

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART E REQUIREMENT

OF

FCC Applicant: Panasonic Corporation of North America
Two Riverfront Plaza, 9th Floor, Newark, NJ 07102-5490

Product Name: Tablet Computer

Brand Name: Panasonic

Marketing Name: FZ-L1

Model No.: FZ-L1AA

Model Difference: N/A

FCC ID: ACJFZL1B

Report Number: ER/2018/B0033

FCC Rule Part: §15.407, Cat:NII

Issue Date: Dec. 20, 2018

Date of Test: Nov. 15, 2018 ~ Nov. 27, 2018

Date of EUT Received: Nov. 15, 2018

We hereby certify that:

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

The test results of this report relate only to the tested sample identified in this report.

Tested By:*Louis Chen***Louis Chen / Sr. Engineer****Approved By:***Jazz Huang***Jazz Huang / Asst. Supervisor**

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Revision History

Report Number	Revision	Description	Effected Page	Issue Date	Revised By
ER/2018/B0033	Rev.00	Initial creation of document	All	Dec. 12, 2018	Violetta Tang
ER/2018/B0033	Rev.01	Update information for chapter 1	4	Dec. 20, 2018	Violetta Tang

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1 GENERAL INFORMATION

1.1 Product Description

General:

Product Name:	Tablet Computer	
Brand Name:	Panasonic	
Model No.:	FZ-L1AA	
Model Difference:	N/A	
Product HW/SW version:	C-NA-002 / 15-02-521-008	
Radio HW/SW version:	N/A / MSM8909.LA.3.0.1	
Power Supply:	3.8V from Rechargeable Li-ion Battery or 5V from AC/DC Adapter	
	Battery:	Model No.: FZ-VZSUT10U, Supplier: Panasonic
	Adapter:	1. Model No.: FZ-AAE184EE, Supplier: Panasonic 2. Model No.: FZ-AAE184EG, Supplier: Panasonic 3. Model No.: FZ-AAE184EM, Supplier: Panasonic

FCC WLAN 5GHz:

WLAN	Frequency Range	Channels	Avg. Power (dBm)	Modulation Technology
11a_20	5150~5250	4	12.67	OFDM
	5250~5350	4	15.75	
	5470~5725	12	15.81	
	5725~5850	5	15.77	
11n_HT20M	5150~5250	4	12.75	OFDM
	5250~5350	4	14.77	
	5470~5725	11	14.84	
	5725~5850	5	14.86	
11n_HT40M	5150~5250	2	12.83	OFDM
	5250~5350	2	12.93	
	5470~5725	5	12.53	
	5725~5850	2	12.64	
Modulation type		64QAM, 16QAM, QPSK, BPSK for OFDM		
Transition Rate:		802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 - 72.2Mbps 802.11 n_40MHz: 13.5 - 150Mbps		
Antenna Designation:		Monopole Antenna, Gain: 0dBi		

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1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10:2013

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

1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803. (TAF code 0513)

FCC Registration Numbers are: 509634 / TW0001

1.4 Special Accessories

There are no special accessories used while test was conducted.

1.5 Equipment Modifications

There was no modification incorporated into the EUT.

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2 SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

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

2.2 EUT Exercise

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

2.3 Test Procedure

2.3.1 Conducted Emissions

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

2.3.2 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 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.

2.4 Measurement Results Explanation

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

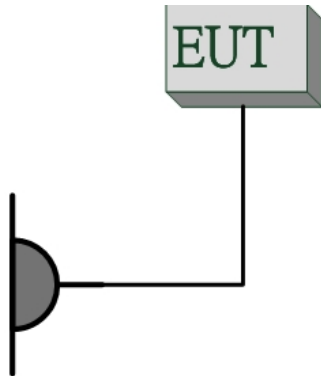


Fig.2-3 Conducted Emission (Antenna Port) Configuration

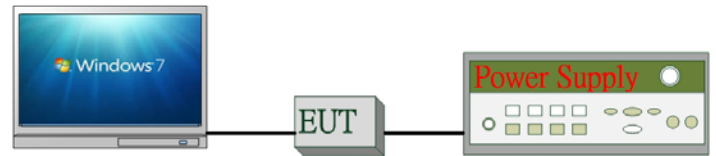


Fig. 2-2 Conduction Emission (AC Power Line) Configuration



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	L430	R9-X11BG	Shielded	Unshielded
3.	DC Power Supply	Anritsu	E3640A	KR93300208	N/A	Unshielded

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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
§15.407(b)	Undesirable Radiated Emissions	Compliant
§15.407(c)	Transmission in case of Absence of Information	Compliant
§15.407(g)	Frequency Stability	Compliant
§15.203 §15.407(a)	Antenna Requirement	Compliant

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4 DESCRIPTION OF TEST MODES

4.1 Operated in U-NII Bands

Operated band in 5150 MHz ~5250 MHz:

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

802.11 n HT40 Mode	
channel	Frequency
38	5190
46	5230

Operated band in 5250 MHz ~5350 MHz:

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

802.11 n HT40 Mode	
channel	Frequency
54	5270
62	5310

Operated band in 5470 MHz ~5725 MHz:

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

802.11 n HT40 Mode	
channel	Frequency
102	5510
110	5550
118	5590
126	5630
134	5670

Operated band in 5745 MHz ~5850 MHz:

802.11a / n HT20 Mode	
Channel	Frequency
149	5745
153	5765
157	5785
161	5805
165	5825

802.11 n HT40 Mode	
channel	Frequency
151	5755
159	5795

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4.2 The Worst Test Modes and Channel Details

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

RADIATED EMISSION TEST:

RADIATED EMISSION TEST (BELOW 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	44	OFDM	6	Main
802.11a	5260~5320	52 to 64	60	OFDM	6	Main
802.11a	5500~5720	100 to 140	116	OFDM	6	Main
802.11a	5745~5825	149 to 165	157	OFDM	6	Main
RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	Main
802.11n_HT20				OFDM	MCS0	Main
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS0	Main
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	Main
802.11n_HT20				OFDM	MCS0	Main
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS0	Main
802.11a	5500~5700	100 to 140	100,116,140	OFDM	6	Main
802.11n_HT20				OFDM	MCS0	Main
802.11n_HT40	5510~5670	102 to 134	102,110,134	OFDM	MCS0	Main
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	Main
802.11n_HT20				OFDM	MCS0	Main
802.11n_HT40	5755~5795	151 to 159	151,159	OFDM	MCS0	Main

Note:

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

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ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST

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

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5 MEASUREMENT UNCERTAINTY

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

Radiated Spurious Emission:

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

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

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

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6 CONDUCTED EMISSION TEST

6.1 Standard Applicable

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

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

Note

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

6.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESC17	100335	02/02/2018	02/01/2019
LISN	SCHWARZBECK	NSLK 8127	8127-649	05/18/2018	05/17/2019
Notebook	Lenovo	T440P	P0000564	N/A	N/A

6.3 EUT Setup

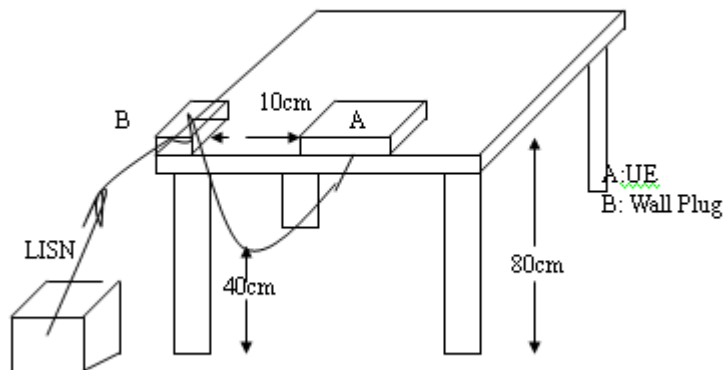
1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The LISN was connected with 120Vac/60Hz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

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6.4 Test SET-UP



6.5 Measurement Procedure

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

6.6 Measurement Result

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

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

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AC POWER LINE CONDUCTED EMISSION TEST DATA

Site: Conduction Room

Phase: **L1**

Temperature: 25 °C

Limit: FCC Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 85 %

Mode: Operation

Note:

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1660	45.47	0.03	45.50	65.16	-19.66	peak	
2		0.2500	46.74	0.03	46.77	61.76	-14.99	peak	
3		0.3820	41.83	0.04	41.87	58.24	-16.37	peak	
4		0.5140	41.68	0.04	41.72	56.00	-14.28	peak	
5	*	0.6260	41.81	0.04	41.85	56.00	-14.15	peak	
6		17.0700	36.56	0.37	36.93	60.00	-23.07	peak	

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Site: Conduction Room

Phase: **N**

Temperature: 25 °C

Limit: FCC Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 85 %

Mode: Operation

Note:

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1700	41.22	0.04	41.26	64.96	-23.70	peak	
2		0.2380	40.18	0.04	40.22	62.17	-21.95	peak	
3		0.3620	34.47	0.04	34.51	58.68	-24.17	peak	
4		0.5260	31.15	0.04	31.19	56.00	-24.81	peak	
5		2.5620	32.50	0.10	32.60	56.00	-23.40	peak	
6	*	16.5540	37.81	0.38	38.19	60.00	-21.81	peak	

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7 DUTY CYCLE TEST SIGNAL

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

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

Formula:

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

Measurement Procedure:

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

Duty Cycle:

Mode	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11a	87.24	0.59	0.73	1.00
802.11n_20	86.64	0.62	0.78	1.00
802.11n_40	76.24	1.18	1.57	2.00

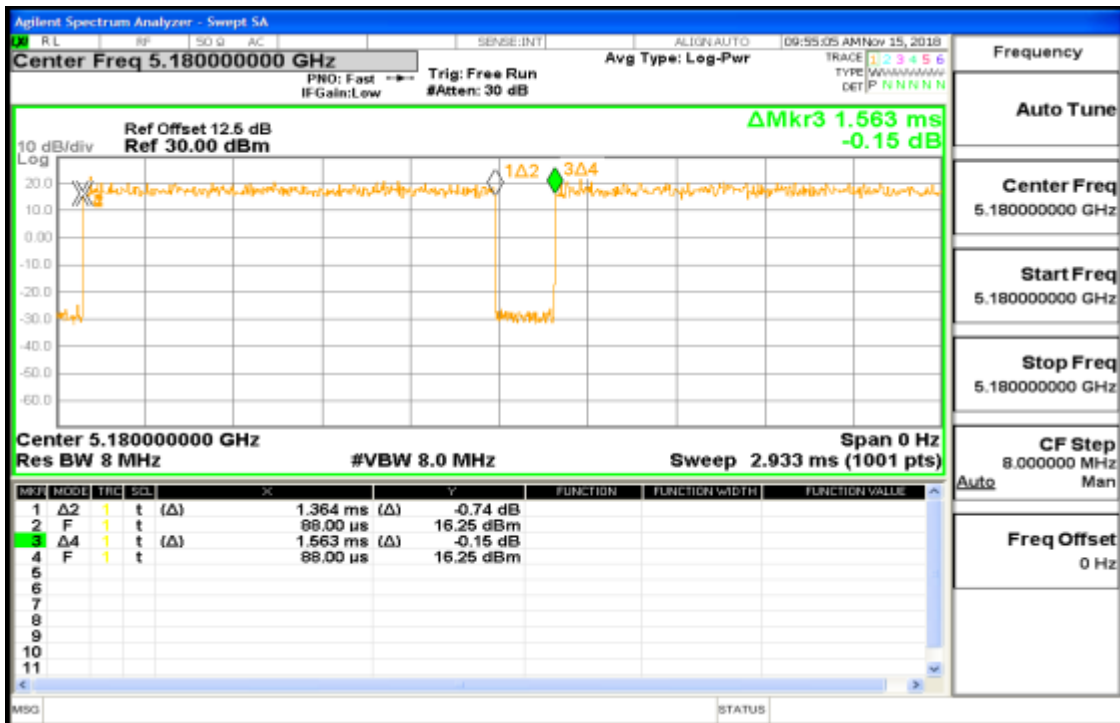
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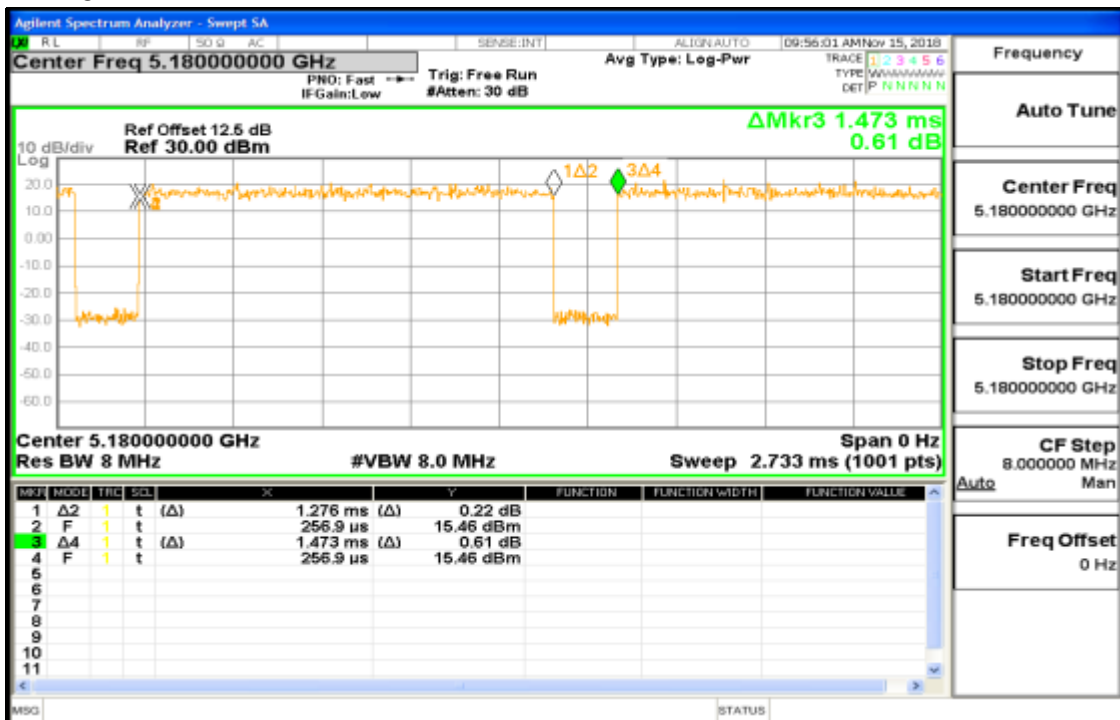
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DUTY CYCLE TEST SIGNAL Measurement Result

802.11a



802.11n HT20



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802.11n HT 40



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8 26DB & 6DB EMISSION BANDWIDTH MEASUREMENT

8.1 Standard Applicable

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

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

8.2 Measurement Procedure

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

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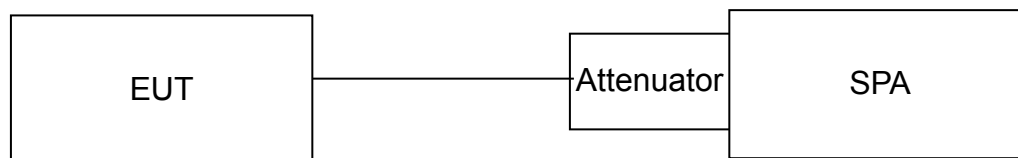
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8.3 Measurement Equipment Used

SGS Conducted Room					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	05/03/2018	05/02/2019
DC Power Supply	Agilent	E3640A	KR93300208	08/15/2018	08/14/2019
Temperature Chamber	TERCHY	MHG-120LF	911009	05/18/2018	05/17/2019
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2018	01/01/2019
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2018	01/01/2019
Coaxial Cables	N/A	WK CE Cable	N/A	01/02/2018	01/01/2019
Notebook	Lenovo	L430	R9-X11BG	N/A	N/A

8.4 Test Set-up



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8.5 Measurement Result

26dB and 6dB Bandwidth

802.11a_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	22.29	13.481
5220	22.03	13.431
5240	22.31	13.486
5260	21.71	13.367
5300	21.77	13.379
5320	22.03	13.429
5500	22.20	13.463
5580	22.36	13.495
5700	22.15	13.454

802.11n_HT20_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	22.45	13.513
5220	22.38	13.499
5240	22.45	13.511
5260	22.34	13.490
5300	22.32	13.486
5320	22.52	13.526
5500	22.23	13.469
5580	22.62	13.545
5700	22.33	13.489

802.11a_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.42	12.155
5785	16.42	12.153
5825	16.43	12.157

802.11n_HT20_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	17.64	12.464
5785	17.63	12.462
5825	17.61	12.458

802.11n_HT40_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	44.06	16.441
5230	44.53	16.487
5270	43.21	16.356
5310	43.10	16.345
5510	43.19	16.354
5550	43.54	16.389
5670	42.89	16.323

802.11n_HT40_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	35.42	15.492
5795	35.19	15.464

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Acrossband Signals

802.11a_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)	Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.43	< 5250	5240	5238.94	< 5250
5745	5736.63	> 5725	5745	5736.12	> 5725

802.11n_HT20_Ch0

802.11n_HT40_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5230	5248.10	< 5250
5755	5736.90	> 5725

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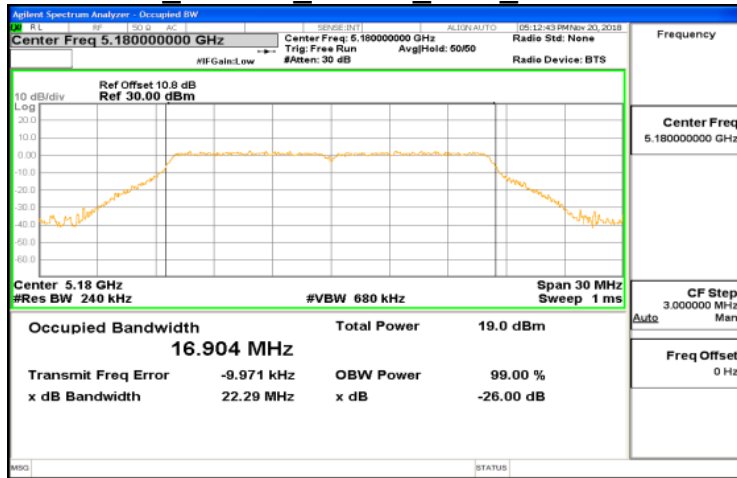
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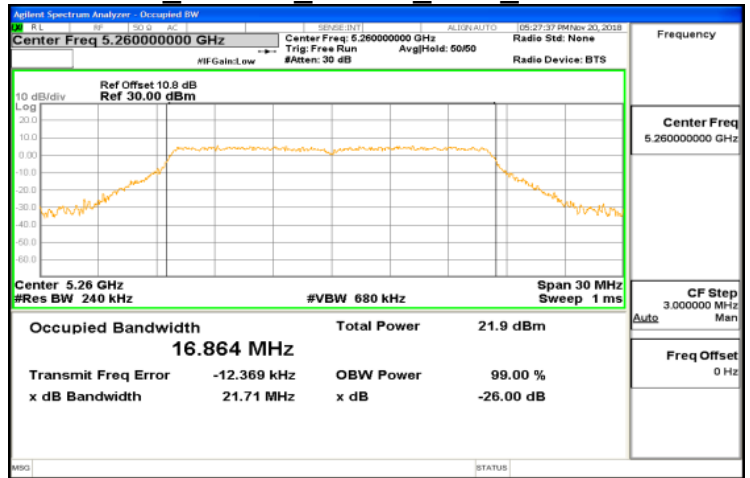
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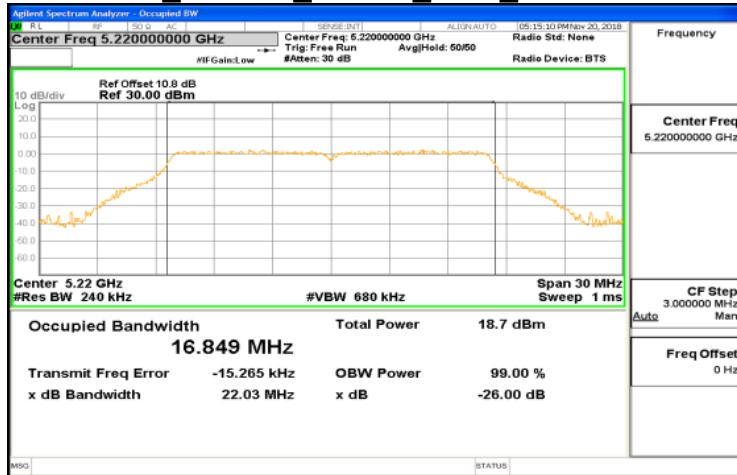
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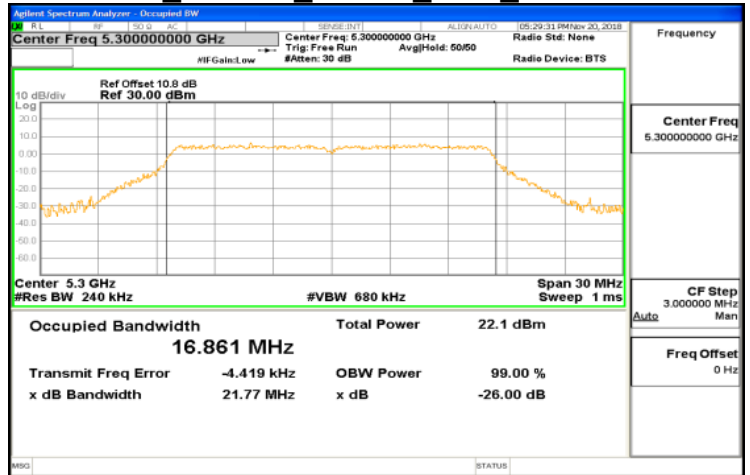
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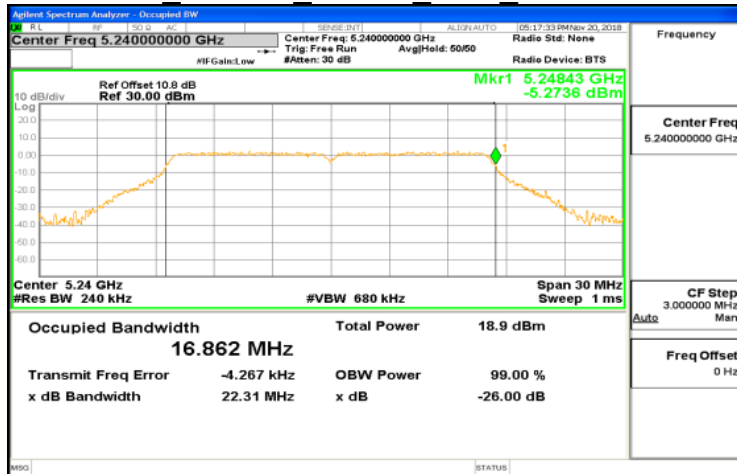
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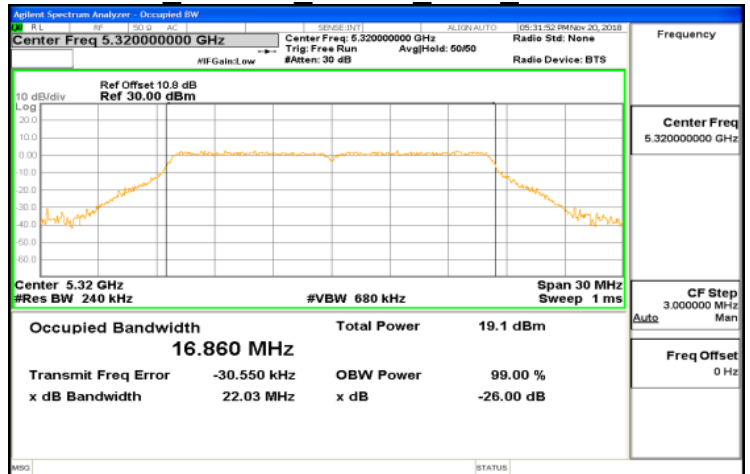
FCC 802.11a 20MHz Main 5300MHz



FCC 802.11a 20MHz Main 5240MHz



FCC 802.11a 20MHz Main 5320MHz



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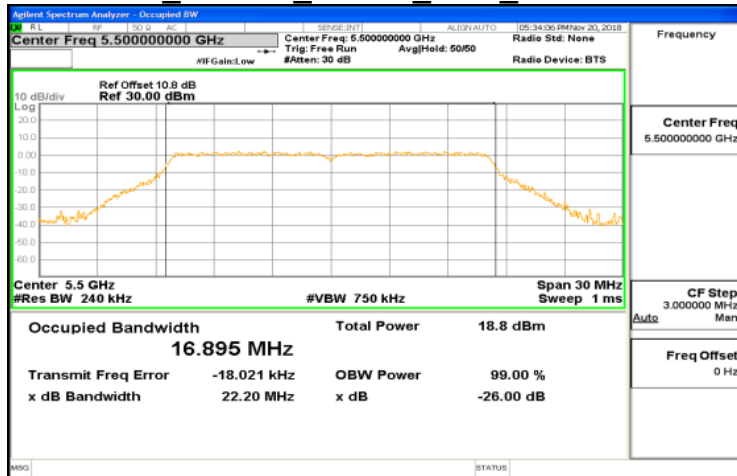
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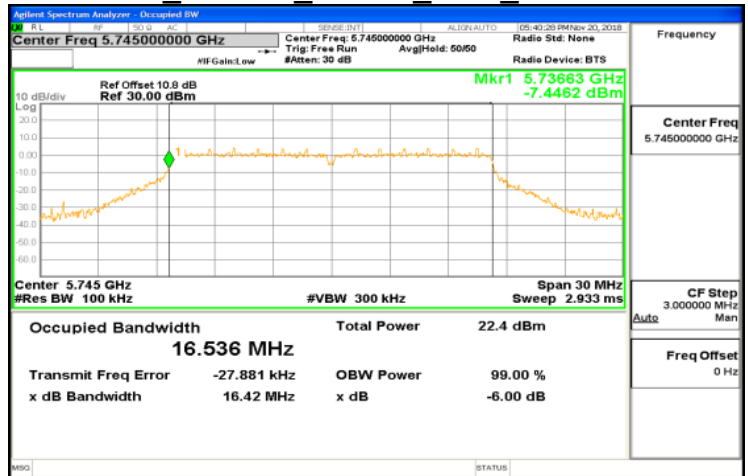
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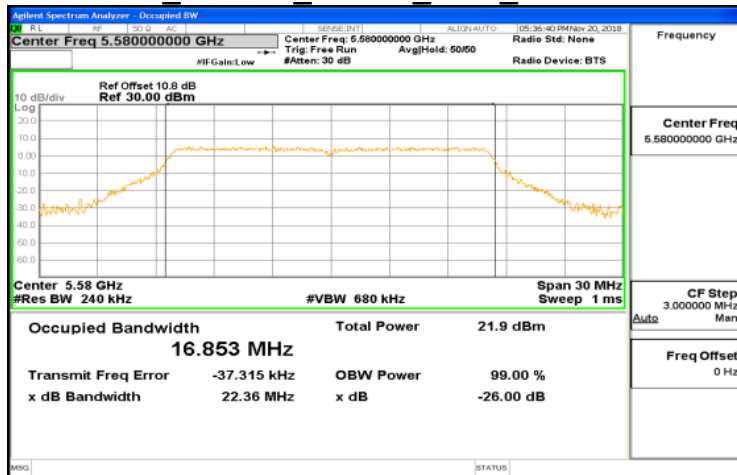
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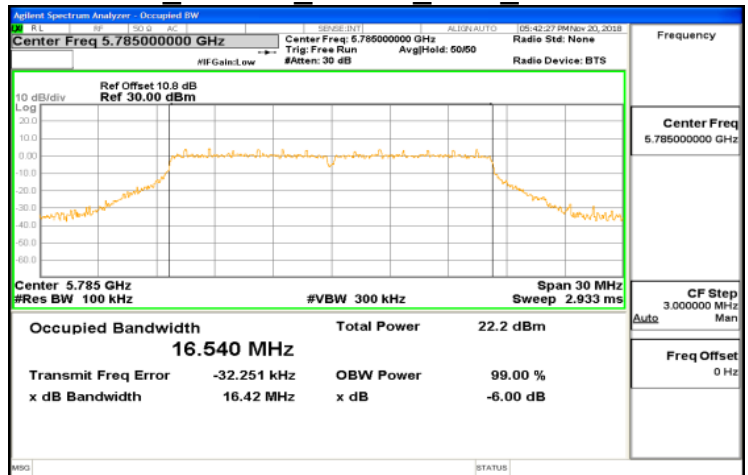
FCC 802.11a 20MHz Main 5745MHz



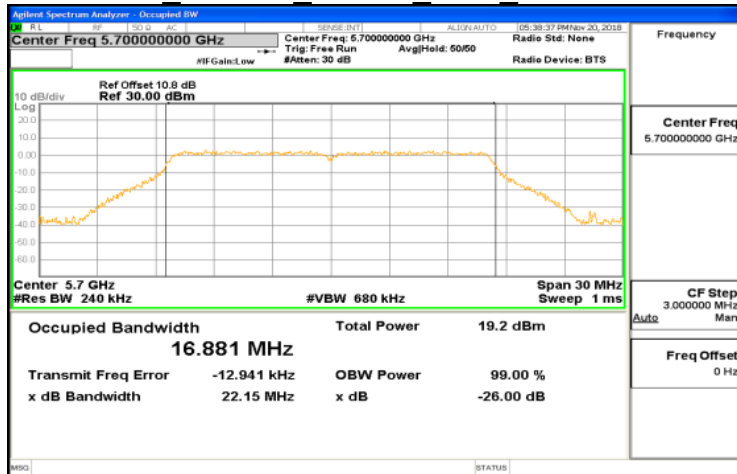
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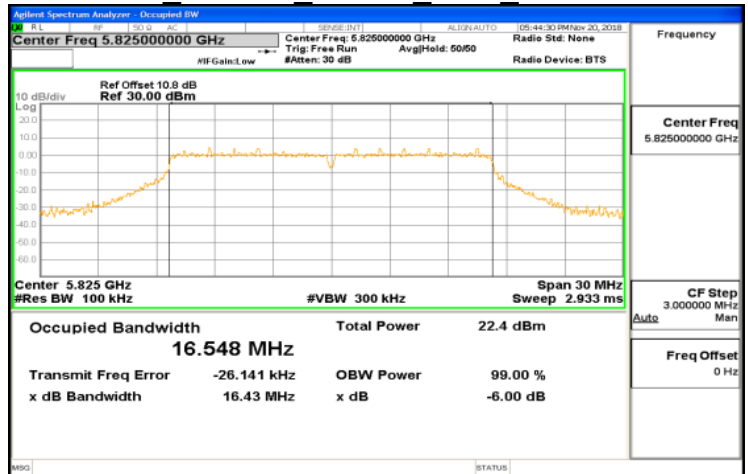
FCC 802.11a 20MHz Main 5785MHz



FCC 802.11a 20MHz Main 5700MHz



FCC 802.11a 20MHz Main 5825MHz

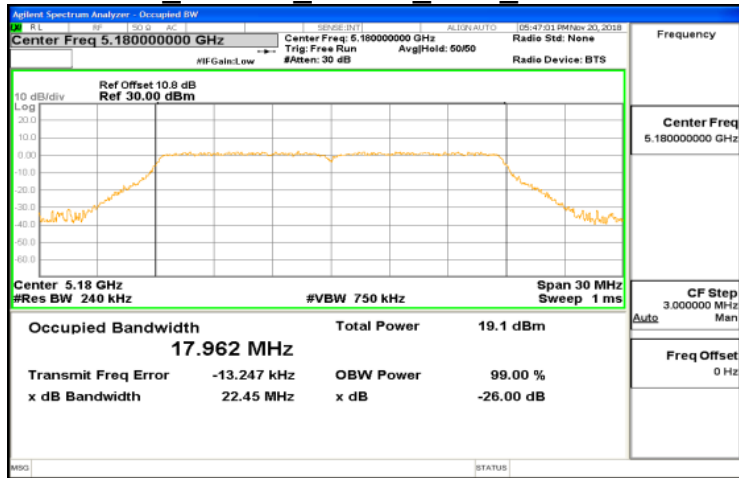


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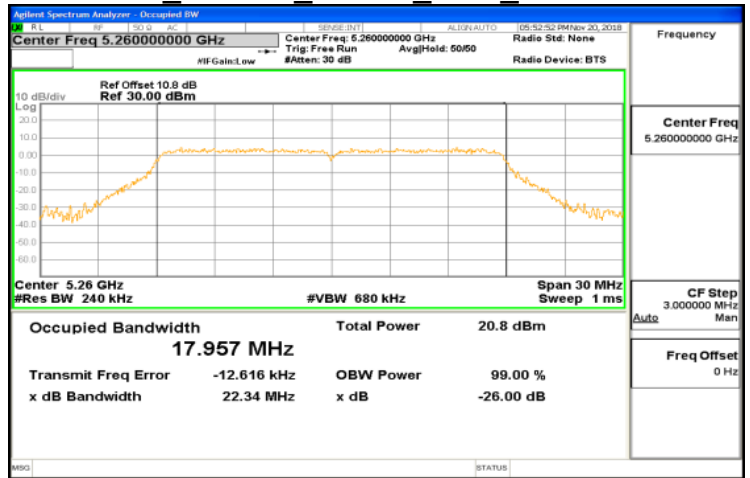
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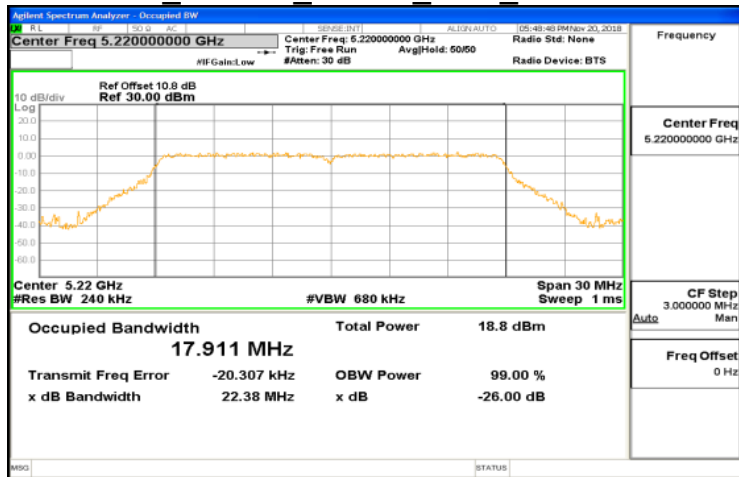
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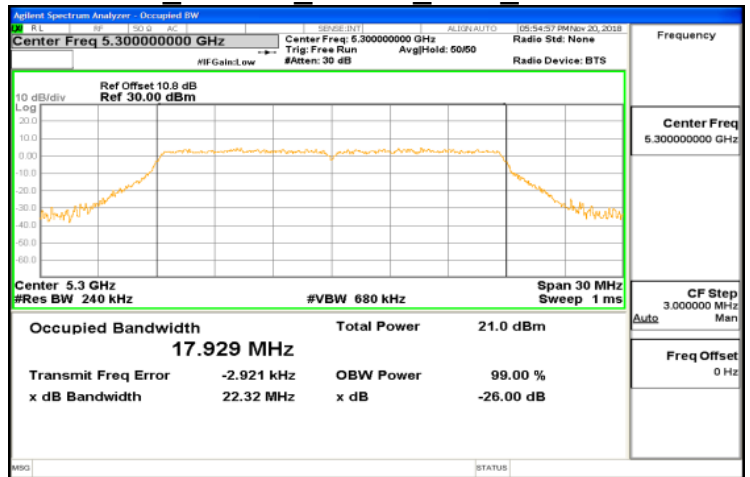
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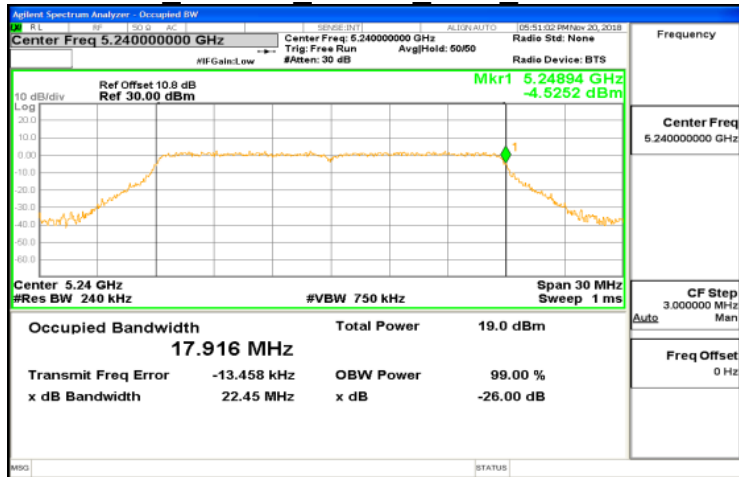
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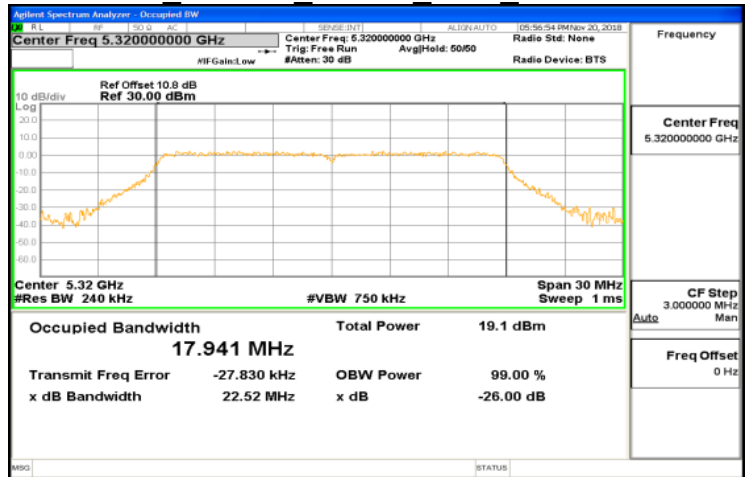
FCC 802.11n 20MHz Main 5300MHz



FCC 802.11n 20MHz Main 5240MHz



FCC 802.11n 20MHz Main 5320MHz



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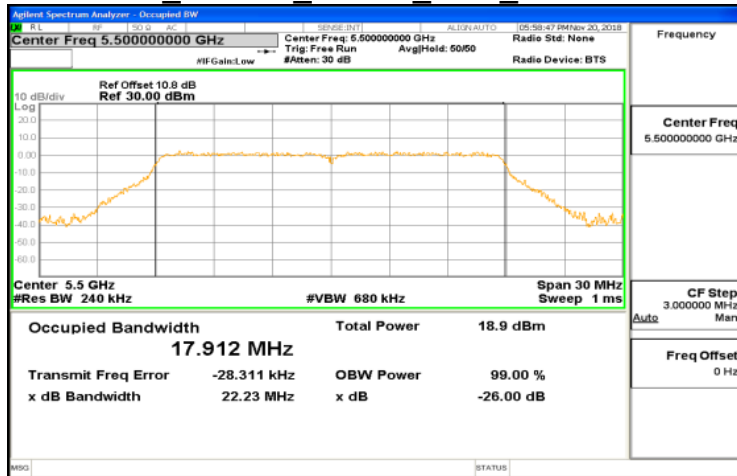
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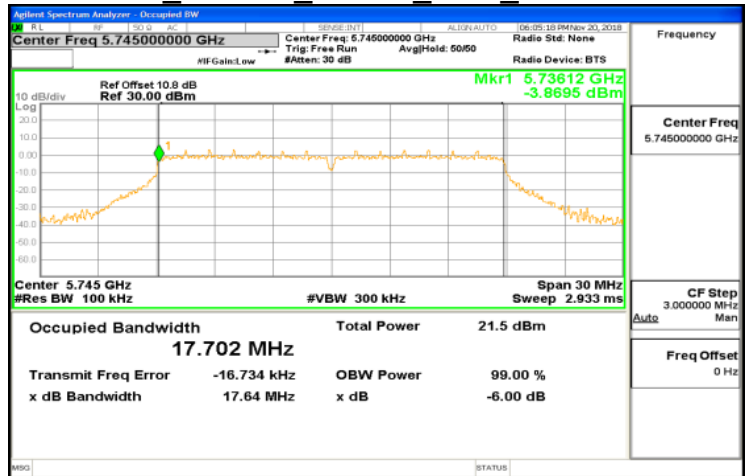
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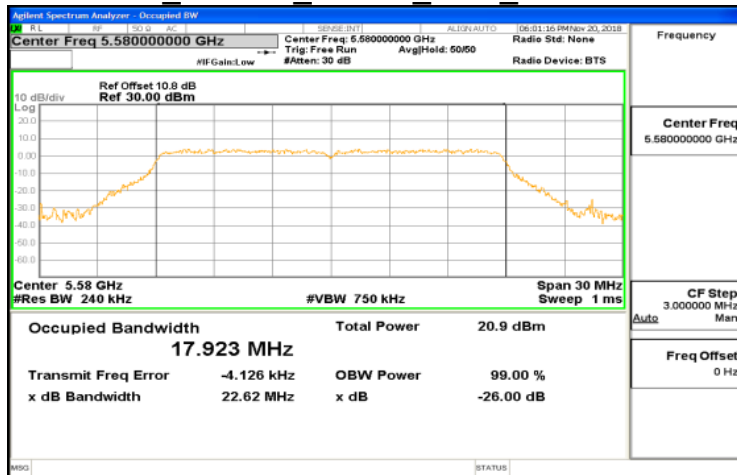
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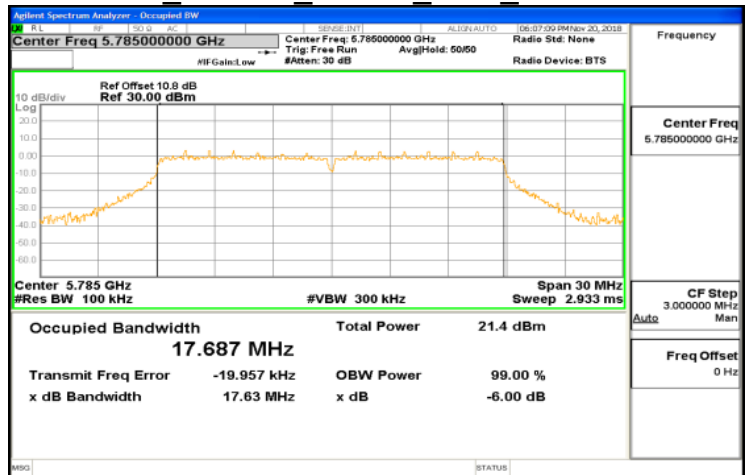
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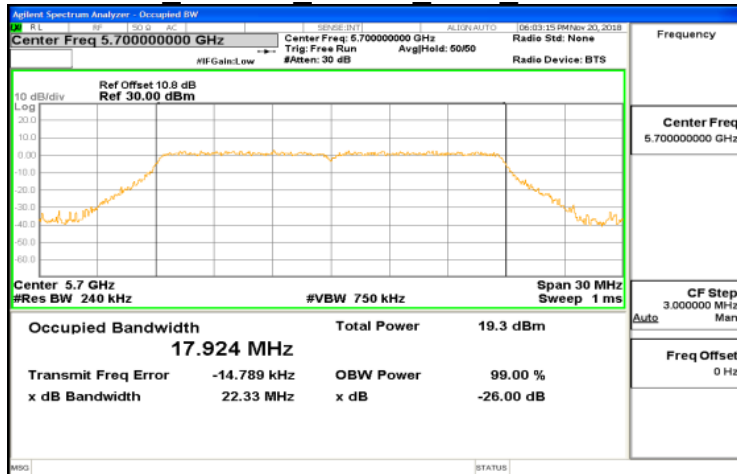
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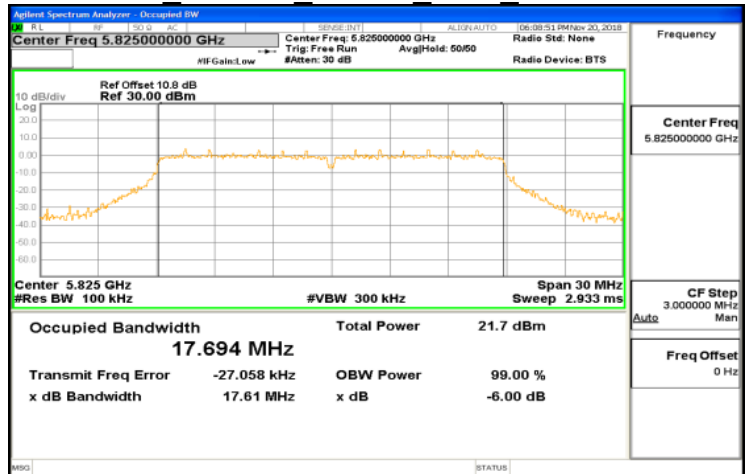
FCC 802.11n 20MHz Main 5785MHz



FCC 802.11n 20MHz Main 5700MHz



FCC 802.11n 20MHz Main 5825MHz



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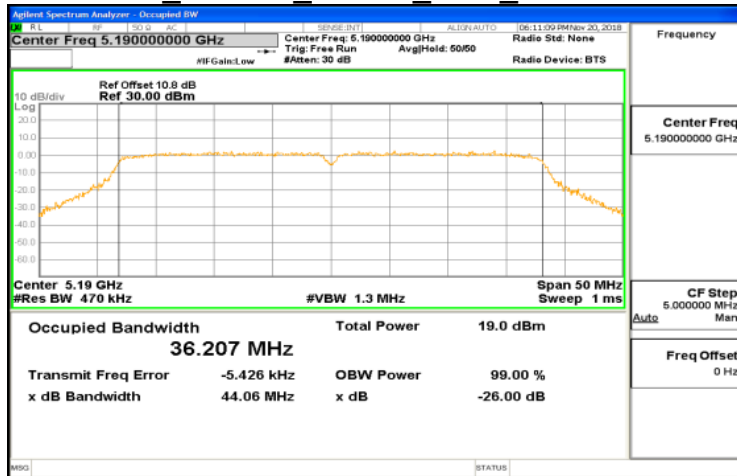
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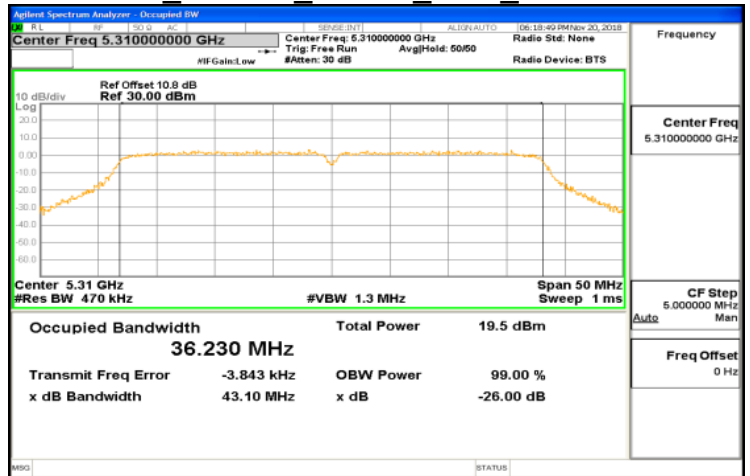
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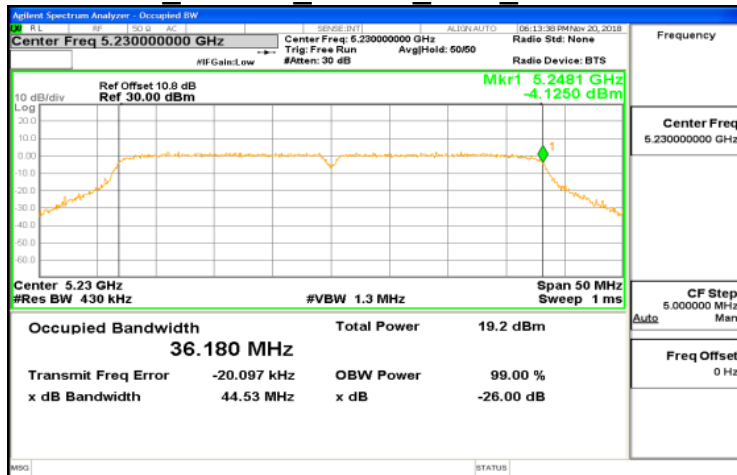
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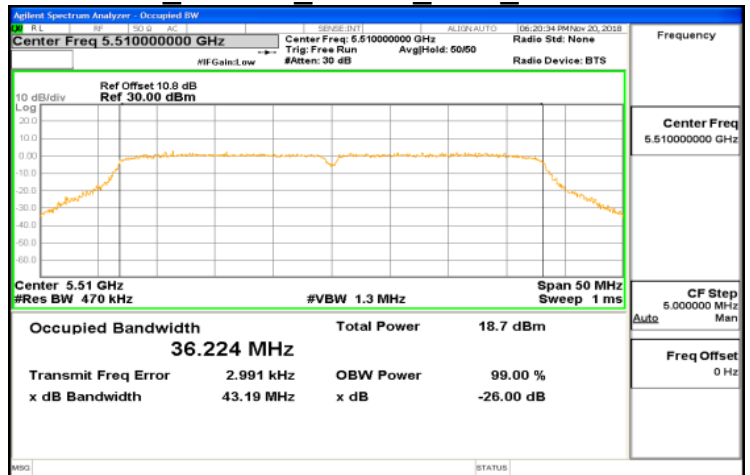
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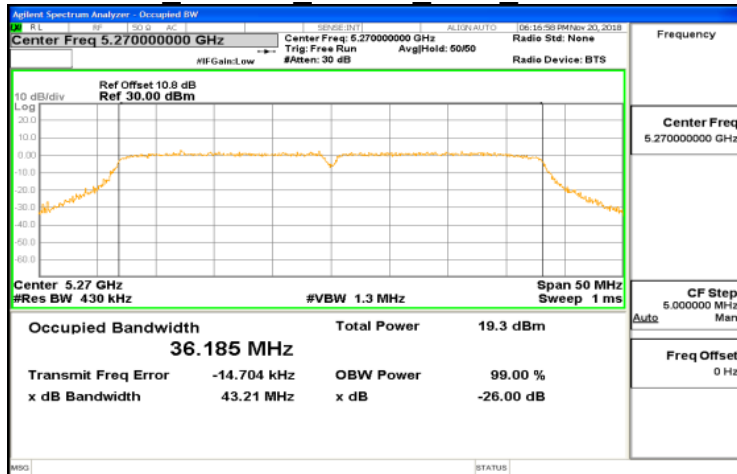
FCC 802.11n 40MHz Main 5230MHz



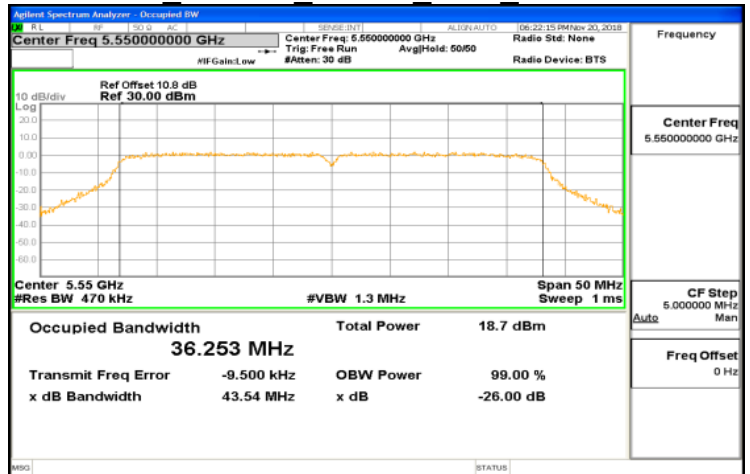
FCC 802.11n 40MHz Main 5510MHz



FCC 802.11n 40MHz Main 5270MHz



FCC 802.11n 40MHz Main 5550MHz



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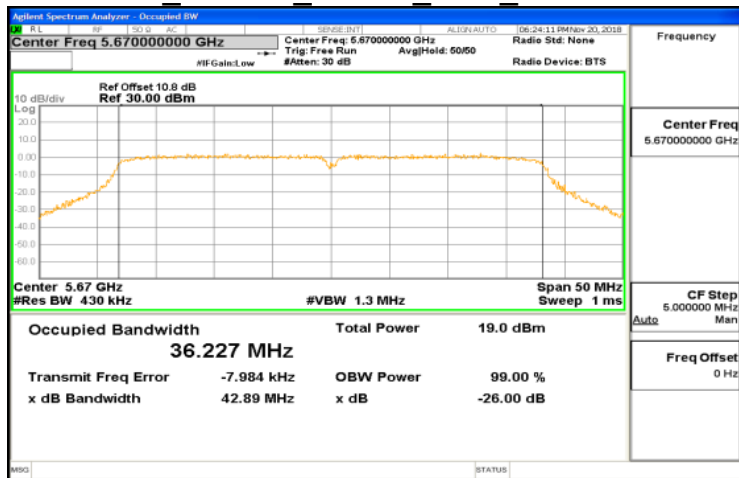
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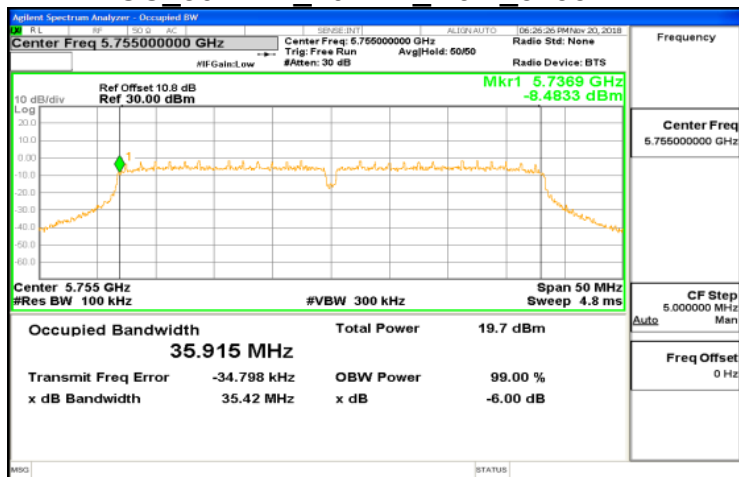
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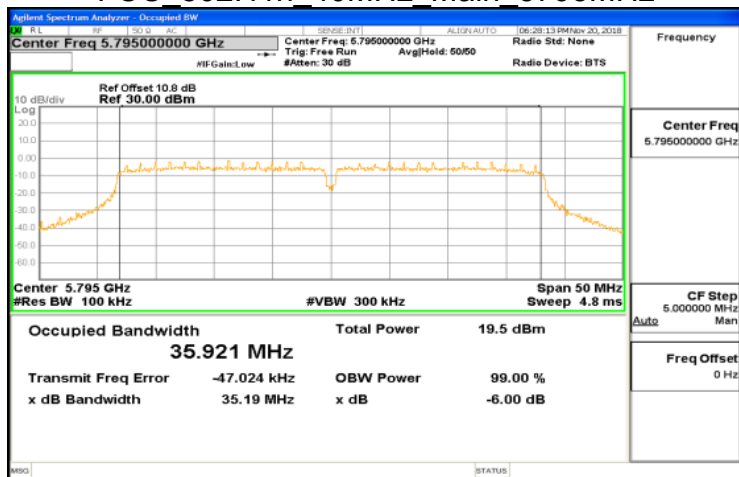
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FCC 802.11n 40MHz Main 5795MHz



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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.			

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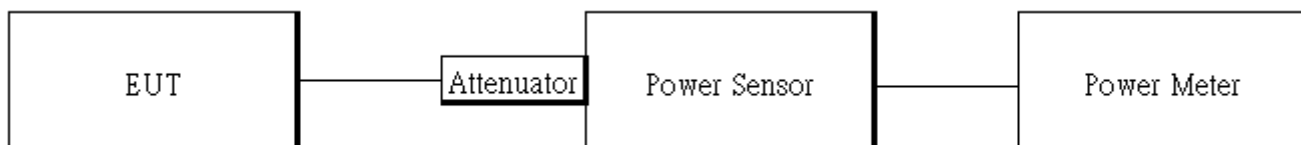
9.2 Measurement Procedure

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 $10 \log(1/\text{duty cycle})$.
6. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.

9.3 Measurement Equipment Used

SGS Conducted Room					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2496A	1804001	02/01/2018	01/31/2019
Power Sensor	Anritsu	MA2411B	1726104	02/01/2018	01/31/2019
DC Power Supply	Agilent	E3640A	KR93300208	08/15/2018	08/14/2019
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2018	01/01/2019
Coaxial Cables	N/A	WK CE Cable	N/A	01/02/2018	01/01/2019
Notebook	Lenovo	L430	R9-X11BG	N/A	N/A

9.4 Test Set-up



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9.5 Measurement Result

Conducted output power (FCC)

802.11a_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	12.54	17.959	23.98	PASS
44	5220	6	12.67	18.505	23.98	PASS
48	5240	6	12.62	18.293	23.98	PASS
52	5260	6	15.67	36.922	23.98 or $11+10\log(B) = 24.37$	PASS
60	5300	6	15.75	37.608	23.98 or $11+10\log(B) = 24.38$	PASS
64	5320	6	12.55	18.000	23.98 or $11+10\log(B) = 24.43$	PASS
100	5500	6	12.87	19.377	23.98 or $11+10\log(B) = 24.46$	PASS
116	5580	6	15.81	38.132	23.98 or $11+10\log(B) = 24.49$	PASS
140	5700	6	12.88	19.422	23.98 or $11+10\log(B) = 24.45$	PASS
149	5745	6	15.76	37.695	30	PASS
157	5785	6	15.56	35.998	30	PASS
165	5825	6	15.77	37.782	30	PASS

802.11n_HT20_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	12.56	18.042	23.98	PASS
44	5220	MCS0	12.60	18.209	23.98	PASS
48	5240	MCS0	12.75	18.849	23.98	PASS
52	5260	MCS0	14.77	30.011	23.98 or $11+10\log(B) = 24.49$	PASS
60	5300	MCS0	14.74	29.804	23.98 or $11+10\log(B) = 24.49$	PASS
64	5320	MCS0	12.73	18.762	23.98 or $11+10\log(B) = 24.53$	PASS
100	5500	MCS0	12.79	19.023	23.98 or $11+10\log(B) = 24.47$	PASS
116	5580	MCS0	14.84	30.499	23.98 or $11+10\log(B) = 24.54$	PASS
140	5700	MCS0	12.98	19.874	23.98 or $11+10\log(B) = 24.49$	PASS
149	5745	MCS0	14.80	30.219	30	PASS
157	5785	MCS0	14.59	28.793	30	PASS
165	5825	MCS0	14.86	30.639	30	PASS

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802.11n_HT40_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	12.55	17.981	23.98	PASS
46	5230	MCS0	12.83	19.179	23.98	PASS
54	5270	MCS0	12.93	19.625	23.98 or $11+10\log(B) = 27.36$	PASS
62	5310	MCS0	12.86	19.312	23.98 or $11+10\log(B) = 27.35$	PASS
102	5510	MCS0	12.52	17.857	23.98 or $11+10\log(B) = 27.35$	PASS
110	5550	MCS0	12.53	17.899	23.98 or $11+10\log(B) = 27.39$	PASS
134	5670	MCS0	12.51	17.816	23.98 or $11+10\log(B) = 27.32$	PASS
151	5755	MCS0	12.59	18.148	30	PASS
159	5795	MCS0	12.64	18.358	30	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.			

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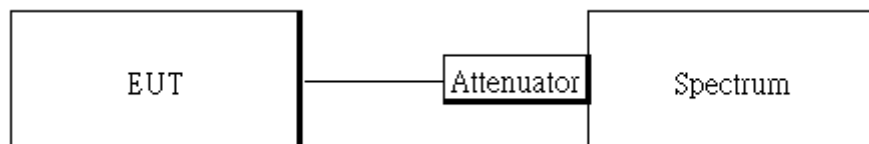
10.2 Measurement Procedure

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 Spectrum.
4. **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 $\geq$ 3RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
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.

10.3 Measurement Equipment Used

SGS Conducted Room					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	05/03/2018	05/02/2019
DC Power Supply	Agilent	E3640A	KR93300208	08/15/2018	08/14/2019
Temperature Chamber	TERCHY	MHG-120LF	911009	05/18/2018	05/17/2019
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2018	01/01/2019
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2018	01/01/2019
Coaxial Cables	N/A	WK CE Cable	N/A	01/02/2018	01/01/2019
Notebook	Lenovo	L430	R9-X11BG	N/A	N/A

10.4 Test Set-up



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10.5 Measurement Result

POWER DENSITY 802.11a MODE						
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Offset	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	-5.27	10.80	0.59	-4.68	11	-15.68
5220	-5.32	10.80	0.59	-4.73	11	-15.73
5240	-6.53	10.80	0.59	-5.94	11	-16.94
5260	-1.43	10.80	0.59	-0.84	11	-11.84
5300	-1.28	10.80	0.59	-0.69	11	-11.69
5320	-4.94	10.80	0.59	-4.35	11	-15.35
5500	-7.35	10.80	0.59	-6.76	11	-17.76
5580	-1.53	10.80	0.59	-0.94	11	-11.94
5700	-6.71	10.80	0.59	-6.12	11	-17.12
5745	9.46	10.80	-	9.46	30	-20.54
5785	9.01	10.80	-	9.01	30	-20.99
5825	9.49	10.80	-	9.49	30	-20.51

POWER DENSITY 802.11n HT20 MODE						
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Offset	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	-6.31	10.80	0.62	-5.69	11	-16.69
5220	-5.02	10.80	0.62	-4.40	11	-15.40
5240	-5.17	10.80	0.62	-4.55	11	-15.55
5260	-3.73	10.80	0.62	-3.11	11	-14.11
5300	-2.83	10.80	0.62	-2.21	11	-13.21
5320	-6.41	10.80	0.62	-5.79	11	-16.79
5500	-4.87	10.80	0.62	-4.25	11	-15.25
5580	-3.77	10.80	0.62	-3.15	11	-14.15
5700	-5.18	10.80	0.62	-4.56	11	-15.56
5745	7.53	10.80	-	7.53	30	-22.47
5785	7.83	10.80	-	7.83	30	-22.17
5825	8.39	10.80	-	8.39	30	-21.61

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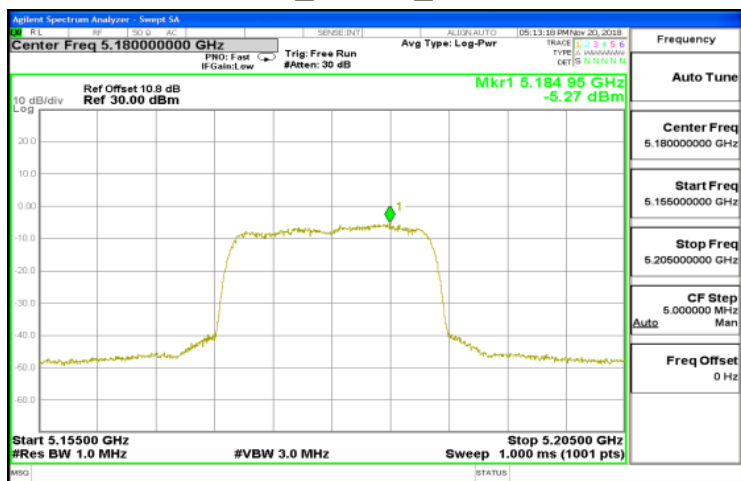
POWER DENSITY 802.11n HT40 MODE						
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Offset	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5190	-12.64	10.80	1.18	-11.46	11	-22.46
5230	-13.73	10.80	1.18	-12.55	11	-23.55
5270	-11.71	10.80	1.18	-10.53	11	-21.53
5310	-12.96	10.80	1.18	-11.78	11	-22.78
5510	-14.56	10.80	1.18	-13.38	11	-24.38
5550	-13.07	10.80	1.18	-11.89	11	-22.89
5670	-12.01	10.80	1.18	-10.83	11	-21.83
5755	2.98	10.80	-	2.98	30	-27.02
5795	3.22	10.80	-	3.22	30	-26.78

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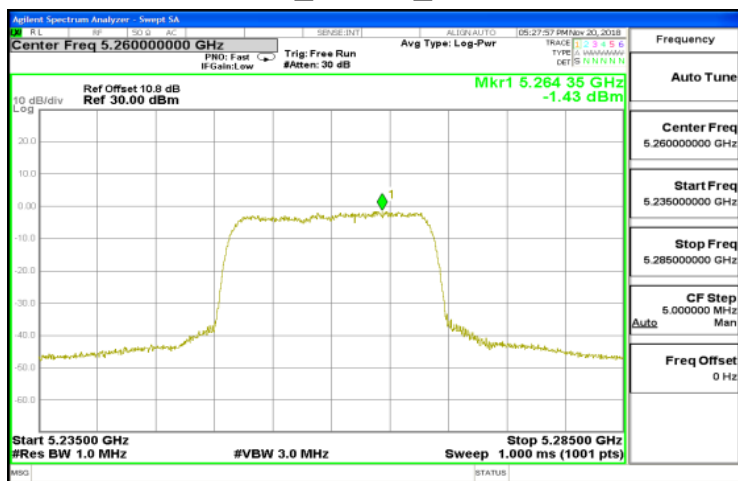
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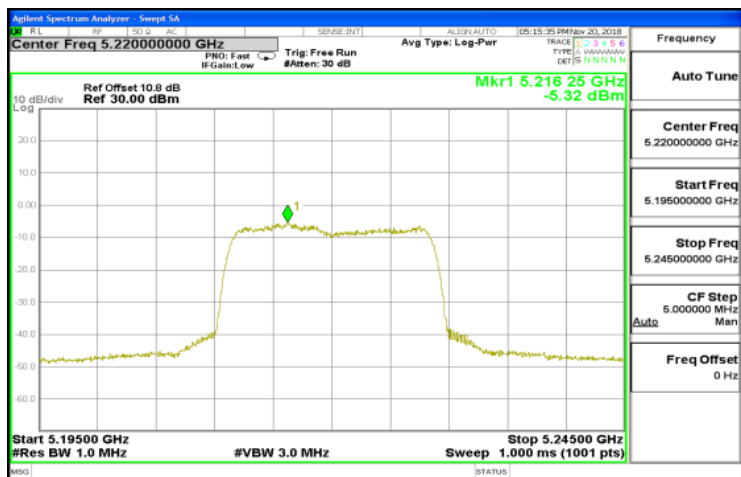
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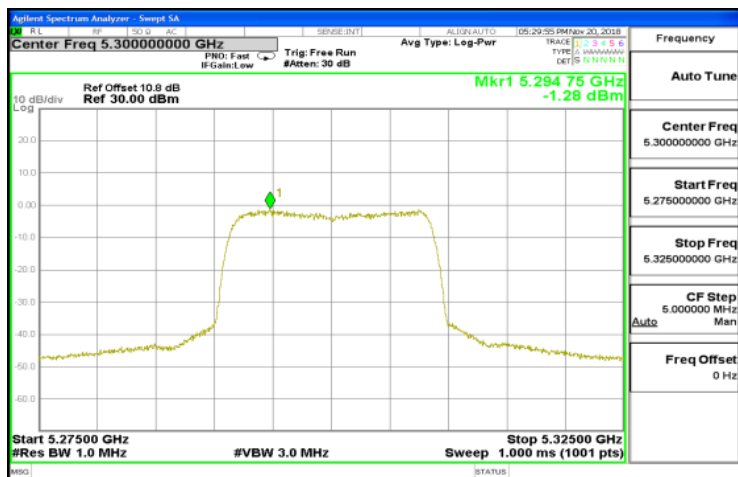
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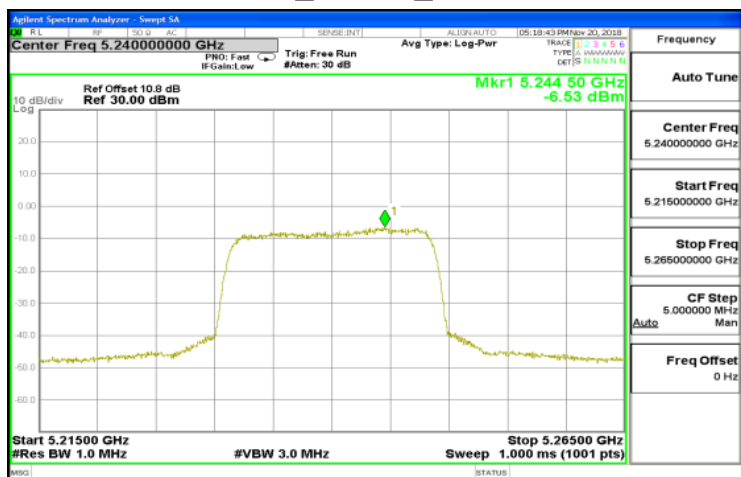
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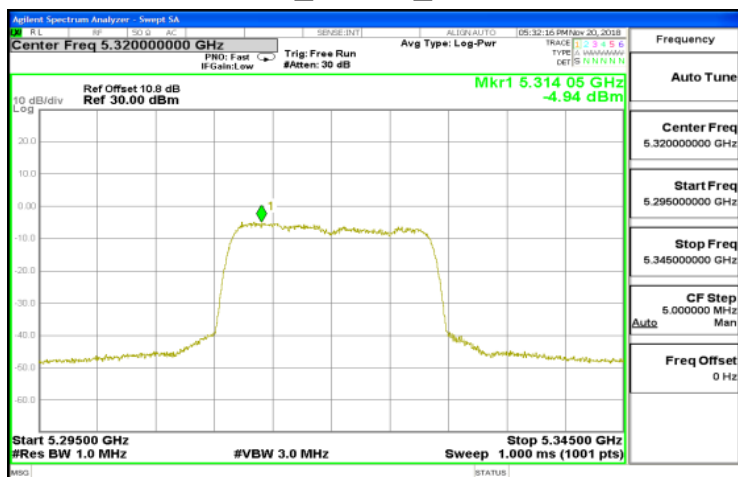
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802.11a_20MHz_5240MHz



802.11a_20MHz_5320MHz



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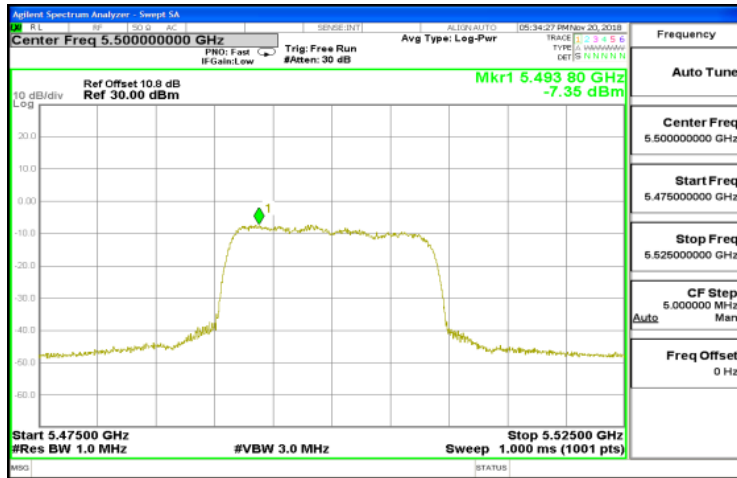
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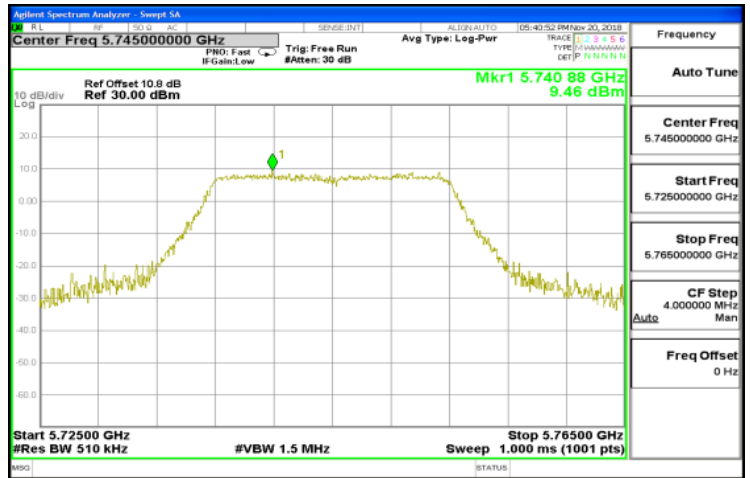
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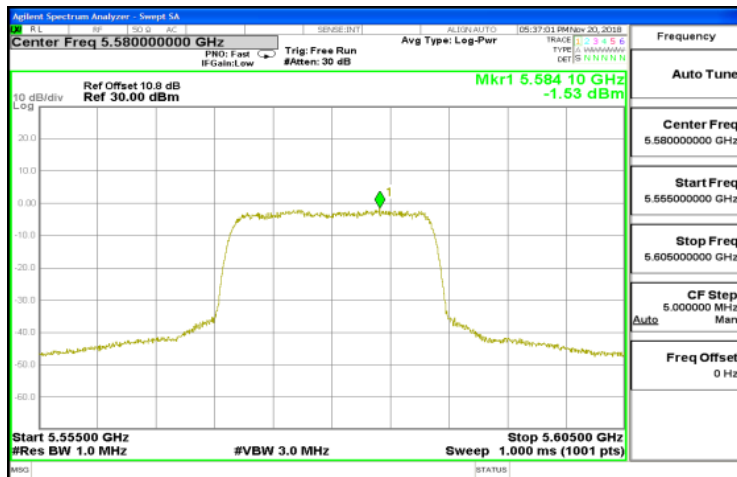
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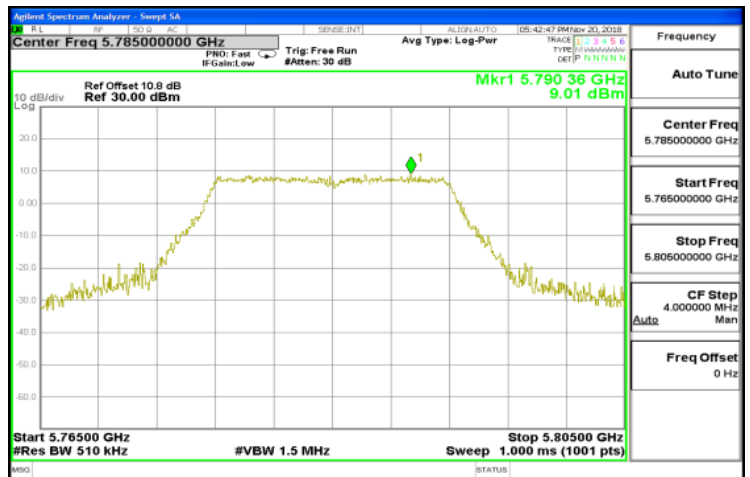
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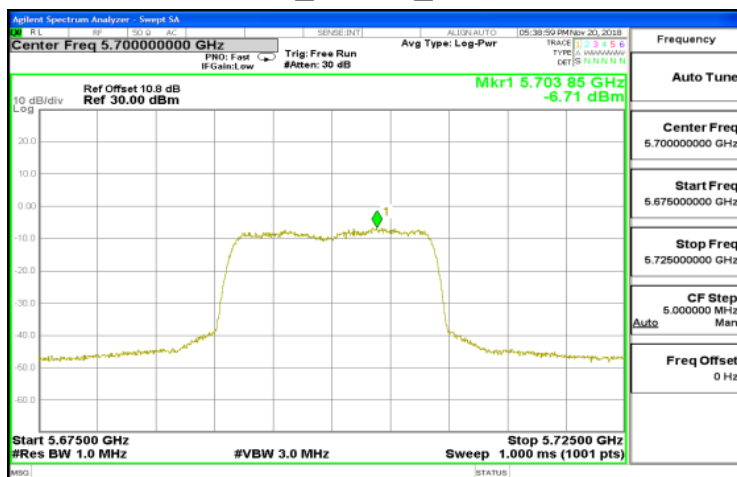
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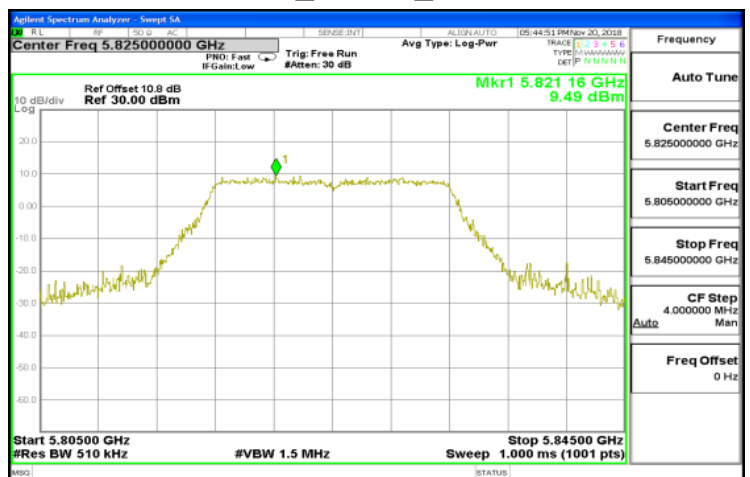
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802.11a_20MHz_5700MHz



802.11a_20MHz_5825MHz

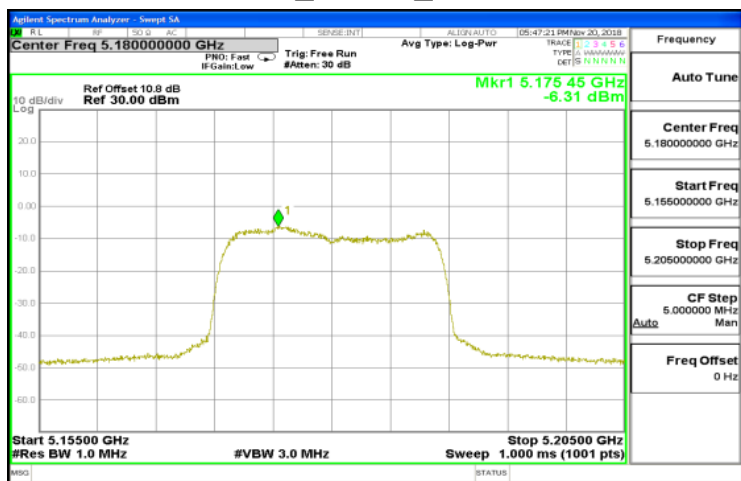


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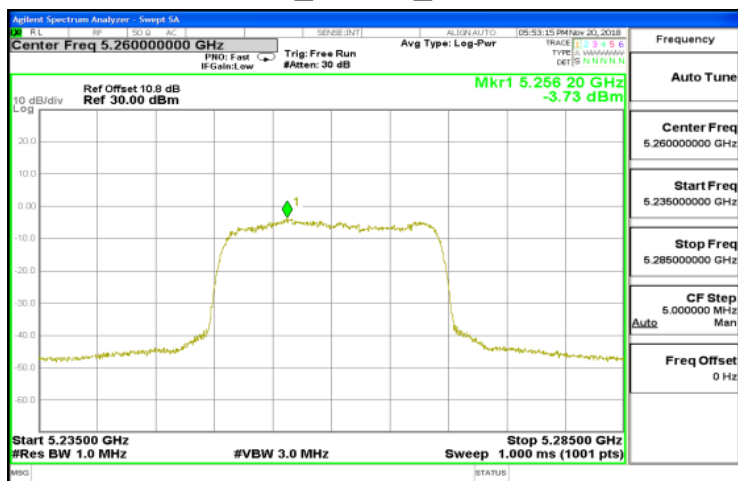
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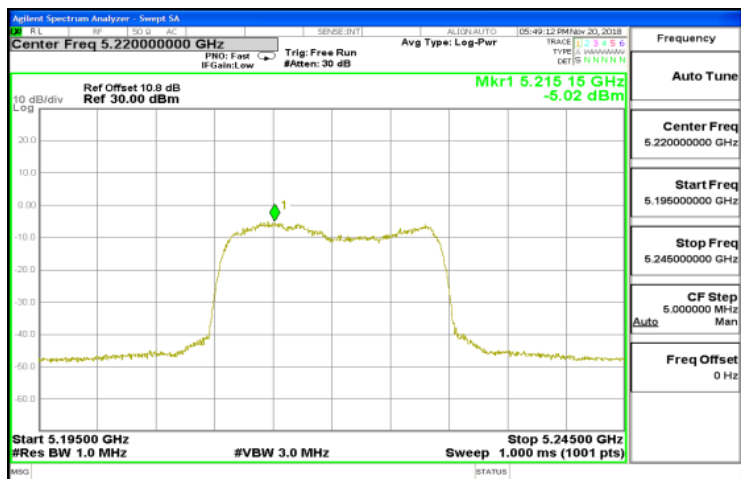
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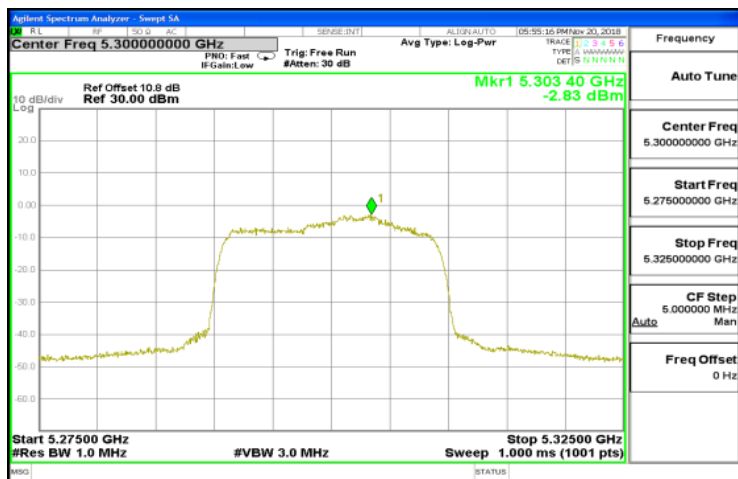
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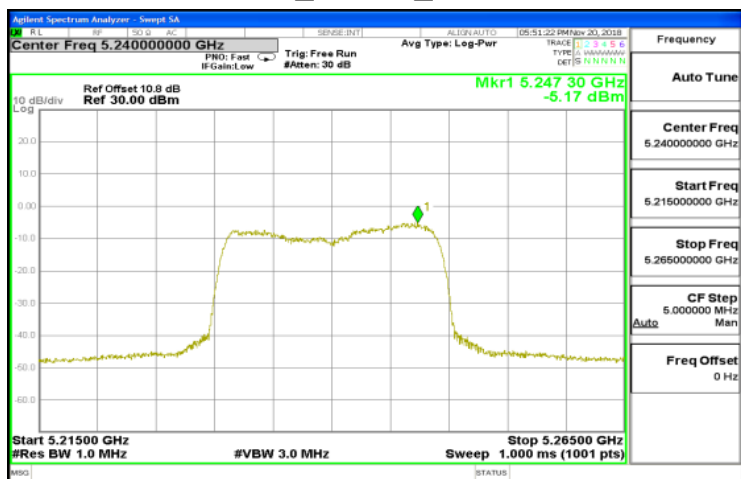
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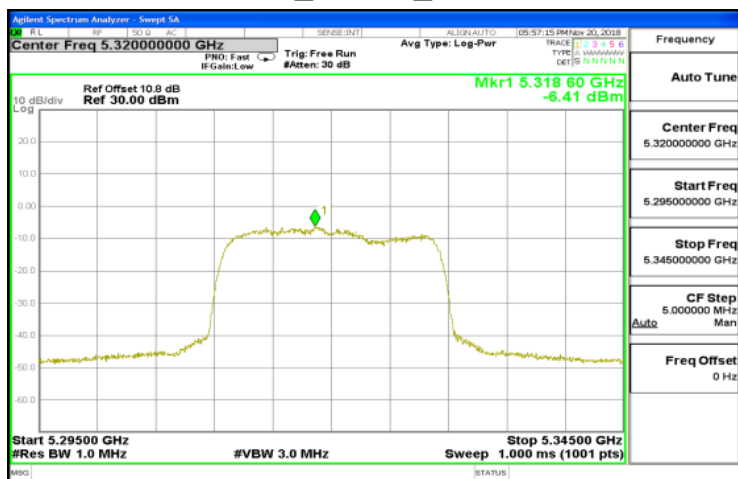
802.11n_20MHz_5300MHz



802.11n_20MHz_5240MHz



802.11n_20MHz_5320MHz

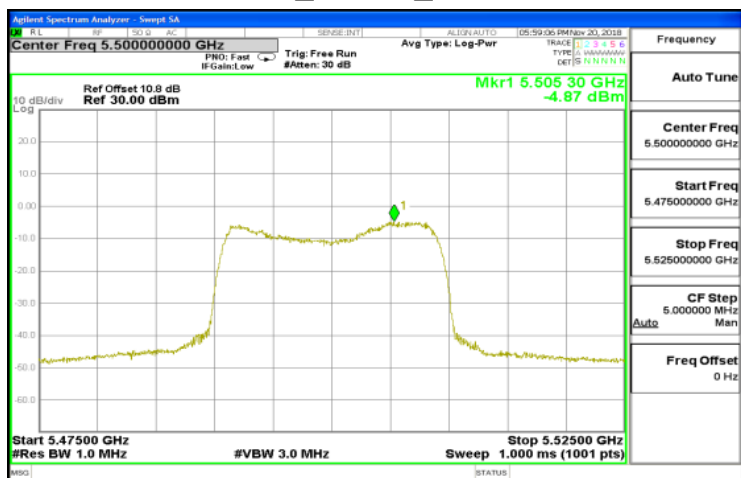


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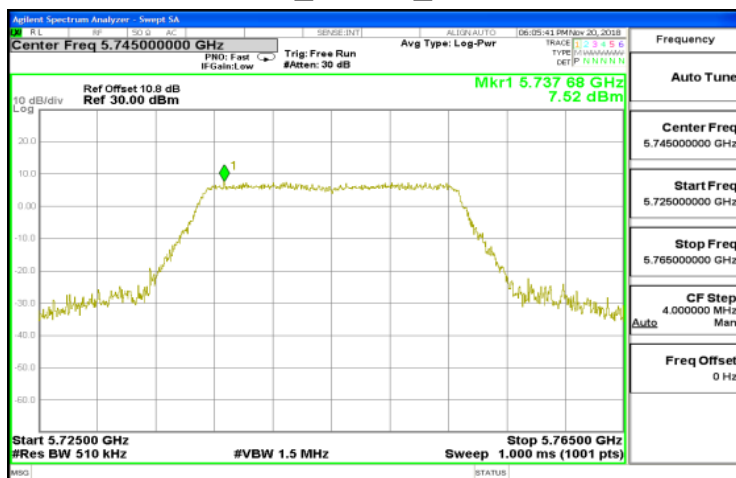
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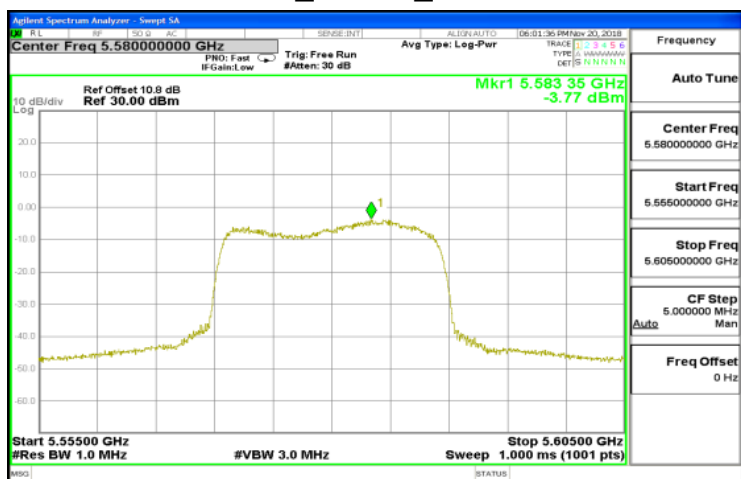
802.11n_20MHz_5500MHz



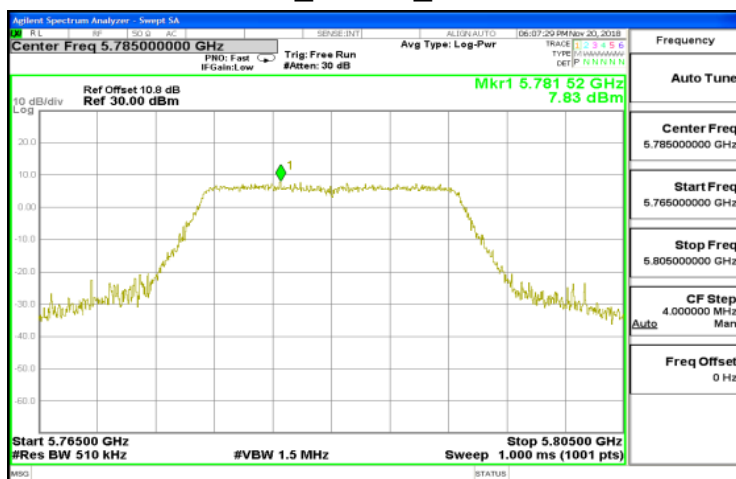
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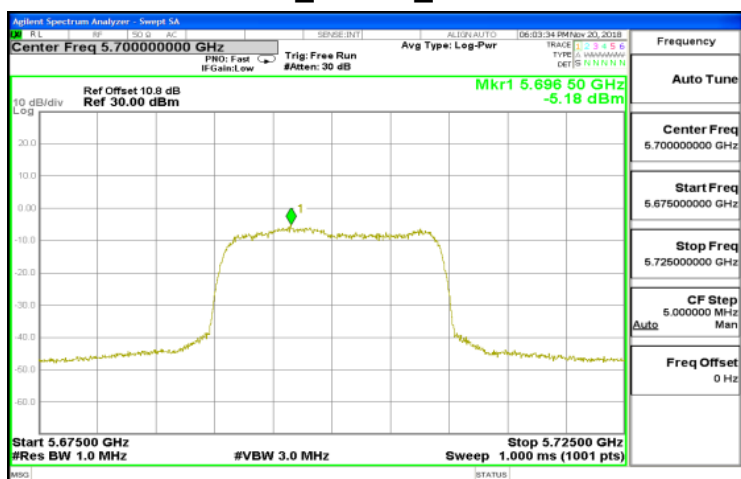
802.11n_20MHz_5580MHz



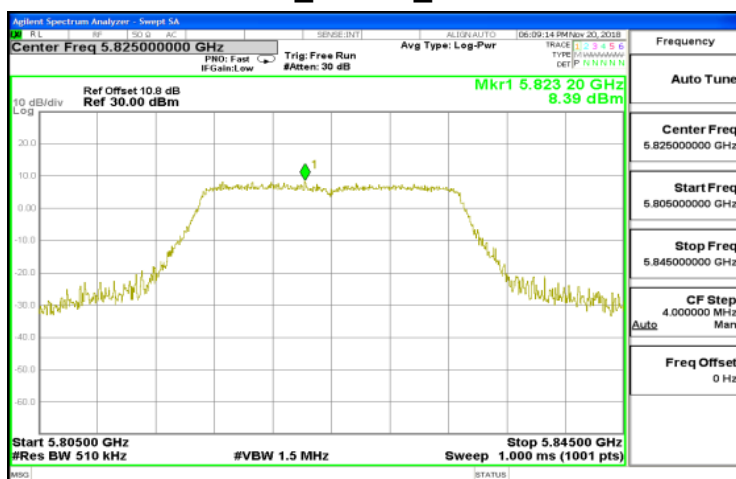
802.11n_20MHz_5785MHz



802.11n_20MHz_5700MHz



802.11n_20MHz_5825MHz



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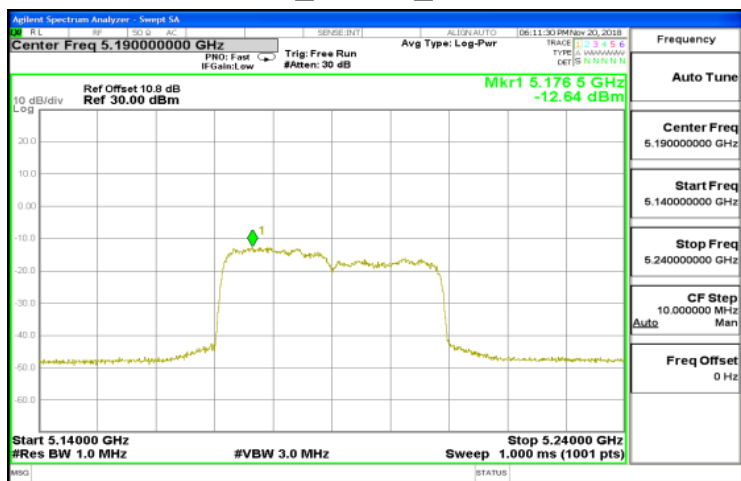
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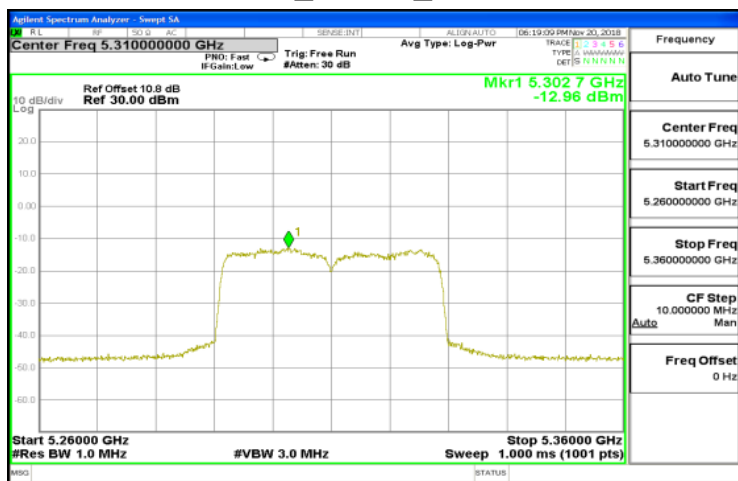
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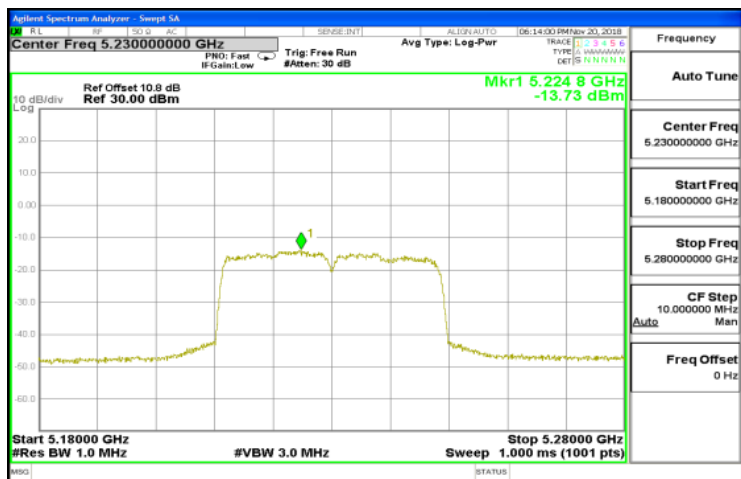
802.11n_40MHz_5190MHz



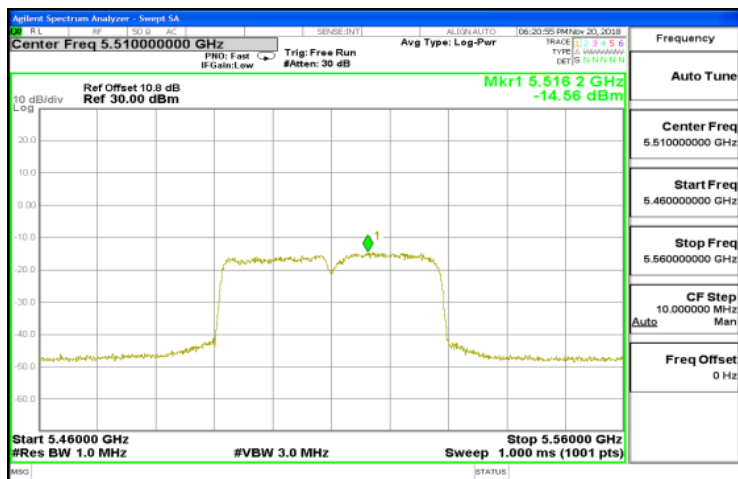
802.11n_40MHz_5310MHz



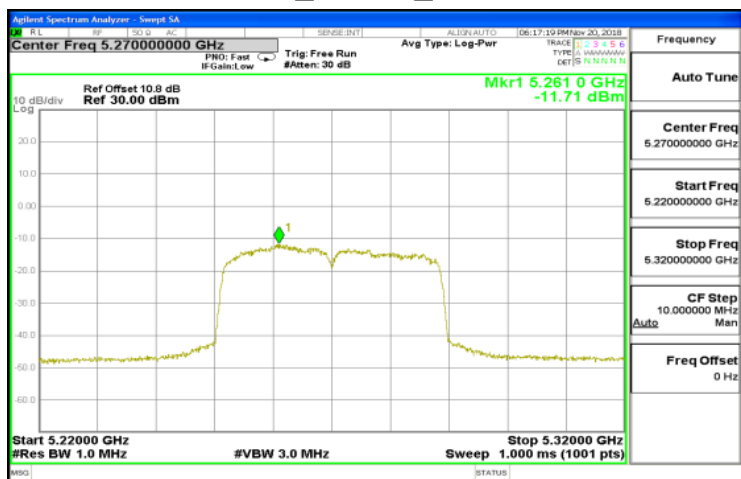
802.11n_40MHz_5230MHz



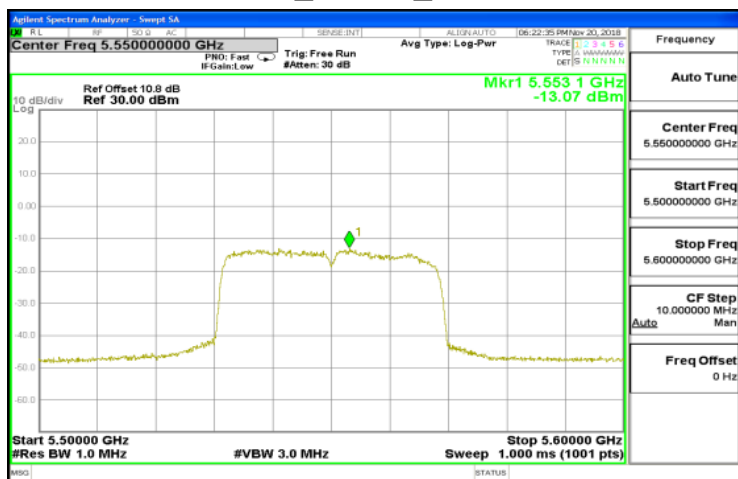
802.11n_40MHz_5510MHz



802.11n_40MHz_5270MHz



802.11n_40MHz_5550MHz

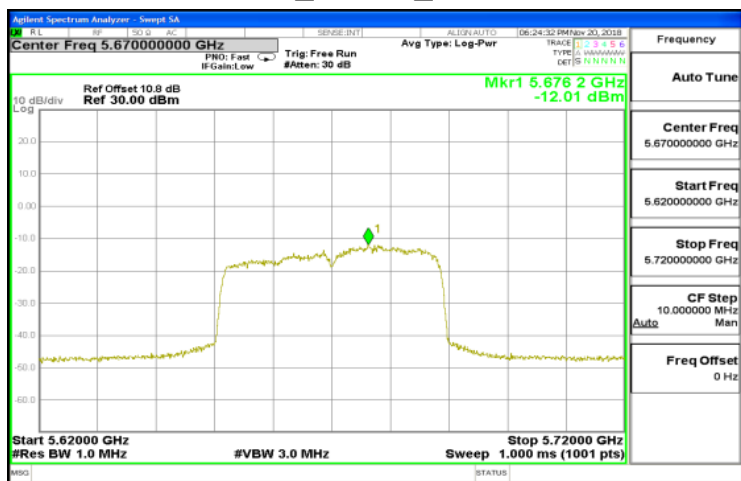


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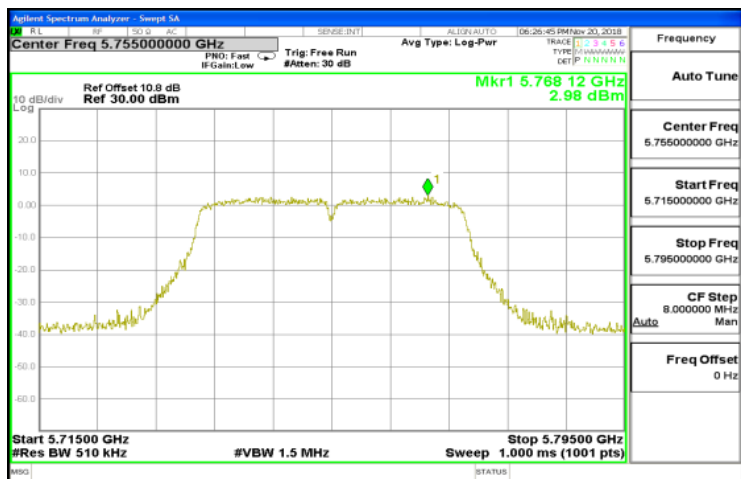
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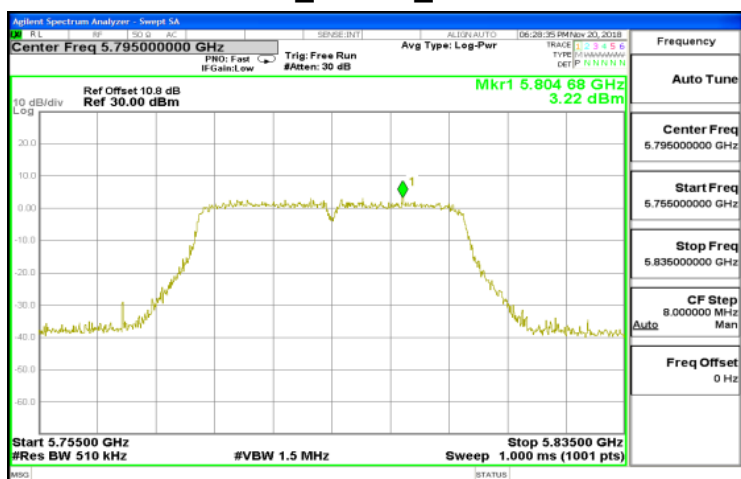
802.11n_40MHz_5670MHz



802.11n_40MHz_5755MHz



802.11n_40MHz_5795MHz



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11 UNDESIRABLE RADIATED EMISSION MEASUREMENT

11.1 Standard Applicable

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

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

APPLICABLE TO	LIMIT	
FCC KDB 789033 D02 General UNII Test Procedures New Rules	FIELD STRENGTH AT 3m	
	PK: 74 (dBμV/m)	AV 54 (dBμV/m)
APPLICABLE TO	EIRP LIMIT	FIELD STRENGTH AT 3m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.3 (dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2(dBμV/m) *1 PK:105.2 (dBμV/m) *2 PK: 110.8(dBμV/m) *3 PK:122.2 (dBμV/m) *4
*1 beyond 75 MHz or more above of the bandedge. *2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above. *3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above. *4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.		

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

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

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

Note:

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

11.2 Measurement Equipment Used

SGS SAC-III					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Bi-log Antenna	SCHWAZBECK	VULB9168	378	12/29/2017	12/28/2018
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/16/2018	08/15/2019
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2017	12/11/2018
Loop Antenna	ETS.LINDGREN	6502	148045	10/08/2018	10/07/2019
3m Site NSA	SGS	966 chamber	N/A	01/02/2018	01/01/2019
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/15/2018	05/14/2019
EMI Test Receiver	R&S	ESCI7	100335	02/02/2018	02/01/2019
Pre-Amplifier	HP	8449B	3008A00578	01/02/2018	01/01/2019
Pre-Amplifier	HP	8447D	2944A07676	01/02/2018	01/01/2019
Pre-Amplifier	EMC Instru-ments	EMC184045B	980135	10/02/2018	10/01/2019
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2018	01/01/2019
2GHz High Pass Filter	Micro-Tronics	HPM50110	36	01/02/2018	01/01/2019
Filter 5150-5350 MHz	Micro-Tronics	BRM50703	1	01/02/2018	01/01/2019
Low Loss Cable	Huber Suhner	966_RX	9	01/02/2018	01/01/2019
Notebook	Lenovo	T440P	P0000564	N/A	N/A

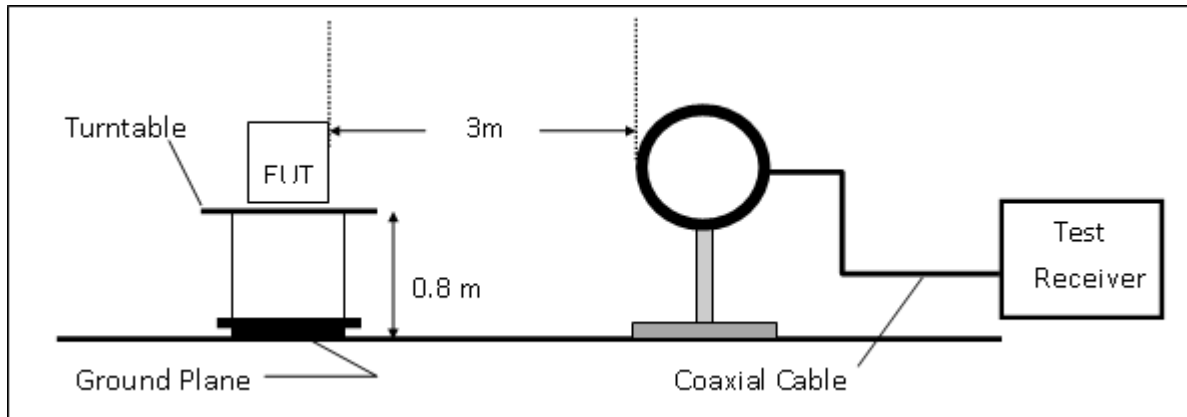
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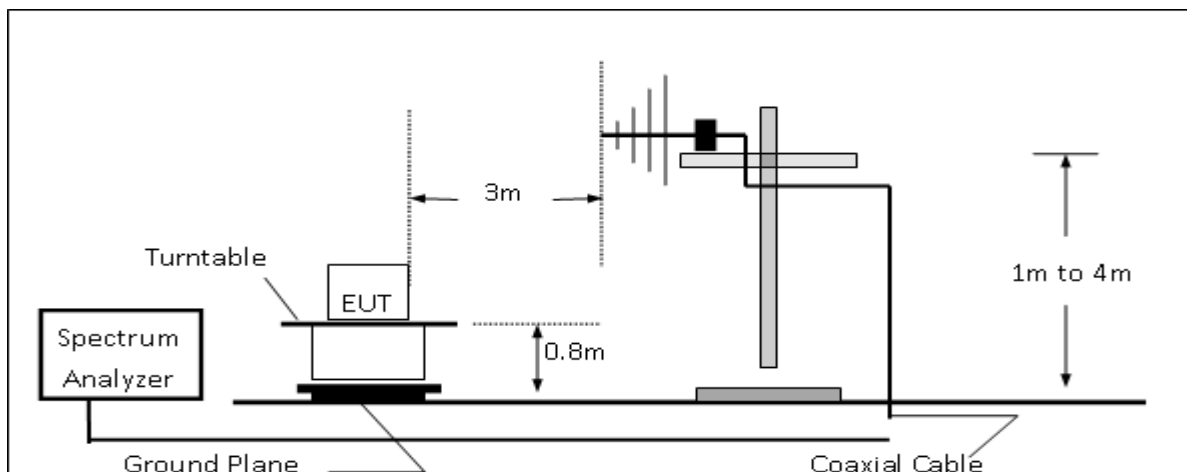
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11.3 Test SET-UP

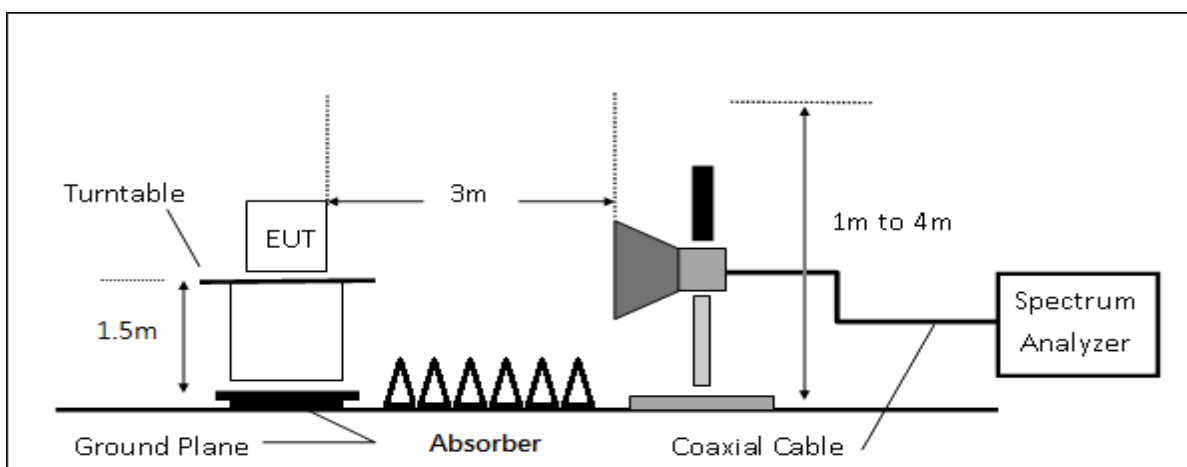
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



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



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



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11.4 Measurement Procedure

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

11.5 Field Strength Calculation

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

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

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

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

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

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.

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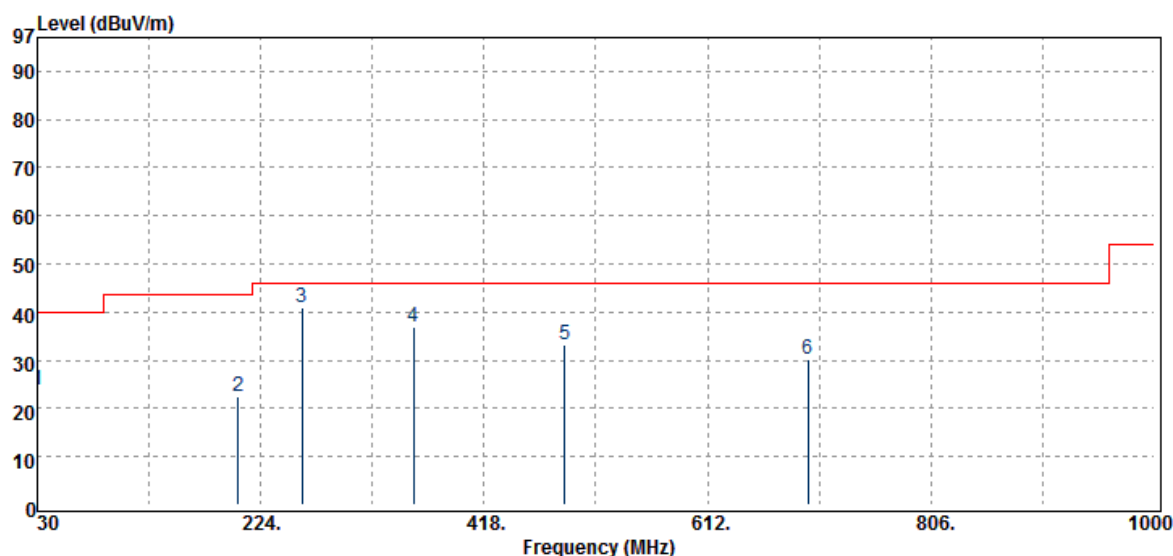
11.7 Radiated Spurious Emission Measurement Result

Below 1GHz Worst-Case Data:

802.11a 5150~5250 MHz

Operation Band :802.11aB1
 Fundamental Frequency :5220 MHz
 Operation Mode :Tx CH MID
 EUT Pol. :E2 Plane

Test Date :2018-11-22
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Kane
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
30.00	Peak	32.93	-8.96	23.97	40.00	-16.03
204.60	Peak	31.75	-9.26	22.49	43.50	-21.01
259.89	Peak	48.03	-7.03	41.00	46.00	-5.00
356.89	Peak	41.29	-4.21	37.08	46.00	-8.92
487.84	Peak	35.75	-2.49	33.26	46.00	-12.74
699.30	Peak	28.63	1.74	30.37	46.00	-15.63

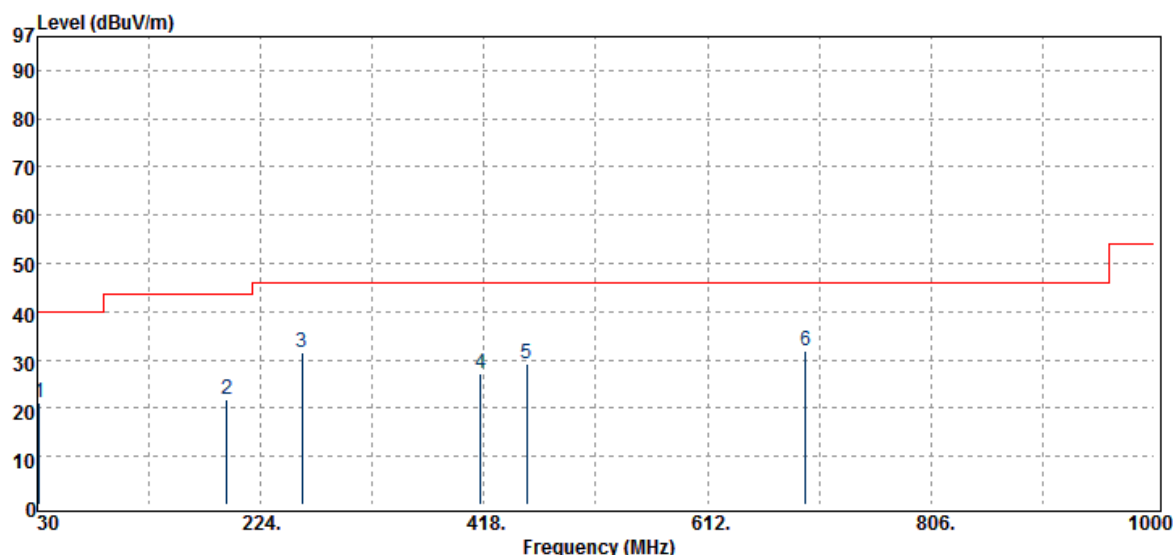
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Operation Band :802.11aB1
Fundamental Frequency :5220 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-22
Temp./Humi. :23 deg_C / 62 RH
Engineer :Kane
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
31.94	Peak	29.97	-8.88	21.09	40.00	-18.91
194.90	Peak	31.11	-9.13	21.98	43.50	-21.52
259.89	Peak	38.72	-7.03	31.69	46.00	-14.31
415.09	Peak	30.18	-2.95	27.23	46.00	-18.77
454.86	Peak	31.64	-2.33	29.31	46.00	-16.69
697.36	Peak	30.57	1.33	31.90	46.00	-14.10

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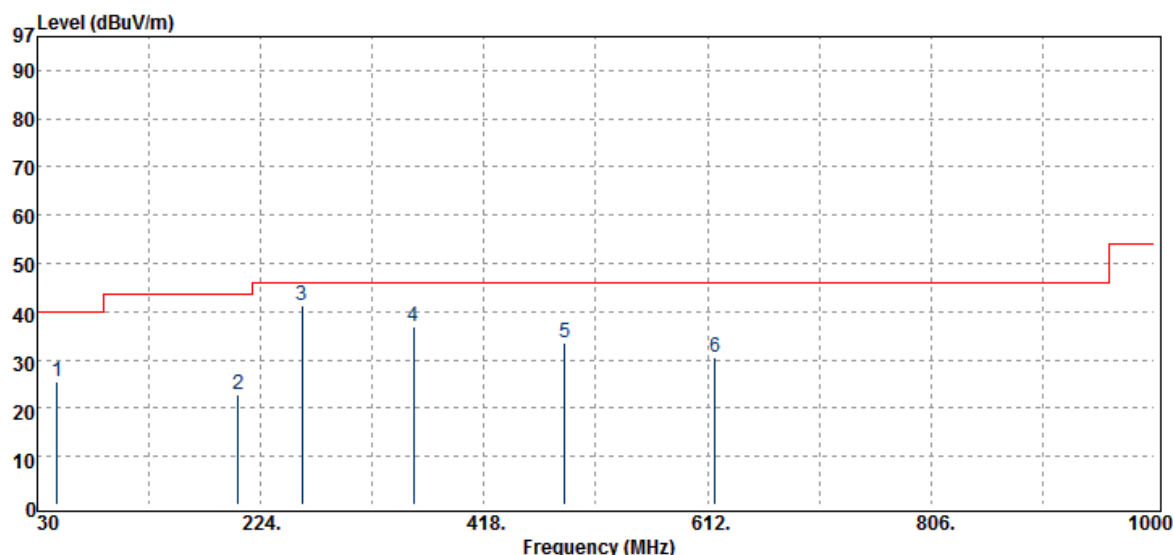
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802.11a 5250~5350 MHz

Operation Band :802.11aB2
Fundamental Frequency :5300 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-22
Temp./Humi. :23 deg_C / 62 RH
Engineer :Kane
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
47.46	Peak	33.02	-7.64	25.38	40.00	-14.62
204.60	Peak	32.02	-9.26	22.76	43.50	-20.74
259.89	Peak	48.33	-7.03	41.30	46.00	-4.70
356.89	Peak	41.30	-4.21	37.09	46.00	-8.91
487.84	Peak	36.08	-2.49	33.59	46.00	-12.41
618.79	Peak	30.22	0.28	30.50	46.00	-15.50

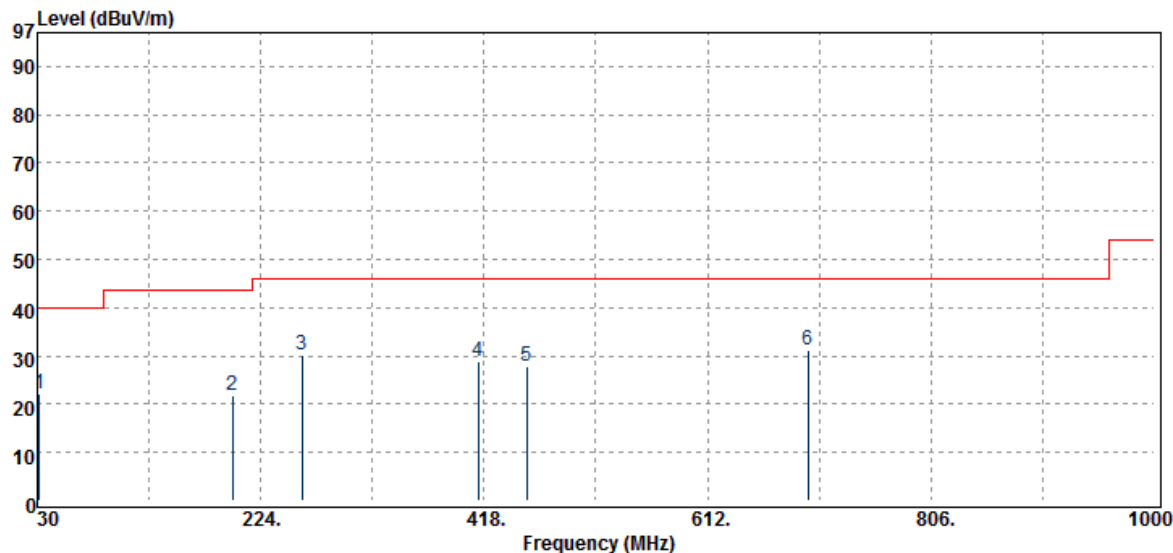
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Operation Band :802.11aB2
Fundamental Frequency :5300 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-22
Temp./Humi. :23 deg_C / 62 RH
Engineer :Kane
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
31.94	Peak	31.12	-8.88	22.24	40.00	-17.76
199.75	Peak	31.21	-9.26	21.95	43.50	-21.55
259.89	Peak	37.37	-7.03	30.34	46.00	-15.66
413.15	Peak	31.82	-2.95	28.87	46.00	-17.13
454.86	Peak	30.22	-2.33	27.89	46.00	-18.11
699.30	Peak	29.64	1.74	31.38	46.00	-14.62

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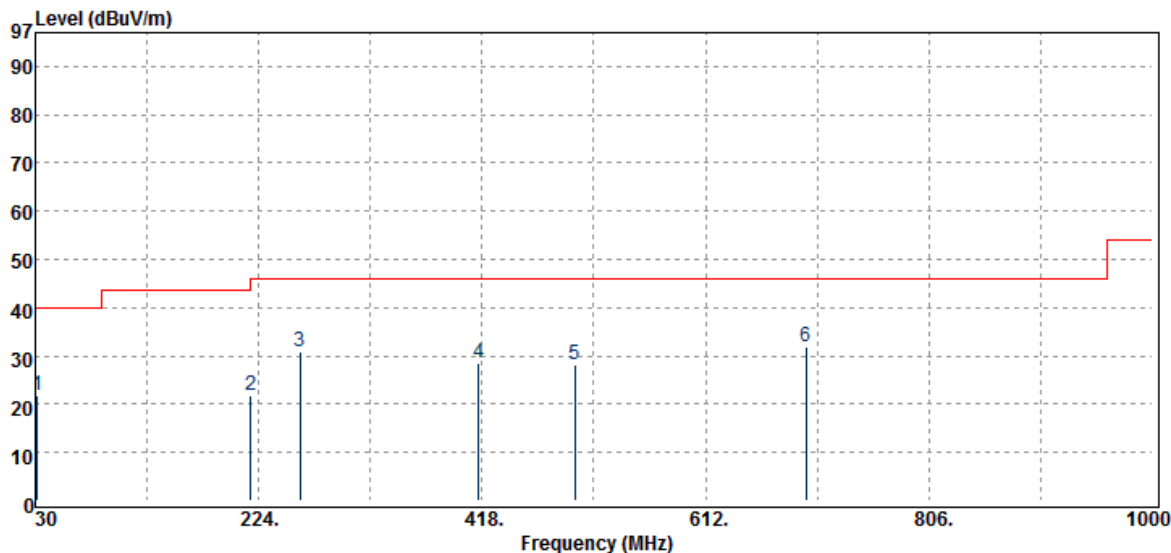
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802.11a, 5470~5725 MHz

Operation Band :802.11aB3
Fundamental Frequency :5580 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-22
Temp./Humi. :23 deg_C / 62 RH
Engineer :Kane
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
31.94	Peak	30.74	-8.88	21.86	40.00	-18.14
217.21	Peak	31.05	-9.12	21.93	46.00	-24.07
259.89	Peak	37.93	-7.03	30.90	46.00	-15.10
415.09	Peak	31.61	-2.95	28.66	46.00	-17.34
498.51	Peak	30.57	-2.53	28.04	46.00	-17.96
699.30	Peak	30.14	1.74	31.88	46.00	-14.12

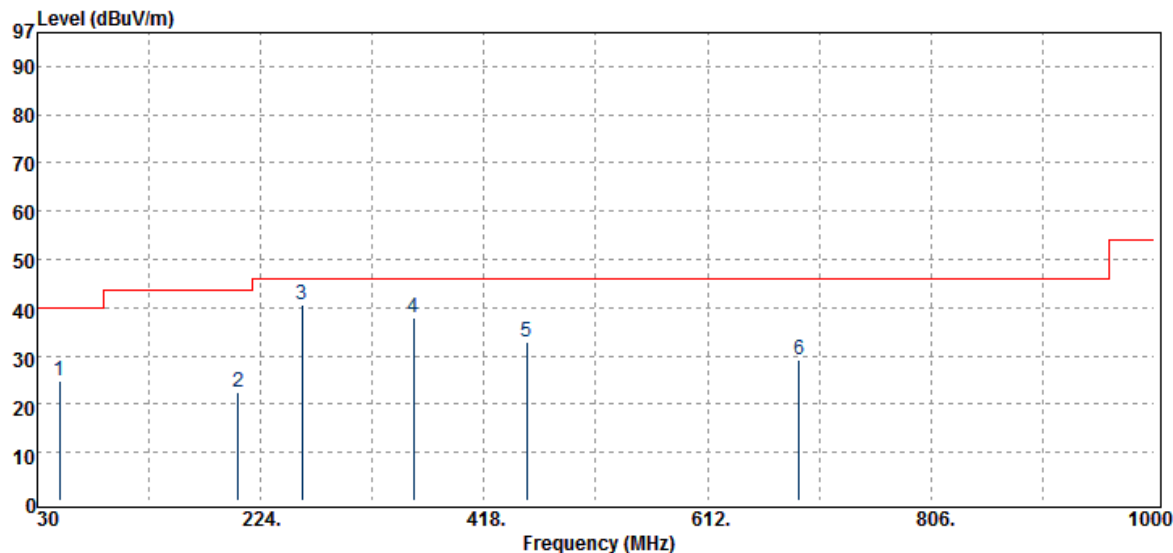
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Operation Band :802.11aB4
Fundamental Frequency :5785 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-22
Temp./Humi. :23 deg_C / 62 RH
Engineer :Kane
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
49.40	Peak	32.17	-7.48	24.69	40.00	-15.31
204.60	Peak	31.60	-9.26	22.34	43.50	-21.16
259.89	Peak	47.79	-7.03	40.76	46.00	-5.24
356.89	Peak	42.14	-4.21	37.93	46.00	-8.07
454.86	Peak	35.35	-2.33	33.02	46.00	-12.98
691.54	Peak	27.66	1.57	29.23	46.00	-16.77

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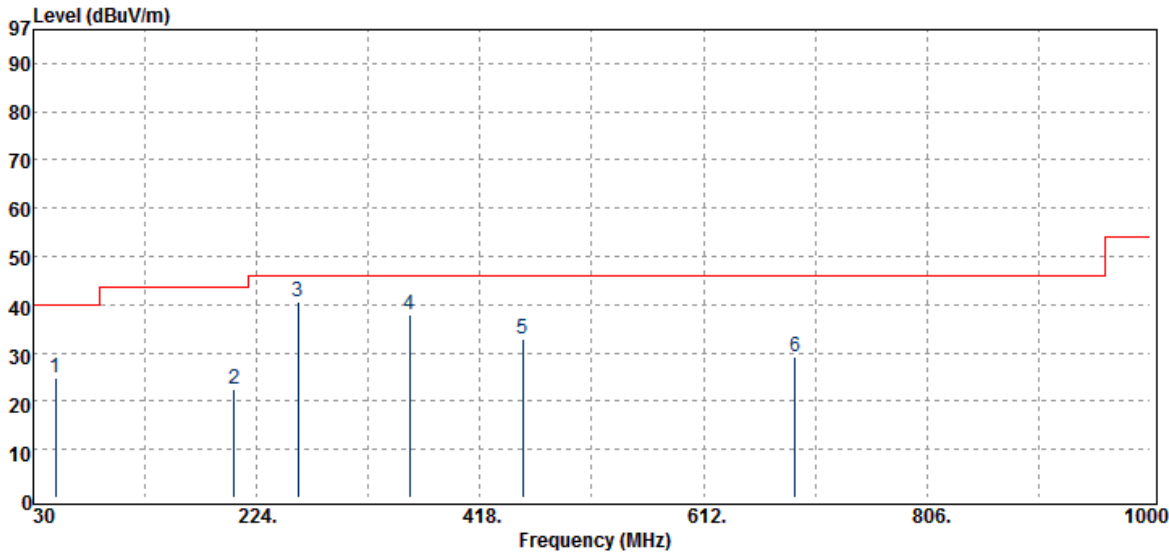
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802.11a, 5725~5850 MHz

Operation Band :802.11aB4
Fundamental Frequency :5785 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-22
Temp./Humi. :23 deg_C / 62 RH
Engineer :Kane
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
49.40	Peak	32.17	-7.48	24.69	40.00	-15.31
204.60	Peak	31.60	-9.26	22.34	43.50	-21.16
259.89	Peak	47.79	-7.03	40.76	46.00	-5.24
356.89	Peak	42.14	-4.21	37.93	46.00	-8.07
454.86	Peak	35.35	-2.33	33.02	46.00	-12.98
691.54	Peak	27.66	1.57	29.23	46.00	-16.77

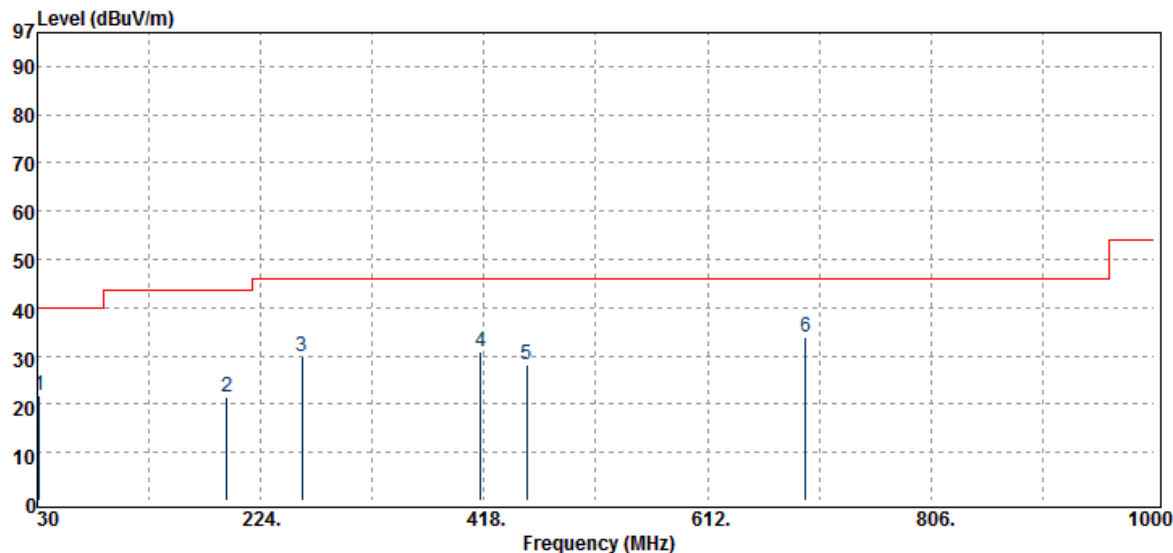
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Operation Band :802.11aB4
Fundamental Frequency :5785 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-22
Temp./Humi. :23 deg_C / 62 RH
Engineer :Kane
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
31.94	Peak	30.57	-8.88	21.69	40.00	-18.31
194.90	Peak	30.45	-9.13	21.32	43.50	-22.18
259.89	Peak	37.06	-7.03	30.03	46.00	-15.97
415.09	Peak	33.82	-2.95	30.87	46.00	-15.13
454.86	Peak	30.62	-2.33	28.29	46.00	-17.71
697.36	Peak	32.53	1.33	33.86	46.00	-12.14

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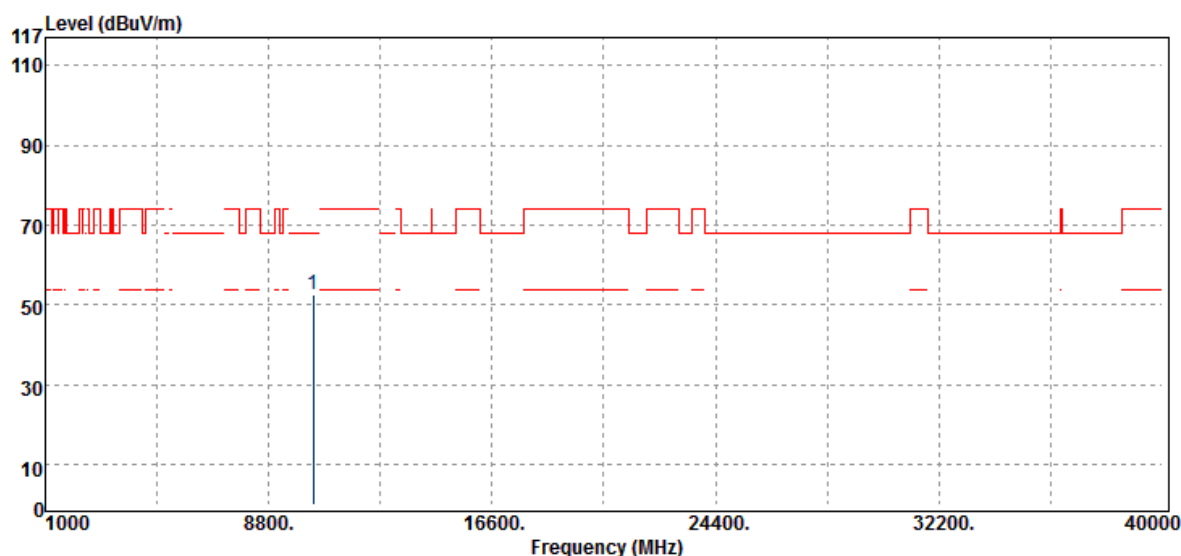
Above 1GHz Worst-Case Data:

Radiated Spurious Emission Measurement Result

802.11a, 5150~5250 MHz

Operation Band :802.11aB1
 Fundamental Frequency :5180 MHz
 Operation Mode :Tx CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
10360.00	Peak	32.10	20.41	52.51	68.20	-15.69

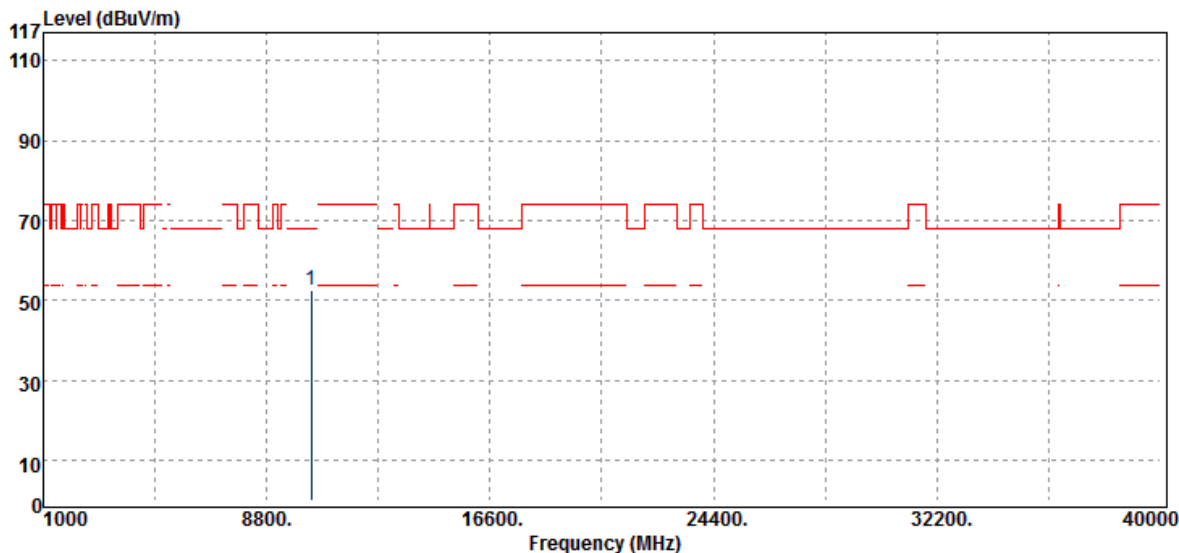
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Operation Band :802.11aB1
Fundamental Frequency :5180 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



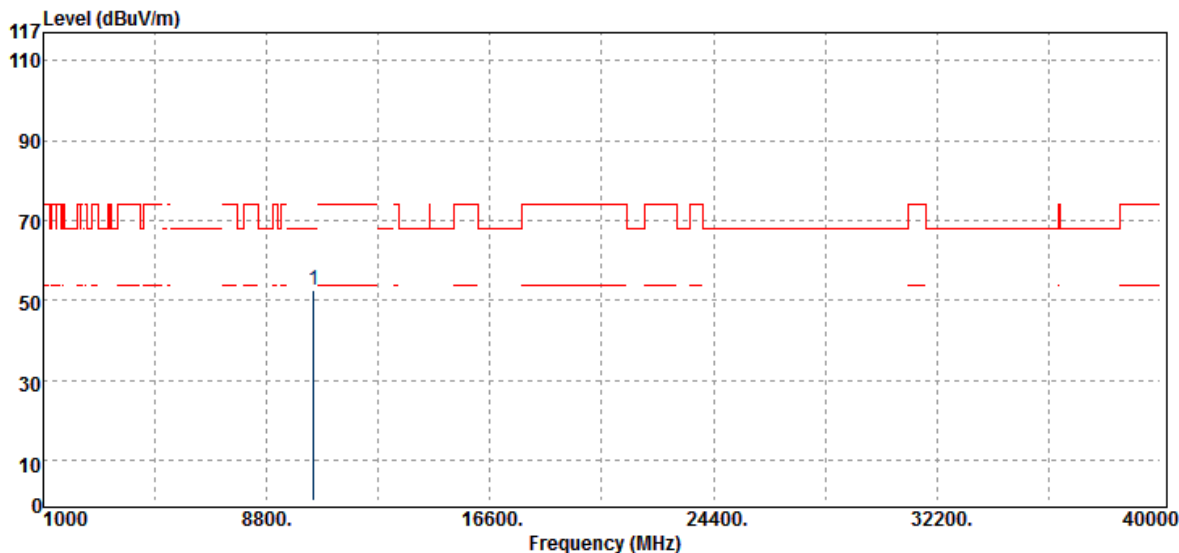
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10360.00	Peak	32.10	20.41	52.51	68.20	-15.69

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Operation Band	:802.11aB1	Test Date	:2018-11-21
Fundamental Frequency	:5220 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10440.00	Peak	31.78	20.75	52.53	68.20	-15.67

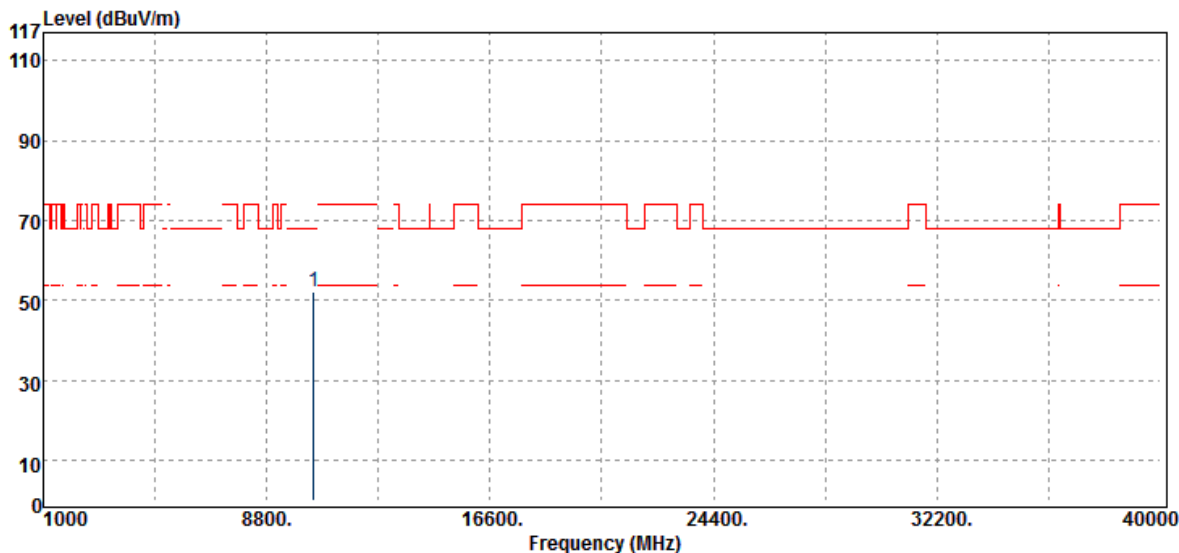
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Operation Band :802.11aB1
Fundamental Frequency :5220 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10440.00	Peak	31.29	20.75	52.04	68.20	-16.16

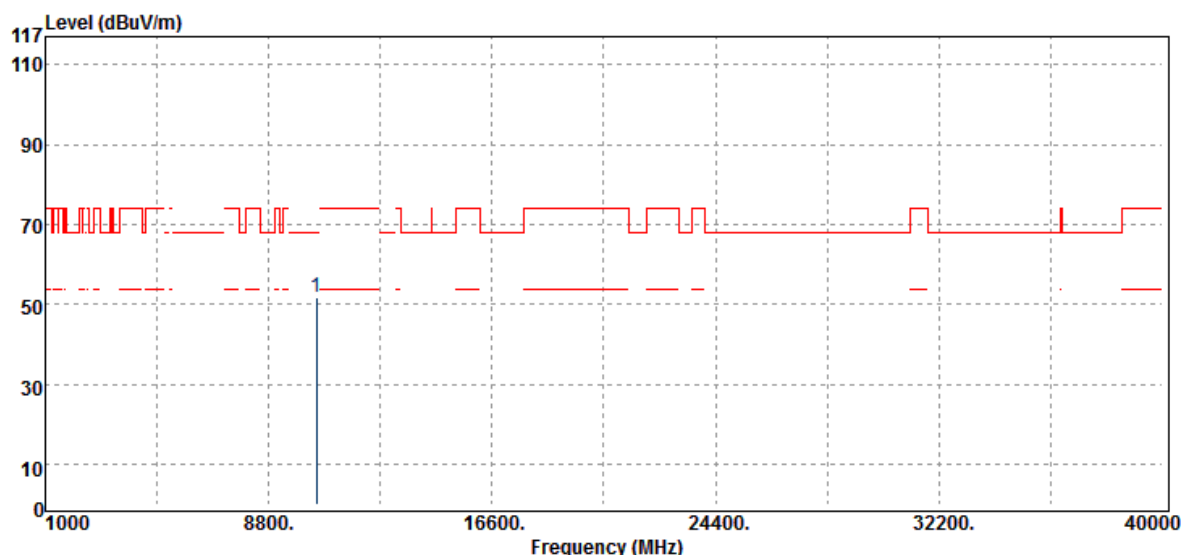
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Operation Band :802.11aB1
Fundamental Frequency :5240 MHz
Operation Mode :Tx CH HIGH
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



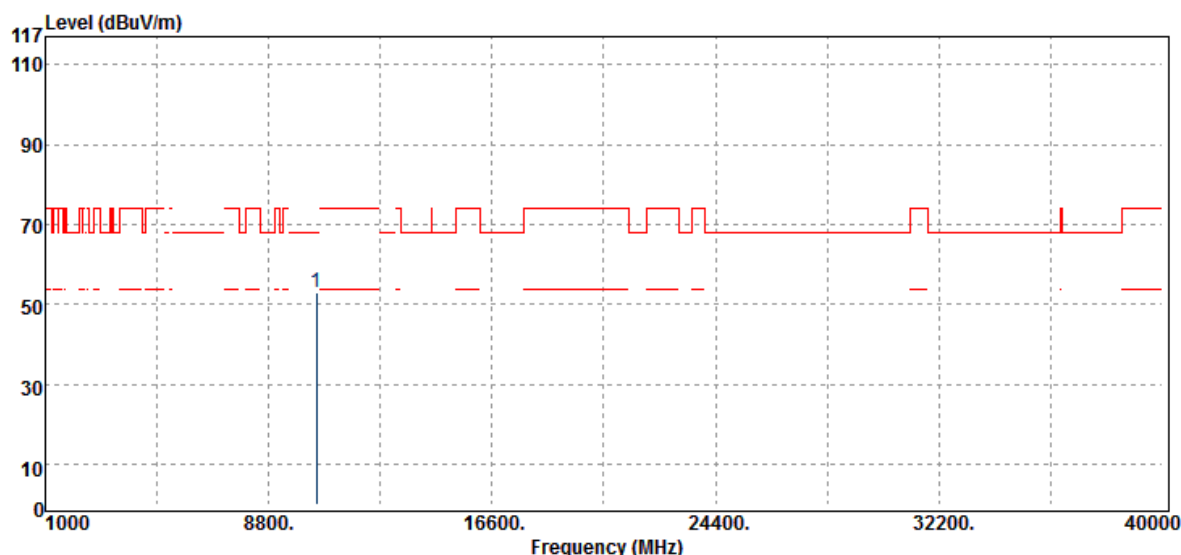
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10480.00	Peak	31.06	20.79	51.85	68.20	-16.35

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Operation Band	:802.11aB1	Test Date	:2018-11-21
Fundamental Frequency	:5240 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10480.00	Peak	32.19	20.79	52.98	68.20	-15.22

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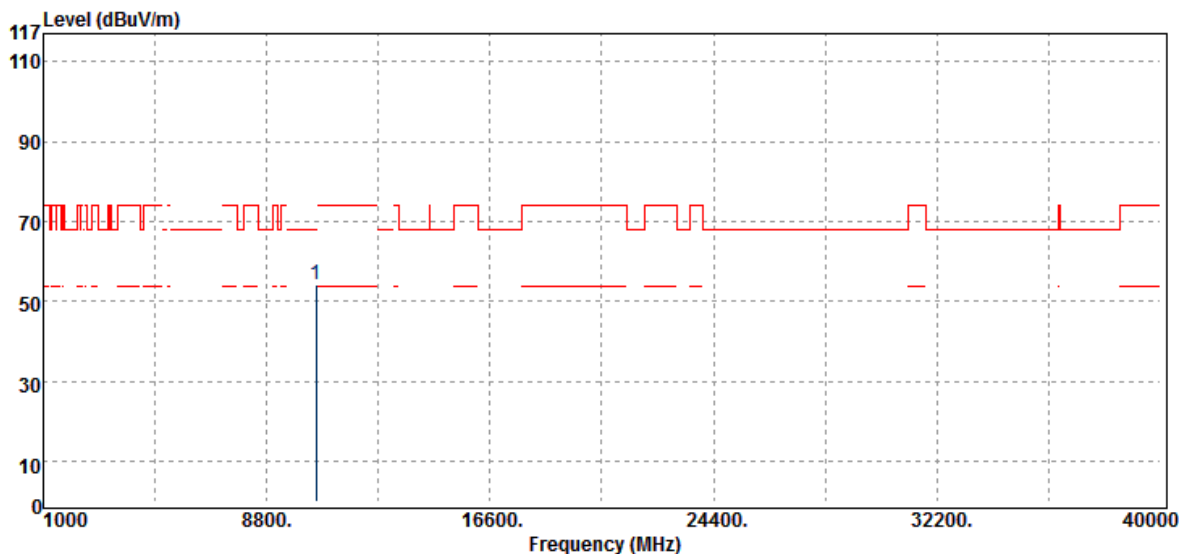
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Radiated Spurious Emission Measurement Result

802.11a, 5250MHz-5350MHz

Operation Band :802.11aB2
 Fundamental Frequency :5260 MHz
 Operation Mode :Tx CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



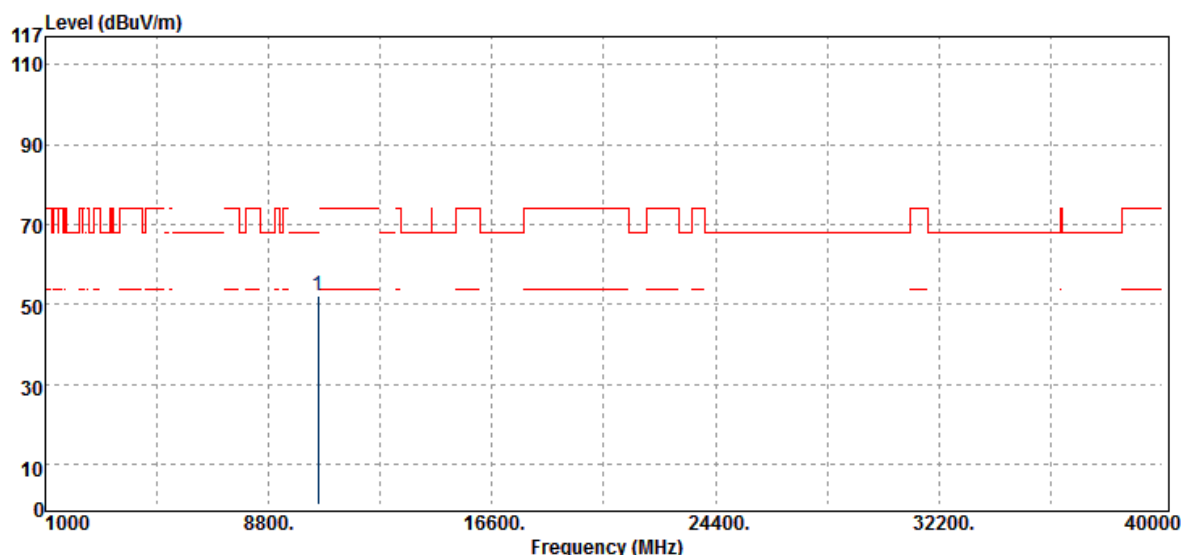
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10520.00	Peak	33.64	20.78	54.42	68.20	-13.78

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Operation Band	:802.11aB2	Test Date	:2018-11-21
Fundamental Frequency	:5260 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10520.00	Peak	31.47	20.78	52.25	68.20	-15.95

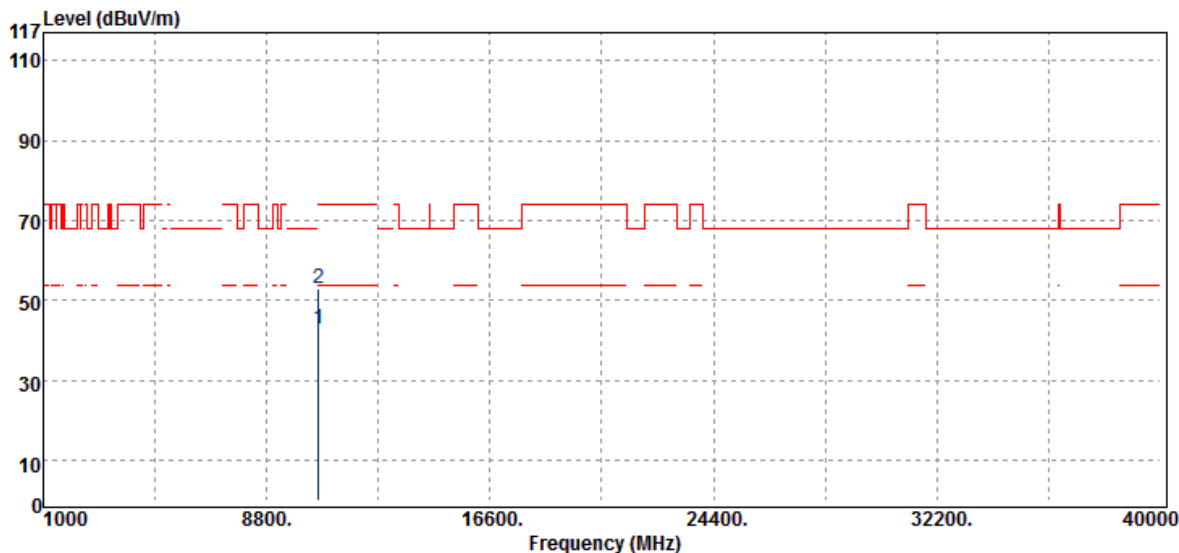
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Operation Band :802.11aB2
 Fundamental Frequency :5300 MHz
 Operation Mode :Tx CH MID
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
10600.00	Average	21.56	21.18	42.74	54.00	-11.26
10600.00	Peak	32.04	21.18	53.22	74.00	-20.78

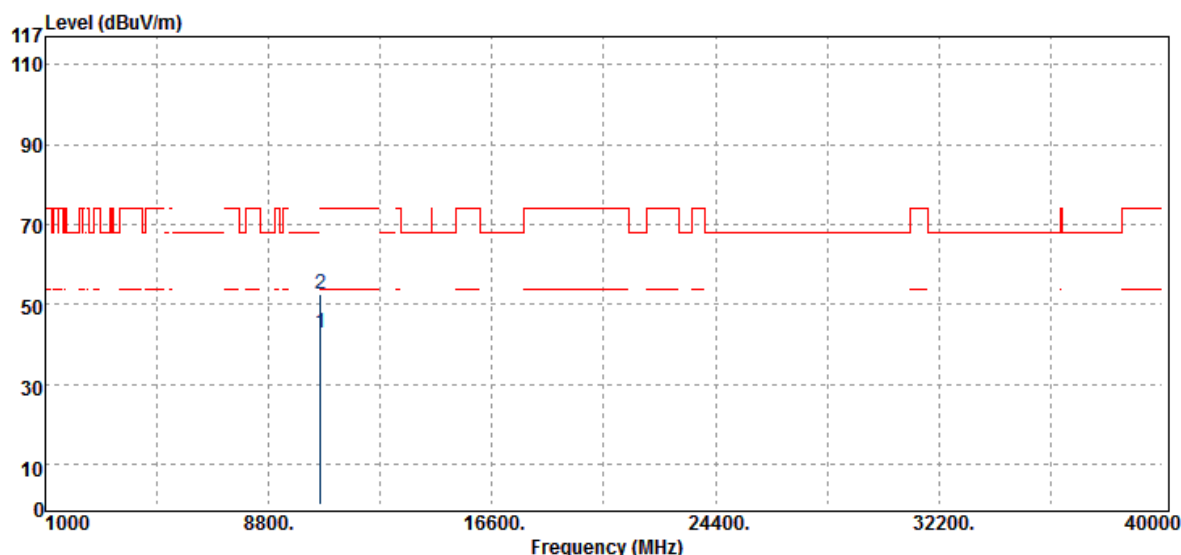
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Operation Band :802.11aB2
Fundamental Frequency :5300 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
10600.00	Average	21.66	21.18	42.84	54.00	-11.16
10600.00	Peak	31.65	21.18	52.83	74.00	-21.17

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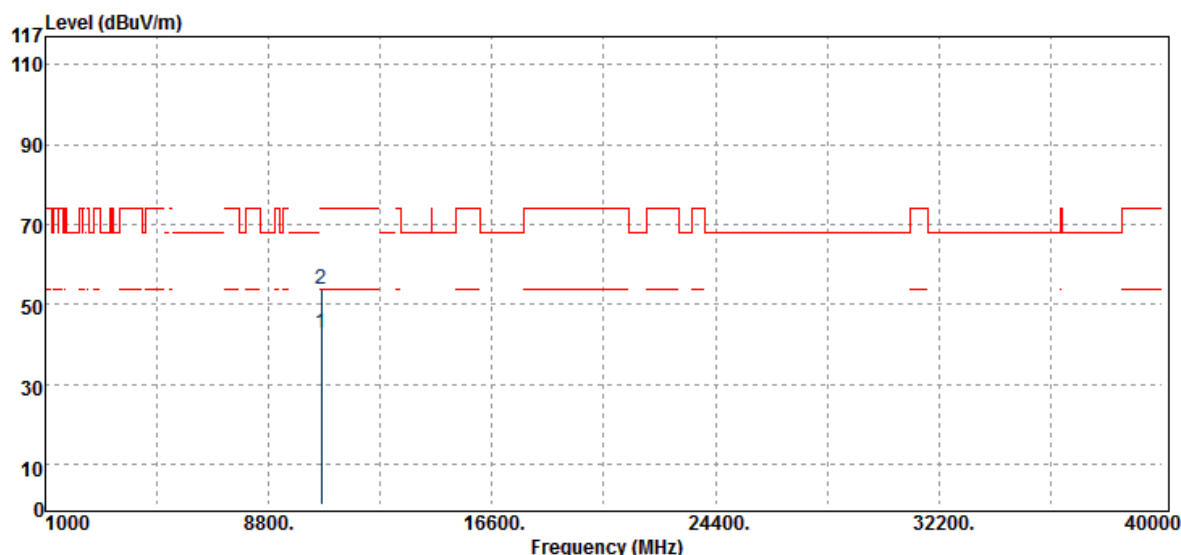
f (886-2) 2298-0488

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Operation Band :802.11aB2
Fundamental Frequency :5320 MHz
Operation Mode :Tx CH HIGH
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
10640.00	Average	21.79	21.24	43.03	54.00	-10.97
10640.00	Peak	32.68	21.24	53.92	74.00	-20.08

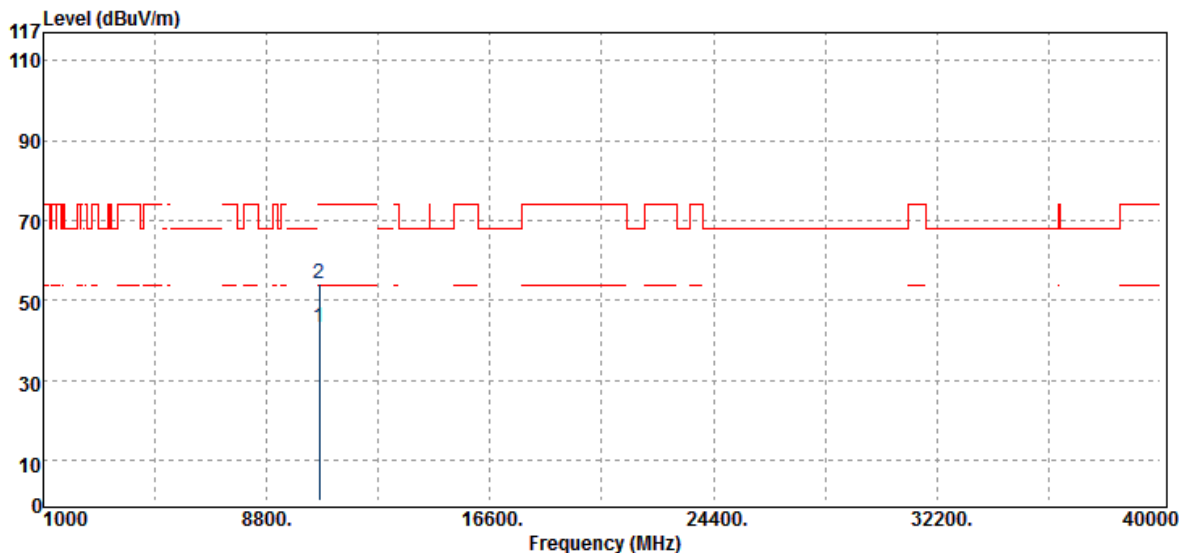
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Operation Band :802.11aB2
Fundamental Frequency :5320 MHz
Operation Mode :Tx CH HIGH
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
10640.00	Average	21.96	21.24	43.20	54.00	-10.80
10640.00	Peak	32.94	21.24	54.18	74.00	-19.82

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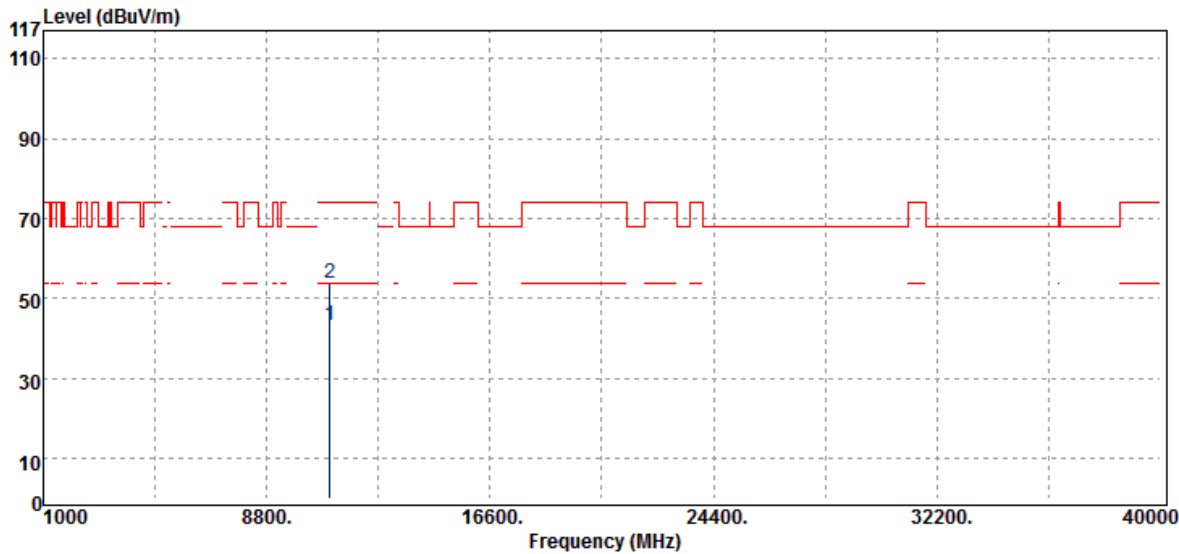
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Radiated Spurious Emission Measurement Result

802.11a, 5470~5725 MHz

Operation Band :802.11aB3
Fundamental Frequency :5500 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



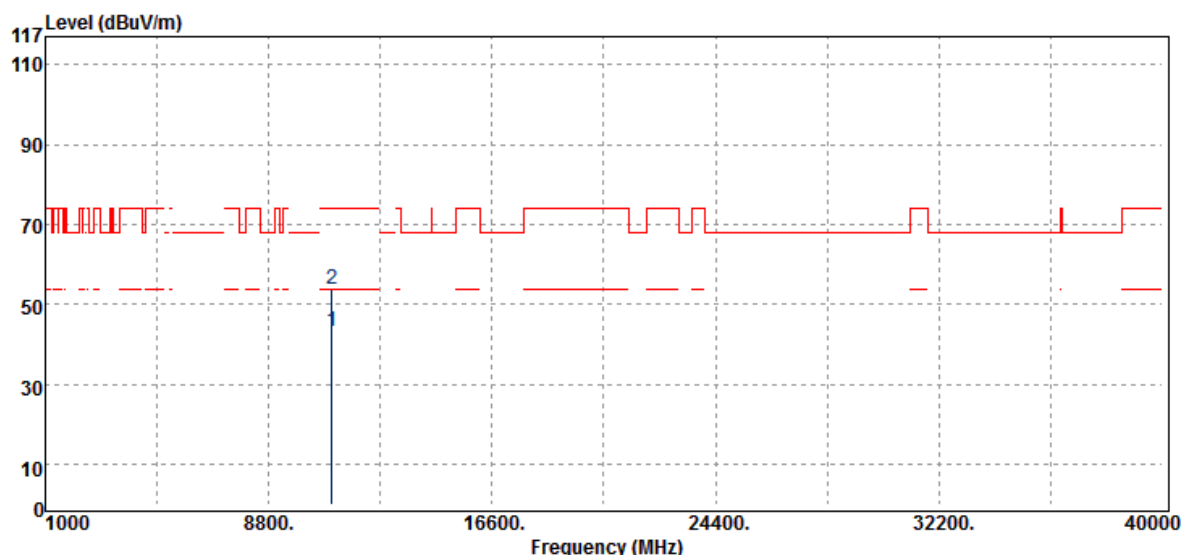
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11000.00	Average	21.19	22.17	43.36	54.00	-10.64
11000.00	Peak	31.68	22.17	53.85	74.00	-20.15

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Operation Band	:802.11aB3	Test Date	:2018-11-21
Fundamental Frequency	:5500 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11000.00	Average	21.28	22.17	43.45	54.00	-10.55
11000.00	Peak	31.68	22.17	53.85	74.00	-20.15

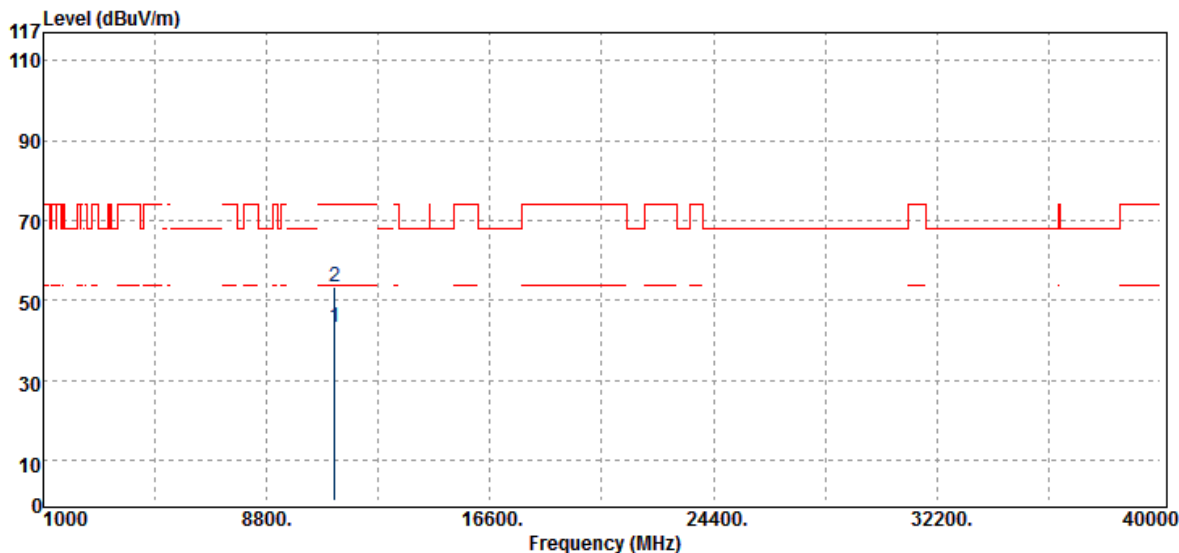
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Operation Band :802.11aB3
 Fundamental Frequency :5580 MHz
 Operation Mode :Tx CH MID
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11160.00	Average	20.85	22.31	43.16	54.00	-10.84
11160.00	Peak	31.16	22.31	53.47	74.00	-20.53

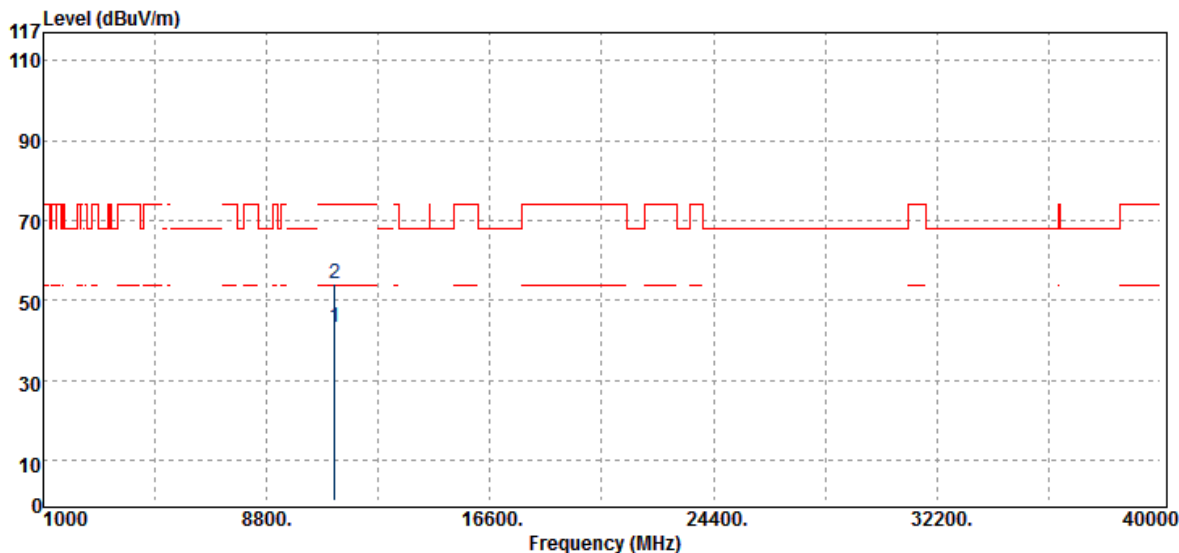
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Operation Band :802.11aB3
Fundamental Frequency :5580 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11160.00	Average	21.08	22.31	43.39	54.00	-10.61
11160.00	Peak	31.76	22.31	54.07	74.00	-19.93

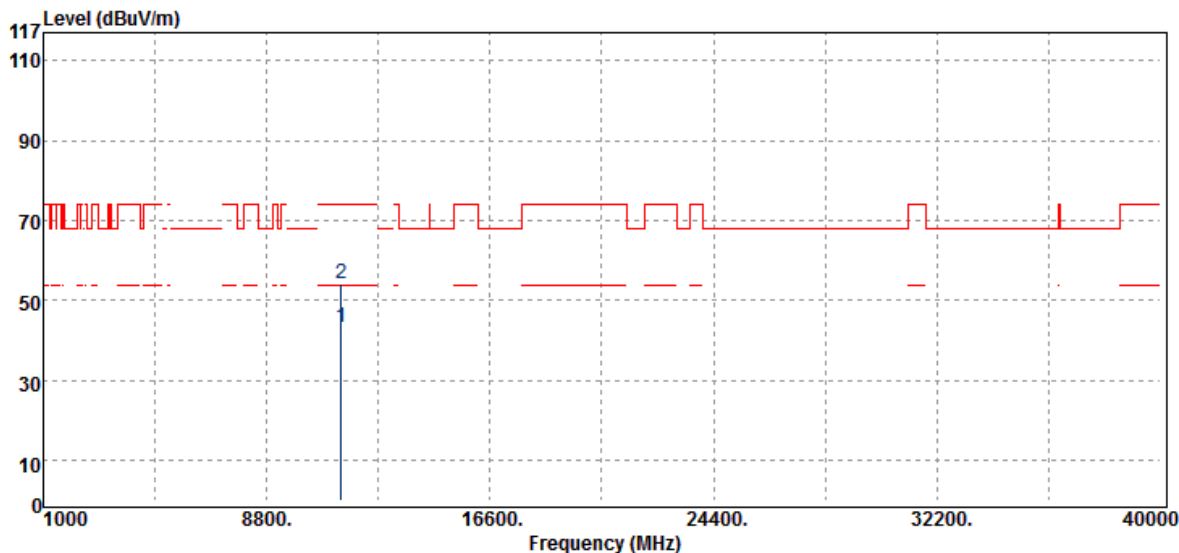
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Operation Band :802.11aB3
 Fundamental Frequency :5700 MHz
 Operation Mode :Tx CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11400.00	Average	20.76	22.42	43.18	54.00	-10.82
11400.00	Peak	31.80	22.42	54.22	74.00	-19.78

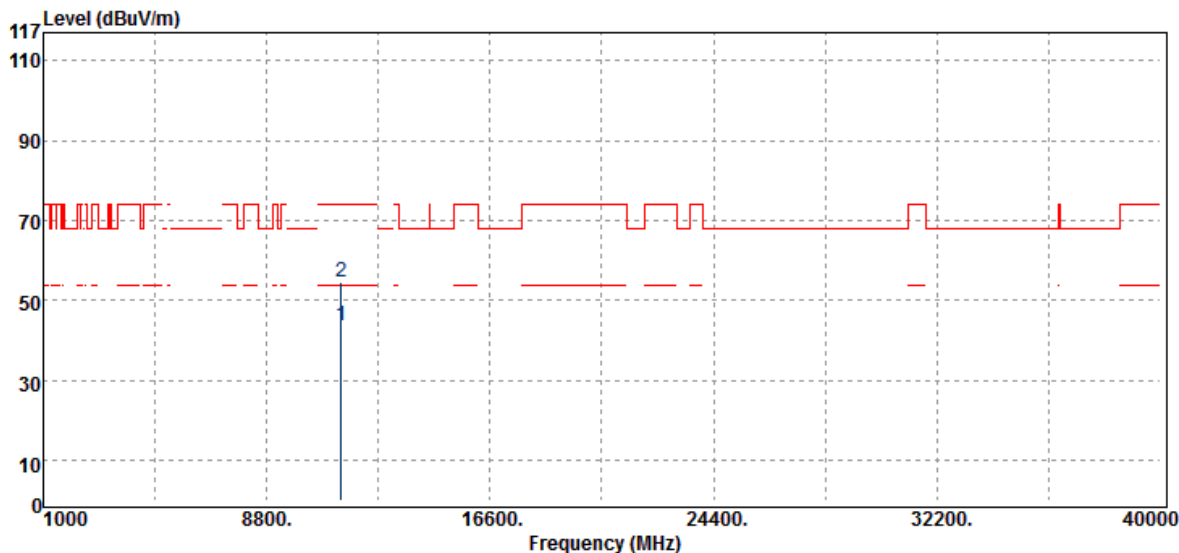
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Operation Band :802.11aB3
 Fundamental Frequency :5700 MHz
 Operation Mode :Tx CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11400.00	Average	21.15	22.42	43.57	54.00	-10.43
11400.00	Peak	32.18	22.42	54.60	74.00	-19.40

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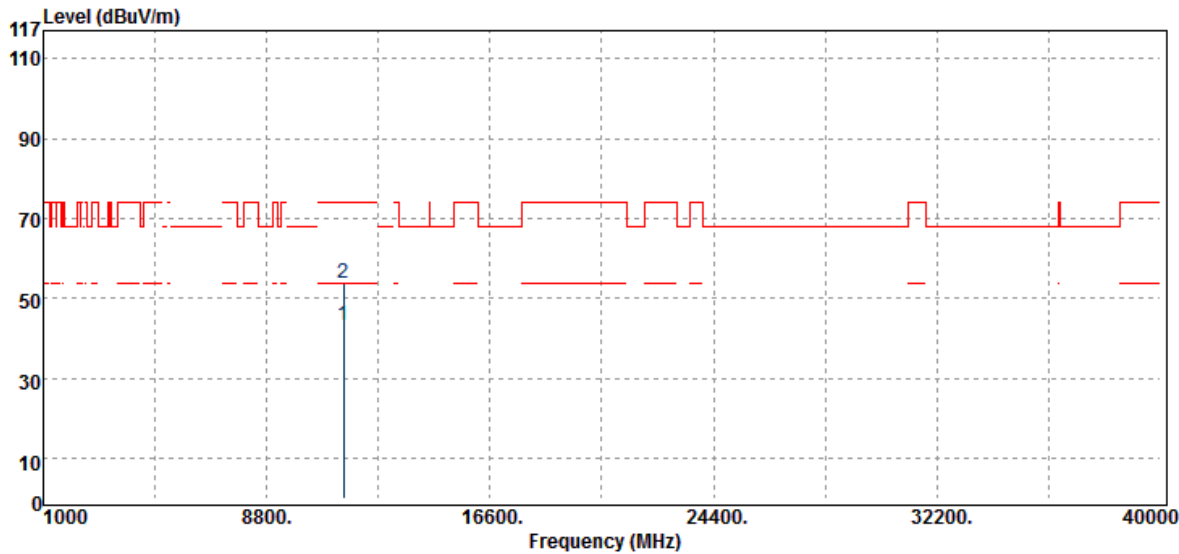
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Radiated Spurious Emission Measurement Result

802.11a, 5725~5850 MHz

Operation Band :802.11aB4
Fundamental Frequency :5745 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11490.00	Average	20.93	22.41	43.34	54.00	-10.66
11490.00	Peak	31.35	22.41	53.76	74.00	-20.24

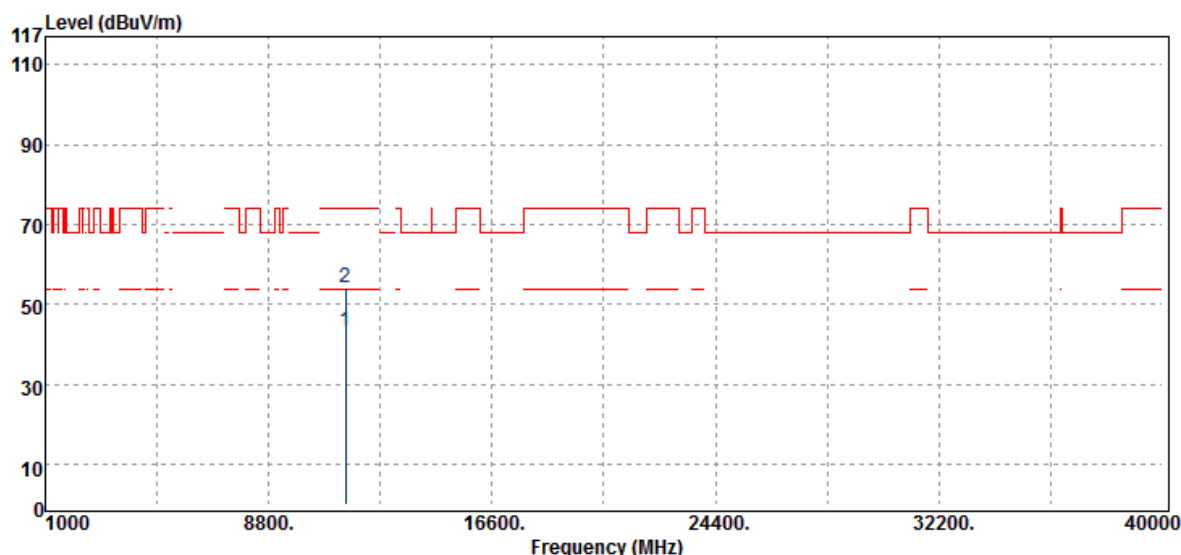
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Operation Band :802.11aB4
Fundamental Frequency :5745 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11490.00	Average	21.07	22.41	43.48	54.00	-10.52
11490.00	Peak	31.86	22.41	54.27	74.00	-19.73

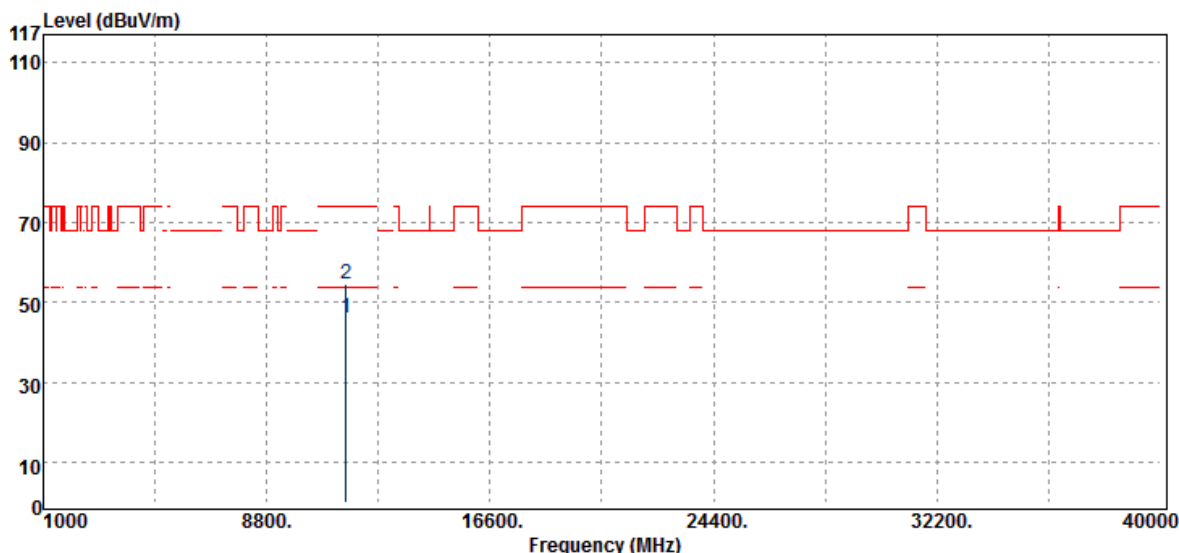
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Operation Band :802.11aB4
Fundamental Frequency :5785 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11570.00	Average	23.53	22.43	45.96	54.00	-8.04
11570.00	Peak	32.09	22.43	54.52	74.00	-19.48

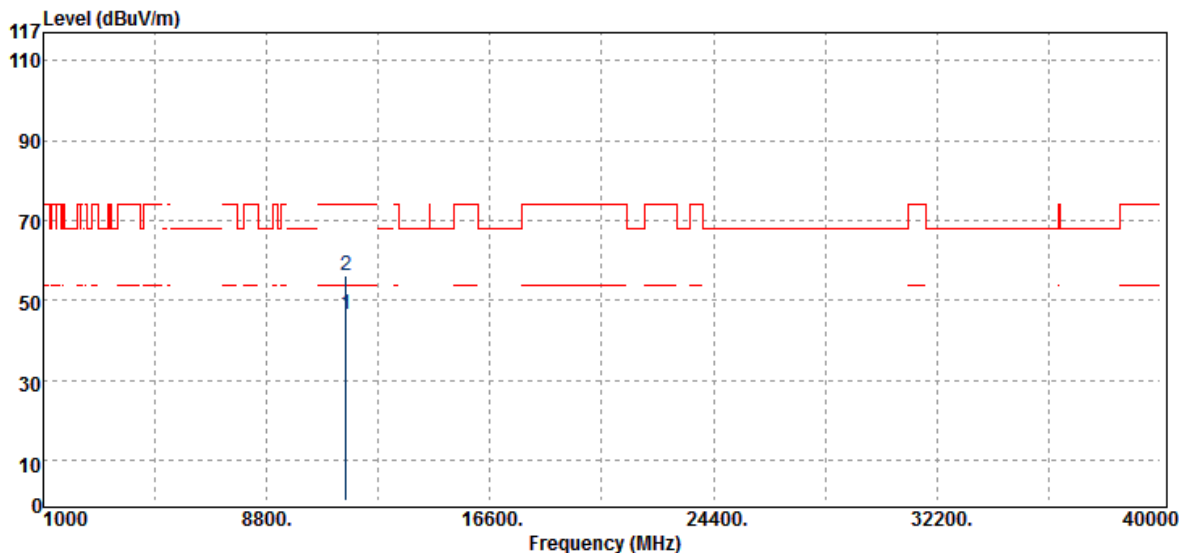
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Operation Band :802.11aB4
Fundamental Frequency :5785 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11570.00	Average	24.32	22.43	46.75	54.00	-7.25
11570.00	Peak	33.65	22.43	56.08	74.00	-17.92

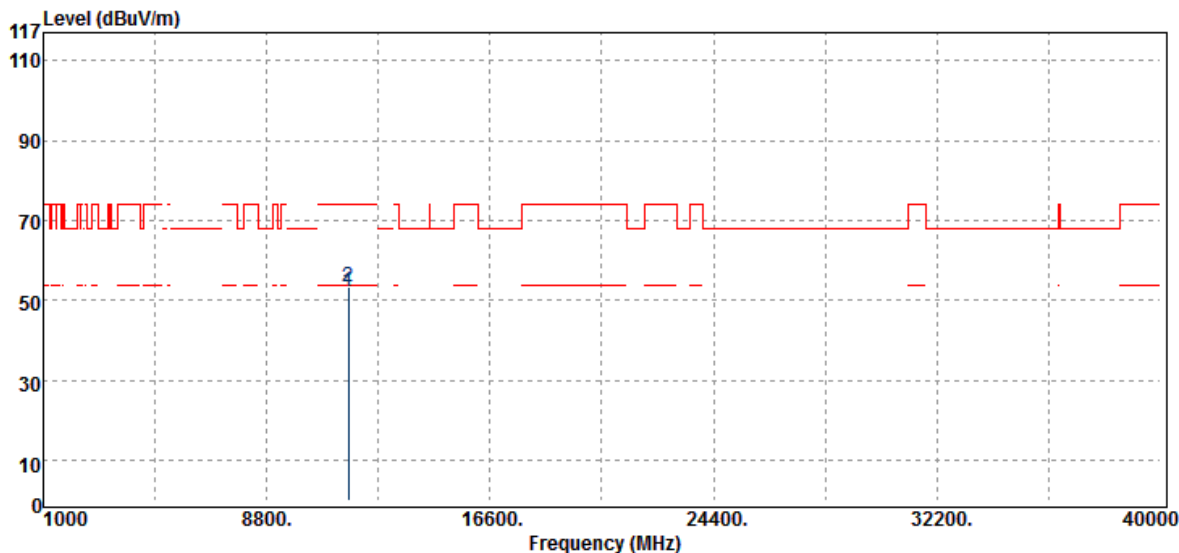
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Operation Band :802.11aB4
 Fundamental Frequency :5825 MHz
 Operation Mode :Tx CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11650.00	Average	30.00	22.30	52.30	54.00	-1.70
11650.00	Peak	31.31	22.30	53.61	74.00	-20.39

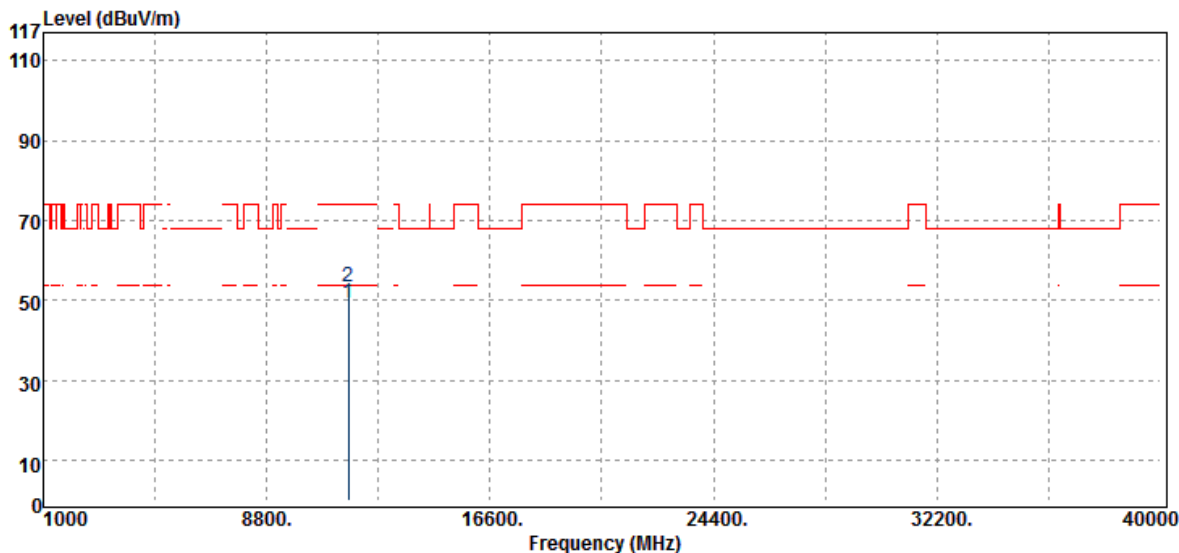
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Operation Band :802.11aB4
 Fundamental Frequency :5825 MHz
 Operation Mode :Tx CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11650.00	Average	26.92	22.30	49.22	54.00	-4.78
11650.00	Peak	31.11	22.30	53.41	74.00	-20.59

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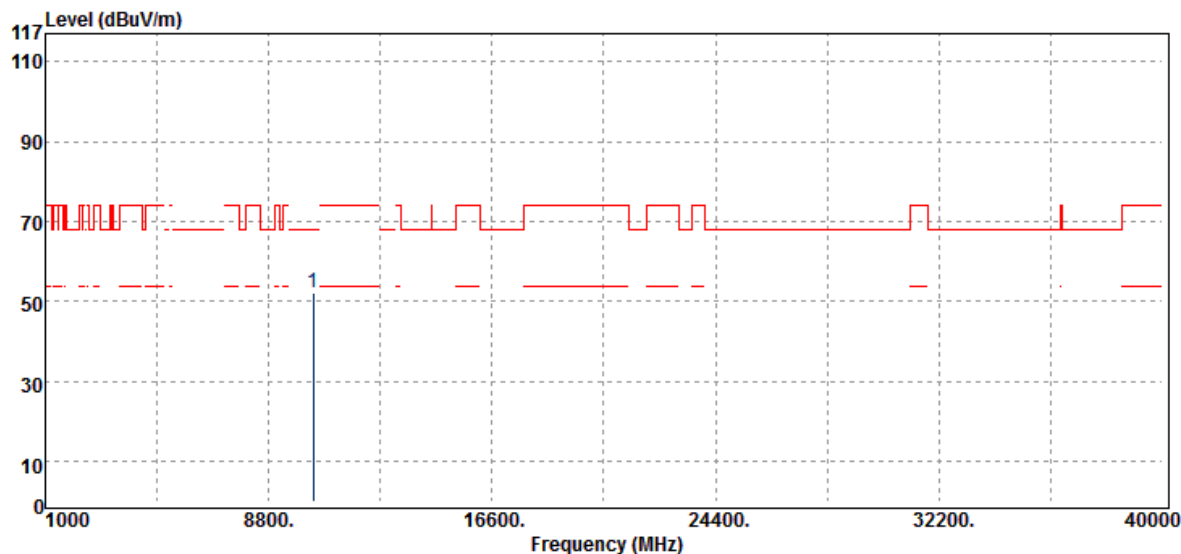
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Radiated Spurious Emission Measurement Result

802.11n HT20, 5150~5250 MHz

Operation Band :802.11n20B1
 Fundamental Frequency :5180 MHz
 Operation Mode :Tx CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10360.00	Peak	31.74	20.41	52.15	68.20	-16.05

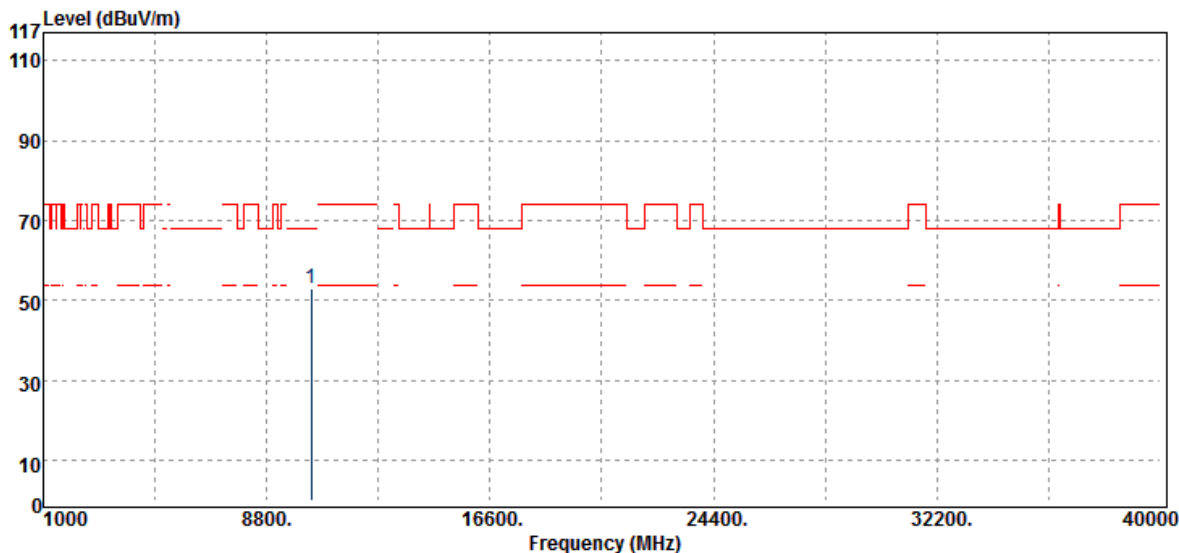
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Operation Band :802.11n20B1
Fundamental Frequency :5180 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10360.00	Peak	32.71	20.41	53.12	68.20	-15.08

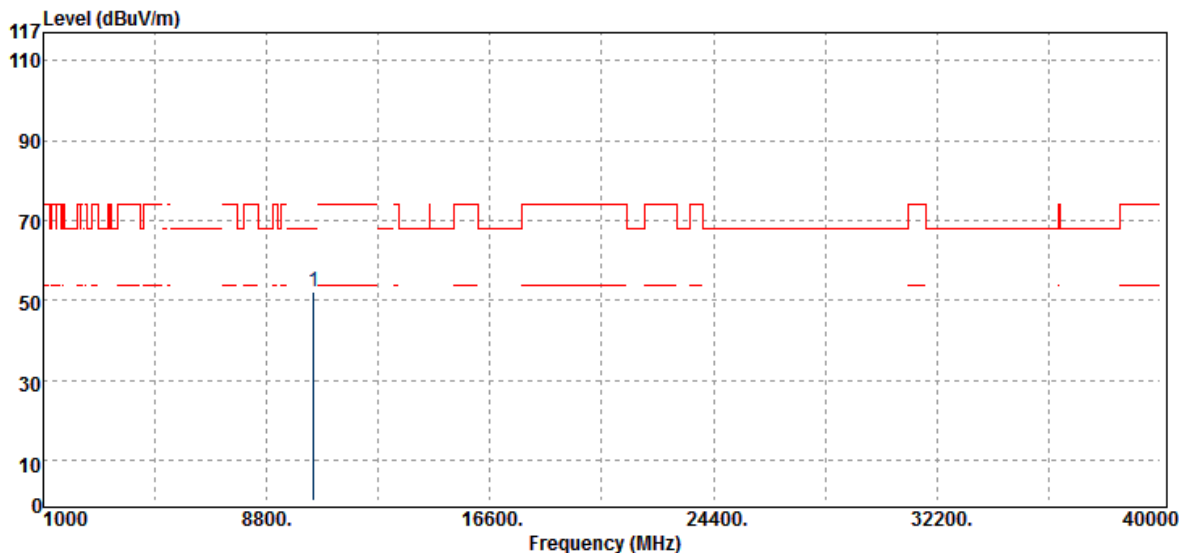
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Operation Band :802.11n20B1
Fundamental Frequency :5220 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10440.00	Peak	31.37	20.75	52.12	68.20	-16.08

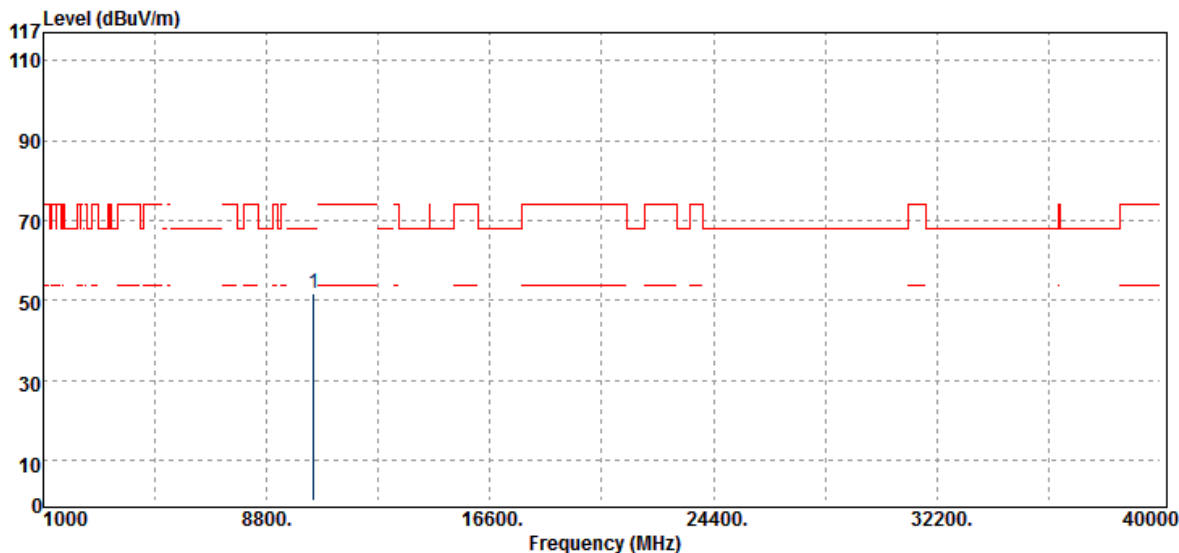
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Operation Band :802.11n20B1
Fundamental Frequency :5220 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10440.00	Peak	31.09	20.75	51.84	68.20	-16.36

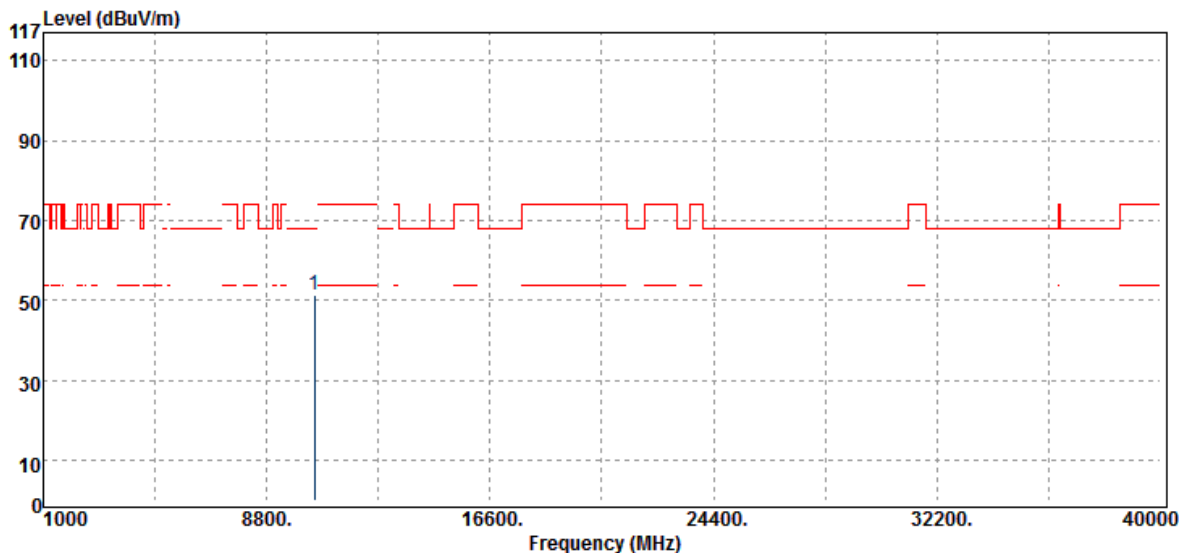
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Operation Band :802.11n20B1
Fundamental Frequency :5240 MHz
Operation Mode :Tx CH HIGH
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10480.00	Peak	30.71	20.79	51.50	68.20	-16.70

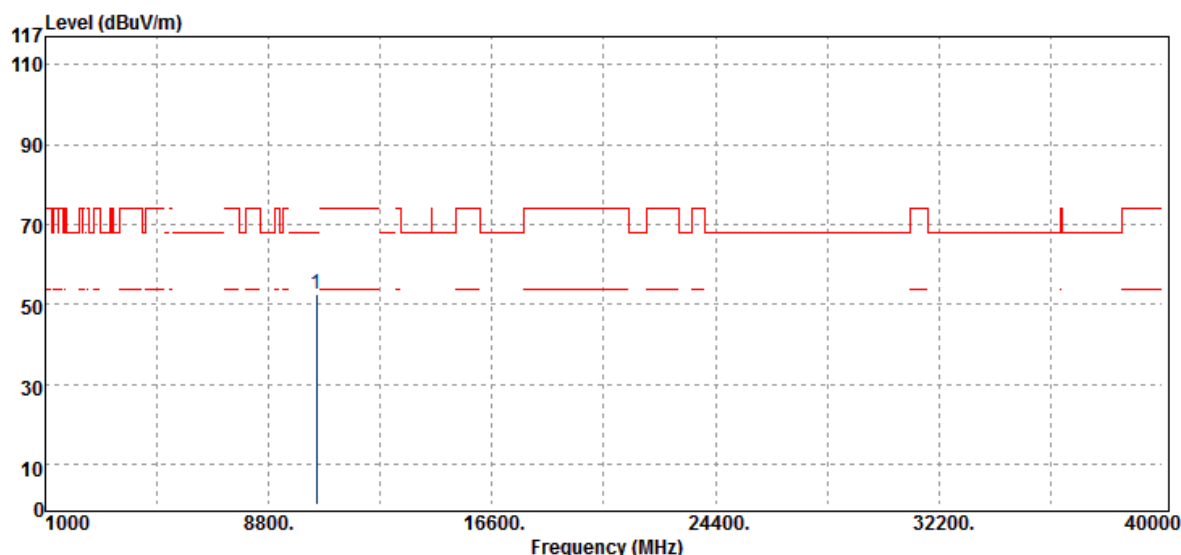
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Operation Band :802.11n20B1
Fundamental Frequency :5240 MHz
Operation Mode :Tx CH HIGH
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10480.00	Peak	31.81	20.79	52.60	68.20	-15.60

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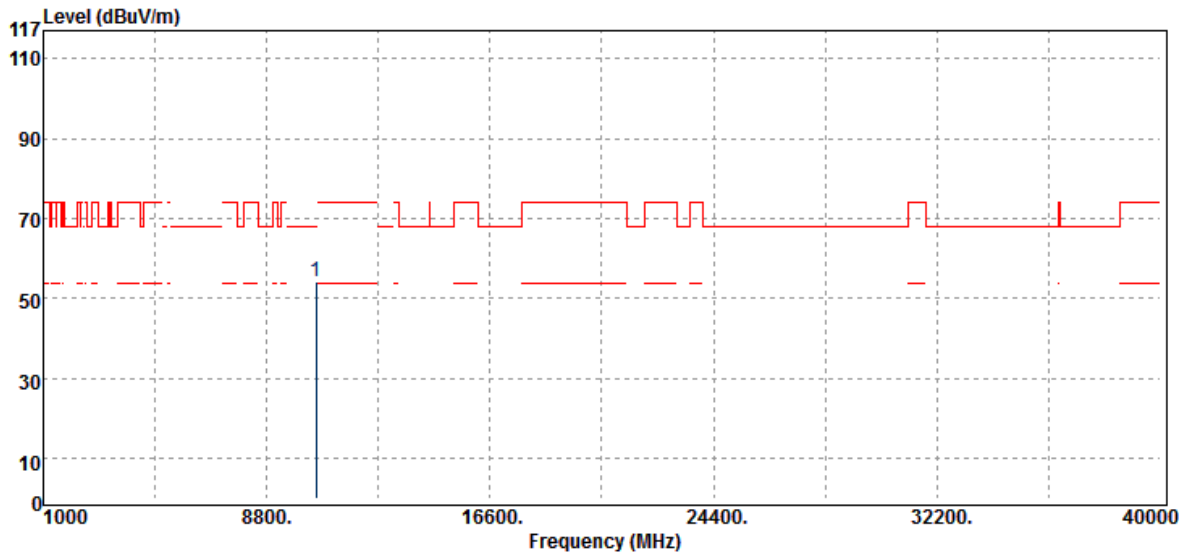
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Radiated Spurious Emission Measurement Result

802.11n HT20, 5250~5350 MHz

Operation Band :802.11n20B2
Fundamental Frequency :5260 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10520.00	Peak	33.27	20.78	54.05	68.20	-14.15

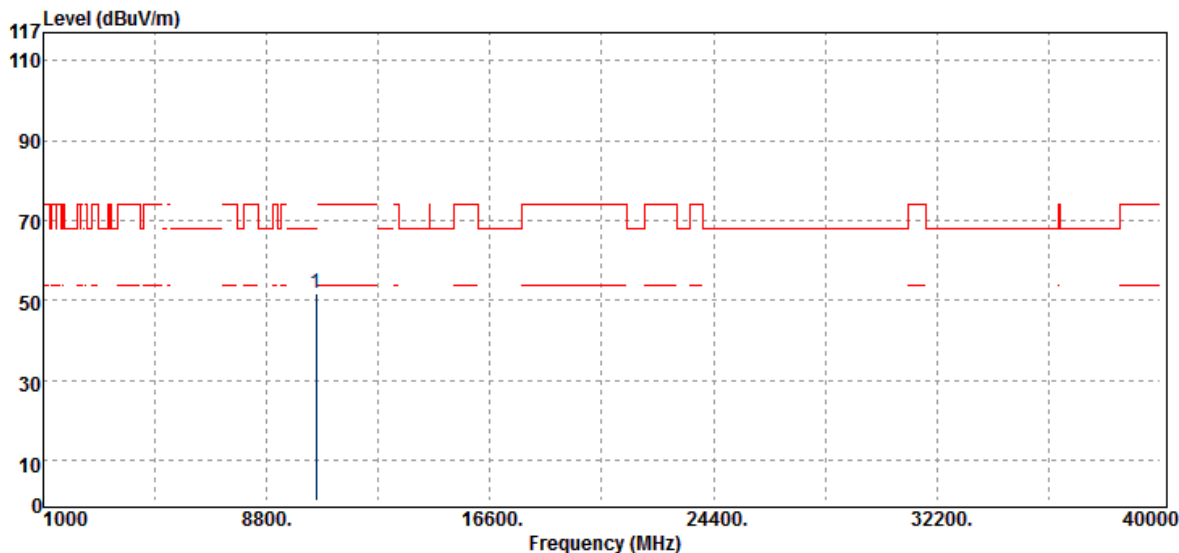
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Operation Band :802.11n20B2
Fundamental Frequency :5260 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10520.00	Peak	31.15	20.78	51.93	68.20	-16.27

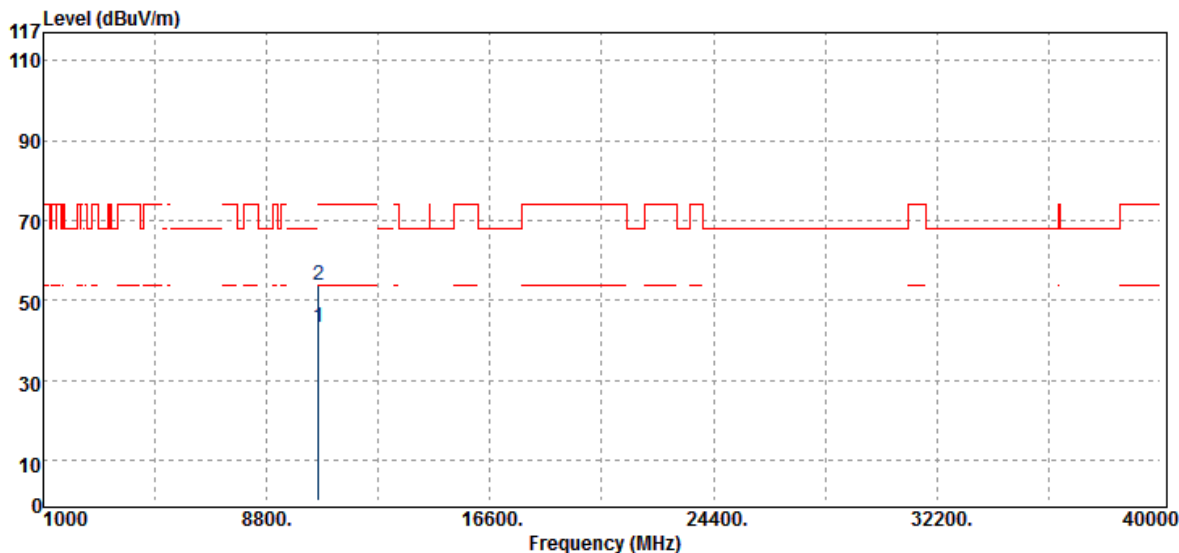
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Operation Band :802.11n20B2
Fundamental Frequency :5300 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
10600.00	Average	22.14	21.18	43.32	54.00	-10.68
10600.00	Peak	32.51	21.18	53.69	74.00	-20.31

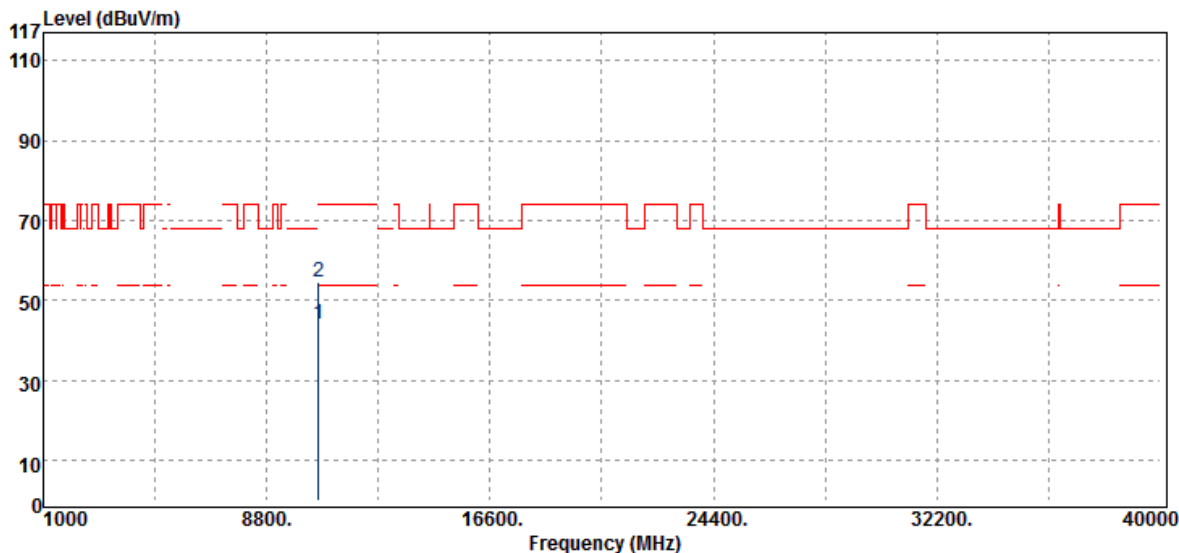
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Operation Band :802.11n20B2
Fundamental Frequency :5300 MHz
Operation Mode :Tx CH MID
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
10600.00	Average	23.05	21.18	44.23	54.00	-9.77
10600.00	Peak	33.30	21.18	54.48	74.00	-19.52

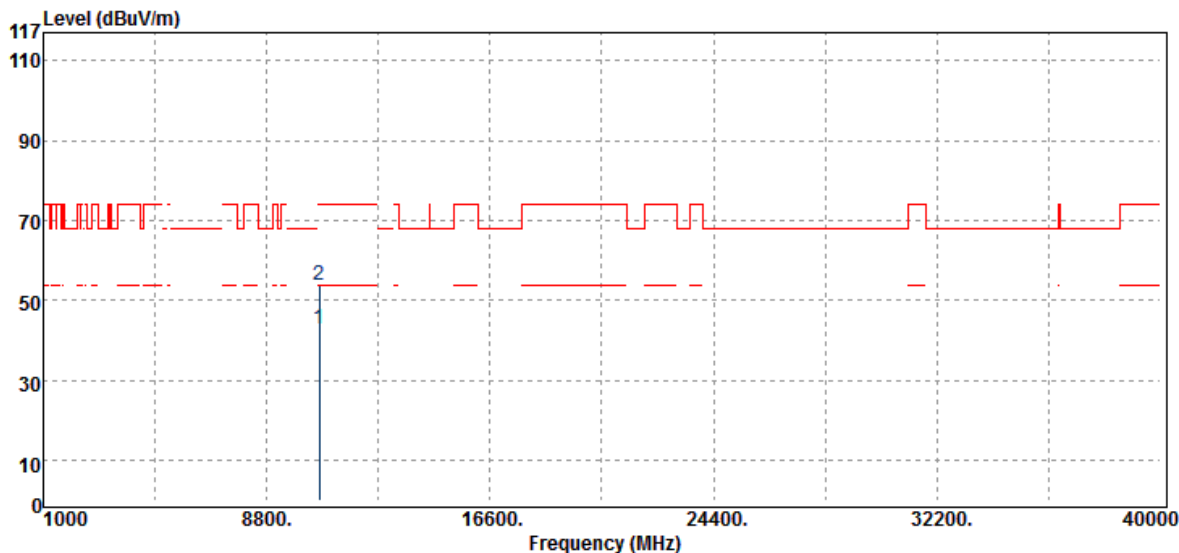
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Operation Band :802.11n20B2
Fundamental Frequency :5320 MHz
Operation Mode :Tx CH HIGH
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
10640.00	Average	21.87	21.24	43.11	54.00	-10.89
10640.00	Peak	32.40	21.24	53.64	74.00	-20.36

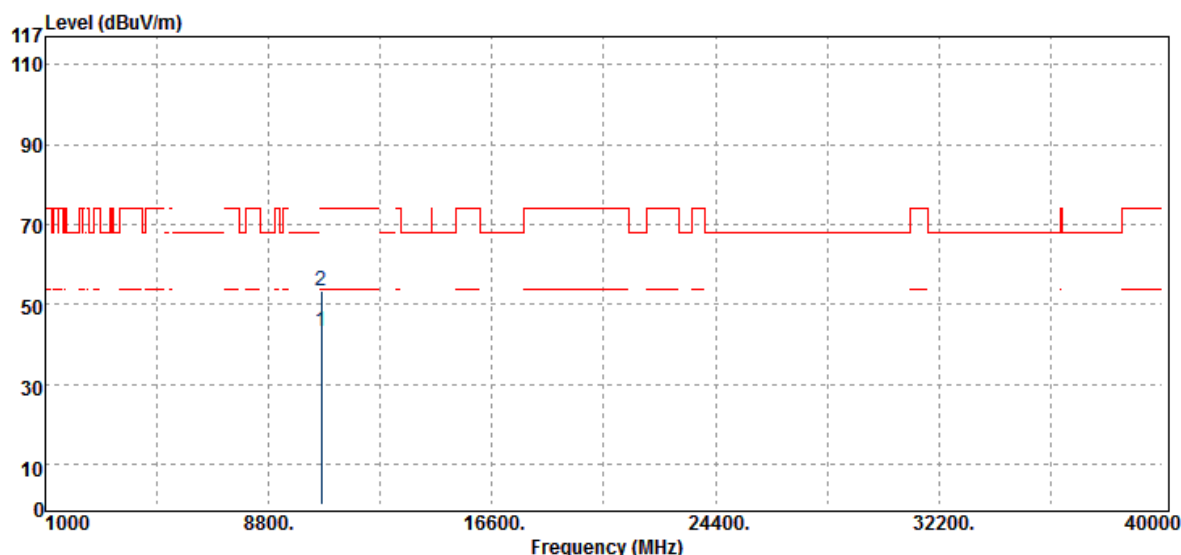
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Operation Band :802.11n20B2
Fundamental Frequency :5320 MHz
Operation Mode :Tx CH HIGH
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
10640.00	Average	21.98	21.24	43.22	54.00	-10.78
10640.00	Peak	32.27	21.24	53.51	74.00	-20.49

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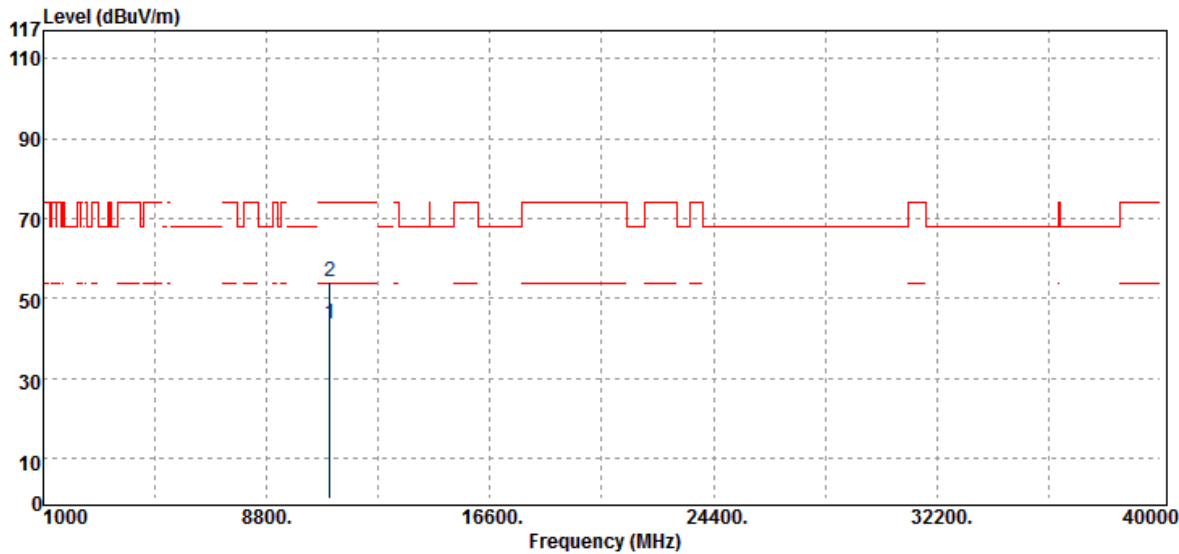
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Radiated Spurious Emission Measurement Result

802.11n HT20, 5470~5725 MHz

Operation Band :802.11n20B3
Fundamental Frequency :5500 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11000.00	Average	21.46	22.17	43.63	54.00	-10.37
11000.00	Peak	31.95	22.17	54.12	74.00	-19.88

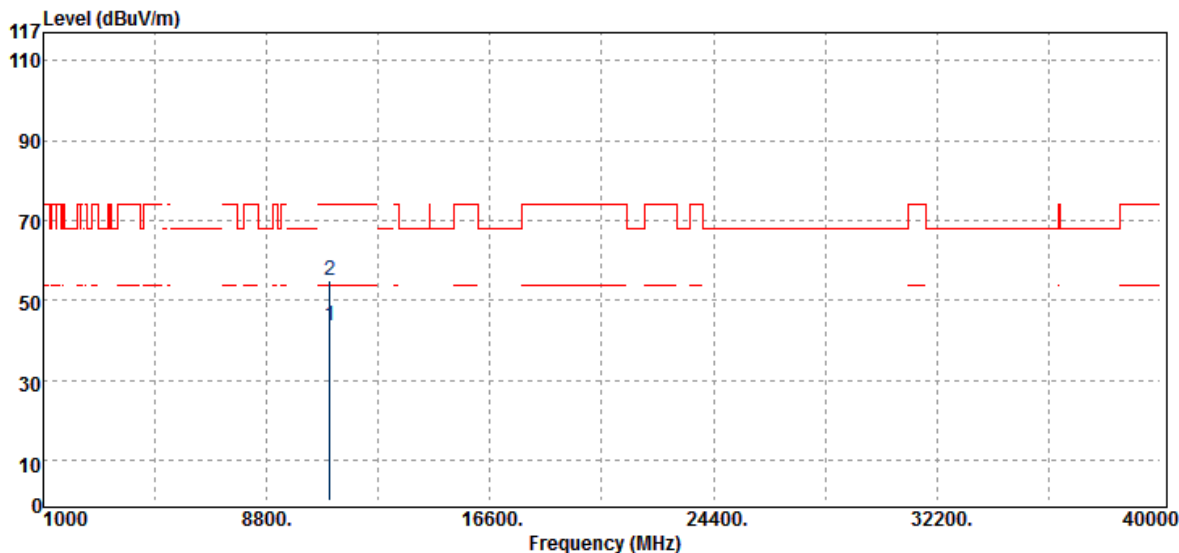
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Operation Band :802.11n20B3
 Fundamental Frequency :5500 MHz
 Operation Mode :Tx CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



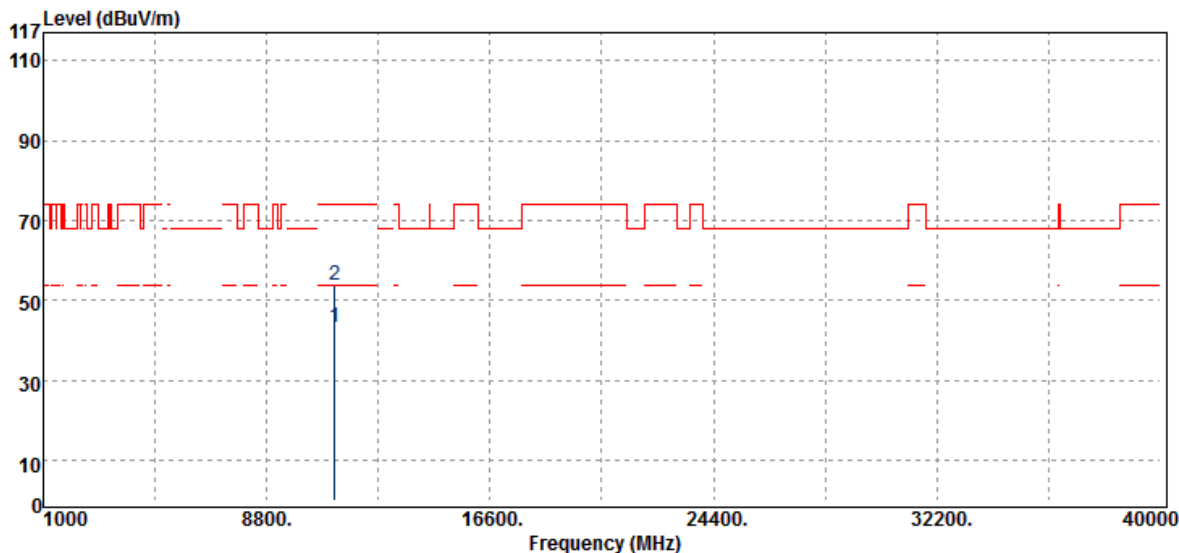
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11000.00	Average	21.69	22.17	43.86	54.00	-10.14
11000.00	Peak	32.74	22.17	54.91	74.00	-19.09

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Operation Band	:802.11n20B3	Test Date	:2018-11-21
Fundamental Frequency	:5580 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11160.00	Average	21.18	22.31	43.49	54.00	-10.51
11160.00	Peak	31.64	22.31	53.95	74.00	-20.05

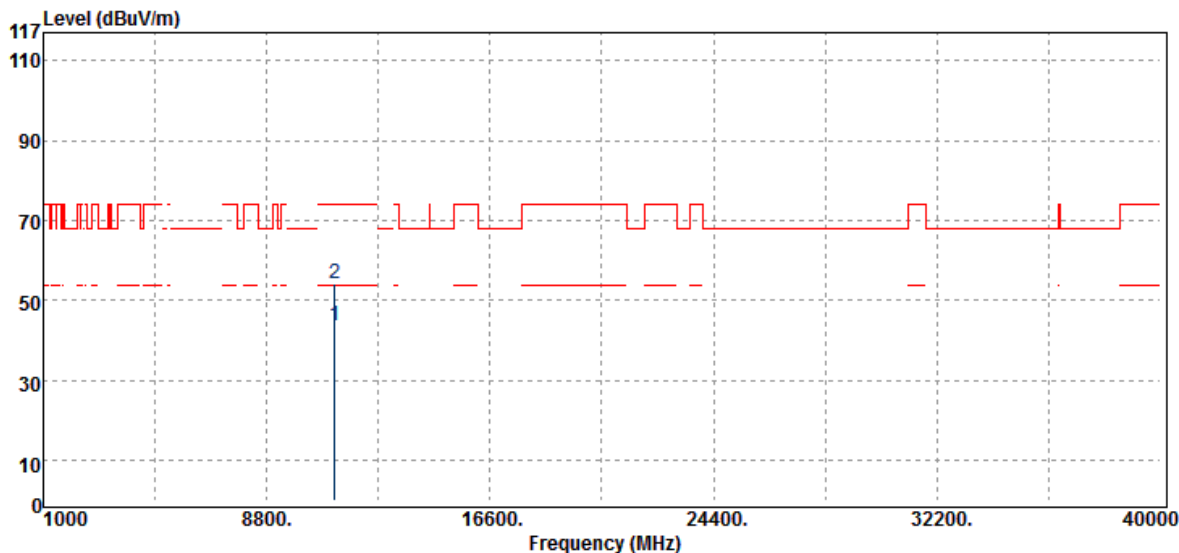
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Operation Band :802.11n20B3
 Fundamental Frequency :5580 MHz
 Operation Mode :Tx CH MID
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11160.00	Average	21.40	22.31	43.71	54.00	-10.29
11160.00	Peak	31.85	22.31	54.16	74.00	-19.84

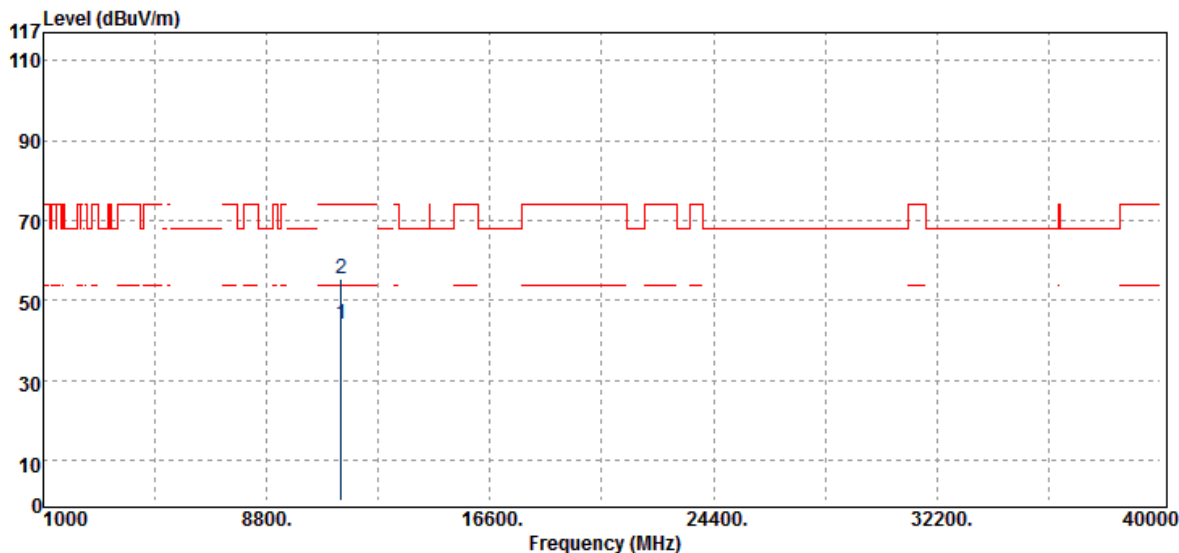
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Operation Band :802.11n20B3
Fundamental Frequency :5700 MHz
Operation Mode :Tx CH HIGH
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11400.00	Average	21.71	22.42	44.13	54.00	-9.87
11400.00	Peak	32.90	22.42	55.32	74.00	-18.68

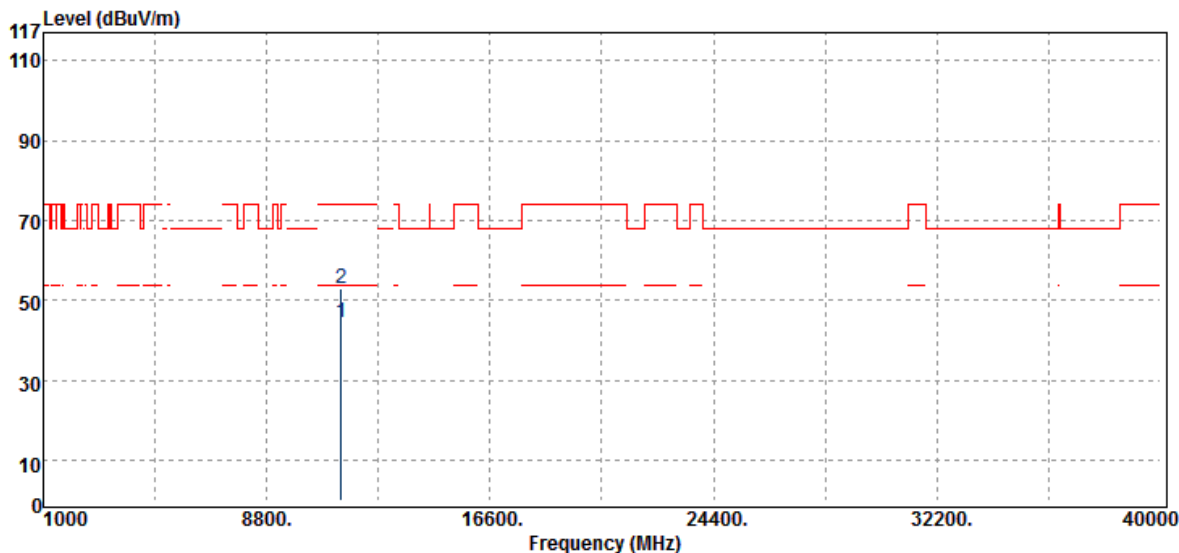
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Operation Band :802.11n20B3
 Fundamental Frequency :5700 MHz
 Operation Mode :Tx CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11400.00	Average	22.05	22.42	44.47	54.00	-9.53
11400.00	Peak	30.56	22.42	52.98	74.00	-21.02

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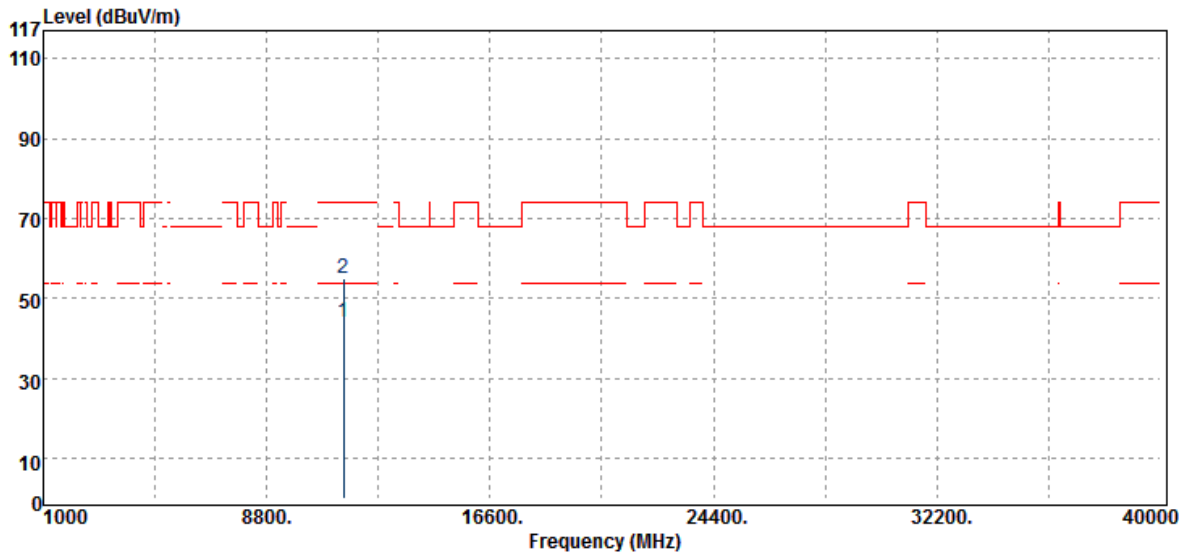
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Radiated Spurious Emission Measurement Result

802.11n HT20, 5725~5850 MHz

Operation Band :802.11n20B4
Fundamental Frequency :5745 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11490.00	Average	21.87	22.41	44.28	54.00	-9.72
11490.00	Peak	32.51	22.41	54.92	74.00	-19.08

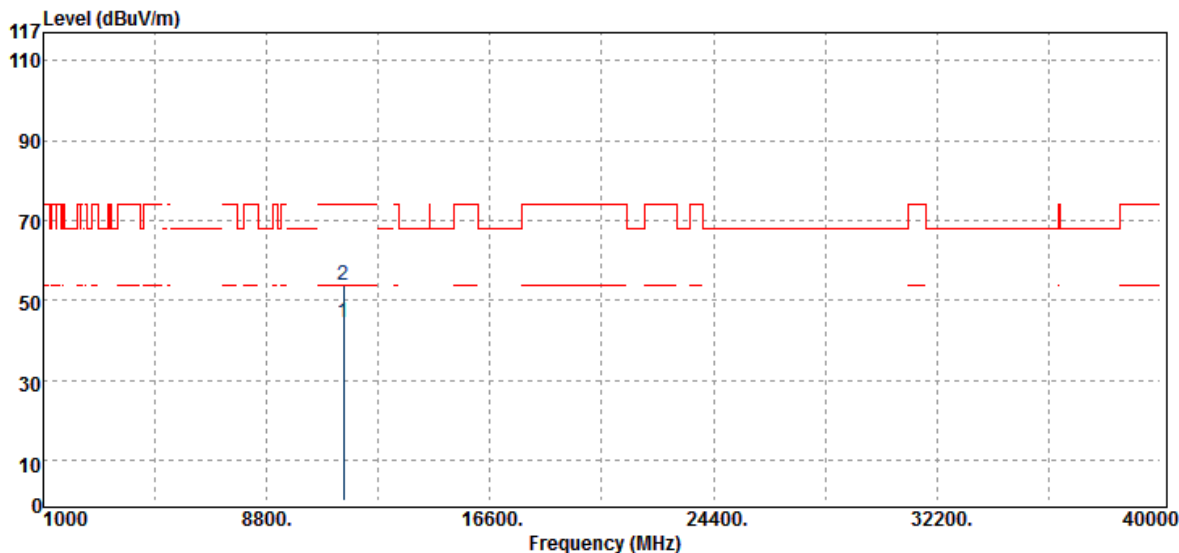
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Operation Band :802.11n20B4
 Fundamental Frequency :5745 MHz
 Operation Mode :Tx CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11490.00	Average	22.12	22.41	44.53	54.00	-9.47
11490.00	Peak	31.63	22.41	54.04	74.00	-19.96

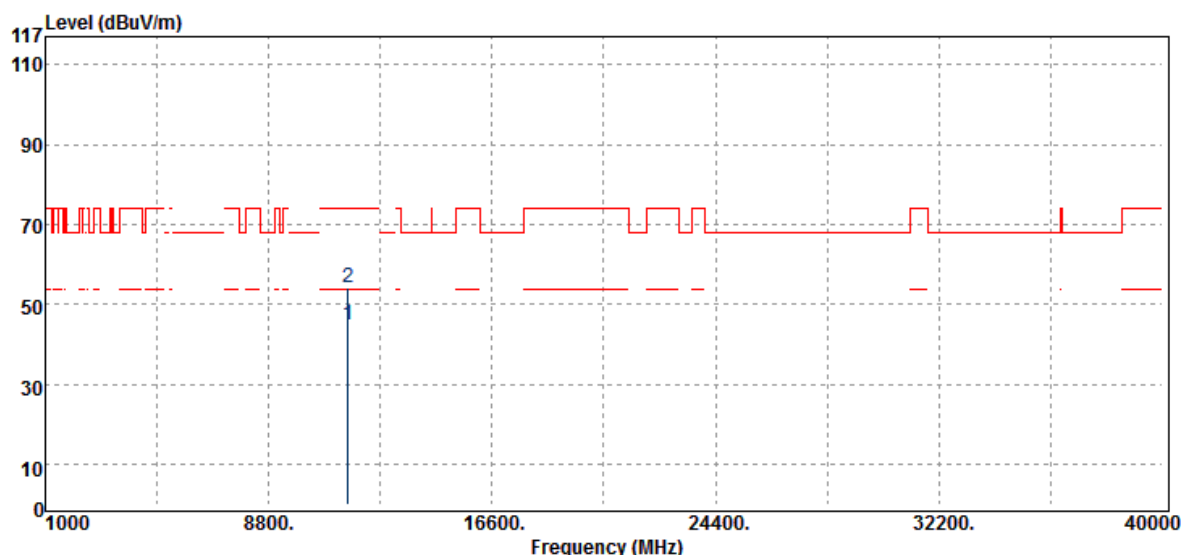
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Operation Band :802.11n20B4
 Fundamental Frequency :5785 MHz
 Operation Mode :Tx CH MID
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11570.00	Average	22.32	22.43	44.75	54.00	-9.25
11570.00	Peak	31.73	22.43	54.16	74.00	-19.84

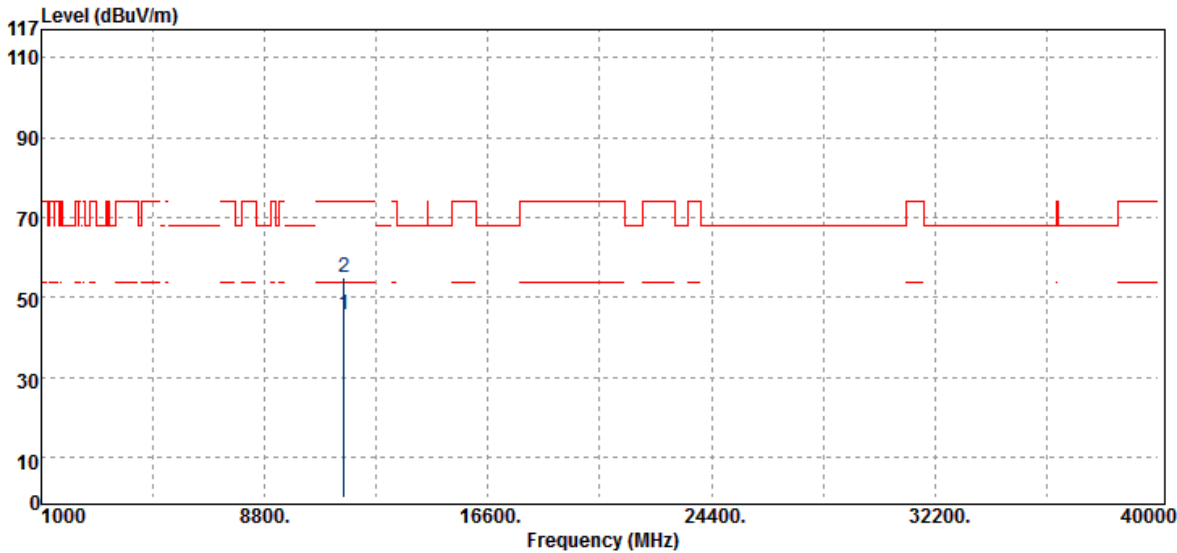
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Operation Band :802.11n20B4
 Fundamental Frequency :5785 MHz
 Operation Mode :Tx CH MID
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11570.00	Average	23.14	22.43	45.57	54.00	-8.43
11570.00	Peak	32.57	22.43	55.00	74.00	-19.00

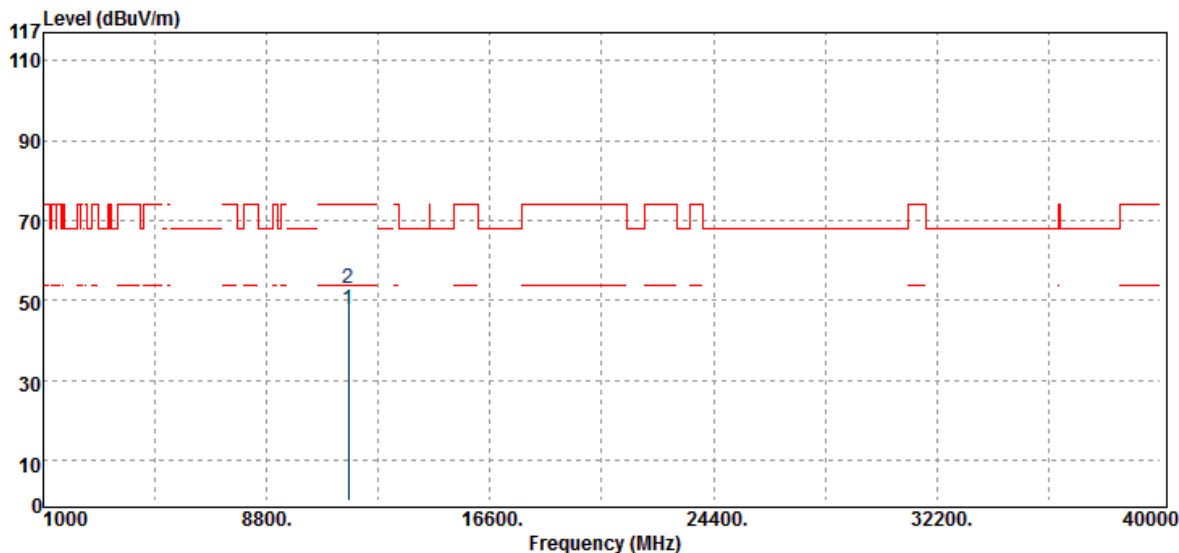
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Operation Band :802.11n20B4
Fundamental Frequency :5825 MHz
Operation Mode :Tx CH HIGH
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11650.00	Average	25.55	22.30	47.85	54.00	-6.15
11650.00	Peak	30.66	22.30	52.96	74.00	-21.04

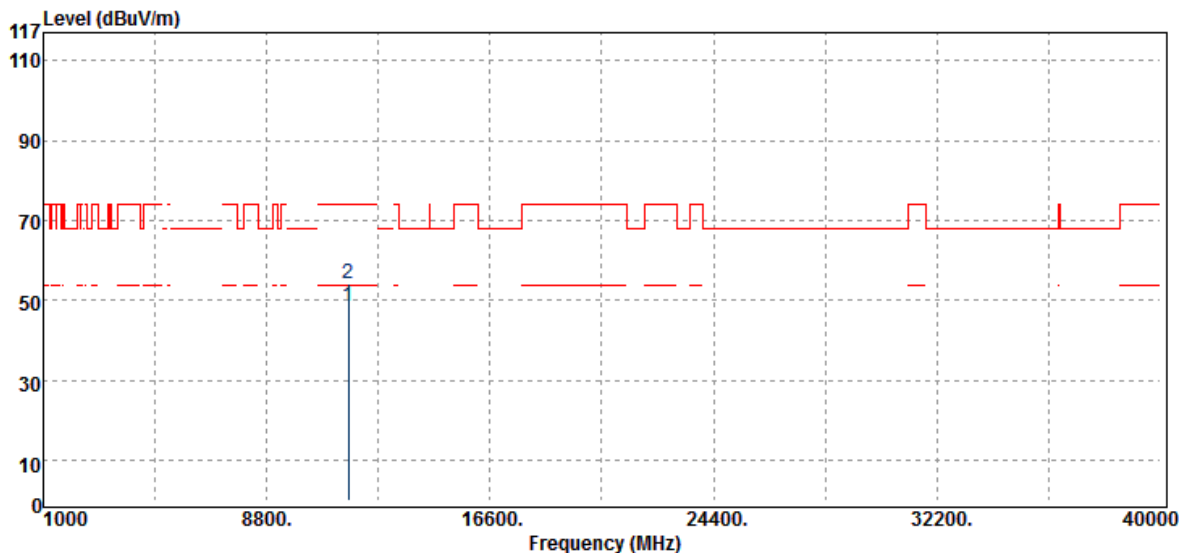
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Operation Band :802.11n20B4
Fundamental Frequency :5825 MHz
Operation Mode :Tx CH HIGH
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11650.00	Average	26.12	22.30	48.42	54.00	-5.58
11650.00	Peak	32.04	22.30	54.34	74.00	-19.66

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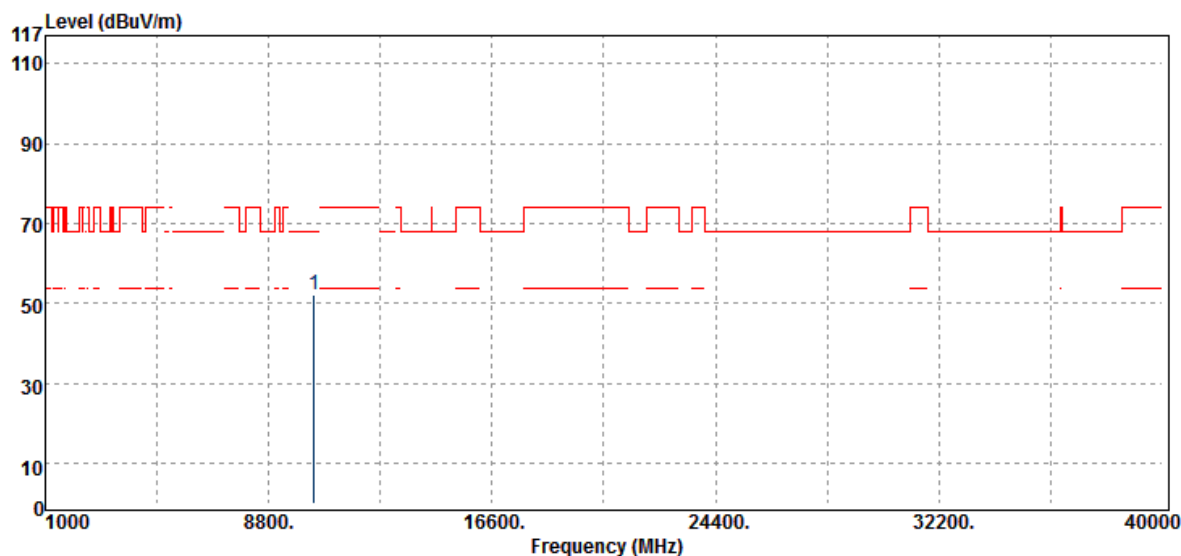
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Radiated Spurious Emission Measurement Result

802.11n HT40, 5150~5250 MHz

Operation Band :802.11n40B1
 Fundamental Frequency :5190 MHz
 Operation Mode :Tx CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10380.00	Peak	31.65	20.48	52.13	68.20	-16.07

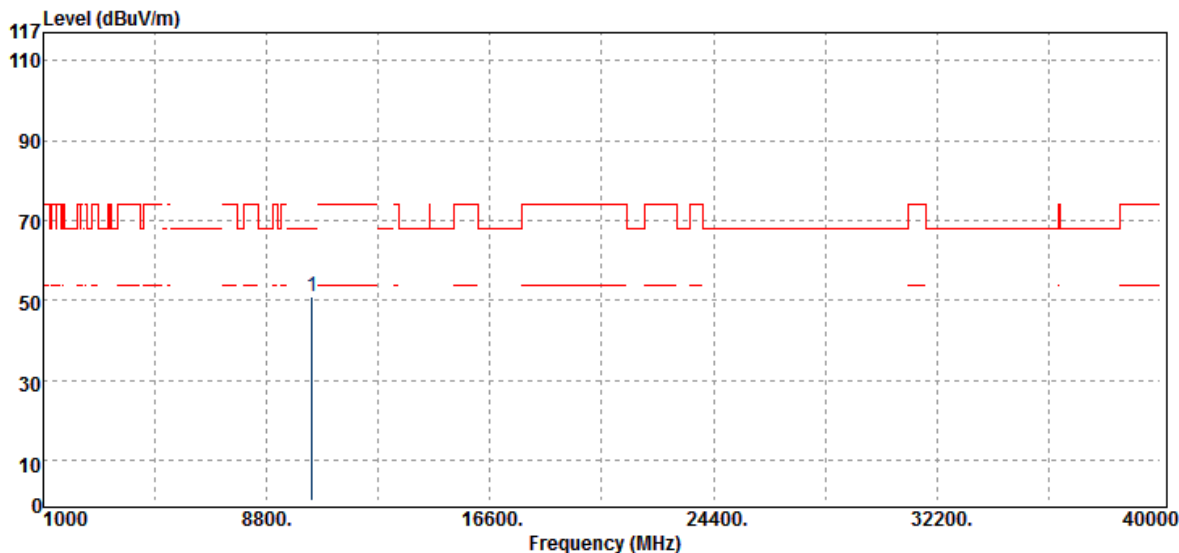
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Operation Band :802.11n40B1
 Fundamental Frequency :5190 MHz
 Operation Mode :Tx CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10380.00	Peak	30.70	20.48	51.18	68.20	-17.02

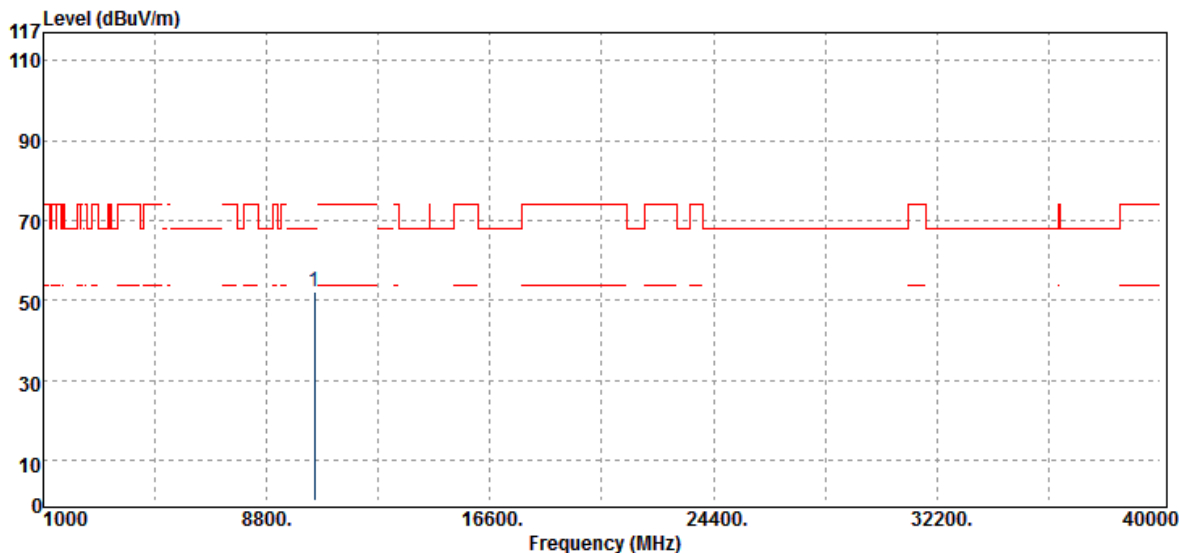
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Operation Band :802.11n40B1
Fundamental Frequency :5230 MHz
Operation Mode :Tx CH HIGH
EUT Pol. :E2 Plane

Test Date :2018-11-22
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10460.00	Peak	31.60	20.77	52.37	68.20	-15.83

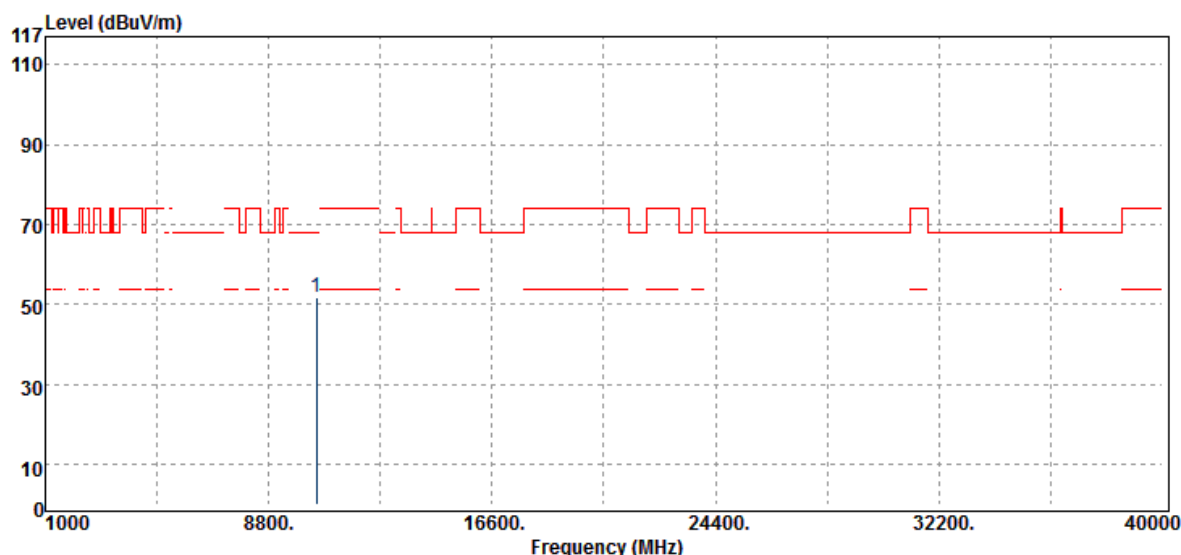
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Operation Band :802.11n40B1
Fundamental Frequency :5230 MHz
Operation Mode :Tx CH HIGH
EUT Pol. :E2 Plane

Test Date :2018-11-22
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10460.00	Peak	31.12	20.77	51.89	68.20	-16.31

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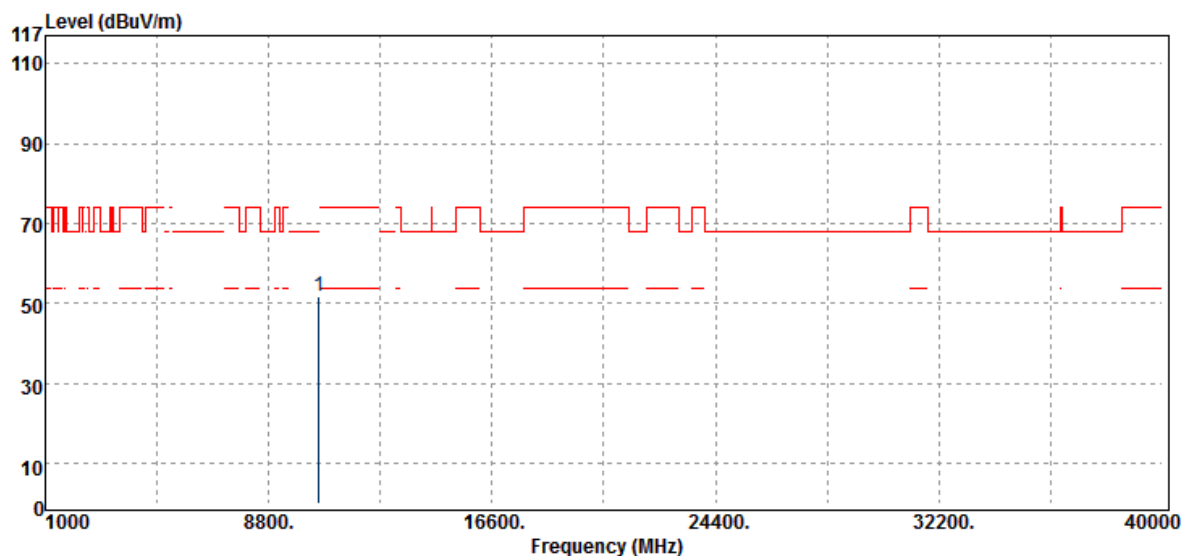
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Radiated Spurious Emission Measurement Result

802.11n HT40, 5250~5350 MHz

Operation Band :802.11n40B2
Fundamental Frequency :5270 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2018-11-22
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



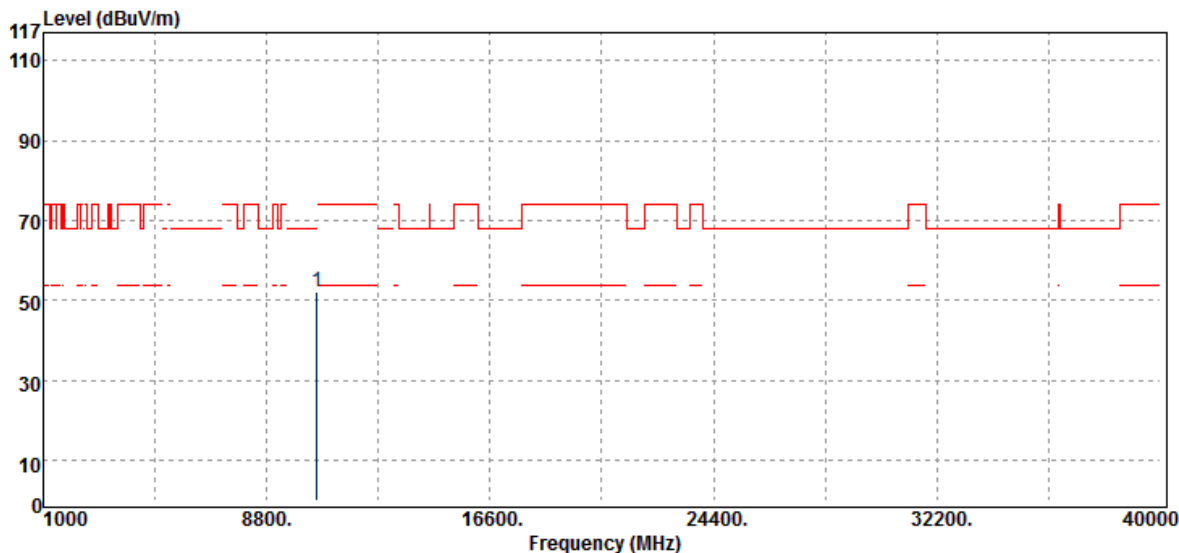
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10540.00	Peak	31.03	20.82	51.85	68.20	-16.35

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Operation Band	:802.11n40B2	Test Date	:2018-11-22
Fundamental Frequency	:5270 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10540.00	Peak	31.51	20.82	52.33	68.20	-15.87

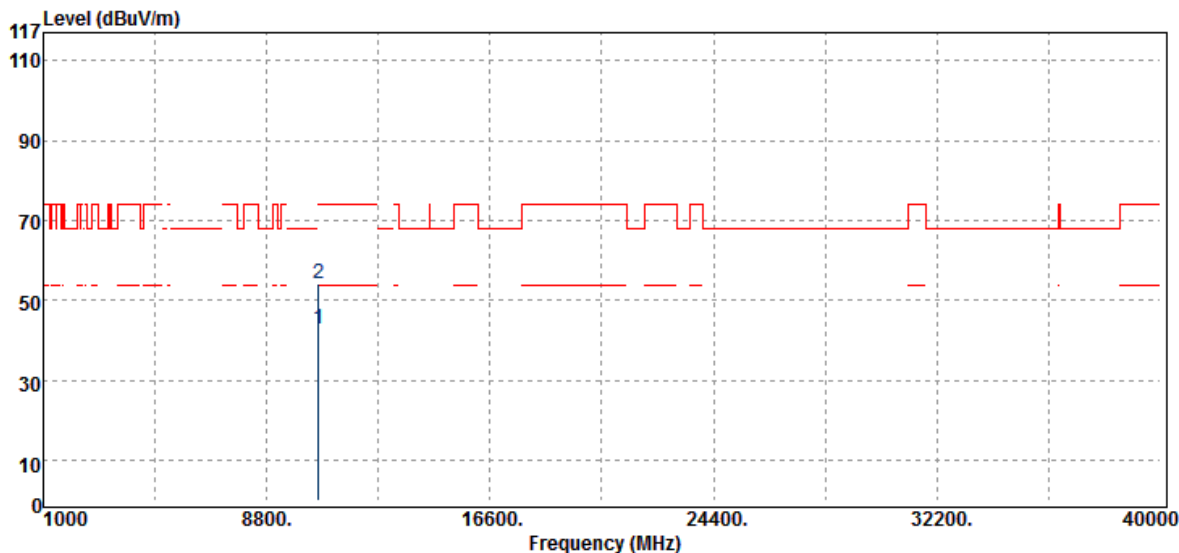
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Operation Band :802.11n40B2
 Fundamental Frequency :5310 MHz
 Operation Mode :Tx CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-22
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
10620.00	Average	21.82	21.21	43.03	54.00	-10.97
10620.00	Peak	33.24	21.21	54.45	74.00	-19.55

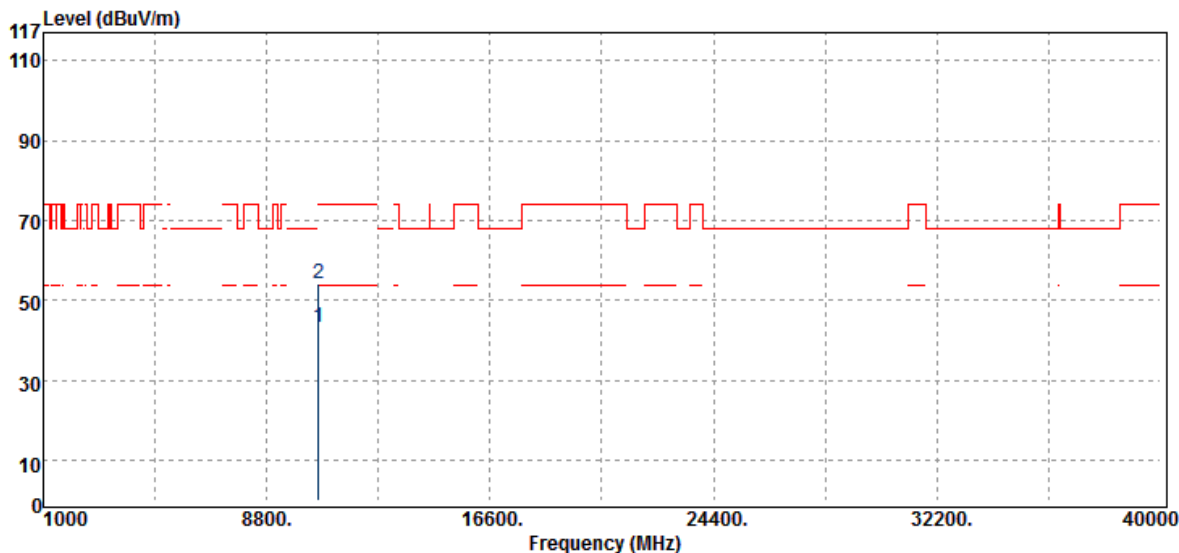
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Operation Band :802.11n40B2
 Fundamental Frequency :5310 MHz
 Operation Mode :Tx CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-22
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
10620.00	Average	22.19	21.21	43.40	54.00	-10.60
10620.00	Peak	33.02	21.21	54.23	74.00	-19.77

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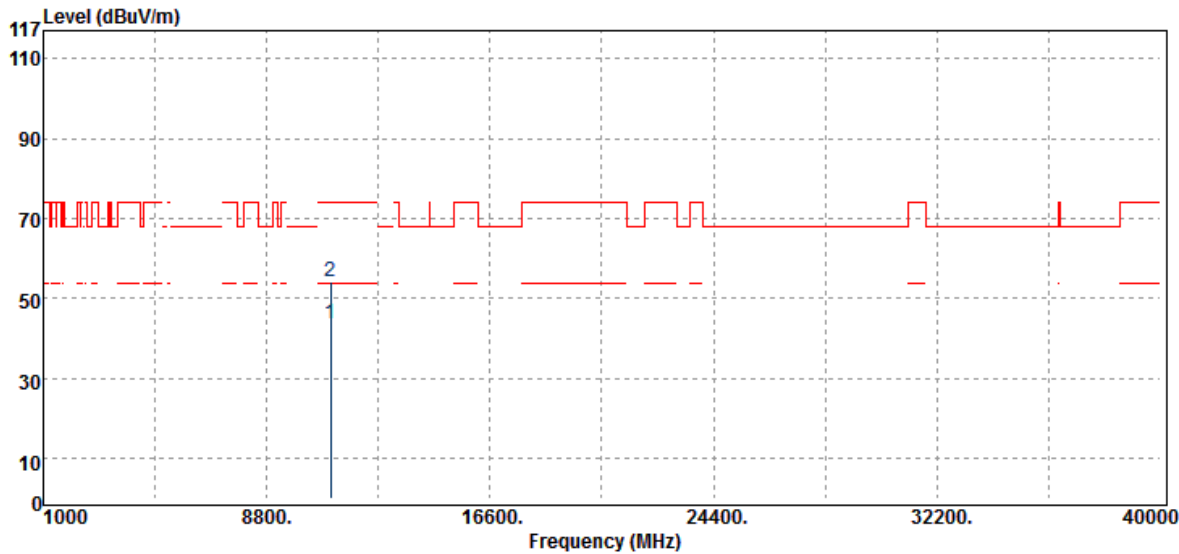
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Radiated Spurious Emission Measurement Result

802.11n HT40, 5470~5725 MHz

Operation Band :802.11n40B3
Fundamental Frequency :5510 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2018-11-22
Temp./Humi. :21 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



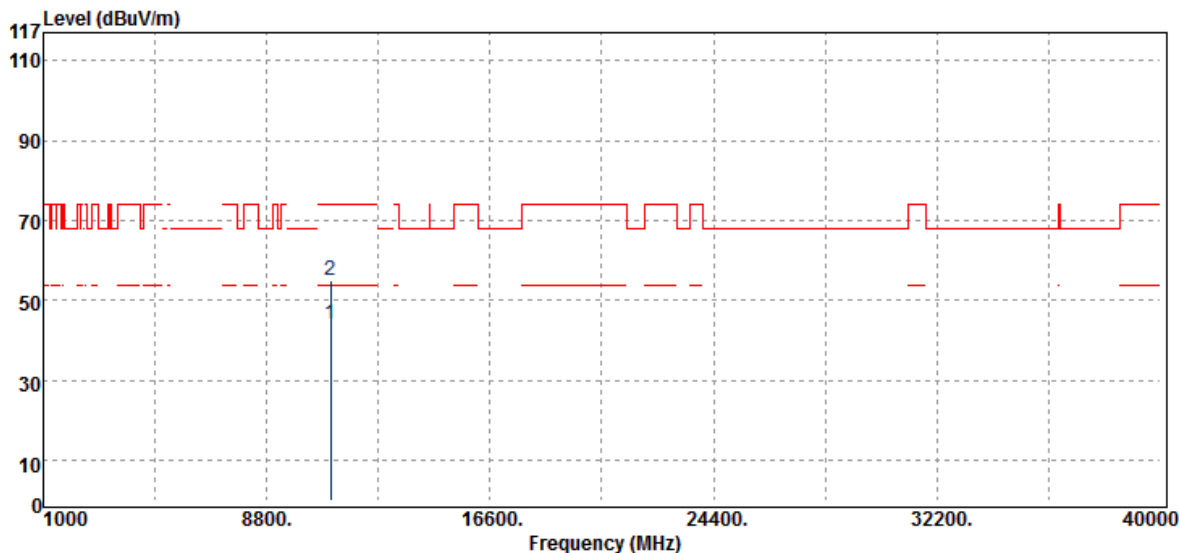
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11020.00	Average	21.45	22.28	43.73	54.00	-10.27
11020.00	Peak	31.77	22.28	54.05	74.00	-19.95

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Operation Band	:802.11n40B3	Test Date	:2018-11-22
Fundamental Frequency	:5510 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11020.00	Average	21.87	22.28	44.15	54.00	-9.85
11020.00	Peak	32.77	22.28	55.05	74.00	-18.95

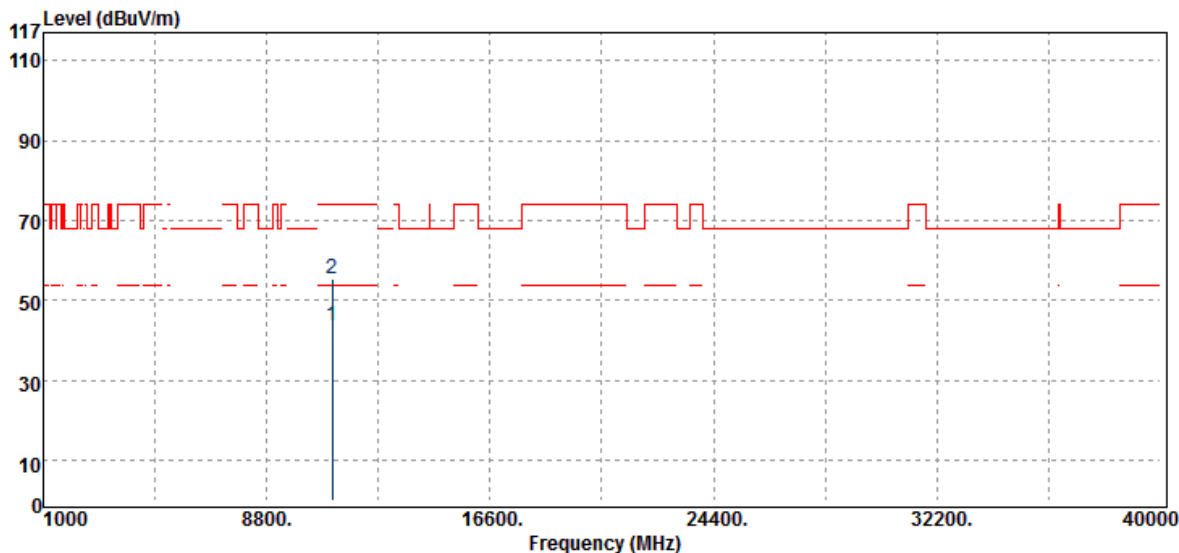
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Operation Band :802.11n40B3
 Fundamental Frequency :5550 MHz
 Operation Mode :Tx CH MID
 EUT Pol. :E2 Plane

Test Date :2018-11-22
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



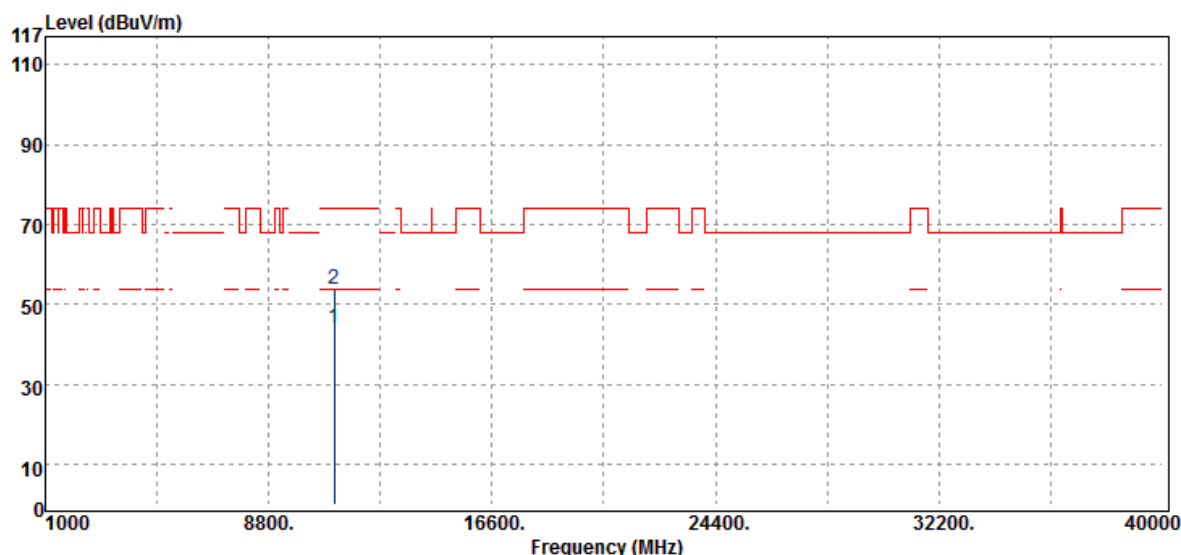
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11100.00	Average	21.38	22.38	43.76	54.00	-10.24
11100.00	Peak	32.99	22.38	55.37	74.00	-18.63

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Operation Band	:802.11n40B3	Test Date	:2018-11-22
Fundamental Frequency	:5550 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



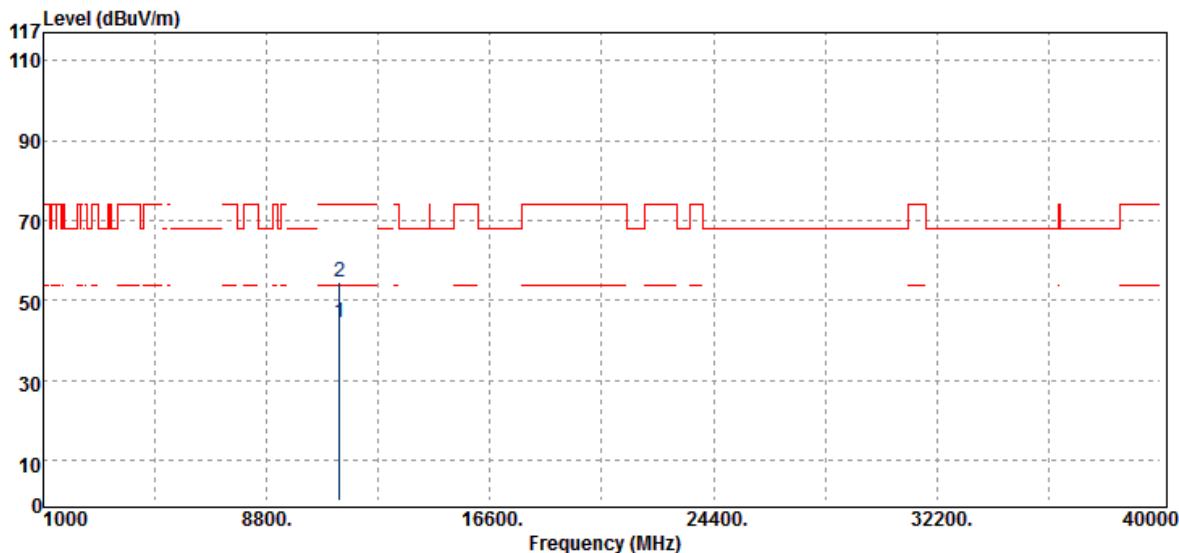
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11100.00	Average	21.94	22.38	44.32	54.00	-9.68
11100.00	Peak	31.46	22.38	53.84	74.00	-20.16

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Operation Band	:802.11n40B3	Test Date	:2018-11-22
Fundamental Frequency	:5670 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11340.00	Average	22.09	22.34	44.43	54.00	-9.57
11340.00	Peak	32.15	22.34	54.49	74.00	-19.51

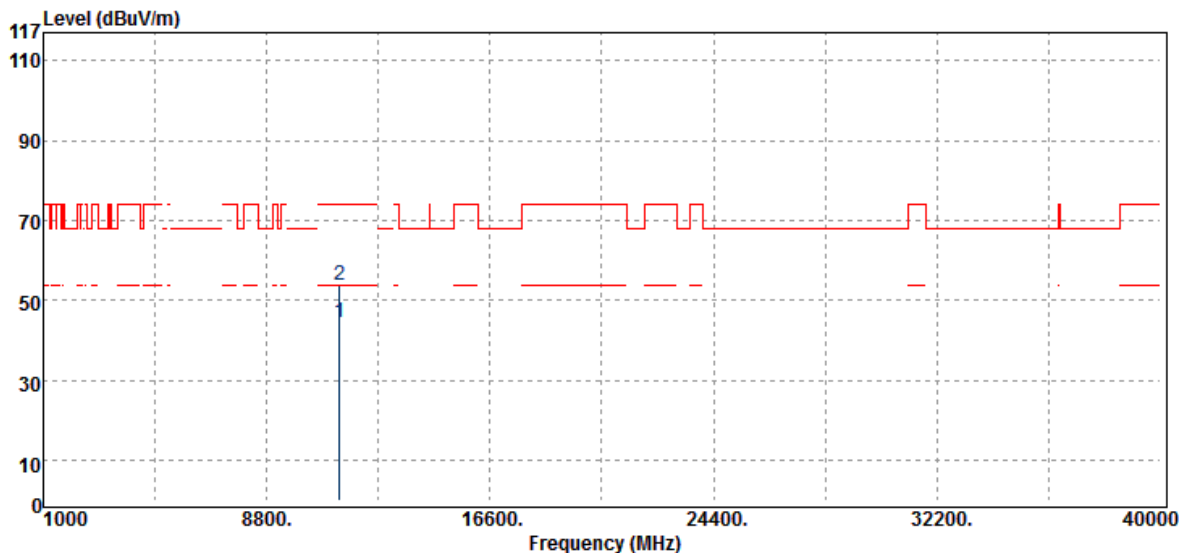
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Operation Band :802.11n40B3
 Fundamental Frequency :5670 MHz
 Operation Mode :Tx CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-22
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11340.00	Average	22.29	22.34	44.63	54.00	-9.37
11340.00	Peak	31.45	22.34	53.79	74.00	-20.21

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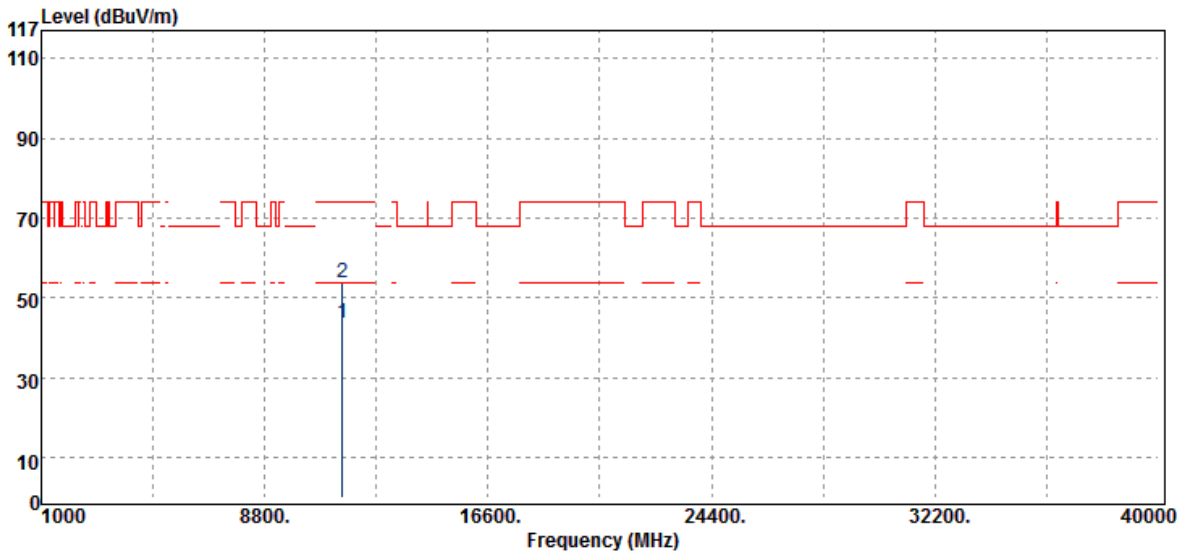
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Radiated Spurious Emission Measurement Result

802.11n HT40, 5725~5850 MHz

Operation Band :802.11n40B4
 Fundamental Frequency :5755 MHz
 Operation Mode :Tx CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-22
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



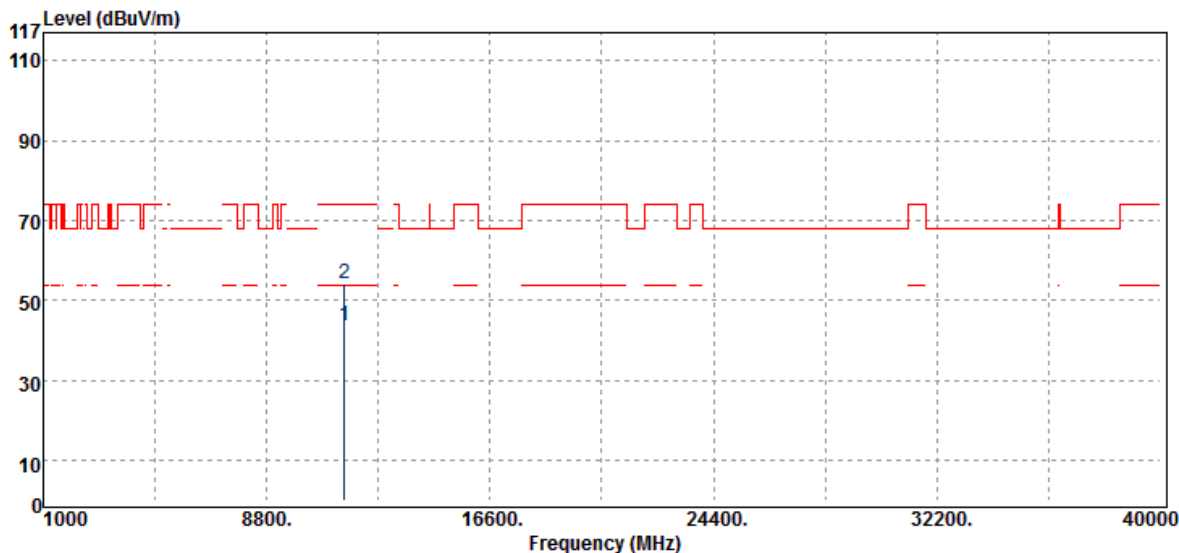
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11510.00	Average	21.17	22.46	43.63	54.00	-10.37
11510.00	Peak	31.57	22.46	54.03	74.00	-19.97

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Operation Band	:802.11n40B4	Test Date	:2018-11-22
Fundamental Frequency	:5755 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11510.00	Average	21.24	22.46	43.70	54.00	-10.30
11510.00	Peak	31.99	22.46	54.45	74.00	-19.55

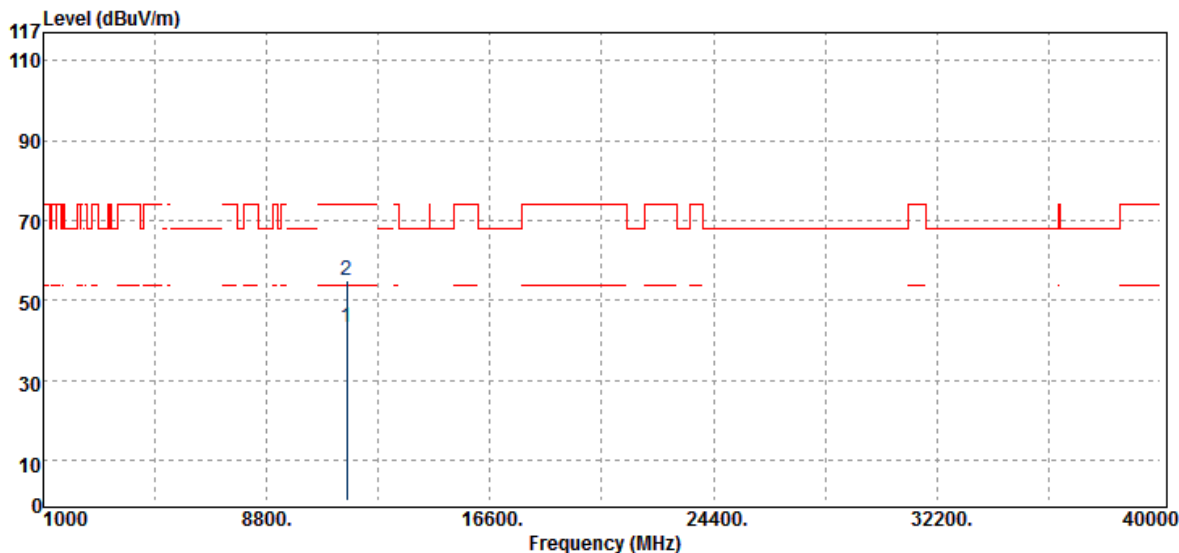
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Operation Band :802.11n40B4
 Fundamental Frequency :5795 MHz
 Operation Mode :Tx CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-22
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11590.00	Average	21.11	22.39	43.50	54.00	-10.50
11590.00	Peak	32.48	22.39	54.87	74.00	-19.13

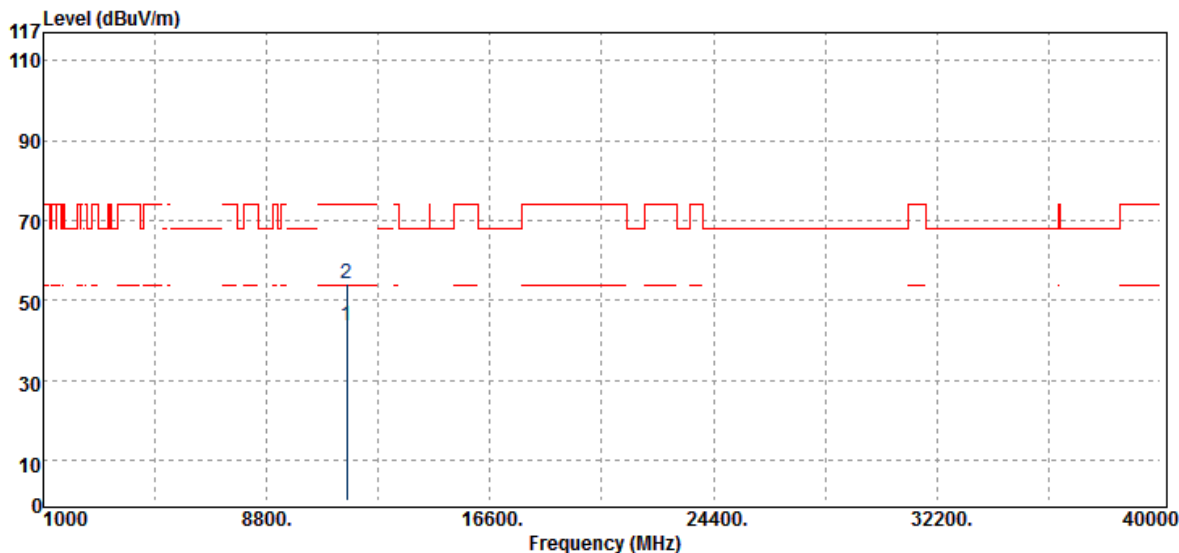
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Operation Band :802.11n40B4
 Fundamental Frequency :5795 MHz
 Operation Mode :Tx CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-22
 Temp./Humi. :21 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
11590.00	Average	21.44	22.39	43.83	54.00	-10.17
11590.00	Peak	31.70	22.39	54.09	74.00	-19.91

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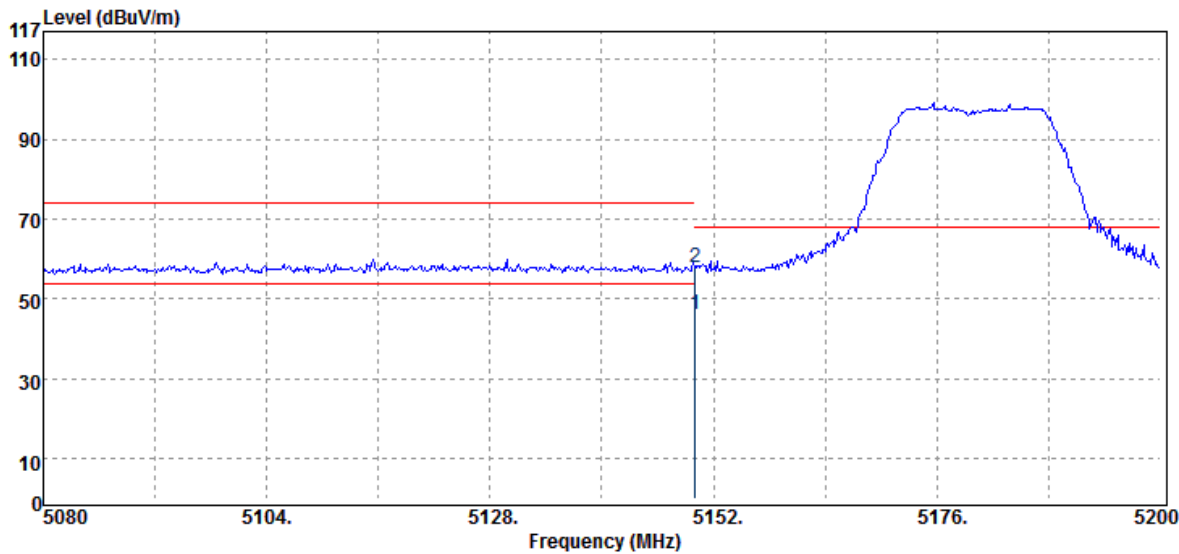
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Band edge falling to restricted band

802.11a mode

Operation Band	:802.11aB1	Test Date	:2018-11-20
Fundamental Frequency	:5180 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Bandedge CH LOW	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5150.00	Average	37.81	8.32	46.13	54.00	-7.87
5150.00	Peak	49.60	8.32	57.92	74.00	-16.08

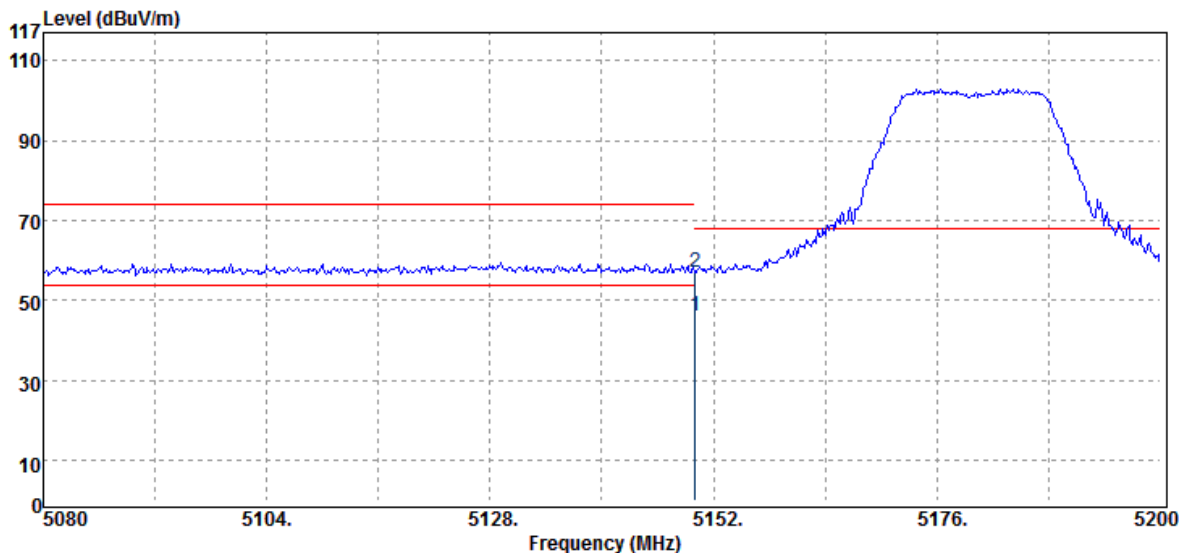
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Operation Band :802.11aB1
 Fundamental Frequency :5180 MHz
 Operation Mode :Bandedge CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-20
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5150.00	Average	37.67	8.32	45.99	54.00	-8.01
5150.00	Peak	48.87	8.32	57.19	74.00	-16.81

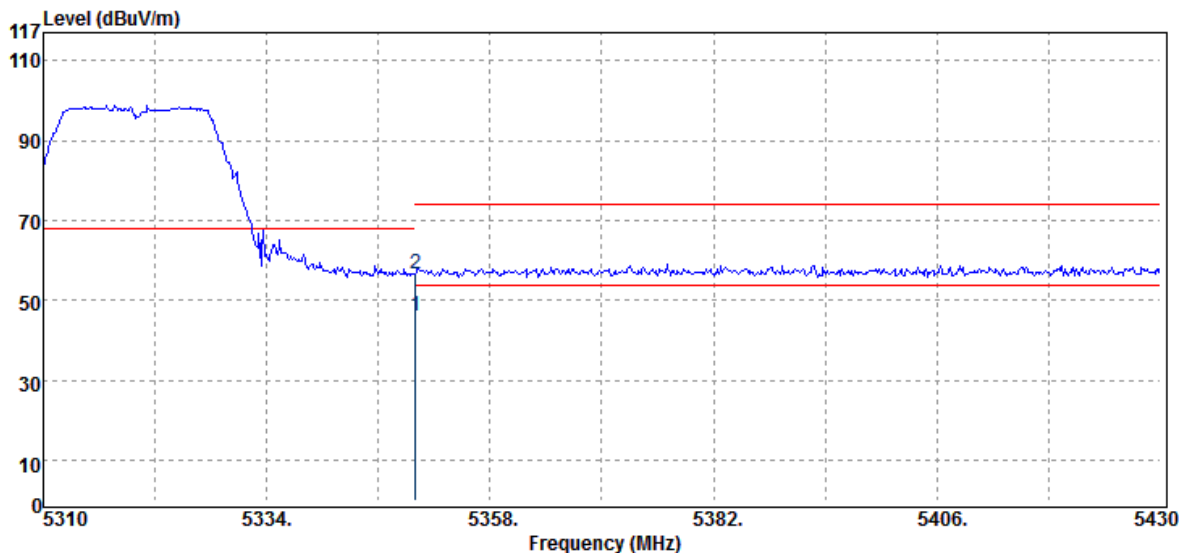
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Operation Band :802.11aB2
 Fundamental Frequency :5320 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-20
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5350.00	Average	37.50	8.63	46.13	54.00	-7.87
5350.00	Peak	48.21	8.63	56.84	74.00	-17.16

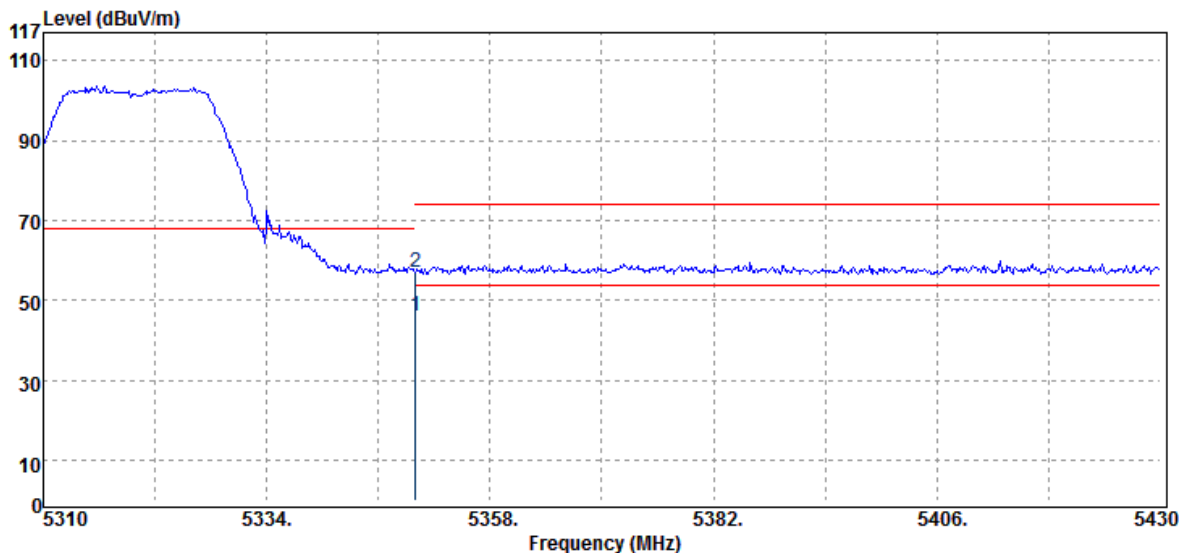
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Operation Band :802.11aB2
 Fundamental Frequency :5320 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-20
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5350.00	Average	37.52	8.63	46.15	54.00	-7.85
5350.00	Peak	48.44	8.63	57.07	74.00	-16.93

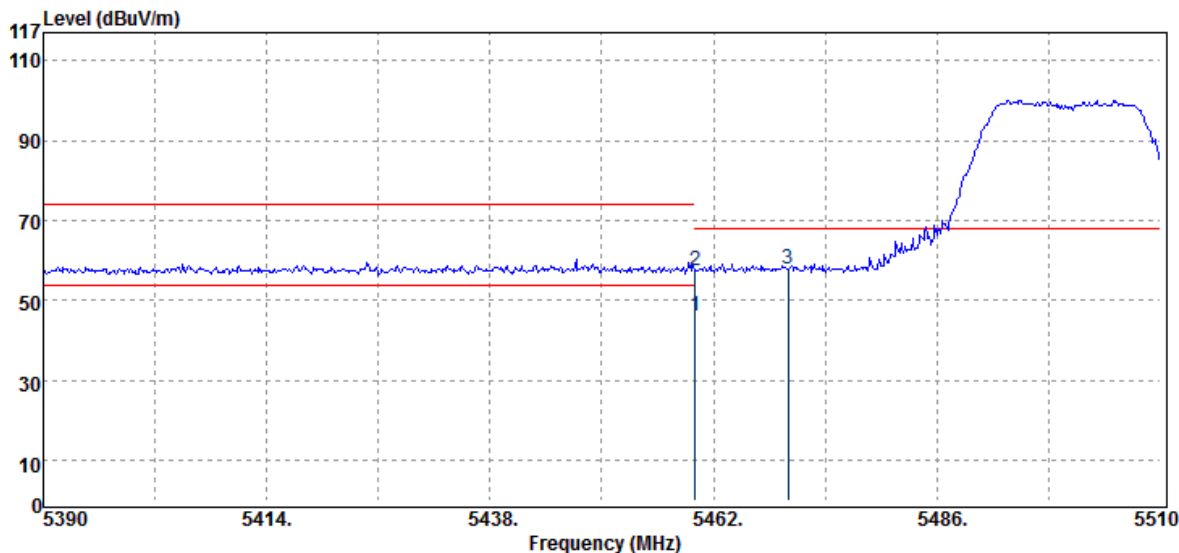
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Operation Band :802.11aB3
 Fundamental Frequency :5500 MHz
 Operation Mode :Bandedge CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-20
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5460.00	Average	37.51	8.75	46.26	54.00	-7.74
5460.00	Peak	48.93	8.75	57.68	74.00	-16.32
5470.00	Peak	48.99	8.74	57.73	68.20	-10.47

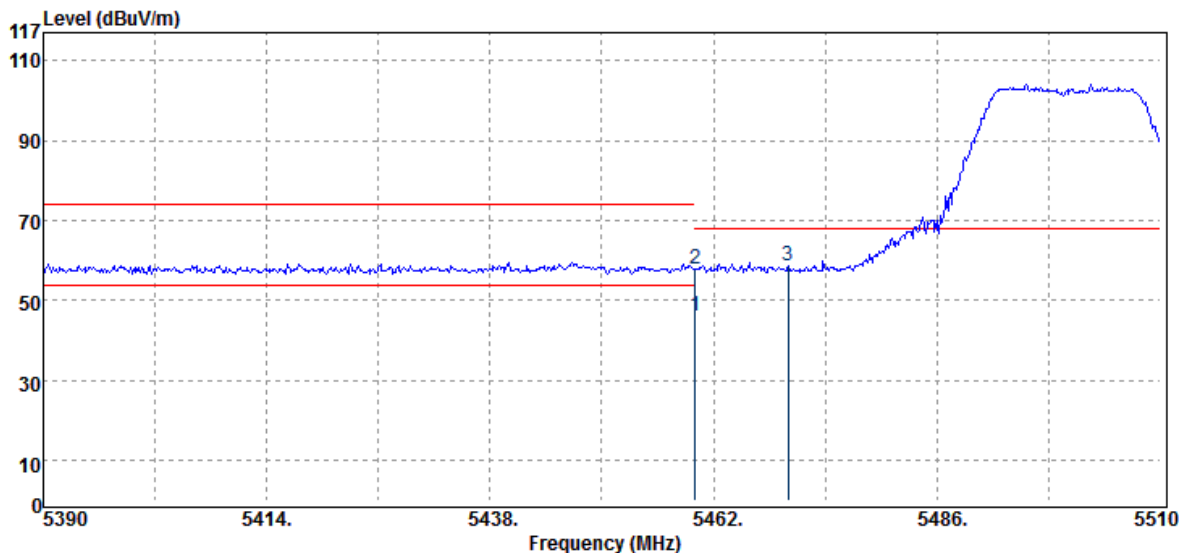
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Operation Band :802.11aB3
 Fundamental Frequency :5500 MHz
 Operation Mode :Bandedge CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-20
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5460.00	Average	37.50	8.75	46.25	54.00	-7.75
5460.00	Peak	49.34	8.75	58.09	74.00	-15.91
5470.00	Peak	49.92	8.74	58.66	68.20	-9.54

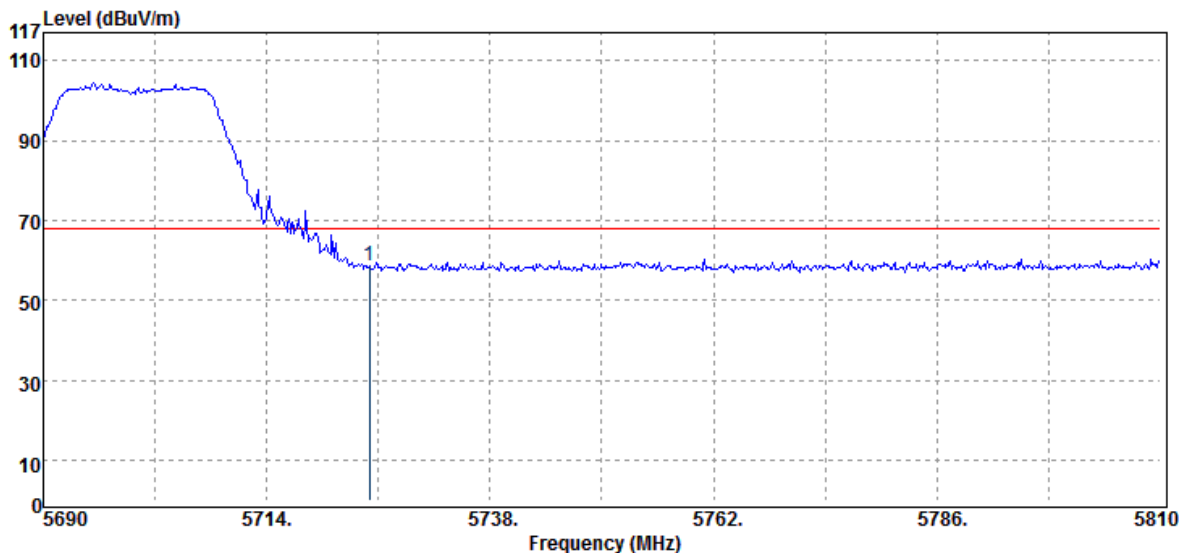
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Operation Band :802.11aB3
 Fundamental Frequency :5700 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-20
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	49.09	9.44	58.53	68.20	-9.67

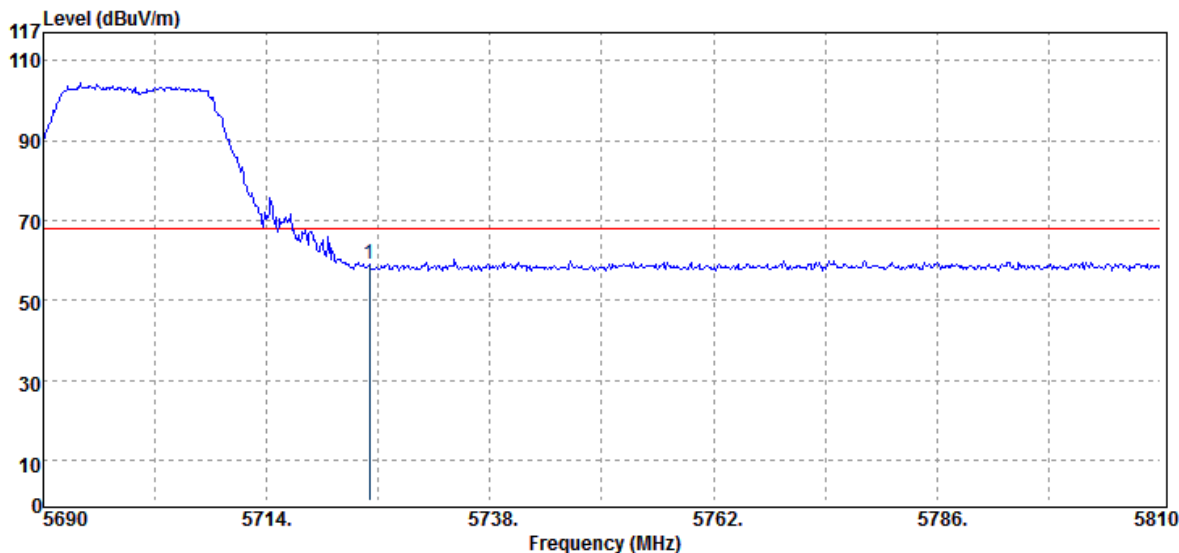
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Operation Band :802.11aB3
 Fundamental Frequency :5700 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-20
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	49.77	9.44	59.21	68.20	-8.99

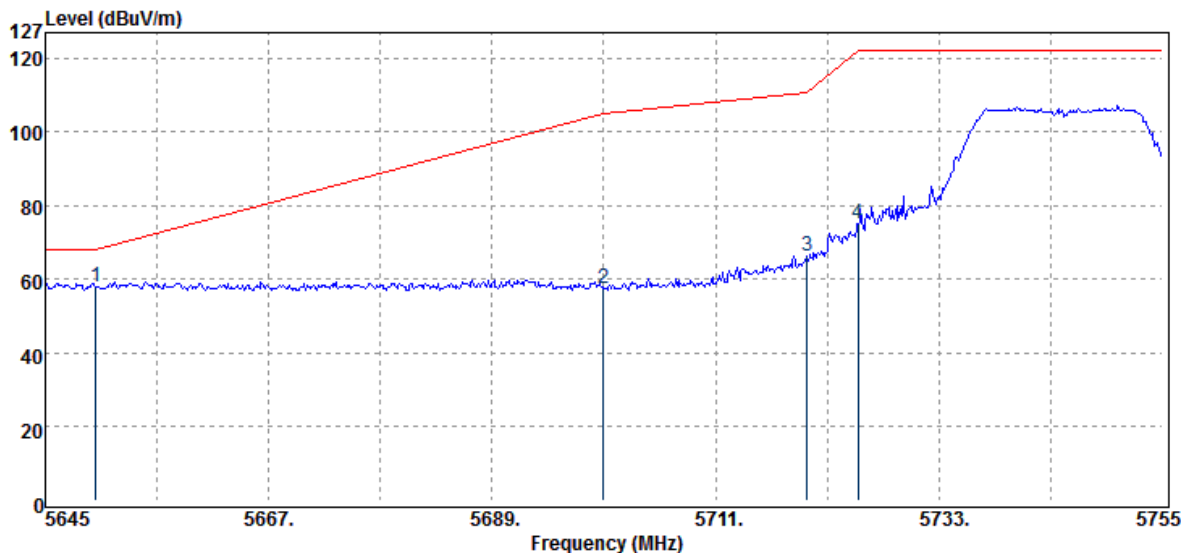
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Operation Band :802.11aB4
 Fundamental Frequency :5745 MHz
 Operation Mode :Bandedge CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-20
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5650.00	Peak	48.79	9.20	57.99	68.23	-10.24
5700.00	Peak	48.29	9.35	57.64	105.23	-47.59
5720.00	Peak	56.83	9.43	66.26	110.83	-44.57
5725.00	Peak	65.82	9.44	75.26	122.23	-46.97

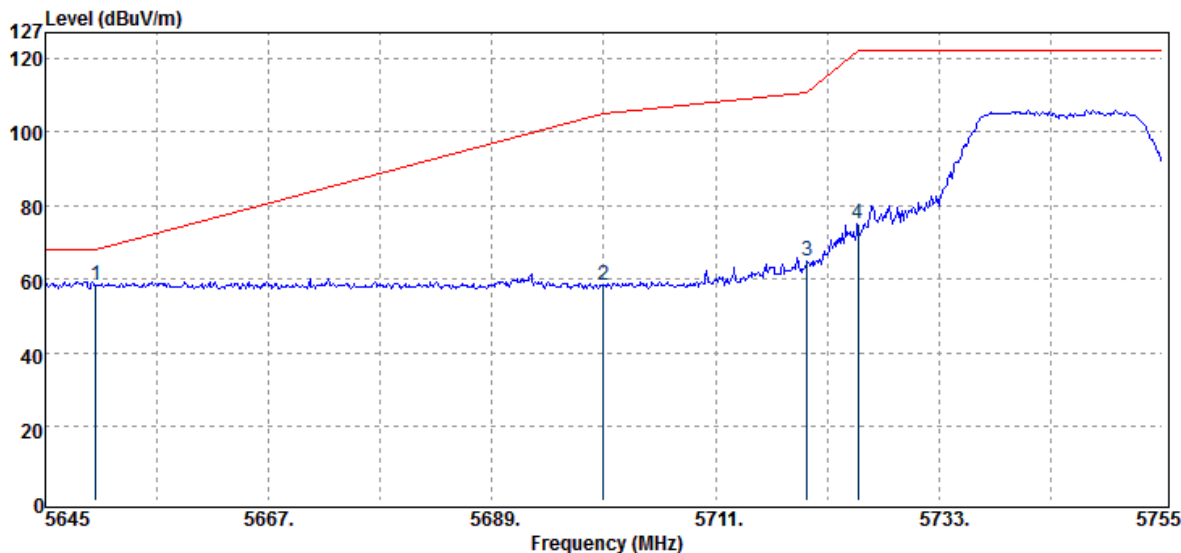
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Operation Band :802.11aB4
 Fundamental Frequency :5745 MHz
 Operation Mode :Bandedge CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-20
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5650.00	Peak	49.06	9.20	58.26	68.23	-9.97
5700.00	Peak	49.16	9.35	58.51	105.23	-46.72
5720.00	Peak	55.62	9.43	65.05	110.83	-45.78
5725.00	Peak	65.82	9.44	75.26	122.23	-46.97

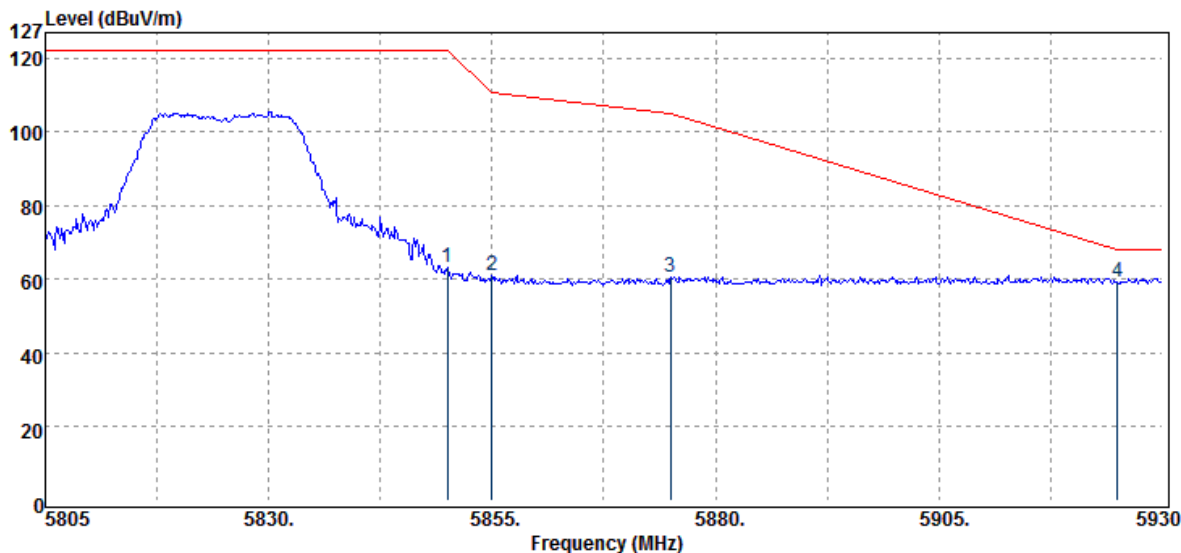
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Operation Band :802.11aB4
 Fundamental Frequency :5825 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-20
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5850.00	Peak	53.30	9.77	63.07	122.23	-59.16
5855.00	Peak	51.23	9.78	61.01	110.83	-49.82
5875.00	Peak	50.76	9.82	60.58	105.23	-44.65
5925.00	Peak	49.24	9.98	59.22	68.23	-9.01

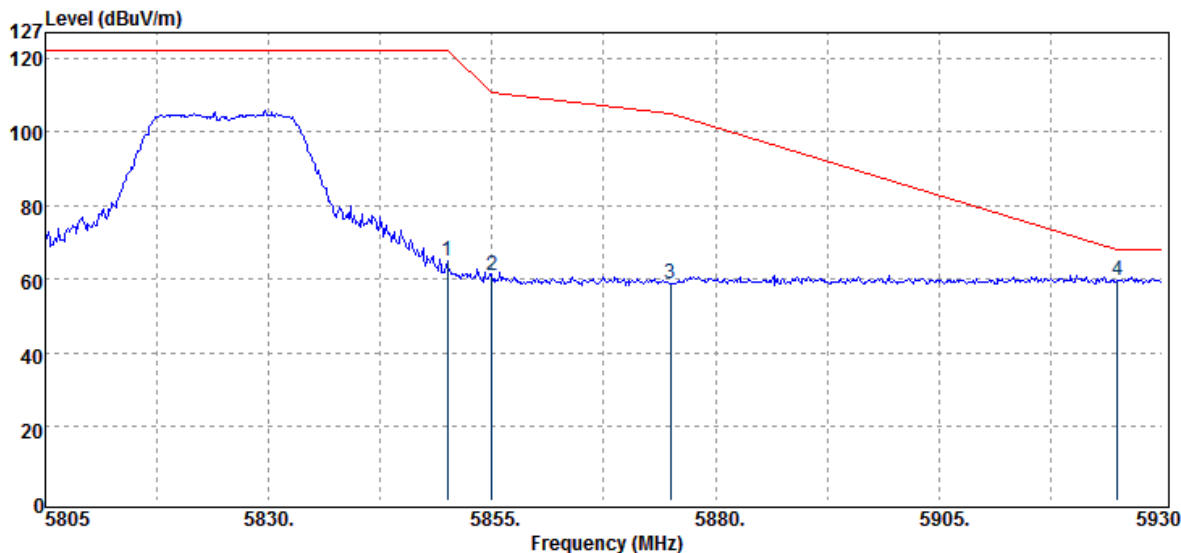
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Operation Band :802.11aB4
 Fundamental Frequency :5825 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-20
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5850.00	Peak	55.25	9.77	65.02	122.23	-57.21
5855.00	Peak	51.50	9.78	61.28	110.83	-49.55
5875.00	Peak	49.20	9.82	59.02	105.23	-46.21
5925.00	Peak	49.80	9.98	59.78	68.23	-8.45

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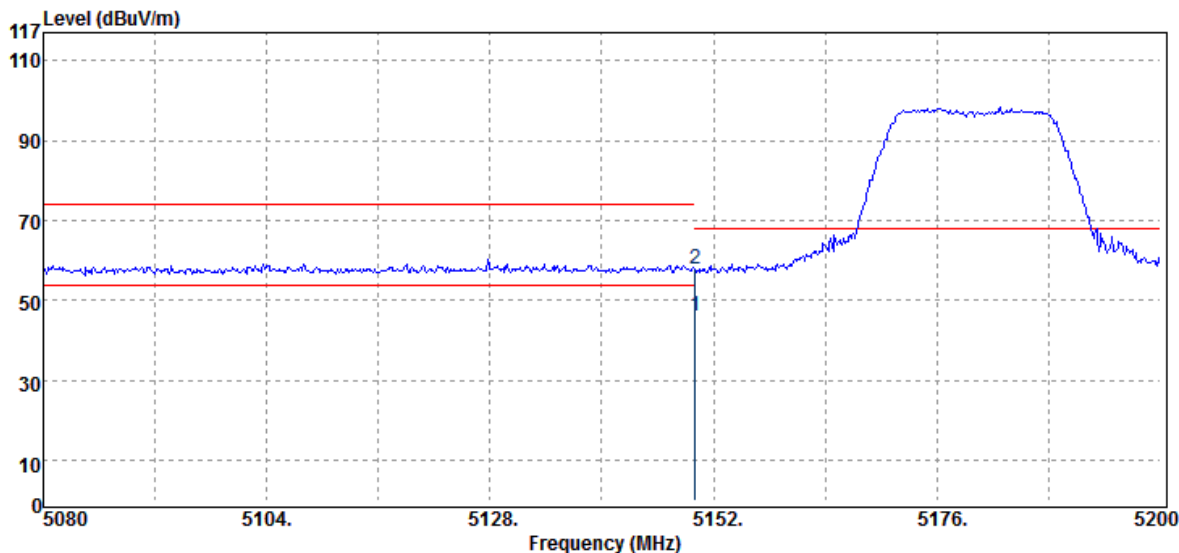
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802.11n20 HT mode

Operation Band :802.11n20B1
Fundamental Frequency :5180 MHz
Operation Mode :Bandedge CH LOW
EUT Pol. :E2 Plane

Test Date :2018-11-20
Temp./Humi. :23 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5150.00	Average	37.71	8.32	46.03	54.00	-7.97
5150.00	Peak	49.56	8.32	57.88	74.00	-16.12

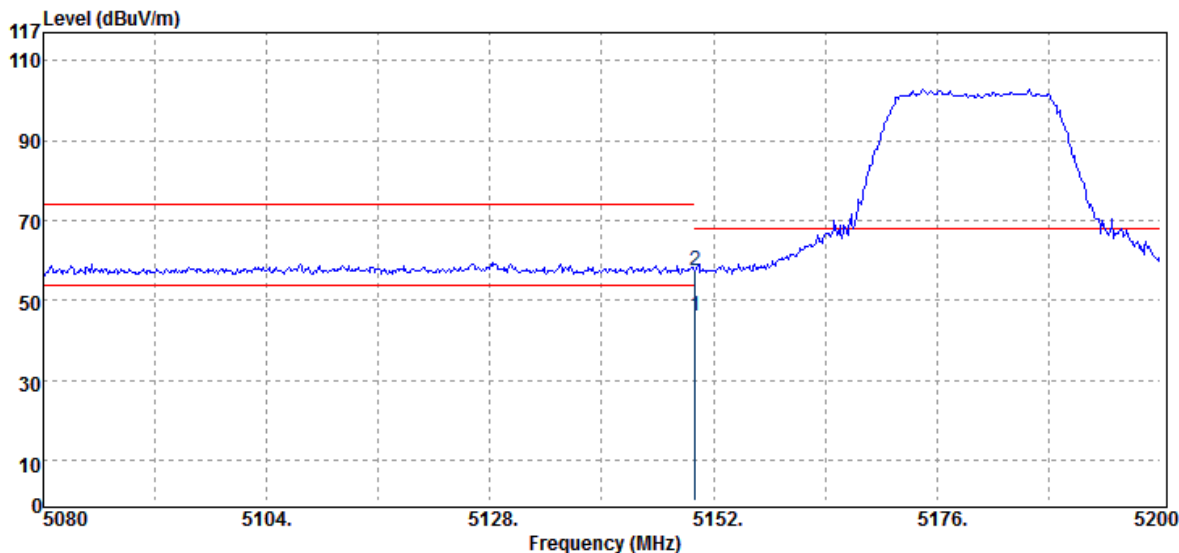
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Operation Band :802.11n20B1
 Fundamental Frequency :5180 MHz
 Operation Mode :Bandedge CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-20
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5150.00	Average	37.79	8.32	46.11	54.00	-7.89
5150.00	Peak	49.32	8.32	57.64	74.00	-16.36

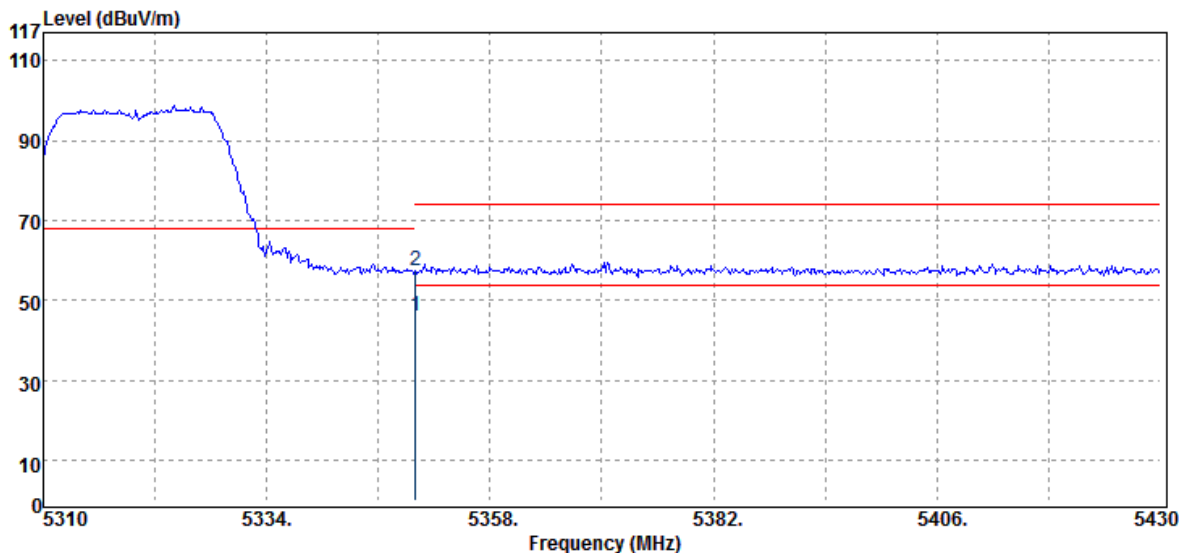
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Operation Band :802.11n20B1
 Fundamental Frequency :5320 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5350.00	Average	37.43	8.63	46.06	54.00	-7.94
5350.00	Peak	48.70	8.63	57.33	74.00	-16.67

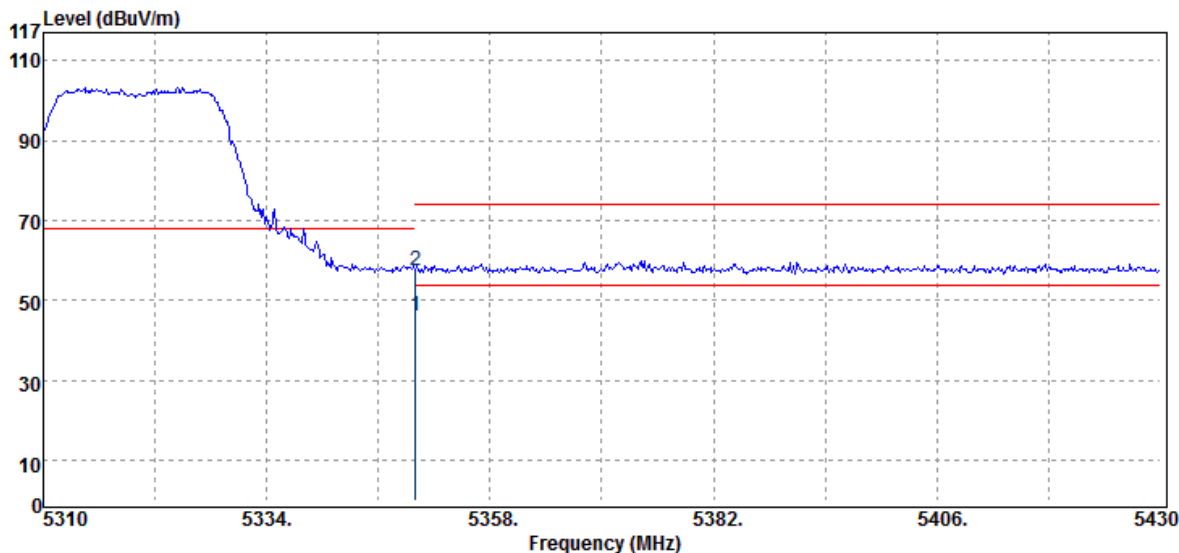
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Operation Band :802.11n20B1
 Fundamental Frequency :5320 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5350.00	Average	37.37	8.63	46.00	54.00	-8.00
5350.00	Peak	49.03	8.63	57.66	74.00	-16.34

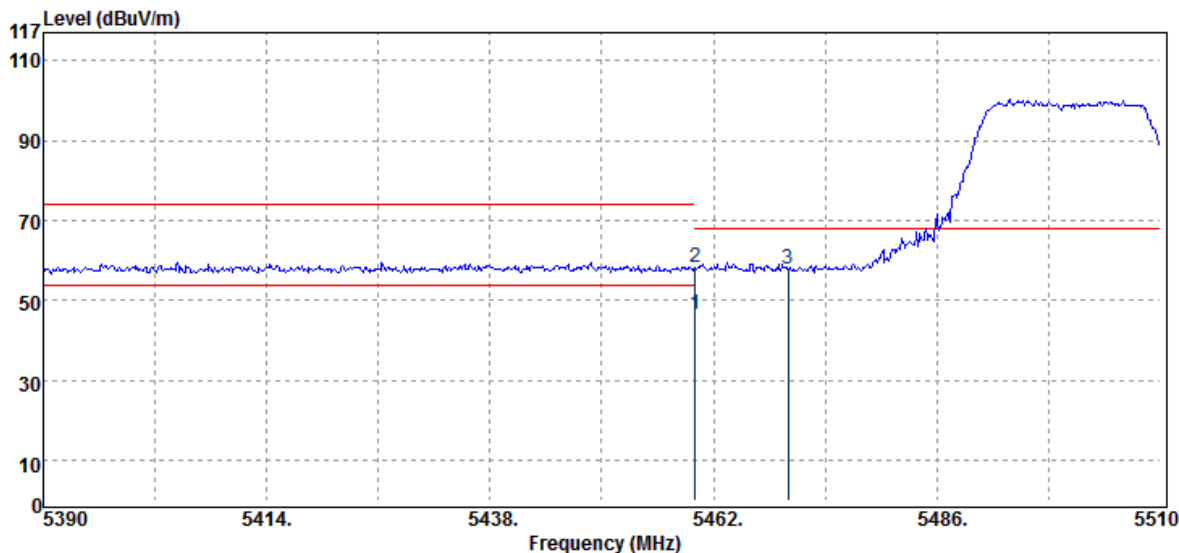
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Operation Band :802.11n20B3
 Fundamental Frequency :5500 MHz
 Operation Mode :Bandedge CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5460.00	Average	37.63	8.75	46.38	54.00	-7.62
5460.00	Peak	49.40	8.75	58.15	74.00	-15.85
5470.00	Peak	49.08	8.74	57.82	68.20	-10.38

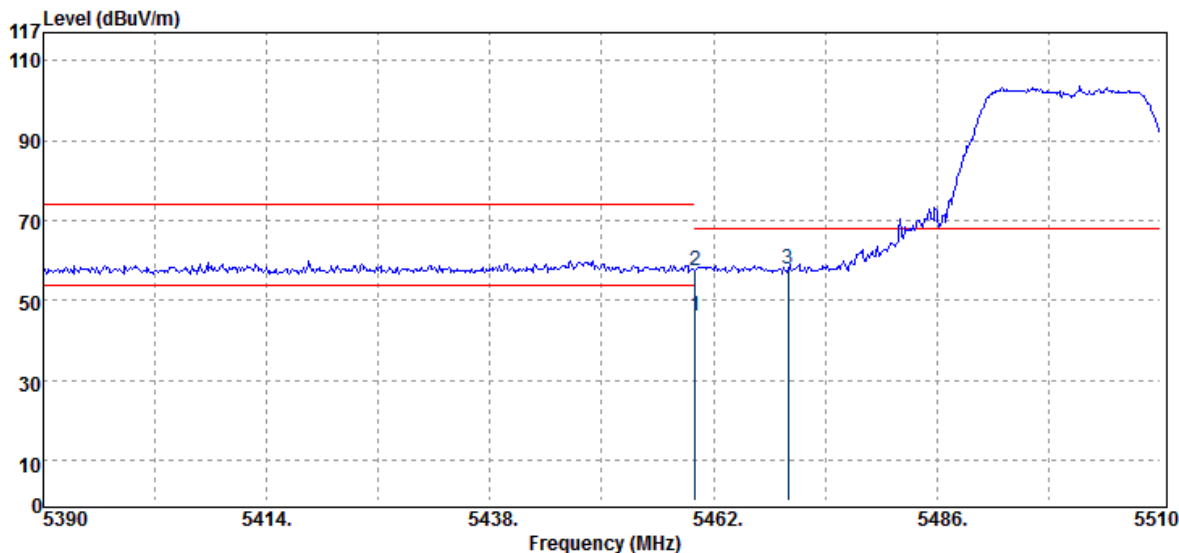
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Operation Band :802.11n20B3
 Fundamental Frequency :5500 MHz
 Operation Mode :Bandedge CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5460.00	Average	37.54	8.75	46.29	54.00	-7.71
5460.00	Peak	48.68	8.75	57.43	74.00	-16.57
5470.00	Peak	49.04	8.74	57.78	68.20	-10.42

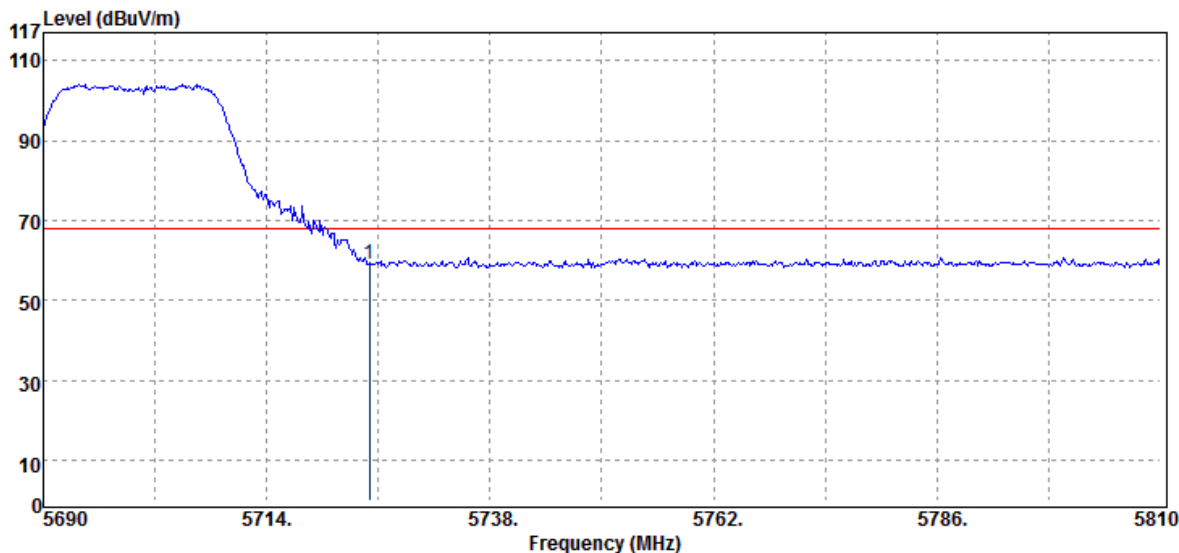
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Operation Band :802.11n20B3
 Fundamental Frequency :5700 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	49.65	9.44	59.09	68.20	-9.11

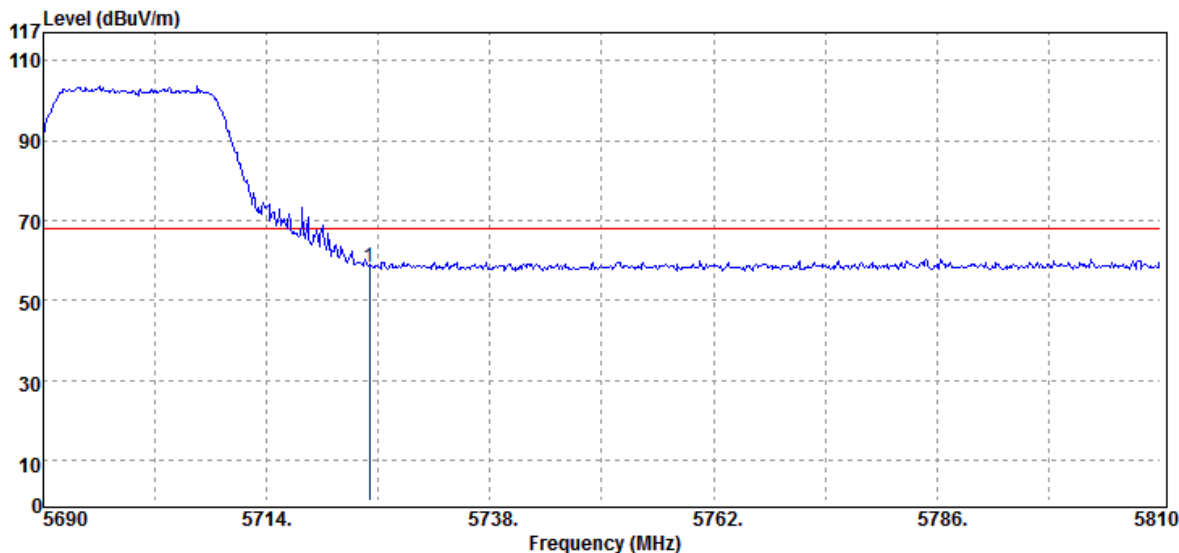
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Operation Band :802.11n20B3
 Fundamental Frequency :5700 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	48.79	9.44	58.23	68.20	-9.97

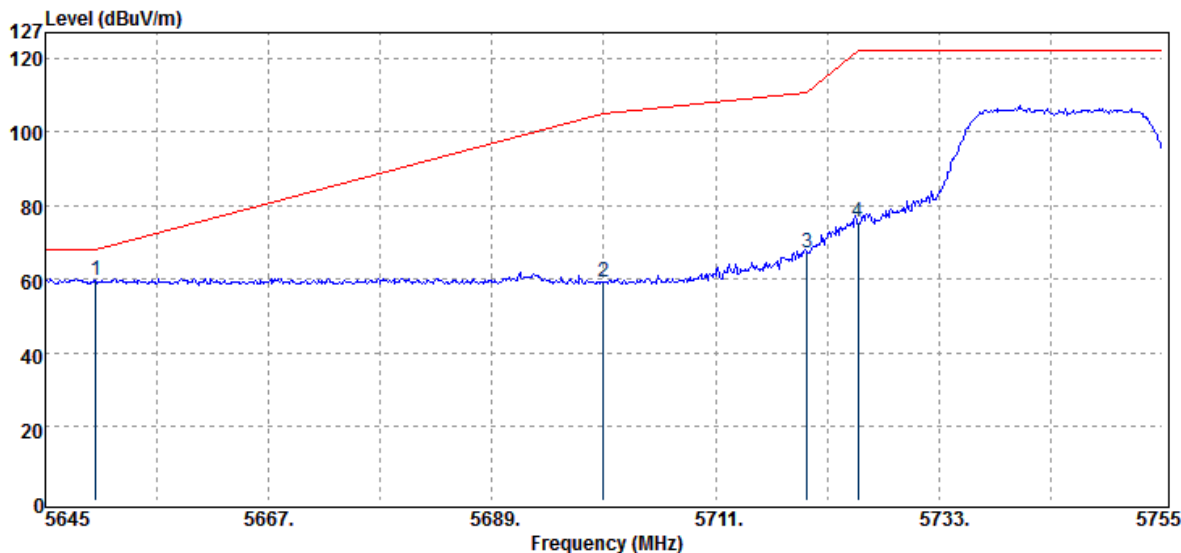
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Operation Band :802.11n20B4
 Fundamental Frequency :5745 MHz
 Operation Mode :Bandedge CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5650.00	Peak	50.77	9.20	59.97	68.23	-8.26
5700.00	Peak	50.01	9.35	59.36	105.23	-45.87
5720.00	Peak	57.68	9.43	67.11	110.83	-43.72
5725.00	Peak	66.05	9.44	75.49	122.23	-46.74

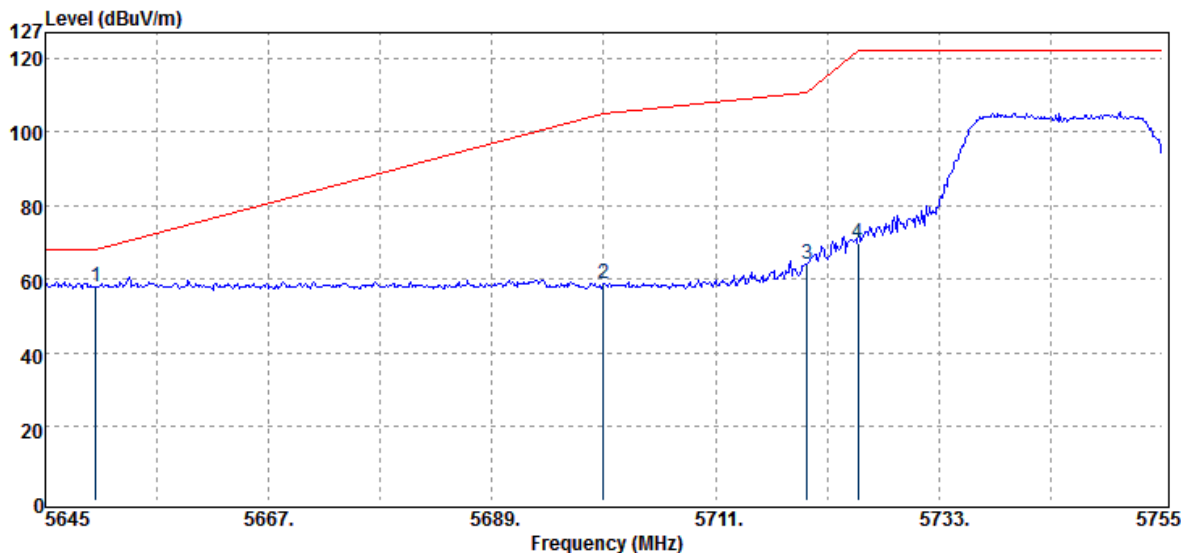
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Operation Band :802.11n20B4
 Fundamental Frequency :5745 MHz
 Operation Mode :Bandedge CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5650.00	Peak	49.00	9.20	58.20	68.23	-10.03
5700.00	Peak	49.73	9.35	59.08	105.23	-46.15
5720.00	Peak	54.60	9.43	64.03	110.83	-46.80
5725.00	Peak	60.58	9.44	70.02	122.23	-52.21

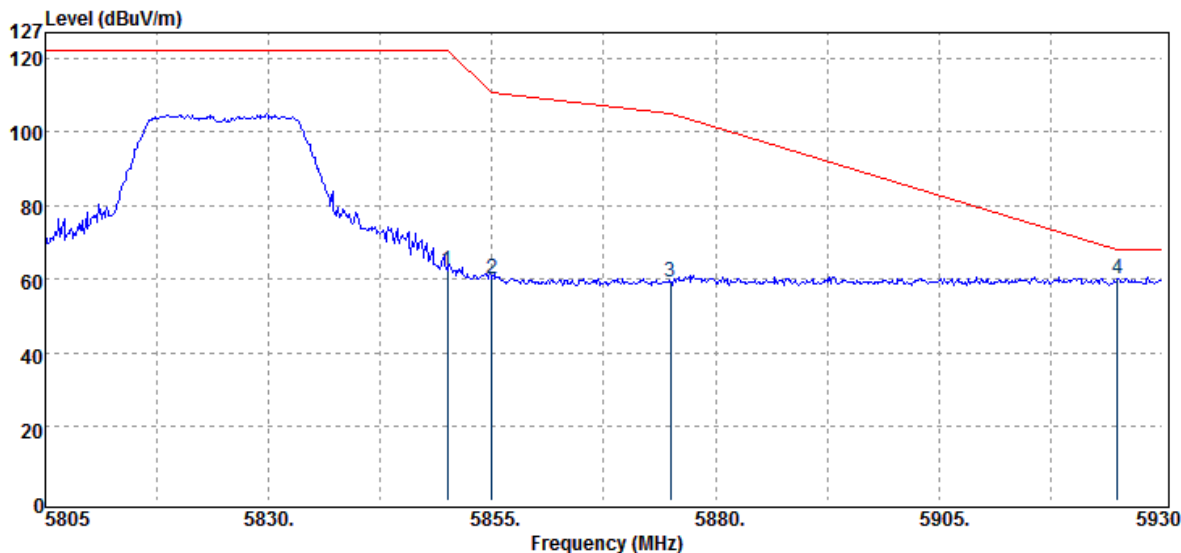
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Operation Band :802.11n20B4
 Fundamental Frequency :5825 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5850.00	Peak	52.60	9.77	62.37	122.23	-59.86
5855.00	Peak	50.34	9.78	60.12	110.83	-50.71
5875.00	Peak	49.71	9.82	59.53	105.23	-45.70
5925.00	Peak	50.23	9.98	60.21	68.23	-8.02

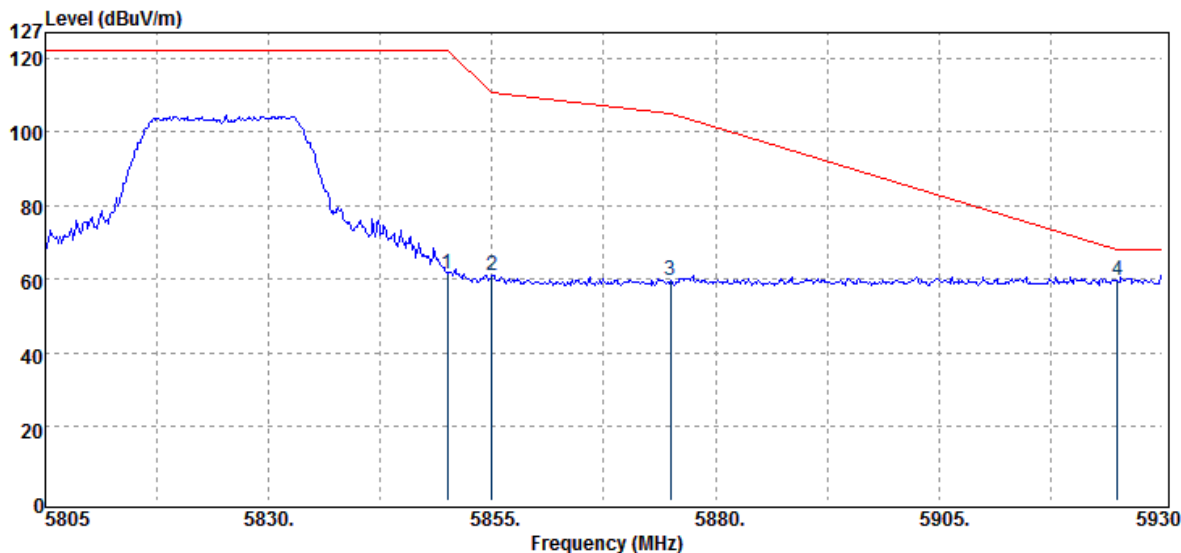
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Operation Band :802.11n20B4
 Fundamental Frequency :5825 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5850.00	Peak	51.91	9.77	61.68	122.23	-60.55
5855.00	Peak	51.18	9.78	60.96	110.83	-49.87
5875.00	Peak	49.76	9.82	59.58	105.23	-45.65
5925.00	Peak	49.79	9.98	59.77	68.23	-8.46

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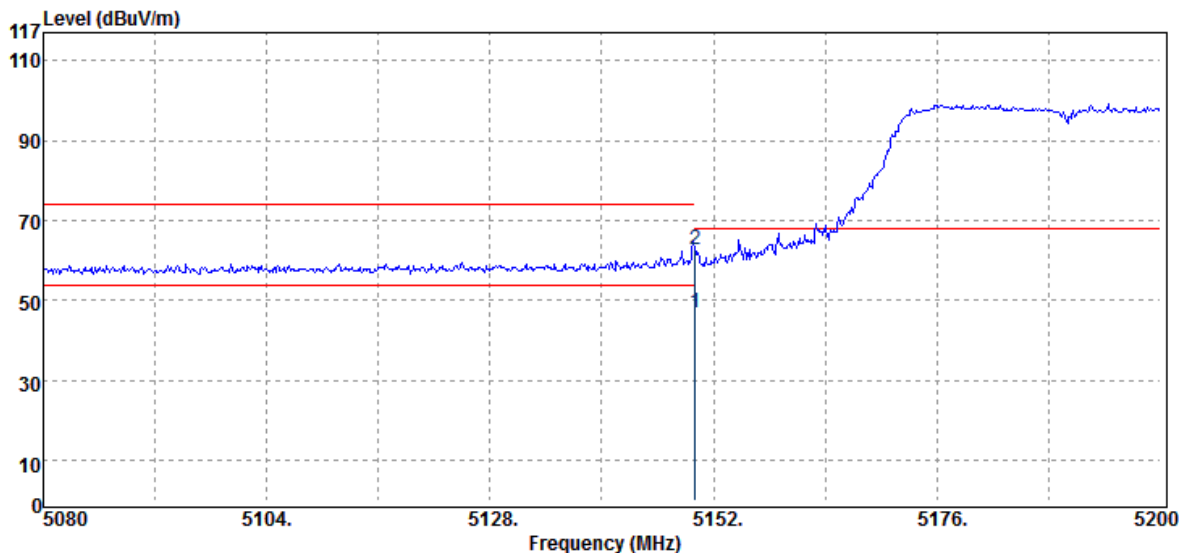
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802.11n40 HT mode

Operation Band :802.11n40B1
Fundamental Frequency :5190 MHz
Operation Mode :Bandedge CH LOW
EUT Pol. :E2 Plane

Test Date :2018-11-21
Temp./Humi. :23 deg_C / 62 RH
Engineer :Tin
Measurement Antenna Pol. :VERTICAL



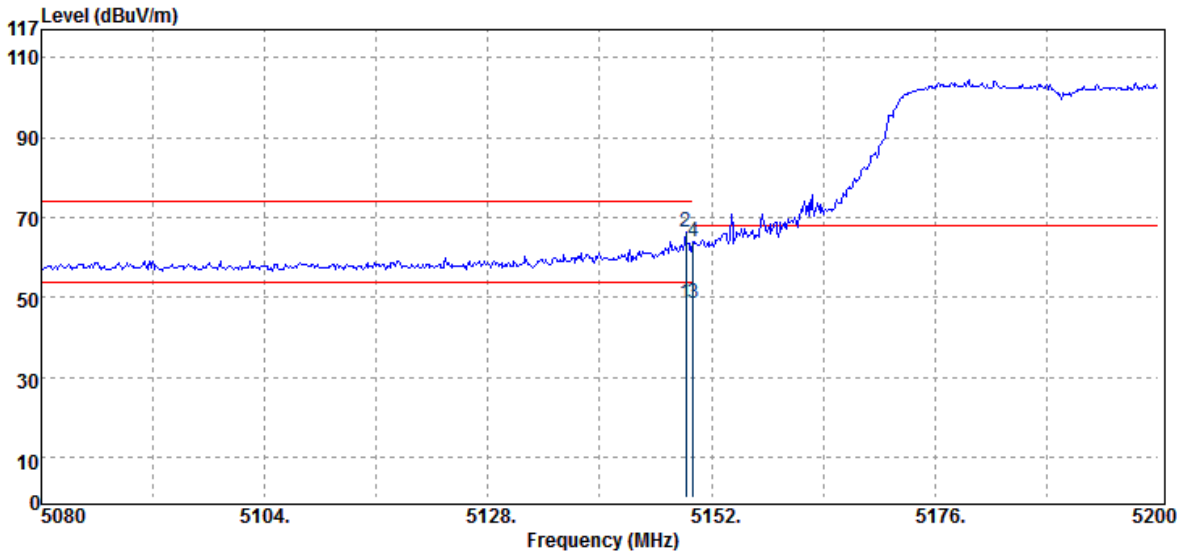
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5150.00	Average	38.79	8.32	47.11	54.00	-6.89
5150.00	Peak	54.26	8.32	62.58	74.00	-11.42

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Operation Band	:802.11n40B1	Test Date	:2018-11-21
Fundamental Frequency	:5190 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Bandedge CH LOW	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5149.24	Average	40.36	8.30	48.66	54.00	-5.34
5149.24	Peak	57.89	8.30	66.19	74.00	-7.81
5150.00	Average	40.45	8.32	48.77	54.00	-5.23
5150.00	Peak	55.66	8.32	63.98	74.00	-10.02

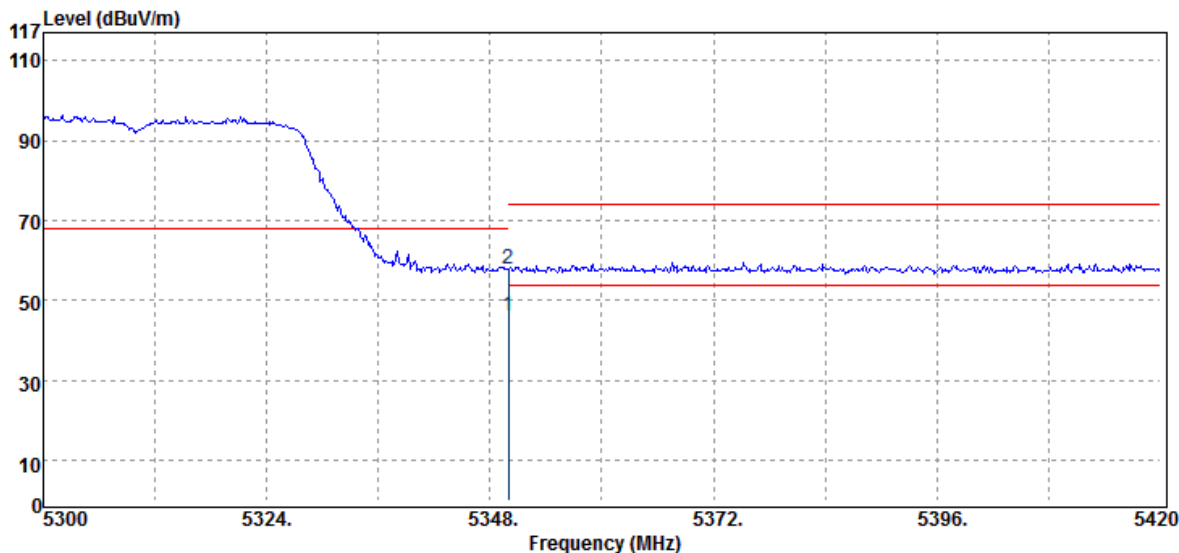
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Operation Band :802.11n40B2
 Fundamental Frequency :5310 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5350.00	Average	37.56	8.63	46.19	54.00	-7.81
5350.00	Peak	49.43	8.63	58.06	74.00	-15.94

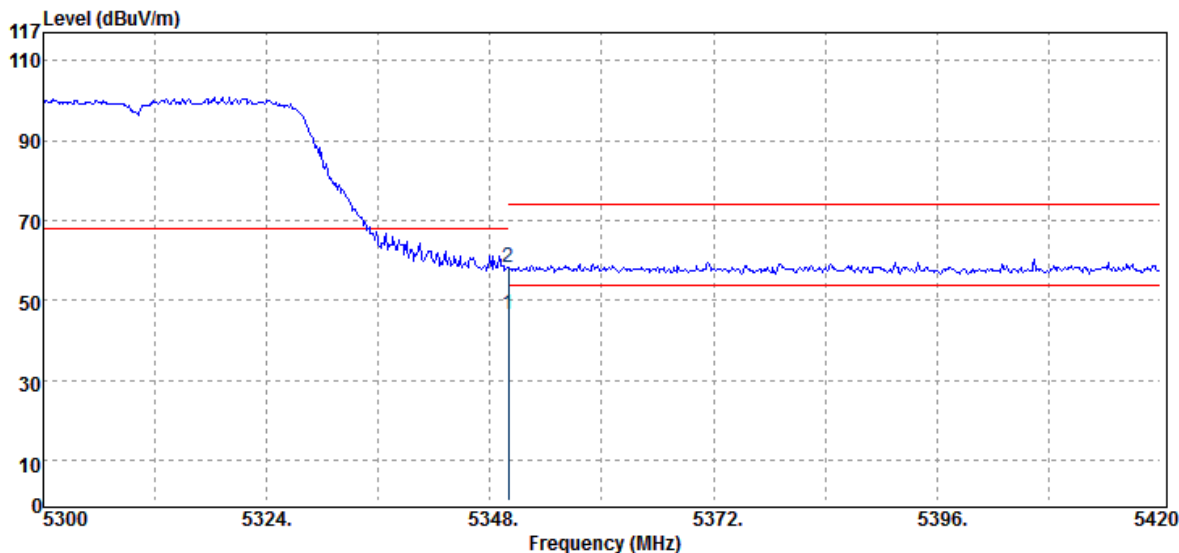
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Operation Band :802.11n40B2
 Fundamental Frequency :5310 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



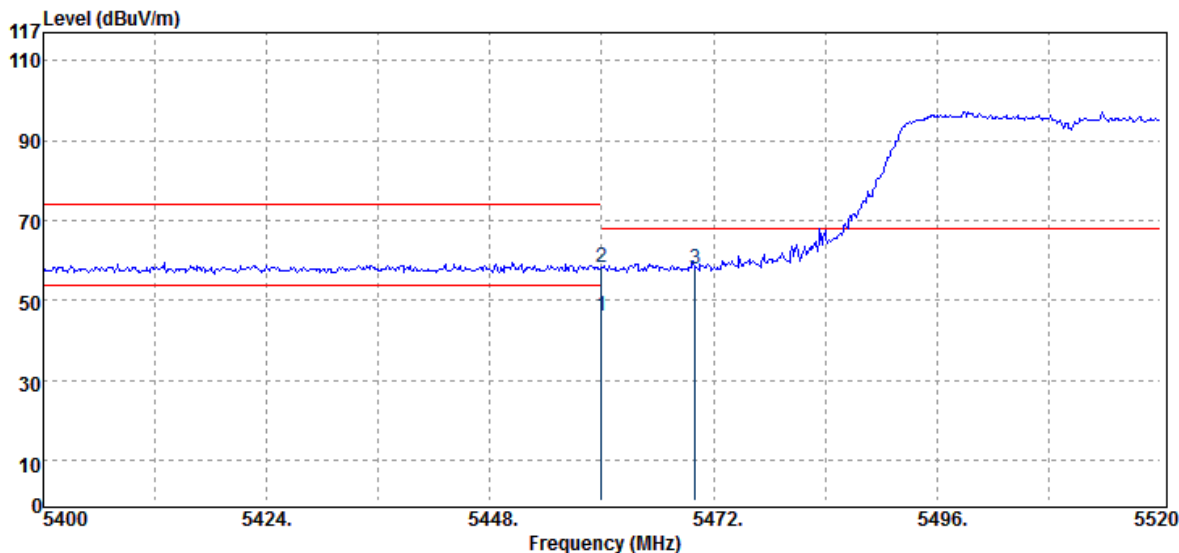
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5350.00	Average	37.75	8.63	46.38	54.00	-7.62
5350.00	Peak	49.51	8.63	58.14	74.00	-15.86

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Operation Band	:802.11n40B3	Test Date	:2018-11-21
Fundamental Frequency	:5510 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Bandedge CH LOW	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



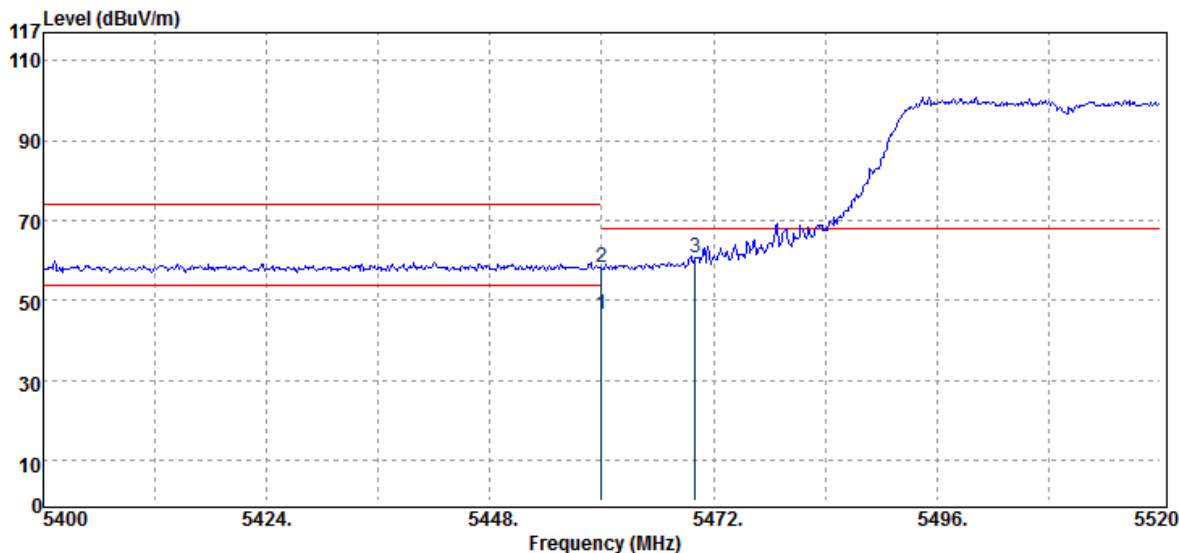
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5460.00	Average	37.56	8.75	46.31	54.00	-7.69
5460.00	Peak	49.38	8.75	58.13	74.00	-15.87
5470.00	Peak	49.32	8.74	58.06	68.20	-10.14

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Operation Band	:802.11n40B3	Test Date	:2018-11-21
Fundamental Frequency	:5510 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Bandedge CH LOW	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5460.00	Average	37.71	8.75	46.46	54.00	-7.54
5460.00	Peak	49.37	8.75	58.12	74.00	-15.88
5470.00	Peak	52.06	8.74	60.80	68.20	-7.40

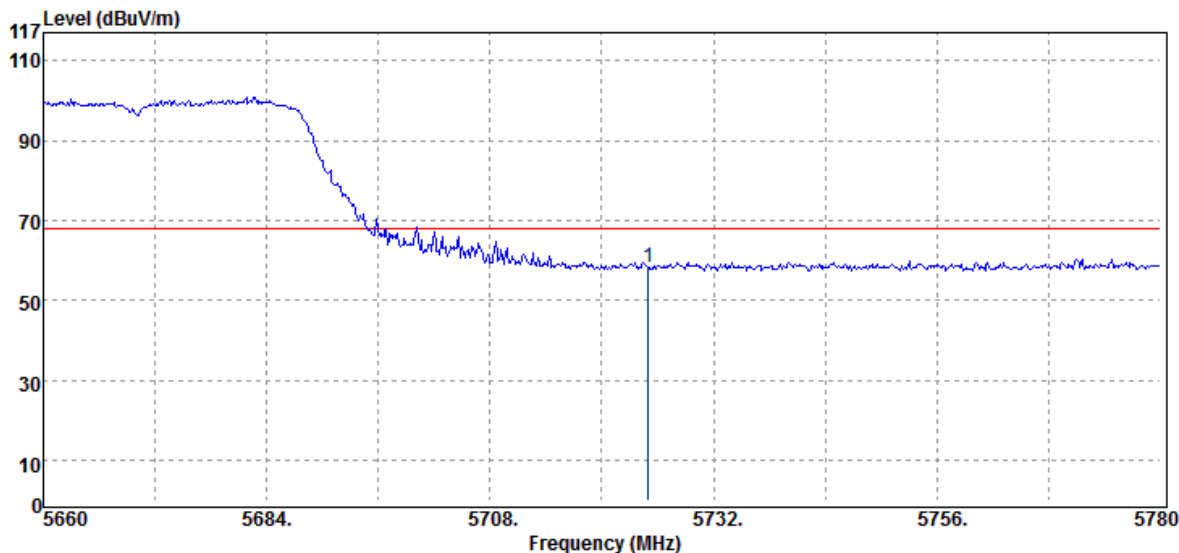
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Operation Band :802.11n40B3
 Fundamental Frequency :5670 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



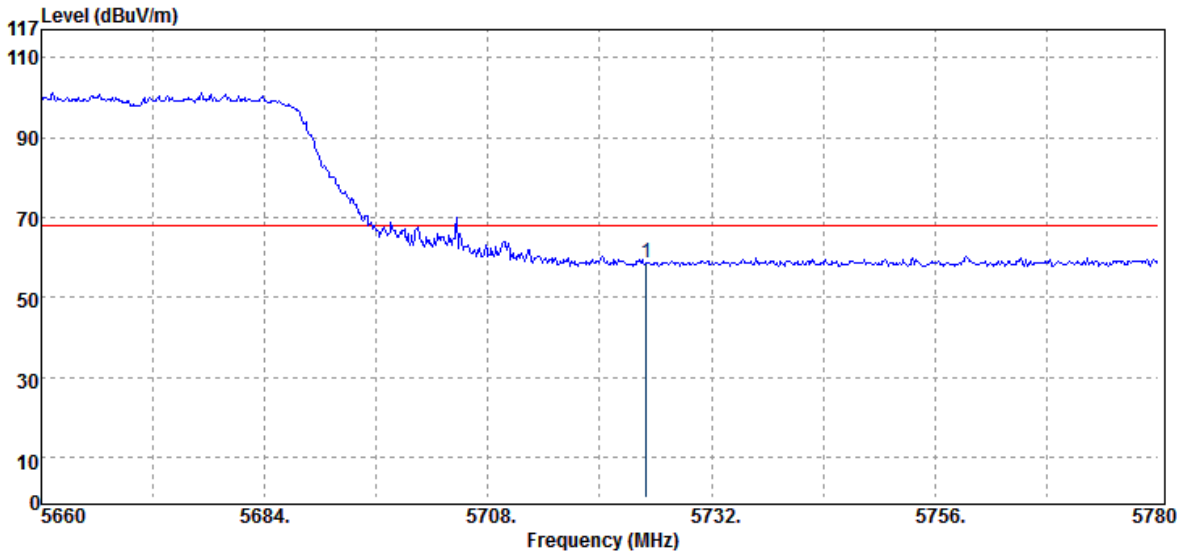
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	48.67	9.44	58.11	68.20	-10.09

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Operation Band	:802.11n40B3	Test Date	:2018-11-21
Fundamental Frequency	:5670 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Bandedge CH HIGH	Engineer	:Tin
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	49.45	9.44	58.89	68.20	-9.31

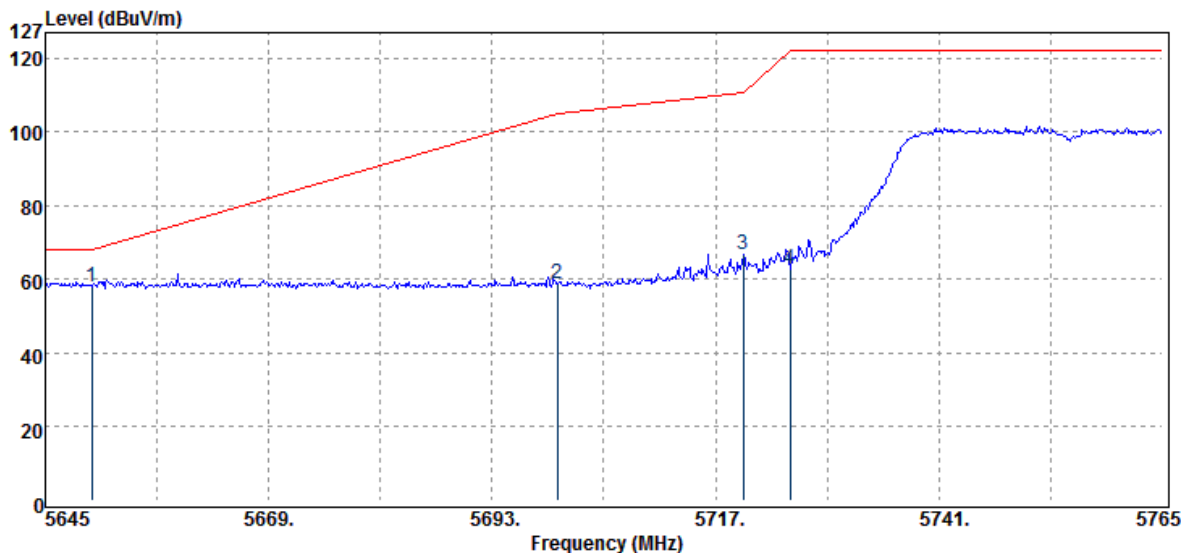
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Operation Band :802.11n40B4
 Fundamental Frequency :5755 MHz
 Operation Mode :Bandedge CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5650.00	Peak	49.02	9.20	58.22	68.23	-10.01
5700.00	Peak	49.42	9.35	58.77	105.23	-46.46
5720.00	Peak	57.23	9.43	66.66	110.83	-44.17
5725.00	Peak	53.26	9.44	62.70	122.23	-59.53

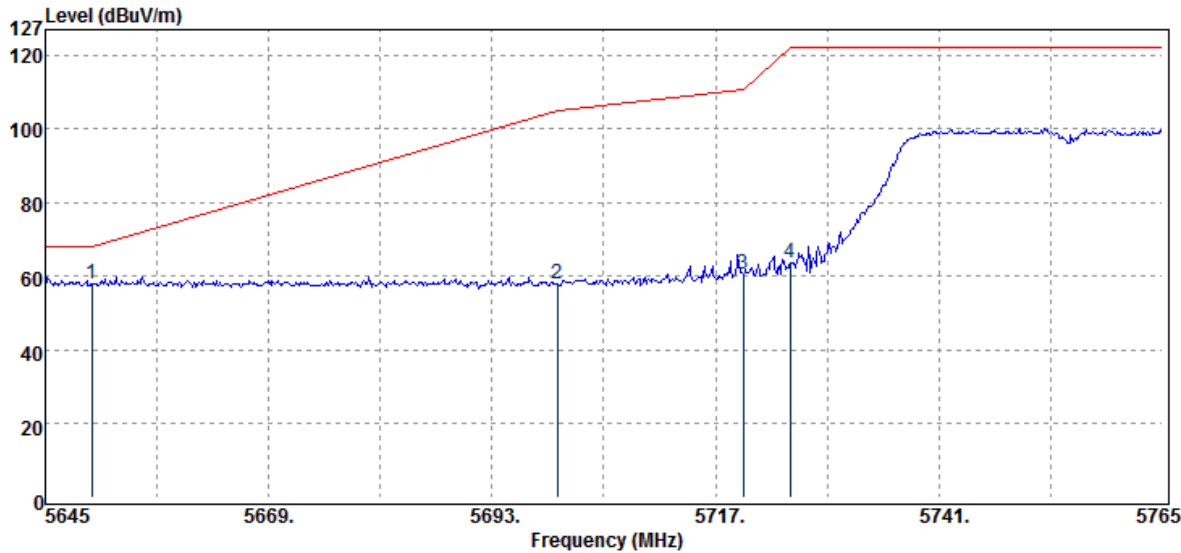
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Operation Band :802.11n40B4
 Fundamental Frequency :5755 MHz
 Operation Mode :Bandedge CH LOW
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5650.00	Peak	48.76	9.20	57.96	68.23	-10.27
5700.00	Peak	48.75	9.35	58.10	105.23	-47.13
5720.00	Peak	51.23	9.43	60.66	110.83	-50.17
5725.00	Peak	54.41	9.44	63.85	122.23	-58.38

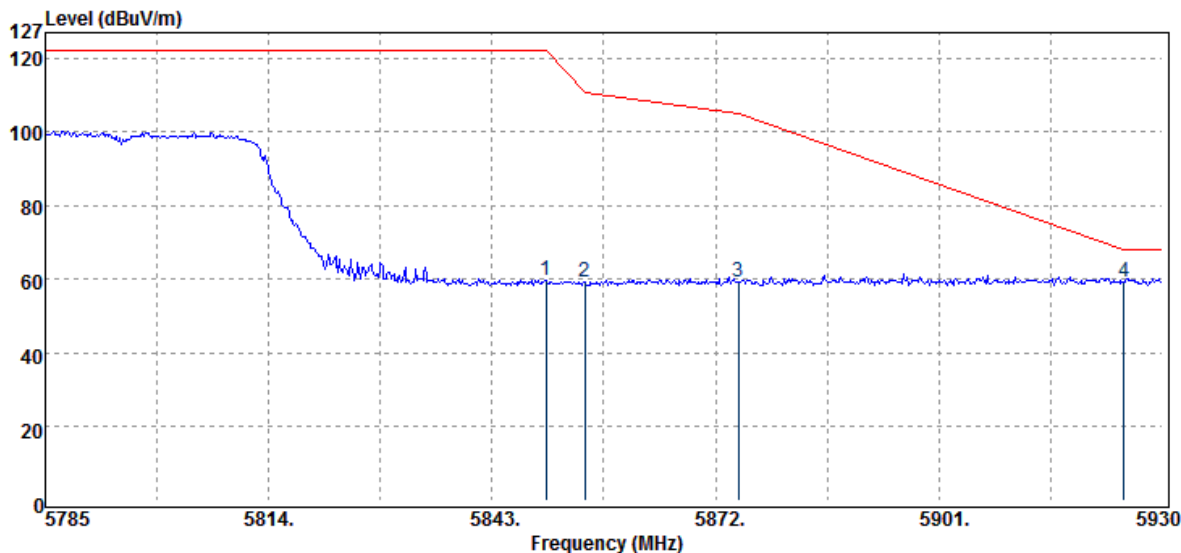
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Operation Band :802.11n40B4
 Fundamental Frequency :5795 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5850.00	Peak	49.86	9.77	59.63	122.23	-62.60
5855.00	Peak	49.66	9.78	59.44	110.83	-51.39
5875.00	Peak	49.49	9.82	59.31	105.23	-45.92
5925.00	Peak	49.34	9.98	59.32	68.23	-8.91

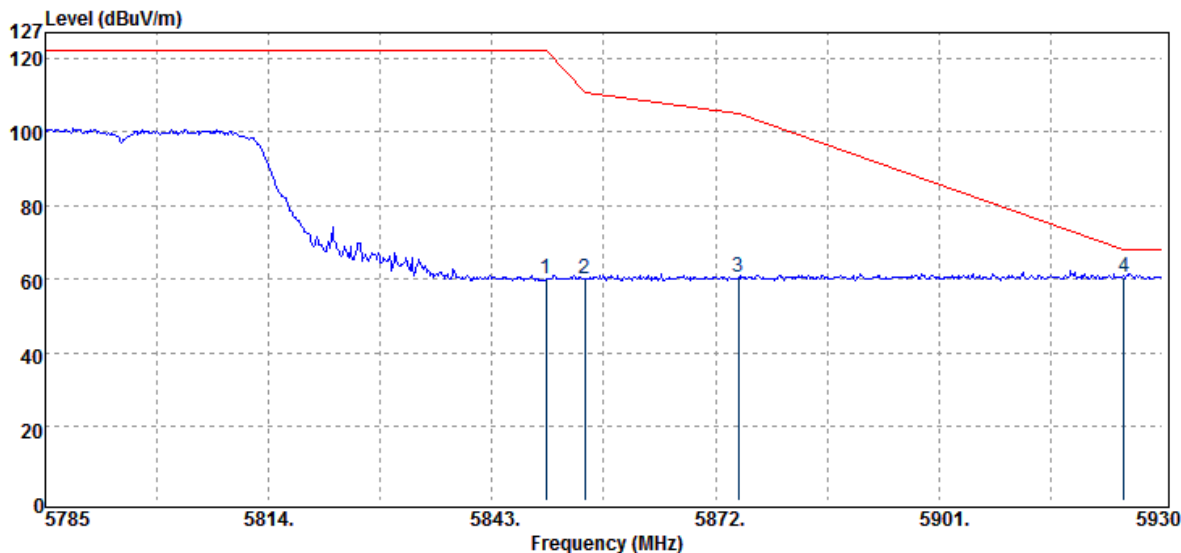
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Operation Band :802.11n40B4
 Fundamental Frequency :5795 MHz
 Operation Mode :Bandedge CH HIGH
 EUT Pol. :E2 Plane

Test Date :2018-11-21
 Temp./Humi. :23 deg_C / 62 RH
 Engineer :Tin
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
5850.00	Peak	50.35	9.77	60.12	122.23	-62.11
5855.00	Peak	50.53	9.78	60.31	110.83	-50.52
5875.00	Peak	50.79	9.82	60.61	105.23	-44.62
5925.00	Peak	50.66	9.98	60.64	68.23	-7.59

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12 TRANSMISSION IN THE ABSENCE OF DATA

12.1 Standard Applicable

According to §15.407(c)

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

12.2 Result

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

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13 FREQUENCY STABILITY

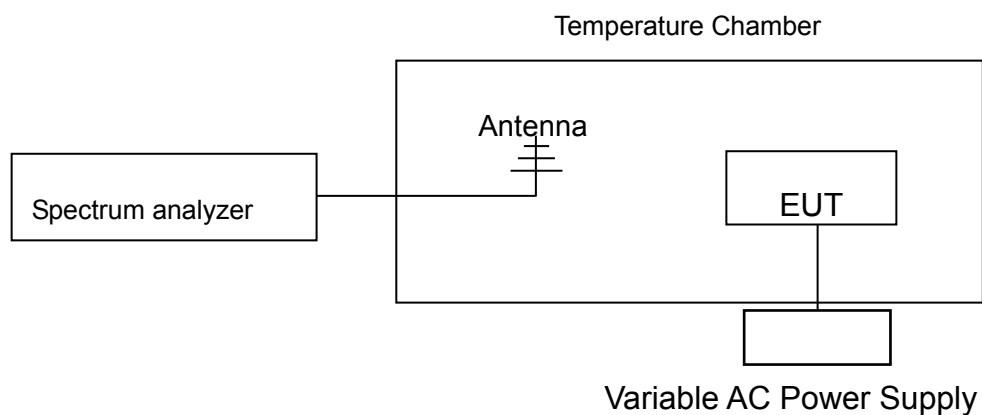
13.1 Standard Applicable

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

13.2 Measurement Procedure

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

13.3 Test SET-UP



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13.4 Measurement Equipment Used:

SGS Conducted Room					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	05/03/2018	05/02/2019
DC Power Supply	Agilent	E3640A	KR93300208	08/15/2018	08/14/2019
Temperature Chamber	TERCHY	MHG-120LF	911009	05/18/2018	05/17/2019
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2018	01/01/2019
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2018	01/01/2019
Coaxial Cables	N/A	WK CE Cable	N/A	01/02/2018	01/01/2019
Notebook	Lenovo	L430	R9-X11BG	N/A	N/A

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13.5 Measurement Result

Startup:

Operation Mode	802.11 a	Test Date	2018.11.11
Temperature	:23 °C	Test By	Gary
Humidity	:68 %		

Test Temp.(°C)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.2	36	5180	5,179.99983	0.00000003
		44	5220	5,220.00579	-0.00000111
		48	5240	5,239.99179	0.00000157
		52	5260	5,259.99689	0.00000059
		60	5300	5,299.99110	0.00000168
		64	5320	5,319.99671	0.00000062
		100	5500	5,500.00776	-0.00000141
		116	5580	5,580.00961	-0.00000172
		140	5700	5,699.99102	0.00000158
		149	5745	5,744.99393	0.00000106
		157	5785	5,784.99427	0.00000099
		165	5825	5,825.00286	-0.00000049
	3.4	36	5180	5,179.99417	0.00000112
		44	5220	5,219.99437	0.00000108
		48	5240	5,240.00749	-0.00000143
		52	5260	5,260.00229	-0.00000044
		60	5300	5,300.00630	-0.00000119
		64	5320	5,319.99545	0.00000086
		100	5500	5,500.00802	-0.00000146
		116	5580	5,579.99740	0.00000047
		140	5700	5,700.00782	-0.00000137
		149	5745	5,744.99081	0.00000160
		157	5785	5,785.00955	-0.00000165
		165	5825	5,824.99175	0.00000142

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25	3.8	36	5180	5,179.99858	0.00000027
		44	5220	5,220.00574	-0.00000110
		48	5240	5,240.00200	-0.00000038
		52	5260	5,260.00285	-0.00000054
		60	5300	5,299.99710	0.00000055
		64	5320	5,319.99146	0.00000160
		100	5500	5,499.99255	0.00000136
		116	5580	5,579.99909	0.00000016
		140	5700	5,699.99624	0.00000066
		149	5745	5,745.00581	-0.00000101
		157	5785	5,785.00844	-0.00000146
		165	5825	5,825.00551	-0.00000095

50	4.2	36	5180	5,179.99211	0.00000152
		44	5220	5,220.00299	-0.00000057
		48	5240	5,239.99556	0.00000085
		52	5260	5,259.99731	0.00000051
		60	5300	5,300.00189	-0.00000036
		64	5320	5,320.00919	-0.00000173
		100	5500	5,500.00796	-0.00000145
		116	5580	5,580.00474	-0.00000085
		140	5700	5,700.00857	-0.00000150
		149	5745	5,745.00203	-0.00000035
		157	5785	5,784.99530	0.00000081
		165	5825	5,825.00530	-0.00000091
	3.4	36	5180	5,180.00356	-0.00000069
		44	5220	5,219.99632	0.00000071
		48	5240	5,240.00008	-0.00000001
		52	5260	5,259.99090	0.00000173
		60	5300	5,299.99809	0.00000036
		64	5320	5,320.00649	-0.00000122
		100	5500	5,500.00902	-0.00000164
		116	5580	5,579.99428	0.00000102
		140	5700	5,700.00025	-0.00000004
		149	5745	5,744.99879	0.00000021
		157	5785	5,784.99921	0.00000014
		165	5825	5,824.99692	0.00000053

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Operation Mode	802.11 n_HT40	Test Date	2018.11.11
Temperature	:23 °C	Test By	Gary
Humidity	:68 %		

Test Temp.(°C)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.2	38	5190	5,189.99878	0.00000024
		46	5230	5,229.99788	0.00000041
		54	5270	5,270.00294	-0.00000056
		62	5310	5,309.99448	0.00000104
		102	5510	5,509.99166	0.00000151
		110	5550	5,550.00632	-0.00000114
		134	5670	5,670.00992	-0.00000175
		151	5755	5,754.99878	0.00000021
		159	5795	5,794.99957	0.00000007
	3.4	38	5190	5,190.00456	-0.00000088
		46	5230	5,229.99574	0.00000081
		54	5270	5,270.00822	-0.00000156
		62	5310	5,309.99493	0.00000095
		102	5510	5,509.99164	0.00000152
		110	5550	5,549.99280	0.00000130
		134	5670	5,669.99136	0.00000152
		151	5755	5,754.99380	0.00000108
		159	5795	5,794.99342	0.00000114

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25	3.8	38	5190	5,190.00995	-0.00000192
		46	5230	5,229.99434	0.00000108
		54	5270	5,270.00136	-0.00000026
		62	5310	5,309.99380	0.00000117
		102	5510	5,509.99132	0.00000157
		110	5550	5,549.99793	0.00000037
		134	5670	5,670.00333	-0.00000059
		151	5755	5,754.99078	0.00000160
		159	5795	5,794.99381	0.00000107
50	4.2	38	5190	5,189.99882	0.00000023
		46	5230	5,229.99177	0.00000157
		54	5270	5,269.99393	0.00000115
		62	5310	5,310.00033	-0.00000006
		102	5510	5,510.00270	-0.00000049
		110	5550	5,550.00022	-0.00000004
		134	5670	5,670.00201	-0.00000035
		151	5755	5,754.99566	0.00000075
		159	5795	5,794.99603	0.00000068
	3.4	38	5190	5,189.99797	0.00000039
		46	5230	5,230.00701	-0.00000134
		54	5270	5,269.99011	0.00000188
		62	5310	5,310.00624	-0.00000118
		102	5510	5,510.00959	-0.00000174
		110	5550	5,550.00404	-0.00000073
		134	5670	5,669.99861	0.00000024
		151	5755	5,755.00118	-0.00000020
		159	5795	5,794.99452	0.00000095

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5 Minutes:

Operation Mode	802.11 a	Test Date	2018.11.11
Temperature	:23 °C	Test By	Gary
Humidity	:68 %		

Test Temp.(°C)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.2	36	5180	5,179.99370	0.00000122
		44	5220	5,220.00903	-0.00000173
		48	5240	5,240.00804	-0.00000153
		52	5260	5,260.00210	-0.00000040
		60	5300	5,300.00537	-0.00000101
		64	5320	5,320.00105	-0.00000020
		100	5500	5,500.00690	-0.00000125
		116	5580	5,579.99935	0.00000012
		140	5700	5,700.00391	-0.00000069
		149	5745	5,744.99957	0.00000008
		157	5785	5,785.00239	-0.00000041
		165	5825	5,824.99238	0.00000131
	3.4	36	5180	5,180.00403	-0.00000078
		44	5220	5,219.99545	0.00000087
		48	5240	5,240.00846	-0.00000161
		52	5260	5,260.00217	-0.00000041
		60	5300	5,300.00452	-0.00000085
		64	5320	5,320.00387	-0.00000073
		100	5500	5,500.00270	-0.00000049
		116	5580	5,579.99623	0.00000068
		140	5700	5,700.00194	-0.00000034
		149	5745	5,744.99697	0.00000053
		157	5785	5,785.00586	-0.00000101
		165	5825	5,824.99738	0.00000045

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25	3.8	36	5180	5,180.00987	-0.00000190
		44	5220	5,219.99299	0.00000134
		48	5240	5,239.99341	0.00000126
		52	5260	5,259.99613	0.00000074
		60	5300	5,299.99610	0.00000074
		64	5320	5,320.00202	-0.00000038
		100	5500	5,499.99823	0.00000032
		116	5580	5,579.99567	0.00000078
		140	5700	5,700.00853	-0.00000150
		149	5745	5,745.00999	-0.00000174
		157	5785	5,785.00895	-0.00000155
		165	5825	5,825.00746	-0.00000128
50	4.2	36	5180	5,179.99087	0.00000176
		44	5220	5,219.99161	0.00000161
		48	5240	5,239.99962	0.00000007
		52	5260	5,260.00052	-0.00000010
		60	5300	5,299.99192	0.00000152
		64	5320	5,320.00556	-0.00000105
		100	5500	5,500.00864	-0.00000157
		116	5580	5,580.00092	-0.00000017
		140	5700	5,700.00388	-0.00000068
		149	5745	5,745.00645	-0.00000112
		157	5785	5,784.99844	0.00000027
		165	5825	5,824.99674	0.00000056
	3.4	36	5180	5,179.99623	0.00000073
		44	5220	5,220.00375	-0.00000072
		48	5240	5,239.99325	0.00000129
		52	5260	5,259.99645	0.00000068
		60	5300	5,299.99501	0.00000094
		64	5320	5,319.99629	0.00000070
		100	5500	5,500.00369	-0.00000067
		116	5580	5,579.99054	0.00000170
		140	5700	5,700.00767	-0.00000135
		149	5745	5,744.99348	0.00000114
		157	5785	5,785.00349	-0.00000060
		165	5825	5,824.99733	0.00000046

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Operation Mode	802.11 n_HT40	Test Date	2018.11.11
Temperature	:23 °C	Test By	Gary
Humidity	:68 %		

Test Temp.(°C)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.2	38	5190	5,189.99107	0.00000172
		46	5230	5,229.99782	0.00000042
		54	5270	5,269.99754	0.00000047
		62	5310	5,310.00345	-0.00000065
		102	5510	5,509.99530	0.00000085
		110	5550	5,549.99001	0.00000180
		134	5670	5,670.00722	-0.00000127
		151	5755	5,755.00569	-0.00000099
		159	5795	5,794.99267	0.00000126
	3.4	38	5190	5,190.00265	-0.00000051
		46	5230	5,229.99203	0.00000152
		54	5270	5,270.00414	-0.00000079
		62	5310	5,310.00725	-0.00000136
		102	5510	5,510.00737	-0.00000134
		110	5550	5,550.00277	-0.00000050
		134	5670	5,669.99099	0.00000159
		151	5755	5,754.99562	0.00000076
		159	5795	5,794.99777	0.00000039

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25	3.8	38	5190	5,189.99168	0.00000160
		46	5230	5,230.00607	-0.00000116
		54	5270	5,269.99471	0.00000100
		62	5310	5,309.99948	0.00000010
		102	5510	5,510.00806	-0.00000146
		110	5550	5,549.99089	0.00000164
		134	5670	5,669.99364	0.00000112
		151	5755	5,755.00687	-0.00000119
		159	5795	5,794.99646	0.00000061
50	4.2	38	5190	5,189.99620	0.00000073
		46	5230	5,229.99485	0.00000098
		54	5270	5,270.00488	-0.00000093
		62	5310	5,309.99288	0.00000134
		102	5510	5,509.99365	0.00000115
		110	5550	5,549.99624	0.00000068
		134	5670	5,669.99298	0.00000124
		151	5755	5,755.00481	-0.00000084
		159	5795	5,795.00711	-0.00000123
	3.4	38	5190	5,189.99510	0.00000095
		46	5230	5,230.00750	-0.00000143
		54	5270	5,270.00234	-0.00000044
		62	5310	5,309.99633	0.00000069
		102	5510	5,510.00602	-0.00000109
		110	5550	5,549.99988	0.00000002
		134	5670	5,670.00822	-0.00000145
		151	5755	5,754.99390	0.00000106
		159	5795	5,794.99407	0.00000102

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10 Minutes:

Operation Mode	802.11 a	Test Date	2018.11.11
Temperature	:23 °C	Test By	Gary
Humidity	:68 %		

Test Temp.(°C)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.2	36	5180	5,180.00837	-0.00000162
		44	5220	5,219.99760	0.00000046
		48	5240	5,240.00877	-0.00000167
		52	5260	5,259.99983	0.00000003
		60	5300	5,300.00246	-0.00000046
		64	5320	5,319.99468	0.00000100
		100	5500	5,499.99770	0.00000042
		116	5580	5,579.99706	0.00000053
		140	5700	5,699.99413	0.00000103
		149	5745	5,745.00608	-0.00000106
		157	5785	5,785.00561	-0.00000097
		165	5825	5,825.00119	-0.00000020
	3.4	36	5180	5,179.99039	0.00000186
		44	5220	5,220.00589	-0.00000113
		48	5240	5,240.00487	-0.00000093
		52	5260	5,259.99372	0.00000119
		60	5300	5,300.00973	-0.00000184
		64	5320	5,320.00242	-0.00000046
		100	5500	5,500.00148	-0.00000027
		116	5580	5,580.00103	-0.00000019
		140	5700	5,700.00135	-0.00000024
		149	5745	5,745.00929	-0.00000162
		157	5785	5,785.00426	-0.00000074
		165	5825	5,824.99384	0.00000106

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25	3.8	36	5180	5,180.00972	-0.00000188
		44	5220	5,220.00768	-0.00000147
		48	5240	5,239.99307	0.00000132
		52	5260	5,259.99390	0.00000116
		60	5300	5,299.99004	0.00000188
		64	5320	5,320.00220	-0.00000041
		100	5500	5,500.00269	-0.00000049
		116	5580	5,580.00382	-0.00000068
		140	5700	5,699.99436	0.00000099
		149	5745	5,745.00166	-0.00000029
		157	5785	5,784.99036	0.00000167
		165	5825	5,824.99853	0.00000025

50	4.2	36	5180	5,180.00382	-0.00000074
		44	5220	5,219.99615	0.00000074
		48	5240	5,240.00632	-0.00000121
		52	5260	5,260.00358	-0.00000068
		60	5300	5,299.99813	0.00000035
		64	5320	5,319.99623	0.00000071
		100	5500	5,499.99840	0.00000029
		116	5580	5,580.00434	-0.00000078
		140	5700	5,700.00700	-0.00000123
		149	5745	5,745.00819	-0.00000143
		157	5785	5,785.00822	-0.00000142
		165	5825	5,825.00632	-0.00000108
	3.4	36	5180	5,180.00596	-0.00000115
		44	5220	5,220.00687	-0.00000132
		48	5240	5,240.00184	-0.00000035
		52	5260	5,260.00105	-0.00000020
		60	5300	5,299.99978	0.00000004
		64	5320	5,319.99467	0.00000100
		100	5500	5,499.99162	0.00000152
		116	5580	5,580.00284	-0.00000051
		140	5700	5,700.00198	-0.00000035
		149	5745	5,745.00636	-0.00000111
		157	5785	5,784.99067	0.00000161
		165	5825	5,825.00619	-0.00000106

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Operation Mode	802.11 n_HT40	Test Date	2018.11.11
Temperature	:23 °C	Test By	Gary
Humidity	:68 %		

Test Temp.(°C)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.2	38	5190	5,190.00226	-0.00000044
		46	5230	5,230.00032	-0.00000006
		54	5270	5,270.00139	-0.00000026
		62	5310	5,310.00996	-0.00000187
		102	5510	5,509.99256	0.00000135
		110	5550	5,549.99088	0.00000164
		134	5670	5,670.00837	-0.00000148
		151	5755	5,755.00172	-0.00000030
		159	5795	5,794.99552	0.00000077
	3.4	38	5190	5,189.99279	0.00000139
		46	5230	5,229.99963	0.00000007
		54	5270	5,269.99617	0.00000073
		62	5310	5,310.00133	-0.00000025
		102	5510	5,509.99381	0.00000112
		110	5550	5,549.99377	0.00000112
		134	5670	5,670.00678	-0.00000120
		151	5755	5,755.00158	-0.00000028
		159	5795	5,794.99589	0.00000071

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25	3.8	38	5190	5,189.99277	0.00000139
		46	5230	5,229.99356	0.00000123
		54	5270	5,269.99807	0.00000037
		62	5310	5,310.00076	-0.00000014
		102	5510	5,509.99660	0.00000062
		110	5550	5,549.99138	0.00000155
		134	5670	5,670.00564	-0.00000099
		151	5755	5,755.00100	-0.00000017
		159	5795	5,794.99003	0.00000172
50	4.2	38	5190	5,190.00869	-0.00000167
		46	5230	5,230.00313	-0.00000060
		54	5270	5,269.99107	0.00000170
		62	5310	5,310.00047	-0.00000009
		102	5510	5,510.00583	-0.00000106
		110	5550	5,550.00886	-0.00000160
		134	5670	5,670.00914	-0.00000161
		151	5755	5,755.00801	-0.00000139
		159	5795	5,795.00639	-0.00000110
	3.4	38	5190	5,190.00442	-0.00000085
		46	5230	5,229.99647	0.00000068
		54	5270	5,270.00479	-0.00000091
		62	5310	5,310.00279	-0.00000053
		102	5510	5,510.00444	-0.00000081
		110	5550	5,550.00600	-0.00000108
		134	5670	5,669.99174	0.00000146
		151	5755	5,755.00487	-0.00000085
		159	5795	5,795.00657	-0.00000113

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14 ANTENNA REQUIREMENT

14.1 Standard Applicable

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

According to §15.407, If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

14.2 Antenna Connected Construction

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

~ End of Report ~

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