

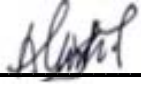
 MOTOROLA SOLUTIONS	    CERTIFICATE 2518.08 SAMM 825																												
MOTOROLA PENANG ADV. COMM. LABORATORY Motorola Solutions Malaysia Sdn. Bhd. Plot 2A Medan Bayan Lepas, Mukim 12, S.W.D. 11900 Bayan Lepas, Penang, Malaysia.	FCC / IC TEST REPORT Report Revision : Rev.A																												
<table><tr><td>Date/s Tested</td><td>: 04-January-2024 - 08-February-2024</td></tr><tr><td>Manufacturer/Location</td><td>: MOTOROLA SOLUTIONS INC (SCHAUMBURG)</td></tr><tr><td>Manufacturer Address</td><td>: 1301 E. ALGONQUIN ROAD BLDG IL02 ROOM 3035 SCHAUMBURG, IL 60196</td></tr><tr><td>Requestor</td><td>: CEZAR NOWAKOWSKI</td></tr><tr><td>Product Type</td><td>: Vehicle Mounted</td></tr><tr><td>Product Marketing Name (PMN)</td><td>: APX8500</td></tr><tr><td>Hardware Version Identification Number (HVIN)</td><td>: M37TSS9PW1CN</td></tr><tr><td>Frequency Band</td><td>: 5180-5825 MHz</td></tr><tr><td>Firmware Version Identification Number (FVIN)</td><td>: D32.50.27</td></tr><tr><td>Applicant Name</td><td>: Motorola Solutions Inc</td></tr><tr><td>Applicant Address</td><td>: Plot 2A Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia</td></tr><tr><td>FCC Registrations</td><td>: 461337</td></tr><tr><td>ISED Registrations</td><td>: MY0001</td></tr></table> The equipment was tested accordance to the requirement listed below: <table><tr><td>(5GHz Wi-Fi) FCC 47 CFR Part 15 Subpart E IC RSS 247 Issue 2</td><td>PASS</td></tr></table>		Date/s Tested	: 04-January-2024 - 08-February-2024	Manufacturer/Location	: MOTOROLA SOLUTIONS INC (SCHAUMBURG)	Manufacturer Address	: 1301 E. ALGONQUIN ROAD BLDG IL02 ROOM 3035 SCHAUMBURG, IL 60196	Requestor	: CEZAR NOWAKOWSKI	Product Type	: Vehicle Mounted	Product Marketing Name (PMN)	: APX8500	Hardware Version Identification Number (HVIN)	: M37TSS9PW1CN	Frequency Band	: 5180-5825 MHz	Firmware Version Identification Number (FVIN)	: D32.50.27	Applicant Name	: Motorola Solutions Inc	Applicant Address	: Plot 2A Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia	FCC Registrations	: 461337	ISED Registrations	: MY0001	(5GHz Wi-Fi) FCC 47 CFR Part 15 Subpart E IC RSS 247 Issue 2	PASS
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Prepared By:  Nur Alieya Binti Mat Yusoff Technician	Approved Signatory:  Vincent Foong Chuen Kit Responsible Engineer																												

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Revision History	Description	Date	Originator
Rev. A	Initial Report	22-December-2024	Alieya

1.0. Summary of Test Results

FCC Clause	IC Clause	Test Item	Result	Remarks	Serial Number tested	Tested by
15.407 (a)(1/2/3)	RSS 247 6.2	Maximum Conducted Output Power (Average)	Pass	Highest output power: 802.11a: 9.724 dBm (9.38 mW) 802.11n20/ac20: 9.846 dBm (9.65 mW)	681IZN6350	Alieya
15.407(a) (1/2/3)	RSS 247 6.2	Maximum Power Spectral Density	Pass	Meet the requirement limit.	681IZN6350	Alieya
15.407 (e)	RSS 247 6.2.4	6dB Bandwidth	Pass	a20: 16.875 MHz (16M9D1D) n20/ac20: 17.744 MHz (17M7D1D)	681IZN6350	Alieya
15.407 (g)	RSS Gen 6.11	Frequency Stability	Pass	Meet the requirement limit.	681IZN6350	Alieya
15.407 (b) (1/2/3/4/6)	RSS 247 6.2	Band Edge Radiated Spurious Emission Measurement	Pass	Worst case emission: 66.7490dBu/m (margin: 1.4510dB)	681IZN6378	Nazrin, Rezza, Fuad
15.407 (b) (1/2/3/4/6)	RSS 247 6.2	Radiated Spurious Emission Measurement	Pass	Worst case emission: 28.9540dBu/m (margin: 11.0460dB)	681IZN6378	Nazrin, Rezza, Fuad
15.207 15.407 (b)(6)	RSS Gen 8.8	AC Powerline Conducted Emission	Pass	Testing is not required, radio shall turn off during charging mode	NA	NA
15.203	-	Antenna requirement	Pass	Internal antenna is not accessible to the end-user	NA	NA

NA → Not Available

2.0. Measurement Uncertainty

Measurement	Frequency	Expanded Uncertainty (k=1.96) (±dB)
AC Power Line Conducted Spurious Emission	150KHz ~ 30MHz	3.43
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	5.88
	200MHz ~ 1000MHz	5.88
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.84
	18GHz ~ 25GHz	6.02
Conducted Spurious Emissions	9kHz ~ 12.75GHz	2.82

3.0. Equipment List

Bluetooth ATE # 1 (SW Version: Ate Main_3.1.12_R1)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
CHAMBER	SH-641	92003820	04-Jul-24	04-Jul-25
POWER SUPPLY	6652A	3541A02371	11-Sep-24	11-Sep-25
PULSE SENSOR	MA2411B	1726287	20-Aug-24	20-Aug-25
PULSE POWER METER	ML2495A	1845014	20-Aug-24	20-Aug-25
SPECTRUM ANALYZER	E4440A	MY48250517	08-Nov-23	08-Nov-24

Radiated Emission Station (SW Version: EMC FCC RE v1.6.5)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
DRG HORN FREQ.	SAS-571	1143	08-Mar-23	08-Mar-25
DRG HORN FREQ.	SAS-571	720	18-Apr-23	18-Apr-25
DC Power Supply	6623A	3302A02585	30-Jul-24	30-Jul-25
SIGNAL GENERATOR	SMB 100A	182511	04-Sep-21	04-Dec-24
EMI TEST RECEIVER	ESW44	101750	08-Aug-24	07-Aug-25
BILOG ANTENNA	CBL6112B	2950	14-Dec-23	14-Dec-24
BILOG ANTENNA	CBL6112D	55546	05-Jun-24	05-Jun-25
DATA LOGGER THERMOHYGROMETER	SDL500	A.016800	26-Jun-24	26-Jun-25
BROAD-BAND HORN ANTENNA	BBHA9170	BBHA9170255	13-Mar-24	13-Mar-25
PREAMPLIFIER	PAM-0118P	574	19-Mar-24	19-Mar-25
LOOP ANTENNA	6502	00203479	06-Mar-24	06-Mar-25
5m SEMI-ANECHOIC CHAMBER	S800-HX	J2308	Not Required	Not Required
SYSTEM CONTROLLER	SC104V	050806-1	Not Required	Not Required
TURNTABLE FLUSH MOUNT 2M	FM2011	NA	Not Required	Not Required
ANTENNA POSITIONING TOWER	TLT2	NA	Not Required	Not Required
PREAMPLIFIER 18-40GHz	Miteq Hi Gain Sucoflex	002	Not Required	Not Required

4.0. General Information

General Description of EUT:

Product	Vehicle Mounted
Brand	Motorola Solutions
Test Model	APX8500
Power Supply Rating	13.6Vdc
Mode of operation	WLAN 5GHz
Modulation Type	QPSK, BPSK, 16QAM, 64QAM, 256QAM
Modulation Technology	OFDM
Transfer Rate	802.11a: 6.0/9.0/12.0/18.0/24.0/36.0/48.0/54.0 Mbps 802.11n: up to MCS15 802.11ac: up to MCS9
Operating Frequency	5.180 ~ 5.240 GHz, 5.260 ~ 5.320 GHz, 5.50 ~ 5.720 GHz, 5.745 ~ 5.825 GHz
Output Power (26 EBW or 99% OBW)	11.2 mW for 5.180 ~ 5.240 GHz 11.2 mW for 5.260 ~ 5.320 GHz 11.2 mW for 5.500 ~ 5.720 GHz 11.2 mW for 5.745 ~ 5.825 GHz
Antenna Type	Vehicular Thru-Hole Mount (Roof or Trunk)
SW Version	D32.50.27

Note:

The EUT contains following accessory devices and data cable:

Item	Brand	Model or P/N
2.4/5 GHz Wi-Fi/BT and GNSS BT/WiFi Antenna BT/WiFi/GPS Antenna	MOTOROLA	AN000163A01
KEYPAD MICROPHONE	MOTOROLA	HMN4079G-CF1
STANDARD SPEAKER 8 OHM	MOTOROLA	HSN4031B-C3
CABLE, ASSEMBLY,0,CABLE, DC POWER	MOTOROLA	HKN4192C-CF4
131 CAN CABLE REMOTE MOUNT	MOTOROLA	HKN6164B-C2
CABLE, CH POWER AND SPEAKER	MOTOROLA	HKN6188B-CF3
07 control Head (English)	MOTOROLA	PMHN4194D-CF3
07 Control Head Chib	MOTOROLA	PMUN1057B-1
ASSEMBLY, TIB, REMOTE	MOTOROLA	AS000016A02-CF2

Description of Test Modes:

For 5180 to 5240 MHz:

Channels for 802.11a, 802.11n, 802.11ac (HT20, VHT20)

Channel	Frequency (MHz)
36	5180
40	5200
44	5220
48	5240

Channels for 802.11n, 802.11ac (HT40, VHT40)

Channel	Frequency (MHz)
38	5190
46	5230

Channels for 802.11ac (VHT80)

Channel	Frequency (MHz)
42	5210

For 5260 to 5320 MHz:

Channels for 802.11a, 802.11n, 802.11ac (HT20, VHT20)

Channel	Frequency (MHz)
52	5260
56	5280
60	5300
64	5320

Channels for 802.11n, 802.11ac (HT40, VHT40)

Channel	Frequency (MHz)
54	5270
62	5310

Channels for 802.11ac (VHT80)

Channel	Frequency (MHz)
58	5290

For 5500 to 5720 MHz:

Channels for 802.11a, 802.11n, 802.11ac (HT20, VHT20)

Channel	Frequency (MHz)
100	5500
104	5520
108	5540
112	5560
116	5580
120	5600
124	5620
128	5640
132	5660
136	5680
140	5700
144	5720

Channels for 802.11n, 802.11ac (HT40, VHT40)

Channel	Frequency (MHz)
102	5510
110	5550
118	5590
126	5630
134	5670
142	5710

Channels for 802.11ac (VHT80)

Channel	Frequency (MHz)
106	5530
122	5610
138	5690

For 5745 to 5825 MHz:

Channels for 802.11a, 802.11n, 802.11ac (HT20, VHT40)

Channel	Frequency(MHz)
149	5745
153	5765
157	5785
161	5805
165	5825

Channels for 802.11n, 802.11ac (HT40, VHT40)

Channel	Frequency(MHz)
151	5755
159	5795

Channels for 802.11ac (VHT80)

Channel	Frequency (MHz)
155	5775

General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, the EUT is to comply with the requirements of the following standards:

FCC Part15, Subpart E (15.407)

789033 D02 General UNII Test Procedures New Rules v01r04

644545 D03 Guidance for IEEE 802 11ac New Rules v01

ANSI C63.10-2013

RSS 247 Issue 2, RSS Gen

All test have been performed and recorded as per above standards.

Deviation from standard

Not applicable as no deviation from standard test method

Modifications to EUT

No modifications were done to the UUT to facilitate the tests in this report.

Antenna gain disclaimer

Antenna gain information is provided by customer. The validity of the results is dependent upon this information. The lab will not be held accountable in the event the supplied information affects compliance

4.1. Test Mode Applicability and Test Channel Detail

EUT Configure Mode	Applicable to				Description
	RE $\geq$ 1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from adapter
B	x	√	x	x	Power from carcharger (12Vdc)
C	x	√	x	x	Power from carcharger (24Vdc)

Where:

RE $\geq$ 1G: Radiated Emission above 1GHz & Band edge
 Measurement

RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

Note: The EUT had been pre-scanned on the position of each 3 axis planes. The worst case was found when positioned on **Y-plane**.

Radiated Emission Test (Above 1GHz)

☒ 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.

EUT Configure Mode	Frequency Band	MODE	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11a	36-48	36,44,48	OFDM	BPSK	6.0
-	5180-5240	802.11n/ac (HT20, VHT20)	36-48	36,44,48	OFDM	BPSK	6.5
-	5180-5240	802.11n/ac (HT40,VHT40)	38-46	38,46	OFDM	BPSK	13.5
-	5180-5240	802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52-64	52,60,64	OFDM	BPSK	6.0
-	5260-5320	802.11n/ac (HT20, VHT20)	52-46	52,60,64	OFDM	BPSK	6.5
-	5260-5320	802.11n/ac (HT40,VHT40)	54-62	54,62	OFDM	BPSK	13.5
-	5260-5320	802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5700	802.11a	100-140	100,116,140	OFDM	BPSK	6.0
-	5500-5720	802.11n/ac (HT20, VHT20)	100-144	100,116,144	OFDM	BPSK	6.5
-	5500-5720	802.11n/ac (HT40,VHT40)	102-142	102,110,142	OFDM	BPSK	13.5
-	5500-5720	802.11ac (VHT80)	106-138	106,122,138	OFDM	BPSK	29.3
-	5745-5825	802.11a	149-165	149,157,165	OFDM	BPSK	6.0
-	5745-5825	802.11n/ac (HT20, VHT20)	149-165	149,157,165	OFDM	BPSK	6.5
-	5745-5825	802.11n/ac (HT40,VHT40)	151-159	151,159	OFDM	BPSK	13.5
-	5745-5825	802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

Radiated Emission Test (Below 1GHz)

☒ 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.

EUT Configure Mode	MODE	Frequency band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11a	5180-5240	36 to 48	36	OFDM	BPSK	6.0
-	802.11a	5260-5320	52 to 64		OFDM	BPSK	6.0
-	802.11a	5500-5700	100 to 140		OFDM	BPSK	6.0
-	802.11a	5745-5825	149 to 165		OFDM	BPSK	6.0

Power Line Conducted Emission Test

☒ 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.

EUT Configure Mode	MODE	Frequency band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11a	5180-5240	36 to 48	36	OFDM	BPSK	6.0
-	802.11a	5260-5320	52 to 64		OFDM	BPSK	6.0
-	802.11a	5500-5700	100 to 140		OFDM	BPSK	6.0
-	802.11a	5745-5825	149 to 165		OFDM	BPSK	6.0

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ 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.

EUT Configure Mode	Frequency Band	MODE	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11a	36-48	36,44,48	OFDM	BPSK	6.0
-	5180-5240	802.11n/ac (HT20, VHT20)	36-48	36,44,48	OFDM	BPSK	6.5
-	5180-5240	802.11n/ac (HT40,VHT40)	38-46	38,46	OFDM	BPSK	13.5
-	5180-5240	802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52-64	52,60,64	OFDM	BPSK	6.0
-	5260-5320	802.11n/ac (HT20, VHT20)	52-64	52,60,64	OFDM	BPSK	6.5
-	5260-5320	802.11n/ac (HT40,VHT40)	54-62	54,62	OFDM	BPSK	13.5
-	5260-5320	802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5700	802.11a	100-140	100,116,140	OFDM	BPSK	6.0
-	5500-5720	802.11n/ac (HT20, VHT20)	100-144	100,116,144	OFDM	BPSK	6.5
-	5500-5720	802.11n/ac (HT40,VHT40)	102-142	102,110,142	OFDM	BPSK	13.5
-	5500-5720	802.11ac (VHT80)	106-138	106,122,138	OFDM	BPSK	29.3
-	5745-5825	802.11a	149-165	149,157,165	OFDM	BPSK	6.0
-	5745-5825	802.11n/ac (HT20, VHT20)	149-165	149,157,165	OFDM	BPSK	6.5
-	5745-5825	802.11n/ac (HT40,VHT40)	151-159	151,159	OFDM	BPSK	13.5
-	5745-5825	802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	25°C, 50% RH	13.6V DC	Nazrin/Fuad
RE<1G	25°C, 50% RH	13.6V DC	Nazrin/Fuad
PLC	22.4°C, 68.6% RH	120V AC,240V AC	NA
APCM	25°C, 50% RH	13.6V DC	Alieya

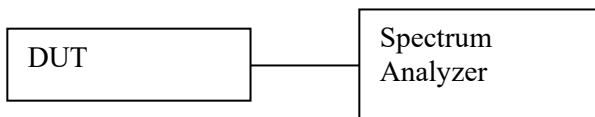
Duty Cycle of Test Signal

802.11a, 802.11n and 802.11ac (HT20, VHT20): Duty cycle of test signal is 100%.

If Duty cycle of test signal is <98%, duty cycle factor shall be considered. (Refer to section 6.0 for duty cycle measurement)

5.0. Duty Cycle of Test Signal

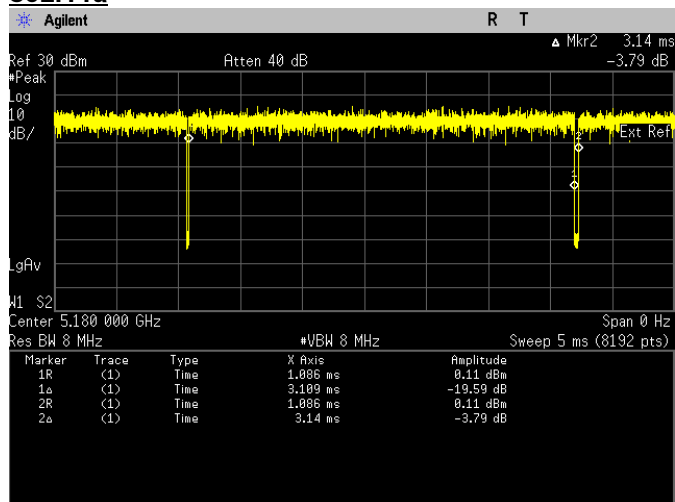
5.0.1. Test Setup



- 1) Set DUT to desire transmit frequency and transmit with maximum power.
- 2) Connect DUT's antenna terminal to spectrum analyzer with a low loss cable.
- 3) Setting of Spectrum analyzer :
 - a. Set the RBW = 10 MHz or the highest RBW available on spectrum analyzer.
 - b. Set the VBW $\geq$ RBW.
 - c. Set to Zero Span.
 - d. Detector = Peak.
 - e. Sweep time = 10ms or others that allow to measure accurate duty cycle.
 - f. Trace mode = Max hold.
- 4) Record the duty cycle as X and save the plot.

5.0.2. Test Data

802.11a

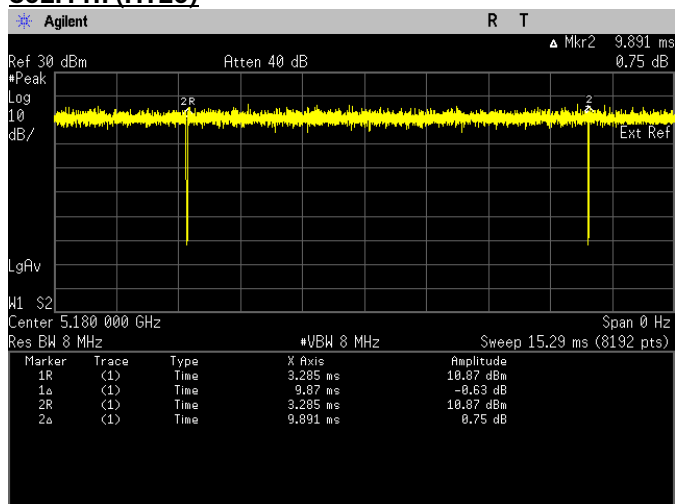


On time	3.109	ms
On + off time	3.140	ms
Duty Cycle	0.9901	
Duty Cycle Factor	0.043	

*Duty cycle = On time/ On +off time

*Duty Cycle factor = 10*log (1/Duty Cycle)

802.11n (HT20)



On time	9.870	ms
On + off time	9.891	ms
Duty Cycle	0.9979	
Duty Cycle Factor	0.009	

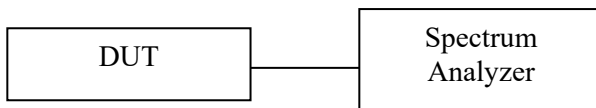
*Duty cycle = On time/ On +off time

*Duty Cycle factor = 10*log (1/Duty Cycle)

6.0. Transmitter Test Parameters

6.1. Bandwidth measurements

6.1.1. Test Setup



- a) Test Setup as per illustrated above.
- b) Set DUT to transmit at desire transmit frequency.
- c) Connect DUT's antenna terminal to spectrum analyzer with a low loss cable.
- d) Setting of Spectrum analyzer for 26dB EBW:
 - RBW = approximate 1% of emission bandwidth
 - VBW > RBW
 - Detector = Peak
 - Trace =Max hold
 - Measure the maximum width of the emission that is 26 dB down from the maximum of the emission.
 - Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
- e) Setting of Spectrum analyzer for 99% Occupied bandwidth:
 - Span = 1.5 times to 5.0 times the OBW
 - RBW = 1% to 5 % of the OBW
 - VBW $\geq$ 3·RBW
 - Detector = Peak
 - Trace = Max Hold
 - Use the 99% power bandwidth function of the instrument
- f) The measurement method follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04 under clause C.1) & D).

6.1.2. Test Limits

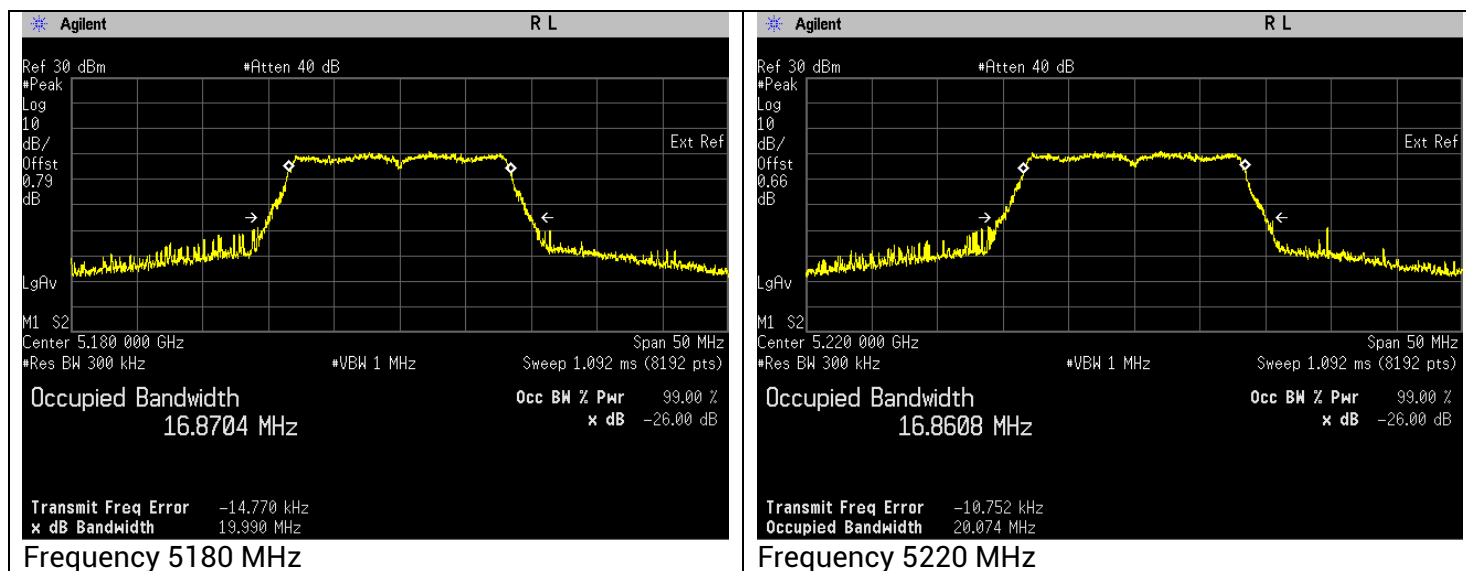
Not applicable.

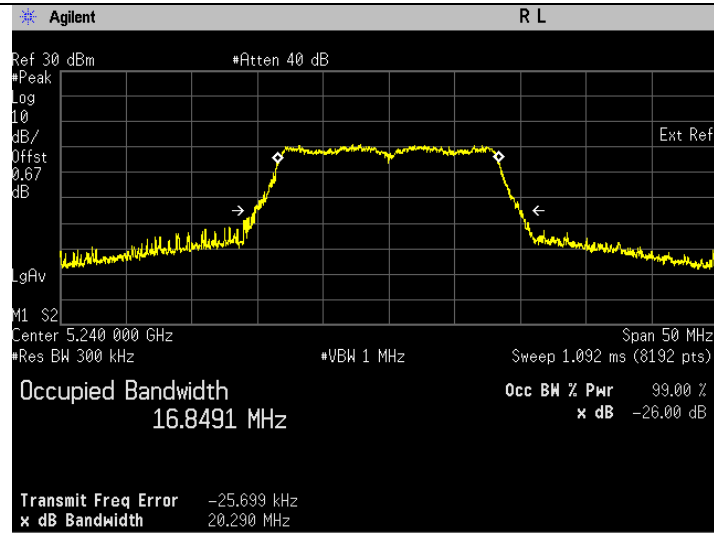
6.1.3. Test Data

802.11a

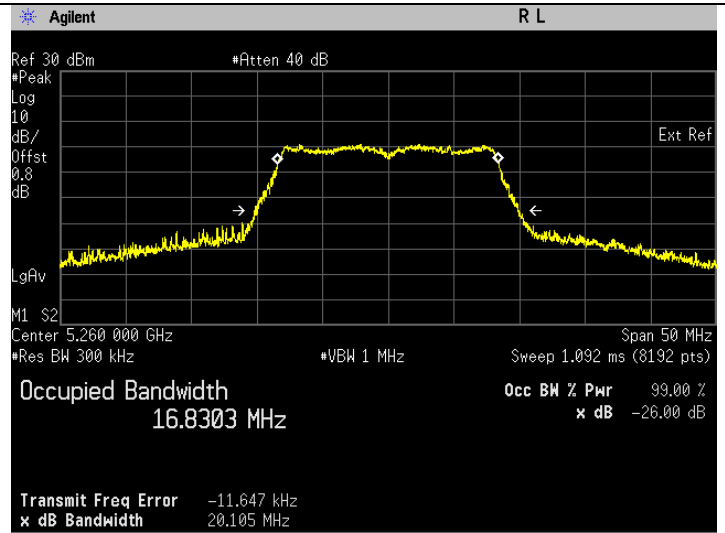
Frequency (MHz)	Test Configuration	Results			
		26 dB Bandwidth(MHz)	Status	99% Bandwidth(MHz)	Status
5180	Mod Type: BPSK, Data Rate: 6	19.990	Pass	16.870	Pass
5220	Mod Type: BPSK, Data Rate: 6	20.074	Pass	16.861	Pass
5240	Mod Type: BPSK, Data Rate: 6	20.290	Pass	16.849	Pass
5260	Mod Type: BPSK, Data Rate: 6	20.105	Pass	16.830	Pass
5300	Mod Type: BPSK, Data Rate: 6	20.201	Pass	16.823	Pass
5320	Mod Type: BPSK, Data Rate: 6	20.023	Pass	16.865	Pass
5500	Mod Type: BPSK, Data Rate: 6	20.038	Pass	16.824	Pass
5580	Mod Type: BPSK, Data Rate: 6	20.131	Pass	16.868	Pass
5700	Mod Type: BPSK, Data Rate: 6	20.108	Pass	16.829	Pass
5720	Mod Type: BPSK, Data Rate: 6, UNII-2C	15.056	Pass	13.421	Pass
5720	Mod Type: BPSK, Data Rate: 6, UNII-3	5.056	Pass	3.421	Pass
5745	Mod Type: BPSK, Data Rate: 6	19.944	Pass	16.826	Pass
5785	Mod Type: BPSK, Data Rate: 6	20.047	Pass	16.875	Pass
5825	Mod Type: BPSK, Data Rate: 6	20.169	Pass	16.841	Pass

26 dB Bandwidth/ 99% Bandwidth

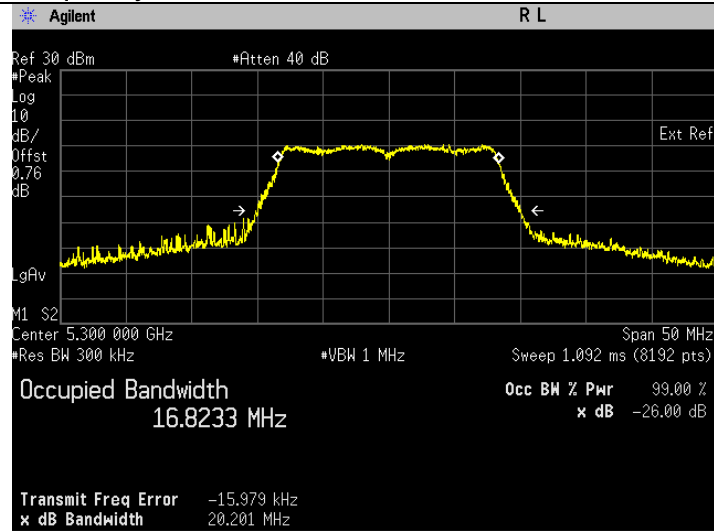




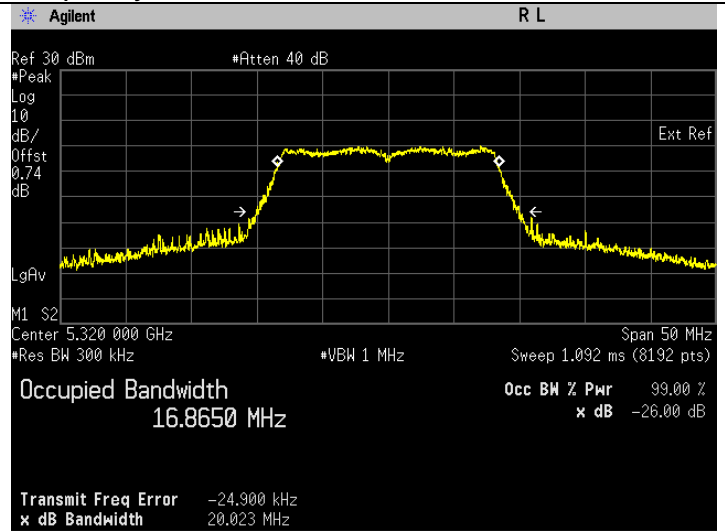
Frequency 5240 MHz



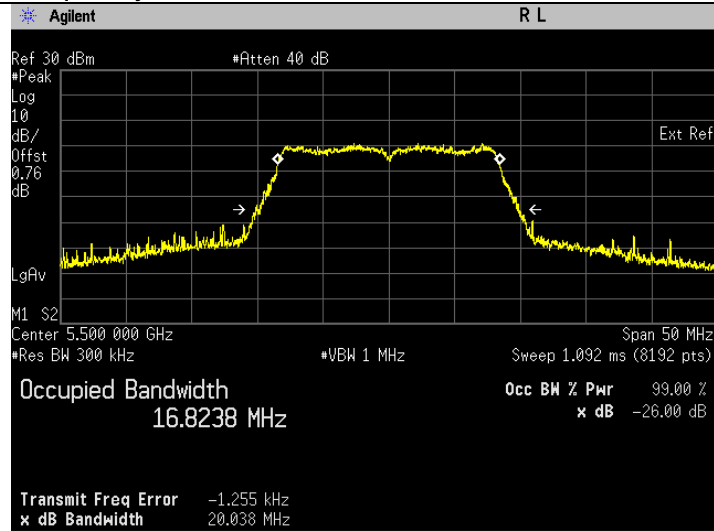
Frequency 5260 MHz



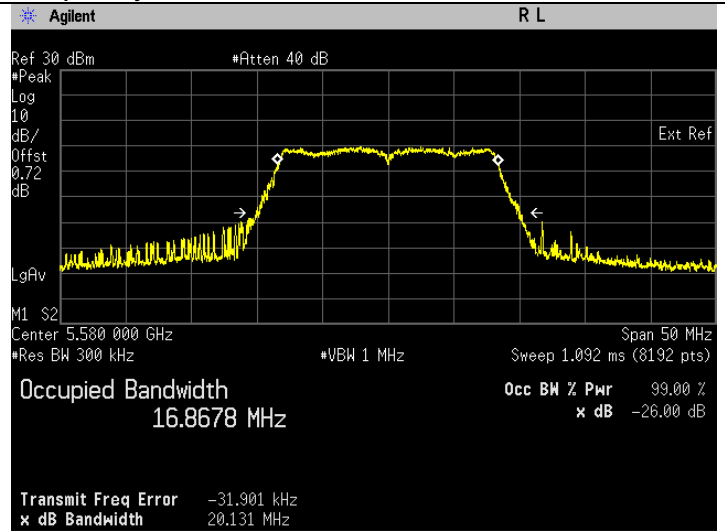
Frequency 5300 MHz



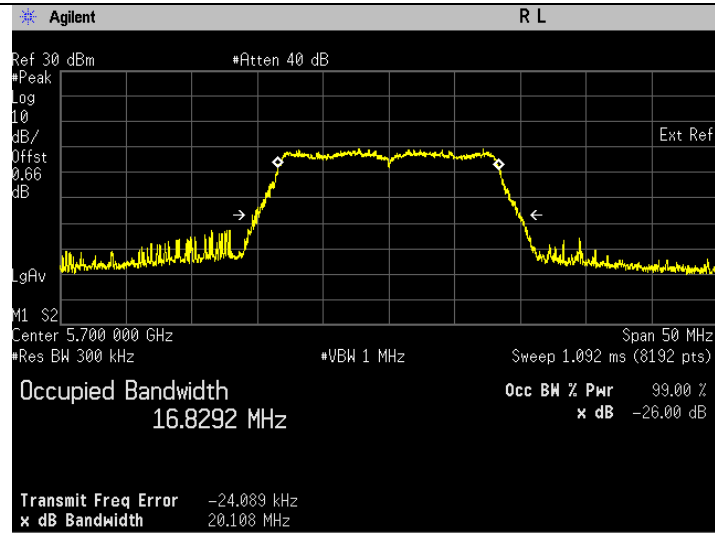
Frequency 5320 MHz



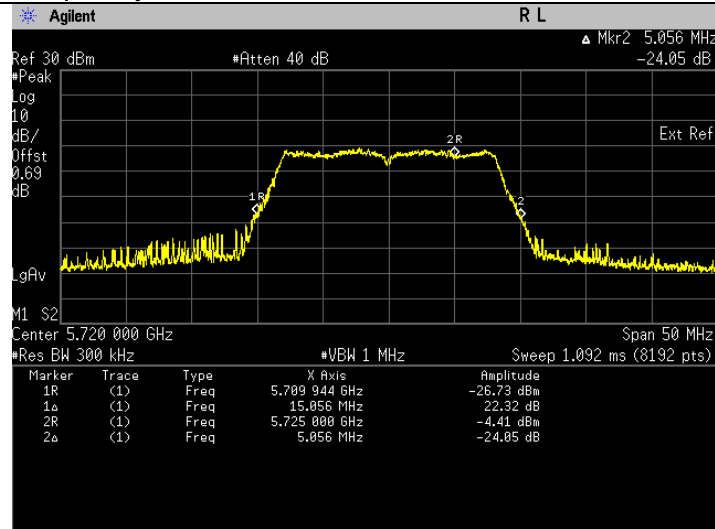
Frequency 5500 MHz



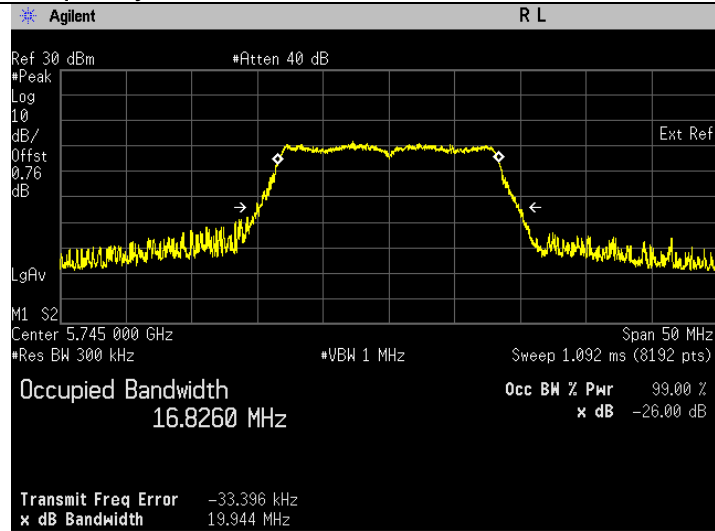
Frequency 5580 MHz



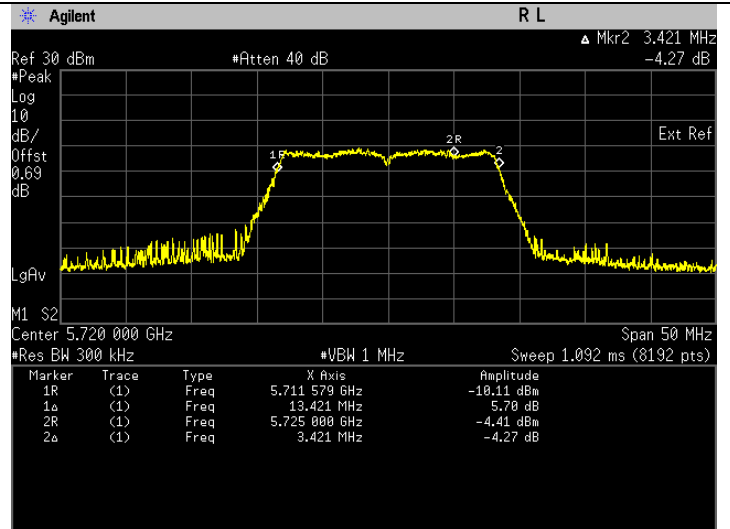
Frequency 5700 MHz



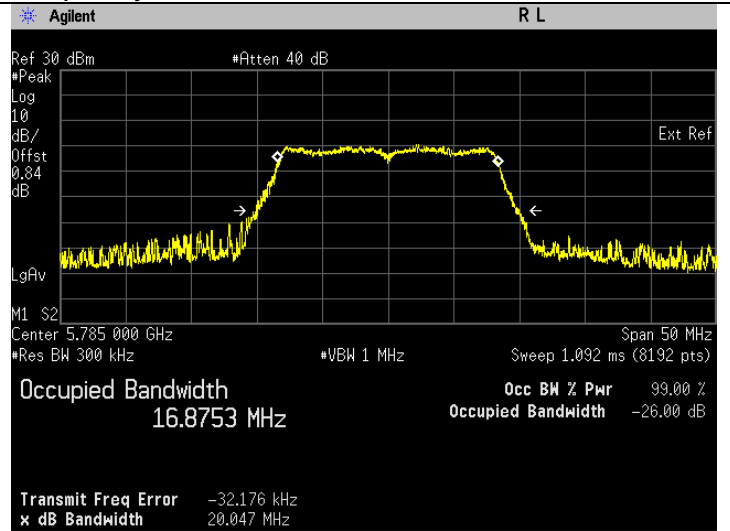
Frequency 5720 MHz, UNII-2C & UNII-3



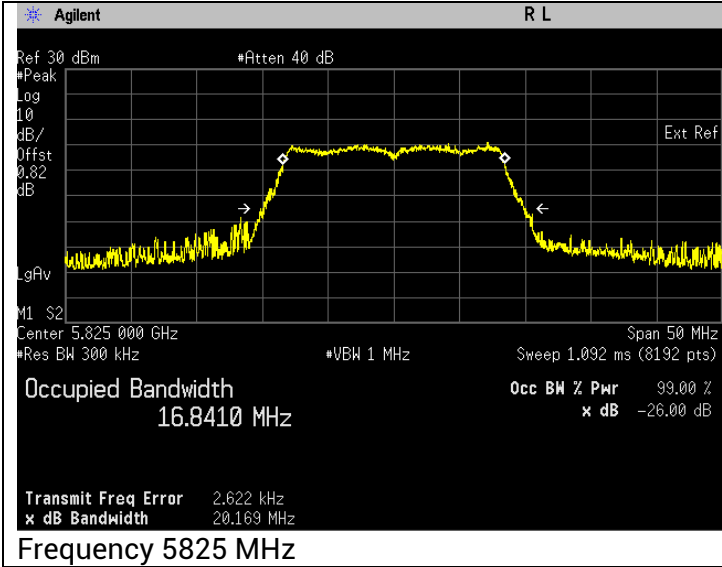
Frequency 5745 MHz



Frequency 5720 MHz, UNII-2C & UNII-3



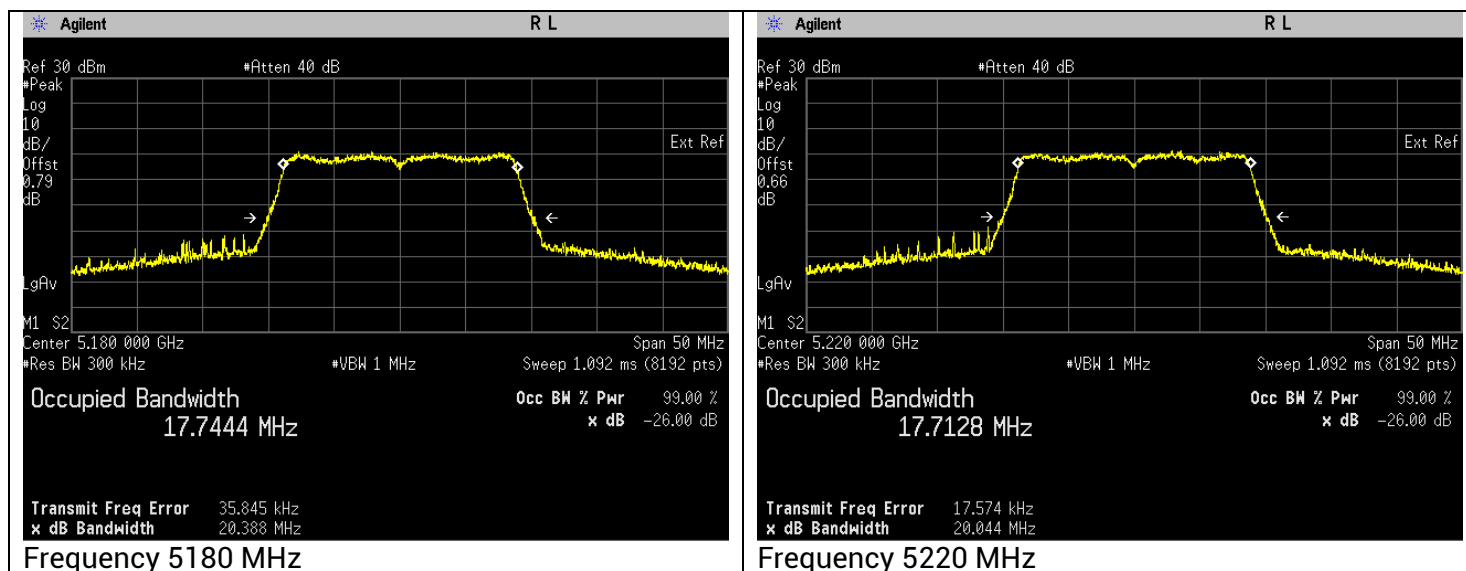
Frequency 5785 MHz

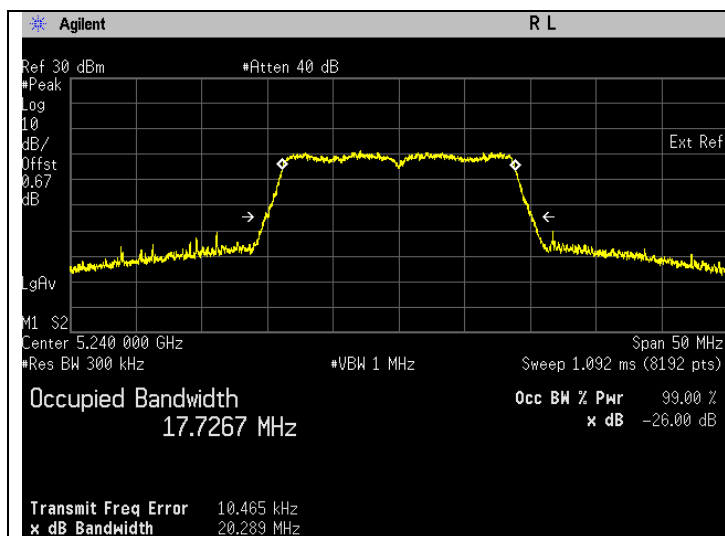


802.11n (HT20)

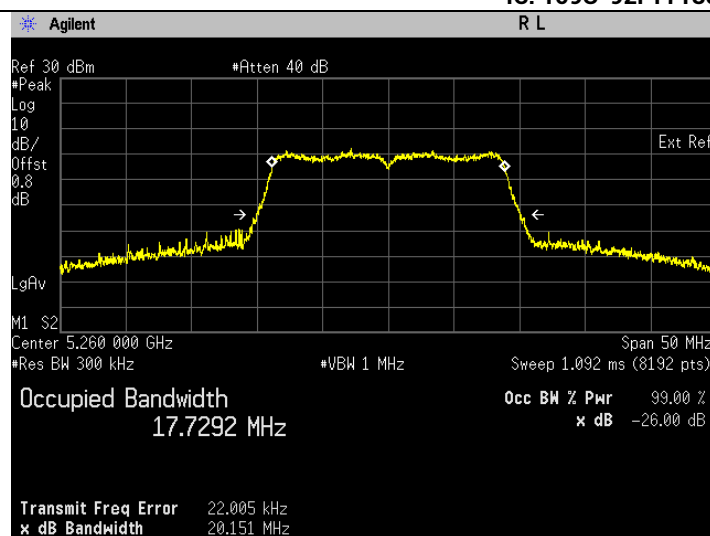
Frequency (MHz)	Test Configuration	Results			
		26 dB Bandwidth(MHz)	Status	99% Bandwidth(MHz)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.388	Pass	17.744	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.044	Pass	17.713	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.289	Pass	17.727	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.151	Pass	17.729	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.359	Pass	17.736	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.267	Pass	17.738	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.353	Pass	17.721	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.216	Pass	17.731	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.309	Pass	17.717	Pass
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5), UNII-2C	15.513	Pass	13.860	Pass
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5), UNII-3	5.513	Pass	3.860	Pass
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.289	Pass	17.711	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.250	Pass	17.728	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.272	Pass	17.725	Pass

26 dB Bandwidth/ 99% Bandwidth

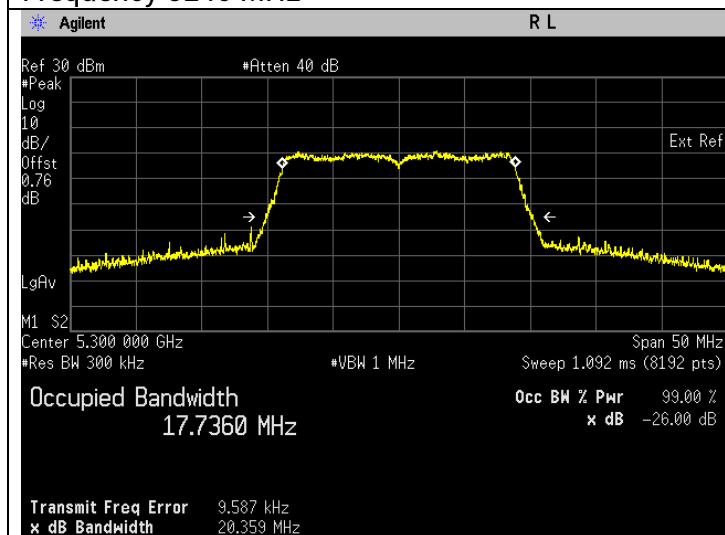




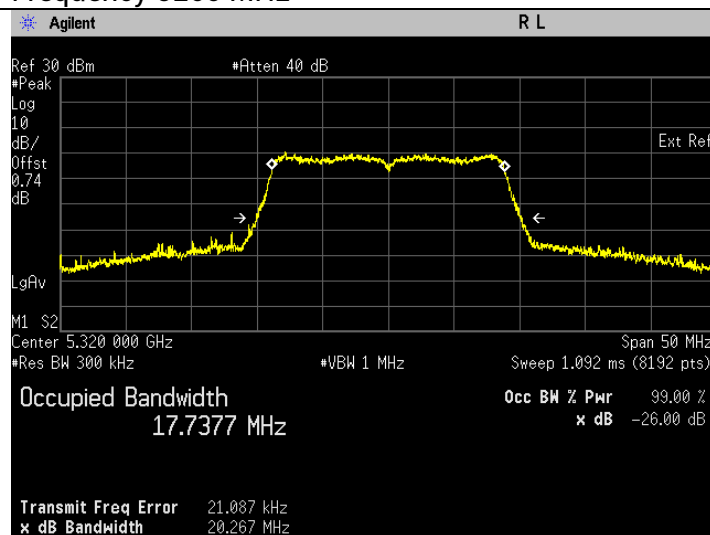
Frequency 5240 MHz



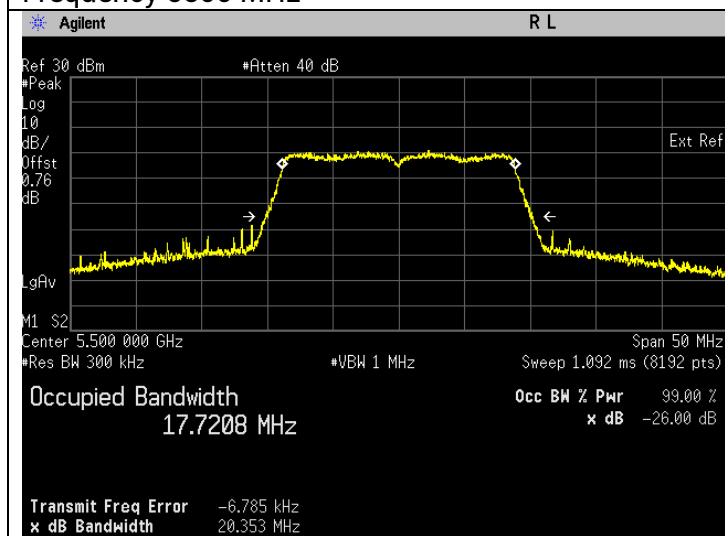
Frequency 5260 MHz



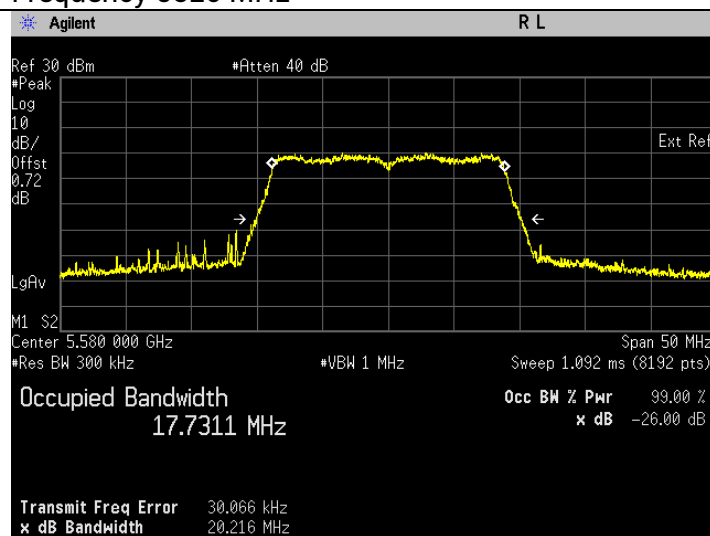
Frequency 5300 MHz



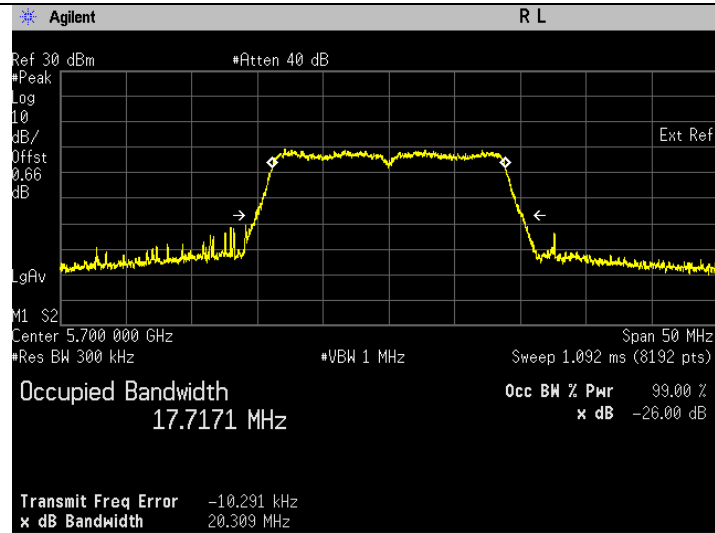
Frequency 5320 MHz



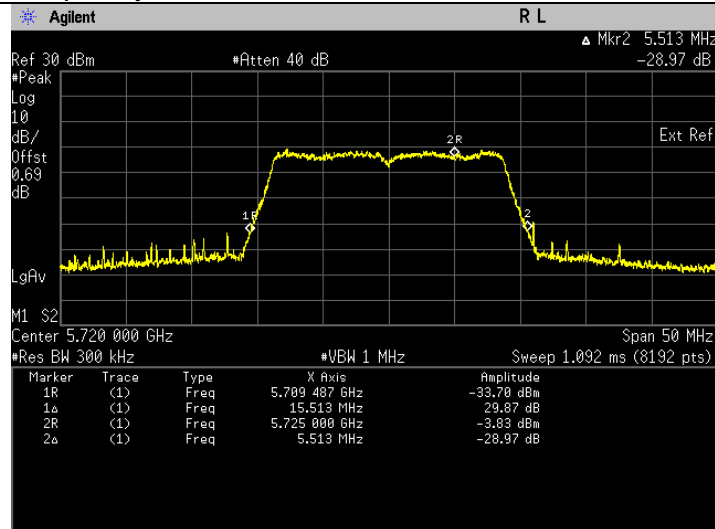
Frequency 5500 MHz



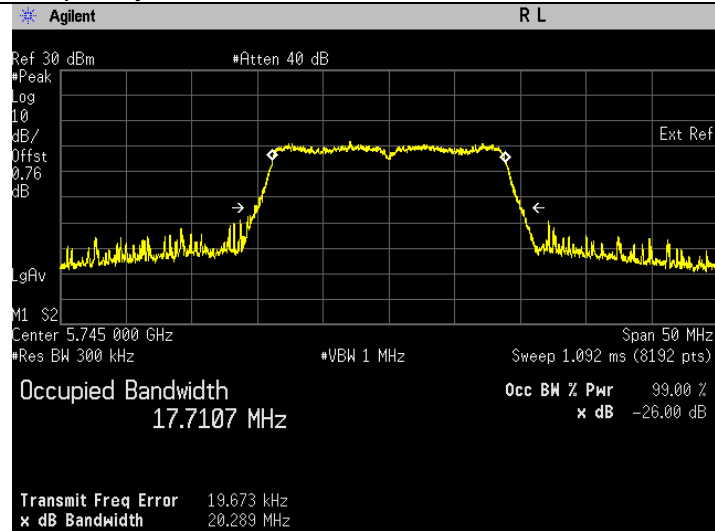
Frequency 5580 MHz



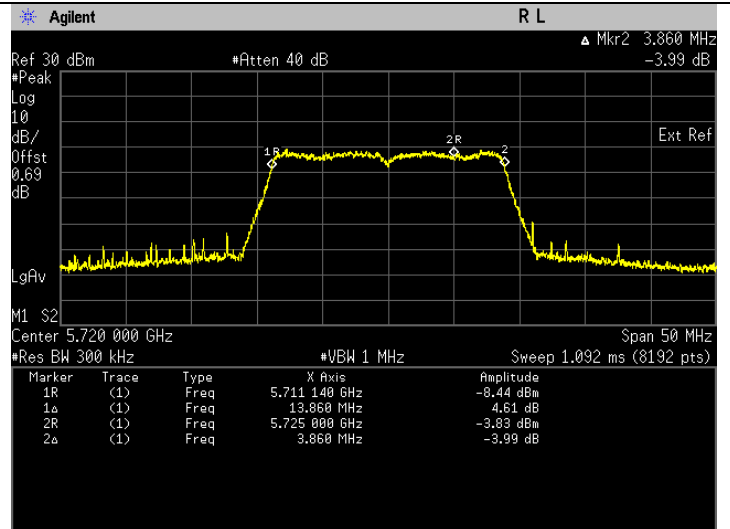
Frequency 5700 MHz



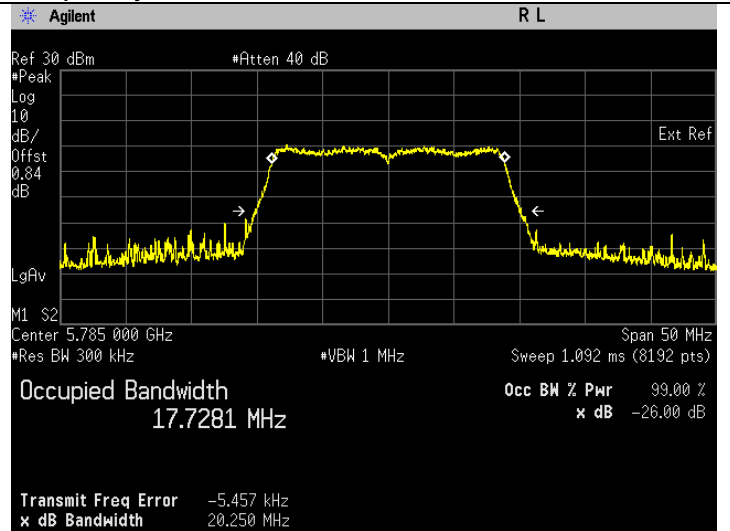
Frequency 5720 MHz, UNII-2C & UNII-3



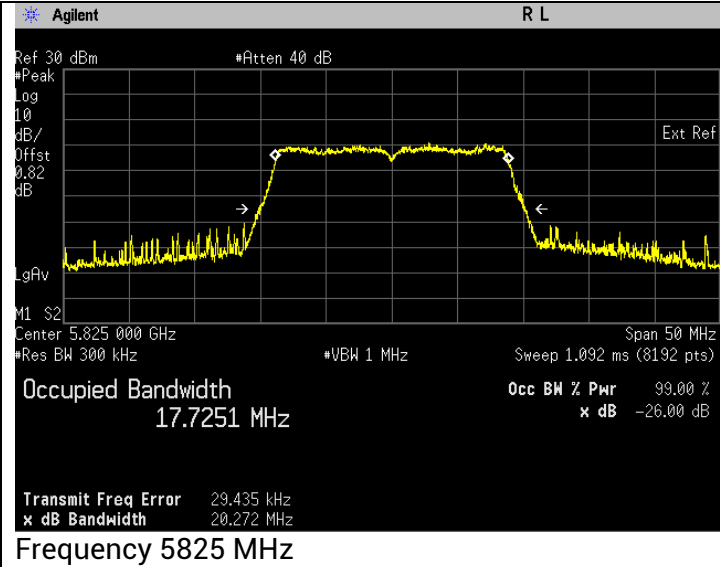
Frequency 5745 MHz



Frequency 5720 MHz, UNII-2C & UNII-3

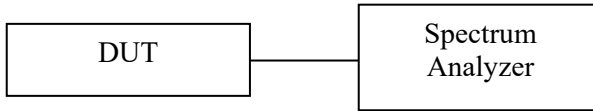


Frequency 5785 MHz



6.2. Maximum Conducted Output Power

6.2.1. Test Setup



- Test setup as per illustrated above.
- Set DUT to transmit at desire transmit frequency.
- Connect DUT's antenna terminal to spectrum analyzer with a low loss cable.
- Setting of Spectrum analyzer :
 - Span to encompass the entire 26dB EBW or 99% Occupied Bandwidth.
 - RBW = 1 MHz
 - VBW $\geq$ 3 MHz
 - Detector = power averaging (RMS)
 - Trace = Max hold
 - Number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$
 - Sweep time = auto
 - Trace average at least 100 traces in power averaging (rms) mode
 - Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges.
 - Add $10 \log (1/x)$, where x is the duty cycle, to the measured power to compute the average power during the actual transmission times
- The measurement method follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04 under clause E.2.d) Method SA-2.
- The Maximum output power results are included duty cycle correction factor.

6.2.2. Test Limits

FCC 15.407(a)

Range(GHz)	Condition	Output Power Limit
5.15-5.25 (UNII-1)	Outdoor AP	$\leq 1W$
	Indoor AP	$\leq 1W$
	Fixed Point to Point AP	$\leq 1W$
	✓ Mobile and Portable client devices	$\leq 250mW$
5.25-5.35 (UNII-2A)	✓	$\leq 250mW$ or $11dBm + 10\log_{10} B^*$
5.47-5.525 (UNII-2C)	✓	

*B is 26dB emission bandwidth in MHz

5.725-5.85 (UNII-3)	✓	≤1W
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RSS-247 6.2

Range(GHz)	Condition	Output Power Limit
5.15-5.25	indoor only (e.i.r.p.)	≤200mW or $10+10\log_{10}B^*$ *B is 99% emission bandwidth in 1MHz

5.25-5.35	(Conducted & e.i.r.p.)	Conducted: ≤250mW or $11+10\log_{10}B^*$ EIRP: < 1.0W or $17+10\log_{10}B^*$ *B is 99% emission bandwidth in 1MHz
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5.47-5.6 5.65-5.725	(Conducted & e.i.r.p.)	Conducted: ≤250mW or $11+10\log_{10}B^*$ EIRP: < 1.0W or $17+10\log_{10}B^*$ *B is 99% emission bandwidth in 1MHz
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5.725-5.85	(Conducted)	≤1W
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6.2.3. Additional Info

Antenna	Gain (dBi)
UNII1, UNII2A, UNII2C & UNII3	5.25
Duty Cycle Correction Factor	
802.11a	0.043
802.11n20	0.009

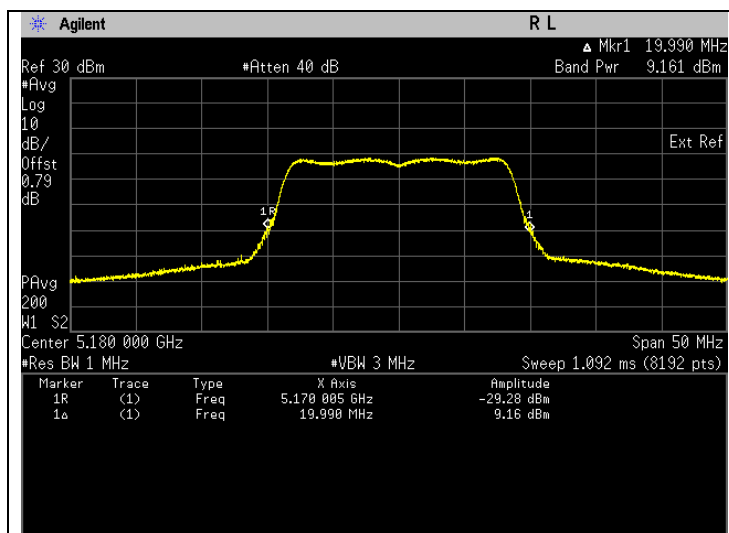
6.2.4. Test Data

Summary table

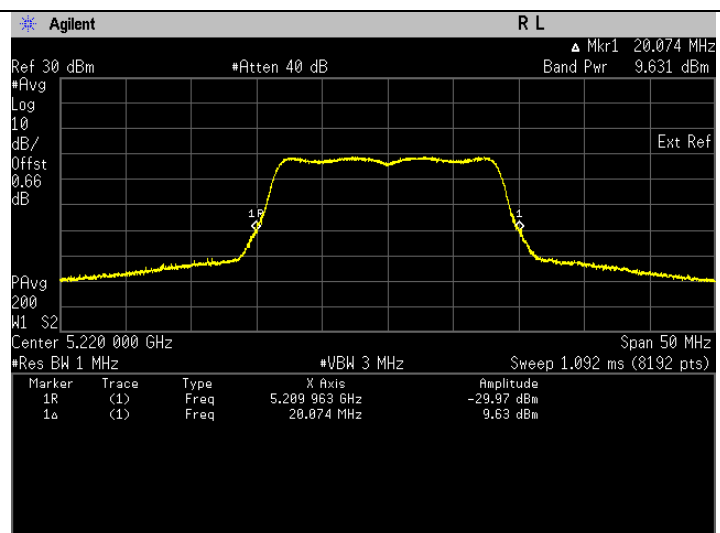
WLAN	Frequency Range (MHz)	Bandwidth (MHz)	RF Power Output		EIRP		Max Emission Designator
			Max measured (mW)	Max declared (mW)	Max measured (mW)	Max declared (mW)	
802.11a	5180-5240	20	9.14	11.22	30.61	37.58	16M9D1D
	5260-5320	20	9.29	11.22	31.13	37.58	16M9D1D
	5500-5580	20	8.38	11.22	28.07	37.58	16M9D1D
	5660-5720	20	8.44	11.22	28.26	37.58	16M8D1D
	5745-5825	20	9.38	11.22	31.43	37.58	16M9D1D
802.11n/ac (HT20)	5180-5240	20	9.35	11.22	31.31	37.58	17M7D1D
	5260-5320	20	9.65	11.22	32.33	37.58	17M7D1D
	5500-5580	20	8.77	11.22	29.36	37.58	17M7D1D
	5660-5720	20	8.68	11.22	29.06	37.58	17M7D1D
	5745-5825	20	8.79	11.22	29.43	37.58	17M7D1D

802.11a (26dB EBW)

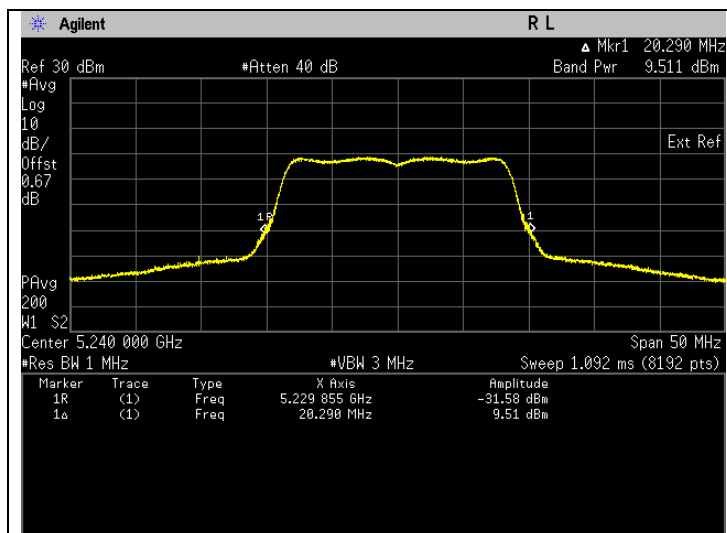
Freq. (MHz)	Test Conditions	Results		
		Power (mW)	Power (dBm)	Status
5180	Mod Type: BPSK, Data Rate: 6	8.325	9.204	Pass
5220	Mod Type: BPSK, Data Rate: 6	9.277	9.674	Pass
5240	Mod Type: BPSK, Data Rate: 6	9.024	9.554	Pass
5260	Mod Type: BPSK, Data Rate: 6	9.415	9.738	Pass
5300	Mod Type: BPSK, Data Rate: 6	8.945	9.516	Pass
5320	Mod Type: BPSK, Data Rate: 6	7.178	8.560	Pass
5500	Mod Type: BPSK, Data Rate: 6	8.498	9.293	Pass
5580	Mod Type: BPSK, Data Rate: 6	7.259	8.609	Pass
5700	Mod Type: BPSK, Data Rate: 6	8.545	9.317	Pass
5745	Mod Type: BPSK, Data Rate: 6	9.539	9.795	Pass
5785	Mod Type: BPSK, Data Rate: 6	7.697	8.863	Pass
5825	Mod Type: BPSK, Data Rate: 6	7.836	8.941	Pass



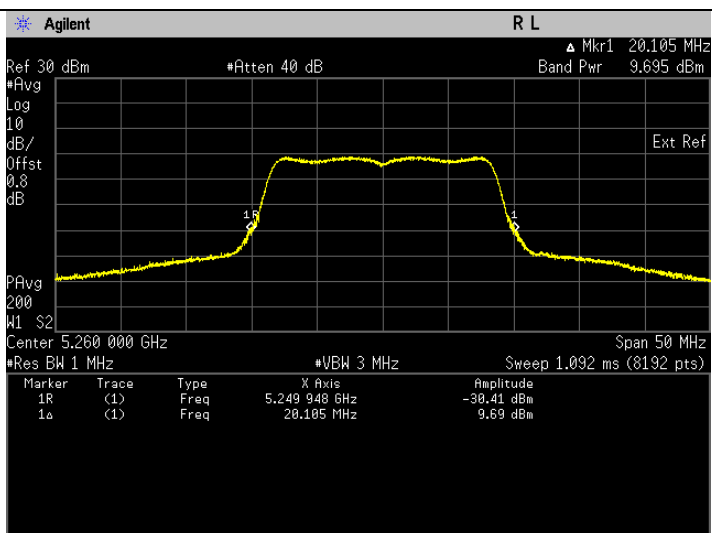
Frequency 5180 MHz



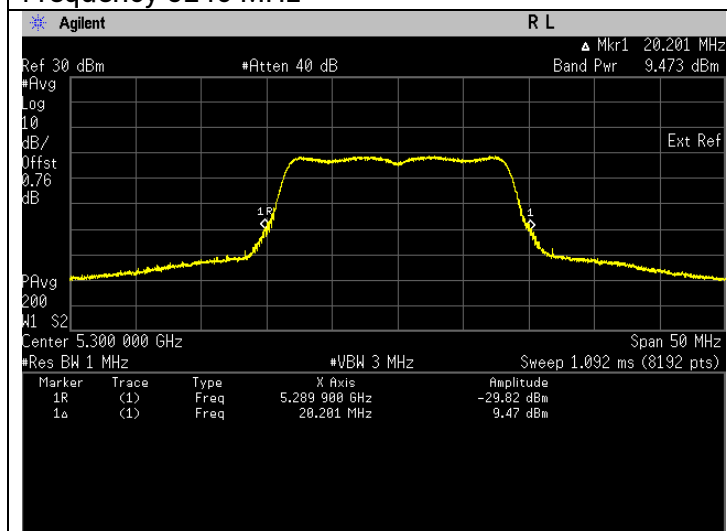
Frequency 5220 MHz



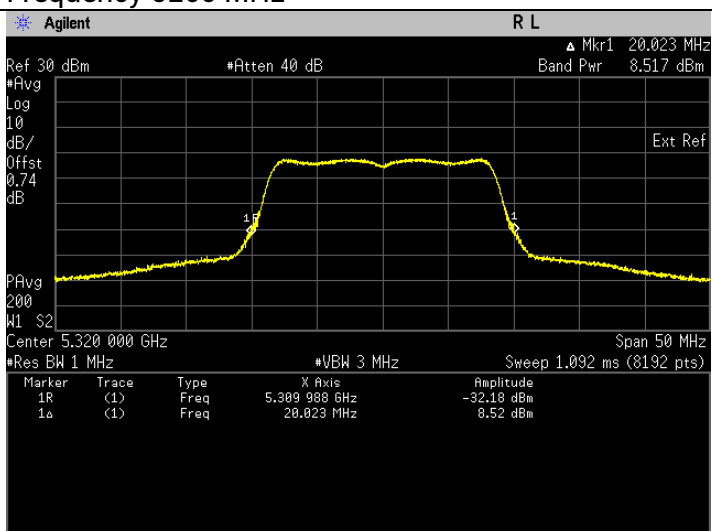
Frequency 5240 MHz



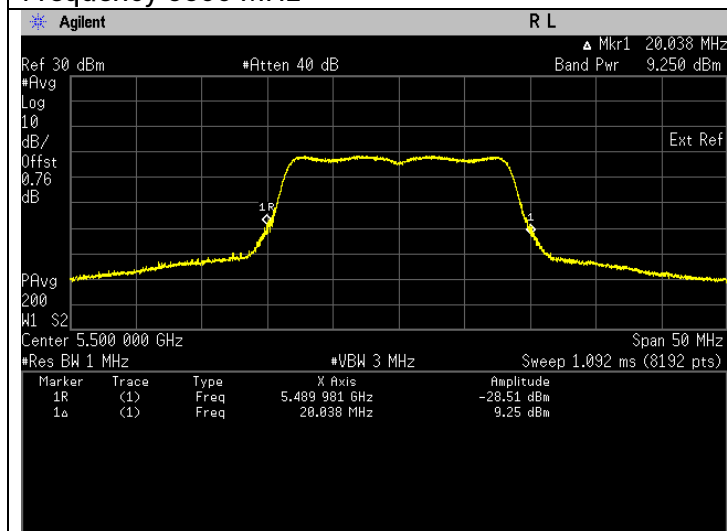
Frequency 5260 MHz



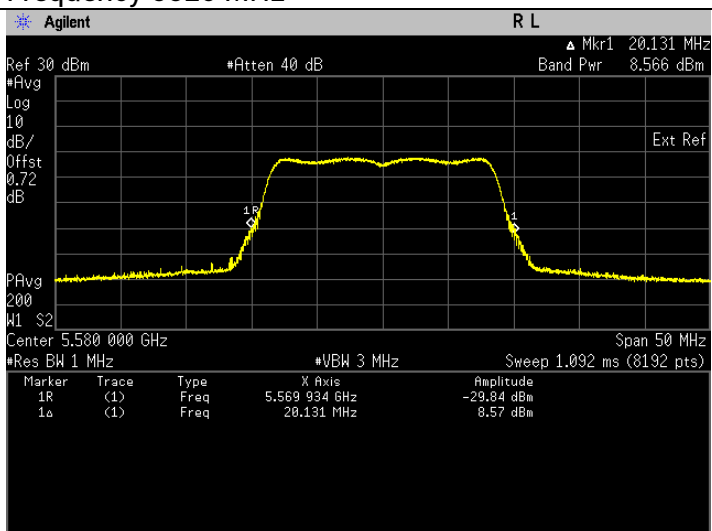
Frequency 5300 MHz



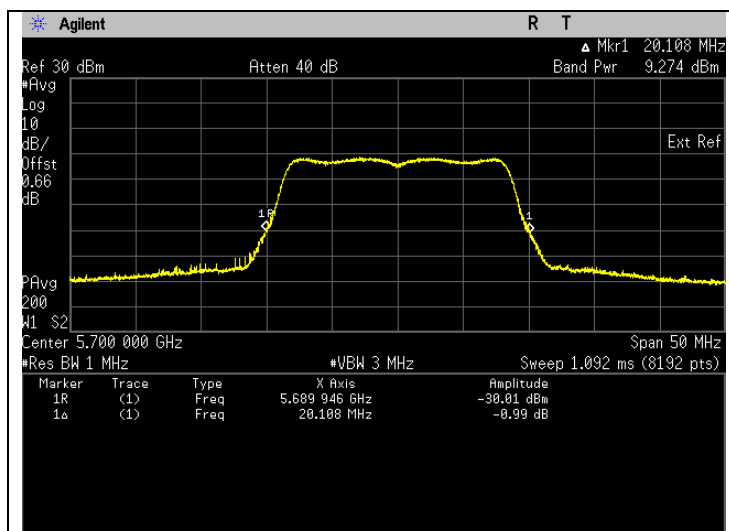
Frequency 5320 MHz



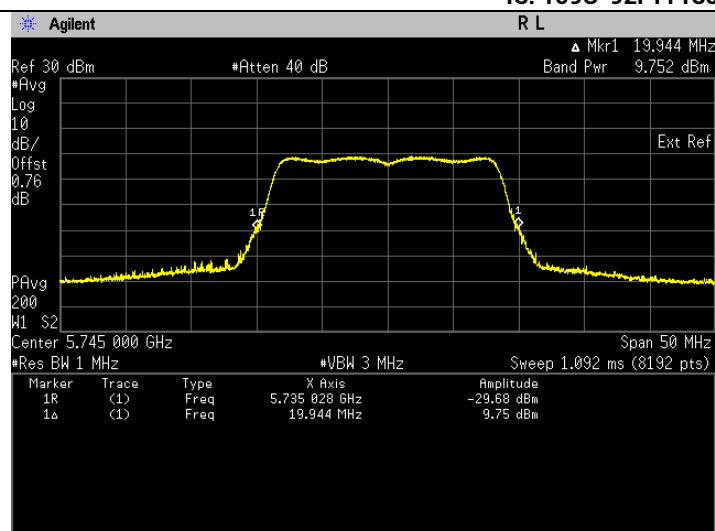
Frequency 5500 MHz



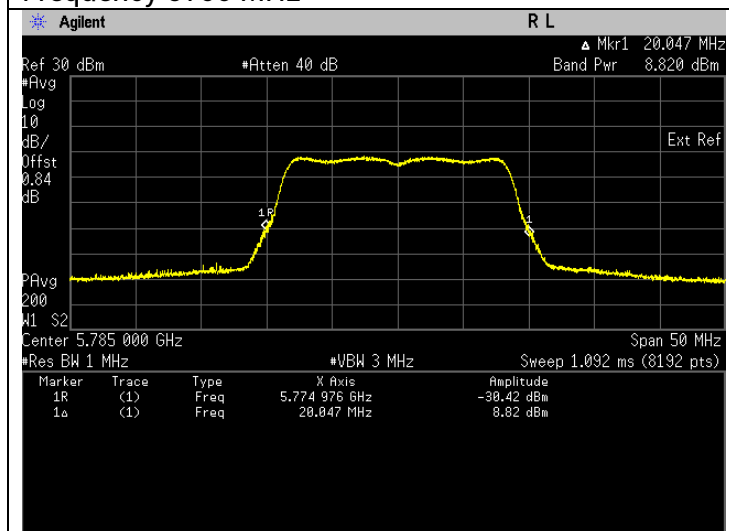
Frequency 5580 MHz



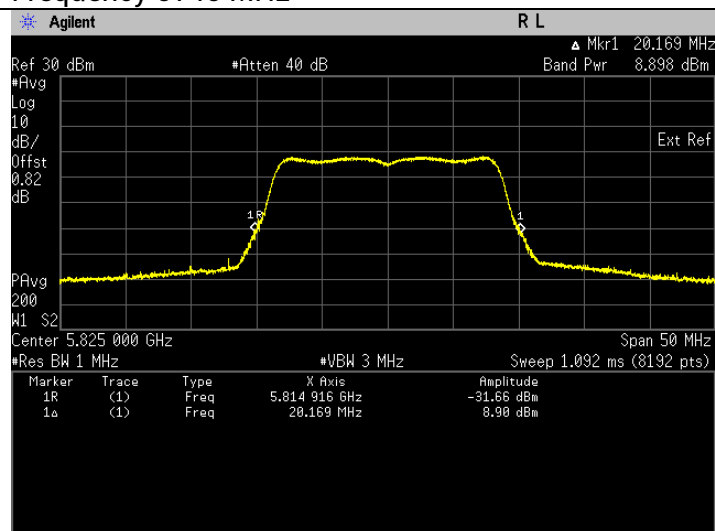
Frequency 5700 MHz



Frequency 5745 MHz

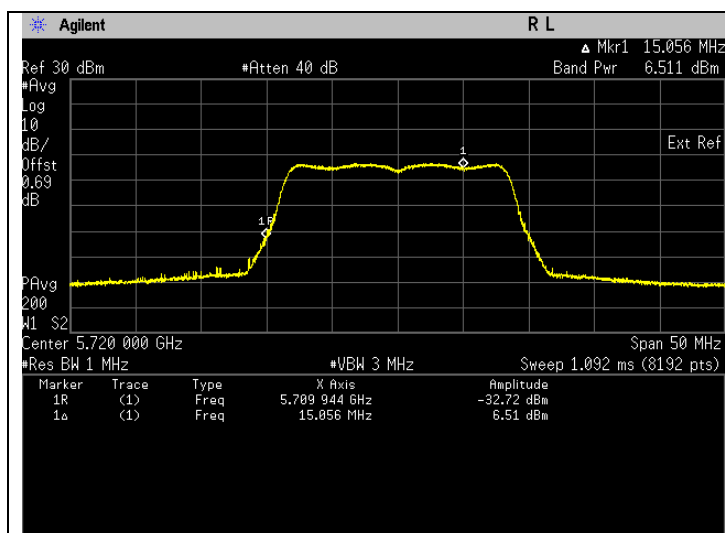


Frequency 5785 MHz

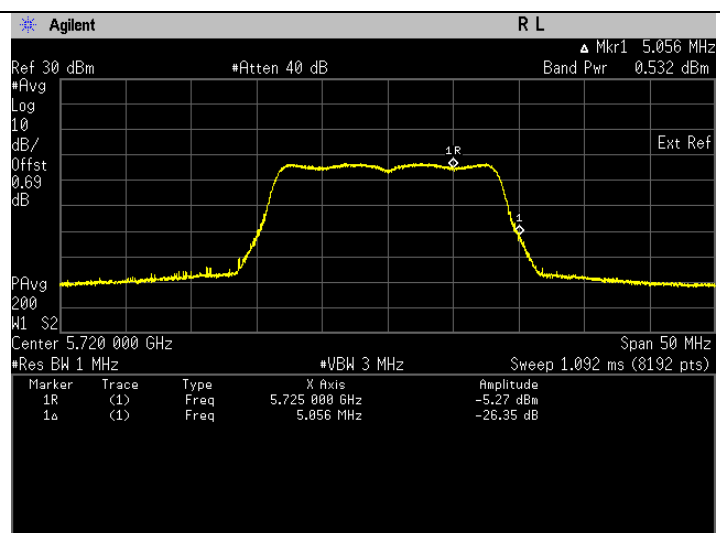


Frequency 5825 MHz

Freq. (MHz)	Test Conditions	Results		
		U-NII- 2C		
		Power (mW)	Power (dBm)	Status
5720	Mod Type: BPSK, Data Rate: 6	4.523	6.554	Pass
		U-NII-3		
5720	Mod Type: BPSK, Data Rate: 6	1.142	0.575	Pass



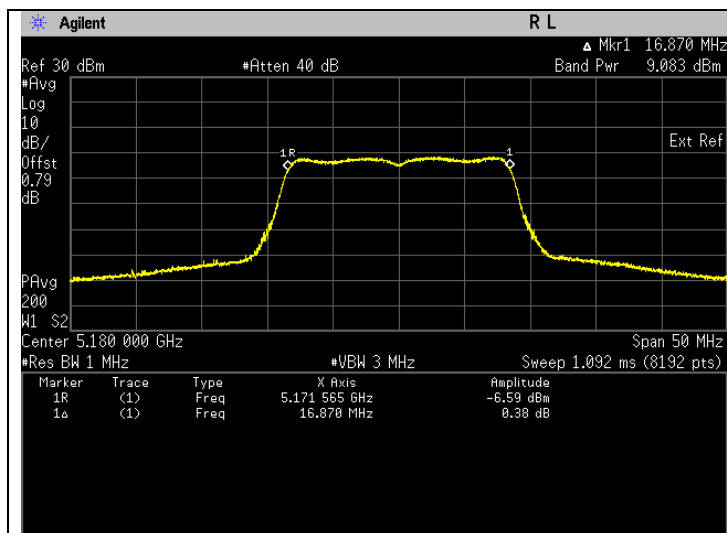
Frequency 5720 MHz, U-NII-2C. *Note: The band power is captured before the 5725 MHz.



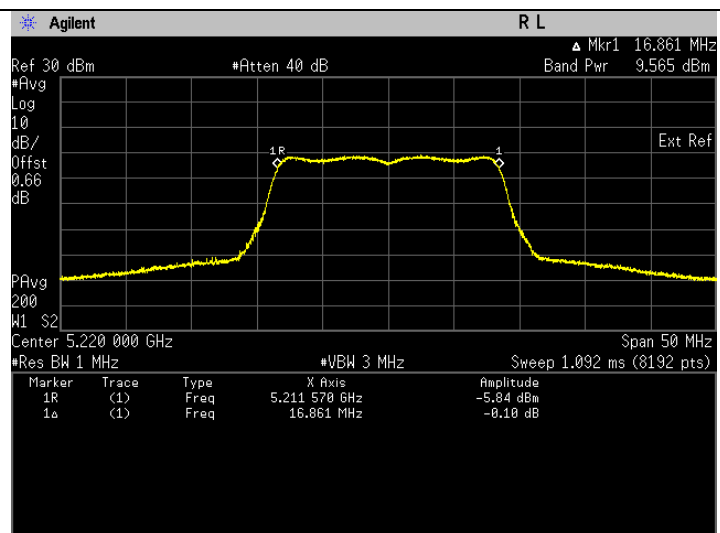
Frequency 5720 MHz, U-NII-3. *Note: The band power is captured after the 5725 MHz.

802.11a (99% EBW)

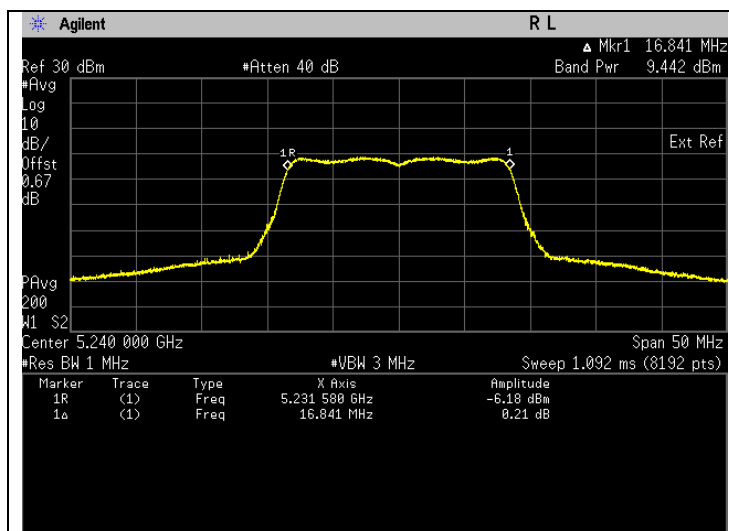
Freq. (MHz)	Test Conditions	Results				
		Power (mW)	Power (dBm)	Statu s	EIRP (dBm)	Status
5180	Mod Type: BPSK, Data Rate: 6	8.177	9.126	Pass	14.376	Pass
5220	Mod Type: BPSK, Data Rate: 6	9.137	9.608	Pass	14.858	Pass
5240	Mod Type: BPSK, Data Rate: 6	8.882	9.485	Pass	14.735	Pass
5260	Mod Type: BPSK, Data Rate: 6	9.294	9.682	Pass	14.932	Pass
5300	Mod Type: BPSK, Data Rate: 6	8.798	9.444	Pass	14.694	Pass
5320	Mod Type: BPSK, Data Rate: 6	7.078	8.499	Pass	13.749	Pass
5500	Mod Type: BPSK, Data Rate: 6	8.379	9.232	Pass	14.482	Pass
5580	Mod Type: BPSK, Data Rate: 6	7.129	8.530	Pass	13.78	Pass
5700	Mod Type: BPSK, Data Rate: 6	8.435	9.261	Pass	14.511	Pass
5745	Mod Type: BPSK, Data Rate: 6	9.384	9.724	Pass	14.974	Pass
5785	Mod Type: BPSK, Data Rate: 6	7.588	8.801	Pass	14.051	Pass
5825	Mod Type: BPSK, Data Rate: 6	7.700	8.865	Pass	14.115	Pass



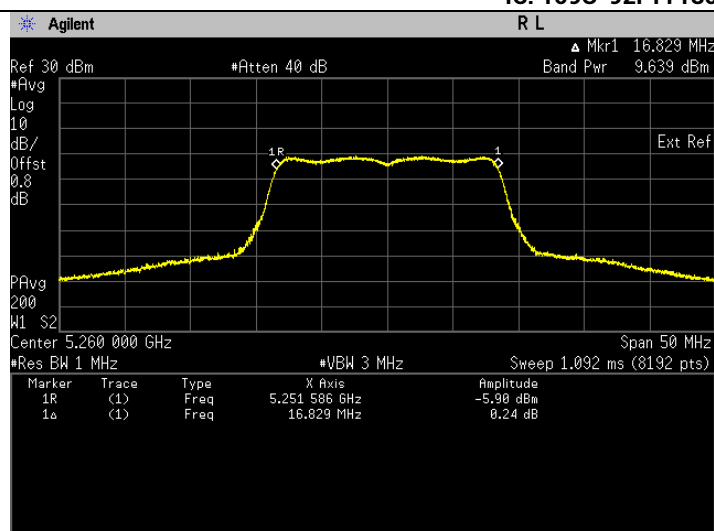
Frequency 5180 MHz



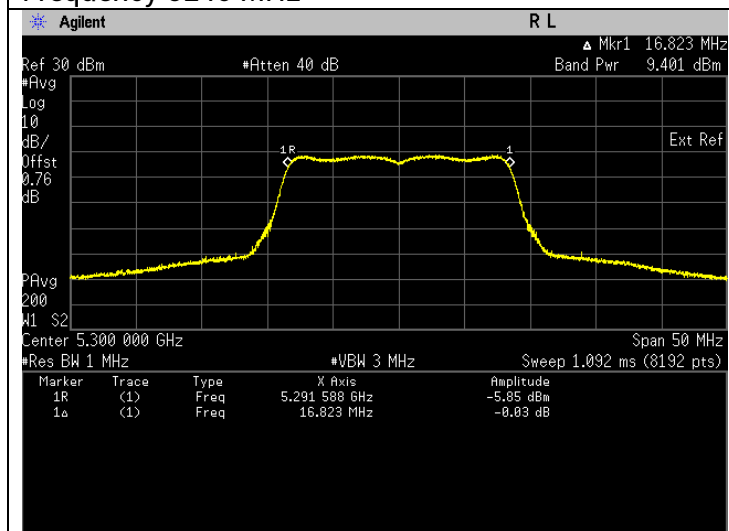
Frequency 5220 MHz



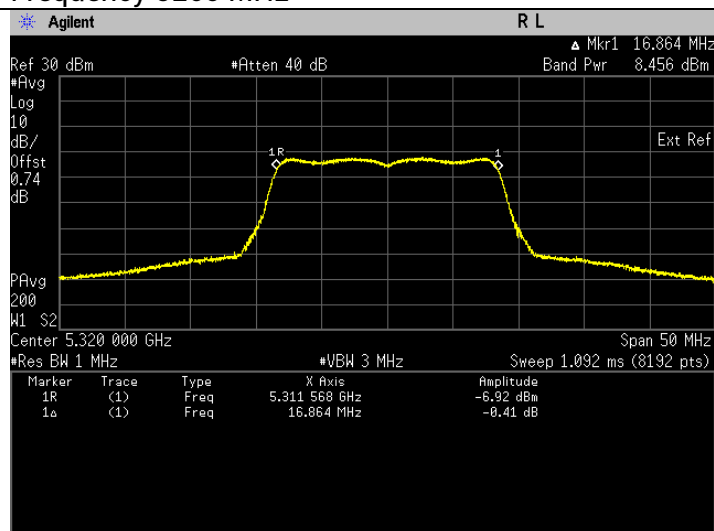
Frequency 5240 MHz



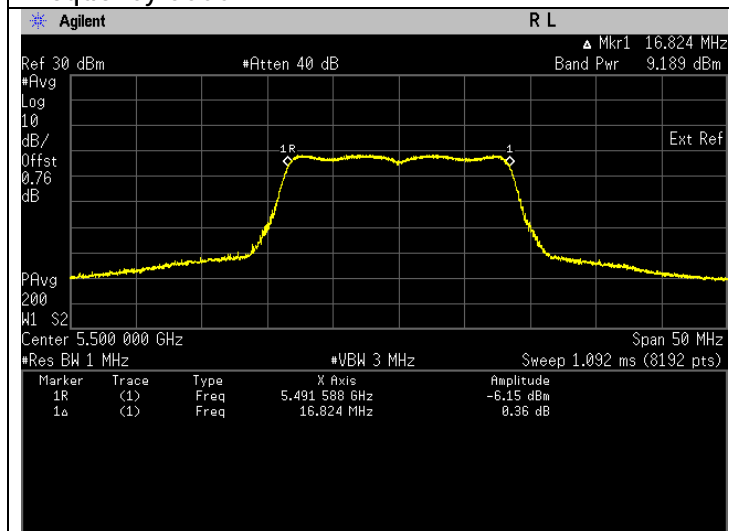
Frequency 5260 MHz



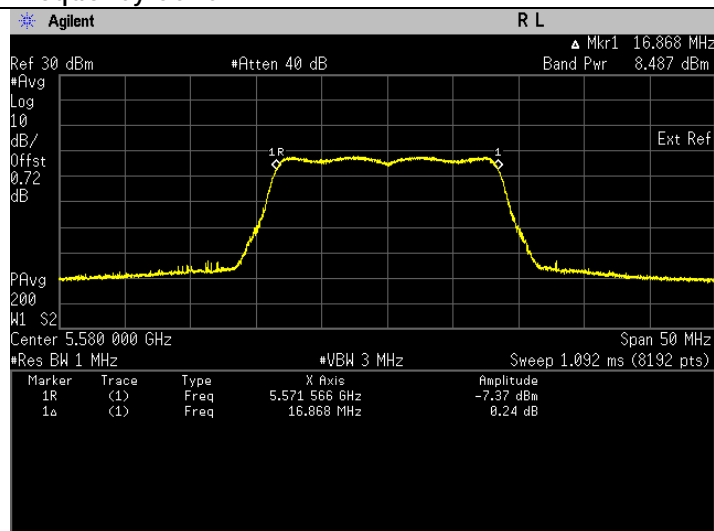
Frequency 5300 MHz



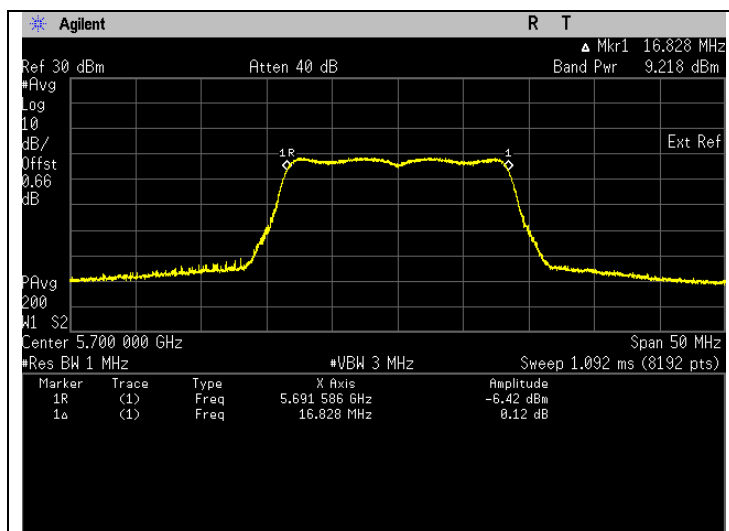
Frequency 5320 MHz



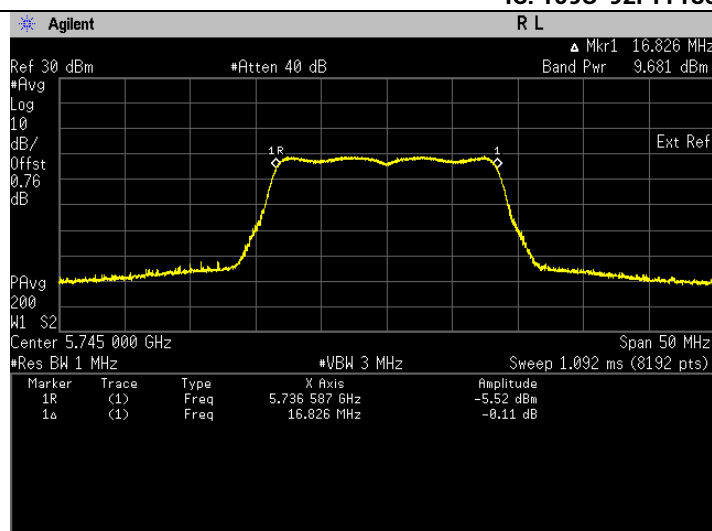
Frequency 5500 MHz



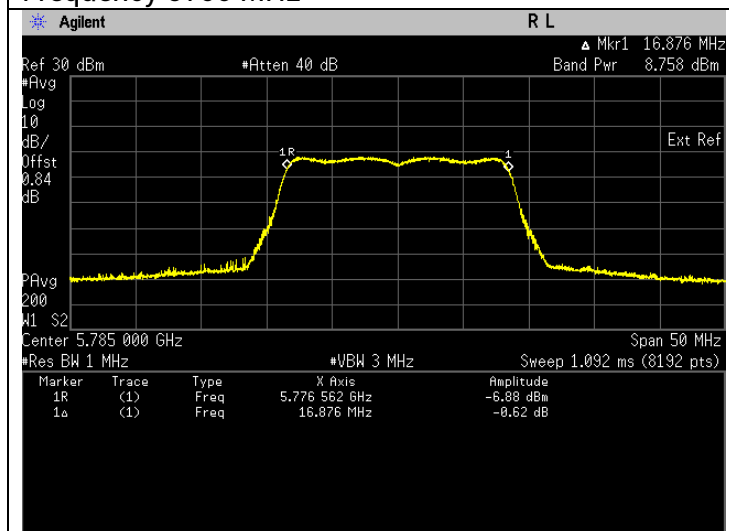
Frequency 5580 MHz



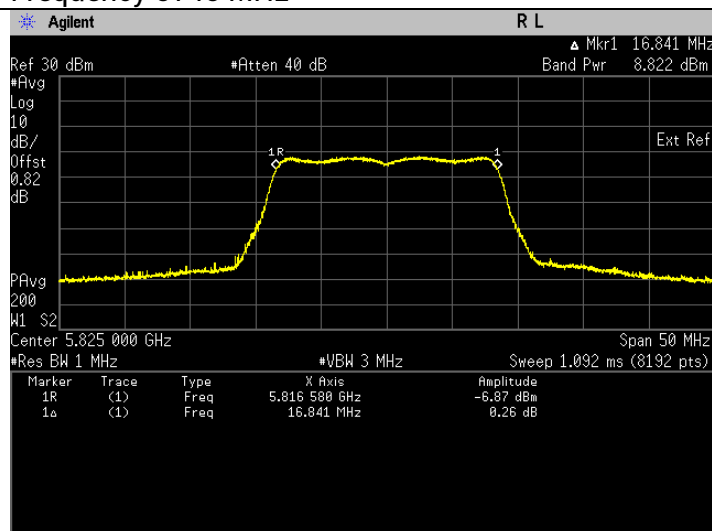
Frequency 5700 MHz



Frequency 5745 MHz

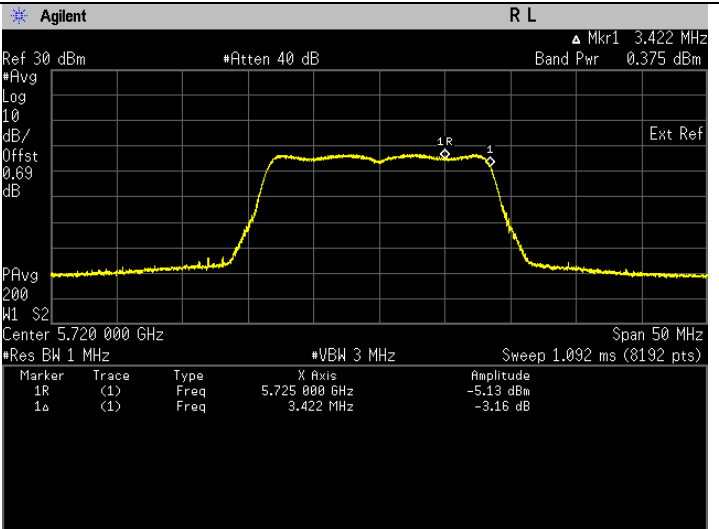
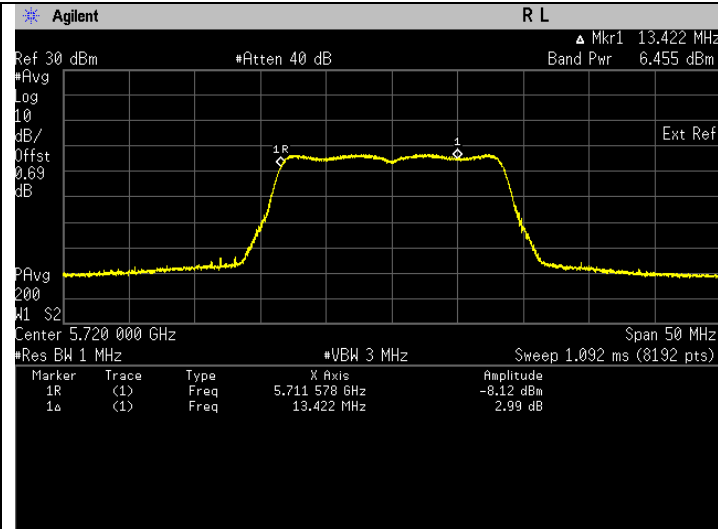


Frequency 5785 MHz



Frequency 5825 MHz

Freq. (MHz)	Test Conditions	Results				
		U-NII- 2C				
		Power (mW)	Power (dBm)	Statu s	EIRP (dBm)	Statu s
5720	Mod Type: BPSK, Data Rate: 6	4.465	6.498	Pass	11.748	Pass
		U-NII-3				
5720	Mod Type: BPSK, Data Rate: 6	1.101	0.418	Pass	5.668	Pass

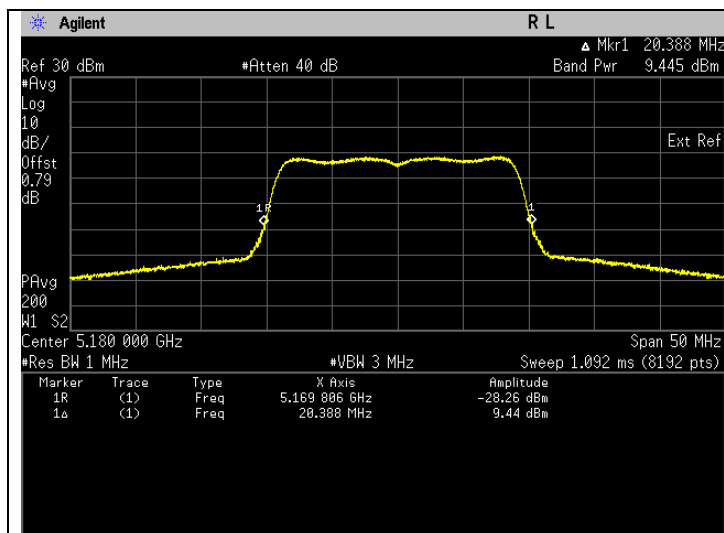


Frequency 5720 MHz, U-NII-2C. *Note: The band power is captured before the 5725 MHz.

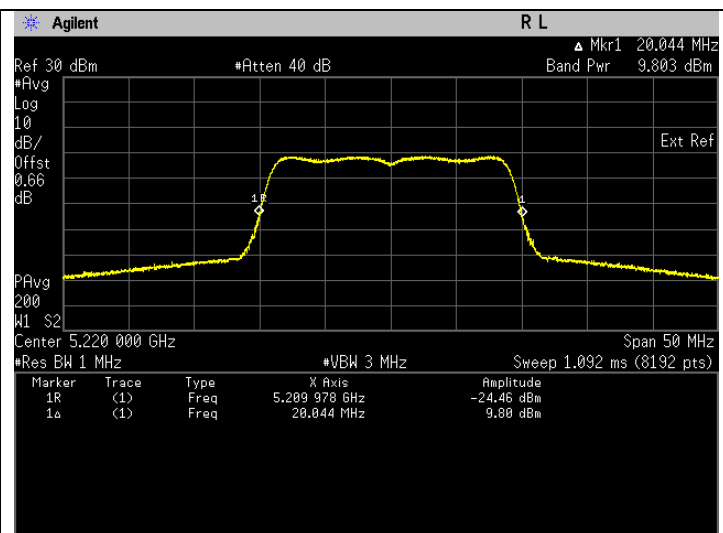
Frequency 5720 MHz, U-NII-3. *Note: The band power is captured after the 5725 MHz.

802.11n (HT20)(26dB EBW)

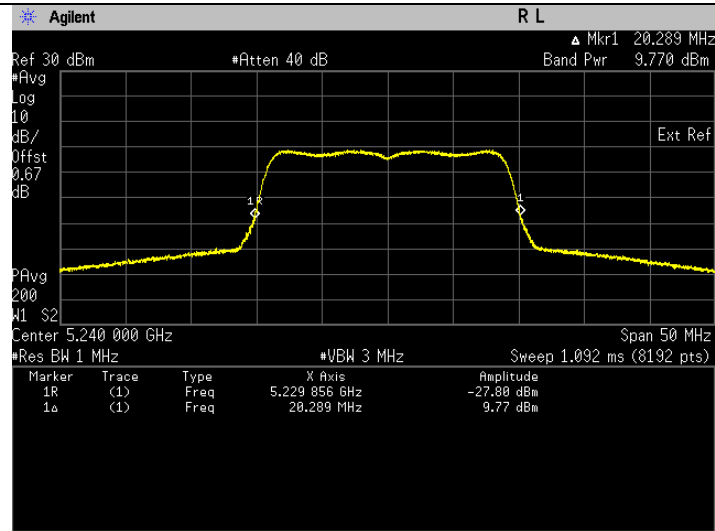
Freq. (MHz)	Test Conditions	Results		
		Power (mW)	Power (dBm)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	8.819	9.454	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	9.576	9.812	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	9.504	9.779	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	9.858	9.938	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	9.082	9.582	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.589	8.802	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	8.950	9.518	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.508	8.755	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	8.872	9.480	Pass
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	9.625	9.834	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.958	9.008	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	8.125	9.098	Pass



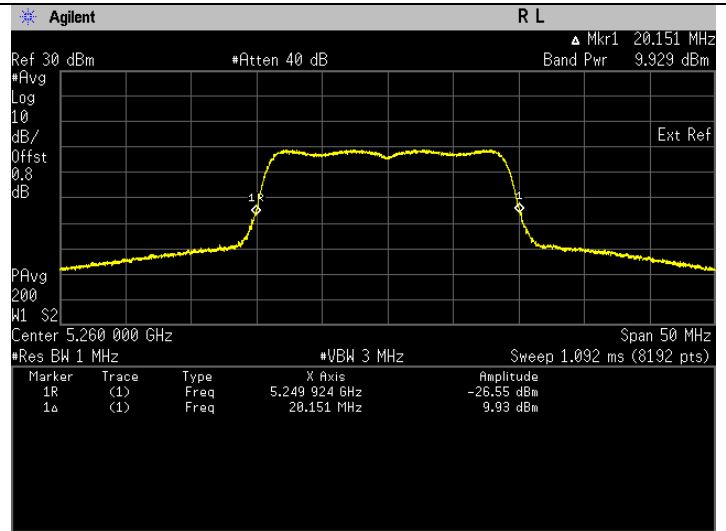
Frequency 5180 MHz



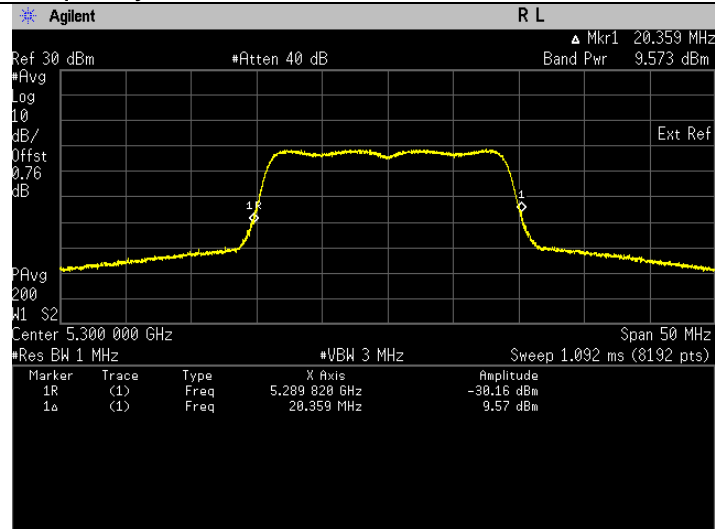
Frequency 5220 MHz



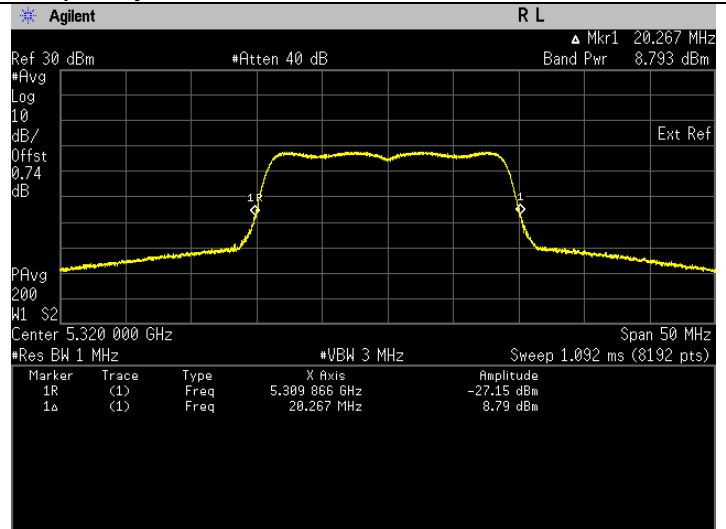
Frequency 5240 MHz



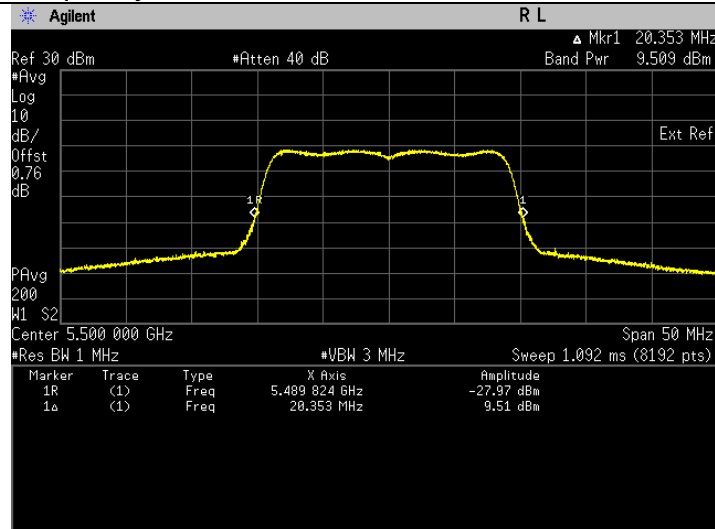
Frequency 5260 MHz



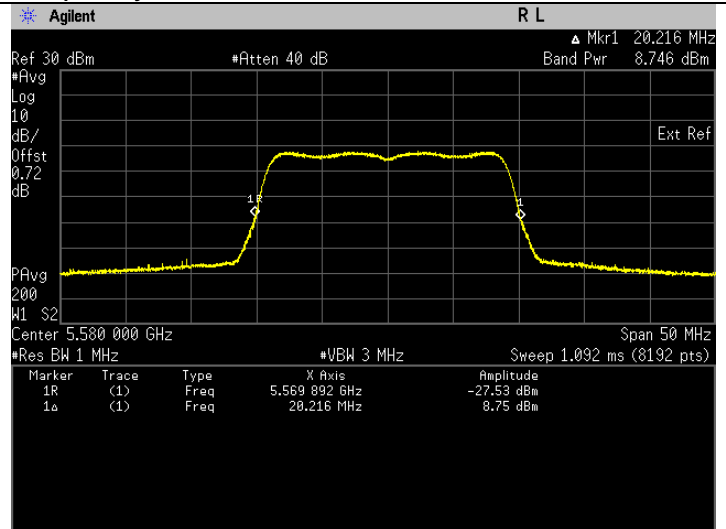
Frequency 5300 MHz



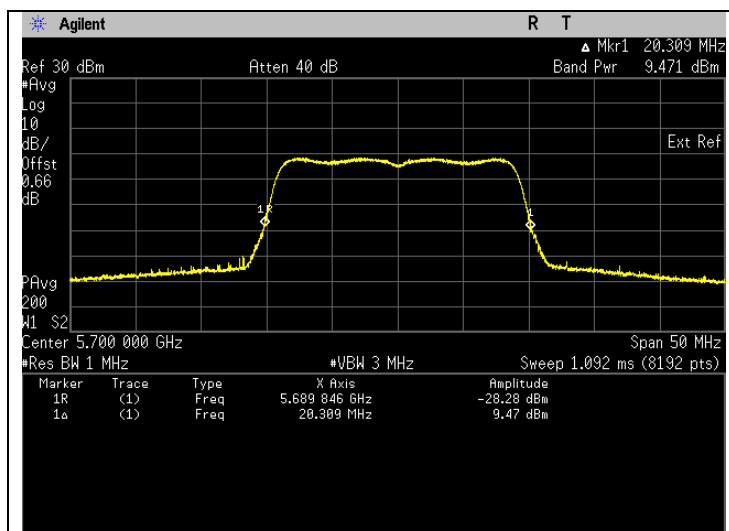
Frequency 5320 MHz



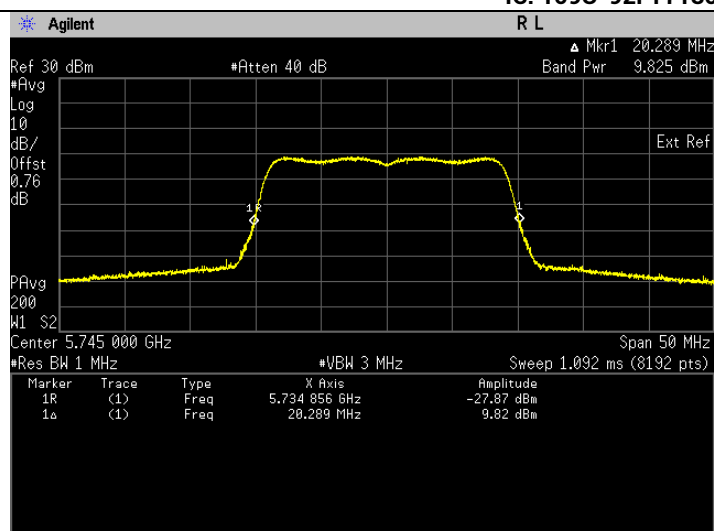
Frequency 5500 MHz



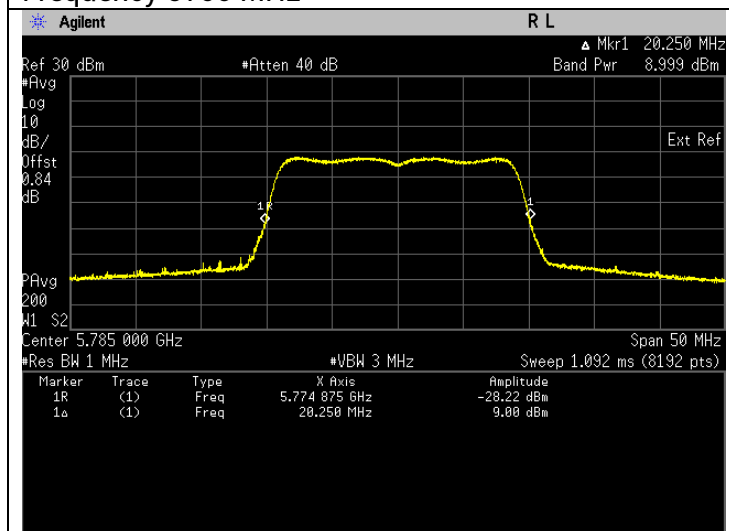
Frequency 5580 MHz



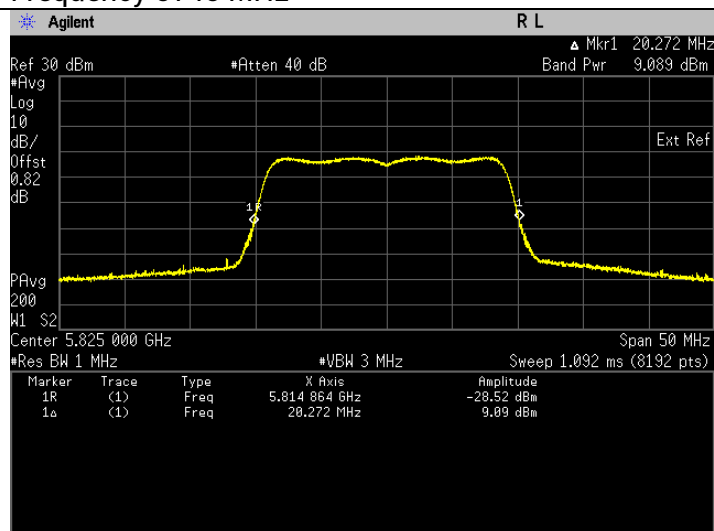
Frequency 5700 MHz



Frequency 5745 MHz



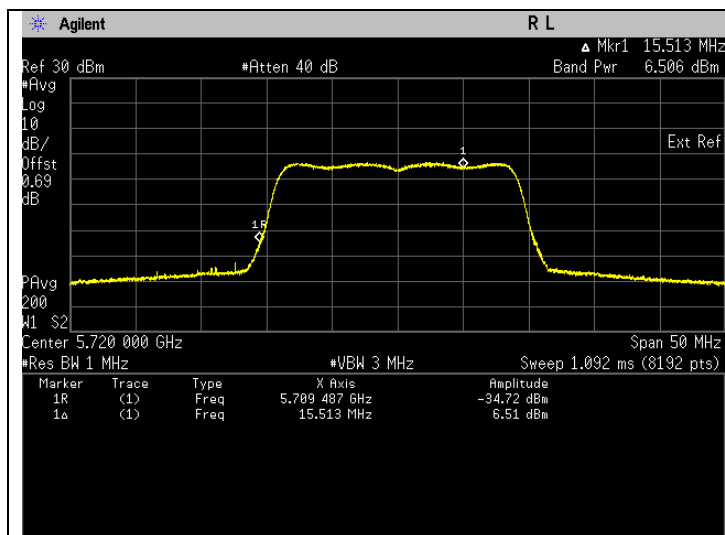
Frequency 5785 MHz



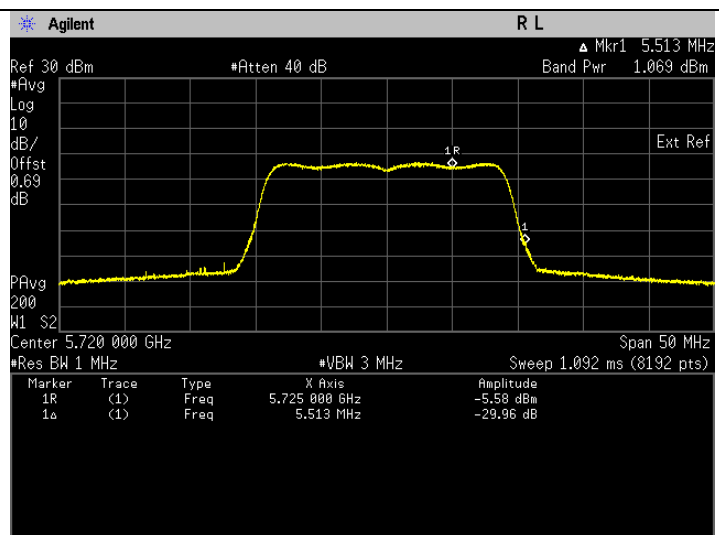
Frequency 5825 MHz

Straddle Frequency

Freq. (MHz)	Test Conditions	Results		
		U-NII- 2C		
		Power (mW)	Power (dBm)	Status
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	4.482	6.515	Pass
		U-NII-3		
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	1.282	1.078	Pass



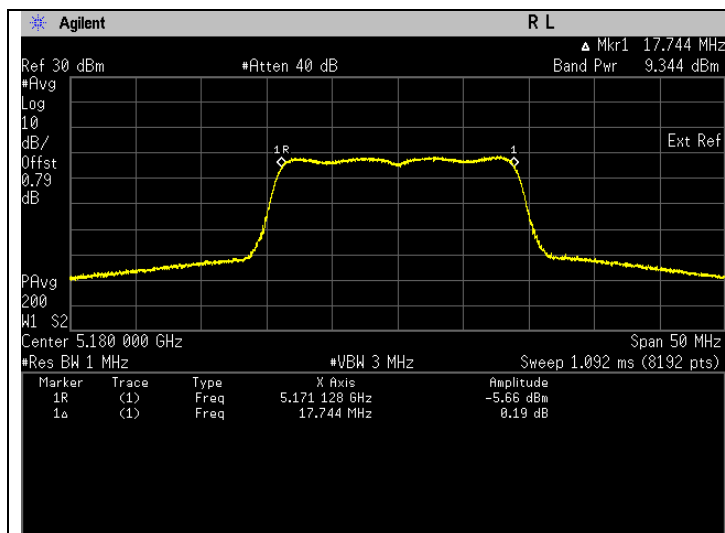
Frequency 5720 MHz, U-NII-2C. *Note: The band power is captured before the 5725 MHz.



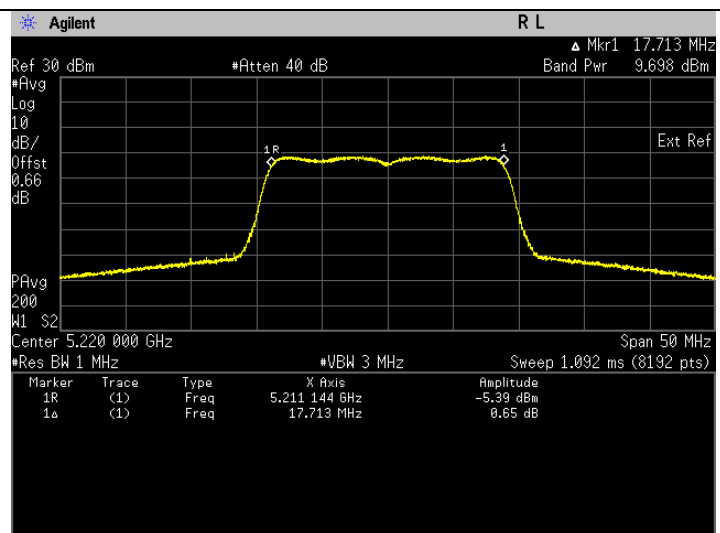
Frequency 5720 MHz, U-NII-3. *Note: The band power is captured after the 5725 MHz.

802.11n (HT20)(99% EBW)

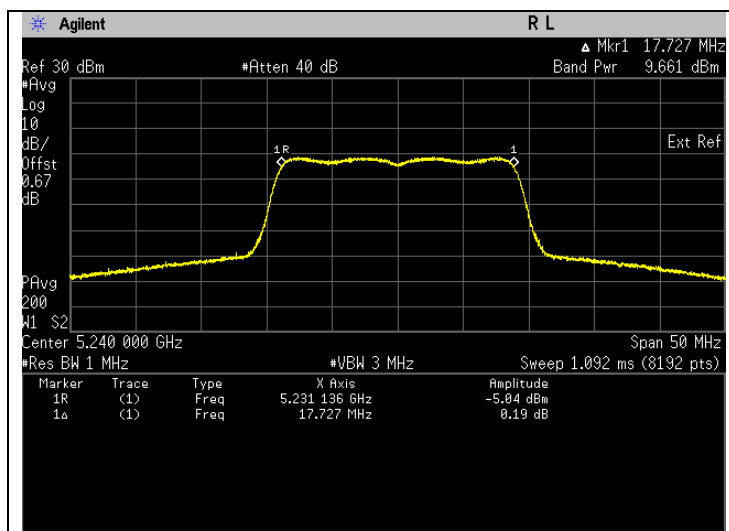
Freq. (MHz)	Test Conditions	Results				
		Power (mW)	Power (dBm)	Statu s	EIRP (dBm)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	8.616	9.353	Pass	14.603	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	9.348	9.707	Pass	14.957	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	9.268	9.670	Pass	14.92	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	9.652	9.846	Pass	15.096	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	8.931	9.509	Pass	14.759	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.444	8.718	Pass	13.968	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	8.766	9.428	Pass	14.678	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.327	8.649	Pass	13.899	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	8.676	9.383	Pass	14.633	Pass
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	9.438	9.749	Pass	14.999	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.759	8.898	Pass	14.148	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.947	9.002	Pass	14.252	Pass



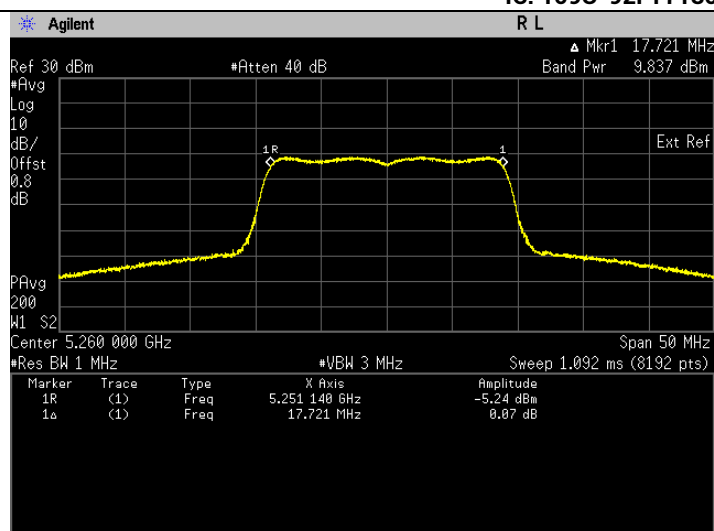
Frequency 5180 MHz



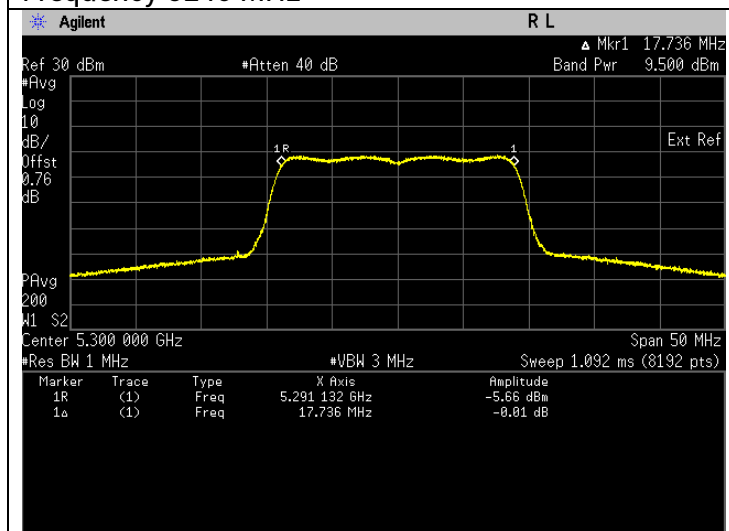
Frequency 5220 MHz



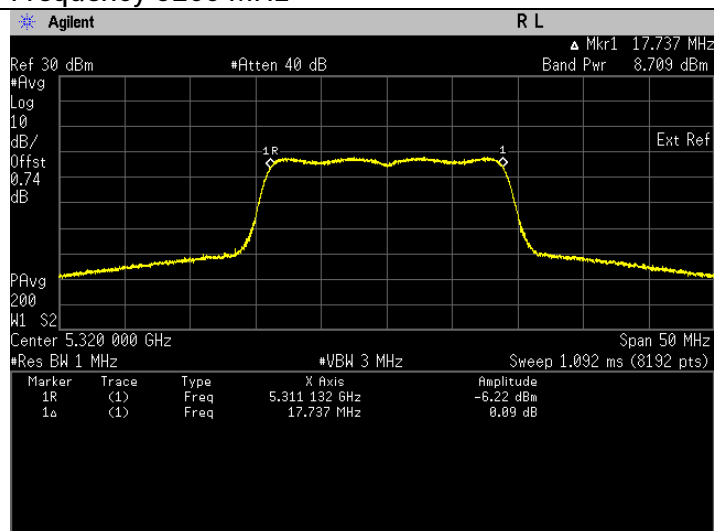
Frequency 5240 MHz



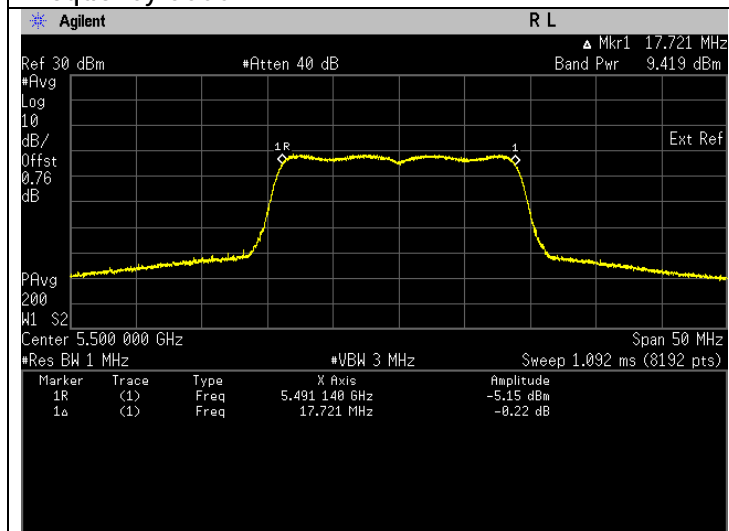
Frequency 5260 MHz



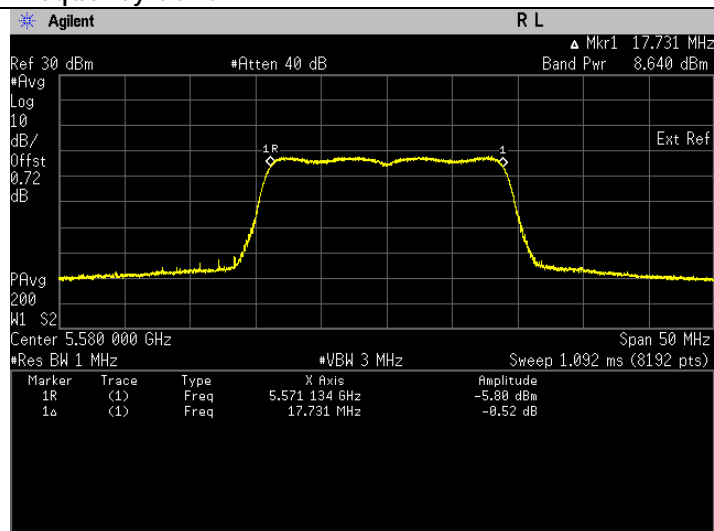
Frequency 5300 MHz



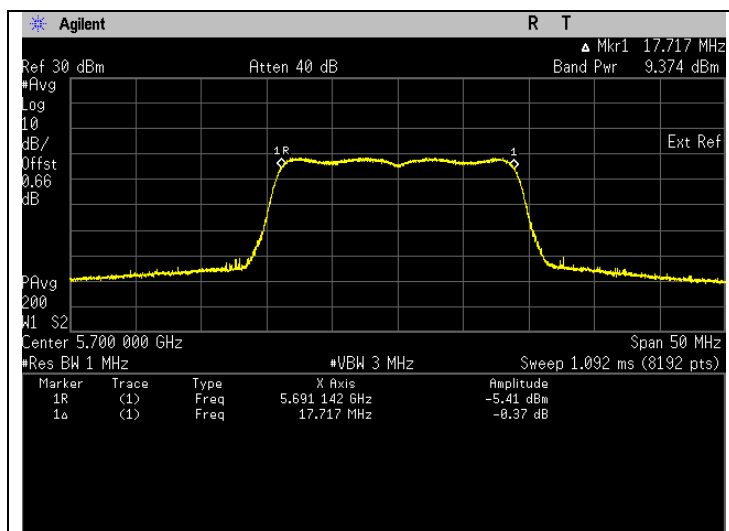
Frequency 5320 MHz



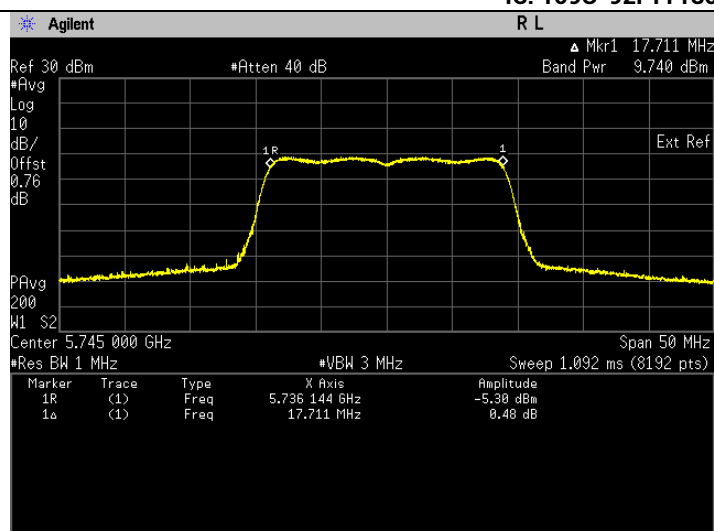
Frequency 5500 MHz



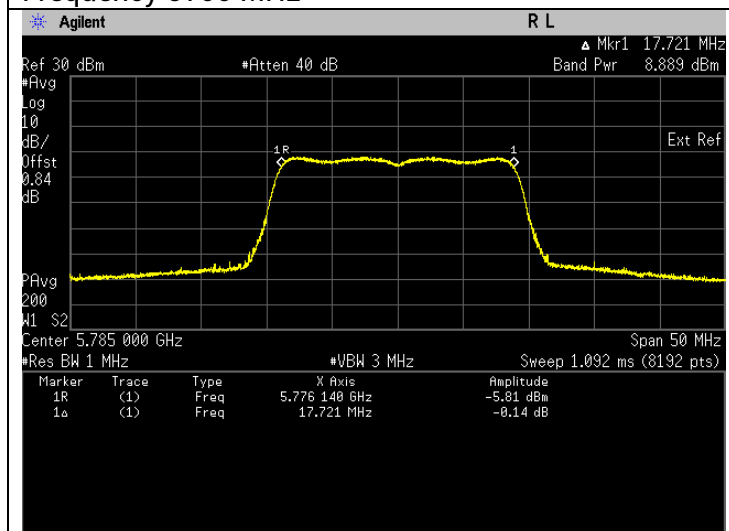
Frequency 5580 MHz



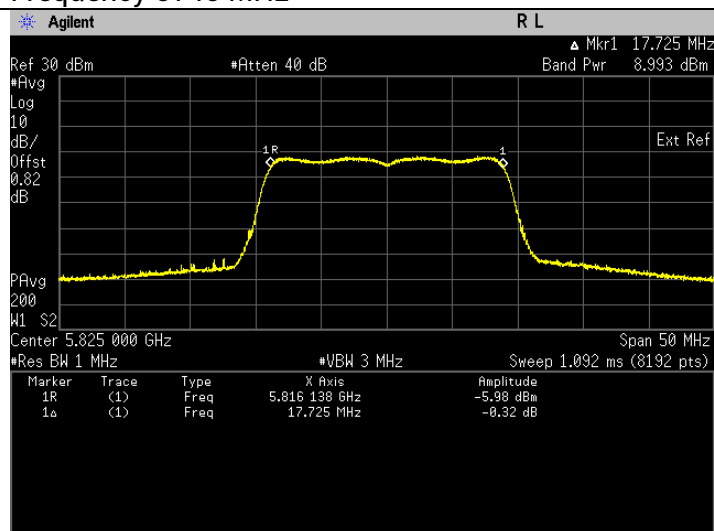
Frequency 5700 MHz



Frequency 5745 MHz



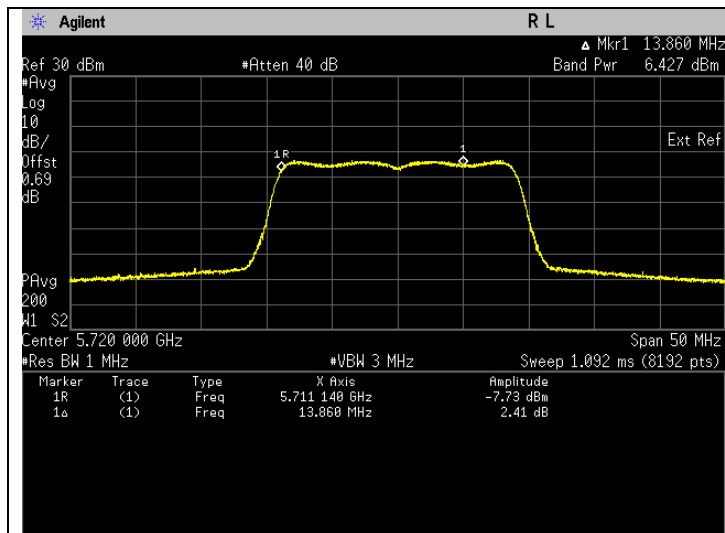
Frequency 5785 MHz



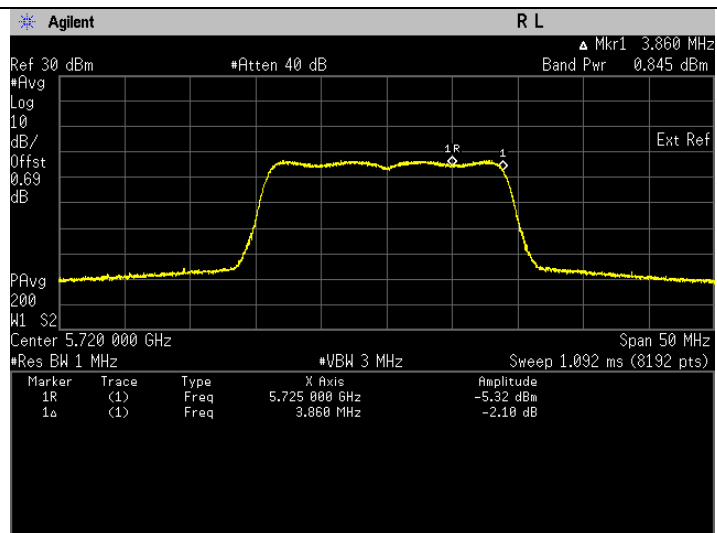
Frequency 5825 MHz

Straddle Frequency

Freq. (MHz)	Test Conditions	Results				
		U-NII- 2C				
		Power (mW)	Power (dBm)	Statu s	EIRP (dBm)	Status
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	4.401	6.436	Pass	11.686	Pass
U-NII-3						
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	1.217	0.854	Pass	6.104	Pass



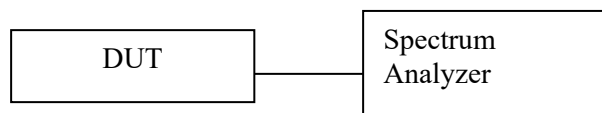
Frequency 5720 MHz, U-NII-2C. *Note: The band power is captured before the 5725 MHz.



Frequency 5720 MHz, U-NII-3. *Note: The band power is captured after the 5725 MHz.

6.3. Maximum Power Spectral Density

6.3.1. Test Setup



- a) Test setup as per illustrated above.
- b) Set DUT to transmit at desire transmit frequency.
- c) Connect DUT's antenna terminal to spectrum analyzer with a low loss cable.
- d) Setting of Spectrum analyzer :
 - Span to encompass the entire 26dB EBW or 99% occupied bandwidth.
 - RBW = 1 MHz (5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz) / 500 kHz (5.725-5.85 GHz)
 - VBW $\geq 3 \cdot$ RBW
 - Detector = power averaging (RMS)
 - Trace = Max hold
 - Number of points in sweep $\geq 2 \times$ span / RBW
 - Sweep time = auto
 - Trace average at least 100 traces in power averaging (rms) mode
- e) Use the peak search function on the instrument to find the peak of the spectrum and record its value.
- f) Add $10 \log (1/x)$, where x is the duty cycle, to the peak of the spectrum.
- g) The measurement method follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04 under clause F) Method SA-2.
- h) The Maximum power spectral density results are included duty cycle correction factor.

6.3.2. Test Limits

FCC 15.407(a)

Range (GHz)	Condition		Limit
5.15-5.25		Outdoor AP	17dBm/ 1MHz
		Indoor AP	17dBm/ 1MHz
		Fixed Point to Point AP	17dBm/ 1MHz
	✓	Mobile and Portable Client Devices	11dBm/ 1MHz
5.25-5.35		✓	11dBm/ 1MHz
5.47-5.525		✓	11dBm/ 1MHz
5.725-5.85		✓	30dBm/ 500kHz

RSS-247 6.2

Range(GHz)	Condition	Limit
5.15-5.25	Indoor Operation Only	EIRP: 10dBm/ 1MHz
5.25-5.35		11dBm/ 1MHz
5.47-5.6 5.6-5.525		11dBm/ 1MHz
5.725-5.85		30dBm/ 500kHz

6.3.3. Additional Info

Antenna Type	Gain (dBi)
UNII1, UNII2A, UNII2C & UNII3	5.25
Duty Cycle Correction Factor	
802.11a	0.043
802.11n20	0.009

6.3.4. Test Data

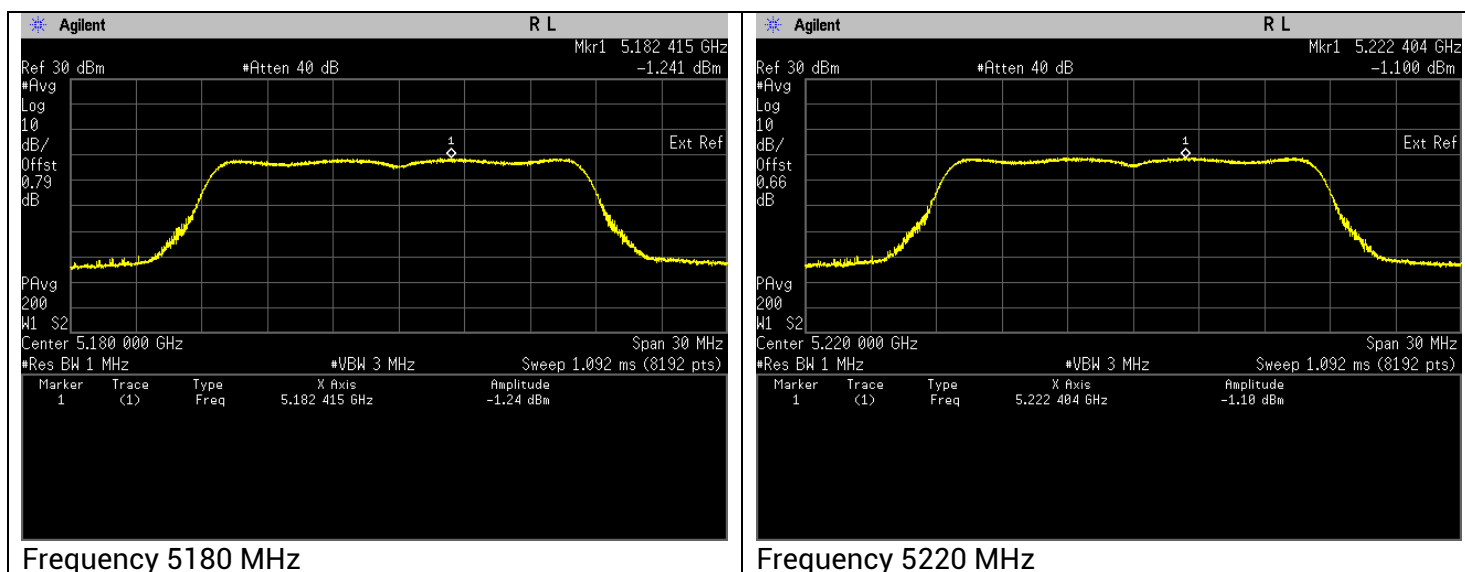
802.11a (26dB EBW)

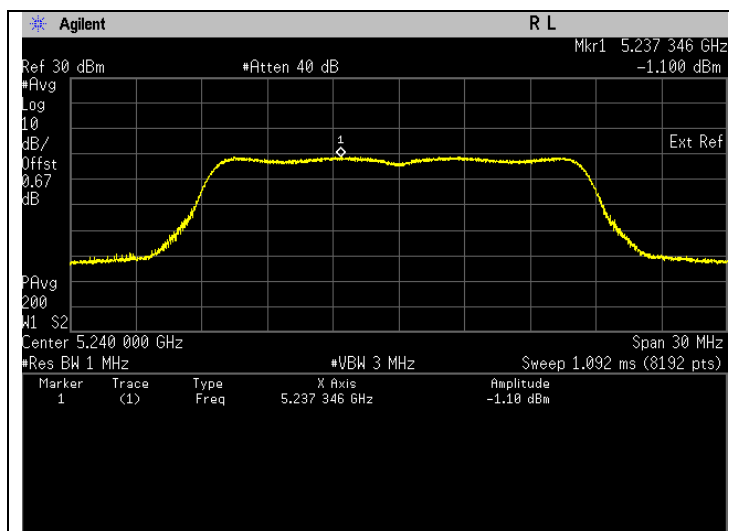
Freq. (MHz)	Test Conditions	Results	
		Power/Frequency(dBm/MHz)	Status
5180	Mod Type: BPSK, Data Rate: 6	-1.198	Pass
5220	Mod Type: BPSK, Data Rate: 6	-1.057	Pass
5240	Mod Type: BPSK, Data Rate: 6	-1.057	Pass
5260	Mod Type: BPSK, Data Rate: 6	-0.927	Pass
5300	Mod Type: BPSK, Data Rate: 6	-1.012	Pass
5320	Mod Type: BPSK, Data Rate: 6	-2.045	Pass
5500	Mod Type: BPSK, Data Rate: 6	-1.132	Pass
5580	Mod Type: BPSK, Data Rate: 6	-2.036	Pass
5700	Mod Type: BPSK, Data Rate: 6	-3.118	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status
5745	Mod Type: BPSK, Data Rate: 6	-3.730	Pass
5785	Mod Type: BPSK, Data Rate: 6	-4.342	Pass
5825	Mod Type: BPSK, Data Rate: 6	-4.556	Pass

802.11a (99% EBW)

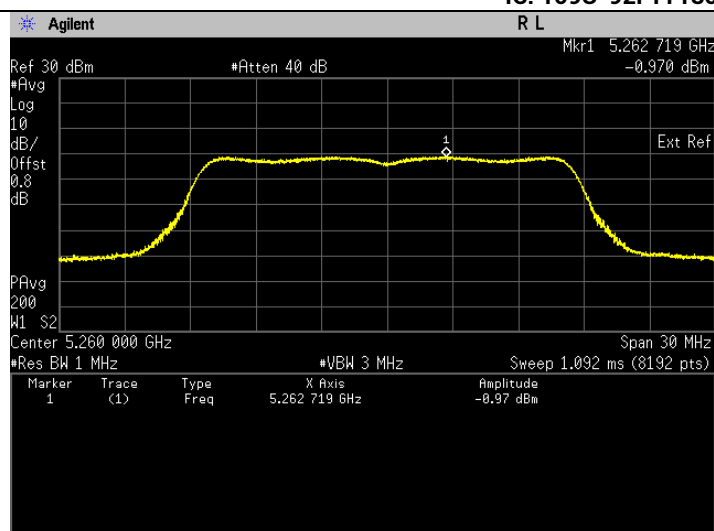
Freq. (MHz)	Test Conditions	Results			
		Power/Frequency (dBm/MHz)	Status	EIRP (dBm/MHz)	Status
5180	Mod Type: BPSK, Data Rate: 6	-1.198	Pass	4.052	Pass
5220	Mod Type: BPSK, Data Rate: 6	-1.057	Pass	4.193	Pass
5240	Mod Type: BPSK, Data Rate: 6	-1.057	Pass	4.193	Pass
5260	Mod Type: BPSK, Data Rate: 6	-0.927	Pass	4.323	Pass
5300	Mod Type: BPSK, Data Rate: 6	-1.012	Pass	4.238	Pass
5320	Mod Type: BPSK, Data Rate: 6	-2.045	Pass	3.205	Pass
5500	Mod Type: BPSK, Data Rate: 6	-1.132	Pass	4.118	Pass
5580	Mod Type: BPSK, Data Rate: 6	-2.036	Pass	3.214	Pass
5700	Mod Type: BPSK, Data Rate: 6	-3.118	Pass	2.132	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status		
5745	Mod Type: BPSK, Data Rate: 6	-3.730	Pass	1.520	Pass
5785	Mod Type: BPSK, Data Rate: 6	-4.342	Pass	0.908	Pass
5825	Mod Type: BPSK, Data Rate: 6	-4.556	Pass	0.694	Pass

Plots for 802.11a (26dB EBW & 99% EBW)

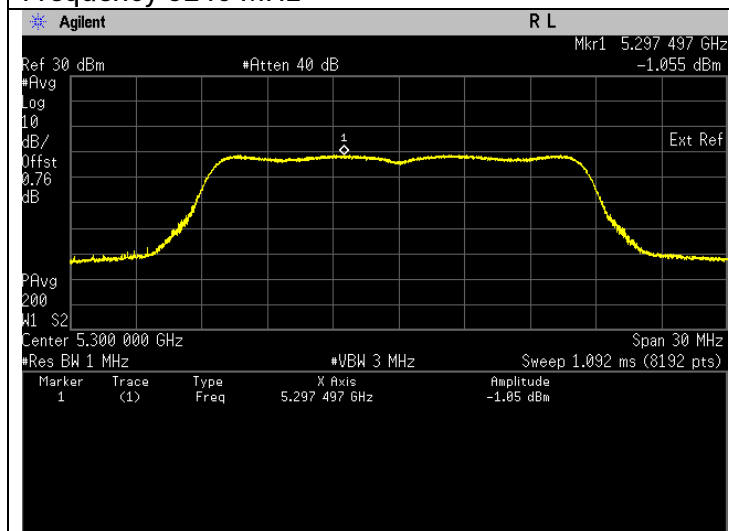




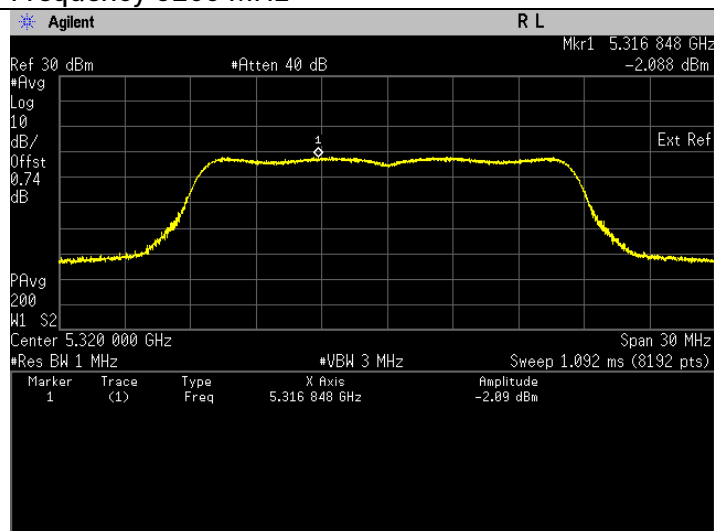
Frequency 5240 MHz



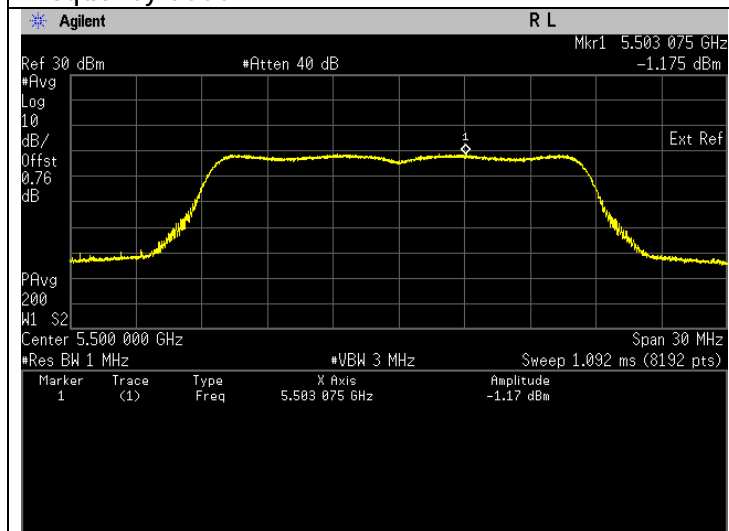
Frequency 5260 MHz



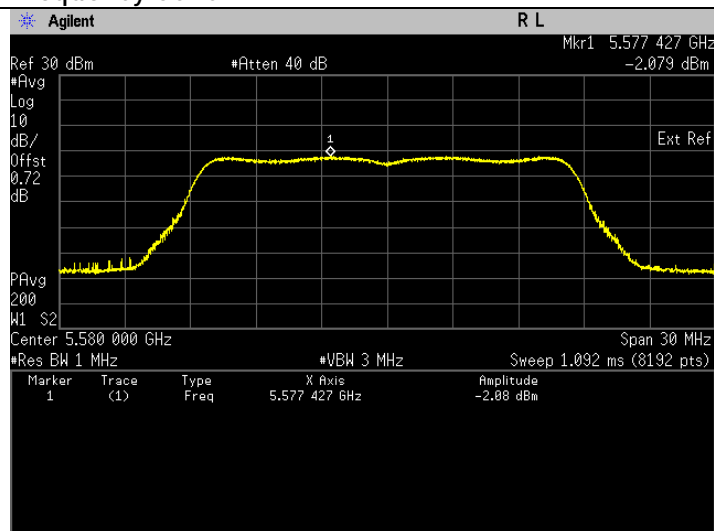
Frequency 5300 MHz



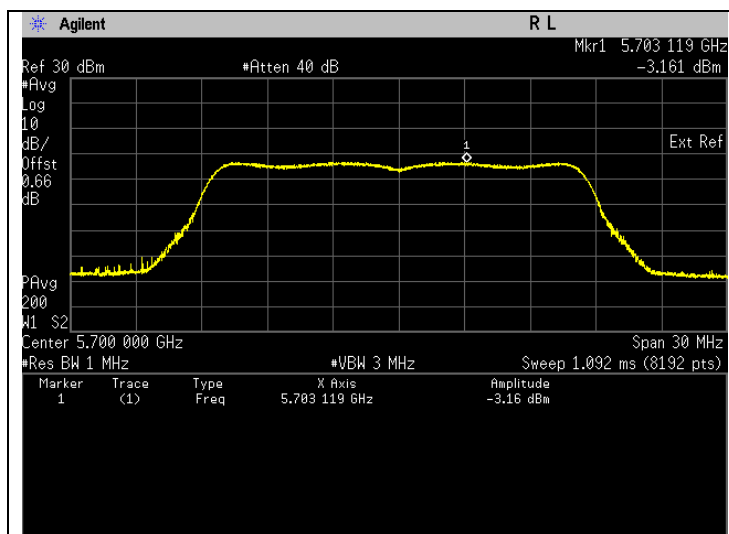
Frequency 5320 MHz



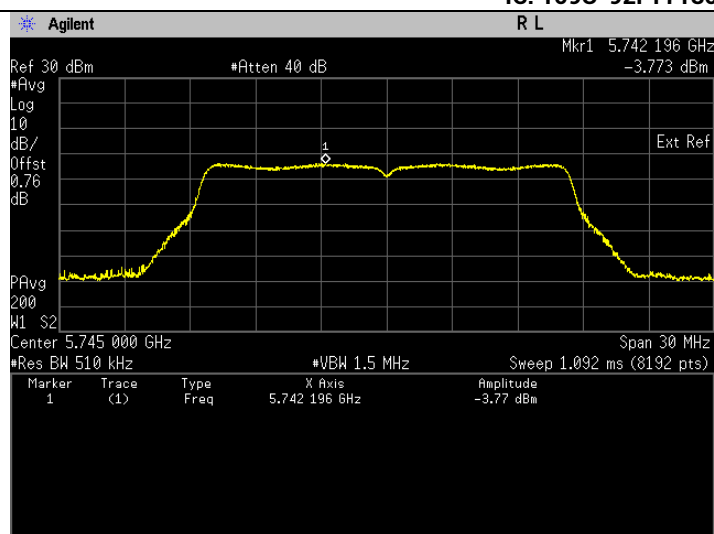
Frequency 5500 MHz



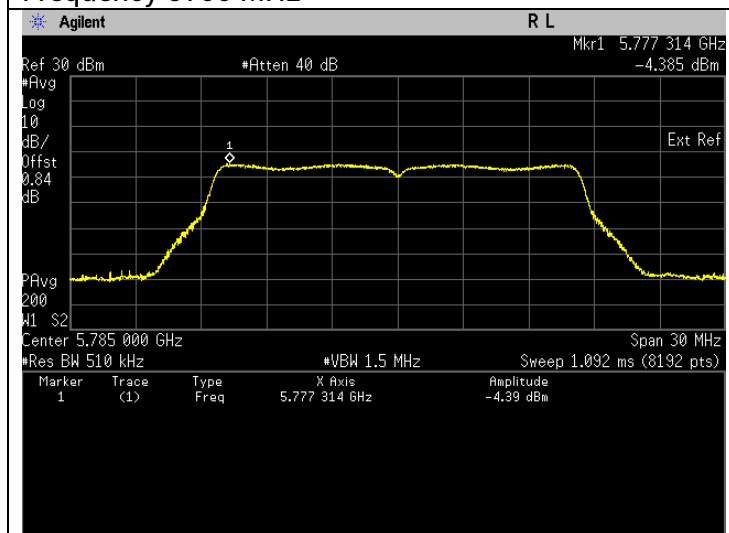
Frequency 5580 MHz



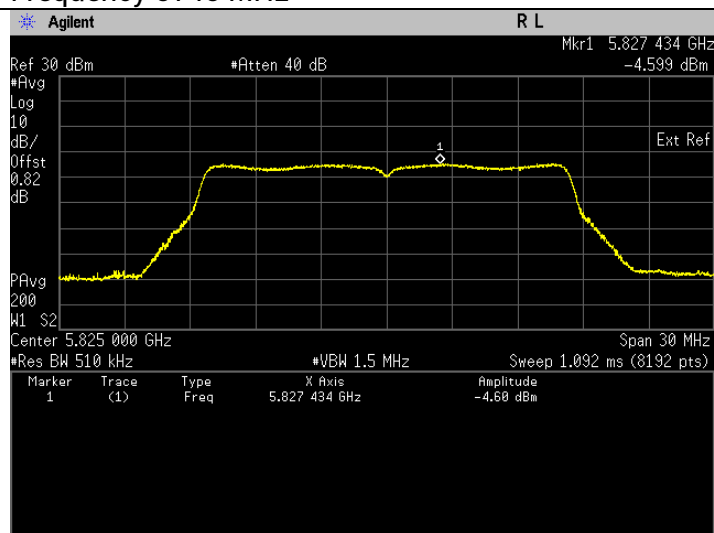
Frequency 5700 MHz



Frequency 5745 MHz



Frequency 5785 MHz



Frequency 5825 MHz

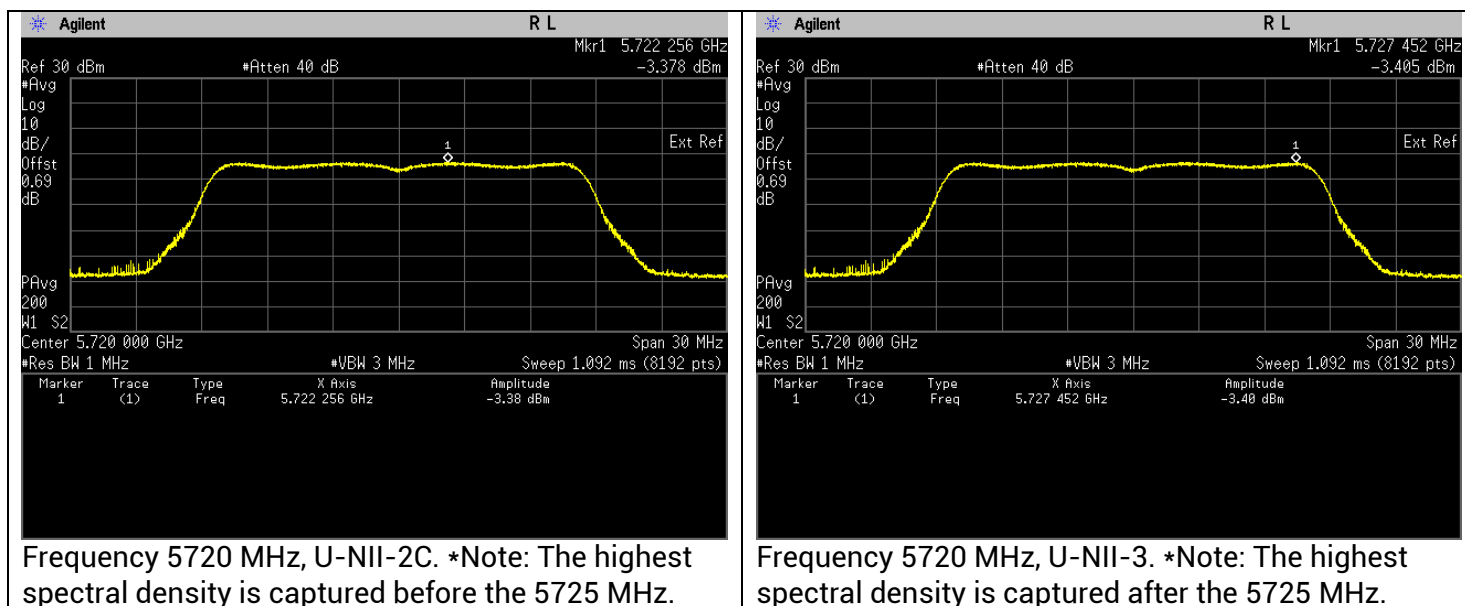
Straddle Frequency for 802.11a (26dB EBW)

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
		U-NII- 2C	
5720	Mod Type: BPSK, Data Rate: 6	-3.335	Pass
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
5720	Mod Type: BPSK, Data Rate: 6	-3.362	Pass

Straddle Frequency for 802.11a (99% EBW)

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
		U-NII- 2C	
5720	Mod Type: BPSK, Data Rate: 6	-3.335	Pass
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
5720	Mod Type: BPSK, Data Rate: 6	-3.362	Pass

Plots for 802.11a Straddle Frequency (26dB EBW & 99% EBW)



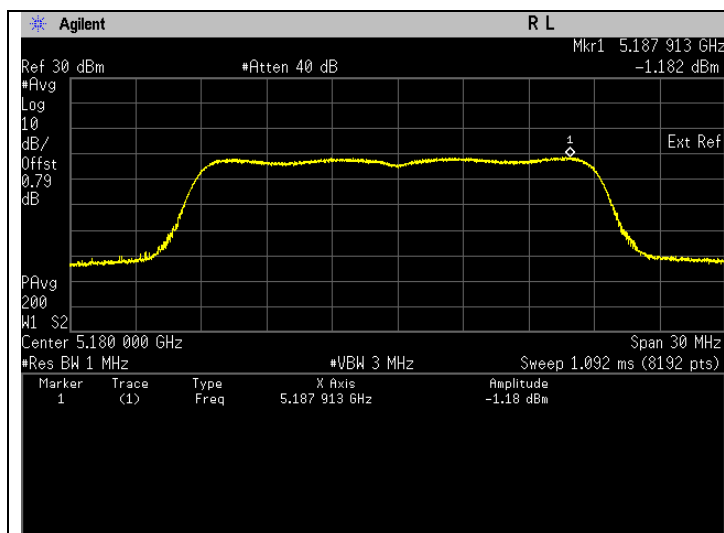
802.11n (HT20)(26dB EBW)

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-1.173	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-0.99	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-1.152	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-0.948	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-1.307	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-2.097	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-1.439	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-2.143	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-3.005	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-3.963	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-4.708	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-4.505	Pass

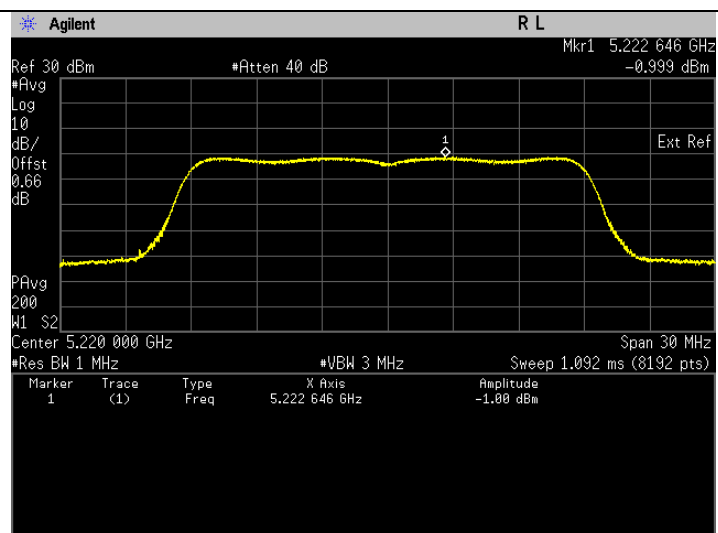
802.11n (HT20)(99% EBW)

Freq. (MHz)	Test Conditions	Results			
		Power/Frequency (dBm/MHz)	Status	EIRP (dBm/MHz)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-1.173	Pass	4.077	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-0.99	Pass	4.26	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-1.152	Pass	4.098	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-0.948	Pass	4.302	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-1.307	Pass	3.943	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-2.097	Pass	3.153	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-1.439	Pass	3.811	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-2.143	Pass	3.107	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-3.005	Pass	2.245	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status		
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-3.963	Pass	1.287	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-4.708	Pass	0.542	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-4.505	Pass	0.745	Pass

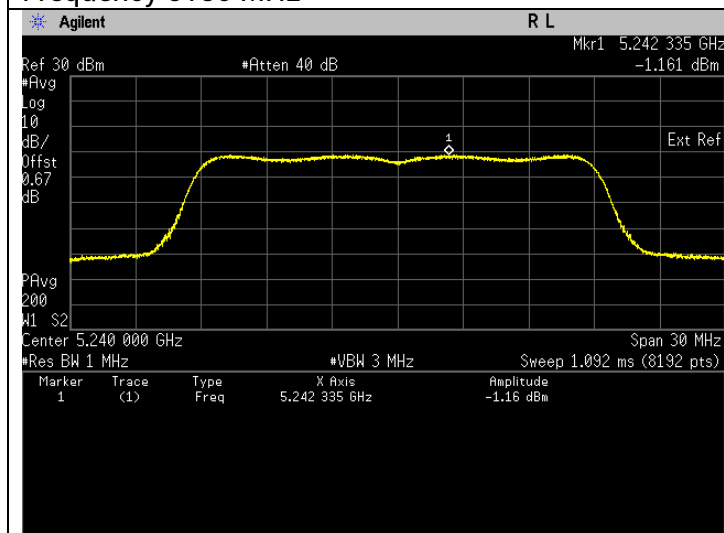
Plots for 802.11n (HT20) (26dB EBW & 99% EBW)



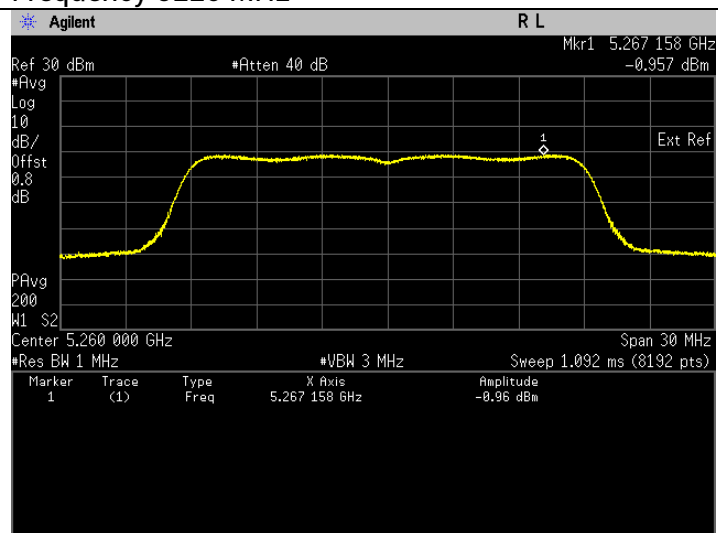
Frequency 5180 MHz



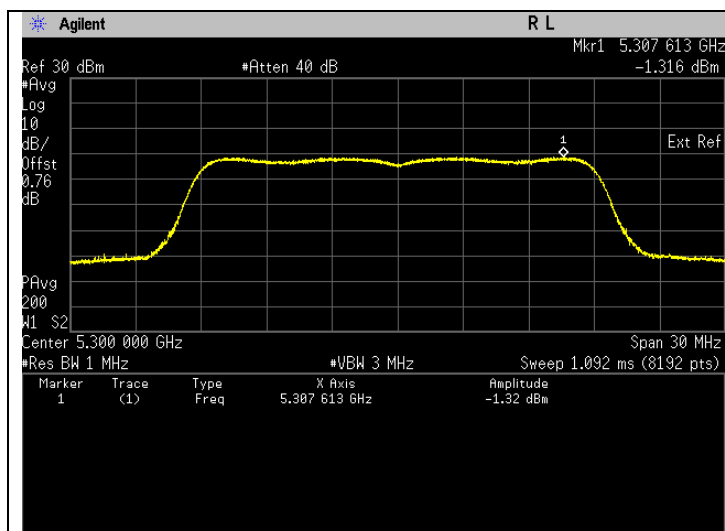
Frequency 5220 MHz



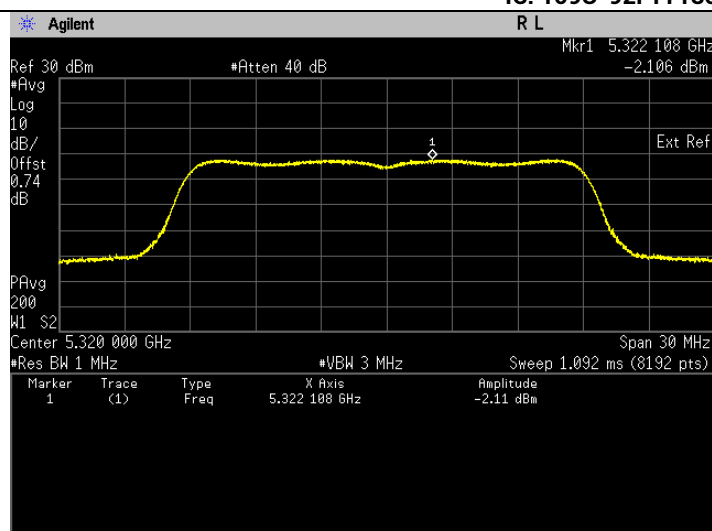
Frequency 5240 MHz



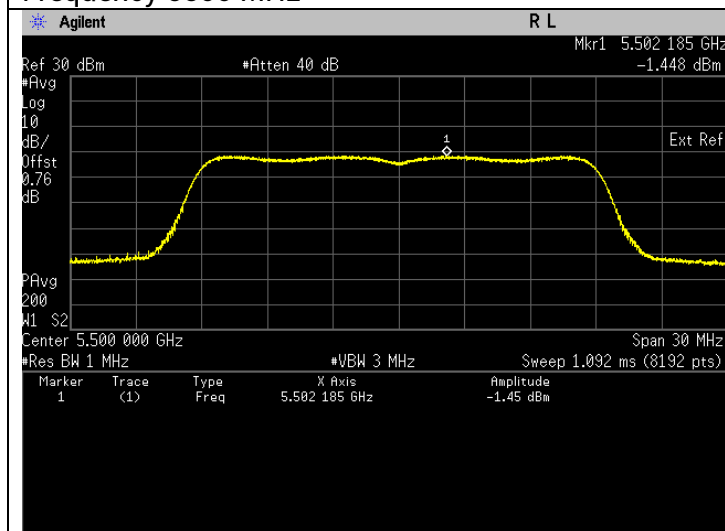
Frequency 5260 MHz



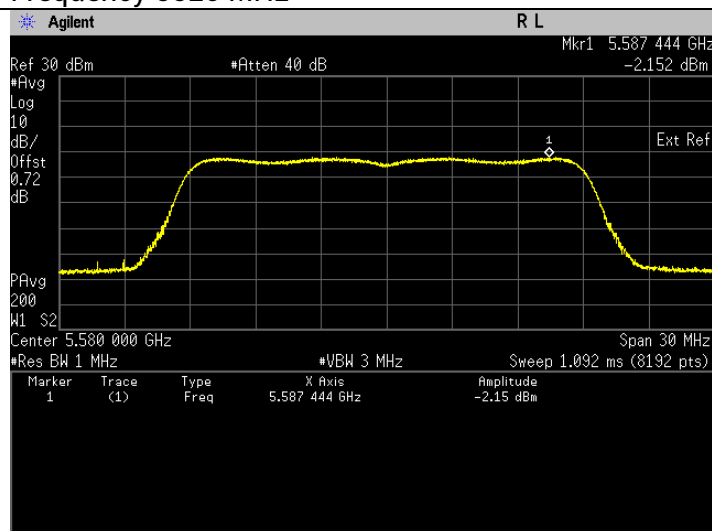
Frequency 5300 MHz



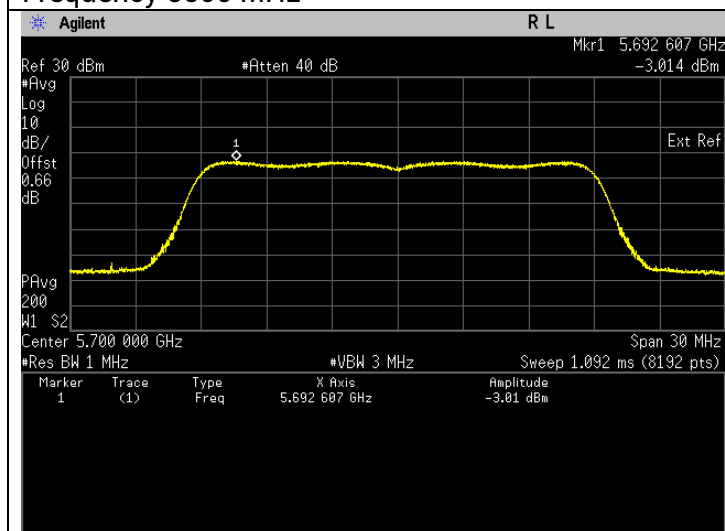
Frequency 5320 MHz



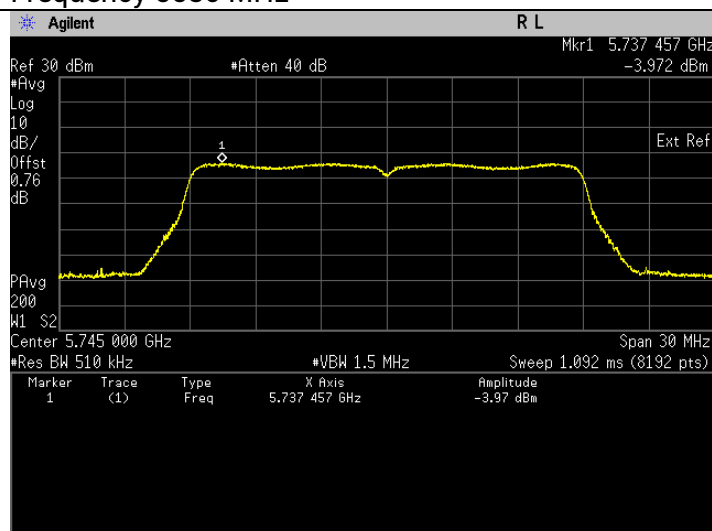
Frequency 5500 MHz



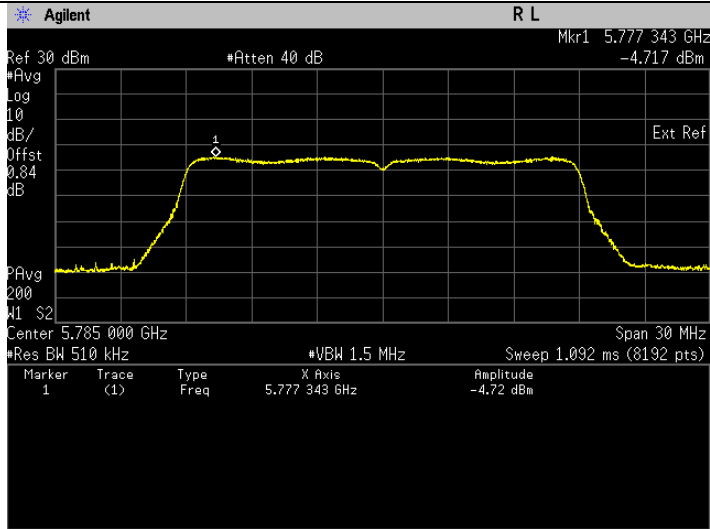
Frequency 5580 MHz



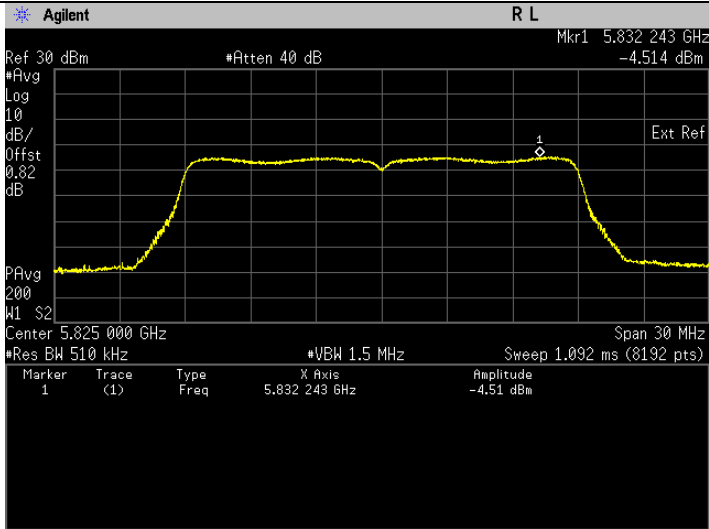
Frequency 5700 MHz



Frequency 5745 MHz



Frequency 5785 MHz



Frequency 5825 MHz

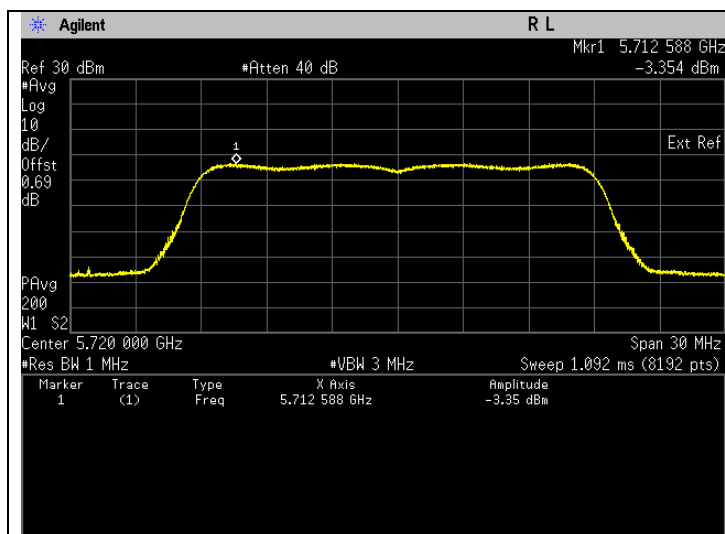
Straddle Frequency for 802.11n (HT20) (26dB EBW)

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
		U-NII- 2C	
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-3.345	Pass
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-3.369	Pass

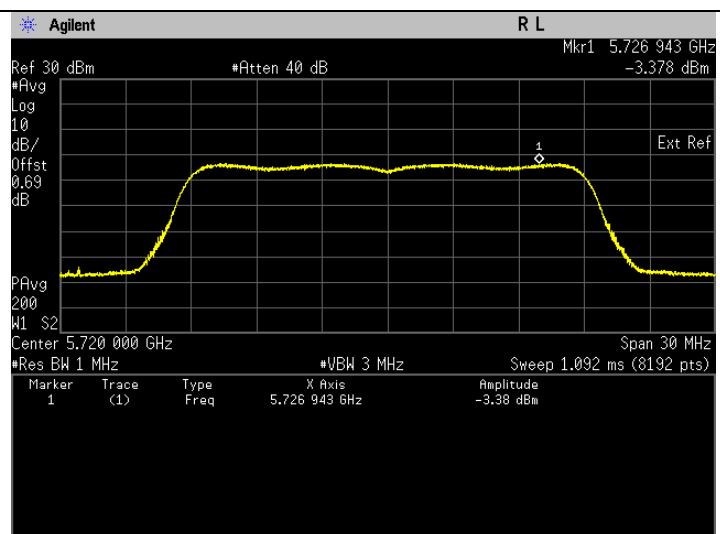
Straddle Frequency for 802.11n (HT20) (99% EBW)

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
		U-NII- 2C	
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-3.345	Pass
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-3.369	Pass

Plots for 802.11n (HT20) Straddle Frequency (26dB EBW & 99% EBW)



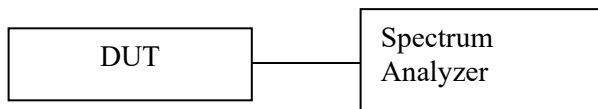
Frequency 5720 MHz, U-NII-2C. *Note: The highest spectral density is captured before the 5725 MHz.



Frequency 5720 MHz, U-NII-3. *Note: The highest spectral density is captured after the 5725 MHz.

6.4. 6dB Bandwidth

6.4.1. Test Setup



- a) Test setup as per illustrated above.
- b) Set DUT to transmit at desire transmit frequency.
- c) 6dB bandwidth is applicable for the band 5.725-5.85GHz only.
- d) Connect DUT's antenna terminal to spectrum analyzer with a low loss cable.
- e) Setting of Spectrum analyzer :
 - RBW = 100 kHz
 - VBW $\geq$ 3·RBW
 - Detector = Peak
 - Trace = Max Hold
 - Sweep = Auto couple
- f) Allow 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) The measurement method follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04 under clause C.2).

6.4.2. Test Limits

FCC 15.407(e)

Within the 5.725-5.85GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

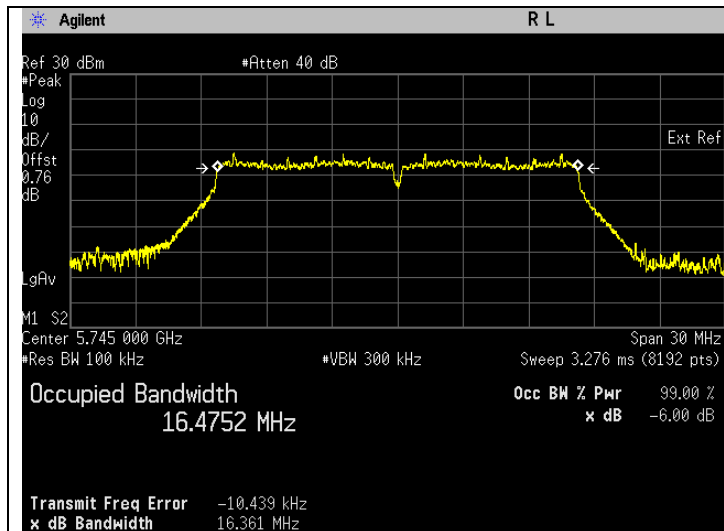
RSS 247 6.2.4

For equipment operating in the band 5725-5850 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.

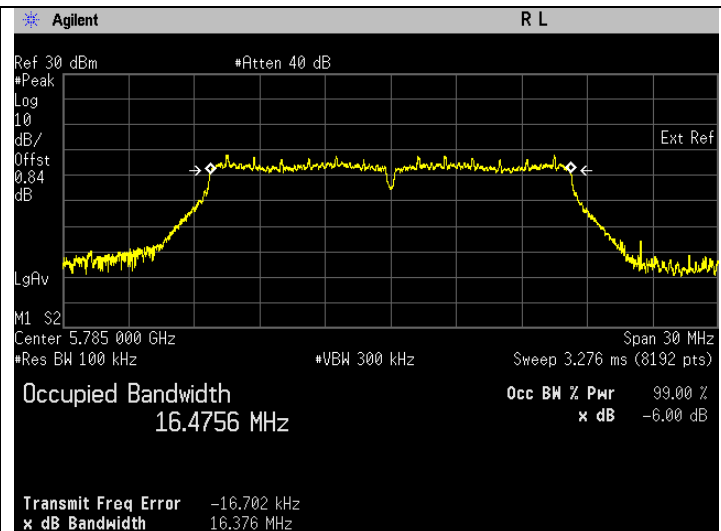
6.4.3. Test Data

802.11a

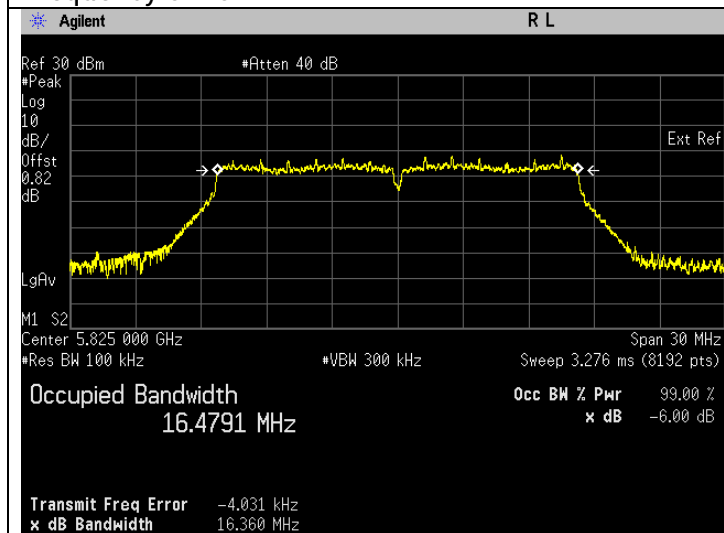
Frequency (MHz)	Test Configuration	Results	
		Bandwidth(MHz)	Status
5745	Mod Type: BPSK, Data Rate: 6	16.361	Pass
5785	Mod Type: BPSK, Data Rate: 6	16.376	Pass
5825	Mod Type: BPSK, Data Rate: 6	16.360	Pass



Frequency 5745 MHz



Frequency 5785 MHz

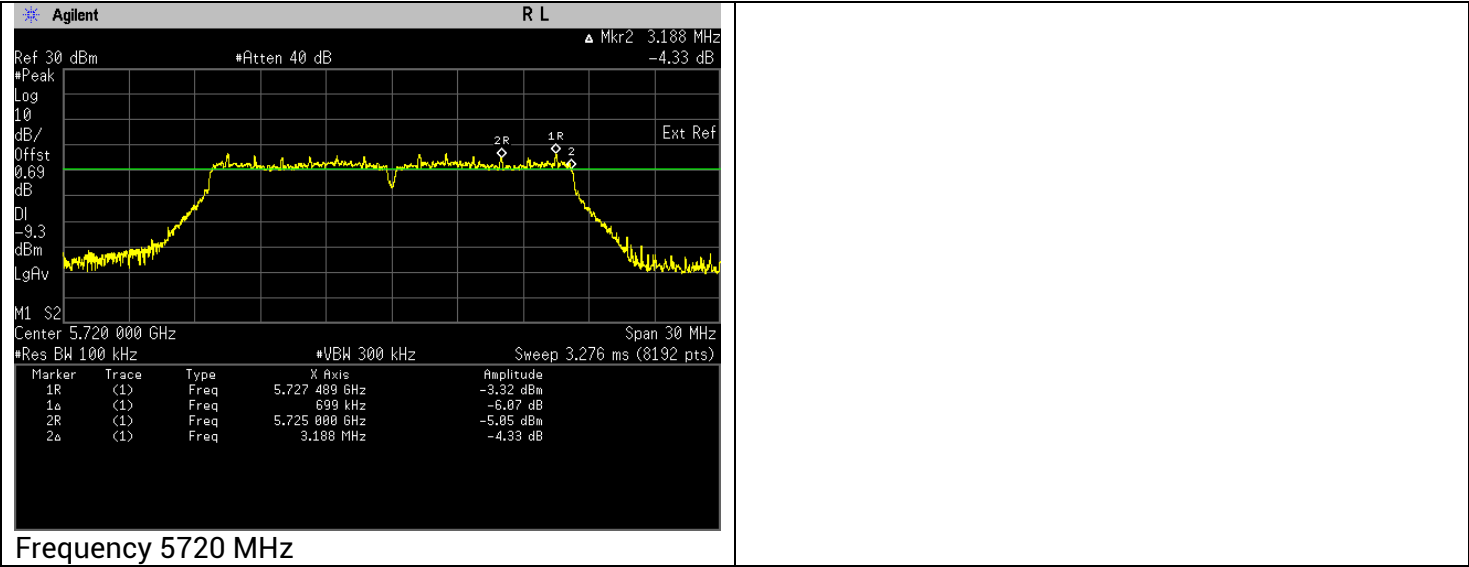


Frequency 5825 MHz

Straddle Frequency for 802.11a

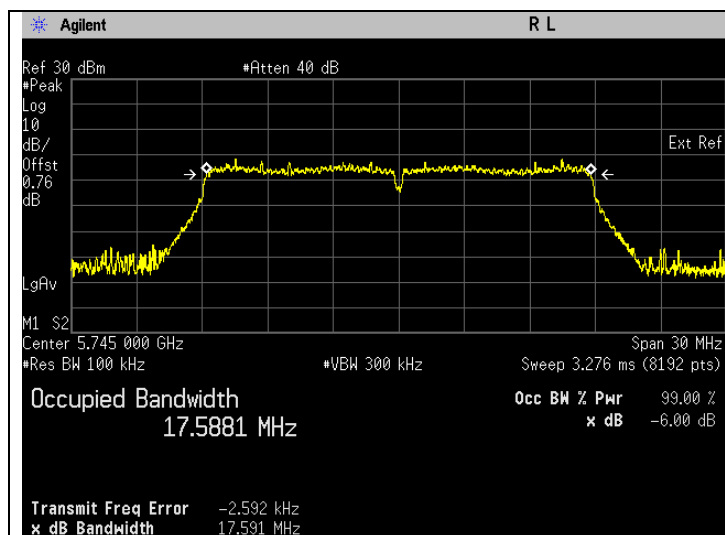
Freq. (MHz)	Test Conditions	Results	
		Bandwidth (MHz)	Status
		U-NII- 3	
5720	Mod Type: BPSK, Data Rate: 6	3.188	Pass

Plots for 802.11a Straddle Frequency

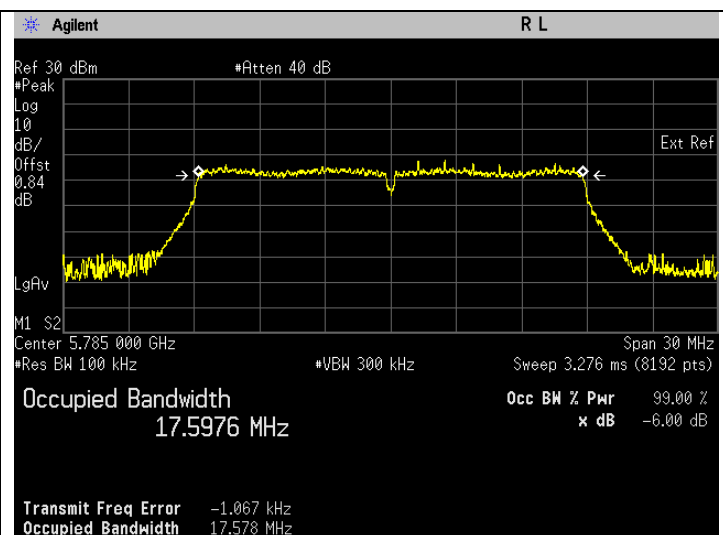


802.11n (HT20)

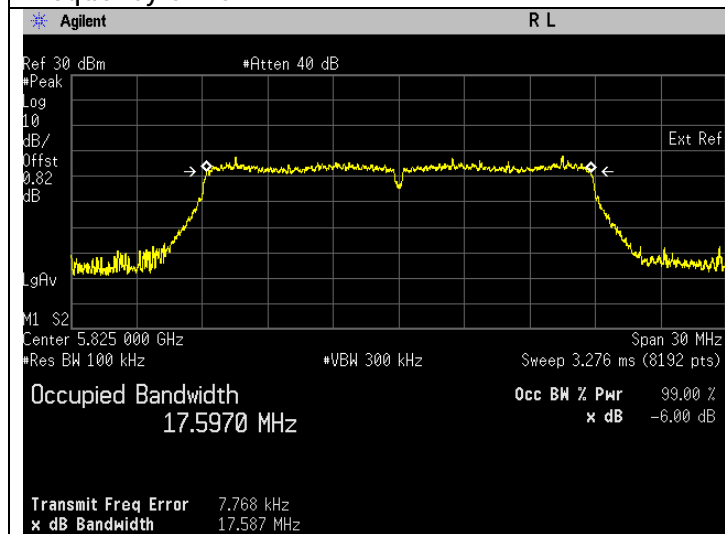
Frequency (MHz)	Test Configuration	Results	
		Bandwidth(MHz)	Status
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	17.591	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	17.578	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	17.587	Pass



Frequency 5745 MHz



Frequency 5785 MHz

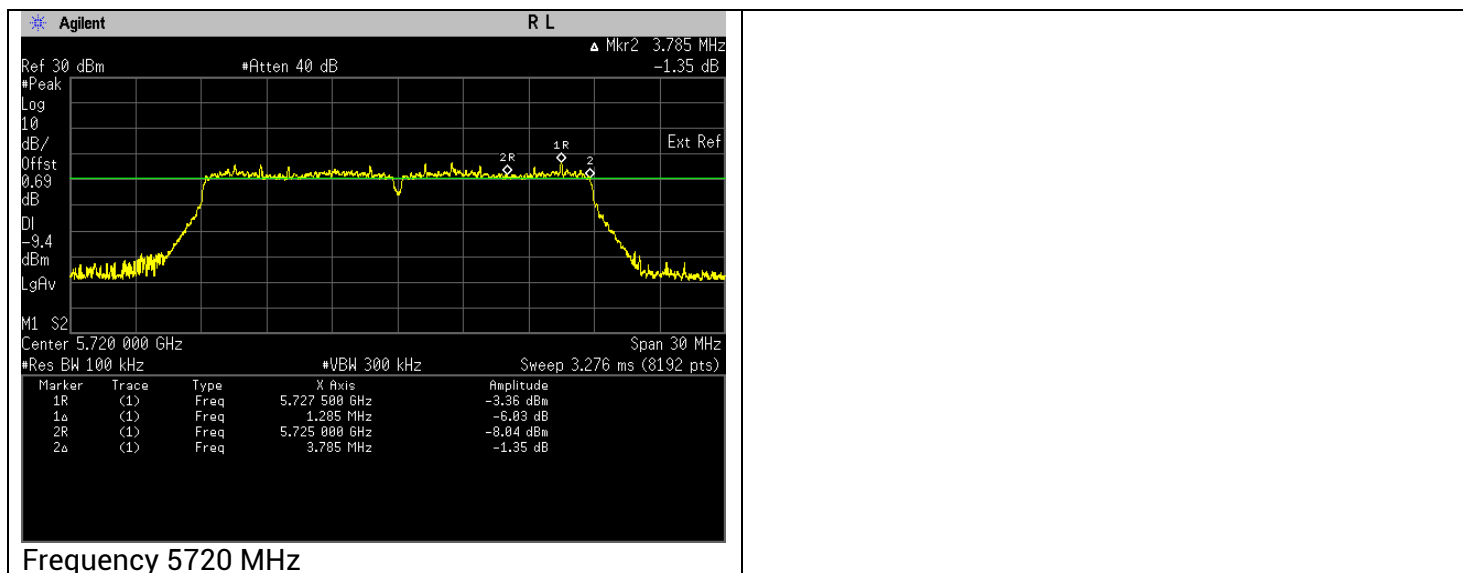


Frequency 5825 MHz

Straddle Frequency for 802.11n (HT20)

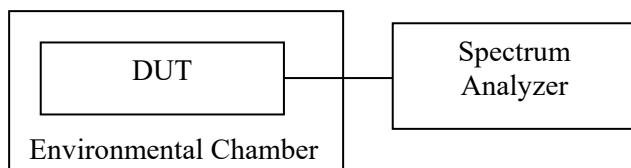
Freq. (MHz)	Test Conditions	Results	
		Bandwidth (MHz)	Status
		U-NII- 3	
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	3.785	Pass

Plots for 802.11n (HT20) Straddle Frequency



6.5. Frequency Stability

6.5.1. Test Setup



- a) Test setup as per illustrated above.
- b) Set DUT to transmit un-modulated signal at desire transmit frequency.
- c) Connect DUT's antenna terminal to spectrum analyzer with a low loss cable.
- d) The DUT was operated at the maximum output power, and spectrum which is set to maximum hold function and peak detector.
- e) The peak value of the power envelope was measured and noted.
- f) Test was conducted from temperature range from -30°C to 50°C with step size of 10°C on manufacturer's rated supply voltage.
- g) At temperature of 20°C, +/-15% of manufacturer's rated voltage are to be applied.
- h) The frequency stability is measured and recorded of frequency deviation due to temperature and supply voltage variations as mentioned at condition f) & g) above.

6.5.2. Test Limits

FCC 15.407(g)

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

RSS-GEN 6.11

6.5.3. Test Data

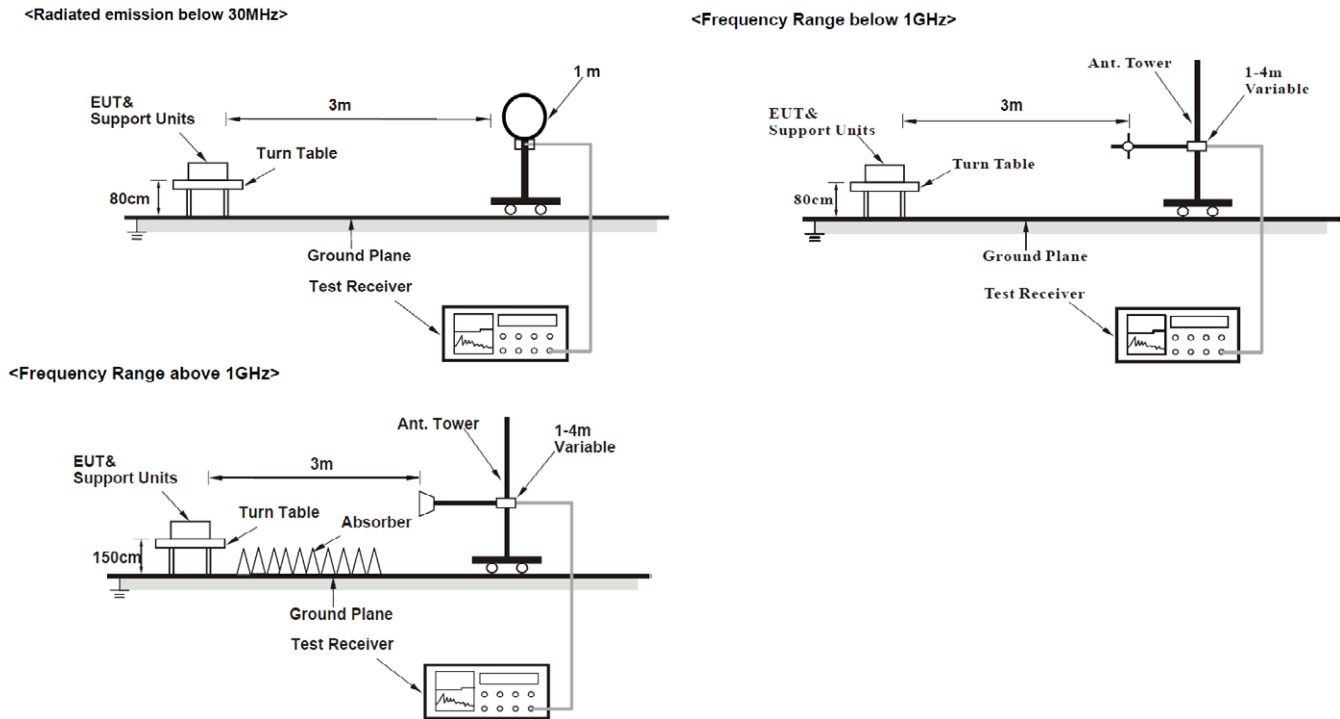
802.11a

Test Configuration	Test Frequency
	Tx (MHz)
Mod Type: BPSK, Data Rate: 6	5180

Temperature(°C)	Voltage	Results			
		Measured Frequency(MHz)	Frequency Error(kHz)	Frequency Error (%)	Status
20	+15%	5179.996852	3.148000	0.000061	Pass
	±0%	5179.997424	2.576000	0.000050	Pass
	-15%	5179.997631	2.369000	0.000046	Pass
-30		5179.997738	2.262000	0.000044	Pass
-20		5179.997914	2.086000	0.000040	Pass
-10		5179.998061	1.939000	0.000037	Pass
0		5179.998343	1.657000	0.000032	Pass
10		5179.998930	1.070000	0.000021	Pass
30		5179.997402	2.598000	0.000050	Pass
40		5179.997387	2.613000	0.000050	Pass
50		5179.997364	2.636000	0.000051	Pass

6.6. Band Edge Radiated Spurious Emission Measurement

6.6.1. Test Setup



1. The EUT is placed on the top of a rotating table 0.8m/1.5m above the ground at a 3m semi-anechoic chamber. The table is rotated 360 degrees to determine the position of the highest radiation.
2. The EUT is set 3m away from the interference-receiving antenna, which is mounted on the top of a variable-height antenna tower.
3. The antenna is Bilog/Horn antenna depend on which frequency range uses, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT is arranged to its worst case and then the antenna is tuned to heights from 1m to 4m and the rotatable table is turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system is set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode is fall within the range of 10dB from the limit specified, the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. Otherwise, the testing could be stopped and the peak values of the EUT would be reported.

NOTE:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3 MHz for Peak detection at frequency above 1 GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection using reduced video bandwidth (Duty cycle $\geq 98\%$) at frequency above 1GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $1/\tau$ Hz, where τ is minimum transmitter on time (Duty cycle $< 98\%$) for Average detection using reduced video bandwidth at frequency above 1GHz.
- All modes of operation were investigated and the worst-case emissions are reported.

6.6.2. Test Limits

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

NOTE:

- The lower limit shall apply at the transition frequencies.
- Emission level (dBuV/m) = 20 log Emission level (uV/m).
- For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

For Radiated emissions which fall out of the restricted bands must comply with the radiated emission limits specified as below table.

Applicable To		Limit	
789033 D02 General UNII Test Procedures New Rules v01r03		Field Strength at 3 m	
		PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
Frequency Band	Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
5150–5250 MHz	15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)
5250–5350 MHz	15.407(b)(2)		
5470–5725 MHz	15.407(b)(3)		
5725–5850 MHz	15.407(b)(4)(i)	PK:-27 (dBm/MHz) ^{*1} PK:10 (dBm/MHz) ^{*2} PK:15.6 (dBm/MHz) ^{*3} PK:27 (dBm/MHz) ^{*4}	PK: 68.2 (dBμV/m) ^{*1} PK:105.2 (dBμV/m) ^{*2} PK: 110.8 (dBμV/m) ^{*3} PK:122.2 (dBμV/m) ^{*4}
	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	
^{*1} beyond 75 MHz or more above of the band edge.			
^{*2} below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.			
^{*3} below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.			
^{*4} from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge			

NOTE:

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = ((1000000\sqrt{(30P)}) / 3) \text{ } \mu\text{V/m, where P is the eirp (Watts)}$$

802.11a

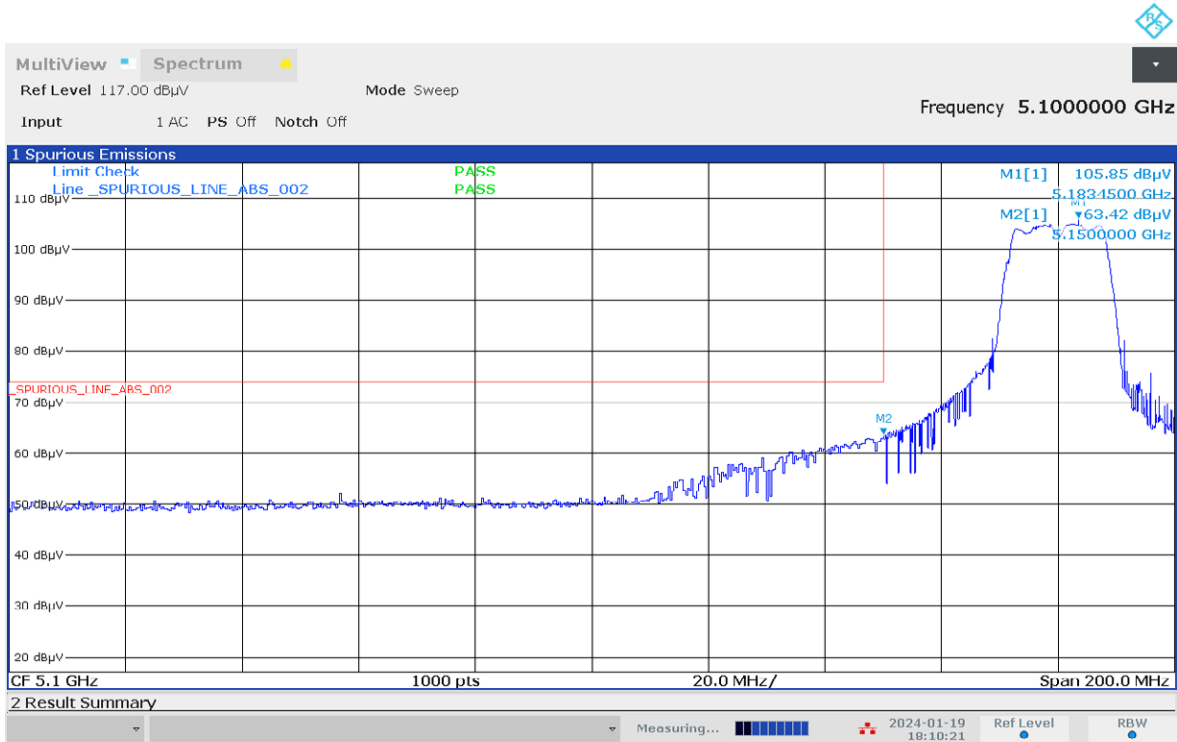
Model Number: M37TSS9PW1CN S/N: 681IZN6378 EMC SR ID#: 41528-EMC-00030
Battery: NA Softpot power (10.5dBm) Accessory: HMN4079G-CF1, HSN4031B-C3,
HKN4192C-CF4, HKN6164B-C2, HKN6188B-CF3, HKN6172C-C2, PMHN4194D-CF3,
13921-PMUN1057B-1, AS000016A02-CF2, AN000163A01
Test Channel: Low Test Frequency: 5180.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Y-Plane (802.11a 20MHz)

[illegible]

Remarks: Pass Result	Marginal Result	Fail Result
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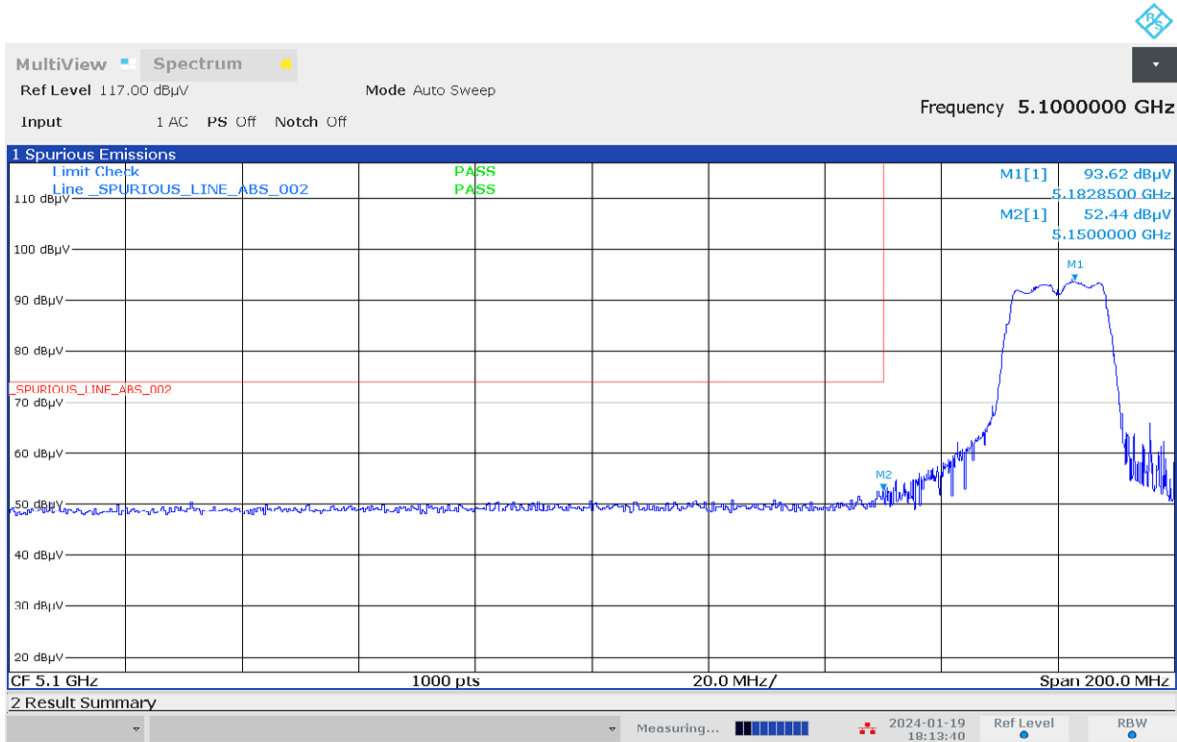
Humidity (%): 69.6
Test Date: Sat, 20 Jan, 2024

Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



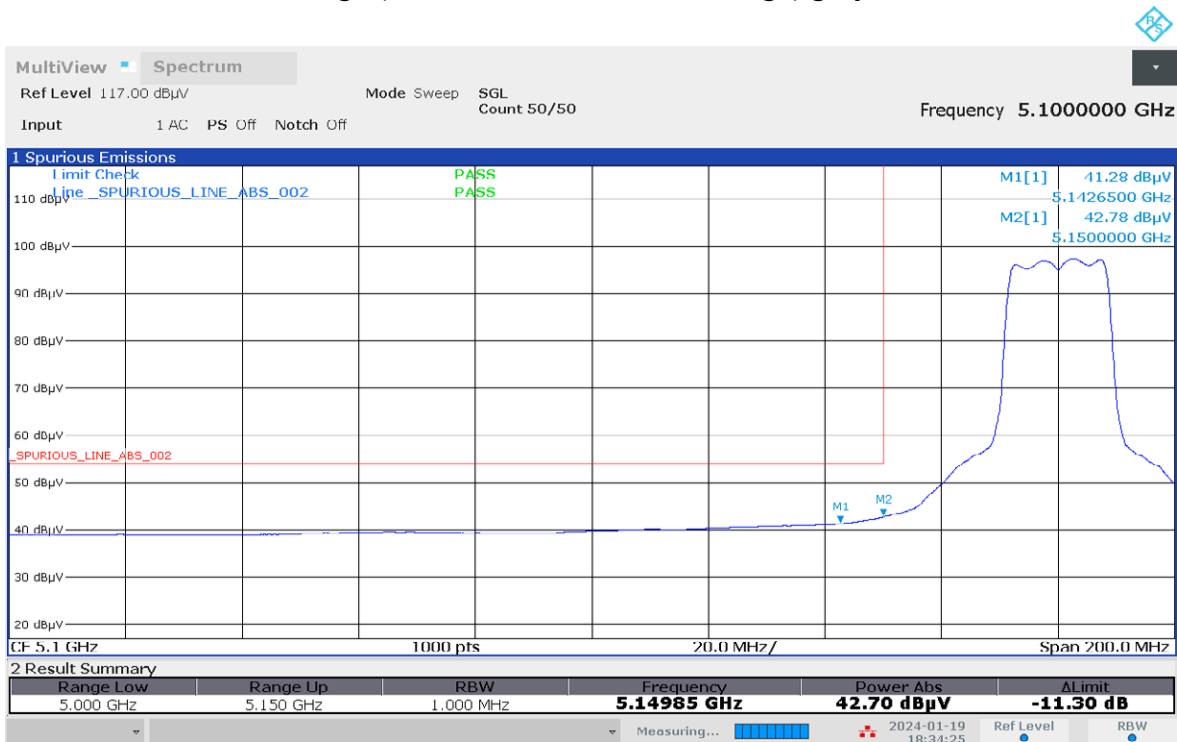
06:10:21 PM 01/19/2024

Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot



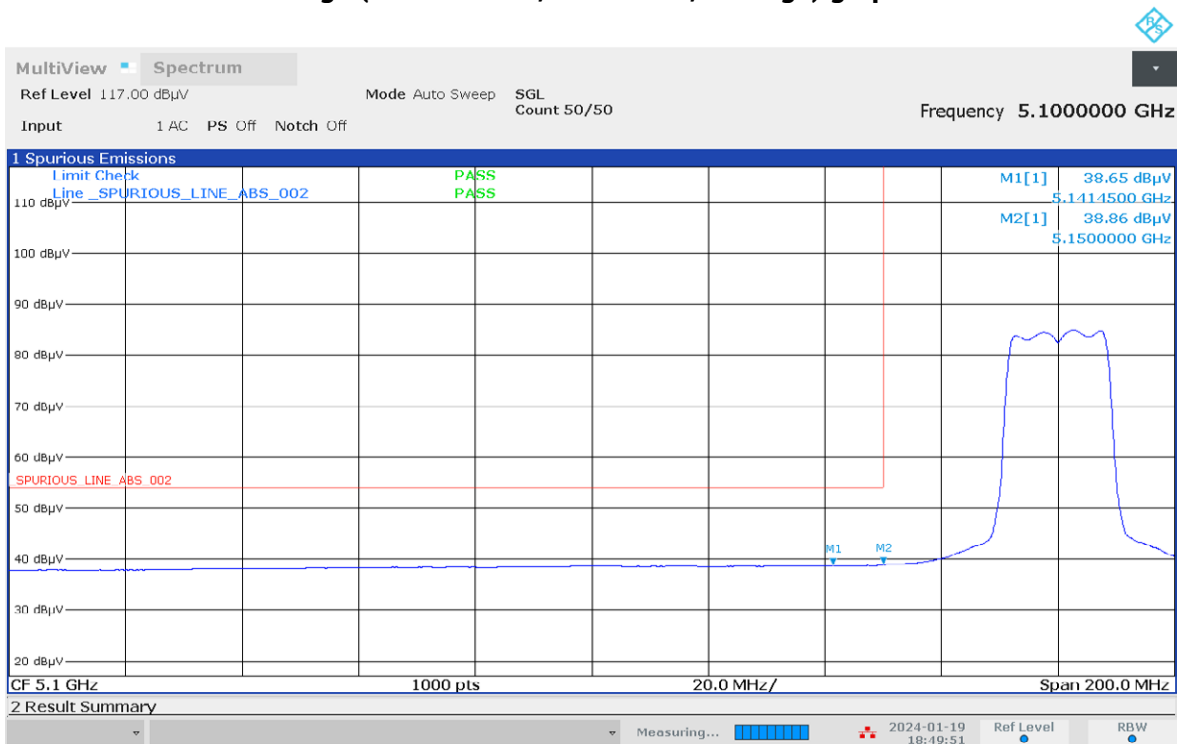
06:13:40 PM 01/19/2024

Restricted Band Edge (Low Channel, Vertical, Average) graphical screen shot



06:34:25 PM 01/19/2024

Restricted Band Edge (Low Channel, Horizontal, Average) graphical screen shot



06:49:51 PM 01/19/2024

Test: WIFI SAC Restricted Band Edge

Model Number: M37TSS9PW1CN S/N: 681IZN6378 EMC SR ID#: 41528-EMC-00030

Battery: NA Softpot power (10.5dBm) Accessory: HMN4079G-CF1, HSN4031B-C3,
HKN4192C-CF4, HKN6164B-C2, HKN6188B-CF3, HKN6172C-C2, PMHN4194D-CF3,
13921-PMUN1057B-1, AS000016A02-CF2, AN000163A01

Test Channel: High Test Frequency: 5320.0000 MHz Test Standard: ANSI C63.10-2013

Worst Case Plane: Y-Plane (802.11a 20MHz)

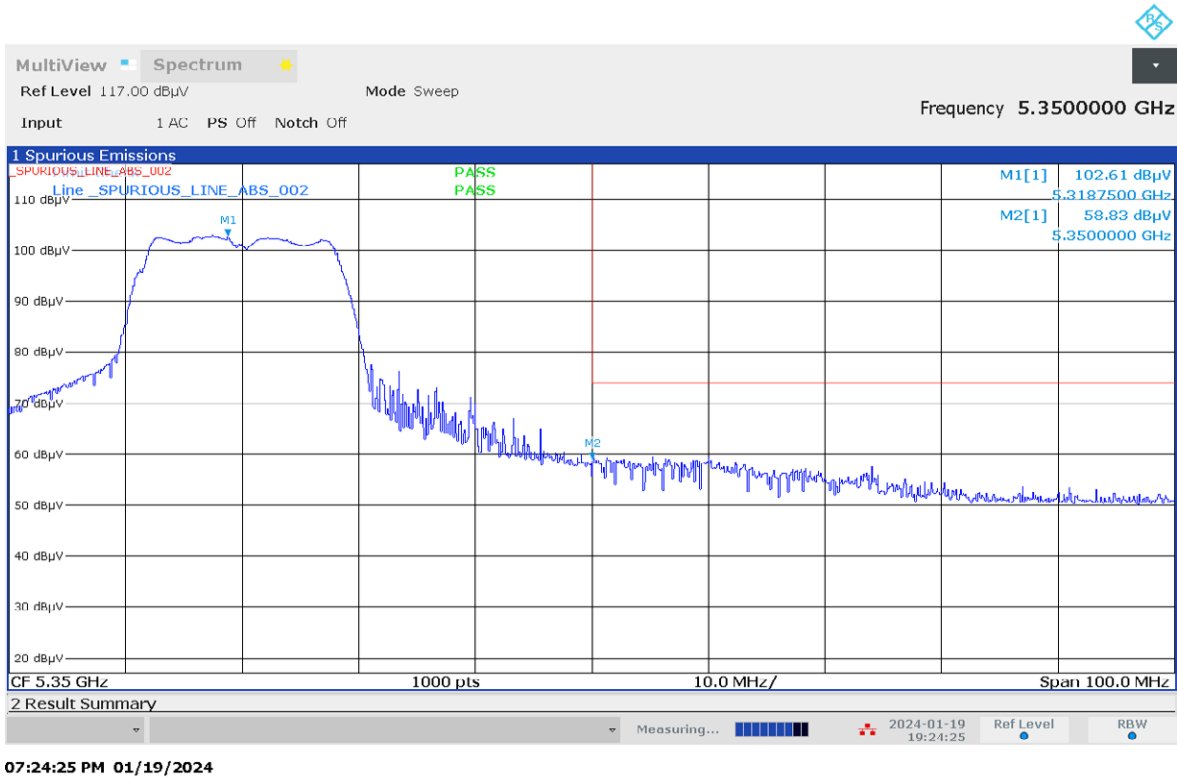
Restricted Band Edge (High Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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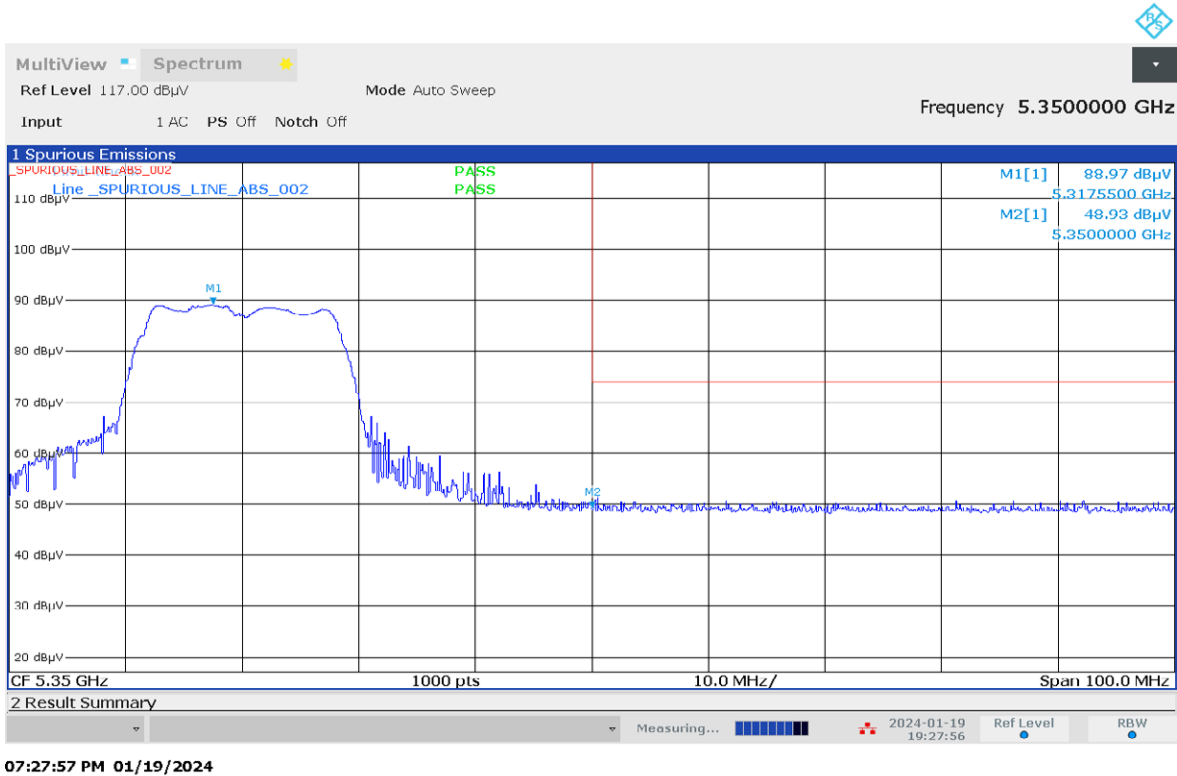
Temperature (degC): 23.4
Test Performed by: Nazrin & Fuad
System MU: 5.84dB

Humidity (%): 69.6
Test Date: Sat, 20 Jan, 2024

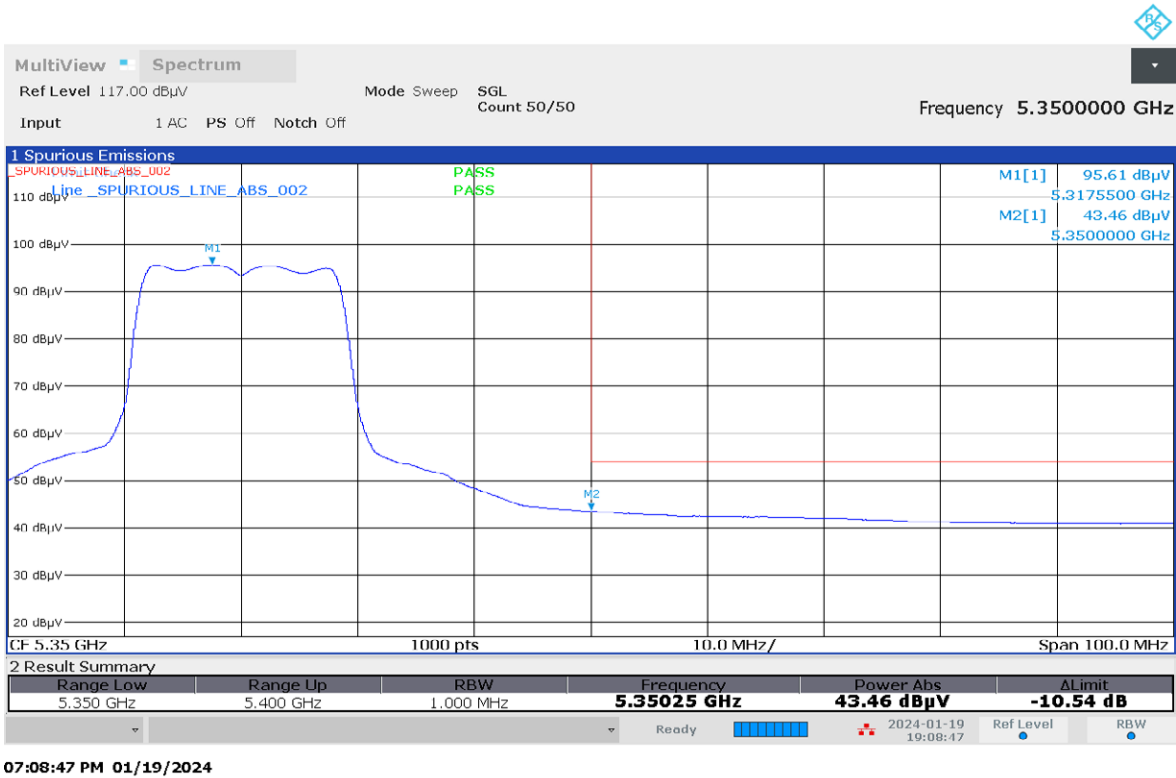
Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



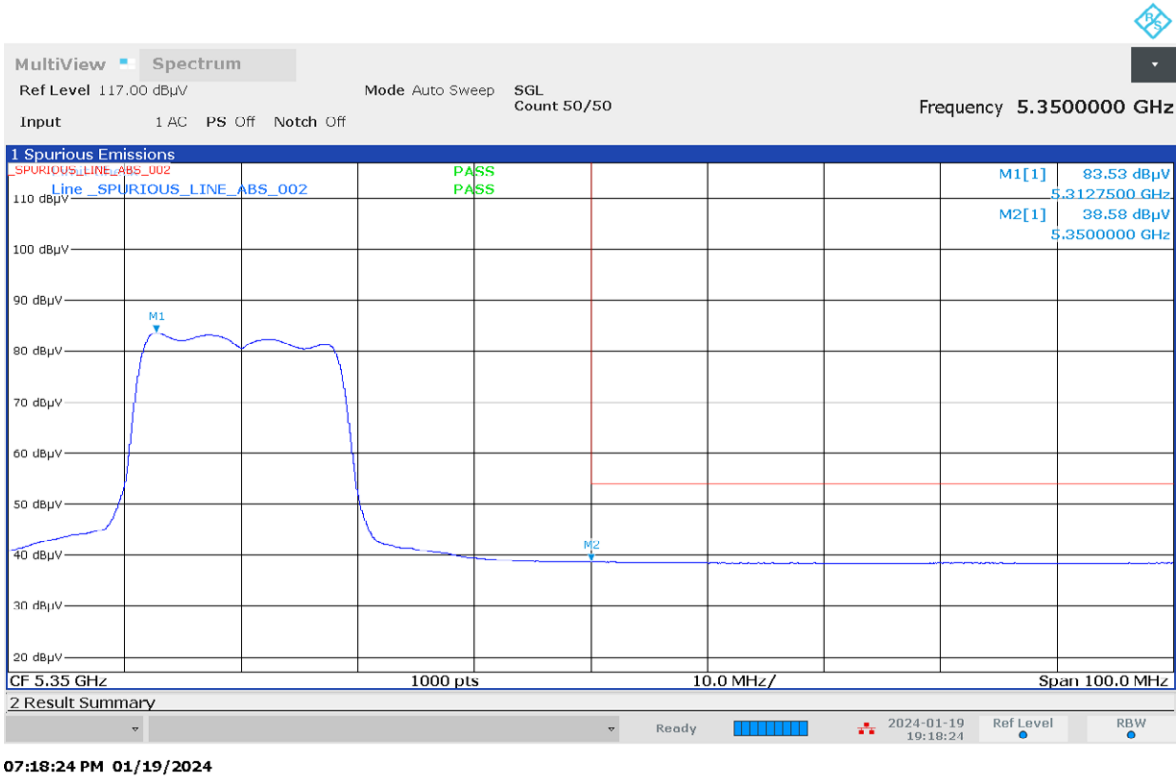
Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



Restricted Band Edge (High Channel, Vertical, Average) graphical screen shot



Restricted Band Edge (High Channel, Horizontal, Average) graphical screen shot

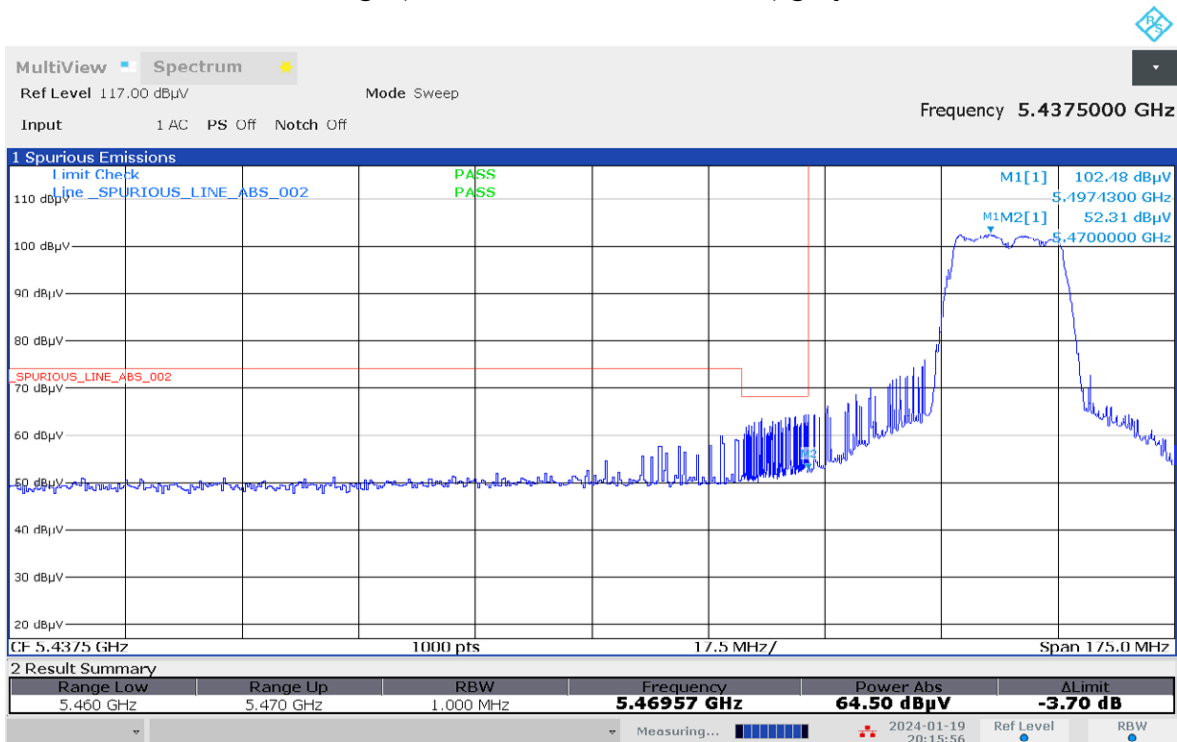


Restricted Band Edge (Low Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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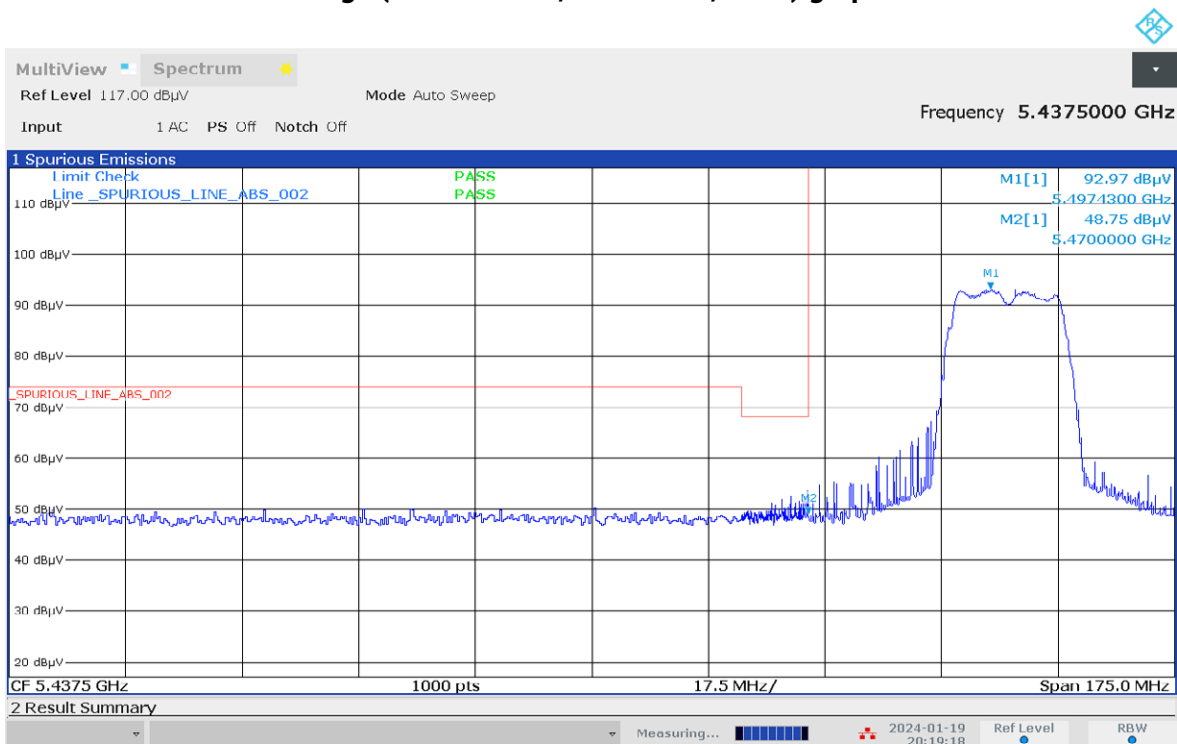
Humidity (%): 69.6
Test Date: Sat, 20 Jan, 2024

Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



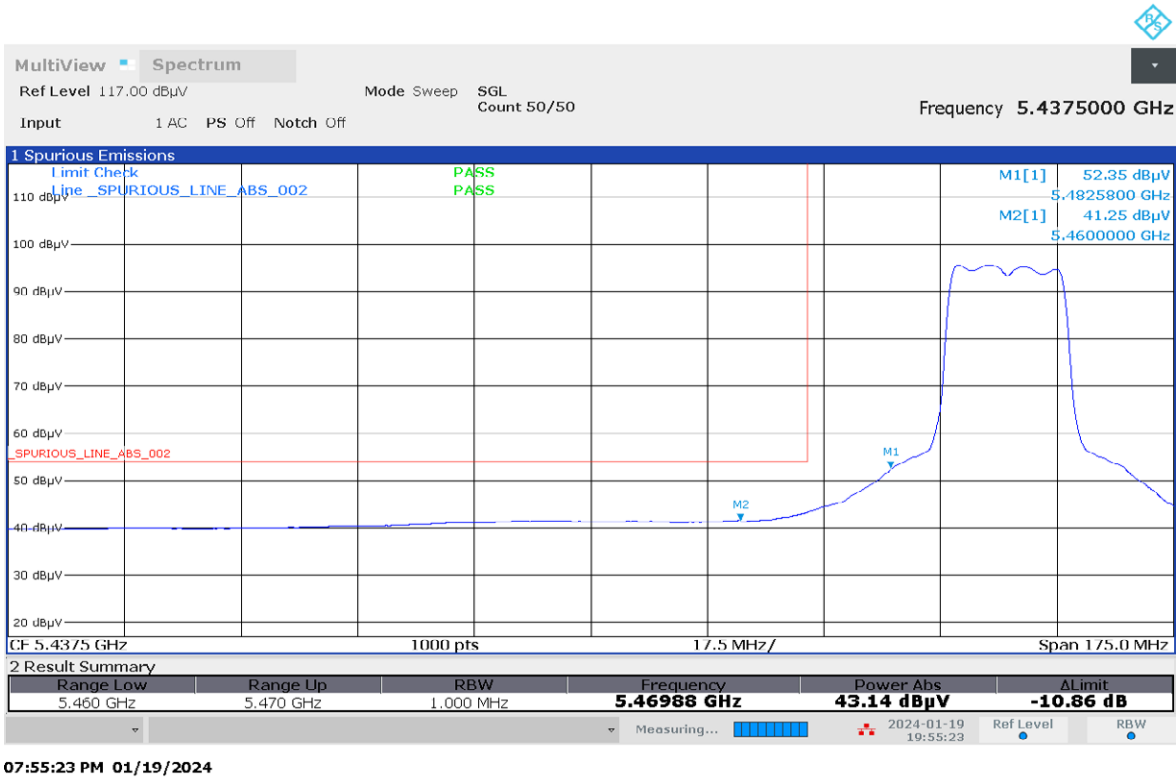
08:15:57 PM 01/19/2024

Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot

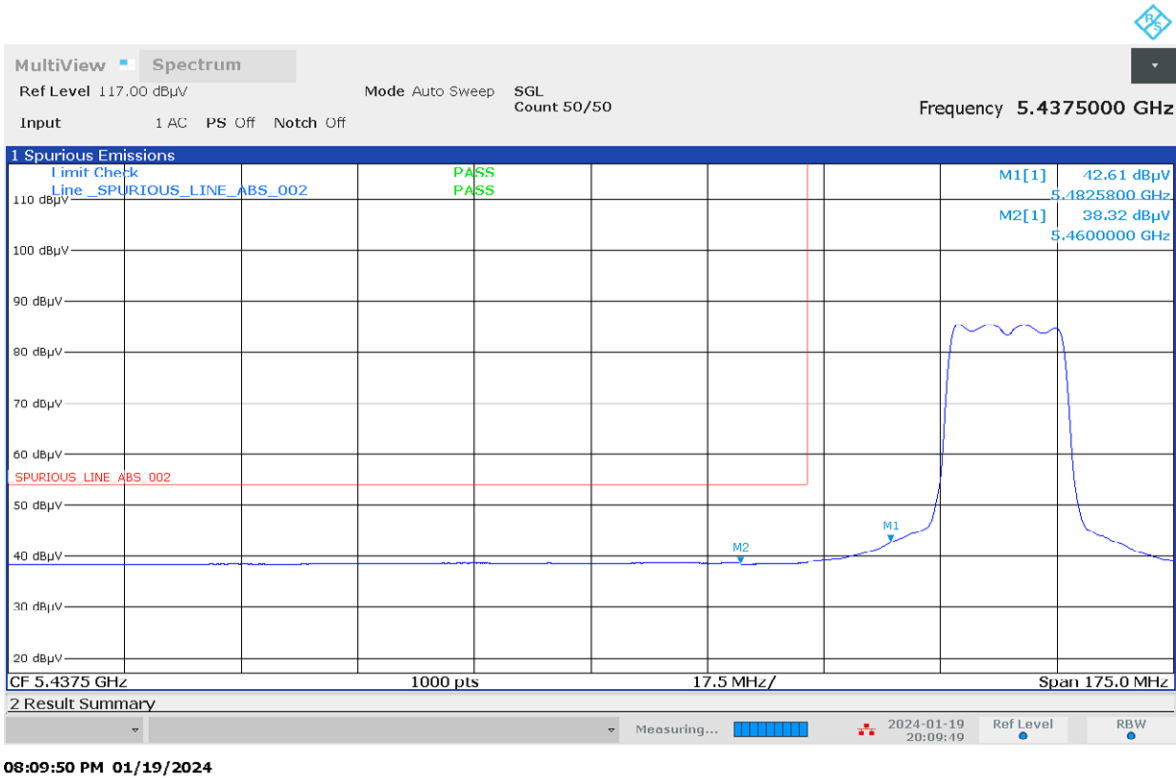


08:19:18 PM 01/19/2024

Restricted Band Edge (Low Channel, Vertical, Average) graphical screen shot



Restricted Band Edge (Low Channel, Horizontal, Average) graphical screen shot



Test: WIFI SAC Restricted Band Edge

Model Number: M37TSS9PW1CN **S/N:** 681IZN6378 **EMC SR ID#:** 41528-EMC-00030

Battery: NA **Softpot power (10.5dBm)** **Accessory:** HMN4079G-CF1, HSN4031B-C3, HKN4192C-CF4, HKN6164B-C2, HKN6188B-CF3, HKN6172C-C2, PMHN4194D-CF3, 13921-PMUN1057B-1, AS000016A02-CF2, AN000163A01

Test Channel: High **Test Frequency:** 5700.0000 MHz **Test Standard:** ANSI C63.10-2013

Worst Case Plane: Y-Plane (802.11a 20MHz)

Restricted Band Edge (High Channel) tabular data

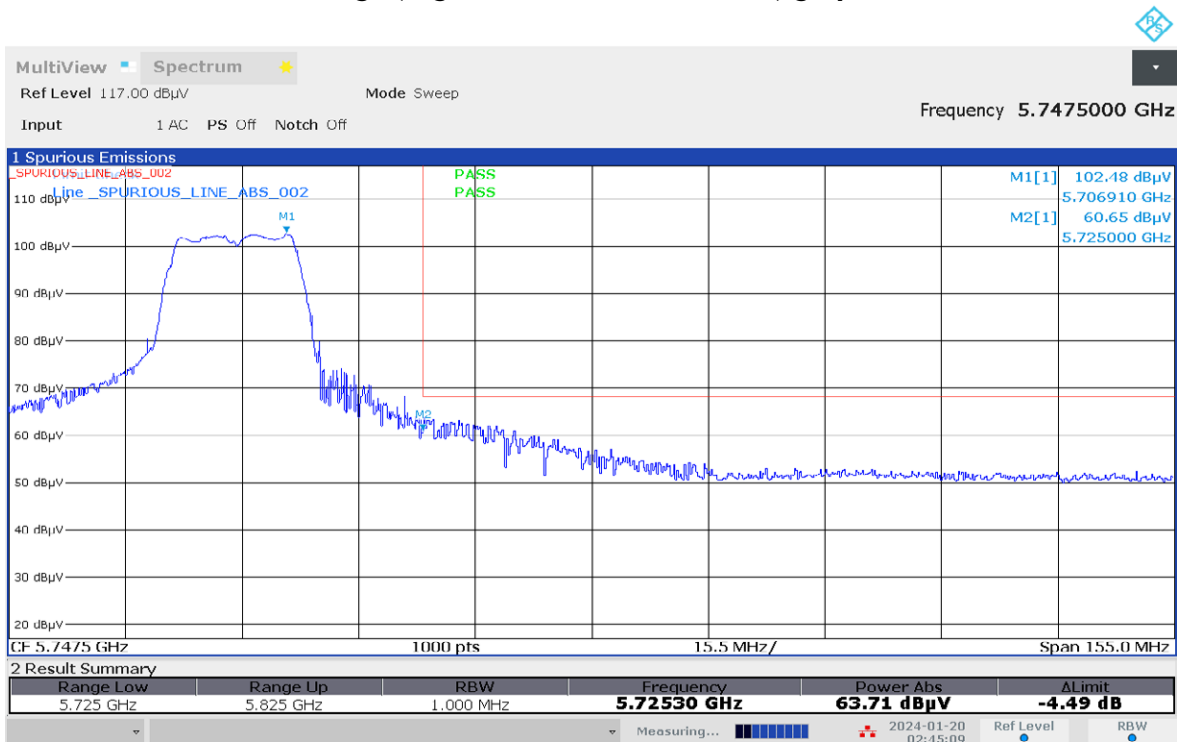
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBμV/m)	Spur level PK (dBμV/m)	Spur level AV (dBμV/m)	Limit QPK (dBμV/m)	Limit PK (dBμV/m)	Limit AV (dBμV/m)	Margin QPK (dBμV/m)	Margin PK (dBμV/m)	Margin AV (dBμV/m)	Carrier PK Power (dBμV/m)
5725.0000	-	60.6455	-	-	68.2000	-	-	7.5545	-	-
5725.3000	-	63.7123	-	-	68.2000	-	-	4.4877	-	-
5736.3000	-	59.1932	-	-	68.2000	-	-	9.0068	-	-
5737.3000	-	60.9040	-	-	68.2000	-	-	7.2960	-	-
5738.1000	-	59.1463	-	-	68.2000	-	-	9.0537	-	-
5739.3000	-	59.1724	-	-	68.2000	-	-	9.0276	-	-
5739.9000	-	59.7316	-	-	68.2000	-	-	8.4684	-	-
5740.5000	-	59.5735	-	-	68.2000	-	-	8.6265	-	-
5741.1000	-	58.4439	-	-	68.2000	-	-	9.7561	-	-
5742.5000	-	59.0049	-	-	68.2000	-	-	9.1951	-	-
5743.1000	-	59.0205	-	-	68.2000	-	-	9.1795	-	-
Horizontal Radiated Emission Result										
5725.0000	-	52.1828	-	-	68.2000	-	-	16.0172	-	-

Remarks: Pass Result	Marginal Result	Fail Result
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Temperature (degC): 23.4
Test Performed by: Nazrin & Fuad
System MU: 5.84dB

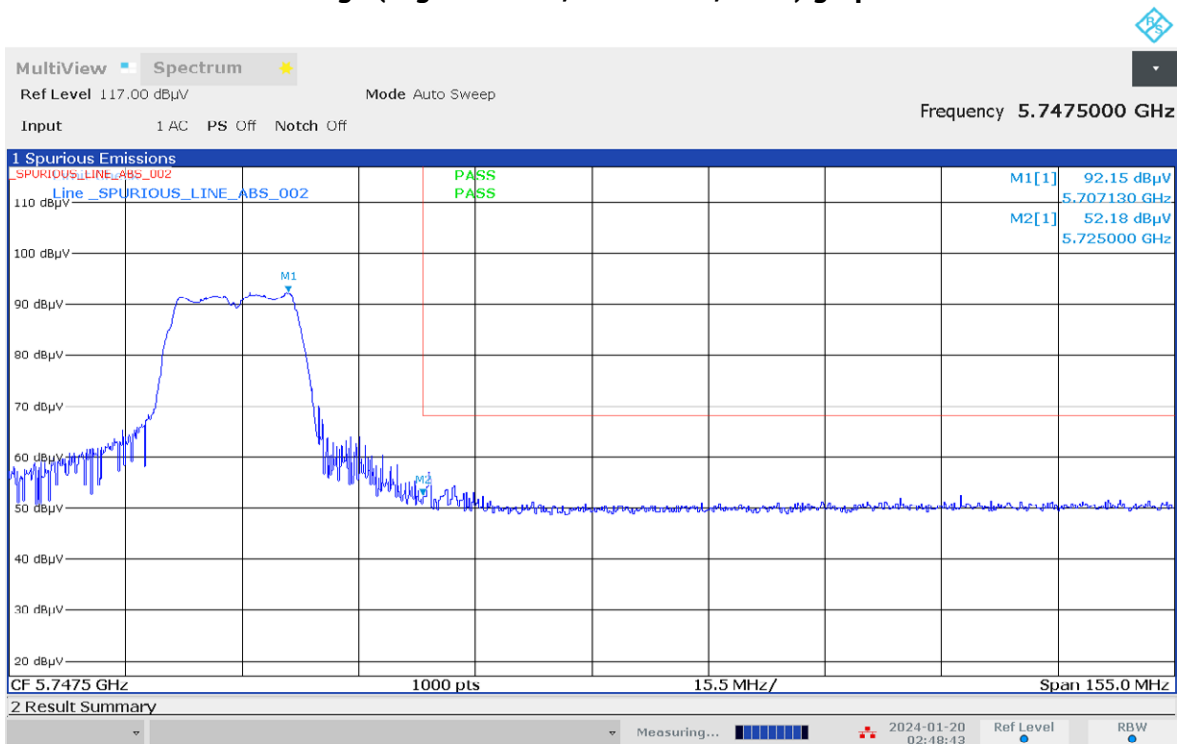
Humidity (%): 69.6
Test Date: Sat, 20 Jan, 2024

Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



02:45:09 AM 01/20/2024

Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



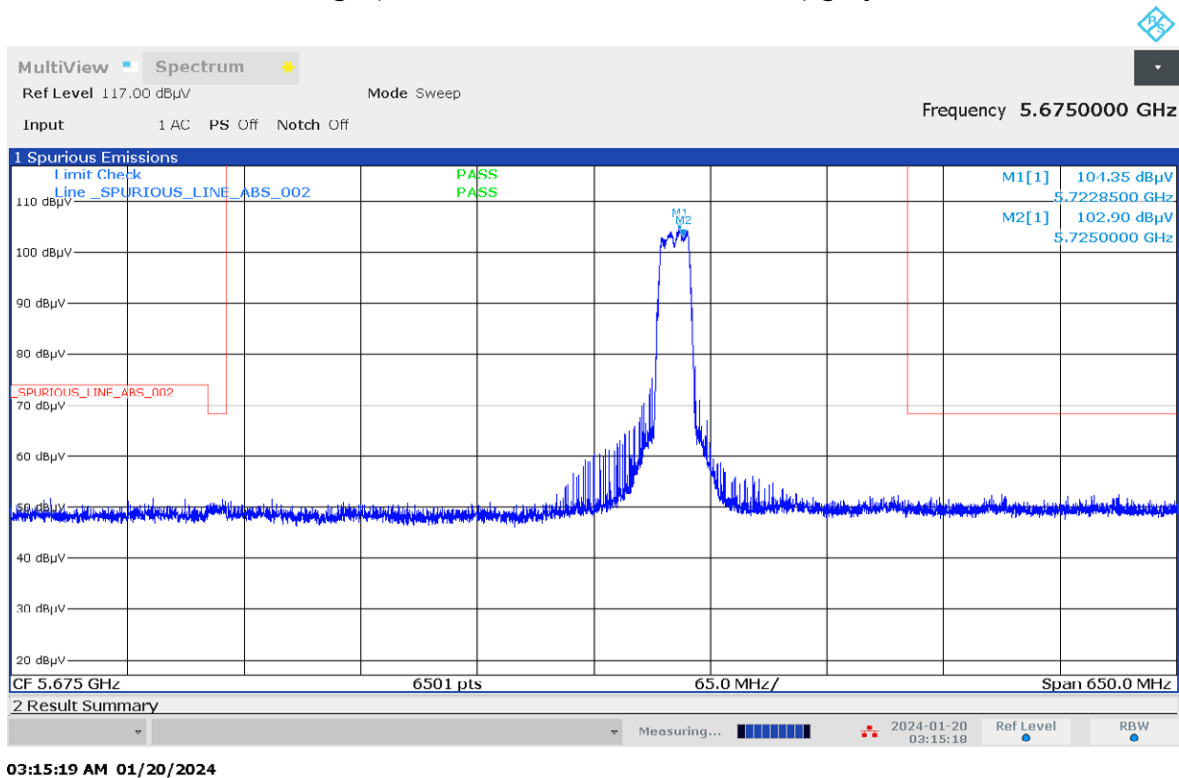
02:48:44 AM 01/20/2024

Test Channel: Straddle **Test Frequency: 5720.0000 MHz** **Test Standard: ANSI C63.10-2013**
Worst Case Plane: Y-Plane (802.11a 20MHz)

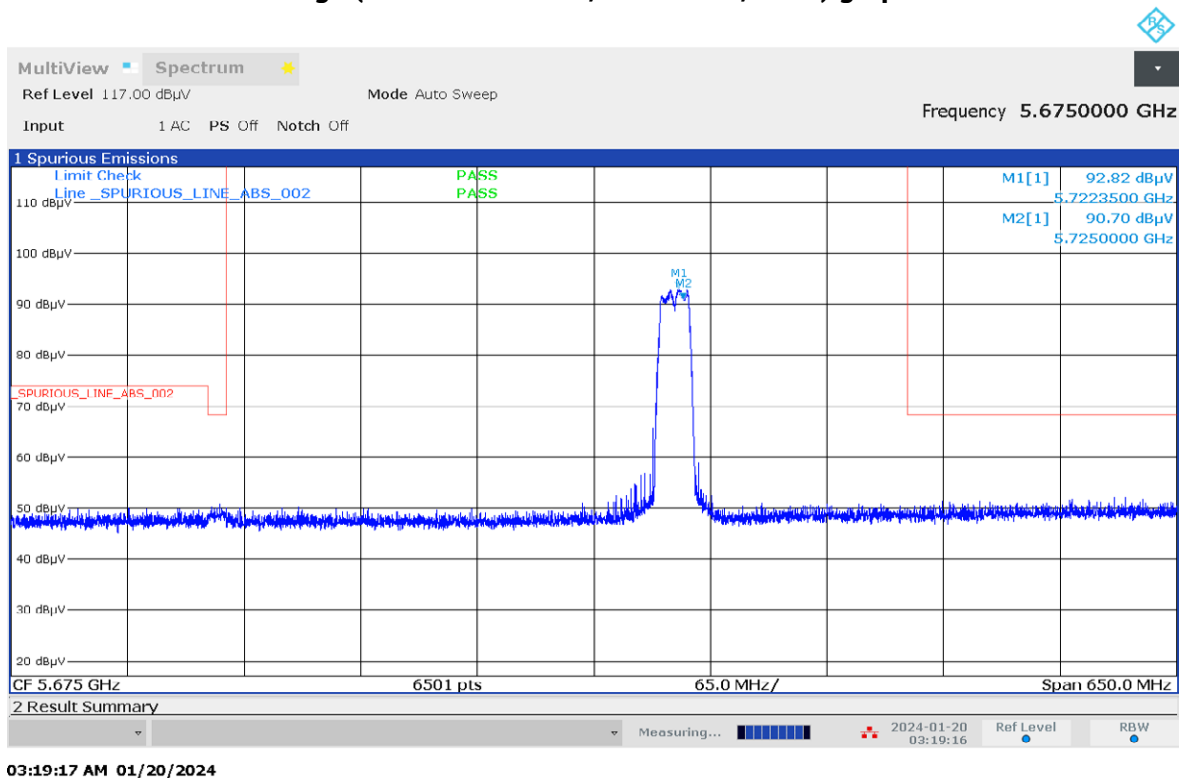
Remarks: Pass Result	Marginal Result	Fail Result
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Humidity (%): 69.6
Test Date: Sat, 20 Jan, 2024

Restricted Band Edge (Straddle Channel, Vertical, Peak) graphical screen shot



Restricted Band Edge (Straddle Channel, Horizontal, Peak) graphical screen shot

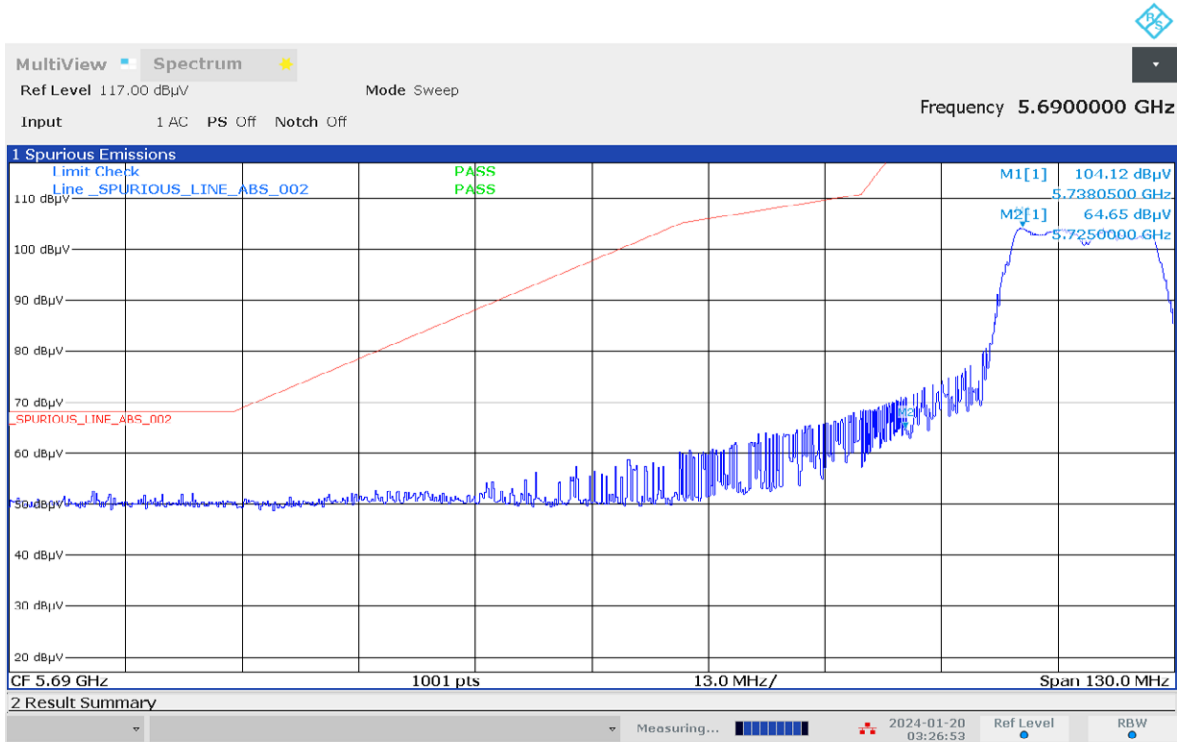


Restricted Band Edge (Low Channel) tabular data

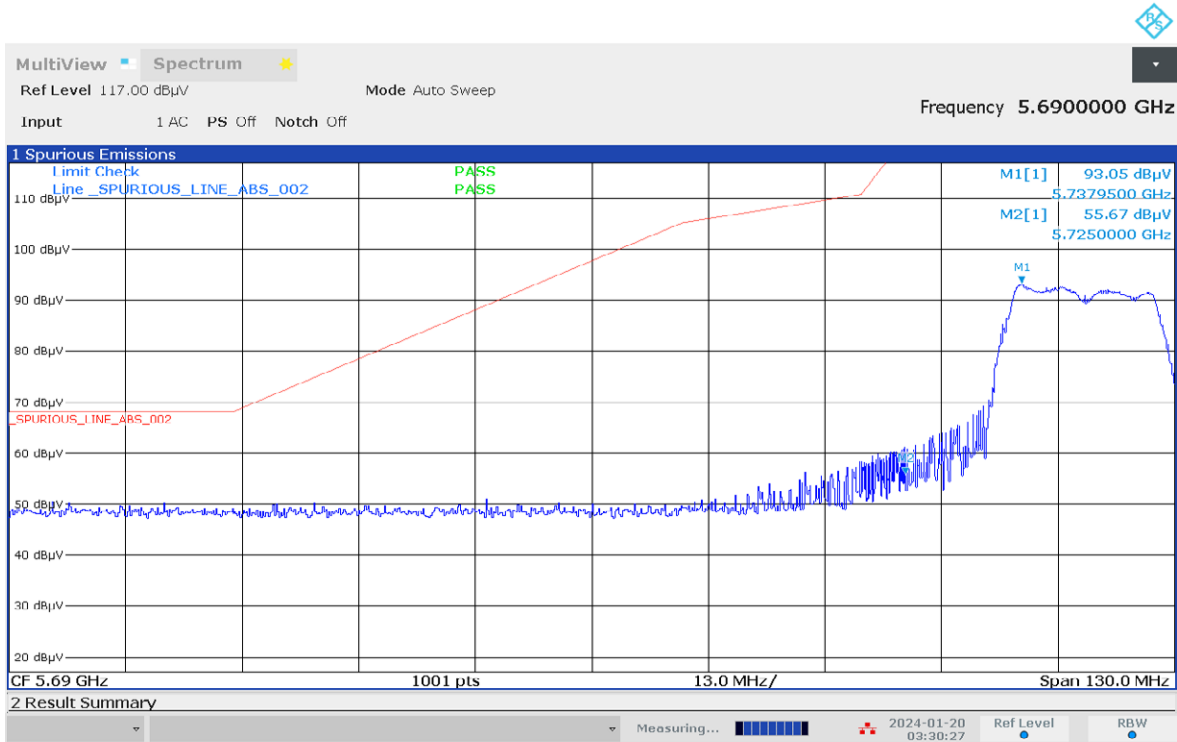
Remarks: Pass Result	Marginal Result	Fail Result
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Humidity (%): 69.6
Test Date: Sat, 20 Jan, 2024

Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot

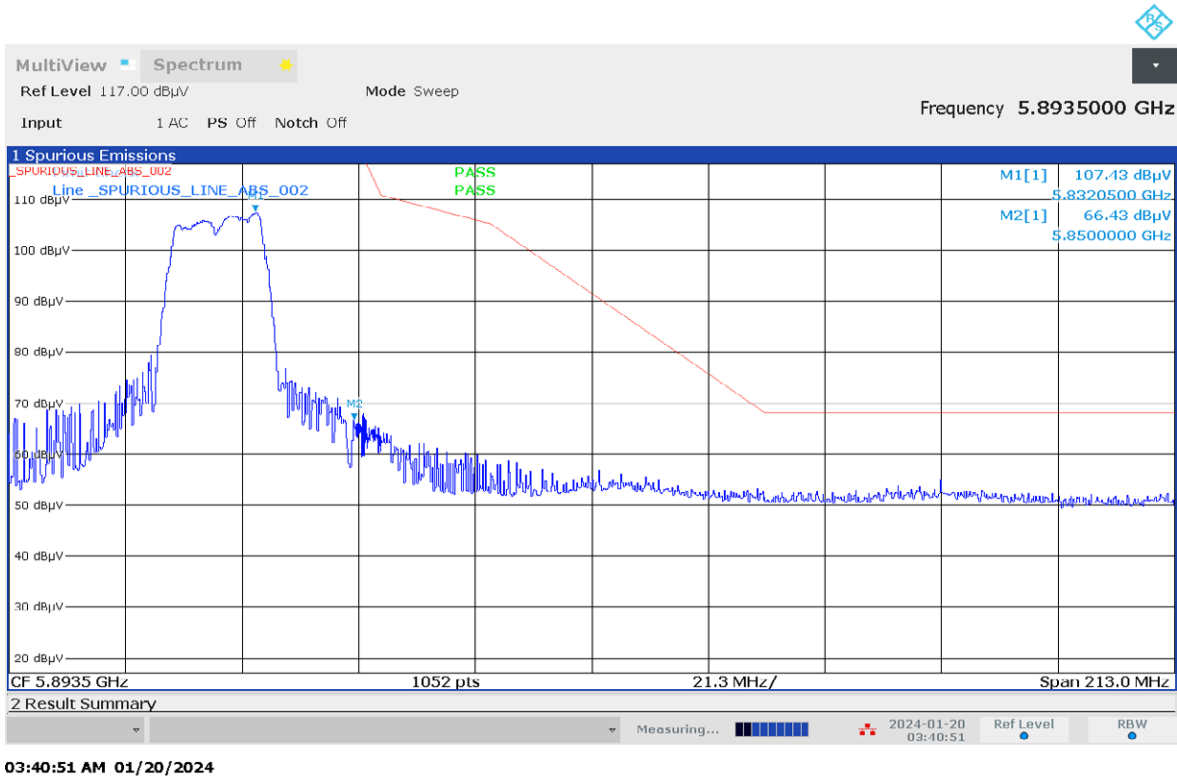


Restricted Band Edge (High Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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Humidity (%): 69.6
Test Date: Sat, 20 Jan, 2024

Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot

