

Echelon Fitness Multimedia LLC

TEST REPORT

SCOPE OF WORK

EMC TESTING—ECH-REFL-06

REPORT NUMBER

250908219GZU-002

ISSUE DATE

24-April-2026

[REVISED DATE]

[-----]

PAGES

127

DOCUMENT CONTROL NUMBER

FCC WIFI 5G

© 2017 INTERTEK



TEST REPORT

Applicant Name & Address : Echelon Fitness Multimedia LLC
605 Chestnut Street, 7th Floor Chattanooga TN 37450 United States
Of America
Manufacturing Site : Sundek Industrial Co., Limited
TongFuYuXuFa Industrial Zoon, ShangCun Village, GongMing Town,
BaoAn District Shenzhen City GuangDong 518106 China (Peoples
Republic Of)
Intertek Report No: 250908219GZU-002
FCC ID: 2AWD4-ECH-REFL-06

Test standards

47 CFR PART 15 Subpart E: 2024 section 15.407

Sample Description

Product : Reflect 60 Fitness Mirror
Model No. : ECH-REFL-06
Electrical Rating : AC100-240Vac 50/60Hz
Serial No. : Not Labeled
Date Received : 08 September 2025
Date Test : 05 February 2026-09 March 2026
Conducted

Prepared and Checked By

Approved By:



Elena Lei

Project Engineer



Dean Liu

Sr. Project Engineer

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

TEST REPORT

CONTENT

TEST REPORT	1
CONTENT	3
1.0 TEST RESULT SUMMARY	4
2.0 GENERAL DESCRIPTION	5
2.1 PRODUCT DESCRIPTION	5
2.2 RELATED SUBMITTAL(S) GRANTS	8
2.3 TEST METHODOLOGY	8
2.4 TEST FACILITY	8
3.0 SYSTEM TEST CONFIGURATION	9
3.1 JUSTIFICATION	9
3.2 EUT EXERCISING SOFTWARE	10
3.3 SPECIAL ACCESSORIES	10
3.4 MEASUREMENT UNCERTAINTY	10
3.5 EQUIPMENT MODIFICATION	11
3.6 SUPPORT EQUIPMENT LIST AND DESCRIPTION	11
4.0 MEASUREMENT RESULTS	12
4.1 ANTENNA REQUIREMENT	12
4.2 DUTY CYCLE	13
4.3 26 DB BANDWIDTH	23
4.4 6 DB BANDWIDTH	45
4.5 MAXIMUM CONDUCTED OUTPUT POWER	52
4.6 MAXIMUM PEAK POWER SPECTRAL DENSITY	55
4.7 RADIATED SPURIOUS EMISSIONS	78
4.8 BAND EDGES REQUIREMENT	94
4.10 CONDUCTED EMISSION TEST	124
5.0 TEST EQUIPMENT LIST	127

TEST REPORT

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 v02r01, 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 v02r01, Clause C	PASS
Maximum Conducted Output Power	FCC PART 15 E clause 15.407(a)	FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01, 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 v02r01, Clause F	PASS
Radiated spurious emission	FCC PART 15 E clause 15.407(b)	FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01, Clause G	PASS
Band Edge	FCC PART 15 E clause 15.407(b)	FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01, 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 C63.10:2020 in the whole report			

TEST REPORT

2.0 General Description

2.1 Product Description

Operating Frequency:	Band I(U-NII-1): 5150 MHz to 5250 MHz, Band II(U-NII-2A): 5250 MHz to 5350 MHz Band III (U-NII-2C): 5470 MHz to 5725 MHz Band IV (U-NII-3): 5725 MHz to 5850MHz
Type of Modulation:	802.11 a: OFDM (BPSK/QPSK/16QAM/64QAM) 802.11 n: OFDM (BPSK/QPSK/16QAM/64QAM) 802.11 ac: OFDM (BPSK/QPSK/16QAM/64QAM/256QAM)
Transmit Data Rate:	802.11a :6/9/12/18/24/36/48/54 Mbps 802.11n 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 802.11n HT40: MCS0:15Mbps, MCS1:30Mbps, MCS2:45Mbps, MCS3:60Mbps, MCS4:90Mbps, MCS5:120Mbps, MCS6:135Mbps, MCS7:150Mbps 802.11ac VHT20: 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 VHT40: MCS0:15Mbps, MCS1:30Mbps, MCS2:45Mbps, MCS3:60Mbps, MCS4:90Mbps, MCS5:120Mbps, MCS6:135Mbps, MCS7:150Mbps, MCS8:180Mbps, MCS9:200Mbps 802.11ac VHT80: 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	4 channels for 5180 MHz ~ 5240 MHz (802.11 a/n HT20/ac VHT20); 2 channels for 5190 MHz ~ 5230 MHz (802.11 n HT40/ac VHT40); 1 channels for 5210 MHz (802.11ac VHT80); 4 channels for 5260 MHz ~ 5320 MHz (802.11 a/n HT20/ac VHT20); 2 channels for 5270 MHz ~ 5310 MHz (802.11 n HT40/ac VHT40); 1 channels for 5290 MHz (802.11ac VHT80); 11 channels for 5500 MHz ~ 5700 MHz (802.11a/n HT20/ac VHT20); 5 channels for 5510 MHz ~ 5670 MHz (802.11n HT40/ac VHT40); 1 channels for 5530 MHz (802.11ac VHT80); 5 channels for 5745 MHz ~ 5825 MHz (802.11a/n HT20/ac VHT20); 2 channels for 5755 MHz ~ 5795 MHz (802.11n HT40/ac VHT40); 1 channels for 5775 MHz (802.11ac VHT80);
Function:	Reflect 60 Exercise Mirror with 5 GHz WIFI
EUT Power Supply:	AC 120V 60 Hz
Power cord:	AC supply cable

TEST REPORT

Channels and frequencies list:

Band I 5150 MHz to 5250 MHz

For 802.11a/n HT20/ac VHT20: test frequencies are lowest channel 36: 5180 MHz, middle channel 44: 5220 MHz and highest channel 48: 5240.

For 802.11n HT40/ac VHT40: test frequencies are lowest channel 38: 5190 MHz and highest channel 46: 5230 MHz

For 802.11ac VHT80: test frequencies is channel 42: 5210 MHz

Band II 5250MHz-5350MHz

For 802.11a/n HT20/ac VHT20: test frequencies are lowest channel 52: 5260 MHz, middle channel 60: 5300 MHz and highest channel 64: 5320.

For 802.11n HT40/ac VHT40: test frequencies are lowest channel 54: 5270 MHz and highest channel 62: 5310 MHz

For 802.11ac VHT80: test frequencies is channel 58: 5290 MHz

Band III 5470MHz-5725MHz

For 802.11a/n HT20/ac VHT20: test frequencies are lowest channel 100: 5500 MHz, middle channel 116: 5580 MHz and highest channel 140: 5700.

For 802.11n HT40/ac VHT40: test frequencies are lowest channel 102: 5510 MHz, middle channel 110: 5550 MHz and highest channel 134: 5670.

For 802.11ac VHT80: test frequencies is lowest channel 106: 5530 MHz.

Band VI 5725 MHz to 5850 MHz

For 802.11a/n HT20/ac VHT20: test frequencies are lowest channel 149: 5745 MHz, middle channel 157: 5785 MHz and highest channel 165: 5825 MHz

For 802.11n HT40/ac VHT40: test frequencies are lowest channel 151: 5755 MHz and highest channel 159: 5795 MHz

For 802.11ac VHT80: test frequencies is channel 155: 5775 MHz

For 802.11a/n HT20/ac VHT20:

Band I (5150MHz-5250MHz)		Band II (5250MHz-5350MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	52	5260
40	5200	56	5280
44	5220	60	5300
48	5240	64	5320

TEST REPORT

Band III (5470MHz-5725MHz)		Band IV(5725MHz-5850MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	149	5745
104	5520	153	5765
108	5540	157	5785
112	5560	161	5805
116	5580	165	5825
120	5600		
124	5620		
128	5640		
132	5660		
136	5680		
140	5700		

For 802.11n HT40/ac VHT40:

Band I(5150MHz-5250MHz)		Band II (5250MHz-5350MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	54	5270
46	5230	62	5310

Band III (5470MHz-5725MHz)		Band IV(5725MHz-5850MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510	151	5755
110	5550	159	5795
118	5590		
126	5630		
134	5670		

For 802.11ac VHT80:

Band I(5150MHz-5250MHz)		Band II (5250MHz-5350MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	58	5290

TEST REPORT

Band III (5470MHz-5725MHz)		Band IV(5725MHz-5850MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530	155	5775

2.2 Related Submittal(s) Grants

This is an application for certification of Reflect 60 Exercise Mirror Devices.

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 v02r01.

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10:2020. 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
Room102/104, No 203, KeZhu Road, Science City, GETDD Guangzhou, China

Except Conducted Emissions was performed at:

Room101/301/401/102/202/302/402/502/602/702/802, No. 7-2, Caipin Road, Huangpu District, 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.

TEST REPORT

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, AC power line was manipulated to produce worst case emissions. It was powered by AC 120V/60Hz supply.

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

TEST REPORT

3.2 EUT Exercising Software

Description	Manufacturer	Model No.	SN/Version	Supplied by
For fixing frequency	Echelon	"cmd" command	--	Applicant

3.3 Special Accessories

No special accessories used.

3.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	20 dB Bandwidth	2.31%
	6dB Bandwidth	
	99% Bandwidth	
2	Carrier Frequencies Separated	2.31%
3	Dwell Time	1.19%
4	Maximum Peak Conducted Output Power	1.98 dB
5	Peak Power Spectral Density	1.98 dB
6	Out of Band Conducted Emissions	1.98 dB
7	Band edges measurement	1.98 dB
8	Radiated Emissions	3.64 dB (9 kHz-30 MHz)
		4.26 dB (30 MHz-1 GHz)
		4.96 dB (1 GHz-18 GHz)
		5.16 dB (18 GHz-40 GHz)
9	Conducted Emissions at Mains Terminals	2.23 dB
10	Temperature	0.81 °C
11	Humidity	1.73%
12	Time	1.19%

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

TEST REPORT

3.5 Equipment Modification

Any modifications installed previous to testing by Echelon Fitness Multimedia LLC will be incorporated in each production model sold / leased in the United States.

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
USB flash disk*2	--	--	USB	Intertek

Cable

Description	Model No.	Connector type	Cable length/type	Supplied by
Antenna cable	RF-01	SMA	0.2 m(unshielded)	Intertek
USB extension cord	USB-01	USB	1.0 m(unshielded)	Intertek
Network port connection cable	--	RJ45	1.5 m(unshielded)	Intertek

TEST REPORT

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 2.76 dBi as provided by applicant.



TEST REPORT

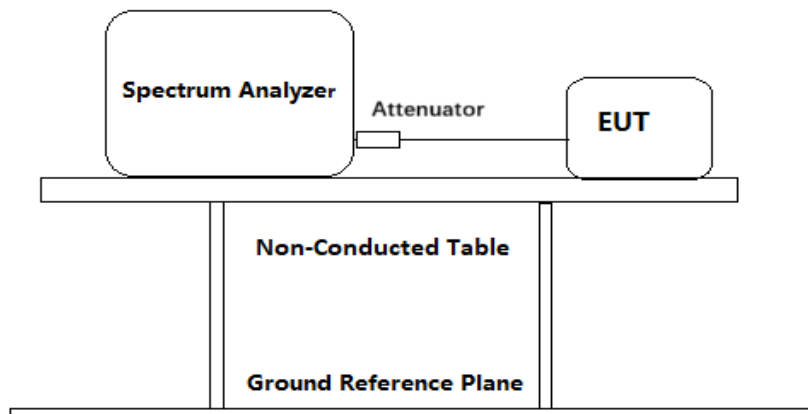
4.2 Duty Cycle

Test Requirement: FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01, Clause B

Test Method: FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01, 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 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.

TEST REPORT

Test result:

Band I (5150MHz-5250MHz)

Channel No.	Frequency (MHz)	Mode	On time (ms)	Period (ms)	Duty Cycle (%)
40	5200	802.11a	100	100	100
40	5200	802.11n HT20	100	100	100
46	5230	802.11n HT40	100	100	100
42	5210	802.11ac VHT80	100	100	100

Band II (5250MHz-5350MHz)

Channel No.	Frequency (MHz)	Mode	On time (ms)	Period (ms)	Duty Cycle (%)
60	5300	802.11a	100	100	100
60	5300	802.11n HT20	100	100	100
54	5270	802.11n HT40	100	100	100
58	5290	802.11ac VHT80	100	100	100

Band III (5470MHz-5725MHz)

Channel No.	Frequency (MHz)	Mode	On time (ms)	Period (ms)	Duty Cycle (%)
116	5580	802.11a	100	100	100
116	5580	802.11n HT20	100	100	100
110	5550	802.11n HT40	100	100	100
106	5530	802.11ac VHT80	100	100	100

Band IV (5725MHz-5850MHz)

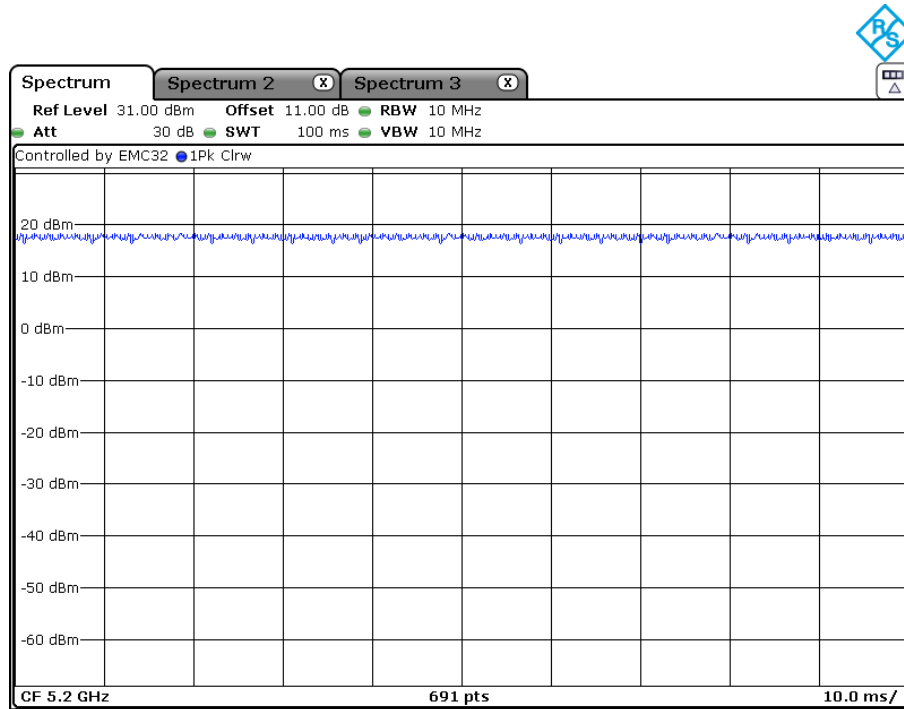
Channel No.	Frequency (MHz)	Mode	On time (ms)	Period (ms)	Duty Cycle (%)
157	5785	802.11a	100	100	100
157	5785	802.11n HT20	100	100	100
151	5755	802.11n HT40	100	100	100
155	5775	802.11ac VHT80	100	100	100

TEST REPORT

Result plot as follows :

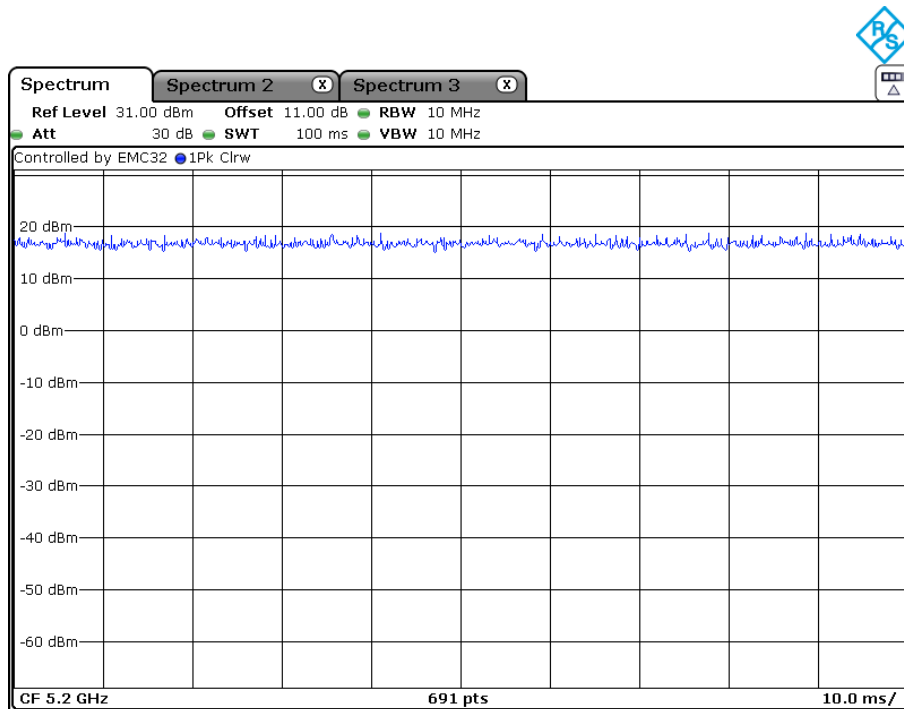
802.11a

Channel 40: 5200 MHz:



802.11n HT20

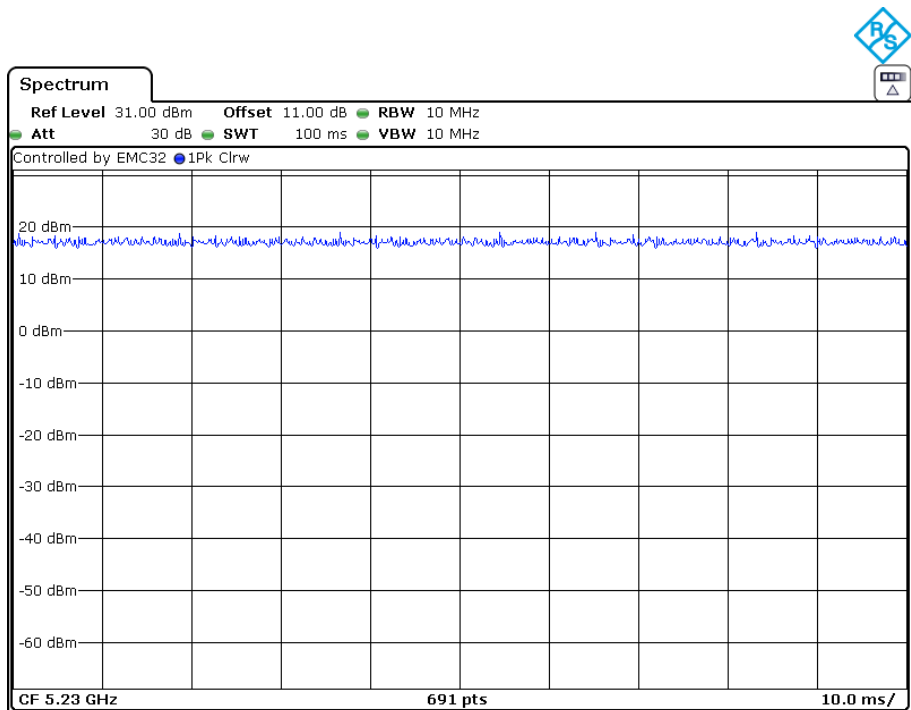
Channel 40: 5200 MHz:



TEST REPORT

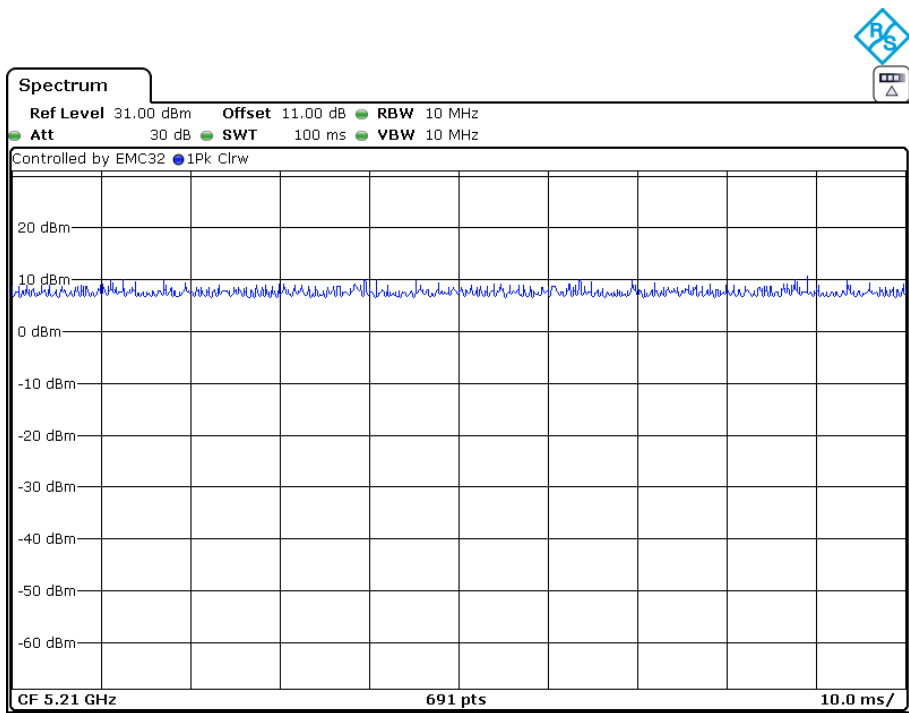
802.11n HT40

Channel 46: 5230 MHz:



802.11ac VHT80

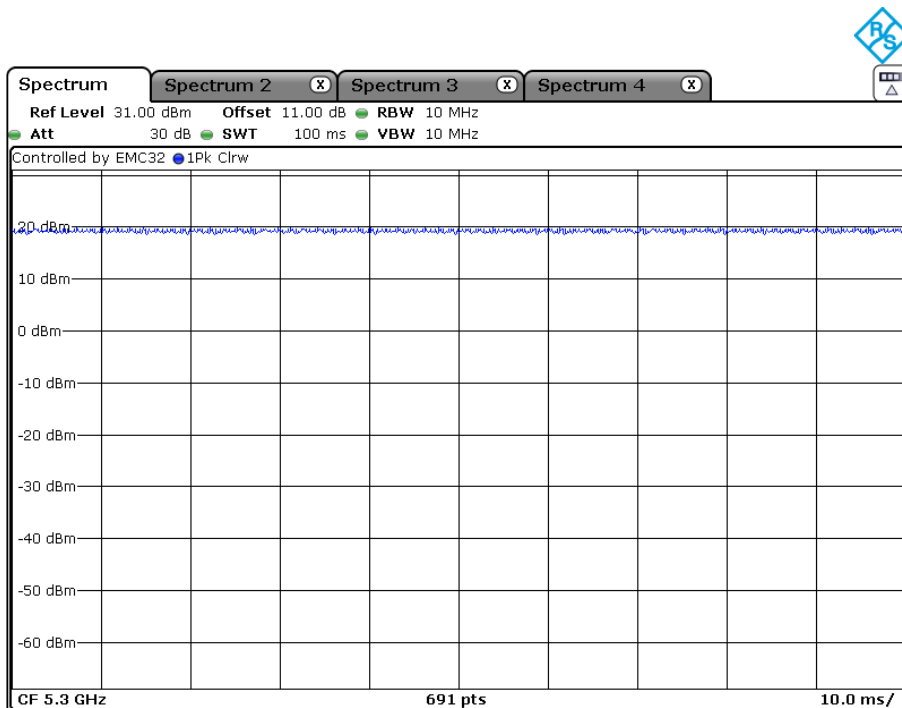
Channel 42: 5210 MHz:



TEST REPORT

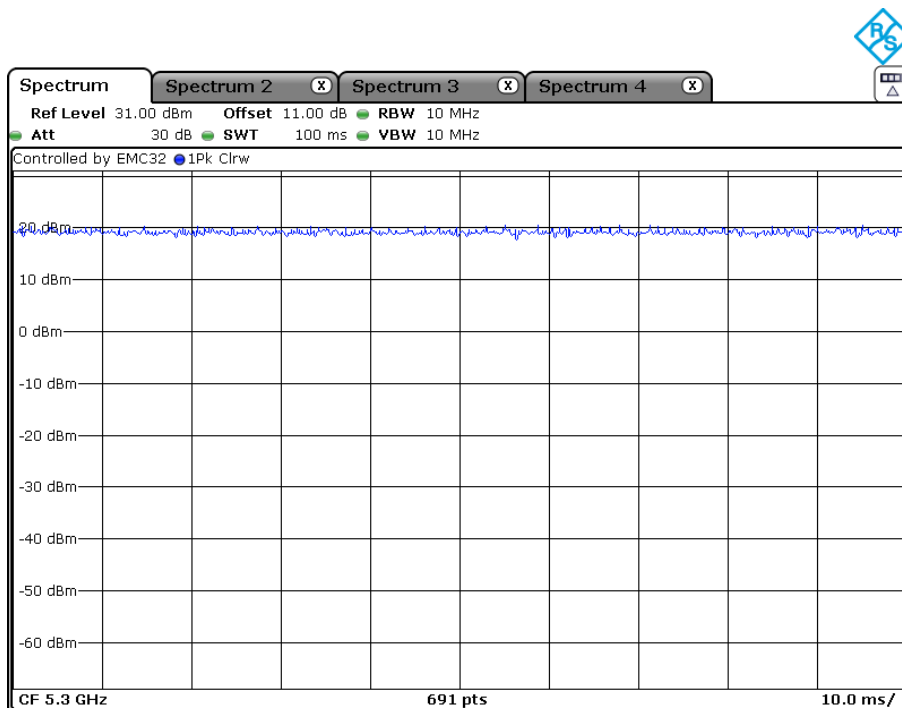
802.11a

Channel 60: 5300 MHz:



802.11n HT20

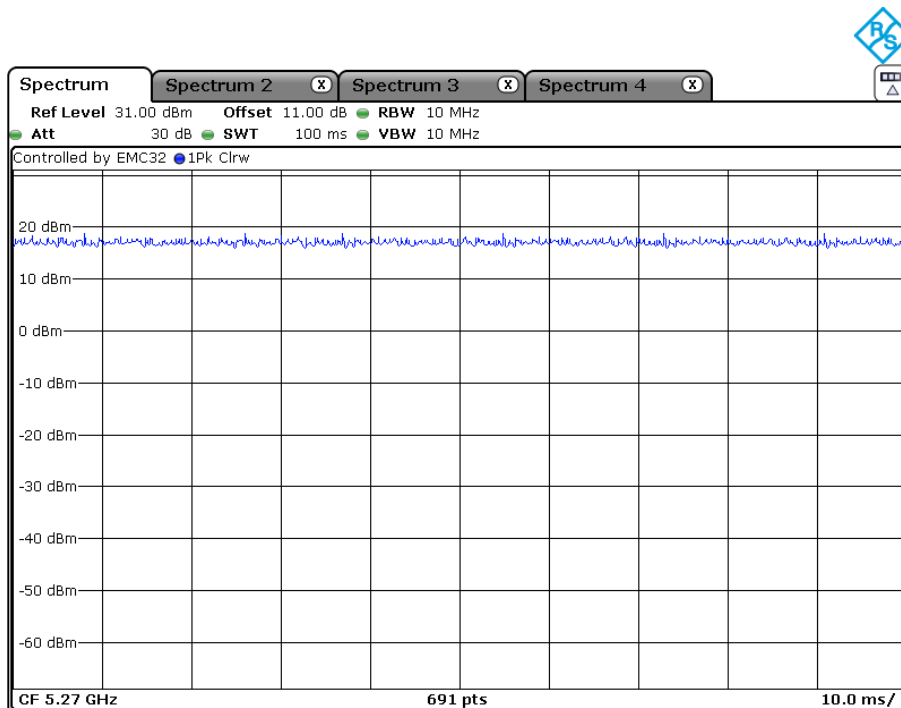
Channel 60: 5300 MHz:



TEST REPORT

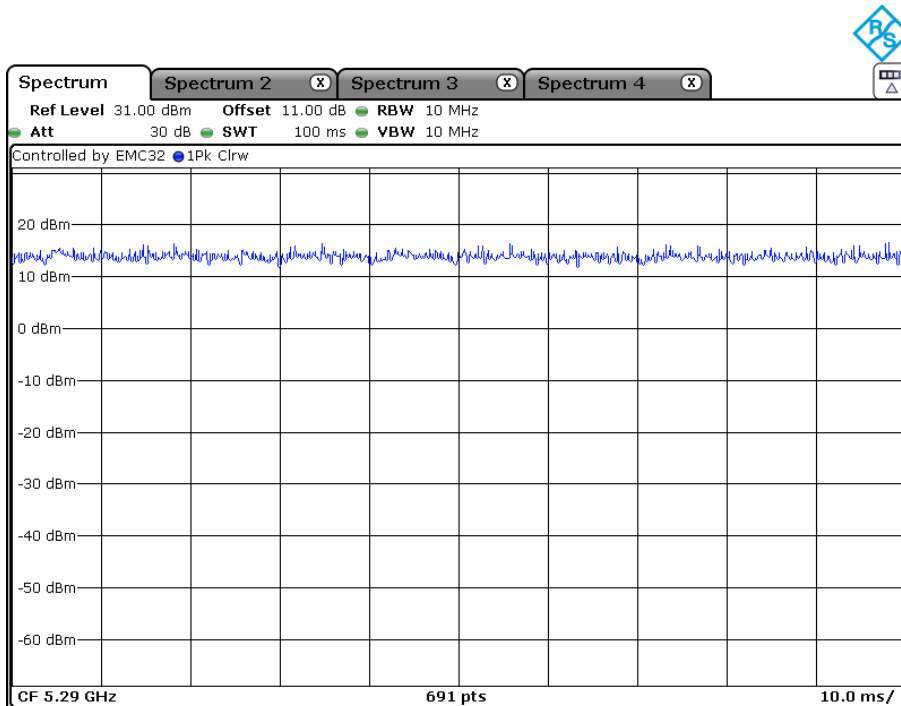
802.11n HT40

Channel 54:5270 MHz:



802.11ac VHT80

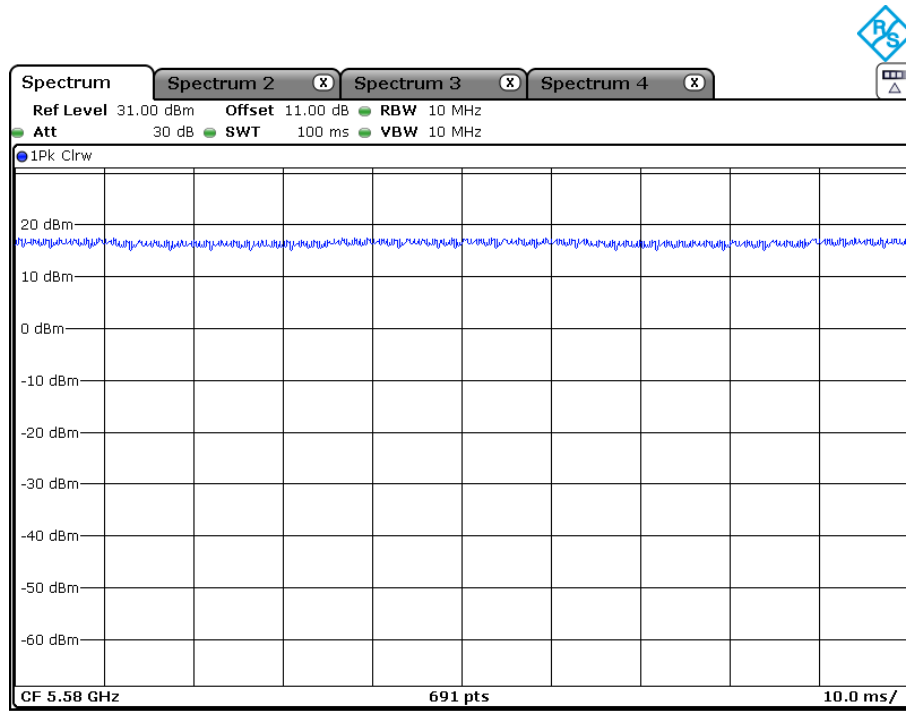
Channel 58: 5290 MHz:



TEST REPORT

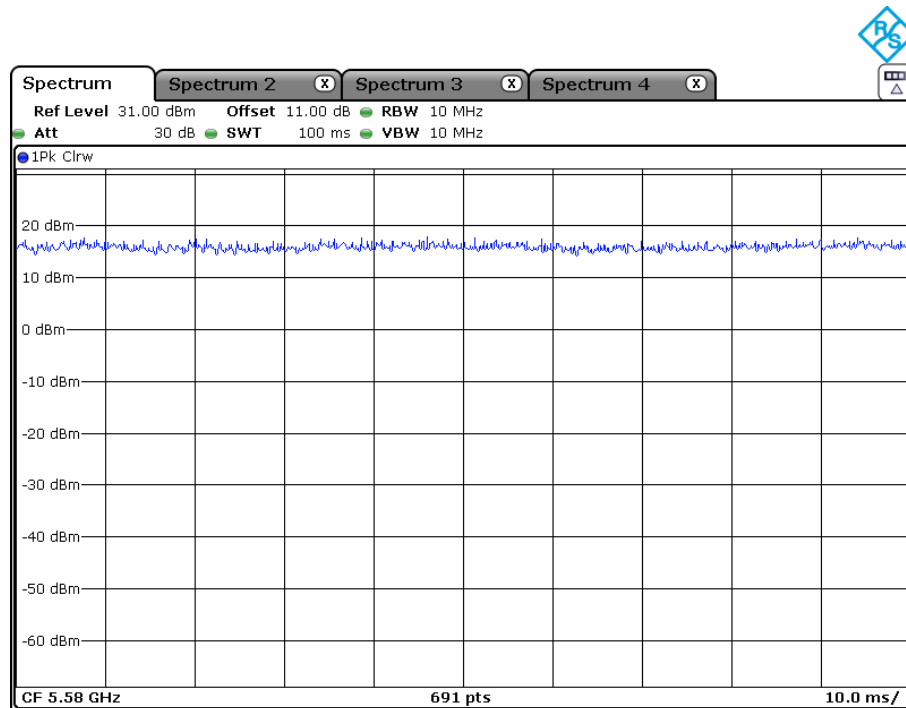
802.11a

Channel 116: 5580 MHz:



802.11n HT20

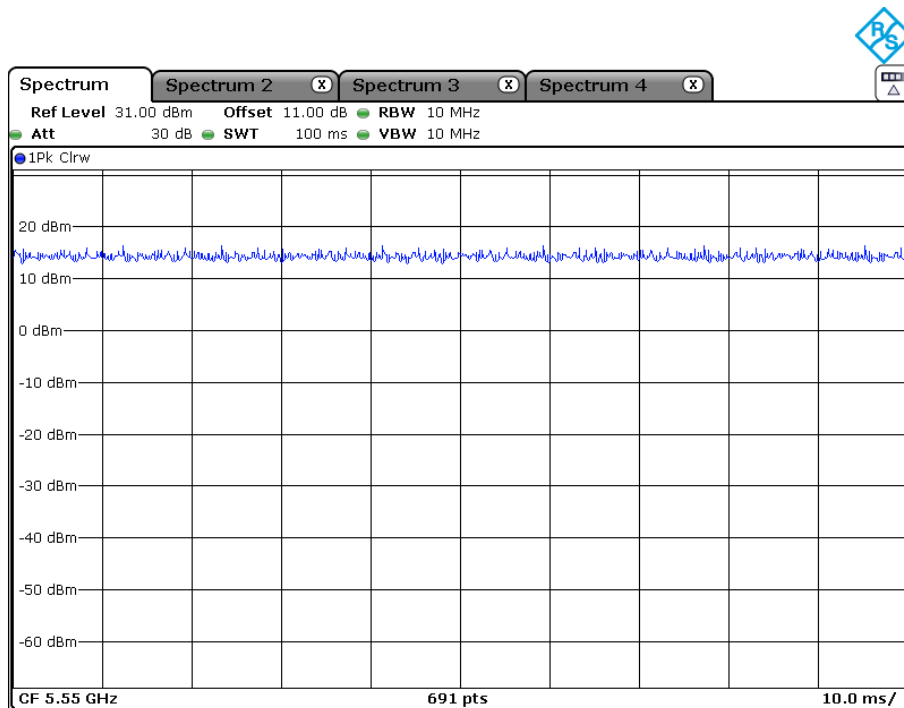
Channel 116: 5580 MHz:



TEST REPORT

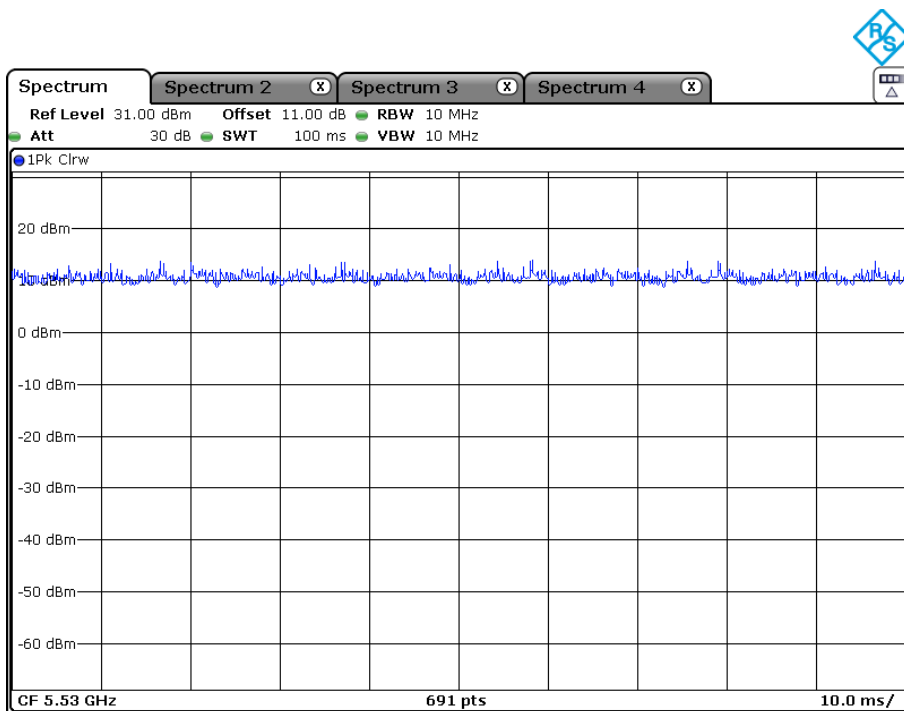
802.11n HT40

Channel 110: 5550MHz:



802.11ac VHT80

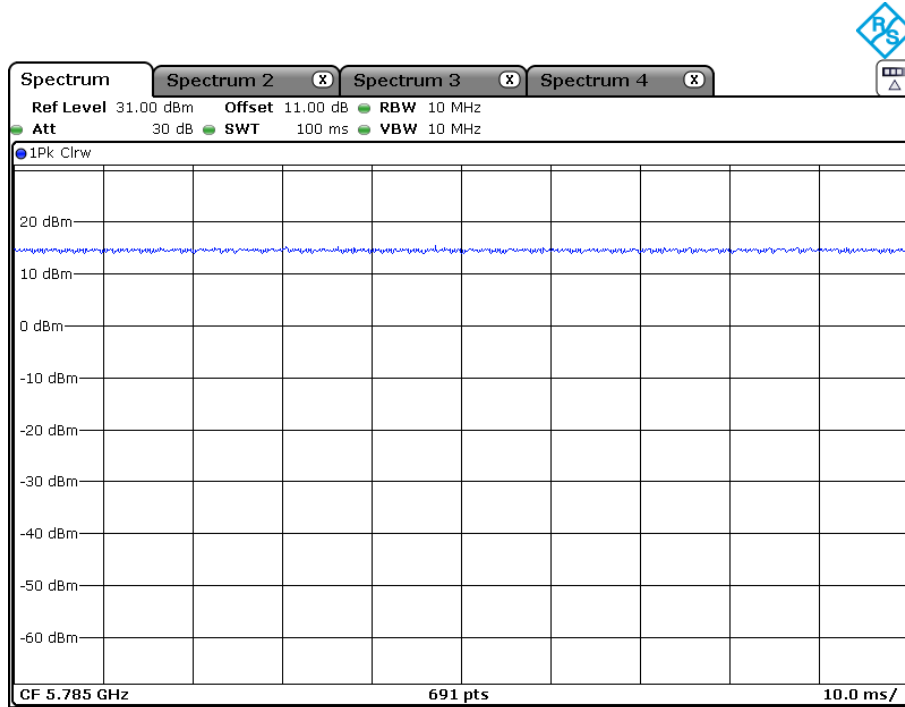
Channel 106: 5530 MHz:



TEST REPORT

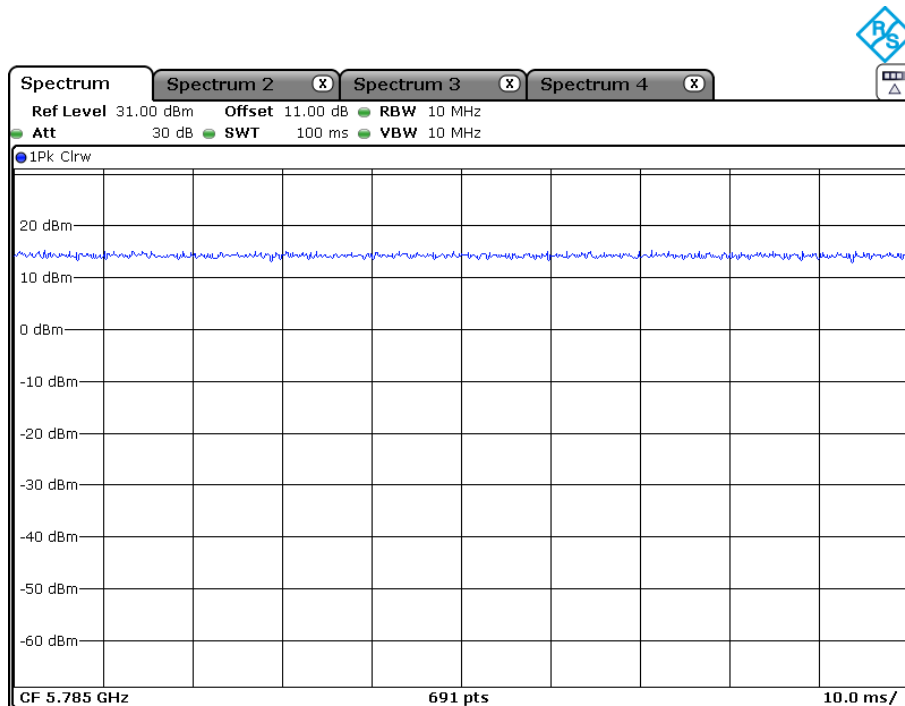
802.11a

Channel 157: 5785MHz:



802.11n HT20

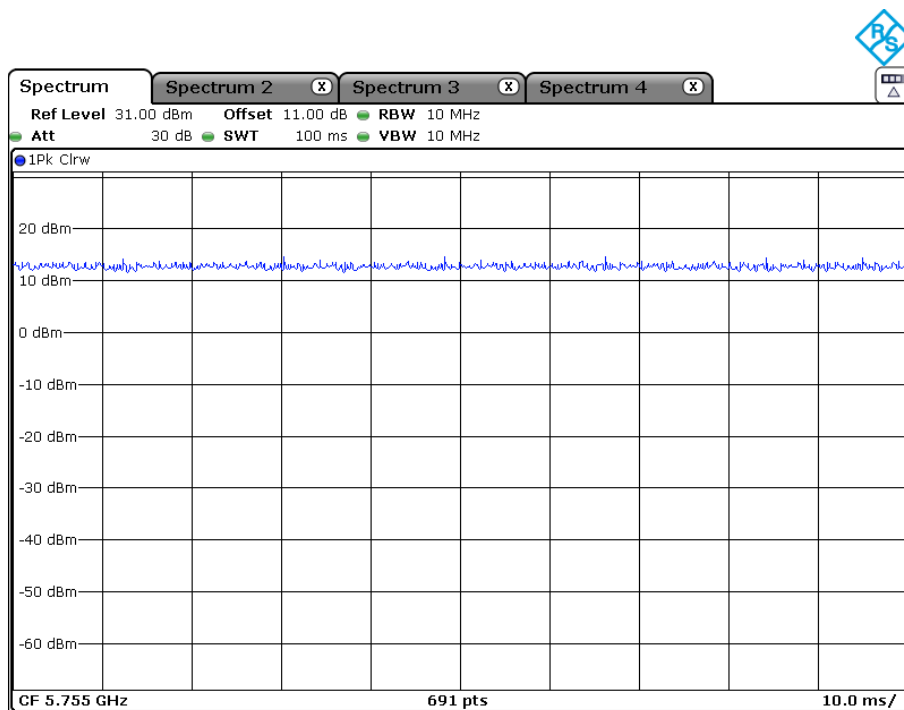
Channel 157: 5785MHz:



TEST REPORT

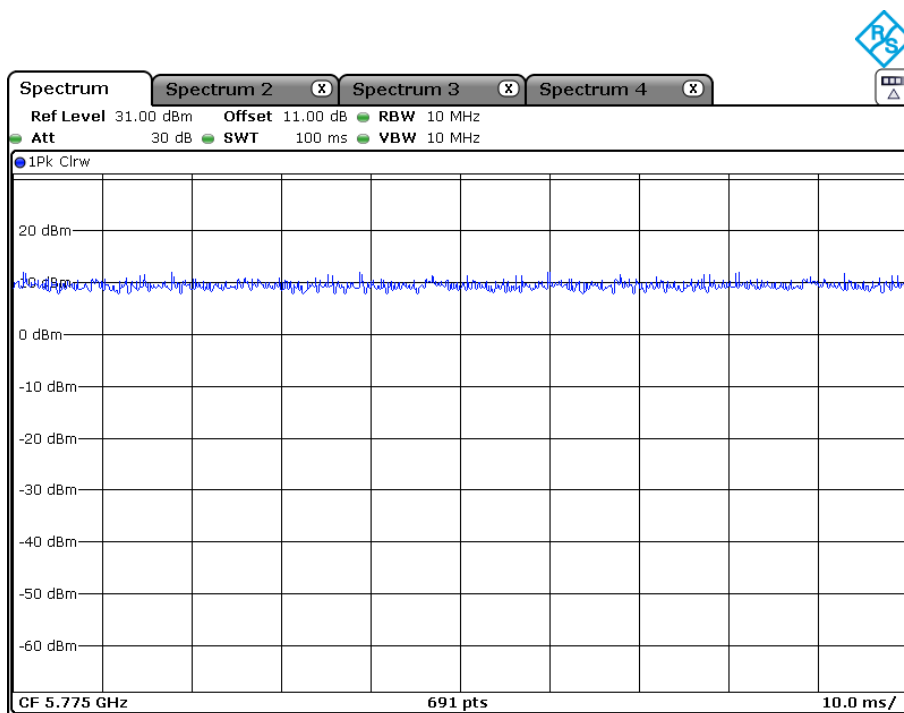
802.11n HT40

Channel 151:5755 MHz:



802.11ac VHT80

Channel 155: 5775 MHz:

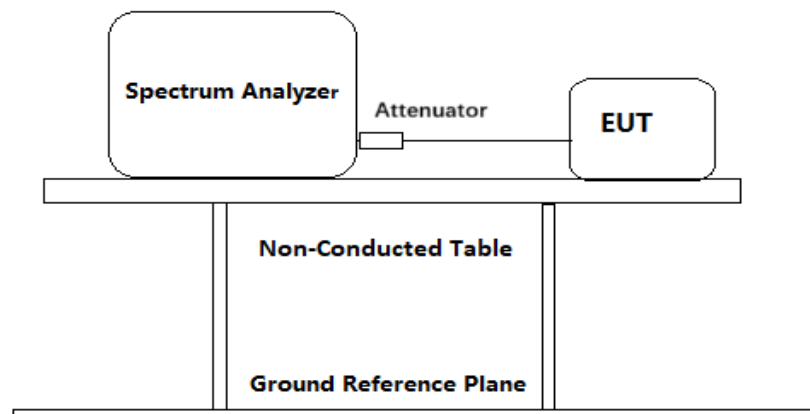


TEST REPORT

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 v02r01, Clause C&D
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 10dB attenuator) from the antenna port to the spectrum.
2. Set the spectrum analyzer:

Emission Bandwidth (EBW)

 - a) Set the RBW = approximately 1% of the emission bandwidth.
 - b) Set the VBW > 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.

Minimum Emission Bandwidth for the band 5.725–5.85 GHz

 - a) Set RBW = 100 kHz.
 - b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
 - c) Detector = Peak.
 - d) Trace mode = max-hold.
 - e) Sweep = No faster than coupled (auto) time.

TEST REPORT

- 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.

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.

Band I (5150MHz – 5250MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Result
36	5180	802.11a	6 Mbps	21.187
40	5200		6 Mbps	21.245
48	5240		6 Mbps	21.302
36	5180	802.11 n HT20	7.2 Mbps	21.418
40	5200		7.2 Mbps	21.708
48	5240		7.2 Mbps	21.766
38	5190	802.11n HT40	15 Mbps	39.480
46	5230		15 Mbps	39.360
42	5210	802.11ac VHT80	32.5 Mbps	80.580

Band II (5250MHz-5350MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Result
52	5260	802.11a	6 Mbps	21.360
60	5300		6 Mbps	21.245
64	5320		6 Mbps	21.245
52	5260	802.11 n HT20	7.2 Mbps	21.832
60	5300		7.2 Mbps	21.534
64	5320		7.2 Mbps	21.708
54	5270	802.11n HT40	15 Mbps	39.830
62	5310		15 Mbps	39.360

TEST REPORT

58	5290	802.11ac VHT80	32.5 Mbps	80.810
----	------	-------------------	-----------	--------

Band III (5470MHz-5725MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Result
100	5500	802.11a	6 Mbps	21.360
116	5580		6 Mbps	21.071
140	5700		6 Mbps	21.360
100	5500	802.11 n HT20	7.2 Mbps	21.534
116	5580		7.2 Mbps	21.534
140	5700		7.2 Mbps	21.766
102	5510	802.11n HT40	15 Mbps	39.360
110	5550		15 Mbps	39.590
134	5670		15 Mbps	38.670
106	5530	802.11ac VHT80	32.5 Mbps	81.270

Band IV (5725MHz – 5850MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Result
149	5745	802.11a	6 Mbps	21.534
157	5785		6 Mbps	21.418
165	5825		6 Mbps	21.766
149	5745	802.11 n HT20	7.2 Mbps	21.939
157	5785		7.2 Mbps	22.344
165	5825		7.2 Mbps	22.287
151	5755	802.11n HT40	15 Mbps	40.870
159	5795		15 Mbps	40.290
155	5775	802.11ac VHT80	32.5 Mbps	80.580

Test result: The unit does meet the FCC requirements.

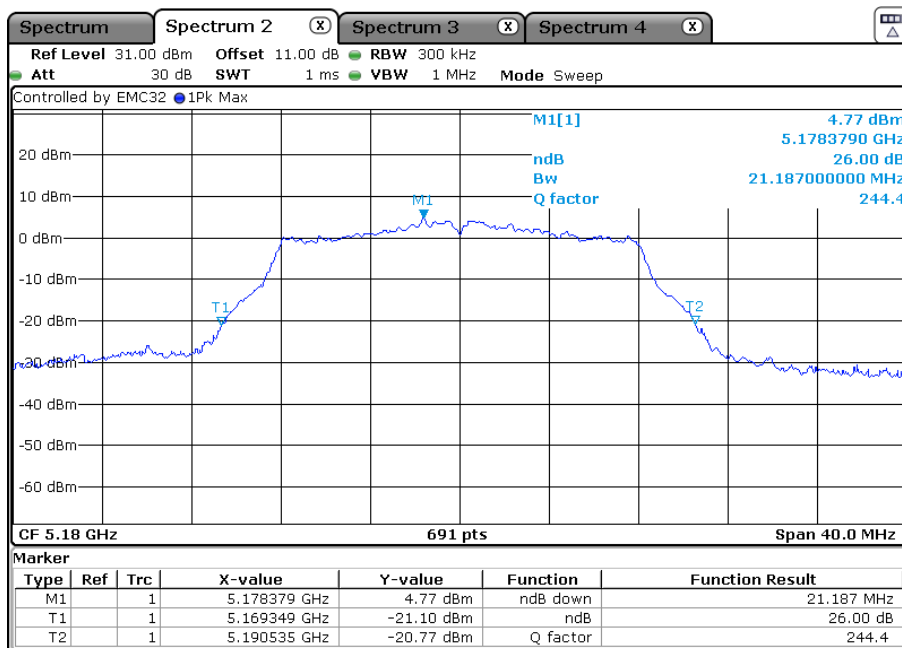
TEST REPORT

Result plot as follows

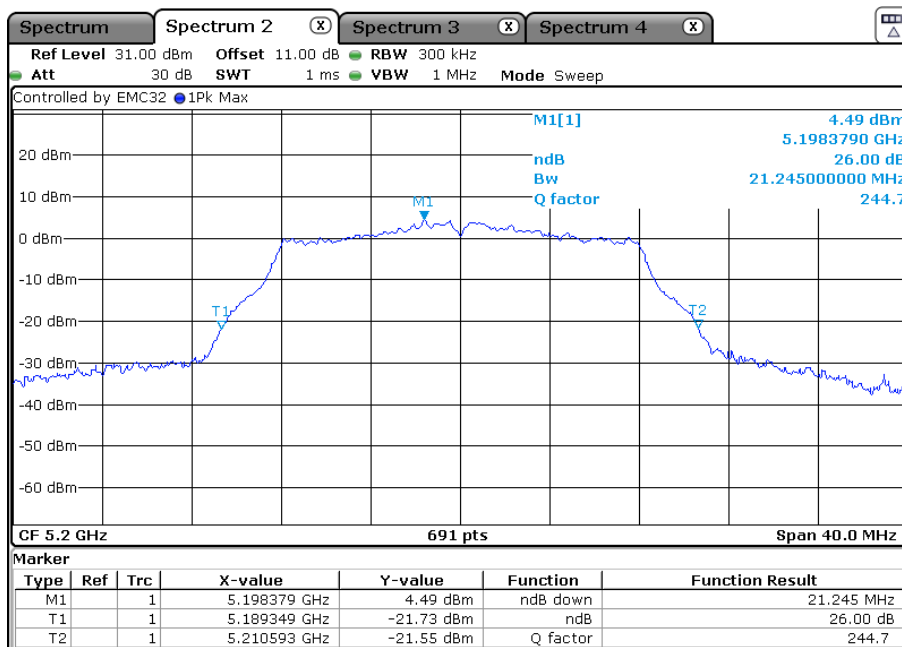
Band I 5150 MHz to 5250 MHz

802.11a

Channel 36: 5180 MHz:

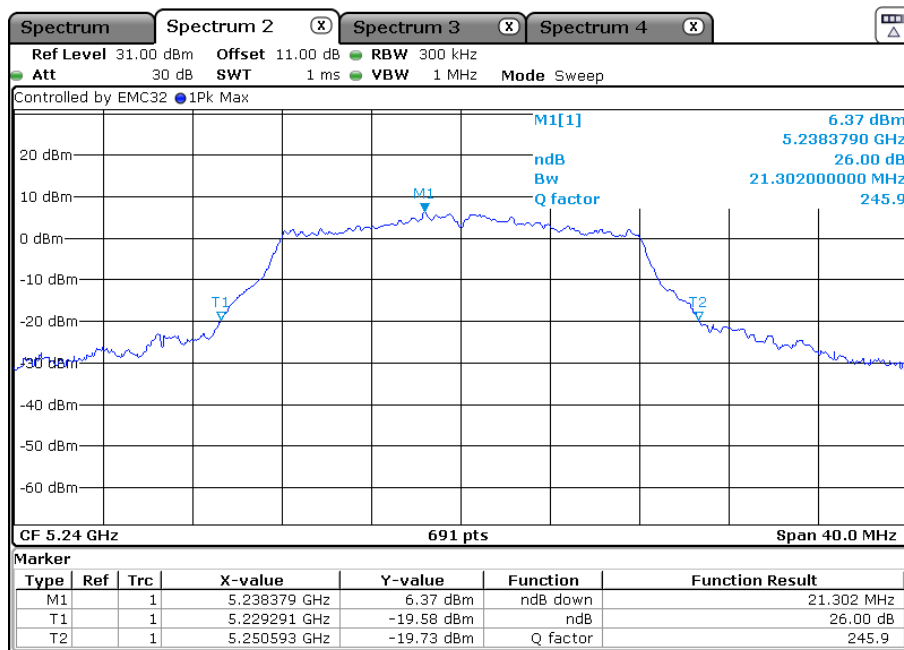


Channel 40: 5200 MHz:



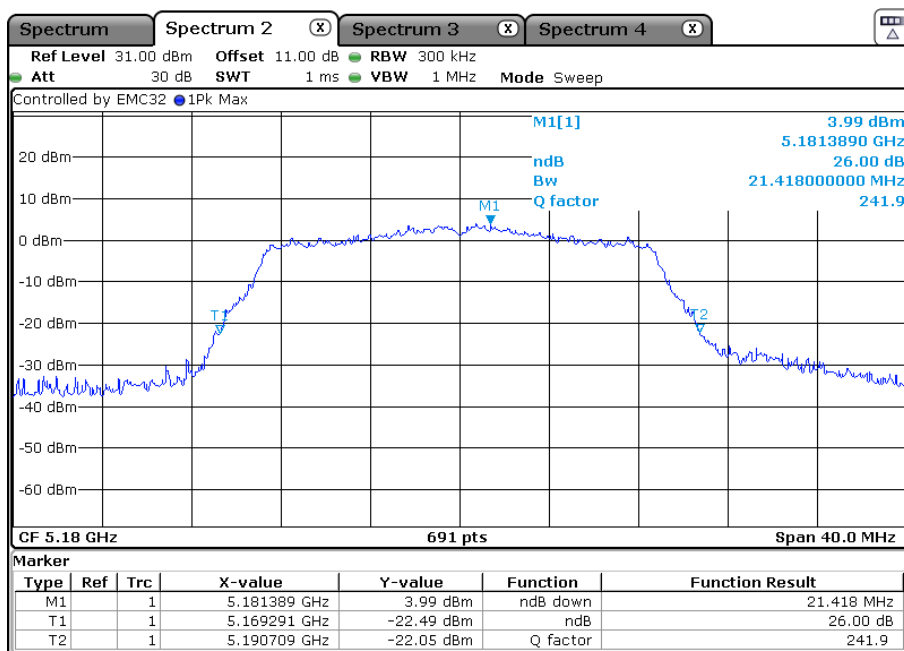
TEST REPORT

Channel 48: 5240 MHz:



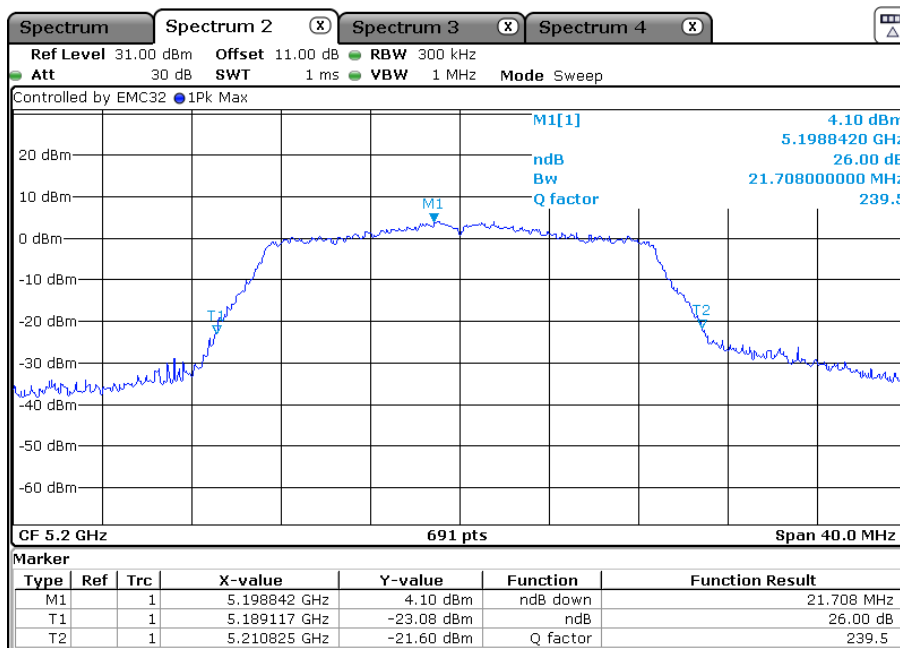
802.11n HT20

Channel 36: 5180 MHz:

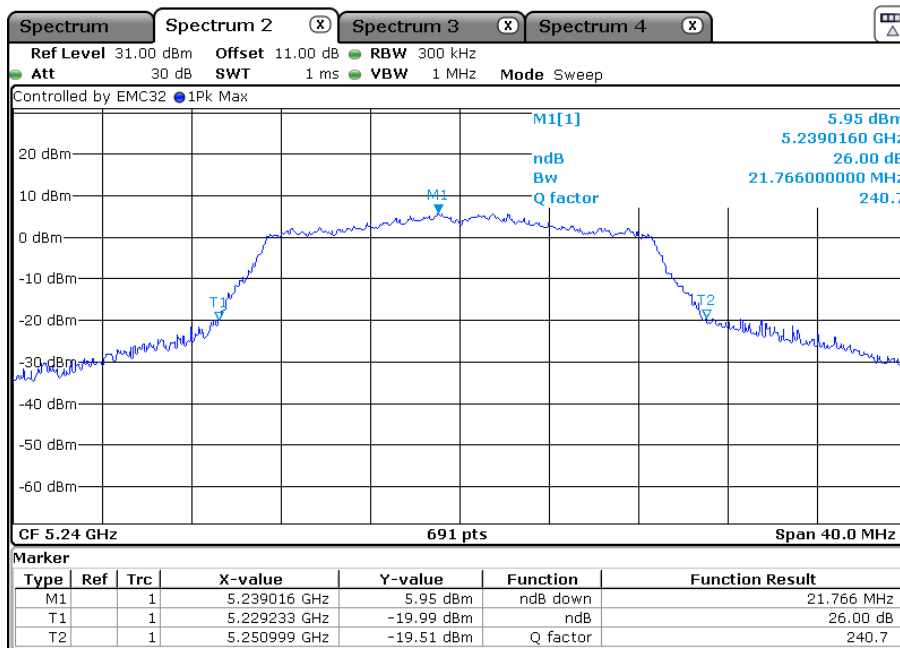


TEST REPORT

Channel 40: 5200 MHz:



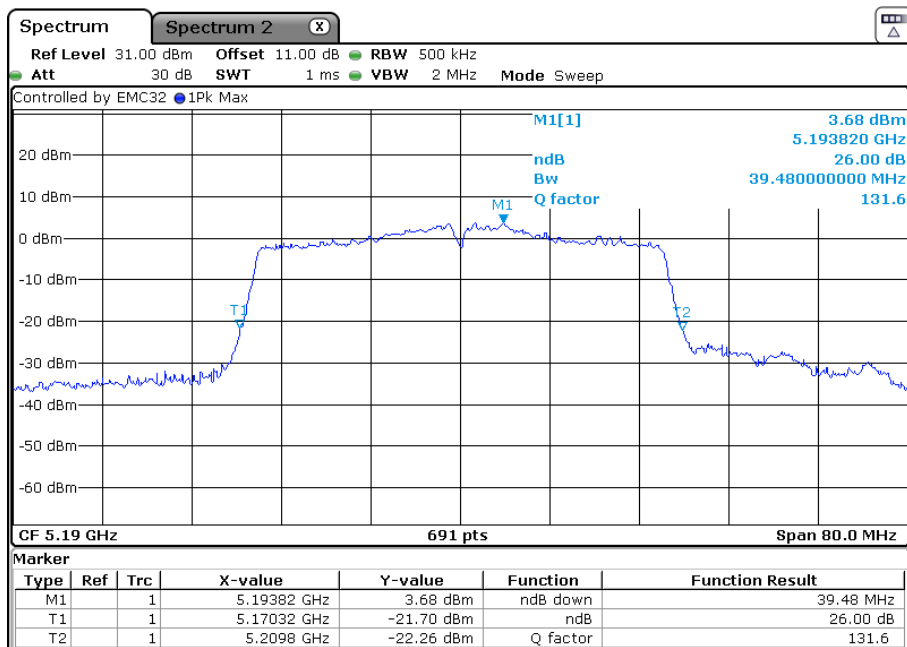
Channel 48: 5240 MHz:



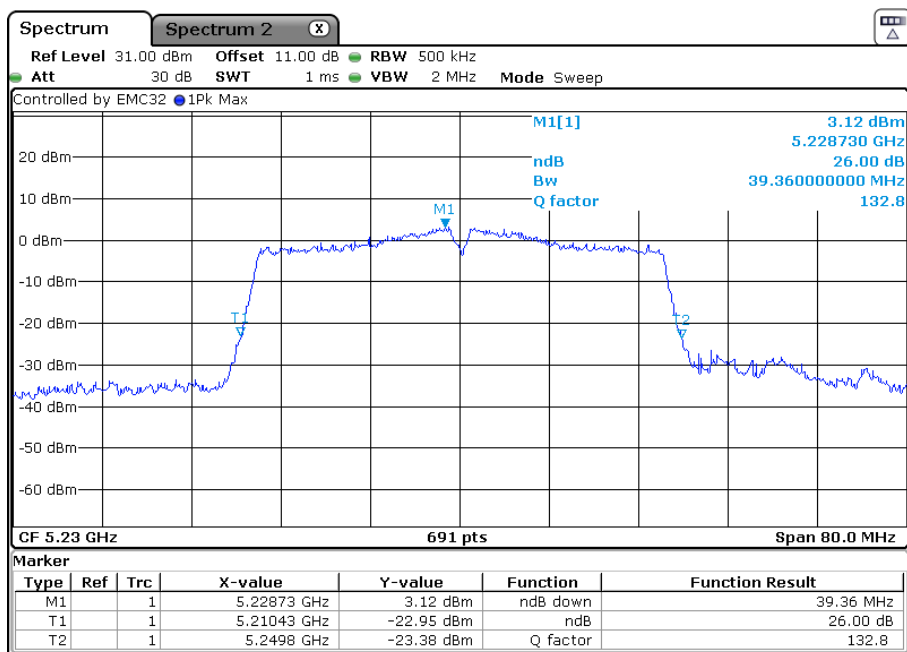
TEST REPORT

802.11n HT40

Channel 38: 5190 MHz:



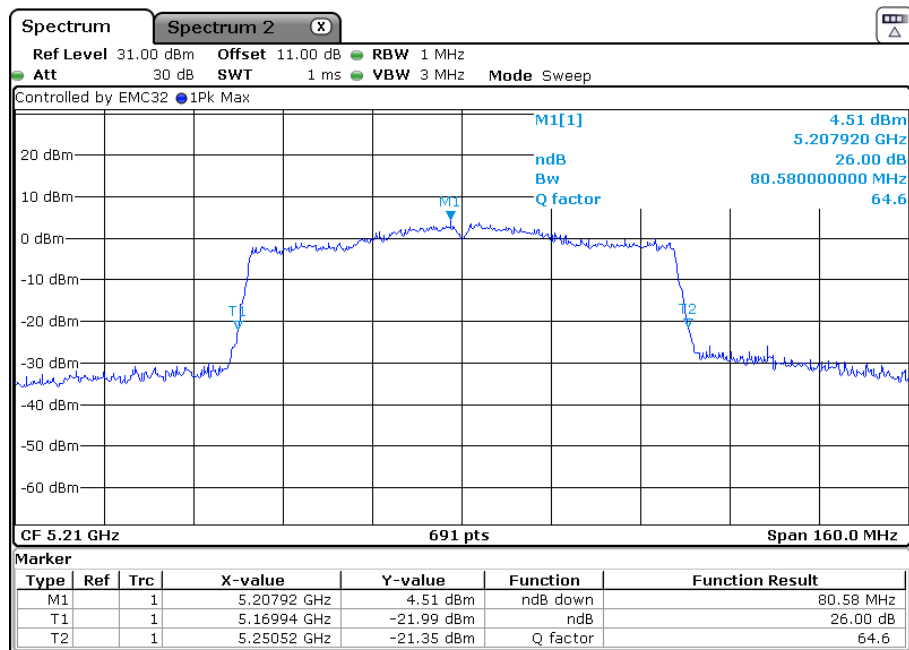
Channel 46: 5230 MHz:



TEST REPORT

802.11ac VHT80

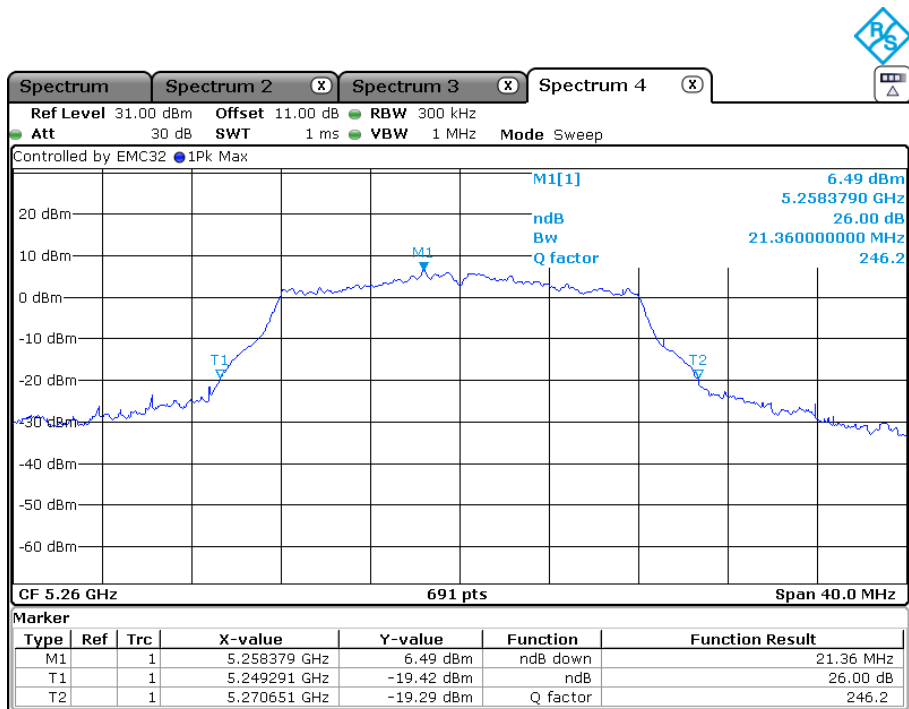
Channel 42: 5210 MHz:



Band II 5250 MHz to 5350 MHz

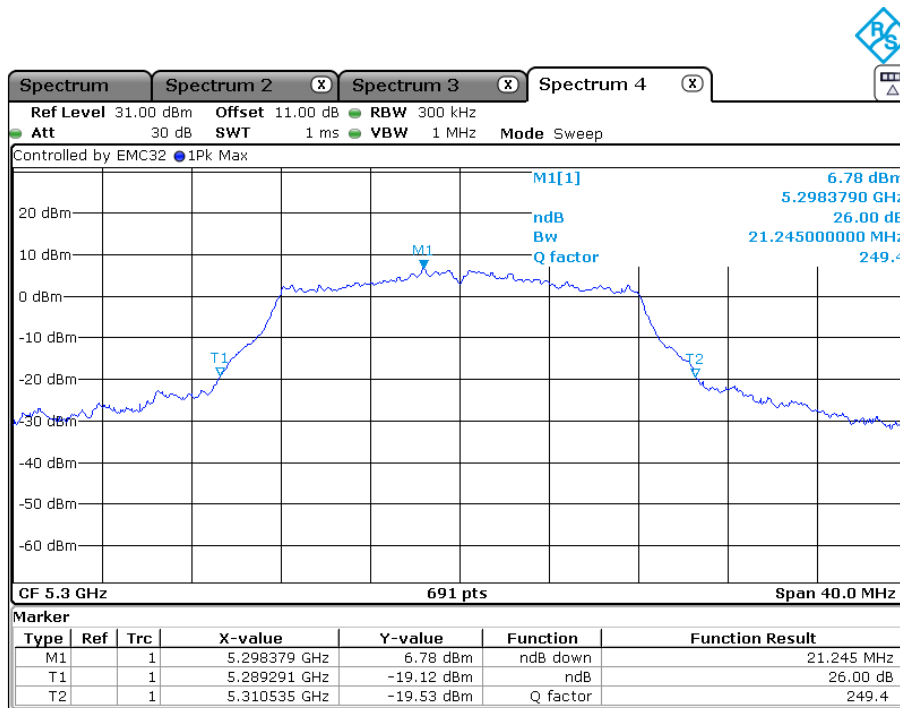
802.11a

Channel 52: 5260 MHz:

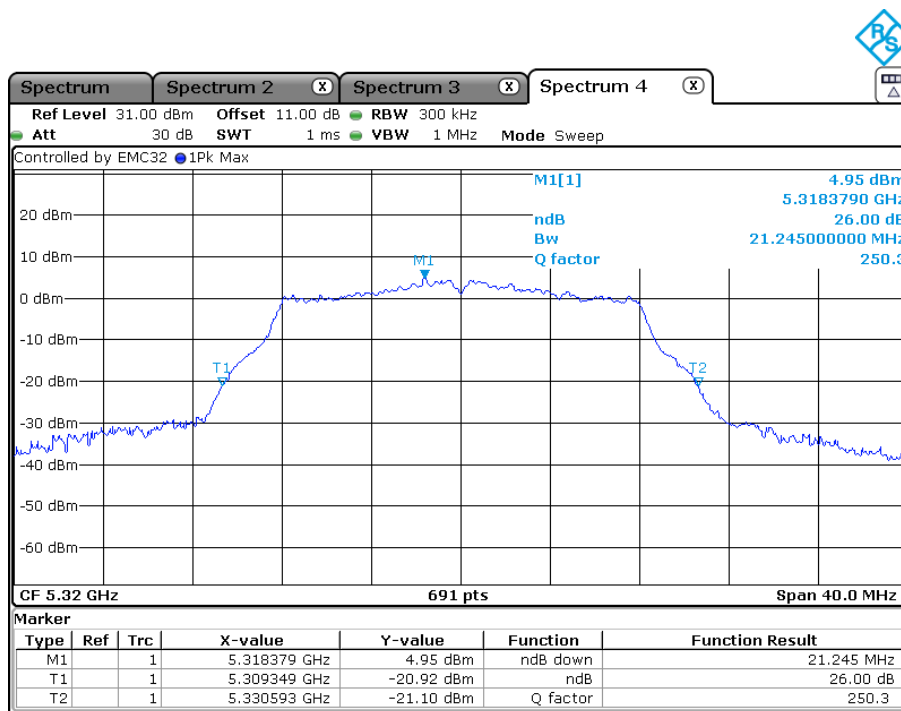


TEST REPORT

Channel 60: 5300 MHz:



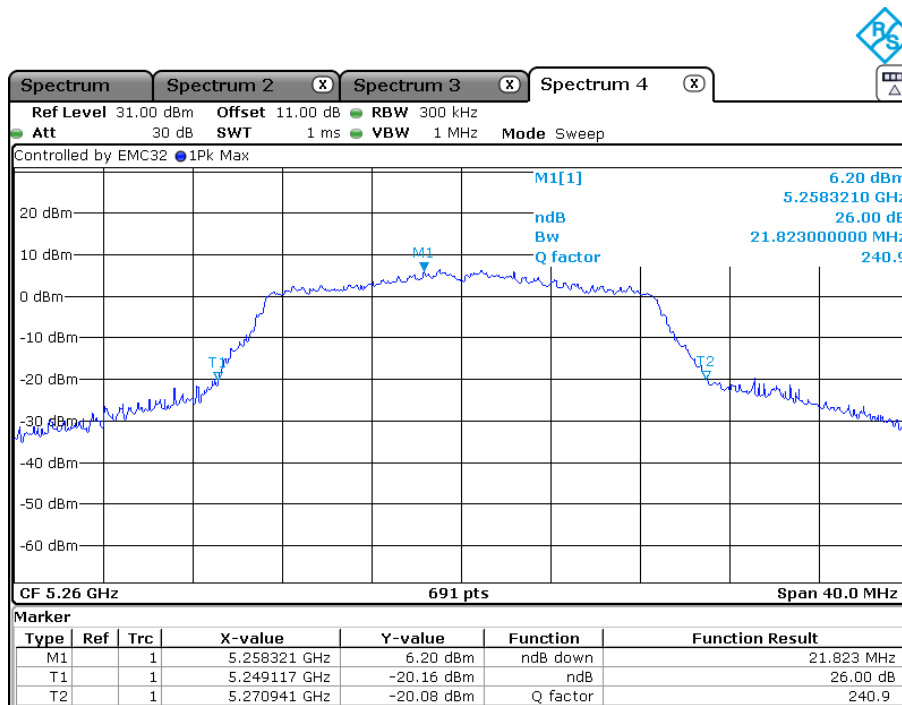
Channel 64: 5320 MHz:



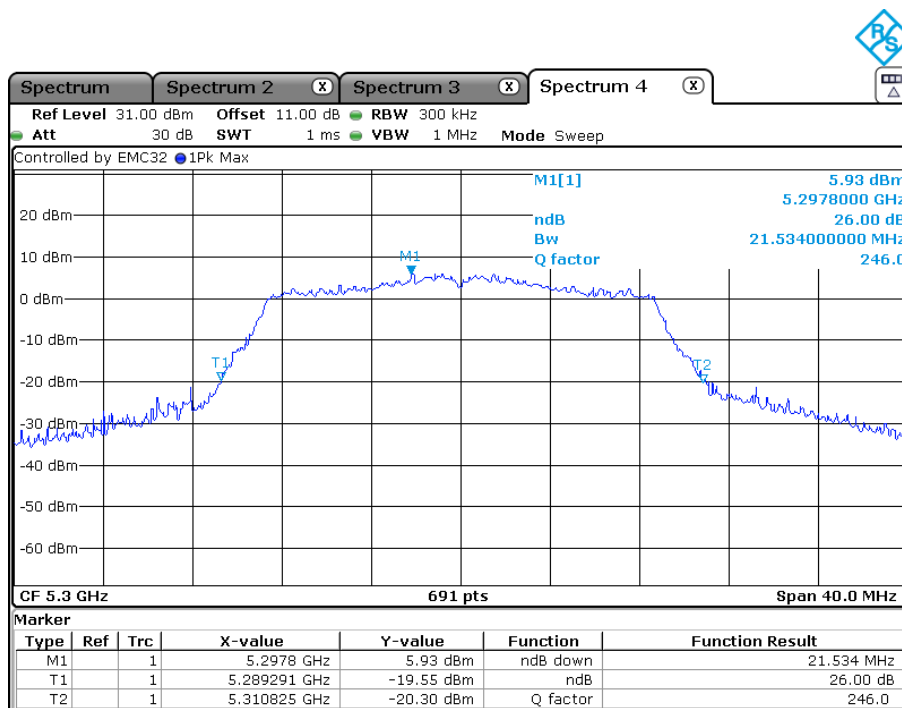
TEST REPORT

802.11n HT20

Channel 52: 5260 MHz:

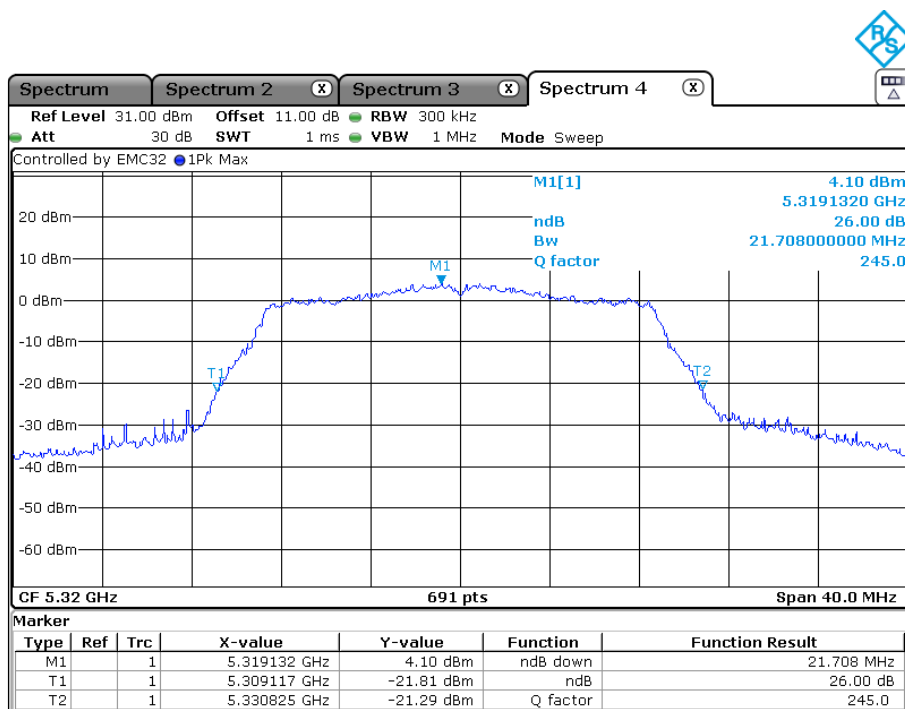


Channel 60: 5300 MHz:



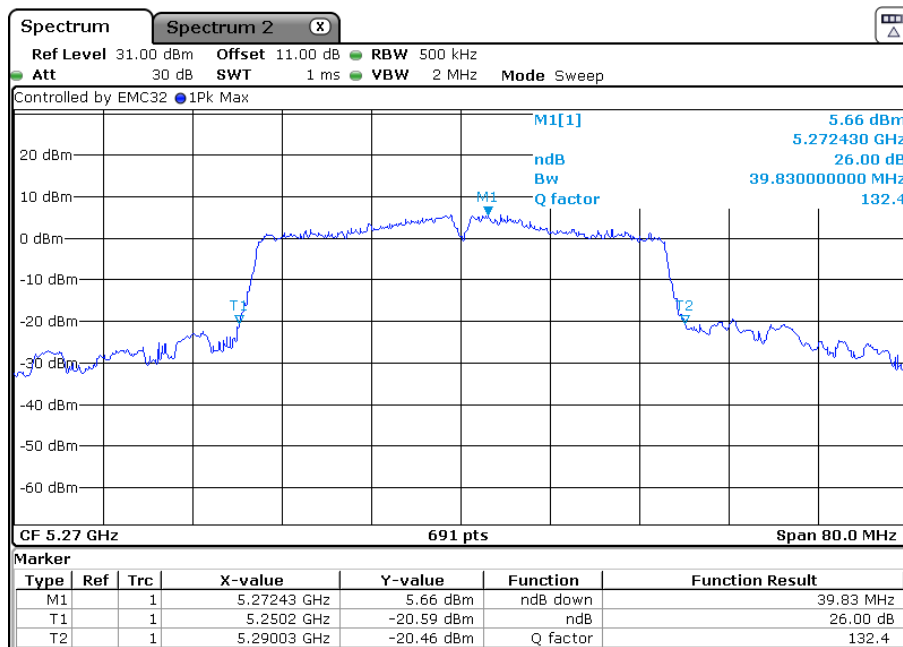
TEST REPORT

Channel 64: 5320 MHz:



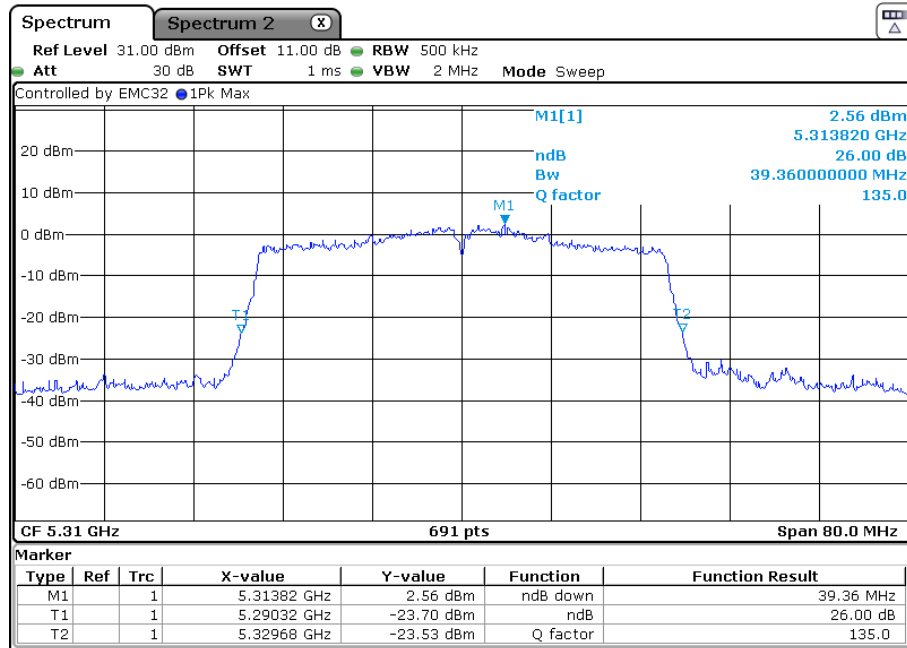
802.11n HT40

Channel 54: 5270 MHz:



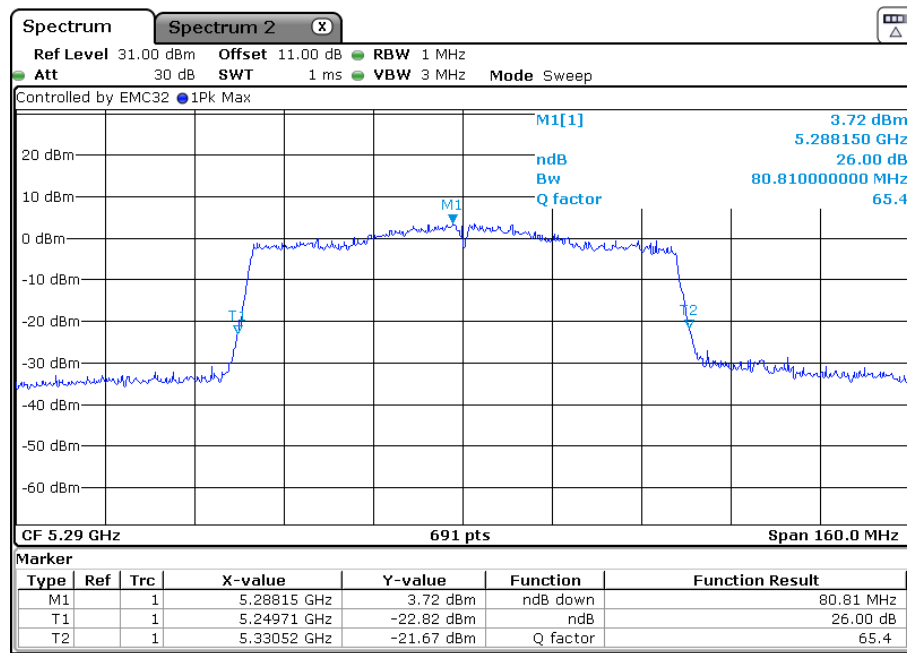
TEST REPORT

Channel 62: 5310 MHz:



802.11ac VHT80

Channel 58: 5290 MHz:

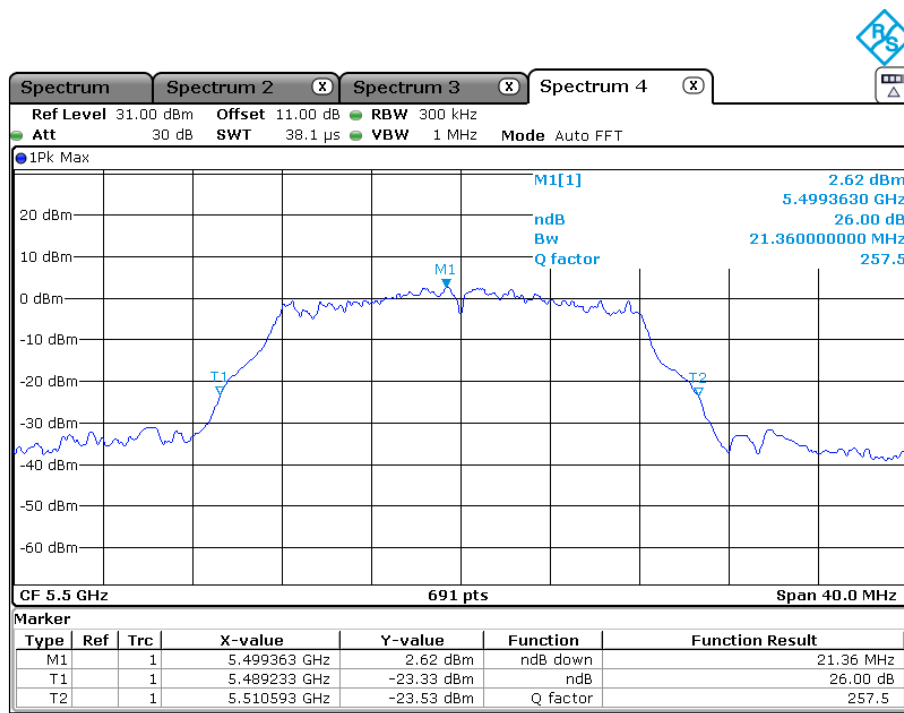


TEST REPORT

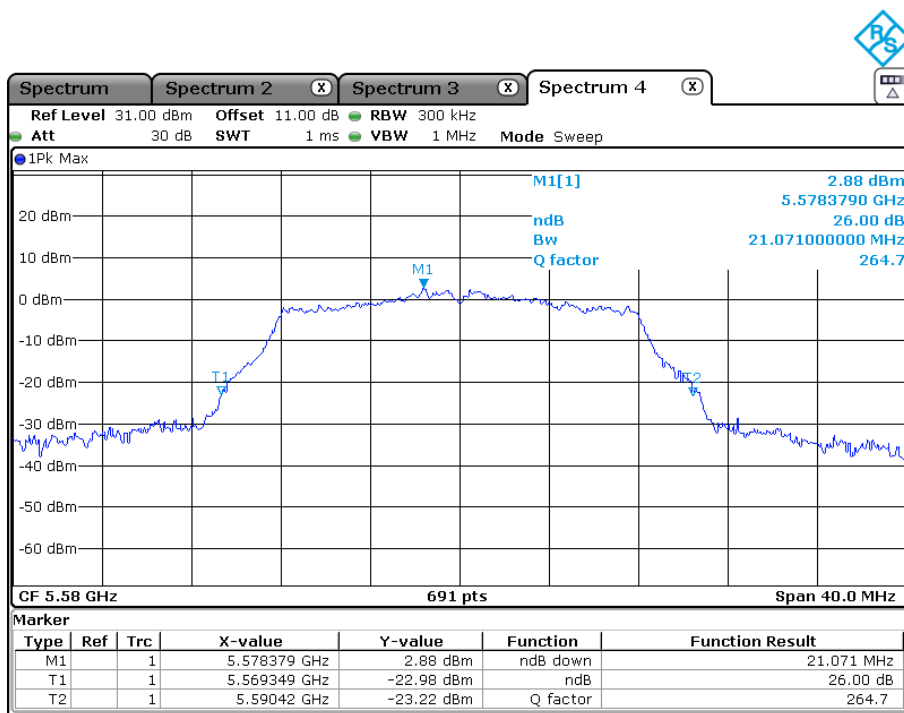
Band III 5470 MHz to 5725 MHz

802.11a

Channel 100: 5500 MHz:

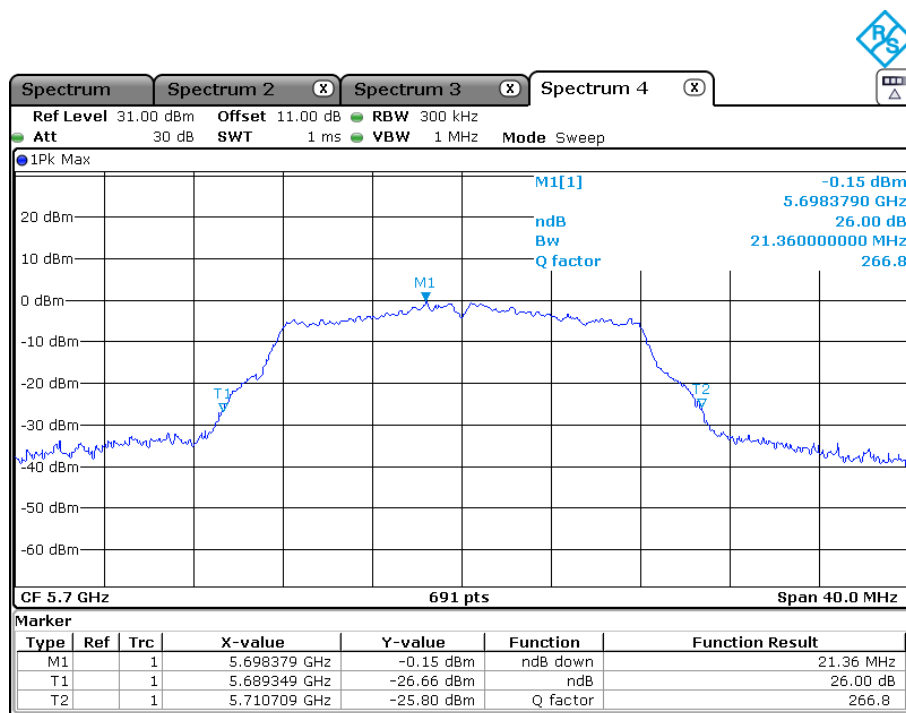


Channel 116: 5580 MHz:



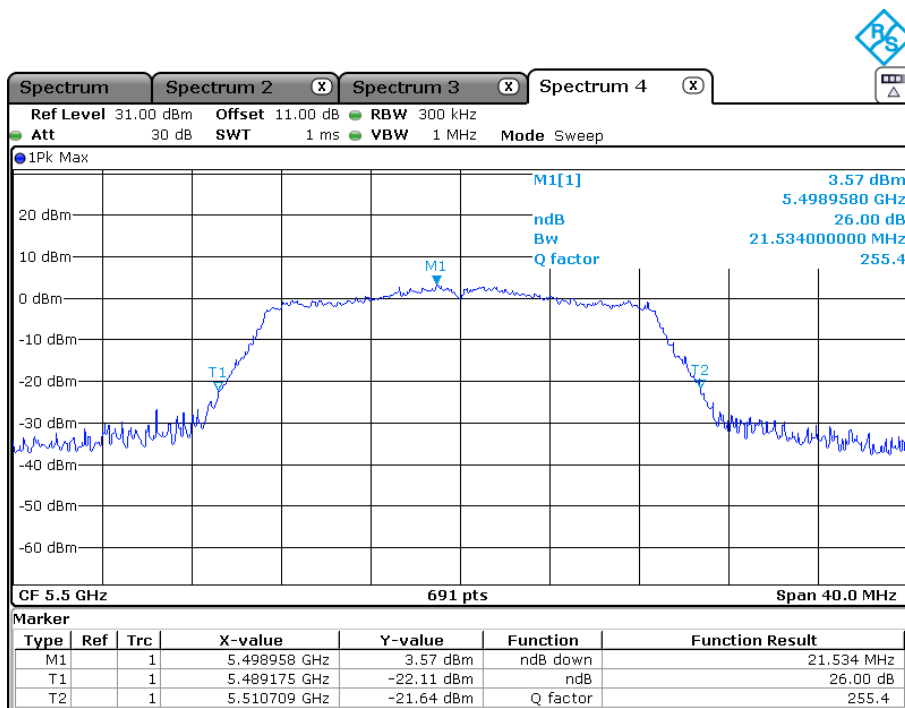
TEST REPORT

Channel 140: 5700 MHz:



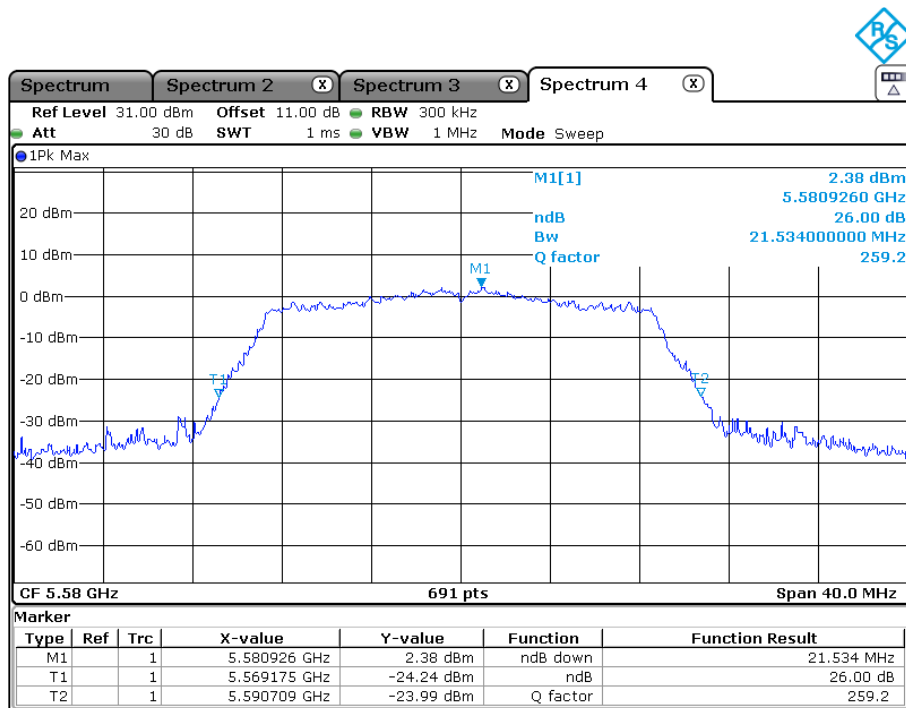
802.11n HT20

Channel 100: 5500 MHz:

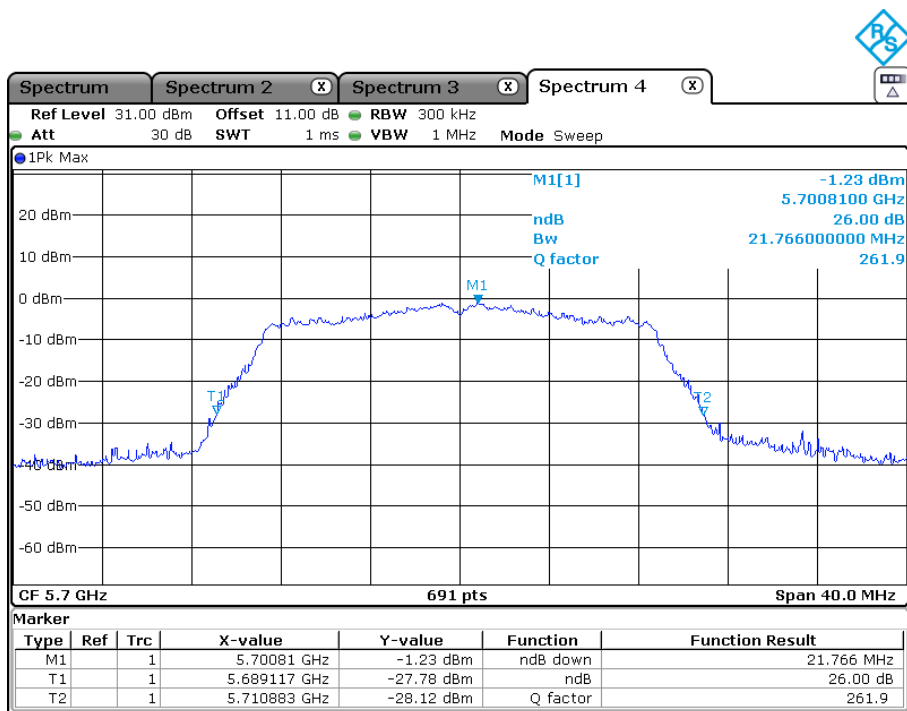


TEST REPORT

Channel 116: 5580 MHz:



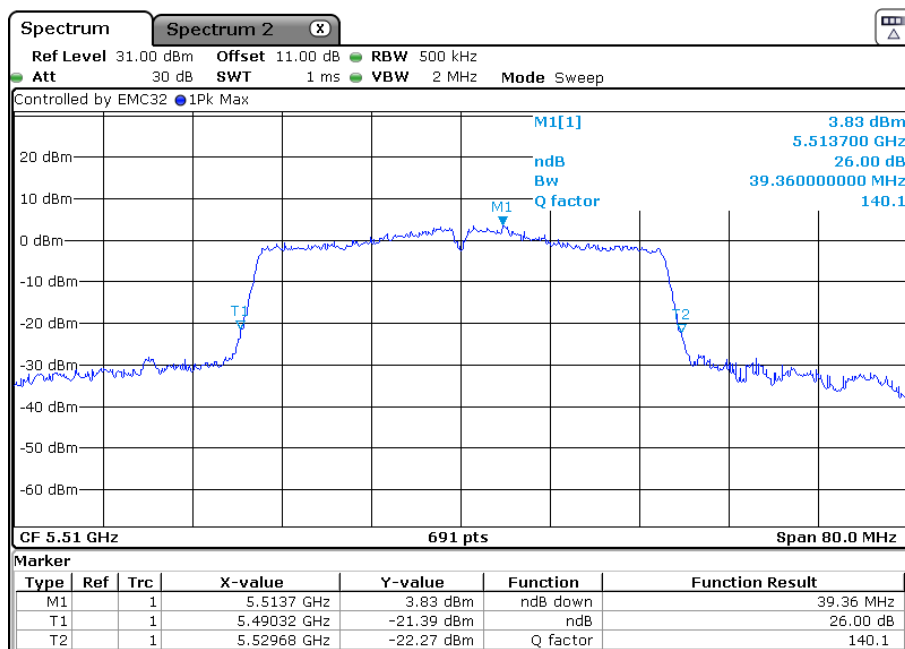
Channel 140: 5700 MHz:



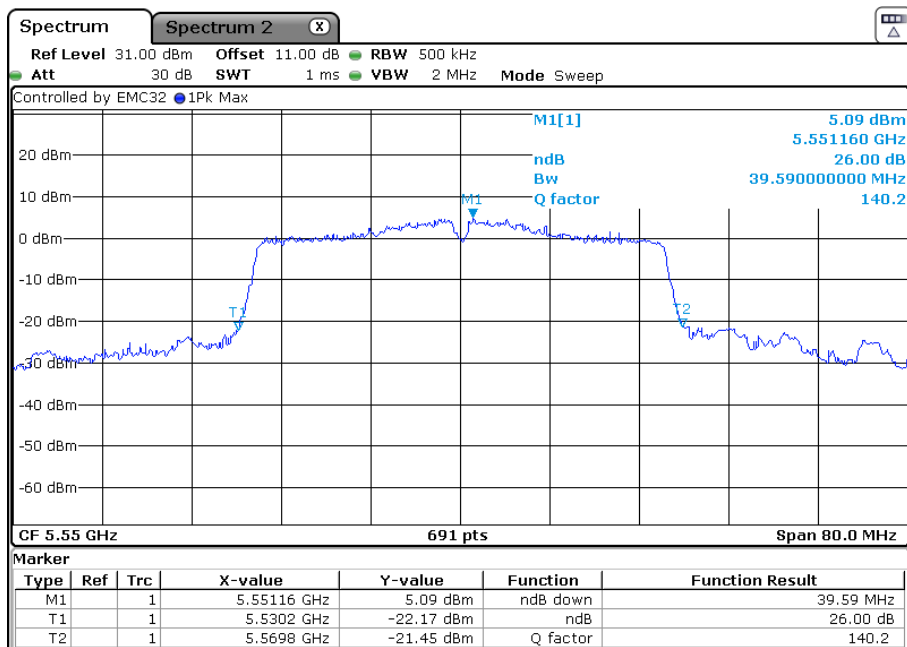
TEST REPORT

802.11n HT40

Channel 102: 5510 MHz:

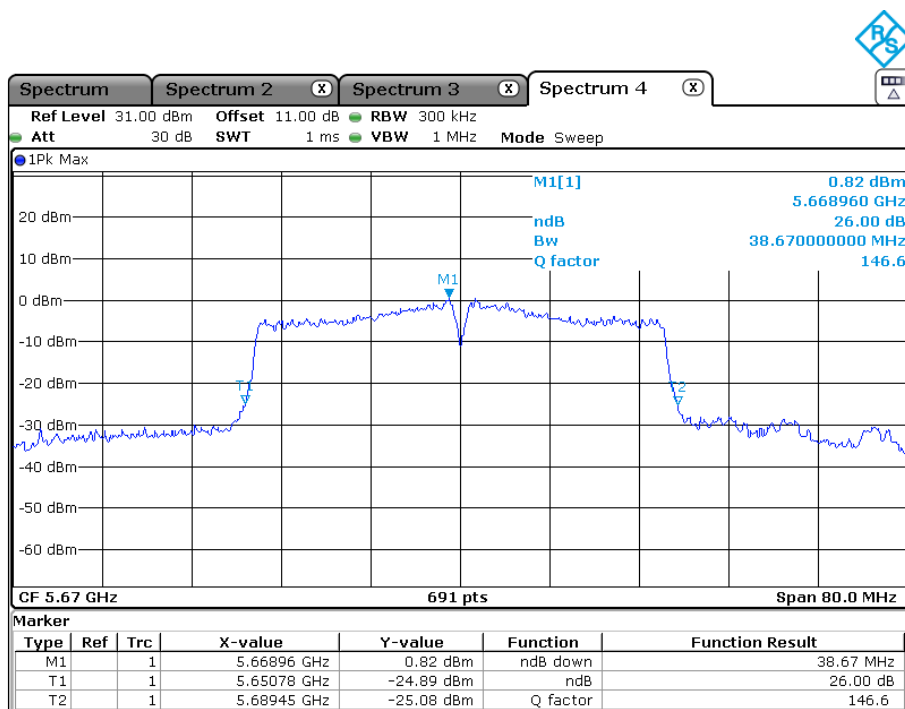


Channel 110: 5550 MHz:



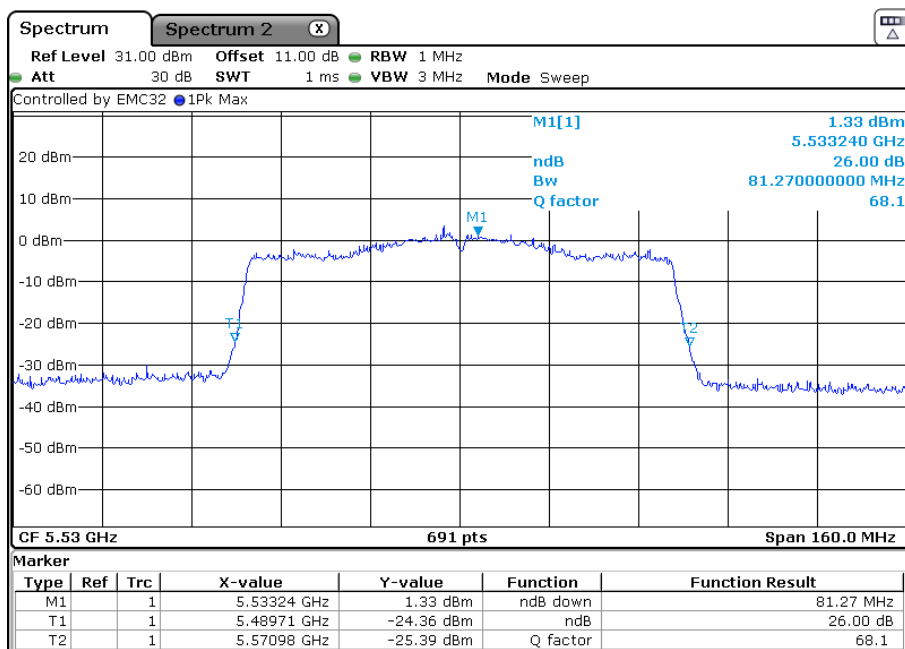
TEST REPORT

Channel 134: 5670 MHz:



802.11ac VHT80

Channel 106: 5530 MHz:

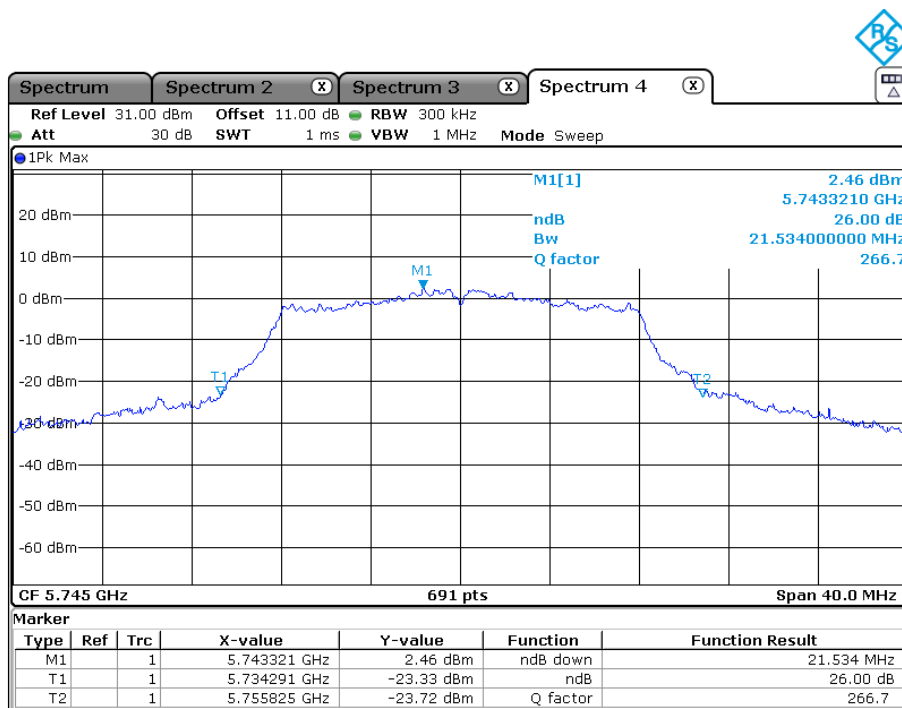


TEST REPORT

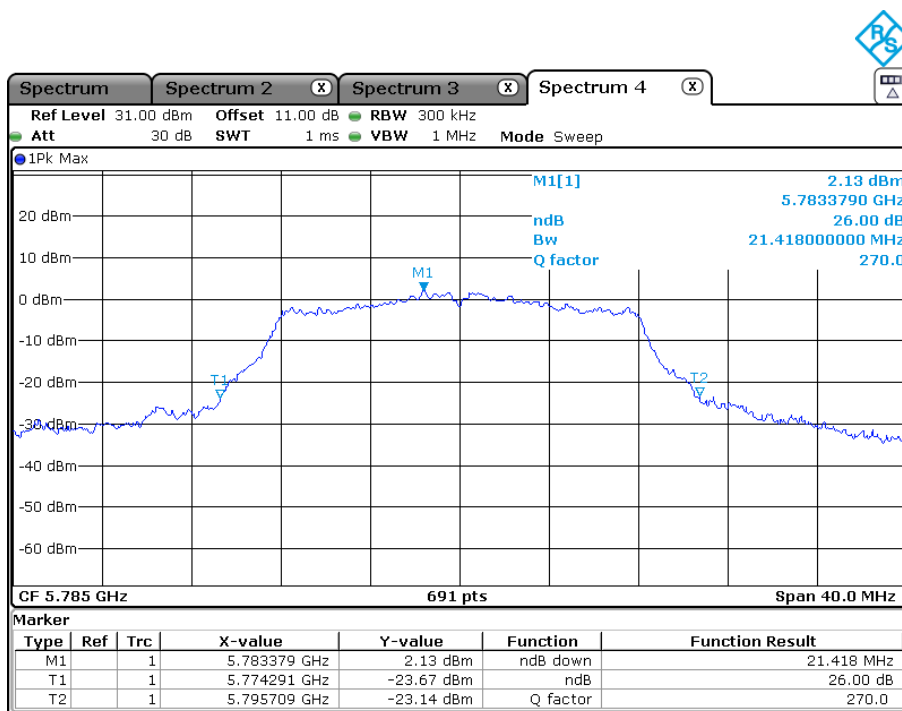
Band IV 5725 MHz to 5850 MHz

802.11a

Channel 149: 5745 MHz:

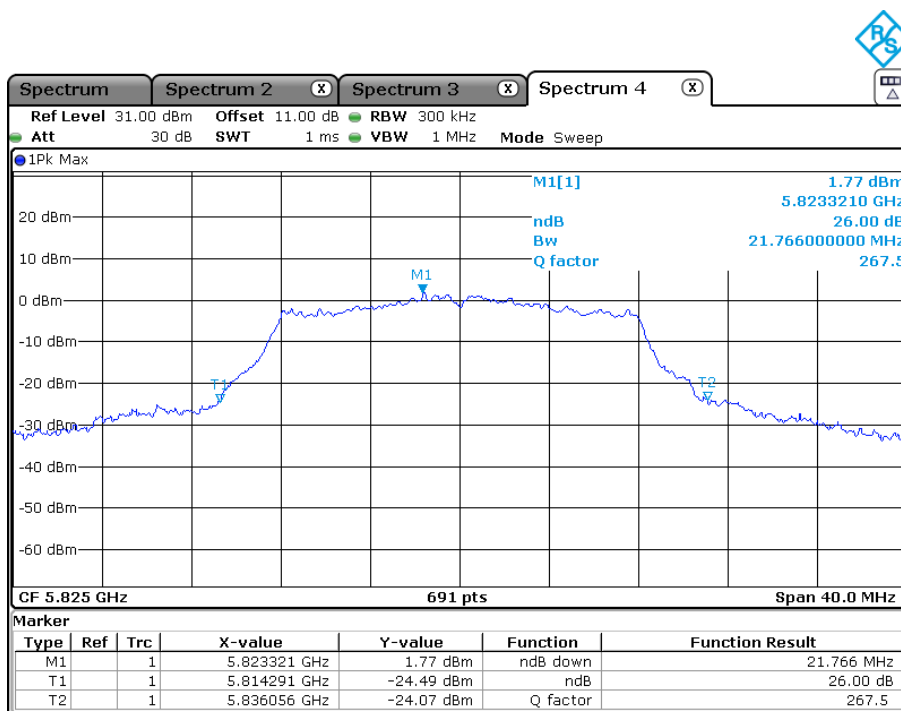


Channel 157: 5785 MHz:



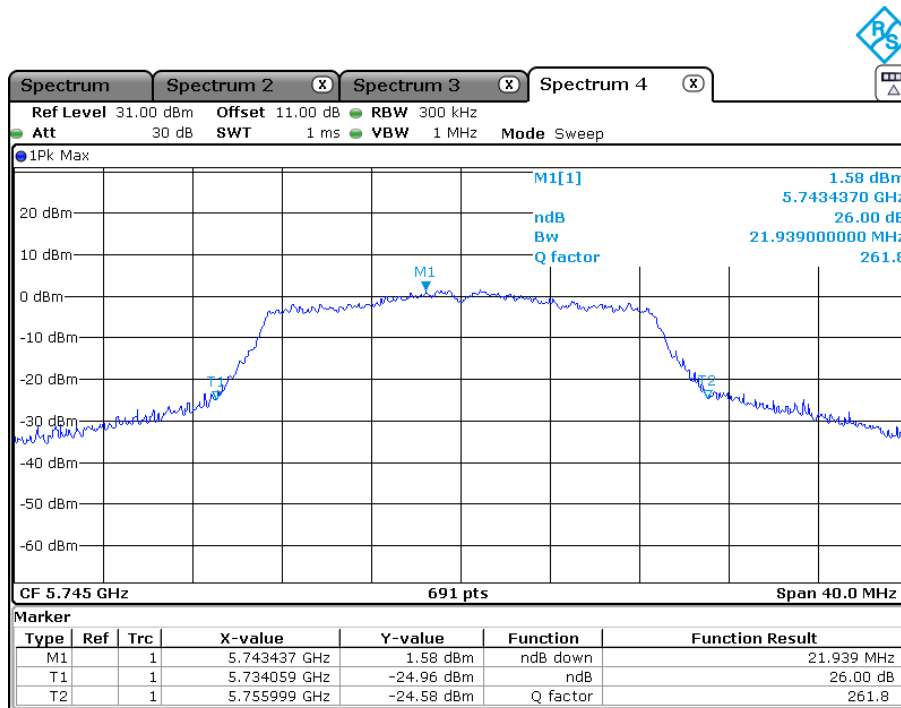
TEST REPORT

Channel 165: 5825 MHz:



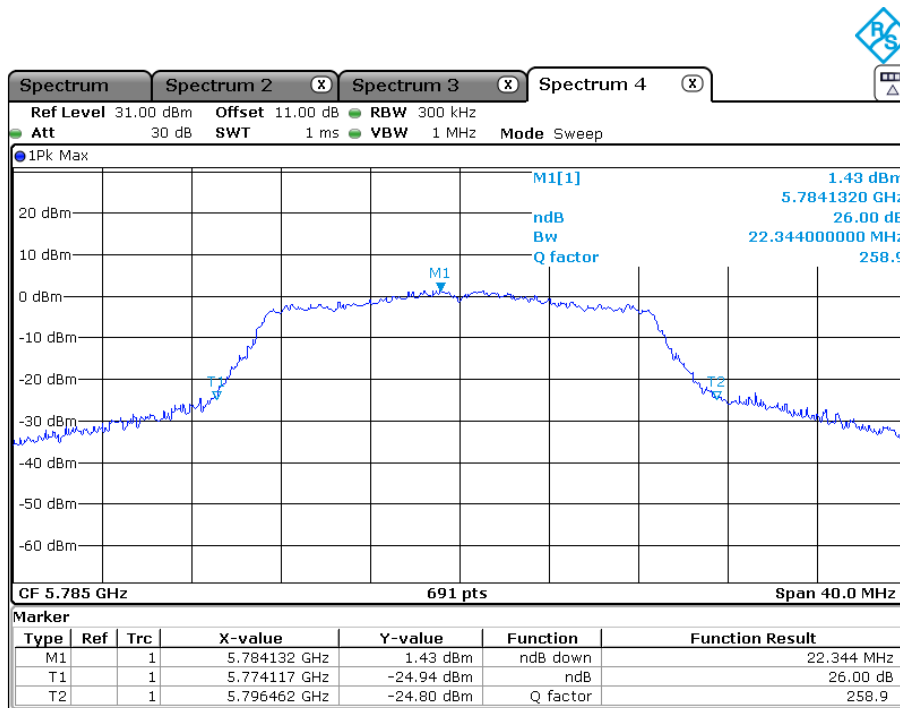
802.11n HT20

Channel 149: 5745 MHz:

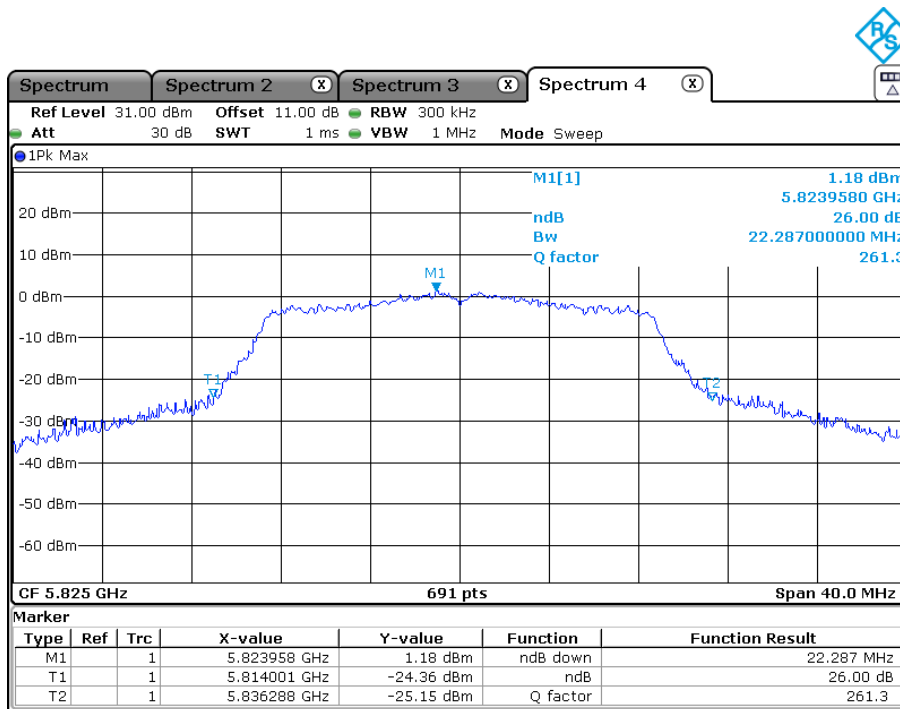


TEST REPORT

Channel 157: 5785 MHz:



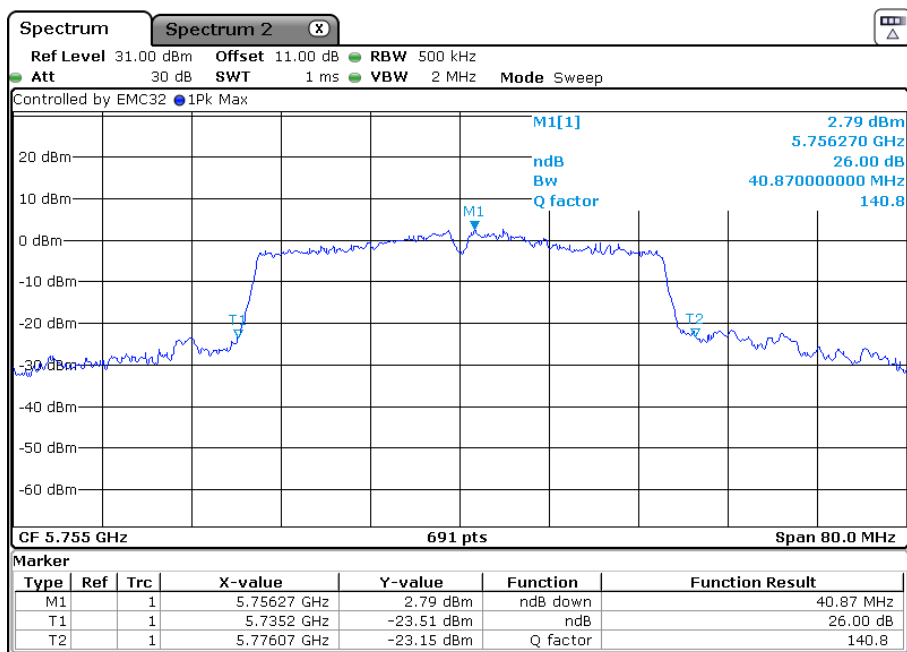
Channel 165: 5825 MHz:



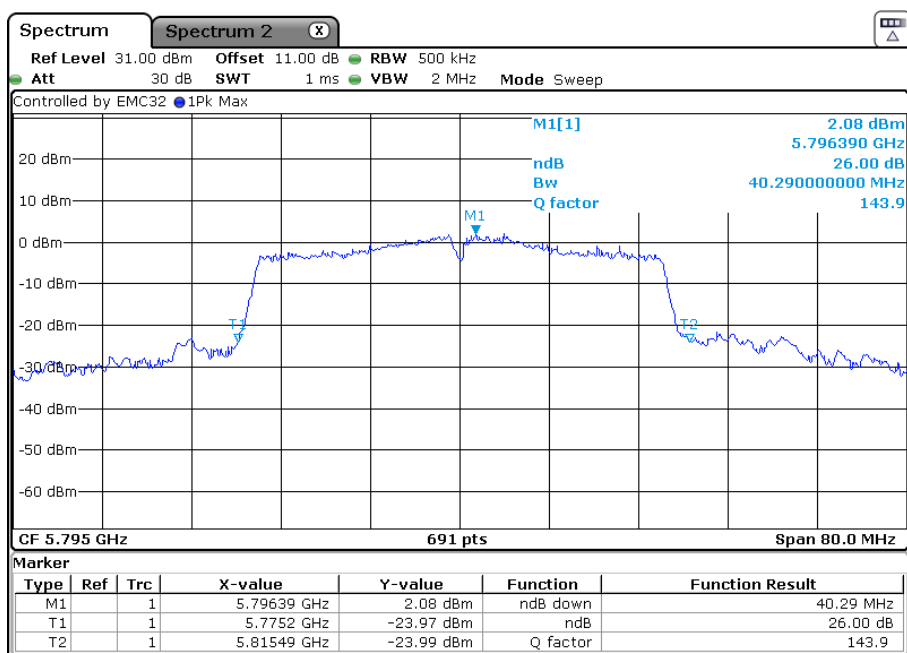
TEST REPORT

802.11n HT40

Channel 151: 5755 MHz:



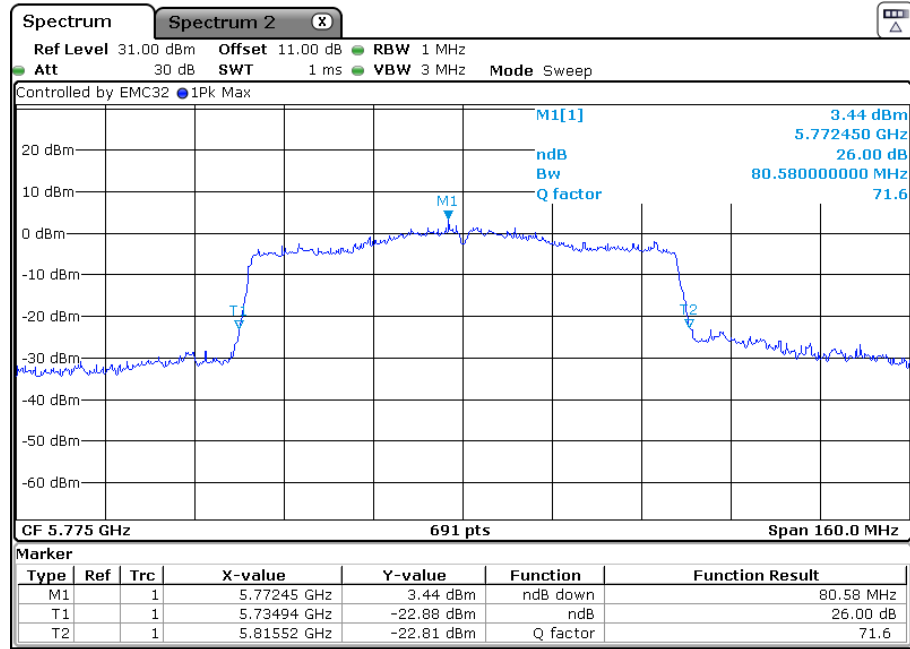
Channel 159: 5795 MHz:



TEST REPORT

802.11ac VHT80

Channel 155: 5775 MHz:

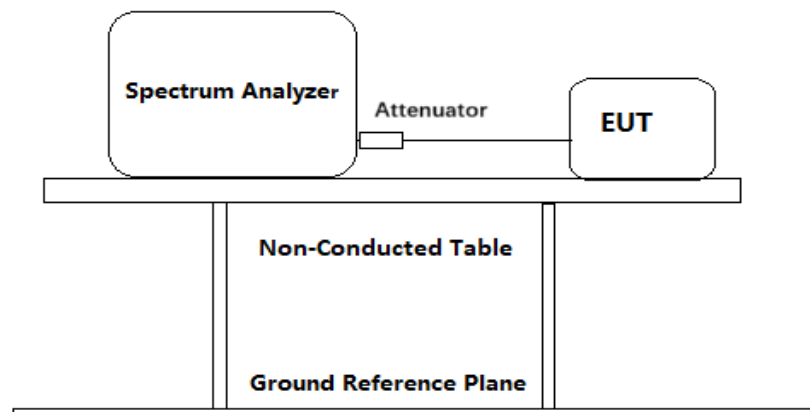


TEST REPORT

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 U–NII devices shall be at least 500 kHz.
Test Method:	FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01, 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 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.

TEST REPORT

Used Test Equipment List

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

Test result:

Channel No.	Frequency (MHz)	Mode	Data Rate	6dB bandwidth (MHz)	Limit	Result
149	5745	802.11a	6 Mbps	16.266	≥500kHz	Pass
157	5785		6 Mbps	16.440		Pass
165	5825		6 Mbps	16.556		Pass
149	5745	802.11n HT20	7.2 Mbps	17.250		Pass
157	5785		7.2 Mbps	17.308		Pass
165	5825		7.2 Mbps	17.250		Pass
151	5755	802.11n HT40	15 Mbps	36.122		Pass
159	5795		15 Mbps	36.353		Pass
155	5775	802.11ac VHT80	32.5 Mbps	75.480		Pass

Test result: The unit does meet the FCC requirements

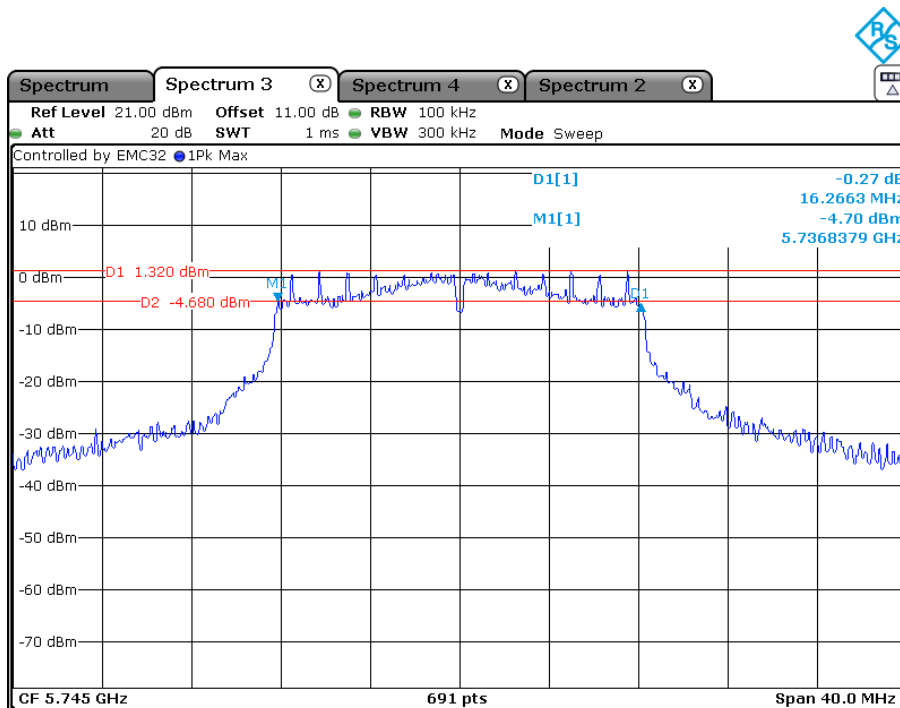
TEST REPORT

Result plot as follows:

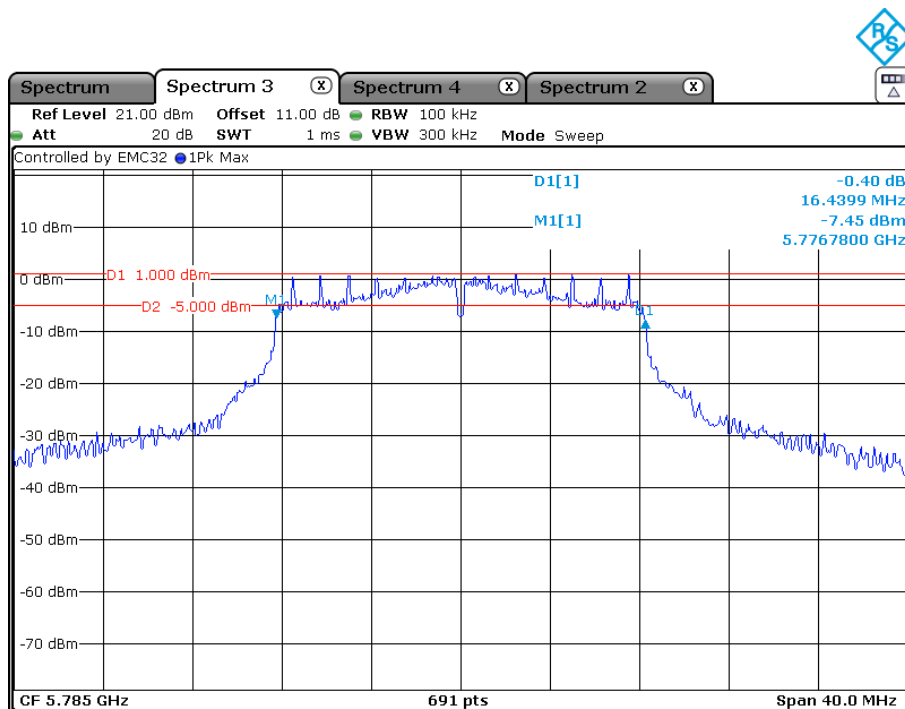
Band IV 5725 MHz to 5850 MHz

802.11a mode

Channel 149: 5745 MHz:

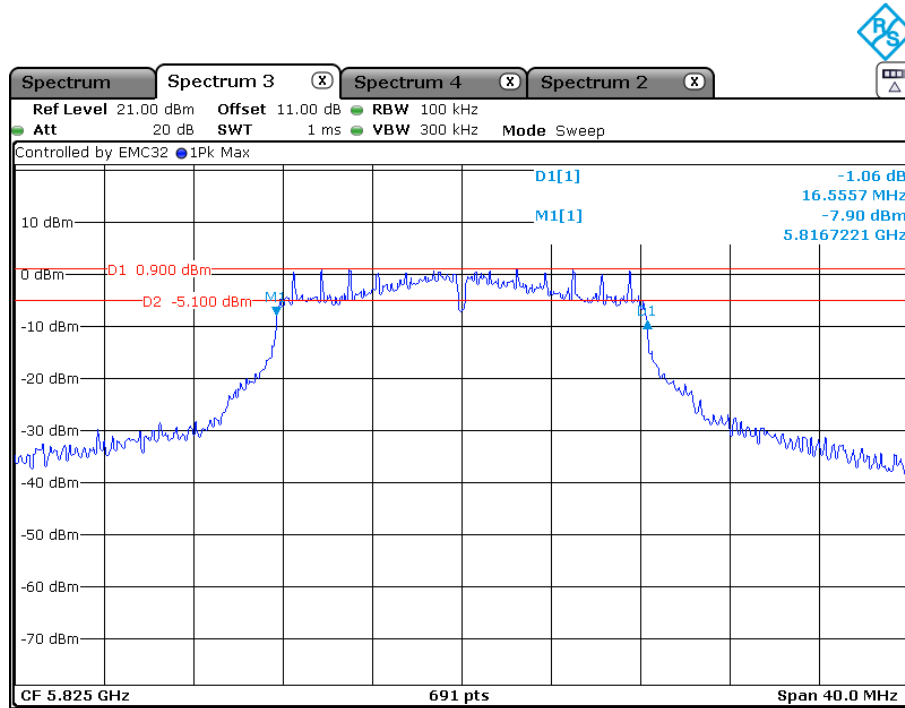


Channel 157: 5785 MHz:



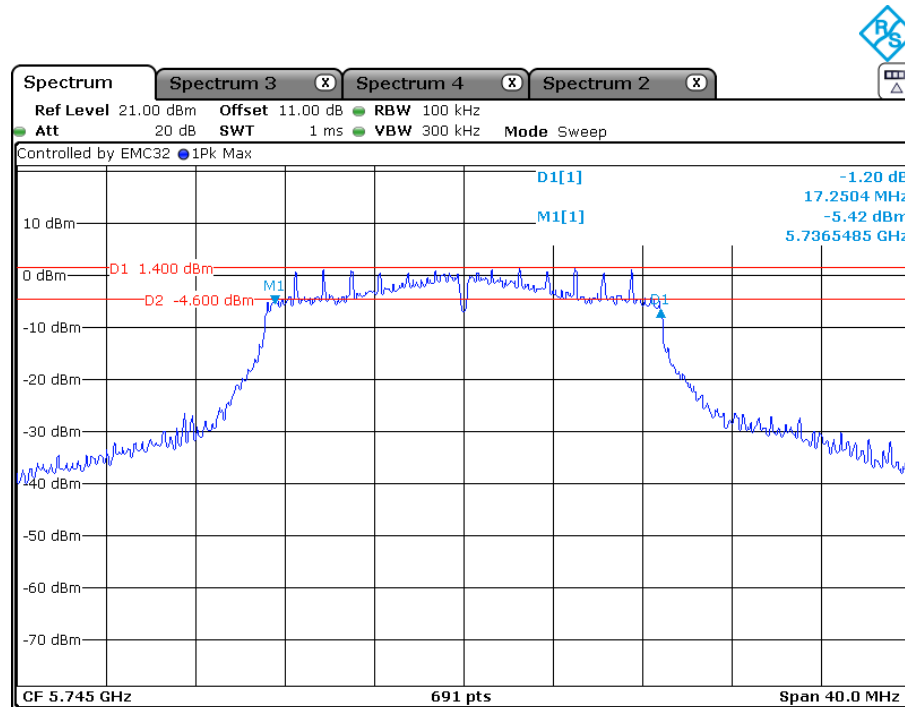
TEST REPORT

Channel 165: 5825 MHz:



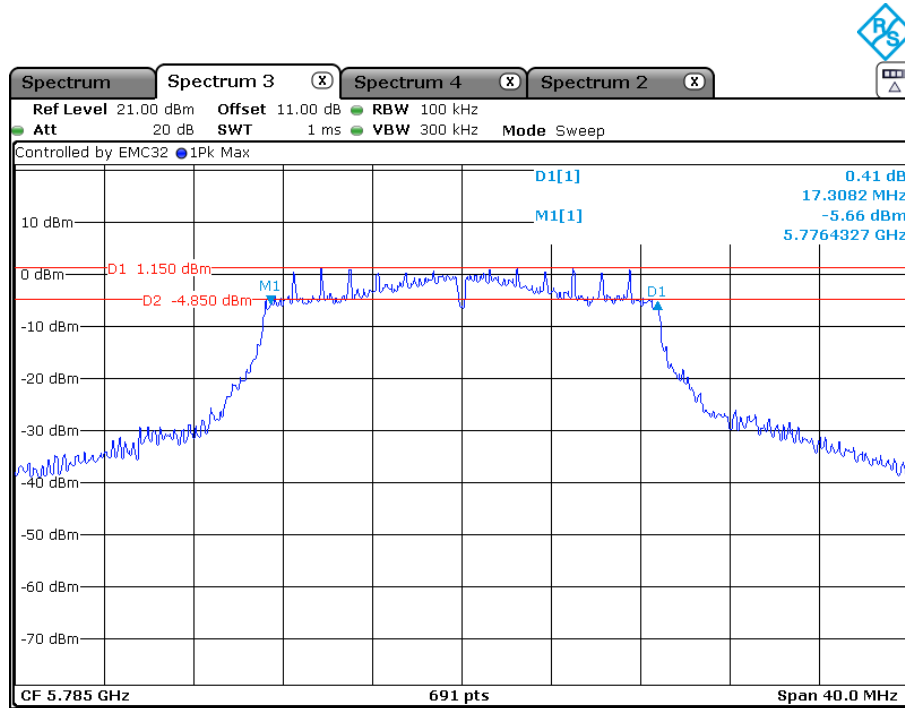
802.11n HT20

Channel 149: 5745 MHz:

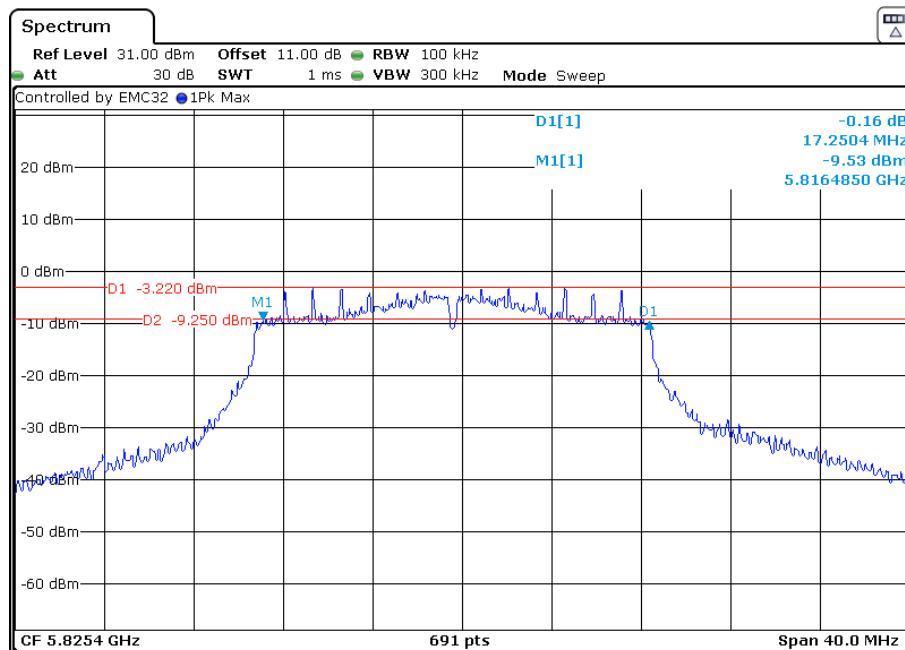


TEST REPORT

Channel 157: 5785 MHz:



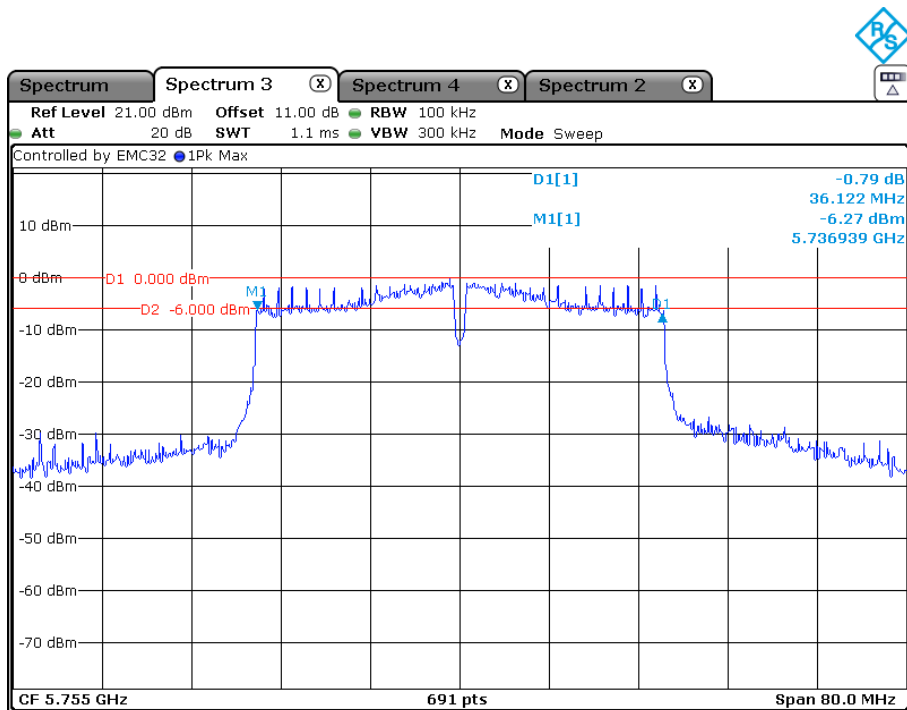
Channel 165: 5825 MHz:



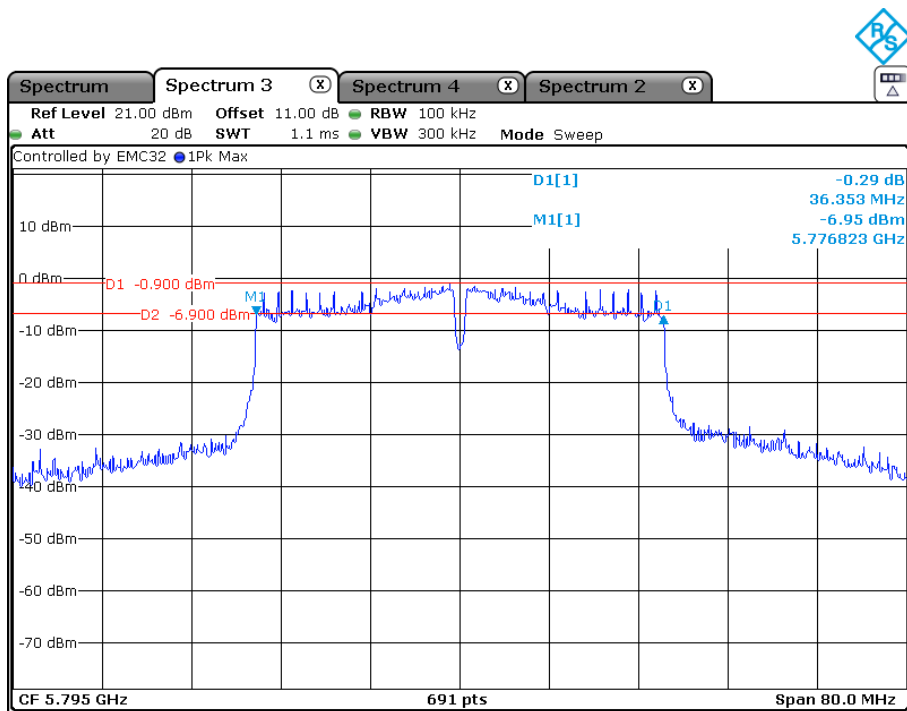
TEST REPORT

802.11n HT40

Channel 151: 5755 MHz:



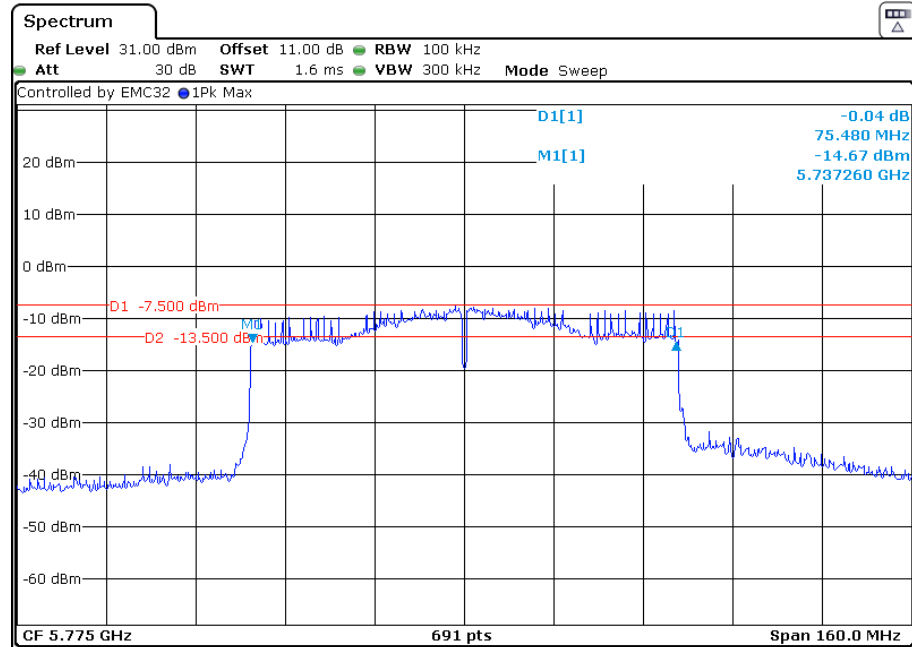
Channel 159: 5795 MHz:



TEST REPORT

802.11ac VHT80

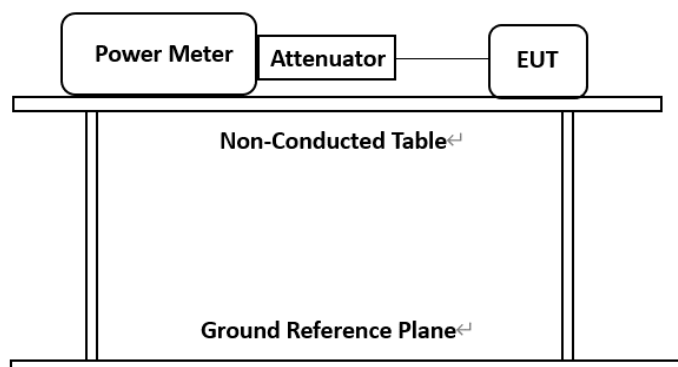
Channel 155: 5775 MHz:



TEST REPORT

4.5 Maximum 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 v02r01, Clause E
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 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.

Used Test Equipment List

Power Sensor. Refer to Clause 5 Test Equipment List for details.

TEST REPORT

Test result:

Maximum Conducted Output Power Band I (5150MHz-5250MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Maximum Conducted output power (dBm)	Limit dBm	Result
36	5180	802.11a	6 Mbps	12.04	24	Pass
40	5200		6 Mbps	11.95		Pass
48	5240		6 Mbps	11.90		Pass
36	5180	802.11n HT20	7.2 Mbps	11.58		Pass
40	5200		7.2 Mbps	11.62		Pass
48	5240		7.2 Mbps	11.41		Pass
38	5190	802.11n HT40	15 Mbps	9.56		Pass
46	5230	802.11n HT40	15 Mbps	12.60		Pass
42	5210	802.11ac VHT80	32.5 Mbps	6.73		Pass

Band II (5250MHz-5350MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Maximum Conducted output power (dBm)	Limit dBm	Result
52	5260	802.11a	6 Mbps	11.86	24dBm	Pass
60	5300		6 Mbps	12.12		Pass
64	5320		6 Mbps	11.03		Pass
52	5260	802.11n HT20	7.2 Mbps	11.58		Pass
60	5300		7.2 Mbps	11.62		Pass
64	5320		7.2 Mbps	11.83		Pass
54	5270	802.11n HT40	15 Mbps	11.74		Pass
62	5310	802.11n HT40	15 Mbps	8.54		Pass
58	5290	802.11ac VHT80	32.5 Mbps	6.64		Pass

B = 26dB Emission Bandwidth

TEST REPORT

Band III (5470MHz-5725MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Maximum Conducted output power (dBm)	Limit dBm	Result
100	5500	802.11a	6 Mbps	11.43	24dBm	Pass
116	5580		6 Mbps	10.30		Pass
140	5700		6 Mbps	8.22		Pass
100	5500	802.11n HT20	7.2 Mbps	11.10		Pass
116	5580		7.2 Mbps	9.98		Pass
140	5700		7.2 Mbps	7.61		Pass
102	5510	802.11n HT40	15 Mbps	9.61		Pass
110	5550		15 Mbps	9.17		Pass
134	5670		15 Mbps	9.04		Pass
108	5530	802.11ac VHT80	32.5 Mbps	6.53		Pass

B = 26dB Emission Bandwidth

Band IV (5725MHz-5850MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Maximum Conducted output power (dBm)	Limit dBm	Result
149	5745	802.11a	6 Mbps	10.15	30	Pass
157	5785		6 Mbps	9.66		Pass
165	5825		6 Mbps	9.17		Pass
149	5745	802.11n HT20	7.2 Mbps	9.70		Pass
157	5785		7.2 Mbps	9.32		Pass
165	5825		7.2 Mbps	8.87		Pass
151	5755	802.11n HT40	15 Mbps	8.56		Pass
159	5795	802.11n HT40	15 Mbps	7.98		Pass
155	5775	802.11ac VHT80	32.5 Mbps	5.30		Pass

The measured power in the table has considered the compensation of cable loss, attenuator and duty cycle.

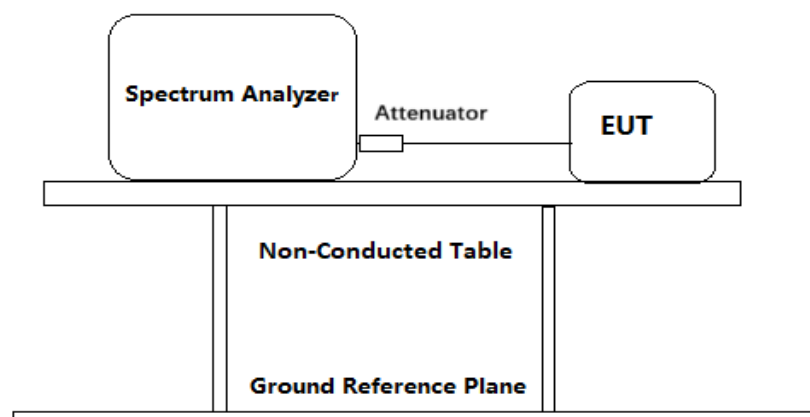
The unit does meet the FCC requirements.

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 v02r01, 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 attention attenuation RF cable (cable loss =1dB, with 10 dB attenuator) from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer:
For 5.15–5.25 GHz, 5.25–5.35 GHz, and 5.47–5.725 GHz
 - 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 5.725–5.85 GHz

- 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 PSD (dBm/MHz)	Limit dBm/MHz	Result
36	5180	802.11a	6 Mbps	9.47	11	Pass
40	5200		6 Mbps	9.11		Pass
48	5240		6 Mbps	9.05		Pass
36	5180	802.11n HT20	7.2 Mbps	9.05		Pass
40	5200		7.2 Mbps	9.62		Pass
48	5240		7.2 Mbps	9.17		Pass
38	5190	802.11 n HT40	15 Mbps	6.50		Pass
46	5230		15 Mbps	9.29		Pass
42	5210	802.11ac VHT80	32.5 Mbps	3.99		Pass

TEST REPORT

Band II (5250MHz-5350MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Maximum PSD (dBm/MHz)	Limit dBm/MHz	Result
52	5260	802.11a	6 Mbps	9.50	11	Pass
60	5300		6 Mbps	9.15		Pass
64	5320		6 Mbps	9.24		Pass
52	5260	802.11n HT20	7.2 Mbps	8.45		Pass
60	5300		7.2 Mbps	9.53		Pass
64	5320		7.2 Mbps	9.23		Pass
54	5270	802.11 n HT40	15 Mbps	9.44		Pass
62	5310		15 Mbps	5.30		Pass
58	5290	802.11ac VHT80	32.5 Mbps	5.93		Pass

Band III (5470MHz-5725MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Maximum PSD (dBm/MHz)	Limit dBm/MHz	Result
100	5500	802.11a	6 Mbps	8.81	11	Pass
116	5580		6 Mbps	7.91		Pass
140	5700		6 Mbps	4.88		Pass
100	5500	802.11n HT20	7.2 Mbps	9.92		Pass
116	5580		7.2 Mbps	8.11		Pass
140	5700		7.2 Mbps	5.65		Pass
102	5510	802.11 n HT40	15 Mbps	6.62		Pass
110	5550		15 Mbps	6.16		Pass
134	5670		15 Mbps	5.53		Pass
106	5530	802.11ac VHT80	32.5 Mbps	3.77		Pass

TEST REPORT

Band IV (5725MHz-5850MHz)

Channel No.	Frequency (MHz)	Mode	Data Rate	Maximum PSD (dBm/500kHz)	Limit	Result
149	5745	802.11a	6 Mbps	4.45	30dBm /500k Hz	Pass
157	5785		6 Mbps	3.89		Pass
165	5825		6 Mbps	3.42		Pass
149	5745	802.11n HT20	7.2 Mbps	4.52		Pass
157	5785		7.2 Mbps	3.67		Pass
165	5825		7.2 Mbps	4.18		Pass
151	5755	802.11 n HT40	15 Mbps	1.59		Pass
159	5795		15 Mbps	2.41		Pass
155	5775	802.11ac VHT80	32.5 Mbps	-1.39		Pass

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

The unit does meet the FCC requirements

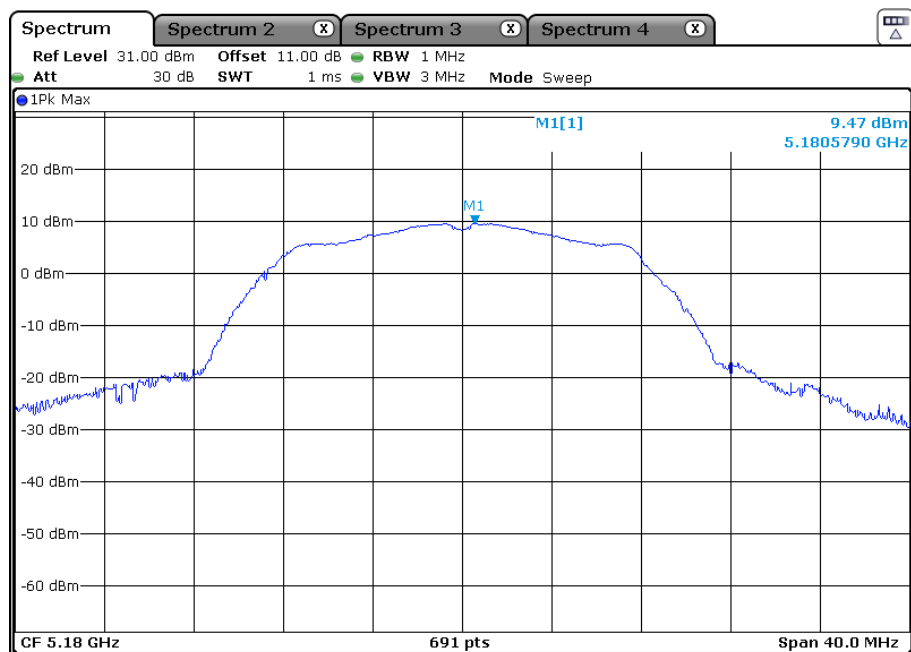
TEST REPORT

Result plot as follows:

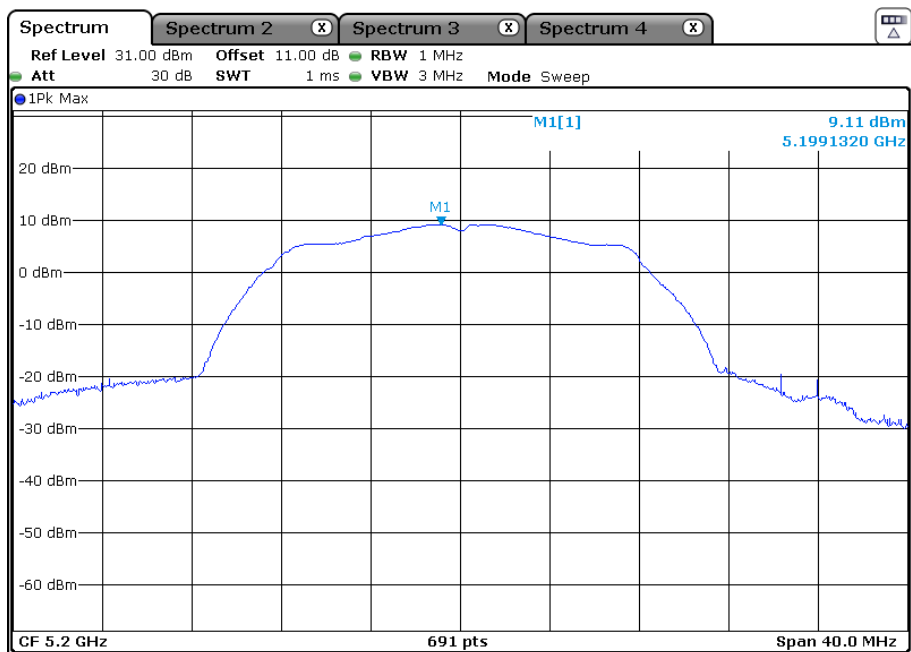
Band I 5150 MHz to 5250 MHz

802.11a

Channel 36: 5180 MHz:

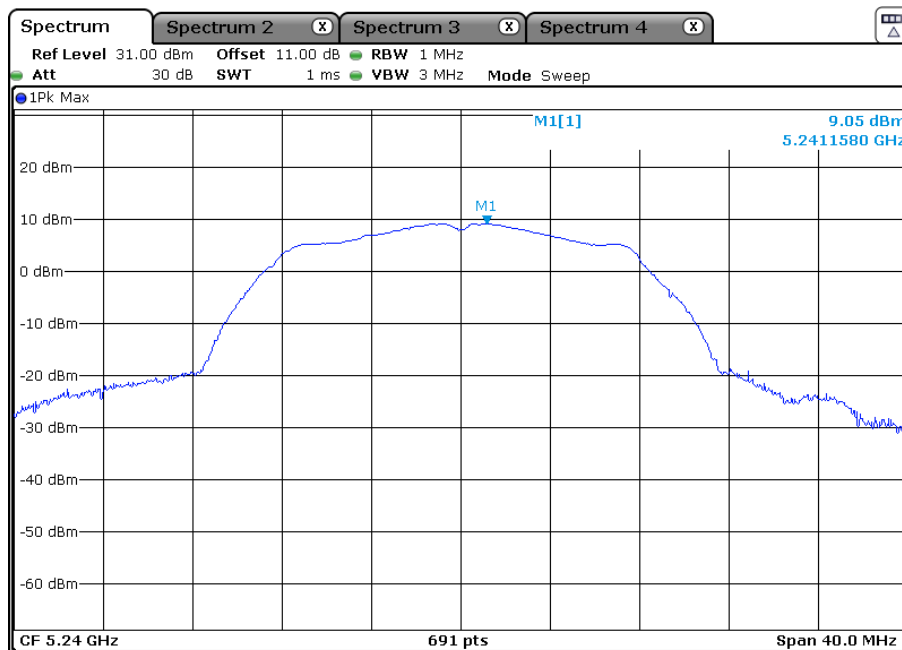


Channel 40: 5200 MHz:



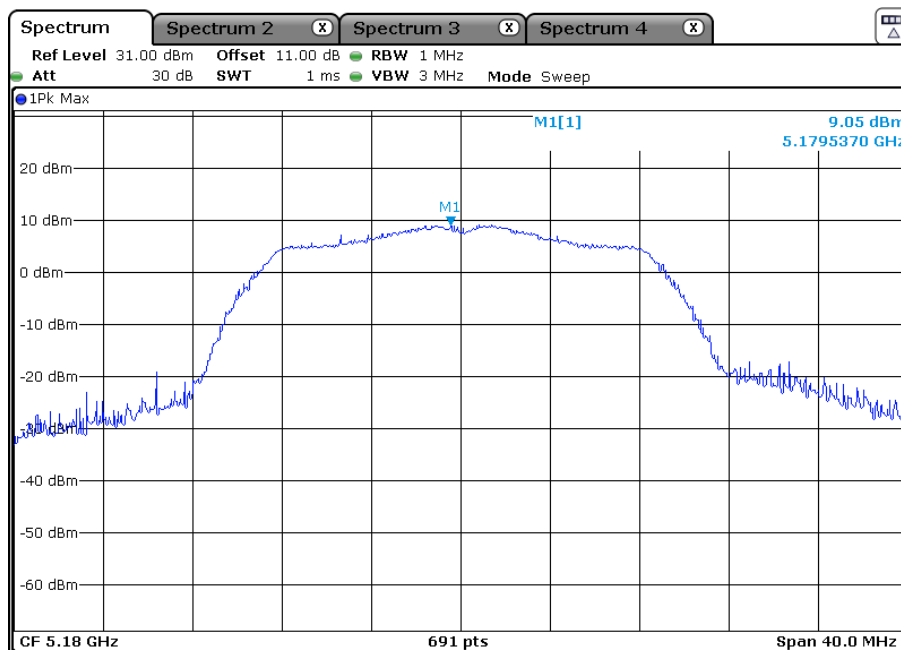
TEST REPORT

Channel 48: 5240 MHz:



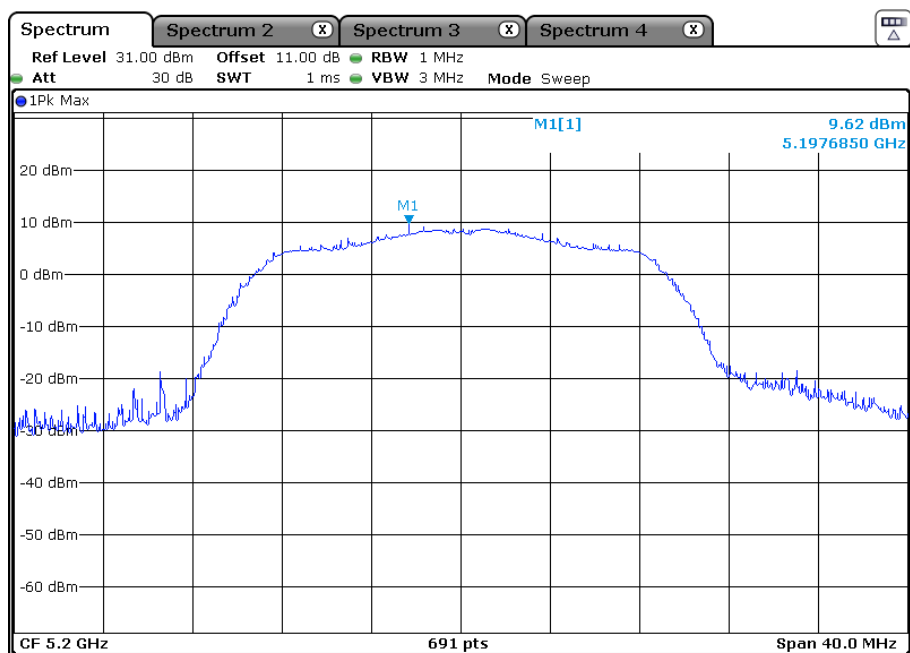
802.11n HT20

Channel 36: 5180 MHz:

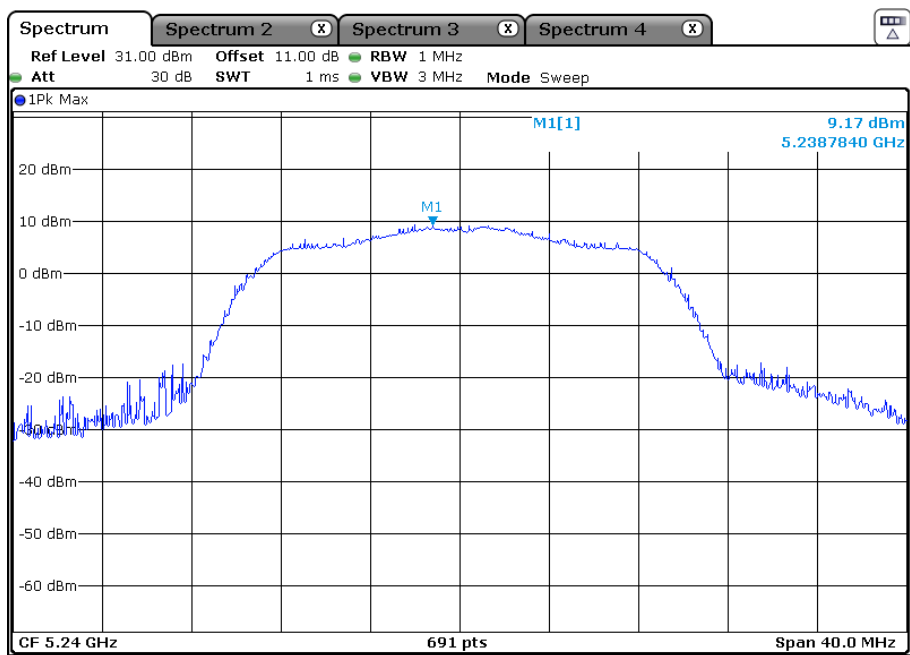


TEST REPORT

Channel 40: 5200 MHz:



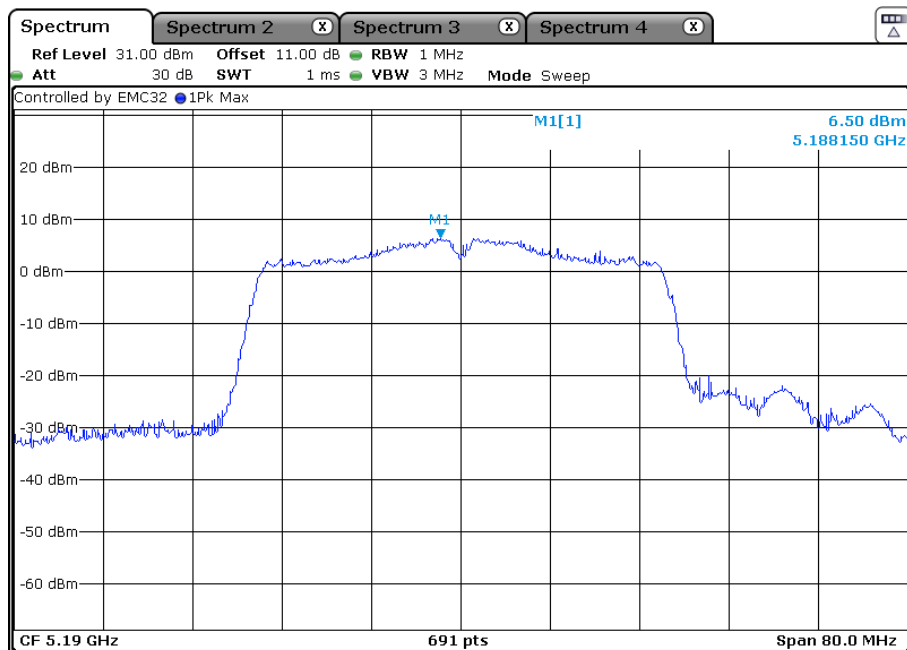
Channel 48: 5240 MHz:



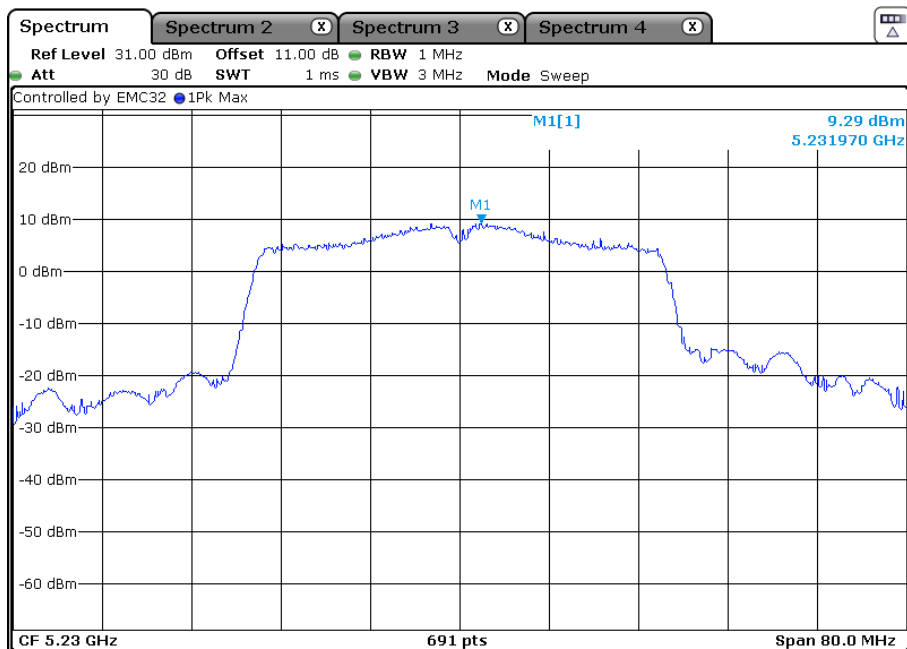
TEST REPORT

802.11n HT40

Channel 38: 5190 MHz:



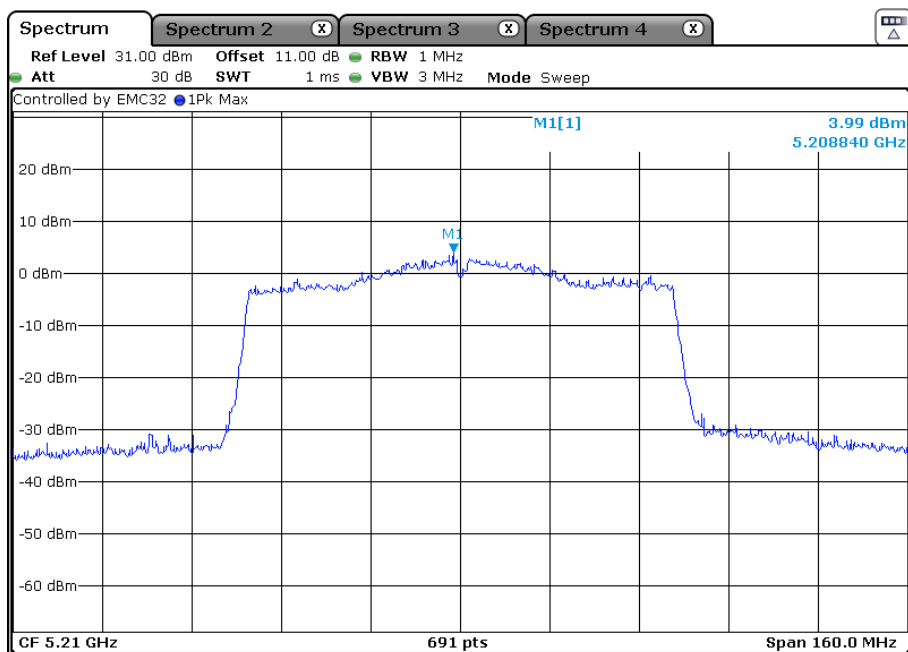
Channel 46: 5230 MHz:



TEST REPORT

802.11ac VHT80

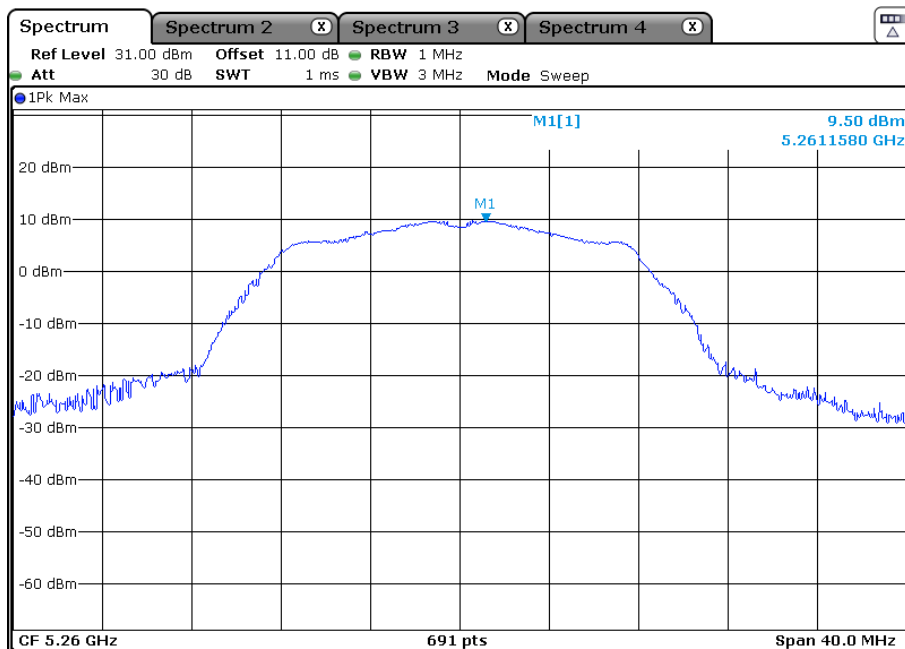
Channel 42: 5210 MHz:



Band II 5250 MHz to 5350 MHz

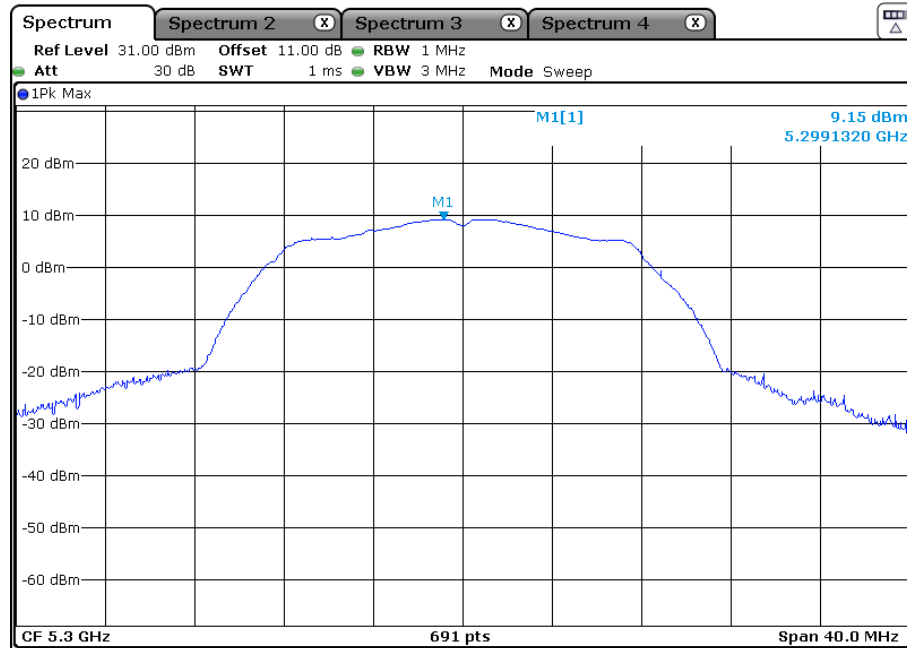
802.11a

Channel 52: 5260 MHz:

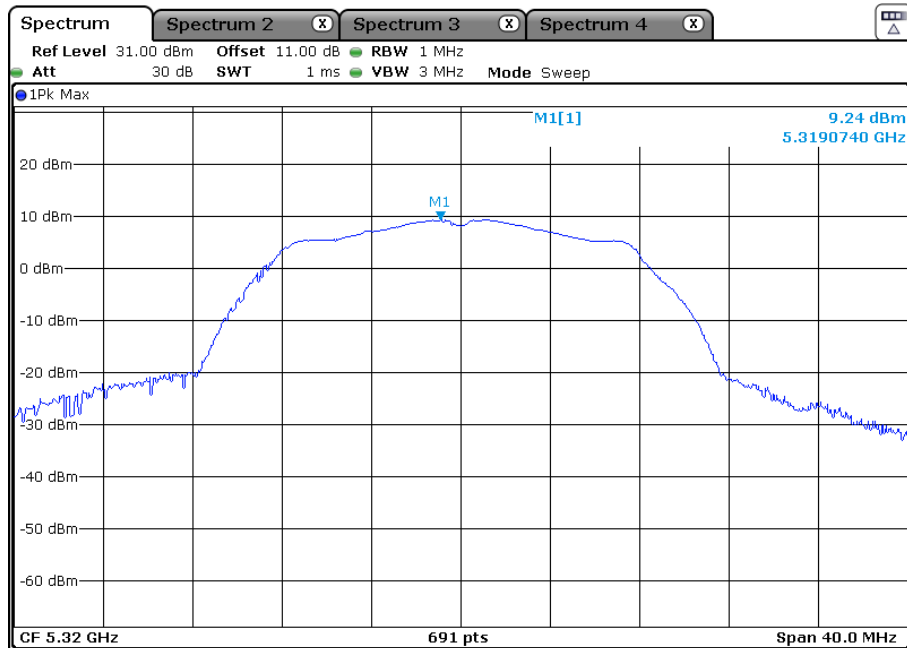


TEST REPORT

Channel 60: 5300 MHz:



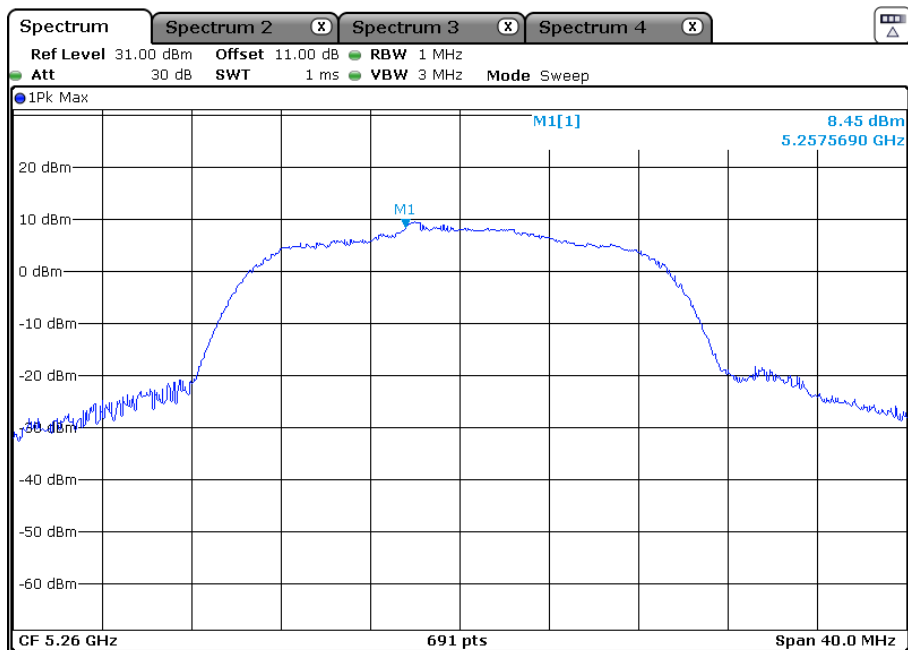
Channel 64: 5320 MHz:



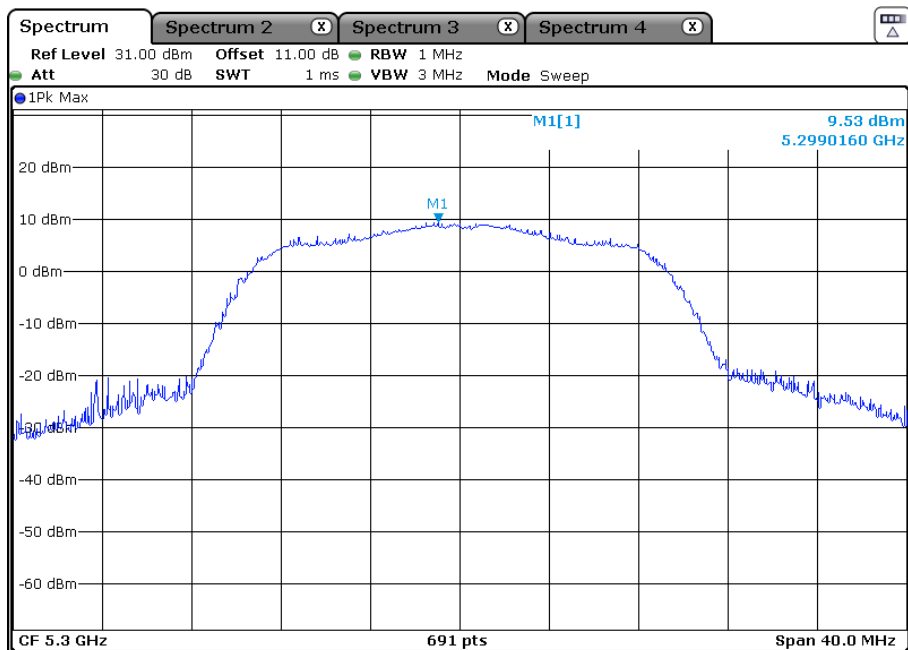
TEST REPORT

802.11n HT20

Channel 52: 5260 MHz:

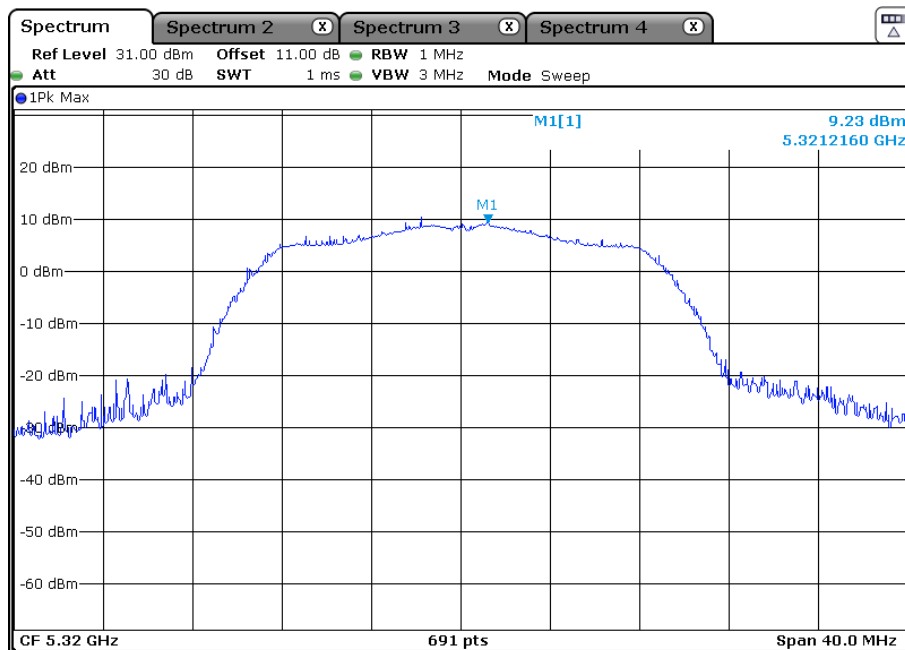


Channel 60: 5300 MHz:



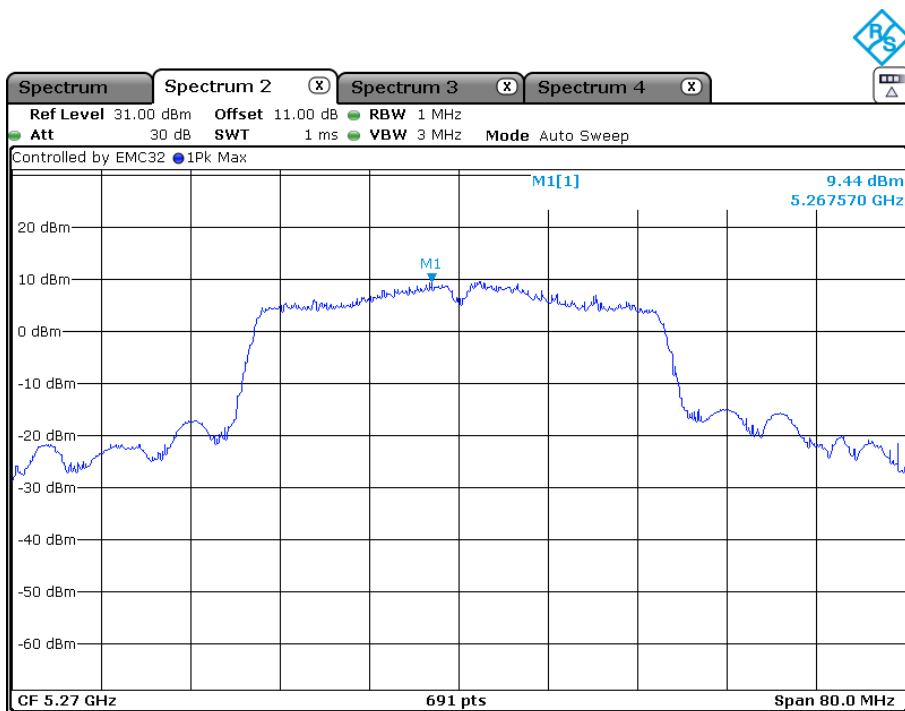
TEST REPORT

Channel 64: 5320 MHz:



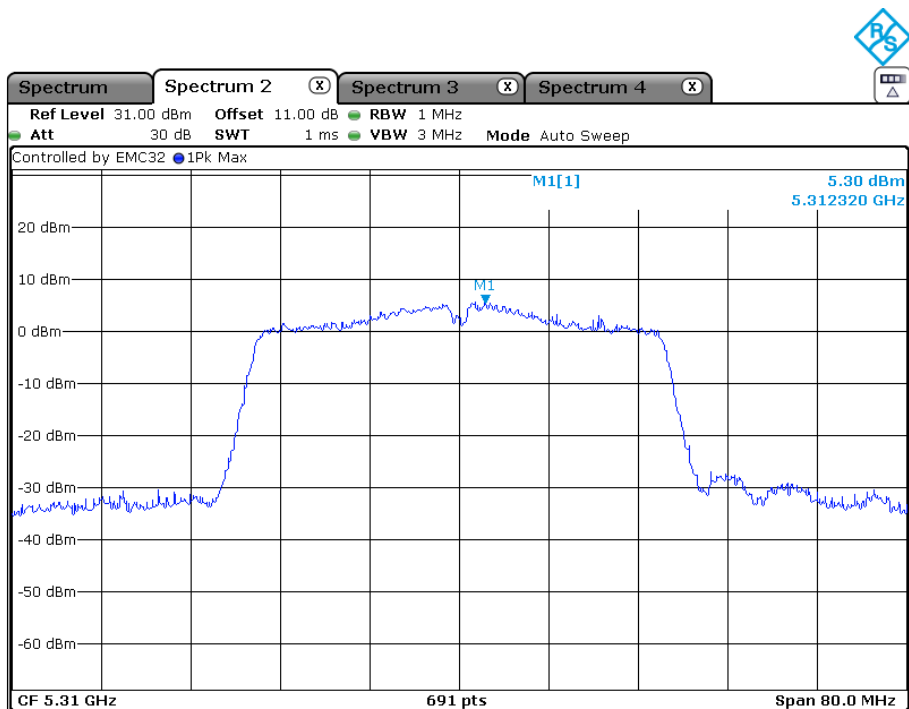
802.11n HT40

Channel 54: 5270 MHz:



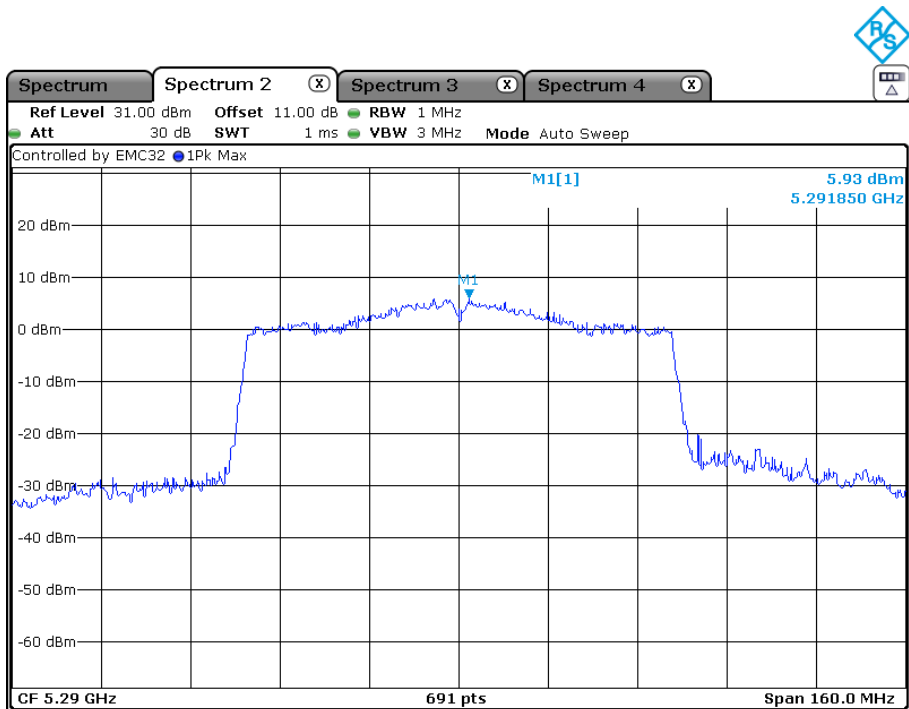
TEST REPORT

Channel 62: 5310 MHz:



802.11ac VHT80

Channel 58: 5290 MHz:

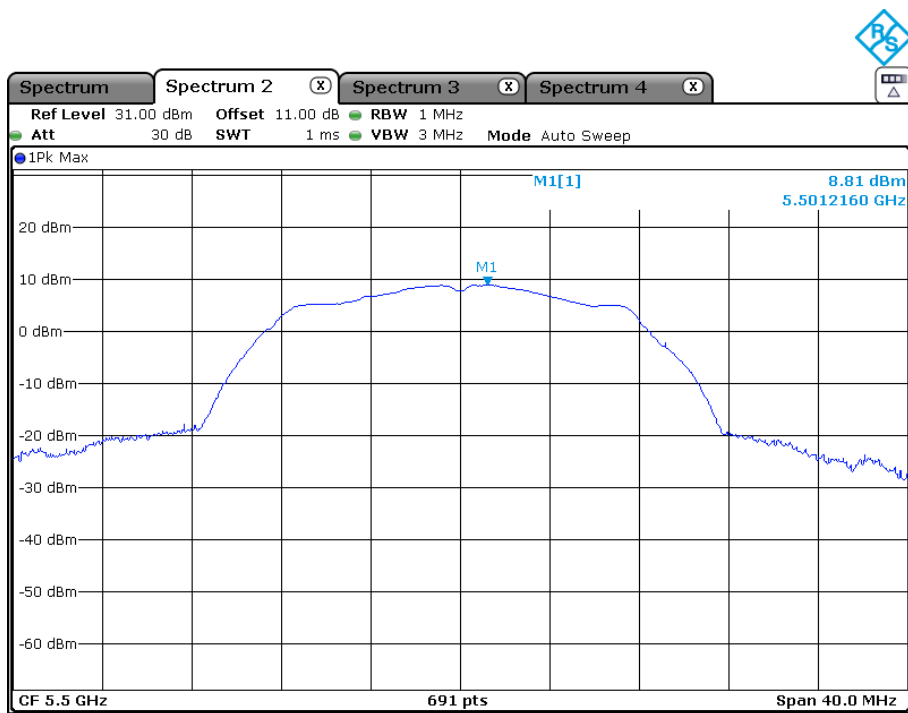


TEST REPORT

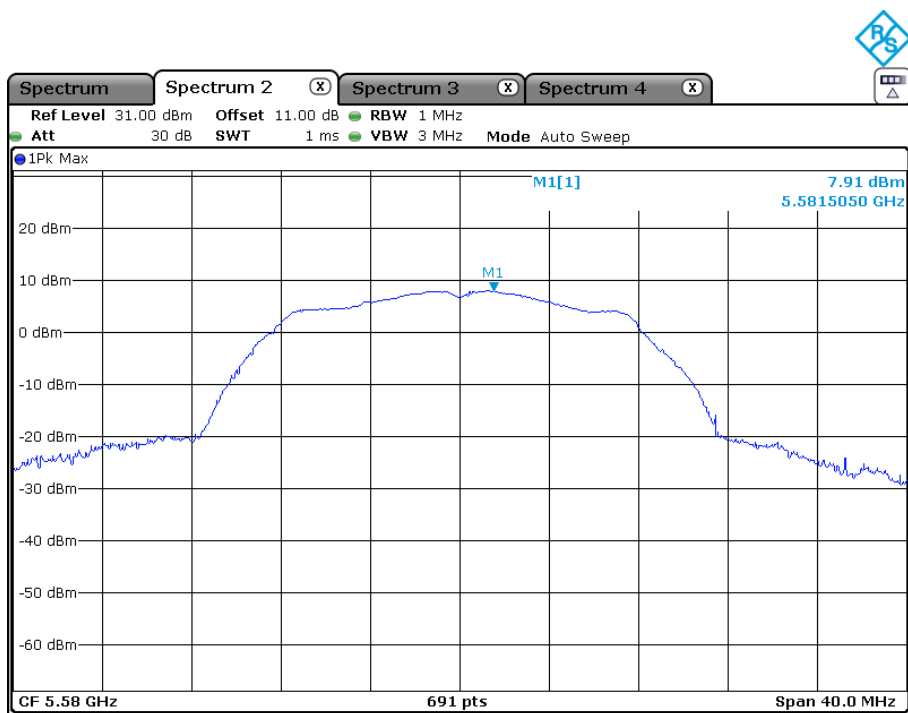
Band III 5470 MHz to 5725 MHz

802.11a

Channel 100: 5500 MHz:

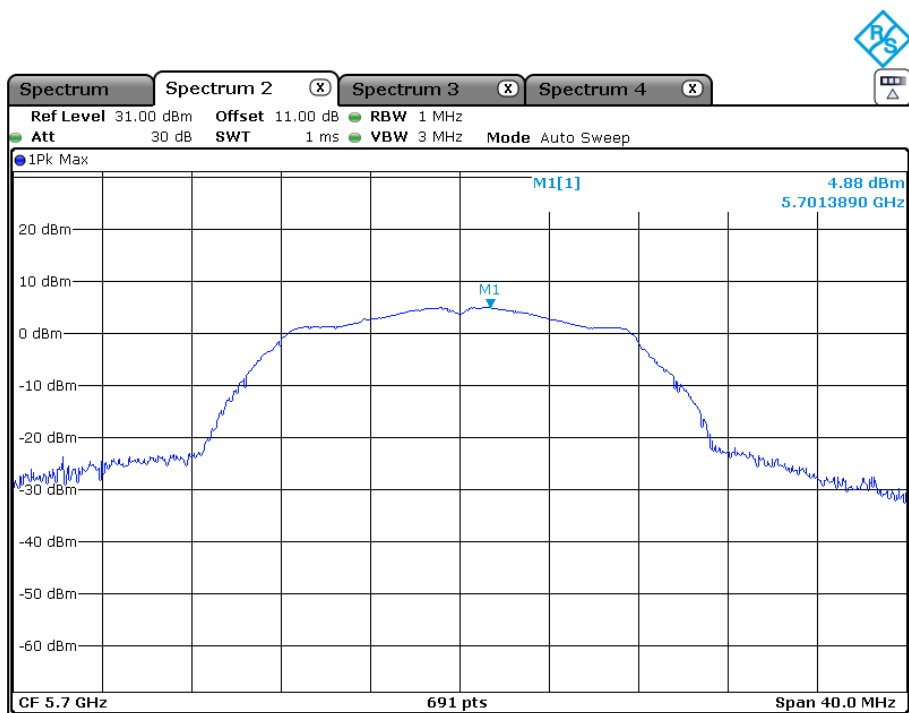


Channel 116: 5580 MHz:



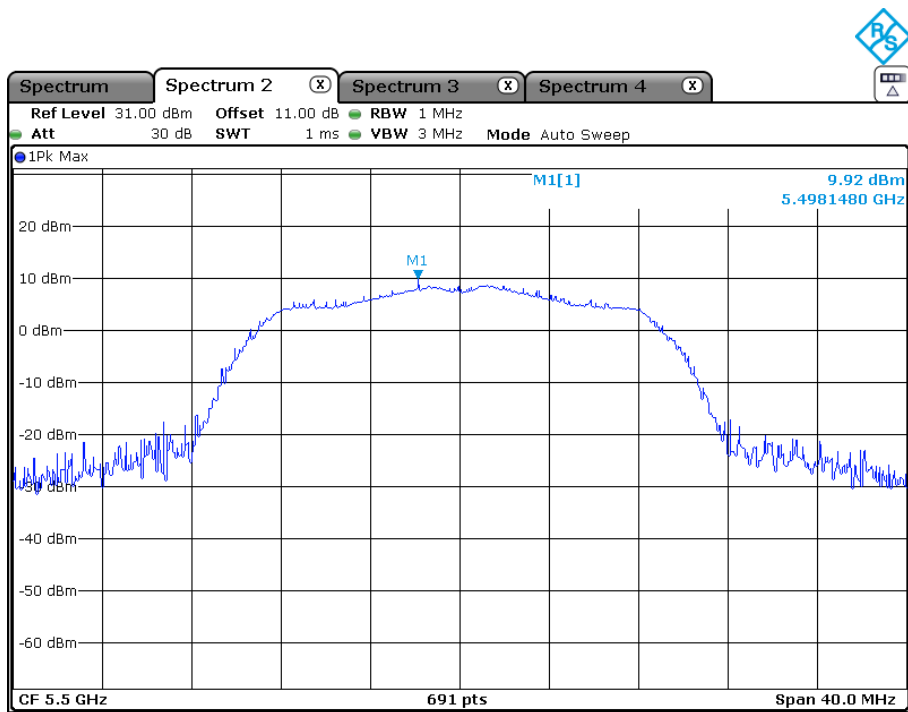
TEST REPORT

Channel 140: 5700 MHz:



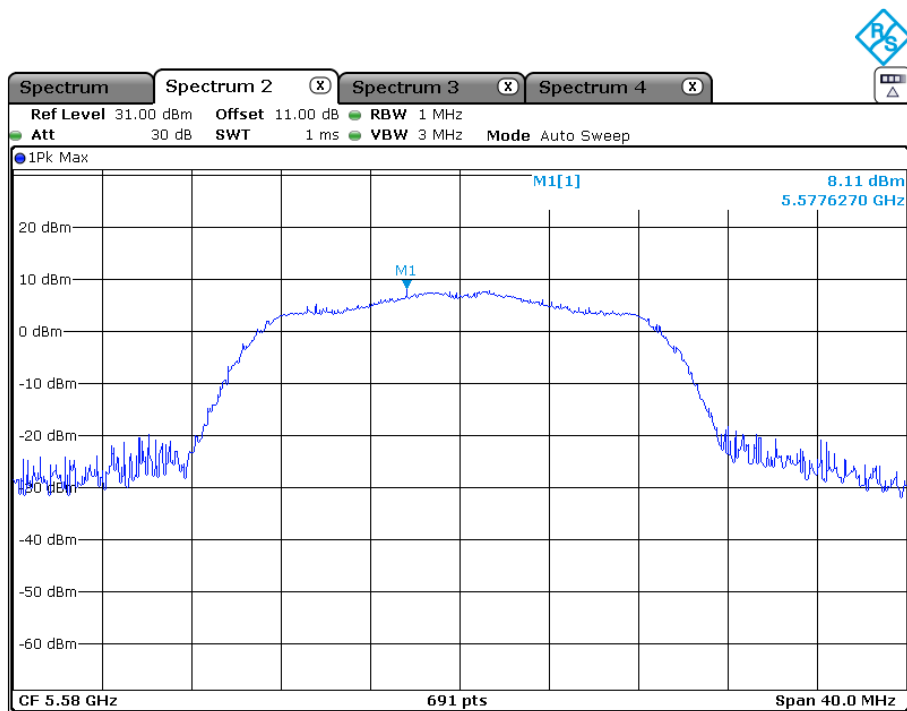
802.11n HT20

Channel 100: 5500 MHz:

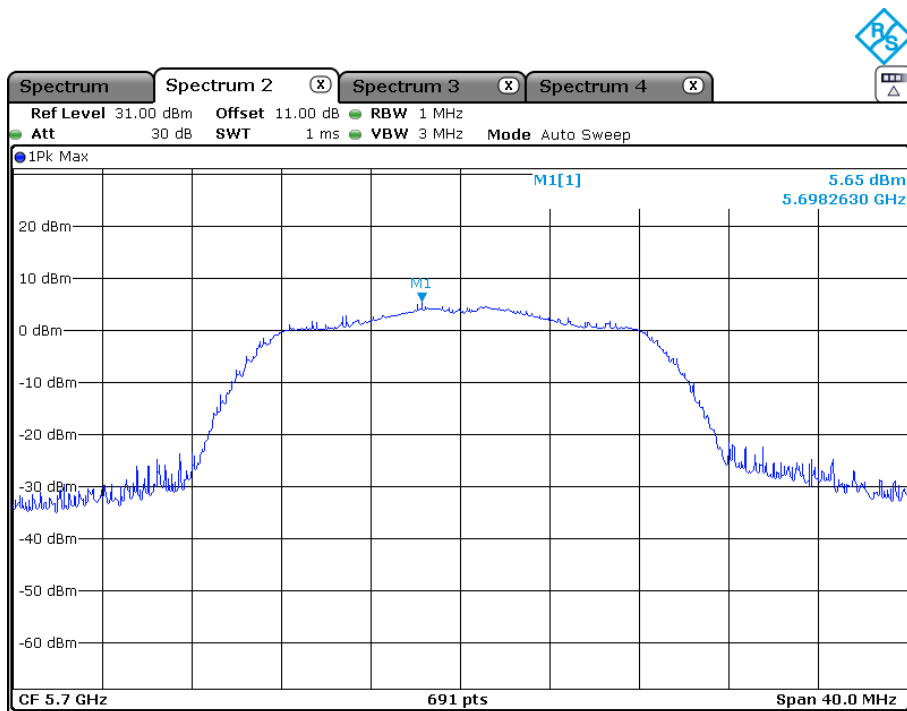


TEST REPORT

Channel 116: 5580 MHz:



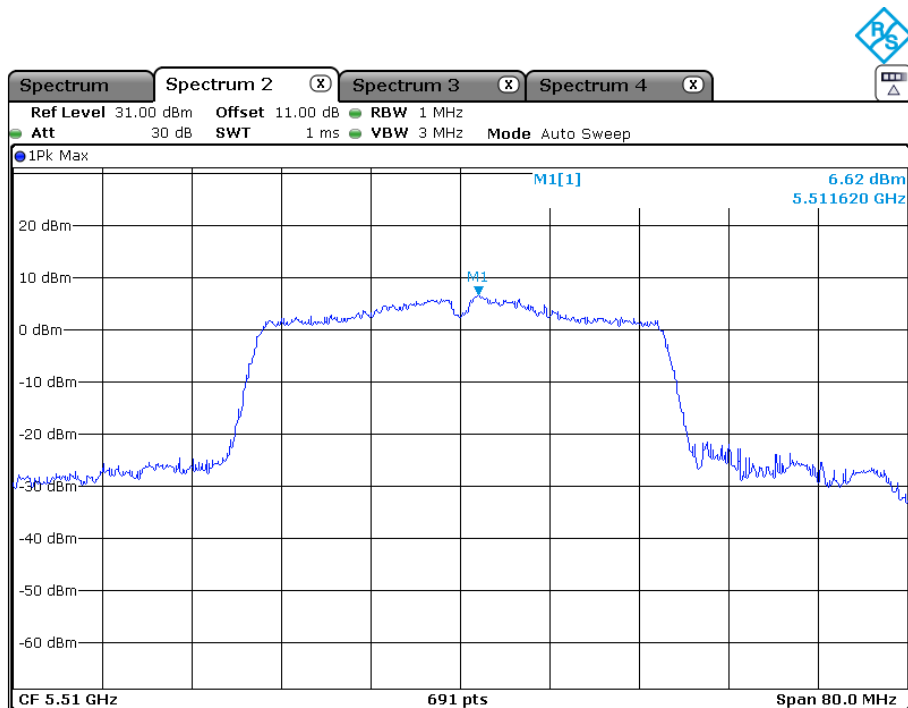
Channel 140: 5700 MHz:



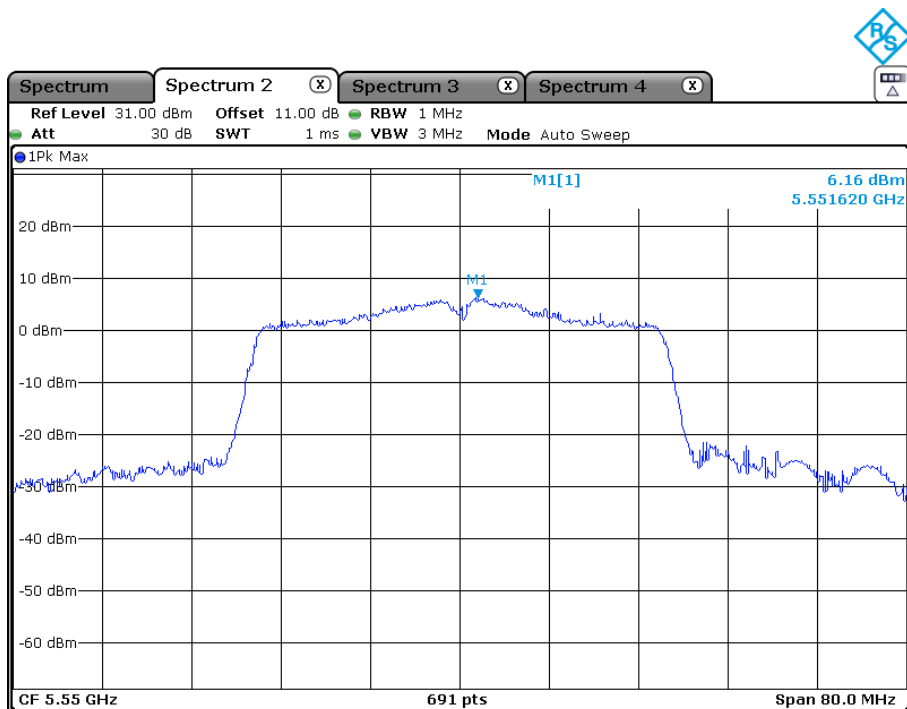
TEST REPORT

802.11n HT40

Channel 102: 5510 MHz:

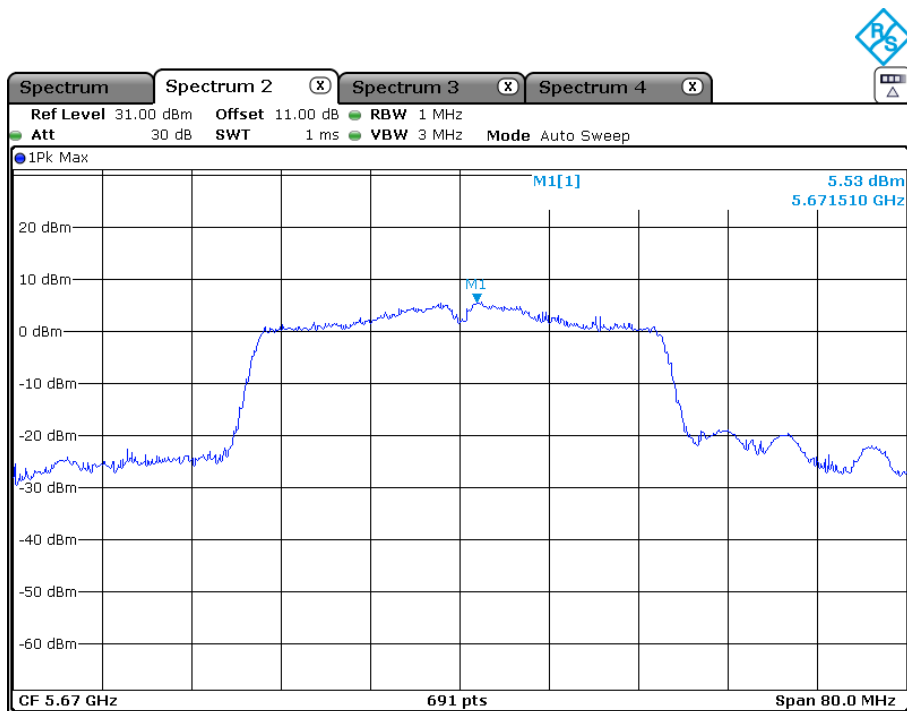


Channel 110: 5550 MHz:



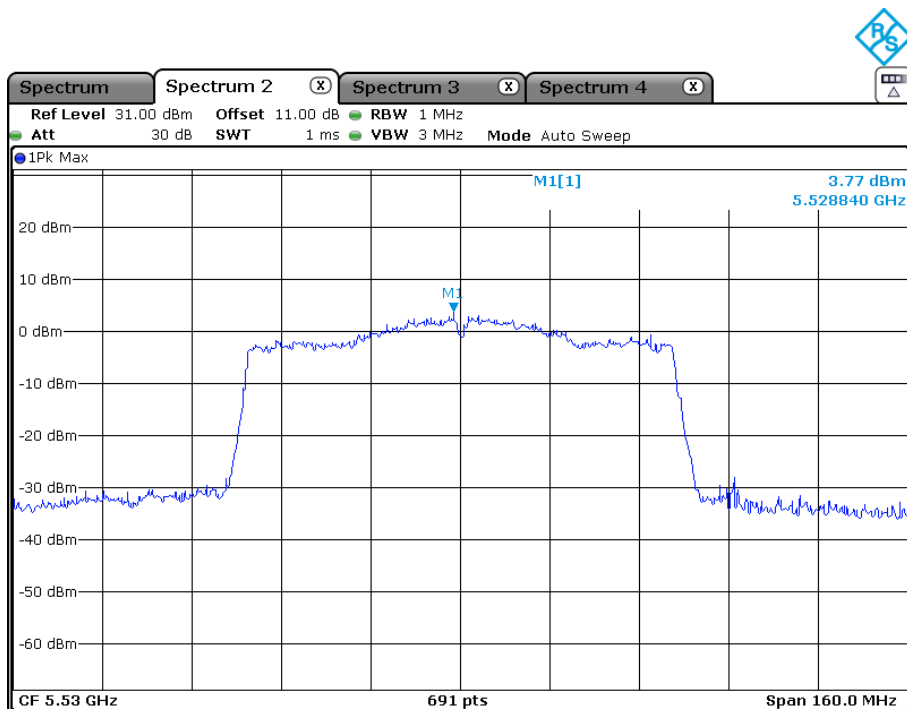
TEST REPORT

Channel 134: 5670 MHz:



802.11ac VHT80

Channel 106: 5530 MHz:

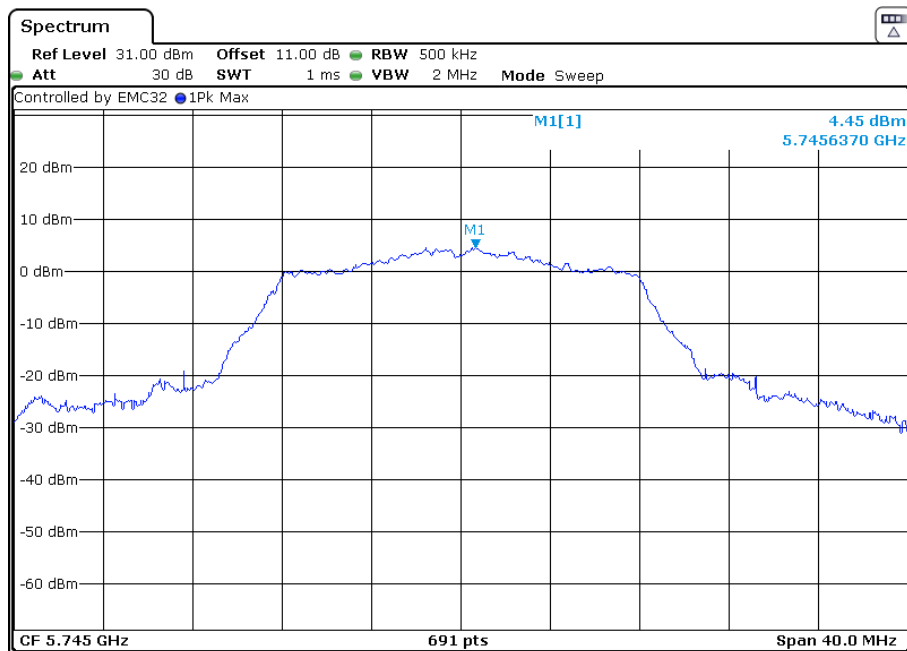


TEST REPORT

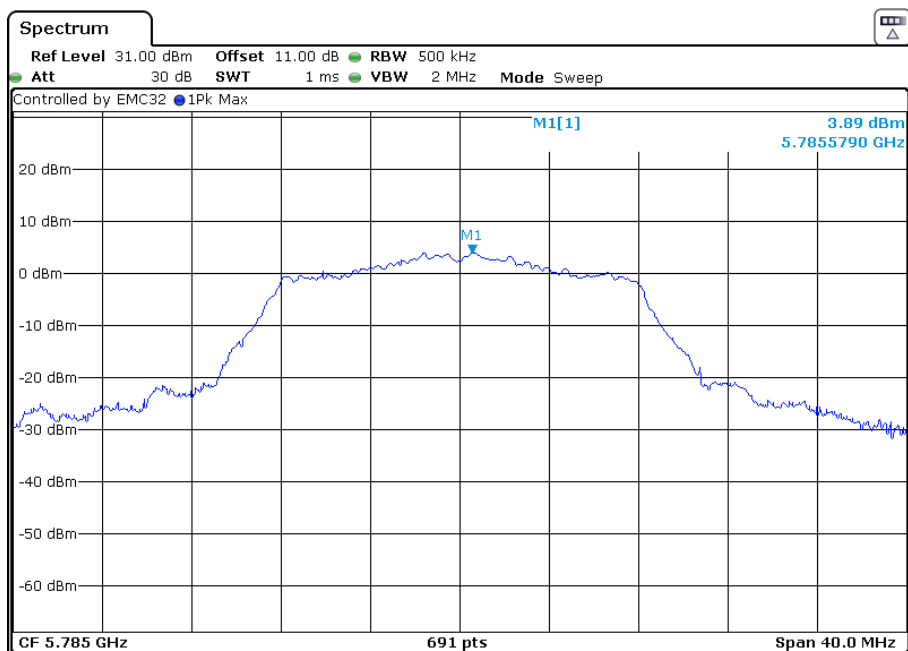
Band IV 5725 MHz to 5850 MHz

802.11a

Channel 149: 5745 MHz:

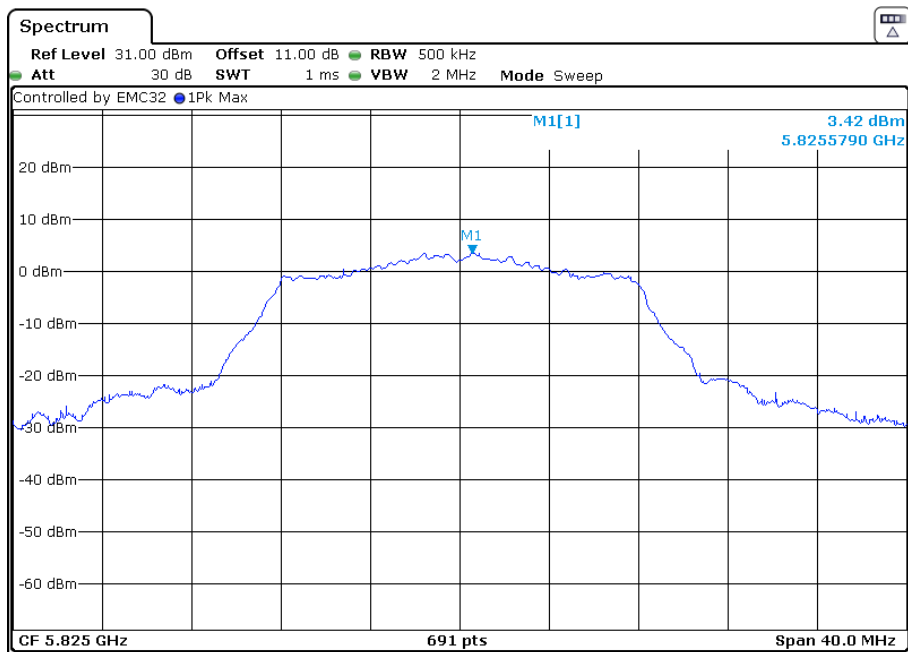


Channel 157: 5785 MHz:



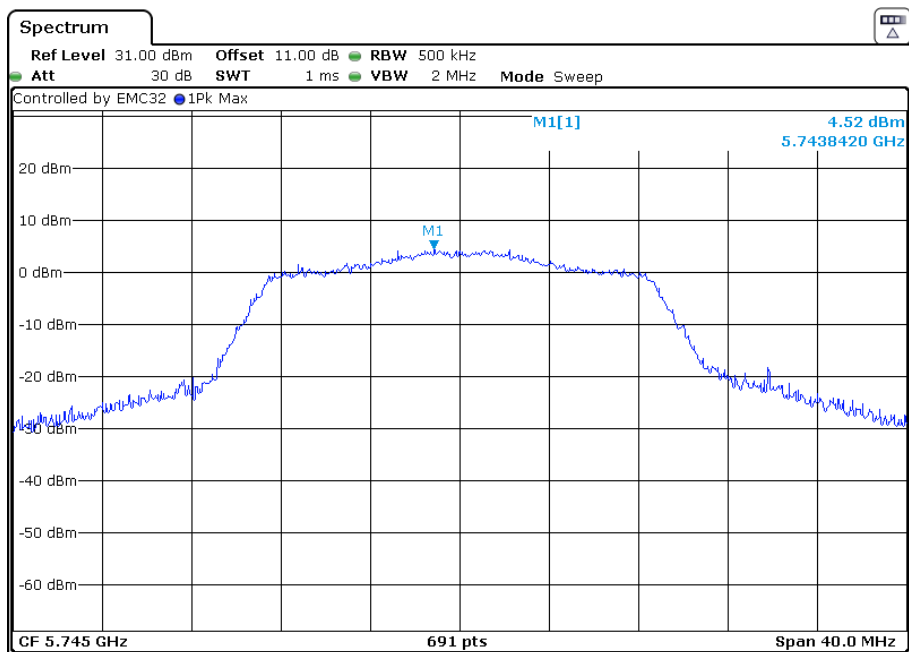
TEST REPORT

Channel 165: 5825 MHz:



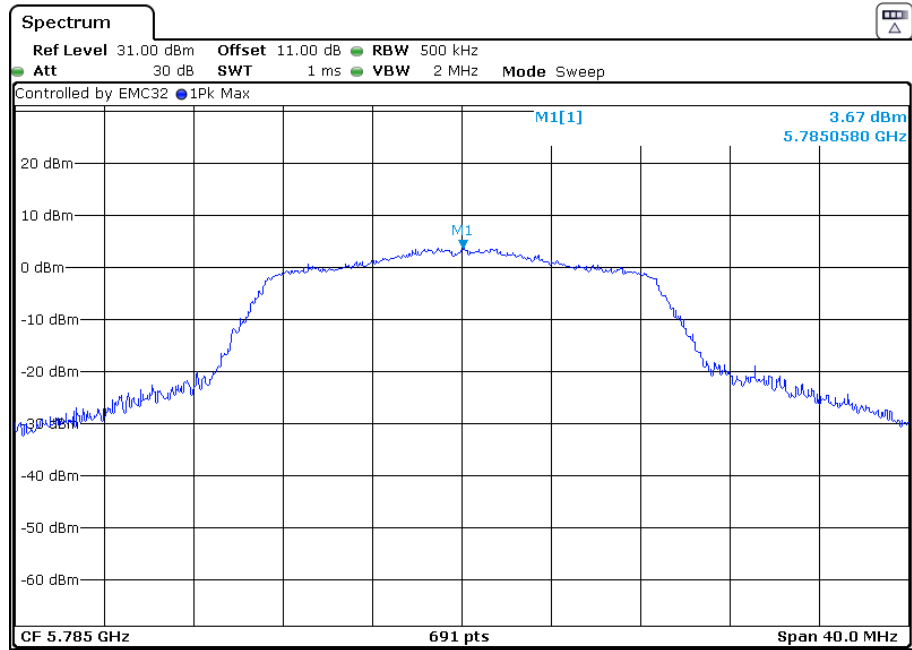
802.11n HT20

Channel 149: 5745 MHz:

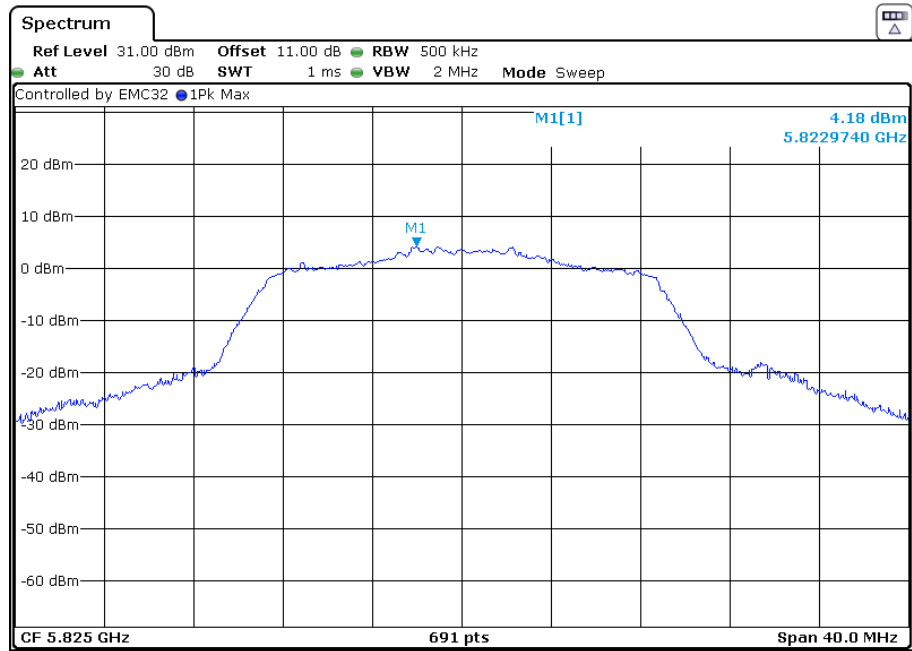


TEST REPORT

Channel 157: 5785 MHz:



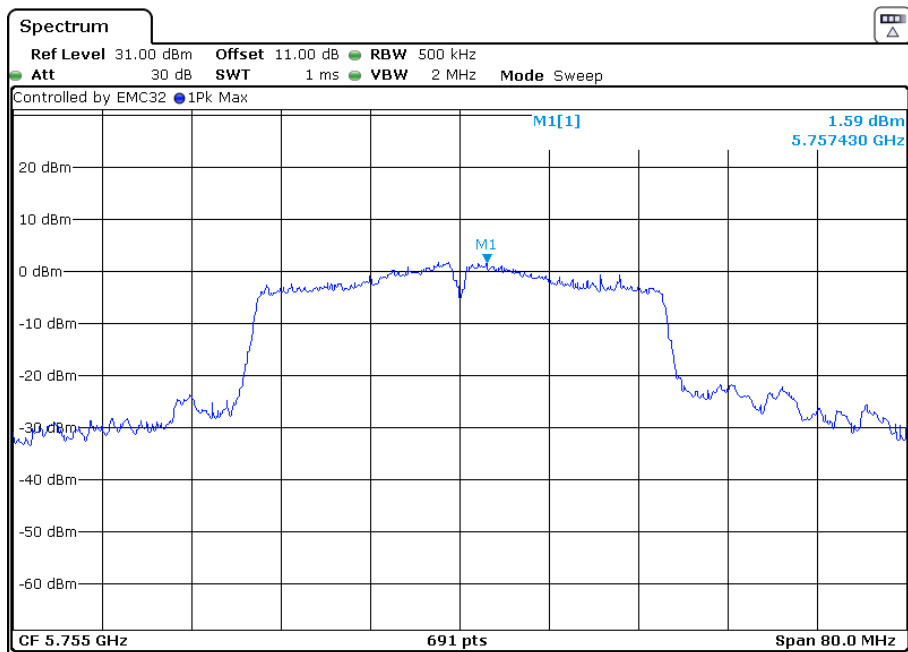
Channel 165: 5825 MHz:



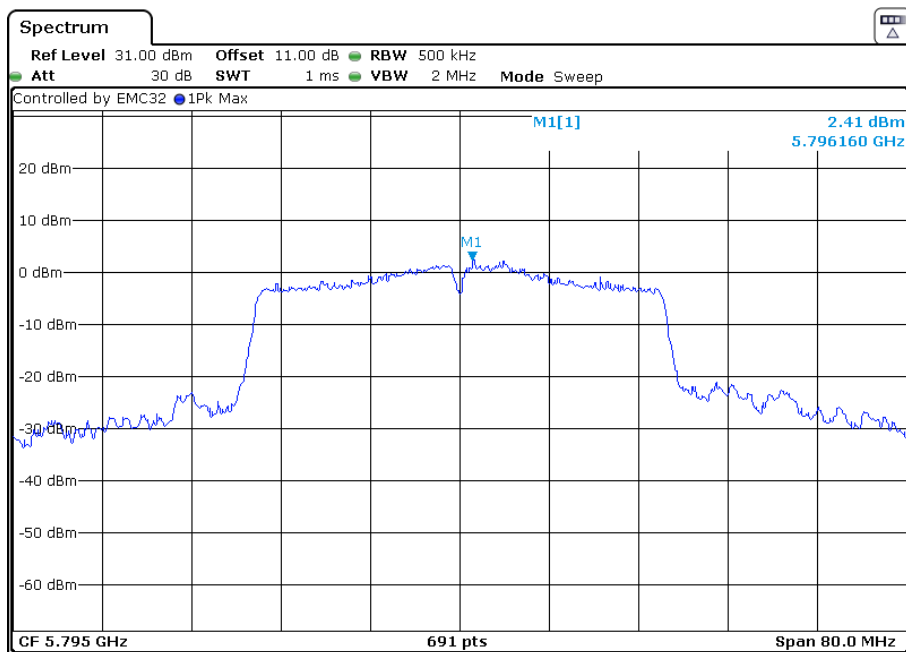
TEST REPORT

802.11n HT40

Channel 151: 5755 MHz:



Channel 159: 5795 MHz:



TEST REPORT

802.11ac VHT80

Channel 155: 5775 MHz:

