

 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.C																												
<table><tr><td>Date/s Tested</td><td>: 09-Aug-2023 - 16-Sep-2023</td></tr><tr><td>Manufacturer/Location</td><td>: Motorola Solutions Penang SDN BHD</td></tr><tr><td>Manufacturer Address</td><td>: Plot 2A Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia</td></tr><tr><td>Requestor</td><td>: HOMICIL HARLY</td></tr><tr><td>Product Type</td><td>: Portable</td></tr><tr><td>Product Version (PMN)</td><td>: APX N50</td></tr><tr><td>Model Number (HVIN)</td><td>: H25XDF9PW6AN</td></tr><tr><td>Frequency Band</td><td>: 5180-5825 MHz</td></tr><tr><td>Firmware Version (FVIN)</td><td>: L06221125</td></tr><tr><td>Applicant Name</td><td>: Motorola Solutions Inc</td></tr><tr><td>Applicant Address</td><td>: 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322</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 in accordance to the requirement listed below: <table><tr><td>(5GHz Wi-Fi) FCC 47 CFR Part 15 Subpart E ISED RSS 247 Issue 2 February 2017</td><td>PASS</td></tr></table>		Date/s Tested	: 09-Aug-2023 - 16-Sep-2023	Manufacturer/Location	: Motorola Solutions Penang SDN BHD	Manufacturer Address	: Plot 2A Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia	Requestor	: HOMICIL HARLY	Product Type	: Portable	Product Version (PMN)	: APX N50	Model Number (HVIN)	: H25XDF9PW6AN	Frequency Band	: 5180-5825 MHz	Firmware Version (FVIN)	: L06221125	Applicant Name	: Motorola Solutions Inc	Applicant Address	: 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322	FCC Registrations	: 461337	ISED Registrations	: MY0001	(5GHz Wi-Fi) FCC 47 CFR Part 15 Subpart E ISED RSS 247 Issue 2 February 2017	PASS
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Prepared By: <i>hidayati</i> SITI NUR HIDAYATI BINTI ABDUL HALIM Technician	Approved Signatory: <i>CK</i> VINCENT FOONG CHUEN KIT Responsible Engineer																												

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Revision History	Description	Date	Originator
Rev. A	Initial Report	18-Oct-2023	Hidayati
Rev. B	Update for change in ant gain	6-Nov-2023	Vincent
Rev. C	Update the description of test modes table	19-Dec-2023	Hidayati

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: 14.41dBm (27.61mW) 802.11n20/ac20: 13.178dBm (20.79mW)	657BWT0127	Hidayati
15.407(a) (1/2/3)	RSS 247 6.2	Maximum Power Spectral Density	Pass	NA	657BWT0127	Hidayati
15.407 (e)	RSS 247 6.2.4	6dB Bandwidth	Pass	Worst case emission: a20: 17.005MHz (17M0D1D) n20/ac20: 17.837MHz (17M8D1D)	657BWT0127	Hidayati
15.407 (g)	RSS Gen 6.11	Frequency Stability	Pass	NA	657BWT0127	Hidayati
15.407 (b) (1/2/3/4/6)	RSS 247 6.2	Band Edge Radiated Spurious Emission Measurement	Pass	Worst case emission: 67.4251 dBuV/m (margin: 6.5749 dB)	287TZP0060	Haikal & Rezza
15.407 (b) (1/2/3/4/6)	RSS 247 6.2	Radiated Spurious Emission Measurement	Pass	Worst case emission: 67.2739 dBuV/m (margin: 0.9261 dB) Noise floor	287TZP0060	Haikal & Rezza
15.207 15.407 (b)(6)	RSS Gen 8.8	AC Powerline Conducted Emission	Pass	NA	287TZP0060	Shidee
15.203	-	Antenna requirement	Pass	Internal antenna is not accessible to the end-user	NA	NA

2.0 Measurement Uncertainty

Measurement	Frequency	Expended Uncertainty (k=1.96) (±dB)
AC Power Line Conducted Spurious Emission	150KHz ~ 30MHz	3.48
Radiated Emissions up to 1 GHz	30MHz ~ 1000MHz	5.88
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.84
	18GHz ~ 40GHz	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	18-Jul-23	18-Jul-24
POWER SUPPLY	6652A	3640A02967	19-Oct-22	19-Oct-23
SPECTRUM ANALYZER	E4440A	MY46185415	27-Dec-22	27-Dec-23

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	6033A	3211A06649	12-Jun-22	12-Jun-24
SIGNAL GENERATOR	SMB 100A	182511	4-Jun-21	4-Jun-24
EMI TEST RECEIVER	ESW44	101731	11-Aug-23	11-Aug-24
5m SEMI-ANECHOIC CHAMBER	S800-HX	J2308	No Cal. Req'd	No Cal. Req'd
BILOG ANTENNA	CBL6112D	30991	5-Jan-23	5-Jan-24
BILOG ANTENNA	CBL6112D	55546	23-Jun-22	23-Dec-23
DATA LOGGER THERMOHYGROMETER	SDL500	A.016800	21-Jun-23	21-Jun-24
SYSTEM CONTROLLER	SC104V	050806-1	No Cal. Req'd	No Cal. Req'd
TURNTABLE FLUSH MOUNT 2M	FM2011	NA	No Cal. Req'd	No Cal. Req'd
ANTENNA POSITIONING TOWER	TLT2	NA	No Cal. Req'd	No Cal. Req'd
BROAD-BAND HORN ANTENNA	BBHA9170	BBHA9170255	22-Feb-23	22-Feb-24
PREAMPLIFIER 18-40GHz	Miteq Hi Gain Sucoflex	002	No Cal. Req'd	No Cal. Req'd
PREAMPLIFIER	PAM-0118P	269	28-Mar-23	28-Mar-24
LOOP ANTENNA	6502	00208416	12-Oct-22	12-Oct-23

AC Powerline Station (SW Version: EMC32 Ver. 10.60.10)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
DATA LOGGER	DSB	16344143	21-Jun-2023	23-Jun-2024
V-NETWORK 2-LINE	ENV216	101268	15-Nov-2022	15-Nov-2023
EMI TEST RECEIVER	ESCI	100225	9-Nov-2022	9-Nov-2023
PROGRAMMABLE AC SOURCE	61604	616040003502	12-Dec-2022	12-Dec-2023

4.0 General Information

General Description of EUT:

Product	Hand-held
Brand	Motorola Solutions
Test Model	APX N50
Power Supply Rating	7.5Vdc
Mode of operation	WLAN 5GHz
Modulation Type	BPSK, QPSK, 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 (26EBW or 99% OBW)	28.18 mW for 5.180 ~ 5.240 GHz 28.18 mW for 5.260 ~ 5.320 GHz 28.18 mW for 5.50 ~ 5.720 GHz 22.39 mW for 5.745 ~ 5.825 GHz
Antenna Type	Wifi Antenna (5.150-5.850 GHz) UNII-1/UNII-2A/UNII-2C/UNII-3 5.150-5.850 GHz
SW Version	SHWY05

The EUT contains following accessory devices and data cable:

Item	Brand	Model or P/N
BATT LIION IMPRES 2 IP68 2850T	MOTOROLA	PMNN4813A
UHF Whip Antenna (380 – 520 MHz) 380-520MHz	MOTOROLA	AN000452A01
CHGR DEKSTOP MULTI UNIT IMPRES 2 1 DISPLAYS BASE ONLY	MOTOROLA	PMPN4593A
CHGR DEKSTOP SINGLE UNIT IMPRES 2 BASE ONLY	MOTOROLA	PMPN4819A
CGAI mini programming cable and test cable, non-DIV1	MOTOROLA	PMKN4231A

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

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

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

For 5745 to 5825 MHz:

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

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

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

662911 D01 Multiple Transmitter Output v02r01

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.

5.0 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
-	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
-	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
-	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

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
-	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
-	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
-	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

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	25°C, 50% RH	7.5V DC	Haikal/Rezza
RE<1G	25°C, 50% RH	7.5V DC	Haikal/Rezza
PLC	22.4°C, 68.6% RH	120V AC, 240V AC	Shideeee
APCM	25°C, 50% RH	7.5V DC	Hidayati

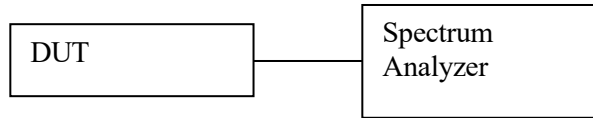
Duty Cycle of Test Signal

802.11a, 802.11n (HT20): Duty cycle of test signal is 99%.

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

6.0 Duty Cycle of Test Signal

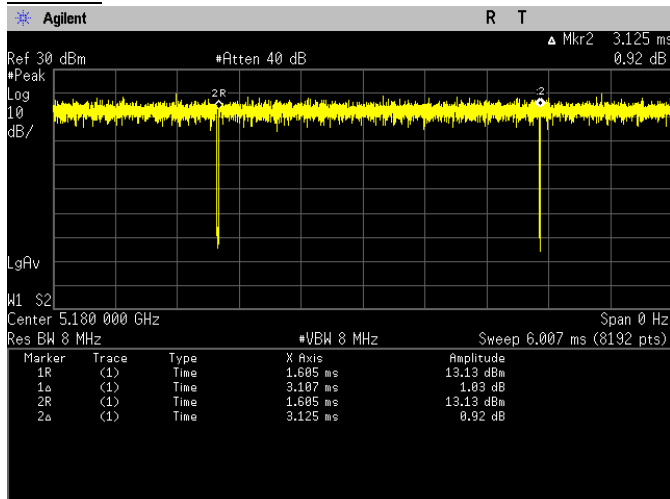
6.0.1. Test Setup



- 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 ≥ 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.

6.0.2. Test Data

802.11a

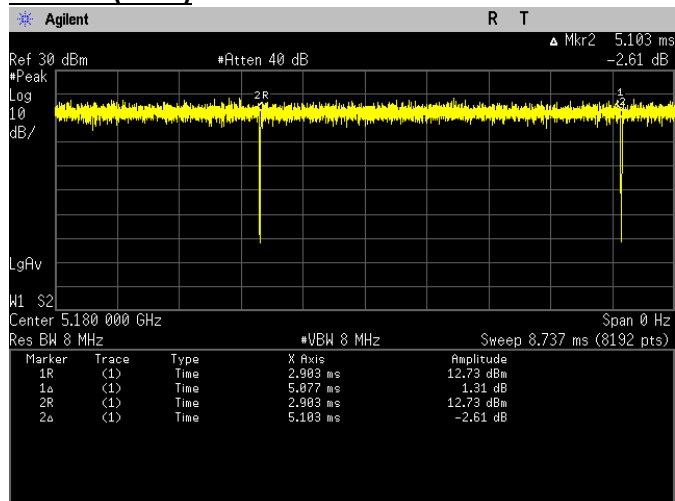


On time	3.107	ms
On + off time	3.125	ms
Duty Cycle	0.9942	
Duty Cycle Factor	0.025	

*Duty cycle = On time/ On +off time

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

802.11n (HT20)



On time	5.077	ms
On + off time	5.103	ms
Duty Cycle	0.9949	
Duty Cycle Factor	0.022	

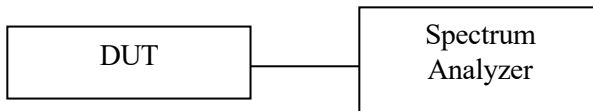
*Duty cycle = On time/ On +off time

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

7.0 Transmitter Test Parameters

7.1. Bandwidth measurements

7.1.1. 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 $\geq 3 \cdot$ 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).

7.1.2. Test Limits

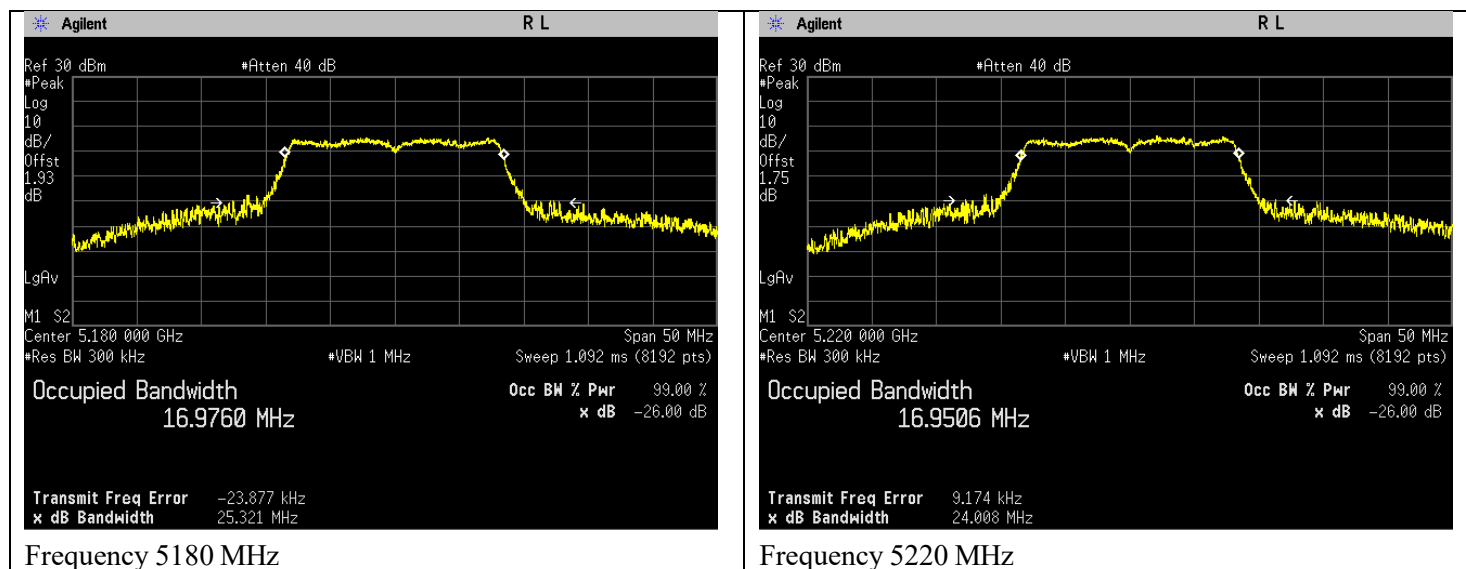
Not applicable.

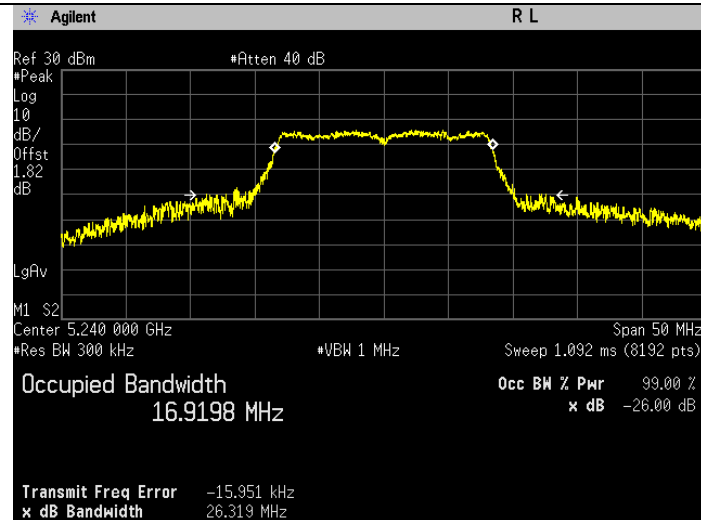
7.1.3. Test Data

802.11a

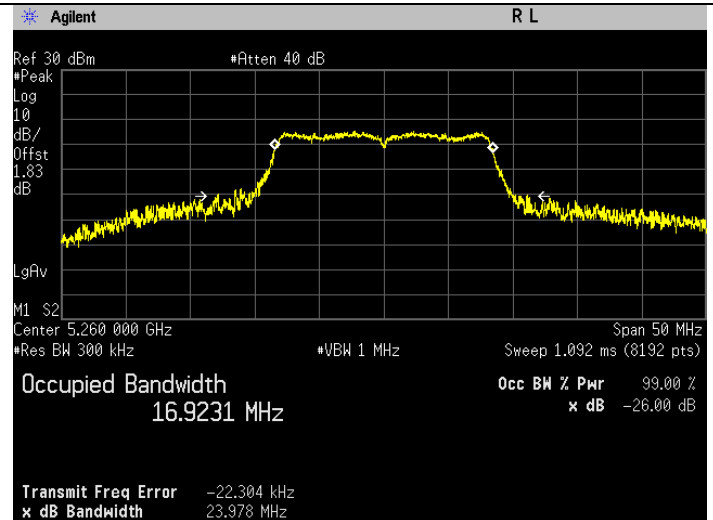
Frequency (MHz)	Test Configuration	Results			
		26 dB Bandwidth(MHz)	Status	99% Bandwidth(MHz)	Status
5180	Mod Type: BPSK, Data Rate: 6	25.321	Pass	16.976	Pass
5220	Mod Type: BPSK, Data Rate: 6	24.008	Pass	16.950	Pass
5240	Mod Type: BPSK, Data Rate: 6	26.319	Pass	16.920	Pass
5260	Mod Type: BPSK, Data Rate: 6	23.978	Pass	16.923	Pass
5300	Mod Type: BPSK, Data Rate: 6	22.489	Pass	16.964	Pass
5320	Mod Type: BPSK, Data Rate: 6	19.971	Pass	16.882	Pass
5500	Mod Type: BPSK, Data Rate: 6	19.995	Pass	16.815	Pass
5580	Mod Type: BPSK, Data Rate: 6	26.807	Pass	17.005	Pass
5700	Mod Type: BPSK, Data Rate: 6	20.022	Pass	16.854	Pass
5720	Mod Type: BPSK, Data Rate: 6, UNII-2C	16.101	Pass	13.469	Pass
5720	Mod Type: BPSK, Data Rate: 6, UNII-3	6.101	Pass	3.469	Pass
5745	Mod Type: BPSK, Data Rate: 6	23.862	Pass	16.952	Pass
5785	Mod Type: BPSK, Data Rate: 6	26.752	Pass	16.948	Pass
5825	Mod Type: BPSK, Data Rate: 6	26.958	Pass	16.929	Pass

26 dB Bandwidth/ 99% Bandwidth

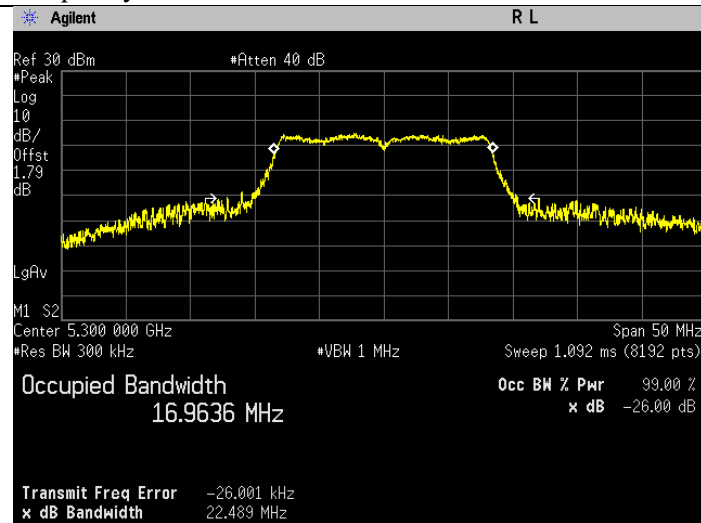




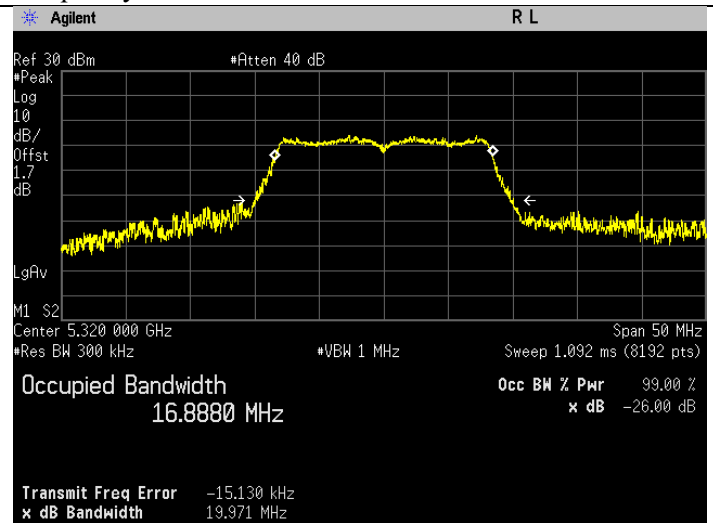
Frequency 5240 MHz



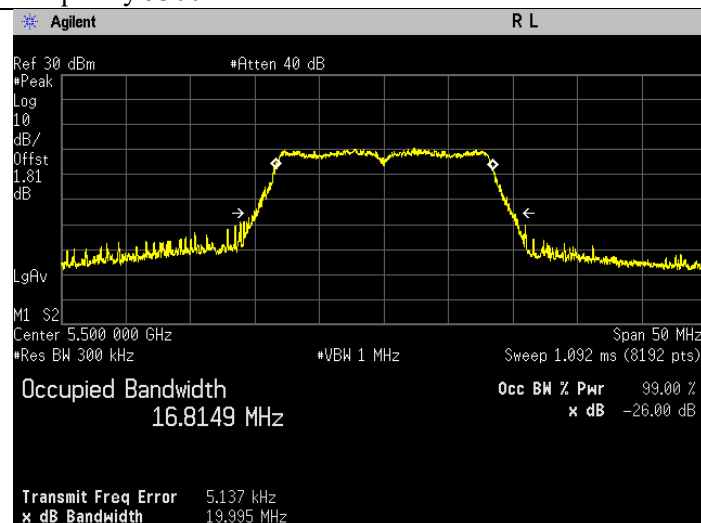
Frequency 5260 MHz



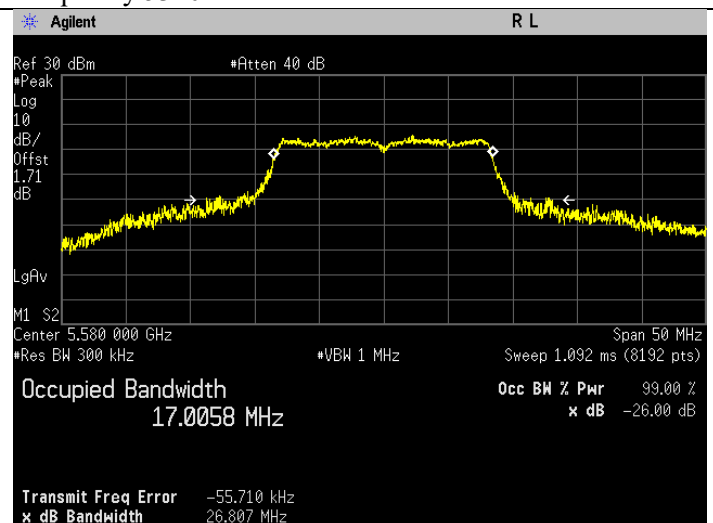
Frequency 5300 MHz



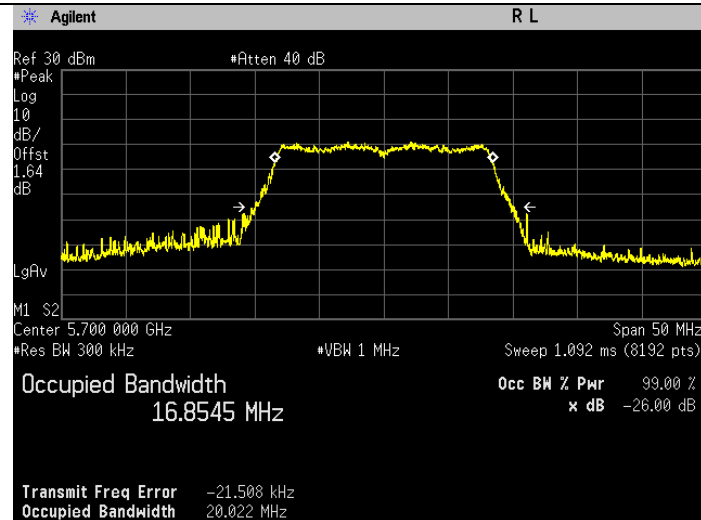
Frequency 5320 MHz



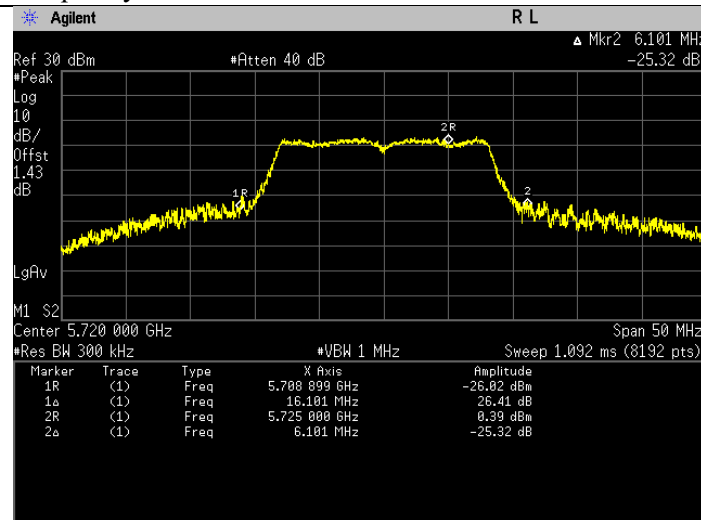
Frequency 5500 MHz



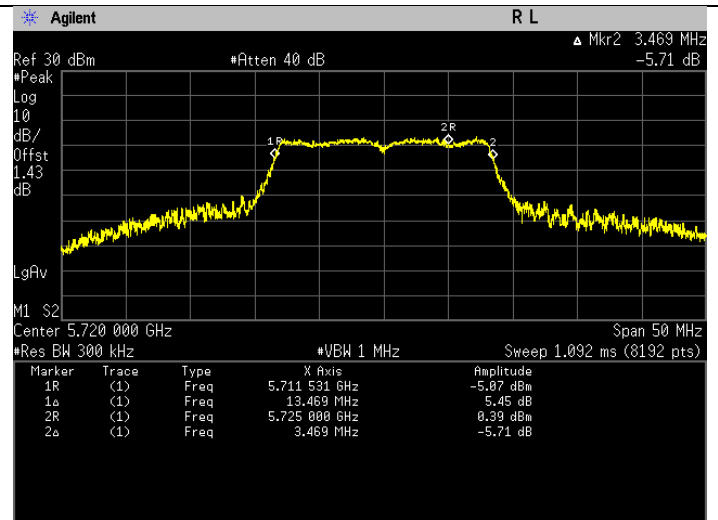
Frequency 5580 MHz



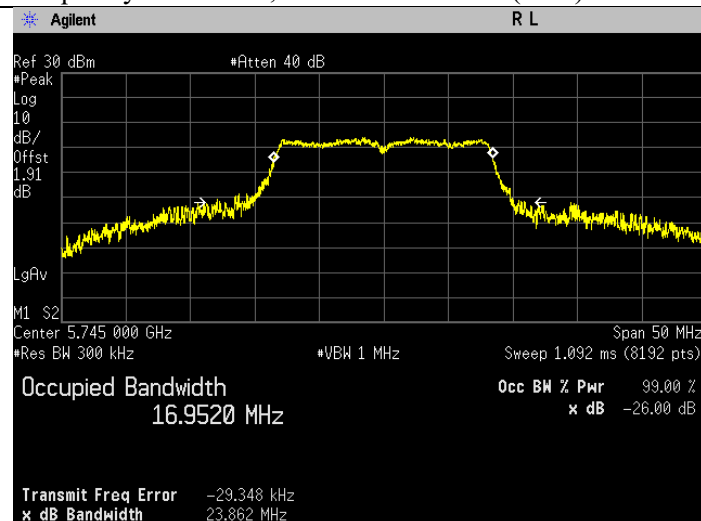
Frequency 5700 MHz



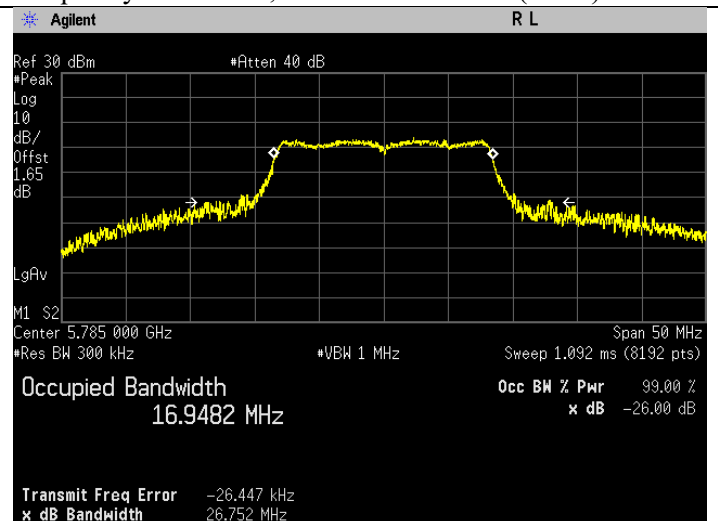
Frequency 5720 MHz, UNII-2C & UNII-3(FCC)



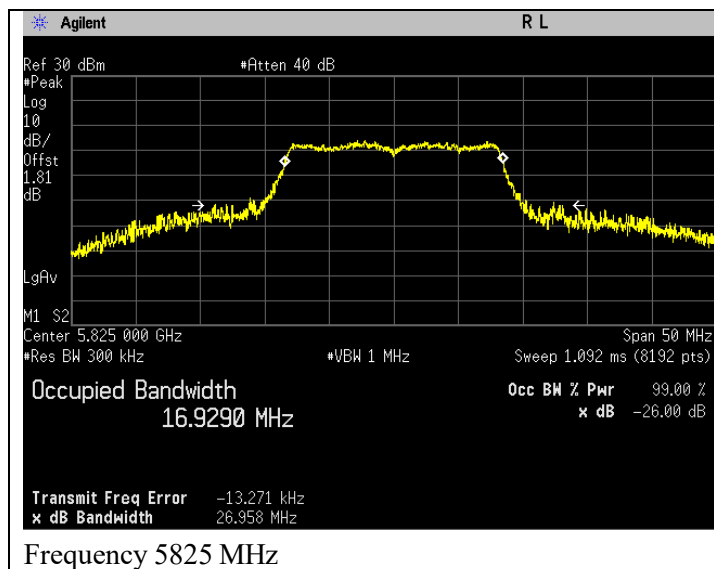
Frequency 5720 MHz, UNII-2C & UNII-3 (ISED)



Frequency 5745 MHz



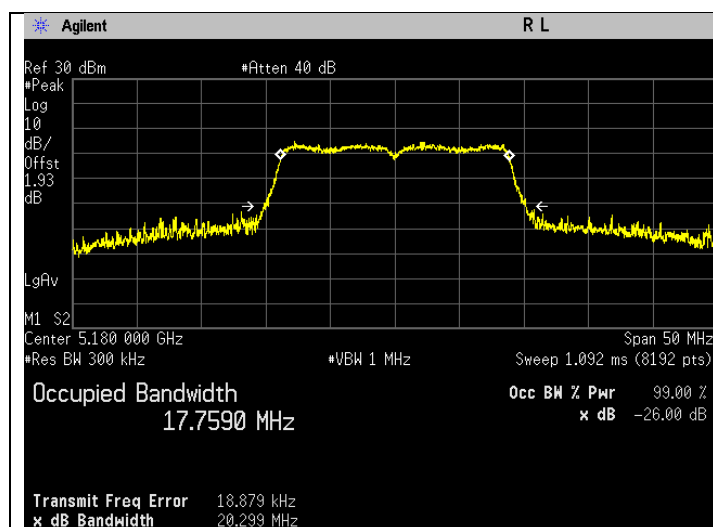
Frequency 5785 MHz



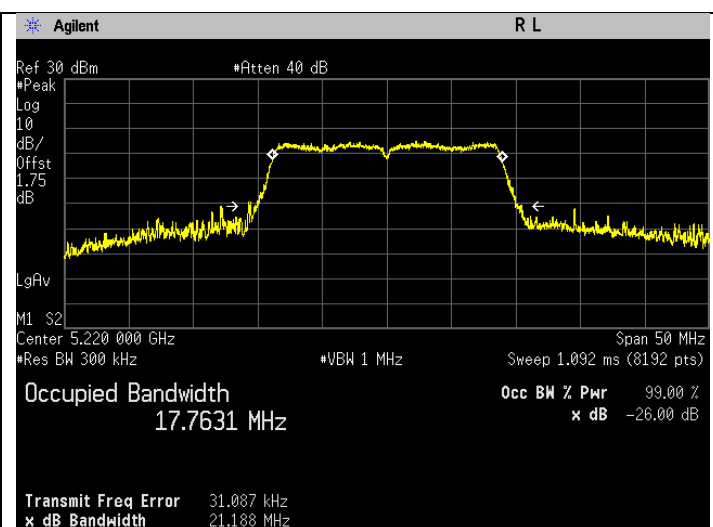
802.11n (HT20)

Frequency (MHz)	Test Configuration	Results			
		26 dB Bandwidth(MHz)	Status	99% Bandwidth(MHz)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.299	Pass	17.758	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	21.188	Pass	17.763	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.269	Pass	17.7110	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	21.011	Pass	17.726	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	23.338	Pass	17.766	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	21.270	Pass	17.778	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.363	Pass	17.718	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	25.204	Pass	17.779	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.370	Pass	17.709	Pass
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5), UNII-2C	16.362	Pass	13.896	Pass
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5), UNII-3	6.362	Pass	3.896	Pass
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	25.766	Pass	17.8210	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	23.786	Pass	17.819	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	29.104	Pass	17.837	Pass

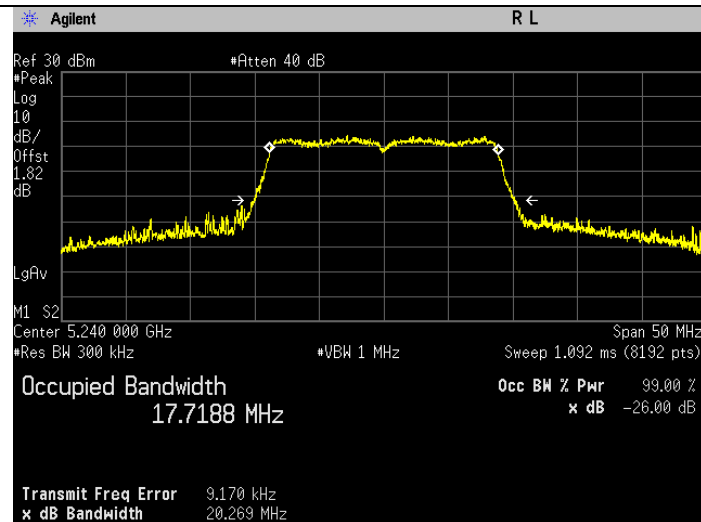
26 dB Bandwidth/ 99% Bandwidth



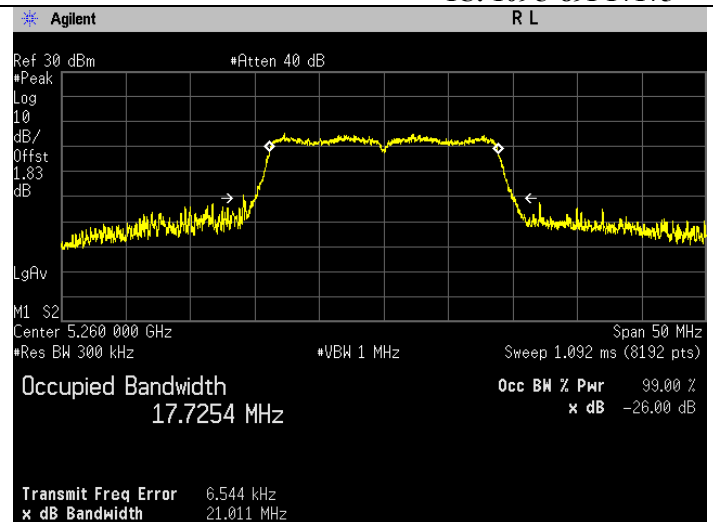
Frequency 5180 MHz



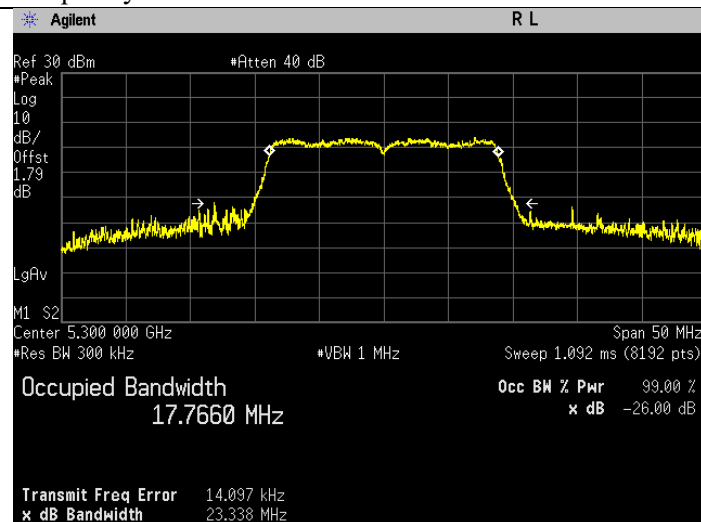
Frequency 5220 MHz



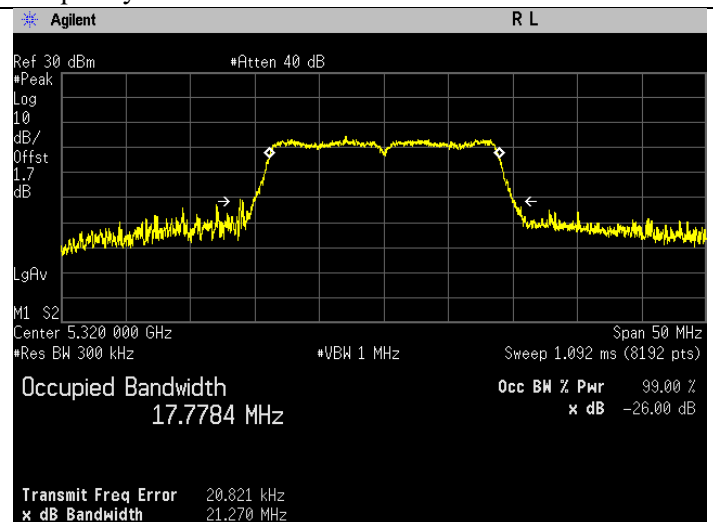
Frequency 5240 MHz



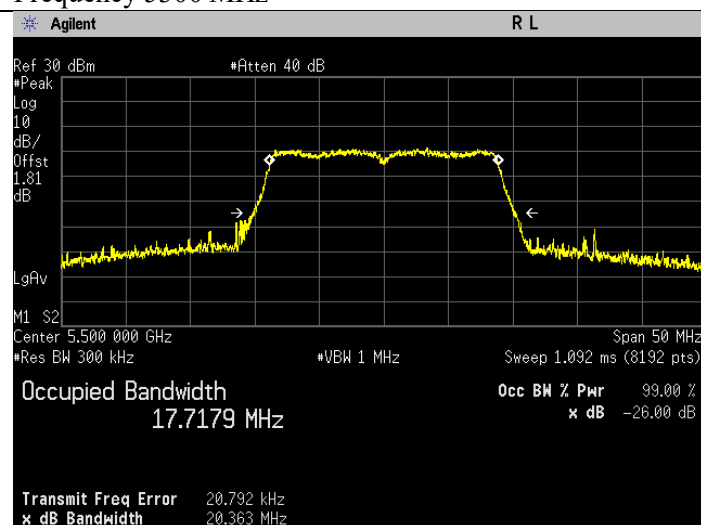
Frequency 5260 MHz



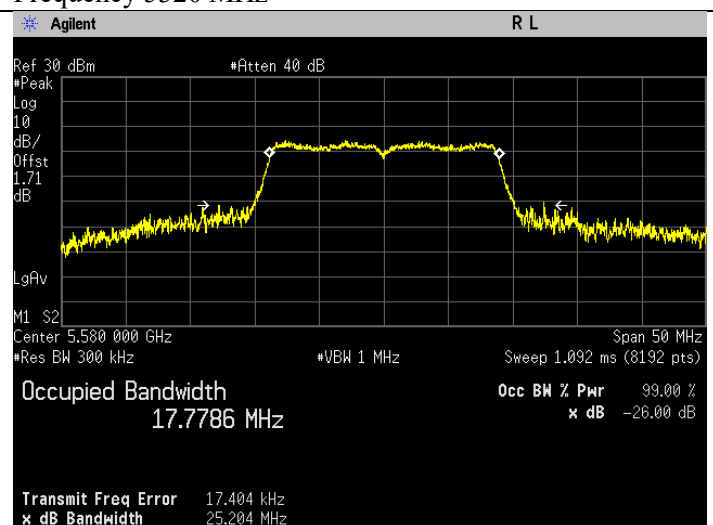
Frequency 5300 MHz



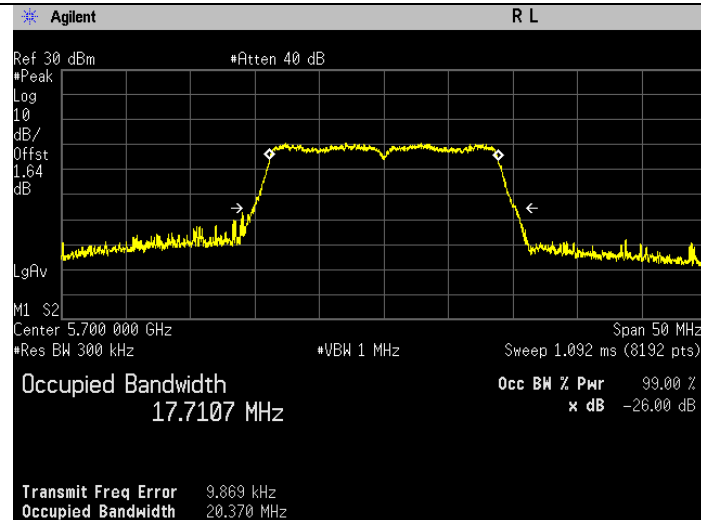
Frequency 5320 MHz



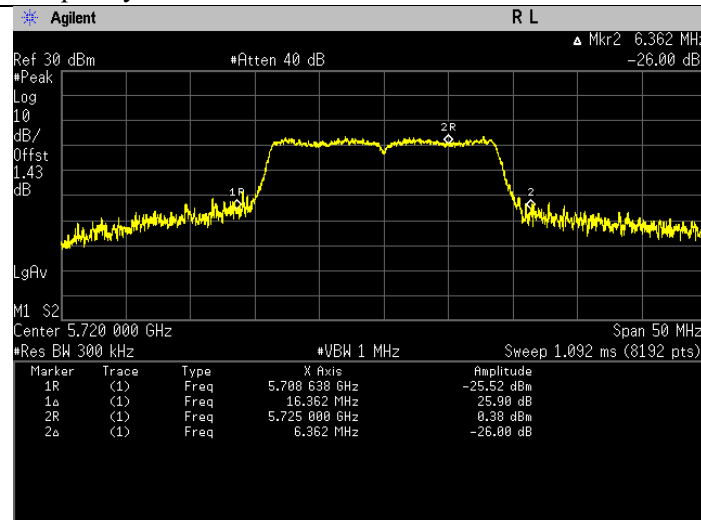
Frequency 5500 MHz



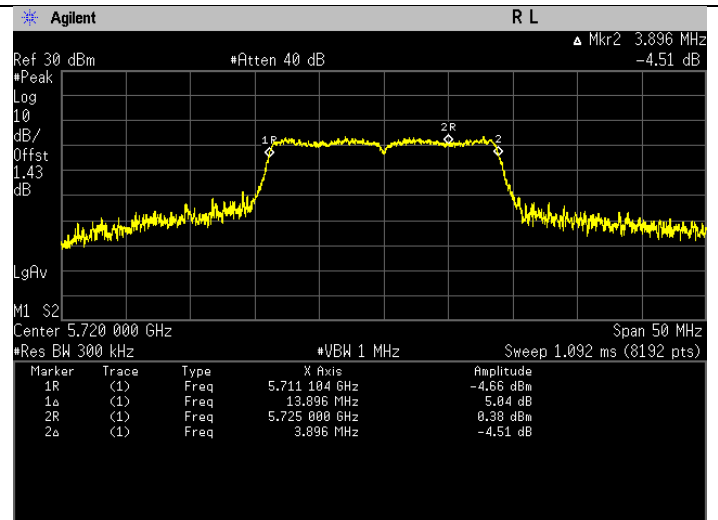
Frequency 5580 MHz



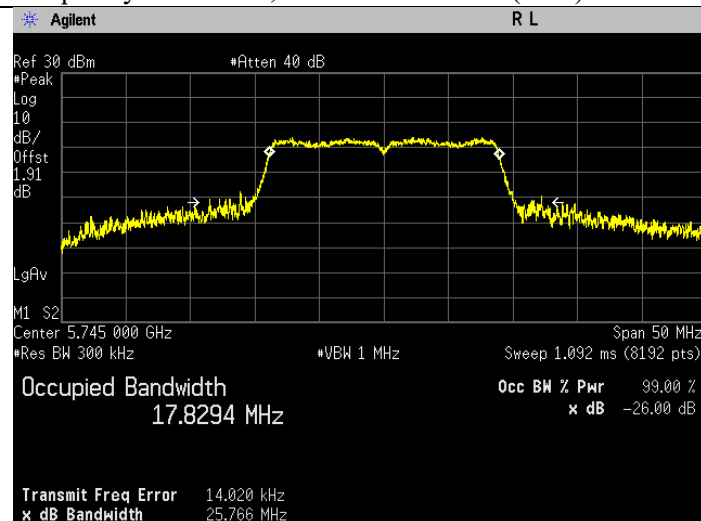
Frequency 5700 MHz



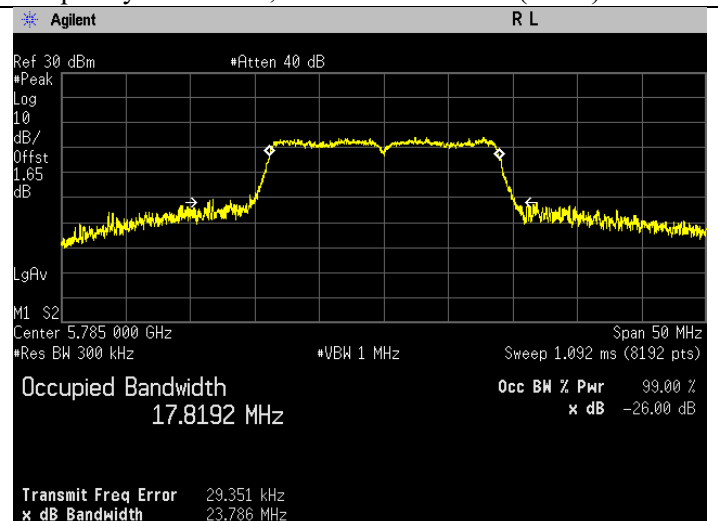
Frequency 5720 MHz, UNII-2C & UNII-3(FCC)



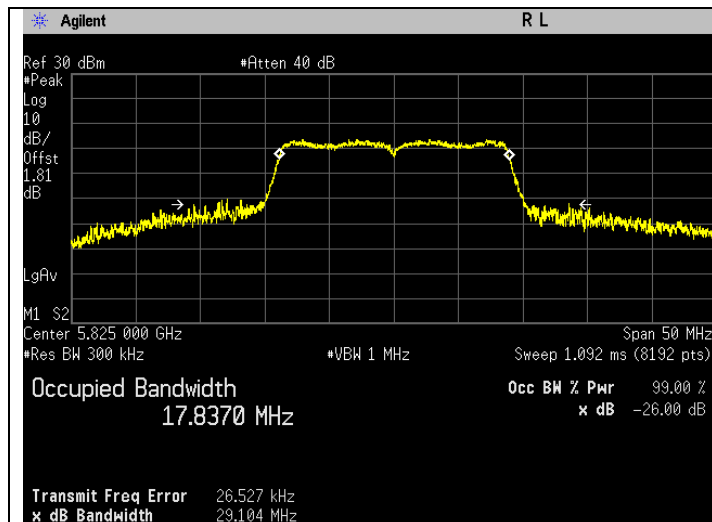
Frequency 5720 MHz, UNII-2C & UNII-3 (ISED)



Frequency 5745 MHz



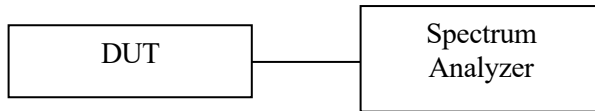
Frequency 5785 MHz



Frequency 5825 MHz

7.2. Maximum Conducted Output Power

7.2.1. 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.
- Total power (mW) = Ant 1 (dBm) + Ant 2 (dBm), included duty cycle correction factor.
- E.I.R.P = Total power (mW) + Directional Gain (dB).

7.2.2. 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 $11dBm + 10\log_{10} B^*$ *B is 26dB emission bandwidth in MHz
5.47-5.525 (UNII-2C)	√	
5.725-5.85 (UNII-3)	√	$\leq 1W$

RSS-247 6.2

Range(GHz)	Condition	Output Power Limit
5.15-5.25	indoor only (e.i.r.p.)	$\leq 200\text{mW}$ or $10+10\log_{10}B^*$ *B is 99% emission bandwidth in 1MHz
5.25-5.35	(Conducted & e.i.r.p.)	Conducted: $\leq 250\text{mW}$ or $11+10\log_{10}B^*$ EIRP: $< 1.0\text{W}$ or $17+10\log_{10}B^*$ *B is 99% emission bandwidth in 1MHz
5.47-5.6 5.65-5.725	(Conducted & e.i.r.p.)	Conducted: $\leq 250\text{mW}$ or $11+10\log_{10}B^*$ EIRP: $< 1.0\text{W}$ or $17+10\log_{10}B^*$ *B is 99% emission bandwidth in 1MHz
5.725-5.85	(Conducted)	$\leq 1\text{W}$

7.2.3. Additional Info

Antenna	Gain (dBi)
UNII1, UNII2A, UNII2C, UNII3	4.88
Duty Cycle Correction Factor	
802.11a	0.025
802.11n (HT20)	0.022

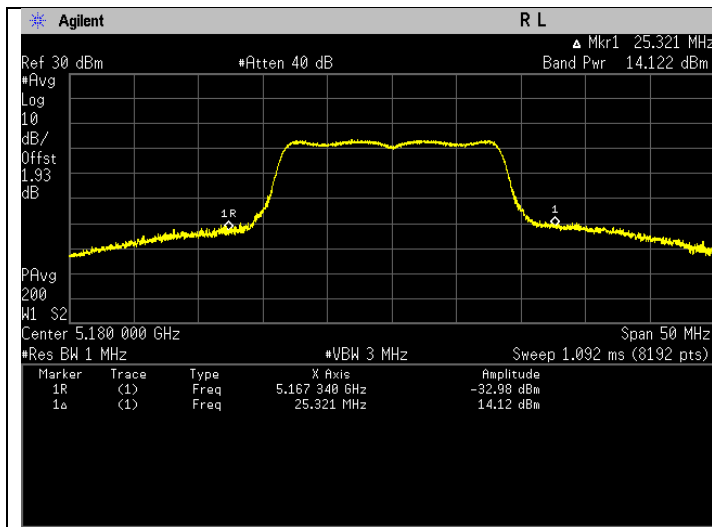
7.2.4. Test Data

Summary table

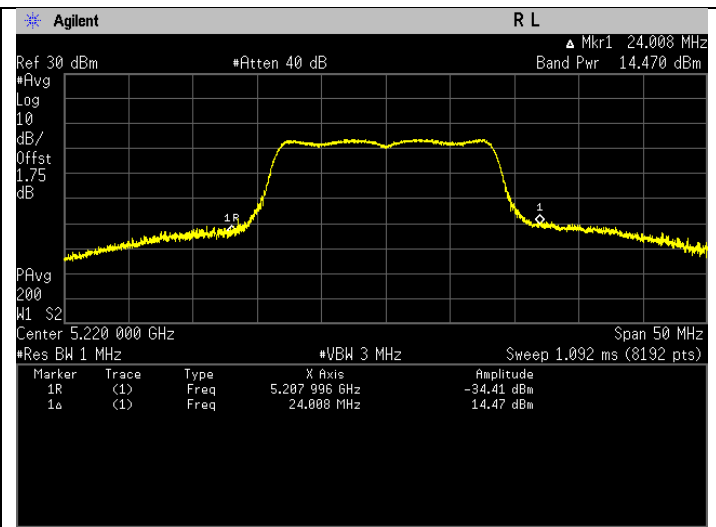
WLAN	Frequency Range (MHz)	Bandwidth (MHz)	RF Power Output		EIRP		Max Emission Designator
			Max measured (mW)	Max declared (mW)	Max measured (mW)	Max declared (mW)	
802.11a	5180-5240	20	27.61	28.18	84.92	86.70	17M0D1D
	5260-5320	20	25.25	28.18	77.68	86.70	17M0D1D
	5500-5580	20	22.91	28.18	70.49	86.70	17M0D1D
	5660-5720	20	8.44	28.18	25.97	86.70	17M0D1D
	5745-5825	20	18.09	22.39	55.64	68.87	17M0D1D
802.11n/ac	5180-5240	20	20.08	22.39	61.76	68.87	17M8D1D
	5260-5320	20	20.79	22.39	63.94	68.87	17M8D1D
	5500-5580	20	19.05	22.39	58.61	68.87	17M8D1D
	5660-5720	20	8.74	22.39	26.89	68.87	17M7D1D
	5745-5825	20	18.66	22.39	57.39	68.87	17M8D1D

802.11a (26dB EBW)

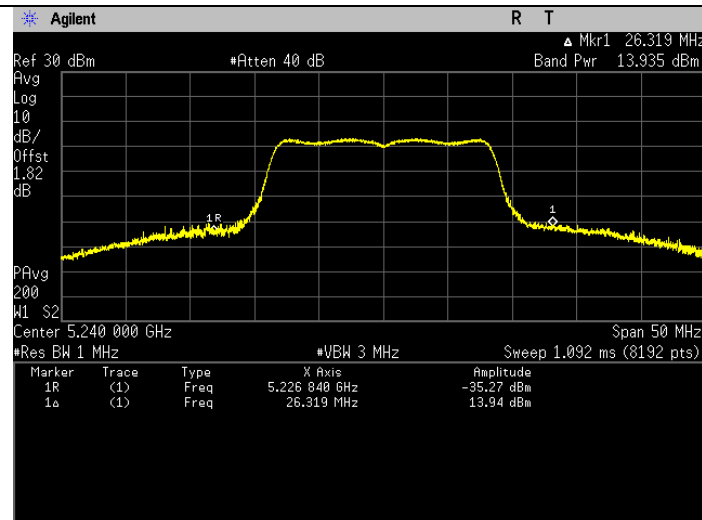
Freq. (MHz)	Test Conditions	Results		
		Power (mW)	Power (dBm)	Status
5180	Mod Type: BPSK, Data Rate: 6	25.985	14.147	Pass
5220	Mod Type: BPSK, Data Rate: 6	28.153	14.495	Pass
5240	Mod Type: BPSK, Data Rate: 6	24.888	13.960	Pass
5260	Mod Type: BPSK, Data Rate: 6	25.611	14.084	Pass
5300	Mod Type: BPSK, Data Rate: 6	22.132	13.450	Pass
5320	Mod Type: BPSK, Data Rate: 6	16.774	12.246	Pass
5500	Mod Type: BPSK, Data Rate: 6	6.021	7.797	Pass
5580	Mod Type: BPSK, Data Rate: 6	23.223	13.659	Pass
5700	Mod Type: BPSK, Data Rate: 6	8.553	9.321	Pass
5745	Mod Type: BPSK, Data Rate: 6	18.405	12.649	Pass
5785	Mod Type: BPSK, Data Rate: 6	16.851	12.266	Pass
5825	Mod Type: BPSK, Data Rate: 6	16.980	12.299	Pass



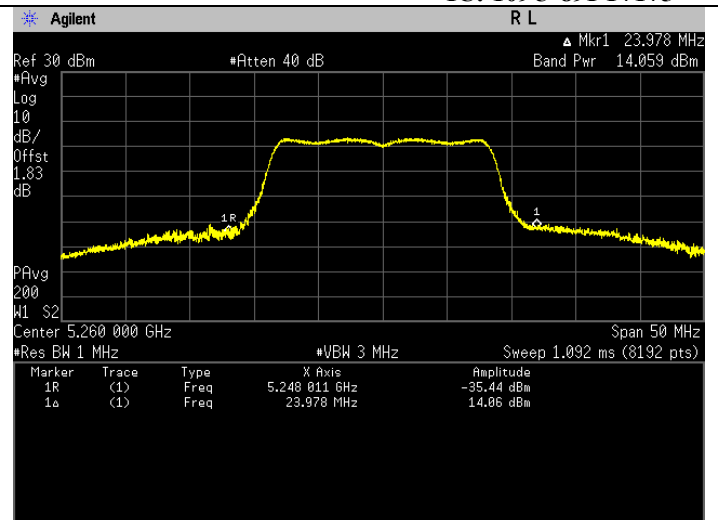
Frequency 5180 MHz, FCC.



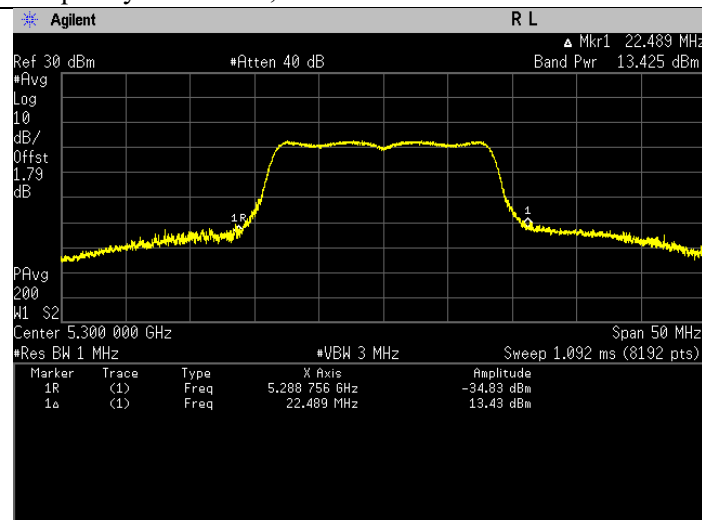
Frequency 5220 MHz, FCC.



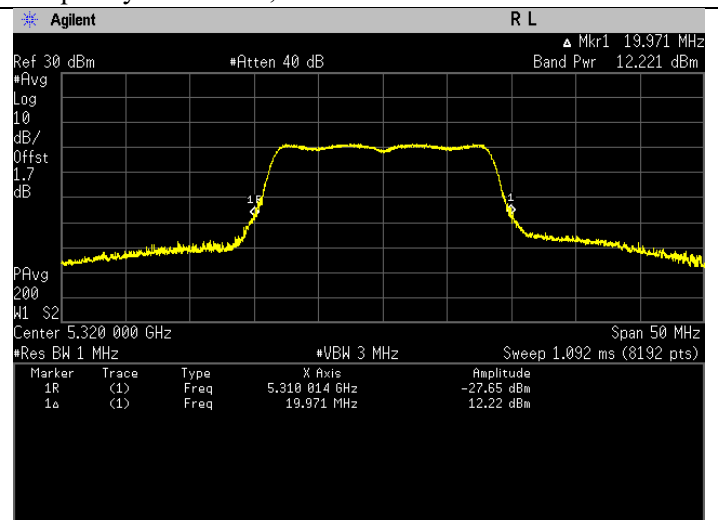
Frequency 5240 MHz, FCC.



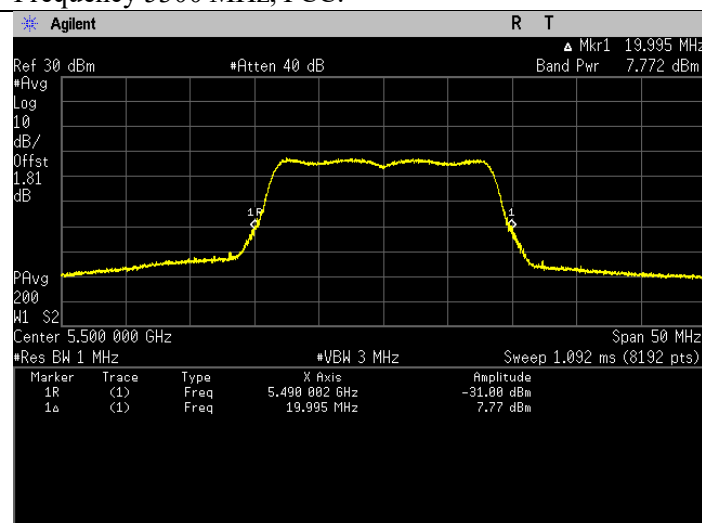
Frequency 5260 MHz, FCC.



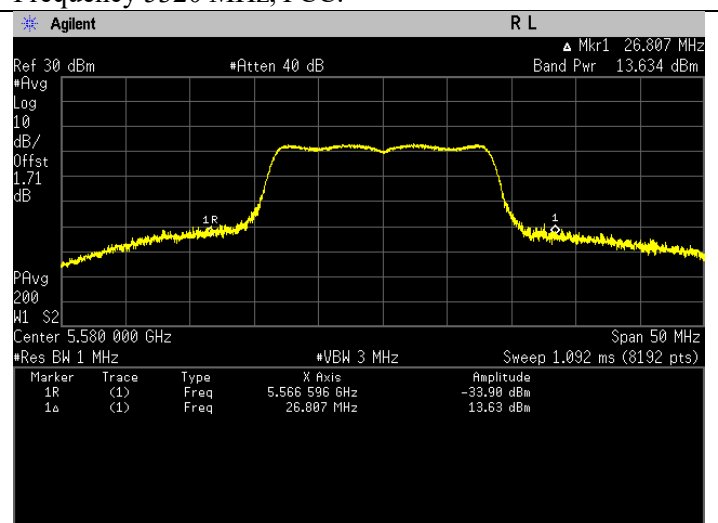
Frequency 5300 MHz, FCC.



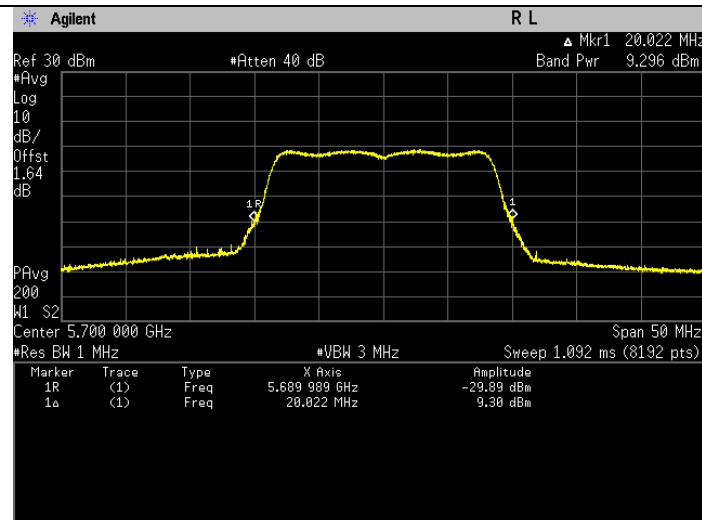
Frequency 5320 MHz, FCC.



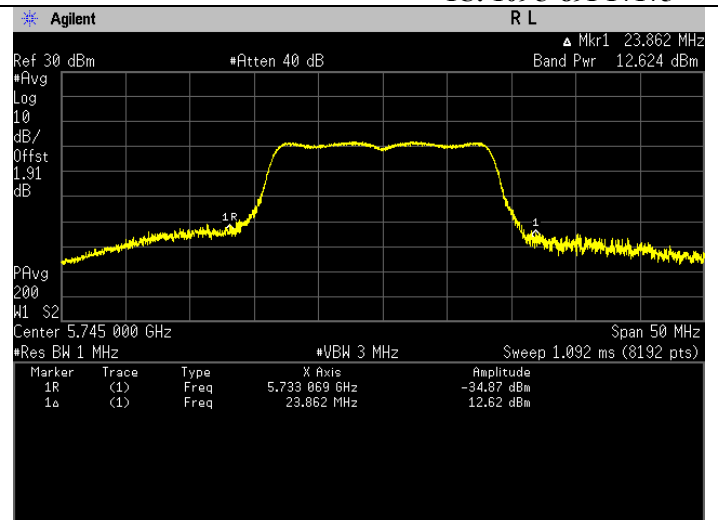
Frequency 5500 MHz, FCC.



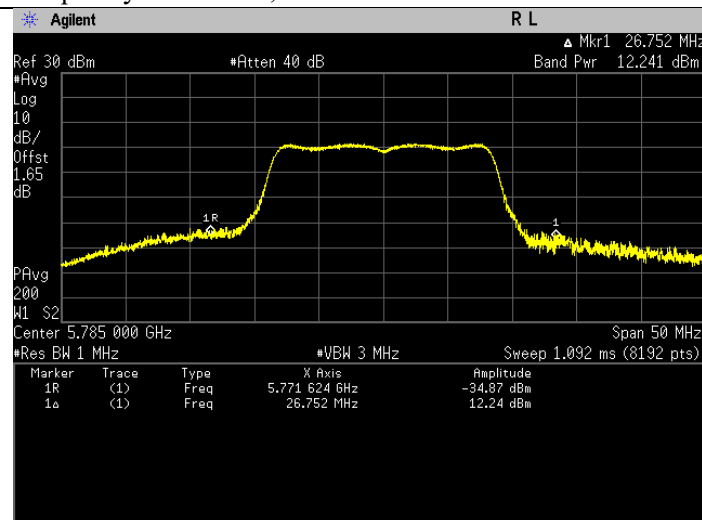
Frequency 5580 MHz, FCC.



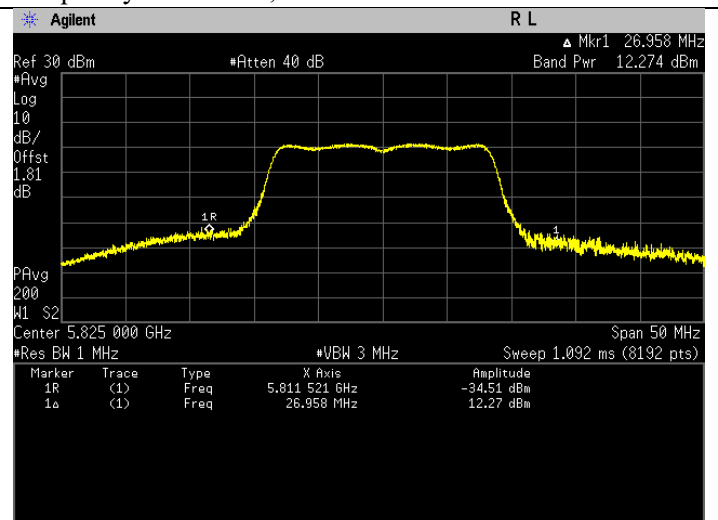
Frequency 5700 MHz, FCC.



Frequency 5745 MHz, FCC.



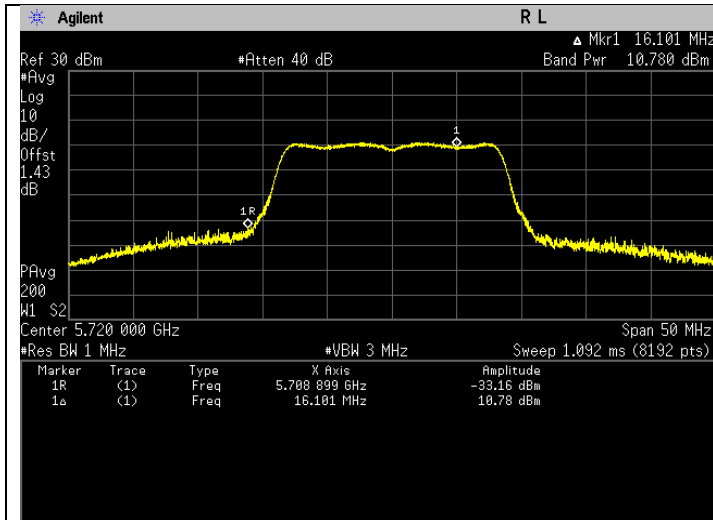
Frequency 5785 MHz, FCC.



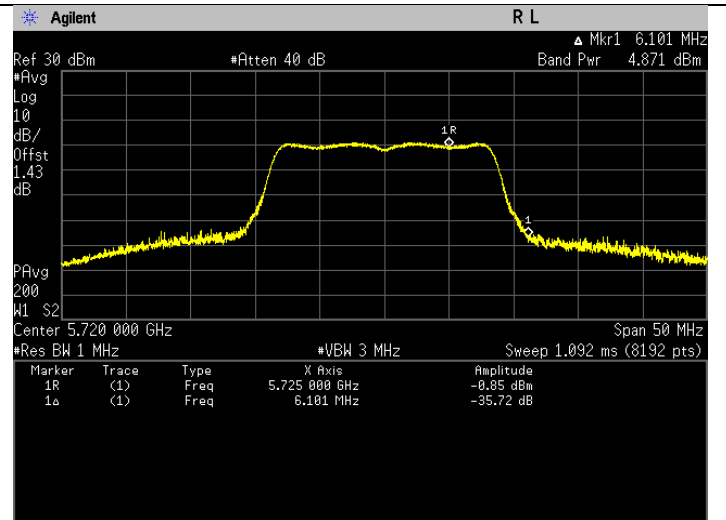
Frequency 5825 MHz, FCC.

Straddle Frequency

Freq. (MHz)	Test Conditions	Results		
		U-NII- 2C		
		Power (mW)	Power (dBm)	Status
5720	Mod Type: BPSK, Data Rate: 6	12.037	10.805	Pass
		U-NII-3		
5720	Mod Type: BPSK, Data Rate: 6	3.088	4.896	Pass



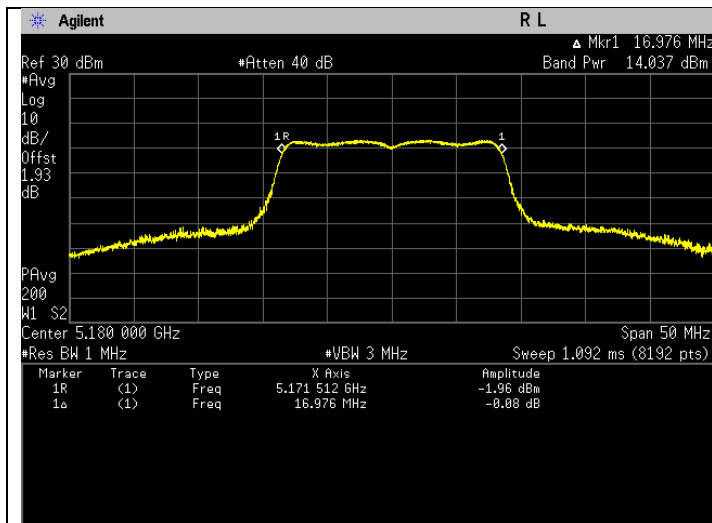
Frequency 5720 MHz, FCC, U-NII-2C. *Note: The band power is captured before the 5725 MHz.



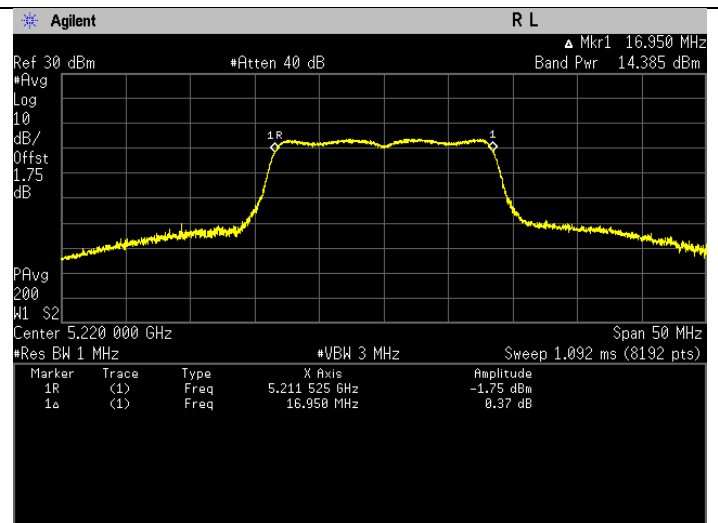
Frequency 5720 MHz, FCC, U-NII-3. *Note: The band power is captured after the 5725 MHz.

802.11a (99% EBW)

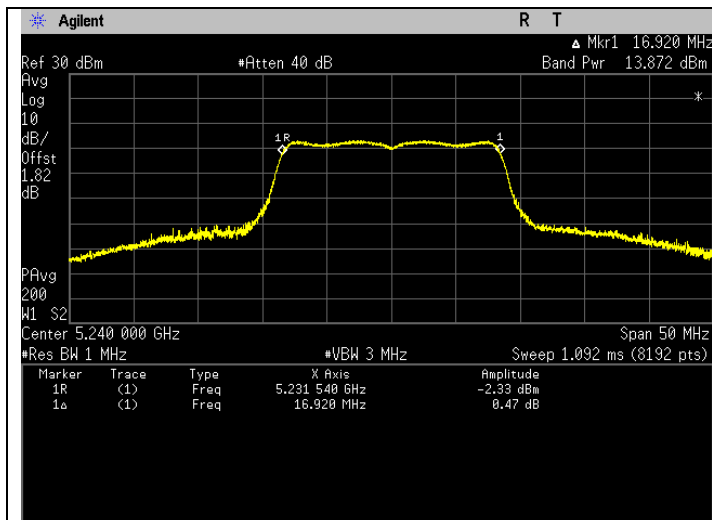
Freq. (MHz)	Test Conditions	Results				
		Power (mW)	Power (dBm)	Status	EIRP (dBm)	Status
5180	Mod Type: BPSK, Data Rate: 6	25.482	14.062	Pass	18.942	Pass
5220	Mod Type: BPSK, Data Rate: 6	27.607	14.41	Pass	19.29	Pass
5240	Mod Type: BPSK, Data Rate: 6	24.530	13.897	Pass	18.777	Pass
5260	Mod Type: BPSK, Data Rate: 6	25.254	14.023	Pass	18.903	Pass
5300	Mod Type: BPSK, Data Rate: 6	21.859	13.396	Pass	18.276	Pass
5320	Mod Type: BPSK, Data Rate: 6	16.547	12.187	Pass	17.067	Pass
5500	Mod Type: BPSK, Data Rate: 6	5.918	7.722	Pass	12.602	Pass
5580	Mod Type: BPSK, Data Rate: 6	22.915	13.601	Pass	18.481	Pass
5700	Mod Type: BPSK, Data Rate: 6	8.442	9.264	Pass	14.144	Pass
5745	Mod Type: BPSK, Data Rate: 6	18.089	12.574	Pass	17.454	Pass
5785	Mod Type: BPSK, Data Rate: 6	16.608	12.203	Pass	17.083	Pass
5825	Mod Type: BPSK, Data Rate: 6	16.662	12.217	Pass	17.097	Pass



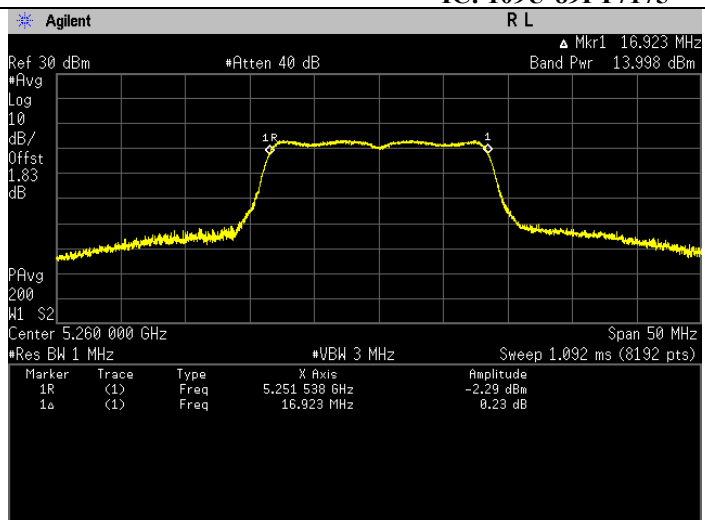
Frequency 5180 MHz, ISED



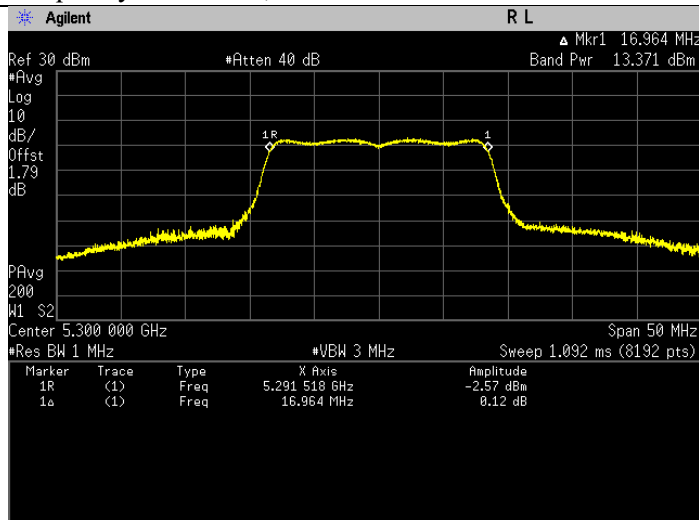
Frequency 5220 MHz, ISED



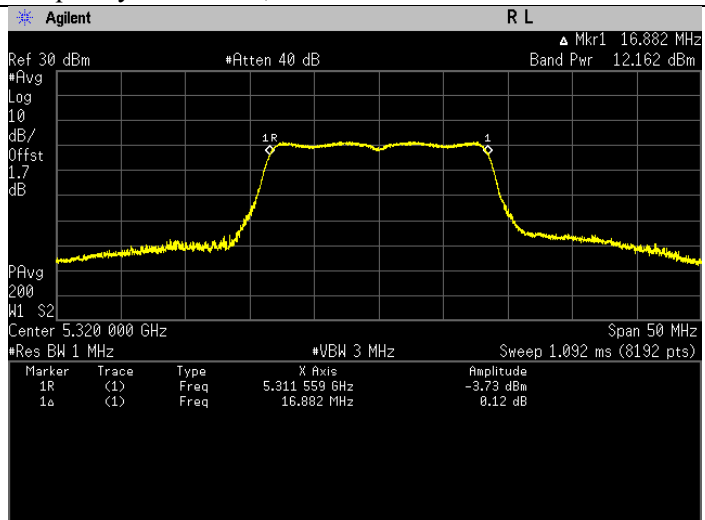
Frequency 5240 MHz, ISED



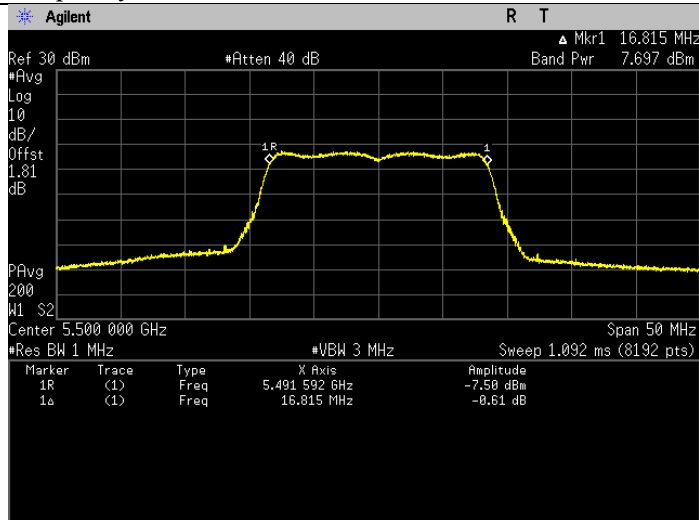
Frequency 5260 MHz, ISED



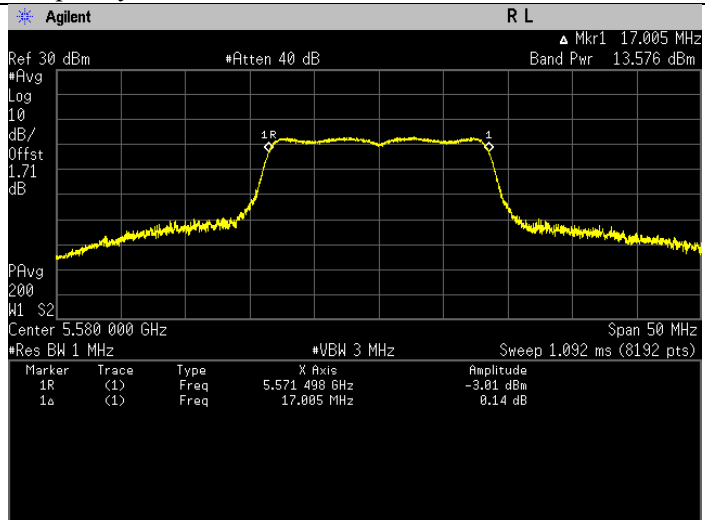
Frequency 5300 MHz, ISED



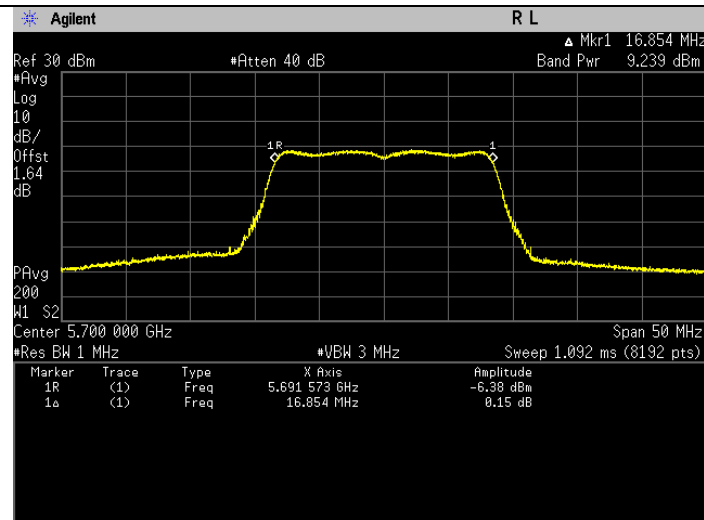
Frequency 5320 MHz, ISED



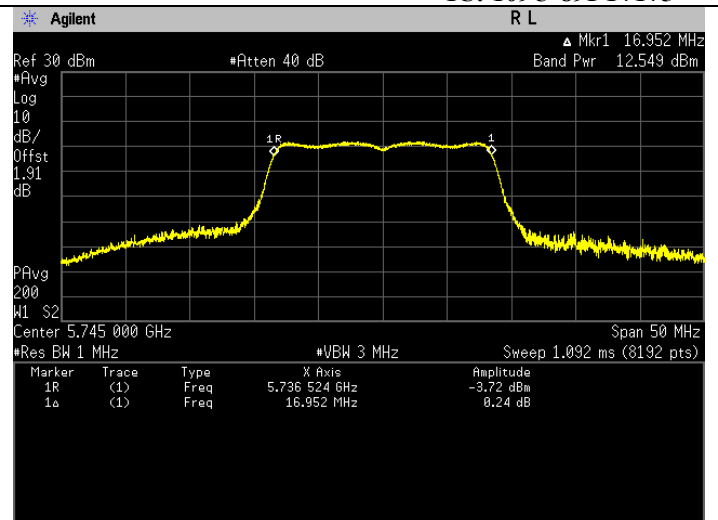
Frequency 5500 MHz, ISED



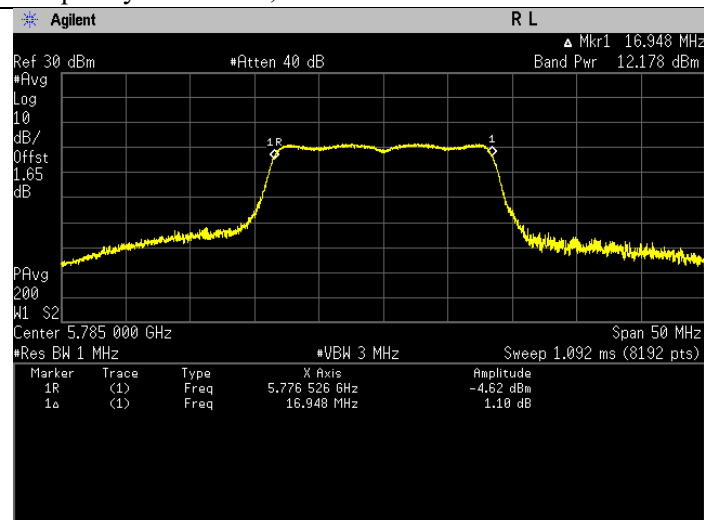
Frequency 5580 MHz, ISED



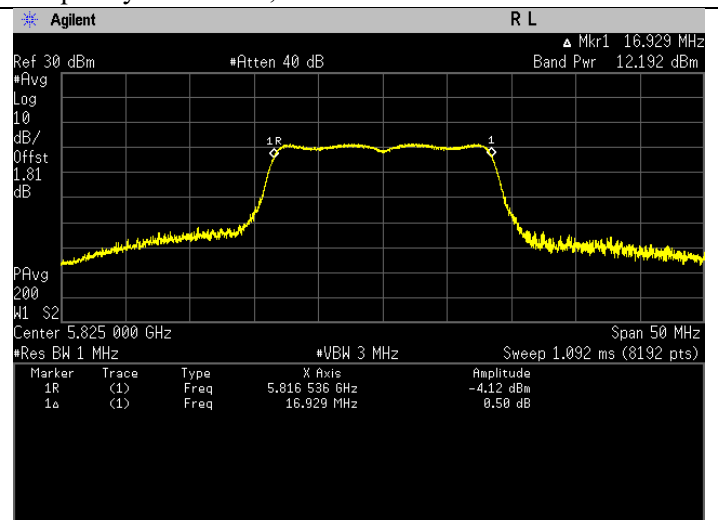
Frequency 5700 MHz, ISED



Frequency 5745 MHz, ISED



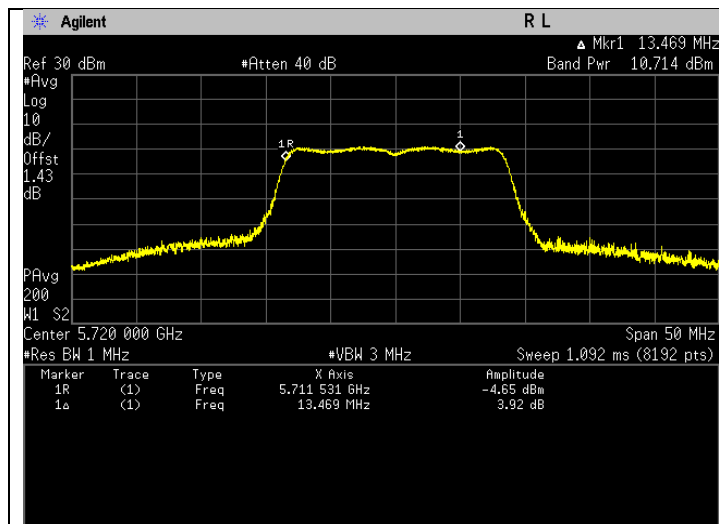
Frequency 5785 MHz, ISED



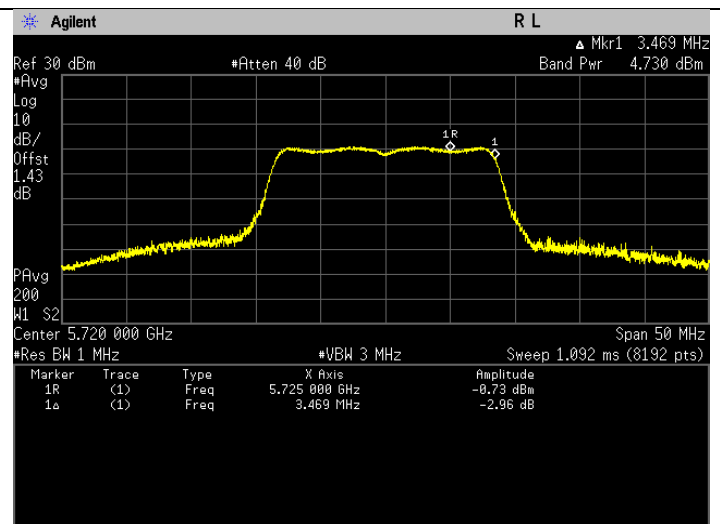
Frequency 5825 MHz, ISED

Straddle Frequency

Freq. (MHz)	Test Conditions	Results				
		U-NII- 2C				
		Power (mW)	Power (dBm)	Status	EIRP (dBm)	Status
5720	Mod Type: BPSK, Data Rate: 6	11.856	10.739	Pass	15.619	Pass
		U-NII-3				
5720	Mod Type: BPSK, Data Rate: 6	2.989	4.755	Pass	9.635	Pass



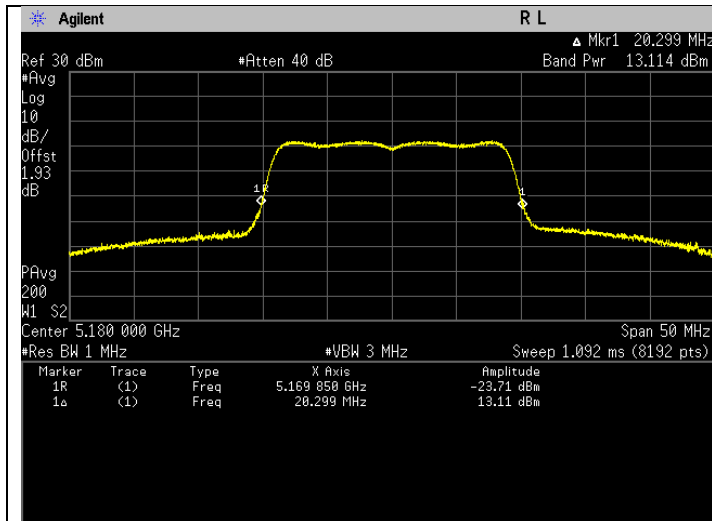
Frequency 5720 MHz, ISSED, U-NII-2C. *Note: The band power is captured before the 5725 MHz.



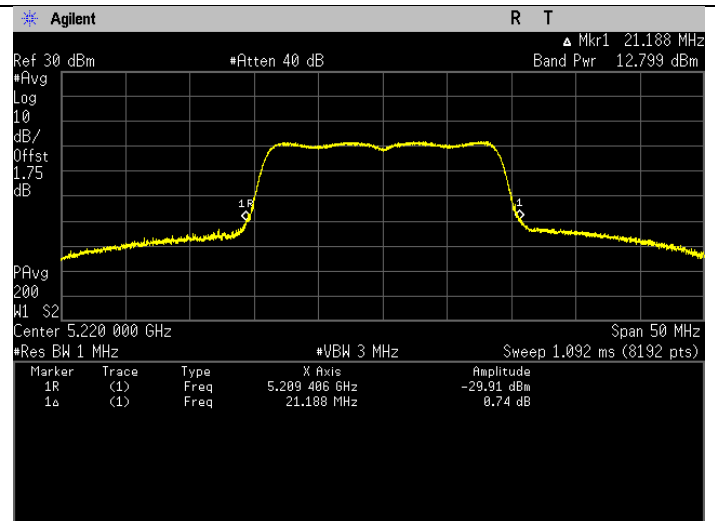
Frequency 5720 MHz, ISSED, U-NII-3. *Note: The band power is captured after the 5725 MHz.

802.11n (HT20) (26dB EBW)

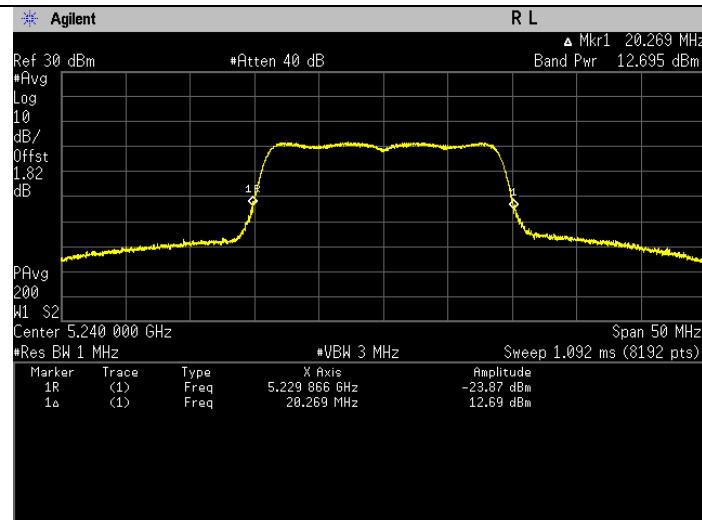
Freq. (MHz)	Test Conditions	Results		
		Power (mW)	Power (dBm)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.588	13.136	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	19.146	12.821	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	18.695	12.717	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	21.356	13.295	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	18.511	12.674	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	17.564	12.446	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	10.345	10.147	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	19.463	12.892	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	8.923	9.505	Pass
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	19.042	12.797	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	18.837	12.750	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	18.118	12.581	Pass



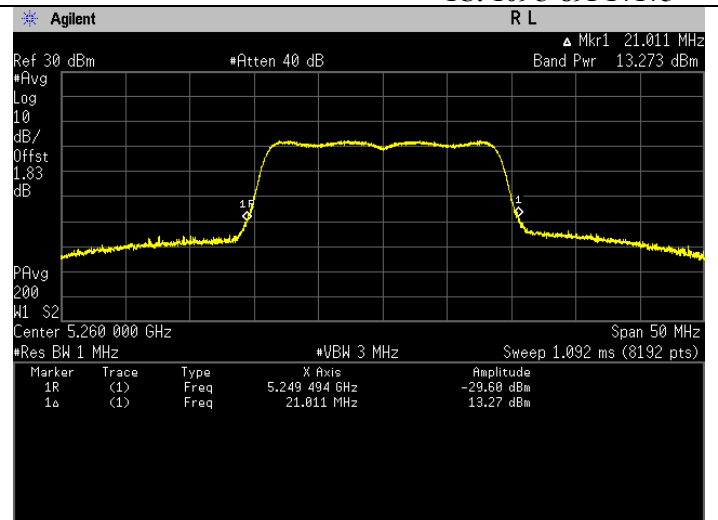
Frequency 5180 MHz, FCC.



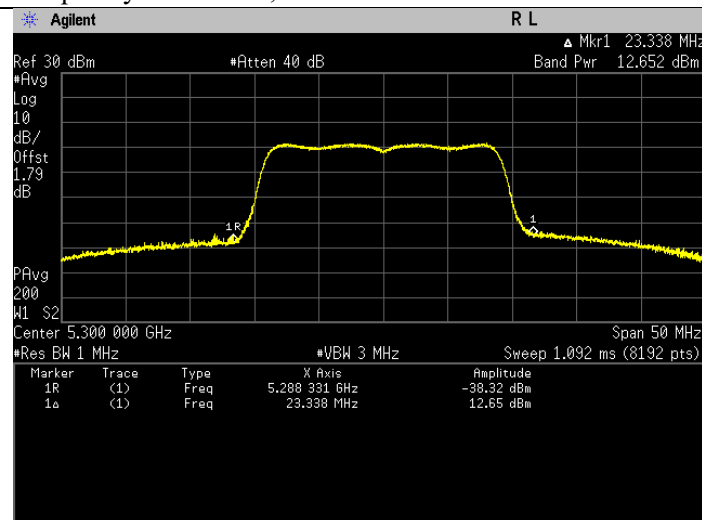
Frequency 5220 MHz, FCC.



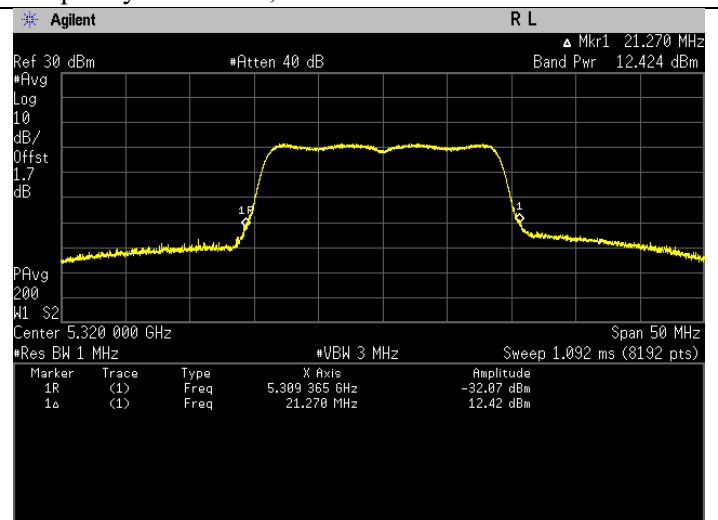
Frequency 5240 MHz, FCC.



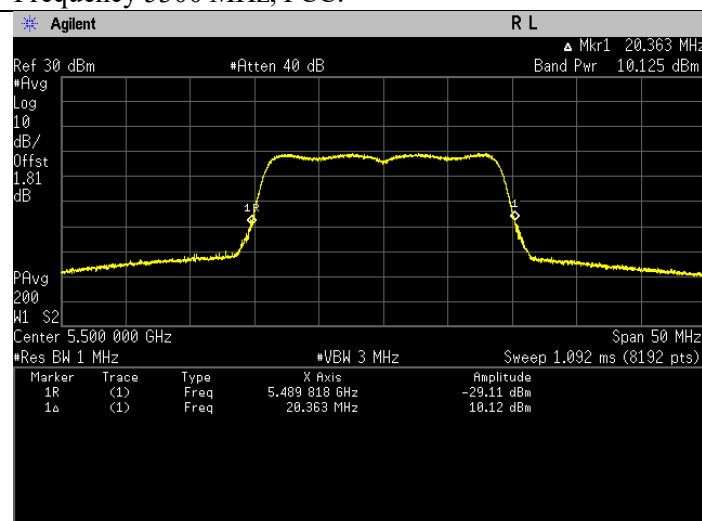
Frequency 5260 MHz, FCC.



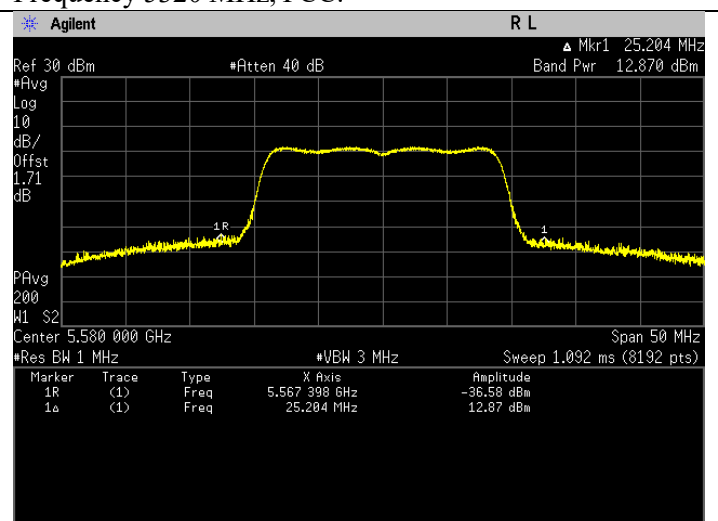
Frequency 5300 MHz, FCC.



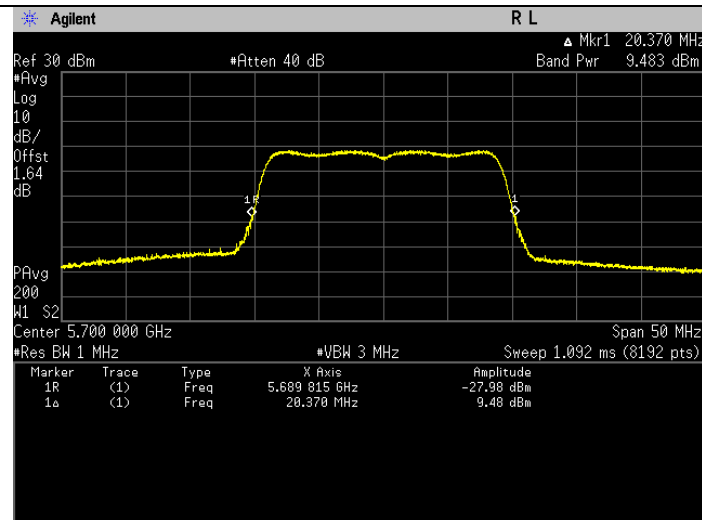
Frequency 5320 MHz, FCC.



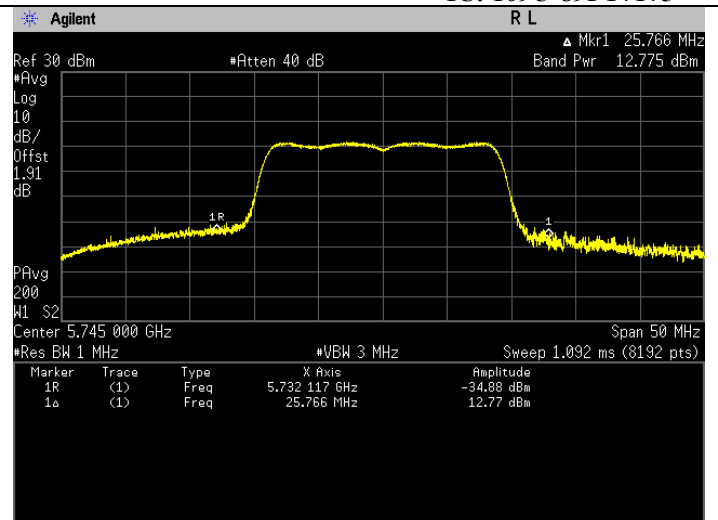
Frequency 5500 MHz, FCC.



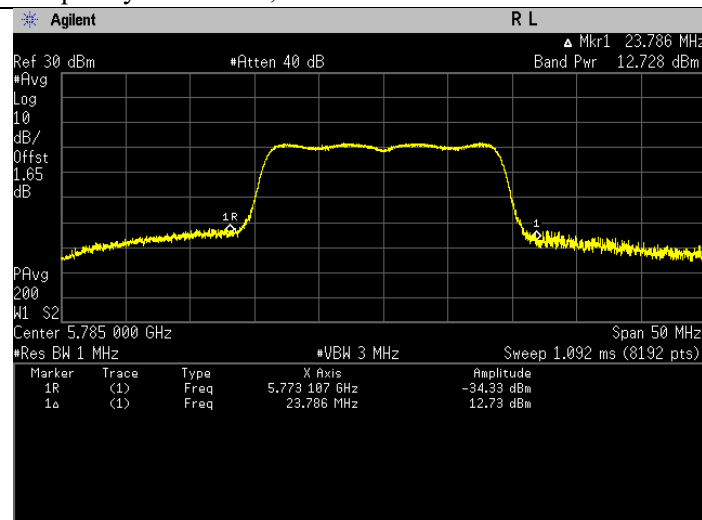
Frequency 5580 MHz, FCC.



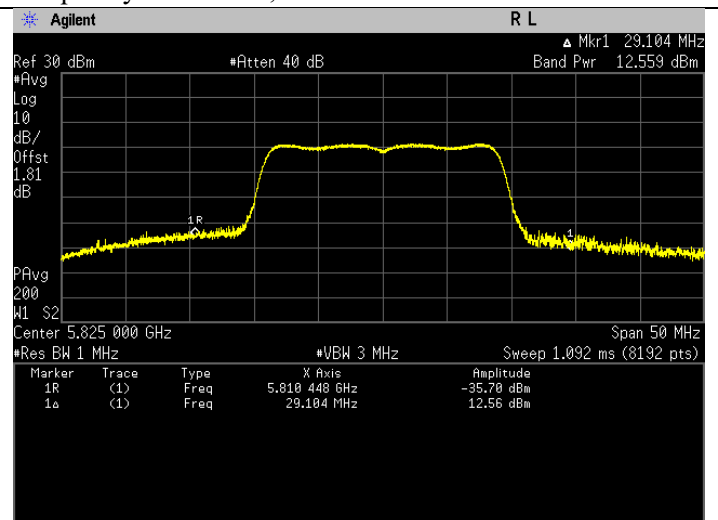
Frequency 5700 MHz, FCC.



Frequency 5745 MHz, FCC.



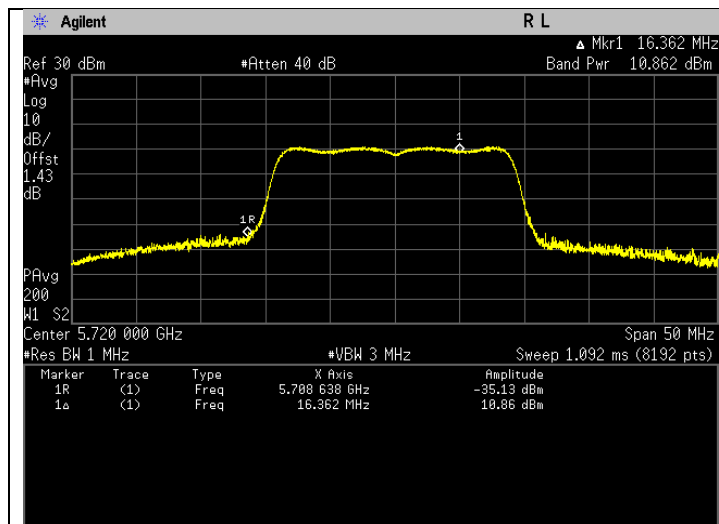
Frequency 5785 MHz, FCC.



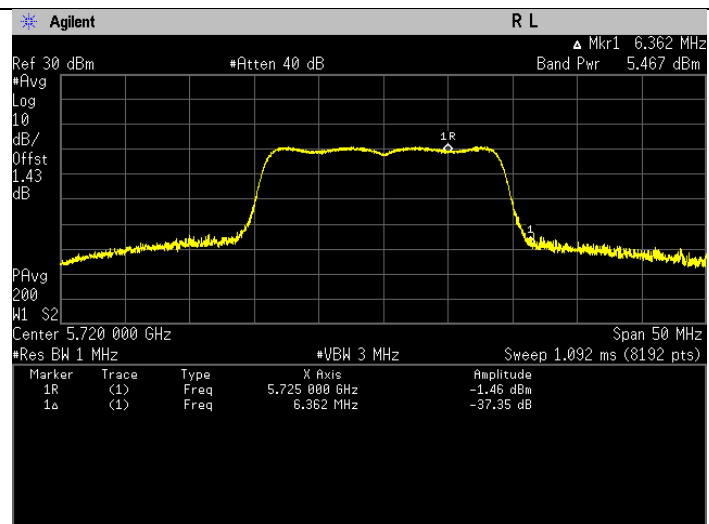
Frequency 5825 MHz, FCC.

Straddle Frequency

Freq. (MHz)	Test Conditions	Results		
		U-NII- 2C		
		Power (mW)	Power (dBm)	Status
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	12.258	10.884	Pass
		U-NII-3		
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	3.539	5.489	Pass



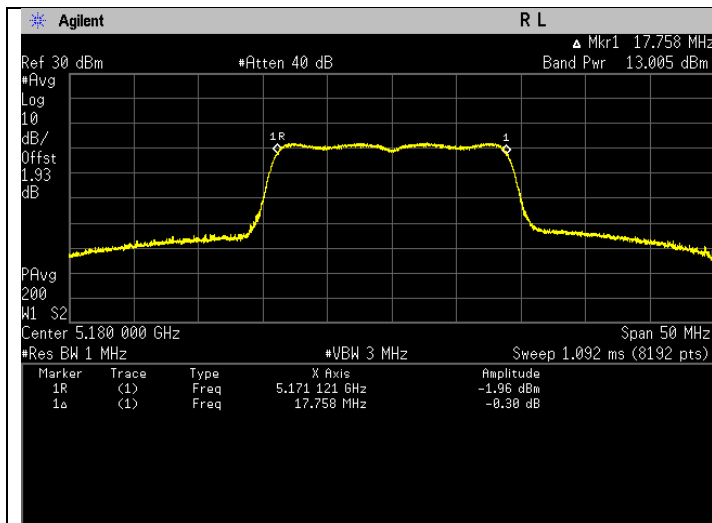
Frequency 5720 MHz, FCC, U-NII-2C. *Note: The band power is captured before the 5725 MHz.



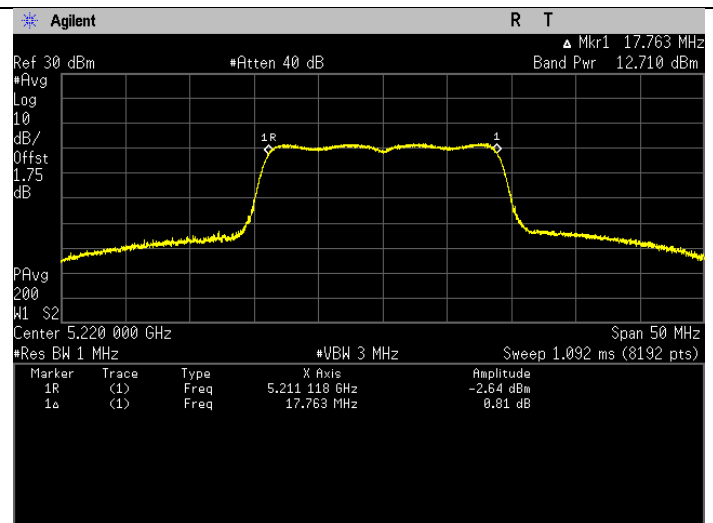
Frequency 5720 MHz, FCC, U-NII-3. *Note: The band power is captured after the 5725 MHz.

802.11n (HT20) (99% EBW)

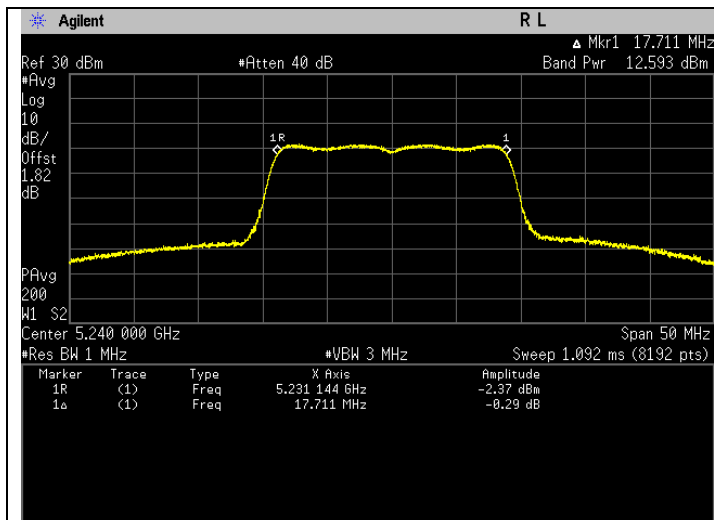
Freq. (MHz)	Test Configuration	Results				
		Power (mW)	Power (dBm)	Status	EIRP (dBm)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.078	13.027	Pass	17.907	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	18.758	12.732	Pass	17.612	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	18.261	12.615	Pass	17.495	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	20.788	13.178	Pass	18.058	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	18.152	12.589	Pass	17.469	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	17.180	12.35	Pass	17.23	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	10.102	10.044	Pass	14.924	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	19.056	12.8	Pass	17.68	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	8.742	9.416	Pass	14.296	Pass
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	18.656	12.708	Pass	17.588	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	18.316	12.628	Pass	17.508	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	17.800	12.504	Pass	17.384	Pass



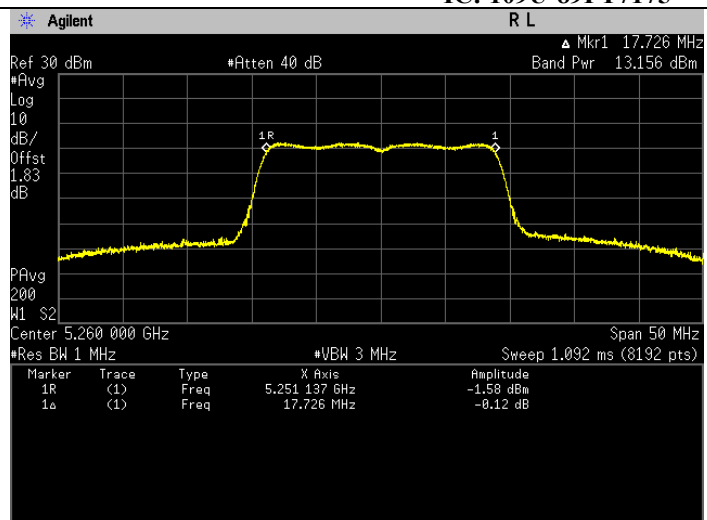
Frequency 5180 MHz, ISED



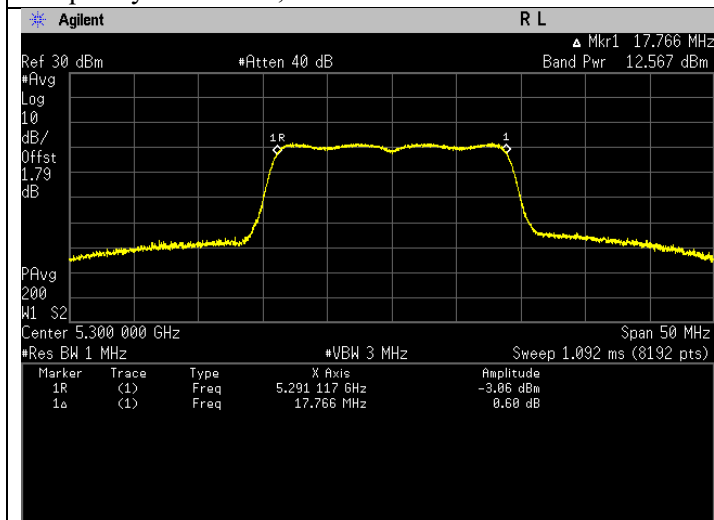
Frequency 5220 MHz, ISED



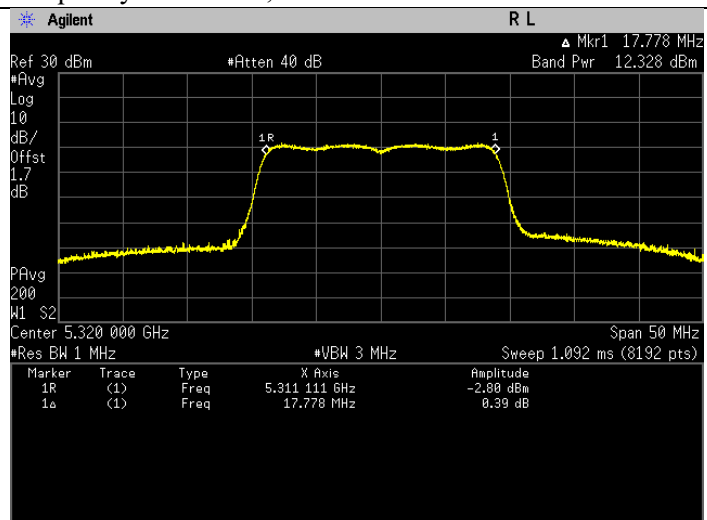
Frequency 5240 MHz, ISED



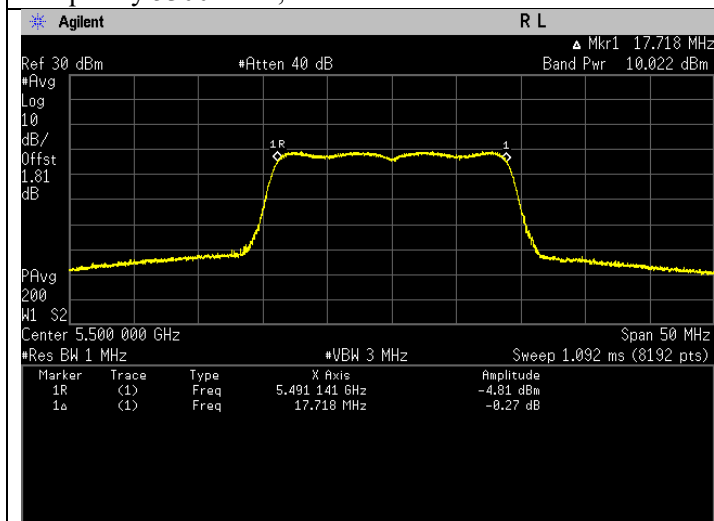
Frequency 5260 MHz, ISED



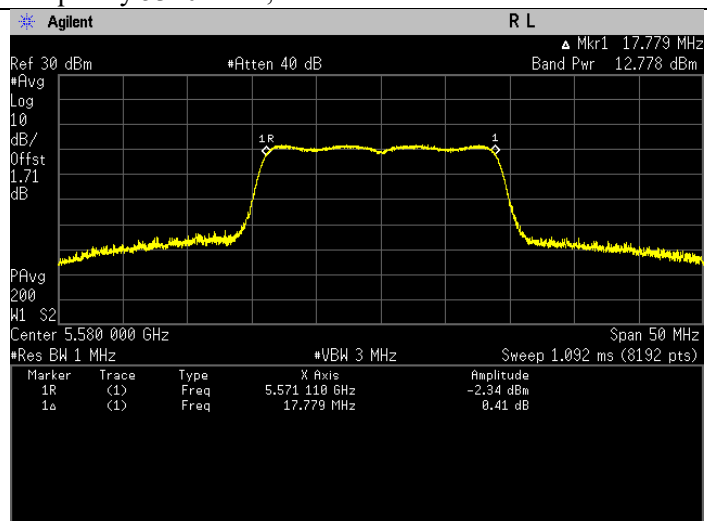
Frequency 5300 MHz, ISED



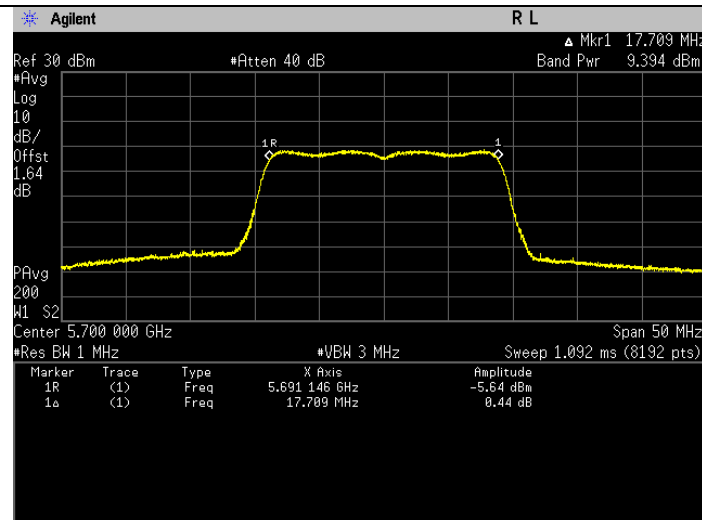
Frequency 5320 MHz, ISED



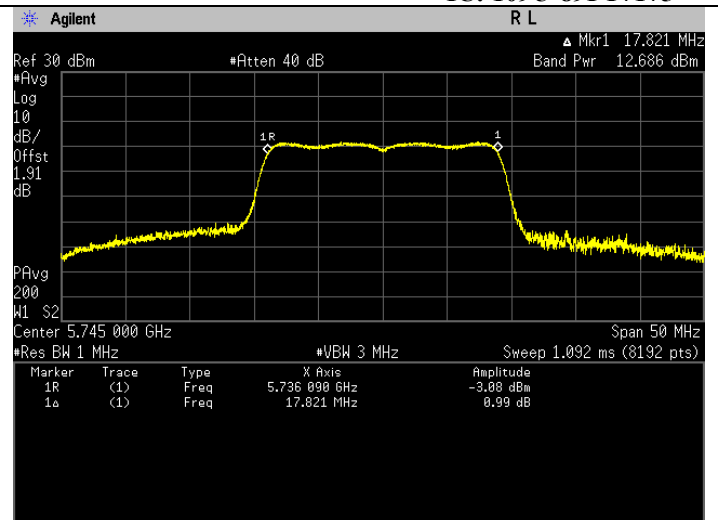
Frequency 5500 MHz, ISED



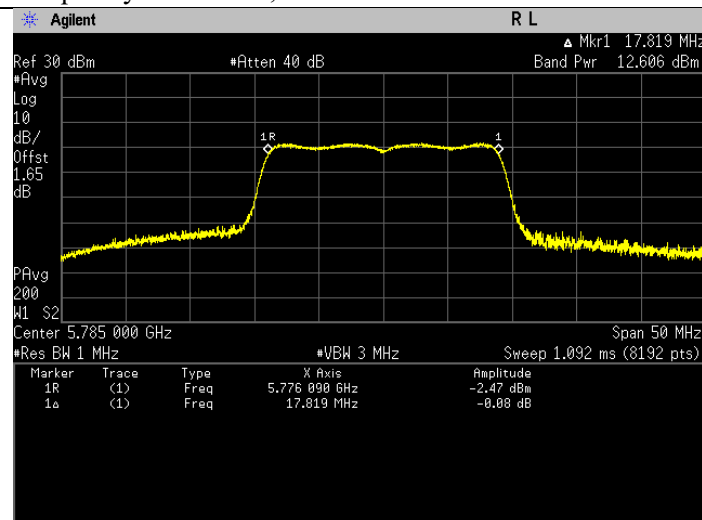
Frequency 5580 MHz, ISED



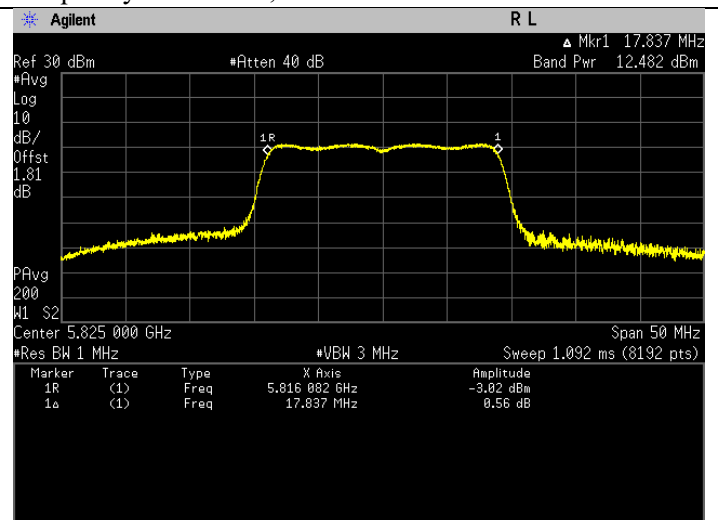
Frequency 5700 MHz, ISED



Frequency 5745 MHz, ISED



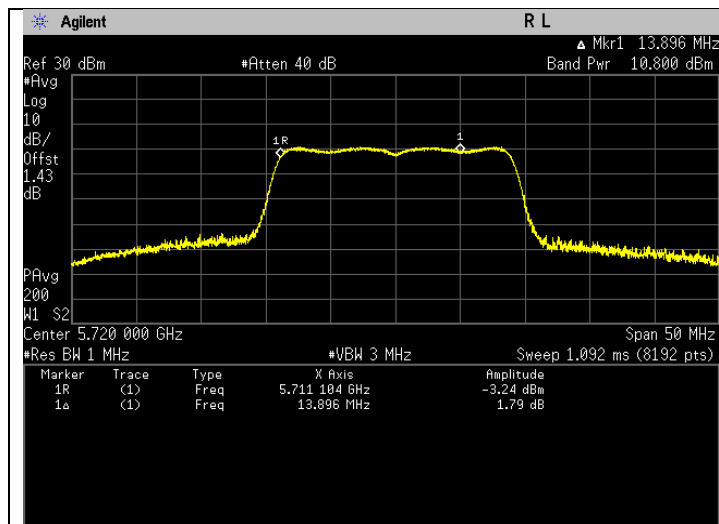
Frequency 5785 MHz, ISED



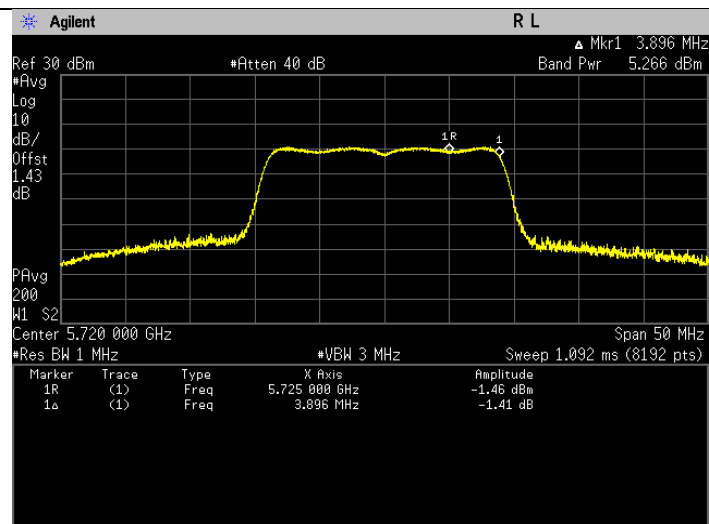
Frequency 5825 MHz, ISED

Straddle Frequency

Freq. (MHz)	Test Conditions	Results				
		U-NII- 2C				
		Power (mW)	Power (dBm)	Status	EIRP (dBm)	Status
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	12.084	10.822	Pass	15.702	Pass
		U-NII-3				
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	3.379	5.288	Pass	10.168	Pass



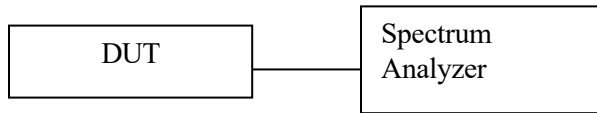
Frequency 5720 MHz, ISSED, U-NII-2C. *Note: The band power is captured before the 5725 MHz.



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

7.3. Maximum Power Spectral Density

7.3.1. 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) Total power (mW/MHz) = Ant 1 (dBm/MHz) + Ant 2 (dBm/MHz), included duty cycle correction factor.
- i) E.I.R.P = Total power (mW/MHz) + Directional Gain (dB).

7.3.2. 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

7.3.3. Additional Info

Antenna	Gain (dBi)
Antenna 1	4.88
Duty Cycle Correction Factor	
802.11a	0.025
802.11n (HT20)	0.022

7.3.4. Test Data

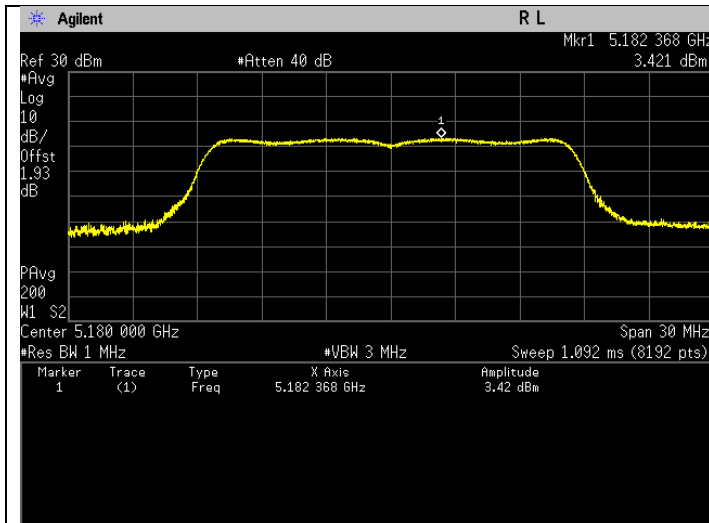
802.11a (26dB EBW)

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
5180	Mod Type: BPSK, Data Rate: 6	3.446	Pass
5220	Mod Type: BPSK, Data Rate: 6	3.846	Pass
5240	Mod Type: BPSK, Data Rate: 6	3.902	Pass
5260	Mod Type: BPSK, Data Rate: 6	3.332	Pass
5300	Mod Type: BPSK, Data Rate: 6	2.865	Pass
5320	Mod Type: BPSK, Data Rate: 6	1.722	Pass
5500	Mod Type: BPSK, Data Rate: 6	-1.608	Pass
5580	Mod Type: BPSK, Data Rate: 6	3.113	Pass
5700	Mod Type: BPSK, Data Rate: 6	-1.196	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status
5745	Mod Type: BPSK, Data Rate: 6	0.052	Pass
5785	Mod Type: BPSK, Data Rate: 6	-1.165	Pass
5825	Mod Type: BPSK, Data Rate: 6	-1.1010	Pass

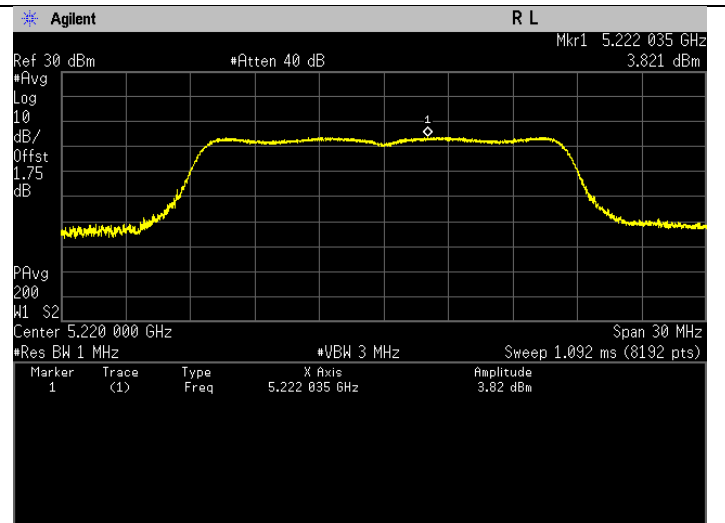
802.11a (99% EBW)

Freq. (MHz)	Test Conditions	Results			
		Power/Frequency (dBm/MHz)	Status	EIRP (dBm/MHz)	Status
5180	Mod Type: BPSK, Data Rate: 6	3.446	Pass	8.326	Pass
5220	Mod Type: BPSK, Data Rate: 6	3.846	Pass	8.726	Pass
5240	Mod Type: BPSK, Data Rate: 6	3.902	Pass	8.782	Pass
5260	Mod Type: BPSK, Data Rate: 6	3.332	Pass	8.212	Pass
5300	Mod Type: BPSK, Data Rate: 6	2.865	Pass	7.745	Pass
5320	Mod Type: BPSK, Data Rate: 6	1.722	Pass	6.602	Pass
5500	Mod Type: BPSK, Data Rate: 6	-1.608	Pass	3.272	Pass
5580	Mod Type: BPSK, Data Rate: 6	3.113	Pass	7.993	Pass
5700	Mod Type: BPSK, Data Rate: 6	-1.196	Pass	3.684	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status		
5745	Mod Type: BPSK, Data Rate: 6	0.052	Pass	4.932	Pass
5785	Mod Type: BPSK, Data Rate: 6	-1.165	Pass	3.715	Pass
5825	Mod Type: BPSK, Data Rate: 6	-1.101	Pass	3.779	Pass

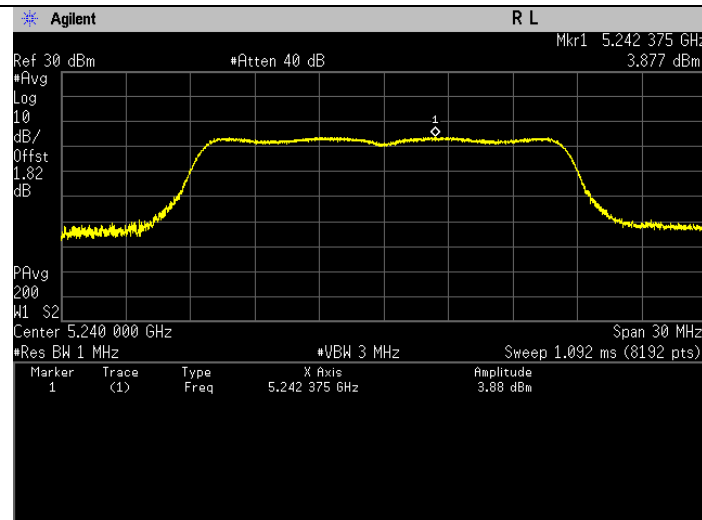
Plots for 802.11a (26dB EBW & 99% EBW)



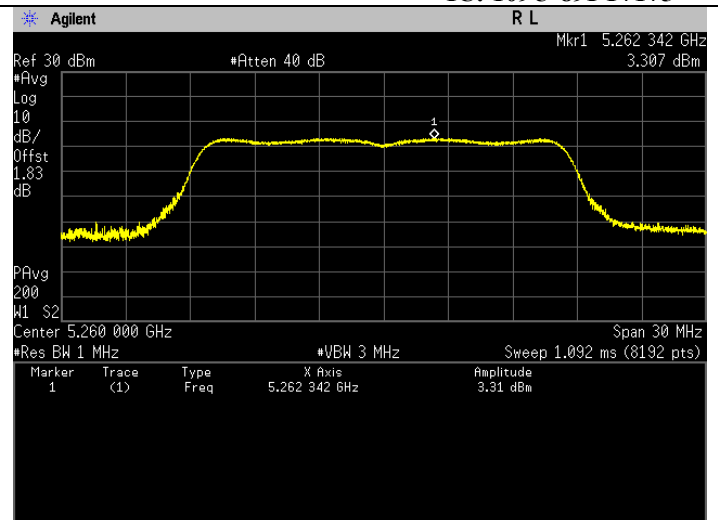
Frequency 5180 MHz, FCC & ISSED.



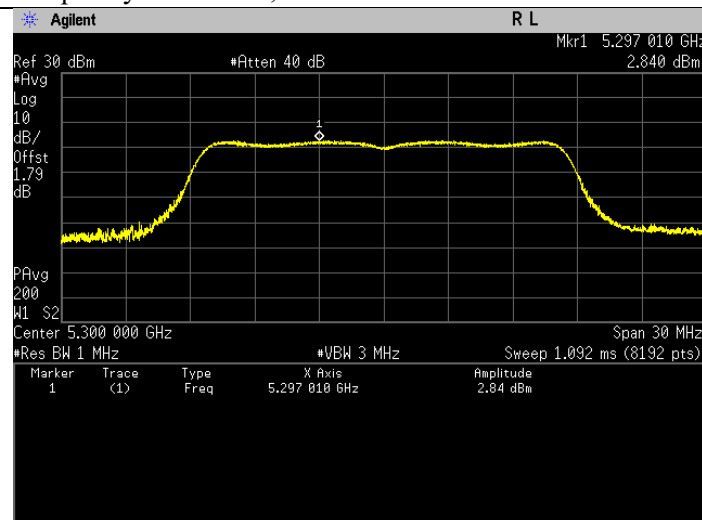
Frequency 5220 MHz, FCC & ISSED.



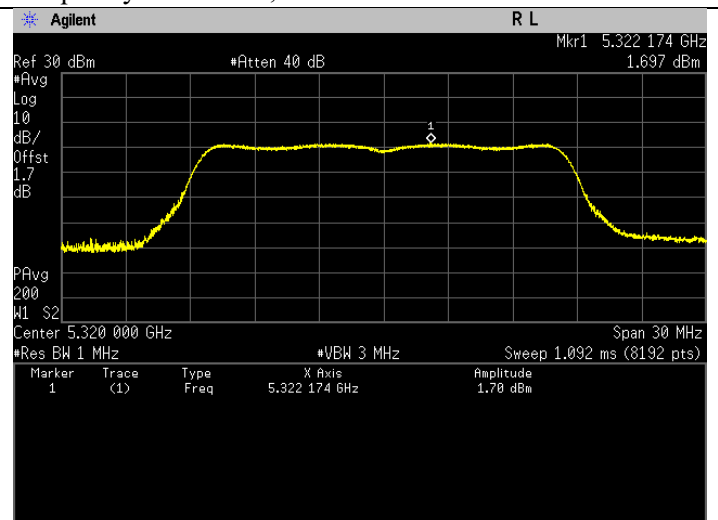
Frequency 5240 MHz, FCC & ISSED.



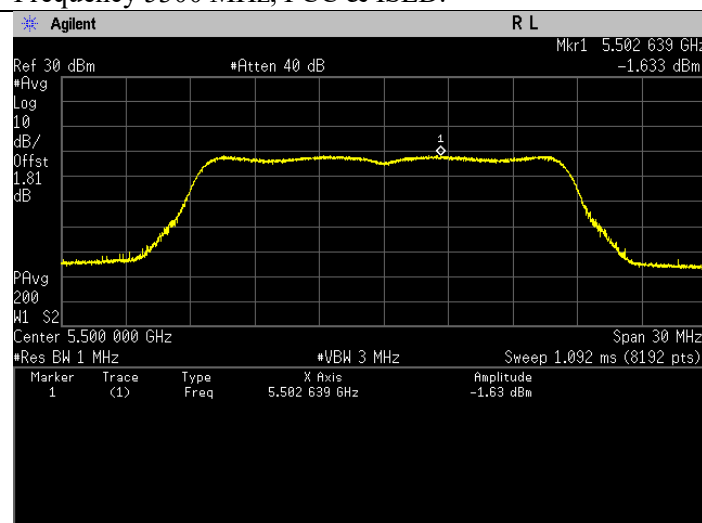
Frequency 5260 MHz, FCC & ISSED.



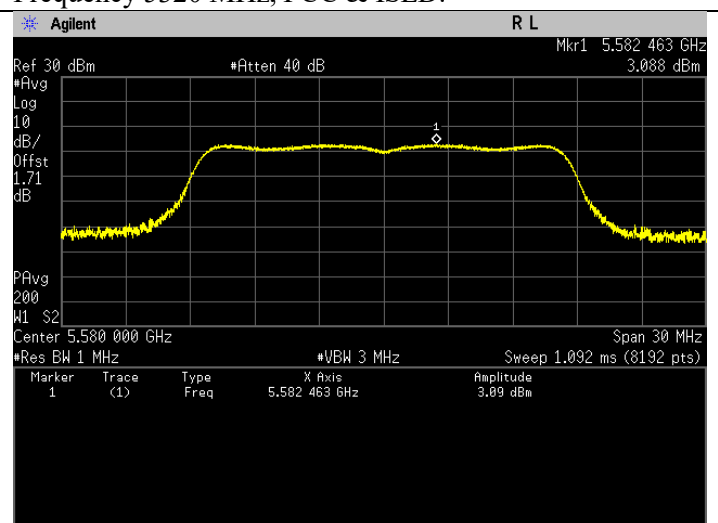
Frequency 5300 MHz, FCC & ISSED.



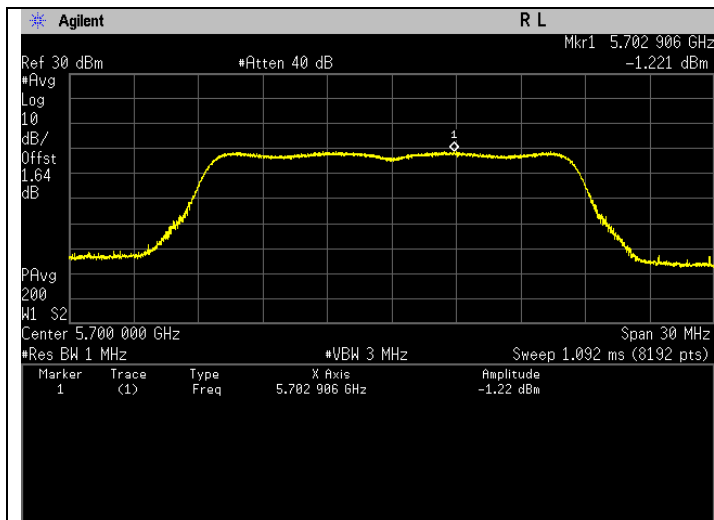
Frequency 5320 MHz, FCC & ISSED.



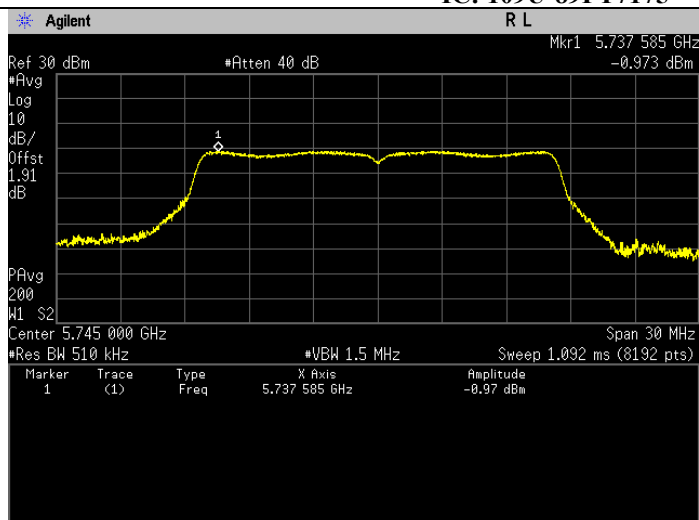
Frequency 5500 MHz, FCC & ISSED.



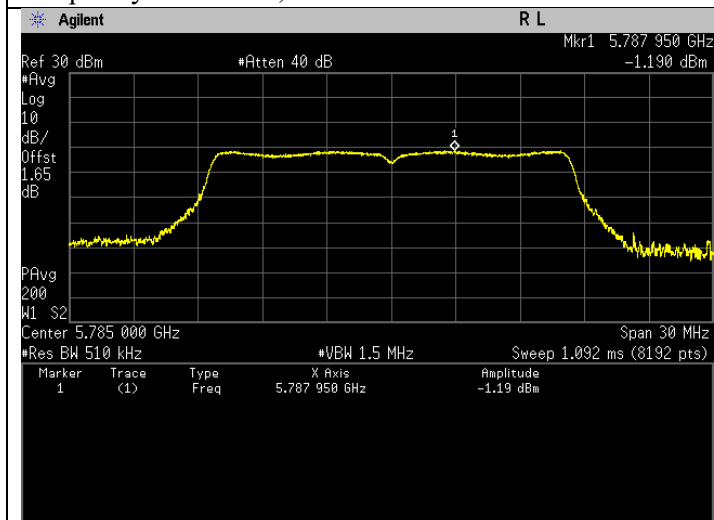
Frequency 5580 MHz, FCC & ISSED.



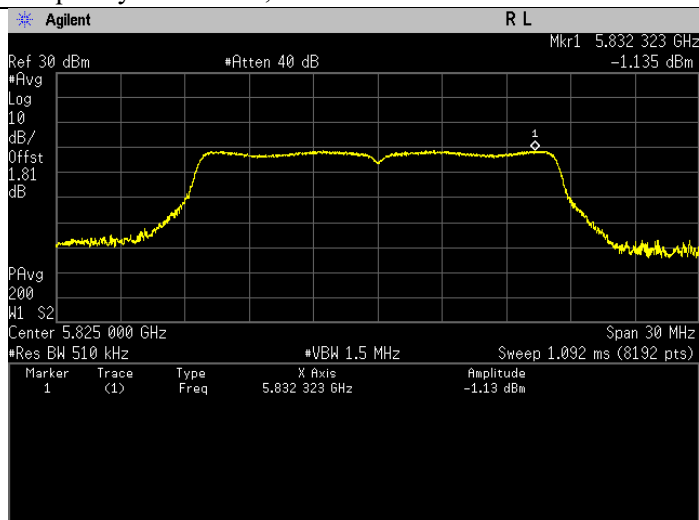
Frequency 5700 MHz, FCC & ISCED.



Frequency 5745 MHz, FCC & ISCED.



Frequency 5785 MHz, FCC & ISCED.



Frequency 5825 MHz, FCC & ISCED.

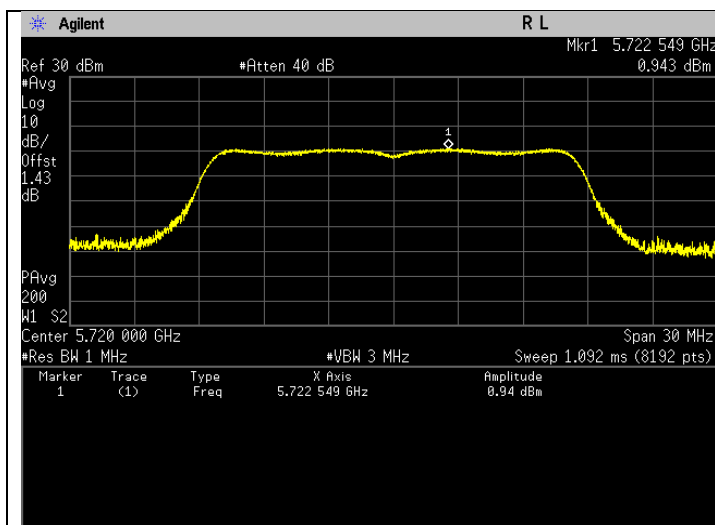
Straddle Frequency for 802.11a (26dB EBW)

Freq. (MHz)	Test Conditions	Results		
		Power/Frequency(dBm/MHz)	Status	
		U-NII- 2C		
5720	Mod Type: BPSK, Data Rate: 6	0.968	Pass	
Freq. (MHz)	Test Conditions	U-NII-3		
		Power/Frequency(dBm/500kHz)	Status	
5720	Mod Type: BPSK, Data Rate: 6	0.996	Pass	

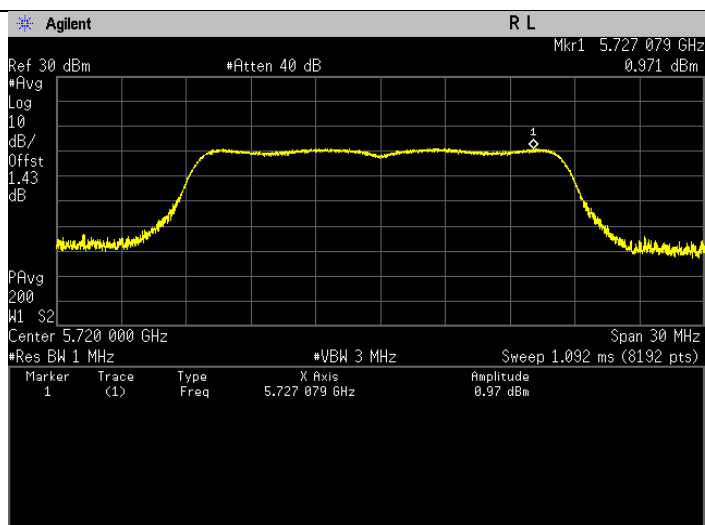
Straddle Frequency for 802.11a (99% EBW)

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
		U-NII- 2C	
5720	Mod Type: BPSK, Data Rate: 6	0.968	Pass
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
5720	Mod Type: BPSK, Data Rate: 6	0.996	Pass

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



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



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

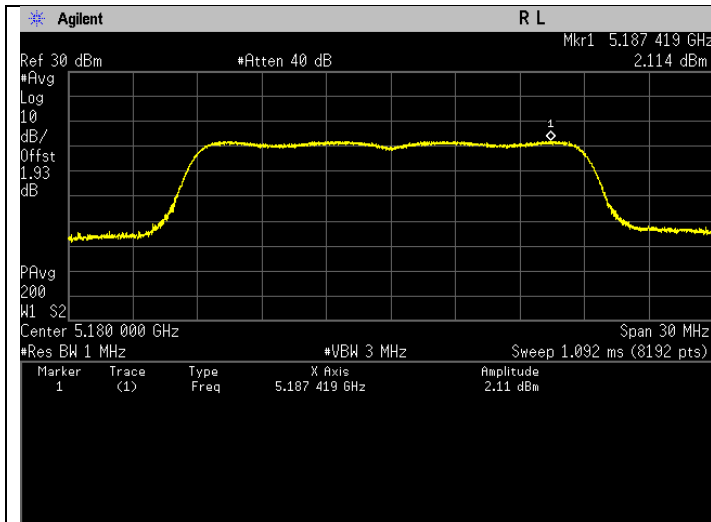
802.11n (HT20) (26dB EBW)

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	2.136	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	2.789	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	1.824	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	2.421	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	1.772	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	1.403	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	0.325	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	1.986	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-1.263	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	0.267	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	0.059	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	0.061	Pass

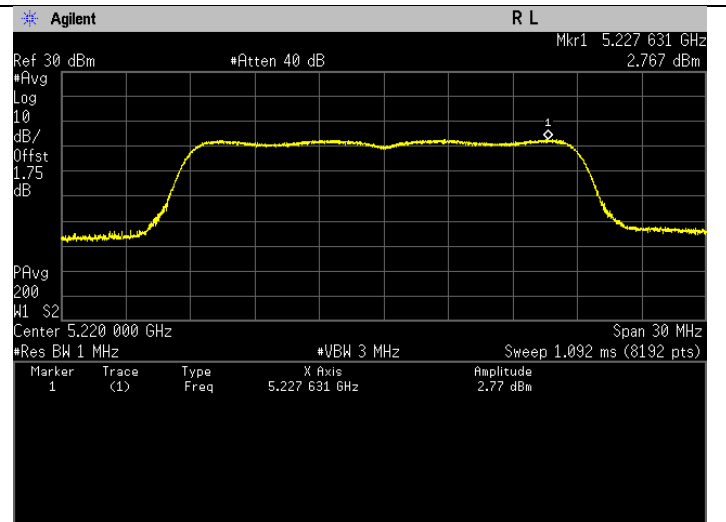
802.11n (HT20)(99% EBW)

Freq. (MHz)	Test Conditions	Results			
		Power/Frequency (dBm/MHz)	Status	EIRP (dBm/MHz)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	2.136	Pass	7.016	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	2.789	Pass	7.669	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	1.824	Pass	6.704	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	2.421	Pass	7.301	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	1.772	Pass	6.652	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	1.403	Pass	6.283	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	0.325	Pass	5.205	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	1.986	Pass	6.866	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	-1.263	Pass	3.617	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status		
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	0.267	Pass	5.147	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	0.059	Pass	4.939	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	0.061	Pass	4.941	Pass

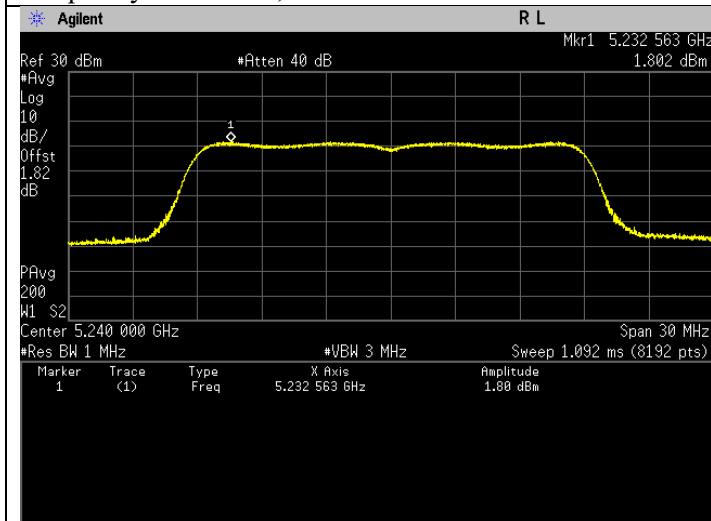
Plots for 802.11n (HT20) (26dB EBW & 99% EBW)



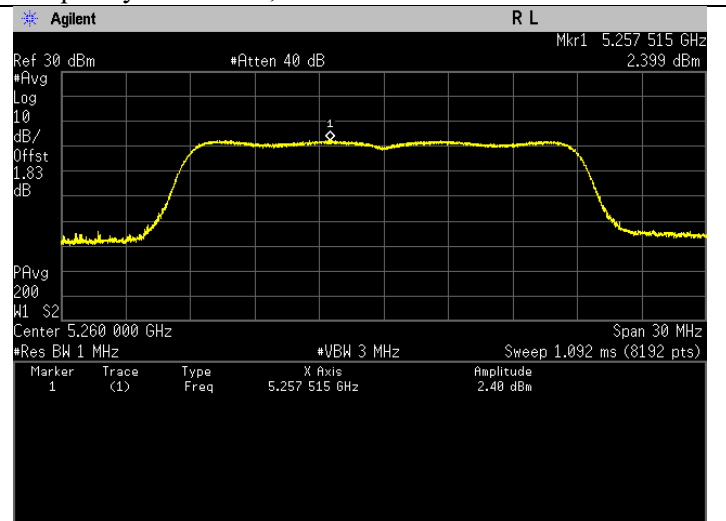
Frequency 5180 MHz, FCC & ISSED.



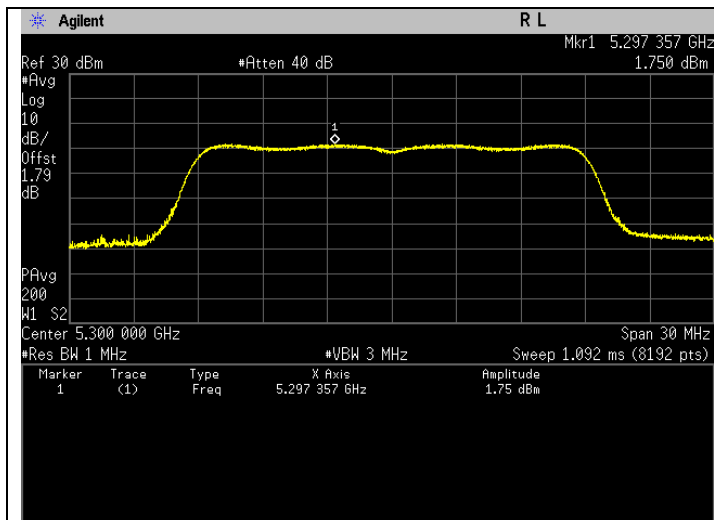
Frequency 5220 MHz, FCC & ISSED.



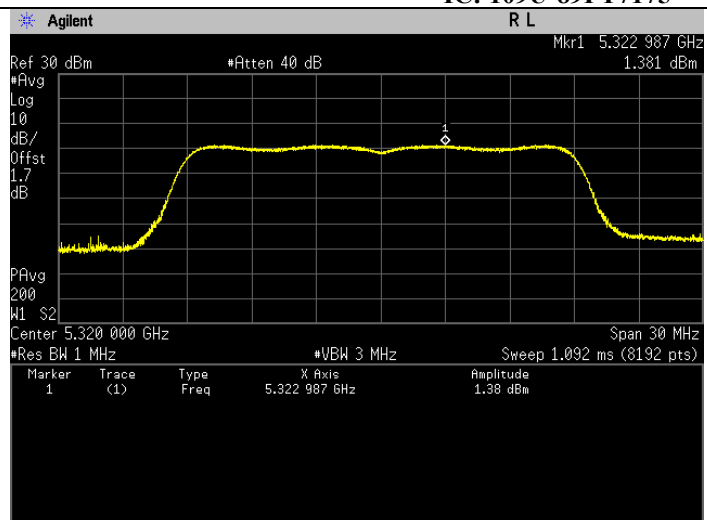
Frequency 5240 MHz, FCC & ISSED.



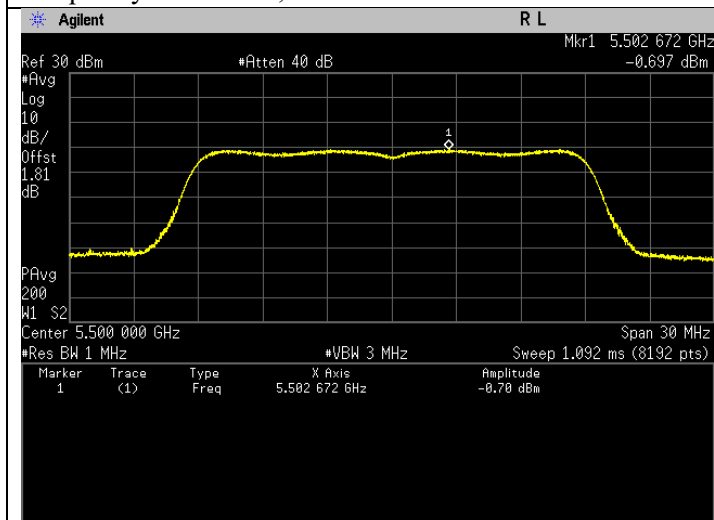
Frequency 5260 MHz, FCC & ISSED.



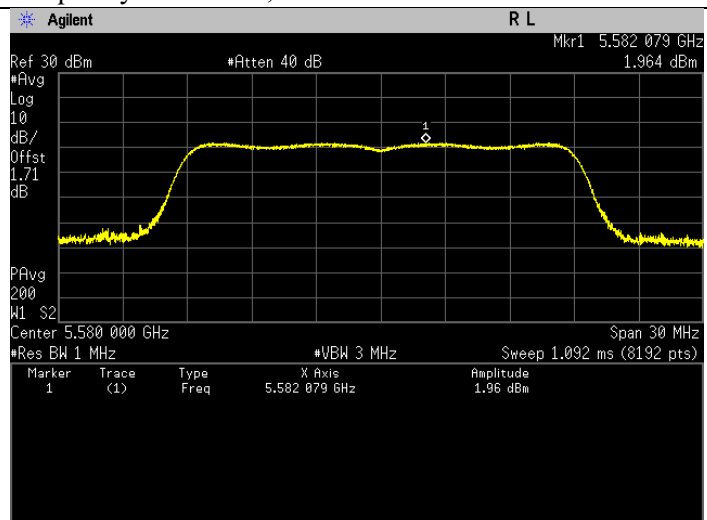
Frequency 5300 MHz, FCC & ISSED.



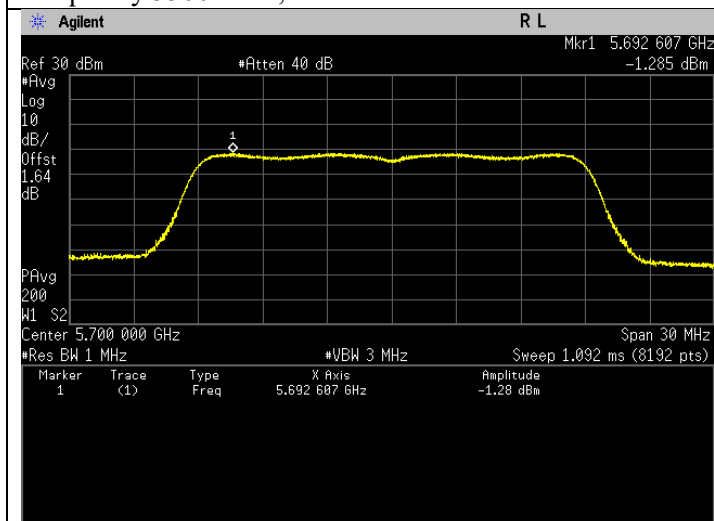
Frequency 5320 MHz, FCC & ISSED.



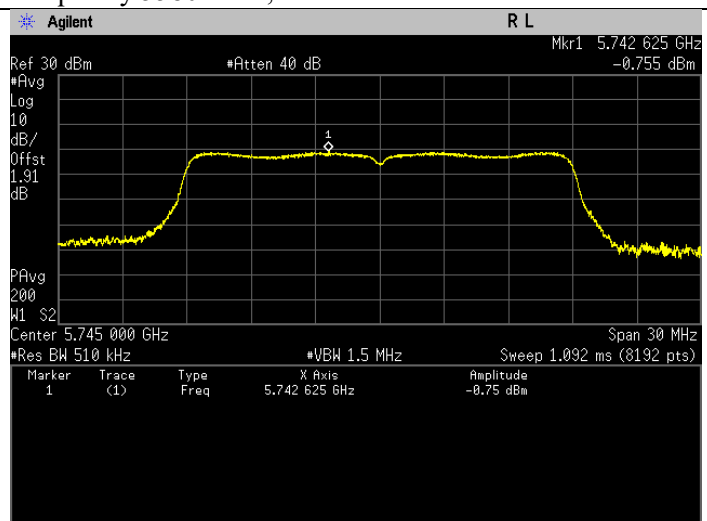
Frequency 5500 MHz, FCC & ISSED.



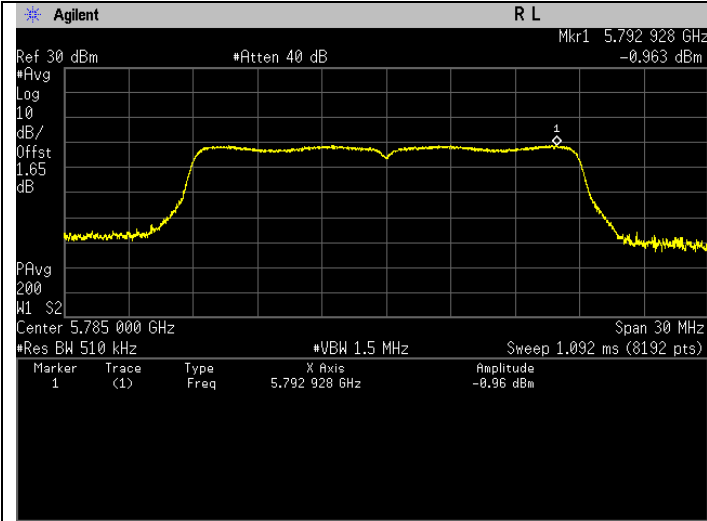
Frequency 5580 MHz, FCC & ISSED.



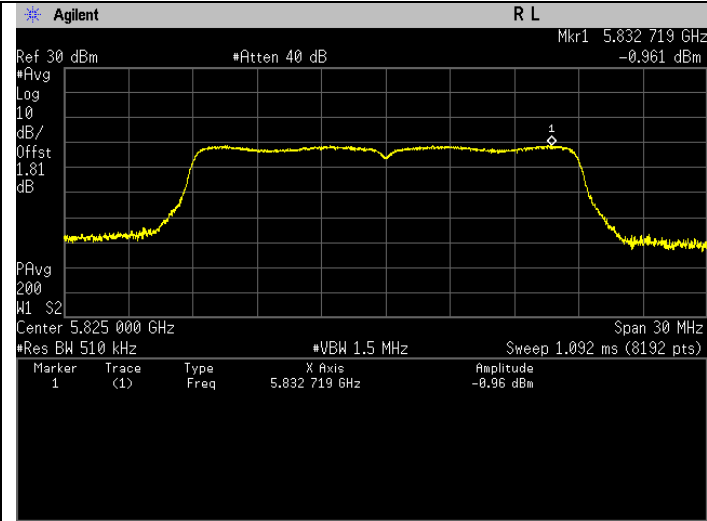
Frequency 5700 MHz, FCC & ISSED.



Frequency 5745 MHz, FCC & ISSED.



Frequency 5785 MHz, FCC & ISED.



Frequency 5825 MHz, FCC & ISED.

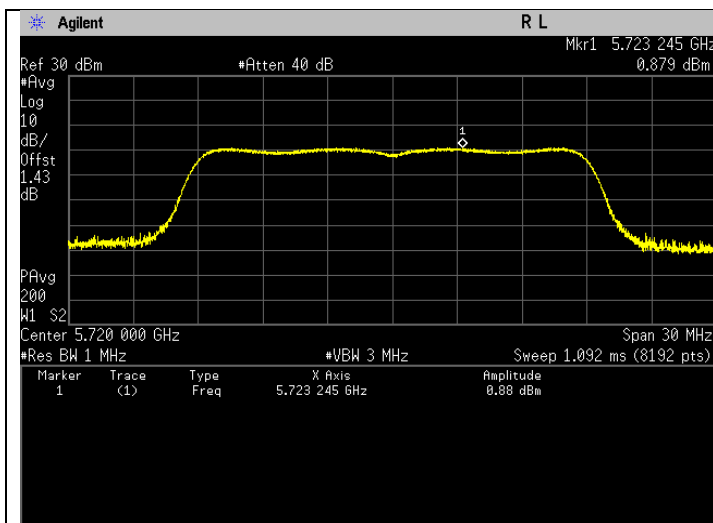
Straddle Frequency 802.11n (HT20) (26dB EBW)

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
		U-NII- 2C	
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	0.901	Pass
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	0.963	Pass

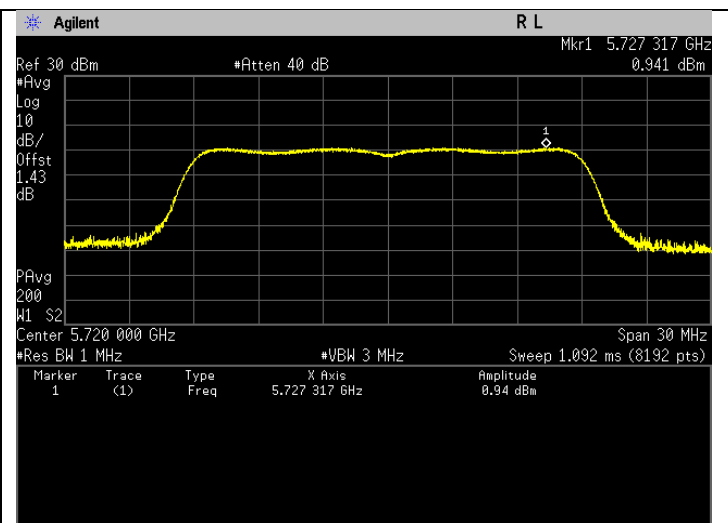
Straddle Frequency 802.11n (HT20) (99% EBW)

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
		U-NII- 2C	
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	0.901	Pass
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	0.963	Pass

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



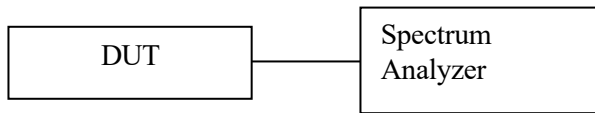
Frequency 5720 MHz, FCC & ISSED,U-NII-2C. *Note: The highest spectral density is captured before the 5725 MHz.



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

7.4. 6dB Bandwidth

7.4.1. 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 $\geq 3 \cdot$ 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).

7.4.2. 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.

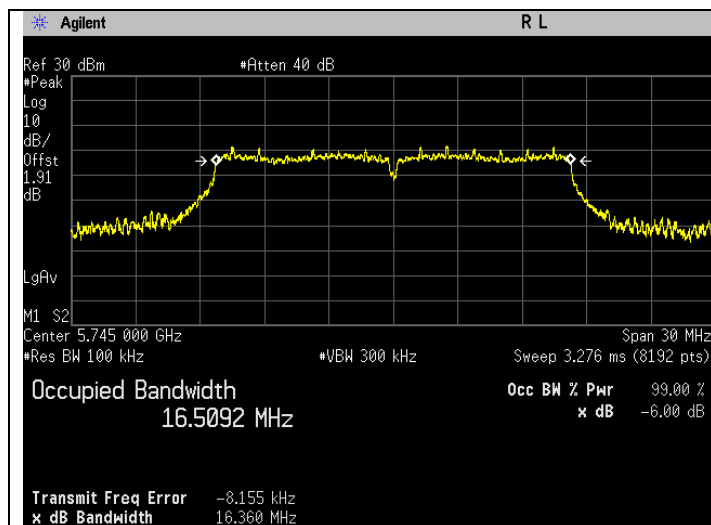
RSS 247 6.2.4

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

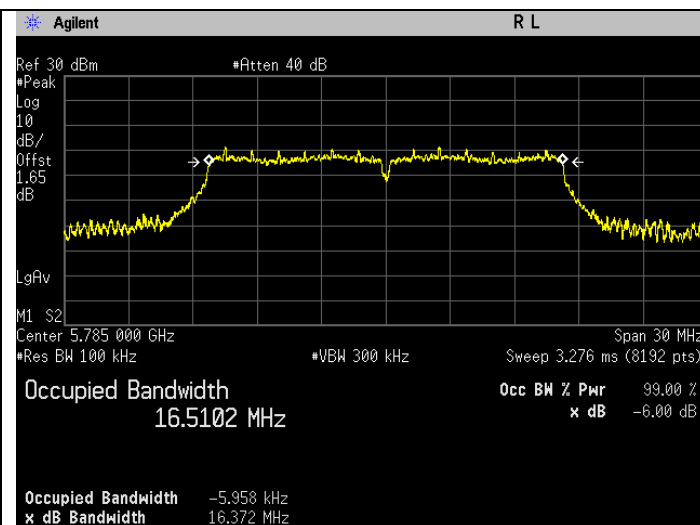
7.4.3. Test Data

802.11a

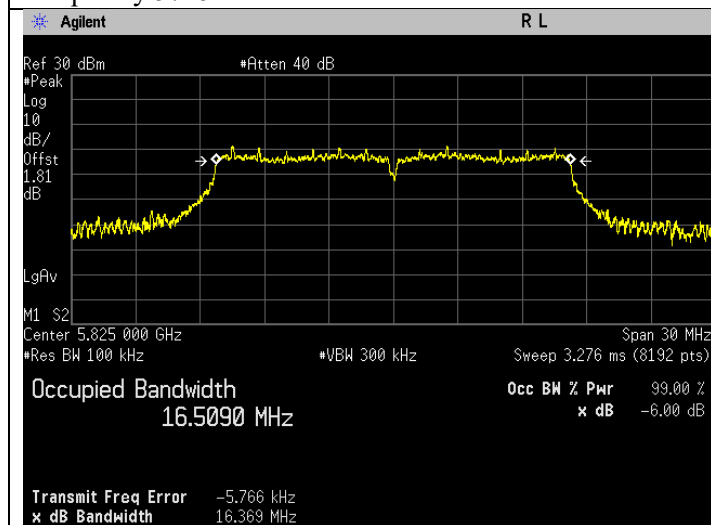
Freq. (MHz)	Test Configuration	Results	
		Bandwidth(MHz)	Status
5745	Mod Type: BPSK, Data Rate: 6	16.360	Pass
5785	Mod Type: BPSK, Data Rate: 6	16.372	Pass
5825	Mod Type: BPSK, Data Rate: 6	16.369	Pass



Frequency 5745 MHz



Frequency 5785 MHz

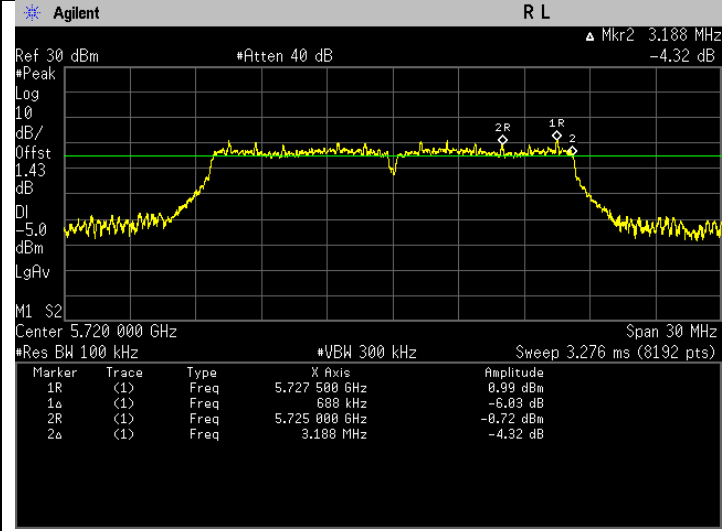


Frequency 5825 MHz

Straddle Frequency for 802.11a

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

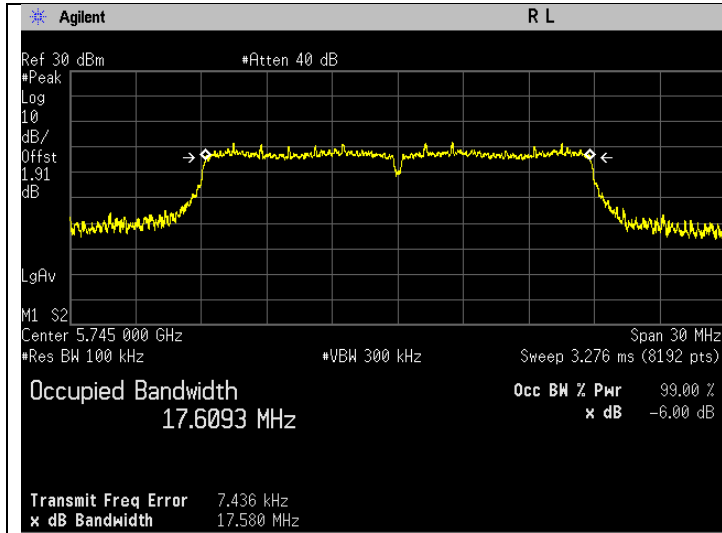
Plots for 802.11a Straddle Frequency



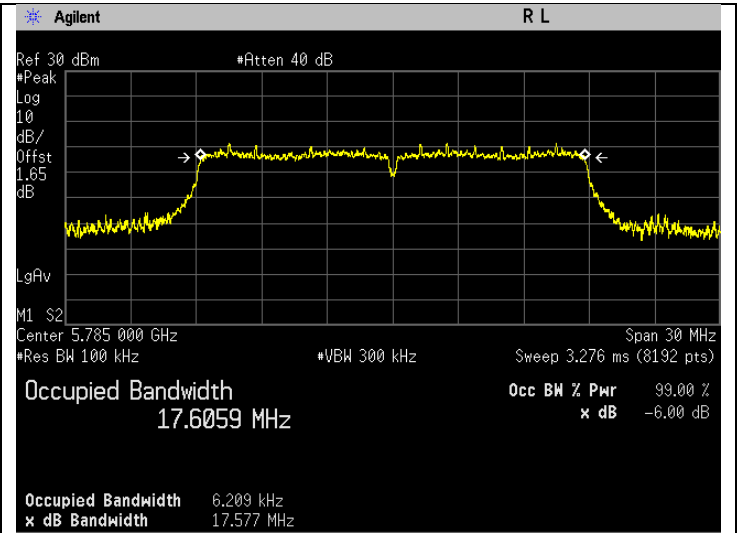
Frequency 5720 MHz

802.11n (HT20)

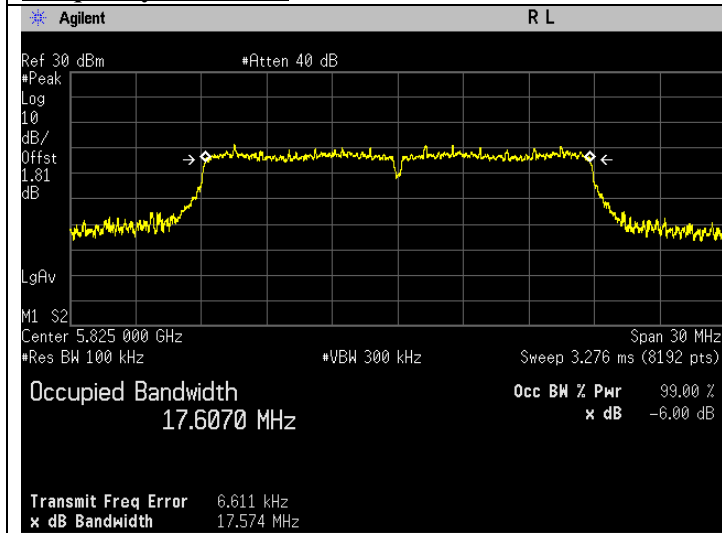
Freq. (MHz)	Test Configuration	Results	
		Bandwidth(MHz)	Status
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	17.580	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	17.577	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	17.574	Pass



Frequency 5745 MHz



Frequency 5785 MHz

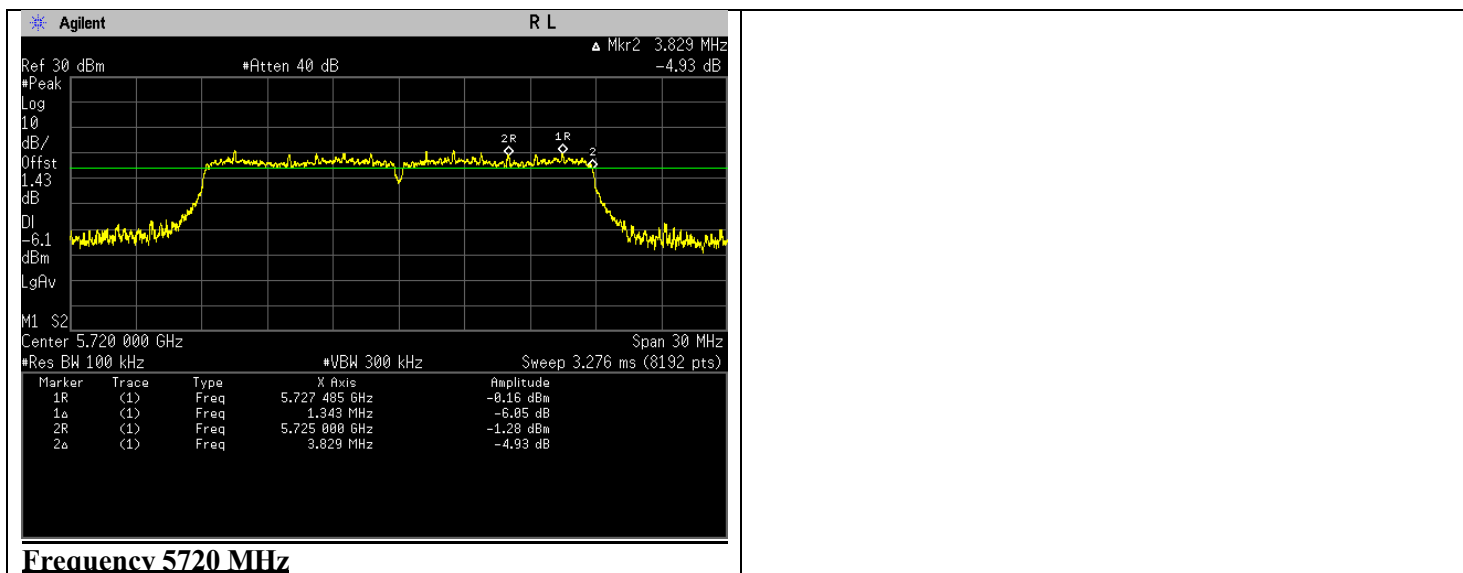


Frequency 5825 MHz

Straddle Frequency for 802.11n (HT20)

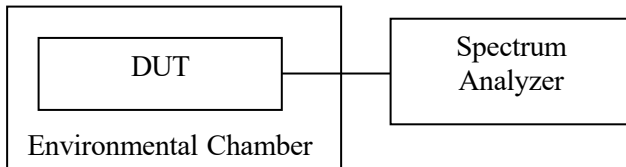
Freq. (MHz)	Test Conditions	Results	
		Power/Freq. (dBm/MHz)	Status
		U-NII- 3	
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	3.829	Pass

Plots for 802.11n (HT20) Straddle Frequency



7.5. Frequency Stability

7.5.1. Test Setup



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

7.5.2. 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

For licence-exempt devices, the following conditions apply:

- at the temperatures of -20°C (-4°F), +20°C (+68°F) and +50°C (+122°F), and at the manufacturer's rated supply voltage
- at the temperature of +20°C (+68°F) and at ±15% of the manufacturer's rated supply voltage

If the frequency stability limits are only met within a temperature range that is smaller than the range specified in (a) for licensed or licence-exempt devices, the frequency stability requirement will be deemed to be met if the transmitter is automatically prevented from operating outside this smaller temperature range and if the published operating characteristics for the equipment are revised to reflect this restricted temperature range.

If the device contains both licence and licence-exempt transmitter modules, the device's frequency stability shall be measured under the most stringent condition specified in the applicable RSS of the transmitter module.

In addition, if an unmodulated carrier is not available, the method used to measure frequency stability shall be described in the test report.

7.5.3. Test Data

802.11a

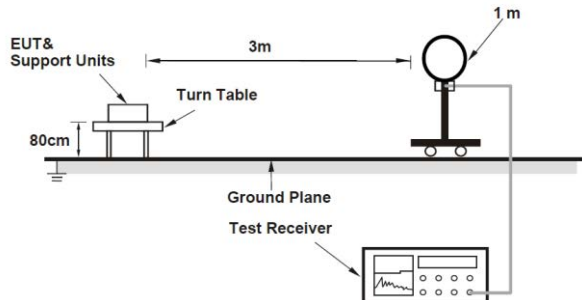
Test Configuration	Test Frequency
	Tx (MHz)
Mod Type: BPSK, Data Rate: 6	5180

Temperature(°C)	Voltage	Results			
		Measured Frequency(MHz)	Frequency Error(kHz)	Frequency Error(%)	Status
20	+15%	5179.998797	1.203000	0.000023	Pass
	±0%	5179.999652	0.348000	0.000007	Pass
	-15%	5180.000293	0.293000	0.000006	Pass
-30		5180.000861	0.861000	0.000017	Pass
-20		5180.001208	1.208000	0.000023	Pass
-10		5180.001690	1.690000	0.000033	Pass
0		5180.002332	2.332000	0.000045	Pass
10		5180.002327	2.327000	0.000045	Pass
30		5180.001016	1.016000	0.000020	Pass
40		5180.001021	1.021000	0.000020	Pass
50		5180.001022	1.022000	0.000020	Pass

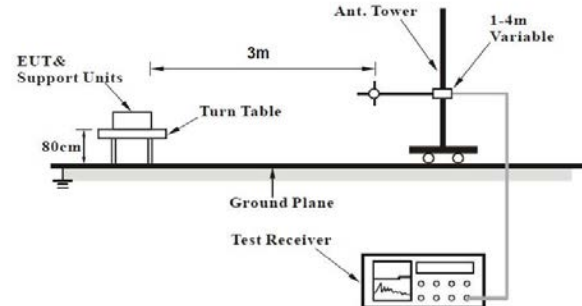
7.6. Band Edge Radiated Spurious Emission Measurement

7.6.1. Test Setup

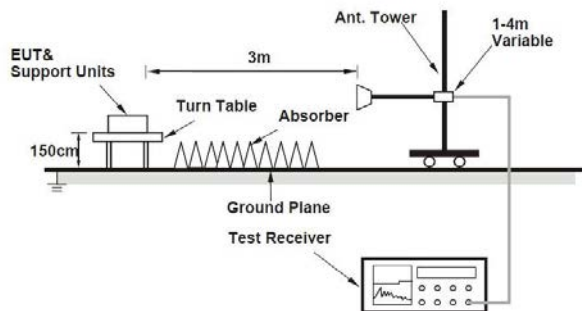
<Radiated emission below 30MHz>



<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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.

7.6.2. 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			

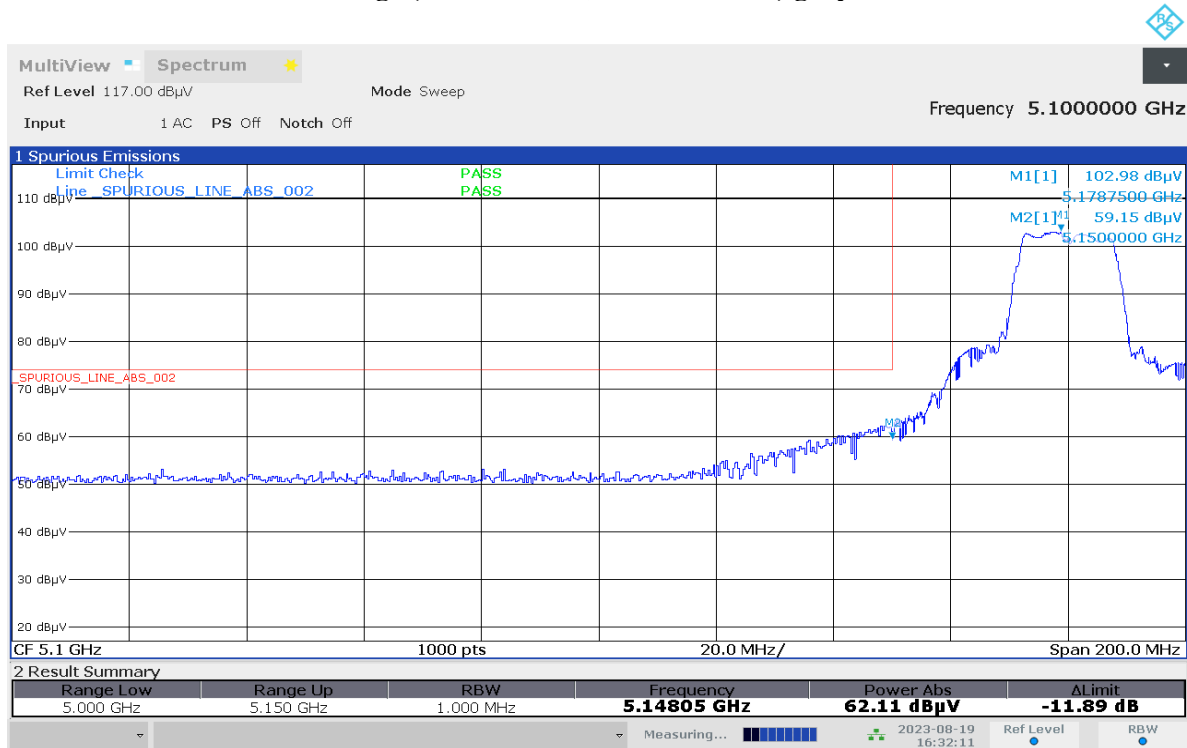
NOTE:

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

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

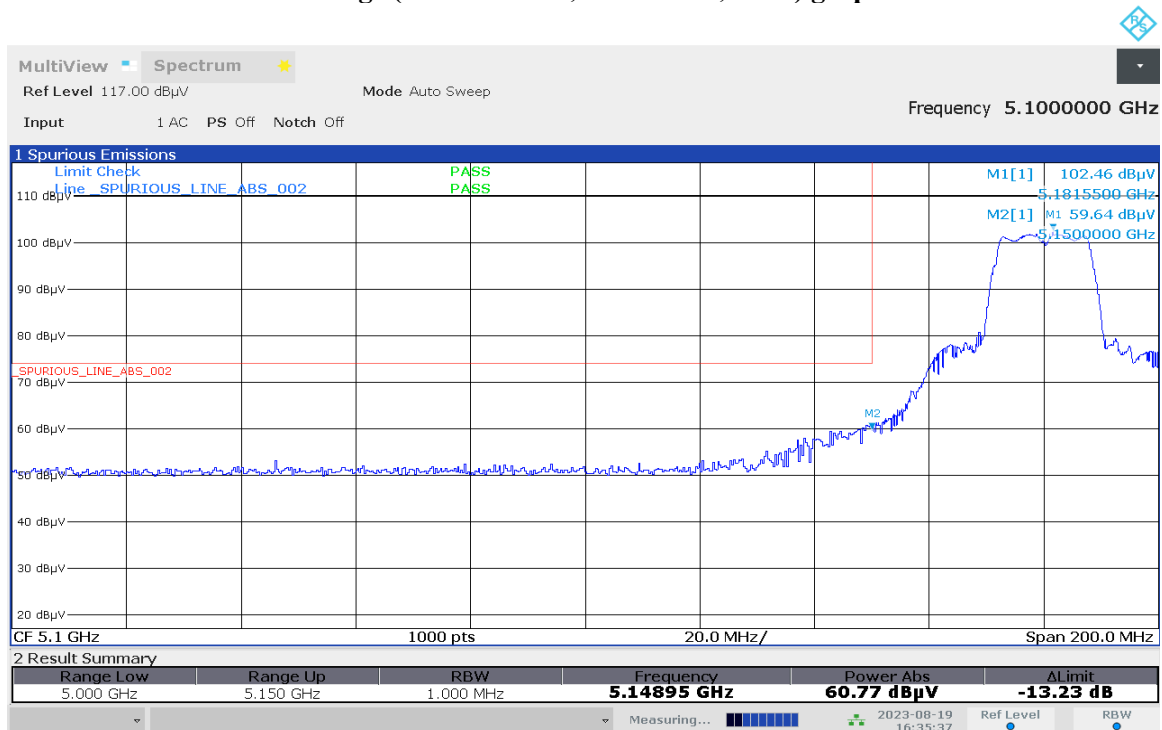
802.11a

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



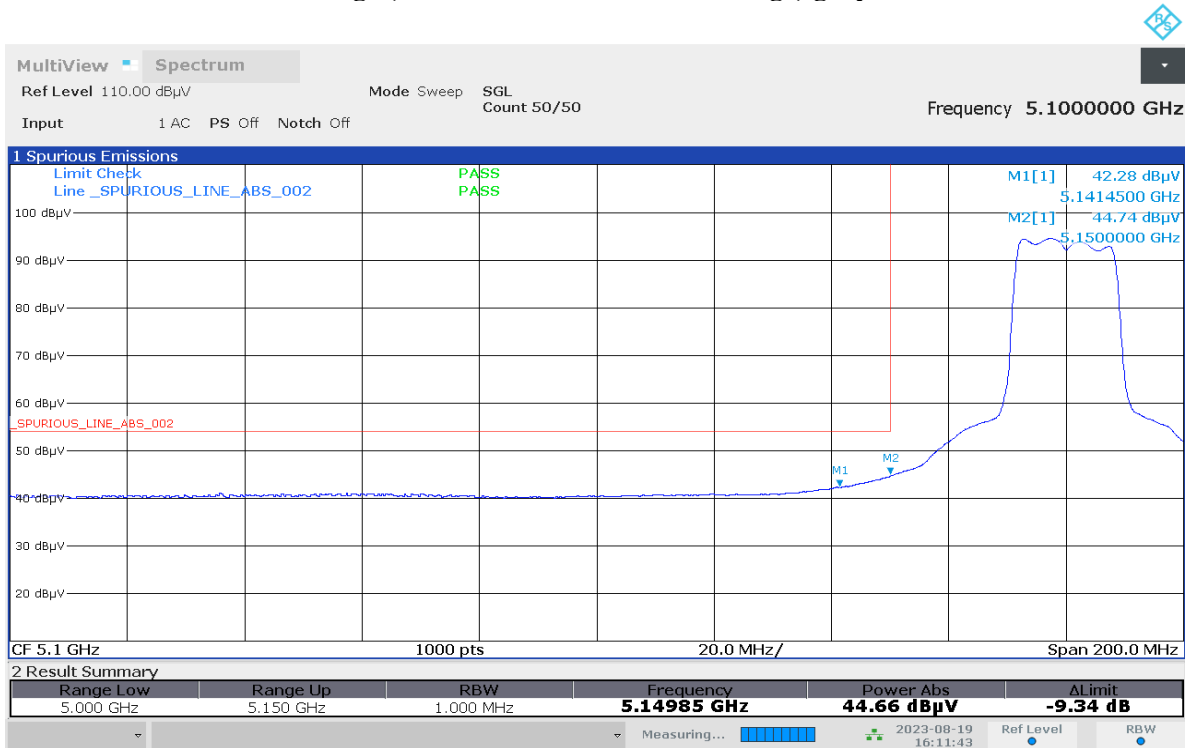
04:32:11 PM 08/19/2023

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



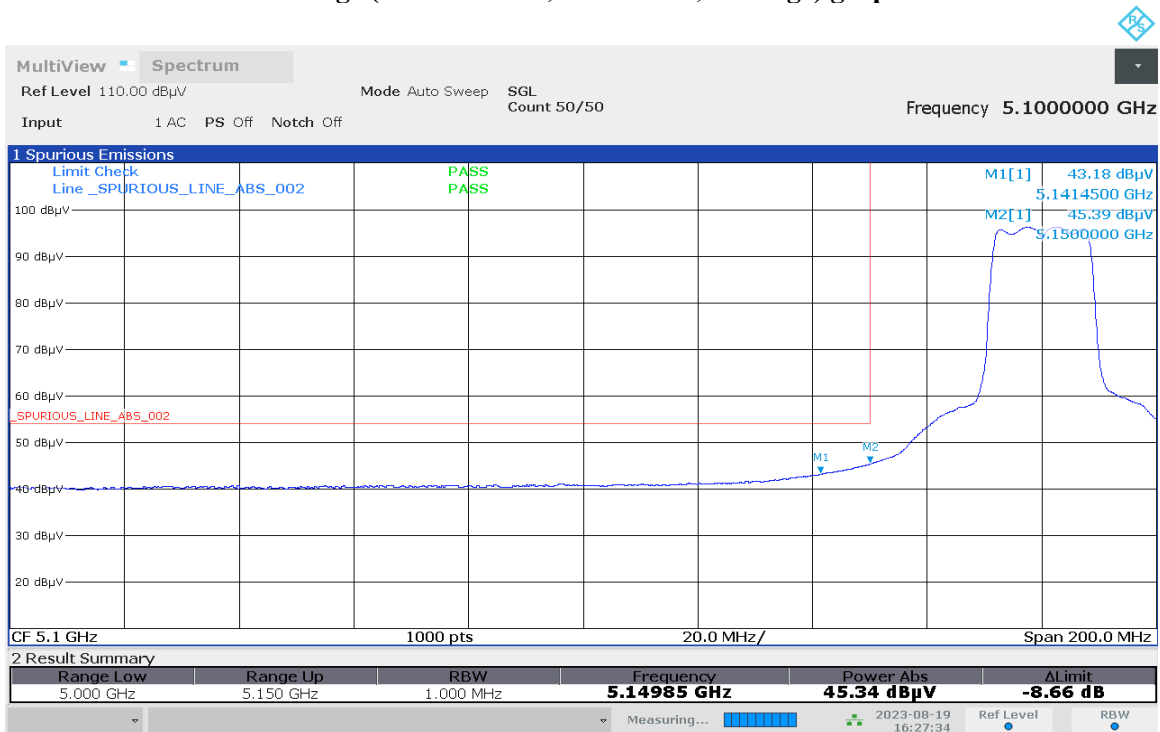
04:35:37 PM 08/19/2023

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



04:11:43 PM 08/19/2023

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



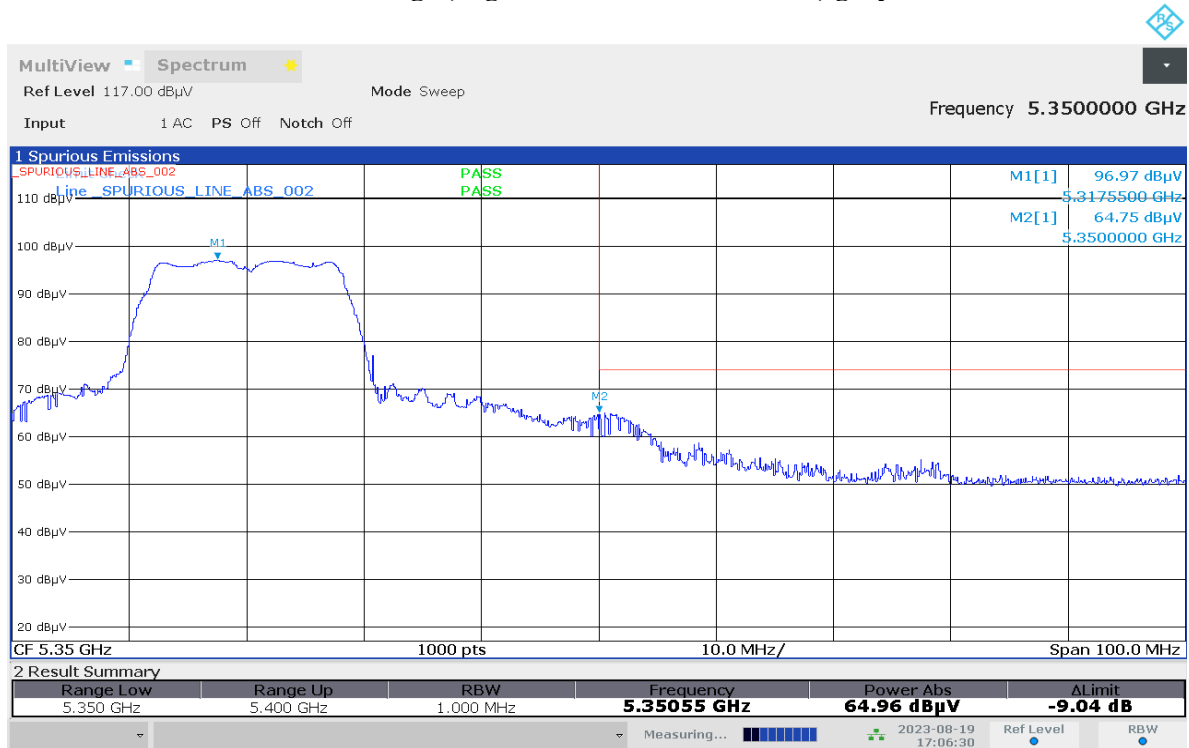
04:27:35 PM 08/19/2023

Restricted Band Edge (High Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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Humidity (%): 69.9
Test Date: Sat, 19 Aug, 2023
System MU: 5.84dB

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



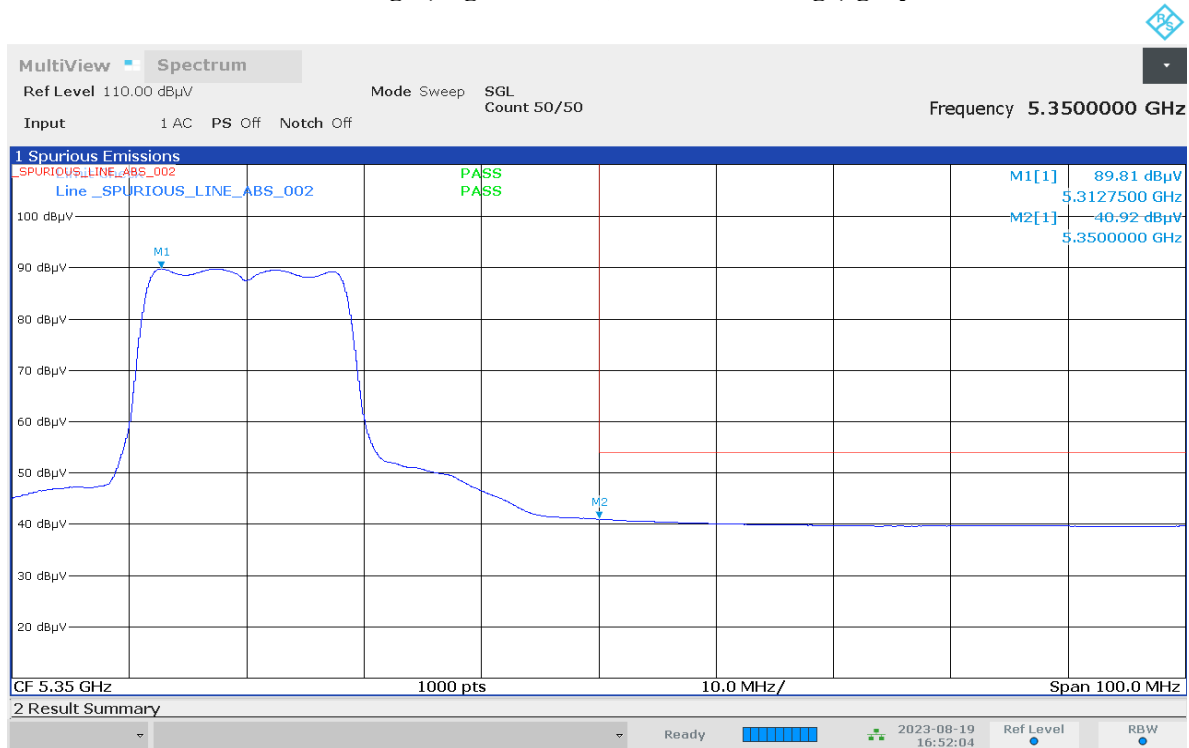
05:06:31 PM 08/19/2023

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



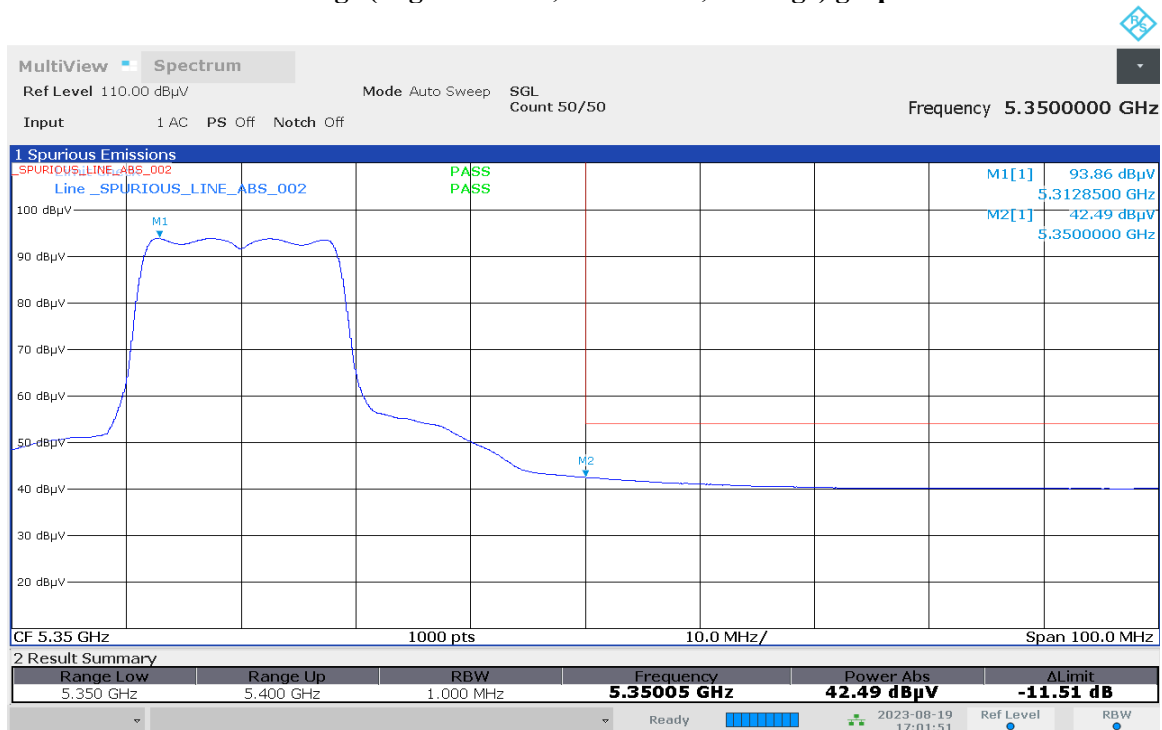
05:09:59 PM 08/19/2023

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



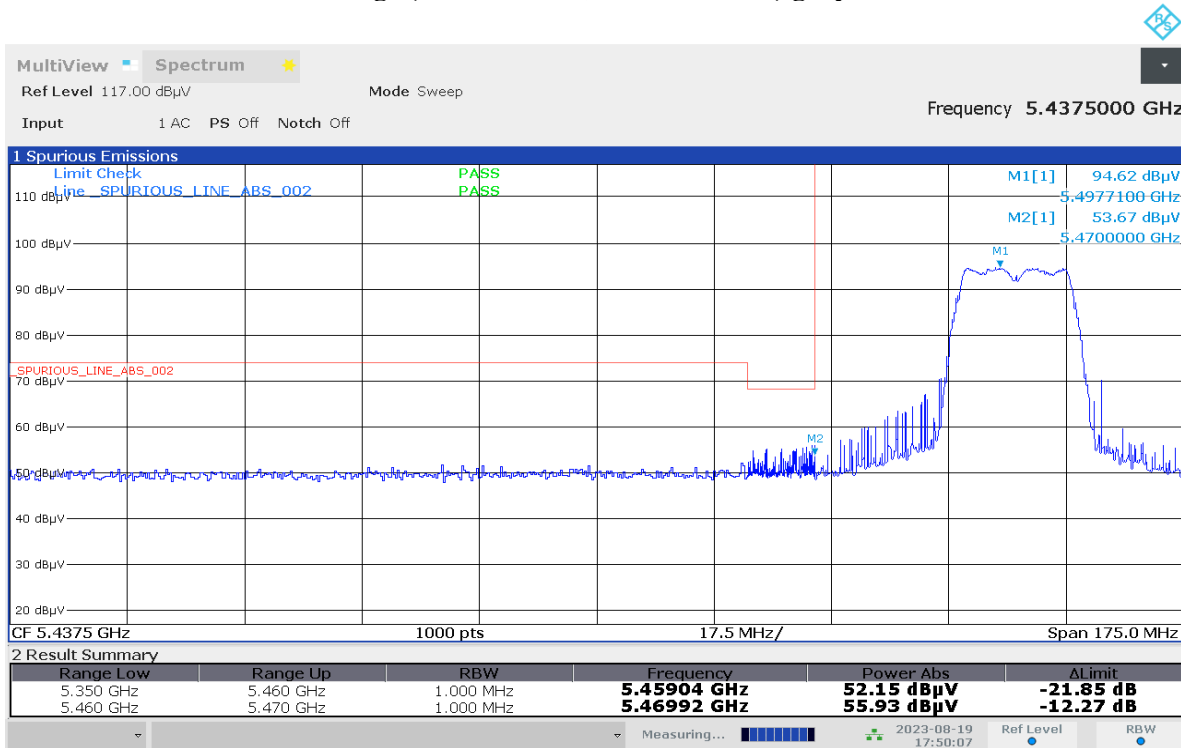
04:52:05 PM 08/19/2023

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



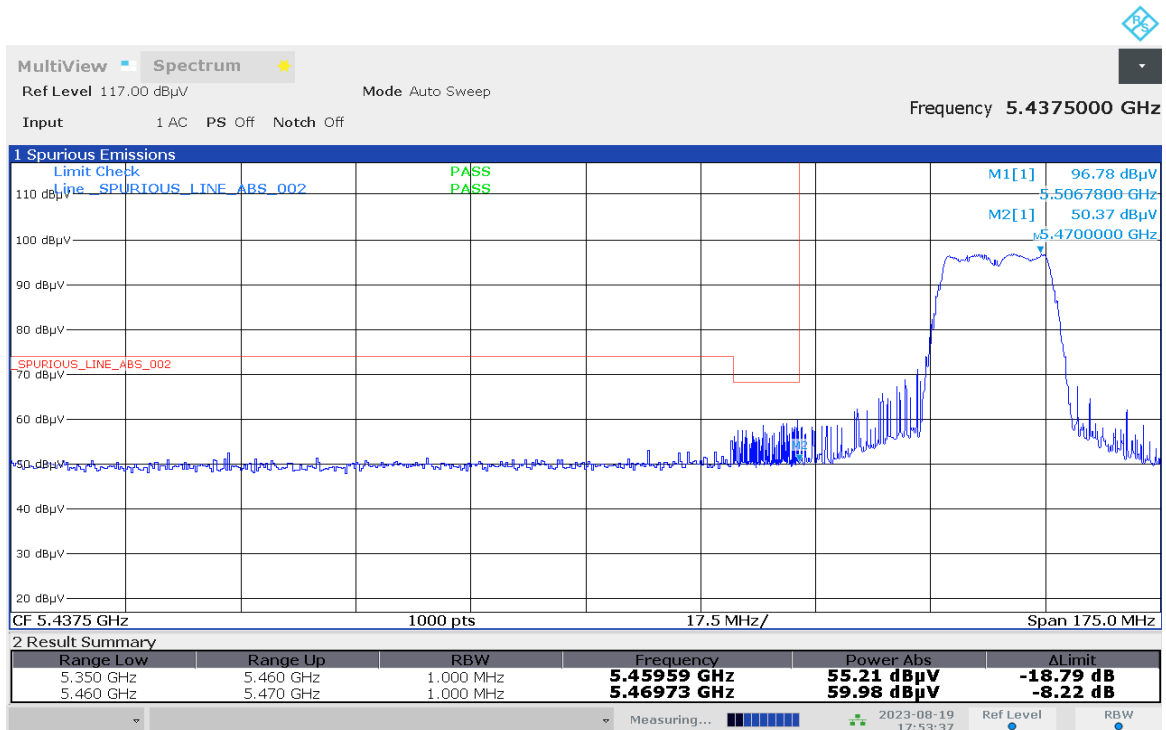
05:01:51 PM 08/19/2023

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



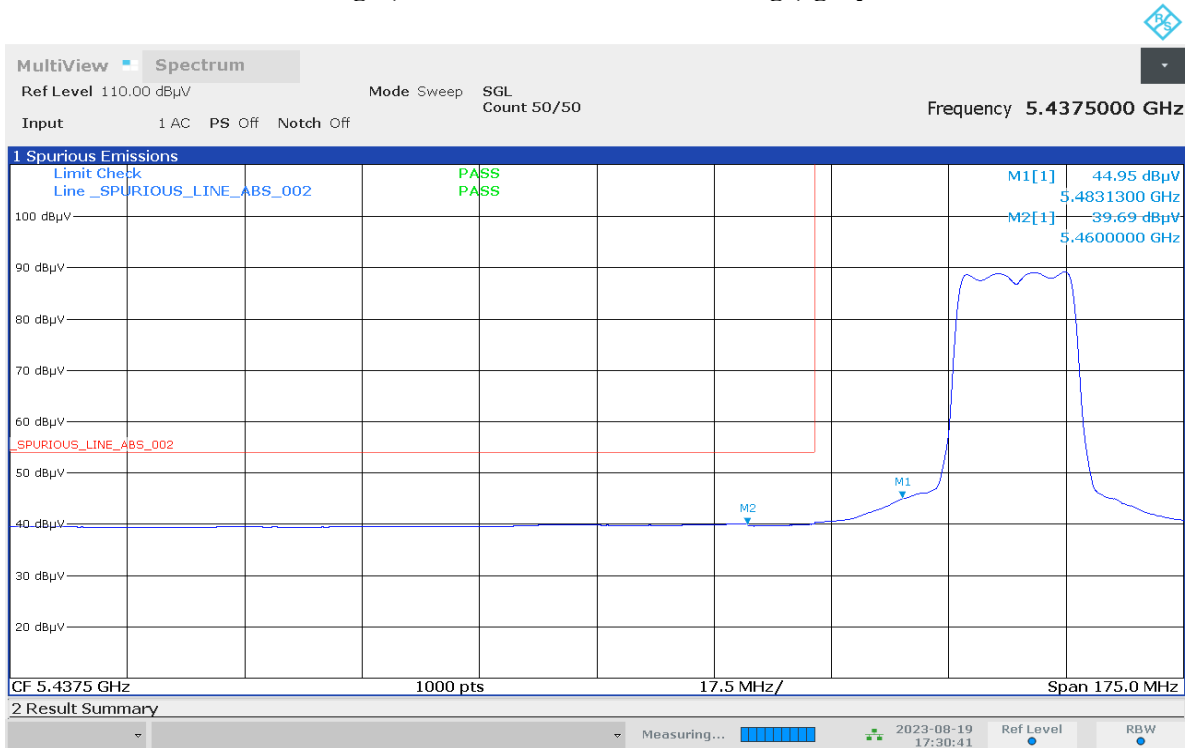
05:50:08 PM 08/19/2023

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



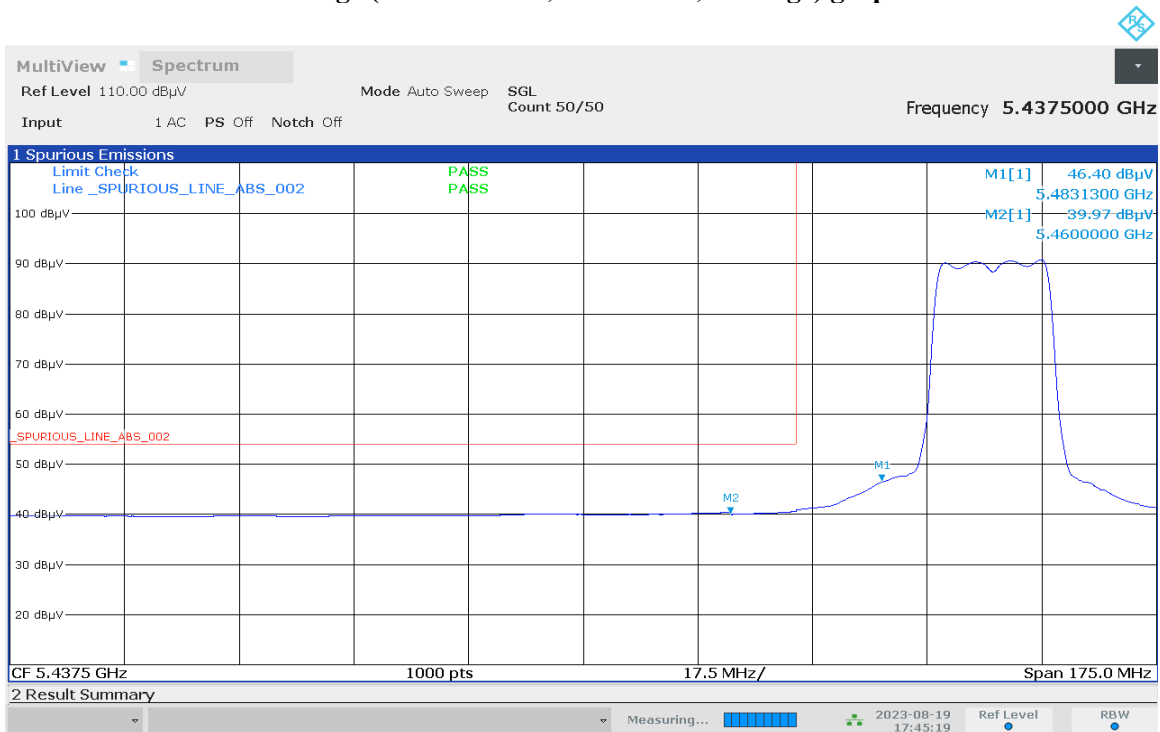
05:53:38 PM 08/19/2023

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



05:30:42 PM 08/19/2023

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



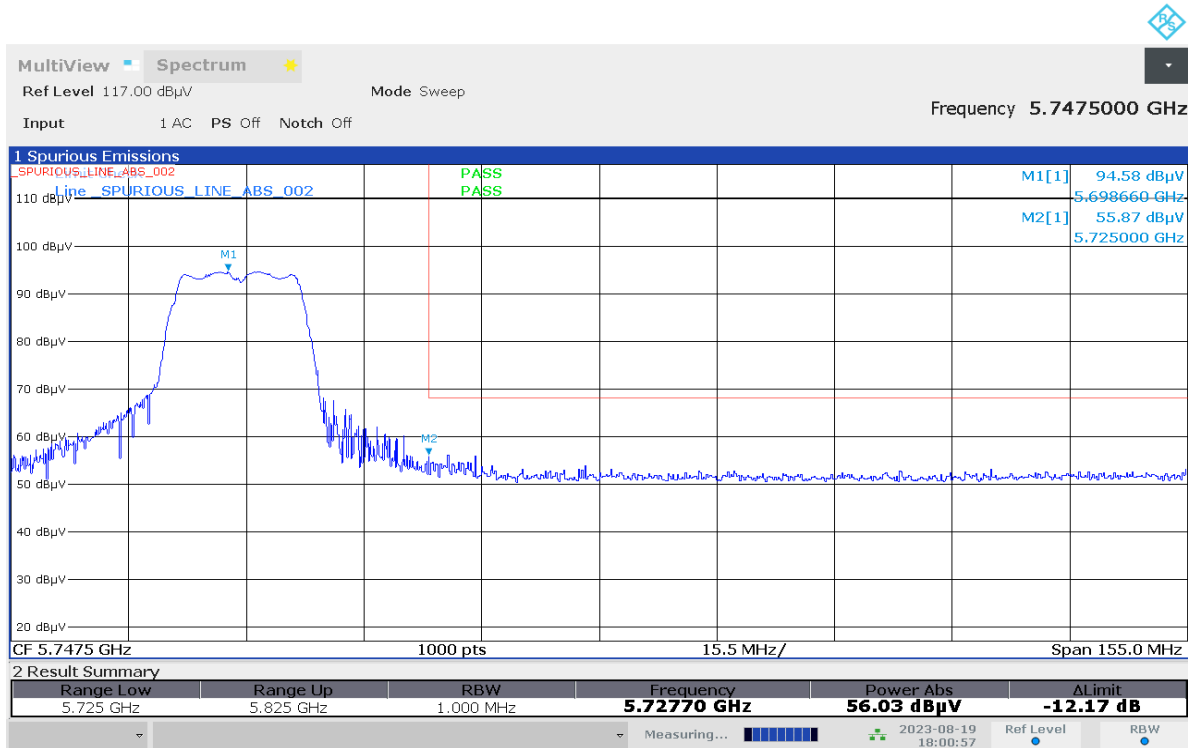
05:45:19 PM 08/19/2023

Restricted Band Edge (High Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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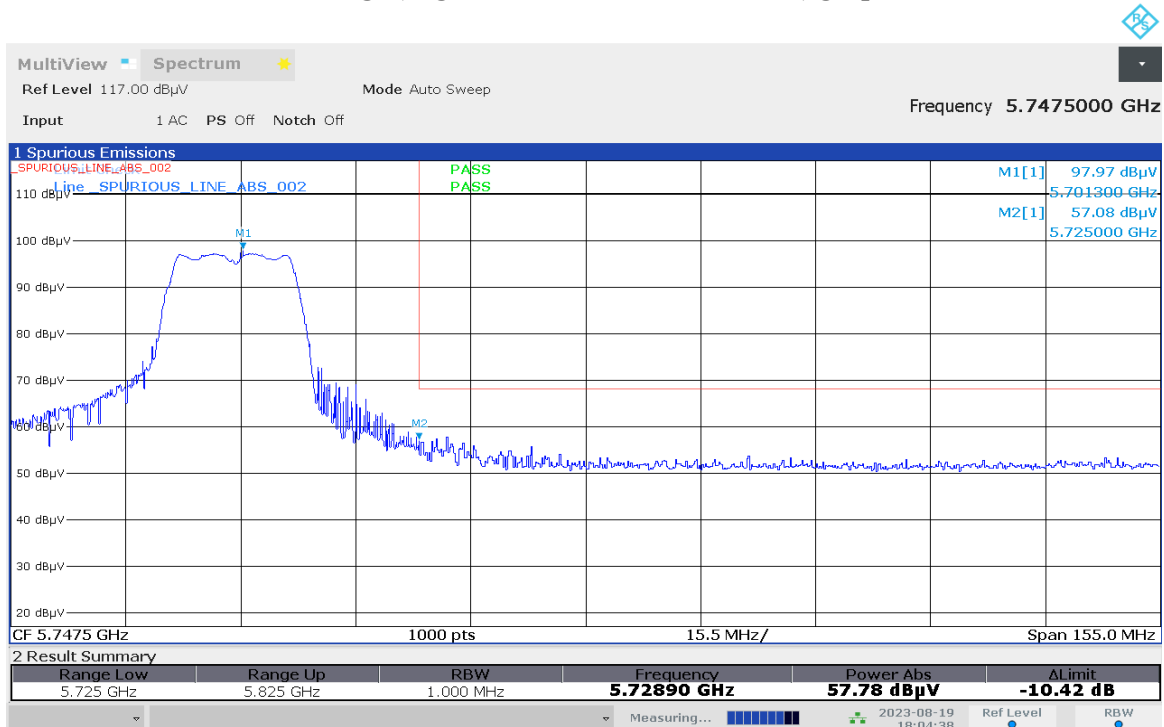
Humidity (%): 69.9
Test Date: Sat, 19 Aug, 2023

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



06:00:57 PM 08/19/2023

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



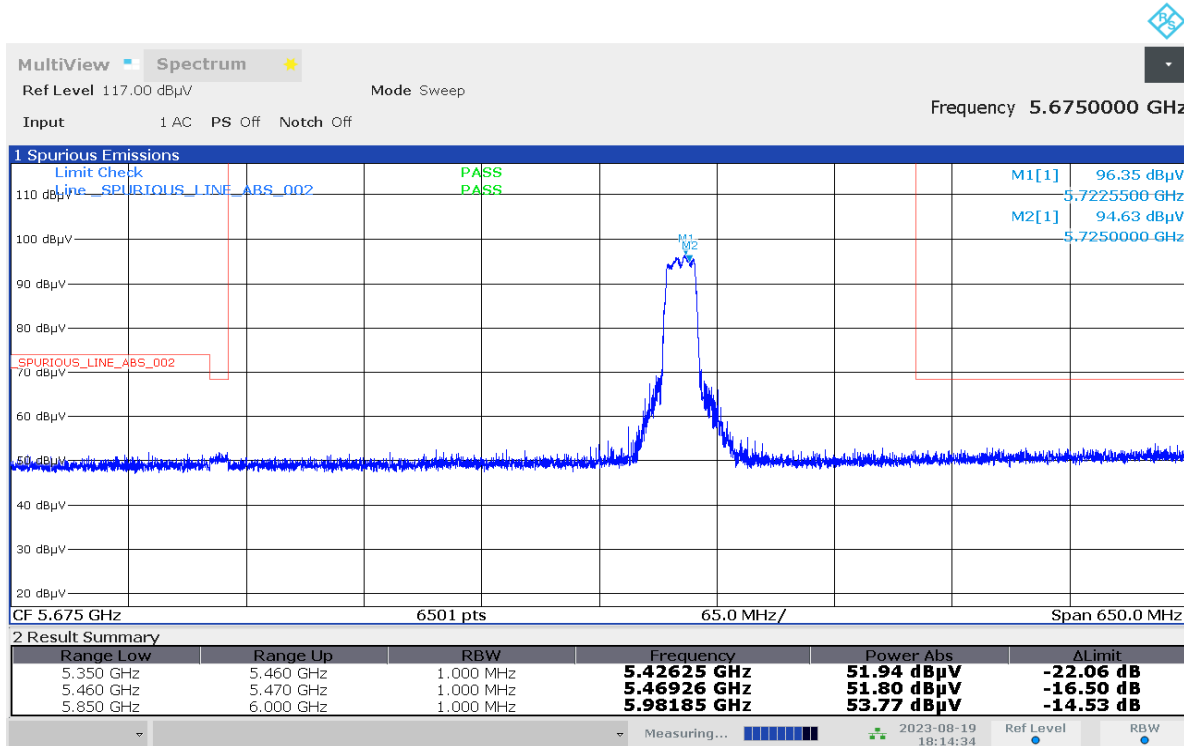
06:04:38 PM 08/19/2023

Restricted Band Edge (Straddle Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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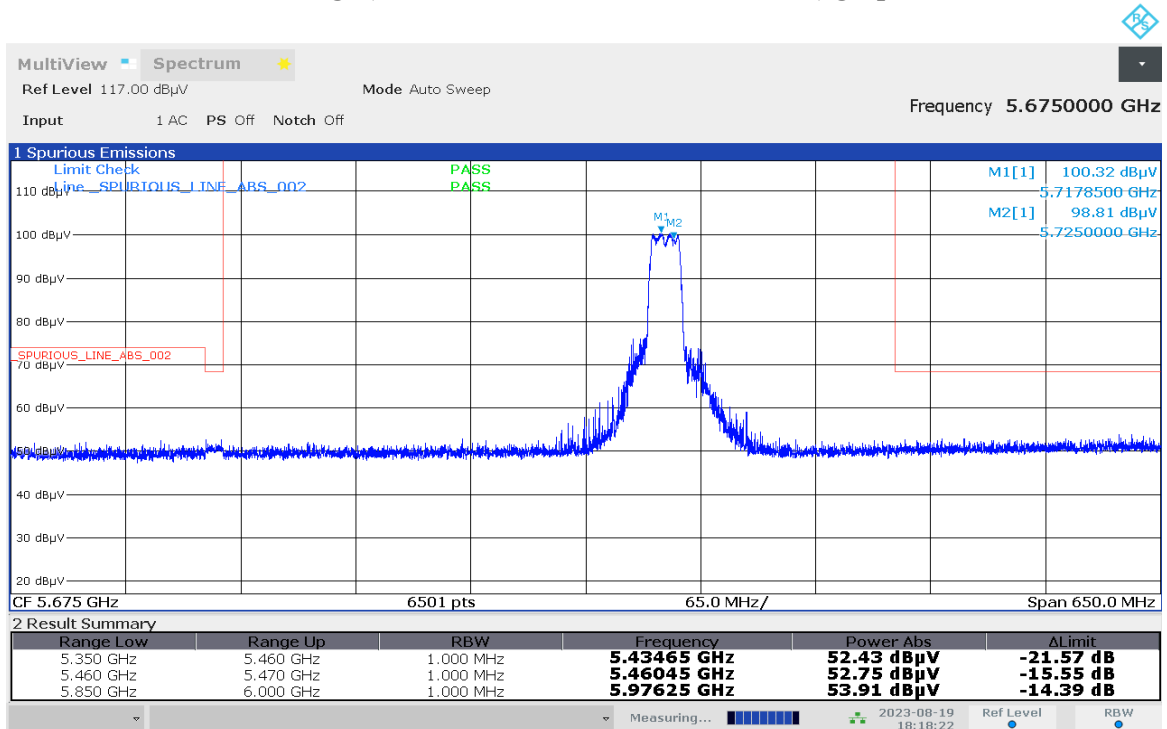
Humidity (%): 69.9
Test Date: Sun, 20 Aug, 2023

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



06:14:34 PM 08/19/2023

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



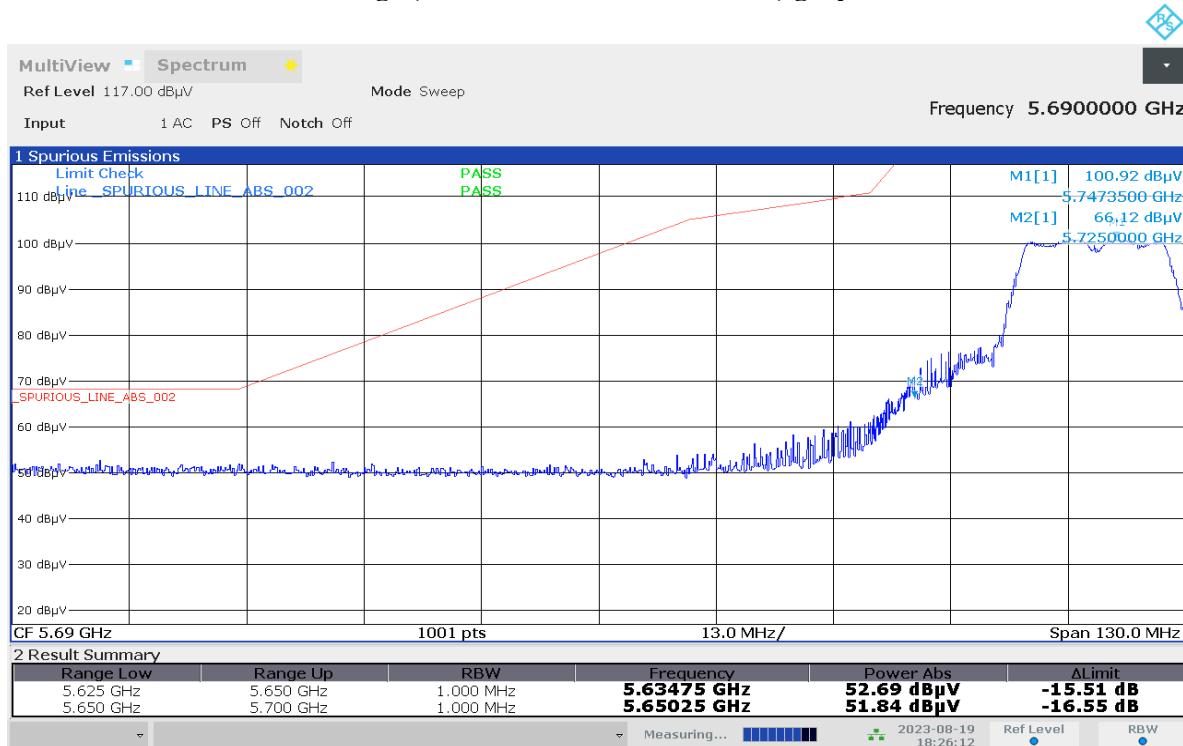
06:18:22 PM 08/19/2023

Restricted Band Edge (Low Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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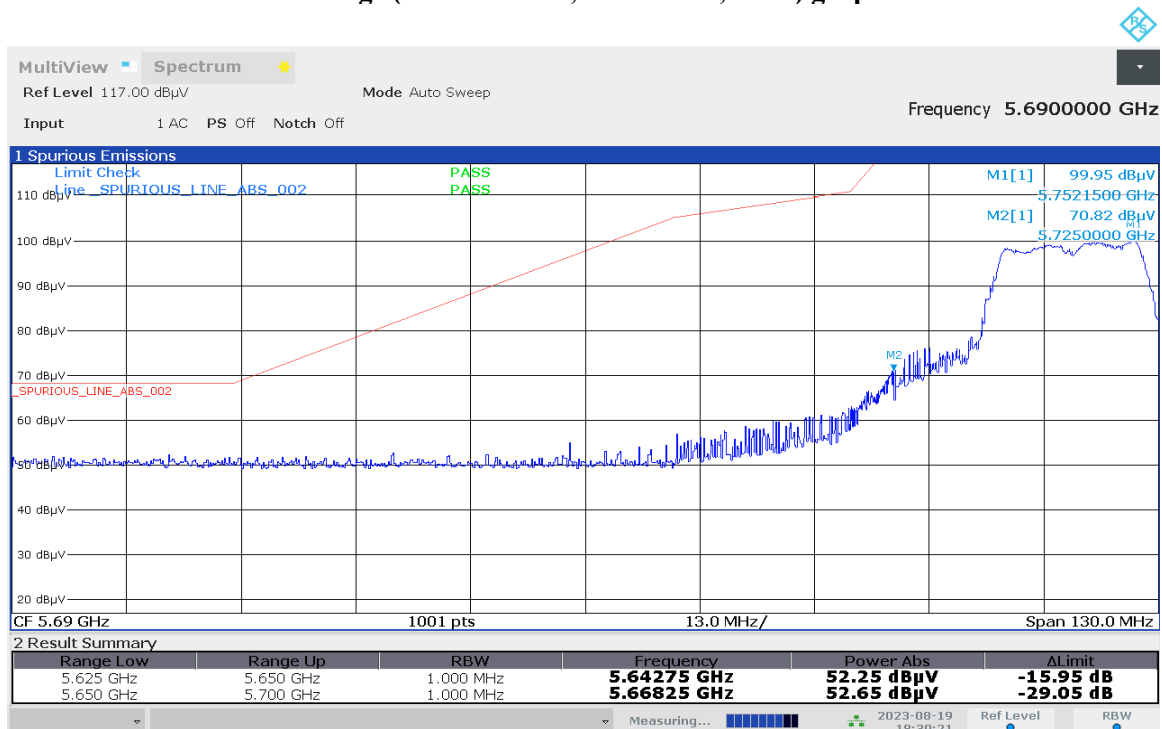
Humidity (%): 69.9
Test Date: Sun, 20 Aug, 2023
System MU: 5.84dB

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



06:26:13 PM 08/19/2023

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



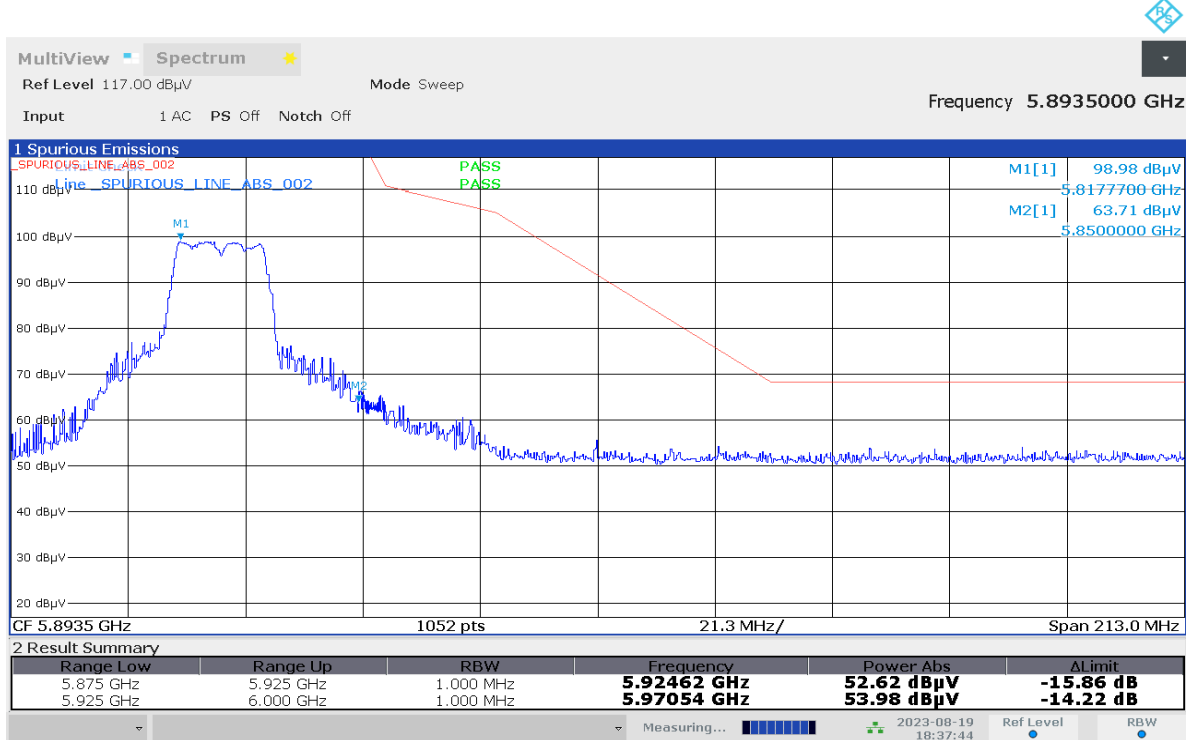
06:30:21 PM 08/19/2023

Restricted Band Edge (High Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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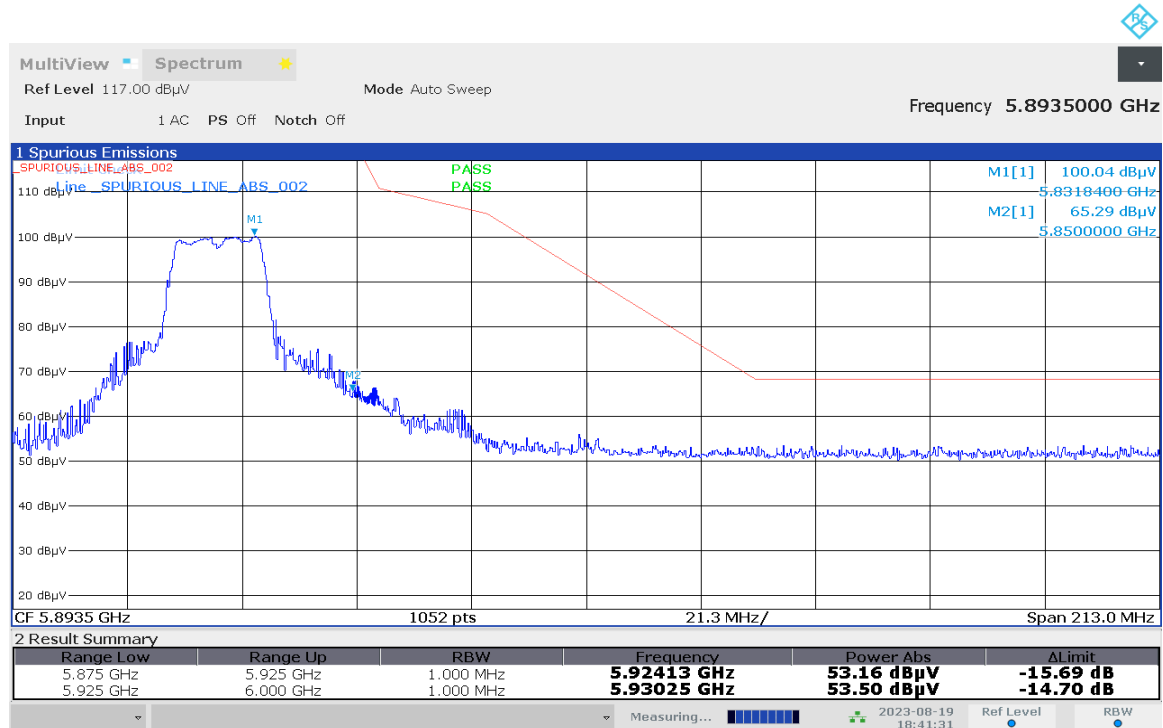
Humidity (%): 69.9
Test Date: Sun, 20 Aug, 2023
System MU: 5.84dB

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



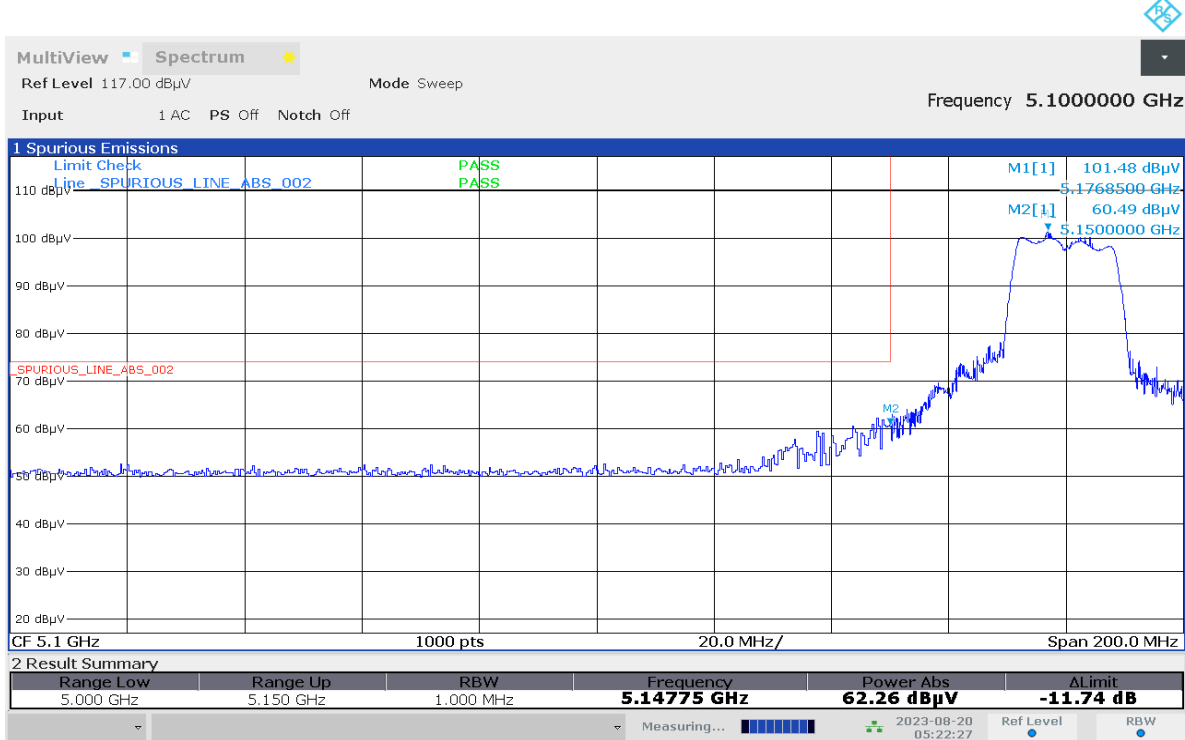
06:37:44 PM 08/19/2023

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



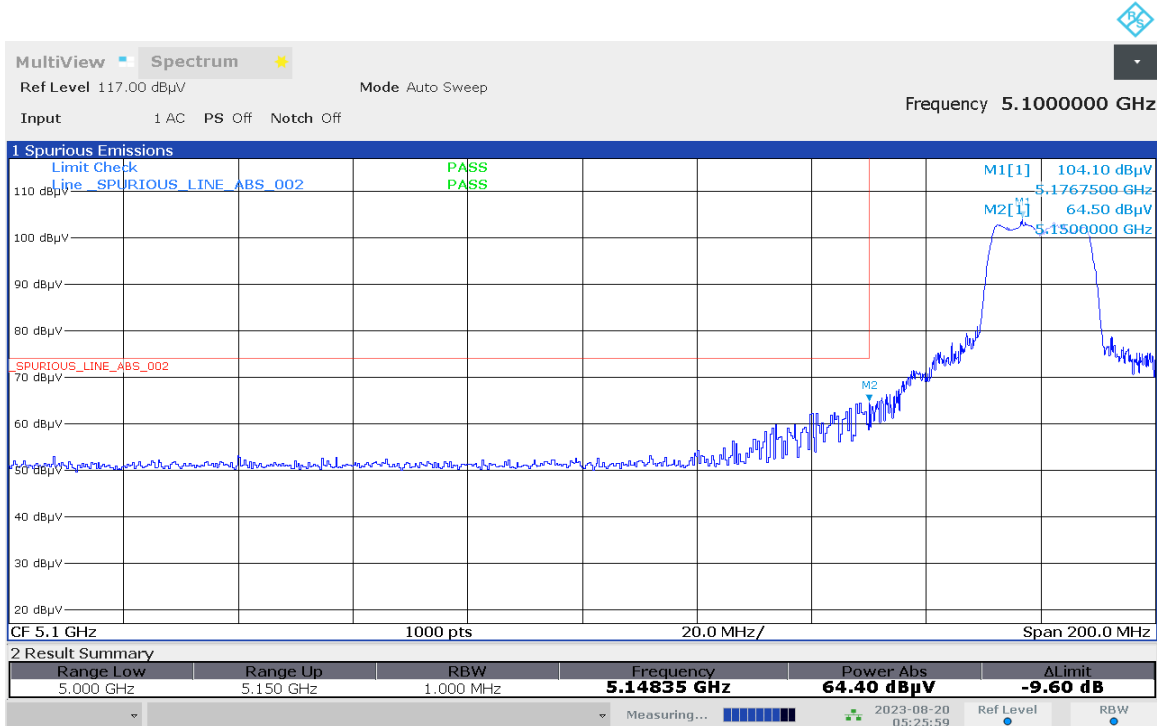
06:41:31 PM 08/19/2023

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



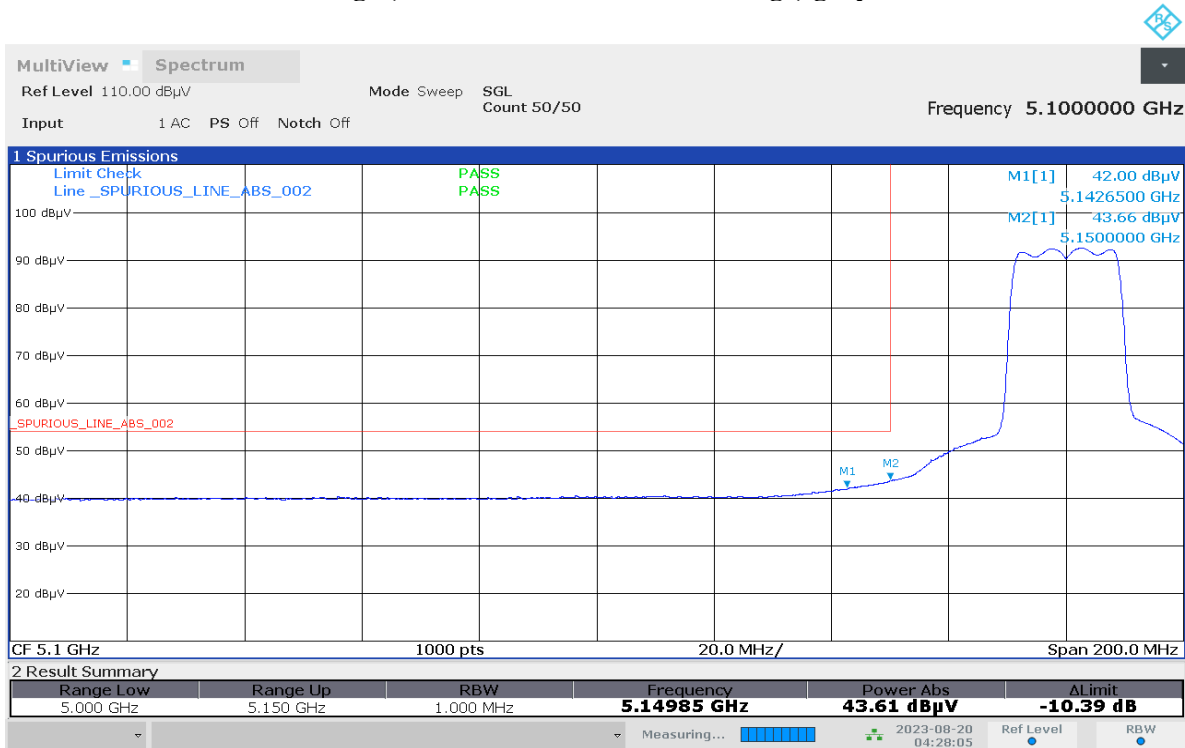
05:22:28 AM 08/20/2023

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



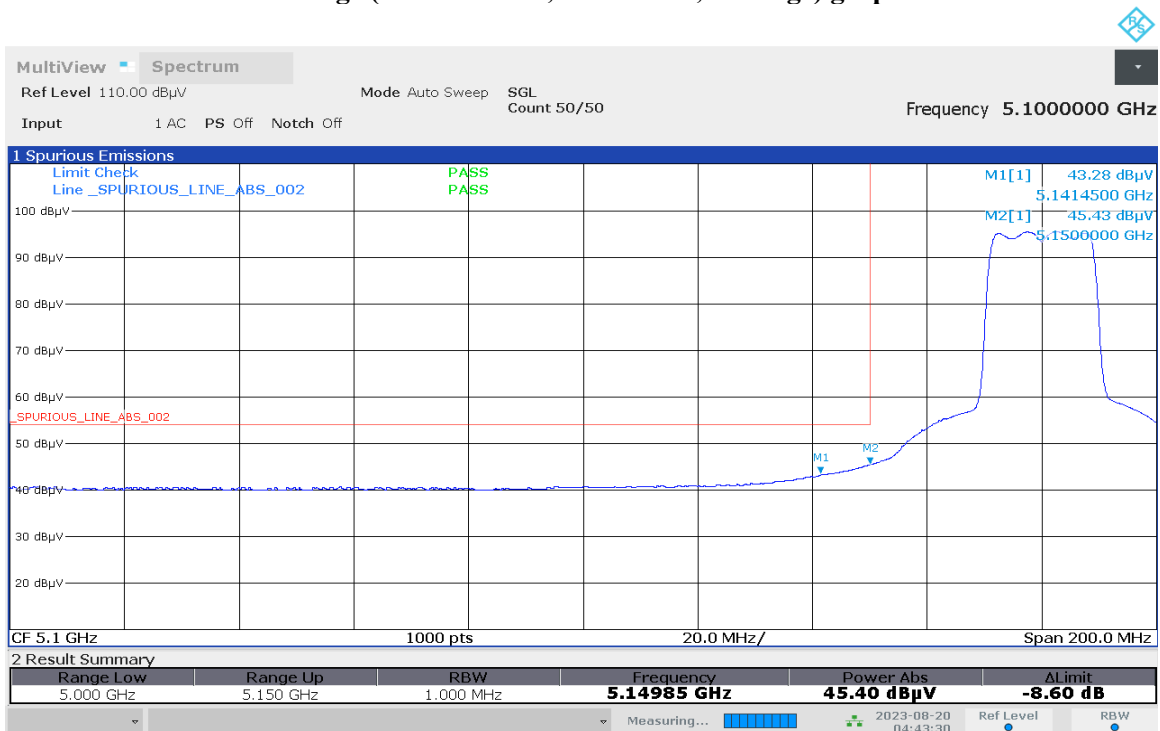
05:26:00 AM 08/20/2023

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



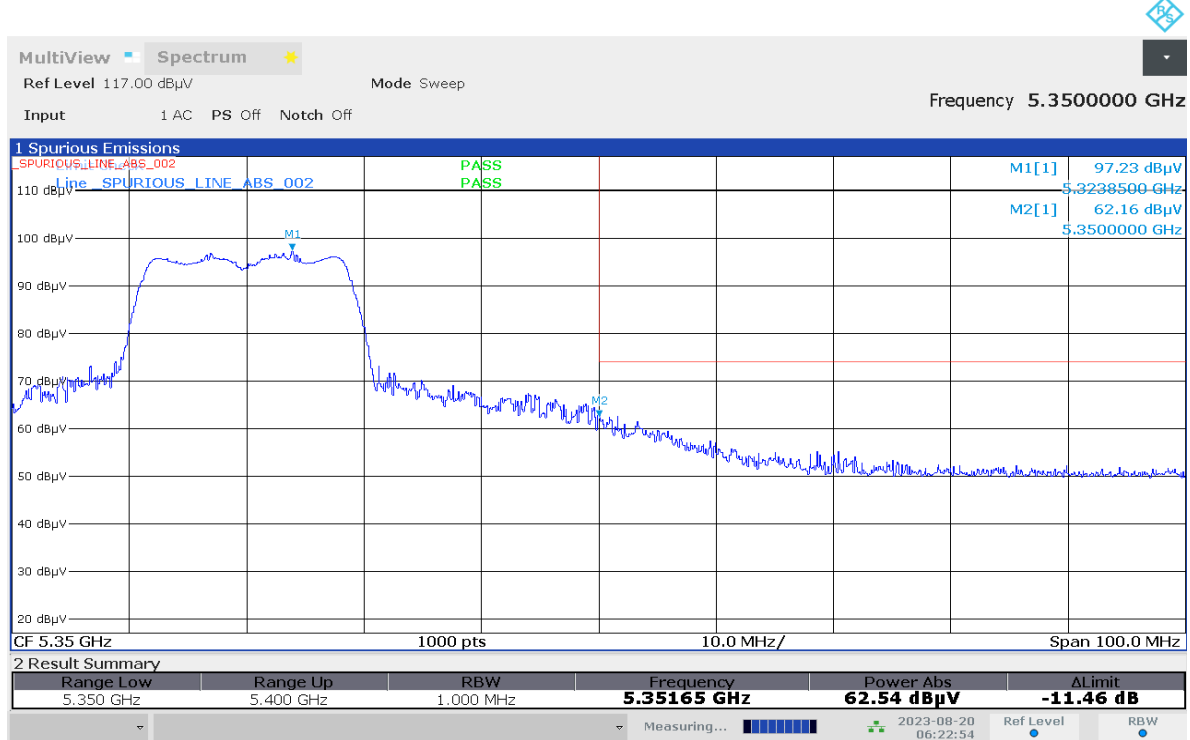
04:28:06 AM 08/20/2023

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



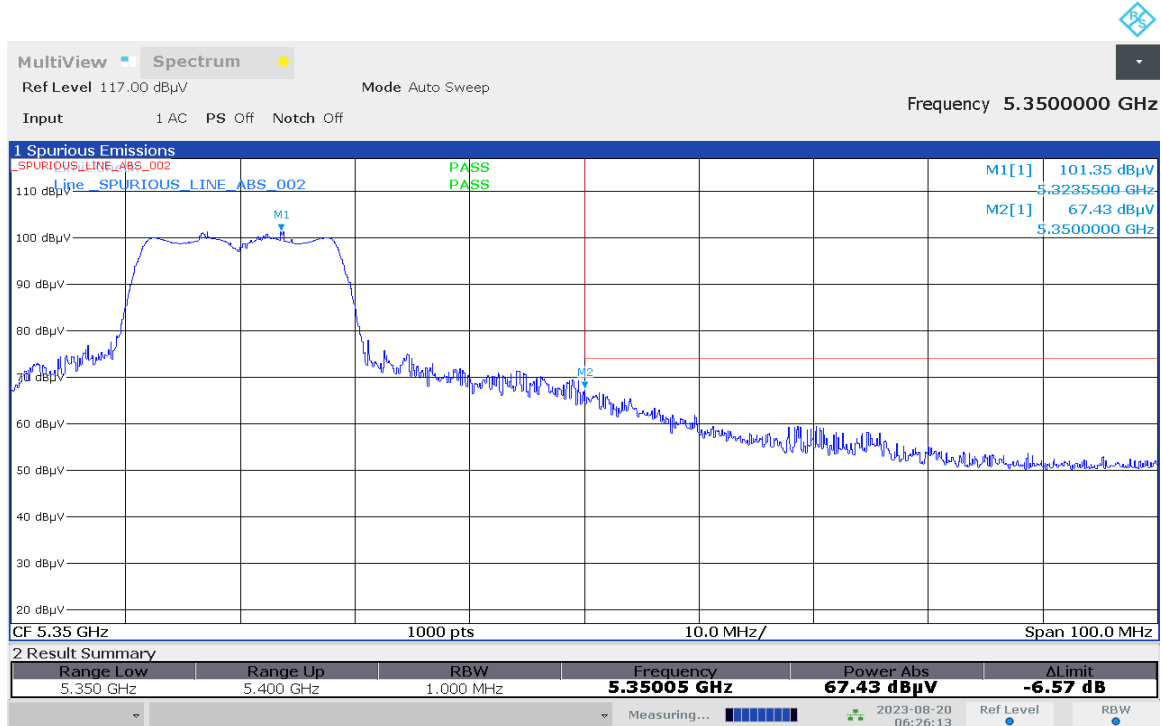
04:43:31 AM 08/20/2023

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



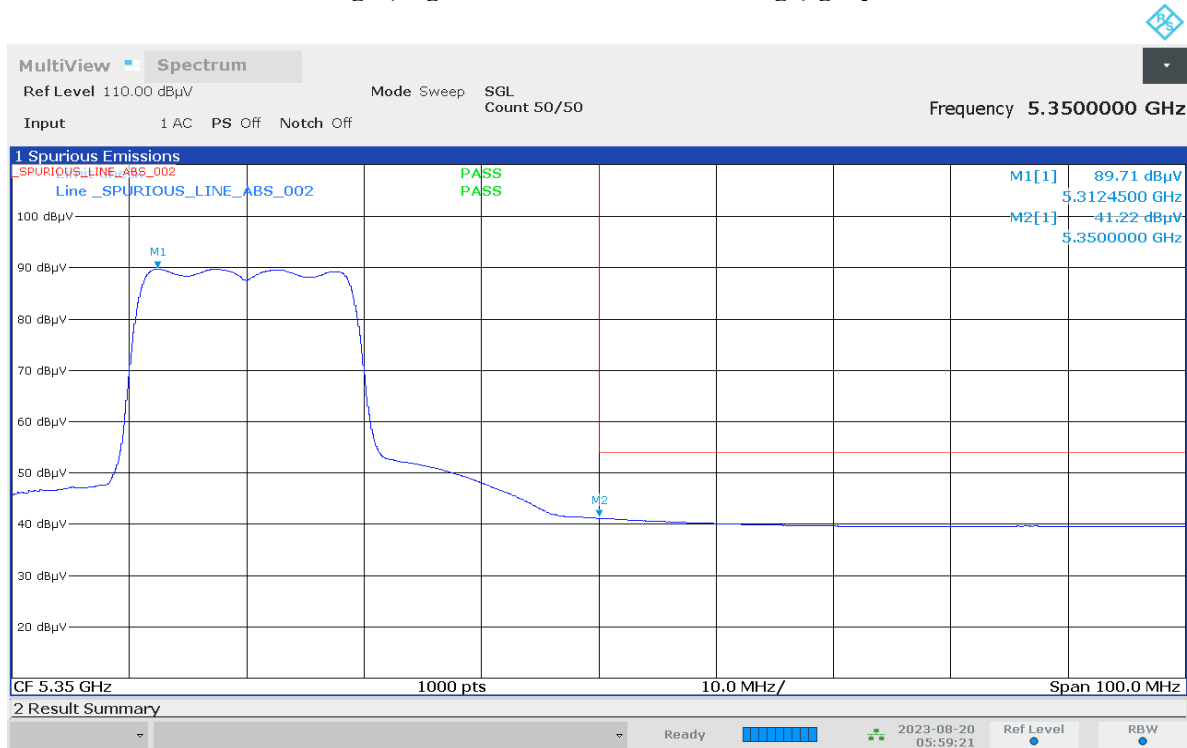
06:22:55 AM 08/20/2023

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



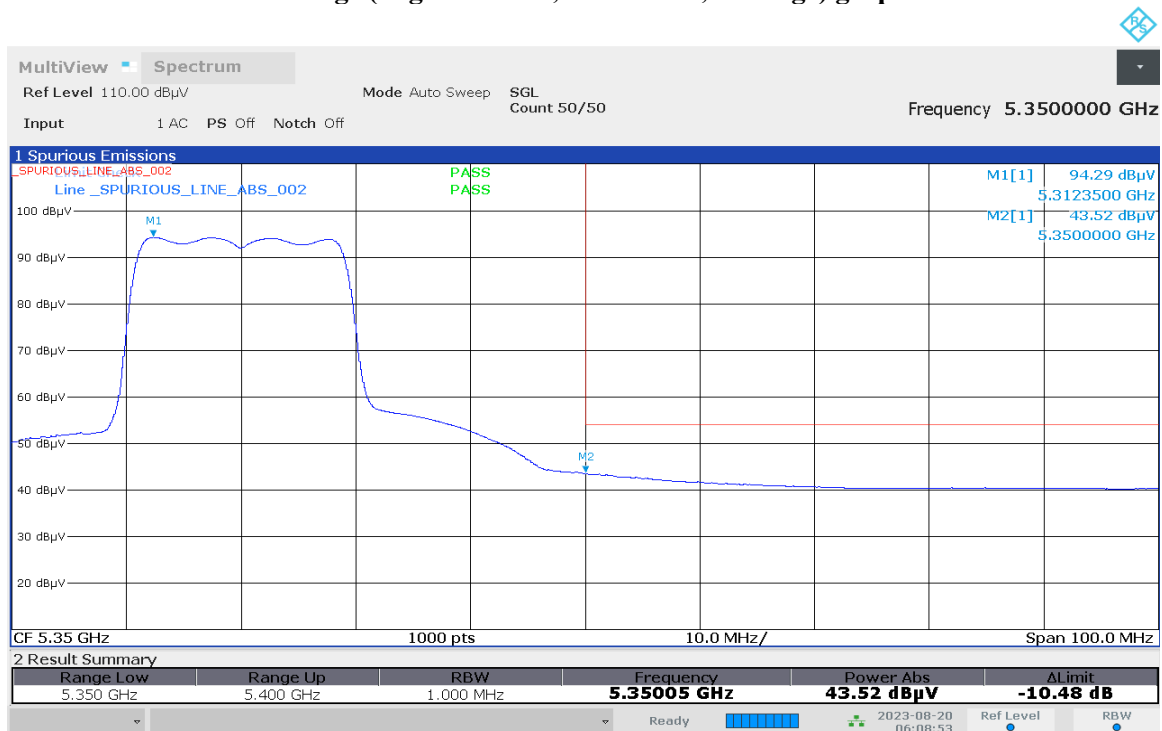
06:26:14 AM 08/20/2023

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



05:59:22 AM 08/20/2023

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



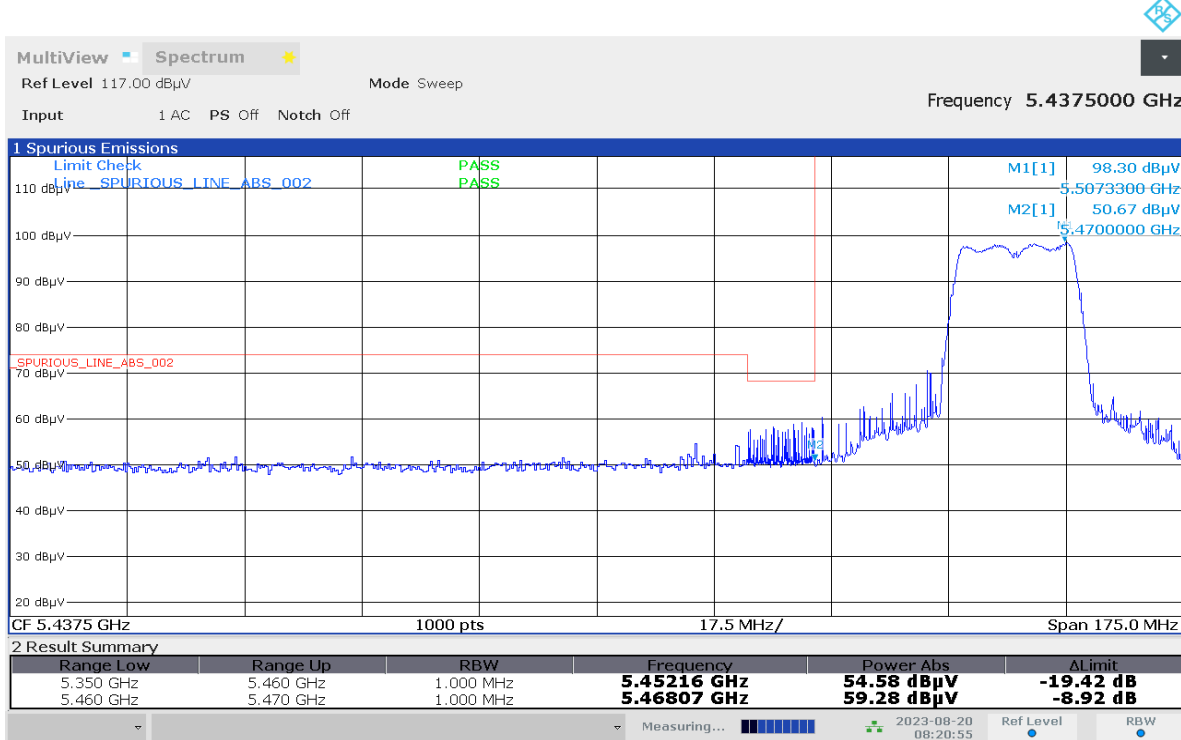
06:08:53 AM 08/20/2023

Restricted Band Edge (Low Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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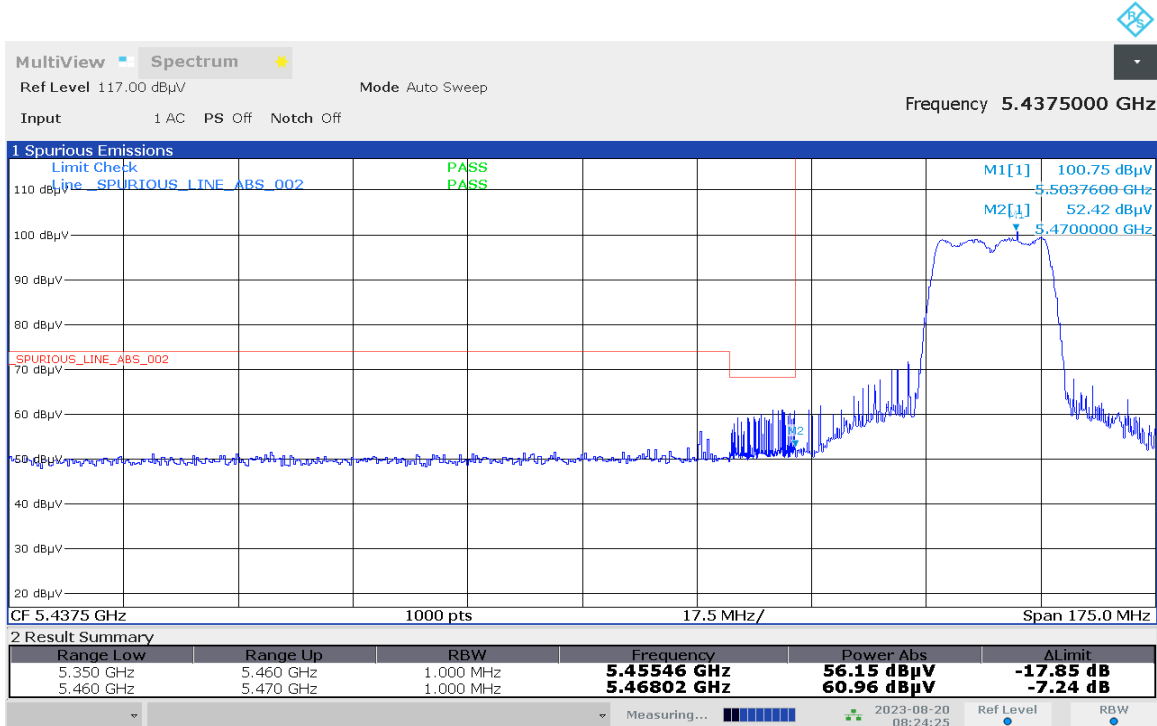
Humidity (%): 69.9
Test Date: Sun, 20 Aug, 2023

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



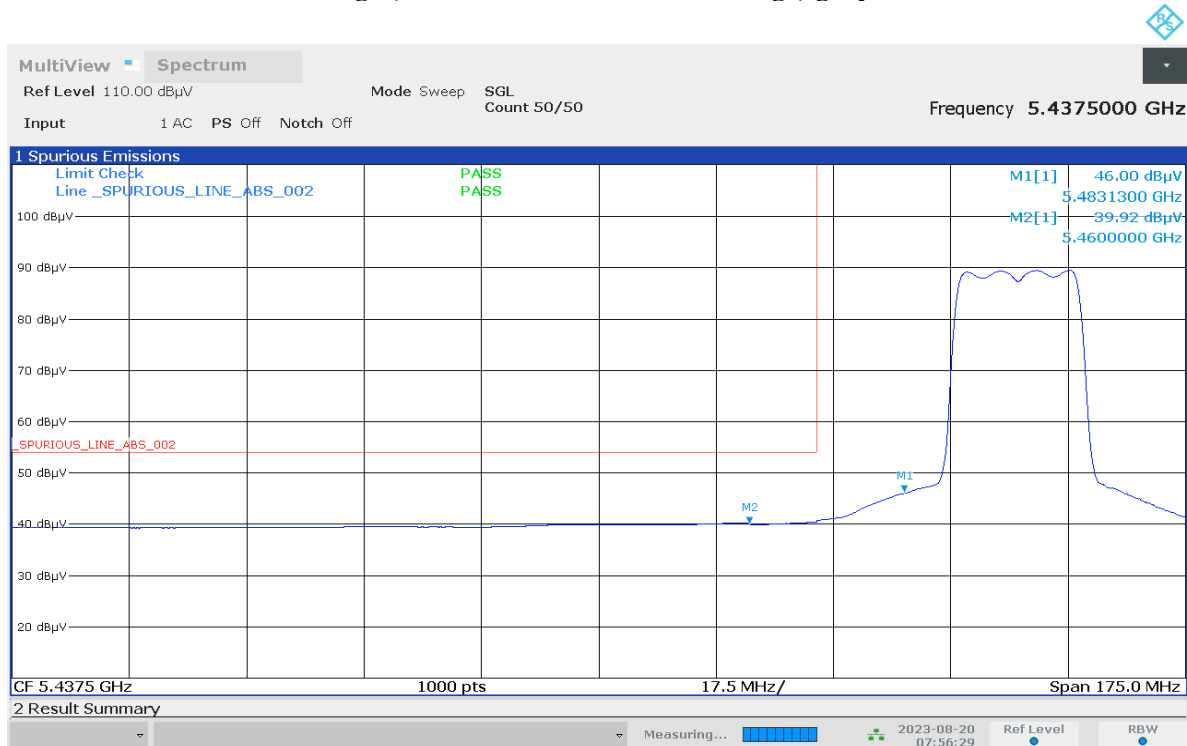
08:20:56 AM 08/20/2023

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



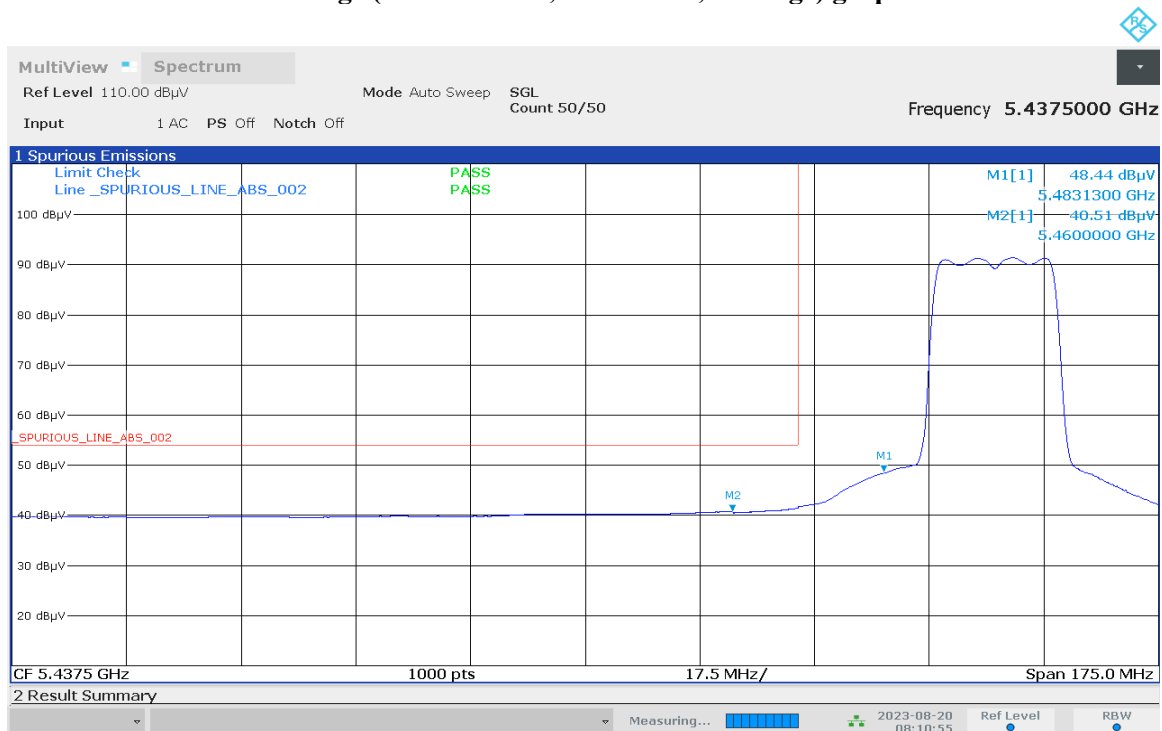
08:24:25 AM 08/20/2023

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



07:56:29 AM 08/20/2023

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



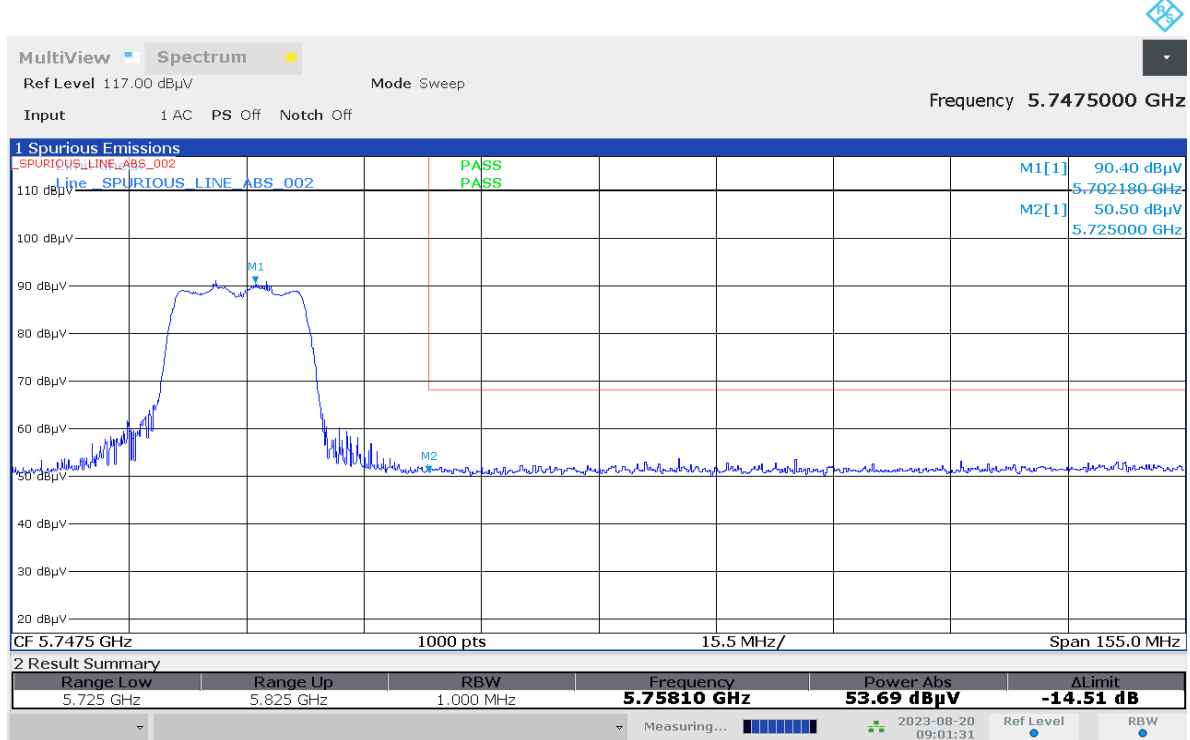
08:10:55 AM 08/20/2023

Restricted Band Edge (High Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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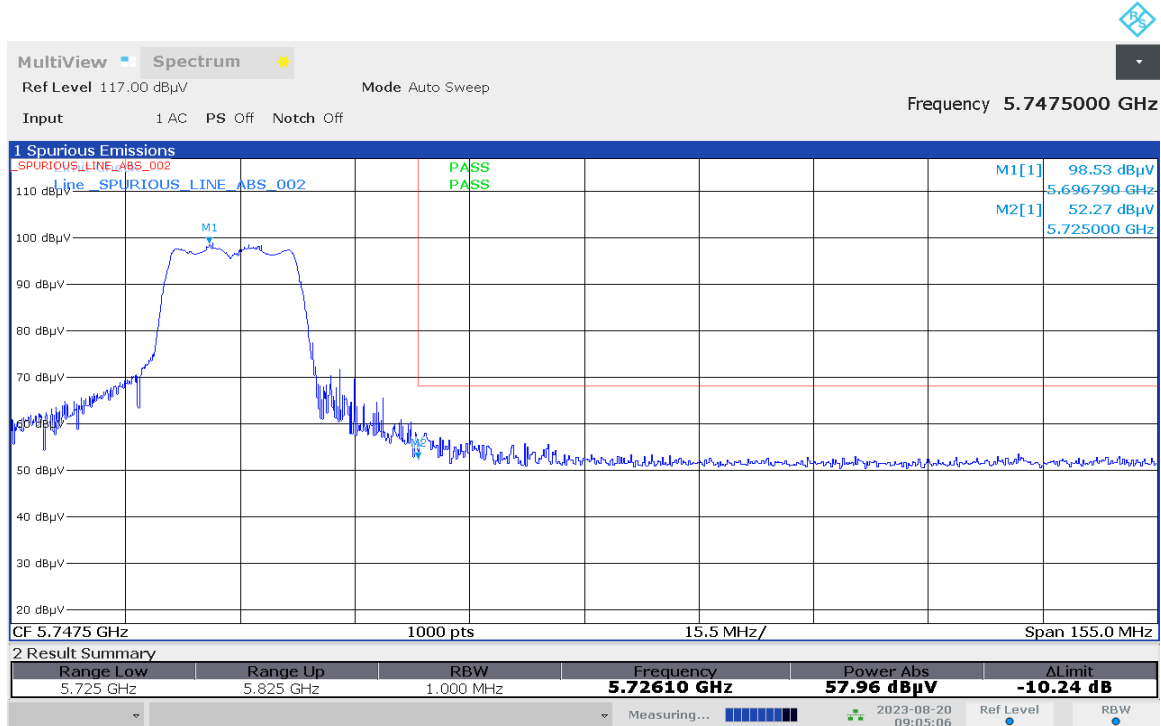
Humidity (%): 69.9
Test Date: Sun, 20 Aug, 2023

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



09:01:32 AM 08/20/2023

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



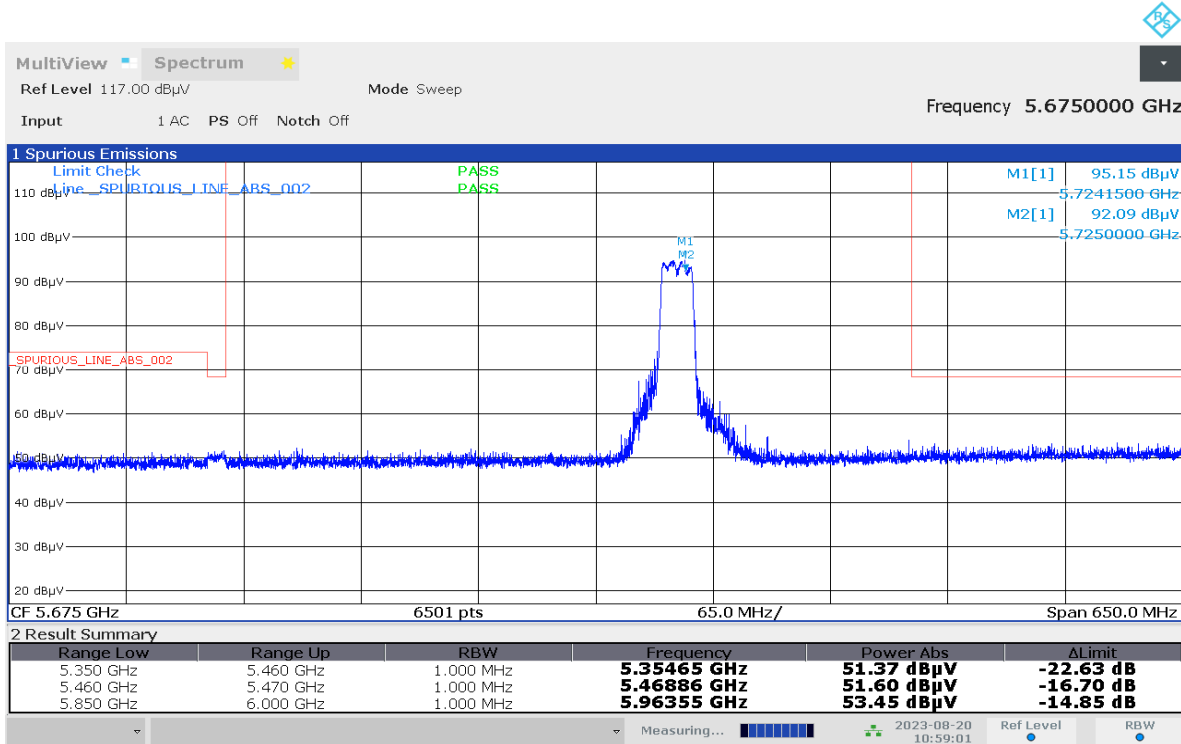
09:05:06 AM 08/20/2023

Restricted Band Edge (Straddle Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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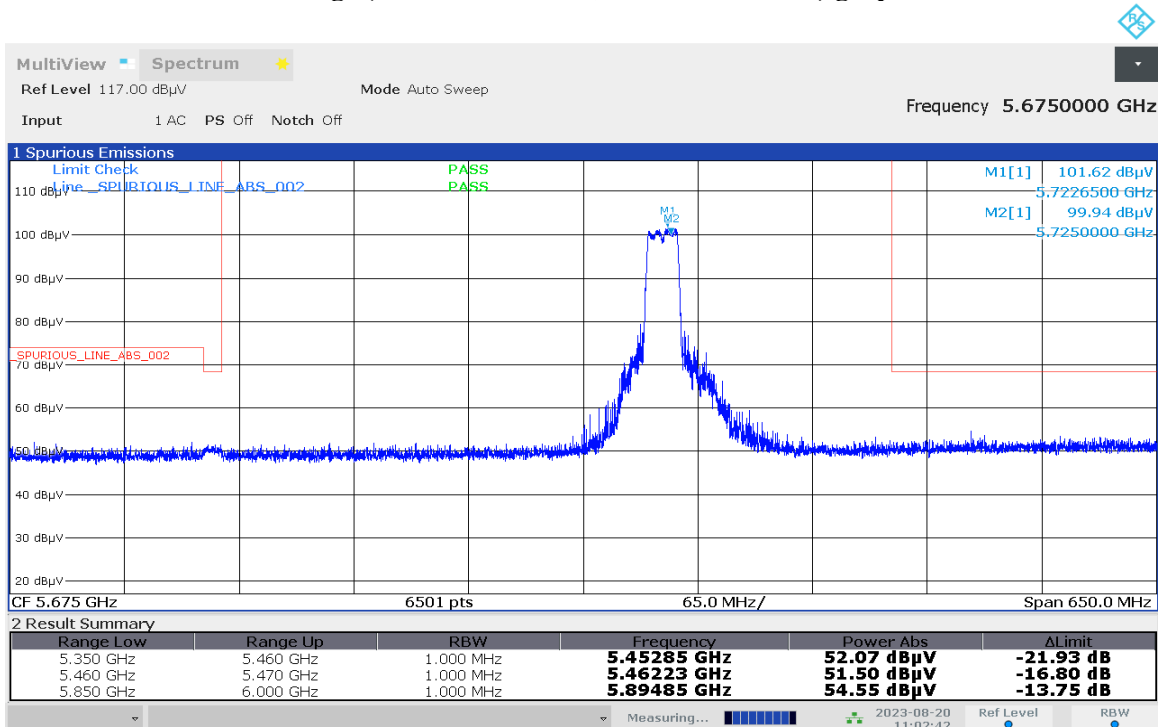
Humidity (%): 69.9
Test Date: Sun, 20 Aug, 2023

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



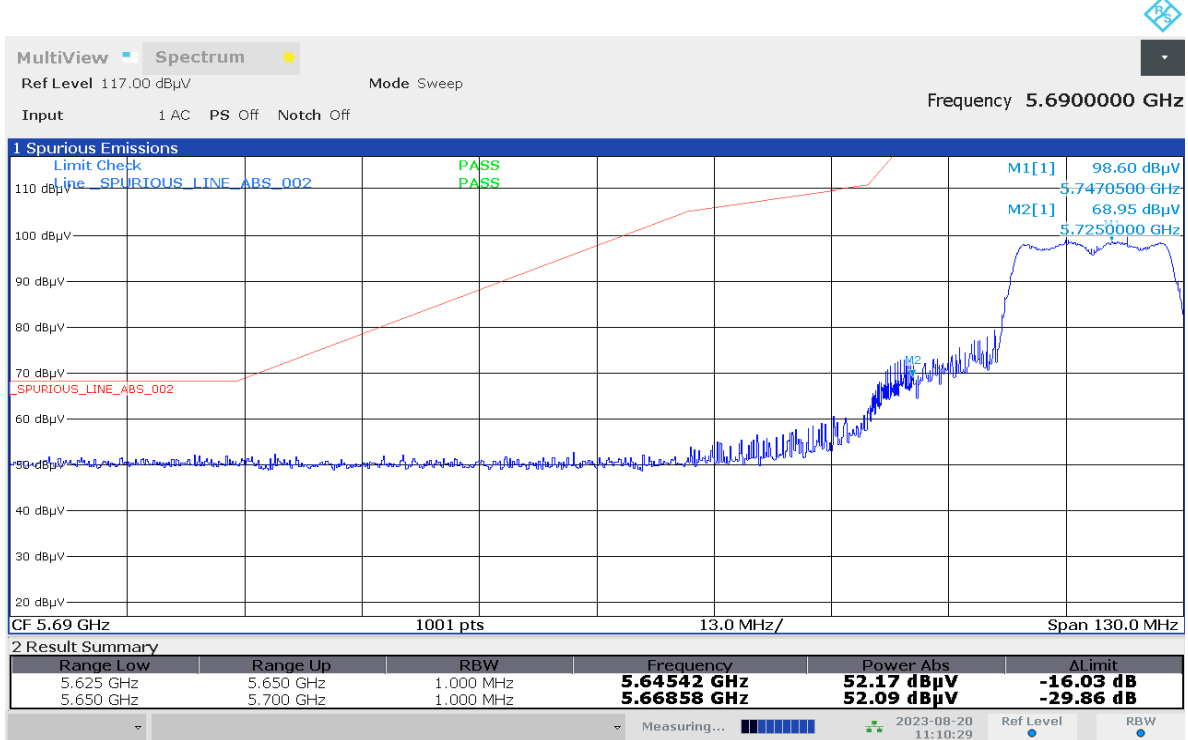
10:59:02 AM 08/20/2023

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



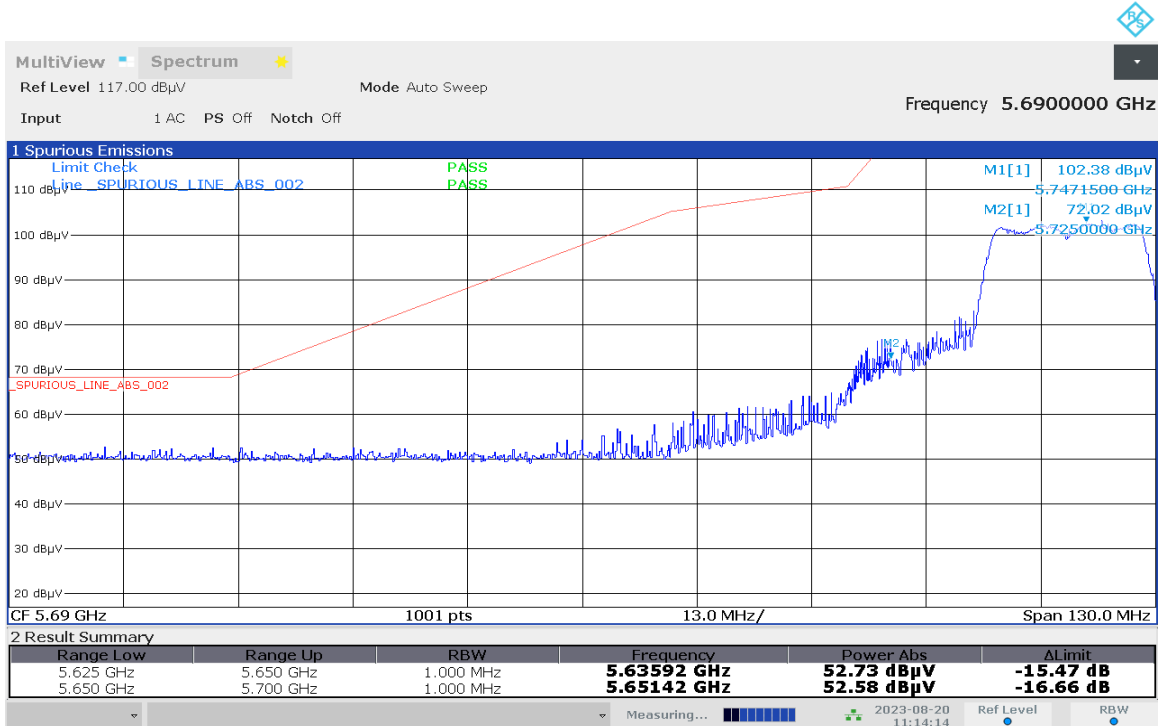
11:02:43 AM 08/20/2023

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



11:10:29 AM 08/20/2023

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



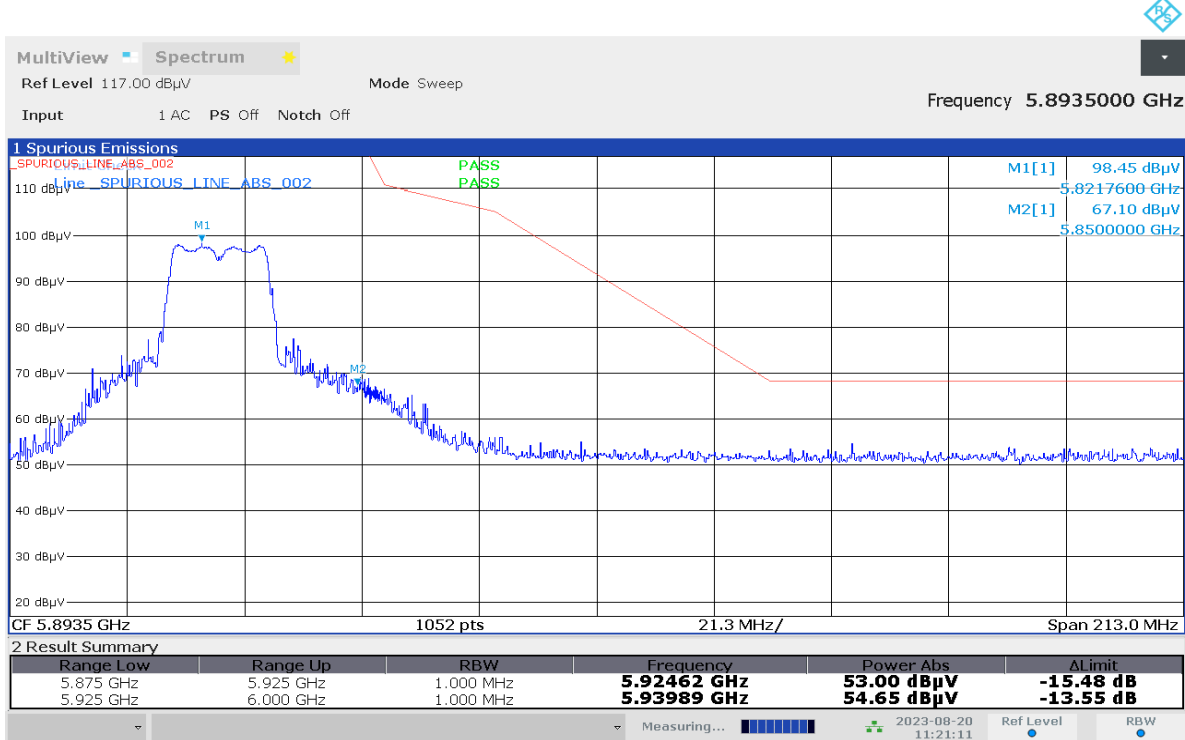
11:14:14 AM 08/20/2023

Restricted Band Edge (High Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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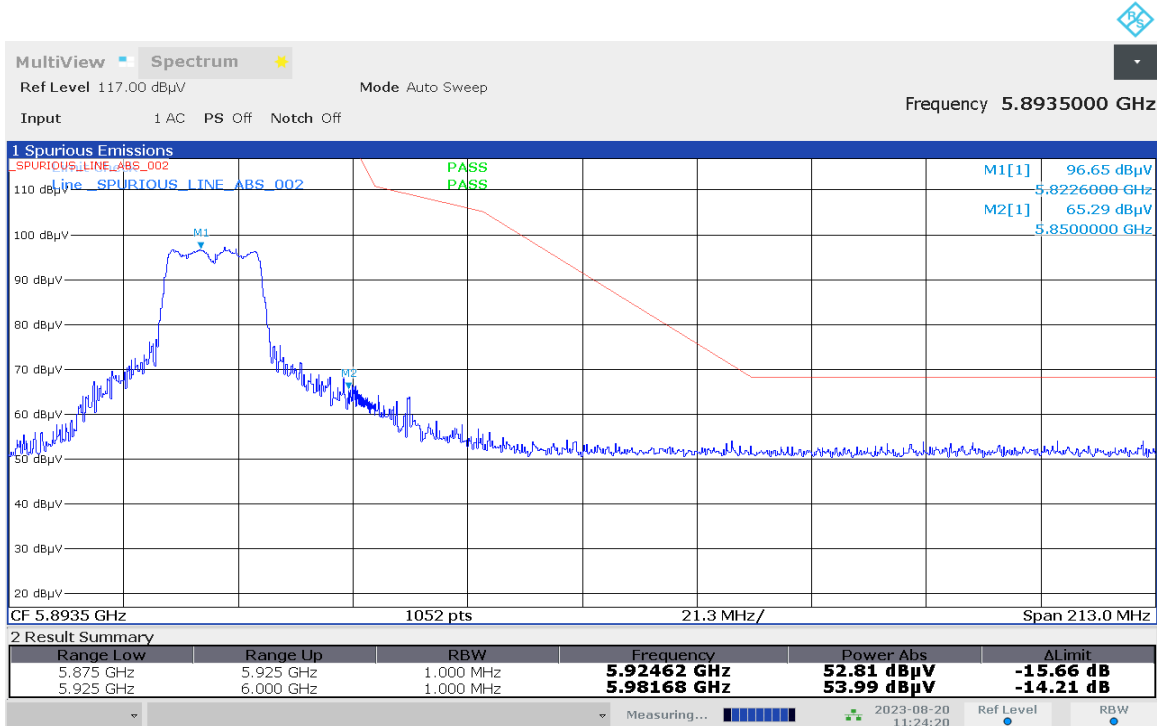
Humidity (%): 69.9
Test Date: Sun, 20 Aug, 2023

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



11:21:11 AM 08/20/2023

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

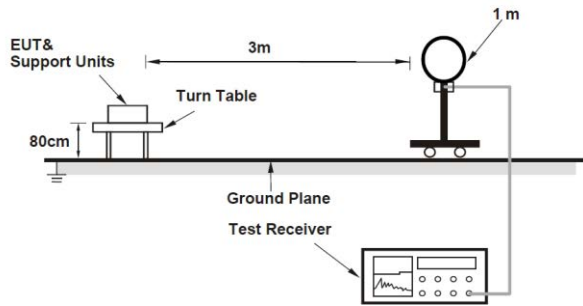


11:24:20 AM 08/20/2023

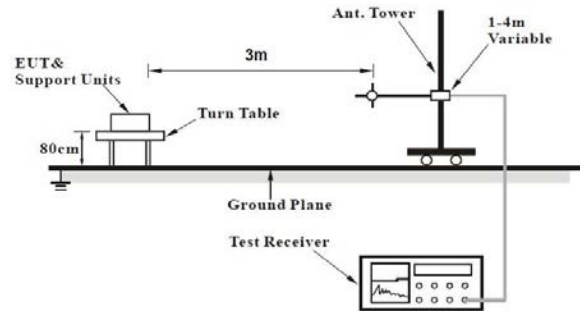
7.7. Radiated Spurious Emission Measurement

7.7.1. Test Setup

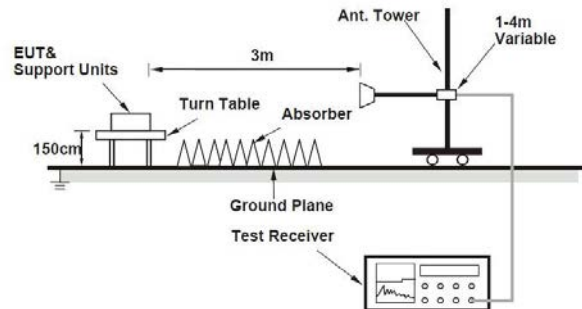
<Radiated emission below 30MHz>



<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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.

7.7.2. 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) ¹¹ PK:10 (dBm/MHz) ¹² PK:15.6 (dBm/MHz) ¹³ PK:27 (dBm/MHz) ¹⁴	PK: 68.2 (dBμV/m) ¹¹ PK:105.2 (dBμV/m) ¹² PK: 110.8 (dBμV/m) ¹³ PK:122.2 (dBμV/m) ¹⁴
	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	
¹¹ beyond 75 MHz or more above of the band edge.			
¹² below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.			
¹³ below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.			
¹⁴ 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:

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

802.11a

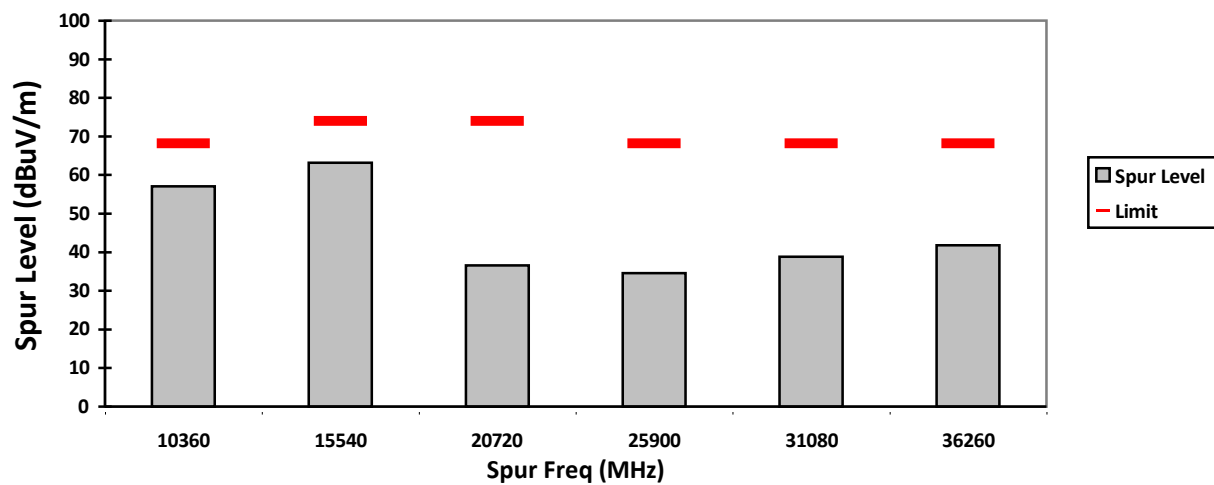
Model#: H25XDF9PW6AN S/N: 287TZP0060 EMC SR ID#: 39809-EMC-00052
Battery: PMNN4813A Accessory: AN000452A01
Test Channel: Low Test Frequency: 5180.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Z-Plane (802.11a 20MHz)

[illegible]

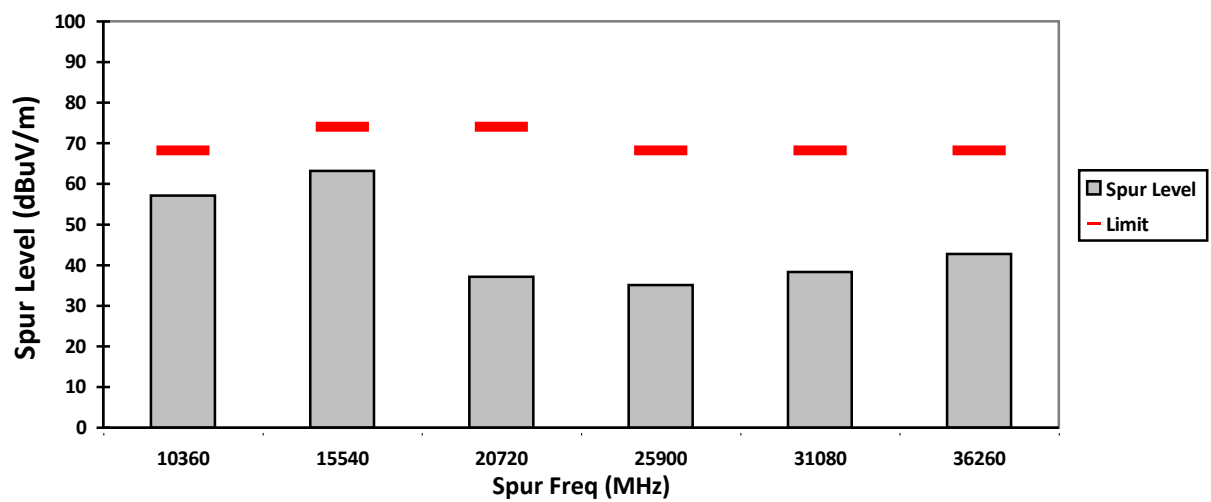
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

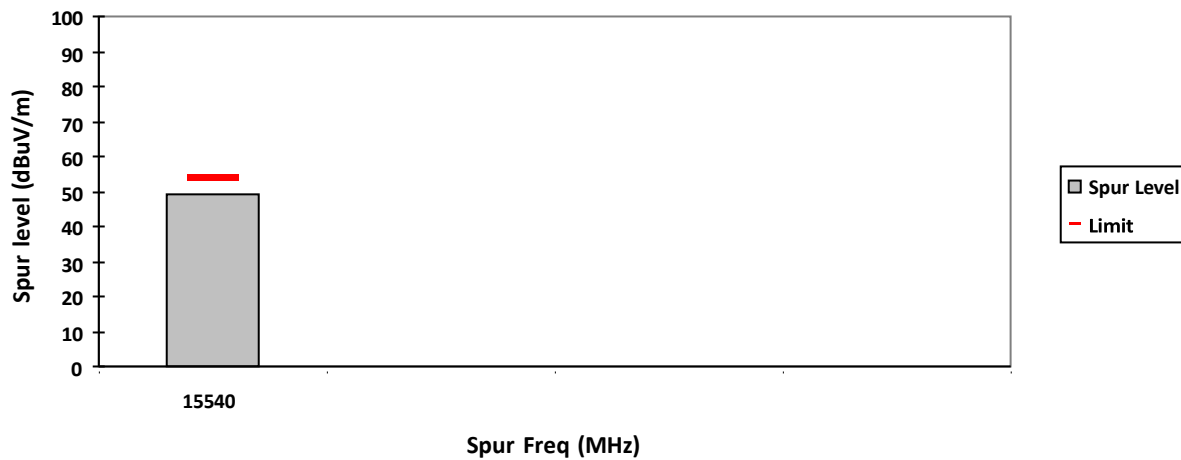
VERTICAL, PK



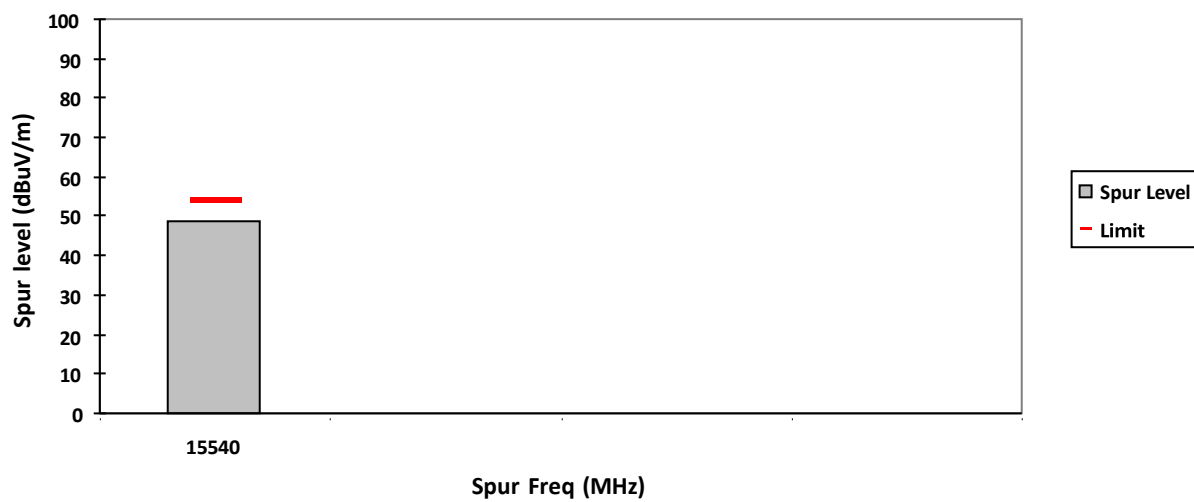
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

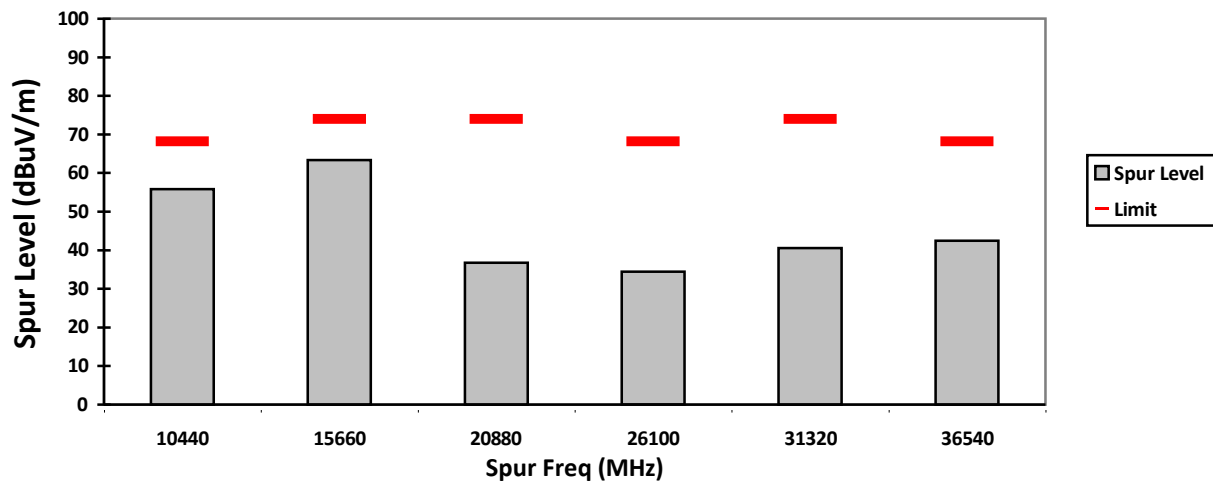


Radiated Emission (Mid Channel) tabular data

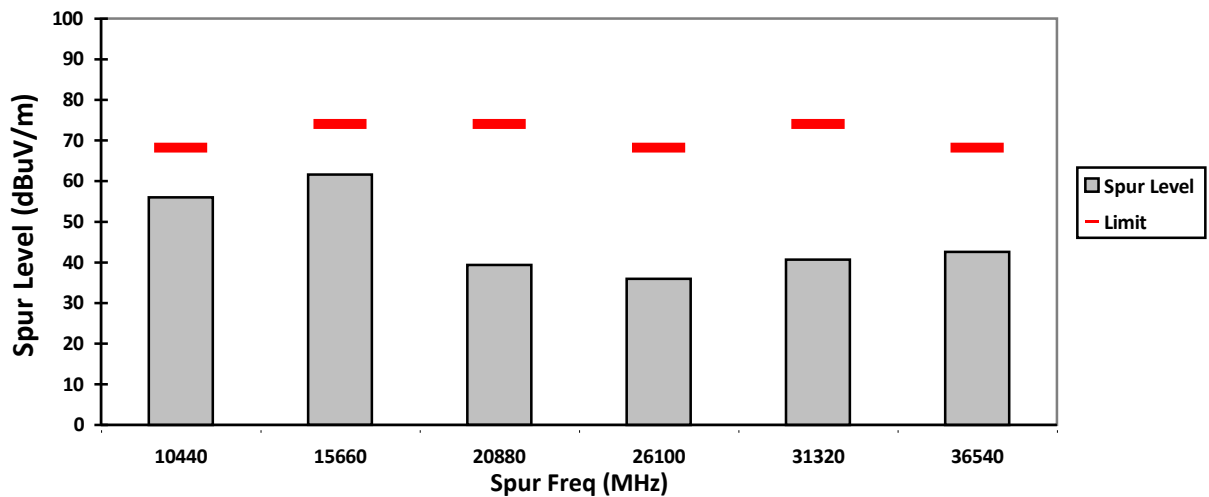
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

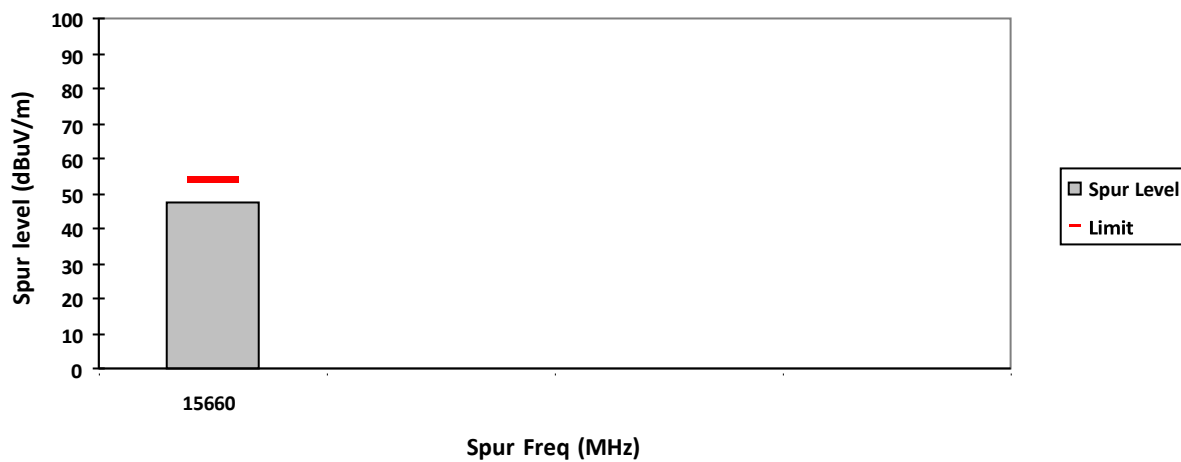
VERTICAL, PK



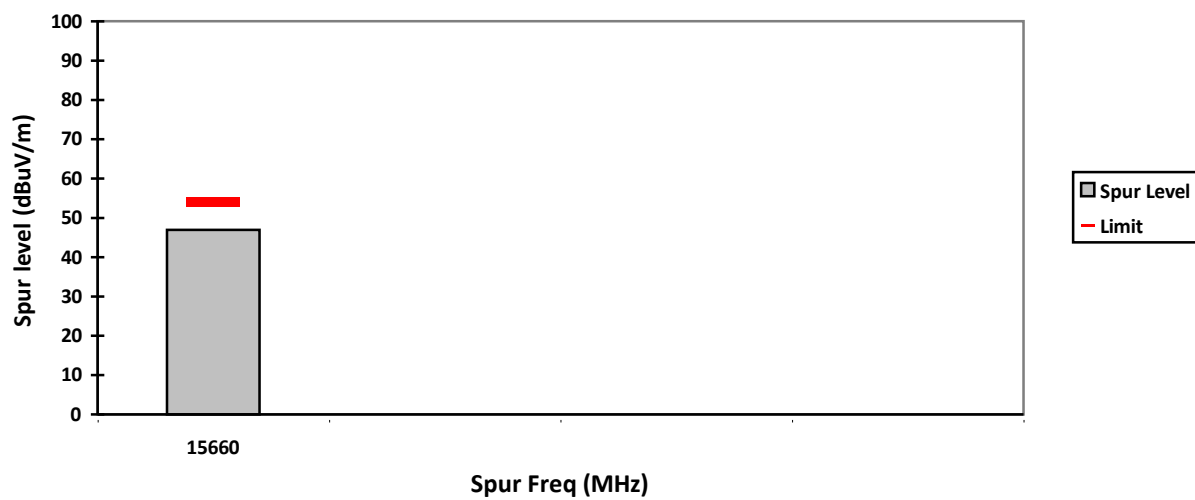
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

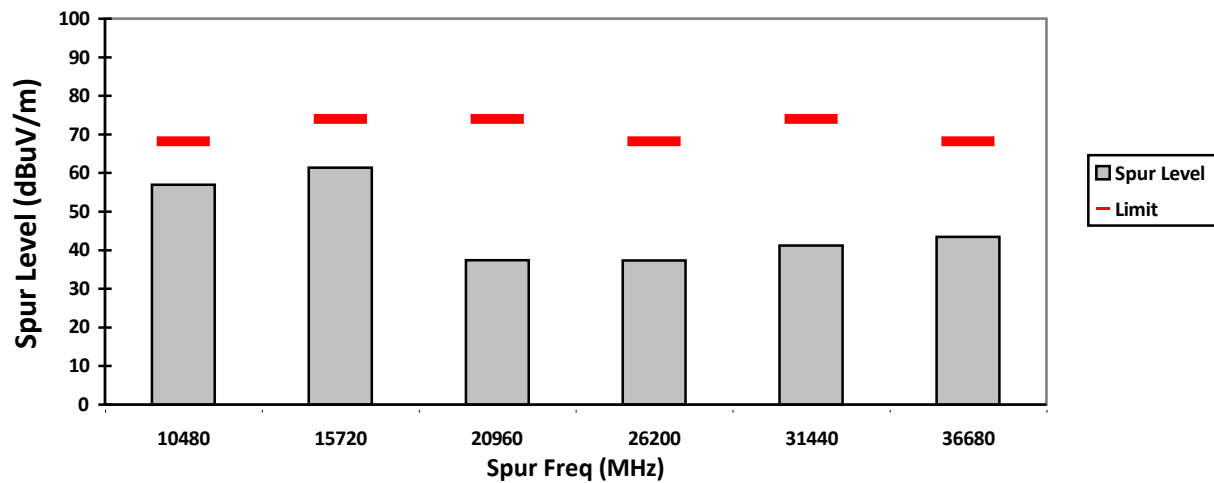


Radiated Emission (High Channel) tabular data

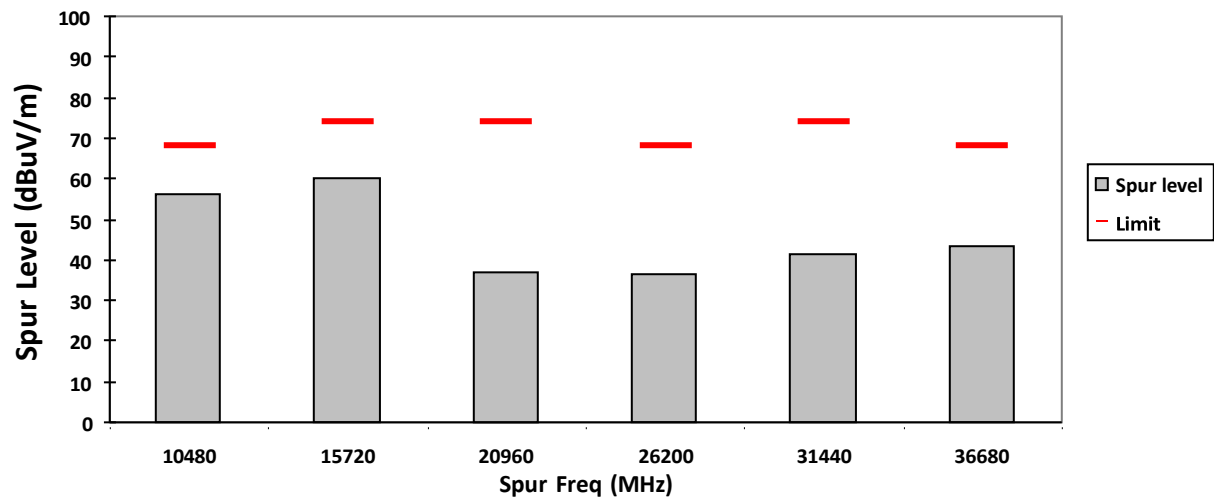
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

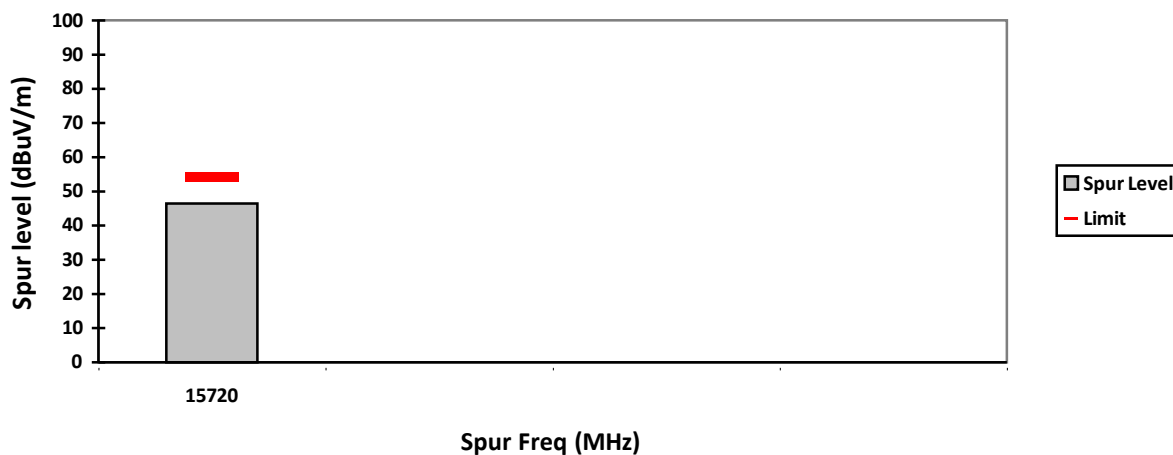
VERTICAL, PK



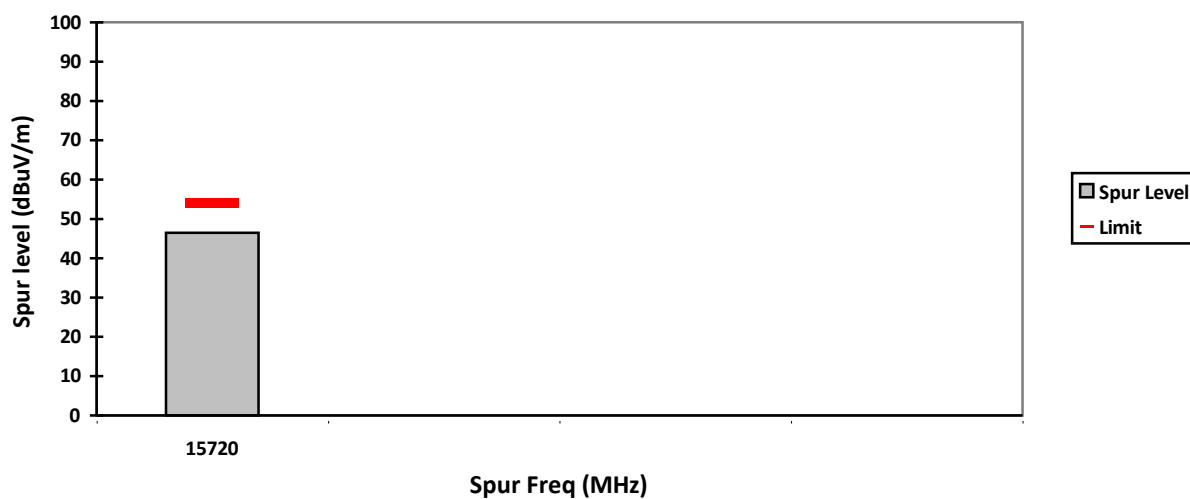
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

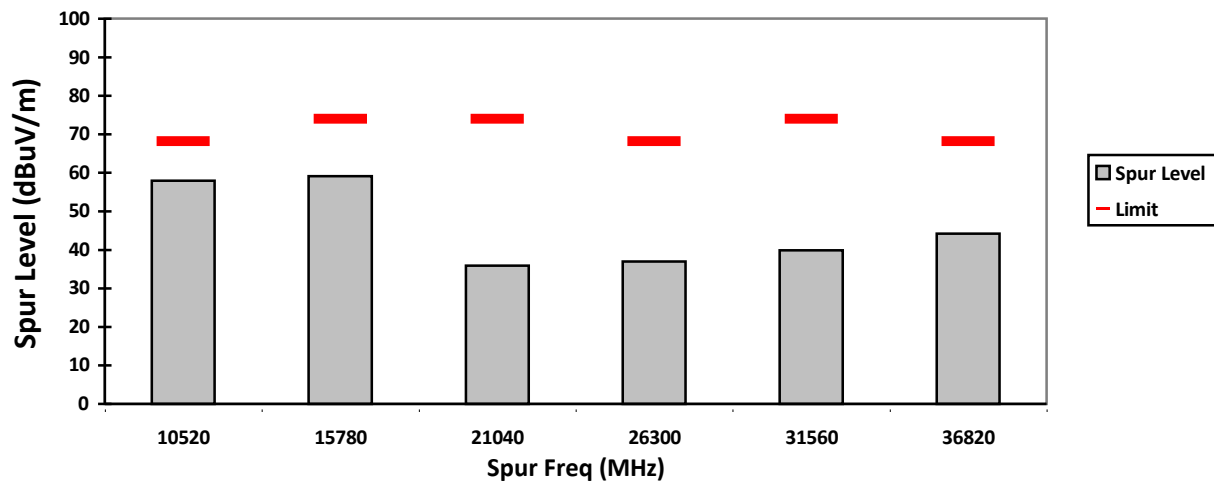


Radiated Emission (Low Channel) tabular data

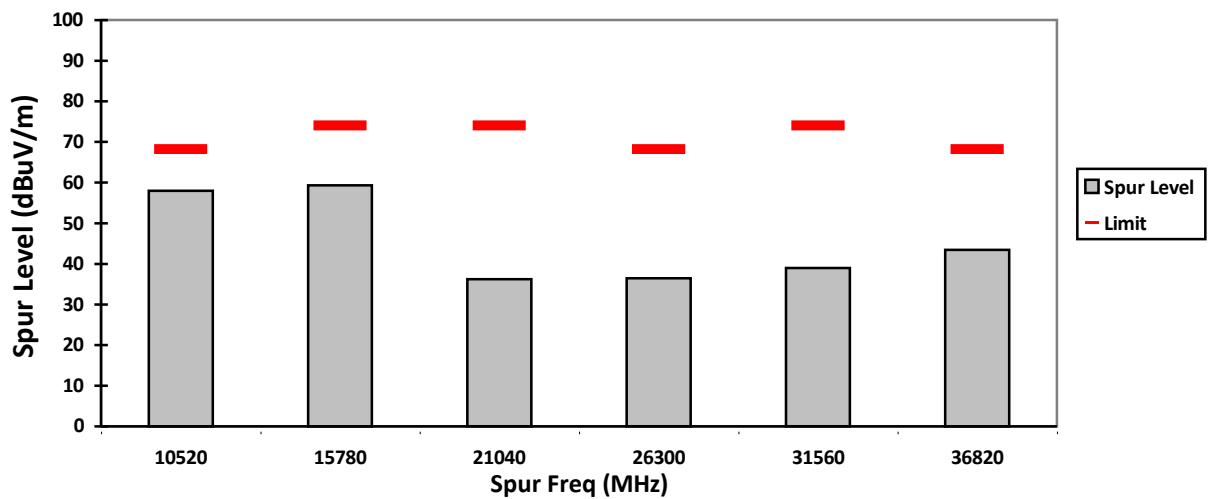
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

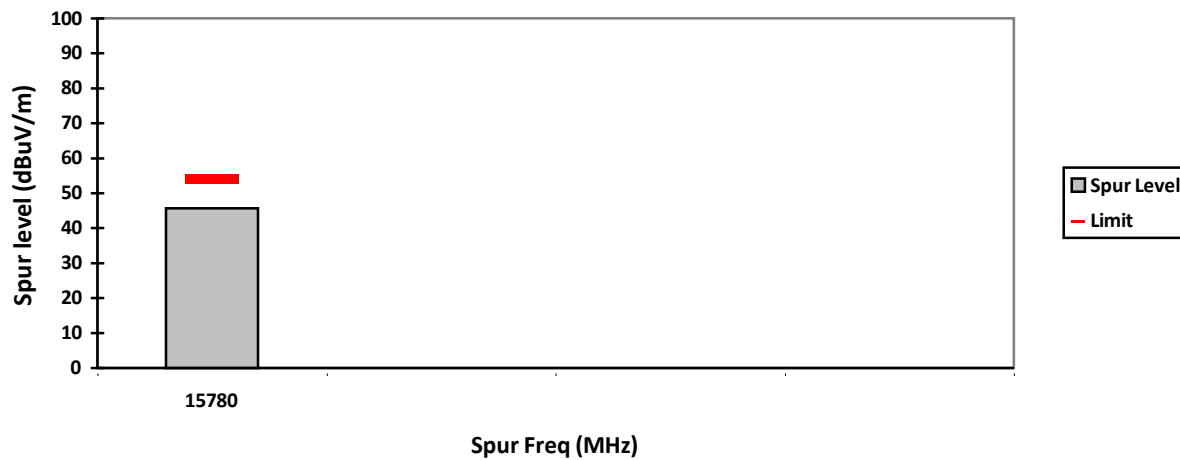
VERTICAL, PK



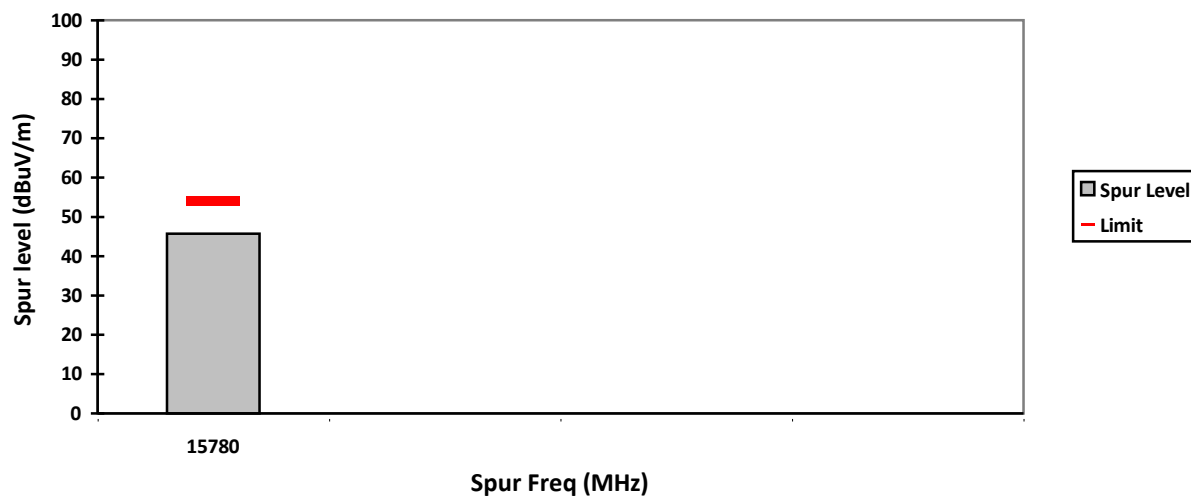
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

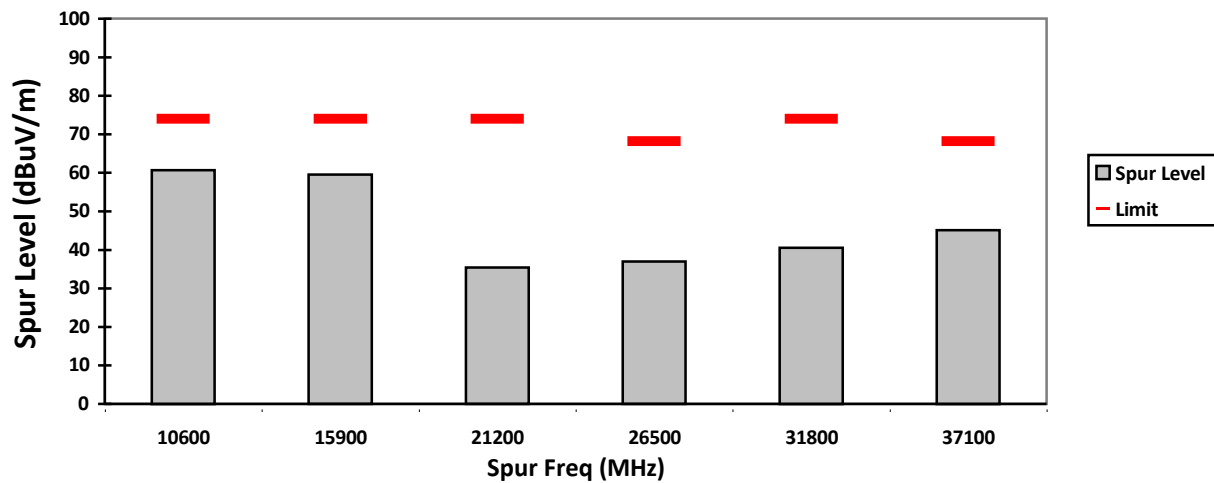


Radiated Emission (Mid Channel) tabular data

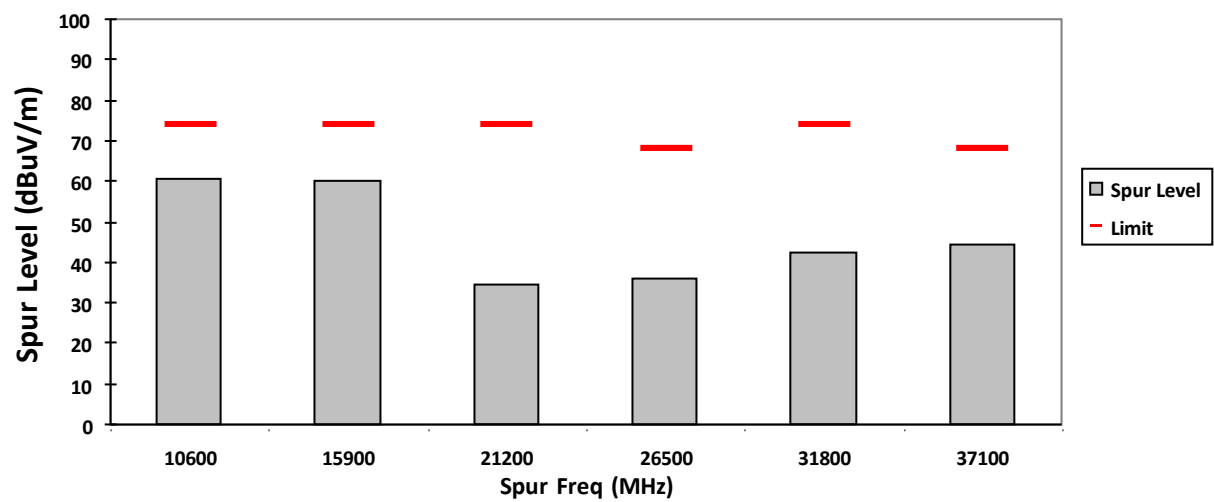
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

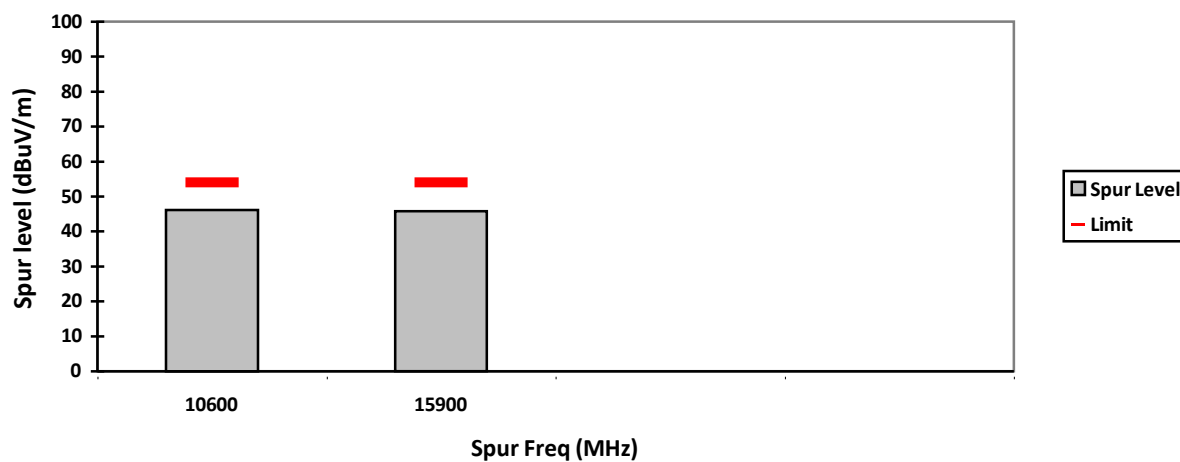
VERTICAL, PK



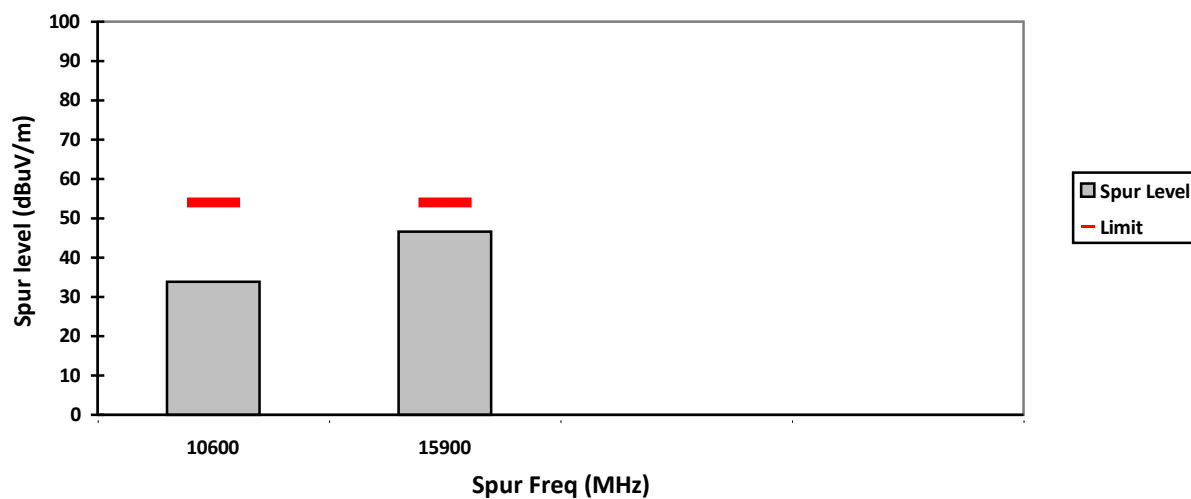
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

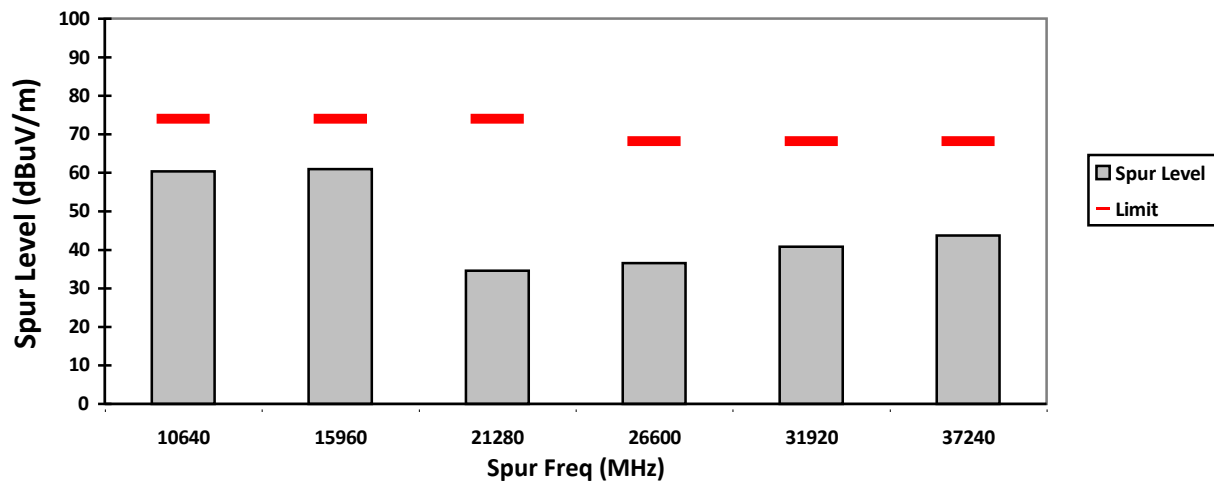


Radiated Emission (High Channel) tabular data

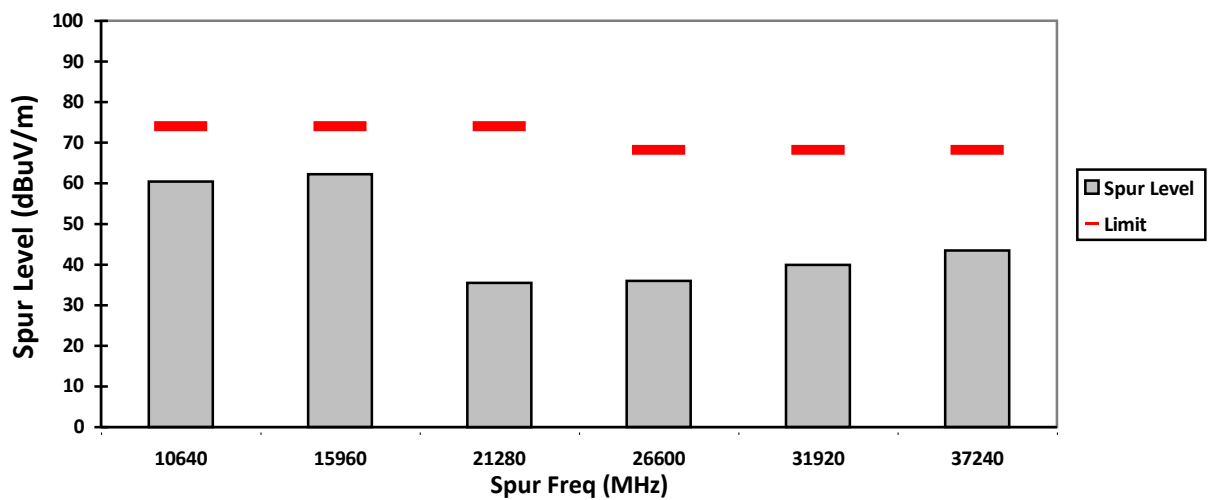
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

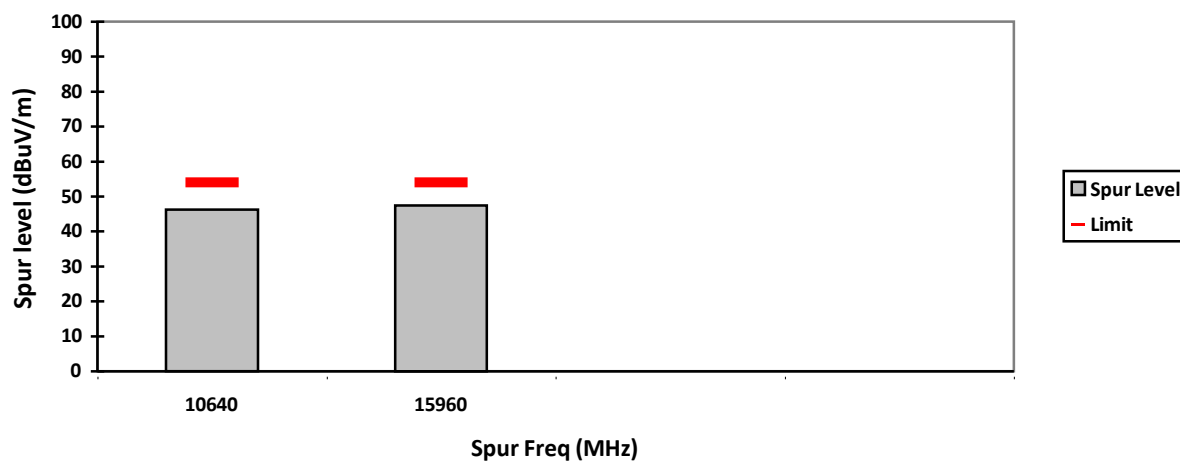
VERTICAL, PK



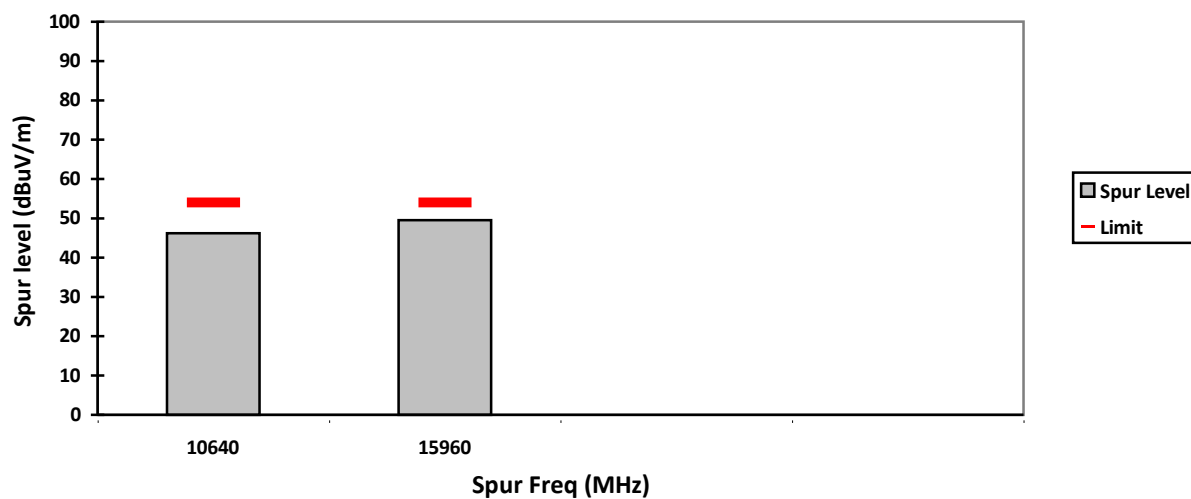
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

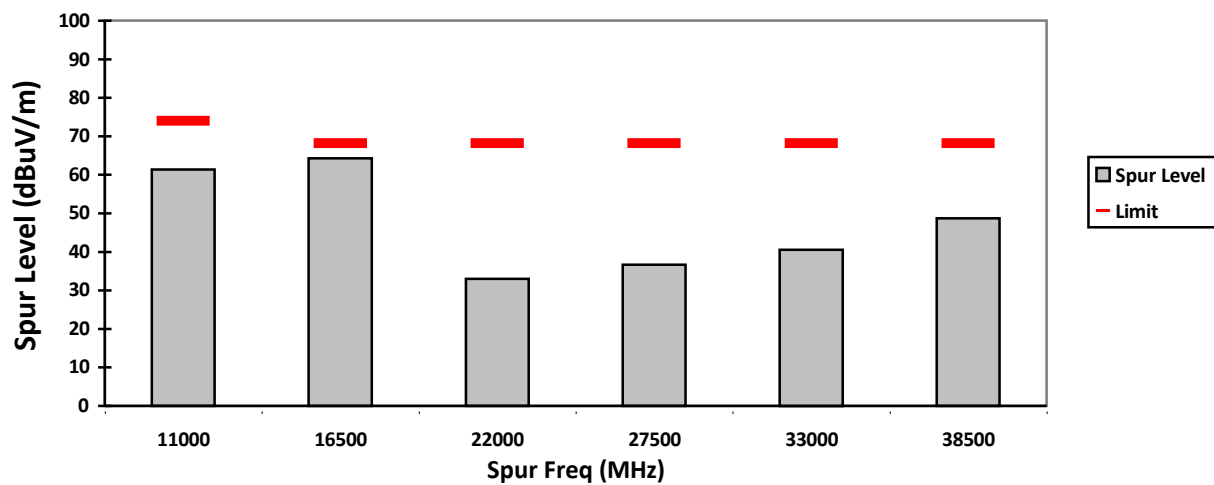


Radiated Emission (Low Channel) tabular data

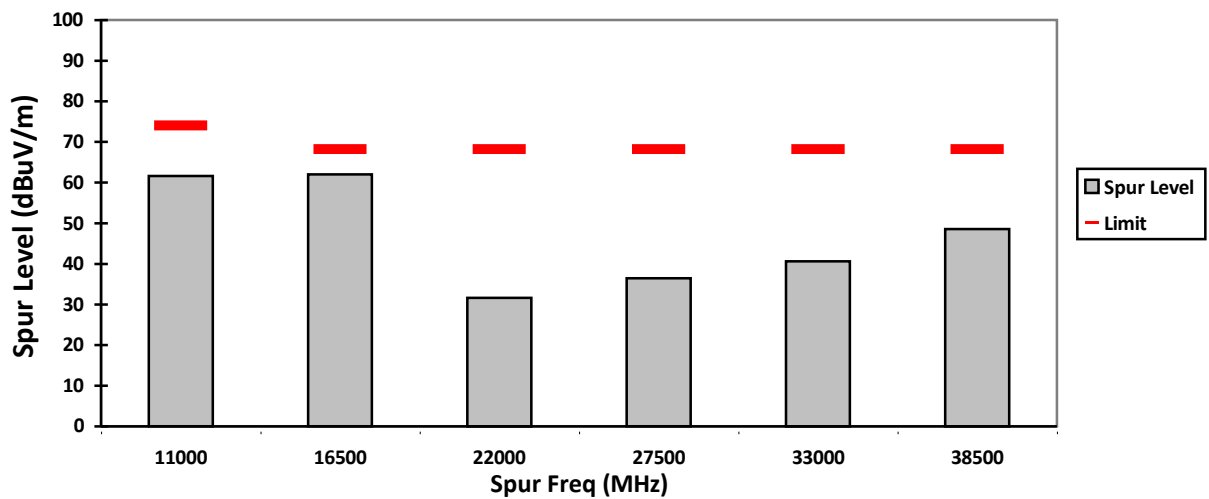
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

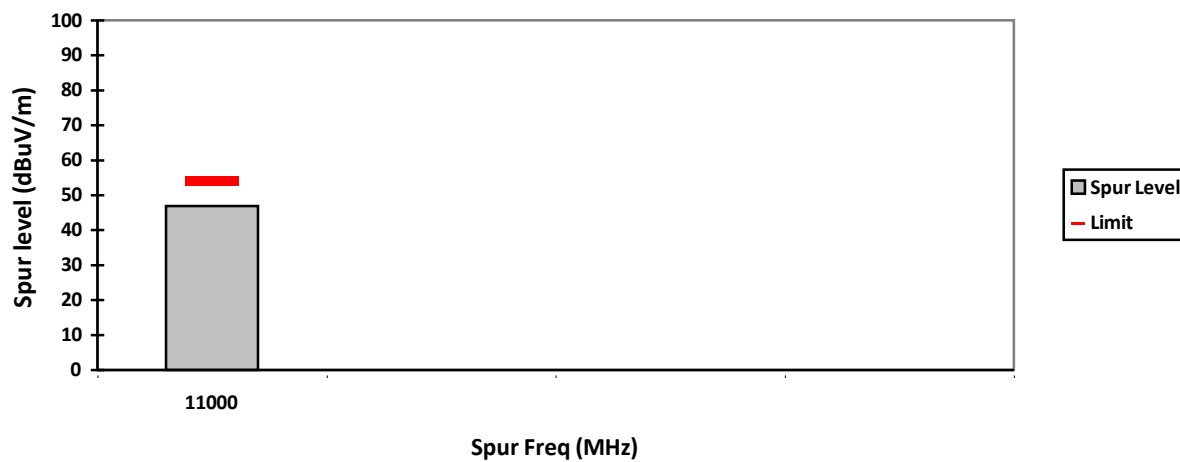
VERTICAL, PK



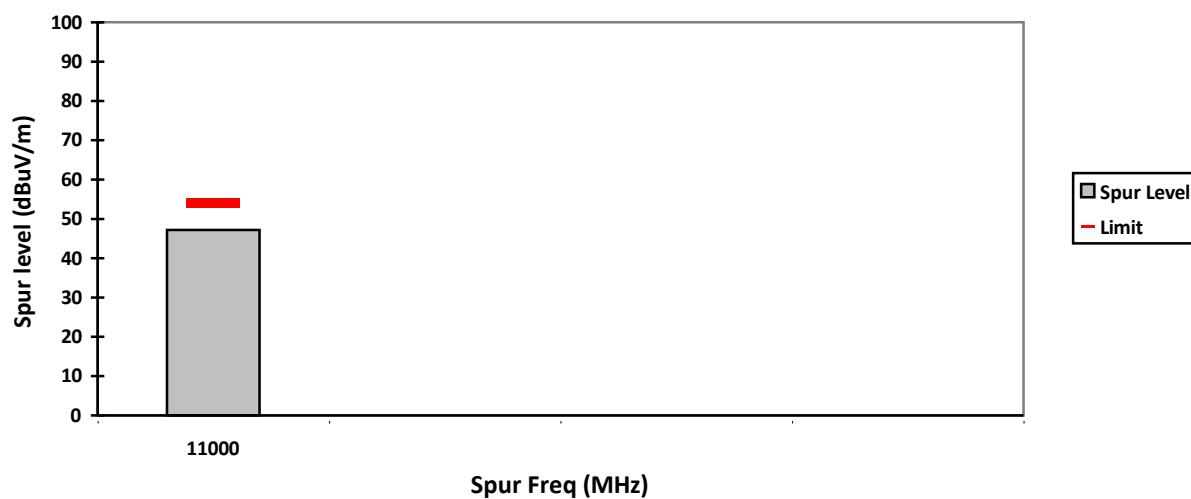
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

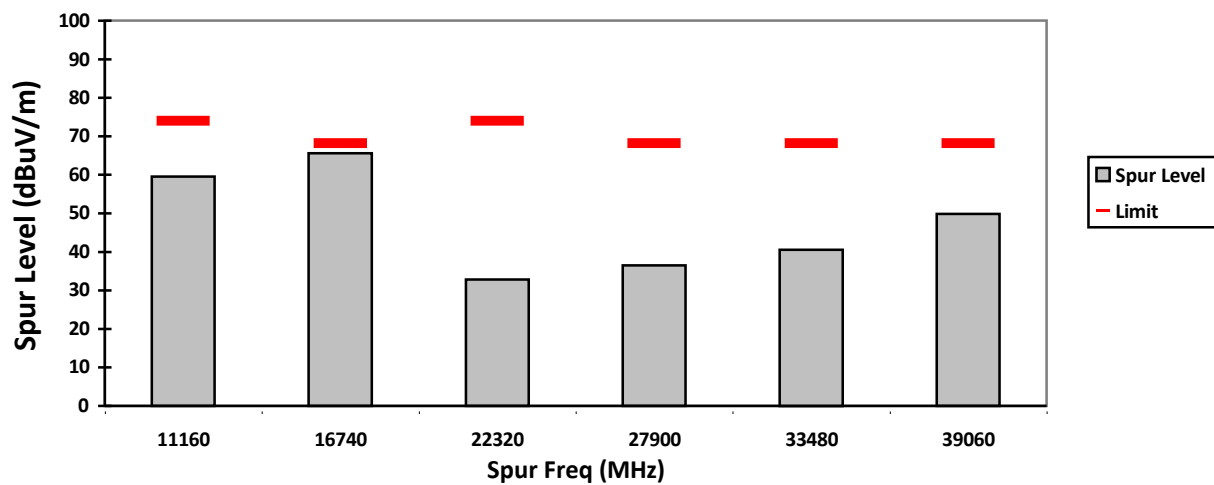


Radiated Emission (Mid Channel) tabular data

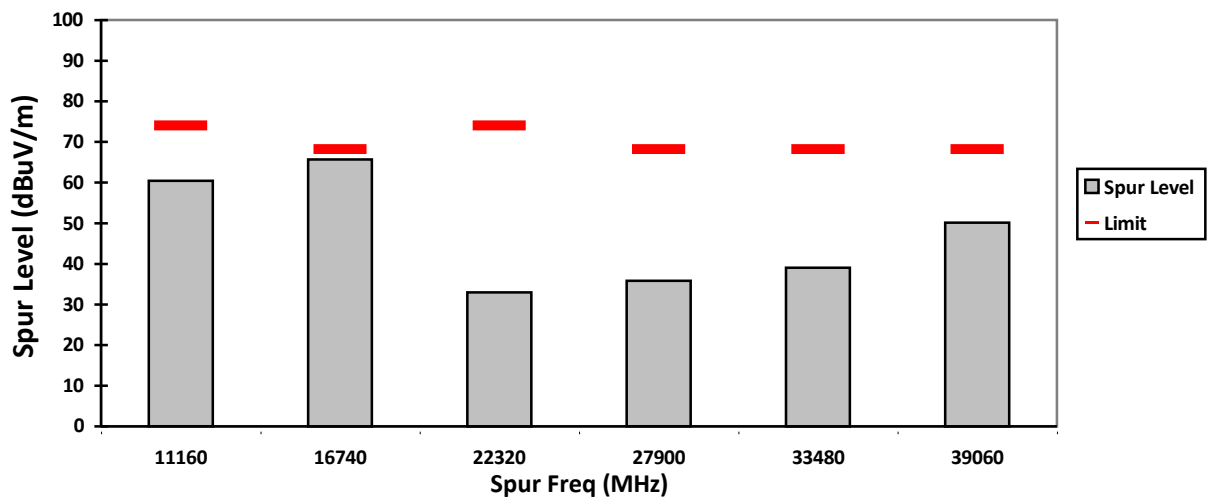
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

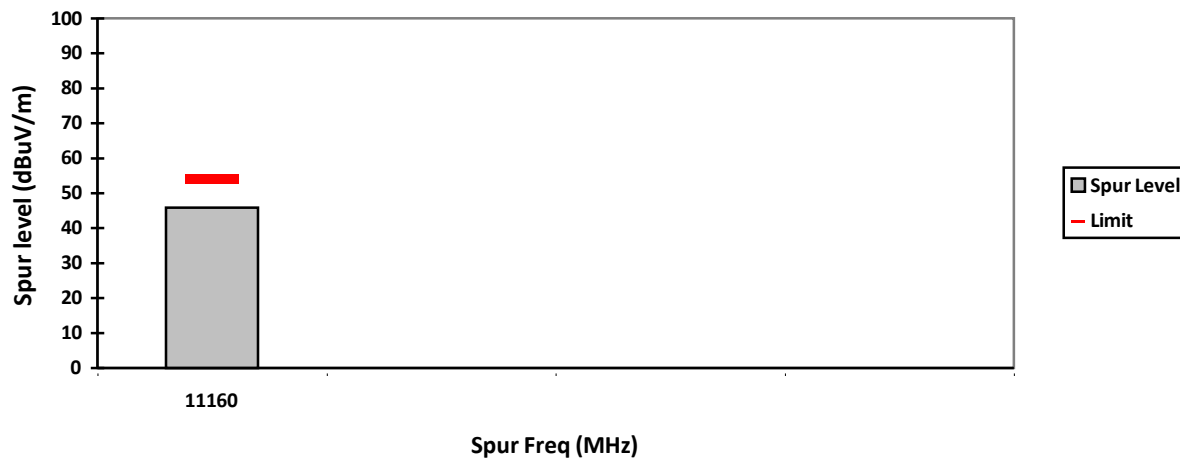
VERTICAL, PK



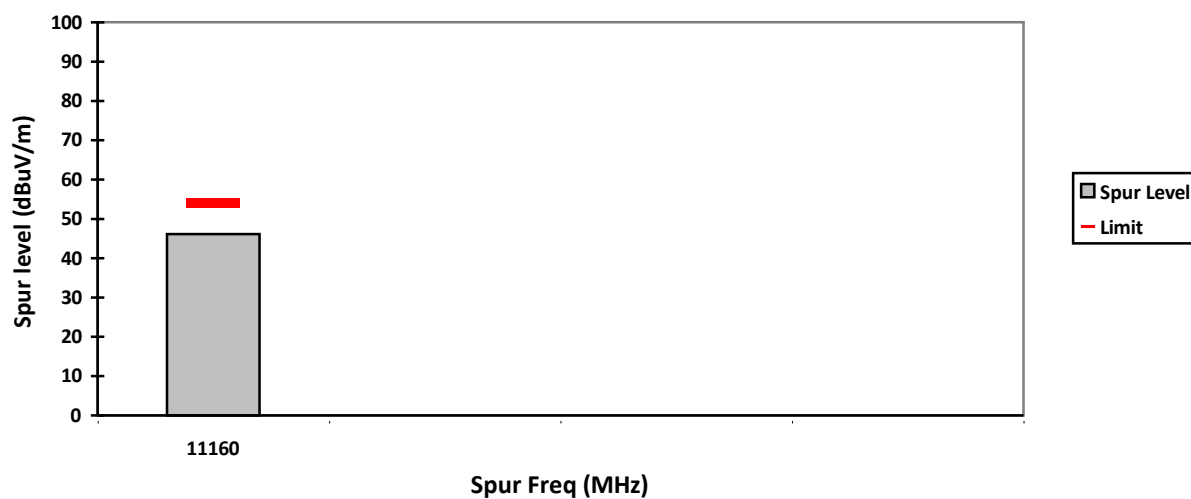
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

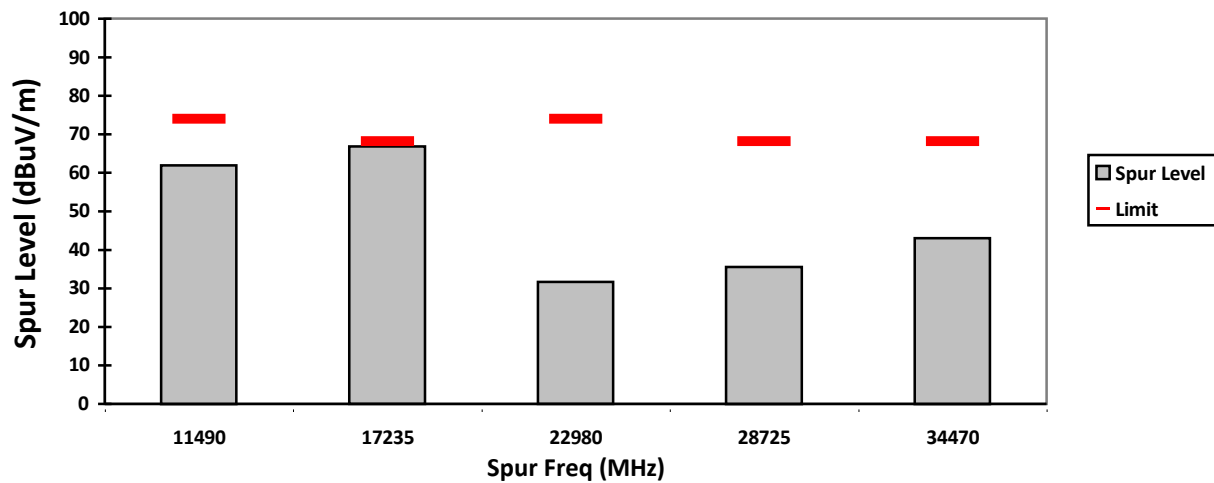


Radiated Emission (Low Channel) tabular data

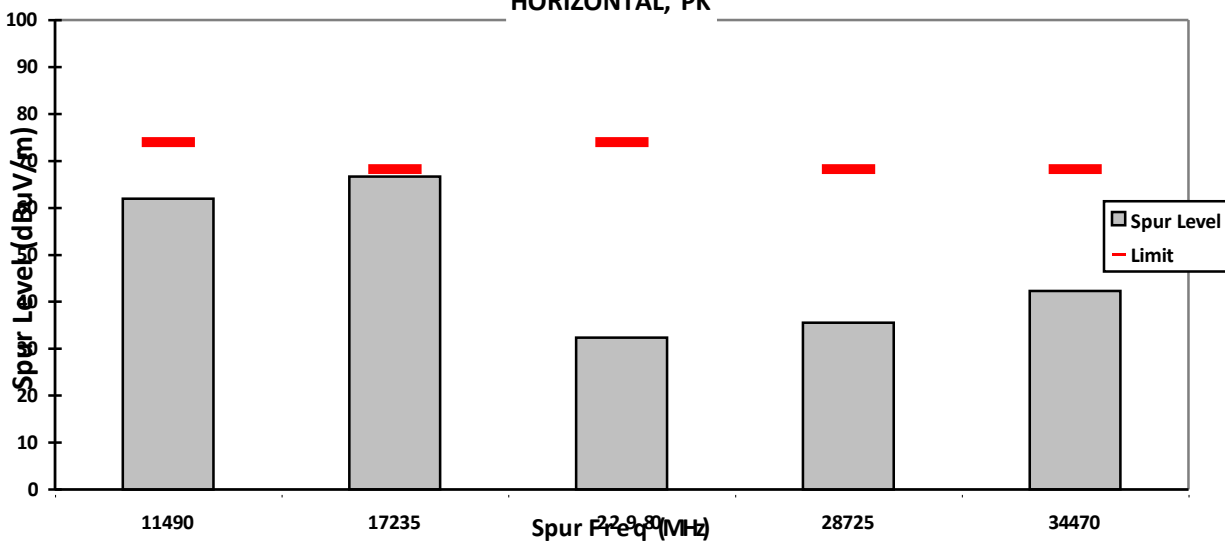
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

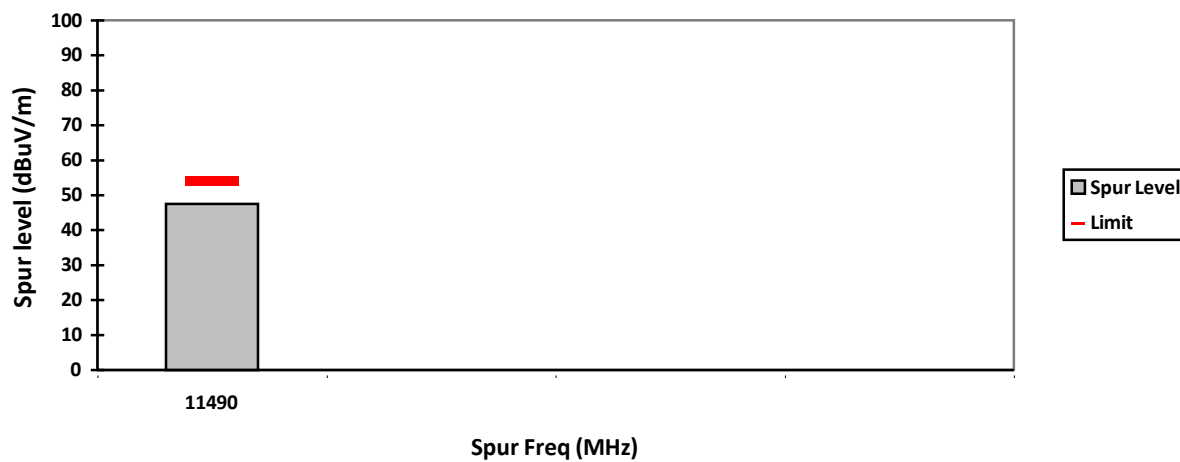
VERTICAL, PK



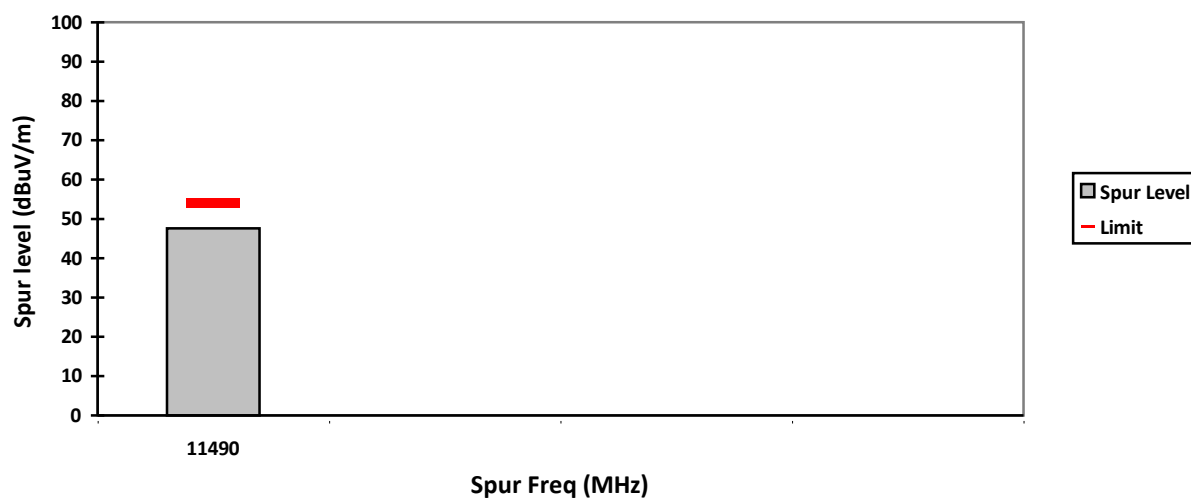
HORIZONTAL, PK



VERTICAL, AV



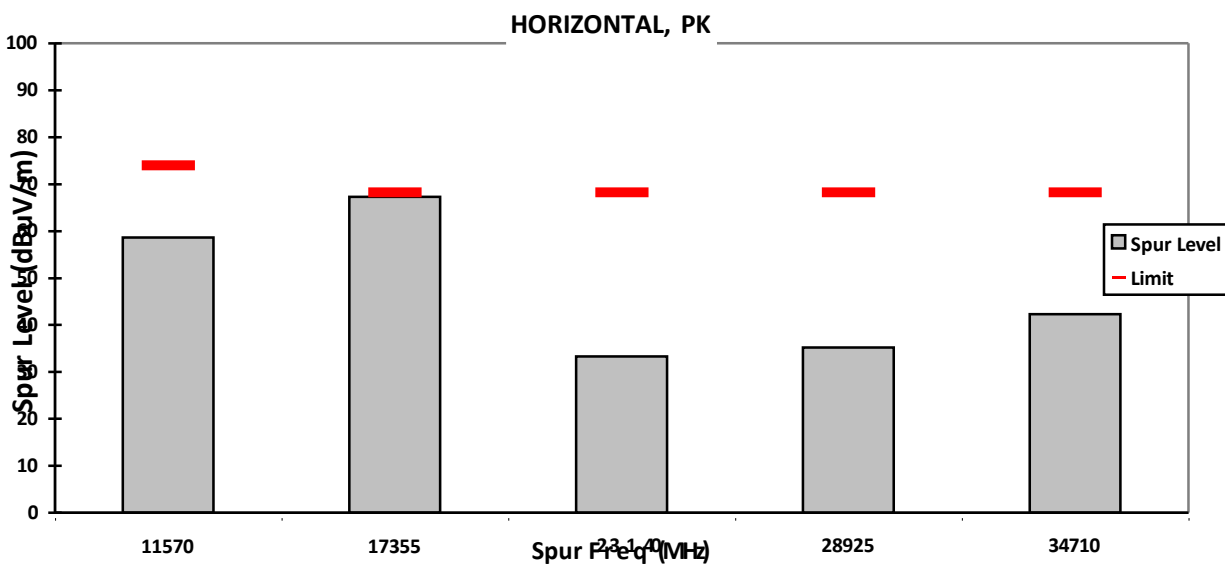
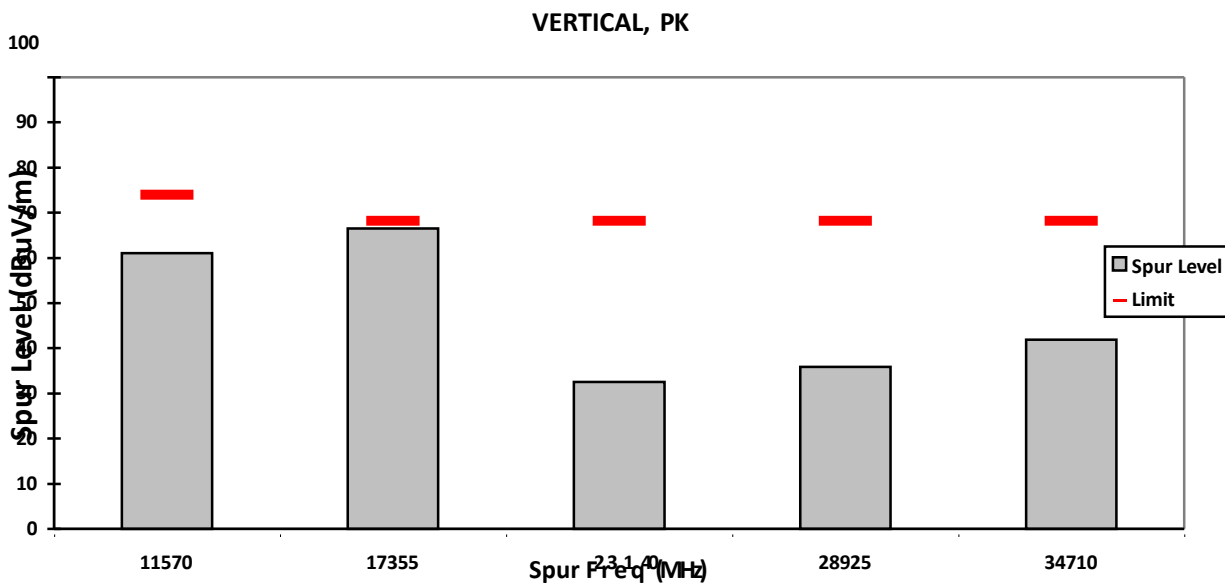
HORIZONTAL, AV



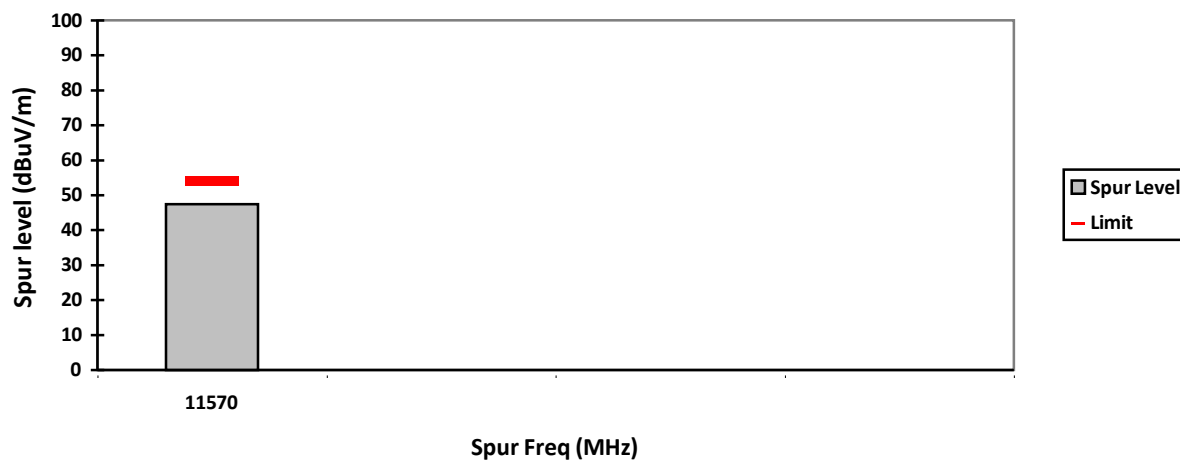
Radiated Emission (Mid Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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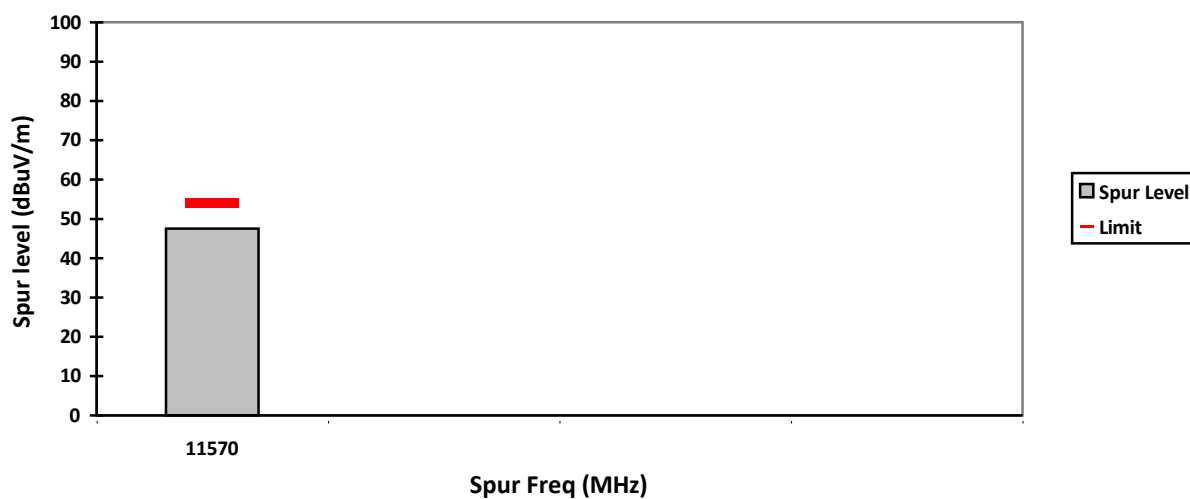
Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**



VERTICAL, AV



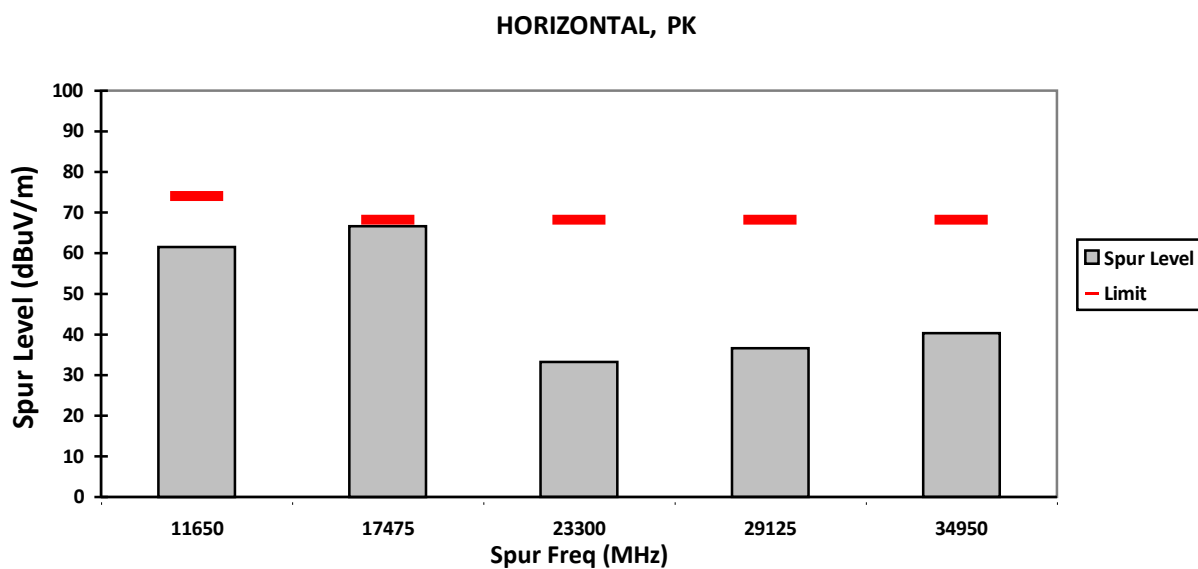
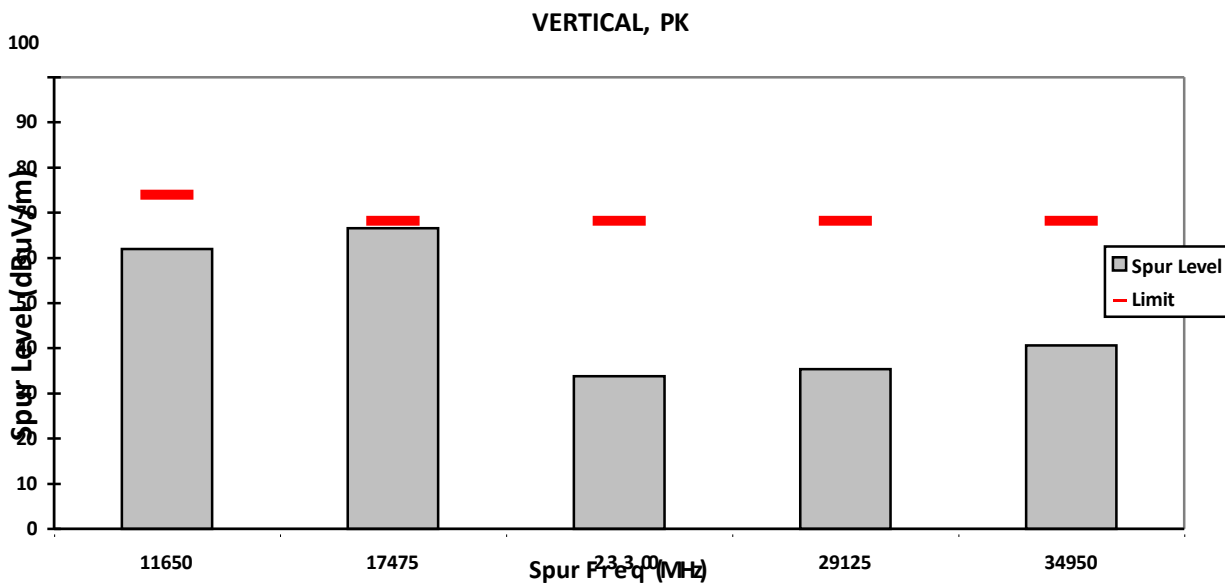
HORIZONTAL, AV



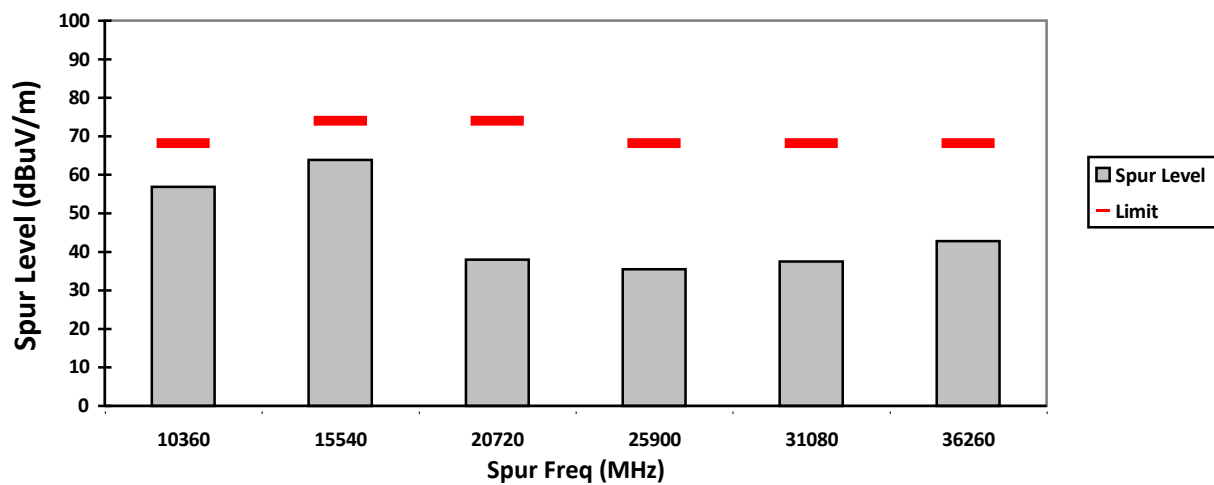
Radiated Emission (High Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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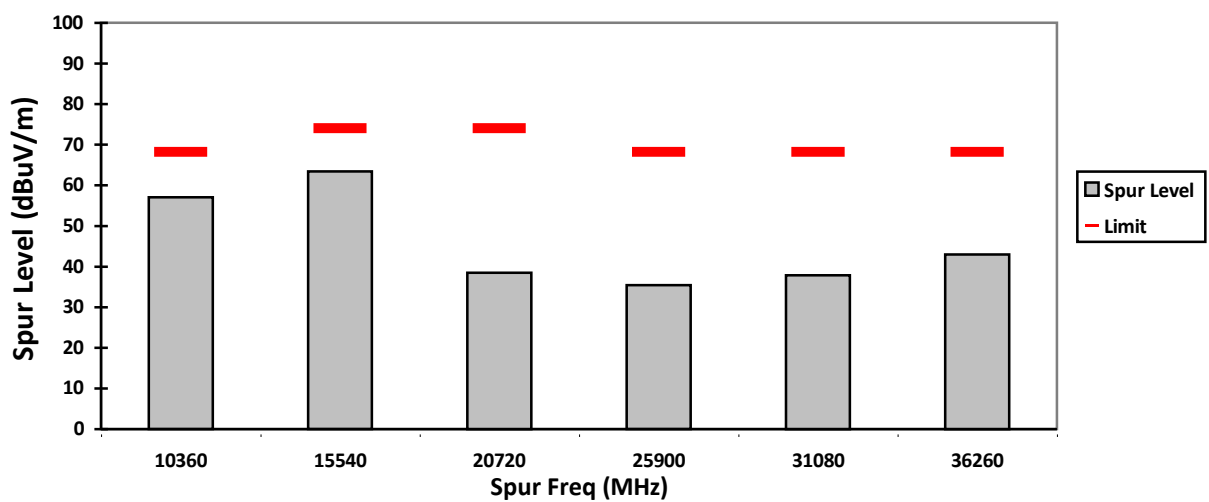
Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**



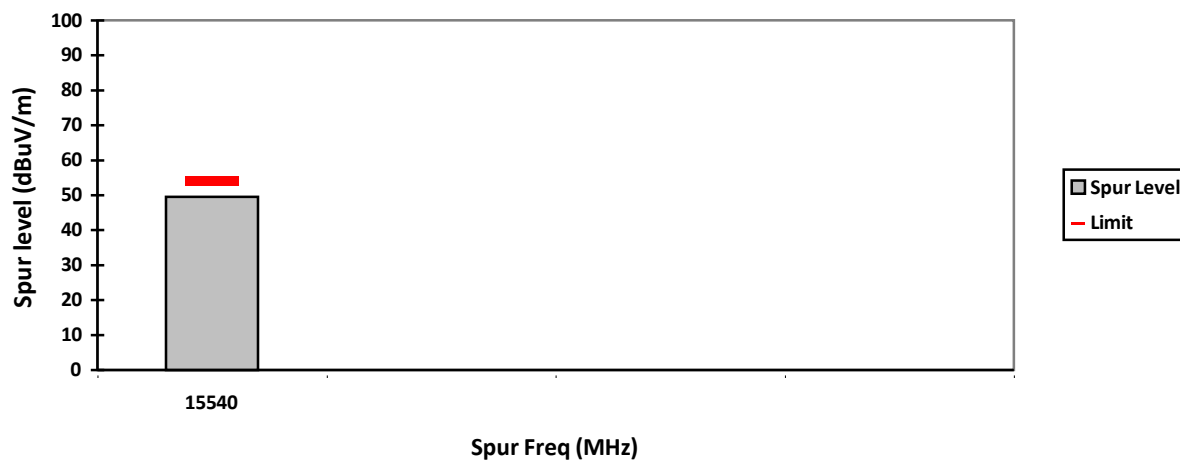
VERTICAL, PK



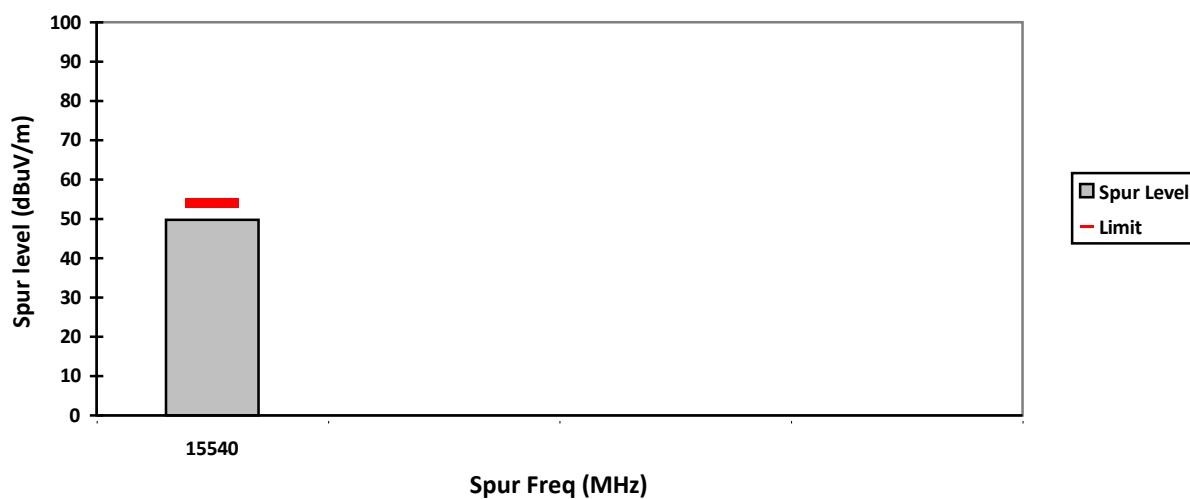
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

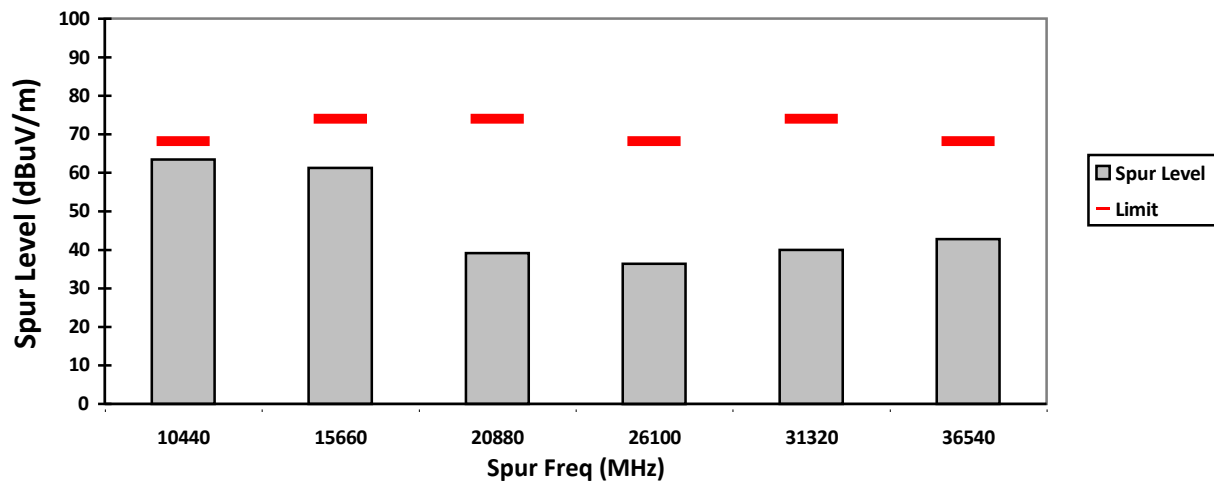


Radiated Emission (Mid Channel) tabular data

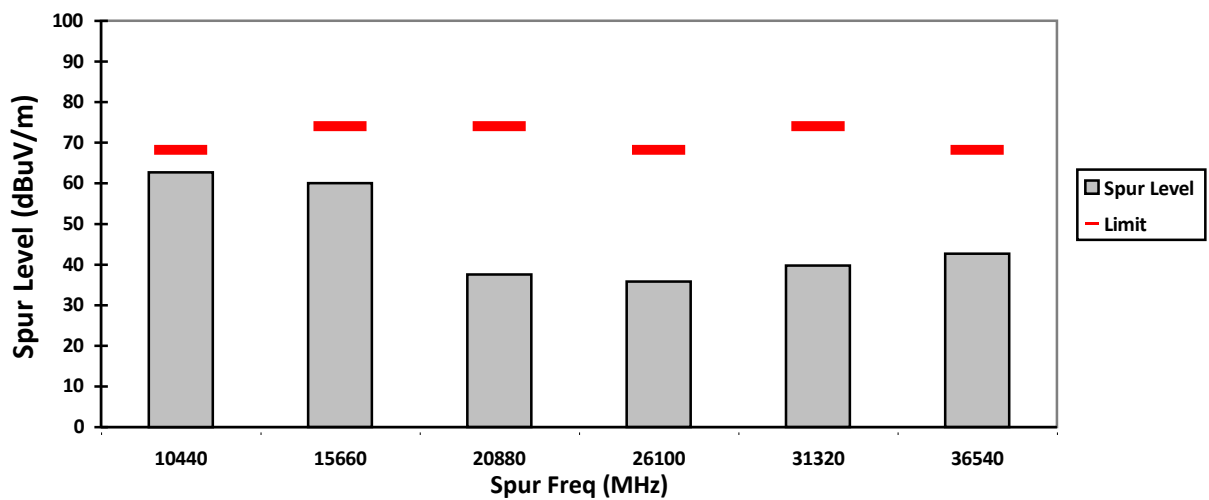
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

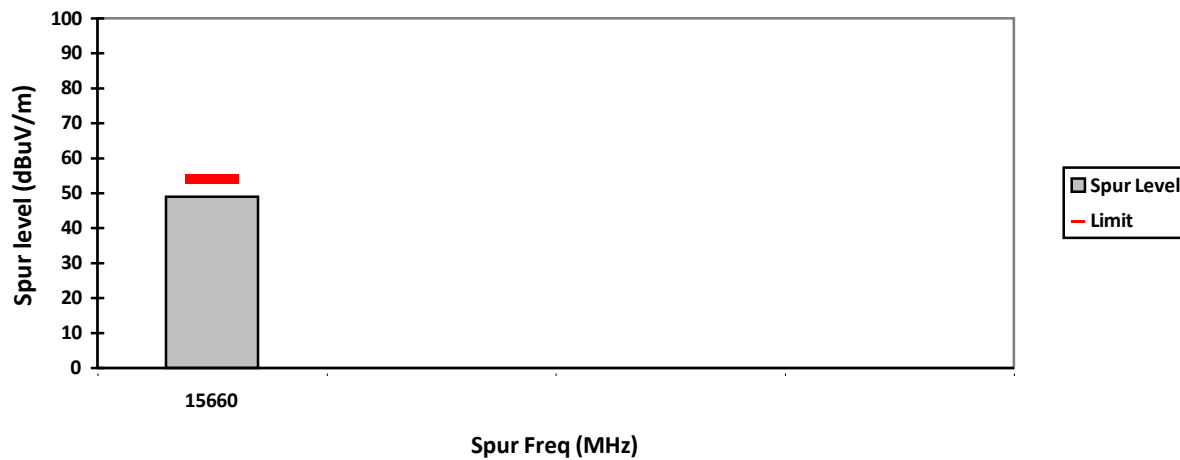
VERTICAL, PK



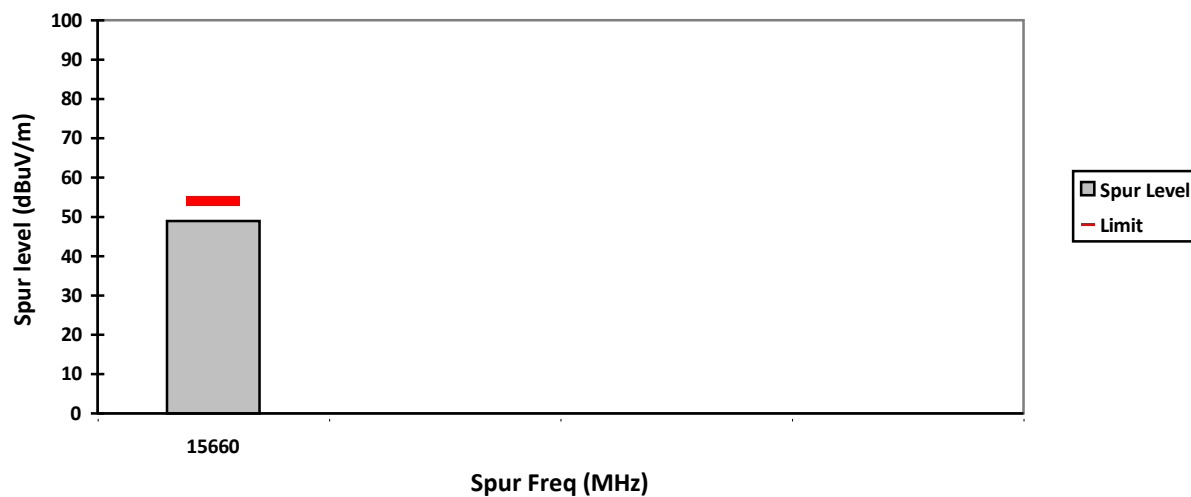
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

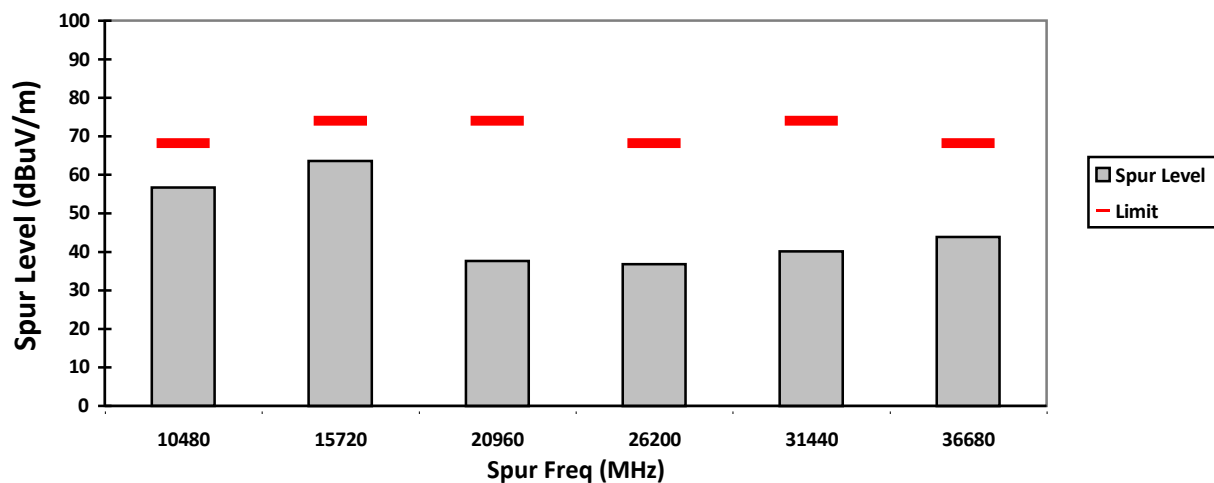


Radiated Emission (High Channel) tabular data

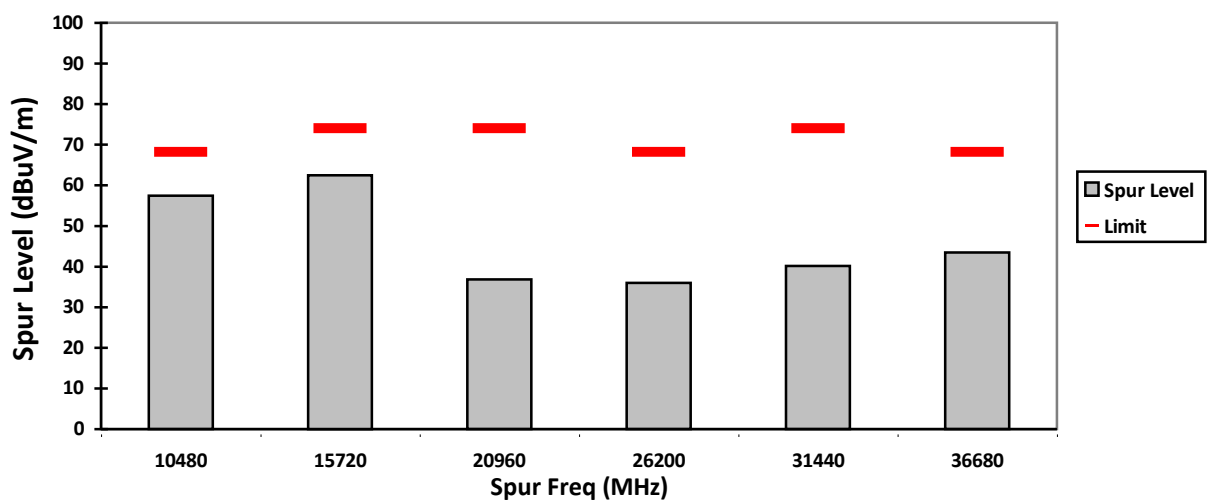
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

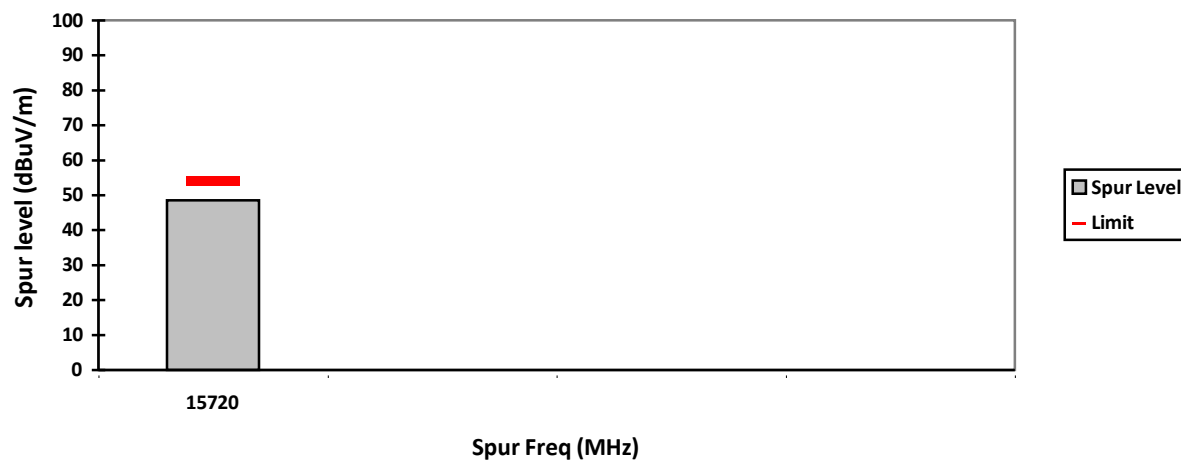
VERTICAL, PK



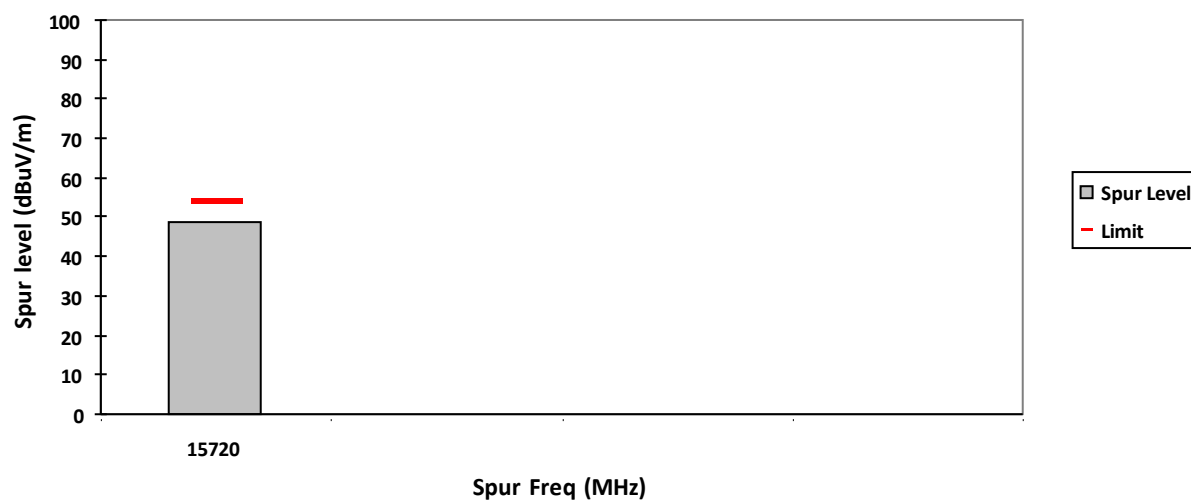
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

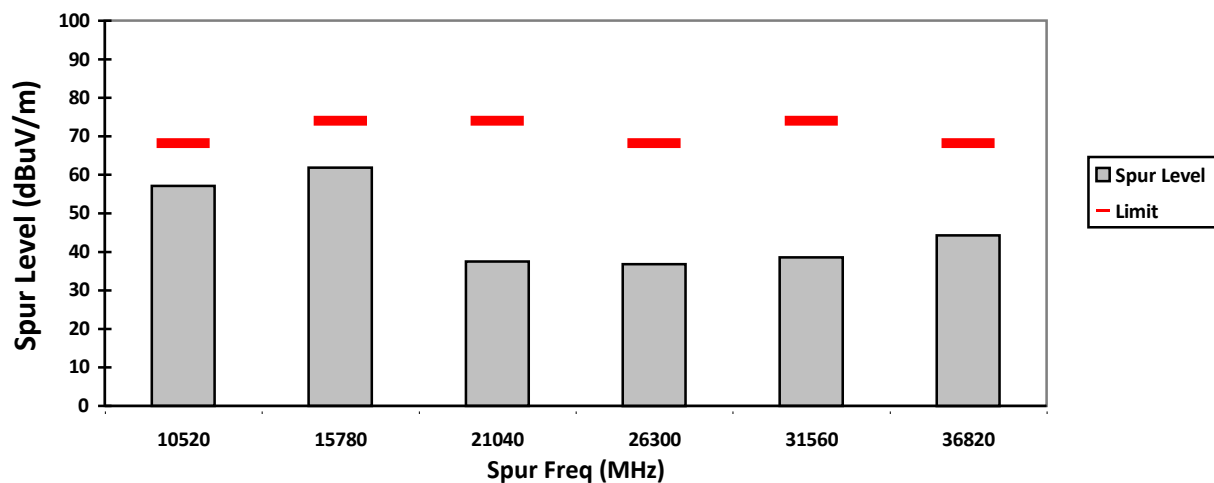


Radiated Emission (Low Channel) tabular data

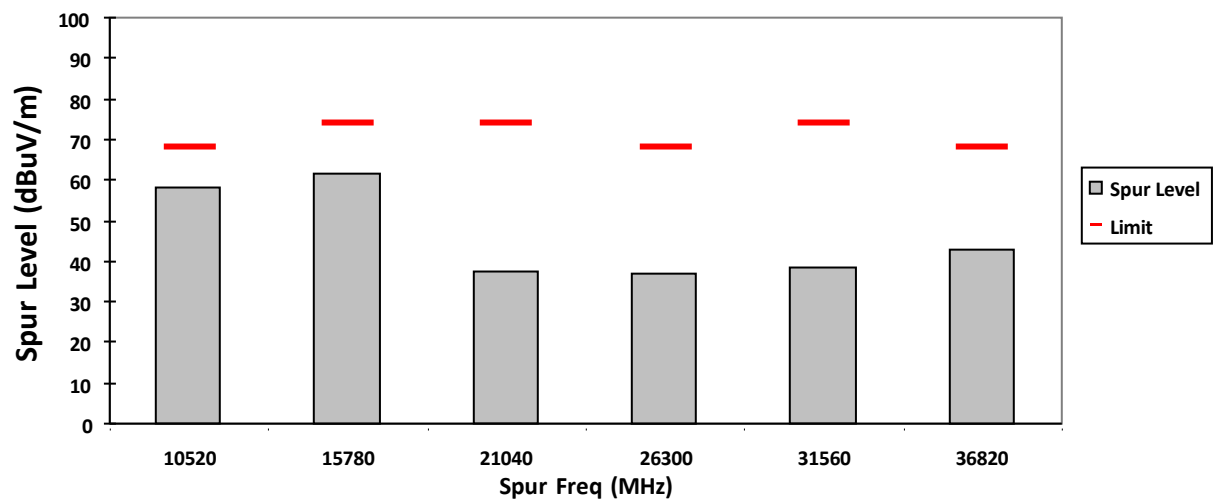
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

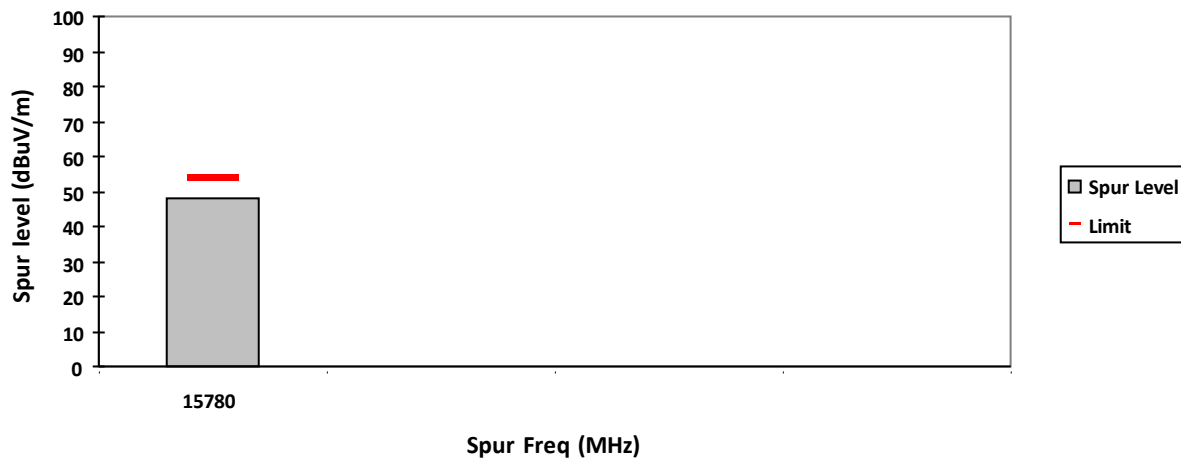
VERTICAL, PK



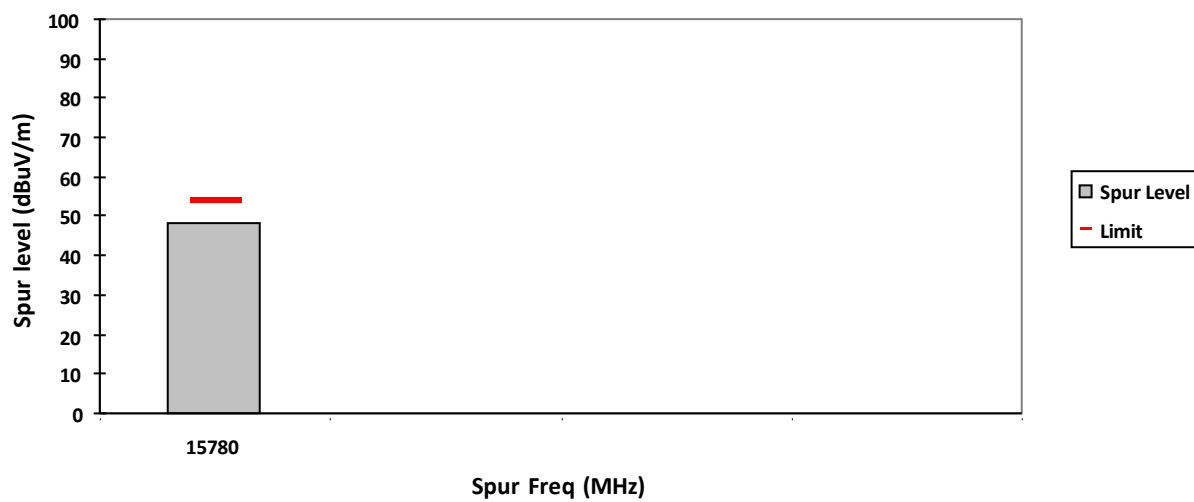
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

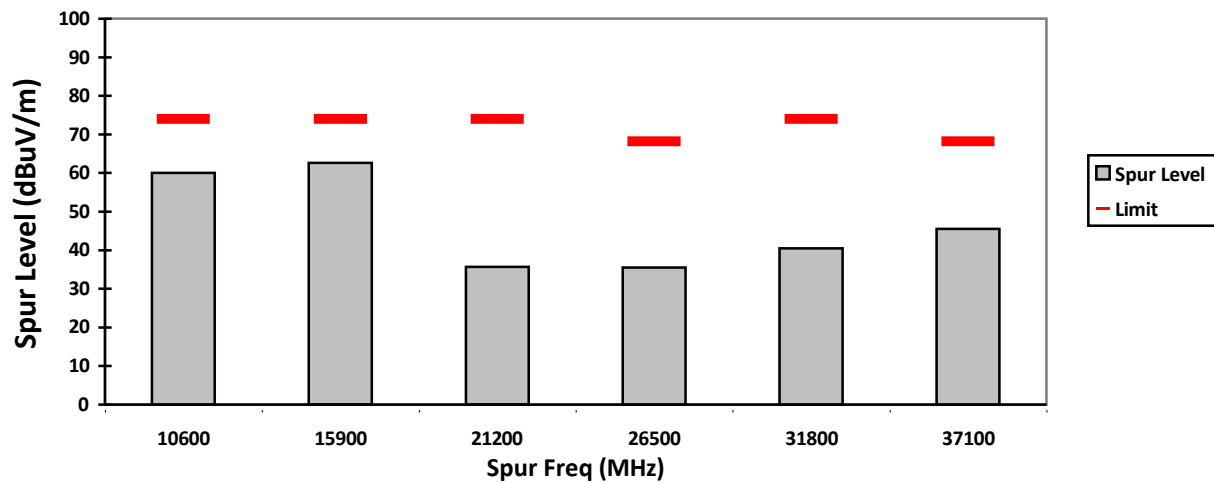


Radiated Emission (Mid Channel) tabular data

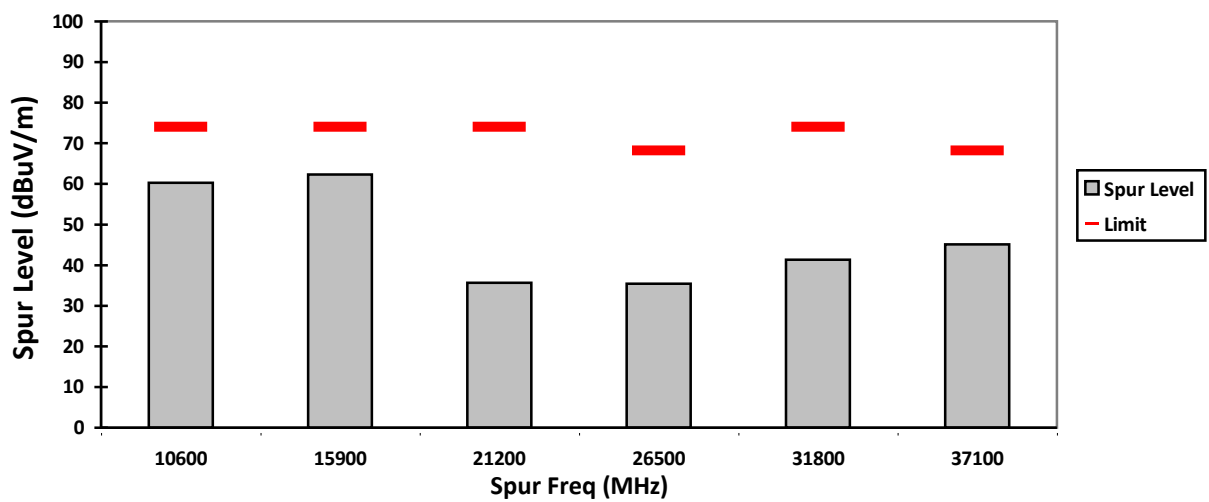
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

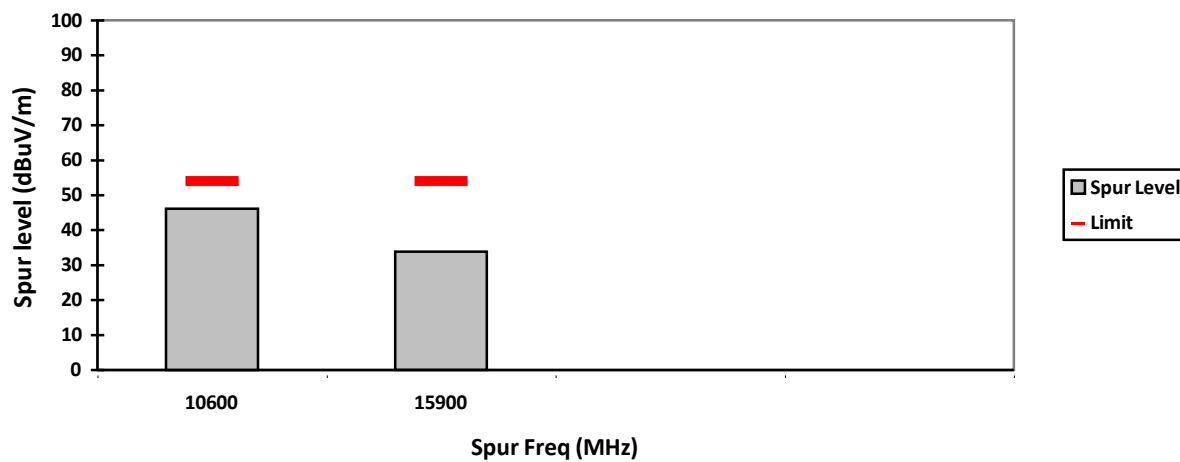
VERTICAL, PK



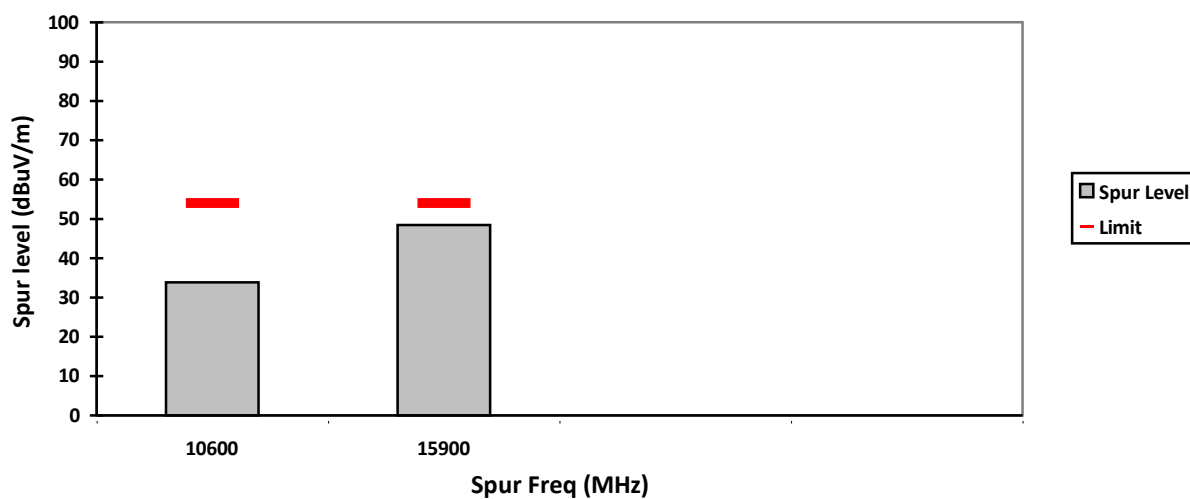
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

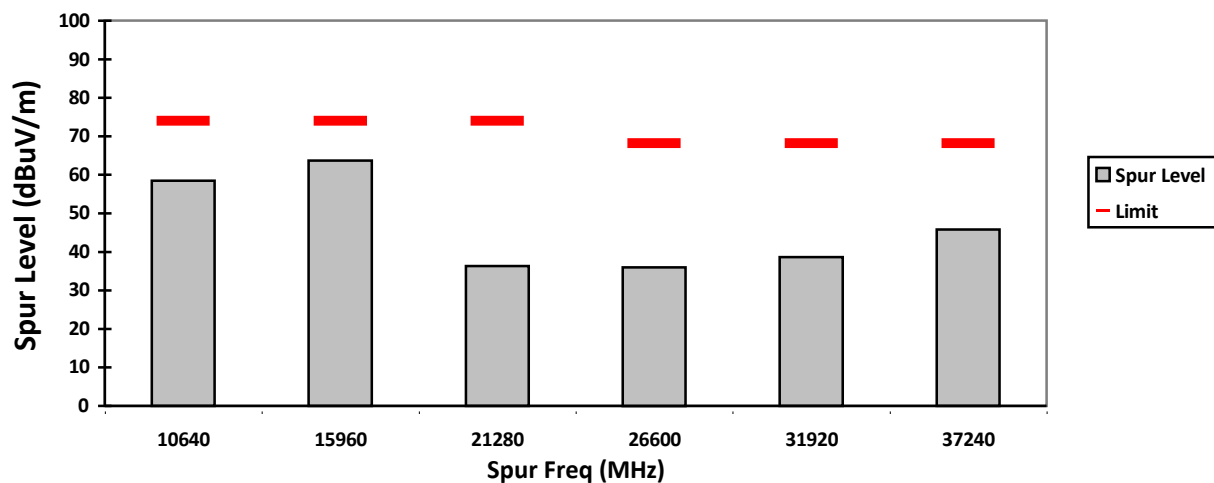


Radiated Emission (High Channel) tabular data

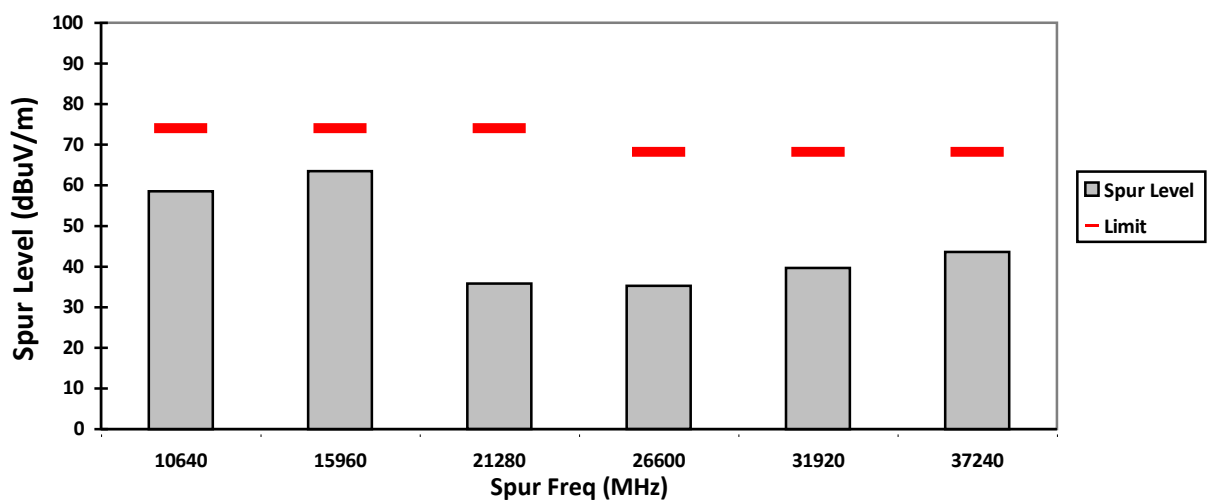
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

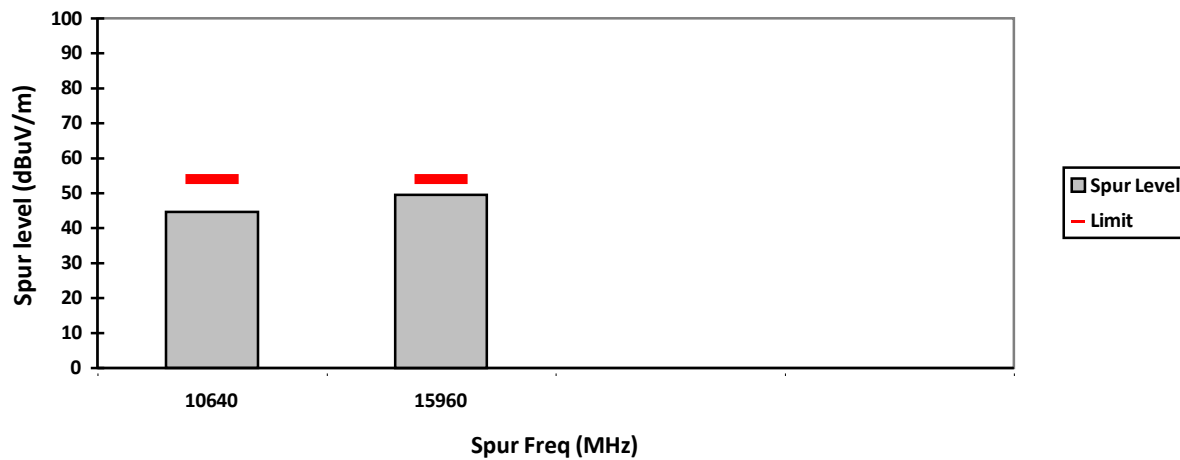
VERTICAL, PK



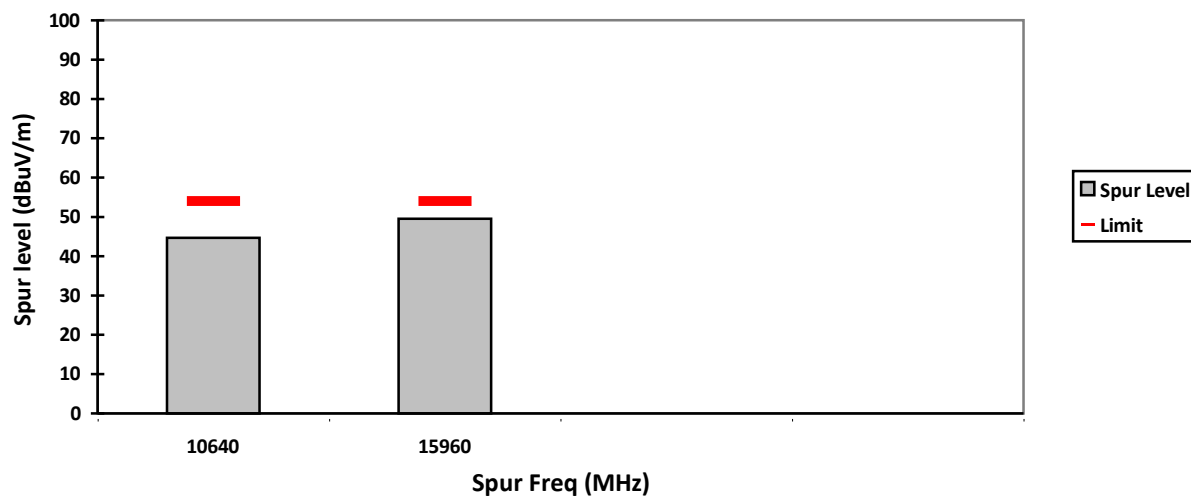
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

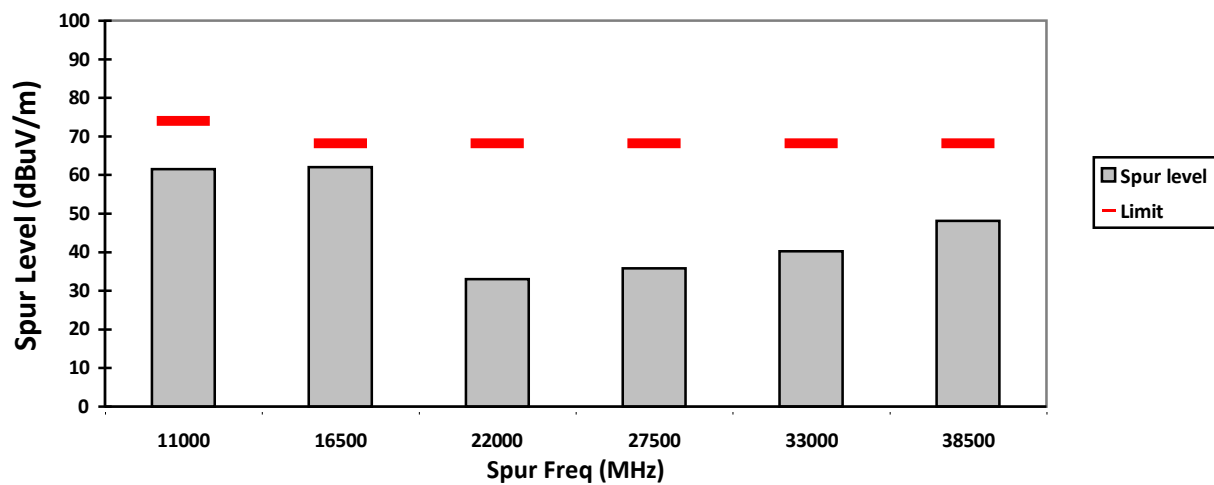


Radiated Emission (Low Channel) tabular data

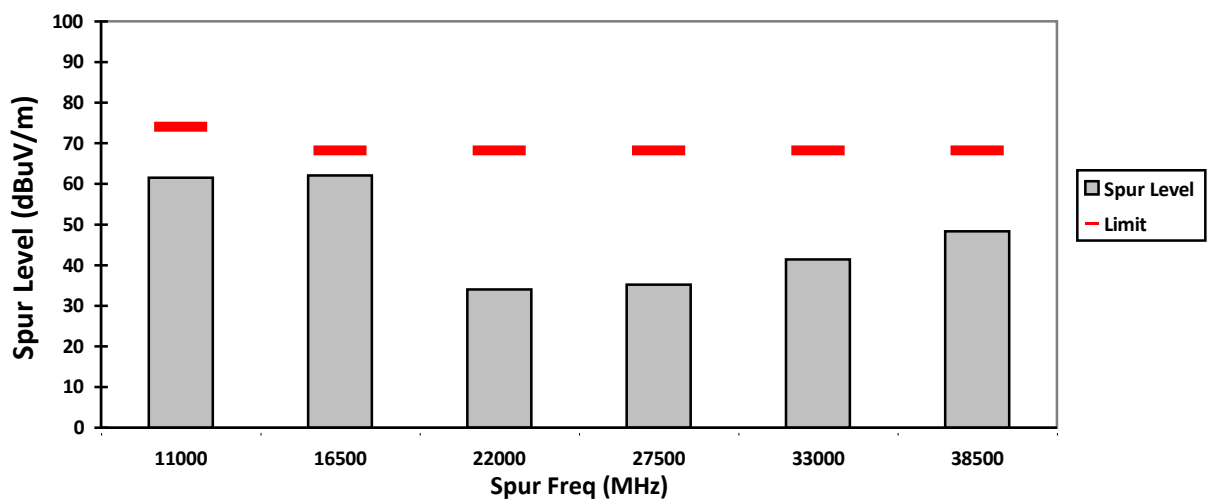
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

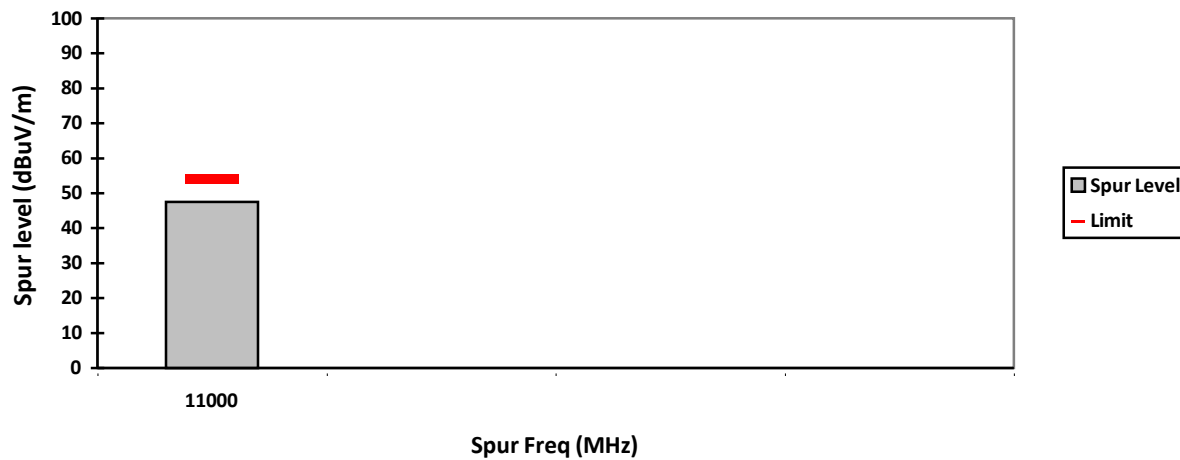
VERTICAL, PK



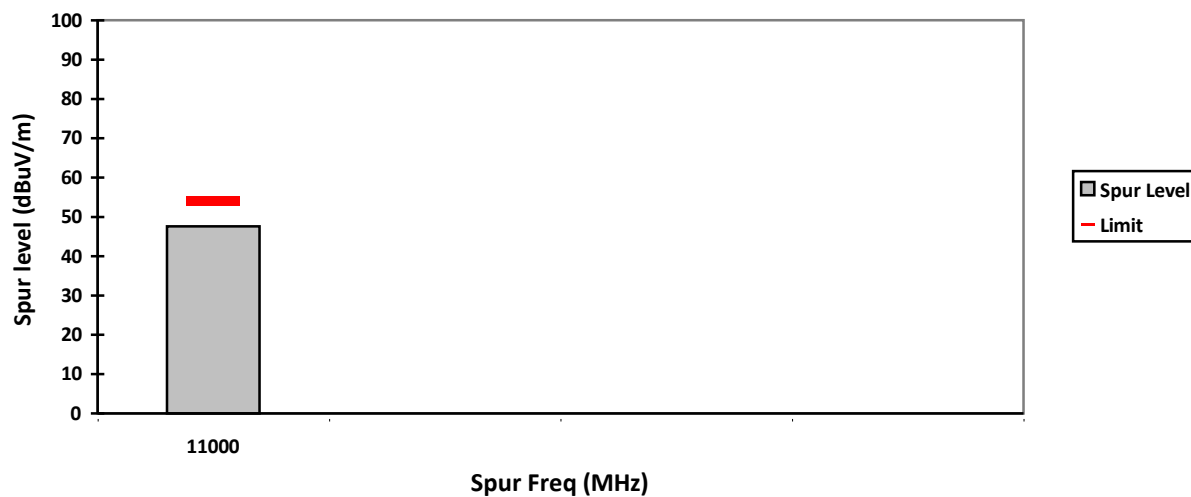
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

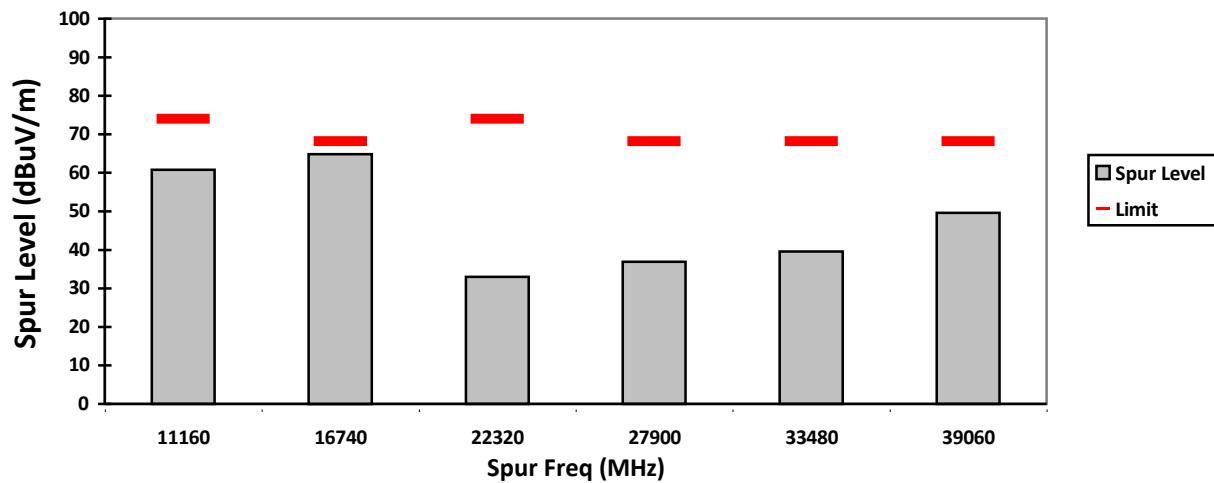


Radiated Emission (Mid Channel) tabular data

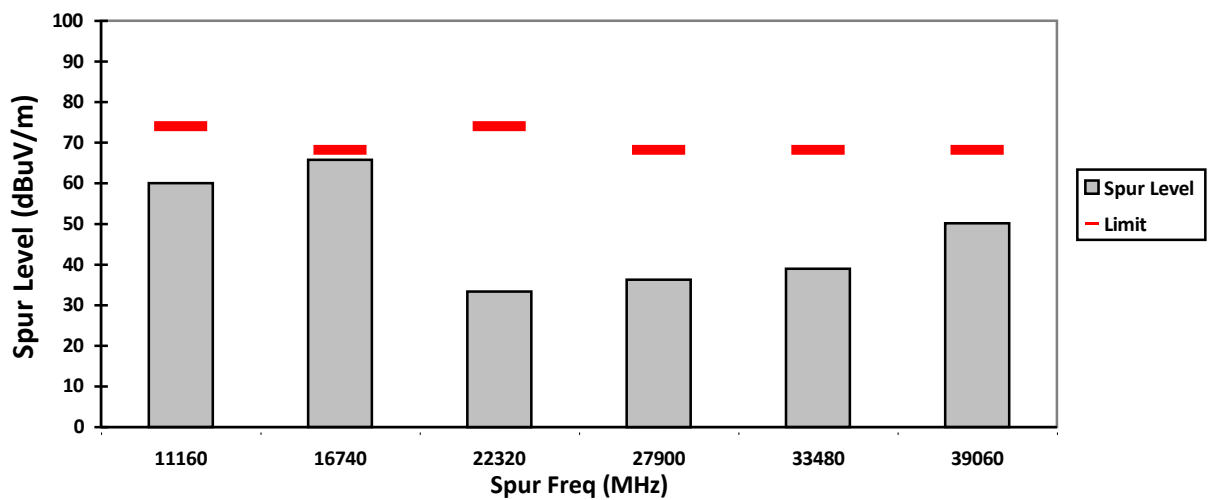
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

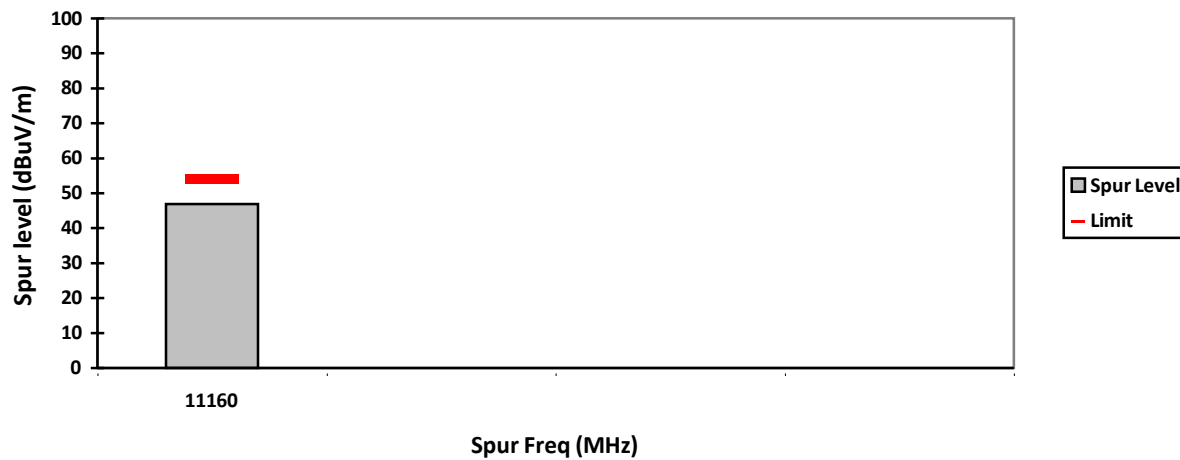
VERTICAL, PK



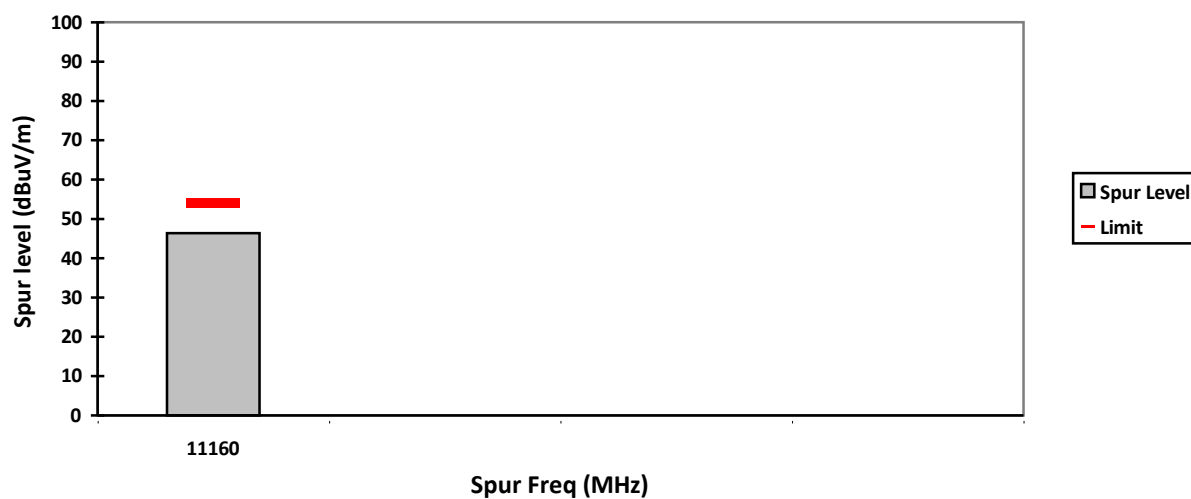
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

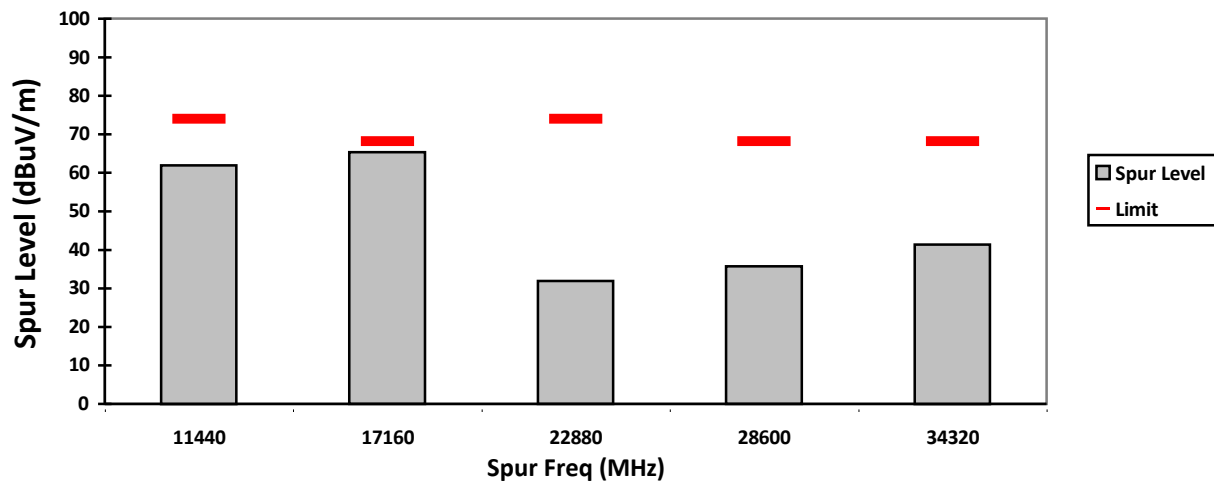


Radiated Emission (Straddle Channel) tabular data

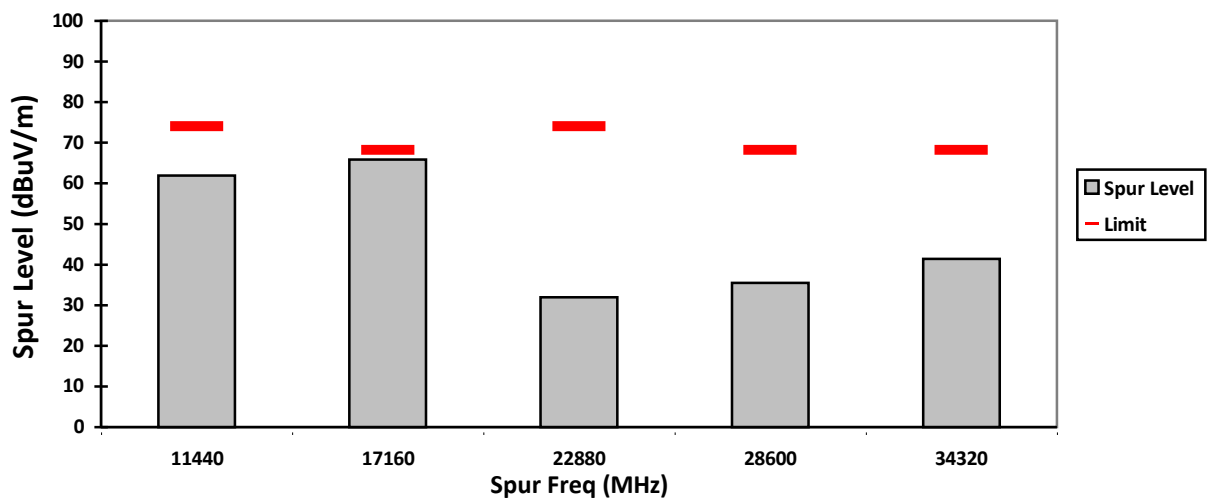
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

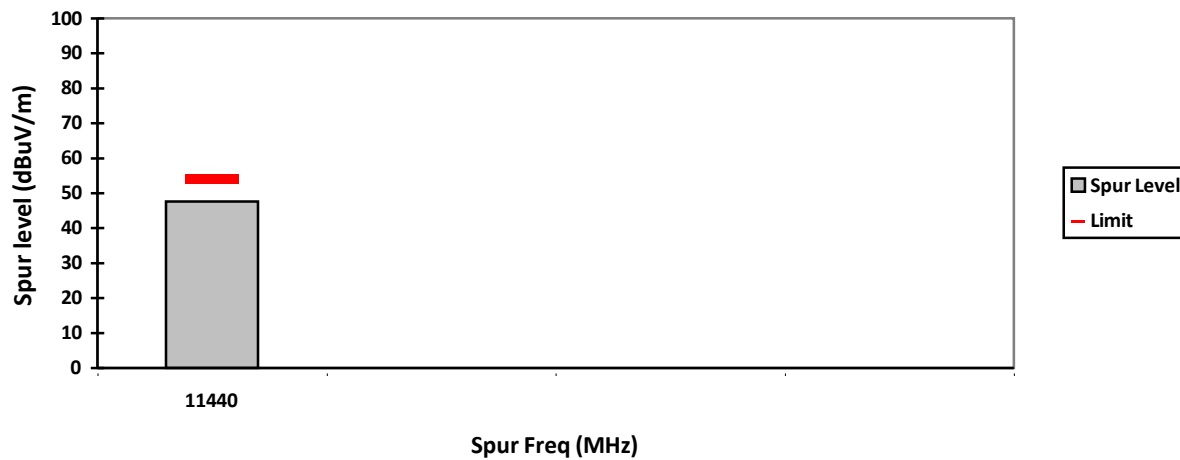
VERTICAL, PK



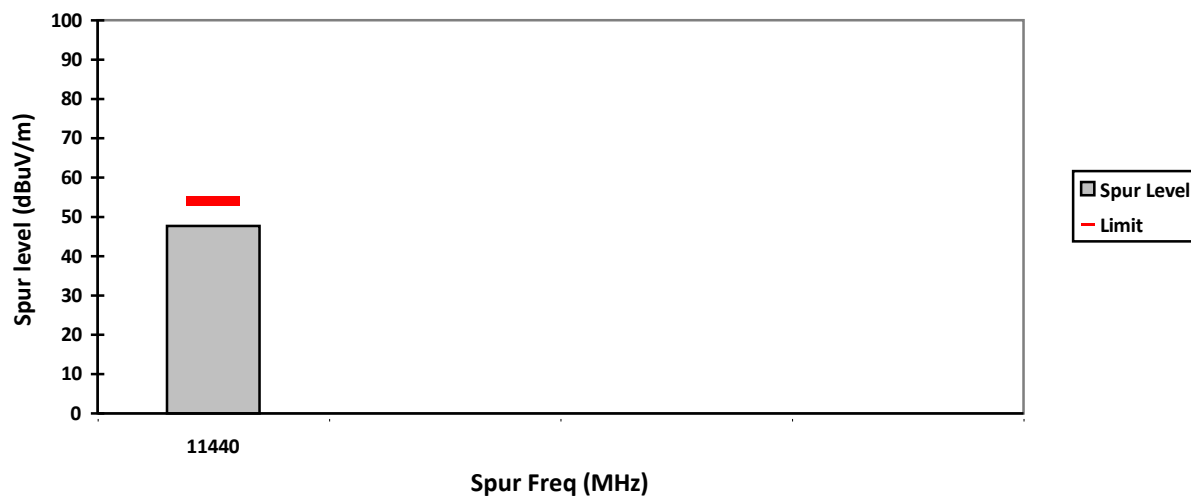
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

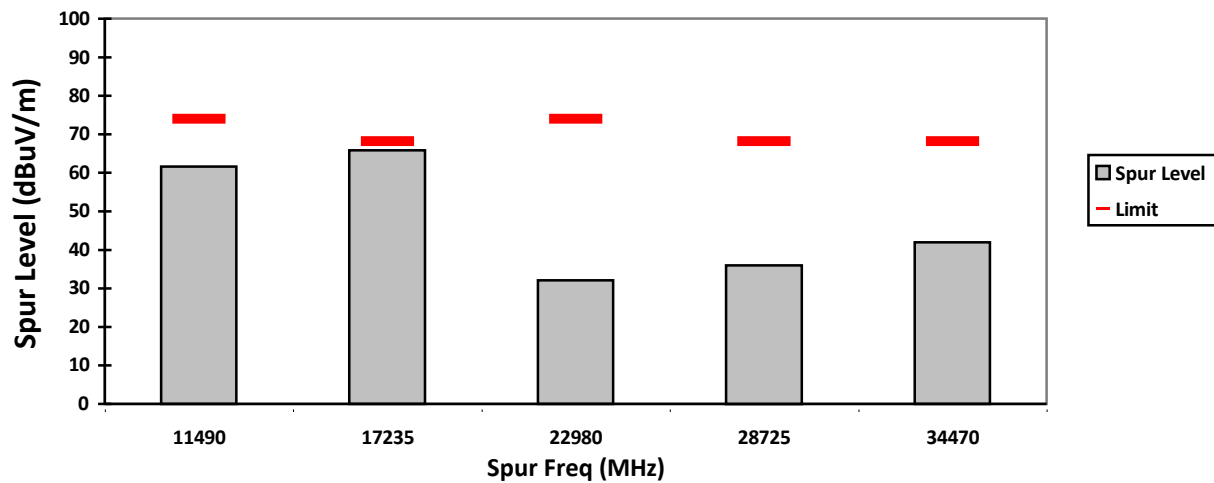


Radiated Emission (Low Channel) tabular data

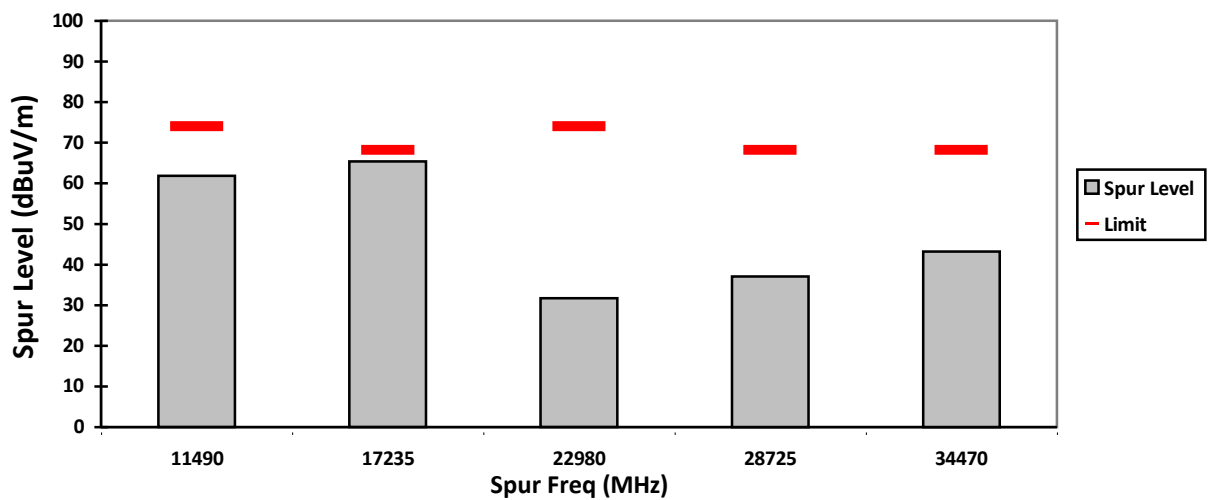
Remarks: Pass Result	Marginal Result	Fail Result
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Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

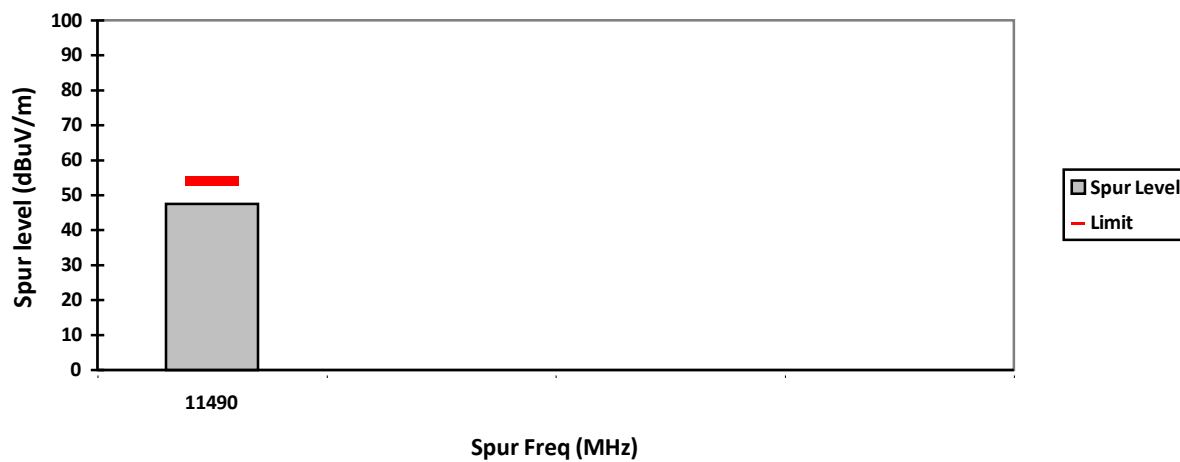
VERTICAL, PK



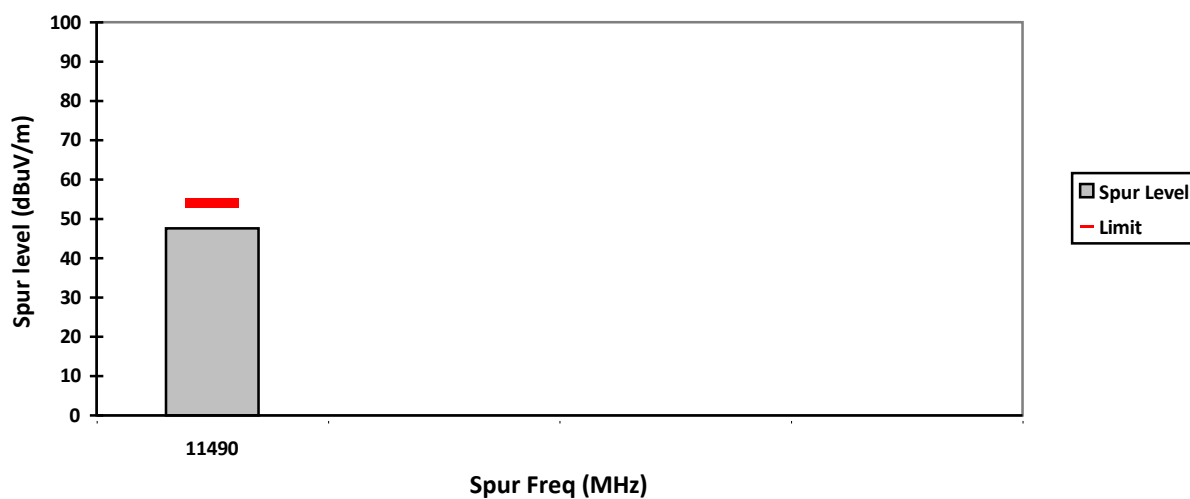
HORIZONTAL, PK



VERTICAL, AV



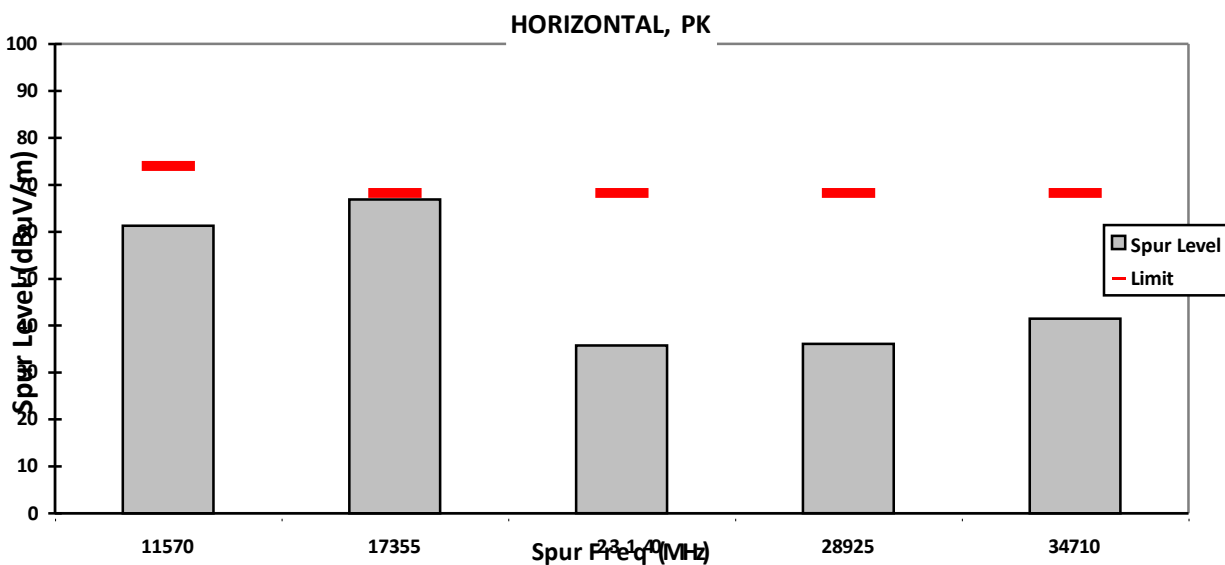
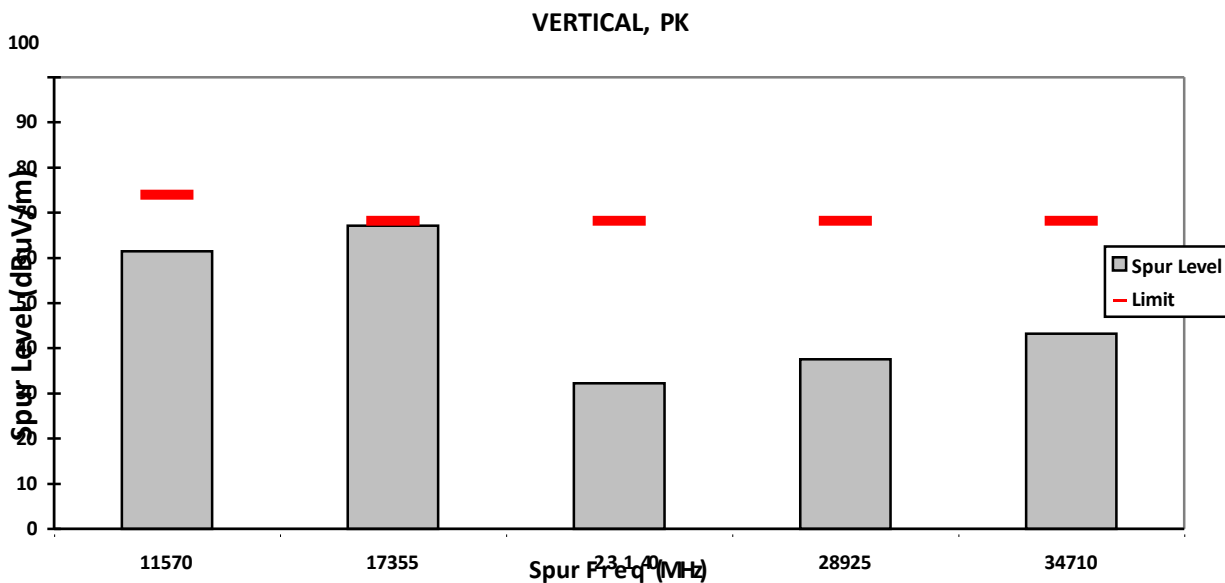
HORIZONTAL, AV



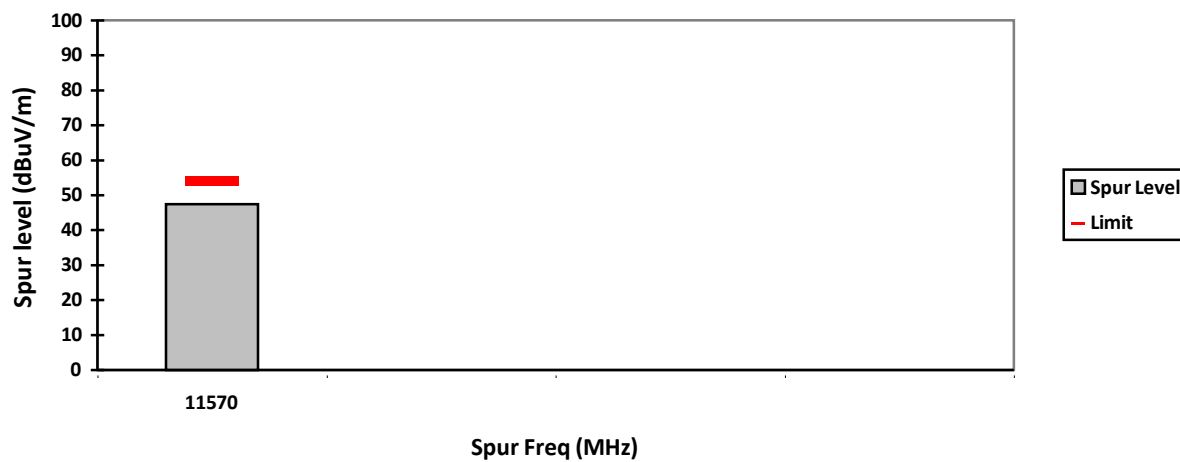
Radiated Emission (Mid Channel) tabular data

Remarks: Pass Result	Marginal Result	Fail Result
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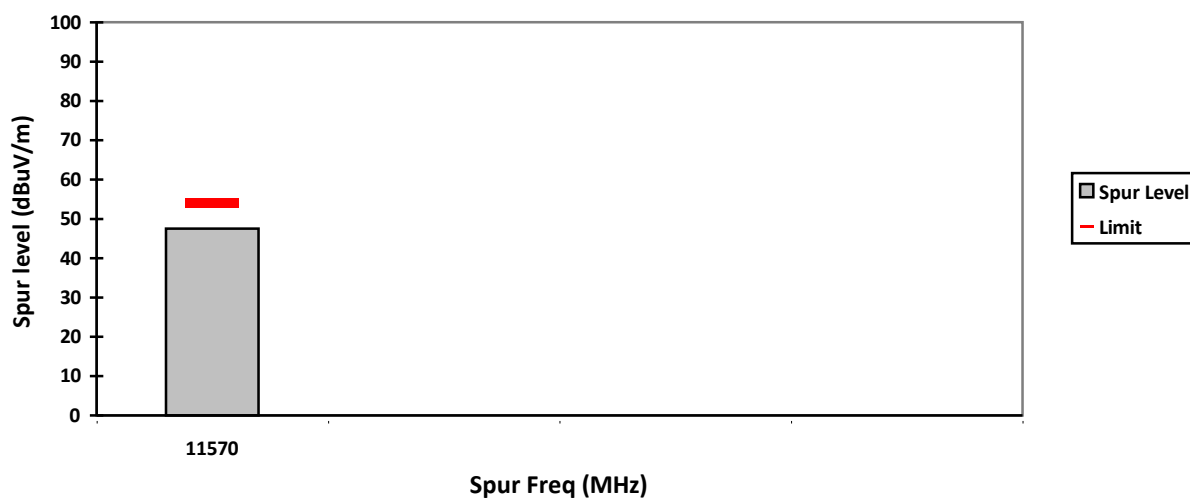
Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**



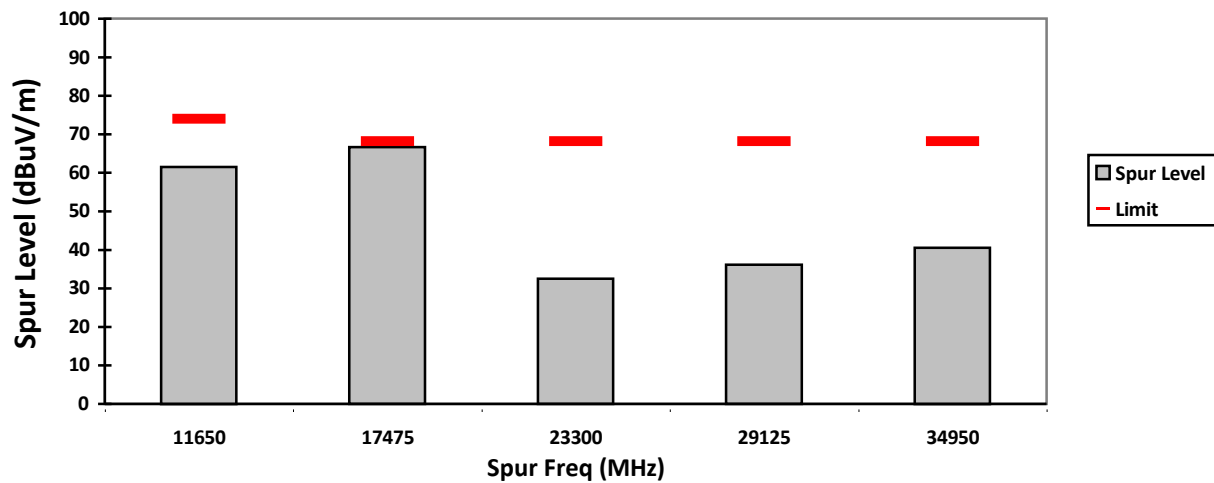
VERTICAL, AV



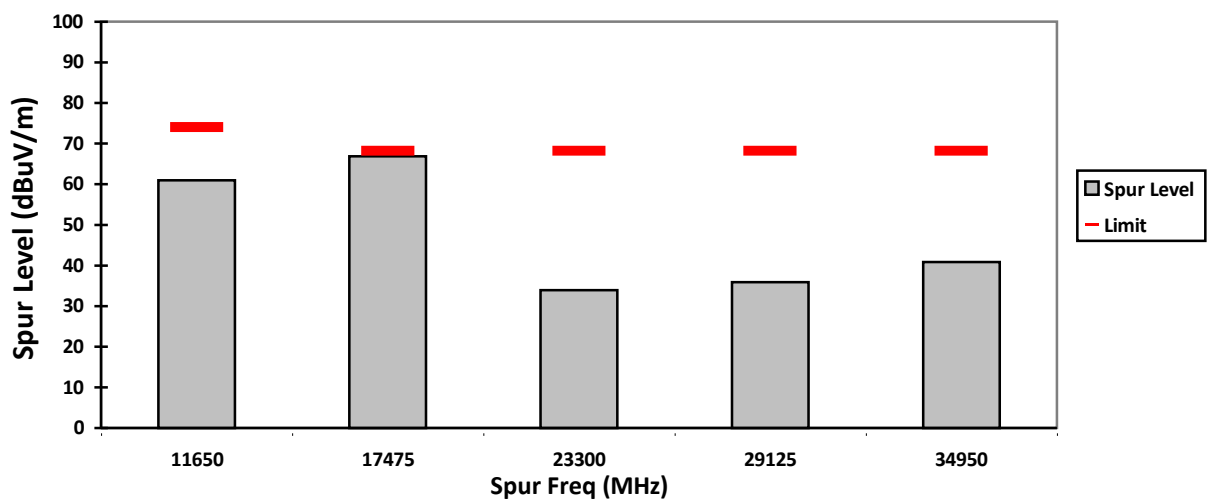
HORIZONTAL, AV



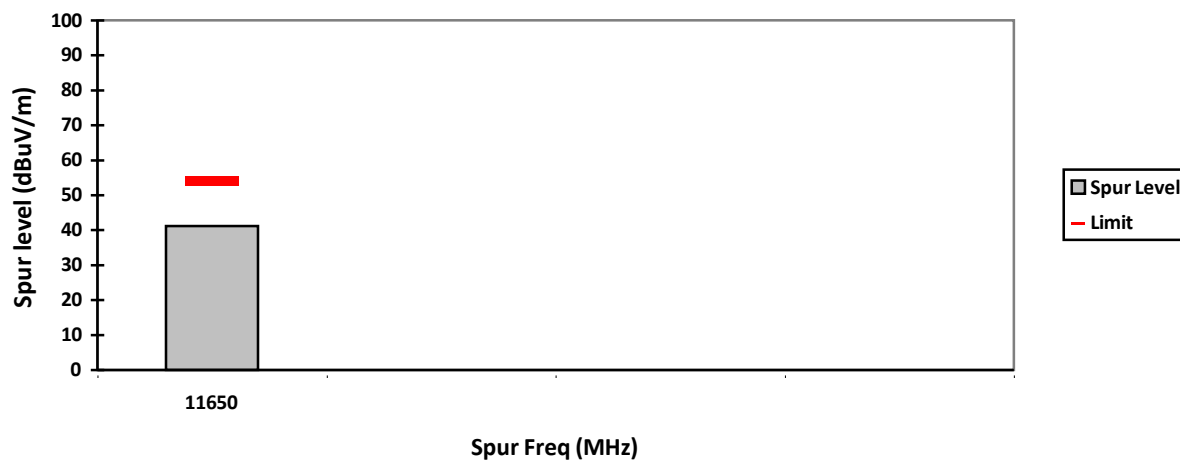
VERTICAL, PK



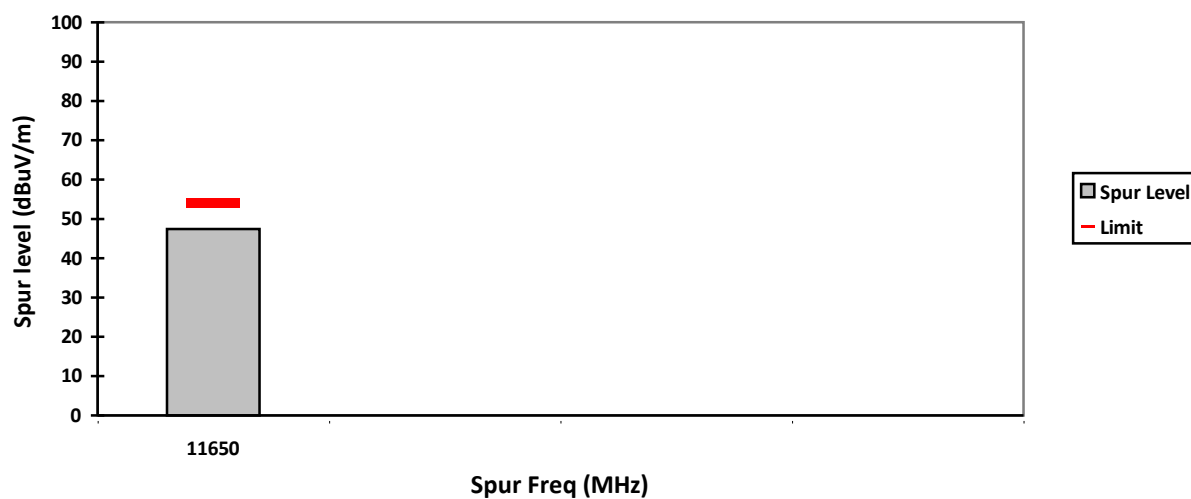
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



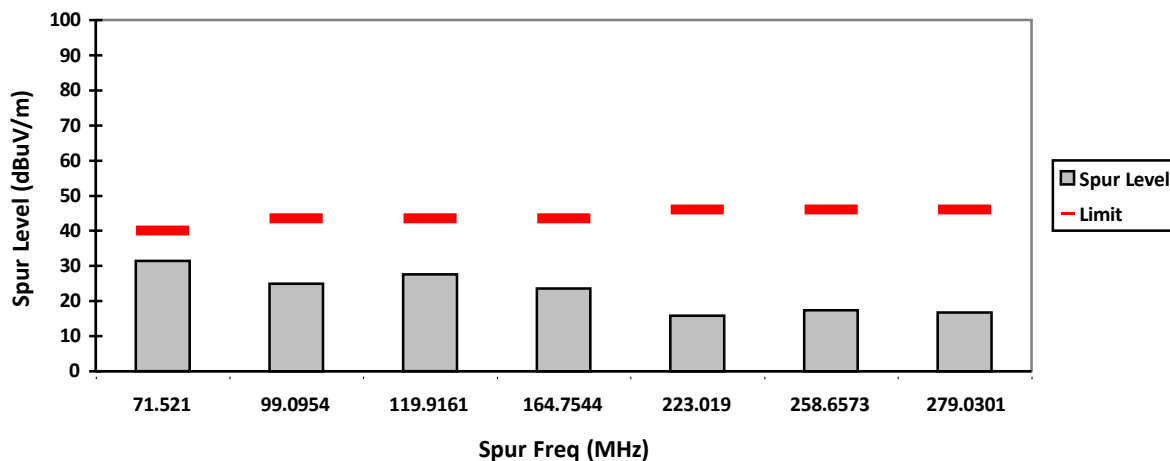
Worst Case Plane: Y-Plane (802.11a 20MHz)

Remarks: Pass Result	Marginal Result	Fail Result
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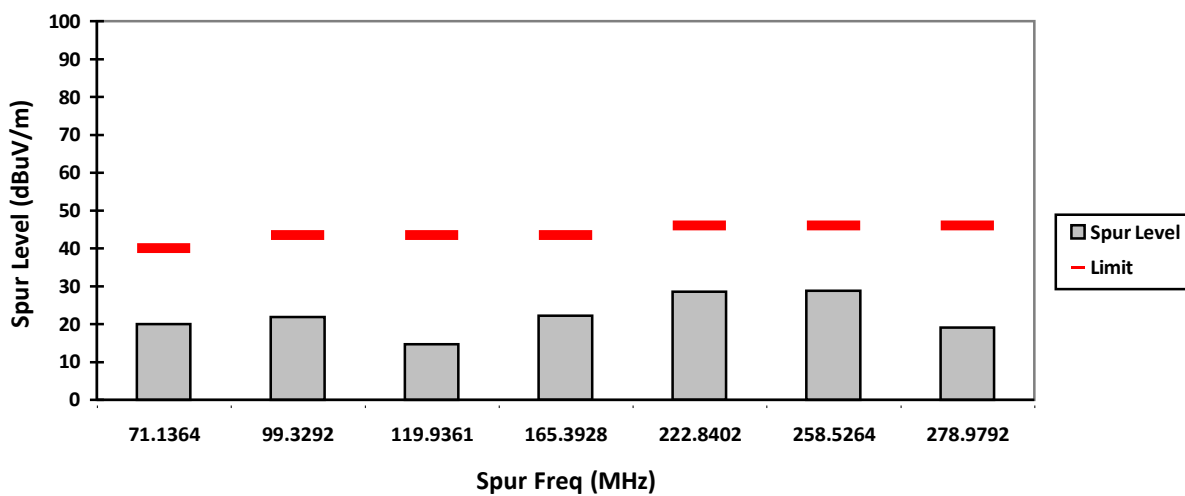
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

VERTICAL, QPK

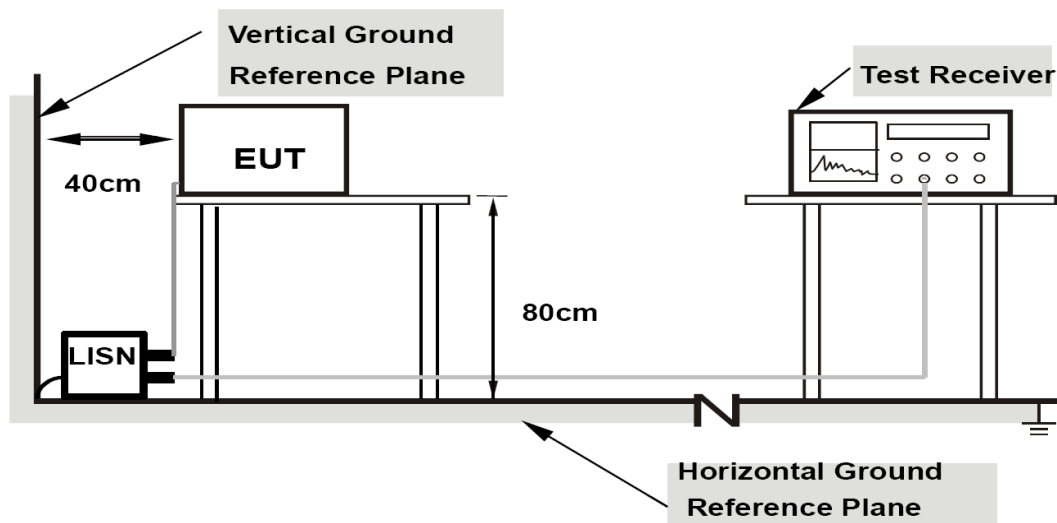


HORIZONTAL, QPK



7.8. AC Powerline Conducted Emission

7.8.1. Test Setup



- 1) Tests were conducted for both Receive and Transmit Mode of the EUT.
- 2) The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50uH of coupling impedance for the measuring instrument.
- 3) Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- 4) The frequency range from 150 kHz to 30MHz was measured.

7.8.2. Test Limits

For AC Power Line Conducted Test Limit can be Class A or B depends on product classification.

**Limits for conducted disturbance at the mains ports
of class A ITE**

Frequency range MHz	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	79	66
0,50 to 30	73	60
NOTE The lower limit shall apply at the transition frequency.		

Table 1: Limits for Conducted Disturbance at the Mains Ports of Class A ITE.

**Limits for conducted disturbance at the mains ports
of class B ITE**

Frequency range MHz	Limits dB(μ V)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50
NOTE 1 The lower limit shall apply at the transition frequencies.		
NOTE 2 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.		

Table 2: Limits for Conducted Disturbance at the Mains Ports of Class B ITE

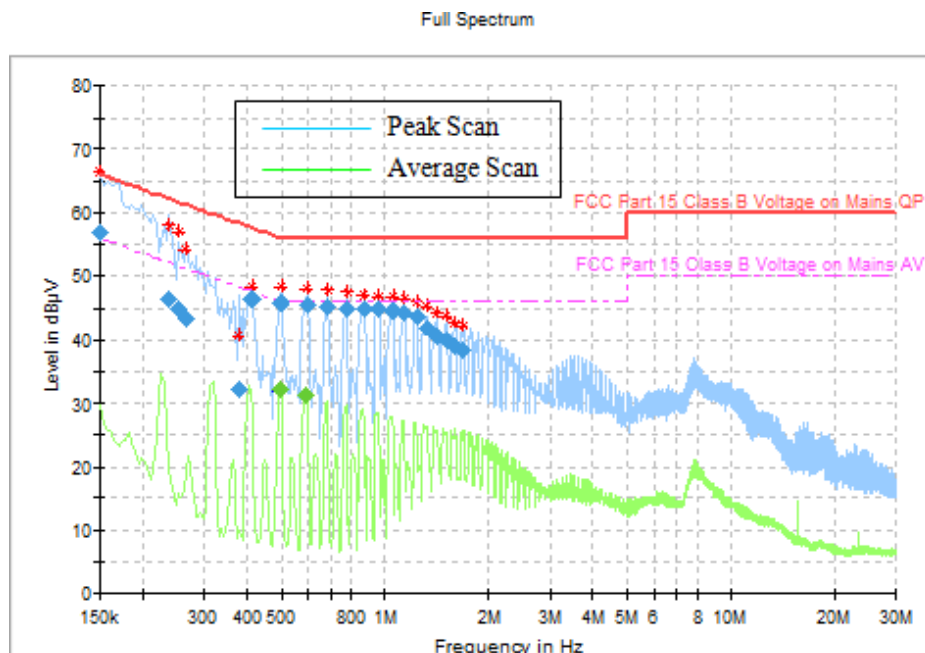
7.8.3. Test Data

Report ID.:	: 39809-EMC-00052
Ambient Temperature:	: 20.2 °C
Humidity:	: 59.3 %RH
Tester:	: Shidee
Date of test:	: 31 August 2023

120 VAC , 60Hz

SUC

1) Charger + Radio TX with WiFi 5G 802.11a



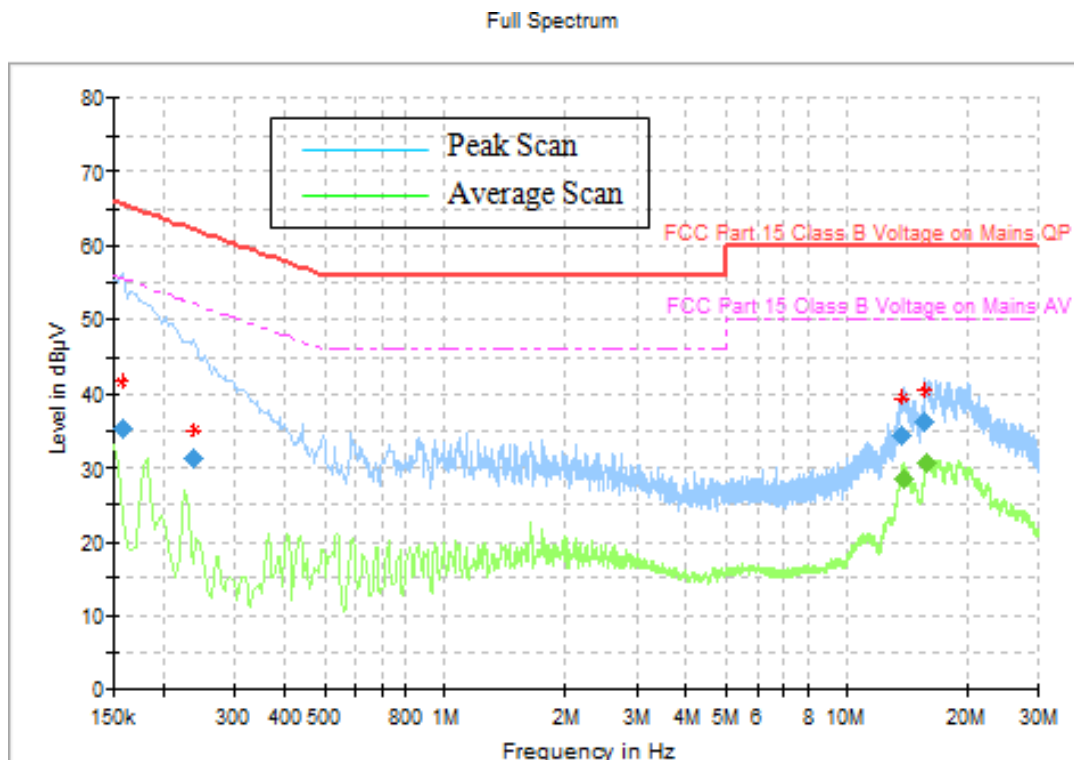
Quasipeak and Average Measurement

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)	Comment
0.150000	56.63	---	66.00	9.37	1000.0	9.000	L1	ON	10.3	Pass
0.238000	46.49	---	62.17	15.67	1000.0	9.000	N	ON	10.2	Pass
0.254000	44.89	---	61.63	16.73	1000.0	9.000	N	ON	10.2	Pass
0.266000	43.22	---	61.24	18.03	1000.0	9.000	N	ON	10.2	Pass
0.378000	32.12	---	58.32	26.20	1000.0	9.000	L1	ON	10.3	Pass
0.414000	46.23	---	57.57	11.34	1000.0	9.000	N	ON	10.3	Pass
0.498000	---	32.13	46.03	13.90	1000.0	9.000	L1	ON	10.3	Pass
0.502000	45.70	---	56.00	10.30	1000.0	9.000	N	ON	10.3	Pass
0.590000	---	31.30	46.00	14.70	1000.0	9.000	L1	ON	10.3	Pass
0.594000	45.43	---	56.00	10.57	1000.0	9.000	N	ON	10.3	Pass
0.686000	45.27	---	56.00	10.73	1000.0	9.000	N	ON	10.3	Pass
0.778000	45.06	---	56.00	10.94	1000.0	9.000	N	ON	10.3	Pass
0.870000	44.80	---	56.00	11.20	1000.0	9.000	N	ON	10.3	Pass
0.962000	44.64	---	56.00	11.36	1000.0	9.000	N	ON	10.3	Pass
1.054000	44.43	---	56.00	11.57	1000.0	9.000	N	ON	10.2	Pass
1.146000	44.18	---	56.00	11.82	1000.0	9.000	N	ON	10.2	Pass
1.238000	43.80	---	56.00	12.20	1000.0	9.000	N	ON	10.2	Pass
1.326000	41.80	---	56.00	14.20	1000.0	9.000	N	ON	10.2	Pass
1.414000	40.69	---	56.00	15.31	1000.0	9.000	N	ON	10.2	Pass
1.506000	39.94	---	56.00	16.06	1000.0	9.000	N	ON	10.2	Pass
1.598000	39.13	---	56.00	16.87	1000.0	9.000	N	ON	10.2	Pass
1.690000	38.31	---	56.00	17.69	1000.0	9.000	N	ON	10.2	Pass

* Expanded Uncertainty (U) = +/- 3.48dB

MUC

2) Charger + Radio TX with WiFi 5G 802.11a



Quasipeak and Average Measurement

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)	Comment
0.158000	35.25	---	65.57	30.32	1000.0	9.000	N	ON	10.5	Pass
0.238000	31.05	---	62.17	31.11	1000.0	9.000	N	ON	10.2	Pass
13.842000	34.17	---	60.00	25.83	1000.0	9.000	N	ON	10.3	Pass
13.922000	---	28.49	50.00	21.51	1000.0	9.000	L1	ON	10.3	Pass
15.754000	36.27	---	60.00	23.73	1000.0	9.000	N	ON	10.3	Pass
15.930000	---	30.73	50.00	19.27	1000.0	9.000	N	ON	10.3	Pass

* Expanded Uncertainty (U) = +/- 3.48dB

END OF TEST REPORT