



**CFR 47 FCC PART 15 SUBPART E**  
**CERTIFICATION TEST REPORT**

*For*

**Integrated video conference terminal**

**MODEL NUMBER: UC S10, MS10B, MS\*\*\*\*, UC\*\*\*\***

**FCC ID: 2AFG6-MS10B**

**REPORT NUMBER: 4789822671.2-6**

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	04/06/2021	Initial Issue	



Summary of Test Results			
Clause	Test Items	FCC Rules	Test Results
1	6dB/26dB Bandwidth and 99% Occupied Bandwidth	FCC 15.407 (a)&(e)	PASS
2	Conducted Output Power	FCC 15.407 (a)	PASS
3	Power Spectral Density	FCC 15.407 (a)	PASS
4	Radiated Bandedge and Spurious Emission	FCC 15.407 (b) FCC 15.209 FCC 15.205	PASS
5	Conducted Emission Test for AC Power Port	FCC 15.207	PASS
6	Frequency Stability	FCC 15.407 (g)	PASS
7	Antenna Requirement	FCC 15.203	PASS
<p>Note:</p> <p>1. This test report is only published to and used by the applicant, and it is not for evidence purpose in China.</p> <p>2. The measurement result for the sample received is &lt;Pass&gt; according to &lt; CFR 47 FCC PART 15 SUBPART C &gt; when &lt;Accuracy Method&gt; decision rule is applied.</p>			



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## 1. ATTESTATION OF TEST RESULTS

### Applicant Information

Company Name: Guangzhou Shirui Electronics Co Ltd  
Address: 192 Kezhu Road, Sciencetech Park, Guangzhou Economic Technology Development District Guangzhou China

### Manufacturer Information

Company Name: Guangzhou Shirui Electronics Co Ltd  
Address: 192 Kezhu Road, Sciencetech Park, Guangzhou Economic Technology Development District Guangzhou China

### EUT Information

EUT Name: Integrated video conference terminal  
Model: UC S10  
Series Model: MS10B, MS\*\*\*\*, UC\*\*\*\*  
Model difference: There are no difference except the model name.  
(\* = A-Z, a-z, 0-9 "-" or blank, no other difference but model number and color just for marketing purpose)  
Sample Received Date: February 7, 2021  
Sample Status: Normal  
Sample ID: 3689328  
Date of Tested: February 7, 2021~ April 7, 2021

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 15 SUBPART E	PASS

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## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, CFR 47 FCC Part 2, CFR 47 FCC Part 15, KDB 789033 D02 v02r01, KDB414788 D01 Radiated Test Site v01r01 and KDB 662911 D01 Multiple Transmitter Output v02r01, KDB 905462 D03 UNII clients without radar detection New Rules v01r02.

## 3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p><b>A2LA (Certificate No.: 4102.01)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p><b>FCC (FCC Designation No.: CN1187)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules</p> <p><b>ISED (Company No.: 21320)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p><b>VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B, the VCCI registration No. is C-20012 and T-20011</p>
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Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30 MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30 MHz had been correlated to measurements performed on an OFS.





## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognize national standards.

### 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Conduction emission	3.62 dB
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	2.2 dB
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB
Radiated Emission (Included Fundamental Emission) (1 GHz to 26 GHz)	5.78 dB (1 GHz ~ 18 GHz)
	5.23 dB (18 GHz ~ 26 GHz)
Duty Cycle	±0.028%
Emission Bandwidth and 99% Occupied Bandwidth	±0.0196%
Maximum Conducted Output Power	±0.766 dB
Maximum Power Spectral Density Level	±1.22 dB
Frequency Stability	±2.76%
Conducted Band-edge Compliance	±1.328 dB
Conducted Unwanted Emissions In Non-restricted Frequency Bands	±0.746 dB (9 kHz ~ 1 GHz)
	±1.328dB (1 GHz ~ 26 GHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	



## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

EUT Name	Integrated video conference terminal			
Model	UC S10			
Series Model:	MS10B, MS****, UC****			
Model difference:	There are no difference except the model name. (* = A-Z, a-z, 0-9 "-" or blank, no other difference but model number and color just for marketing purpose)			
Radio Technology	IEEE802.11a IEEE802.11n HT20/n HT40 IEEE802.11ac HT20/HT40/HT80			
Operation frequency	UNII-1/UNII-3			
Modulation	OFDM(BPSK,QPSK,16QAM,64QAM,256QAM)			
Wireless Module	RTL8821CU-CG			
Supply Voltage	<input type="checkbox"/> AC mains State			
	<input checked="" type="checkbox"/> DC State	<input type="checkbox"/> Internal Power Supply		
		<input checked="" type="checkbox"/> External Power Supply or AC/DC adapter	Rate Input:	AC 100-240V~, 50/60Hz, 50/60, 1.0A Max
			Rate Output:	DC 12V3A, 36.0W
		<input type="checkbox"/> Battery		

## 5.2. MAXIMUM AVERAGE OUTPUT POWER

### UNII-1 BAND

IEEE Std. 802.11	Frequency (MHz)	Maximum Average Conducted Power (dBm)	Max Average EIRP (dBm)
a 20	5150 ~ 5250	10.23	13.71
n HT20		8.96	12.44
n HT40		8.99	12.47
ac VHT20		9.32	12.80
ac VHT40		9.37	12.85
ac VHT80		7.15	10.63

### UNII-3 BAND

IEEE Std. 802.11	Frequency (MHz)	Max Power (dBm)
a 20	5725 ~ 5850	9.25
n HT20		7.97
n HT40		8.23
ac VHT20		8.24
ac VHT40		7.10
ac VHT80		7.23

## 5.3. CHANNEL LIST

UNII-1 (For Bandwidth = 20 MHz)		UNII-1 (For Bandwidth = 40 MHz)		UNII-1 (For Bandwidth = 80 MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230		
44	5220				
48	5240				

UNII-3 (For Bandwidth = 20 MHz)		UNII-3 (For Bandwidth = 40 MHz)		UNII-3 (For Bandwidth = 80 MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	151	5755	155	5775
153	5765	159	5795		
157	5785				
161	5805				
165	5825				



#### 5.4. TEST CHANNEL CONFIGURATION

UNII-1 Test Channel Configuration		
IEEE Std.	Test Channel Number	Frequency
802.11a 20	CH 36(Low Channel), CH 40(MID Channel), CH 48(High Channel)	5180 MHz, 5200 MHz, 5240 MHz
802.11n HT20	CH 36(Low Channel), CH 40(MID Channel), CH 48(High Channel)	5180 MHz, 5200 MHz, 5240 MHz
802.11n HT40	CH 38(Low Channel), CH 46(High Channel)	5190 MHz, 5230 MHz
802.11ac VHT20	CH 36(Low Channel), CH 40(MID Channel), CH 48(High Channel)	5180 MHz, 5200 MHz, 5240 MHz
802.11ac VHT40	CH 38(Low Channel), CH 46(High Channel)	5190 MHz, 5230 MHz
802.11ac VHT80	CH 42(Low Channel)	5210 MHz

UNII-3 Test Channel Configuration		
IEEE Std.	Test Channel Number	Frequency
802.11a 20	CH 149(Low Channel), CH 157(MID Channel), CH 165(High Channel)	5745 MHz, 5785 MHz, 5825 MHz
802.11n HT20	CH 149(Low Channel), CH 157(MID Channel), CH 165(High Channel)	5745 MHz, 5785 MHz, 5825 MHz
802.11n HT40	CH 151(Low Channel), CH 159(High Channel)	5755MHz, 5795MHz
802.11ac VHT20	CH 149(Low Channel), CH 157(MID Channel), CH 165(High Channel)	5745 MHz, 5785 MHz, 5825 MHz
802.11ac VHT40	CH 151(Low Channel), CH 159(High Channel)	5755 MHz, 5795 MHz
802.11ac VHT80	CH 155(Low Channel)	5775 MHz



### 5.5. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna No.	Frequency (MHz)	Antenna Type	Max Antenna Gain (dBi)
2	5150-5850	FPC antenna	3.48

Note: The value of the antenna gain was declared by customer.

IEE Std. 802.11	Transmit and Receive Mode	Description
802.11a	<input checked="" type="checkbox"/> 1TX, 1RX	ANT 2 can be used as transmitting/receiving antenna.
802.11n HT20	<input checked="" type="checkbox"/> 1TX, 1RX	ANT 2 can be used as transmitting/receiving antenna.
802.11n HT40	<input checked="" type="checkbox"/> 1TX, 1RX	ANT 2 can be used as transmitting/receiving antenna.
802.11ac VHT20	<input checked="" type="checkbox"/> 1TX, 1RX	ANT 2 can be used as transmitting/receiving antenna.
802.11ac VHT40	<input checked="" type="checkbox"/> 1TX, 1RX	ANT 2 can be used as transmitting/receiving antenna.
802.11ac VHT80	<input checked="" type="checkbox"/> 1TX, 1RX	ANT 2 can be used as transmitting/receiving antenna.

Note:

1.WLAN 2.4G & WLAN 5G can't transmit simultaneously. (declared by client)



## 5.6. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter			
Test Software	WLAN Test Tool		
Frequency Band	mode	channel	setting
UNII-1	802.11a	5180	default
		5200	default
		5240	default
	802.11n (20M)	5180	default
		5200	default
		5240	default
	802.11ac (20M)	5180	default
		5200	default
		5240	default
	802.11n (40M)	5190	default
		5230	default
	802.11ac (40M)	5190	default
		5230	default
	802.11ac (80M)	5210	default
UNII-3	802.11a	5745	default
		5785	default
		5825	default
	802.11n (20M)	5745	default
		5785	default
		5825	default
	802.11ac (20M)	5745	default
		5785	default
		5825	default
	802.11n (40M)	5755	default
		5795	default
	802.11ac (40M)	5755	default
		5795	default
	802.11ac (80M)	5775	default



## 5.7. THE WORSE CASE CONFIGURATIONS

Worst-case data rates as provided by the client were:

802.11a mode: 6 Mbps  
802.11n HT20 mode: MCS0  
802.11n HT40 mode: MCS0  
802.11ac VHT20 mode: MCS0  
802.11ac VHT40 mode: MCS0  
802.11ac VHT80 mode: MCS0

802.11ac VHT20 and VHT40 mode are different from 802.11nHT20 and HT40 only in control messages and have the same power settings, so for these 4 modes, only 802.11nHT20 and 802.11nHT40 modes data are recorded in the report .

## 5.8. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	Laptop	ThinkPad	X230i	/
2	USB TO UART	/	/	/
3	Monitor	DELL	P2715Qt	CN-040FHF-WS200-79C-390L
4	Earphone	GIONEE	N/A	N/A
5	Mouse	Lenovo	MO28UOB	8SSM50G45918F CCC1545

### I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	/	/	1.0	/
2	HDMI Cable	YES	YES	1.5	/
3	Network Cable	/	/	2.0	/

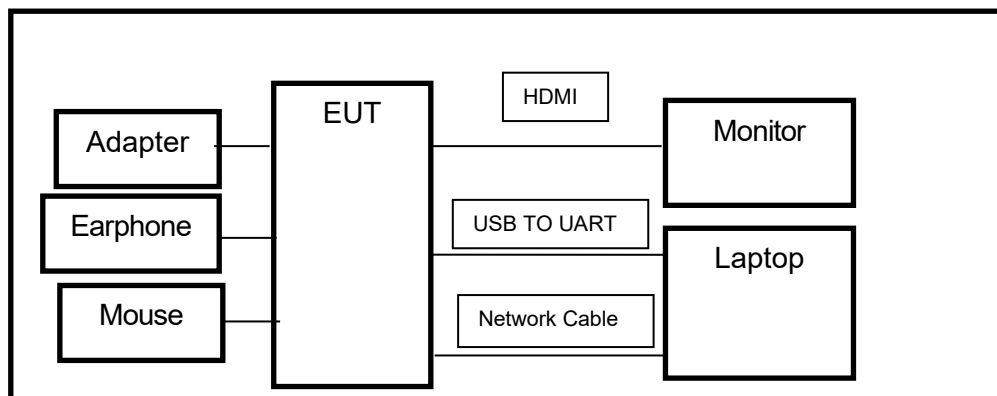
### ACCESSORIES

Item	Accessory	Brand Name	Model Name	Description
1	Adapter	GangQi	GQ36-120300-AX	Input: AC 100-240V~, 50/60Hz, 50/60, 1.0A Max Output: DC 12V3A, 36.0W

### TEST SETUP

The EUT can work in engineering mode with a software.

### SETUP DIAGRAM FOR TESTS





## 6. MEASURING INSTRUMENT AND SOFTWARE USED

Conducted Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	EMI Test Receiver	R&S	ESR3	101961	Nov. 12, 2020	Nov. 11, 2021
<input checked="" type="checkbox"/>	Two-Line V-Network	R&S	ENV216	101983	Nov. 12, 2020	Nov. 11, 2021
Software						
Used	Description		Manufacturer	Name		Version
<input checked="" type="checkbox"/>	Test Software for Conducted disturbance		Farad	EZ-EMC		Ver. UL-3A1
Radiated Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Nov. 12, 2020	Nov. 11, 2021
<input checked="" type="checkbox"/>	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Aug. 11, 2018	Aug. 10, 2021
<input checked="" type="checkbox"/>	Preamplifier	HP	8447D	2944A09099	Nov. 12, 2020	Nov. 11, 2021
<input checked="" type="checkbox"/>	EMI Measurement Receiver	R&S	ESR26	101377	Nov. 12, 2020	Nov. 11, 2021
<input checked="" type="checkbox"/>	Horn Antenna	TDK	HRN-0118	130939	Sept. 17, 2018	Sept. 17, 2021
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-0118	TRS-305-00067	Nov. 20, 2020	Nov. 19, 2021
<input checked="" type="checkbox"/>	Horn Antenna	Schwarzbeck	BBHA9170	#691	Aug. 11, 2018	Aug. 11, 2021
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-2	TRS-307-00003	Nov. 12, 2020	Nov. 11, 2021
<input checked="" type="checkbox"/>	Loop antenna	Schwarzbeck	1519B	00008	Jan.17, 2019	Jan.17,2022
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-001-3000	TRS-302-00050	Nov. 12, 2020	Nov. 11, 2021
<input checked="" type="checkbox"/>	Preamplifier	Mini-Circuits	ZX60-83LN-S+	SUP01201941	Nov. 20, 2020	Nov. 19, 2021
<input checked="" type="checkbox"/>	Band Reject Filter	Wainwright	WRCJV12-5695-5725-5850-5880-40SS	4	Nov. 12, 2020	Nov. 11, 2021
<input checked="" type="checkbox"/>	Band Reject Filter	Wainwright	WRCJV20-5120-5150-5350-5380-60SS	2	Nov. 12, 2020	Nov. 11, 2021
<input checked="" type="checkbox"/>	Highpass Filter	Wainwright	WHKX10-5850-6500-1800-40SS	4	Nov. 12, 2020	Nov. 11, 2021



Software						
Used	Description		Manufacturer	Name		Version
<input checked="" type="checkbox"/>	Test Software for Radiated disturbance		Farad	EZ-EMC		Ver. UL-3A1
Other instruments						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	Spectrum Analyzer	Keysight	N9030A	MY55410512	Nov. 20, 2020	Nov. 19, 2021
<input checked="" type="checkbox"/>	Power sensor, Power Meter	Tonsend	JS0806-2	178060074	Dec.30,2020	Dec.30,2021
<input checked="" type="checkbox"/>	DC power supply	Keysight	E3642A	MY55159130	Nov.24,2020	Nov.23,2021
<input checked="" type="checkbox"/>	Temperature & Humidity Chamber	SANMOOD	SG-80- CC-2	2088	Nov. 20, 2020	Nov. 19, 2021



## 7. ANTENNA PORT TEST RESULTS

### 7.1. ON TIME AND DUTY CYCLE

#### LIMITS

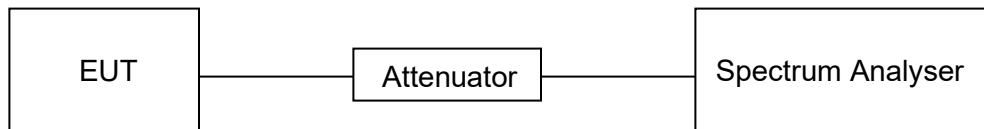
None; for reporting purposes only.

#### PROCEDURE

Refer to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section II.B.

The zero-span mode on a spectrum analyzer or EMI receiver, if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set  $RBW \geq EBW$  if possible; otherwise, set RBW to the largest available value. Set  $VBW \geq RBW$ . Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are  $> 50/T$ , where T is defined in II.B.1.a), and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if  $T \leq 16.7$  microseconds.)

#### TEST SETUP



#### TEST ENVIRONMENT

Temperature	25.8 °C	Relative Humidity	68.3 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120 V/60 Hz

#### RESULTS

Please refer to appendix H.



## 7.2. 6/26 dB EMISSION BANDWIDTH AND 99 % OCCUPIED BANDWIDTH

### LIMITS

CFR 47 FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
26 dB Emission Bandwidth	For reporting purposes only.	5150 ~ 5250
26 dB Emission Bandwidth	For reporting purposes only.	5250 ~ 5350
26 dB Emission Bandwidth	For reporting purposes only.	5470 ~ 5725 (For FCC) 5470 ~ 5600 (For ISED) 5650 ~ 5725 (For ISED)
6 dB Emission Bandwidth	The minimum 6 dB emission bandwidth shall be 500 kHz.	5725 ~ 5850
99 % Occupied Bandwidth	For reporting purposes only.	5150 ~ 5825 (For ISED)

### TEST PROCEDURE

ISED RSS-247 6.2.1.2 clause unwanted emission limits

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz.

### TEST PROCEDURE

Refer to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section II.C1. for 26 dB Emission Bandwidth; section II.C2. for 6 dB Emission Bandwidth; section II.D. for 99 % Occupied Bandwidth.

Connect the EUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	For 6 dB Emission Bandwidth: RBW=100 kHz For 26 dB Emission bandwidth: approximately 1 % of the EBW. For 99 % Occupied Bandwidth: approximately 1 % ~ 5 % of the OBW.
VBW	For 6 dB Bandwidth: $\geq 3 \times \text{RBW}$ For 26 dB Bandwidth: $\geq 3 \times \text{RBW}$ For 99 % Bandwidth: $> 3 \times \text{RBW}$
Trace	Max hold
Sweep	Auto couple

a) Use the 99 % power bandwidth function of the instrument, allow the trace to stabilize and report the measured bandwidth.

b) Allow the trace to stabilize and 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 6/26 dB relative to the maximum level measured in the fundamental emission.

#### Calculation for 99 % Bandwidth of UNII-2C and UNII-3 Straddle Channel:

For Example: Fundamental Frequency: 5720 MHz

99 % OBW: 21.00 MHz

Turning Frequency: 5725 MHz

99 % Bandwidth of UNII-2C Band Portion =  $(5725 - (5720 - (21.00/2))) = 15.50$  MHz

99 % Bandwidth of UNII-3 Band Portion =  $(5720 + (21.00/2) - 5725) = 5.50$  MHz

#### Calculation for 26 dB Bandwidth of UNII-2C Straddle Channel:

For Example: Fundamental frequency: 5720 MHz

26 dB BW: 20.00 MHz

FL: 5710.16 MHz

FH: 5730.16 MHz

Turning Frequency: 5725 MHz

26 dB Bandwidth of UNII-2C Band Portion =  $5725 - 5710.16 = 14.84$  MHz

#### Calculation for 6dB Bandwidth of UNII-3 Straddle Channel:

For Example: Fundamental frequency: 5720 MHz

6 dB BW: 16.44 MHz

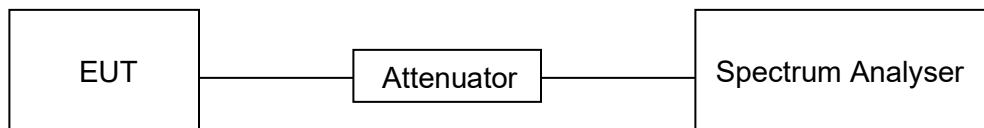
FL: 5711.76 MHz

FH: 5728.2 MHz

Turning Frequency: 5725 MHz

6 dB Bandwidth of UNII-3 band Portion =  $5728.2 - 5725 = 3.2$  MHz

#### TEST SETUP



#### TEST ENVIRONMENT

Temperature	25.8 °C	Relative Humidity	68.3 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120 V/60 Hz



## **RESULTS**

Please refer to Appendix A1&A2&A3.



### 7.3. CONDUCTED OUTPUT POWER

#### LIMITS

CFR 47 FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
Conducted Output Power	<input type="checkbox"/> Outdoor Access Point: 1 W (30 dBm) <input type="checkbox"/> Indoor Access Point: 1 W (30 dBm) <input type="checkbox"/> Fixed Point-To-Point Access Points: 1 W (30 dBm) <input checked="" type="checkbox"/> Client Devices: 250 mW (24 dBm)	5150 ~ 5250
	Shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.	5250 ~ 5350 5470 ~ 5725
	Shall not exceed 1 Watt (30 dBm).	5725 ~ 5850

**Note:**

The above limits are based upon the maximum antenna gain does not exceed 6 dBi.

If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

## **TEST PROCEDURE**

Refer to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section II.E.

### **Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep):**

- (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- (ii) Set RBW = 1 MHz.
- (iii) Set VBW  $\geq$  3 MHz.
- (iv) Number of points in sweep  $\geq 2 \times \text{span} / \text{RBW}$ . (This ensures that bin-to-bin spacing is  $\leq \text{RBW}/2$ , so that narrowband signals are not lost between frequency bins.)
- (v) Sweep time = auto.
- (vi) Detector = power averaging (rms), if available. Otherwise, use sample detector mode.
- (vii) If transmit duty cycle  $< 98\%$ , use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle  $\geq 98\%$ , and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run."
- (viii) Trace average at least 100 traces in power averaging (rms) mode.
- (ix) 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. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

### **Method PM (Measurement using an RF average power meter):**

- (i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the following conditions are satisfied:
  - a. The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
  - b. At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
  - c. The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
- (ii) If the transmitter does not transmit continuously, measure the duty cycle,  $x$ , of the transmitter output signal as described in II.B.
- (iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
- (iv) Adjust the measurement in dBm by adding  $10 \log (1/x)$  where  $x$  is the duty cycle (e.g.,  $10 \log (1/0.25)$  if the duty cycle is 25 %).

### **Method PM-G (Measurement using a gated RF average power meter):**

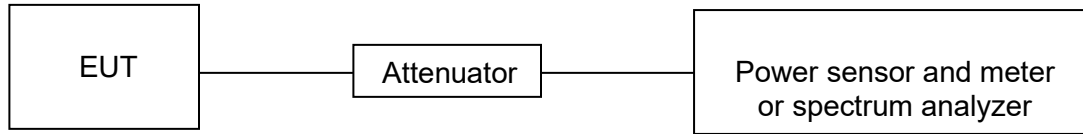
Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

Straddle channel power was measured using spectrum analyzer.





### TEST SETUP



### TEST ENVIRONMENT

Temperature	25.8 °C	Relative Humidity	68.3 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120 V/60 Hz

### RESULTS

Please refer to Appendix B.



## 7.4. POWER SPECTRAL DENSITY

### LIMITS

CFR 47 FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
Power Spectral Density	<input type="checkbox"/> Outdoor Access Point: 17 dBm/MHz <input type="checkbox"/> Indoor Access Point: 17 dBm/MHz <input type="checkbox"/> Fixed Point-To-Point Access Points: 17 dBm/MHz <input checked="" type="checkbox"/> Client Devices: 11 dBm/MHz	5150 ~ 5250
	11 dBm/MHz	5250 ~ 5350 5470 ~ 5725
	30 dBm/500kHz	5725 ~ 5850

Note:

The above limits are based upon the maximum antenna gain does not exceed 6 dBi.

If transmitting antennas of directional gain greater than 6 dBi are used, maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### TEST PROCEDURE

Refer to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section II.F.



Connect the EUT to the spectrum analyser and use the following settings:

For U-NII-1, U-NII-2A and U-NII-2C band:

Center Frequency	The center frequency of the channel under test
Detector	RMS
RBW	1 MHz
VBW	$\geq 3 \times \text{RBW}$
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

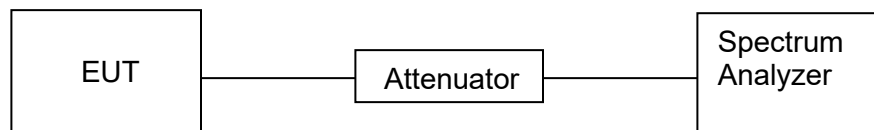
For U-NII-3:

Center Frequency	The center frequency of the channel under test
Detector	RMS
RBW	500 kHz
VBW	$\geq 3 \times \text{RBW}$
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

Allow trace to fully stabilize and Use the peak search function on the instrument to find the peak of the spectrum and record its value.

Add  $10 \log(1/x)$ , where  $x$  is the duty cycle, to the peak of the spectrum, the result is the Maximum PSD over 1 MHz / 500 kHz reference bandwidth.

## **TEST SETUP**



## **TEST ENVIRONMENT**

Temperature	25.8 °C	Relative Humidity	68.3 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120 V/60 Hz

## **RESULTS**

Please refer to Appendix C.



## 8. RADIATED TEST RESULTS

### LIMITS

Refer to CFR 47 FCC §15.205, §15.209 and §15.407 (b).

Radiation Disturbance Test Limit for FCC (Class B) (9 kHz ~ 1 GHz)

Emissions radiated outside of the specified frequency bands above 30 MHz			
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m	
		Quasi-Peak	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average
		74	54

FCC Emissions radiated outside of the specified frequency bands below 30 MHz		
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

FCC Restricted bands of operation refer to FCC §15.205 (a):

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	( <sup>2</sup> )
13.36-13.41			



Note: <sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

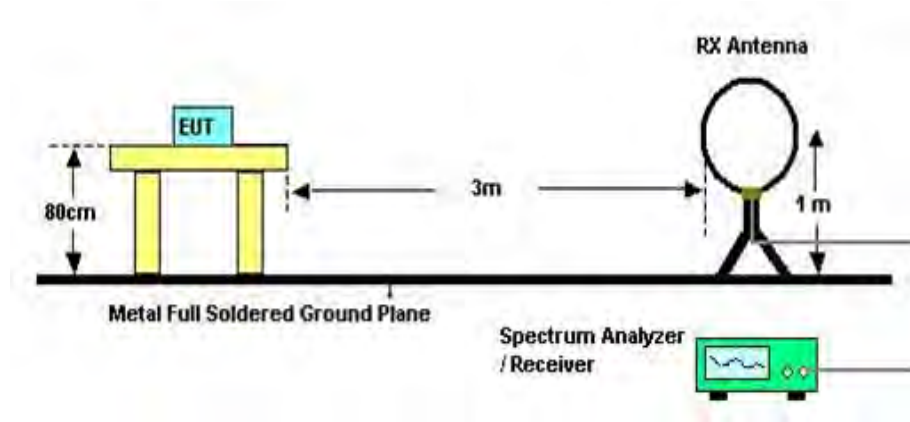
<sup>2</sup>Above 38.6c

Limits of unwanted/undesirable emission out of the restricted bands refer to CFR 47 FCC §15.407 (b) and ISSED RSS-247 6.2.

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1GHz)		
Frequency Range (MHz)	EIRP Limit	Field Strength Limit (dBuV/m) at 3 m
5150~5250 MHz	PK: -27 (dBm/MHz)	PK:68.2(dBμV/m)
5250~5350 MHz		
5470~5725 MHz		
5725~5850 MHz	PK: -27 (dBm/MHz) *1 PK: 10 (dBm/MHz) *2 PK: 15.6 (dBm/MHz) *3 PK: 27 (dBm/MHz) *4	PK: 68.2(dBμV/m) *1 PK: 105.2 (dBμV/m) *2 PK: 110.8(dBμV/m) *3 PK: 122.2 (dBμV/m) *4
Note: *1 beyond 75 MHz or more above of the band edge. *2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above. *3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above. *4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.		

## TEST SETUP AND PROCEDURE

Below 30 MHz

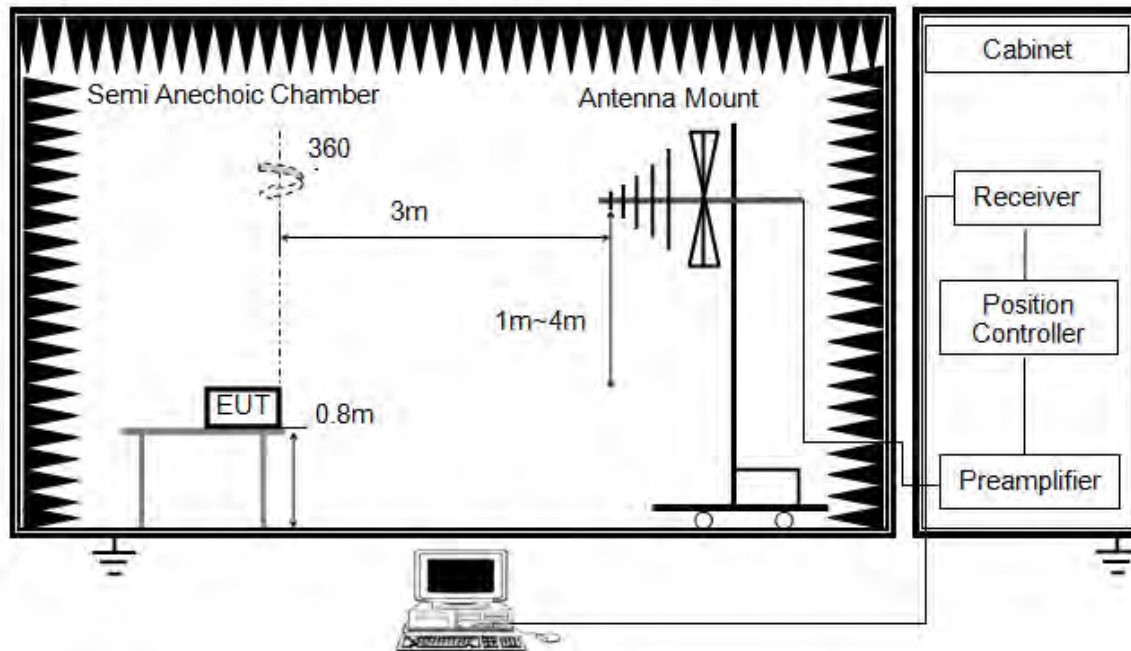


The setting of the spectrum analyser

RBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
VBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
Sweep	Auto
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.4.
2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80 cm above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1 m height antenna tower.
5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
6. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak and average detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak and average detector and reported.
7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30 m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field site based on KDB 414788.

Below 1 GHz and above 30 MHz

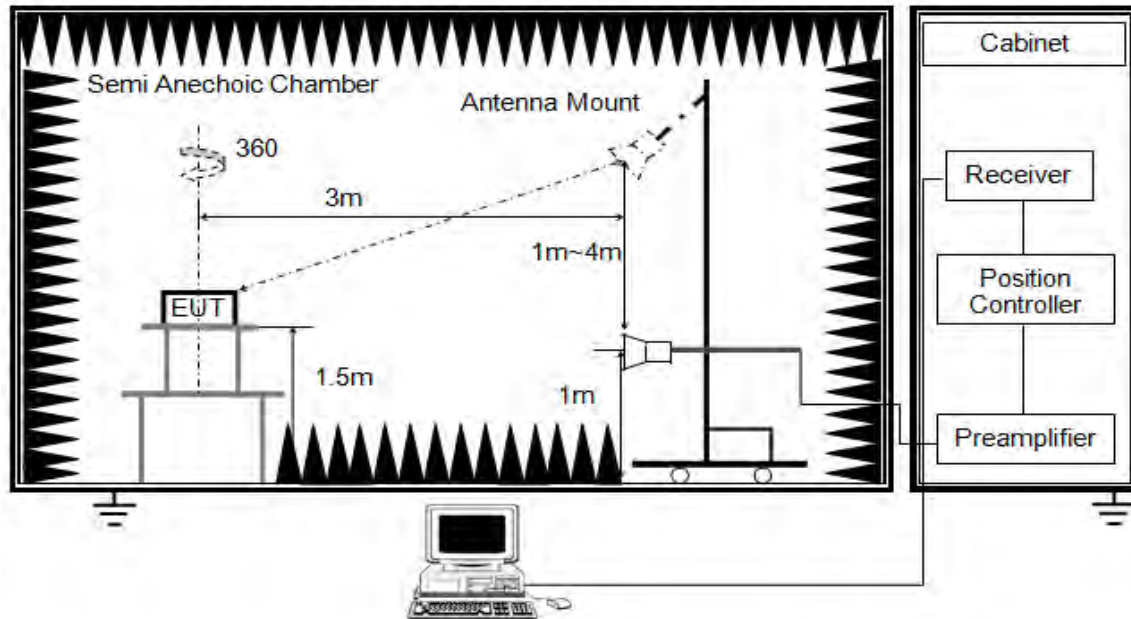


The setting of the spectrum analyser

RBW	120 kHz
VBW	300 kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.5.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80 cm above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

Above 1 GHz



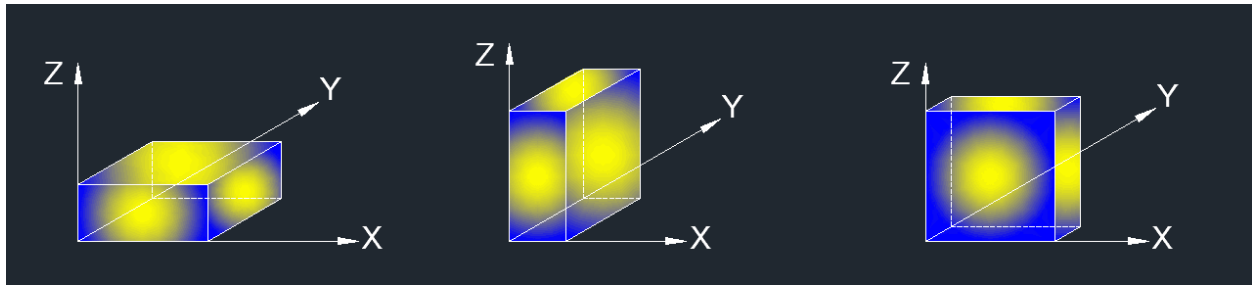
The setting of the spectrum analyser

RBW	1 MHz
VBW	PEAK: 3 MHz AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section II.G.3 ~ II.G.6.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 1.5 m above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement above 1 GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.
6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 7.1.ON TIME AND DUTY CYCLE.



X axis, Y axis, Z axis positions:



Note: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

### **TEST ENVIRONMENT**

Temperature	22.7 °C	Relative Humidity	66.7 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120 V/60 Hz

### **RESULTS**



## 8.1. RESTRICTED BANDEDGE

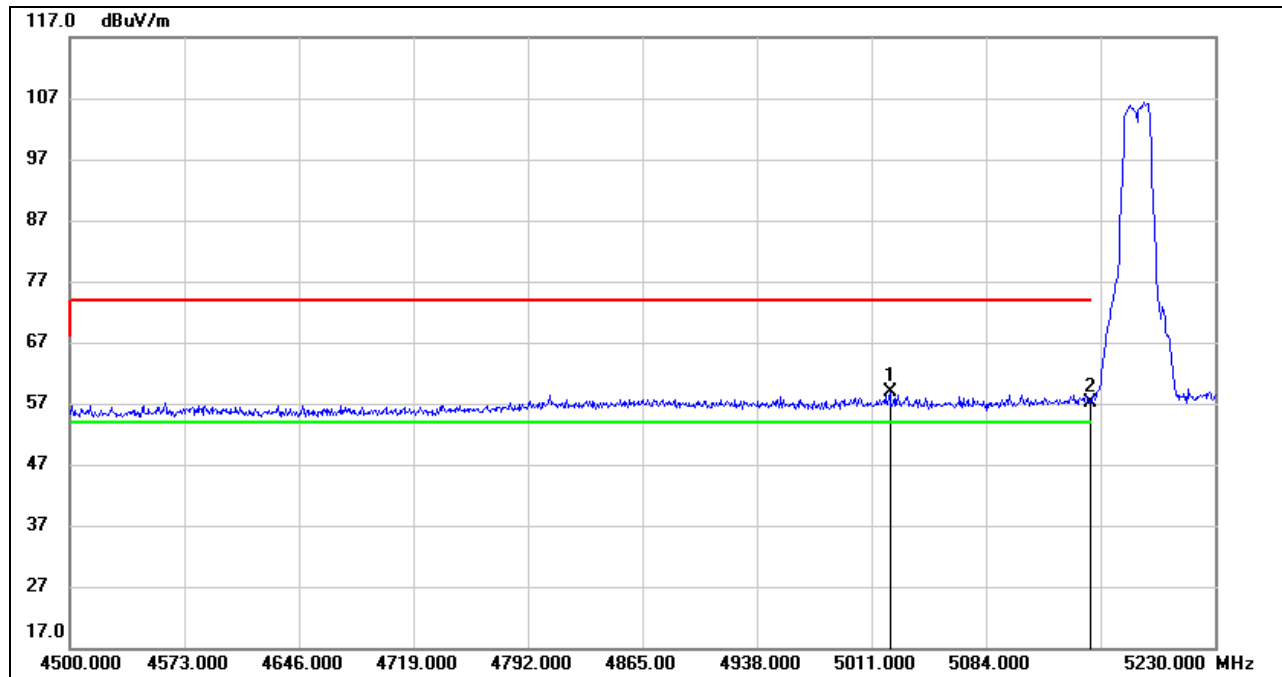
### 8.1.1. 802.11a SISO MODE

#### UNII-1 BAND

#### TEST RESULTS (WORST CASE)

#### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

#### PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5022.680	17.81	40.96	58.77	74.00	-15.23	peak
2	5150.000	16.03	41.19	57.22	74.00	-16.78	peak

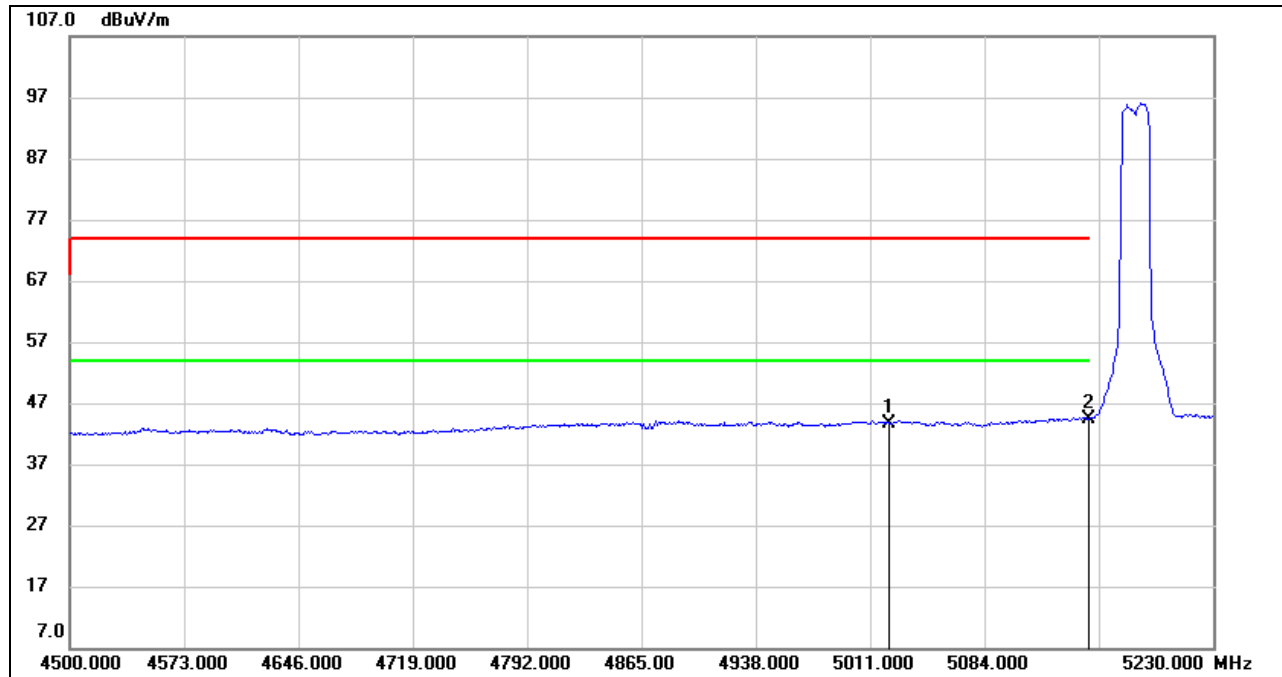
Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

### AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5022.680	2.79	40.96	43.75	54.00	-10.25	AVG
2	5150.000	3.28	41.19	44.47	54.00	-9.53	AVG

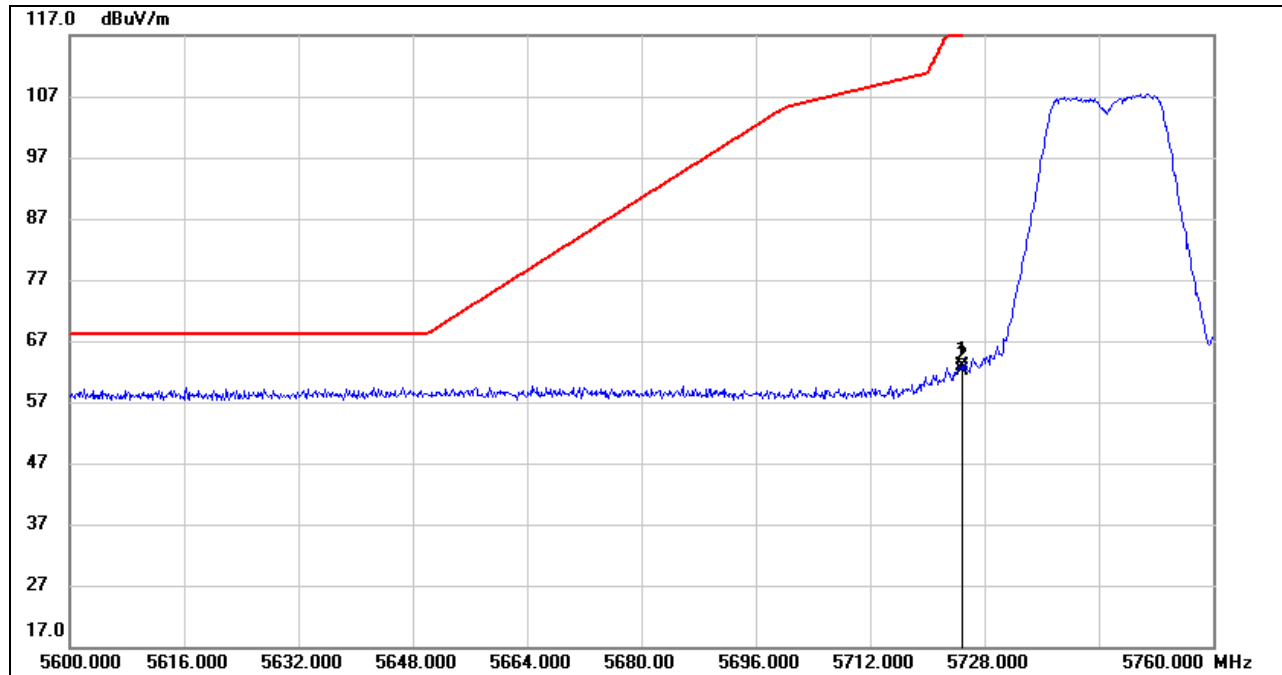
- Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. AVG: VBW=1/Ton, where: Ton is the transmitting duration.  
4. For the transmitting duration, please refer to clause 7.1.  
5. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

# UNII-3 BAND

## TEST RESULTS (WORST CASE)

### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

#### PEAK

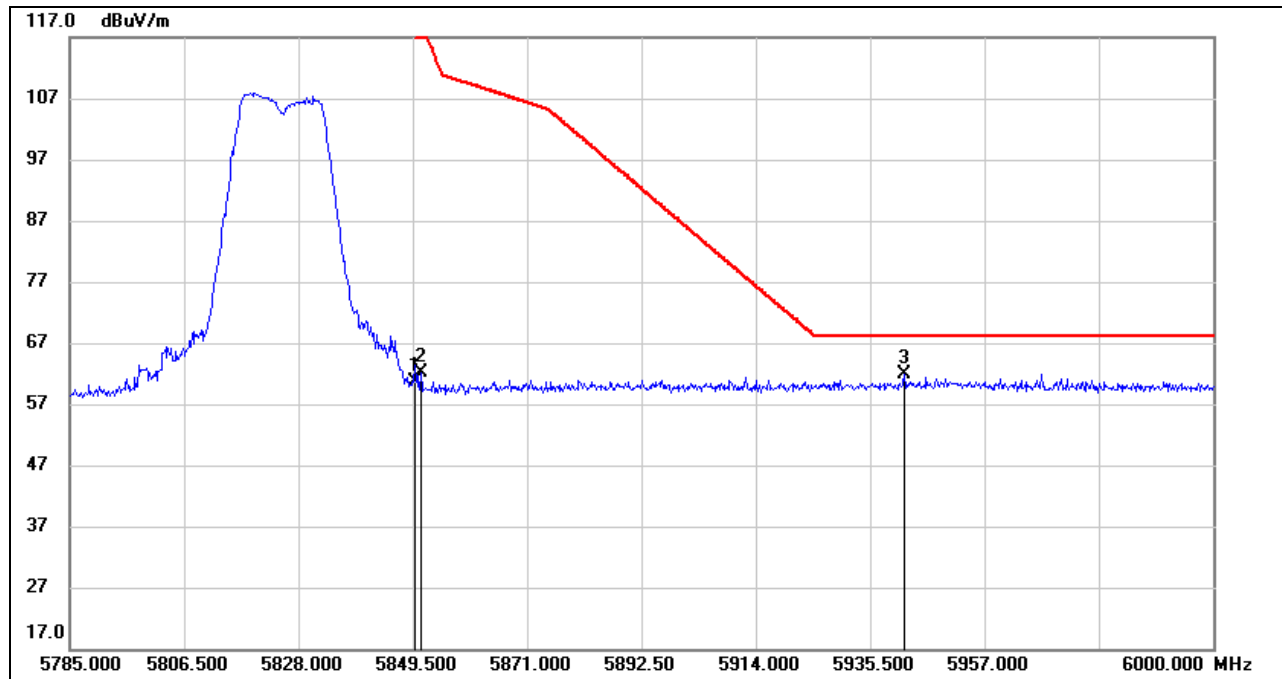


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5724.800	21.32	41.67	62.99	121.74	-58.75	peak
2	5725.000	20.44	41.67	62.11	122.20	-60.09	peak

Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Peak: Peak detector.  
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

# RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

## PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	18.23	42.52	60.75	122.20	-61.45	peak
2	5851.005	19.63	42.53	62.16	119.91	-57.75	peak
3	5941.950	19.01	42.83	61.84	68.20	-6.36	peak

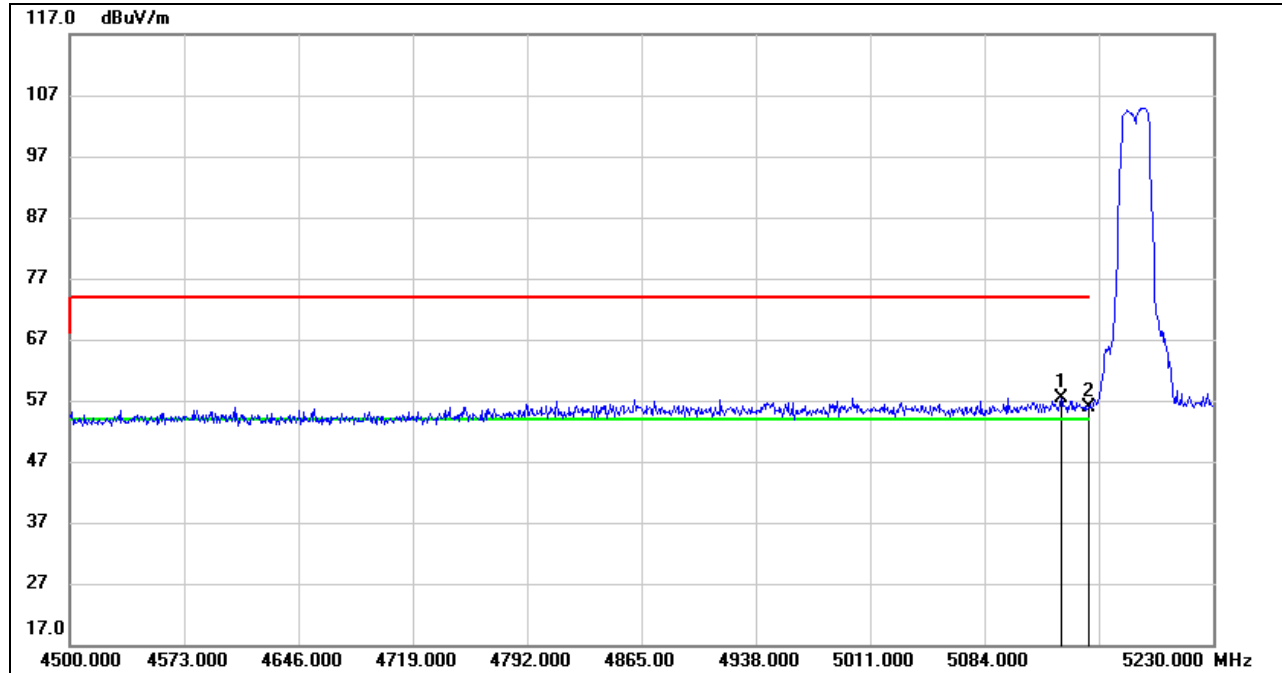
Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Peak: Peak detector.  
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Note: All the modes and antennas had been tested, but only the worst data was recorded in the report.

Note: Both horizontal and vertical had been tested, but only the worst data was recorded in the report.



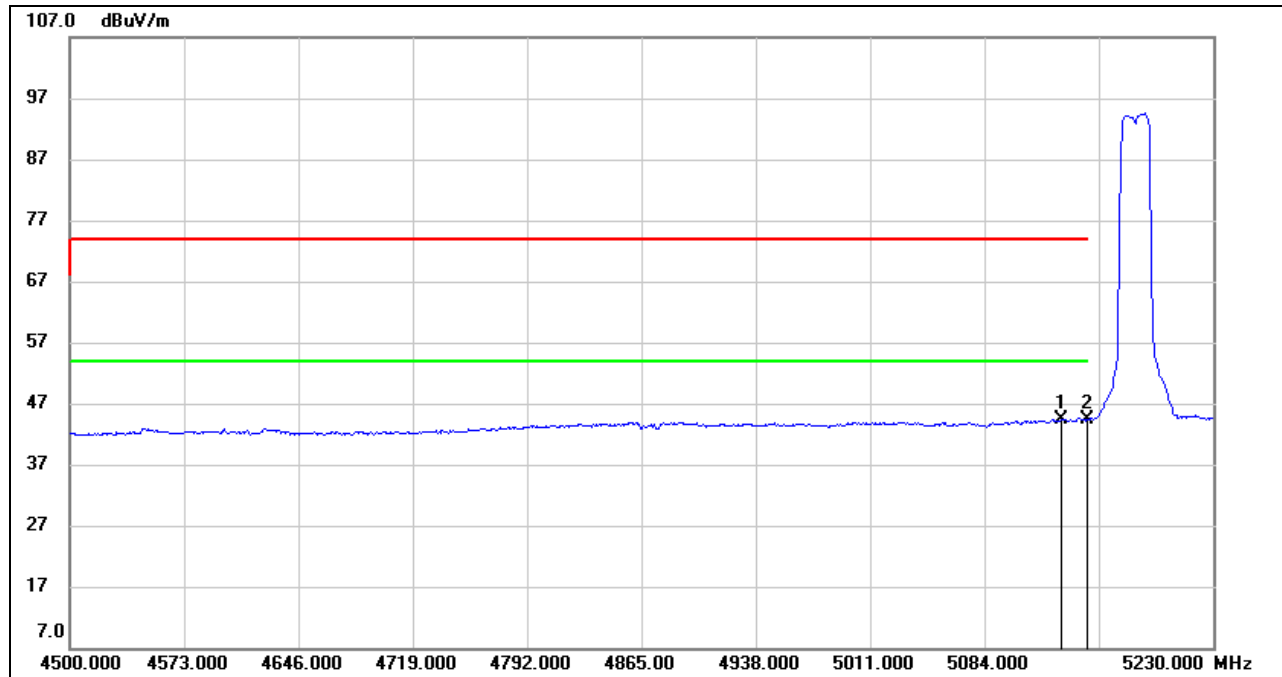
## 8.1.2. 802.11ac VHT20 SISO MODE

UNII-1 BANDRESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)PEAK

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5132.910	16.35	41.04	57.39	74.00	-16.61	peak
2	5150.000	14.70	41.19	55.89	74.00	-18.11	peak

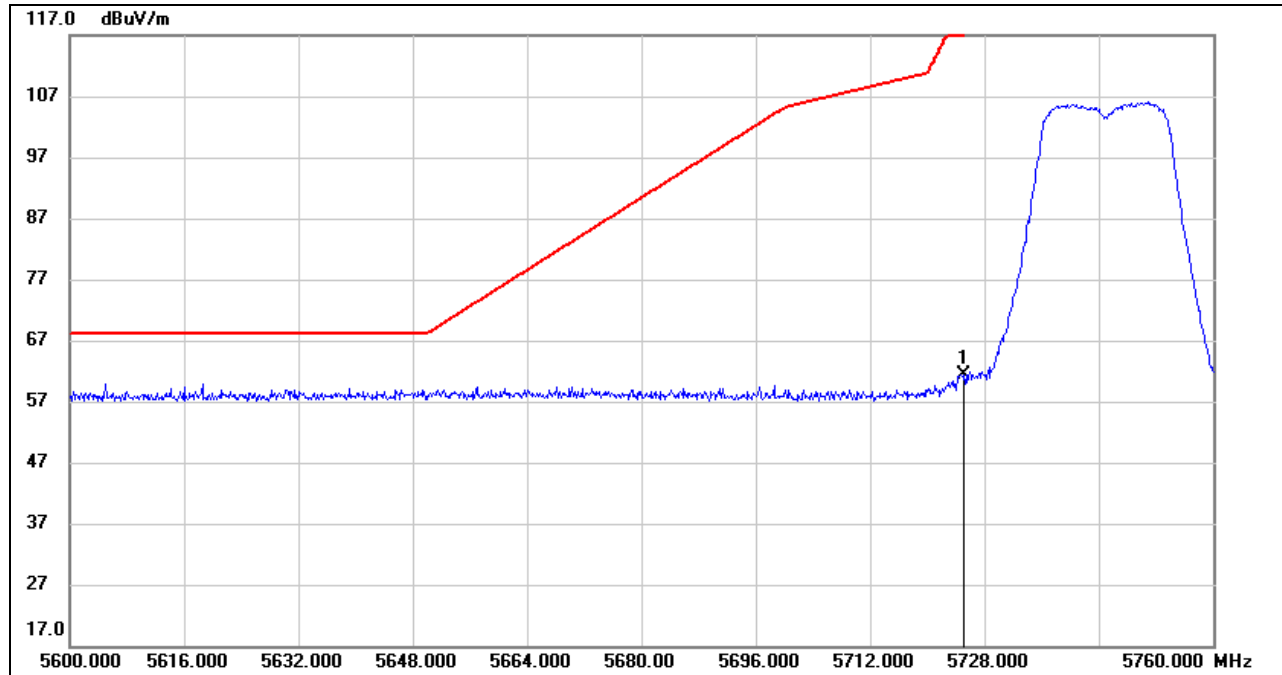
Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Peak: Peak detector.  
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

### AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5132.910	3.24	41.04	44.28	54.00	-9.72	AVG
2	5150.000	3.21	41.19	44.40	54.00	-9.60	AVG

Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. AVG: VBW=1/Ton, where: Ton is the transmitting duration.  
4. For the transmitting duration, please refer to clause 7.1.  
5. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

**UNII-3 BAND****RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)****PEAK**

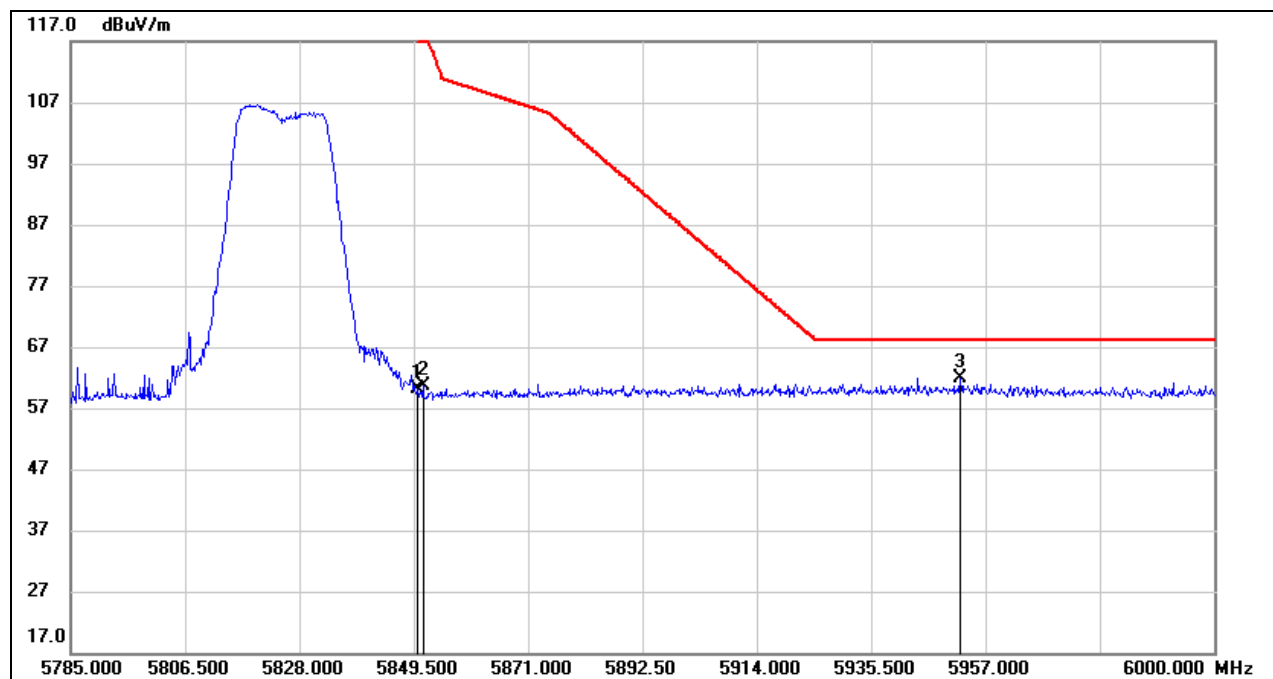
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5725.000	19.76	41.67	61.43	122.20	-60.77	peak

Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Peak: Peak detector.  
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



# RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

## PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	17.51	42.52	60.03	122.20	-62.17	peak
2	5851.220	18.18	42.54	60.72	119.42	-58.70	peak
3	5952.270	19.21	42.78	61.99	68.20	-6.21	peak

Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Peak: Peak detector.  
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Note: All the modes and antennas had been tested, but only the worst data was recorded in the report.

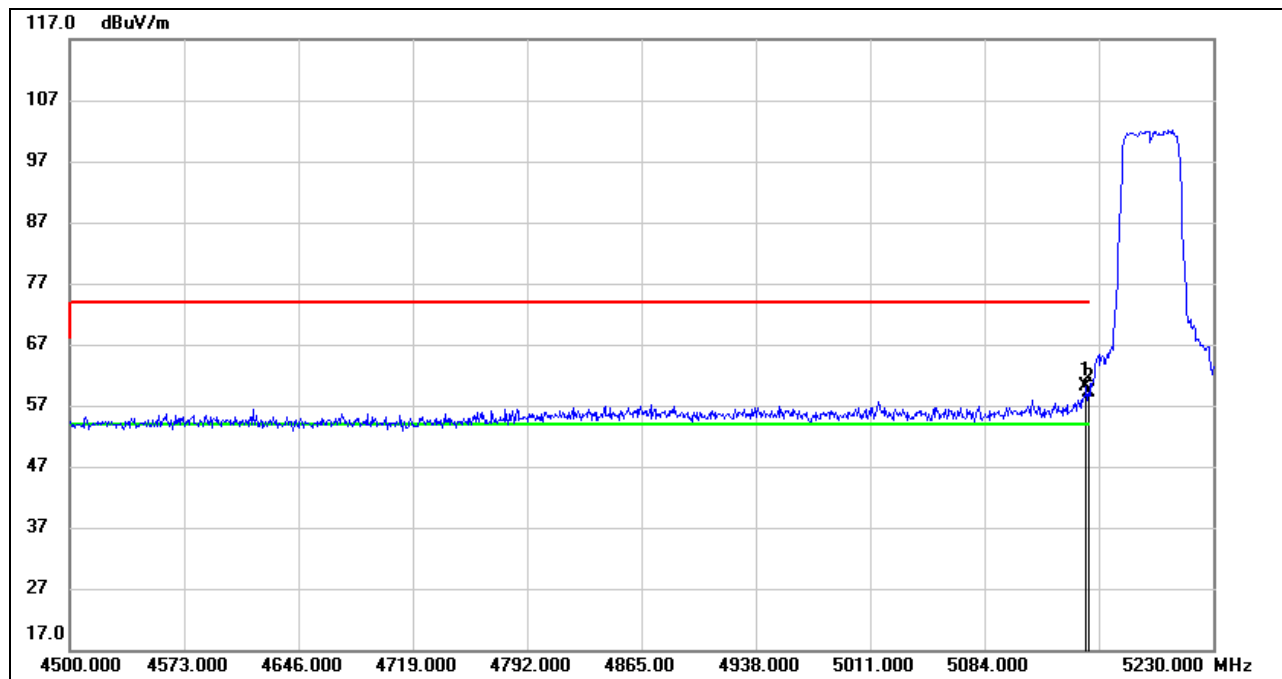
Note: Both horizontal and vertical had been tested, but only the worst data was recorded in the report.

### 8.1.3. 802.11ac VHT40 SISO MODE

#### UNII-1 BAND

#### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

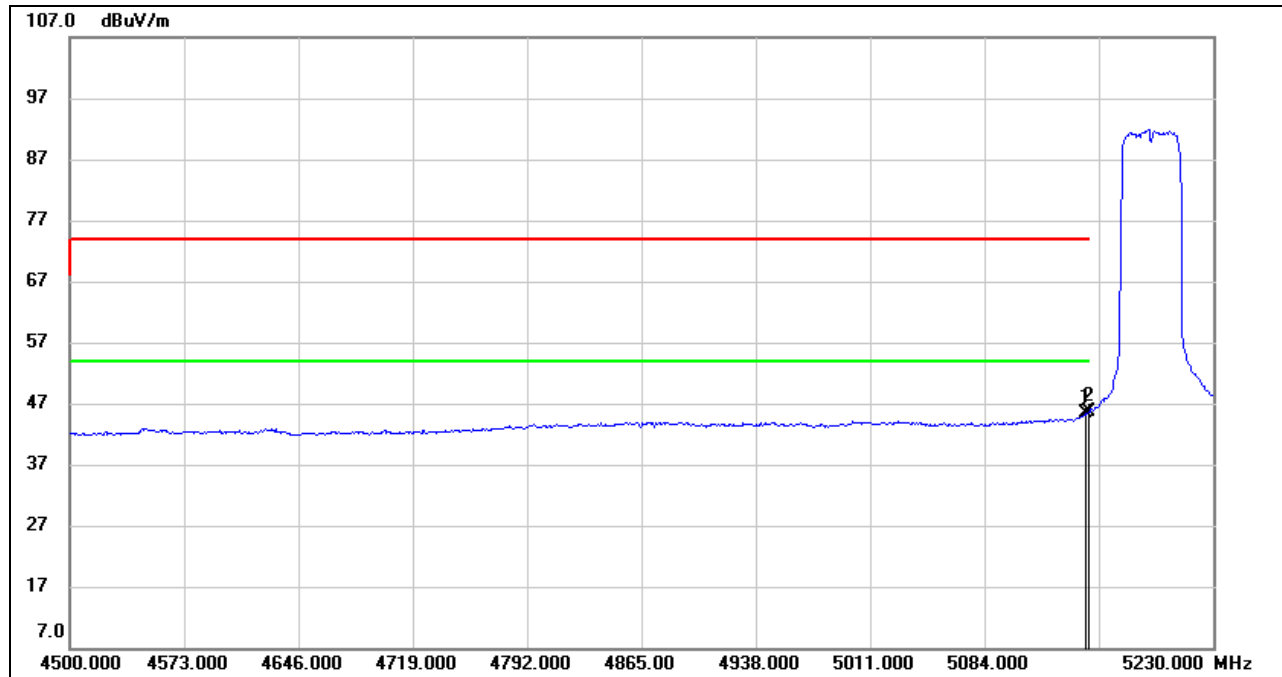
#### PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5148.970	18.97	41.18	60.15	74.00	-13.85	peak
2	5150.000	18.03	41.19	59.22	74.00	-14.78	peak

Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Peak: Peak detector.  
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

### AVG



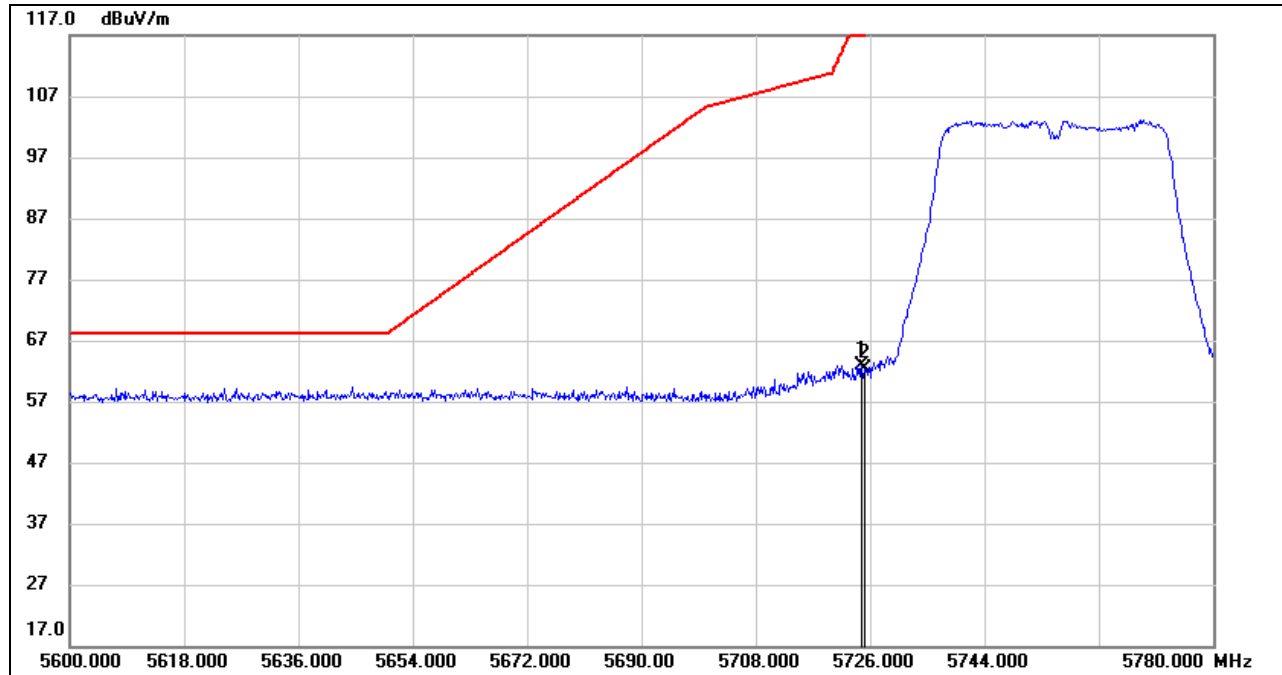
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5148.970	4.14	41.18	45.32	54.00	-8.68	AVG
2	5150.000	4.45	41.19	45.64	54.00	-8.36	AVG

Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. AVG: VBW=1/Ton, where: Ton is the transmitting duration.  
4. For the transmitting duration, please refer to clause 7.1.  
5. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

## UNII-3 BAND

### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

#### PEAK

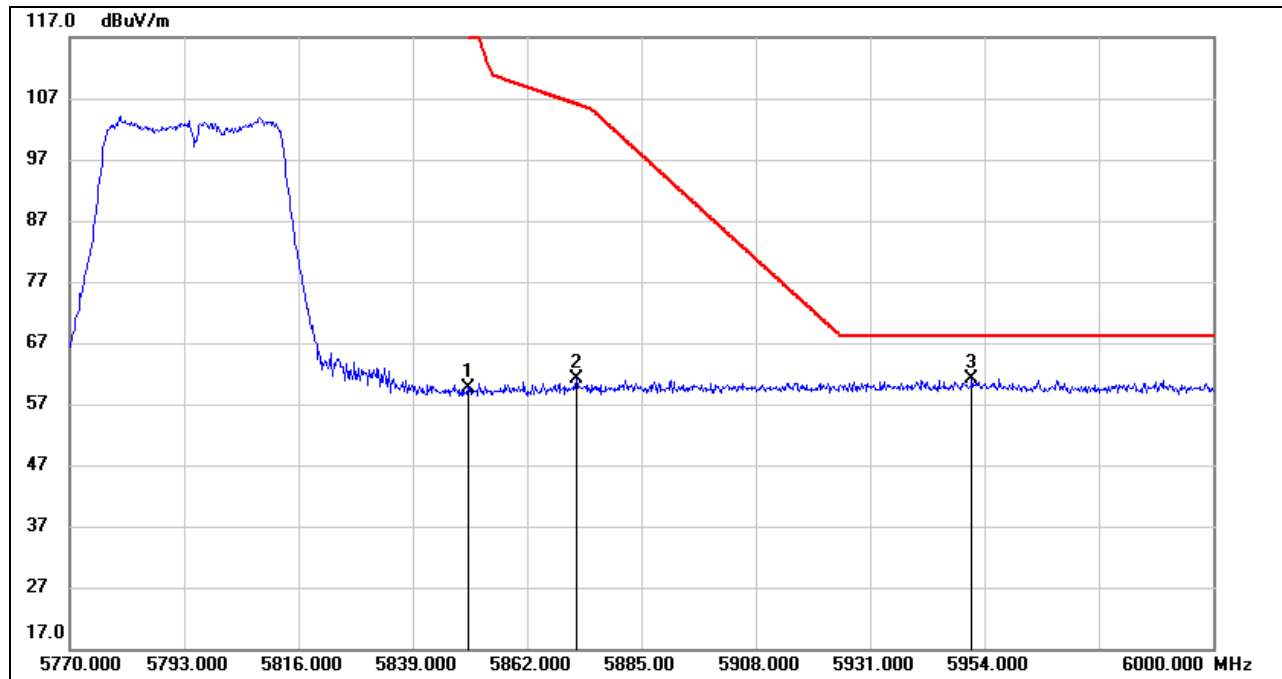


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5724.740	21.31	41.67	62.98	121.61	-58.63	peak
2	5725.000	20.68	41.67	62.35	122.20	-59.85	peak

Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Peak: Peak detector.  
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

# RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

## PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	17.15	42.52	59.67	122.20	-62.53	peak
2	5871.890	18.33	42.75	61.08	106.07	-44.99	peak
3	5951.470	18.39	42.79	61.18	68.20	-7.02	peak

Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Peak: Peak detector.  
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Note: All the modes and antennas had been tested, but only the worst data was recorded in the report.

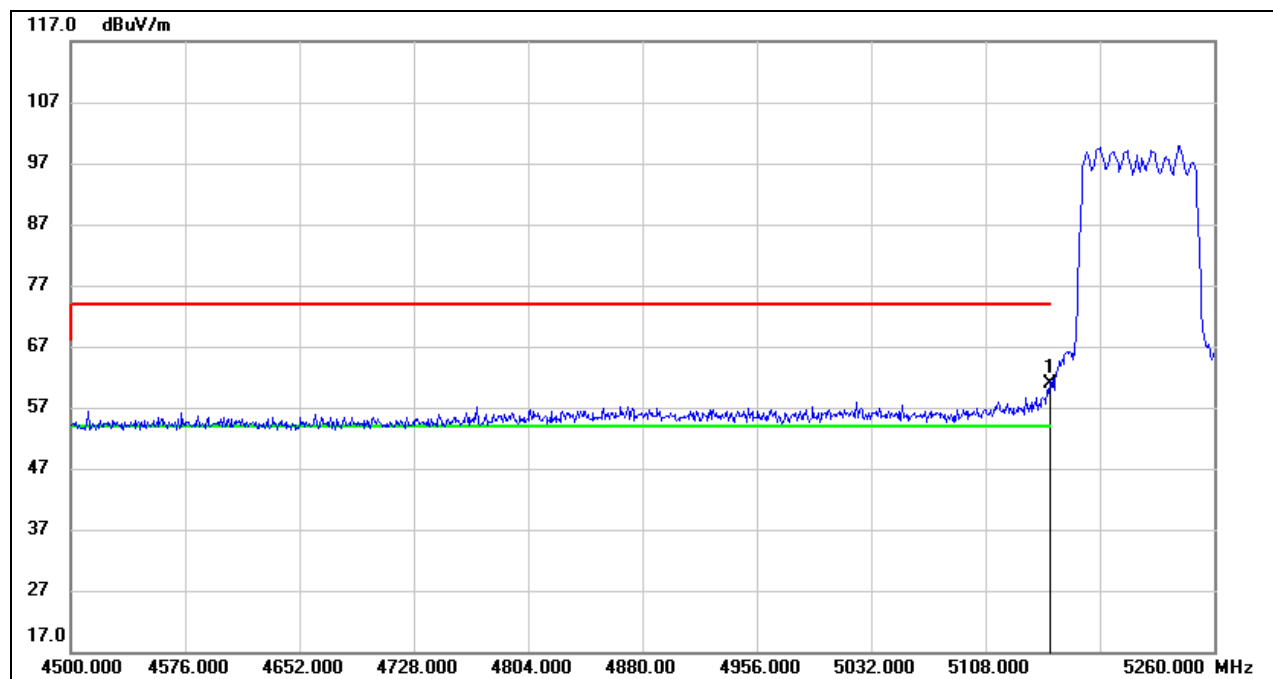
Note: Both horizontal and vertical had been tested, but only the worst data was recorded in the report.

# 8.1.4. 802.11ac VHT80 SISO MODE

## UNII-1 BAND

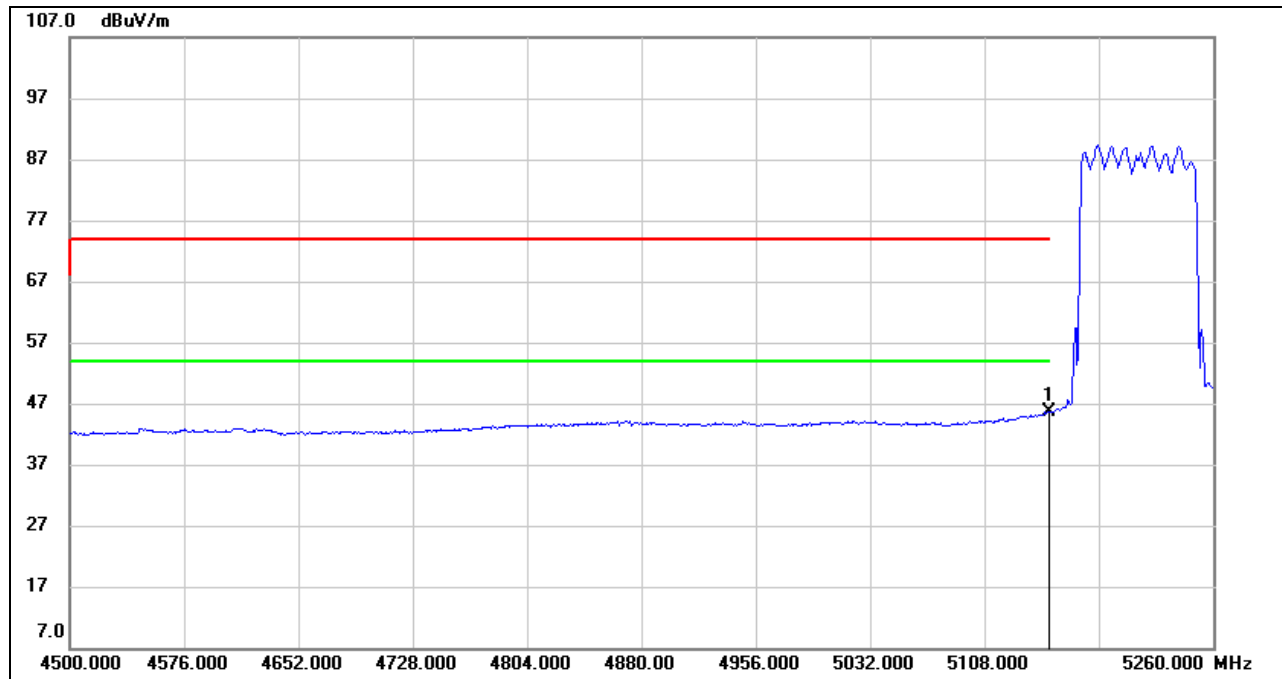
### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

#### PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5150.000	19.70	41.19	60.89	74.00	-13.11	peak

Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Peak: Peak detector.  
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

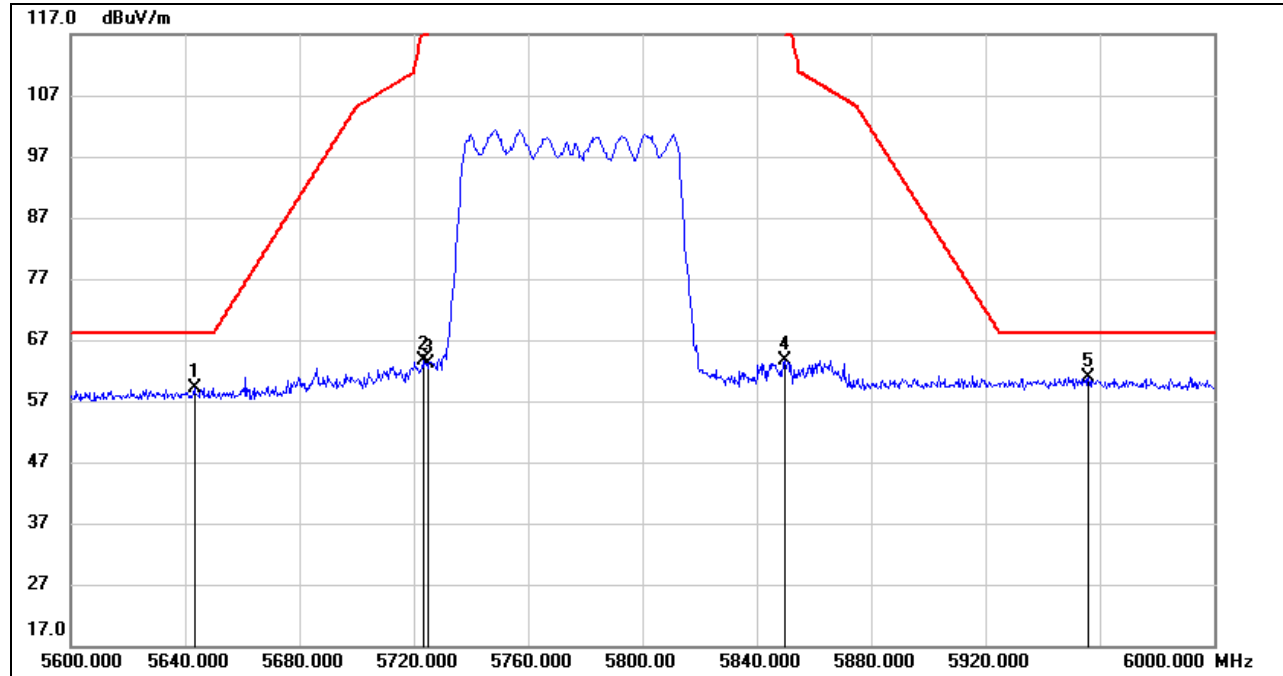
**AVG**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5150.000	4.33	41.19	45.52	54.00	-8.48	AVG

Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. AVG:  $VBW=1/T_{on}$ , where:  $T_{on}$  is the transmitting duration.  
4. For the transmitting duration, please refer to clause 7.1.  
5. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

## UNII-3 BAND

### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5643.200	17.54	41.65	59.19	68.20	-9.01	peak
2	5723.200	22.00	41.66	63.66	118.10	-54.44	peak
3	5725.000	21.51	41.67	63.18	122.20	-59.02	peak
4	5850.000	21.20	42.52	63.72	122.20	-58.48	peak
5	5956.000	18.06	42.77	60.83	68.20	-7.37	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Note: All the modes and antennas had been tested, but only the worst data was recorded in the report.

Note: Both horizontal and vertical had been tested, but only the worst data was recorded in the report.



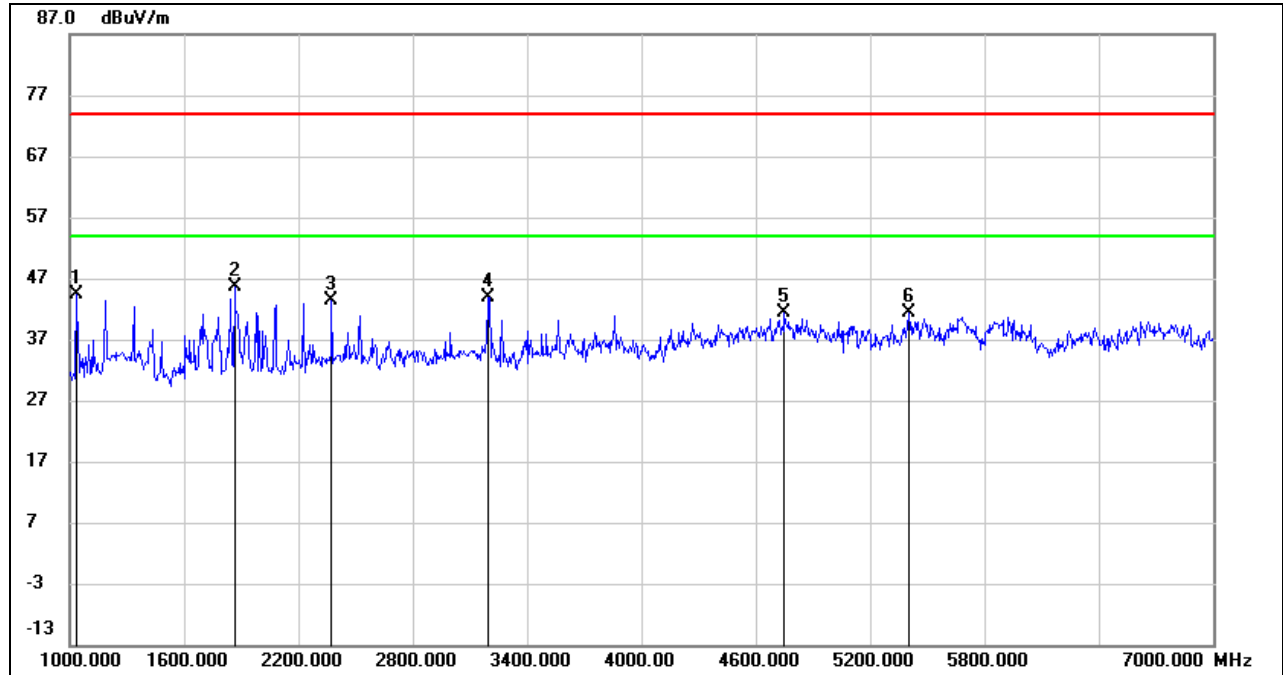
## 8.2. SPURIOUS EMISSIONS (1 GHz ~ 7 GHz)

### 8.2.1. 802.11a SISO MODE

#### TEST RESULTS (WORST CASE)

#### UNII-1 BAND

#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1036.000	58.25	-13.81	44.44	74.00	-29.56	peak
2	1864.000	55.65	-10.10	45.55	74.00	-28.45	peak
3	2374.000	51.91	-8.48	43.43	74.00	-30.57	peak
4	3196.000	49.13	-5.25	43.88	74.00	-30.12	peak
5	4750.000	41.17	0.30	41.47	74.00	-32.53	peak
6	5404.000	39.40	1.89	41.29	74.00	-32.71	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

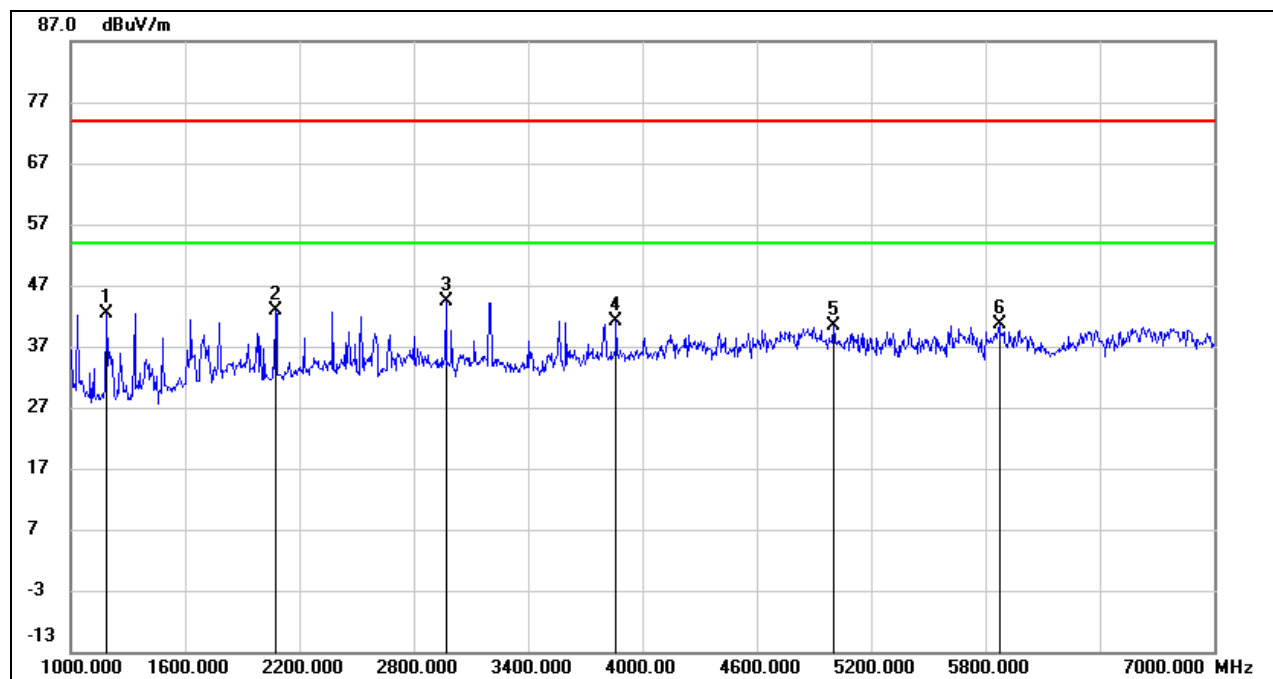
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1186.000	55.41	-13.07	42.34	74.00	-31.66	peak
2	2074.000	52.56	-9.77	42.79	74.00	-31.21	peak
3	2968.000	50.13	-5.75	44.38	74.00	-29.62	peak
4	3862.000	44.62	-3.37	41.25	74.00	-32.75	peak
5	5002.000	39.51	0.91	40.42	74.00	-33.58	peak
6	5872.000	37.80	2.80	40.60	74.00	-33.40	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

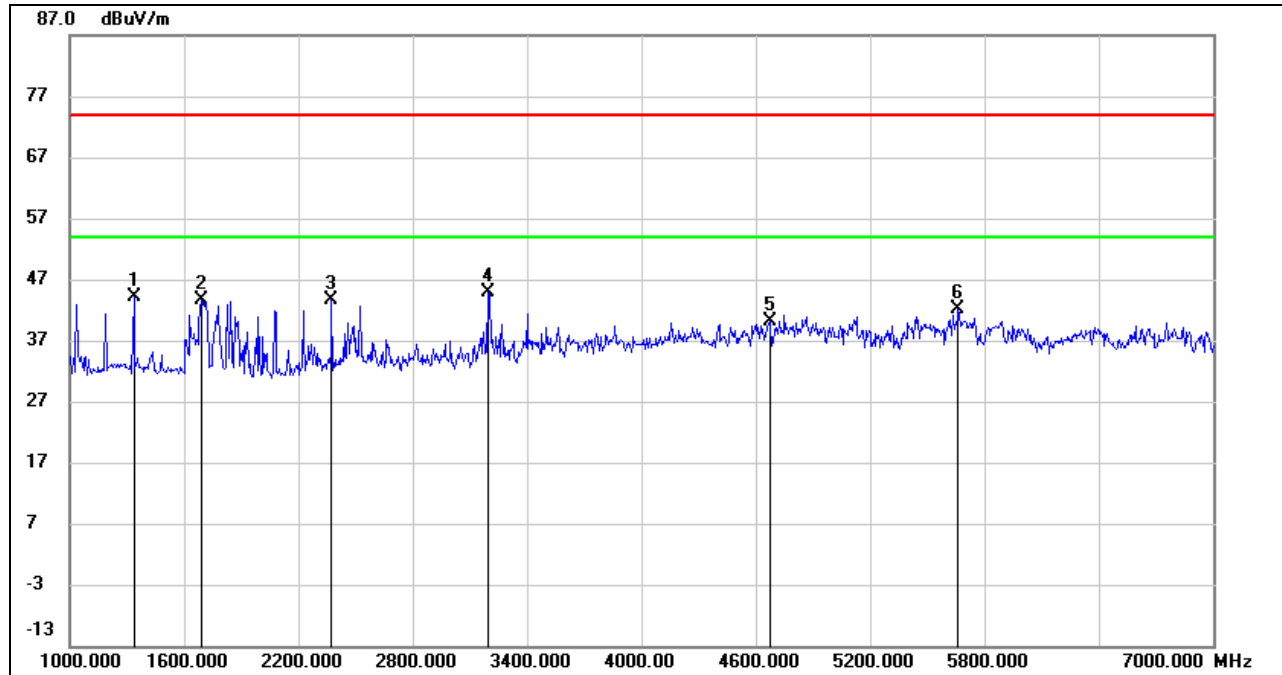
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1336.000	56.89	-12.80	44.09	74.00	-29.91	peak
2	1690.000	54.52	-10.87	43.65	74.00	-30.35	peak
3	2374.000	52.05	-8.48	43.57	74.00	-30.43	peak
4	3196.000	50.06	-5.25	44.81	74.00	-29.19	peak
5	4672.000	40.34	-0.15	40.19	74.00	-33.81	peak
6	5662.000	39.60	2.47	42.07	74.00	-31.93	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

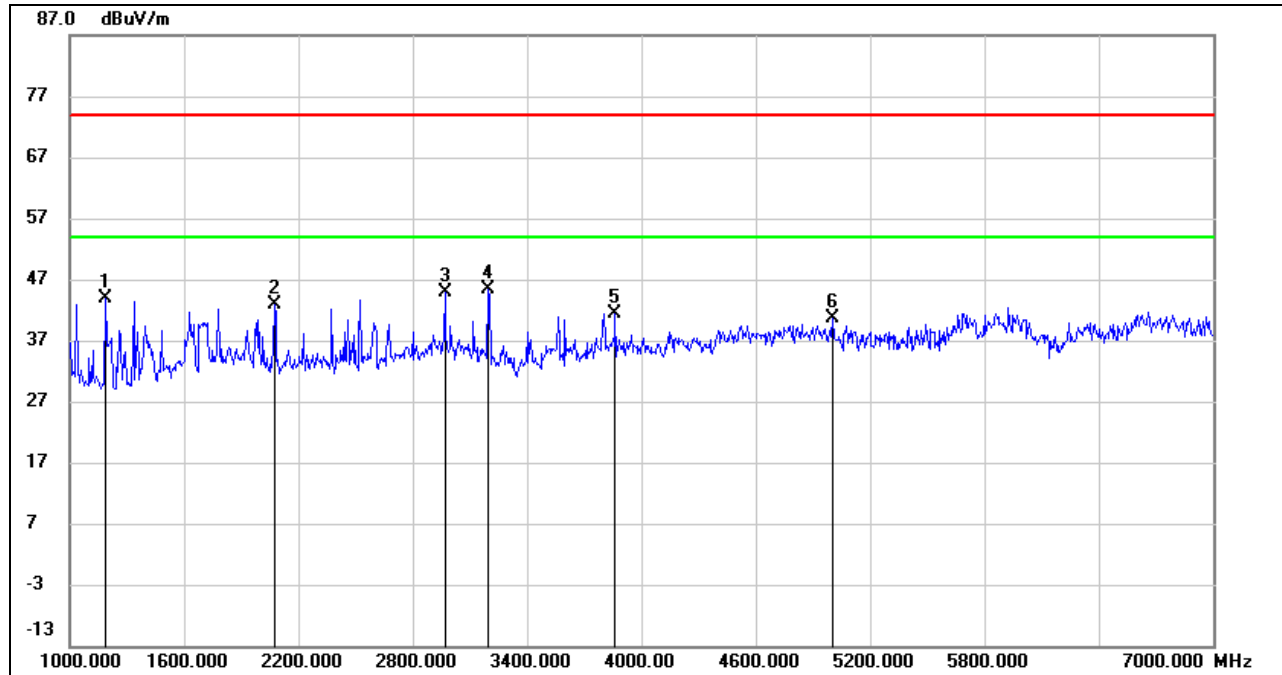
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1186.000	57.02	-13.07	43.95	74.00	-30.05	peak
2	2074.000	52.62	-9.77	42.85	74.00	-31.15	peak
3	2968.000	50.74	-5.75	44.99	74.00	-29.01	peak
4	3196.000	50.68	-5.25	45.43	74.00	-28.57	peak
5	3862.000	44.83	-3.37	41.46	74.00	-32.54	peak
6	5002.000	39.73	0.91	40.64	74.00	-33.36	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

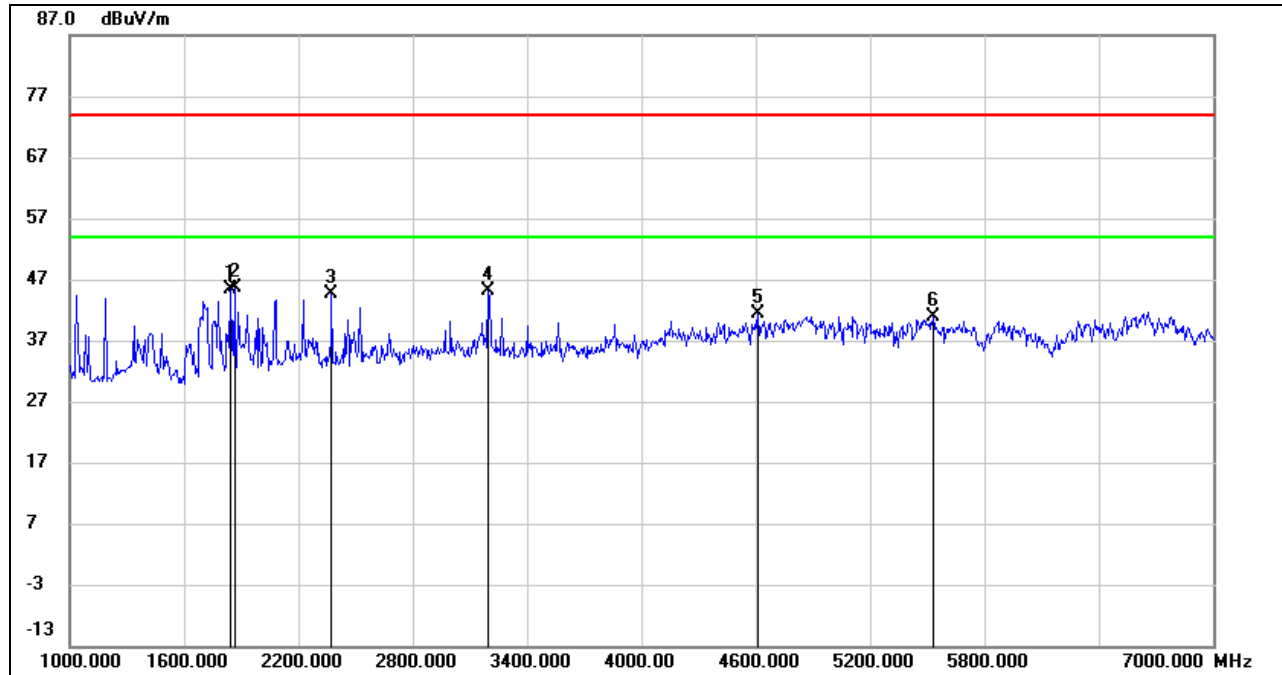
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

## HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1846.000	55.35	-10.09	45.26	74.00	-28.74	peak
2	1864.000	55.78	-10.10	45.68	74.00	-28.32	peak
3	2374.000	53.14	-8.48	44.66	74.00	-29.34	peak
4	3196.000	50.40	-5.25	45.15	74.00	-28.85	peak
5	4612.000	41.79	-0.49	41.30	74.00	-32.70	peak
6	5530.000	38.55	2.25	40.80	74.00	-33.20	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

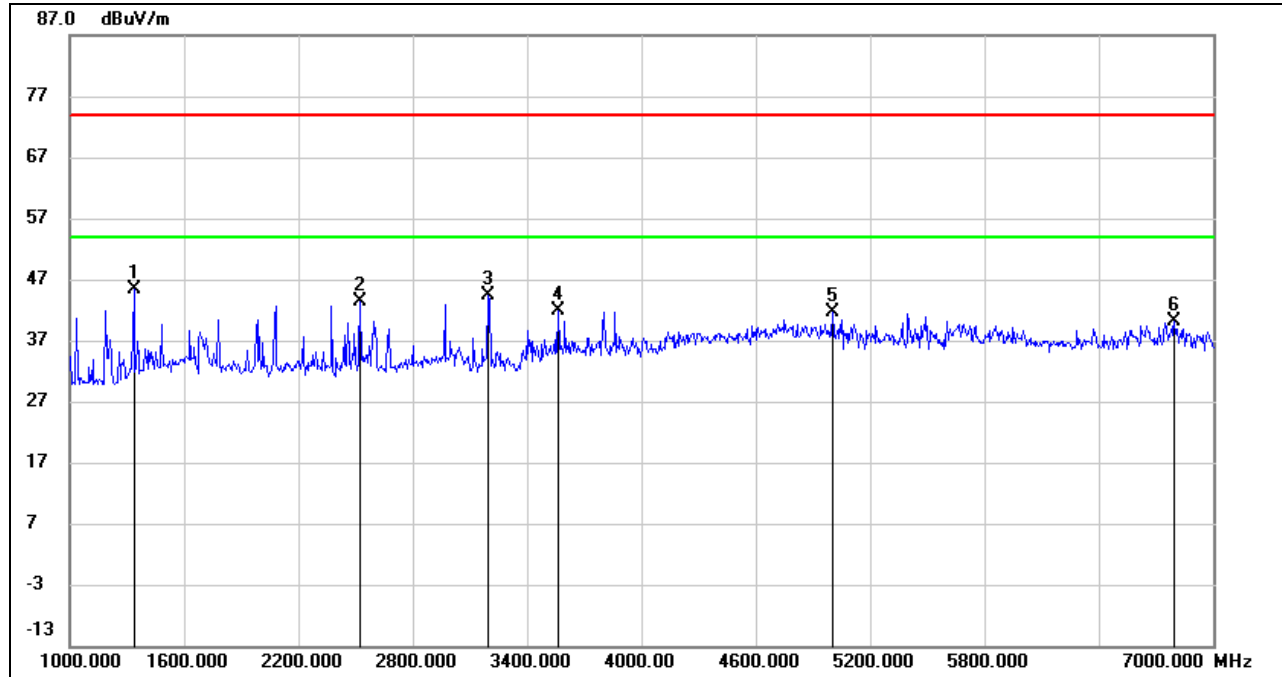
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1336.000	58.10	-12.80	45.30	74.00	-28.70	peak
2	2524.000	51.58	-8.13	43.45	74.00	-30.55	peak
3	3196.000	49.52	-5.25	44.27	74.00	-29.73	peak
4	3562.000	46.31	-4.39	41.92	74.00	-32.08	peak
5	5002.000	40.81	0.91	41.72	74.00	-32.28	peak
6	6796.000	34.58	5.57	40.15	74.00	-33.85	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

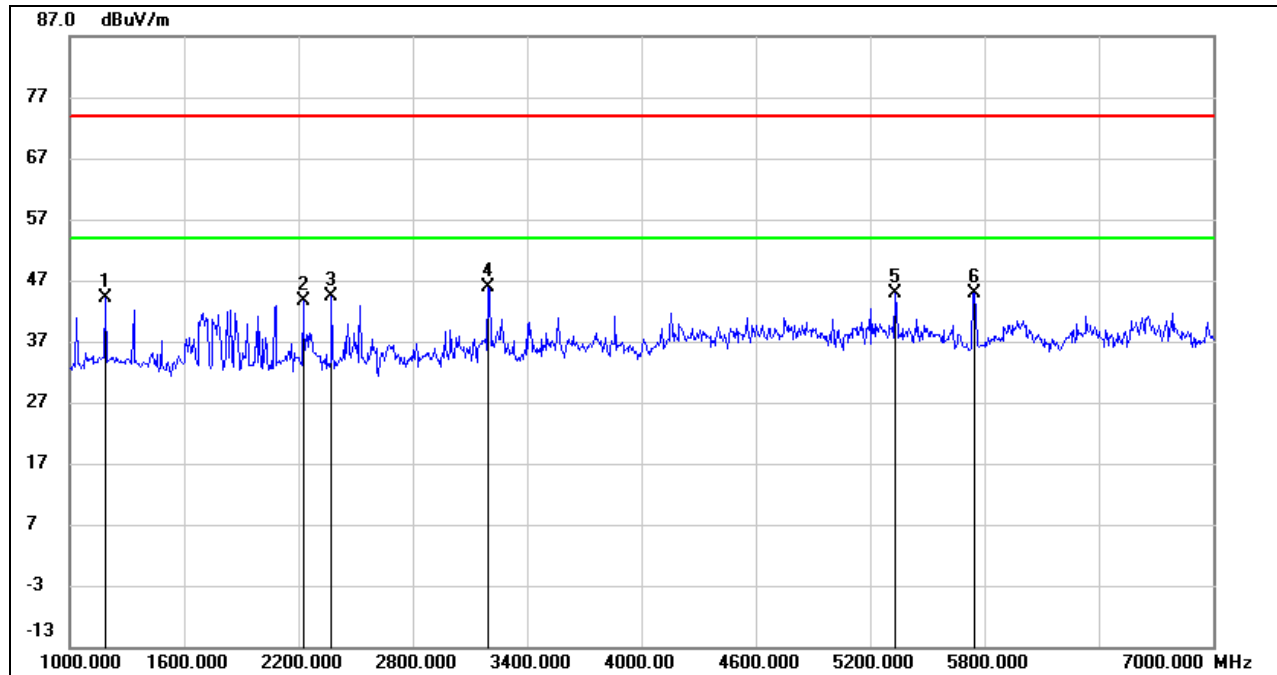
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

Note: All the modes and antennas had been tested, but only the worst data was recorded in the report.

**UNII-3 BAND****HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1186.000	57.11	-13.07	44.04	74.00	-29.96	peak
2	2224.000	52.61	-8.97	43.64	74.00	-30.36	peak
3	2374.000	52.93	-8.48	44.45	74.00	-29.55	peak
4	3196.000	51.20	-5.25	45.95	74.00	-28.05	peak
5	5332.000	43.02	1.95	44.97	74.00	-29.03	peak
6	5746.000	42.44	2.50	44.94	74.00	-29.06	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

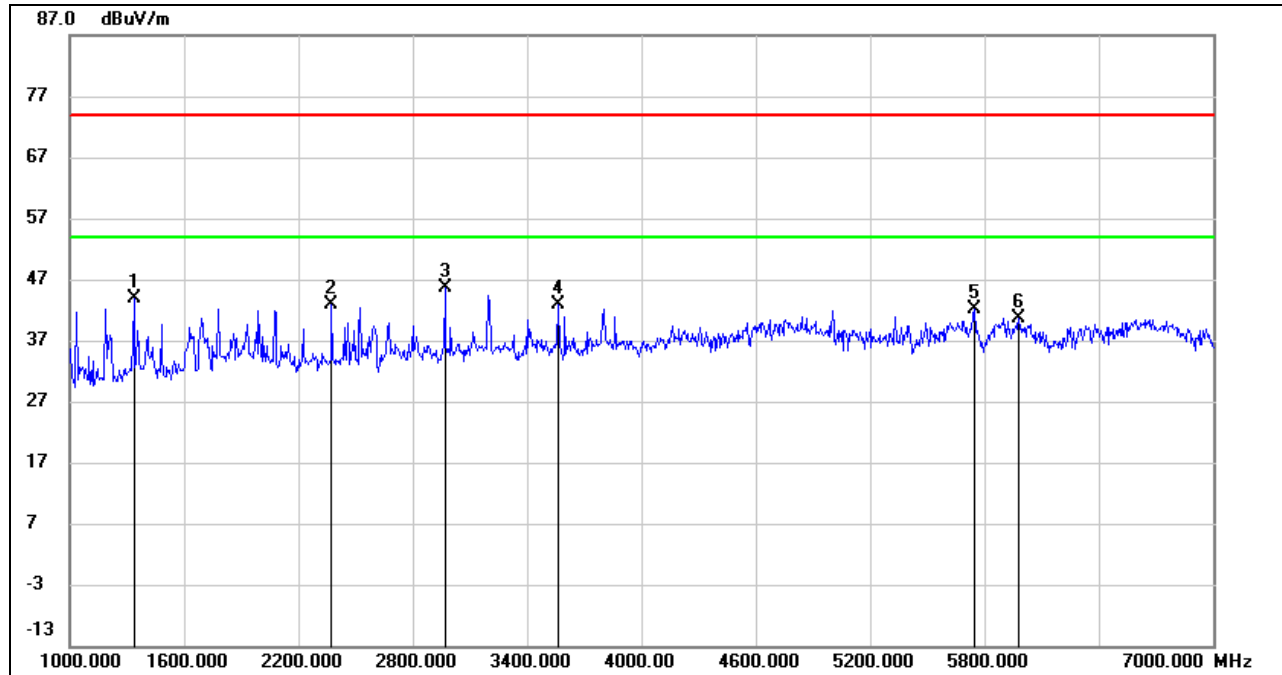
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1336.000	56.71	-12.80	43.91	74.00	-30.09	peak
2	2374.000	51.27	-8.48	42.79	74.00	-31.21	peak
3	2968.000	51.39	-5.75	45.64	74.00	-28.36	peak
4	3562.000	47.18	-4.39	42.79	74.00	-31.21	peak
5	5746.000	39.58	2.50	42.08	74.00	-31.92	peak
6	5980.000	37.45	3.22	40.67	74.00	-33.33	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

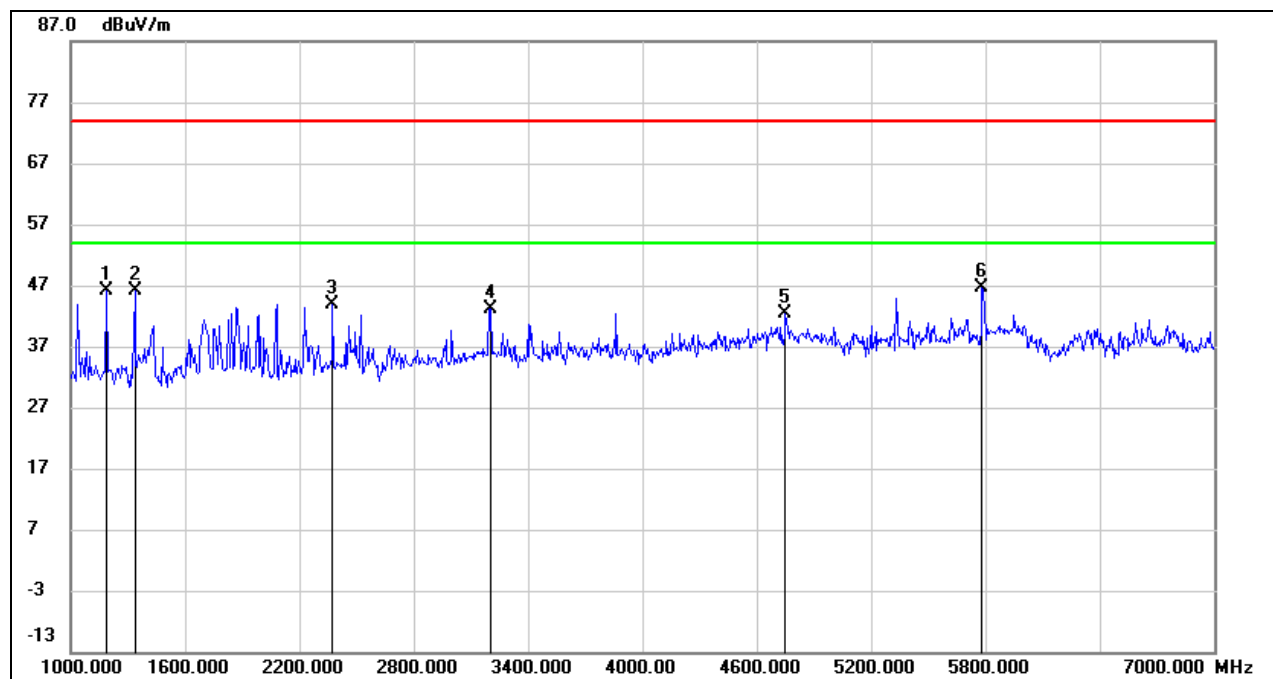
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.



### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1186.000	59.23	-13.07	46.16	74.00	-27.84	peak
2	1336.000	58.91	-12.80	46.11	74.00	-27.89	peak
3	2374.000	52.38	-8.48	43.90	74.00	-30.10	peak
4	3202.000	48.33	-5.25	43.08	74.00	-30.92	peak
5	4750.000	42.15	0.30	42.45	74.00	-31.55	peak
6	5782.000	44.01	2.50	46.51	74.00	-27.49	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

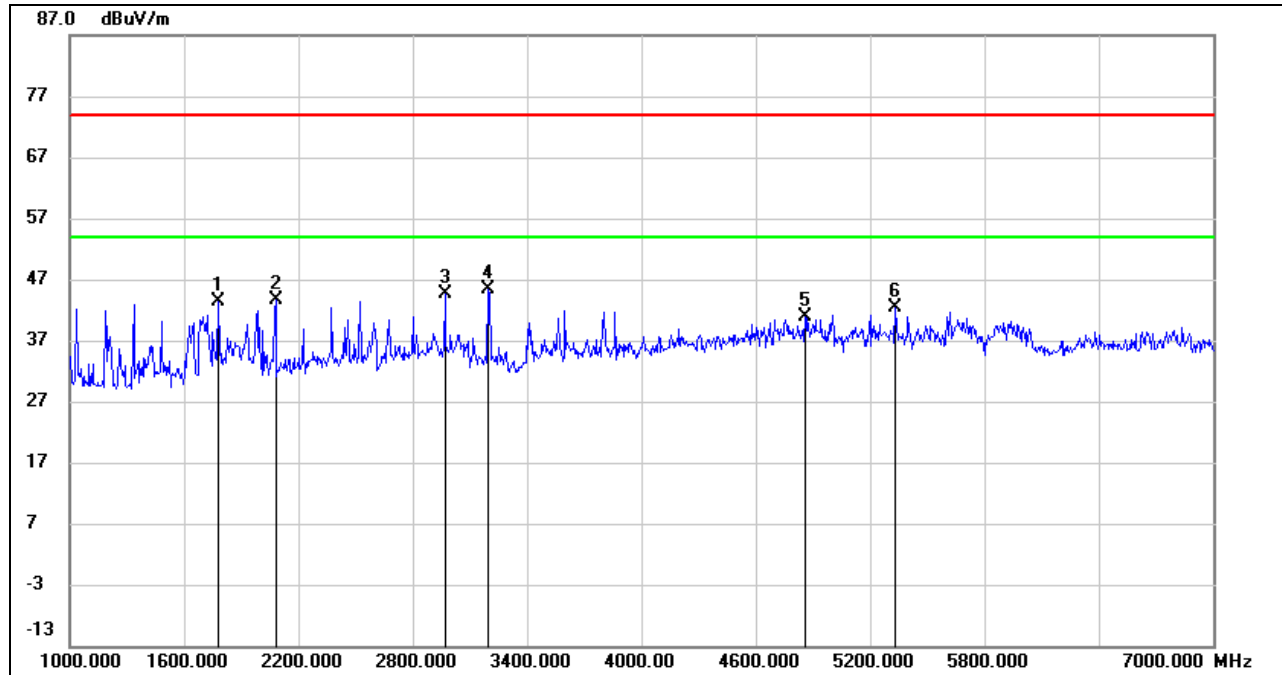
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1780.000	53.65	-10.20	43.45	74.00	-30.55	peak
2	2080.000	53.37	-9.73	43.64	74.00	-30.36	peak
3	2968.000	50.47	-5.75	44.72	74.00	-29.28	peak
4	3196.000	50.57	-5.25	45.32	74.00	-28.68	peak
5	4858.000	40.12	0.68	40.80	74.00	-33.20	peak
6	5332.000	40.54	1.95	42.49	74.00	-31.51	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

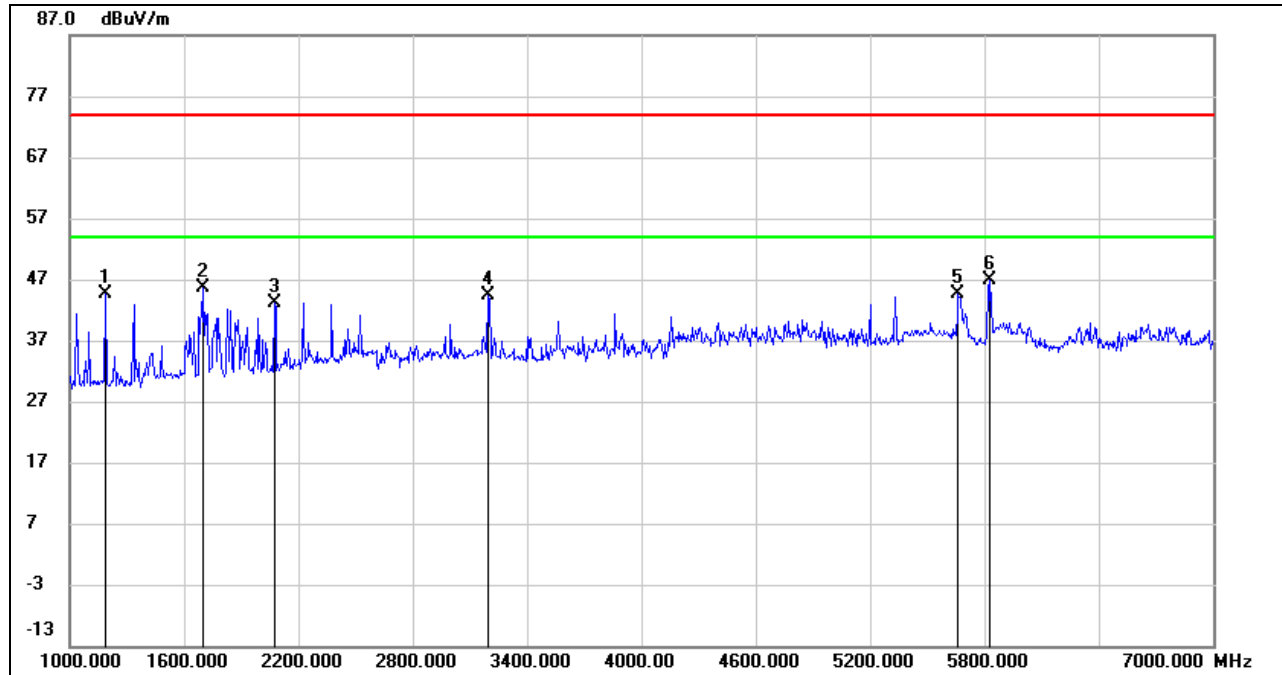
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1186.000	57.66	-13.07	44.59	74.00	-29.41	peak
2	1702.000	56.42	-10.79	45.63	74.00	-28.37	peak
3	2074.000	52.91	-9.77	43.14	74.00	-30.86	peak
4	3196.000	49.67	-5.25	44.42	74.00	-29.58	peak
5	5662.000	42.09	2.47	44.56	74.00	-29.44	peak
6	5825.000	44.15	2.61	46.76	74.00	-27.24	peak

Note: 1. Measurement = Reading Level + Correct Factor.

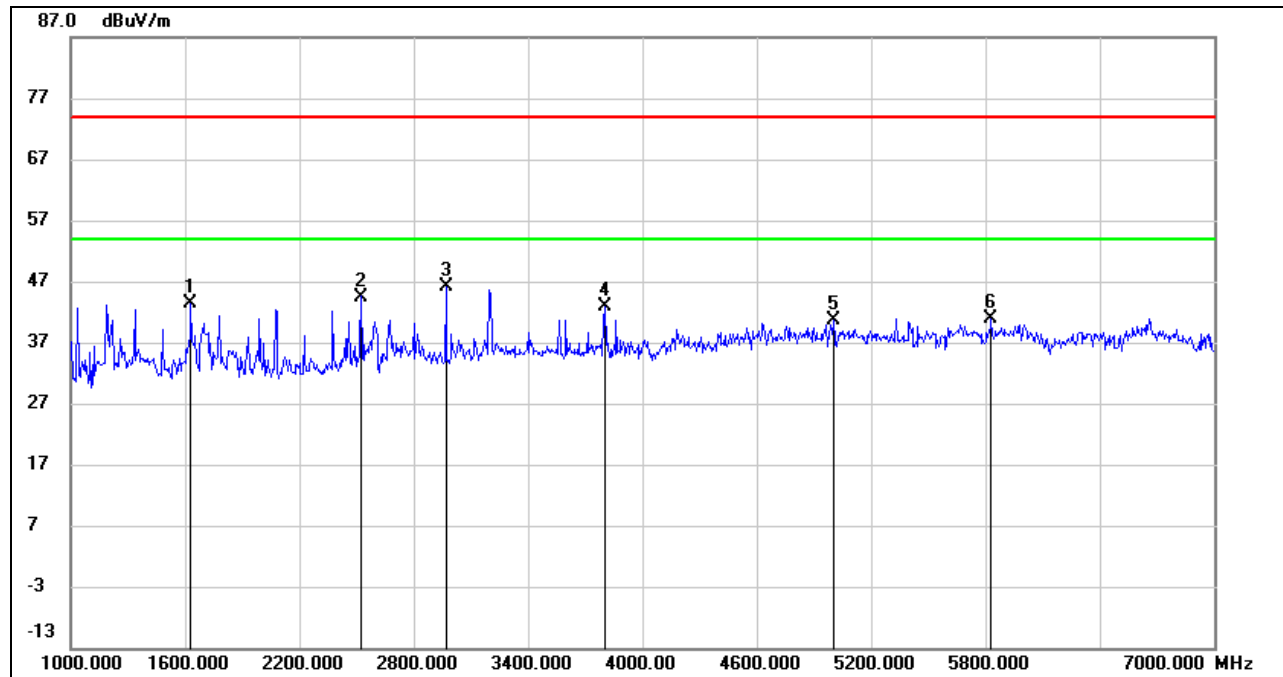
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

**HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1630.000	54.59	-11.33	43.26	74.00	-30.74	peak
2	2524.000	52.63	-8.13	44.50	74.00	-29.50	peak
3	2968.000	51.97	-5.75	46.22	74.00	-27.78	peak
4	3802.000	46.09	-3.27	42.82	74.00	-31.18	peak
5	5002.000	39.76	0.91	40.67	74.00	-33.33	peak
6	5830.000	38.32	2.63	40.95	74.00	-33.05	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

Note: All the modes and antennas had been tested, but only the worst data was recorded in the report.

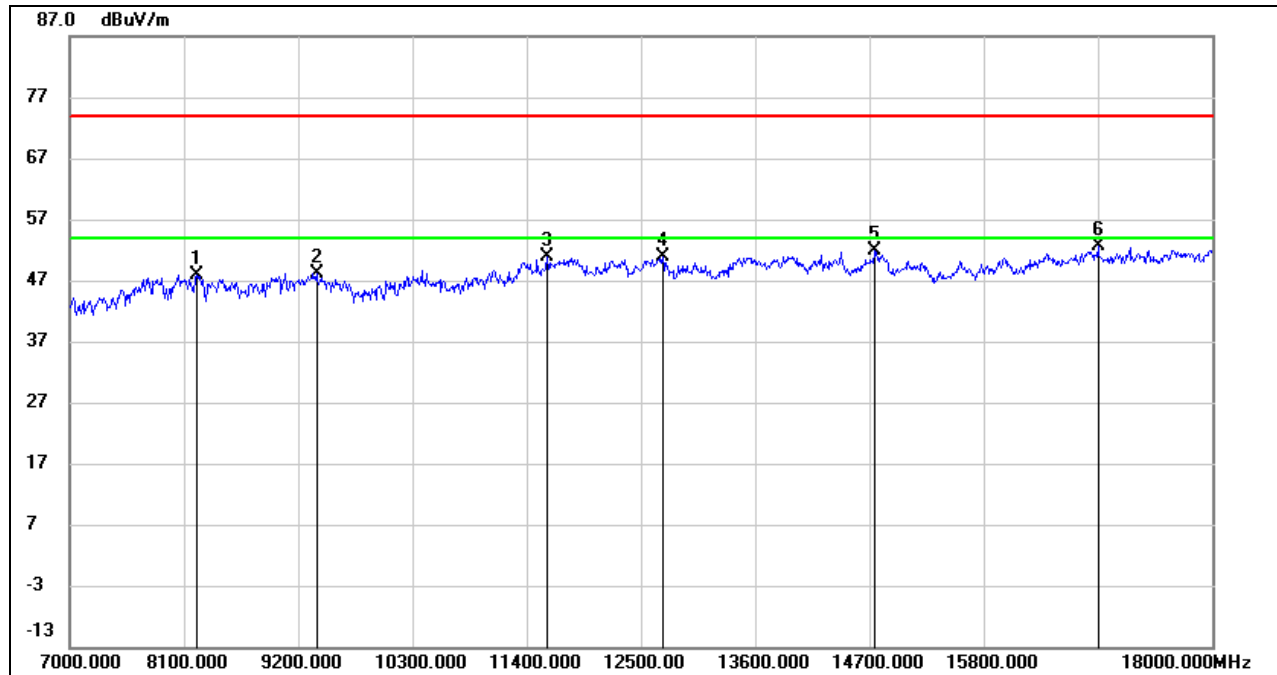
### 8.3. SPURIOUS EMISSIONS (7 GHz ~ 18 GHz)

#### 8.3.1. 802.11a SISO MODE

#### TEST RESULTS (WORST CASE)

#### UNII-1 BAND

#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8221.000	38.12	9.79	47.91	74.00	-26.09	peak
2	9376.000	37.29	10.84	48.13	74.00	-25.87	peak
3	11598.000	36.23	14.72	50.95	74.00	-23.05	peak
4	12709.000	35.25	15.66	50.91	74.00	-23.09	peak
5	14755.000	33.99	17.88	51.87	74.00	-22.13	peak
6	16900.000	31.13	21.57	52.70	74.00	-21.30	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

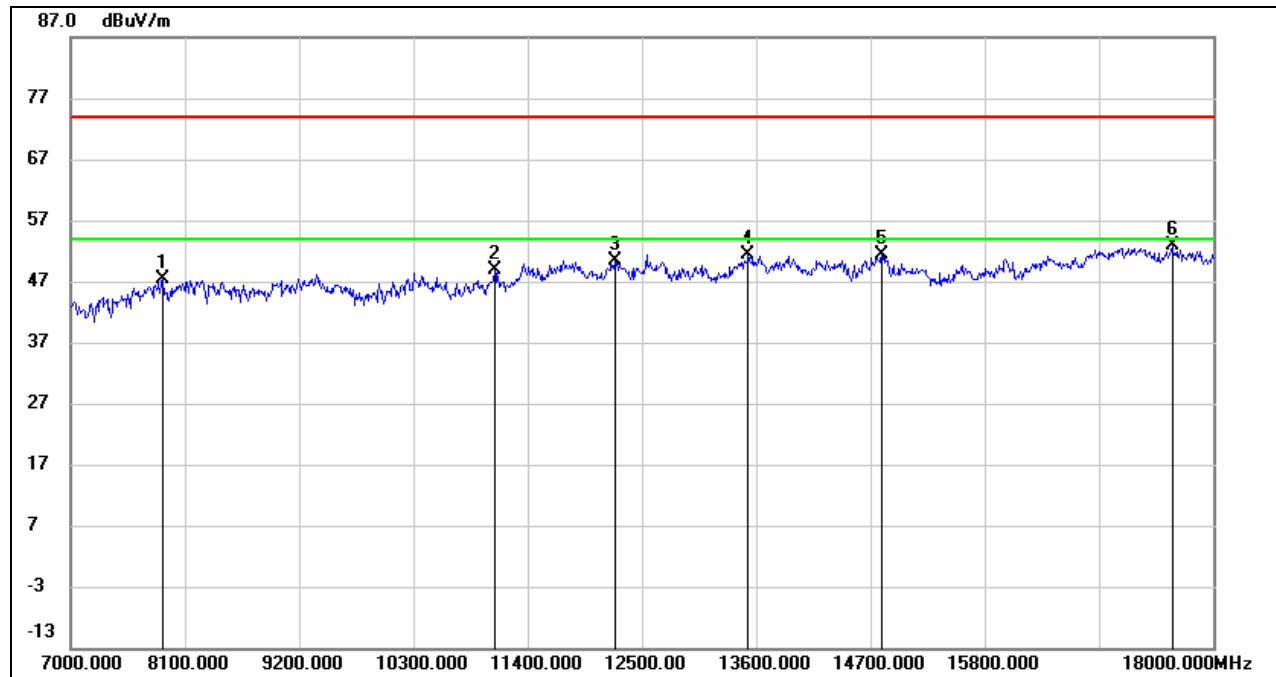
4. AVG:  $VBW=1/Ton$ , where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

7. Proper operation of the transmitter prior to adding the filter to the measurement chain.

8. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

**HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7891.000	38.58	8.90	47.48	74.00	-26.52	peak
2	11081.000	35.18	13.70	48.88	74.00	-25.12	peak
3	12236.000	34.49	16.01	50.50	74.00	-23.50	peak
4	13523.000	34.31	17.19	51.50	74.00	-22.50	peak
5	14810.000	33.37	17.97	51.34	74.00	-22.66	peak
6	17604.000	30.08	22.76	52.84	74.00	-21.16	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

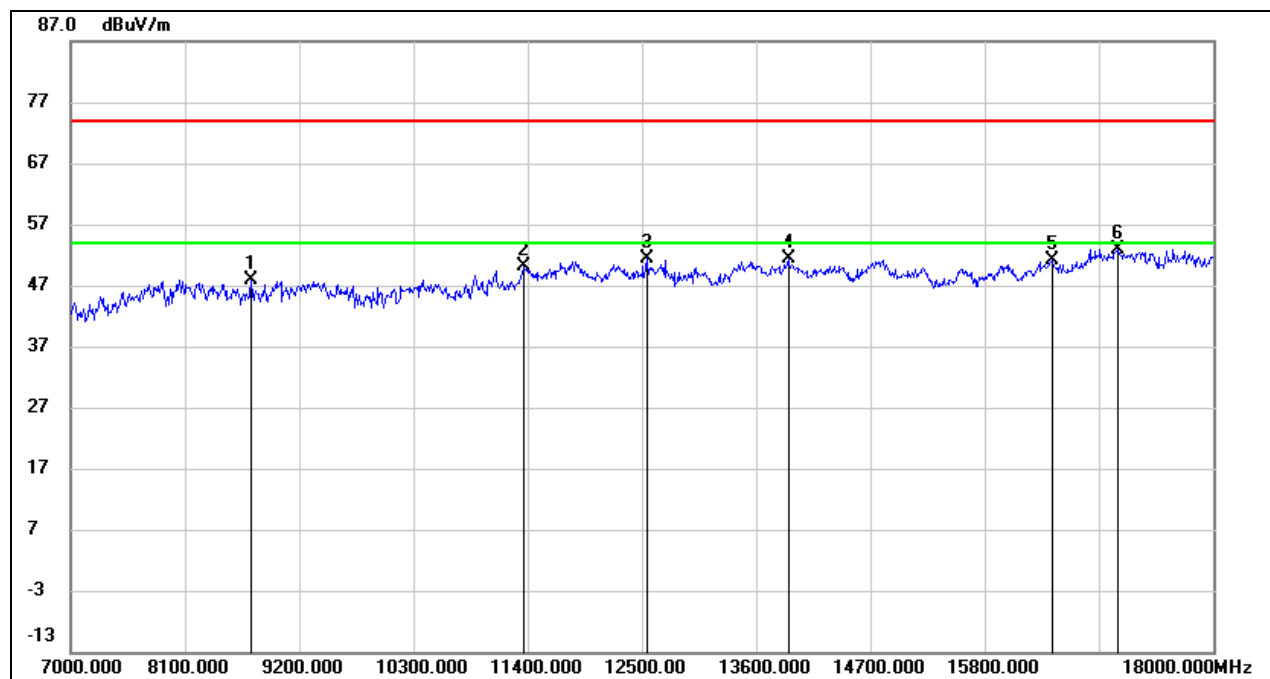
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8738.000	38.75	9.11	47.86	74.00	-26.14	peak
2	11367.000	35.65	14.45	50.10	74.00	-23.90	peak
3	12544.000	35.74	15.72	51.46	74.00	-22.54	peak
4	13908.000	33.74	17.54	51.28	74.00	-22.72	peak
5	16449.000	31.35	19.69	51.04	74.00	-22.96	peak
6	17087.000	31.13	21.81	52.94	74.00	-21.06	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. AVG:  $VBW=1/Ton$ , where: Ton is the transmitting duration.

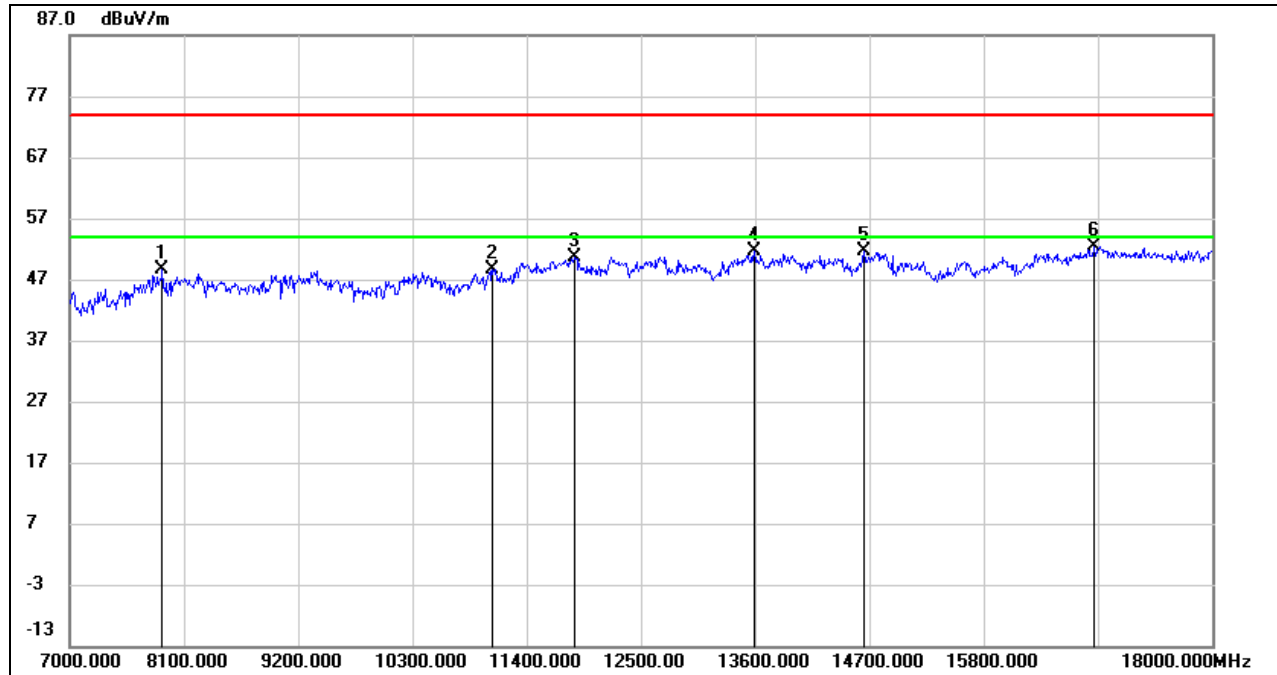
5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

7. Proper operation of the transmitter prior to adding the filter to the measurement chain.

8. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7891.000	39.66	8.90	48.56	74.00	-25.44	peak
2	11070.000	34.96	13.65	48.61	74.00	-25.39	peak
3	11862.000	35.24	15.41	50.65	74.00	-23.35	peak
4	13589.000	34.54	17.11	51.65	74.00	-22.35	peak
5	14645.000	34.02	17.51	51.53	74.00	-22.47	peak
6	16867.000	31.15	21.29	52.44	74.00	-21.56	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

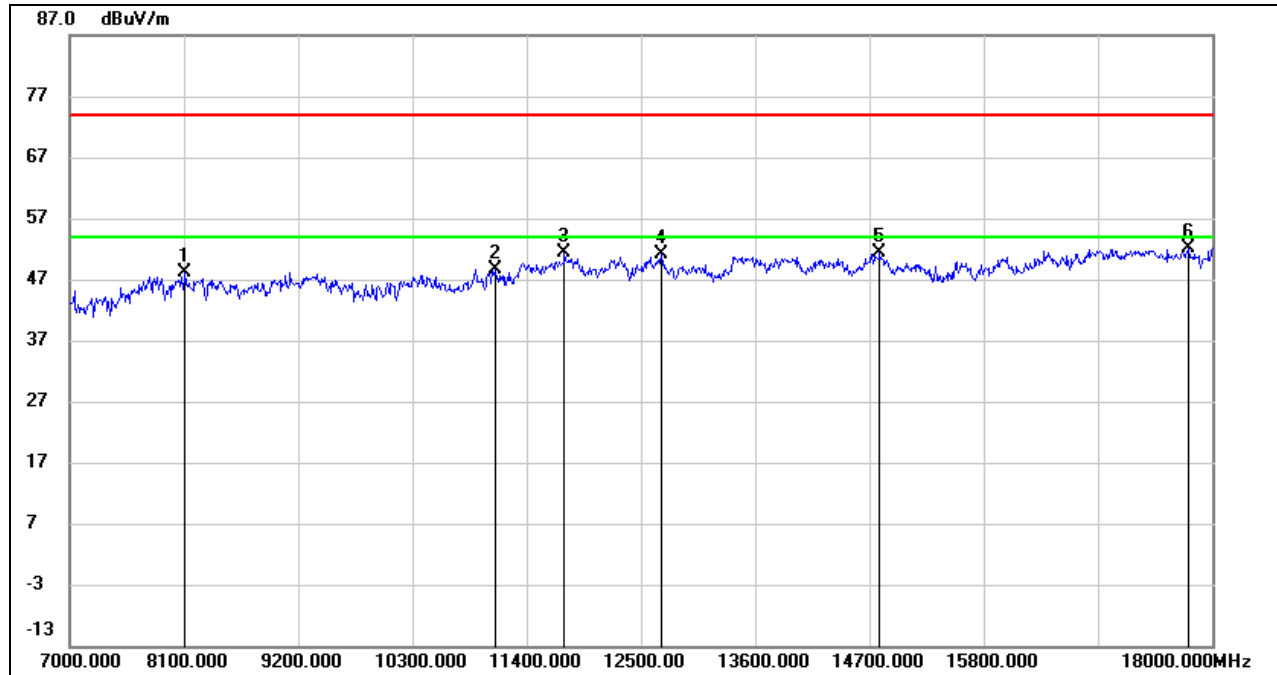
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.



## HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8111.000	38.10	10.14	48.24	74.00	-25.76	peak
2	11092.000	34.89	13.75	48.64	74.00	-25.36	peak
3	11763.000	36.08	15.28	51.36	74.00	-22.64	peak
4	12698.000	35.41	15.62	51.03	74.00	-22.97	peak
5	14799.000	33.29	18.04	51.33	74.00	-22.67	peak
6	17769.000	28.19	23.87	52.06	74.00	-21.94	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. AVG:  $VBW=1/Ton$ , where: Ton is the transmitting duration.

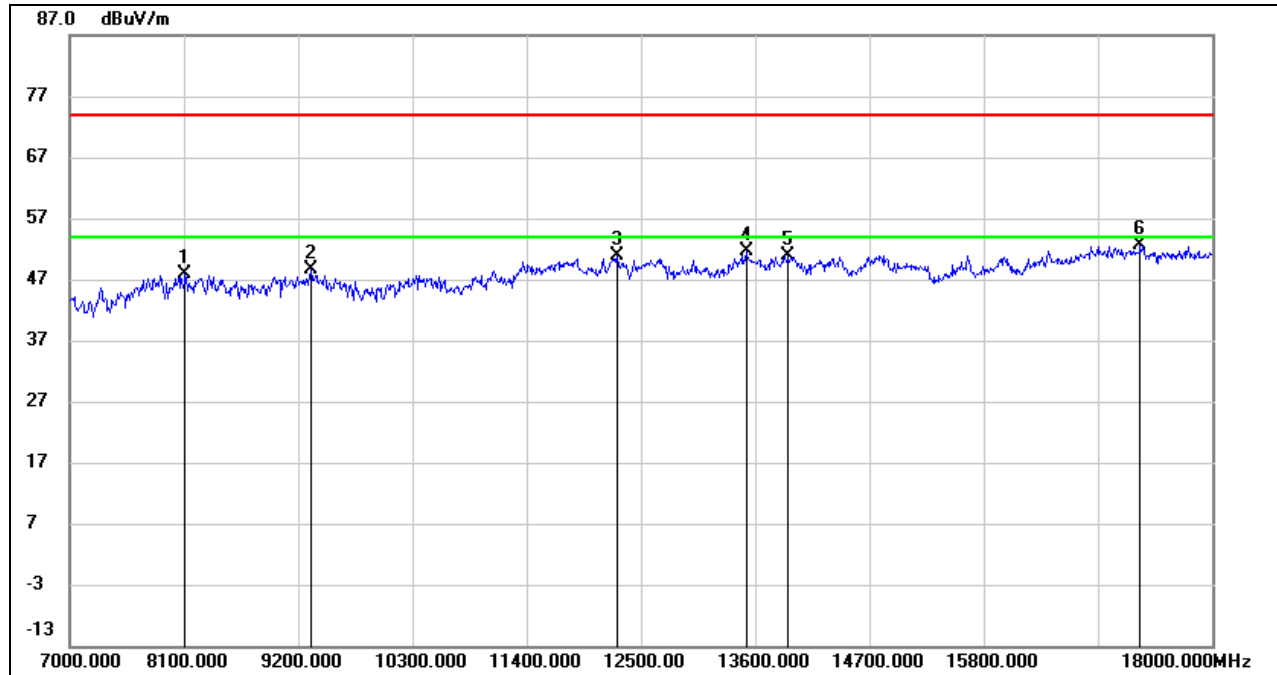
5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

7. Proper operation of the transmitter prior to adding the filter to the measurement chain.

8. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

## HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8111.000	37.77	10.14	47.91	74.00	-26.09	peak
2	9321.000	38.06	10.52	48.58	74.00	-25.42	peak
3	12269.000	34.86	16.04	50.90	74.00	-23.10	peak
4	13512.000	34.35	17.20	51.55	74.00	-22.45	peak
5	13919.000	33.44	17.55	50.99	74.00	-23.01	peak
6	17307.000	30.00	22.56	52.56	74.00	-21.44	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

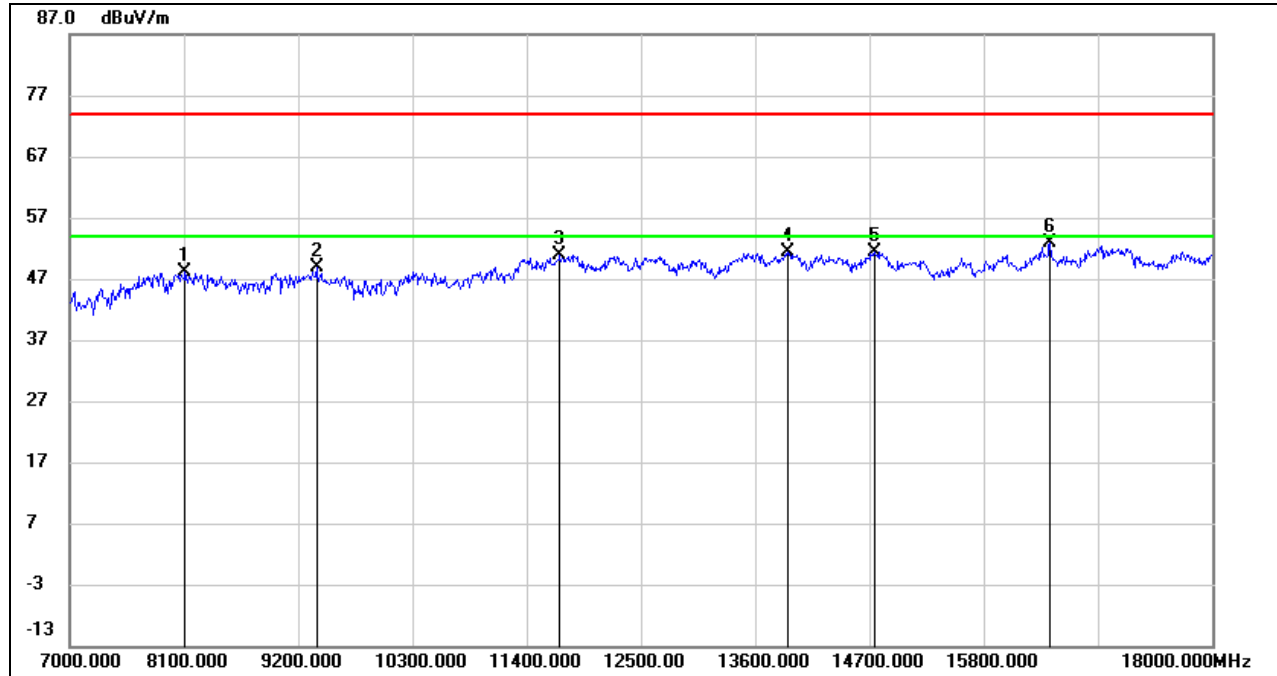
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

## UNII-3 BAND

### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8111.000	38.02	10.14	48.16	74.00	-25.84	peak
2	9376.000	38.04	10.84	48.88	74.00	-25.12	peak
3	11719.000	35.60	15.33	50.93	74.00	-23.07	peak
4	13908.000	33.83	17.54	51.37	74.00	-22.63	peak
5	14744.000	33.50	17.84	51.34	74.00	-22.66	peak
6	16438.000	33.12	19.68	52.80	74.00	-21.20	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

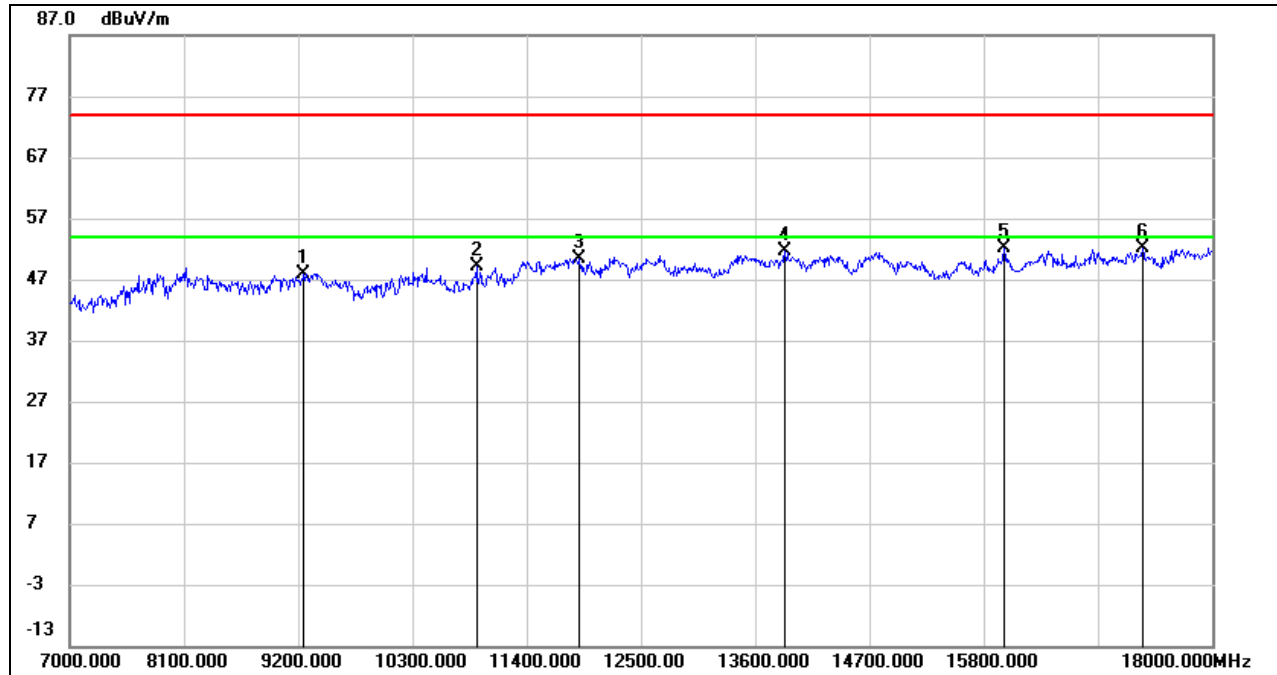
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9255.000	37.76	10.17	47.93	74.00	-26.07	peak
2	10916.000	35.80	13.35	49.15	74.00	-24.85	peak
3	11906.000	34.89	15.52	50.41	74.00	-23.59	peak
4	13886.000	34.02	17.54	51.56	74.00	-22.44	peak
5	15998.000	33.74	18.42	52.16	74.00	-21.84	peak
6	17329.000	29.70	22.39	52.09	74.00	-21.91	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

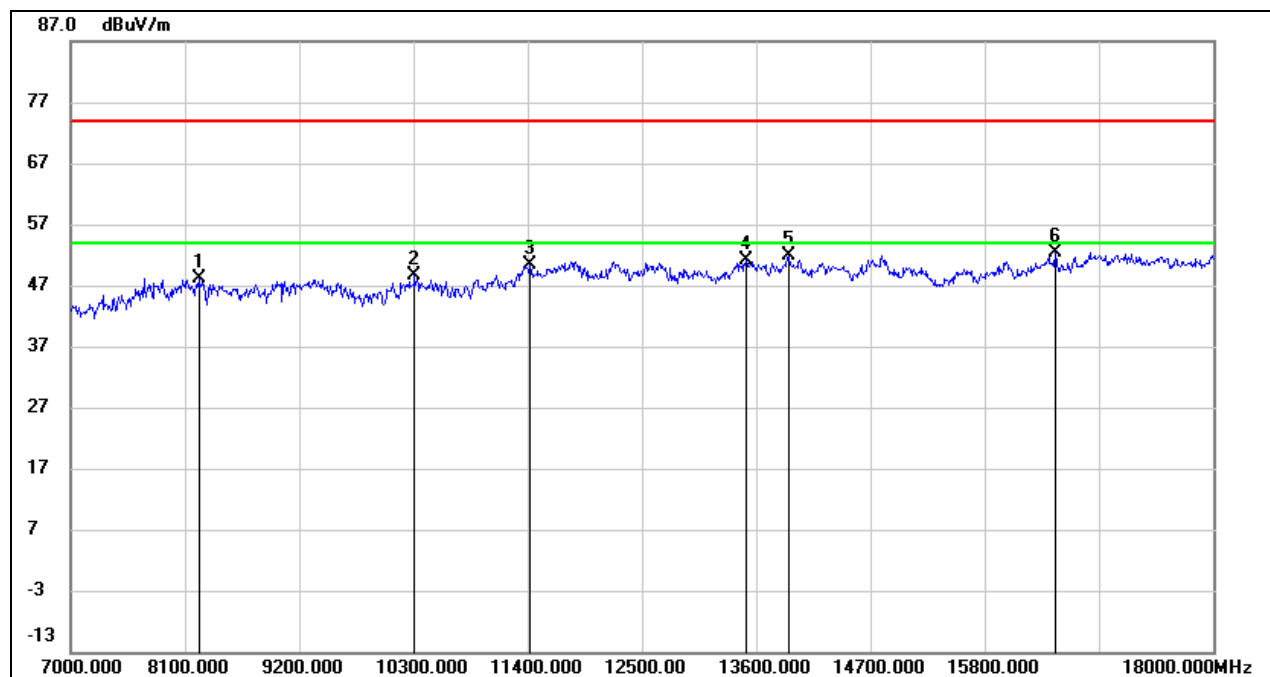
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

## HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8232.000	38.47	9.77	48.24	74.00	-25.76	peak
2	10311.000	36.72	11.86	48.58	74.00	-25.42	peak
3	11422.000	35.64	14.73	50.37	74.00	-23.63	peak
4	13501.000	33.91	17.22	51.13	74.00	-22.87	peak
5	13908.000	34.45	17.54	51.99	74.00	-22.01	peak
6	16482.000	32.64	19.69	52.33	74.00	-21.67	peak

Note: 1. Measurement = Reading Level + Correct Factor.

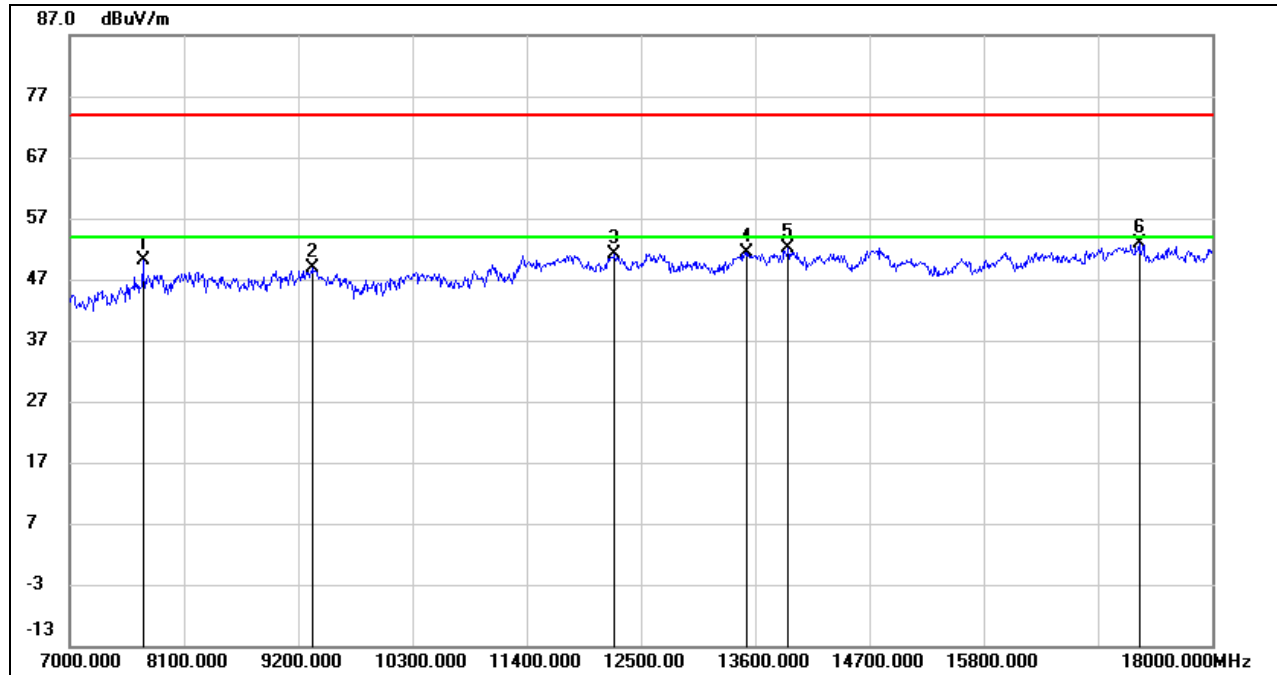
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

**HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7704.000	41.73	8.48	50.21	74.00	-23.79	peak
2	9343.000	38.18	10.64	48.82	74.00	-25.18	peak
3	12247.000	35.18	16.02	51.20	74.00	-22.80	peak
4	13512.000	34.26	17.20	51.46	74.00	-22.54	peak
5	13919.000	34.66	17.55	52.21	74.00	-21.79	peak
6	17296.000	30.19	22.59	52.78	74.00	-21.22	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

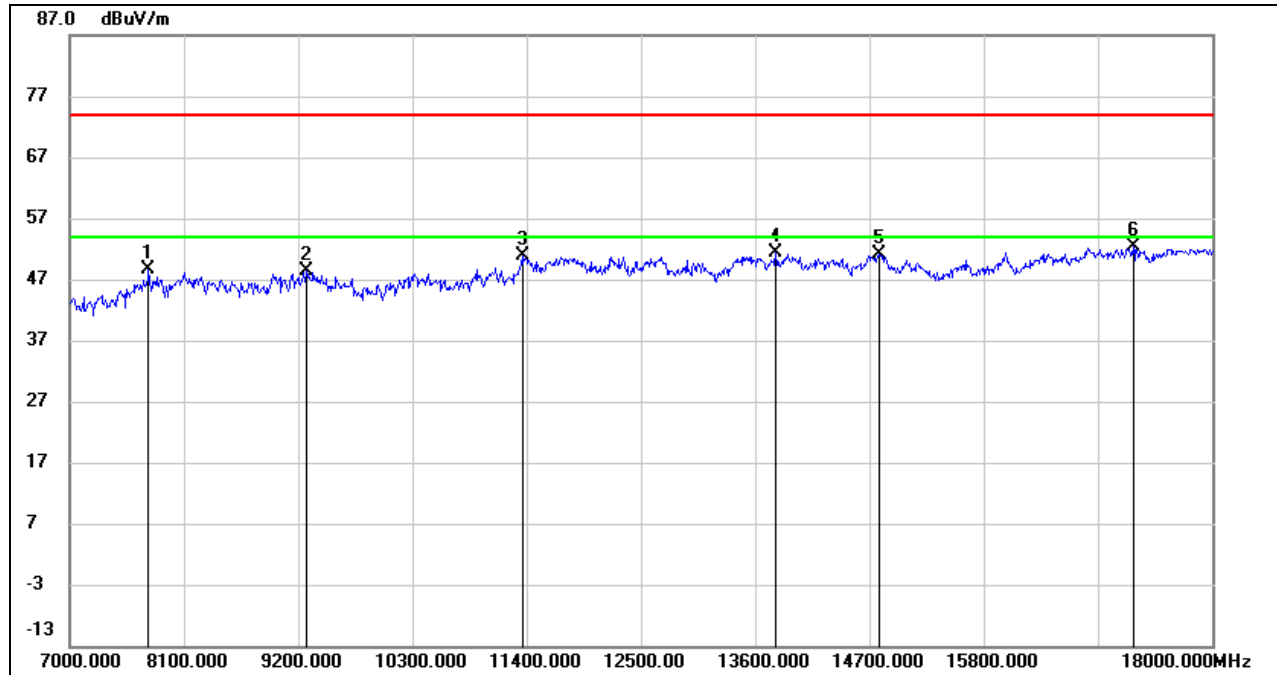
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

## HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7759.000	39.77	8.98	48.75	74.00	-25.25	peak
2	9277.000	38.08	10.28	48.36	74.00	-25.64	peak
3	11356.000	36.64	14.35	50.99	74.00	-23.01	peak
4	13798.000	33.89	17.61	51.50	74.00	-22.50	peak
5	14799.000	33.06	18.04	51.10	74.00	-22.90	peak
6	17241.000	30.14	22.24	52.38	74.00	-21.62	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

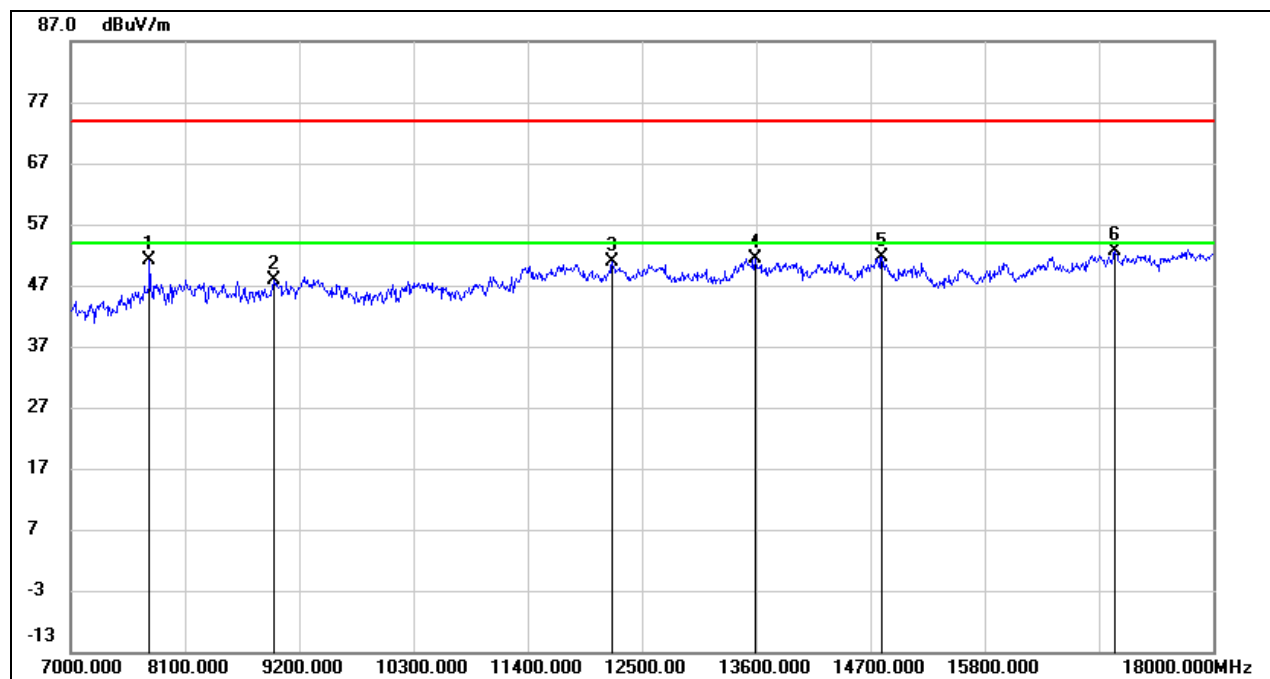
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7759.000	42.24	8.98	51.22	74.00	-22.78	peak
2	8958.000	37.47	10.48	47.95	74.00	-26.05	peak
3	12214.000	34.80	15.97	50.77	74.00	-23.23	peak
4	13589.000	34.27	17.11	51.38	74.00	-22.62	peak
5	14810.000	33.59	17.97	51.56	74.00	-22.44	peak
6	17054.000	31.02	21.59	52.61	74.00	-21.39	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

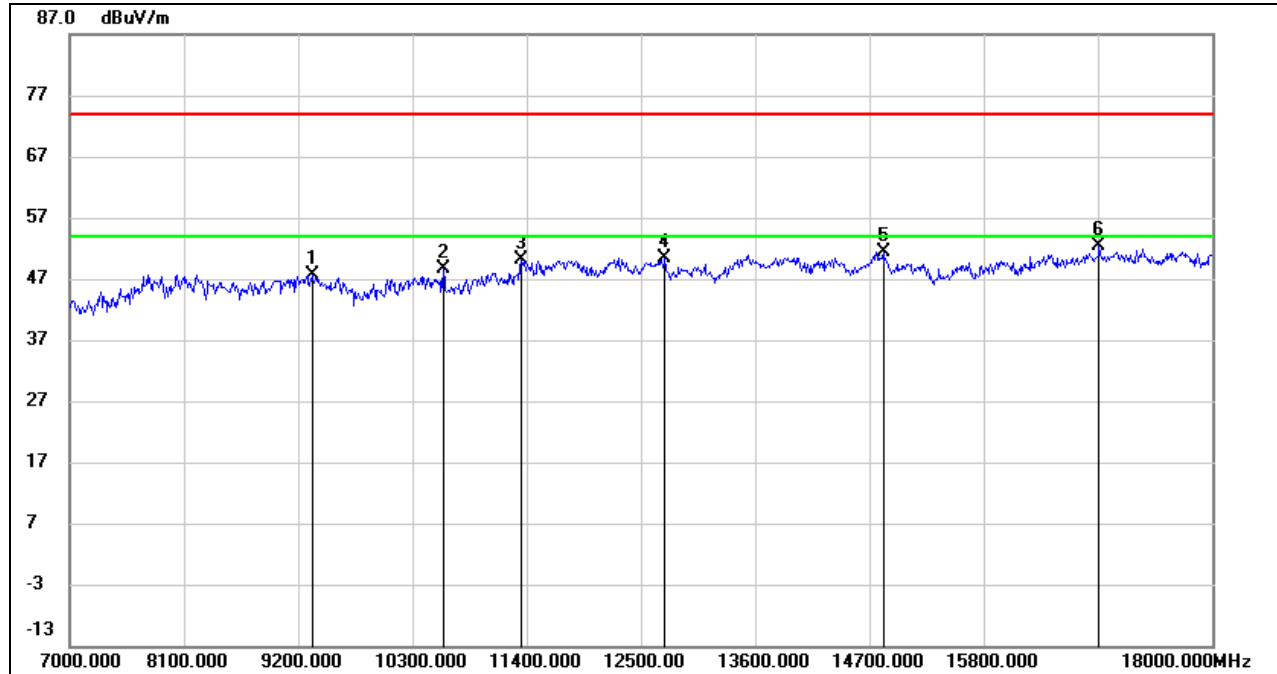
6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.



### 8.3.2. 802.11ac VHT20 SISO MODE

#### UNII-1 BAND

#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9332.000	37.03	10.59	47.62	74.00	-26.38	peak
2	10597.000	35.92	12.68	48.60	74.00	-25.40	peak
3	11345.000	35.99	14.26	50.25	74.00	-23.75	peak
4	12731.000	34.61	15.74	50.35	74.00	-23.65	peak
5	14832.000	33.60	17.83	51.43	74.00	-22.57	peak
6	16911.000	30.85	21.54	52.39	74.00	-21.61	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

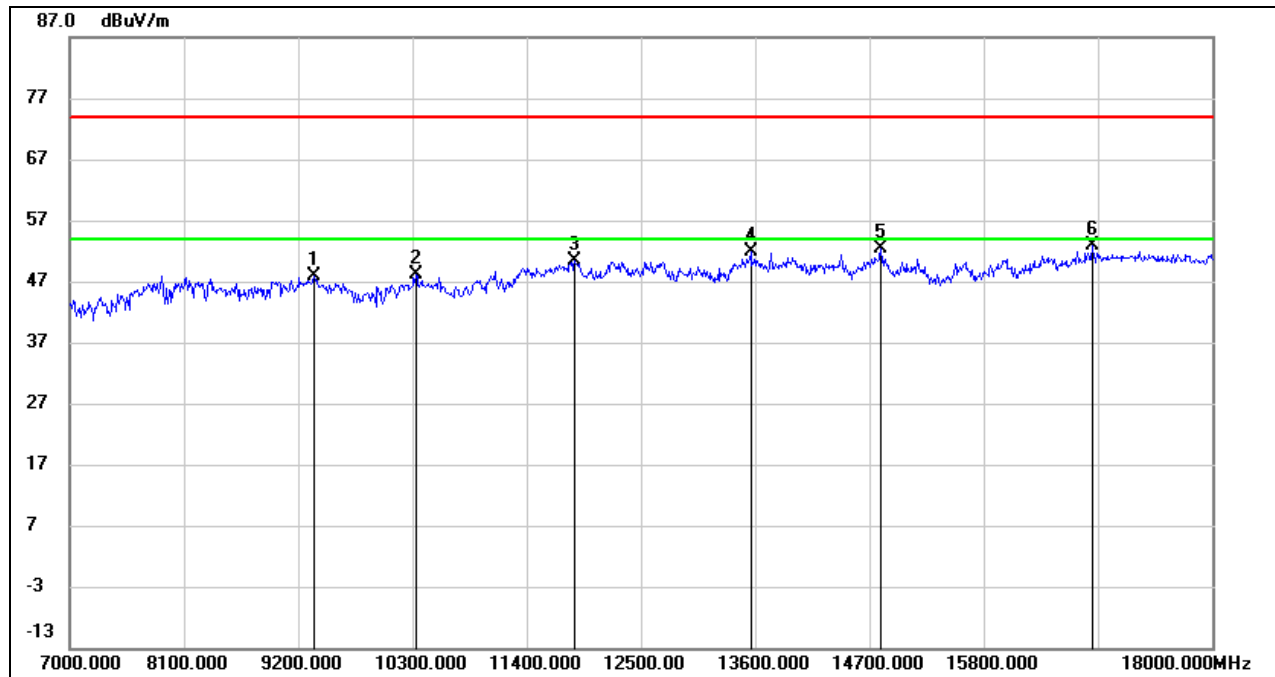
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. \*-indicates frequency is out of the restricted bands, the AVG result only for reference.

7. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

**HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9354.000	37.20	10.70	47.90	74.00	-26.10	peak
2	10333.000	36.12	11.94	48.06	74.00	-25.94	peak
3	11862.000	35.04	15.41	50.45	74.00	-23.55	peak
4	13556.000	34.83	17.14	51.97	74.00	-22.03	peak
5	14810.000	34.29	17.97	52.26	74.00	-21.74	peak
6	16845.000	31.77	21.10	52.87	74.00	-21.13	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

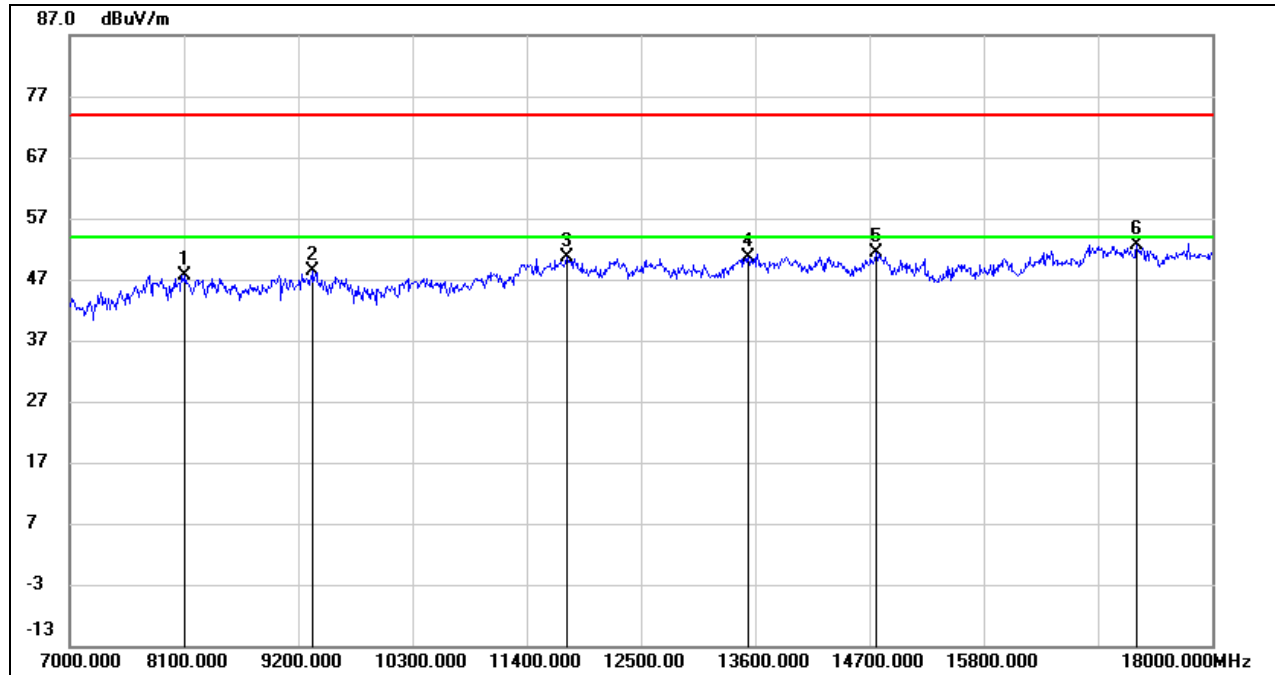
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8111.000	37.44	10.14	47.58	74.00	-26.42	peak
2	9343.000	37.64	10.64	48.28	74.00	-25.72	peak
3	11785.000	35.32	15.25	50.57	74.00	-23.43	peak
4	13534.000	33.38	17.18	50.56	74.00	-23.44	peak
5	14766.000	33.47	17.92	51.39	74.00	-22.61	peak
6	17274.000	30.21	22.45	52.66	74.00	-21.34	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

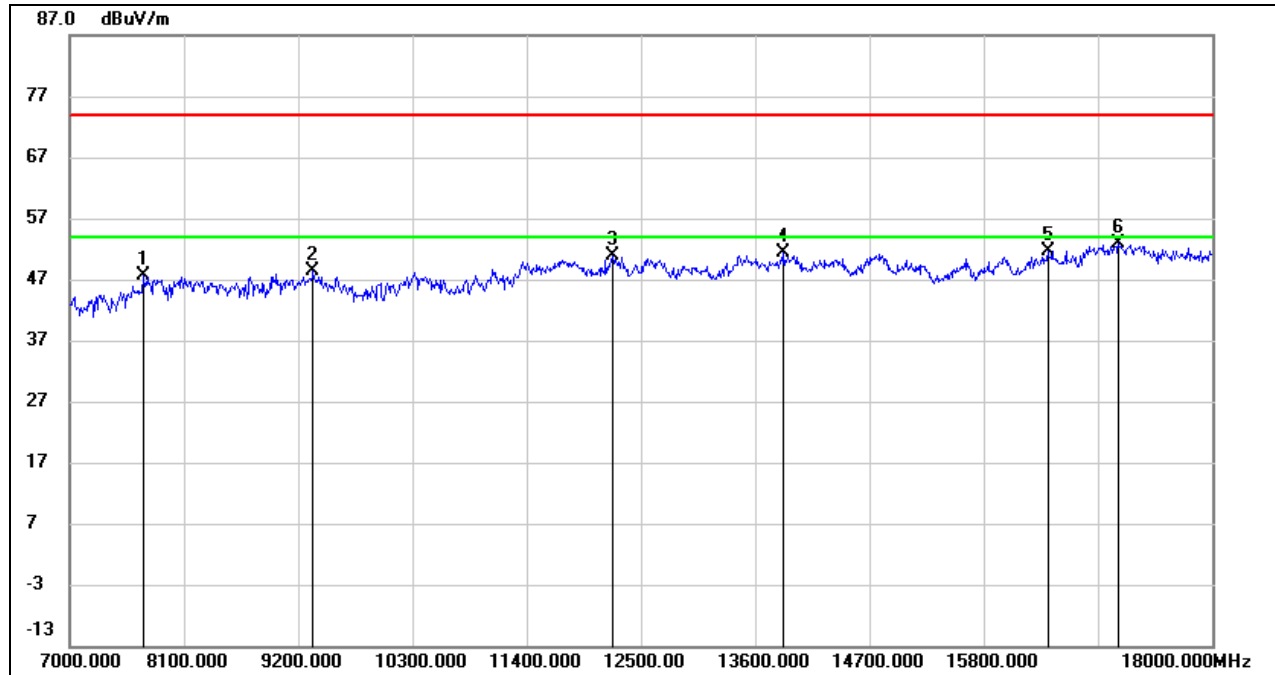
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. \*-indicates frequency is out of the restricted bands, the AVG result only for reference.

7. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

**HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7704.000	39.20	8.48	47.68	74.00	-26.32	peak
2	9343.000	37.63	10.64	48.27	74.00	-25.73	peak
3	12225.000	35.00	15.99	50.99	74.00	-23.01	peak
4	13875.000	33.71	17.55	51.26	74.00	-22.74	peak
5	16416.000	32.05	19.68	51.73	74.00	-22.27	peak
6	17098.000	30.98	21.89	52.87	74.00	-21.13	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

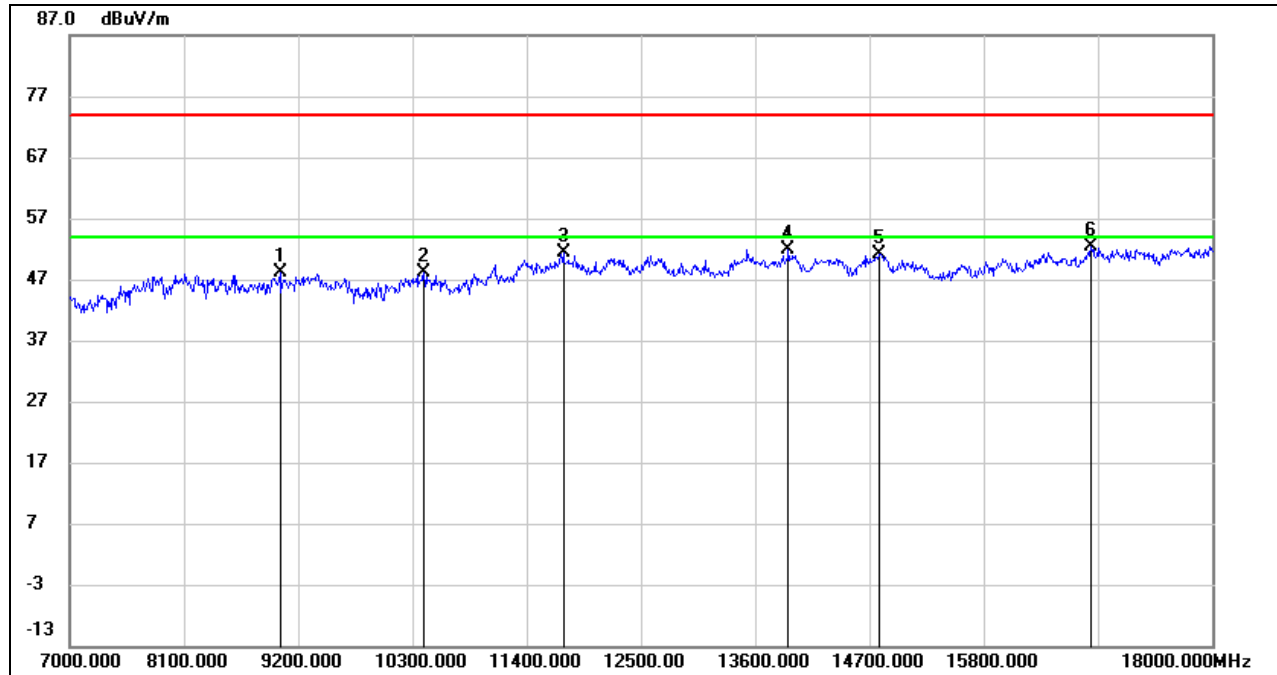
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9024.000	37.18	11.01	48.19	74.00	-25.81	peak
2	10410.000	35.87	12.25	48.12	74.00	-25.88	peak
3	11752.000	36.15	15.29	51.44	74.00	-22.56	peak
4	13919.000	34.40	17.55	51.95	74.00	-22.05	peak
5	14788.000	33.04	18.00	51.04	74.00	-22.96	peak
6	16834.000	31.37	21.00	52.37	74.00	-21.63	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

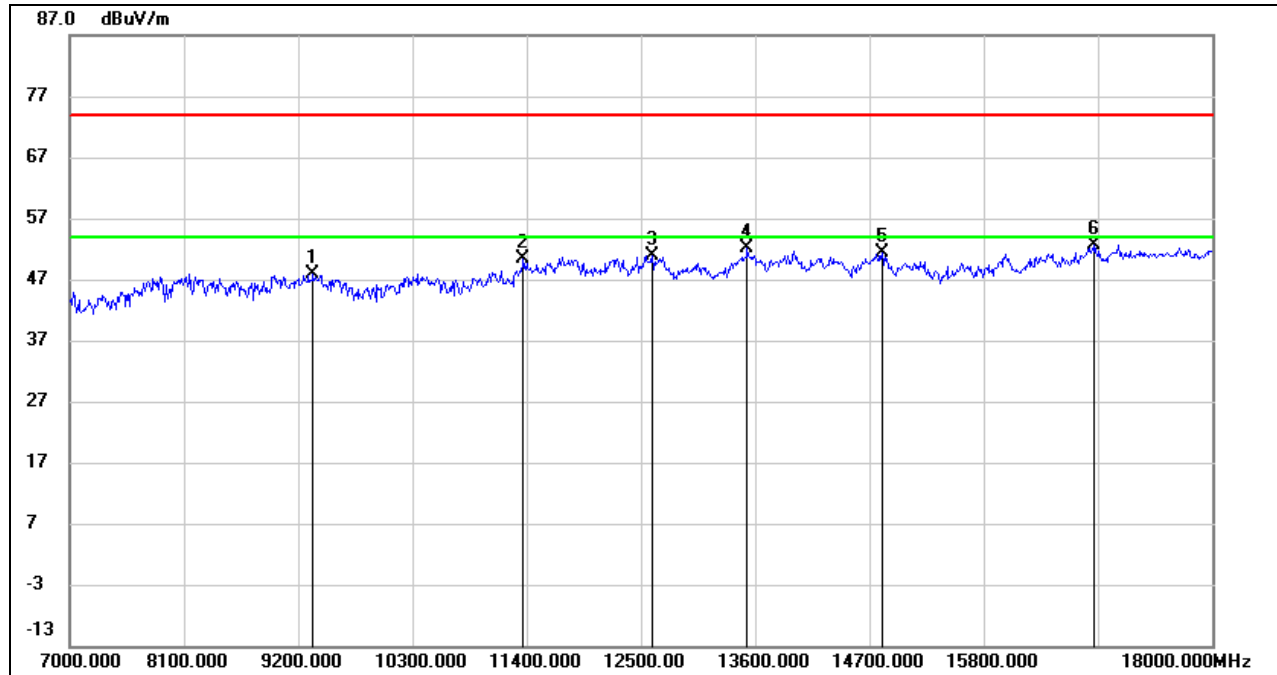
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. \*-indicates frequency is out of the restricted bands, the AVG result only for reference.

7. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

## HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9343.000	37.31	10.64	47.95	74.00	-26.05	peak
2	11367.000	35.99	14.45	50.44	74.00	-23.56	peak
3	12610.000	35.22	15.76	50.98	74.00	-23.02	peak
4	13523.000	34.83	17.19	52.02	74.00	-21.98	peak
5	14821.000	33.53	17.90	51.43	74.00	-22.57	peak
6	16867.000	31.29	21.29	52.58	74.00	-21.42	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

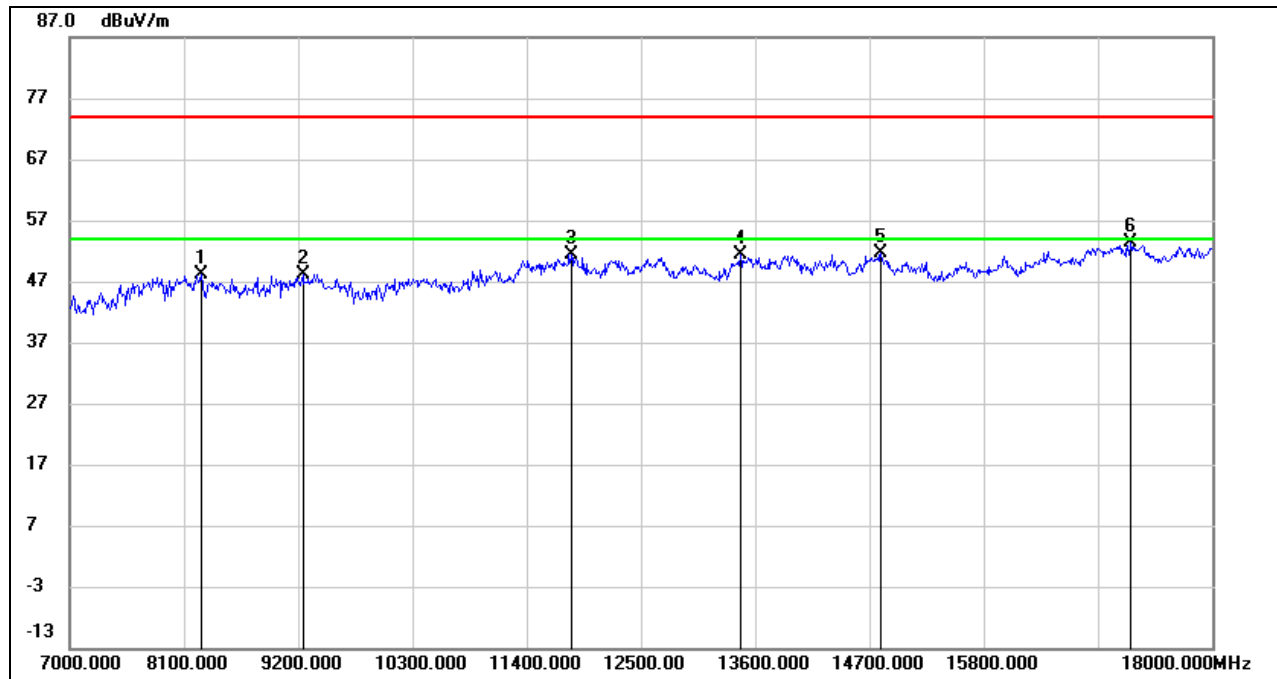
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

## UNII-3 BAND

### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8265.000	38.31	9.73	48.04	74.00	-25.96	peak
2	9244.000	38.10	10.12	48.22	74.00	-25.78	peak
3	11829.000	36.13	15.32	51.45	74.00	-22.55	peak
4	13457.000	34.15	17.14	51.29	74.00	-22.71	peak
5	14810.000	33.63	17.97	51.60	74.00	-22.40	peak
6	17219.000	31.22	22.11	53.33	74.00	-20.67	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

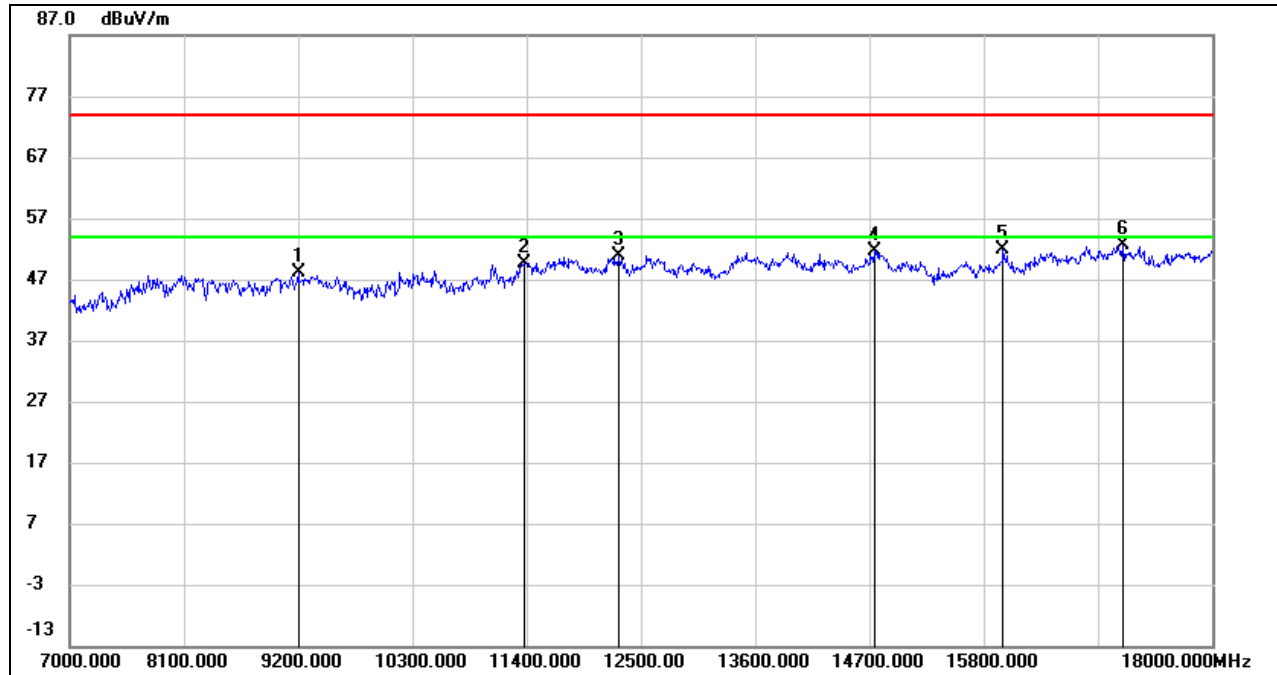
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9200.000	38.12	9.91	48.03	74.00	-25.97	peak
2	11378.000	35.05	14.55	49.60	74.00	-24.40	peak
3	12291.000	34.77	16.08	50.85	74.00	-23.15	peak
4	14744.000	33.84	17.84	51.68	74.00	-22.32	peak
5	15987.000	33.62	18.37	51.99	74.00	-22.01	peak
6	17142.000	30.76	21.93	52.69	74.00	-21.31	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

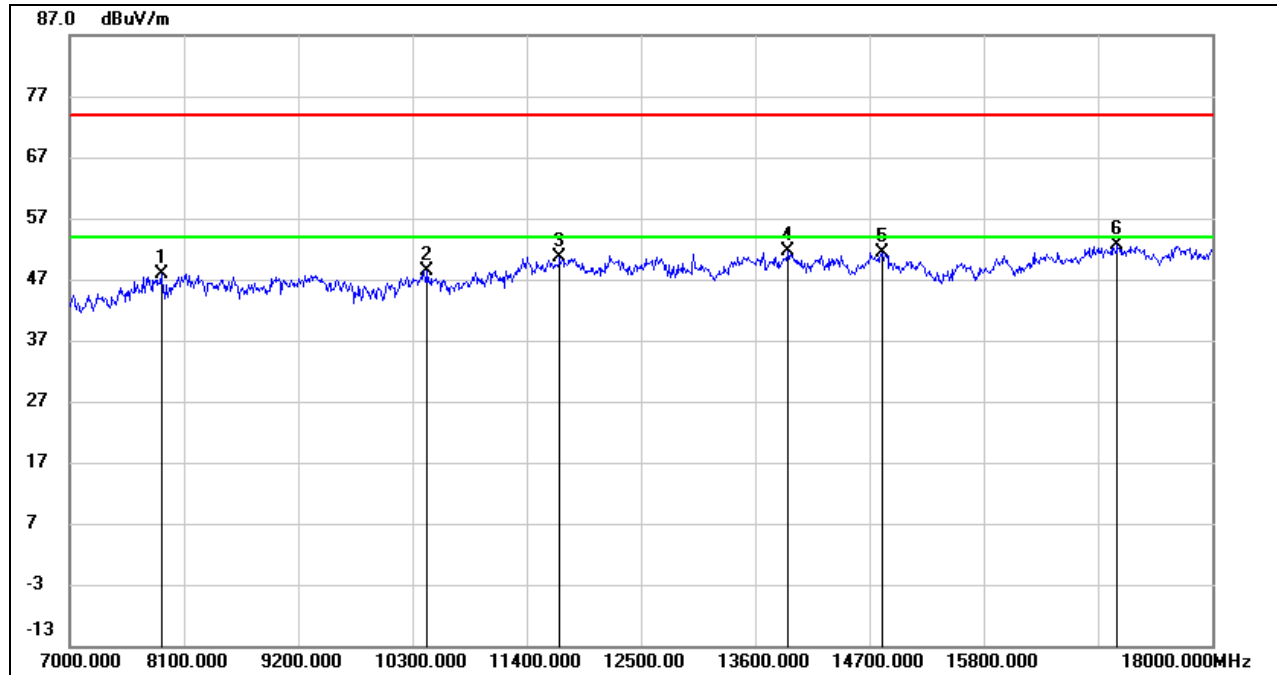
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.



### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7880.000	38.93	8.95	47.88	74.00	-26.12	peak
2	10443.000	36.15	12.29	48.44	74.00	-25.56	peak
3	11719.000	35.22	15.33	50.55	74.00	-23.45	peak
4	13919.000	34.03	17.55	51.58	74.00	-22.42	peak
5	14821.000	33.56	17.90	51.46	74.00	-22.54	peak
6	17087.000	30.70	21.81	52.51	74.00	-21.49	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

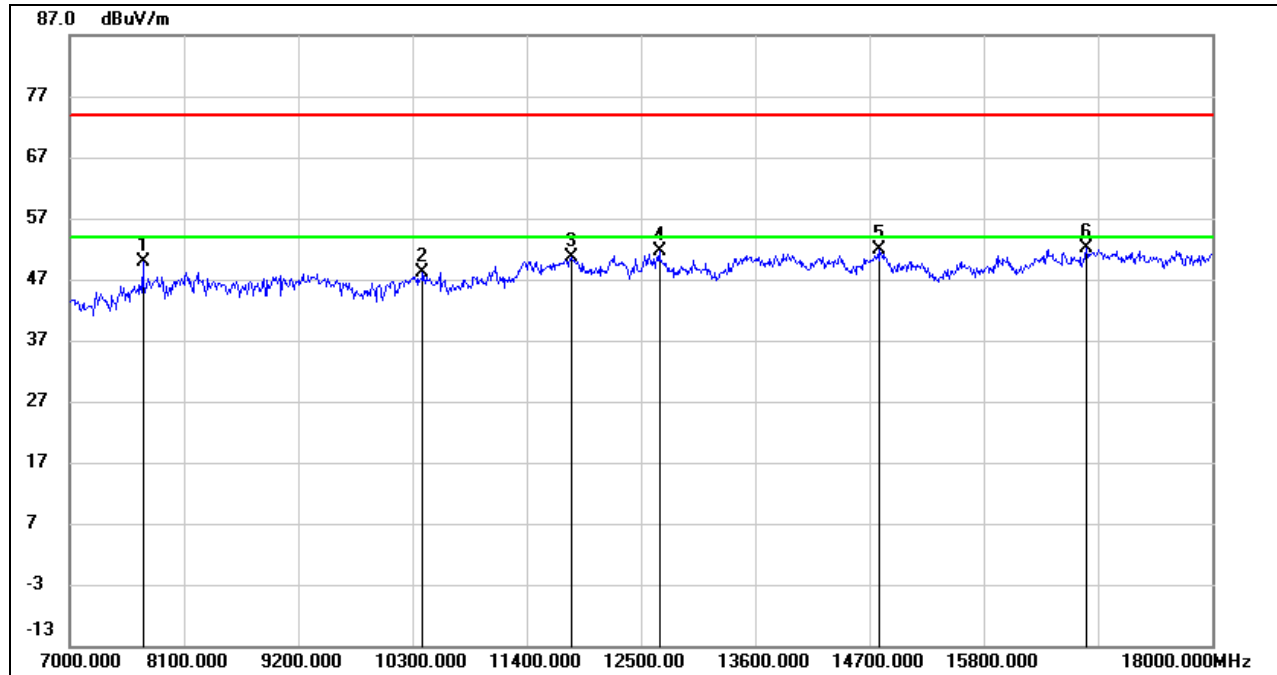
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7704.000	41.29	8.48	49.77	74.00	-24.23	peak
2	10399.000	35.84	12.23	48.07	74.00	-25.93	peak
3	11829.000	35.32	15.32	50.64	74.00	-23.36	peak
4	12676.000	35.97	15.66	51.63	74.00	-22.37	peak
5	14799.000	33.80	18.04	51.84	74.00	-22.16	peak
6	16790.000	31.49	20.64	52.13	74.00	-21.87	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

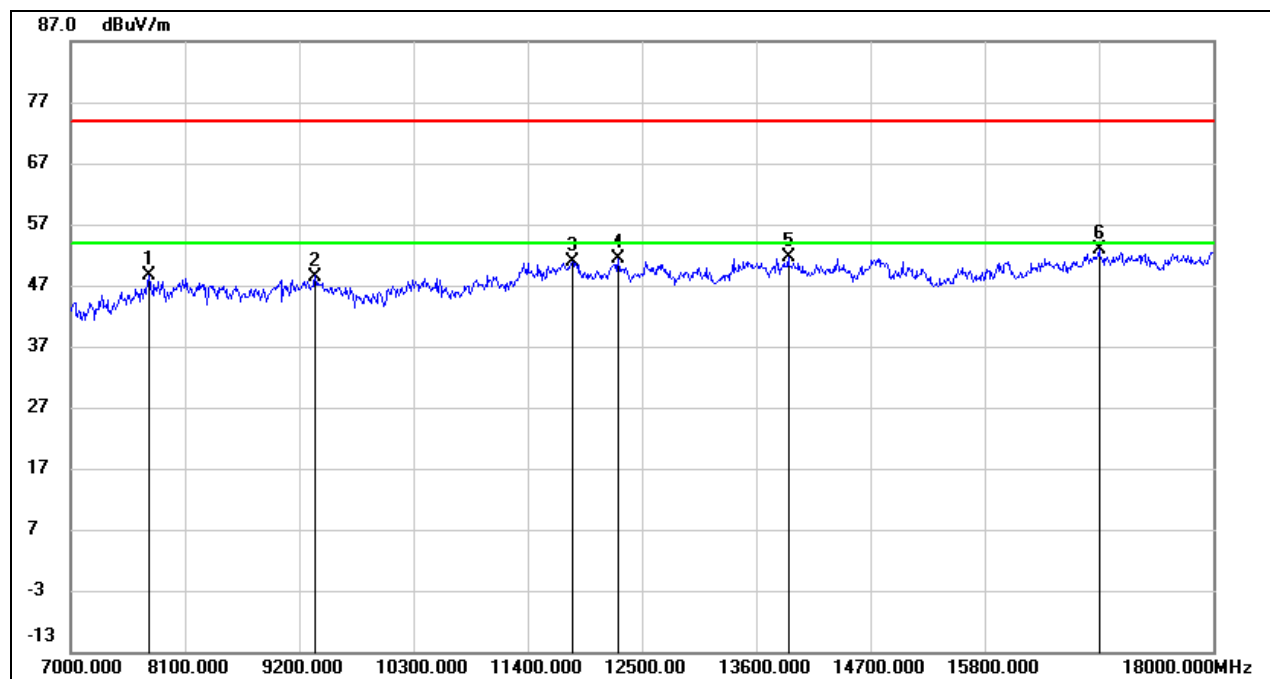
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7759.000	39.69	8.98	48.67	74.00	-25.33	peak
2	9354.000	37.80	10.70	48.50	74.00	-25.50	peak
3	11829.000	35.51	15.32	50.83	74.00	-23.17	peak
4	12269.000	35.23	16.04	51.27	74.00	-22.73	peak
5	13908.000	34.21	17.54	51.75	74.00	-22.25	peak
6	16900.000	31.41	21.57	52.98	74.00	-21.02	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

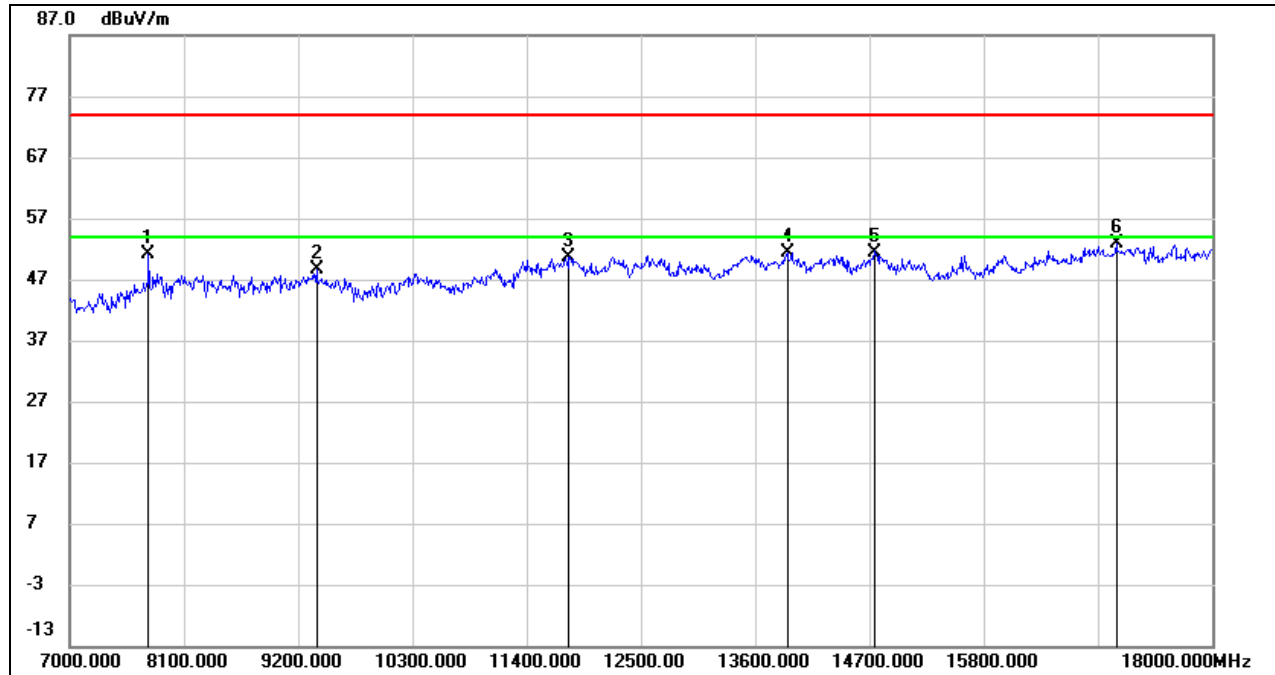
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7759.000	42.05	8.98	51.03	74.00	-22.97	peak
2	9376.000	37.76	10.84	48.60	74.00	-25.40	peak
3	11807.000	35.43	15.27	50.70	74.00	-23.30	peak
4	13908.000	33.93	17.54	51.47	74.00	-22.53	peak
5	14755.000	33.62	17.88	51.50	74.00	-22.50	peak
6	17076.000	31.03	21.74	52.77	74.00	-21.23	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

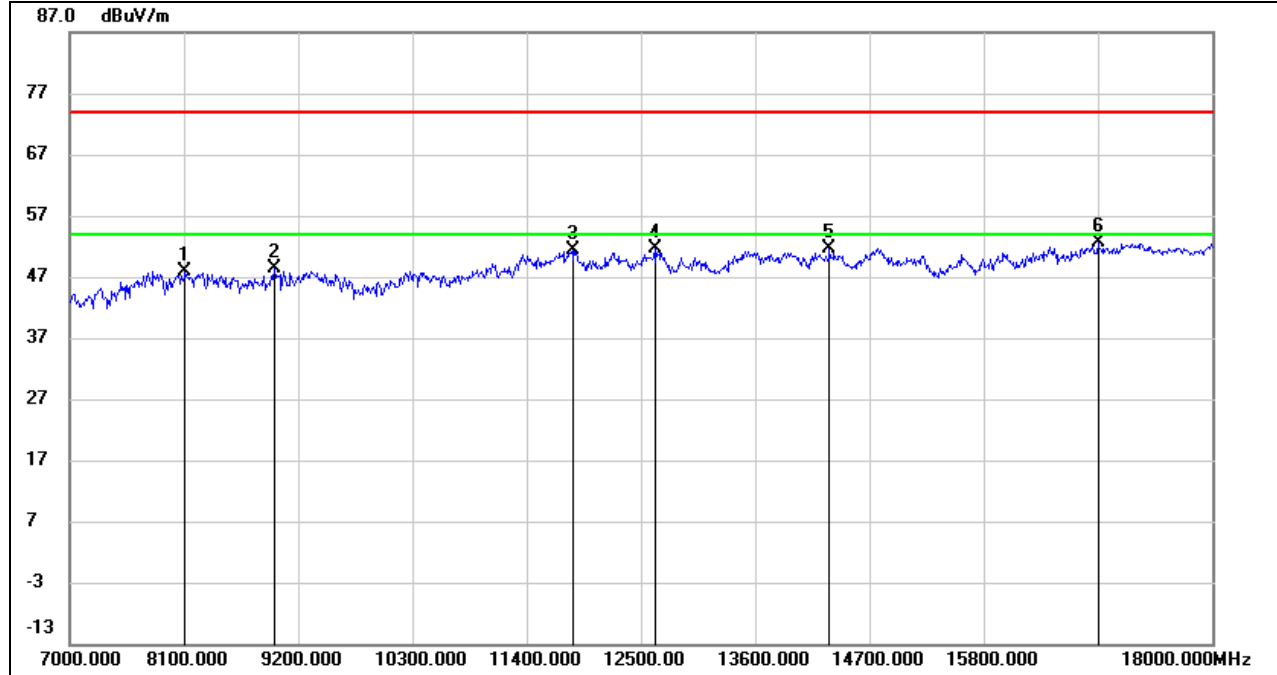
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### 8.3.3. 802.11ac VHT40 SISO MODE

#### UNII-1 BAND

#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8111.000	37.66	10.14	47.80	74.00	-26.20	peak
2	8969.000	37.79	10.69	48.48	74.00	-25.52	peak
3	11840.000	35.99	15.35	51.34	74.00	-22.66	peak
4	12632.000	35.96	15.73	51.69	74.00	-22.31	peak
5	14315.000	33.59	18.02	51.61	74.00	-22.39	peak
6	16900.000	31.04	21.57	52.61	74.00	-21.39	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

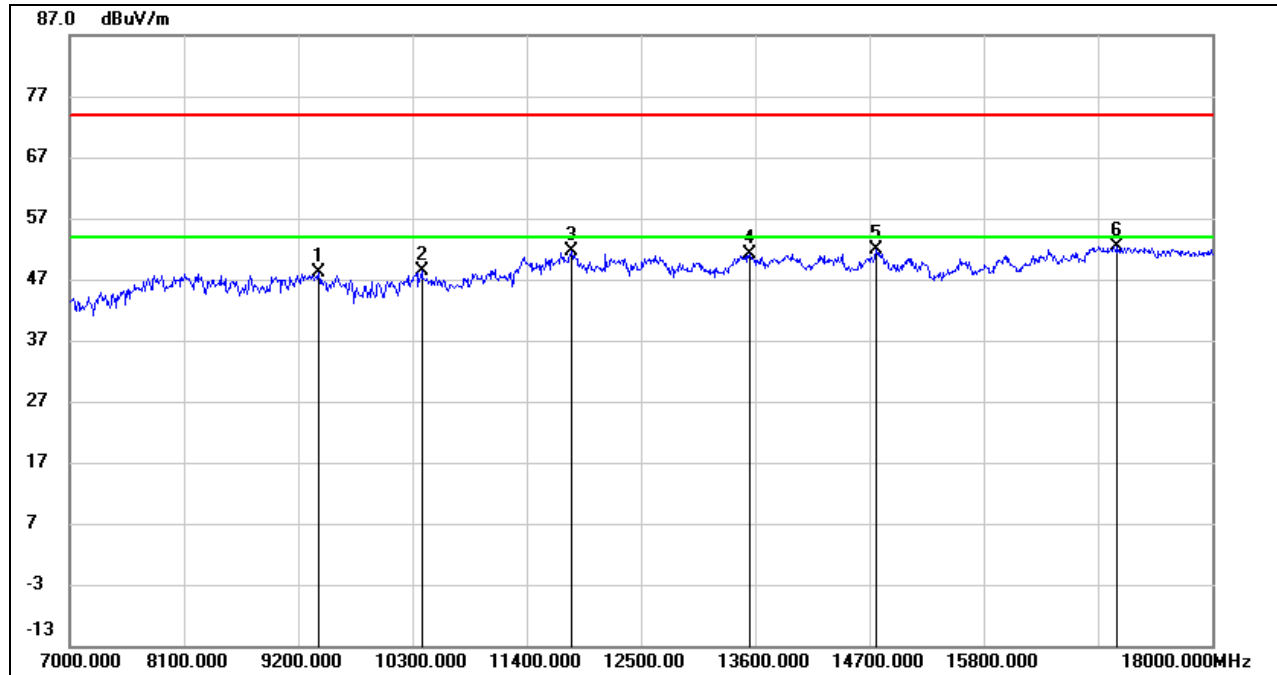
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9398.000	37.18	10.96	48.14	74.00	-25.86	peak
2	10388.000	36.23	12.18	48.41	74.00	-25.59	peak
3	11829.000	36.26	15.32	51.58	74.00	-22.42	peak
4	13545.000	33.99	17.16	51.15	74.00	-22.85	peak
5	14766.000	34.04	17.92	51.96	74.00	-22.04	peak
6	17076.000	30.68	21.74	52.42	74.00	-21.58	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

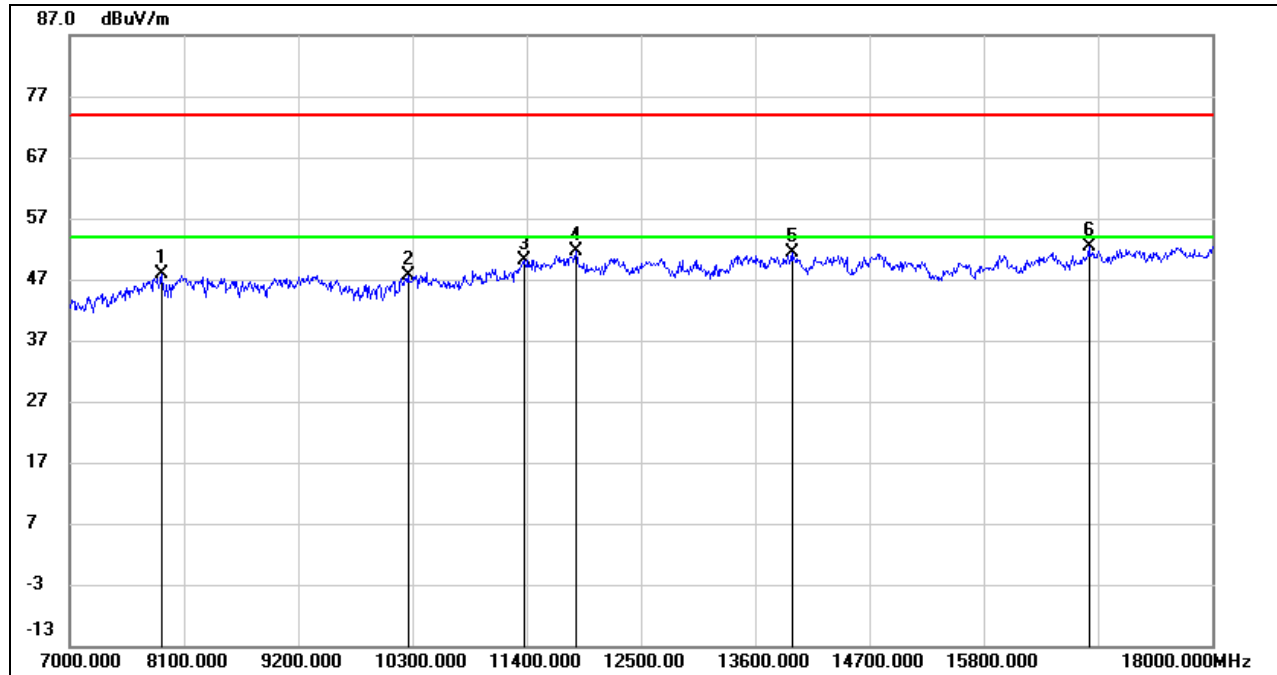
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7880.000	38.89	8.95	47.84	74.00	-26.16	peak
2	10256.000	36.02	11.67	47.69	74.00	-26.31	peak
3	11378.000	35.52	14.55	50.07	74.00	-23.93	peak
4	11873.000	36.07	15.44	51.51	74.00	-22.49	peak
5	13952.000	33.86	17.60	51.46	74.00	-22.54	peak
6	16812.000	31.68	20.81	52.49	74.00	-21.51	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

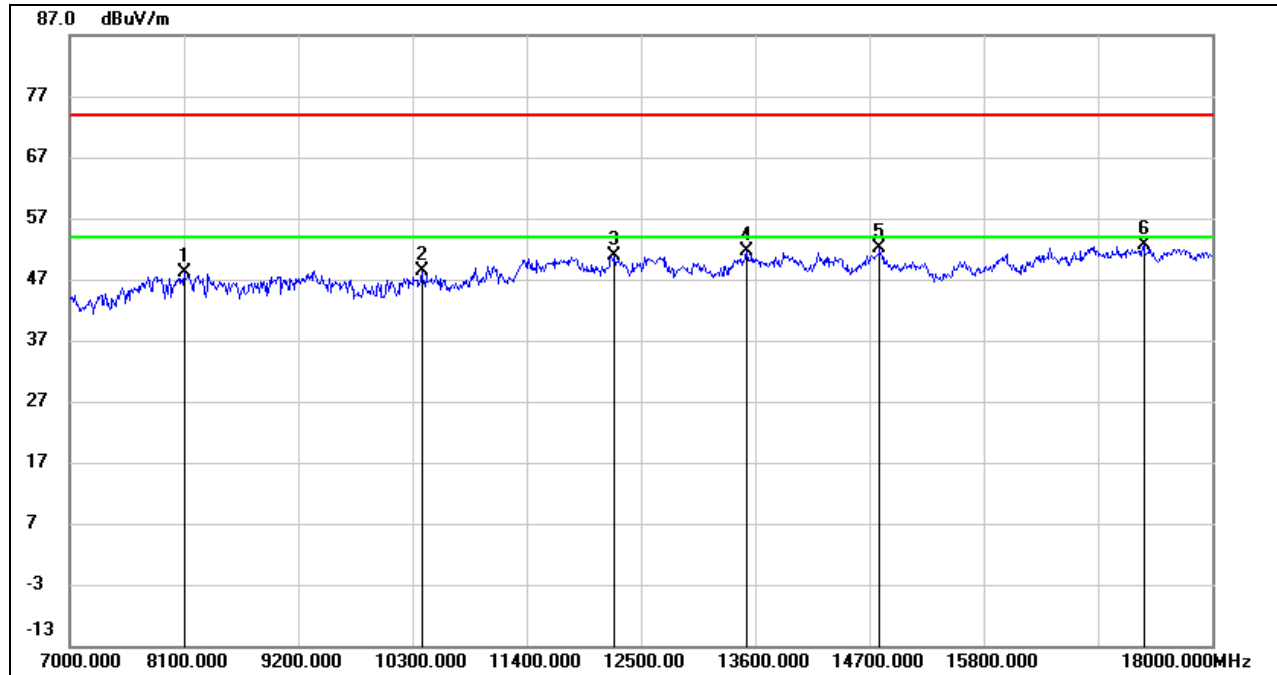
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. \*-indicates frequency is out of the restricted bands, the AVG result only for reference.

7. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8100.000	37.93	10.18	48.11	74.00	-25.89	peak
2	10388.000	36.24	12.18	48.42	74.00	-25.58	peak
3	12247.000	34.91	16.02	50.93	74.00	-23.07	peak
4	13512.000	34.35	17.20	51.55	74.00	-22.45	peak
5	14799.000	34.03	18.04	52.07	74.00	-21.93	peak
6	17340.000	30.22	22.31	52.53	74.00	-21.47	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

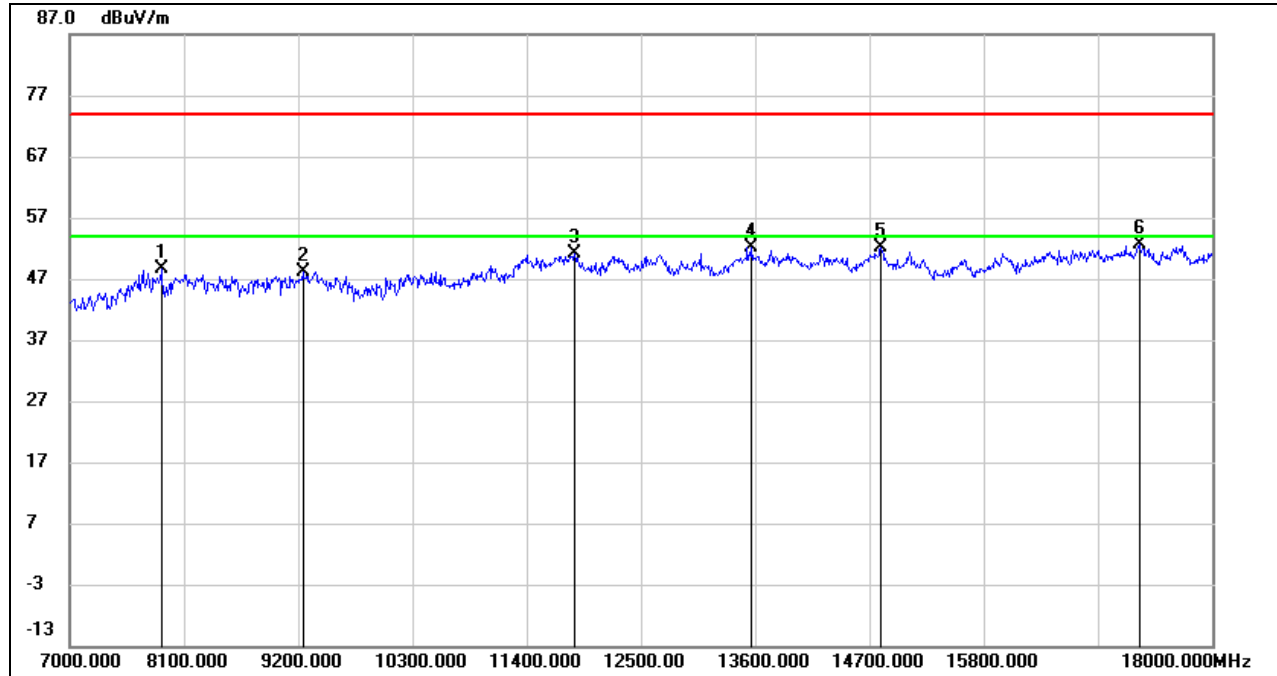
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.



## UNII-3 BAND

### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7880.000	39.64	8.95	48.59	74.00	-25.41	peak
2	9244.000	38.03	10.12	48.15	74.00	-25.85	peak
3	11862.000	35.69	15.41	51.10	74.00	-22.90	peak
4	13567.000	35.06	17.14	52.20	74.00	-21.80	peak
5	14810.000	34.05	17.97	52.02	74.00	-21.98	peak
6	17296.000	29.95	22.59	52.54	74.00	-21.46	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

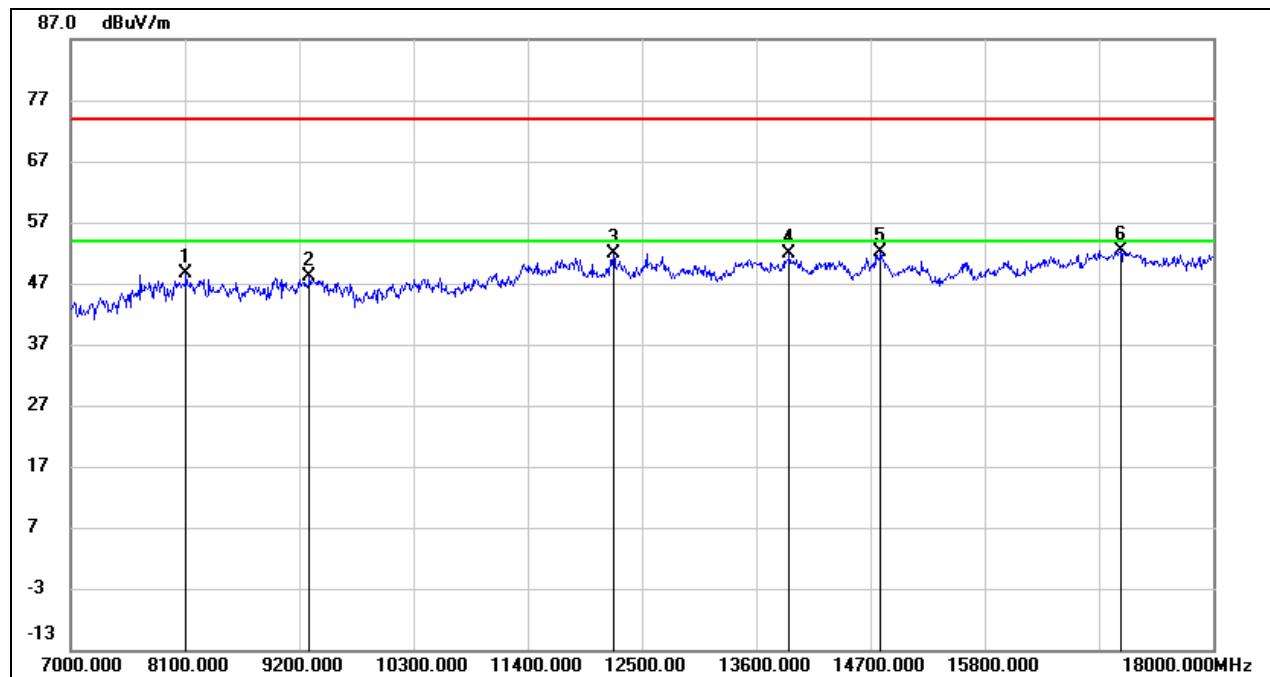
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8111.000	38.37	10.14	48.51	74.00	-25.49	peak
2	9299.000	37.63	10.40	48.03	74.00	-25.97	peak
3	12225.000	35.93	15.99	51.92	74.00	-22.08	peak
4	13919.000	34.34	17.55	51.89	74.00	-22.11	peak
5	14799.000	34.08	18.04	52.12	74.00	-21.88	peak
6	17109.000	30.49	21.91	52.40	74.00	-21.60	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

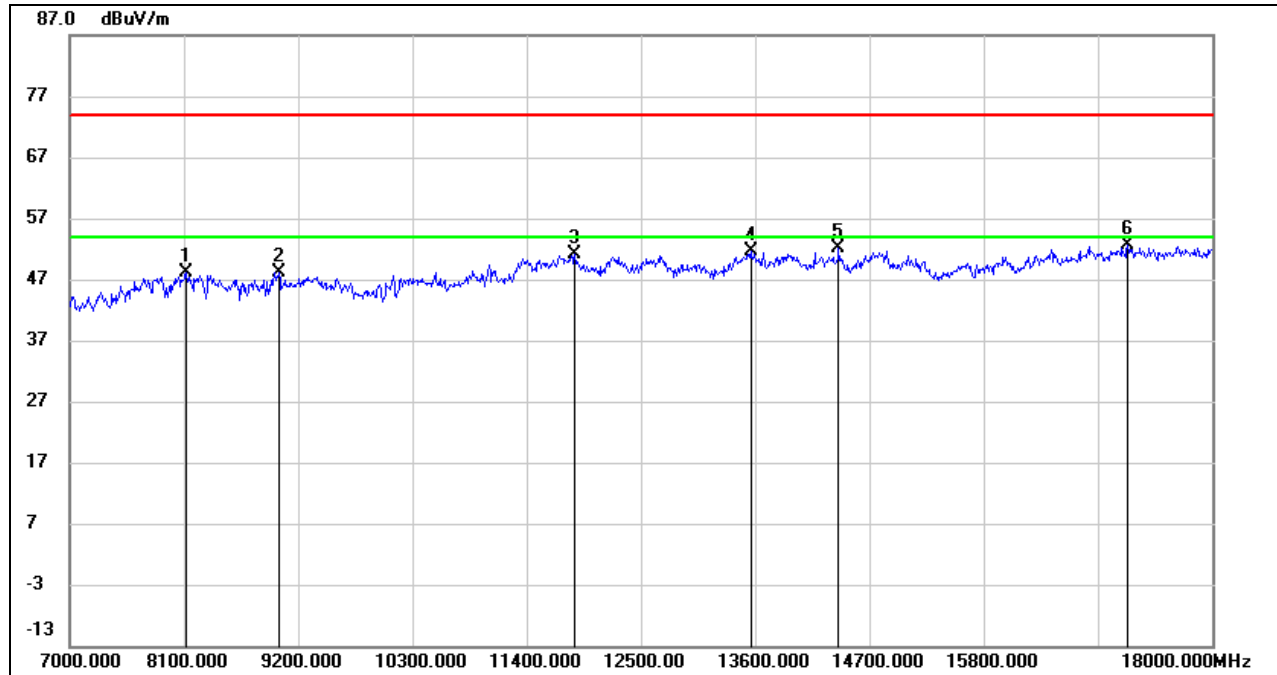
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8122.000	37.92	10.10	48.02	74.00	-25.98	peak
2	9013.000	37.05	11.12	48.17	74.00	-25.83	peak
3	11862.000	35.76	15.41	51.17	74.00	-22.83	peak
4	13556.000	34.40	17.14	51.54	74.00	-22.46	peak
5	14403.000	34.62	17.39	52.01	74.00	-21.99	peak
6	17186.000	30.76	21.98	52.74	74.00	-21.26	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

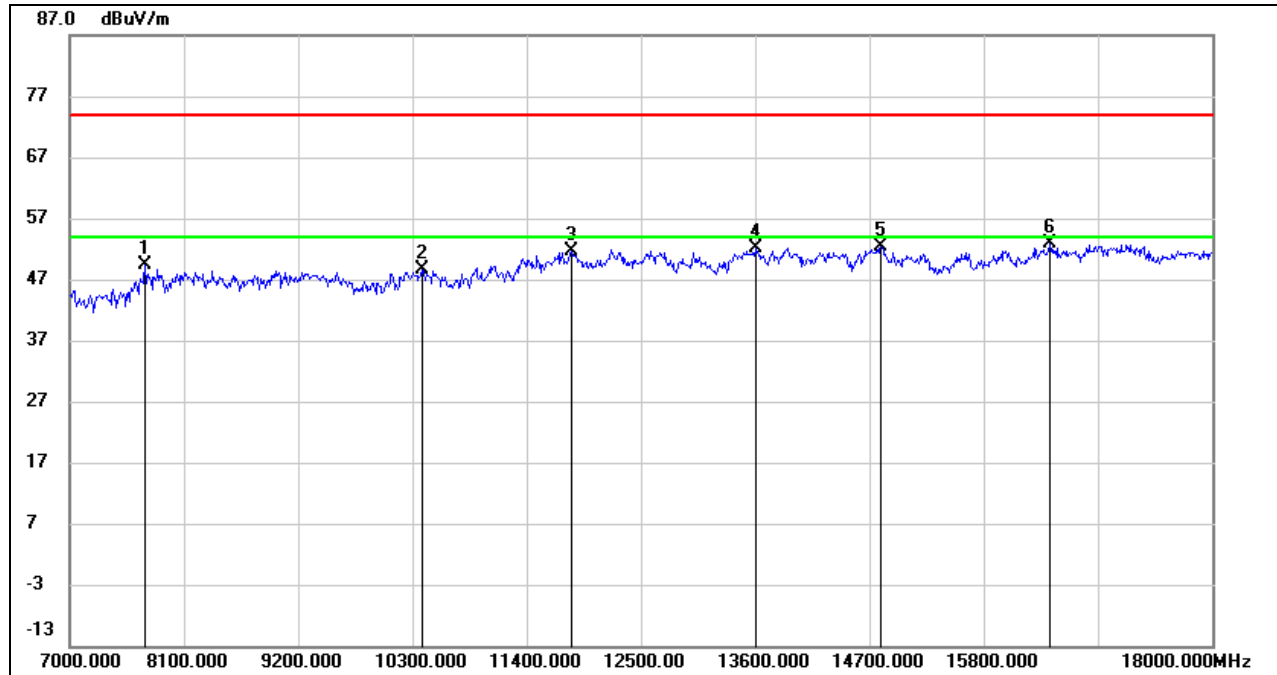
3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

## HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7726.000	40.68	8.68	49.36	74.00	-24.64	peak
2	10388.000	36.44	12.18	48.62	74.00	-25.38	peak
3	11829.000	36.38	15.32	51.70	74.00	-22.30	peak
4	13600.000	34.92	17.10	52.02	74.00	-21.98	peak
5	14810.000	34.49	17.97	52.46	74.00	-21.54	peak
6	16438.000	33.09	19.68	52.77	74.00	-21.23	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

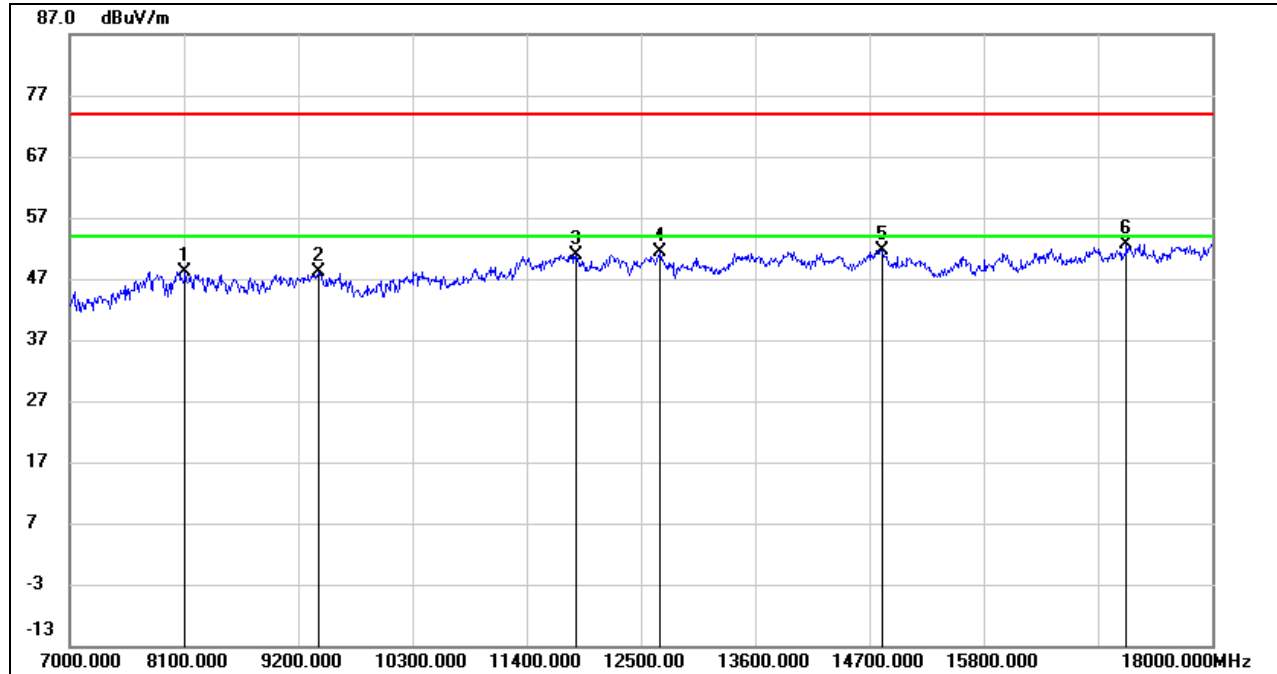
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### 8.3.4. 802.11ac VHT80 SISO MODE

#### UNII-1 BAND

#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8111.000	38.02	10.14	48.16	74.00	-25.84	peak
2	9398.000	37.08	10.96	48.04	74.00	-25.96	peak
3	11873.000	35.55	15.44	50.99	74.00	-23.01	peak
4	12687.000	35.62	15.64	51.26	74.00	-22.74	peak
5	14821.000	33.85	17.90	51.75	74.00	-22.25	peak
6	17175.000	30.78	21.97	52.75	74.00	-21.25	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

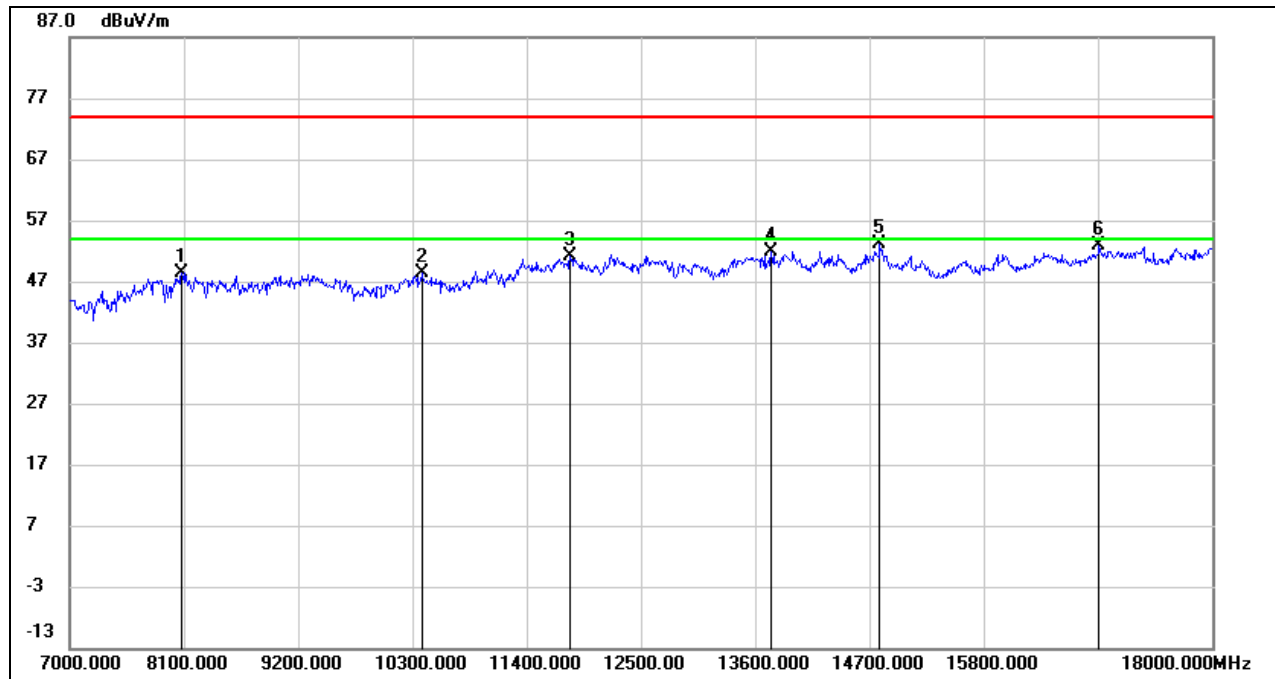
4. AVG:  $VBW=1/Ton$ , where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

7. Proper operation of the transmitter prior to adding the filter to the measurement chain.

8. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

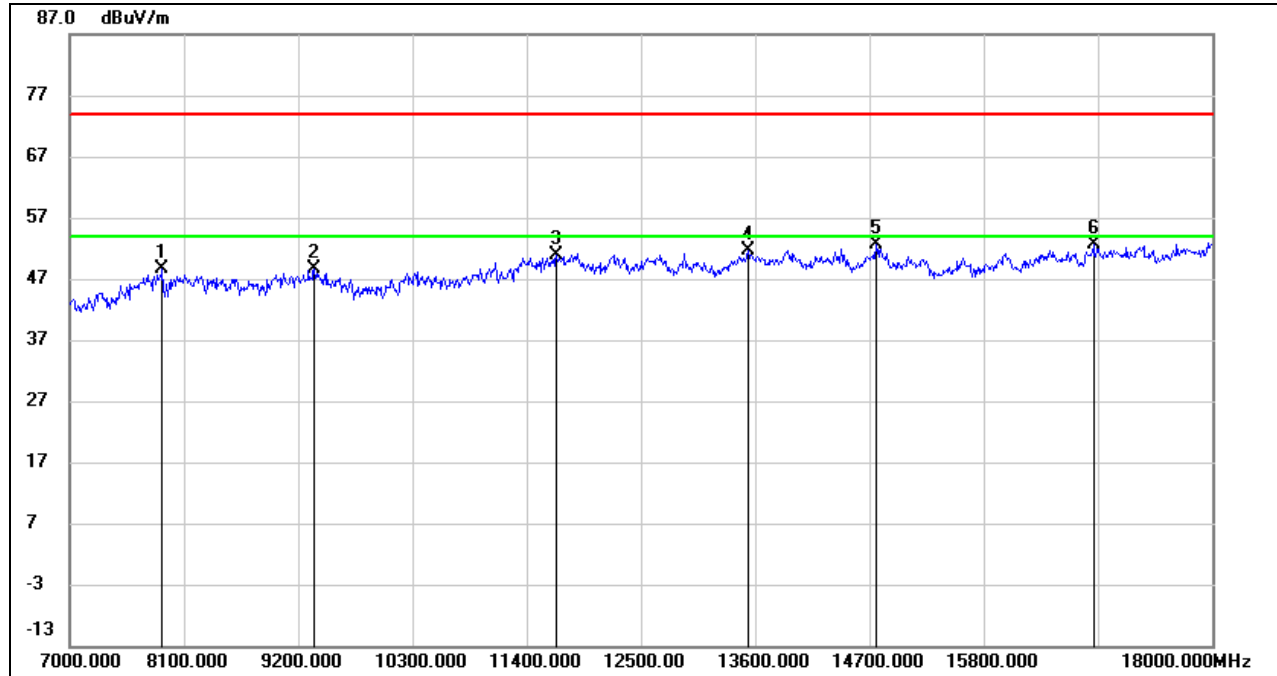
**HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8078.000	38.61	9.83	48.44	74.00	-25.56	peak
2	10388.000	36.25	12.18	48.43	74.00	-25.57	peak
3	11818.000	35.76	15.29	51.05	74.00	-22.95	peak
4	13754.000	34.16	17.61	51.77	74.00	-22.23	peak
5	14799.000	35.06	18.04	53.10	74.00	-20.90	peak
6	16911.000	31.28	21.54	52.82	74.00	-21.18	peak

Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Peak: Peak detector.  
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.  
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.  
6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

## UNII-3 BAND

### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7891.000	39.63	8.90	48.53	74.00	-25.47	peak
2	9354.000	37.85	10.70	48.55	74.00	-25.45	peak
3	11686.000	35.57	15.27	50.84	74.00	-23.16	peak
4	13534.000	34.41	17.18	51.59	74.00	-22.41	peak
5	14766.000	34.81	17.92	52.73	74.00	-21.27	peak
6	16856.000	31.39	21.19	52.58	74.00	-21.42	peak

Note: 1. Measurement = Reading Level + Correct Factor.

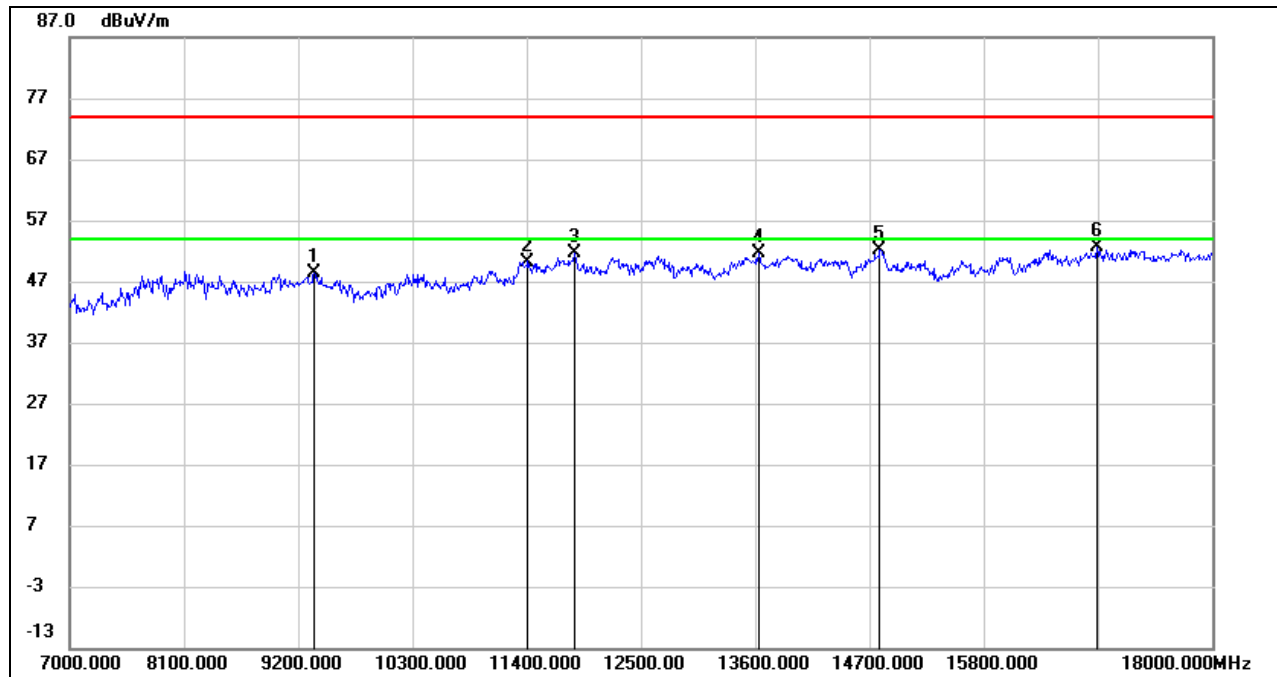
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

**HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9354.000	37.59	10.70	48.29	74.00	-25.71	peak
2	11411.000	35.51	14.74	50.25	74.00	-23.75	peak
3	11862.000	36.23	15.41	51.64	74.00	-22.36	peak
4	13633.000	34.31	17.27	51.58	74.00	-22.42	peak
5	14799.000	34.18	18.04	52.22	74.00	-21.78	peak
6	16889.000	31.16	21.47	52.63	74.00	-21.37	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

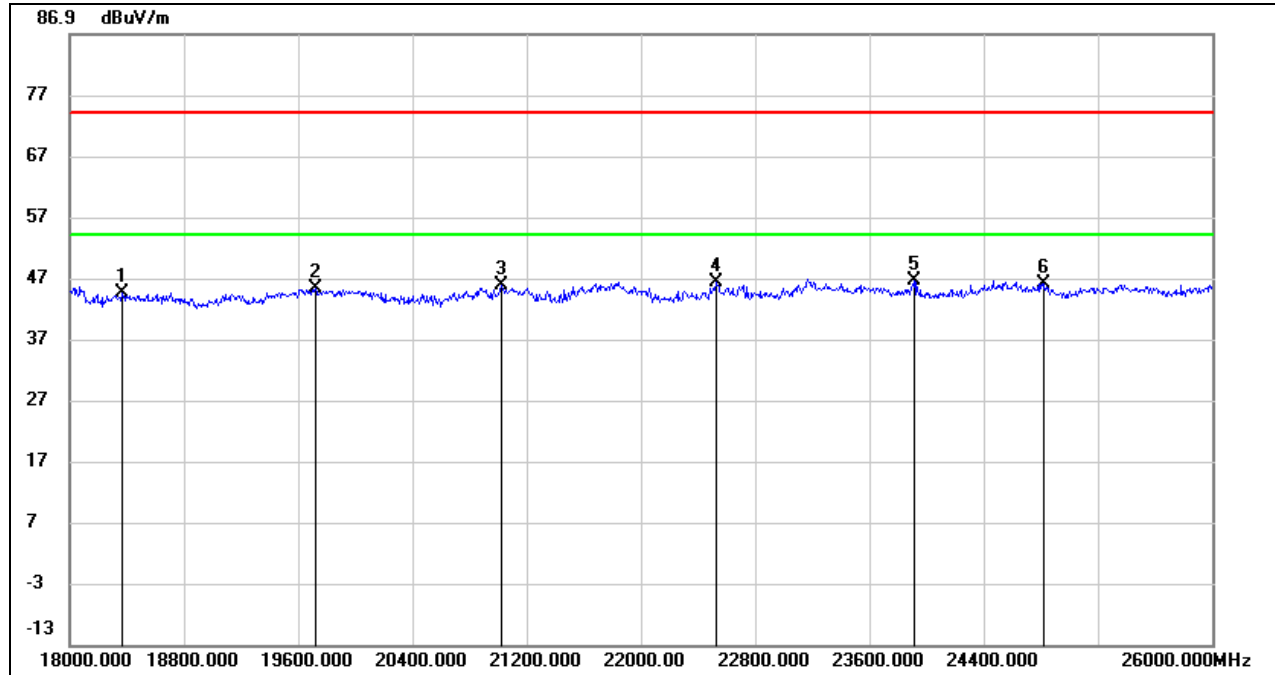
6. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.



## 8.4. SPURIOUS EMISSIONS (18 GHz ~ 26 GHz)

### 8.4.1. 802.11a SISO MODE

#### SPURIOUS EMISSIONS (UNII-1 BAND MID CHANNEL, HORIZONTAL, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18368.000	49.01	-4.38	44.63	74.00	-29.37	peak
2	19720.000	49.58	-4.39	45.19	74.00	-28.81	peak
3	21024.000	51.12	-5.30	45.82	74.00	-28.18	peak
4	22528.000	52.16	-5.79	46.37	74.00	-27.63	peak
5	23912.000	50.82	-4.23	46.59	74.00	-27.41	peak
6	24824.000	47.77	-1.69	46.08	74.00	-27.92	peak

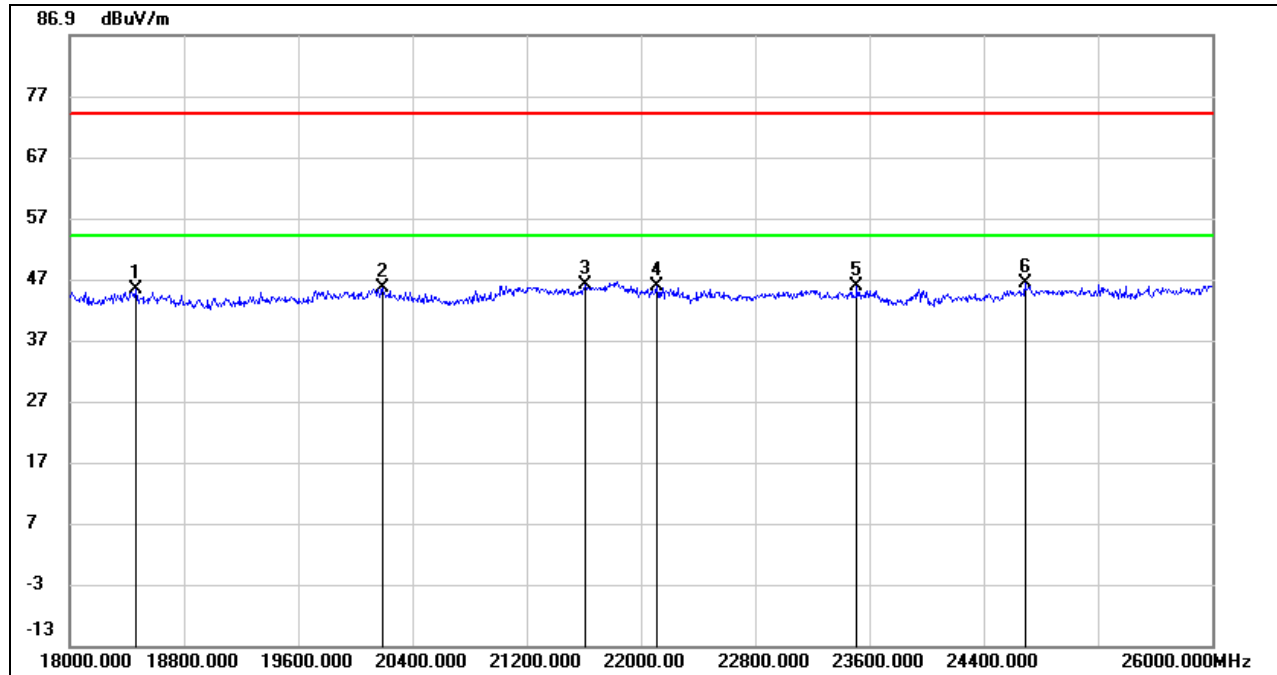
Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18464.000	49.70	-4.39	45.31	74.00	-28.69	peak
2	20192.000	50.37	-4.76	45.61	74.00	-28.39	peak
3	21608.000	51.73	-5.76	45.97	74.00	-28.03	peak
4	22112.000	51.97	-6.17	45.80	74.00	-28.20	peak
5	23512.000	50.51	-4.76	45.75	74.00	-28.25	peak
6	24688.000	48.39	-2.11	46.28	74.00	-27.72	peak

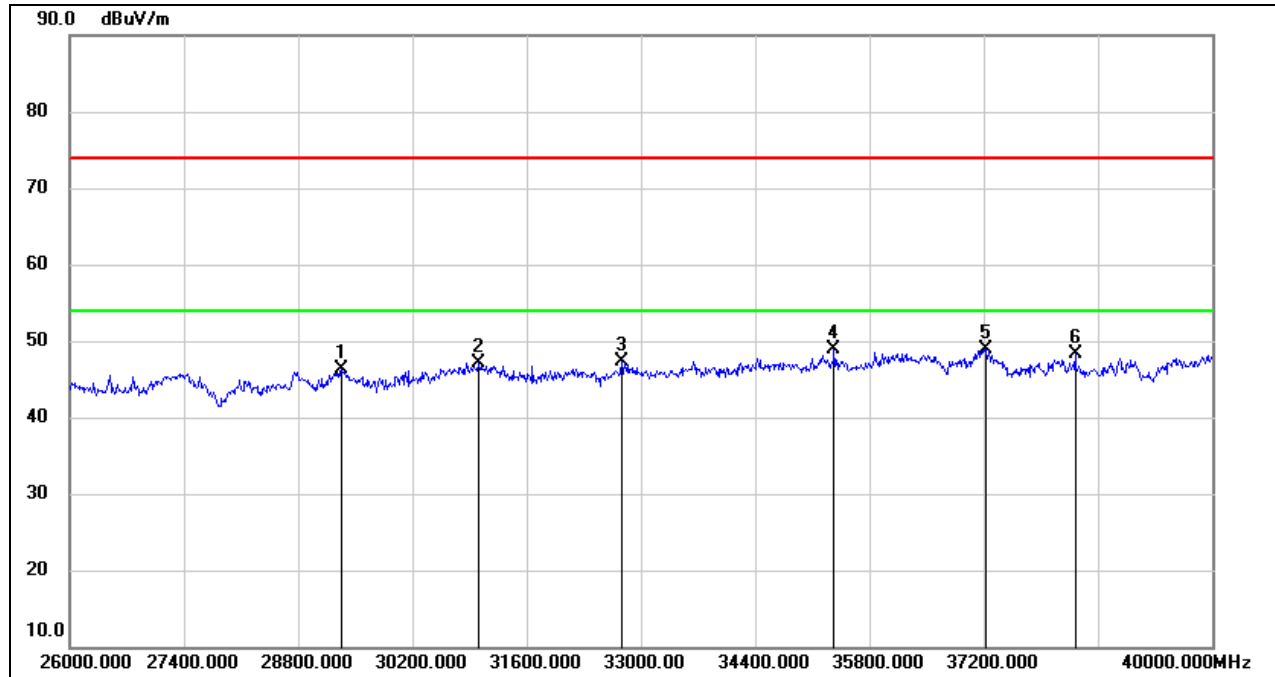
Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Peak: Peak detector.  
4. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

Note: All the modes and antennas had been tested, but only the worst data was recorded in the report.

## 8.5. SPURIOUS EMISSIONS (26 GHz ~ 40 GHz)

### 8.5.1. 802.11a SISO MODE

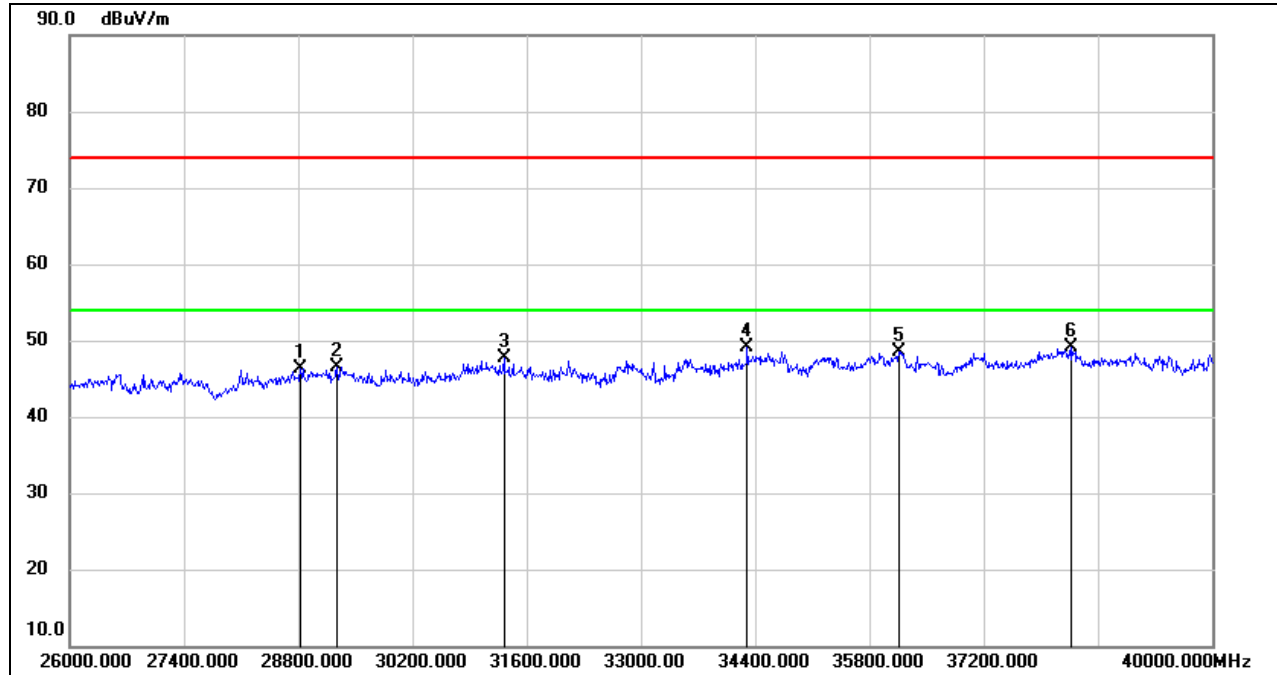
#### SPURIOUS EMISSIONS (UNII-1 BAND MID CHANNEL, HORIZONTAL, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	29332.000	47.16	-0.93	46.23	74.00	-27.77	peak
2	31012.000	47.83	-0.71	47.12	74.00	-26.88	peak
3	32762.000	48.45	-1.21	47.24	74.00	-26.76	peak
4	35366.000	46.40	2.59	48.99	74.00	-25.01	peak
5	37228.000	45.73	3.14	48.87	74.00	-25.13	peak
6	38320.000	44.56	3.77	48.33	74.00	-25.67	peak

Note: 1. Measurement = Reading Level + Correct Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Peak: Peak detector.  
4. Proper operation of the transmitter prior to adding the filter to the measurement chain.  
5. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

### SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	28828.000	47.13	-0.79	46.34	74.00	-27.66	peak
2	29276.000	47.51	-1.01	46.50	74.00	-27.50	peak
3	31320.000	48.61	-0.93	47.68	74.00	-26.32	peak
4	34302.000	47.95	1.10	49.05	74.00	-24.95	peak
5	36164.000	45.06	3.52	48.58	74.00	-25.42	peak
6	38278.000	45.32	3.82	49.14	74.00	-24.86	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Proper operation of the transmitter prior to adding the filter to the measurement chain.

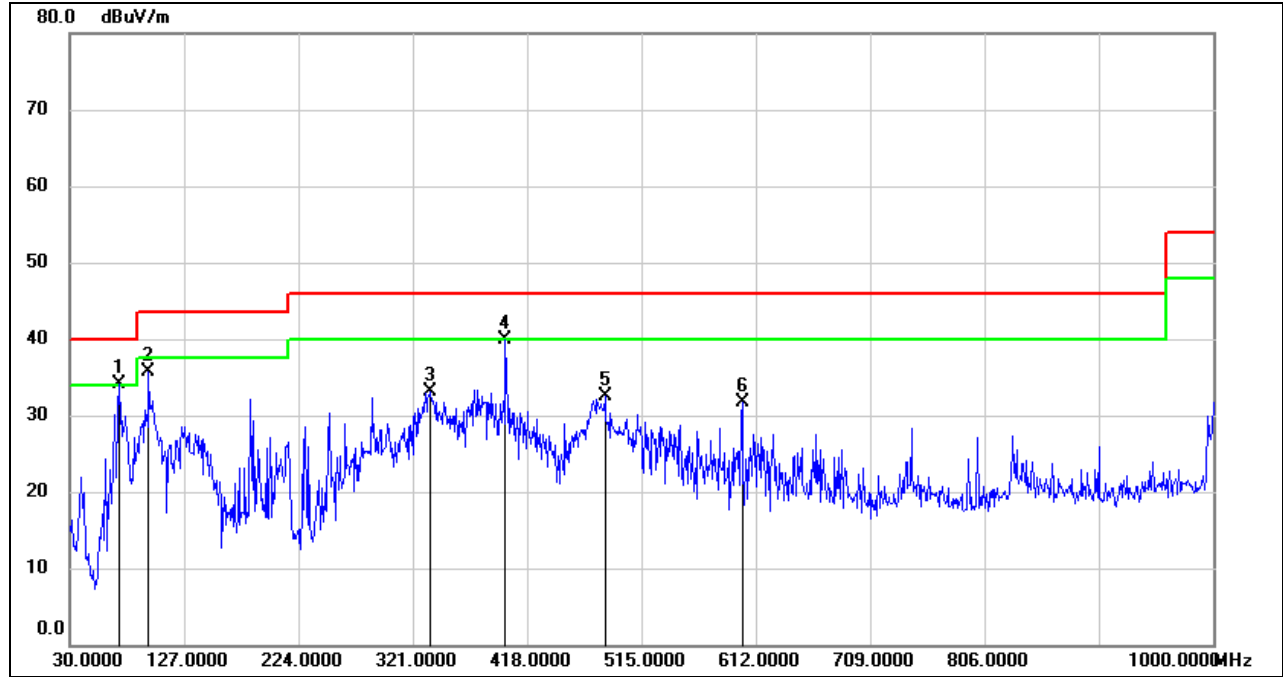
5. Since non-restricted band peak emissions are less than the average limit, they also comply with the -27dBm/MHz (68.2dBuV/m) limit.

Note: All the modes and antennas had been tested, but only the worst data was recorded in the report.

## 8.6. SPURIOUS EMISSIONS (30 MHz ~ 1 GHz)

### 8.6.1. 802.11a SISO MODE

#### SPURIOUS EMISSIONS (UNII-1 BAND MID CHANNEL, HORIZONTAL, WORST-CASE CONFIGURATION)

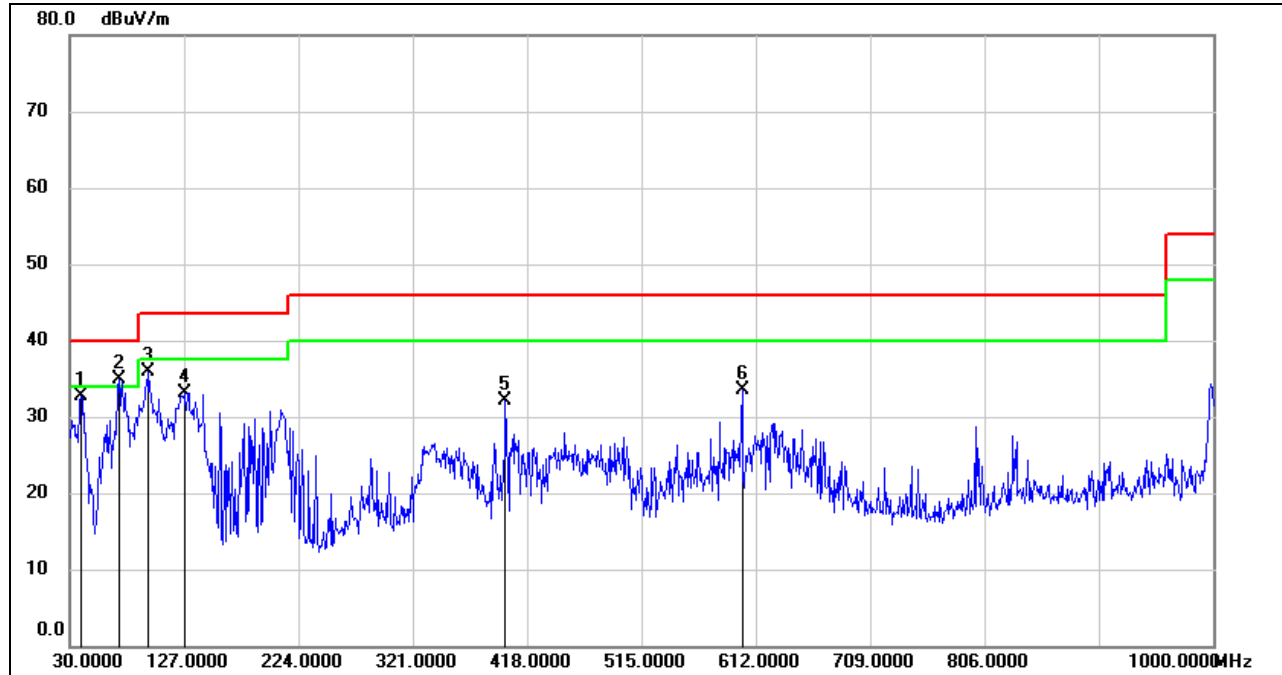


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	71.7100	54.81	-20.70	34.11	40.00	-5.89	QP
2	96.9300	57.09	-21.38	35.71	43.50	-7.79	QP
3	335.5500	47.69	-14.54	33.15	46.00	-12.85	QP
4	399.5700	53.21	-13.37	39.84	46.00	-6.16	QP
5	483.9600	44.23	-11.76	32.47	46.00	-13.53	QP
6	600.3600	41.17	-9.54	31.63	46.00	-14.37	QP

Note: 1. Result Level = Read Level + Correct Factor.  
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.  
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.



**SPURIOUS EMISSIONS (UNII-1 BAND MID CHANNEL, VERTICAL, WORST-CASE CONFIGURATION)**



Note: 1. Result Level = Read Level + Correct Factor.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

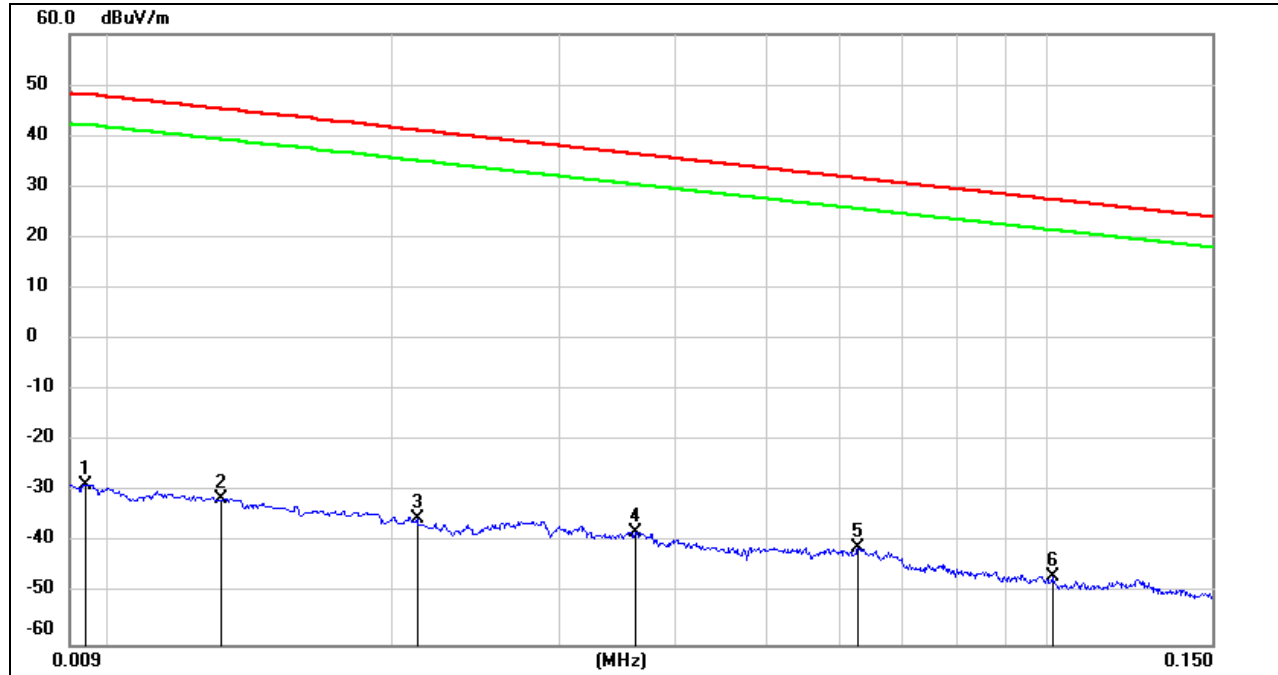
Note: All the modes and antennas had been tested, but only the worst data was recorded in the report.

## 8.7. SPURIOUS EMISSIONS BELOW 30 MHz

### 8.7.1. 802.11a SISO MODE

#### SPURIOUS EMISSIONS (UNII-1 BAND MID CHANNEL, LOOP ANTENNA FACE ON TO THE EUT, WORST-CASE CONFIGURATION)

9 kHz~ 150 kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.0094	72.66	-101.35	-28.69	48.05	-80.19	-3.45	-76.74	peak
2	0.0131	69.97	-101.38	-31.41	45.25	-82.91	-6.25	-76.66	peak
3	0.0212	66.04	-101.35	-35.31	41.07	-86.81	-10.43	-76.38	peak
4	0.0362	63.51	-101.42	-37.91	36.43	-89.41	-15.07	-74.34	peak
5	0.0627	60.65	-101.53	-40.88	31.66	-92.38	-19.84	-72.54	peak
6	0.1014	55.06	-101.79	-46.73	27.48	-98.23	-24.02	-74.21	peak

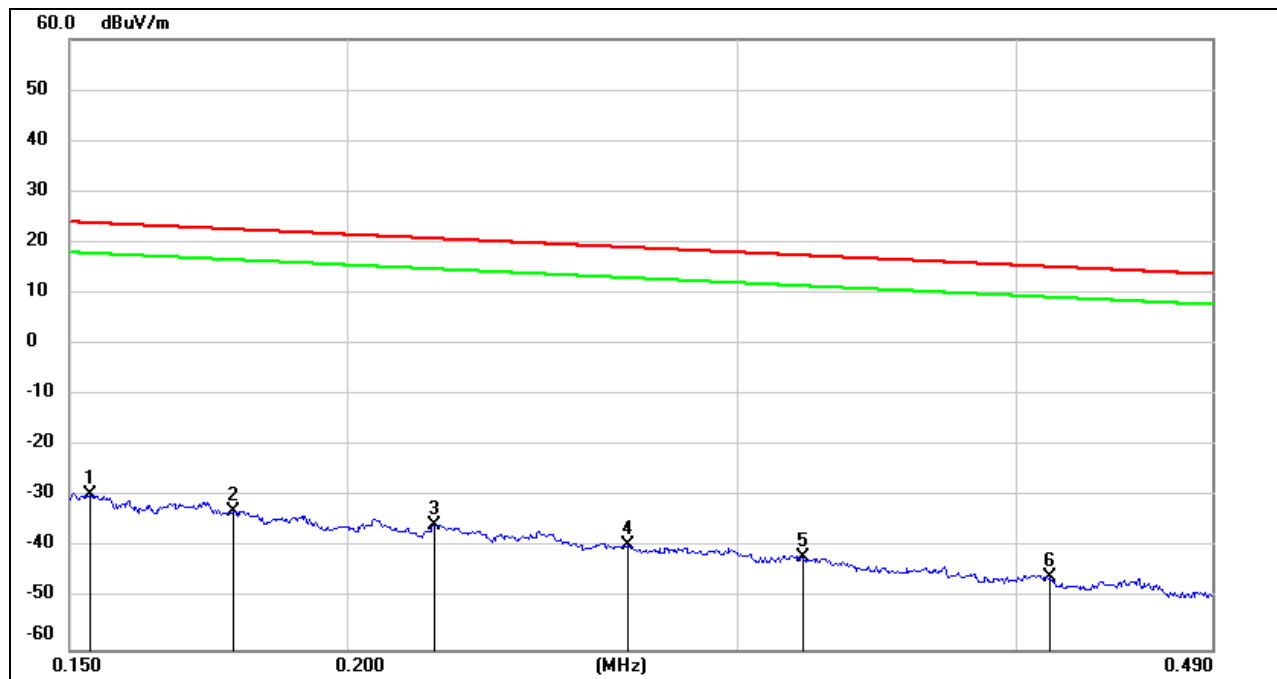
Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

4.  $\text{dBuA/m} = \text{dBuV/m} - 20\log_{10}(120\pi) = \text{dBuV/m} - 51.5$ .

### 150 kHz ~ 490 kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.1532	72.23	-101.64	-29.41	23.9	-80.91	-27.60	-53.31	peak
2	0.1776	68.95	-101.68	-32.73	22.62	-84.23	-28.88	-55.35	peak
3	0.2190	66.27	-101.75	-35.48	20.79	-86.98	-30.71	-56.27	peak
4	0.2676	62.51	-101.82	-39.31	19.05	-90.81	-32.45	-58.36	peak
5	0.3205	59.95	-101.88	-41.93	17.49	-93.43	-34.01	-59.42	peak
6	0.4142	56.23	-101.98	-45.75	15.26	-97.25	-36.24	-61.01	peak

Note: 1. Measurement = Reading Level + Correct Factor.

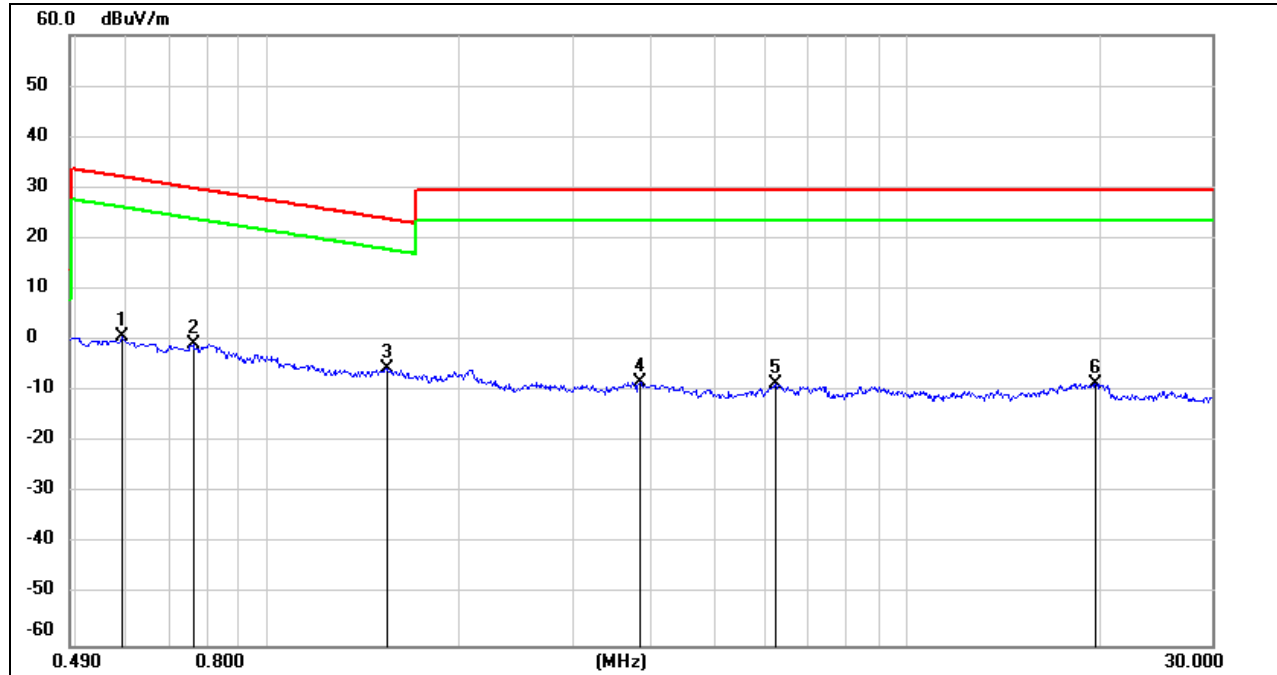
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

4.  $\text{dBuA/m} = \text{dBuV/m} - 20\log_{10}(120\pi) = \text{dBuV/m} - 51.5$ .



### 490 kHz ~ 30 MHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.5917	62.74	-62.08	0.66	32.16	-50.84	-19.34	-31.50	peak
2	0.7641	61.42	-62.12	-0.7	29.94	-52.20	-21.56	-30.64	peak
3	1.5380	56.35	-62.03	-5.68	23.86	-57.18	-27.64	-29.54	peak
4	3.8246	53.20	-61.38	-8.18	29.54	-59.68	-21.96	-37.72	peak
5	6.2445	52.63	-61.32	-8.69	29.54	-60.19	-21.96	-38.23	peak
6	19.7895	52.42	-60.84	-8.42	29.54	-59.92	-21.96	-37.96	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

4.  $\text{dBuA/m} = \text{dBuV/m} - 20\log_{10}(120\pi) = \text{dBuV/m} - 51.5$ .

Note: All the modes and antennas had been tested, but only the worst data was recorded in the report.

## 9. AC POWER LINE CONDUCTED EMISSIONS

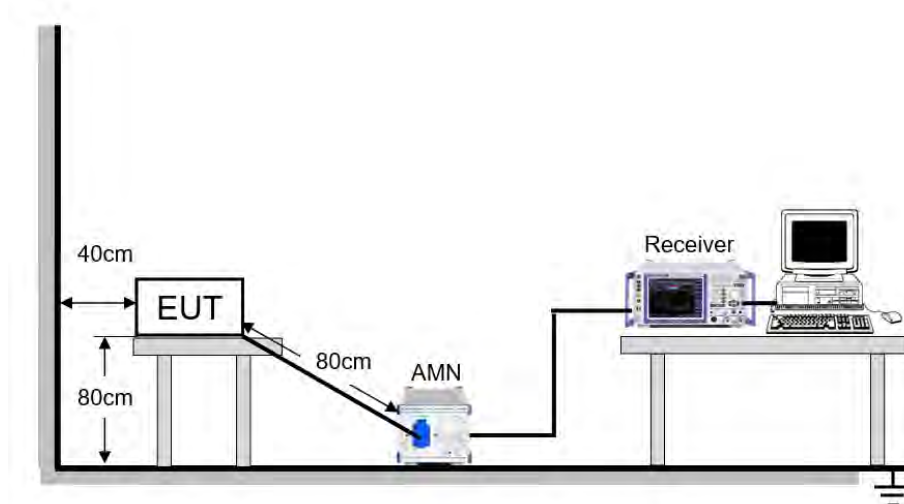
### LIMITS

Please refer to CFR 47 FCC §15.207 (a)

FREQUENCY (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

### TEST SETUP AND PROCEDURE

Refer to ANSI C63.10-2013 clause 6.2.



The EUT is put on a table of non-conducting material that is 80 cm high. The vertical conducting wall of shielding is located 40 cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9 kHz.

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

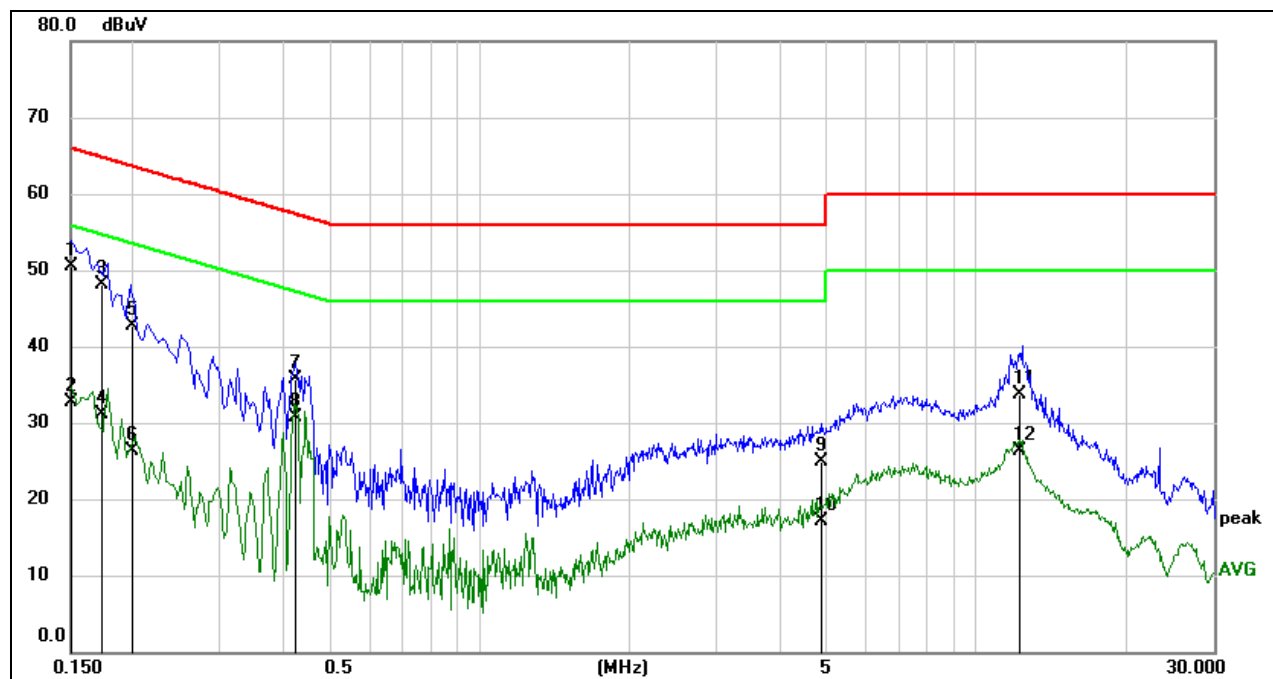
### TEST ENVIRONMENT

Temperature	24.6 °C	Relative Humidity	65.1 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120 V/60 Hz

## RESULTS

### 9.1. 802.11a MODE

#### LINE N RESULTS (UNII-1 BAND MID CHANNEL, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1513	40.99	9.59	50.58	65.93	-15.35	QP
2	0.1513	23.09	9.59	32.68	55.93	-23.25	AVG
3	0.1731	38.55	9.59	48.14	64.81	-16.67	QP
4	0.1731	21.60	9.59	31.19	54.81	-23.62	AVG
5	0.1999	33.06	9.59	42.65	63.61	-20.96	QP
6	0.1999	16.78	9.59	26.37	53.61	-27.24	AVG
7	0.4273	26.18	9.60	35.78	57.31	-21.53	QP
8	0.4273	21.13	9.60	30.73	47.31	-16.58	AVG
9	4.8446	15.28	9.61	24.89	56.00	-31.11	QP
10	4.8446	7.54	9.61	17.15	46.00	-28.85	AVG
11	12.2576	24.00	9.66	33.66	60.00	-26.34	QP
12	12.2576	16.66	9.66	26.32	50.00	-23.68	AVG

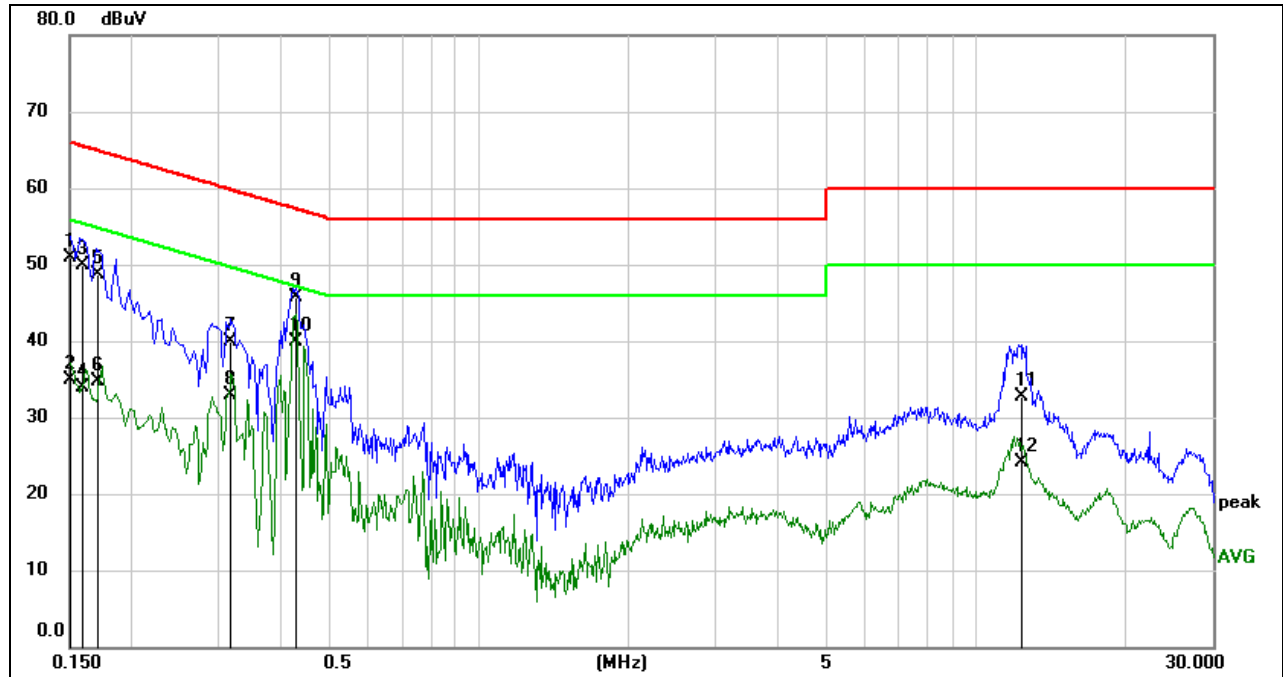
Note: 1. Result = Reading + Correct Factor.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz ~ 150 kHz), 9 kHz (150 kHz ~ 30 MHz).

4. Step size: 80 Hz (0.009 MHz ~ 0.15 MHz), 4 kHz (0.15 MHz ~ 30 MHz), Scan time: auto.

**LINE L RESULTS (UNII-1 BAND MID CHANNEL, WORST-CASE CONFIGURATION)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1510	41.34	9.59	50.93	65.94	-15.01	QP
2	0.1510	25.36	9.59	34.95	55.94	-20.99	AVG
3	0.1595	40.32	9.59	49.91	65.49	-15.58	QP
4	0.1595	24.31	9.59	33.90	55.49	-21.59	AVG
5	0.1712	39.13	9.59	48.72	64.90	-16.18	QP
6	0.1712	25.06	9.59	34.65	54.90	-20.25	AVG
7	0.3156	30.26	9.59	39.85	59.82	-19.97	QP
8	0.3156	23.38	9.59	32.97	49.82	-16.85	AVG
9	0.4291	36.18	9.60	45.78	57.27	-11.49	QP
10	0.4291	30.22	9.60	39.82	47.27	-7.45	AVG
11	12.2867	23.02	9.66	32.68	60.00	-27.32	QP
12	12.2867	14.44	9.66	24.10	50.00	-25.90	AVG

Note: 1. Result = Reading + Correct Factor.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz ~ 150 kHz), 9 kHz (150 kHz ~ 30 MHz).

4. Step size: 80 Hz (0.009 MHz ~ 0.15 MHz), 4 kHz (0.15 MHz ~ 30 MHz), Scan time: auto.

Note: All the modes had been tested, but only the worst data was recorded in the report.

## 10. FREQUENCY STABILITY

### LIMITS

The frequency of the carrier signal shall be maintained within band of operation.

### TEST PROCEDURE

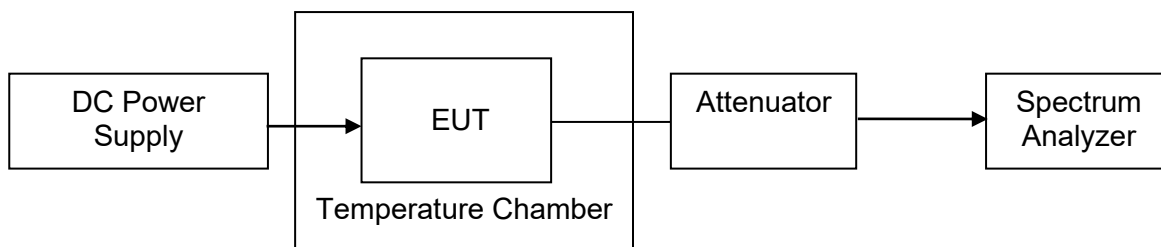
1. The EUT was placed inside an environmental chamber as the temperature in the chamber was varied between 0 °C ~ 40 °C (declared by customer).
2. The temperature was incremented by 10 °C intervals and the unit allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.
3. The primary supply voltage is varied from 85 % to 115 % of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Connect the EUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	10 kHz
VBW	$\geq 3 \times \text{RBW}$
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

4. While maintaining a constant temperature inside the environmental chamber, turn the EUT on and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized.
5. Allow the trace to stabilize, find the peak value of the power envelope and record the frequency, then calculated the frequency drift.

### TEST SETUP



**TEST ENVIRONMENT**

	Normal Test Conditions	Extreme Test Conditions
Temperature	NT(Normal Temperature): 23.5°C	LT(Low Temperature): 0°C
		HT(High Temperature): 40°C
Supply Voltage	NV(Normal Voltage): AC 120 V/60 Hz	LT(Low Voltage): AC 102 V/60 Hz
		HT(High Voltage): AC 138 V/60 Hz

**RESULTS**

Frequency Error vs. Voltage									
802.11a:5200MHz									
Temp.	Volt.	0 Minute		2 Minute		5 Minute		10 Minute	
		Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)
TN	VL	5200.0186	3.58	5199.9788	-4.07	5199.9873	-2.44	5200.0194	3.72
TN	VN	5199.9916	-1.62	5199.9962	-0.74	5200.0016	0.32	5199.9965	-0.68
TN	VH	5200.0204	3.92	5199.9811	-3.63	5199.9843	-3.03	5199.9853	-2.83
Frequency Error vs. Temperature									
802.11a:5200MHz									
Temp.	Volt.	0 Minute		2 Minute		5 Minute		10 Minute	
		Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)
40	VN	5200.0201	3.86	5199.9759	-4.63	5199.9857	-2.75	5199.9835	-3.18
30	VN	5199.9825	-3.37	5200.0174	3.35	5199.9929	-1.36	5200.0233	4.48
20	VN	5199.9811	-3.64	5200.0230	4.42	5200.0243	4.67	5199.9920	-1.55
10	VN	5199.9759	-4.63	5200.0127	2.44	5200.0209	4.02	5200.0191	3.68
0	VN	5199.9946	-1.03	5200.0063	1.20	5199.9872	-2.47	5199.9820	-3.46

Frequency Error vs. Voltage									
802.11a:5825MHz									
Temp.	Volt.	0 Minute		2 Minute		5 Minute		10 Minute	
		Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)
TN	VL	5824.9954	-0.79	5824.9908	-1.58	5824.9759	-4.14	5824.9969	-0.53
TN	VN	5824.9896	-1.79	5825.0161	2.76	5824.9752	-4.25	5824.9758	-4.16
TN	VH	5824.9834	-2.85	5824.9752	-4.26	5824.9761	-4.11	5824.9779	-3.79
Frequency Error vs. Temperature									
802.11a:5825MHz									
Temp.	Volt.	0 Minute		2 Minute		5 Minute		10 Minute	



		Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)
40	VN	5825.0002	0.03	5824.9984	-0.27	5825.0013	0.22	5824.9897	-1.77
30	VN	5825.0001	0.01	5824.9853	-2.53	5825.0067	1.16	5824.9961	-0.66
20	VN	5824.9803	-3.38	5825.0018	0.31	5825.0126	2.16	5824.9826	-2.98
10	VN	5824.9803	-3.39	5825.0039	0.67	5825.0004	0.06	5825.0170	2.91
0	VN	5824.9793	-3.55	5824.9761	-4.10	5825.0027	0.47	5824.9760	-4.12

Note: All antennas and test modes have been tested, only the worst data record in the report.

## 11. ANTENNA REQUIREMENTS

### APPLICABLE REQUIREMENTS

Please refer to FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Please refer to FCC §15.407(a)

If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### RESULTS

Complies



**11.1. Appendix Appendix A1: Emission Bandwidth****11.1.1. Test Result**

Test Mode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Verdict
11A	Ant2	5180	20.600	5169.760	5190.360	PASS
		5200	19.960	5189.880	5209.840	PASS
		5240	20.960	5229.480	5250.440	PASS
		5745	20.280	5734.800	5755.080	PASS
		5785	20.640	5774.760	5795.400	PASS
		5825	20.280	5814.680	5834.960	PASS
11N20SISO	Ant2	5180	20.880	5169.640	5190.520	PASS
		5200	20.920	5188.920	5209.840	PASS
		5240	20.920	5229.400	5250.320	PASS
		5745	21.160	5734.360	5755.520	PASS
		5785	20.680	5774.560	5795.240	PASS
		5825	20.560	5814.680	5835.240	PASS
11N40SISO	Ant2	5190	41.520	5169.280	5210.800	PASS
		5230	41.520	5209.360	5250.880	PASS
		5755	40.400	5734.600	5775.000	PASS
		5795	40.160	5775.160	5815.320	PASS
11AC20SISO	Ant2	5180	21.240	5169.640	5190.880	PASS
		5200	20.120	5190.000	5210.120	PASS
		5240	20.280	5229.960	5250.240	PASS
		5745	20.600	5735.040	5755.640	PASS
		5785	20.920	5774.560	5795.480	PASS
		5825	20.800	5814.520	5835.320	PASS
11AC40SISO	Ant2	5190	40.400	5169.680	5210.080	PASS
		5230	40.160	5210.160	5250.320	PASS
		5755	40.800	5734.520	5775.320	PASS
		5795	41.280	5774.280	5815.560	PASS
11AC80SISO	Ant2	5210	80.800	5169.360	5250.160	PASS
		5775	81.760	5734.520	5755.640	PASS



## 11.1.2. Test Graphs











11N20SISO Ant2 5745



11N20SISO Ant2 5785



11N20SISO Ant2 5825





11N40SISO Ant2 5795



11AC20SISO Ant2 5180



11AC20SISO Ant2 5200

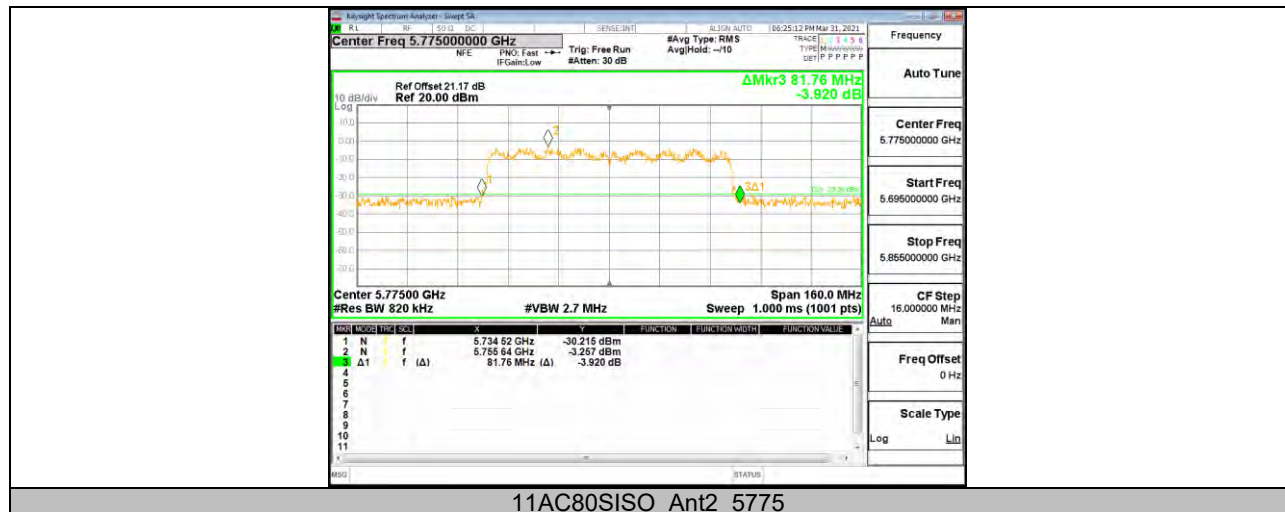








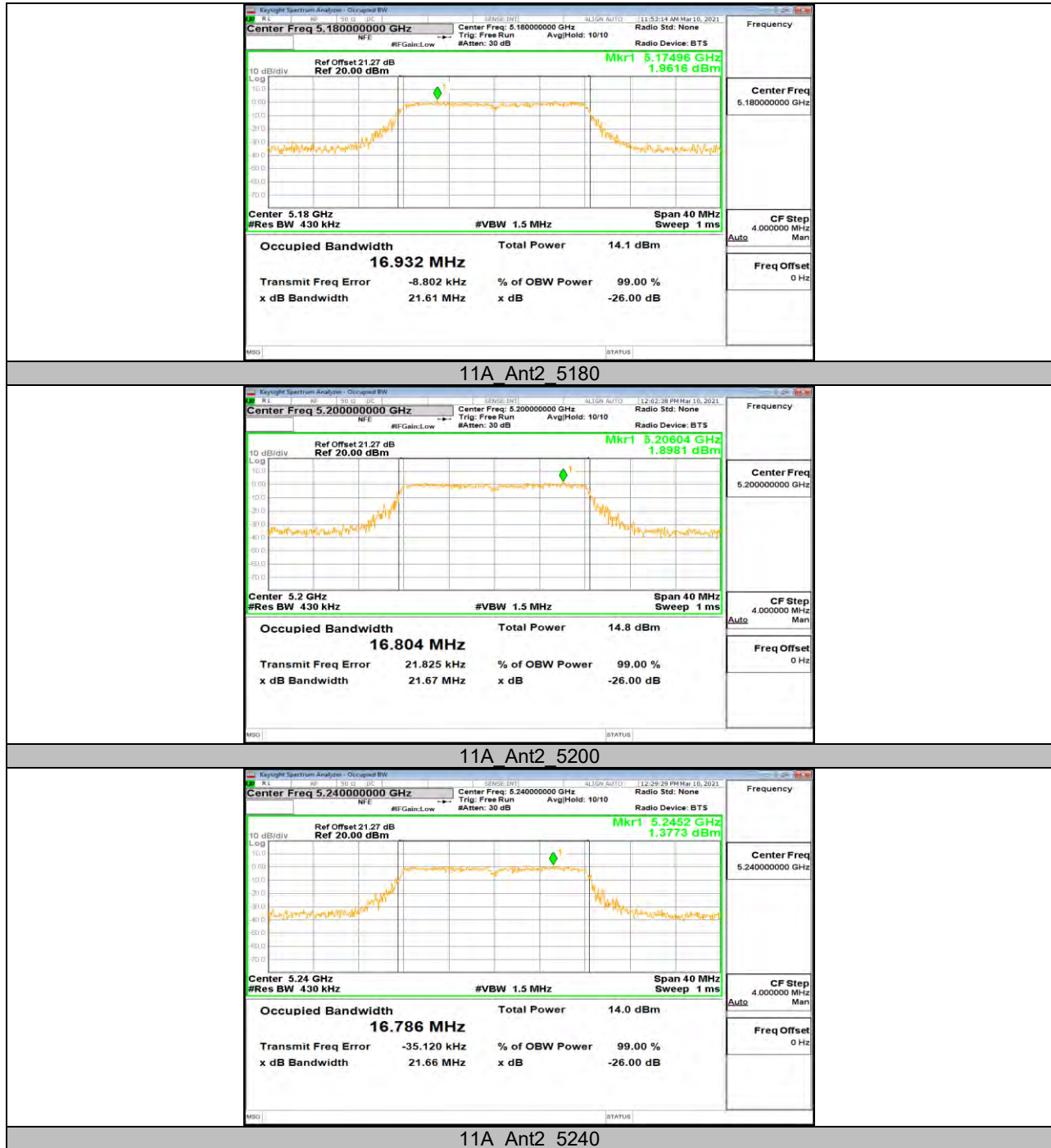




**11.2. Appendix A2: Occupied channel bandwidth****11.2.1. Test Result**

Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Verdict
11A	Ant2	5180	16.932	5171.525	5188.457	PASS
		5200	16.804	5191.620	5208.424	PASS
		5240	16.786	5231.572	5248.358	PASS
		5745	16.786	5736.597	5753.383	PASS
		5785	16.724	5776.624	5793.348	PASS
		5825	16.695	5816.694	5833.389	PASS
11N20SISO	Ant2	5180	17.859	5171.094	5188.953	PASS
		5200	17.812	5191.083	5208.895	PASS
		5240	17.861	5231.114	5248.975	PASS
		5745	17.841	5736.073	5753.914	PASS
		5785	17.869	5776.038	5793.907	PASS
		5825	17.808	5816.077	5833.885	PASS
11N40SISO	Ant2	5190	36.421	5171.868	5208.289	PASS
		5230	36.448	5211.814	5248.262	PASS
		5755	36.420	5736.800	5773.220	PASS
		5795	36.228	5776.913	5813.141	PASS
11AC20SISO	Ant2	5180	17.904	5171.106	5189.010	PASS
		5200	17.842	5191.096	5208.938	PASS
		5240	17.786	5231.142	5248.928	PASS
		5745	17.821	5736.116	5753.937	PASS
		5785	17.861	5776.103	5793.964	PASS
		5825	17.839	5816.061	5833.900	PASS
11AC40SISO	Ant2	5190	36.254	5171.925	5208.179	PASS
		5230	36.500	5211.773	5248.273	PASS
		5755	36.317	5736.887	5773.204	PASS
		5795	36.359	5776.896	5813.255	PASS
11AC80SISO	Ant2	5210	76.142	5172.296	5248.438	PASS
		5775	76.167	5737.012	5813.179	PASS

## 11.2.2. Test Graphs















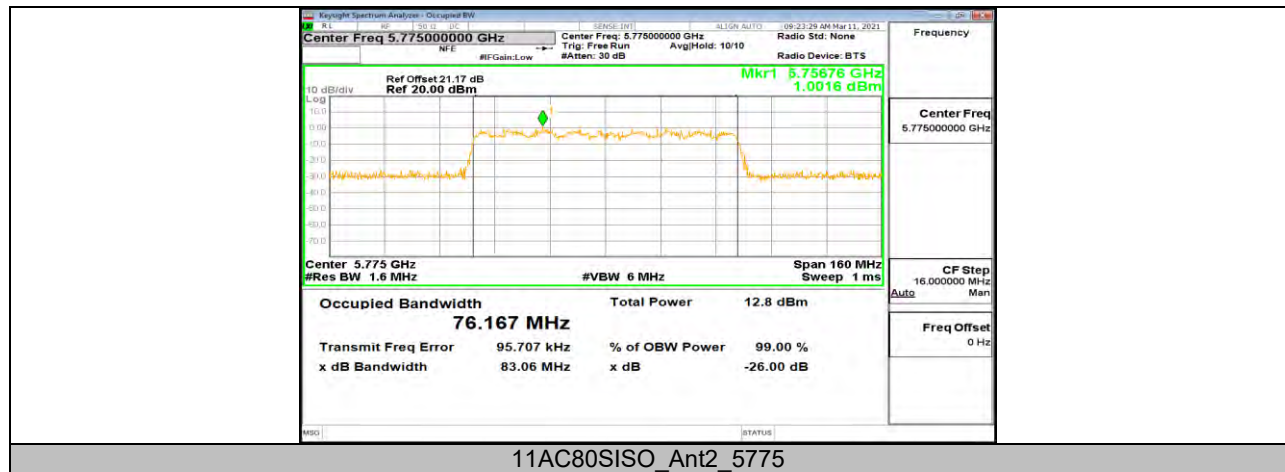














### 11.3. Appendix A3: Min emission bandwidth

#### 11.3.1. Test Result

Test Mode	Antenna	Channel	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant2	5745	16.380	5736.810	5753.190	0.5	PASS
		5785	16.440	5776.780	5793.220	0.5	PASS
		5825	16.530	5816.690	5833.220	0.5	PASS
11N20SISO	Ant2	5745	16.830	5736.360	5753.190	0.5	PASS
		5785	16.980	5776.210	5793.190	0.5	PASS
		5825	17.610	5816.210	5833.820	0.5	PASS
11N40SISO	Ant2	5755	33.900	5737.420	5771.320	0.5	PASS
		5795	35.400	5777.420	5812.820	0.5	PASS
11AC20SISO	Ant2	5745	17.790	5736.090	5753.880	0.5	PASS
		5785	17.370	5776.180	5793.550	0.5	PASS
		5825	17.670	5816.180	5833.850	0.5	PASS
11AC40SISO	Ant2	5755	35.580	5737.120	5772.700	0.5	PASS
		5795	36.240	5777.000	5813.240	0.5	PASS
11AC80SISO	Ant2	5775	74.040	5737.680	5811.720	0.5	PASS



### 11.3.2. Test Graphs

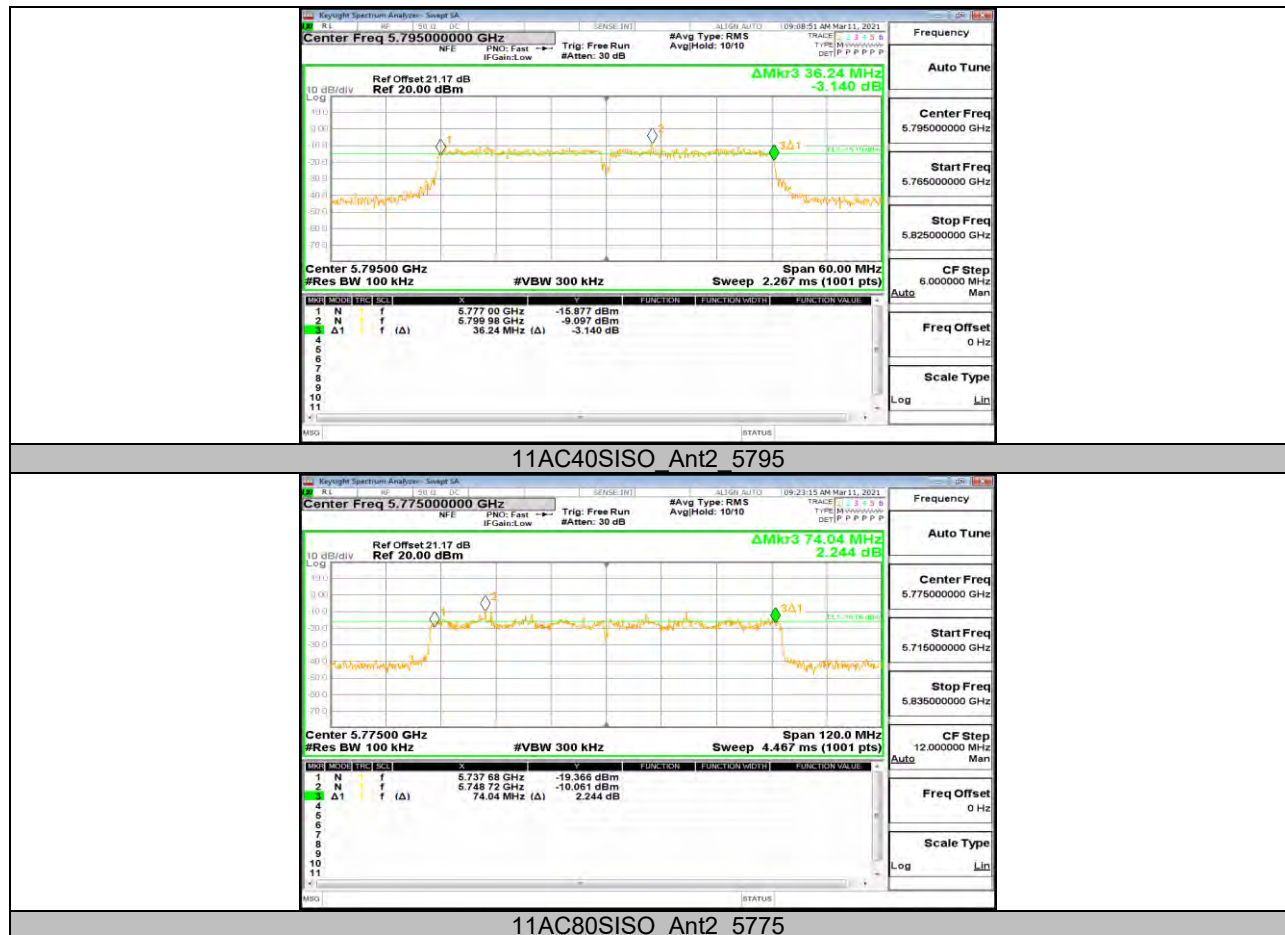














**11.4. Appendix B: Maximum conducted output power****11.4.1. Test Result**

Test Mode	Antenna	Channel	Power [dBm]	FCC Limit [dBm]	ISED Limit [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
11A	Ant2	5180	10.02	<=23.98	---	13.50	<=22.29	PASS
		5200	10.23	<=23.98	---	13.71	<=22.25	PASS
		5240	9.43	<=23.98	---	12.91	<=22.25	PASS
		5745	9.25	<=30	<=30	---	---	PASS
		5785	8.89	<=30	<=30	---	---	PASS
		5825	8.40	<=30	<=30	---	---	PASS
11N20SISO	Ant2	5180	8.93	<=23.98	---	12.41	<=22.52	PASS
		5200	8.96	<=23.98	---	12.44	<=22.51	PASS
		5240	8.36	<=23.98	---	11.84	<=22.52	PASS
		5745	7.97	<=30	<=30	---	---	PASS
		5785	7.95	<=30	<=30	---	---	PASS
		5825	7.21	<=30	<=30	---	---	PASS
11N40SISO	Ant2	5190	8.99	<=23.98	---	12.47	<=23	PASS
		5230	8.81	<=23.98	---	12.29	<=23	PASS
		5755	8.23	<=30	<=30	---	---	PASS
		5795	7.89	<=30	<=30	---	---	PASS
11AC20SISO	Ant2	5180	8.72	<=23.98	---	12.20	<=22.53	PASS
		5200	9.32	<=23.98	---	12.80	<=22.51	PASS
		5240	8.38	<=23.98	---	11.86	<=22.50	PASS
		5745	8.24	<=30	<=30	---	---	PASS
		5785	7.73	<=30	<=30	---	---	PASS
		5825	7.24	<=30	<=30	---	---	PASS
11AC40SISO	Ant2	5190	9.18	<=23.98	---	12.66	<=23	PASS
		5230	9.37	<=23.98	---	12.85	<=23	PASS
		5755	7.04	<=30	<=30	---	---	PASS
		5795	7.10	<=30	<=30	---	---	PASS
11AC80SISO	Ant2	5210	7.15	<=23.98	---	10.63	<=23	PASS
		5775	7.23	<=30	<=30	---	---	PASS

Note : The Duty Cycle Factor is compensated in the graph.

## 11.5. Appendix C: Maximum power spectral density

### 11.5.1. Test Result

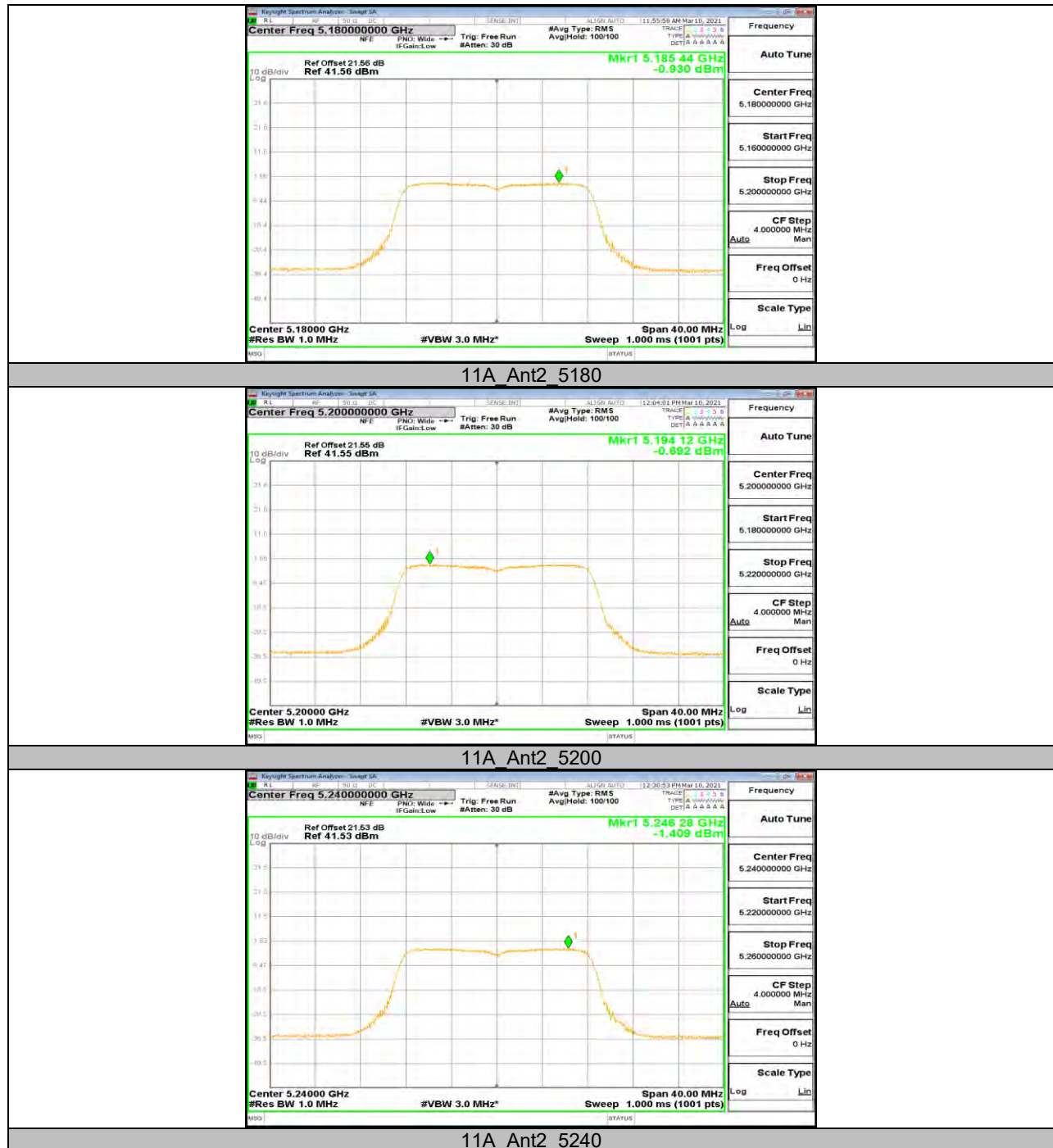
Test Mode	Antenna	Channel	Power [dBm/MHz]	Limit [dBm/MHz]	EIRP [dBm/MHz]	Limit [dBm/MHz]	Verdict
11A	Ant2	5180	-0.93	<=11	2.55	<=10	PASS
		5200	-0.69	<=11	2.79	<=10	PASS
		5240	-1.41	<=11	2.07	<=10	PASS
		5745	-4.36	<=30	---	---	PASS
		5785	-4.69	<=30	---	---	PASS
		5825	-5.16	<=30	---	---	PASS
11N20SISO	Ant2	5180	-2.13	<=11	1.35	<=10	PASS
		5200	-2.16	<=11	1.32	<=10	PASS
		5240	-2.75	<=11	0.73	<=10	PASS
		5745	-5.69	<=30	---	---	PASS
		5785	-5.39	<=30	---	---	PASS
		5825	-6.57	<=30	---	---	PASS
11N40SISO	Ant2	5190	-5.25	<=11	-1.77	<=10	PASS
		5230	-5.1	<=11	-1.62	<=10	PASS
		5755	-8.76	<=30	---	---	PASS
		5795	-9.14	<=30	---	---	PASS
11AC20SISO	Ant2	5180	-2.28	<=11	1.20	<=10	PASS
		5200	-1.9	<=11	1.58	<=10	PASS
		5240	-2.77	<=11	0.71	<=10	PASS
		5745	-5.77	<=30	---	---	PASS
		5785	-6.13	<=30	---	---	PASS
		5825	-6.7	<=30	---	---	PASS
11AC40SISO	Ant2	5190	-4.83	<=11	-1.35	<=10	PASS
		5230	-5.07	<=11	-1.59	<=10	PASS
		5755	-10.01	<=30	---	---	PASS
		5795	-9.89	<=30	---	---	PASS
11AC80SISO	Ant2	5775	-11.57	<=30	---	---	PASS

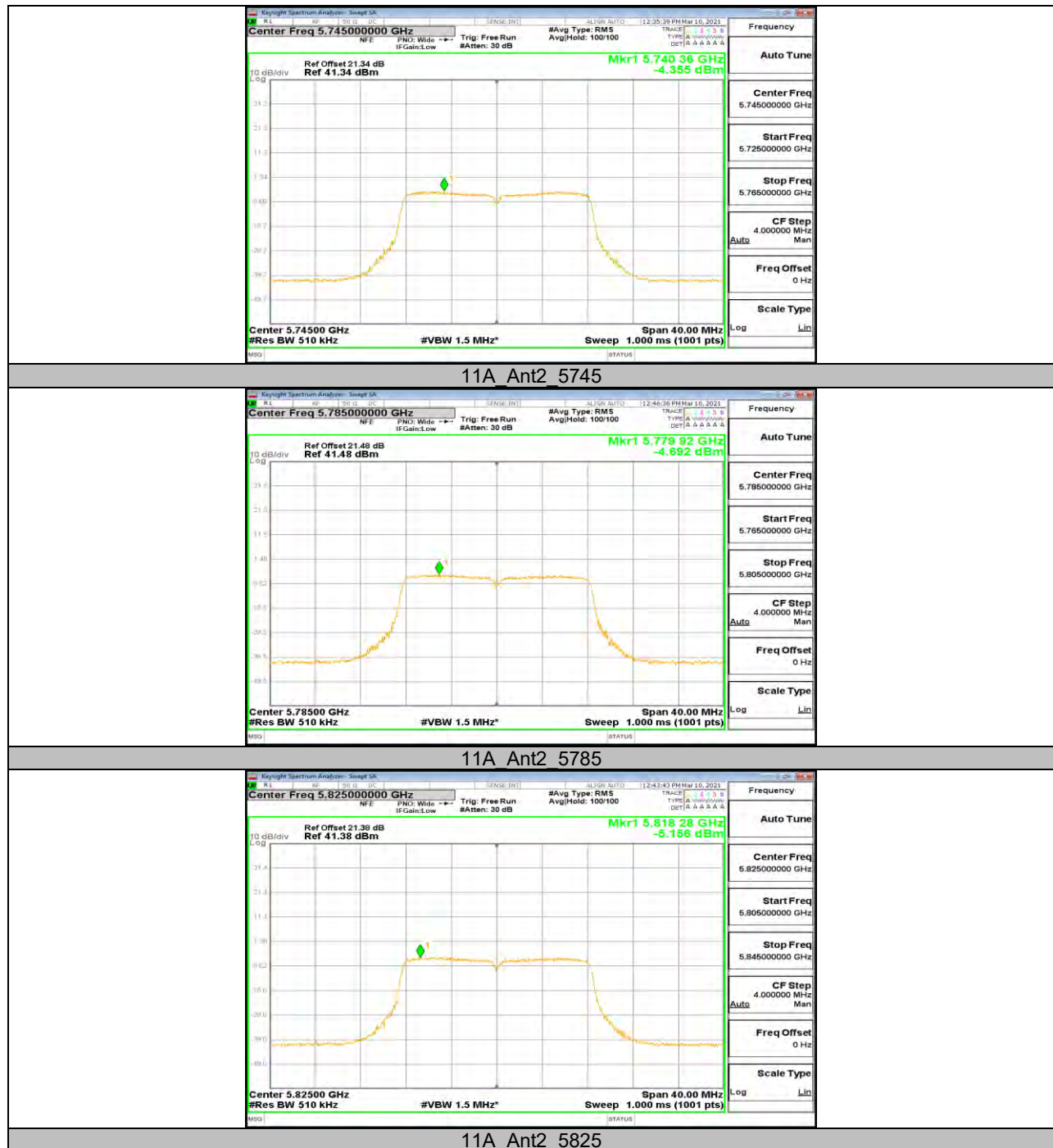
Note : 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.

2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

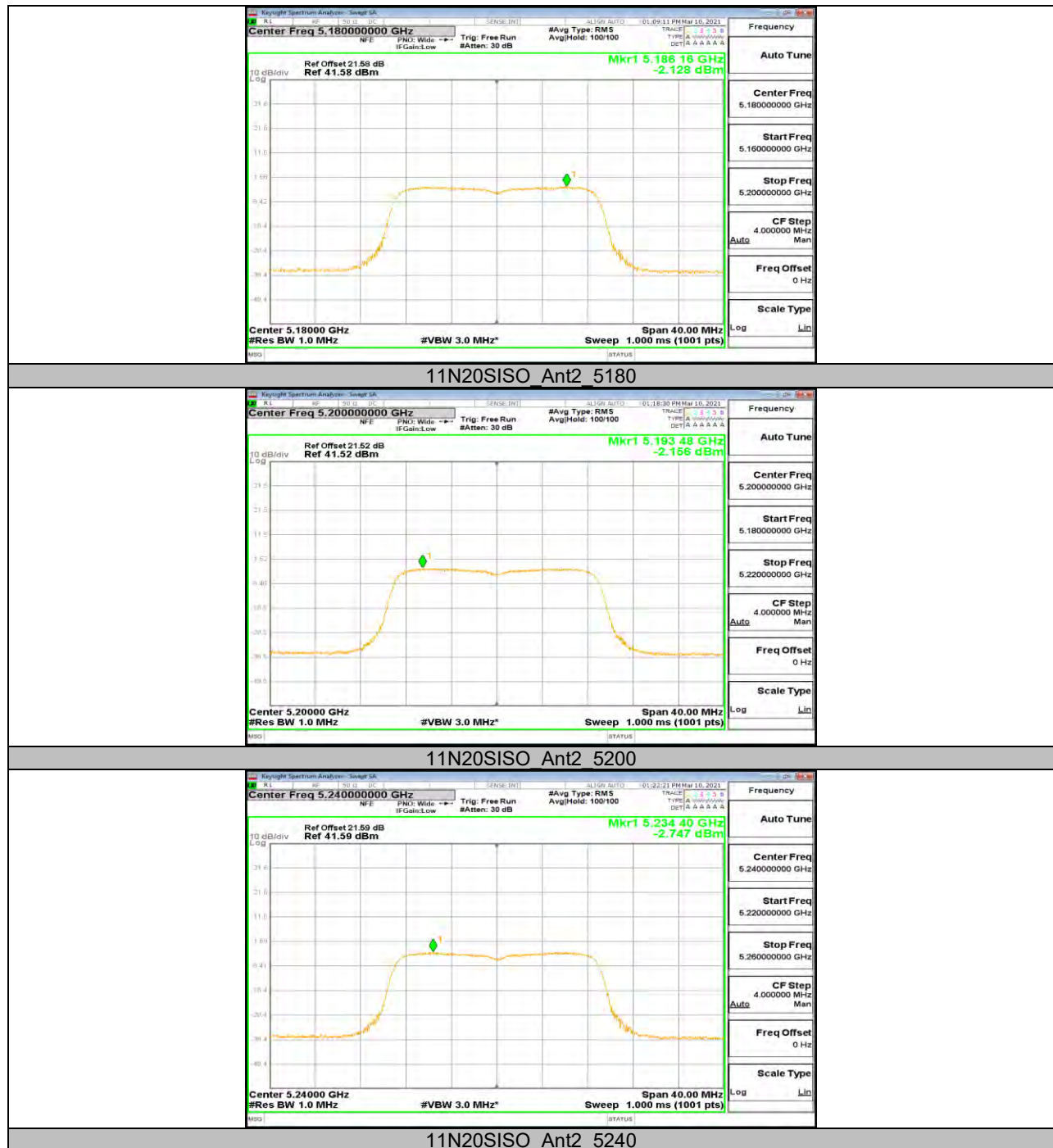


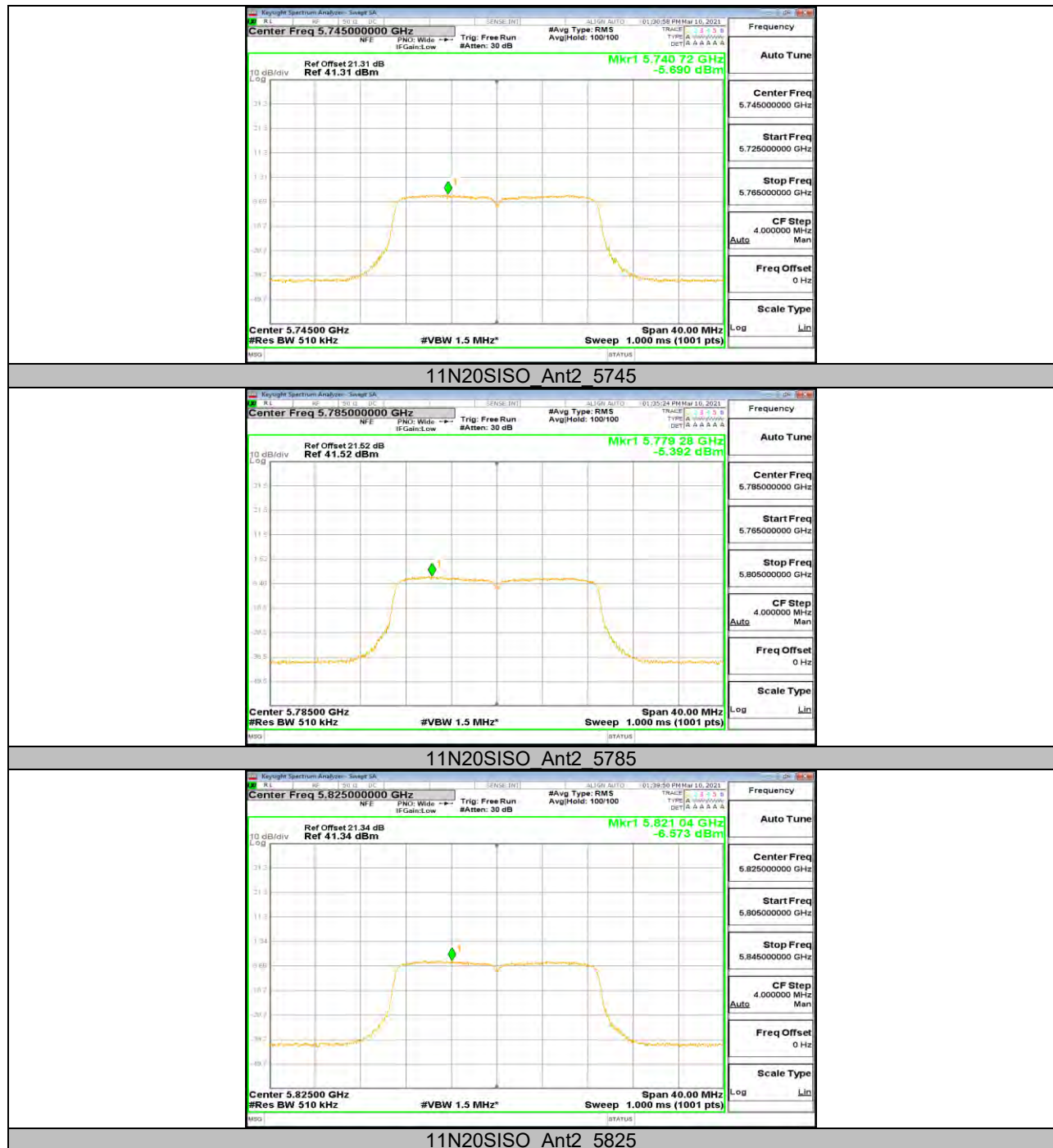
## 11.5.2. Test Graphs



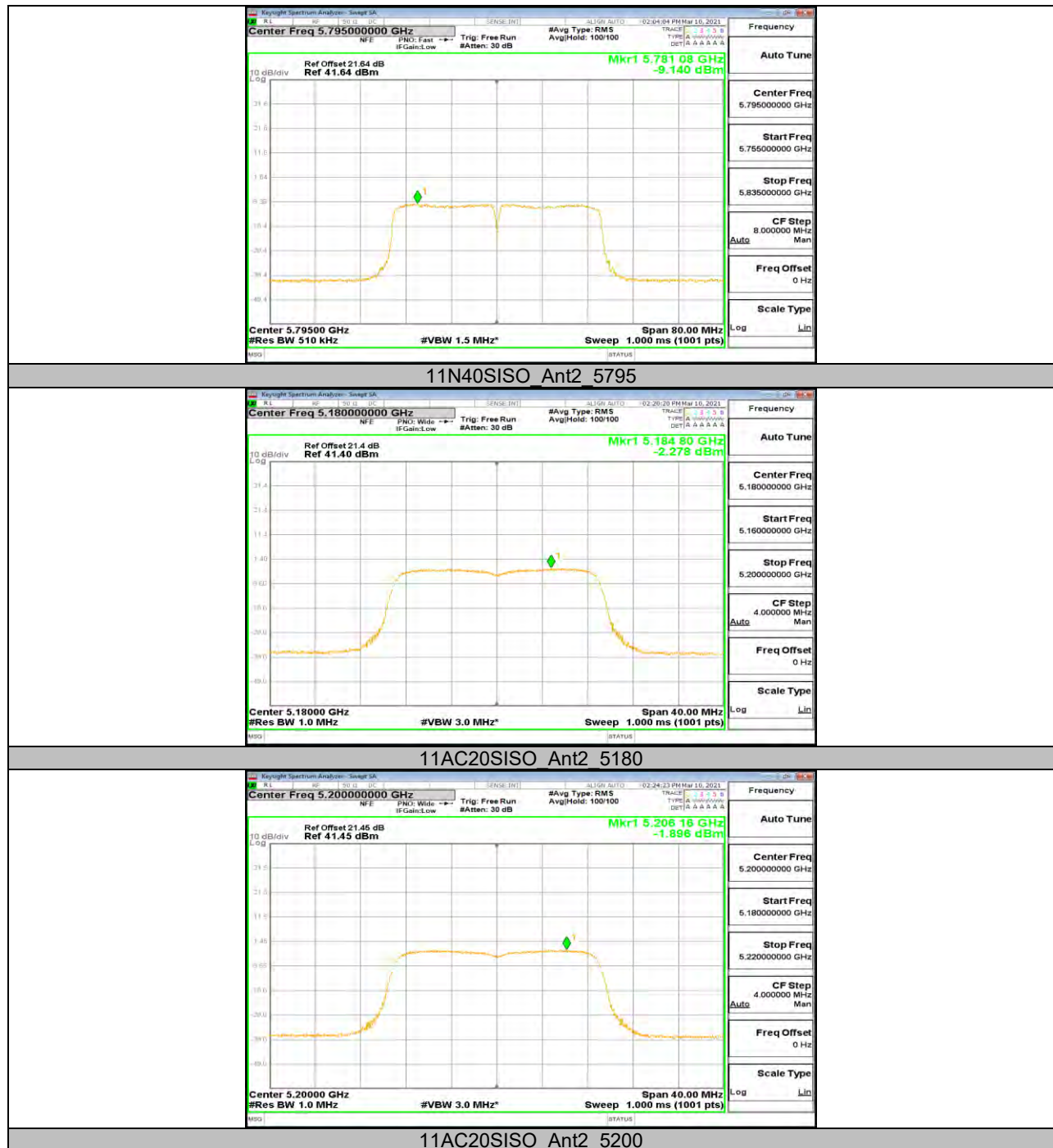




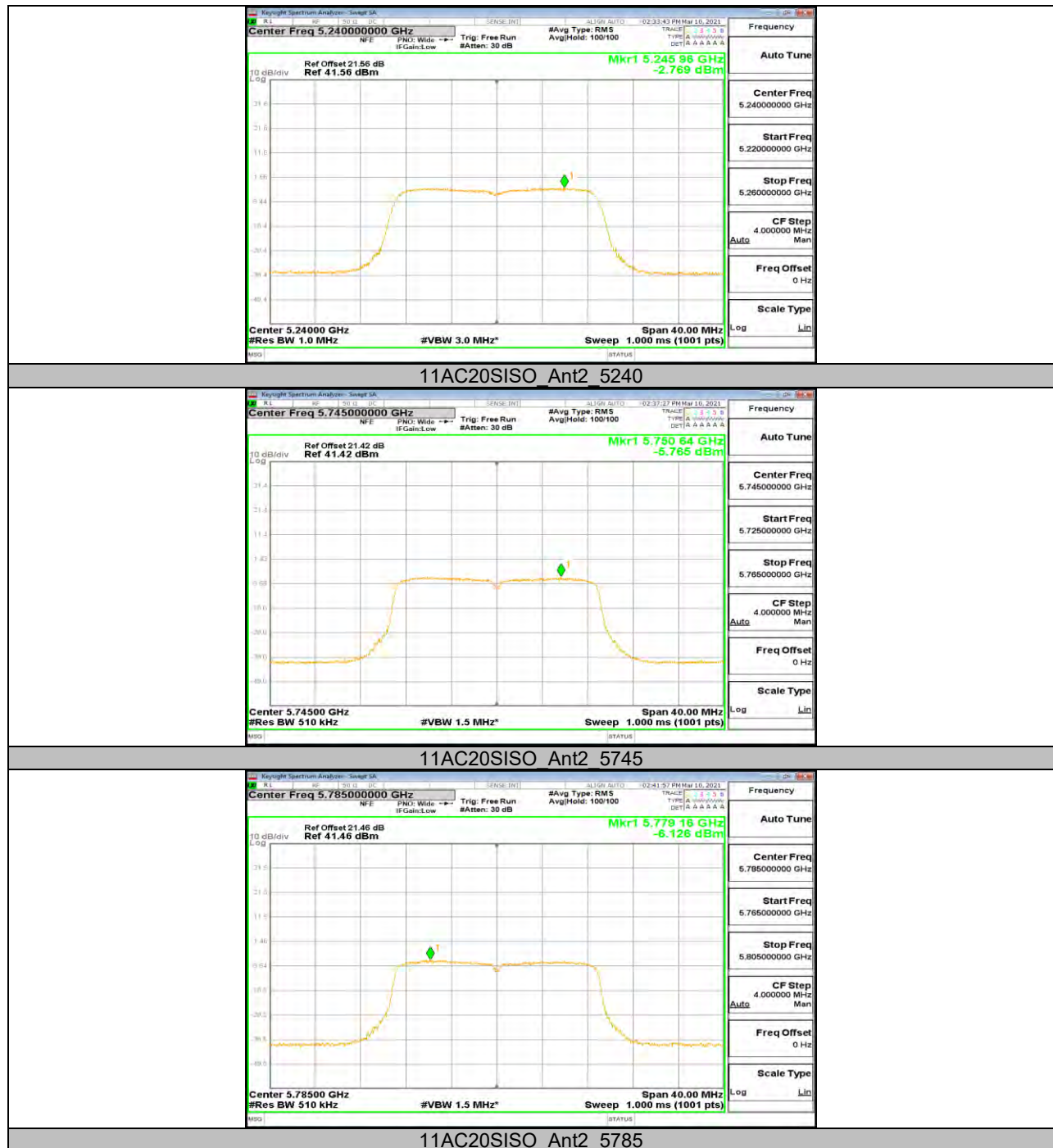


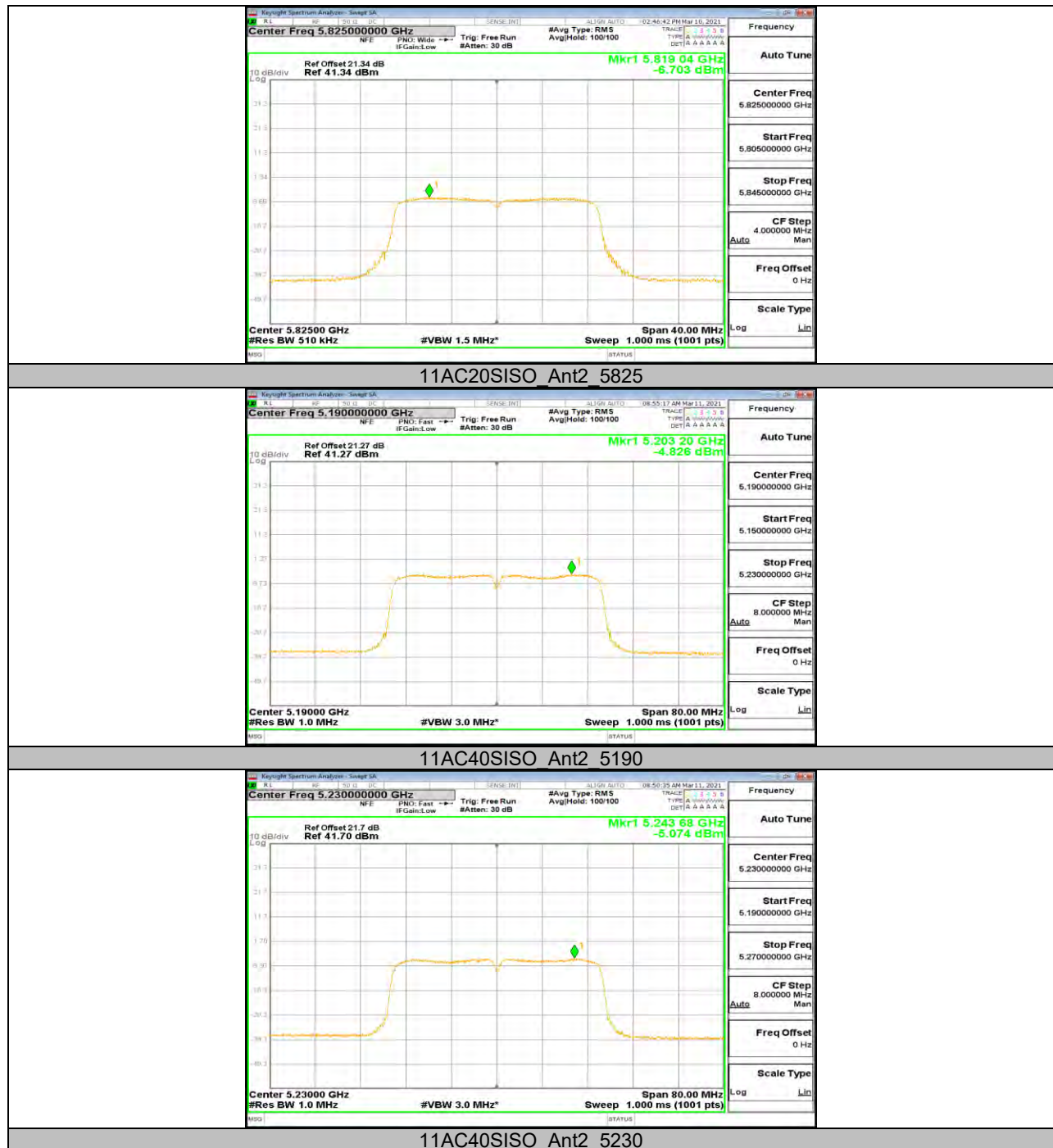


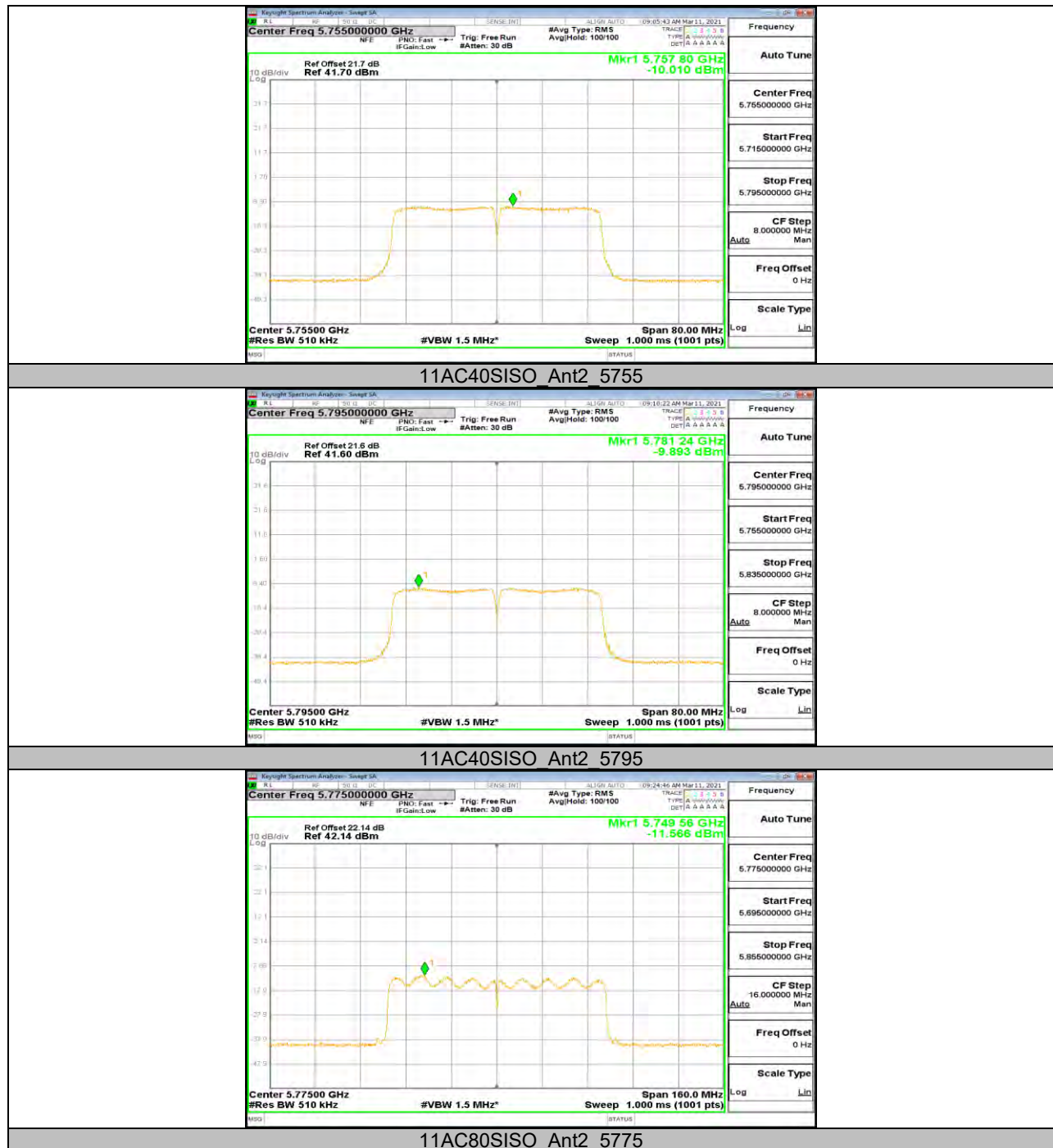














## 11.6. Appendix H: Duty Cycle

### 11.6.1. Test Result

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
11A	2.06	2.21	0.9321	93.21	0.31	0.49	0.5
11N20SISO	1.92	2.03	0.9458	94.58	0.24	0.52	1
11N40SISO	0.95	1.11	0.8559	85.59	0.68	1.05	2
11AC20SISO	1.93	2.11	0.9147	91.47	0.39	0.52	1
11AC40SISO	0.95	1.11	0.8559	85.59	0.68	1.05	2
11AC80SISO	0.46	0.61	0.7541	75.41	1.23	2.17	3

Note:

Duty Cycle Correction Factor=10log (1/x).

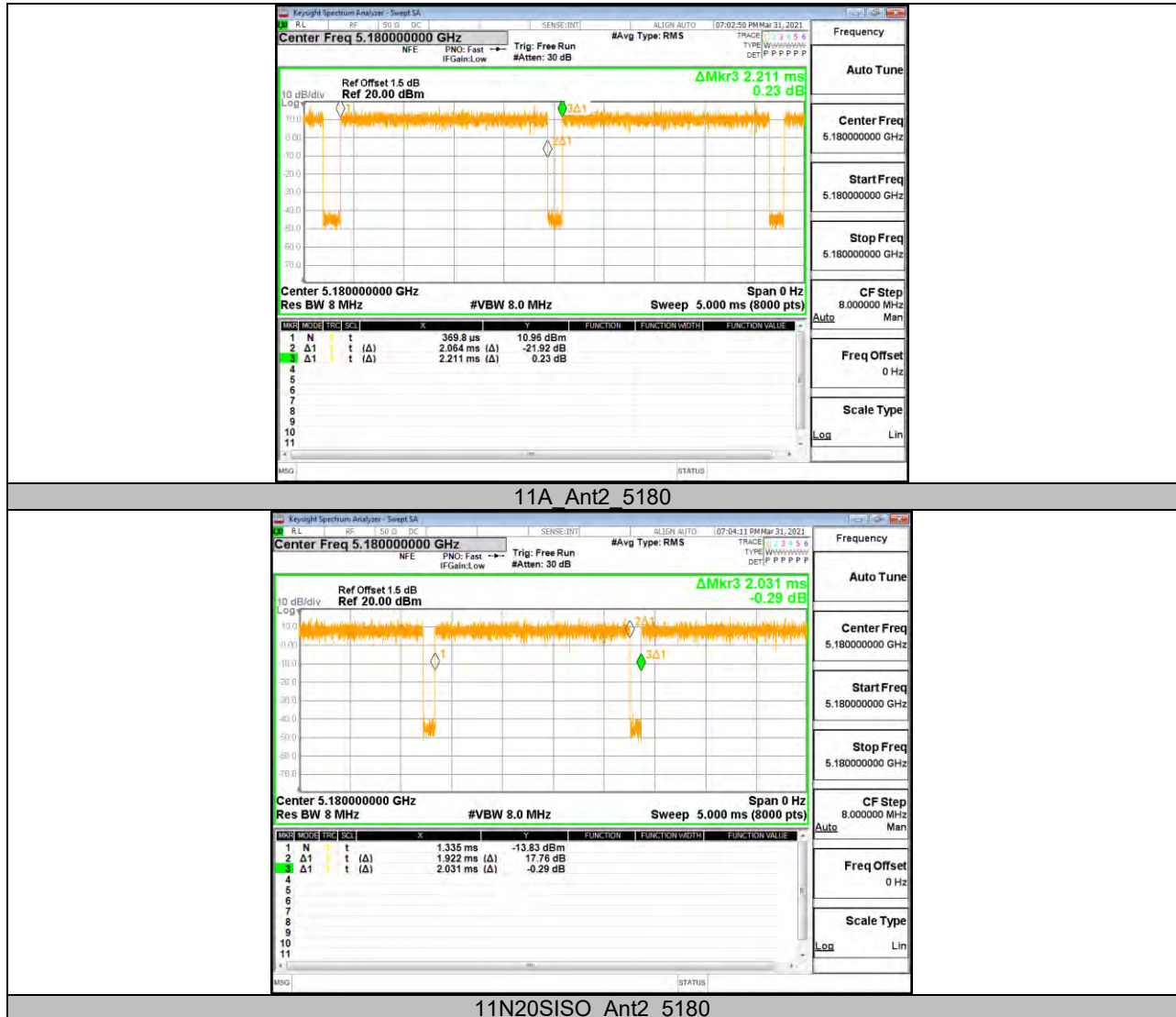
Where: x is Duty Cycle (Linear)

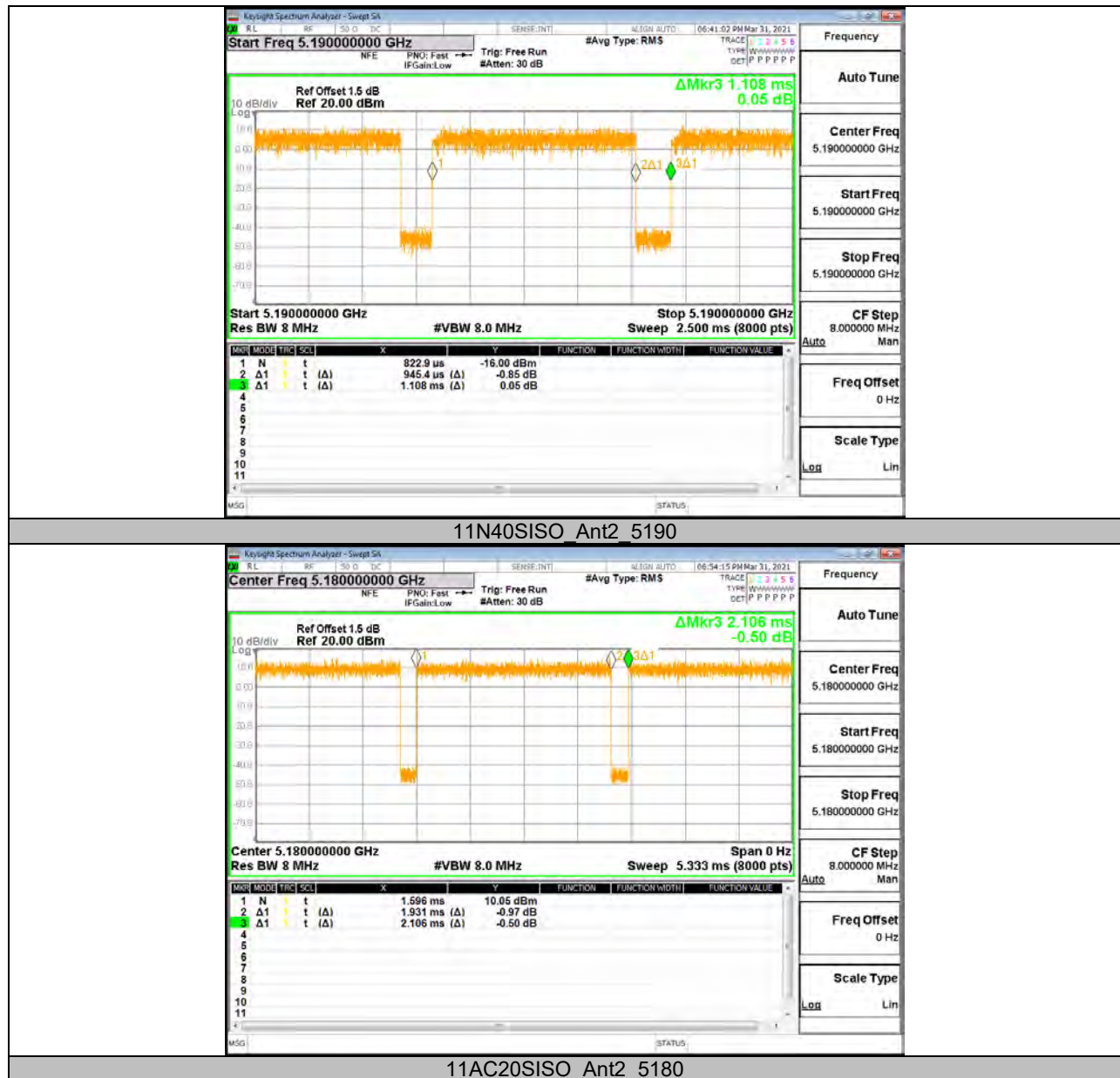
Where: T is On Time

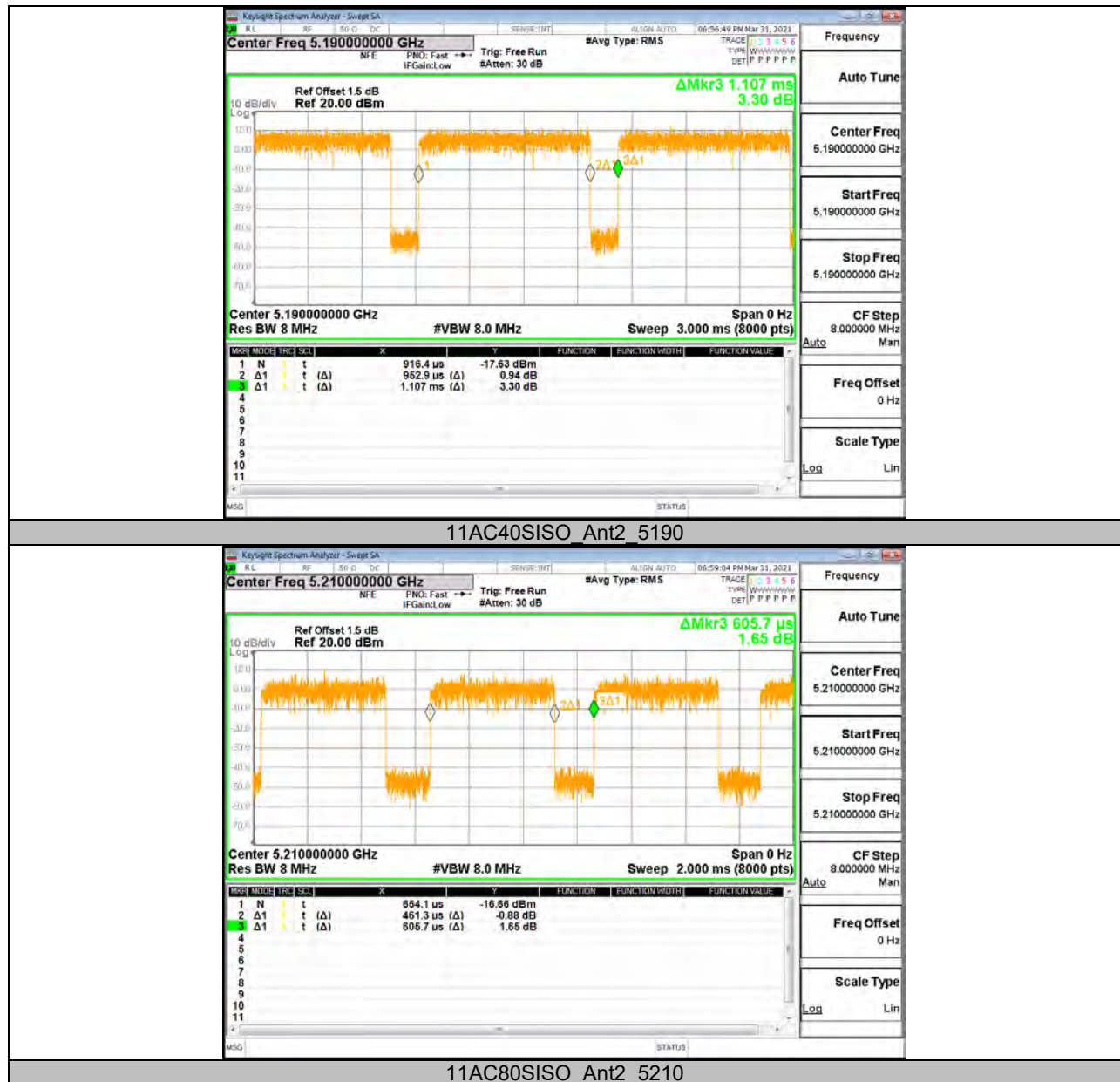
If that calculated VBW is not available on the analyzer then the next higher value should be used.



## 11.6.2. Test Graphs







END OF REPORT