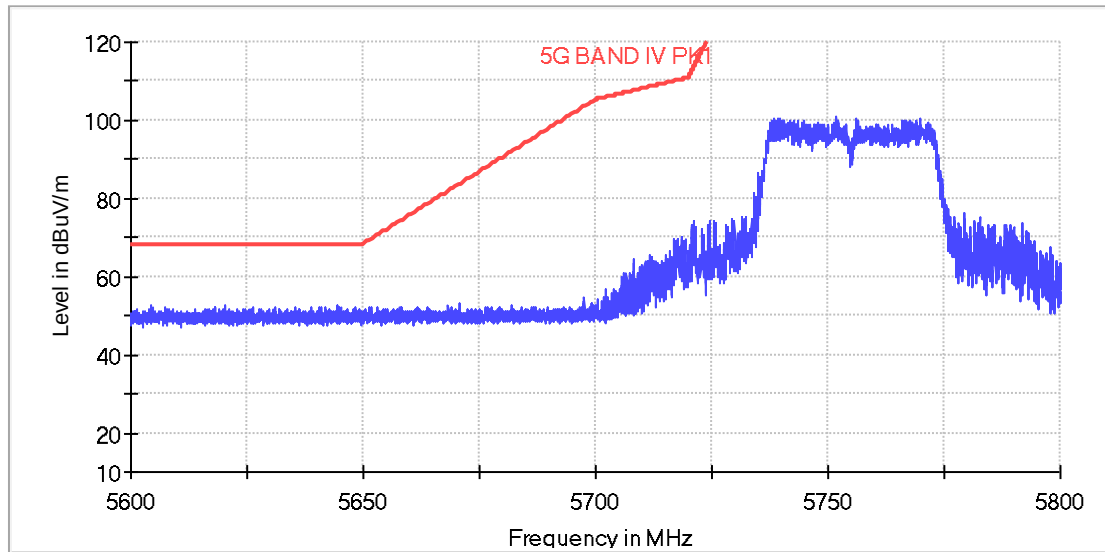
Channel 151: 5755 MHz:

Horizontal



Vertical

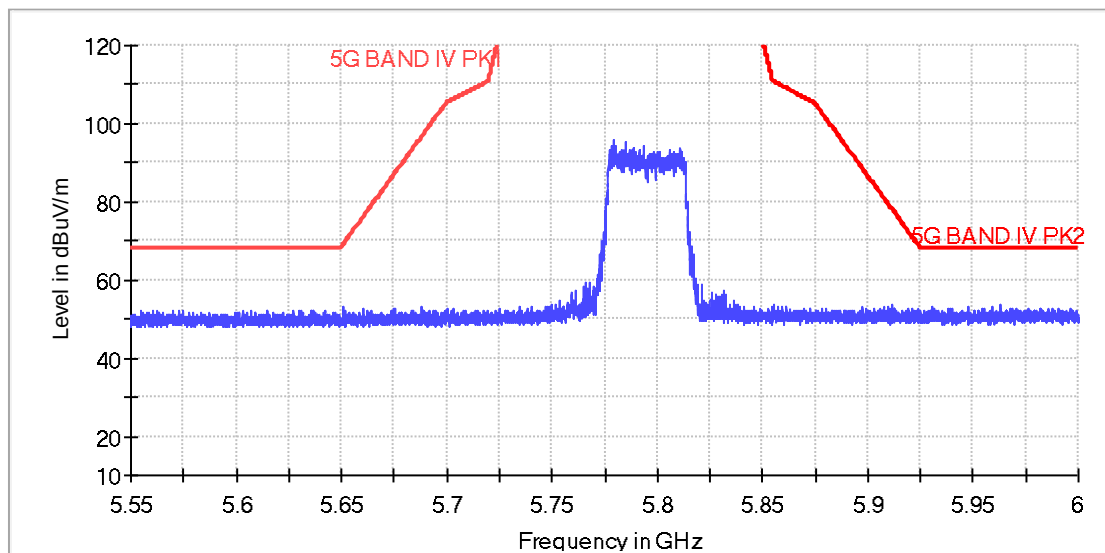
TEST REPORT



All emission levels are more than 6 dB below the limit.

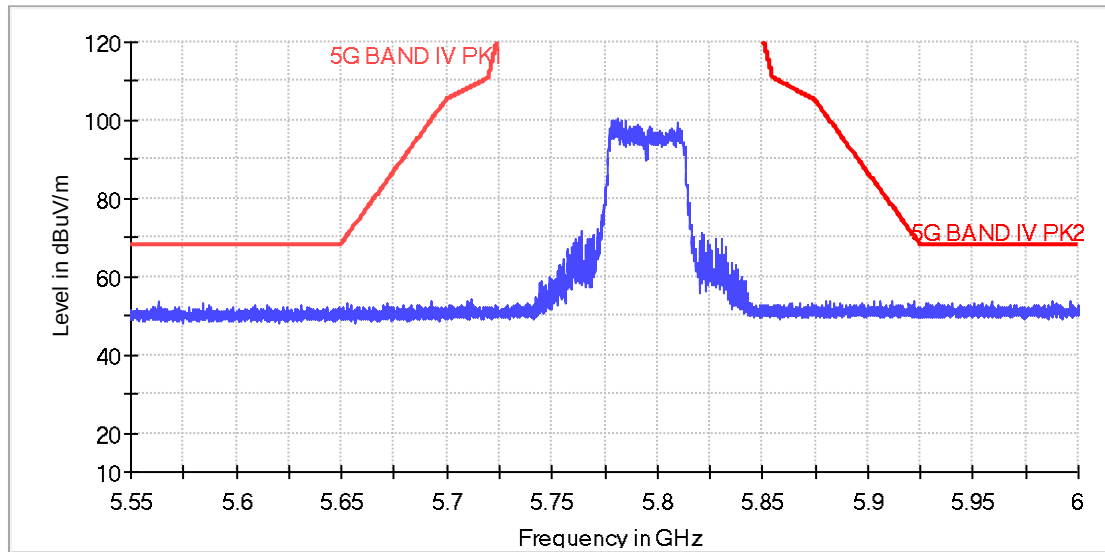
Channel 159: 5795 MHz:

Horizontal



Vertical

TEST REPORT

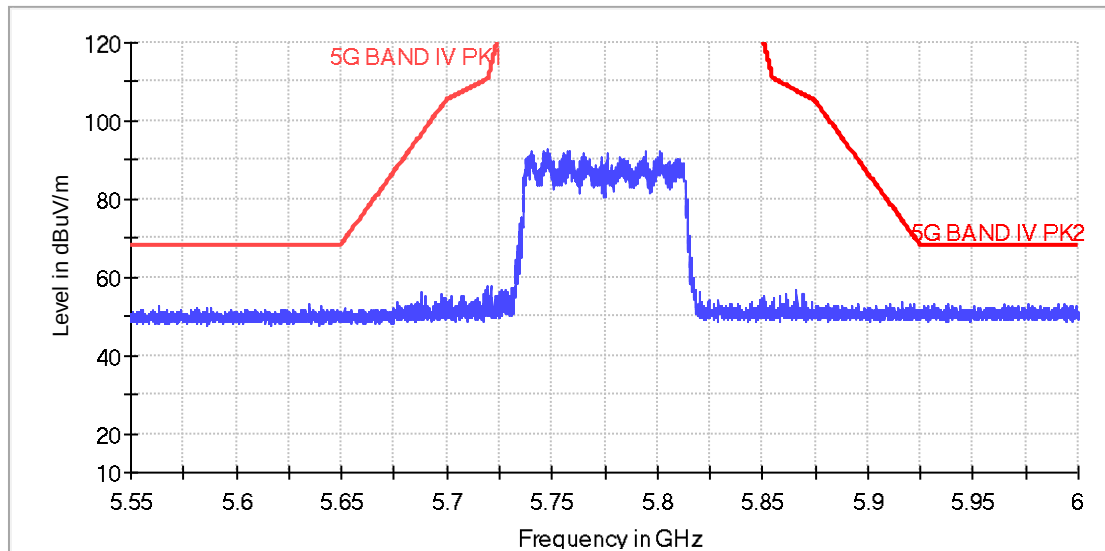


All emission levels are more than 6 dB below the limit.

802.11ac(HT 80)

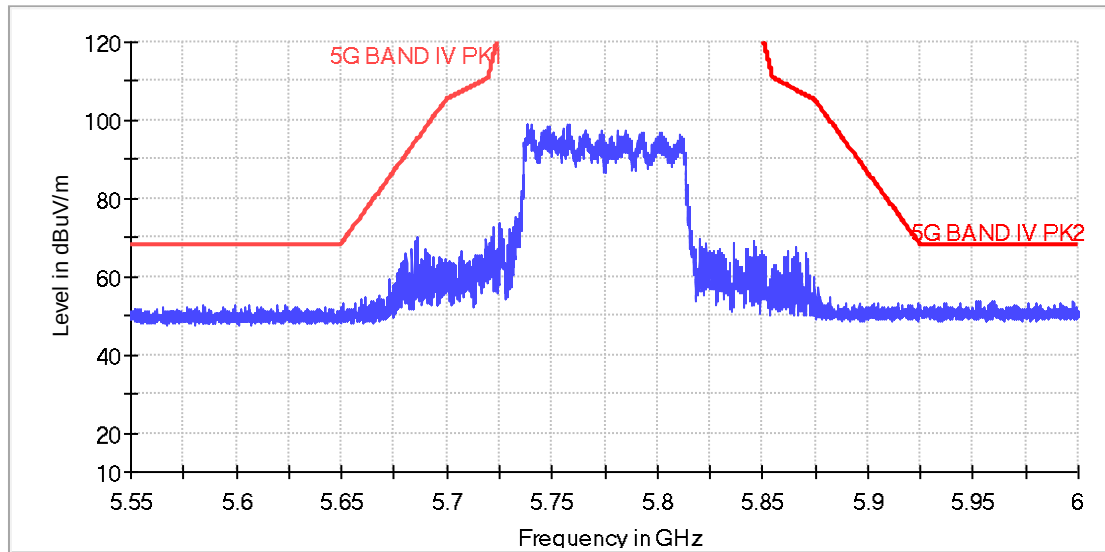
Channel 155: 5775 MHz:

Horizontal



Vertical

TEST REPORT

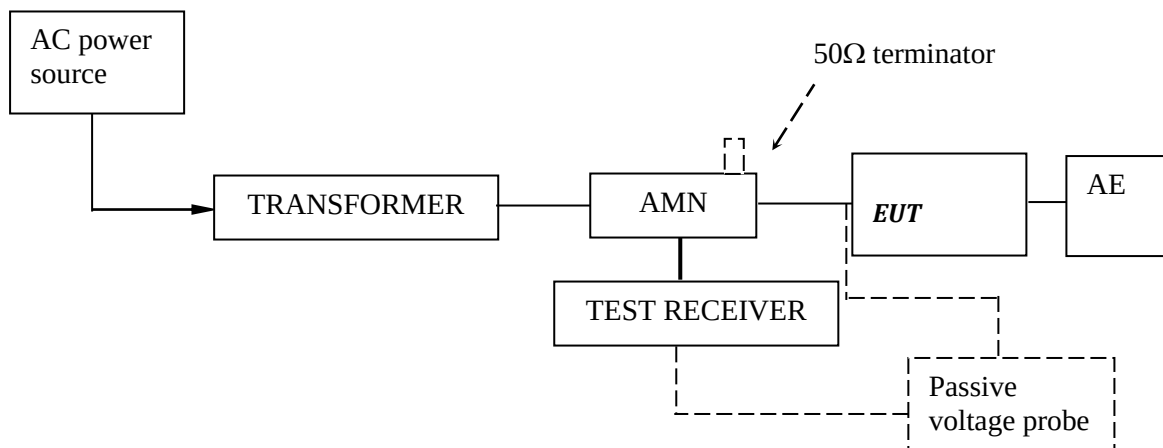


All emission levels are more than 6 dB below the limit.

TEST REPORT

4.10 Conducted Emission Test

Test Configuration:



Test Setup and Procedure:

Test was performed according to ANSI C63.10 Clause 6.2. The EUT was set to achieve the maximum emission level. The mains terminal disturbance voltage was measured with the EUT in a shielded room. The EUT was connected to AC power source through an Artificial Mains Network which provides a 50Ω linear impedance. Artificial hand is used if appropriate (for handheld apparatus). The load/control terminal disturbance voltage was measured with passive voltage probe if appropriate.

The table-top EUT was placed on a 0.8m high non-metallic table above earthed ground plane (Ground Reference Plane). And for floor standing EUT, was placed on a 0.1m high non-metallic supported on GRP. The EUT keeps a distance of at least 0.8m from any other of the metallic surface. The Artificial Mains Network is situated at a distance of 0.8m from the EUT.

During the test, mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m.

The bandwidth of test receiver was set at 9 kHz. The frequency range from 150 kHz to 30MHz was checked.

Pre-test the all model, find worse case in model UTi320V+.

TEST REPORT

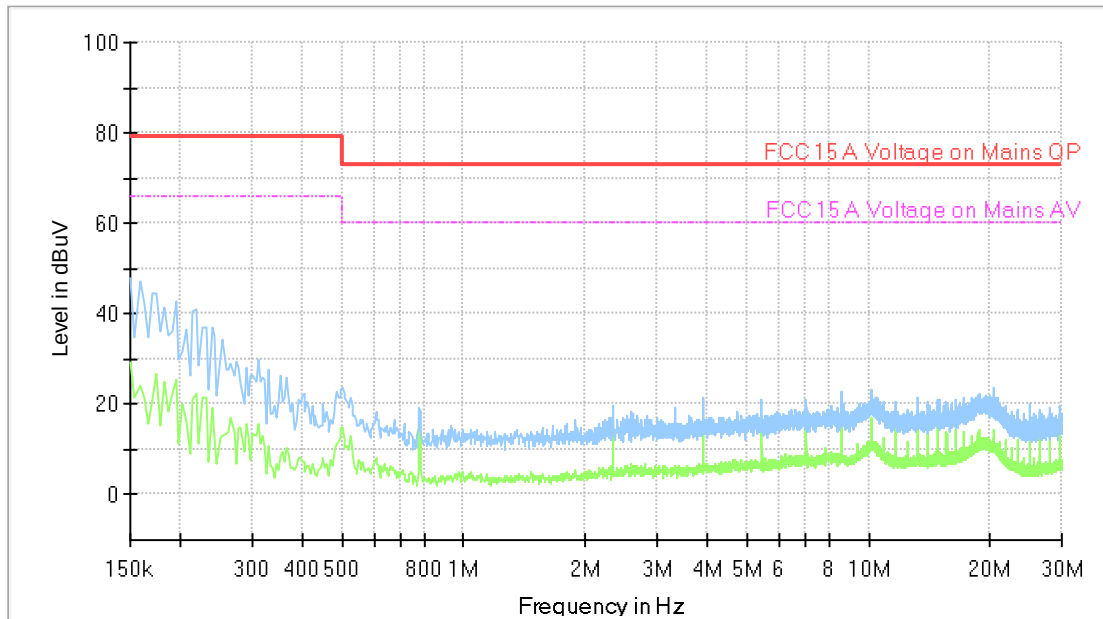
Test Data and Curve

At main terminal: Pass

Tested Wire: Live

Operation Mode: transmitting mode

Full Spectrum



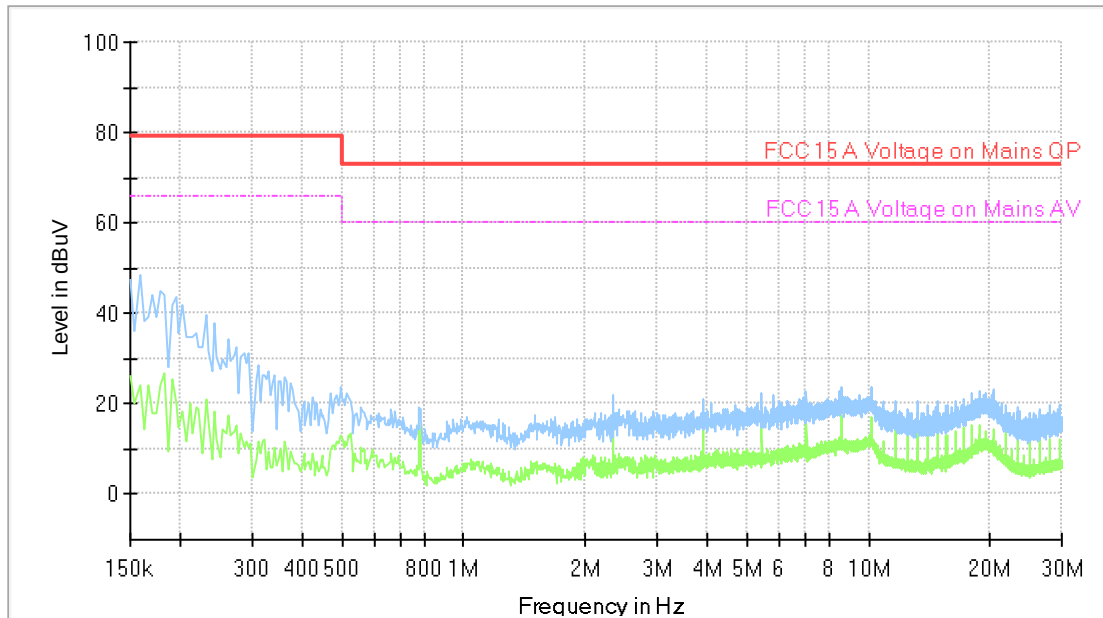
All emission levels are more than 6 dB below the limit.

TEST REPORT

Tested Wire: Neutral

Operation Mode: transmitting mode

Full Spectrum



All emission levels are more than 6 dB below the limit.

TEST REPORT

5.0 Test Equipment List

Radiated Emission/Radio

Equipment No.	Equipment	Model	Manufacturer	Cal. Due date (YYYY-MM-DD)	Calibration Interval
EM030-04	3m Semi-Anechoic Chamber	9×6×6 m ³	ETS•LINDGRE N	2024-04-10	1Y
EM031-02	EMI Test Receiver (9 kHz~7 GHz)	R&S ESR7	R&S	2023-11-15	1Y
EM031-03	Signal and Spectrum Analyzer (10 Hz~40 GHz)	R&S FSV40	R&S	2023-11-15	1Y
EM011-04	Loop antenna (9 kHz-30 MHz)	HFH2-Z2	R&S	2023-06-27	1Y
EM061-03	TRILOG Super Broadband test Antenna (30 MHz-1.5 GHz) (TX)	VULB 9161	SCHWARZBECK	2023-06-26	1Y
EM033-01	TRILOG Super Broadband test Antenna(30 MHz-3 GHz) (RX)	VULB 9163	SCHWARZBECK	2023-12-04	1Y
EM033-02	Bouble-Ridged Waveguide Horn Antenna (800 MHz-18 GHz)(RX)	R&S HF907	R&S	2023-06-26	1Y
EM033-03	High Frequency Antenna & preamplifier(18 GHz~26.5 GHz) (RX)	R&S SCU-26	R&S	2024-04-22	1Y
EM033-04	High Frequency Antenna & preamplifier (26 GHz-40 GHz)	R&S SCU-40	R&S	2024-04-22	1Y
EM031-02-01	Coaxial cable(9 kHz-1 GHz)	N/A	R&S	2024-04-10	1Y
EM033-02-02	Coaxial cable(1 GHz-18 GHz)	N/A	R&S	2024-04-10	1Y
EM033-04-02	Coaxial cable(18 GHz~40 GHz)	N/A	R&S	2024-04-22	1Y
EM031-01	Signal Generator (9 kHz~6 GHz)	SMB100A	R&S	2023-07-17	1Y
EM040-01	Band Reject/Notch Filter	WRHFV	Wainwright	N/A	1Y
EM040-02	Band Reject/Notch Filter	WRCGV	Wainwright	N/A	1Y
EM040-03	Band Reject/Notch Filter	WRCGV	Wainwright	N/A	1Y
EM022-03	2.45 GHz Filter	BRM50702	Micro-Tronics	2024-05-09	1Y
SA016-29	Climatic Test Chamber	MHU-80L	JIANQIAO	2024-01-03	1Y
SA012-74	Digital Multimeter	FLUKE175	FLUKE	2023-10-07	1Y
EM010-01	Regulated DC Power supply	PAB-3003A	GUANHUA	N/A	1Y
SA040-22	Regulated DC Power supply	IT6721	ITECH	2023-09-04	1Y
EM046-05	Power meter	NPR6A	R&S	2024-04-19	1Y
EM046-06	Power meter	NPR6A	R&S	2024-04-19	1Y
EM045-01-01	EMC32 software (RE/RS)	V10.01.00	R&S	N/A	N/A
EM045-01-09	EMC32 software (328/893)	V9.26.01	R&S	N/A	N/A

Conducted emission at the mains terminals

Equipment No.	Equipment	Model	Manufacturer	Cal. Due date (YYYY-MM-DD)	Calibration Interval
EM080-05	EMI receiver	ESCI	R&S	2023-06-08	1Y
EM006-05	LISN	ENV216	R&S	2023-06-05	1Y
EM006-06	LISN	ENV216	R&S	2023-09-05	1Y
EM006-06-01	Coaxial cable	/	R&S	2024-04-10	1Y
EM004-04	EMC shield Room	8m×3m×3m	Zhongyu	2024-01-03	1Y

*****End of the test report*****