



 <b>MOTOROLA SOLUTIONS</b>	  
<b>MOTOROLA PENANG ADV. COMM. LABORATORY</b> Motorola Solutions Malaysia Sdn. Bhd. Plot 2A Medan Bayan Lepas, Mukim 12, S.W.D. 11900 Bayan Lepas, Penang, Malaysia.	<b>FCC / IC TEST REPORT</b> <b>Report Revision : Rev.E</b>
<p><b>Date/s Tested</b> : 24-February-2024 - 03-April-2024 <b>Manufacturer/Location</b> : Motorola Solutions Malaysia SDN BHD <b>Manufacturer Address</b> : Plot 2A Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia <b>Requestor</b> : HOMICIL HARLY <b>Product Type</b> : Hand-held <b>Product Version (PMN)</b> : APX N70 <b>Model Number (HVIN)</b> : H35XDT9PW8AN <b>Frequency Band</b> : 5180-5825 MHz <b>Firmware Version (FVIN)</b> : D02.76.02 <b>Applicant Name</b> : Motorola Solutions Inc <b>Applicant Address</b> : Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia <b>FCC Registrations</b> : 461337</p> <p><b>The equipment was tested accordance to the requirement listed below:</b></p> <p><b>(5GHz Wi-Fi) FCC 47 CFR Part 15 Subpart E</b> <b>PASS</b></p>	
<p>This report shall not be reproduced without written approval from an officially designated representative of the Motorola Penang Adv. Comm. Laboratory. The results and statements contained in this report pertain only to the device(s) evaluated.</p>	
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<b>Revision History</b>	<b>Description</b>	<b>Date</b>	<b>Originator</b>
Rev. A	Initial Report	<b>17-April-2024</b>	<b>Alieya</b>
Rev. B	FVIN updated, SW version consolidated	<b>02-May-2024</b>	<b>Vincent</b>
Rev. C	Table 7.2.2 updated per TCB feedback	<b>16-May-2024</b>	<b>Vincent</b>
Rev. D	Adding test result for parameter maximum power spectral density, 6dB bandwidth and frequency stability	<b>22-May-2024</b>	<b>Alieya</b>
Rev. E	Updated table 7.3.2, rectified straddle headings	<b>29-May-2024</b>	<b>Vincent</b>

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: 17.918 dBm (61.916 mW) 802.11n20/ac20: 18.211 dBm (66.237 mW) 802.11n40/ac40: 18.058 dBm (63.944 mW) 802.11ac80: 18.094 dBm (64.476 mW)	022TAB0381	Alieya
15.407(a) (1/2/3)	RSS 247 6.2	Maximum Power Spectral Density	Pass	Meet the requirement limit.	022TAB0381	Alieya
15.407 (e)	RSS 247 6.2.4	6dB Bandwidth	Pass	Worst case emission: 802.11a: 16.722MHz (16M7D1D) 802.11n20/ac20: 17.910MHz (17M9D1D) 802.11n40/ac40: 36.292MHz (36M3D1D) 802.11ac80: 75.934MHz (76M0D1D)	022TAB0381	Alieya
15.407 (g)	RSS Gen 6.11	Frequency Stability	Pass	Meet the requirement limit.	022TAB0381	Alieya
15.407 (b) (1/2/3/4/6)	RSS 247 6.2	Band Edge Radiated Spurious Emission Measurement	Pass	Worst case emission: 61.9317 dBuV/m (margin: 6.2683 dBuV/m)	022TAB0346	Nazrin & Rezza
15.407 (b) (1/2/3/4/6)	RSS 247 6.2	Radiated Spurious Emission Measurement	Pass	Worst case emission: 24.0544 dBuV/m (margin: 15.9456 dB)	022TAB0346, 022TAB0352, 022TAB0353	Nazrin & Rezza
15.207 15.407 (b)(6)	RSS Gen 8.8	AC Powerline Conducted Emission	Pass	Meet the requirement limit.	022TAB0346	Shidee
15.203	-	Antenna requirement	Pass	Internal antenna is not accessible to the end-user	NA	NA

## 2.0. Measurement Uncertainty

<b>Measurement</b>	<b>Frequency</b>	<b>Expanded Uncertainty (k=1.96) (±dB)</b>
AC Power Line Conducted Spurious Emission	150KHz ~ 30MHz	3.43
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	5.01
	200MHz ~ 1000MHz	5.01
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.01
	18GHz ~ 25GHz	5.01
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 ( 0-20V / 0-25A )	6652A	3541A02371	18-Jul-23	18-Jul-24
PULSE SENSOR	MA2411B	1726287	22-Aug-23	22-Aug-24
PULSE POWER METER	ML2495A	1845014	16-Aug-23	16-Aug-24
SPECTRUM ANALYZER	E4440A	MY48250517	8-Nov-23	8-Nov-24

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

Description	Model	Serial Number	Calibration Date	Calibration Due Date
DRG HORN FREQ.	SAS-571	1143	08-Mar-23	08-Mar-25
DRG HORN FREQ.	SAS-571	720	18-Apr-23	18-Apr-25
DC Power Supply	NR973A	MY54180189	30-Aug-23	30-Aug-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	CBL6112B	2950	14-Dec-23	14-Dec-24
BILOG ANTENNA	CBL6112B	2964	25-Sep-23	25-Sep-24
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	BBHA9170143	28-Aug-23	28-Aug-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	26-Oct-23	26-Oct-24

#### 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-23	21-Jun-24
V-NETWORK 2-LINE	ENV216V	101039	13-Dec-23	13-Dec-24
EMI TEST RECEIVER	ESIB40	100225	19-Sep-23	19-Sep-24
PROGRAMMABLE AC SOURCE	61604	ABR000000926	25-Jul-23	25-Jul-24

4.0. General Information

**General Description of EUT:**

<b>Product</b>	Hand-held
<b>Brand</b>	Motorola Solutions
<b>Test Model</b>	APX N70
<b>Power Supply Rating</b>	7.5Vdc
<b>Mode of operation</b>	WLAN 5GHz
<b>Modulation Type</b>	QPSK, BPSK, 16QAM, 64QAM, 256QAM
<b>Modulation Technology</b>	OFDM
<b>Transfer Rate</b>	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
<b>Operating Frequency</b>	5.180 ~ 5.240 GHz, 5.260 ~ 5.320 GHz, 5.50 ~ 5.720 GHz, 5.745 ~ 5.825 GHz
<b>Output Power (26 EBW or 99% OBW)</b>	79.43 mW for 5.180 ~ 5.240 GHz 79.43 mW for 5.260 ~ 5.320 GHz 79.43 mW for 5.50 ~ 5.720 GHz 79.43 mW for 5.745 ~ 5.825 GHz
<b>Antenna Type</b>	Stamped Metal

Note:

The EUT contains following accessory devices and data cable:

<b>Item</b>	<b>Brand</b>	<b>Model or P/N</b>
UHF Whip 380-520MHz	MOTOROLA	AN000452A01
UL 3650mAH (using RN 2170 Li-Ion cell)	MOTOROLA	PMNN4818A
Standard 3200mAH (new 18650 Li-Ion cell)	MOTOROLA	PMNN4816A
Hi Cap 4400mAH (using RN 2170 Li-Ion cell) Non-UL battery	MOTOROLA	PMNN4817A
CHARGER,CHGR DEKSTOP SINGLE UNIT IMPRES 2 EXT PS BASE ONLY	MOTOROLA	PMPN4590A
PWR SUPPLY WALL CUBE,AC,DC,110VAC FIXED BLADE US 14.5V/2.5A L6 BARREL	MOTOROLA	PS000040A01
CHARGER DEKSTOP MULTI UNIT IMPRES 2 6 DISPLAYS INT PS US	MOTOROLA	PMPN4591A
POWER CORD US for MUC	MOTOROLA	3087791G01

**Description of Test Modes:**

**For 5180 to 5240 MHz:**

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

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

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

Channel	Frequency (MHz)
38	5190
46	5230

Channels for 802.11ac (VHT80)

Channel	Frequency (MHz)
42	5210

**For 5260 to 5320 MHz:**

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

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

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

Channel	Frequency (MHz)
54	5270
62	5310

Channels for 802.11ac (VHT80)

Channel	Frequency (MHz)
58	5290

**For 5500 to 5720 MHz:**

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

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

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

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



Channels for 802.11ac (VHT80)

Channel	Frequency (MHz)
106	5530
122	5610
138	5690

**For 5745 to 5825 MHz:**

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

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

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

Channel	Frequency(MHz)
151	5755
159	5795

Channels for 802.11ac (VHT80)

Channel	Frequency (MHz)
155	5775

**General Description of Applied Standards**

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

**FCC Part15, Subpart E (15.407)**

**789033 D02 General UNII Test Procedures New Rules v01r04**

**644545 D03 Guidance for IEEE 802 11ac New Rules v01**

**ANSI C63.10-2013**

**RSS 247 Issue 2, RSS Gen**

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

**Deviation from standard**

Not applicable as no deviation from standard test method

**Modifications to EUT**

A pigtail was soldered out from the board to accommodate conducted tests. Radiated test units are unmodified

**Antenna gain disclaimer**

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

5.0. Test Mode Applicability and Test Channel Detail

EUT Configure Mode	Applicable to				Description
	RE≥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≥1G:** Radiated Emission above 1GHz & Band edge Measurement

**RE<1G:** Radiated Emission below 1GHz

**PLC:** Power Line Conducted Emission

**APCM:** Antenna Port Conducted Measurement

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

**Radiated Emission Test (Above 1GHz)**

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

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

**Radiated Emission Test (Below 1GHz)**

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

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

**Power Line Conducted Emission Test**

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

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

**Antenna Port Conducted Measurement:**

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

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

**Test Condition:**

Applicable To	Environmental Conditions	Input Power	Tested By
RE $\geq$ 1G	25°C, 50% RH	7.5V DC	Nazrin/Rezza
RE<1G	25°C, 50% RH	7.5V DC	Nazrin/Rezza
PLC	22.4°C, 68.6% RH	120V AC, 240V AC	Shidee
APCM	25°C, 50% RH	7.5V DC	Alieya

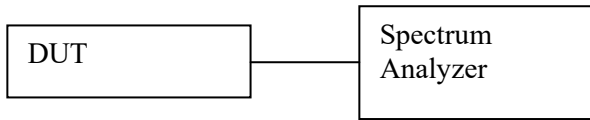
**Duty Cycle of Test Signal**

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

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

## 6.0. Duty Cycle of Test Signal

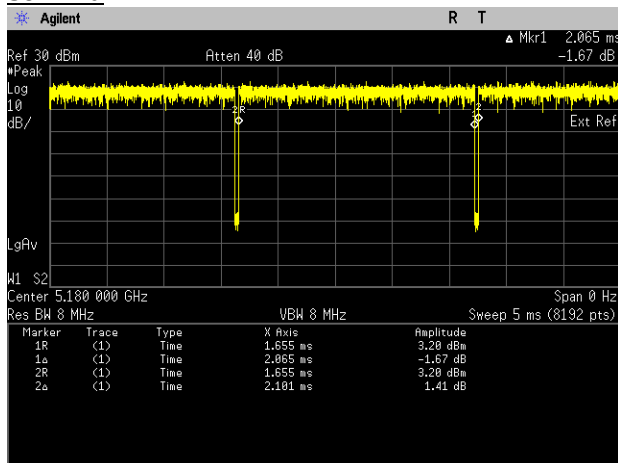
### 6.0.1. Test Setup



- 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

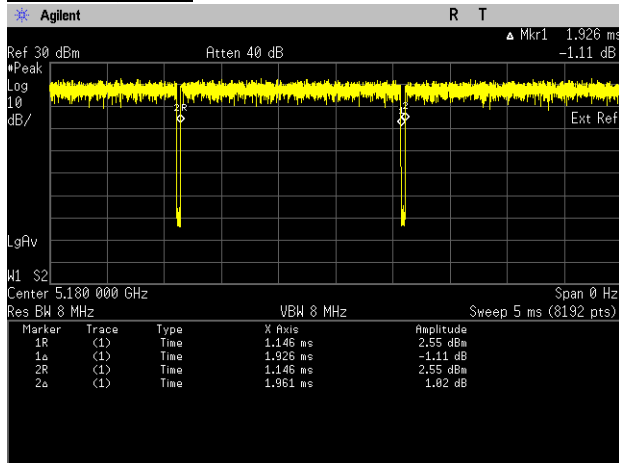


On time	2.065	ms
On + off time	2.101	ms
Duty Cycle	0.9829	
Duty Cycle Factor	0.075	

\*Duty cycle = On time/ On +off time

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

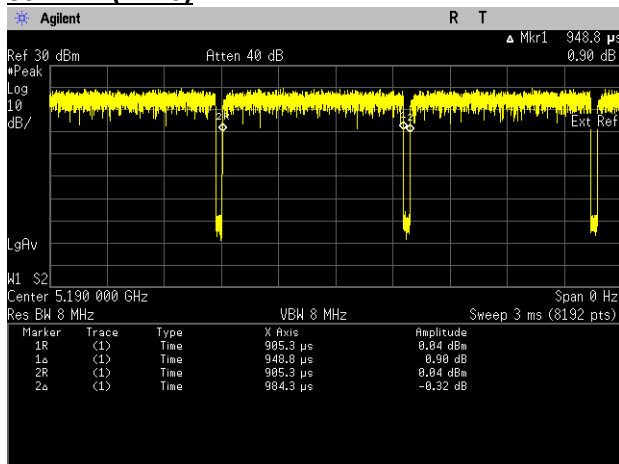
**802.11n (HT20)**



On time	1.926	ms
On + off time	1.961	ms
Duty Cycle	0.9822	
Duty Cycle Factor	0.078	

\*Duty cycle = On time/ On +off time  
 \*Duty Cycle factor = 10\*log (1/Duty Cycle)

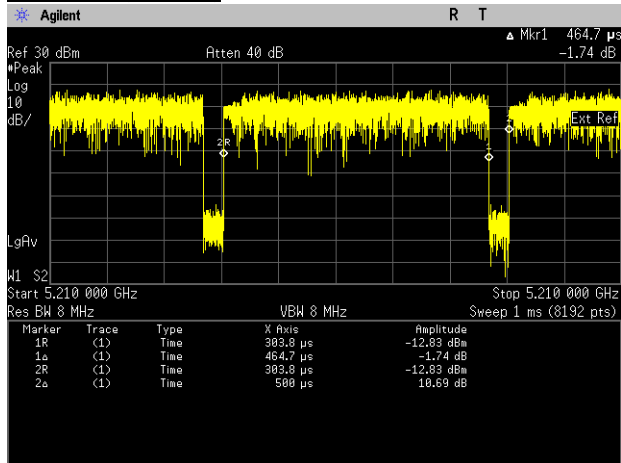
**802.11n (HT40)**



On time	0.9488	ms
On + off time	0.9843	ms
Duty cycle	0.9639	
Duty Cycle factor	0.160	

\*Duty cycle = On time/ On +off time  
 \*Duty Cycle factor = 10\*log (1/Duty Cycle)

**802.11ac (VHT80)**



On time	0.4647	ms
On + off time	0.5000	ms
Duty cycle	0.9294	
Duty Cycle factor	0.318	

\*Duty cycle = On time/ On +off time

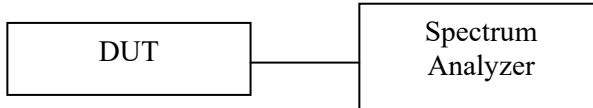
\*Duty Cycle factor = 10\*log (1/Duty Cycle)



## 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·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

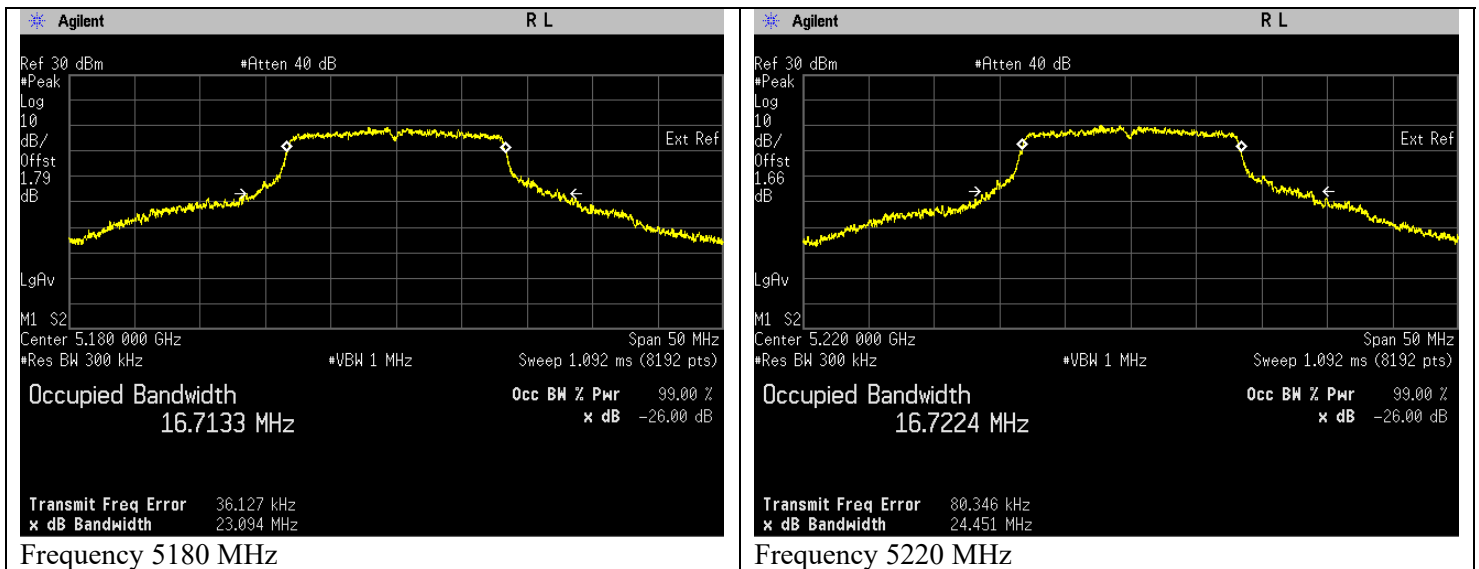
Not applicable.

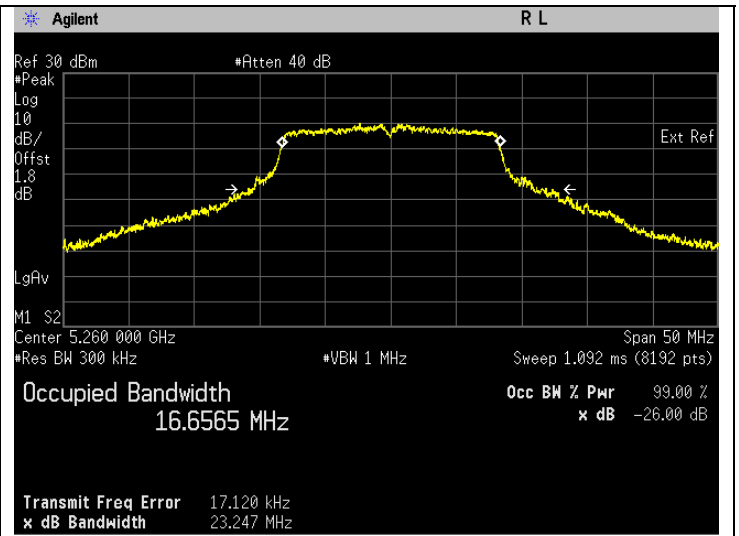
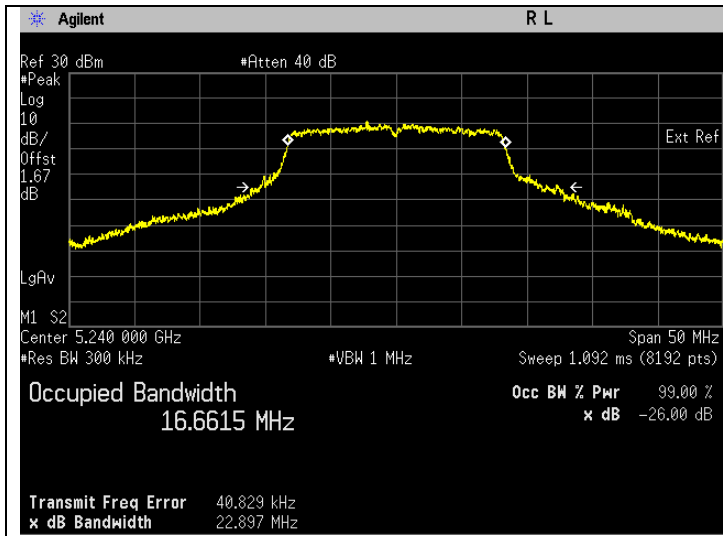
7.1.3. Test Data

**802.11a**

Frequency (MHz)	Test Configuration	Results			
		26 dB Bandwidth(MHz)	Status	99% Bandwidth(MHz)	Status
5180	Mod Type: BPSK, Data Rate: 6	23.094	Pass	16.713	Pass
5220	Mod Type: BPSK, Data Rate: 6	24.451	Pass	16.722	Pass
5240	Mod Type: BPSK, Data Rate: 6	22.897	Pass	16.662	Pass
5260	Mod Type: BPSK, Data Rate: 6	23.247	Pass	16.657	Pass
5300	Mod Type: BPSK, Data Rate: 6	22.338	Pass	16.671	Pass
5320	Mod Type: BPSK, Data Rate: 6	23.413	Pass	16.669	Pass
5500	Mod Type: BPSK, Data Rate: 6	22.147	Pass	16.658	Pass
5580	Mod Type: BPSK, Data Rate: 6	22.135	Pass	16.678	Pass
5700	Mod Type: BPSK, Data Rate: 6	21.974	Pass	16.630	Pass
5720	Mod Type: BPSK, Data Rate: 6, UNII-2C	15.942	Pass	13.317	Pass
5720	Mod Type: BPSK, Data Rate: 6, UNII-3	5.942	Pass	3.317	Pass
5745	Mod Type: BPSK, Data Rate: 6	21.873	Pass	16.603	Pass
5785	Mod Type: BPSK, Data Rate: 6	21.936	Pass	16.635	Pass
5825	Mod Type: BPSK, Data Rate: 6	22.155	Pass	16.583	Pass

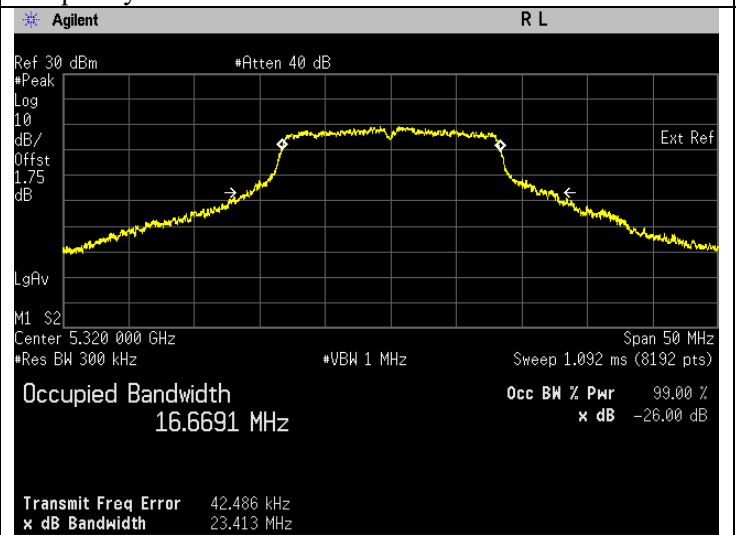
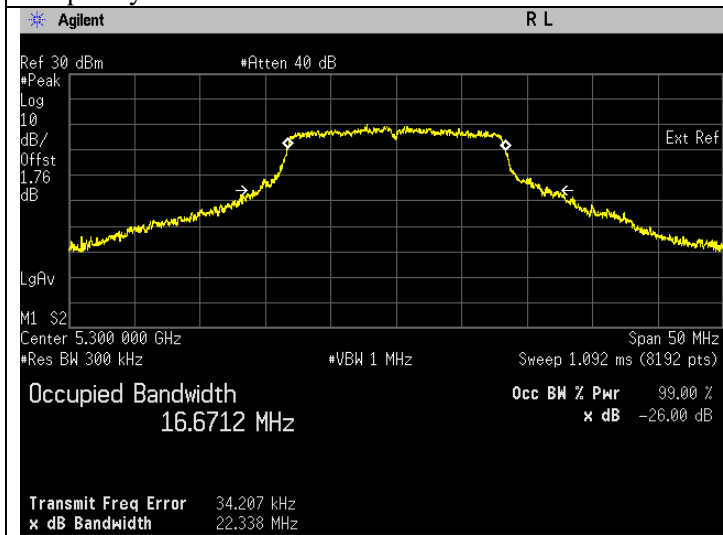
**26 dB Bandwidth/ 99% Bandwidth**





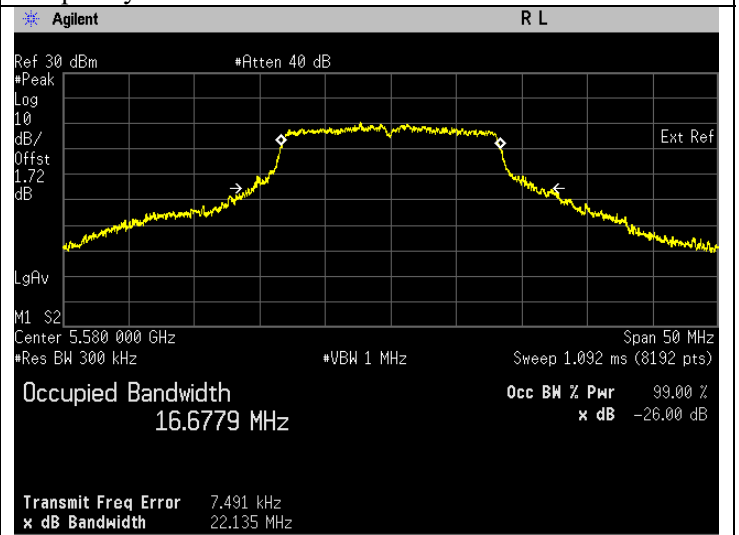
Frequency 5240 MHz

Frequency 5260 MHz



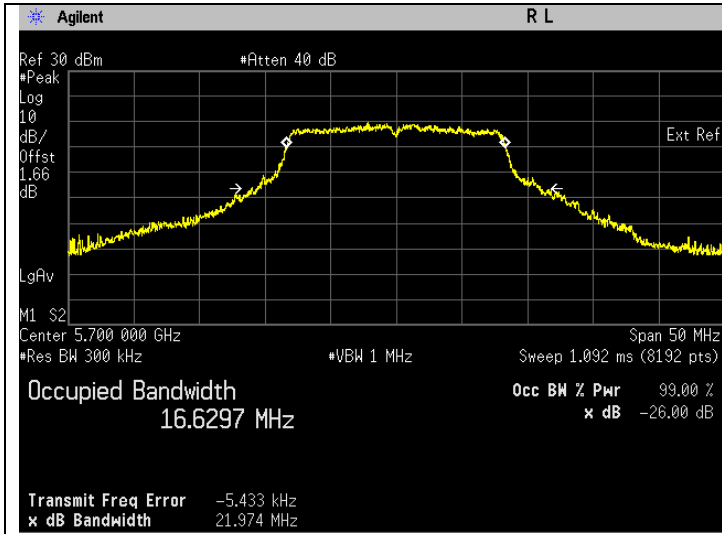
Frequency 5300 MHz

Frequency 5320 MHz

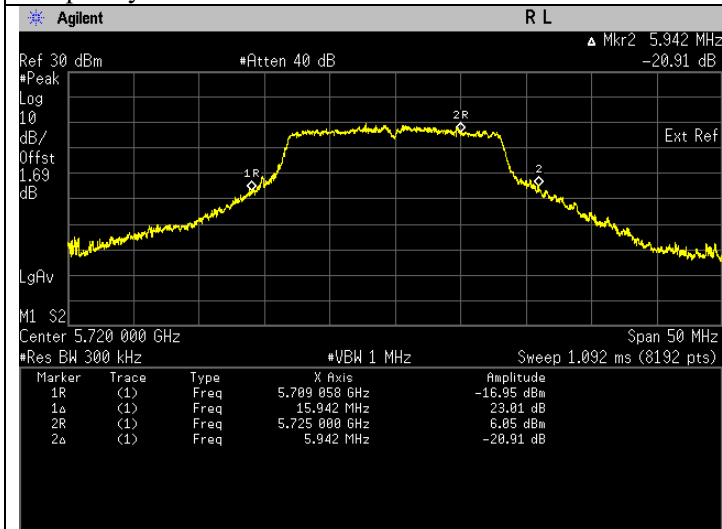


Frequency 5500 MHz

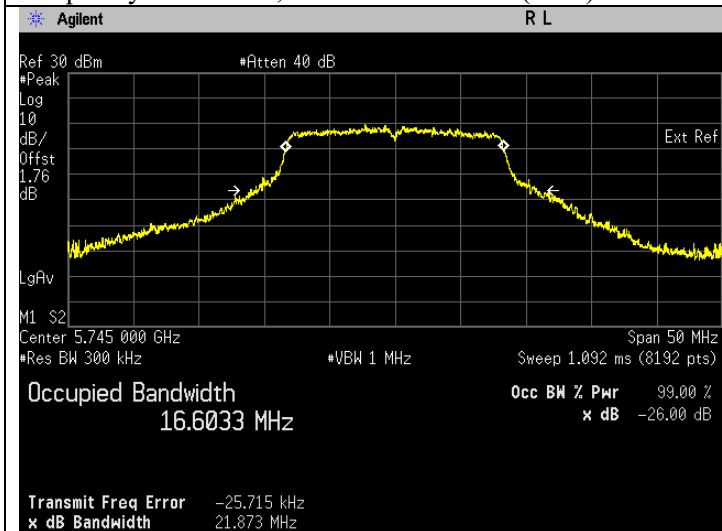
Frequency 5580 MHz



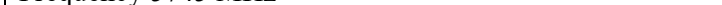
Frequency 5700 MHz



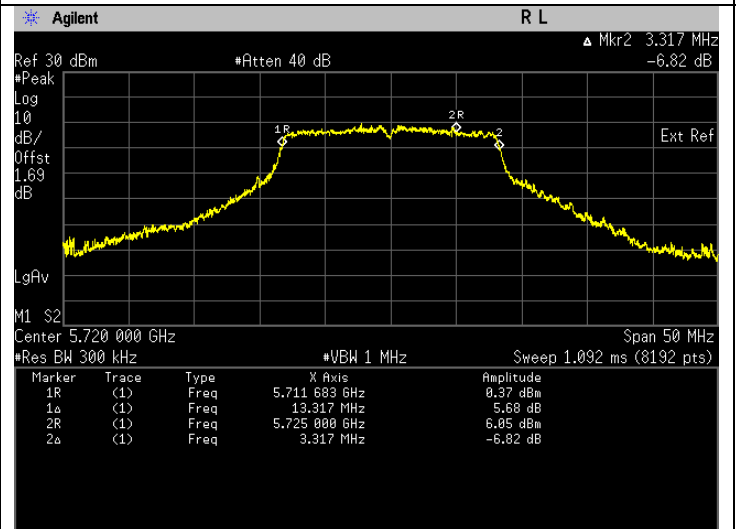
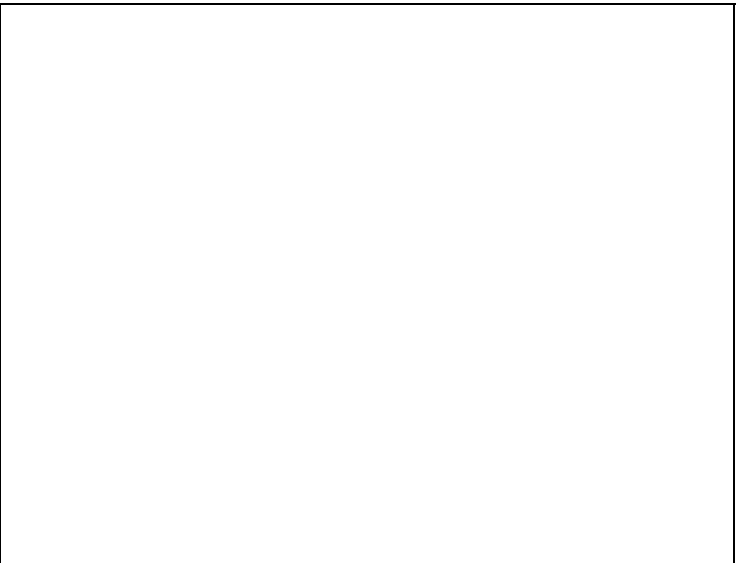
Frequency 5720 MHz, UNII-2C & UNII-3(FCC)



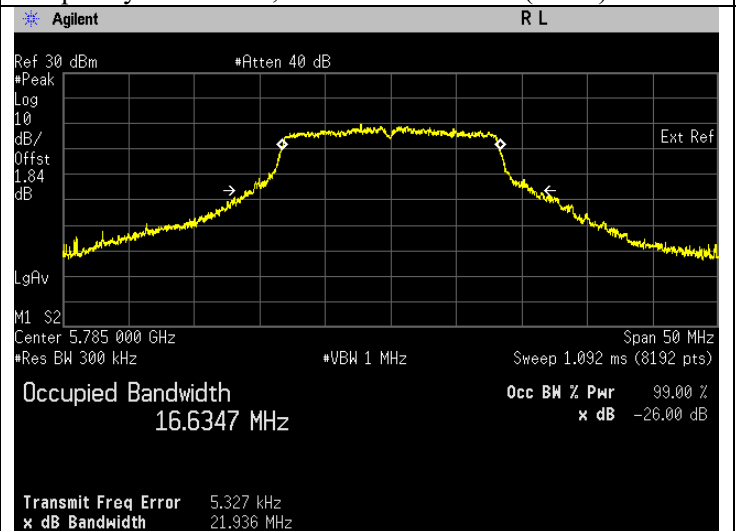
Frequency 5745 MHz



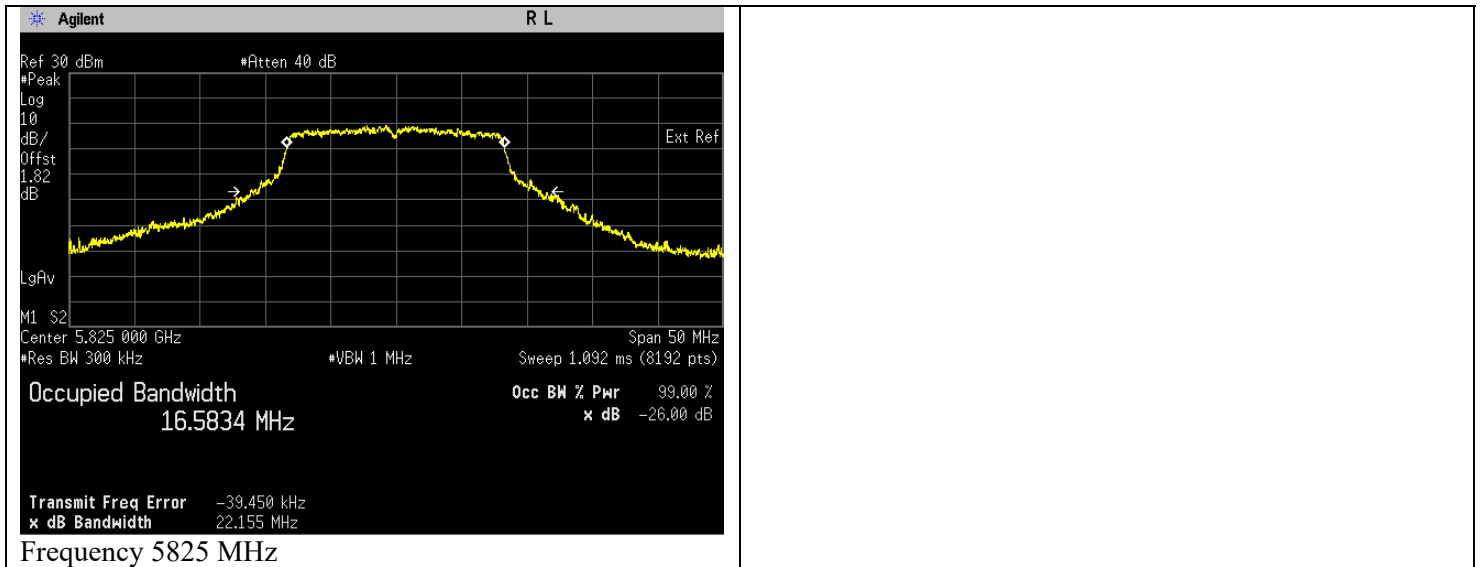
Frequency 5785 MHz



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



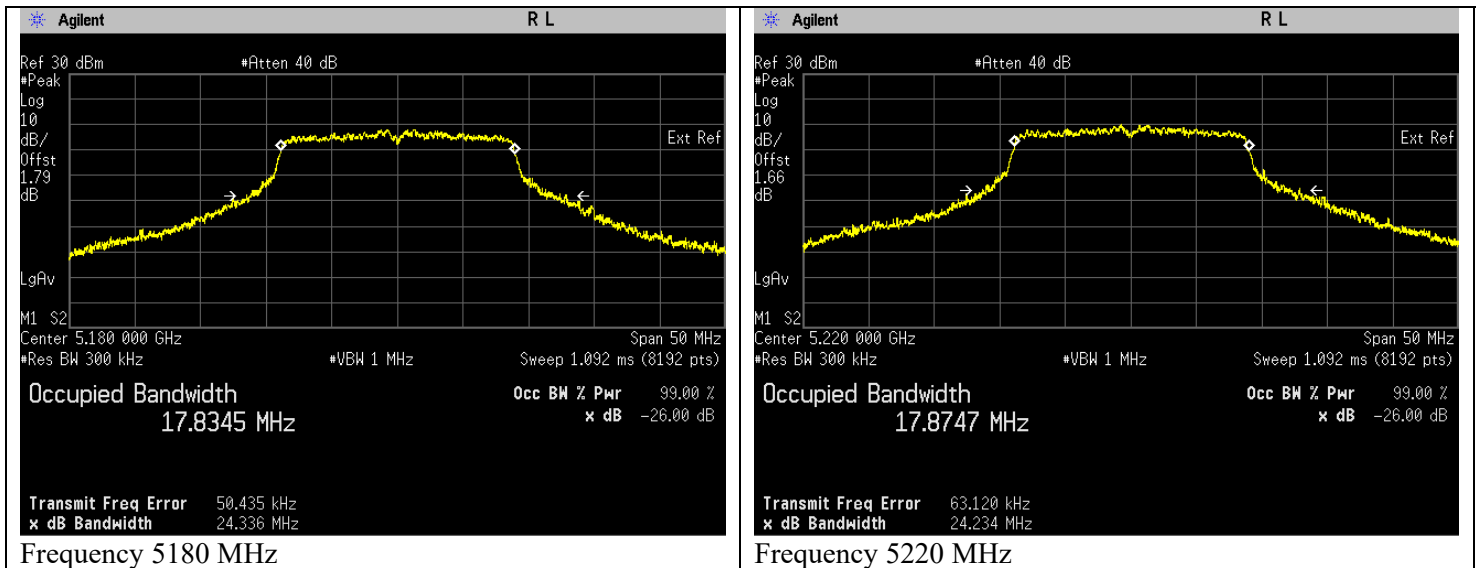
Frequency 5785 MHz

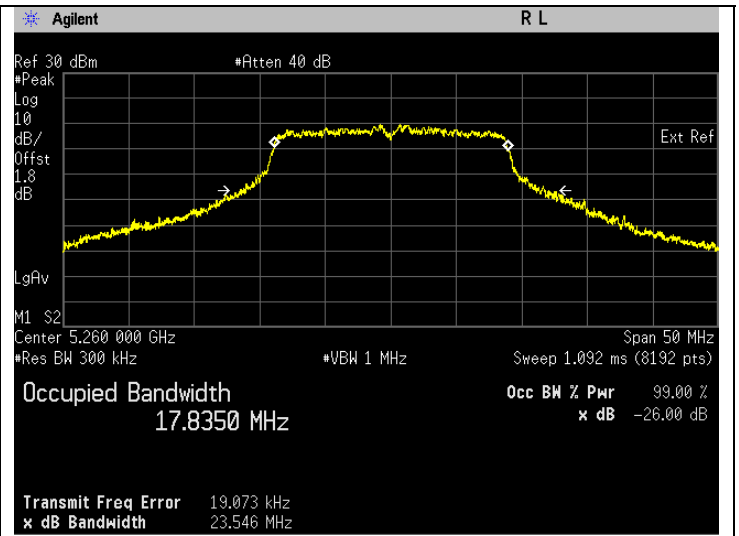
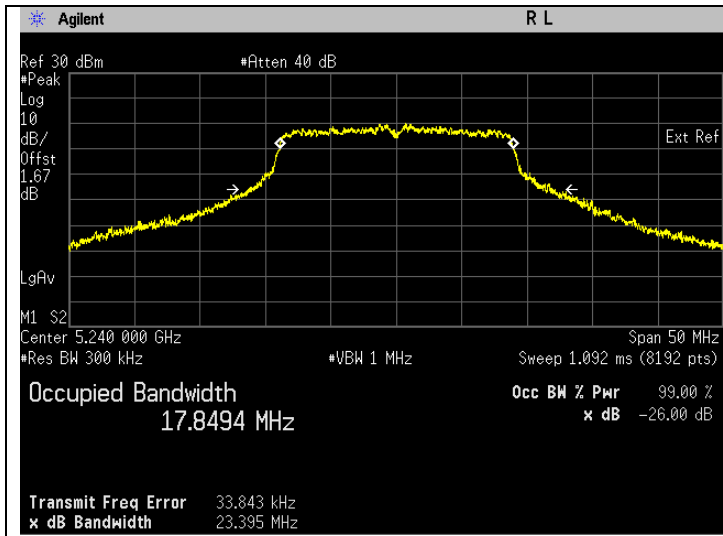


**802.11n (HT20)**

Frequency (MHz)	Test Configuration	Results			
		26 dB Bandwidth(MHz)	Status	99% Bandwidth(MHz)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	24.336	Pass	17.835	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	24.234	Pass	17.875	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	23.395	Pass	17.849	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	23.546	Pass	17.835	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	25.166	Pass	17.910	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	24.123	Pass	17.830	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	24.216	Pass	17.846	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	23.083	Pass	17.809	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	23.201	Pass	17.816	Pass
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5), UNII-2C	16.556	Pass	13.903	Pass
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5), UNII-3	6.556	Pass	3.903	Pass
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	23.034	Pass	17.802	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	22.508	Pass	17.803	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	22.866	Pass	17.793	Pass

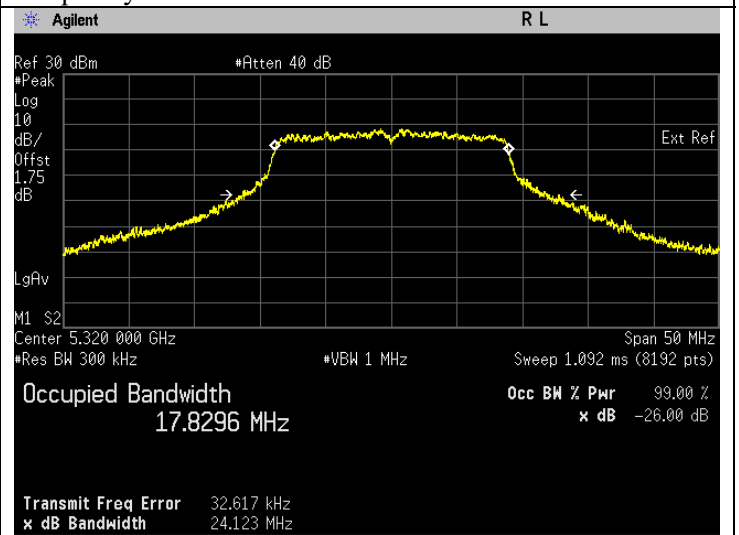
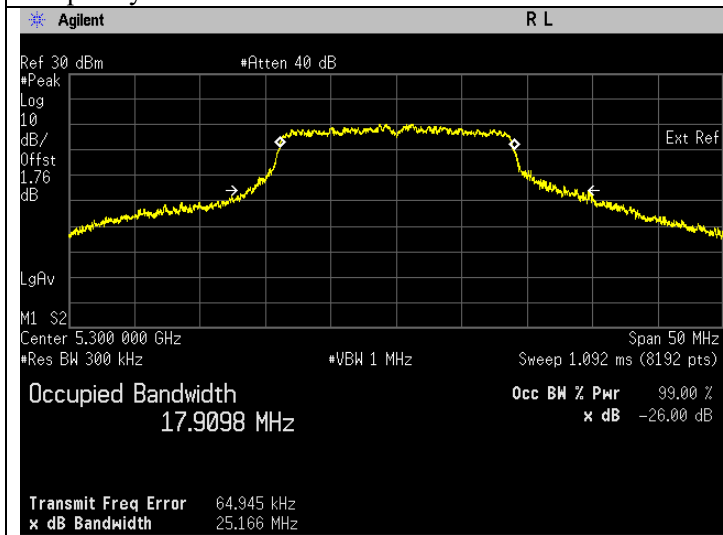
**26 dB Bandwidth/ 99% Bandwidth**





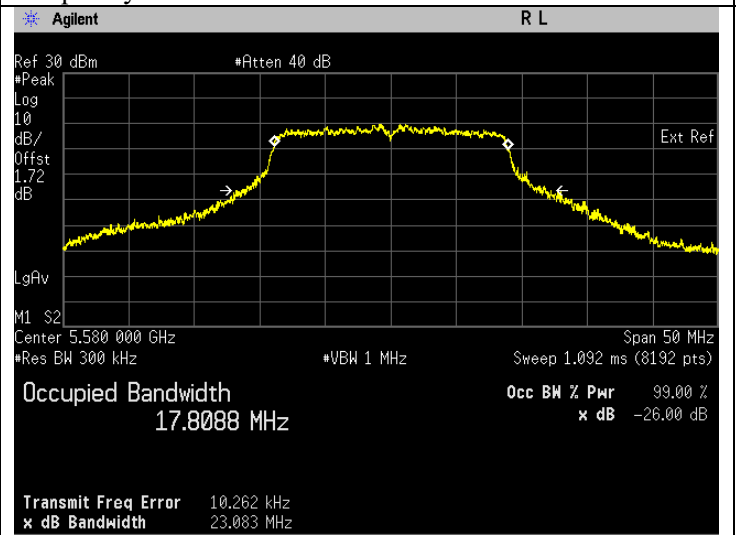
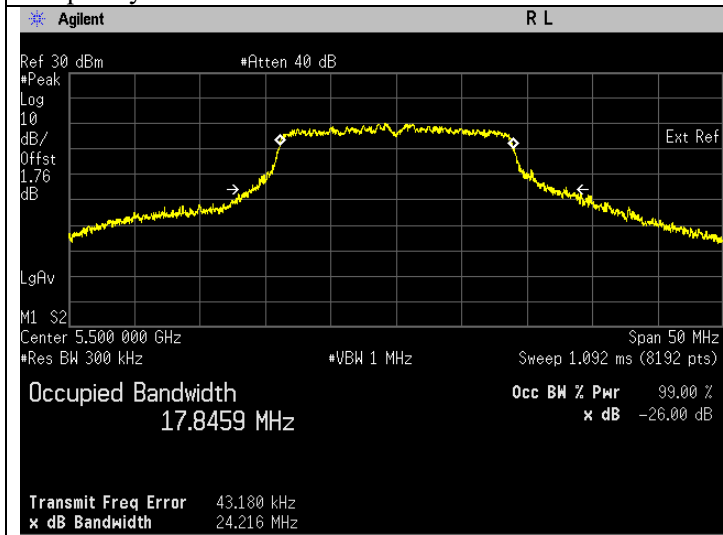
Frequency 5240 MHz

Frequency 5260 MHz



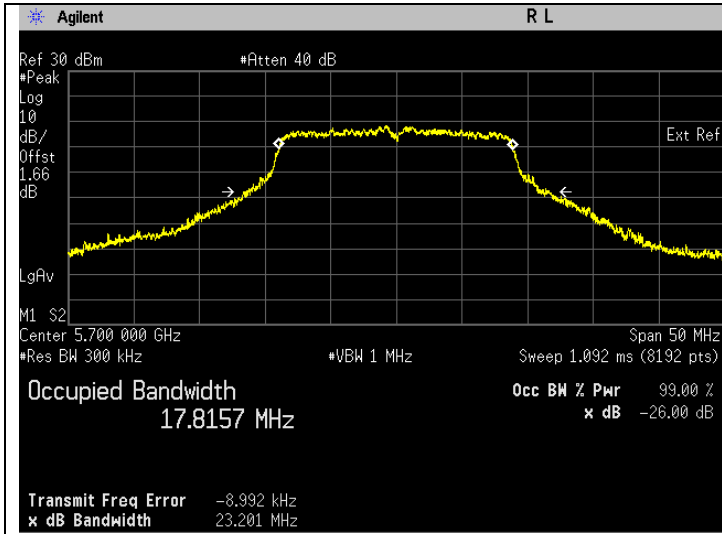
Frequency 5300 MHz

Frequency 5320 MHz

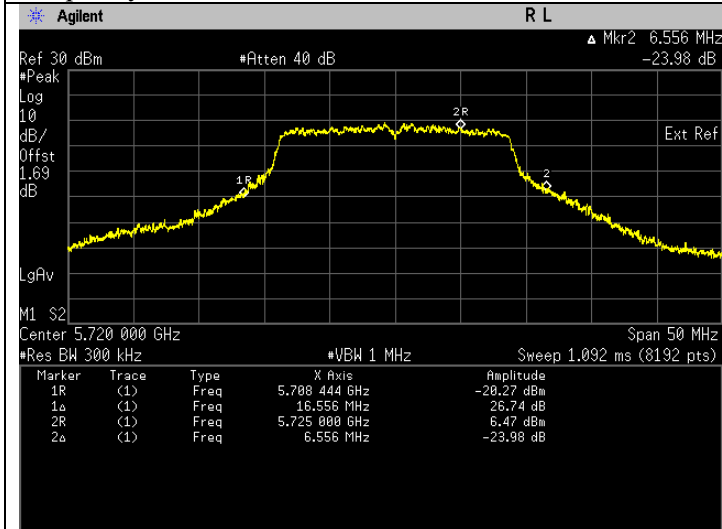


Frequency 5500 MHz

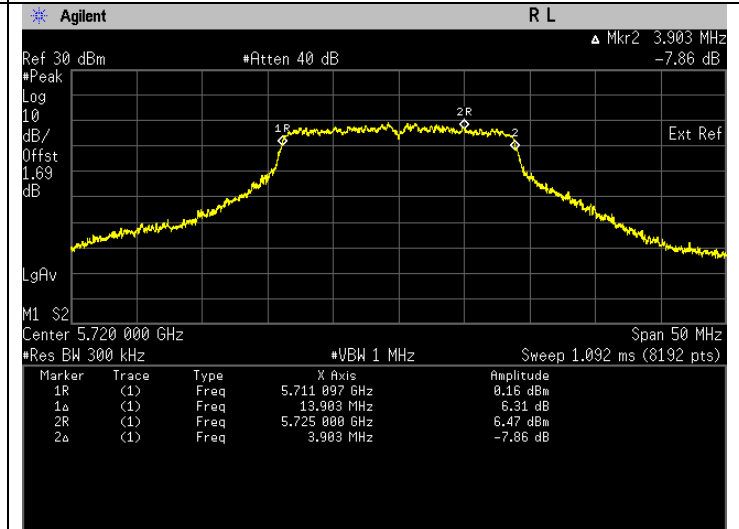
Frequency 5580 MHz



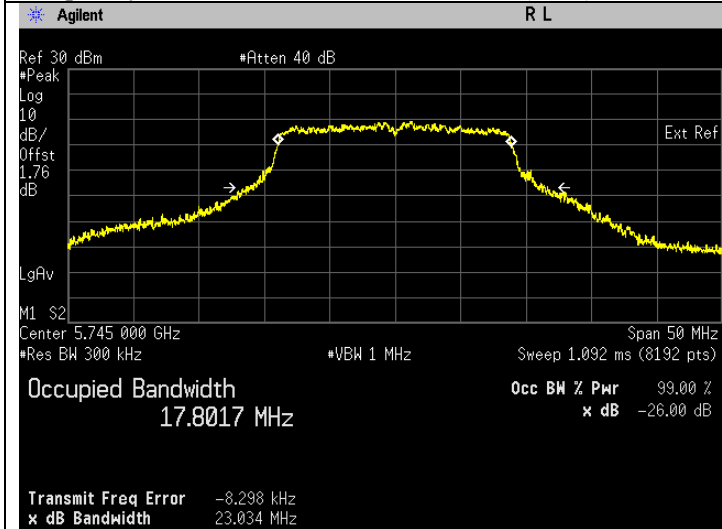
Frequency 5700 MHz



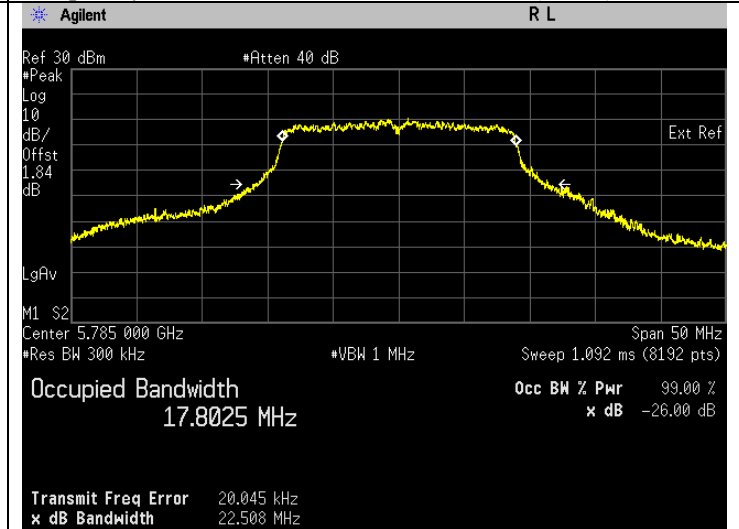
Frequency 5720 MHz, UNII-2C & UNII-3 (FCC)



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

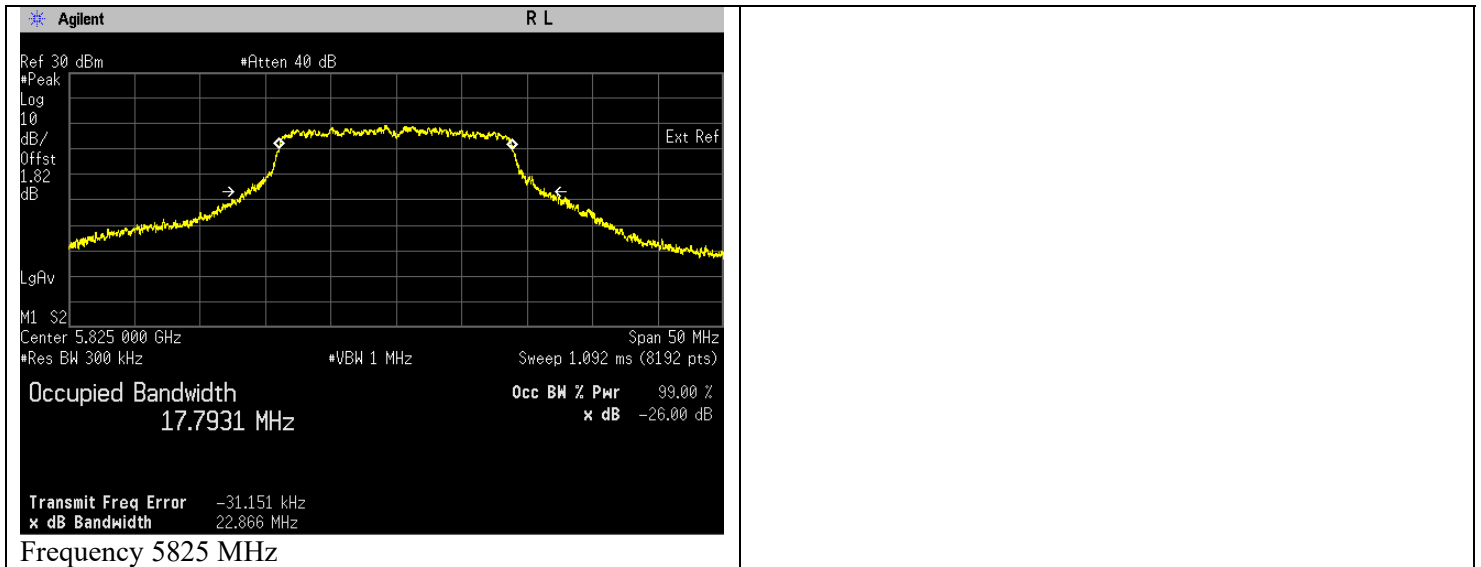


Frequency 5745 MHz



Frequency 5785 MHz

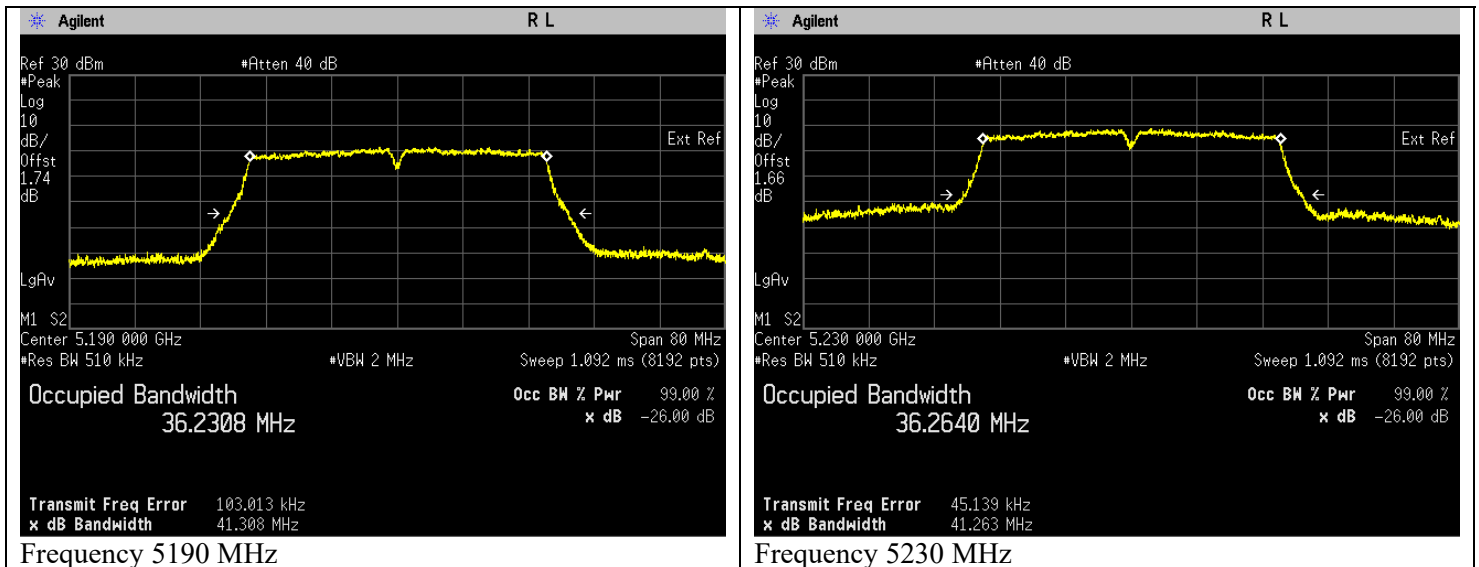


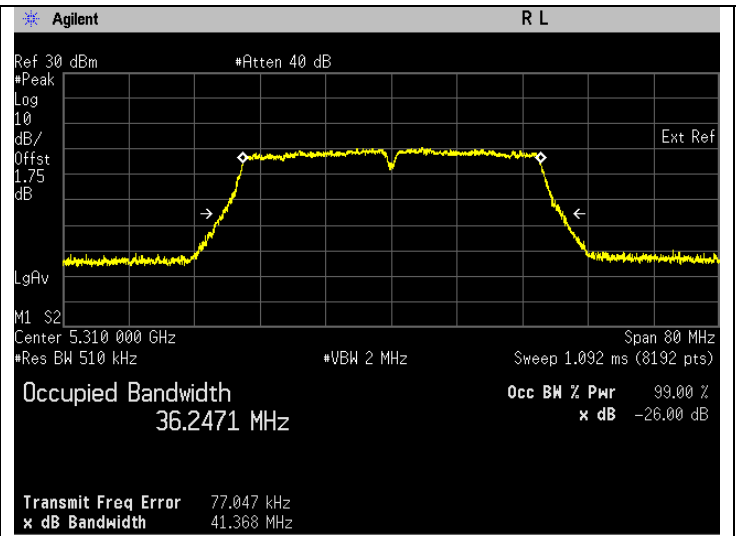
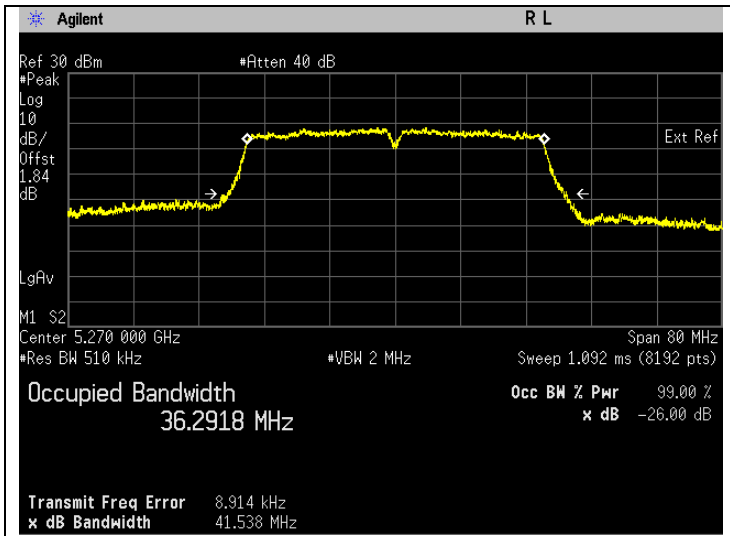


**802.11n (HT40)**

Frequency (MHz)	Test Configuration	Results			
		26 dB Bandwidth(MHz)	Status	99% Bandwidth(MHz)	Status
5190	Mod Type: BPSK, Data Rate: MCS0 (13.5)	41.308	Pass	36.231	Pass
5230	Mod Type: BPSK, Data Rate: MCS0 (13.5)	41.263	Pass	36.264	Pass
5270	Mod Type: BPSK, Data Rate: MCS0 (13.5)	41.541	Pass	36.292	Pass
5310	Mod Type: BPSK, Data Rate: MCS0 (13.5)	41.368	Pass	36.247	Pass
5510	Mod Type: BPSK, Data Rate: MCS0 (13.5)	41.753	Pass	36.255	Pass
5590	Mod Type: BPSK, Data Rate: MCS0 (13.5)	41.406	Pass	36.277	Pass
5670	Mod Type: BPSK, Data Rate: MCS0 (13.5)	41.245	Pass	36.285	Pass
5710	Mod Type: BPSK, Data Rate: MCS0 (13.5), UNII-2C	35.723	Pass	33.133	Pass
5710	Mod Type: BPSK, Data Rate: MCS0 (13.5), UNII-3	5.723	Pass	3.133	Pass
5755	Mod Type: BPSK, Data Rate: MCS0 (13.5)	41.191	Pass	36.274	Pass
5795	Mod Type: BPSK, Data Rate: MCS0 (13.5)	41.356	Pass	36.208	Pass

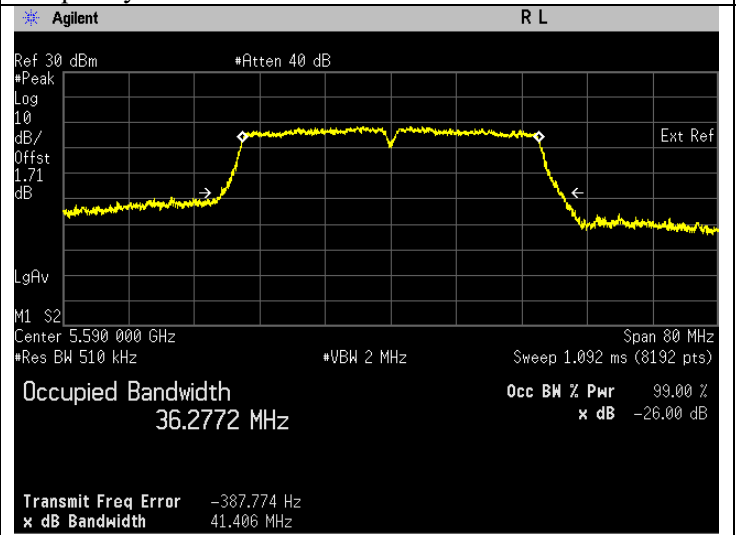
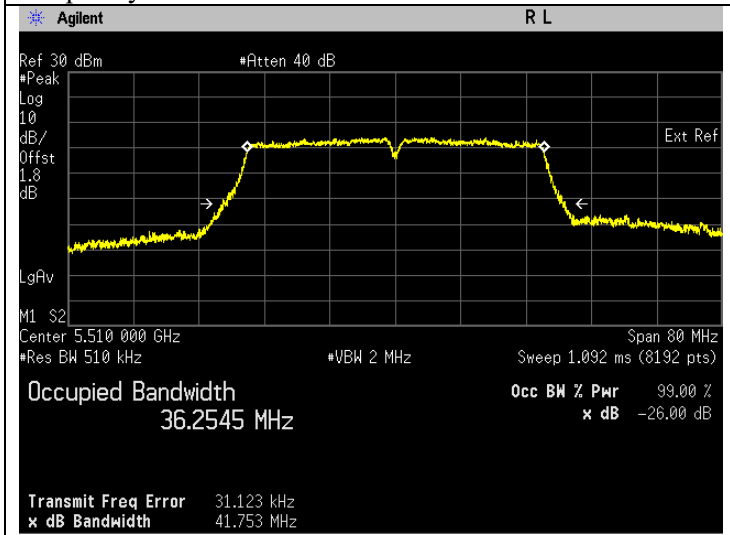
**26 dB Bandwidth/ 99% Bandwidth**





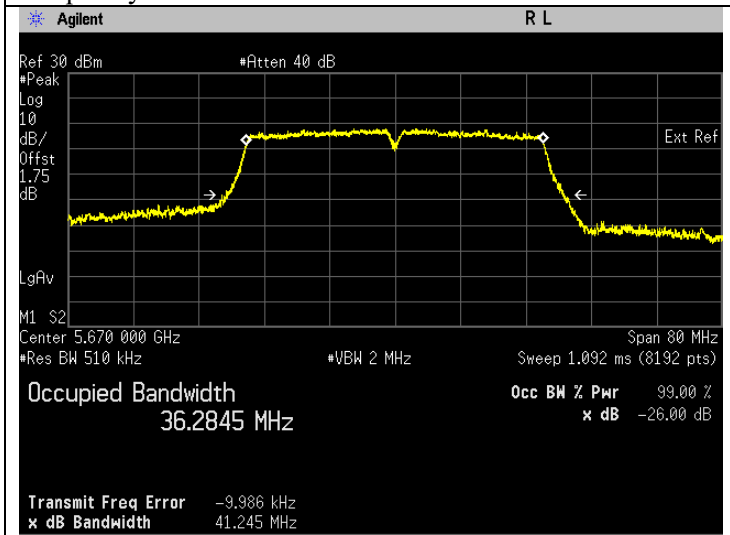
Frequency 5270 MHz

Frequency 5310 MHz

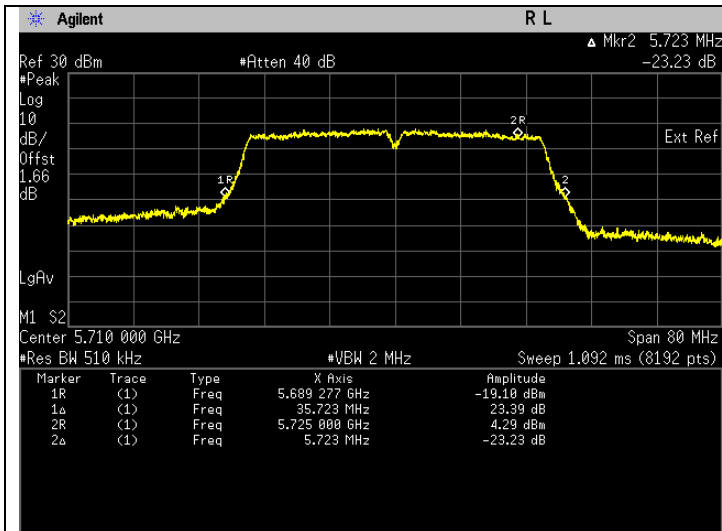


Frequency 5510 MHz

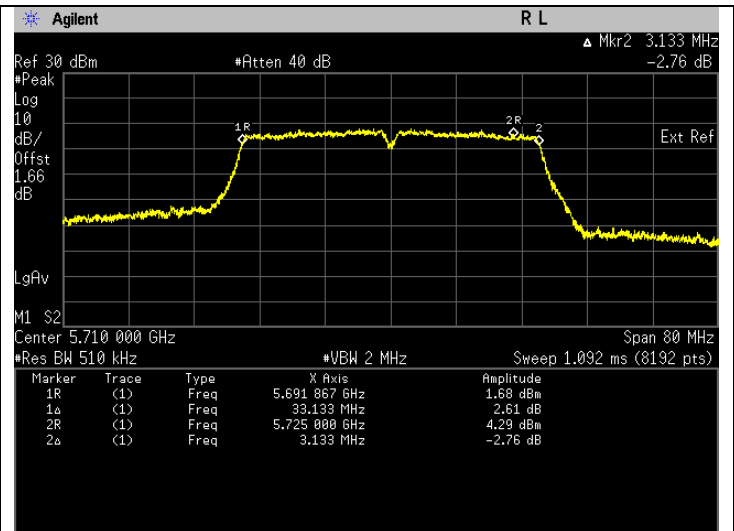
Frequency 5590 MHz



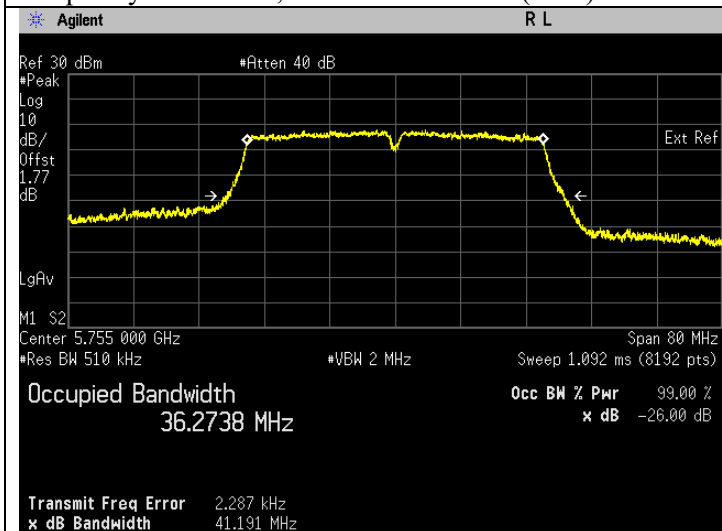
Frequency 5670 MHz



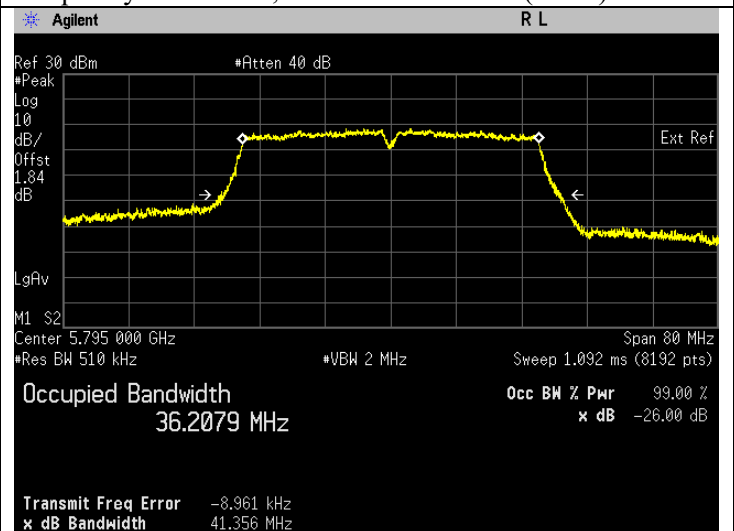
Frequency 5710 MHz, UNII-2C & UNII-3(FCC)



Frequency 5710 MHz, UNII-2C & UNII-3 (ISED)



Frequency 5755 MHz

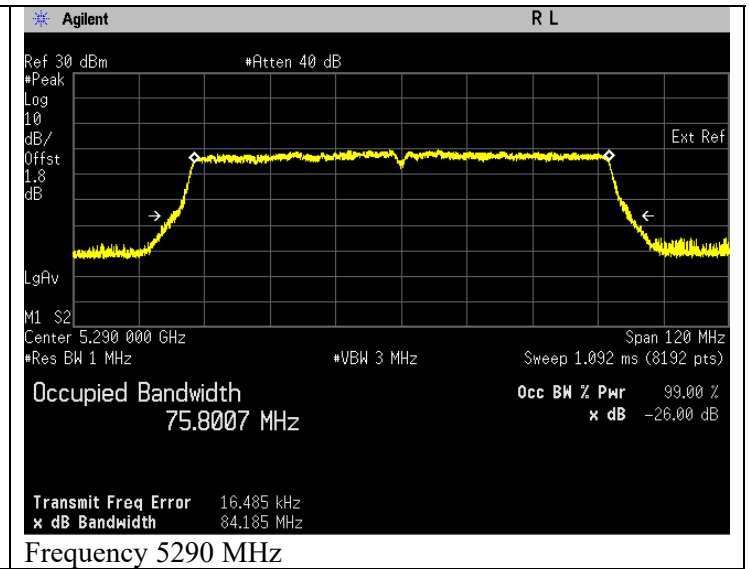
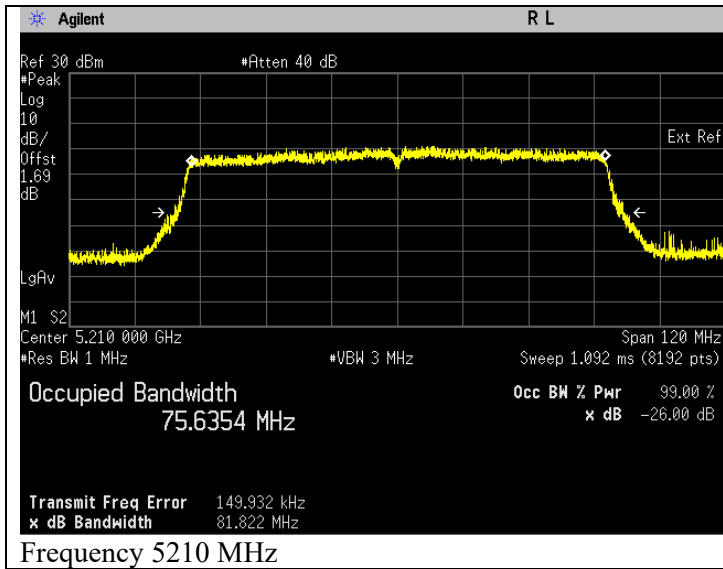


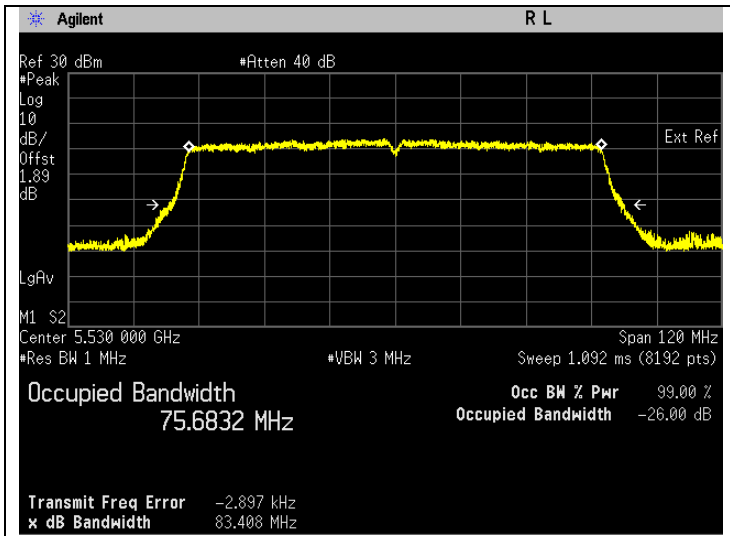
Frequency 5795 MHz

**802.11ac (HT80)**

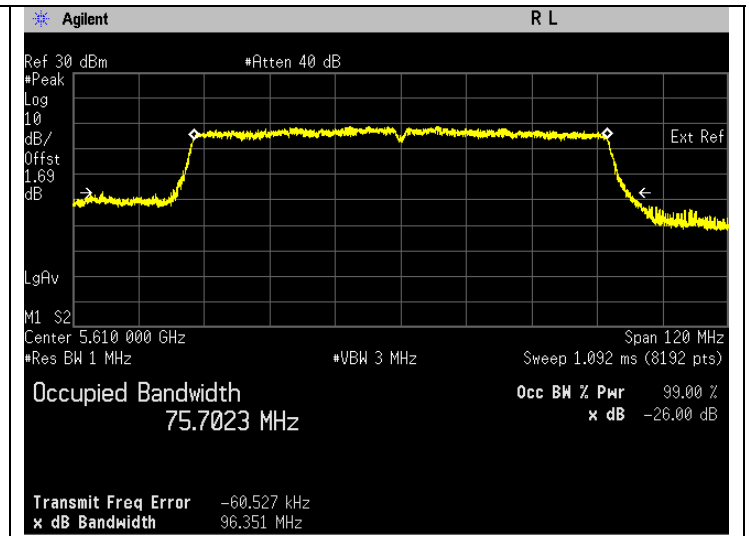
Frequency (MHz)	Test Configuration	Results			
		26 dB Bandwidth(MHz)	Status	99% Bandwidth(MHz)	Status
5210	Mod Type: BPSK, Data Rate: MCS0 (29.3)	81.822	Pass	75.635	Pass
5290	Mod Type: BPSK, Data Rate: MCS0 (29.3)	84.185	Pass	75.801	Pass
5530	Mod Type: BPSK, Data Rate: MCS0 (29.3)	83.408	Pass	75.683	Pass
5610	Mod Type: BPSK, Data Rate: MCS0 (29.3)	96.351	Pass	75.702	Pass
5690	Mod Type: BPSK, Data Rate: MCS0 (29.3), UNII-2C	76.812	Pass	72.838	Pass
5690	Mod Type: BPSK, Data Rate: MCS0 (29.3), UNII-3	6.812	Pass	2.838	Pass
5775	Mod Type: BPSK, Data Rate: MCS0 (29.3)	116.284	Pass	75.934	Pass

**26 dB Bandwidth/ 99% Bandwidth**

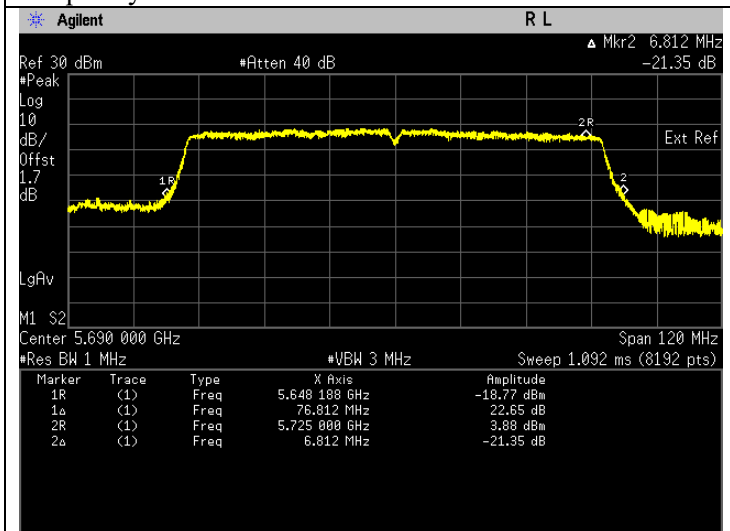




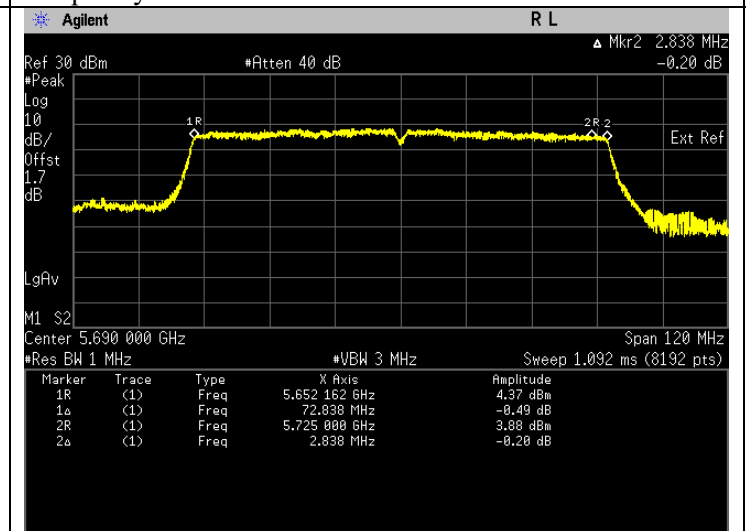
Frequency 5530 MHz



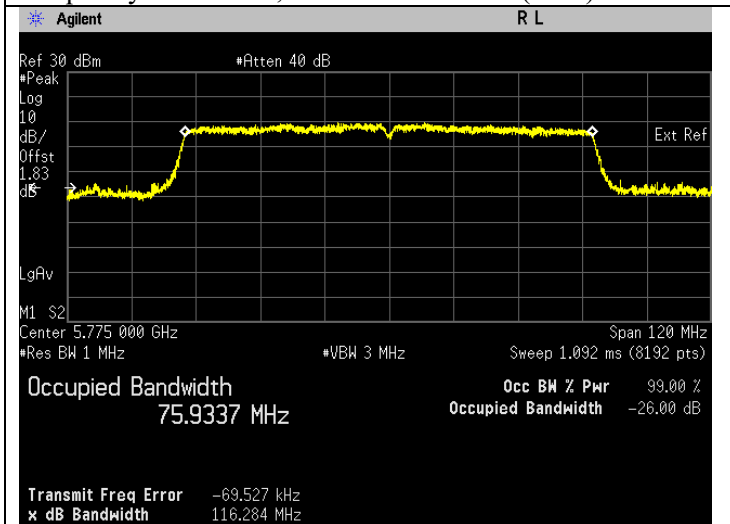
Frequency 5610 MHz



Frequency 5690 MHz, UNII-2C & UNII-3(FCC)



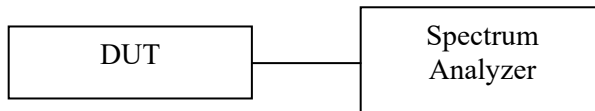
Frequency 5690 MHz, UNII-2C & UNII-3(ISED)



Frequency 5775 MHz

## 7.2. Maximum Conducted Output Power

### 7.2.1. 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
  - VBW  $\geq$  3 MHz
  - 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
  - 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
- e) The measurement method follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04 under clause E.2.d) Method SA-2.
- f) The Maximum output power results are included duty cycle correction factor.

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

7.2.3. Additional Info

Antenna	Gain (dBi)
UNII1, UNII2A	4.6
UNII2C	3.3
UNII3	3.1
Duty Cycle Correction Factor	
802.11a	0.075
802.11n20	0.078
802.11n40	0.160
802.11ac80	0.318

7.2.4. Test Data

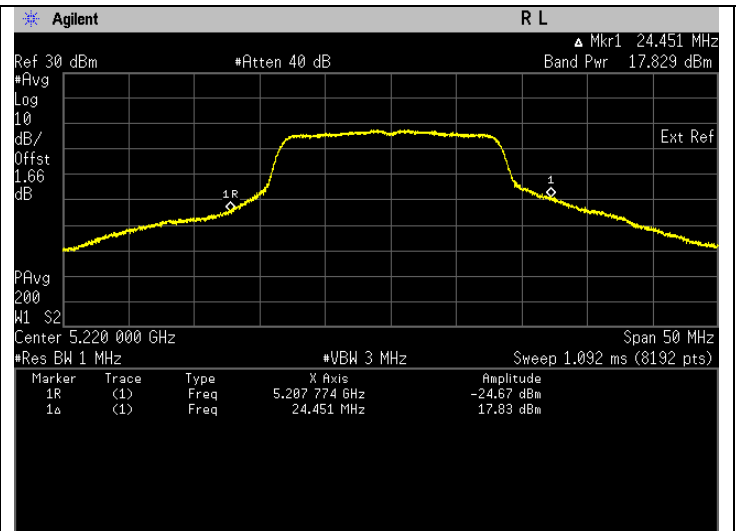
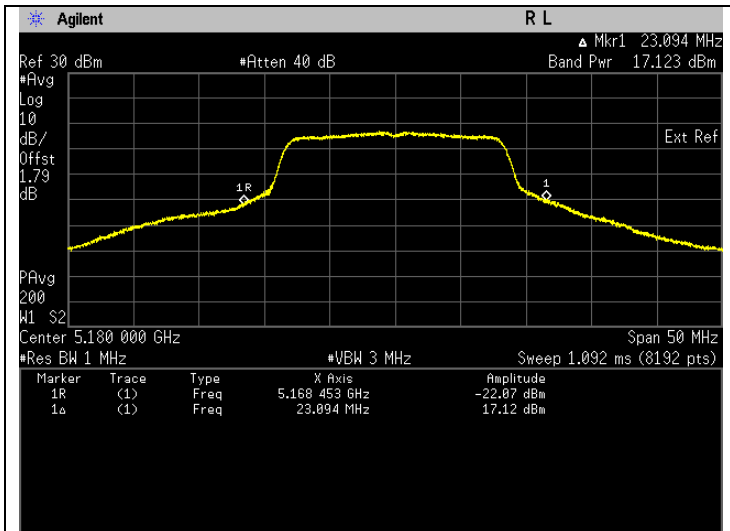


**Summary table**

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	61.92	79.43	178.57	229.09	16M7D1D
	5260-5320	20	60.21	79.43	173.66	229.09	16M7D1D
	5500-5580	20	60.87	79.43	130.14	169.82	16M7D1D
	5660-5720	20	53.58	79.43	114.55	169.82	16M6D1D
	5745-5825	20	56.58	79.43	115.53	162.18	16M6D1D
802.11n (HT20)	5180-5240	20	60.84	79.43	175.47	229.09	17M9D1D
	5260-5320	20	66.24	79.43	191.03	229.09	17M9D1D
	5500-5580	20	62.03	79.43	132.62	169.82	17M8D1D
	5660-5720	20	42.65	79.43	91.18	169.82	17M8D1D
	5745-5825	20	63.14	79.43	128.91	162.18	17M8D1D
802.11n (HT40)	5190-5230	40	63.94	79.43	184.42	229.09	36M3D1D
	5270-5310	40	59.12	79.43	170.49	229.09	36M3D1D
	5510-5550	40	23.59	79.43	50.44	169.82	36M3D1D
	5670-5710	40	56.32	79.43	120.42	169.82	36M3D1D
	5755-5795	40	56.96	79.43	116.31	162.18	36M3D1D
802.11ac (VHT80)	5210	80	9.39	12.59	27.08	36.31	75M6D1D
	5290	80	6.64	8.91	19.16	25.70	75M8D1D
	5530	80	17.84	79.43	38.15	169.82	75M7D1D
	5690	80	59.91	79.43	128.09	169.82	75M7D1D
	5775	80	64.48	79.43	131.64	162.18	75M9D1D

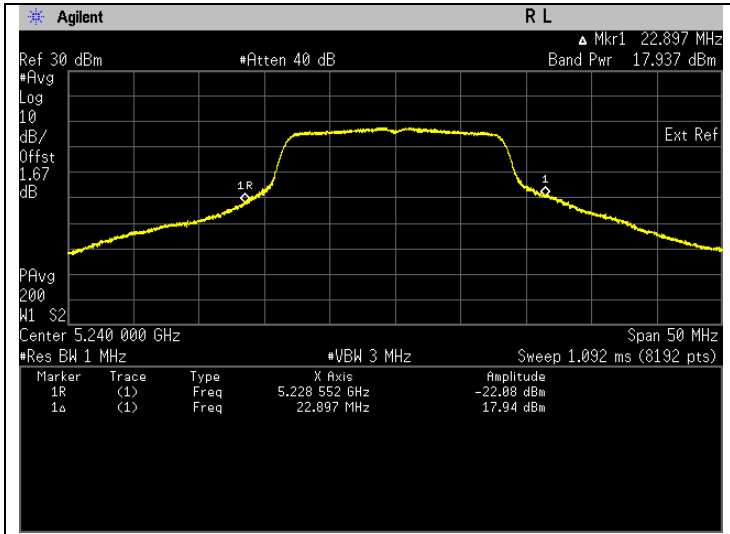
**802.11a (26dB EBW)**

Freq. (MHz)	Test Conditions	Results		
		Power (mW)	Power (dBm)	Status
5180	Mod Type: BPSK, Data Rate: 6	52.457	17.198	Pass
5220	Mod Type: BPSK, Data Rate: 6	61.716	17.904	Pass
5240	Mod Type: BPSK, Data Rate: 6	63.270	18.012	Pass
5260	Mod Type: BPSK, Data Rate: 6	61.291	17.874	Pass
5300	Mod Type: BPSK, Data Rate: 6	55.514	17.444	Pass
5320	Mod Type: BPSK, Data Rate: 6	53.530	17.286	Pass
5500	Mod Type: BPSK, Data Rate: 6	18.378	12.643	Pass
5580	Mod Type: BPSK, Data Rate: 6	61.901	17.917	Pass
5700	Mod Type: BPSK, Data Rate: 6	54.600	17.372	Pass
5745	Mod Type: BPSK, Data Rate: 6	51.369	17.107	Pass
5785	Mod Type: BPSK, Data Rate: 6	50.501	17.033	Pass
5825	Mod Type: BPSK, Data Rate: 6	57.425	17.591	Pass

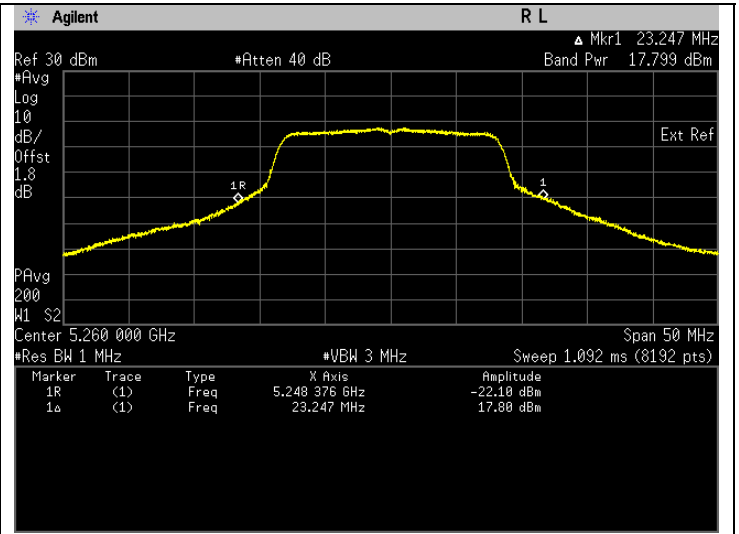


Frequency 5180 MHz, FCC.

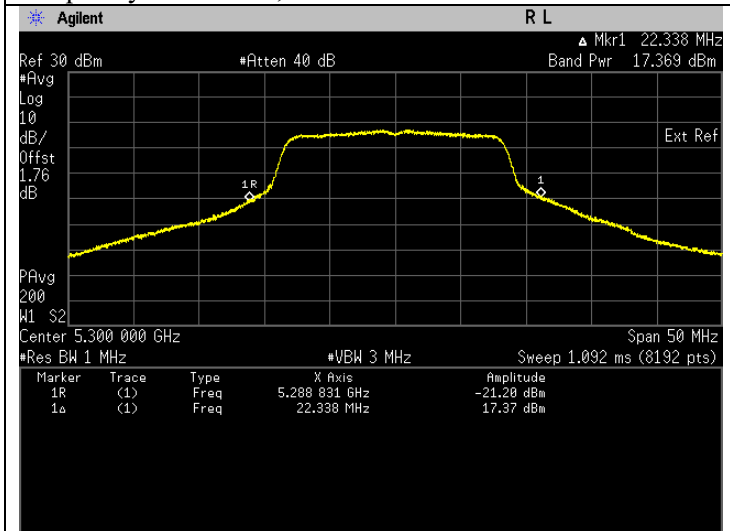
Frequency 5220 MHz, FCC.



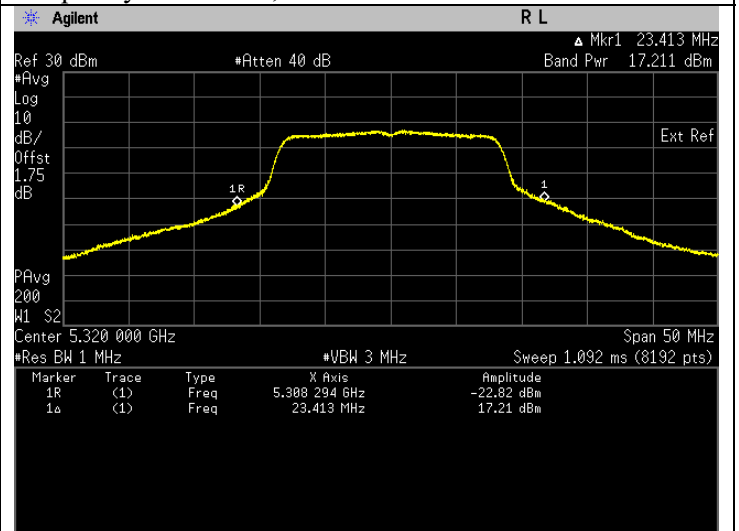
Frequency 5240 MHz, FCC.



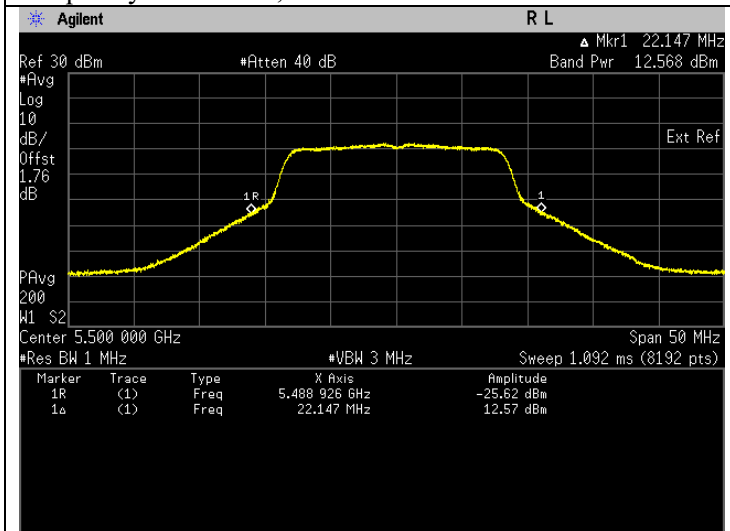
Frequency 5260 MHz, FCC.



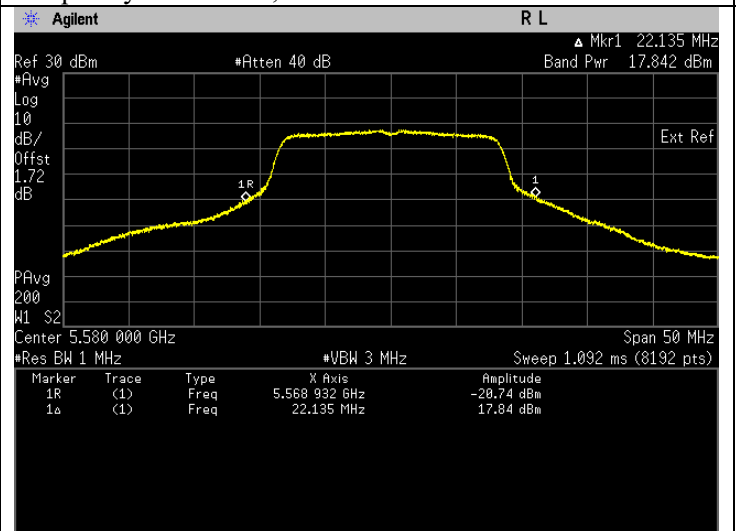
Frequency 5300 MHz, FCC.



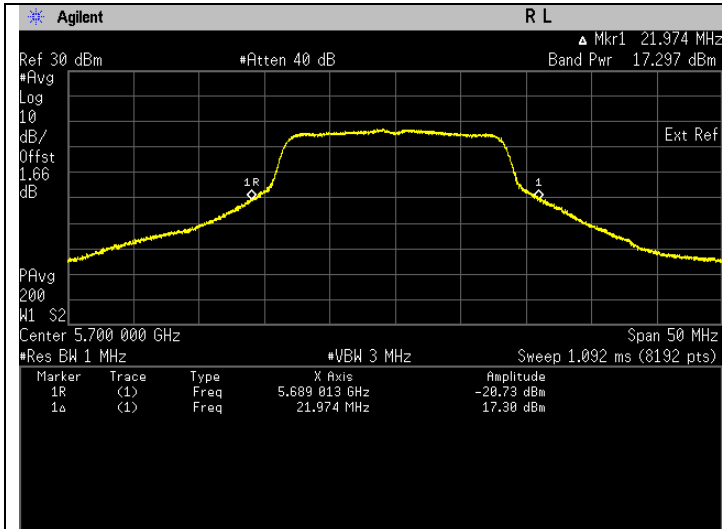
Frequency 5320 MHz, FCC.



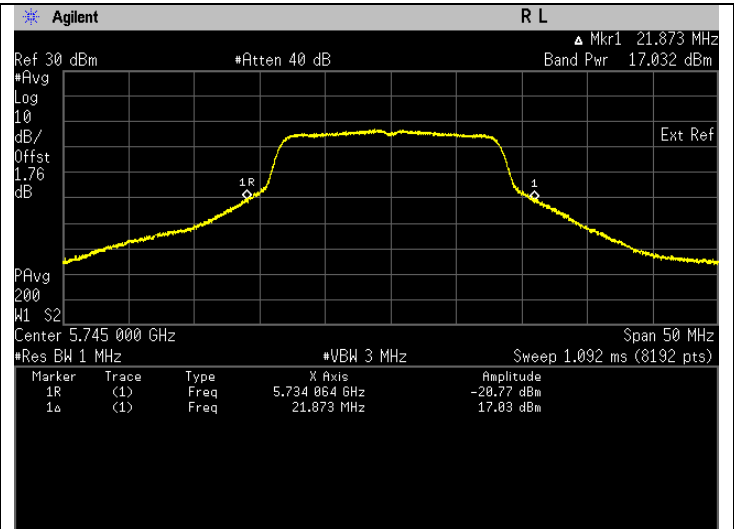
Frequency 5500 MHz, FCC.



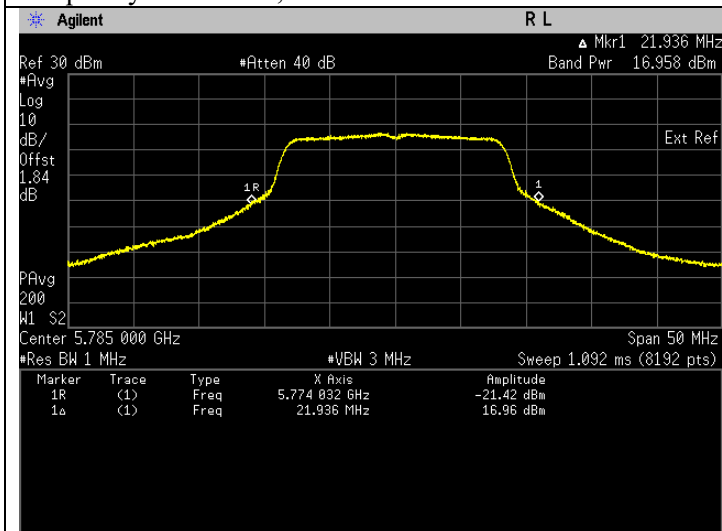
Frequency 5580 MHz, FCC.



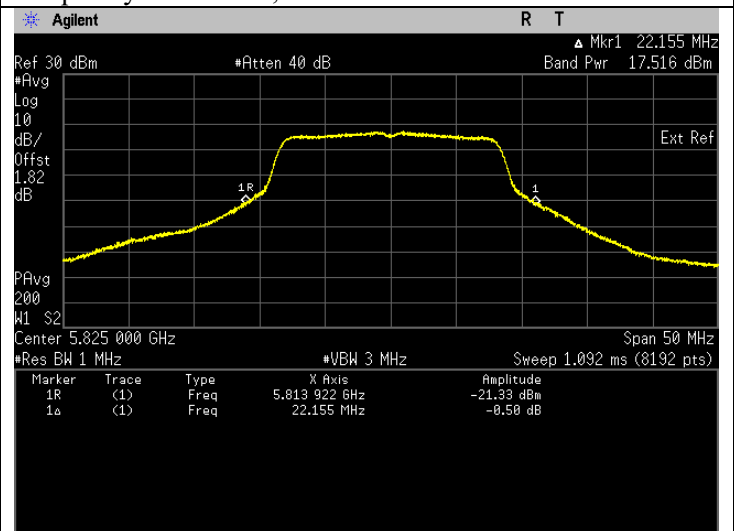
Frequency 5700 MHz, FCC.



Frequency 5745 MHz, FCC.



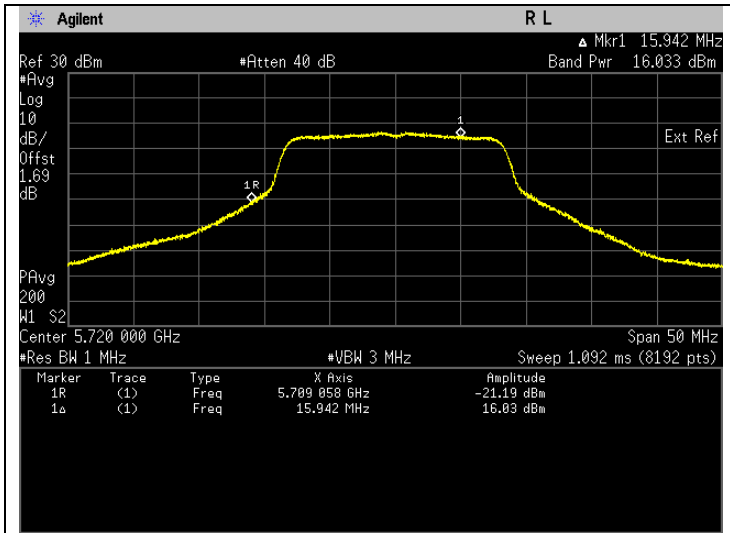
Frequency 5785 MHz, FCC.



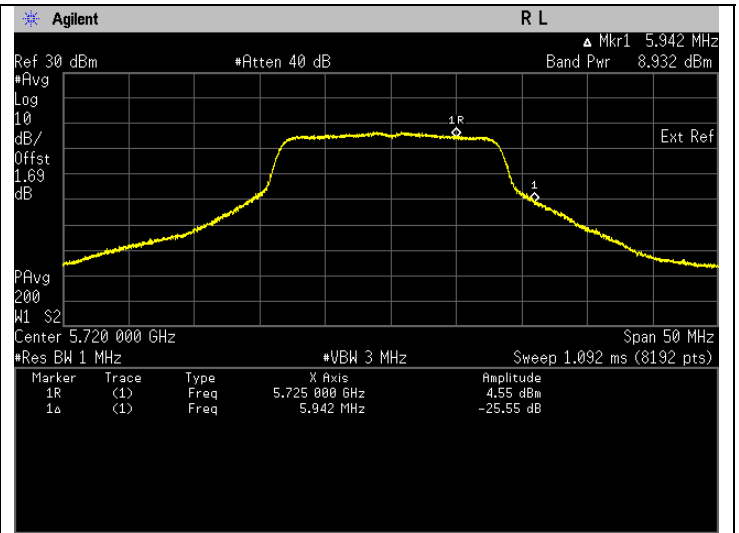
Frequency 5825 MHz, FCC.

**Straddle Frequency**

Freq. (MHz)	Test Conditions	Results		
		U-NII- 2C		
		Power (mW)	Power (dBm)	Status
5720	Mod Type: BPSK, Data Rate: 6	40.812	16.108	Pass
		U-NII-3		
5720	Mod Type: BPSK, Data Rate: 6	7.956	9.007	Pass



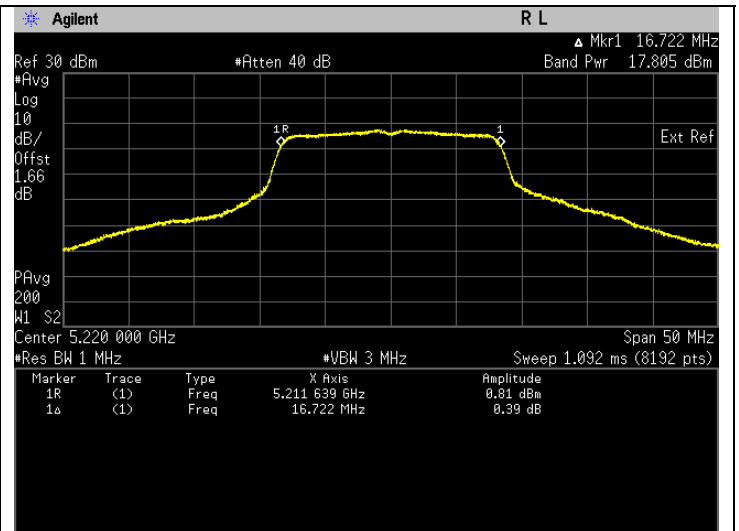
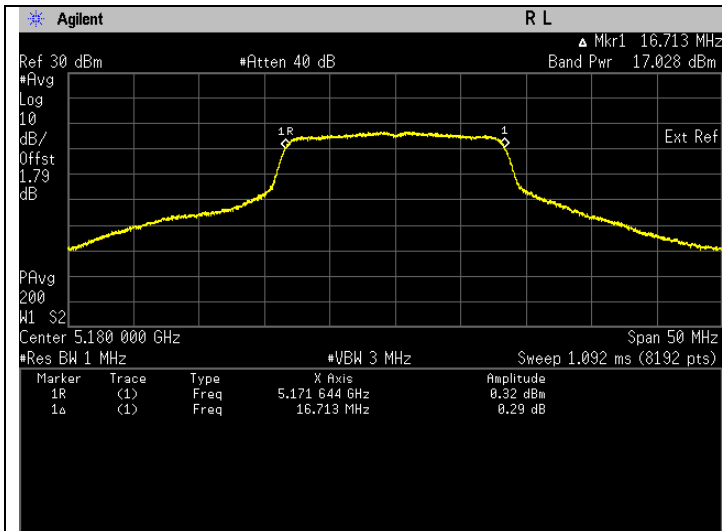
Frequency 5720 MHz, FCC, U-NII-2C. \*Note: The band power is captured before the 5725 MHz.



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

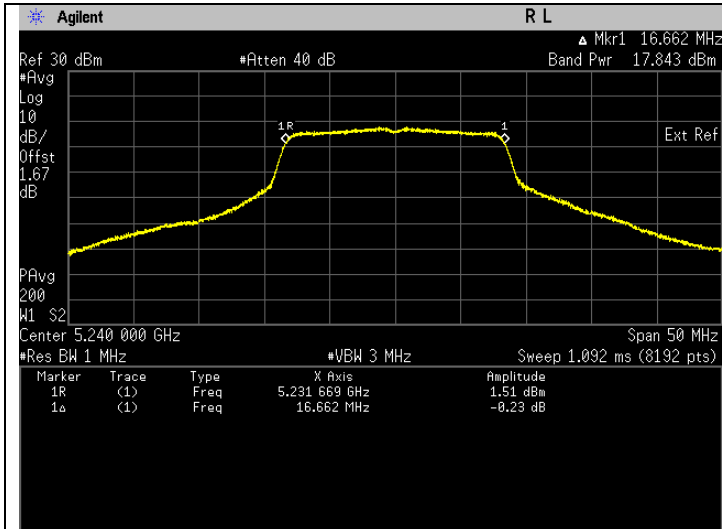
**802.11a (99% EBW)**

Freq. (MHz)	Test Conditions	Results				
		Power (mW)	Power (dBm)	Status	EIRP (dBm)	Status
5180	Mod Type: BPSK, Data Rate: 6	51.322	17.103	Pass	21.703	Pass
5220	Mod Type: BPSK, Data Rate: 6	61.376	17.880	Pass	22.480	Pass
5240	Mod Type: BPSK, Data Rate: 6	61.916	17.918	Pass	22.518	Pass
5260	Mod Type: BPSK, Data Rate: 6	60.214	17.797	Pass	22.397	Pass
5300	Mod Type: BPSK, Data Rate: 6	54.388	17.355	Pass	21.955	Pass
5320	Mod Type: BPSK, Data Rate: 6	52.155	17.173	Pass	21.773	Pass
5500	Mod Type: BPSK, Data Rate: 6	18.146	12.588	Pass	15.888	Pass
5580	Mod Type: BPSK, Data Rate: 6	60.870	17.844	Pass	21.144	Pass
5700	Mod Type: BPSK, Data Rate: 6	53.579	17.290	Pass	20.590	Pass
5745	Mod Type: BPSK, Data Rate: 6	50.188	17.006	Pass	20.106	Pass
5785	Mod Type: BPSK, Data Rate: 6	49.808	16.973	Pass	20.073	Pass
5825	Mod Type: BPSK, Data Rate: 6	56.585	17.527	Pass	20.627	Pass

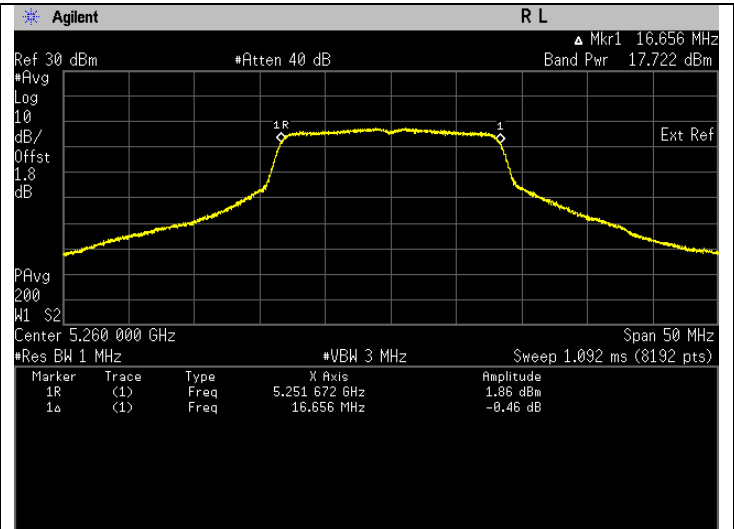


Frequency 5180 MHz, ISED

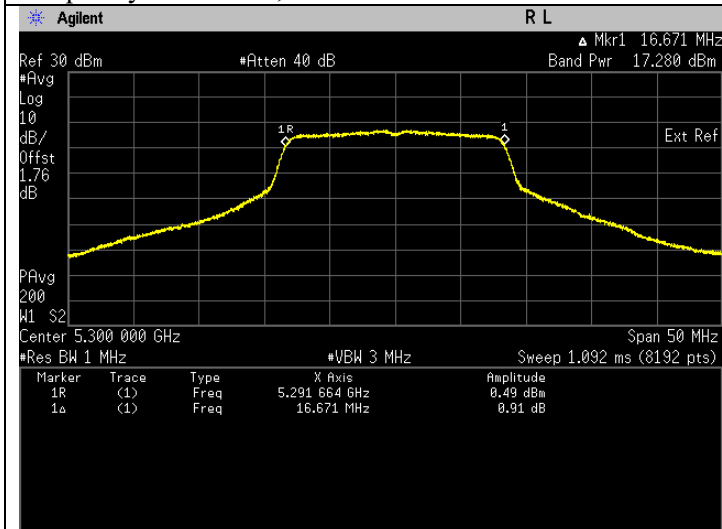
Frequency 5220 MHz, ISED



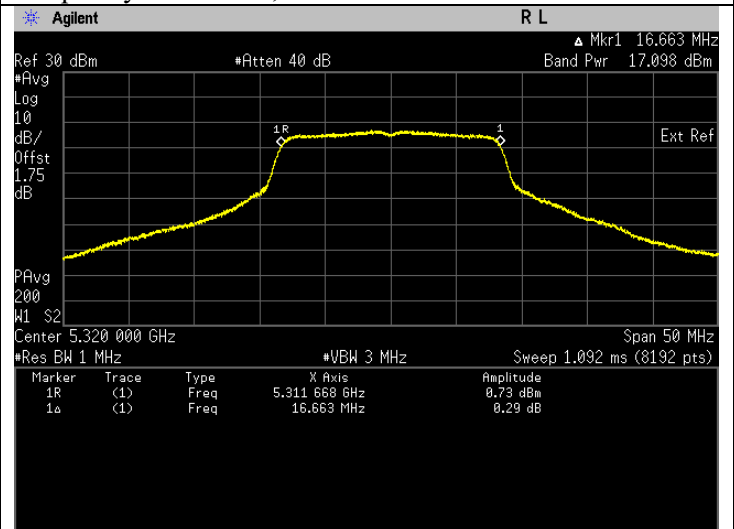
Frequency 5240 MHz, ISED



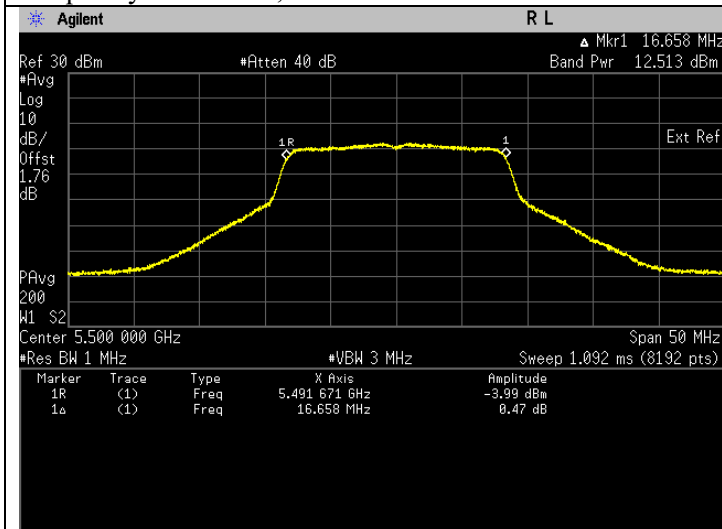
Frequency 5260 MHz, ISED



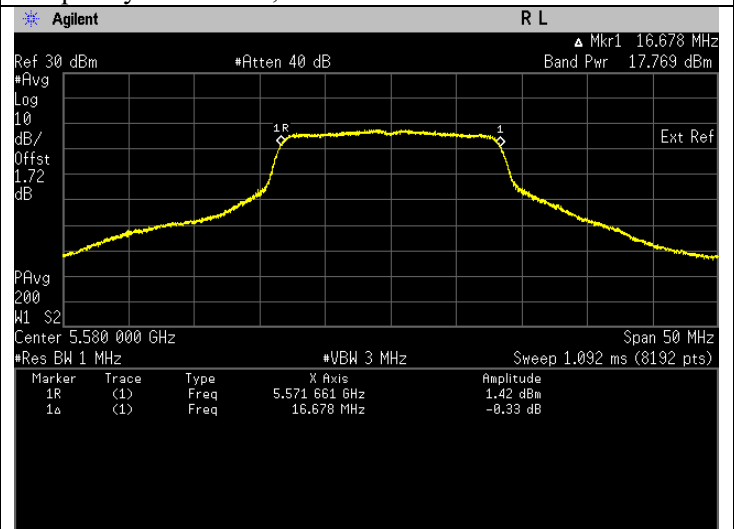
Frequency 5300 MHz, ISED



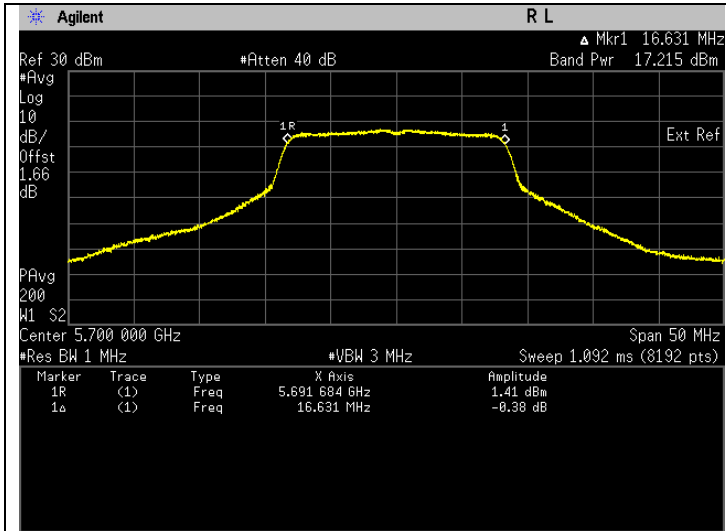
Frequency 5320 MHz, ISED



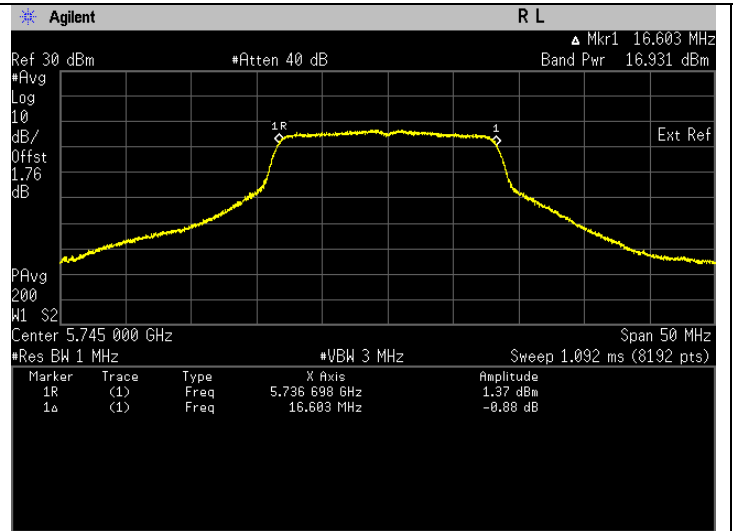
Frequency 5500 MHz, ISED



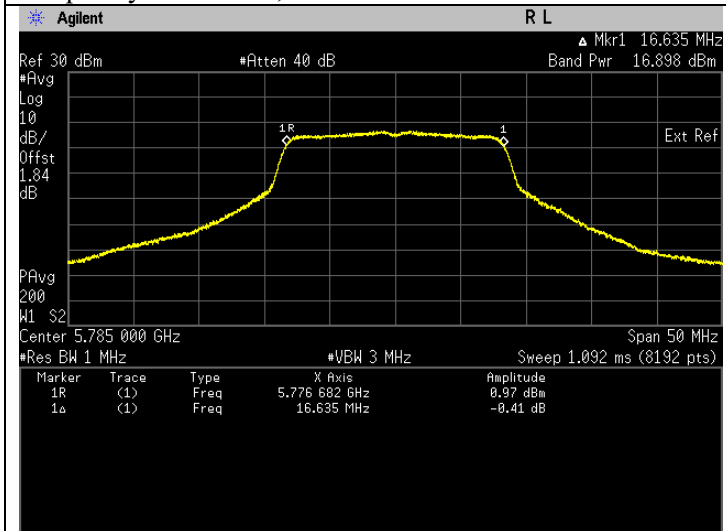
Frequency 5580 MHz, ISED



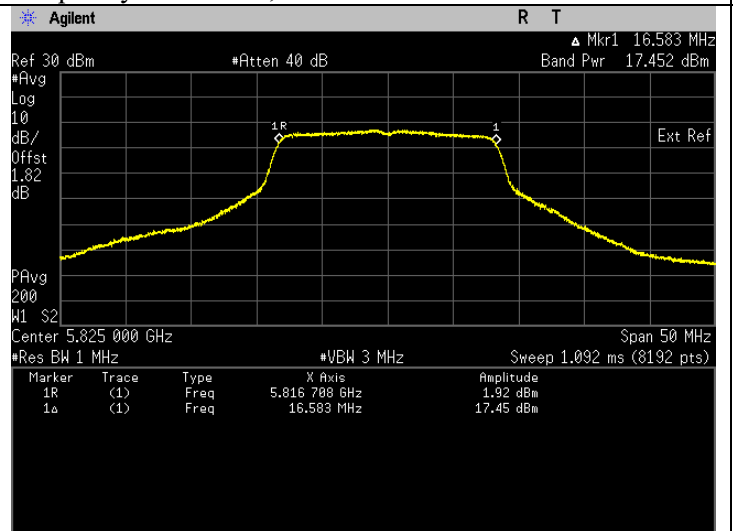
Frequency 5700 MHz, ISED



Frequency 5745 MHz, ISED



Frequency 5785 MHz, ISED

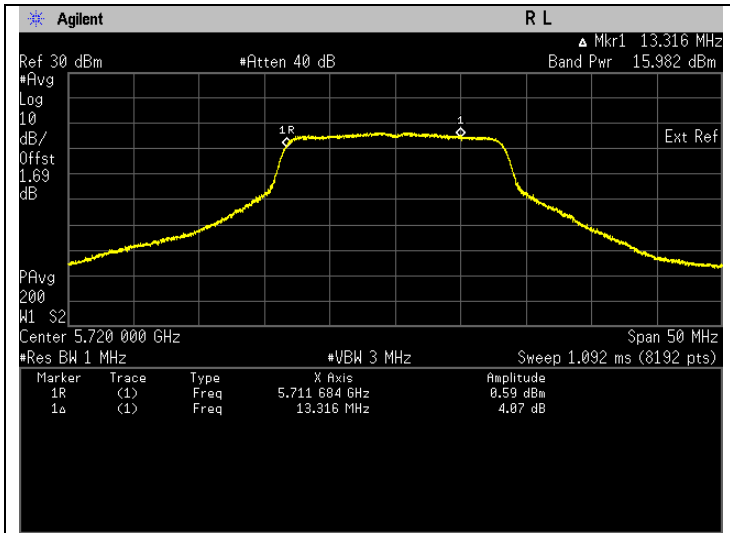


Frequency 5825 MHz, ISED

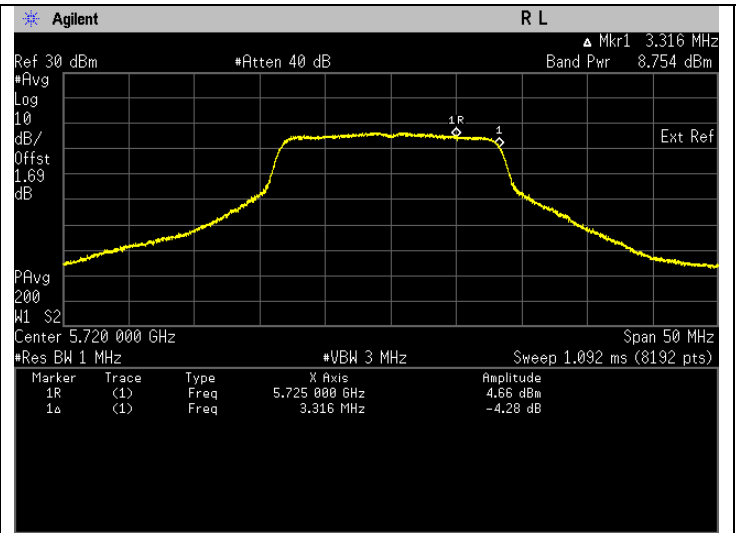


**Straddle Frequency**

Freq. (MHz)	Test Conditions	Results				
		U-NII- 2C				
		Power (mW)	Power (dBm)	Status	EIRP (dBm)	Status
5720	Mod Type: BPSK, Data Rate: 6	40.337	16.057	Pass	19.357	Pass
		U-NII-3				
5720	Mod Type: BPSK, Data Rate: 6	7.637	8.829	Pass	12.129	Pass



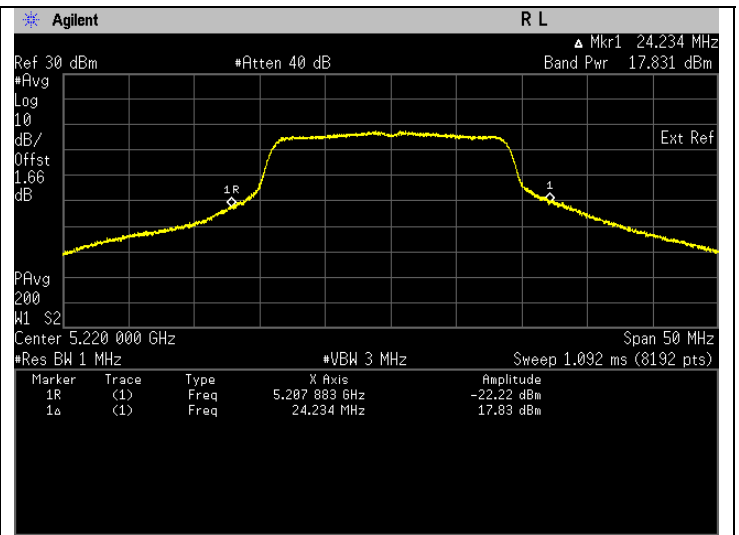
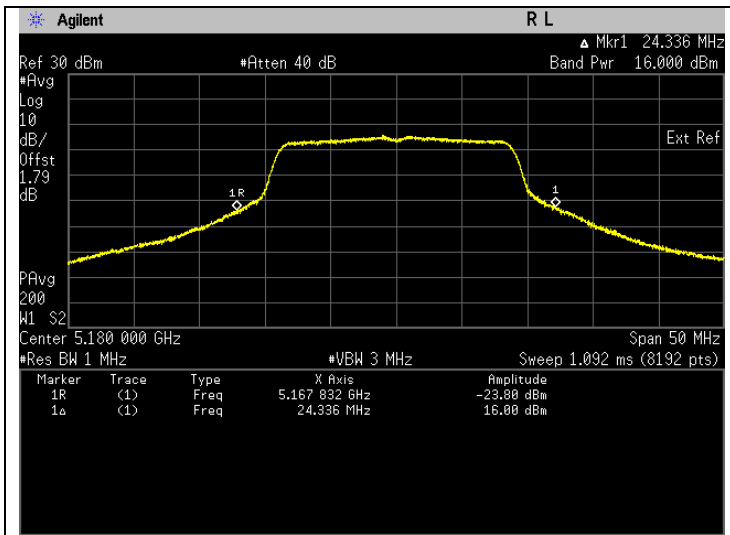
Frequency 5720 MHz, ISED, U-NII-2C. \*Note: The band power is captured before the 5725 MHz.



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

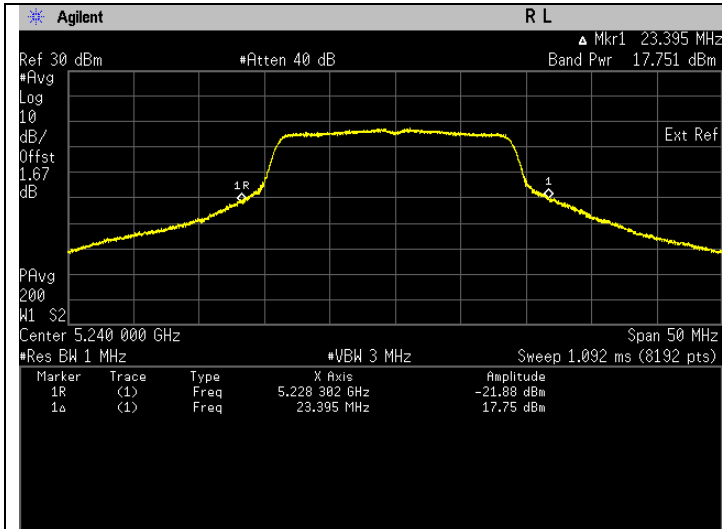
**802.11n (HT20)(26dB EBW)**

Freq. (MHz)	Test Conditions	Results		
		Power (mW)	Power (dBm)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	40.532	16.078	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	61.787	17.909	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	60.660	17.829	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	55.950	17.478	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	67.220	18.275	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	42.884	16.323	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	62.445	17.955	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	59.786	17.766	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	43.132	16.348	Pass
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	53.383	17.274	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	64.284	18.081	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	54.213	17.341	Pass

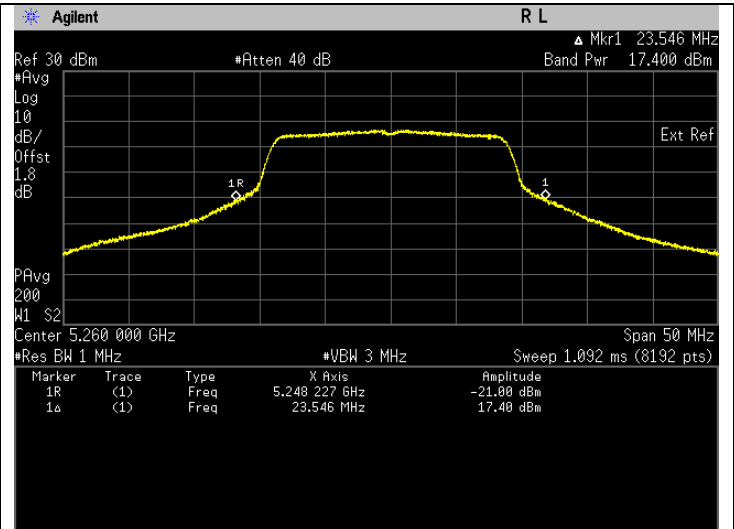


Frequency 5180 MHz, FCC.

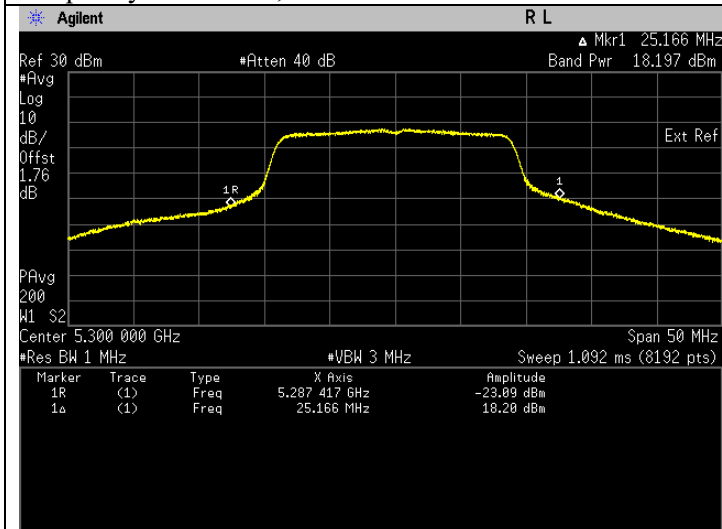
Frequency 5220 MHz, FCC.



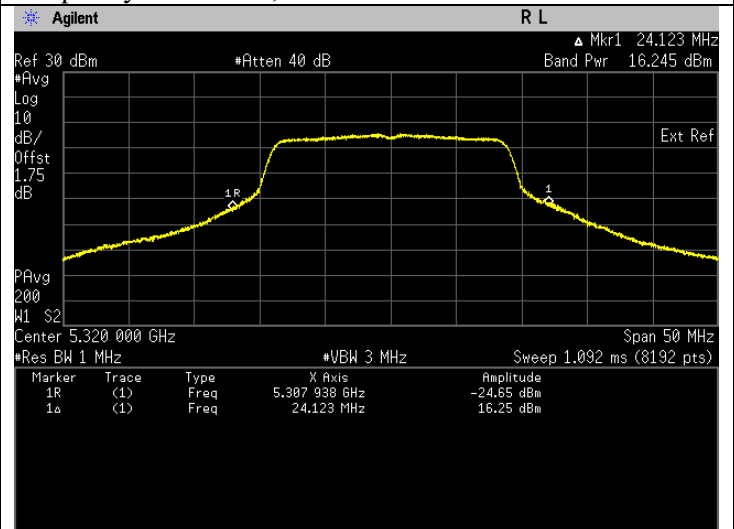
Frequency 5240 MHz, FCC.



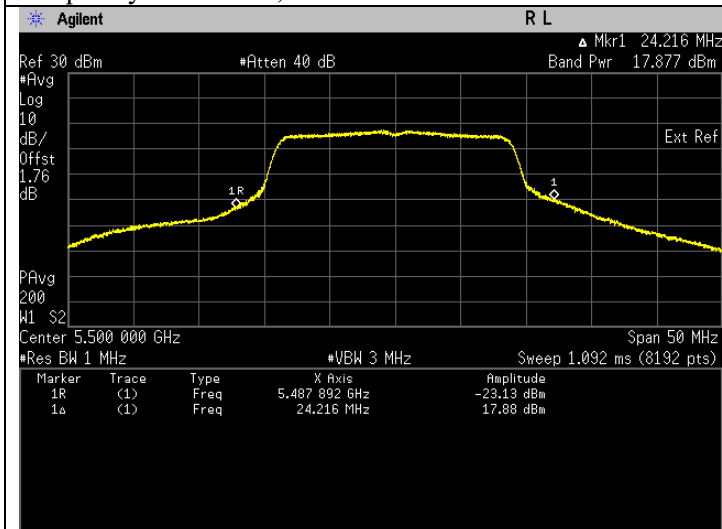
Frequency 5260 MHz, FCC.



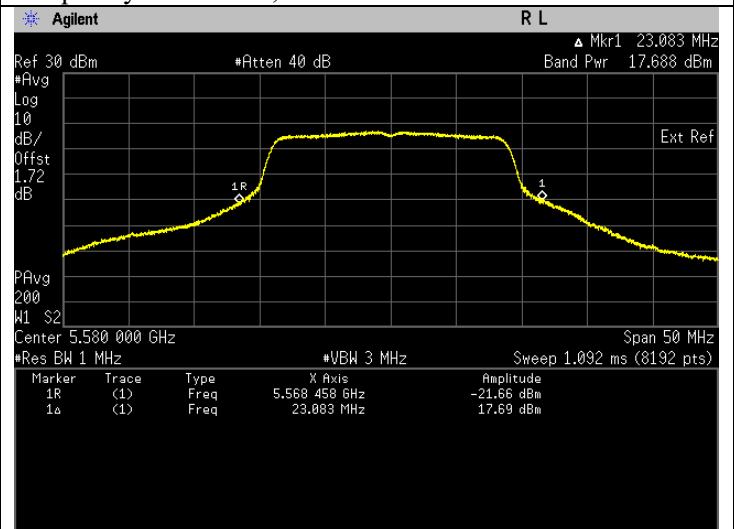
Frequency 5300 MHz, FCC.



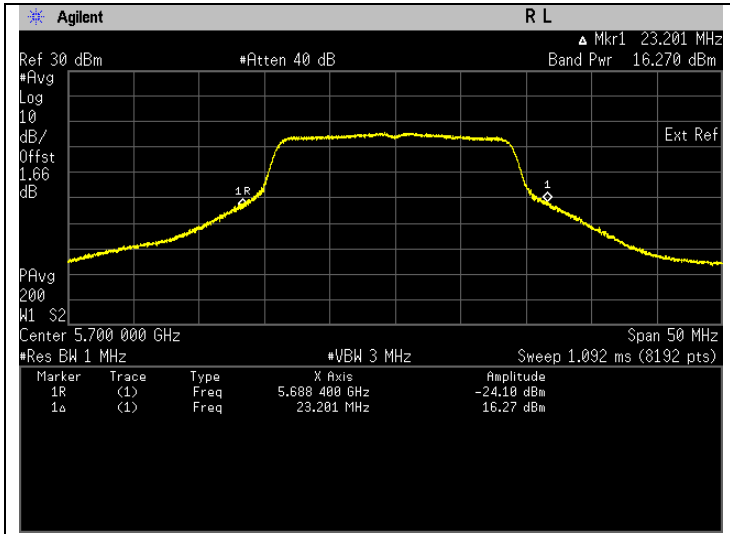
Frequency 5320 MHz, FCC.



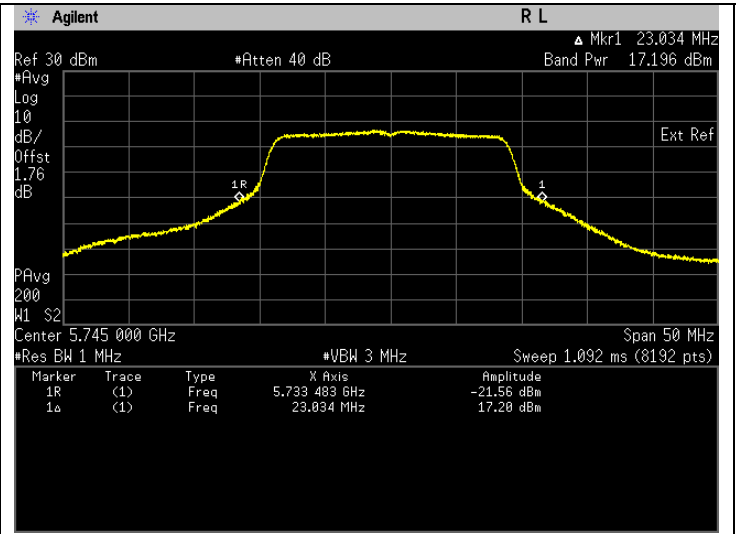
Frequency 5500 MHz, FCC.



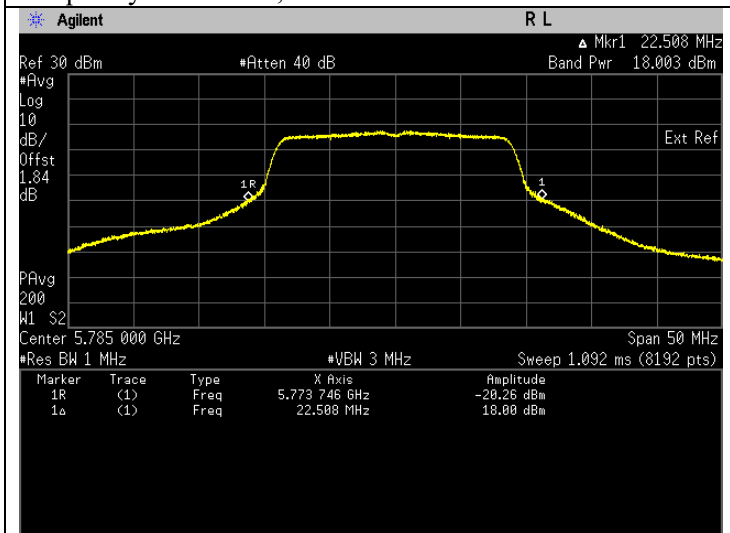
Frequency 5580 MHz, FCC.



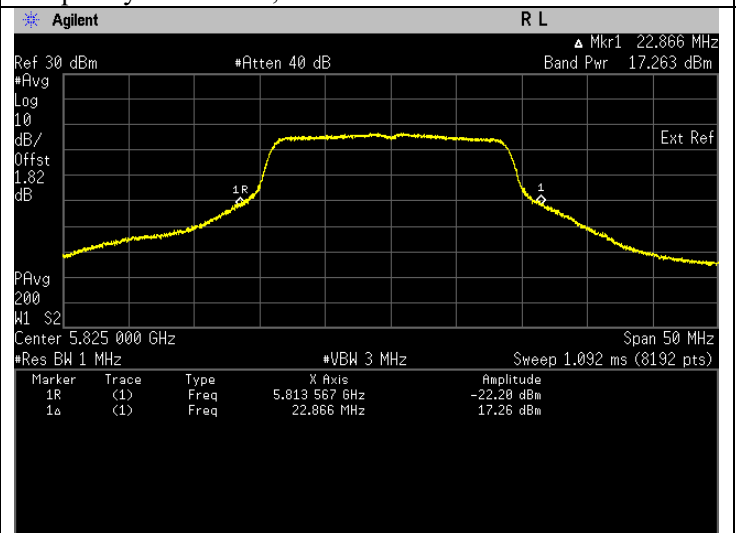
Frequency 5700 MHz, FCC.



Frequency 5745 MHz, FCC.



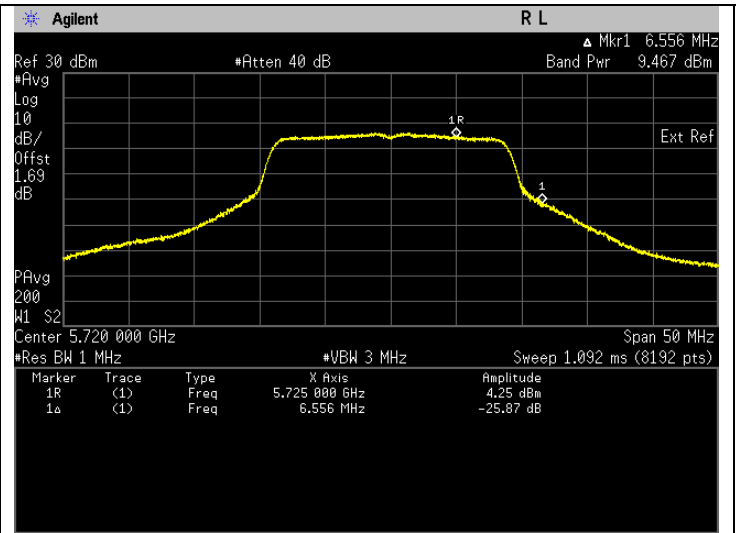
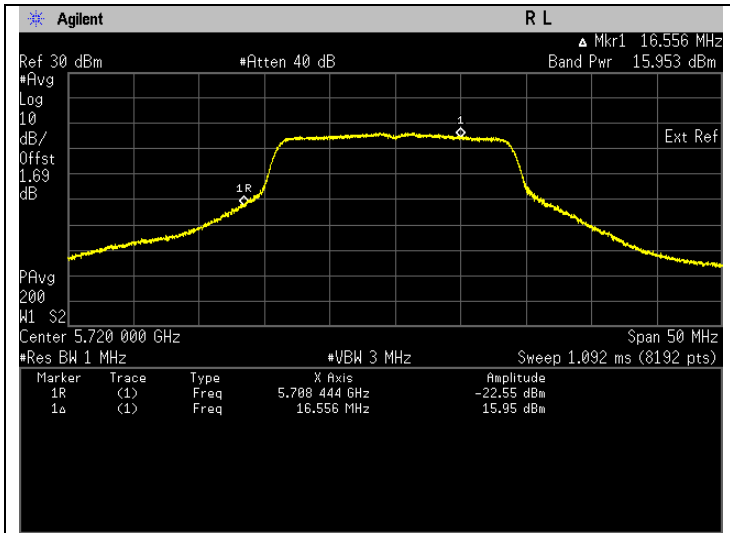
Frequency 5785 MHz, FCC.



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)	40.096	16.031	Pass
		U-NII-3		
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	9.005	9.545	Pass

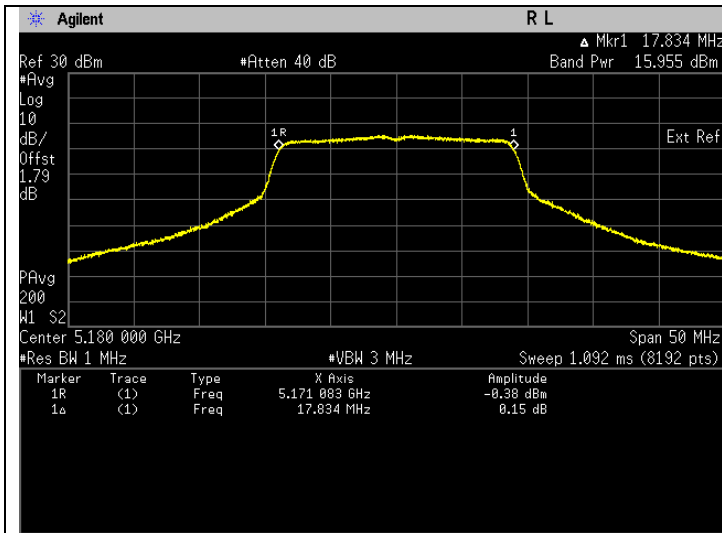


Frequency 5720 MHz, FCC, U-NII-2C. \*Note: The band power is captured before the 5725 MHz.

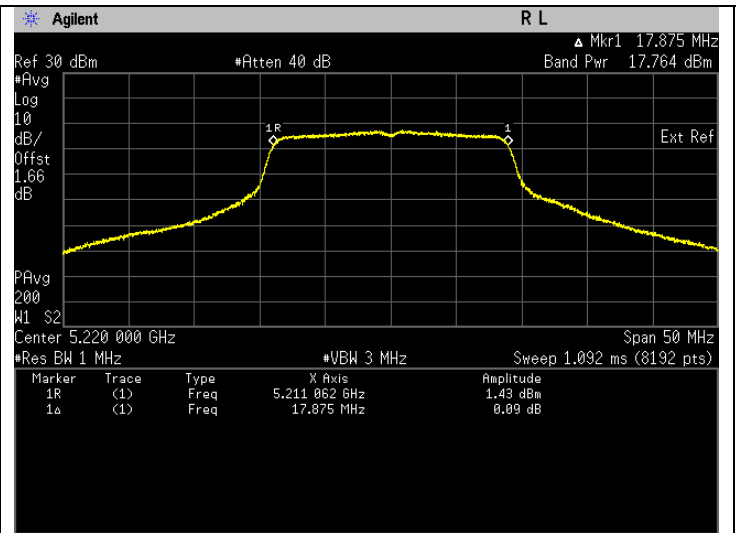
Frequency 5720 MHz, FCC, U-NII-3. \*Note: The band power is captured after the 5725 MHz.

**802.11n (HT20)(99% EBW)**

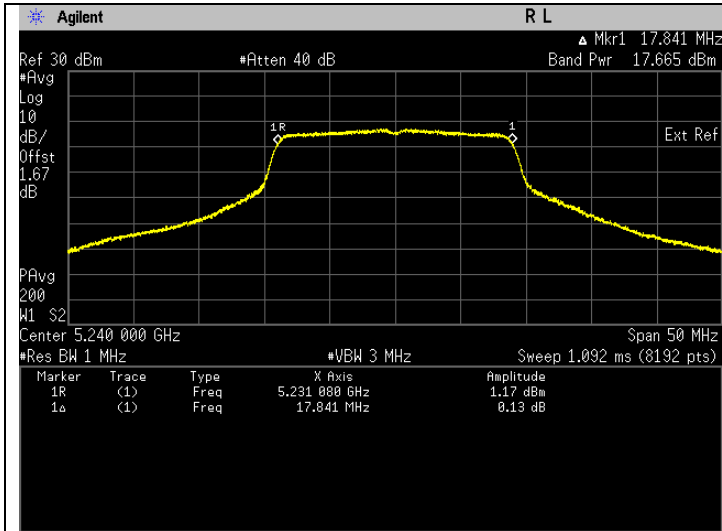
Freq. (MHz)	Test Conditions	Results				
		Power (mW)	Power (dBm)	Status	EIRP (dBm)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	40.114	16.033	Pass	20.633	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	60.842	17.842	Pass	22.442	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	59.470	17.743	Pass	22.343	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	55.578	17.449	Pass	22.049	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	66.237	18.211	Pass	22.811	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	42.306	16.264	Pass	20.864	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	62.030	17.926	Pass	21.226	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	58.803	17.694	Pass	20.994	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	42.648	16.299	Pass	19.599	Pass
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	52.905	17.235	Pass	20.335	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	63.139	18.003	Pass	21.103	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	53.199	17.259	Pass	20.359	Pass



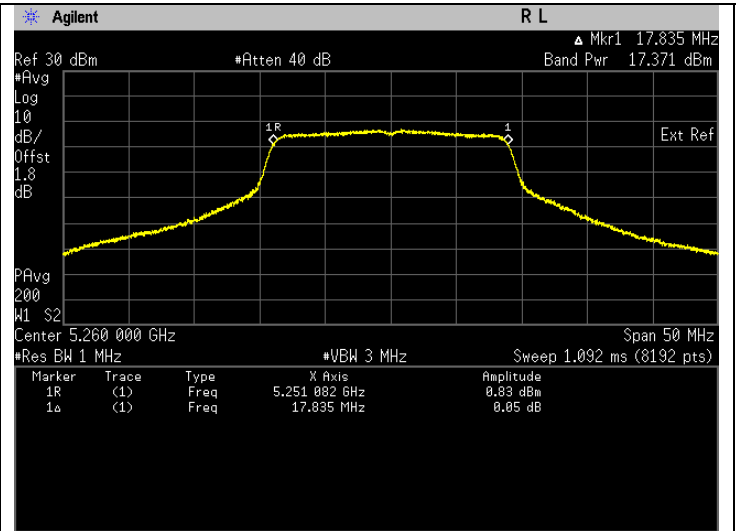
Frequency 5180 MHz, ISED



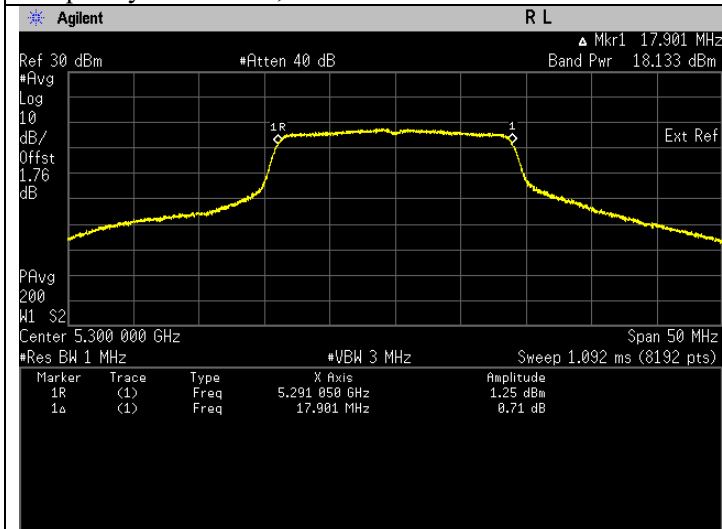
Frequency 5220 MHz, ISED



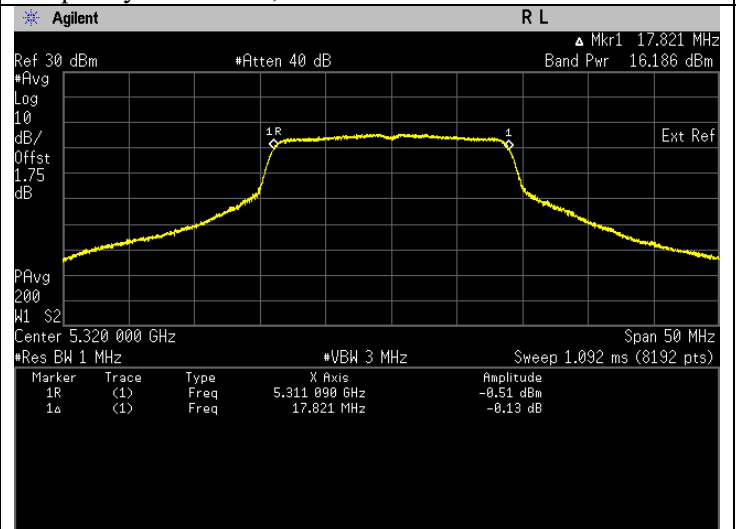
Frequency 5240 MHz, ISED



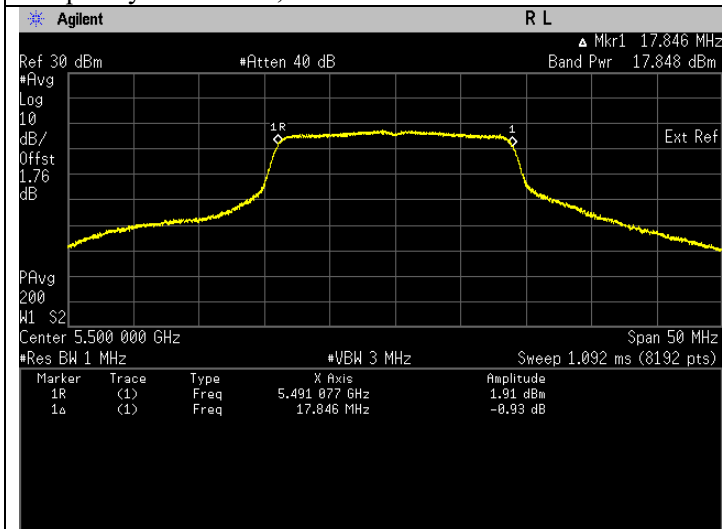
Frequency 5260 MHz, ISED



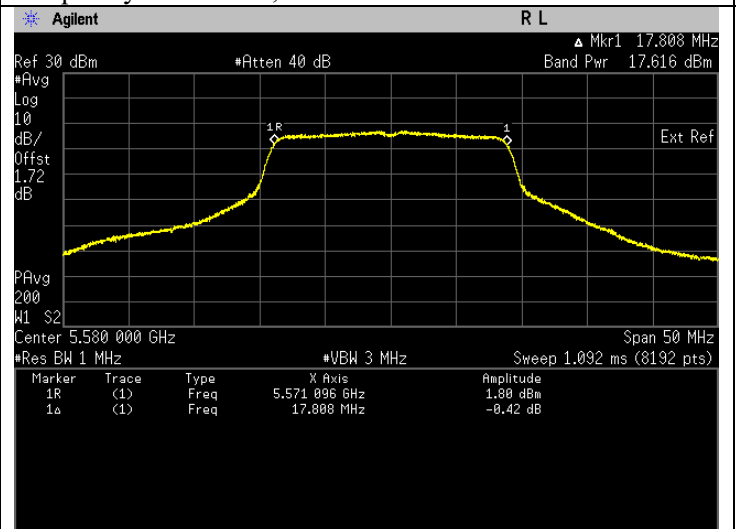
Frequency 5300 MHz, ISED



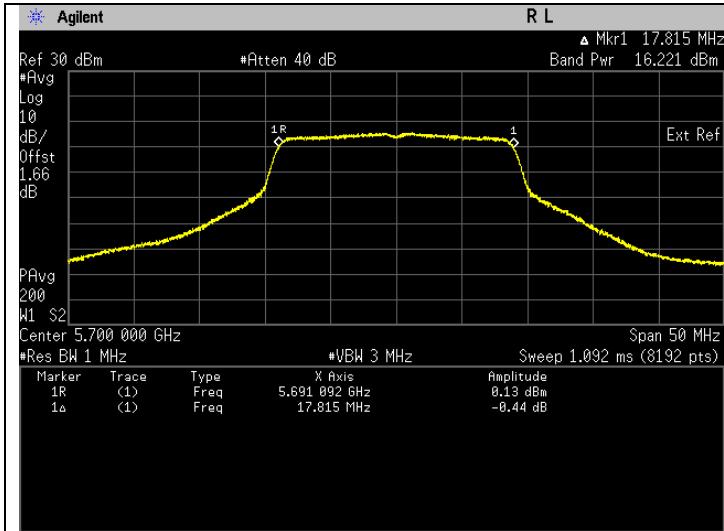
Frequency 5320 MHz, ISED



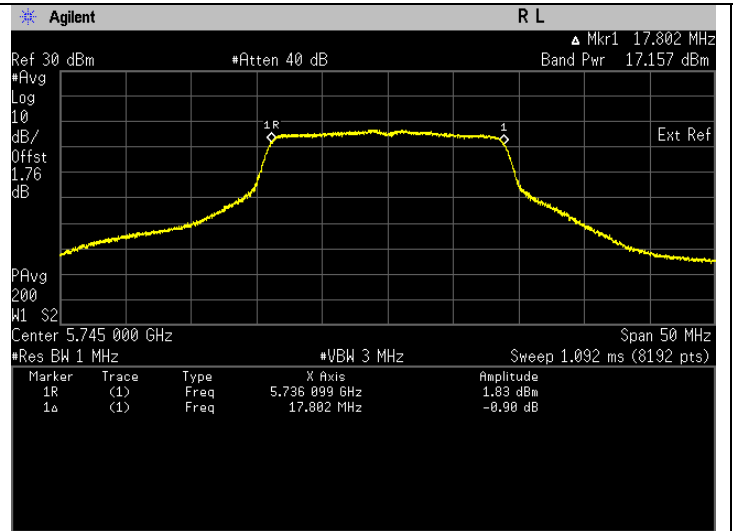
Frequency 5500 MHz, ISED



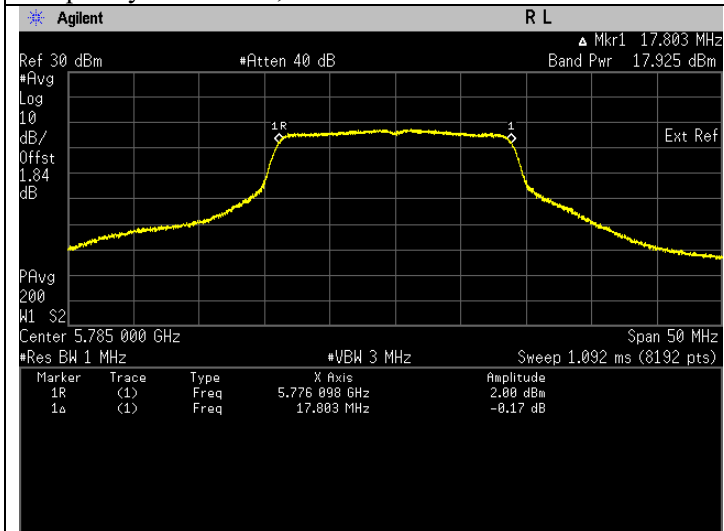
Frequency 5580 MHz, ISED



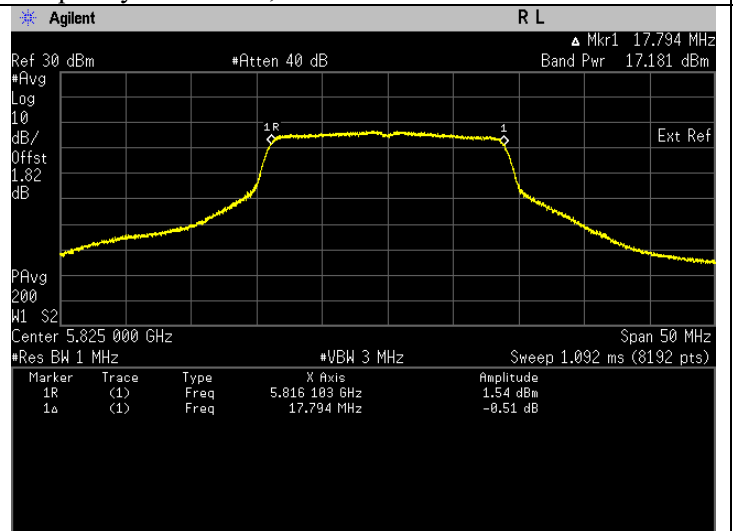
Frequency 5700 MHz, ISED



Frequency 5745 MHz, ISED



Frequency 5785 MHz, ISED

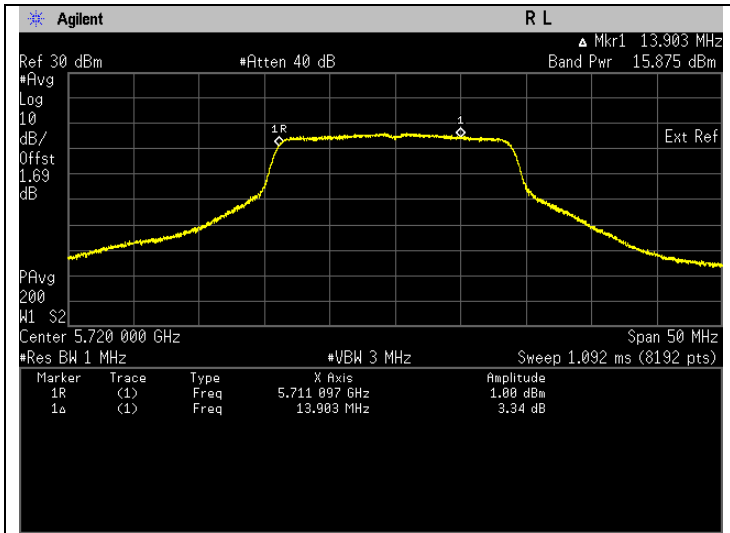


Frequency 5825 MHz, ISED

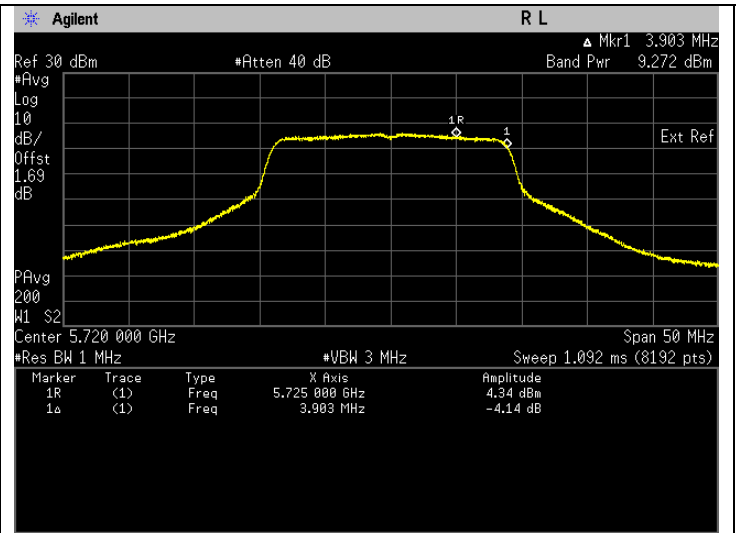


### Straddle Frequency

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)	39.382	15.953	Pass	19.253	Pass
		U-NII-3				
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	8.610	9.350	Pass	12.650	Pass



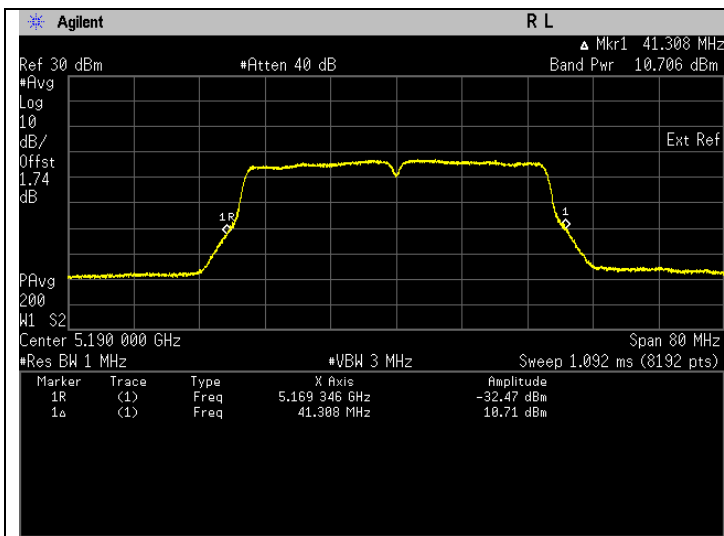
Frequency 5720 MHz, ISED, U-NII-2C. \*Note: The band power is captured before the 5725 MHz.



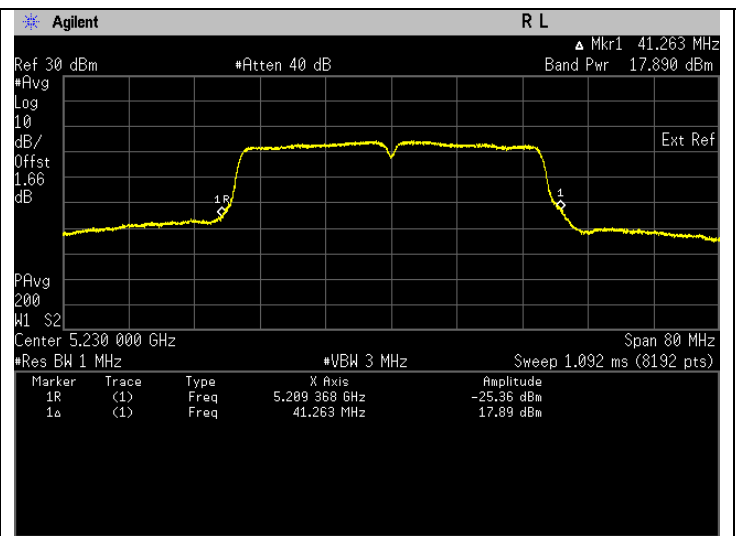
Frequency 5720 MHz, ISED, U-NII-3. \*Note: The band power is captured after the 5725 MHz.

**802.11n (HT40)(26dB EBW)**

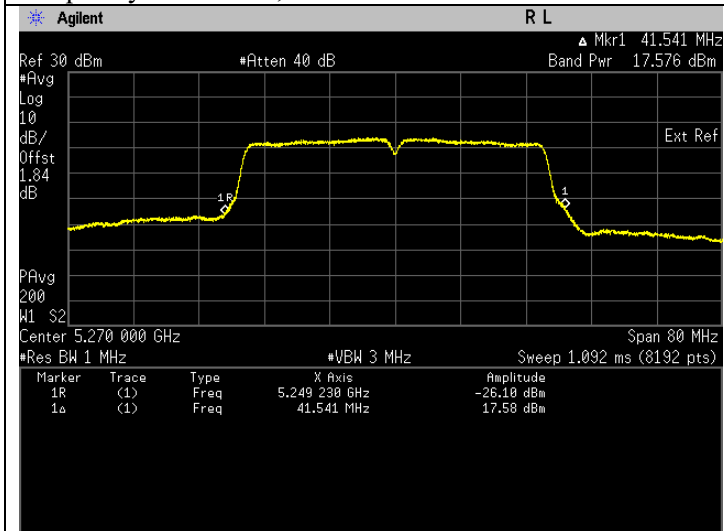
Freq. (MHz)	Test Conditions	Results		
		Power (mW)	Power (dBm)	Status
5190	Mod Type: BPSK, Data Rate: MCS0 (13.5)	12.206	10.866	Pass
5230	Mod Type: BPSK, Data Rate: MCS0 (13.5)	63.826	18.050	Pass
5270	Mod Type: BPSK, Data Rate: MCS0 (13.5)	59.375	17.736	Pass
5310	Mod Type: BPSK, Data Rate: MCS0 (13.5)	9.660	9.850	Pass
5510	Mod Type: BPSK, Data Rate: MCS0 (13.5)	23.823	13.770	Pass
5590	Mod Type: BPSK, Data Rate: MCS0 (13.5)	62.015	17.925	Pass
5670	Mod Type: BPSK, Data Rate: MCS0 (13.5)	56.925	17.553	Pass
5755	Mod Type: BPSK, Data Rate: MCS0 (13.5)	55.233	17.422	Pass
5795	Mod Type: BPSK, Data Rate: MCS0 (13.5)	57.650	17.608	Pass



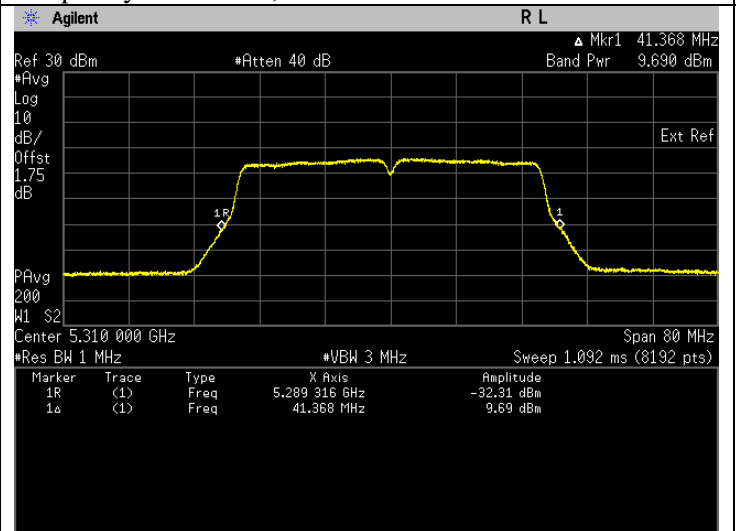
Frequency 5190 MHz, FCC.



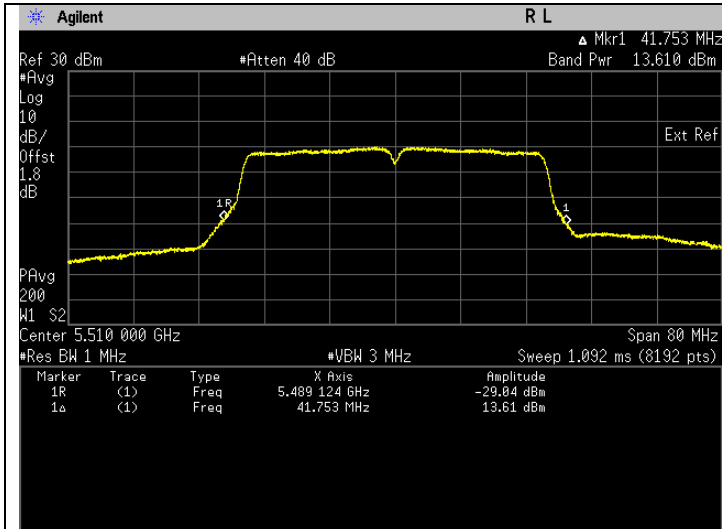
Frequency 5230 MHz, FCC.



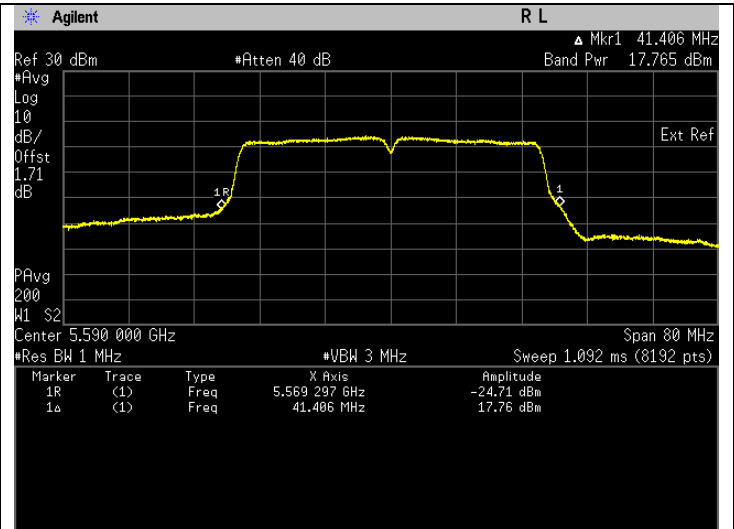
Frequency 5270 MHz, FCC.



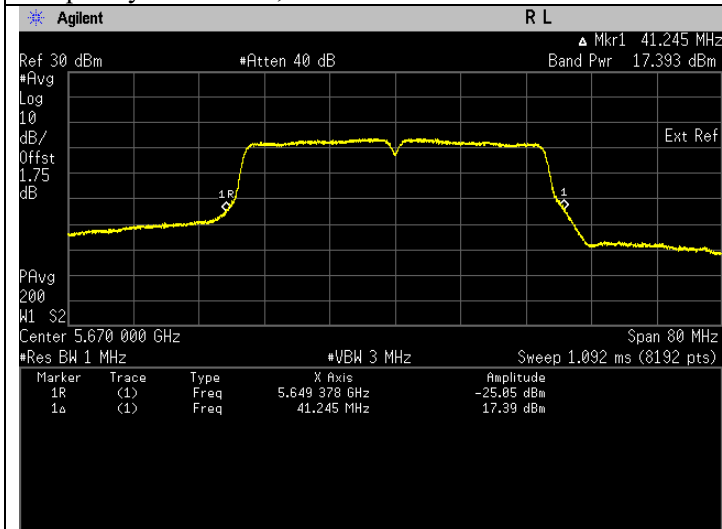
Frequency 5310 MHz, FCC.



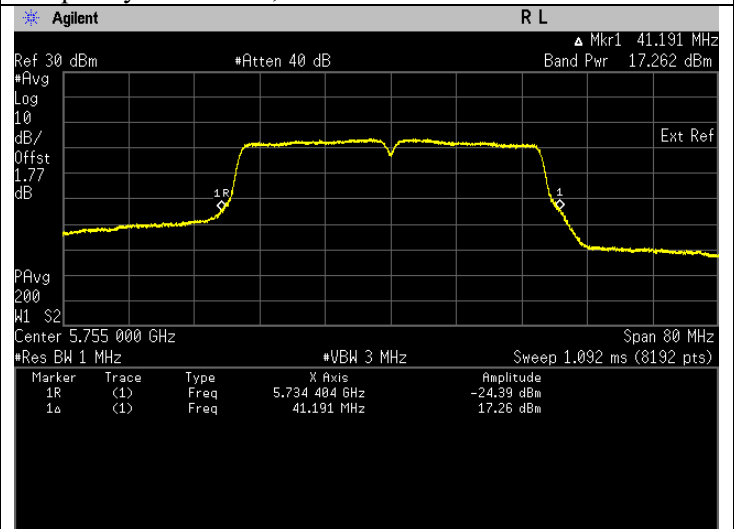
Frequency 5510 MHz, FCC.



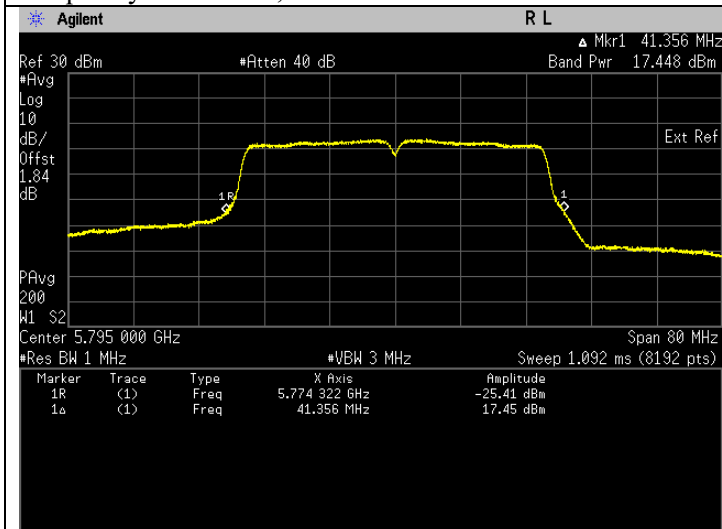
Frequency 5590 MHz, FCC.



Frequency 5670 MHz, FCC.



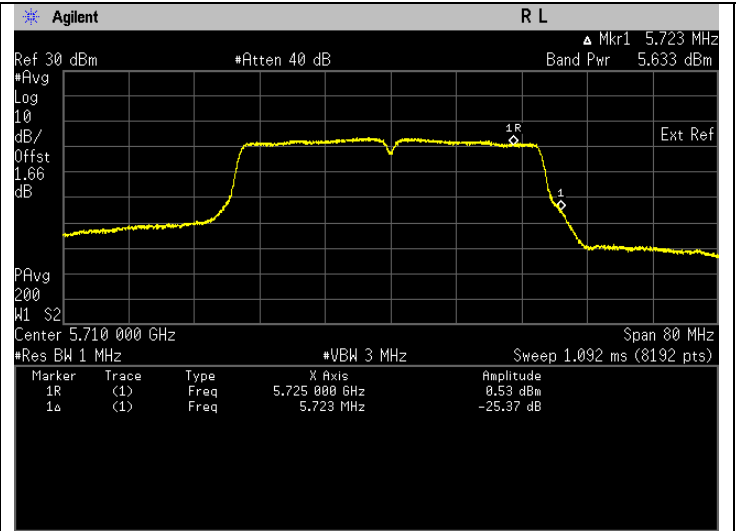
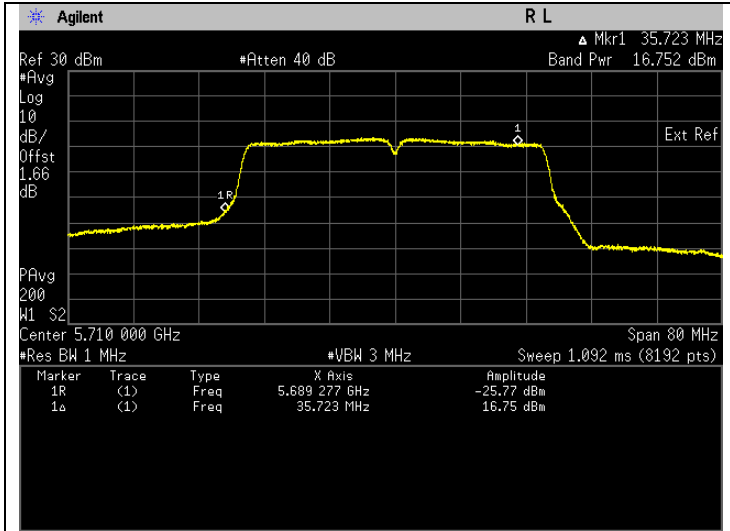
Frequency 5755 MHz, FCC.



Frequency 5795 MHz, FCC.

### Straddle Frequency

Freq. (MHz)	Test Conditions	Results		
		U-NII- 2C		
		Power (mW)	Power (dBm)	Status
5710	Mod Type: BPSK, Data Rate: MCS0 (13.5)	49.113	16.912	Pass
		U-NII-3		
5710	Mod Type: BPSK, Data Rate: MCS0 (13.5)	3.796	5.793	Pass

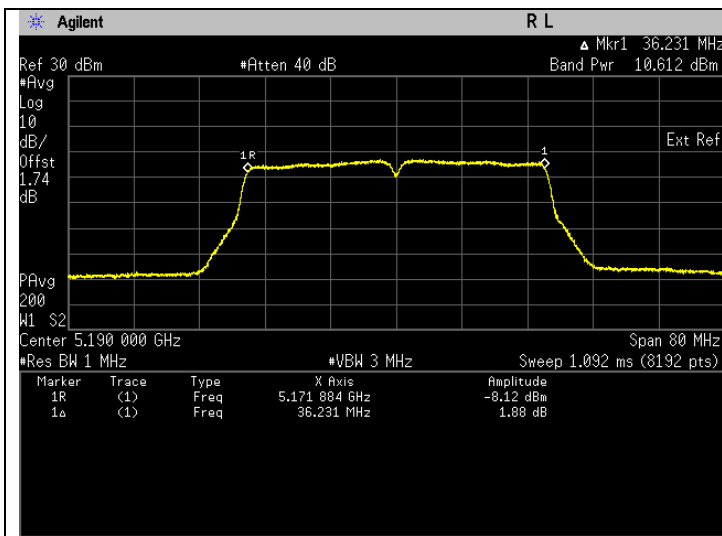


Frequency 5710 MHz, FCC, U-NII-2C. \*Note: The band power is captured before the 5725 MHz.

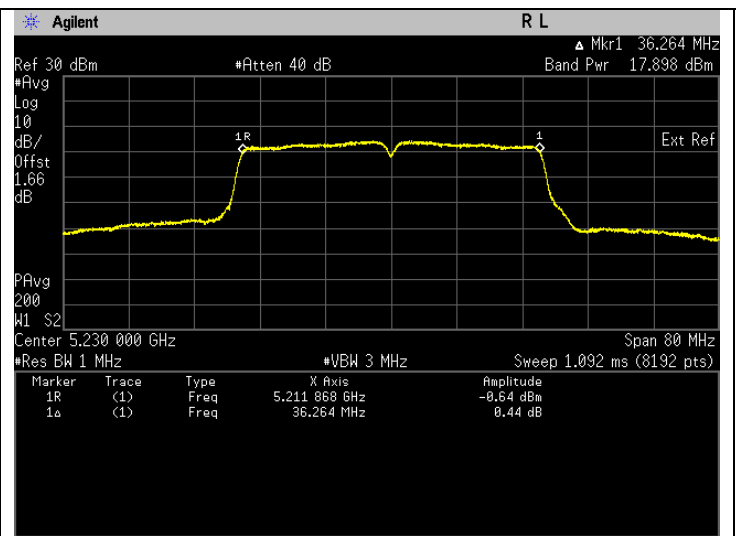
Frequency 5710 MHz, FCC, U-NII-3. \*Note: The band power is captured after the 5725 MHz.

**802.11n (HT40)(99% EBW)**

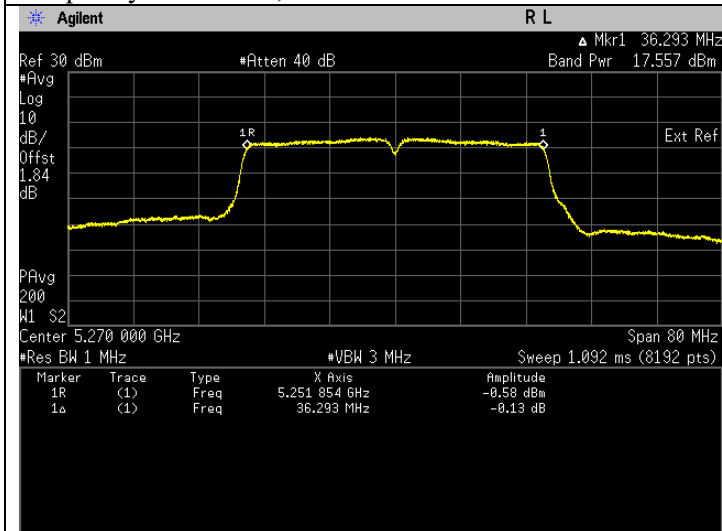
Freq. (MHz)	Test Conditions	Results				
		Power (mW)	Power (dBm)	Status	EIRP (dBm)	Status
5190	Mod Type: BPSK, Data Rate: MCS0 (13.5)	11.945	10.772	Pass	15.372	Pass
5230	Mod Type: BPSK, Data Rate: MCS0 (13.5)	63.944	18.058	Pass	22.658	Pass
5270	Mod Type: BPSK, Data Rate: MCS0 (13.5)	59.115	17.717	Pass	22.317	Pass
5310	Mod Type: BPSK, Data Rate: MCS0 (13.5)	9.587	9.817	Pass	14.417	Pass
5510	Mod Type: BPSK, Data Rate: MCS0 (13.5)	23.594	13.728	Pass	17.028	Pass
5590	Mod Type: BPSK, Data Rate: MCS0 (13.5)	61.873	17.915	Pass	21.215	Pass
5670	Mod Type: BPSK, Data Rate: MCS0 (13.5)	56.325	17.507	Pass	20.807	Pass
5755	Mod Type: BPSK, Data Rate: MCS0 (13.5)	54.563	17.369	Pass	20.469	Pass
5795	Mod Type: BPSK, Data Rate: MCS0 (13.5)	56.964	17.556	Pass	20.656	Pass



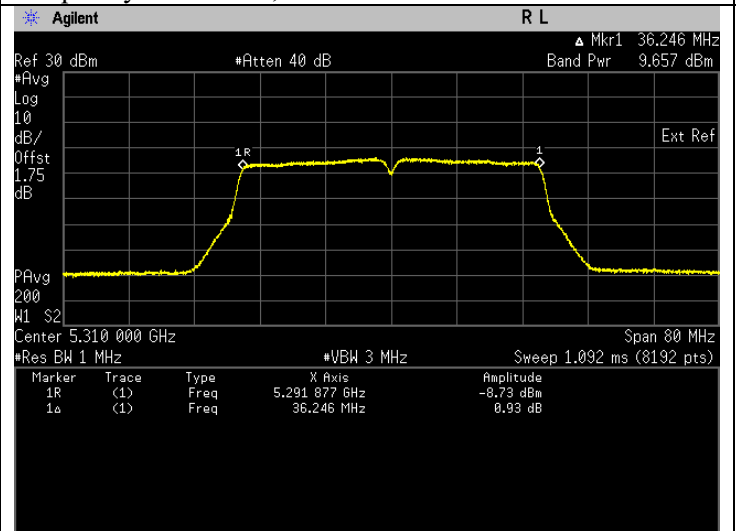
Frequency 5190 MHz, ISED



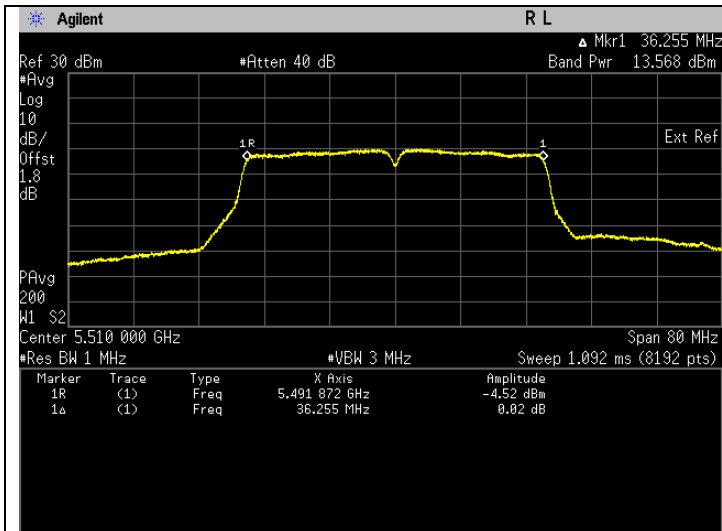
Frequency 5230 MHz, ISED



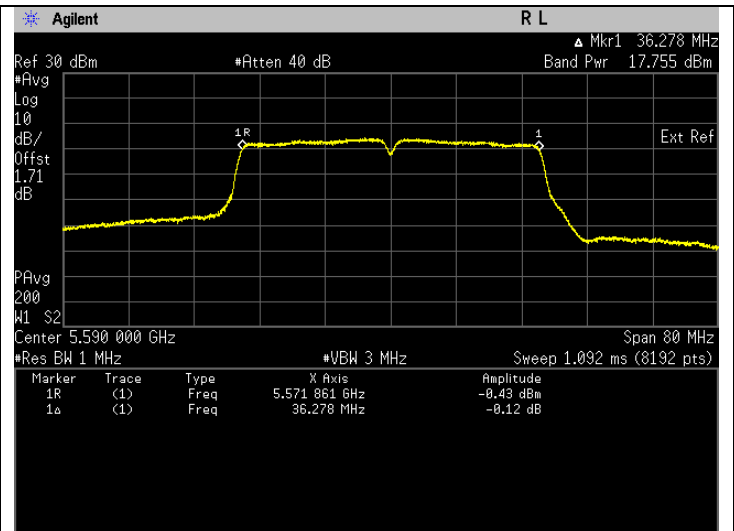
Frequency 5270 MHz, ISED



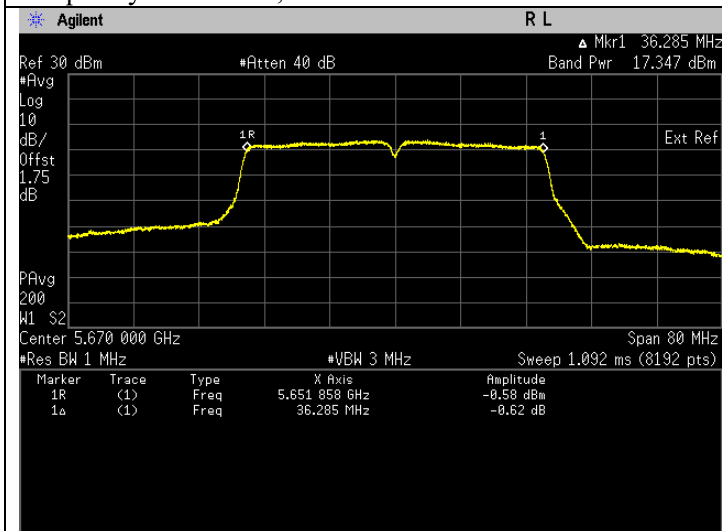
Frequency 5310 MHz, ISED



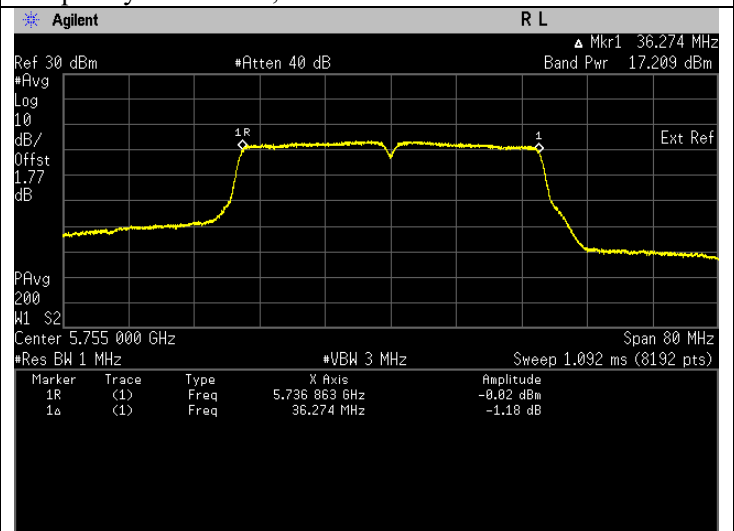
Frequency 5510 MHz, ISED



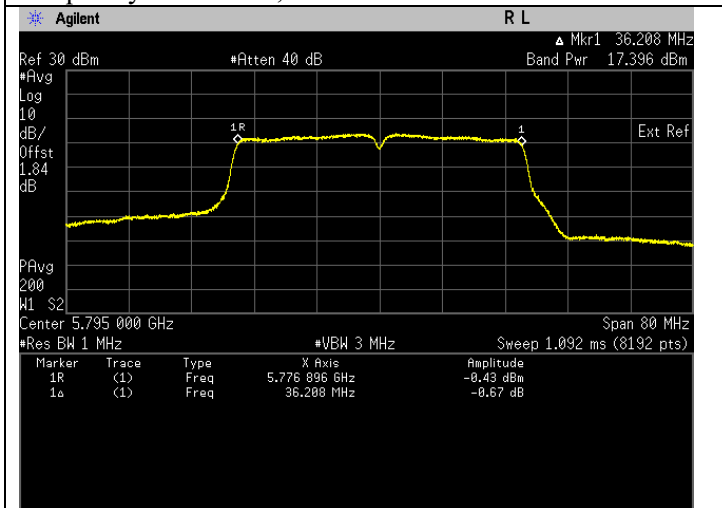
Frequency 5590 MHz, ISED



Frequency 5670 MHz, ISED



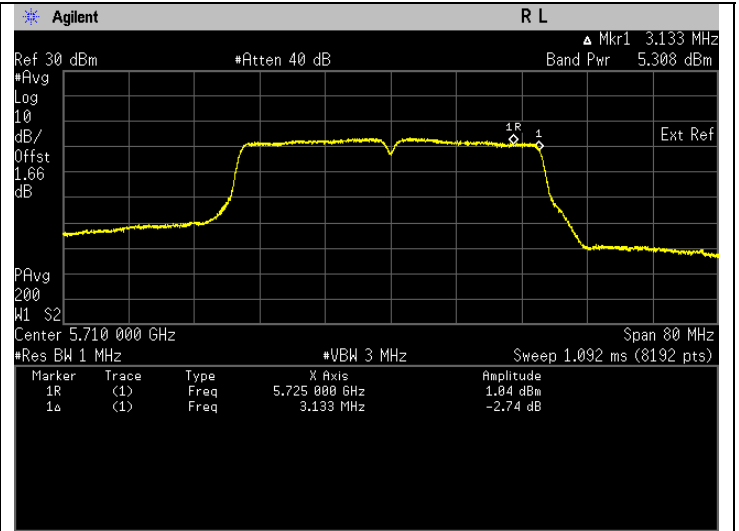
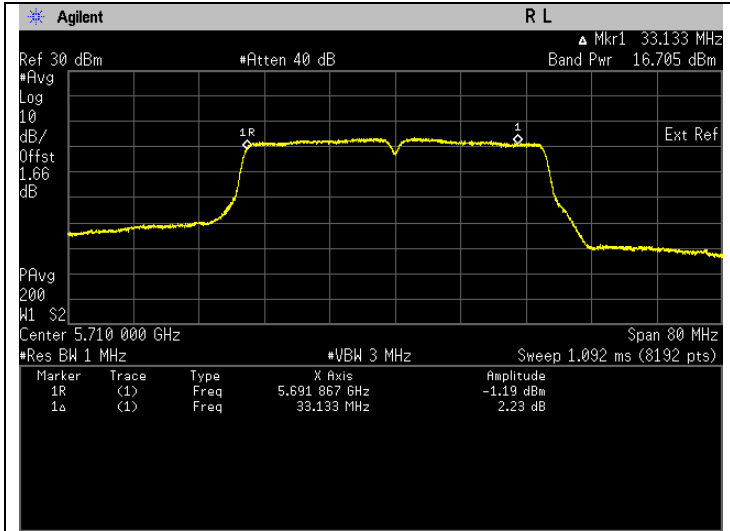
Frequency 5755 MHz, ISED



Frequency 5795 MHz, ISED

### Straddle Frequency

Freq. (MHz)	Test Conditions	Results				
		U-NII- 2C				
		Power (mW)	Power (dBm)	Status	EIRP (dBm)	Status
5710	Mod Type: BPSK, Data Rate: MCS0 (13.5)	48.585	16.865	Pass	20.165	Pass
		U-NII-3				
5710	Mod Type: BPSK, Data Rate: MCS0 (13.5)	3.522	5.468	Pass	8.768	Pass

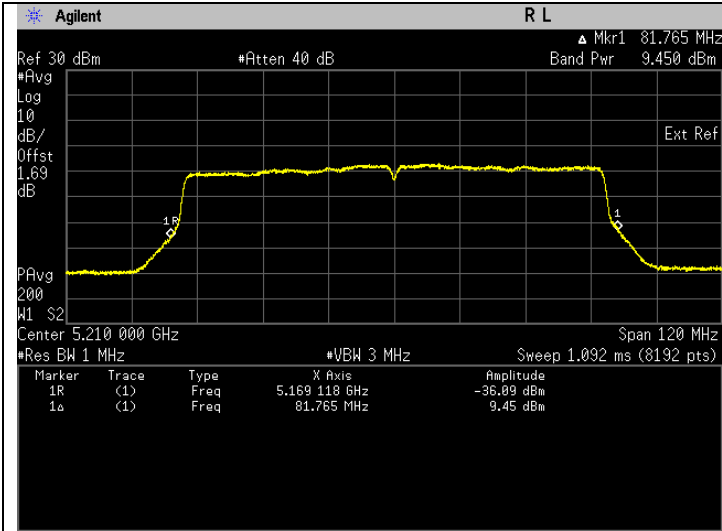


Frequency 5710 MHz, ISED, U-NII-2C. \*Note: The band power is captured before the 5725 MHz.

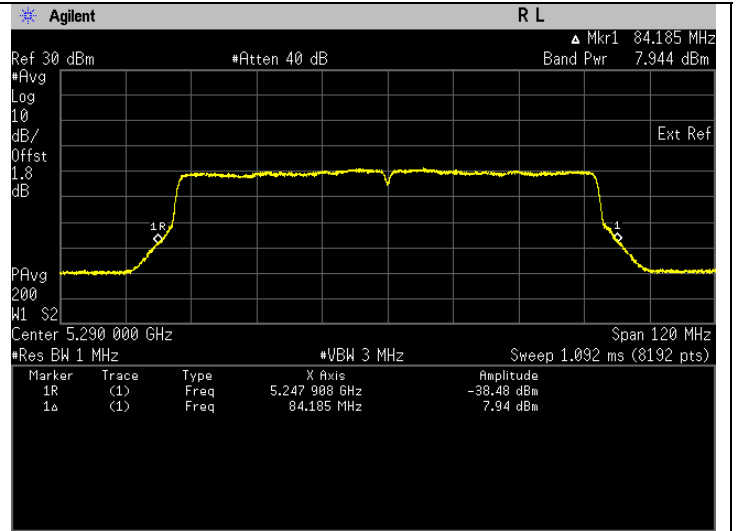
Frequency 5710 MHz, ISED, U-NII-3. \*Note: The band power is captured after the 5725 MHz.

**802.11ac (HT80)(26dB EBW)**

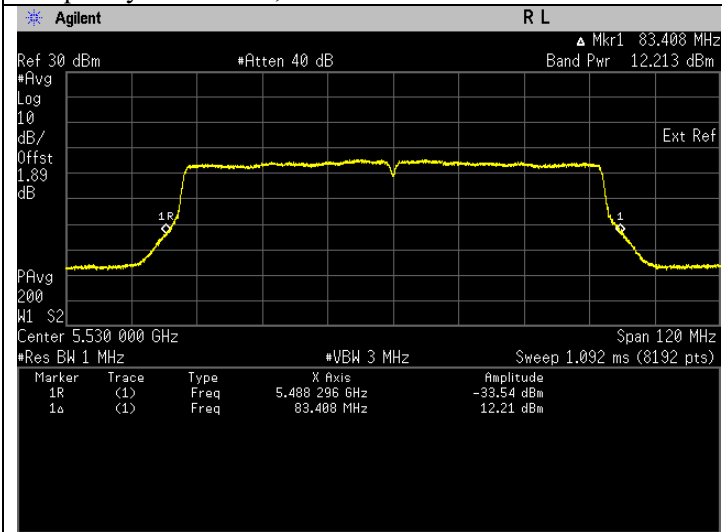
Freq. (MHz)	Test Conditions	Results		
		Power (mW)	Power (dBm)	Status
5210	Mod Type: BPSK, Data Rate: MCS0 (29.3)	9.480	9.768	Pass
5290	Mod Type: BPSK, Data Rate: MCS0 (29.3)	6.702	8.262	Pass
5530	Mod Type: BPSK, Data Rate: MCS0 (29.3)	17.910	12.531	Pass
5610	Mod Type: BPSK, Data Rate: MCS0 (29.3)	60.534	17.820	Pass
5775	Mod Type: BPSK, Data Rate: MCS0 (29.3)	64.849	18.119	Pass



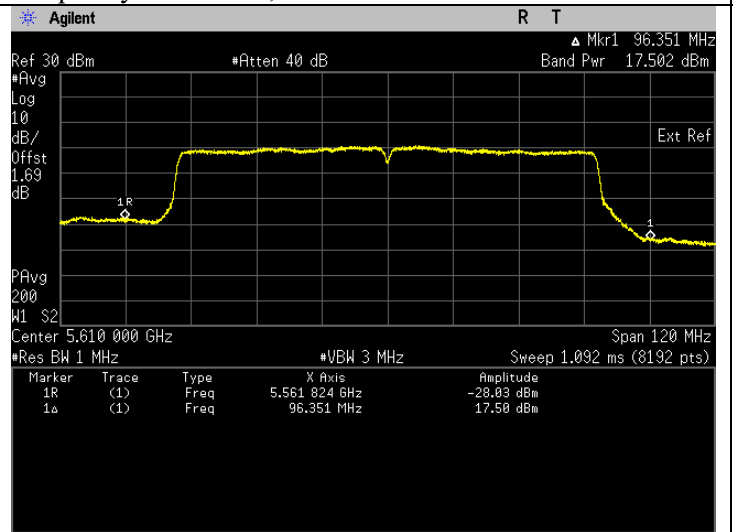
Frequency 5210 MHz, FCC.



Frequency 5290 MHz, FCC.

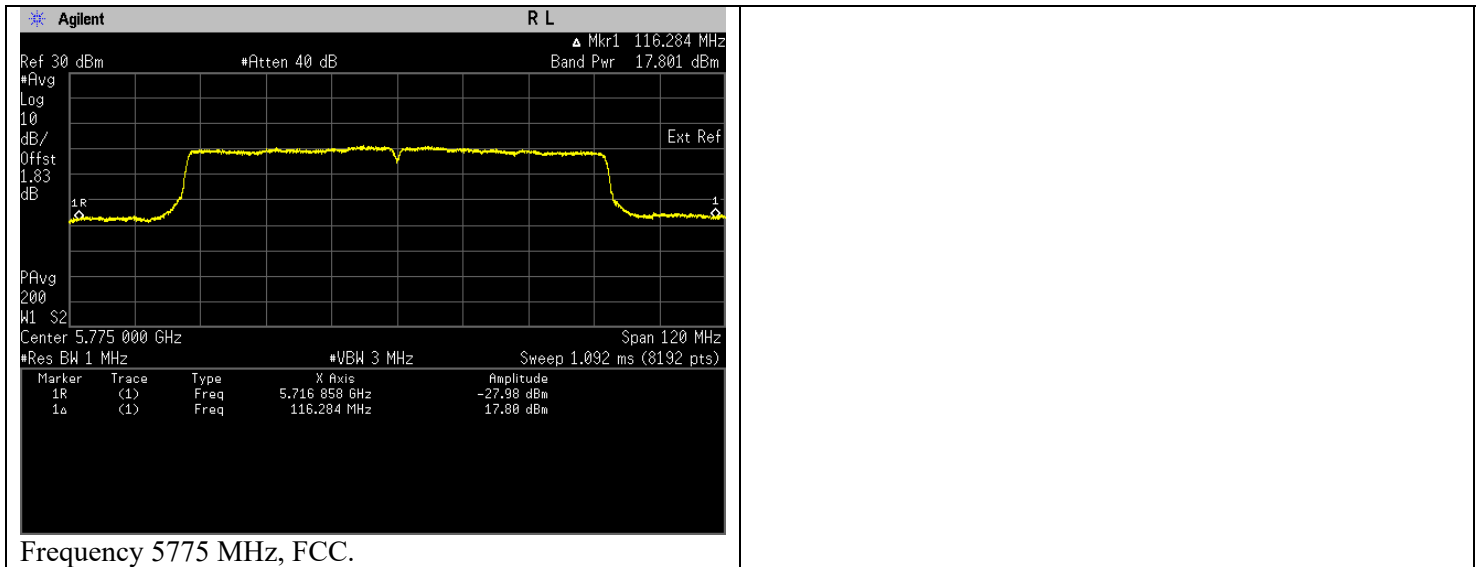


Frequency 5530 MHz, FCC.



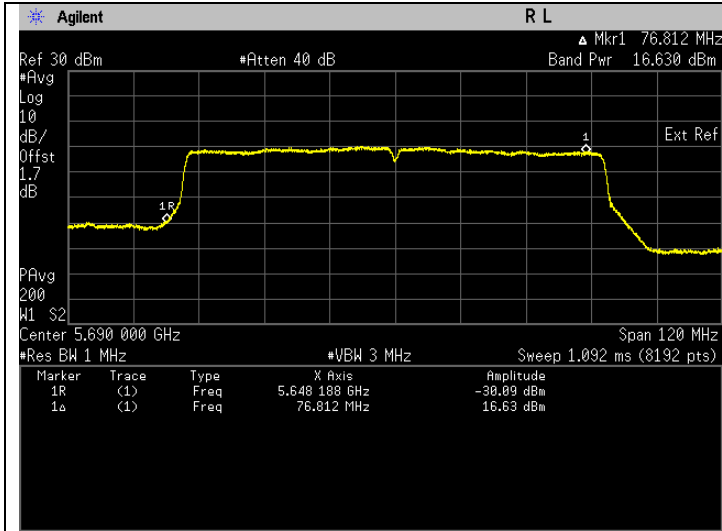
Frequency 5610 MHz, FCC.



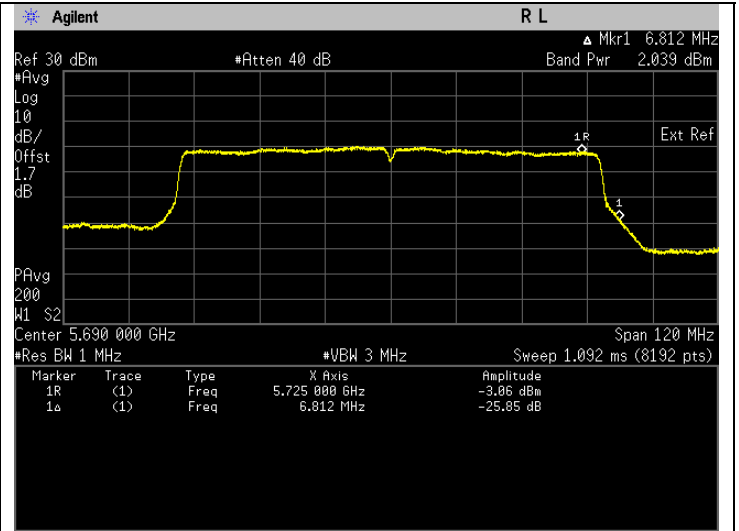


### Straddle Frequency

Freq. (MHz)	Test Conditions	Results		
		U-NII- 2C		
		Power (mW)	Power (dBm)	Status
5690	Mod Type: BPSK, Data Rate: MCS0 (29.3)	49.522	16.948	Pass
		U-NII-3		
5690	Mod Type: BPSK, Data Rate: MCS0 (29.3)	1.721	2.357	Pass



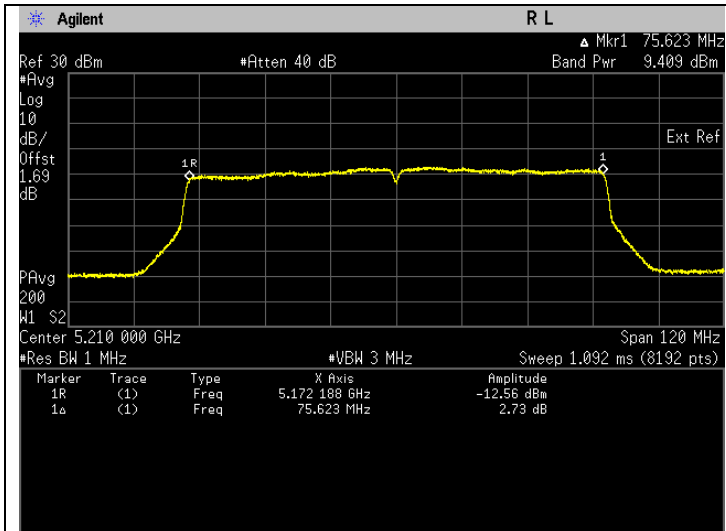
Frequency 5690 MHz, FCC, U-NII-2C. \*Note: The band power is captured before the 5725 MHz.



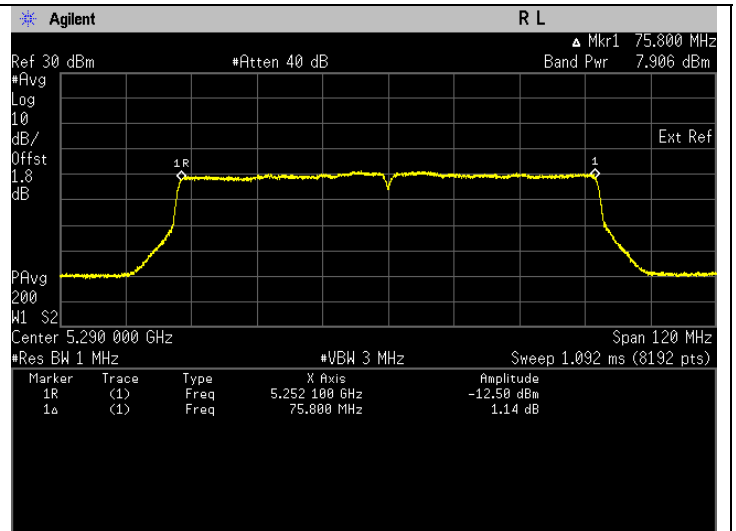
Frequency 5690 MHz, FCC, U-NII-3. \*Note: The band power is captured after the 5725 MHz.

**802.11ac (HT80)(99% EBW)**

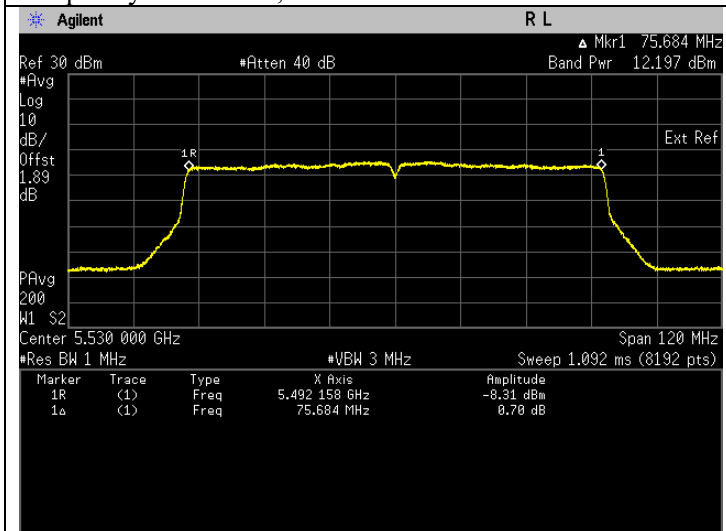
Freq. (MHz)	Test Conditions	Results				
		Power (mW)	Power (dBm)	Status	EIRP (dBm)	Status
5210	Mod Type: BPSK, Data Rate: MCS0 (29.3)	9.391	9.727	Pass	14.327	Pass
5290	Mod Type: BPSK, Data Rate: MCS0 (29.3)	6.644	8.224	Pass	12.824	Pass
5530	Mod Type: BPSK, Data Rate: MCS0 (29.3)	17.844	12.515	Pass	15.815	Pass
5610	Mod Type: BPSK, Data Rate: MCS0 (29.3)	59.910	17.775	Pass	21.075	Pass
5775	Mod Type: BPSK, Data Rate: MCS0 (29.3)	64.476	18.094	Pass	21.194	Pass



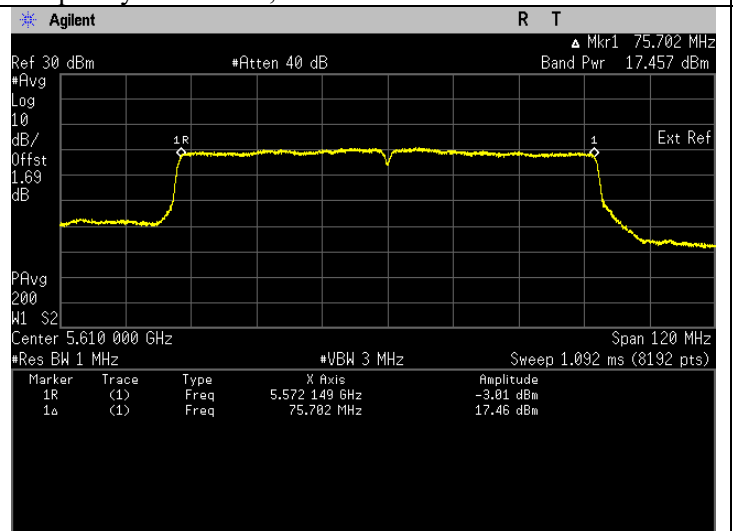
Frequency 5210 MHz, ISED



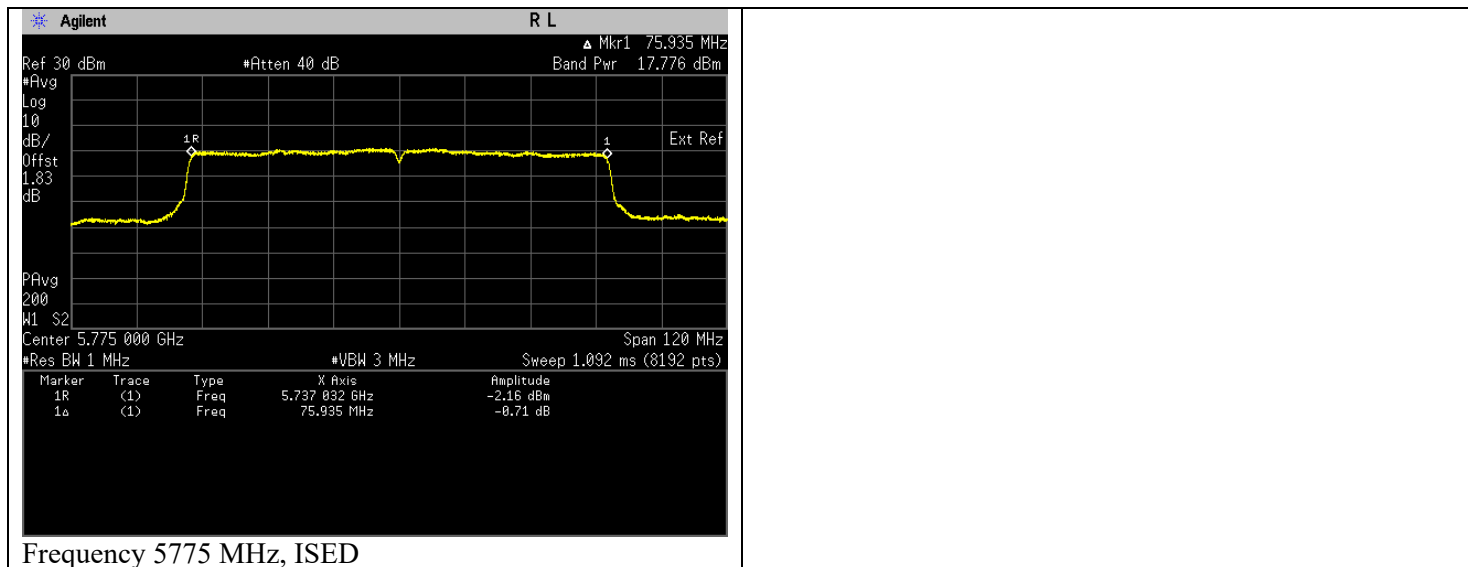
Frequency 5290 MHz, ISED



Frequency 5530 MHz, ISED

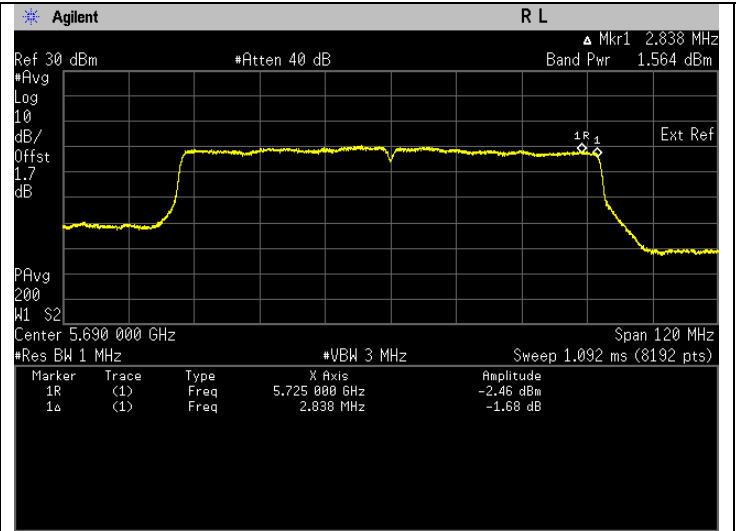
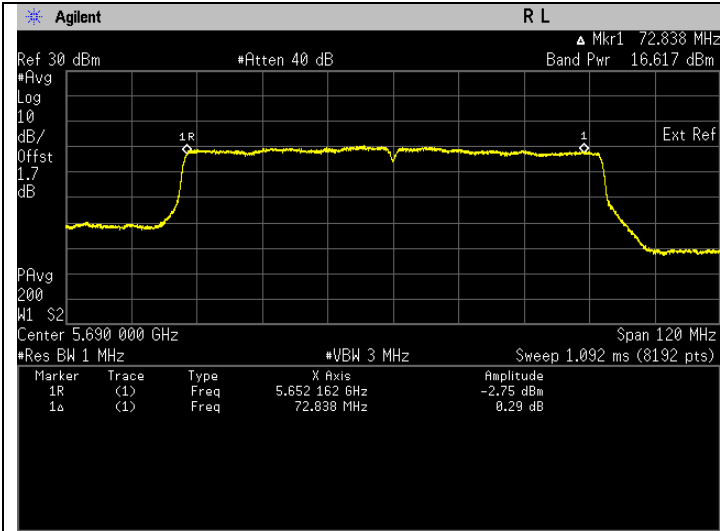


Frequency 5610 MHz, ISED



### Straddle Frequency

Freq. (MHz)	Test Conditions	Results				
		U-NII- 2C				
		Power (mW)	Power (dBm)	Status	EIRP (dBm)	Status
5690	Mod Type: BPSK, Data Rate: MCS0 (29.3)	49.374	16.935	Pass	20.235	Pass
U-NII-3						
5690	Mod Type: BPSK, Data Rate: MCS0 (29.3)	1.542	1.882	Pass	5.182	Pass

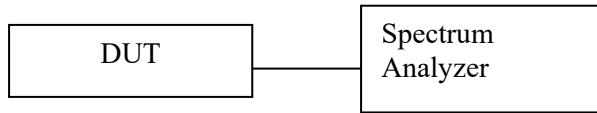


Frequency 5690 MHz, ISED, U-NII-2C. \*Note: The band power is captured before the 5725 MHz.

Frequency 5690 MHz, ISED, 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 ≥ 3·RBW
  - Detector = power averaging (RMS)
  - Trace = Max hold
  - Number of points in sweep ≥ 2 × span / RBW
  - Sweep time = auto
  - Trace average at least 100 traces in power averaging (rms) mode
- e) Use the peak search function on the instrument to find the peak of the spectrum and record its value.
- f) Add 10 log (1/x), where x is the duty cycle, to the peak of the spectrum.
- g) The measurement method follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04 under clause F) Method SA-2.
- h) The Maximum power spectral density results are included duty cycle correction factor.

#### 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

**Additional Info**

Antenna Type	Gain (dBi)
UNII1, UNII2A	4.6
UNII2C	3.3
UNII3	3.1
Duty Cycle Correction Factor	
802.11a	0.075
802.11n20	0.078
802.11n40	0.160
802.11ac80	0.318

7.3.3. Test Data

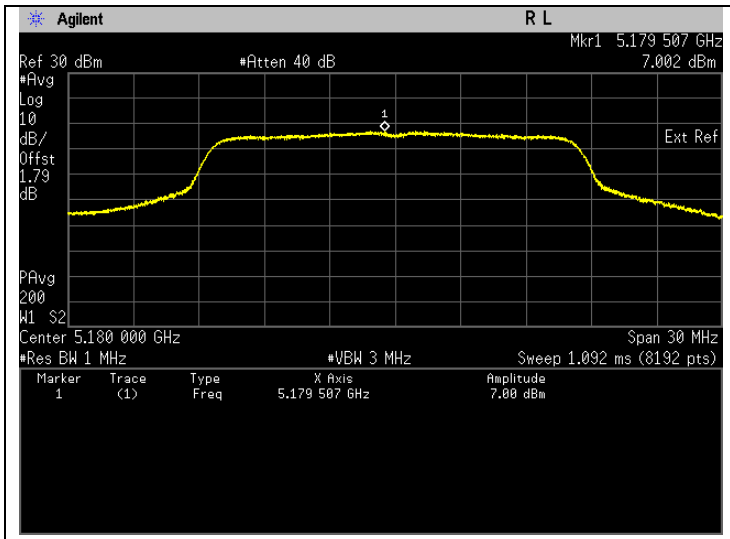
**802.11a (26dB EBW)**

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
5180	Mod Type: BPSK, Data Rate: 6	7.077	Pass
5220	Mod Type: BPSK, Data Rate: 6	7.821	Pass
5240	Mod Type: BPSK, Data Rate: 6	7.859	Pass
5260	Mod Type: BPSK, Data Rate: 6	7.614	Pass
5300	Mod Type: BPSK, Data Rate: 6	7.355	Pass
5320	Mod Type: BPSK, Data Rate: 6	7.003	Pass
5500	Mod Type: BPSK, Data Rate: 6	2.412	Pass
5580	Mod Type: BPSK, Data Rate: 6	7.671	Pass
5700	Mod Type: BPSK, Data Rate: 6	7.102	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status
5745	Mod Type: BPSK, Data Rate: 6	4.029	Pass
5785	Mod Type: BPSK, Data Rate: 6	4.117	Pass
5825	Mod Type: BPSK, Data Rate: 6	4.495	Pass

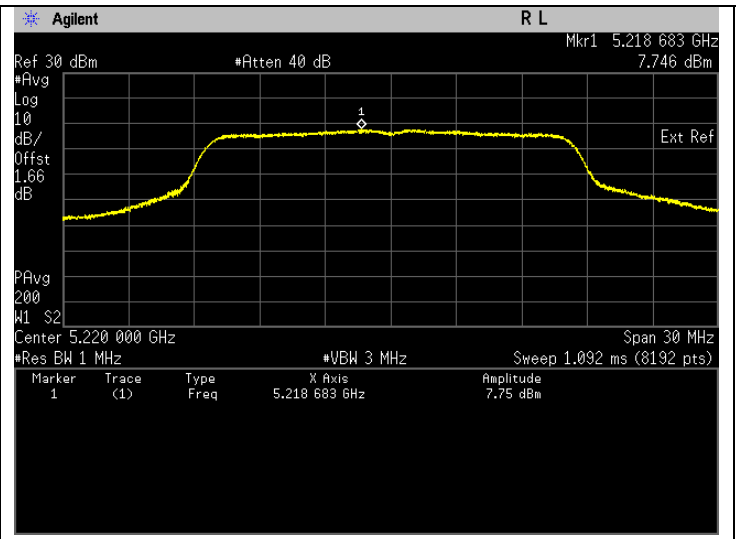
**802.11a (99% EBW)**

Freq. (MHz)	Test Conditions	Results			
		Power/Frequency (dBm/MHz)	Status	EIRP (dBm/MHz)	Status
5180	Mod Type: BPSK, Data Rate: 6	7.077	Pass	11.677	Pass
5220	Mod Type: BPSK, Data Rate: 6	7.821	Pass	12.421	Pass
5240	Mod Type: BPSK, Data Rate: 6	7.859	Pass	12.459	Pass
5260	Mod Type: BPSK, Data Rate: 6	7.614	Pass	12.214	Pass
5300	Mod Type: BPSK, Data Rate: 6	7.355	Pass	11.955	Pass
5320	Mod Type: BPSK, Data Rate: 6	7.003	Pass	11.603	Pass
5500	Mod Type: BPSK, Data Rate: 6	2.412	Pass	5.712	Pass
5580	Mod Type: BPSK, Data Rate: 6	7.671	Pass	10.971	Pass
5700	Mod Type: BPSK, Data Rate: 6	7.102	Pass	10.402	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status		
5745	Mod Type: BPSK, Data Rate: 6	4.029	Pass	7.129	Pass
5785	Mod Type: BPSK, Data Rate: 6	4.117	Pass	7.217	Pass
5825	Mod Type: BPSK, Data Rate: 6	4.495	Pass	7.595	Pass

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

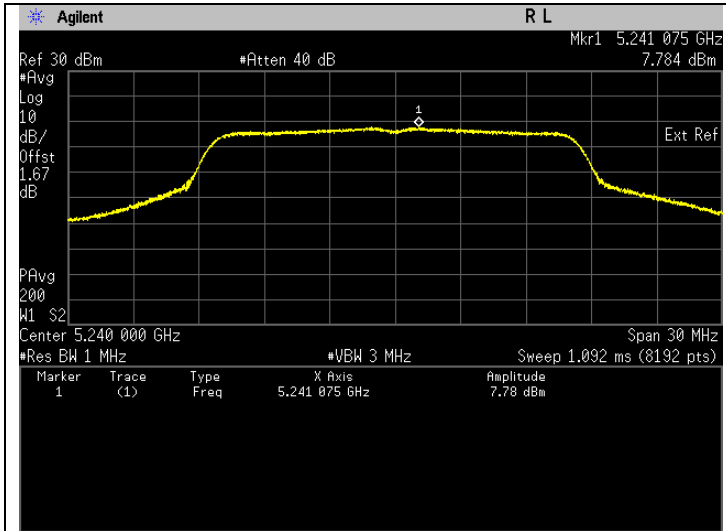


Frequency 5180 MHz, FCC & ISED.

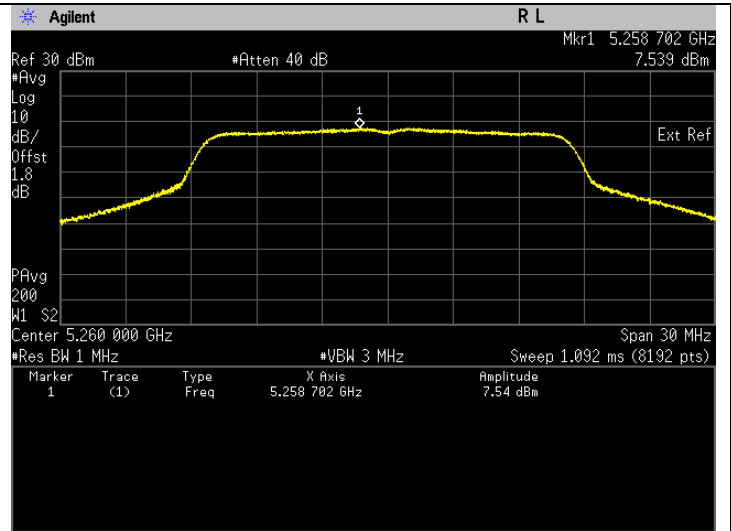


Frequency 5220 MHz, FCC & ISED.

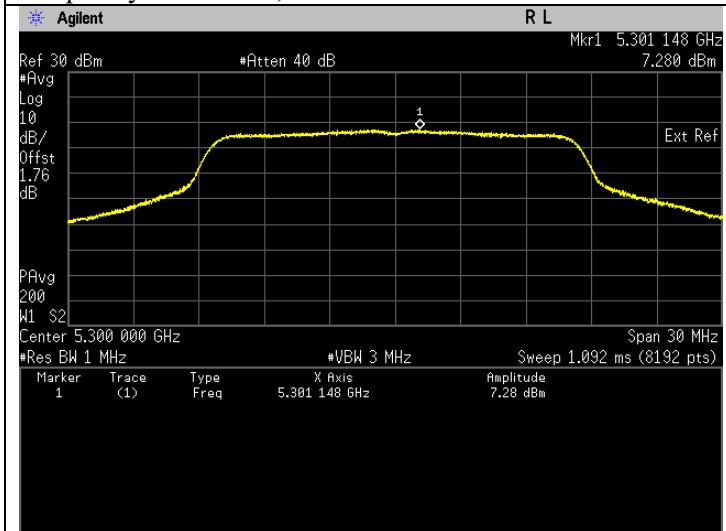




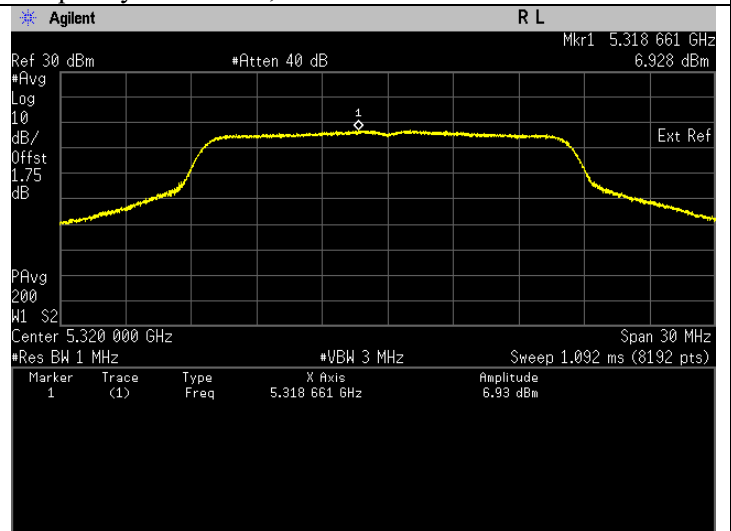
Frequency 5240 MHz, FCC & ISSED.



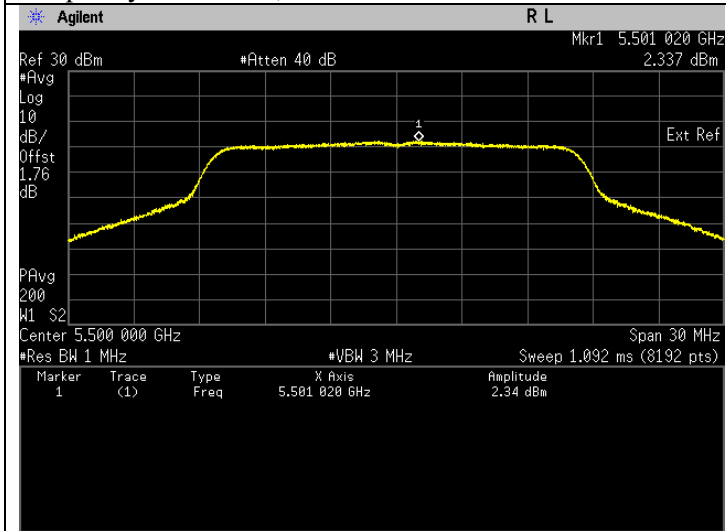
Frequency 5260 MHz, FCC & ISSED.



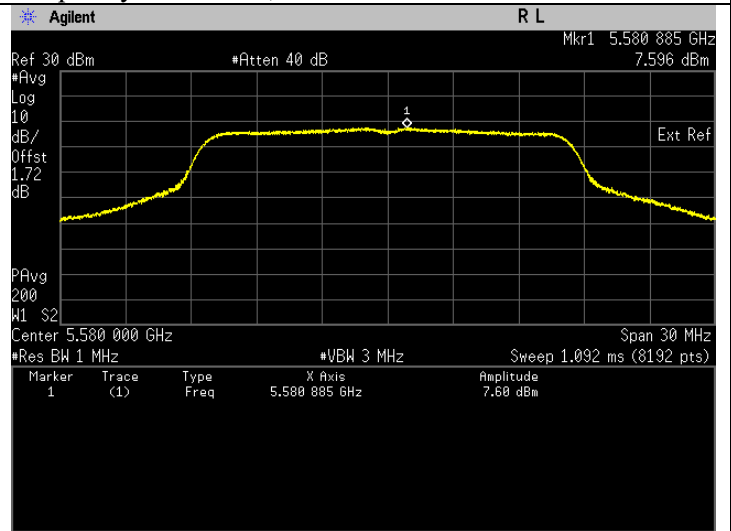
Frequency 5300 MHz, FCC & ISSED.



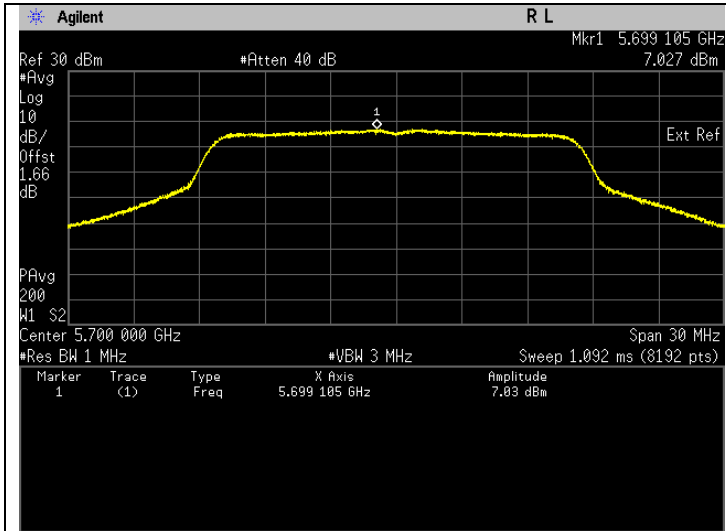
Frequency 5320 MHz, FCC & ISSED.



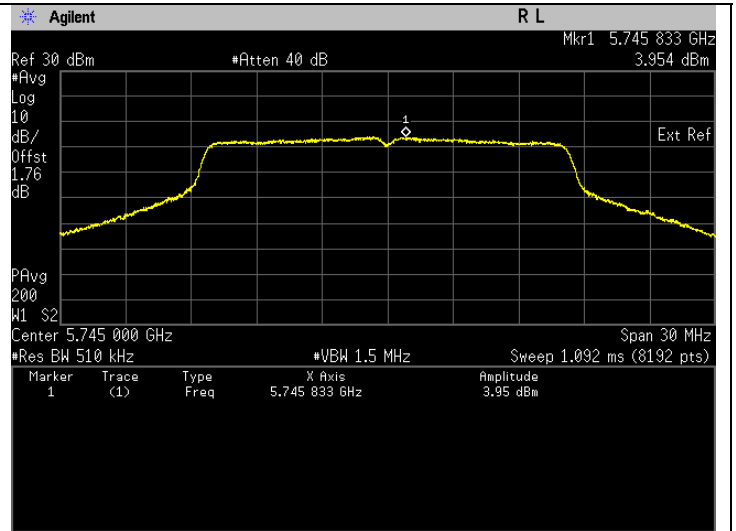
Frequency 5500 MHz, FCC & ISSED.



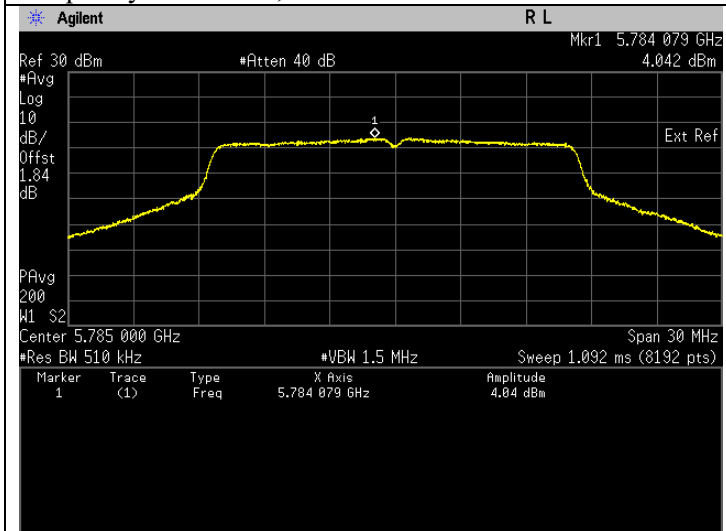
Frequency 5580 MHz, FCC & ISSED.



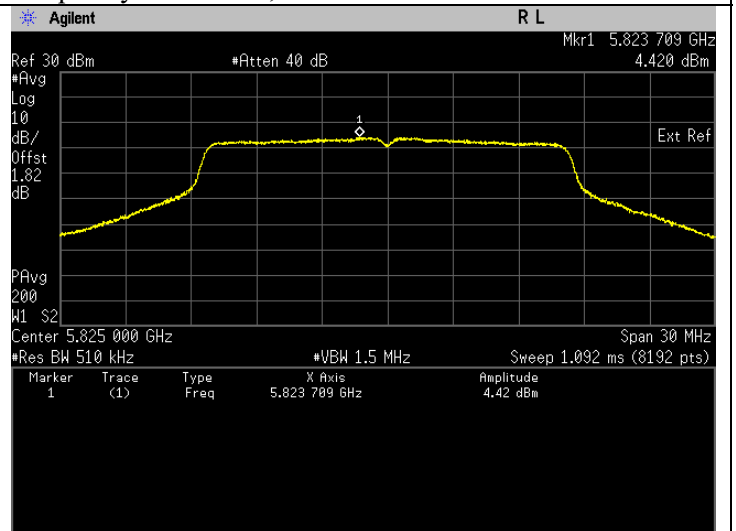
Frequency 5700 MHz, FCC & ISSED.



Frequency 5745 MHz, FCC & ISSED.



Frequency 5785 MHz, FCC & ISSED.



Frequency 5825 MHz, FCC & ISSED.

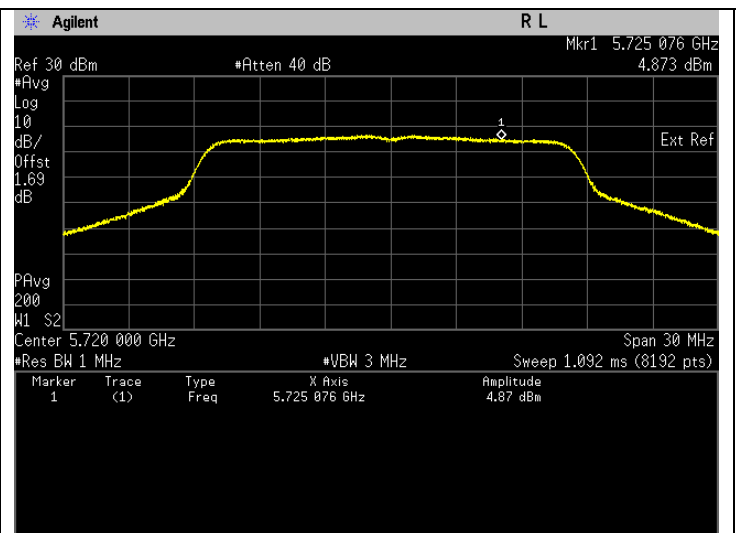
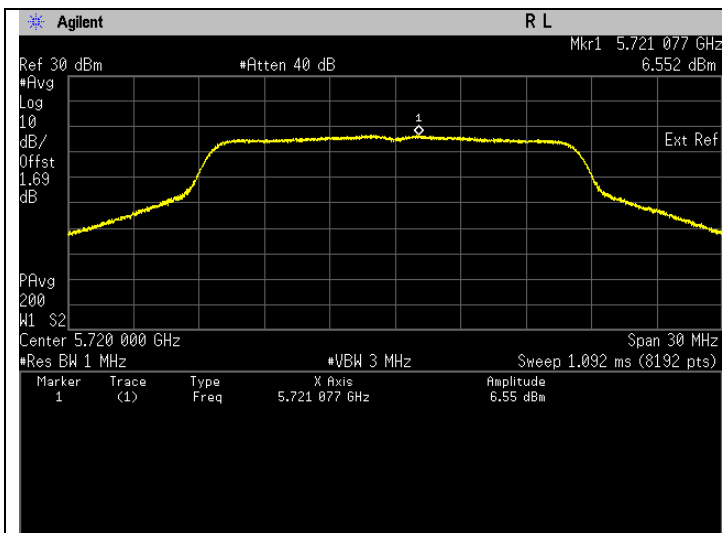
**Straddle Frequency for 802.11a (26dB EBW)**

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
		U-NII- 2C	
5720	Mod Type: BPSK, Data Rate: 6	6.627	Pass
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
		5720	Mod Type: BPSK, Data Rate: 6

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

**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.

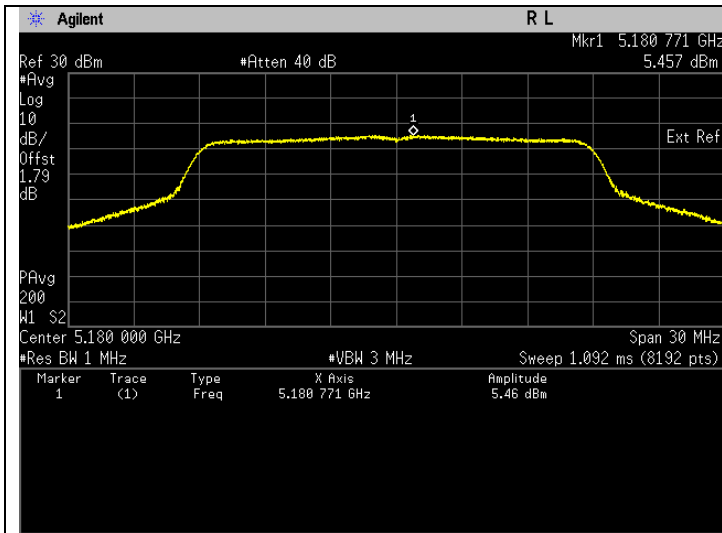
**802.11n (HT20)(26dB EBW)**

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	5.535	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.472	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.373	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.163	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.874	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	5.838	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.746	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.352	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	5.765	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	3.932	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	4.851	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	3.981	Pass

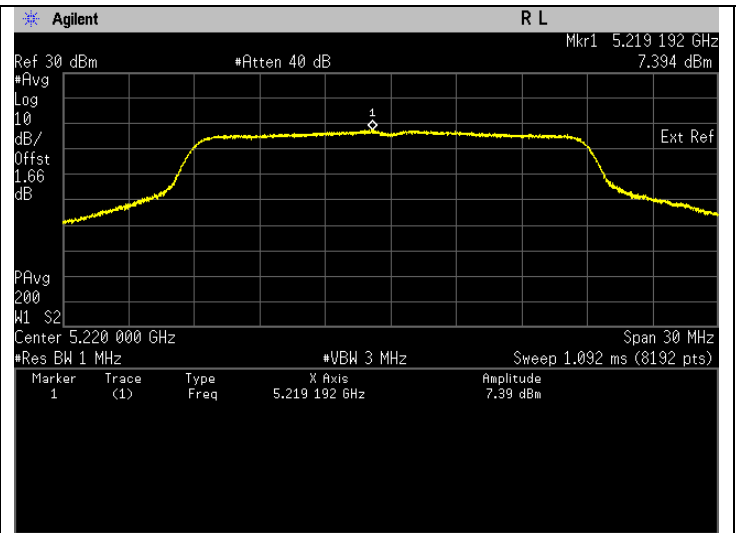
**802.11n (HT20)(99% EBW)**

Freq. (MHz)	Test Conditions	Results			
		Power/Frequency (dBm/MHz)	Status	EIRP (dBm/MHz)	Status
5180	Mod Type: BPSK, Data Rate: MCS0 (6.5)	5.535	Pass	10.135	Pass
5220	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.472	Pass	12.072	Pass
5240	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.373	Pass	11.973	Pass
5260	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.163	Pass	11.763	Pass
5300	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.874	Pass	12.474	Pass
5320	Mod Type: BPSK, Data Rate: MCS0 (6.5)	5.838	Pass	10.438	Pass
5500	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.746	Pass	11.046	Pass
5580	Mod Type: BPSK, Data Rate: MCS0 (6.5)	7.352	Pass	10.652	Pass
5700	Mod Type: BPSK, Data Rate: MCS0 (6.5)	5.765	Pass	9.065	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status		
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	3.932	Pass	7.032	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	4.851	Pass	7.951	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	3.981	Pass	7.081	Pass

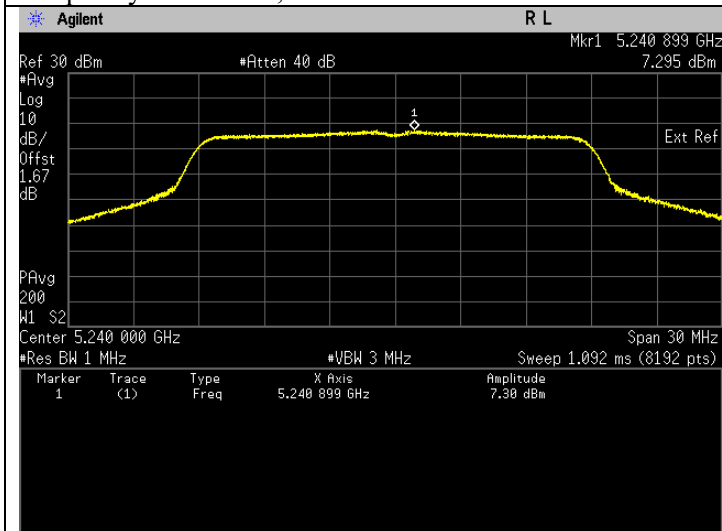
**Plots for 802.11n (HT20) (26dB EBW & 99% EBW)**



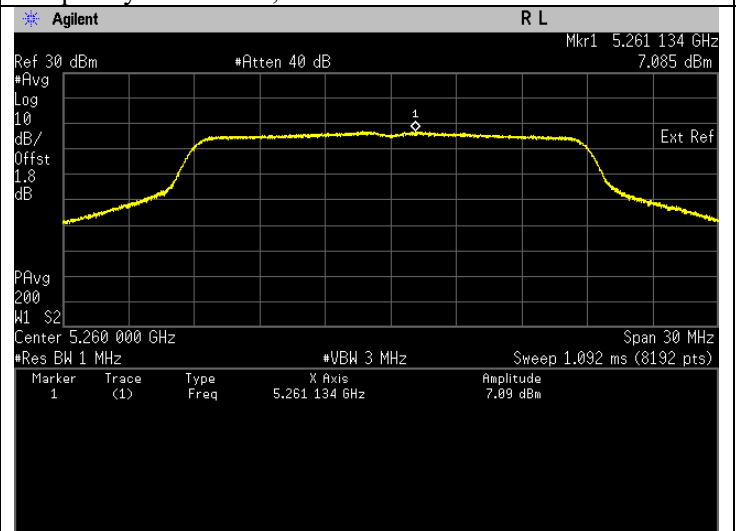
Frequency 5180 MHz, FCC & ISSED.



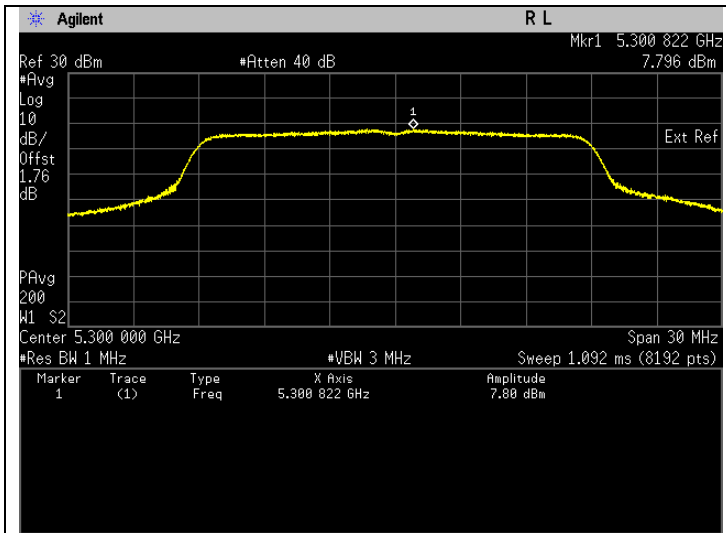
Frequency 5220 MHz, FCC & ISSED.



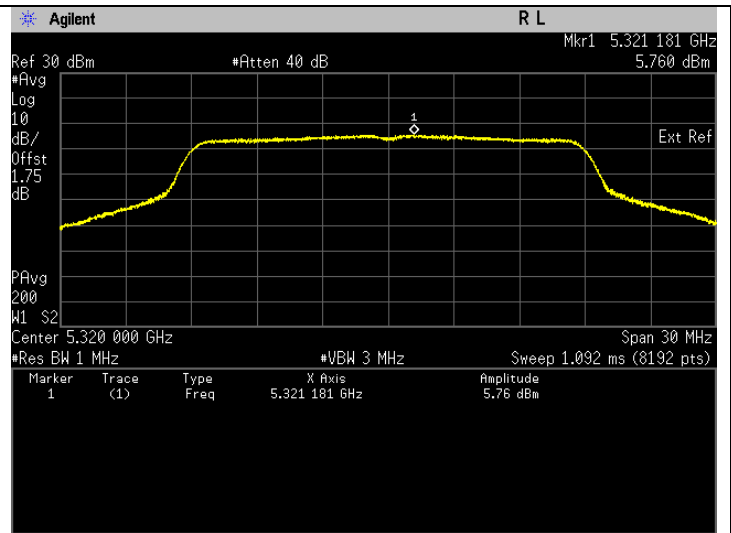
Frequency 5240 MHz, FCC & ISSED.



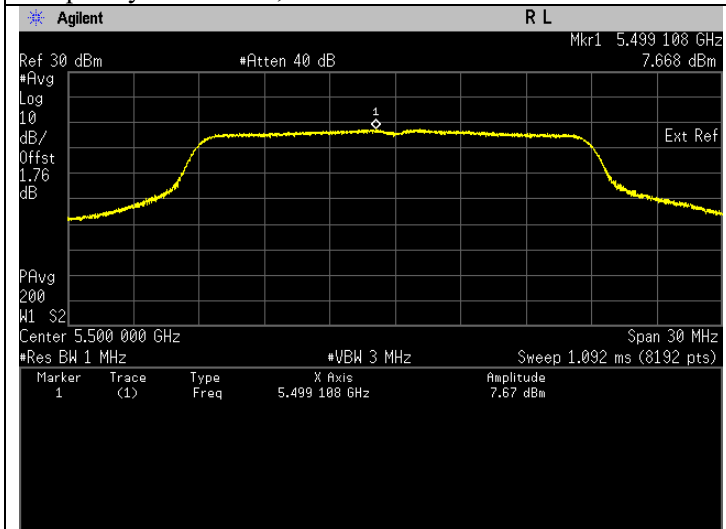
Frequency 5260 MHz, FCC & ISSED.



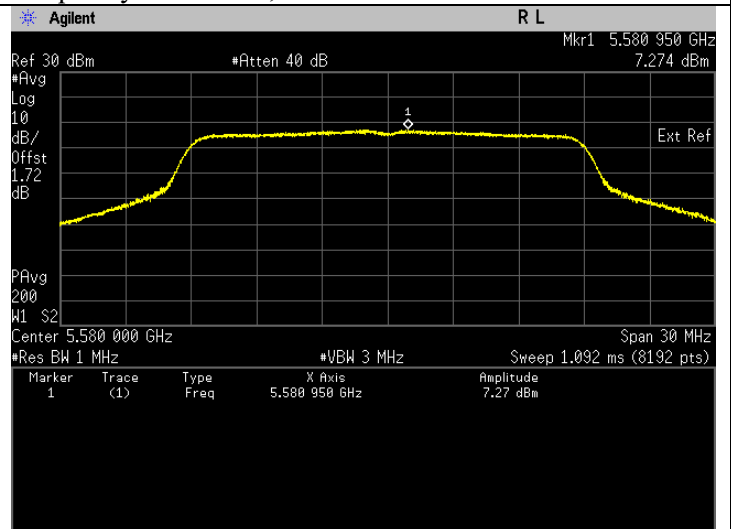
Frequency 5300 MHz, FCC & ISSED.



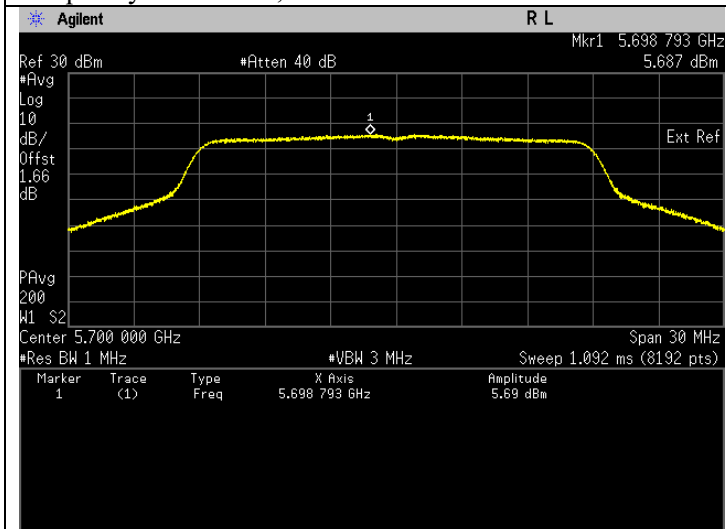
Frequency 5320 MHz, FCC & ISSED.



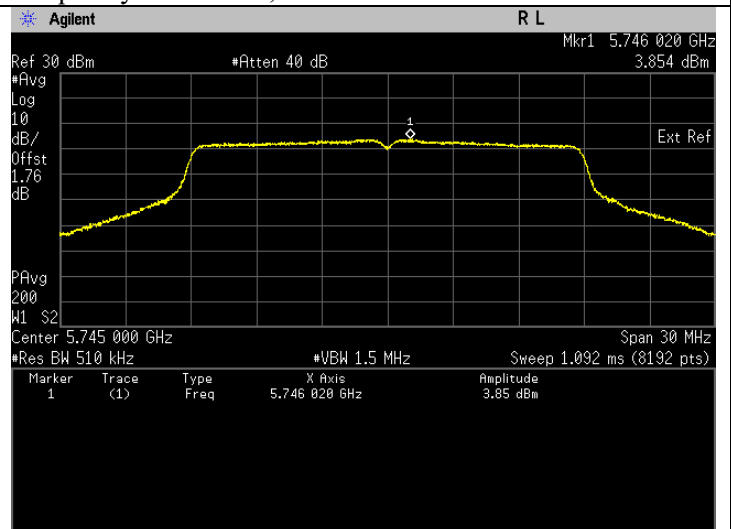
Frequency 5500 MHz, FCC & ISSED.



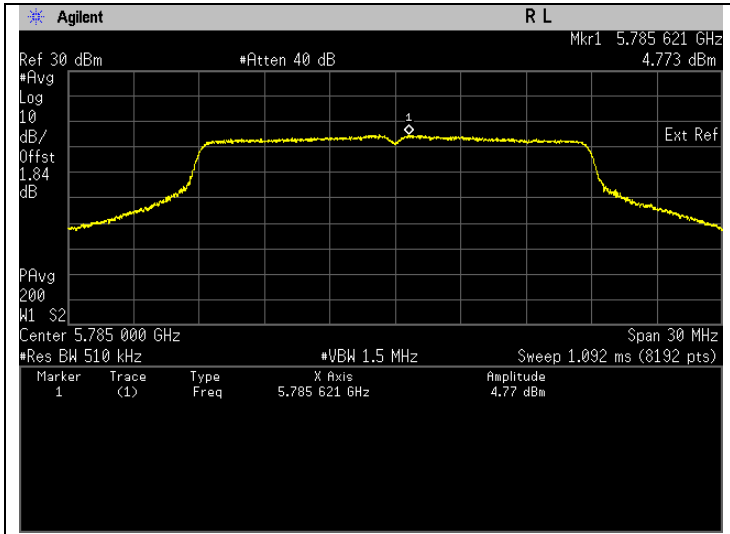
Frequency 5580 MHz, FCC & ISSED.



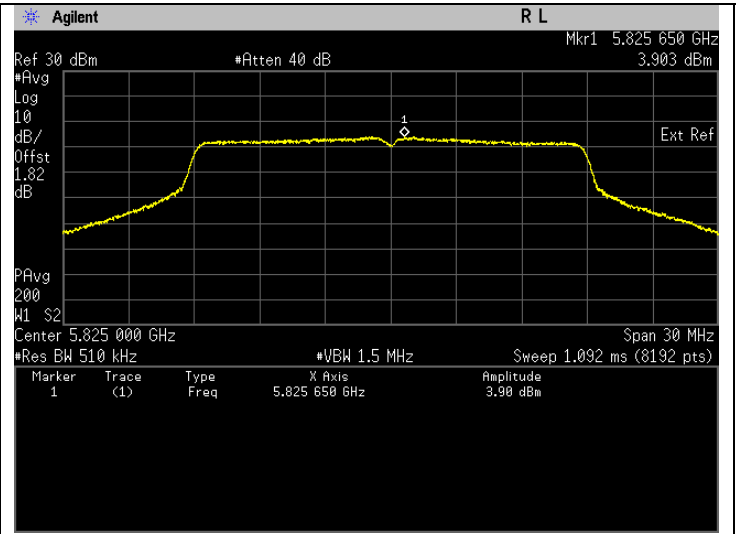
Frequency 5700 MHz, FCC & ISSED.



Frequency 5745 MHz, FCC & ISSED.



Frequency 5785 MHz, FCC & ISED.



Frequency 5825 MHz, FCC & ISED.

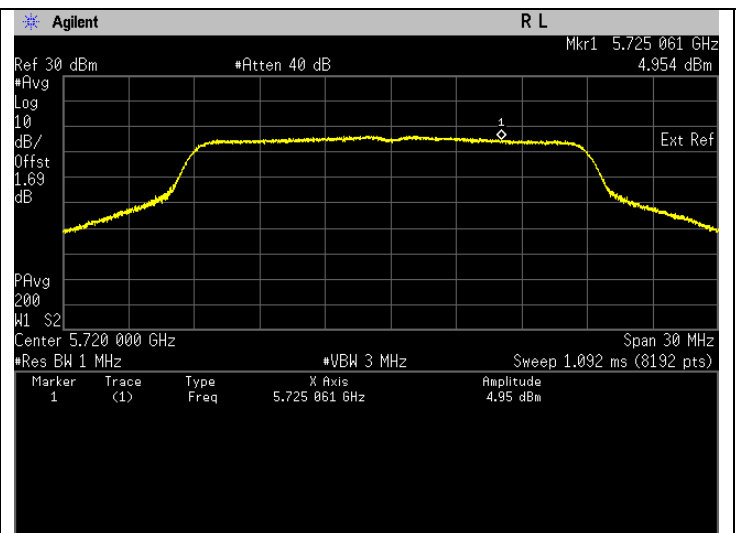
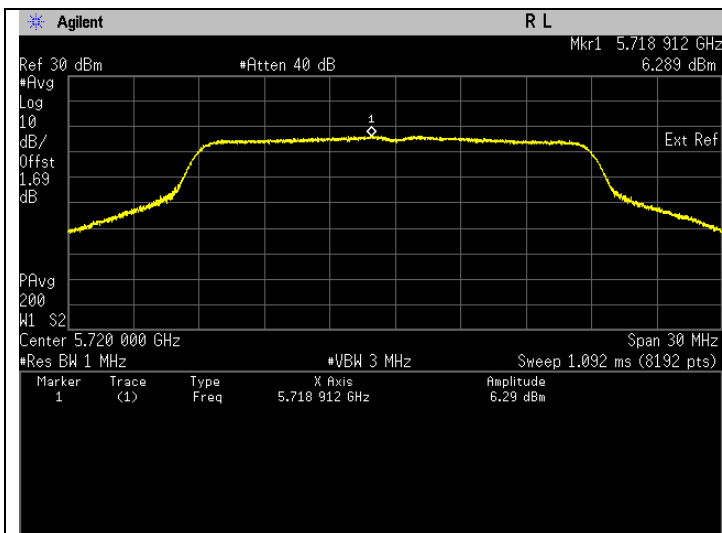
**Straddle Frequency for 802.11n (HT20) (26dB EBW)**

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	6.367	Pass
		U-NII- 2C	
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	5.032	Pass

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

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	6.367	Pass
		U-NII- 2C	
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	5.032	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.



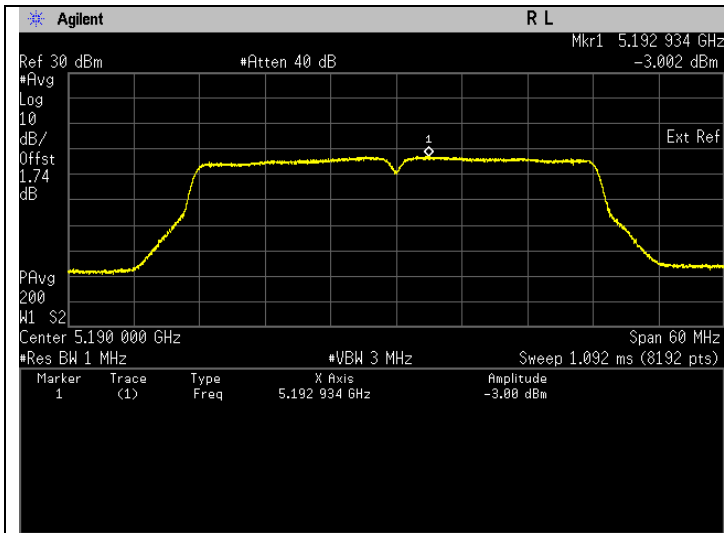
**802.11n (HT40) (26dB EBW)**

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
5190	Mod Type: BPSK, Data Rate: MCS0 (13.5)	-2.842	Pass
5230	Mod Type: BPSK, Data Rate: MCS0 (13.5)	4.735	Pass
5270	Mod Type: BPSK, Data Rate: MCS0 (13.5)	4.151	Pass
5310	Mod Type: BPSK, Data Rate: MCS0 (13.5)	-3.661	Pass
5510	Mod Type: BPSK, Data Rate: MCS0 (13.5)	0.071	Pass
5590	Mod Type: BPSK, Data Rate: MCS0 (13.5)	4.466	Pass
5670	Mod Type: BPSK, Data Rate: MCS0 (13.5)	3.960	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status
5755	Mod Type: BPSK, Data Rate: MCS0 (13.5)	0.865	Pass
5795	Mod Type: BPSK, Data Rate: MCS0 (13.5)	1.044	Pass

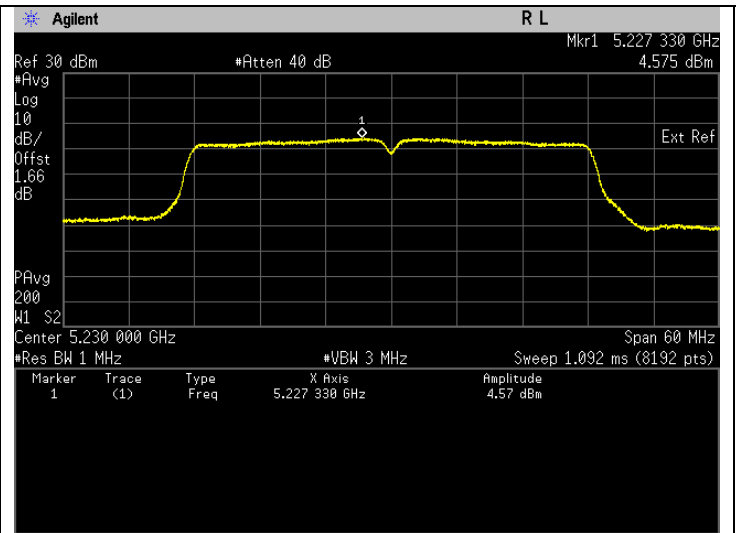
**802.11n (HT40)(99% EBW)**

Freq. (MHz)	Test Conditions	Results			
		Power/Frequency (dBm/MHz)	Status	EIRP (dBm/MHz)	Status
5190	Mod Type: BPSK, Data Rate: MCS0 (13.5)	-2.842	Pass	1.758	Pass
5230	Mod Type: BPSK, Data Rate: MCS0 (13.5)	4.735	Pass	9.335	Pass
5270	Mod Type: BPSK, Data Rate: MCS0 (13.5)	4.151	Pass	8.751	Pass
5310	Mod Type: BPSK, Data Rate: MCS0 (13.5)	-3.661	Pass	0.939	Pass
5510	Mod Type: BPSK, Data Rate: MCS0 (13.5)	0.071	Pass	3.371	Pass
5590	Mod Type: BPSK, Data Rate: MCS0 (13.5)	4.466	Pass	7.766	Pass
5670	Mod Type: BPSK, Data Rate: MCS0 (13.5)	3.960	Pass	7.260	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status		
5755	Mod Type: BPSK, Data Rate: MCS0 (13.5)	0.865	Pass	3.965	Pass
5795	Mod Type: BPSK, Data Rate: MCS0 (13.5)	1.044	Pass	4.144	Pass

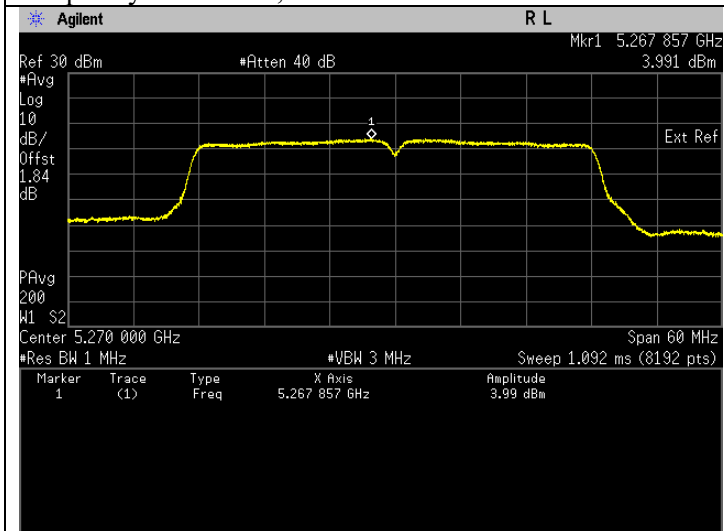
**Plots for 802.11n (HT40) (26dB EBW & 99% EBW)**



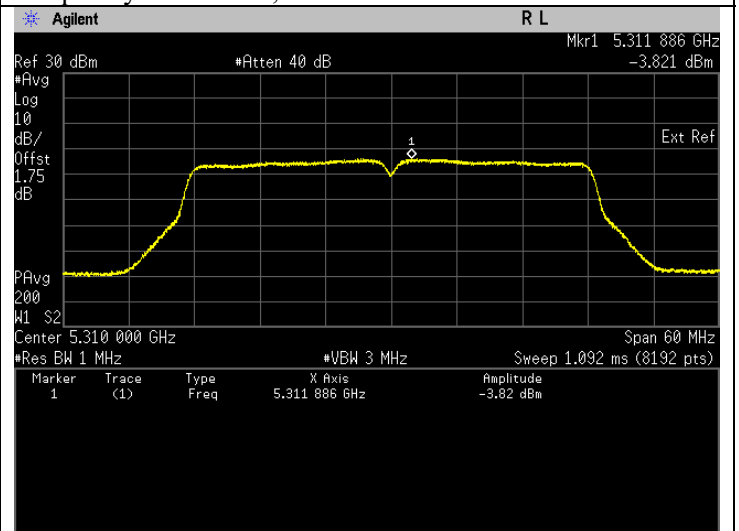
Frequency 5190 MHz, FCC & ISSED.



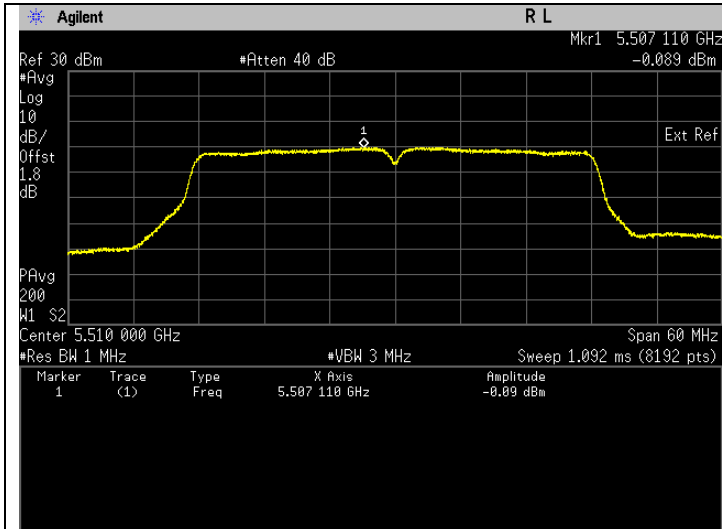
Frequency 5230 MHz, FCC & ISSED.



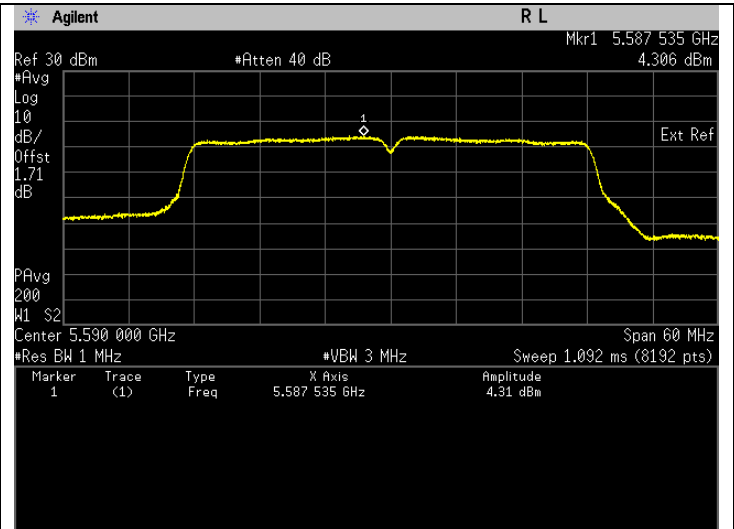
Frequency 5270 MHz, FCC & ISSED.



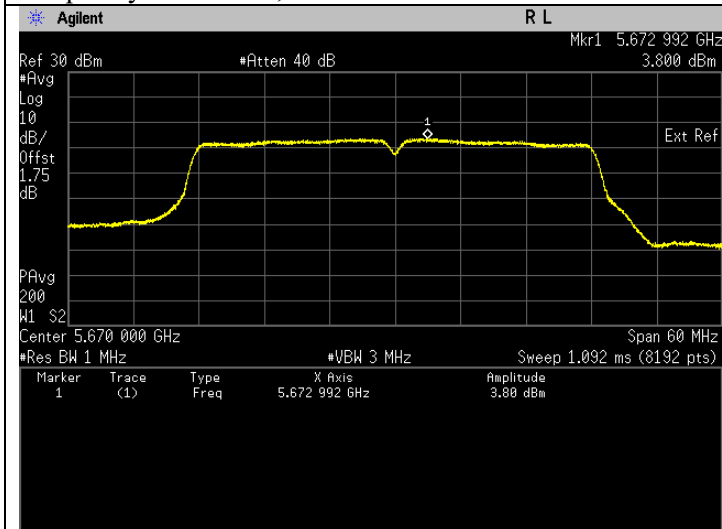
Frequency 5310 MHz, FCC & ISSED.



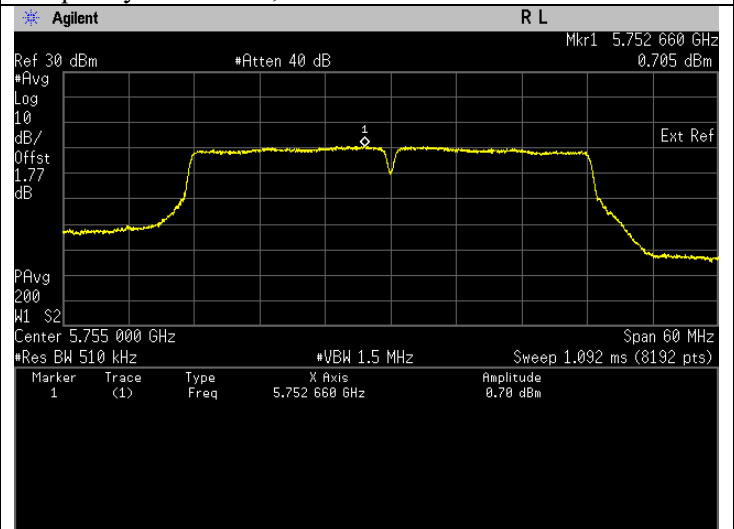
Frequency 5510 MHz, FCC & ISSED.



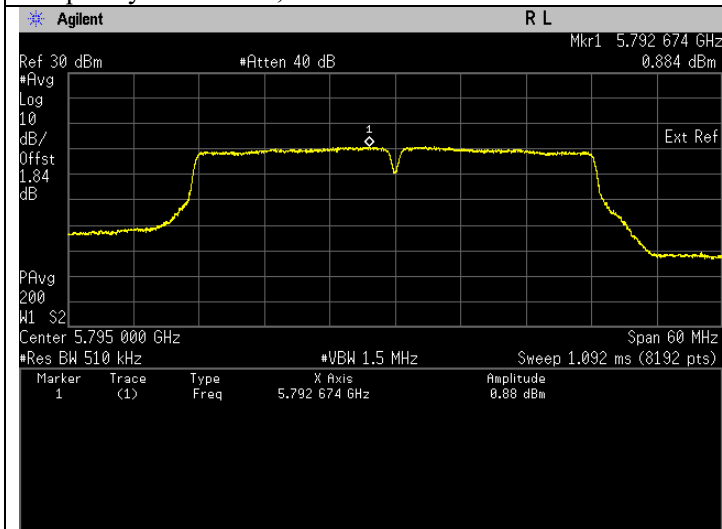
Frequency 5590 MHz, FCC & ISSED.



Frequency 5670 MHz, FCC & ISSED.



Frequency 5755 MHz, FCC & ISSED.



Frequency 5795 MHz, FCC & ISSED.

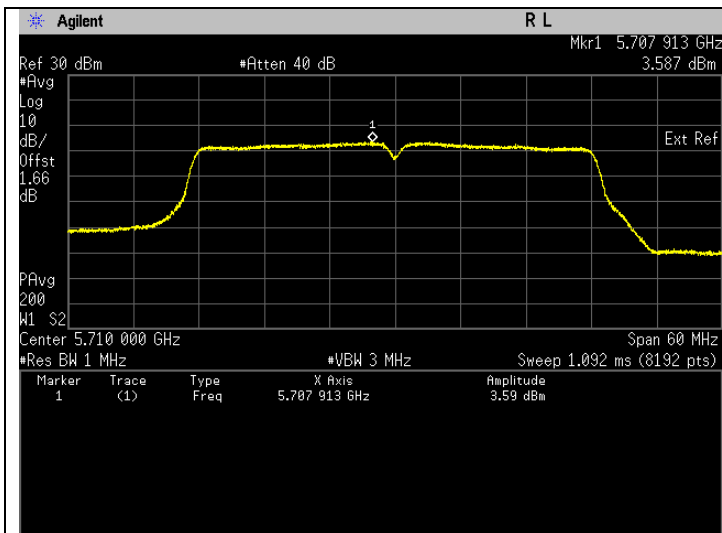
**Straddle Frequency 802.11n (HT40) (26dB EBW)**

Freq. (MHz)	Test Conditions	Results	
		U-NII- 2C	
		Power/Frequency (dBm/MHz)	Status
5710	Mod Type: BPSK, Data Rate: MCS0 (13.5)	3.747	Pass
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
		5710	Mod Type: BPSK, Data Rate: MCS0 (13.5)

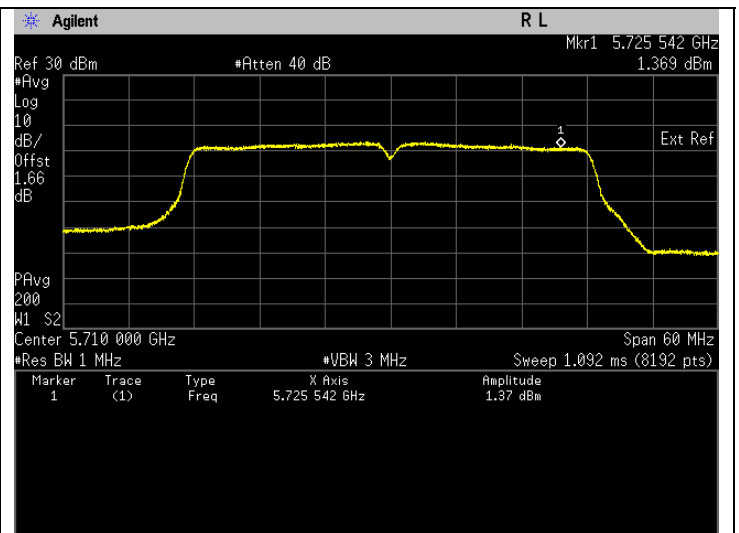
**Straddle Frequency 802.11n (HT40) (99% EBW)**

Freq. (MHz)	Test Conditions	Results	
		U-NII- 2C	
		Power/Frequency (dBm/MHz)	Status
5710	Mod Type: BPSK, Data Rate: MCS0 (13.5)	3.747	Pass
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
		5710	Mod Type: BPSK, Data Rate: MCS0 (13.5)

**Plots for 802.11n (HT40) Straddle Frequency (26dB EBW & 99% EBW)**



Frequency 5710 MHz, FCC & ISED,U-NII-2C. \*Note: The highest spectral density is captured before the 5725 MHz.



Frequency 5710 MHz, FCC & ISED, U-NII-3. \*Note: The highest spectral density is captured after the 5725 MHz.

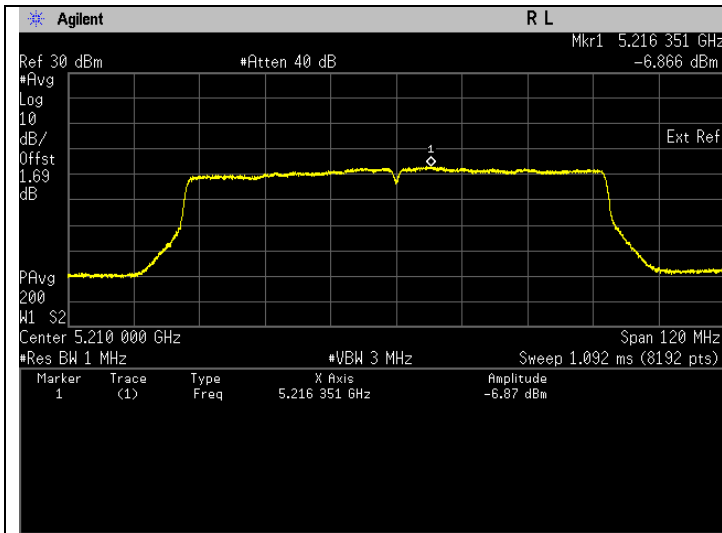
**802.11ac (HT80)(26dB EBW)**

Freq. (MHz)	Test Conditions	Results	
		Power/Frequency (dBm/MHz)	Status
5210	Mod Type: BPSK, Data Rate: MCS0 (29.3)	-6.548	Pass
5290	Mod Type: BPSK, Data Rate: MCS0 (29.3)	-8.660	Pass
5530	Mod Type: BPSK, Data Rate: MCS0 (29.3)	-4.206	Pass
5610	Mod Type: BPSK, Data Rate: MCS0 (29.3)	1.011	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status
5775	Mod Type: BPSK, Data Rate: MCS0 (29.3)	-1.309	Pass

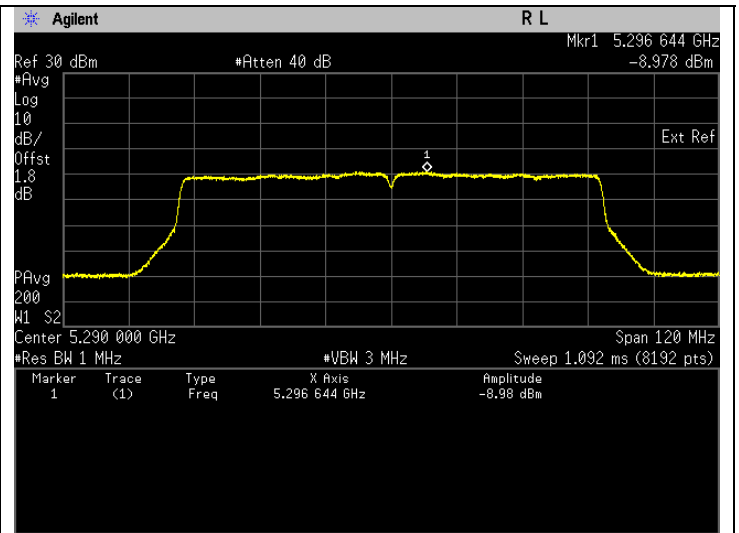
**802.11ac (HT80)(99% EBW)**

Freq. (MHz)	Test Conditions	Results			
		Power/Frequency (dBm/MHz)	Status	EIRP (dBm/MHz)	Status
5210	Mod Type: BPSK, Data Rate: MCS0 (29.3)	-6.548	Pass	-1.948	Pass
5290	Mod Type: BPSK, Data Rate: MCS0 (29.3)	-8.660	Pass	-4.060	Pass
5530	Mod Type: BPSK, Data Rate: MCS0 (29.3)	-4.206	Pass	-0.906	Pass
5610	Mod Type: BPSK, Data Rate: MCS0 (29.3)	1.011	Pass	4.311	Pass
Freq. (MHz)	Test Conditions	Power/Frequency (dBm/500kHz)	Status		
5775	Mod Type: BPSK, Data Rate: MCS0 (29.3)	-1.309	Pass	1.791	Pass

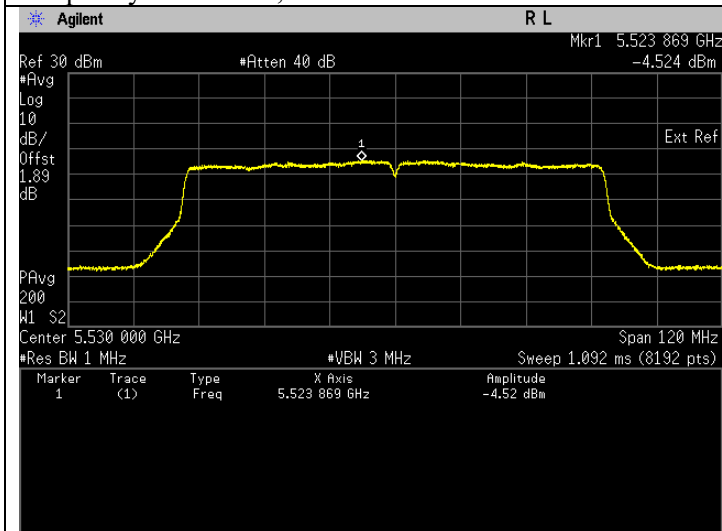
**Plots for 802.11ac (HT80) (26dB EBW & 99% EBW)**



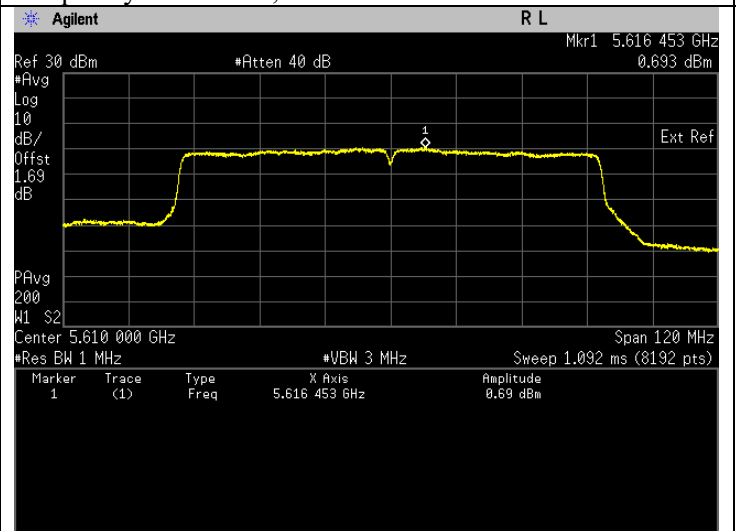
Frequency 5210 MHz, FCC & ISED.



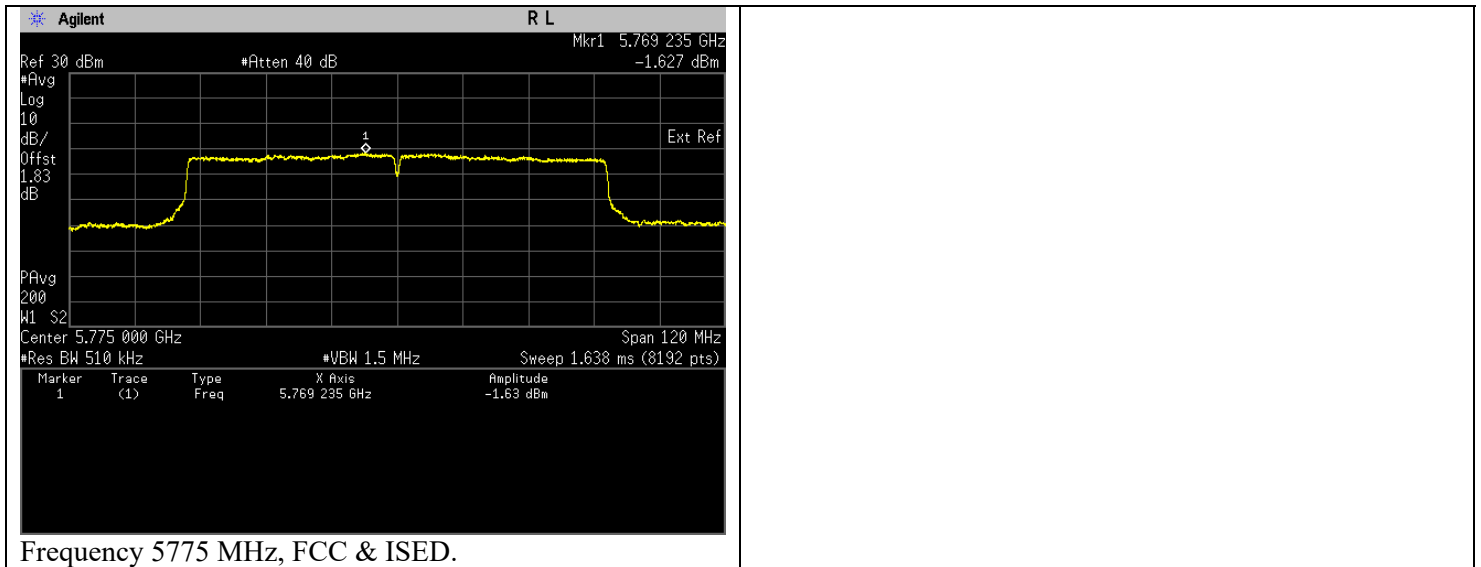
Frequency 5290 MHz, FCC & ISED.



Frequency 5530 MHz, FCC & ISED.



Frequency 5610 MHz, FCC & ISED.



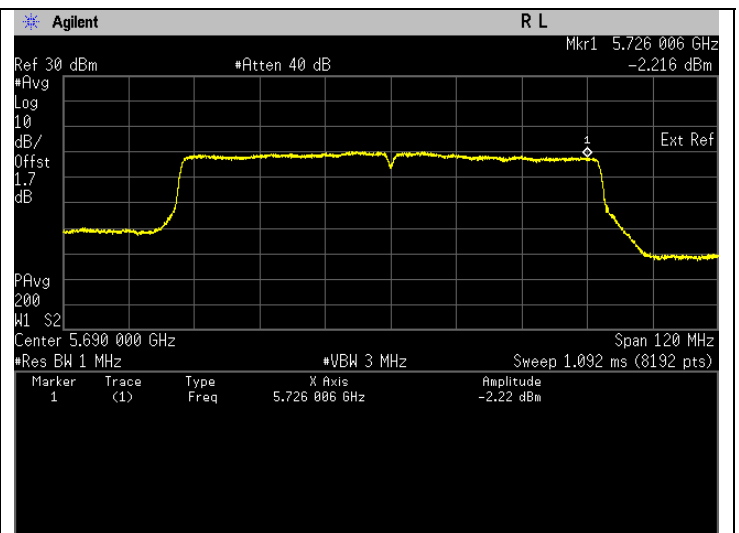
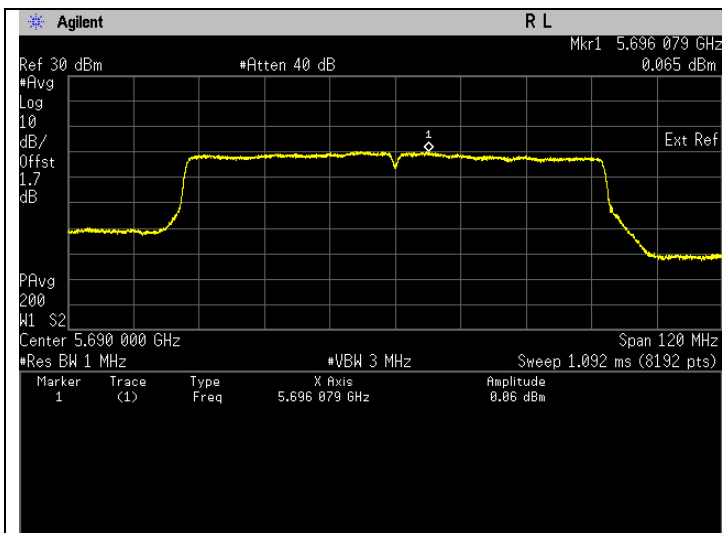
**Straddle Frequency 802.11ac (HT80) (26dB EBW)**

Freq. (MHz)	Test Conditions	Results	
		U-NII- 2C	
		Power/Frequency (dBm/MHz)	Status
5690	Mod Type: BPSK, Data Rate: MCS0 (29.3)	0.383	Pass
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
5690	Mod Type: BPSK, Data Rate: MCS0 (29.3)	-1.898	Pass

**Straddle Frequency 802.11ac (HT80) (99% EBW)**

Freq. (MHz)	Test Conditions	Results	
		U-NII- 2C	
		Power/Frequency (dBm/MHz)	Status
5690	Mod Type: BPSK, Data Rate: MCS0 (29.3)	0.383	Pass
Freq. (MHz)	Test Conditions	U-NII-3	
		Power/Frequency (dBm/500kHz)	Status
5690	Mod Type: BPSK, Data Rate: MCS0 (29.3)	-1.898	Pass

**Plots for 802.11ac (HT80) Straddle Frequency (26dB EBW & 99% EBW)**



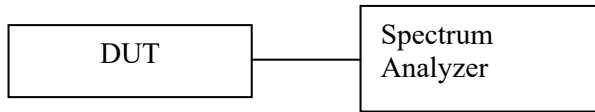
Frequency 5690 MHz, FCC & ISSED,U-NII-2C. \*Note: The highest spectral density is captured before the 5725 MHz.

Frequency 5690 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·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).

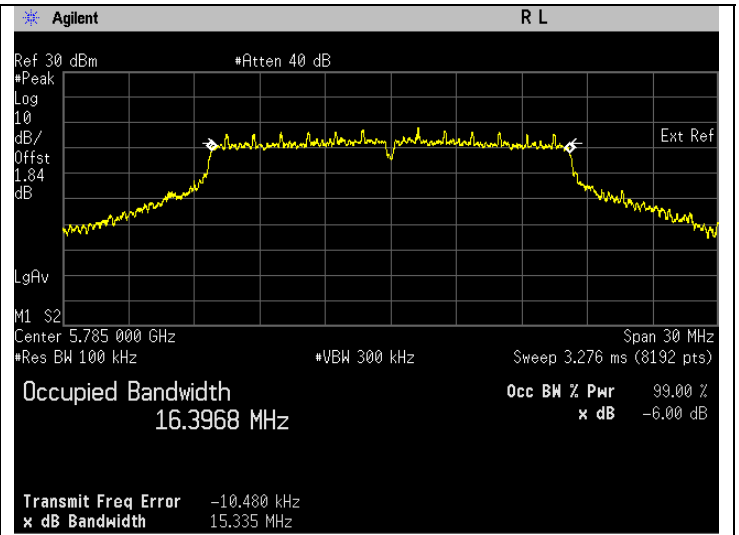
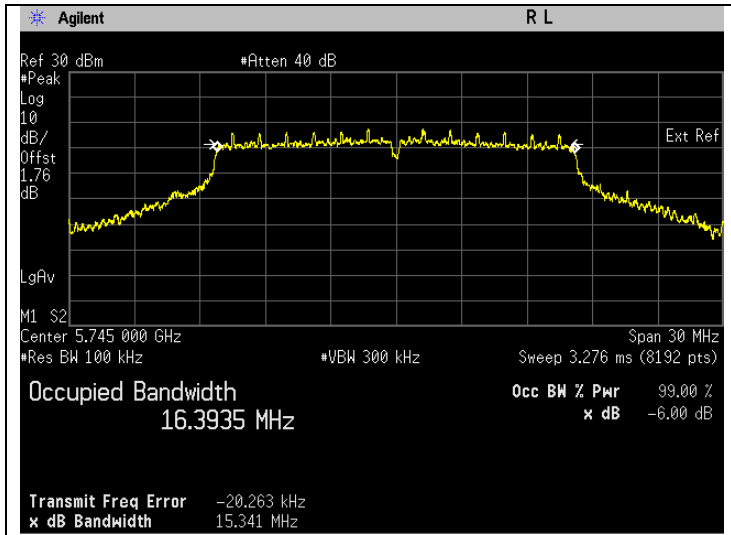
### 7.4.2. Test Limits

#### **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.

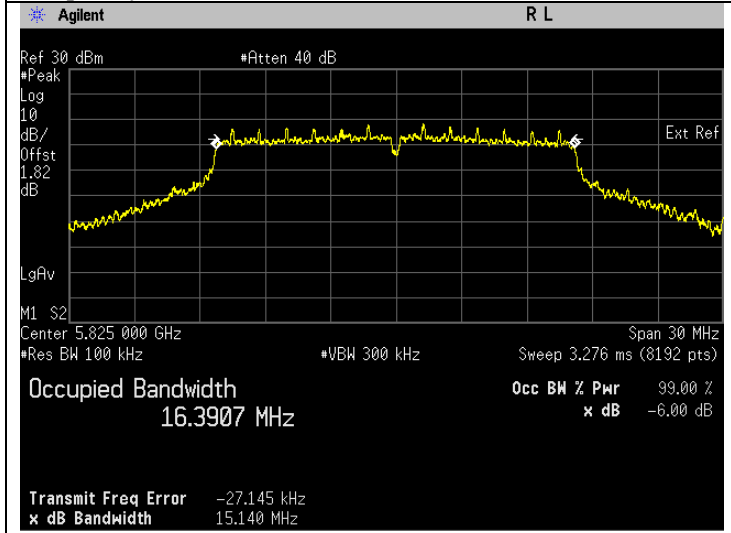
7.4.3. Test Data

Freq. (MHz)	Test Configuration	Results	
		Bandwidth(MHz)	Status
5745	Mod Type: BPSK, Data Rate: 6	15.341	Pass
5785	Mod Type: BPSK, Data Rate: 6	15.335	Pass
5825	Mod Type: BPSK, Data Rate: 6	15.140	Pass



Frequency 5745 MHz

Frequency 5785 MHz

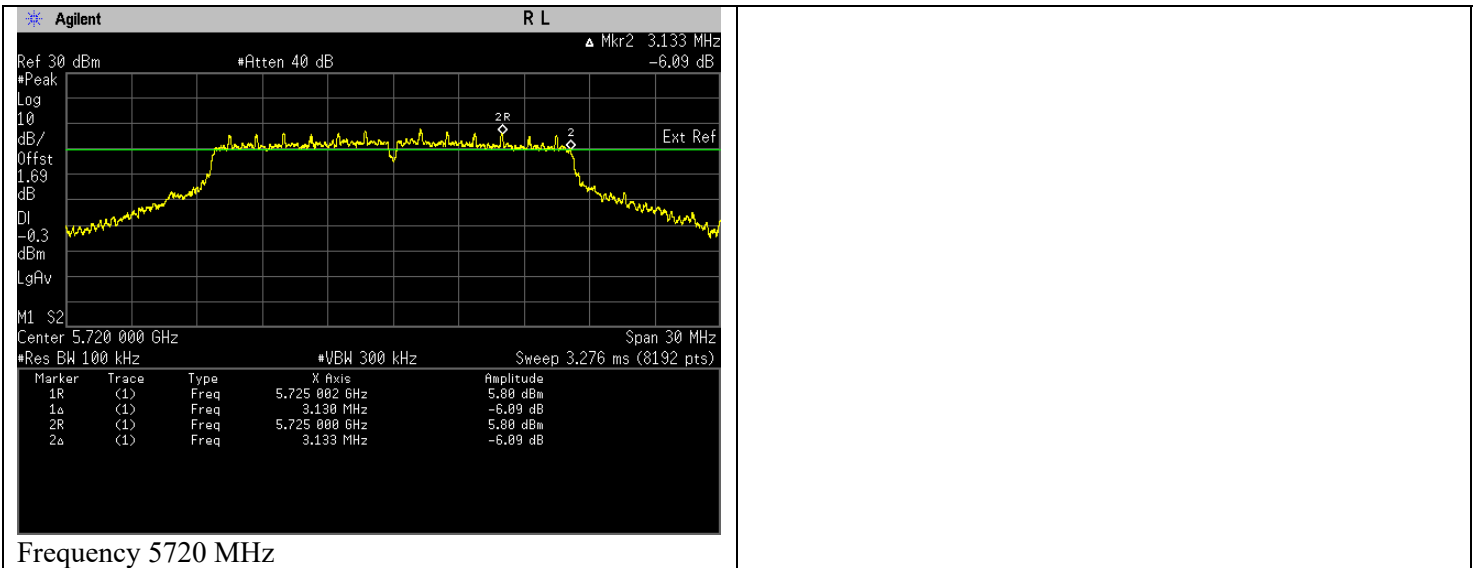


Frequency 5825 MHz

**Straddle Frequency for 802.11a**

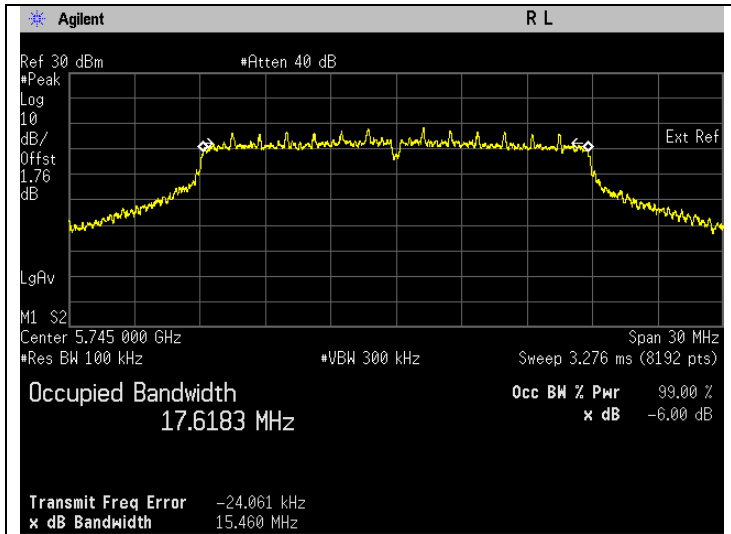
Freq. (MHz)	Test Conditions	Results	
		Bandwidth(MHz)	Status
		U-NII- 3	
5720	Mod Type: BPSK, Data Rate: 6	3.133	Pass

**Plots for 802.11a Straddle Frequency**

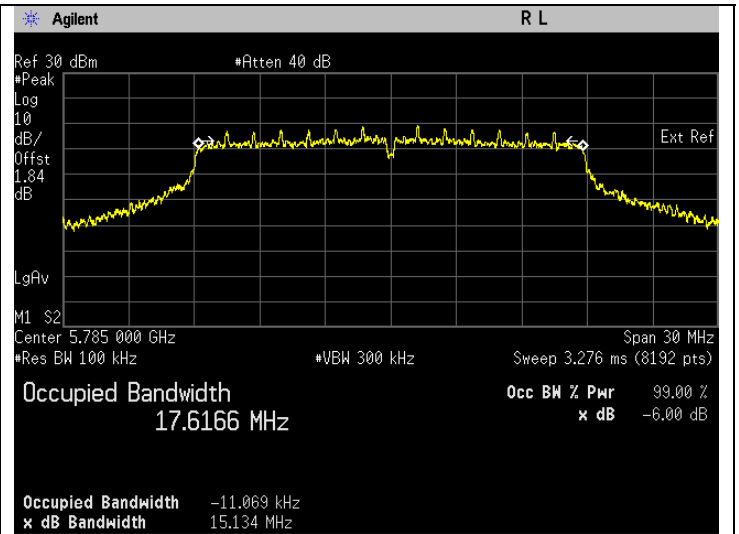


**802.11n (HT20)**

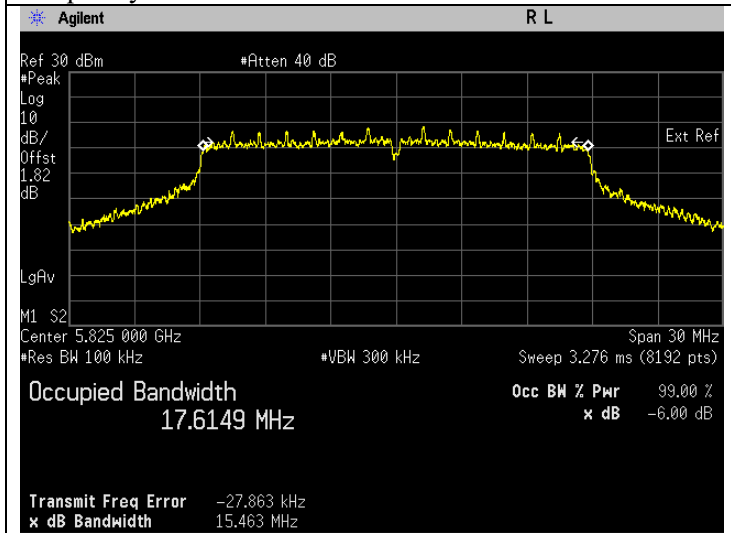
Freq. (MHz)	Test Configuration	Results	
		Bandwidth(MHz)	Status
5745	Mod Type: BPSK, Data Rate: MCS0 (6.5)	15.460	Pass
5785	Mod Type: BPSK, Data Rate: MCS0 (6.5)	15.134	Pass
5825	Mod Type: BPSK, Data Rate: MCS0 (6.5)	15.463	Pass



Frequency 5745 MHz



Frequency 5785 MHz

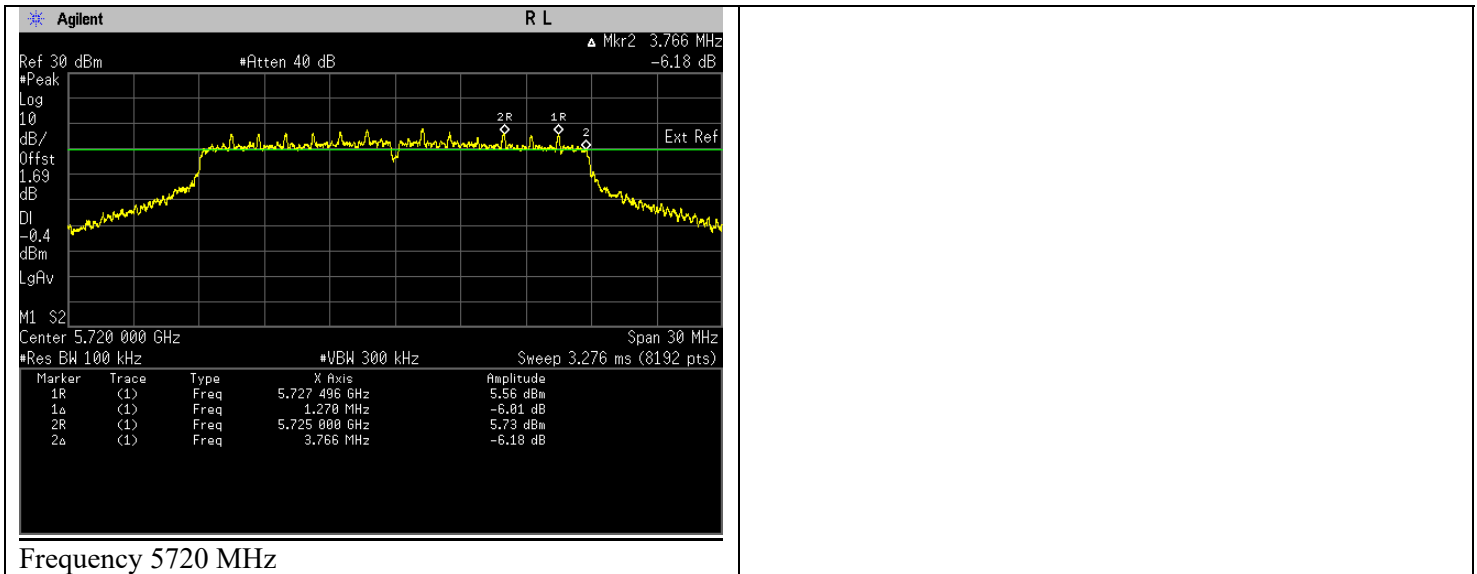


Frequency 5825 MHz

**Straddle Frequency for 802.11n (HT20)**

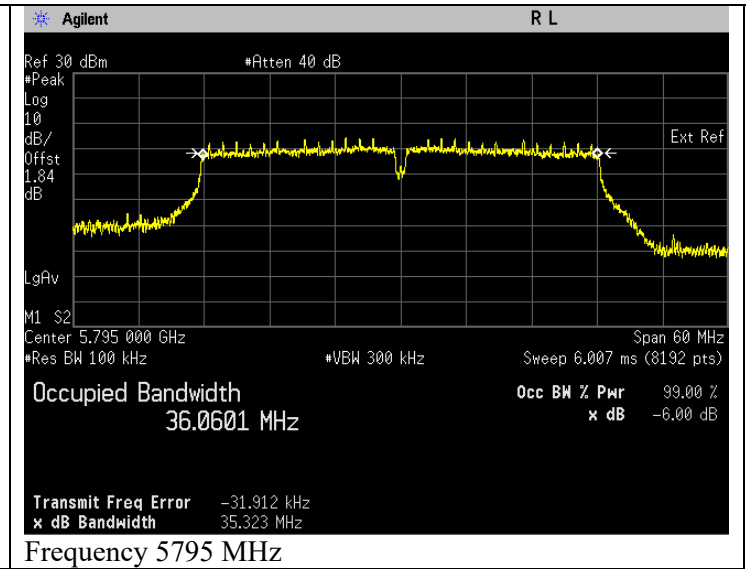
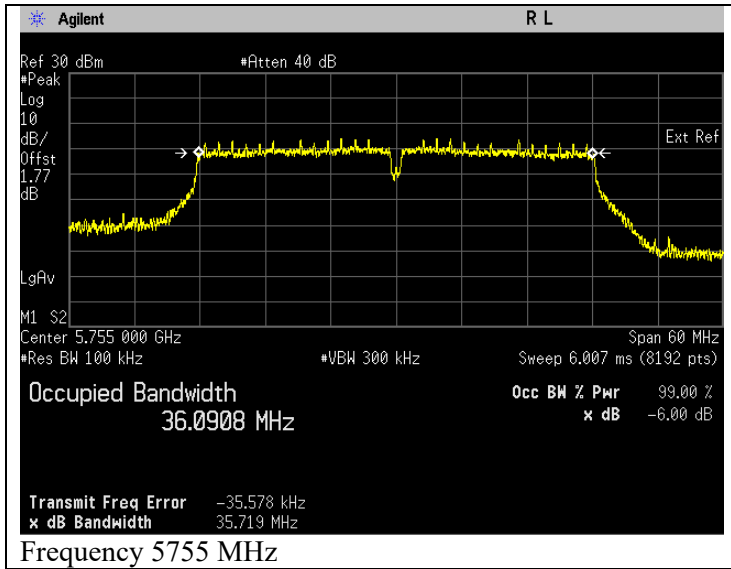
Freq. (MHz)	Test Conditions	Results	
		Bandwidth(MHz)	Status
		U-NII- 3	
5720	Mod Type: BPSK, Data Rate: MCS0 (6.5)	3.766	Pass

**Plots for 802.11n (HT20) Straddle Frequency**



**802.11n (HT40)**

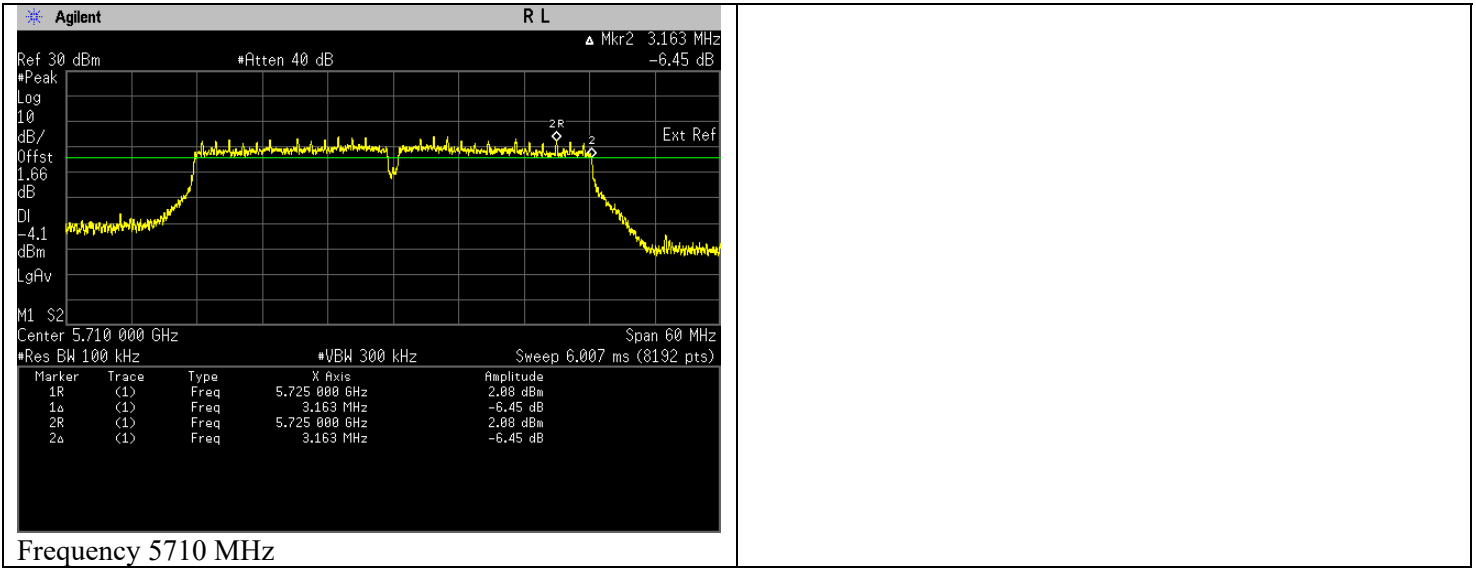
Freq. (MHz)	Test Configuration	Results	
		Bandwidth(MHz)	Status
5755	Mod Type: BPSK, Data Rate: MCS0 (13.5)	35.719	Pass
5795	Mod Type: BPSK, Data Rate: MCS0 (13.5)	35.323	Pass



**Straddle Frequency for 802.11n (HT40)**

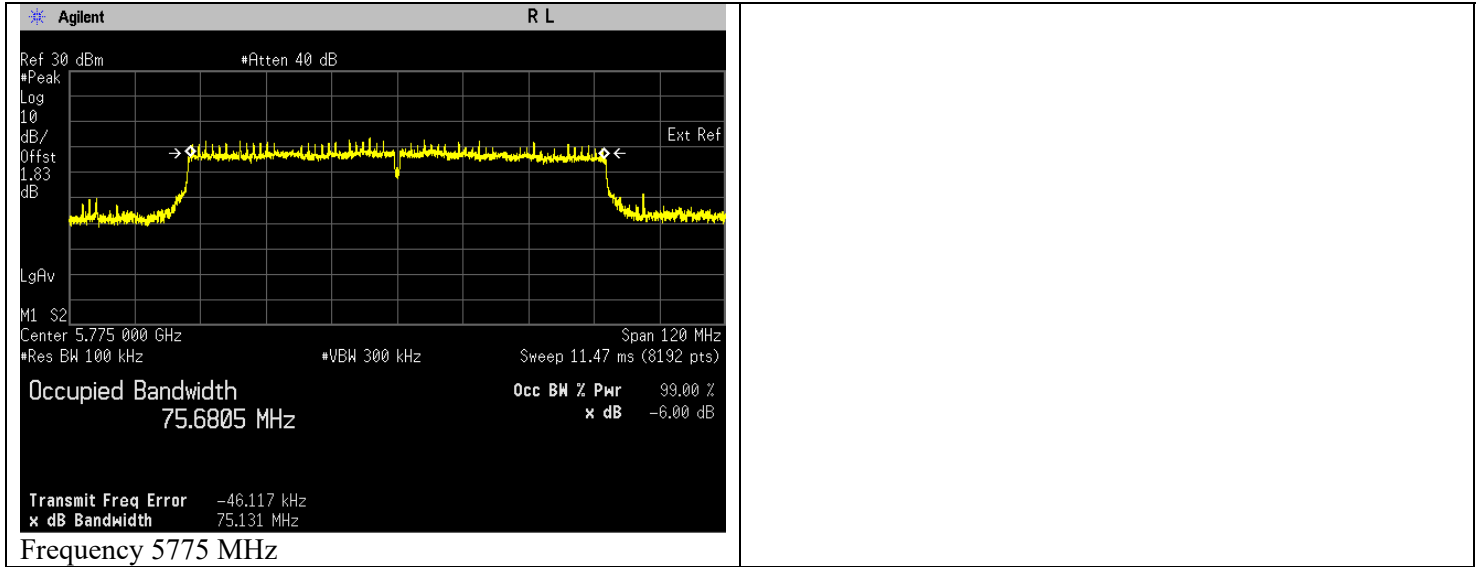
Freq. (MHz)	Test Conditions	Results	
		Bandwidth(MHz)	Status
		U-NII- 3	
5710	Mod Type: BPSK, Data Rate: MCS0 (13.5)	3.163	Pass

**Plots for 802.11n (HT40) Straddle Frequency**



**802.11ac (HT80)**

Freq. (MHz)	Test Configuration	Results	
		Bandwidth(MHz)	Status
5775	Mod Type: BPSK, Data Rate: MCS0 (29.3)	75.131	Pass

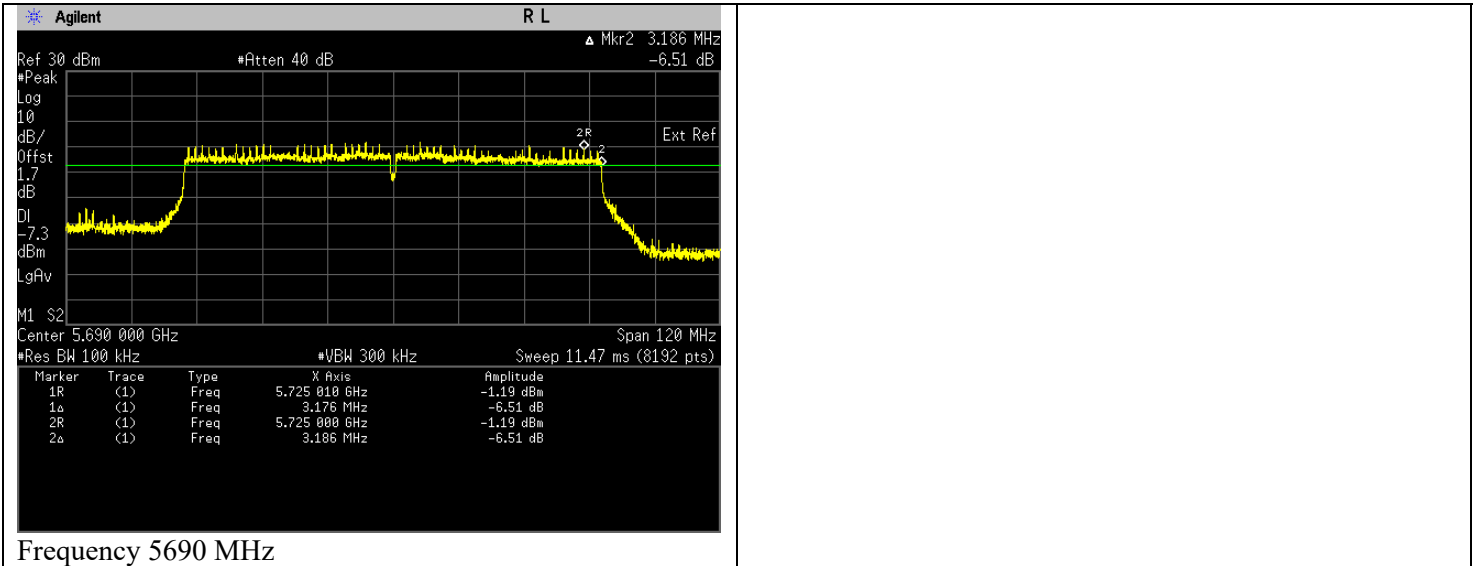




**Straddle Frequency for 802.11ac (HT80)**

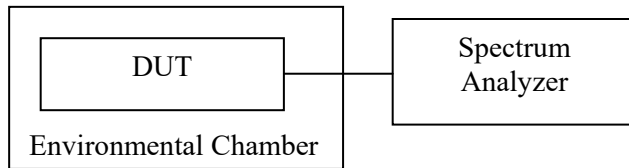
Freq. (MHz)	Test Conditions	Results	
		Bandwidth(MHz)	Status
		U-NII- 3	
5690	Mod Type: BPSK, Data Rate: MCS0 (29.3)	3.186	Pass

**Plots for 802.11ac (HT80) Straddle Frequency**



## 7.5. Frequency Stability

### 7.5.1. Test Setup



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

### 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.

7.5.3. Test Data

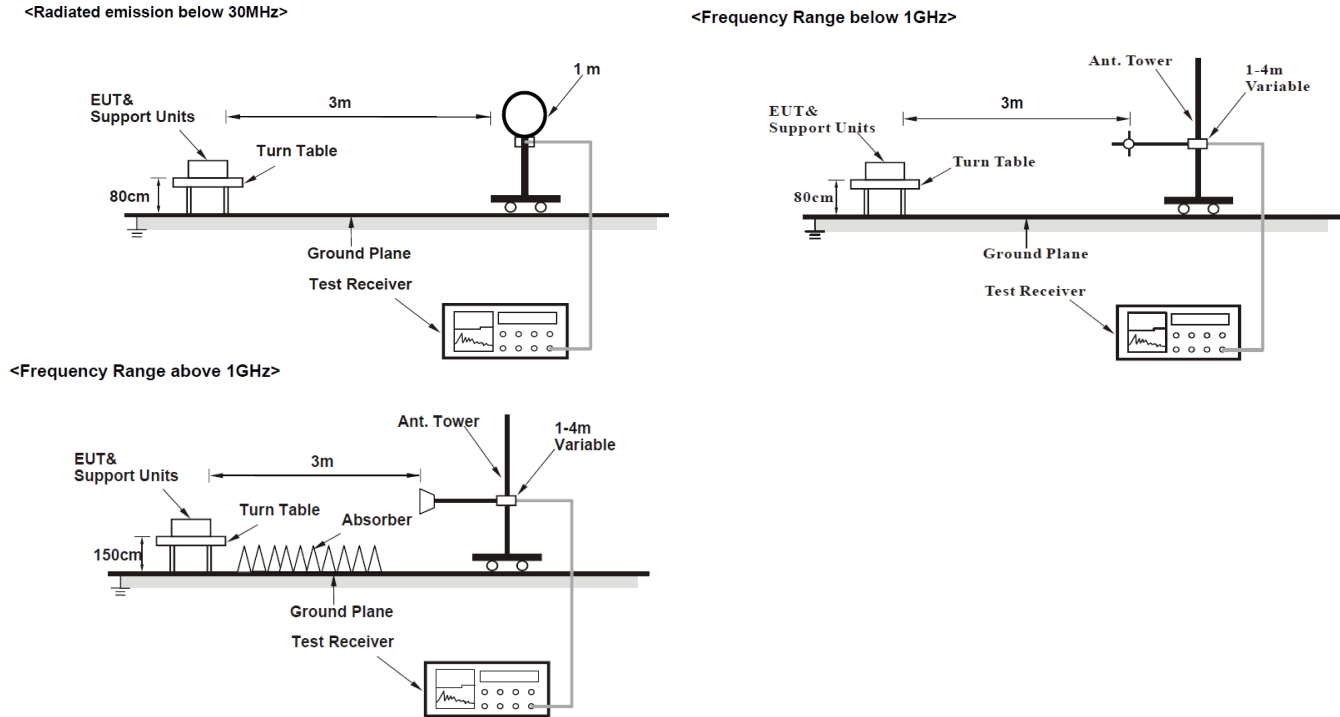
**802.11a**

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%	5180.029492	29.492000	0.000569	Pass
	±0%	5180.029469	29.469000	0.000569	Pass
	-15%	5180.029528	29.528000	0.000570	Pass
-30		5180.025504	25.504000	0.000492	Pass
-20		5180.017269	17.269000	0.000333	Pass
-10		5179.999324	0.676000	0.000013	Pass
0		5179.987794	12.206000	0.000236	Pass
10		5179.982947	17.053000	0.000329	Pass
30		5179.991911	8.089000	0.000156	Pass
40		5179.991986	8.014000	0.000155	Pass
50		5179.992293	7.707000	0.000149	Pass

## 7.6. Band Edge Radiated Spurious Emission Measurement

### 7.6.1. Test Setup



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

**NOTE:**

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3 MHz for Peak detection at frequency above 1 GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection using reduced video bandwidth (Duty cycle ≥98%) at frequency above 1GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $1/\tau$  Hz, where  $\tau$  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 (dBuV/m)	AV: 54 (dBuV/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 (dBuV/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) <sup>11</sup> PK:10 (dBm/MHz) <sup>12</sup> PK:15.6 (dBm/MHz) <sup>13</sup> PK:27 (dBm/MHz) <sup>14</sup>	PK: 68.2 (dBuV/m) <sup>11</sup> PK:105.2 (dBuV/m) <sup>12</sup> PK: 110.8 (dBuV/m) <sup>13</sup> PK:122.2 (dBuV/m) <sup>14</sup>
	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	
<sup>11</sup> beyond 75 MHz or more above of the band edge.			
<sup>12</sup> below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.			
<sup>13</sup> below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.			
<sup>14</sup> from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.			

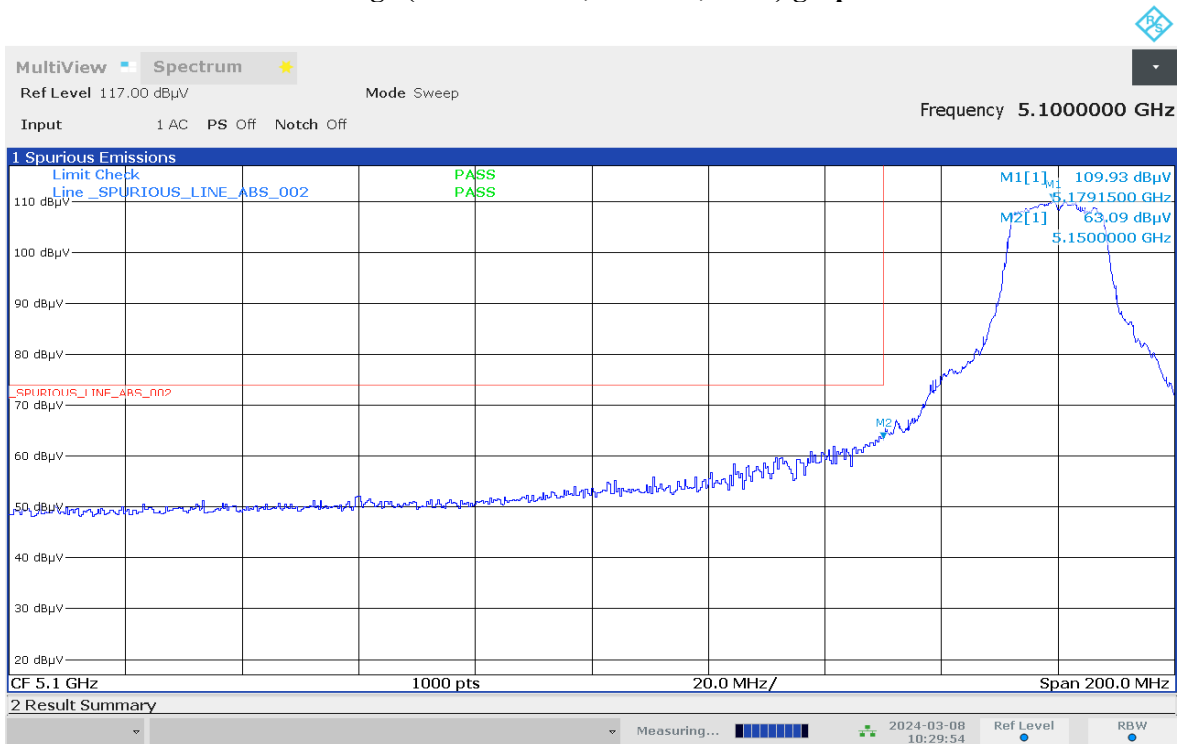
**NOTE:**

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

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

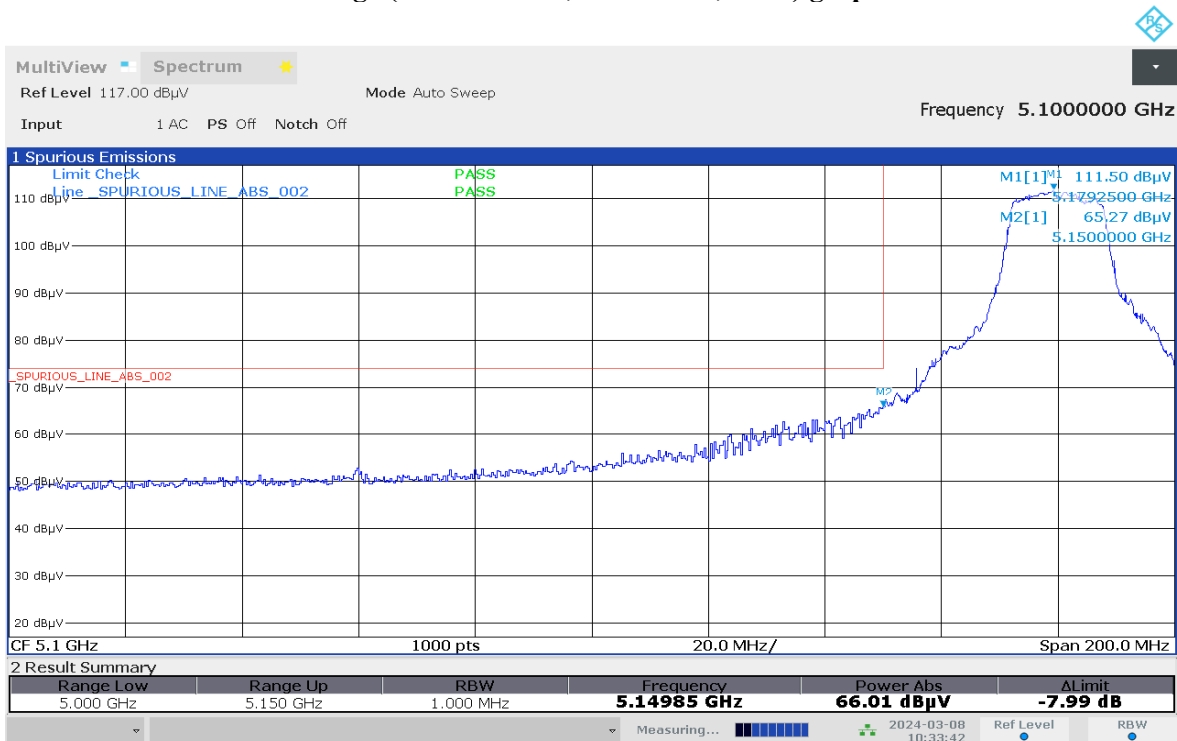


### Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



10:29:55 AM 03/08/2024

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



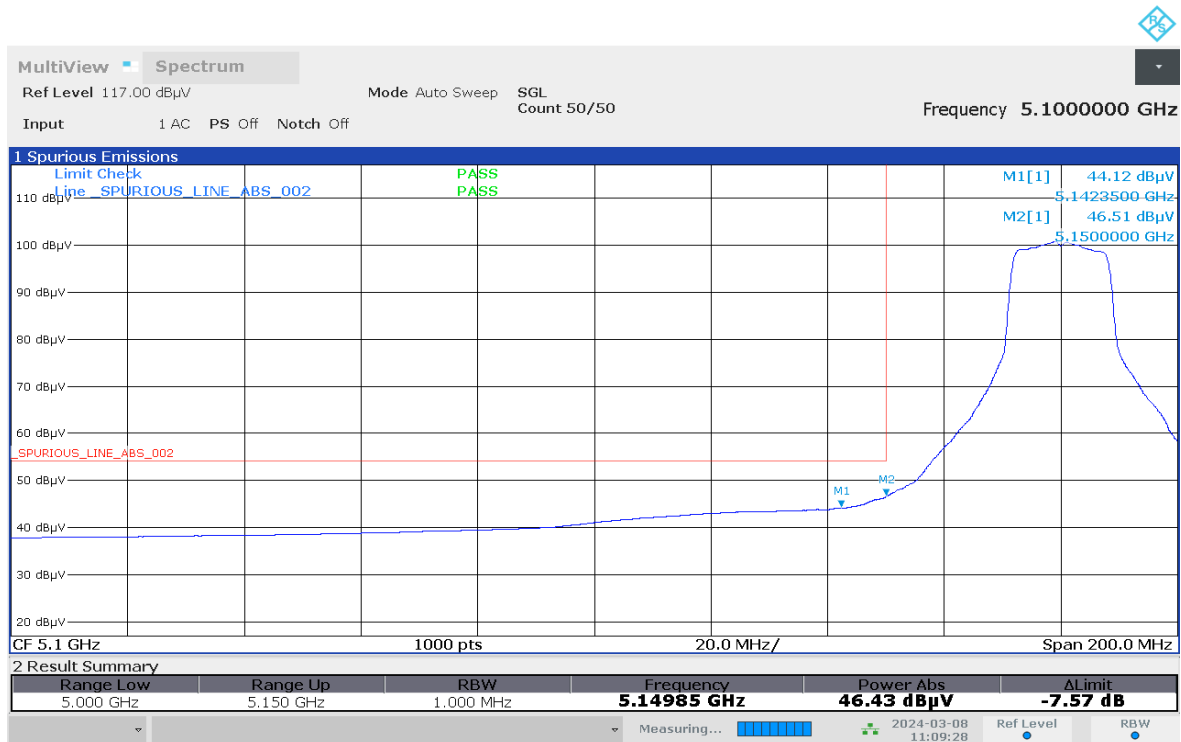
10:33:42 AM 03/08/2024

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



10:53:56 AM 03/08/2024

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

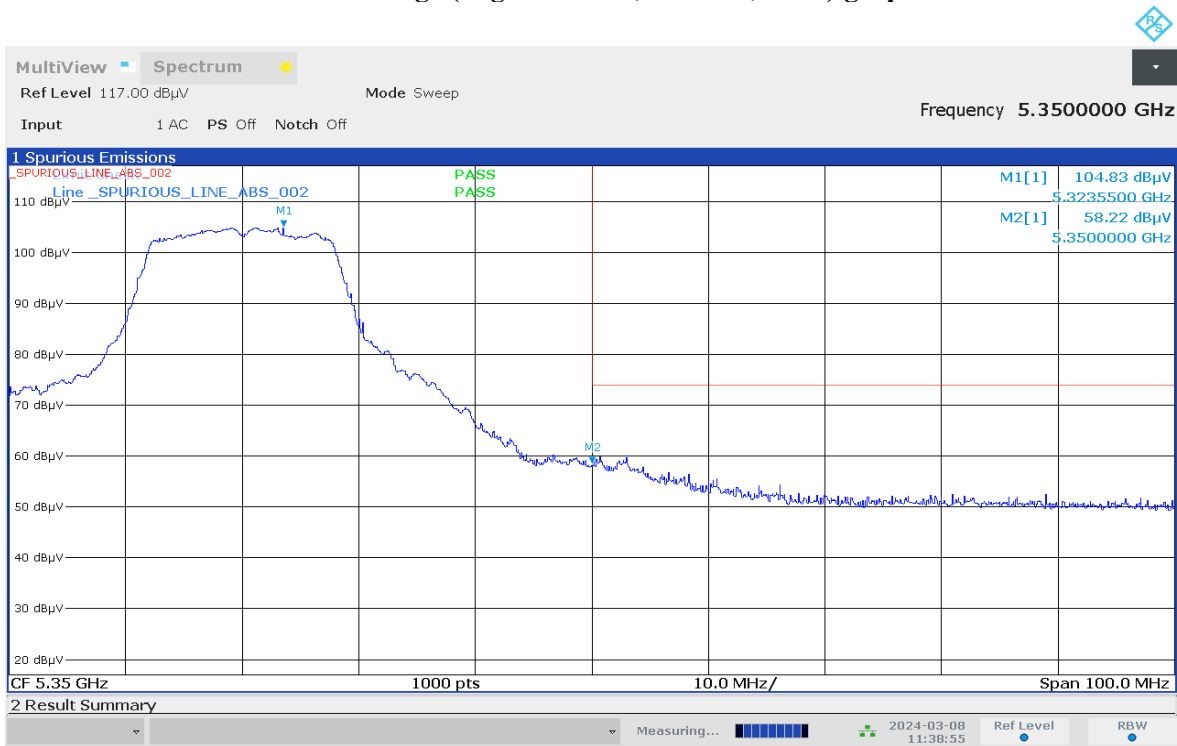


11:09:29 AM 03/08/2024



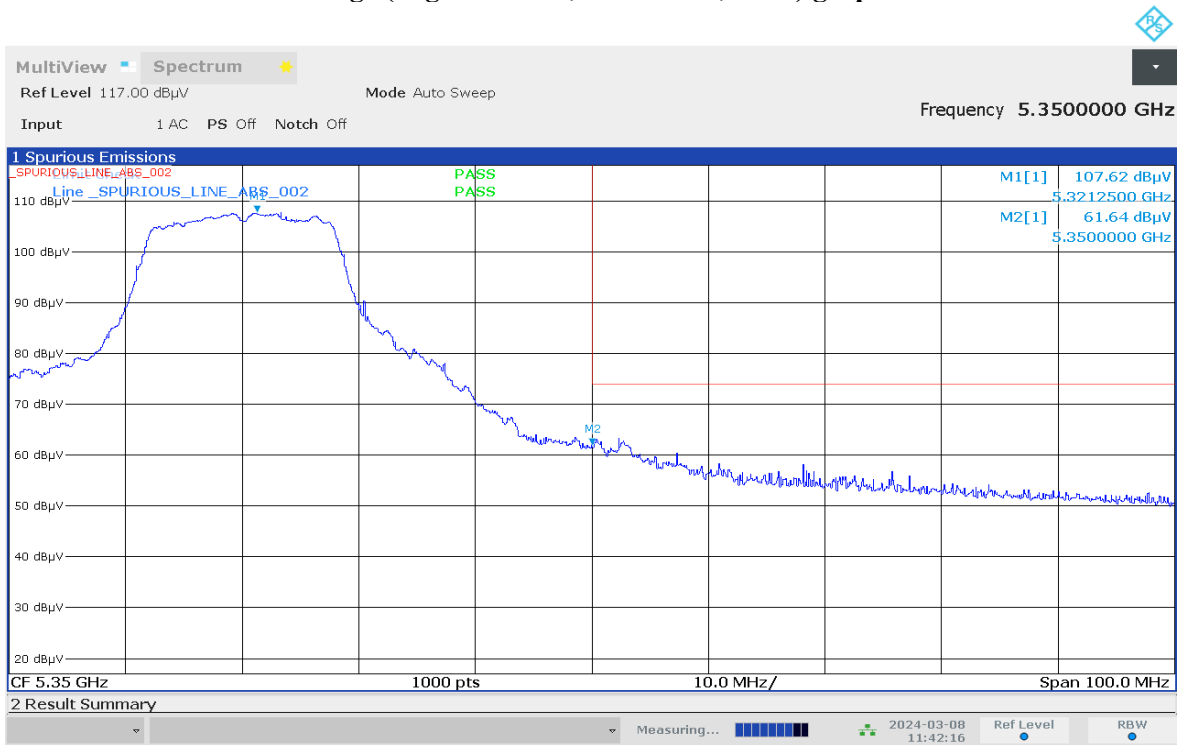


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



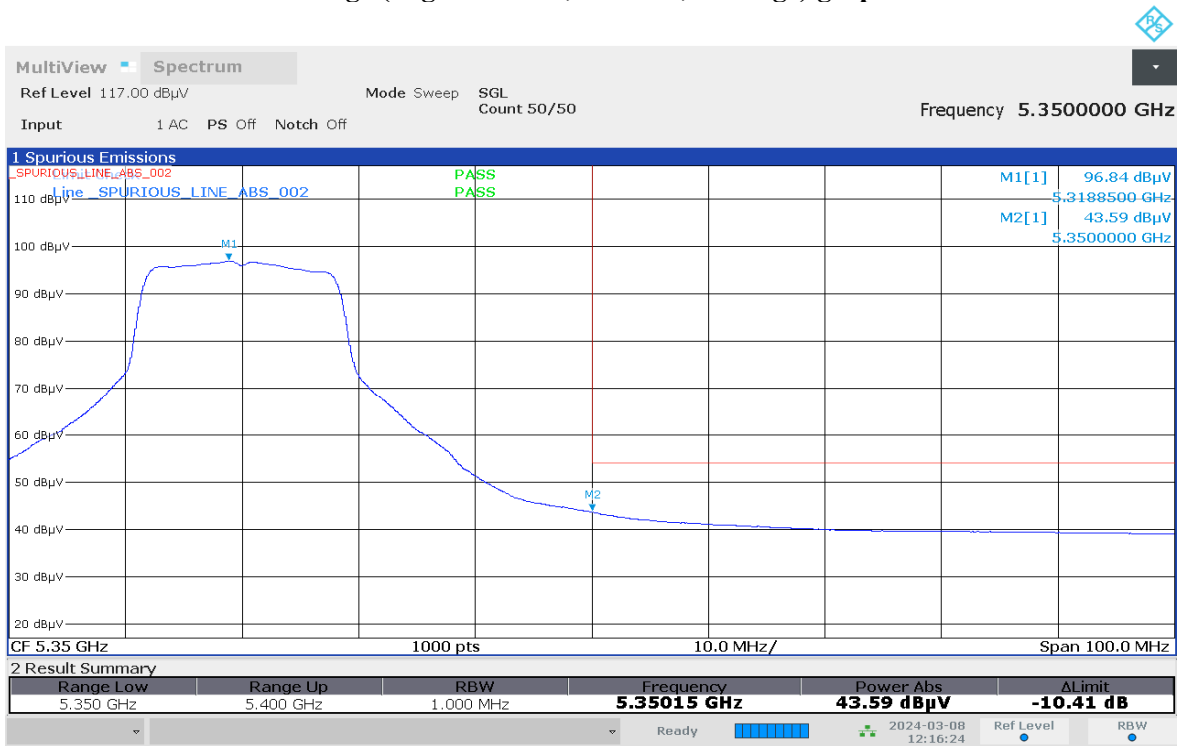
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### Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



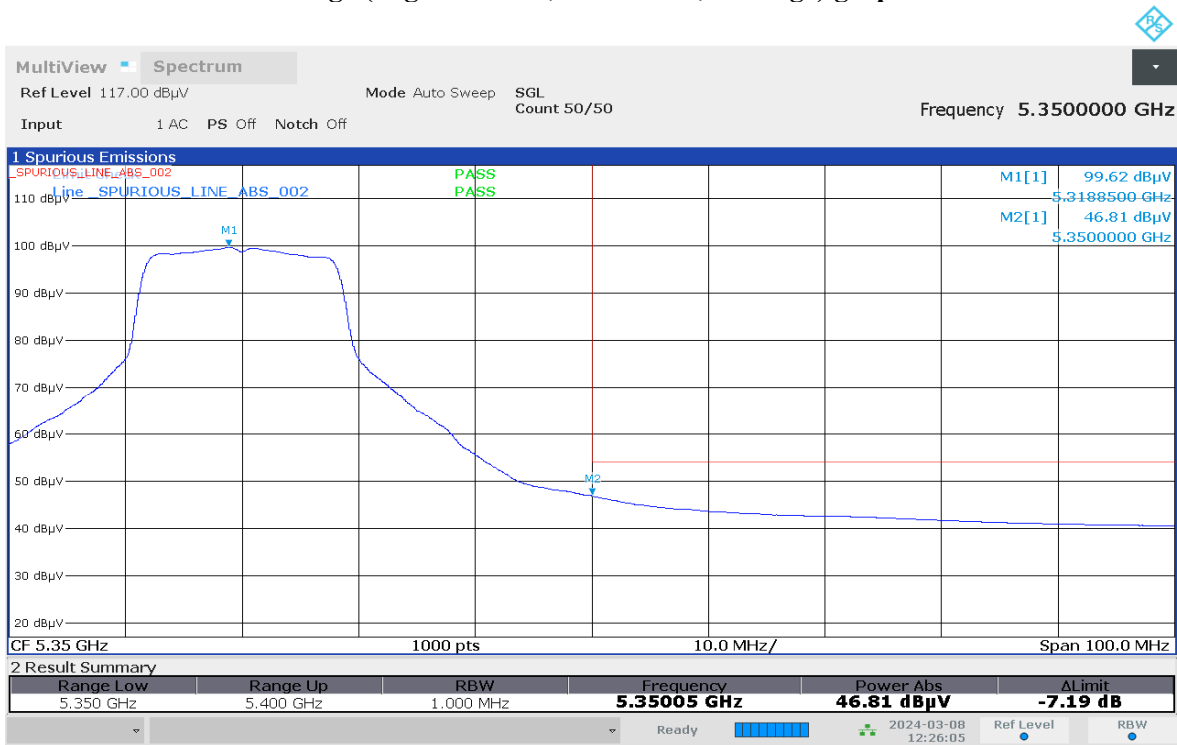
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### Restricted Band Edge (High Channel, Vertical, Average) graphical screen shot



12:16:25 PM 03/08/2024

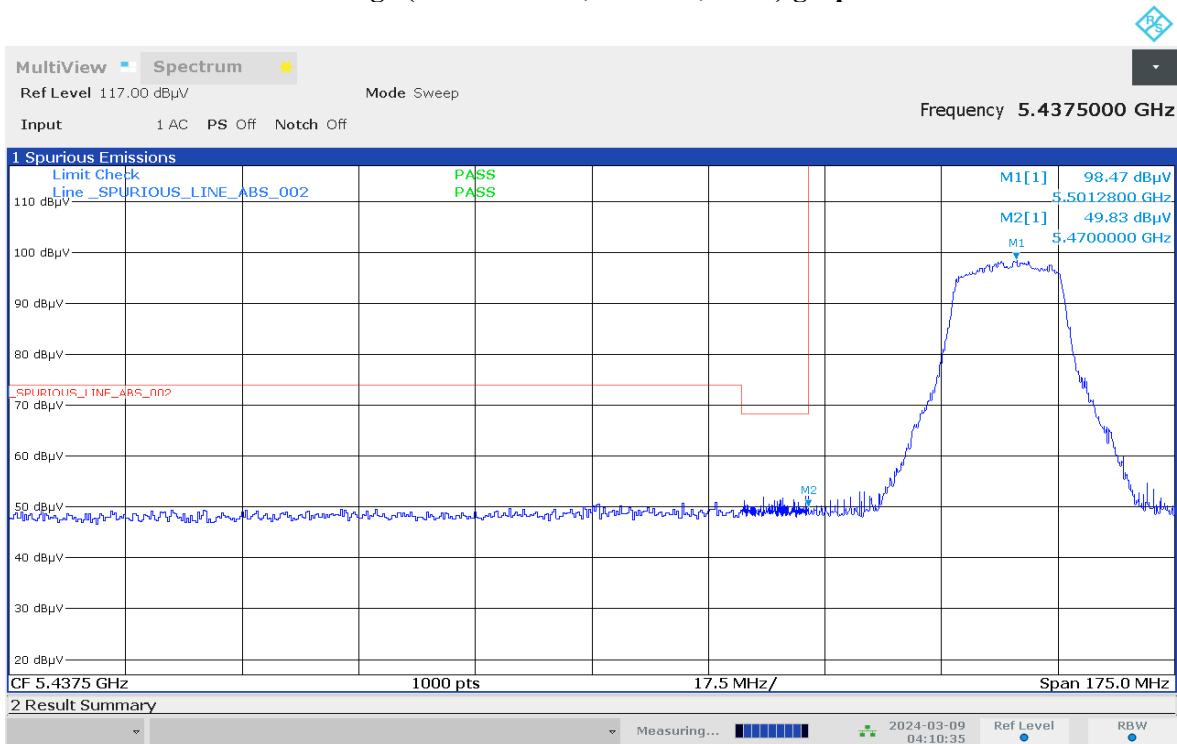
### Restricted Band Edge (High Channel, Horizontal, Average) graphical screen shot



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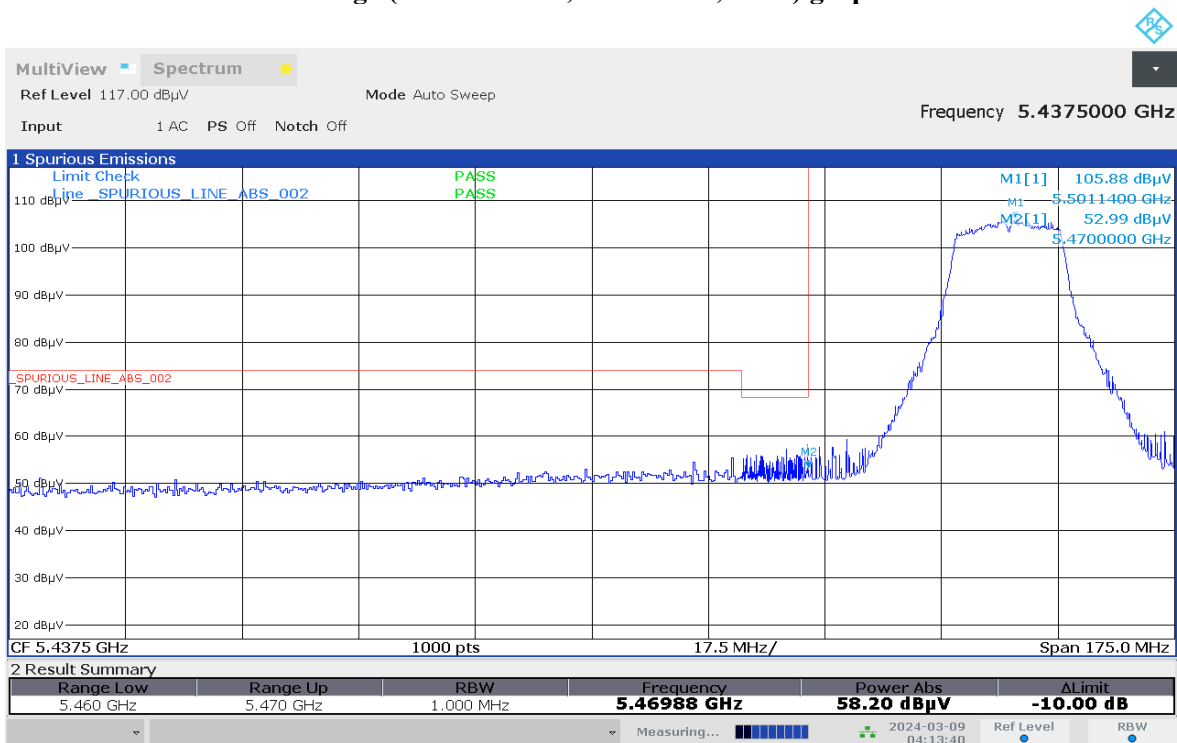


### Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



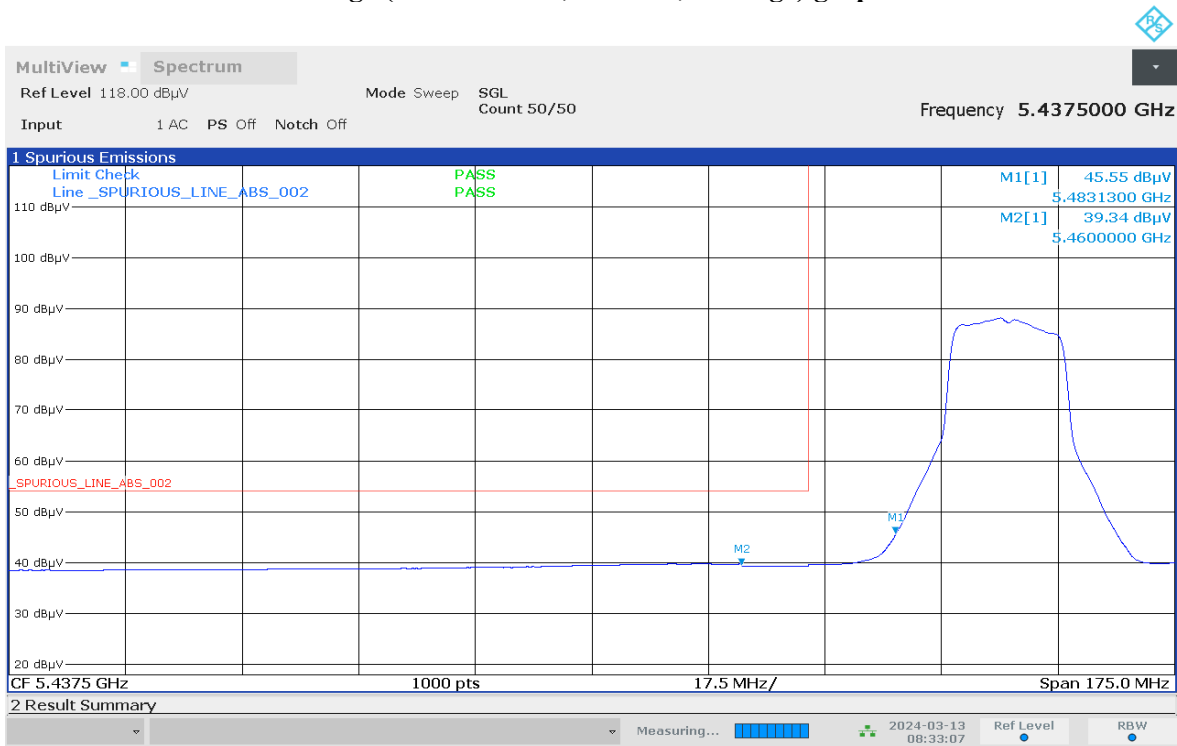
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### Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot



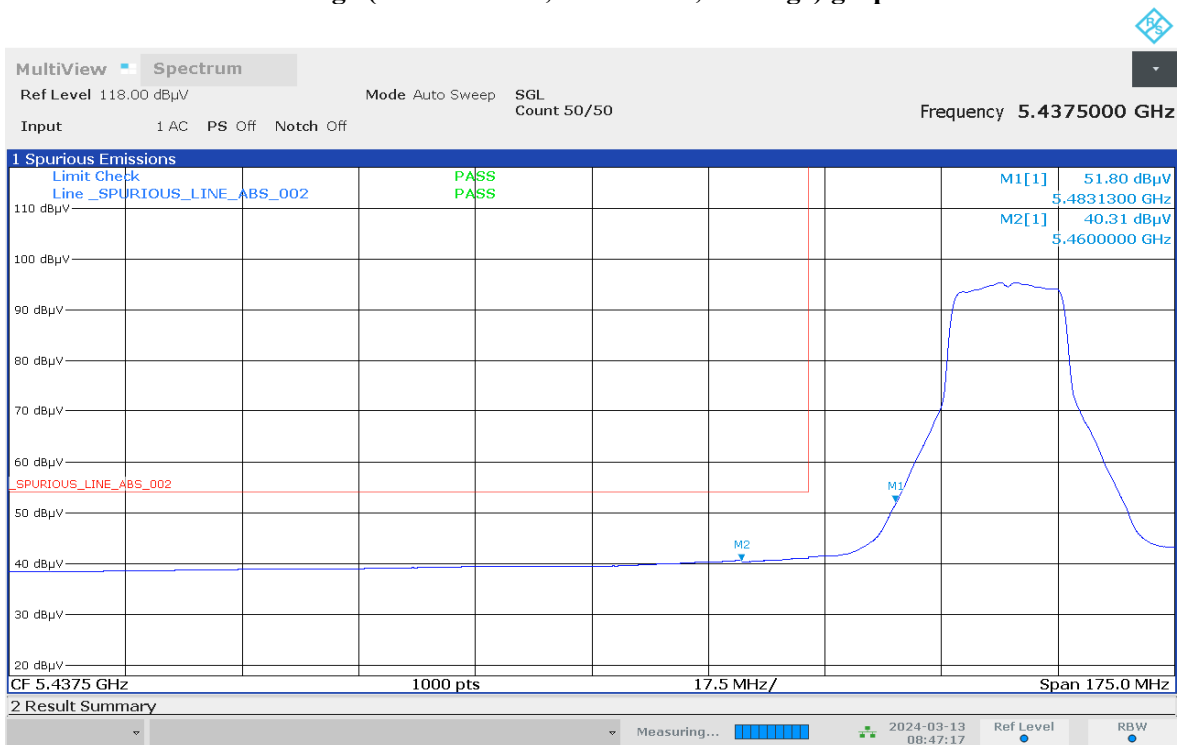
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### Restricted Band Edge (Low Channel, Vertical, Average) graphical screen shot



08:33:07 AM 03/13/2024

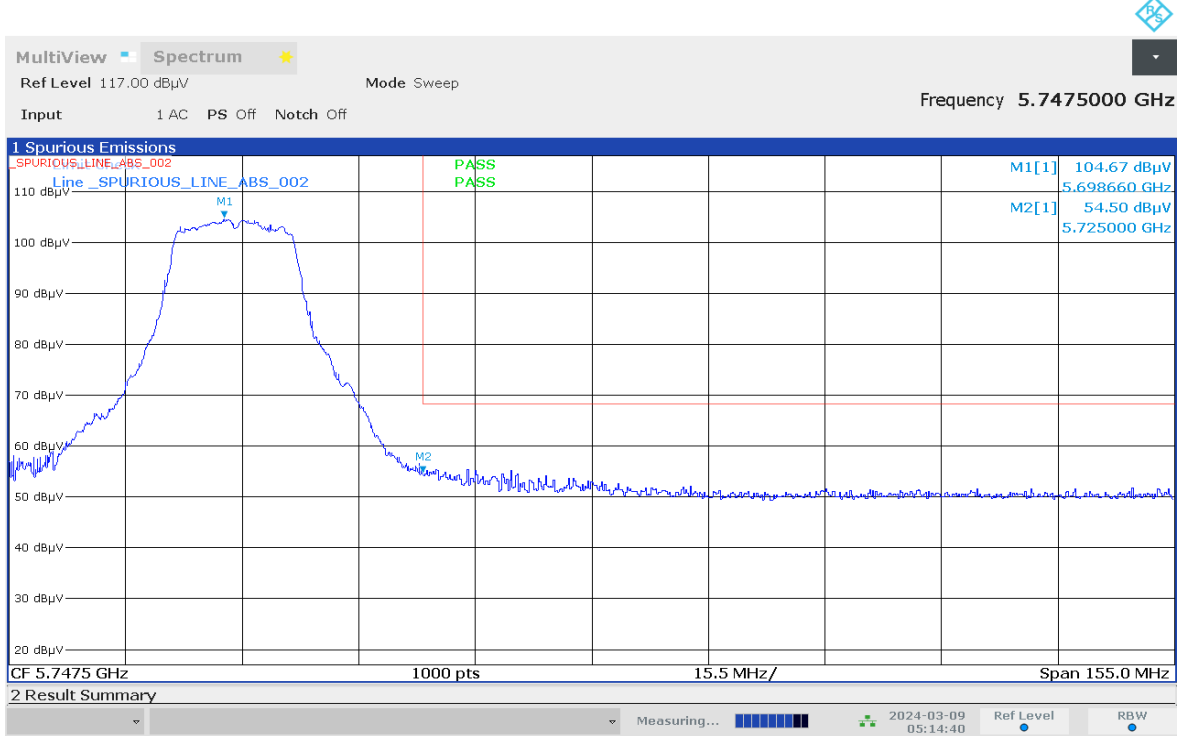
### Restricted Band Edge (Low Channel, Horizontal, Average) graphical screen shot



08:47:17 AM 03/13/2024

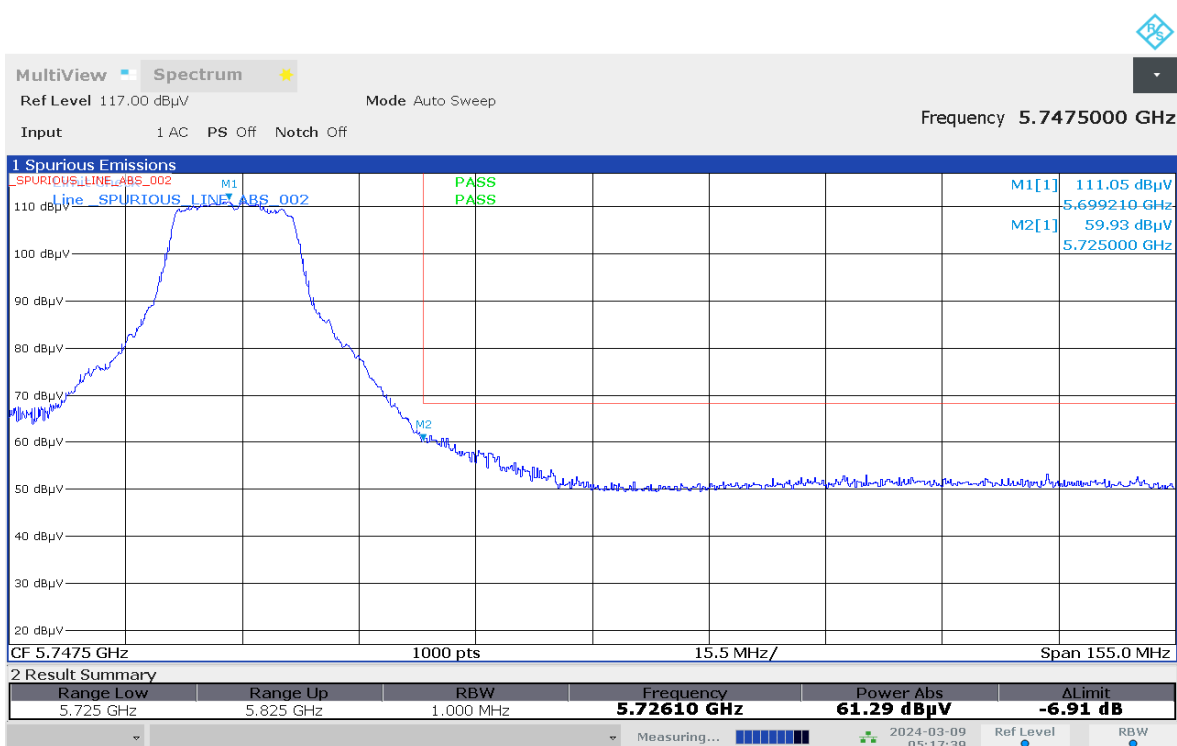


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



05:14:40 AM 03/09/2024

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

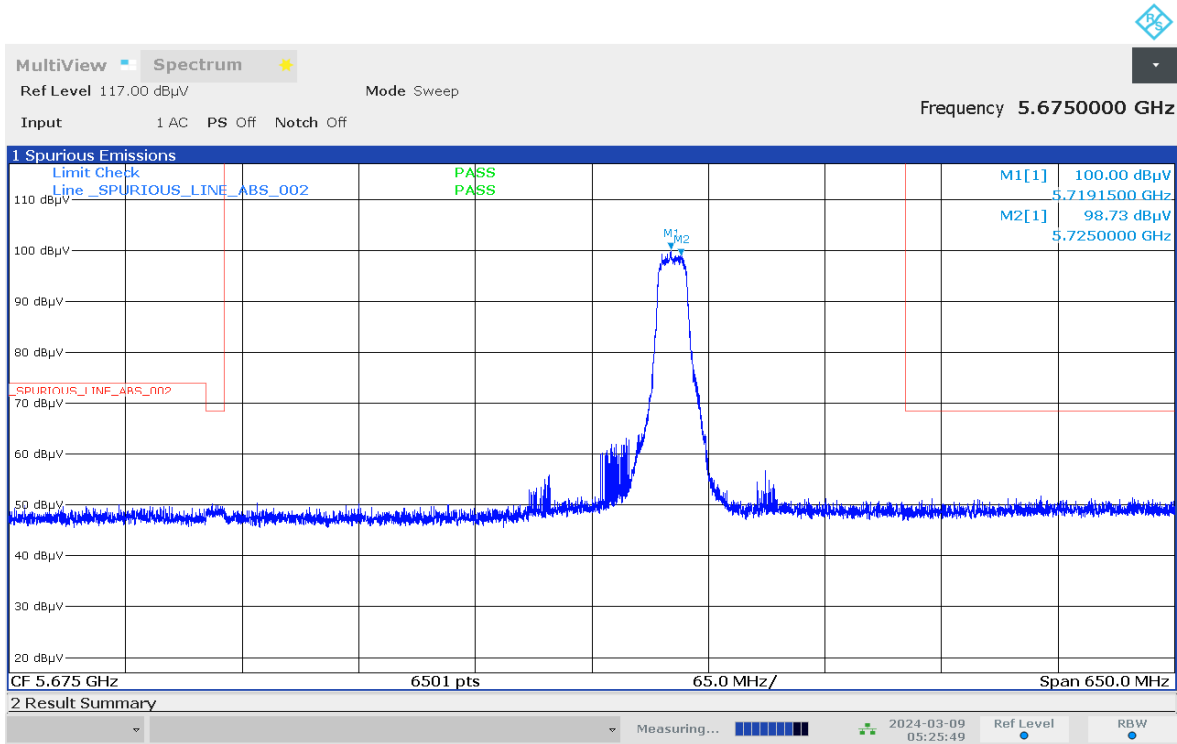


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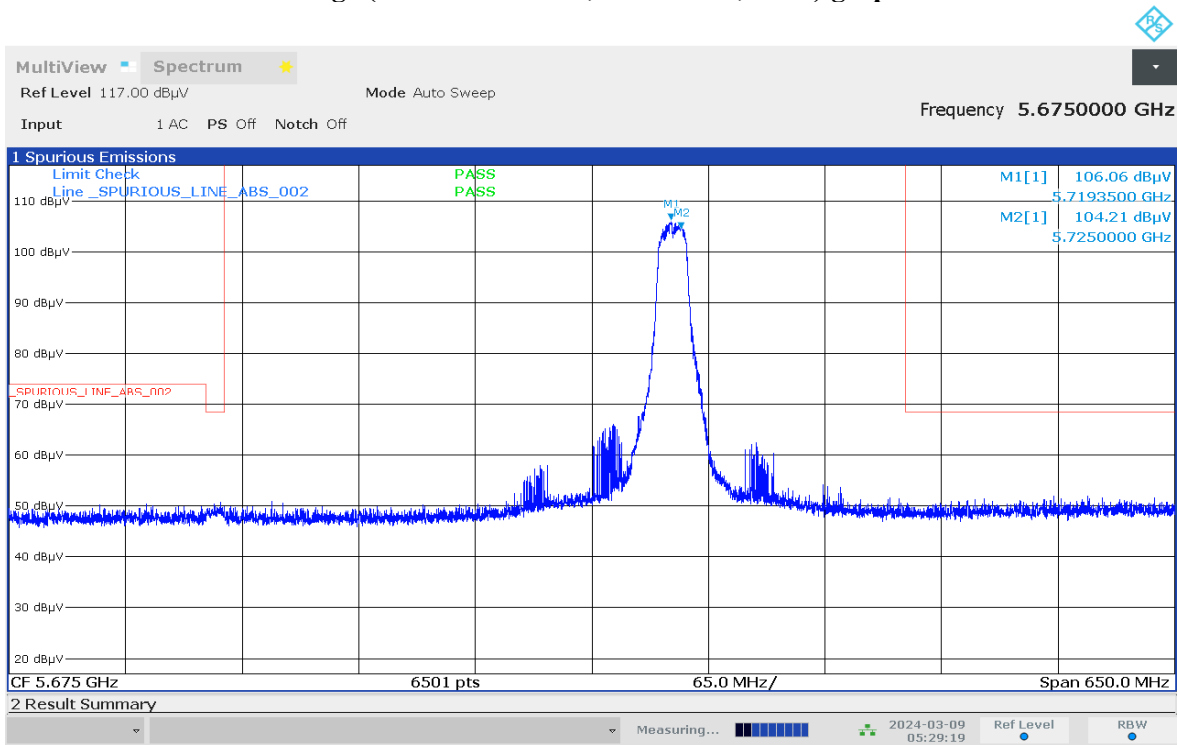




### Restricted Band Edge (Straddle Channel, Vertical, Peak) graphical screen shot

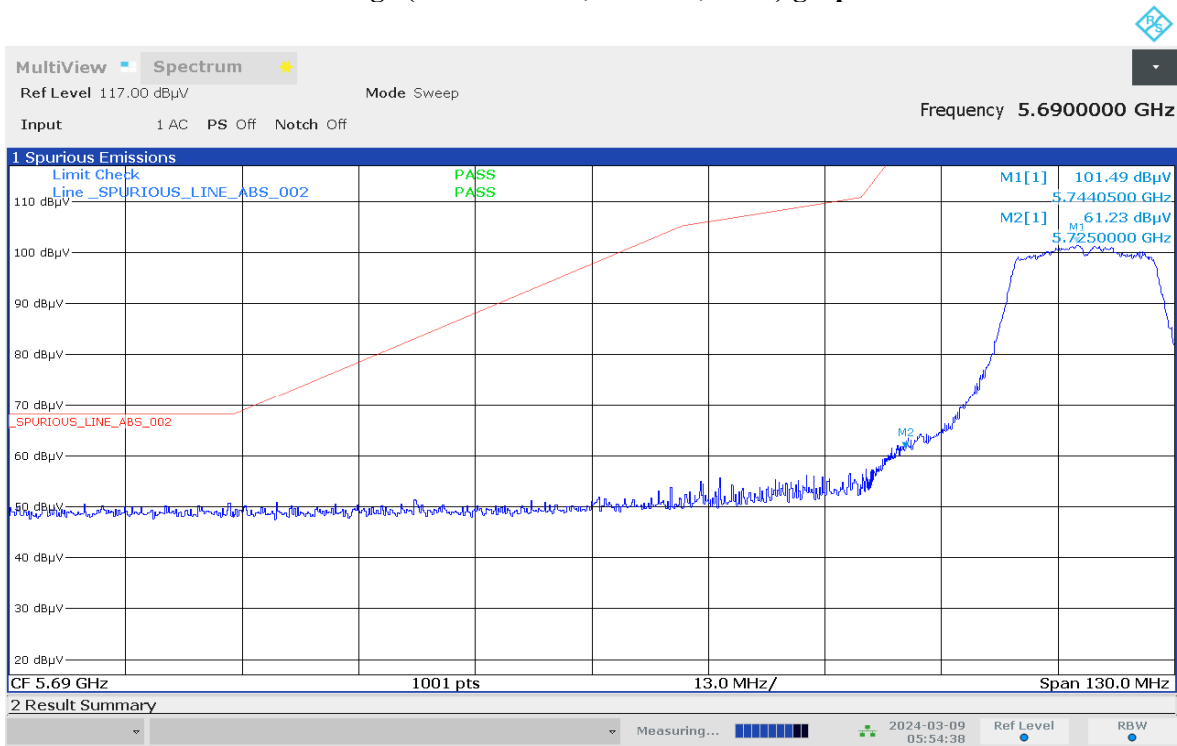


### Restricted Band Edge (Straddle Channel, Horizontal, Peak) graphical screen shot



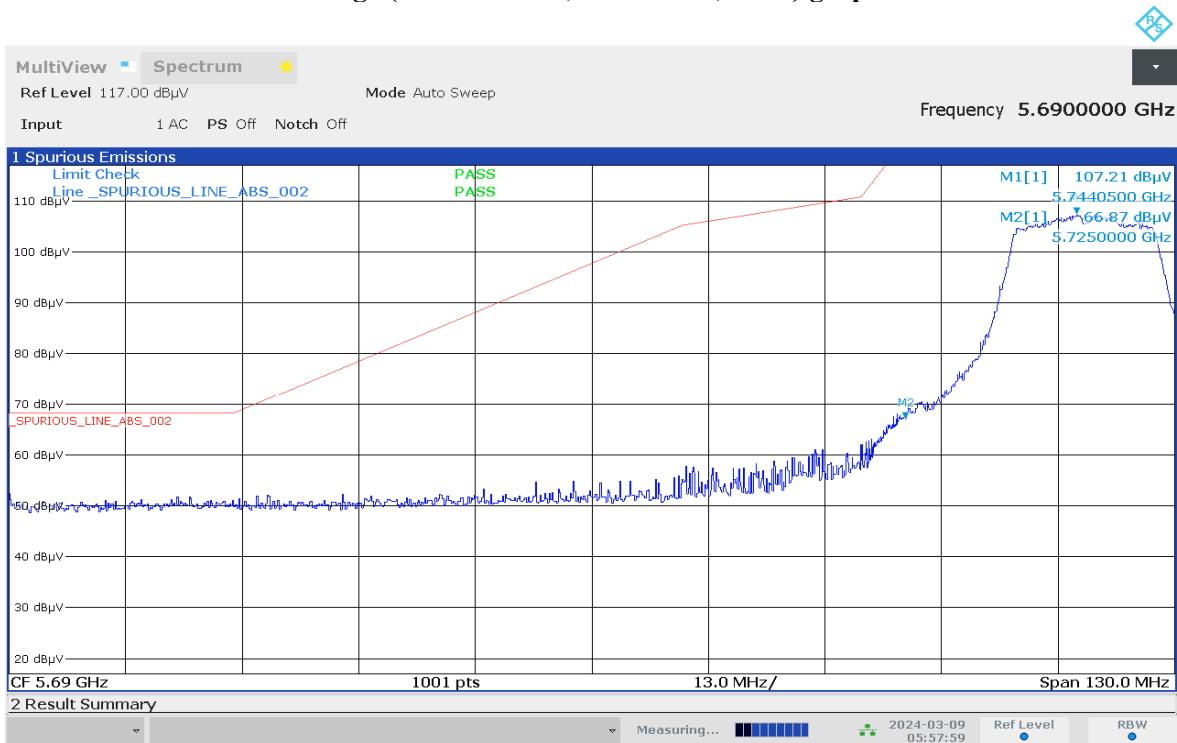


### Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



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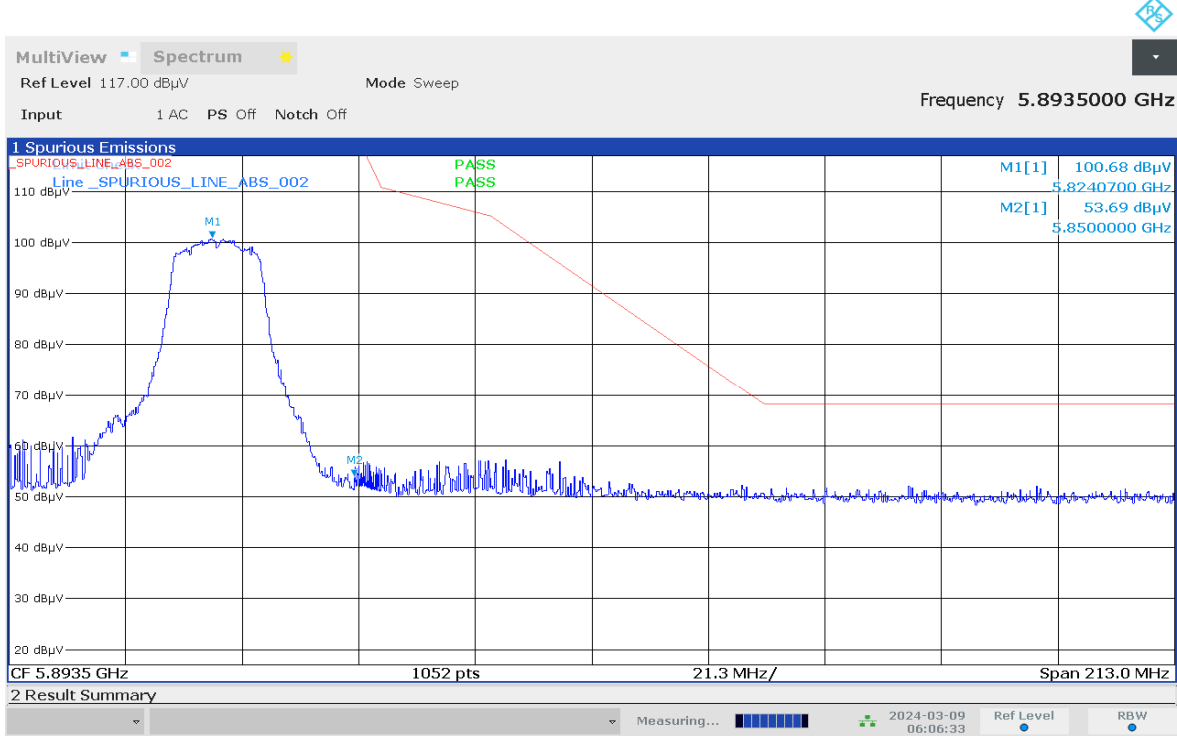
### Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot



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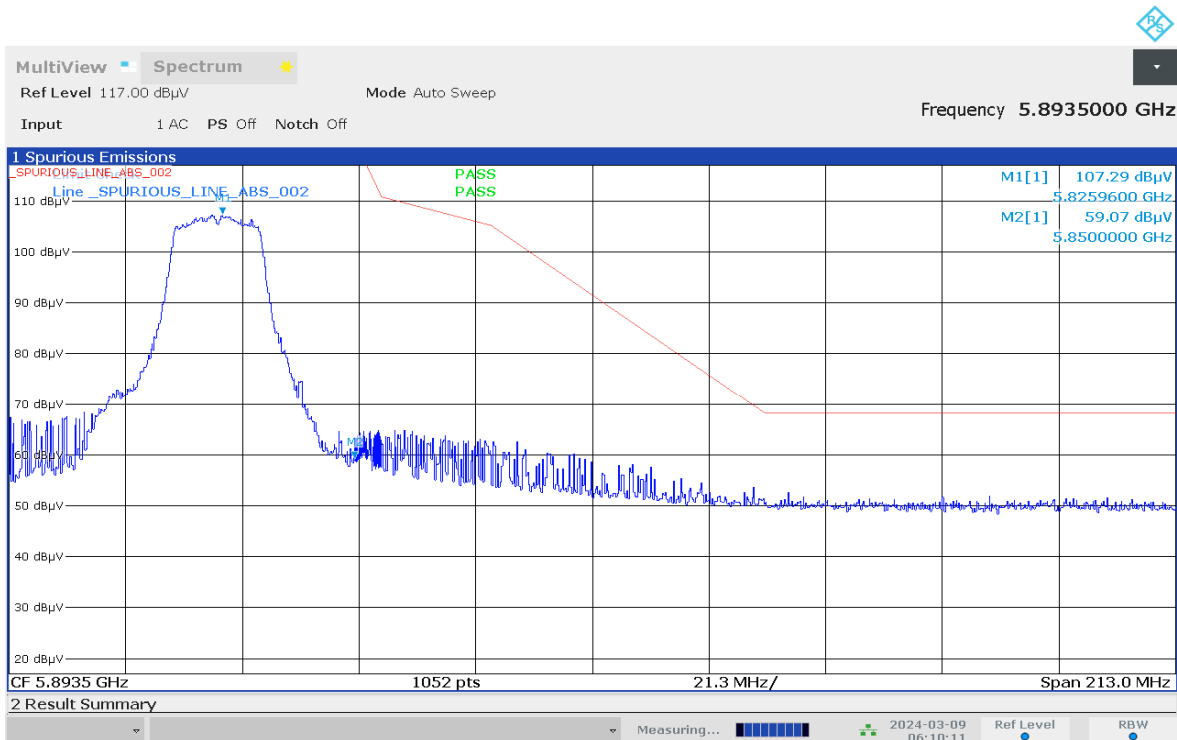


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



06:06:34 AM 03/09/2024

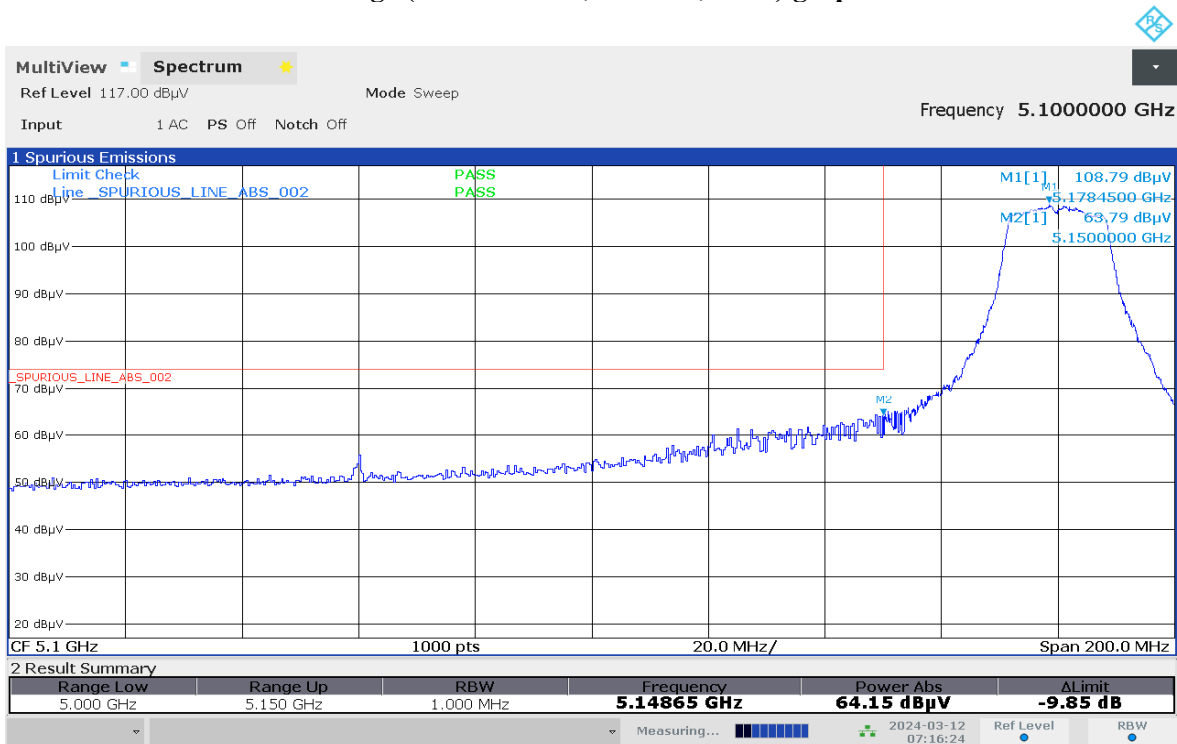
### Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



06:10:12 AM 03/09/2024

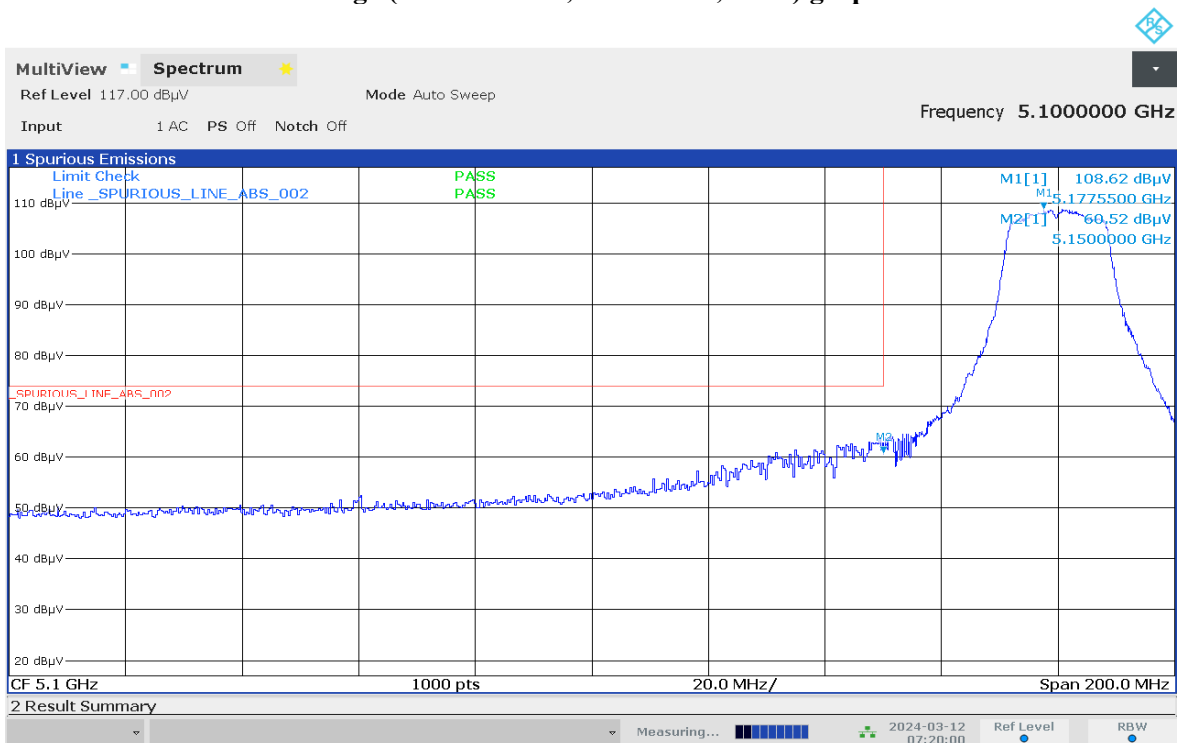


### Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



07:16:25 AM 03/12/2024

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



07:20:00 AM 03/12/2024

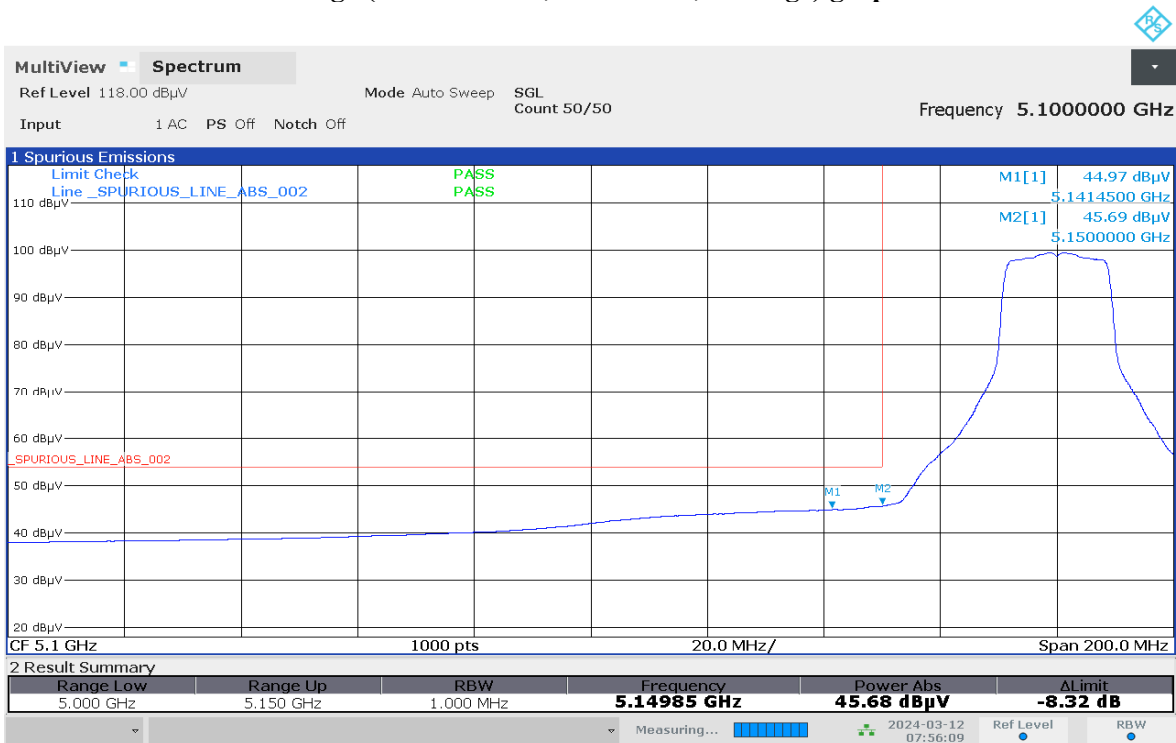


### Restricted Band Edge (Low Channel, Vertical, Average) graphical screen shot



07:40:29 AM 03/12/2024

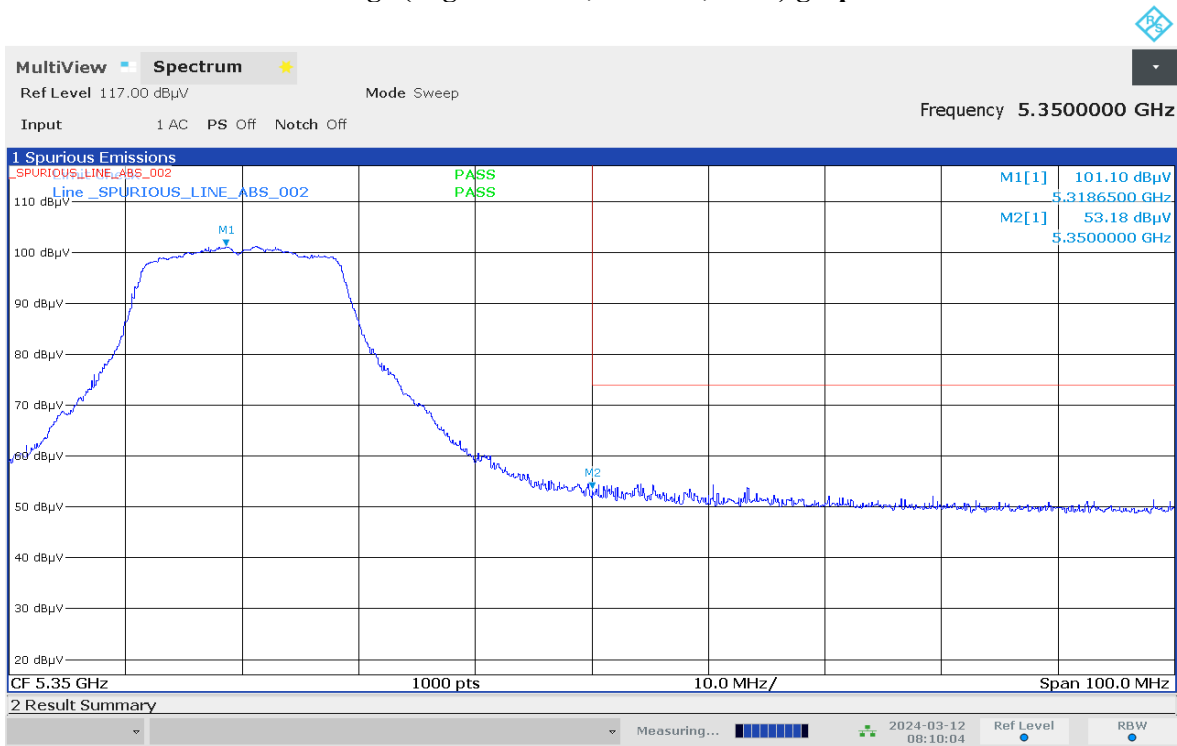
### Restricted Band Edge (Low Channel, Horizontal, Average) graphical screen shot



07:56:09 AM 03/12/2024

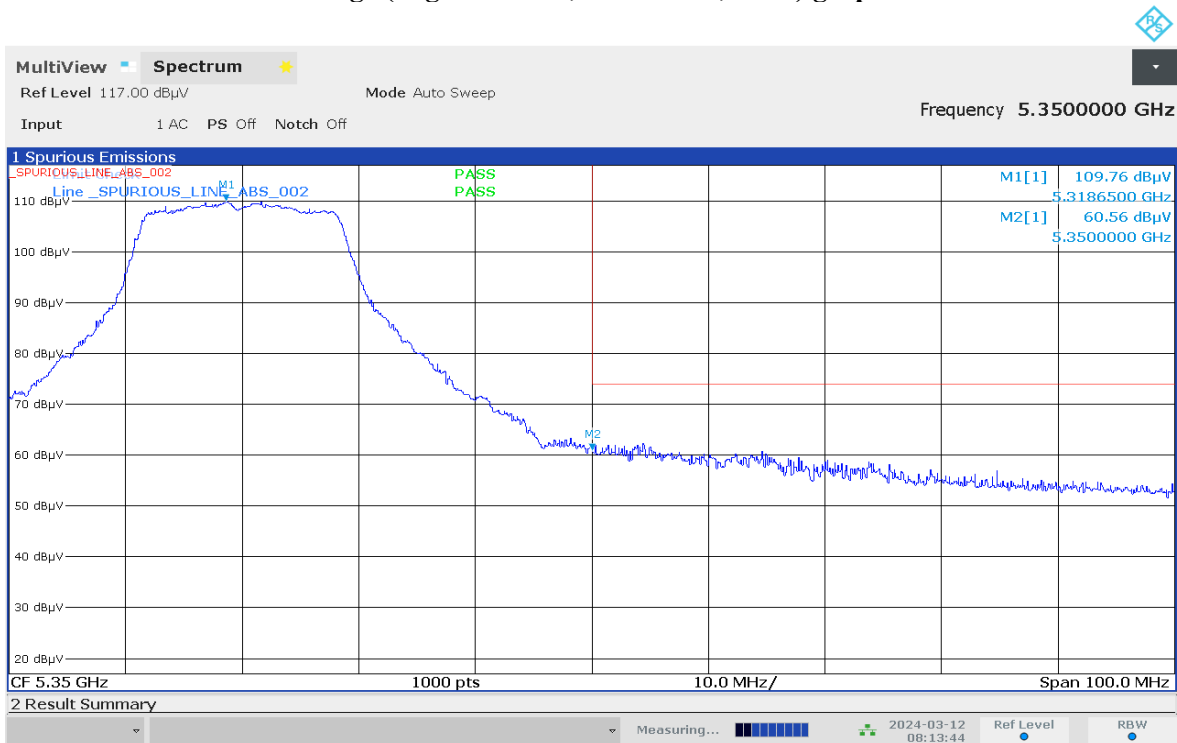


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



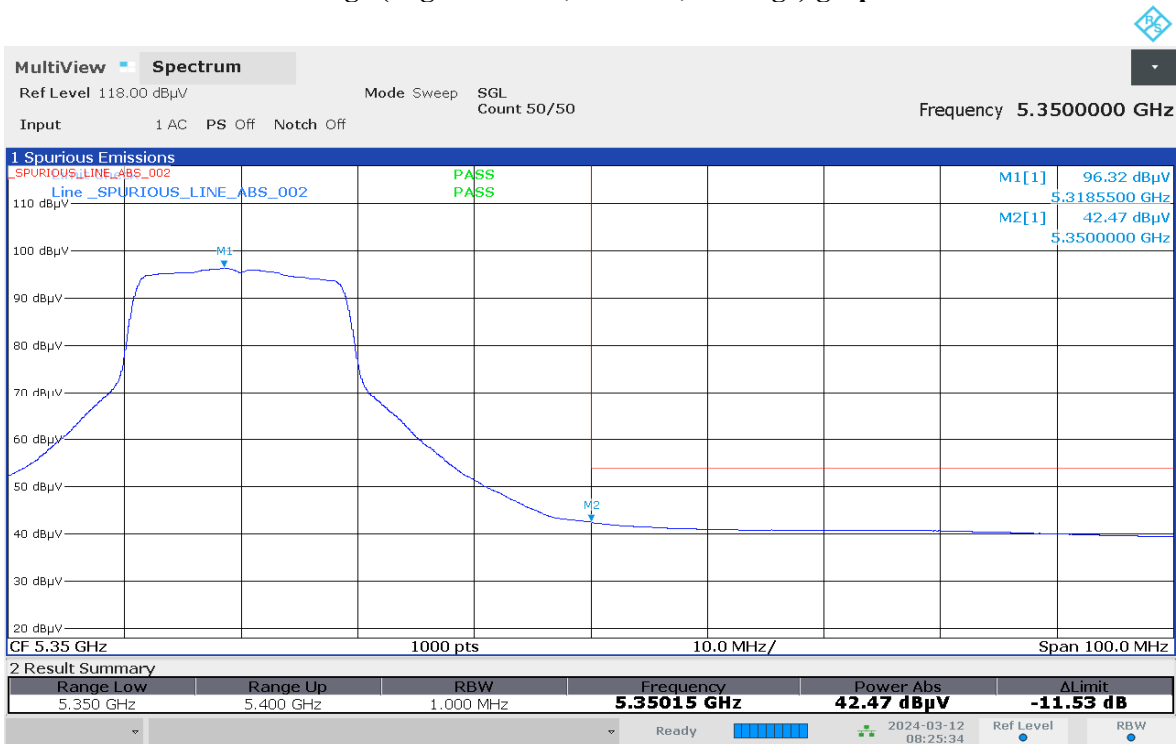
08:10:04 AM 03/12/2024

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



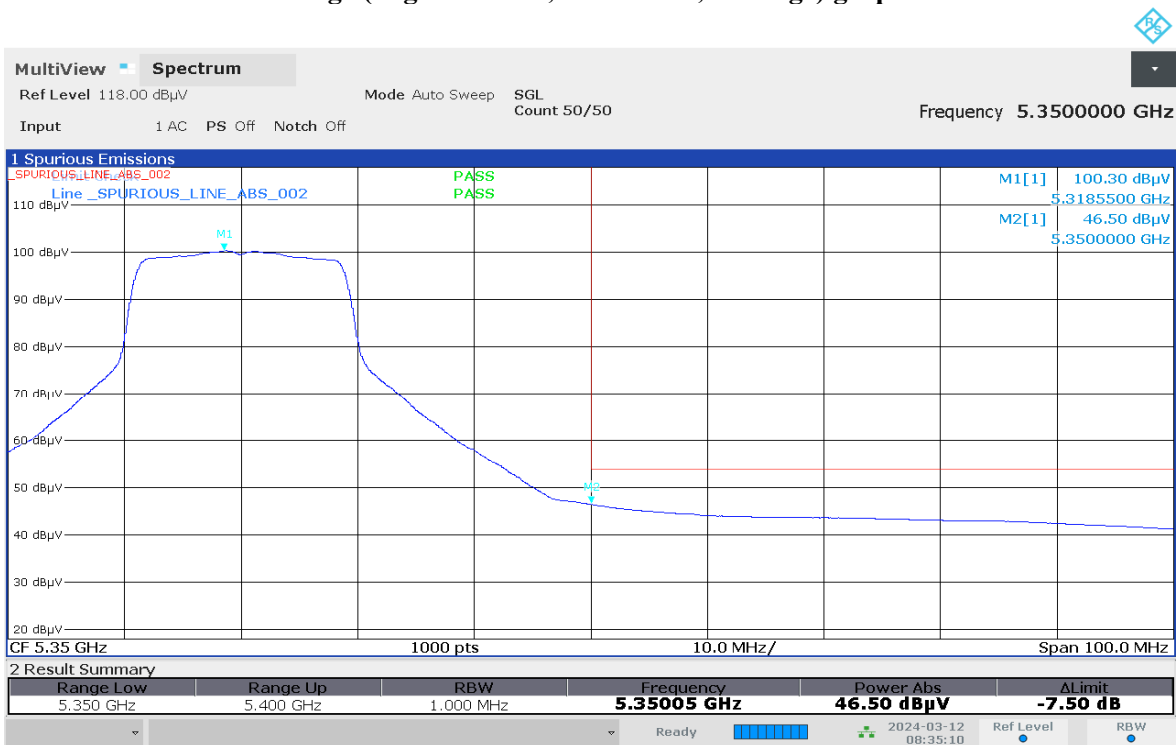
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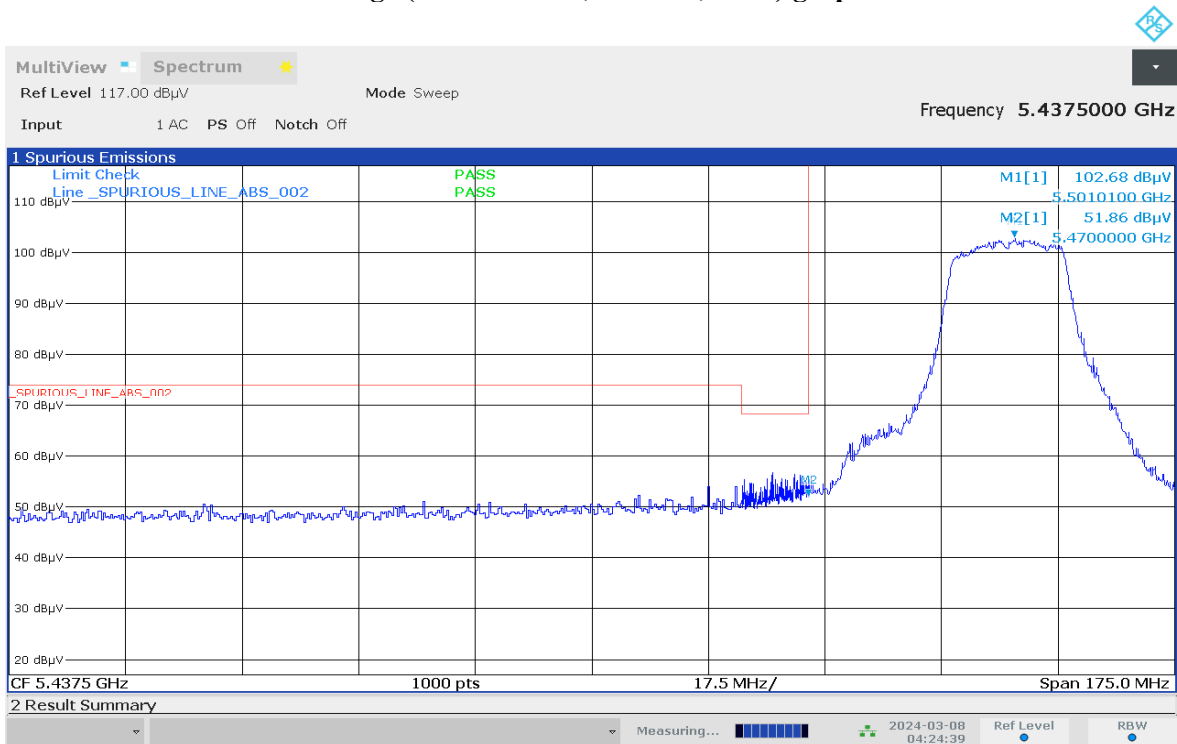
### Restricted Band Edge (High Channel, Horizontal, Average) graphical screen shot



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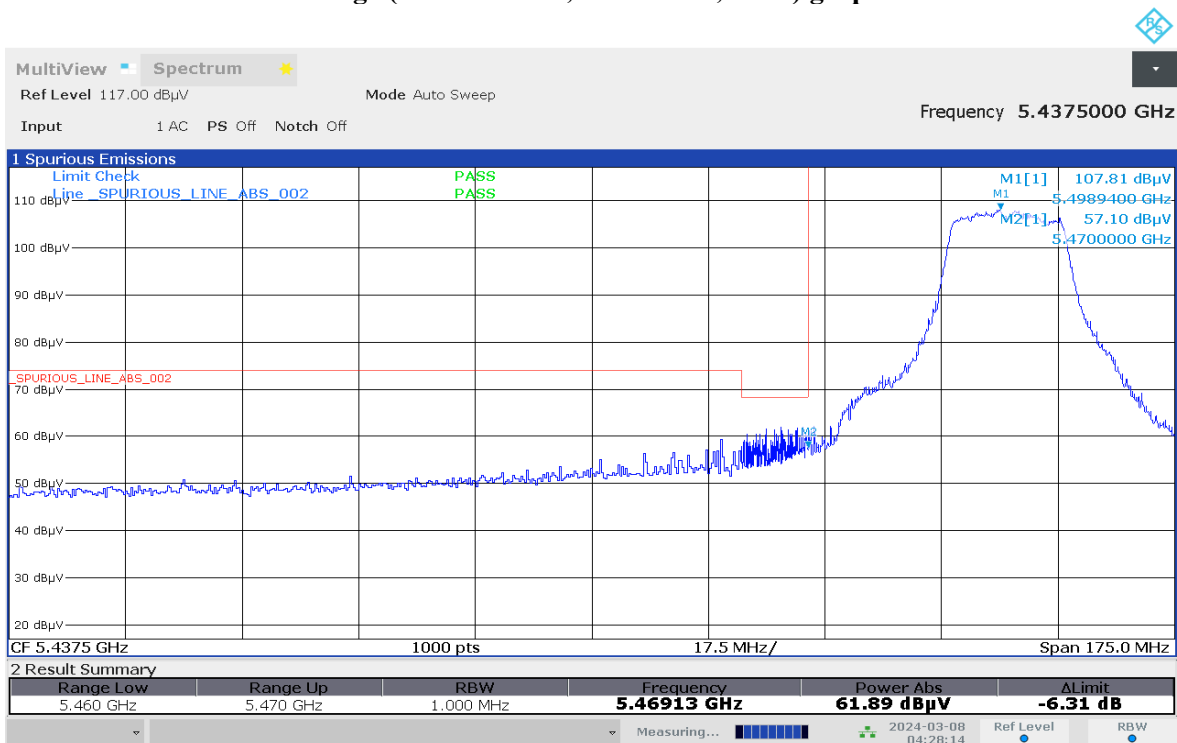


### Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



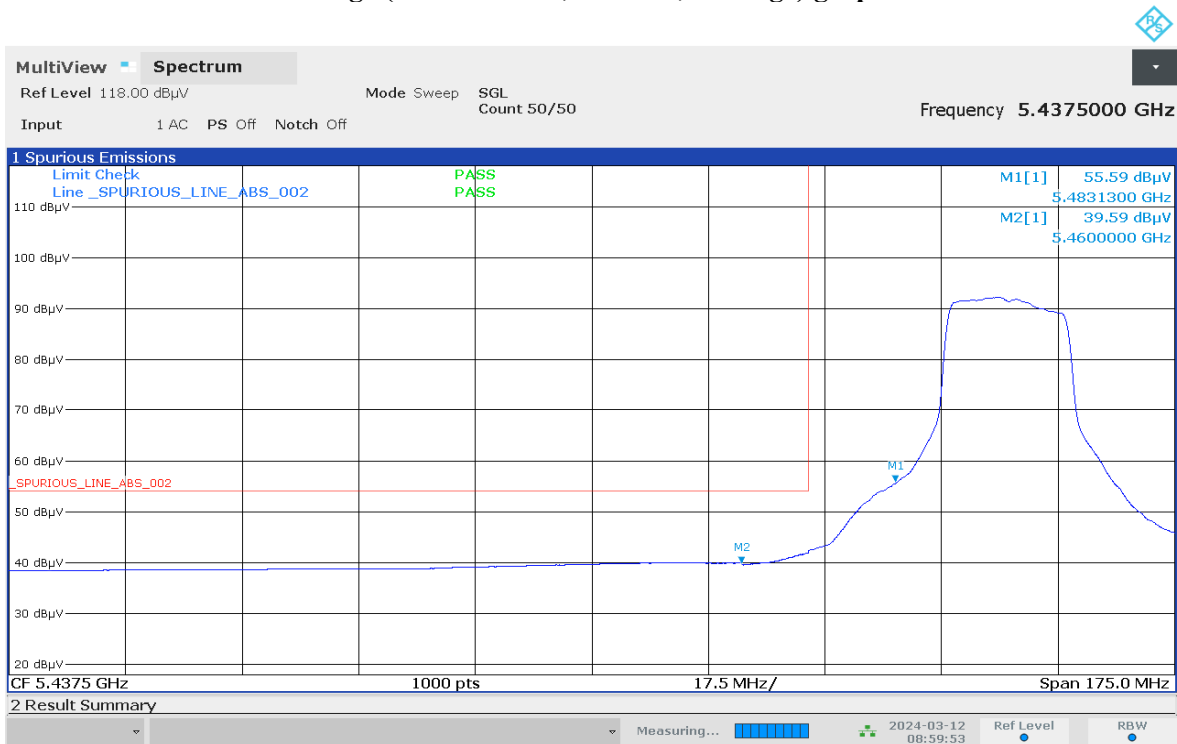
04:24:39 AM 03/08/2024

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



04:28:14 AM 03/08/2024

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



08:59:53 AM 03/12/2024

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

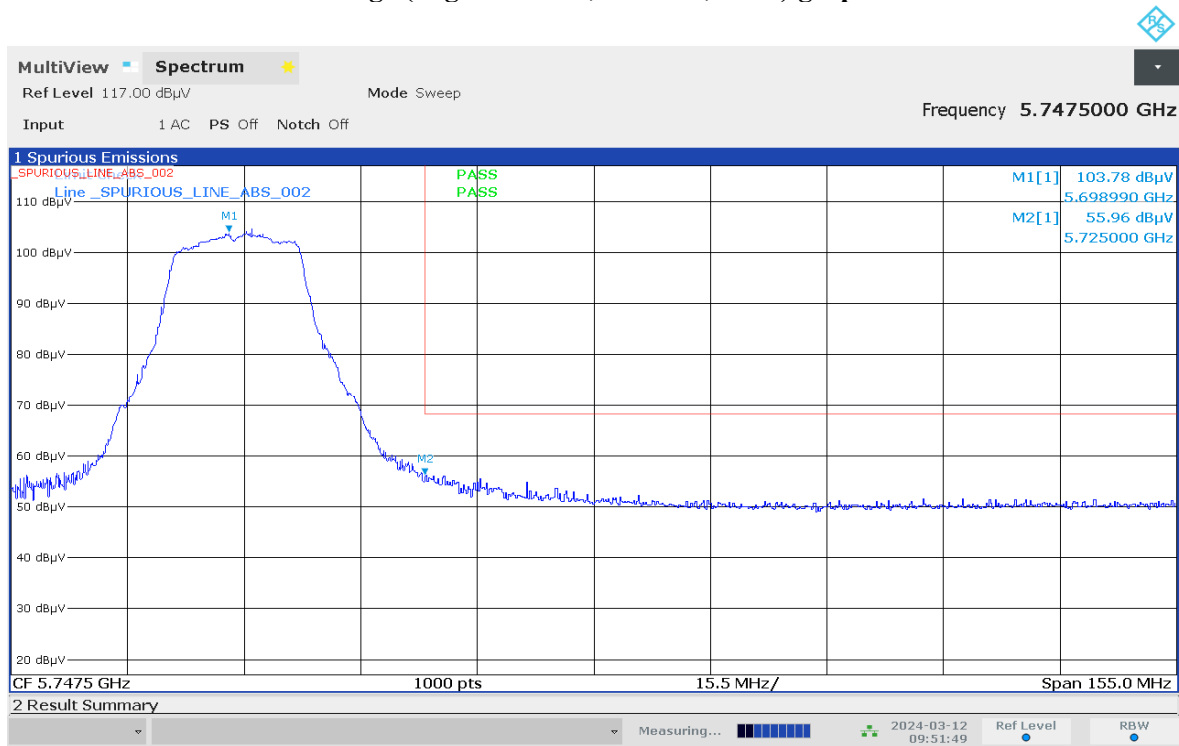


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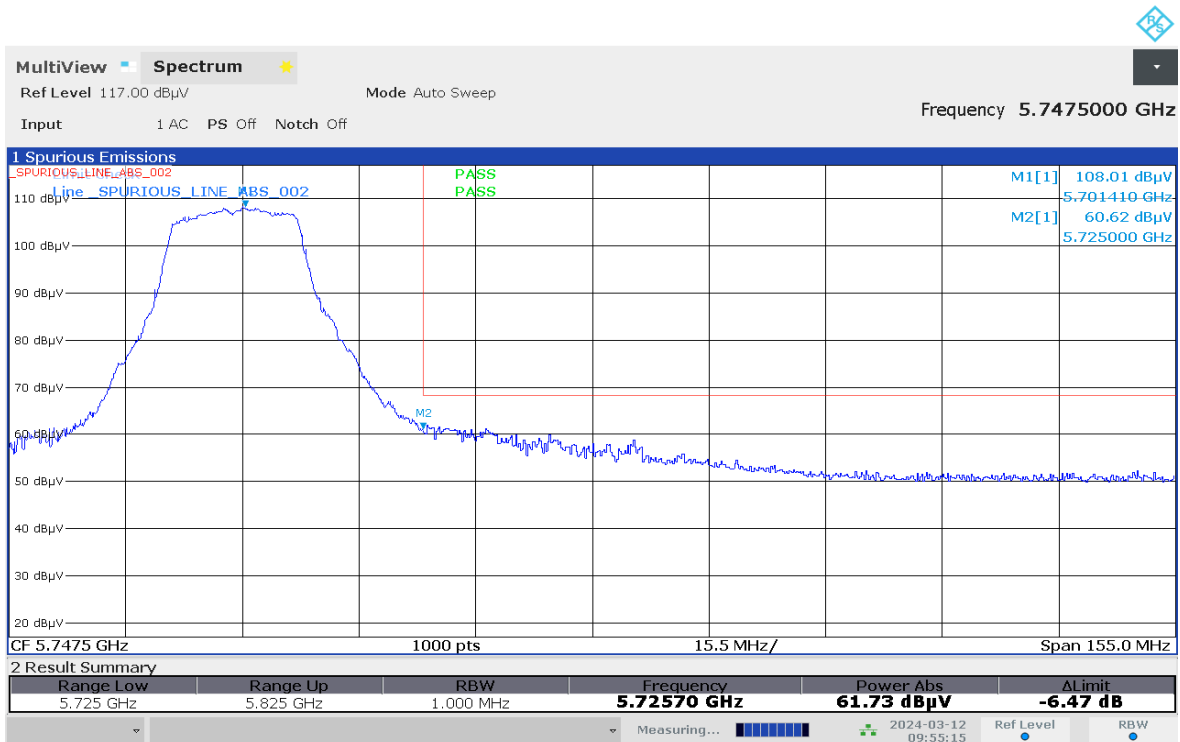


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



09:51:50 AM 03/12/2024

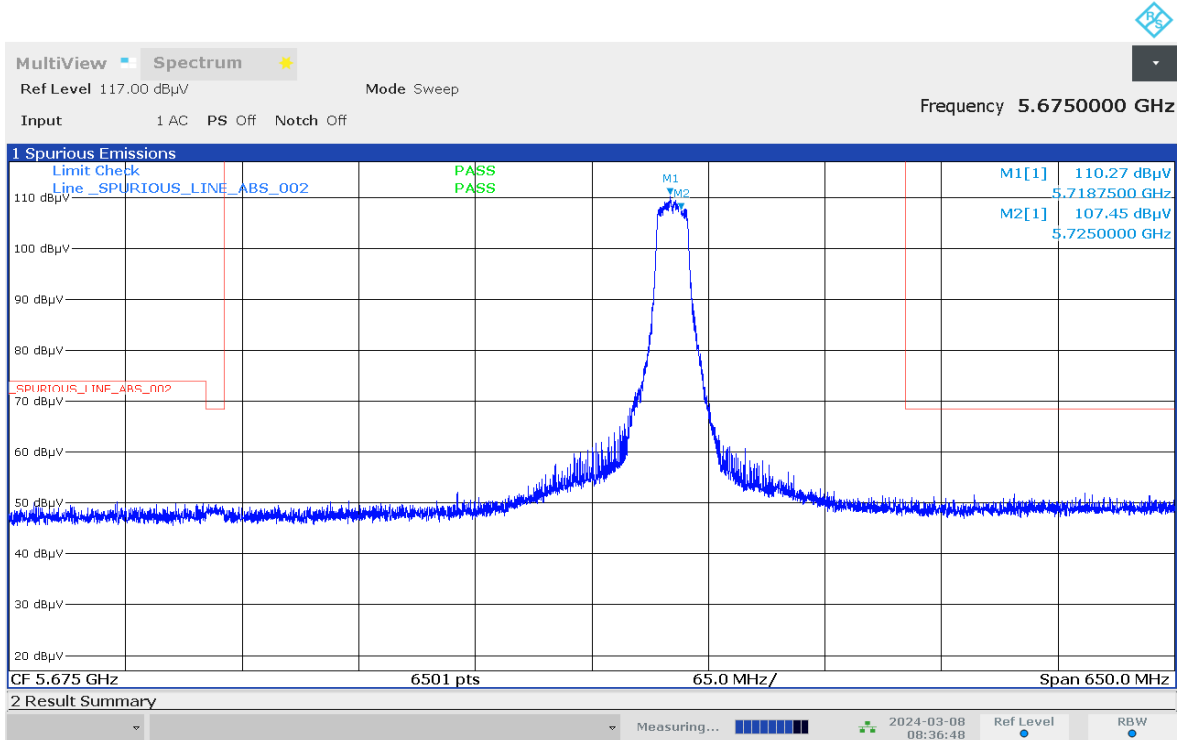
### Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



09:55:15 AM 03/12/2024

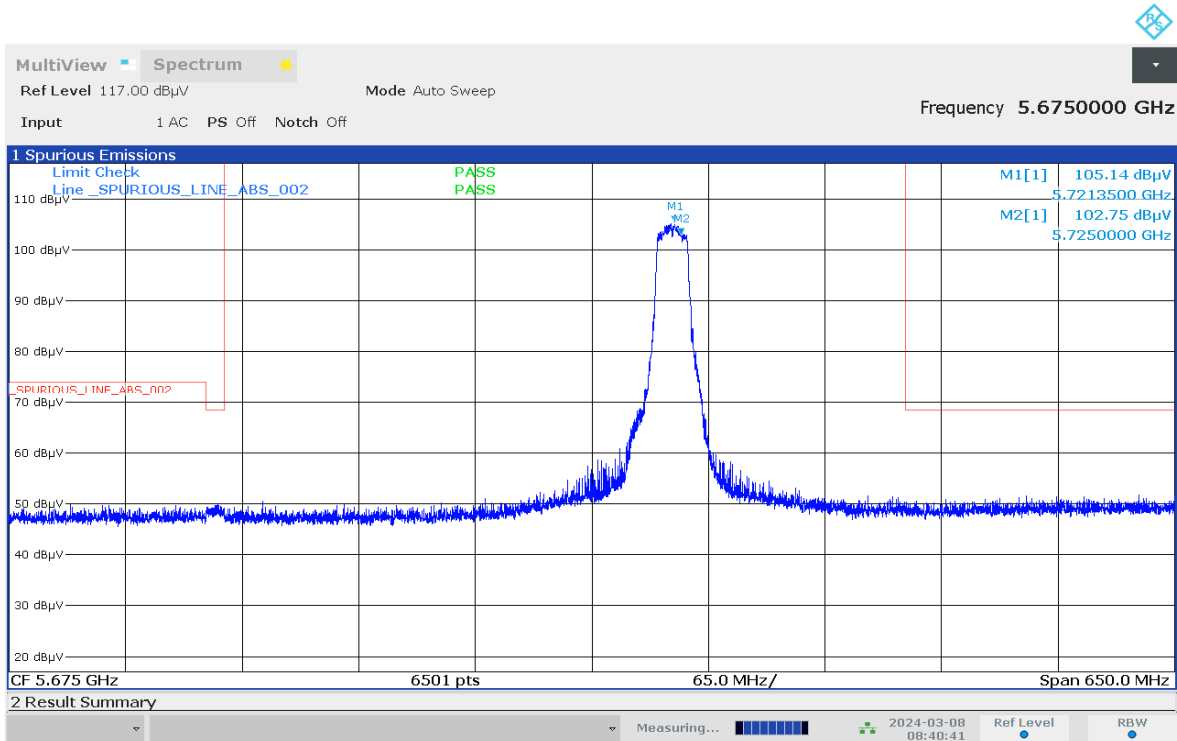


### Restricted Band Edge (Straddle Channel, Vertical, Peak) graphical screen shot



08:36:48 AM 03/08/2024

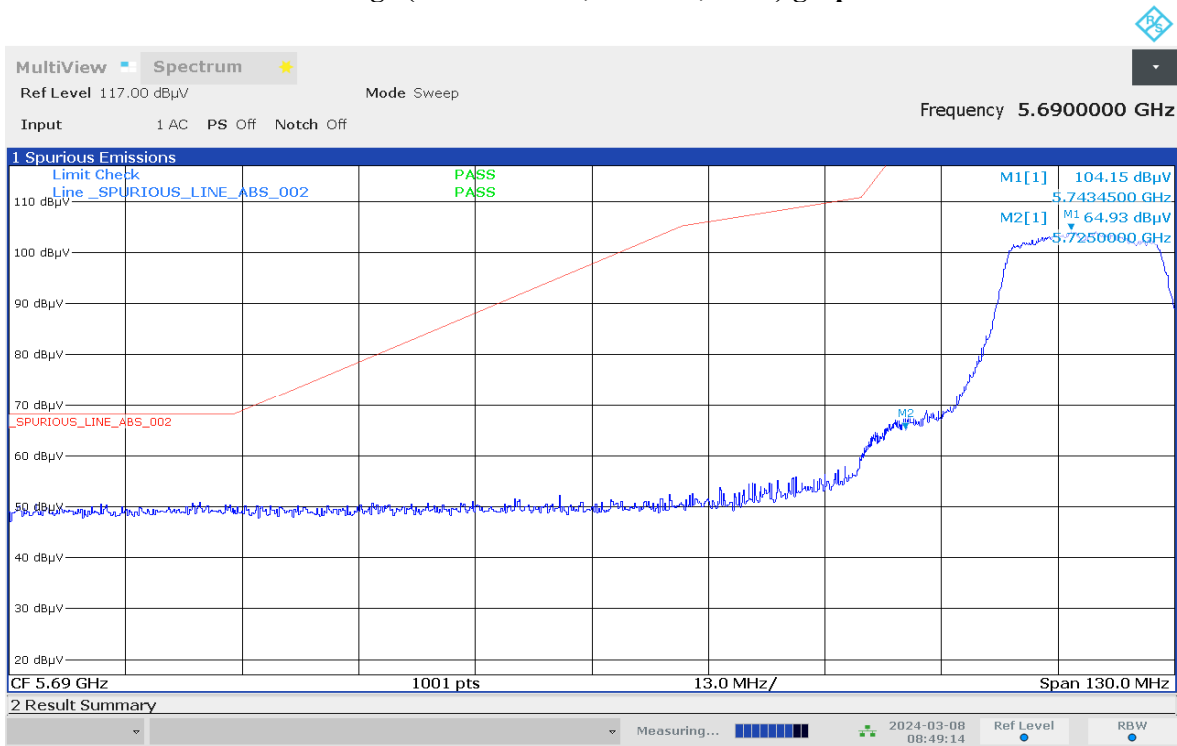
### Restricted Band Edge (Straddle Channel, Horizontal, Peak) graphical screen shot



08:40:42 AM 03/08/2024

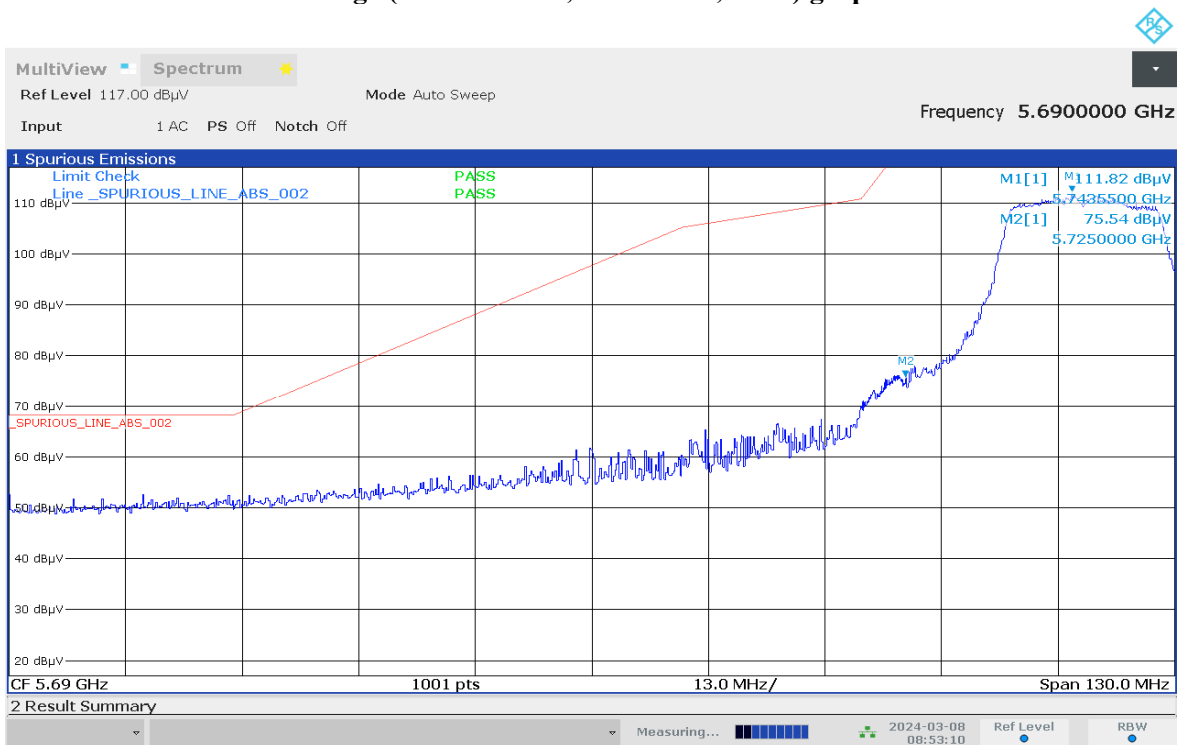


### Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



08:49:14 AM 03/08/2024

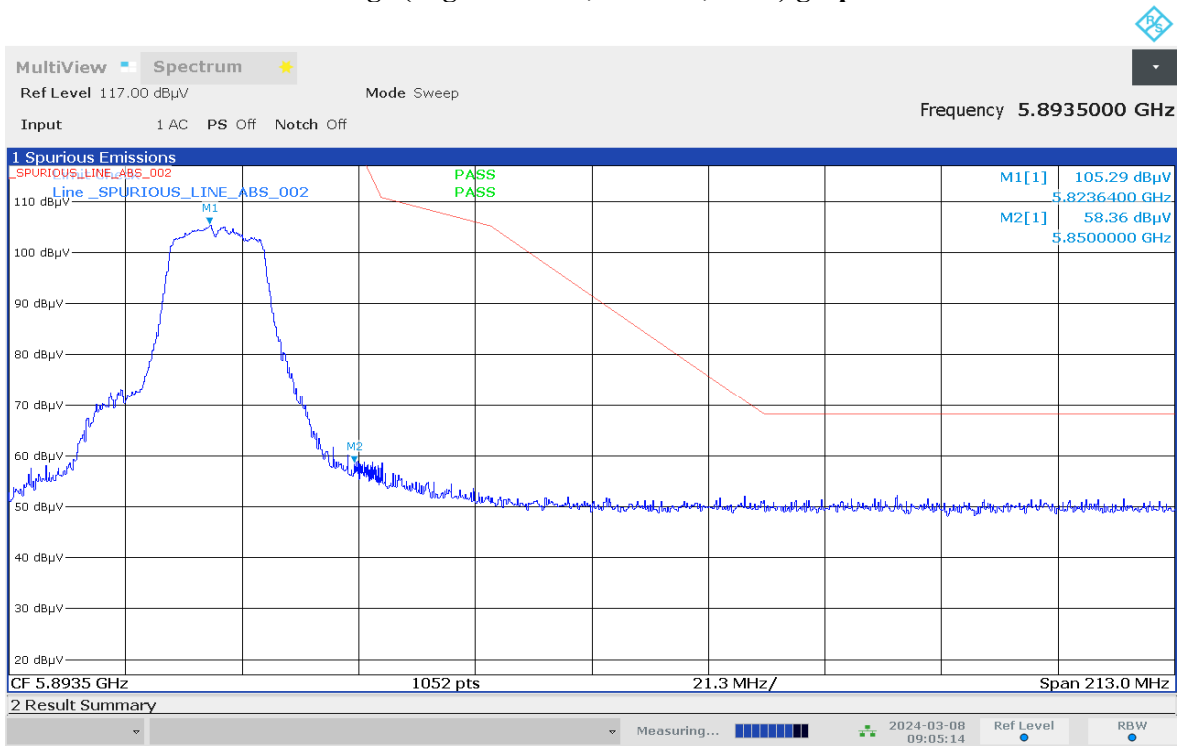
### Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot



08:53:10 AM 03/08/2024

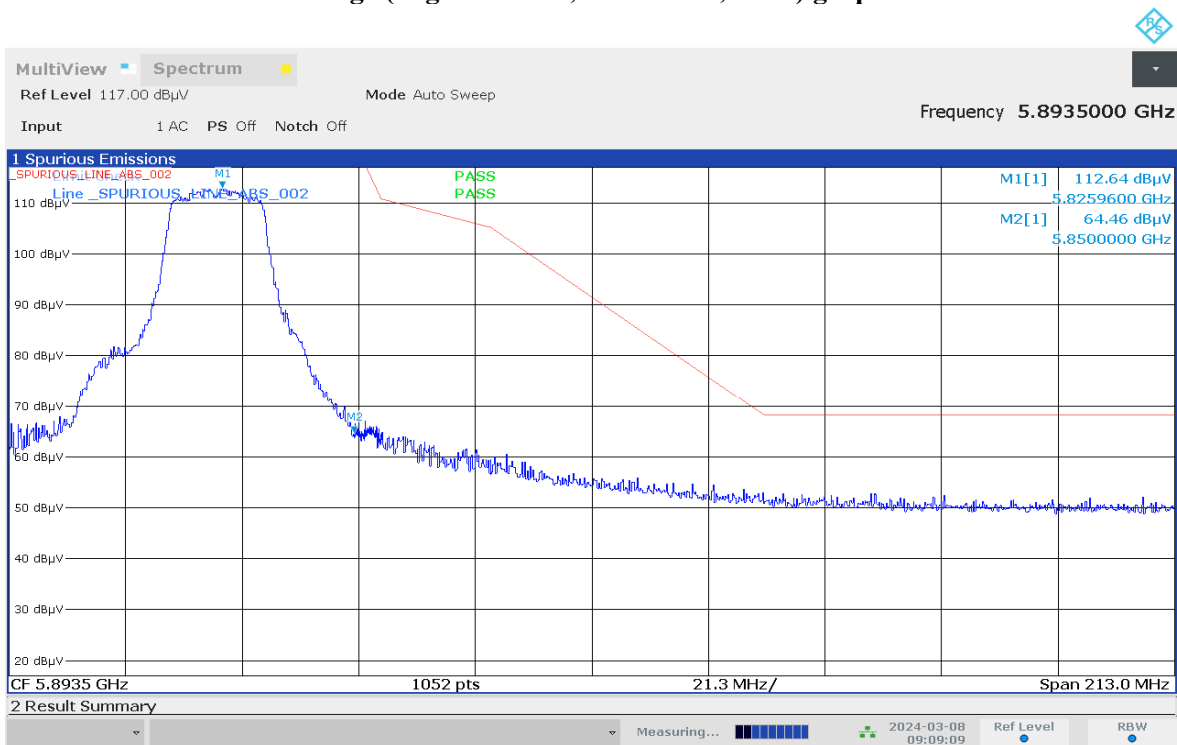


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



09:05:14 AM 03/08/2024

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

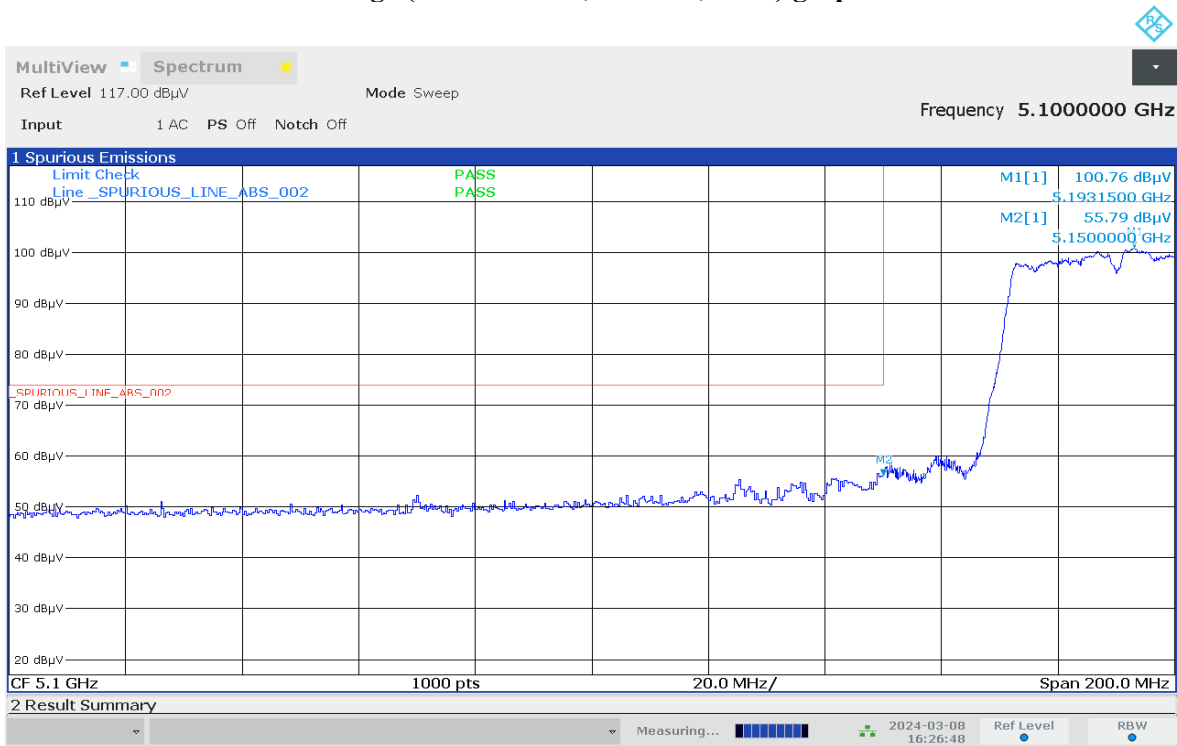


09:09:10 AM 03/08/2024



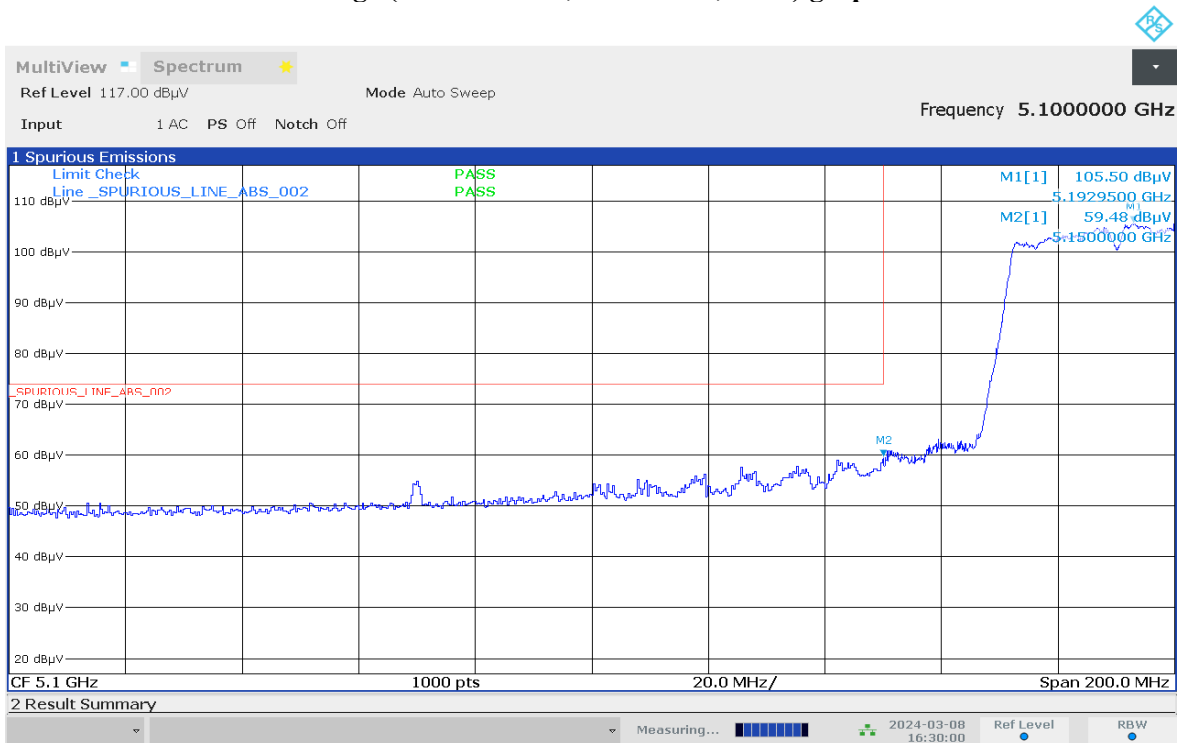


### Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



04:26:48 PM 03/08/2024

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



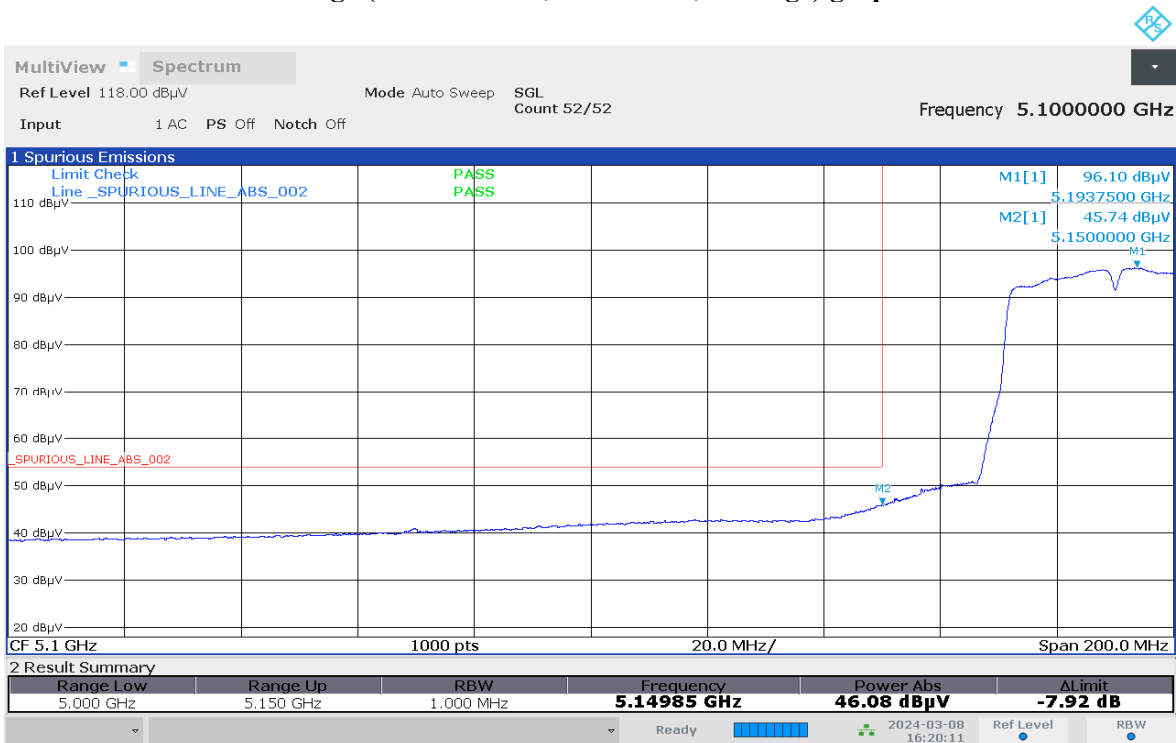
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### Restricted Band Edge (Low Channel, Vertical, Average) graphical screen shot



04:16:57 PM 03/08/2024

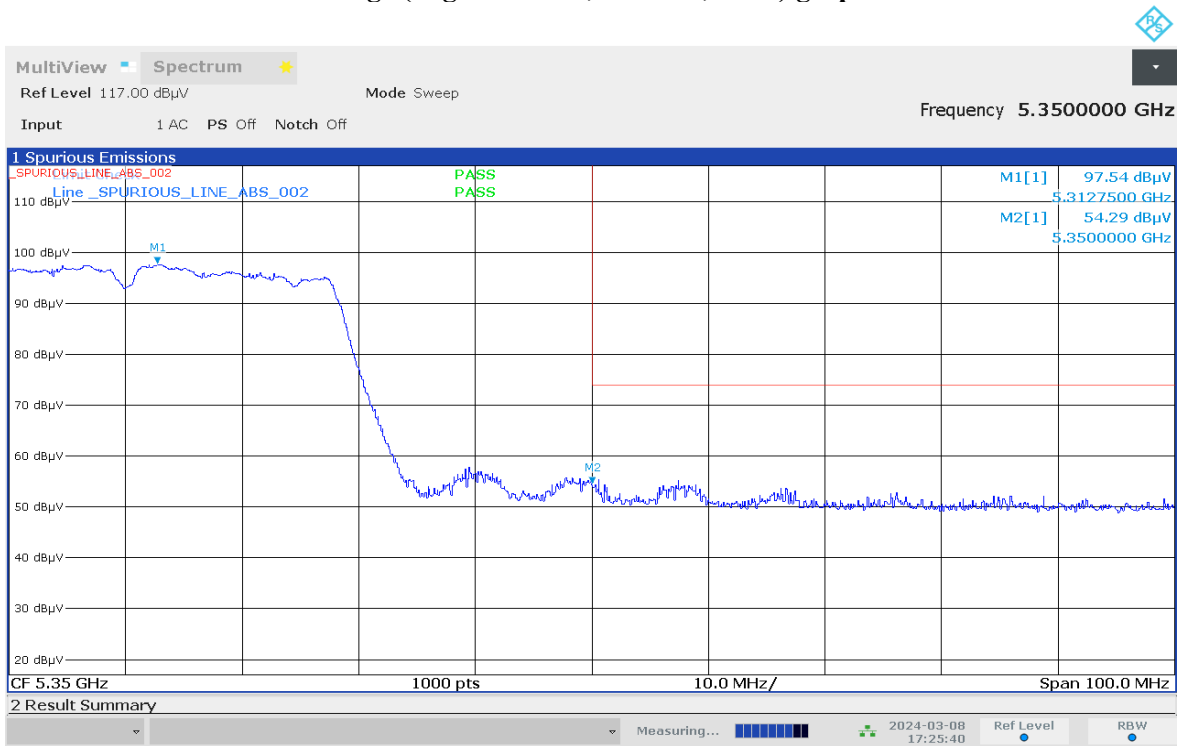
### Restricted Band Edge (Low Channel, Horizontal, Average) graphical screen shot



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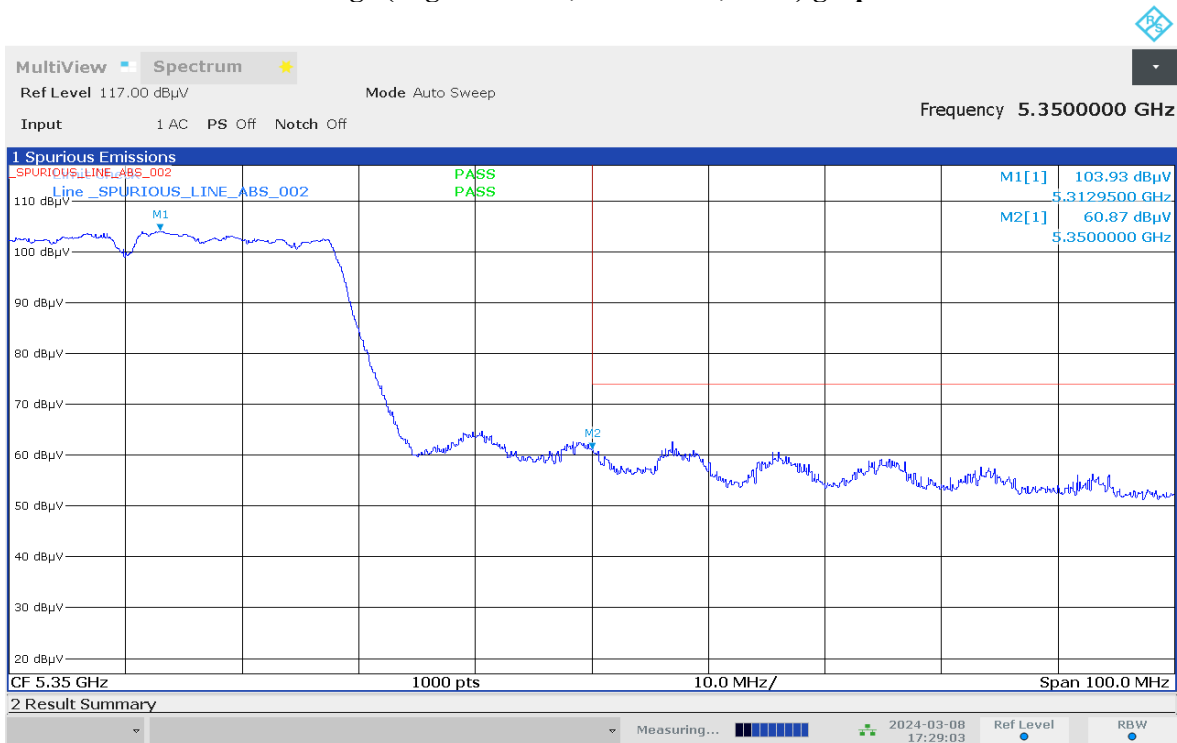


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



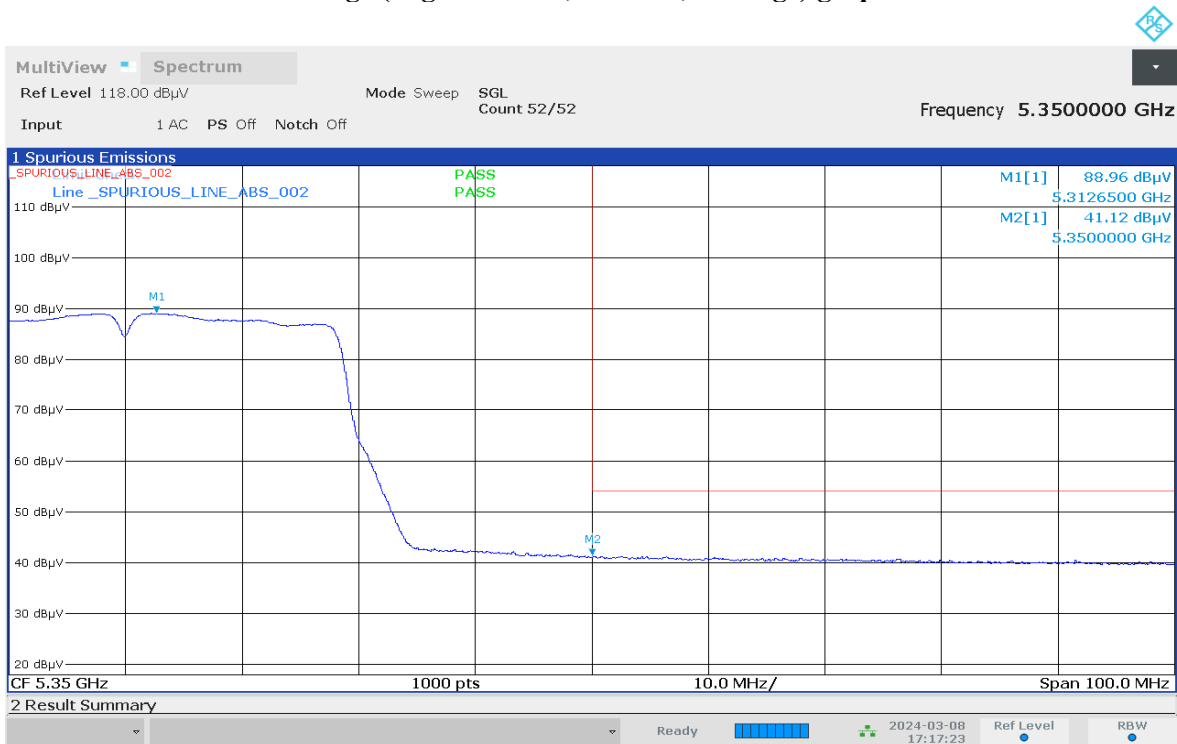
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### Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



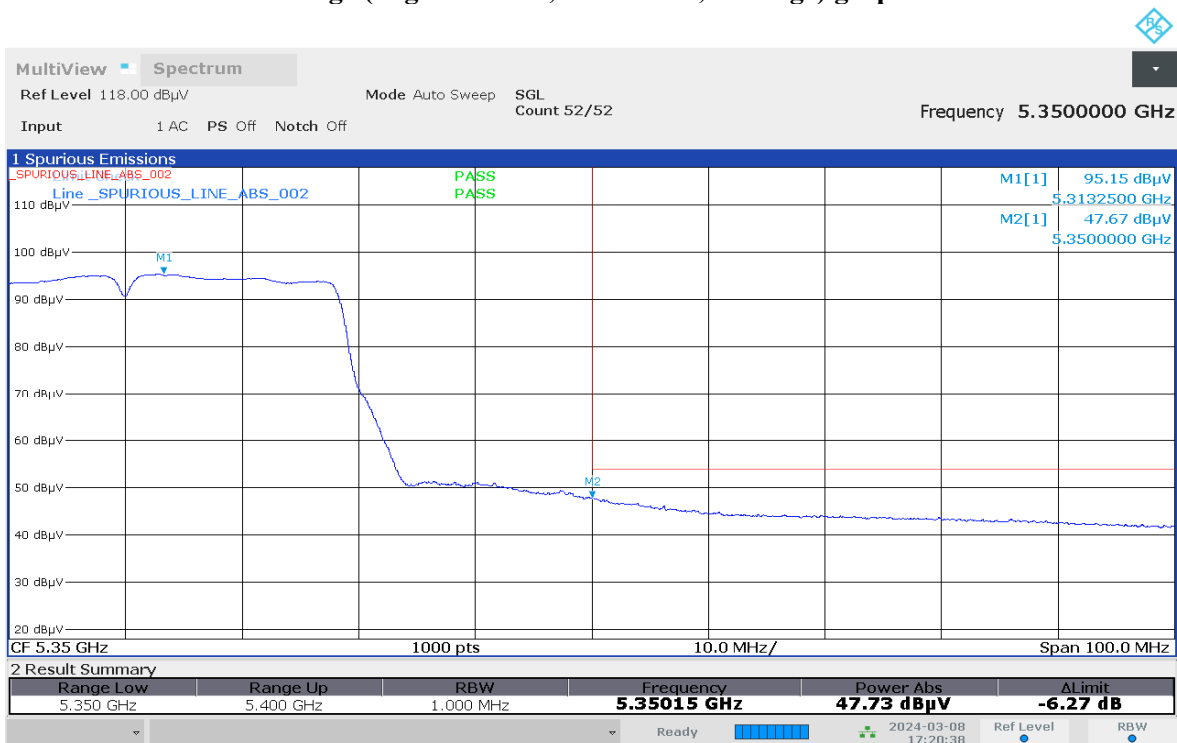
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### Restricted Band Edge (High Channel, Vertical, Average) graphical screen shot



05:17:24 PM 03/08/2024

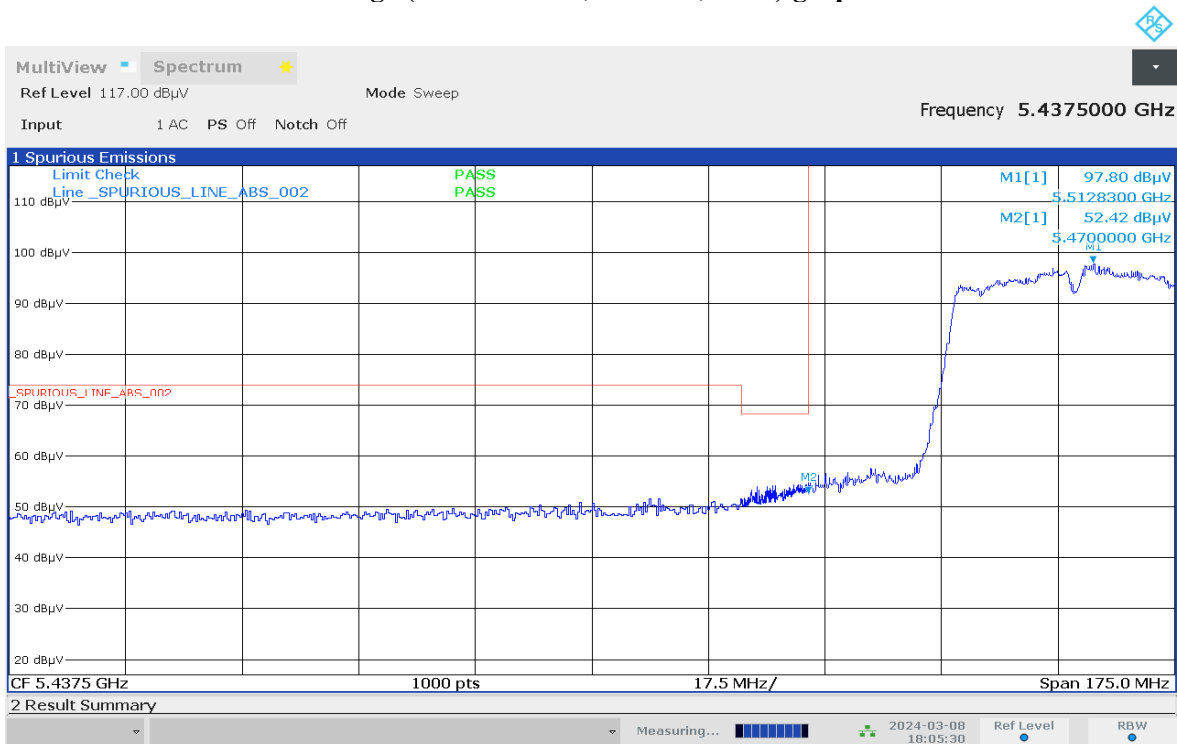
### Restricted Band Edge (High Channel, Horizontal, Average) graphical screen shot



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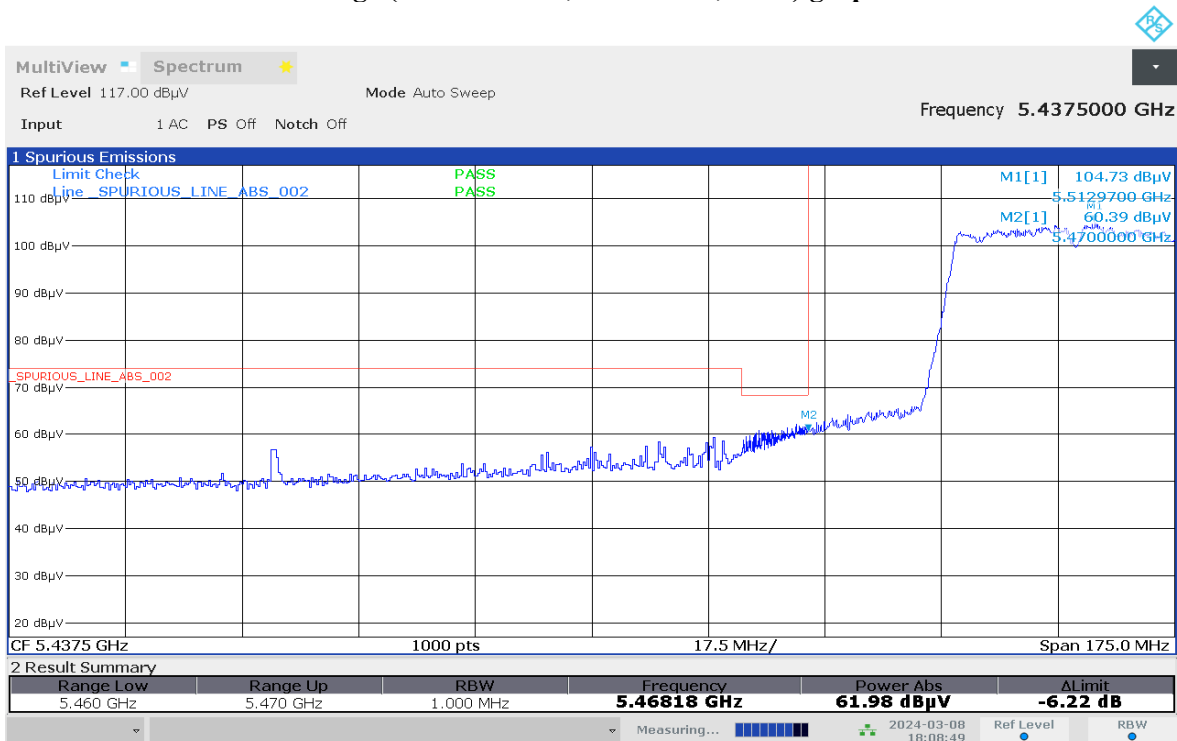


### Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



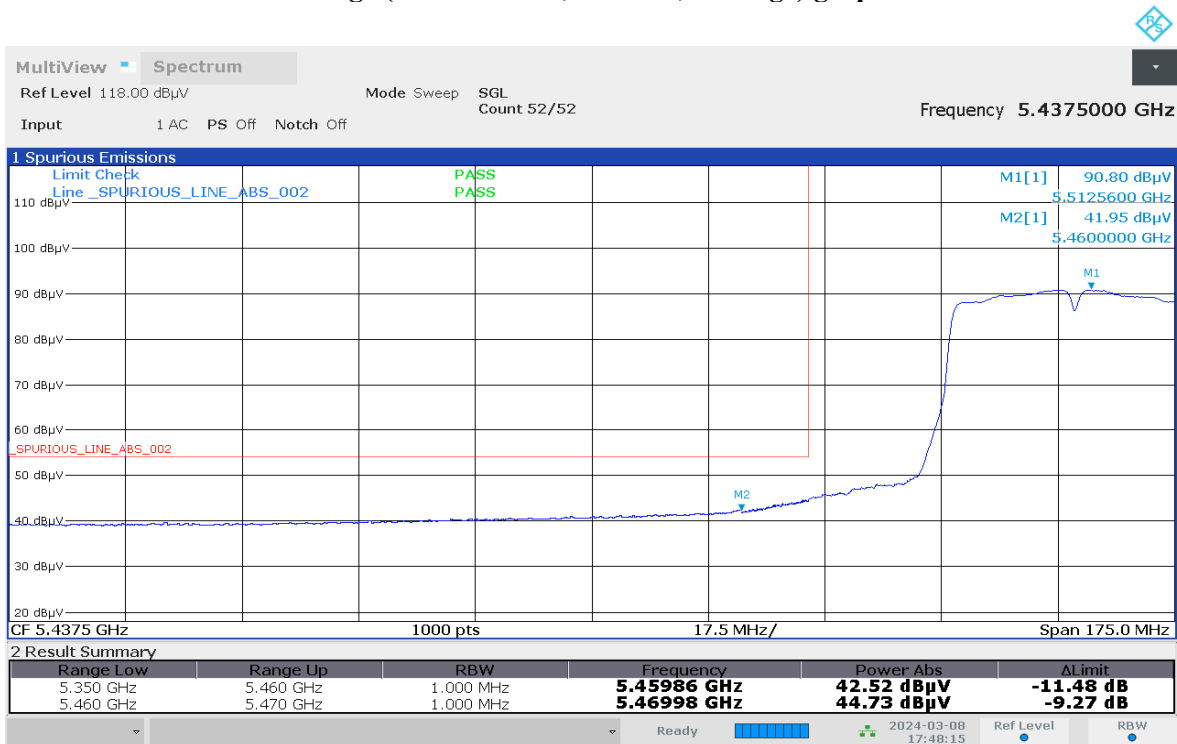
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### Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot



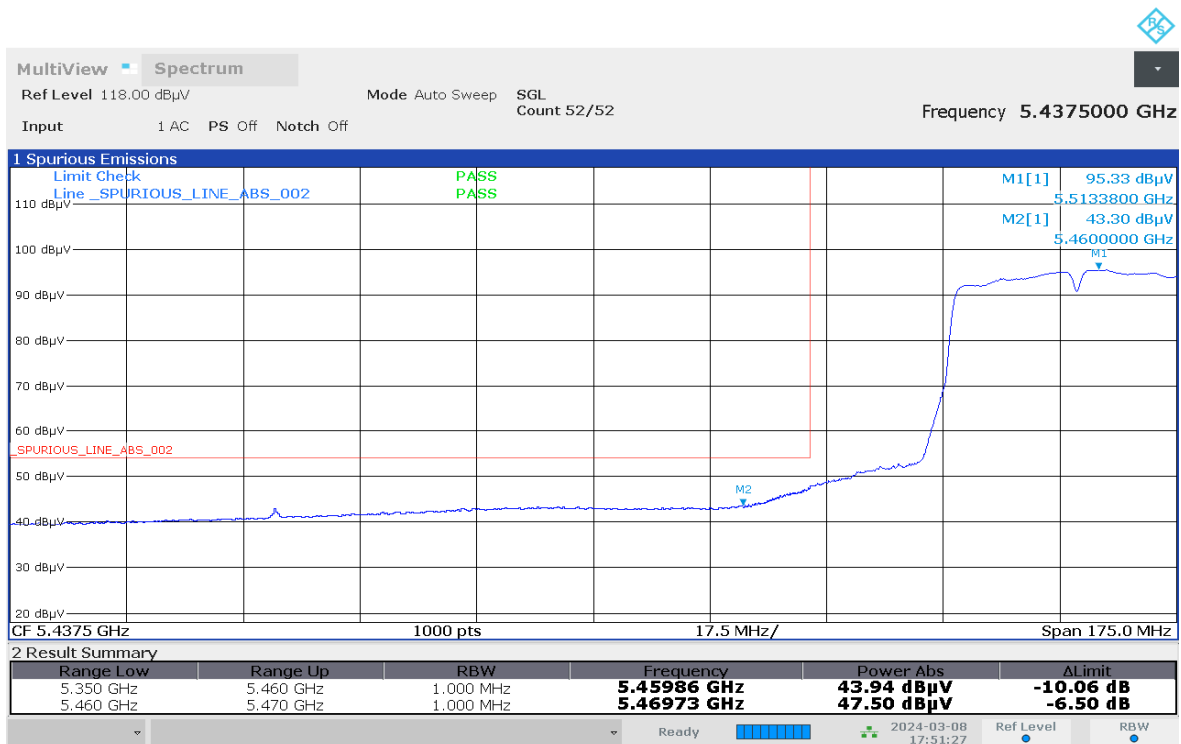
06:08:50 PM 03/08/2024

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



05:48:16 PM 03/08/2024

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

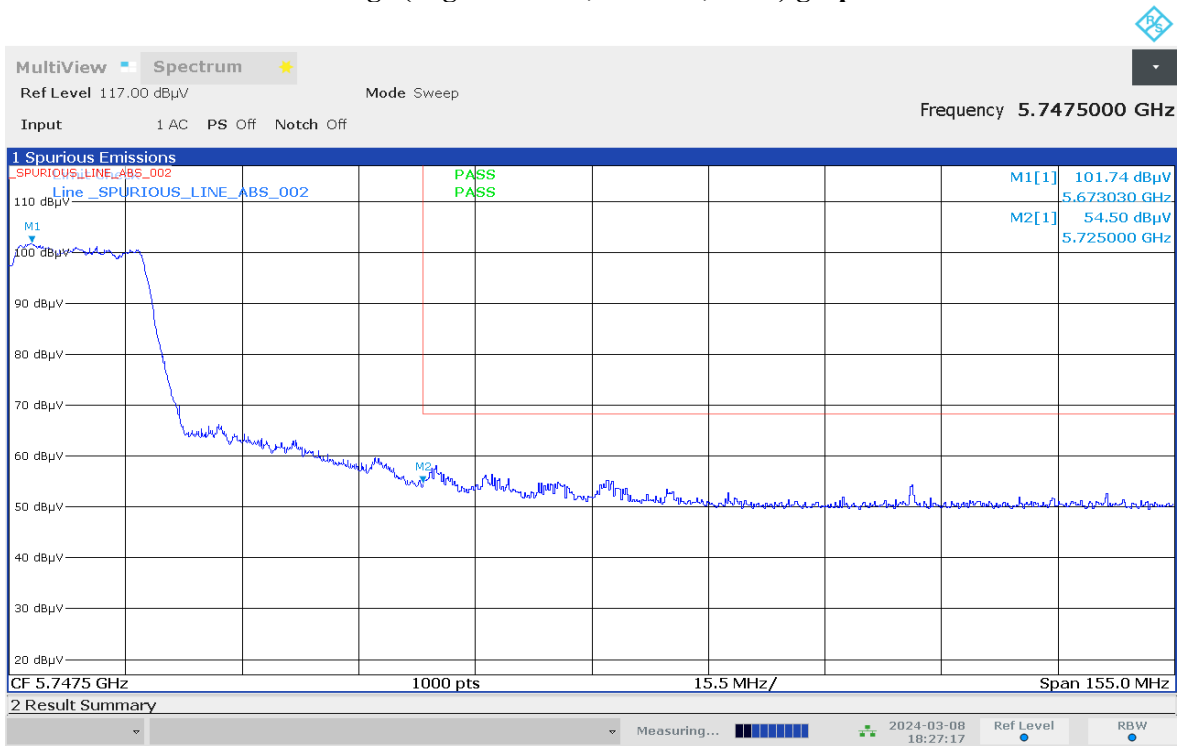


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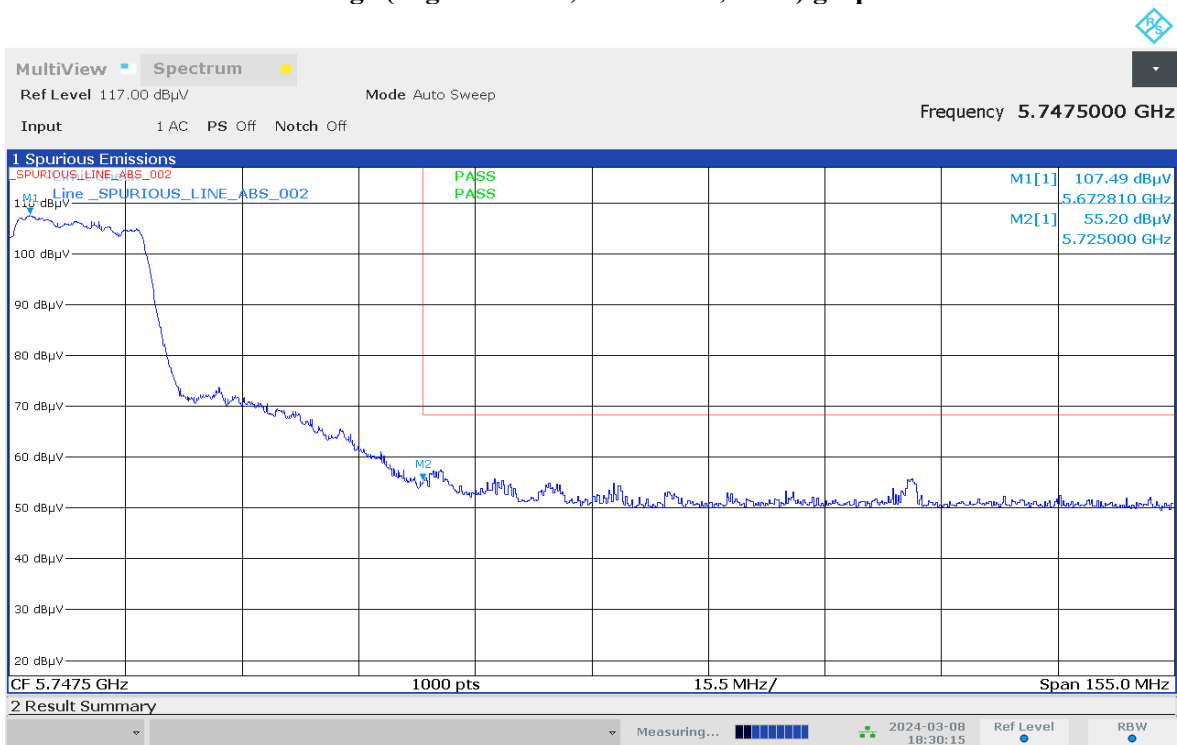


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



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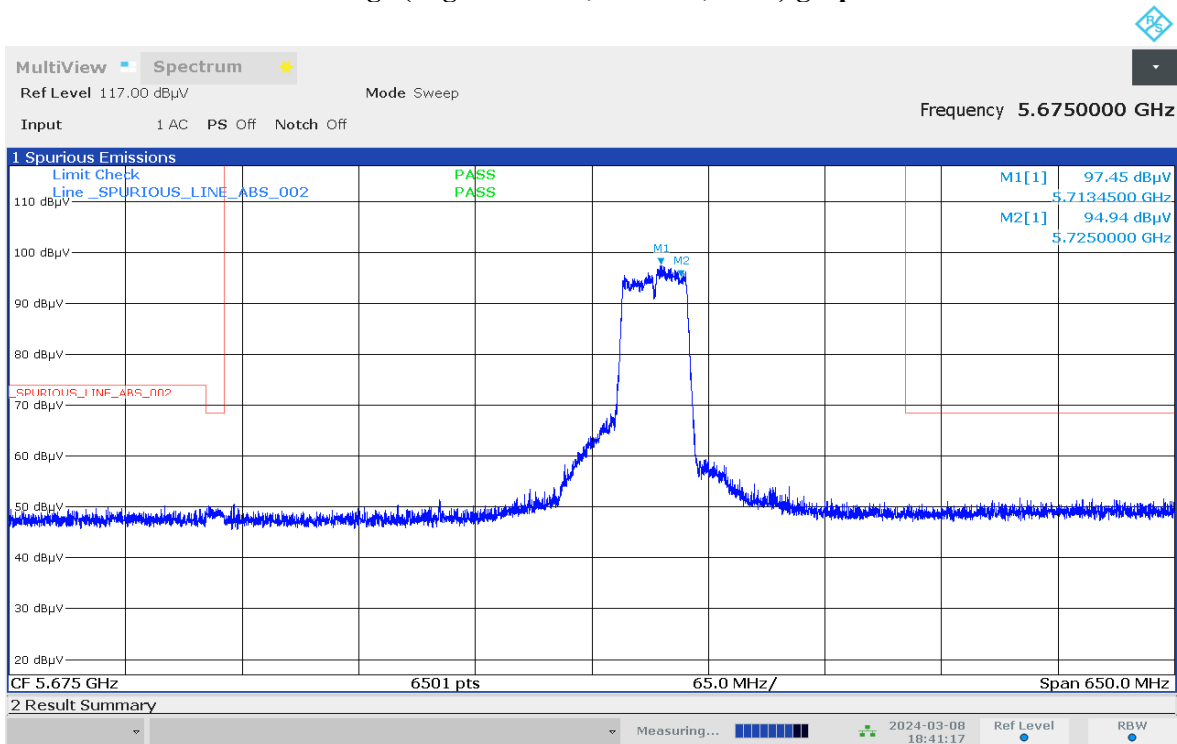
### Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



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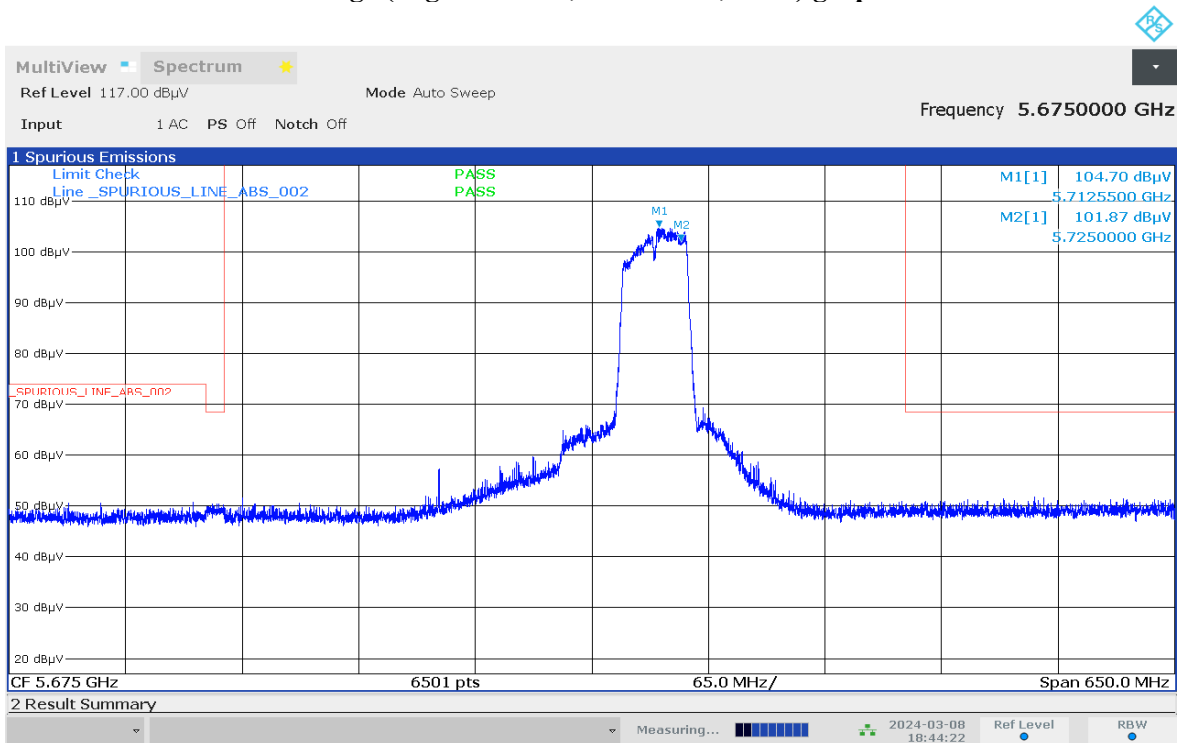


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



06:41:17 PM 03/08/2024

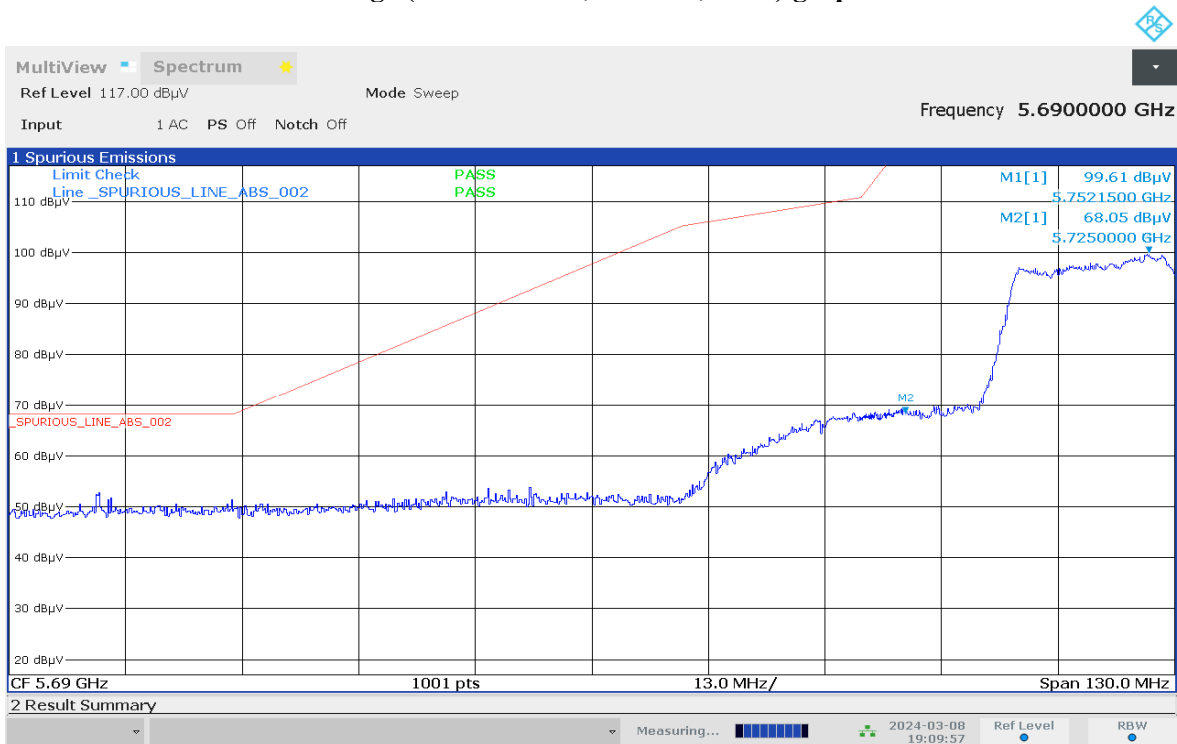
### Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



06:44:23 PM 03/08/2024

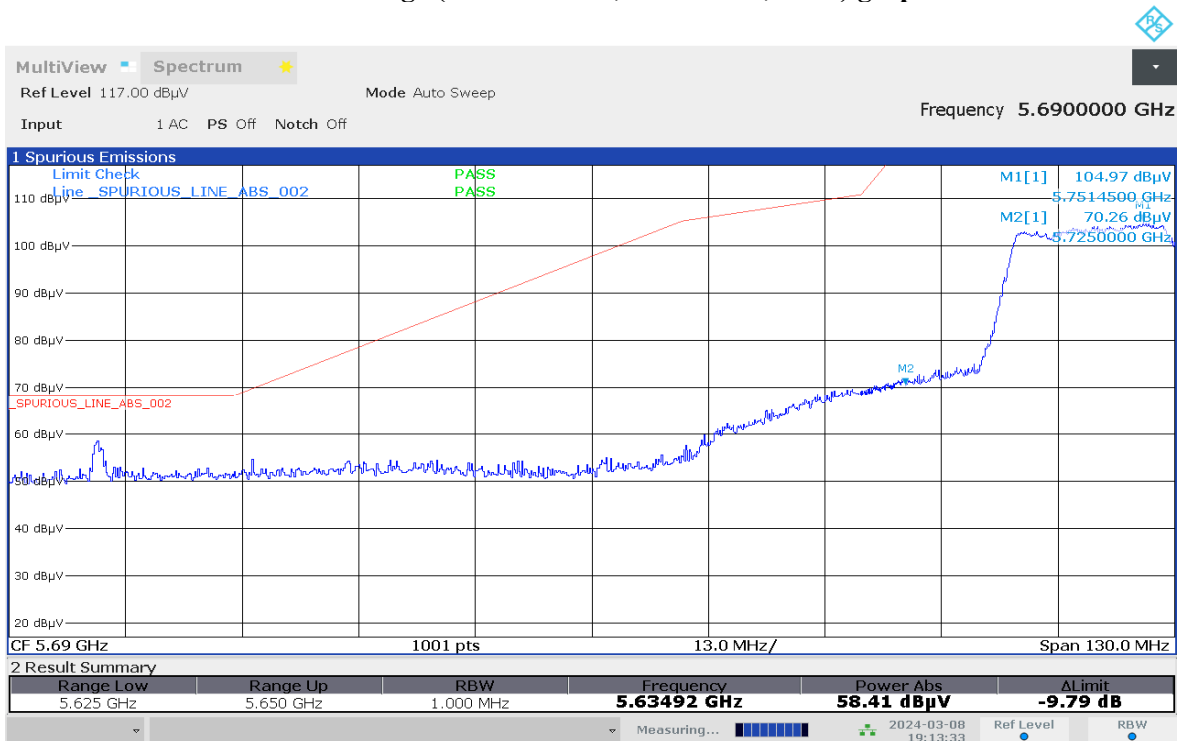


### Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



07:09:57 PM 03/08/2024

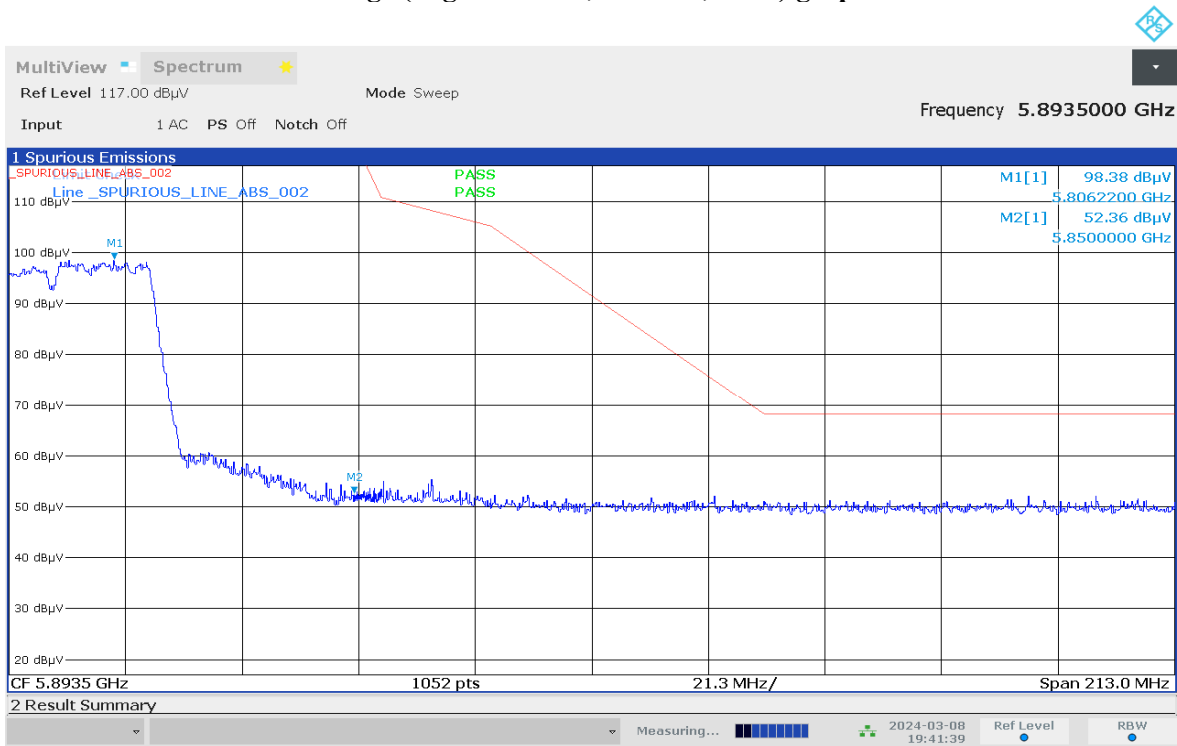
### Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot



07:13:33 PM 03/08/2024

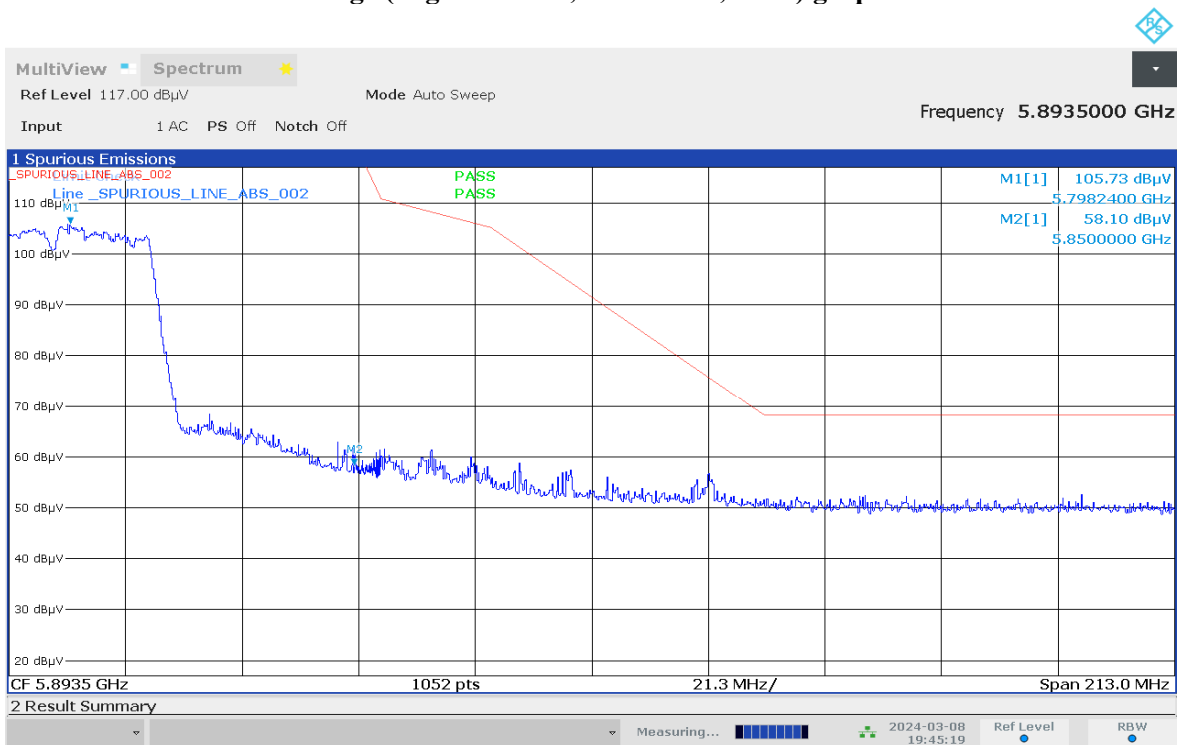


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



07:41:39 PM 03/08/2024

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

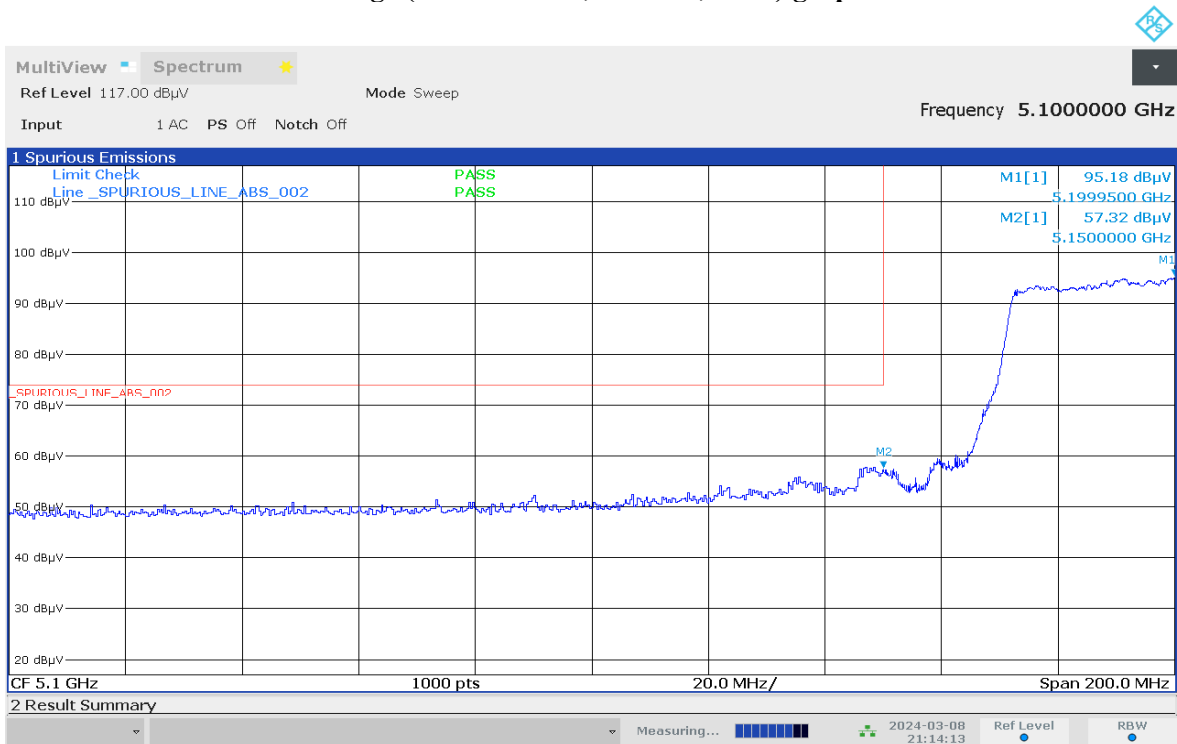


07:45:19 PM 03/08/2024





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



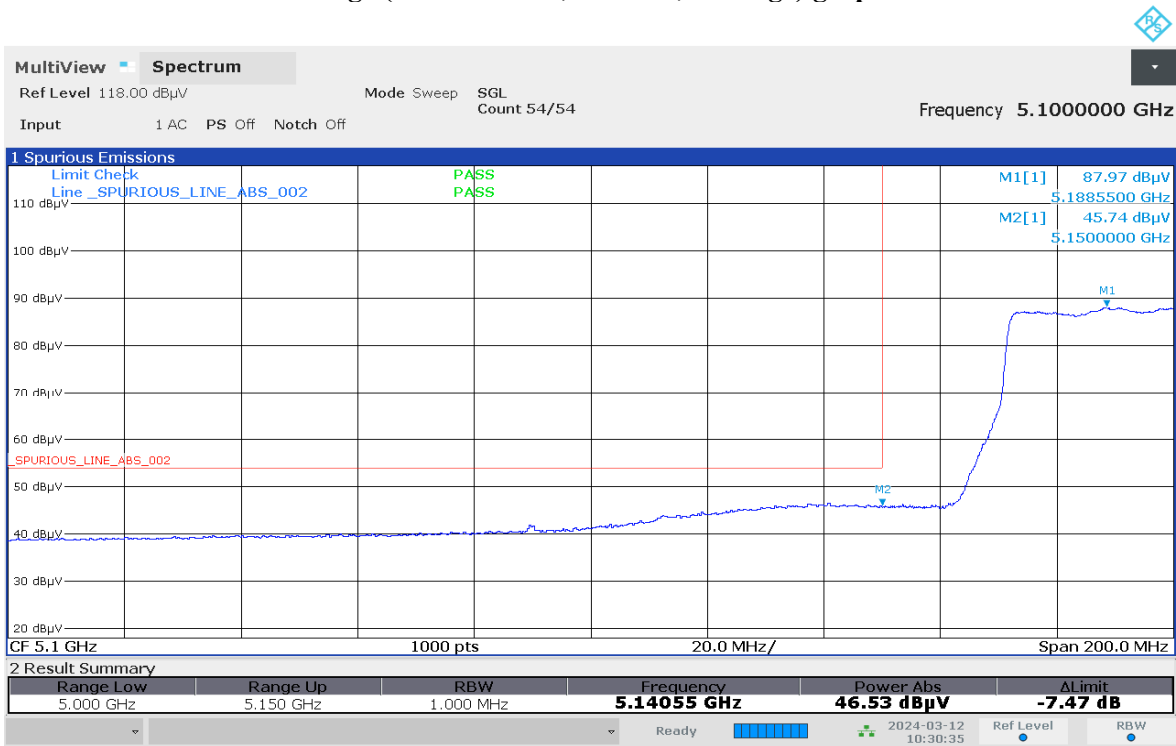
09:14:13 PM 03/08/2024

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



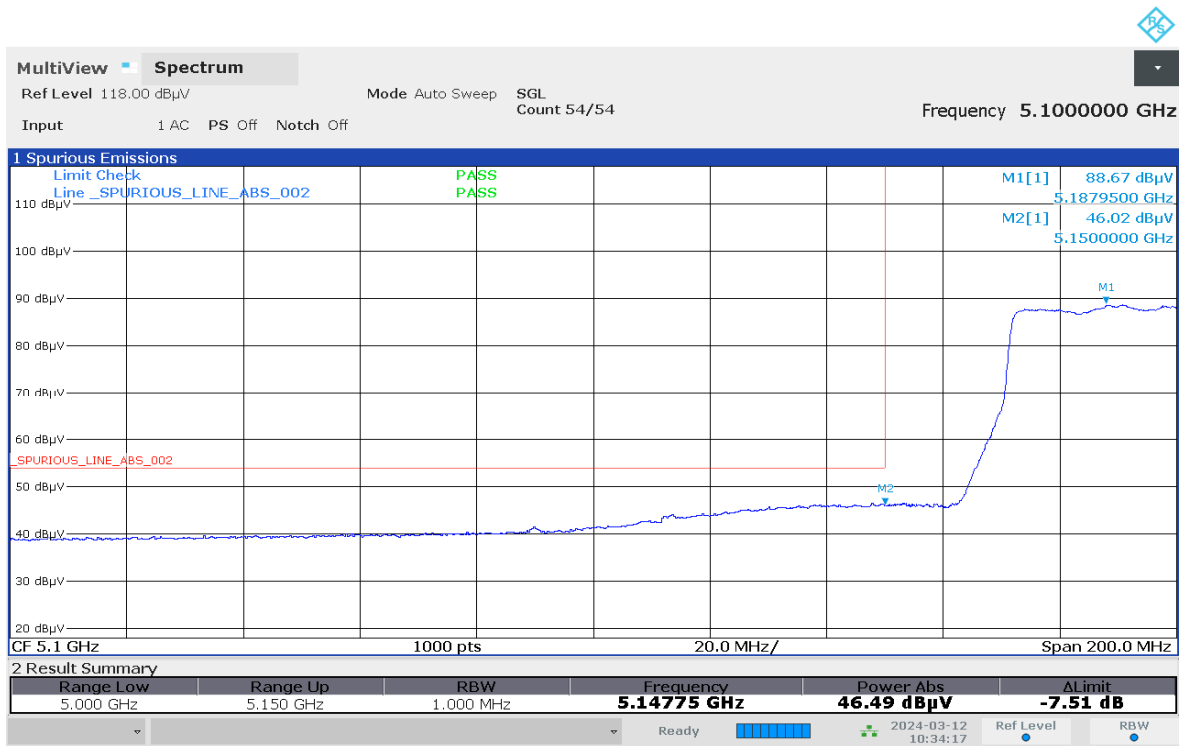
09:17:48 PM 03/08/2024

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



10:30:36 AM 03/12/2024

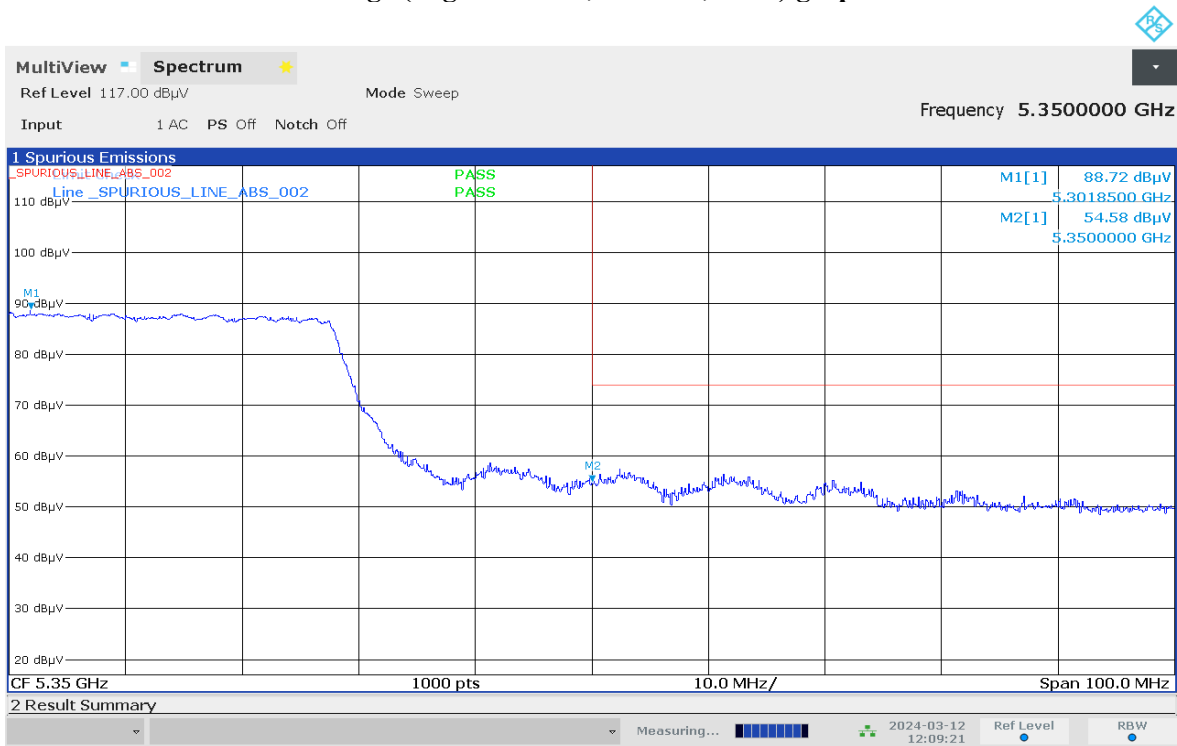
### Restricted Band Edge (Low Channel, Horizontal, Average) graphical screen shot



10:34:17 AM 03/12/2024

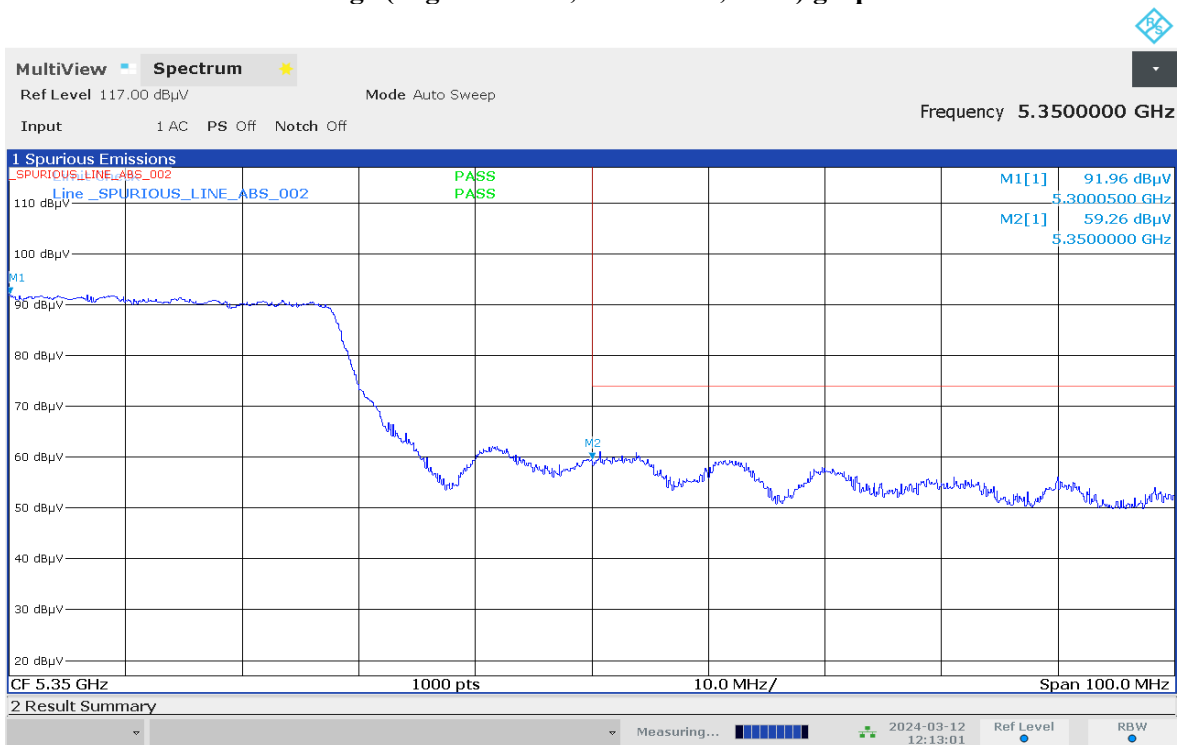


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



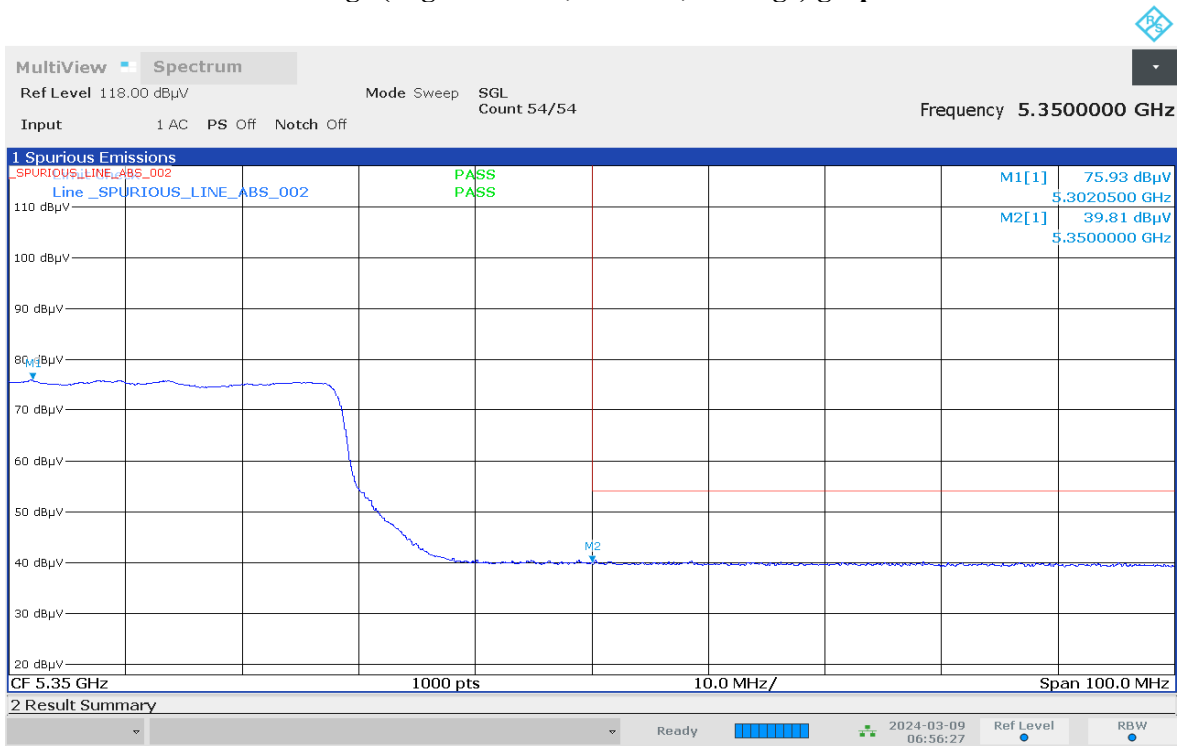
12:09:22 PM 03/12/2024

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



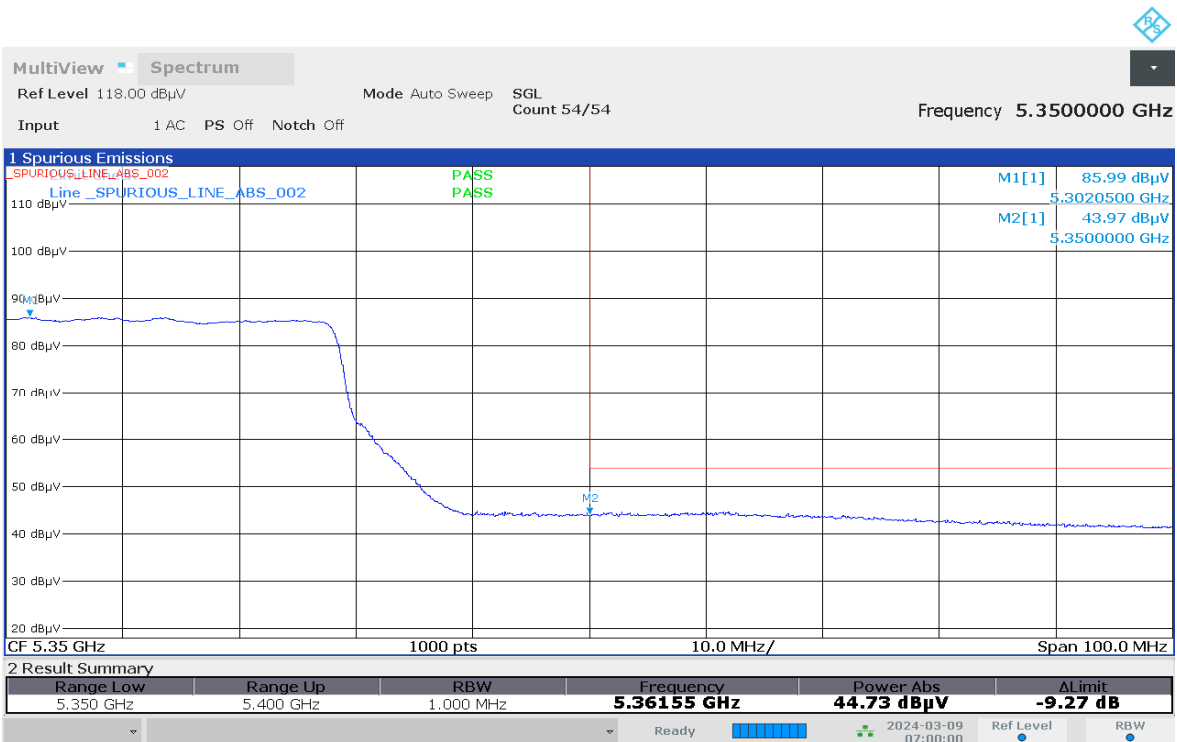
12:13:02 PM 03/12/2024

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



06:56:27 AM 03/09/2024

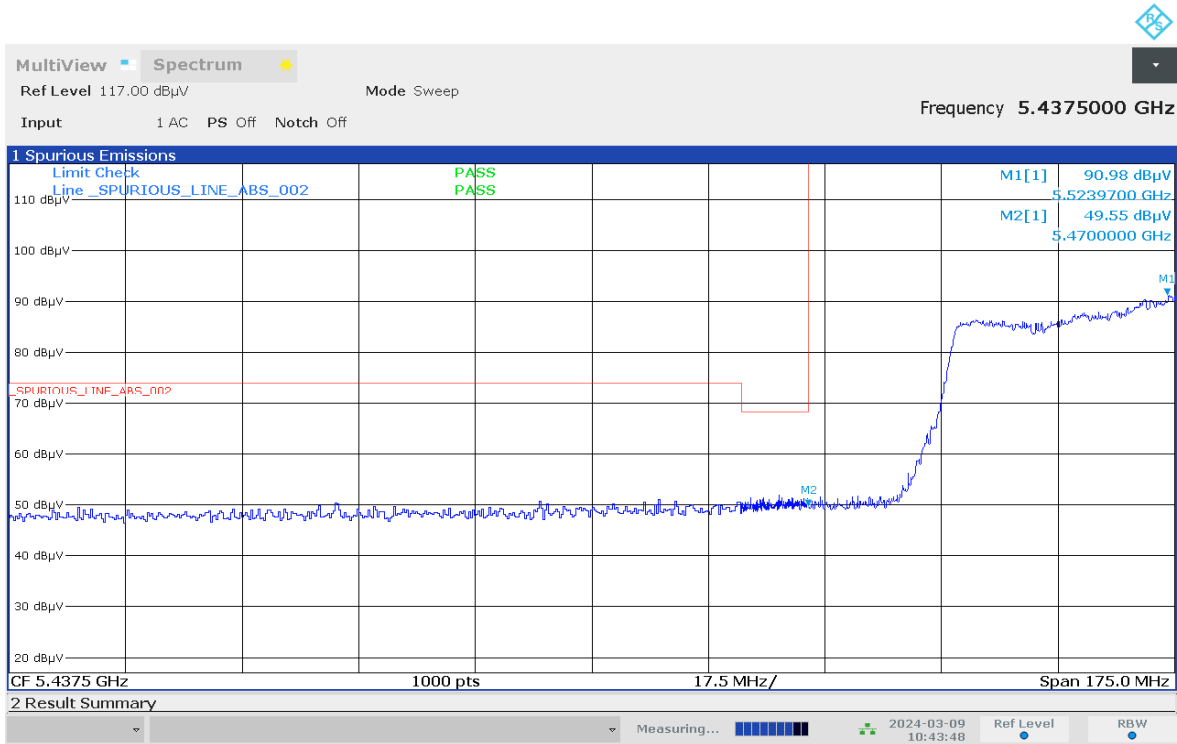
### Restricted Band Edge (High Channel, Horizontal, Average) graphical screen shot



07:00:01 AM 03/09/2024

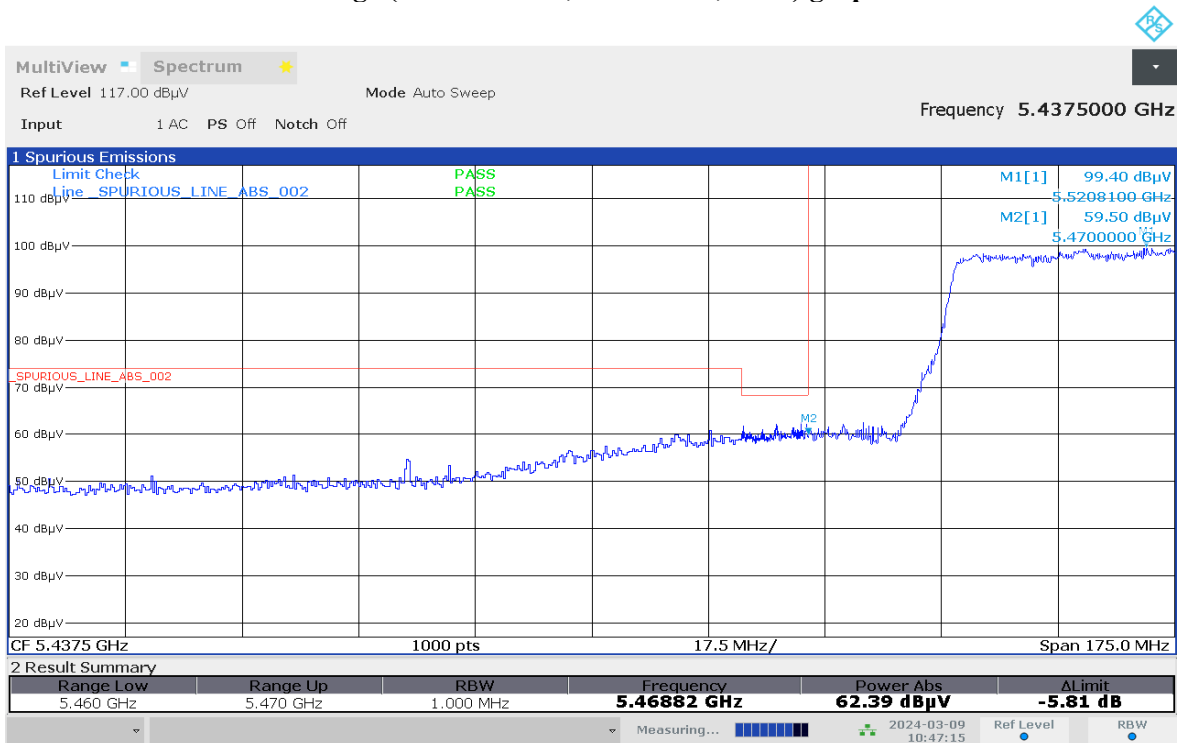


### Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



10:43:49 AM 03/09/2024

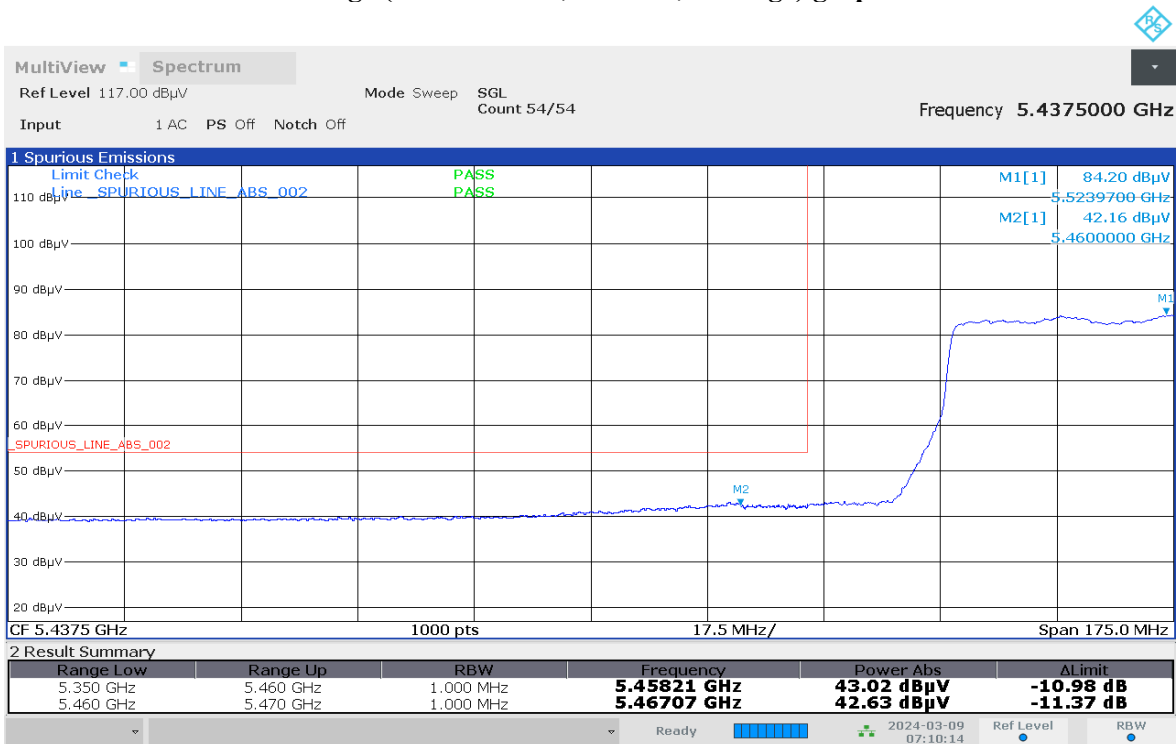
### Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot



10:47:16 AM 03/09/2024

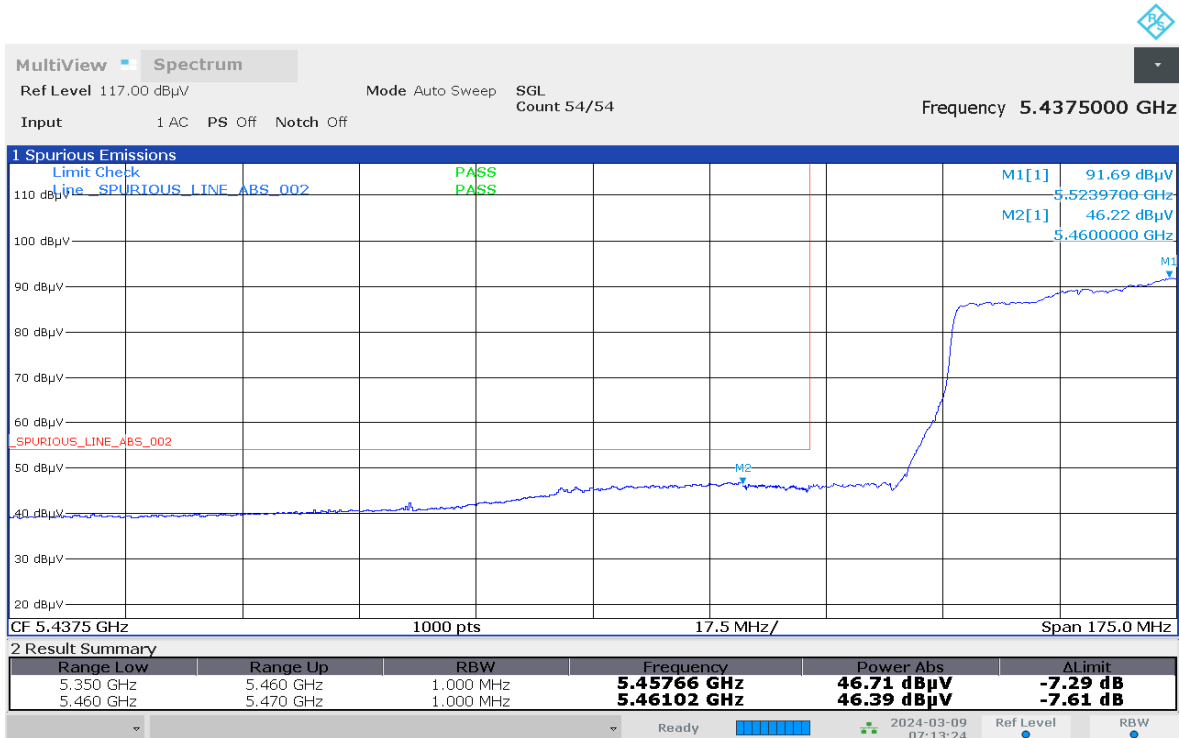


### Restricted Band Edge (Low Channel, Vertical, Average) graphical screen shot



07:10:14 AM 03/09/2024

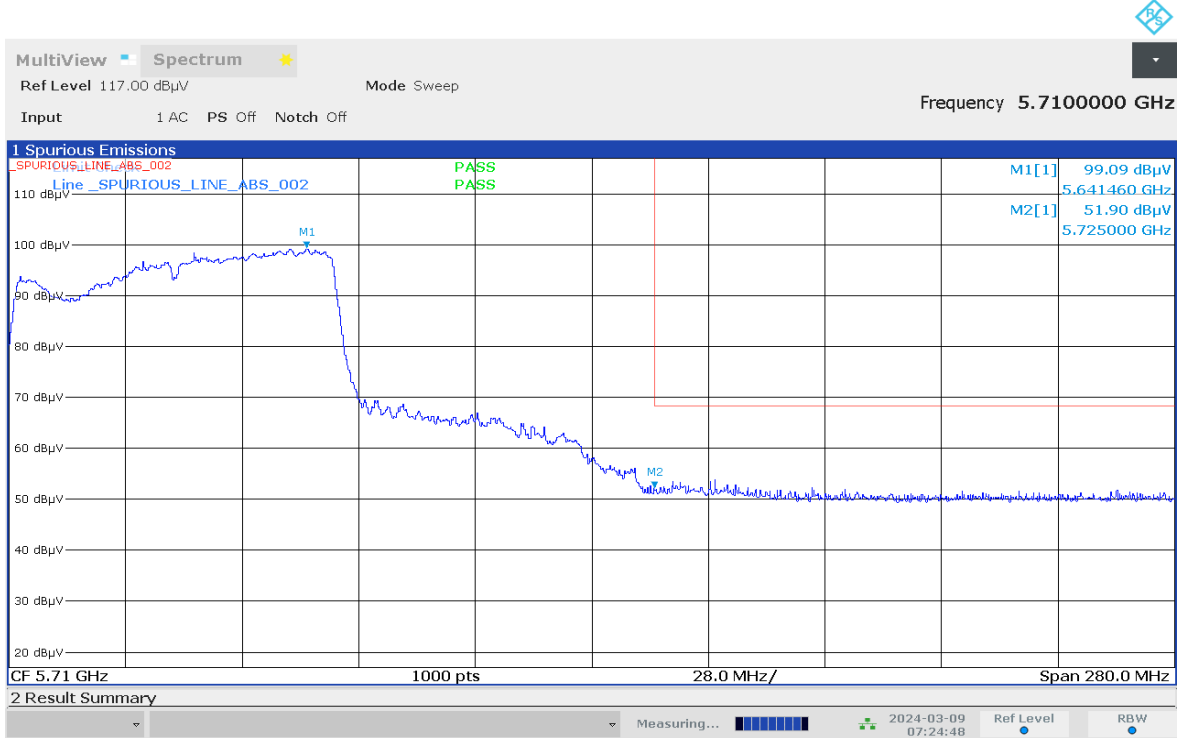
### Restricted Band Edge (Low Channel, Horizontal, Average) graphical screen shot



07:13:25 AM 03/09/2024

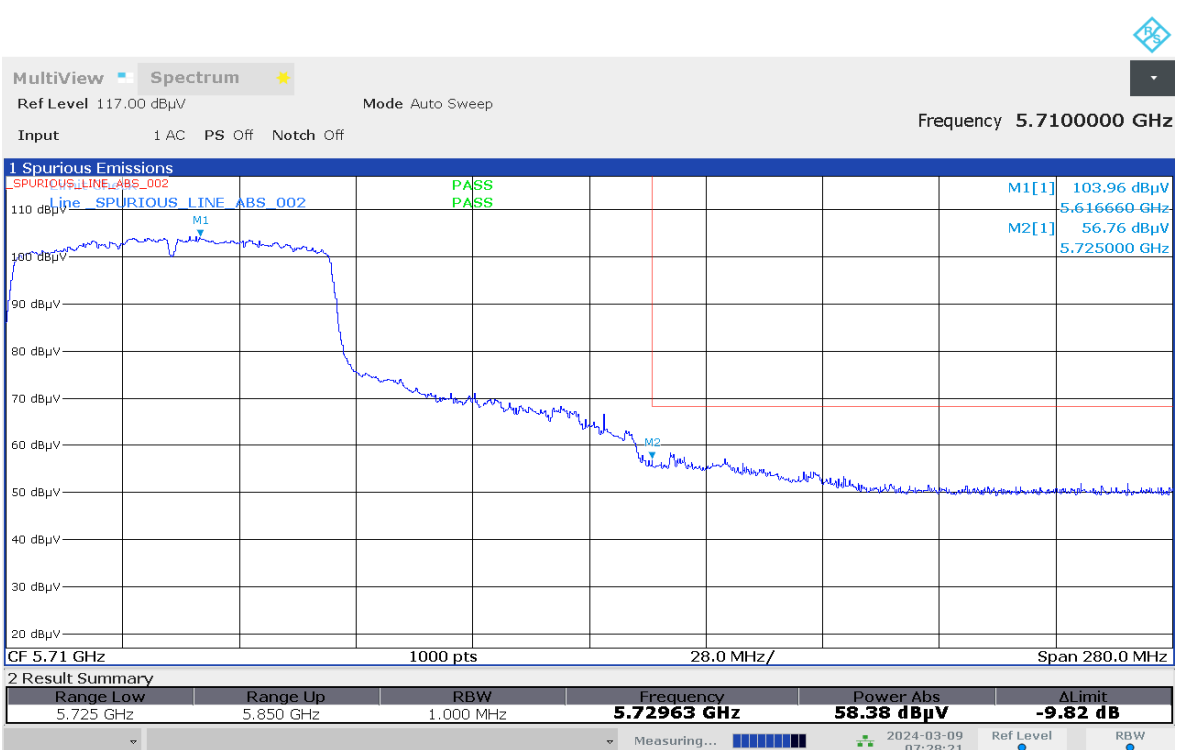


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



07:24:48 AM 03/09/2024

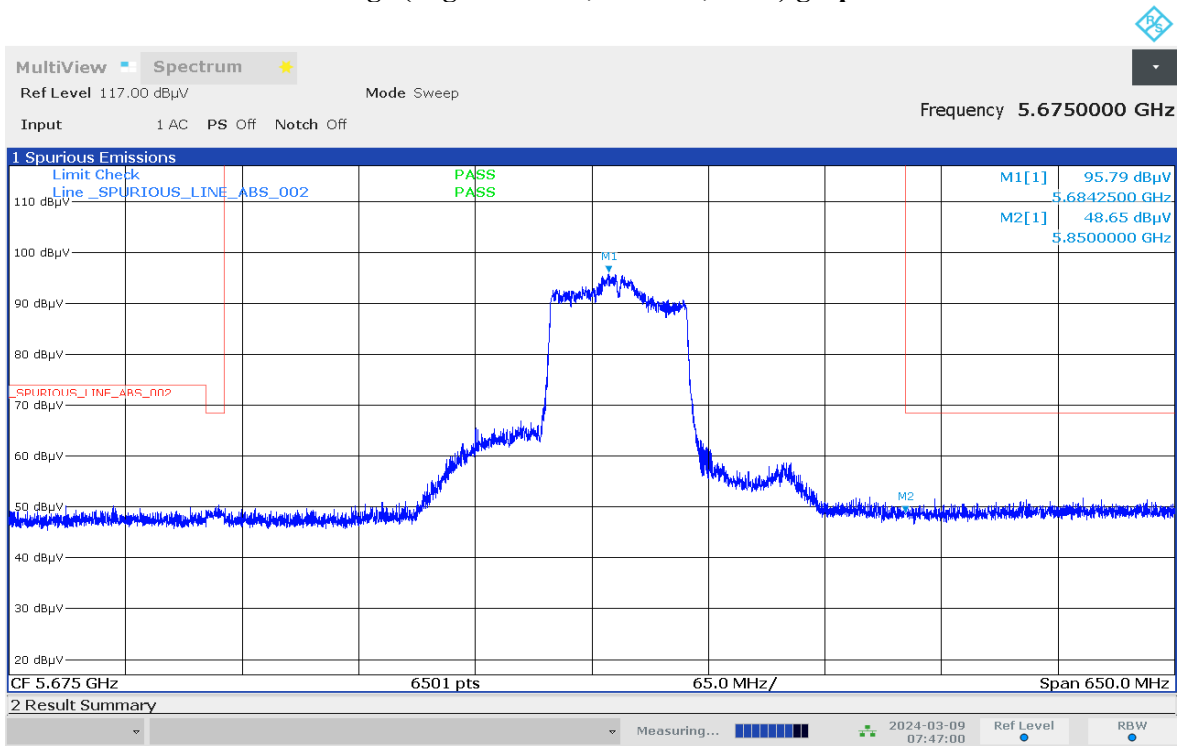
### Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



07:28:21 AM 03/09/2024

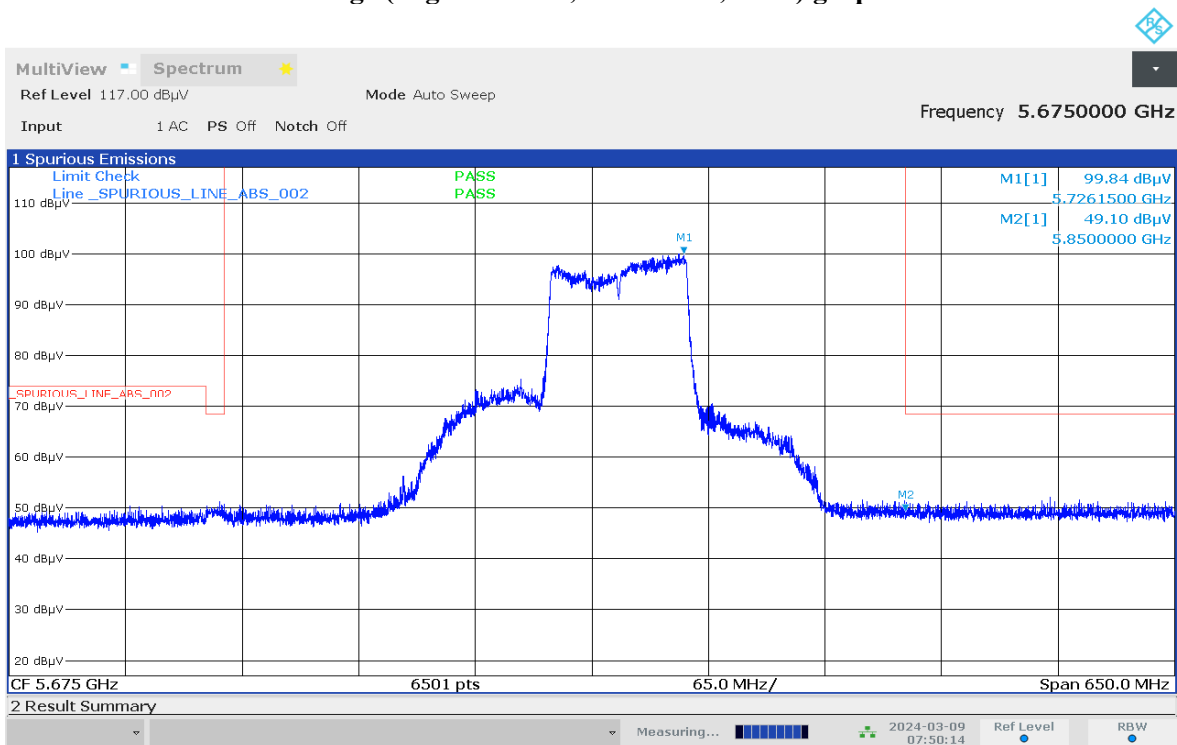


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



07:47:00 AM 03/09/2024

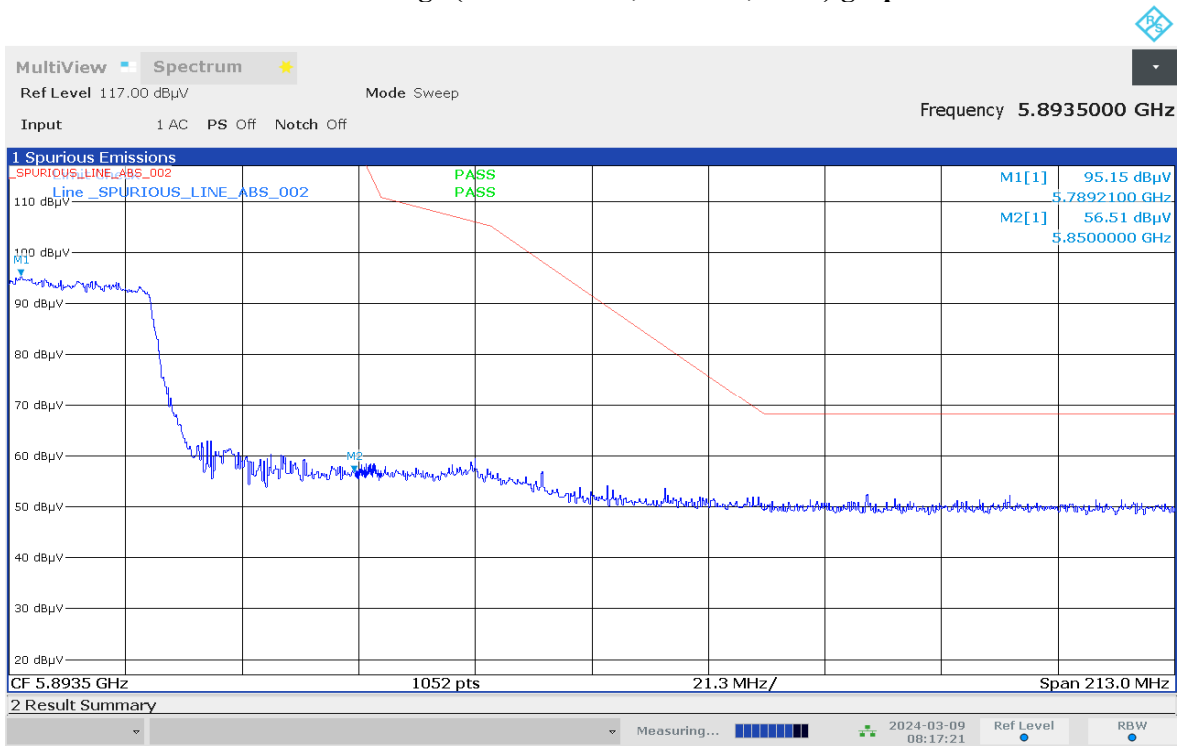
### Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



07:50:14 AM 03/09/2024

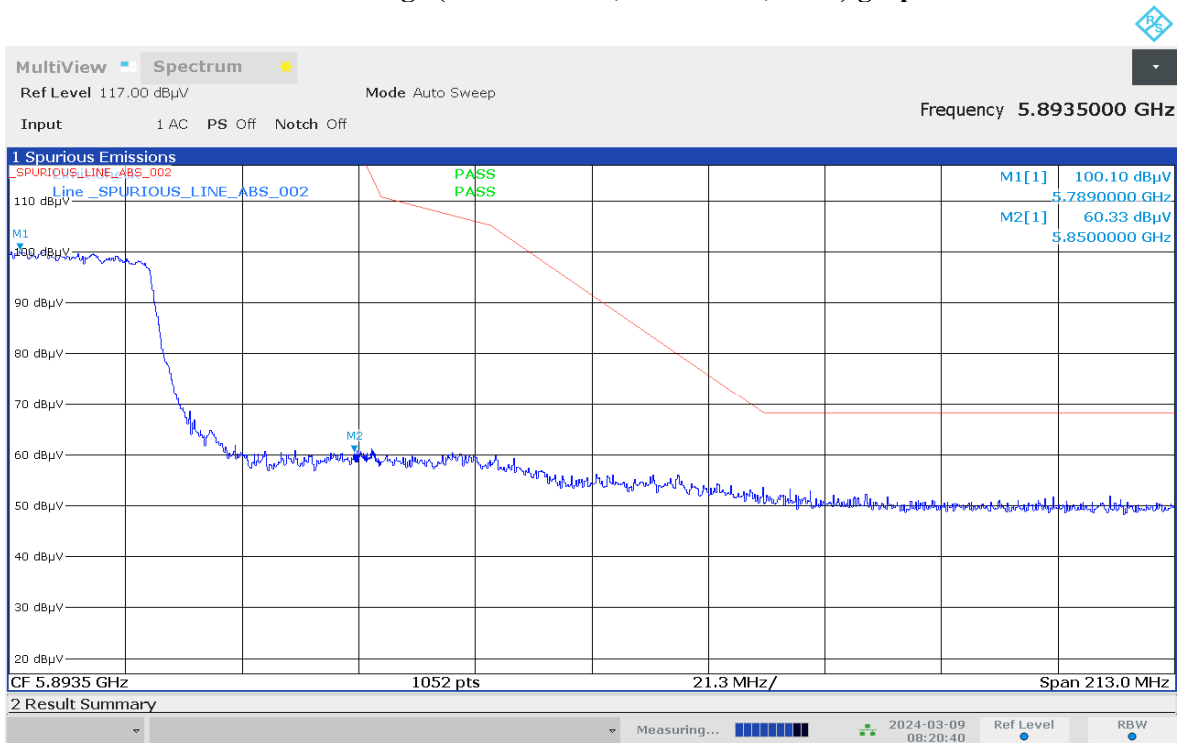


### Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



08:17:22 AM 03/09/2024

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

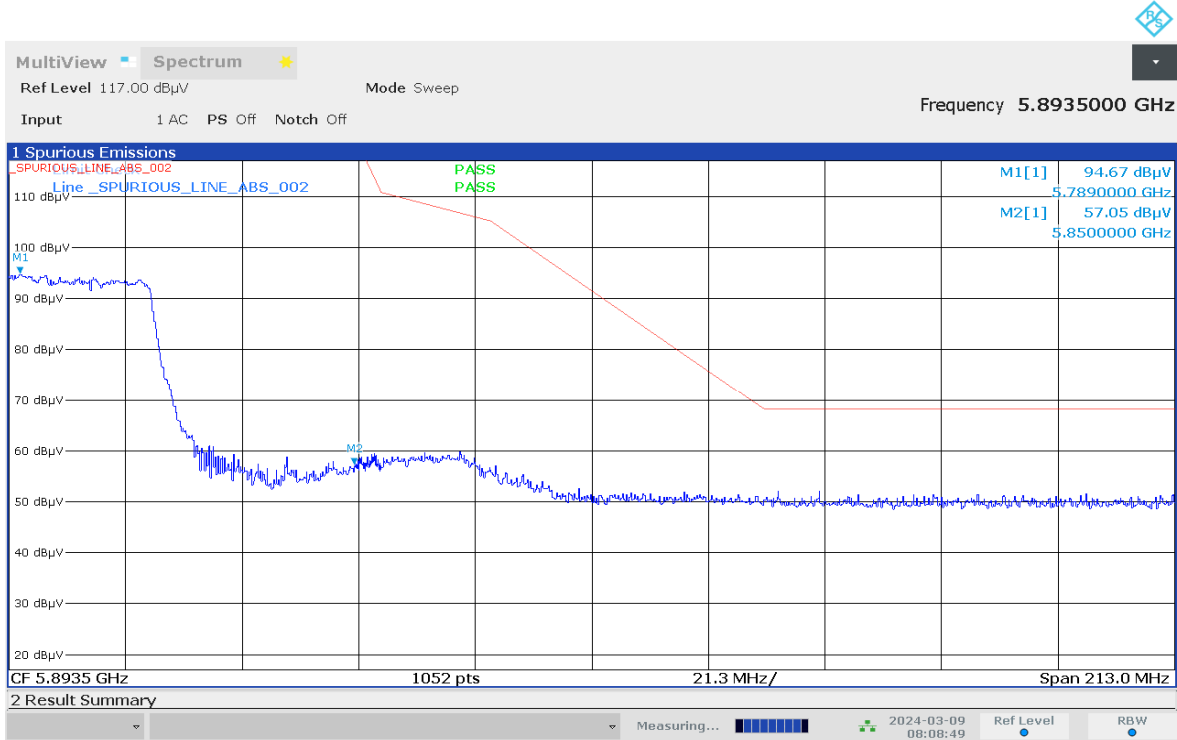


08:20:40 AM 03/09/2024



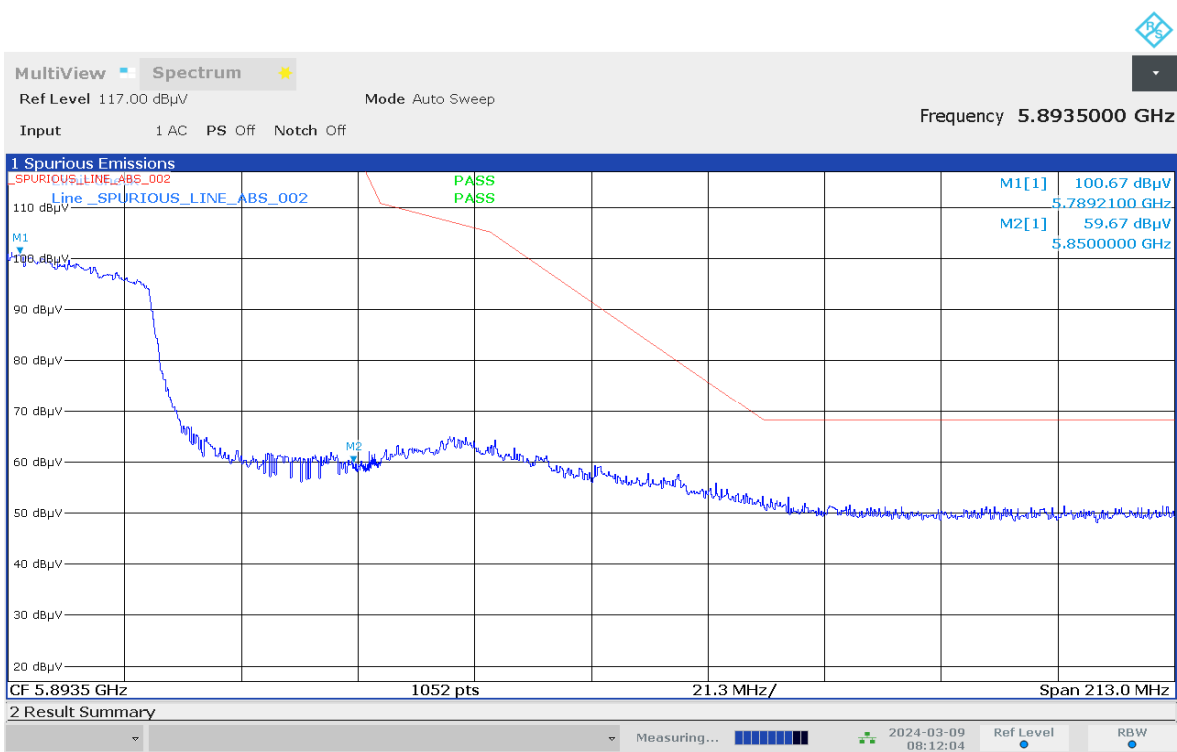


### Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



08:08:50 AM 03/09/2024

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

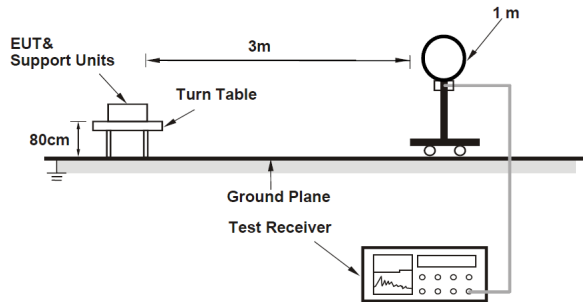


08:12:05 AM 03/09/2024

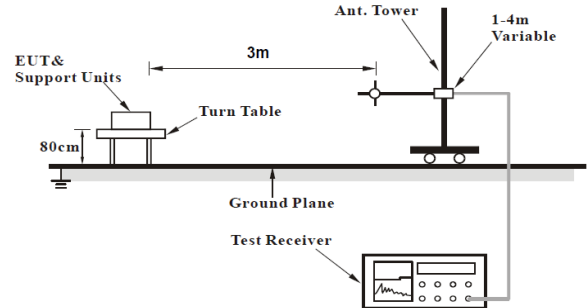
## 7.7. Radiated Spurious Emission Measurement

### 7.7.1. Test Setup

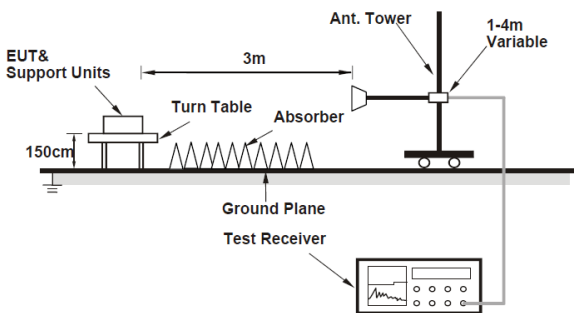
<Radiated emission below 30MHz>



<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:**

- a. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1GHz.
- b. 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.
- c. 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 ≥98%) at frequency above 1GHz.
- d. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 1/ τ Hz, where τ is minimum transmitter on time (Duty cycle <98%) for Average detection using reduced video bandwidth at frequency above 1GHz.
- e. 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:**

- d. The lower limit shall apply at the transition frequencies.
- e. Emission level (dBuV/m) = 20 log Emission level (uV/m).
- f. 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) <sup>11</sup> PK:10 (dBm/MHz) <sup>12</sup> PK:15.6 (dBm/MHz) <sup>13</sup> PK:27 (dBm/MHz) <sup>14</sup>	PK: 68.2 (dBµV/m) <sup>11</sup> PK:105.2 (dBµV/m) <sup>12</sup> PK: 110.8 (dBµV/m) <sup>13</sup> PK:122.2 (dBµV/m) <sup>14</sup>
	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	
<sup>11</sup> beyond 75 MHz or more above of the band edge. <sup>12</sup> below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above. <sup>13</sup> below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above. <sup>14</sup> 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:

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

7.7.3. Test Data

**802.11a**

**Test: WIFI SAC Transmitter Radiated Emission**

**Model#: H35XDT9PW8AN-H S/N: 022TAB0346 EMC SR ID#: 40793-EMC-00067**  
**Battery: PMNN4818A Softpot power (18dBm) Accessory: AN000452A01**  
**Test Channel: Low Test Frequency: 5180.0000 MHz Test Standard: ANSI C63.10-2013**  
**Worst Case Plane: X-Plane (802.11a 20MHz)**

**Radiated Emission (Low Channel) tabular data**

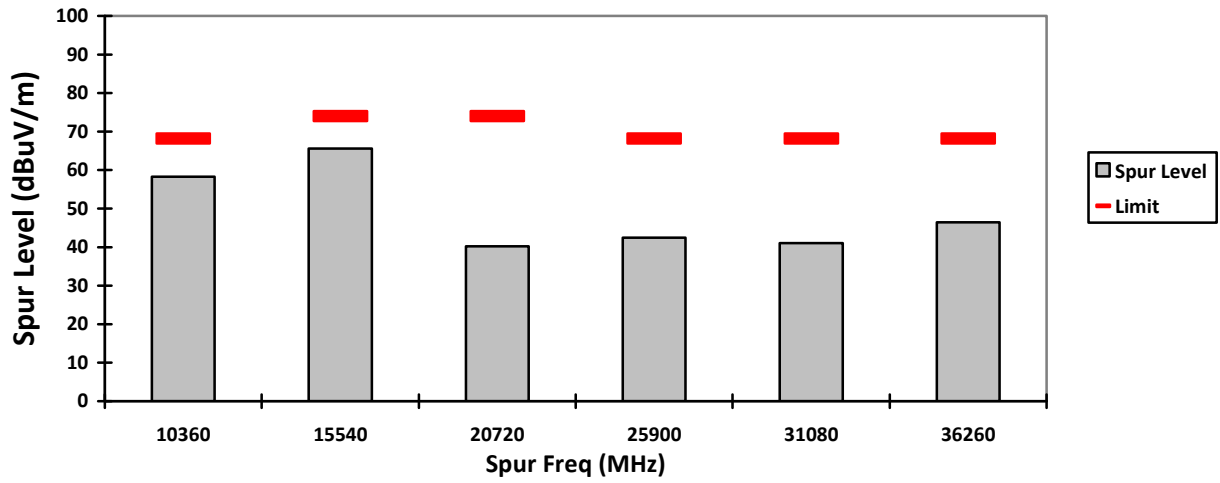
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
10360	-	58.2904**	-	-	68.2000	-	-	9.9096	-	-
15540	-	65.5754**	51.8445**	-	74.0000	54.0000	-	8.4246	2.1555	-
20720	-	40.1978**	-	-	74.0000	-	-	33.8022	-	-
25900	-	42.4550**	-	-	68.2000	-	-	25.7450	-	-
31080	-	41.0393**	-	-	68.2000	-	-	27.1607	-	-
36260	-	46.4546**	-	-	68.2000	-	-	21.7454	-	-
Horizontal Radiated Emission Result										
10360	-	57.2861**	-	-	68.2000	-	-	10.9139	-	-
15540	-	65.8837**	51.8486**	-	74.0000	54.0000	-	8.1163	2.1514	-
20720	-	39.7208**	-	-	74.0000	-	-	34.2792	-	-
25900	-	42.1767**	-	-	68.2000	-	-	26.0233	-	-
31080	-	41.4338**	-	-	68.2000	-	-	26.7662	-	-
36260	-	45.6925**	-	-	68.2000	-	-	22.5075	-	-

Remarks: Pass Result	Marginal Result	Fail Result
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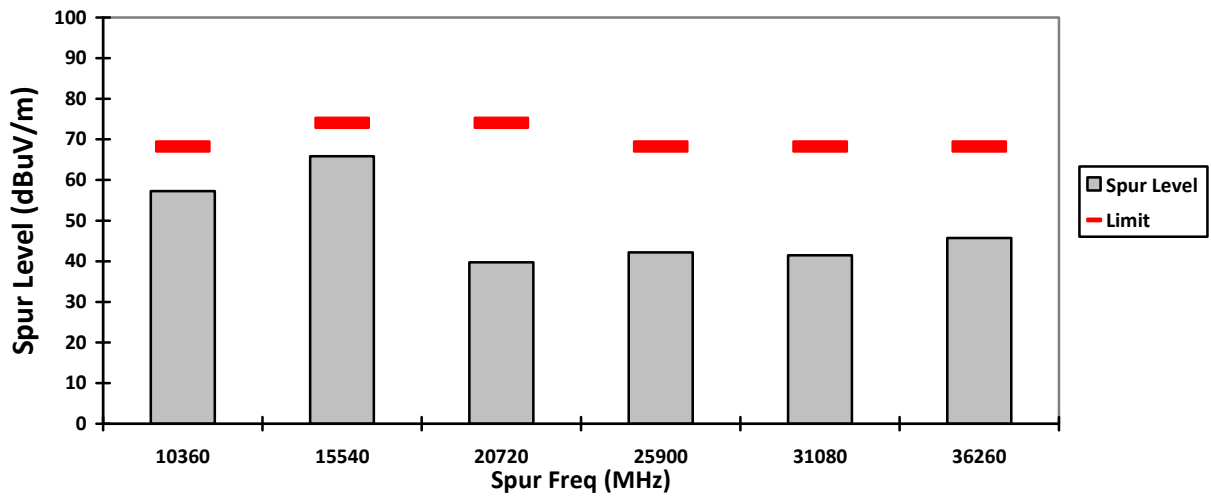
Temperature (degC): 23.3 Humidity (%): 69.6  
 Test Performed by: Nazrin & Rezza Test Date: Sun, 10 Mar, 2024  
 System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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.

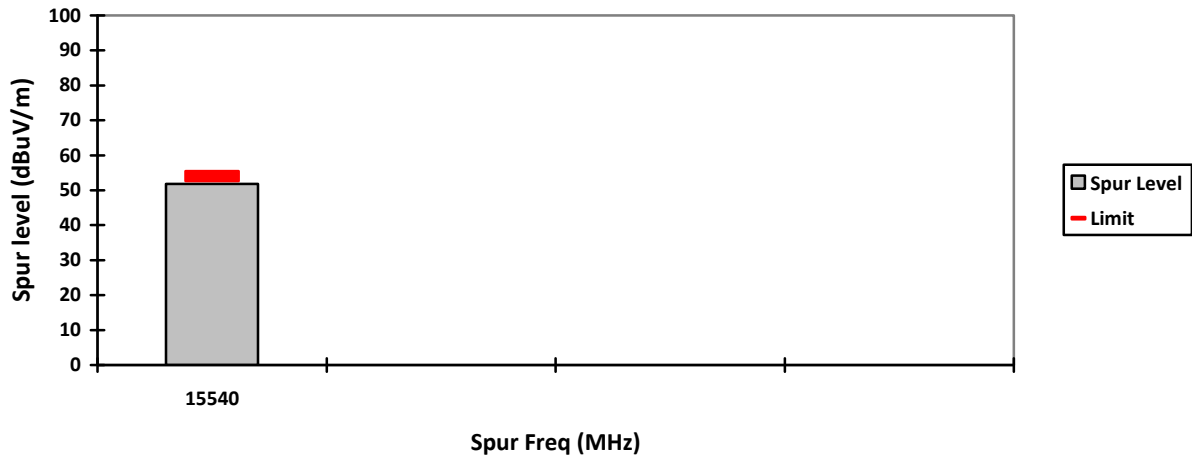
### VERTICAL, PK



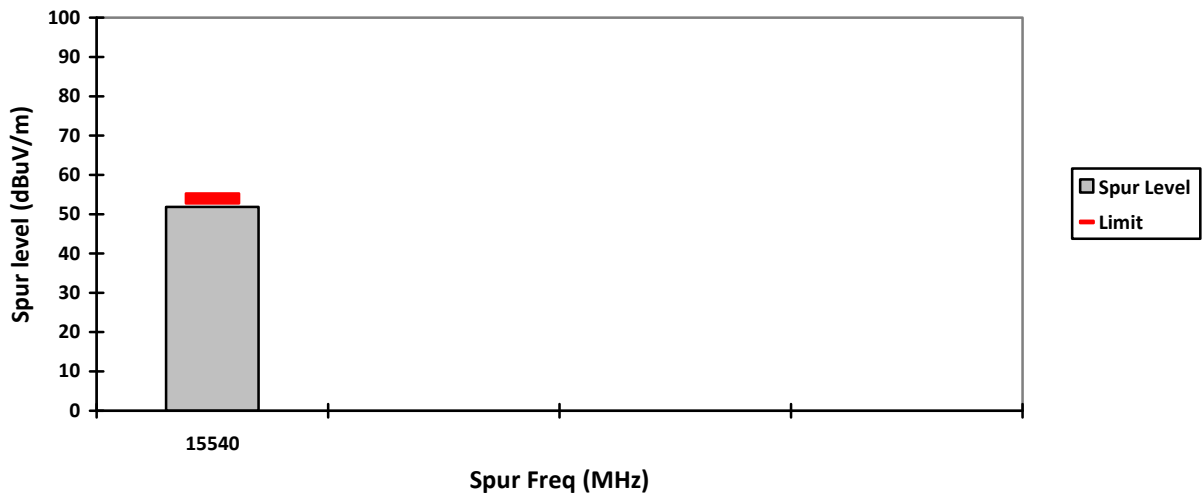
### HORIZONTAL, PK



VERTICAL, AV

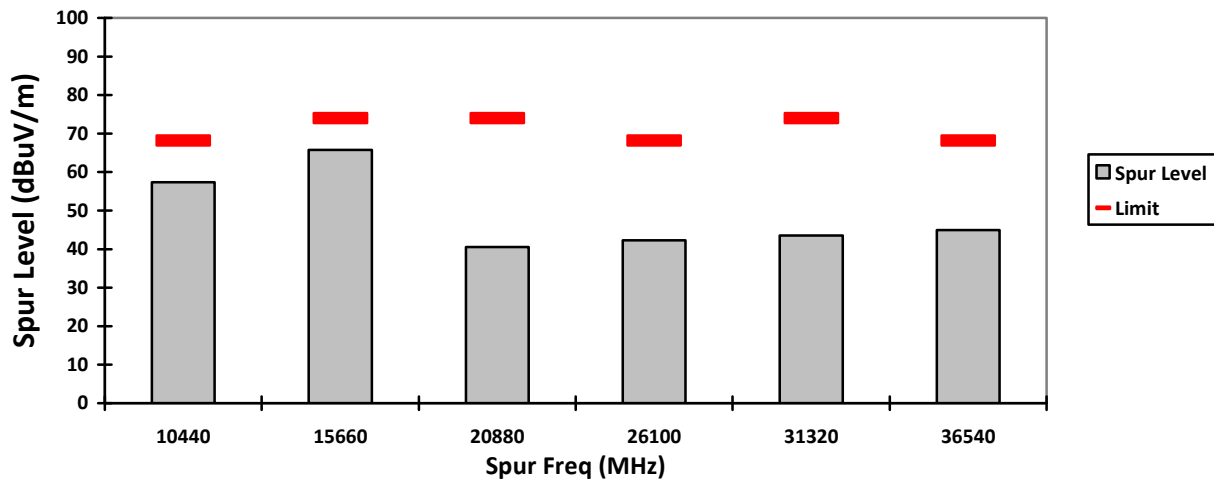


HORIZONTAL, AV

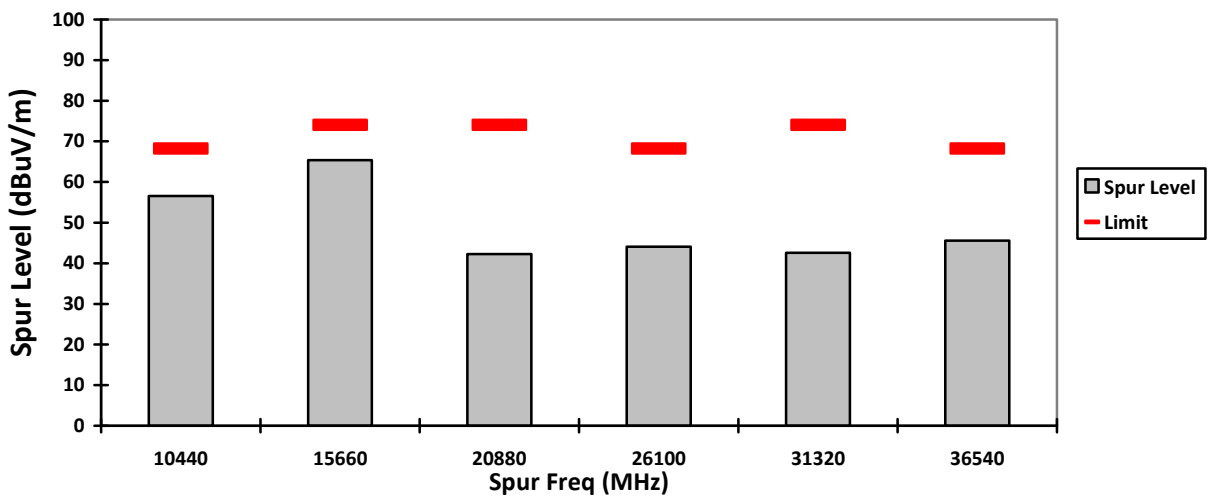




### VERTICAL, PK

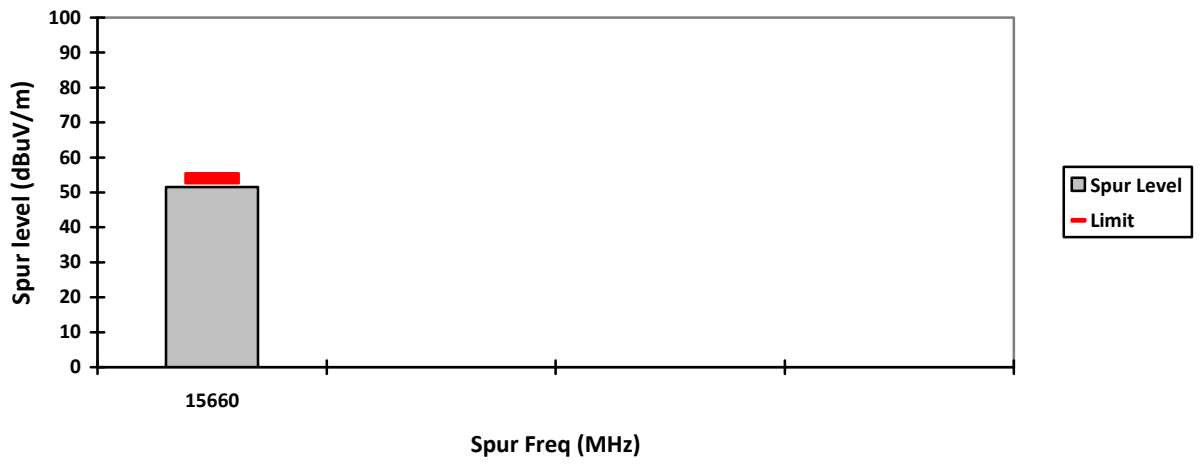


### HORIZONTAL, PK

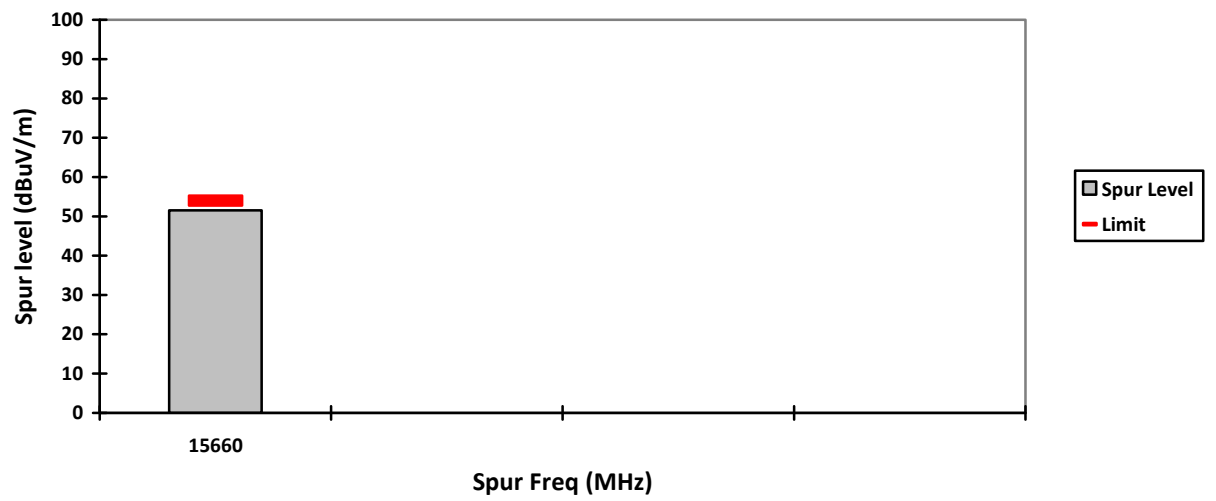




### VERTICAL, AV

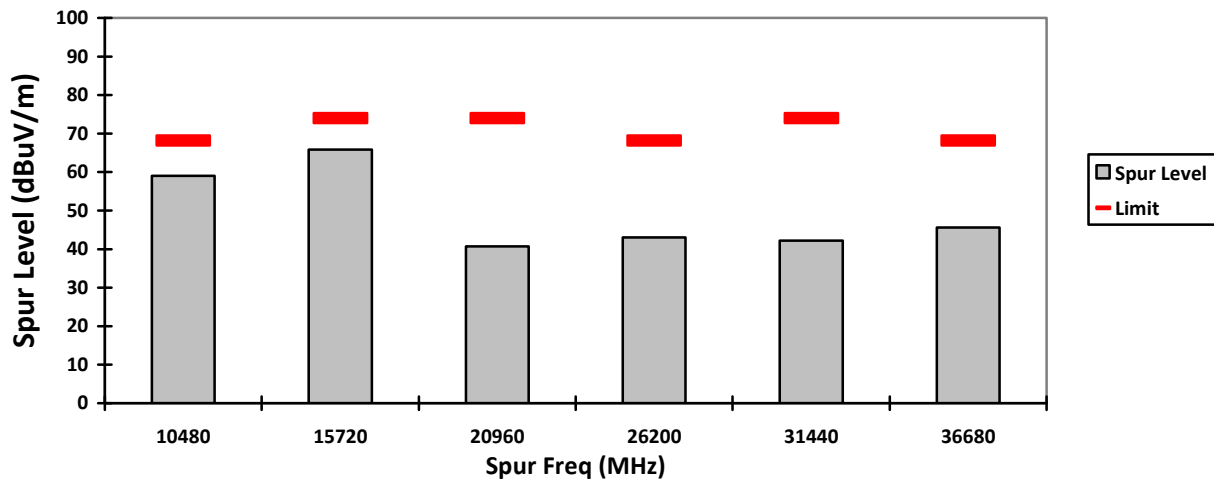


### HORIZONTAL, AV

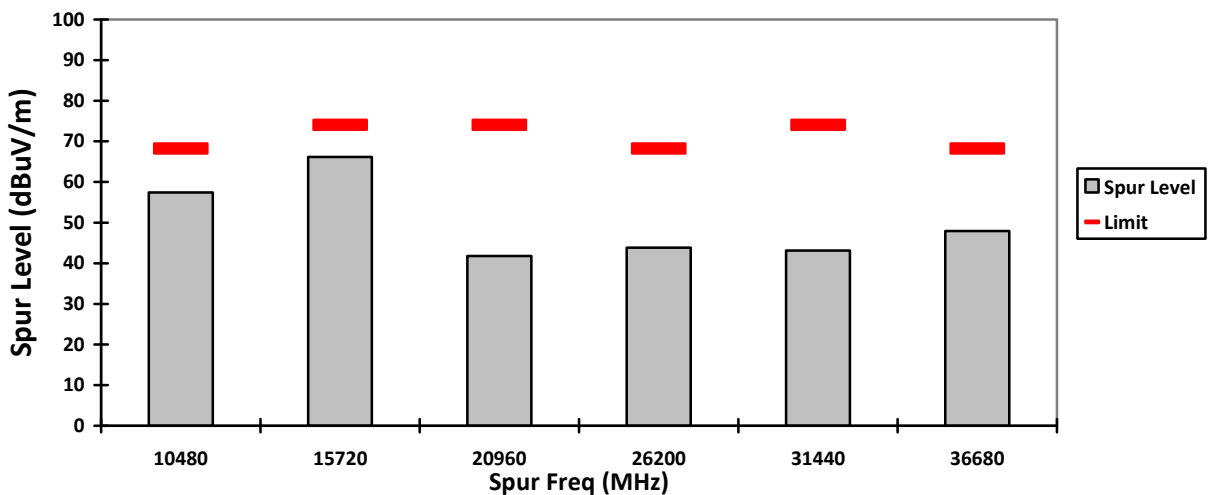




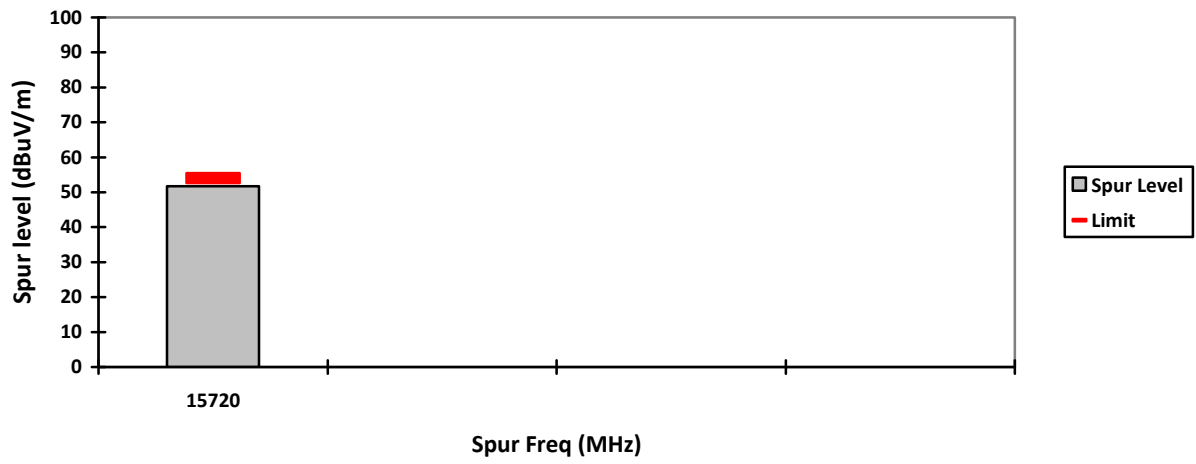
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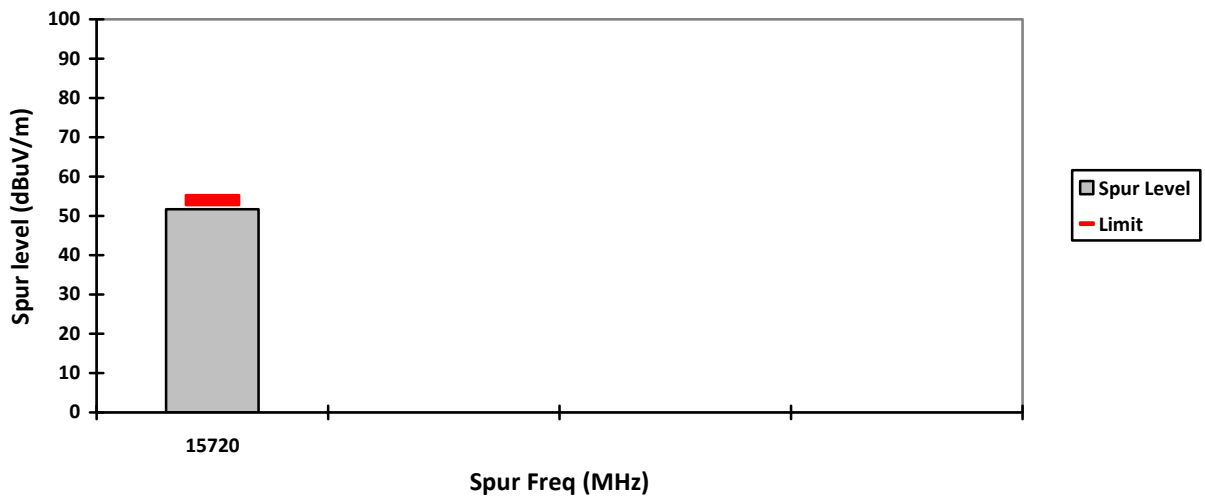
### HORIZONTAL, PK



### VERTICAL, AV

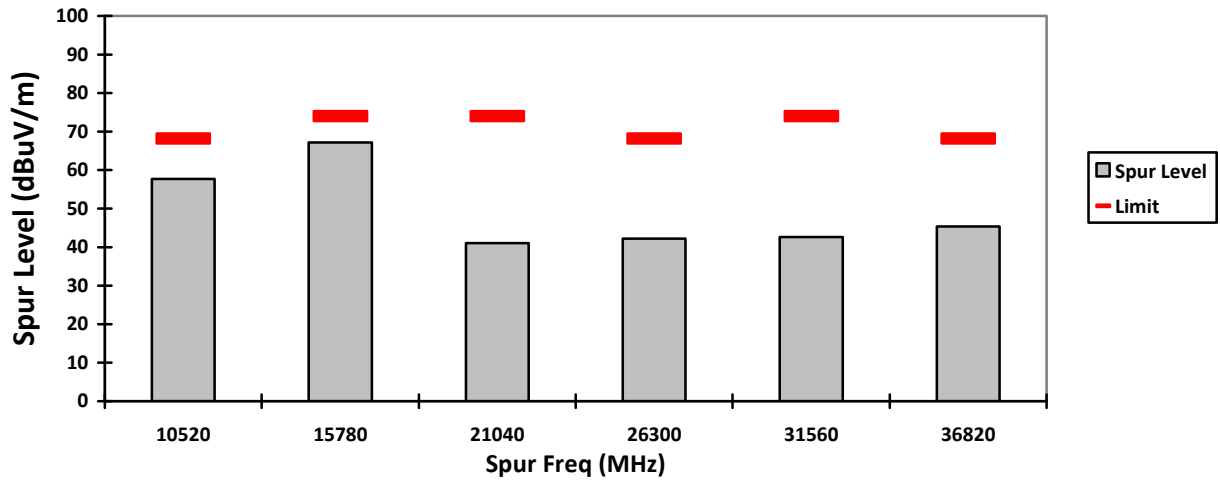


### HORIZONTAL, AV

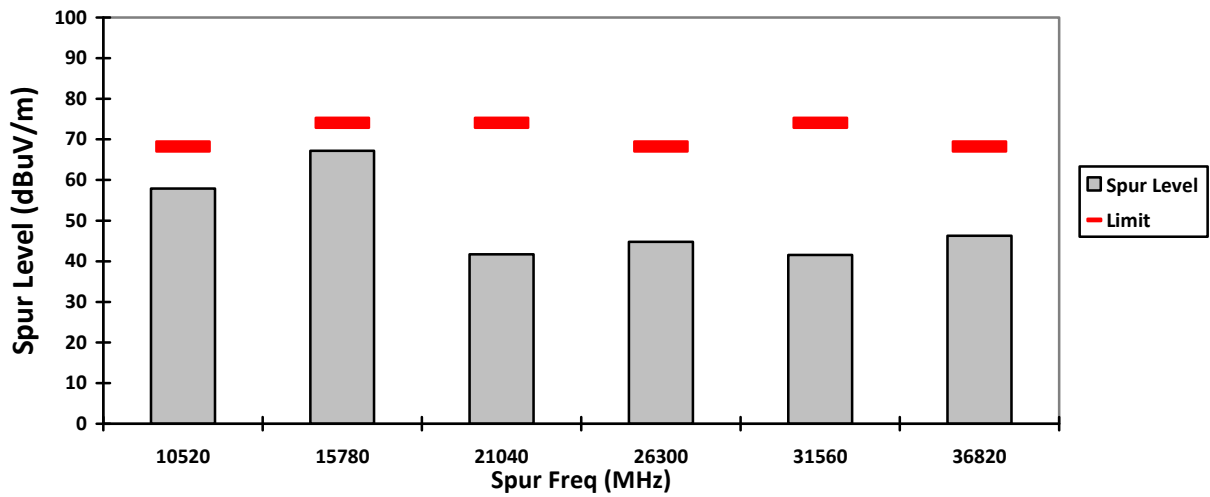




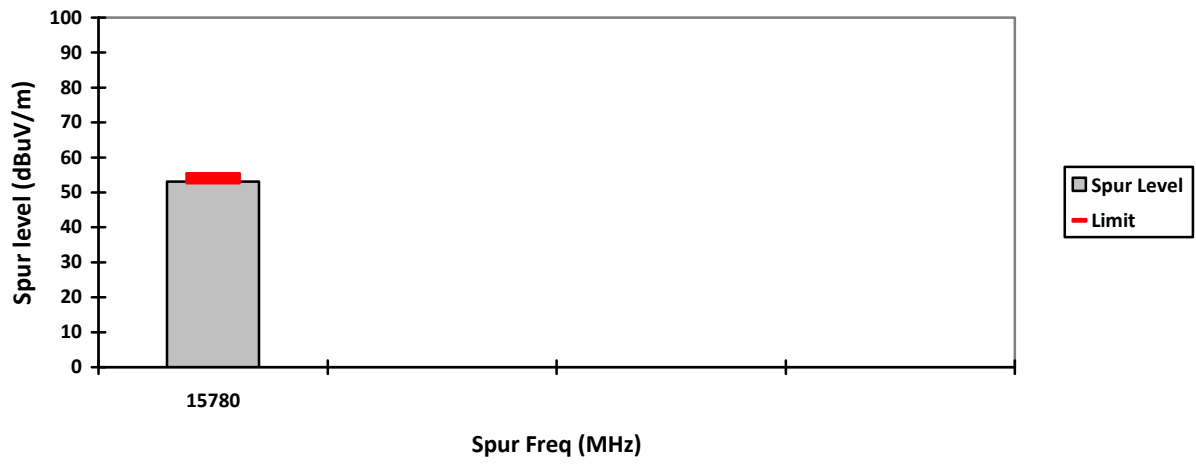
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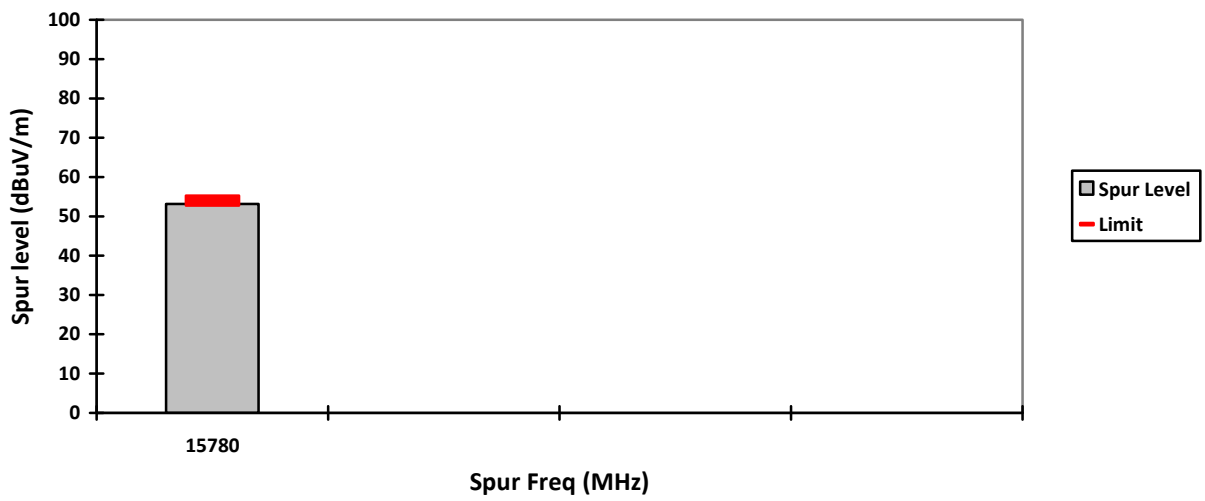
### HORIZONTAL, PK



### VERTICAL, AV



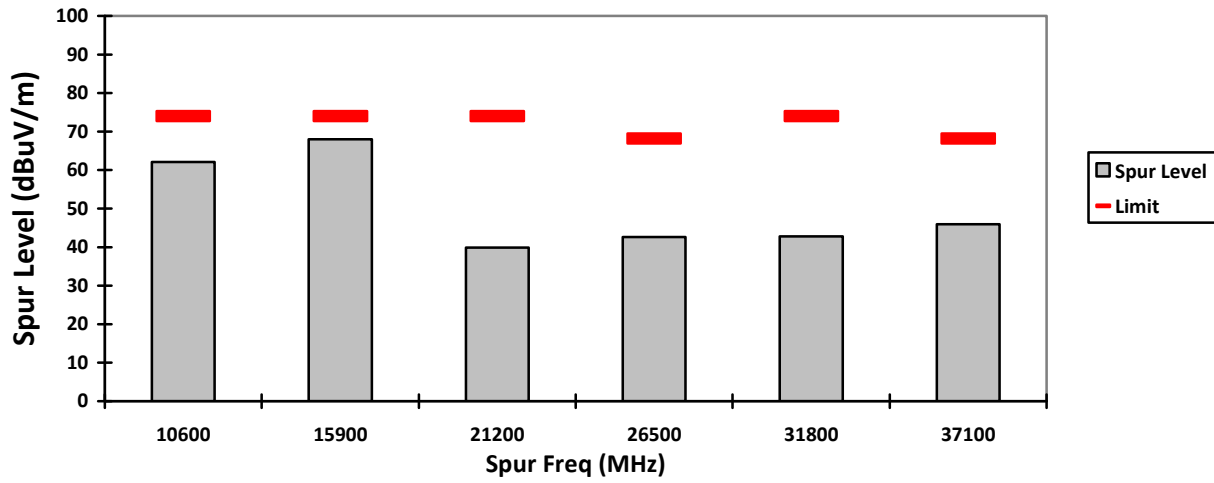
### HORIZONTAL, AV



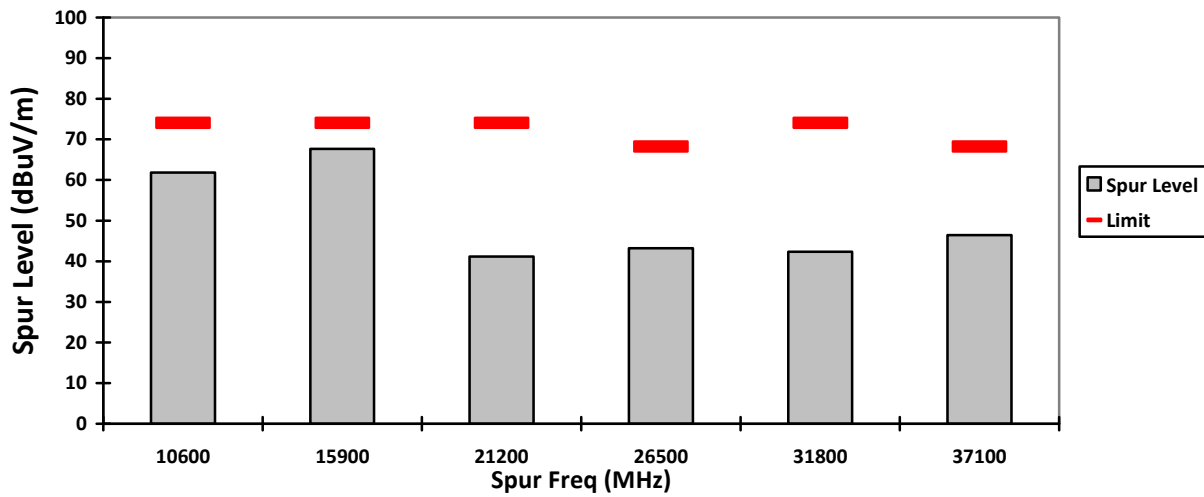




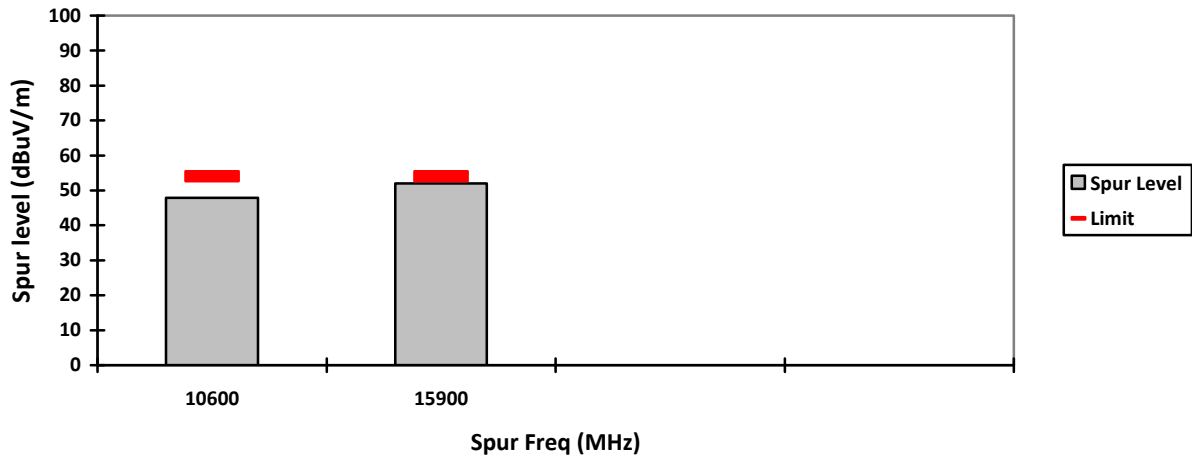
### VERTICAL, PK



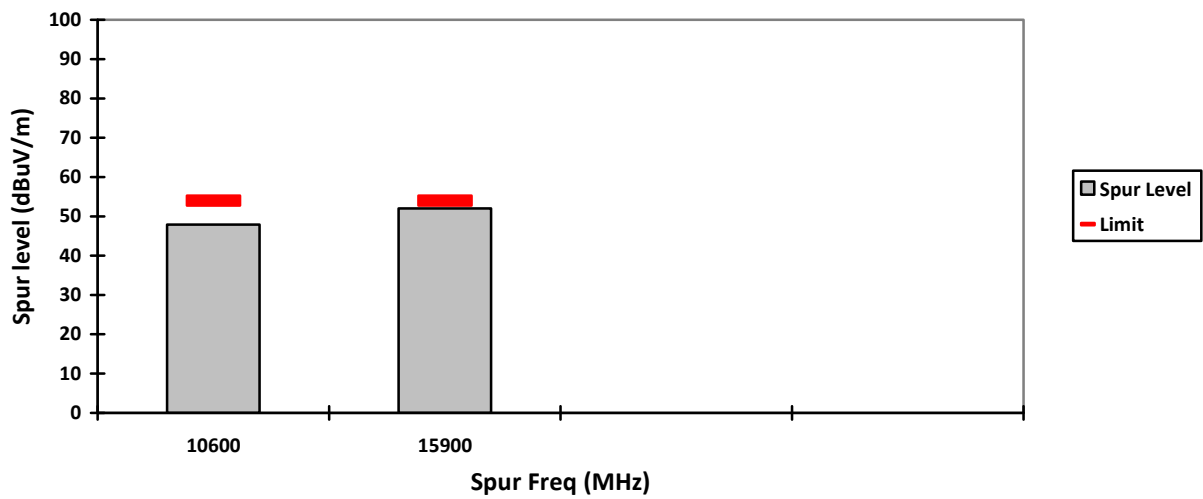
### HORIZONTAL, PK



### VERTICAL, AV

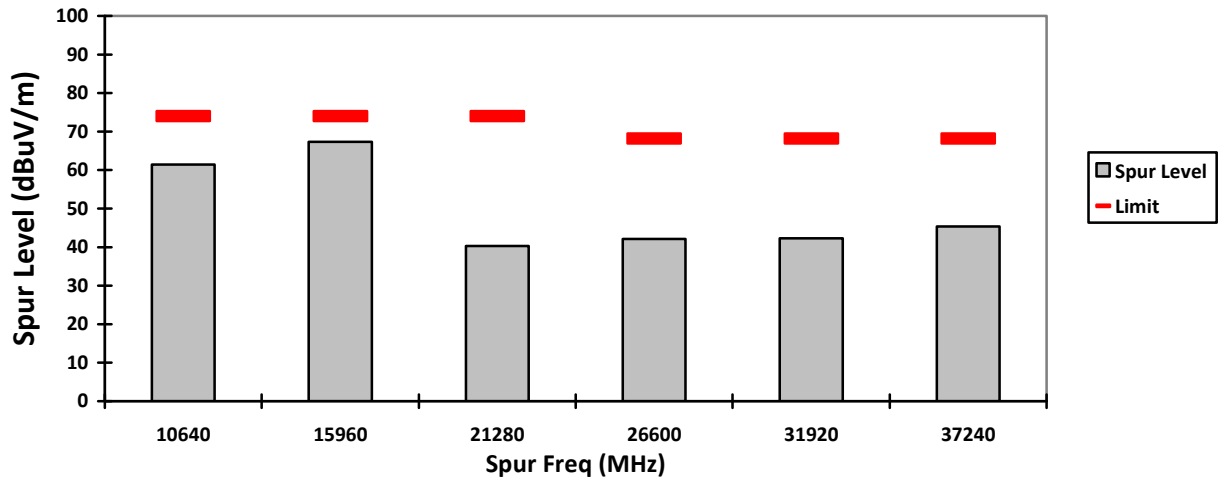


### HORIZONTAL, AV

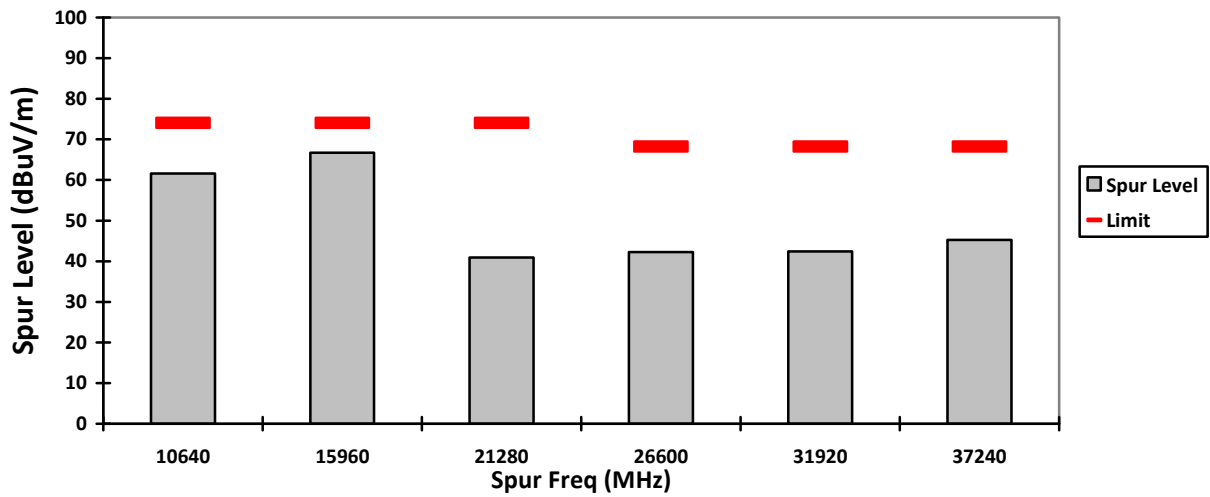




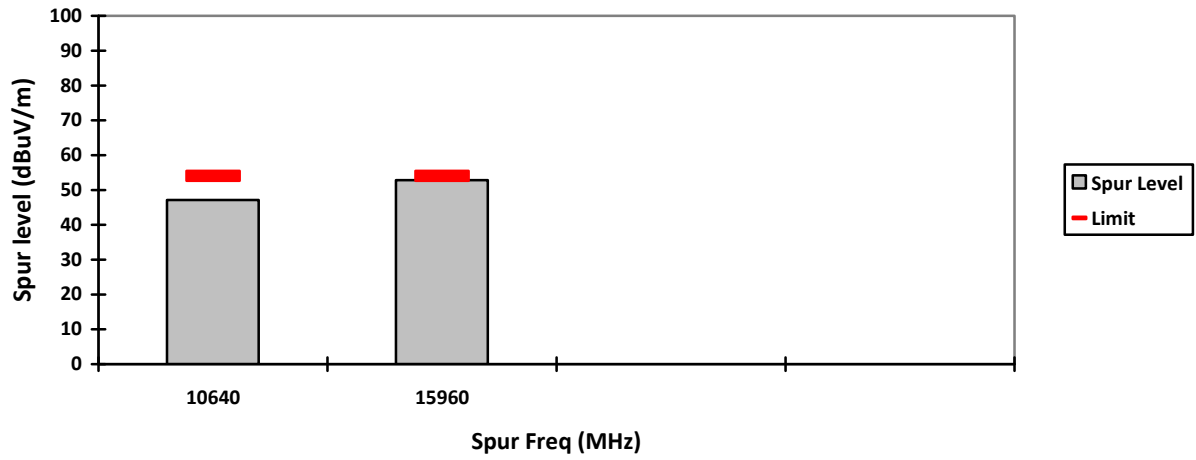
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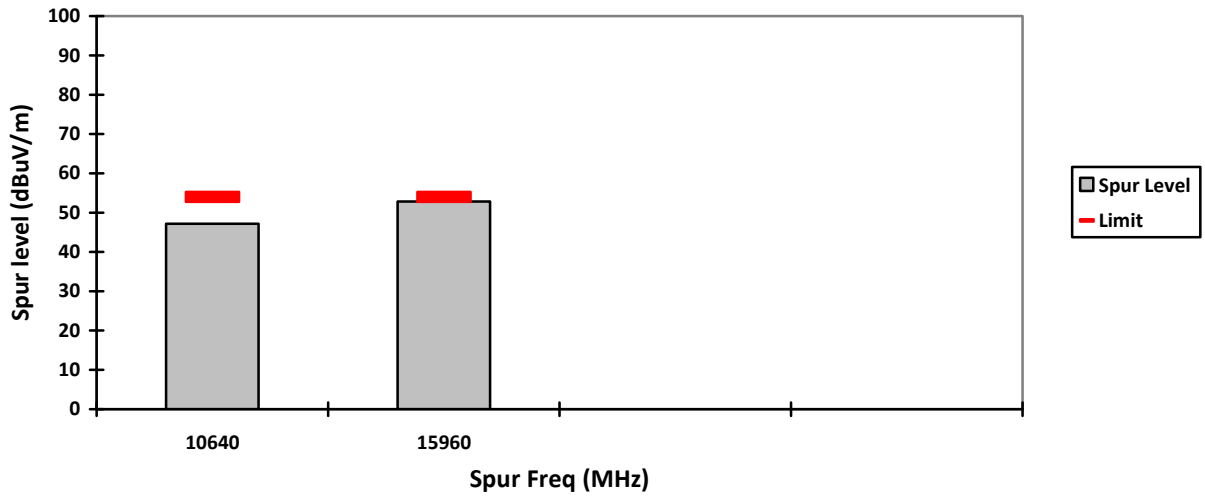
### HORIZONTAL, PK



### VERTICAL, AV

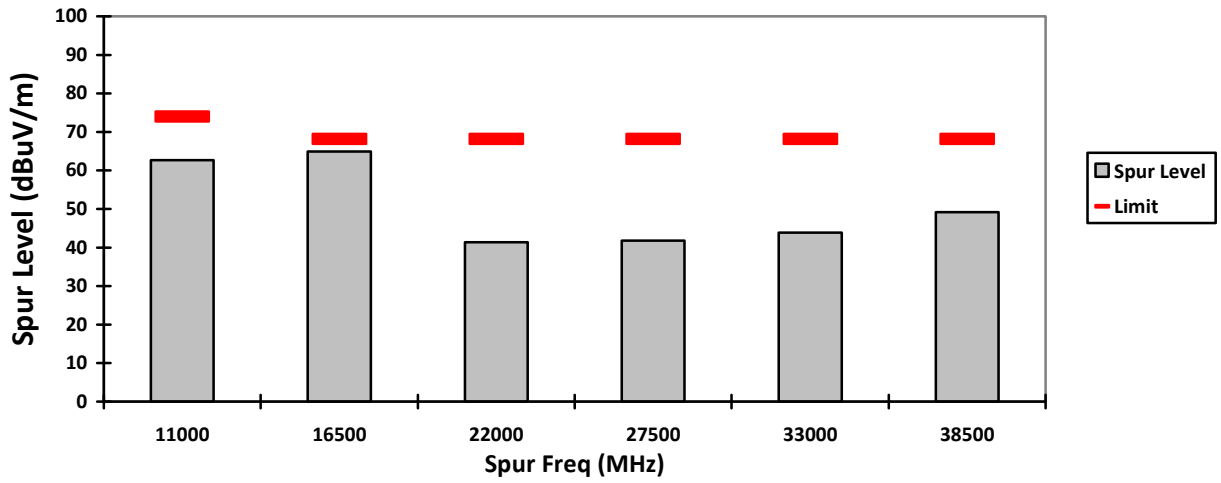


### HORIZONTAL, AV

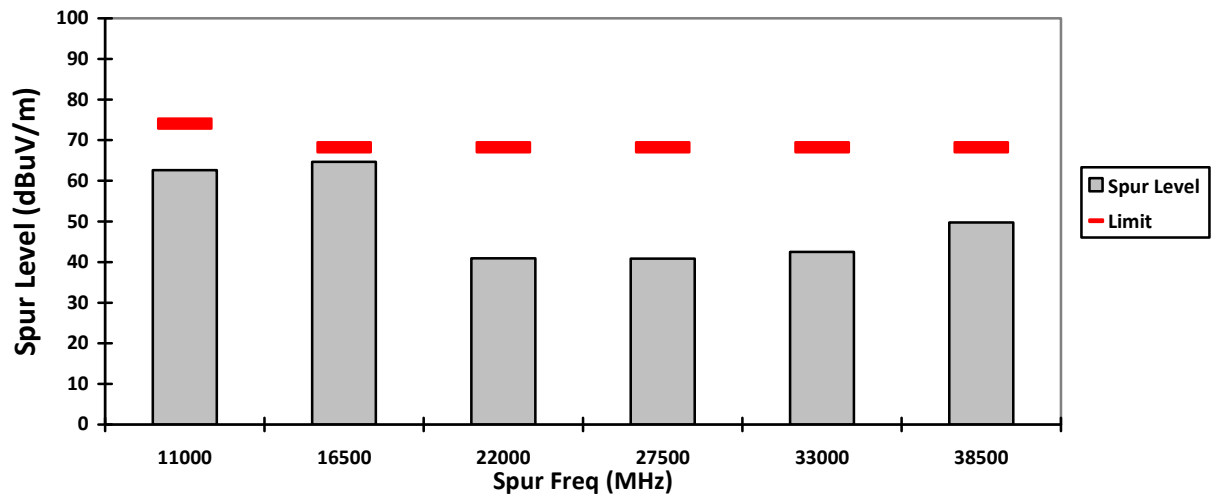




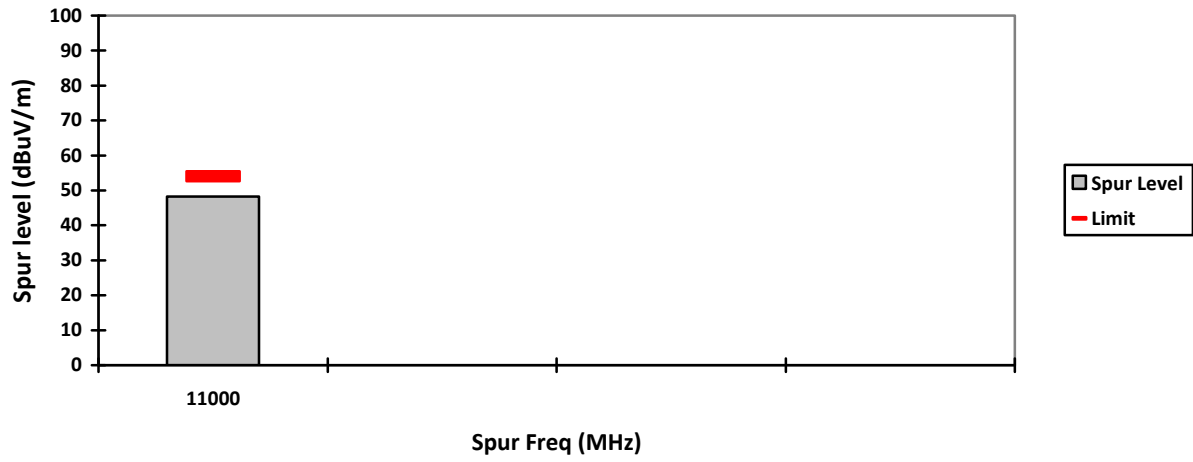
### VERTICAL, PK



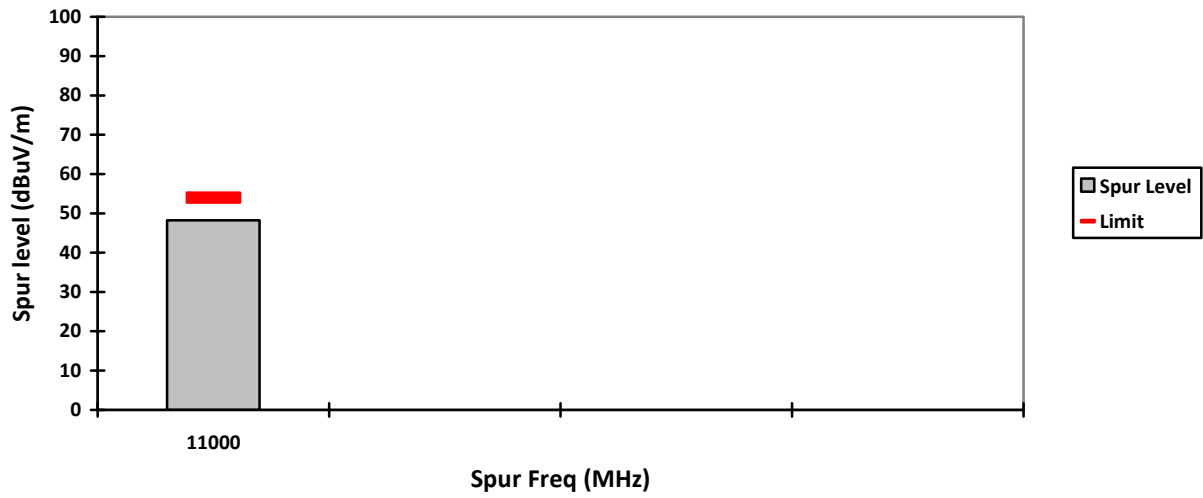
### HORIZONTAL, PK



### VERTICAL, AV



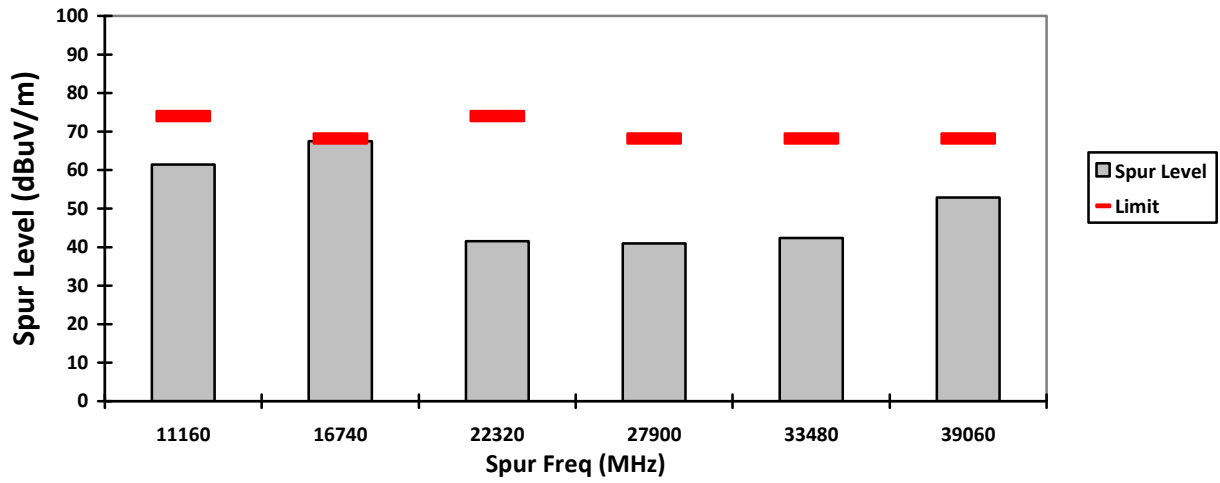
### HORIZONTAL, AV



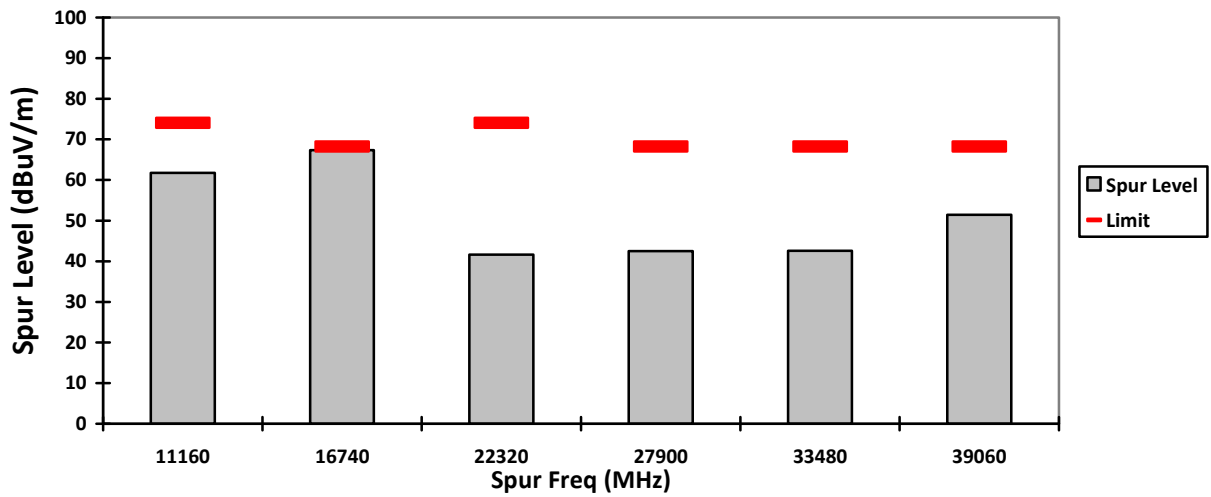




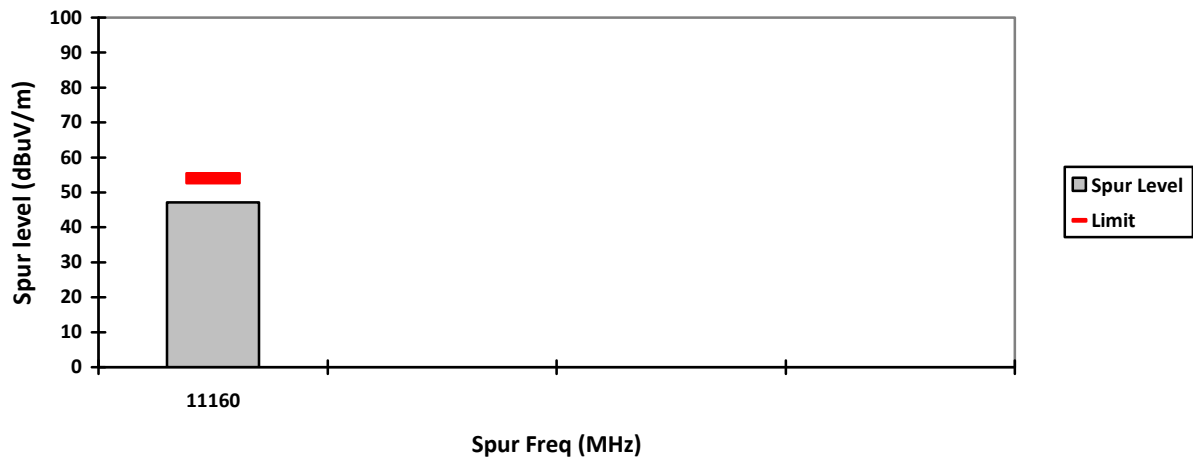
### VERTICAL, PK



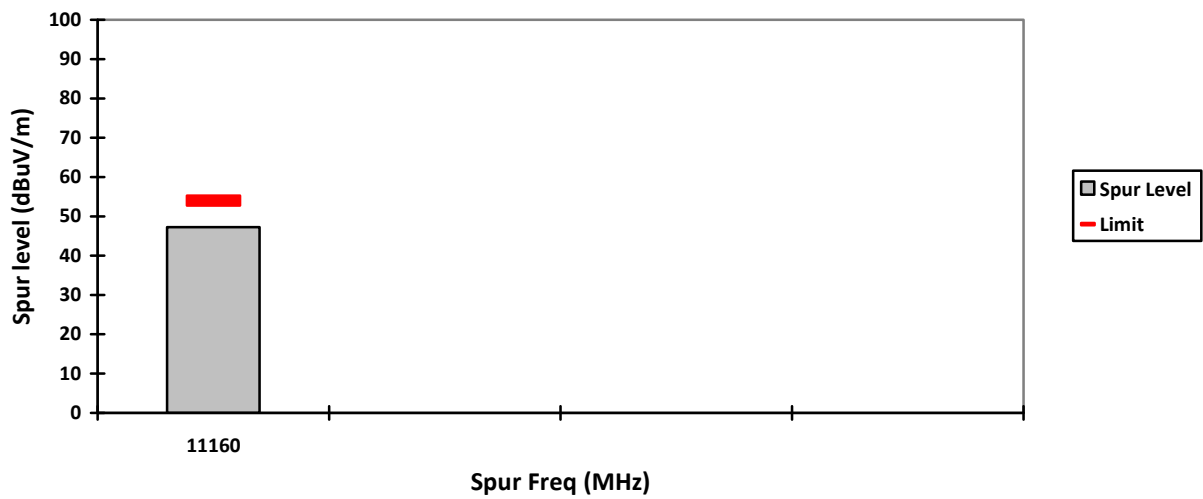
### HORIZONTAL, PK



### VERTICAL, AV

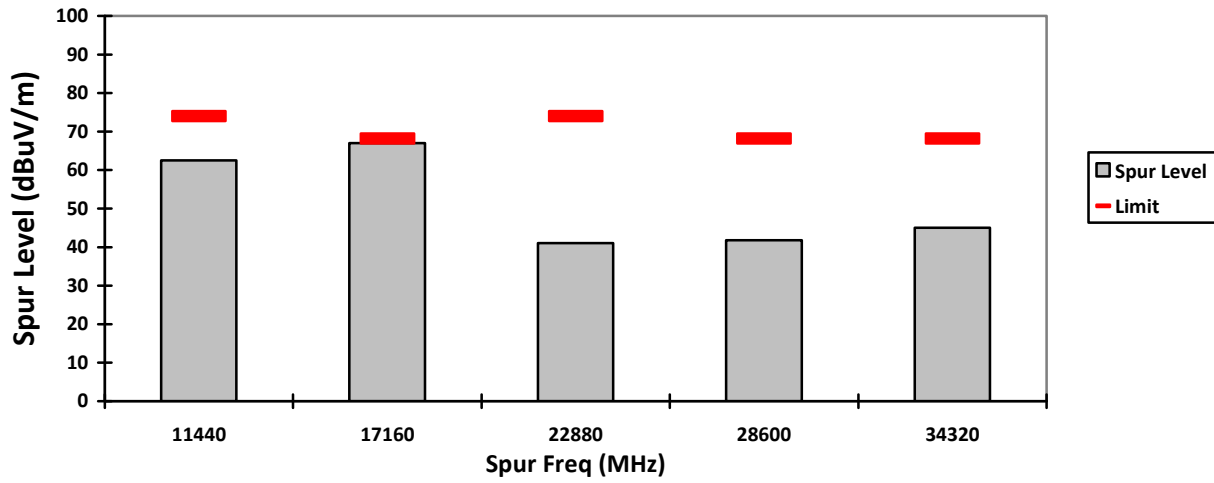


### HORIZONTAL, AV

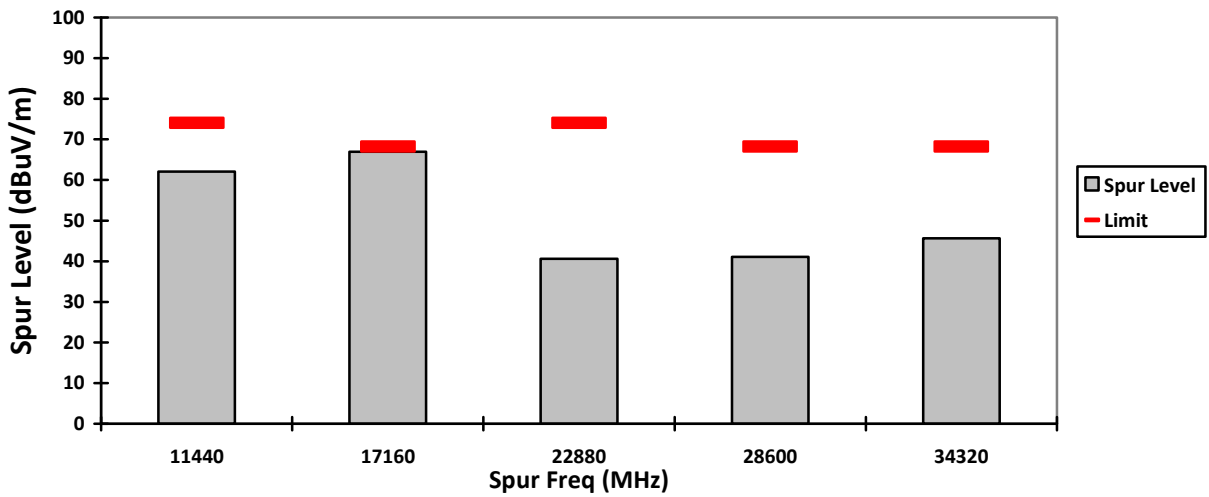




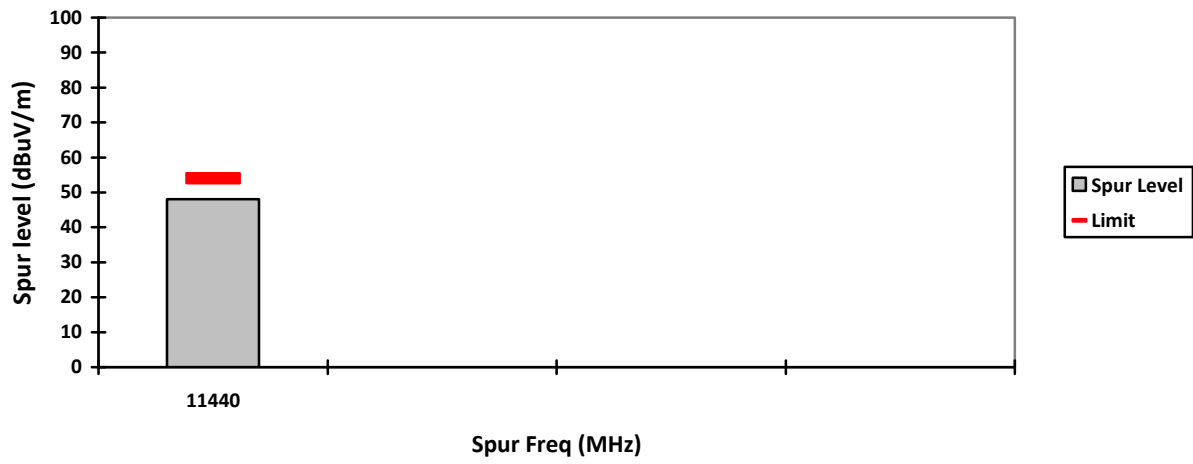
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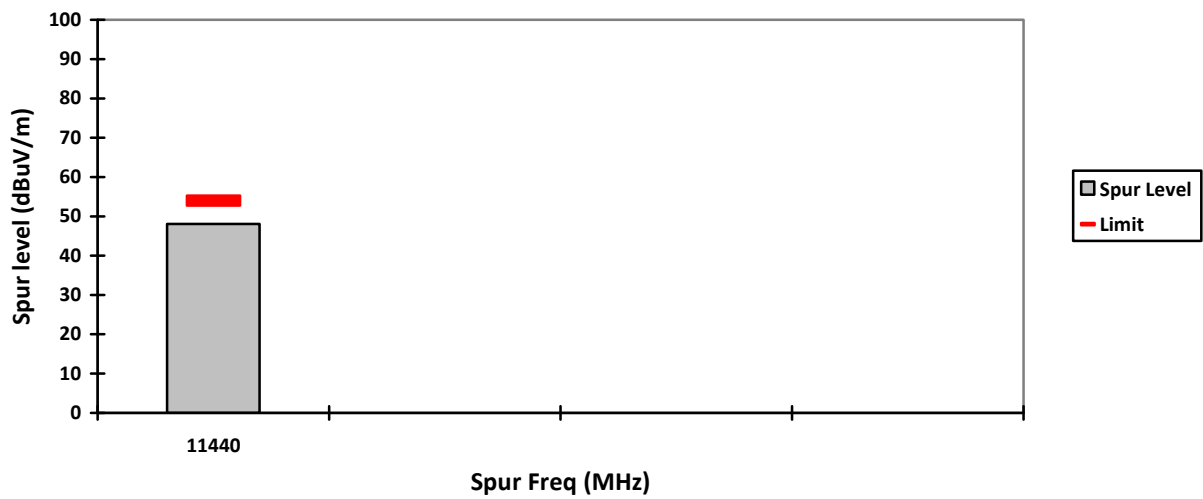
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### VERTICAL, AV

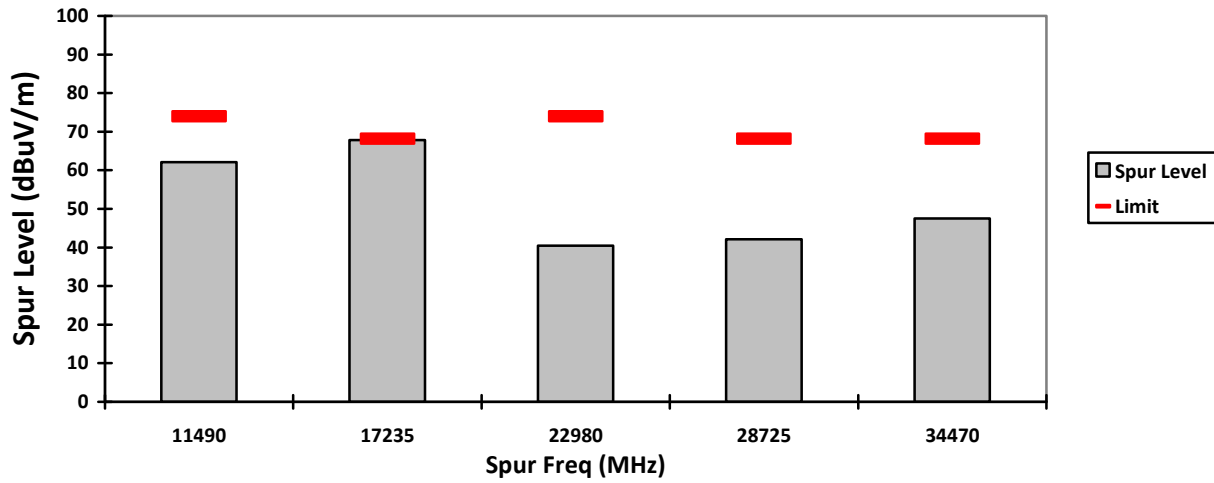


### HORIZONTAL, AV

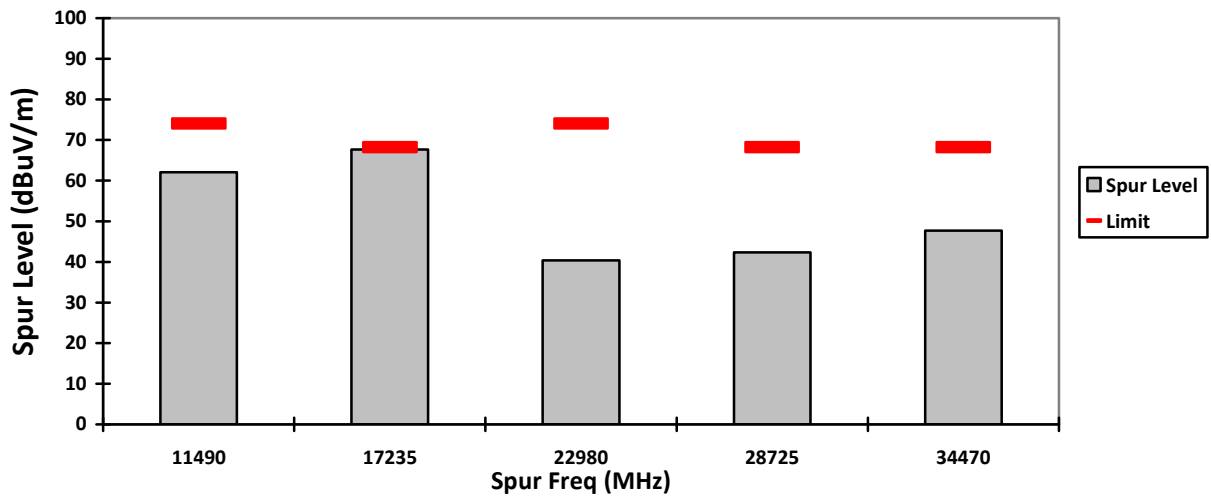




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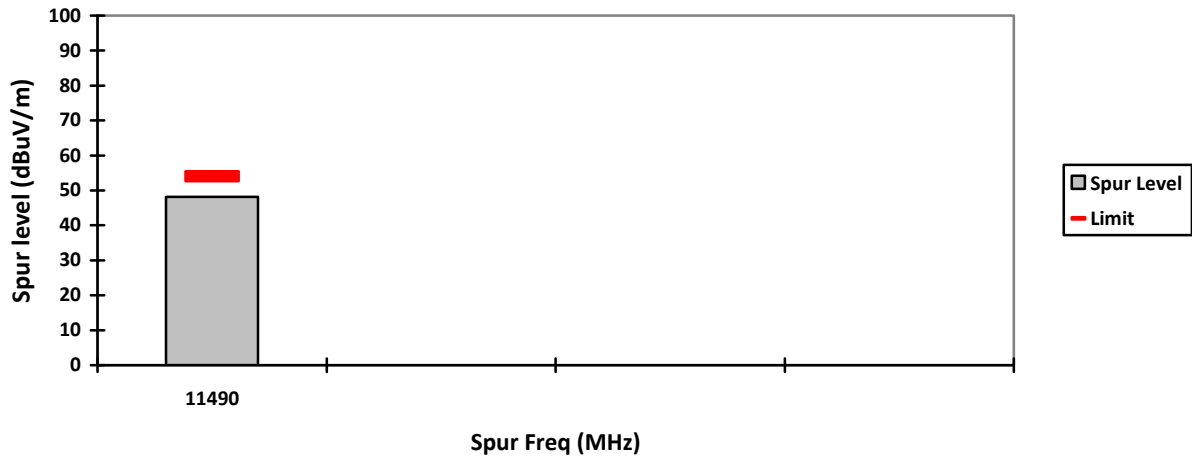


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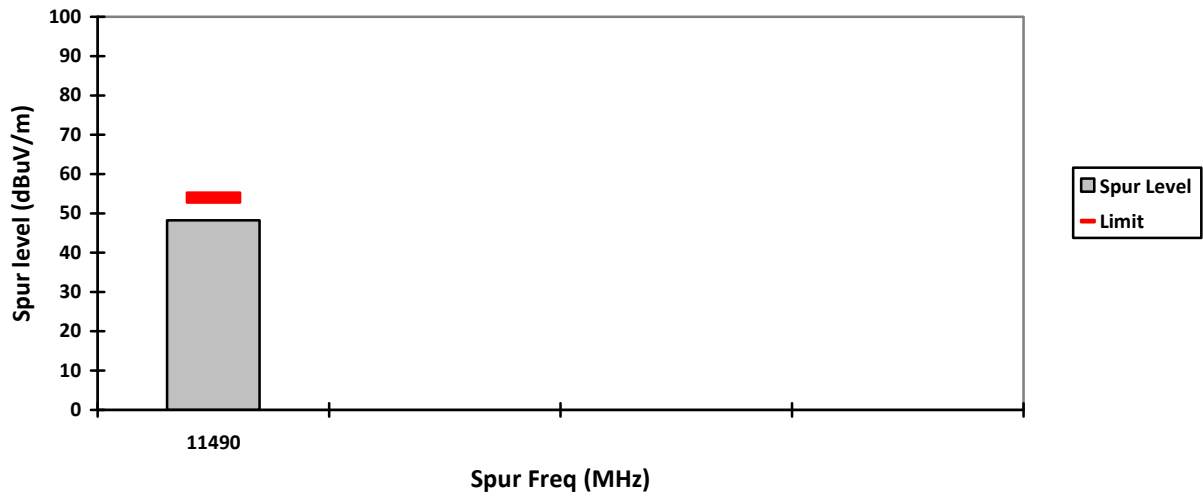




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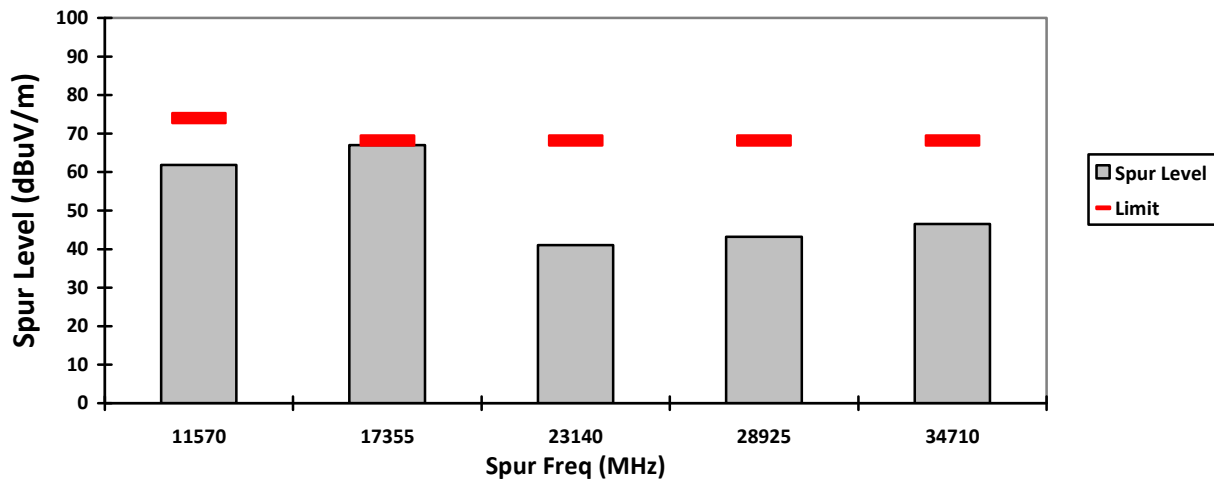


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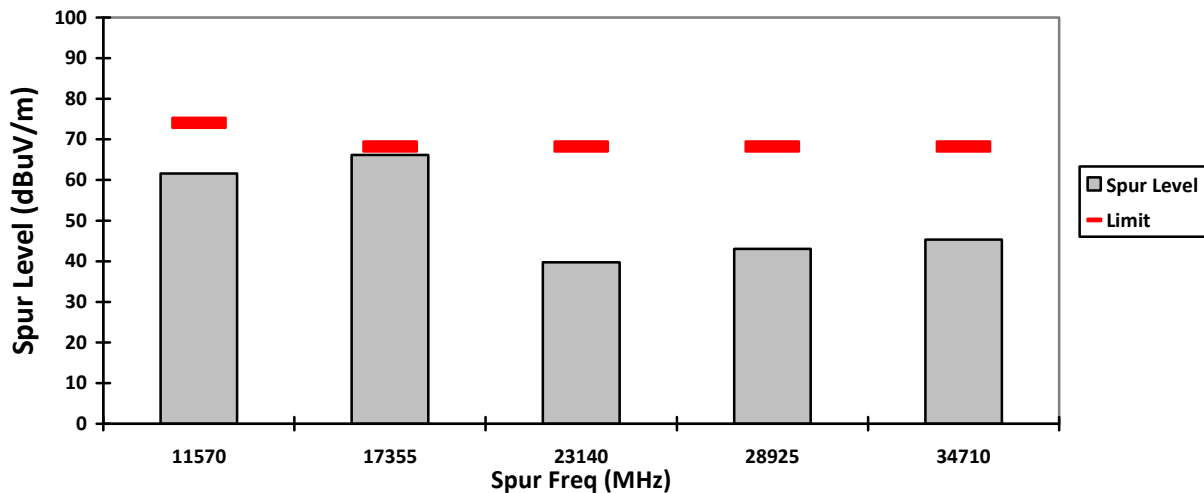




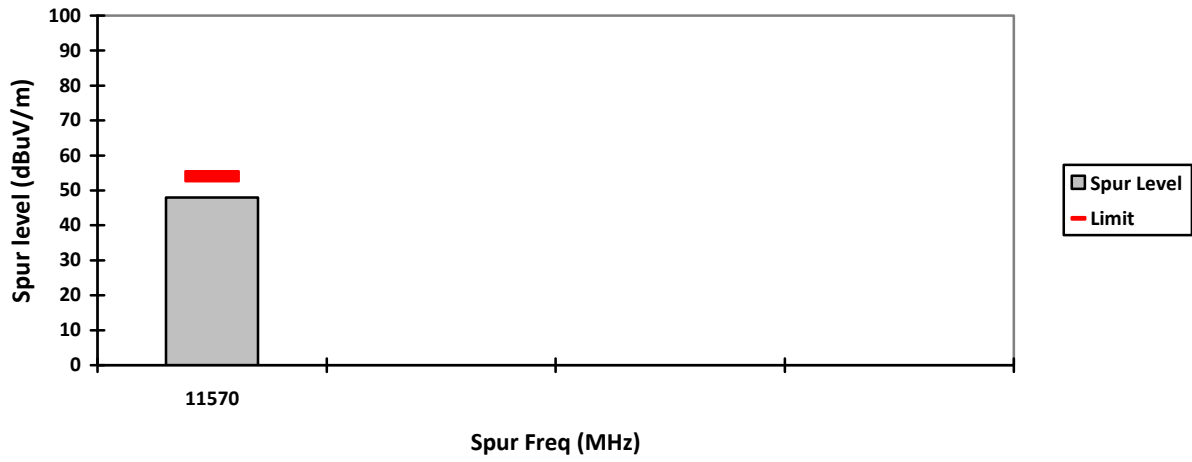
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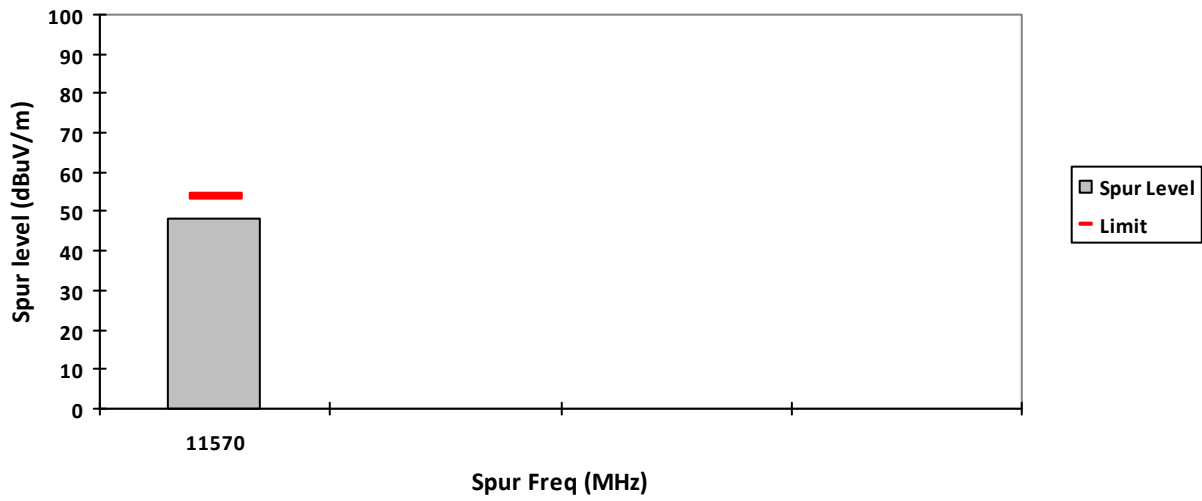
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### VERTICAL, AV

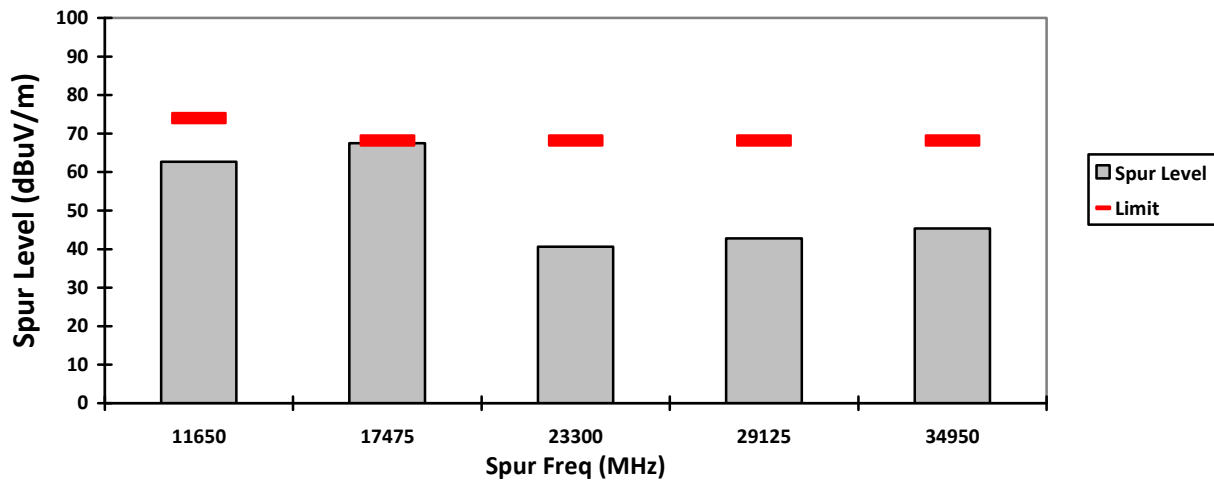


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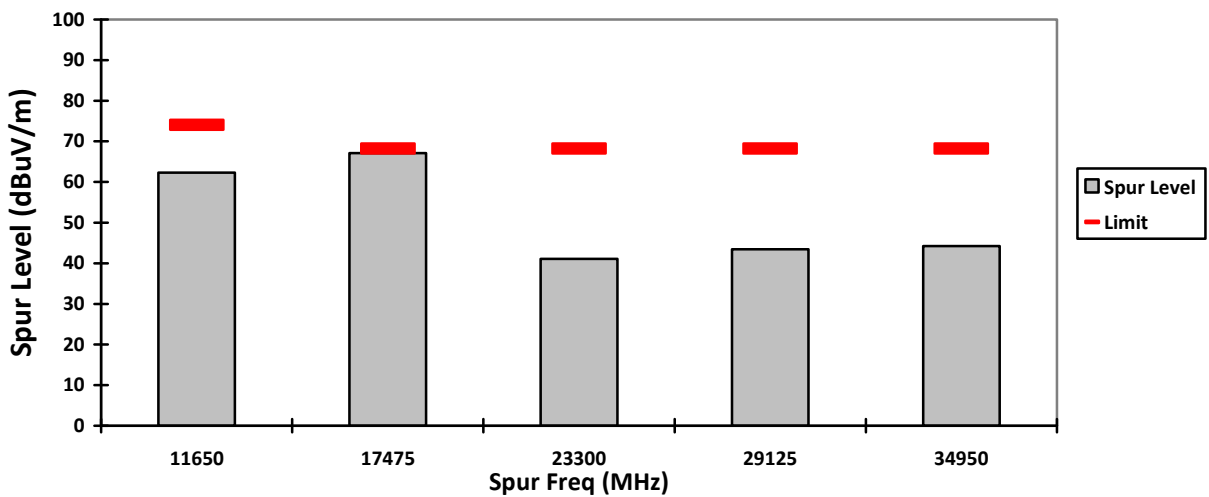




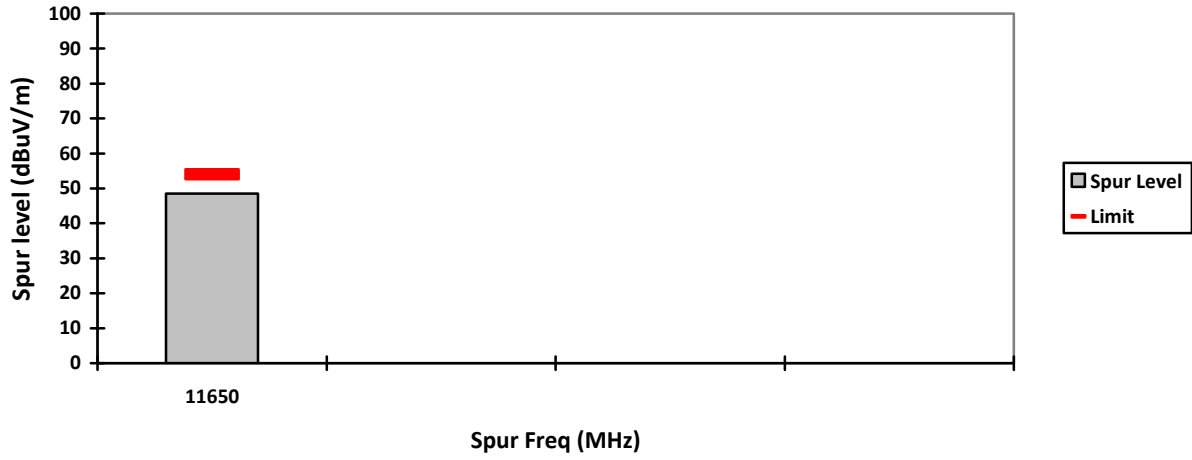
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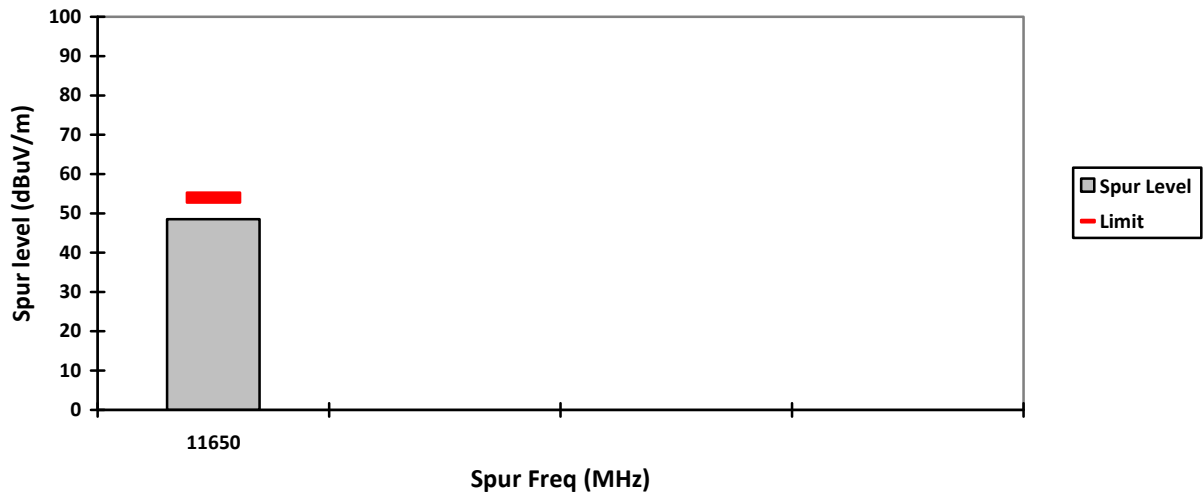
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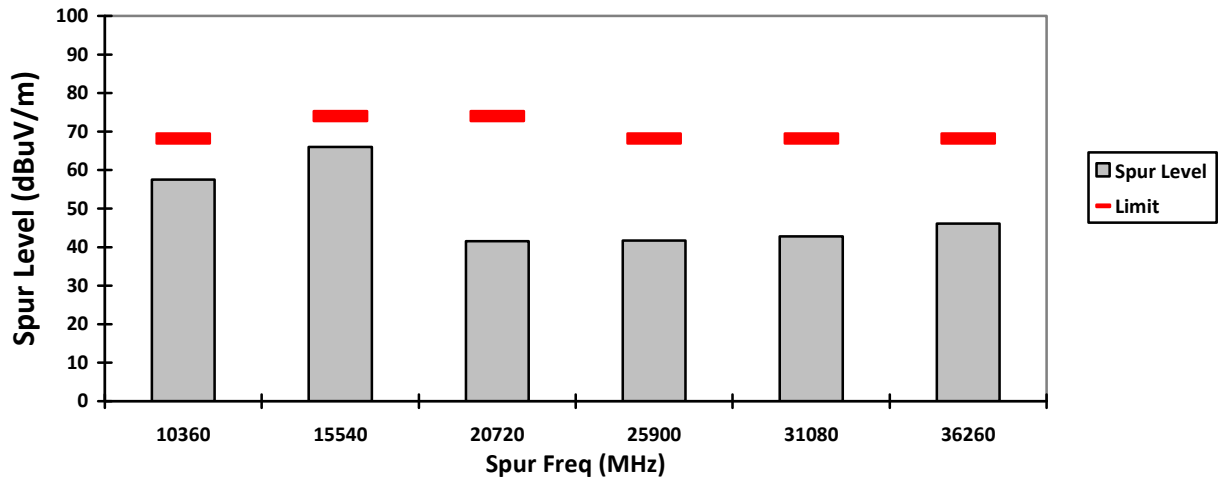
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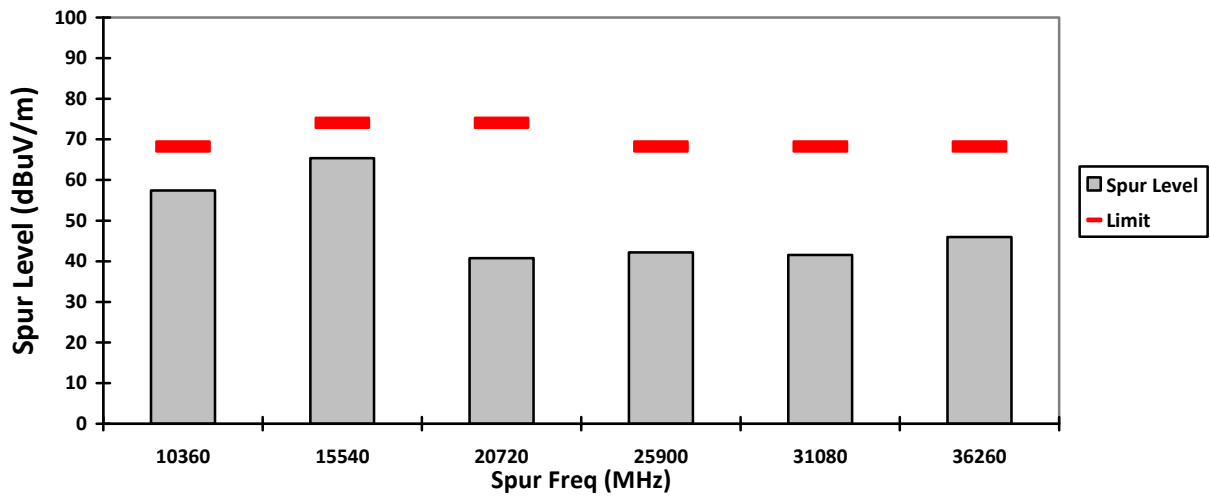




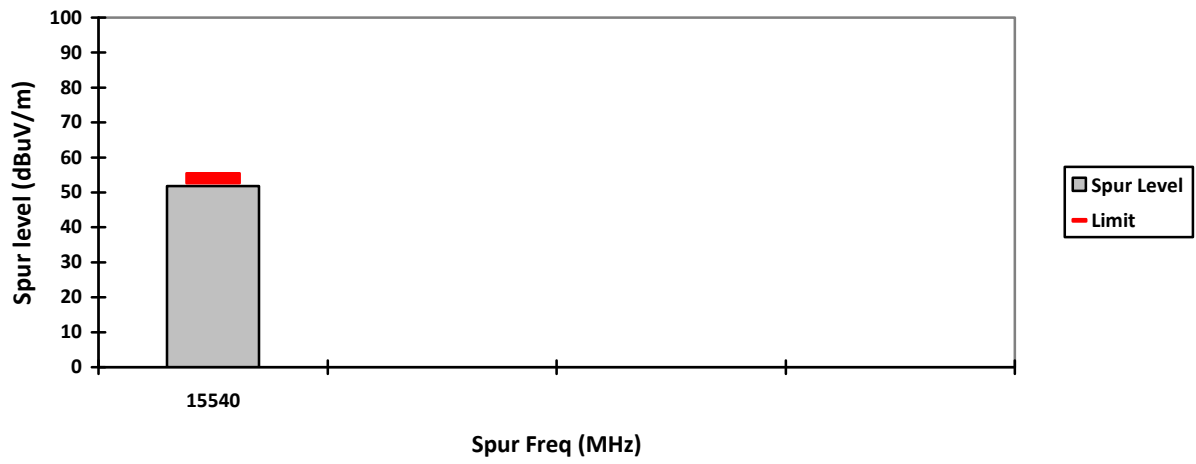
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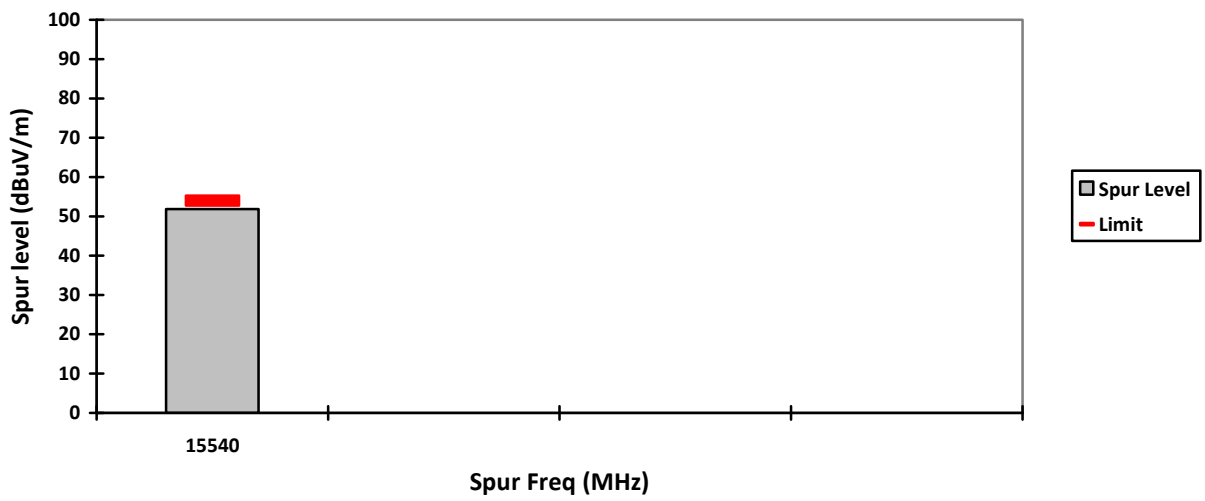
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### VERTICAL, AV

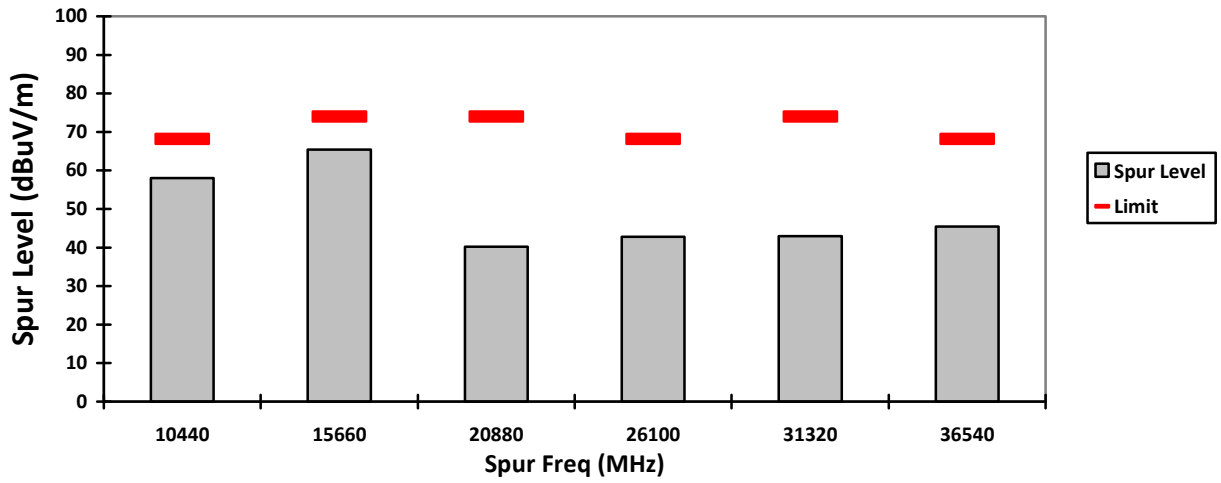


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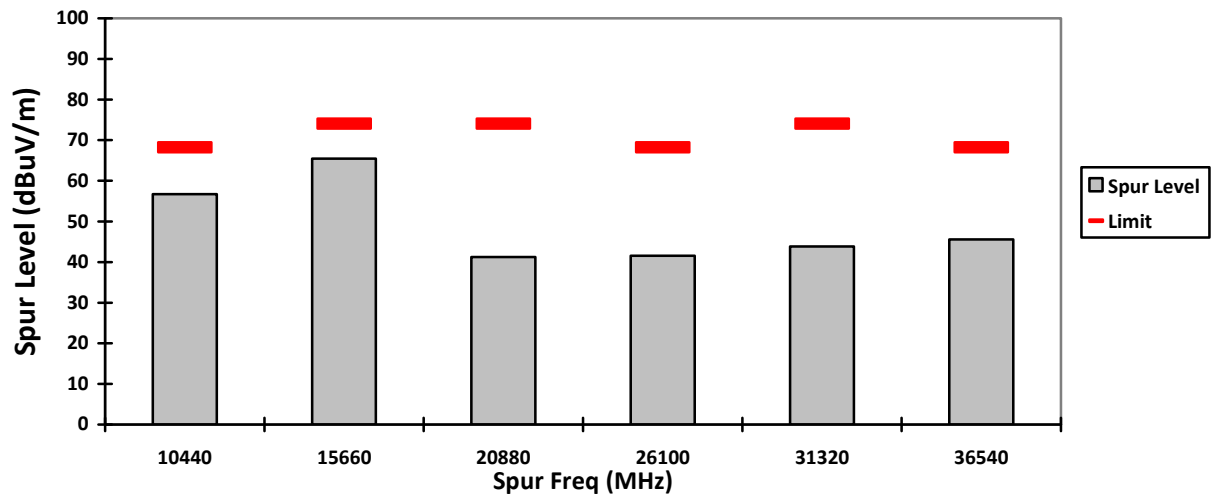




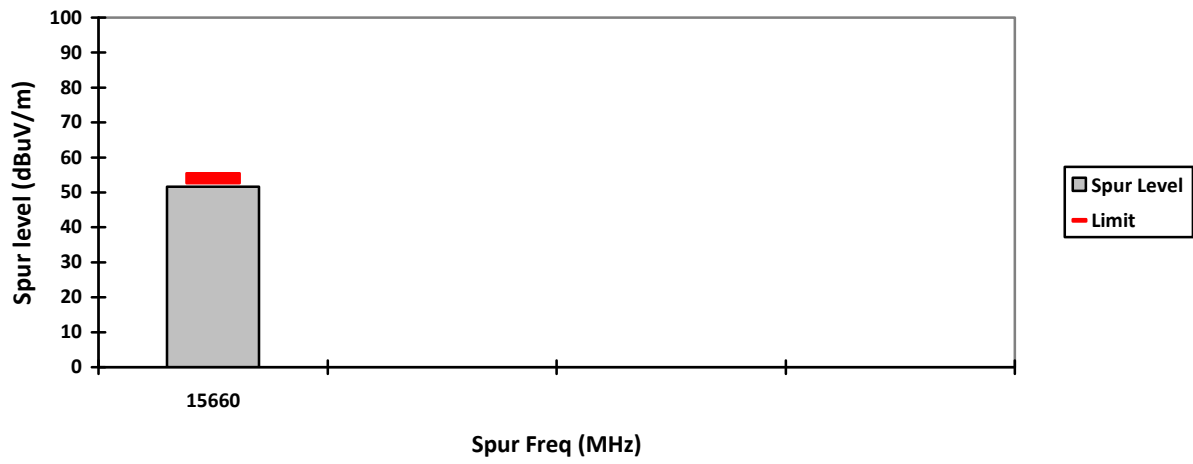
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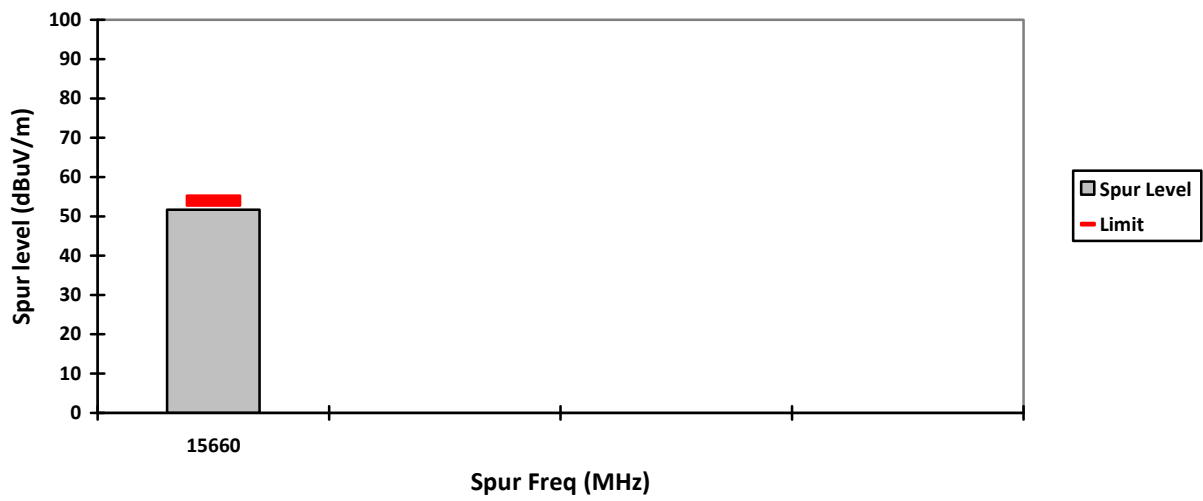
### HORIZONTAL, PK



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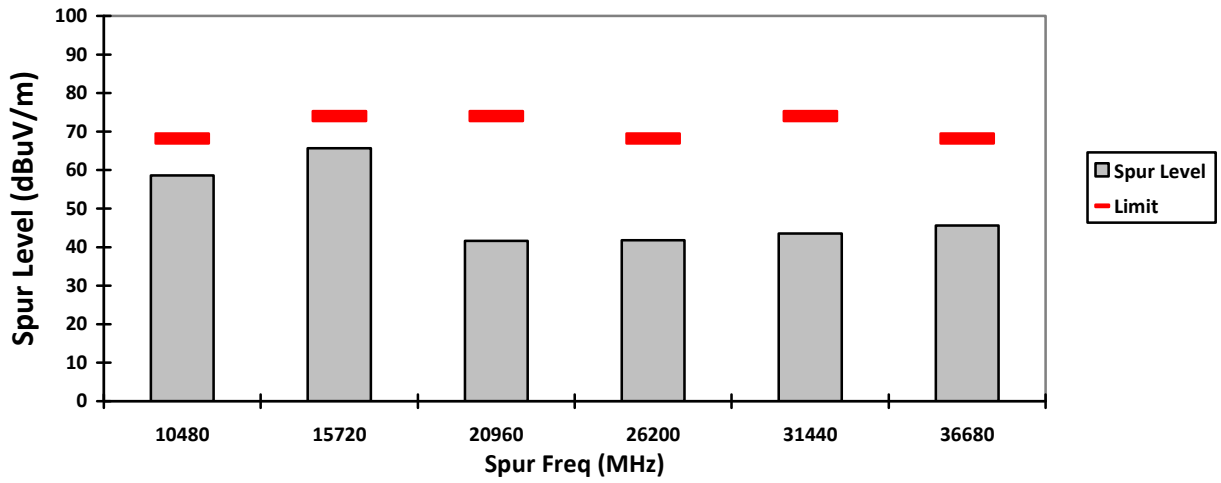


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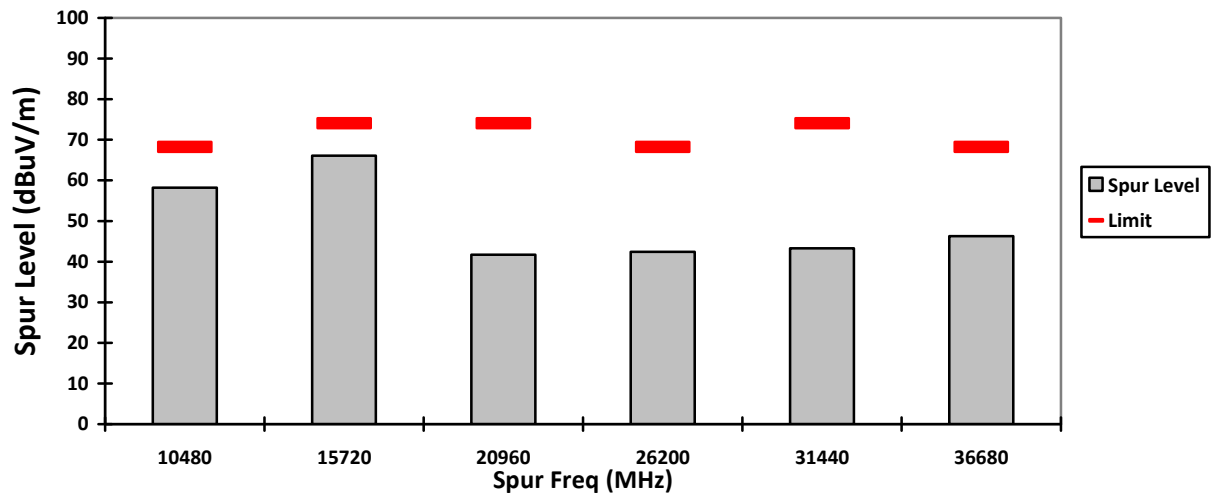




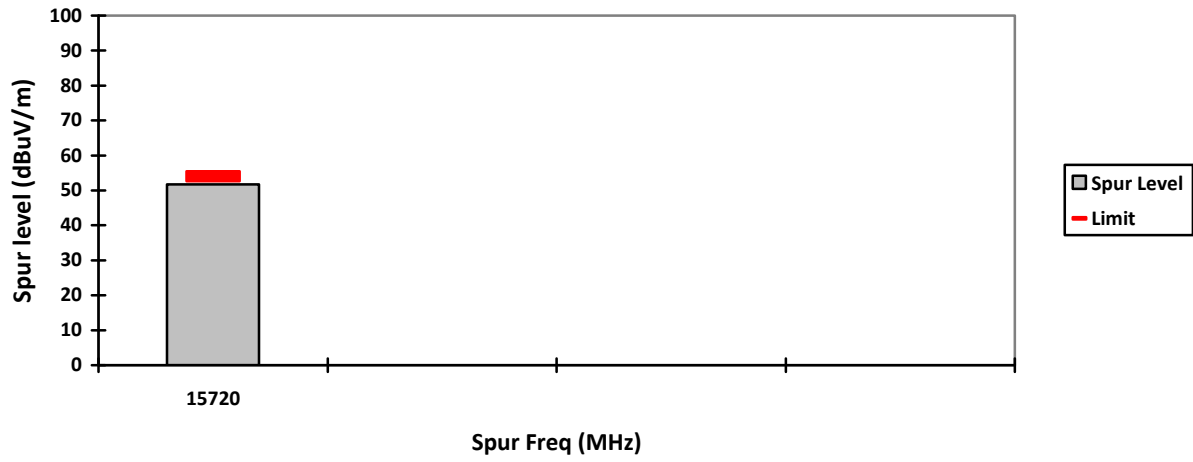
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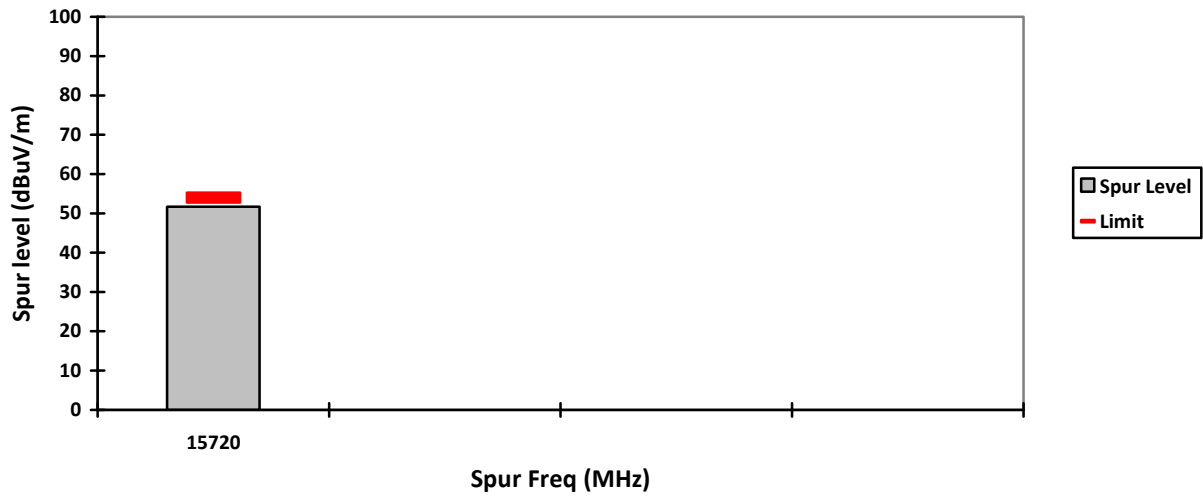
### HORIZONTAL, PK



### VERTICAL, AV



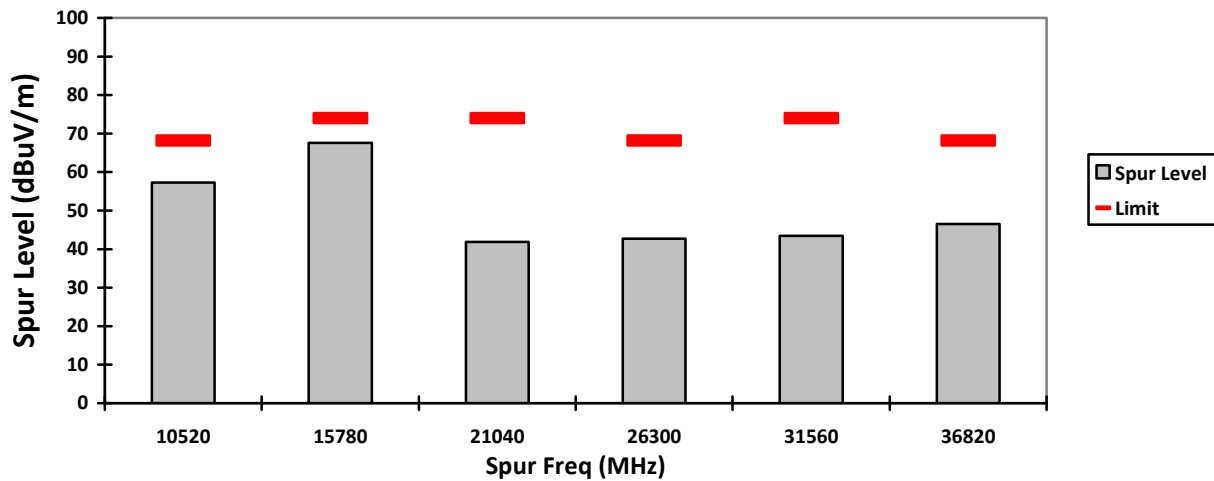
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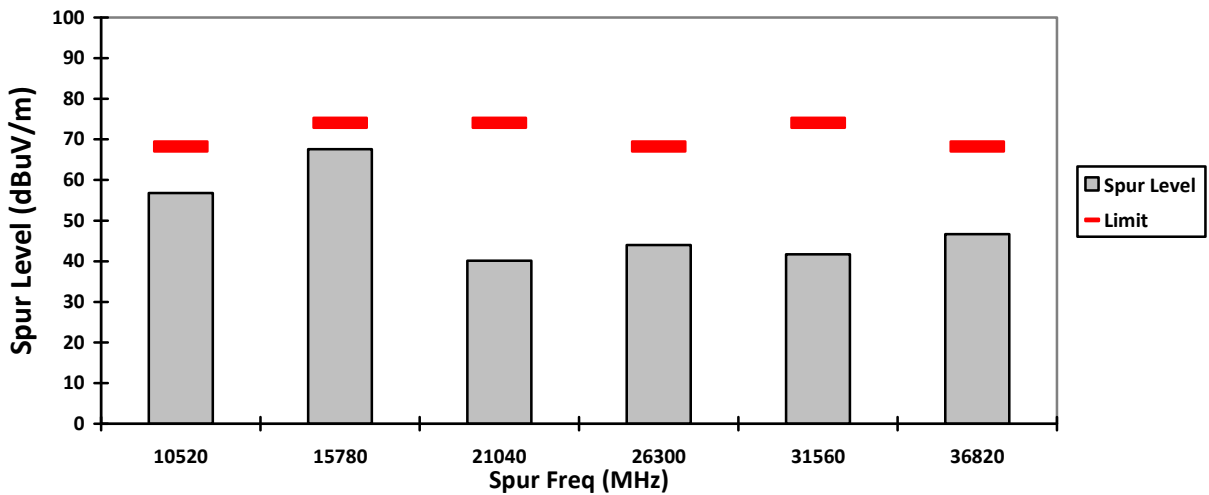




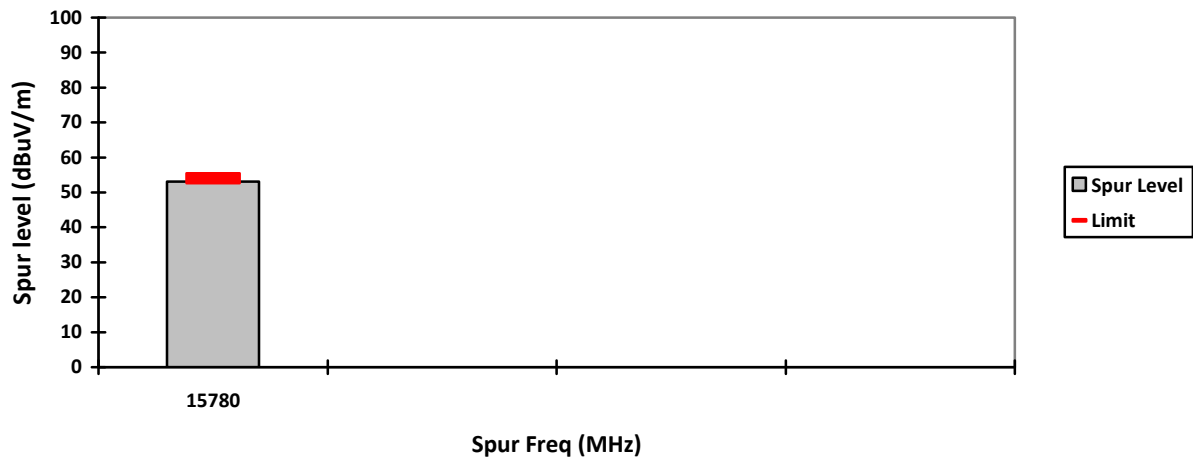
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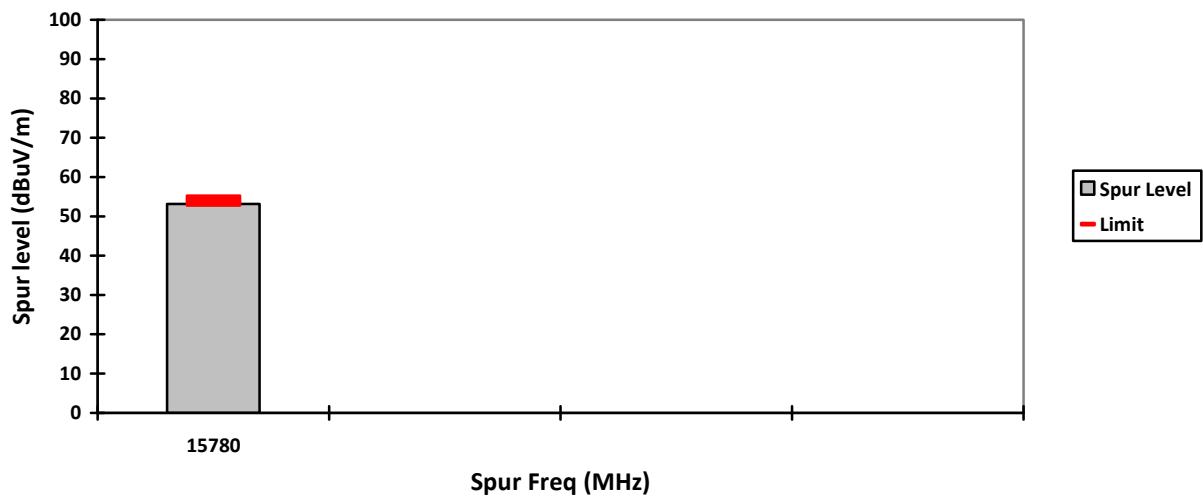
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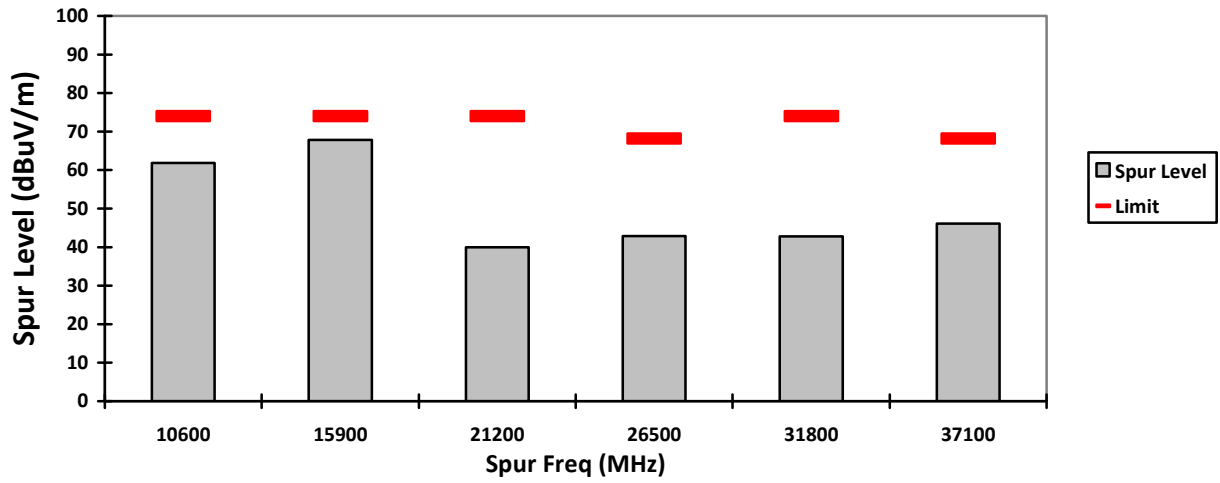


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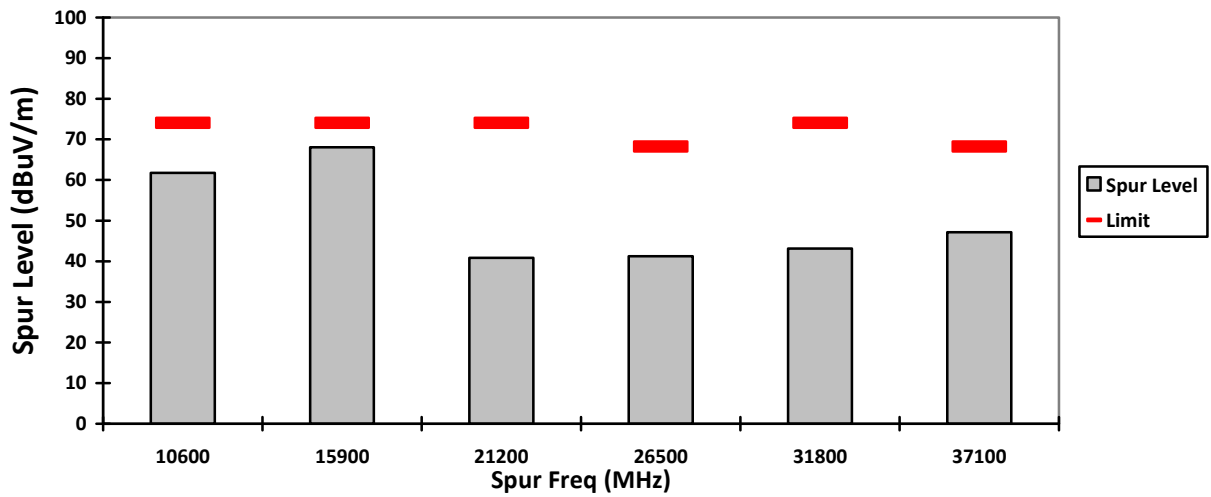




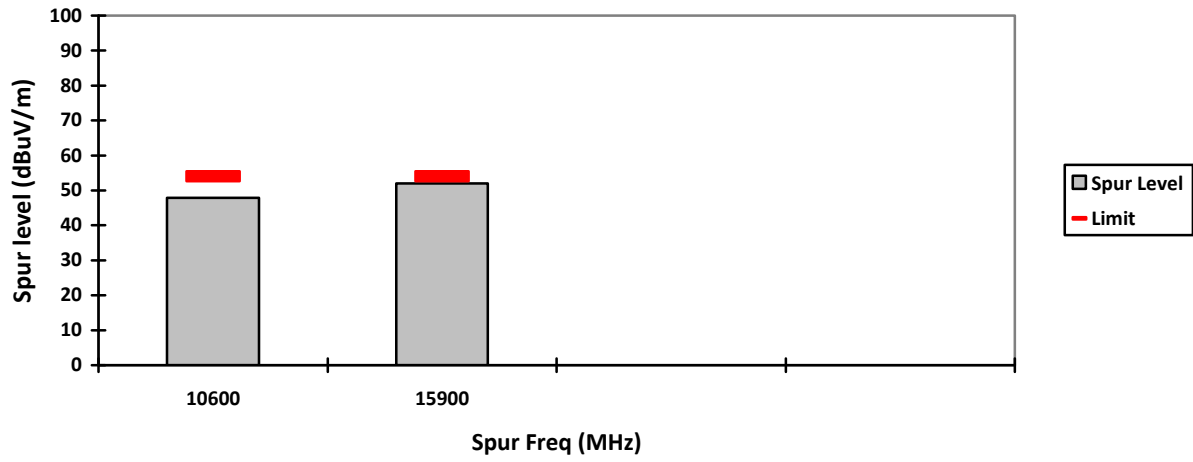
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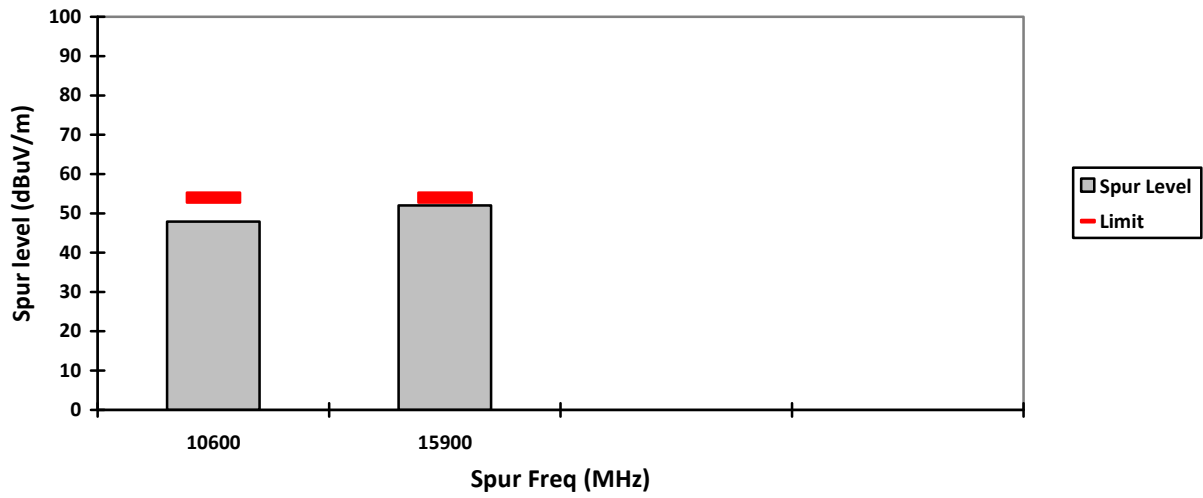
### HORIZONTAL, PK



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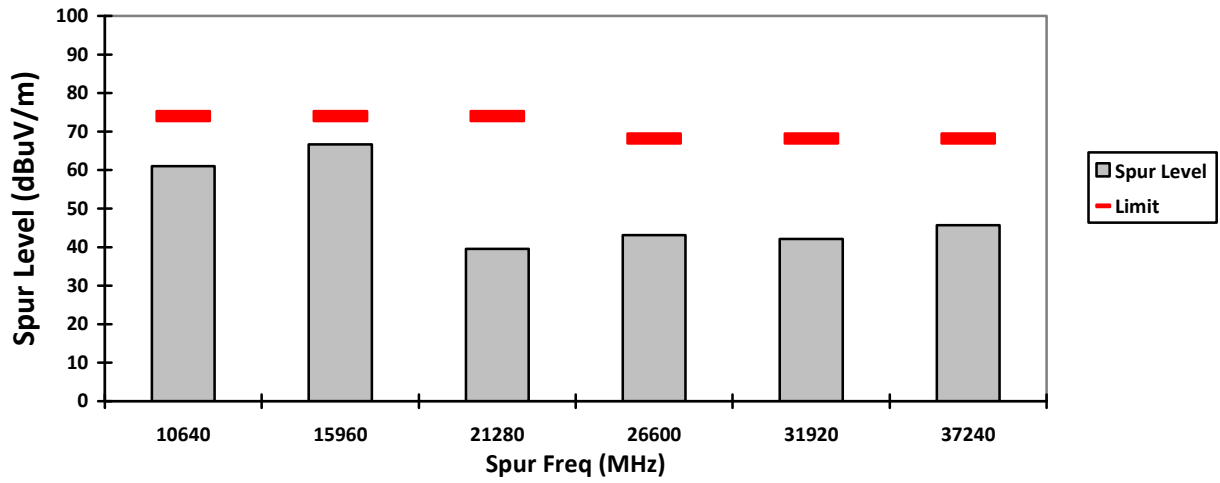


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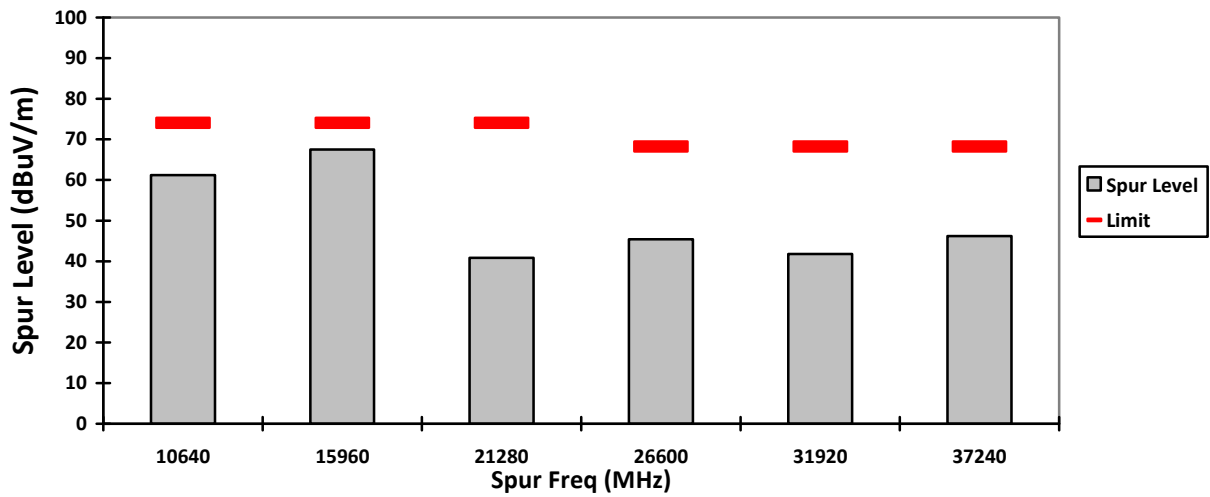




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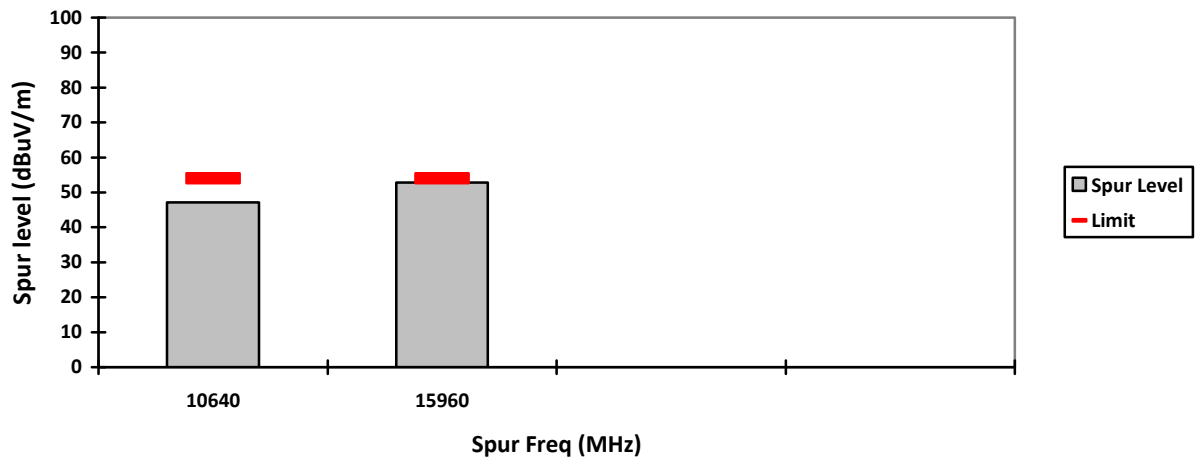


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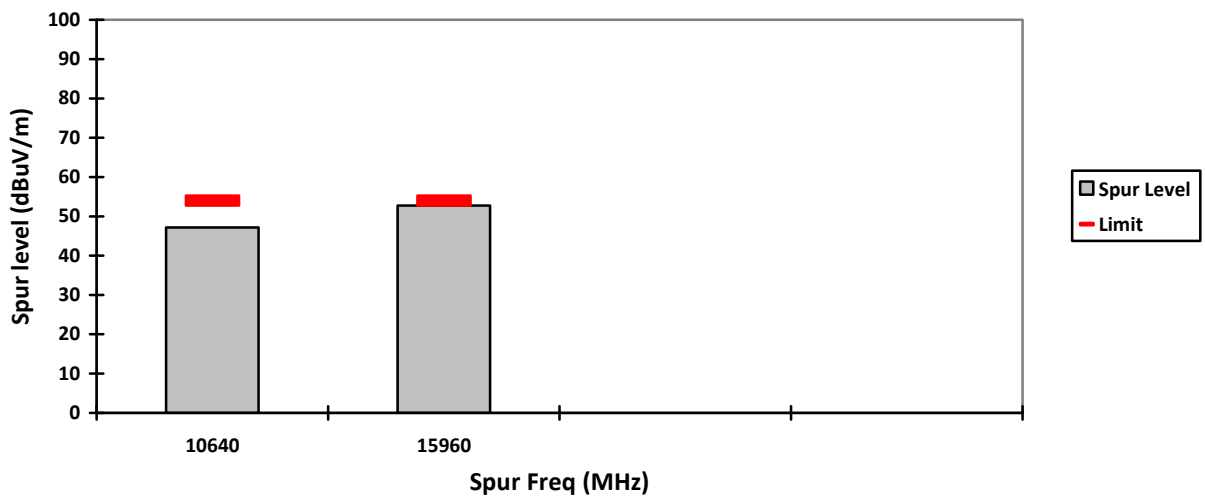




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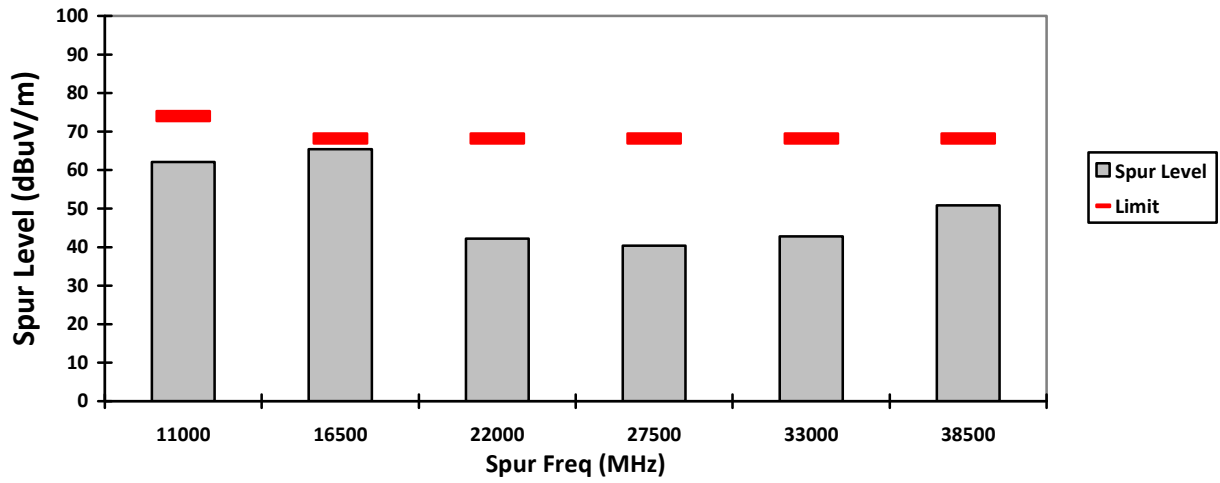


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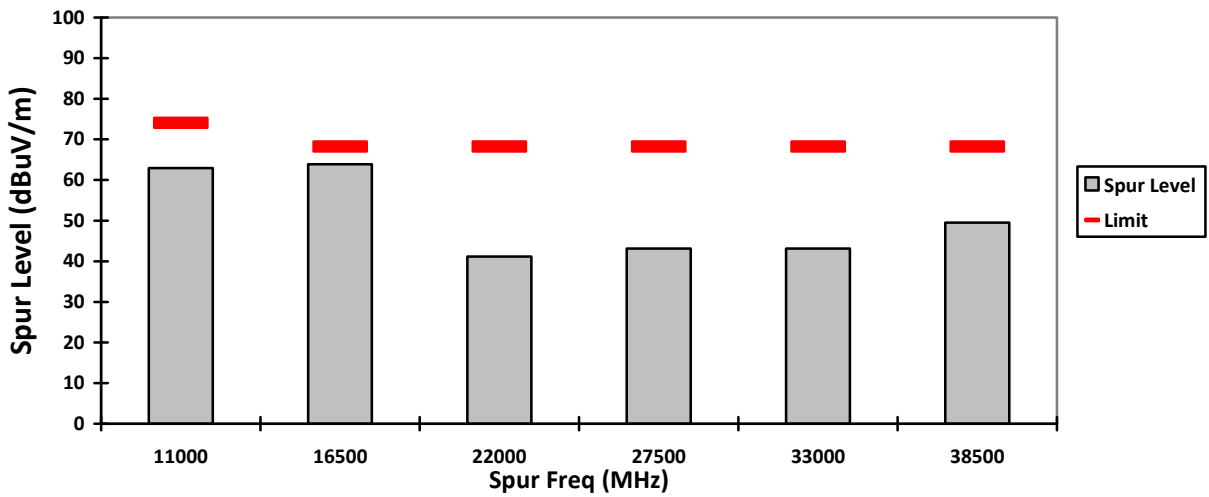




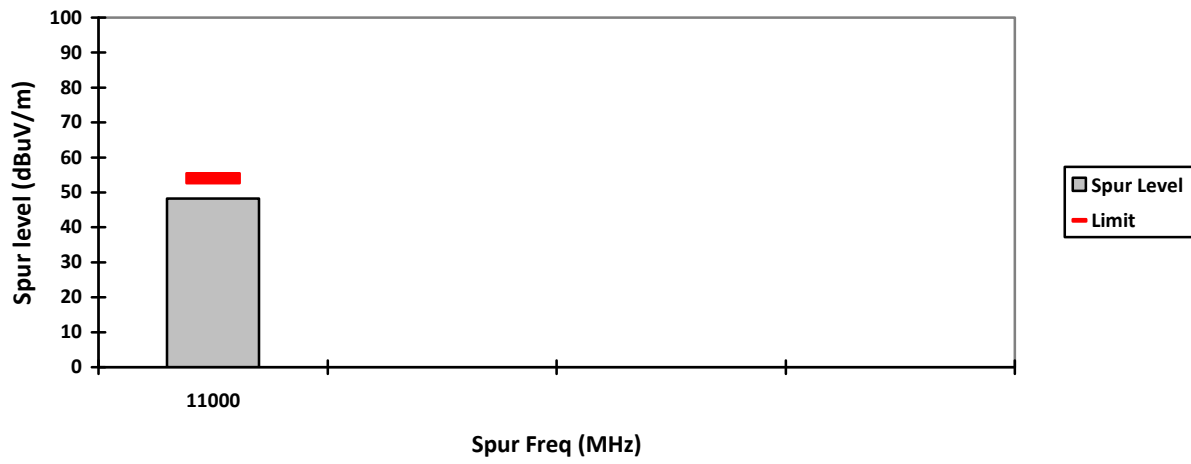
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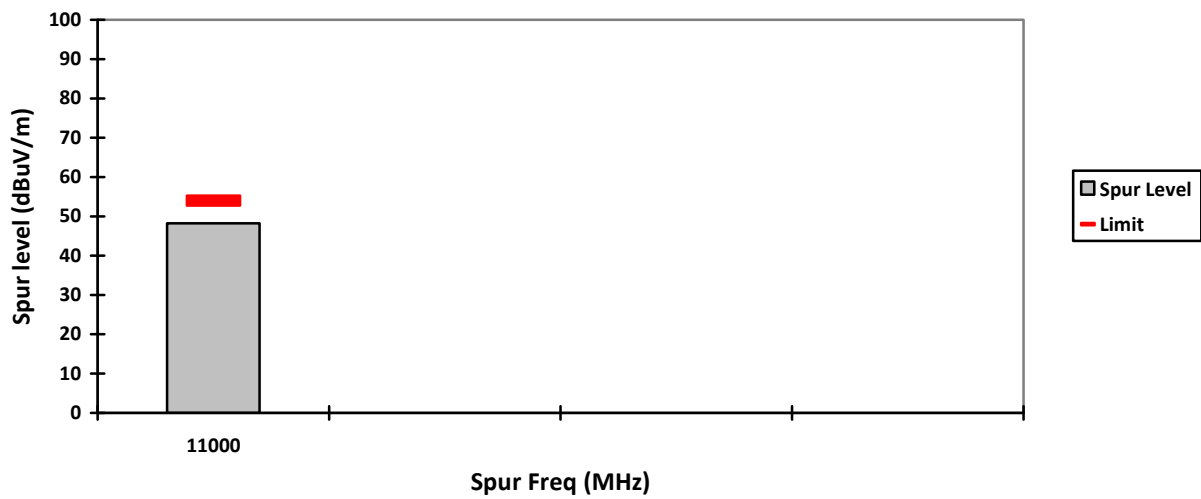
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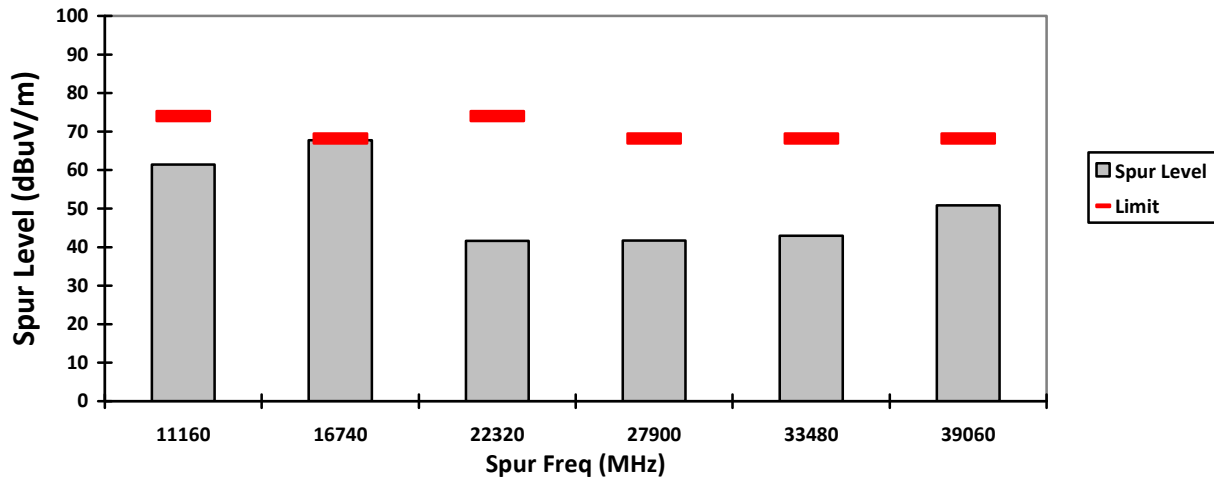


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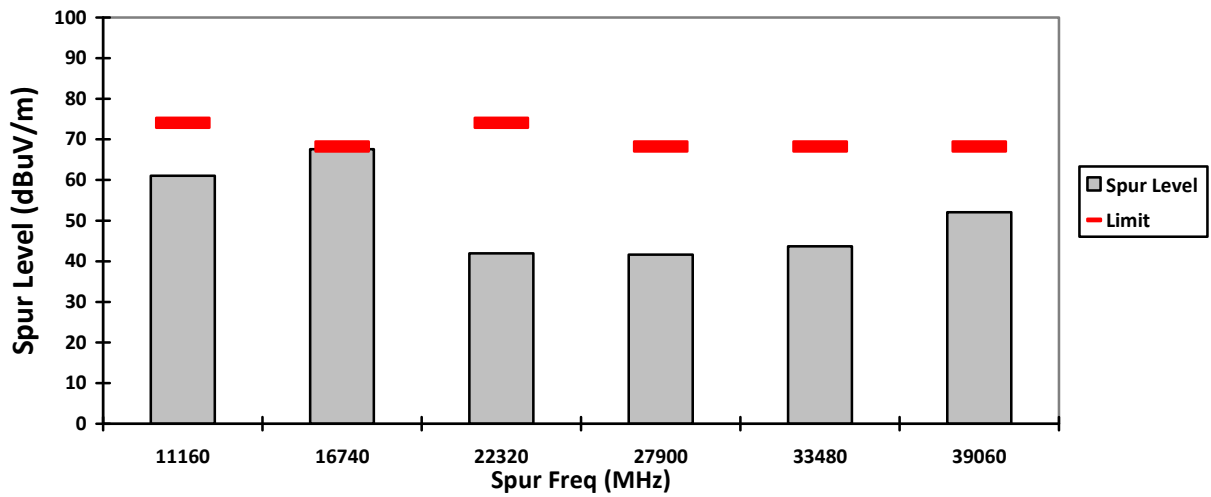




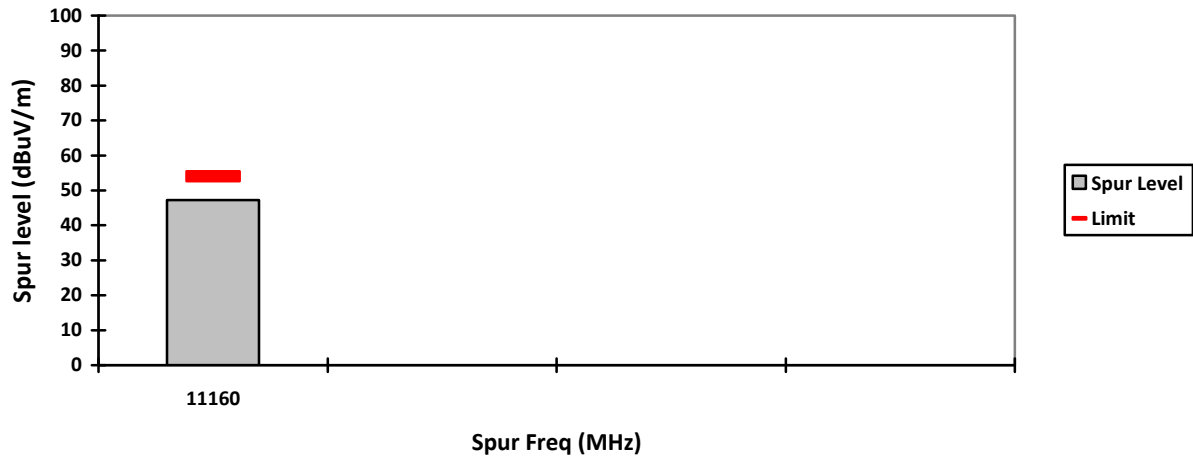
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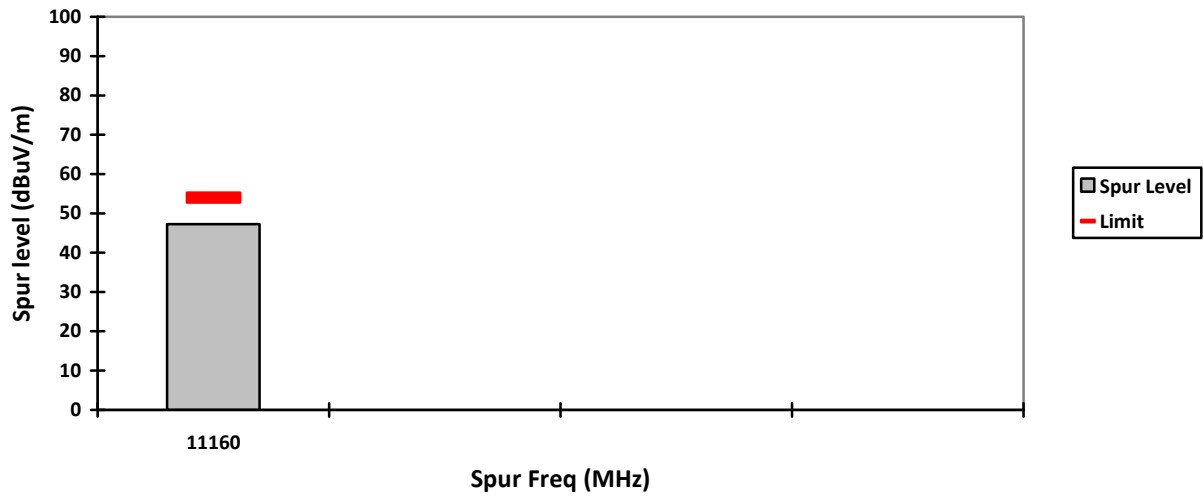
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### VERTICAL, AV



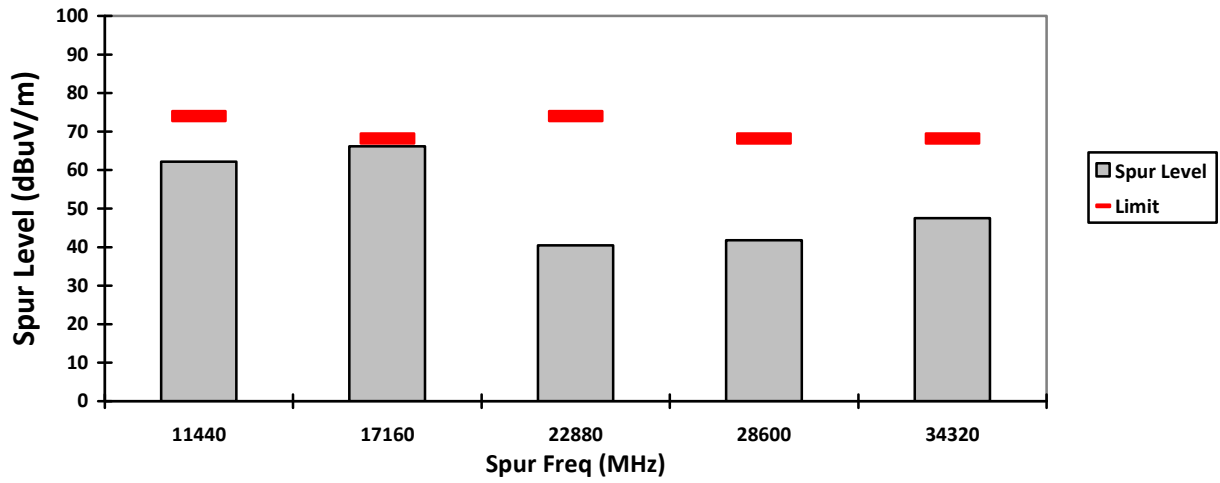
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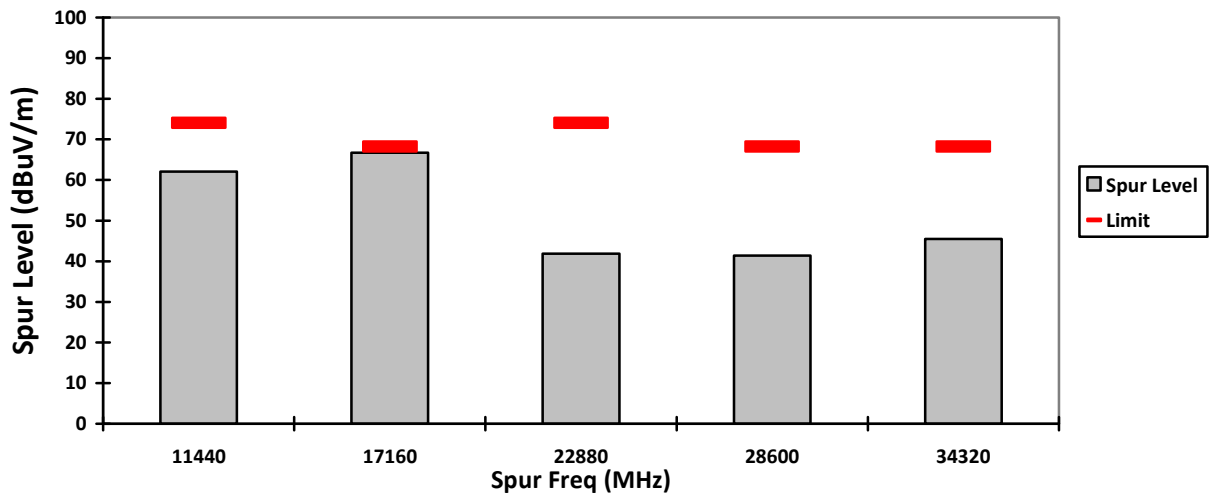




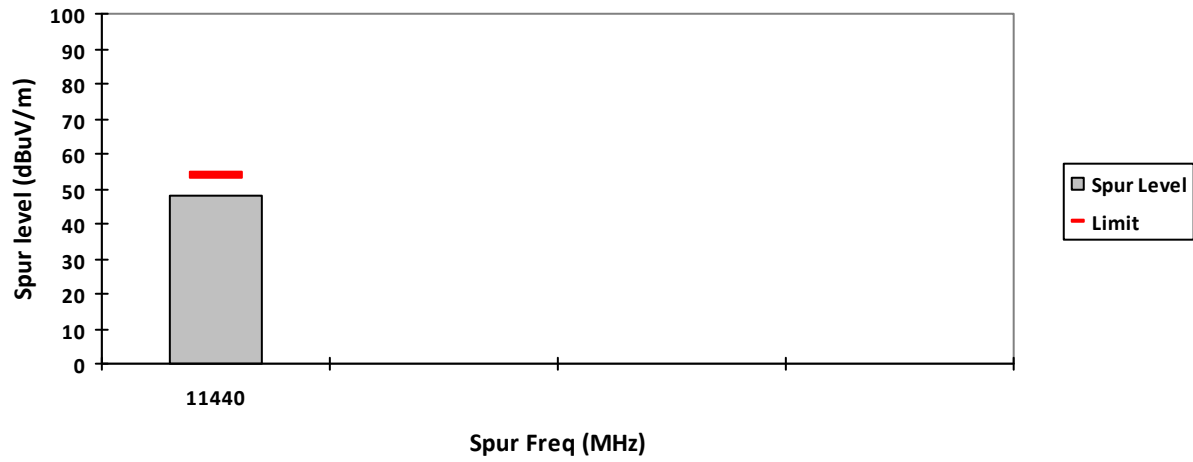
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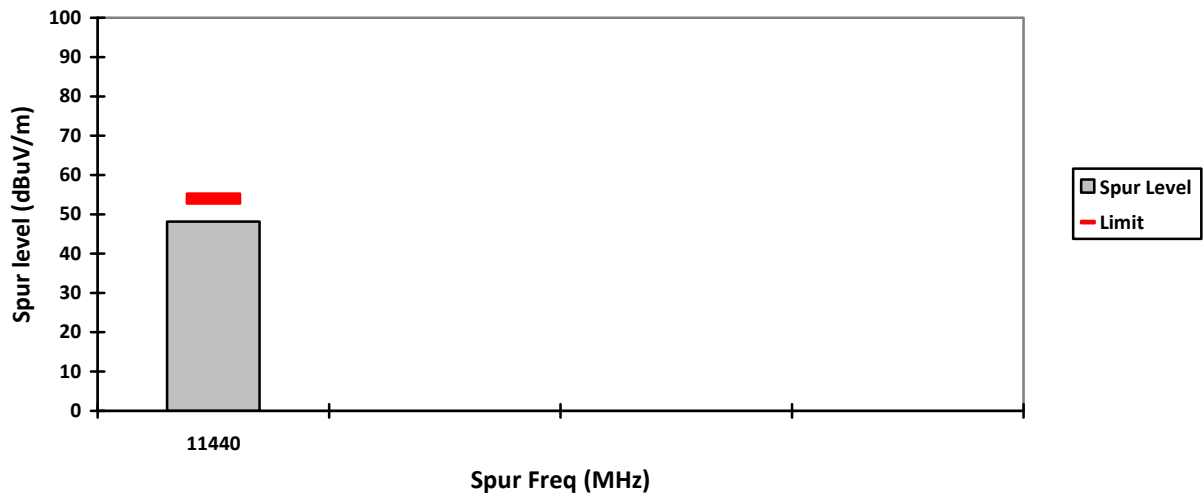
### HORIZONTAL, PK



### VERTICAL, AV

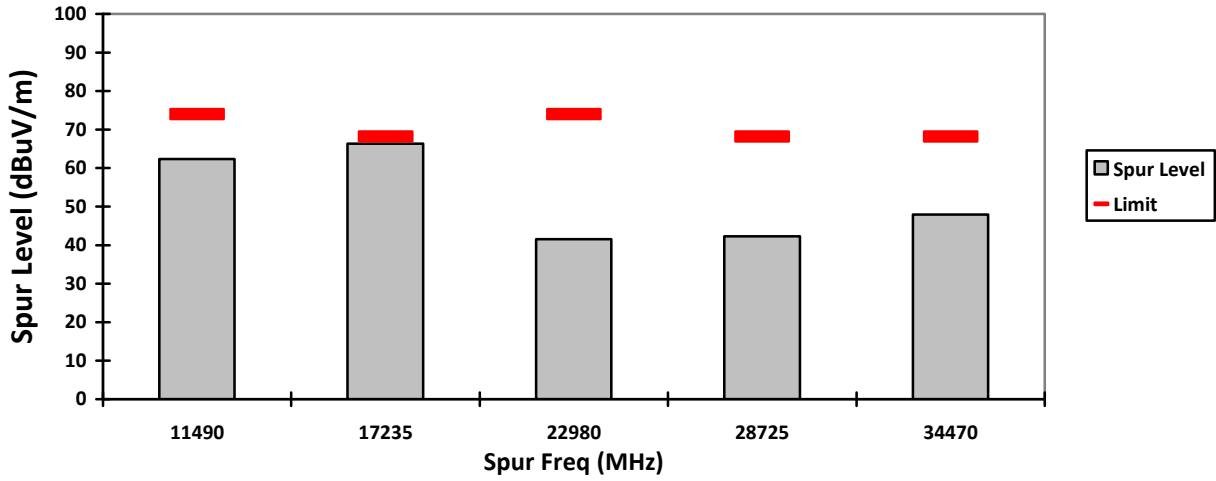


### HORIZONTAL, AV

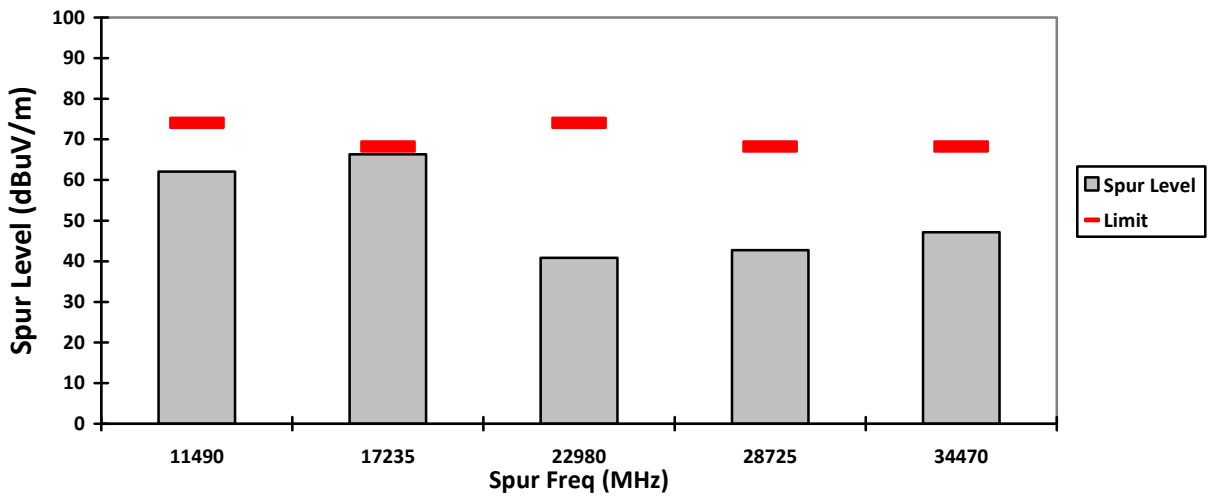




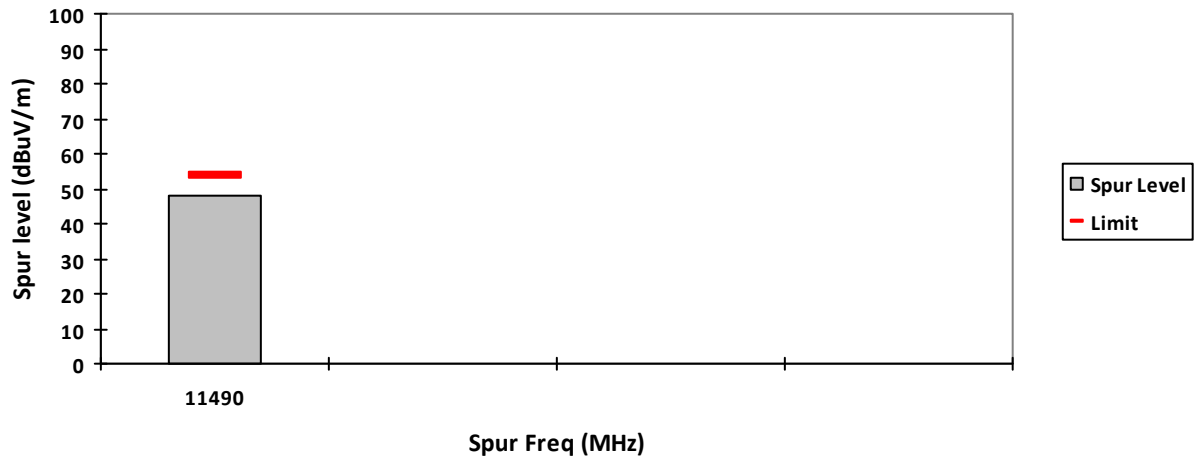
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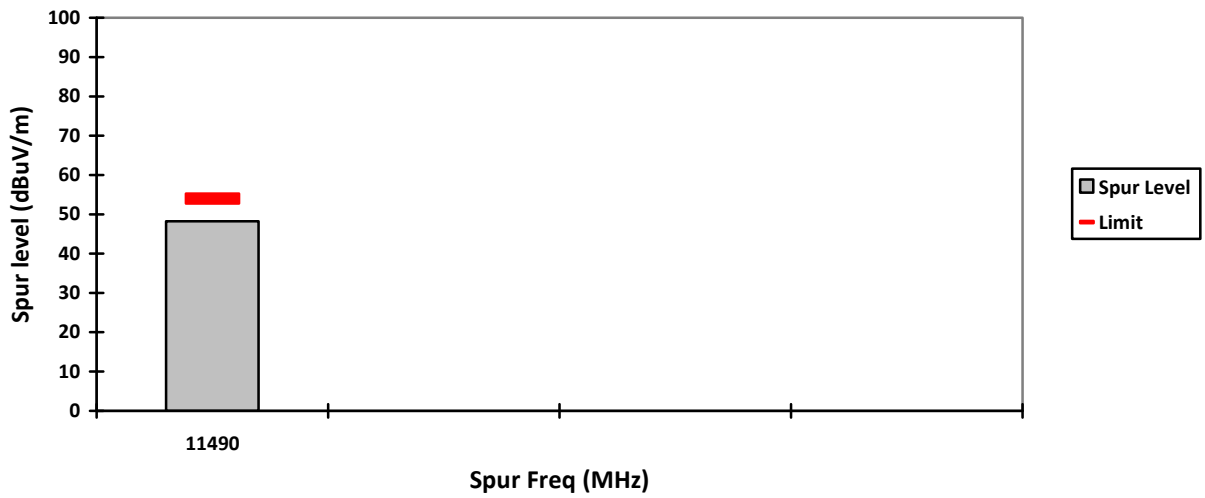
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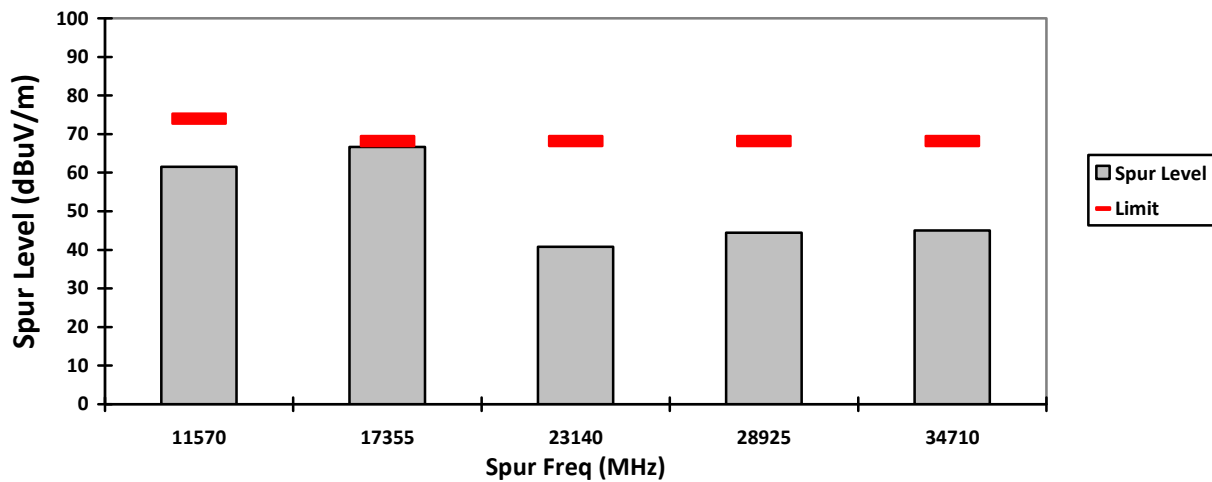


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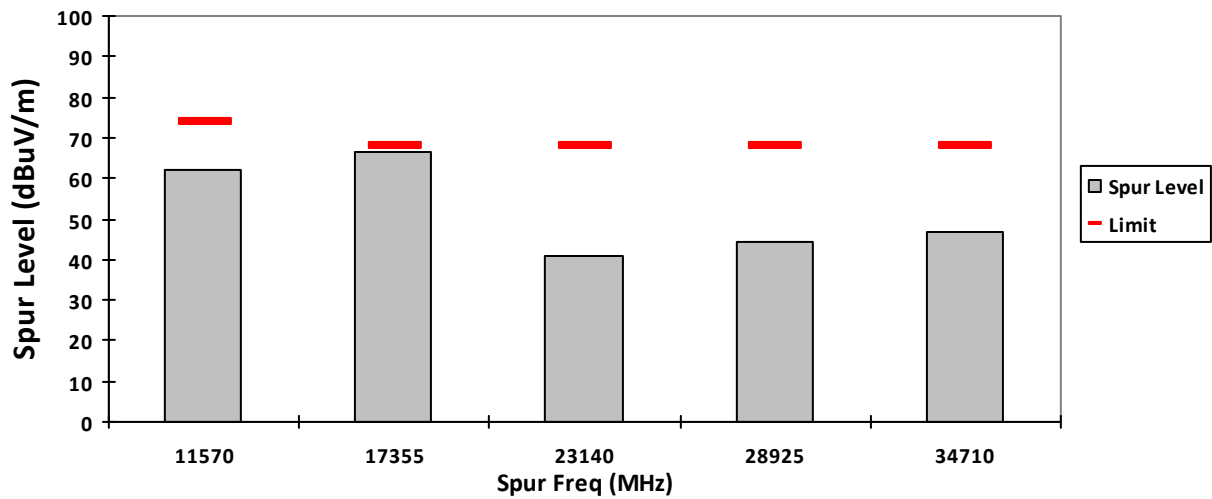




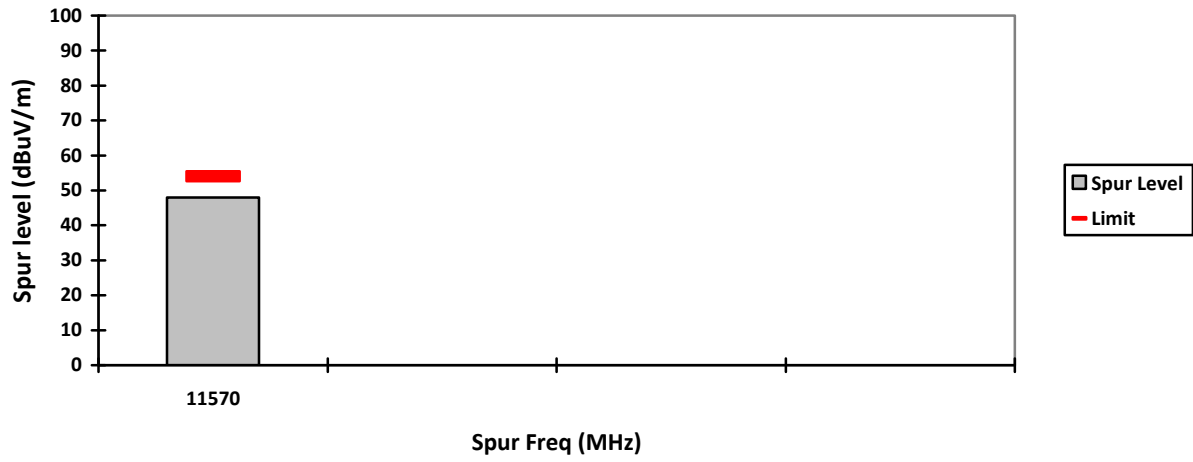
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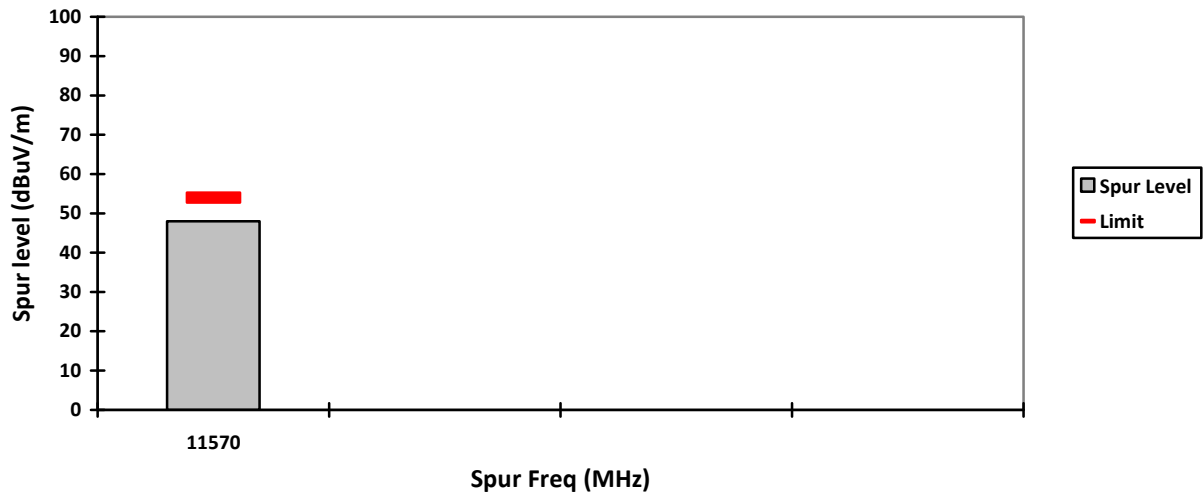
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### VERTICAL, AV



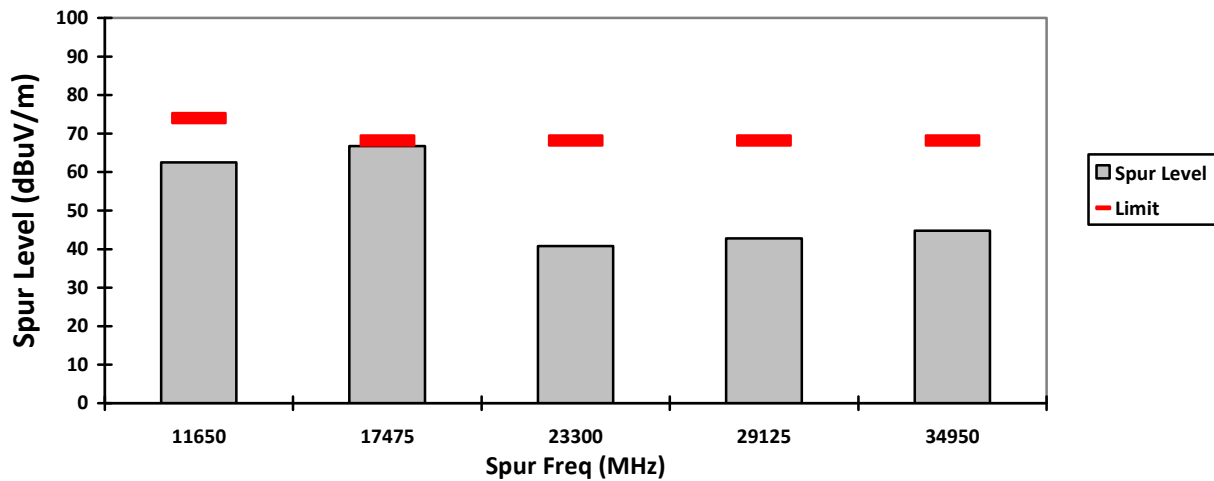
### HORIZONTAL, AV



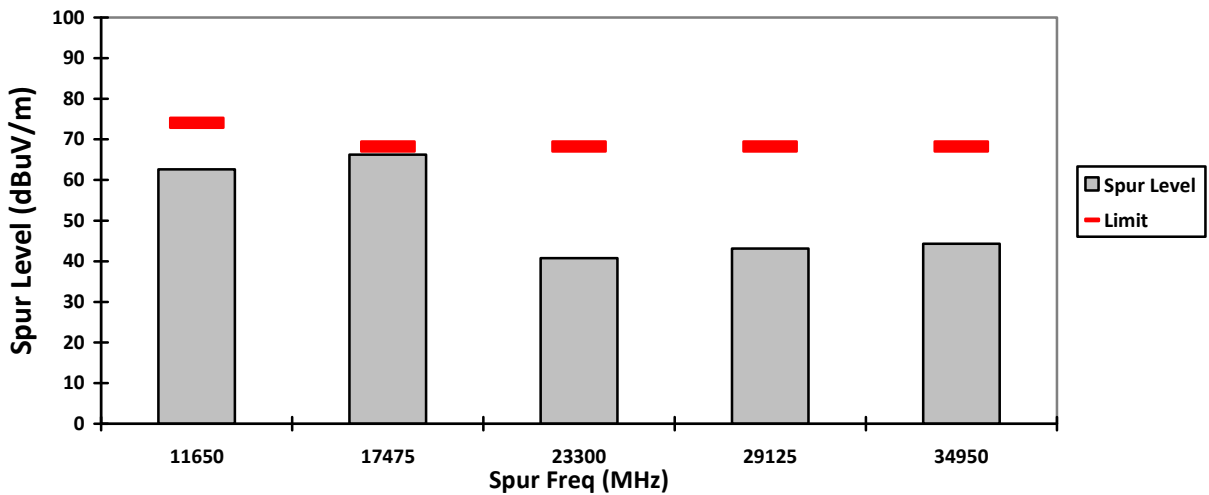




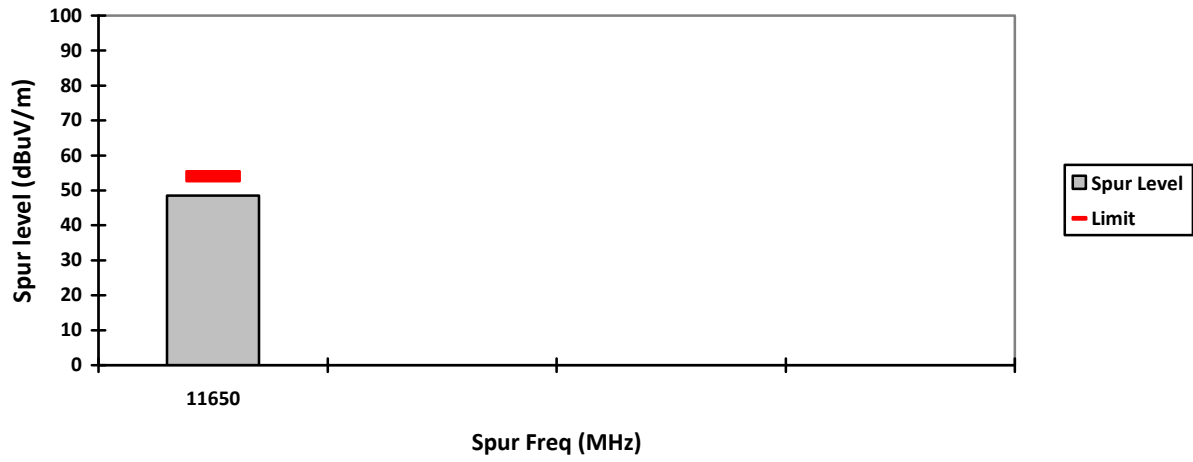
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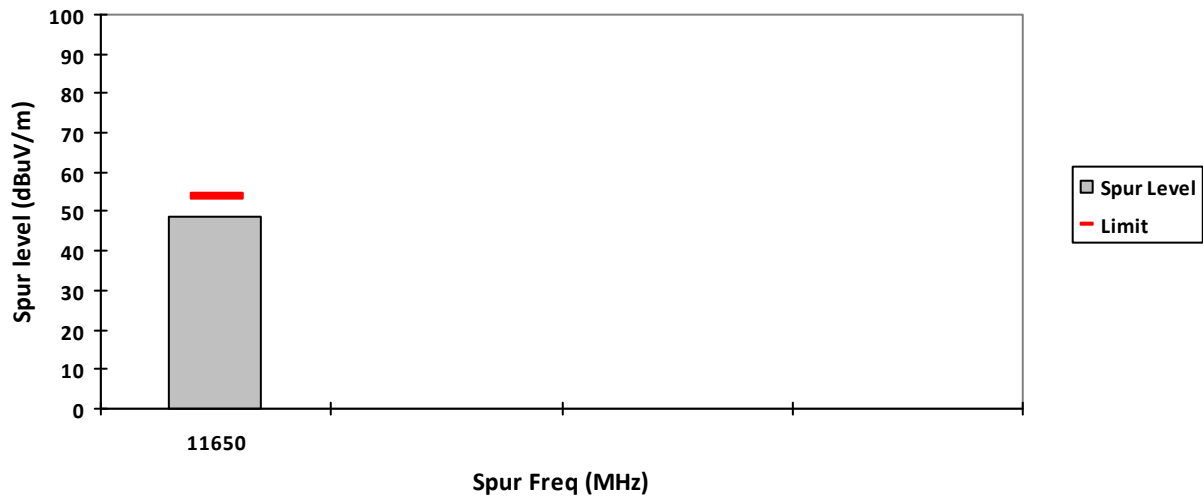
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### VERTICAL, AV

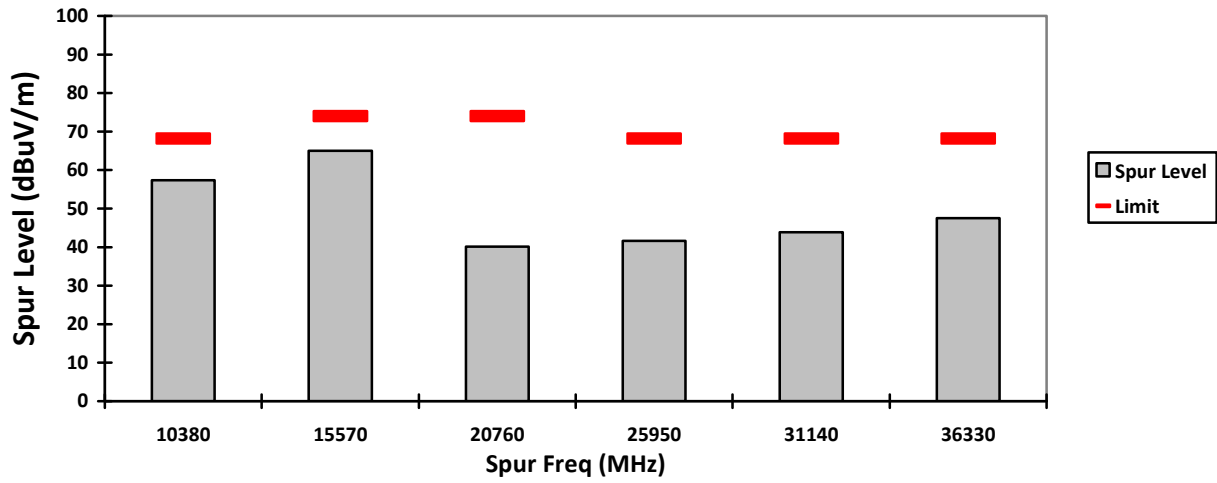


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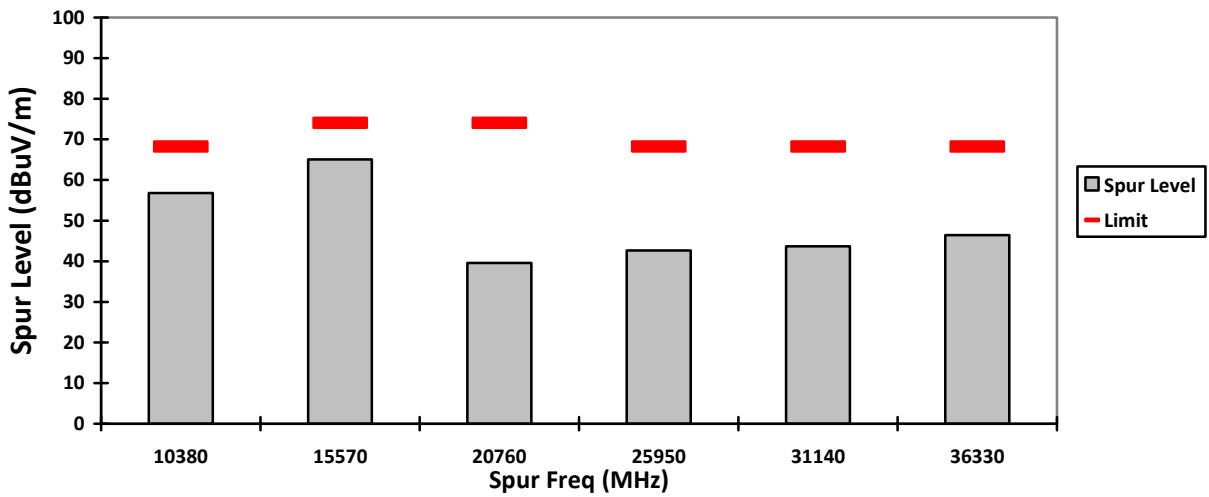




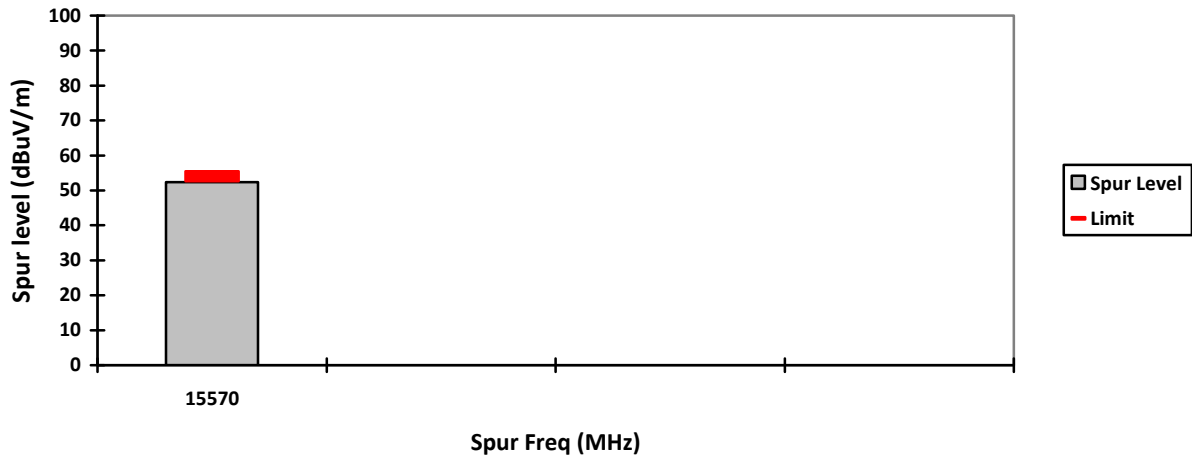
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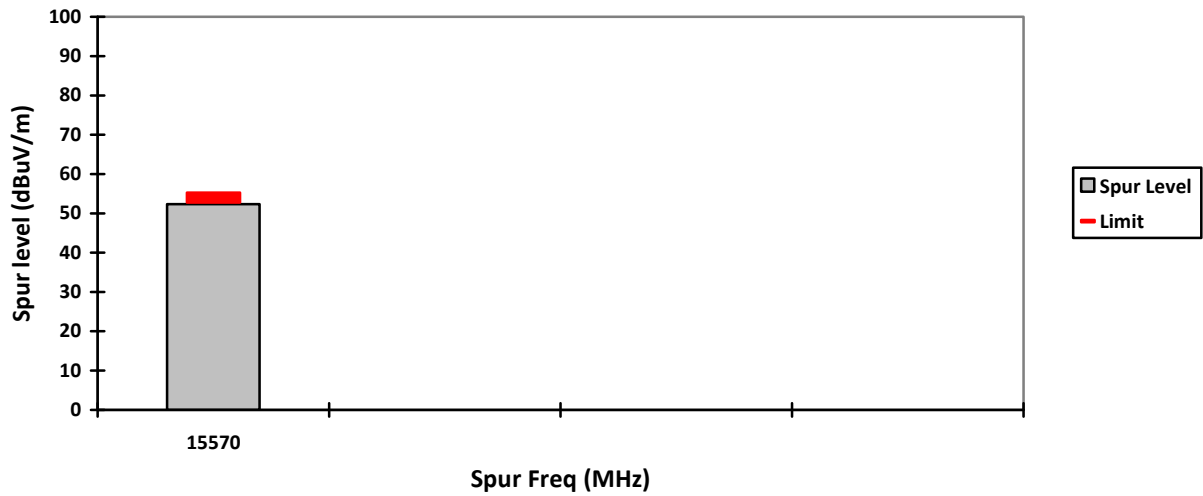
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### VERTICAL, AV

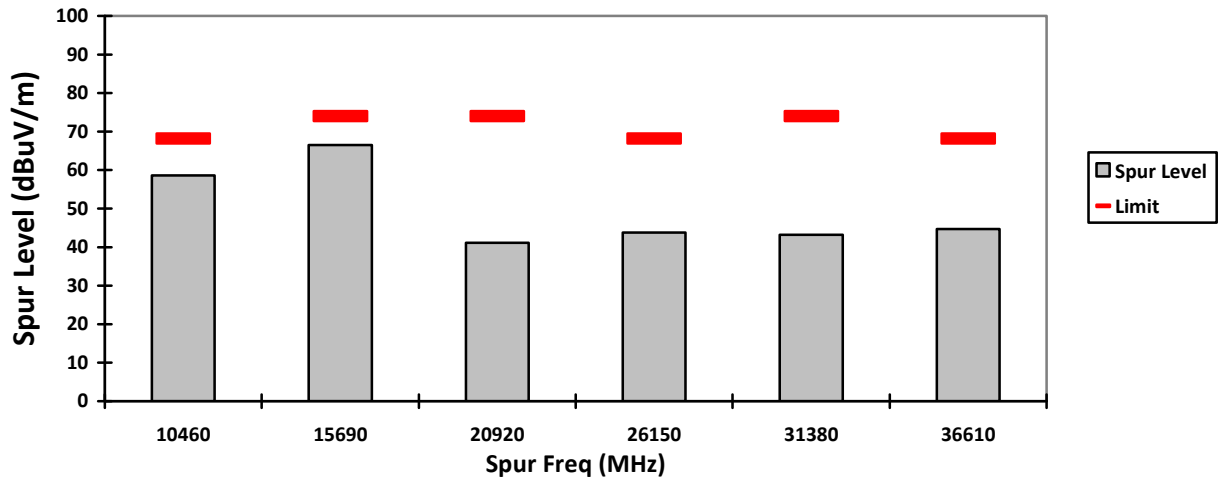


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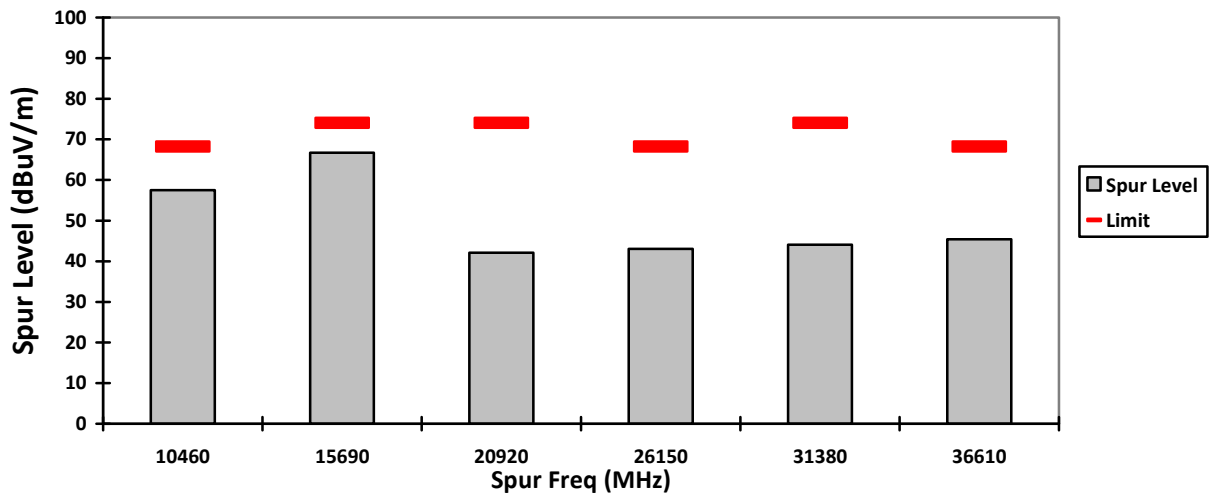




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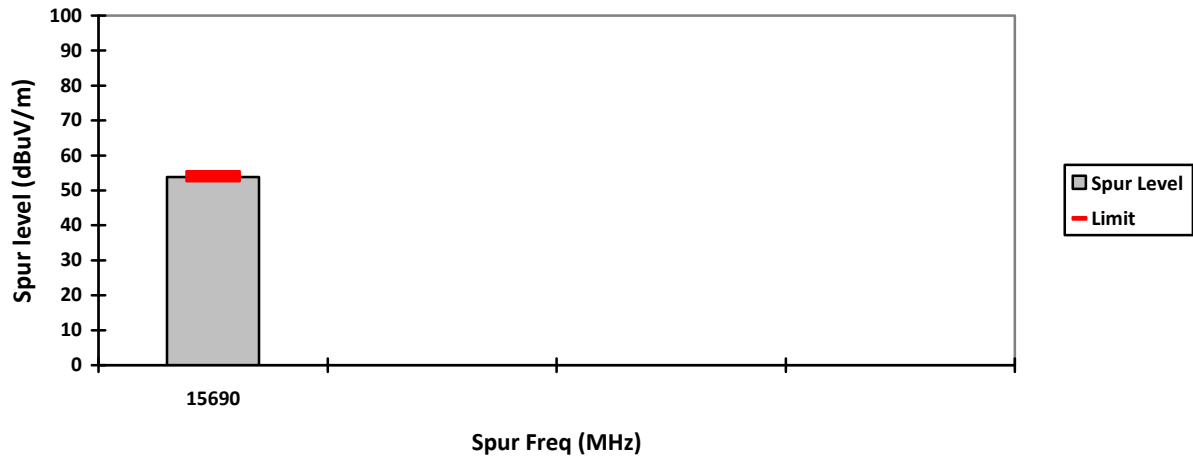


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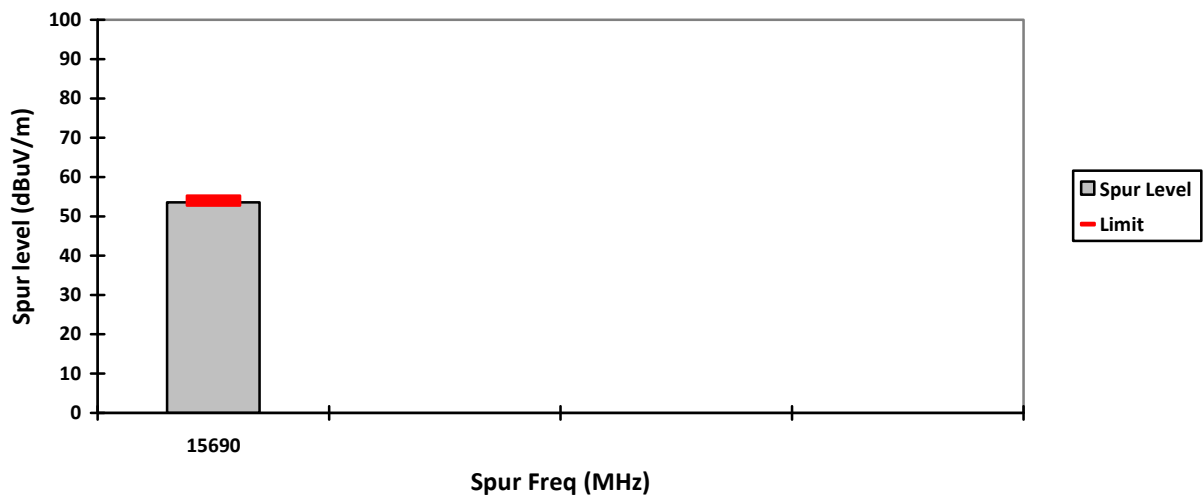




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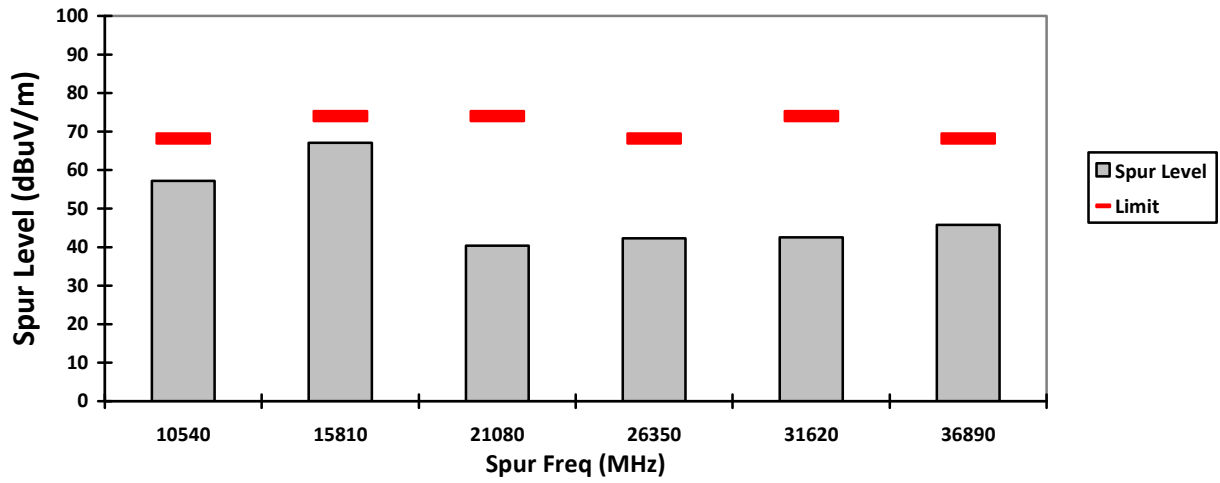


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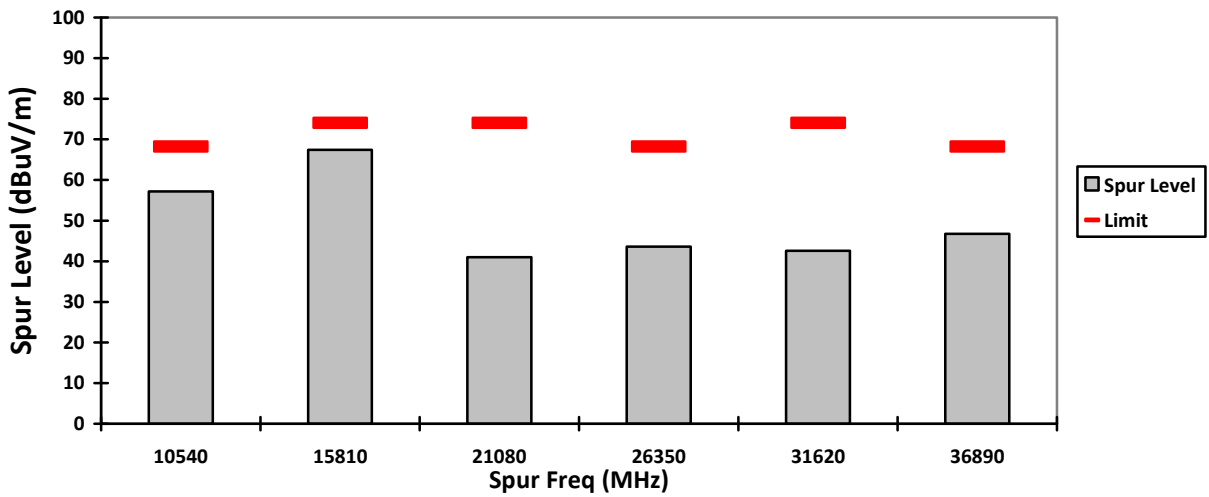




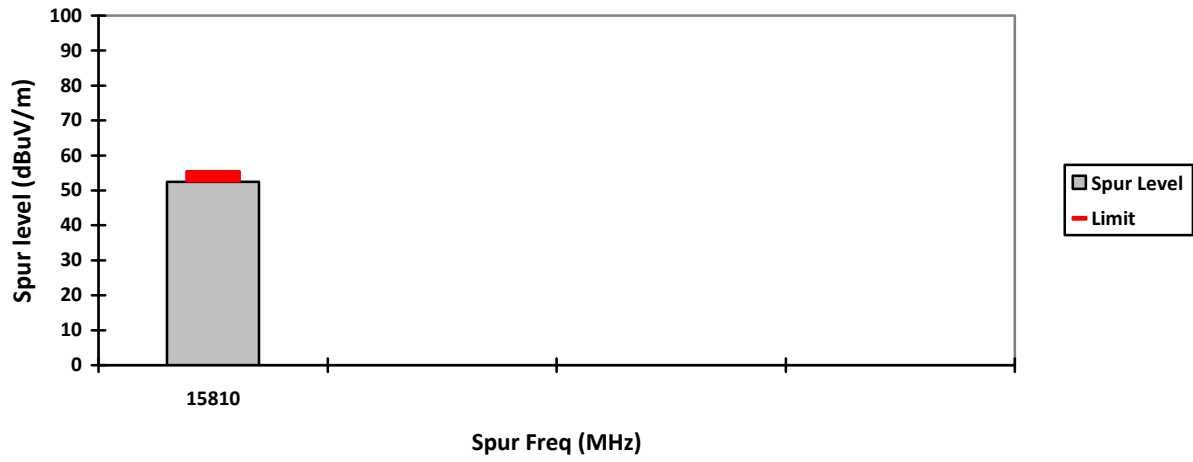
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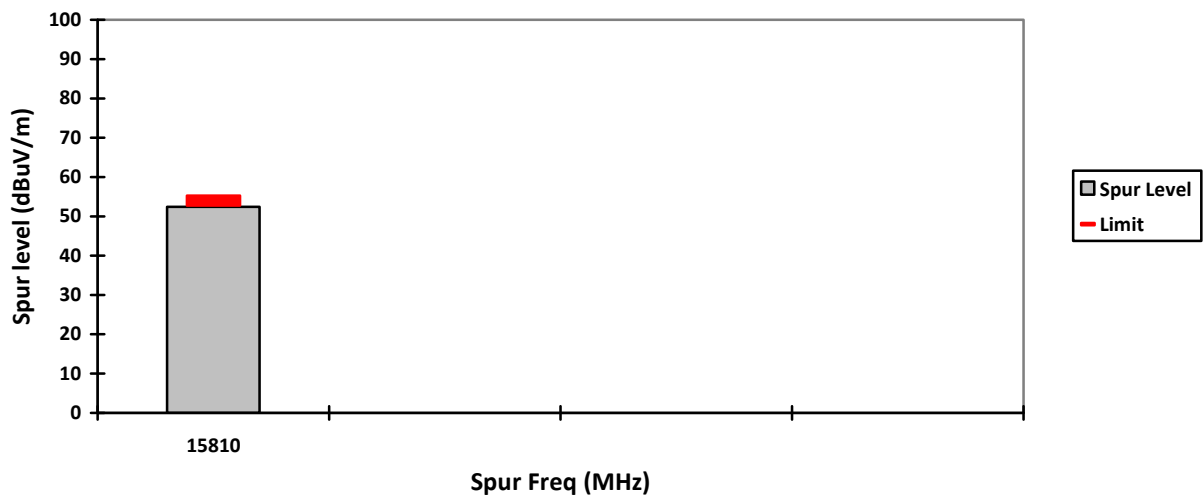
### HORIZONTAL, PK



### VERTICAL, AV

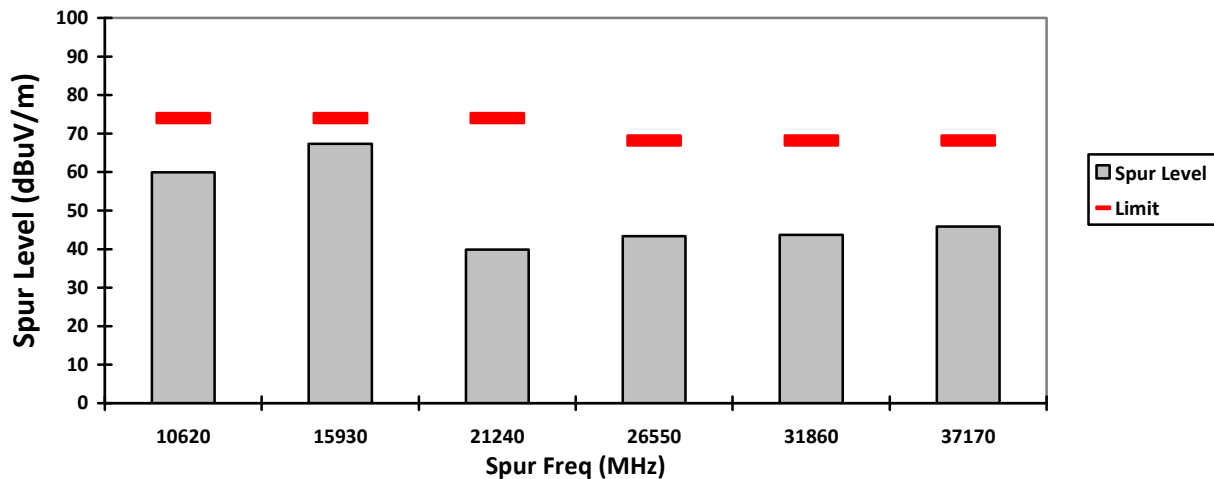


### HORIZONTAL, AV

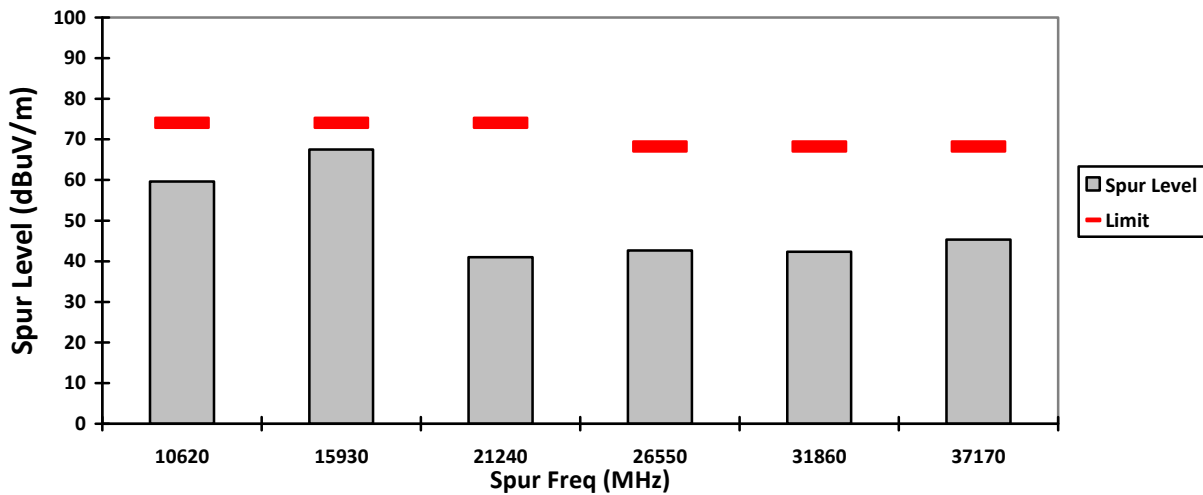




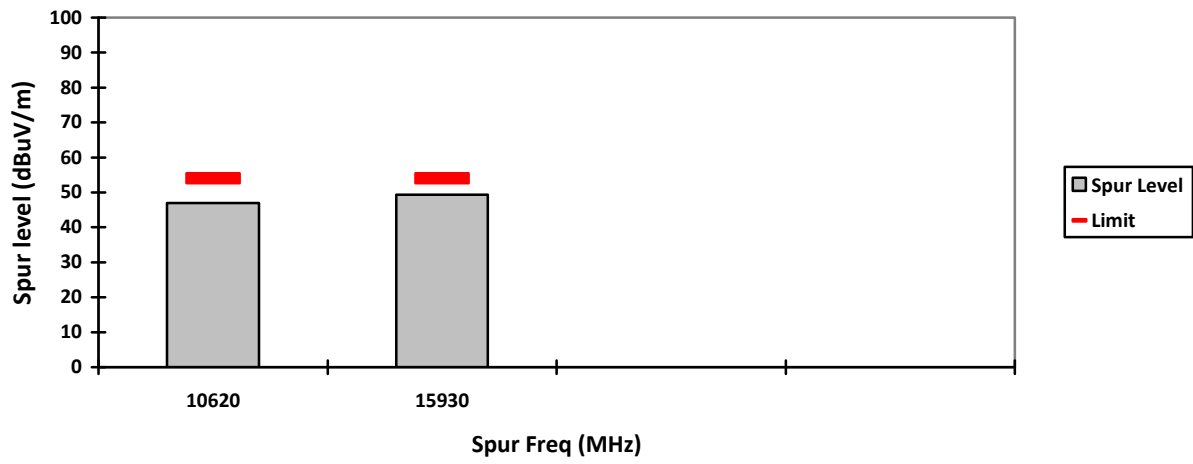
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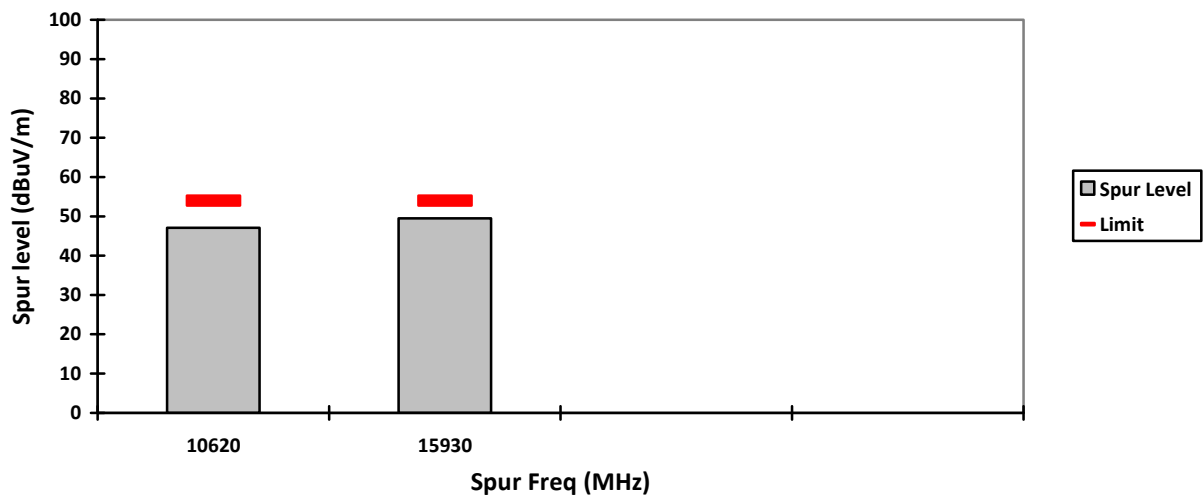
### HORIZONTAL, PK



### VERTICAL, AV



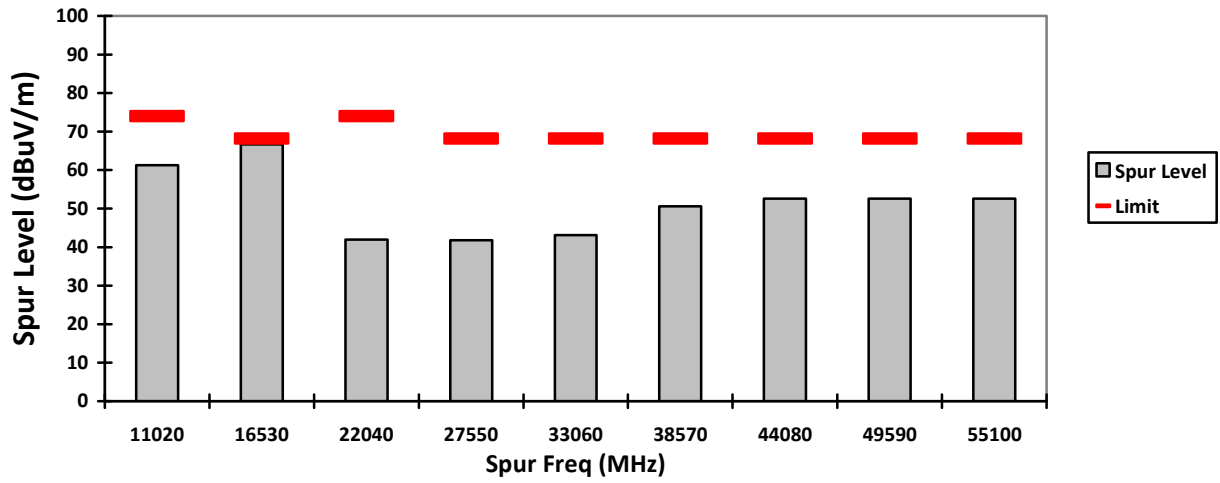
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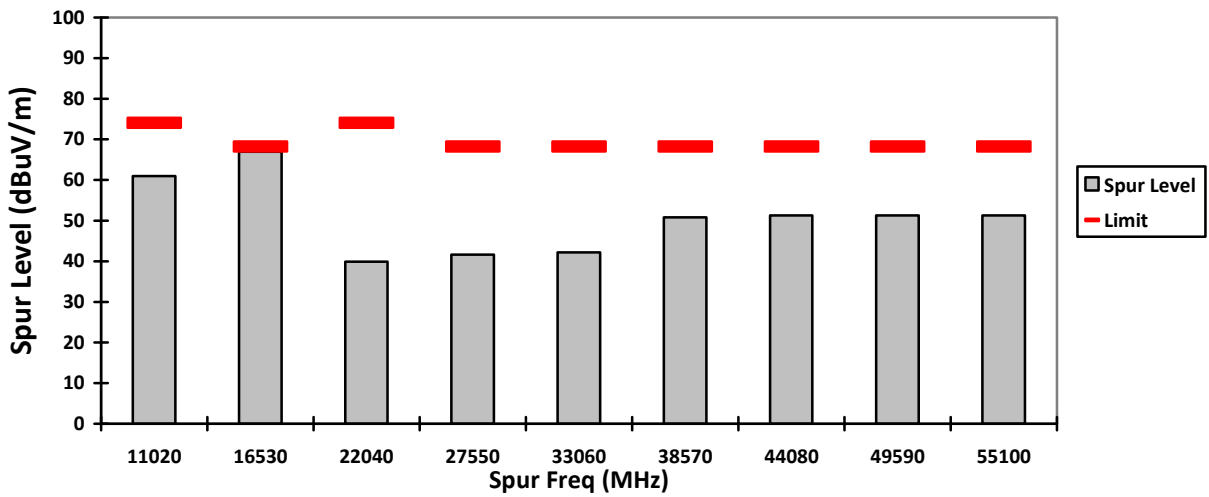




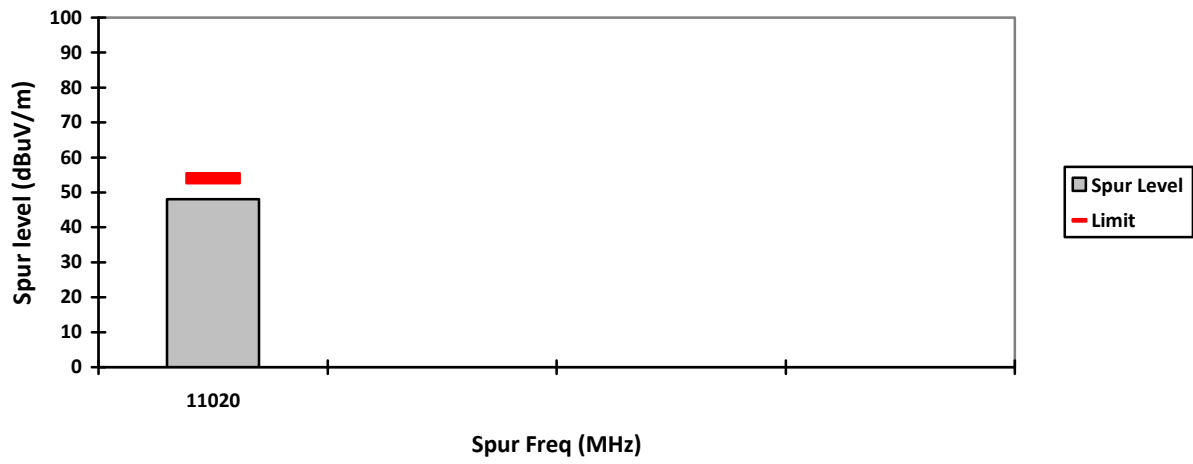
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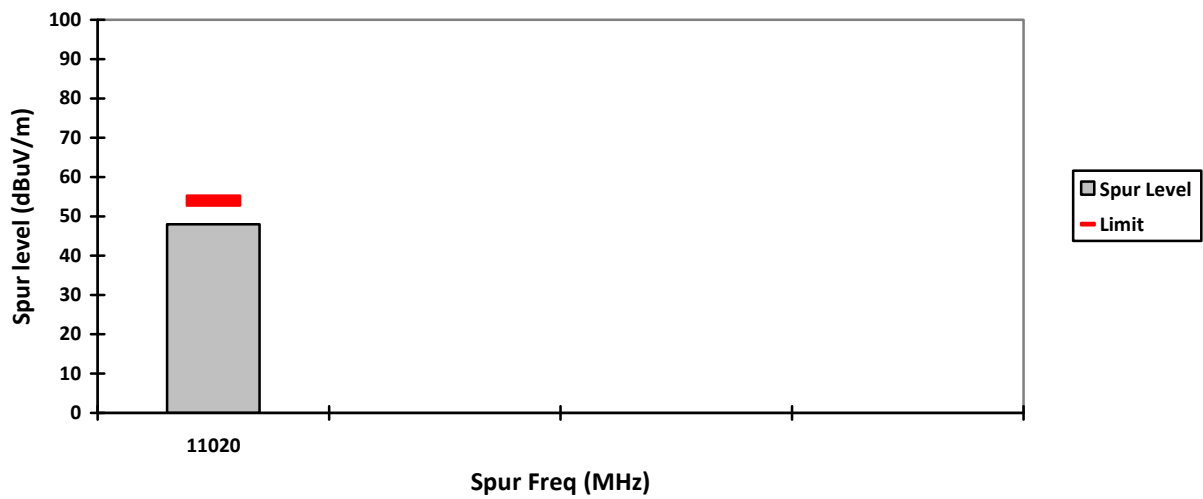
### HORIZONTAL, PK



### VERTICAL, AV

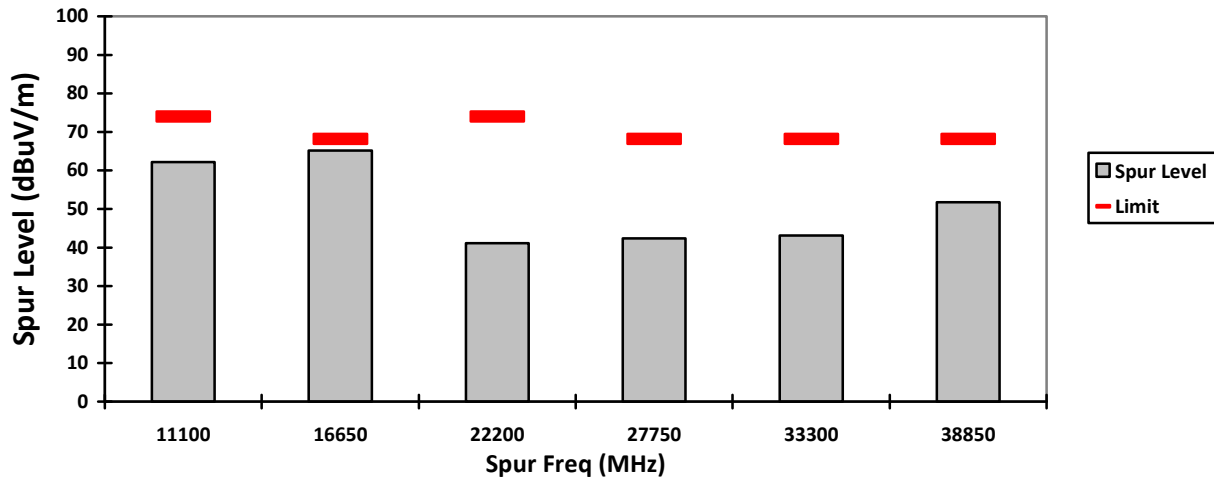


### HORIZONTAL, AV

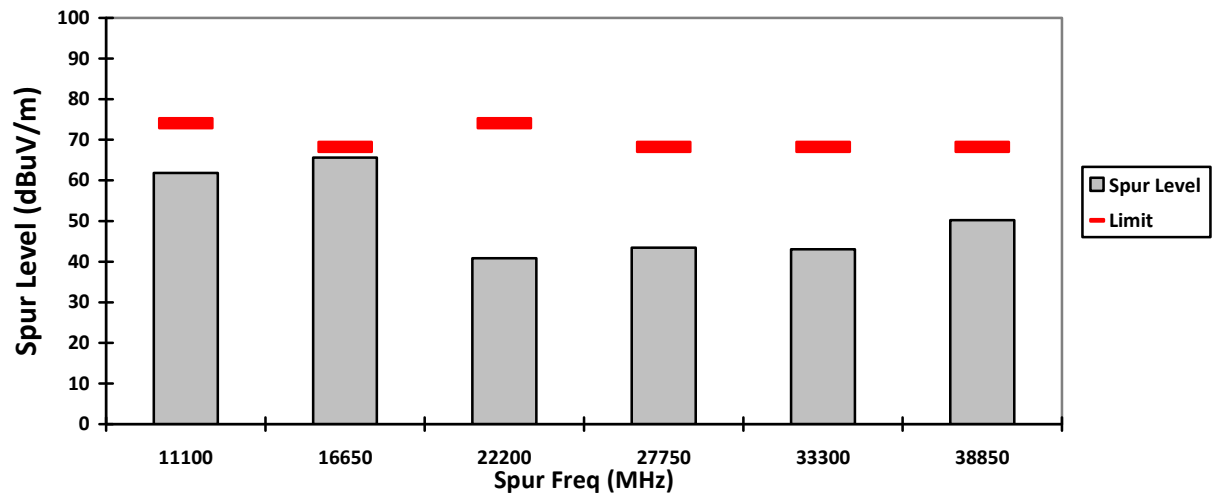




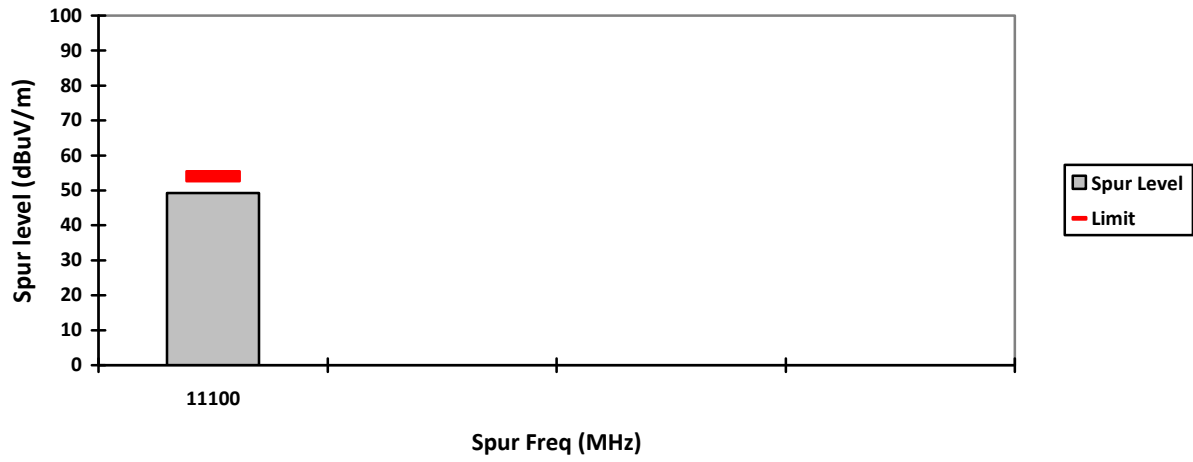
VERTICAL, PK



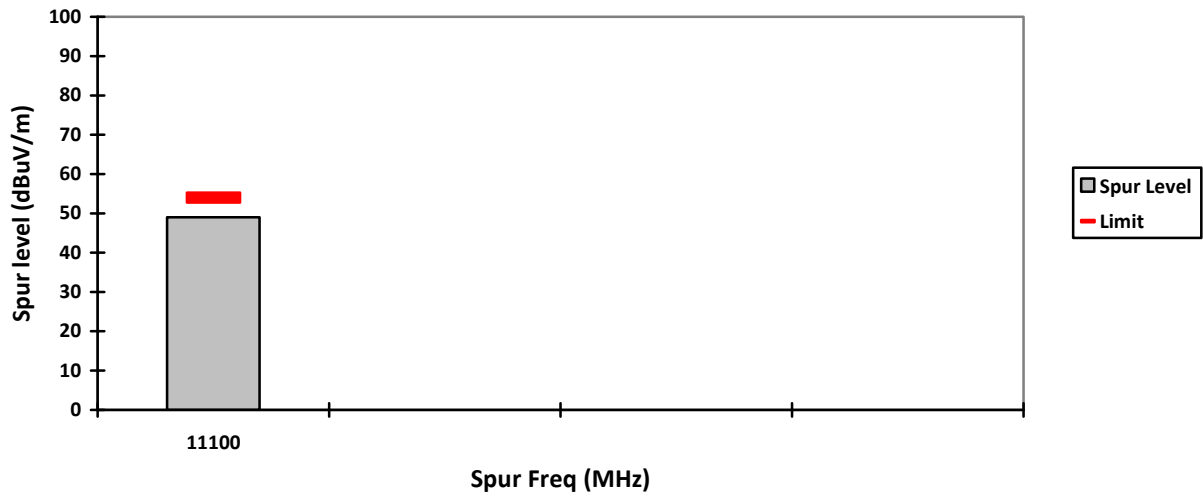
HORIZONTAL, PK



### VERTICAL, AV

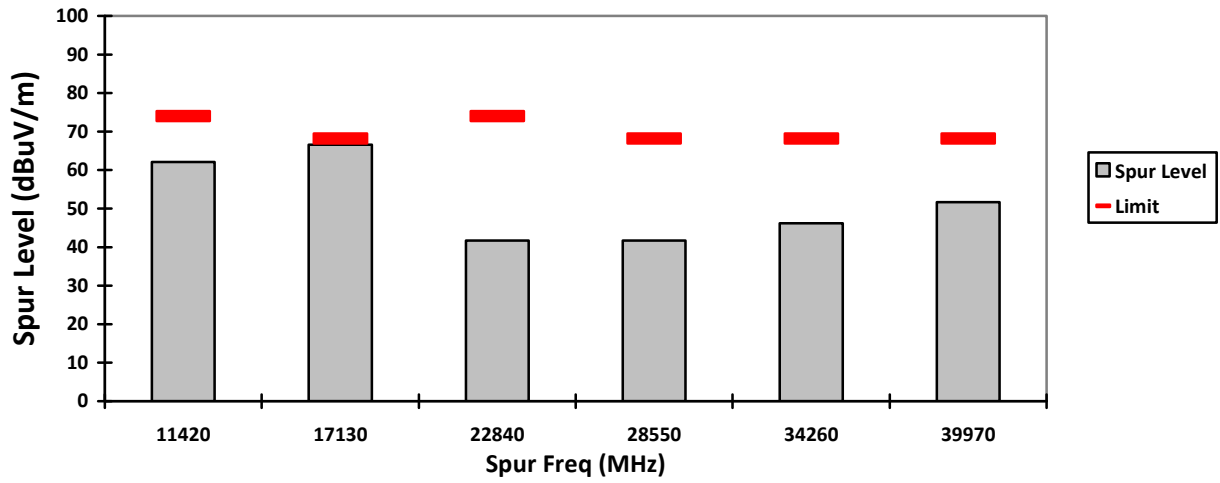


### HORIZONTAL, AV

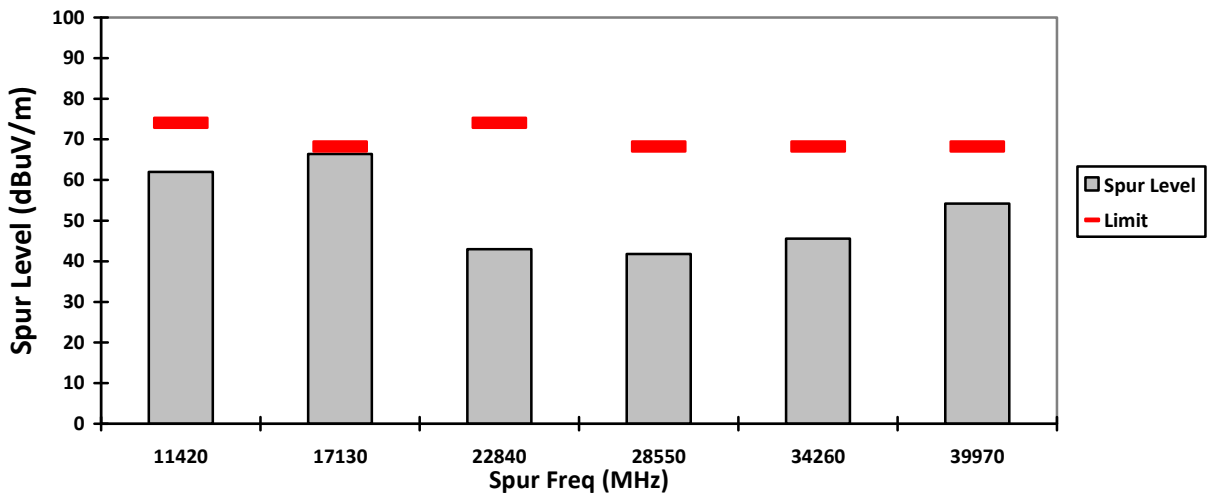




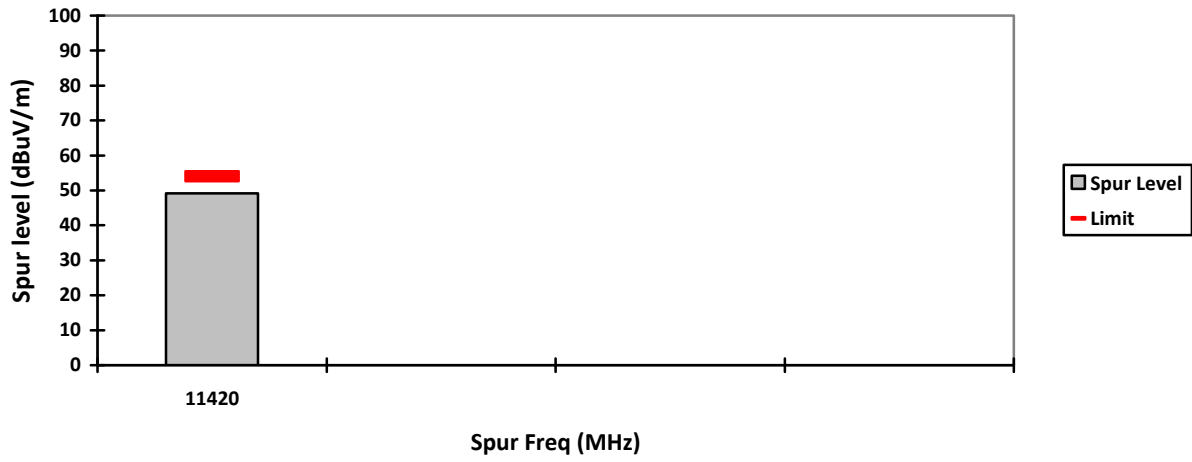
### VERTICAL, PK



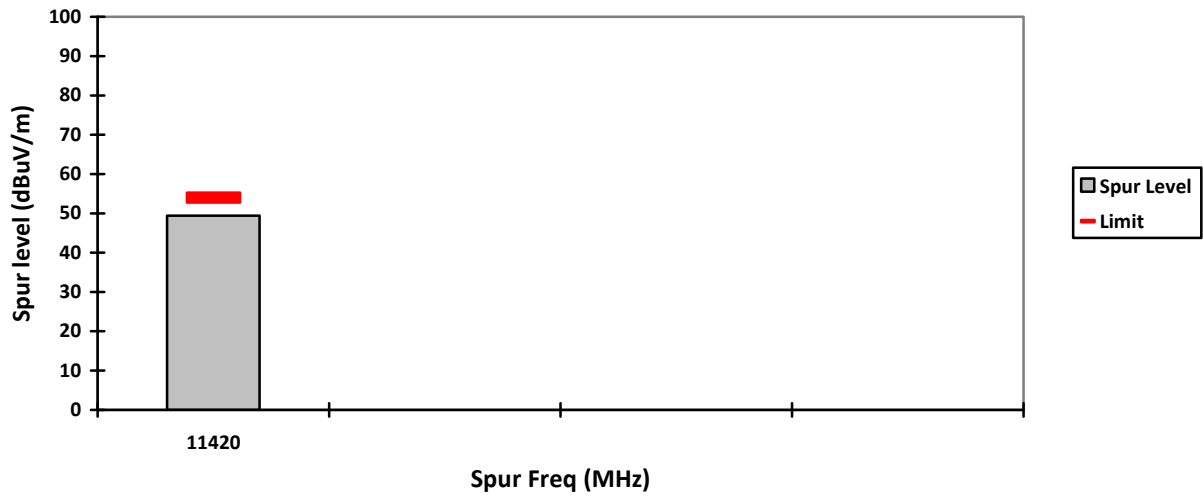
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### VERTICAL, AV



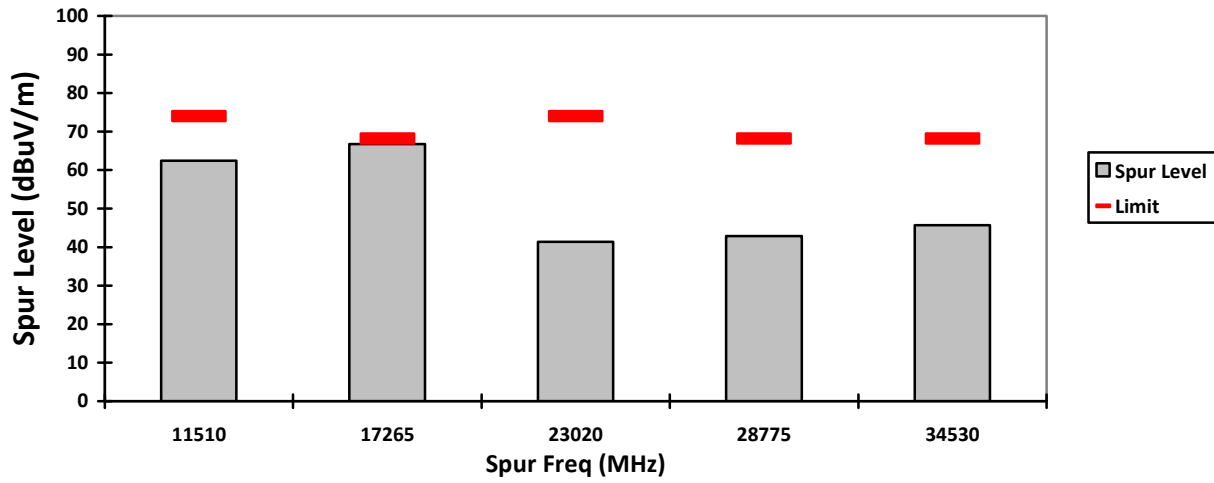
### HORIZONTAL, AV



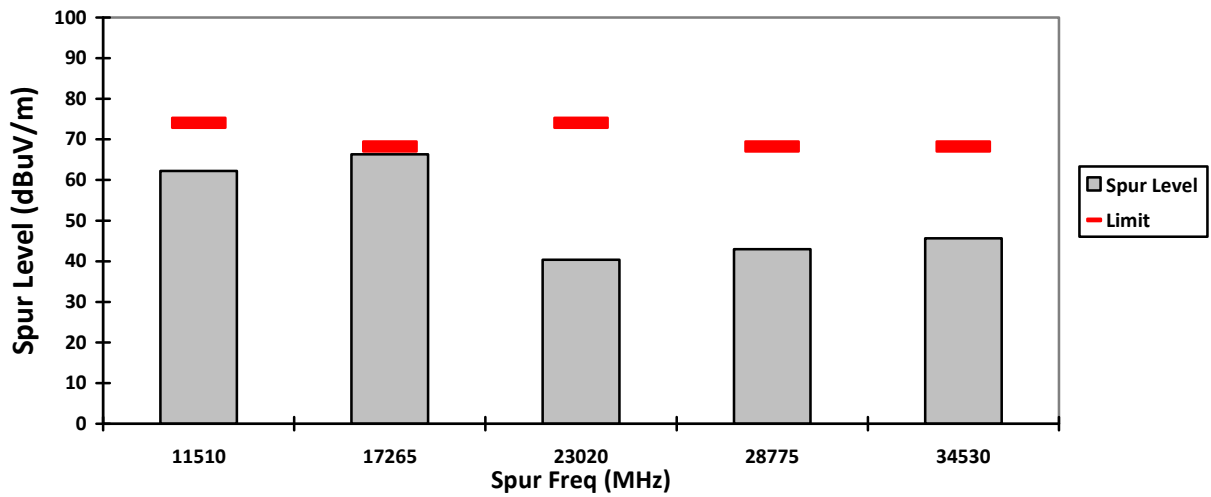




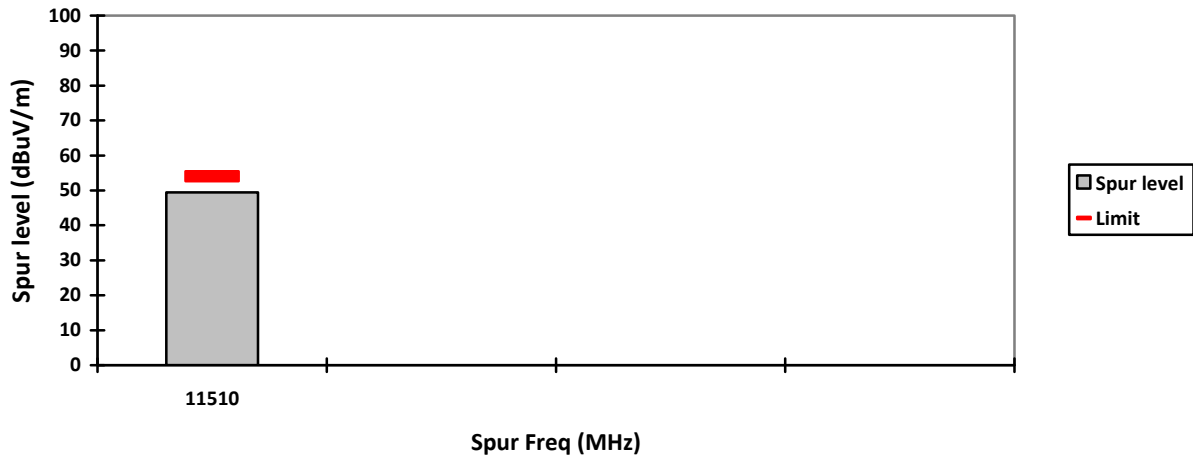
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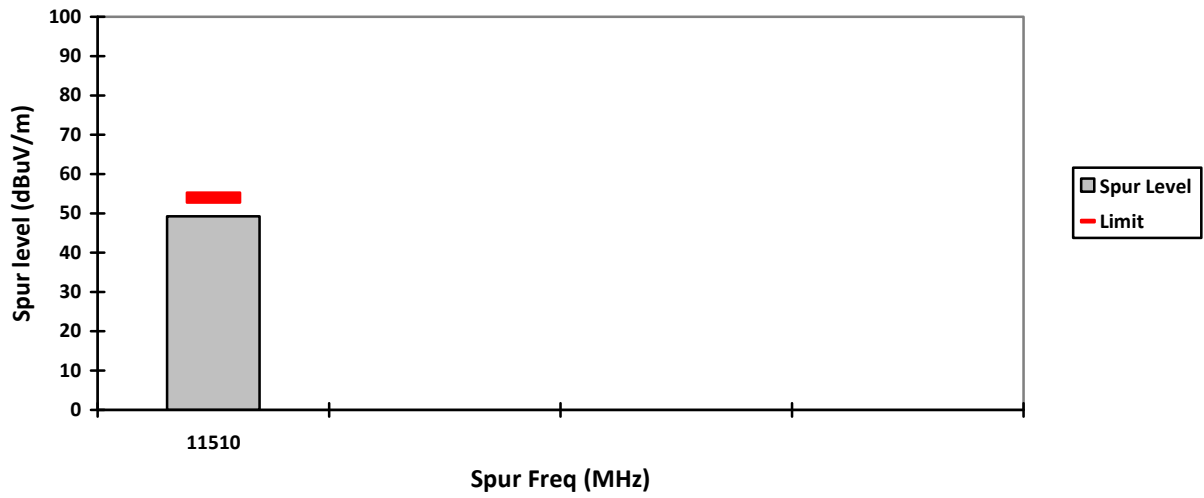
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### VERTICAL, AV

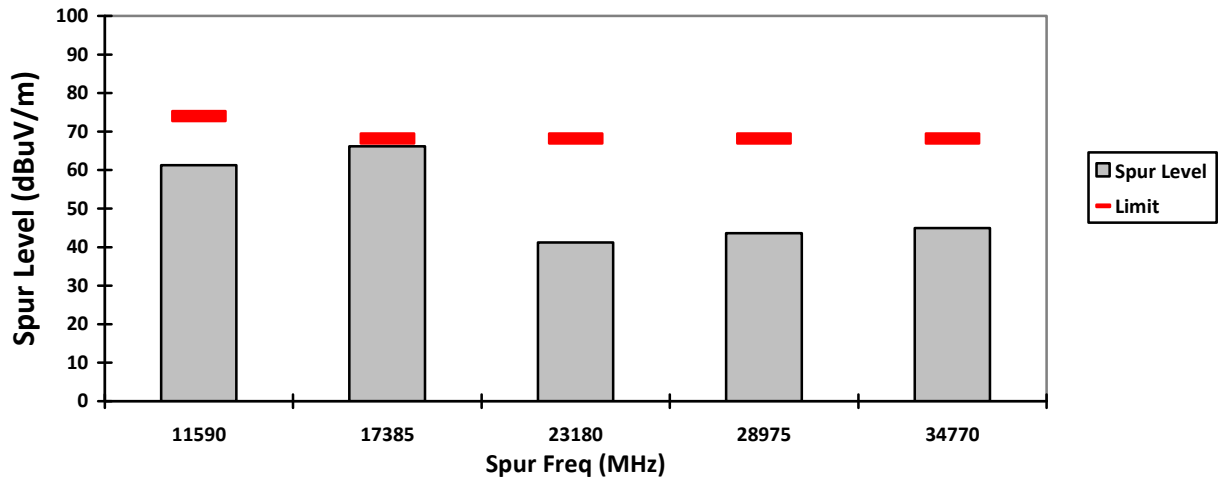


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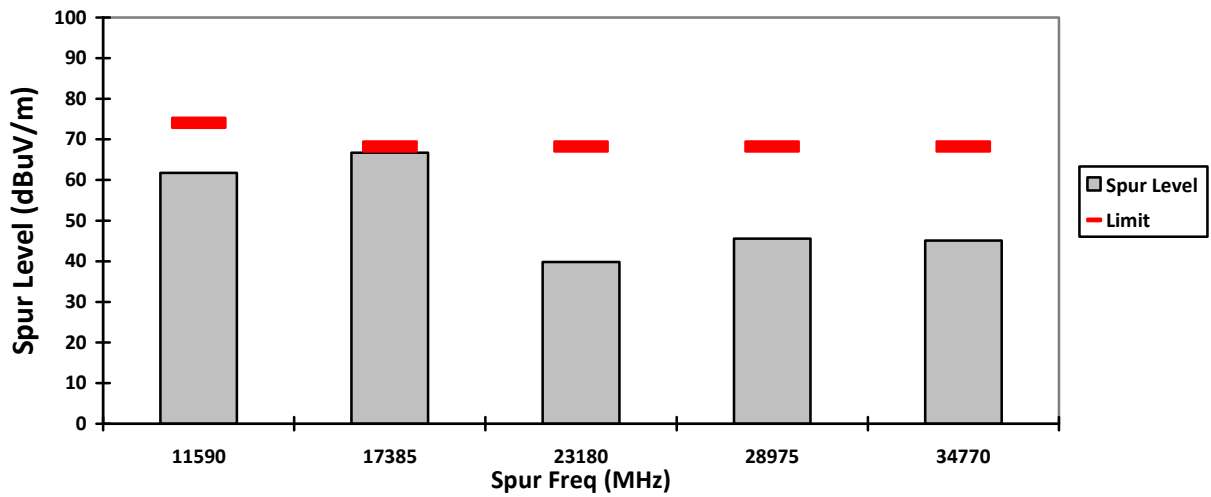




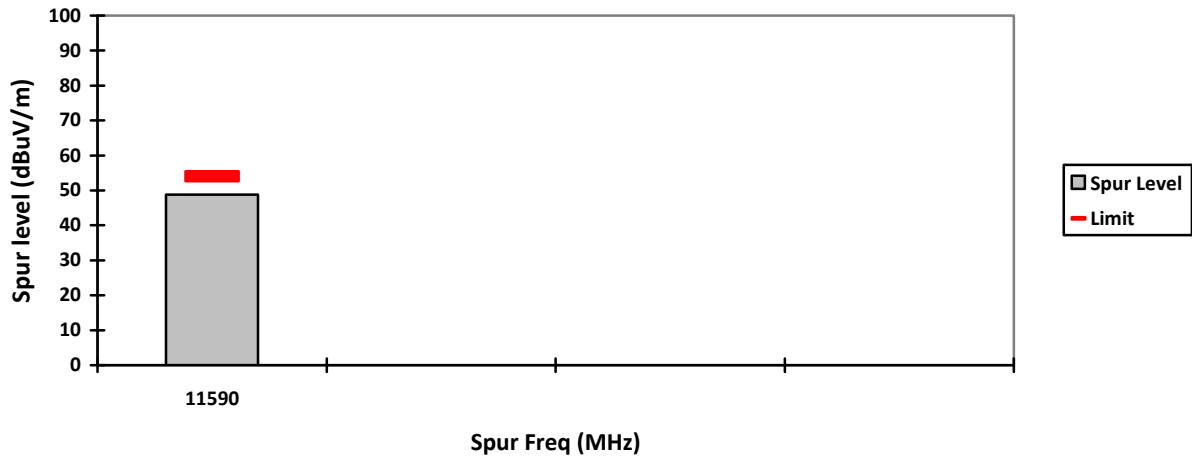
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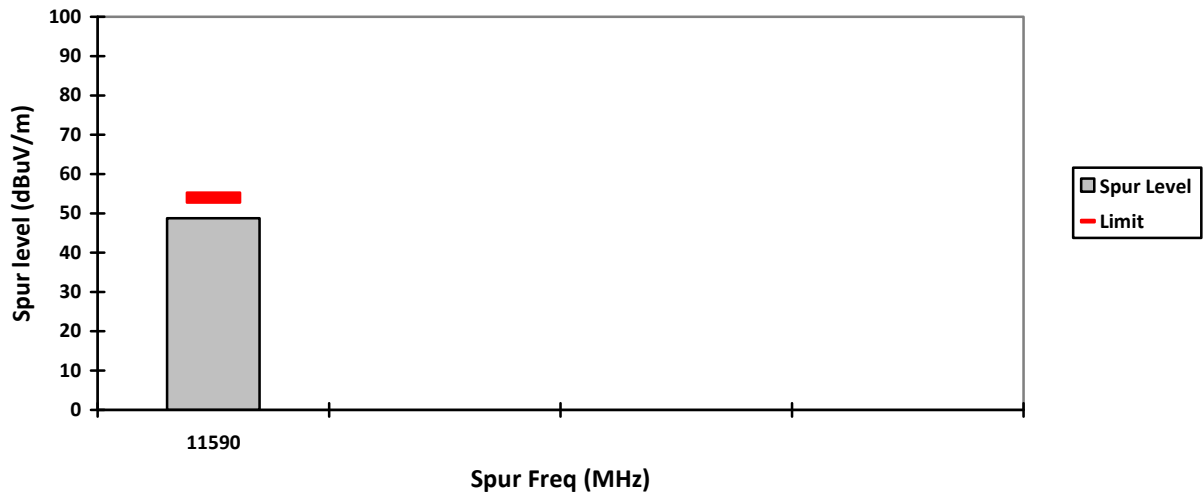
### HORIZONTAL, PK



### VERTICAL, AV

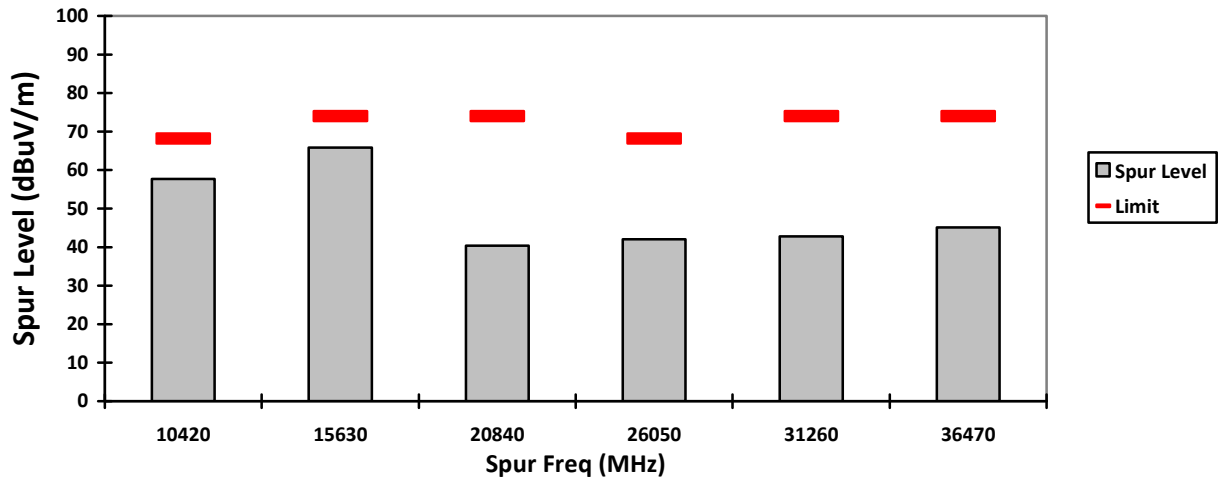


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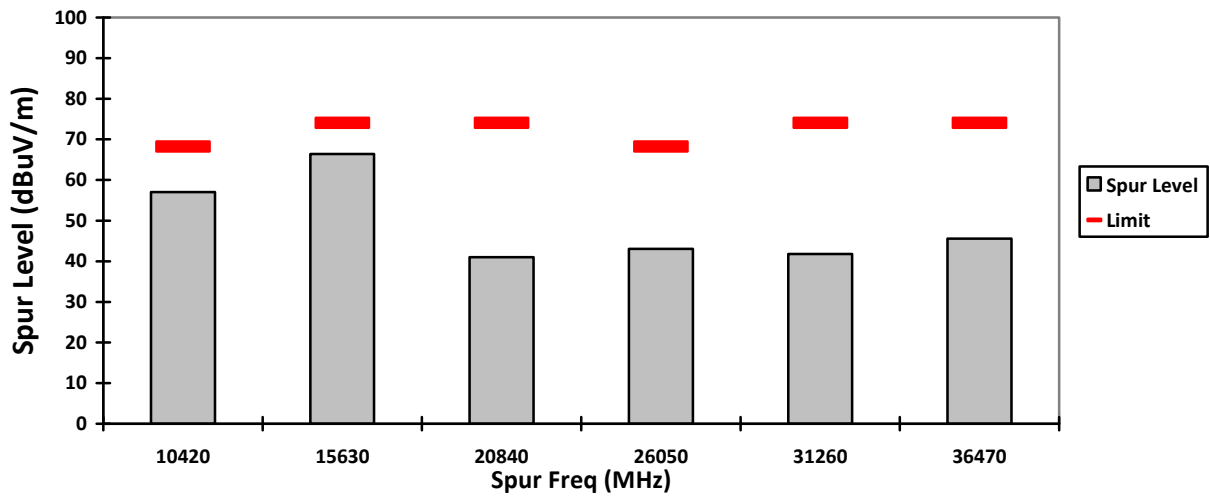




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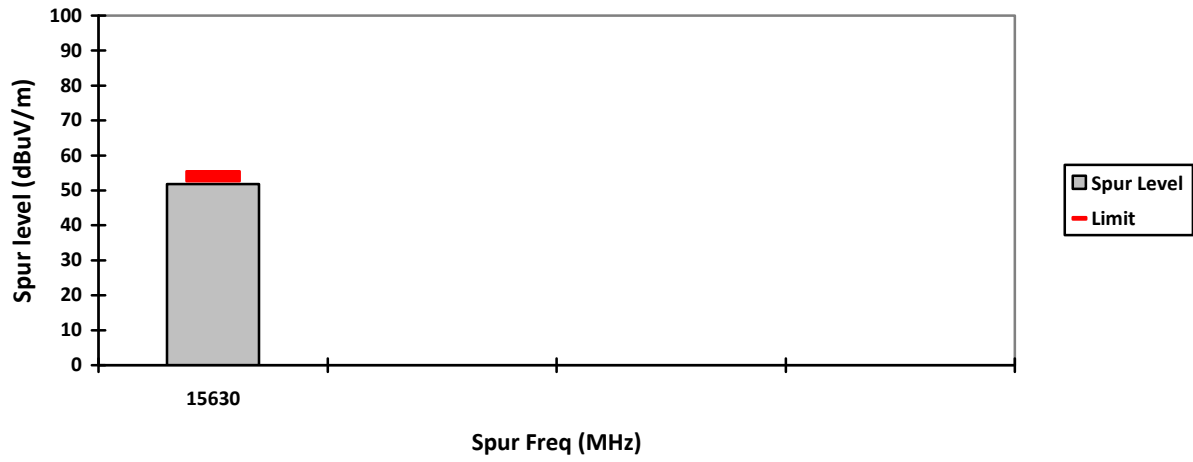


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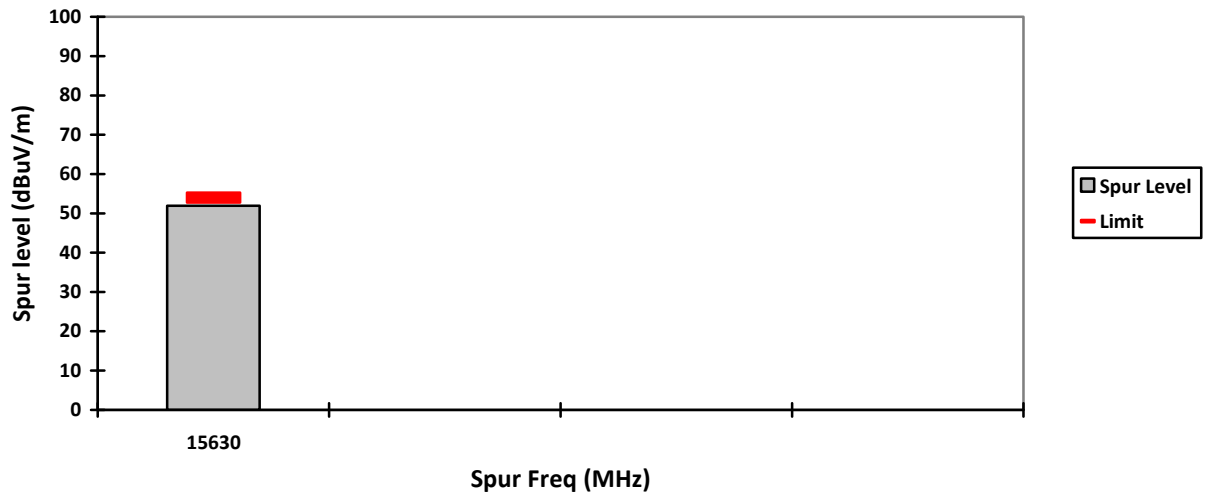




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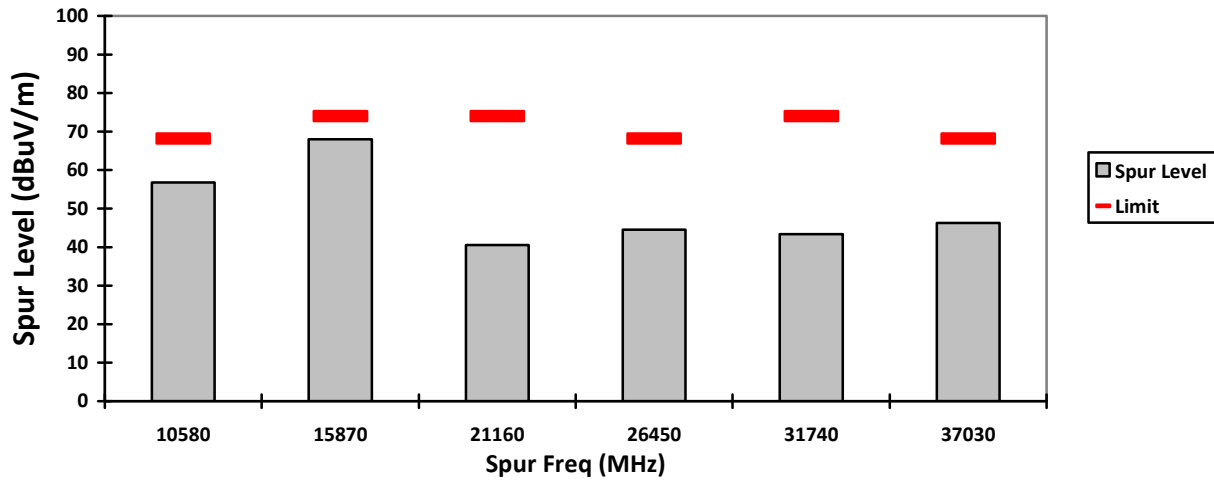


### HORIZONTAL, AV

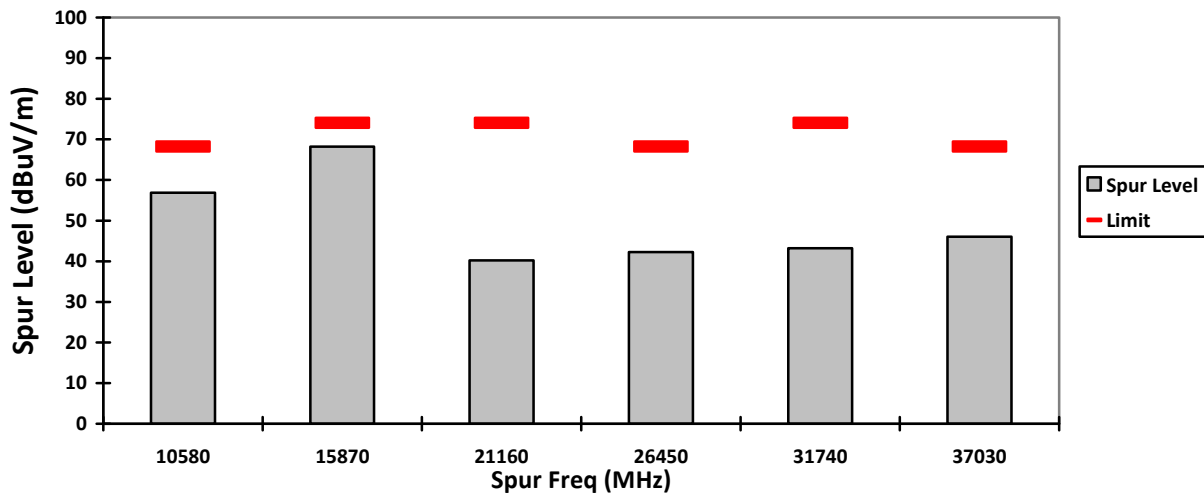




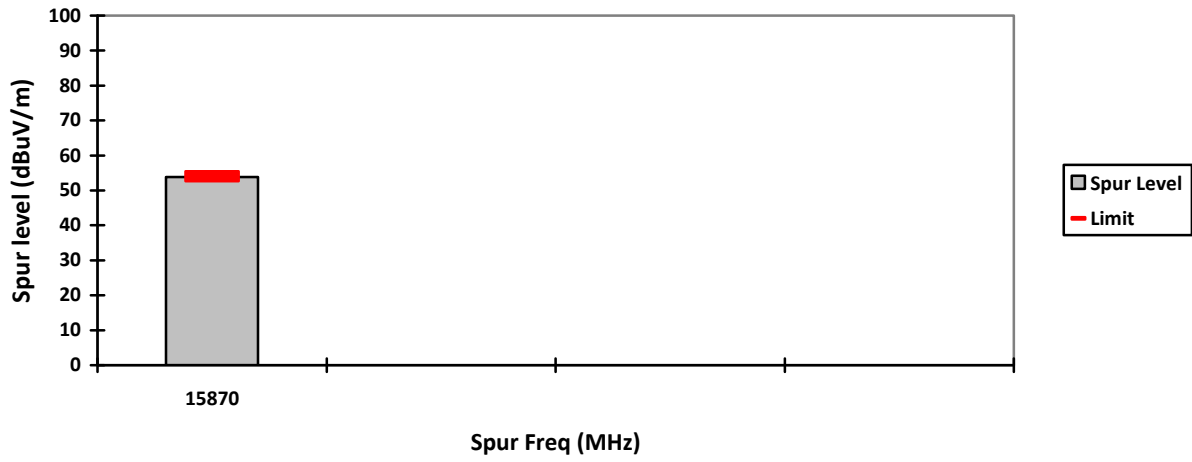
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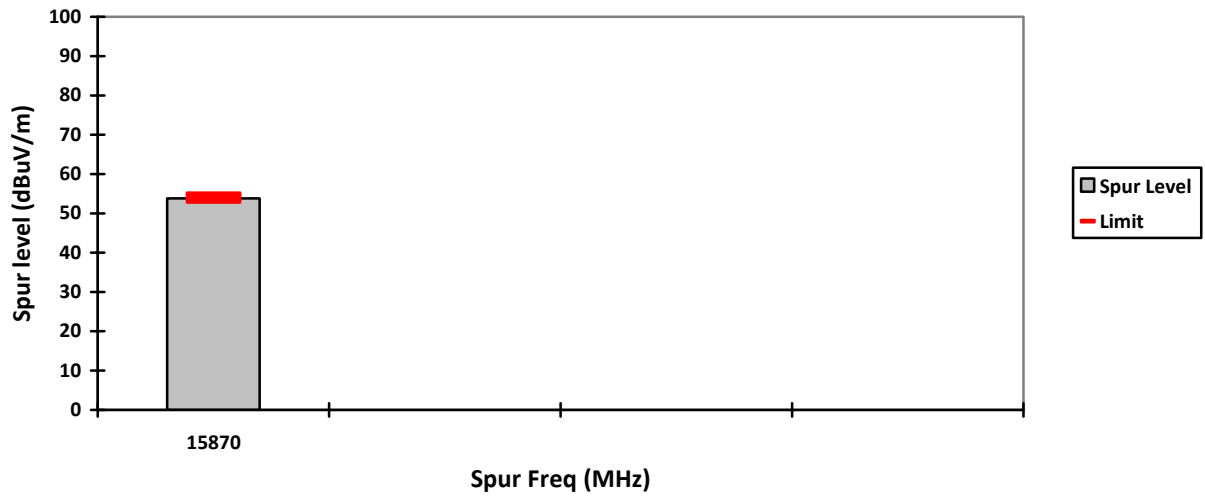
### HORIZONTAL, PK



### VERTICAL, AV

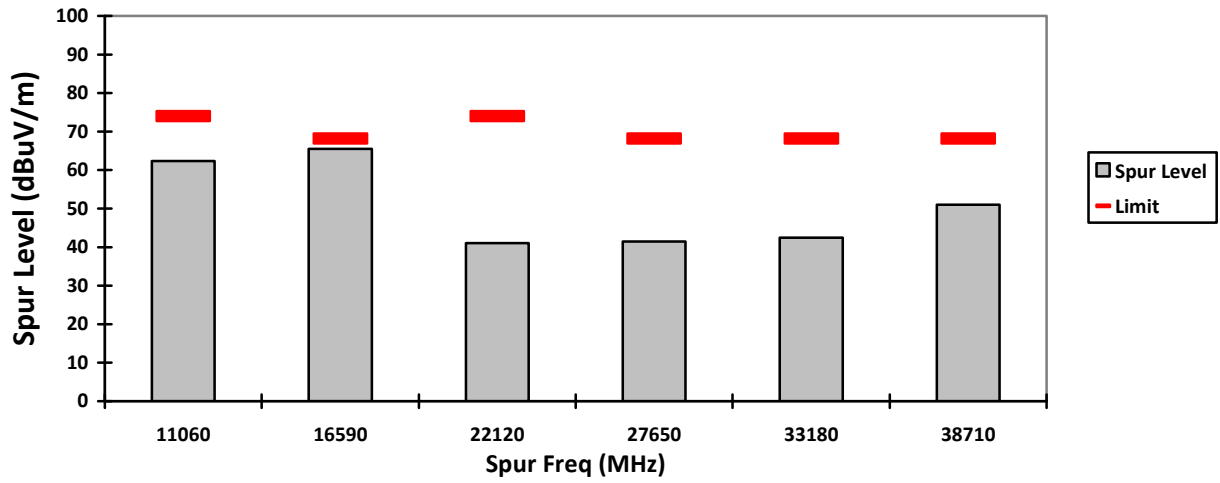


### HORIZONTAL, AV

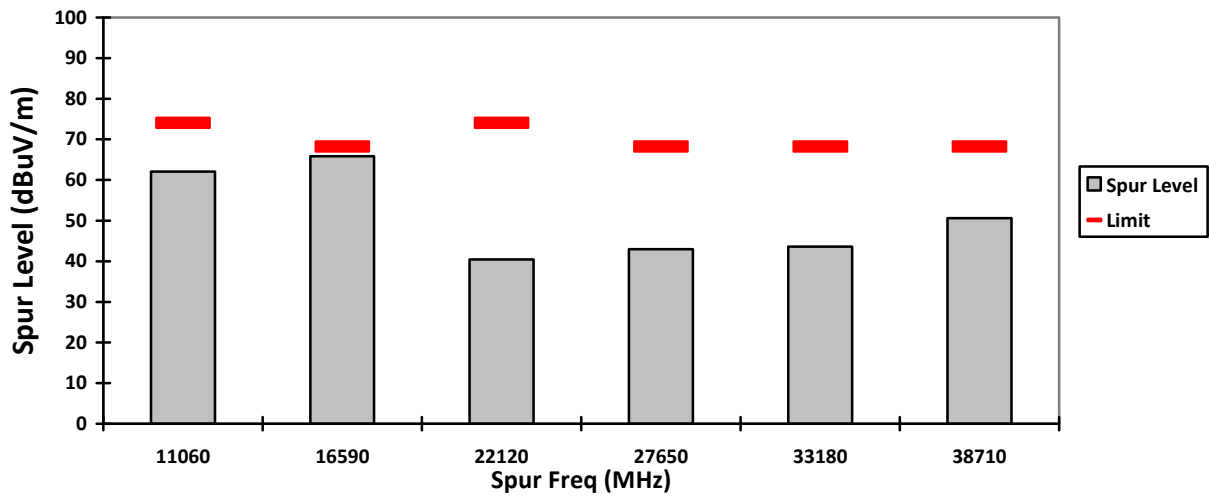




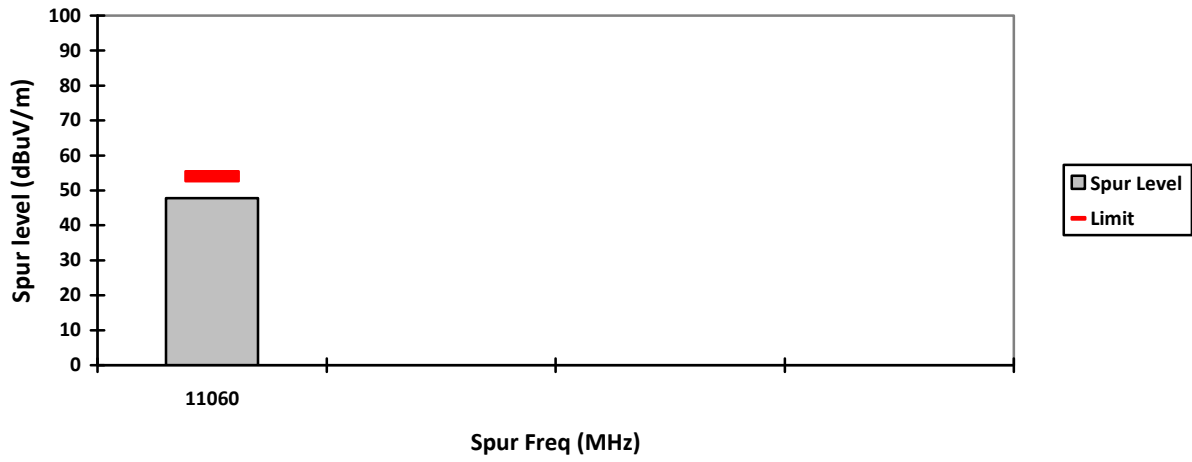
VERTICAL, PK



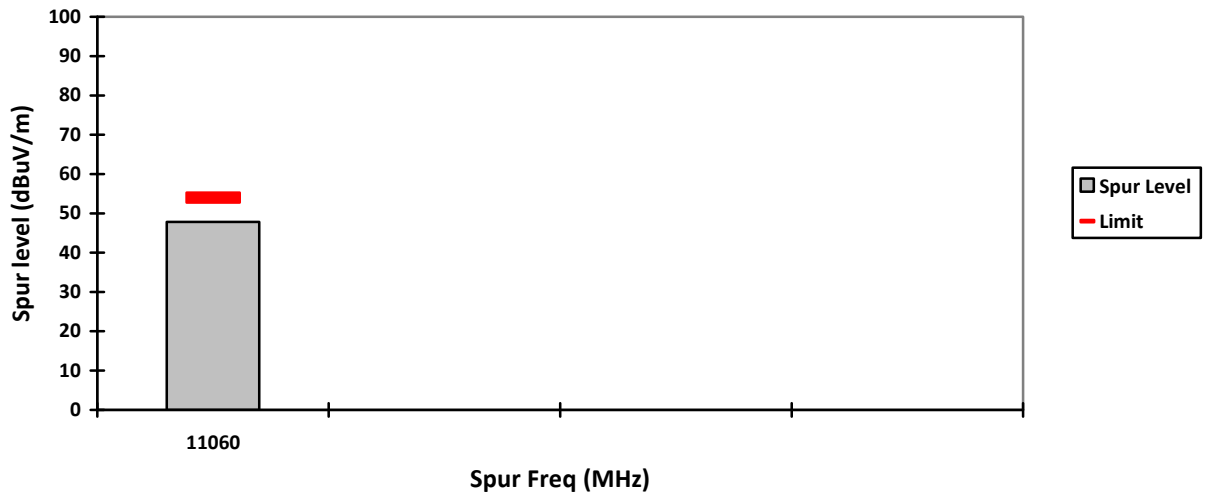
HORIZONTAL, PK



### VERTICAL, AV



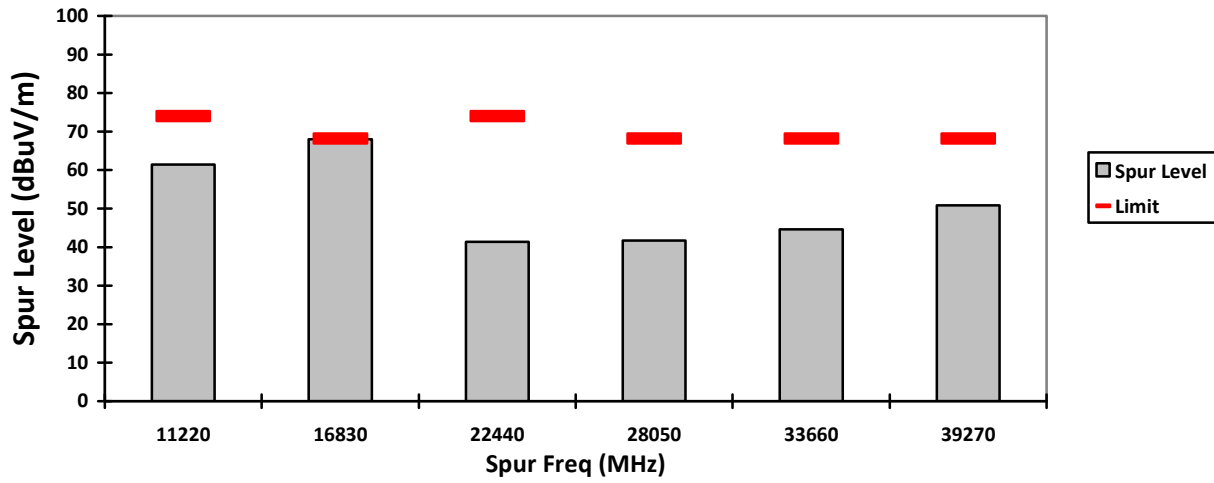
### HORIZONTAL, AV



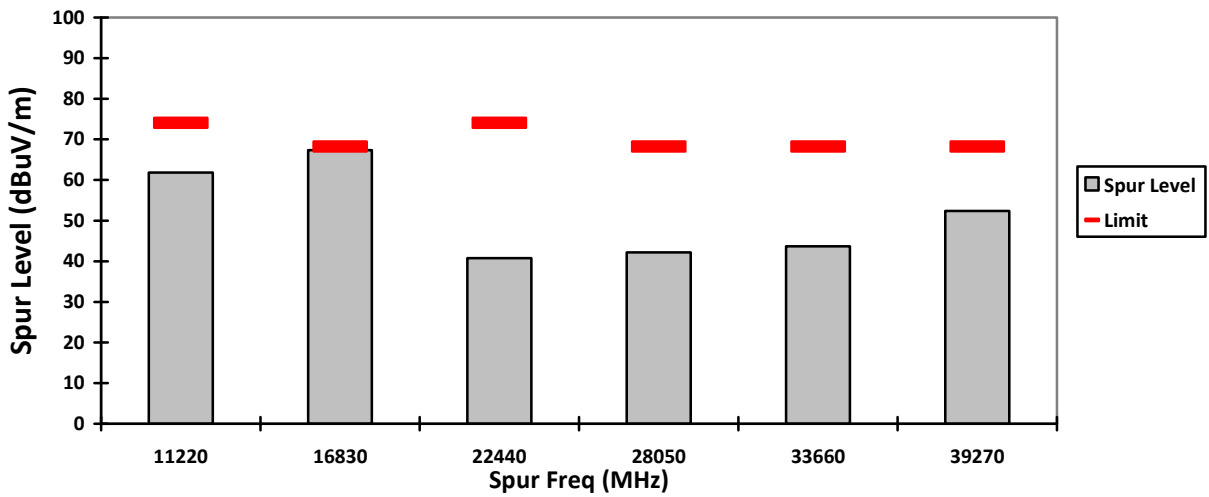




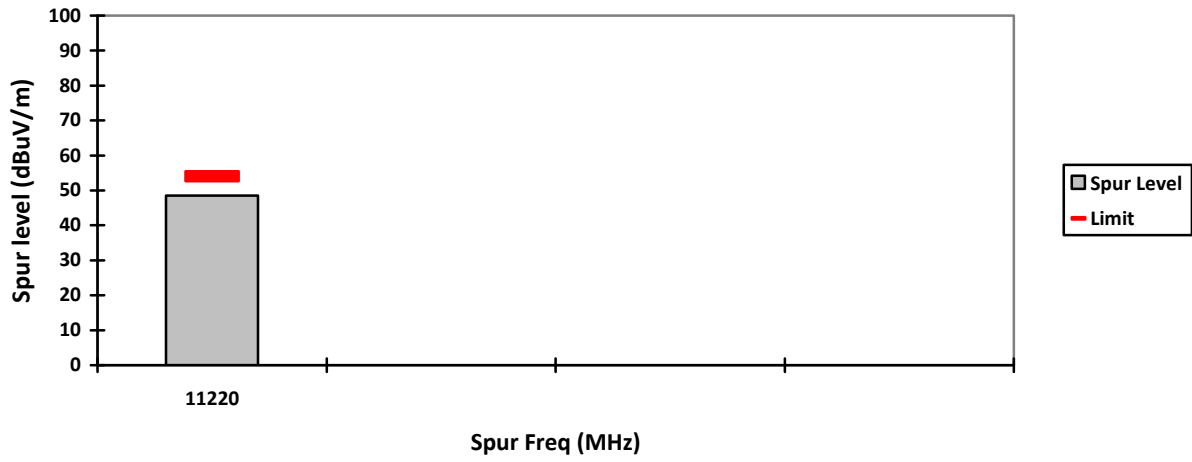
### VERTICAL, PK



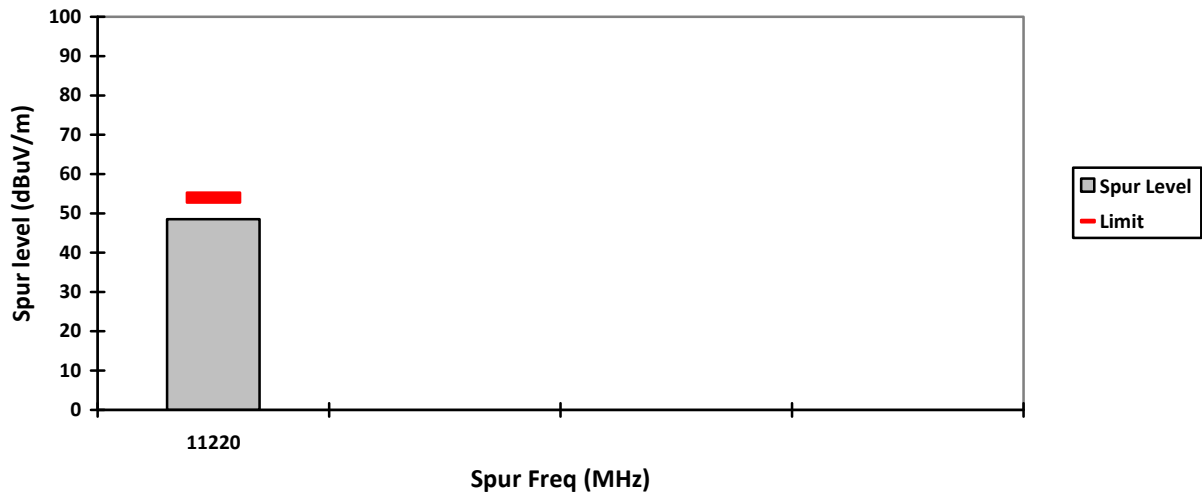
### HORIZONTAL, PK



### VERTICAL, AV

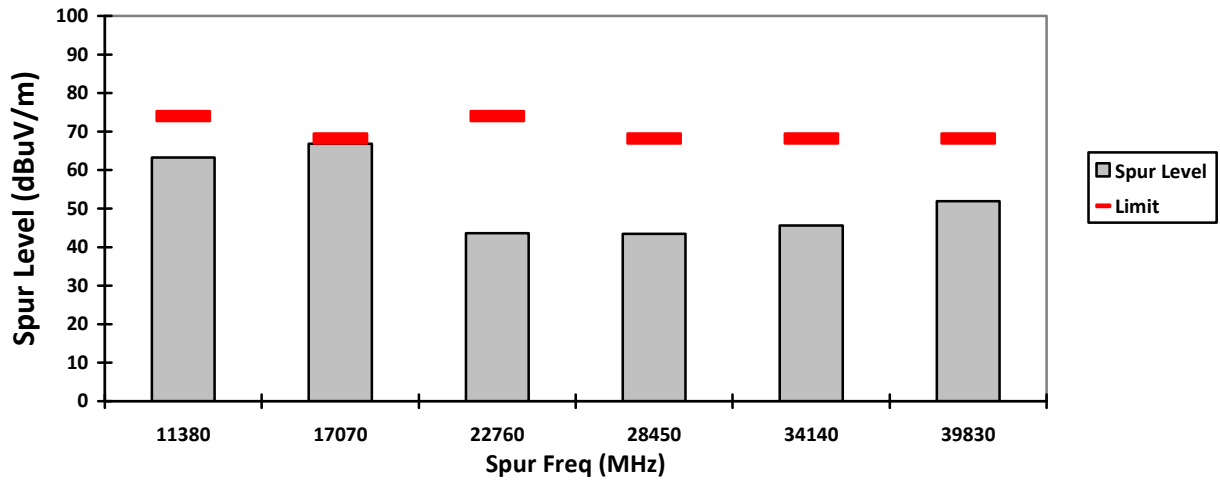


### HORIZONTAL, AV

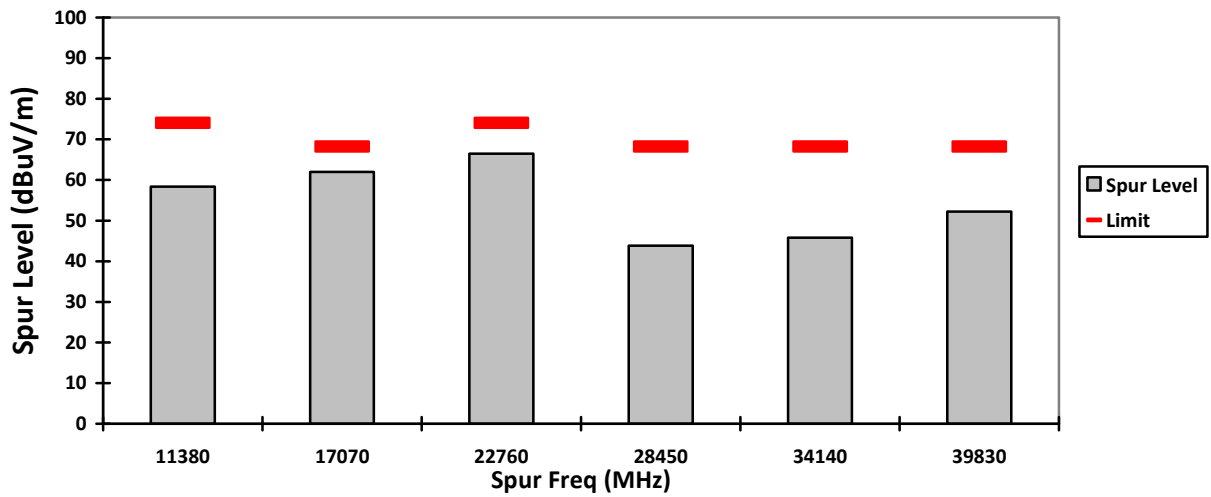




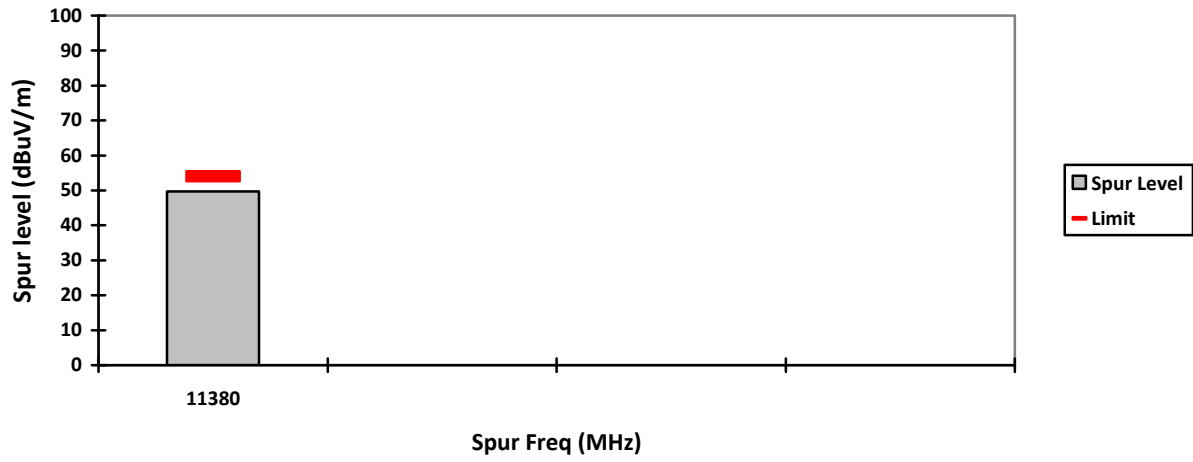
### VERTICAL, PK



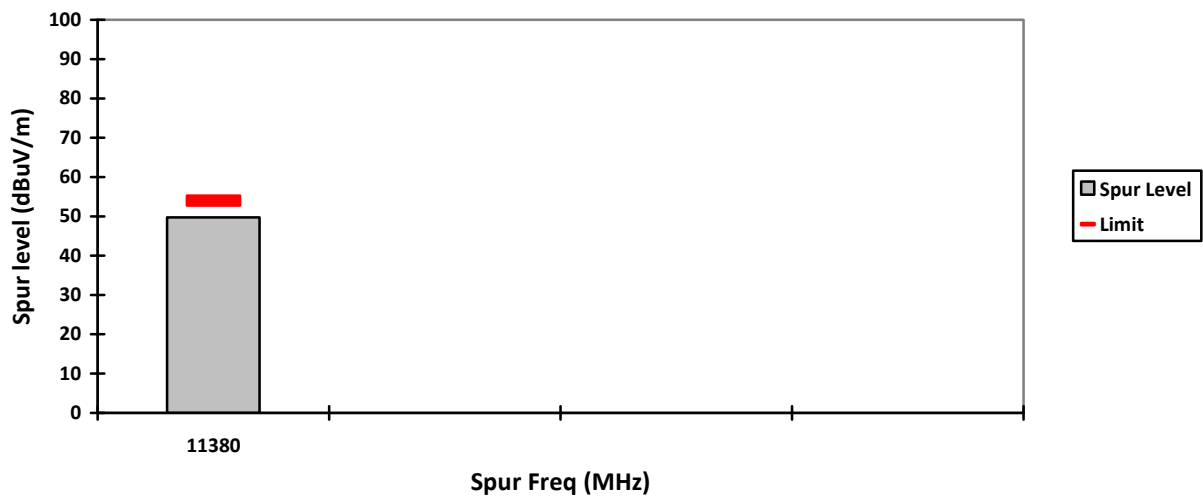
### HORIZONTAL, PK



### VERTICAL, AV

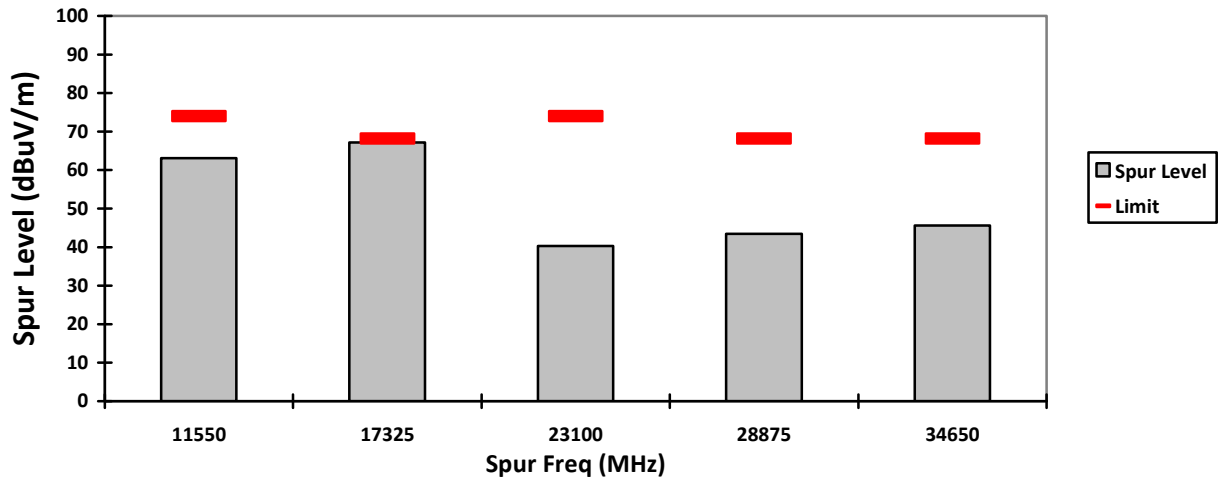


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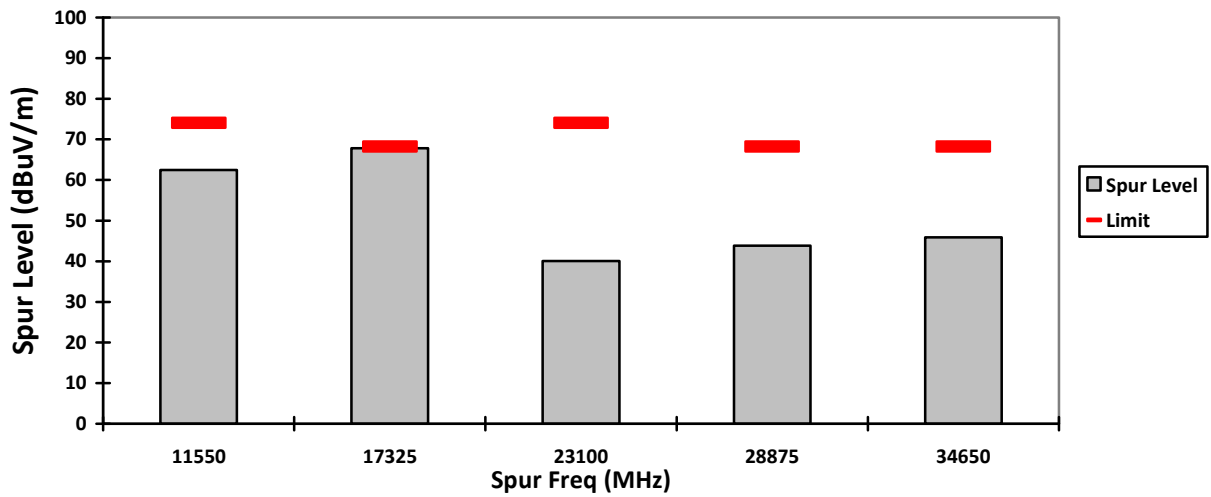




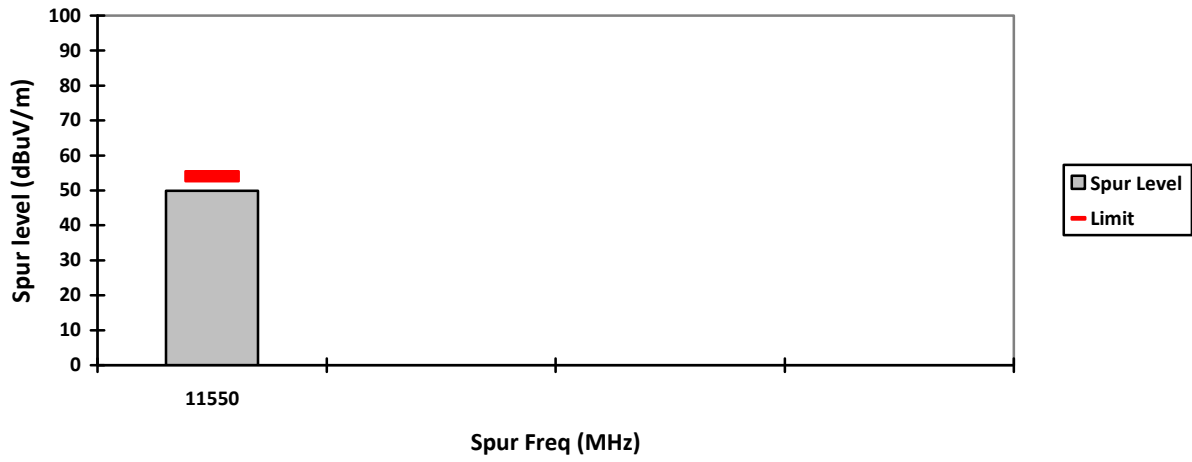
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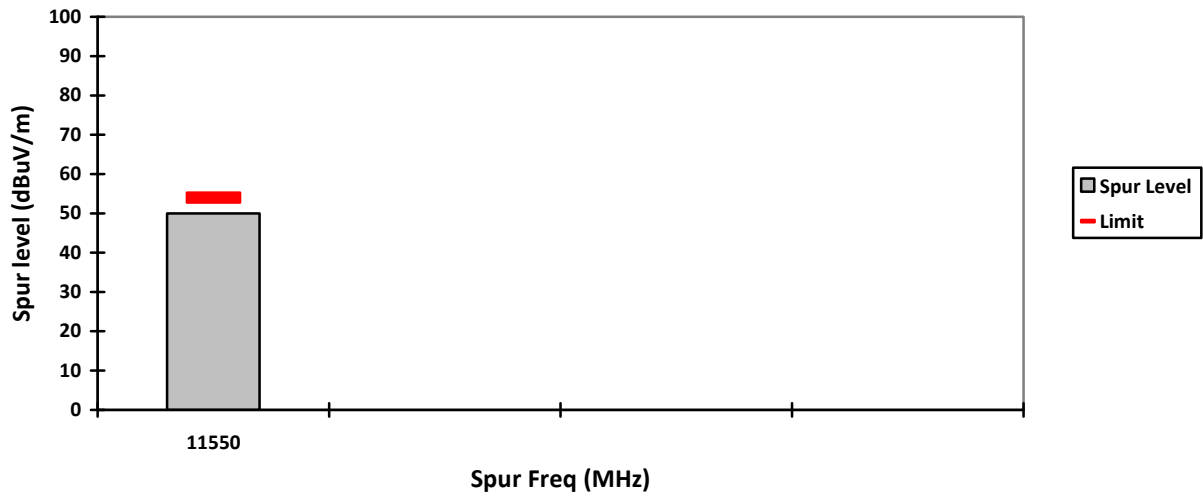
### HORIZONTAL, PK



### VERTICAL, AV



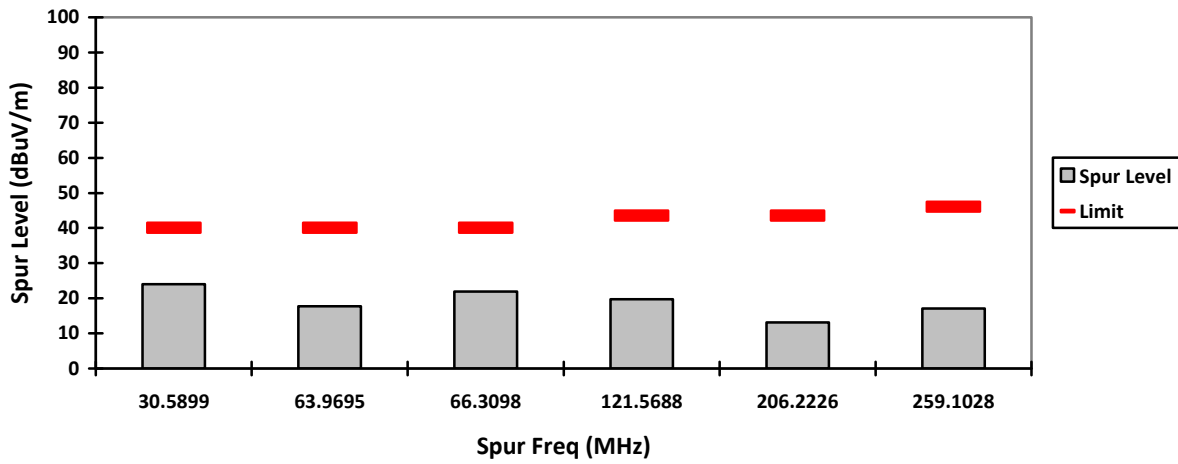
### HORIZONTAL, AV



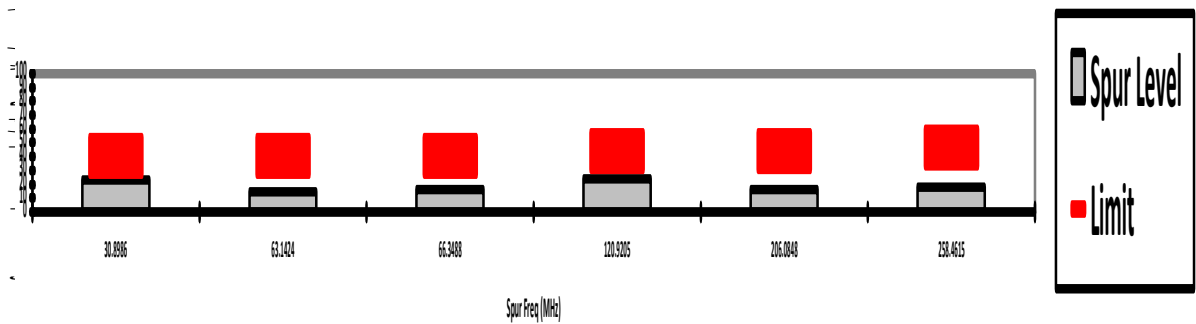




### VERTICAL, QPK

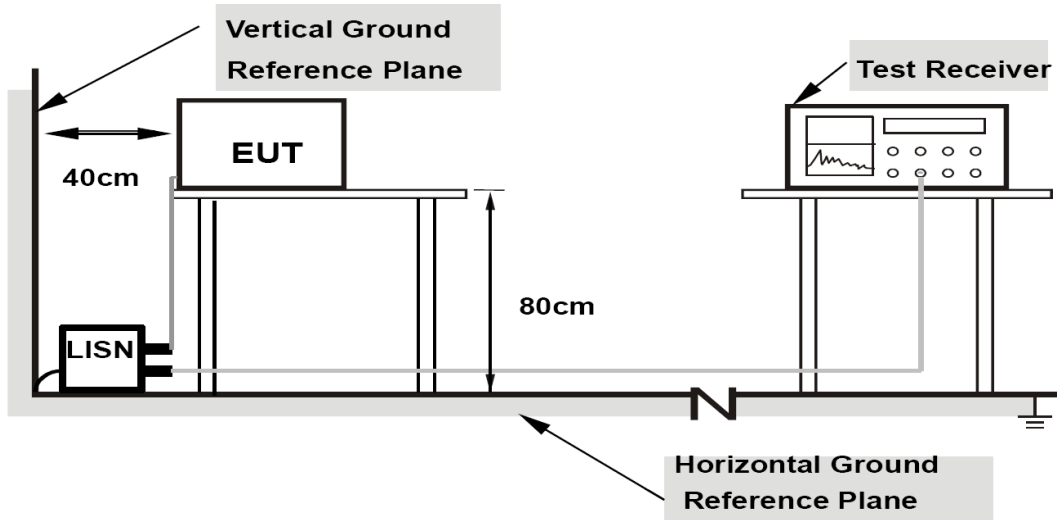


### HORIZONTAL, QPK



## 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( $\mu$ V)	
	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( $\mu$ 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

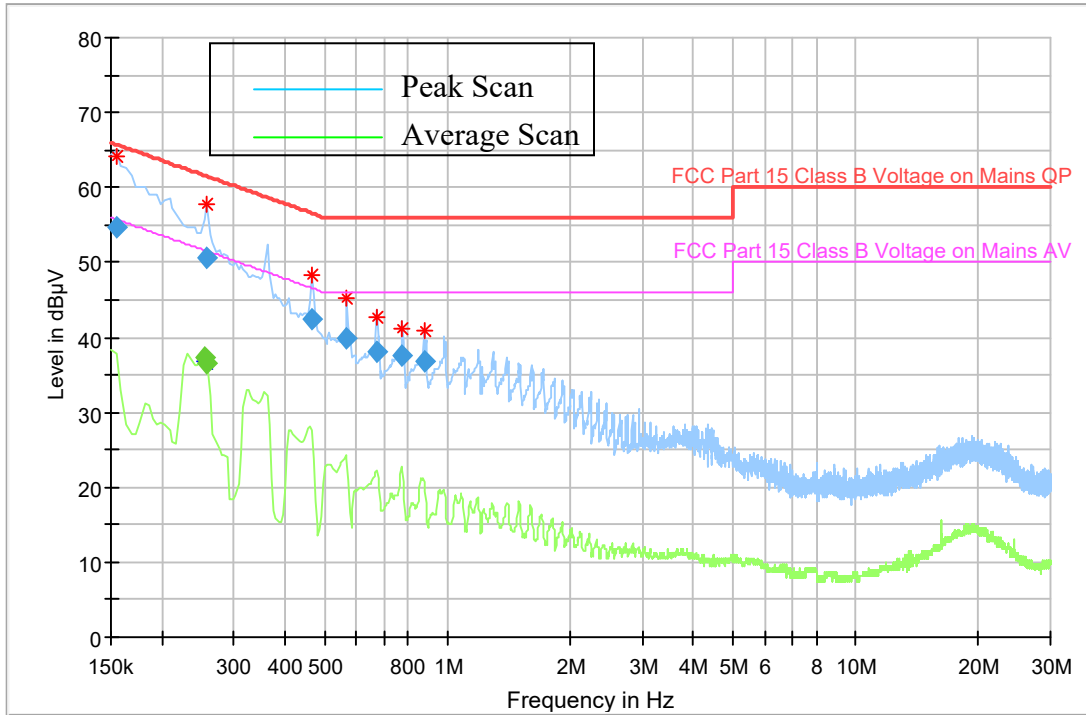
7.8.3. Test Data

**SUC**

**120 Vac, 60Hz**

1) Charger + Radio TX WiFi 5GHz 802.11n20

Full Spectrum



**Quasipeak and Average Measurement**

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)	Comment
0.154500	54.75	---	65.75	11.00	1000.0	9.000	N	ON	10.3	Pass
0.253500	---	37.20	51.64	14.44	1000.0	9.000	L1	ON	10.3	Pass
0.258000	50.59	---	61.50	10.90	1000.0	9.000	N	ON	10.3	Pass
0.258000	---	36.67	51.50	14.83	1000.0	9.000	L1	ON	10.3	Pass
0.465000	42.53	---	56.60	14.07	1000.0	9.000	L1	ON	10.3	Pass
0.568500	39.96	---	56.00	16.04	1000.0	9.000	L1	ON	10.3	Pass
0.672000	38.09	---	56.00	17.91	1000.0	9.000	N	ON	10.3	Pass
0.775500	37.47	---	56.00	18.53	1000.0	9.000	L1	ON	10.3	Pass
0.879000	36.73	---	56.00	19.27	1000.0	9.000	L1	ON	10.3	Pass

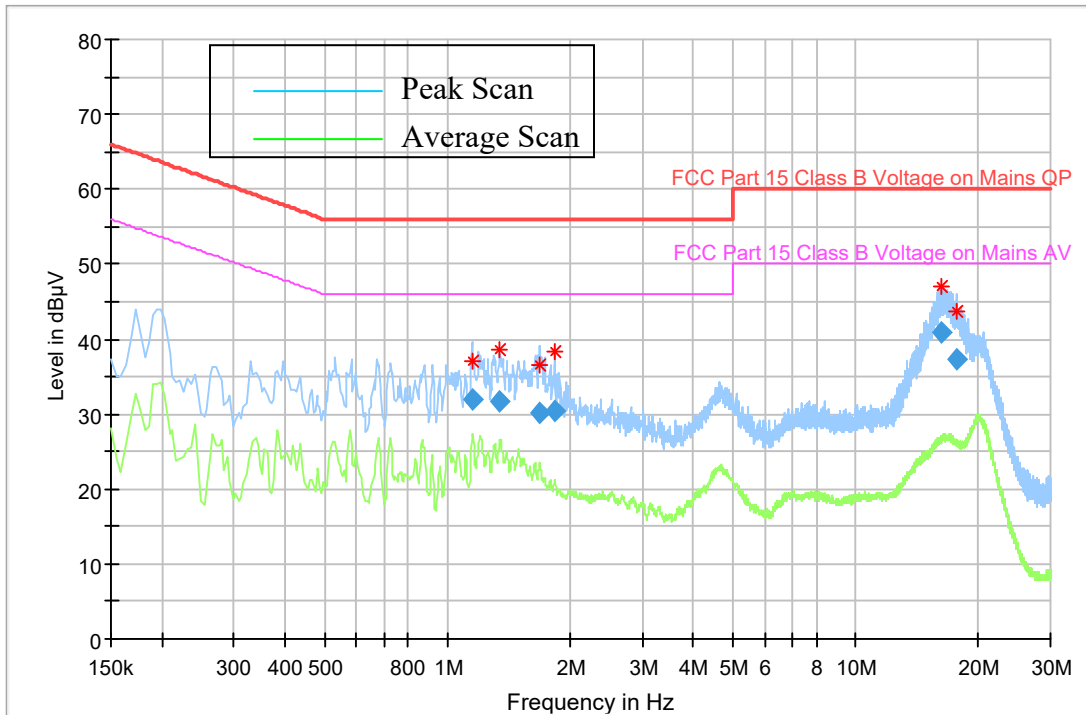
\* Expanded Uncertainty (U) = +/- 3.48dB

## MUC

### 120 Vac, 60Hz

2) Charger + Radio TX WiFi 5GHz 802.11n20

Full Spectrum



### Quasipeak and Average Measurement

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)	Comment
1.149000	31.86	---	56.00	24.14	1000.0	9.000	L1	ON	10.3	Pass
1.342500	31.79	---	56.00	24.21	1000.0	9.000	L1	ON	10.3	Pass
1.675500	30.06	---	56.00	25.94	1000.0	9.000	N	ON	10.3	Pass
1.837500	30.47	---	56.00	25.53	1000.0	9.000	L1	ON	10.3	Pass
16.305000	40.88	---	60.00	19.12	1000.0	9.000	N	ON	11.0	Pass
17.668500	37.26	---	60.00	22.74	1000.0	9.000	L1	ON	10.8	Pass

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

**END OF TEST REPORT**