

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART E REQUIREMENT

OF

**Applicant:** Quanta Computer Inc.  
No. 188, Wenhua 2nd Road, Guishan District, Taoyuan City  
33377, Taiwan

**Product Name:** 7 inch POS Terminal

**Brand Name:** Quanta, CASTLES

**Model No.:** KI1, SATURN7000

**Model Difference:** N/A

**FCC ID:** HFS-KI1WIFI

**Report Number:** E2/2019/90010

**FCC Rule Part:** §15.407, Cat: NII

**Issue Date:** Oct. 17, 2019

**Date of Test:** Aug. 08, 2018 ~ Oct. 19, 2018

**Date of EUT Re-  
ceived:** Aug. 08, 2018

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10: 2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits. The test results of this report relate only to the tested sample identified in this report.

Approved By:



Jim Chang / Enignner



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## Revision History

Revision	Description	Issue Date	Remark
Rev.00	Original.	Oct. 17, 2019	Revised By: Karen Huang

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## 1 GENERAL INFORMATION

### 1.1 Product Description

#### General:

Product Name:	7 inch POS Terminal	
Brand Name:	Quanta, CASTLES	
Model No.:	KI1, SATURN7000	
Model Difference:	N/A	
Hardware Version:	B2	
Software Version:	01.000	
Power Supply:	3.8V from Rechargeable Li-ion Battery or 5V from AC/DC Adapter	
	Battery:	Model no.: 141023 Supplier: Ningbo Veken Battery Co., Ltd.
	Adapter:	Model No.: CYSF12G-050200U, Supplier: JIANGSU CHENYANG ELECTRON Co., LTD

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### WLAN 5GHz:

Wi-Fi 802.11	Frequency Range	Channels	Rated Power (Avg.) (dBm)	Modulation Technology
a	5150~5250	4	15.37	OFDM
	5250~5350	4	16.49	
	5470~5725	12	13.42	
	5725-5850	5	16.48	
n_HT ac_VHT 20M	5150~5250	4	HT: 15.46 (Worst Case)	OFDM
	5250~5350	4	HT: 16.49 (Worst Case)	
	5470~5725	11	HT: 13.39 (Worst Case)	
	5725-5850	5	HT: 16.48 (Worst Case)	
n_HT ac_VHT 40M	5150~5250	2	HT: 15.49 (Worst Case)	OFDM
	5250~5350	2	HT: 16.48 (Worst Case)	
	5470~5725	5	HT: 13.42 (Worst Case)	
	5725-5850	2	HT: 16.49 (Worst Case)	
ac_VHT 80M	5150~5250	1	11.32	OFDM
	5250~5350	1	11.66	
	5470~5725	2	13.45	
	5725-5850	1	16.46	
Modulation type		64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 802.11ac only		
Transition Rate:		802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 144.4Mbps 802.11 n_40MHz: 13.5 – 300Mbps 802.11 ac_20MHz: 6.5 –144.4Mbps 802.11 ac_40MHz: 13.5 –300Mbps 802.11 ac_80MHz: 29.3 – 650Mbps		

### Antenna Designation:

Antenna Type	Part Number	Supplier	Frequency (MHz)	Peak Antenna Gain(dBi)
PIFA	L64RF019-CS-H	Luxshare-ICT	5150~5250	3.2 dBi
			5250~5350	3.0 dBi
			5470~5725	4.0 dBi
			5725~5850	3.1 dBi

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## 1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

ANSI C63.10:2013

Note:

1. All test items have been performed and record as per the above standards.

## 1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.2, Keji 1st Rd.,  
Guishan District, Taoyuan City, Taiwan 333 (TAF code 0513)

FCC Registration Number and Designation are: 735305 / TW0002

## 1.4 Special Accessories

There are no special accessories used while test was conducted.

## 1.5 Equipment Modifications

There was no modification incorporated into the EUT.

## 1.6 Test data is referenced from cross authorization(s)

Measurement results in the original test report E2/2018/70096 under FCC ID: HFS-K11 are fully leveraged in this test report with spot check to demonstrate compliance.

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## 2 SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz. The CISPR Quasi-Peak and Average detector mode is employed according to §15.207. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

#### 2.3.2 Radiated Emissions

The EUT is placed on a turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

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## 2.4 Measurement Results Explanation Example

### For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

### Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor. Following shows an offset computation example.

MIMO mode offset

$$= \text{RF cable loss (dB)} + \text{attenuation factor(dB)} + 10 \log(N_{\text{ANT}}) \text{ dB} = 16.6(\text{dB})$$

## 2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission



Fig. 2-2 Conducted (Antenna Port) Configuration Emission



Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	Notebook	Lenovo	L440	R9-007LAZ	Shielded	Unshielded
2.	WLAN Test Software	N/A	N/A	N/A	N/A	N/A
3.	DC Power Supply	Agilent	E3640A	MY53140006	N/A	Un-Shielded

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### 3 SUMMARY OF TEST RESULT

FCC Rules	Description Of Test	Result
§15.207	AC Power Line Conducted Emission	Compliant
§15.403(i) §15.407(e)	26 dB & 6dB & 99% Emission Bandwidth	Compliant
§15.407(a)	Maximum Conducted Output Power	Compliant
§15.407(a)	Power Spectral Density	Compliant
§15.407(b)	Undesirable Radiated Emissions	Compliant
§15.407(c)	Transmission in case of Absence of Information	Compliant
§15.407(g)	Frequency Stability	Compliant
§15.203 §15.407(a)	Antenna Requirement	Compliant

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## 4 DESCRIPTION OF TEST MODES

### 4.1 Operated in U-NII Bands

Operated band in 5150 MHz ~5250 MHz:

802.11a / n HT20 Mode, 802.11ac VHT20 Mode	
Channel	Frequency
36	5180
40	5200
44	5220
48	5240

802.11 n HT40 Mode, 802.11ac VHT40 Mode	
channel	Frequency
38	5190
46	5230

802.11ac VHT80 Mode	
channel	Frequency
42	5210

Operated band in 5250 MHz ~5350 MHz:

802.11a / n HT20 Mode, 802.11ac VHT20 Mode	
channel	Frequency
52	5260
56	5280
60	5300
64	5320

802.11 n HT40 Mode, 802.11ac VHT40 Mode	
channel	Frequency
54	5270
62	5310

802.11ac VHT80 Mode	
Channel	Frequency
58	5290

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**Operated band in 5500 MHz ~5700 MHz:**

<b>802.11a / n HT20 Mode, 802.11ac VHT20 Mode</b>	
Channel	Frequency
100	5500
104	5520
108	5540
112	5560
116	5580
120	5600
124	5620
128	5640
132	5660
136	5680
140	5700

<b>802.11 n HT40 Mode, 802.11ac VHT40 Mode</b>	
channel	Frequency
102	5510
110	5550
118	5590
126	5630
134	5670

<b>802.11ac VHT80 Mode</b>	
channel	Frequency
106	5530
122	5610

**Operated band in 5745 MHz ~5850 MHz:**

<b>802.11a / n HT20 Mode, 802.11ac VHT20 Mode</b>	
Channel	Frequency
149	5745
153	5765
157	5785
161	5805
165	5825

<b>802.11 n HT40 Mode, 802.11ac VHT40 Mode</b>	
channel	Frequency
151	5755
159	5795

<b>802.11ac VHT80 Mode</b>	
channel	Frequency
155	5775

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## 4.2 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case.

### RADIATED EMISSION TEST:

RADIATED EMISSION TEST (BELOW 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	Main
802.11ac_VHT80	5210	42	42	OFDM	MCS0	Main
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	Main
802.11ac_VHT80	5290	58	58	OFDM	MCS0	Main
802.11a	5500~5720	100 to 140	100,116,140	OFDM	6	Main
802.11ac_VHT80	5530~5690	106 to 138	106,122,138	OFDM	MCS0	Main
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	Main
802.11ac_VHT80	5775	155	155	OFDM	MCS0	Main
RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	Main
802.11n_HT20				OFDM	MCS0	Main
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS0	Main
802.11ac_VHT80	5210	42	42	OFDM	MCS0	Main
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	Main
802.11n_HT20				OFDM	MCS0	Main
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS0	Main
802.11ac_VHT80	5290	58	58	OFDM	MCS0	Main

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MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5500~5720	100 to 144	100,116,140	OFDM	6	Main
802.11n_HT20				OFDM	MCS0	Main
802.11n_HT40	5510~5710	102 to 142	102,110,134	OFDM	MCS0	Main
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS0	Main
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	Main
802.11n_HT20				OFDM	MCS0	Main
802.11n_HT40	5755~5795	151 to 159	151,159	OFDM	MCS0	Main
802.11ac_VHT80	5775	155	155	OFDM	MCS0	Main

# Note:

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for 802.11a/n/ac WLAN Transmitter for channel Low, Mid and High, the worst case H position was reported.

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**ANTENNA PORT CONDUCTED MEASUREMENT:**

CONDUCTED TEST						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	Main
802.11n_HT20 802.11ac_VHT20				OFDM	MCS0	Main
802.11n_HT40 802.11ac_VHT40	5190~5230	38 to 46	38,46	OFDM	MCS0	Main
802.11ac_VHT80	5210	42	42	OFDM	MCS0	Main
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	Main
802.11n_HT20 802.11ac_VHT20				OFDM	MCS0	Main
802.11n_HT40 802.11ac_VHT40	5270~5310	54 to 62	54,62	OFDM	MCS0	Main
802.11ac_VHT80	5290	58	58	OFDM	MCS0	Main
802.11a	5500~5700	100 to 140	100,116,140	OFDM	6	Main
802.11n_HT20 802.11ac_VHT20				OFDM	MCS0	Main
802.11n_HT40 802.11ac_VHT40	5510~5670	102 to 134	102,110,134	OFDM	MCS0	Main
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS0	Main
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	Main
802.11n_HT20 802.11ac_VHT20				OFDM	MCS0	Main
802.11n_HT40 802.11ac_VHT40	5755~5795	151 to 159	151,159	OFDM	MCS0	Main
802.11ac_VHT80	5775	155	155	OFDM	MCS0	Main

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## 5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
26dB & 6dB Emission Bandwidth	+/- 123.36 Hz
The Maximum Output Power Measurement	+/- 0.96 dB
Peak Power Spectral Density Measurement	+/- 1.67 dB
Frequency Stability	+/- 123.36 Hz
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, AC=+/- 0.2%

### Radiated Spurious Emission:

Measurement uncertainty (Polarization : <b>Vertical</b> )	9kHz-30MHz: +/-2.87dB
	30MHz - 180MHz: +/- 3.37dB
	180MHz -417MHz: +/- 3.19dB
	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

Measurement uncertainty (Polarization : <b>Horizontal</b> )	9kHz-30MHz: +/-2.87dB
	30MHz - 167MHz: +/- 4.22dB
	167MHz -500MHz: +/- 3.44dB
	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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## 6 CONDUCTED EMISSION TEST

### 6.1 Standard Applicable

Frequency range within 150 kHz to 30 MHz shall not exceed the Limit table as below.

Frequency range MHz	Limits dB(uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note

- 1.The lower limit shall apply at the transition frequencies
- 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### 6.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
LISN	TESEQ	NNB 51	36076	2018/02/14	2019/02/13
EMI Test Receiver	R&S	ESCI	101300	2017/11/02	2018/11/01

### 6.3 EUT Setup

1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The LISN was connected with 120Vac/60Hz power source.

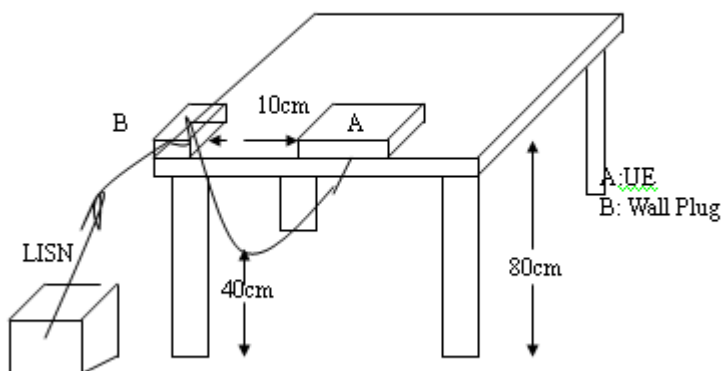
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## 6.4 Test SET-UP



## 6.5 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all phases of power being supplied by given UE are completed.

## 6.6 Measurement Result

Note: Refer to next page for measurement data and plots.

Note2: The \* reveals the worst-case results that closet to the limit

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## AC POWER LINE CONDUCTED EMISSION TEST DATA

Site : Conduction Room Phase: **L1** Temperature: 23 °C  
 Limit: FCC Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 69 %  
 Mode:  
 Note:

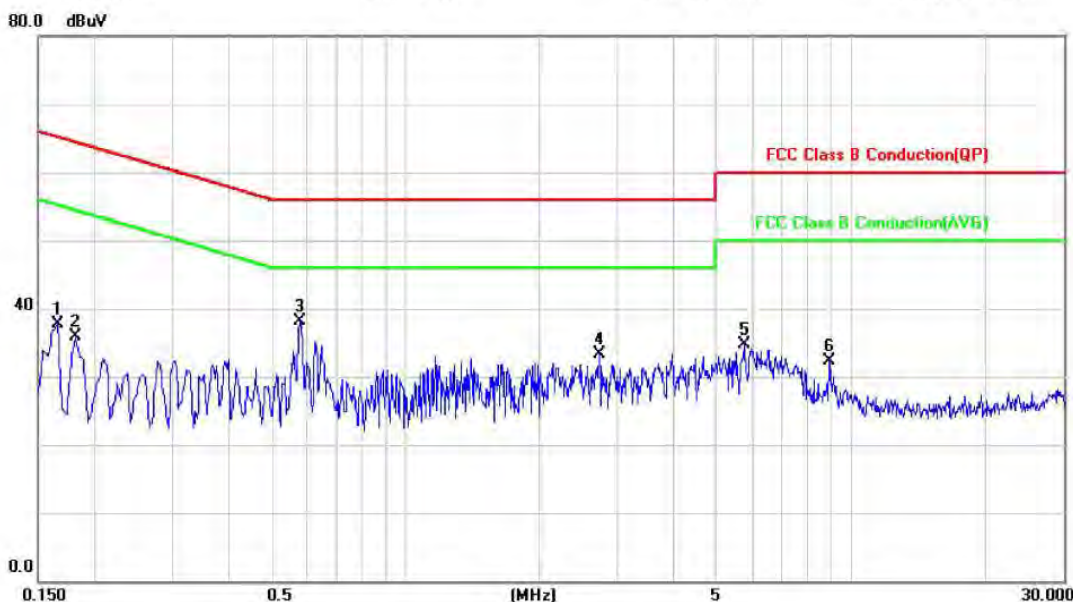
## Conducted Emission

File :Conduction

Data :#1007

Date: 2018/8/8

Time: 上午 08:45:28



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1660	18.02	19.68	37.70	65.16	-27.46	peak	
2		0.1820	16.23	19.70	35.93	64.39	-28.46	peak	
3	*	0.5820	18.00	20.16	38.16	56.00	-17.84	peak	
4		2.7220	12.87	20.43	33.30	56.00	-22.70	peak	
5		5.7540	14.63	19.98	34.61	60.00	-25.39	peak	
6		8.9380	12.40	19.96	32.36	60.00	-27.64	peak	

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Site : Conduction Room

Phase: **N**

Temperature: 23 °C

Limit: FCC Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 69 %

Mode:

Note:

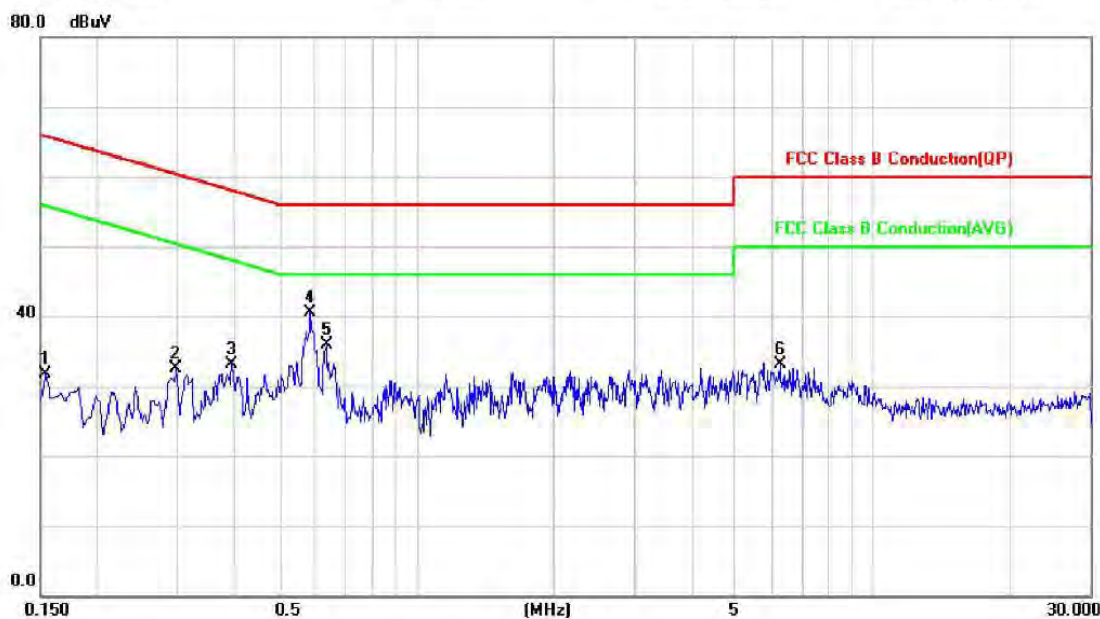
## Conducted Emission

File :Conduction

Data :#1008

Date: 2018/8/8

Time: 上午 08:46:54



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1540	12.09	19.65	31.74	65.78	-34.04	peak	
2		0.2980	12.54	19.88	32.42	60.30	-27.88	peak	
3		0.3940	13.02	20.04	33.06	57.98	-24.92	peak	
4 *		0.5860	20.42	20.15	40.57	56.00	-15.43	peak	
5		0.6340	15.71	20.11	35.82	56.00	-20.18	peak	
6		6.2820	13.15	19.96	33.11	60.00	-26.89	peak	

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## 7 DUTY CYCLE TEST SIGNAL

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

### Formula:

$$\text{Duty Cycle} = \text{Ton} / (\text{Ton} + \text{Toff})$$

### Measurement Procedure:

1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

Duty Cycle:

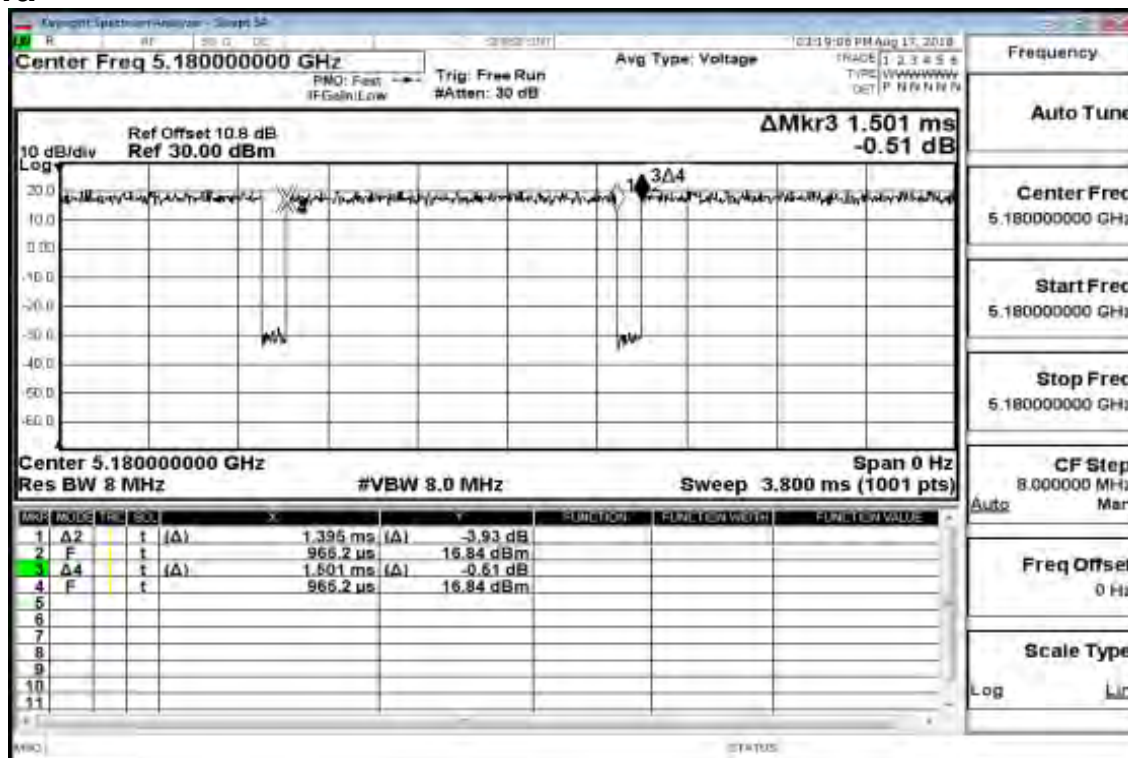
Mode	Duty Cycle (%)	Duty Factor (dB) =10*log ( 1/Duty Cycle )	1/T (kHz)	VBW setting (kHz)
802.11a	92.91	0.32	1.08	2.00
802.11n_20	92.39	0.34	1.08	2.00
802.11n_40	85.68	0.67	1.08	2.00
802.11ac_80	75.07	1.25	1.33	2.00

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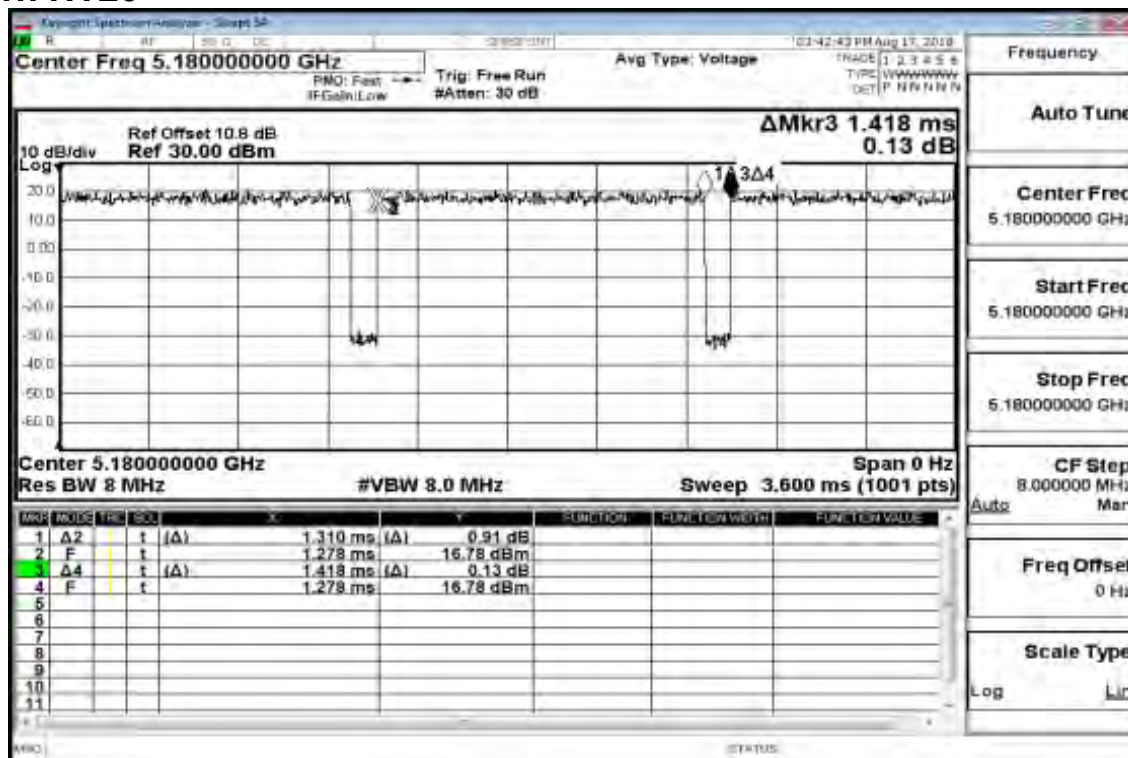
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## DUTY CYCLE TEST SIGNAL Measurement Result 802.11a



## 802.11n HT20



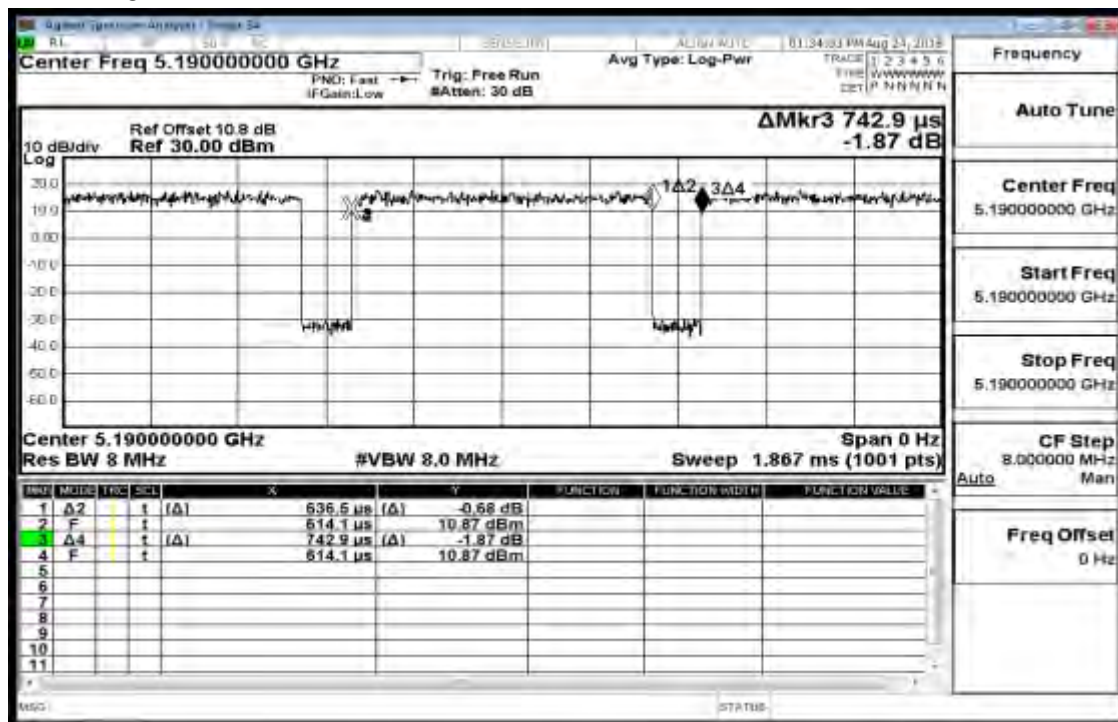
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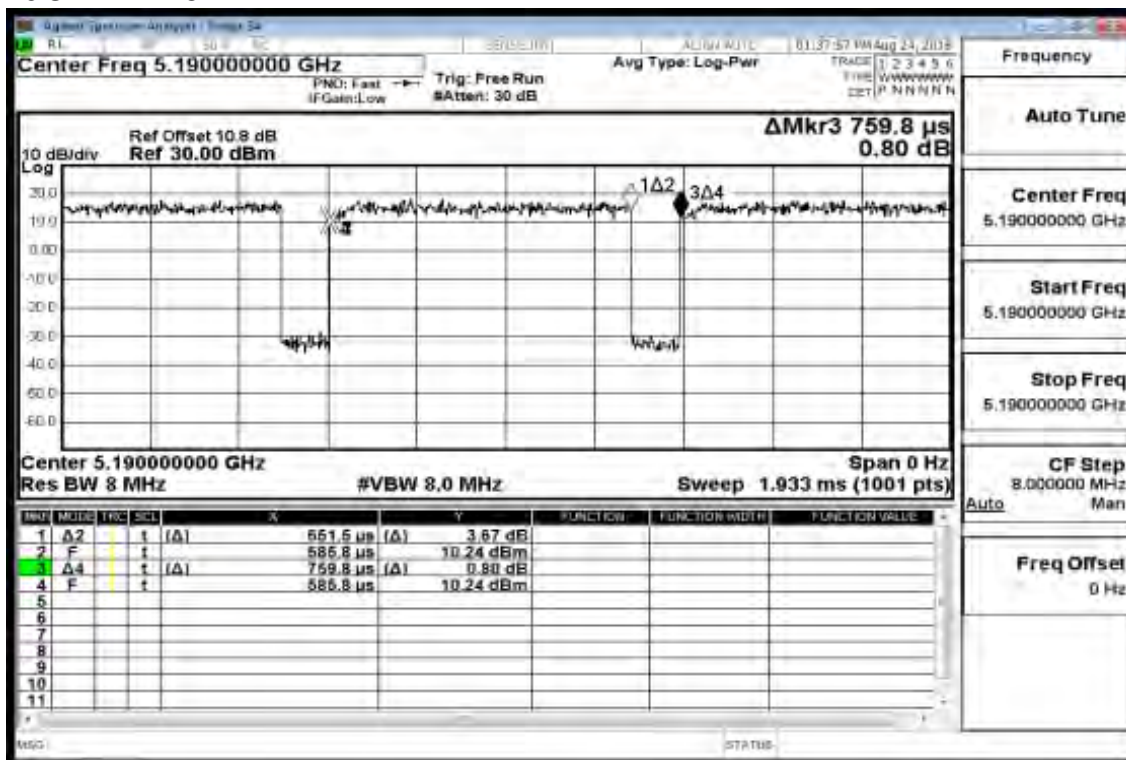
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## 802.11n HT 40



## 802.11 ac VHT 40

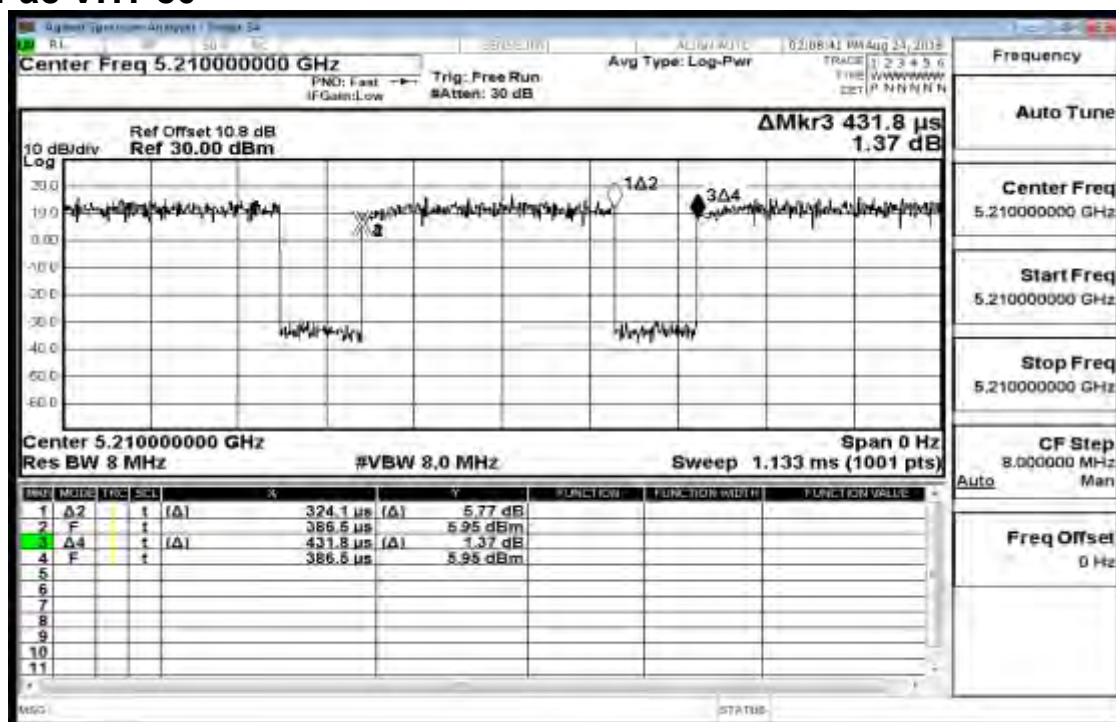


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## 802.11 ac VHT 80



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## 8 26DB & 6DB EMISSION BANDWIDTH MEASUREMENT

### 8.1 Standard Applicable

There is no limit bandwidth for U-NII-1, U-NII-2-A and U-NII-2-C.

The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3

### 8.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the Antenna port to the spectrum analyzer.
  - a. 26dB Band width Measurement: Set the spectrum analyzer as 1% of emission BW Sweep=auto, Detector = Peak, Trace Mode = Max Hold, Manually readjust RBW until the RBW/EBW ratio is 1% based on EBW as observed on the result of pre-sequence measurement.
  - b. Mark the peak frequency and -26dB (upper and lower) frequency.
4. Repeat the procedures as list above until all test default channels (low, middle, and high) are completed.
5. Minimum Emission Bandwidth for the band 5.725-5.850GHz.
  - a. Set the spectrum analyzer as RBW = 100 kHz, VBW = 3\*RBW, Span = 30M/50MHz, Detector=Peak, Sweep=auto
  - b. Mark the peak frequency and -6dB (upper and lower) frequency.
6. For 99% Bandwidth:

Set the spectrum analyzer as RBW=1%, VBW = 3\*RBW, Span = 30M/50MHz, Detector=Sample, Sweep=auto.
7. Turn on the 99% bandwidth function, max reading.
8. Repeat above procedures until all frequency of interest measured was complete.

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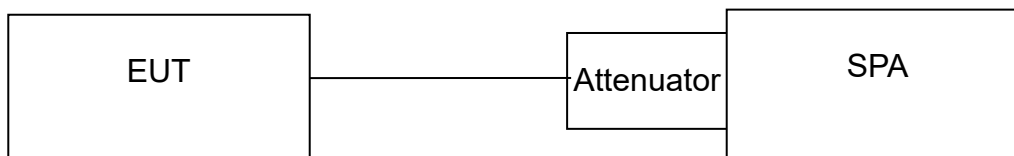
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### 8.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	Agilent	N9010A	MY51440113	2018/06/20	2019/06/19
DC Block	PASTERNAK	PE8210	RF29	2017/12/26	2018/12/25
Notebook	Lenovo	L420	S0011721	N/A	N/A
DC Power Supply	Agilent	E3640A	MY53140006	2018/05/30	2019/05/29
Attenuator	Marvelous	MVE2213-10	RF30	2017/12/26	2018/12/25
Power Meter	Anritsu	ML2496A	1326001	2018/08/09	2019/08/02
Power Sensor	Anritsu	MA2411B	1315048	2018/08/09	2019/08/02
Power Sensor	Anritsu	MA2411B	1315049	2018/08/09	2019/08/02

### 8.4 Test Set-up



### 8.5 Measurement Result

#### 26dB Bandwidth

802.11a\_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	19.90	12.989
5220	19.56	12.914
5240	19.72	12.948
5260	20.14	13.040
5300	19.31	12.857
5320	19.49	12.899
5500	19.81	12.970
5580	19.94	12.997
5700	19.64	12.932
5720(U-NII 2C)	12.20	10.863
5720 (U-NII 3)	3.52	5.460

802.11n\_HT20\_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	20.20	13.054
5220	19.88	12.985
5240	19.85	12.977
5260	19.79	12.964
5300	20.01	13.013
5320	19.72	12.948
5500	20.13	13.037
5580	20.53	13.124
5700	19.81	12.968
5720(U-NII 2C)	12.85	11.090
5720 (U-NII 3)	3.96	5.975

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## 802.11n\_HT40\_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	39.72	15.990
5230	40.78	16.105
5270	40.83	16.110
5310	40.32	16.055
5510	40.19	16.041
5550	<b>43.24</b>	16.359
5670	45.09	16.541
5710 (U-NII 2C)	<b>30.06</b>	14.780
5710 (U-NII 3)	3.77	5.762

## 802.11ac\_VHT80\_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	80.11	19.037
5290	80.67	19.067
5530	80.79	19.074
5610	81.24	19.097
5690 (U-NII 2C)	70.92	18.508
5690 (U-NII 3)	4.20	6.232

## 6dB Bandwidth (5725 MHz~ 5850 MHz) measure with Peak detector for FCC

## 802.11a\_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	14.51	11.615
5785	15.11	11.792
5825	11.67	10.670

## 802.11n\_HT20\_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	12.55	10.986
5785	15.06	11.777
5825	13.83	11.409

## 802.11n\_HT40\_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	35.08	15.450
5795	35.07	15.449

## 802.11ac\_VHT80\_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	73.88	18.685

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## 99% BW verification for DFS Function

802.11a\_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.16	< 5250
5745	5736.81	> 5725

802.11n\_HT20\_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.79	< 5250
5745	5736.15	> 5725

802.11n\_HT40\_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5230	5248.05	< 5250
5755	5737.00	> 5725

802.11ac\_VHT80\_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5210	5247.50	< 5250
5775	5737.50	> 5725

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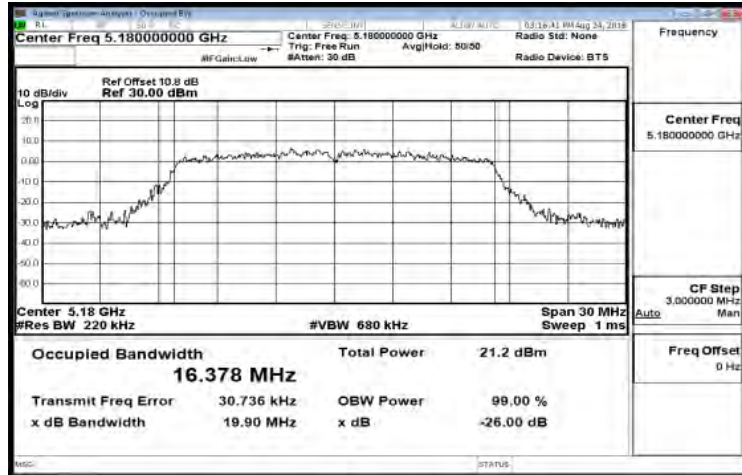
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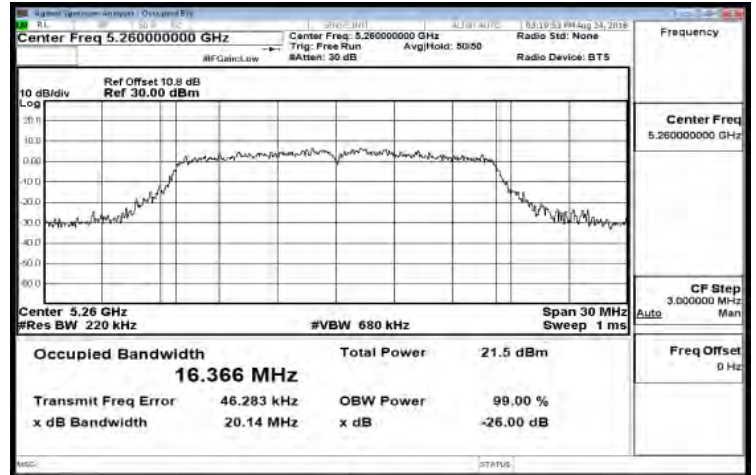
802.11a, 5150~5250 MHz

26dB Band Width Test Data CH-Low (5180MHz)

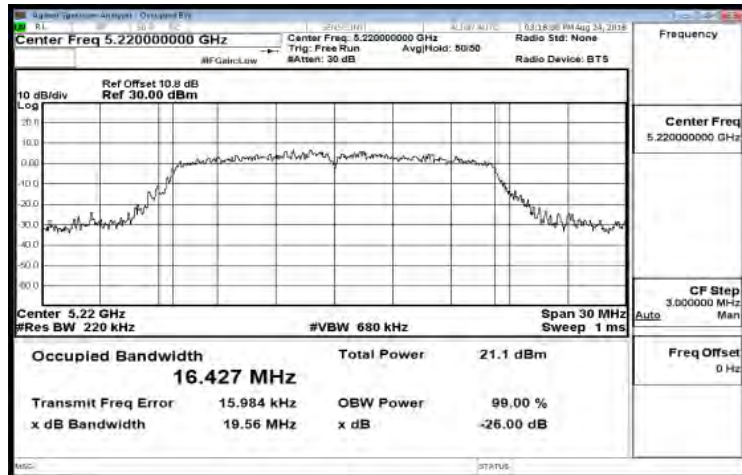


802.11a, 5250~5350 MHz

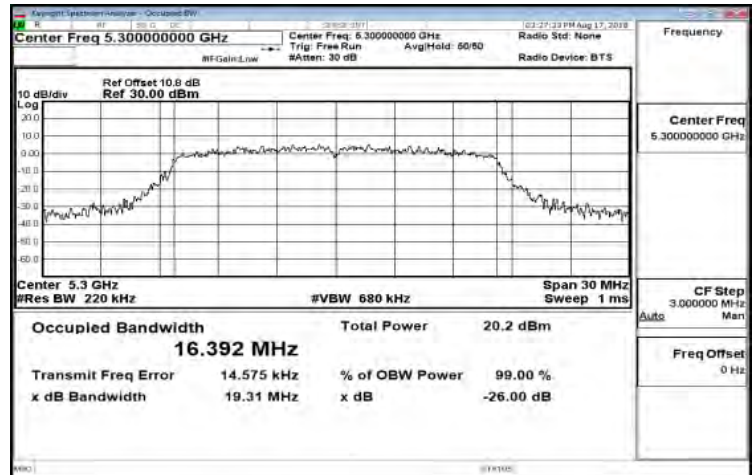
26dB Band Width Test Data CH-Low (5260MHz)



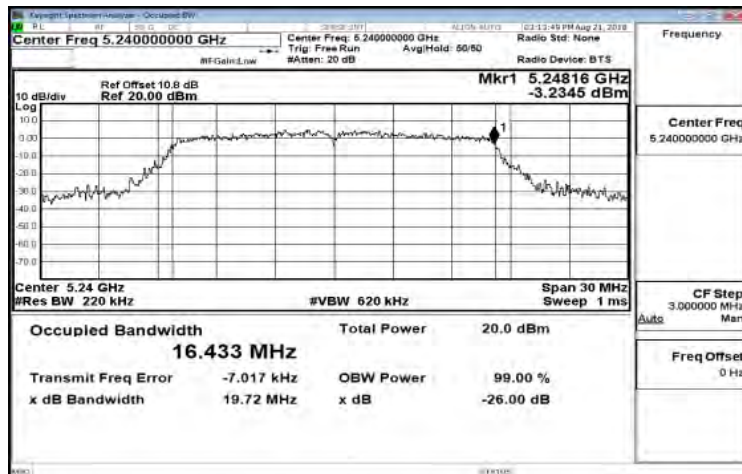
26dB Band Width Test Data CH-Mid (5220MHz)



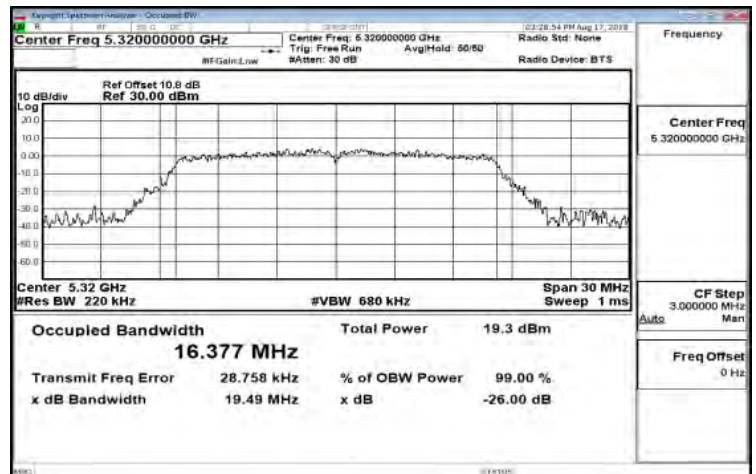
26dB Band Width Test Data CH-Mid (5300MHz)



26dB Band Width Test Data CH-High (5240MHz)



26dB Band Width Test Data CH-High (5320MHz)



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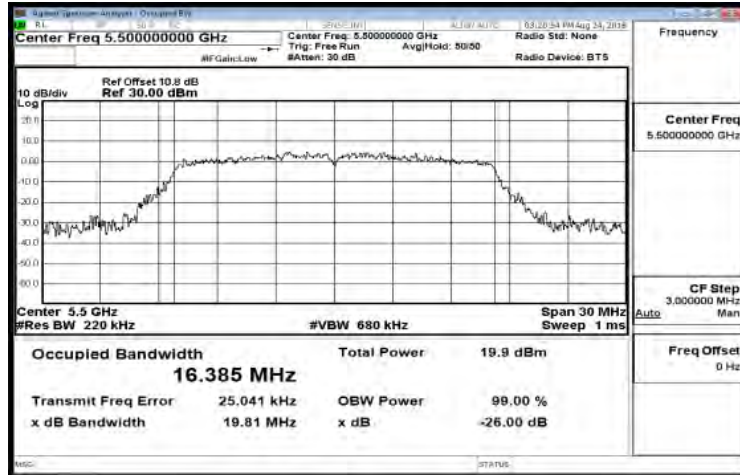
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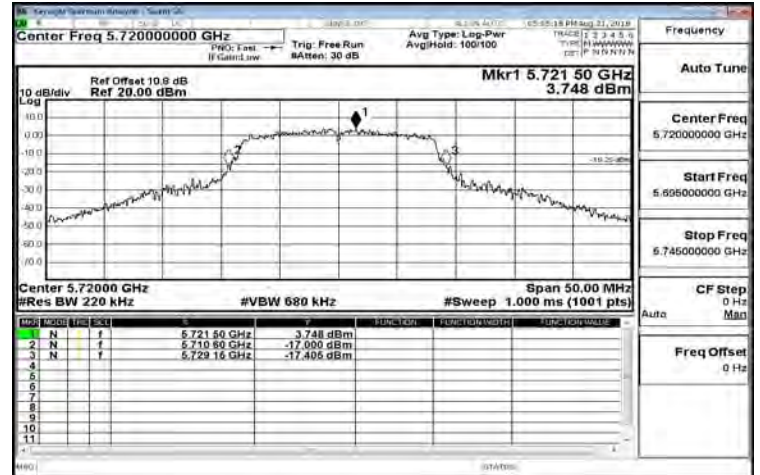


802.11a, 5470~5725 MHz

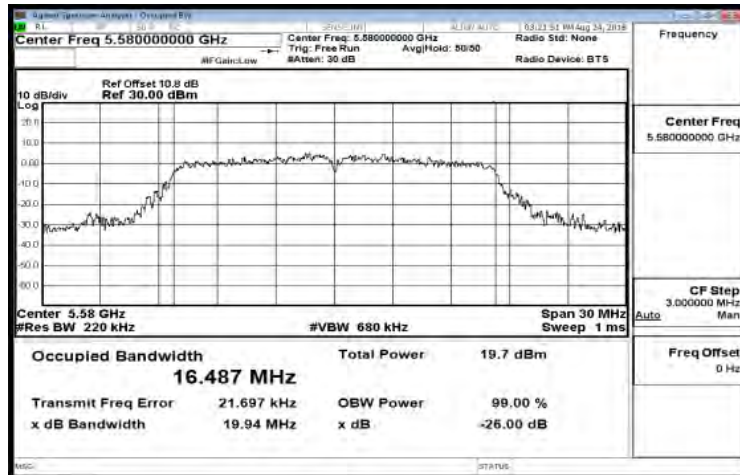
26dB Band Width Test Data CH-Low (5500MHz)



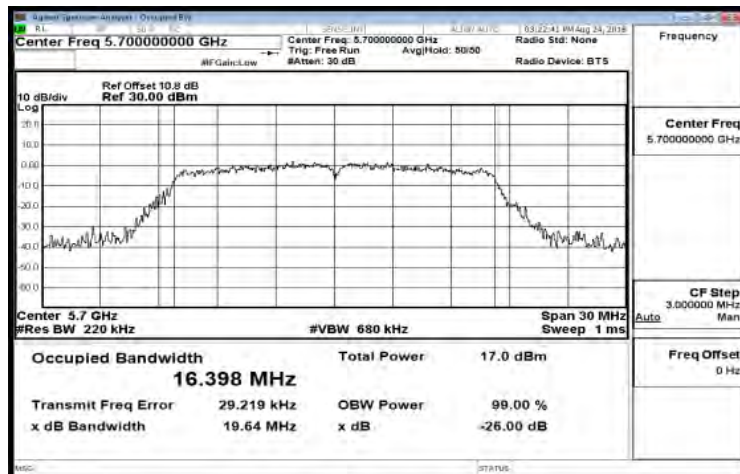
26dB Band Width Test Data CH-High (5720MHz)



26dB Band Width Test Data CH-Mid (5580MHz)



26dB Band Width Test Data CH-High (5700MHz)



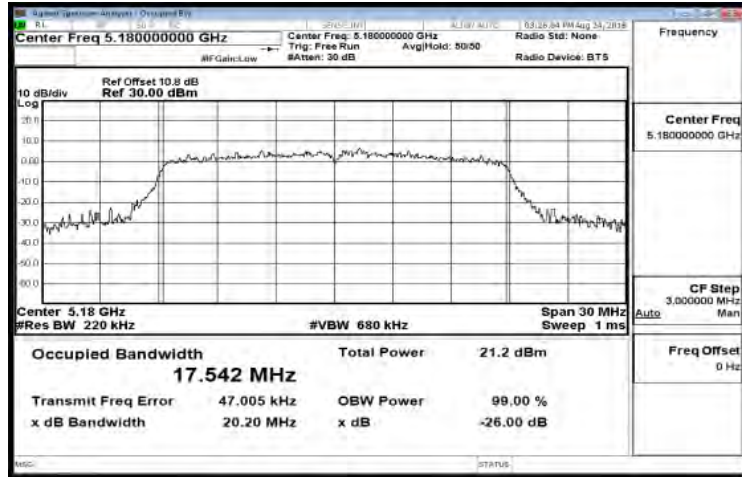
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802.11n HT20, 5150~5250 MHz

26dB Band Width Test Data CH-Low (5180 MHz)

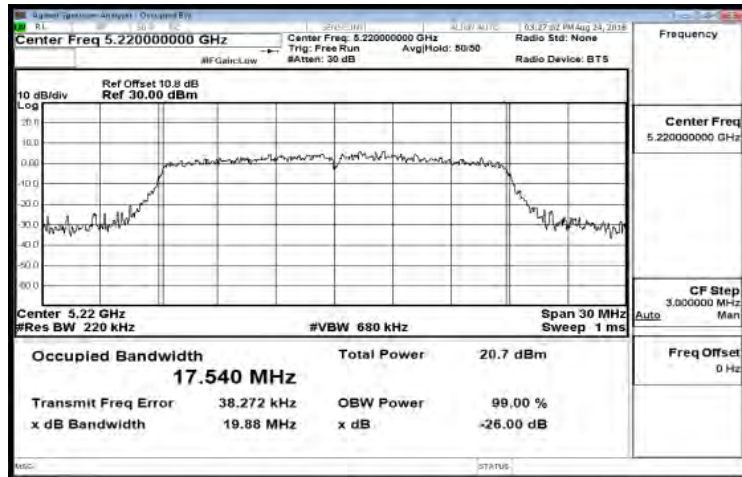


802.11n HT20, 5250~5350 MHz

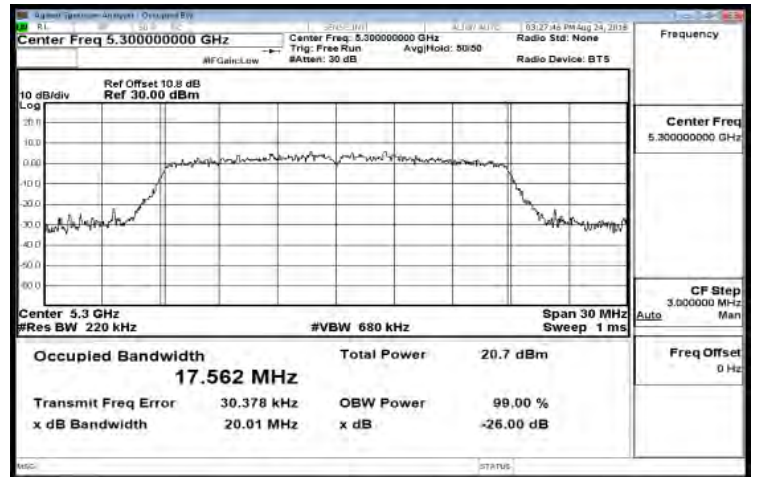
26dB Band Width Test Data CH-Low (5260 MHz)



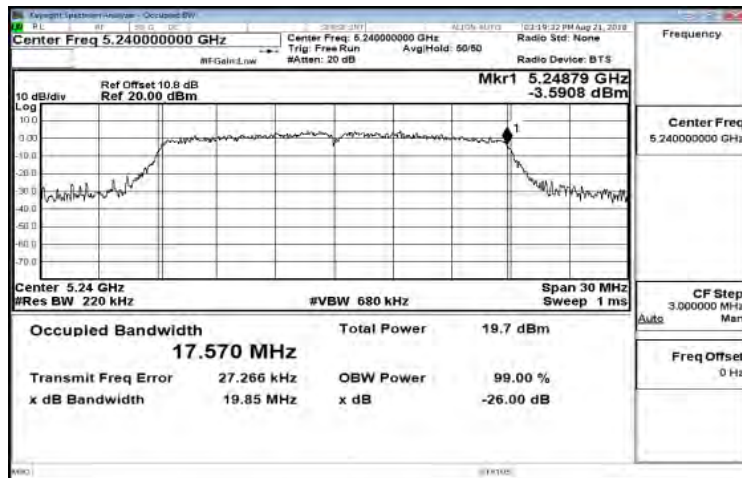
26dB Band Width Test Data CH-Mid (5220 MHz)



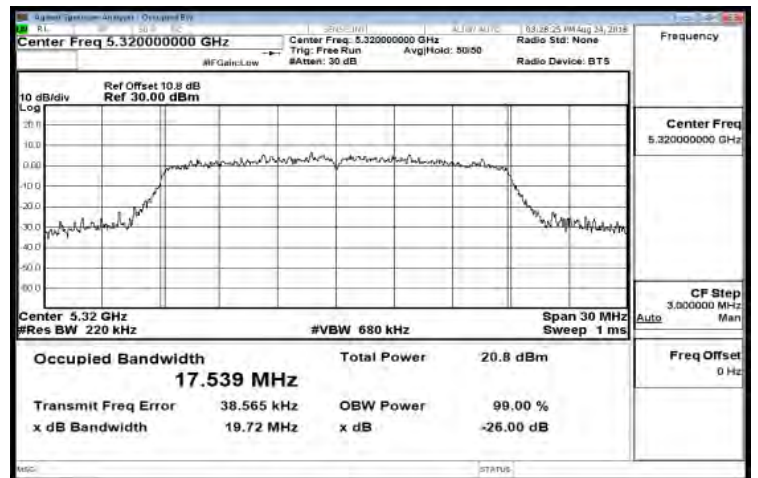
26dB Band Width Test Data CH-Mid (5300 MHz)



26dB Band Width Test Data CH-High (5240 MHz)



26dB Band Width Test Data CH-High (5320 MHz)



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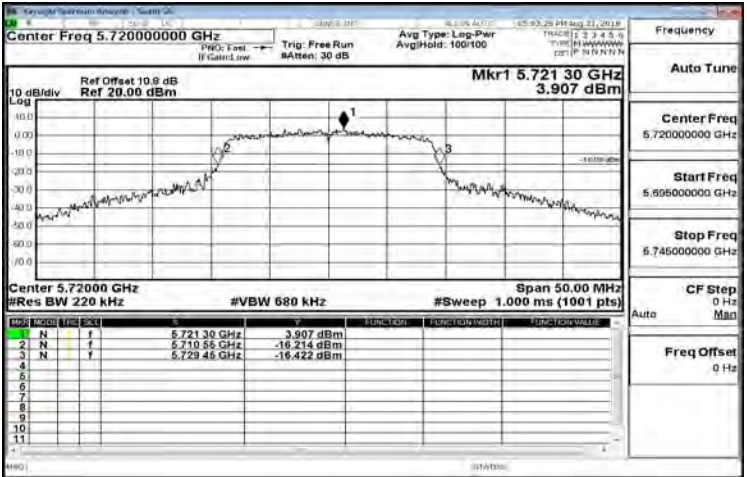
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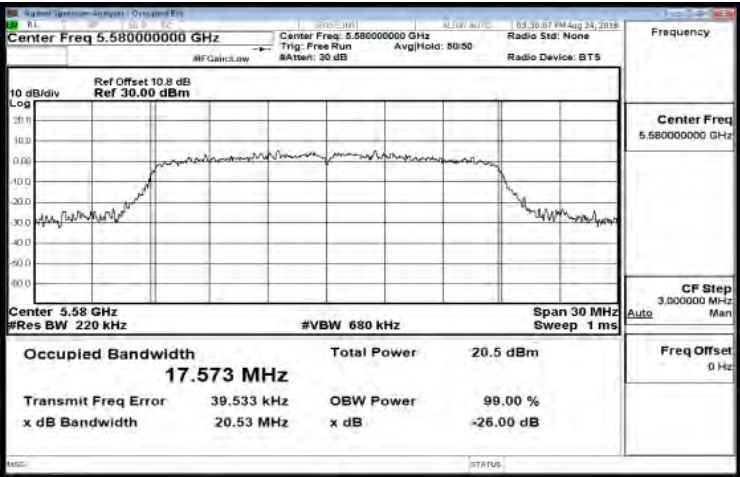
802.11n HT20, 5470~5725 MHz  
26dB Band Width Test Data CH-Low (5500 MHz)



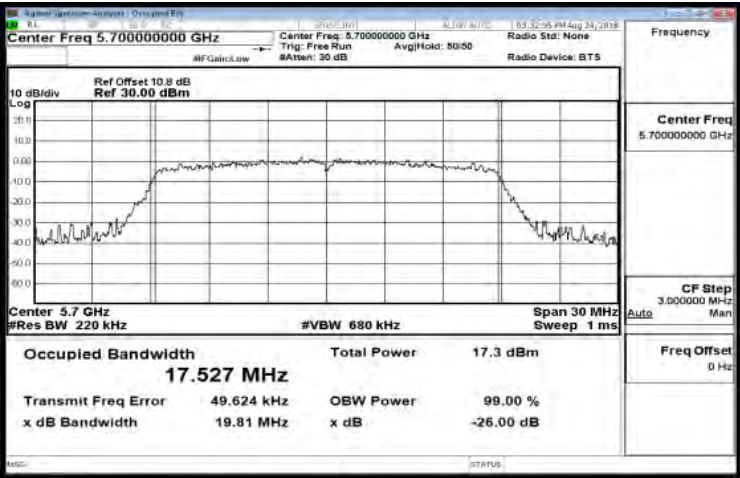
26dB Band Width Test Data CH-High (5720 MHz)



26dB Band Width Test Data CH-Mid (5580 MHz)



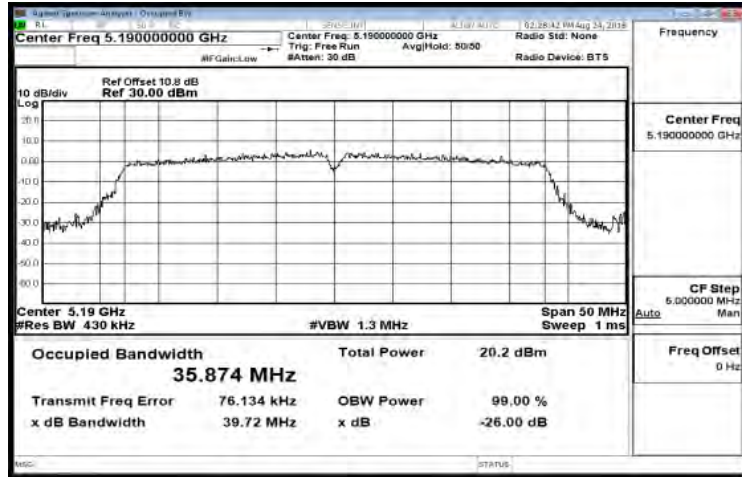
26dB Band Width Test Data CH-High (5700 MHz)



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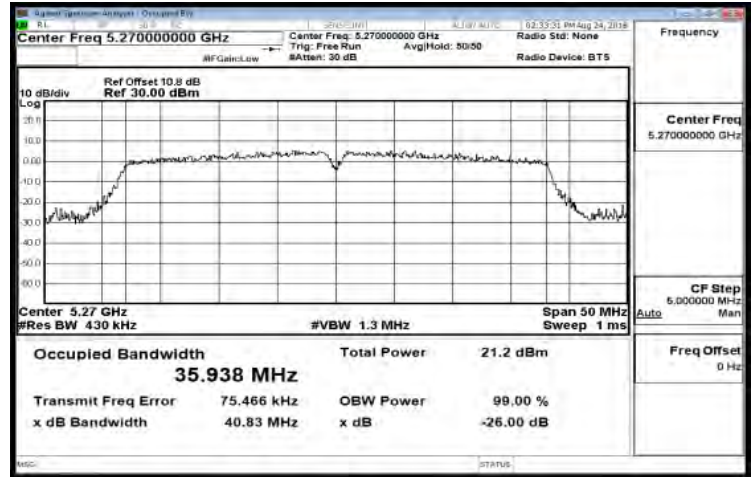
802.11n HT40, 5150~5250 MHz

26dB Band Width Test Data CH-Low (5190 MHz)

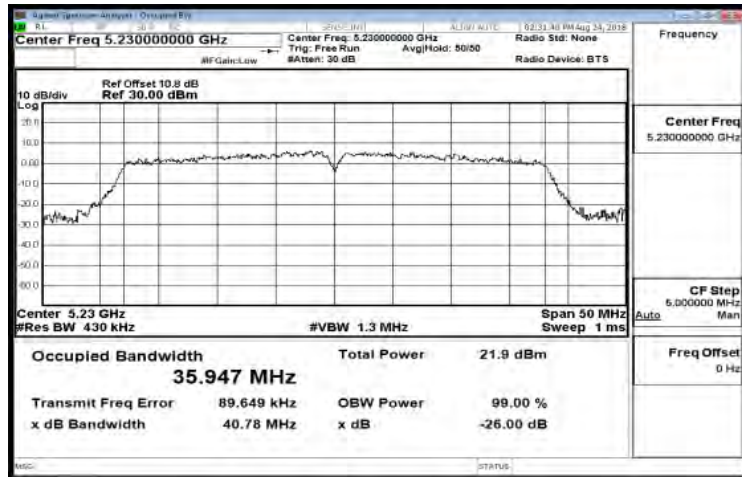


802.11n HT40, 5250~5350 MHz

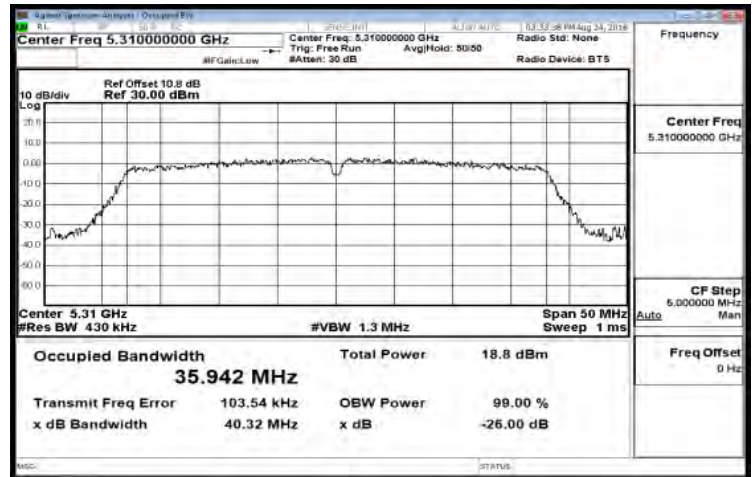
26dB Band Width Test Data CH-Low (5270 MHz)



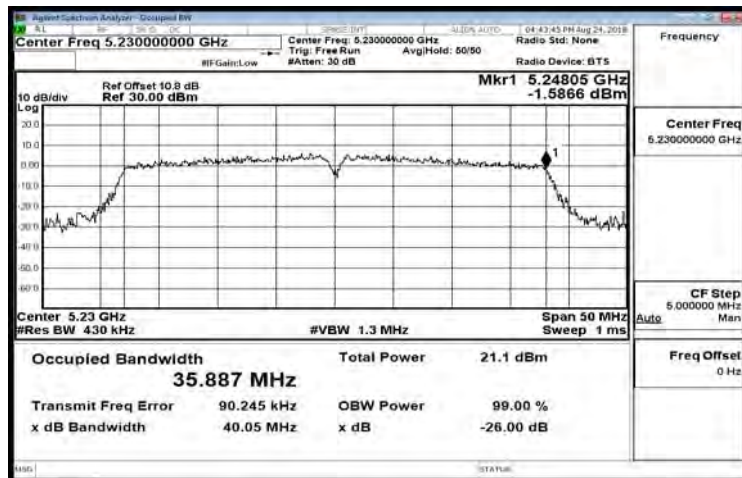
26dB Band Width Test Data CH-High (5230 MHz)



26dB Band Width Test Data CH-High (5310MHz)



26dB Band Width Test Data CH-High (5230 MHz)-Low



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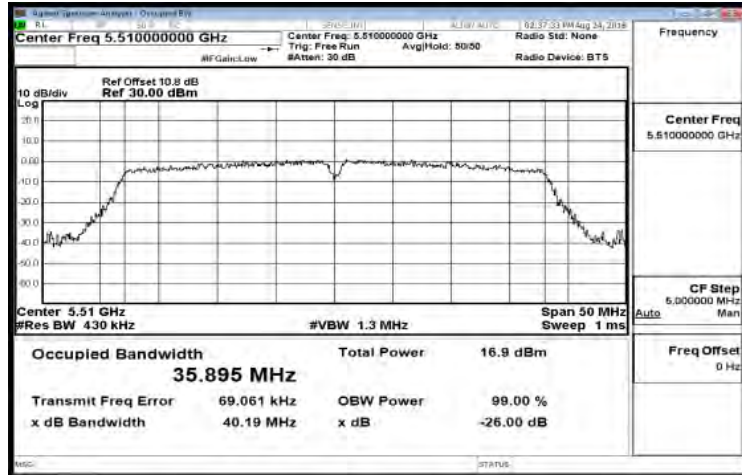
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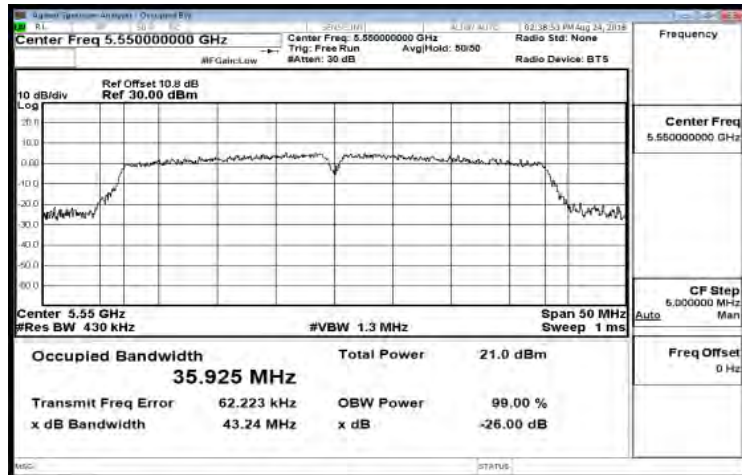


## 802.11n HT40, 5470~5725 MHz

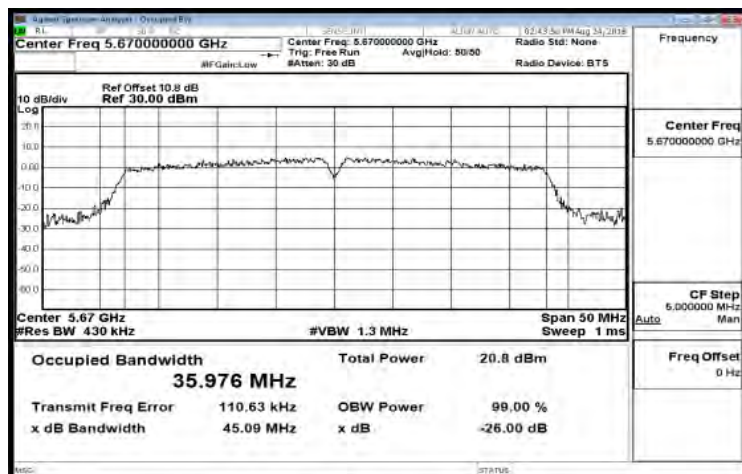
### 26dB Band Width Test Data CH-Low (5510 MHz)



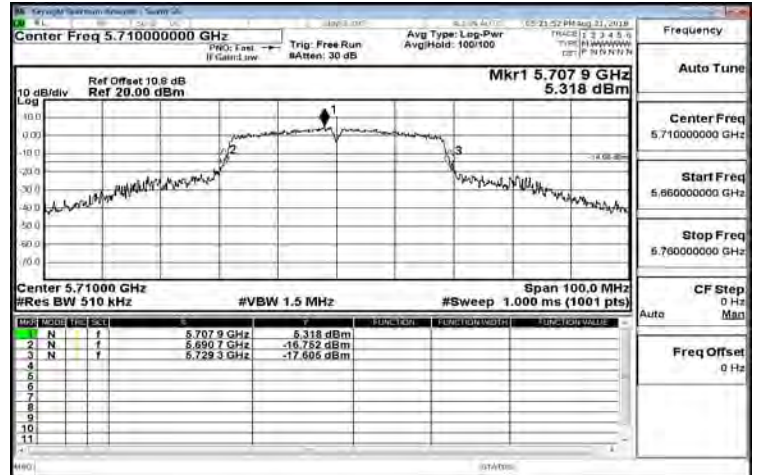
### 26dB Band Width Test Data CH-Mid (5550 MHz)



### 26dB Band Width Test Data CH-High (5670 MHz)



### 26dB Band Width Test Data CH-High (5710 MHz)

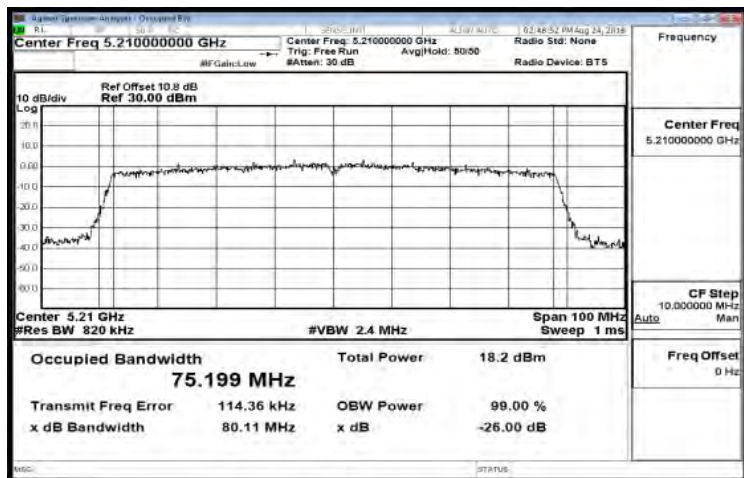


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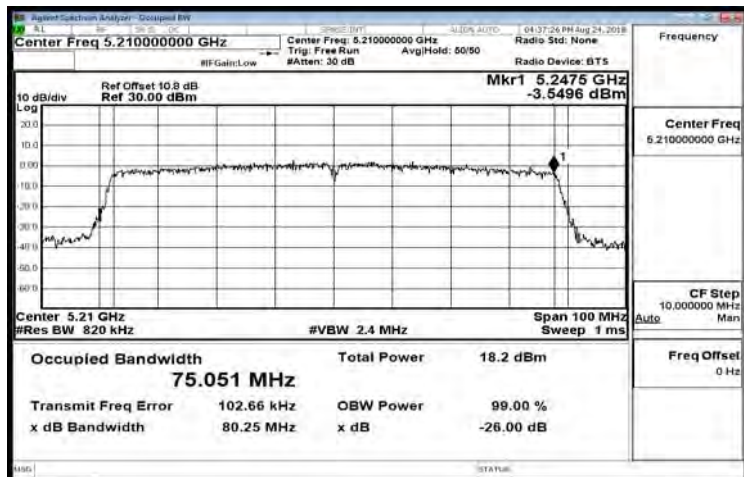
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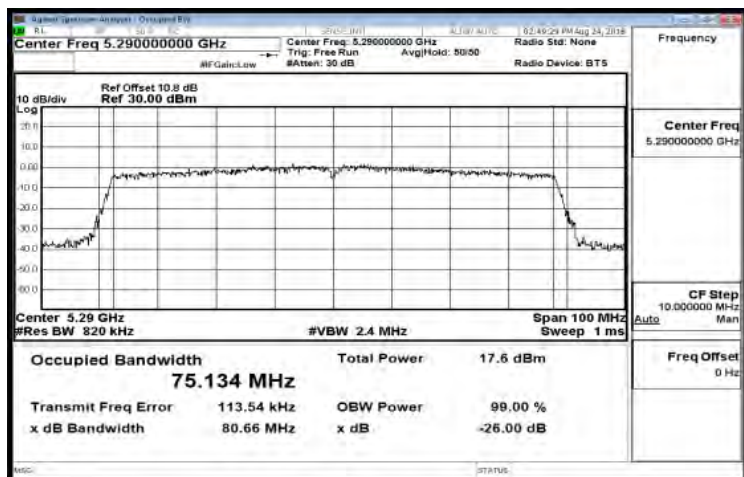
802.11ac VHT80, 5150~5250 MHz  
26dB Band Width Test Data CH-Mid (5210 MHz)



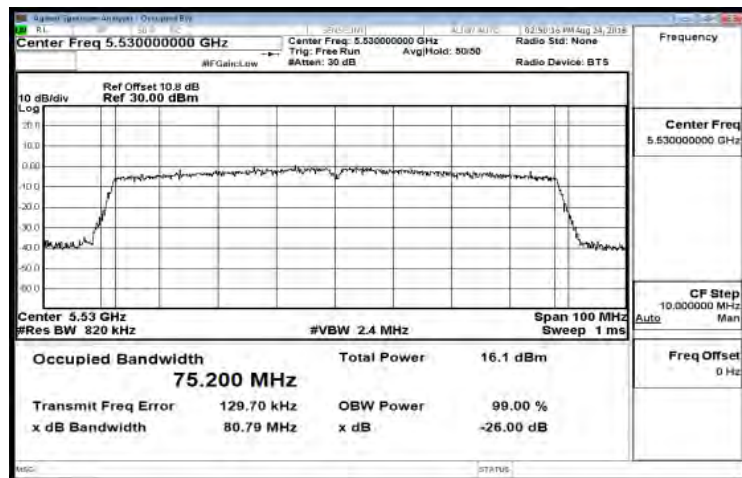
26dB Band Width Test Data CH-Mid (5210 MHz)-Low



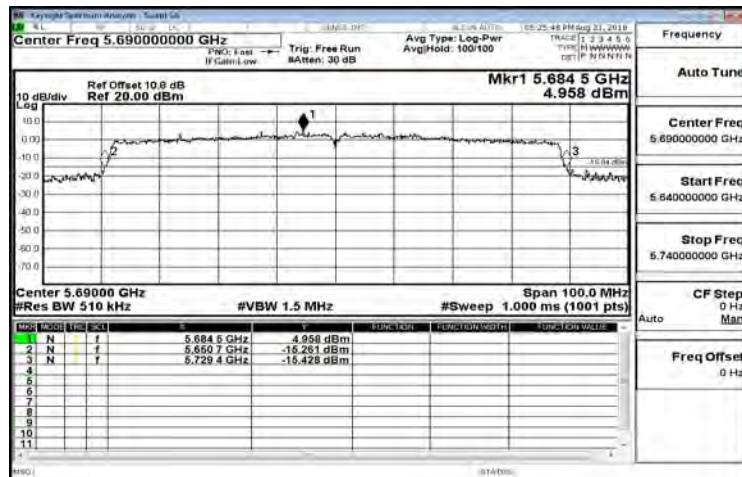
802.11ac VHT80, 5250~5350 MHz  
26dB Band Width Test Data CH-Mid (5290 MHz)



802.11ac VHT80, 5470~5725 MHz  
26dB Band Width Test Data CH-Low (5530 MHz)



26dB Band Width Test Data CH-High (5690 MHz)



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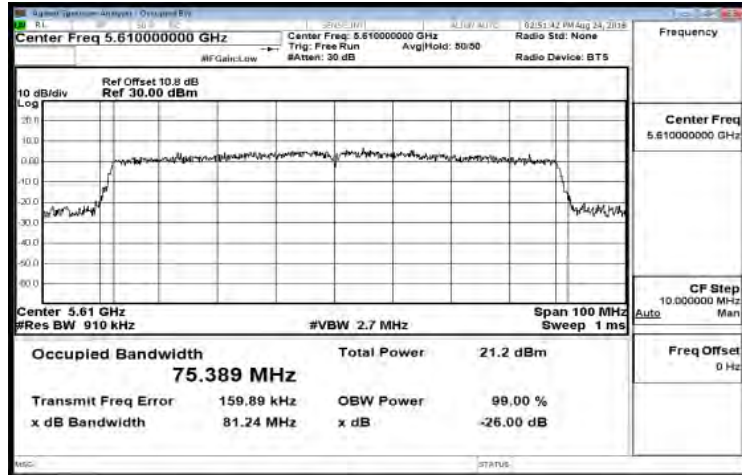
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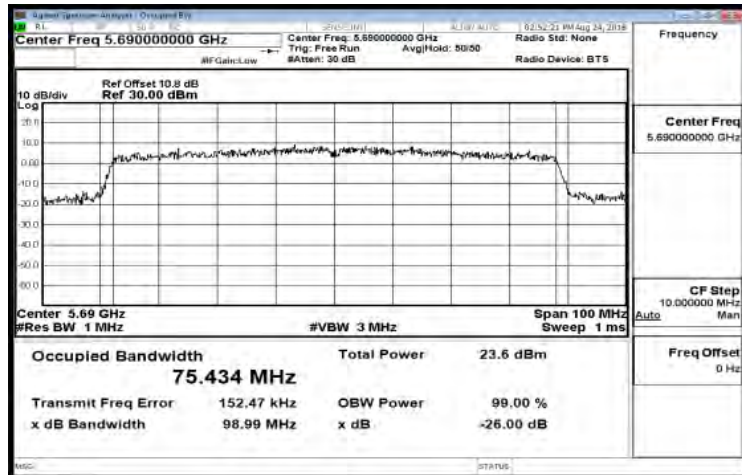


802.11ac VHT80, 5470~5725 MHz

26dB Band Width Test Data CH-High (5610 MHz)



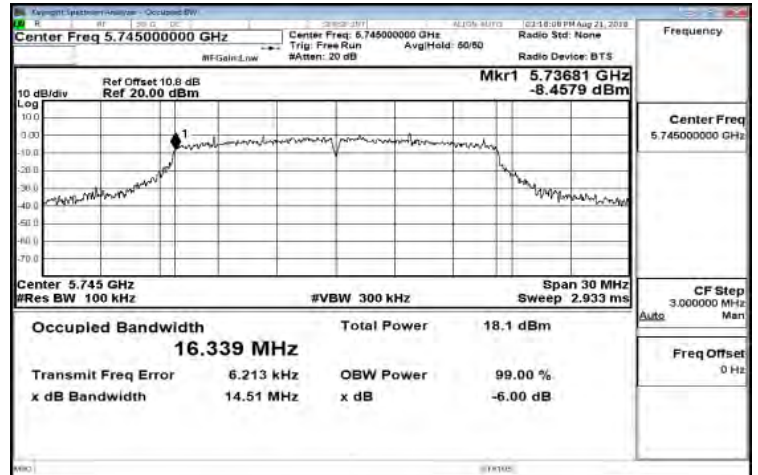
26dB Band Width Test Data CH-High (5690 MHz)



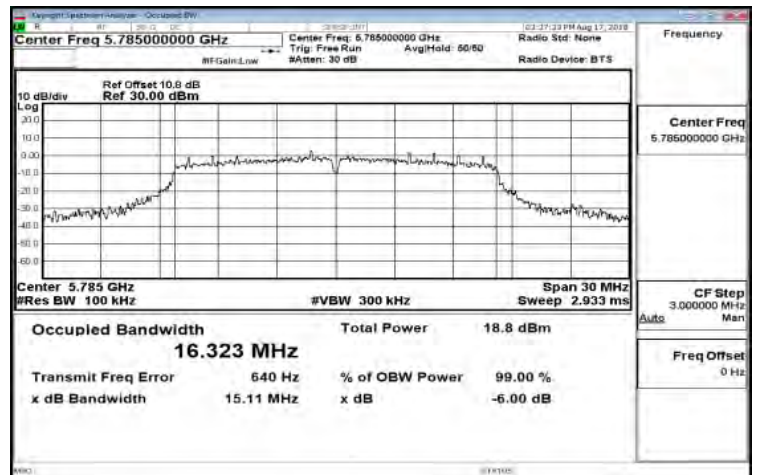
6dB Band Width measure with Peak detector for FCC

802.11a, 5725~5850 MHz

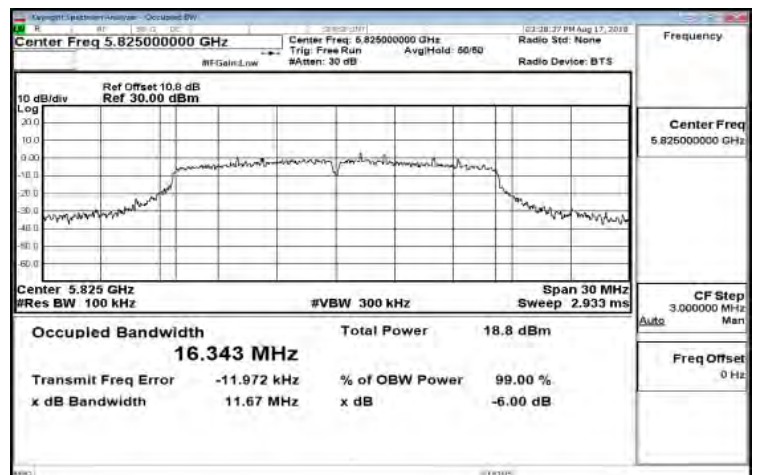
6dB Band Width Test Data CH-Low (5745 MHz)



6dB Band Width Test Data CH-Mid (5785 MHz)



6dB Band Width Test Data CH-High (5825 MHz)



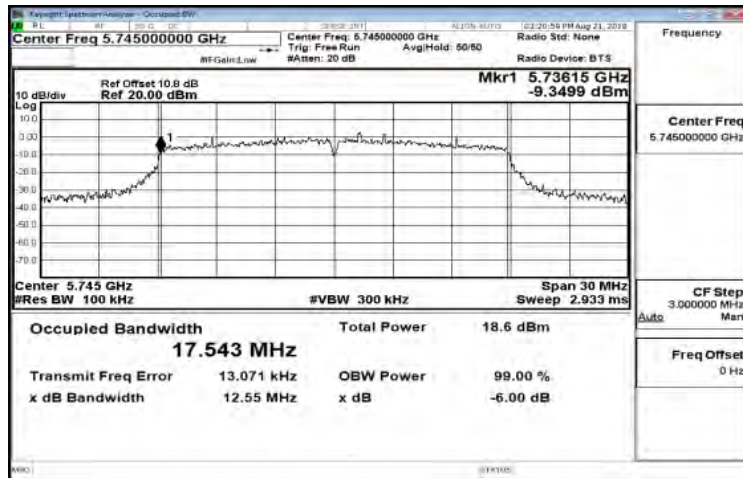
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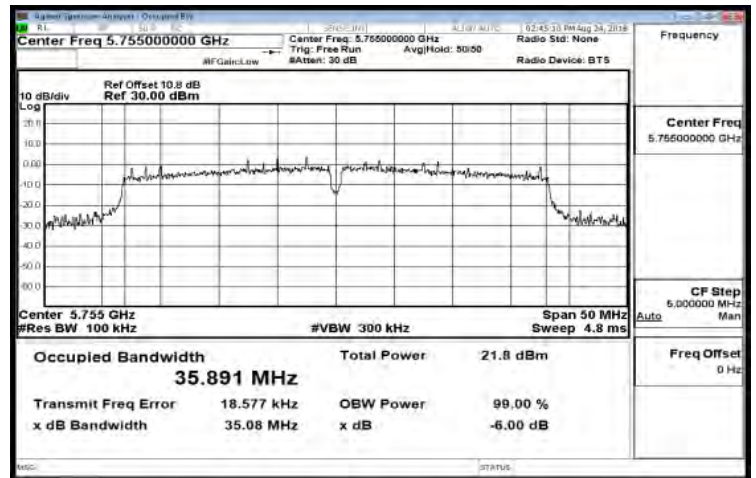
802.11n\_HT20, 5725~5850 MHz

6dB Band Width Test Data CH-Low (5745 MHz)

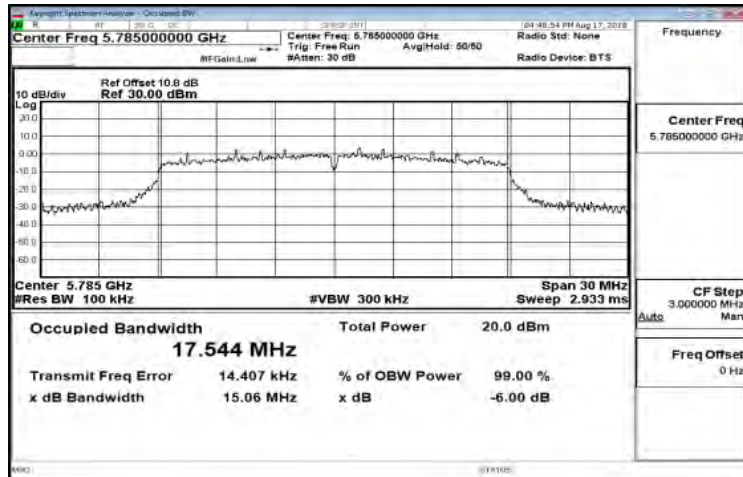


802.11n\_HT40, 5725~5850 MHz

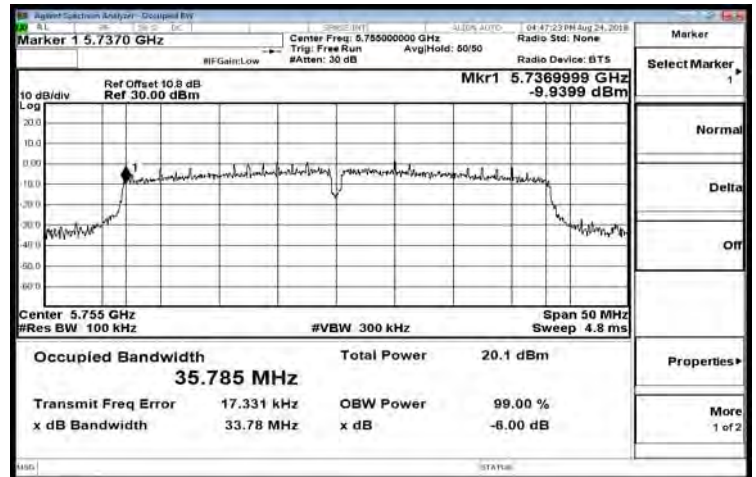
6dB Band Width Test Data CH-Low (5755 MHz)



6dB Band Width Test Data CH-Mid (5785 MHz)



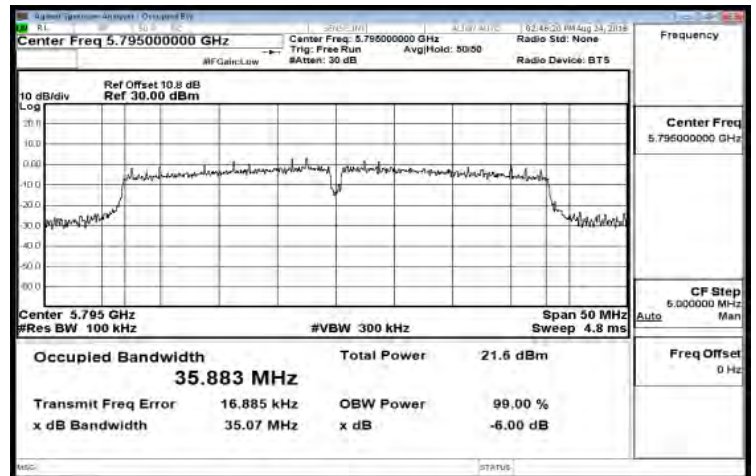
6dB Band Width Test Data CH-Low (5755 MHz)-High



6dB Band Width Test Data CH-High (5825 MHz)



6dB Band Width Test Data CH-Mid (5795 MHz)



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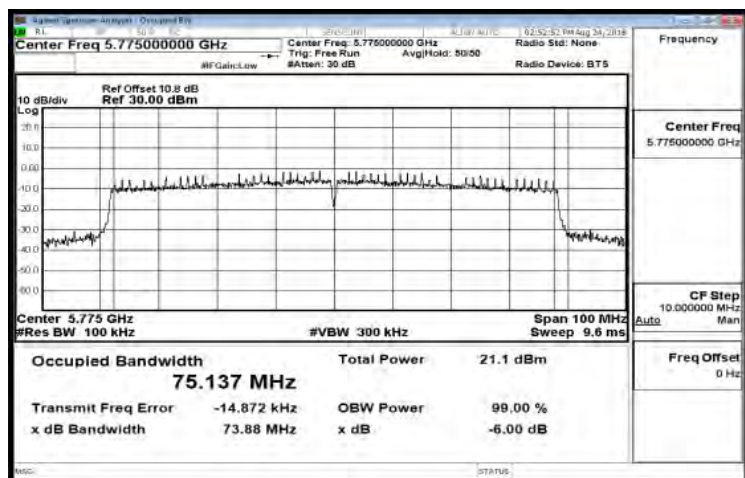
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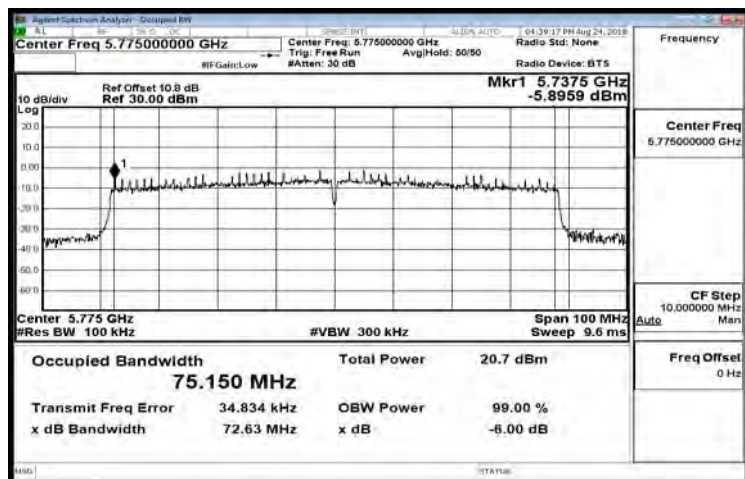


802.11ac VHT80, 5725~5850 MHz

6dB Band Width Test Data CH-Low (5775 MHz)



6dB Band Width Test Data CH-Low (5775 MHz)-High



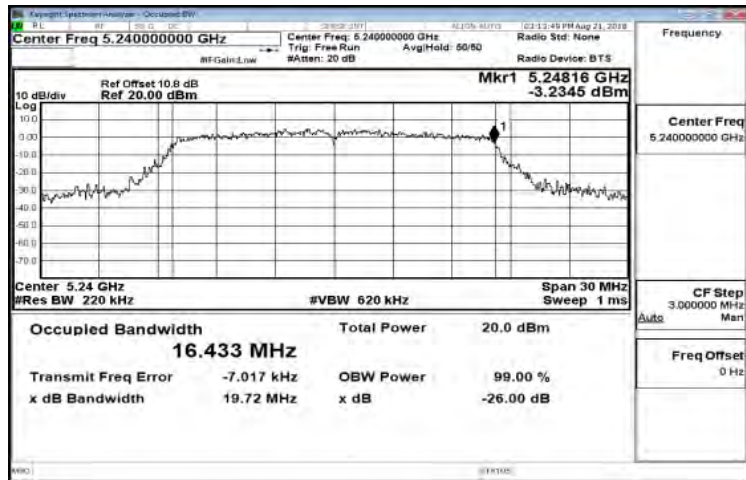
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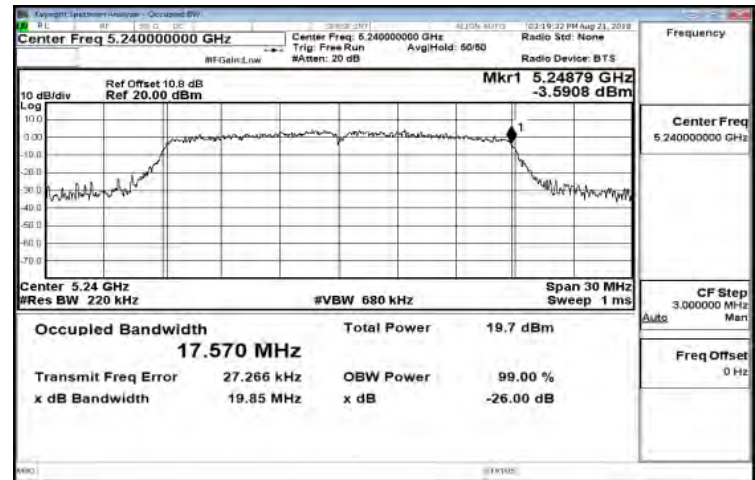
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## 99% BW verification for DFS Function

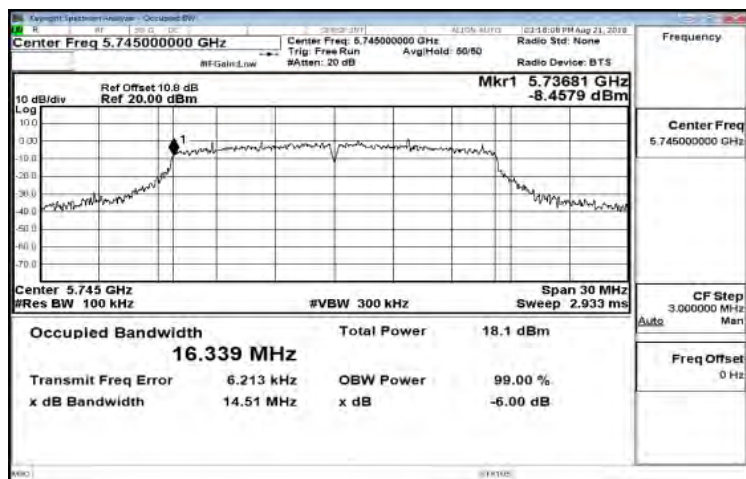
802.11a\_5240MHz



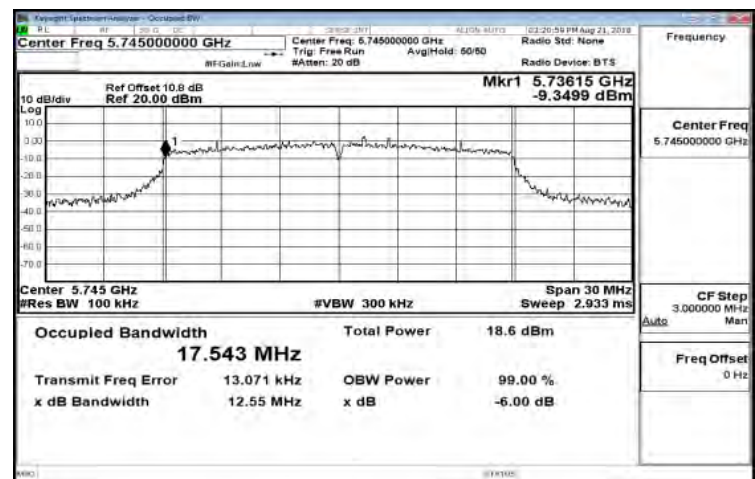
802.11n\_20MHz\_5240MHz



802.11a\_5745MHz



802.11n\_20MHz\_5745MHz

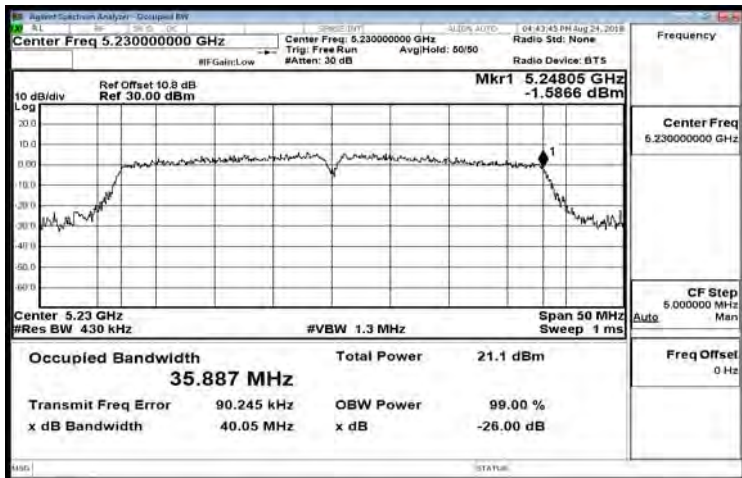


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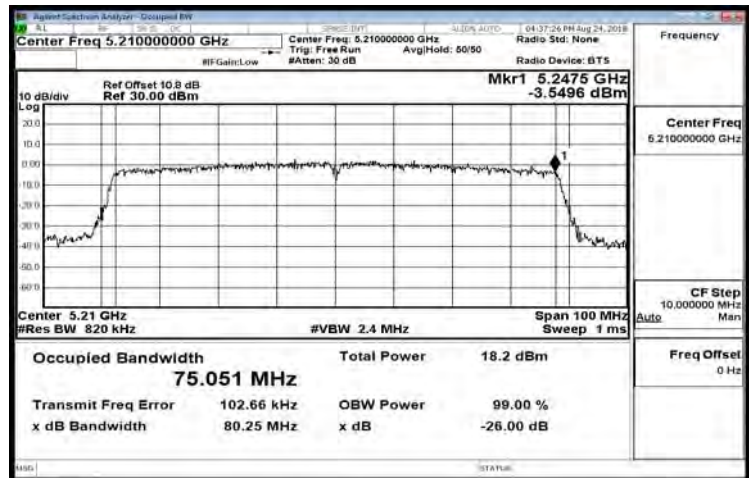
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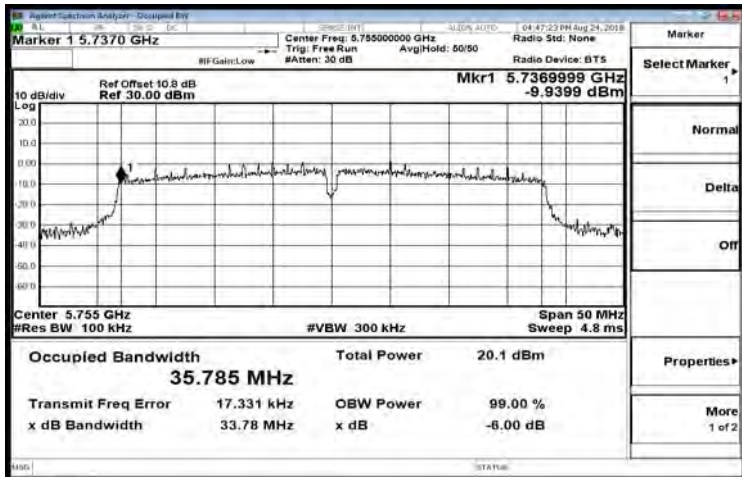
802.11n\_40MHz\_5230MHz



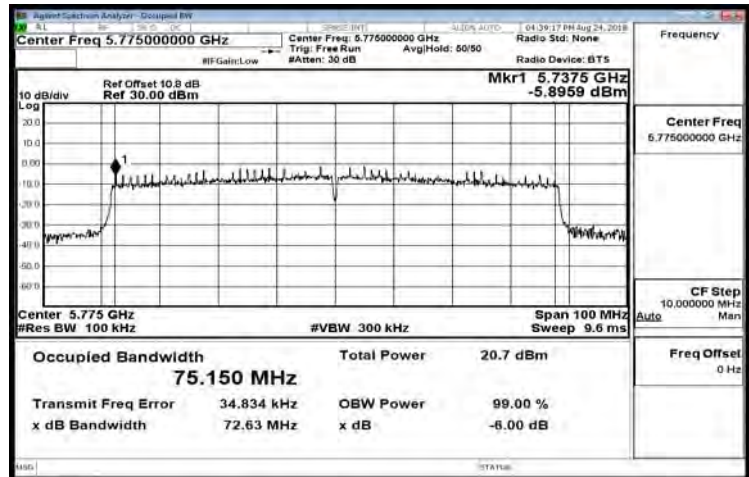
802.11ac\_80MHz\_5210MHz



802.11n\_40MHz\_5755MHz



802.11ac\_80MHz\_5775MHz



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## 9 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

### 9.1 Standard Applicable

OPERZTION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Master device )	1 Watt(30dBm)
		Fixed point-to-point Access Point	1 Watt(30dBm)
	✓	Mobile and portable client device	250mW(23.98dBm)
U-NII-2A	✓		250mW(23.98dBm) or 11dBm+10 log B
U-NII-2C	✓		250mW(23.98dBm) or 11dBm+10 log B
U-NII-3	✓		1 Watt(30dBm)

### 9.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter
4. Power Meter is used as the auxiliary test equipment to conduct the output power measurement.
5. Record the max. reading and add 10 log(1/duty cycle).
6. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.

### 9.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Power Meter	Anritsu	ML2496A	1326001	2018/08/09	2019/08/02
Power Sensor	Anritsu	MA2411B	1315048	2018/08/09	2019/08/02
Power Sensor	Anritsu	MA2411B	1315049	2018/08/09	2019/08/02
Notebook	Lenovo	L420	S0011721	N/A	N/A
DC Power Supply	Agilent	E3640A	MY53140006	2018/05/30	2019/05/29
Attenuator	Marvelous	MVE2213-10	RF30	2017/12/26	2018/12/25

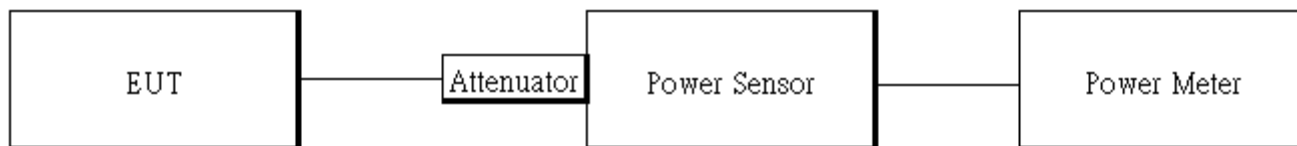
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## 9.4 Test Set-up



## 9.5 Measurement Result

## Conducted output power (FCC)

## 802.11a\_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	15.32	34.041	23.98	PASS
44	5220	6	15.37	34.435	23.98	PASS
48	5240	6	15.34	34.198	23.98	PASS
52	5260	6	<b>16.49</b>	44.566	23.98 or $11+10\log(B) = 24.04$	PASS
60	5300	6	16.43	43.954	23.98 or $11+10\log(B) = 23.86$	PASS
64	5320	6	16.45	44.157	23.98 or $11+10\log(B) = 23.90$	PASS
100	5500	6	<b>13.42</b>	21.979	23.98 or $11+10\log(B) = 23.97$	PASS
116	5580	6	13.37	21.727	23.98 or $11+10\log(B) = 24.00$	PASS
140	5700	6	13.41	21.928	23.98 or $11+10\log(B) = 23.93$	PASS
144	5720(U-NII 2C)	6	12.80086	19.058	23.98 or $11+10\log(B) = 21.86$	PASS
144	5720 (U-NII 3)	6	3.689137	2.338	30	PASS
149	5745	6	<b>16.48</b>	44.463	30	PASS
157	5785	6	16.47	44.361	30	PASS
165	5825	6	16.43	43.954	30	PASS

## 802.11n\_HT20\_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	15.46	35.156	23.98	PASS
44	5220	MCS0	15.45	35.075	23.98	PASS
48	5240	MCS0	15.41	34.754	23.98	PASS
52	5260	MCS0	16.48	44.463	23.98 or $11+10\log(B) = 23.96$	PASS
60	5300	MCS0	16.46	44.259	23.98 or $11+10\log(B) = 24.01$	PASS
64	5320	MCS0	<b>16.49</b>	44.566	23.98 or $11+10\log(B) = 23.95$	PASS
100	5500	MCS0	<b>13.39</b>	21.827	23.98 or $11+10\log(B) = 24.04$	PASS
116	5580	MCS0	13.31	21.429	23.98 or $11+10\log(B) = 24.12$	PASS
140	5700	MCS0	13.32	21.478	23.98 or $11+10\log(B) = 23.97$	PASS
144	5720(U-NII 2C)	MCS0	<b>12.60</b>	18.196	23.98 or $11+10\log(B) = 22.09$	PASS
144	5720 (U-NII 3)	MCS0	3.88	2.444	30	PASS
149	5745	MCS0	13.49	22.336	30	PASS
157	5785	MCS0	<b>16.48</b>	44.463	30	PASS
165	5825	MCS0	16.36	43.251	30	PASS

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## 802.11ac\_VHT20\_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	15.38	34.514	23.98	PASS
44	5220	MCS0	15.36	34.356	23.98	PASS
48	5240	MCS0	15.35	34.277	23.98	PASS
52	5260	MCS0	16.33	42.954	23.98 or $11+10\log(B) = 23.96$	PASS
60	5300	MCS0	16.31	42.793	23.98 or $11+10\log(B) = 24.01$	PASS
64	5320	MCS0	<b>16.33</b>	42.991	23.98 or $11+10\log(B) = 23.95$	PASS
100	5500	MCS0	<b>13.20</b>	20.893	23.98 or $11+10\log(B) = 24.04$	PASS
116	5580	MCS0	13.19	20.845	23.98 or $11+10\log(B) = 24.12$	PASS
140	5700	MCS0	13.17	20.767	23.98 or $11+10\log(B) = 23.97$	PASS
144	5720(U-NII 2C)	MCS0	12.43	17.486	23.98 or $11+10\log(B) = 22.09$	PASS
144	5720 (U-NII 3)	MCS0	3.83	2.414	30	PASS
149	5745	MCS0	13.31	21.429	30	PASS
157	5785	MCS0	<b>16.34</b>	43.090	30	PASS
165	5825	MCS0	16.27	42.401	30	PASS

## 802.11n\_HT40\_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	15.08	32.211	23.98	PASS
46	5230	MCS0	15.49	35.400	23.98	PASS
54	5270	MCS0	<b>16.48</b>	44.463	23.98 or $11+10\log(B) = 27.11$	PASS
62	5310	MCS0	13.58	22.803	23.98 or $11+10\log(B) = 27.06$	PASS
102	5510	MCS0	12.07	16.106	23.98 or $11+10\log(B) = 27.04$	PASS
110	5550	MCS0	13.42	21.979	23.98 or $11+10\log(B) = 27.36$	PASS
134	5670	MCS0	13.39	21.827	23.98 or $11+10\log(B) = 27.54$	PASS
142	5710(U-NII 2C)	MCS0	<b>14.65</b>	29.195	23.98 or $11+10\log(B) = 25.78$	PASS
142	5710 (U-NII 3)	MCS0	1.84	1.527	30	PASS
151	5755	MCS0	16.48	44.463	30	PASS
159	5795	MCS0	<b>16.49</b>	44.566	30	PASS

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## 802.11ac\_VHT40\_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	14.98	31.460	23.98	PASS
46	5230	MCS0	15.30	33.884	23.98	PASS
54	5270	MCS0	<b>16.29</b>	42.560	23.98 or $11+10\log(B) = 27.11$	PASS
62	5310	MCS0	13.44	22.068	23.98 or $11+10\log(B) = 27.06$	PASS
102	5510	MCS0	11.98	15.767	23.98 or $11+10\log(B) = 27.04$	PASS
110	5550	MCS0	13.30	21.380	23.98 or $11+10\log(B) = 27.36$	PASS
134	5670	MCS0	13.22	20.989	23.98 or $11+10\log(B) = 27.54$	PASS
142	5710(U-NII 2C)	MCS0	<b>14.60</b>	28.824	23.98 or $11+10\log(B) = 25.78$	PASS
142	5710 (U-NII 3)	MCS0	1.83	1.524	30	PASS
151	5755	MCS0	<b>16.40</b>	43.627	30	PASS
159	5795	MCS0	16.39	43.527	30	PASS

## 802.11ac\_VHT80\_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0	11.32	13.552	23.98	PASS
58	5290	MCS0	<b>11.66</b>	14.655	23.98 or $11+10\log(B) = 30.07$	PASS
106	5530	MCS0	11.97	15.732	23.98 or $11+10\log(B) = 30.07$	PASS
122	5610	MCS0	<b>13.45</b>	22.131	23.98 or $11+10\log(B) = 30.10$	PASS
138	5690(U-NII 2C)	MCS0	12.59	18.173	23.98 or $11+10\log(B) = 29.51$	PASS
138	5690 (U-NII 3)	MCS0	0.75	1.187	30	PASS
155	5775	MCS0	<b>16.46</b>	44.259	30	PASS

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## 10 PEAK POWER SPECTRAL DENSITY

### 10.1 Standard Applicable

OPERZTION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Master device )	17dBm/ MHz
		Fixed point-to-point Acess Ponit	
	√	Mobile and portable clinet device	11dBm/ MHz
U-NII-2A	√		11dBm/ MHz
U-NII-2C	√		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

### 10.2 Measurement Procedure

- Place the EUT on the table and set it in transmitting mode.
- The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
- Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
- For U-NII1, U-NII-2A, U-NII-2C Band:**  
Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)  
**For U-NII-3 Band:**  
Set RBW=500 kHz, VBW≥ 3RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
- User the cursor on spectrum to peak search the highest level of trace
- Record the max. reading and add 10 log(1/duty cycle).
- Repeat above procedures until all default test channel (low, middle, and high) was complete.

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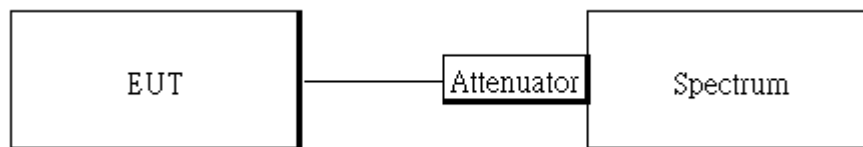
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### 10.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	Agilent	N9010A	MY51440113	2018/06/20	2019/06/19
DC Block	PASTERNAK	PE8210	RF29	2017/12/26	2018/12/25
Notebook	Lenovo	L420	S0011721	N/A	N/A
DC Power Supply	Agilent	E3640A	MY53140006	2018/05/30	2019/05/29
Attenuator	Marvelous	MVE2213-10	RF30	2017/12/26	2018/12/25
Power Meter	Anritsu	ML2496A	1326001	2018/08/09	2019/08/02
Power Sensor	Anritsu	MA2411B	1315048	2018/08/09	2019/08/02
Power Sensor	Anritsu	MA2411B	1315049	2018/08/09	2019/08/02

### 10.4 Test Set-up



### 10.5 Measurement Result

POWER DENSITY 802.11a MODE						
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Offset	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	1.83	10.80	0.32	2.15	11	-8.85
5220	0.77	10.80	0.32	1.09	11	-9.91
5240	2.41	10.80	0.32	2.73	11	-8.27
5260	3.91	10.80	0.32	4.23	11	-6.77
5300	1.35	10.80	0.32	1.67	11	-9.33
5320	0.68	10.80	0.32	1.00	11	-10.00
5500	1.54	10.80	0.32	1.86	11	-9.14
5580	0.33	10.80	0.32	0.65	11	-10.35
5700	-0.70	10.80	0.32	-0.38	11	-11.38
5720 (U-NII 2C)	-1.33	10.80	0.32	-1.01	11	-12.01
5720 (U-NII 3)	-5.34	10.80	0.32	-5.02	30	-35.02
5745	7.12	10.80	0.32	7.12	30	-22.88
5785	7.10	10.80	0.32	7.10	30	-22.90
5825	6.74	10.80	0.32	6.74	30	-23.26

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POWER DENSITY 802.11n HT20 MODE						
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Offset	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	0.54	10.80	0.34	0.88	11	-10.12
5220	1.51	10.80	0.34	1.85	11	-9.15
5240	-0.77	10.80	0.34	-0.43	11	-11.43
5260	2.90	10.80	0.34	3.24	11	-7.76
5300	0.90	10.80	0.34	1.24	11	-9.76
5320	2.08	10.80	0.34	2.42	11	-8.58
5500	-0.75	10.80	0.34	-0.41	11	-11.41
5580	0.07	10.80	0.34	0.41	11	-10.59
5700	0.23	10.80	0.34	0.57	11	-10.43
5720 (U-NII 2C)	-1.52	10.80	0.34	-1.18	11	-12.18
5720 (U-NII 3)	-5.68	10.80	0.34	-5.33	30	-35.33
5745	6.23	10.80	0.34	6.23	30	-23.77
5785	7.17	10.80	0.34	7.17	30	-22.83
5825	7.26	10.80	0.34	7.26	30	-22.74

POWER DENSITY 802.11n HT40 MODE						
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Offset	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5190	-3.4	10.80	0.67	-2.73	11	-13.73
5230	-5.18	10.80	0.67	-4.51	11	-15.51
5270	-3.28	10.80	0.67	-2.61	11	-13.61
5310	-7.02	10.80	0.67	-6.35	11	-17.35
5510	-8.62	10.80	0.67	-7.95	11	-18.95
5550	-4.44	10.80	0.67	-3.77	11	-14.77
5670	-5.06	10.80	0.67	-4.39	11	-15.39
5710 (U-NII 2C)	-6.09	10.80	0.67	-5.41	11	-16.41
5710 (U-NII 3)	-11.16	10.80	0.67	-10.49	30	-40.49
5755	6.89	10.80	0.67	6.89	30	-23.11
5795	6.60	10.80	0.67	6.60	30	-23.40

POWER DENSITY 802.11ac VHT80 MODE						
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Offset	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5210	-14.64	10.80	1.25	-13.39	11	-24.39
5290	-14.92	10.80	1.25	-13.67	11	-24.67
5530	-16.39	10.80	1.25	-15.14	11	-26.14
5610	-11.48	10.80	1.25	-10.23	11	-21.23
5690 (U-NII 2C)	-12.52	10.80	1.25	-11.27	11	-22.27
5690 (U-NII 3)	-17.57	10.80	1.25	-16.33	30	-46.33
5775	1.54	10.80	1.25	1.54	30	-28.46

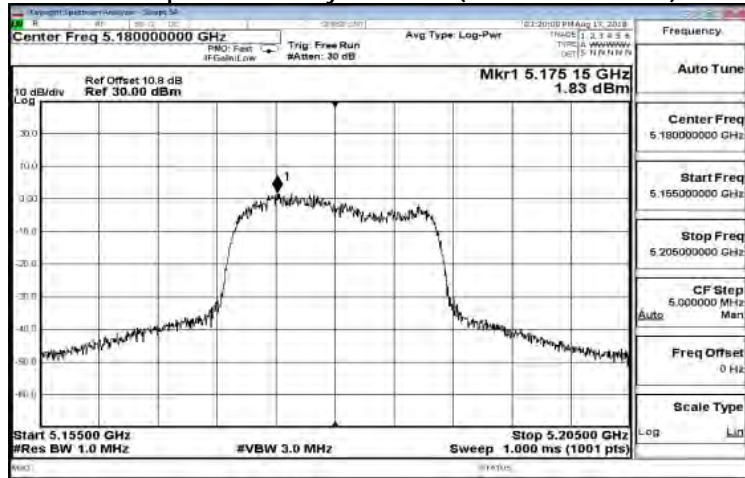
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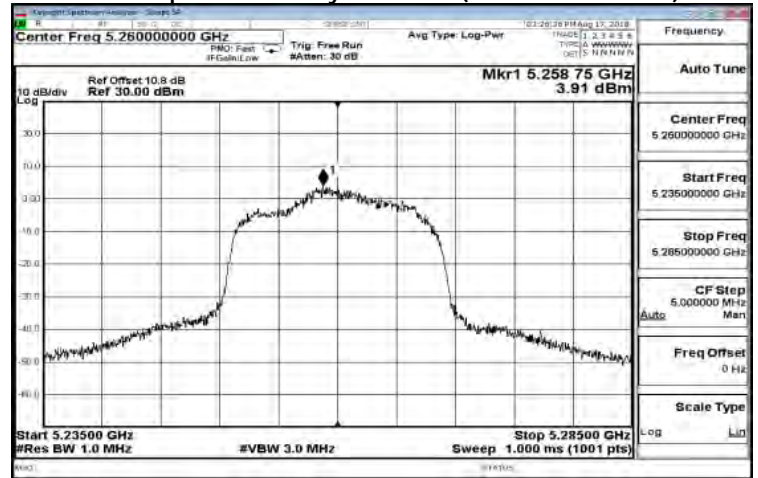
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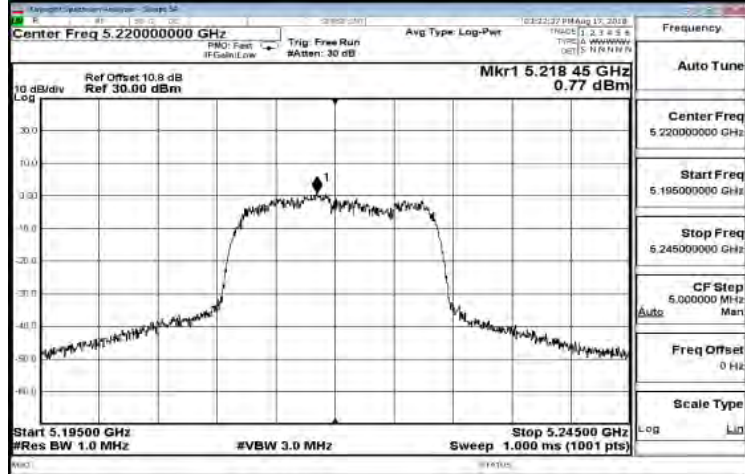
802.11a 5150~5250 MHz  
Peak Power Spectral Density Data Plot (CH Low 5180 MHz)



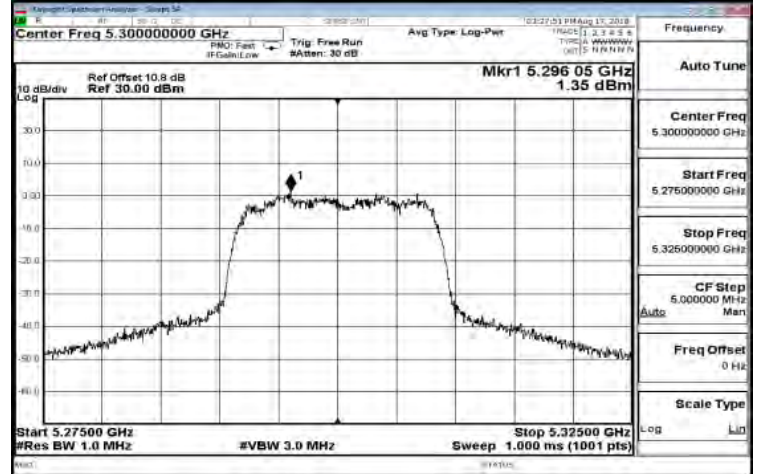
802.11a 5250~5350 MHz  
Peak Power Spectral Density Data Plot (CH Low 5260 MHz)



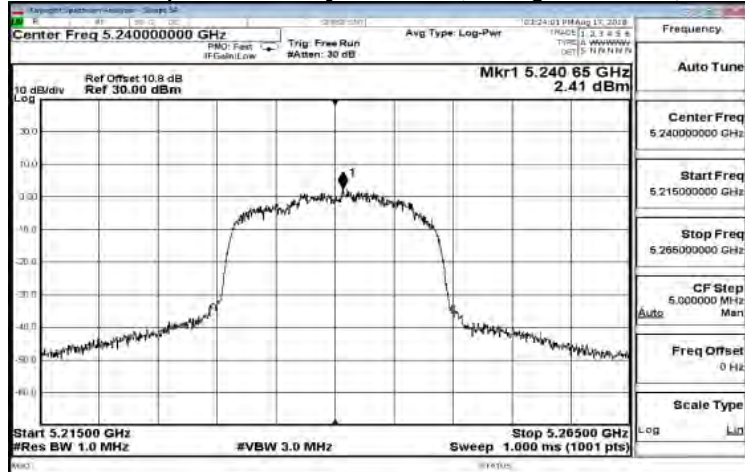
Peak Power Spectral Density Data Plot (CH Mid 5220 MHz)



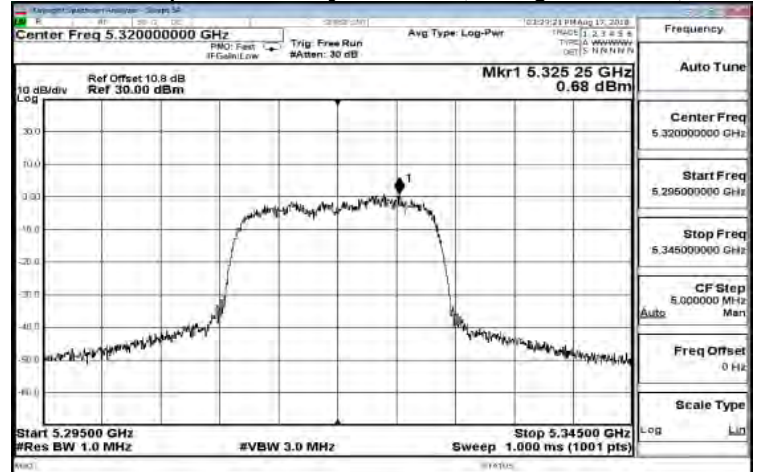
Peak Power Spectral Density Data Plot (CH Mid 5300 MHz)



Peak Power Spectral Density Data Plot (CH High 5240 MHz)



Peak Power Spectral Density Data Plot (CH High 5320 MHz)



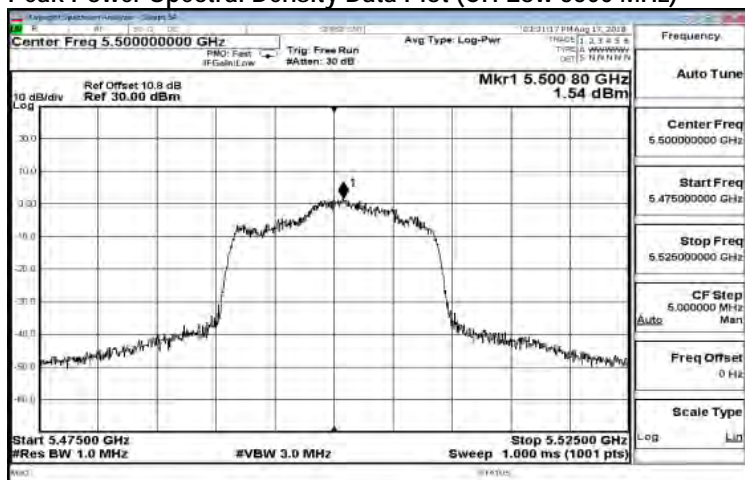
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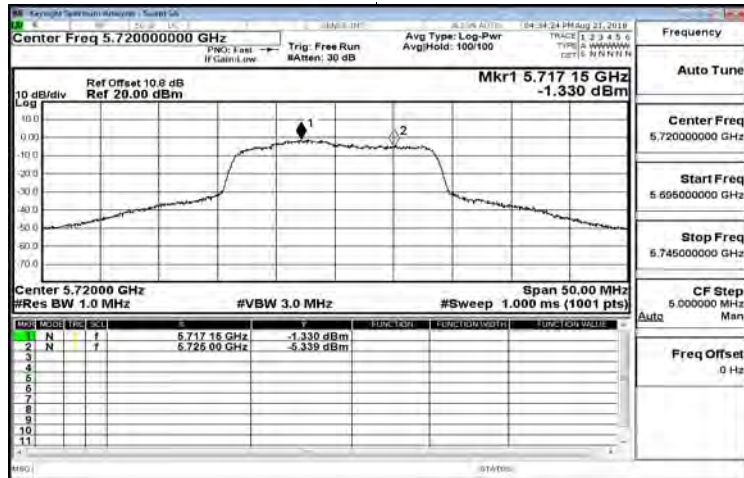
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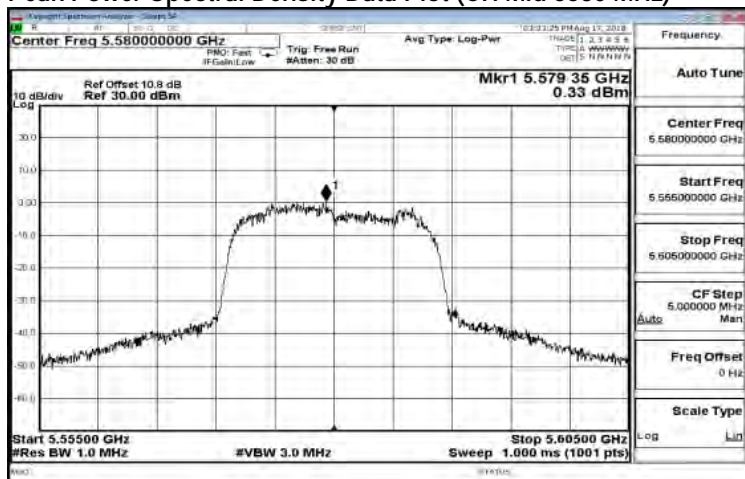
### 802.11a 5470~5725 MHz Peak Power Spectral Density Data Plot (CH Low 5500 MHz)



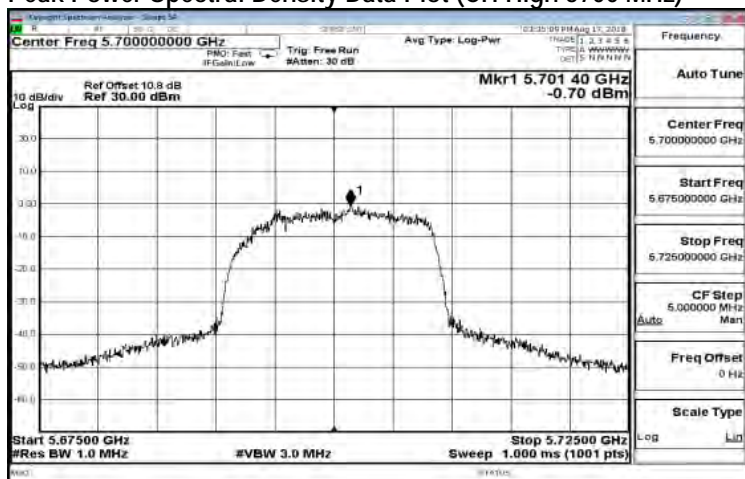
### Peak Power Spectral Density Data Plot (CH High 5720 MHz)



### Peak Power Spectral Density Data Plot (CH Mid 5580 MHz)



### Peak Power Spectral Density Data Plot (CH High 5700 MHz)

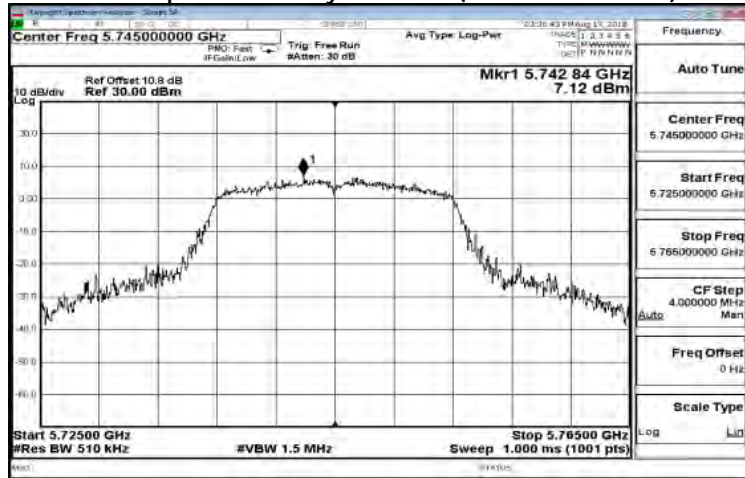


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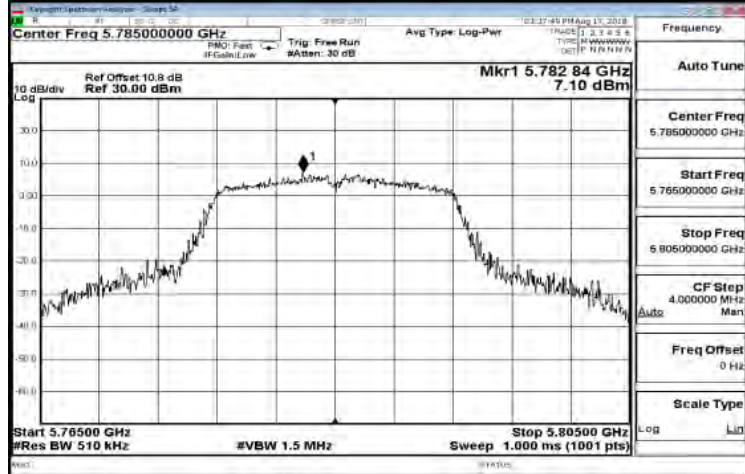
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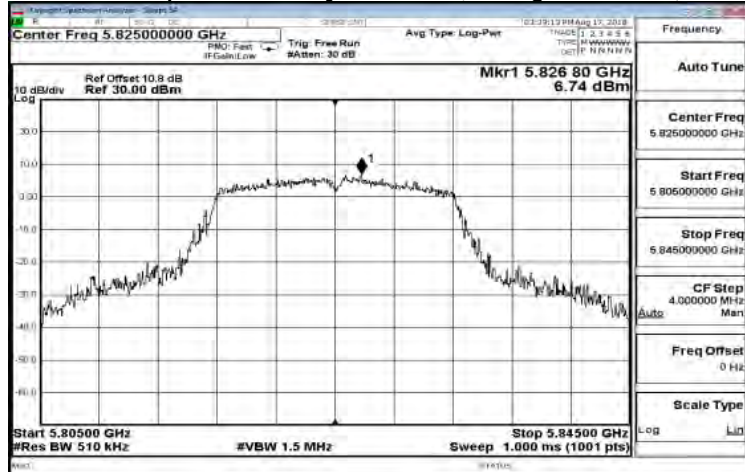
802.11a 5725~5850 MHz  
Peak Power Spectral Density Data Plot (CH Low 5745 MHz)



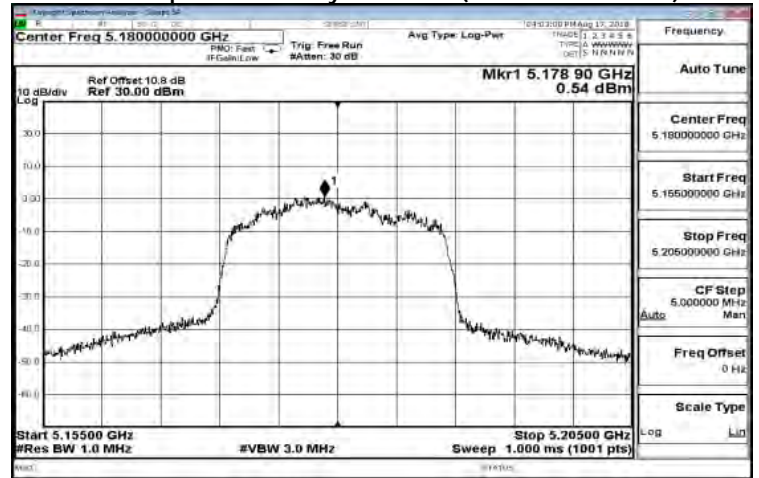
Peak Power Spectral Density Data Plot (CH Mid 5785 MHz)



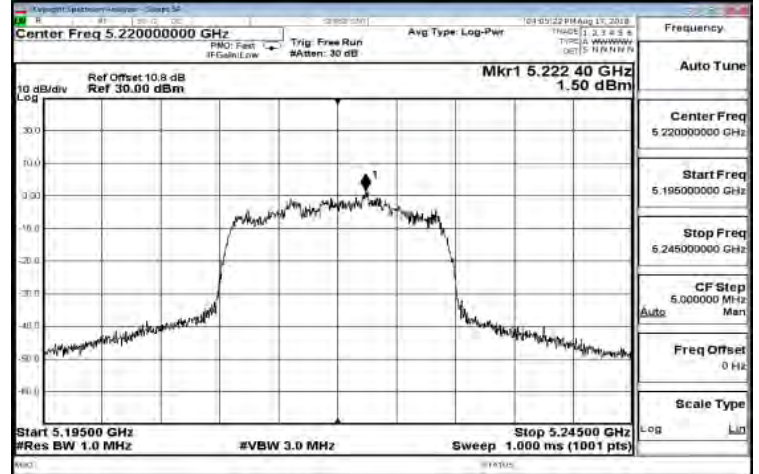
Peak Power Spectral Density Data Plot (CH High 5825 MHz)



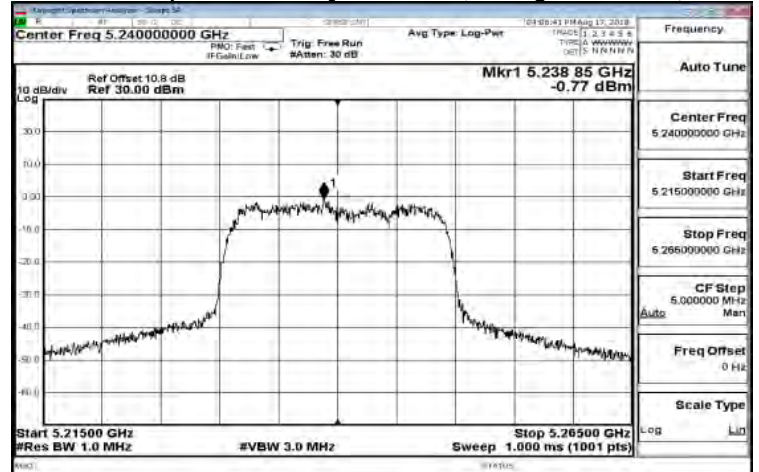
802.11n HT20, 5150~5250 MHz  
Peak Power Spectral Density Data Plot (CH Low 5180 MHz)



Peak Power Spectral Density Data Plot (CH Mid 5220 MHz)



Peak Power Spectral Density Data Plot (CH High 5240 MHz)



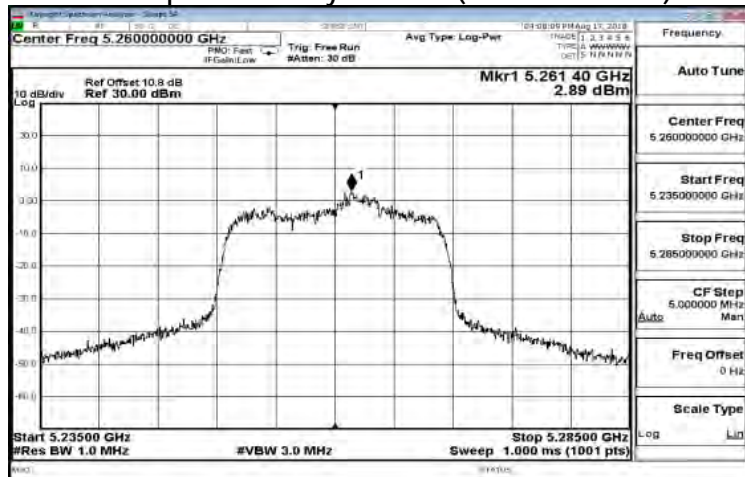
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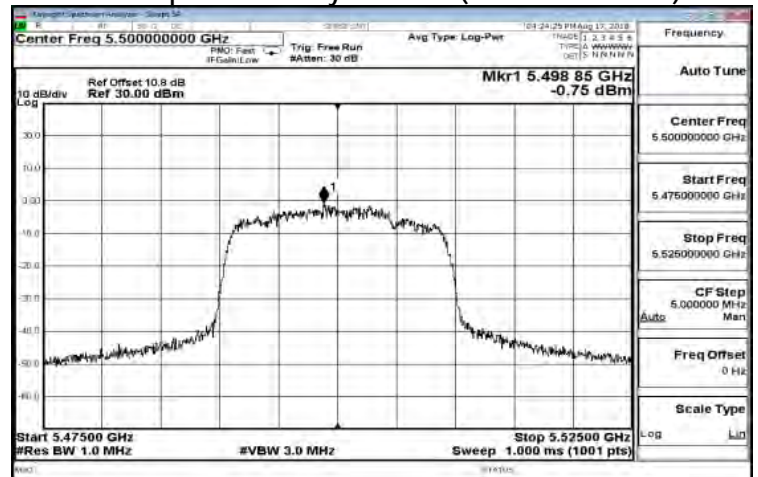
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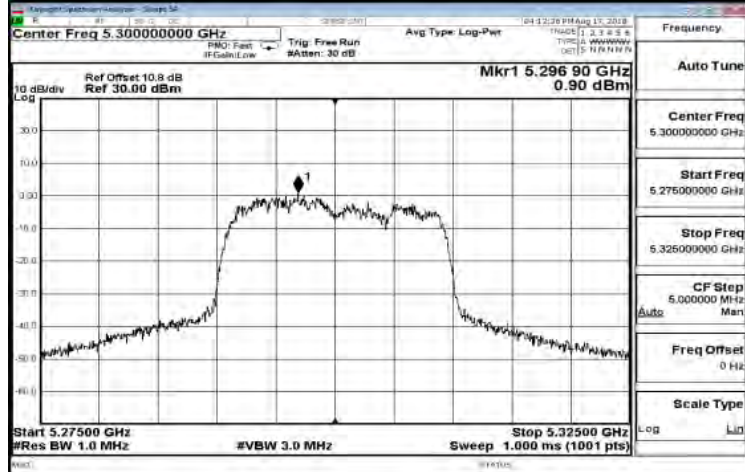
802.11n HT20, 5250~5350 MHz  
Peak Power Spectral Density Data Plot (CH Low 5260MHz)



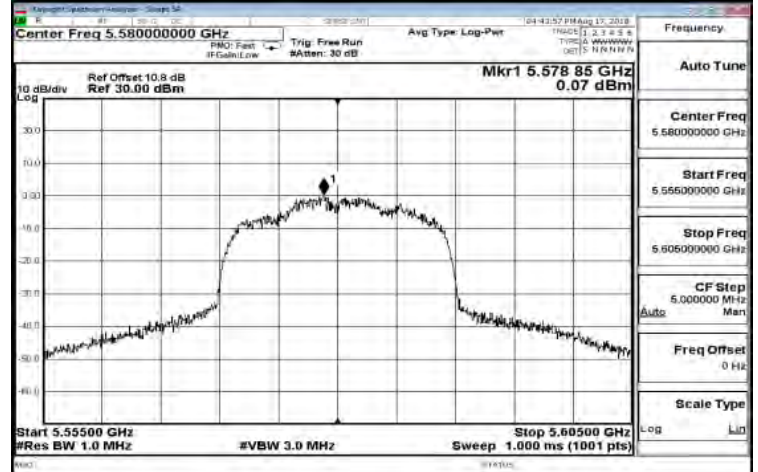
802.11n HT20, 5470~5725 MHz  
Peak Power Spectral Density Data Plot (CH Low 5500 MHz)



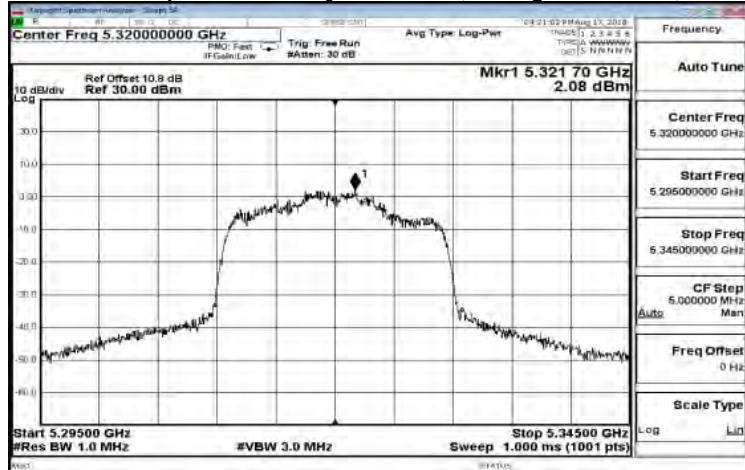
Peak Power Spectral Density Data Plot (CH Mid 5300 MHz)



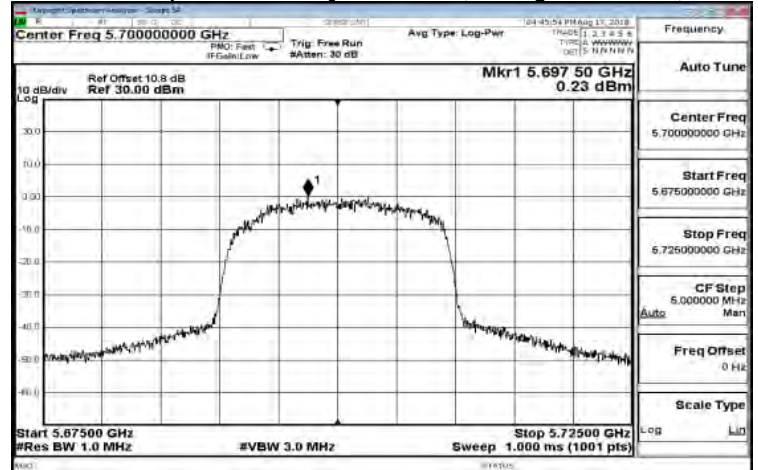
Peak Power Spectral Density Data Plot (CH Mid 5580MHz)



Peak Power Spectral Density Data Plot (CH High 5320 MHz)



Peak Power Spectral Density Data Plot (CH High 5700 MHz)

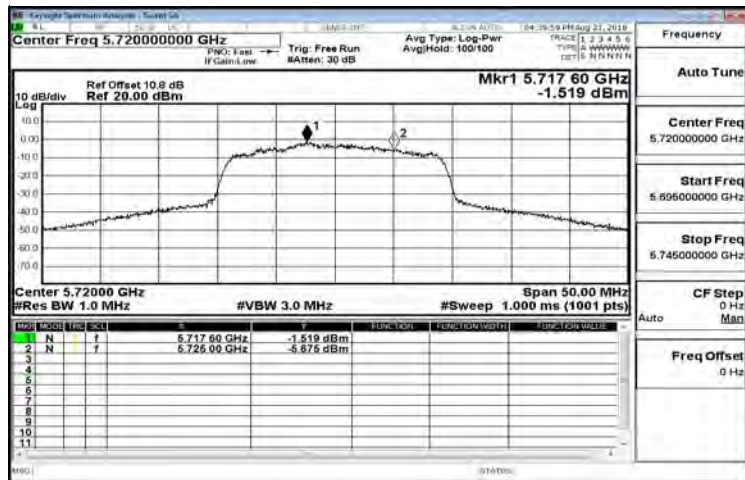


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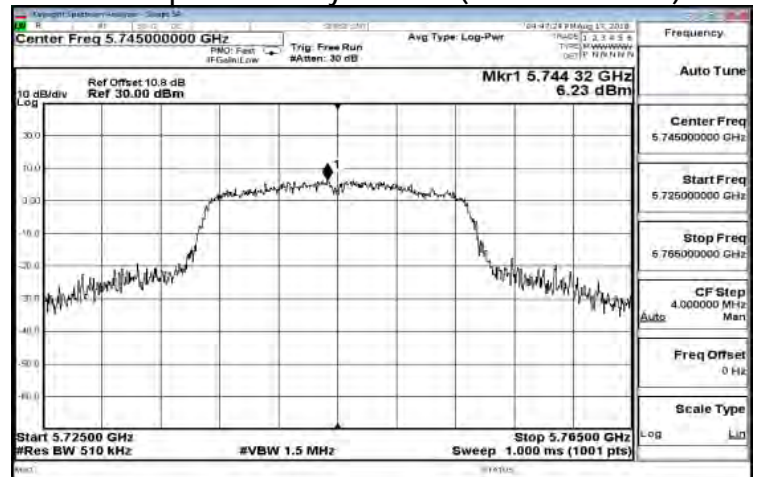
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## Peak Power Spectral Density Data Plot (CH High 5720 MHz)

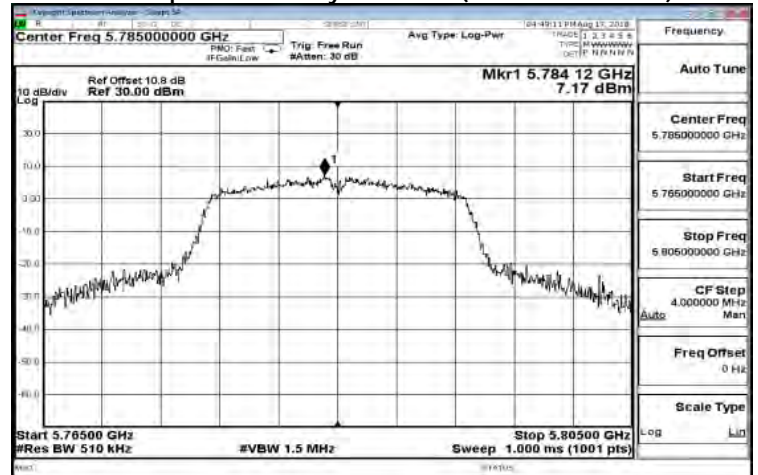


## 802.11n HT20, 5725~5850 MHz

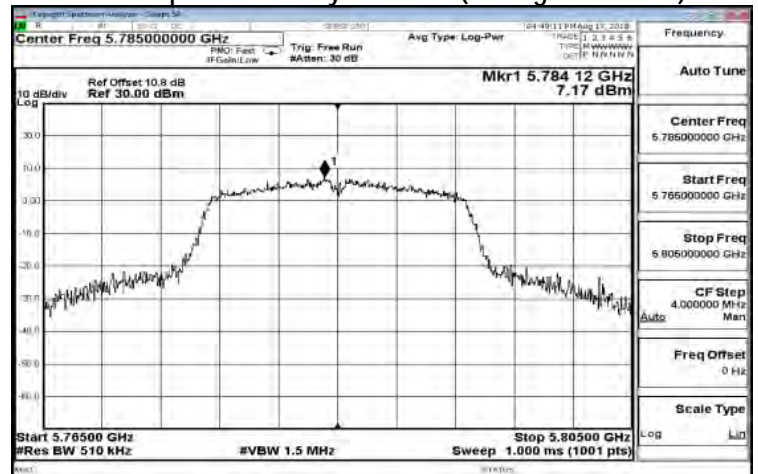
## Peak Power Spectral Density Data Plot (CH Low 5745 MHz)



## Peak Power Spectral Density Data Plot (CH Mid 5785 MHz)



## Peak Power Spectral Density Data Plot (CH High 5825 MHz)



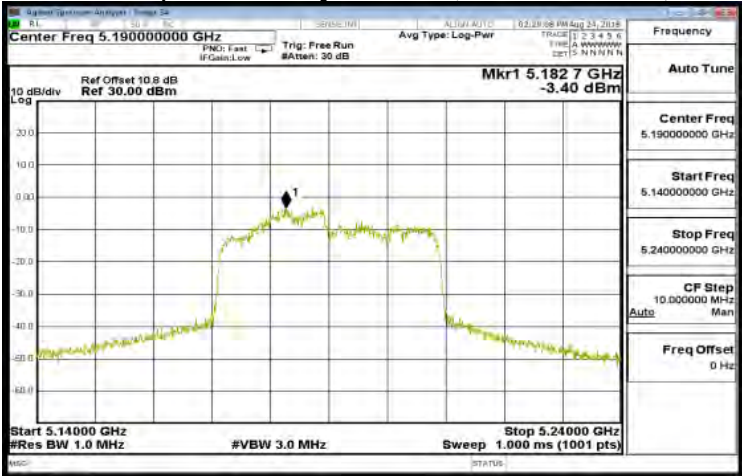
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802.11n HT40, 5150~5250 MHz  
Peak Power Spectral Density Data Plot (CH Low 5190 MHz)



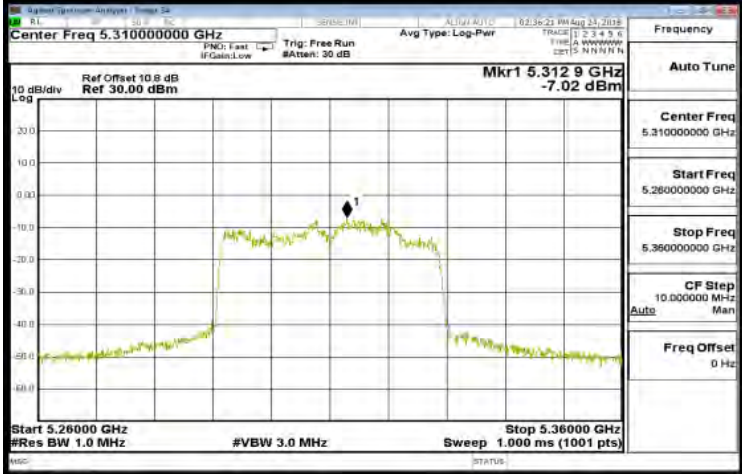
802.11n HT40, 5250~5350 MHz  
Peak Power Spectral Density Data Plot (CH Low 5270 MHz)



Peak Power Spectral Density Data Plot (CH High 5230 MHz)



Peak Power Spectral Density Data Plot (CH High 5310 MHz)



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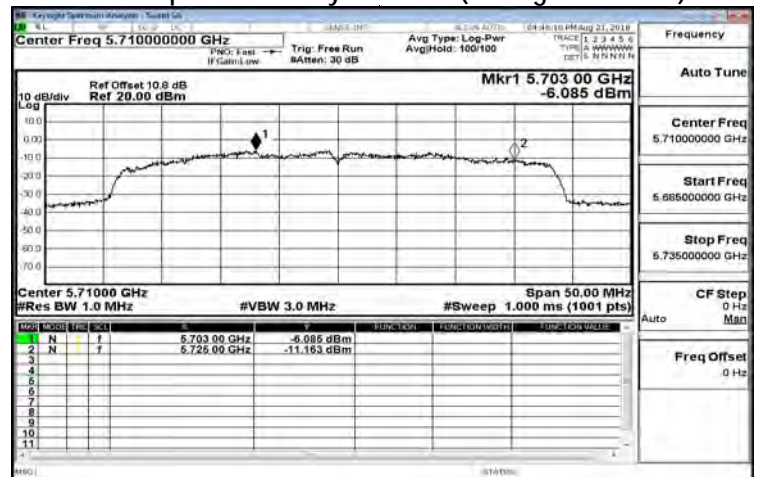
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802.11n HT40, 5470~5725 MHz  
Peak Power Spectral Density Data Plot (CH Low 5510 MHz)



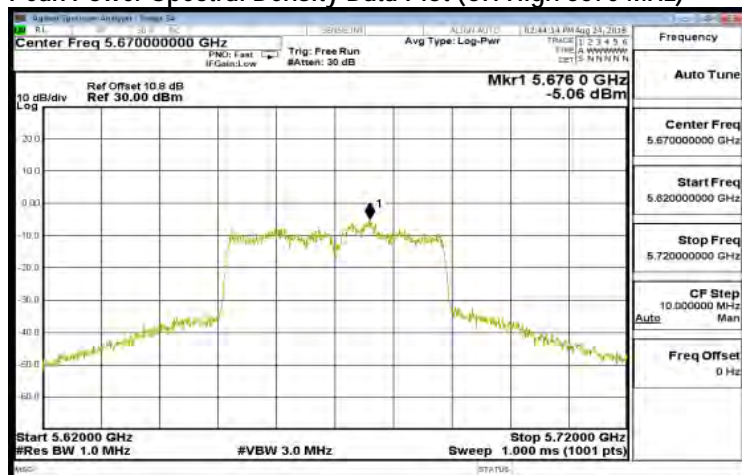
Peak Power Spectral Density Data Plot (CH High 5710 MHz)



Peak Power Spectral Density Data Plot (CH Mid 5550 MHz)



Peak Power Spectral Density Data Plot (CH High 5670 MHz)



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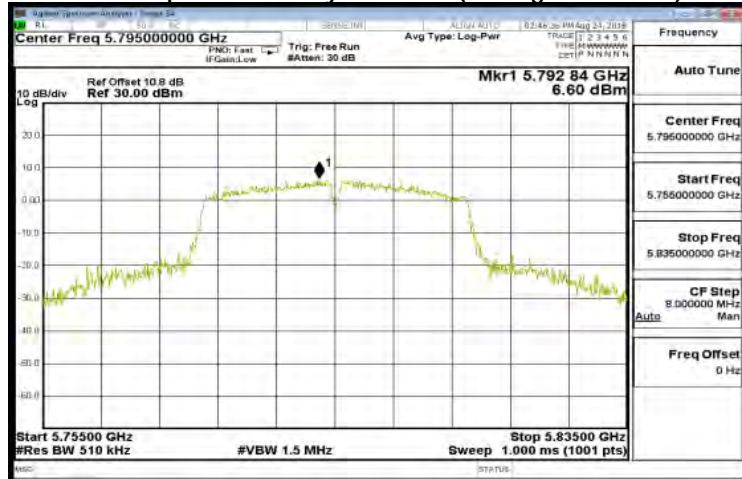
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802.11n HT40, 5725~5850 MHz

Peak Power Spectral Density Data Plot (CH Low 5755 MHz)



Peak Power Spectral Density Data Plot (CH High 5795 MHz)



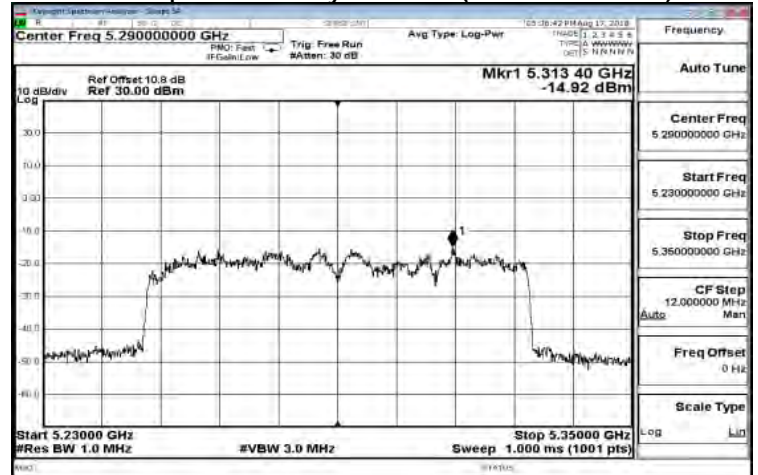
802.11ac VHT80, 5150~5250 MHz

Peak Power Spectral Density Data Plot (CH Mid 5210 MHz)



802.11ac VHT80, 5250~5350 MHz

Peak Power Spectral Density Data Plot (CH Mid 5290 MHz)



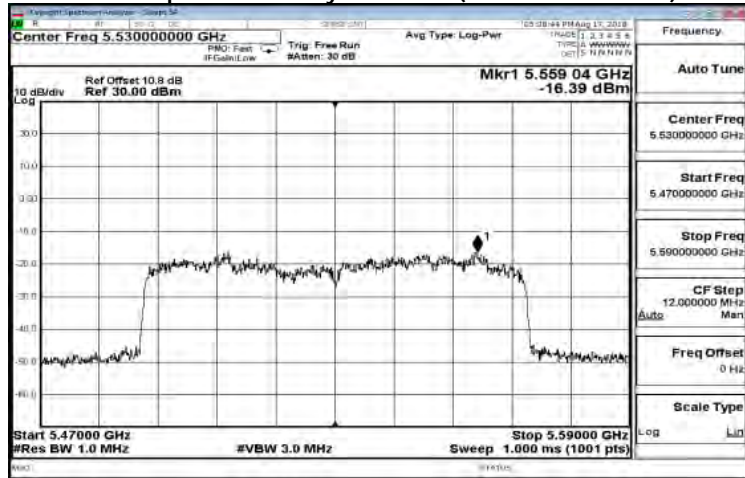
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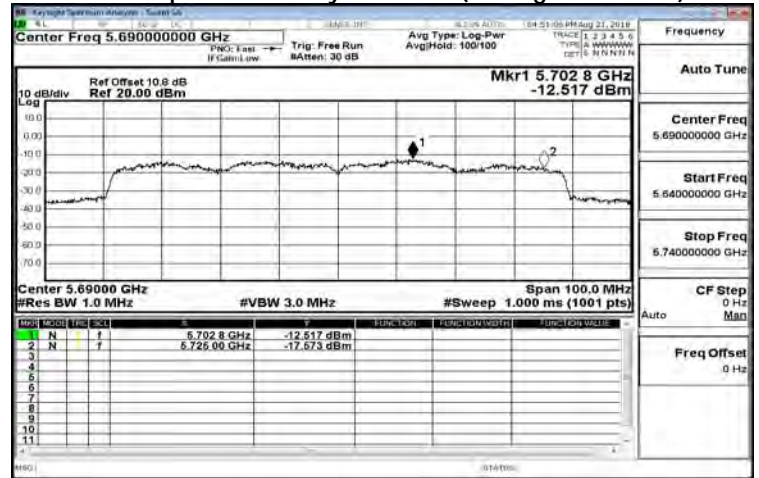
## 802.11ac VHT80, 5470~5725 MHz Peak Power Spectral Density Data Plot (CH Low 5530 MHz)



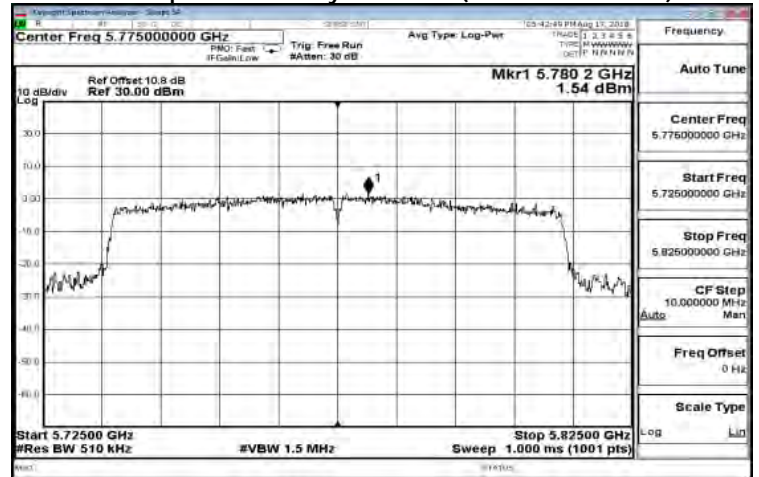
## 802.11ac VHT80, 5470~5725 MHz Peak Power Spectral Density Data Plot (CH High 5610 MHz)



## Peak Power Spectral Density Data Plot (CH High 5690 MHz)



## 802.11ac VHT80, 5725~5850 MHz Peak Power Spectral Density Data Plot (CH Mid 5775 MHz)



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## 11 UNDESIRABLE RADIATED EMISSION MEASUREMENT

### 11.1 Standard Applicable

The maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

1. For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
2. For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

APPLICABLE TO	LIMIT	
FCC KDB 789033 D02 General UNII Test Procedures New Rules	FIELD STRENGTH AT 3m	
	PK: 74 (dBμV/m)	AV 54 (dBμV/m)
APPLICABLE TO	EIRP LIMIT	FIELD STRENGTH AT 3m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.3 (dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2(dBμV/m) *1 PK:105.2 (dBμV/m) *2 PK: 110.8(dBμV/m) *3 PK:122.2 (dBμV/m) *4
*1 beyond 75 MHz or more above of the bandedge. *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.		

$EIRP = (E \cdot d)^2 / 30$ , where E is the field in V/m, d is the measurement distance (3m), EIRP is the equivalent isotropically radiated power in Watts.

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Unwanted spurious emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

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

**Note:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBμV/m) = 20 log Emission level (dBμV/m)

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## 11.2 Measurement Equipment Used

SGS SAC-III					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Broadband Antenna	TESEQ	CBL 6112D	35243	2017/11/10	2018/11/09
Horn Antenna	Schwarzbeck	BBHA9120D	1187	2018/01/04	2019/01/03
Horn Antenna	SCHWAZBECK	BBHA9170	184	2017/12/12	2018/12/11
Loop Antenna	ETS.LINDGREN	6502	148045	2017/09/26	2018/09/25
EMI Test Receiver	R&S	ESU 40	100363	2018/04/11	2019/04/10
Pre-Amplifier	EMC Instruments	EMC330	980096	2017/12/26	2018/12/25
Pre-Amplifier	EMC Instruments	EMC0011830	980199	2017/12/26	2018/12/25
Pre-Amplifier	EMC Instruments	EMC184045B	980135	2017/10/27	2018/10/26
Attenuator	Marvelous	WATT-218FS-10	RF246	2017/12/26	2018/12/25
Band Rejection Filter	Micro-Tronics	G015	RF100	2017/12/26	2018/12/25
Band Rejection Filter	Micro-Tronics	G016	RF101	2017/12/26	2018/12/25
Band Rejection Filter	Micro-Tronics	G021	RF102	2017/12/26	2018/12/25
Coaxial Cable	Huber+Suhner	RG 214/U	W21.01	2017/12/26	2018/12/25
Coaxial Cable	Huber Suhner	EMC106-SM-SM-7200	150703	2017/12/26	2018/12/25
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17388/4	2017/12/26	2018/12/25
Coaxial Cable	Huber Suhner	RG 214/U	W22.03	2017/12/26	2018/12/25
Notebook	Lenovo	T470	P0001293	N/A	N/A

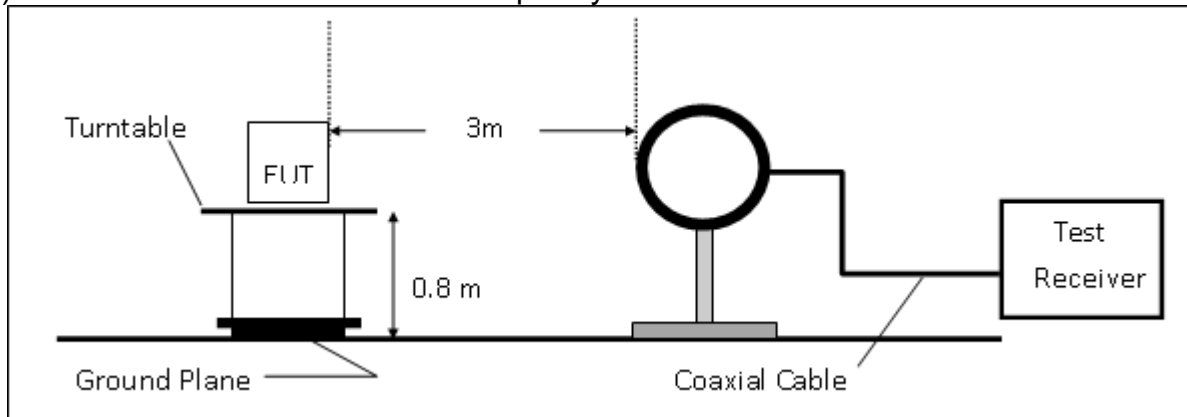
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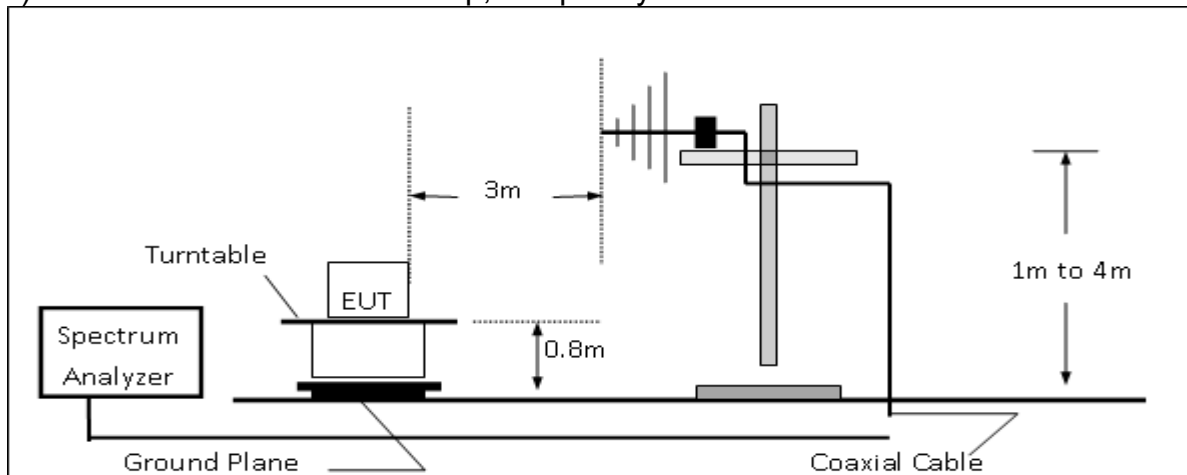
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## 11.3 Test SET-UP

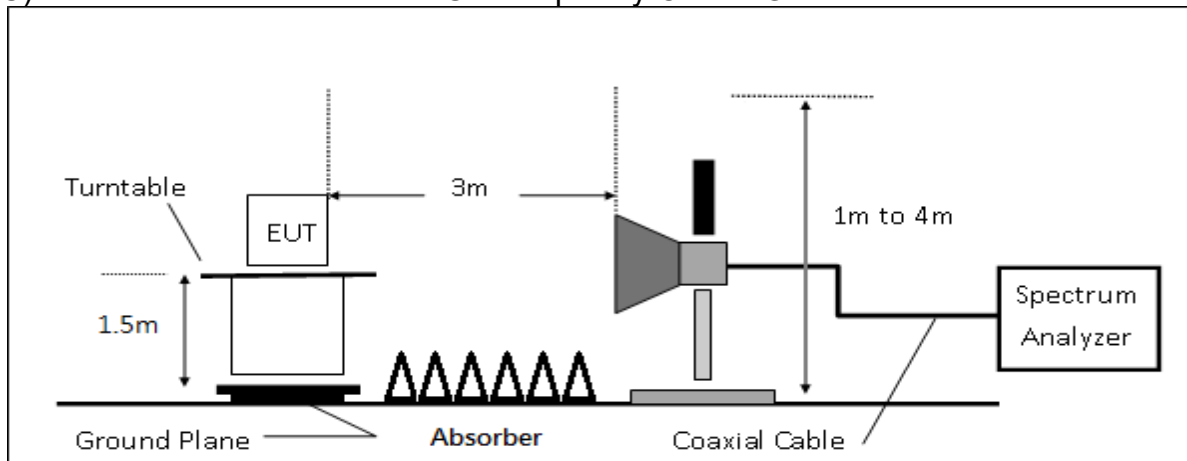
### (A) Radiated Emission Test Set-UP Frequency Below 30MHz.



### (B) Radiated Emission Test Set-UP, Frequency form 30MHz to 1000MHz



### (C) Radiated Emission Test Set-UP Frequency Over 1 GHz



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#### 11.4 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 1GHz above ground plane.
4. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
5. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
6. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
9. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
10. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
11. Repeat above procedures until all frequency measured were complete.

#### 11.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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### 11.6 Test Results of Radiated Spurious Emissions form 9 KHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

### 11.7 Measurement Result

Refer to attach tabular data sheets.

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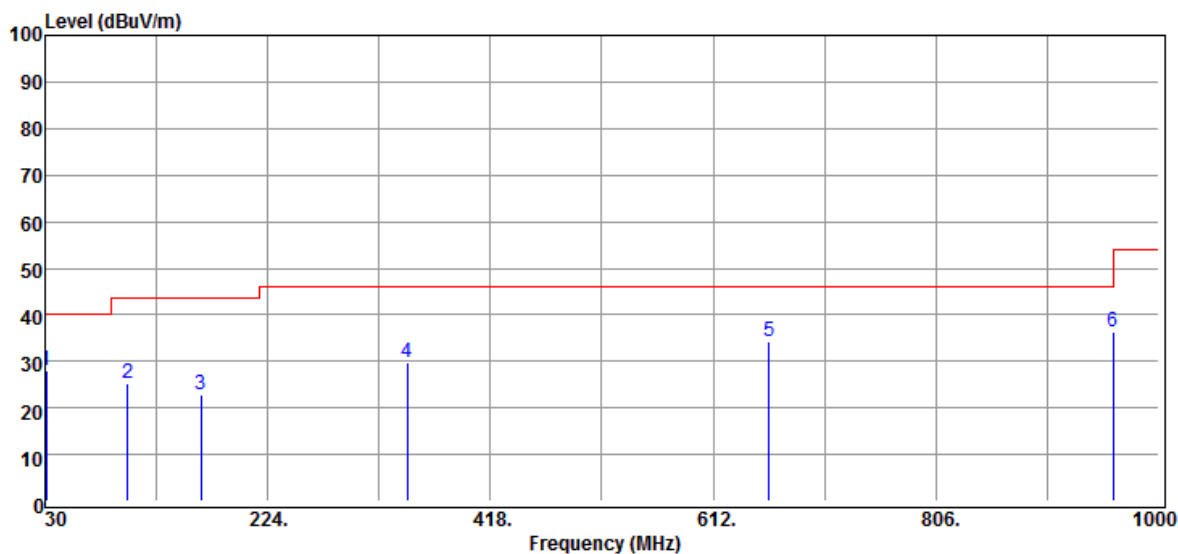
# Radiated Spurious Emission Measurement Result

## Below 1GHz Worst-Case Data:

### 802.11a 5150~5250 MHz

Operation Mode :802.11a /Band 1  
Test Mode :TX CH MID  
EUT Pol :H Plan  
Test Channel :5220 MHz

Test Date :2018-08-07  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
30.97	Peak	32.34	-4.16	28.18	40.00	-11.82
101.78	Peak	39.78	-14.49	25.29	43.50	-18.21
165.80	Peak	36.57	-13.67	22.90	43.50	-20.60
345.25	Peak	38.05	-8.13	29.92	46.00	-16.08
660.50	Peak	36.45	-2.19	34.26	46.00	-11.74
960.23	Peak	34.07	2.32	36.39	54.00	-17.61

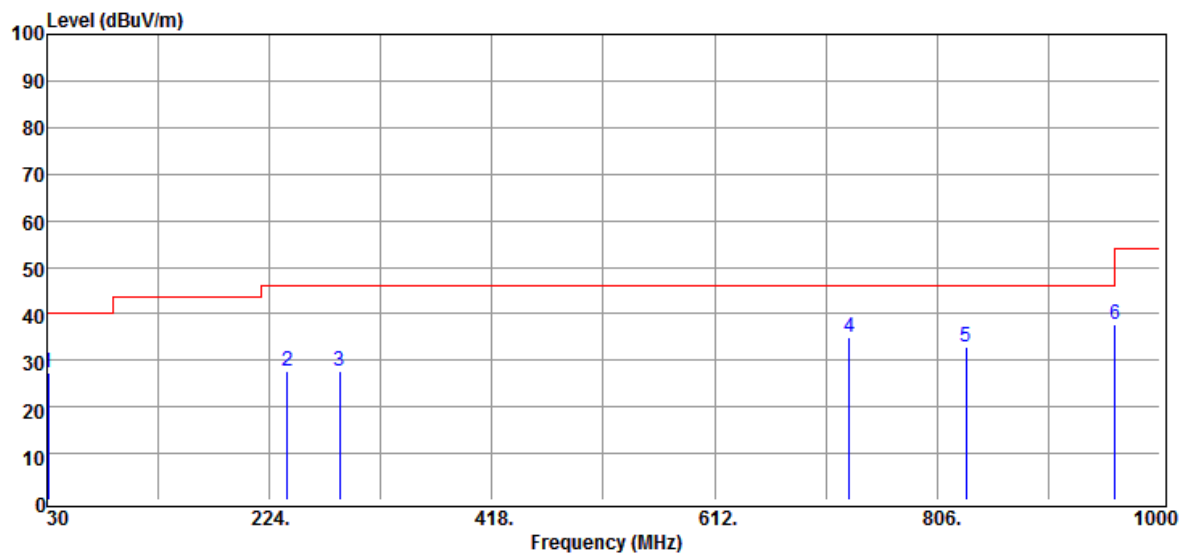
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Operation Mode :802.11a /Band 1  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5220 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
30.97	Peak	31.55	-4.16	27.39	40.00	-12.61
239.52	Peak	39.34	-11.62	27.72	46.00	-18.28
285.11	Peak	37.93	-10.16	27.77	46.00	-18.23
729.37	Peak	36.50	-1.45	35.05	46.00	-10.95
831.22	Peak	32.54	0.34	32.88	46.00	-13.12
961.20	Peak	35.51	2.34	37.85	54.00	-16.15

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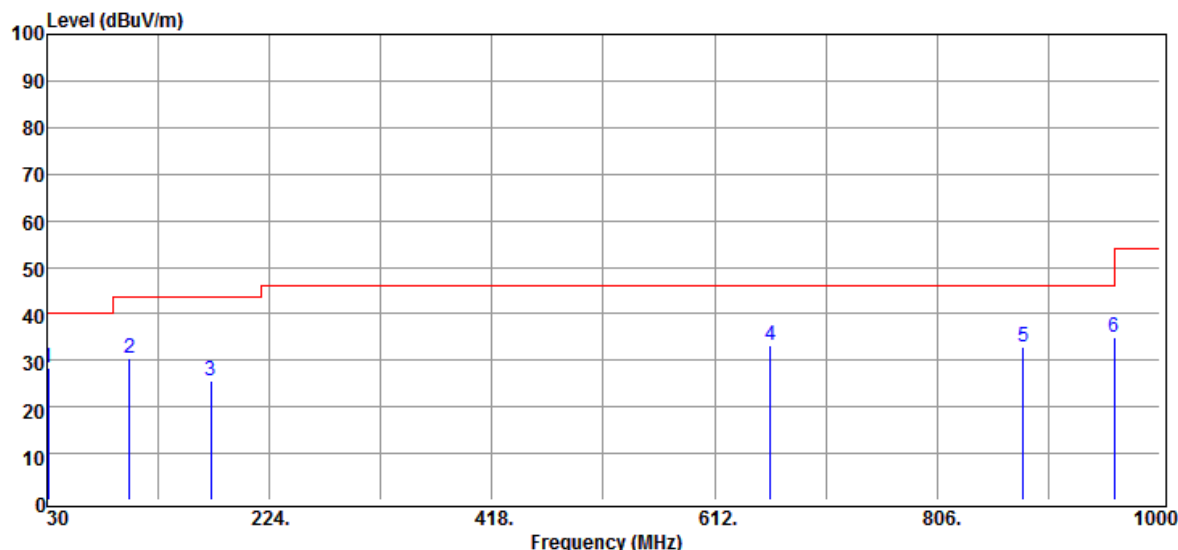
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# 802.11a 5250~5350 MHz

Operation Mode :802.11a /Band 2  
Test Mode :TX CH MID  
EUT Pol :H Plan  
Test Channel :5300 MHz

Test Date :2018-08-07  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
30.97	Peak	32.49	-4.16	28.33	40.00	-11.67
101.78	Peak	44.88	-14.49	30.39	43.50	-13.11
172.59	Peak	39.60	-14.05	25.55	43.50	-17.95
660.50	Peak	35.56	-2.19	33.37	46.00	-12.63
880.69	Peak	31.72	1.01	32.73	46.00	-13.27
960.23	Peak	32.46	2.32	34.78	54.00	-19.22

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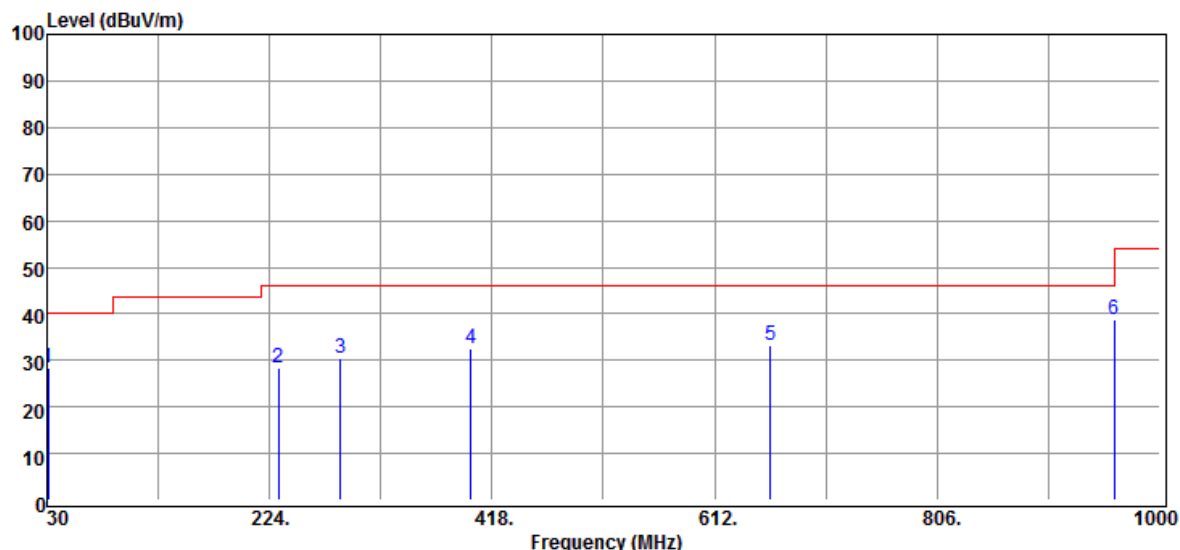
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Operation Mode :802.11a /Band 2  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5300 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
30.97	Peak	32.48	-4.16	28.32	40.00	-11.68
231.76	Peak	40.68	-12.32	28.36	46.00	-17.64
286.08	Peak	40.48	-10.15	30.33	46.00	-15.67
399.57	Peak	38.53	-6.03	32.50	46.00	-13.50
660.50	Peak	35.34	-2.19	33.15	46.00	-12.85
960.23	Peak	36.36	2.32	38.68	54.00	-15.32

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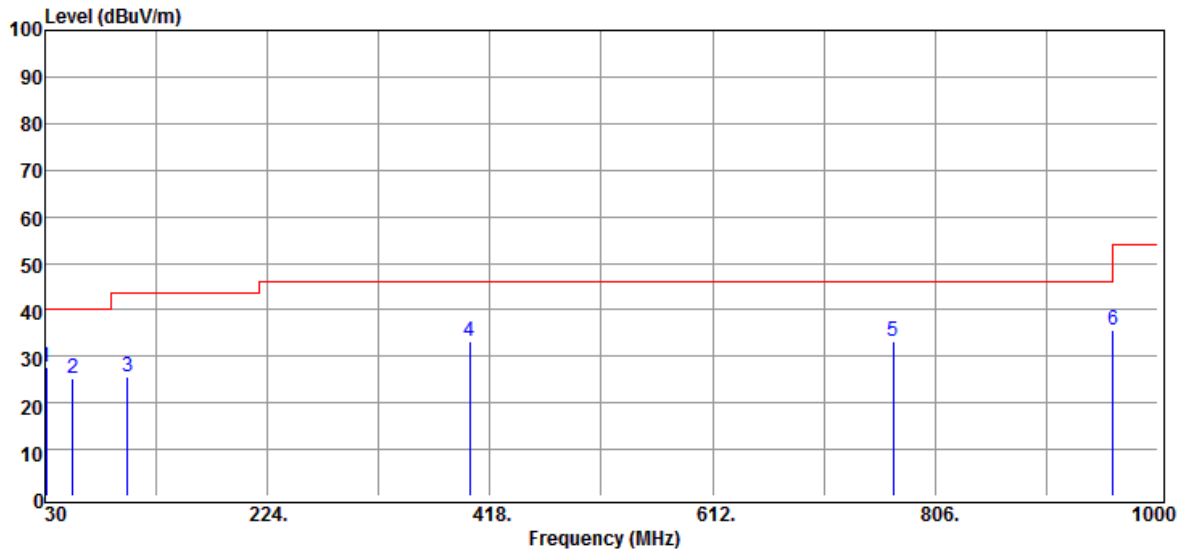
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## 802.11a, 5470~5725 MHz

Operation Mode :802.11a /Band 3  
Test Mode :TX CH MID  
EUT Pol :H Plan  
Test Channel :5580 MHz

Test Date :2018-08-07  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
30.97	Peak	31.98	-4.16	27.82	40.00	-12.18
54.25	Peak	43.05	-17.63	25.42	40.00	-14.58
101.78	Peak	40.10	-14.49	25.61	43.50	-17.89
400.54	Peak	39.17	-6.01	33.16	46.00	-12.84
769.14	Peak	34.17	-0.96	33.21	46.00	-12.79
961.20	Peak	33.13	2.34	35.47	54.00	-18.53

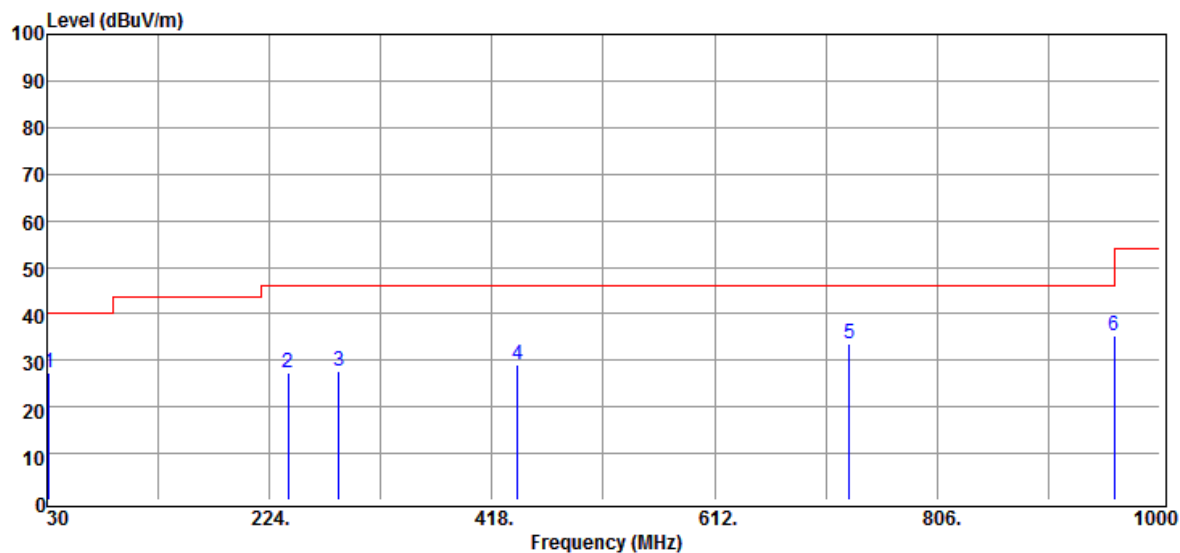
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Operation Mode :802.11a /Band 3  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5580 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
31.94	Peak	31.98	-4.71	27.27	40.00	-12.73
240.49	Peak	38.99	-11.53	27.46	46.00	-18.54
284.14	Peak	37.87	-10.16	27.71	46.00	-18.29
440.31	Peak	34.82	-5.73	29.09	46.00	-16.91
729.37	Peak	34.86	-1.45	33.41	46.00	-12.59
960.23	Peak	32.86	2.32	35.18	54.00	-18.82

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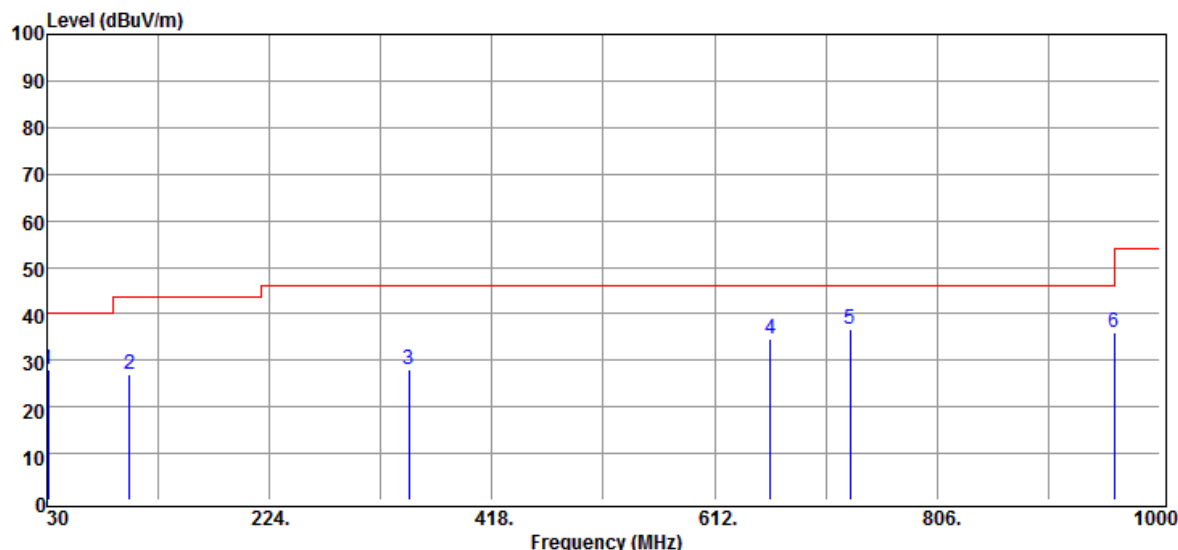
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## 802.11a, 5725~5850 MHz

Operation Mode :802.11a /Band 4  
Test Mode :TX CH MID  
EUT Pol :H Plan  
Test Channel :5785 MHz

Test Date :2018-08-07  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
30.97	Peak	32.21	-4.16	28.05	40.00	-11.95
101.78	Peak	41.41	-14.49	26.92	43.50	-16.58
345.25	Peak	36.17	-8.13	28.04	46.00	-17.96
660.50	Peak	36.96	-2.19	34.77	46.00	-11.23
730.34	Peak	38.05	-1.45	36.60	46.00	-9.40
960.23	Peak	33.70	2.32	36.02	54.00	-17.98

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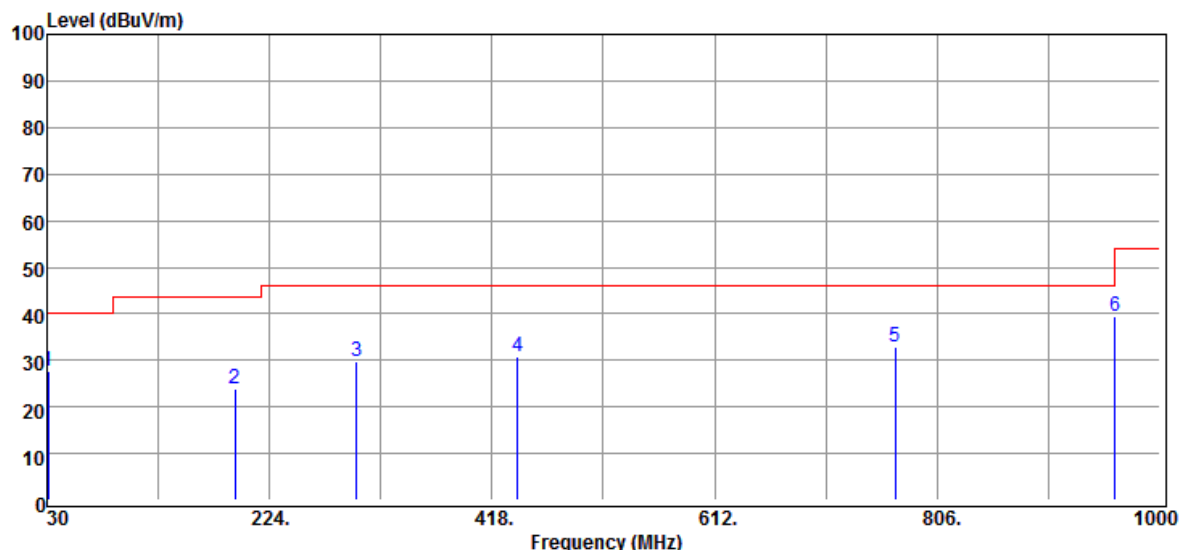
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Operation Mode :802.11a /Band 4  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5785 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
30.97	Peak	31.73	-4.16	27.57	40.00	-12.43
193.93	Peak	37.26	-13.51	23.75	43.50	-19.75
299.66	Peak	39.70	-9.90	29.80	46.00	-16.20
440.31	Peak	36.40	-5.73	30.67	46.00	-15.33
769.14	Peak	33.87	-0.96	32.91	46.00	-13.09
961.20	Peak	37.00	2.34	39.34	54.00	-14.66

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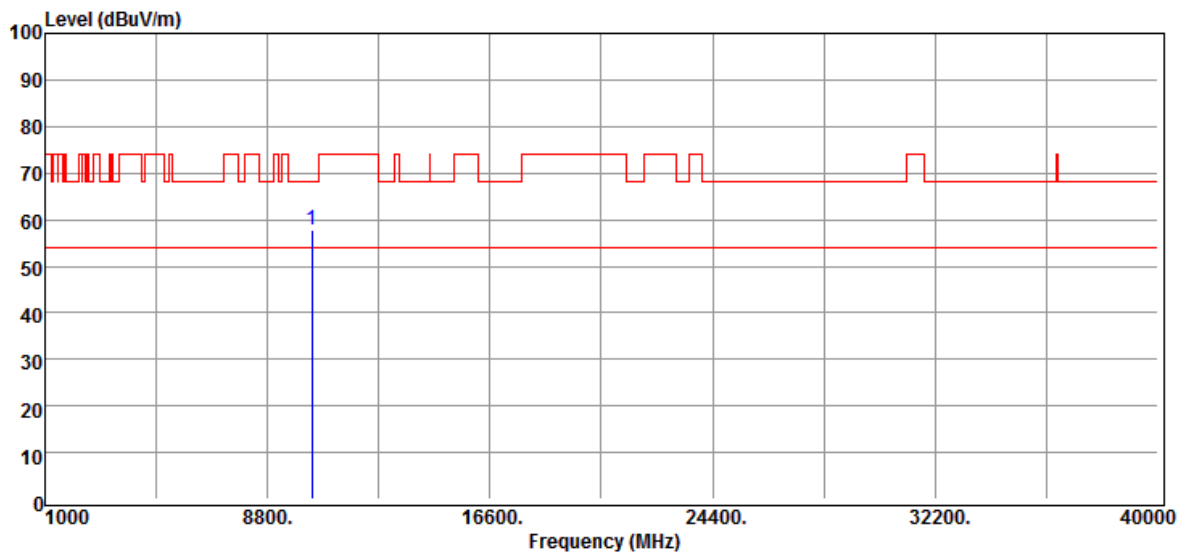
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## Above 1GHz Worst-Case Data:

### Radiated Spurious Emission Measurement Result 802.11a, 5150~5250 MHz

Operation Mode	:802.11a/Band 1	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5180 MHz	Engineer	:Ashton



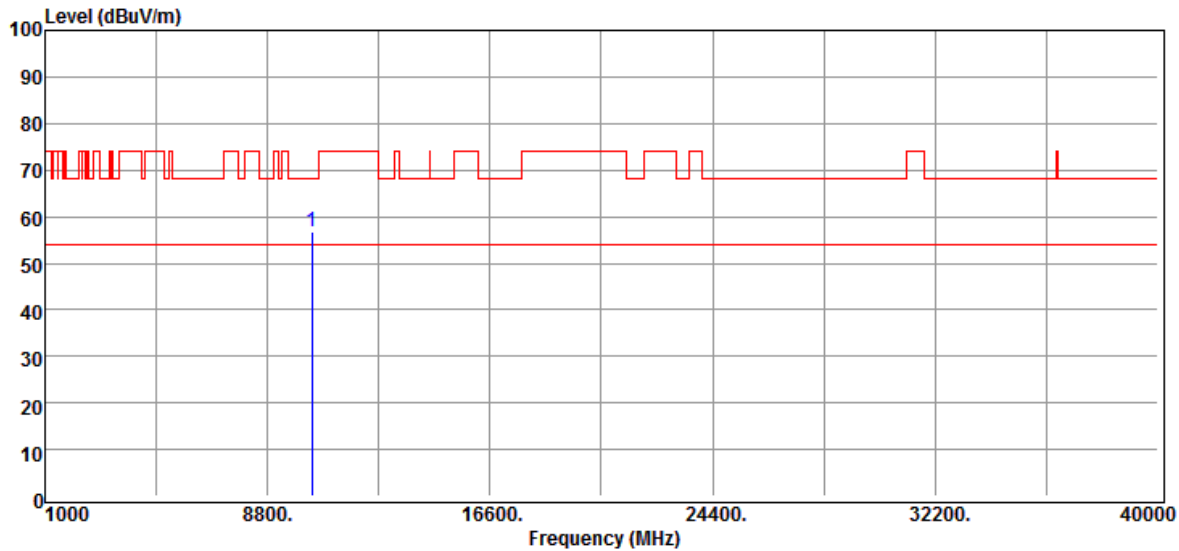
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
10360.00	Peak	31.07	26.61	57.68	68.20	-10.52

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Operation Mode	:802.11a/Band 1	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5180 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10360.00	Peak	30.08	26.61	56.69	68.20	-11.51

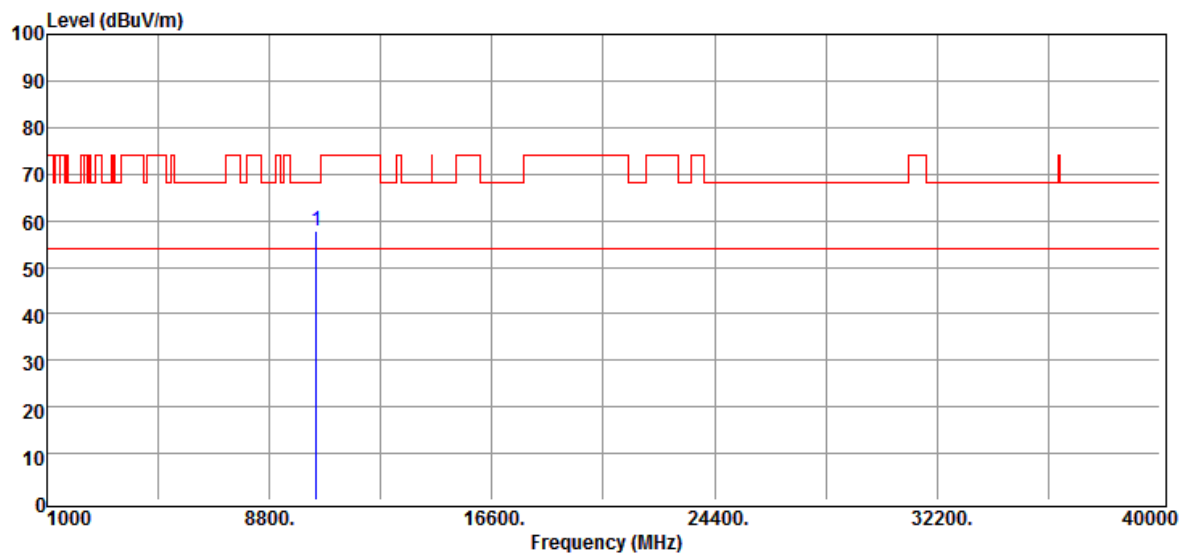
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Operation Mode :802.11a/Band 1  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5220 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10440.00	Peak	30.91	26.98	57.89	68.20	-10.31

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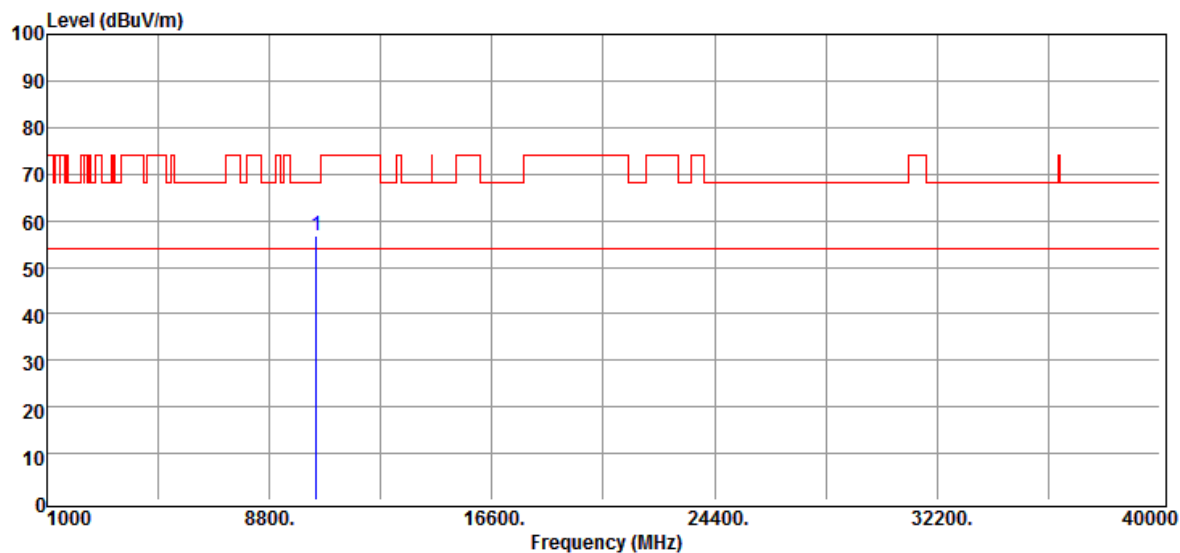
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Operation Mode :802.11a/Band 1  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5220 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Ashton



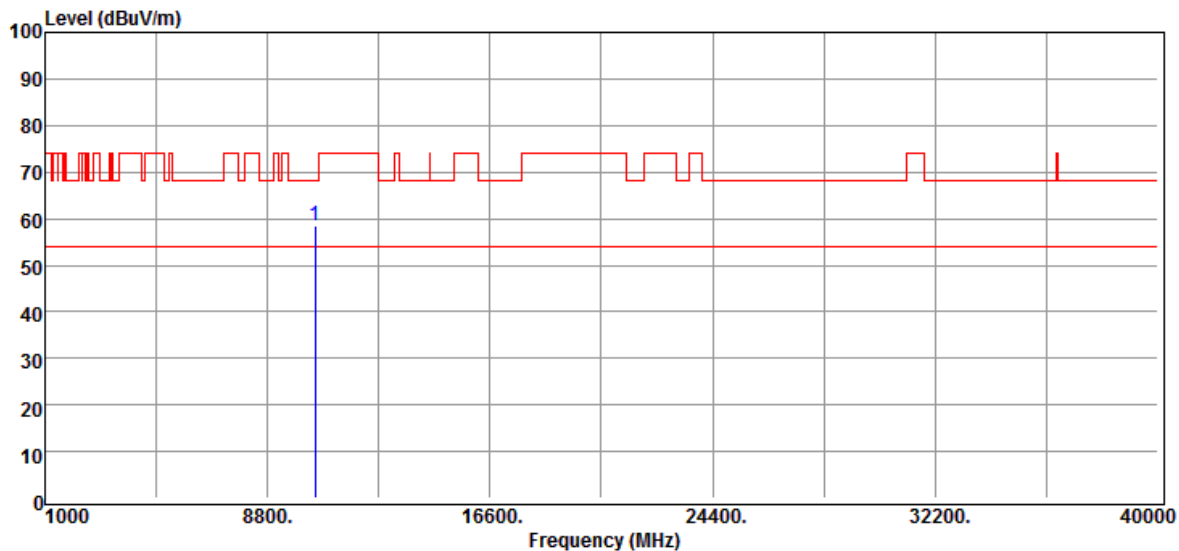
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10440.00	Peak	29.67	26.98	56.65	68.20	-11.55

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Operation Mode	:802.11a/Band 1	Test Date	:2018-08-08
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5240 MHz	Engineer	:Ashton



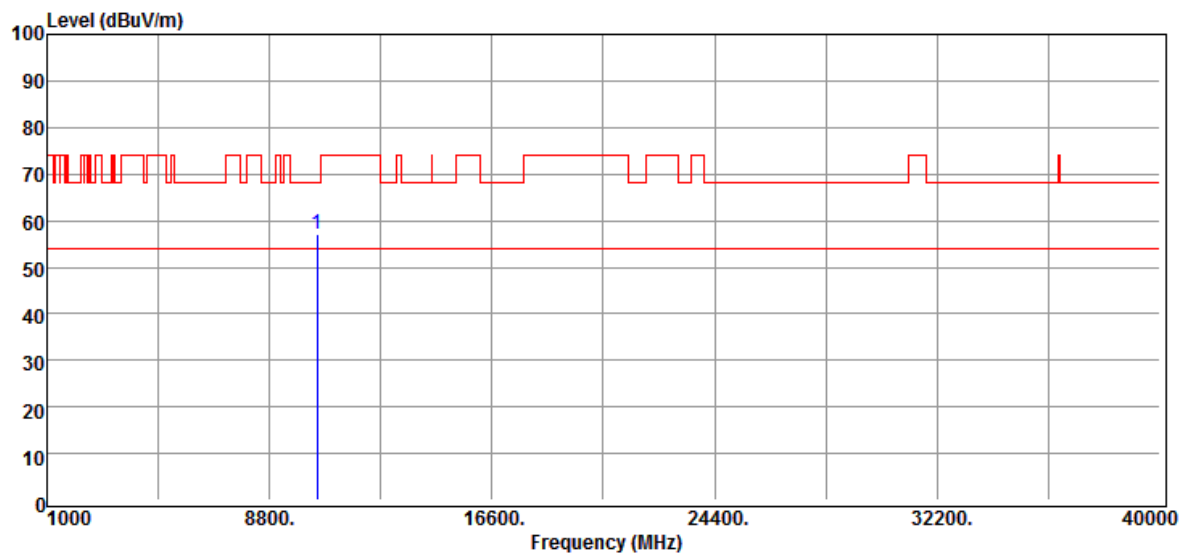
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10480.00	Peak	31.20	27.16	58.36	68.20	-9.84

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Operation Mode	:802.11a/Band 1	Test Date	:2018-08-08
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5240 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10480.00	Peak	30.02	27.16	57.18	68.20	-11.02

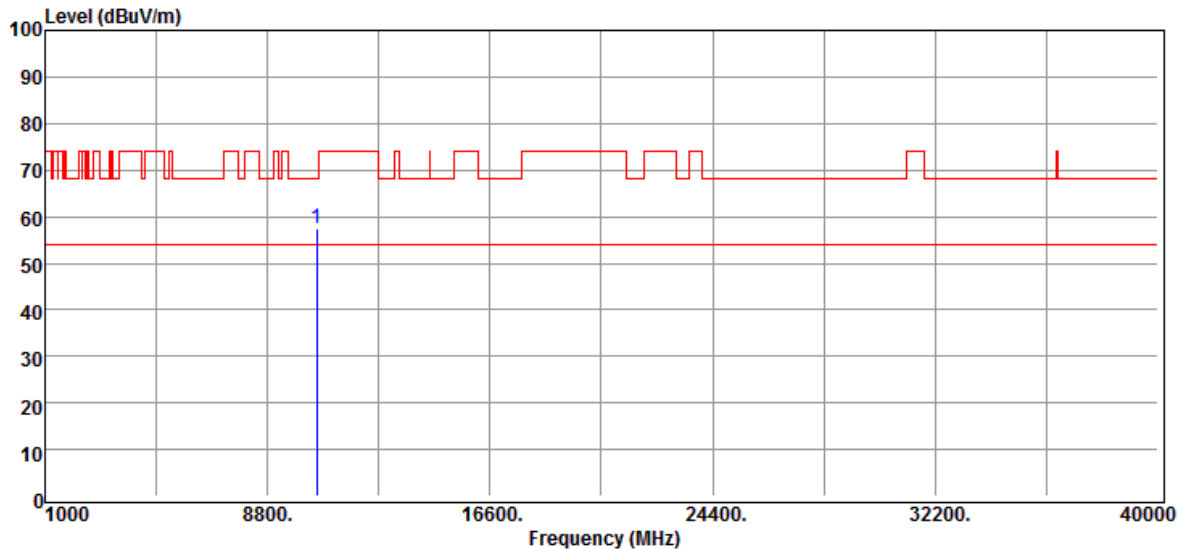
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## Radiated Spurious Emission Measurement Result 802.11a, 5250MHz-5350MHz

Operation Mode	:802.11a/Band 2	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5260 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10520.00	Peak	30.11	27.23	57.34	68.20	-10.86

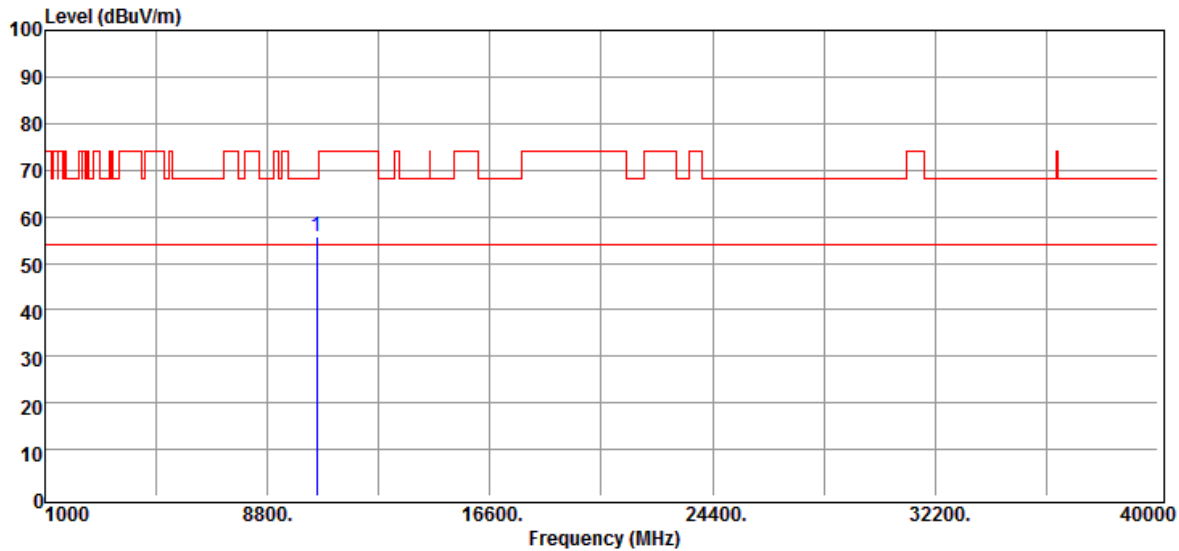
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Operation Mode	:802.11a/Band 2	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5260 MHz	Engineer	:Ashton



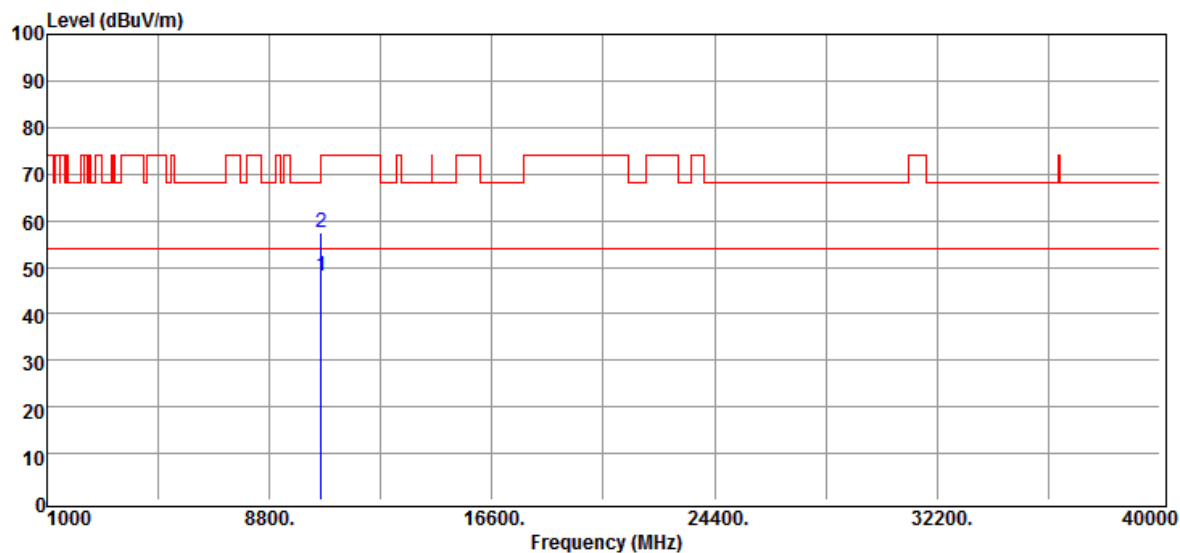
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10520.00	Peak	28.59	27.23	55.82	68.20	-12.38

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Operation Mode	:802.11a/Band 2	Test Date	:2018-08-08
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5300 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
10600.00	Average	20.88	27.21	48.09	54.00	-5.91
10600.00	Peak	30.17	27.21	57.38	68.20	-10.82

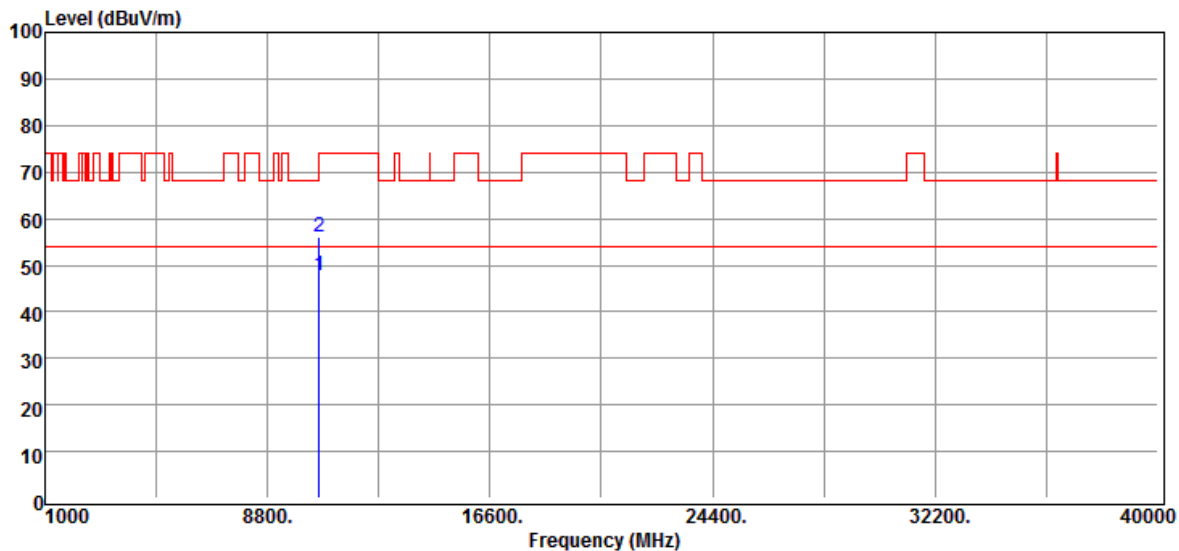
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Operation Mode :802.11a/Band 2  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5300 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Ashton



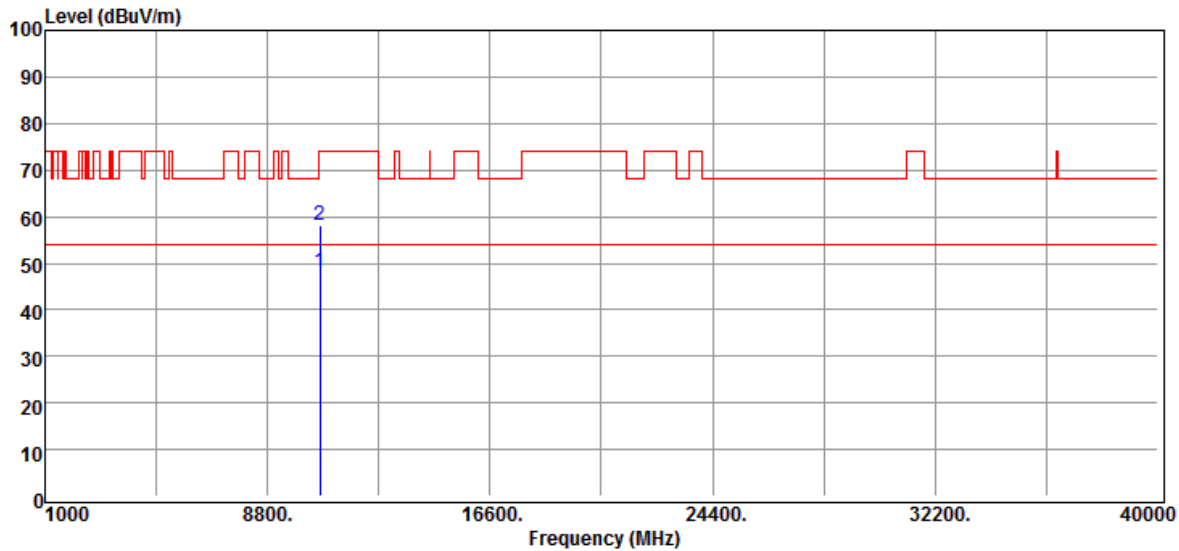
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10600.00	Average	20.43	27.21	47.64	54.00	-6.36
10600.00	Peak	29.01	27.21	56.22	68.20	-11.98

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Operation Mode	:802.11a/Band 2	Test Date	:2018-08-08
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5320 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
10640.00	Average	20.76	27.20	47.96	54.00	-6.04
10640.00	Peak	30.87	27.20	58.07	74.00	-15.93

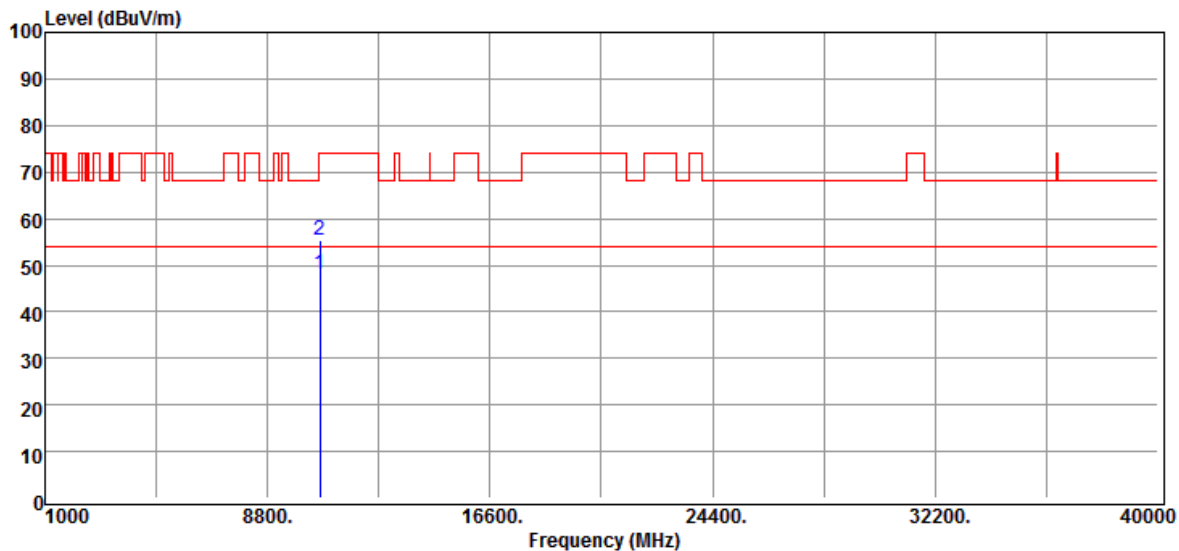
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Operation Mode :802.11a/Band 2  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5320 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
10640.00	Average	20.94	27.20	48.14	54.00	-5.86
10640.00	Peak	28.13	27.20	55.33	74.00	-18.67

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

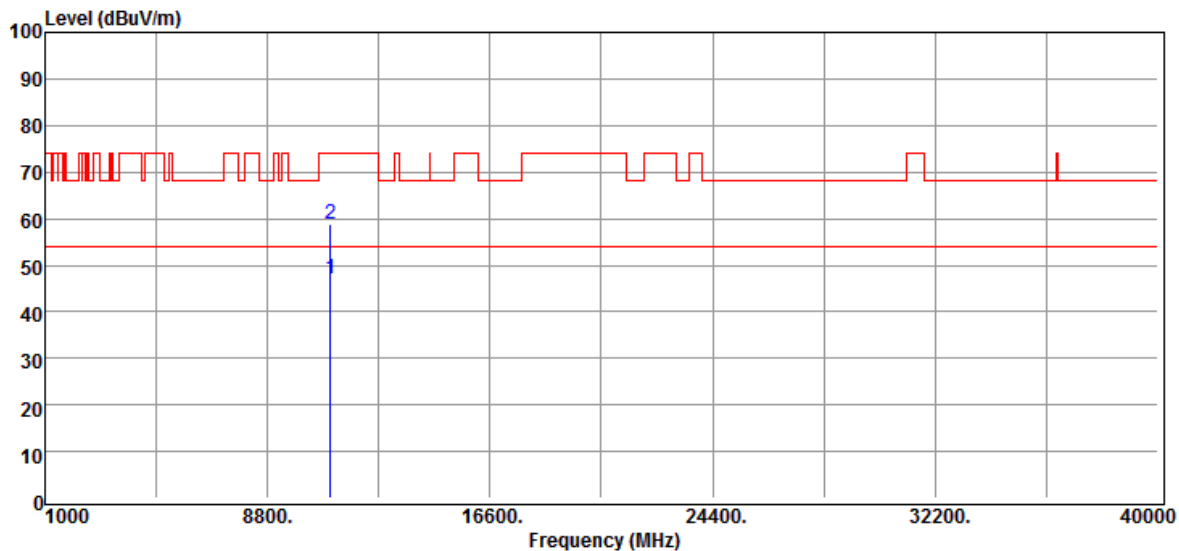
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## Radiated Spurious Emission Measurement Result 802.11a, 5470~5725 MHz

Operation Mode	:802.11a / Band 3	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5500 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11000.00	Average	20.05	27.09	47.14	54.00	-6.86
11000.00	Peak	31.73	27.09	58.82	74.00	-15.18

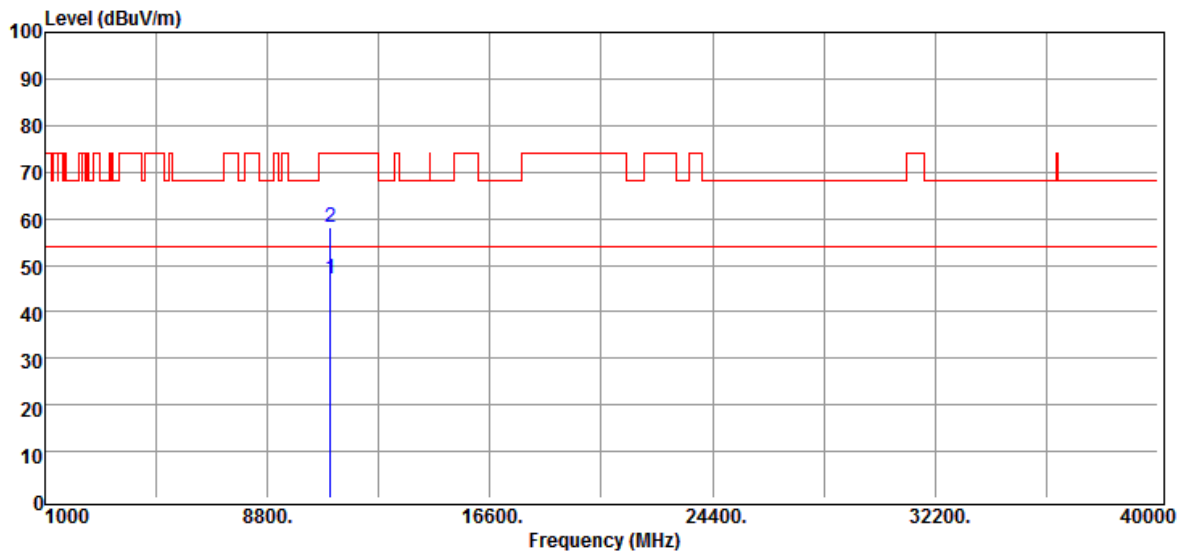
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Operation Mode :802.11a / Band 3  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5500 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11000.00	Average	19.98	27.09	47.07	54.00	-6.93
11000.00	Peak	30.94	27.09	58.03	74.00	-15.97

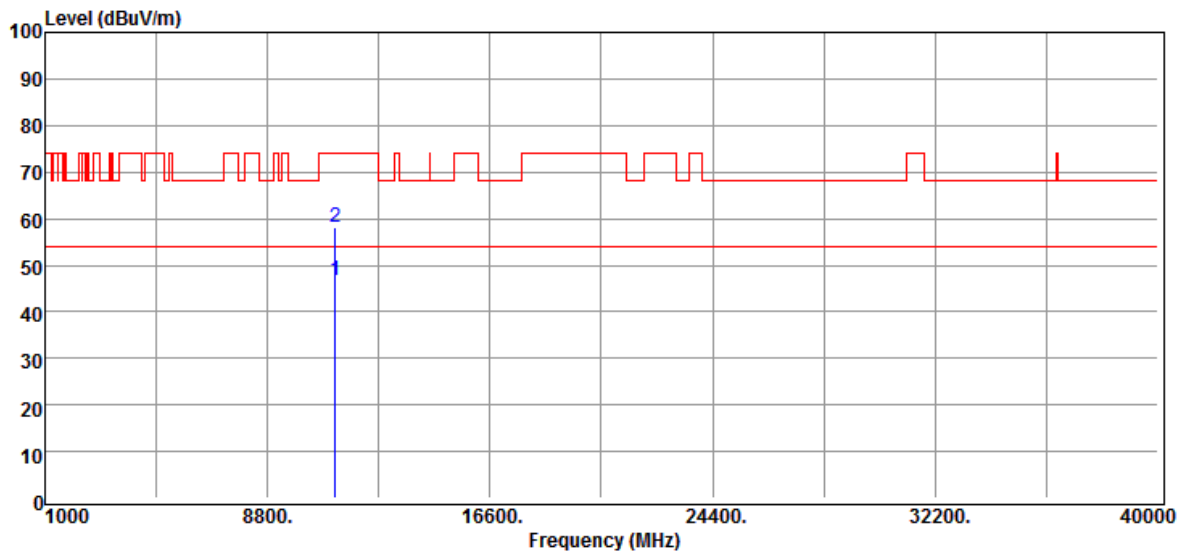
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Operation Mode :802.11a / Band 3  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5580 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



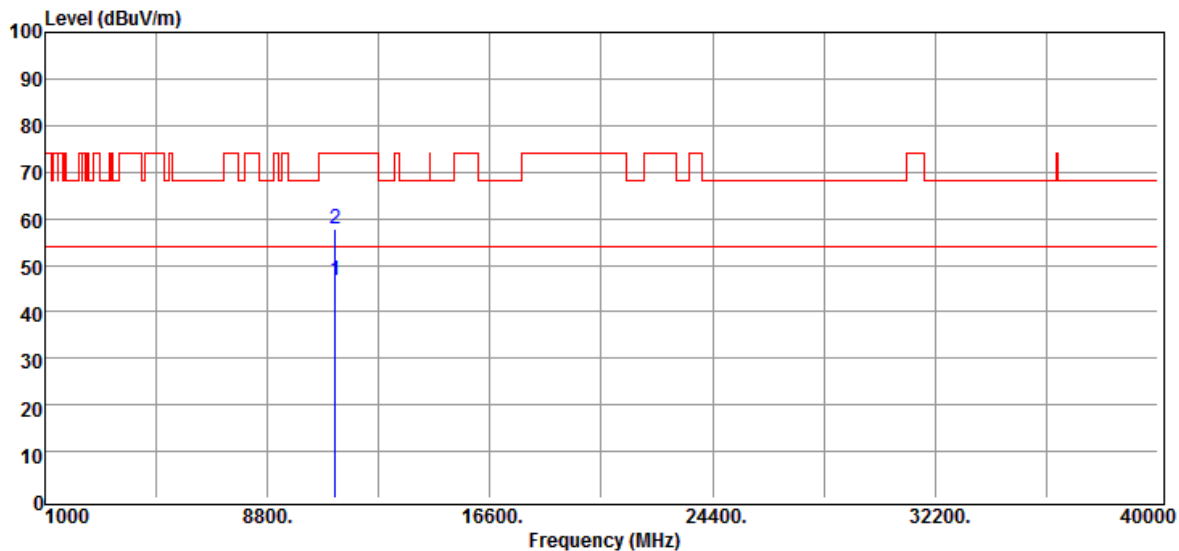
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11160.00	Average	20.02	26.67	46.69	54.00	-7.31
11160.00	Peak	31.44	26.67	58.11	74.00	-15.89

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Operation Mode :802.11a / Band 3  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5580 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11160.00	Average	20.11	26.67	46.78	54.00	-7.22
11160.00	Peak	31.27	26.67	57.94	74.00	-16.06

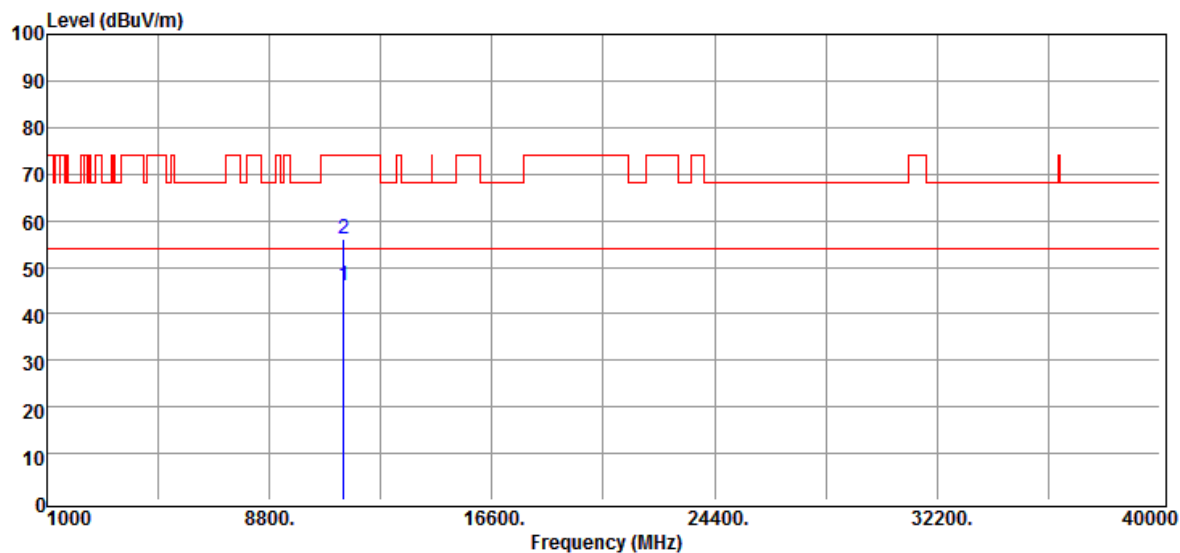
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Operation Mode :802.11a / Band 3  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5700 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11400.00	Average	19.96	26.07	46.03	54.00	-7.97
11400.00	Peak	30.13	26.07	56.20	74.00	-17.80

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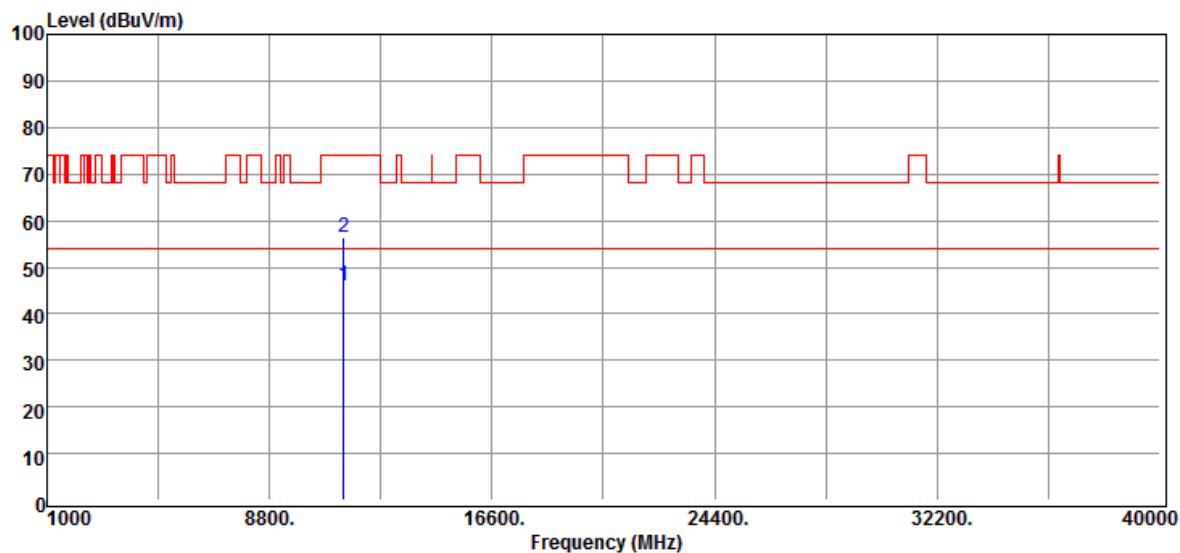
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Operation Mode :802.11a / Band 3  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5700 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11400.00	Average	19.94	26.07	46.01	54.00	-7.99
11400.00	Peak	30.50	26.07	56.57	74.00	-17.43

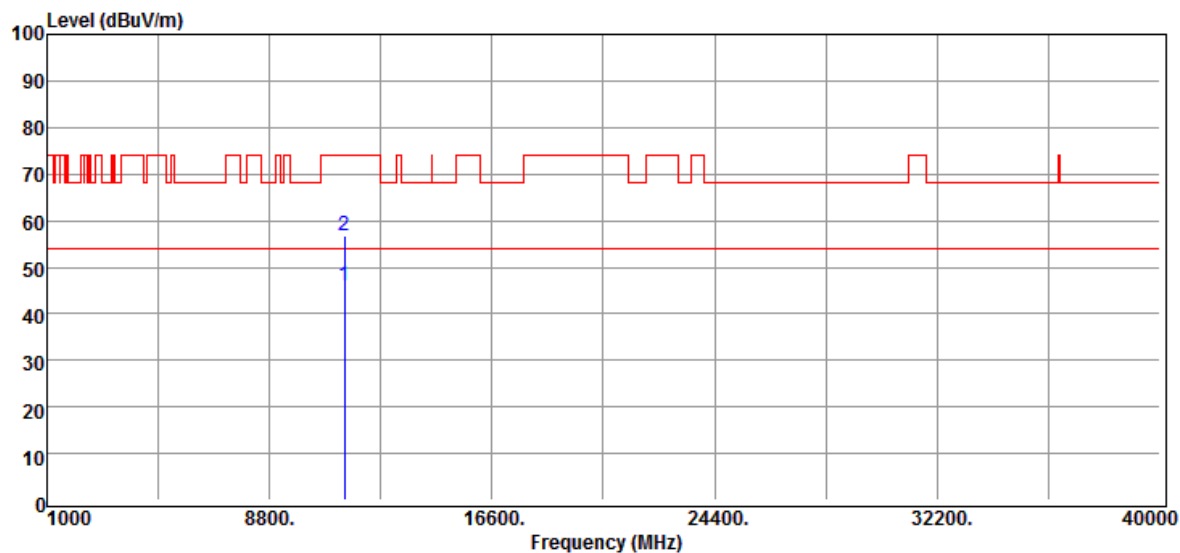
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## Radiated Spurious Emission Measurement Result 802.11a, 5725~5850 MHz

Operation Mode	:802.11a / Band 3/4	Test Date	:2018-08-08
Test Mode	:TX CH 144	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5720 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11440.00	Average	19.99	25.96	45.95	54.00	-8.05
11440.00	Peak	30.78	25.96	56.74	74.00	-17.26

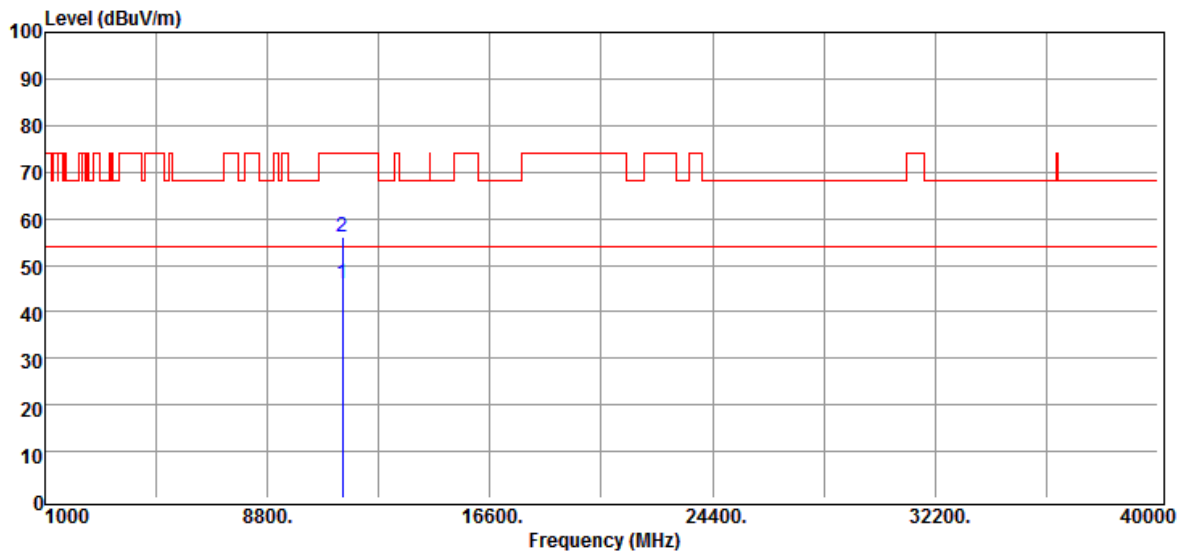
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Operation Mode :802.11a / Band 3/4  
 Test Mode :TX CH 144  
 EUT Pol :H Plan  
 Test Channel :5720 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



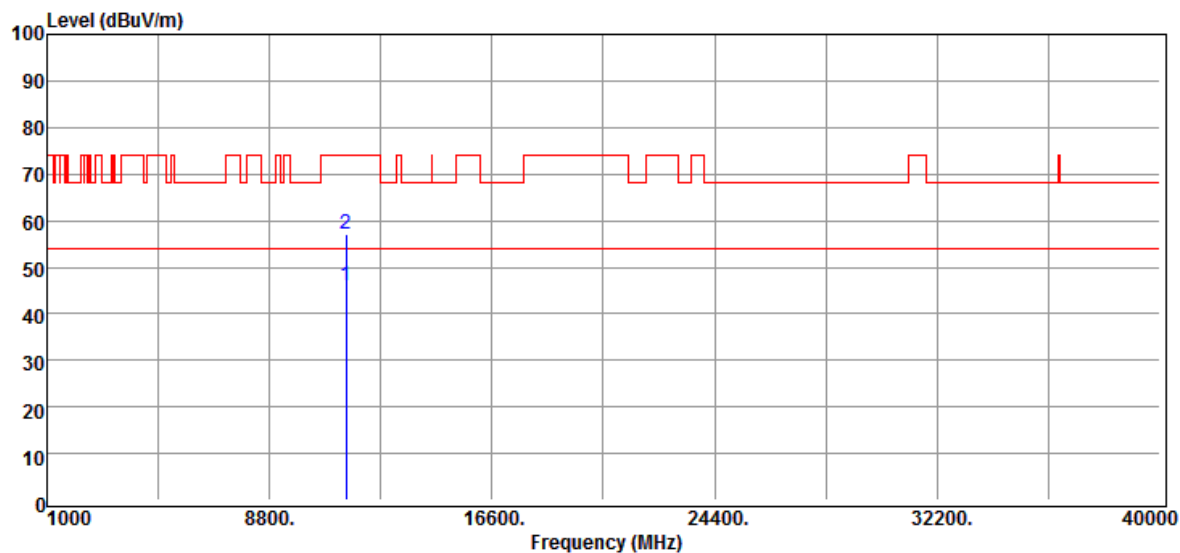
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11440.00	Average	20.01	25.96	45.97	54.00	-8.03
11440.00	Peak	30.11	25.96	56.07	74.00	-17.93

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Operation Mode :802.11a / Band 4  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5745 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11490.00	Average	20.06	25.83	45.89	54.00	-8.11
11490.00	Peak	31.27	25.83	57.10	74.00	-16.90

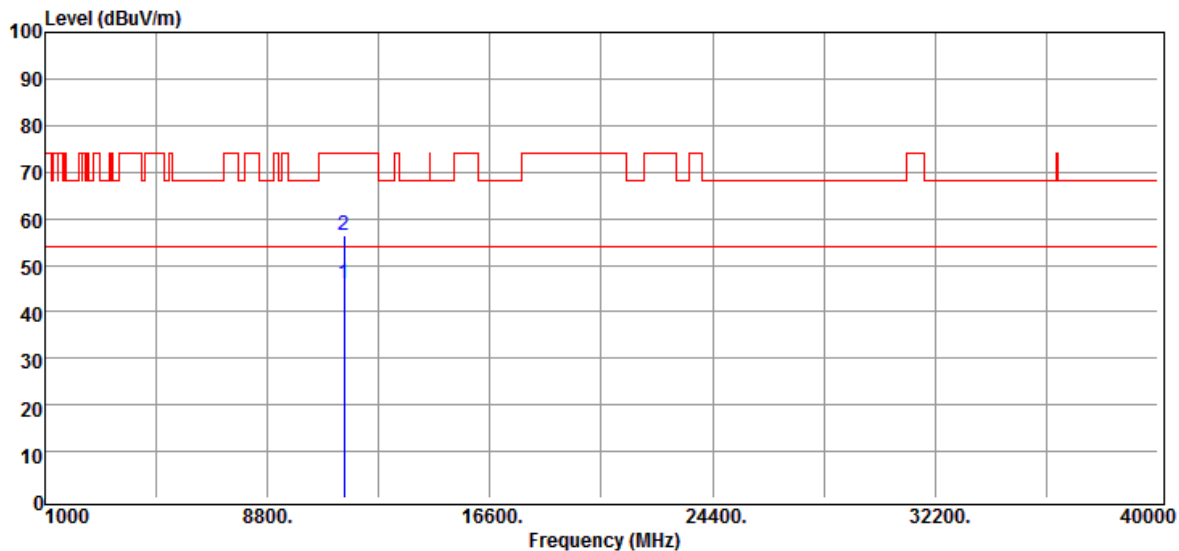
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Operation Mode :802.11a / Band 4  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5745 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11490.00	Average	20.04	25.83	45.87	54.00	-8.13
11490.00	Peak	30.50	25.83	56.33	74.00	-17.67

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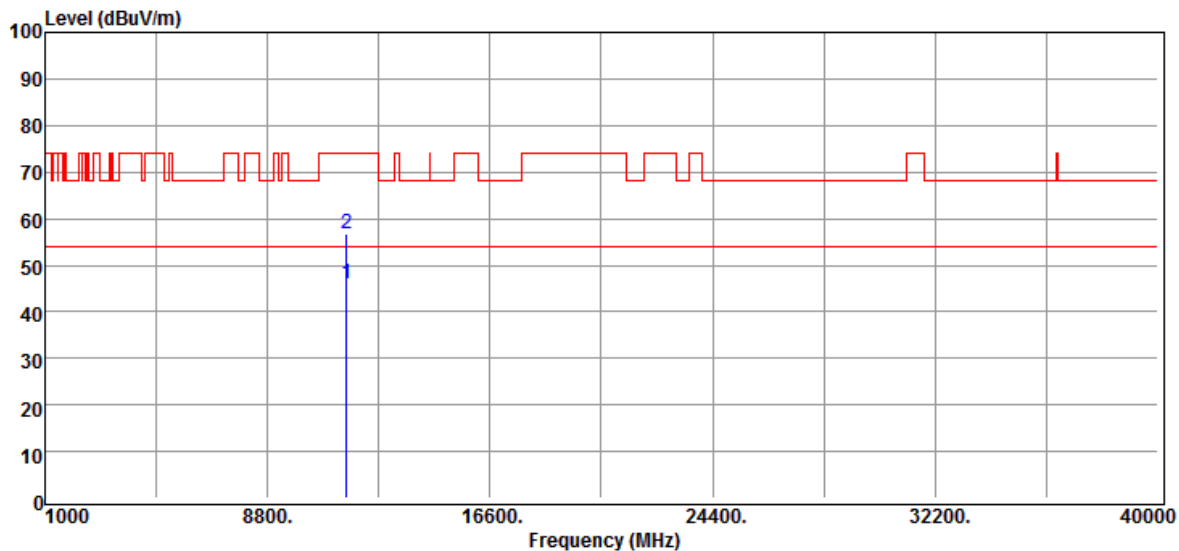
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Operation Mode :802.11a / Band 4  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5785 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11570.00	Average	20.12	25.87	45.99	54.00	-8.01
11570.00	Peak	30.77	25.87	56.64	74.00	-17.36

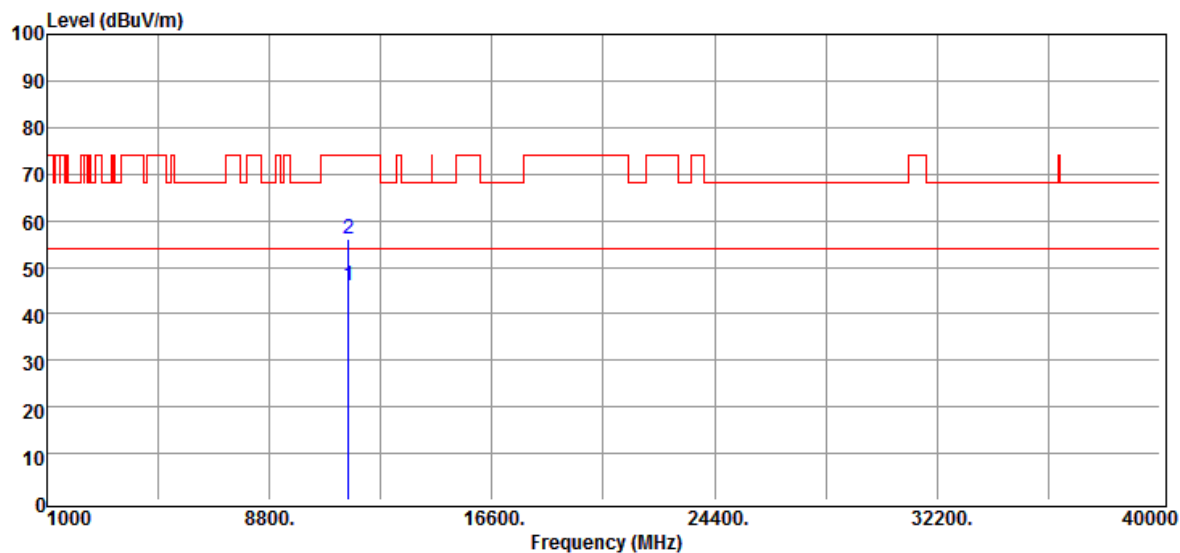
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Operation Mode :802.11a / Band 4  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5785 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11570.00	Average	20.10	25.87	45.97	54.00	-8.03
11570.00	Peak	30.06	25.87	55.93	74.00	-18.07

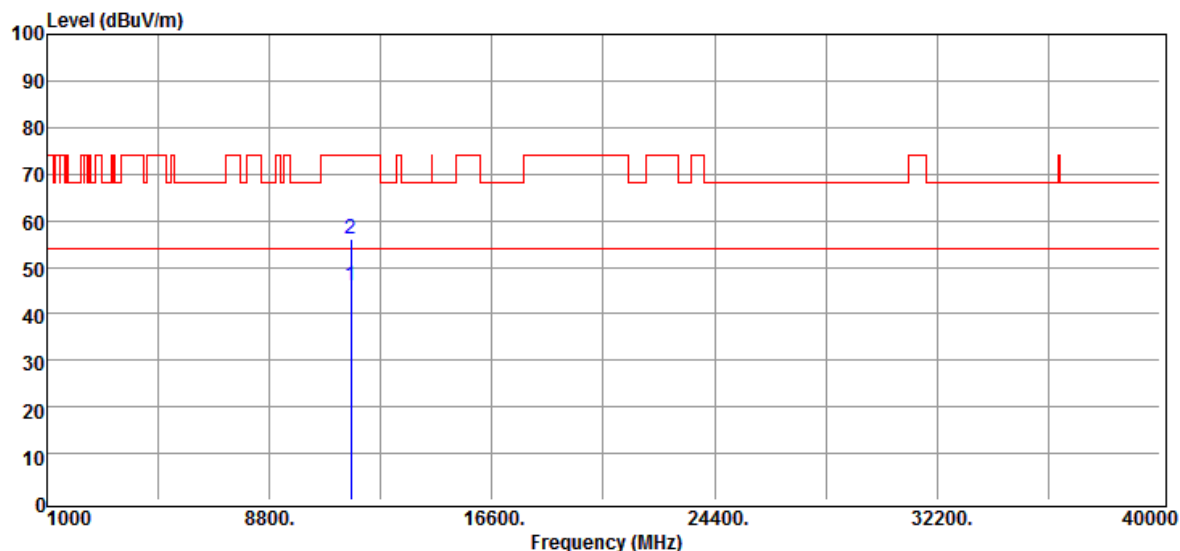
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Operation Mode :802.11a / Band 4  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5825 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11650.00	Average	19.98	25.94	45.92	54.00	-8.08
11650.00	Peak	30.13	25.94	56.07	74.00	-17.93

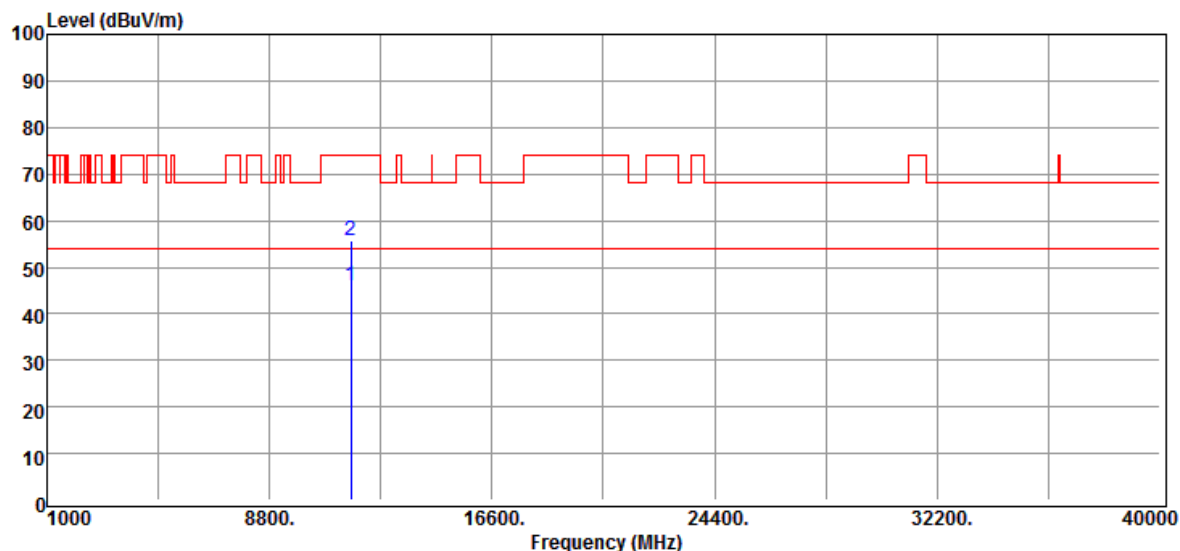
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Operation Mode :802.11a / Band 4  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5825 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11650.00	Average	20.07	25.94	46.01	54.00	-7.99
11650.00	Peak	29.67	25.94	55.61	74.00	-18.39

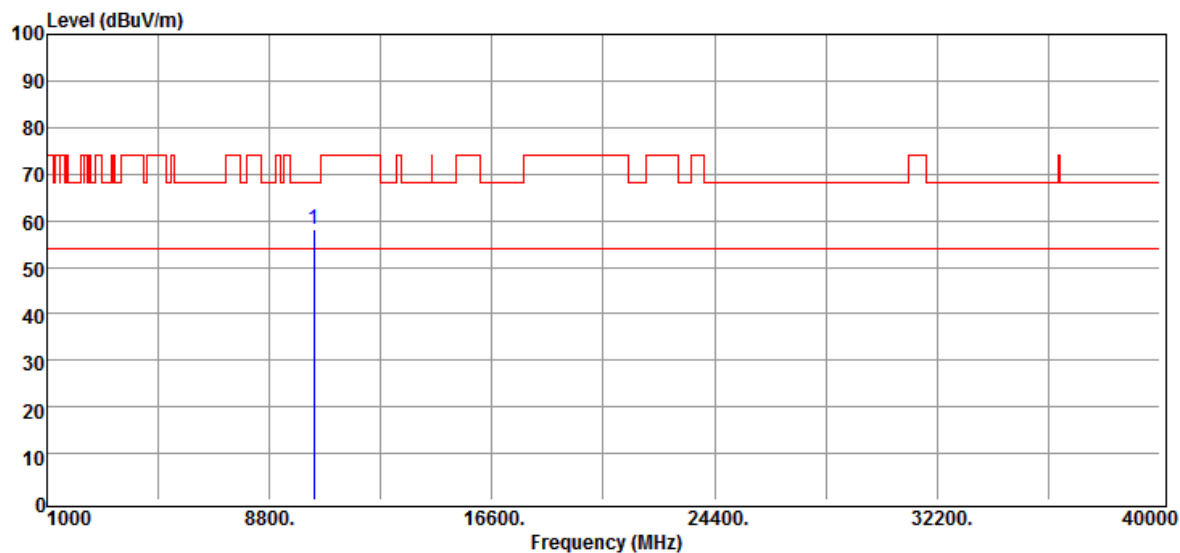
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## Radiated Spurious Emission Measurement Result 802.11n HT20, 5150~5250 MHz

Operation Mode	:802.11n20 / Band 1	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5180 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10360.00	Peak	31.49	26.61	58.10	68.20	-10.10

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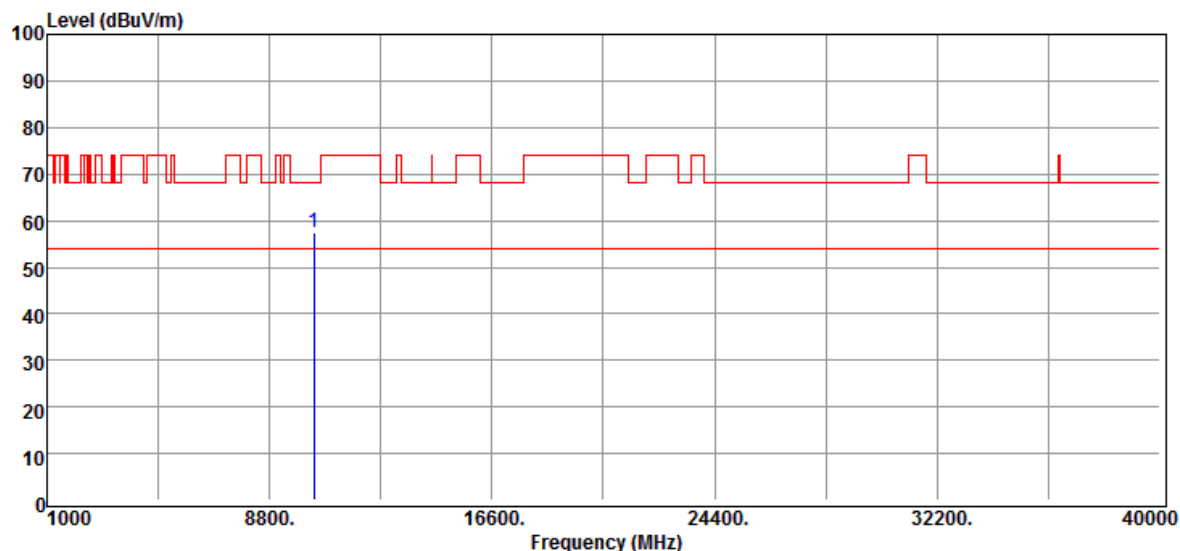
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Operation Mode :802.11n20 / Band 1  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5180 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10360.00	Peak	30.72	26.61	57.33	68.20	-10.87

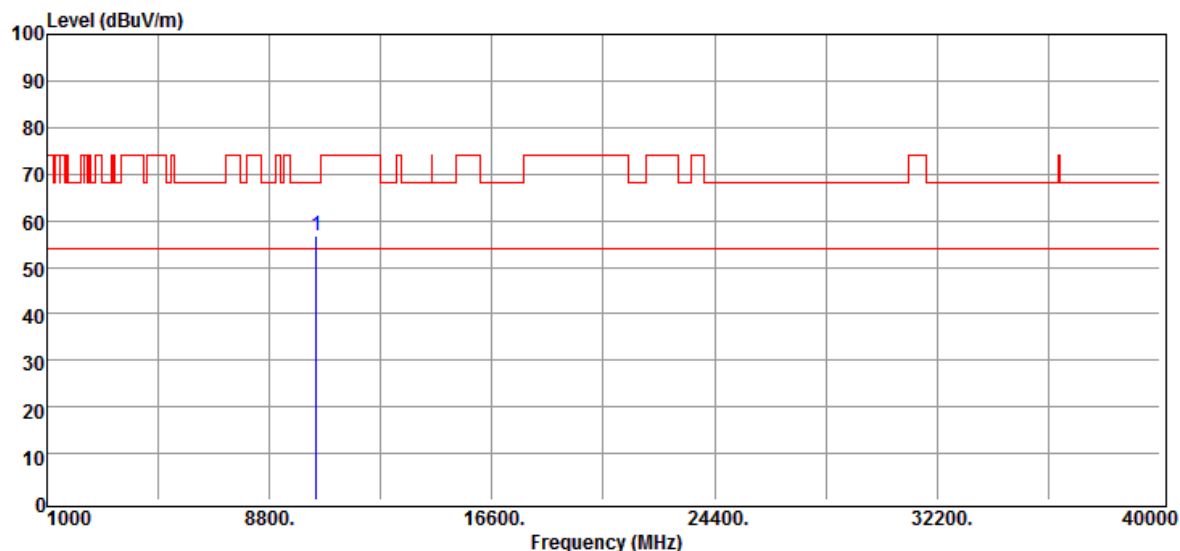
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Operation Mode :802.11n20 / Band 1  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5220 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



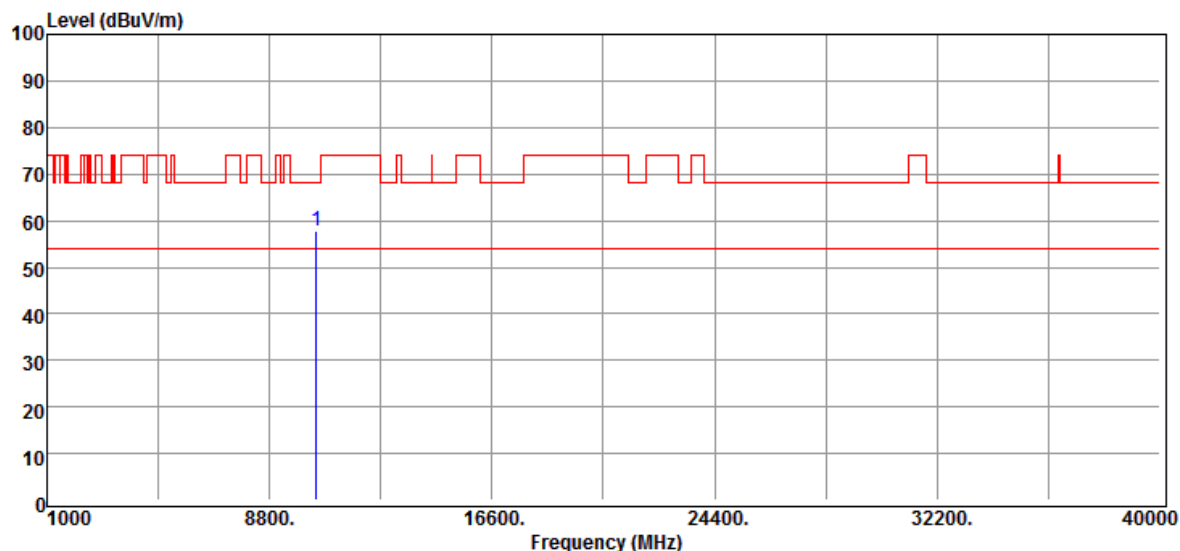
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10440.00	Peak	29.87	26.98	56.85	68.20	-11.35

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Operation Mode :802.11n20 / Band 1  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5220 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10440.00	Peak	30.65	26.98	57.63	68.20	-10.57

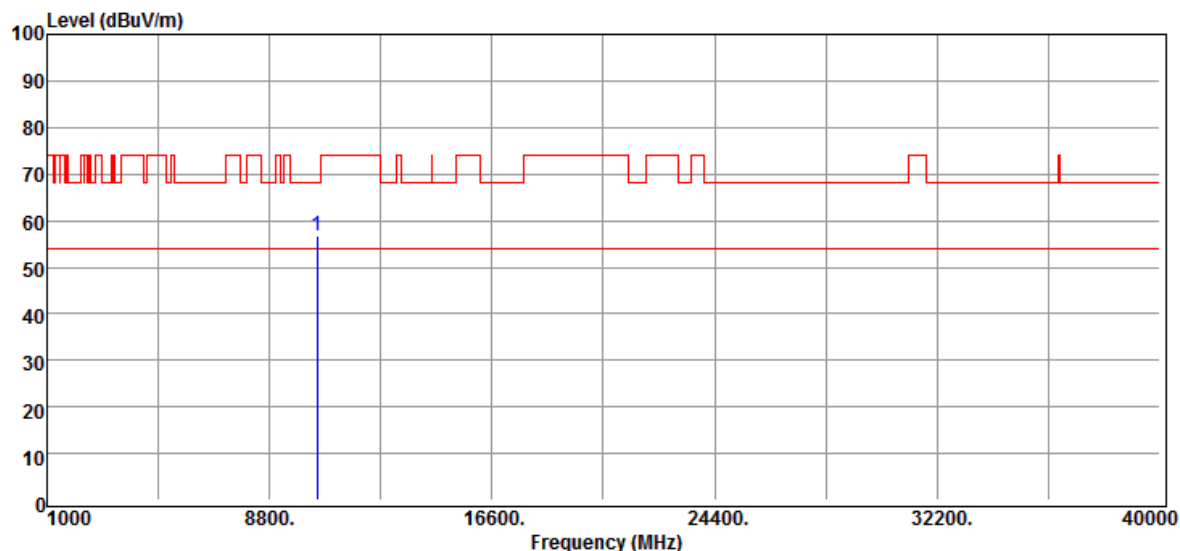
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Operation Mode :802.11n20 / Band 1  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5240 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10480.00	Peak	29.74	27.16	56.90	68.20	-11.30

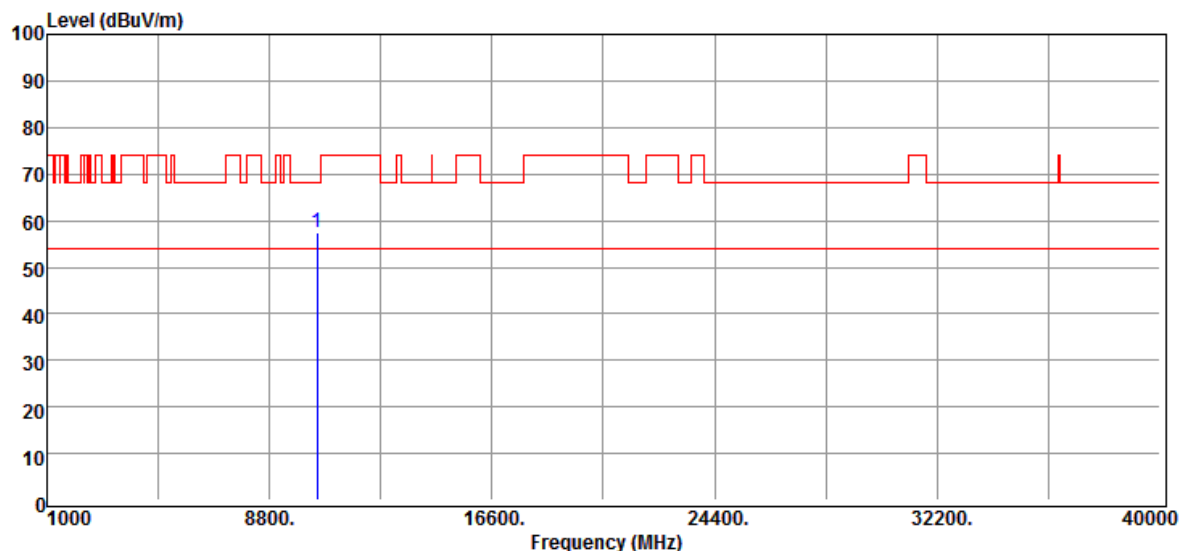
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Operation Mode :802.11n20 / Band 1  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5240 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



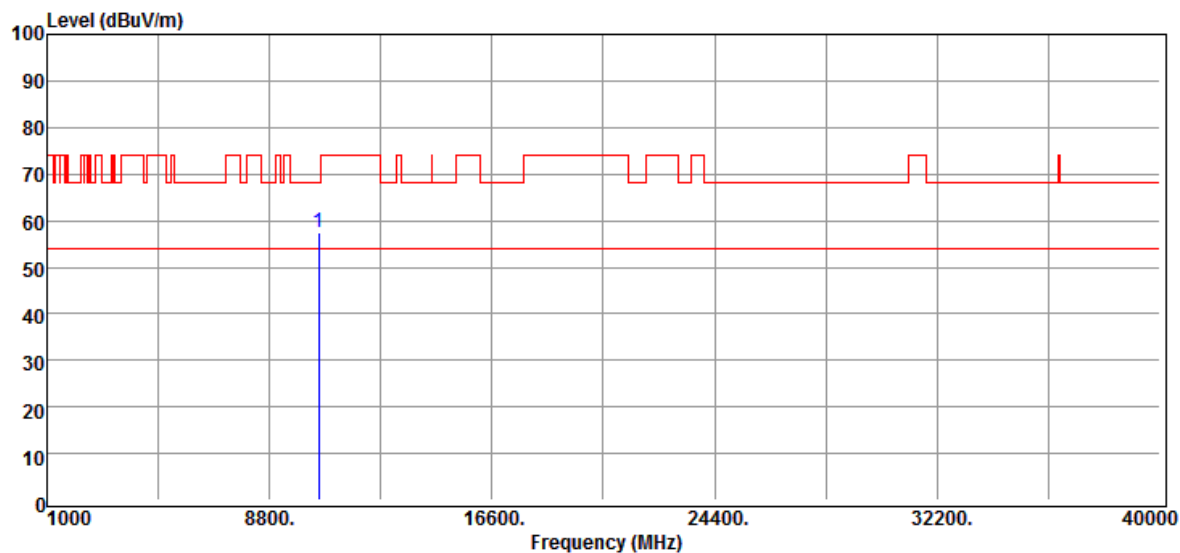
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10480.00	Peak	30.29	27.16	57.45	68.20	-10.75

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## Radiated Spurious Emission Measurement Result 802.11n HT20, 5250~5350 MHz

Operation Mode	:802.11n20 / Band 2	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5260 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10520.00	Peak	30.16	27.23	57.39	68.20	-10.81

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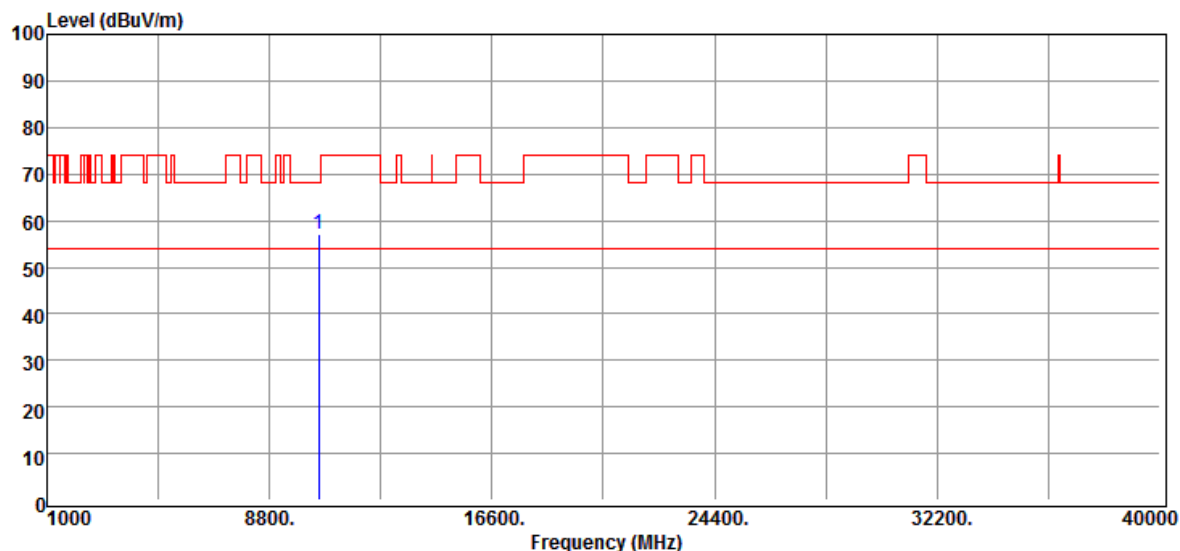
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Operation Mode :802.11n20 / Band 2  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5260 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



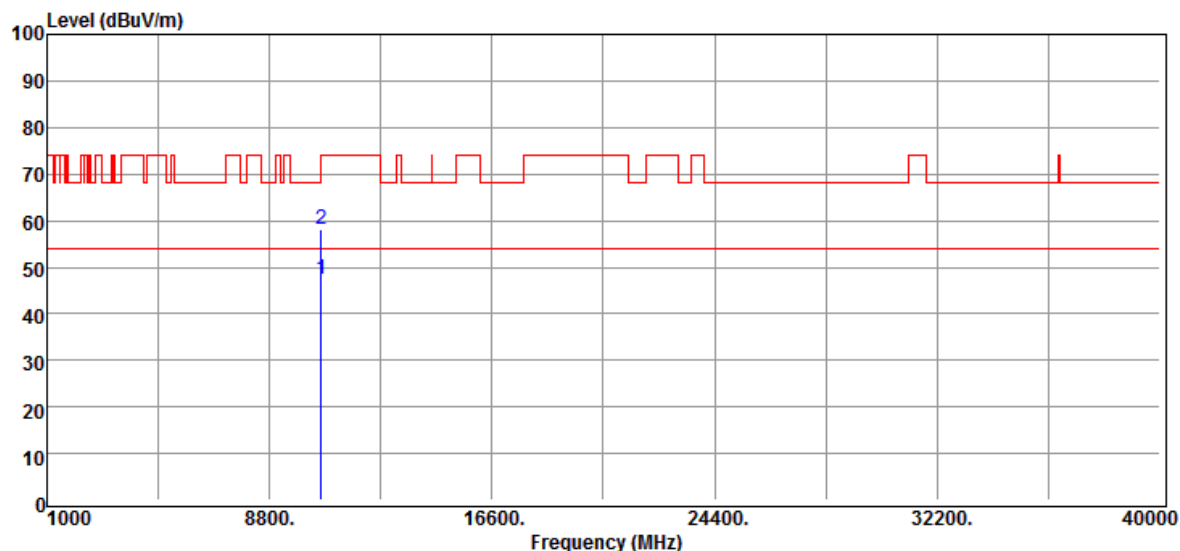
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10520.00	Peak	29.96	27.23	57.19	68.20	-11.01

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Operation Mode :802.11n20 / Band 2  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5300 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10600.00	Average	20.04	27.21	47.25	54.00	-6.75
10600.00	Peak	30.84	27.21	58.05	68.20	-10.15

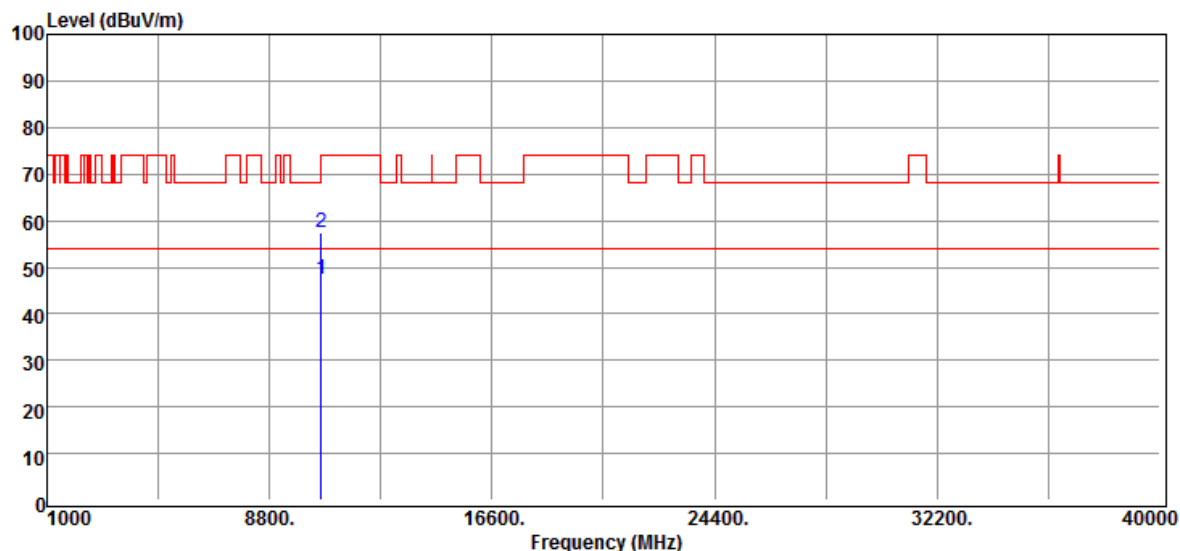
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Operation Mode :802.11n20 / Band 2  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5300 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10600.00	Average	20.11	27.21	47.32	54.00	-6.68
10600.00	Peak	30.13	27.21	57.34	68.20	-10.86

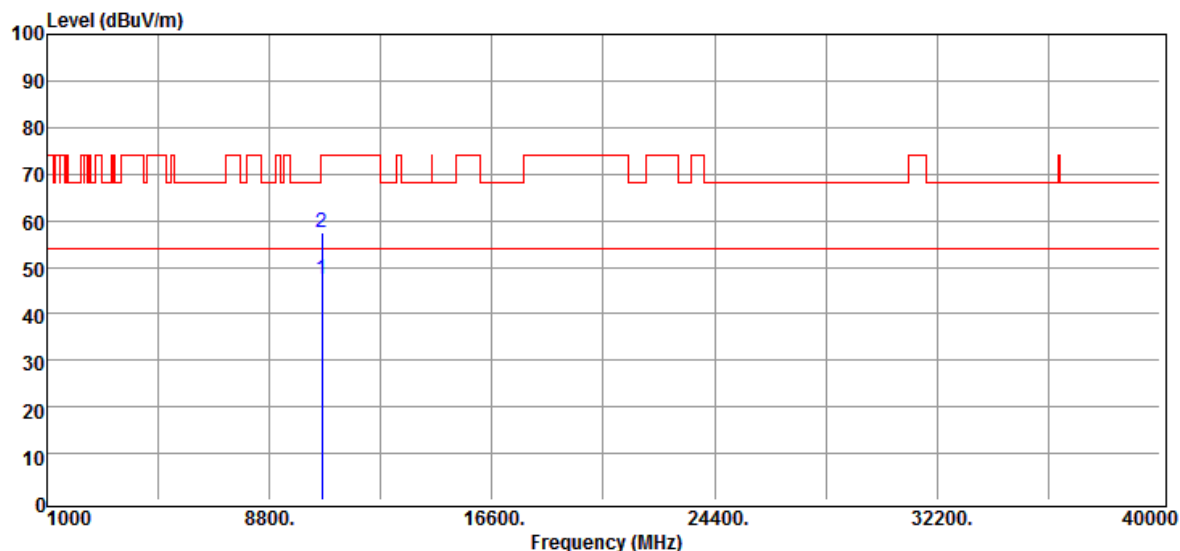
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Operation Mode :802.11n20 / Band 2  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5320 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10640.00	Average	20.07	27.20	47.27	54.00	-6.73
10640.00	Peak	30.23	27.20	57.43	74.00	-16.57

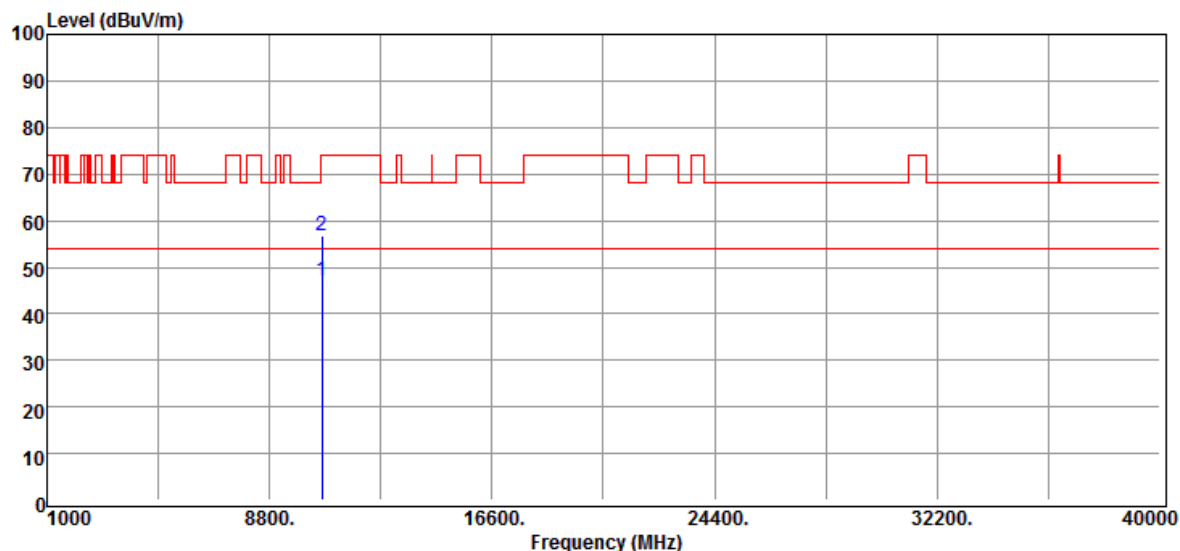
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Operation Mode :802.11n20 / Band 2  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5320 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10640.00	Average	20.03	27.20	47.23	54.00	-6.77
10640.00	Peak	29.59	27.20	56.79	74.00	-17.21

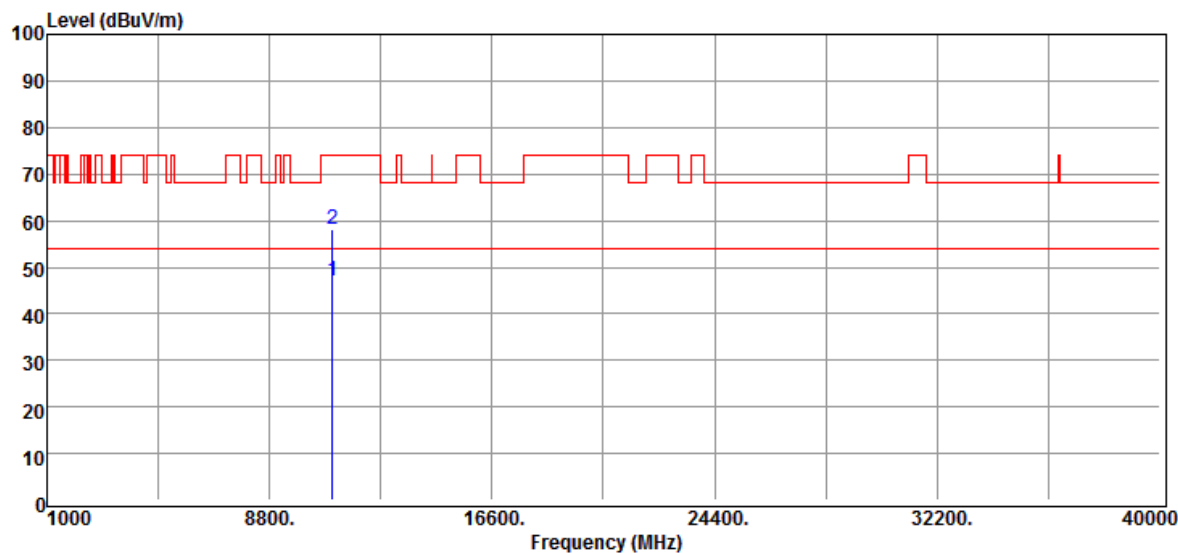
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## Radiated Spurious Emission Measurement Result 802.11n HT20, 5470~5725 MHz

Operation Mode	:802.11n20 / Band 3	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5500 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11000.00	Average	20.03	27.09	47.12	54.00	-6.88
11000.00	Peak	31.03	27.09	58.12	74.00	-15.88

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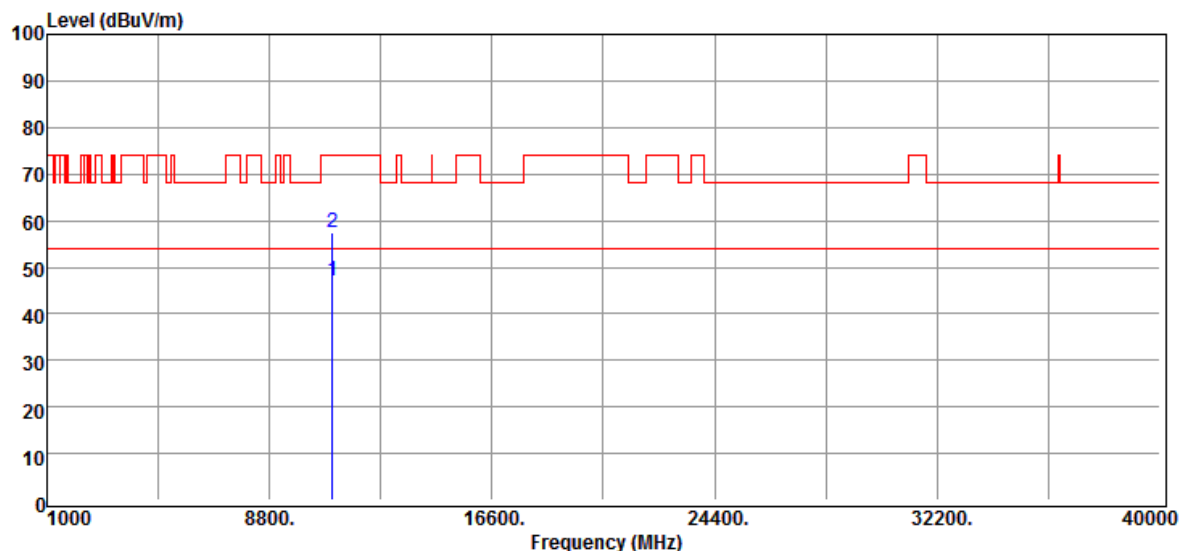
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Operation Mode :802.11n20 / Band 3  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5500 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11000.00	Average	20.02	27.09	47.11	54.00	-6.89
11000.00	Peak	30.30	27.09	57.39	74.00	-16.61

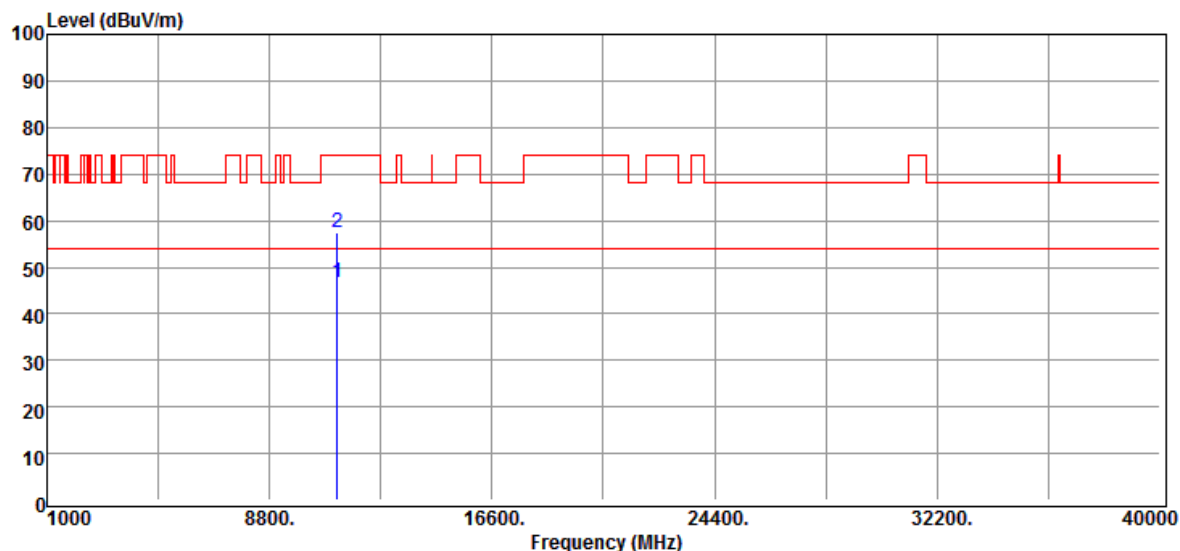
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Operation Mode :802.11n20 / Band 3  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5580 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11160.00	Average	20.11	26.67	46.78	54.00	-7.22
11160.00	Peak	30.69	26.67	57.36	74.00	-16.64

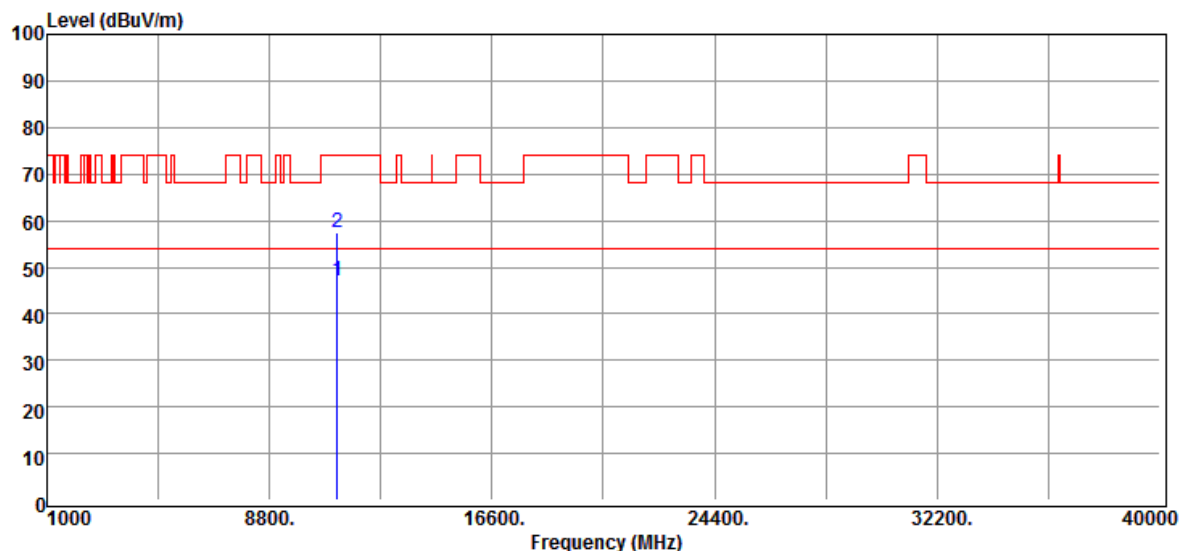
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Operation Mode :802.11n20 / Band 3  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5580 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11160.00	Average	20.24	26.67	46.91	54.00	-7.09
11160.00	Peak	30.88	26.67	57.55	74.00	-16.45

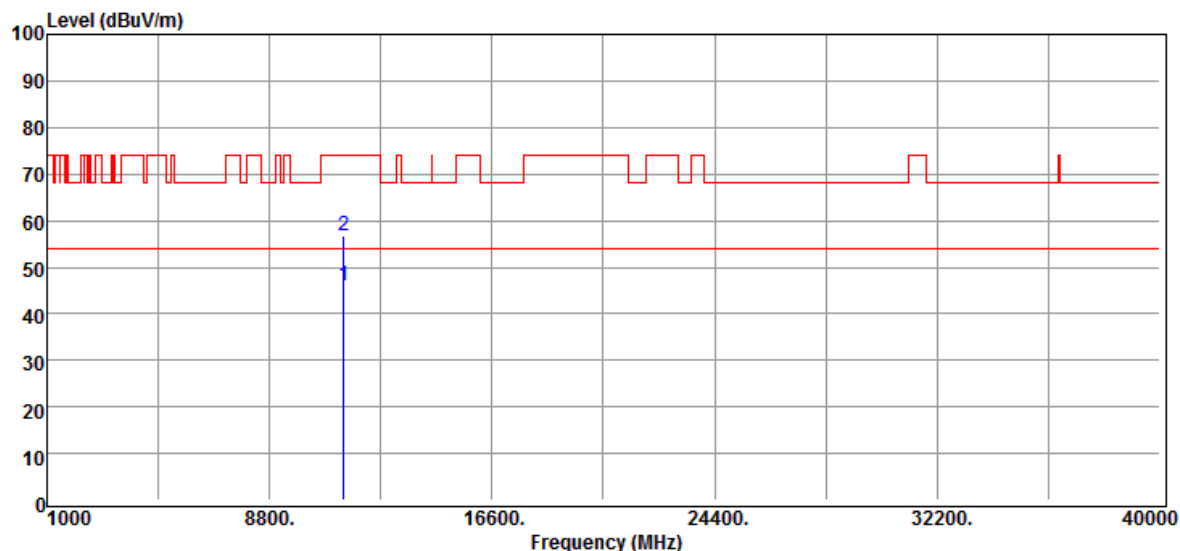
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Operation Mode :802.11n20 / Band 3  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5700 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



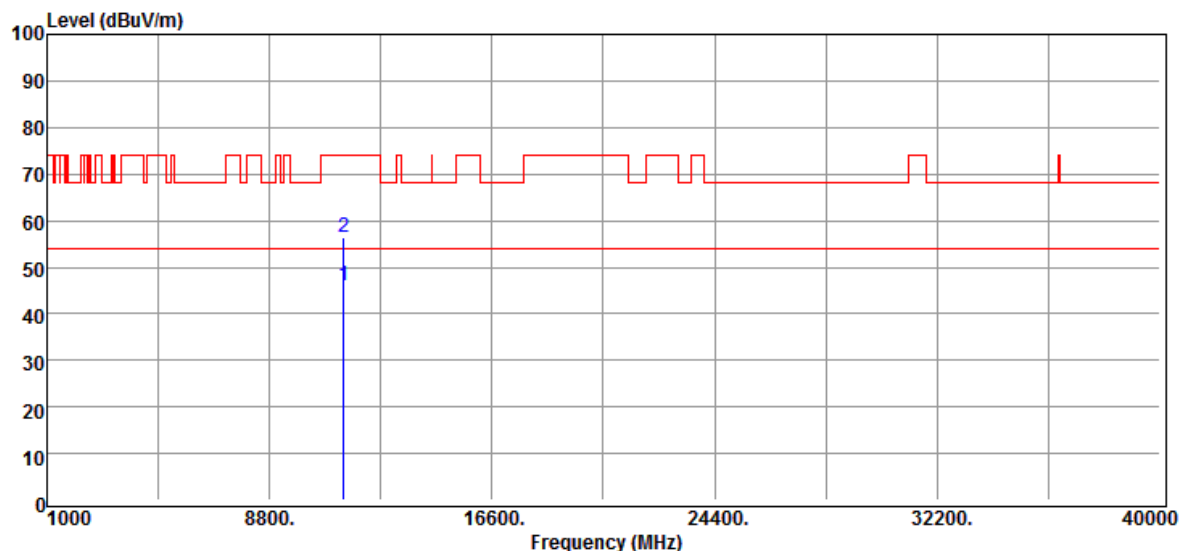
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11400.00	Average	20.12	26.07	46.19	54.00	-7.81
11400.00	Peak	30.58	26.07	56.65	74.00	-17.35

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Operation Mode :802.11n20 / Band 3  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5700 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



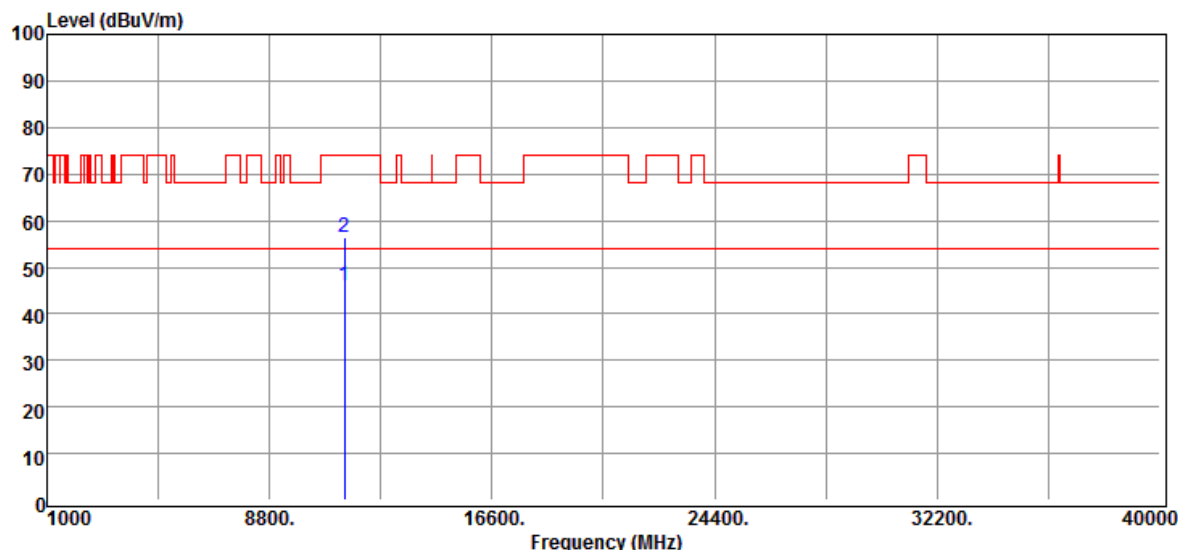
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11400.00	Average	20.07	26.07	46.14	54.00	-7.86
11400.00	Peak	30.35	26.07	56.42	74.00	-17.58

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## Radiated Spurious Emission Measurement Result 802.11n HT20, 5725~5850 MHz

Operation Mode	:802.11n20 / Band 3/4	Test Date	:2018-08-08
Test Mode	:TX CH 144	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5720 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11440.00	Average	20.05	25.96	46.01	54.00	-7.99
11440.00	Peak	30.42	25.96	56.38	74.00	-17.62

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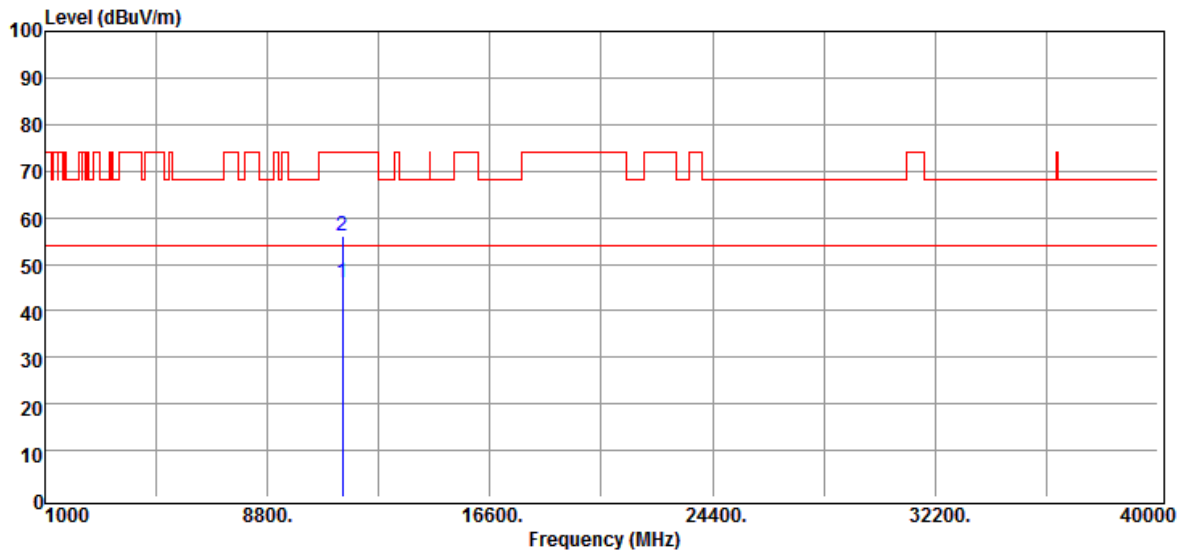
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Operation Mode :802.11n20 / Band 3/4  
 Test Mode :TX CH 144  
 EUT Pol :H Plan  
 Test Channel :5720 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



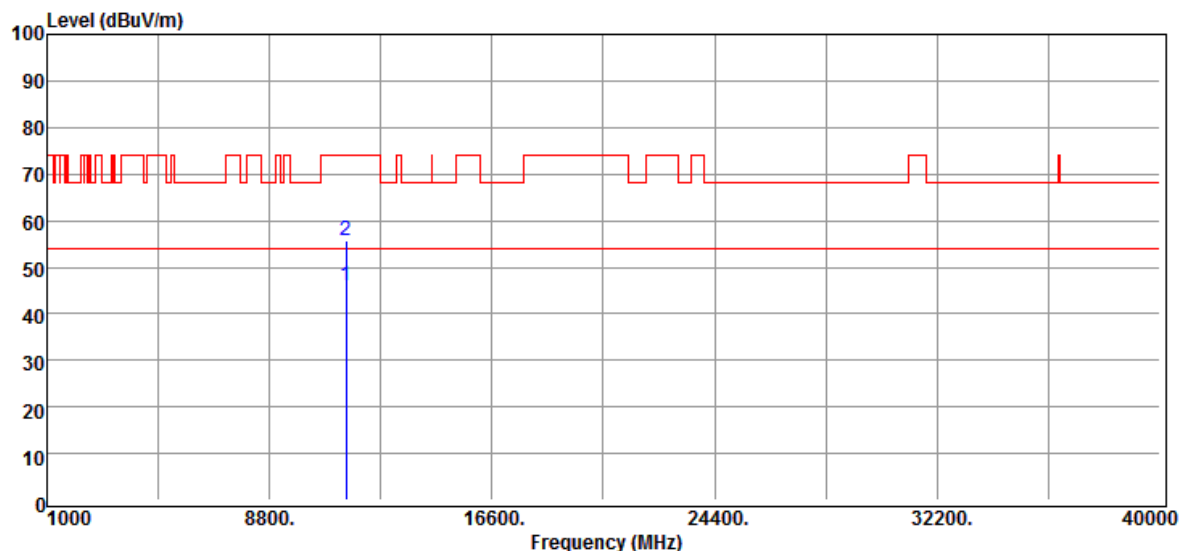
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11440.00	Average	20.01	25.96	45.97	54.00	-8.03
11440.00	Peak	30.17	25.96	56.13	74.00	-17.87

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Operation Mode :802.11n20 / Band 4  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5745 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11490.00	Average	20.09	25.83	45.92	54.00	-8.08
11490.00	Peak	29.95	25.83	55.78	74.00	-18.22

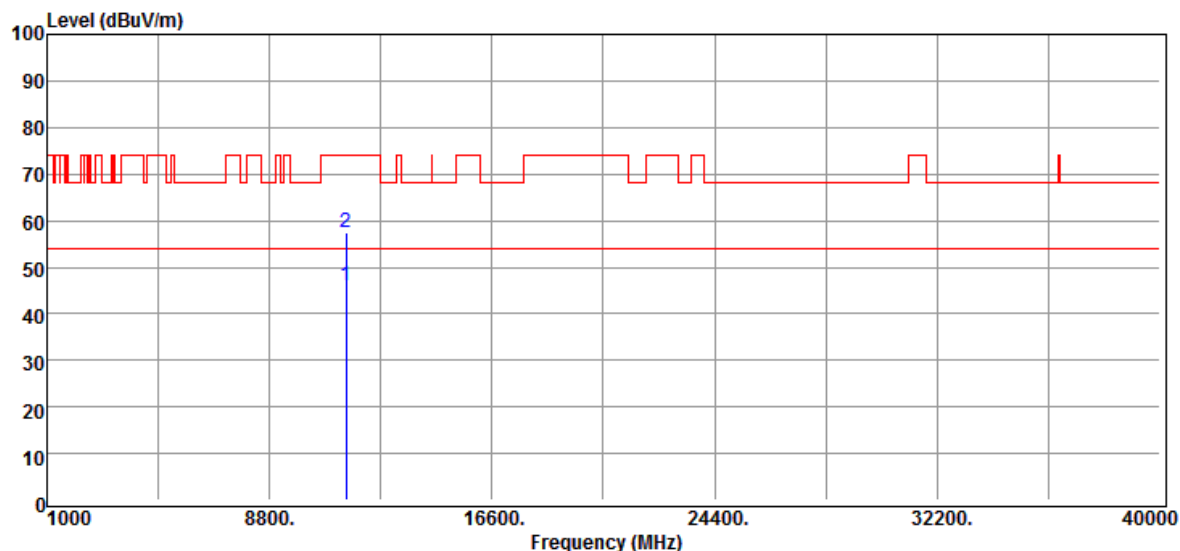
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Operation Mode :802.11n20 / Band 4  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5745 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11490.00	Average	20.13	25.83	45.96	54.00	-8.04
11490.00	Peak	31.52	25.83	57.35	74.00	-16.65

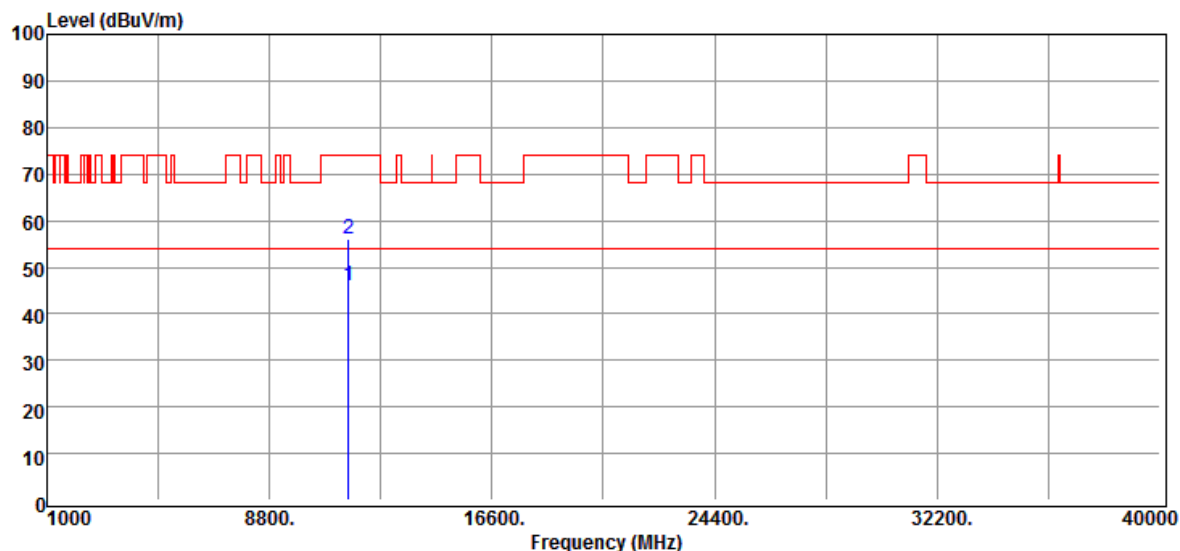
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Operation Mode :802.11n20 / Band 4  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5785 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11570.00	Average	19.98	25.87	45.85	54.00	-8.15
11570.00	Peak	30.21	25.87	56.08	74.00	-17.92

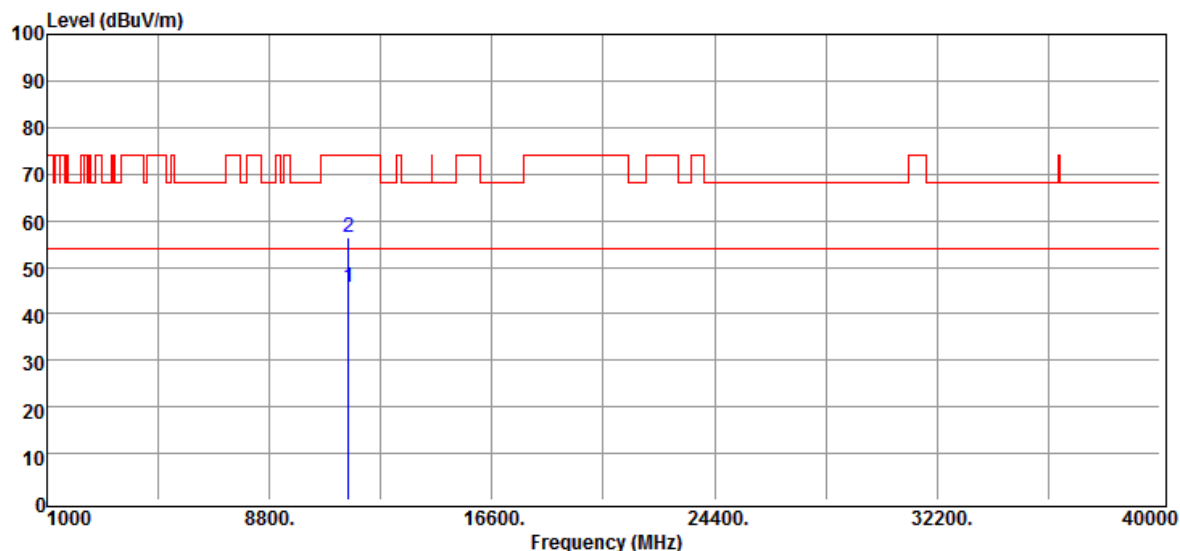
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Operation Mode :802.11n20 / Band 4  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5785 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



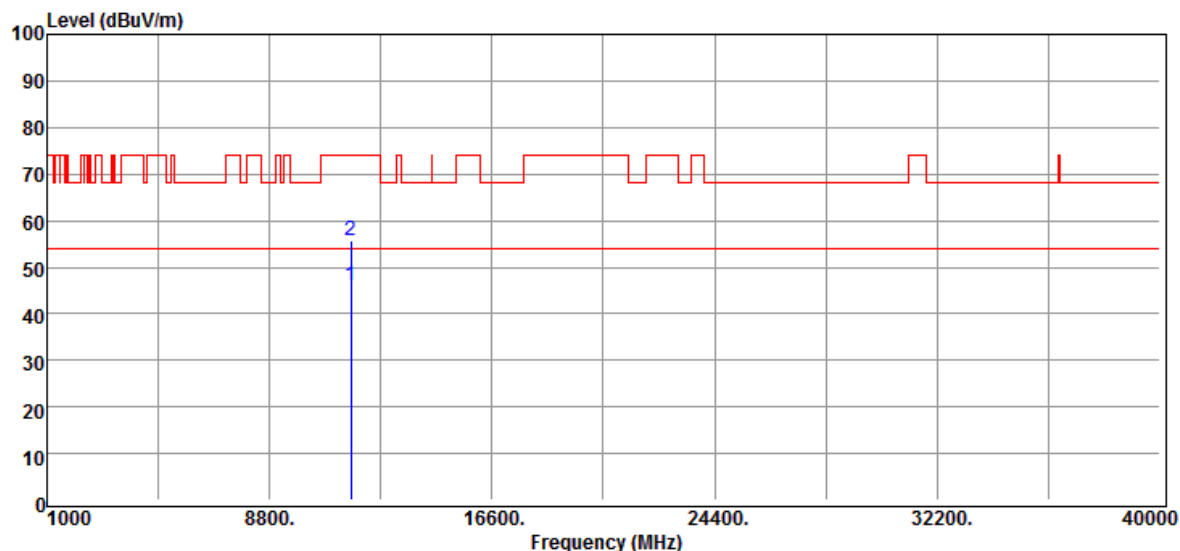
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11570.00	Average	19.96	25.87	45.83	54.00	-8.17
11570.00	Peak	30.50	25.87	56.37	74.00	-17.63

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Operation Mode :802.11n20 / Band 4  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5825 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11650.00	Average	20.03	25.94	45.97	54.00	-8.03
11650.00	Peak	29.94	25.94	55.88	74.00	-18.12

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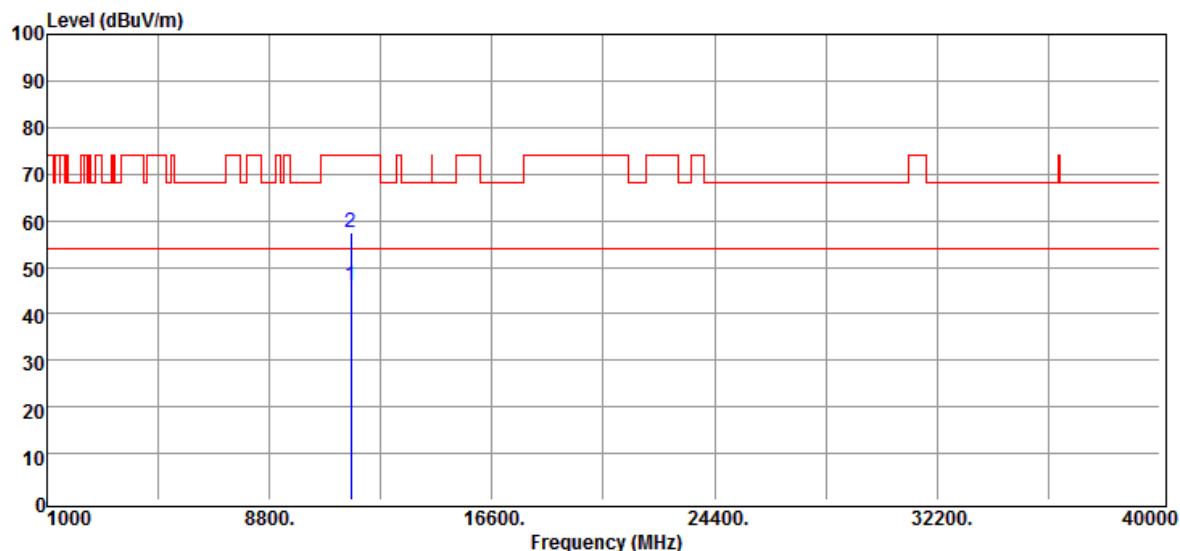
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Operation Mode :802.11n20 / Band 4  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5825 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11650.00	Average	20.10	25.94	46.04	54.00	-7.96
11650.00	Peak	31.35	25.94	57.29	74.00	-16.71

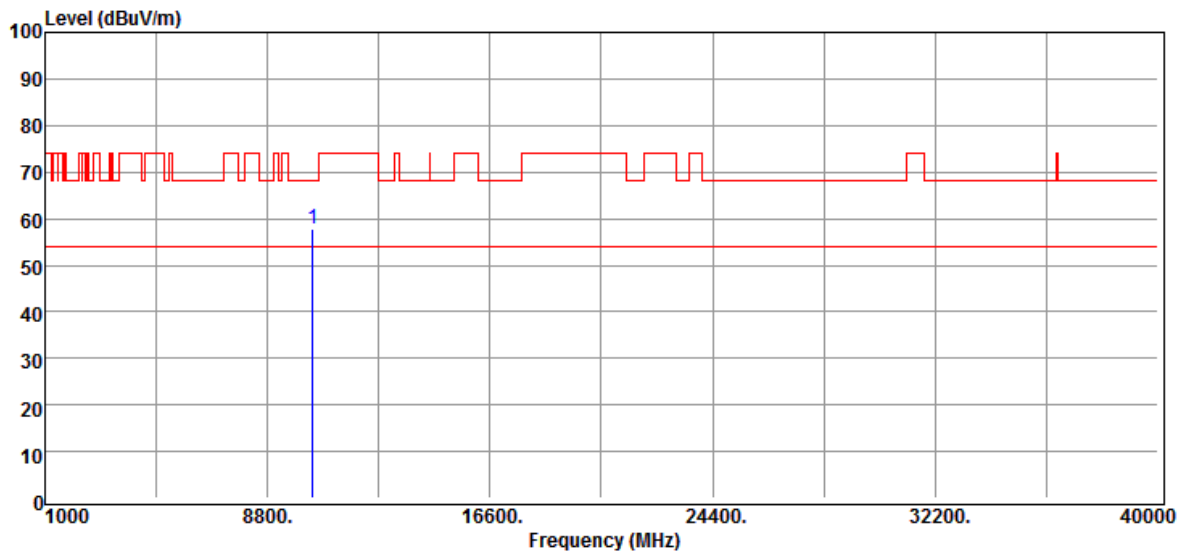
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## Radiated Spurious Emission Measurement Result 802.11n HT40, 5150~5250 MHz

Operation Mode	:802.11n40 / Band 1	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5190 MHz	Engineer	:Enzo



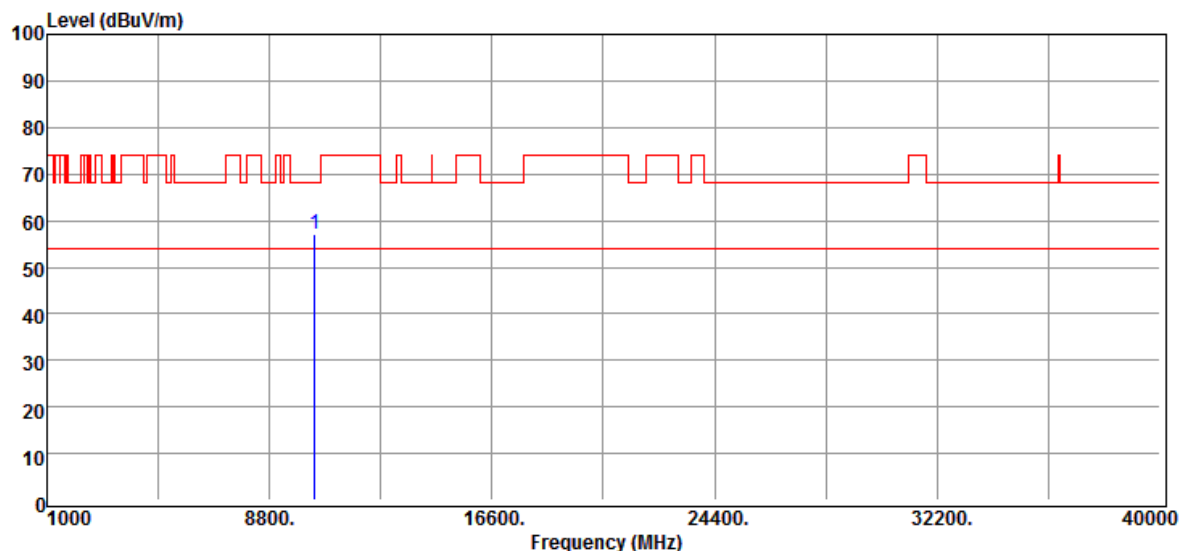
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10380.00	Peak	31.03	26.69	57.72	68.20	-10.48

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Operation Mode :802.11n40 / Band 1  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5190 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



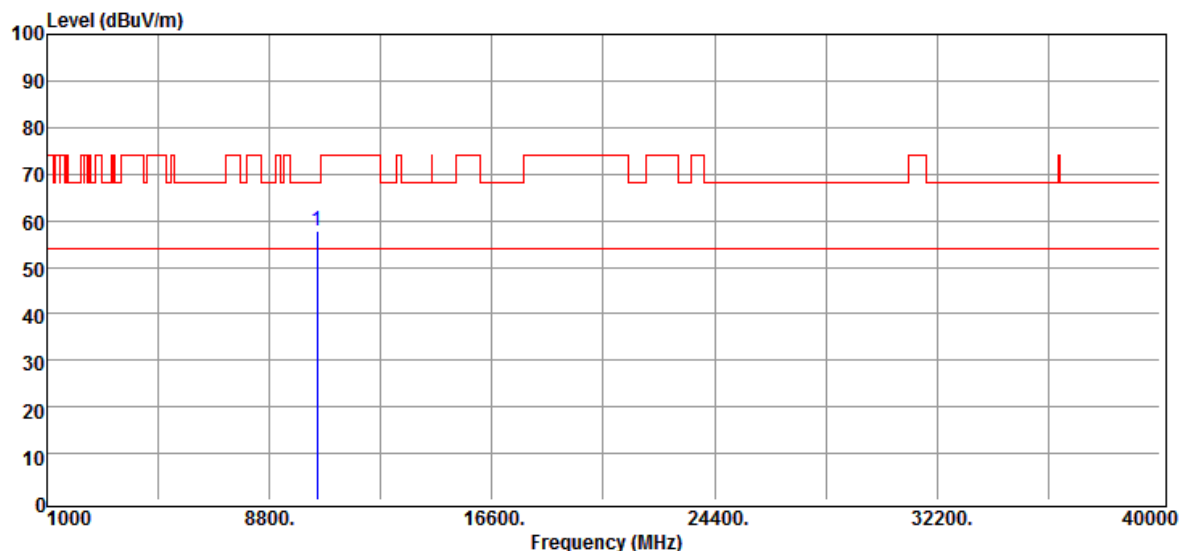
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10380.00	Peak	30.37	26.69	57.06	68.20	-11.14

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Operation Mode :802.11n40 / Band 1  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5230 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



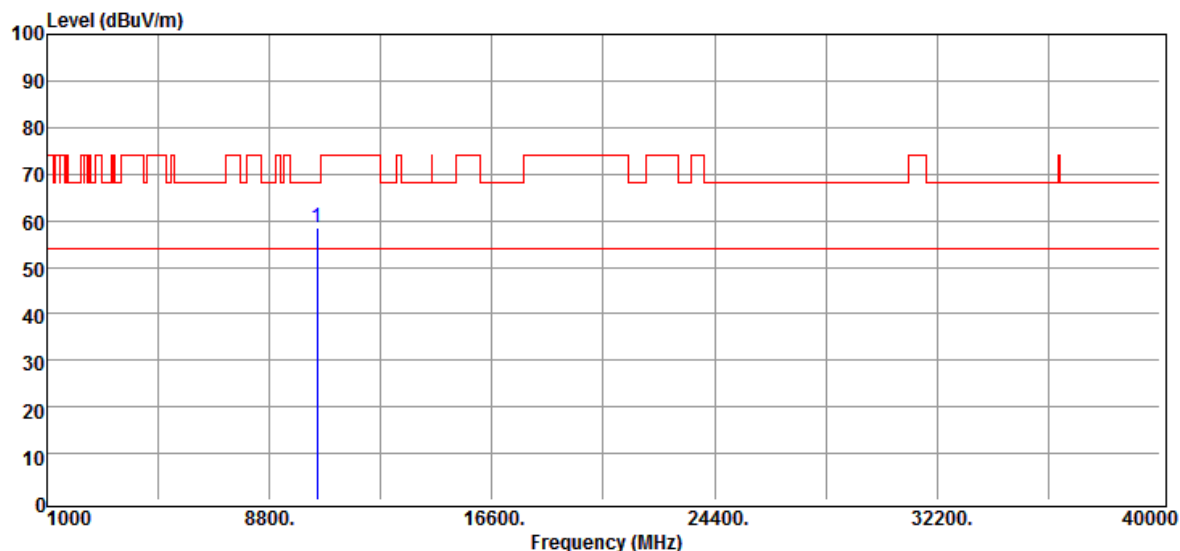
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10460.00	Peak	30.76	27.06	57.82	68.20	-10.38

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Operation Mode :802.11n40 / Band 1  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5230 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



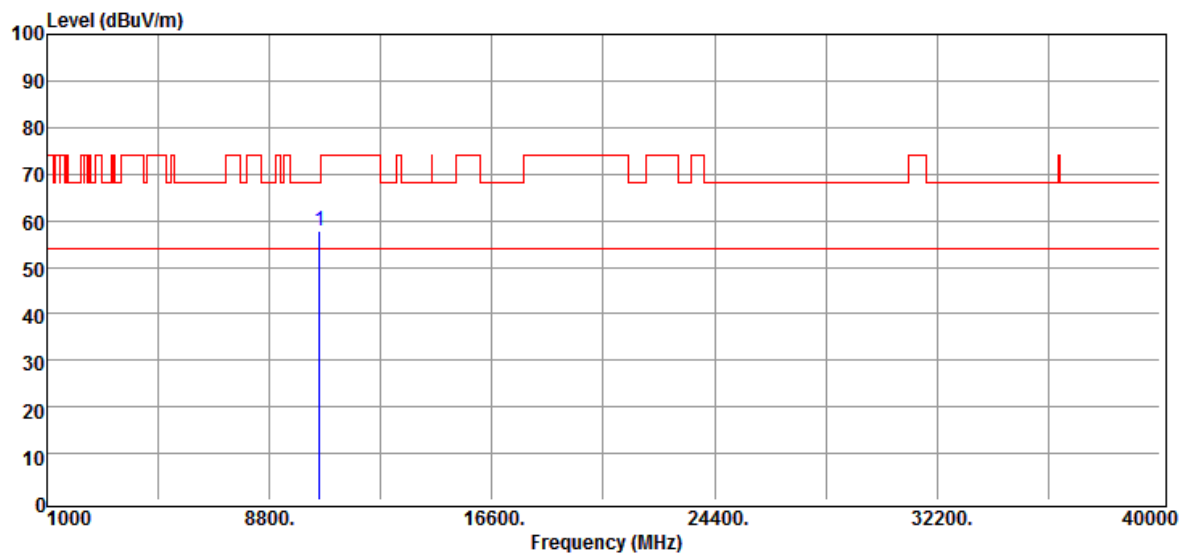
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10460.00	Peak	31.28	27.06	58.34	68.20	-9.86

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## Radiated Spurious Emission Measurement Result 802.11n HT40, 5250~5350 MHz

Operation Mode	:802.11n40 / Band 2	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5270 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10540.00	Peak	30.60	27.23	57.83	68.20	-10.37

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

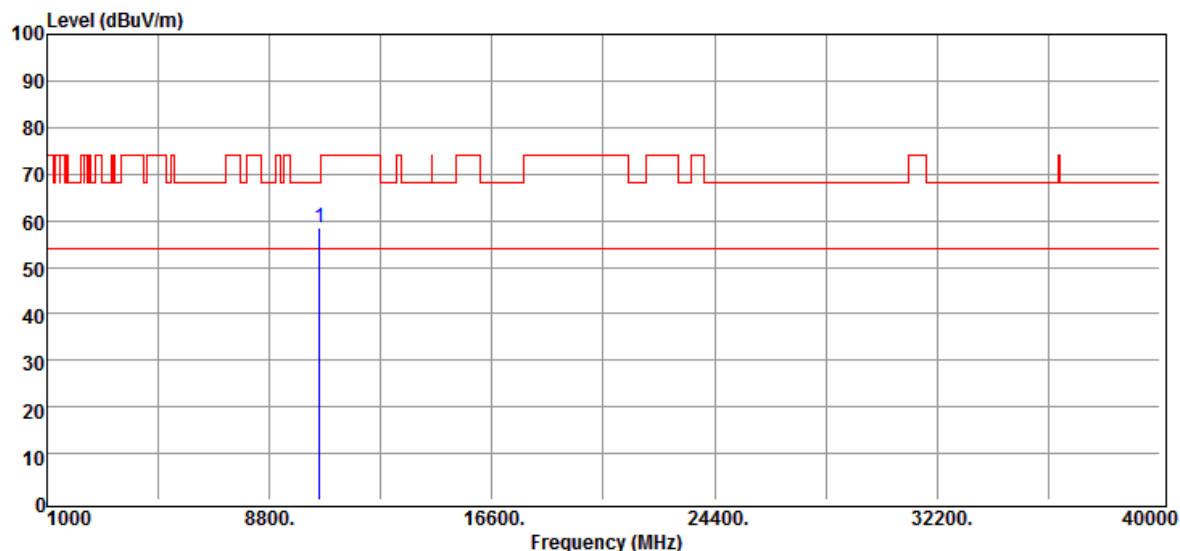
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Operation Mode :802.11n40 / Band 2  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5270 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10540.00	Peak	31.09	27.23	58.32	68.20	-9.88

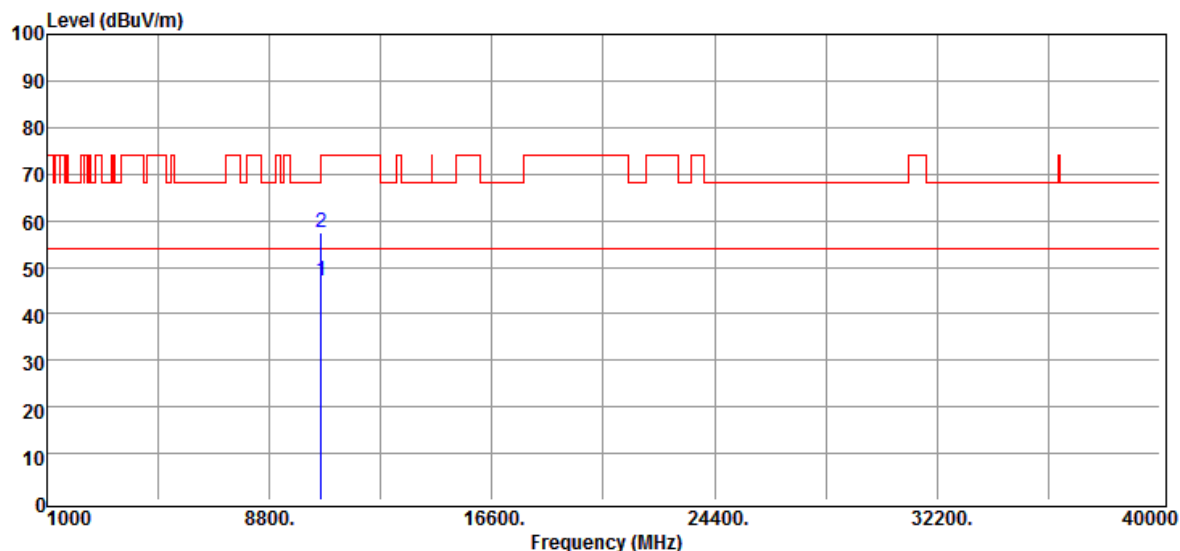
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Operation Mode :802.11n40 / Band 2  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5310 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



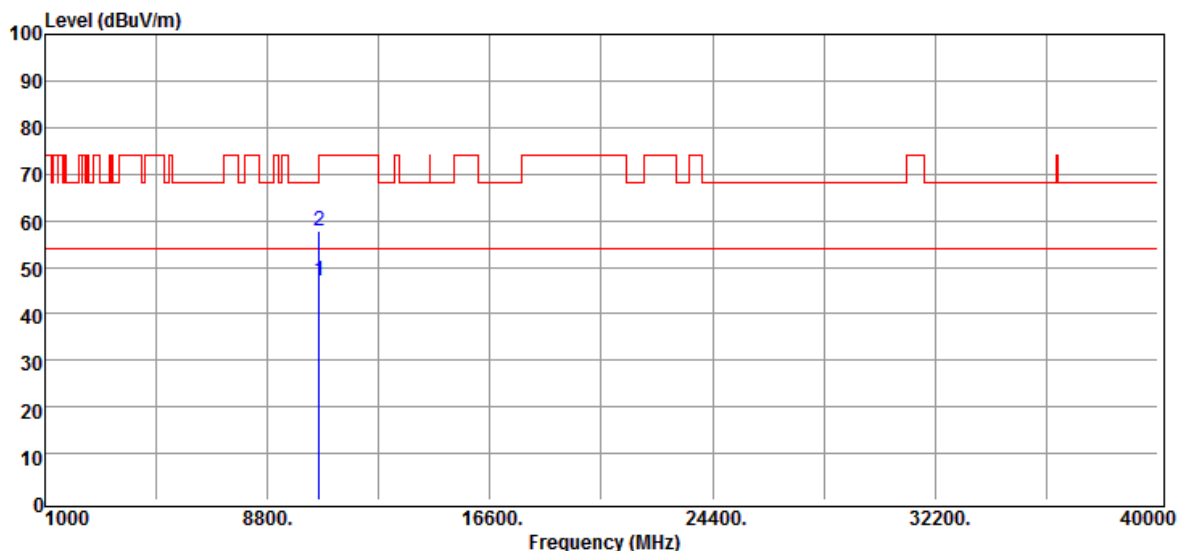
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10620.00	Average	19.94	27.20	47.14	54.00	-6.86
10620.00	Peak	30.38	27.20	57.58	74.00	-16.42

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Operation Mode :802.11n40 / Band 2  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5310 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10620.00	Average	19.97	27.20	47.17	54.00	-6.83
10620.00	Peak	30.57	27.20	57.77	74.00	-16.23

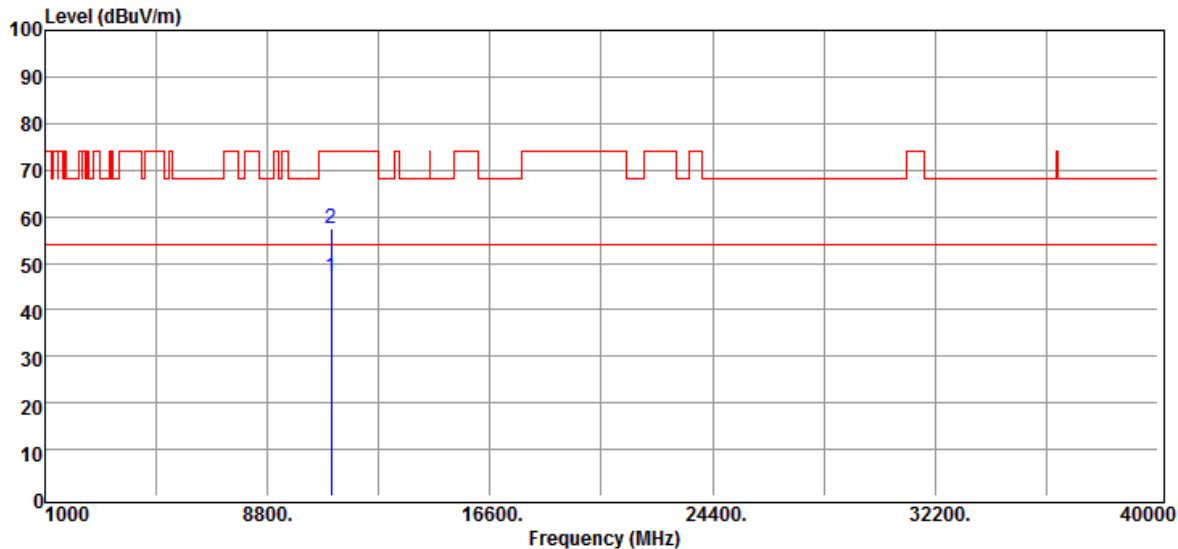
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## Radiated Spurious Emission Measurement Result 802.11n HT40, 5470~5725 MHz

Operation Mode	:802.11n40 / Band 3	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5510 MHz	Engineer	:Enzo



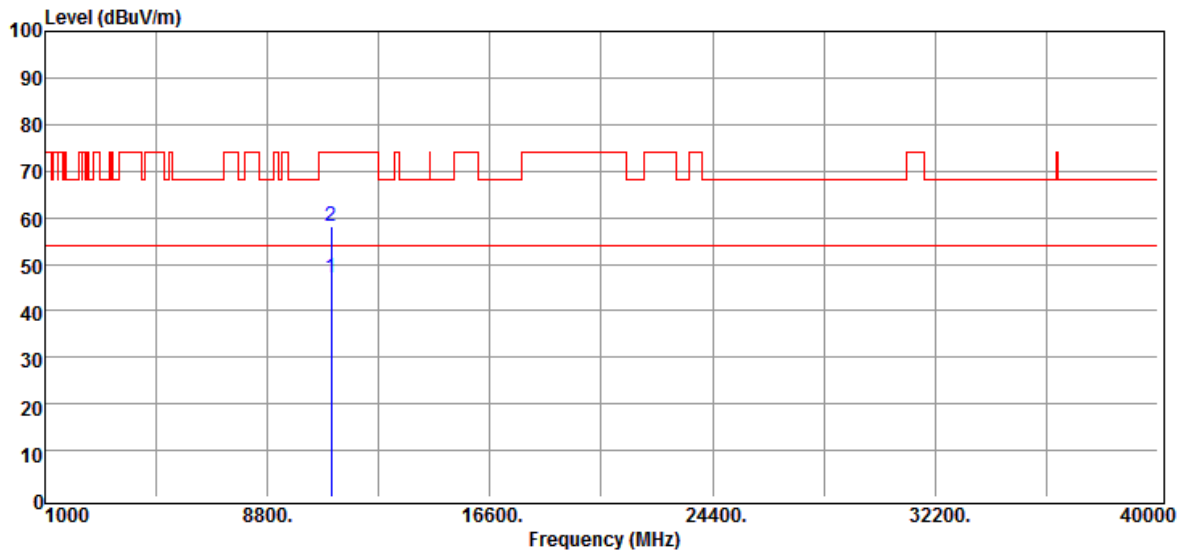
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11020.00	Average	20.05	27.04	47.09	54.00	-6.91
11020.00	Peak	30.44	27.04	57.48	74.00	-16.52

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Operation Mode :802.11n40 / Band 3  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5510 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11020.00	Average	20.08	27.04	47.12	54.00	-6.88
11020.00	Peak	31.20	27.04	58.24	74.00	-15.76

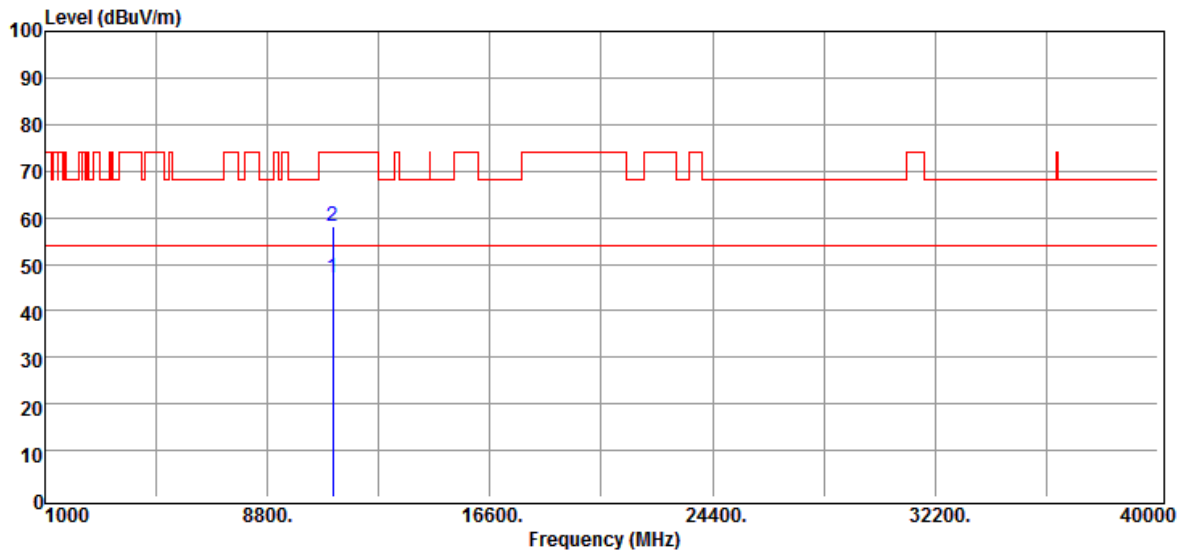
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Operation Mode :802.11n40 / Band 3  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5550 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11100.00	Average	20.09	26.83	46.92	54.00	-7.08
11100.00	Peak	31.24	26.83	58.07	74.00	-15.93

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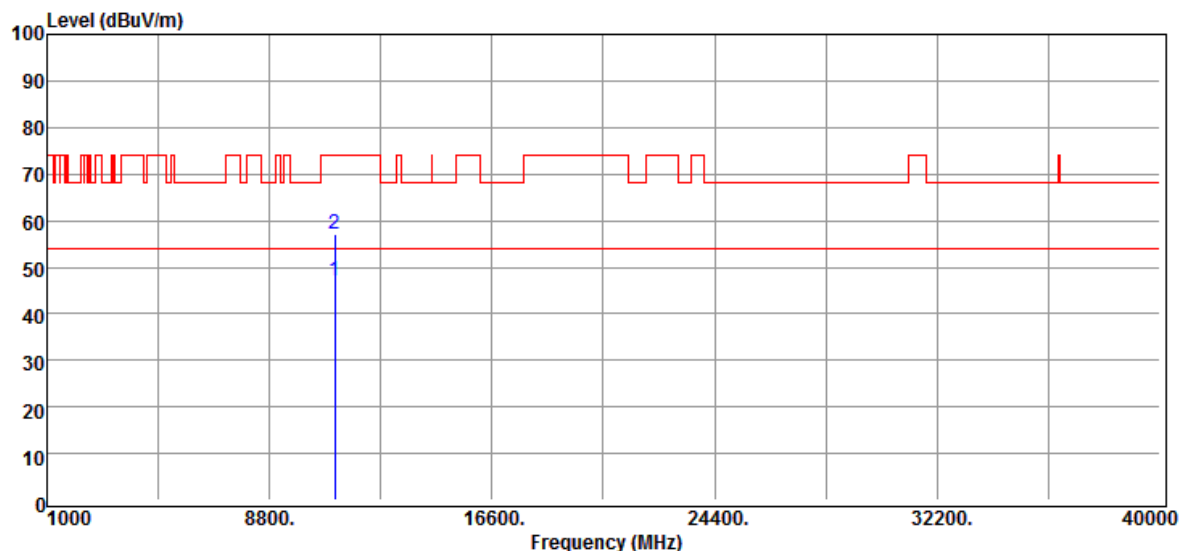
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Operation Mode :802.11n40 / Band 3  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5550 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11100.00	Average	20.15	26.83	46.98	54.00	-7.02
11100.00	Peak	30.35	26.83	57.18	74.00	-16.82

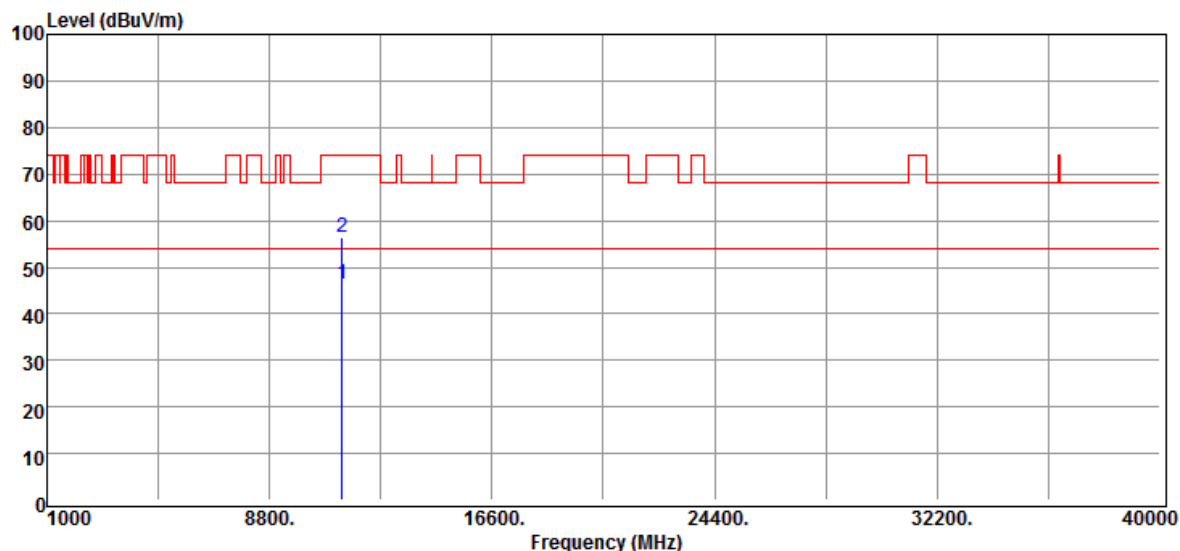
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Operation Mode :802.11n40 / Band 3  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5670 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11340.00	Average	19.99	26.21	46.20	54.00	-7.80
11340.00	Peak	30.07	26.21	56.28	74.00	-17.72

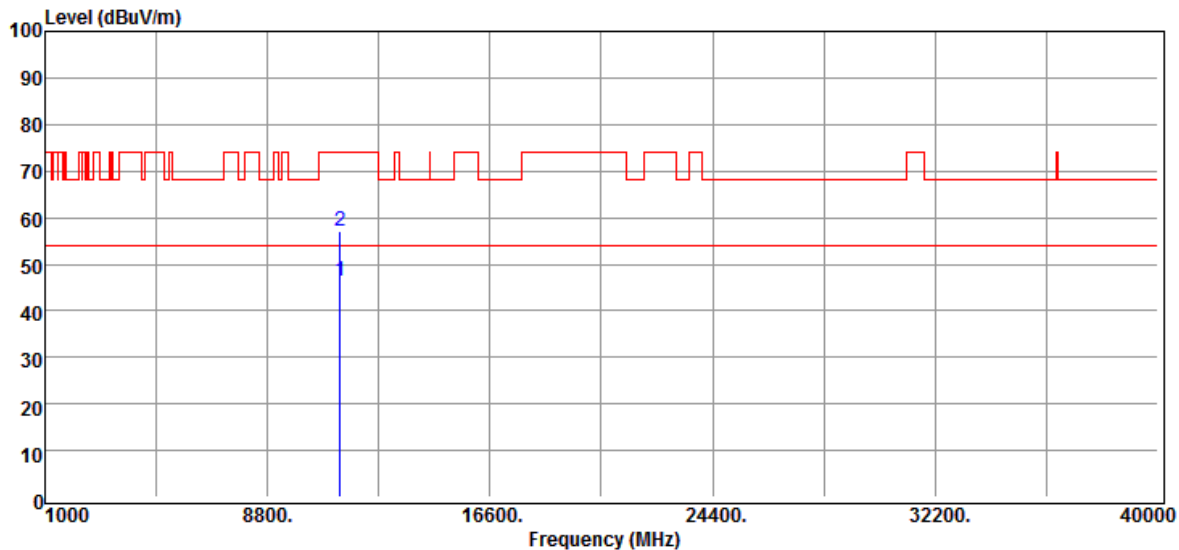
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Operation Mode :802.11n40 / Band 3  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5670 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



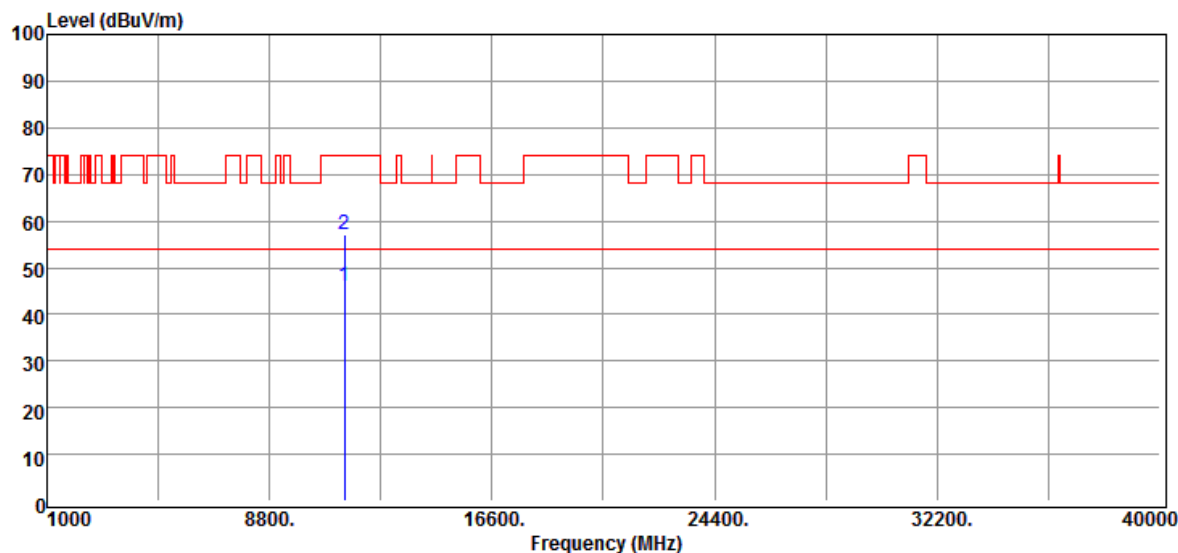
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11340.00	Average	20.03	26.21	46.24	54.00	-7.76
11340.00	Peak	30.78	26.21	56.99	74.00	-17.01

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## Radiated Spurious Emission Measurement Result 802.11n HT40, 5725~5850 MHz

Operation Mode	:802.11n40 / Band 3/4	Test Date	:2018-08-08
Test Mode	:TX CH 142	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5710 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11420.00	Average	20.02	26.01	46.03	54.00	-7.97
11420.00	Peak	30.92	26.01	56.93	74.00	-17.07

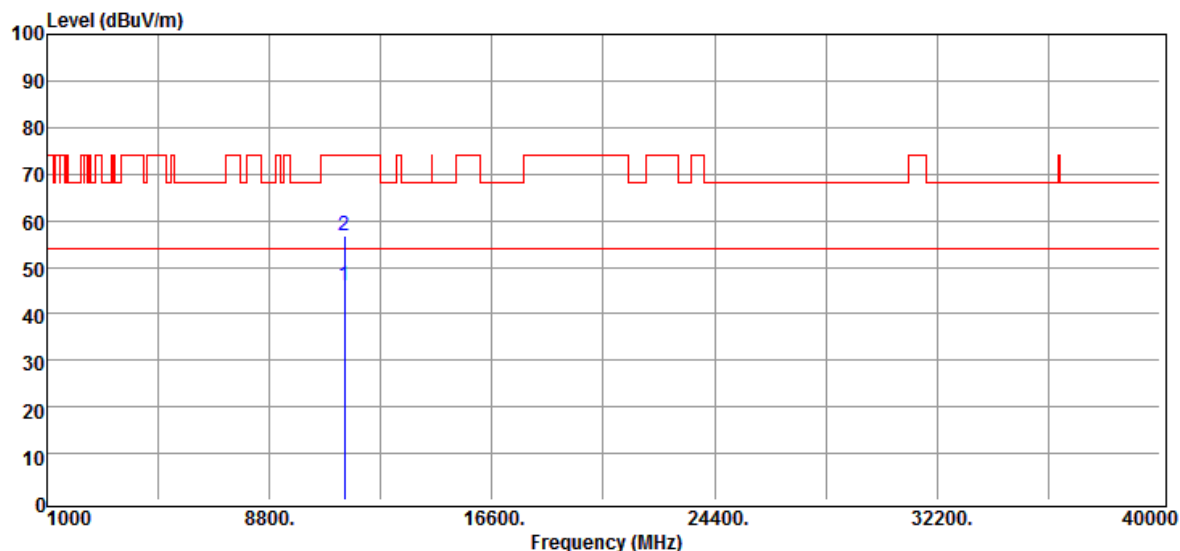
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Operation Mode :802.11n40 / Band 3/4  
 Test Mode :TX CH 142  
 EUT Pol :H Plan  
 Test Channel :5710 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11420.00	Average	19.97	26.01	45.98	54.00	-8.02
11420.00	Peak	30.88	26.01	56.89	74.00	-17.11

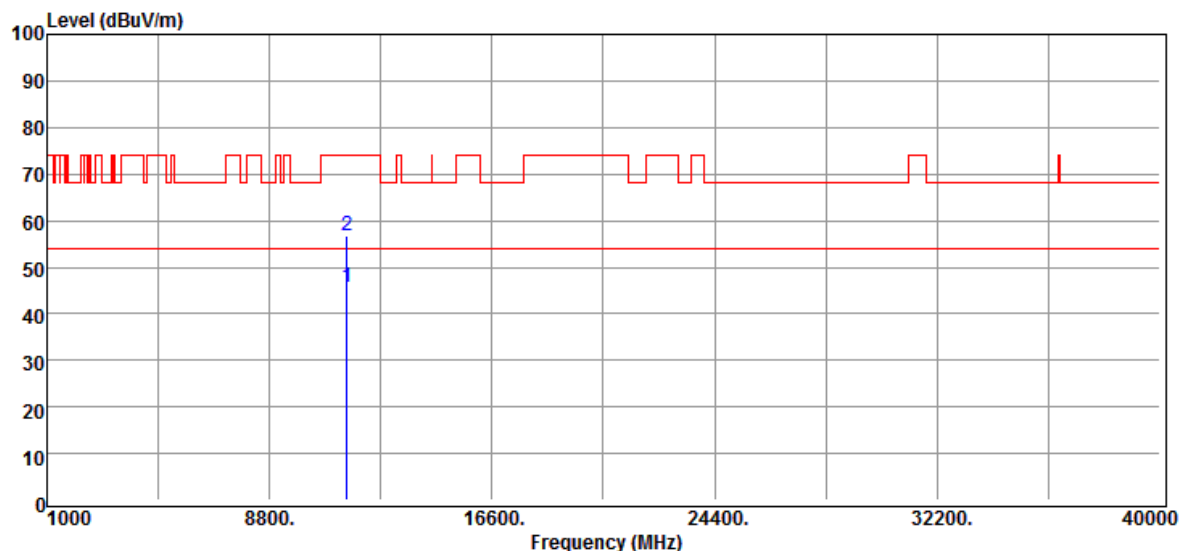
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Operation Mode :802.11n40 / Band 4  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5755 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



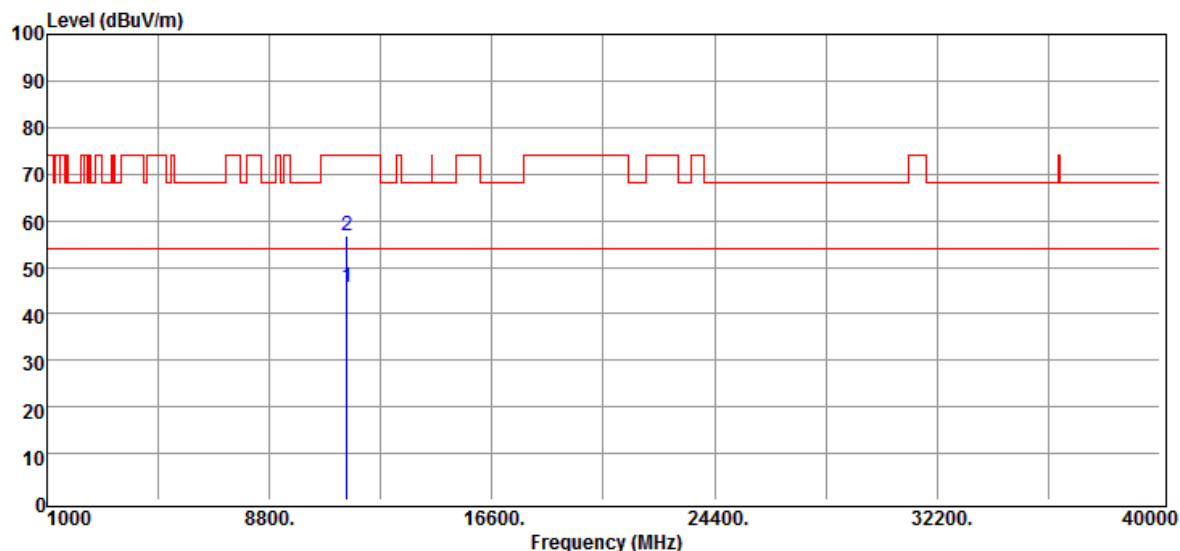
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11510.00	Average	19.91	25.82	45.73	54.00	-8.27
11510.00	Peak	30.87	25.82	56.69	74.00	-17.31

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Operation Mode :802.11n40 / Band 4  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5755 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11510.00	Average	20.01	25.82	45.83	54.00	-8.17
11510.00	Peak	30.87	25.82	56.69	74.00	-17.31

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

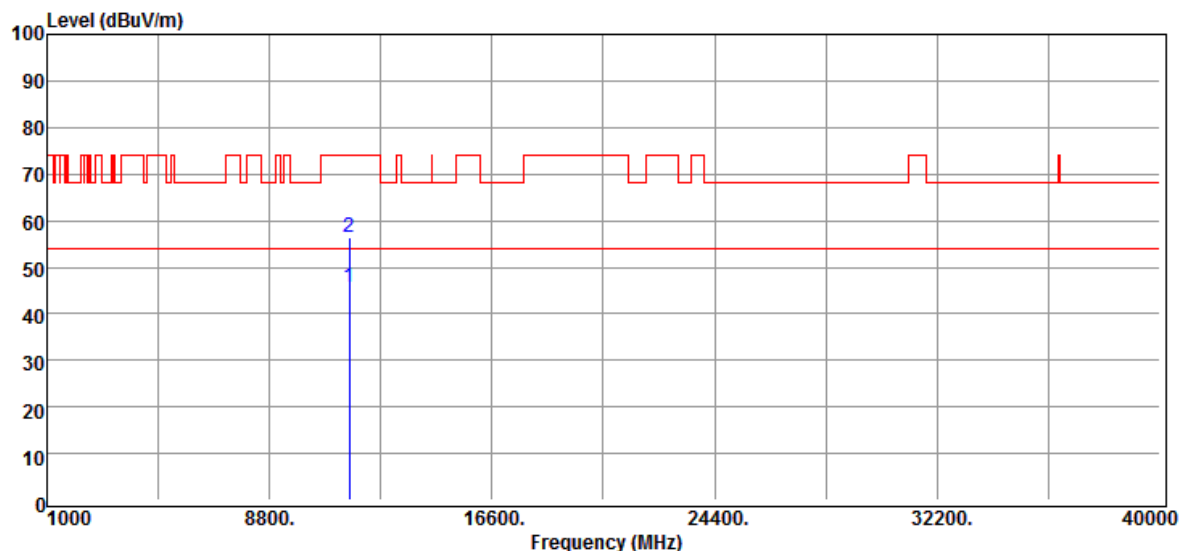
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Operation Mode :802.11n40 / Band 4  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5795 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



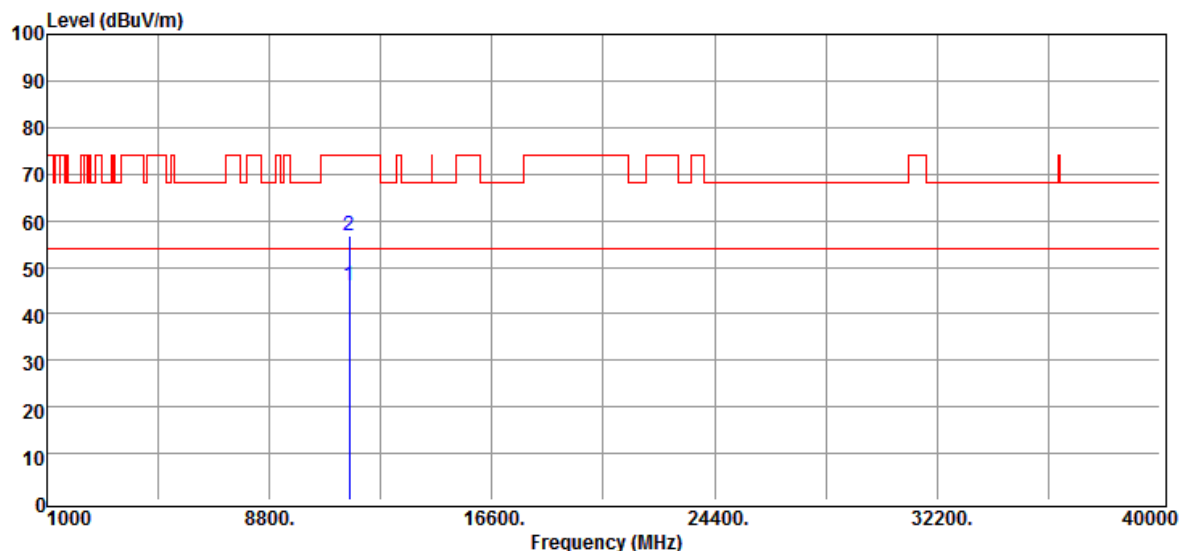
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11590.00	Average	19.95	25.89	45.84	54.00	-8.16
11590.00	Peak	30.49	25.89	56.38	74.00	-17.62

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Operation Mode :802.11n40 / Band 4  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5795 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11590.00	Average	19.98	25.89	45.87	54.00	-8.13
11590.00	Peak	30.80	25.89	56.69	74.00	-17.31

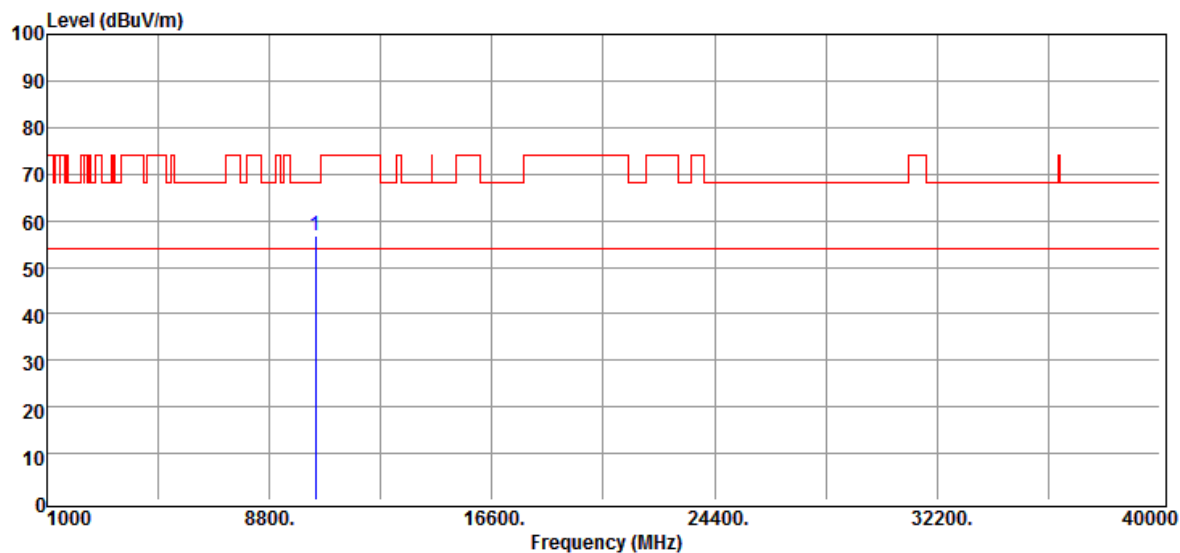
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## Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5150~5250 MHz

Operation Mode	:802.11ac80 / Band 1	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5210 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10420.00	Peak	29.79	26.87	56.66	68.20	-11.54

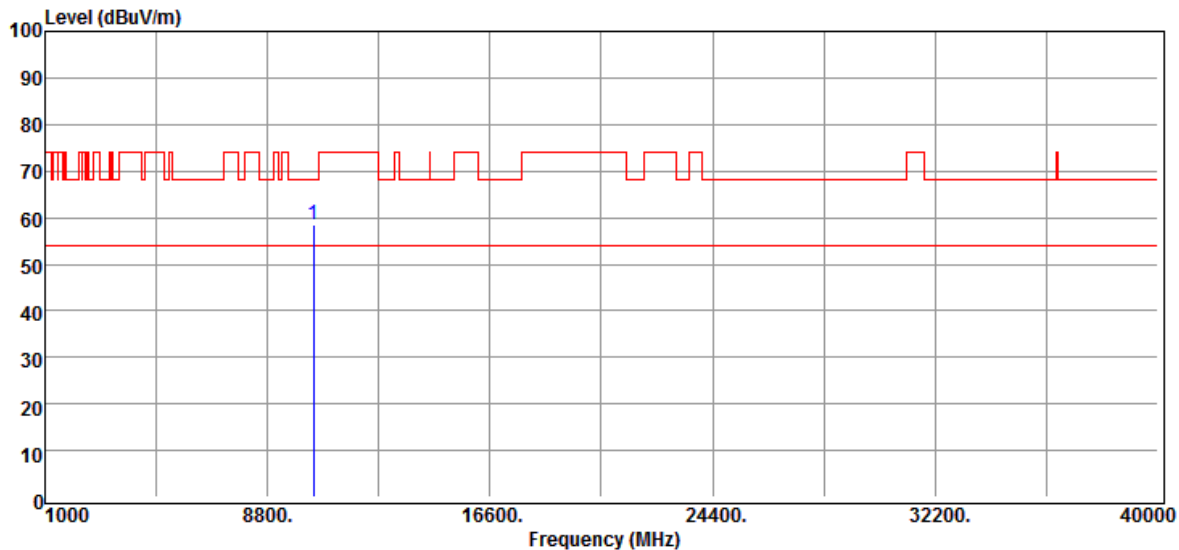
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Operation Mode :802.11ac80 / Band 1  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5210 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



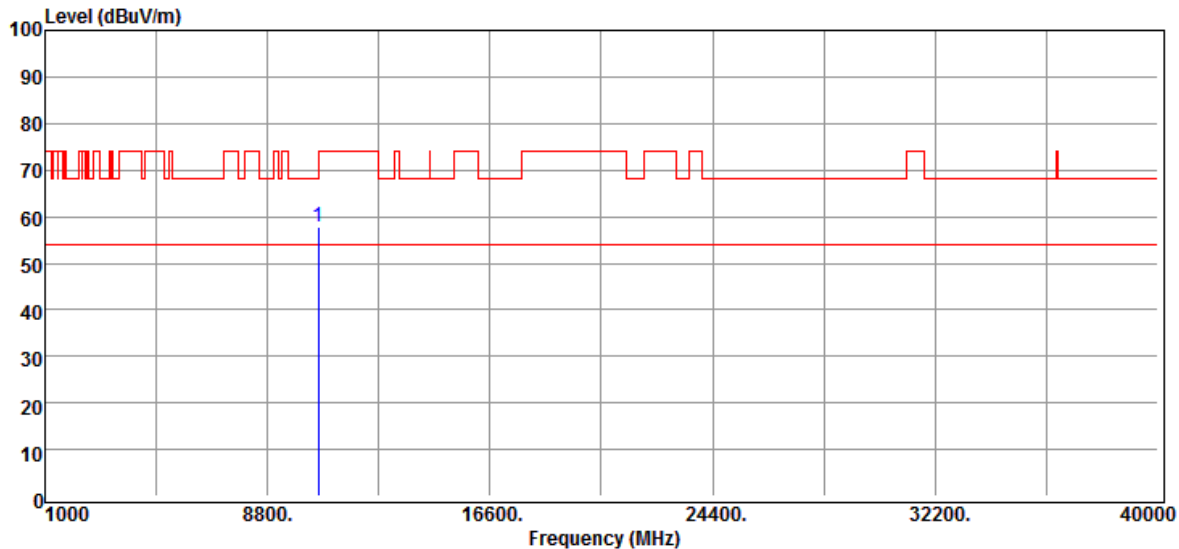
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10420.00	Peak	31.74	26.87	58.61	68.20	-9.59

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## Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5250~5350 MHz

Operation Mode	:802.11ac80 / Band 2	Test Date	:2018-08-08
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5290 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
10580.00	Peak	30.41	27.22	57.63	68.20	-10.57

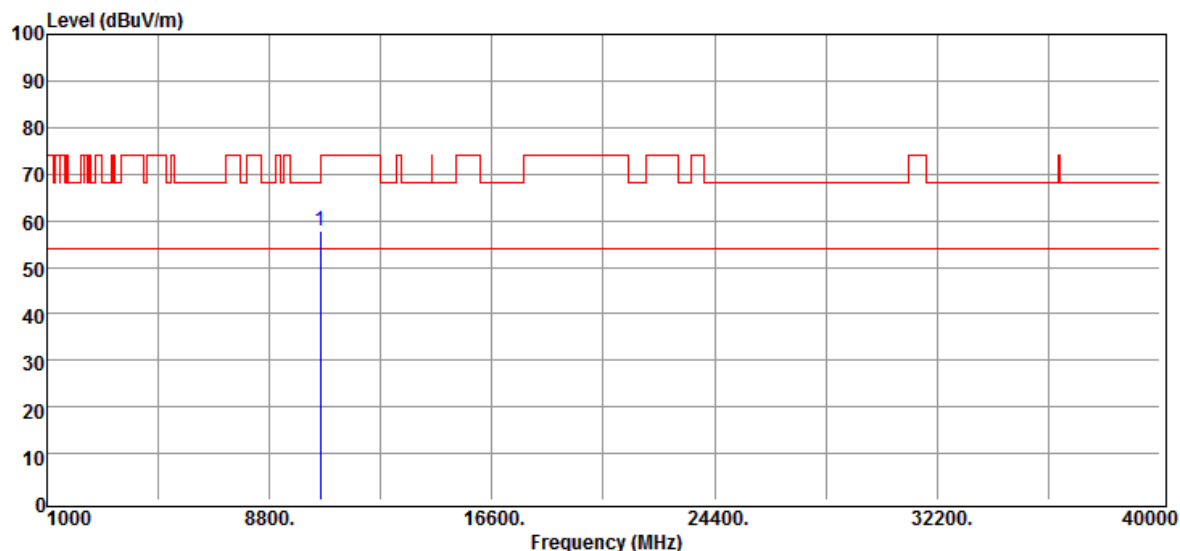
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Operation Mode :802.11ac80 / Band 2  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5290 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



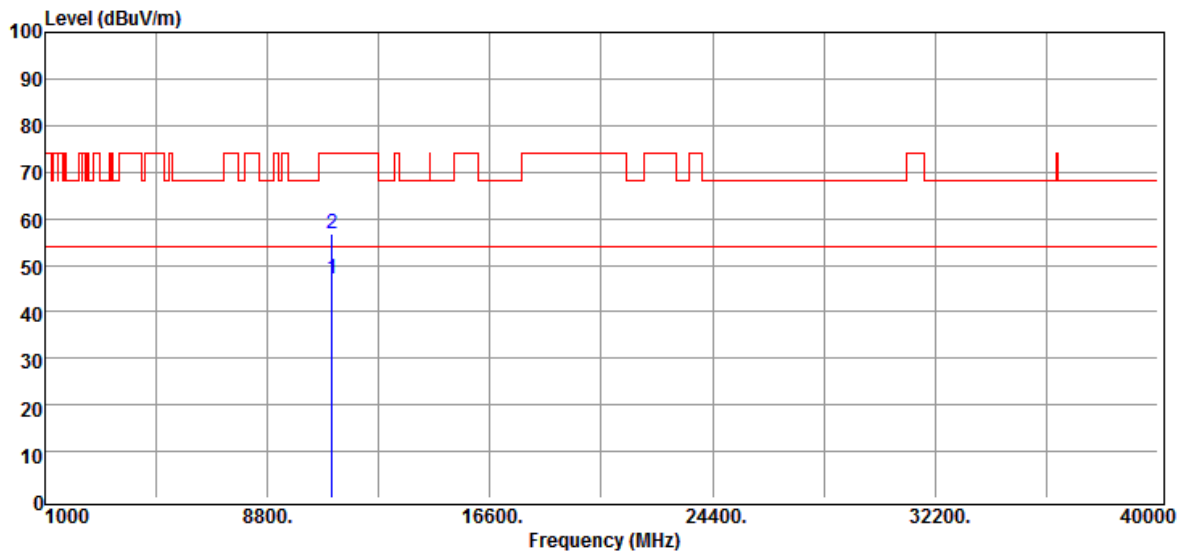
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10580.00	Peak	30.61	27.22	57.83	68.20	-10.37

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## Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5470~5725 MHz

Operation Mode	:802.11ac80 / Band 3	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5530 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11060.00	Average	20.20	26.94	47.14	54.00	-6.86
11060.00	Peak	29.80	26.94	56.74	74.00	-17.26

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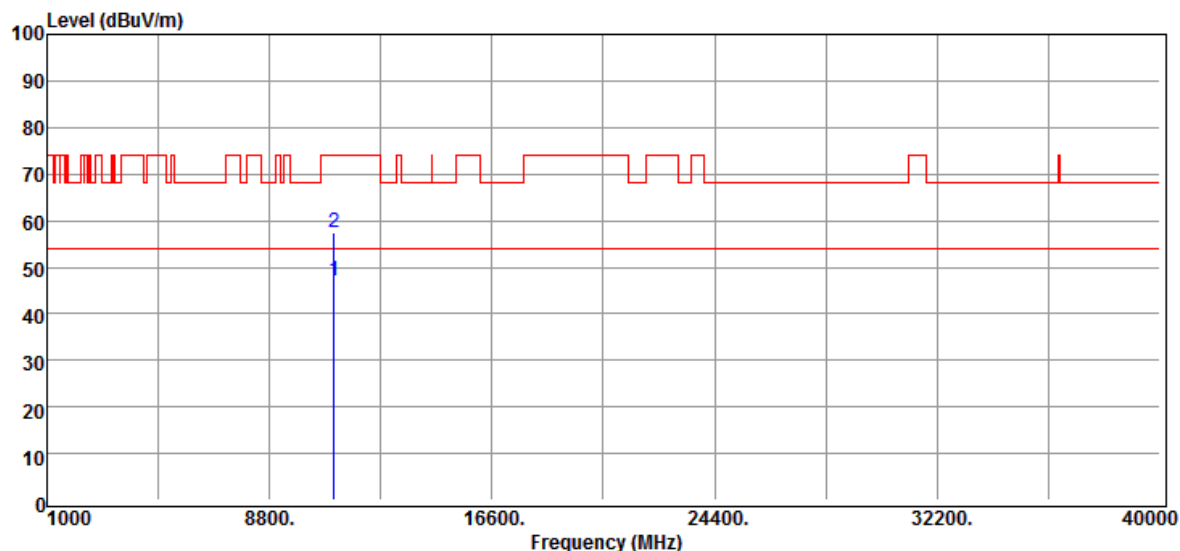
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Operation Mode :802.11ac80 / Band 3  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5530 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11060.00	Average	20.07	26.94	47.01	54.00	-6.99
11060.00	Peak	30.45	26.94	57.39	74.00	-16.61

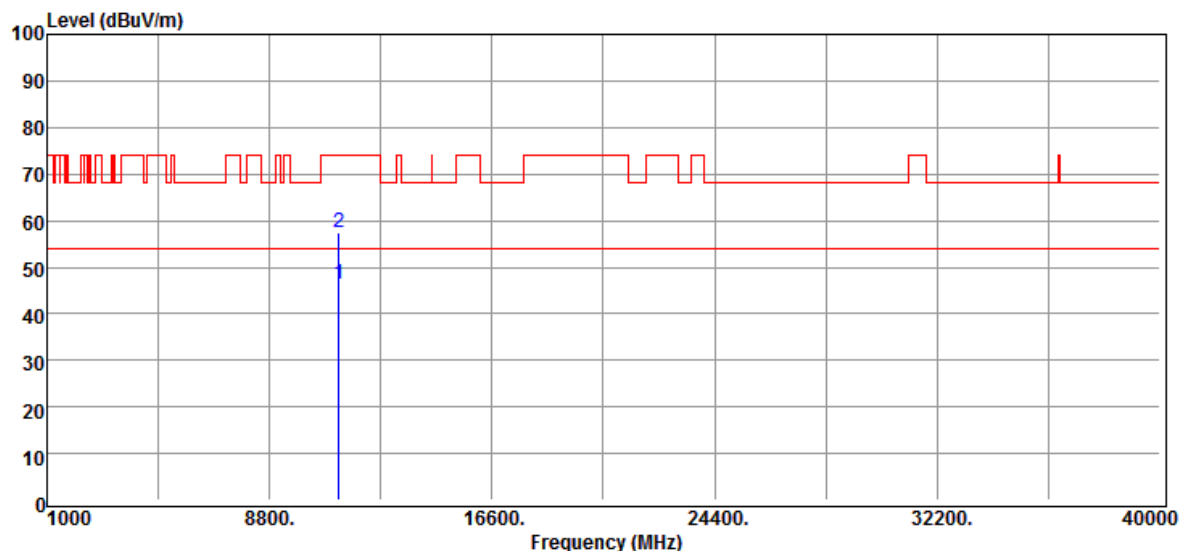
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Operation Mode :802.11ac80 / Band 3  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5610 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11220.00	Average	19.99	26.52	46.51	54.00	-7.49
11220.00	Peak	30.80	26.52	57.32	74.00	-16.68

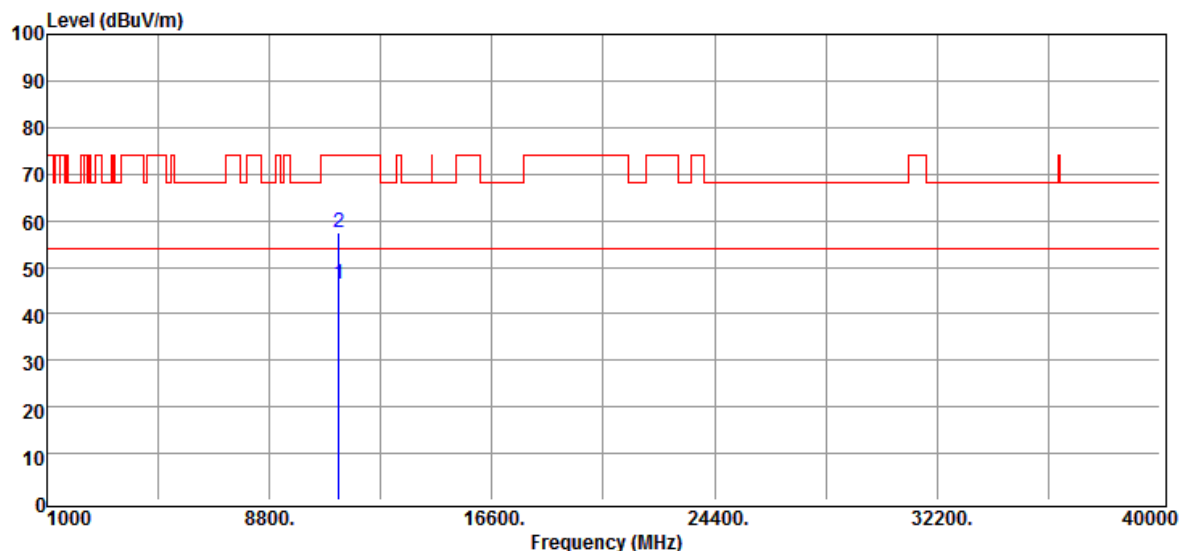
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Operation Mode :802.11ac80 / Band 3  
 Test Mode :TX CH MID  
 EUT Pol :H Plan  
 Test Channel :5610 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11220.00	Average	20.02	26.52	46.54	54.00	-7.46
11220.00	Peak	30.97	26.52	57.49	74.00	-16.51

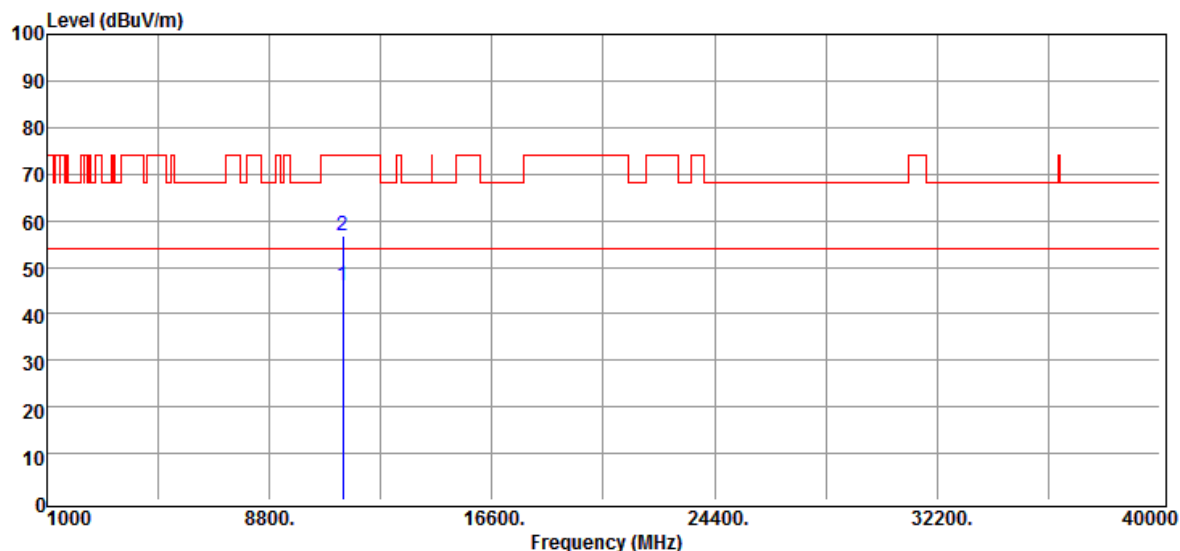
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Operation Mode :802.11ac80 / Band 3  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5690 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



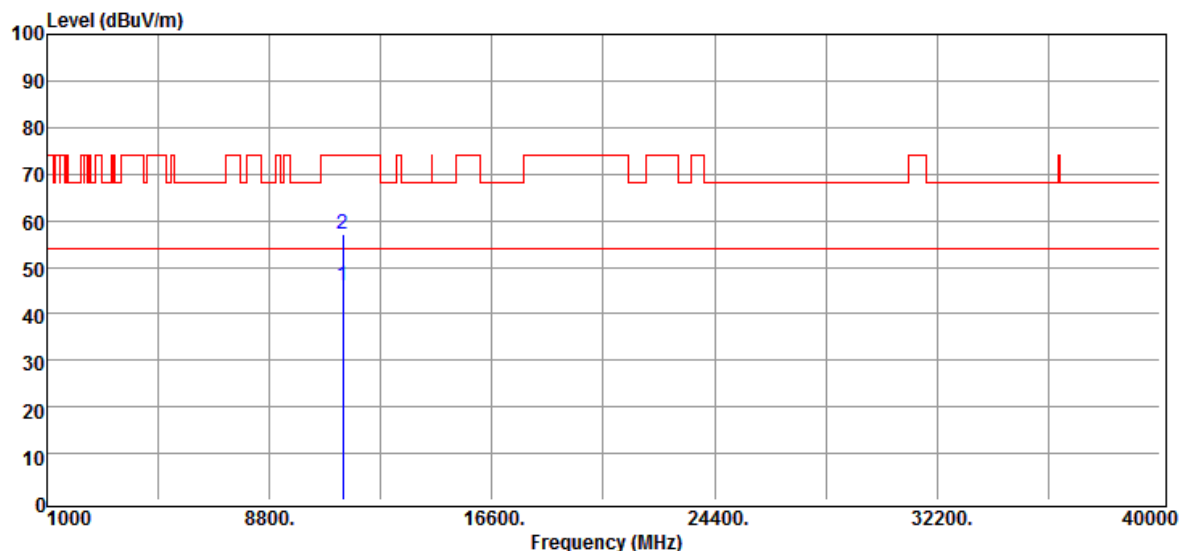
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11380.00	Average	19.92	26.11	46.03	54.00	-7.97
11380.00	Peak	30.51	26.11	56.62	74.00	-17.38

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Operation Mode :802.11ac80 / Band 3  
 Test Mode :TX CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5690 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11380.00	Average	19.90	26.11	46.01	54.00	-7.99
11380.00	Peak	30.90	26.11	57.01	74.00	-16.99

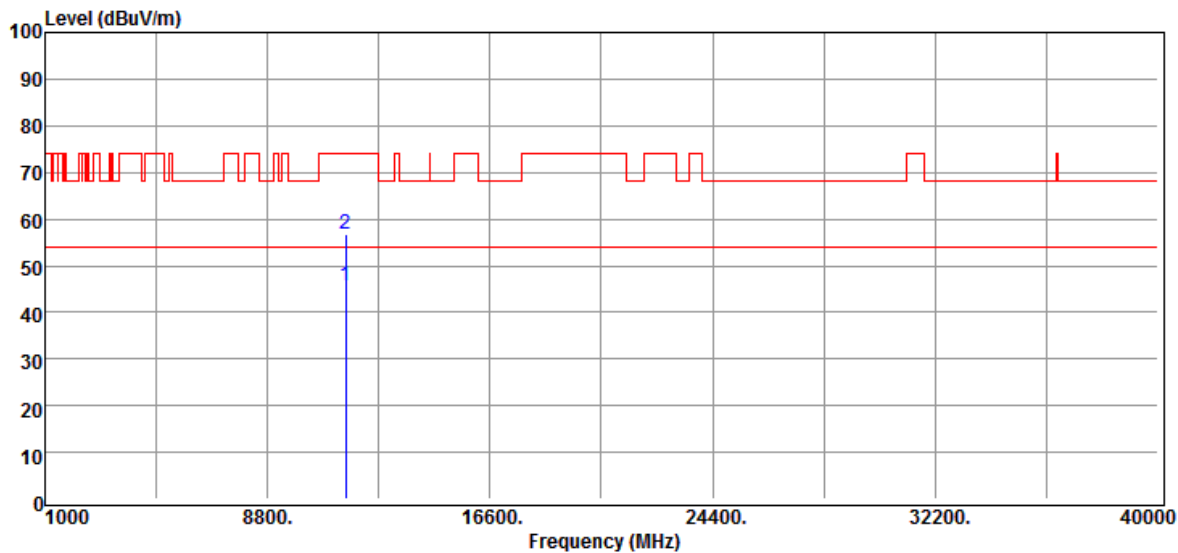
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## Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5725~5850 MHz

Operation Mode	:802.11ac80 / Band 4	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5775 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11550.00	Average	19.88	25.85	45.73	54.00	-8.27
11550.00	Peak	30.78	25.85	56.63	74.00	-17.37

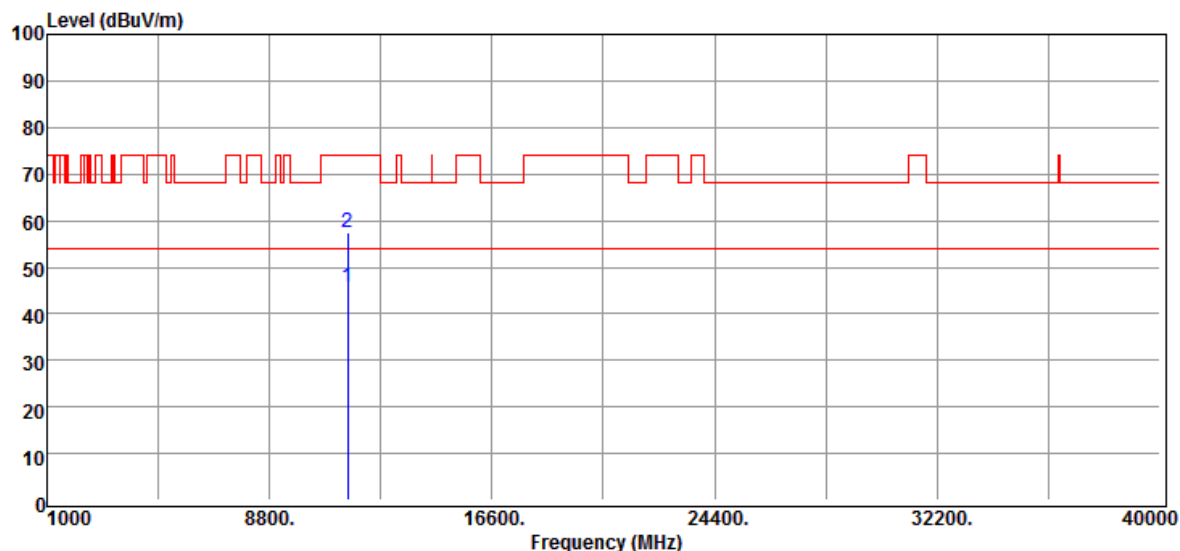
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Operation Mode :802.11ac80 / Band 4  
 Test Mode :TX CH LOW  
 EUT Pol :H Plan  
 Test Channel :5775 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11550.00	Average	19.98	25.85	45.83	54.00	-8.17
11550.00	Peak	31.64	25.85	57.49	74.00	-16.51

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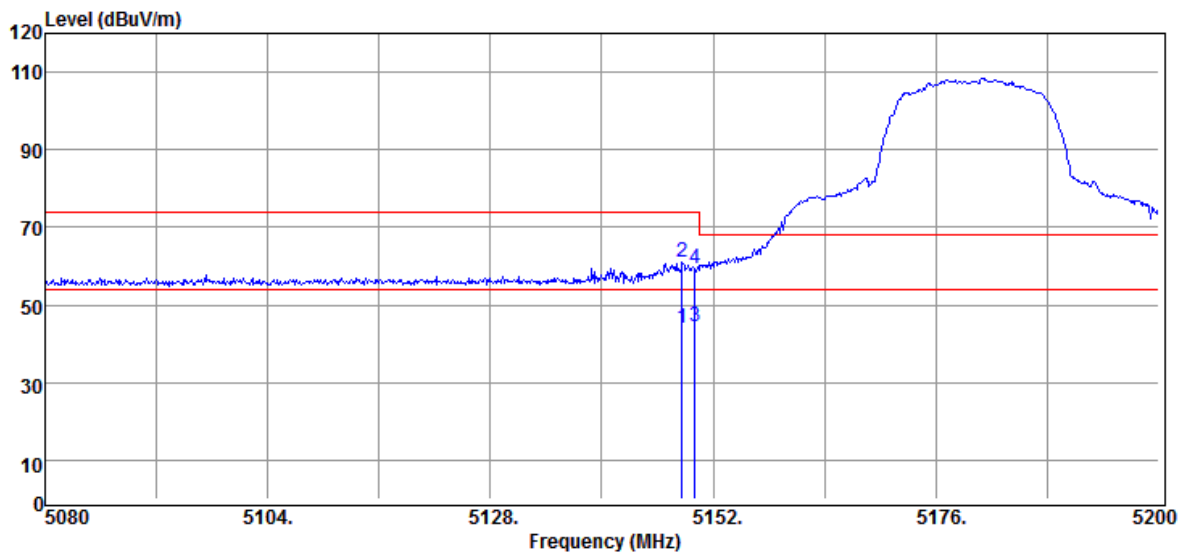


## Band edge falling to restricted band

### 802.11a mode

Operation Mode :802.11a / Band 1  
Test Mode :BE CH LOW  
EUT Pol :H Plan  
Test Channel :5180 MHz

Test Date :2018-08-07  
Temp./Humi. :25/60  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5148.64	Average	30.59	13.63	44.22	54.00	-9.78
5148.64	Peak	47.49	13.63	61.12	74.00	-12.88
5150.00	Average	30.83	13.65	44.48	54.00	-9.52
5150.00	Peak	45.56	13.65	59.21	74.00	-14.79

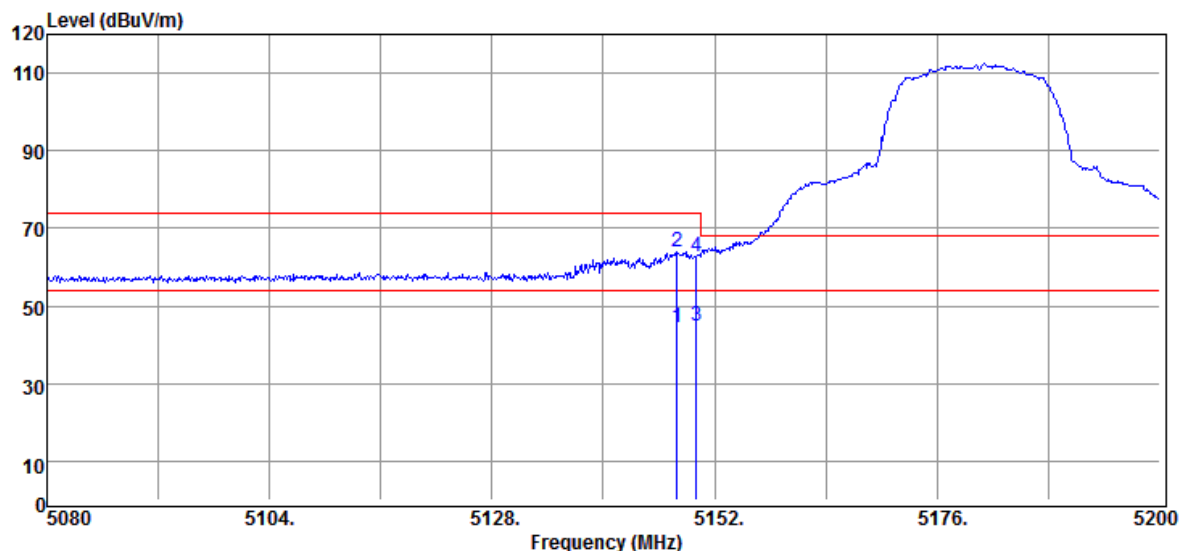
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Operation Mode :802.11a / Band 1  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5180 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5147.92	Average	30.76	13.63	44.39	54.00	-9.61
5147.92	Peak	50.47	13.63	64.10	74.00	-9.90
5150.00	Average	31.30	13.65	44.95	54.00	-9.05
5150.00	Peak	49.03	13.65	62.68	74.00	-11.32

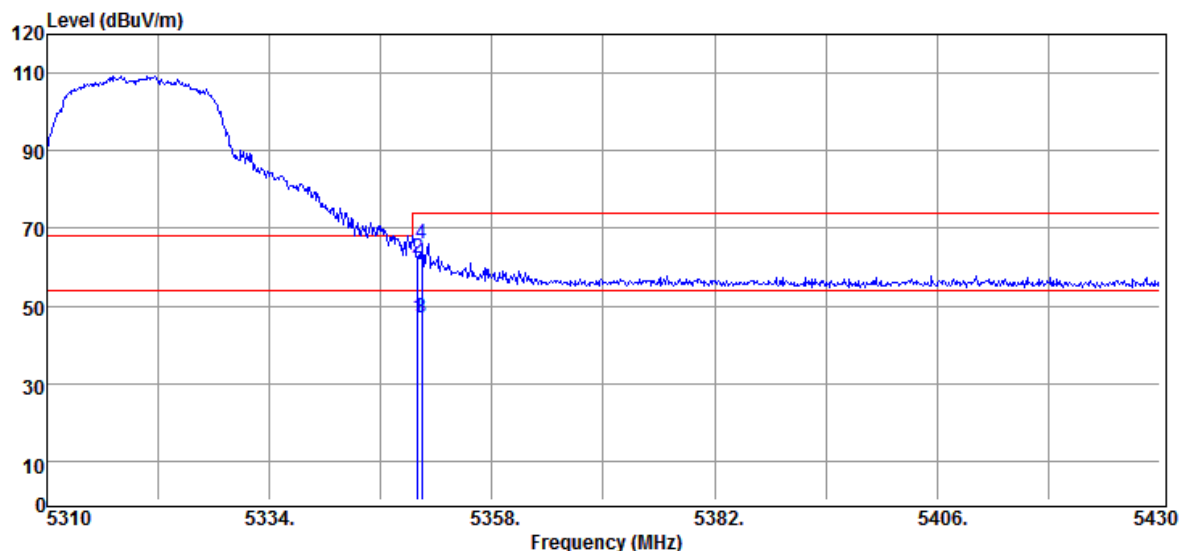
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Operation Mode :802.11a / Band 2  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5320 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5350.00	Average	32.59	14.16	46.75	54.00	-7.25
5350.00	Peak	47.93	14.16	62.09	74.00	-11.91
5350.44	Average	32.63	14.17	46.80	54.00	-7.20
5350.44	Peak	51.90	14.17	66.07	74.00	-7.93

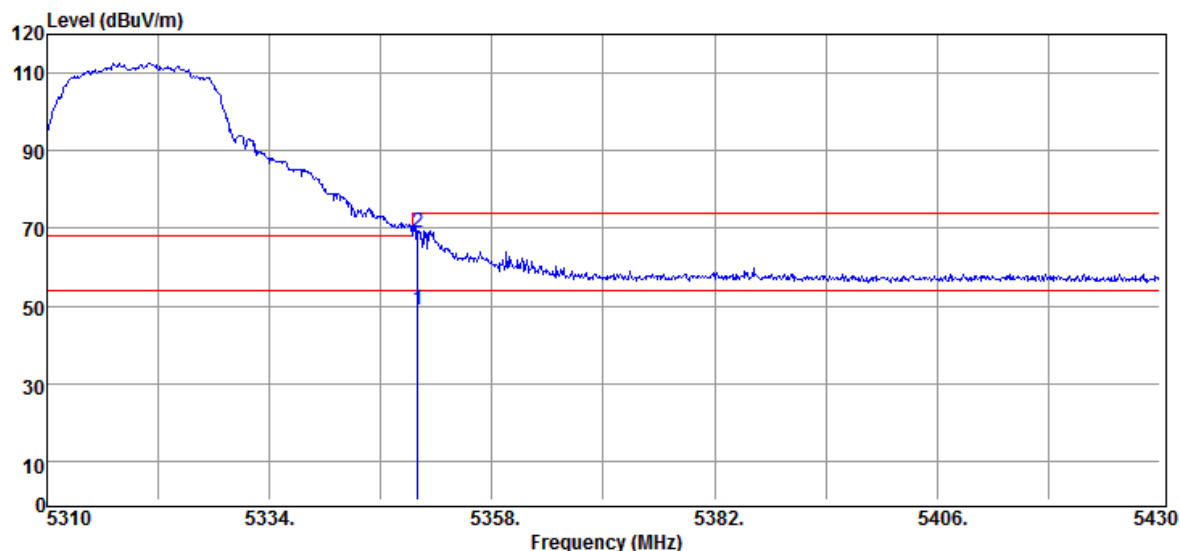
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Operation Mode :802.11a / Band 2  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5320 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5350.00	Average	34.66	14.16	48.82	54.00	-5.18
5350.00	Peak	54.80	14.16	68.96	74.00	-5.04

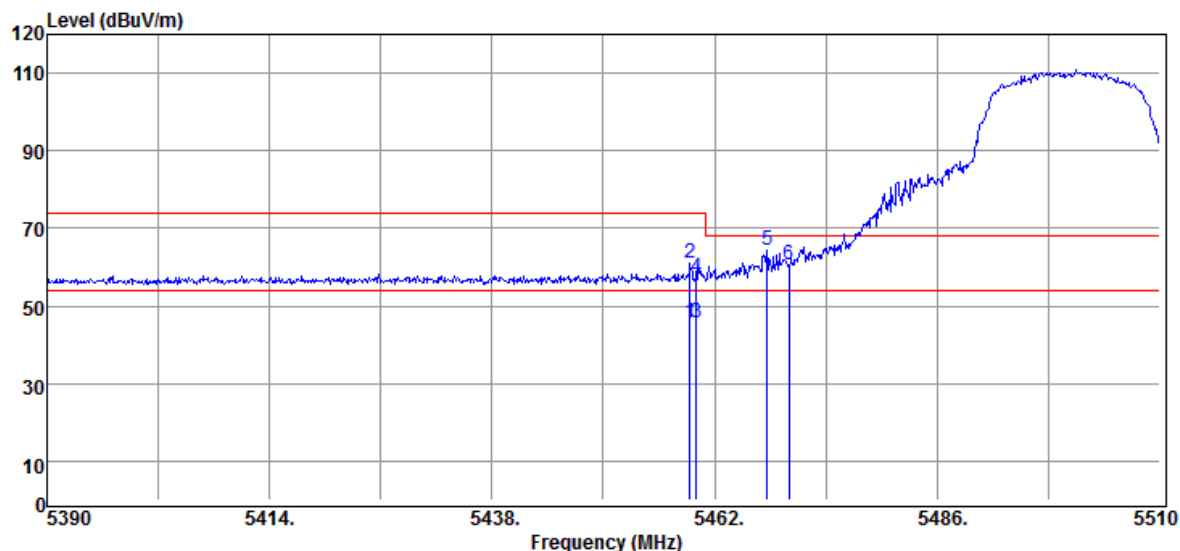
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Operation Mode :802.11a / Band 3  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5500 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5459.36	Average	31.22	14.31	45.53	54.00	-8.47
5459.36	Peak	46.57	14.31	60.88	74.00	-13.12
5460.00	Average	31.17	14.31	45.48	54.00	-8.52
5460.00	Peak	43.15	14.31	57.46	74.00	-16.54
5467.64	Peak	50.07	14.32	64.39	68.20	-3.81
5470.00	Peak	46.33	14.31	60.64	68.20	-7.56

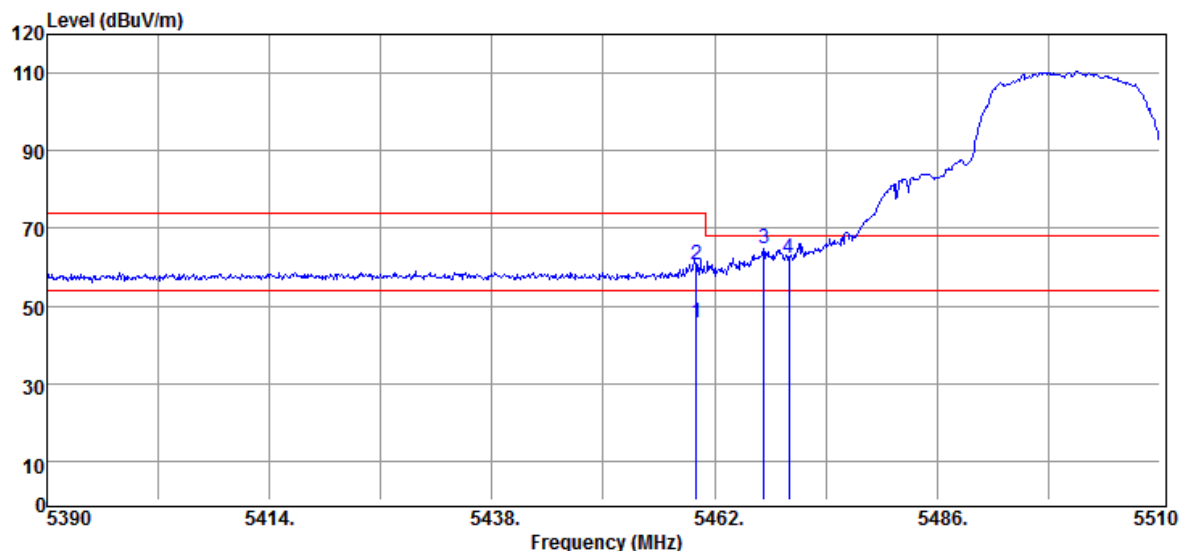
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Operation Mode :802.11a / Band 3  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5500 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5460.00	Average	31.43	14.31	45.74	54.00	-8.26
5460.00	Peak	46.19	14.31	60.50	74.00	-13.50
5467.28	Peak	50.53	14.32	64.85	68.20	-3.35
5470.04	Peak	47.88	14.31	62.19	68.20	-6.01

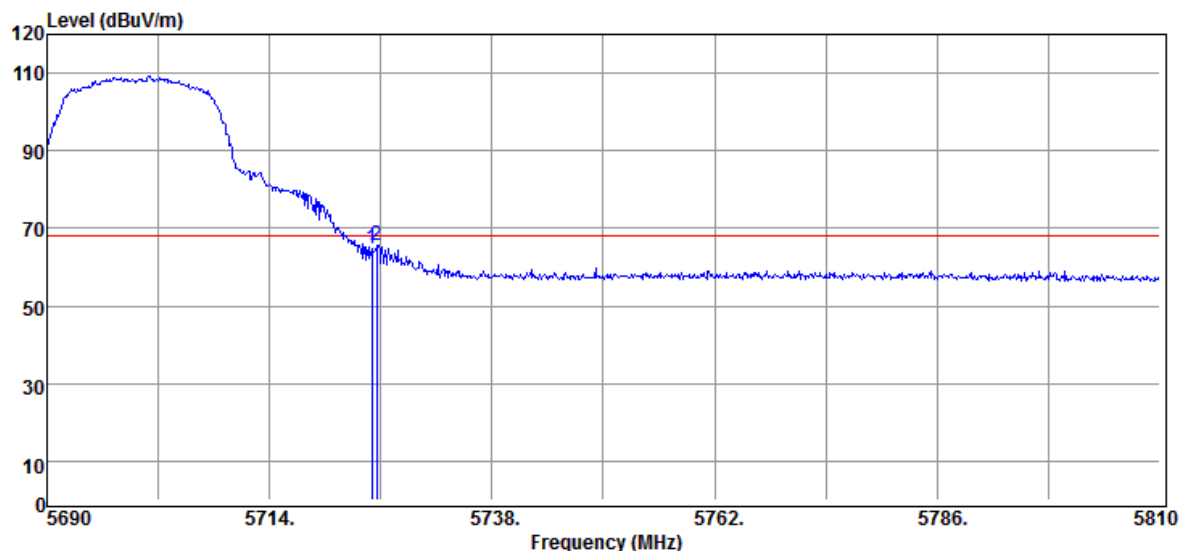
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Operation Mode :802.11a / Band 3  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5700 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	50.30	14.50	64.80	68.20	-3.40
5725.52	Peak	51.03	14.50	65.53	68.20	-2.67

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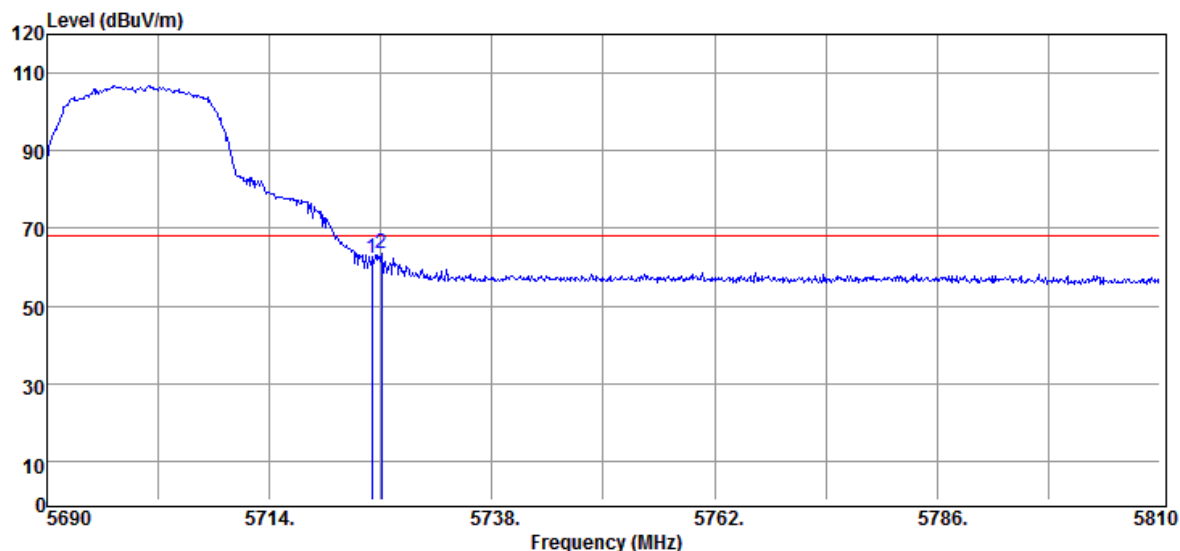
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Operation Mode :802.11a / Band 3  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5700 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



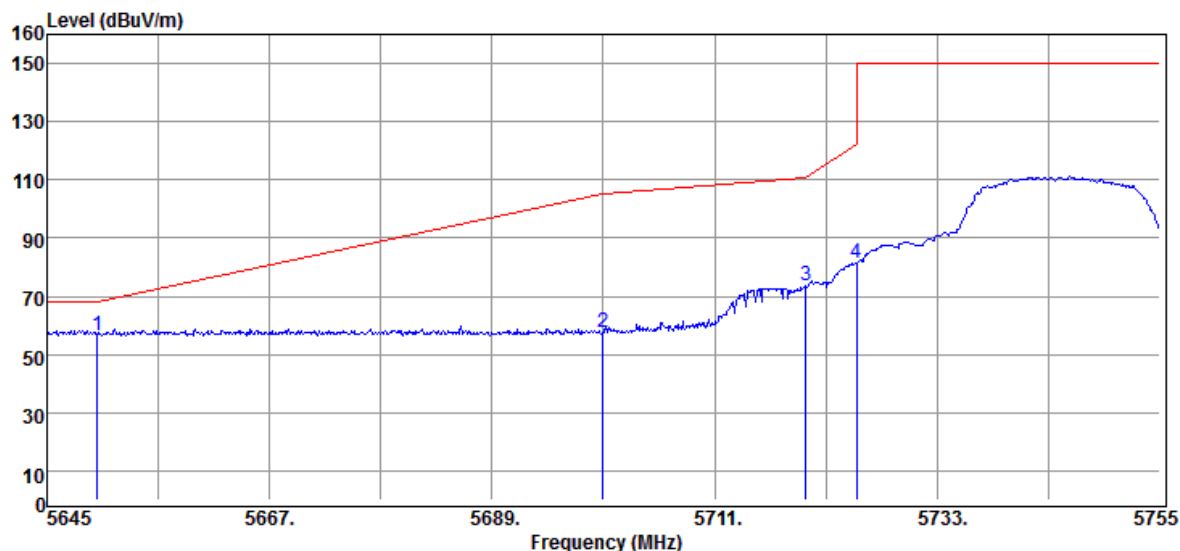
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	47.95	14.50	62.45	68.20	-5.75
5726.12	Peak	49.16	14.50	63.66	68.20	-4.54

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Operation Mode :802.11a / Band 4  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5745 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5650.00	Peak	42.16	14.42	56.58	68.20	-11.62
5700.00	Peak	43.11	14.47	57.58	105.20	-47.62
5720.00	Peak	59.12	14.49	73.61	110.80	-37.19
5725.00	Peak	66.77	14.50	81.27	122.20	-40.93

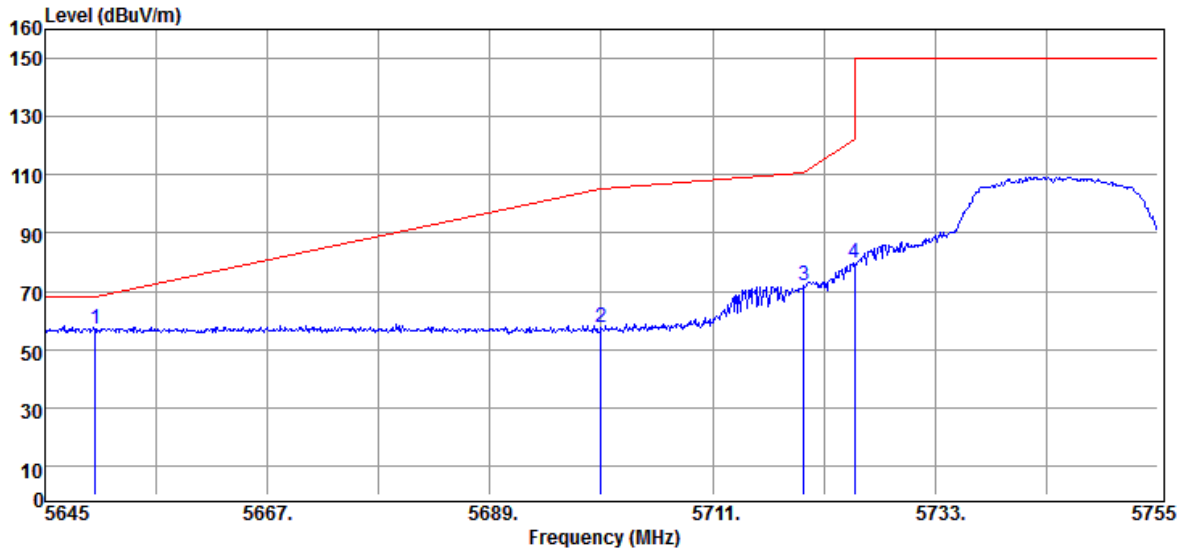
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Operation Mode :802.11a / Band 4  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5745 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5650.00	Peak	42.61	14.42	57.03	68.20	-11.17
5700.00	Peak	42.87	14.47	57.34	105.20	-47.86
5720.00	Peak	57.33	14.49	71.82	110.80	-38.98
5725.00	Peak	65.20	14.50	79.70	122.20	-42.50

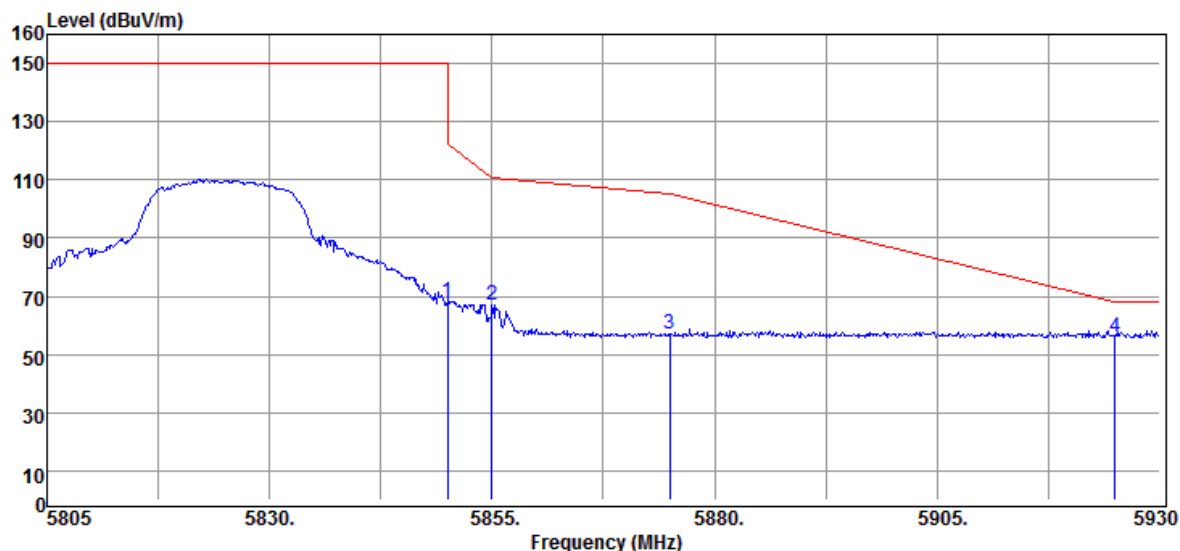
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Operation Mode :802.11a / Band 4  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5825 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5850.00	Peak	53.34	14.72	68.06	122.20	-54.14
5855.00	Peak	52.14	14.73	66.87	110.80	-43.93
5875.00	Peak	42.16	14.78	56.94	105.20	-48.26
5925.00	Peak	41.27	14.91	56.18	68.20	-12.02

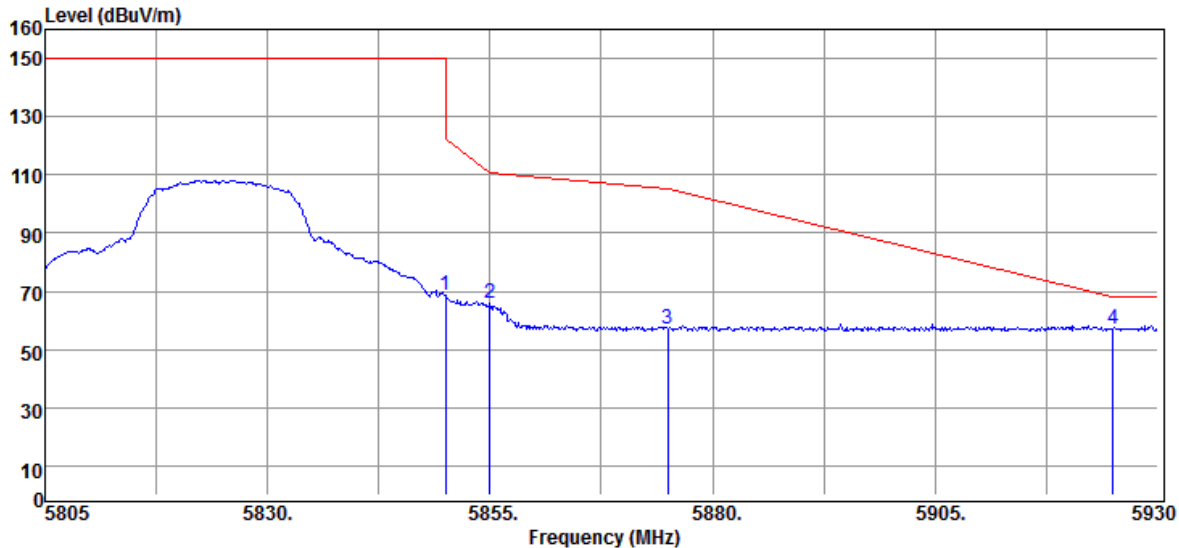
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Operation Mode :802.11a / Band 4  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5825 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5850.00	Peak	53.95	14.72	68.67	122.20	-53.53
5855.00	Peak	51.13	14.73	65.86	110.80	-44.94
5875.00	Peak	42.20	14.78	56.98	105.20	-48.22
5925.00	Peak	42.10	14.91	57.01	68.20	-11.19

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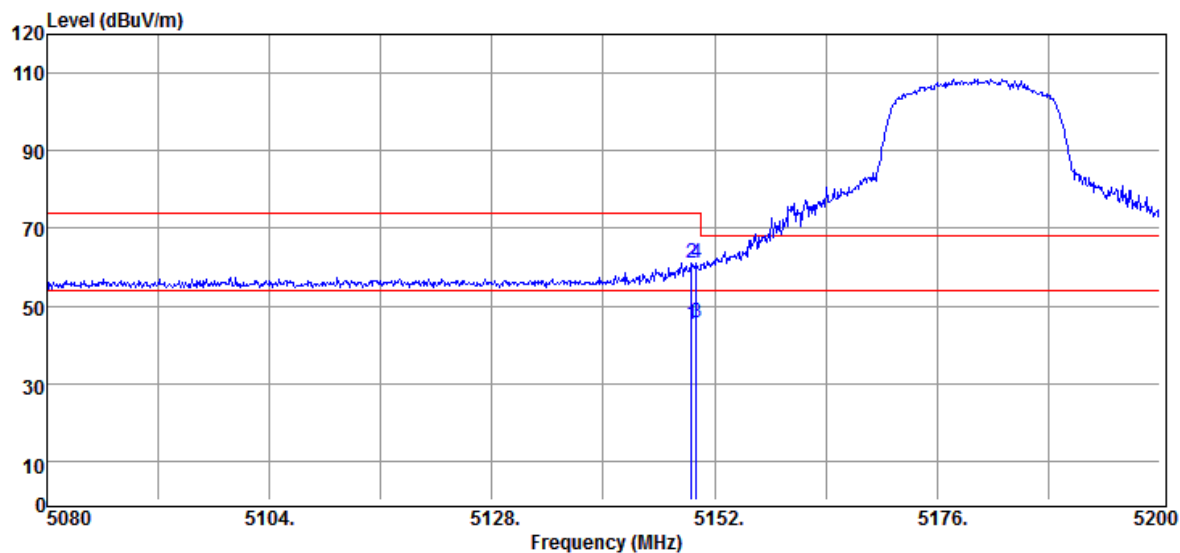
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## 802.11n20 HT mode

Operation Mode :802.11n20 / Band 1  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5180 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5149.48	Average	31.74	13.64	45.38	54.00	-8.62
5149.48	Peak	47.33	13.64	60.97	74.00	-13.03
5150.00	Average	31.89	13.65	45.54	54.00	-8.46
5150.00	Peak	47.26	13.65	60.91	74.00	-13.09

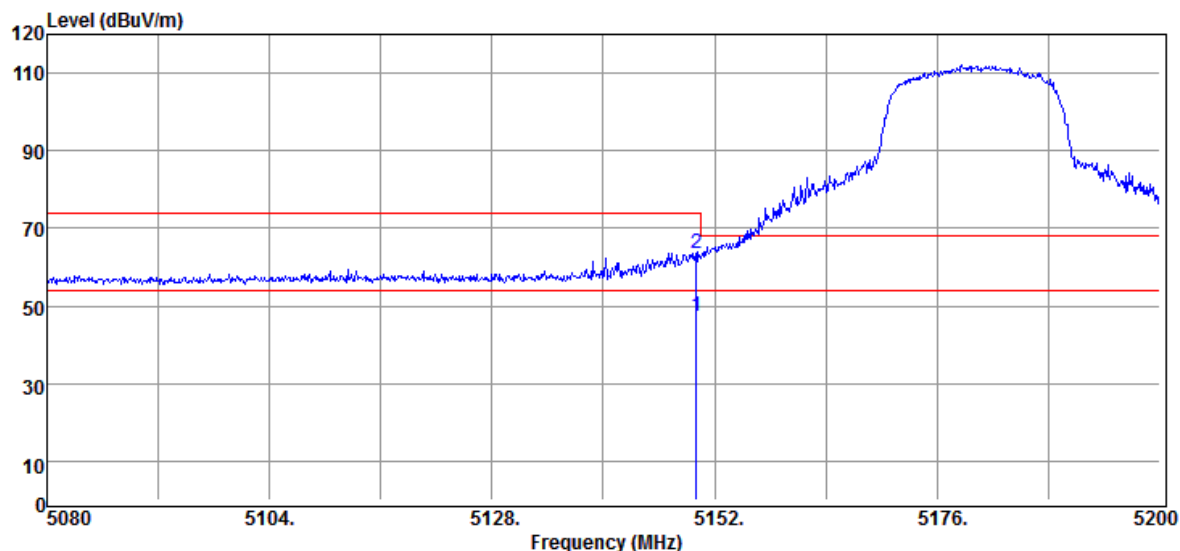
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Operation Mode :802.11n20 / Band 1  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5180 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5150.00	Average	33.63	13.65	47.28	54.00	-6.72
5150.00	Peak	49.87	13.65	63.52	74.00	-10.48

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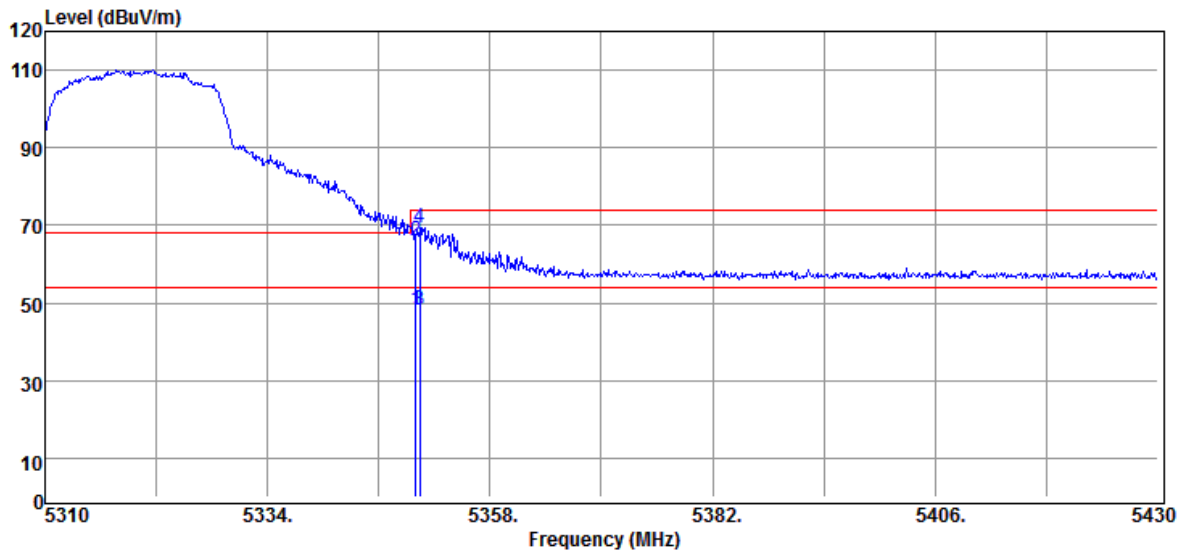
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Operation Mode :802.11n20 / Band 2  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5320 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5350.00	Average	33.89	14.16	48.05	54.00	-5.95
5350.00	Peak	51.96	14.16	66.12	74.00	-7.88
5350.44	Average	33.80	14.17	47.97	54.00	-6.03
5350.44	Peak	55.24	14.17	69.41	74.00	-4.59

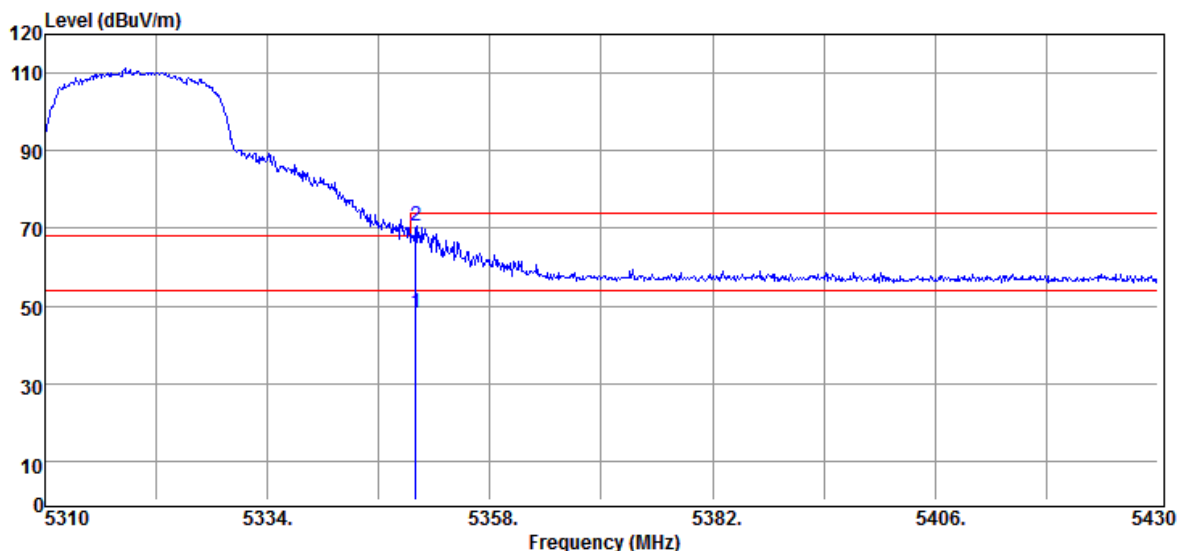
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Operation Mode :802.11n20 / Band 2  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5320 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5350.00	Average	34.03	14.16	48.19	54.00	-5.81
5350.00	Peak	56.49	14.16	70.65	74.00	-3.35

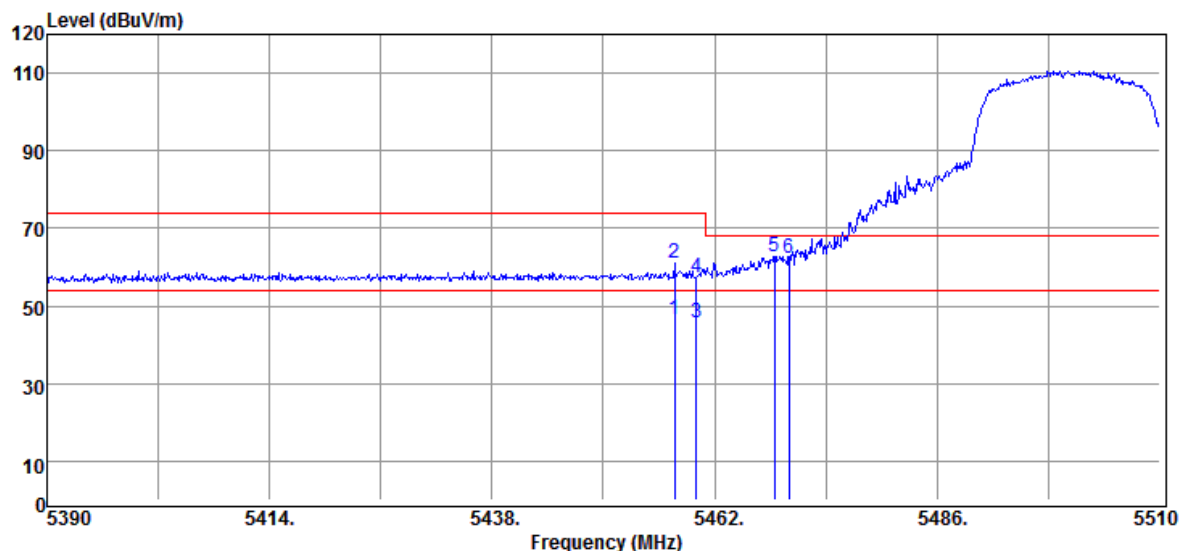
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Operation Mode :802.11n20 / Band 3  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5500 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5457.68	Average	32.14	14.31	46.45	54.00	-7.55
5457.68	Peak	46.71	14.31	61.02	74.00	-12.98
5460.00	Average	31.52	14.31	45.83	54.00	-8.17
5460.00	Peak	43.09	14.31	57.40	74.00	-16.60
5468.48	Peak	48.47	14.32	62.79	68.20	-5.41
5470.00	Peak	48.15	14.31	62.46	68.20	-5.74

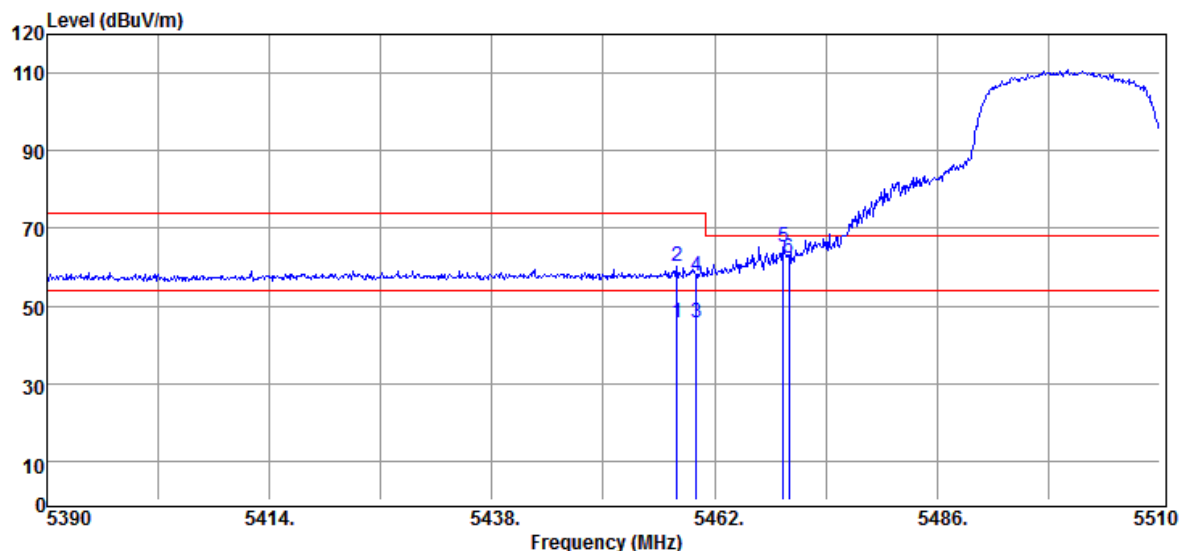
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Operation Mode :802.11n20 / Band 3  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5500 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5457.92	Average	31.36	14.31	45.67	54.00	-8.33
5457.92	Peak	45.83	14.31	60.14	74.00	-13.86
5460.00	Average	31.46	14.31	45.77	54.00	-8.23
5460.00	Peak	43.60	14.31	57.91	74.00	-16.09
5469.44	Peak	50.80	14.31	65.11	68.20	-3.09
5470.00	Peak	48.06	14.31	62.37	68.20	-5.83

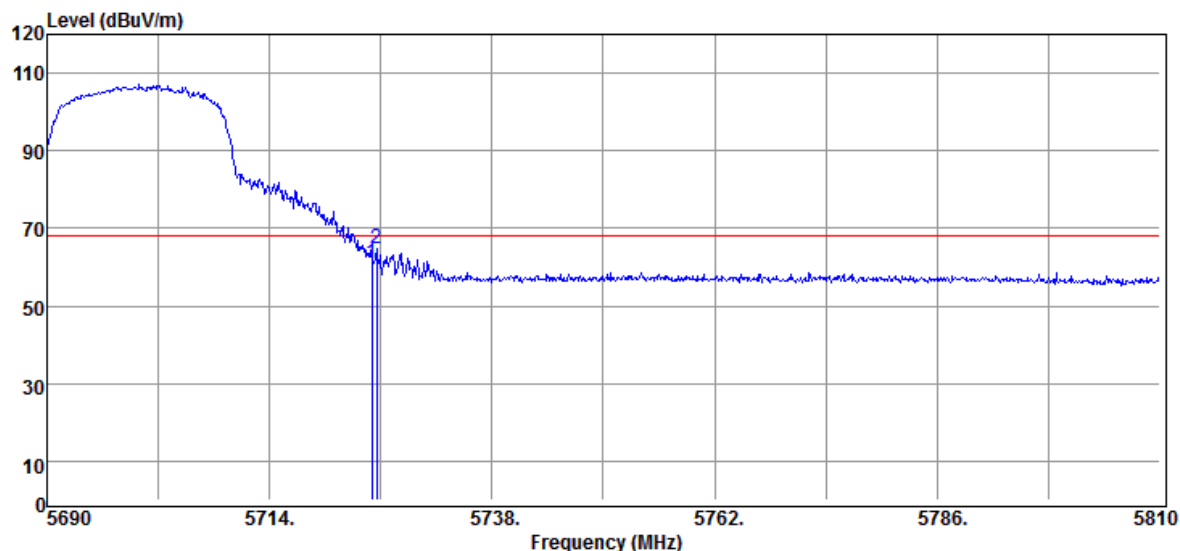
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Operation Mode :802.11n20 / Band 3  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5700 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



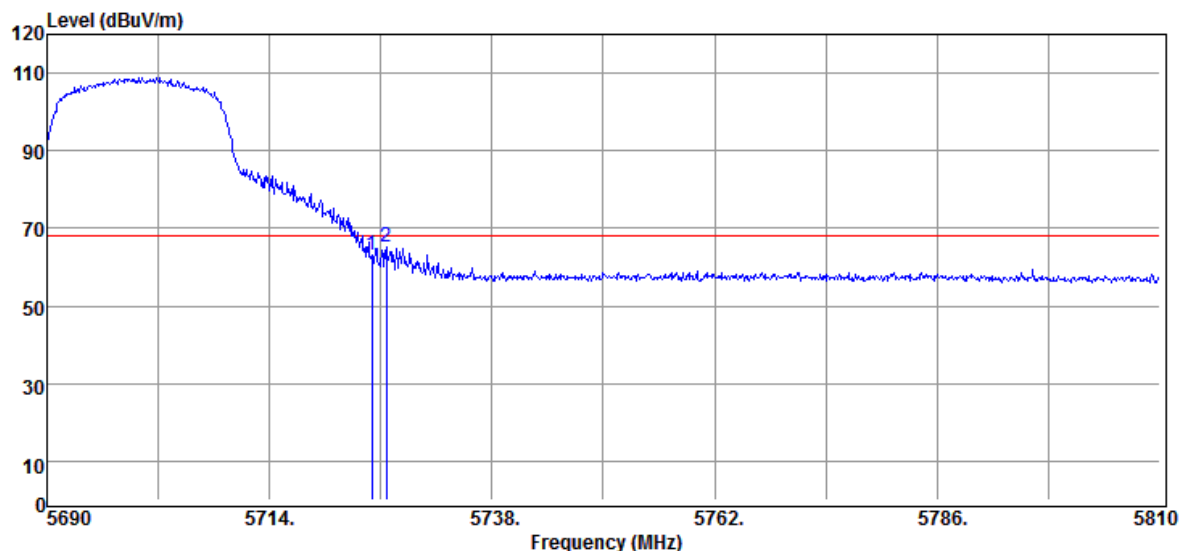
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	46.51	14.50	61.01	68.20	-7.19
5725.52	Peak	50.48	14.50	64.98	68.20	-3.22

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Operation Mode :802.11n20 / Band 3  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5700 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



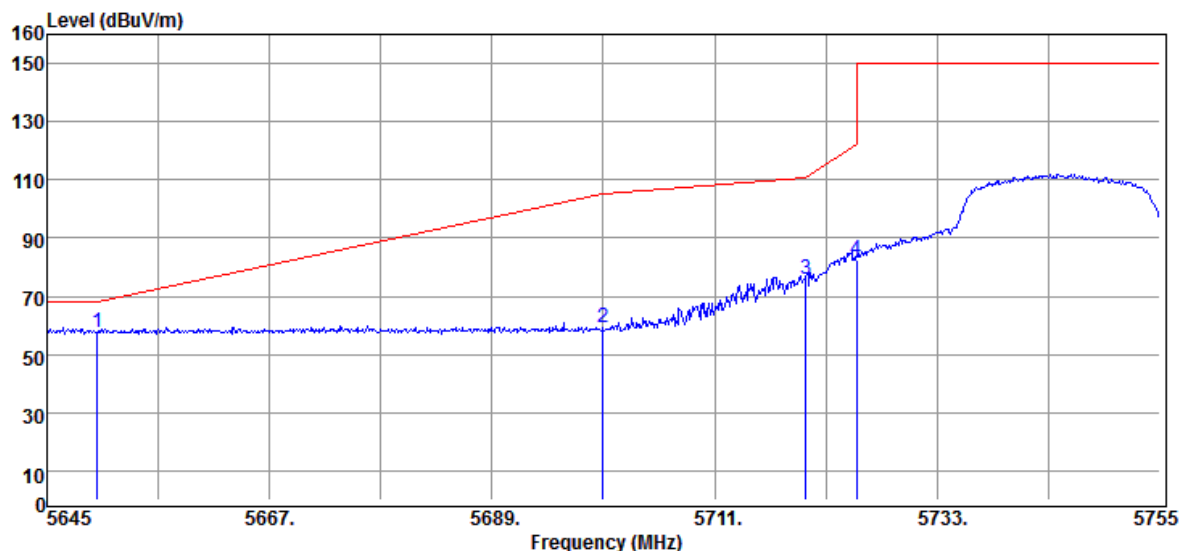
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	48.55	14.50	63.05	68.20	-5.15
5726.60	Peak	50.83	14.50	65.33	68.20	-2.87

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Operation Mode :802.11n20 / Band 4  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5745 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5650.00	Peak	42.93	14.42	57.35	68.20	-10.85
5700.00	Peak	44.57	14.47	59.04	105.20	-46.16
5720.00	Peak	61.59	14.49	76.08	110.80	-34.72
5725.00	Peak	67.94	14.50	82.44	122.20	-39.76

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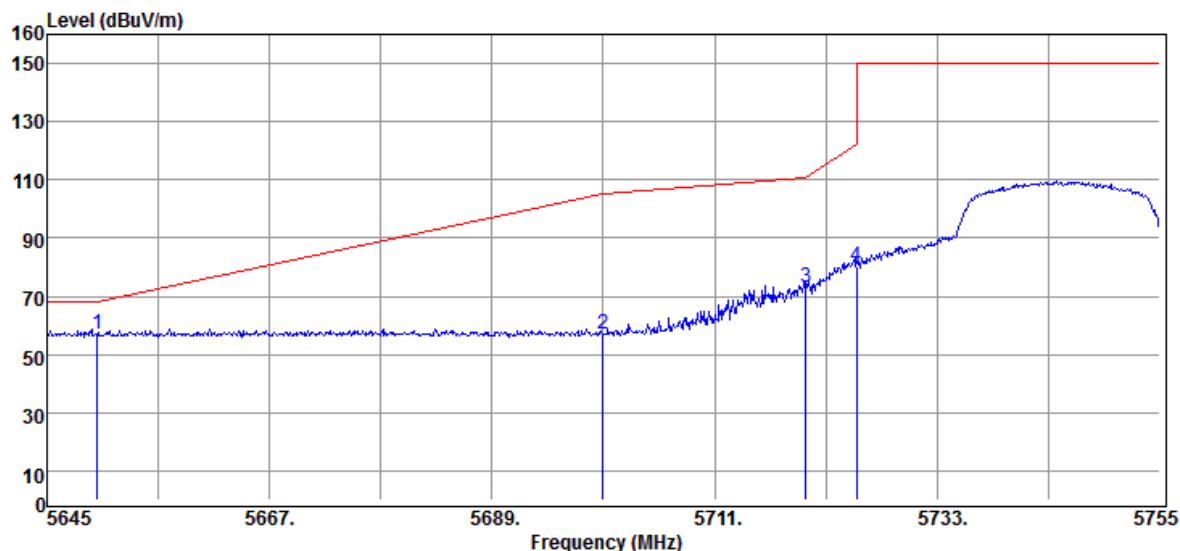
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Operation Mode :802.11n20 / Band 4  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5745 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5650.00	Peak	42.55	14.42	56.97	68.20	-11.23
5700.00	Peak	42.52	14.47	56.99	105.20	-48.21
5720.00	Peak	58.54	14.49	73.03	110.80	-37.77
5725.00	Peak	65.64	14.50	80.14	122.20	-42.06

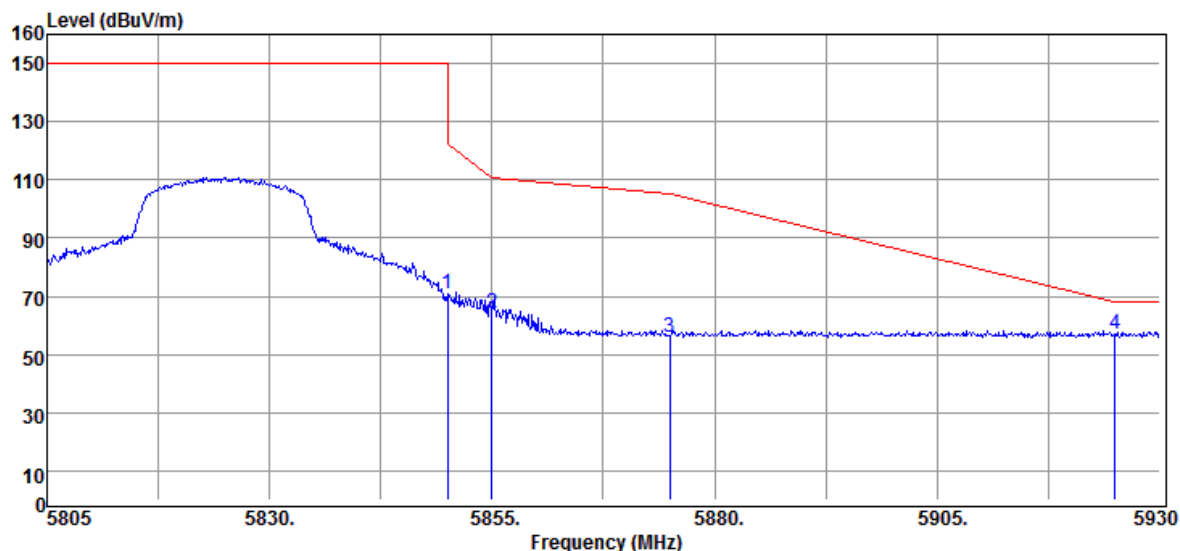
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Operation Mode :802.11n20 / Band 4  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5825 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5850.00	Peak	56.32	14.72	71.04	122.20	-51.16
5855.00	Peak	49.46	14.73	64.19	110.80	-46.61
5875.00	Peak	41.33	14.78	56.11	105.20	-49.09
5925.00	Peak	41.95	14.91	56.86	68.20	-11.34

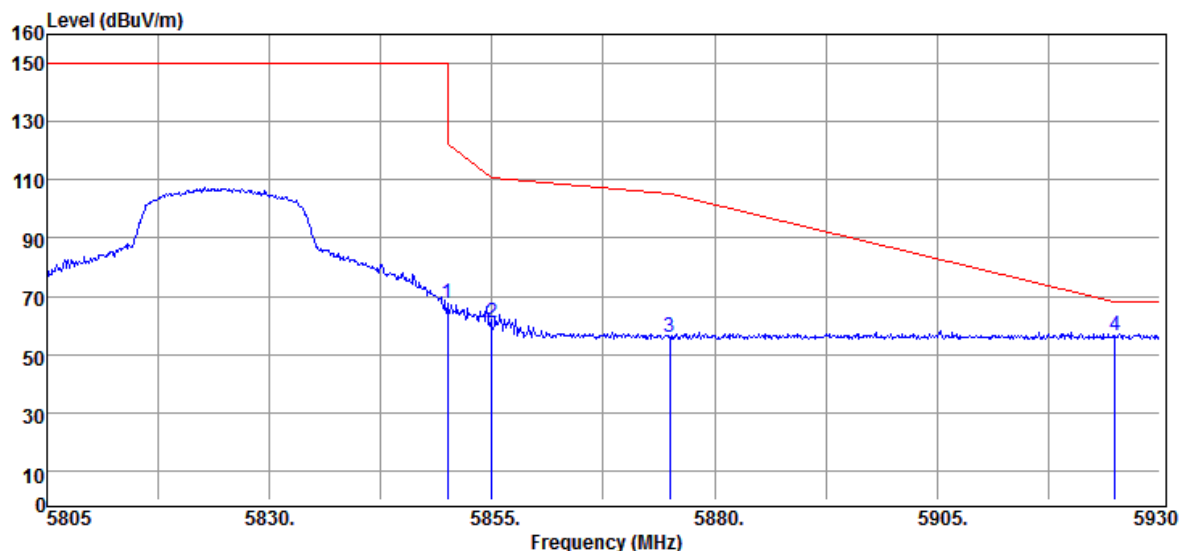
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Operation Mode :802.11n20 / Band 4  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5825 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5850.00	Peak	52.93	14.72	67.65	122.20	-54.55
5855.00	Peak	46.08	14.73	60.81	110.80	-49.99
5875.00	Peak	41.07	14.78	55.85	105.20	-49.35
5925.00	Peak	41.42	14.91	56.33	68.20	-11.87

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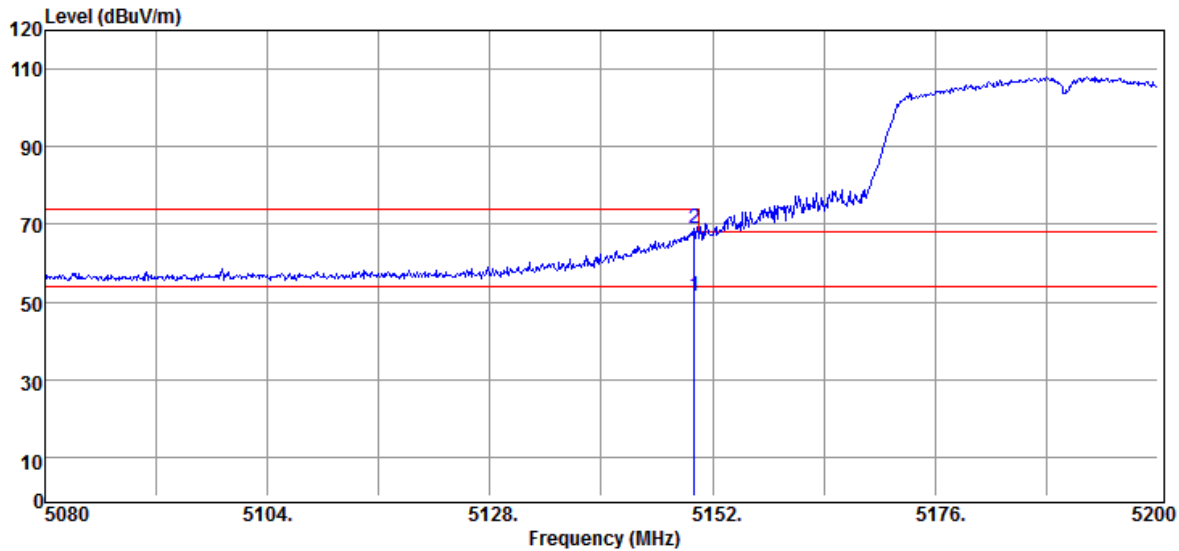
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## 802.11n40 HT mode

Operation Mode :802.11n40 / Band 1  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5190 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5150.00	Average	37.73	13.65	51.38	54.00	-2.62
5150.00	Peak	55.31	13.65	68.96	74.00	-5.04

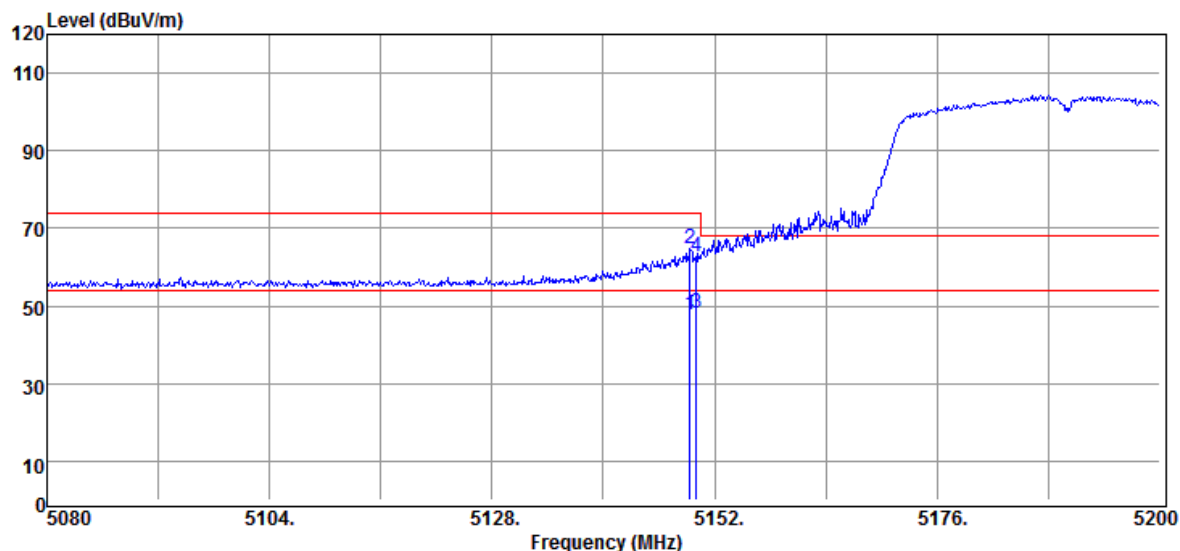
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Operation Mode :802.11n40 / Band 1  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5190 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5149.36	Average	34.15	13.64	47.79	54.00	-6.21
5149.36	Peak	51.27	13.64	64.91	74.00	-9.09
5150.00	Average	34.41	13.65	48.06	54.00	-5.94
5150.00	Peak	49.20	13.65	62.85	74.00	-11.15

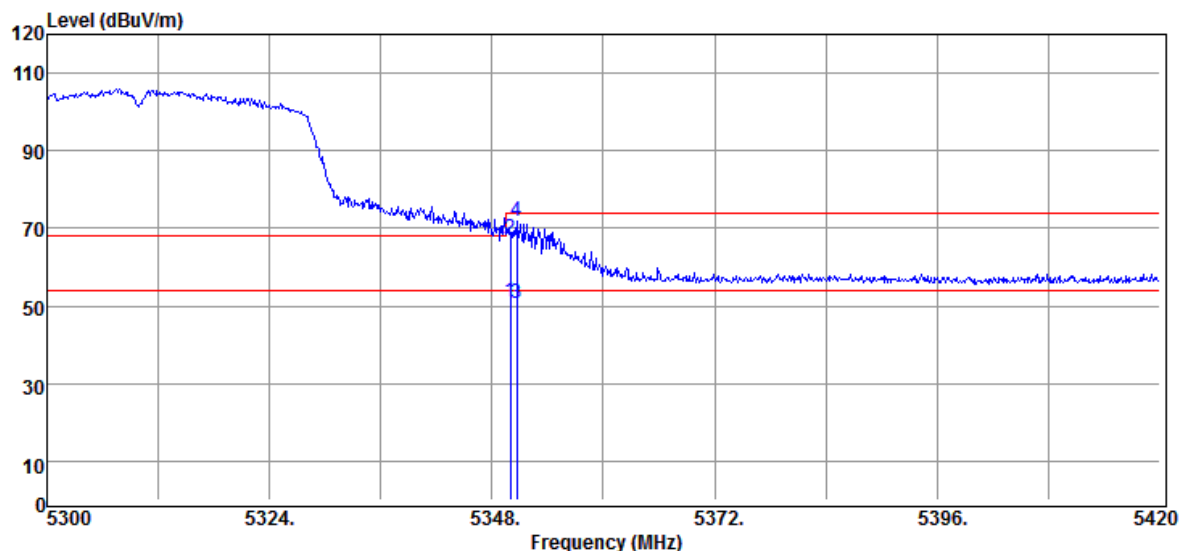
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Operation Mode :802.11n40 / Band 2  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5310 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5350.00	Average	36.92	14.16	51.08	54.00	-2.92
5350.00	Peak	52.91	14.16	67.07	74.00	-6.93
5350.64	Average	36.42	14.17	50.59	54.00	-3.41
5350.64	Peak	57.64	14.17	71.81	74.00	-2.19

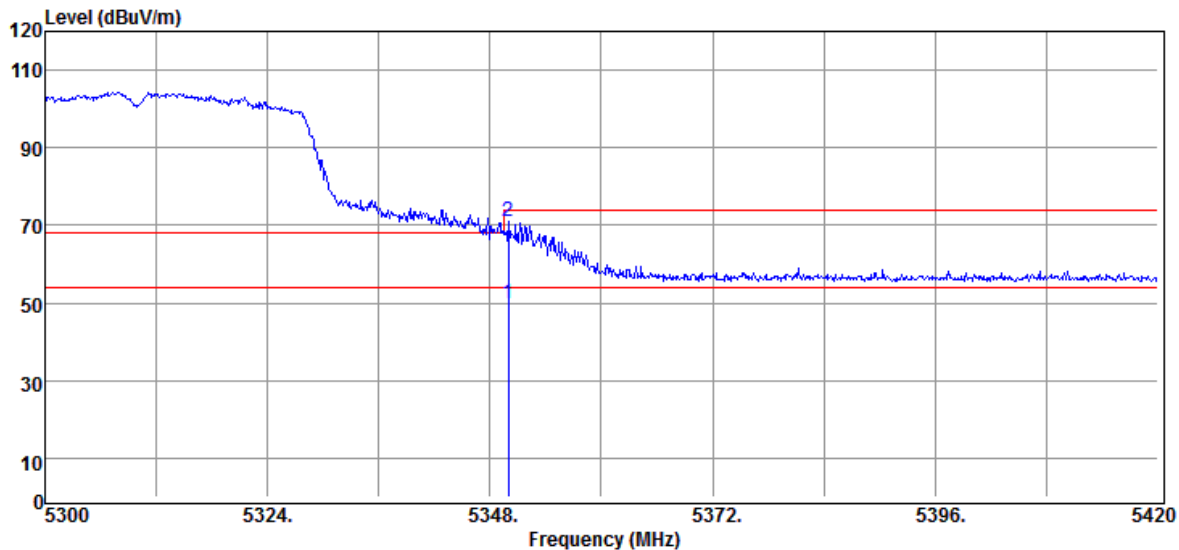
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Operation Mode :802.11n40 / Band 2  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5310 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5350.00	Average	35.61	14.16	49.77	54.00	-4.23
5350.00	Peak	56.94	14.16	71.10	74.00	-2.90

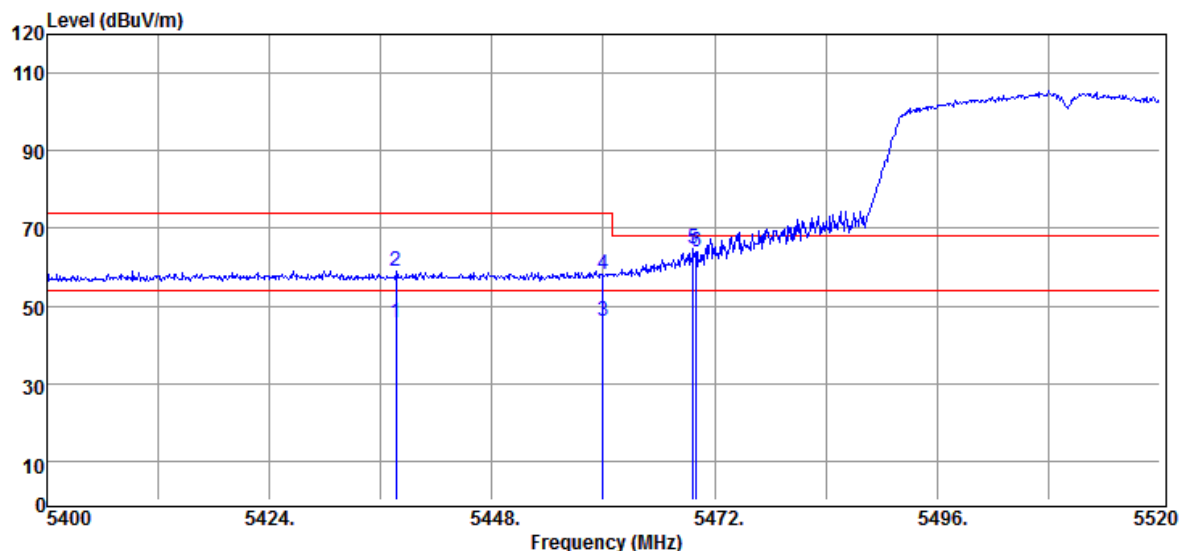
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Operation Mode :802.11n40 / Band 3  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5510 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5437.68	Average	31.27	14.30	45.57	54.00	-8.43
5437.68	Peak	44.67	14.30	58.97	74.00	-15.03
5460.00	Average	31.63	14.31	45.94	54.00	-8.06
5460.00	Peak	43.76	14.31	58.07	74.00	-15.93
5469.72	Peak	50.61	14.31	64.92	68.20	-3.28
5470.00	Peak	49.47	14.31	63.78	68.20	-4.42

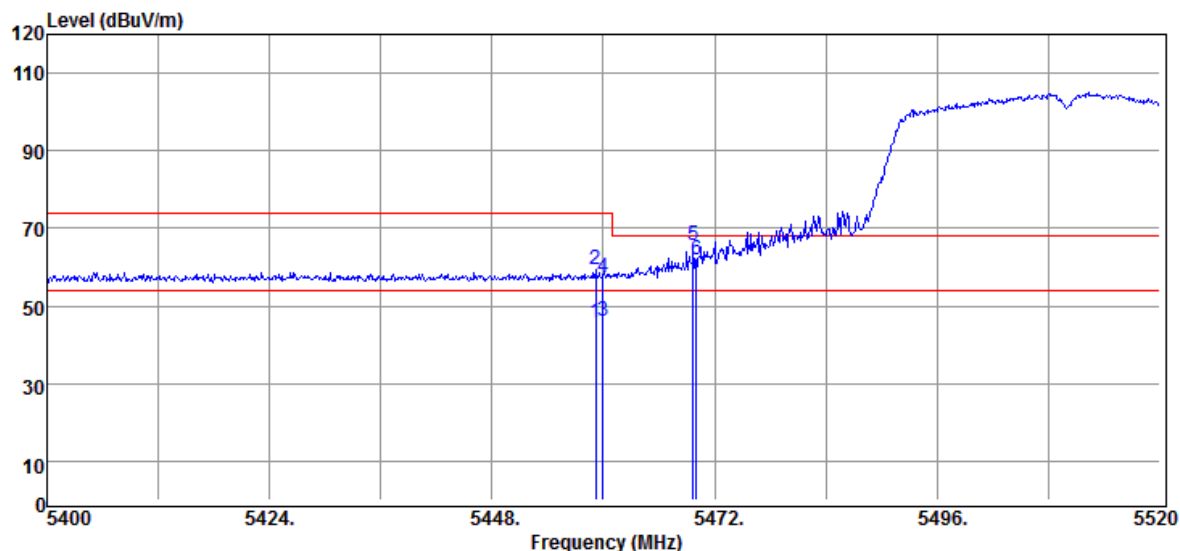
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Operation Mode :802.11n40 / Band 3  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5510 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5459.16	Average	31.55	14.31	45.86	54.00	-8.14
5459.16	Peak	45.02	14.31	59.33	74.00	-14.67
5460.00	Average	31.58	14.31	45.89	54.00	-8.11
5460.00	Peak	43.00	14.31	57.31	74.00	-16.69
5469.72	Peak	51.31	14.31	65.62	68.20	-2.58
5470.00	Peak	47.42	14.31	61.73	68.20	-6.47

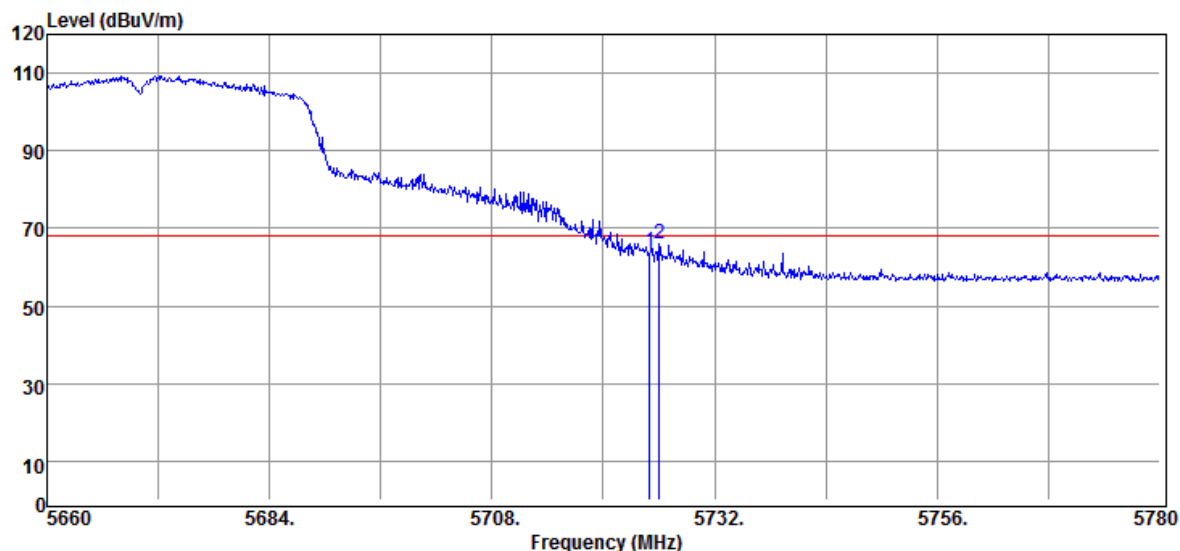
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Operation Mode :802.11n40 / Band 3  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5670 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	49.46	14.50	63.96	68.20	-4.24
5726.00	Peak	51.53	14.50	66.03	68.20	-2.17

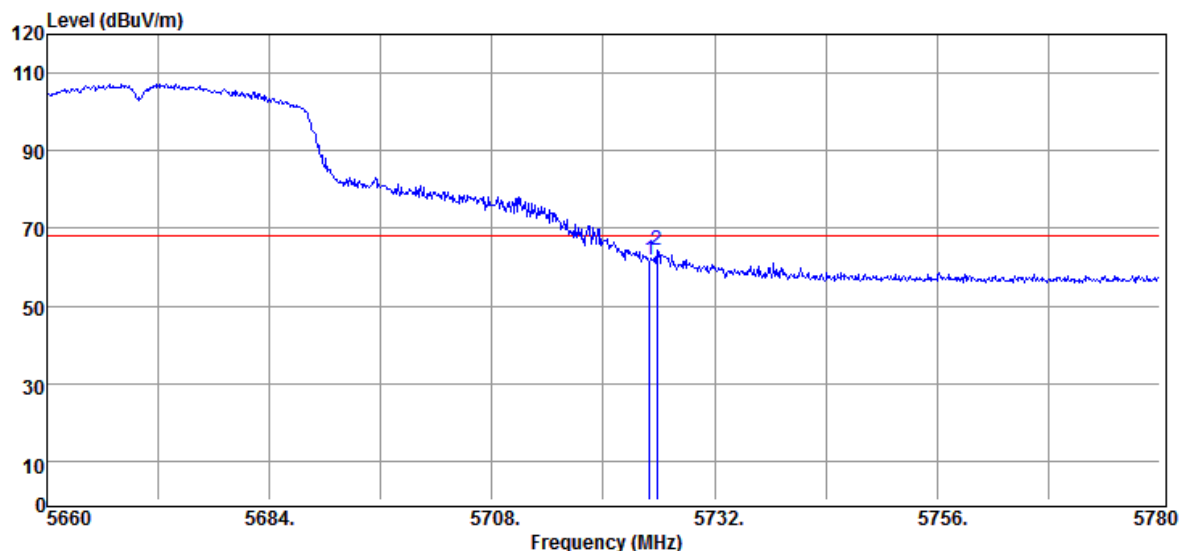
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Operation Mode :802.11n40 / Band 3  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5670 MHz

Test Date :2018-08-07  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



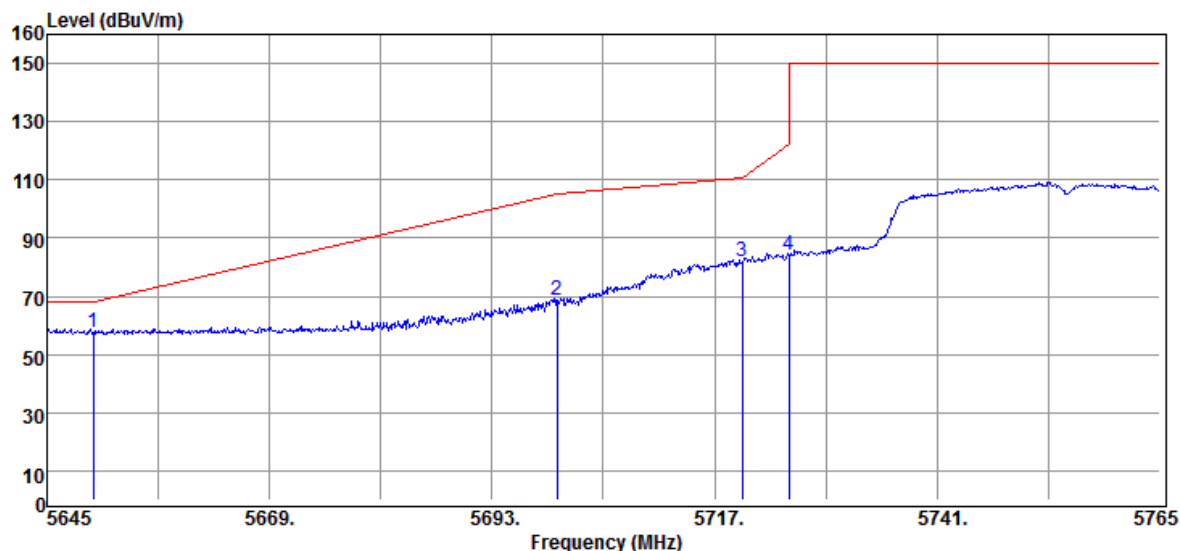
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	47.54	14.50	62.04	68.20	-6.16
5725.76	Peak	50.01	14.50	64.51	68.20	-3.69

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Operation Mode :802.11n40 / Band 4  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5755 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5650.00	Peak	42.92	14.42	57.34	68.20	-10.86
5700.00	Peak	54.23	14.47	68.70	105.20	-36.50
5720.00	Peak	67.33	14.49	81.82	110.80	-28.98
5725.00	Peak	69.44	14.50	83.94	122.20	-38.26

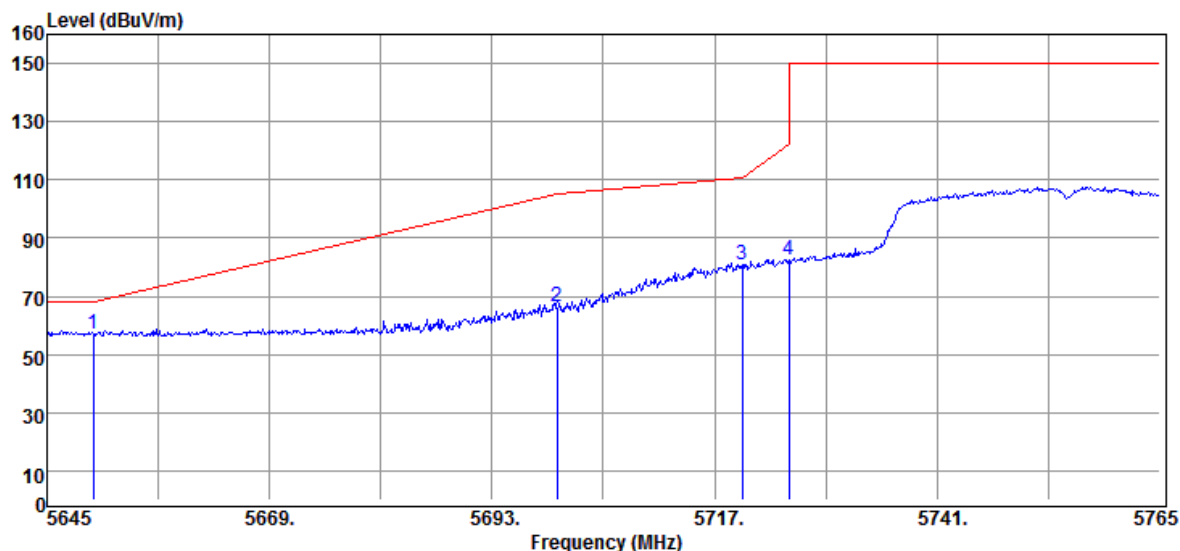
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Operation Mode :802.11n40 / Band 4  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5755 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5650.00	Peak	42.66	14.42	57.08	68.20	-11.12
5700.00	Peak	52.15	14.47	66.62	105.20	-38.58
5720.00	Peak	66.20	14.49	80.69	110.80	-30.11
5725.00	Peak	68.14	14.50	82.64	122.20	-39.56

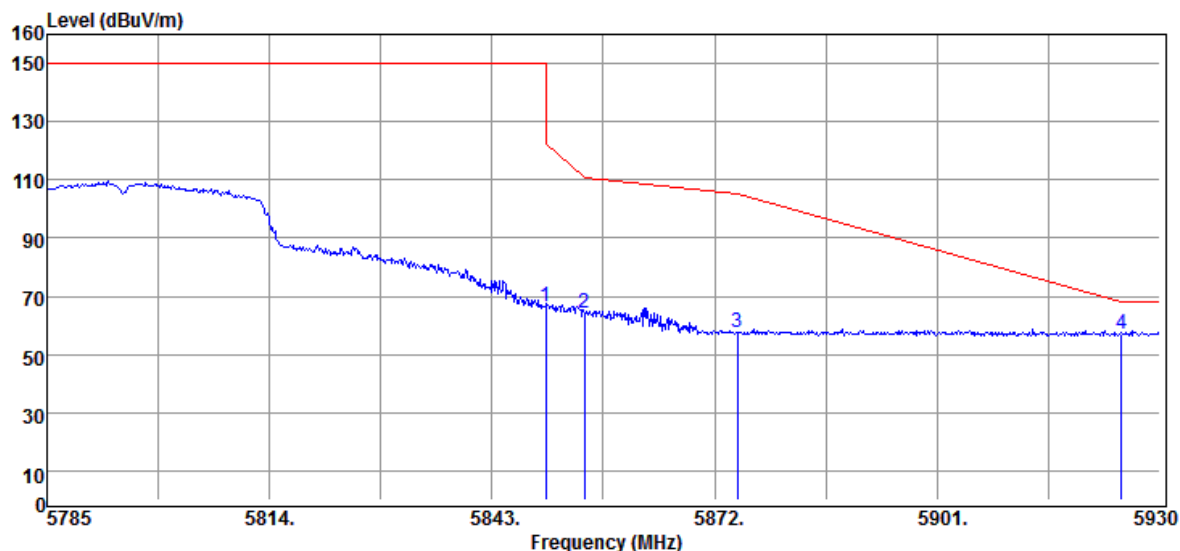
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Operation Mode :802.11n40 / Band 4  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5795 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5850.00	Peak	51.69	14.72	66.41	122.20	-55.79
5855.00	Peak	49.33	14.73	64.06	110.80	-46.74
5875.00	Peak	42.67	14.78	57.45	105.20	-47.75
5925.00	Peak	41.99	14.91	56.90	68.20	-11.30

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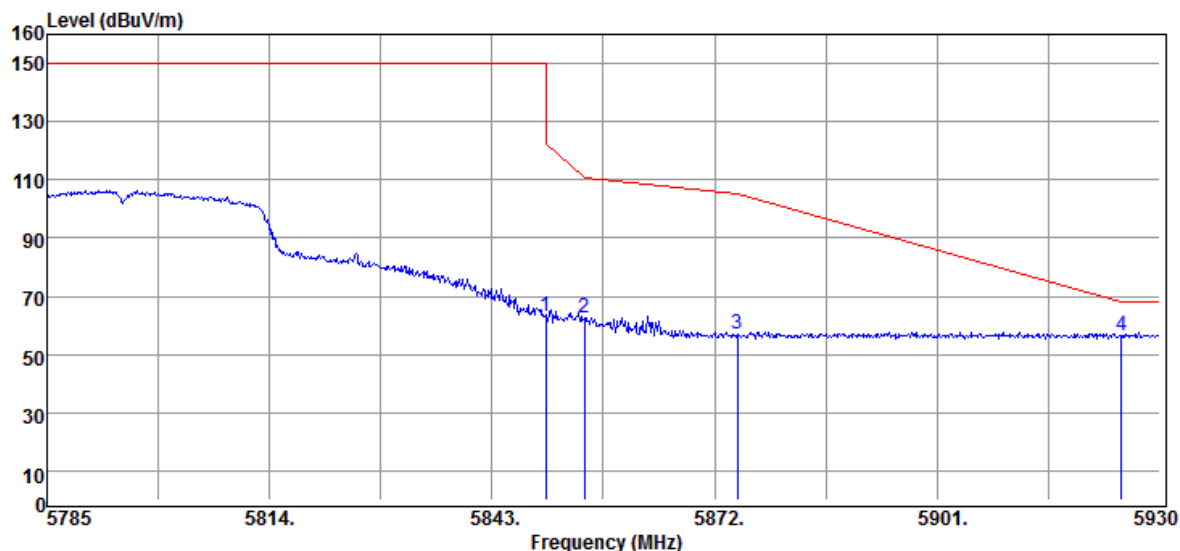
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Operation Mode :802.11n40 / Band 4  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5795 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5850.00	Peak	48.25	14.72	62.97	122.20	-59.23
5855.00	Peak	48.09	14.73	62.82	110.80	-47.98
5875.00	Peak	42.50	14.78	57.28	105.20	-47.92
5925.00	Peak	41.30	14.91	56.21	68.20	-11.99

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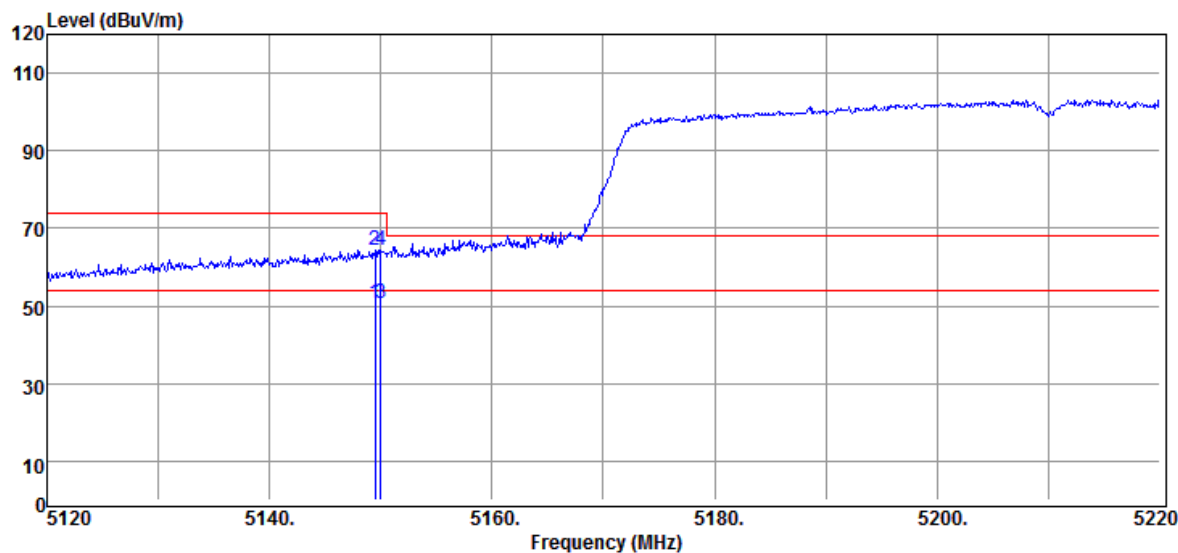
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## 802.11ac80 VHT mode

Operation Mode :802.11ac80 / Band 1  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5210 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5149.50	Average	37.10	13.64	50.74	54.00	-3.26
5149.50	Peak	50.80	13.64	64.44	74.00	-9.56
5150.00	Average	37.16	13.65	50.81	54.00	-3.19
5150.00	Peak	50.54	13.65	64.19	74.00	-9.81

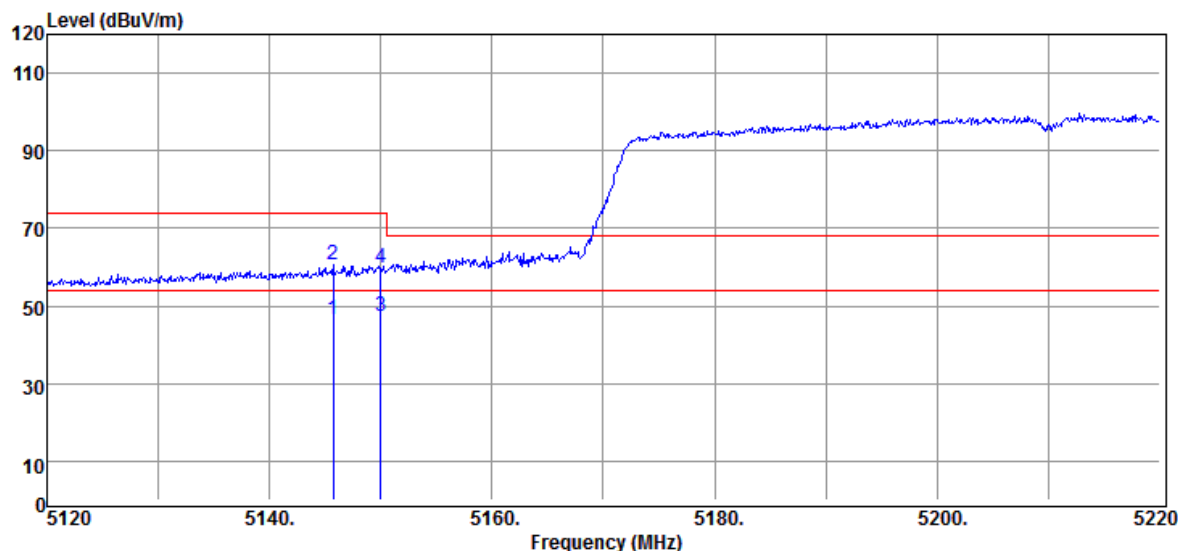
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Operation Mode :802.11ac80 / Band 1  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5210 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5145.70	Average	32.91	13.63	46.54	54.00	-7.46
5145.70	Peak	47.00	13.63	60.63	74.00	-13.37
5150.00	Average	33.88	13.65	47.53	54.00	-6.47
5150.00	Peak	46.32	13.65	59.97	74.00	-14.03

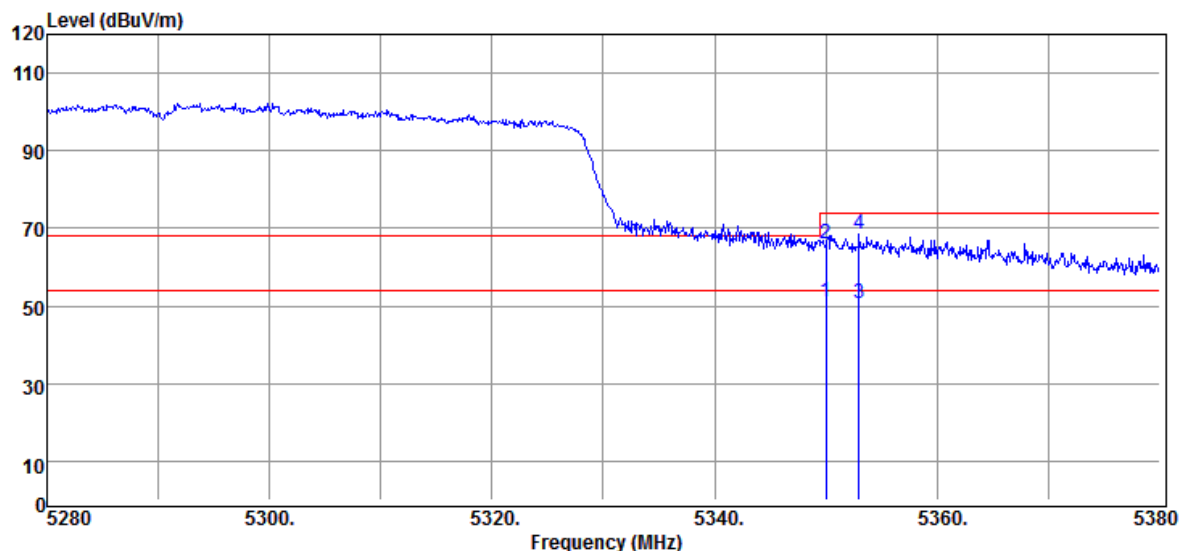
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Operation Mode :802.11ac80 / Band 2  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5290 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5350.00	Average	36.83	14.16	50.99	54.00	-3.01
5350.00	Peak	51.98	14.16	66.14	74.00	-7.86
5353.00	Average	36.34	14.17	50.51	54.00	-3.49
5353.00	Peak	54.17	14.17	68.34	74.00	-5.66

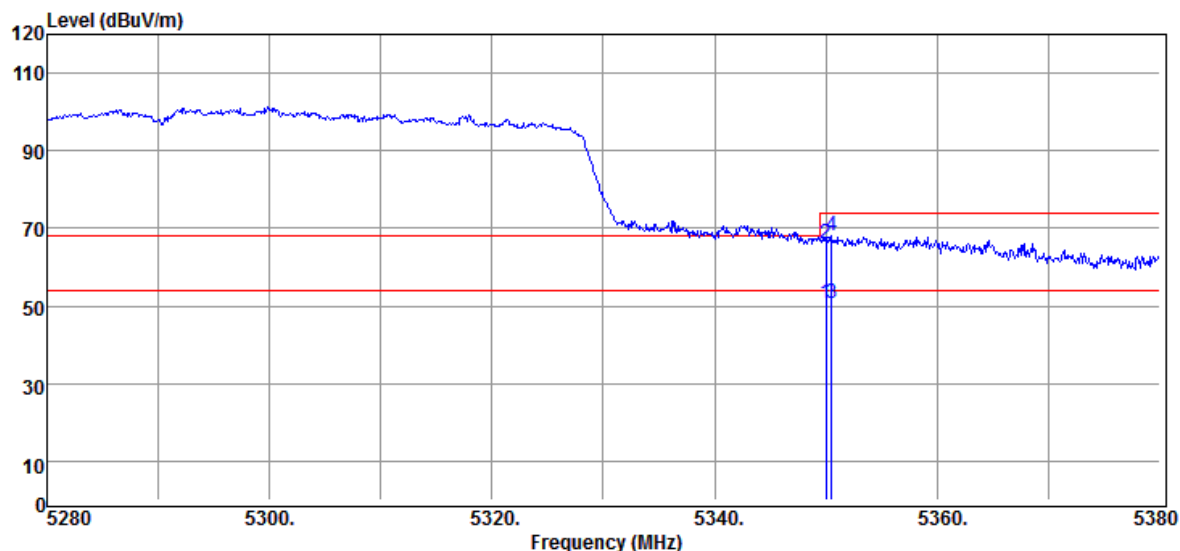
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Operation Mode :802.11ac80 / Band 2  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5290 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5350.00	Average	36.44	14.16	50.60	54.00	-3.40
5350.00	Peak	51.94	14.16	66.10	74.00	-7.90
5350.50	Average	36.29	14.17	50.46	54.00	-3.54
5350.50	Peak	53.75	14.17	67.92	74.00	-6.08

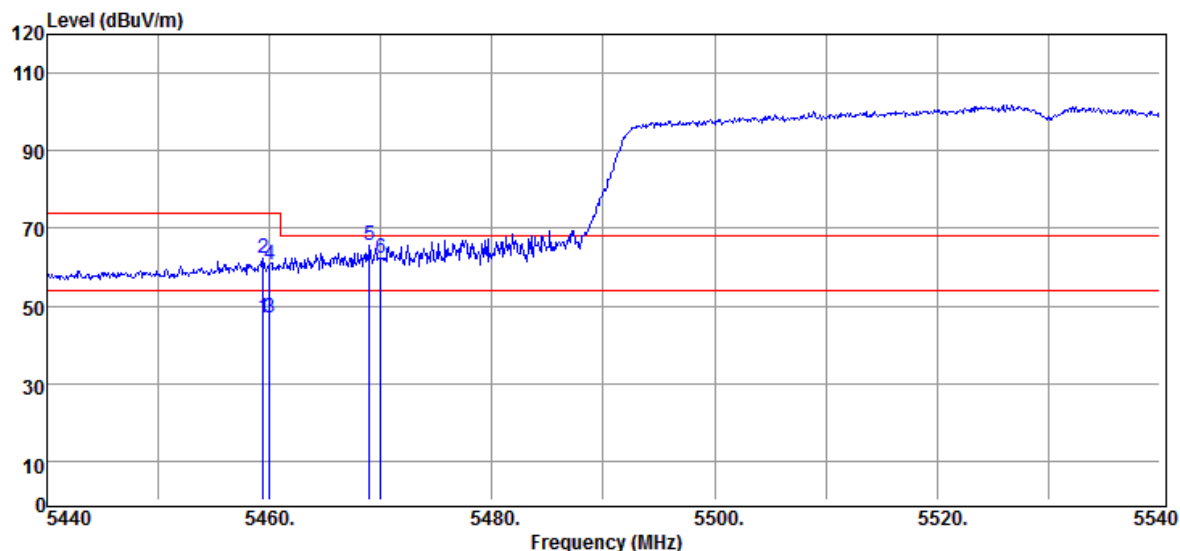
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Operation Mode :802.11ac80 / Band 3  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5530 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5459.40	Average	32.55	14.31	46.86	54.00	-7.14
5459.40	Peak	48.11	14.31	62.42	74.00	-11.58
5460.00	Average	32.49	14.31	46.80	54.00	-7.20
5460.00	Peak	46.26	14.31	60.57	74.00	-13.43
5469.00	Peak	51.26	14.32	65.58	68.20	-2.62
5470.00	Peak	48.15	14.31	62.46	68.20	-5.74

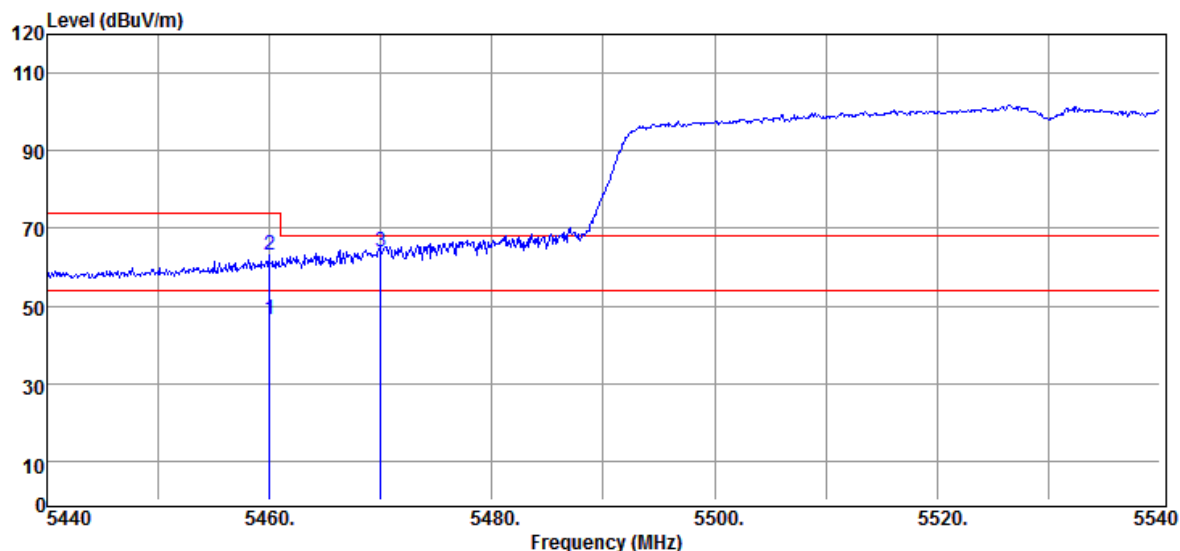
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Operation Mode :802.11ac80 / Band 3  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5530 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



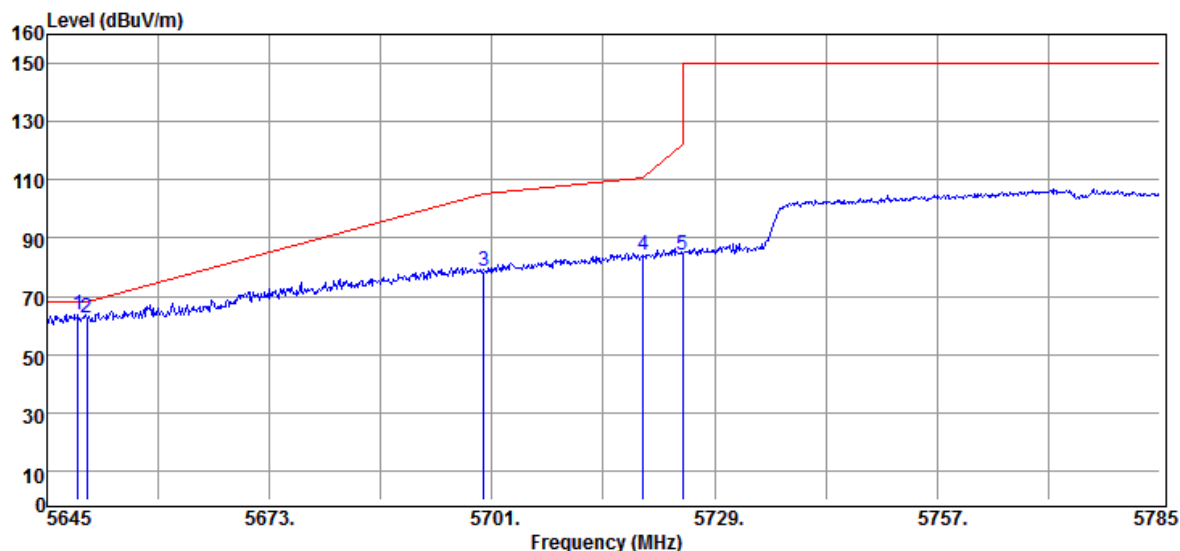
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5460.00	Average	32.05	14.31	46.36	54.00	-7.64
5460.00	Peak	48.77	14.31	63.08	74.00	-10.92
5470.00	Peak	49.47	14.31	63.78	68.20	-4.42

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Operation Mode :802.11ac80 / Band 4  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5775 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5648.92	Peak	49.44	14.41	63.85	68.20	-4.35
5650.00	Peak	48.40	14.42	62.82	68.20	-5.38
5700.00	Peak	64.30	14.47	78.77	105.20	-26.43
5720.00	Peak	69.70	14.49	84.19	110.80	-26.61
5725.00	Peak	69.78	14.50	84.28	122.20	-37.92

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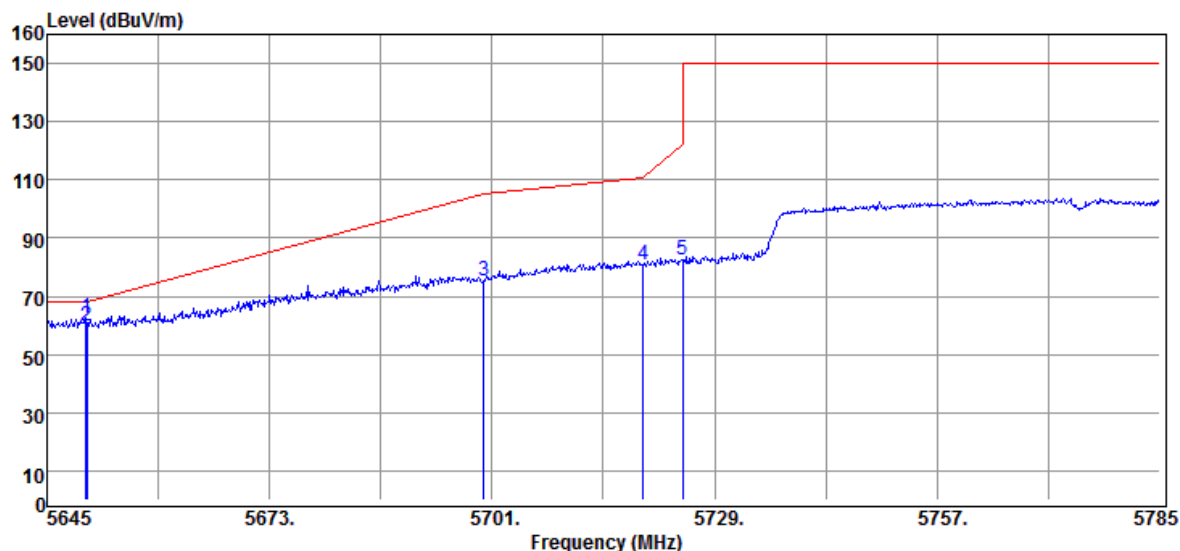
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Operation Mode :802.11ac80 / Band 4  
 Test Mode :BE CH LOW  
 EUT Pol :H Plan  
 Test Channel :5775 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5649.90	Peak	48.29	14.42	62.71	68.20	-5.49
5650.00	Peak	45.30	14.42	59.72	68.20	-8.48
5700.00	Peak	61.00	14.47	75.47	105.20	-29.73
5720.00	Peak	66.55	14.49	81.04	110.80	-29.76
5725.00	Peak	68.25	14.50	82.75	122.20	-39.45

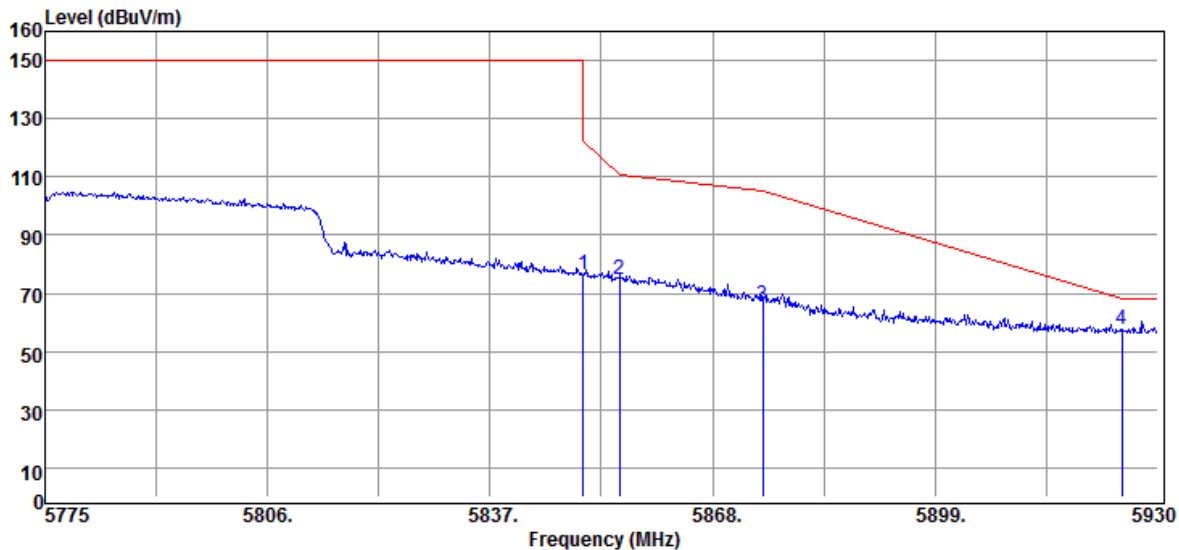
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Operation Mode :802.11ac80 / Band 4  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5775 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5850.00	Peak	61.54	14.72	76.26	122.20	-45.94
5855.00	Peak	60.06	14.73	74.79	110.80	-36.01
5875.00	Peak	51.27	14.78	66.05	105.20	-39.15
5925.00	Peak	42.78	14.91	57.69	68.20	-10.51

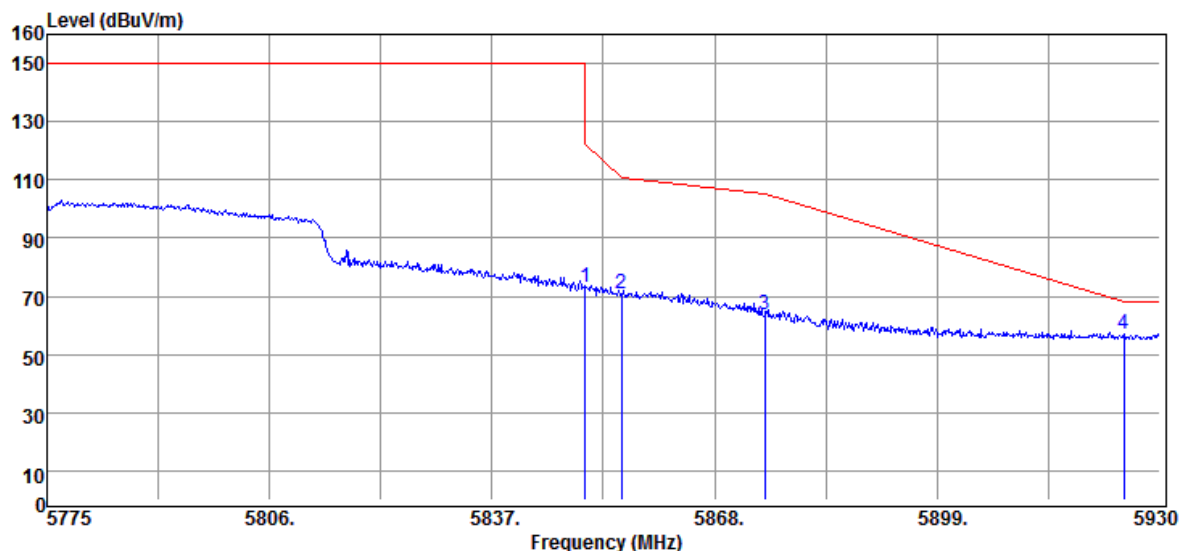
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Operation Mode :802.11ac80 / Band 4  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :5775 MHz

Test Date :2018-08-08  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5850.00	Peak	58.24	14.72	72.96	122.20	-49.24
5855.00	Peak	55.89	14.73	70.62	110.80	-40.18
5875.00	Peak	48.69	14.78	63.47	105.20	-41.73
5925.00	Peak	42.29	14.91	57.20	68.20	-11.00

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## 12 TRANSMISSION IN THE ABSENCE OF DATA

### 12.1 Standard Applicable

According to §15.407(c)

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

### 12.2 Result

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

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## 13 FREQUENCY STABILITY

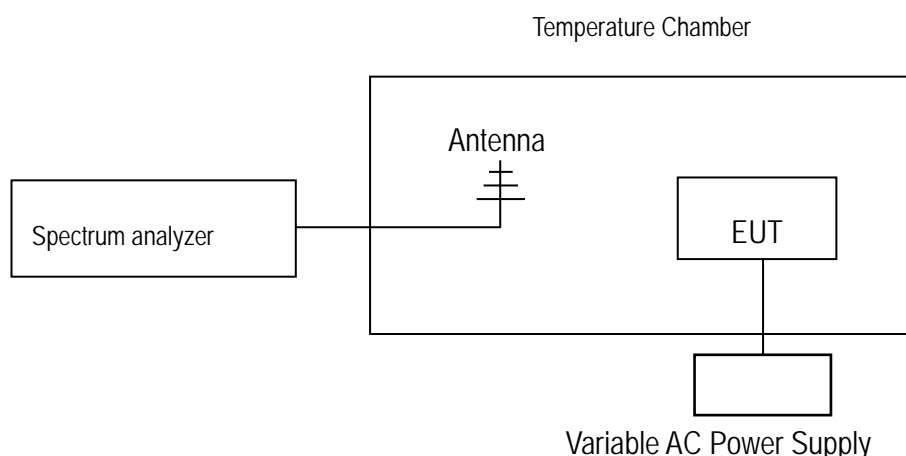
### 13.1 Standard Applicable

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

### 13.2 Measurement Procedure

1. The EUT was placed inside temperature chamber and powered and powered by nominal DC voltage.
2. Set EUT as normal operation.
3. Turn the EUT on and couple its output to spectrum.
4. Turn the EUT off and set the chamber to the highest temperature specified.
5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT and measure the operating frequency.
6. Repeat step with the temperature chamber set to the lowest temperature.

### 13.3 Test SET-UP



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### 13.4 Measurement Equipment Used:

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	Agilent	N9010A	MY51440113	2018/06/20	2019/06/19
DC Block	PASTERNAK	PE8210	RF29	2017/12/26	2018/12/25
Notebook	Lenovo	L420	S0011721	N/A	N/A
DC Power Supply	Agilent	E3640A	MY53140006	2018/05/30	2019/05/29
Attenuator	Marvelous	MVE2213-10	RF30	2017/12/26	2018/12/25
Power Meter	Anritsu	ML2496A	1326001	2018/08/09	2019/08/02
Power Sensor	Anritsu	MA2411B	1315048	2018/08/09	2019/08/02
Power Sensor	Anritsu	MA2411B	1315049	2018/08/09	2019/08/02

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### 13.5 Measurement Result

#### Startup

Operation Mode	802.11 a	Test Date	2018.08.24
Temperature	:24.5 °C	Test By	Scott
Humidity	:62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0 °C	3.42V	36	5180	5,179.95916	0.00000788
		44	5220	5,219.95843	0.00000796
		48	5240	5,239.91361	0.00001649
		52	5260	5,259.93645	0.00001208
		60	5300	5,299.90918	0.00001714
		64	5320	5,319.91986	0.00001506
		100	5500	5,499.93485	0.00001185
		116	5580	5,579.97264	0.00000490
		140	5700	5,699.93428	0.00001153
		144	5720	5,719.90550	0.00001652
		149	5745	5,744.90381	0.00001674
		157	5785	5,784.92376	0.00001318
		165	5825	5,824.99202	0.00000137
	4.18V	36	5180	5,179.99706	0.00000057
		44	5220	5,219.90076	0.00001901
		48	5240	5,239.95119	0.00000931
		52	5260	5,259.96542	0.00000657
		60	5300	5,299.93159	0.00001291
		64	5320	5,319.90650	0.00001758
		100	5500	5,499.99162	0.00000152
		116	5580	5,579.93802	0.00001111
		140	5700	5,699.95043	0.00000870
		144	5720	5,719.97255	0.00000480
		149	5745	5,744.97615	0.00000415
		157	5785	5,784.92388	0.00001316
		165	5825	5,824.96039	0.00000680

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25 °C	3.8V	36	5180	5,179.95515	0.00000866
		44	5220	5,219.97343	0.00000509
		48	5240	5,239.99487	0.00000098
		52	5260	5,259.97057	0.00000560
		60	5300	5,299.94947	0.00000953
		64	5320	5,319.92726	0.00001367
		100	5500	5,499.93469	0.00001187
		116	5580	5,579.98477	0.00000273
		140	5700	5,699.92264	0.00001357
		144	5720	5,719.92167	0.00001369
		149	5745	5,744.90180	0.00001709
		157	5785	5,784.93115	0.00001190
		165	5825	5,824.92363	0.00001311
40 °C	3.42V	36	5180	5,179.92746	0.00001400
		44	5220	5,219.92919	0.00001357
		48	5240	5,239.97232	0.00000528
		52	5260	5,259.92150	0.00001492
		60	5300	5,299.92833	0.00001352
		64	5320	5,319.93981	0.00001131
		100	5500	5,499.95173	0.00000878
		116	5580	5,579.91267	0.00001565
		140	5700	5,699.91147	0.00001553
		144	5720	5,719.94494	0.00000963
		149	5745	5,744.93957	0.00001052
		157	5785	5,784.96303	0.00000639
		165	5825	5,824.92479	0.00001291
	4.18V	36	5180	5,179.99155	0.00000163
		44	5220	5,219.92675	0.00001403
		48	5240	5,239.97746	0.00000430
		52	5260	5,259.96189	0.00000725
		60	5300	5,299.99054	0.00000178
		64	5320	5,319.91598	0.00001579
		100	5500	5,499.96045	0.00000719
		116	5580	5,579.96159	0.00000688
		140	5700	5,699.99828	0.00000030
		144	5720	5,719.90552	0.00001652
		149	5745	5,744.93513	0.00001129
		157	5785	5,784.93477	0.00001128
		165	5825	5,824.93220	0.00001164

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Operation Mode	802.11 n_HT40	Test Date	2018.08.24
Temperature	:24.5 °C	Test By	Scott
Humidity	:62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0 °C	3.42V	38	5190	5,189.98158	0.00000355
		46	5230	5,229.96195	0.00000728
		54	5270	5,269.90096	0.00001879
		62	5310	5,309.95132	0.00000917
		102	5510	5,509.94588	0.00000982
		110	5550	5,549.92039	0.00001434
		134	5670	5,669.99512	0.00000086
		142	5710	5,709.96184	0.00000668
		151	5755	5,754.98253	0.00000304
		159	5795	5,794.94653	0.00000923
	4.18V	38	5190	5,189.91361	0.00001665
		46	5230	5,229.94273	0.00001095
		54	5270	5,269.96234	0.00000715
		62	5310	5,309.94415	0.00001052
		102	5510	5,509.99345	0.00000119
		110	5550	5,549.94265	0.00001033
		134	5670	5,669.94640	0.00000945
		142	5710	5,709.92526	0.00001309
		151	5755	5,754.99294	0.00000123
		159	5795	5,794.94427	0.00000962

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25 °C	3.8V	38	5190	5,189.99194	0.00000155
		46	5230	5,229.96966	0.00000580
		54	5270	5,269.96148	0.00000731
		62	5310	5,309.99465	0.00000101
		102	5510	5,509.94173	0.00001058
		110	5550	5,549.96339	0.00000660
		134	5670	5,669.94558	0.00000960
		142	5710	5,709.90572	0.00001651
		151	5755	5,754.96878	0.00000542
		159	5795	5,794.99905	0.00000016
40 °C	3.42V	38	5190	5,189.90818	0.00001769
		46	5230	5,229.94405	0.00001070
		54	5270	5,269.95468	0.00000860
		62	5310	5,309.96311	0.00000695
		102	5510	5,509.93923	0.00001103
		110	5550	5,549.90867	0.00001646
		134	5670	5,669.92192	0.00001377
		142	5710	5,709.98504	0.00000262
		151	5755	5,754.97335	0.00000463
		159	5795	5,794.93023	0.00001204
	4.18V	38	5190	5,189.90373	0.00001855
		46	5230	5,229.93144	0.00001311
		54	5270	5,269.95209	0.00000909
		62	5310	5,309.97785	0.00000417
		102	5510	5,509.90568	0.00001712
		110	5550	5,549.91213	0.00001583
		134	5670	5,669.90111	0.00001744
		142	5710	5,709.93810	0.00001084
		151	5755	5,754.94455	0.00000964
		159	5795	5,794.91885	0.00001400

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Operation Mode	802.11 ac_VHT80	Test Date	2018.08.24
Temperature	:24.5 °C	Test By	Scott
Humidity	:62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0 °C	3.42V	42	5210	5,209.93027	0.00001338
		58	5290	5,289.94534	0.00001033
		106	5530	5,529.96350	0.00000660
		122	5610	5,609.97484	0.00000448
		138	5690	5,689.92811	0.00001263
		155	5775	5,774.91558	0.00001462
	4.18V	42	5210	5,209.93833	0.00001184
		58	5290	5,289.93409	0.00001246
		106	5530	5,529.98646	0.00000245
		122	5610	5,609.98401	0.00000285
		138	5690	5,689.95732	0.00000750
		155	5775	5,774.96739	0.00000565
25 °C	3.8V	42	5210	5,209.90503	0.00001823
		58	5290	5,289.93888	0.00001155
		106	5530	5,529.93683	0.00001142
		122	5610	5,609.98395	0.00000286
		138	5690	5,689.93381	0.00001163
		155	5775	5,774.96316	0.00000638
40 °C	3.42V	42	5210	5,209.96680	0.00000637
		58	5290	5,289.99517	0.00000091
		106	5530	5,529.93906	0.00001102
		122	5610	5,609.95661	0.00000773
		138	5690	5,689.90503	0.00001669
		155	5775	5,774.96821	0.00000550
	4.18V	42	5210	5,209.95044	0.00000951
		58	5290	5,289.93344	0.00001258
		106	5530	5,529.98418	0.00000286
		122	5610	5,609.92691	0.00001303
		138	5690	5,689.98448	0.00000273
		155	5775	5,774.97033	0.00000514

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## 2 Minutes:

Operation Mode	802.11 a	Test Date	2018.08.24
Temperature	:24.5 °C	Test By	Scott
Humidity	:62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0 °C	3.42V	36	5180	5,179.97571	0.00000469
		44	5220	5,219.94111	0.00001128
		48	5240	5,239.99193	0.00000154
		52	5260	5,259.95921	0.00000775
		60	5300	5,299.99179	0.00000155
		64	5320	5,319.91474	0.00001603
		100	5500	5,499.94343	0.00001029
		116	5580	5,579.99310	0.00000124
		140	5700	5,699.94125	0.00001031
		144	5720	5,719.97236	0.00000483
		149	5745	5,744.97343	0.00000462
		157	5785	5,784.97555	0.00000423
		165	5825	5,824.97052	0.00000506
	4.18V	36	5180	5,179.90262	0.00001880
		44	5220	5,219.91611	0.00001607
		48	5240	5,239.92214	0.00001486
		52	5260	5,259.96801	0.00000608
		60	5300	5,299.98710	0.00000243
		64	5320	5,319.92431	0.00001423
		100	5500	5,499.97909	0.00000380
		116	5580	5,579.94320	0.00001018
		140	5700	5,699.97905	0.00000368
		144	5720	5,719.93308	0.00001170
		149	5745	5,744.90130	0.00001718
		157	5785	5,784.90405	0.00001659
		165	5825	5,824.95773	0.00000726

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25 °C	3.8V	36	5180	5,179.90084	0.00001914
		44	5220	5,219.97186	0.00000539
		48	5240	5,239.93067	0.00001323
		52	5260	5,259.96832	0.00000602
		60	5300	5,299.94916	0.00000959
		64	5320	5,319.96310	0.00000694
		100	5500	5,499.94458	0.00001008
		116	5580	5,579.93539	0.00001158
		140	5700	5,699.97084	0.00000512
		144	5720	5,719.99208	0.00000138
		149	5745	5,744.96979	0.00000526
		157	5785	5,784.90605	0.00001624
		165	5825	5,824.91024	0.00001541
40 °C	3.42V	36	5180	5,179.96625	0.00000652
		44	5220	5,219.95758	0.00000813
		48	5240	5,239.97961	0.00000389
		52	5260	5,259.93727	0.00001193
		60	5300	5,299.91359	0.00001630
		64	5320	5,319.98594	0.00000264
		100	5500	5,499.98230	0.00000322
		116	5580	5,579.92847	0.00001282
		140	5700	5,699.95229	0.00000837
		144	5720	5,719.98592	0.00000246
		149	5745	5,744.94996	0.00000871
		157	5785	5,784.95953	0.00000700
		165	5825	5,824.98110	0.00000324
	4.18V	36	5180	5,179.92551	0.00001438
		44	5220	5,219.96579	0.00000655
		48	5240	5,239.91965	0.00001533
		52	5260	5,259.90251	0.00001853
		60	5300	5,299.97203	0.00000528
		64	5320	5,319.99902	0.00000018
		100	5500	5,499.97133	0.00000521
		116	5580	5,579.99940	0.00000011
		140	5700	5,699.98537	0.00000257
		144	5720	5,719.91050	0.00001565
		149	5745	5,744.90850	0.00001593
		157	5785	5,784.98305	0.00000293
		165	5825	5,824.99741	0.00000044

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台灣檢驗科技股份有限公司

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Member of SGS Group

Operation Mode	802.11 n_HT40	Test Date	2018.08.24
Temperature	:24.5 °C	Test By	Scott
Humidity	:62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0 °C	3.42V	38	5190	5,189.95766	0.00000816
		46	5230	5,229.94999	0.00000956
		54	5270	5,269.90298	0.00001841
		62	5310	5,309.96700	0.00000621
		102	5510	5,509.93902	0.00001107
		110	5550	5,549.90133	0.00001778
		134	5670	5,669.93332	0.00001176
		142	5710	5,709.93986	0.00001053
		151	5755	5,754.93284	0.00001167
		159	5795	5,794.92825	0.00001238
	4.18V	38	5190	5,189.98109	0.00000364
		46	5230	5,229.95140	0.00000929
		54	5270	5,269.96576	0.00000650
		62	5310	5,309.99362	0.00000120
		102	5510	5,509.92371	0.00001385
		110	5550	5,549.99477	0.00000094
		134	5670	5,669.91500	0.00001499
		142	5710	5,709.98111	0.00000331
		151	5755	5,754.96536	0.00000602
		159	5795	5,794.91042	0.00001546

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25 °C	3.8V	38	5190	5,189.96017	0.00000767
		46	5230	5,229.99165	0.00000160
		54	5270	5,269.94375	0.00001067
		62	5310	5,309.93080	0.00001303
		102	5510	5,509.98927	0.00000195
		110	5550	5,549.90487	0.00001714
		134	5670	5,669.94006	0.00001057
		142	5710	5,709.99276	0.00000127
		151	5755	5,754.94902	0.00000886
		159	5795	5,794.90441	0.00001650
40 °C	3.42V	38	5190	5,189.96607	0.00000654
		46	5230	5,229.95242	0.00000910
		54	5270	5,269.92646	0.00001395
		62	5310	5,309.91141	0.00001668
		102	5510	5,509.97280	0.00000494
		110	5550	5,549.98180	0.00000328
		134	5670	5,669.97828	0.00000383
		142	5710	5,709.91971	0.00001406
		151	5755	5,754.96348	0.00000635
		159	5795	5,794.97083	0.00000503
	4.18V	38	5190	5,189.92593	0.00001427
		46	5230	5,229.90412	0.00001833
		54	5270	5,269.97752	0.00000427
		62	5310	5,309.94533	0.00001030
		102	5510	5,509.94438	0.00001009
		110	5550	5,549.99290	0.00000128
		134	5670	5,669.94976	0.00000886
		142	5710	5,709.97281	0.00000476
		151	5755	5,754.97989	0.00000349
		159	5795	5,794.96326	0.00000634

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Operation Mode	802.11 ac_VHT80	Test Date	2018.08.24
Temperature	:24.5 °C	Test By	Scott
Humidity	:62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0 °C	3.42V	42	5210	5,209.91114	0.00001706
		58	5290	5,289.97945	0.00000388
		106	5530	5,529.90605	0.00001699
		122	5610	5,609.95371	0.00000825
		138	5690	5,689.91999	0.00001406
		155	5775	5,774.92136	0.00001362
	4.18V	42	5210	5,209.98515	0.00000285
		58	5290	5,289.99455	0.00000103
		106	5530	5,529.94173	0.00001054
		122	5610	5,609.92875	0.00001270
		138	5690	5,689.90883	0.00001602
		155	5775	5,774.92502	0.00001298
25 °C	3.8V	42	5210	5,209.97562	0.00000468
		58	5290	5,289.90436	0.00001808
		106	5530	5,529.98855	0.00000207
		122	5610	5,609.91336	0.00001544
		138	5690	5,689.96285	0.00000653
		155	5775	5,774.91189	0.00001526
40 °C	3.42V	42	5210	5,209.98117	0.00000361
		58	5290	5,289.93631	0.00001204
		106	5530	5,529.91179	0.00001595
		122	5610	5,609.91953	0.00001434
		138	5690	5,689.94678	0.00000935
		155	5775	5,774.91454	0.00001480
	4.18V	42	5210	5,209.96429	0.00000685
		58	5290	5,289.96507	0.00000660
		106	5530	5,529.99717	0.00000051
		122	5610	5,609.99772	0.00000041
		138	5690	5,689.94139	0.00001030
		155	5775	5,774.96296	0.00000641

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## 5 Minutes

Operation Mode	802.11 a	Test Date	2018.08.24
Temperature	:24.5 °C	Test By	Scott
Humidity	:62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0 °C	3.42V	36	5180	5,179.94704	0.00001022
		44	5220	5,219.98913	0.00000208
		48	5240	5,239.90523	0.00001809
		52	5260	5,259.91639	0.00001590
		60	5300	5,299.97818	0.00000412
		64	5320	5,319.90048	0.00001871
		100	5500	5,499.96997	0.00000546
		116	5580	5,579.98104	0.00000340
		140	5700	5,699.98250	0.00000307
		144	5720	5,719.98682	0.00000230
		149	5745	5,744.98092	0.00000332
		157	5785	5,784.92819	0.00001241
		165	5825	5,824.98081	0.00000329
	4.18V	36	5180	5,179.97722	0.00000440
		44	5220	5,219.91999	0.00001533
		48	5240	5,239.93033	0.00001330
		52	5260	5,259.97207	0.00000531
		60	5300	5,299.97758	0.00000423
		64	5320	5,319.96479	0.00000662
		100	5500	5,499.90380	0.00001749
		116	5580	5,579.97226	0.00000497
		140	5700	5,699.96522	0.00000610
		144	5720	5,719.93077	0.00001210
		149	5745	5,744.95225	0.00000831
		157	5785	5,784.98981	0.00000176
		165	5825	5,824.91463	0.00001466

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25 °C	3.8V	36	5180	5,179.94297	0.00001101
		44	5220	5,219.92520	0.00001433
		48	5240	5,239.95426	0.00000873
		52	5260	5,259.90628	0.00001782
		60	5300	5,299.97657	0.00000442
		64	5320	5,319.93561	0.00001210
		100	5500	5,499.90951	0.00001645
		116	5580	5,579.96302	0.00000663
		140	5700	5,699.96026	0.00000697
		144	5720	5,719.93293	0.00001173
		149	5745	5,744.93061	0.00001208
		157	5785	5,784.92880	0.00001231
		165	5825	5,824.91818	0.00001405
40 °C	3.42V	36	5180	5,179.95421	0.00000884
		44	5220	5,219.98061	0.00000371
		48	5240	5,239.91059	0.00001706
		52	5260	5,259.90916	0.00001727
		60	5300	5,299.93410	0.00001243
		64	5320	5,319.91772	0.00001547
		100	5500	5,499.91482	0.00001549
		116	5580	5,579.90420	0.00001717
		140	5700	5,699.99786	0.00000038
		144	5720	5,719.90467	0.00001667
		149	5745	5,744.90677	0.00001623
		157	5785	5,784.90816	0.00001588
		165	5825	5,824.96463	0.00000607
	4.18V	36	5180	5,179.94413	0.00001079
		44	5220	5,219.93761	0.00001195
		48	5240	5,239.92882	0.00001358
		52	5260	5,259.95079	0.00000936
		60	5300	5,299.95079	0.00000928
		64	5320	5,319.93956	0.00001136
		100	5500	5,499.92125	0.00001432
		116	5580	5,579.93742	0.00001122
		140	5700	5,699.92099	0.00001386
		144	5720	5,719.99024	0.00000171
		149	5745	5,744.99654	0.00000060
		157	5785	5,784.96634	0.00000582
		165	5825	5,824.97166	0.00000487

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Operation Mode	802.11 n_HT40	Test Date	2018.08.24
Temperature	:24.5 °C	Test By	Scott
Humidity	:62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0 °C	3.42V	38	5190	5,189.93054	0.00001338
		46	5230	5,229.90769	0.00001765
		54	5270	5,269.99622	0.00000072
		62	5310	5,309.94939	0.00000953
		102	5510	5,509.91259	0.00001586
		110	5550	5,549.98531	0.00000265
		134	5670	5,669.99649	0.00000062
		142	5710	5,709.90594	0.00001647
		151	5755	5,754.99906	0.00000016
		159	5795	5,794.98154	0.00000319
	4.18V	38	5190	5,189.98627	0.00000265
		46	5230	5,229.91301	0.00001663
		54	5270	5,269.93698	0.00001196
		62	5310	5,309.95902	0.00000772
		102	5510	5,509.92409	0.00001378
		110	5550	5,549.92839	0.00001290
		134	5670	5,669.92288	0.00001360
		142	5710	5,709.95342	0.00000816
		151	5755	5,754.95740	0.00000740
		159	5795	5,794.97021	0.00000514

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25 °C	3.8V	38	5190	5,189.92568	0.00001432
		46	5230	5,229.93202	0.00001300
		54	5270	5,269.92624	0.00001400
		62	5310	5,309.92607	0.00001392
		102	5510	5,509.98395	0.00000291
		110	5550	5,549.93966	0.00001087
		134	5670	5,669.93005	0.00001234
		142	5710	5,709.98965	0.00000181
		151	5755	5,754.95677	0.00000751
		159	5795	5,794.96376	0.00000625
40 °C	3.42V	38	5190	5,189.95127	0.00000939
		46	5230	5,229.91479	0.00001629
		54	5270	5,269.95887	0.00000780
		62	5310	5,309.96477	0.00000663
		102	5510	5,509.90690	0.00001690
		110	5550	5,549.97666	0.00000421
		134	5670	5,669.90810	0.00001621
		142	5710	5,709.91668	0.00001459
		151	5755	5,754.97829	0.00000377
		159	5795	5,794.99758	0.00000042
	4.18V	38	5190	5,189.97003	0.00000577
		46	5230	5,229.98353	0.00000315
		54	5270	5,269.97067	0.00000557
		62	5310	5,309.97910	0.00000394
		102	5510	5,509.95707	0.00000779
		110	5550	5,549.97553	0.00000441
		134	5670	5,669.98672	0.00000234
		142	5710	5,709.93042	0.00001219
		151	5755	5,754.99542	0.00000080
		159	5795	5,794.95798	0.00000725

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Operation Mode	802.11 ac_VHT80	Test Date	2018.08.24
Temperature	:24.5 °C	Test By	Scott
Humidity	:62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0 °C	3.42V	42	5210	5,209.93278	0.00001290
		58	5290	5,289.97883	0.00000400
		106	5530	5,529.97399	0.00000470
		122	5610	5,609.93114	0.00001227
		138	5690	5,689.96920	0.00000541
		155	5775	5,774.93513	0.00001123
	4.18V	42	5210	5,209.97680	0.00000445
		58	5290	5,289.97281	0.00000514
		106	5530	5,529.98916	0.00000196
		122	5610	5,609.90638	0.00001669
		138	5690	5,689.98314	0.00000296
		155	5775	5,774.93177	0.00001181
25 °C	3.8V	42	5210	5,209.94539	0.00001048
		58	5290	5,289.95032	0.00000939
		106	5530	5,529.91296	0.00001574
		122	5610	5,609.92164	0.00001397
		138	5690	5,689.94748	0.00000923
		155	5775	5,774.97085	0.00000505
40 °C	3.42V	42	5210	5,209.94761	0.00001006
		58	5290	5,289.93927	0.00001148
		106	5530	5,529.99557	0.00000080
		122	5610	5,609.90601	0.00001675
		138	5690	5,689.98579	0.00000250
		155	5775	5,774.94294	0.00000988
	4.18V	42	5210	5,209.96581	0.00000656
		58	5290	5,289.90713	0.00001756
		106	5530	5,529.91742	0.00001493
		122	5610	5,609.91396	0.00001534
		138	5690	5,689.92530	0.00001313
		155	5775	5,774.99450	0.00000095

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## 10 Minutes

Operation Mode	802.11 a	Test Date	2018.08.24
Temperature	:24.5 °C	Test By	Scott
Humidity	:62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0 °C	3.42V	36	5180	5,179.96941	0.00000591
		44	5220	5,219.99969	0.00000006
		48	5240	5,239.90629	0.00001788
		52	5260	5,259.92127	0.00001497
		60	5300	5,299.99971	0.00000005
		64	5320	5,319.96278	0.00000700
		100	5500	5,499.99855	0.00000026
		116	5580	5,579.90558	0.00001692
		140	5700	5,699.98958	0.00000183
		144	5720	5,719.95049	0.00000866
		149	5745	5,744.94016	0.00001042
		157	5785	5,784.94348	0.00000977
		165	5825	5,824.97314	0.00000461
	4.18V	36	5180	5,179.95836	0.00000804
		44	5220	5,219.93891	0.00001170
		48	5240	5,239.95426	0.00000873
		52	5260	5,259.99490	0.00000097
		60	5300	5,299.97301	0.00000509
		64	5320	5,319.98046	0.00000367
		100	5500	5,499.91696	0.00001510
		116	5580	5,579.97800	0.00000394
		140	5700	5,699.96149	0.00000676
		144	5720	5,719.92572	0.00001299
		149	5745	5,744.94714	0.00000920
		157	5785	5,784.96994	0.00000520
		165	5825	5,824.90989	0.00001547

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25 °C	3.8V	36	5180	5,179.98264	0.00000335
		44	5220	5,219.98705	0.00000248
		48	5240	5,239.94586	0.00001033
		52	5260	5,259.97108	0.00000550
		60	5300	5,299.94046	0.00001123
		64	5320	5,319.92166	0.00001473
		100	5500	5,499.98057	0.00000353
		116	5580	5,579.93528	0.00001160
		140	5700	5,699.92478	0.00001320
		144	5720	5,719.99291	0.00000124
		149	5745	5,744.97631	0.00000412
		157	5785	5,784.95537	0.00000771
		165	5825	5,824.93342	0.00001143
40 °C	3.42V	36	5180	5,179.96212	0.00000731
		44	5220	5,219.92201	0.00001494
		48	5240	5,239.98513	0.00000284
		52	5260	5,259.99047	0.00000181
		60	5300	5,299.90443	0.00001803
		64	5320	5,319.92327	0.00001442
		100	5500	5,499.95712	0.00000780
		116	5580	5,579.95200	0.00000860
		140	5700	5,699.90673	0.00001636
		144	5720	5,719.94710	0.00000925
		149	5745	5,744.94795	0.00000906
		157	5785	5,784.97373	0.00000454
		165	5825	5,824.93684	0.00001084
	4.18V	36	5180	5,179.91028	0.00001732
		44	5220	5,219.99319	0.00000130
		48	5240	5,239.95693	0.00000822
		52	5260	5,259.90652	0.00001777
		60	5300	5,299.97186	0.00000531
		64	5320	5,319.91755	0.00001550
		100	5500	5,499.98450	0.00000282
		116	5580	5,579.95591	0.00000790
		140	5700	5,699.93486	0.00001143
		144	5720	5,719.99437	0.00000098
		149	5745	5,744.96926	0.00000535
		157	5785	5,784.93907	0.00001053
		165	5825	5,824.98219	0.00000306

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Operation Mode	802.11 n_HT40	Test Date	2018.08.24
Temperature	:24.5 °C	Test By	Scott
Humidity	:62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0 °C	3.42V	38	5190	5,189.92601	0.00001426
		46	5230	5,229.90612	0.00001795
		54	5270	5,269.95544	0.00000846
		62	5310	5,309.94568	0.00001023
		102	5510	5,509.99403	0.00000108
		110	5550	5,549.93155	0.00001233
		134	5670	5,669.92198	0.00001376
		142	5710	5,709.93064	0.00001215
		151	5755	5,754.93801	0.00001077
		159	5795	5,794.90588	0.00001624
	4.18V	38	5190	5,189.97699	0.00000443
		46	5230	5,229.95727	0.00000817
		54	5270	5,269.90693	0.00001766
		62	5310	5,309.93236	0.00001274
		102	5510	5,509.94668	0.00000968
		110	5550	5,549.92248	0.00001397
		134	5670	5,669.95502	0.00000793
		142	5710	5,709.94439	0.00000974
		151	5755	5,754.91367	0.00001500
		159	5795	5,794.99091	0.00000157

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25 °C	3.8V	38	5190	5,189.90521	0.00001826
		46	5230	5,229.97966	0.00000389
		54	5270	5,269.96829	0.00000602
		62	5310	5,309.98423	0.00000297
		102	5510	5,509.90415	0.00001740
		110	5550	5,549.94216	0.00001042
		134	5670	5,669.92406	0.00001339
		142	5710	5,709.96237	0.00000659
		151	5755	5,754.95681	0.00000750
		159	5795	5,794.98308	0.00000292
40 °C	3.42V	38	5190	5,189.94191	0.00001119
		46	5230	5,229.93705	0.00001204
		54	5270	5,269.91245	0.00001661
		62	5310	5,309.98501	0.00000282
		102	5510	5,509.90780	0.00001673
		110	5550	5,549.94815	0.00000934
		134	5670	5,669.97202	0.00000493
		142	5710	5,709.93083	0.00001211
		151	5755	5,754.90167	0.00001709
		159	5795	5,794.98564	0.00000248
	4.18V	38	5190	5,189.93066	0.00001336
		46	5230	5,229.95709	0.00000820
		54	5270	5,269.98646	0.00000257
		62	5310	5,309.95839	0.00000784
		102	5510	5,509.93985	0.00001092
		110	5550	5,549.94450	0.00001000
		134	5670	5,669.97024	0.00000525
		142	5710	5,709.99619	0.00000067
		151	5755	5,754.97220	0.00000483
		159	5795	5,794.97352	0.00000457

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Operation Mode	802.11 ac_VHT80	Test Date	2018.08.24
Temperature	:24.5 °C	Test By	Scott
Humidity	:62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0 °C	3.42V	42	5210	5,209.99706	0.00000056
		58	5290	5,289.99063	0.00000177
		106	5530	5,529.90254	0.00001762
		122	5610	5,609.95913	0.00000729
		138	5690	5,689.96549	0.00000607
		155	5775	5,774.90759	0.00001600
	4.18V	42	5210	5,209.96517	0.00000669
		58	5290	5,289.94097	0.00001116
		106	5530	5,529.98840	0.00000210
		122	5610	5,609.99643	0.00000064
		138	5690	5,689.91924	0.00001419
		155	5775	5,774.94156	0.00001012
25 °C	3.8V	42	5210	5,209.90698	0.00001785
		58	5290	5,289.97450	0.00000482
		106	5530	5,529.94855	0.00000930
		122	5610	5,609.93412	0.00001174
		138	5690	5,689.96157	0.00000675
		155	5775	5,774.96655	0.00000579
40 °C	3.42V	42	5210	5,209.96987	0.00000578
		58	5290	5,289.93722	0.00001187
		106	5530	5,529.96432	0.00000645
		122	5610	5,609.90006	0.00001781
		138	5690	5,689.93794	0.00001091
		155	5775	5,774.91550	0.00001463
	4.18V	42	5210	5,209.97778	0.00000426
		58	5290	5,289.97361	0.00000499
		106	5530	5,529.91753	0.00001491
		122	5610	5,609.95224	0.00000851
		138	5690	5,689.95113	0.00000859
		155	5775	5,774.93164	0.00001184

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## 14 ANTENNA REQUIREMENT

### 14.1 Standard Applicable

According to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device.

According to §15.407, 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.

### 14.2 Antenna Connected Construction

The antenna is designed with unique RF connector and no consideration of replacement. Please see EUT photo for details.

*~ End of Report ~*

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