

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

**Applicant:** Cisco Systems  
125 West Tasman Drive San Jose California United States  
95134-1706

**Manufacturer:** Cisco Systems  
125 West Tasman Drive San Jose California United States  
95134-1706

**Product Name:** FM1200V-HW

**Brand Name:** Fluidmesh FM1200V VOLO

**Model No.:** FM1200V-HW

**Model Difference:** N/A

**Report Number:** ER/2020/30136-01

**FCC ID:** R5S1200V

**FCC Rule Part:** §15.407, Cat: NII

**Issue Date:** Mar. 15, 2021

**Date of Test:** Mar. 24, 2020 ~ Apr. 20, 2020

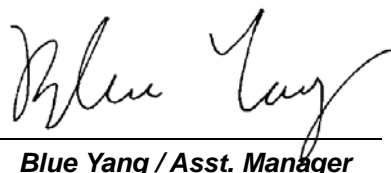
**Date of EUT Re-  
ceived:** Mar. 24, 2020

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab 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:

  
Blue Yang / Asst. Manager



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## Revision History

Report Number	Revision	Description	Issue Date	Remark
ER/2020/30136	Rev.00	Original.	Dec. 28, 2020	Revised By: Elle Chang
ER/2020/30136-01	Rev.00	Enable 5470~5725MHz	Mar. 15, 2021	Revised By: Elle Chang

**Note:**

- 1、Measurement results in the original test report **ER/2020/30136** is fully leveraged in this test report. Only removed the note of 5470~5725MHz is disable by software.
- 2、Disclaimer  
Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

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## 1 GENERAL INFORMATION

### 1.1 Product Description

Product Name:	FM1200V-HW	
Brand Name:	Fluidmesh FM1200V VOLO	
Model No.:	FM1200V-HW	
Model Difference:	N/A	
Hardware Version:	N/A	
Software Version:	N/A	
Power Supply:	24V from AC/DC Adapter	
	Adapter:	Model No.: GFP241DA-240100HB Supplier: GME
Modulation type	64QAM, 16QAM, QPSK, BPSK for OFDM	
Transition Rate:	802.11 n_20MHz: 6.5 – 144.4Mbps 802.11 n_40MHz: 13.5 – 300.0Mbps	

### 1.2 Antenna Designation

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Ma/n / Aux	Peak Antenna Gain (dBi)
Integrated	N/A	N/A	5150~5250	Main / Aux	12
			5470~5725	Main / Aux	12
			5725~5850	Main / Aux	12

### 1.3 FCC worst power

Wi-Fi 802.11	Frequency Range	Channels	Rated Power (Avg.) (dBm) (Worst case)	Modulation Technology
n_HT 20M	5150~5250	4	HT: 14.99	OFDM
	5470~5725	12	HT: 9.96	
	5725~5850	5	HT: 15.92	
n_HT 40M	5150~5250	2	HT: 15.92	OFDM
	5470~5725	5	HT: 9.54	
	5725~5850	2	HT: 15.86	

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#### 1.4 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407  
FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01  
FCC KDB 662911 D01 Multiple Transmitter Output v02r01  
ANSI C63.10:2013

#### 1.5 Test Facility

SGS Taiwan Ltd. Central RF Lab (TAF code 3702)  
No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan  
24803

FCC Designation number: TW0027

#### 1.6 Special Accessories

There are no special accessories used while test was conducted.

#### 1.7 Equipment Modifications

There was no modification incorporated into the EUT.

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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 a placed on a table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz. The CISPR Quasi-Peak and Average detector mode is employed. The two LISNs provide 50uH/50 ohm 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 Conducted Test (RF)

The active antenna port of the unlicensed wireless device is connected to the spectrum analyzer with attenuator to protect the instrumentation. If a second antenna port is available, it is tested at one operating frequency, with other port(s) appropriately terminated, to verify it has similar output characteristics as the fully tested port.

#### 2.3.3 Radiated Emissions

The EUT is a 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

### 2.4.1 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

Radiated emission below 30MHz is measured in a 9m\*9m\*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

### 2.4.2 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.

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## 2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission Configuration

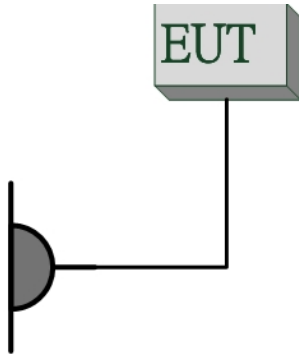


Fig. 2-3 Conducted (AC powerline) Emission Configuration

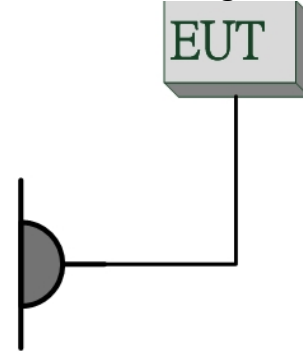


Fig. 2-2 Conducted (Antenna Port) Emission Configuration



Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	N/A	N/A	N/A	N/A	N/A
2.	Notebook	Lenovo	L480	PF-1S9Q32	N/A	N/A

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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 Emission Bandwidth	Compliant
§15.407(a)	Maximum Conducted Output Power	Compliant
§15.407(a)	Power Spectral Density	Compliant
§15.205 §15.209 §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

### 4.1 802.11n operated in U-NII Bands

#### Operated band in 5150 MHz ~5250 MHz:

20 M		40 M	
CH	Freq (MHz)	CH	Freq (MHz)
36	5180	38	5190
40	5200	46	5230
44	5220		
48	5240		

#### Operated band in 5470 MHz ~5725 MHz:

20 M		40 M	
CH	Freq (MHz)	CH	Freq (MHz)
100	5500	102	5510
104	5520	110	5550
108	5540	118	5590
112	5560	126	5630
116	5580	134	5670
120	5600	142	5710
124	5620		
128	5640		
132	5660		
136	5680		
140	5700		
144	5720		

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

20 M		40 M	
CH	Freq (MHz)	CH	Freq (MHz)
149	5745	151	5755
153	5765	159	5795
157	5785		
161	5805		
165	5825		

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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. The gevin UE is pre-scanned among below modes.

Modulation	Transmission Chain				Multiple Transmission Spatial
<input checked="" type="checkbox"/> 802.11 n	<input checked="" type="checkbox"/> Ch0	<input checked="" type="checkbox"/> Ch1	<input type="checkbox"/> Ch2	<input type="checkbox"/> Ch3	<input checked="" type="checkbox"/> MIMO

4. Therefore, below summary is the modes of test configuration that yield the highest reading and generate the highest emission chosen to carry out the relevantly mandatory test items.

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**4.2.1 RADIATED EMISSION TEST:**

RADIATED EMISSION TEST (BELOW 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11n_HT20	5180~5240	36 to 48	44	OFDM	MCS8	MIMO
	5500~5700	100 to 140	116			
	5745~5825	149 to 165	157			

RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11n_HT20	5180~5240	36 to 48	36,44,48	OFDM	MCS8	MIMO
	5500~5720	100 to 144	100,116,140,144			
	5745~5825	149 to 165	149,157,165			
802.11n_HT40	5190~5230	38 to 46	38,46		MCS8	MIMO
	5510~5710	102 to 142	102,110,134,142			
	5755~5795	151 to 159	151,159			

**Note:**

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

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**4.2.1 ANTENNA PORT CONDUCTED MEASUREMENT:**

CONDUCTED TEST						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11n_HT20	5180~5240	36 to 48	36,44,48	OFDM	MCS8	MIMO
	5260~5320	52 to 64	52,60,64			
	5500~5720	100 to 144	100,116,140,144			
	5745~5825	149 to 165	149,157,165			
802.11n_HT40	5190~5230	38 to 46	38,46		MCS8	MIMO
	5270~5310	54 to 62	54,62			
	5510~5710	102 to 142	102,110,134,142			
	5755~5795	151 to 159	151,159			

**Maximum EIRP at any elevation angle above 30 degrees**

MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11n_HT20	5180~5240	36 to 48	36,44,48	OFDM	MCS8	MIMO
802.11n_HT40	5190~5230	38 to 46	38,46		MCS8	MIMO

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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	
<b>Polarization: Vertical</b>	9kHz~30MHz: +/-2.3dB
	30MHz - 180MHz: +/- 3.37dB
	180MHz -417MHz: +/- 3.19dB
	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB
<b>Polarization: Horizontal</b>	9kHz~30MHz: +/-2.3dB
	30MHz - 167MHz: +/- 4.22dB
	167MHz -500MHz: +/- 3.44dB
	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

### Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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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(μV)	
	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.
EMI Test Receiver	R&S	ESCI 7	1166.5950.07	07/04/2019	07/03/2020
LISN	SCHWARZ-BECK	NSLK 8127	8127-649	06/02/2019	06/01/2020
Test Software	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R	N.C.R
Coaxial Cables	N/A	WK CE Cable	N/A	01/02/2020	01/01/2021

### 6.3 EUT Setup

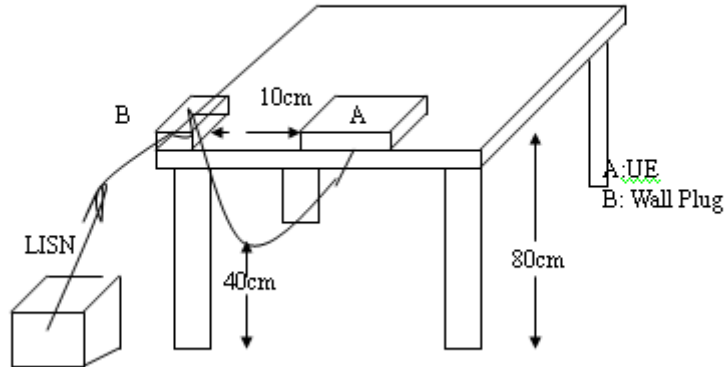
1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The LISN was connected with 120Vac/60Hz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

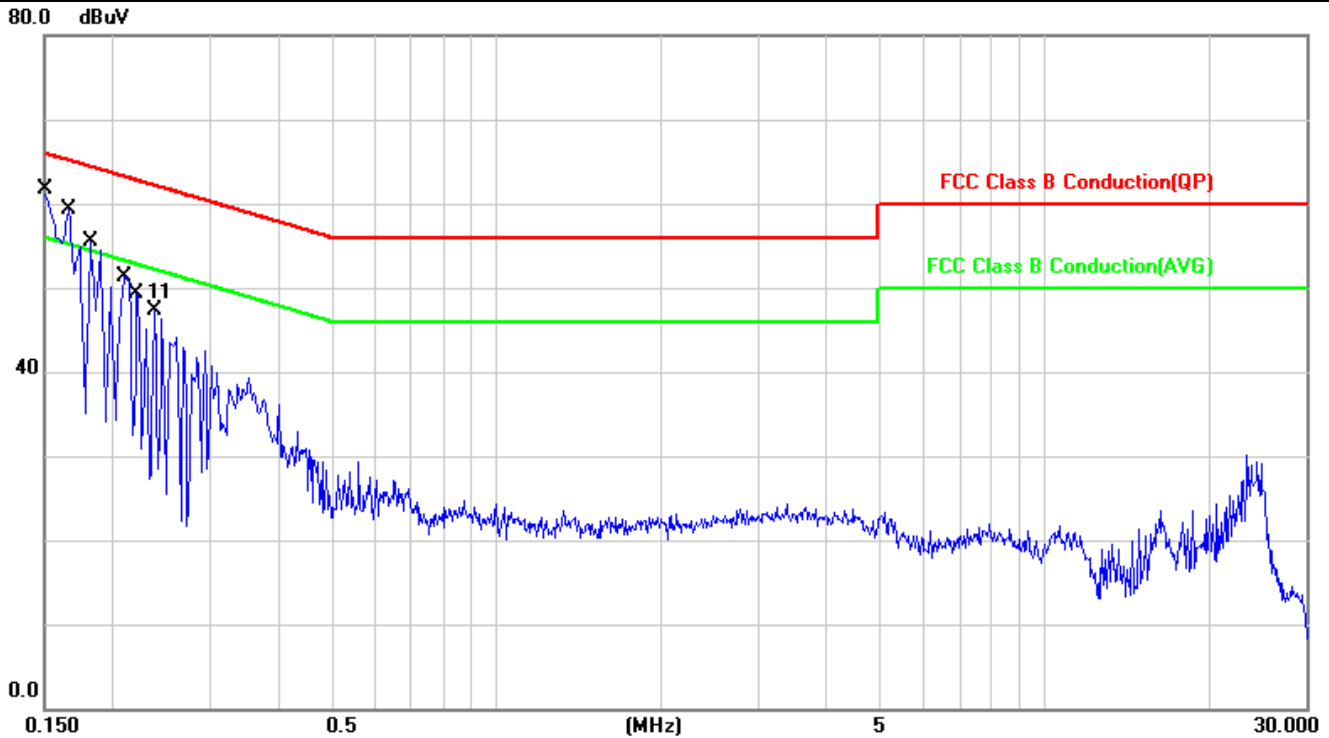
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### AC POWER LINE CONDUCTED EMISSION TEST DATA

Description:	Operation	Date:	2020/04/14
Line:	L1	Temp.(°C)/Hum.(%):	22(°C)/46%
Test Voltage:	AC 120V/60Hz	Test By:	Nick
Report Number:	E2/2020/30136		



No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector
		( MHz )	( dBuV )	( dB )	( dBuV )	( dBuV )	( dB )	
1	*	0.1500	58.47	0.00	58.47	66.00	-7.53	QP
2		0.1500	34.02	0.00	34.02	56.00	-21.98	AVG
3		0.1660	55.67	0.00	55.67	65.16	-9.49	QP
4		0.1660	31.53	0.00	31.53	55.16	-23.63	AVG
5		0.1820	52.44	0.01	52.45	64.39	-11.94	QP
6		0.1820	29.32	0.01	29.33	54.39	-25.06	AVG
7		0.2100	47.45	0.01	47.46	63.21	-15.75	QP
8		0.2100	24.67	0.01	24.68	53.21	-28.53	AVG
9		0.2220	46.54	0.01	46.55	62.74	-16.19	QP
10		0.2220	25.20	0.01	25.21	52.74	-27.53	AVG
11		0.2380	47.28	0.01	47.29	62.17	-14.88	peak

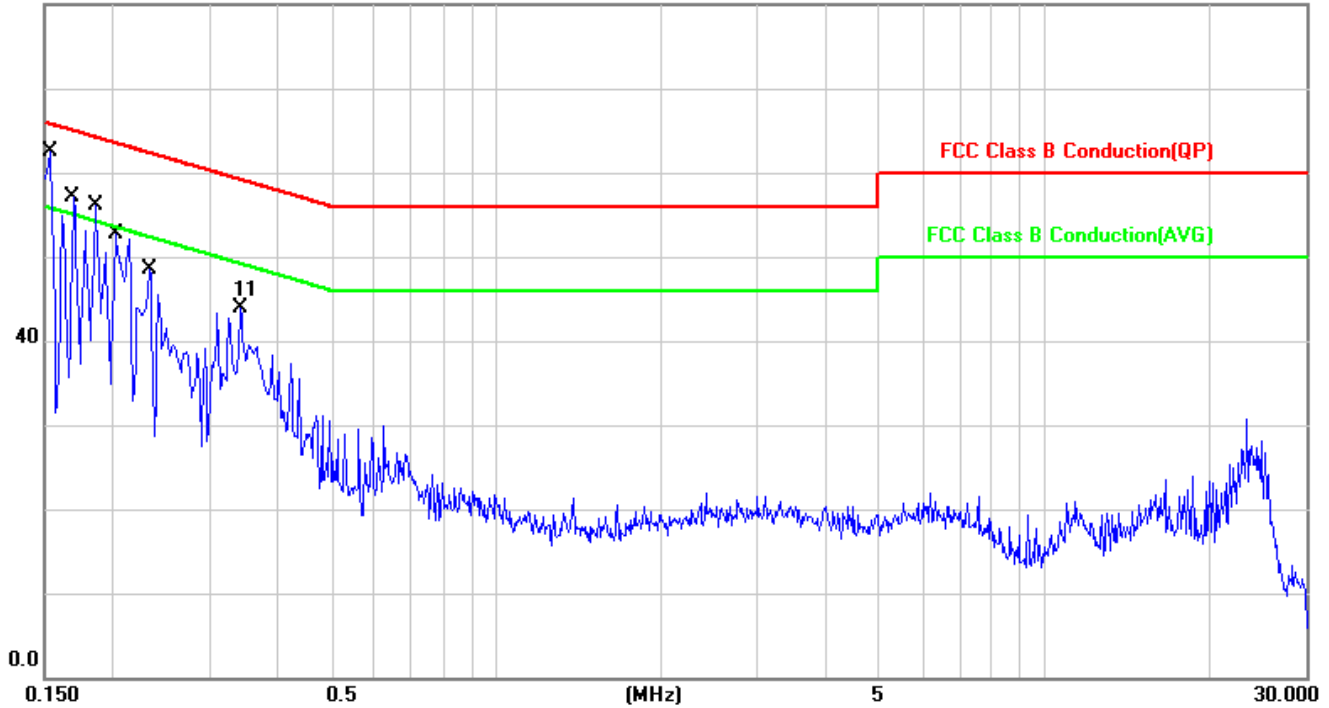
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<b>Description:</b>	<b>Operation</b>	<b>Date:</b>	<b>2020/04/14</b>
<b>Line:</b>	<b>N</b>	<b>Temp.(°C)/Hum.(%):</b>	<b>22(°C)/46%</b>
<b>Test Voltage:</b>	<b>AC 120V/60Hz</b>	<b>Test By:</b>	<b>Nick</b>
<b>Report Number:</b>	<b>E2/2020/30136</b>		

80.0 dBuV



No.	Mk.	Freq. ( MHz )	Reading ( dBuV )	Factor ( dB )	Measurement ( dBuV )	Limit ( dBuV )	Over ( dB )	Detector
1	*	0.1540	57.86	0.03	57.89	65.78	-7.89	QP
2		0.1540	33.19	0.03	33.22	55.78	-22.56	AVG
3		0.1700	54.73	0.03	54.76	64.96	-10.20	QP
4		0.1700	31.52	0.03	31.55	54.96	-23.41	AVG
5		0.1860	51.70	0.03	51.73	64.21	-12.48	QP
6		0.1860	29.12	0.03	29.15	54.21	-25.06	AVG
7		0.2020	49.61	0.03	49.64	63.53	-13.89	QP
8		0.2020	28.02	0.03	28.05	53.53	-25.48	AVG
9		0.2340	42.94	0.03	42.97	62.31	-19.34	QP
10		0.2340	20.97	0.03	21.00	52.31	-31.31	AVG
11		0.3420	43.82	0.03	43.85	59.15	-15.30	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.

### 7.1 Measurement Procedure:

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

Duty Cycle:

Mode	Duty Cycle (%) =Ton / (Ton+Toff)	Duty Factor (dB) =10*log ( 1/Duty Cycle )	1/T (kHz)	VBW setting (kHz)
802.11n_20	96.33	0.16	0.63	1.00
802.11n_40	96.13	0.17	0.62	1.00

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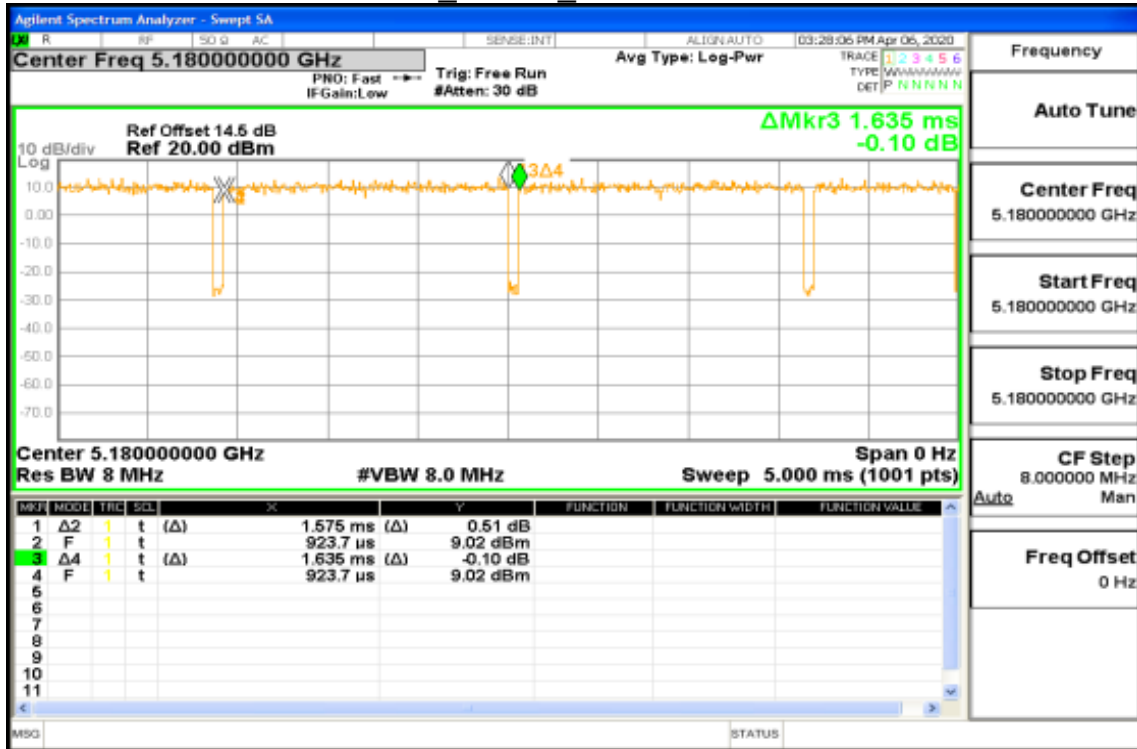
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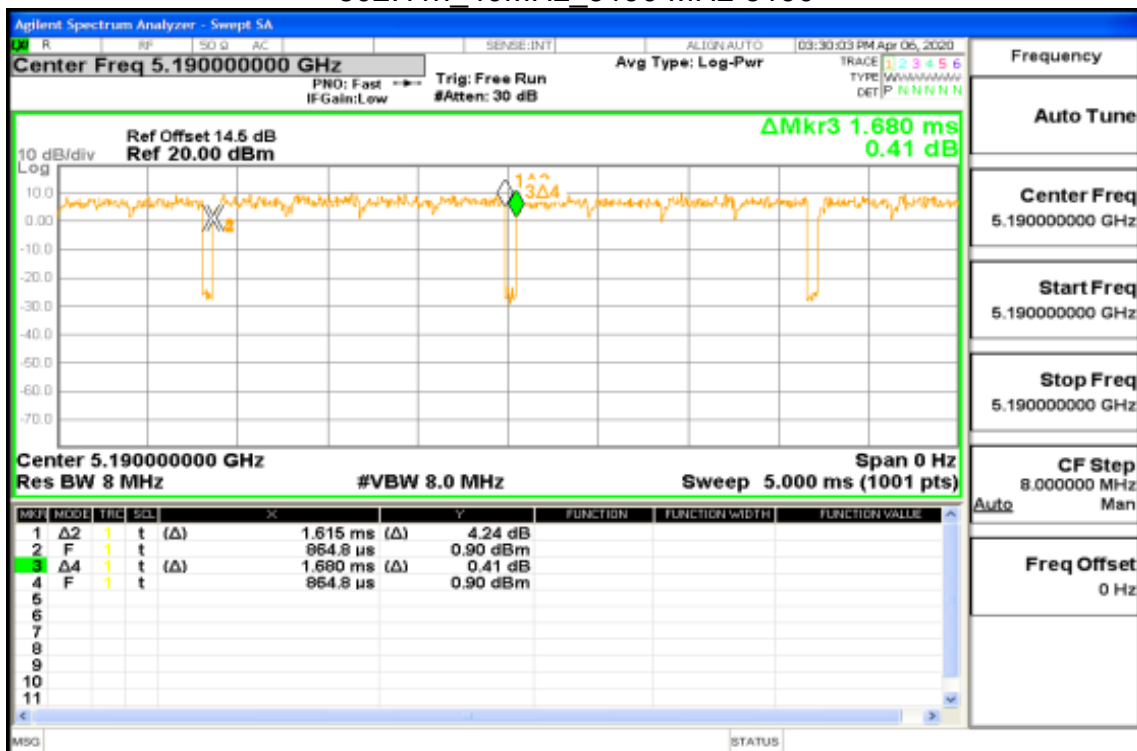
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## 7.2 DUTY CYCLE TEST SIGNAL MEASUREMENT RESULT

802.11n\_20MHz\_5180MHz-5180



802.11n\_40MHz\_5190 MHz-5190



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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.
  - 3.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.
  - 3.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.

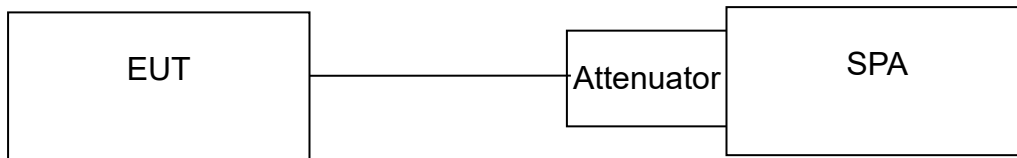
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### 8.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equip-ment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2019	05/16/2020
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY57120290	02/20/2020	02/19/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2020	01/01/2021
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2020	01/01/2021

### 8.4 Test Set-up



### 8.5 Measurement Result

#### 8.5.1 FCC 26dB Bandwidth

802.11n_HT20_Ch0			802.11n_HT20_Ch1		
Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	22.58	13.537	5180	22.32	13.487
5220	22.42	13.506	5220	22.47	13.516
5240	22.3	13.483	5240	22.78	13.576
5500	22.11	13.446	5500	22.57	13.535
5580	23.28	13.670	5580	23.08	13.632
5700	22.61	13.543	5700	22.66	13.553
5720(U-NII 2C)	16.085	12.064	5720(U-NII 2C)	15.995	12.040
5720 (U-NII 3)	6.085	7.843	5720 (U-NII 3)	5.995	7.778

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802.11n_HT40_Ch0			802.11n_HT40_Ch1		
Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	45.99	16.627	5190	45.99	16.627
5230	45.72	16.601	5230	45.94	16.622
5510	46.61	16.685	5510	46.27	16.653
5550	<b>47.58</b>	16.774	5550	<b>46.76</b>	16.699
5670	47.91	16.804	5670	47.7	16.785
5710 (U-NII 2C)	38.085	15.808	5710 (U-NII 2C)	37.085	15.692
5710 (U-NII 3)	8.085	9.077	5710 (U-NII 3)	7.085	8.503

### 8.5.2 6dB Bandwidth (5725 MHz~ 5850 MHz) measure with Peak detector for FCC

802.11n_HT20_Ch0			802.11n_HT20_Ch1		
Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	17.15	12.343	5745	16.46	12.164
5785	16.91	12.281	5785	16.94	12.289
5825	16.96	12.294	5825	17.19	12.353

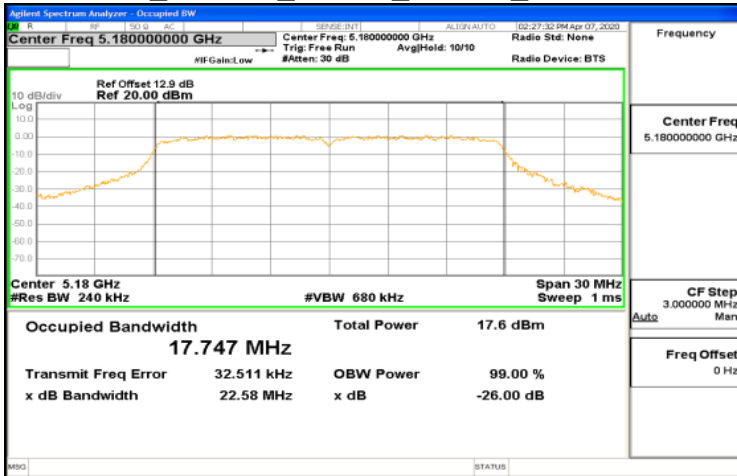
802.11n_HT40_Ch0			802.11n_HT40_Ch1		
Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	35.76	15.534	5755	35.75	15.533
5795	35.39	15.489	5795	35.83	15.542

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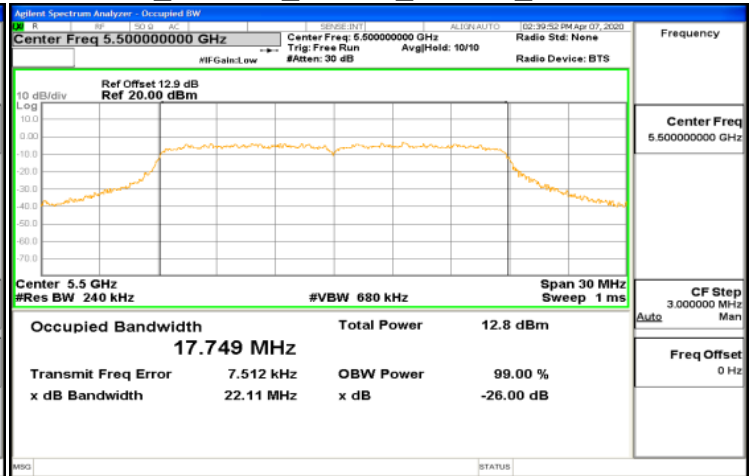
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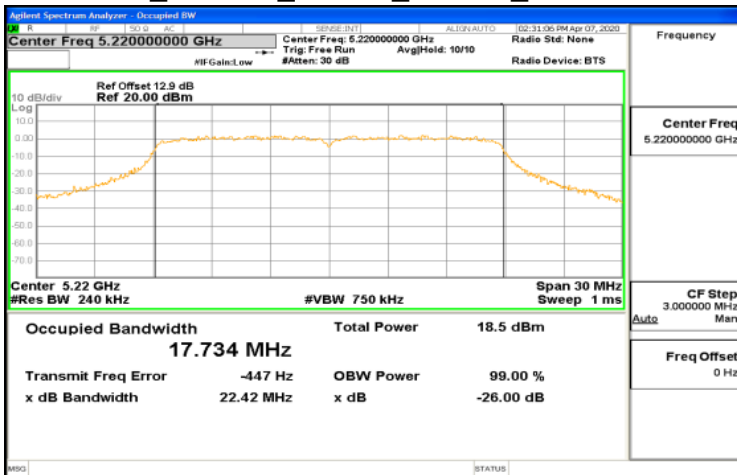
FCC\_802.11n\_20MHz\_Chain0\_5180MHz



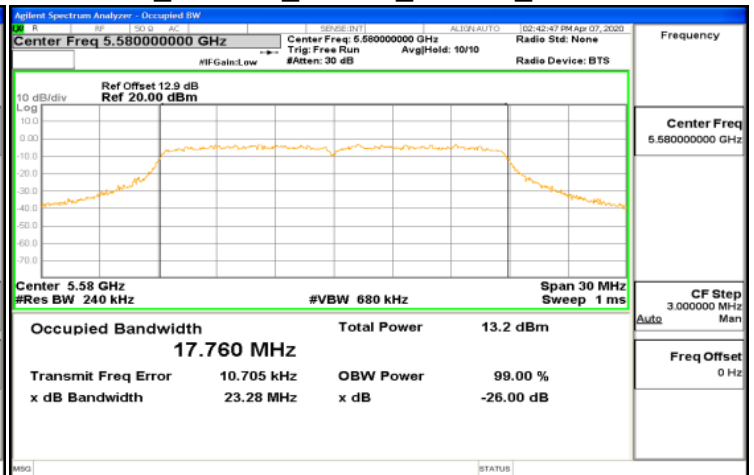
FCC\_802.11n\_20MHz\_Chain0\_5500MHz



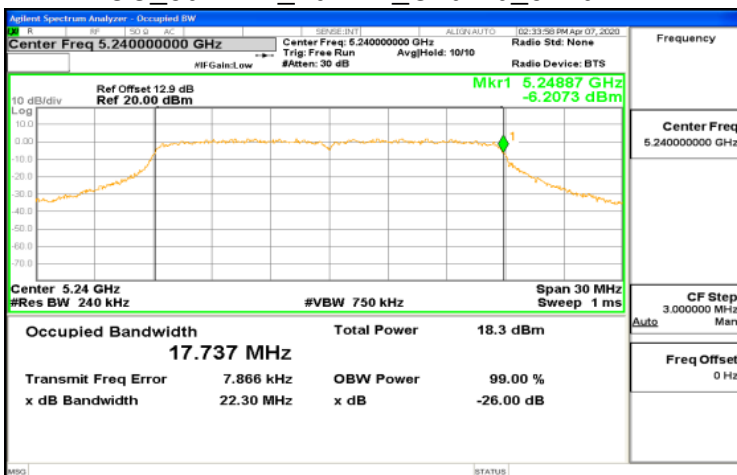
FCC\_802.11n\_20MHz\_Chain0\_5220MHz



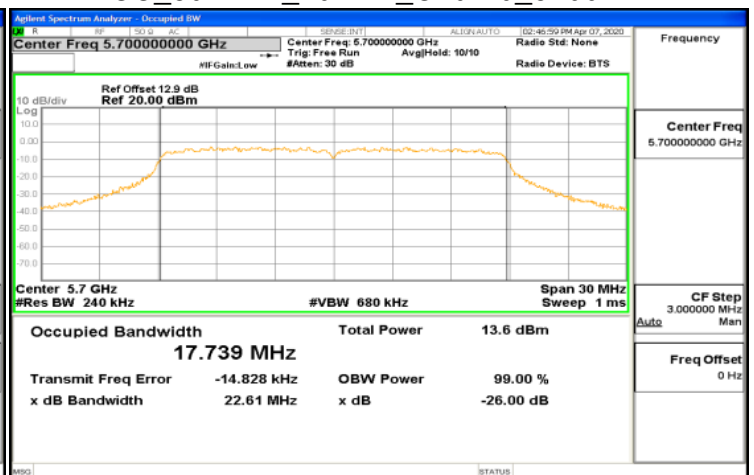
FCC\_802.11n\_20MHz\_Chain0\_5580MHz



FCC\_802.11n\_20MHz\_Chain0\_5240MHz



FCC\_802.11n\_20MHz\_Chain0\_5700MHz



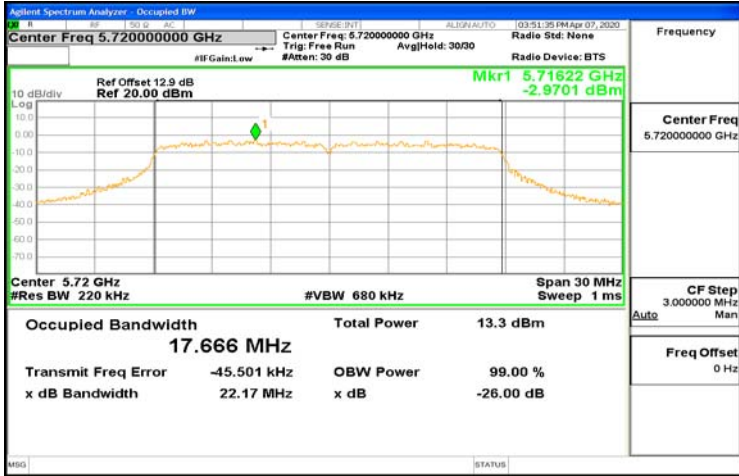
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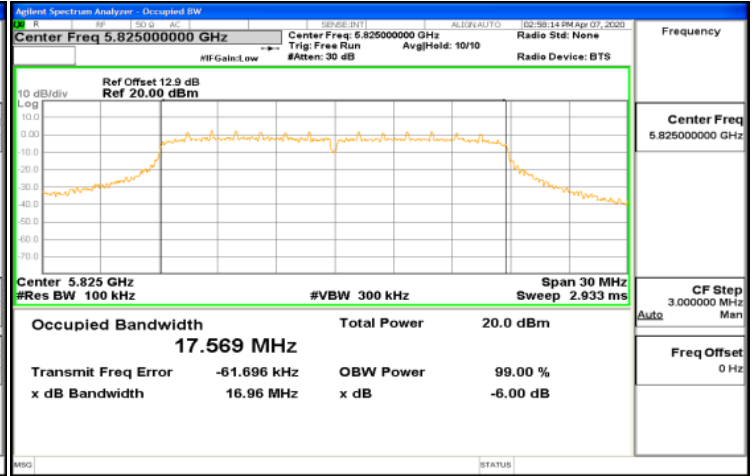
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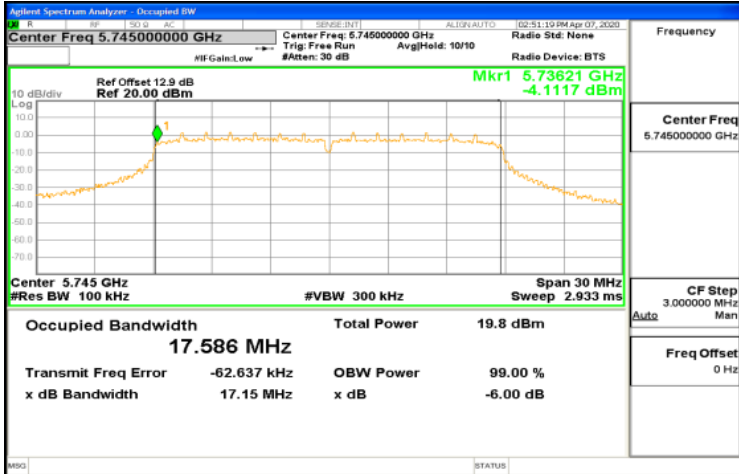
### FCC\_802.11n\_20MHz\_Chain0\_5720MHz



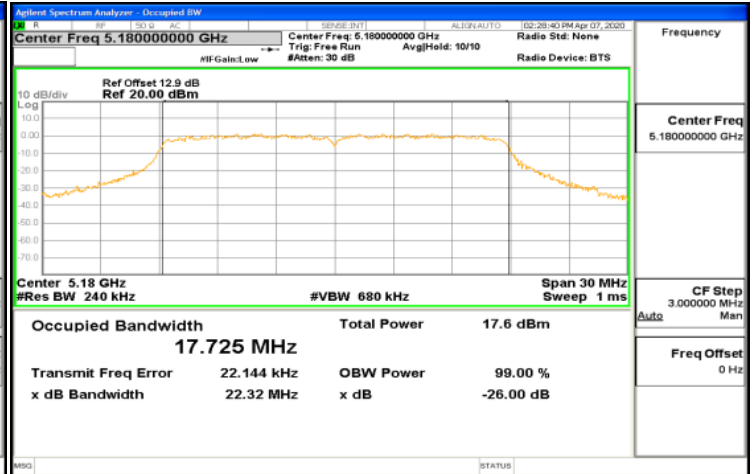
### FCC\_802.11n\_20MHz\_Chain0\_5825MHz



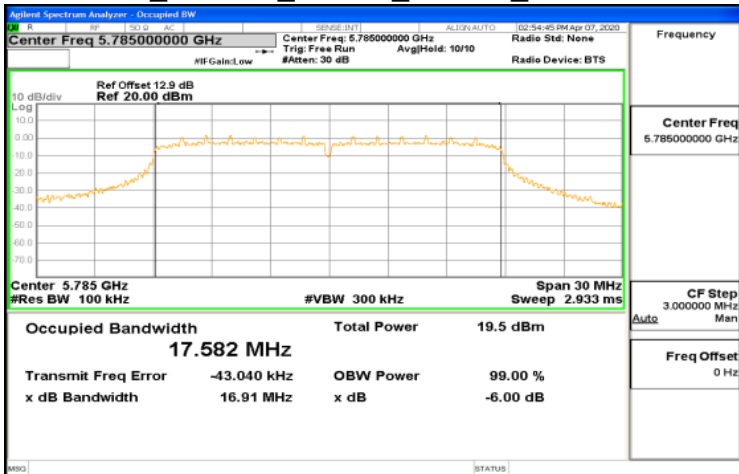
### FCC\_802.11n\_20MHz\_Chain0\_5745MHz



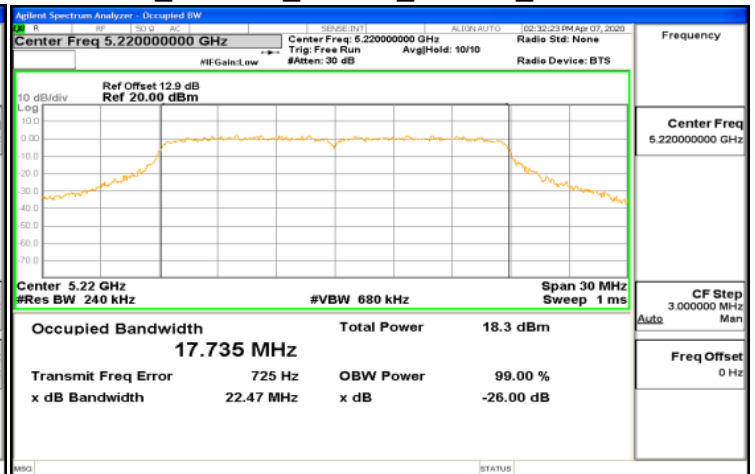
### FCC\_802.11n\_20MHz\_Chain1\_5180MHz



### FCC\_802.11n\_20MHz\_Chain0\_5785MHz



### FCC\_802.11n\_20MHz\_Chain1\_5220MHz

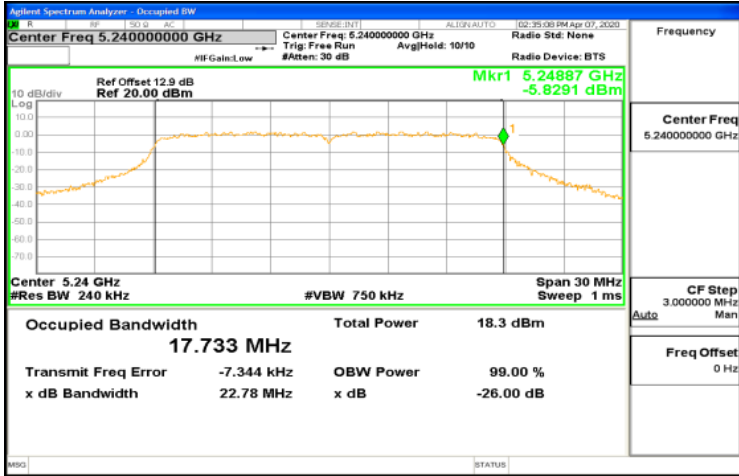


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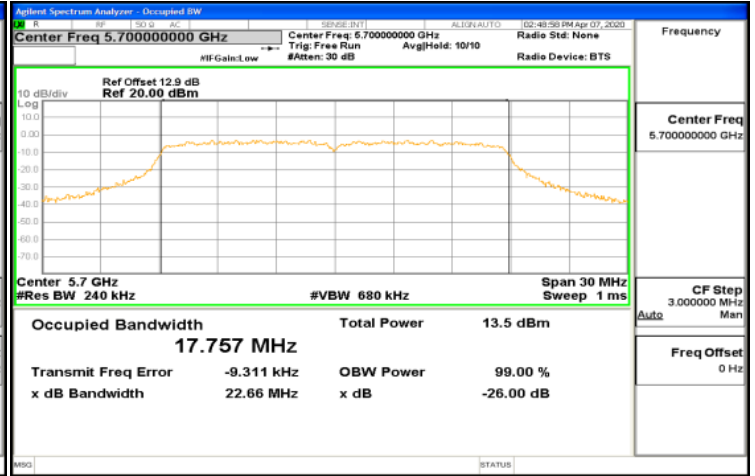
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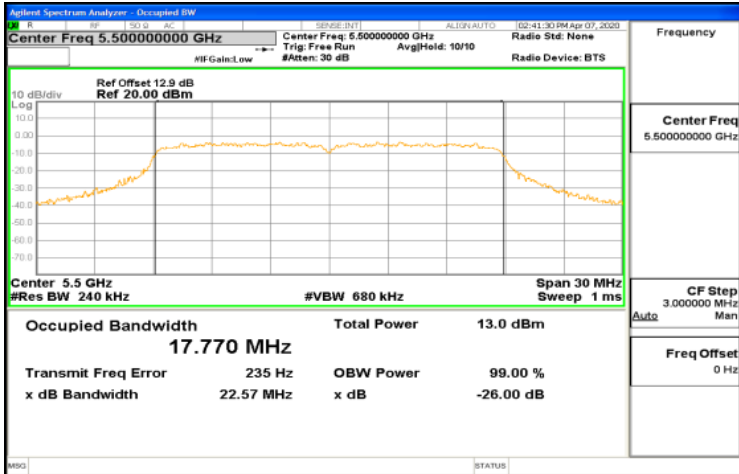
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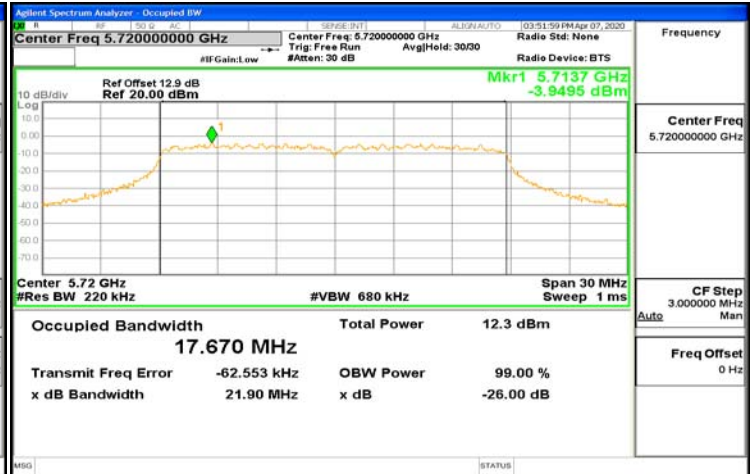
FCC\_802.11n\_20MHz\_Chain1\_5700MHz



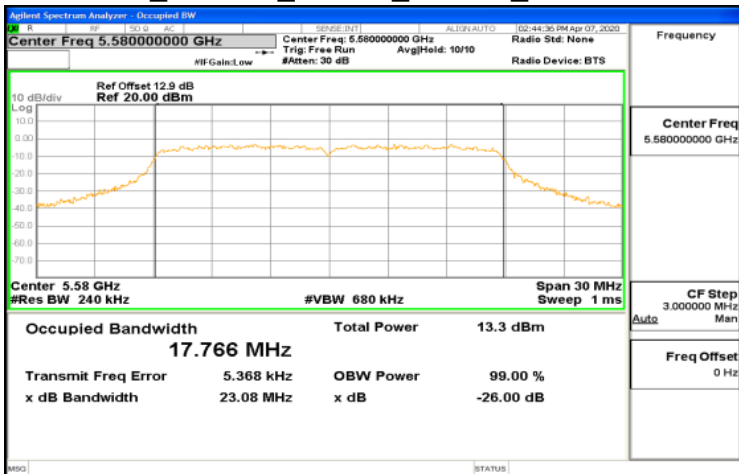
FCC\_802.11n\_20MHz\_Chain1\_5500MHz



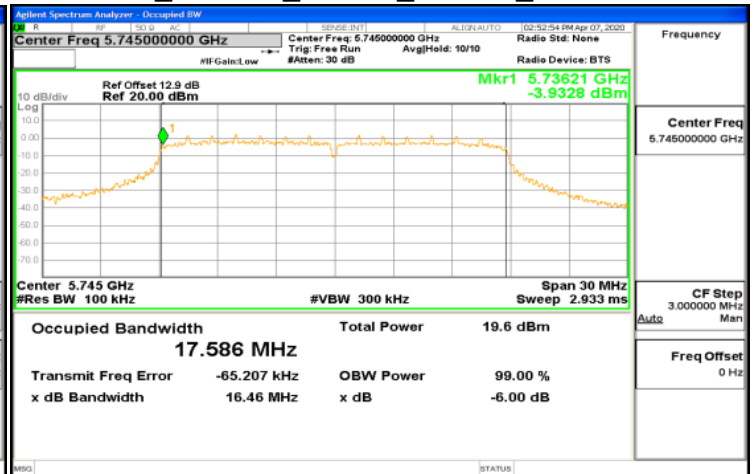
FCC\_802.11n\_20MHz\_Chain1\_5720MHz



FCC\_802.11n\_20MHz\_Chain1\_5580MHz



FCC\_802.11n\_20MHz\_Chain1\_5745MHz

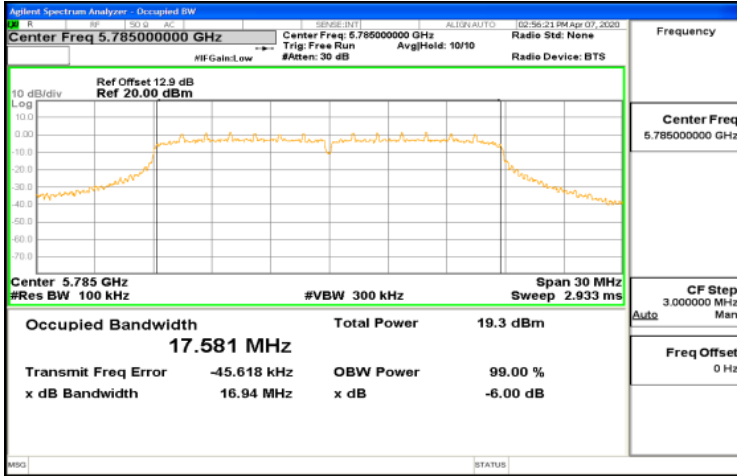


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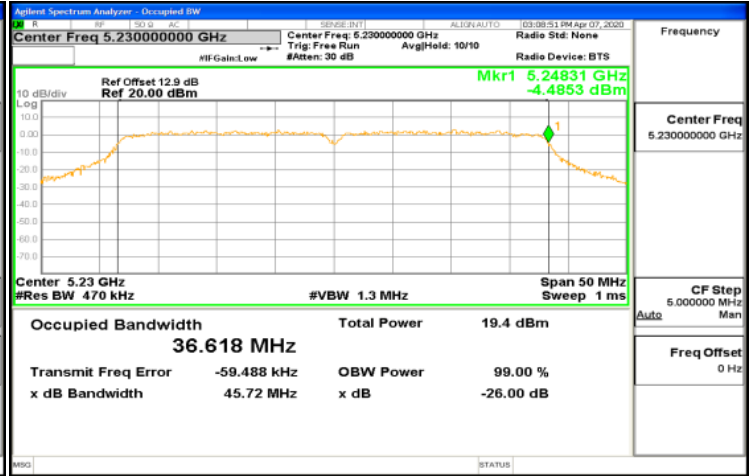
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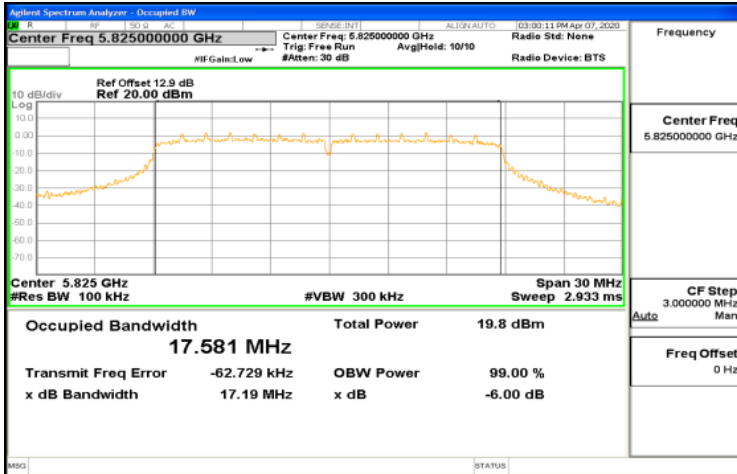
FCC\_802.11n\_20MHz\_Chain1\_5785MHz



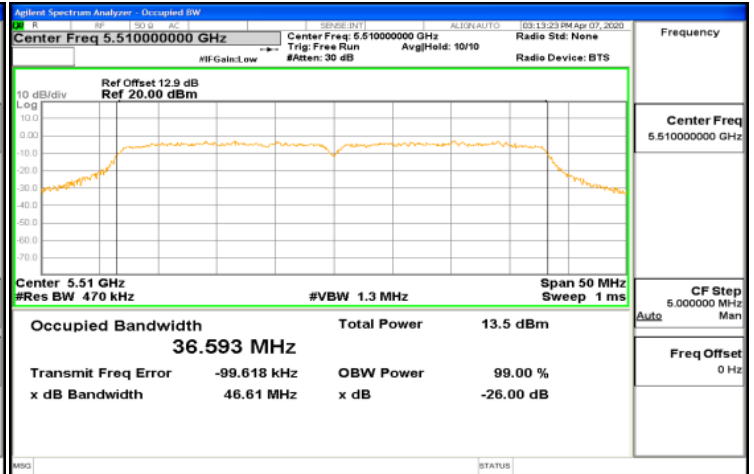
FCC\_802.11n\_40MHz\_Chain0\_5230MHz



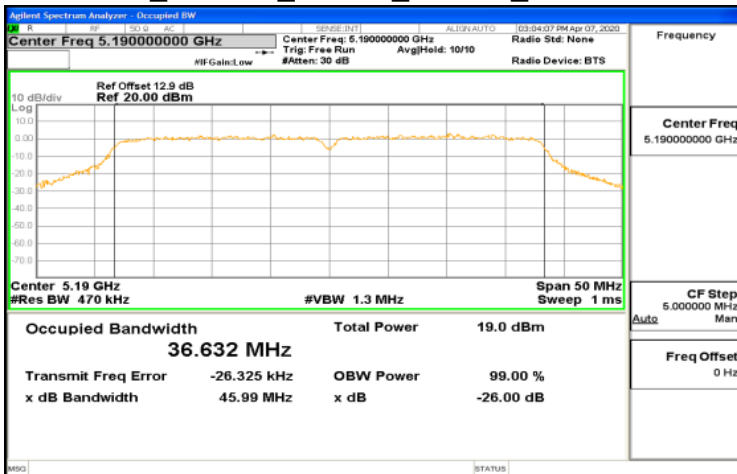
FCC\_802.11n\_20MHz\_Chain1\_5825MHz



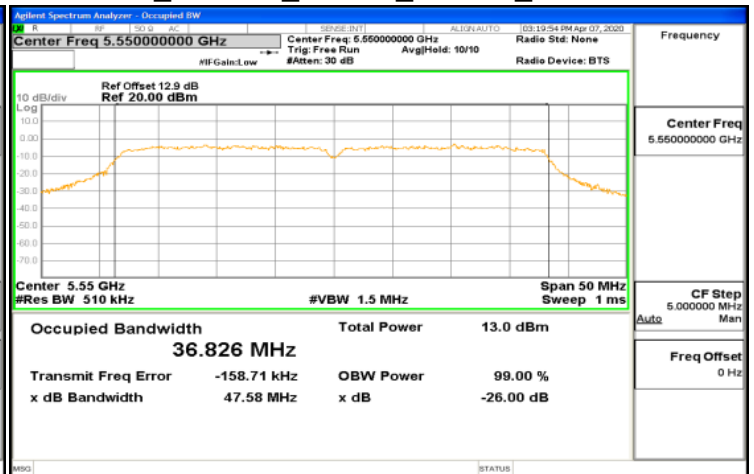
FCC\_802.11n\_40MHz\_Chain0\_5510MHz



FCC\_802.11n\_40MHz\_Chain0\_5190MHz



FCC\_802.11n\_40MHz\_Chain0\_5550MHz

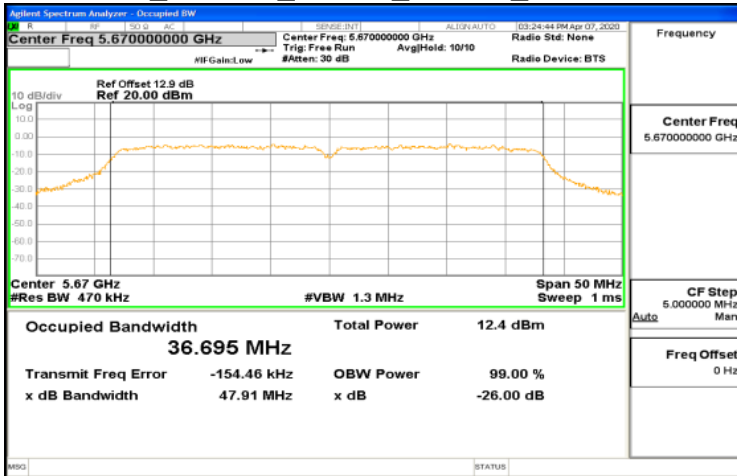


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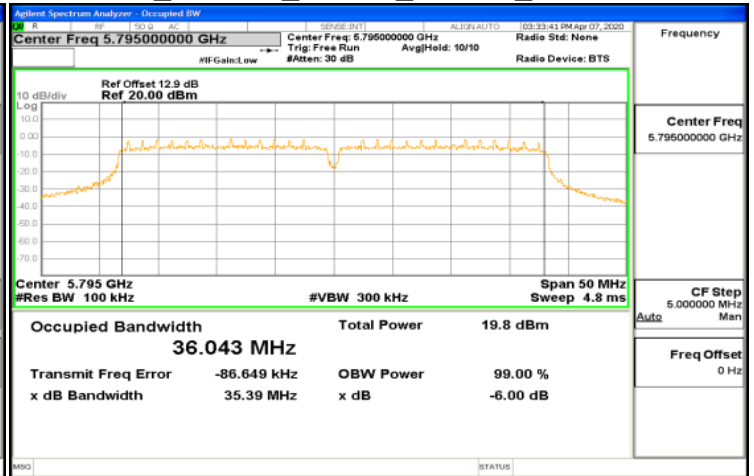
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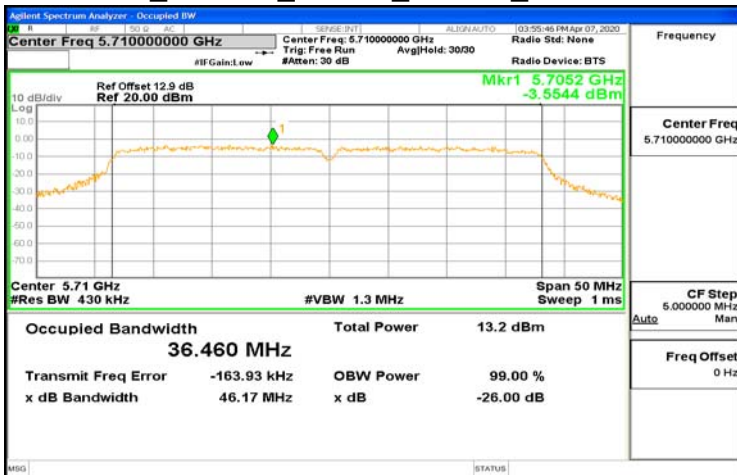
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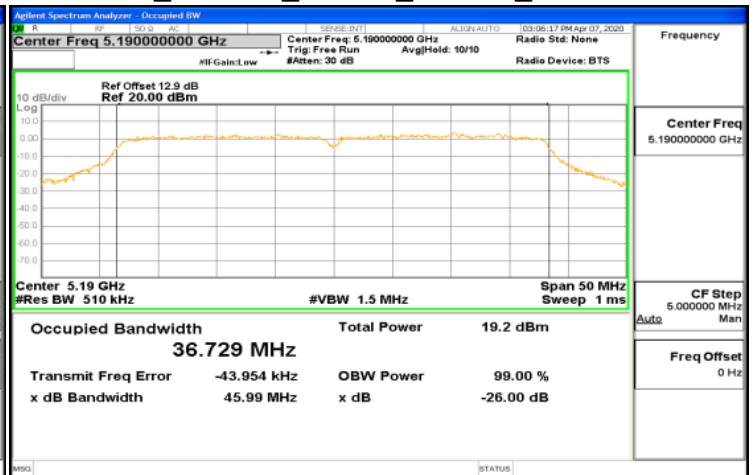
### FCC\_802.11n\_40MHz\_Chain0\_5795MHz



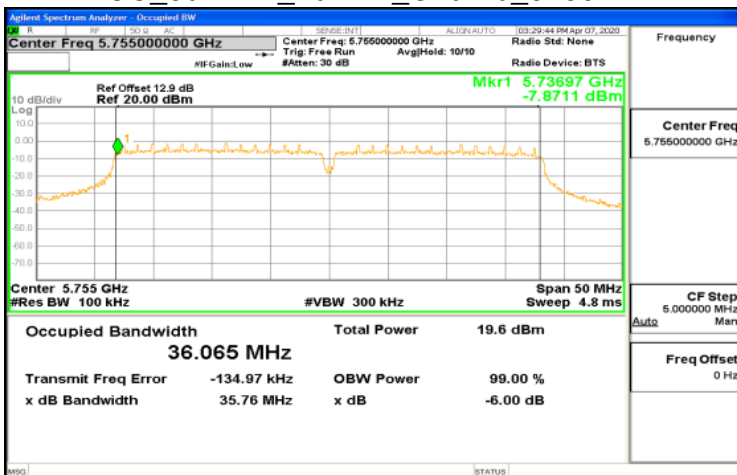
### FCC\_802.11n\_40MHz\_Chain0\_5710MHz



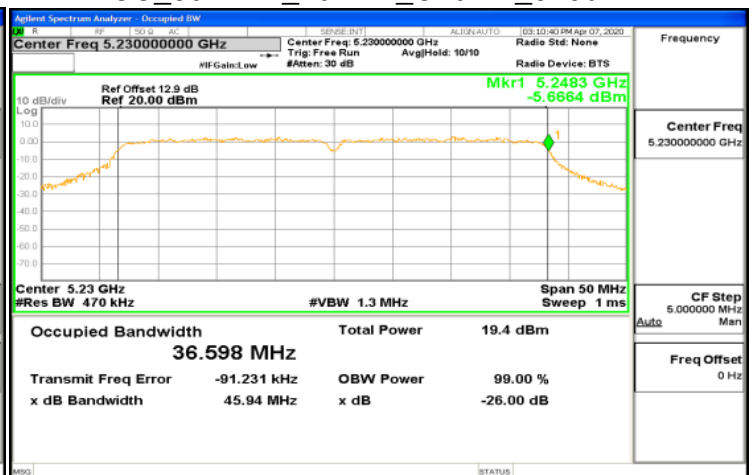
### FCC\_802.11n\_40MHz\_Chain1\_5190MHz



### FCC\_802.11n\_40MHz\_Chain0\_5755MHz



### FCC\_802.11n\_40MHz\_Chain1\_5230MHz

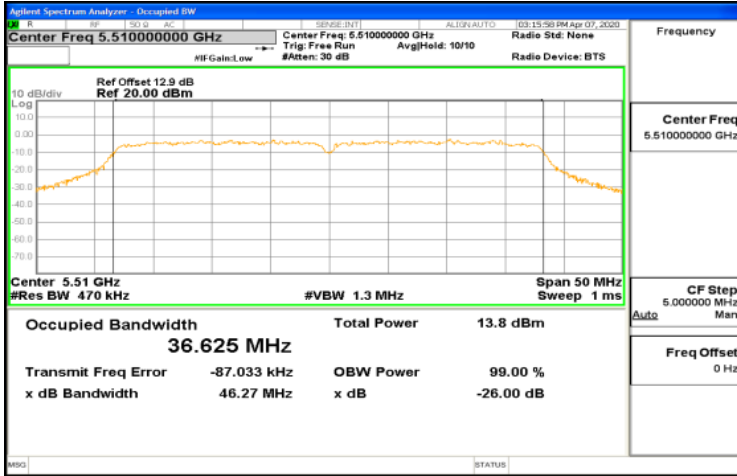


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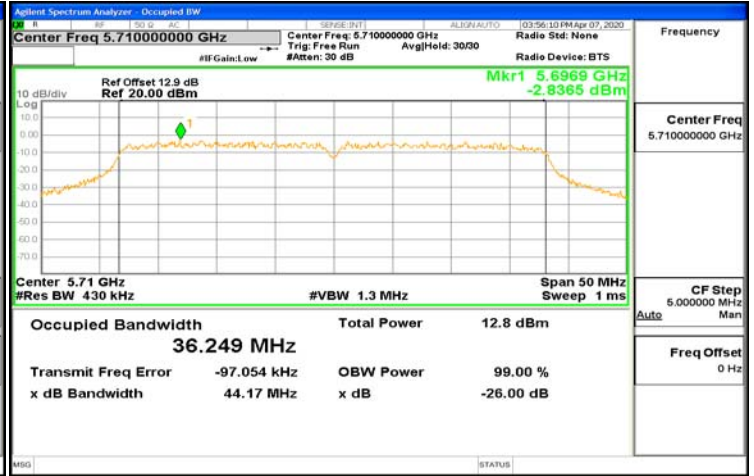
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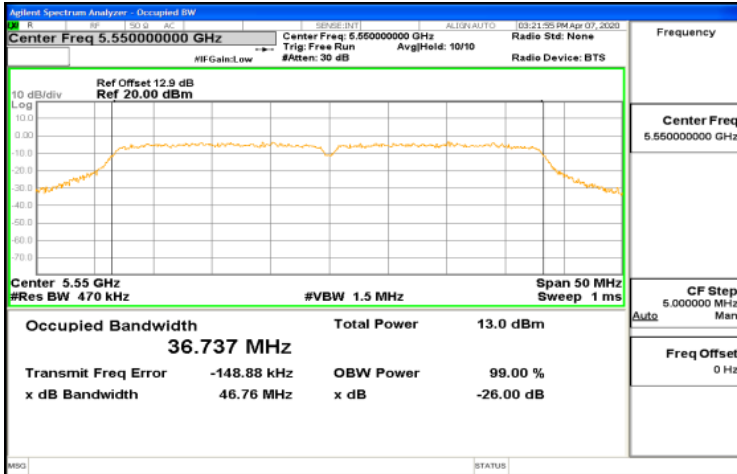
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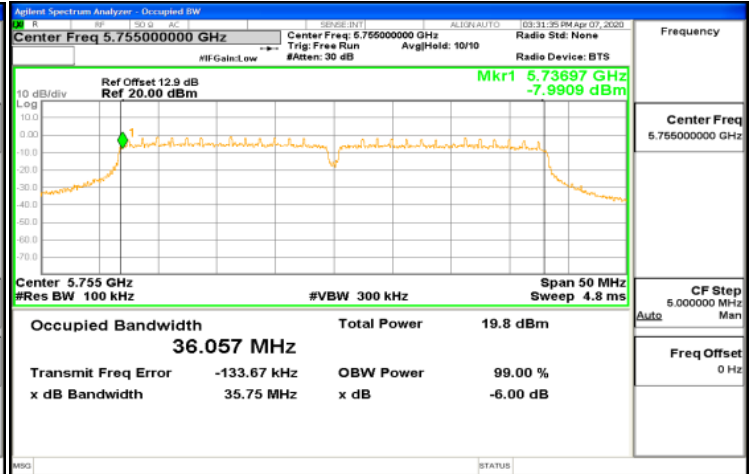
FCC\_802.11n\_40MHz\_Chain1\_5710MHz



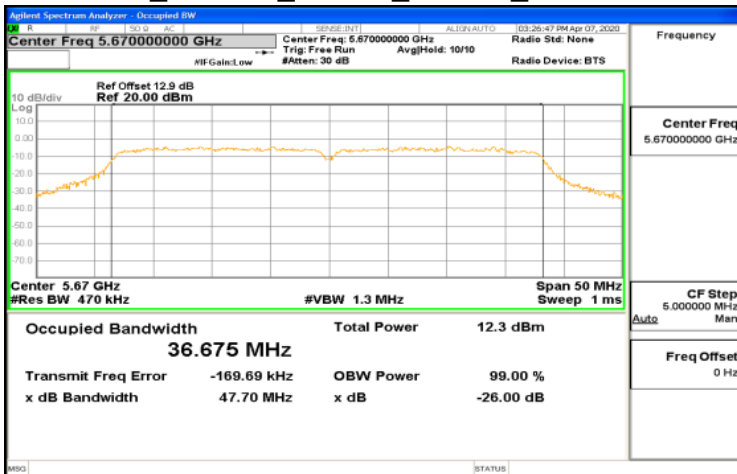
FCC\_802.11n\_40MHz\_Chain1\_5550MHz



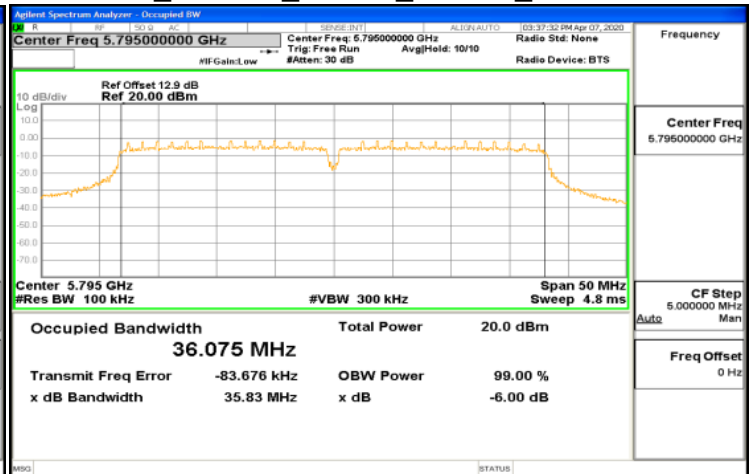
FCC\_802.11n\_40MHz\_Chain1\_5755MHz



FCC\_802.11n\_40MHz\_Chain1\_5670MHz



FCC\_802.11n\_40MHz\_Chain1\_5795MHz



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### 8.5.3 99% BW Verification for DFS Function

802.11n\_HT20\_Ch0

802.11n\_HT20\_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)	Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.87	< 5250	5240	5248.87	< 5250
5745	5736.21	> 5725	5745	5736.21	> 5725

802.11n\_HT40\_Ch0

802.11n\_HT40\_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)	Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5230	5248.31	< 5250	5230	5248.30	< 5250
5755	5736.97	> 5725	5755	5736.97	> 5725

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## 9 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

### 9.1 Standard Applicable

#### FCC

OPERZTION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Master device )	1 Watt(30dBm)
	√	Fixed point-to-point Access Ponit	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)
If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum transmit power shall be reduced by the amount in dB that the direction-al gain of the antenna exceeds 6 dBi.			

#### Note:

As per FCC KDB 662911 D01

Unequal antenna gains, with equal transmit powers. For antenna gains given by G1, G2, ..., GN dBi.

(i) If transmit signals are correlated, then Directional gain

$$= 10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] \text{ dBi}$$

[Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

The maximum e.i.r.p at any elevation angle above 30degrees as measured from the horizon must not exceed 125 mw (21dBm). For fixed point-to-point access points operating in the band 5.15-5.25Ghz.

The antenna gain is grater than 6 dBi in MIMO mode, therefore the limit needs to be reduced as below:

	Antenna Gain (dBi)	Conducted Power Limit (dBm)
<b>UNII-1</b>	15.01	20.99
<b>U-NII-2C</b>	15.01	14.97
<b>U-NII-3</b>	15.01	20.99

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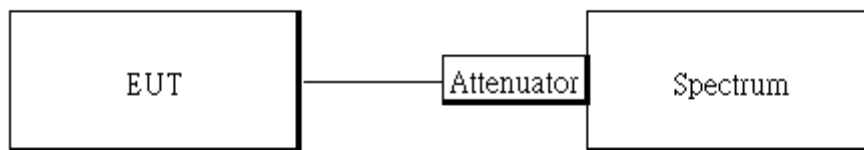
### 9.2 Measurement Procedure

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	1804001	02/20/2020	02/19/2021
Power Sensor	Anritsu	MA2411B	1726104	02/20/2020	02/19/2021
Power Sensor	Anritsu	MA2411B	1726107	02/20/2020	02/19/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2020	01/01/2021

### 9.4 Test Set-up



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## 9.5 Measurement Result

### 9.5.1 Conducted output power (FCC)

#### 802.11n\_HT20\_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1				
36	5180	MCS8	5.92	5.11	8.71	7.424	20.99	PASS
44	5220	MCS8	11.98	11.46	14.90	30.906	20.99	PASS
48	5240	MCS8	12.41	11.12	<b>14.99</b>	31.517	20.99	PASS
100	5500	MCS8	6.92	6.65	<b>9.96</b>	9.908	14.97 or $11+10\log(B) = 24.45$	PASS
116	5580	MCS8	6.8	6.69	9.92	9.813	14.97 or $11+10\log(B) = 24.63$	PASS
140	5700	MCS8	7.07	5.89	9.69	9.317	14.97 or $11+10\log(B) = 24.54$	PASS
144	5720(U-NII 2C)	MCS8	3.95	3.44	6.87	4.861	14.97 or $11+10\log(B) = 23.04$	PASS
144	5720 (U-NII 3)	MCS8	-0.28	-0.82	2.65	1.839	20.99	PASS
149	5745	MCS8	12.97	12.51	<b>15.92</b>	39.073	20.99	PASS
157	5785	MCS8	12.92	12.13	15.72	37.287	20.99	PASS
165	5825	MCS8	13	11.65	15.55	35.892	20.99	PASS

#### 802.11n\_HT40\_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1				
38	5190	MCS8	6.81	6.22	9.71	9.347	20.99	PASS
46	5230	MCS8	12.91	12.56	<b>15.92</b>	39.086	20.99	PASS
102	5510	MCS8	5.53	4.97	8.44	6.983	14.97 or $11+10\log(B) = 27.65$	PASS
110	5550	MCS8	6.61	6.1	<b>9.54</b>	9.004	14.97 or $11+10\log(B) = 27.70$	PASS
134	5670	MCS8	6.38	5.95	9.35	8.614	14.97 or $11+10\log(B) = 27.79$	PASS
142	5710(U-NII 2C)	MCS8	6.17	5.38	8.94	7.839	14.97 or $11+10\log(B) = 26.69$	PASS
142	5720 (U-NII 3)	MCS8	-0.56	-1.81	2.21	1.664	20.99	PASS
151	5755	MCS8	12.92	12.42	<b>15.86</b>	38.538	20.99	PASS
159	5795	MCS8	12.85	11.95	15.60	36.349	20.99	PASS

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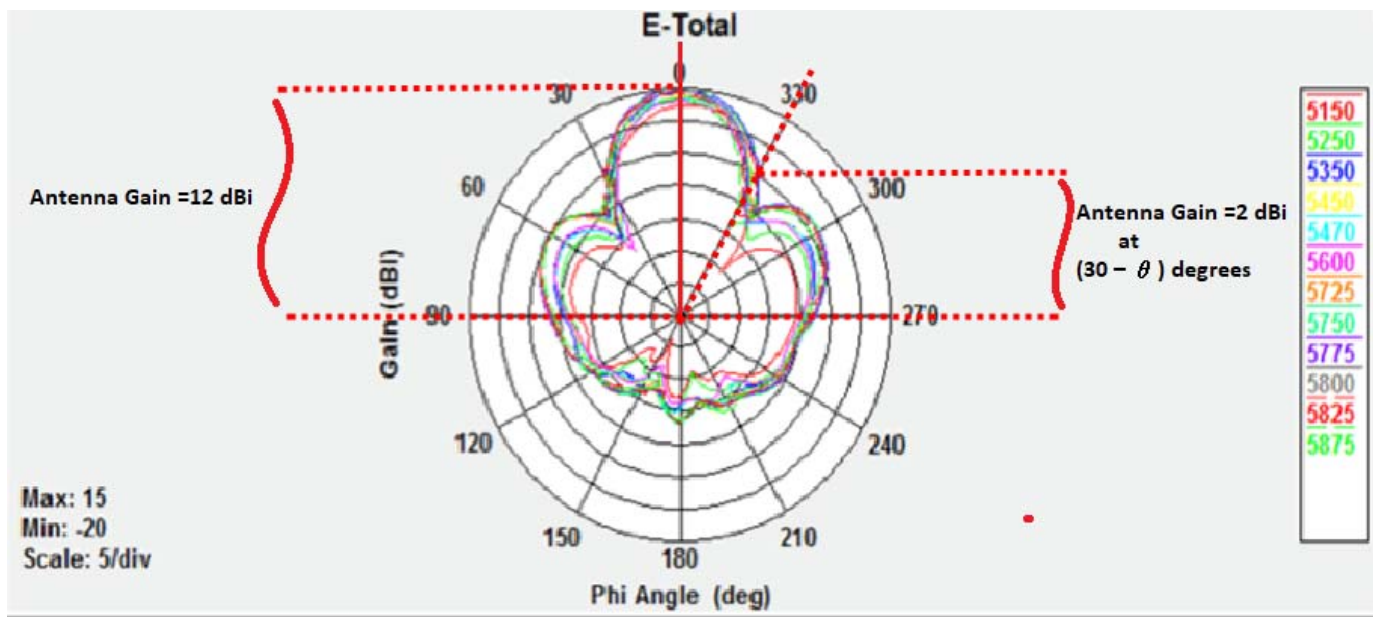
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9.5.2 Maximum EIRP at any elevation angle above 30 degrees

MODE	BANDWIDTH (MHz)	FREQUENCY (MHz)	MAXIMUM CONDUCTED OUTPUT POWER (dBm)	ELEVATION ABOVE 30° Directional GAIN (dBi)	ELEVATION ABOVE 30° MAX EIRP (dBm)	EIRP LIMIT (dBm)	RESULT
Configuration IEEE 802.11n_HT20	20	5180	8.71	5.01	13.72	21	PASS
		5220	14.90	5.01	19.91	21	PASS
		5240	14.99	5.01	20.00	21	PASS
Configuration IEEE 802.11_HT40	40	5190	9.71	5.01	14.72	21	PASS
		5230	15.92	5.01	20.93	21	PASS



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## 10 MAXIMUM POWER SPECTRAL DENSITY

### 10.1 Standard Applicable

#### FCC

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

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

#### Note:

As per FCC KDB 662911 D01

Unequal antenna gains, with equal transmit powers. For antenna gains given by G1, G2, ..., GN dBi.

(i) If transmit signals are correlated, then Directional gain

$$= 10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] \text{ dBi}$$

[Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

The antenna gain is grater than 6 dBi in MIMO mode, therefore the limit needs to be reduced as below:

	Antenna Gain (dBi)	PSD Limit	
<b>UNII-1</b>	15.01	7.99	dBm/MHz
<b>U-NII-2C</b>	15.01	1.99	dBm/MHz
<b>U-NII-3</b>	15.01	20.99	dBm/500 kHz

### 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

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pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

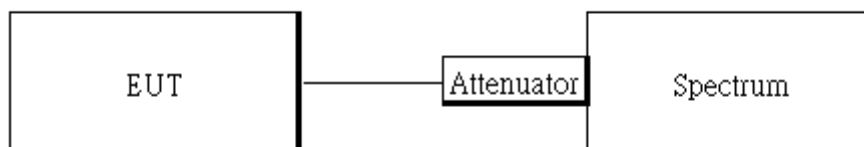
5. Use the cursor on spectrum to peak search the highest level of trace
6. Record the max. reading and add 10 log(1/duty cycle).
7. Repeat above procedures until all default test channel (low, middle, and high) was complete.
8. 802.11n MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure the PSD for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna. N=3 for this given application.

**Note: For the test of PSD at MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. The MIMO transmitting mode produces higher value of outcome**

### 10.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2019	05/16/2020
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY57120290	02/20/2020	02/19/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2020	01/01/2021
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2020	01/01/2021

### 10.4 Test Set-up



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## 10.5 Measurement Result

### 10.5.1 Power spectral density

POWER DENSITY 802.11n HT20 MODE					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	-7.52	0.16	-7.36	7.99	-15.35
5220	2.33	0.16	2.49	7.99	-5.50
5240	2.20	0.16	2.36	7.99	-5.63
5500	-5.91	0.16	-5.75	1.99	-7.74
5580	-5.38	0.16	-5.22	1.99	-7.21
5700	-5.41	0.16	-5.25	1.99	-7.24
5720 (U-NII 2C)	-4.14	0.16	-3.97	1.99	-5.96
5720 (U-NII 3)	-7.14	0.16	-6.98	20.99	-27.97
5745	0.99	0.16	1.15	20.99	-19.84
5785	0.65	0.16	0.81	20.99	-20.18
5825	1.68	0.16	1.84	20.99	-19.15

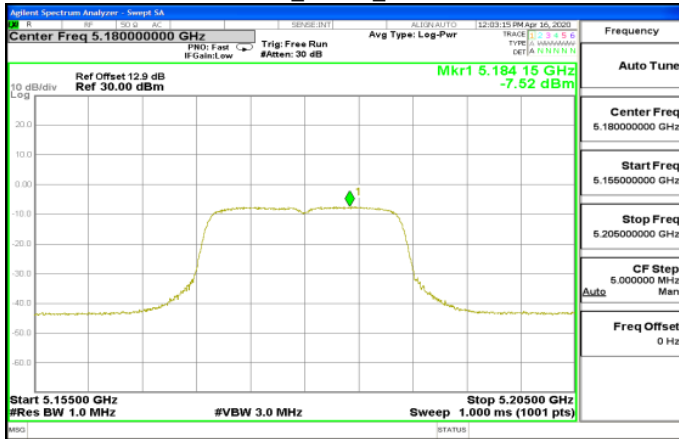
POWER DENSITY 802.11n HT40 MODE					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5190	-9.23	0.17	-9.06	7.99	-17.05
5230	0.65	0.17	0.82	7.99	-7.17
5510	-10.06	0.17	-9.89	1.99	-11.88
5550	-5.54	0.17	-5.37	1.99	-7.36
5670	-5.98	0.17	-5.81	1.99	-7.80
5710 (U-NII 2C)	-4.79	0.17	-4.61	1.99	-6.60
5710 (U-NII 3)	-9.43	0.17	-9.25	20.99	-30.24
5755	-2.03	0.17	-1.86	20.99	-22.85
5795	-2.08	0.17	-1.91	20.99	-22.90

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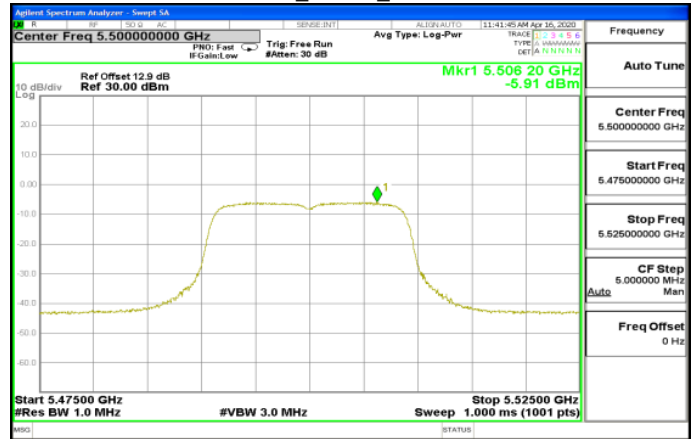
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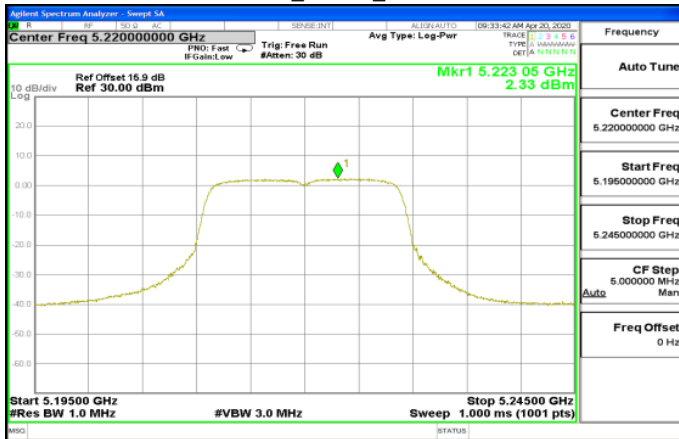
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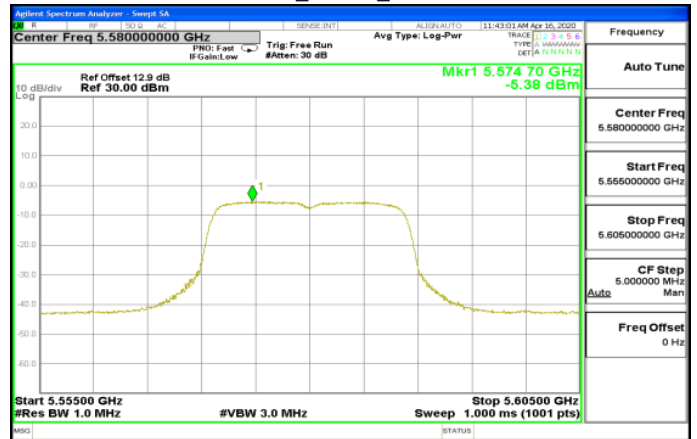
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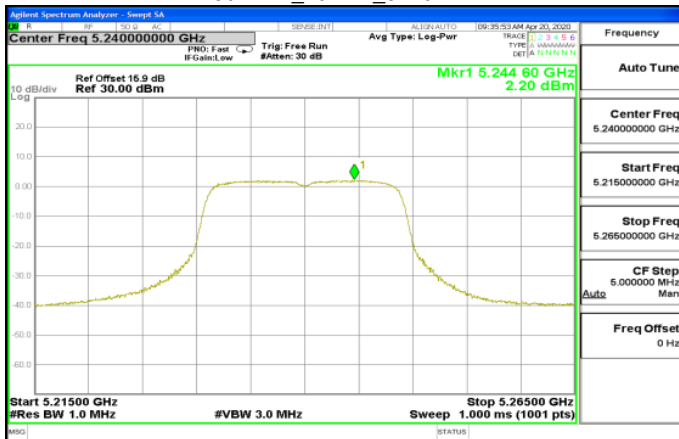
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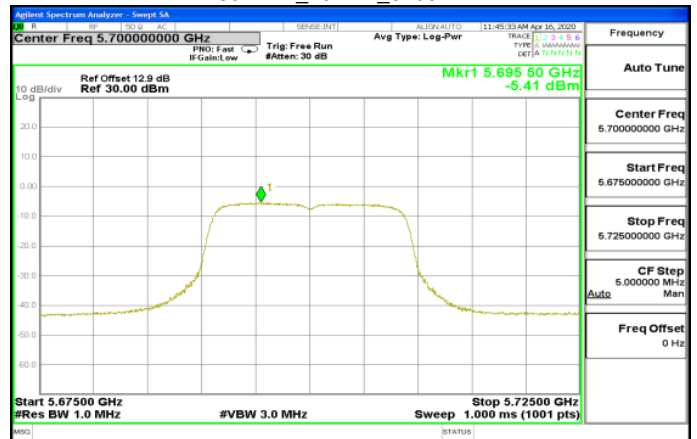
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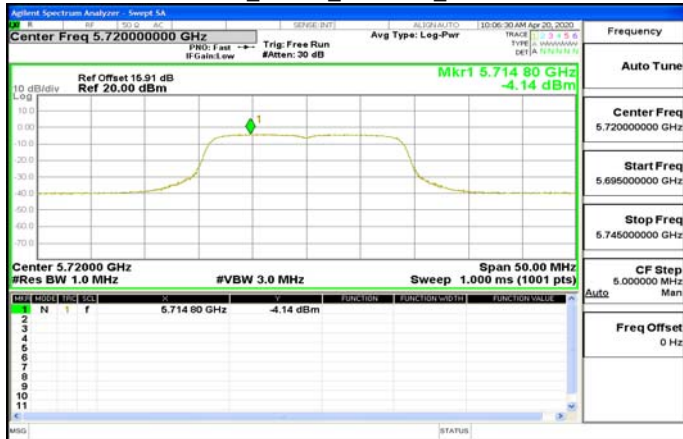


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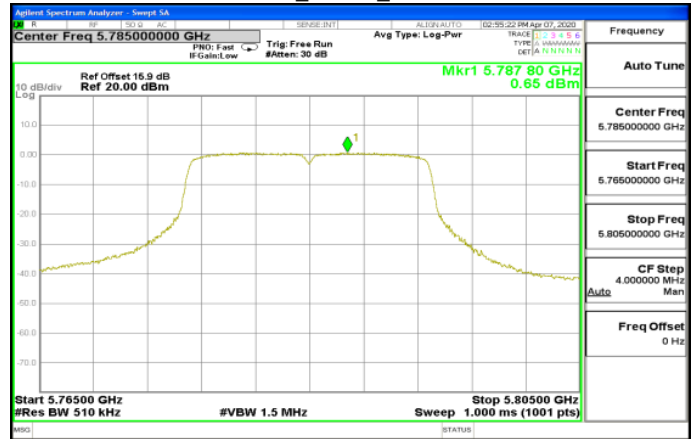
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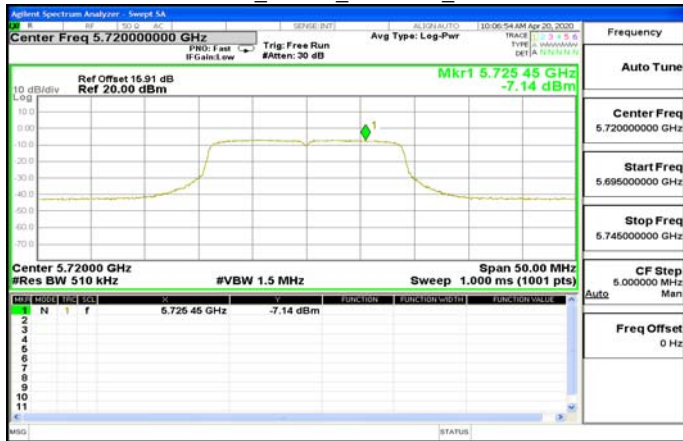
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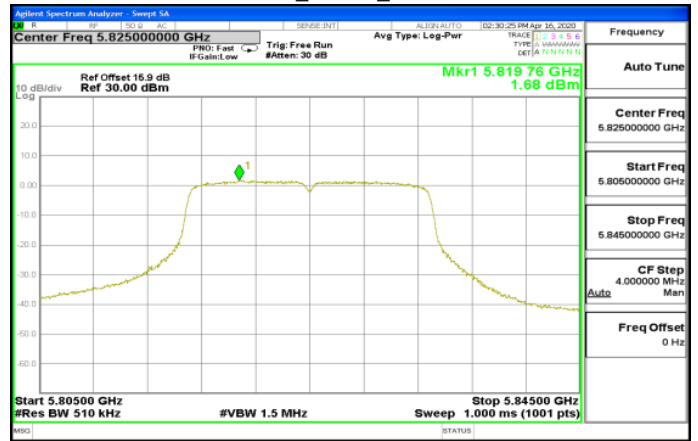
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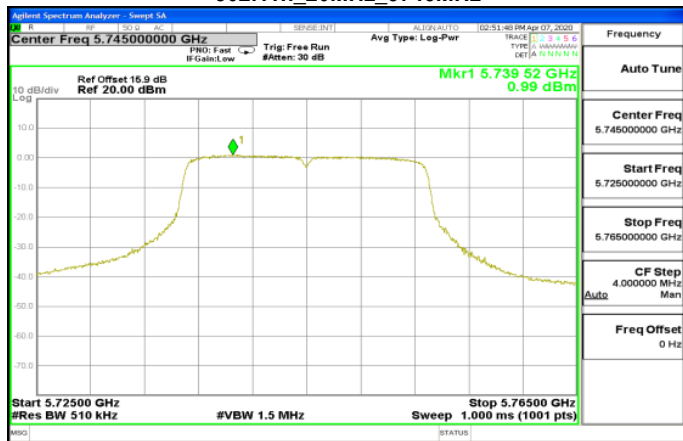
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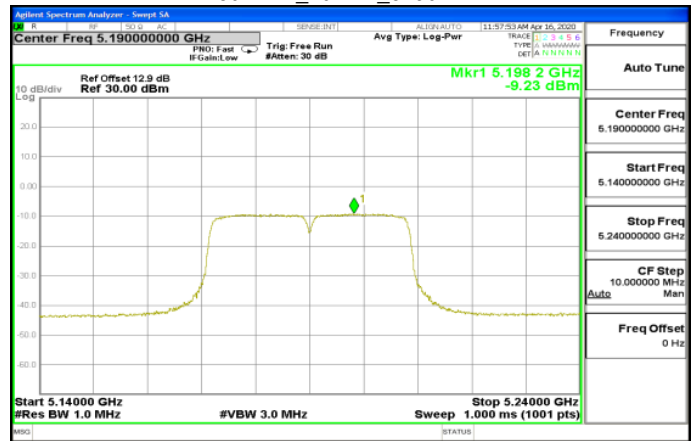
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802.11n\_20MHz\_5745MHz



802.11n\_40MHz\_5190MHz

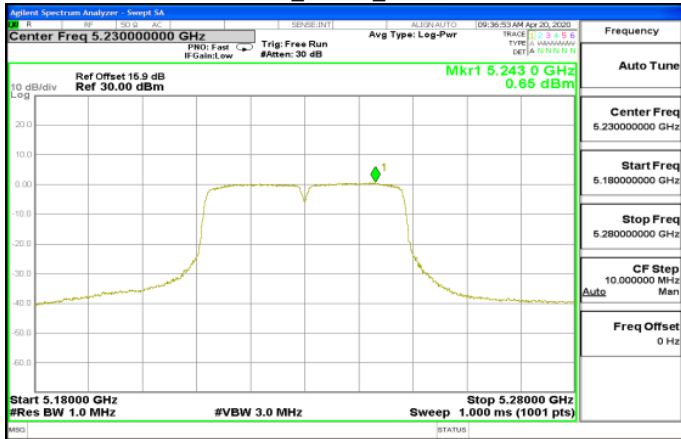


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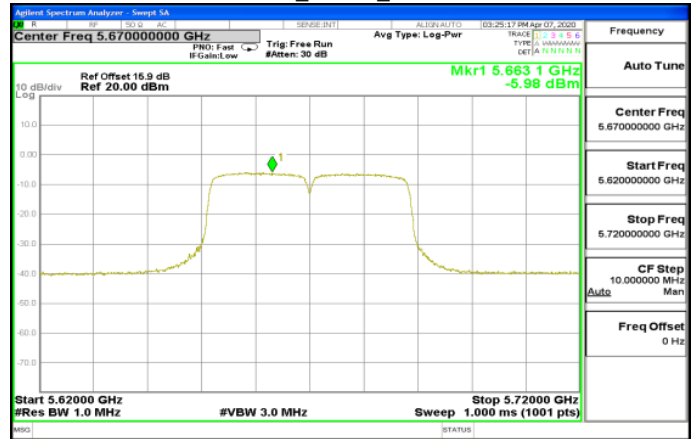
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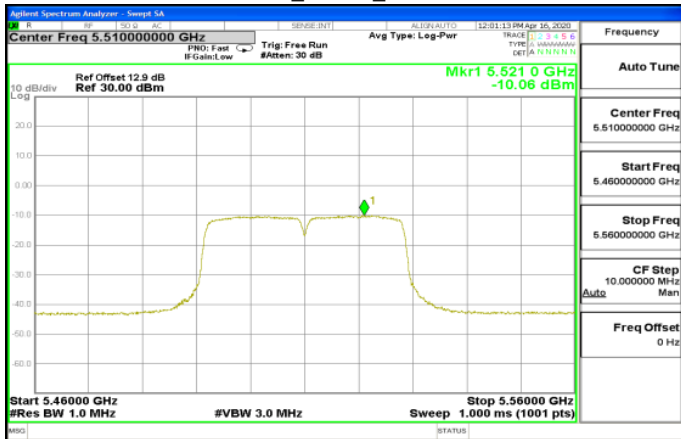
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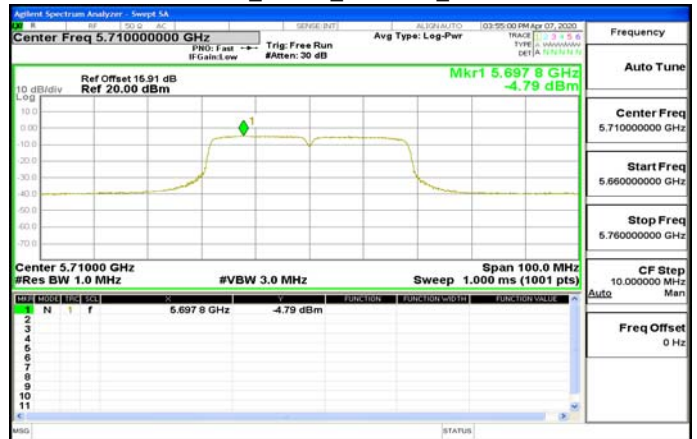
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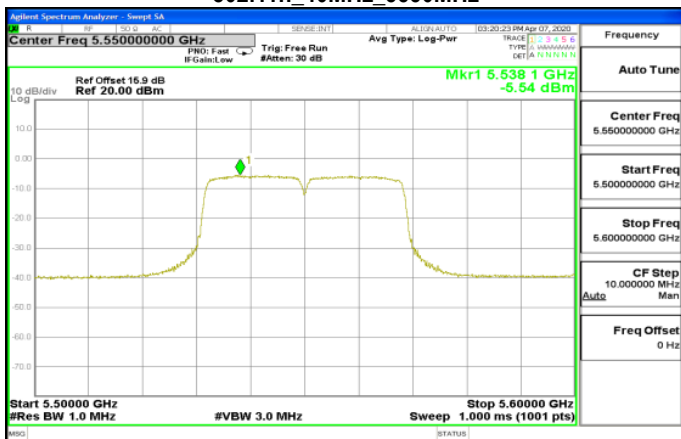
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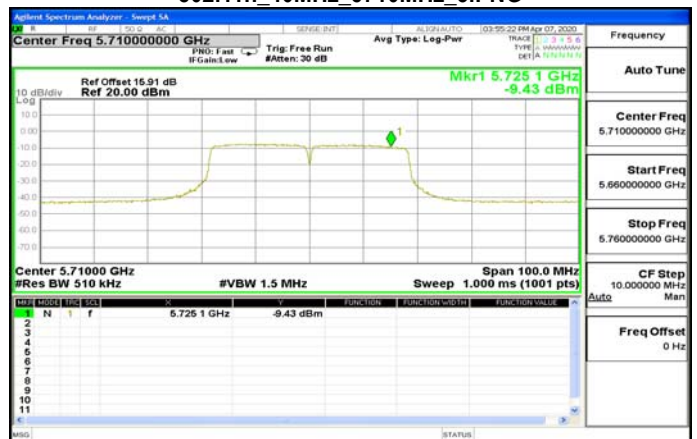
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802.11n\_40MHz\_5550MHz



802.11n\_40MHz\_5710MHz\_3.PNG



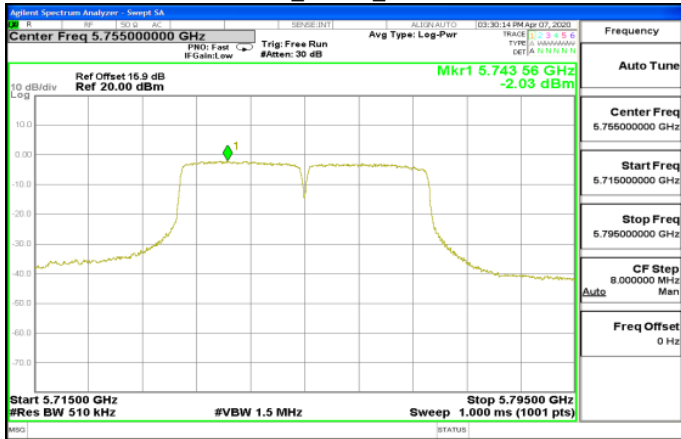
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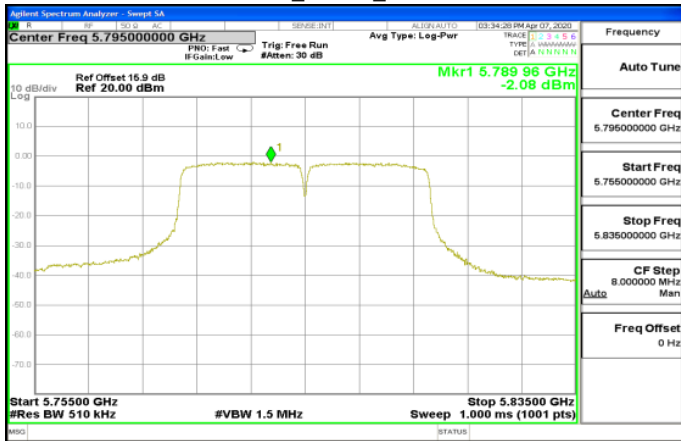
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802.11n\_40MHz\_5755MHz



802.11n\_40MHz\_5795MHz



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## 11 UNDESIRABLE RADIATED EMISSION MEASUREMENT

### 11.1 Standard Applicable

#### 11.1.1 Band Edge

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	EIRP LIMIT	FIELD STRENGTH AT 3m
15.407(b)(1) RSS-247 §6.2.1.2	PK: -27 (dBm/MHz)	PK: 68.3 (dBµV/m)
15.407(b)(2) RSS-247 §6.2.2.2		
15.407(b)(3) RSS-247 §6.2.3.2		
15.407(b)(4)(i) RSS-247 §6.2.4.2	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
<p>*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.</p>		

$EIRP = (E \cdot d)^2 / 30$ , 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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### 11.1.2 Spurious Emission

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 (µV/m)

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## 11.2 Measurement Equipment Used

SGS SAC-III					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Bi-log Antenna	SCHWAZBECK	VULB9168	378	01/03/2020	01/02/2021
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/20/2019	08/19/2020
Horn Antenna	Schwarzbeck	BBHA9170	184	12/25/2019	12/24/2020
3m Site NSA	SGS	966 chamber	N/A	01/02/2019	01/01/2021
Loop Antenna	ETS.LINDGREN	6502	148045	10/15/2019	10/14/2020
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	04/22/2019	04/21/2020
EMI Test Receiver	R&S	ESCI 7	1166.5950.07	07/04/2019	07/03/2020
Pre-Amplifier	HP	8449B	3008A00578	01/02/2020	01/01/2021
Pre-Amplifier	HP	8447D	2944A07676	01/02/2020	01/01/2021
Pre-Amplifier	EMC Instruments	EMC184045B	980135	01/02/2020	01/01/2021
Filter 5150-5350 MHz	Micro-Tronics	BRM50703	1	01/02/2020	01/01/2021
Filter 5470-5725 MHz	Micro-Tronics	BRM50704	1	01/02/2020	01/01/2021
Filter 5725-5875 MHz	Micro-Tronics	BRM50705	1	01/02/2020	01/01/2021
High Pass Filter	WI	WHKX7.0/18G-8SS	45	01/02/2020	01/01/2021
Low Loss Cable	Huber Suhner	966_RX	9	01/02/2020	01/01/2021

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t (886-2) 2299-3279

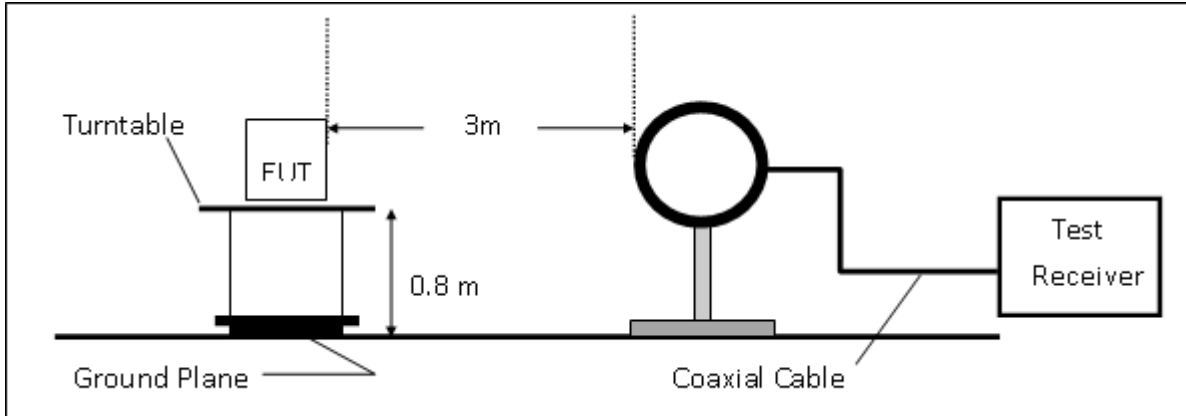
f (886-2) 2298-0488

www.tw.sgs.com

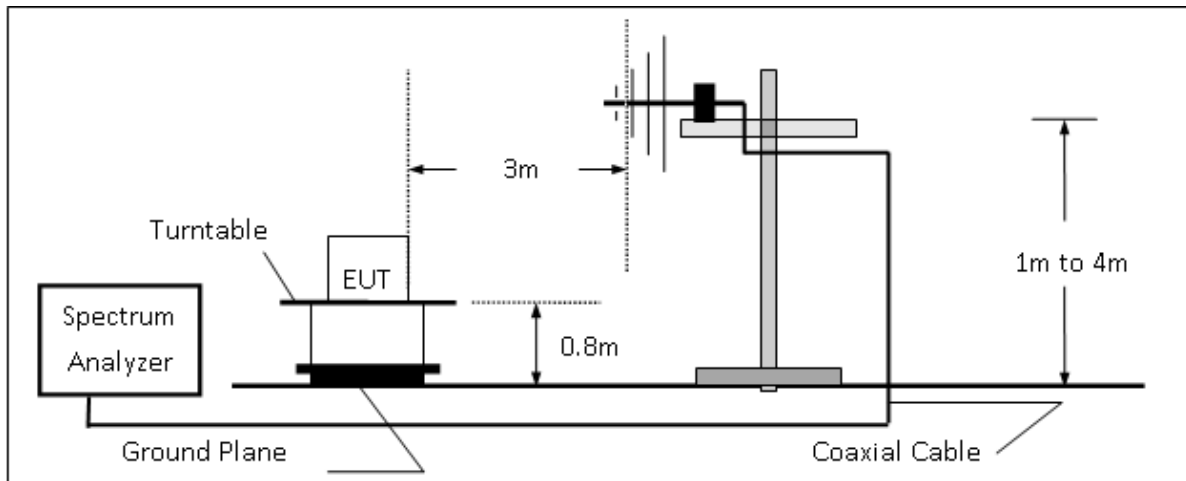
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### 11.3 Test SET-UP

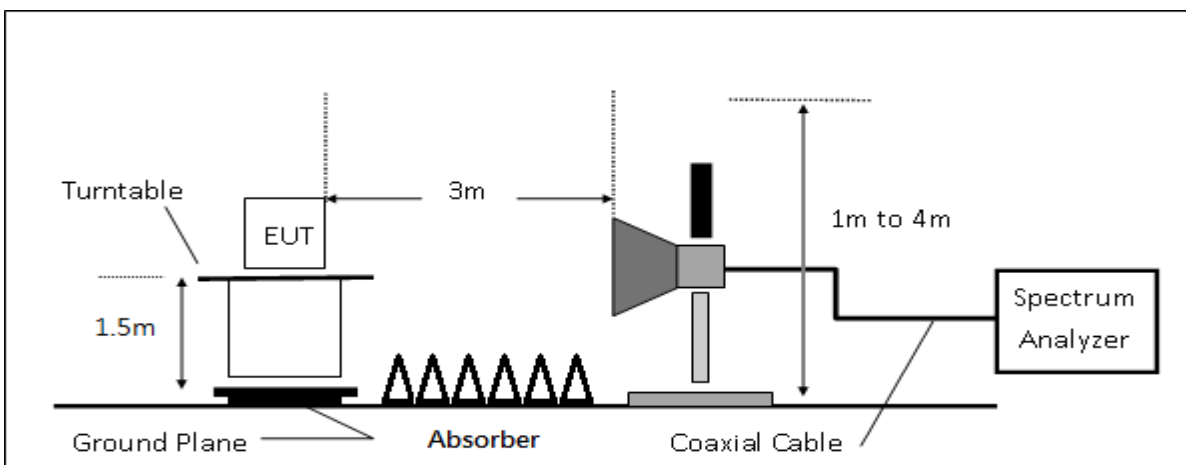
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



(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. At frequency above 1 GHz, Set the spectrum analyzer:
  - A. RBW=1 MHz, VBW=3 MHz for **Peak** Detector.
  - B. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for **Average** Detector.
8. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
9. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
10. Repeat above procedures until all frequency measured were complete.

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### 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

The limit of the emission level is expressed in dBuV/m, which converts  $20 \cdot \log(uV/m)$

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

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

### 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.

Pre-scanned was done at frequency 5.47 GHz and 5.85 GHz for bandedge measurement of straddle channels 138, 142 and 144 which was 20dB lower than the limit per 15.31(o) & RSS-GEN §6.13.2 was not reported.

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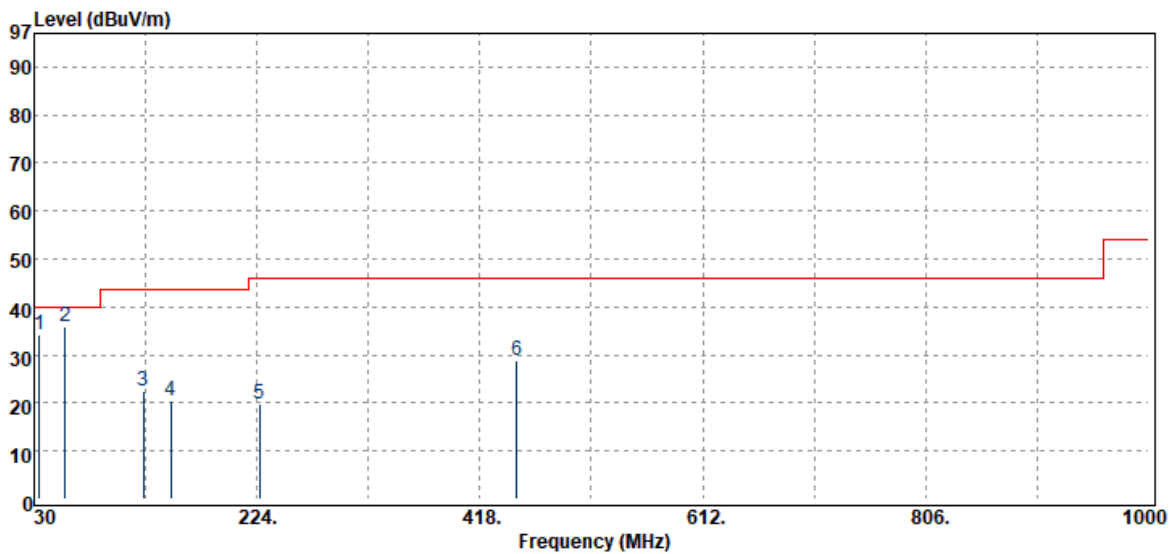
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## 11.7 Radiated Spurious Emission Measurement Result

### 11.7.1 Below 1GHz Worst-Case Data:

Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5220 MHz  
 Test Mode :Tx CH Mid  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



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
34.85	Peak	43.33	-9.00	34.33	40.00	-5.67
57.16	Peak	44.38	-8.53	35.85	40.00	-4.15
125.06	Peak	31.76	-9.19	22.57	43.50	-20.93
149.31	Peak	28.00	-7.37	20.63	43.50	-22.87
225.94	Peak	29.01	-9.30	19.71	46.00	-26.29
450.01	Peak	31.44	-2.57	28.87	46.00	-17.13

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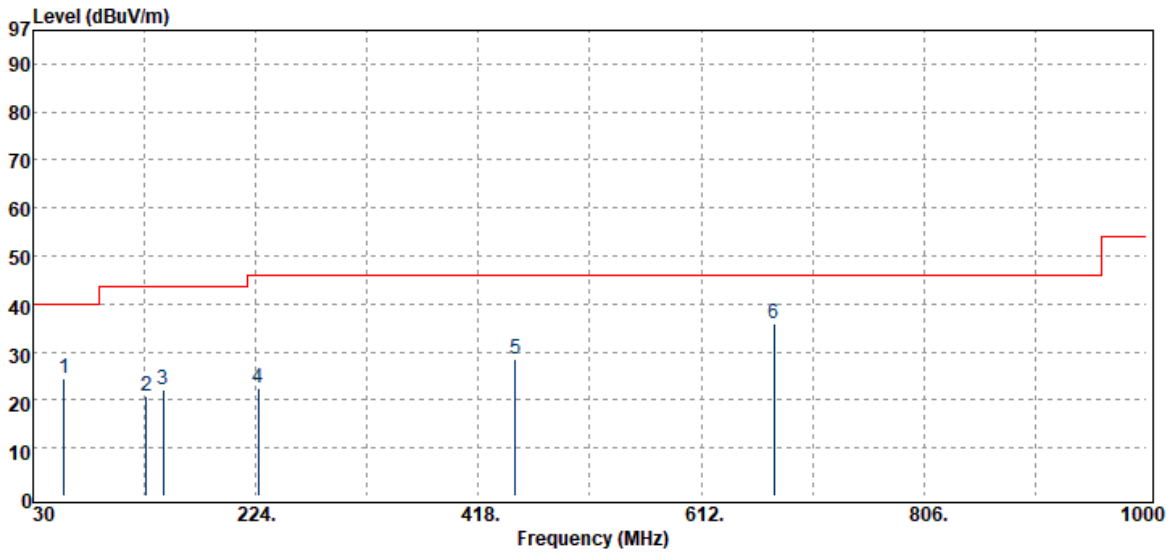
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5220 MHz  
 Test Mode :Tx CH Mid  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
57.16	Peak	32.93	-8.53	24.40	40.00	-15.60
128.94	Peak	29.67	-8.76	20.91	43.50	-22.59
143.49	Peak	29.79	-7.50	22.29	43.50	-21.21
225.94	Peak	31.74	-9.30	22.44	46.00	-23.56
450.01	Peak	31.14	-2.57	28.57	46.00	-17.43
675.05	Peak	35.01	0.86	35.87	46.00	-10.13

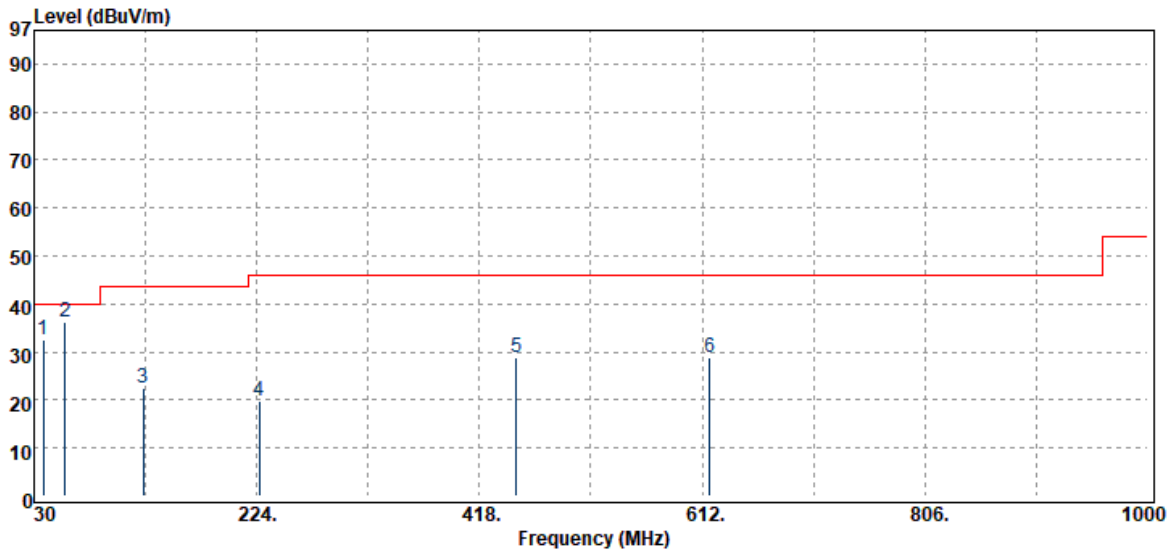
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5580 MHz  
 Test Mode :Tx CH Mid  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
37.76	Peak	41.15	-8.71	32.44	40.00	-7.56
57.16	Peak	44.61	-8.53	36.08	40.00	-3.92
125.06	Peak	31.81	-9.19	22.62	43.50	-20.88
225.94	Peak	29.04	-9.30	19.74	46.00	-26.26
450.01	Peak	31.47	-2.57	28.90	46.00	-17.10
618.79	Peak	29.46	-0.55	28.91	46.00	-17.09

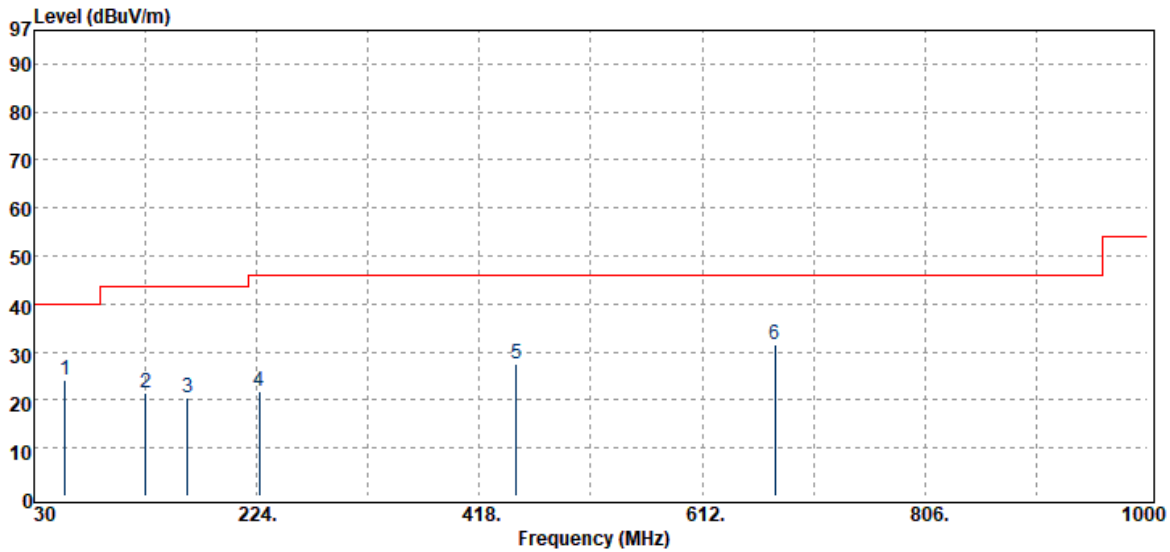
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5580 MHz  
 Test Mode :Tx CH Mid  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
57.16	Peak	32.67	-8.53	24.14	40.00	-15.86
127.00	Peak	30.20	-8.87	21.33	43.50	-22.17
163.86	Peak	27.98	-7.36	20.62	43.50	-22.88
225.94	Peak	31.06	-9.30	21.76	46.00	-24.24
450.01	Peak	29.93	-2.57	27.36	46.00	-18.64
675.05	Peak	30.53	0.86	31.39	46.00	-14.61

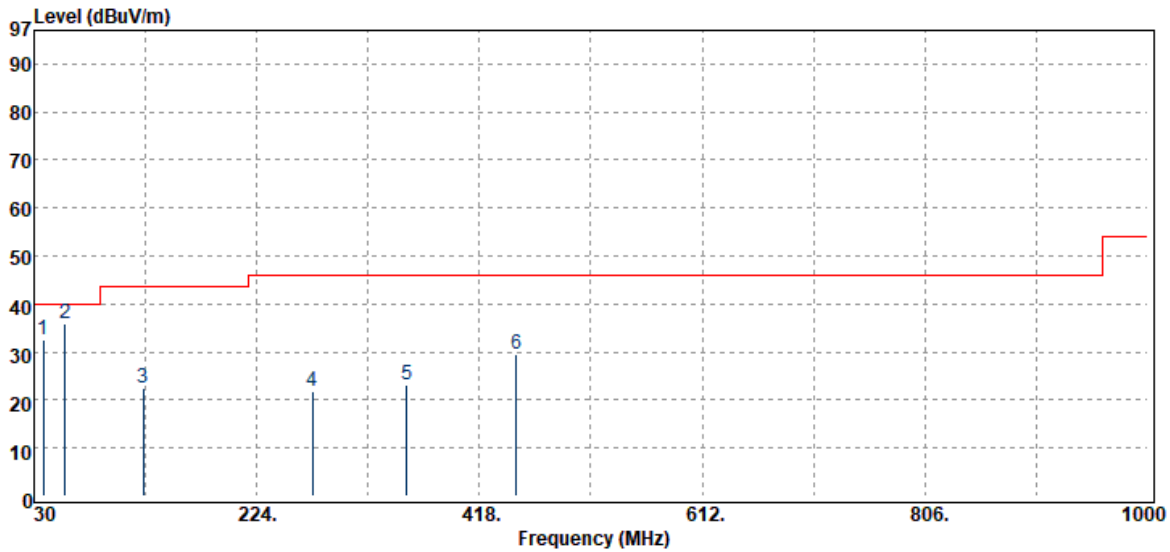
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5785 MHz  
 Test Mode :Tx CH Mid  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
37.76	Peak	41.25	-8.71	32.54	40.00	-7.46
57.16	Peak	44.45	-8.53	35.92	40.00	-4.08
125.06	Peak	31.66	-9.19	22.47	43.50	-21.03
272.50	Peak	28.62	-6.91	21.71	46.00	-24.29
354.95	Peak	28.14	-4.93	23.21	46.00	-22.79
450.01	Peak	32.02	-2.57	29.45	46.00	-16.55

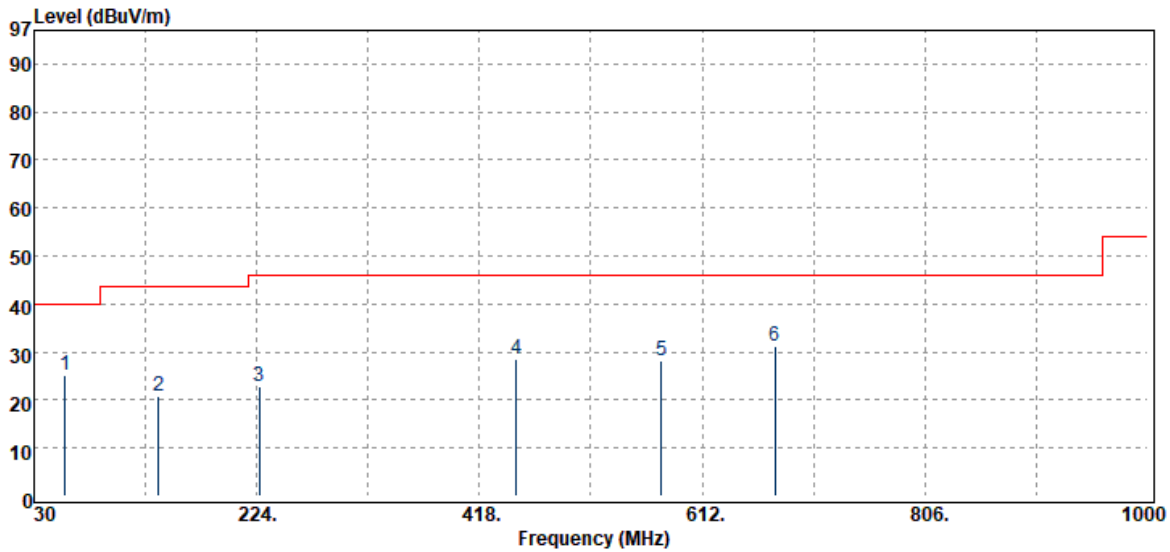
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5785 MHz  
 Test Mode :Tx CH Mid  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
57.16	Peak	33.54	-8.53	25.01	40.00	-14.99
138.64	Peak	28.56	-7.71	20.85	43.50	-22.65
225.94	Peak	32.14	-9.30	22.84	46.00	-23.16
450.01	Peak	31.09	-2.57	28.52	46.00	-17.48
576.11	Peak	28.66	-0.42	28.24	46.00	-17.76
675.05	Peak	30.31	0.86	31.17	46.00	-14.83

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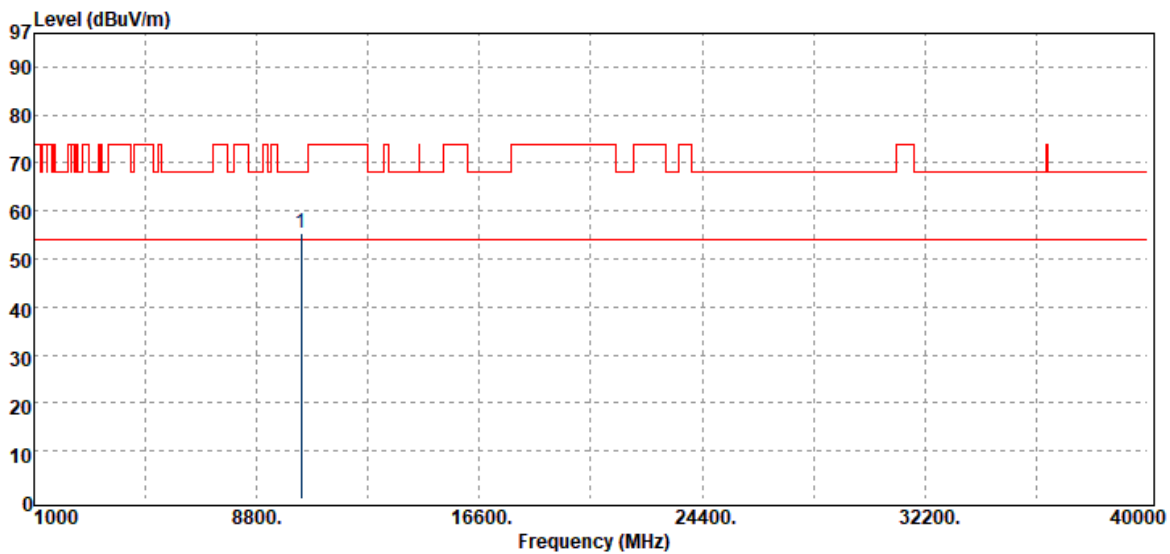
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**11.7.2 Above 1GHz Worst-Case Data:**

Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5180 MHz  
 Test Mode :Tx CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



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	34.82	20.59	55.41	68.20	-12.79

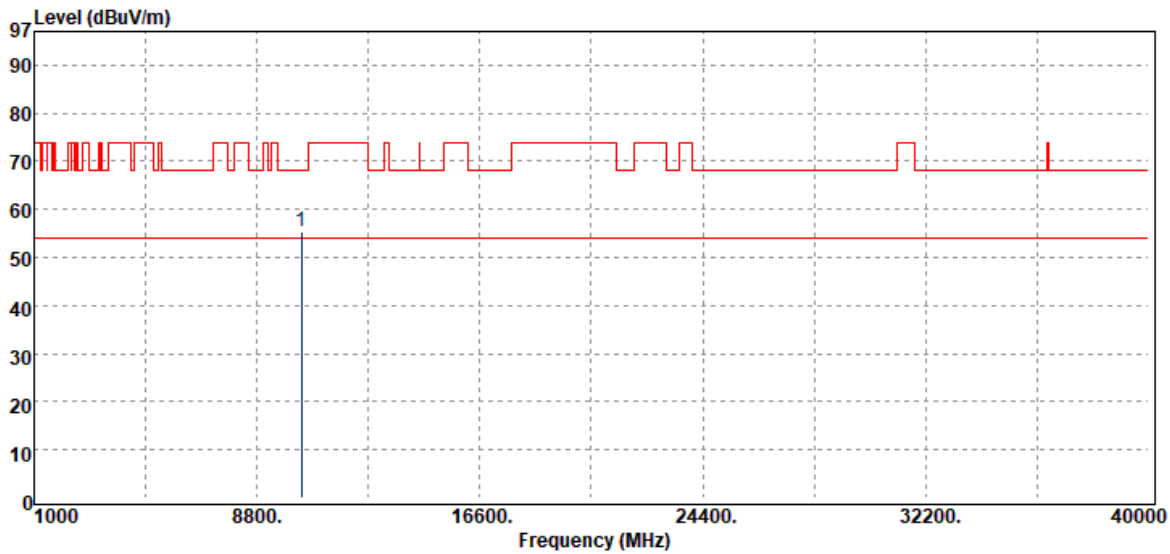
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5180 MHz  
 Test Mode :Tx CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick  
 setting :6  
 :



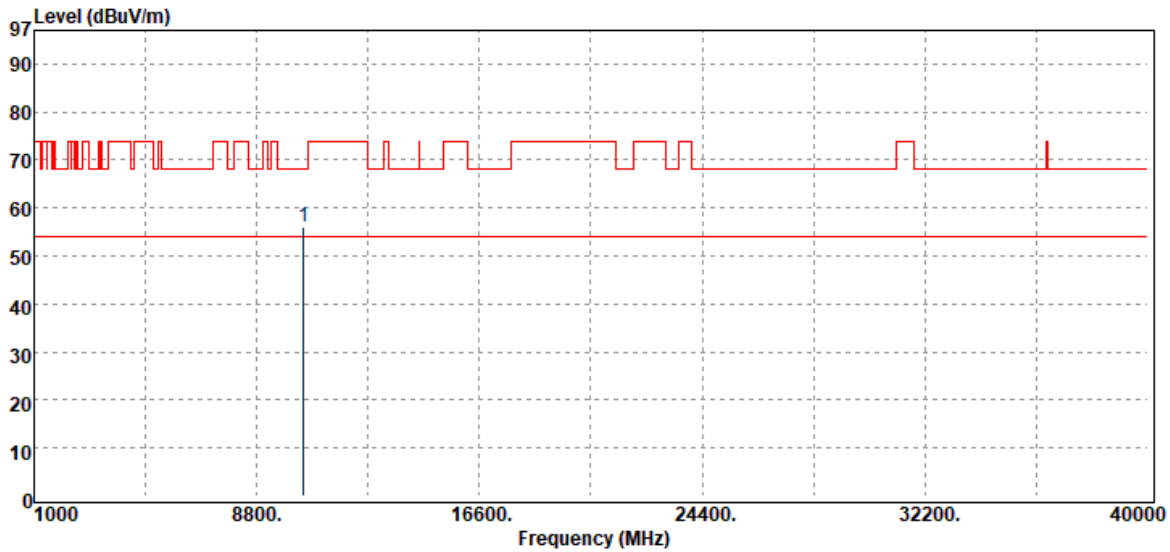
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10360.00	Peak	34.62	20.59	55.21	68.20	-12.99

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Report Number :ER-2020-30136  
Operation Mode :802.11n20  
Test Frequency :5220 MHz  
Test Mode :Tx CH Mid  
EUT Pol :H Plane

Test Date :2020-04-09  
Temp./Humi. :21.2/72  
Antenna Pol. :VERTICAL  
Engineer :Nick



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	35.04	21.08	56.12	68.20	-12.08

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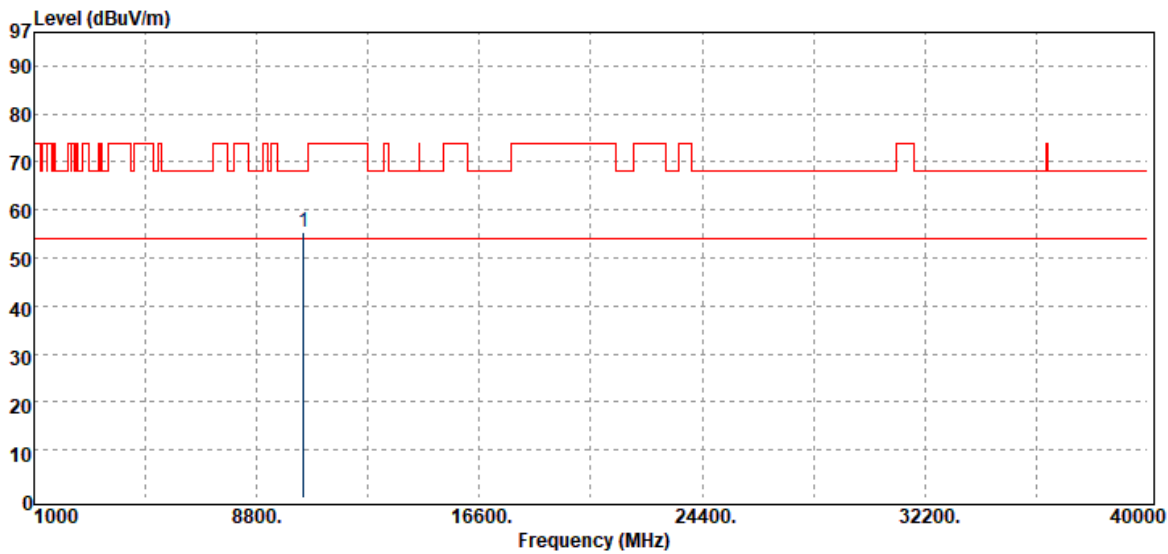
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Report Number :ER-2020-30136  
Operation Mode :802.11n20  
Test Frequency :5220 MHz  
Test Mode :Tx CH Mid  
EUT Pol :H Plane

Test Date :2020-04-09  
Temp./Humi. :21.2/72  
Antenna Pol. :HORIZONTAL  
Engineer :Nick



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	34.26	21.08	55.34	68.20	-12.86

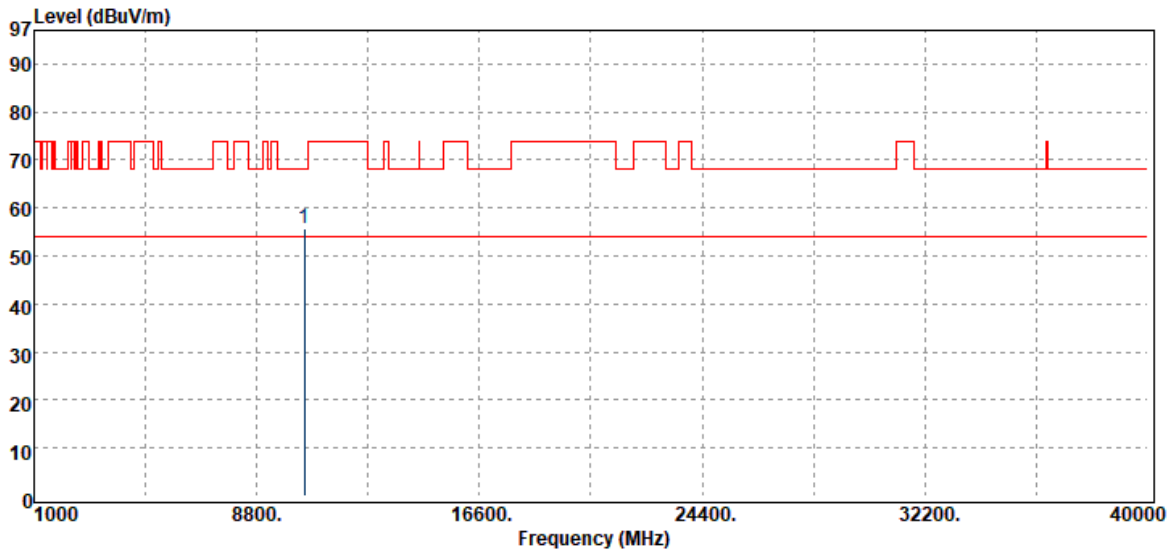
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5240 MHz  
 Test Mode :Tx CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
10480.00	Peak	34.50	21.21	55.71	68.20	-12.49

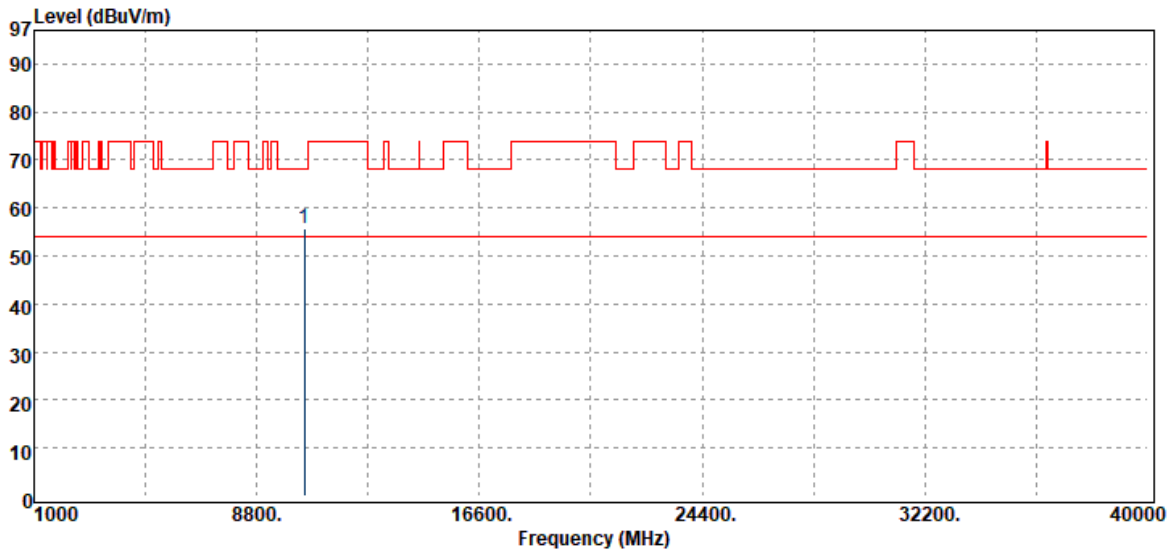
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Report Number :ER-2020-30136  
Operation Mode :802.11n20  
Test Frequency :5240 MHz  
Test Mode :Tx CH High  
EUT Pol :H Plane

Test Date :2020-04-09  
Temp./Humi. :21.2/72  
Antenna Pol. :HORIZONTAL  
Engineer :Nick



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	34.64	21.21	55.85	68.20	-12.35

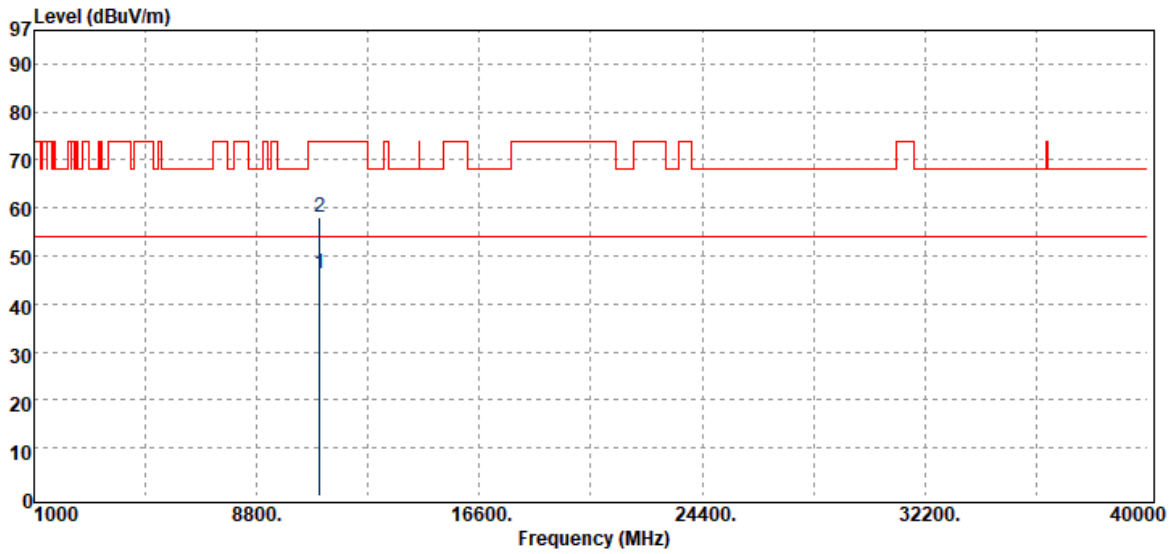
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5500 MHz  
 Test Mode :Tx CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



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	22.86	23.37	46.23	54.00	-7.77
11000.00	Peak	34.63	23.37	58.00	74.00	-16.00

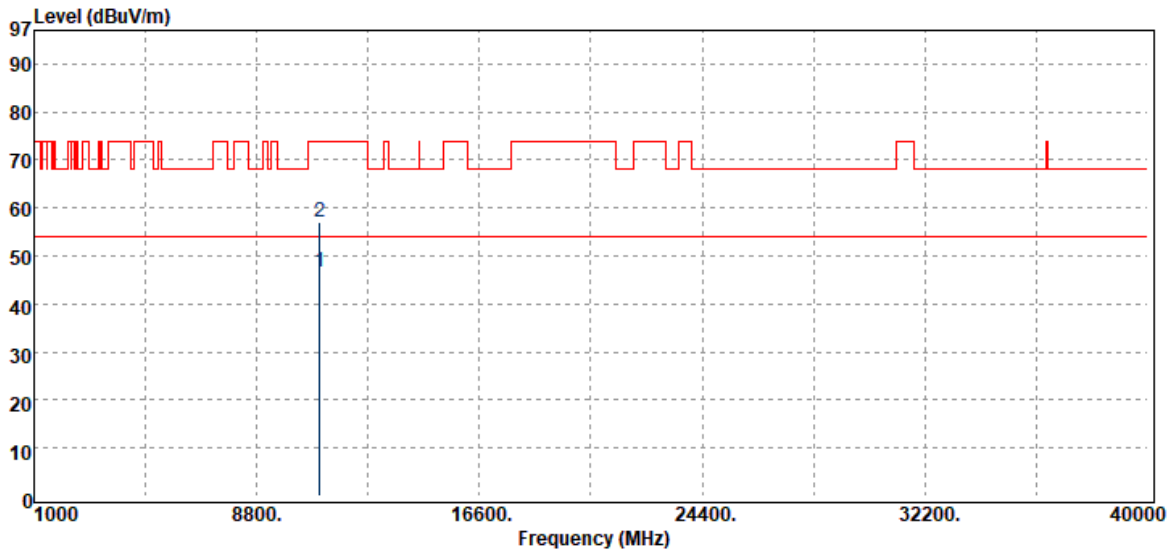
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5500 MHz  
 Test Mode :Tx CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



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	23.25	23.37	46.62	54.00	-7.38
11000.00	Peak	33.53	23.37	56.90	74.00	-17.10

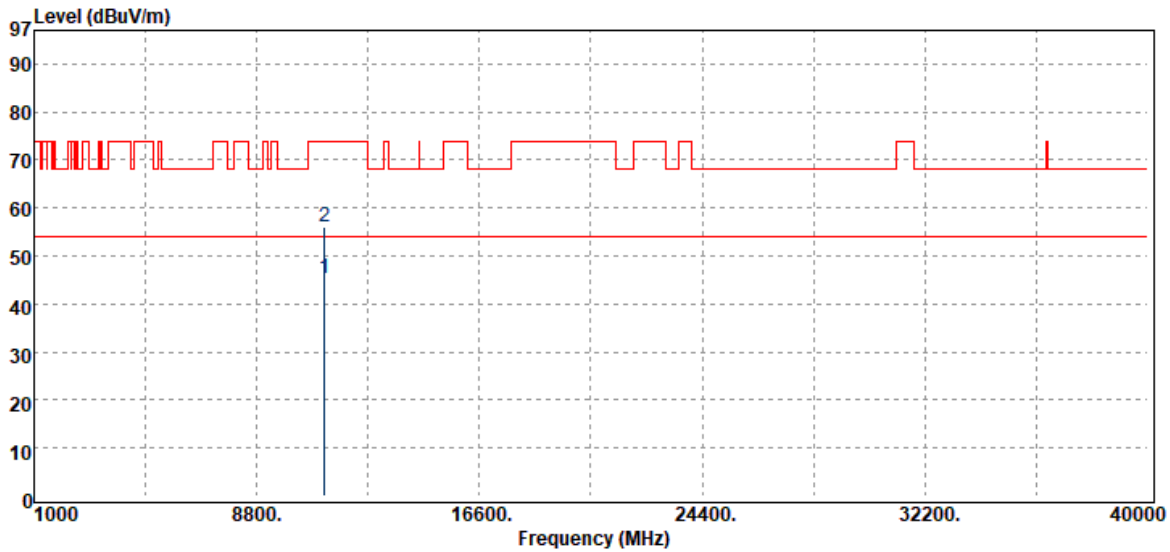
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5580 MHz  
 Test Mode :Tx CH Mid  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



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
11160.00	Average	23.22	22.20	45.42	54.00	-8.58
11160.00	Peak	33.83	22.20	56.03	74.00	-17.97

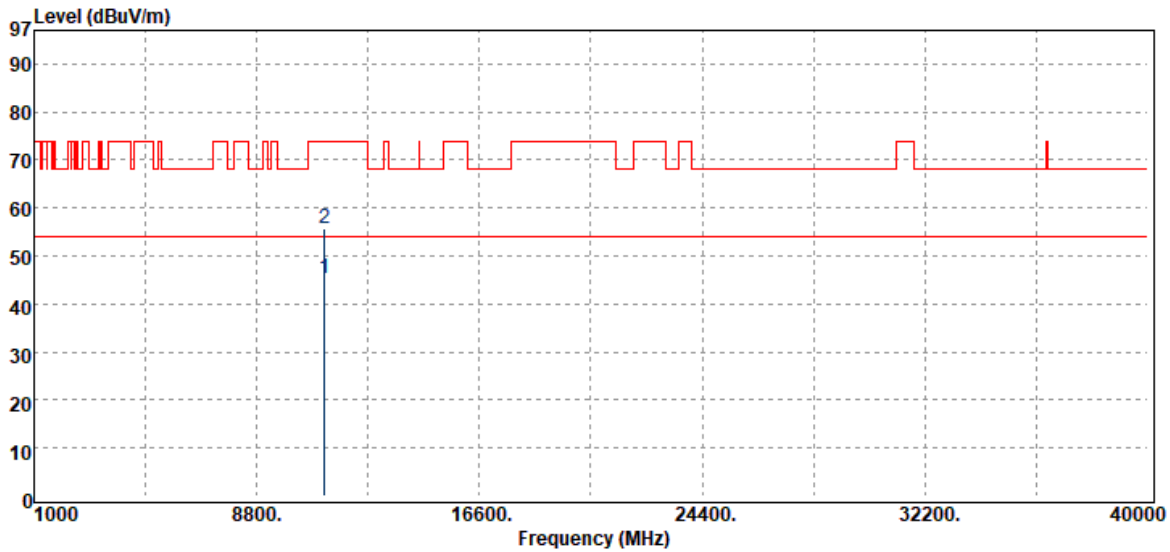
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5580 MHz  
 Test Mode :Tx CH Mid  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



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	23.27	22.20	45.47	54.00	-8.53
11160.00	Peak	33.63	22.20	55.83	74.00	-18.17

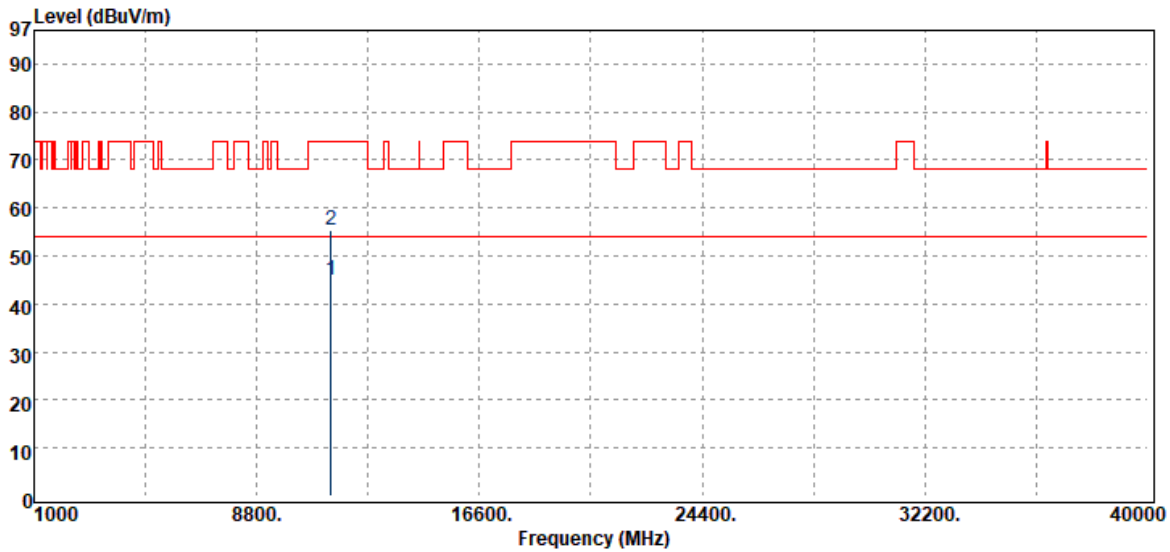
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5700 MHz  
 Test Mode :Tx CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11400.00	Average	22.90	22.22	45.12	54.00	-8.88
11400.00	Peak	33.14	22.22	55.36	74.00	-18.64

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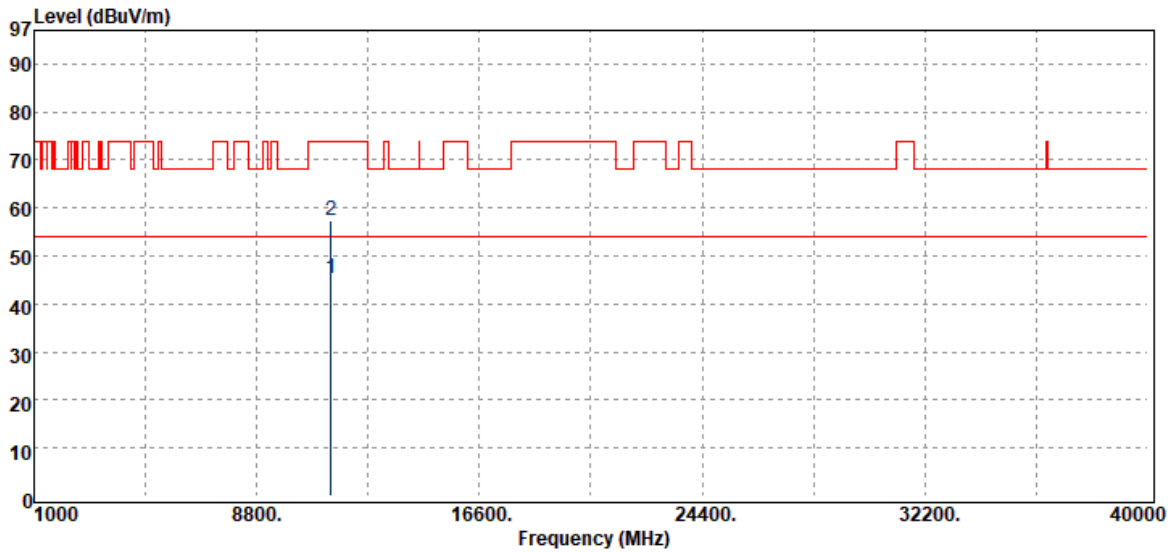
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5700 MHz  
 Test Mode :Tx CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11400.00	Average	22.97	22.22	45.19	54.00	-8.81
11400.00	Peak	35.01	22.22	57.23	74.00	-16.77

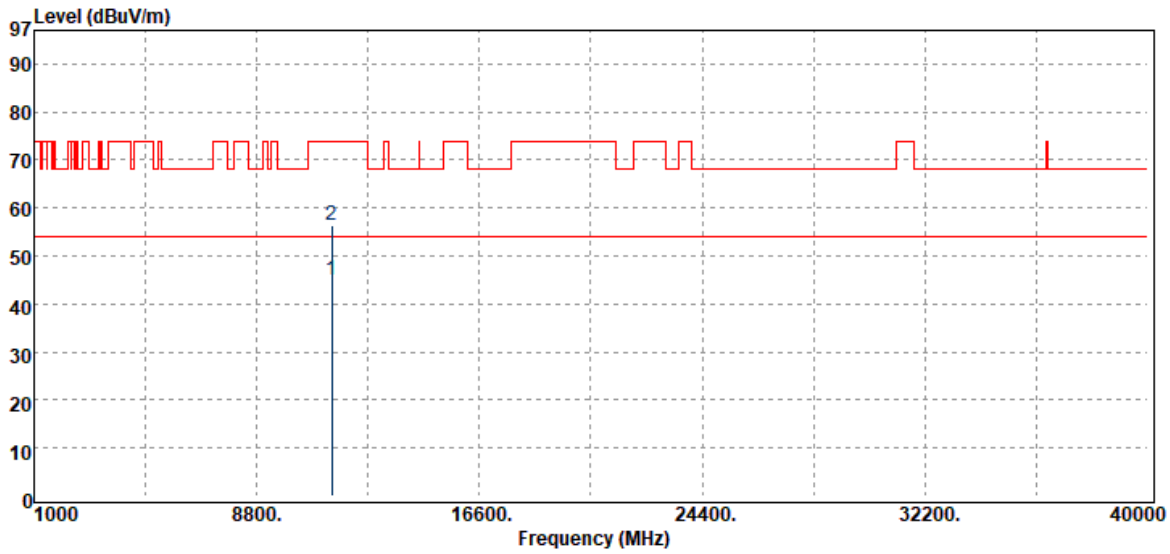
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5720 MHz  
 Test Mode :Tx CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



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	22.31	22.66	44.97	54.00	-9.03
11440.00	Peak	33.60	22.66	56.26	74.00	-17.74

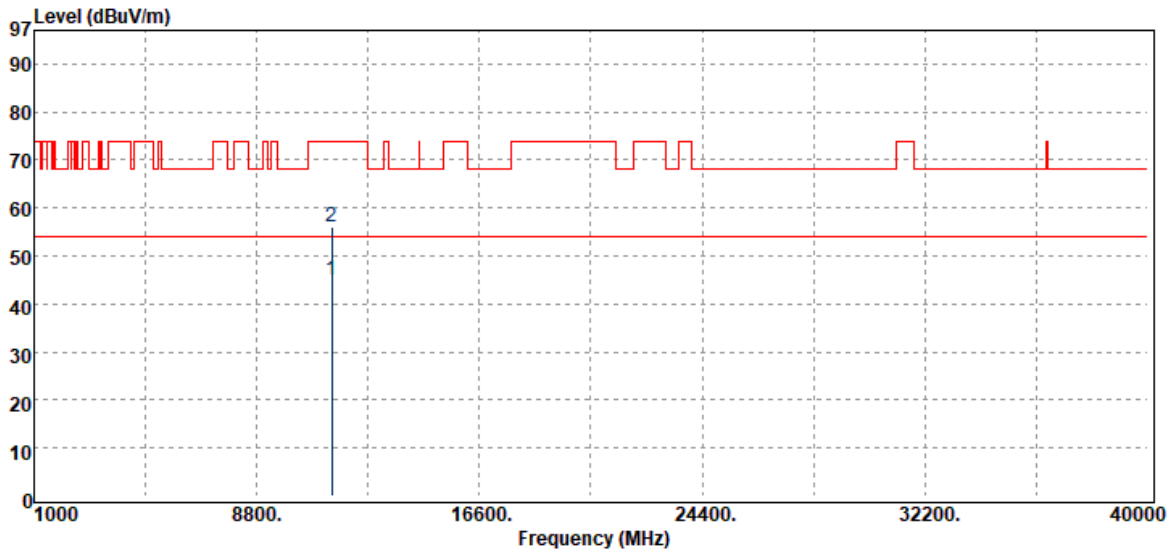
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Report Number :ER-2020-30136  
Operation Mode :802.11n20  
Test Frequency :5720 MHz  
Test Mode :Tx CH High  
EUT Pol :H Plane

Test Date :2020-04-09  
Temp./Humi. :21.2/72  
Antenna Pol. :HORIZONTAL  
Engineer :Nick



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	22.37	22.66	45.03	54.00	-8.97
11440.00	Peak	33.53	22.66	56.19	74.00	-17.81

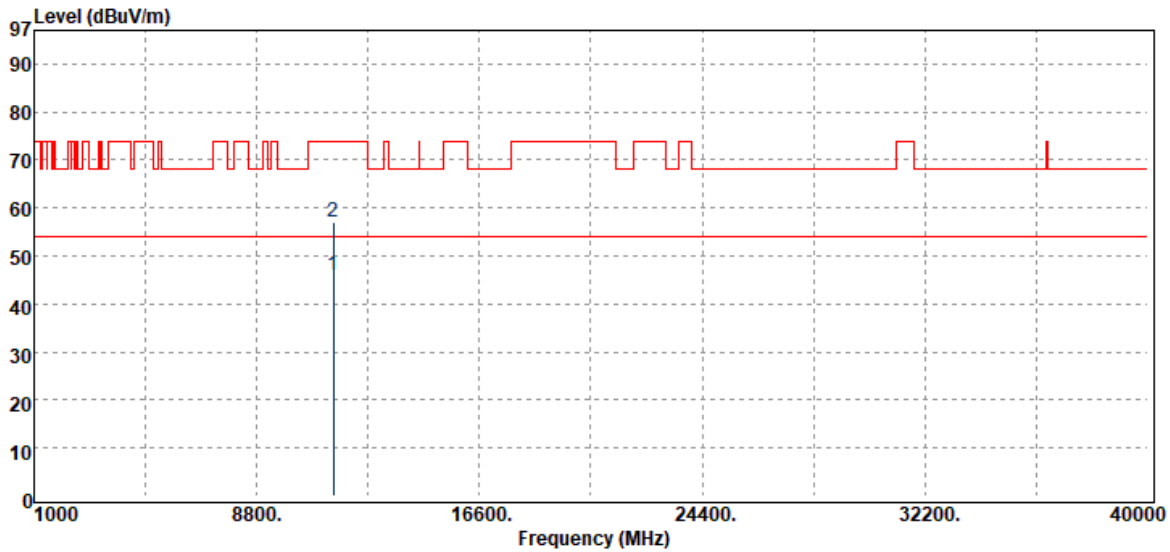
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5745 MHz  
 Test Mode :Tx CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



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	22.89	23.24	46.13	54.00	-7.87
11490.00	Peak	33.97	23.24	57.21	74.00	-16.79

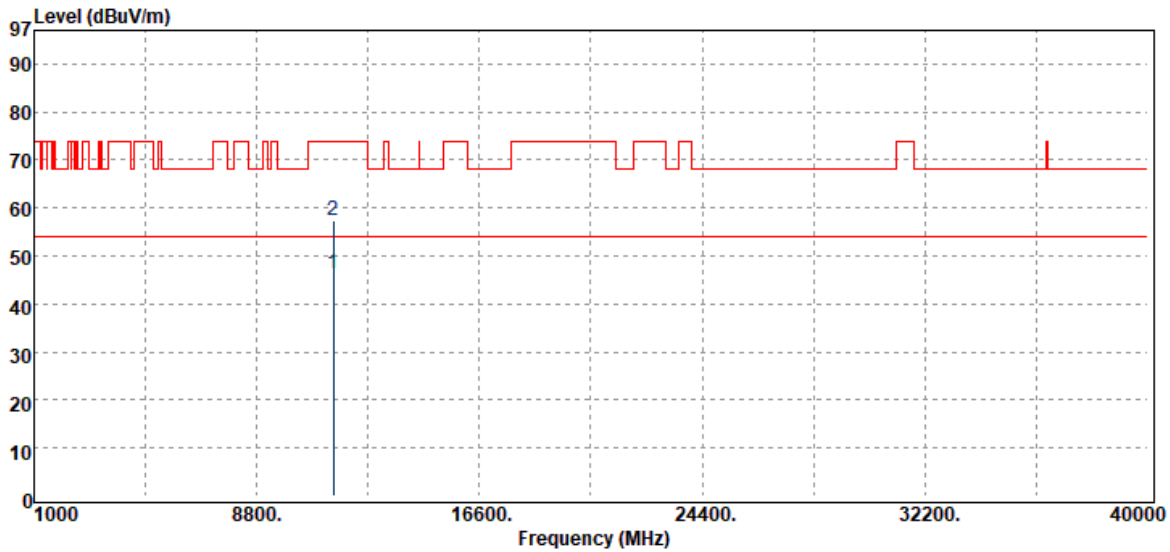
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Report Number :ER-2020-30136  
Operation Mode :802.11n20  
Test Frequency :5745 MHz  
Test Mode :Tx CH Low  
EUT Pol :H Plane

Test Date :2020-04-09  
Temp./Humi. :21.2/72  
Antenna Pol. :HORIZONTAL  
Engineer :Nick



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	23.22	23.24	46.46	54.00	-7.54
11490.00	Peak	34.19	23.24	57.43	74.00	-16.57

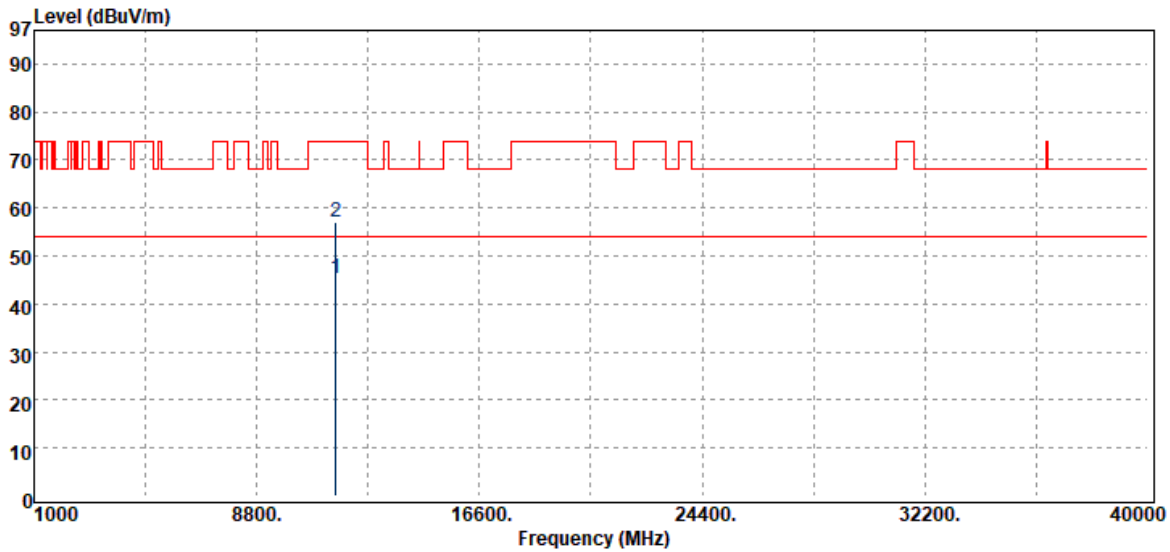
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5785 MHz  
 Test Mode :Tx CH Mid  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



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	23.21	22.01	45.22	54.00	-8.78
11570.00	Peak	35.13	22.01	57.14	74.00	-16.86

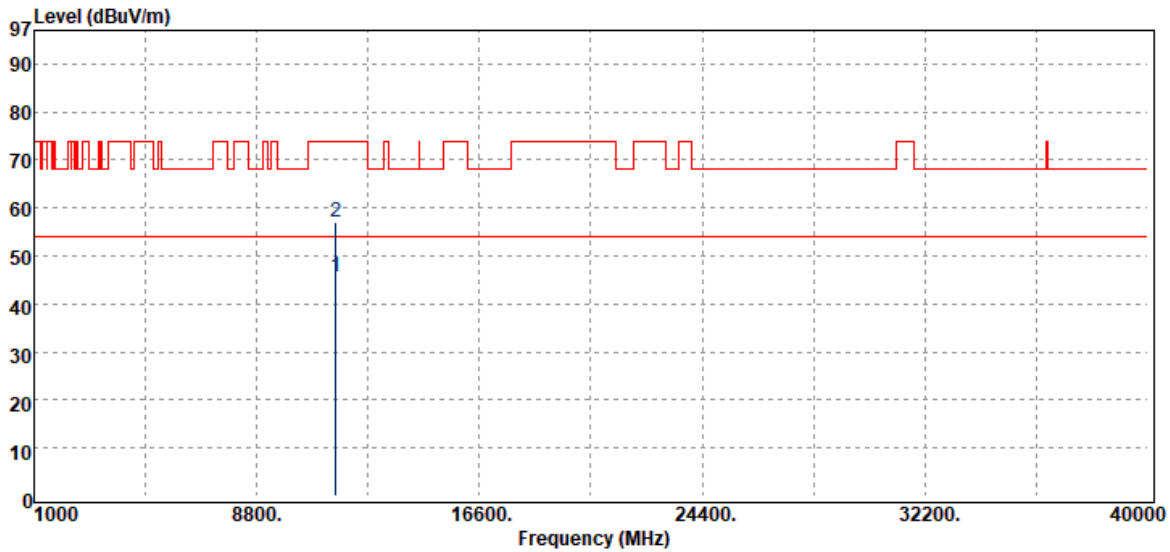
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5785 MHz  
 Test Mode :Tx CH Mid  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



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	23.63	22.01	45.64	54.00	-8.36
11570.00	Peak	35.01	22.01	57.02	74.00	-16.98

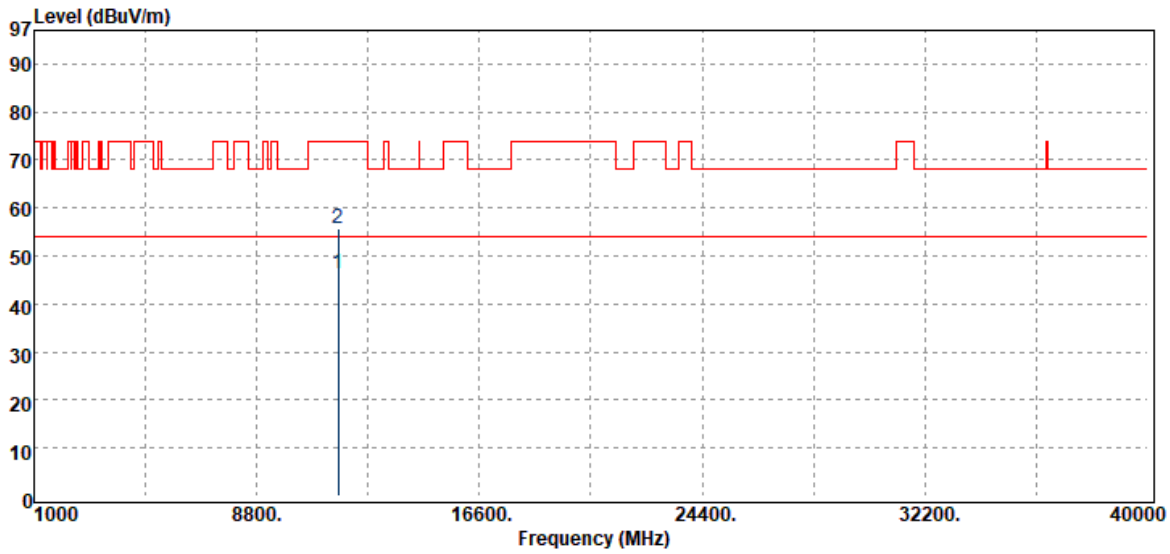
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5825 MHz  
 Test Mode :Tx CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11650.00	Average	23.71	22.45	46.16	54.00	-7.84
11650.00	Peak	33.21	22.45	55.66	74.00	-18.34

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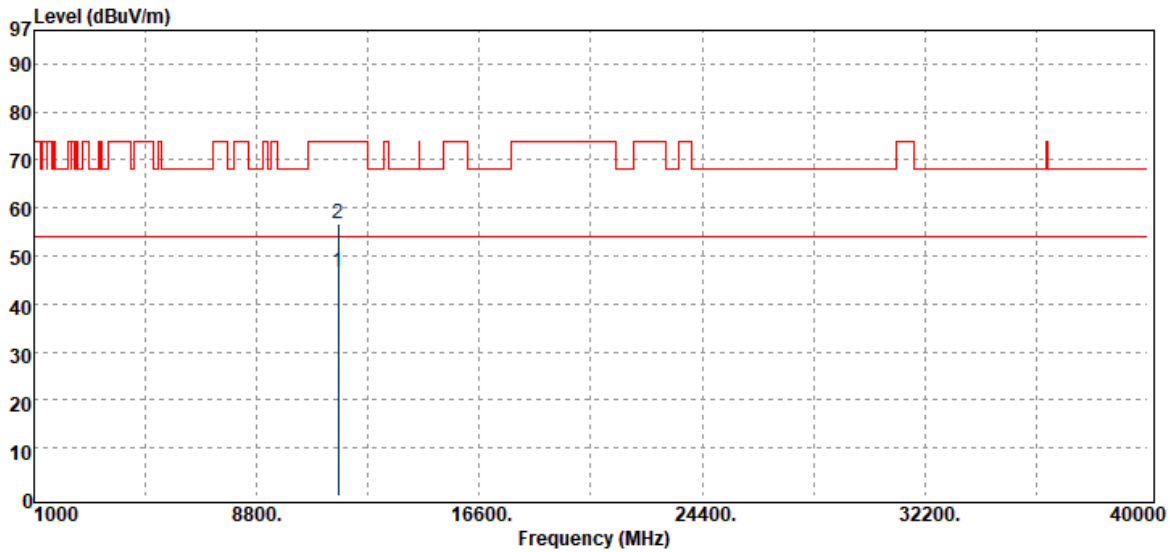
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5825 MHz  
 Test Mode :Tx CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11650.00	Average	24.17	22.45	46.62	54.00	-7.38
11650.00	Peak	34.18	22.45	56.63	74.00	-17.37

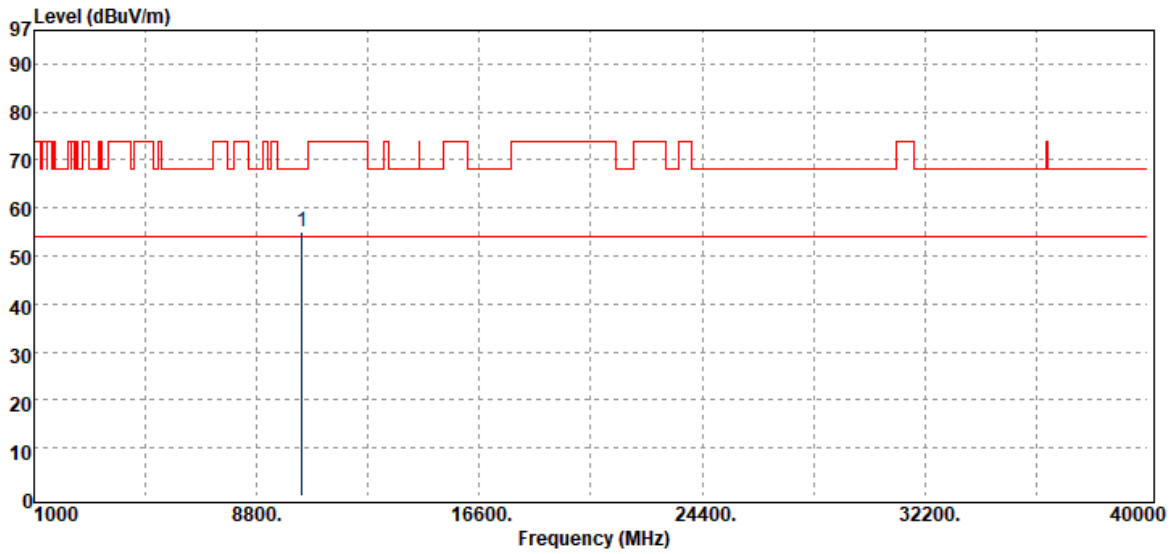
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5190 MHz  
 Test Mode :Tx CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
10380.00	Peak	34.48	20.61	55.09	68.20	-13.11

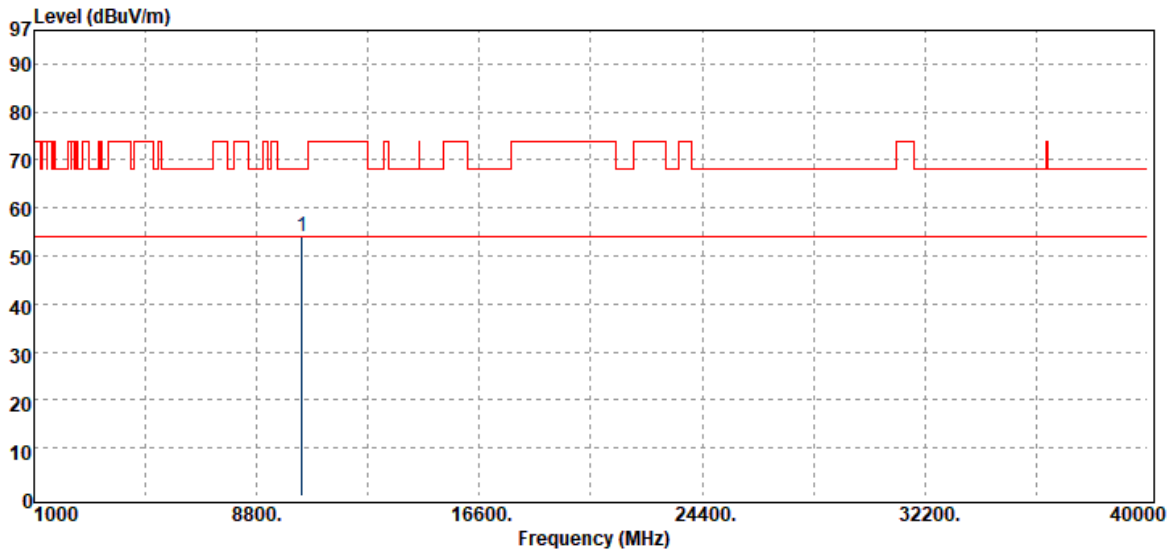
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5190 MHz  
 Test Mode :Tx CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



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	33.58	20.61	54.19	68.20	-14.01

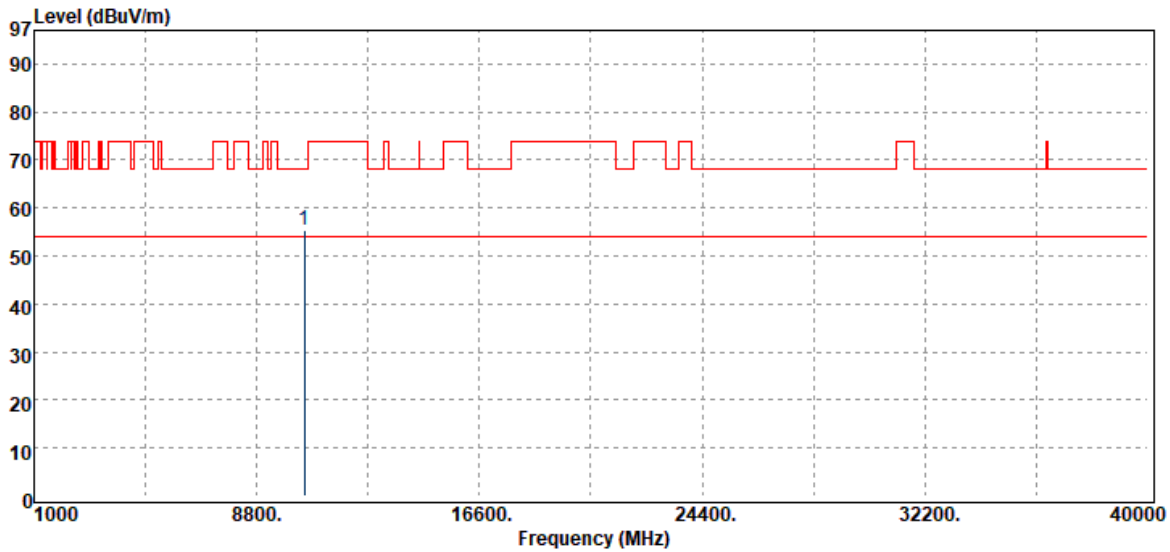
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5230 MHz  
 Test Mode :Tx CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



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
10460.00	Peak	34.05	21.20	55.25	68.20	-12.95

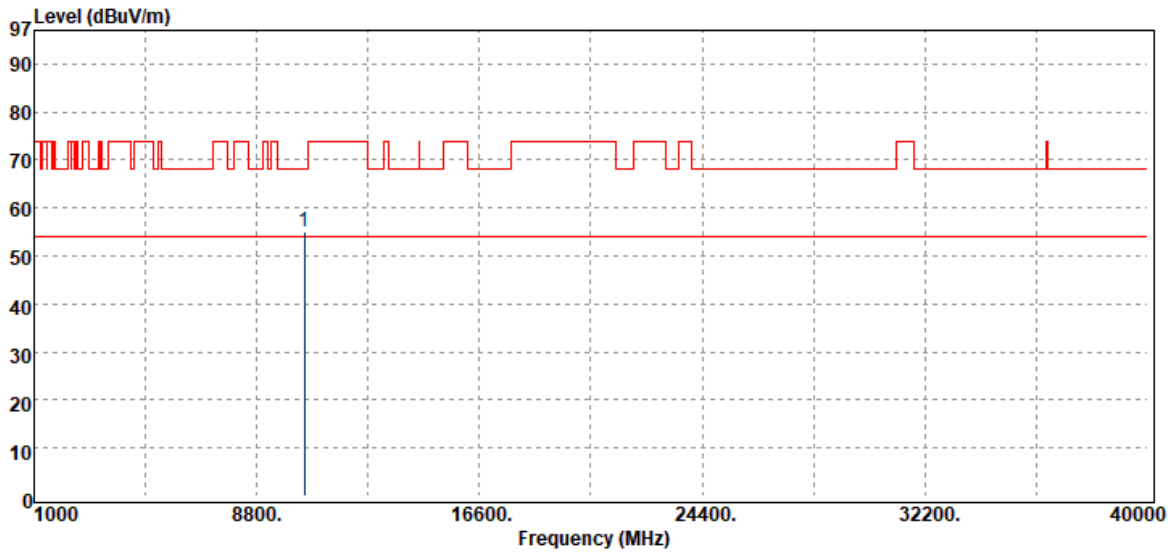
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Report Number :ER-2020-30136  
Operation Mode :802.11n40  
Test Frequency :5230 MHz  
Test Mode :Tx CH High  
EUT Pol :H Plane

Test Date :2020-04-09  
Temp./Humi. :21.2/72  
Antenna Pol. :HORIZONTAL  
Engineer :Nick



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
10460.00	Peak	33.77	21.20	54.97	68.20	-13.23

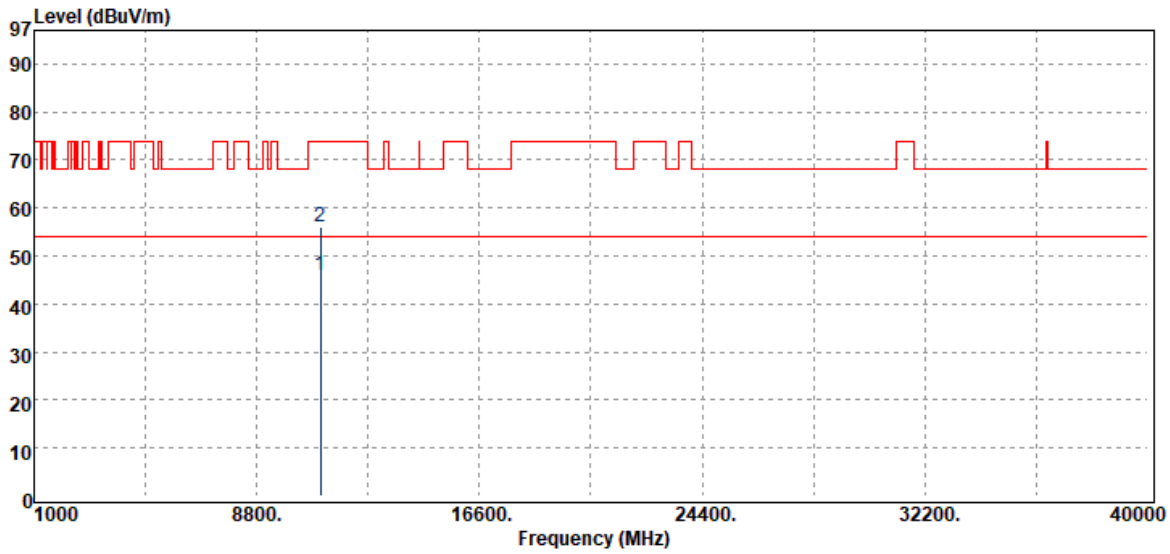
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5510 MHz  
 Test Mode :Tx CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



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	22.99	22.85	45.84	54.00	-8.16
11020.00	Peak	33.28	22.85	56.13	74.00	-17.87

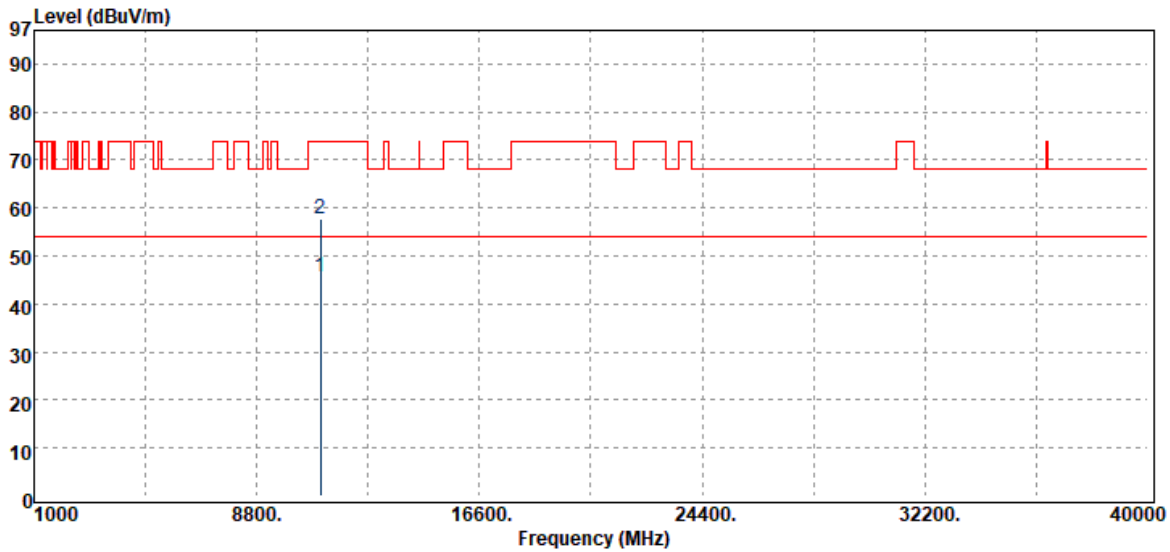
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Report Number :ER-2020-30136  
Operation Mode :802.11n40  
Test Frequency :5510 MHz  
Test Mode :Tx CH Low  
EUT Pol :H Plane

Test Date :2020-04-09  
Temp./Humi. :21.2/72  
Antenna Pol. :HORIZONTAL  
Engineer :Nick



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
11020.00	Average	22.85	22.85	45.70	54.00	-8.30
11020.00	Peak	35.01	22.85	57.86	74.00	-16.14

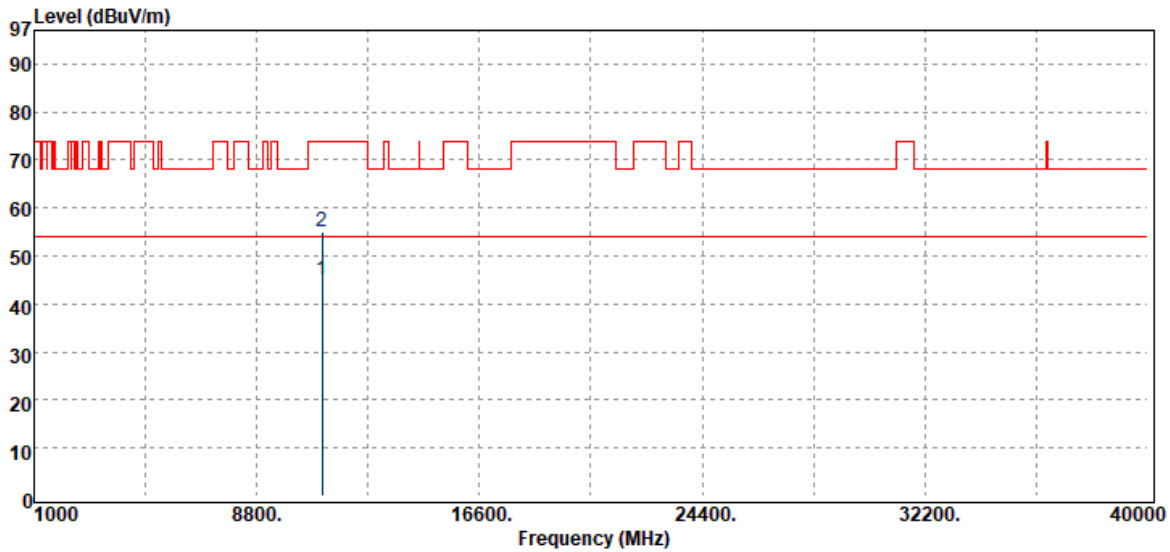
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5550 MHz  
 Test Mode :Tx CH Mid  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11100.00	Average	23.03	21.82	44.85	54.00	-9.15
11100.00	Peak	33.32	21.82	55.14	74.00	-18.86

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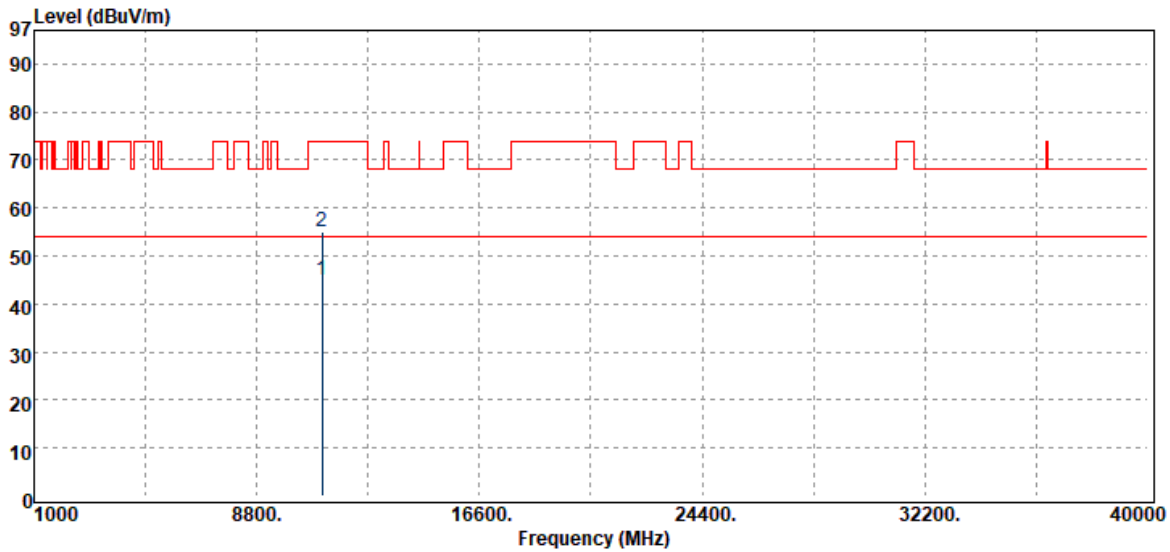
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5550 MHz  
 Test Mode :Tx CH Mid  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



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
11100.00	Average	23.05	21.82	44.87	54.00	-9.13
11100.00	Peak	33.11	21.82	54.93	74.00	-19.07

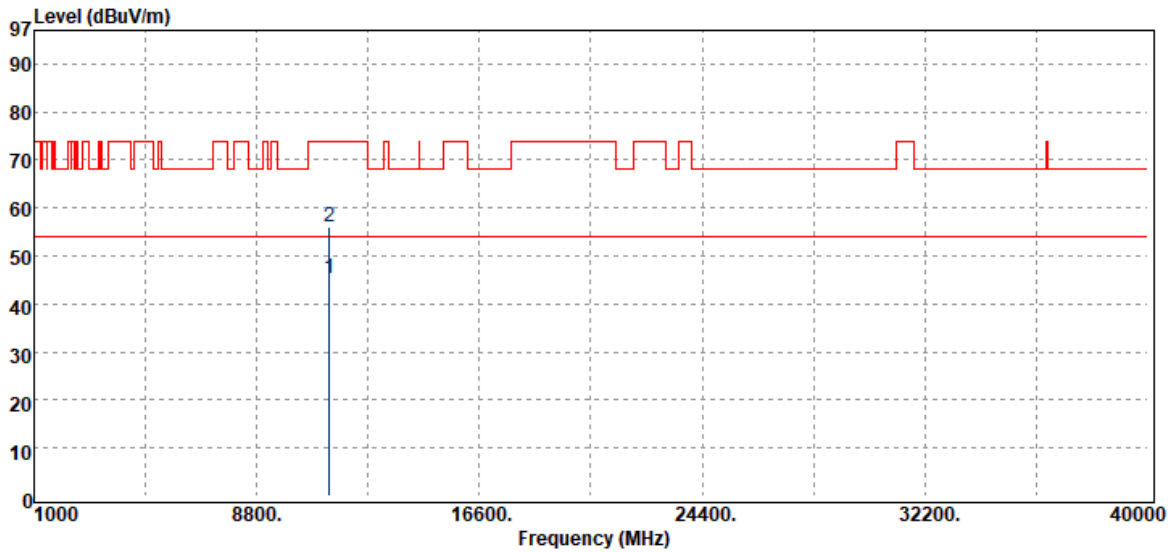
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Report Number :ER-2020-30136  
Operation Mode :802.11n40  
Test Frequency :5670 MHz  
Test Mode :Tx CH High  
EUT Pol :H Plane

Test Date :2020-04-09  
Temp./Humi. :21.2/72  
Antenna Pol. :VERTICAL  
Engineer :Nick



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
11340.00	Average	23.05	22.34	45.39	54.00	-8.61
11340.00	Peak	33.63	22.34	55.97	74.00	-18.03

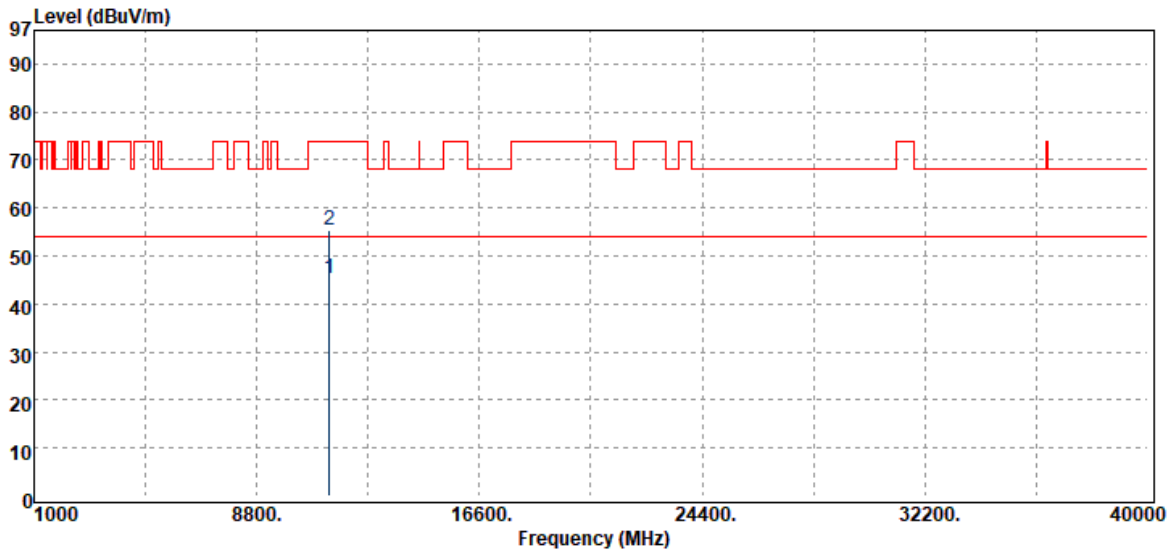
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5670 MHz  
 Test Mode :Tx CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



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
11340.00	Average	22.94	22.34	45.28	54.00	-8.72
11340.00	Peak	33.12	22.34	55.46	74.00	-18.54

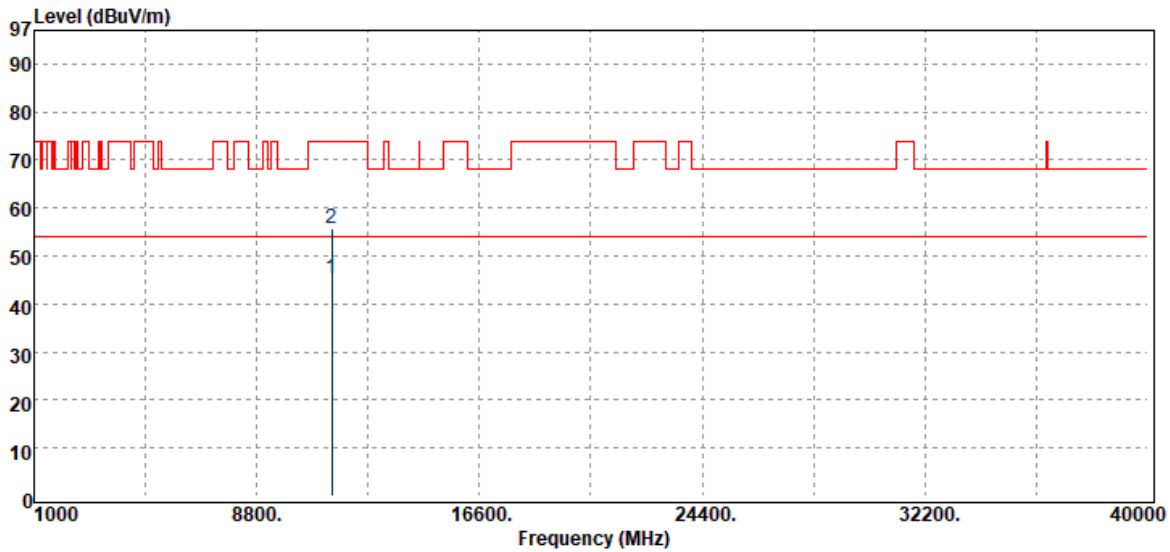
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5710 MHz  
 Test Mode :Tx CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



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	22.81	22.44	45.25	54.00	-8.75
11420.00	Peak	33.13	22.44	55.57	74.00	-18.43

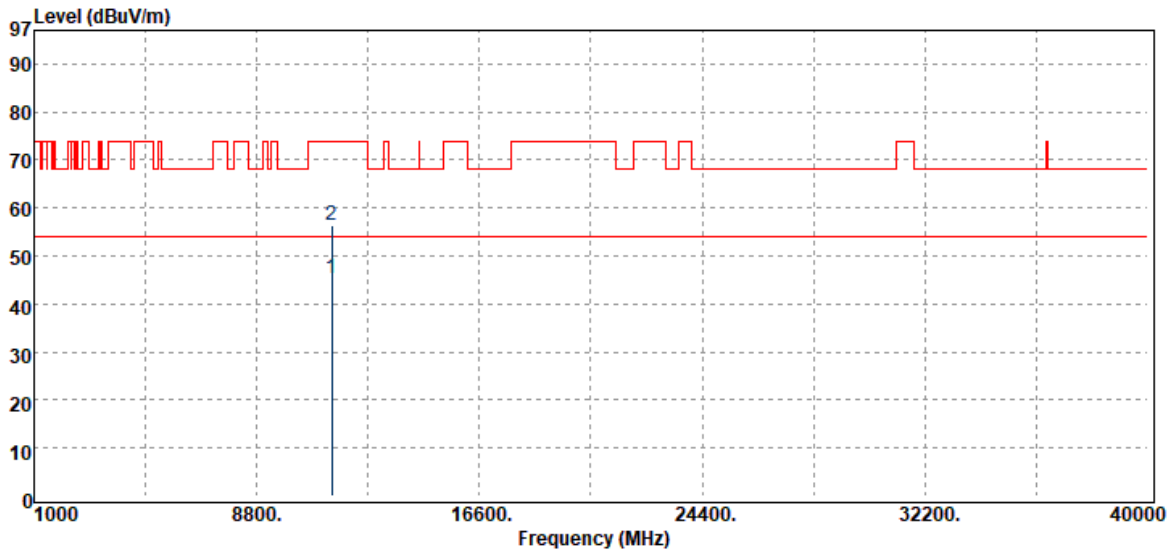
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5710 MHz  
 Test Mode :Tx CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



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
11420.00	Average	22.79	22.44	45.23	54.00	-8.77
11420.00	Peak	34.09	22.44	56.53	74.00	-17.47

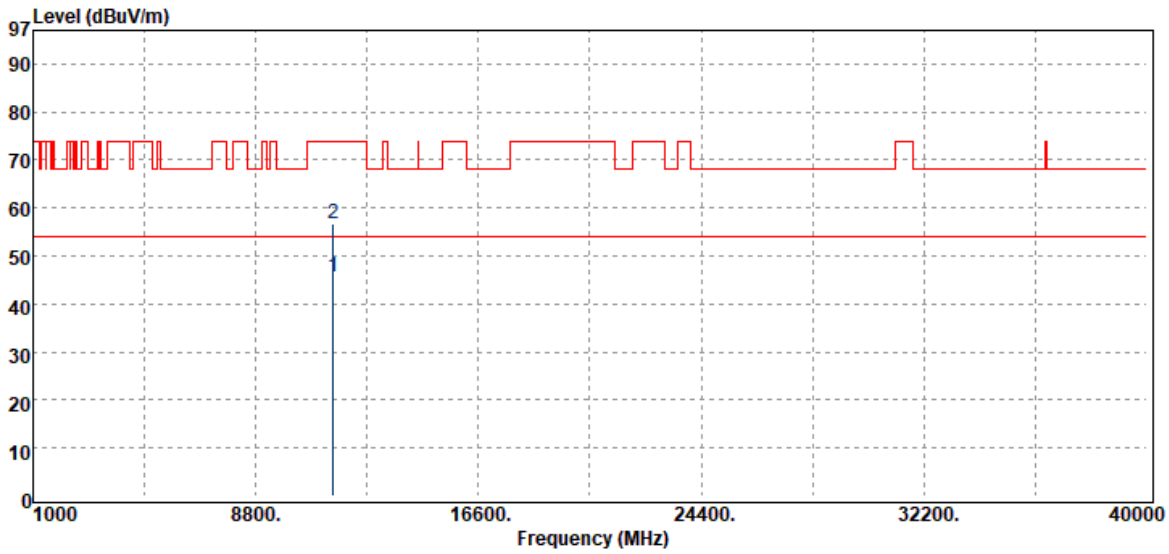
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5755 MHz  
 Test Mode :Tx CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11510.00	Average	22.68	23.13	45.81	54.00	-8.19
11510.00	Peak	33.61	23.13	56.74	74.00	-17.26

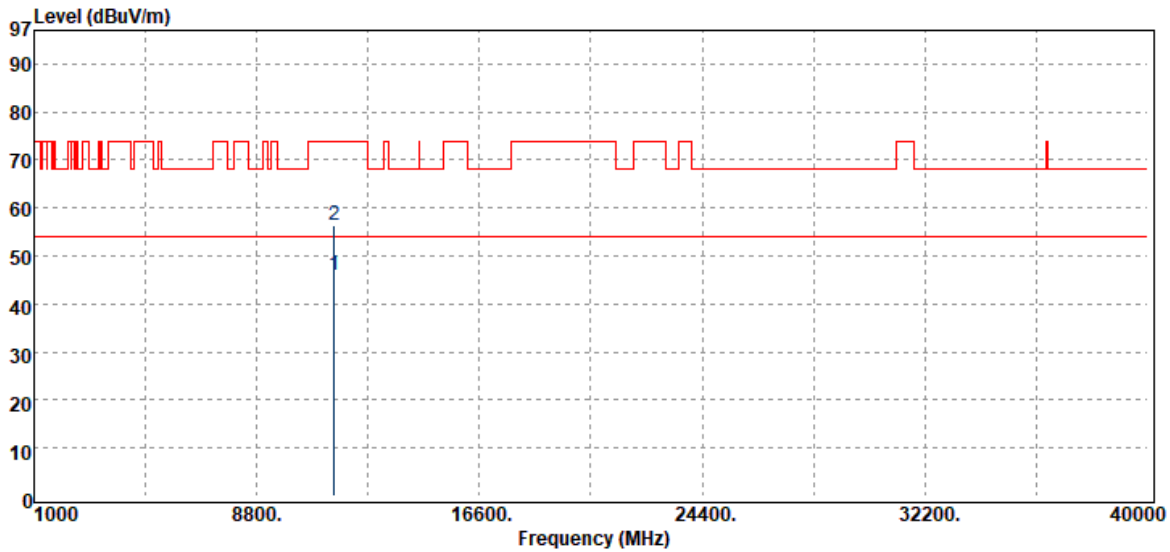
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Report Number :ER-2020-30136  
Operation Mode :802.11n40  
Test Frequency :5755 MHz  
Test Mode :Tx CH Low  
EUT Pol :H Plane

Test Date :2020-04-09  
Temp./Humi. :21.2/72  
Antenna Pol. :HORIZONTAL  
Engineer :Nick



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
11510.00	Average	22.72	23.13	45.85	54.00	-8.15
11510.00	Peak	33.15	23.13	56.28	74.00	-17.72

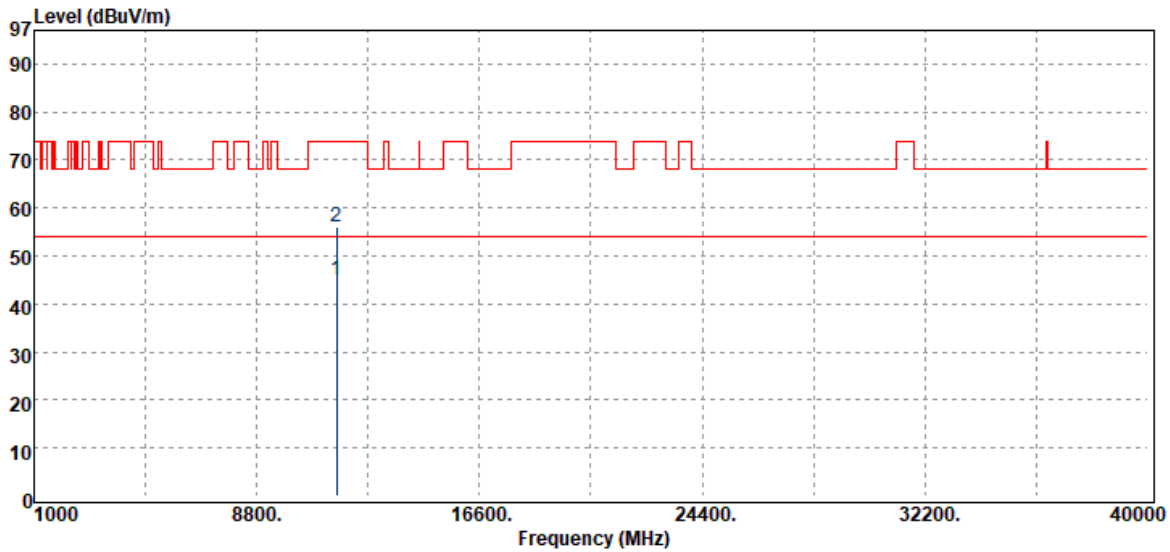
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Report Number :ER-2020-30136  
Operation Mode :802.11n40  
Test Frequency :5795 MHz  
Test Mode :Tx CH High  
EUT Pol :H Plane

Test Date :2020-04-09  
Temp./Humi. :21.2/72  
Antenna Pol. :VERTICAL  
Engineer :Nick



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
11590.00	Average	23.21	21.84	45.05	54.00	-8.95
11590.00	Peak	34.32	21.84	56.16	74.00	-17.84

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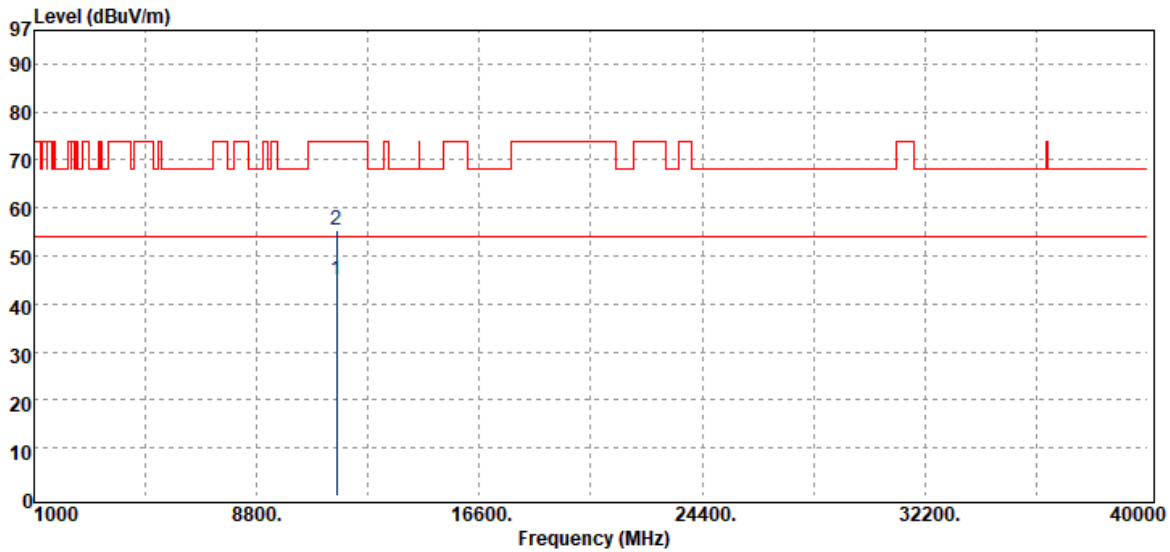
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5795 MHz  
 Test Mode :Tx CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11590.00	Average	23.30	21.84	45.14	54.00	-8.86
11590.00	Peak	33.50	21.84	55.34	74.00	-18.66

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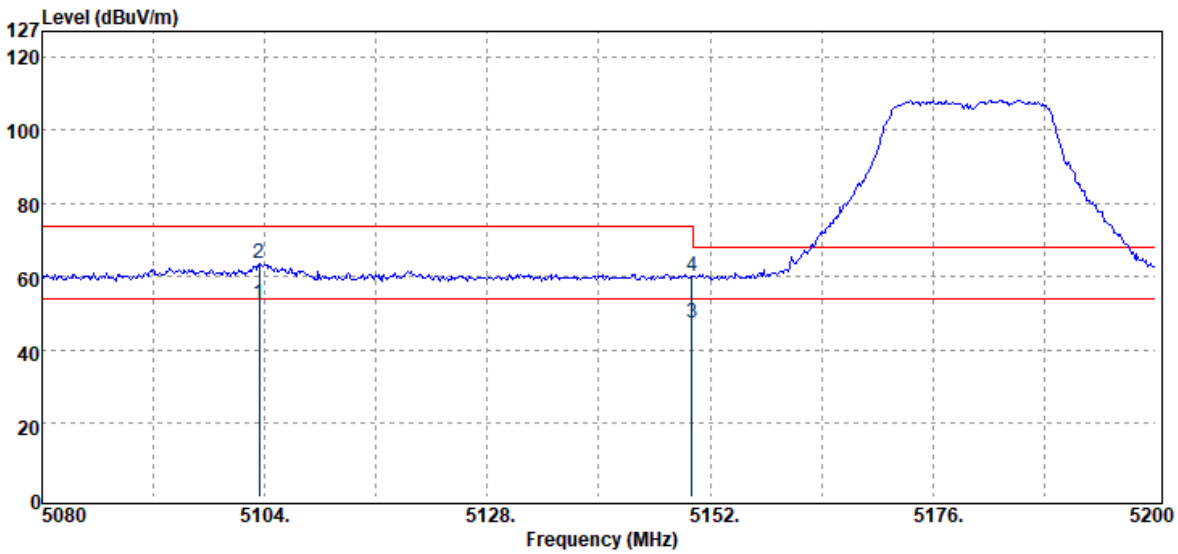
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### 11.7.3 Band edge falling to restricted band

Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5180 MHz  
 Test Mode :Bandedge CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



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
5103.40	Average	43.84	8.82	52.66	54.00	-1.34
5103.40	Peak	55.00	8.82	63.82	74.00	-10.18
5150.00	Average	38.72	8.68	47.40	54.00	-6.60
5150.00	Peak	51.58	8.68	60.26	74.00	-13.74

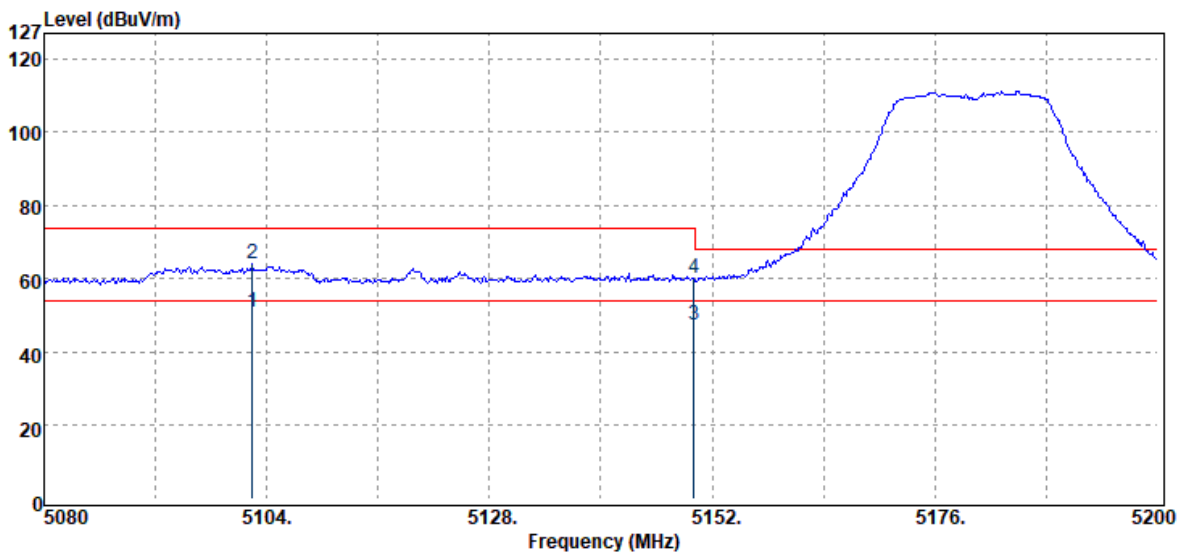
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5180 MHz  
 Test Mode :Bandedge CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5102.44	Average	41.98	8.83	50.81	54.00	-3.19
5102.44	Peak	55.45	8.83	64.28	74.00	-9.72
5150.00	Average	38.65	8.68	47.33	54.00	-6.67
5150.00	Peak	51.54	8.68	60.22	74.00	-13.78

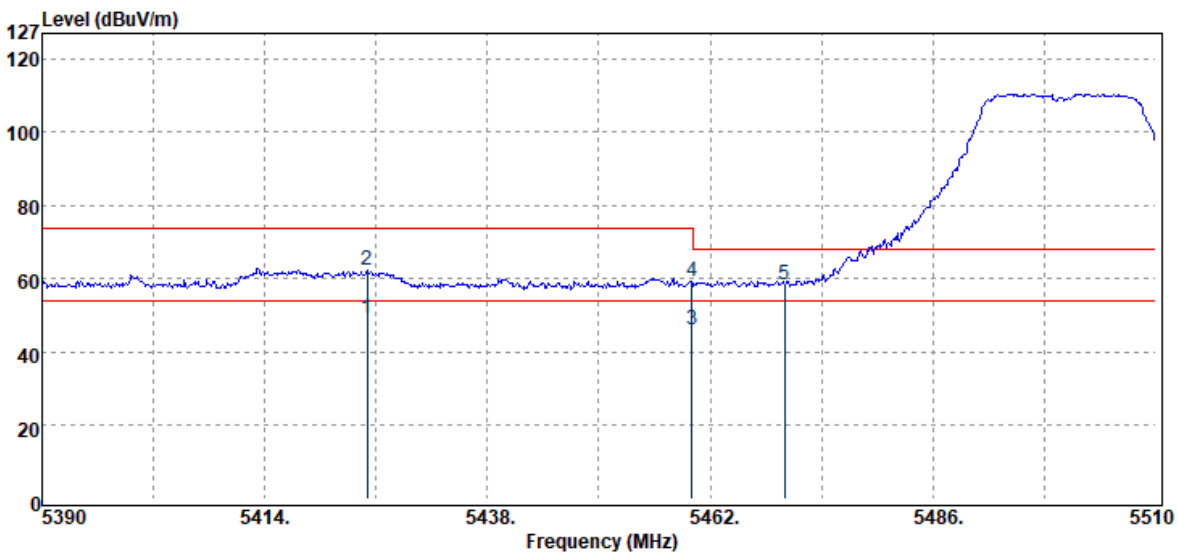
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5500 MHz  
 Test Mode :Bandedge CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5425.04	Average	41.23	8.10	49.33	54.00	-4.67
5425.04	Peak	54.17	8.10	62.27	74.00	-11.73
5460.00	Average	37.96	8.06	46.02	54.00	-7.98
5460.00	Peak	51.37	8.06	59.43	74.00	-14.57
5470.00	Peak	50.41	8.07	58.48	68.20	-9.72

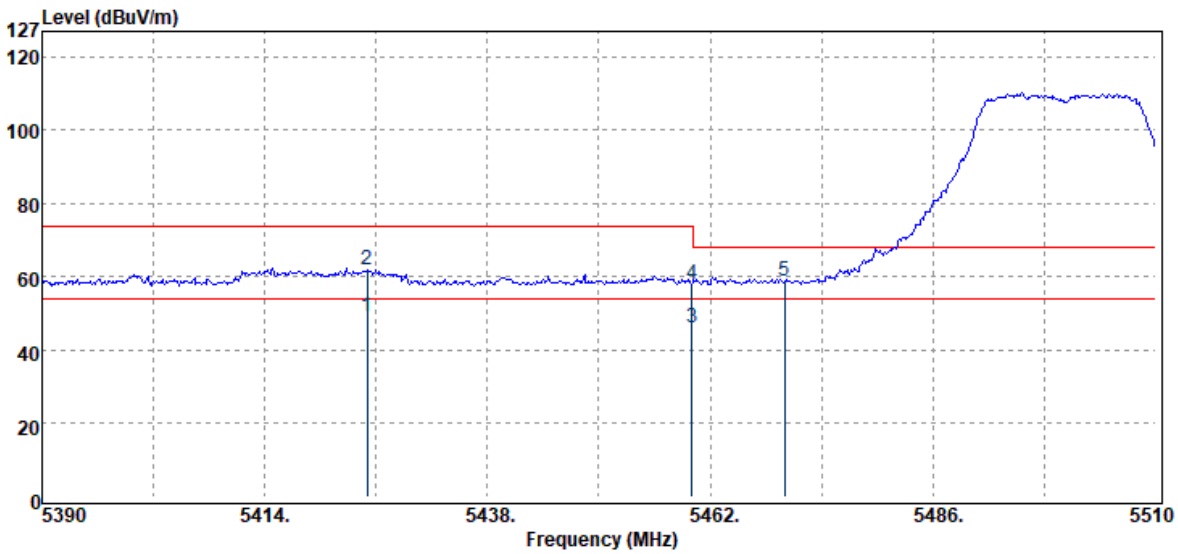
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5500 MHz  
 Test Mode :Bandedge CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5425.04	Average	41.15	8.10	49.25	54.00	-4.75
5425.04	Peak	53.83	8.10	61.93	74.00	-12.07
5460.00	Average	37.96	8.06	46.02	54.00	-7.98
5460.00	Peak	49.84	8.06	57.90	74.00	-16.10
5470.00	Peak	50.80	8.07	58.87	68.20	-9.33

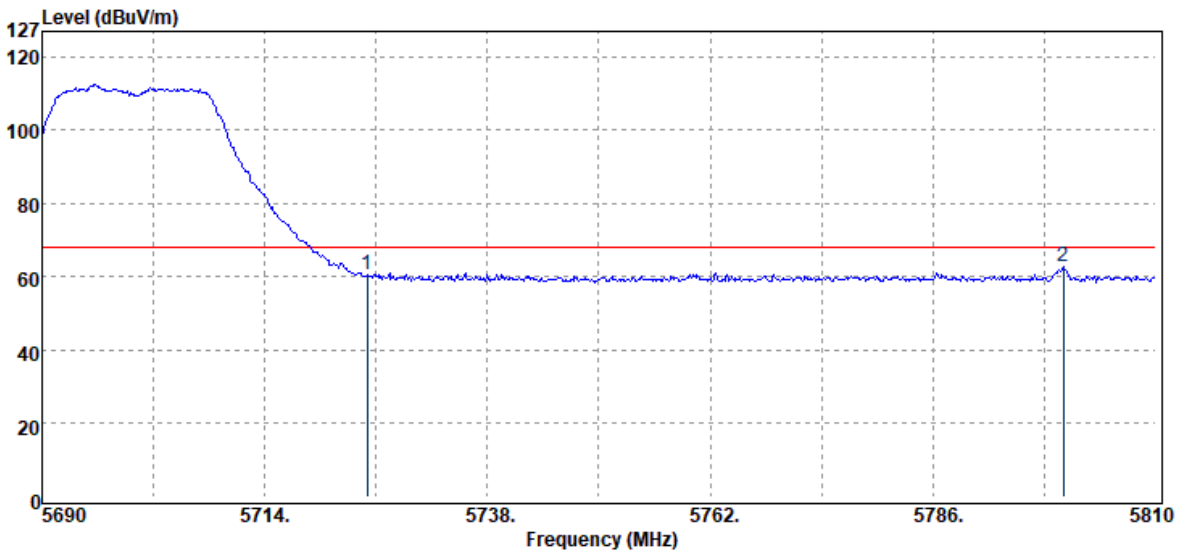
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5700 MHz  
 Test Mode :Bandedge CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5725.00	Peak	51.90	8.81	60.71	68.20	-7.49
5800.04	Peak	53.48	9.27	62.75	68.20	-5.45

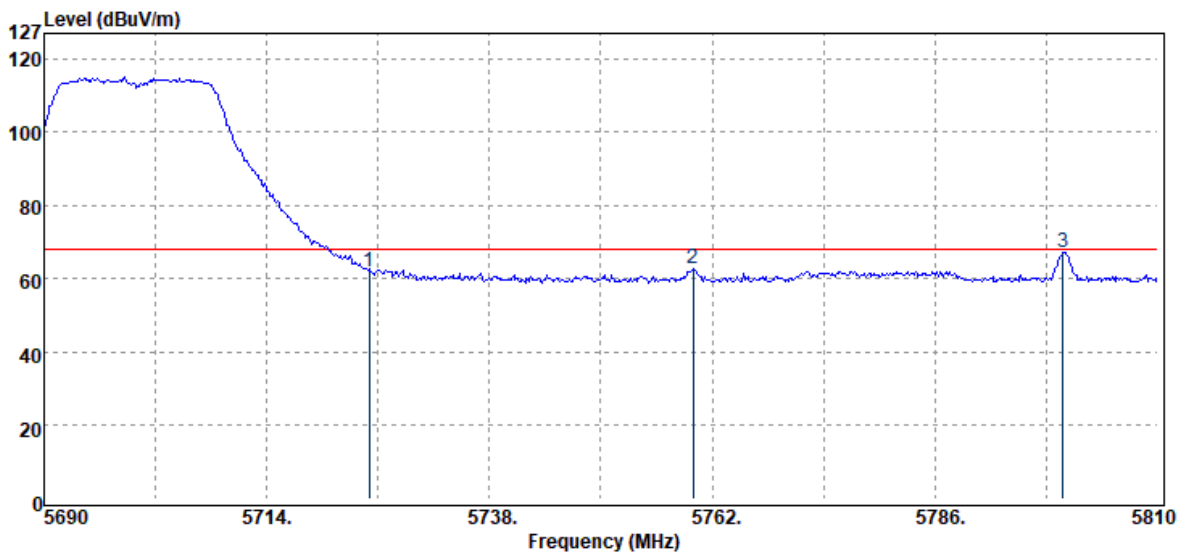
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5700 MHz  
 Test Mode :Bandedge CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5725.00	Peak	53.30	8.81	62.11	68.20	-6.09
5759.96	Peak	53.68	8.99	62.67	68.20	-5.53
5799.80	Peak	58.18	9.27	67.45	68.20	-0.75

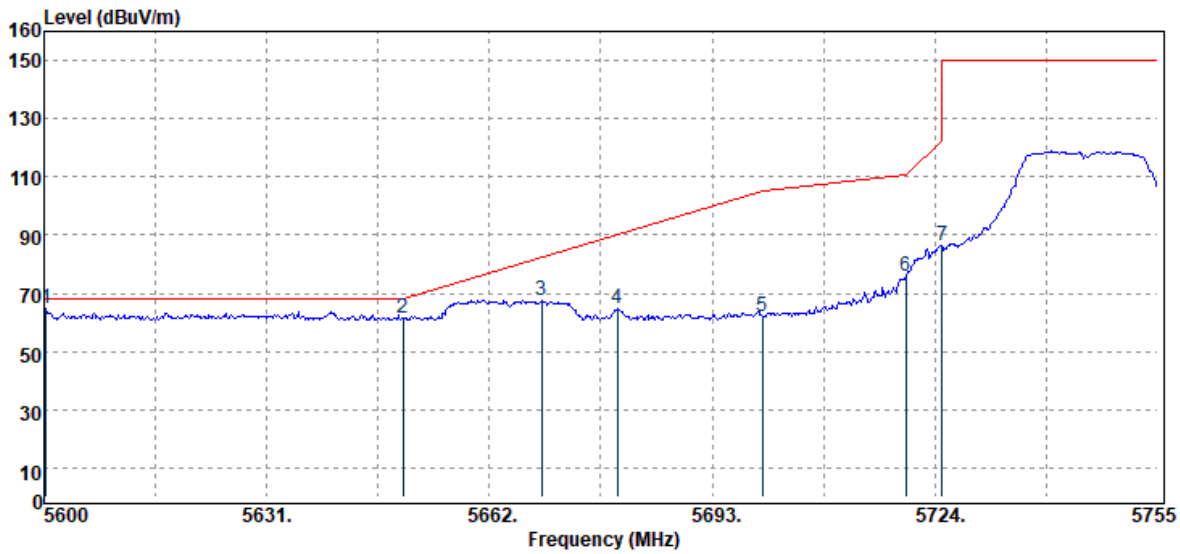
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5745 MHz  
 Test Mode :Bandedge CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5600.31	Peak	56.57	8.15	64.72	68.20	-3.48
5650.00	Peak	53.05	8.32	61.37	68.20	-6.83
5669.29	Peak	59.13	8.47	67.60	82.47	-14.87
5679.83	Peak	56.00	8.54	64.54	90.27	-25.73
5700.00	Peak	53.41	8.69	62.10	105.20	-43.10
5720.00	Peak	67.24	8.78	76.02	110.80	-34.78
5725.00	Peak	77.40	8.81	86.21	122.20	-35.99

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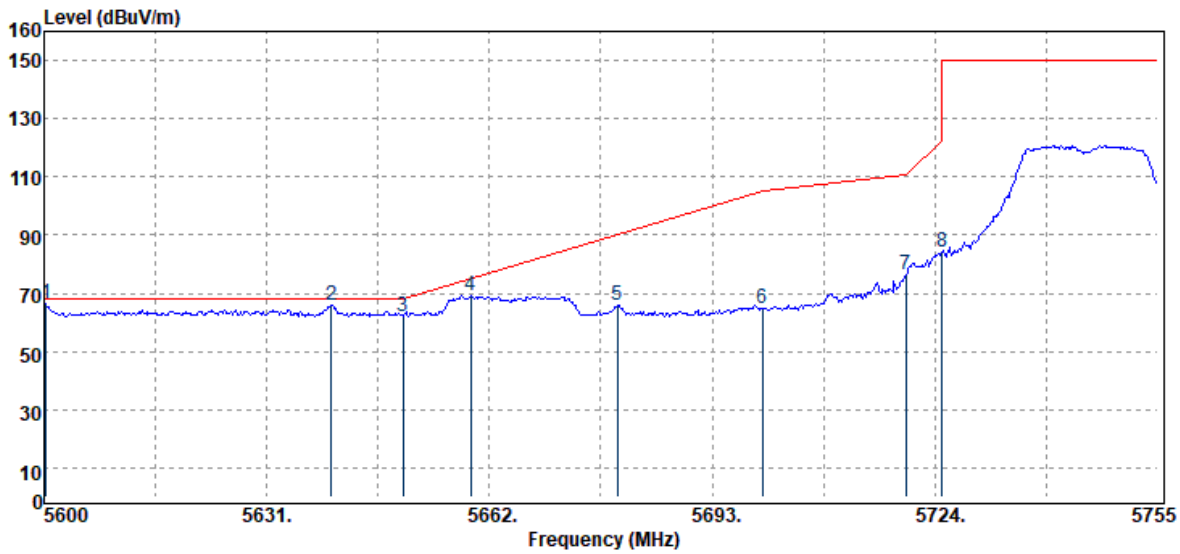
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5745 MHz  
 Test Mode :Bandedge CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



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
5600.31	Peak	58.01	8.15	66.16	68.20	-2.04
5639.99	Peak	57.79	8.28	66.07	68.20	-2.13
5650.00	Peak	53.91	8.32	62.23	68.20	-5.97
5659.37	Peak	60.74	8.39	69.13	75.13	-6.00
5679.83	Peak	57.17	8.54	65.71	90.27	-24.56
5700.00	Peak	56.10	8.69	64.79	105.20	-40.41
5720.00	Peak	67.64	8.78	76.42	110.80	-34.38
5725.00	Peak	75.22	8.81	84.03	122.20	-38.17

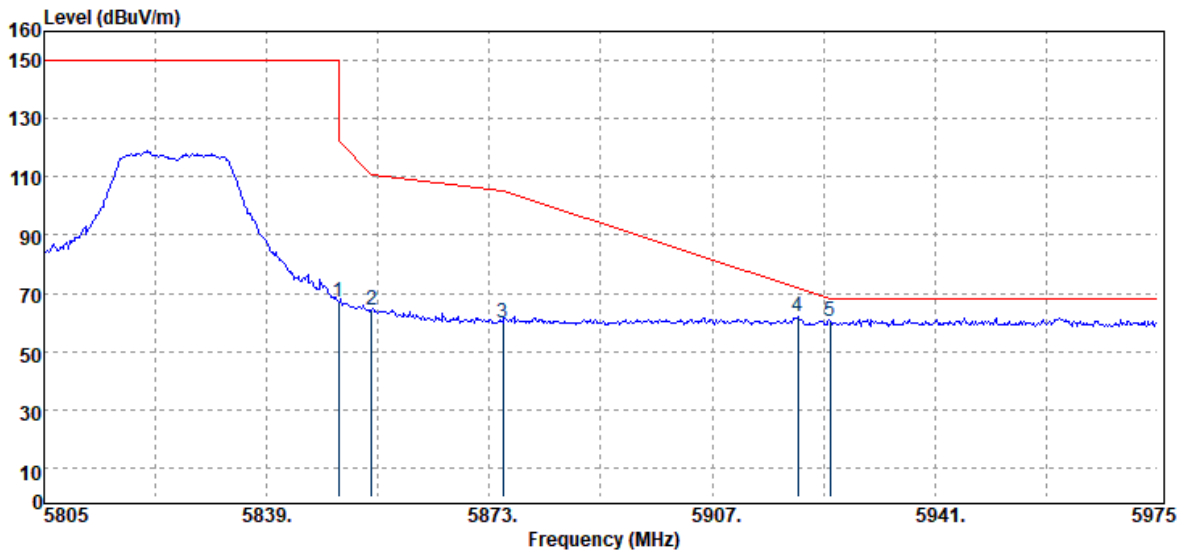
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5825 MHz  
 Test Mode :Bandedge CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5850.00	Peak	57.81	9.42	67.23	122.20	-54.97
5855.00	Peak	54.82	9.44	64.26	110.80	-46.54
5875.00	Peak	50.22	9.50	59.72	105.20	-45.48
5920.09	Peak	52.16	9.64	61.80	71.83	-10.03
5925.00	Peak	50.57	9.65	60.22	68.20	-7.98

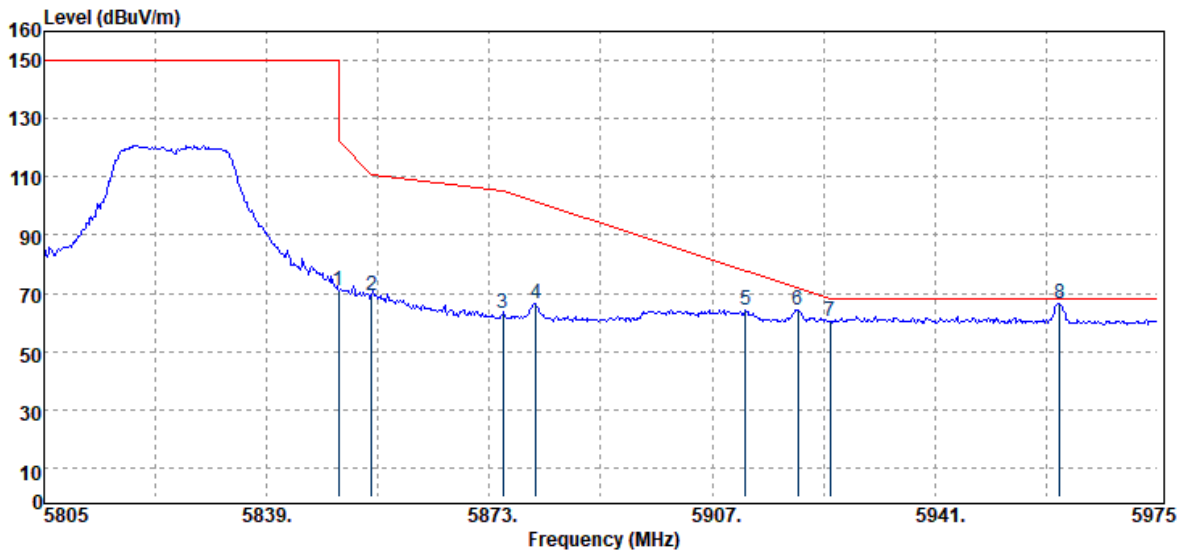
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Report Number :ER-2020-30136  
 Operation Mode :802.11n20  
 Test Frequency :5825 MHz  
 Test Mode :Bandedge CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5850.00	Peak	61.62	9.42	71.04	122.20	-51.16
5855.00	Peak	59.90	9.44	69.34	110.80	-41.46
5875.00	Peak	53.36	9.50	62.86	105.20	-42.34
5880.14	Peak	56.77	9.51	66.28	101.40	-35.12
5912.10	Peak	54.76	9.62	64.38	77.75	-13.37
5920.09	Peak	54.78	9.64	64.42	71.83	-7.41
5925.00	Peak	50.72	9.65	60.37	68.20	-7.83
5960.04	Peak	56.81	9.70	66.51	68.20	-1.69

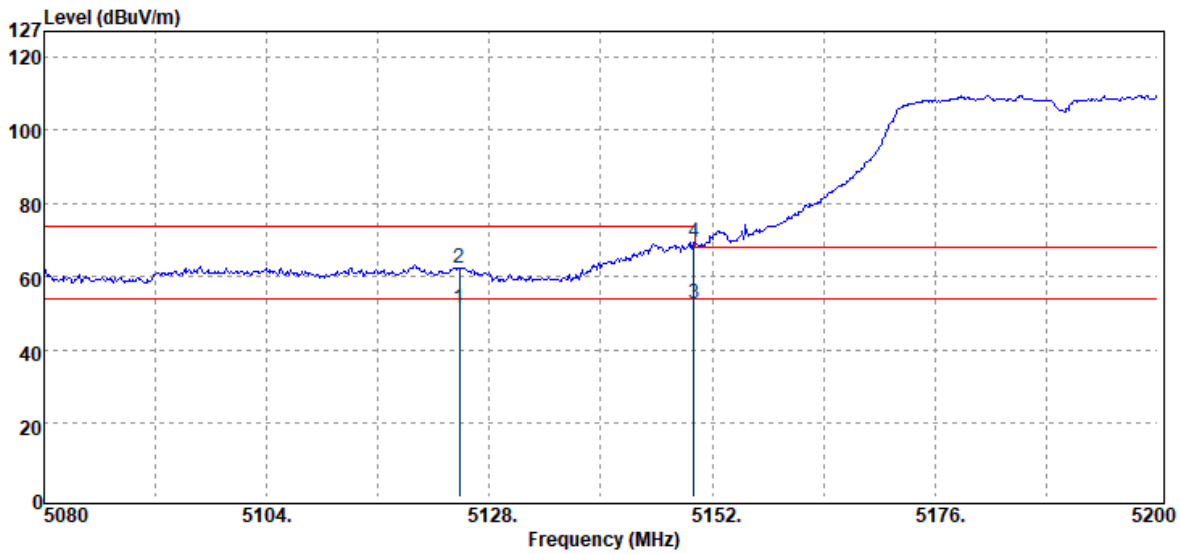
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5190 MHz  
 Test Mode :Bandedge CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5124.76	Average	42.78	8.76	51.54	54.00	-2.46
5124.76	Peak	53.79	8.76	62.55	74.00	-11.45
5150.00	Average	43.83	8.68	52.51	54.00	-1.49
5150.00	Peak	60.79	8.68	69.47	74.00	-4.53

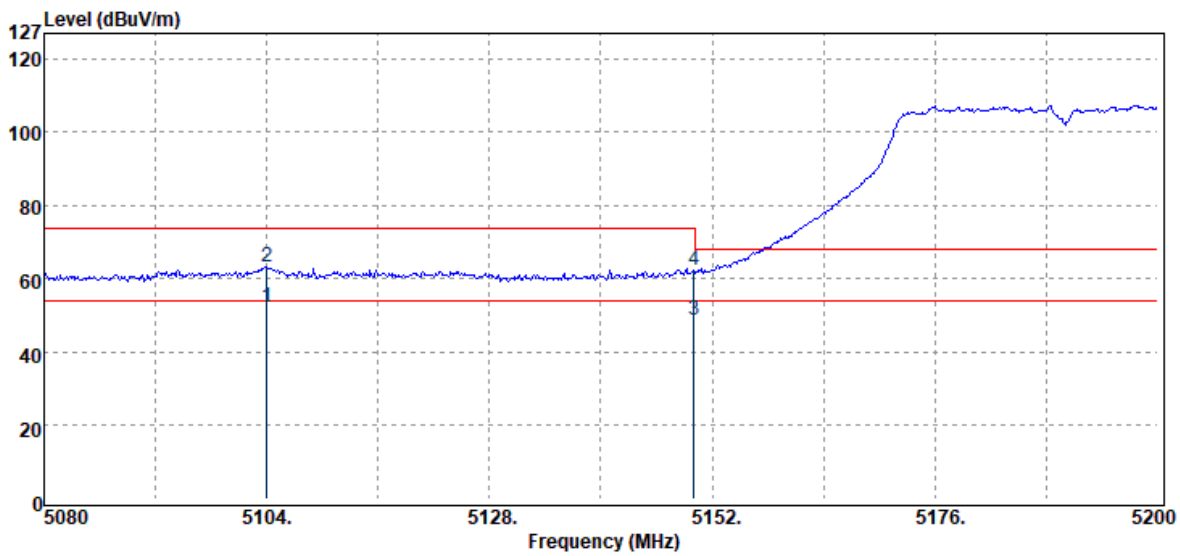
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5190 MHz  
 Test Mode :Bandedge CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level d $\mu$ V	Factor dB	Actual FS d $\mu$ V/m	Limit @3m d $\mu$ V/m	Margin dB
5104.00	Average	43.62	8.82	52.44	54.00	-1.56
5104.00	Peak	54.49	8.82	63.31	74.00	-10.69
5150.00	Average	39.94	8.68	48.62	54.00	-5.38
5150.00	Peak	53.54	8.68	62.22	74.00	-11.78

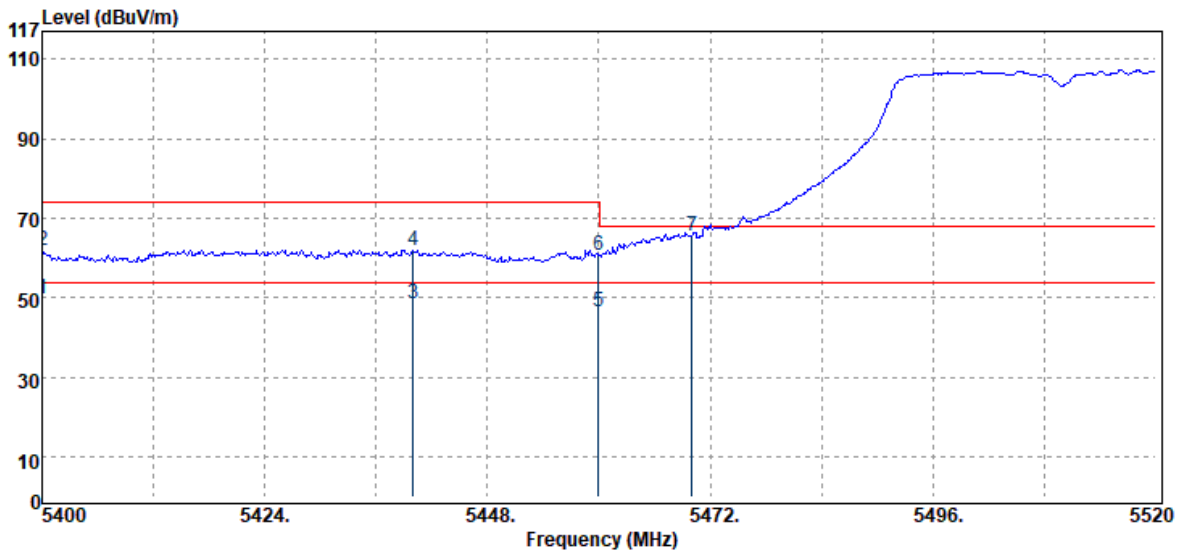
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5510 MHz  
 Test Mode :Bandedge CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5400.00	Average	41.50	8.13	49.63	54.00	-4.37
5400.00	Peak	53.68	8.13	61.81	74.00	-12.19
5439.96	Average	40.32	8.08	48.40	54.00	-5.60
5439.96	Peak	53.94	8.08	62.02	74.00	-11.98
5460.00	Average	38.58	8.06	46.64	54.00	-7.36
5460.00	Peak	52.78	8.06	60.84	74.00	-13.16
5470.00	Peak	57.39	8.07	65.46	68.20	-2.74

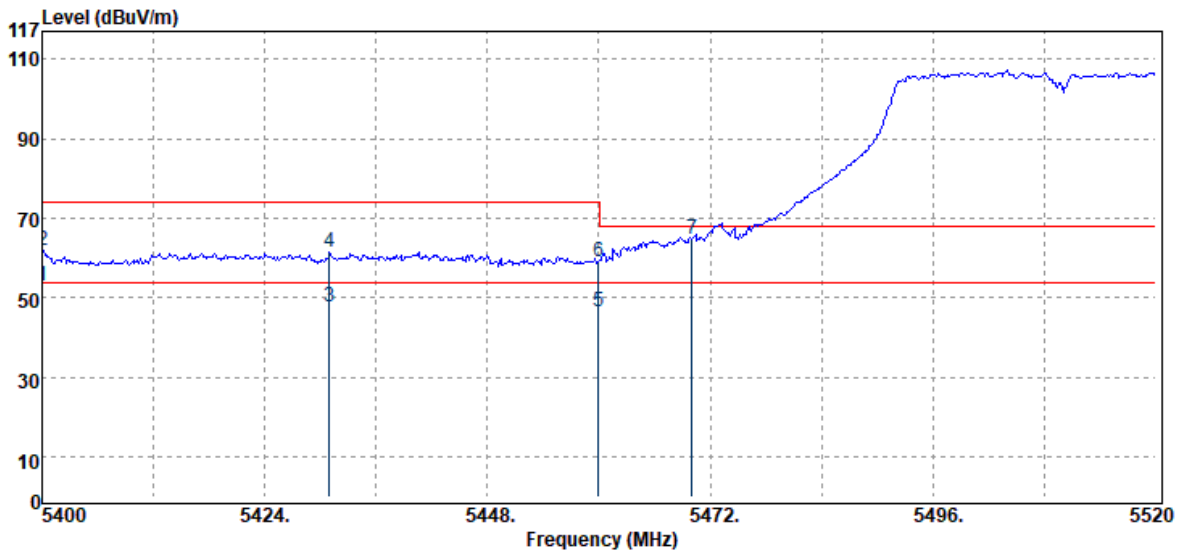
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5510 MHz  
 Test Mode :Bandedge CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5400.00	Average	44.88	8.13	53.01	54.00	-0.99
5400.00	Peak	53.71	8.13	61.84	74.00	-12.16
5430.96	Average	39.62	8.09	47.71	54.00	-6.29
5430.96	Peak	53.46	8.09	61.55	74.00	-12.45
5460.00	Average	38.51	8.06	46.57	54.00	-7.43
5460.00	Peak	51.13	8.06	59.19	74.00	-14.81
5470.00	Peak	56.83	8.07	64.90	68.20	-3.30

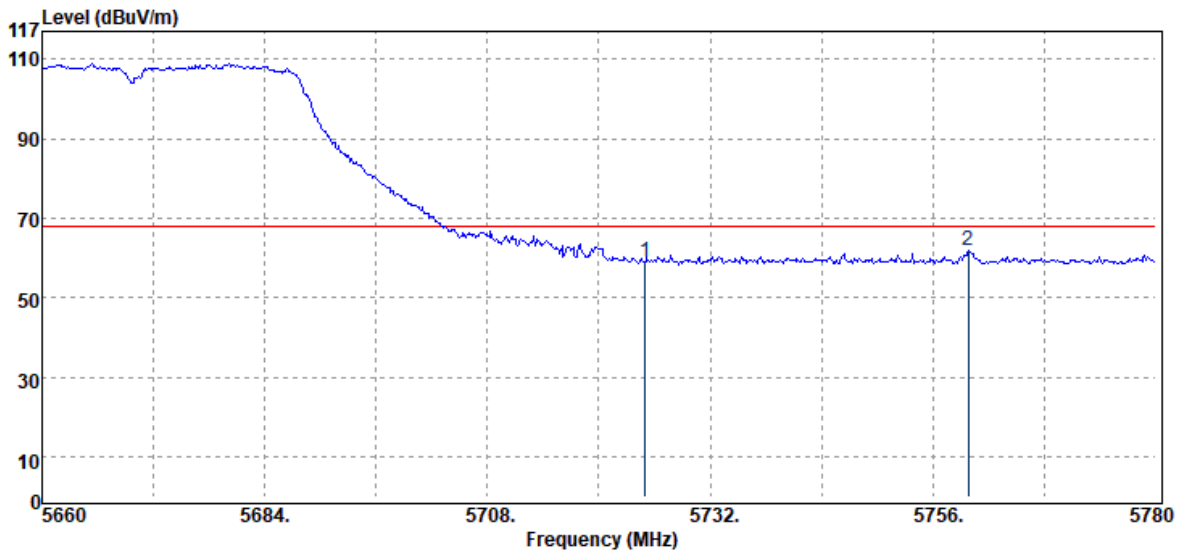
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5670 MHz  
 Test Mode :Bandedge CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



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
5725.00	Peak	50.25	8.81	59.06	68.20	-9.14
5759.84	Peak	52.93	8.99	61.92	68.20	-6.28

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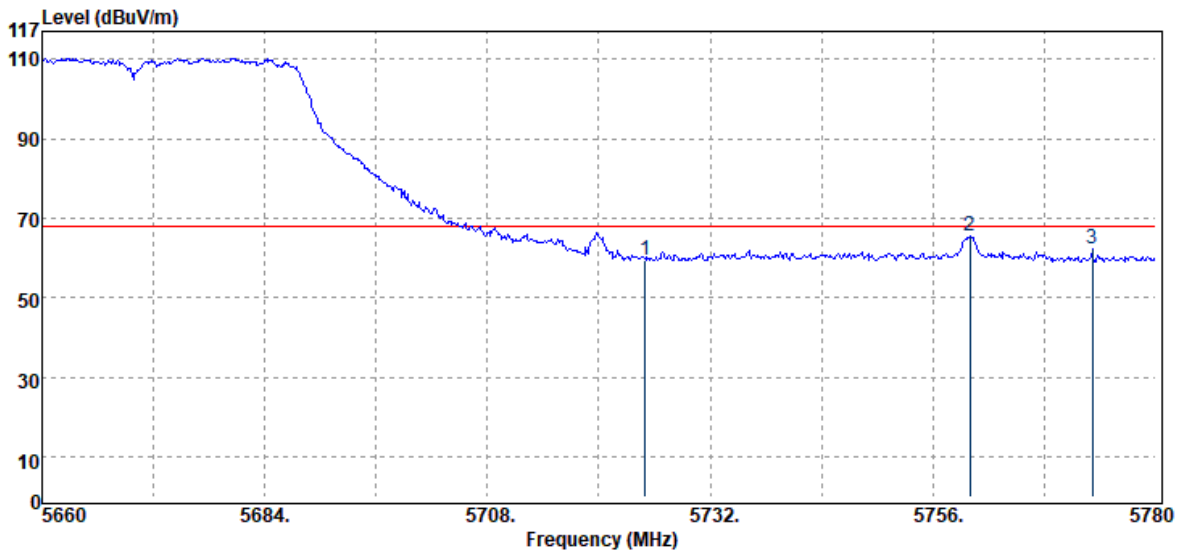
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5670 MHz  
 Test Mode :Bandedge CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBUV/m	Margin dB
5725.00	Peak	50.77	8.81	59.58	68.20	-8.62
5759.96	Peak	56.59	8.99	65.58	68.20	-2.62
5773.16	Peak	53.08	9.08	62.16	68.20	-6.04

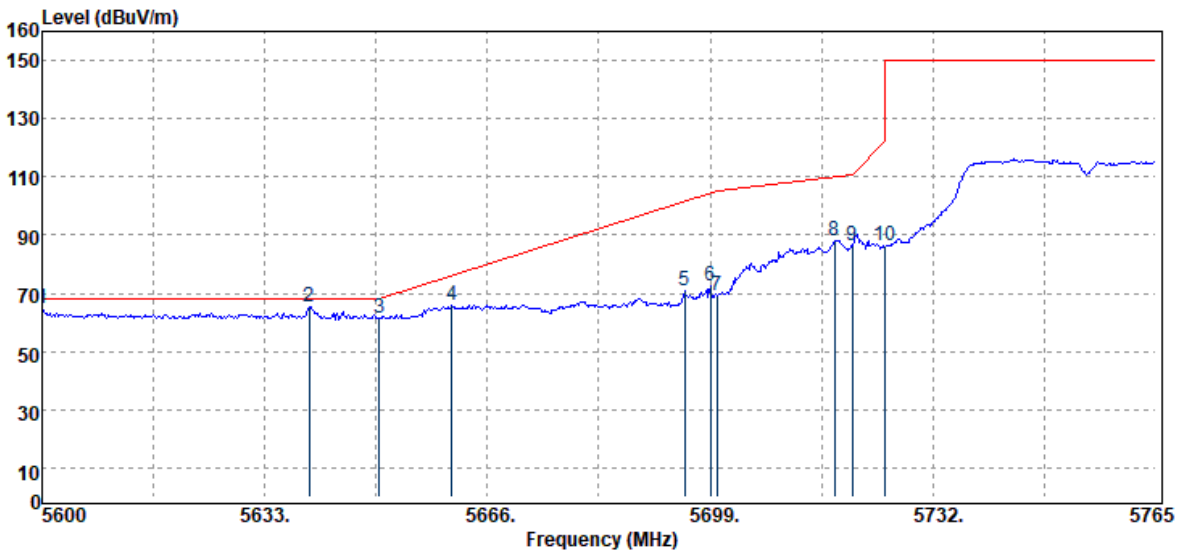
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5755 MHz  
 Test Mode :Bandedge CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5600.00	Peak	56.37	8.15	64.52	68.20	-3.68
5639.60	Peak	57.03	8.28	65.31	68.20	-2.89
5650.00	Peak	53.22	8.32	61.54	68.20	-6.66
5660.72	Peak	57.49	8.40	65.89	76.13	-10.24
5695.21	Peak	62.04	8.65	70.69	101.65	-30.96
5699.00	Peak	64.03	8.69	72.72	104.46	-31.74
5700.00	Peak	60.71	8.69	69.40	105.20	-35.80
5717.48	Peak	79.47	8.78	88.25	110.09	-21.84
5720.00	Peak	77.72	8.78	86.50	110.80	-24.30
5725.00	Peak	77.81	8.81	86.62	122.20	-35.58

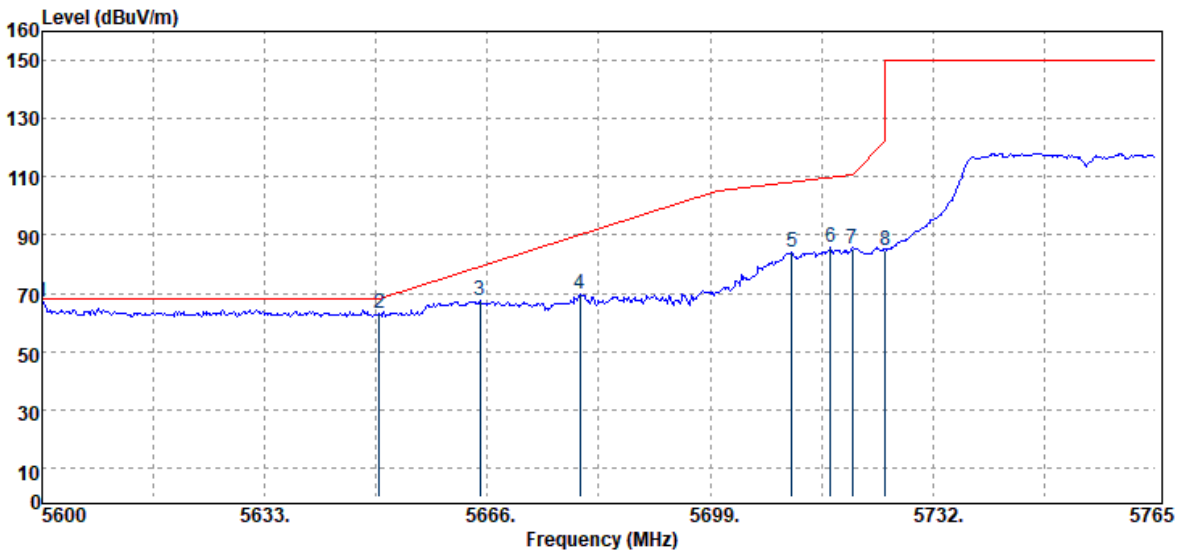
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5755 MHz  
 Test Mode :Bandedge CH Low  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5600.00	Peak	58.82	8.15	66.97	68.20	-1.23
5650.00	Peak	54.65	8.32	62.97	68.20	-5.23
5664.85	Peak	59.29	8.44	67.73	79.19	-11.46
5679.70	Peak	61.06	8.54	69.60	90.17	-20.57
5711.05	Peak	75.44	8.74	84.18	108.29	-24.11
5716.82	Peak	77.06	8.76	85.82	109.91	-24.09
5720.00	Peak	76.52	8.78	85.30	110.80	-25.50
5725.00	Peak	75.99	8.81	84.80	122.20	-37.40

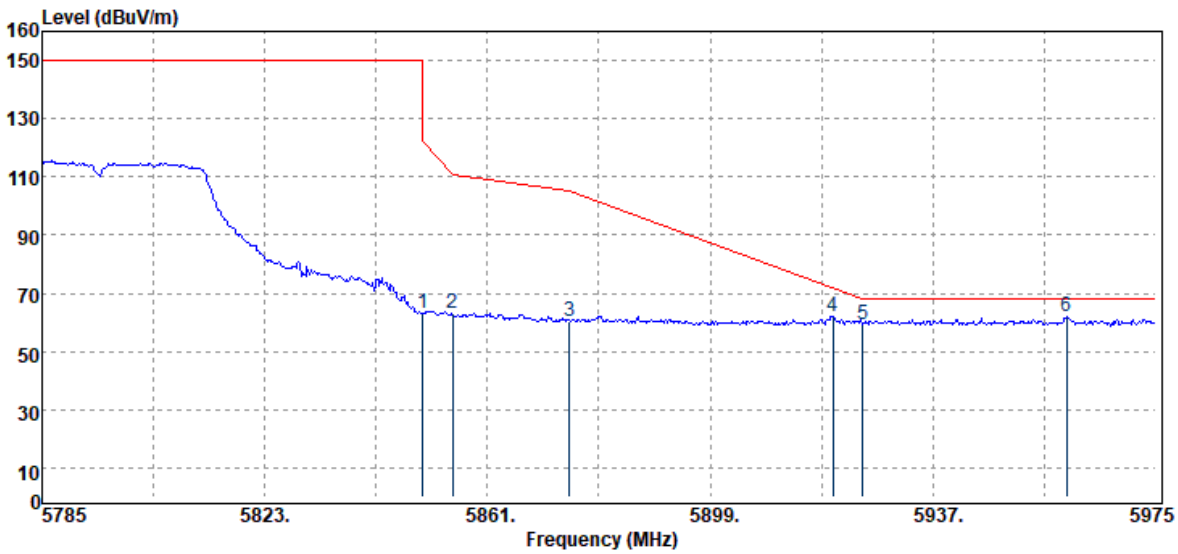
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5795 MHz  
 Test Mode :Bandedge CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



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
5850.00	Peak	53.60	9.42	63.02	122.20	-59.18
5855.00	Peak	53.53	9.44	62.97	110.80	-47.83
5875.00	Peak	50.99	9.50	60.49	105.20	-44.71
5919.90	Peak	52.43	9.64	62.07	71.97	-9.90
5925.00	Peak	49.62	9.65	59.27	68.20	-8.93
5959.80	Peak	52.42	9.70	62.12	68.20	-6.08

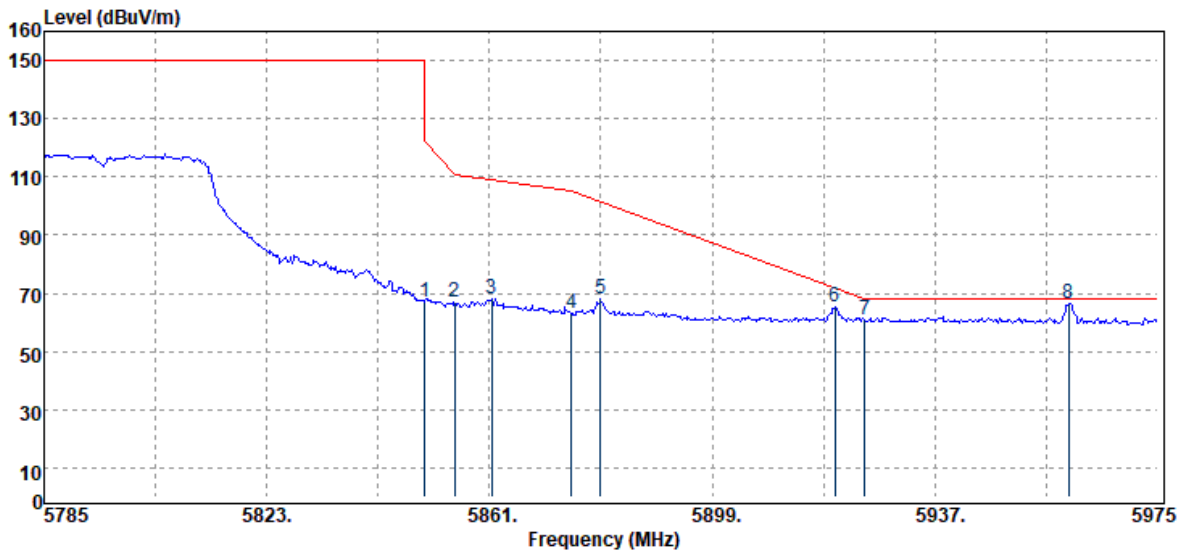
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Report Number :ER-2020-30136  
 Operation Mode :802.11n40  
 Test Frequency :5795 MHz  
 Test Mode :Bandedge CH High  
 EUT Pol :H Plane

Test Date :2020-04-09  
 Temp./Humi. :21.2/72  
 Antenna Pol. :HORIZONTAL  
 Engineer :Nick



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5850.00	Peak	57.41	9.42	66.83	122.20	-55.37
5855.00	Peak	57.57	9.44	67.01	110.80	-43.79
5861.38	Peak	58.69	9.45	68.14	109.01	-40.87
5875.00	Peak	53.54	9.50	63.04	105.20	-42.16
5880.00	Peak	58.31	9.51	67.82	101.50	-33.68
5919.90	Peak	55.55	9.64	65.19	71.97	-6.78
5925.00	Peak	51.18	9.65	60.83	68.20	-7.37
5959.80	Peak	56.79	9.70	66.49	68.20	-1.71

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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

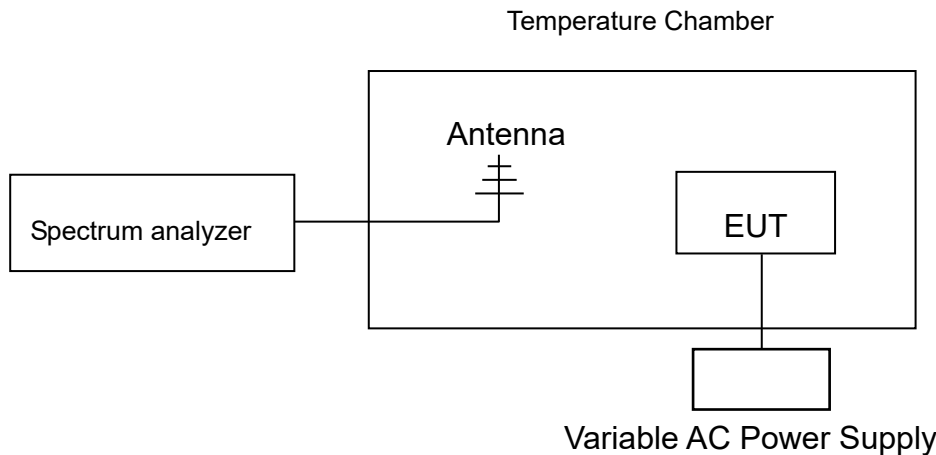
### 13.1 Standard Applicable

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



### 13.4 Measurement Equipment Used:

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2019	05/16/2020
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY57120290	02/20/2020	02/19/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2020	01/01/2021
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2020	01/01/2021

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### 13.5 Measurement Result

#### Start up

Operation Mode	802.11 n	Test Date	2020.04.20
Temperature	: 25°C	Test By	Tom
Humidity	: 51%		

Test Temp.(°C)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0	24	36	5180	5,179.91600	0.00001622
	24	36	5180	5,180.05300	-0.00001023
25	24	36	5180	5,180.06200	-0.00001197
50	24	36	5180	5,179.94600	0.00001042
	24	36	5180	5,179.98700	0.00000251

#### 2 minutes

Operation Mode	802.11 n	Test Date	2020.04.20
Temperature	: 25°C	Test By	Tom
Humidity	: 51%		

Test Temp.(°C)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0	24	36	5180	5,179.96400	0.00000695
	24	36	5180	5,180.07400	-0.00001429
25	24	36	5180	5,179.96200	0.00000734
50	24	36	5180	5,180.08000	-0.00001544
	24	36	5180	5,180.01600	-0.00000309

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**5 minutes**

Operation Mode	802.11 n	Test Date	2020.04.20
Temperature	: 25°C	Test By	Tom
Humidity	: 51%		

Test Temp.(°C)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0	24	36	5180	5,179.90000	0.00001931
	24	36	5180	5,180.05600	-0.00001081
25	24	36	5180	5,179.97300	0.00000521
50	24	36	5180	5,180.02100	-0.00000405
	24	36	5180	5,180.09500	-0.00001834

**10 minutes**

Operation Mode	802.11 n	Test Date	2020.04.20
Temperature	: 25°C	Test By	Tom
Humidity	: 51%		

Test Temp.(°C)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0	24	36	5180	5,179.98000	0.00000386
	24	36	5180	5,180.07900	-0.00001525
25	24	36	5180	5,180.03100	-0.00000598
50	24	36	5180	5,179.93500	0.00001255
	24	36	5180	5,179.97800	0.00000425

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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 as permanently attached and no consideration of replacement. Please see EUT photo for details.

## PHOTOGRAPHS OF EUT

Please refer to the attached file (EUT Photo)

~ End of Report ~

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