ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART E REQUIREMENT

OF

Applicant:	FUJITSU CONNECTED TECHNOLOGIES Ltd. 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki 211-8588, Japan
Product Name:	Smart Phone
Brand Name:	FUJITSU
Model No.:	801FJ
Model Difference:	N/A
FCC ID:	2AQYEFMP170
Report Number:	T190327W10-RP2
FCC Rule Part:	§15.407, Cat: NII
Issue Date:	May 9th, 2019
Date of Test:	Mar. 27th, 2019~Apr. 18th, 2019
Date of EUT Received:	Mar. 27th, 2019
Issued by:	Compliance Certification Services Inc.Wugu Lab. No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.) service@ccsrf.com

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.
The test results of this report relate only to the tested sample (EUT) identified in this report
The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory).

Tested By: Jerry Lu
Jerry Lu / Sr. Engineer

Approved By: Kevin Tsai
Kevin Tsai / Deputy Manager

Revision History

Report Number	Revision	Description	Effected Page	Issue Date	Revised By
T190327W10-RP2	Rev.00	Initial creation of document	All	May 9th, 2019	Violetta Tang

Contents

1. GENERAL INFORMATION

1.1 Product Description

General:

Product Name:	Smart Phone	
Brand Name:	FUJITSU	
Model No.:	801FJ	
Model difference:	N/A	
Hardware Version:	V2.0.0	
Software Version:	V00R028A	
Power Supply:	3.85Vdc from Rechargeable Li-ion Battery or 5Vdc /7Vdc / 9Vdc / 12Vdc from AC/DC Adapter	
	Battery:	Model No.: CA08723-1021, Supplier: FUJITSU CONNECTED TECHNOLOGIES LIMITED
	Adapter:	Model No.: SB-AC20-TCPD Supplier: SoftBank SELECTION

WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Avg. Power (dBm)	Modulation Technology
11a_20	5180~5240	4	14.98	OFDM
	5260~5320	4	14.99	
	5500~5700	11	14.99	
11n_HT / ac_VHT 20M	5180~5240	4	HT: 14.98 (Worst Case)	OFDM
	5260~5320	4	HT: 14.92 (Worst Case)	
	5500~5700	11	HT: 14.85 (Worst Case)	
11n_HT / ac_VHT 40M	5190~5230	2	HT: 14.96 (Worst Case)	OFDM
	5270~5310	2	HT: 14.95 (Worst Case)	
	5510~5670	5	HT: 14.93 (Worst Case)	
11ac VHT80M	5210	1	8.99	OFDM
	5290	1	8.83	
	5530~5610	2	8.97	
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 802.11ac only			
Transition Rate:	802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 72.2Mbps 802.11 n_40MHz: 13.5 – 150.0Mbps 802.11 ac_20MHz: 6.5 – 86.Mbps 802.11 ac_40MHz: 13.5 – 200.0Mbps 802.11 ac_80MHz: 29.3 – 433.3Mbps			
Antenna Designation:	Inverted-F Antenna, 5150~5250MHz Gain: -2.98dBi 5250~5350MHz Gain: -3.06dBi 5470~5725MHz Gain: -1.28dBi			

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

Compliance Certification Services Inc. Wugu Lab. No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.) (TAF code 1309)

FCC Designation number: TW1309

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.

2. SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

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

2.2 EUT Exercise

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

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as 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 30MHz,. 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 a placed on as turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plan. 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 Example

For all conducted test items:

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

Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission

Fig. 2-2 Conducted (Antenna Port) Emission

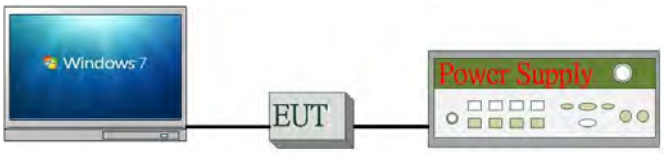


Fig. 2-2 AC Power Line Conducted Emission

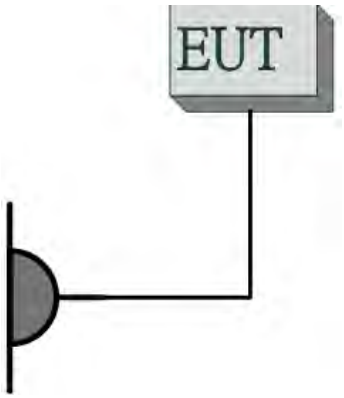


Table 2-1 Equipment Used in Tested System

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.	DC Power Supply	Agilent	E3640A	KR93300208	N/A	Unshielded
3.	Notebook	Lenovo	T440P	PC-089AH5	Shielded	Unshielded

3. SUMMARY OF TEST RESULT

FCC Rules	Description Of Test	Result
§15.207	AC Power Line Conducted Emission	Compliant
§15.403(i) §15.407(e)	26 dB & 6dB & 99% Emission Bandwidth	Compliant
§15.407(a)	Maximum Conducted Output Power	Compliant
§15.407(a)	Power Spectral Density	Compliant
§15.205 §15.209 §15.407(b)	Undesirable Radiated Emissions	Compliant
§15.407(c)	Transmission in case of Absence of Information	Compliant
§15.407(g)	Frequency Stability	Compliant
§15.203 §15.407(a)	Antenna Requirement	Compliant

4. DESCRIPTION OF TEST MODES

4.1 Operated in U-NII Bands

Operated band in 5150 MHz ~5250 MHz:

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

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

802.11ac VHT80 Mode	
channel	Frequency
42	5210

Operated band in 5250 MHz ~5350 MHz:

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

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

802.11ac VHT80 Mode	
Channel	Frequency
58	5290

Operated band in 5470 MHz ~5725 MHz:

802.11a / n HT20 Mode, 802.11ac VHT20 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, 802.11ac VHT40 Mode	
channel	Frequency
102	5510
110	5550
118	5590
126	5630
134	5670

802.11ac VHT80 Mode	
channel	Frequency
106	5530
122	5610

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 prorammed.
3. Investigation has been done on all the possible configurations for searching the worst case. The gevin UE is pre-scanned among below modes.

AC POWER LINE CONDUCTED EMISSION TEST:

Test Condition	AC Power line conducted emission for line and neutral
Worst Case	Operation in normal mode

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	Ch0
802.11a	5260~5320	52 to 64	60	OFDM	6	Ch0
802.11a	5500~5700	100 to 140	116	OFDM	6	Ch0
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	Ch0
802.11n_HT20				OFDM	MCS0	Ch0
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS0	Ch0
802.11ac_VHT80	5210	42	42	OFDM	MCS0	Ch0
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	Ch0
802.11n_HT20				OFDM	MCS0	Ch0
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS0	Ch0
802.11ac_VHT80	5290	58	58	OFDM	MCS0	Ch0
802.11a	5500~5700	100 to 140	100,116,140	OFDM	6	Ch0
802.11n_HT20				OFDM	MCS0	Ch0
802.11n_HT40	5510~5670	102 to 134	102,110,134	OFDM	MCS0	Ch0
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS0	Ch0

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

ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	Ch0
802.11n_HT20				OFDM	MCS0	Ch0
802.11ac_VHT20					MCS0	
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS0	Ch0
802.11ac_VHT40					MCS0	
802.11ac_VHT80	5210	42	42	OFDM	MCS0	Ch0
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	Ch0
802.11n_HT20				OFDM	MCS0	Ch0
802.11ac_VHT20					MCS0	
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS0	Ch0
802.11ac_VHT40					MCS0	
802.11ac_VHT80	5290	58	58	OFDM	MCS0	Ch0
802.11a	5500~5700	100 to 140	100,116,140	OFDM	6	Ch0
802.11n_HT20				OFDM	MCS0	Ch0
802.11ac_VHT20					MCS0	
802.11n_HT40	5510~5670	102 to 134	102,110,134	OFDM	MCS0	Ch0
802.11ac_VHT40					MCS0	
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS0	Ch0

5. MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575 dB
26dB & 6dB Emission Bandwidth	+/- 147.256 Hz
The Maximum Output Power	+/- 1.924 dB
Peak Power Spectral Density	+/- 2.038 dB
Frequency Stability	+/- 147.256 Hz
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12 dB
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68 dB
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18 dB
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47 dB
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81 dB
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87 dB

Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.
3. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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.		

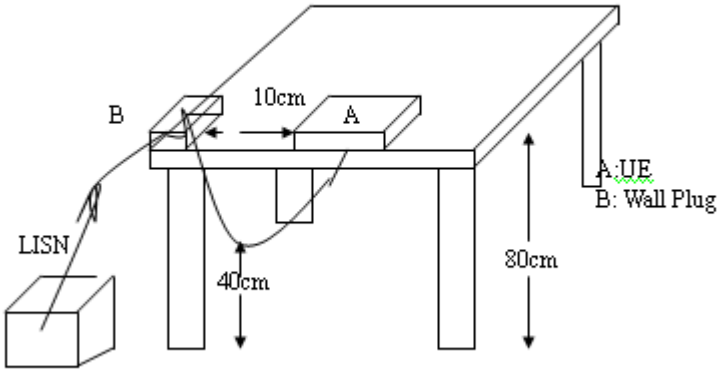
6.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
CABLE	EMCI	CFD300-NL	CERF	Jun. 29th, 2018	Jun. 28th, 2019
EMI Test Receiver	R&S	ESCI	100064	Jul. 24th, 2018	Jul. 23th, 2019
LISN	SCHWARZBECK	NSLK 8127	8127-541	Jan. 31th, 2019	Jan. 30th, 2020
LISN	SCHAFFNER	NNB 41	03/10013	Feb. 13th, 2019	Feb. 12th, 2020
Software	EZ-EMC(CCS-3A1-CE)				

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.

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.

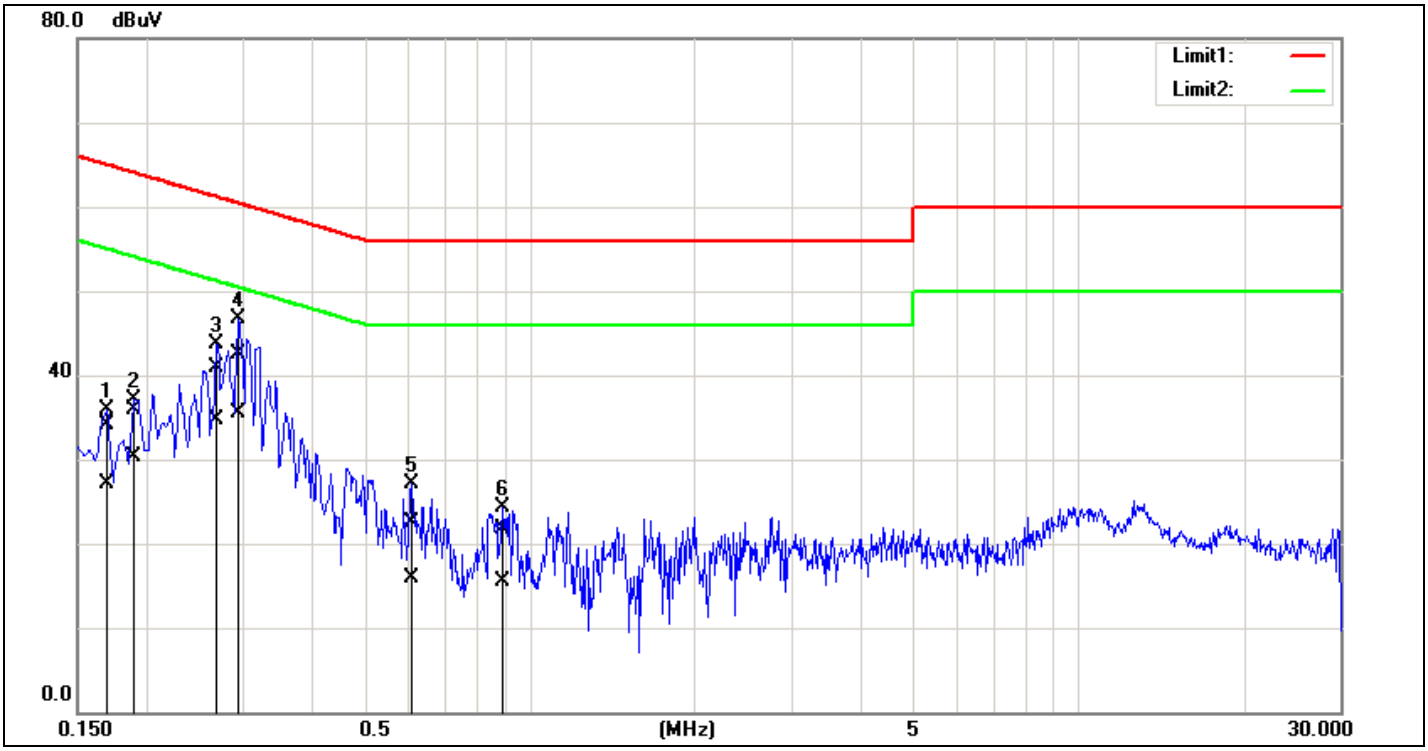
6.6 Measurement Result

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

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

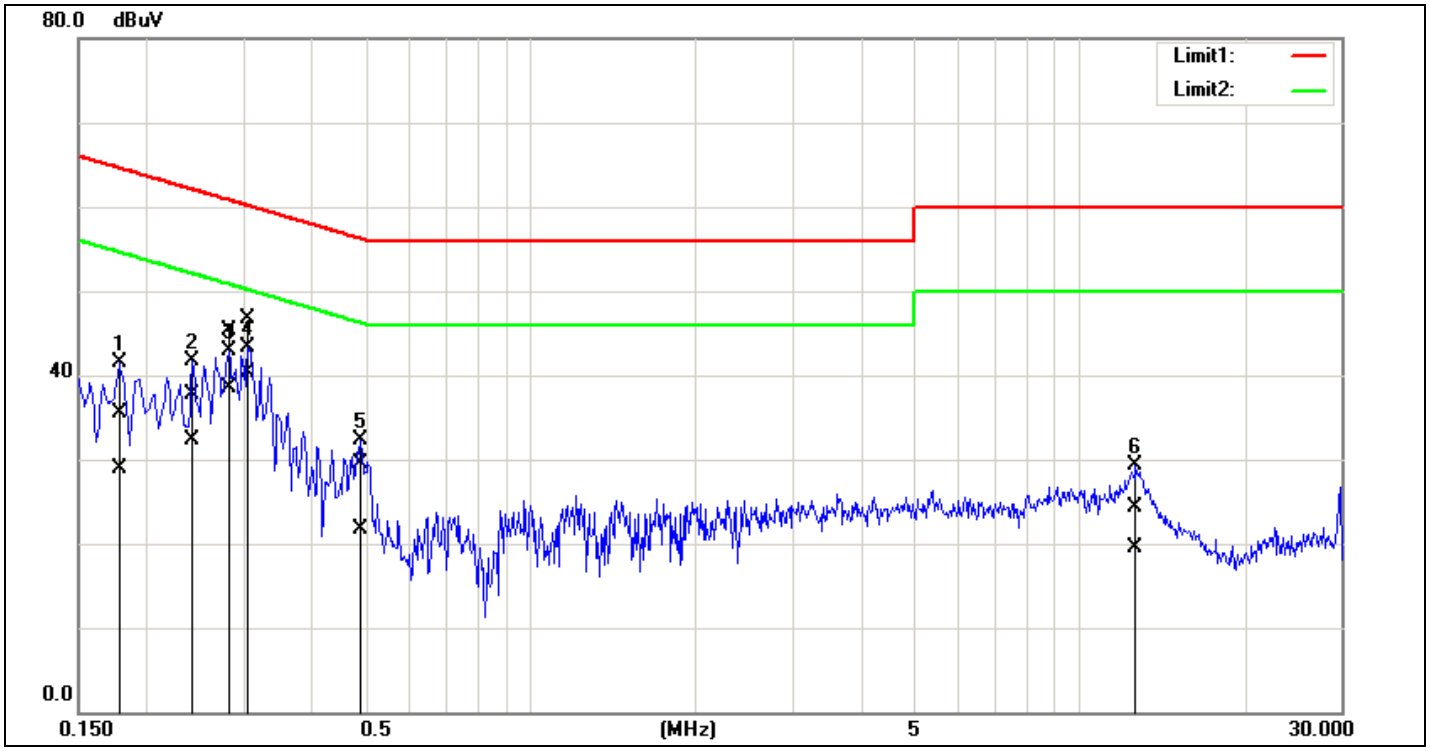
AC POWER LINE CONDUCTED EMISSION TEST DATA

Description:	**Operation**	**Date:**	**2019/4/11**
Line:	**L1**	**Temp.(℃)/Hum.(%):**	**22.5(℃)/61%**
Test Voltage:	**AC 120V/60Hz**	**Test By:**	**Peter**



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1700	33.97	26.87	0.16	34.13	27.03	64.96	54.96	-30.83	-27.93	Pass
2	0.1900	35.82	30.16	0.15	35.97	30.31	64.03	54.04	-28.06	-23.73	Pass
3	0.2700	40.75	34.49	0.15	40.90	34.64	61.12	51.12	-20.22	-16.48	Pass
4*	0.2940	42.45	35.34	0.15	42.60	35.49	60.41	50.41	-17.81	-14.92	Pass
5	0.6100	22.26	15.76	0.16	22.42	15.92	56.00	46.00	-33.58	-30.08	Pass
6	0.8900	21.57	15.41	0.18	21.75	15.59	56.00	46.00	-34.25	-30.41	Pass

Description:	**Operation**	**Date:**	**2019/4/11**
Line:	**N**	**Temp.(℃)/Hum.(%):**	**24(℃)/50%**
Test Voltage:	**AC 120V/60Hz**	**Test By:**	**Peter**



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1780	35.38	28.81	0.05	35.43	28.86	64.58	54.58	-29.15	-25.72	Pass
2	0.2420	37.75	32.33	0.05	37.80	32.38	62.03	52.03	-24.23	-19.65	Pass
3	0.2820	45.20	38.53	0.05	45.25	38.58	60.76	50.76	-15.51	-12.18	Pass
4*	0.3060	46.58	40.34	0.06	46.64	40.40	60.08	50.08	-13.44	-9.68	Pass
5	0.4900	29.54	21.61	0.06	29.60	21.67	56.17	46.17	-26.57	-24.50	Pass
6	12.6620	24.17	19.33	0.17	24.34	19.50	60.00	50.00	-35.66	-30.50	Pass

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:

Duty Cycle = Ton / (Ton+Toff)

Measurement Procedure:

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

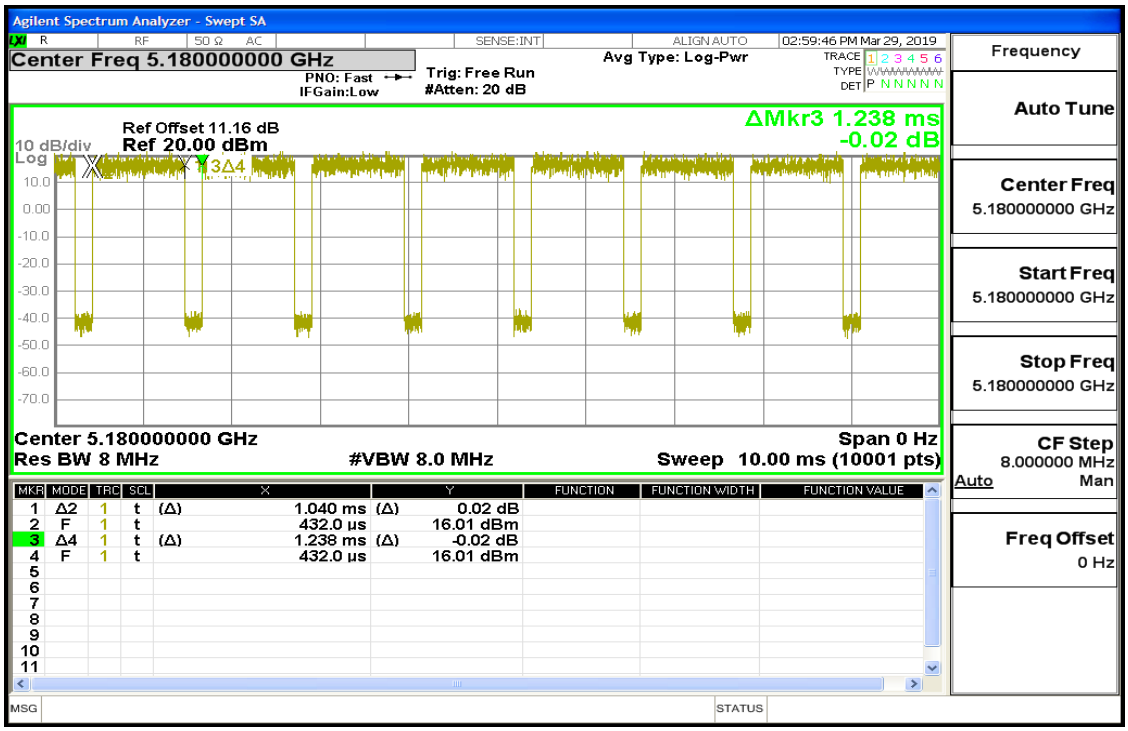
Duty Cycle:

Mode	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11a	84.00	0.76	0.96	1.00
802.11n_20	83.00	0.81	1.02	2.00
802.11ac_20	83.10	0.80	1.02	2.00
802.11n_40	71.00	1.49	2.05	3.00
802.11ac_40	71.20	1.48	2.03	3.00
802.11ac_80	55.40	2.56	4.03	5.00

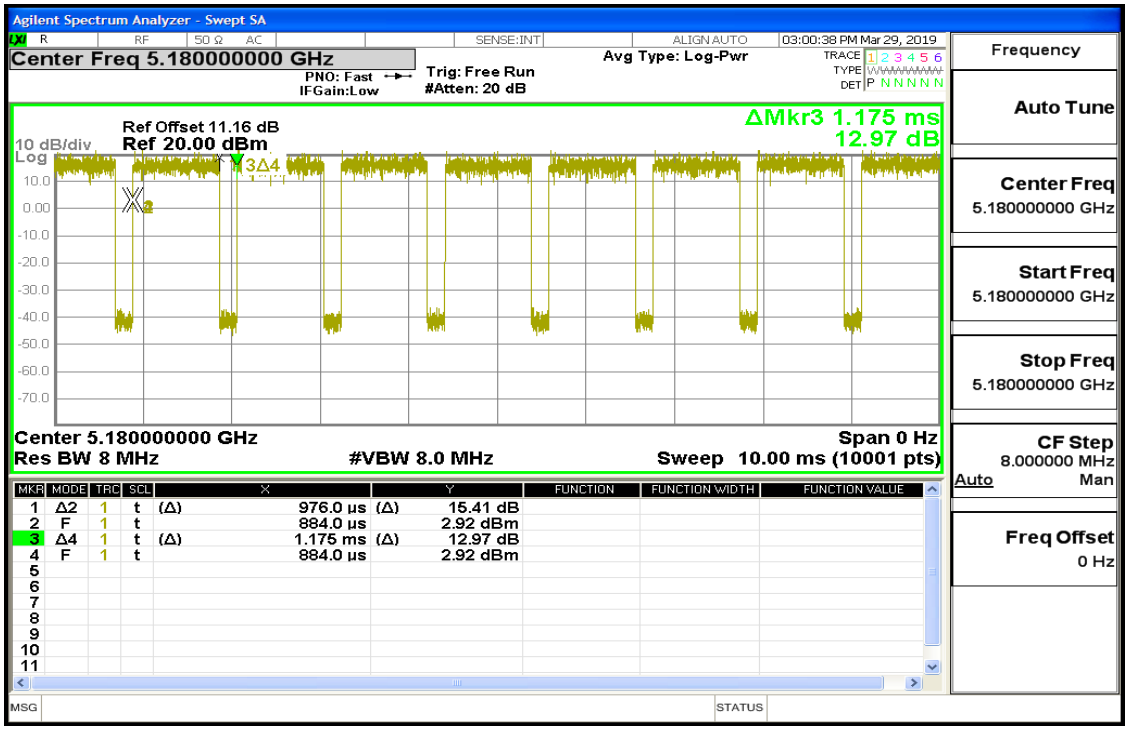
Duty Cycle Factor: 10 * log(1/0.84) = 0.76
Duty Cycle Factor: 10 * log(1/0.83) = 0.81
Duty Cycle Factor: 10 * log(1/0.831) = 0.8
Duty Cycle Factor: 10 * log(1/0.71) = 1.49
Duty Cycle Factor: 10 * log(1/0.712) = 1.48
Duty Cycle Factor: 10 * log(1/0.554) = 2.56

DUTY CYCLE TEST SIGNAL Measurement Result

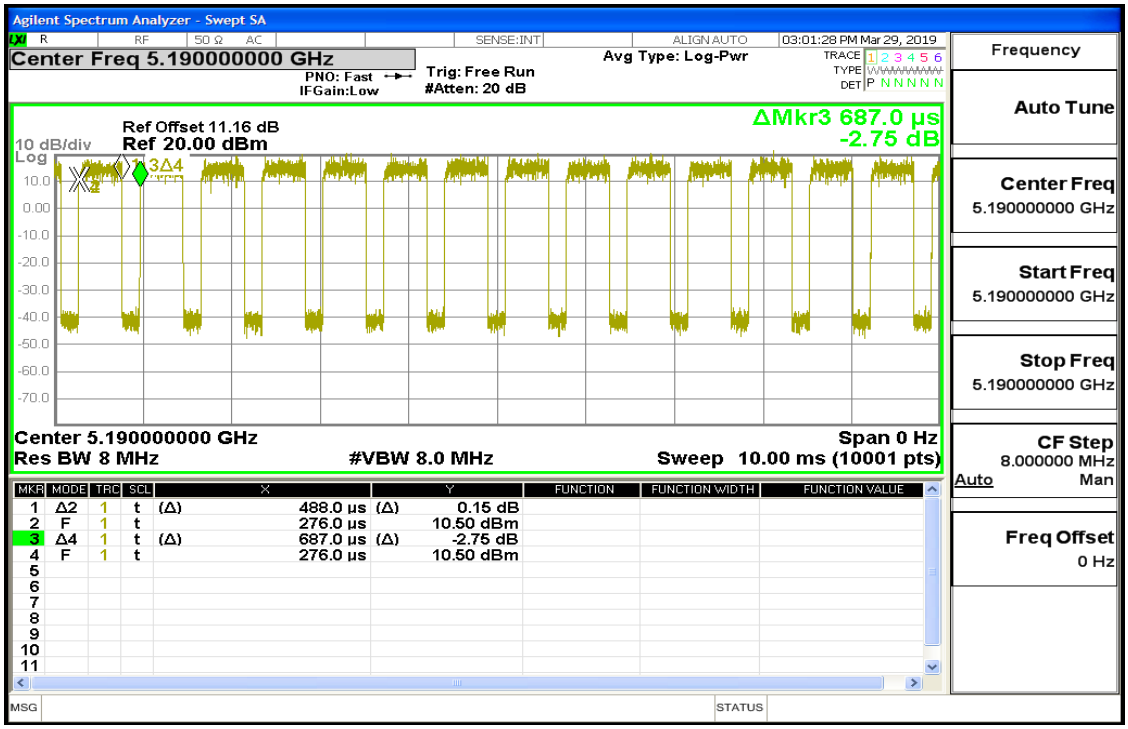
802.11a



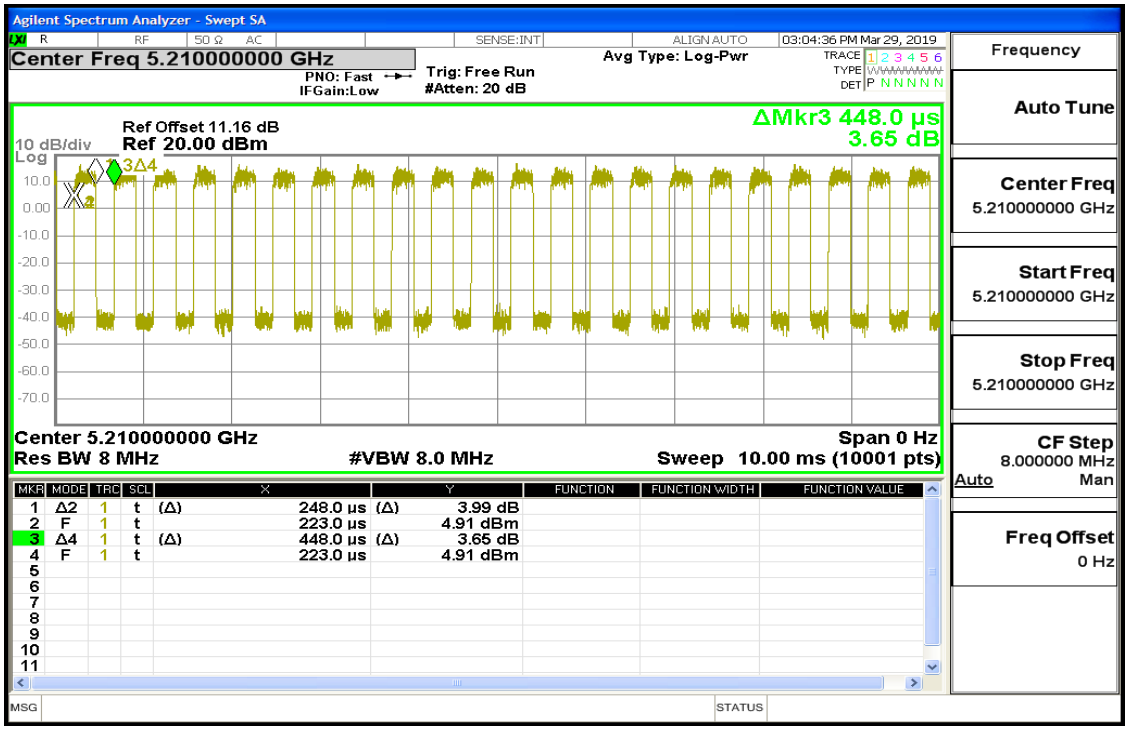
802.11n HT20



802.11n HT 40



802.11 ac VHT 80



8. 26DB EMISSION BANDWIDTH MEASUREMENT

8.1 Standard Applicable

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

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

8.2 Measurement Procedure

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

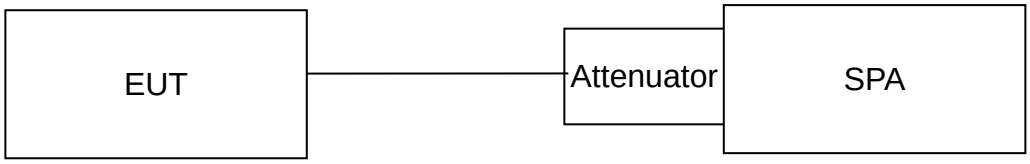
   Set the spectrum analyzer as RBW=1%, VBW = 3*RBW, Span = 30M/50MHz, Detector=Sample, Sweep=auto.
7. Turn on the 99% bandwidth function, max reading.

   Repeat above procedures until all frequency of interest measured was complete.

8.3 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
DC Power Supply	Agilent	E3640A	KR93300208	Aug. 15th, 2018	Aug. 14th, 2019
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY57120290	Feb. 13th, 2019	Feb. 12th, 2020
Thermostatic/Hrgrosatic Chamber	TAICHY	MHG-150LF	930619	Oct. 08th, 2018	Oct. 07th, 2019
DC Block	Mini-Circuits	BLK-18-S+	31129(1)	Feb. 26th, 2019	Feb. 25th, 2020
Attenuator	Mini-Circuit	BW-S10W2+	1	Feb. 26th, 2019	Feb. 25th, 2020

8.4 Test Set-up



8.5 Measurement Result

26dB Bandwidth

802.11a_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	22.17	13.458
5220	21.10	13.243
5240	21.56	13.336
5260	21.48	13.320
5300	22.09	13.442
5320	21.35	13.294
5500	21.77	13.379
5580	21.86	13.397
5700	22.04	13.432

802.11n_HT20_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	22.00	13.424
5220	22.50	13.522
5240	22.02	13.427
5260	21.94	13.412
5300	22.52	13.526
5320	22.39	13.500
5500	21.96	13.417
5580	22.55	13.531
5700	22.31	13.484

802.11n _HT40_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	41.98	16.231
5230	42.41	16.275
5270	42.26	16.260
5310	43.11	16.345
5510	43.28	16.363
5550	**42.82**	16.317
5670	42.90	16.325

802.11ac _VHT80_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	83.19	19.201
5290	82.86	19.184
5530	83.87	19.236
5610	80.87	19.078

99% BW verification for DFS Function

802.11a_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.37	< 5250

802.11n_HT20_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.94	< 5250

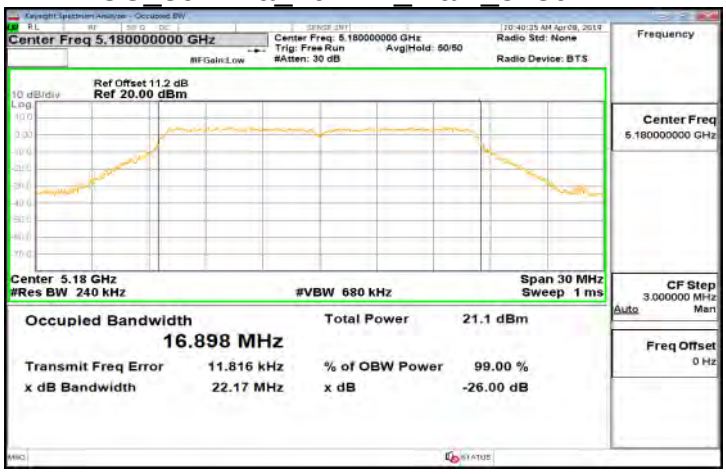
802.11n _HT40_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5230	5248.05	< 5250

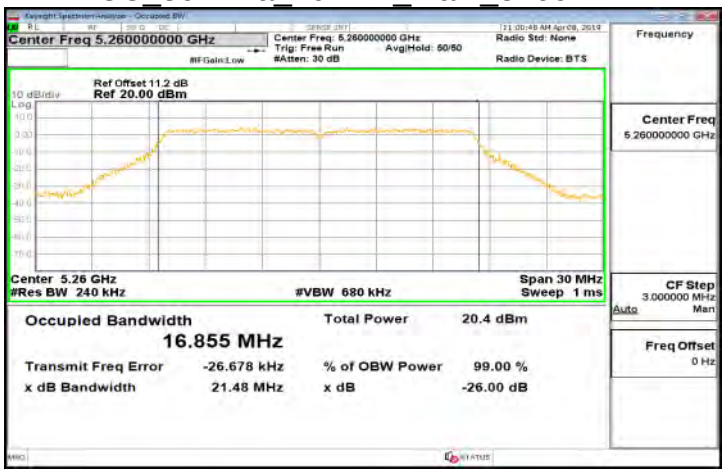
802.11ac _VHT80_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5210	5247.40	< 5250

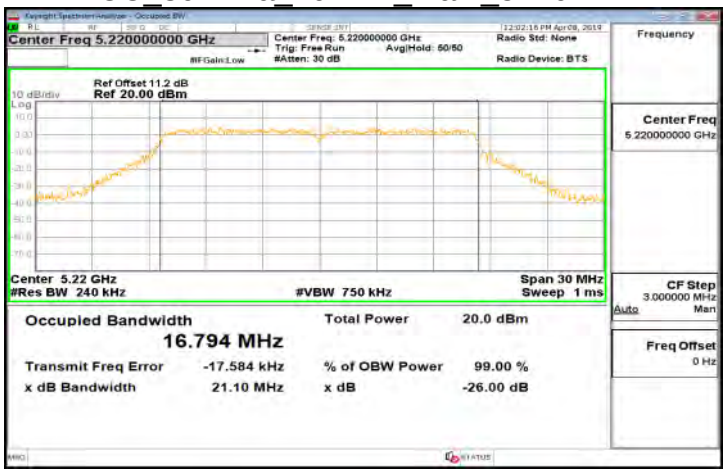
FCC_802.11a_20MHz_Main_5180MHz



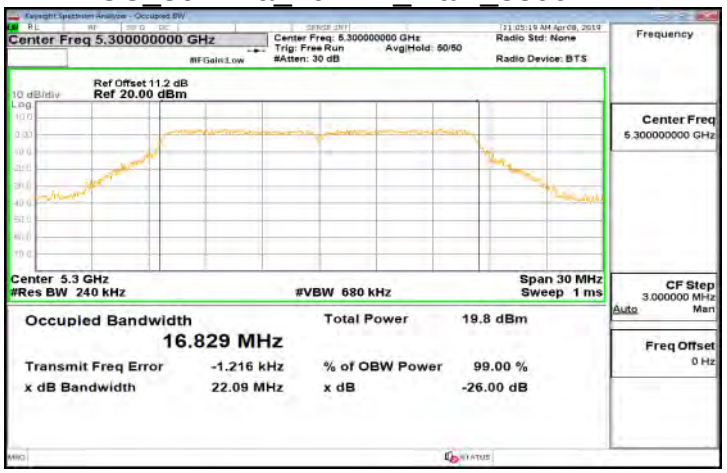
FCC_802.11a_20MHz_Main_5260MHz



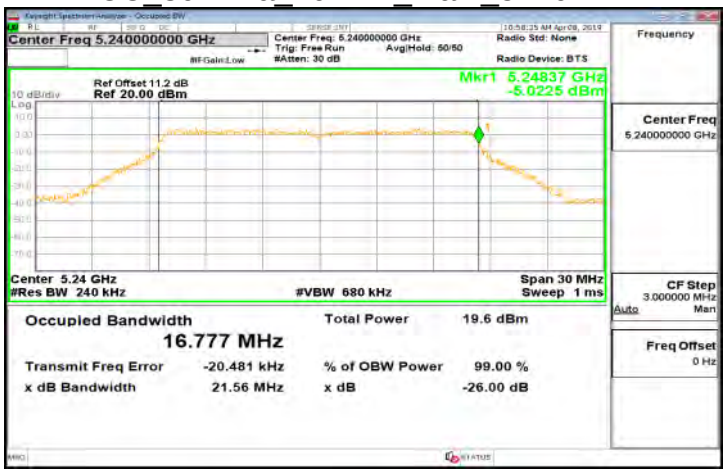
FCC_802.11a_20MHz_Main_5220MHz



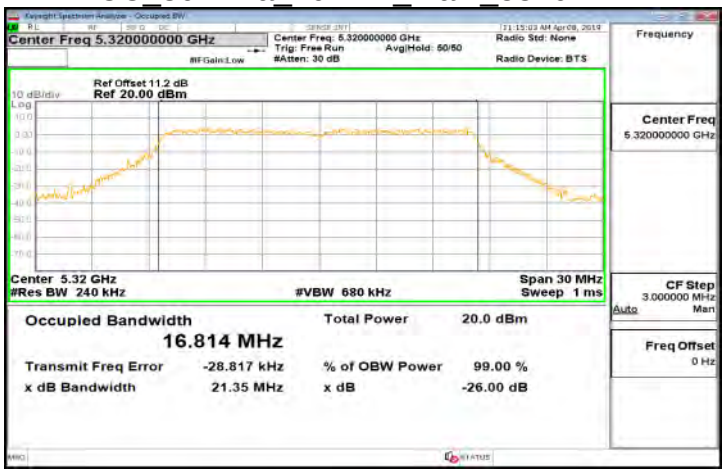
FCC_802.11a_20MHz_Main_5300MHz



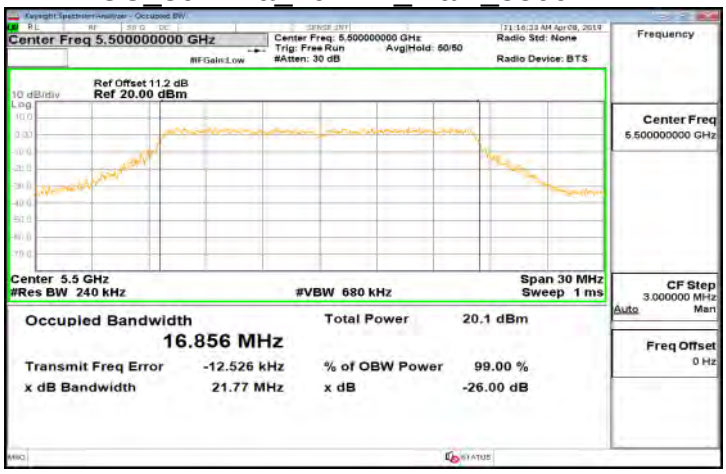
FCC_802.11a_20MHz_Main_5240MHz



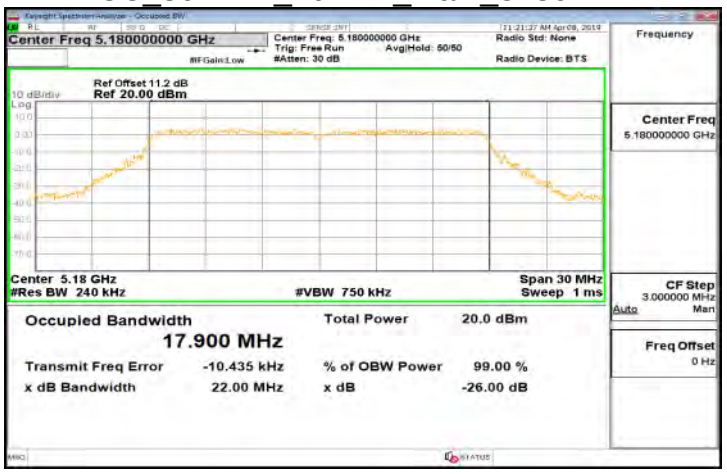
FCC_802.11a_20MHz_Main_5320MHz



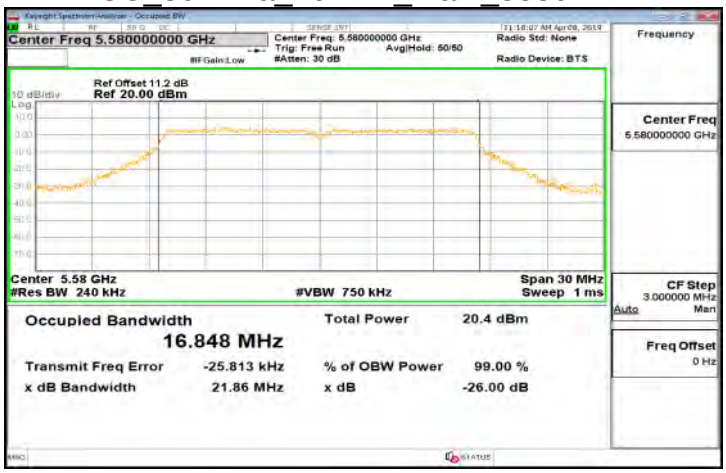
FCC_802.11a_20MHz_Main_5500MHz



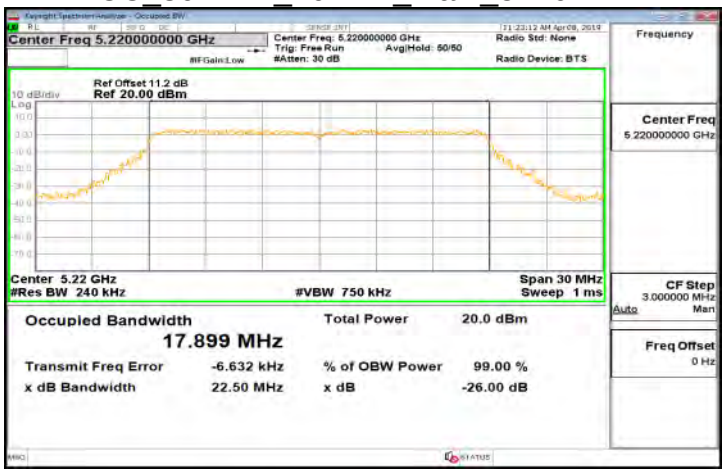
FCC_802.11n_20MHz_Main_5180MHz



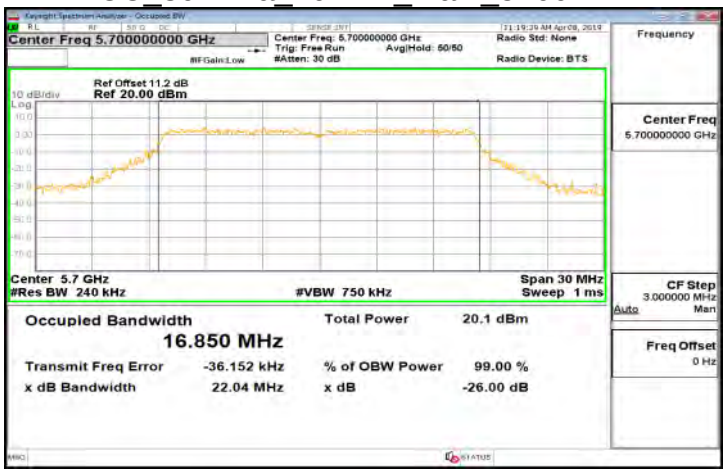
FCC_802.11a_20MHz_Main_5580MHz



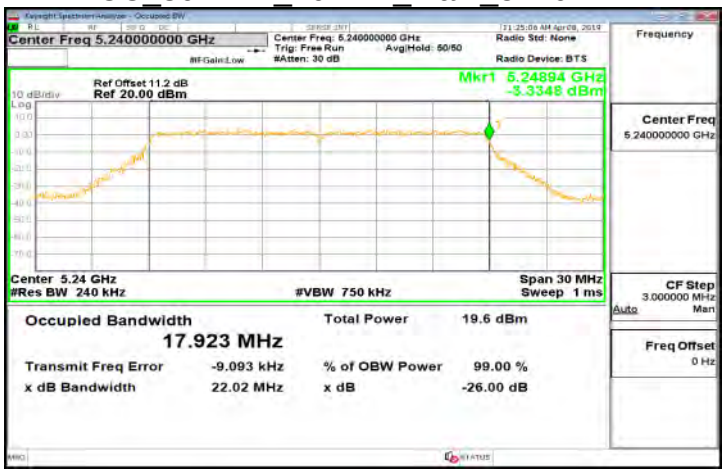
FCC_802.11n_20MHz_Main_5220MHz



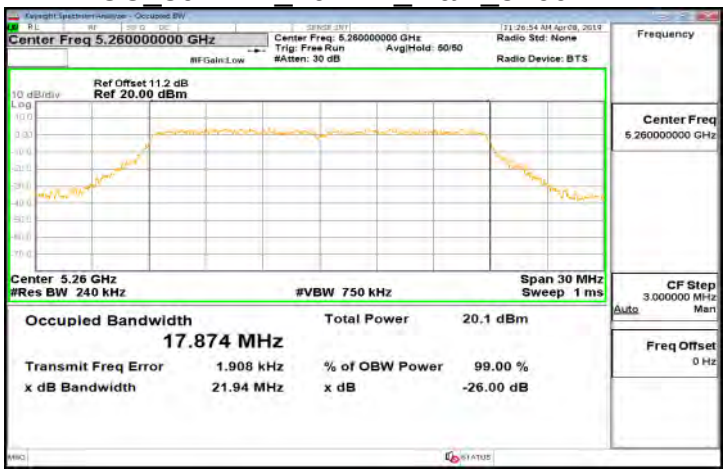
FCC_802.11a_20MHz_Main_5700MHz



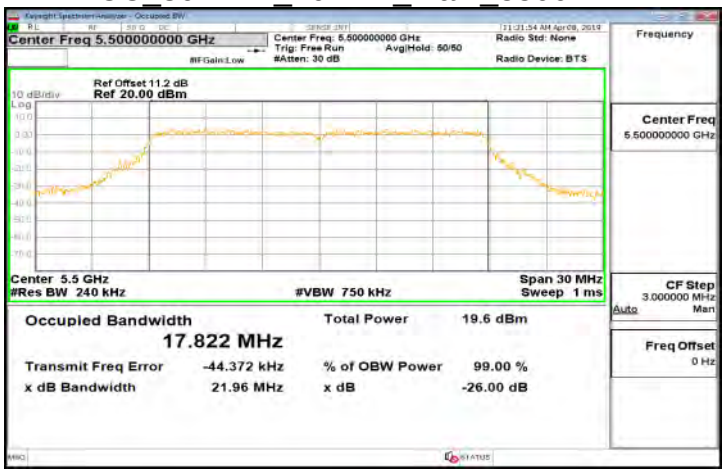
FCC_802.11n_20MHz_Main_5240MHz



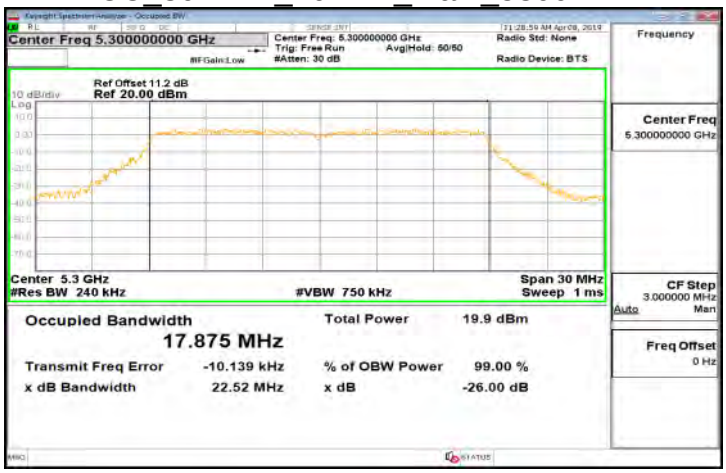
FCC_802.11n_20MHz_Main_5260MHz



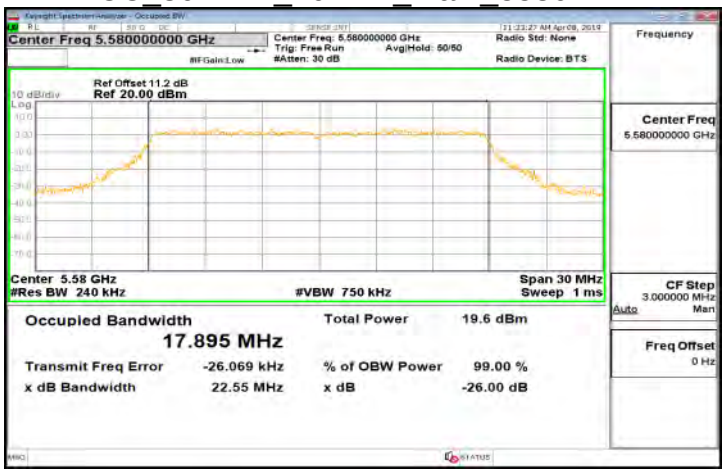
FCC_802.11n_20MHz_Main_5500MHz



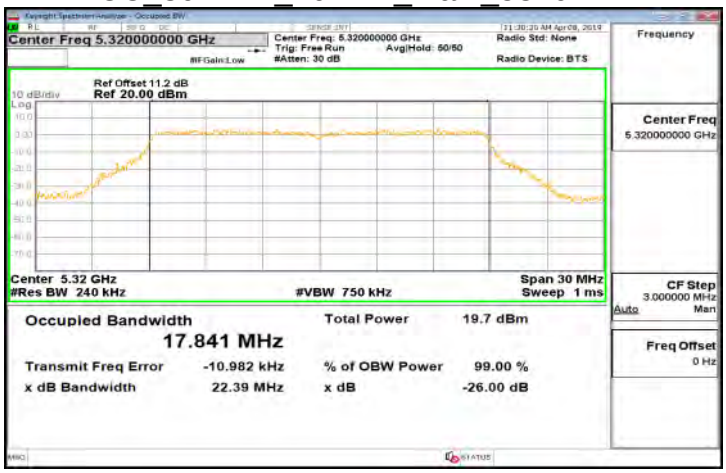
FCC_802.11n_20MHz_Main_5300MHz



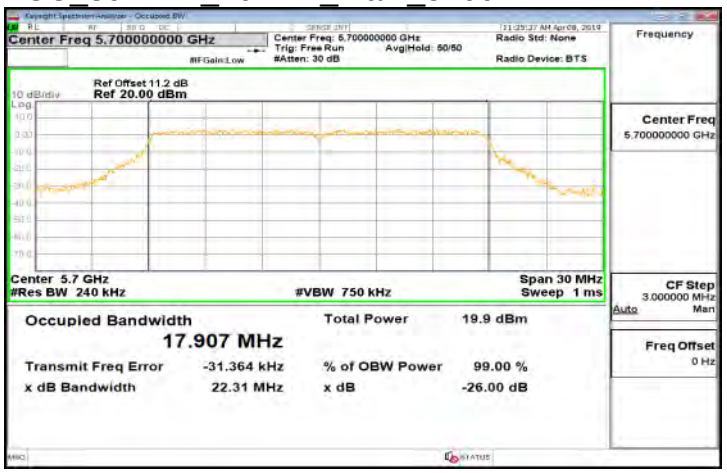
FCC_802.11n_20MHz_Main_5580MHz



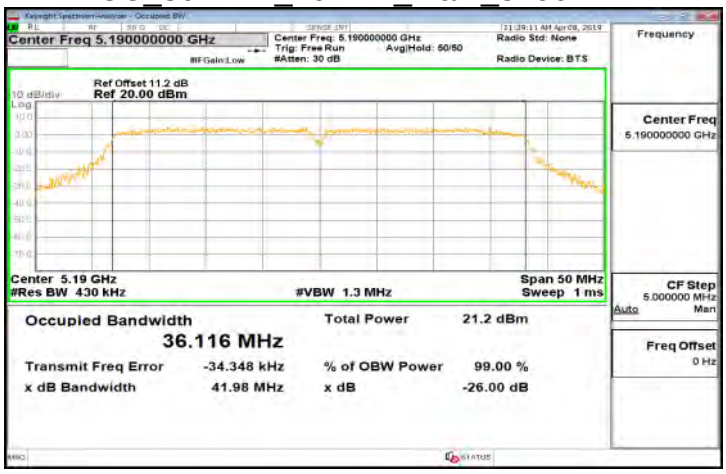
FCC_802.11n_20MHz_Main_5320MHz



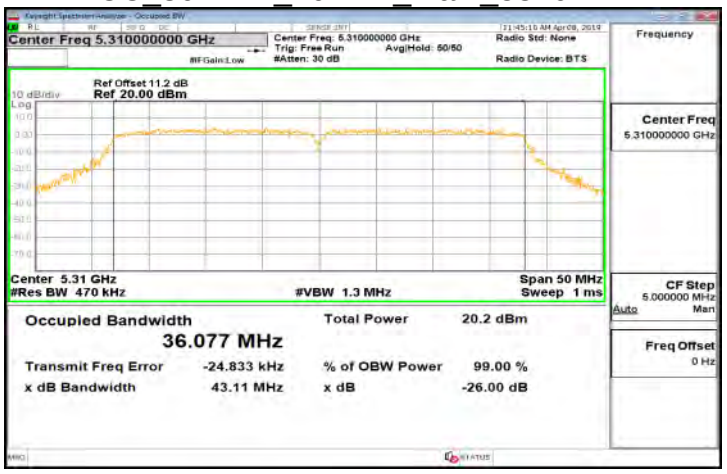
FCC_802.11n_20MHz_Main_5700MHz



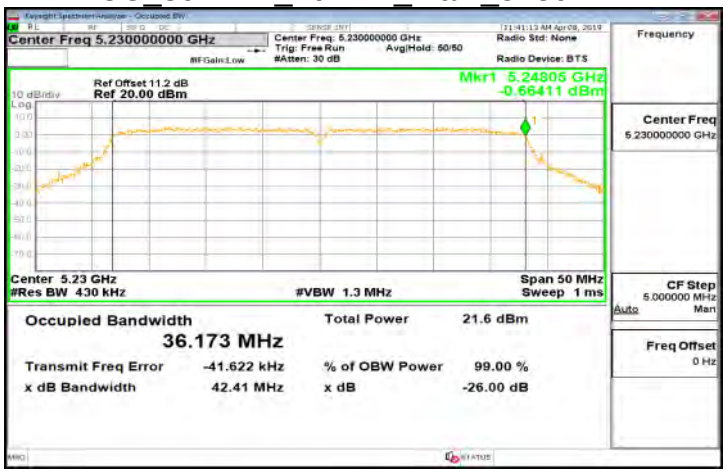
FCC_802.11n_40MHz_Main_5190MHz



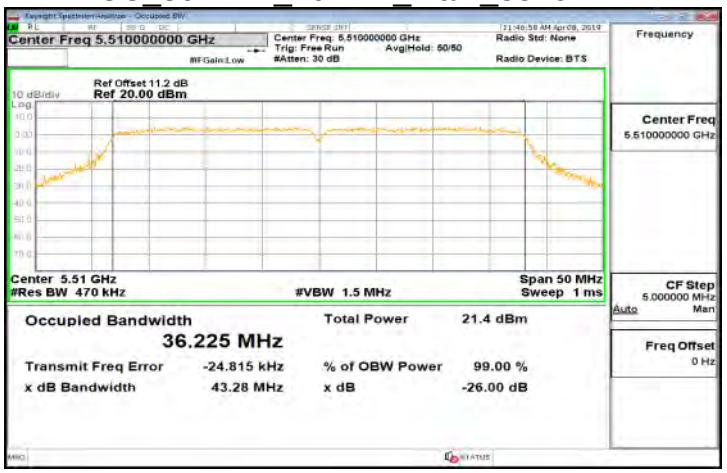
FCC_802.11n_40MHz_Main_5310MHz



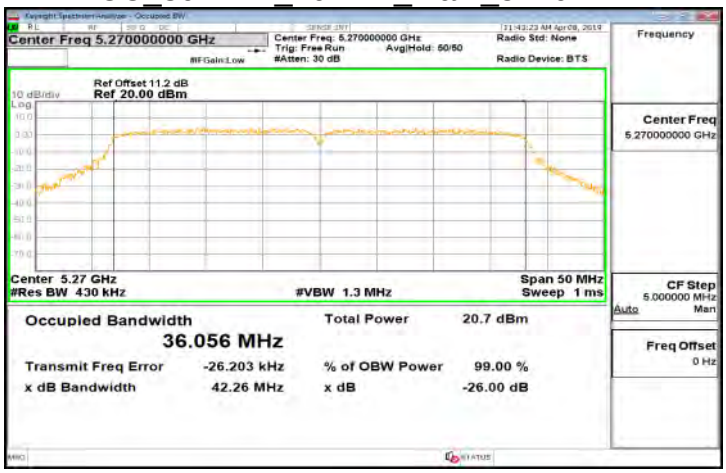
FCC_802.11n_40MHz_Main_5230MHz



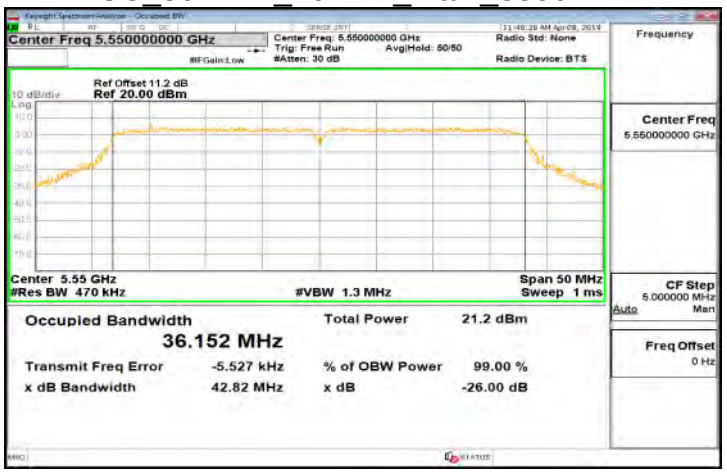
FCC_802.11n_40MHz_Main_5510MHz



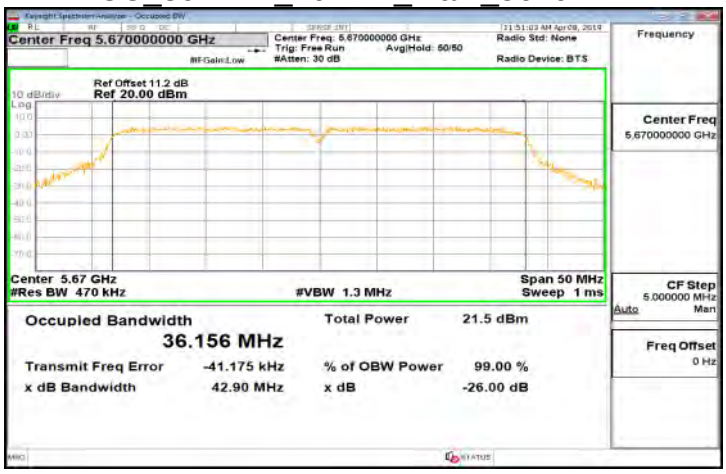
FCC_802.11n_40MHz_Main_5270MHz



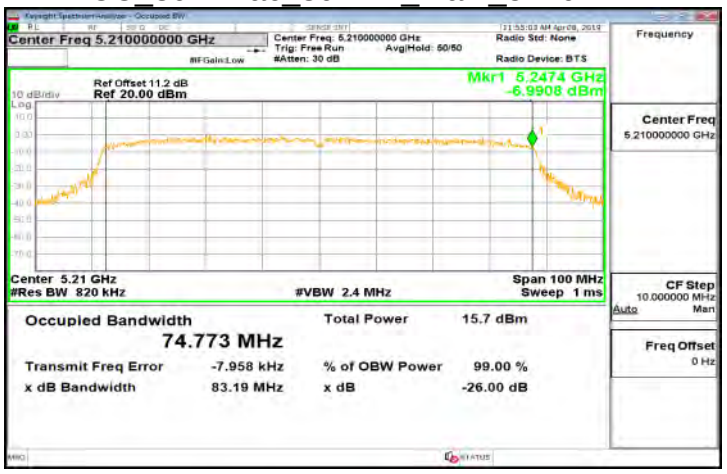
FCC_802.11n_40MHz_Main_5550MHz



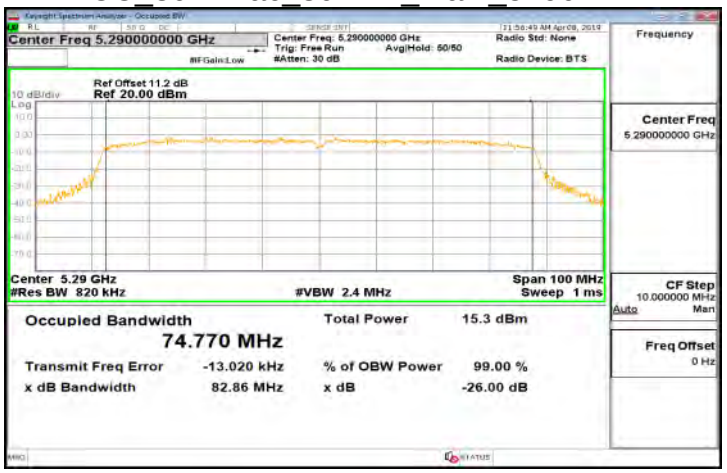
FCC_802.11n_40MHz_Main_5670MHz



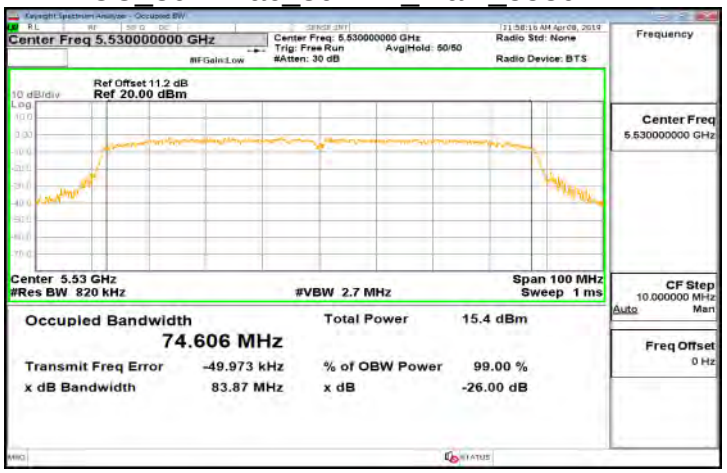
FCC_802.11ac_80MHz_Main_5210MHz



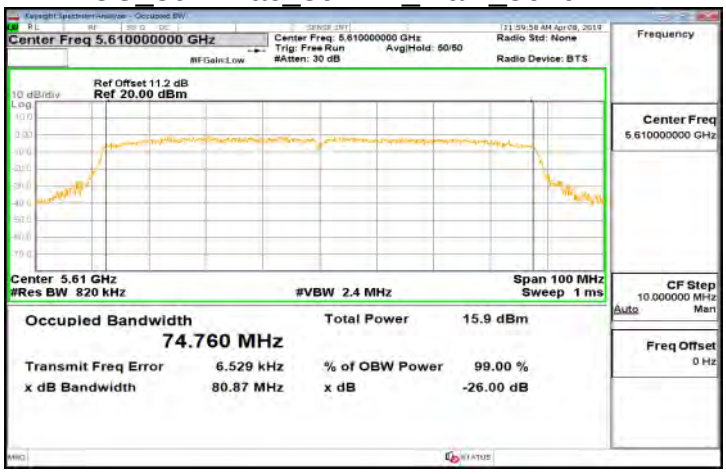
FCC_802.11ac_80MHz_Main_5290MHz



FCC_802.11ac_80MHz_Main_5530MHz



FCC_802.11ac_80MHz_Main_5610MHz



9. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

9.1 Standard Applicable

OPERZTION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Master device)	1 Watt(30dBm)
		Fixed point-to-point Access 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.			

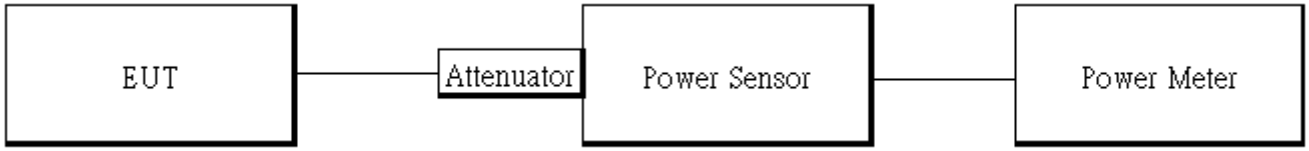
9.2 Measurement Procedure

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

9.3 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2496A	1242004	Oct. 23th, 2018	Oct. 22th, 2019
Power Sensor	Anritsu	MA2411B	1207365	Oct. 23th, 2018	Oct. 22th, 2019
Power Sensor	Anritsu	MA2411B	1207368	Oct. 24th, 2018	Oct. 23th, 2019
DC Power Supply	Agilent	E3640A	KR93300208	Aug. 15th, 2018	Aug. 14th, 2019
Attenuator	Mini-Circuit	BW-S10W2+	1	Feb. 26th, 2019	Feb. 25th, 2020

9.4 Test Set-up



9.5 Measurement Result

802.11a_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	**14.98**	31.457	23.98	PASS
44	5220	6	14.95	31.241	23.98	PASS
48	5240	6	14.92	31.026	23.98	PASS
52	5260	6	14.94	31.169	23.98 or 11+10log(B) = 24.32	PASS
60	5300	6	14.93	31.097	23.98 or 11+10log(B) = 24.44	PASS
64	5320	6	**14.99**	31.530	23.98 or 11+10log(B) = 24.29	PASS
100	5500	6	14.98	31.457	23.98 or 11+10log(B) = 24.38	PASS
116	5580	6	14.95	31.241	23.98 or 11+10log(B) = 24.40	PASS
140	5700	6	**14.99**	31.530	23.98 or 11+10log(B) = 24.43	PASS

802.11n_HT20_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	**14.97**	31.399	23.98	PASS
44	5220	MCS0	14.94	31.183	23.98	PASS
48	5240	MCS0	14.93	31.112	23.98	PASS
52	5260	MCS0	**14.92**	31.040	23.98 or 11+10log(B) = 24.41	PASS
60	5300	MCS0	14.89	30.826	23.98 or 11+10log(B) = 24.53	PASS
64	5320	MCS0	14.82	30.333	23.98 or 11+10log(B) = 24.50	PASS
100	5500	MCS0	**14.85**	30.544	23.98 or 11+10log(B) = 24.42	PASS
116	5580	MCS0	14.73	29.711	23.98 or 11+10log(B) = 24.53	PASS
140	5700	MCS0	14.72	29.643	23.98 or 11+10log(B) = 24.48	PASS

802.11n_HT40_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	**14.96**	31.314	23.98	PASS
46	5230	MCS0	14.94	31.170	23.98	PASS
54	5270	MCS0	14.90	30.885	23.98 or 11+10log(B) = 27.26	PASS
62	5310	MCS0	**14.95**	31.242	23.98 or 11+10log(B) = 27.35	PASS
102	5510	MCS0	**14.93**	31.099	23.98 or 11+10log(B) = 27.36	PASS
110	5550	MCS0	14.88	30.743	23.98 or 11+10log(B) = 27.32	PASS
134	5670	MCS0	14.91	30.956	23.98 or 11+10log(B) = 27.32	PASS

802.11ac_VHT80_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0	**8.99**	7.934	23.98	PASS
58	5290	MCS0	**8.83**	7.647	23.98 or 11+10log(B) = 30.18	PASS
106	5530	MCS0	**8.97**	7.898	23.98 or 11+10log(B) = 30.24	PASS
122	5610	MCS0	8.95	7.861	23.98 or 11+10log(B) = 30.08	PASS

10. POWER SPECTRAL DENSITY

10.1 Standard Applicable

OPERZTION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Master device)	17dBm/ MHz
		Fixed point-to-point 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.			

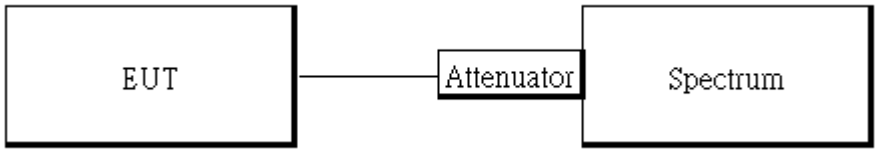
10.2 Measurement Procedure

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)
5. User 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.

10.3Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
DC Power Supply	Agilent	E3640A	KR93300208	Aug. 15th, 2018	Aug. 14th, 2019
EXA Spectrum Analyz-er	KEYSIGHT	N9010A	MY57120290	Feb. 13th, 2019	Feb. 12th, 2020
Thermostat-ic/Hrgrosatic Chamber	TAICHY	MHG-150LF	930619	Oct. 08th, 2018	Oct. 07th, 2019
DC Block	Mini-Circuits	BLK-18-S+	31129(1)	Feb. 26th, 2019	Feb. 25th, 2020
Attenuator	Mini-Circuit	BW-S10W2+	1	Feb. 26th, 2019	Feb. 25th, 2020

10.4Test Set-up



10.5Measurement Result

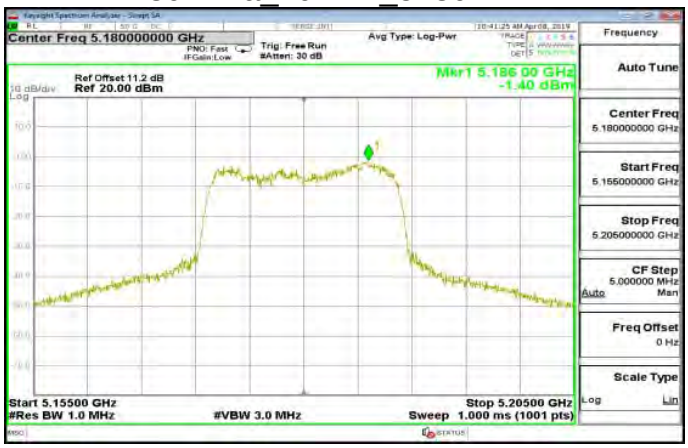
POWER DENSITY 802.11a MODE_Ch0					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	-1.40	0.76	-0.64	11	-11.64
5220	-4.59	0.76	-3.83	11	-14.83
5240	-4.29	0.76	-3.53	11	-14.53
5260	-2.44	0.76	-1.68	11	-12.68
5300	-4.68	0.76	-3.92	11	-14.92
5320	-2.34	0.76	-1.58	11	-12.58
5500	-2.84	0.76	-2.08	11	-13.08
5580	-1.29	0.76	-0.53	11	-11.53
5700	-0.55	0.76	0.21	11	-10.79

POWER DENSITY 802.11n HT20 MODE_Ch0					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	-3.99	0.81	-3.18	11	-14.18
5220	-1.86	0.81	-1.05	11	-12.05
5240	-2.47	0.81	-1.66	11	-12.66
5260	-3.94	0.81	-3.13	11	-14.13
5300	-4.57	0.81	-3.76	11	-14.76
5320	-2.79	0.81	-1.98	11	-12.98
5500	-3.34	0.81	-2.53	11	-13.53
5580	-5.04	0.81	-4.23	11	-15.23
5700	-2.08	0.81	-1.27	11	-12.27

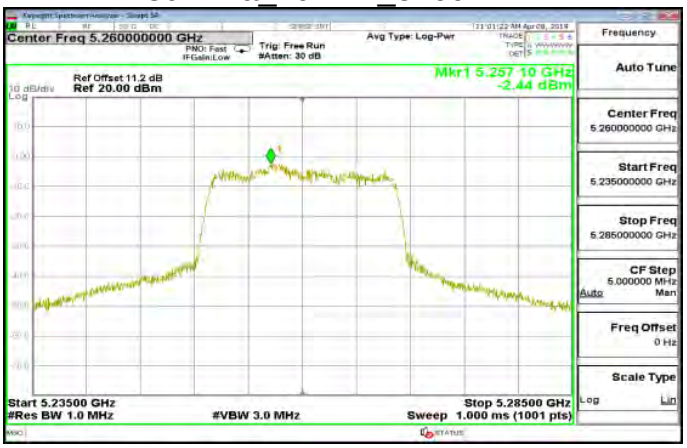
POWER DENSITY 802.11n HT40 MODE_Ch0					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5190	-9.19	1.49	-7.70	11	-18.70
5230	-10.65	1.49	-9.16	11	-20.16
5270	-6.76	1.49	-5.27	11	-16.27
5310	-10.08	1.49	-8.59	11	-19.59
5510	-6.51	1.49	-5.02	11	-16.02
5550	-11.22	1.49	-9.73	11	-20.73
5670	-7.51	1.49	-6.02	11	-17.02

POWER DENSITY 802.11ac VHT80 MODE_Ch0					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5210	-21.51	2.56	-18.95	11	-29.95
5290	-24.89	2.56	-22.33	11	-33.33
5530	-20.93	2.56	-18.37	11	-29.37
5610	-24.31	2.56	-21.75	11	-32.75

802.11a_20MHz_5180MHz



802.11a_20MHz_5260MHz



802.11a_20MHz_5220MHz

802.11a_20MHz_5300MHz

802.11a_20MHz_5240MHz

802.11a_20MHz_5320MHz

802.11a_20MHz_5500MHz

802.11n_20MHz_5180MHz

802.11a_20MHz_5580MHz

802.11n_20MHz_5220MHz

802.11a_20MHz_5700MHz

802.11n_20MHz_5240MHz

802.11n_20MHz_5260MHz

802.11n_20MHz_5500MHz

802.11n_20MHz_5300MHz

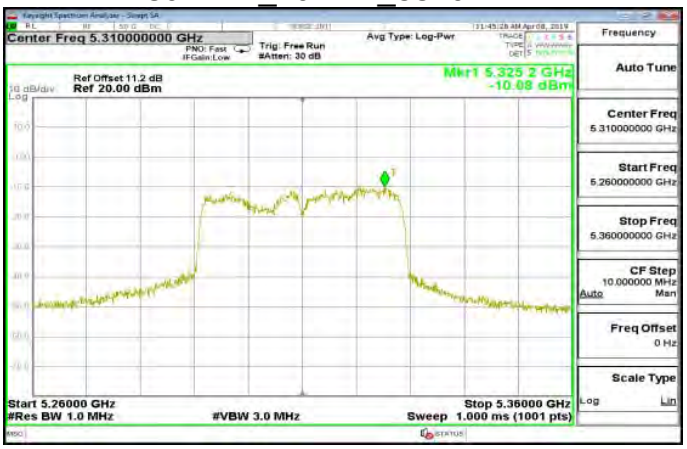
802.11n_20MHz_5580MHz

802.11n_20MHz_5320MHz

802.11n_20MHz_5700MHz

802.11n_40MHz_5190MHz

802.11n_40MHz_5310MHz



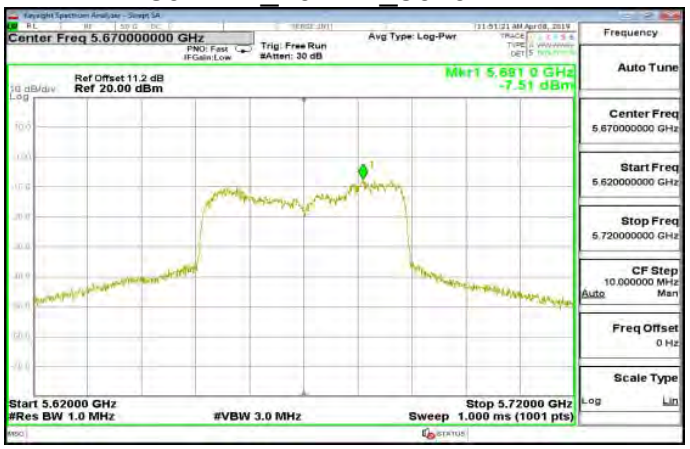
802.11n_40MHz_5230MHz

802.11n_40MHz_5510MHz

802.11n_40MHz_5270MHz

802.11n_40MHz_5550MHz

802.11n_40MHz_5670MHz



802.11ac_80MHz_5530MHz

802.11ac_80MHz_5210MHz

802.11ac_80MHz_5610MHz

802.11ac_80MHz_5290MHz

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*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.

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)

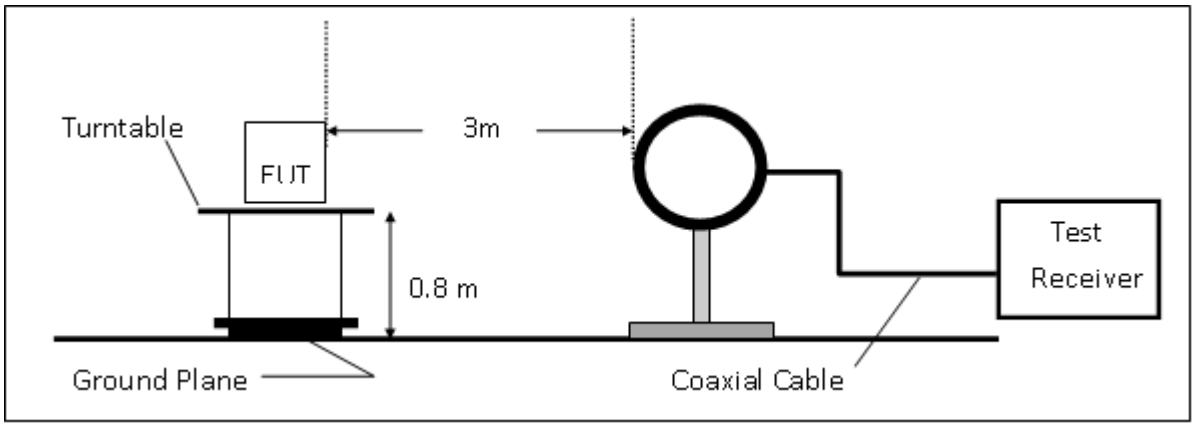
11.2Measurement Equipment Used

966A Chamber					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Bilog Antenna	Sunol Sciences	JB3	A030105	Jul. 13th, 2018	Jul. 12th, 2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	Feb. 26th, 2019	Feb. 25th, 2020
Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	Feb. 26th, 2019	Feb. 25th, 2020
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	Jan. 30th, 2019	Jan. 29th, 2020
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	Aug. 20th, 2018	Aug. 19th, 2019
High Pass Filter	WI	WHKX7.0/18G-8SS	45	Feb. 26th, 2019	Feb. 25th, 2020
Horn Antenna	ETS LINDGREN	3116	00026370	Dec. 26th, 2018	Dec. 25th, 2019
Loop Antenna	COM-POWER	AL-130	121051	Mar. 22th, 2019	Mar. 21th, 2020
Pre-Amplifier	EMEC	EM330	060609	Feb. 26th, 2019	Feb. 25th, 2020
Pre-Amplifier	MITEQ	AMF-6F-260400-40-8P	985646	Feb. 26th, 2019	Feb. 25th, 2020
Pre-Amplifier	HP	8449B	3008A00965	Feb. 26th, 2019	Feb. 25th, 2020
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	May 31th, 2018	May 30th, 2019
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	e3 V6.11-20180413				

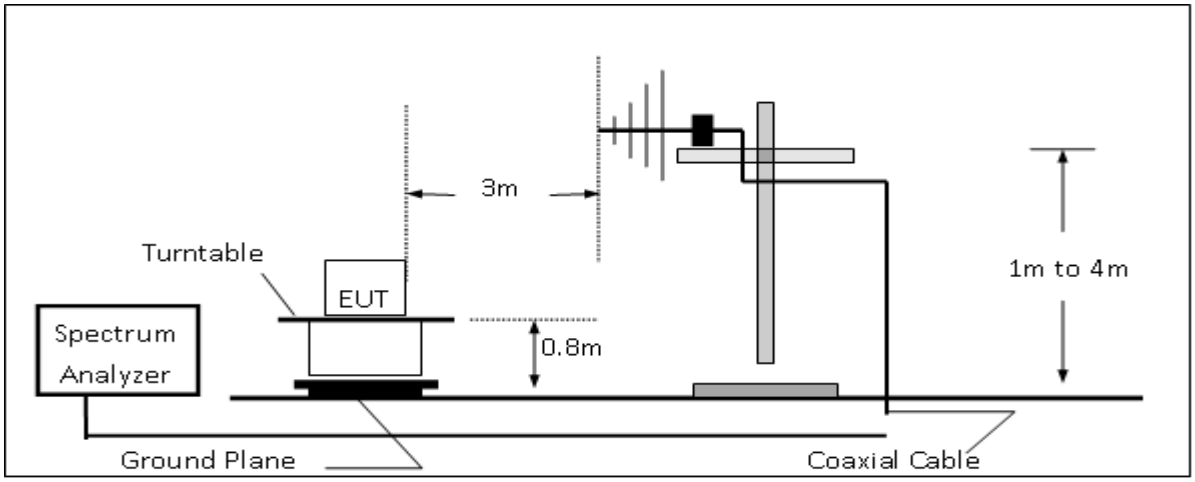
NOTE: N.C.R refers to Not Calibrated Required.

11.3Test SET-UP

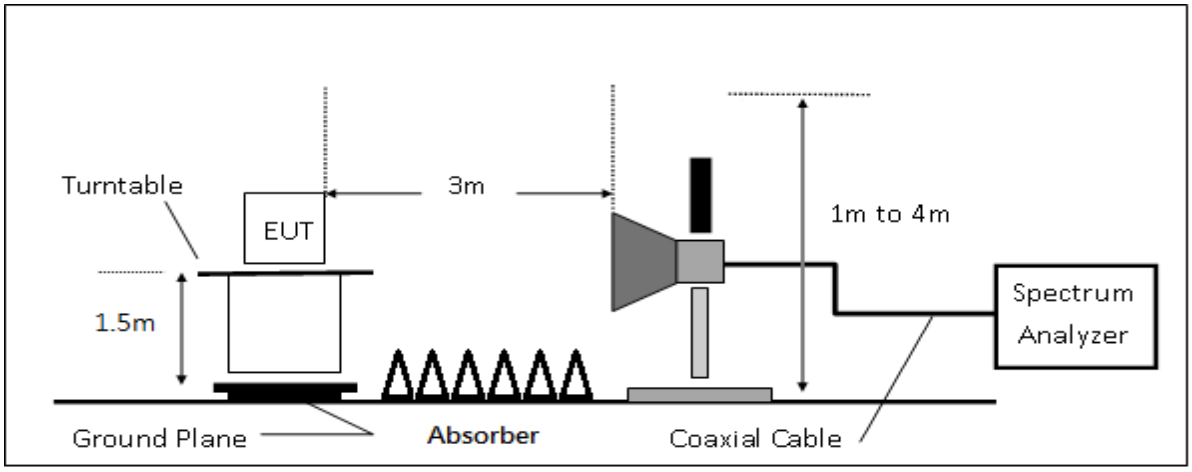
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



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



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



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.

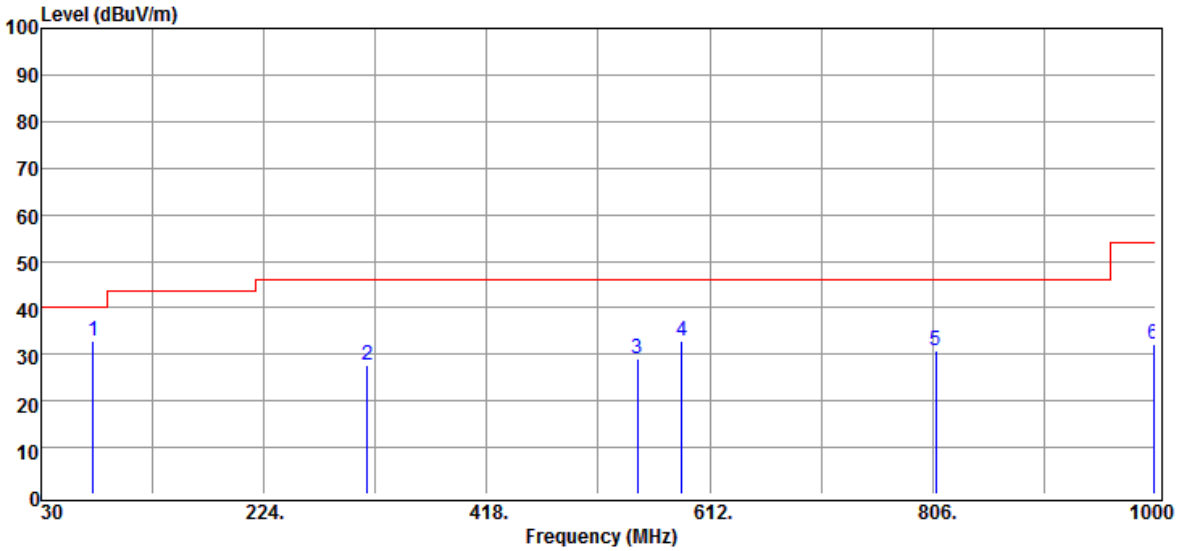
11.7Measurement Result

Radiated Spurious Emission Measurement Result

Below 1GHz Worst-Case Data:

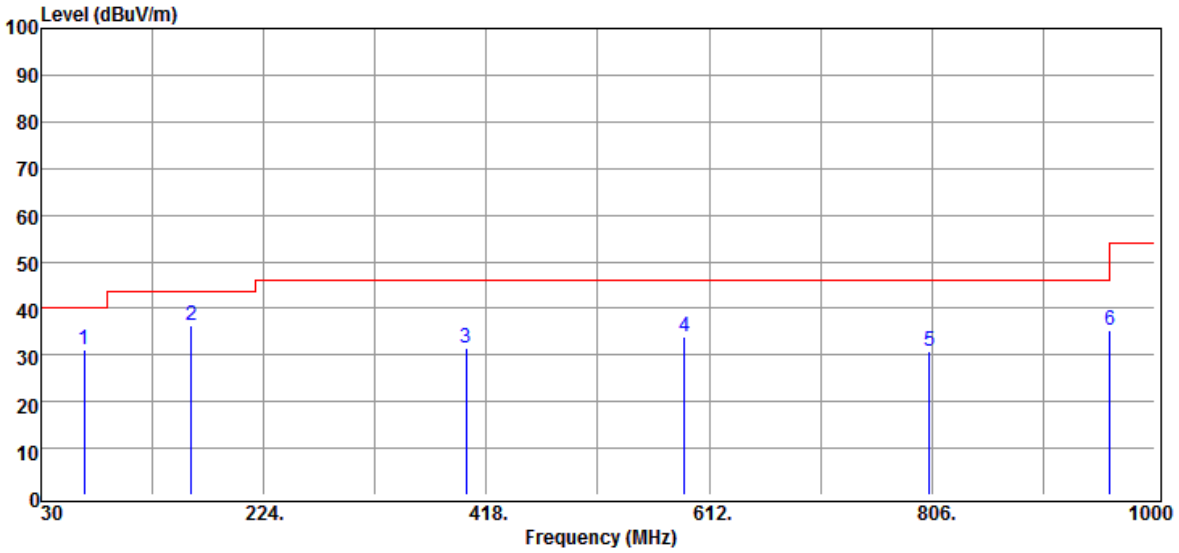
802.11a 5150~5250 MHz

Operation Band	:802.11a / Band1	Test Date	:2019-04-13
Fundamental Frequency	:5220 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	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
75.59	Peak	47.73	-14.79	32.94	40.00	-7.06
314.21	Peak	35.33	-7.76	27.57	46.00	-18.43
548.95	Peak	31.49	-2.33	29.16	46.00	-16.84
587.75	Peak	34.67	-1.73	32.94	46.00	-13.06
808.91	Peak	28.66	2.27	30.93	46.00	-15.07
998.06	Peak	27.01	5.20	32.21	54.00	-21.79

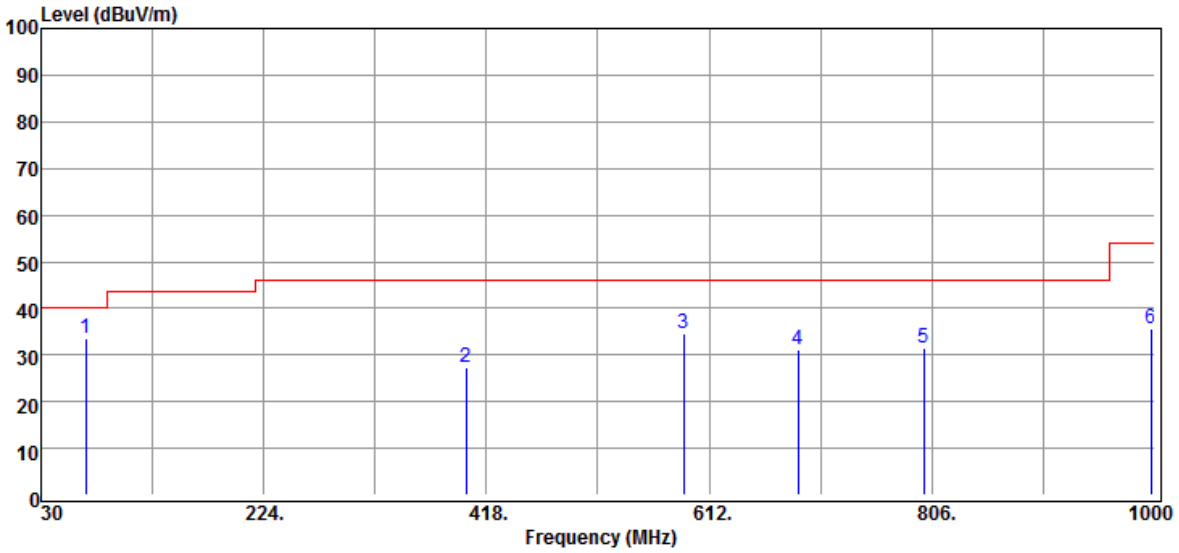
Operation Band	:802.11a / Band1	Test Date	:2019-04-13
Fundamental Frequency	:5220 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
67.83	Peak	45.94	-14.85	31.09	40.00	-8.91
160.95	Peak	46.59	-10.19	36.40	43.50	-7.10
400.54	Peak	36.97	-5.64	31.33	46.00	-14.67
590.66	Peak	35.67	-1.79	33.88	46.00	-12.12
804.06	Peak	28.84	2.07	30.91	46.00	-15.09
961.20	Peak	30.70	4.51	35.21	54.00	-18.79

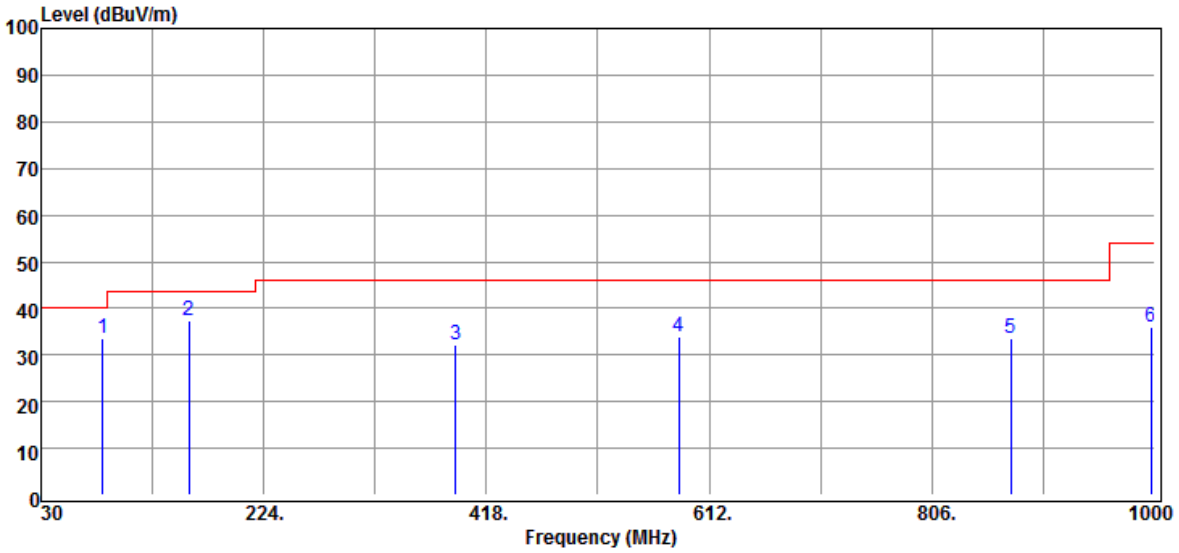
802.11a 5250~5350 MHz

Operation Band	:802.11a / Band2	Test Date	:2019-04-13
Fundamental Frequency	:5300 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	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
68.80	Peak	48.39	-14.93	33.46	40.00	-6.54
400.54	Peak	33.07	-5.64	27.43	46.00	-18.57
589.69	Peak	36.35	-1.73	34.62	46.00	-11.38
689.60	Peak	31.60	-0.33	31.27	46.00	-14.73
799.21	Peak	29.88	1.52	31.40	46.00	-14.60
997.09	Peak	30.28	5.21	35.49	54.00	-18.51

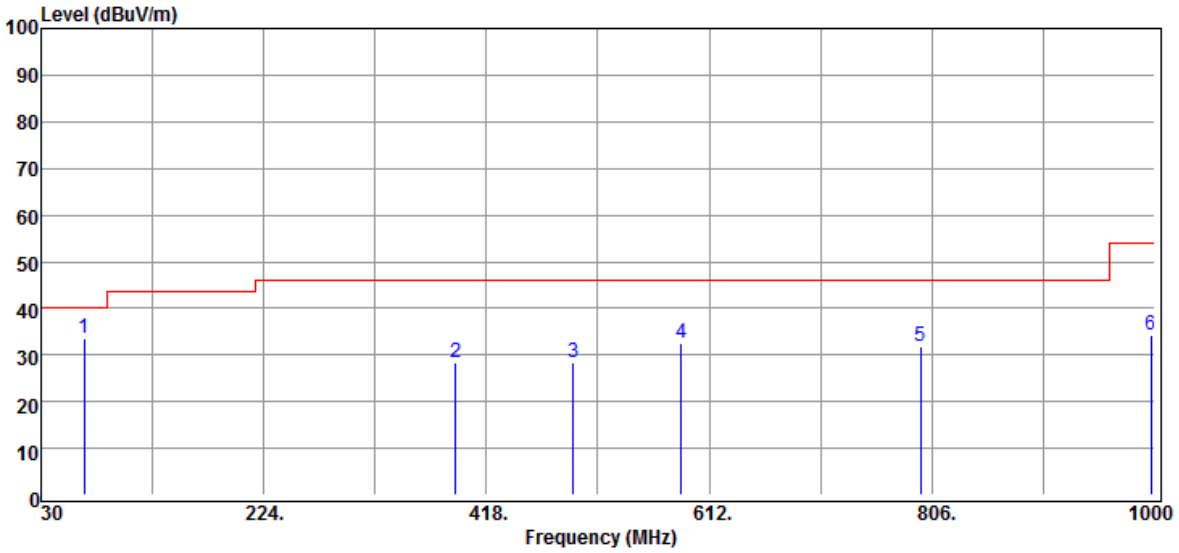
Operation Band	:802.11a / Band2	Test Date	:2019-04-13
Fundamental Frequency	:5300 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
83.35	Peak	48.94	-15.52	33.42	40.00	-6.58
159.01	Peak	47.19	-9.95	37.24	43.50	-6.26
390.84	Peak	38.14	-5.96	32.18	46.00	-13.82
585.81	Peak	35.83	-1.89	33.94	46.00	-12.06
874.87	Peak	30.43	3.19	33.62	46.00	-12.38
997.09	Peak	30.79	5.21	36.00	54.00	-18.00

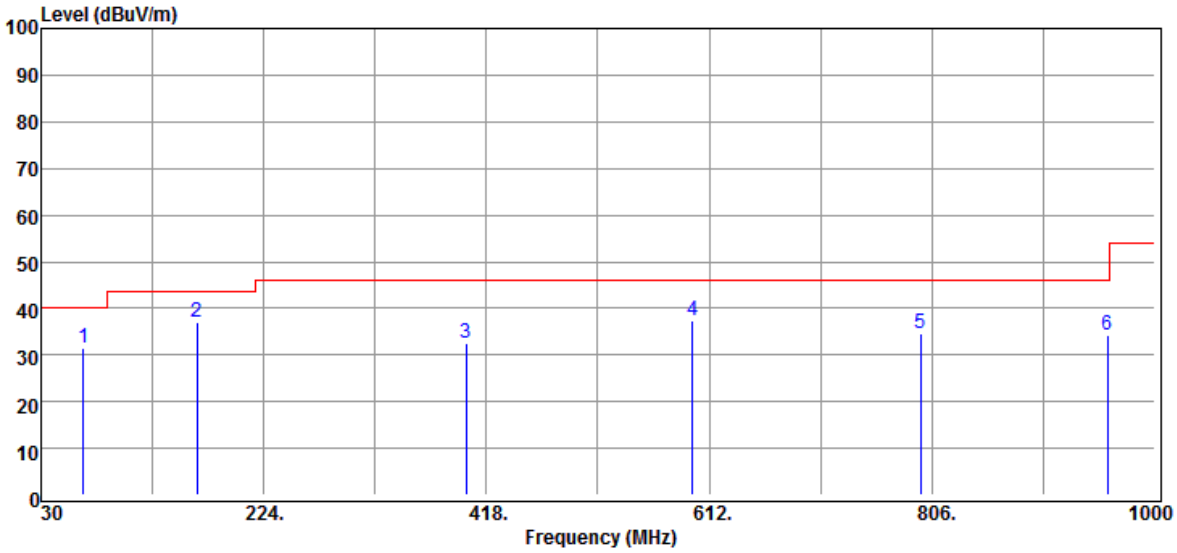
802.11a, 5470~5725 MHz

Operation Band	:802.11a / Band3	Test Date	:2019-04-13
Fundamental Frequency	:5580 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
67.83	Peak	48.43	-14.85	33.58	40.00	-6.42
390.84	Peak	34.26	-5.96	28.30	46.00	-17.70
493.66	Peak	31.27	-2.95	28.32	46.00	-17.68
587.75	Peak	34.40	-1.73	32.67	46.00	-13.33
796.30	Peak	30.54	1.47	32.01	46.00	-13.99
997.09	Peak	28.94	5.21	34.15	54.00	-19.85

Operation Band	:802.11a / Band3	Test Date	:2019-04-13
Fundamental Frequency	:5580 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL

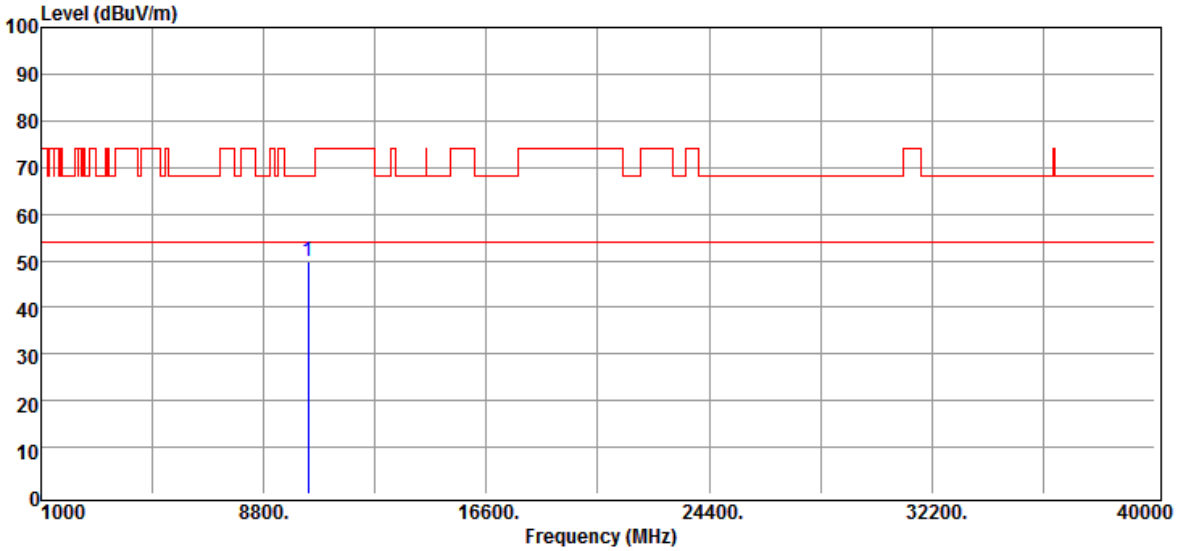


Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
66.86	Peak	46.72	-15.16	31.56	40.00	-8.44
165.80	Peak	47.24	-10.34	36.90	43.50	-6.60
400.54	Peak	38.07	-5.64	32.43	46.00	-13.57
597.45	Peak	39.06	-1.63	37.43	46.00	-8.57
796.30	Peak	33.10	1.47	34.57	46.00	-11.43
959.26	Peak	29.88	4.48	34.36	46.00	-11.64

Above 1GHz Worst-Case Data:

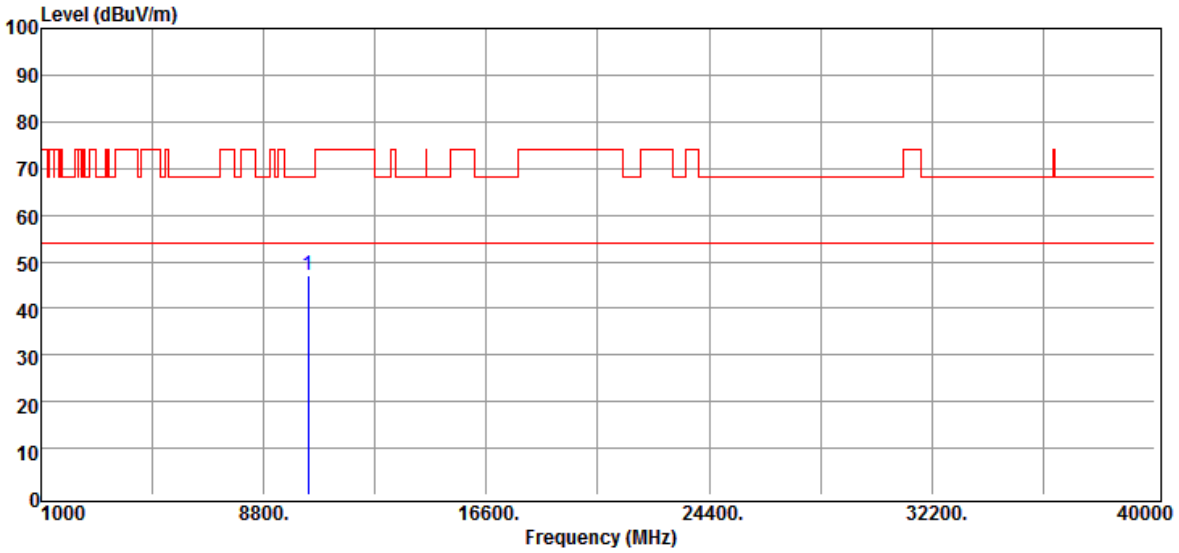
Radiated Spurious Emission Measurement Result 802.11a, 5150~5250 MHz

Operation Band	:802.11a / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5180 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



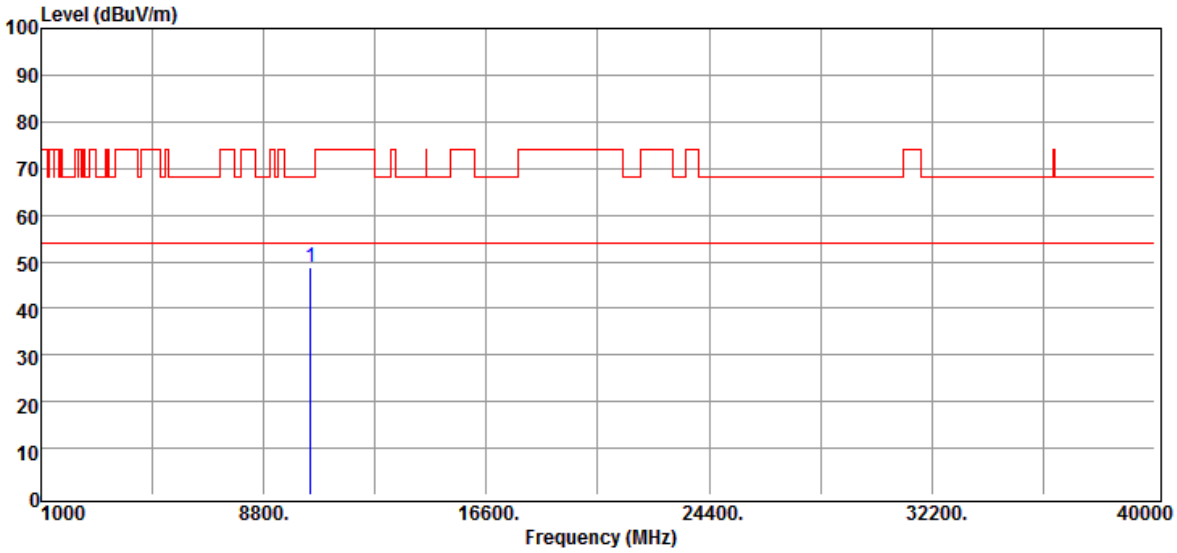
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10360.00	Peak	35.40	14.41	49.81	68.20	-18.39

Operation Band	:802.11a / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5180 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



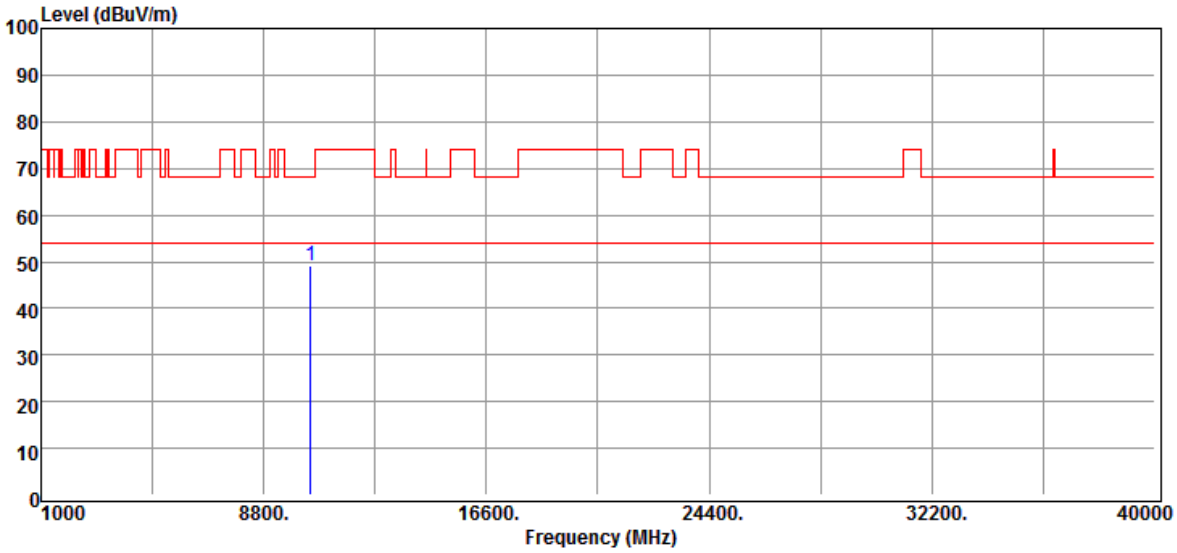
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10360.00	Peak	32.53	14.41	46.94	68.20	-21.26

Operation Band	:802.11a / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5220 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



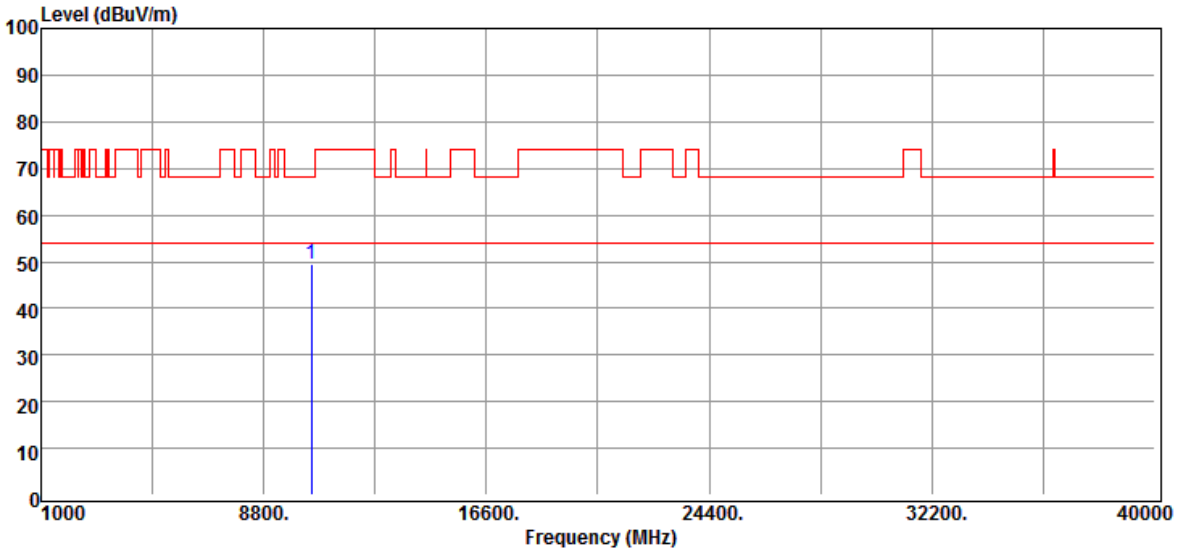
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10440.00	Peak	33.24	15.58	48.82	68.20	-19.38

Operation Band	:802.11a / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5220 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



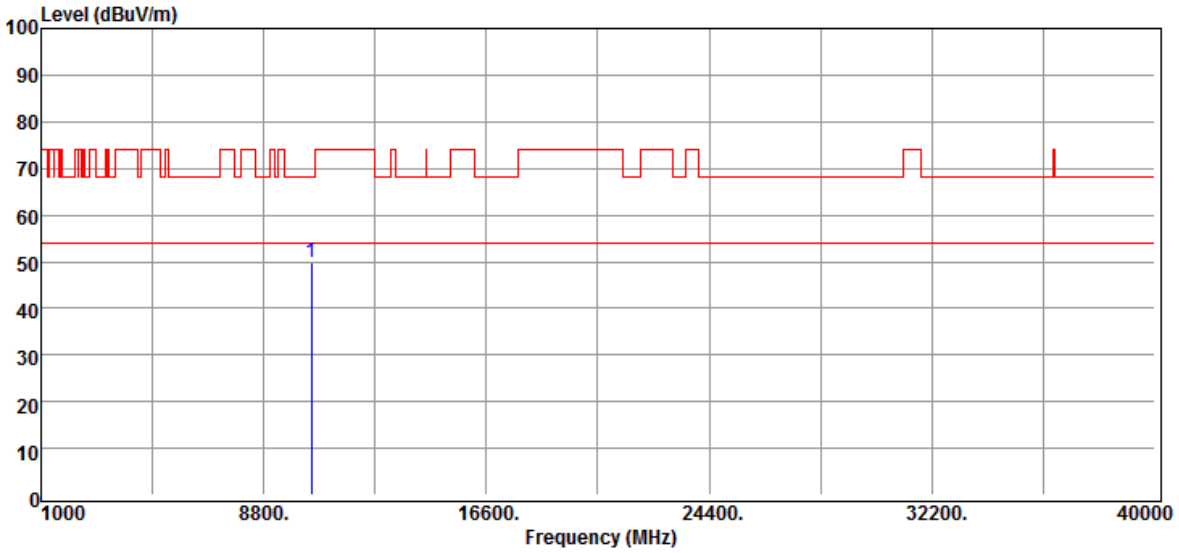
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10440.00	Peak	33.46	15.58	49.04	68.20	-19.16

Operation Band	:802.11a / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5240 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10480.00	Peak	33.15	16.48	49.63	68.20	-18.57

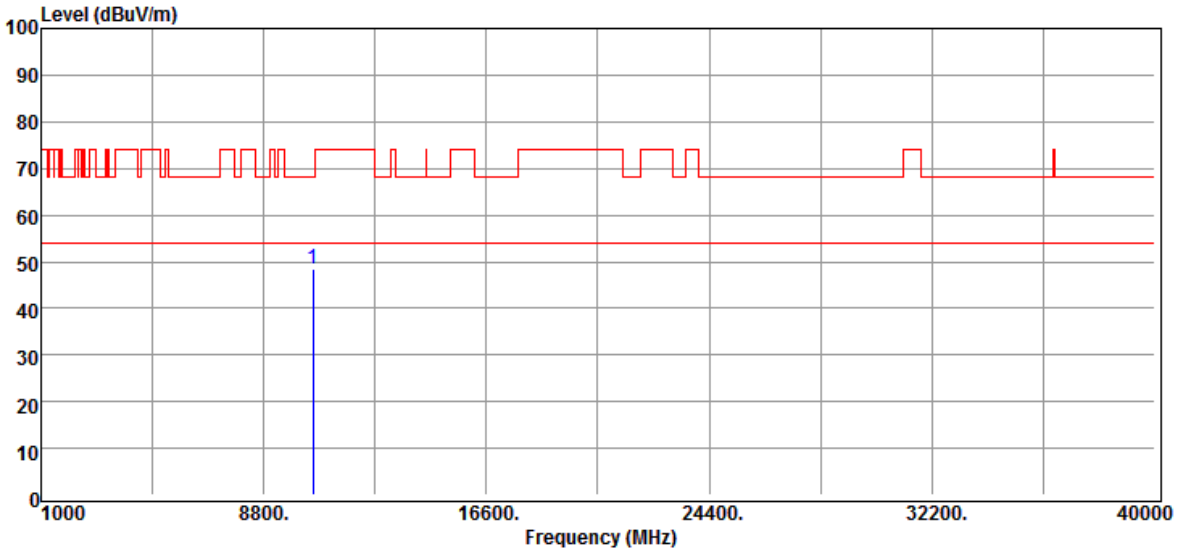
Operation Band	:802.11a / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5240 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10480.00	Peak	33.48	16.48	49.96	68.20	-18.24

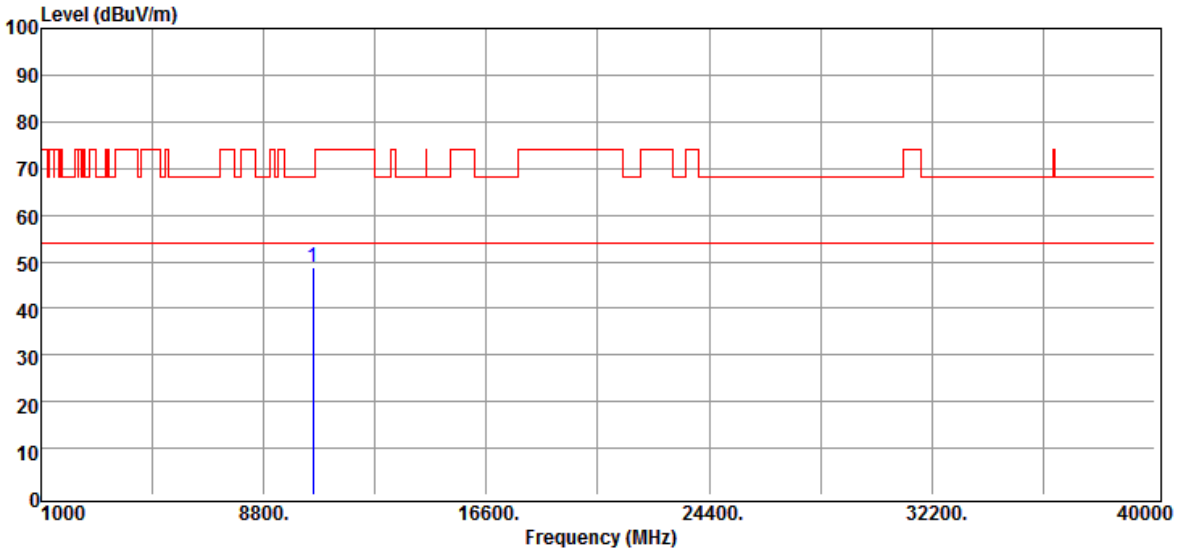
Radiated Spurious Emission Measurement Result 802.11a, 5250MHz-5350MHz

Operation Band	:802.11a / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5260 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



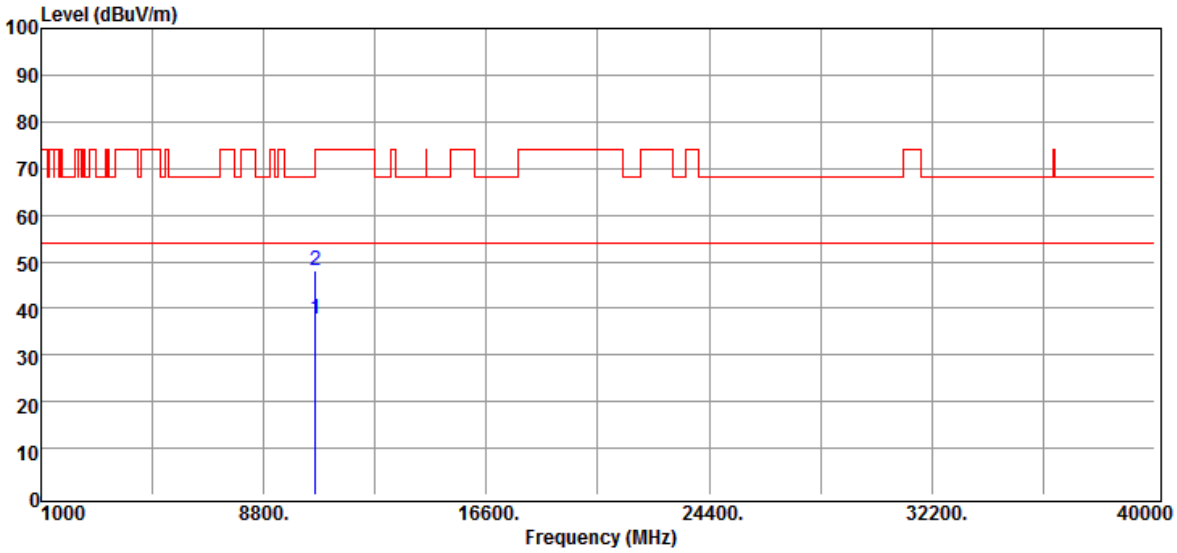
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10520.00	Peak	32.94	15.57	48.51	68.20	-19.69

Operation Band	:802.11a / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5260 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



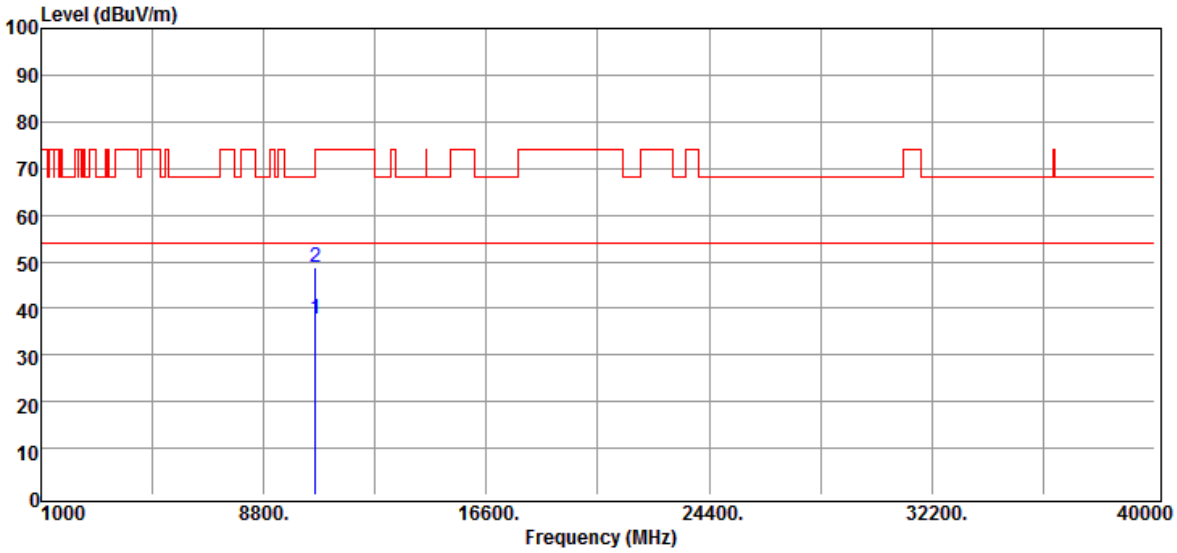
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10520.00	Peak	33.16	15.57	48.73	68.20	-19.47

Operation Band	:802.11a / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5300 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



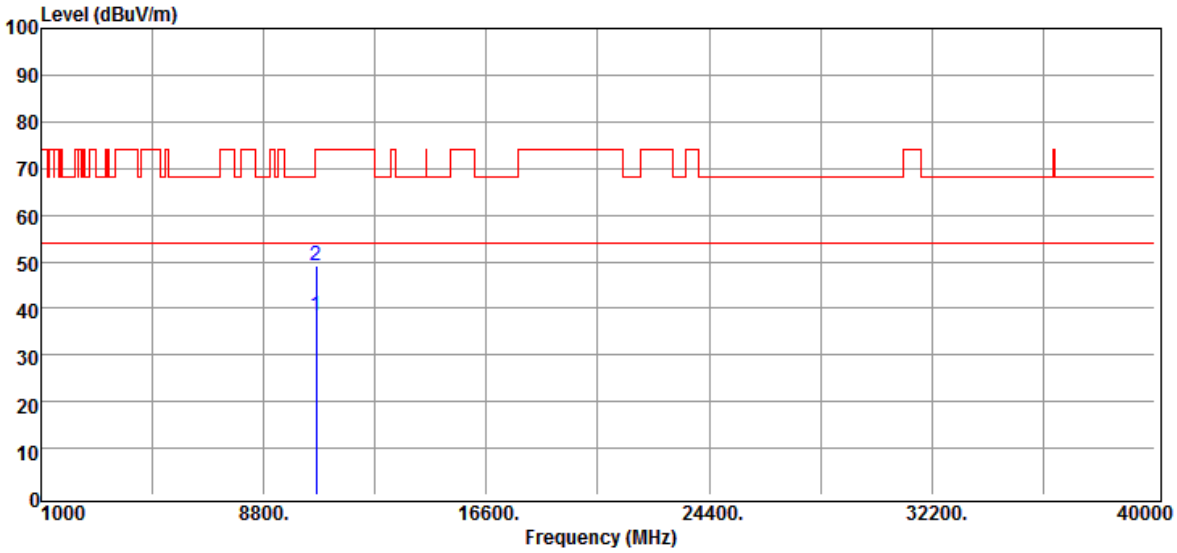
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10600.00	Average	22.14	15.47	37.61	54.00	-16.39
10600.00	Peak	32.66	15.47	48.13	74.00	-25.87

Operation Band	:802.11a / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5300 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



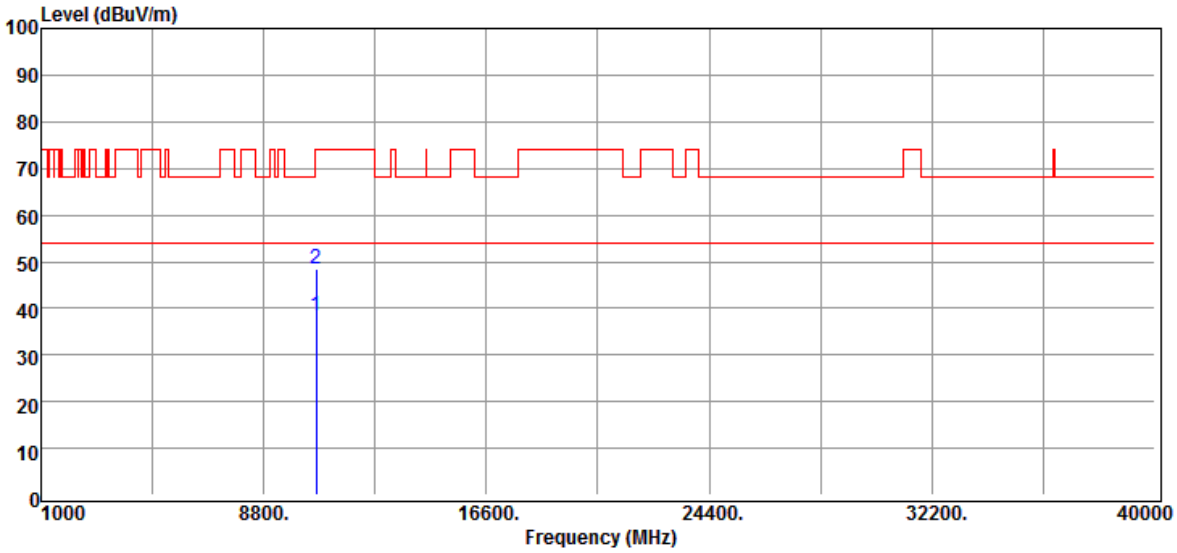
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10600.00	Average	22.36	15.47	37.83	54.00	-16.17
10600.00	Peak	33.37	15.47	48.84	74.00	-25.16

Operation Band	:802.11a / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5320 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10640.00	Average	22.27	16.12	38.39	54.00	-15.61
10640.00	Peak	32.88	16.12	49.00	74.00	-25.00

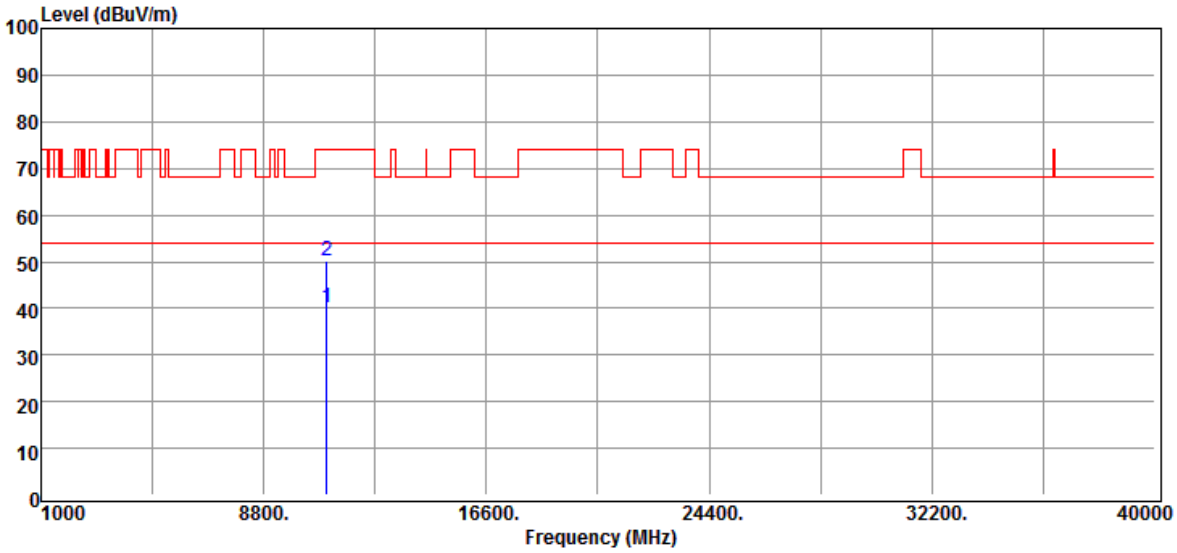
Operation Band	:802.11a / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5320 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10640.00	Average	22.16	16.12	38.28	54.00	-15.72
10640.00	Peak	32.18	16.12	48.30	74.00	-25.70

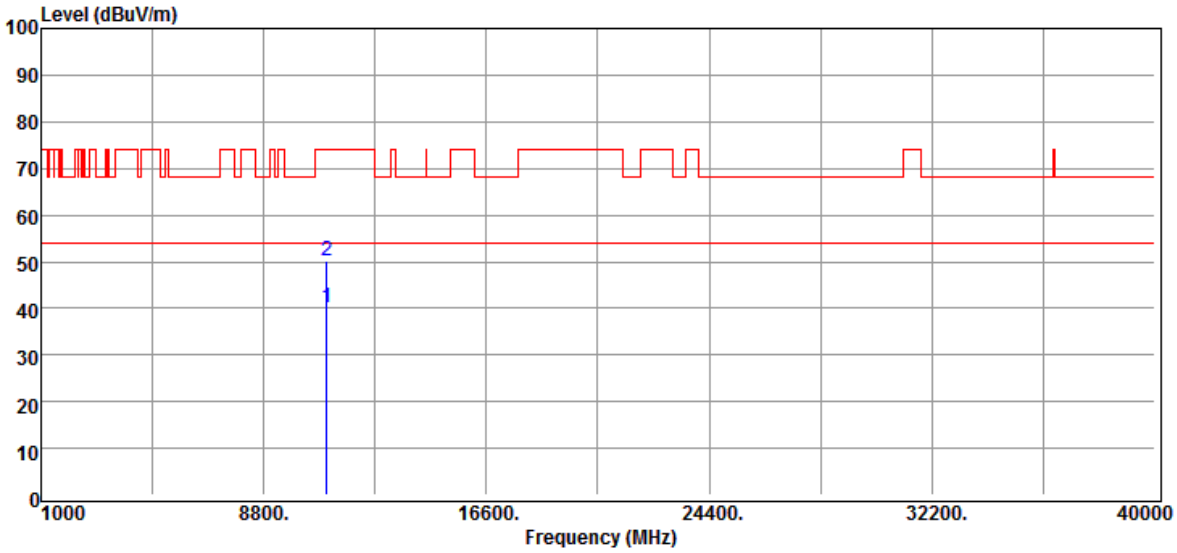
Radiated Spurious Emission Measurement Result 802.11a, 5470~5725 MHz

Operation Band	:802.11a / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5500 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



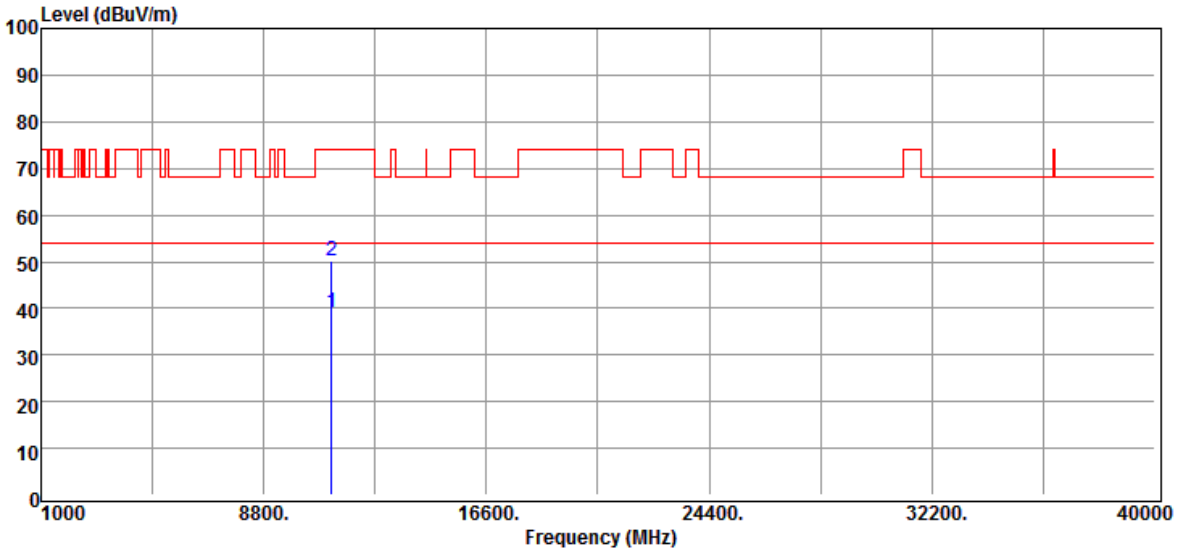
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11000.00	Average	22.26	17.75	40.01	54.00	-13.99
11000.00	Peak	32.38	17.75	50.13	74.00	-23.87

Operation Band	:802.11a / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5500 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



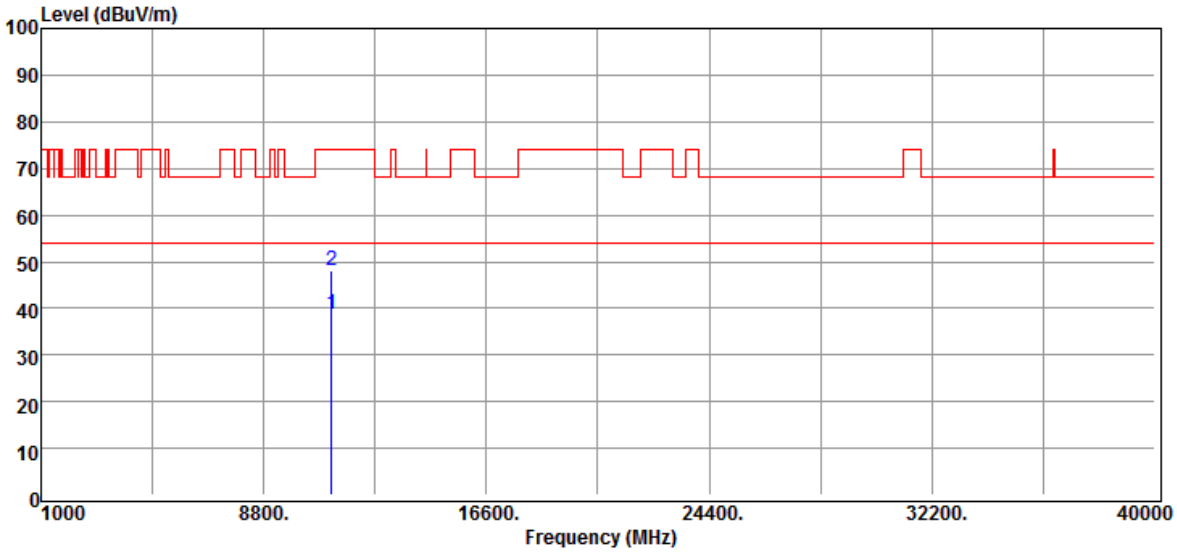
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11000.00	Average	22.33	17.75	40.08	54.00	-13.92
11000.00	Peak	32.28	17.75	50.03	74.00	-23.97

Operation Band	:802.11a / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5580 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



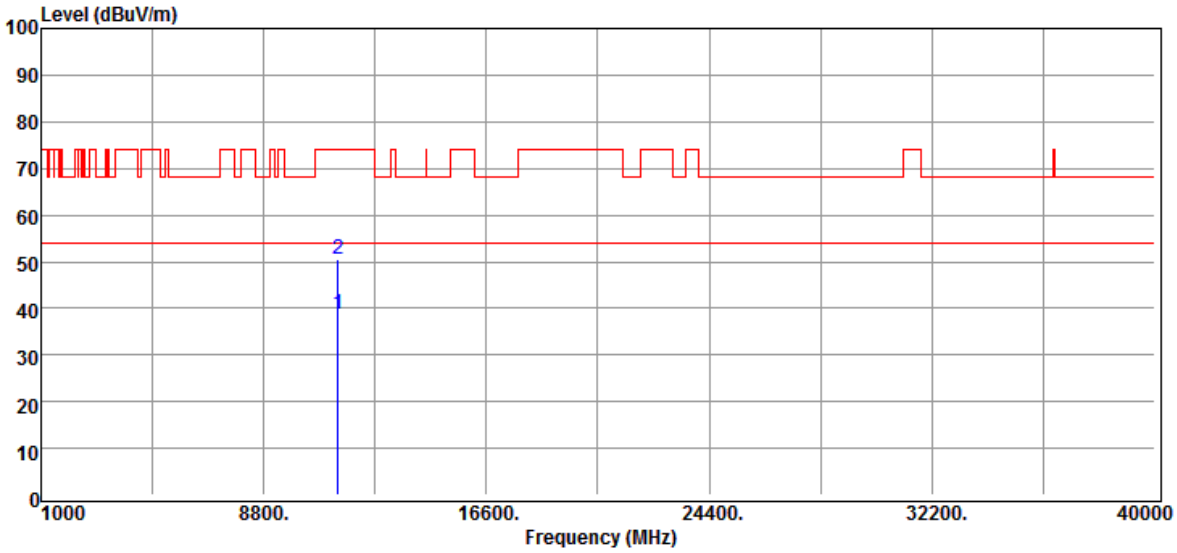
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11160.00	Average	22.42	16.53	38.95	54.00	-15.05
11160.00	Peak	33.53	16.53	50.06	74.00	-23.94

Operation Band	:802.11a / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5580 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



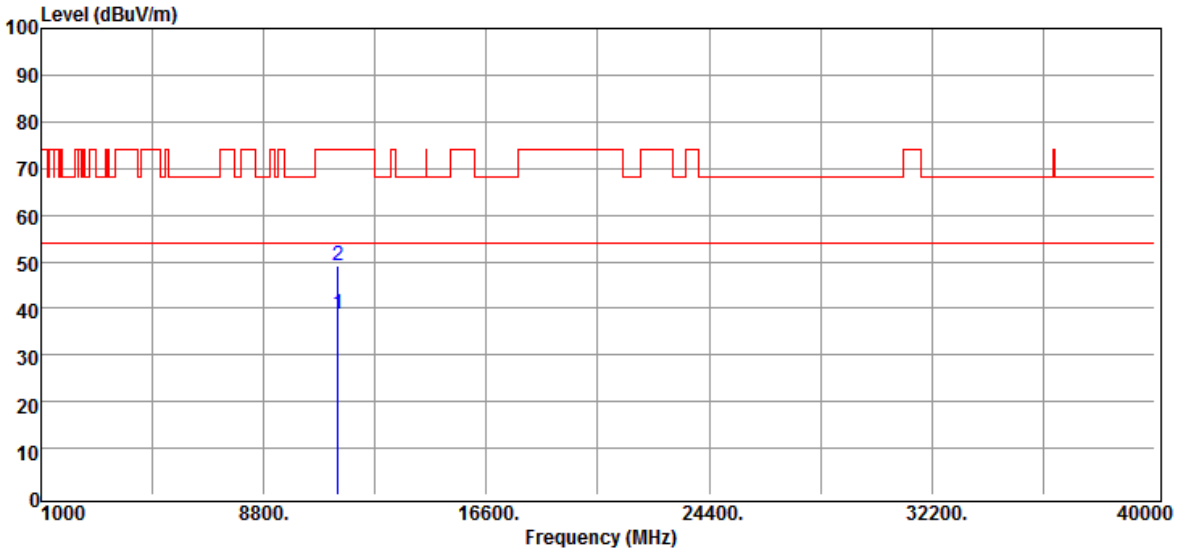
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11160.00	Average	22.28	16.53	38.81	54.00	-15.19
11160.00	Peak	31.46	16.53	47.99	74.00	-26.01

Operation Band	:802.11a / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5700 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11400.00	Average	22.28	16.48	38.76	54.00	-15.24
11400.00	Peak	33.96	16.48	50.44	74.00	-23.56

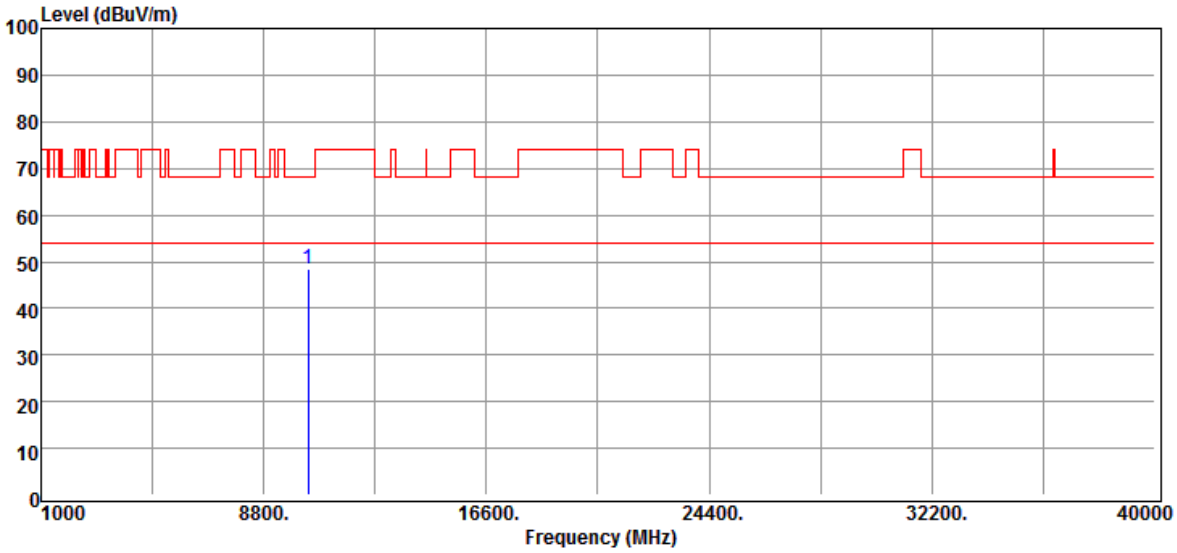
Operation Band	:802.11a / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5700 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11400.00	Average	22.41	16.48	38.89	54.00	-15.11
11400.00	Peak	32.65	16.48	49.13	74.00	-24.87

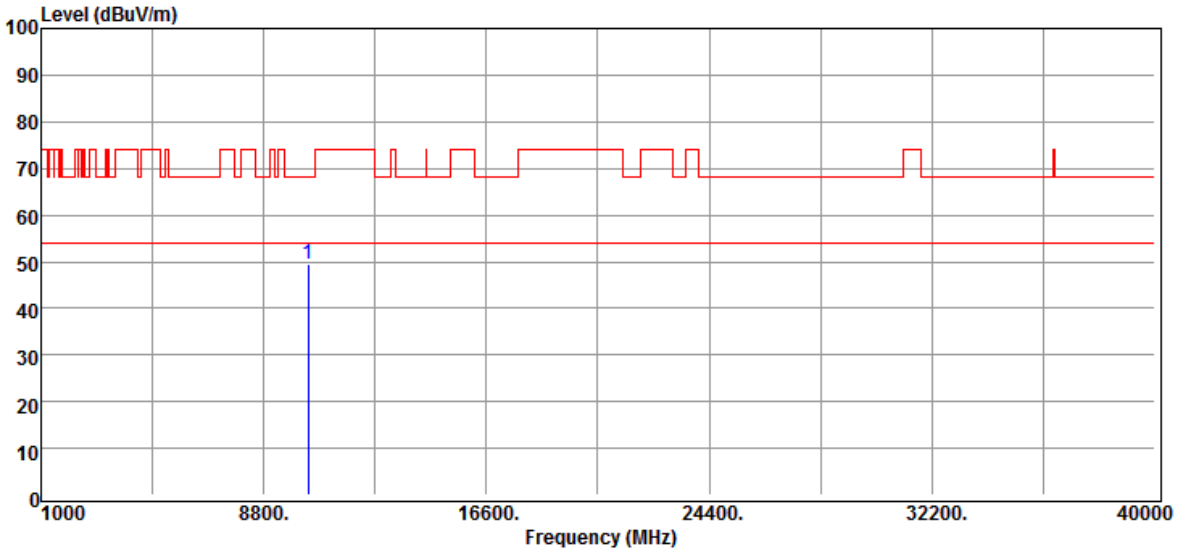
Radiated Spurious Emission Measurement Result 802.11n HT20, 5150~5250 MHz

Operation Band	:802.11n20 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5180 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



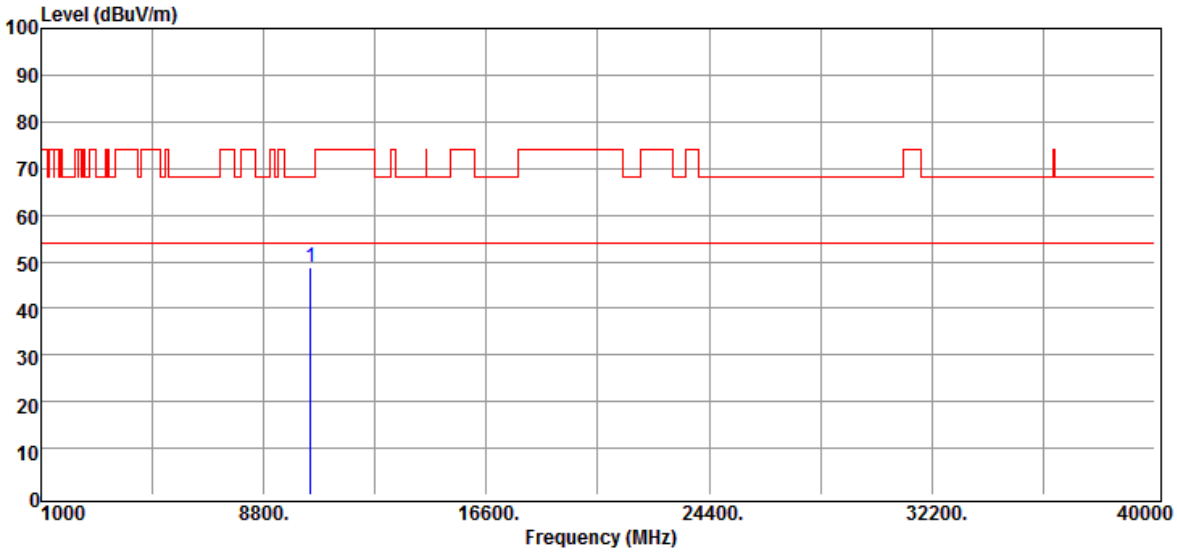
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10360.00	Peak	34.03	14.41	48.44	68.20	-19.76

Operation Band	:802.11n20 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5180 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



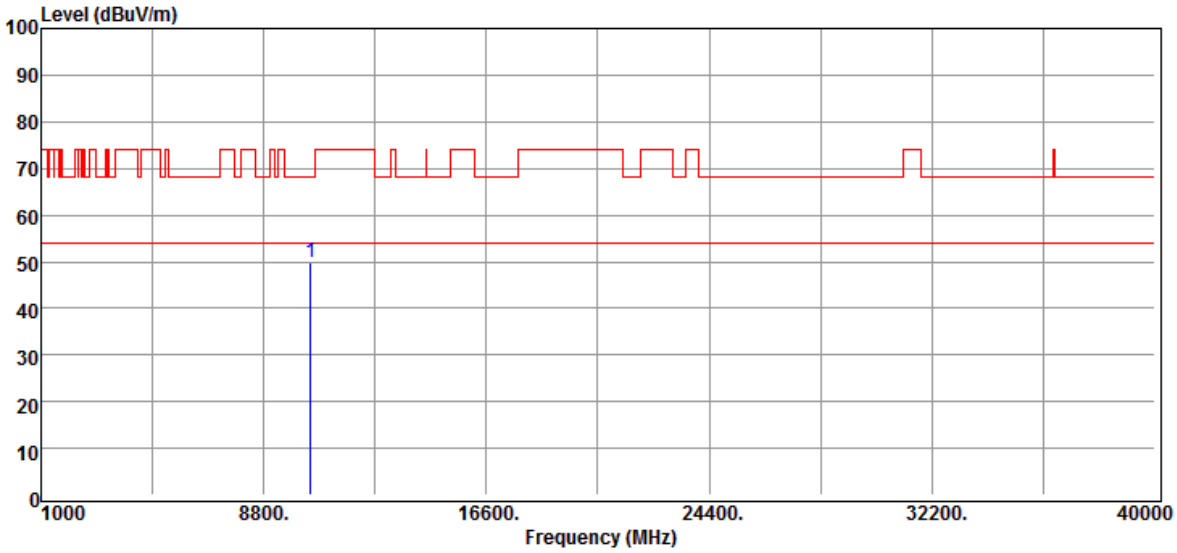
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10360.00	Peak	34.93	14.41	49.34	68.20	-18.86

Operation Band	:802.11n20 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5220 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



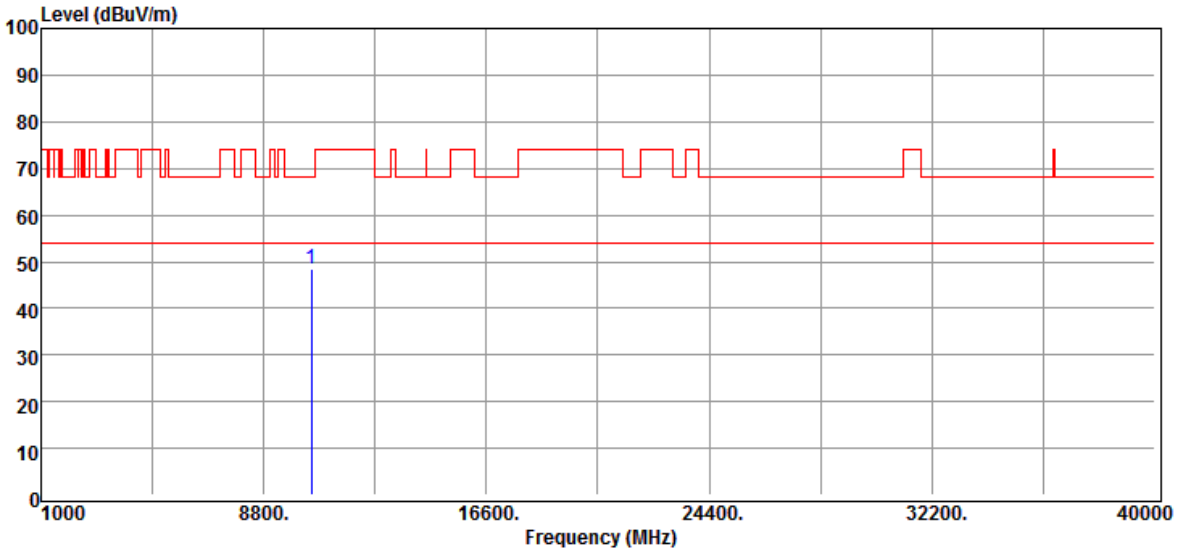
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10440.00	Peak	33.23	15.58	48.81	68.20	-19.39

Operation Band	:802.11n20 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5220 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



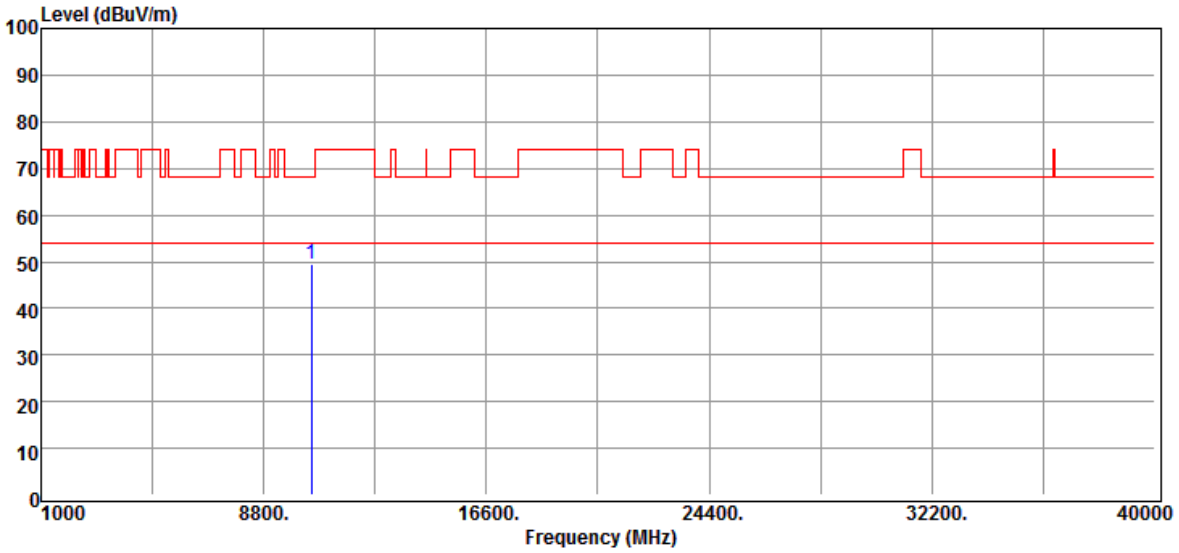
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10440.00	Peak	34.21	15.58	49.79	68.20	-18.41

Operation Band	:802.11n20 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5240 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10480.00	Peak	32.12	16.48	48.60	68.20	-19.60

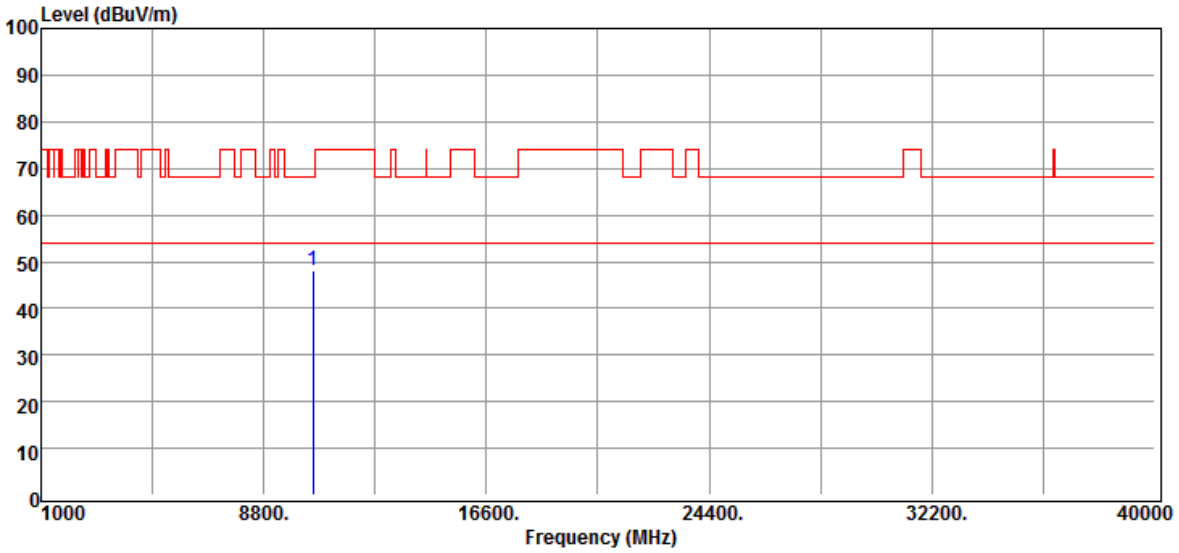
Operation Band	:802.11n20 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5240 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10480.00	Peak	32.88	16.48	49.36	68.20	-18.84

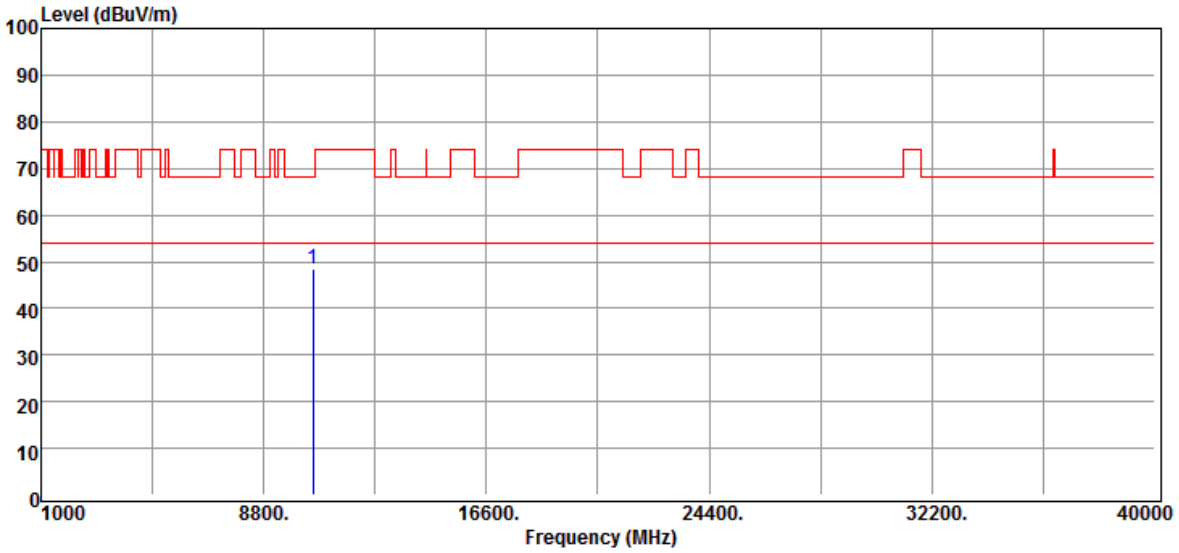
Radiated Spurious Emission Measurement Result 802.11n HT20, 5250~5350 MHz

Operation Band	:802.11n20 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5260 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



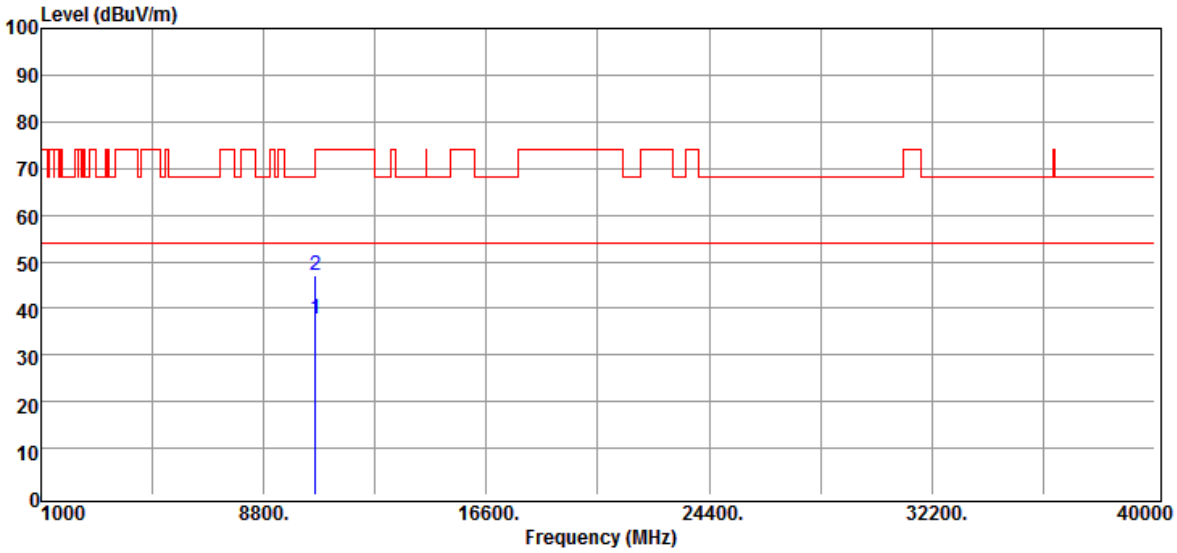
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10520.00	Peak	32.39	15.57	47.96	68.20	-20.24

Operation Band	:802.11n20 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5260 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



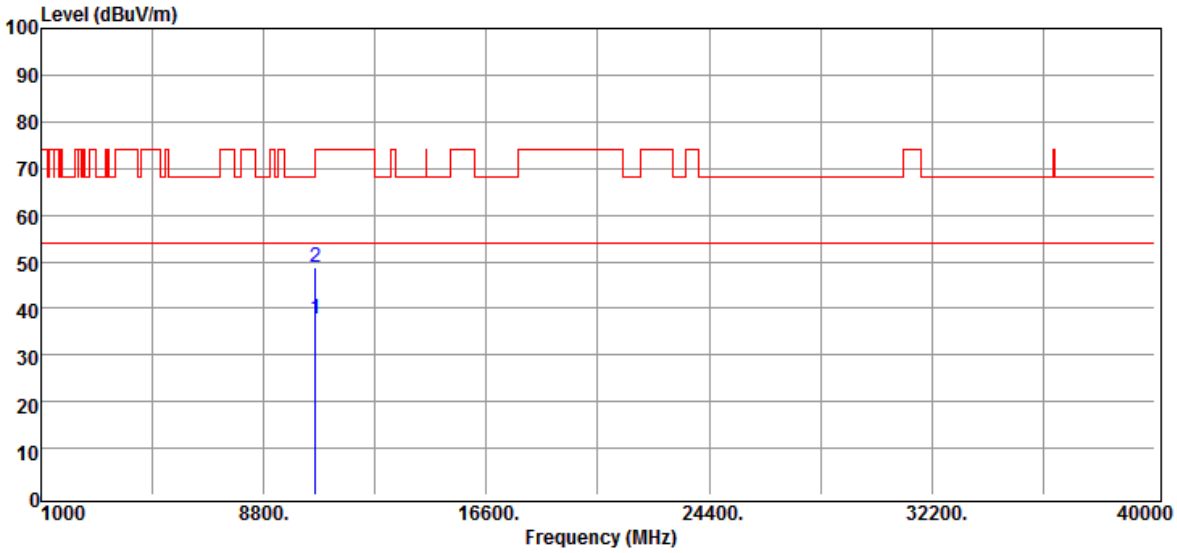
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10520.00	Peak	32.72	15.57	48.29	68.20	-19.91

Operation Band	:802.11n20 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5300 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



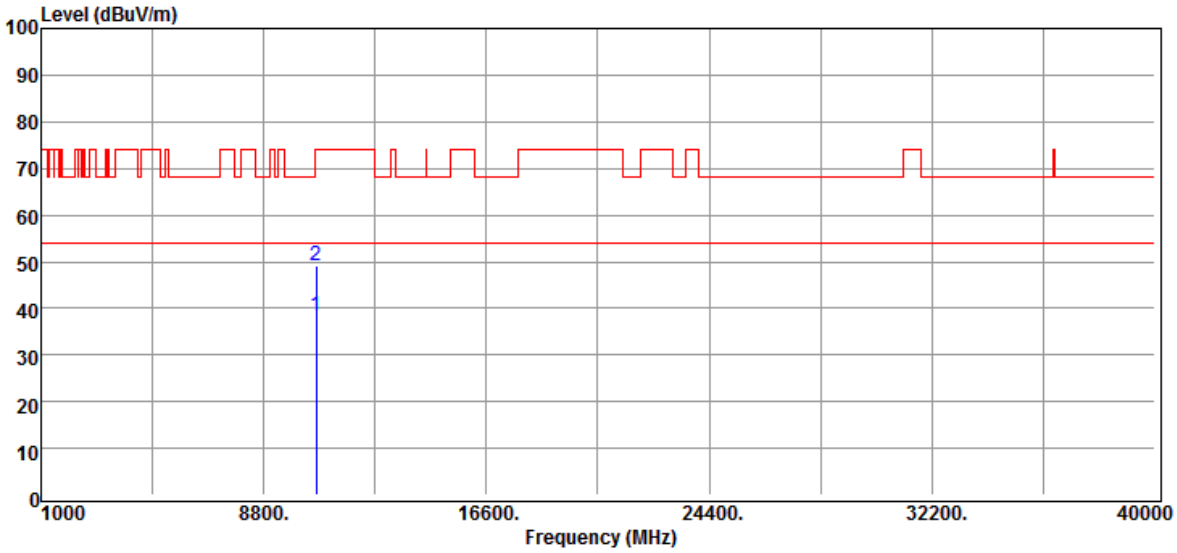
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10600.00	Average	22.17	15.47	37.64	54.00	-16.36
10600.00	Peak	31.59	15.47	47.06	74.00	-26.94

Operation Band	:802.11n20 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5300 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



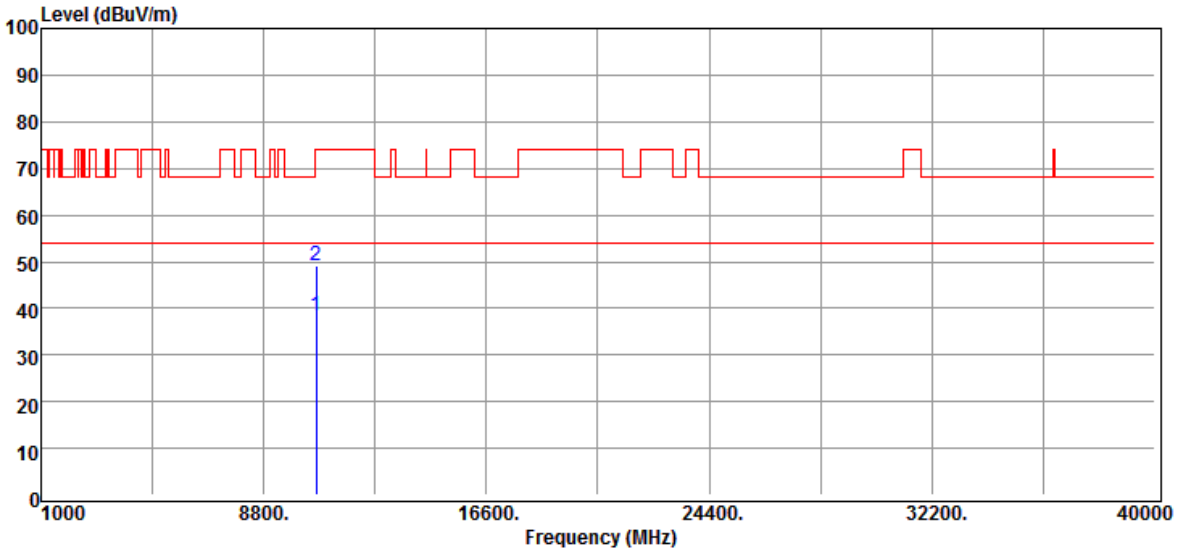
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10600.00	Average	22.30	15.47	37.77	54.00	-16.23
10600.00	Peak	33.48	15.47	48.95	74.00	-25.05

Operation Band	:802.11n20 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5320 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10640.00	Average	22.30	16.12	38.42	54.00	-15.58
10640.00	Peak	33.05	16.12	49.17	74.00	-24.83

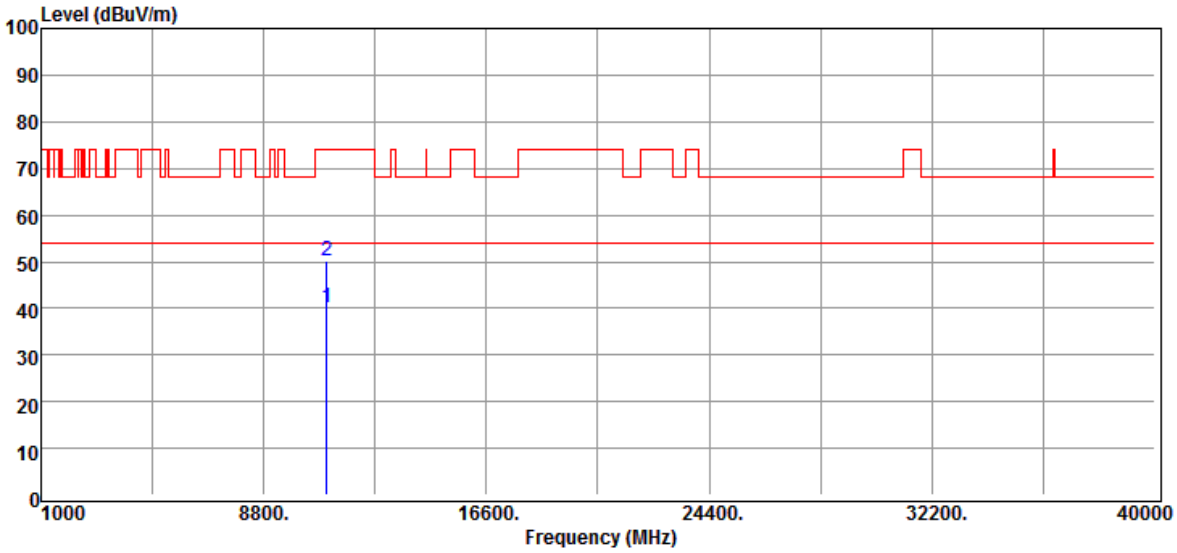
Operation Band	:802.11n20 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5320 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10640.00	Average	22.24	16.12	38.36	54.00	-15.64
10640.00	Peak	32.98	16.12	49.10	74.00	-24.90

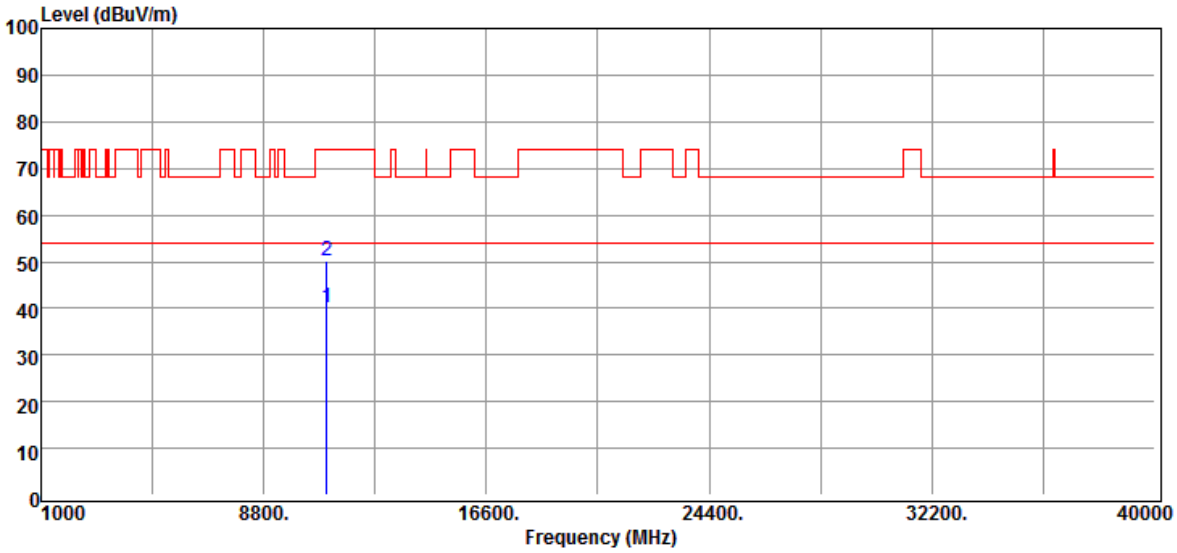
Radiated Spurious Emission Measurement Result 802.11n HT20, 5470~5725 MHz

Operation Band	:802.11n20 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5500 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



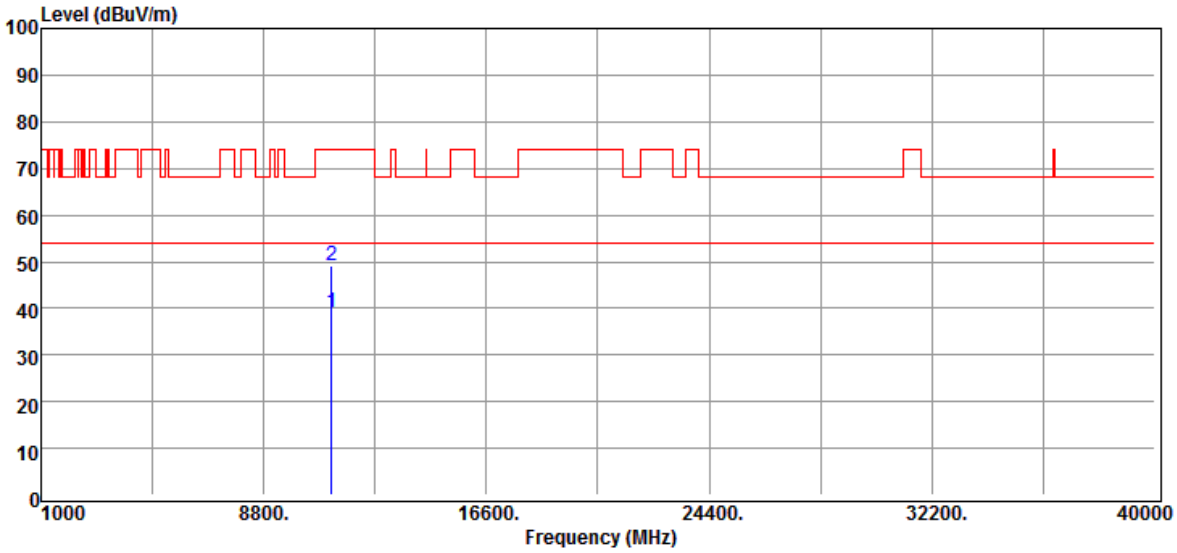
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11000.00	Average	22.32	17.75	40.07	54.00	-13.93
11000.00	Peak	32.27	17.75	50.02	74.00	-23.98

Operation Band	:802.11n20 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5500 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



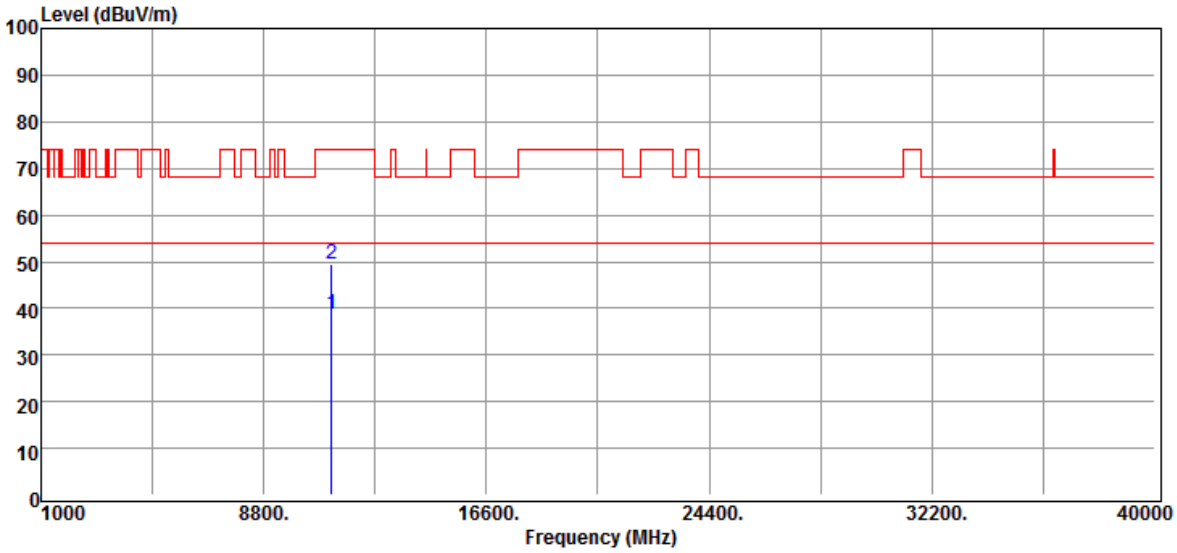
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11000.00	Average	22.29	17.75	40.04	54.00	-13.96
11000.00	Peak	32.56	17.75	50.31	74.00	-23.69

Operation Band	:802.11n20 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5580 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



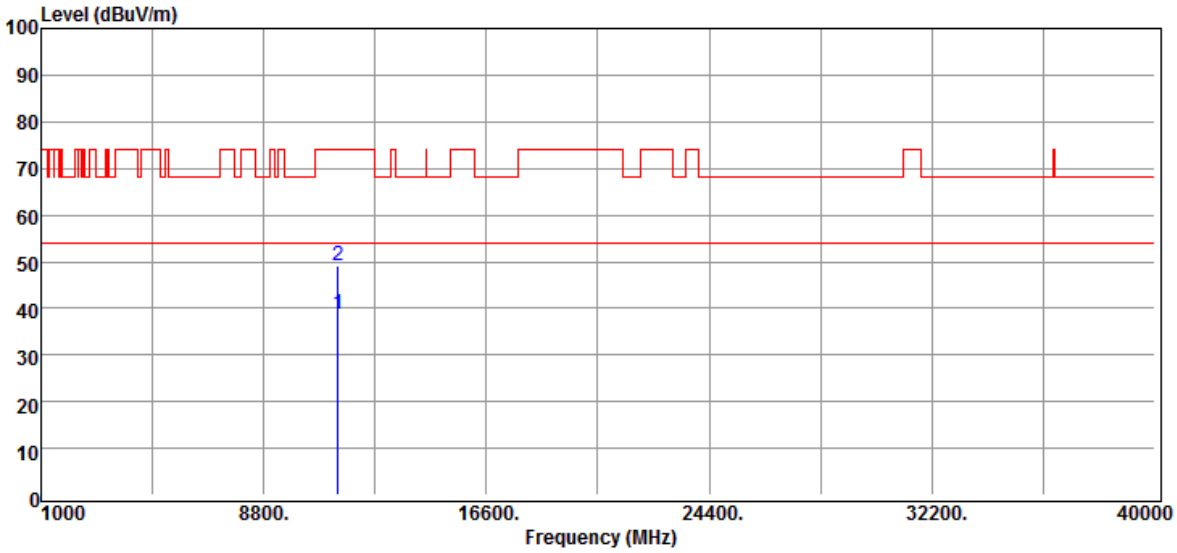
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11160.00	Average	22.42	16.53	38.95	54.00	-15.05
11160.00	Peak	32.48	16.53	49.01	74.00	-24.99

Operation Band	:802.11n20 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5580 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



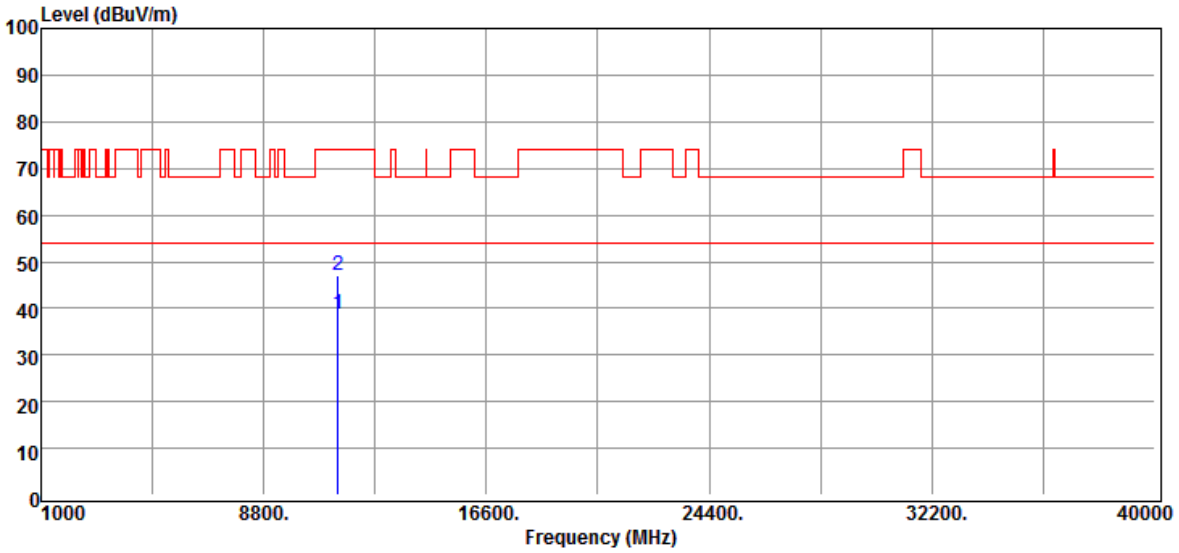
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11160.00	Average	22.35	16.53	38.88	54.00	-15.12
11160.00	Peak	32.92	16.53	49.45	74.00	-24.55

Operation Band	:802.11n20 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5700 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11400.00	Average	22.37	16.48	38.85	54.00	-15.15
11400.00	Peak	32.49	16.48	48.97	74.00	-25.03

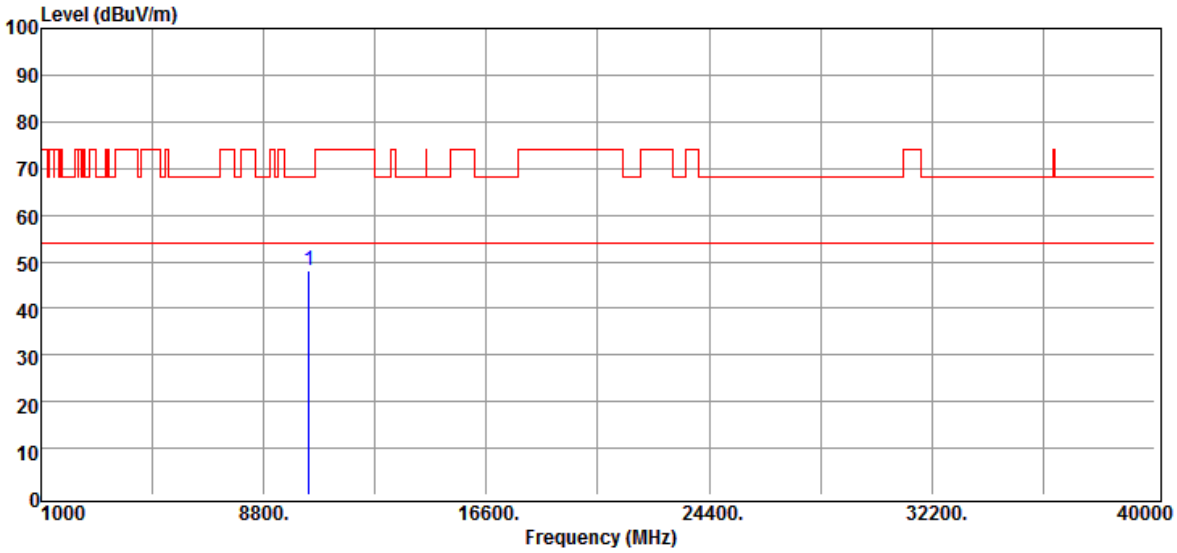
Operation Band	:802.11n20 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5700 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11400.00	Average	22.28	16.48	38.76	54.00	-15.24
11400.00	Peak	30.74	16.48	47.22	74.00	-26.78

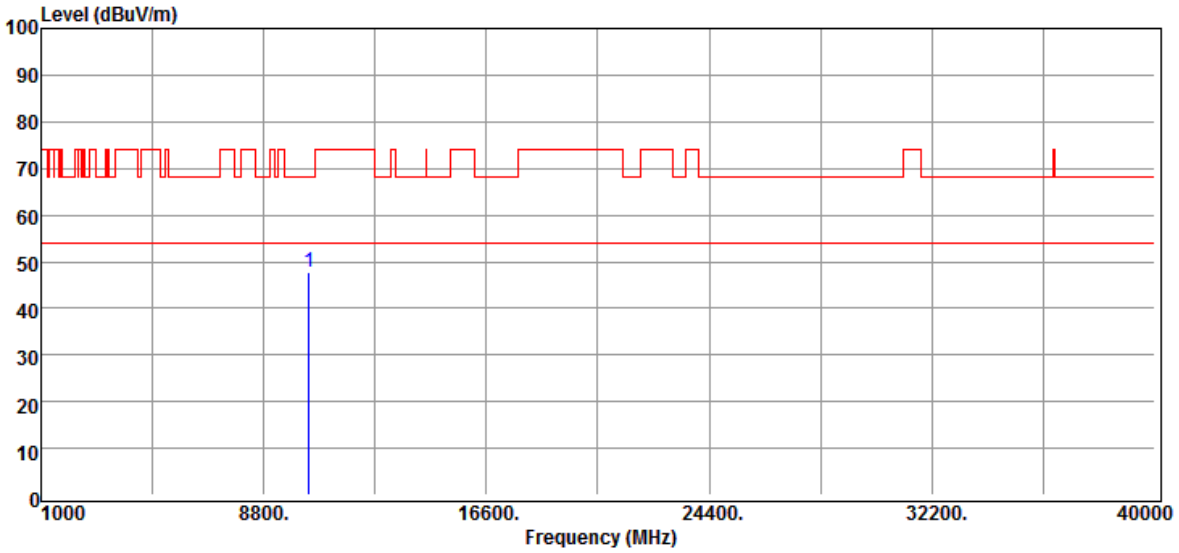
Radiated Spurious Emission Measurement Result 802.11n HT40, 5150~5250 MHz

Operation Band	:802.11n40 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5190 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



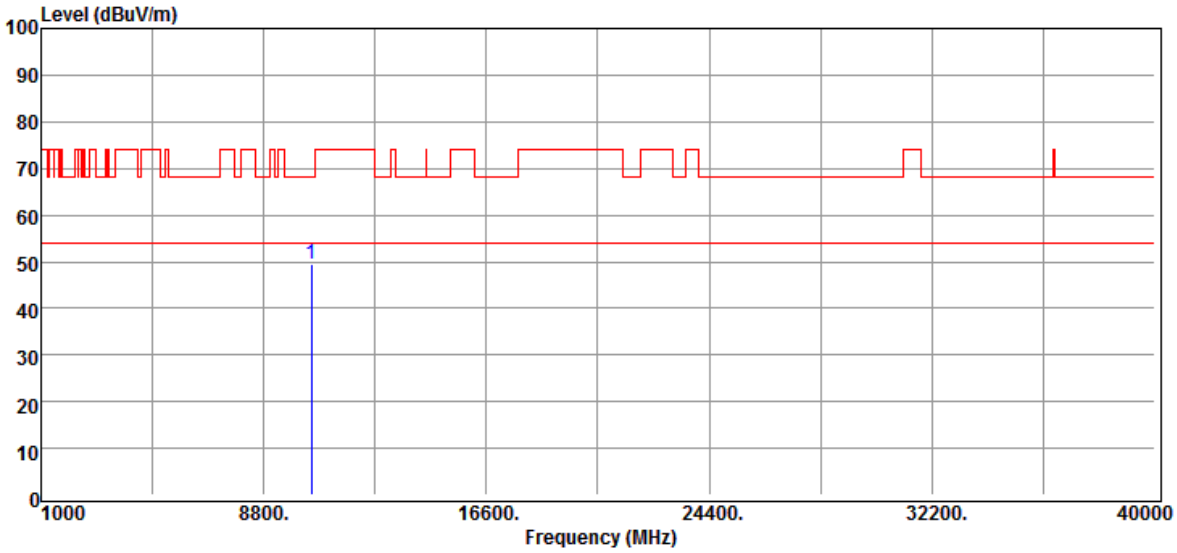
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10380.00	Peak	33.67	14.58	48.25	68.20	-19.95

Operation Band	:802.11n40 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5190 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



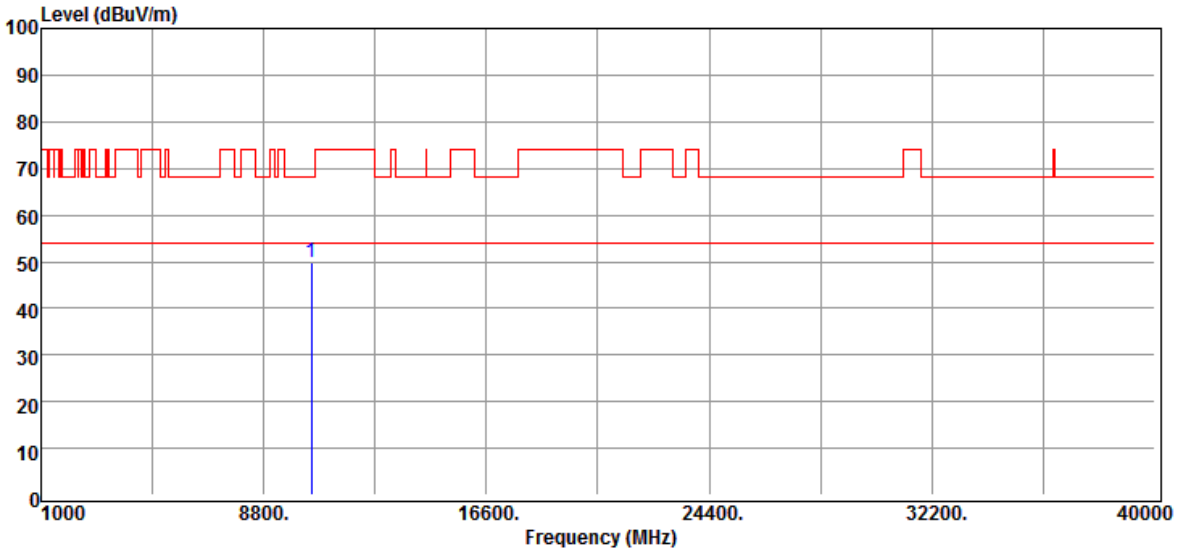
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10380.00	Peak	33.21	14.58	47.79	68.20	-20.41

Operation Band	:802.11n40 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5230 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10460.00	Peak	33.55	15.97	49.52	68.20	-18.68

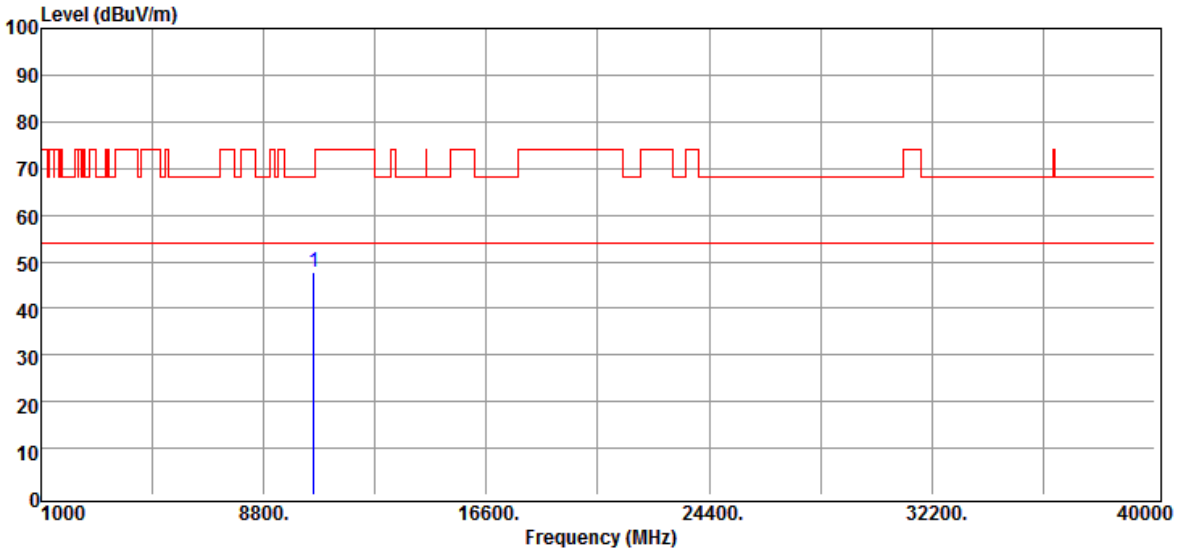
Operation Band	:802.11n40 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5230 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10460.00	Peak	33.82	15.97	49.79	68.20	-18.41

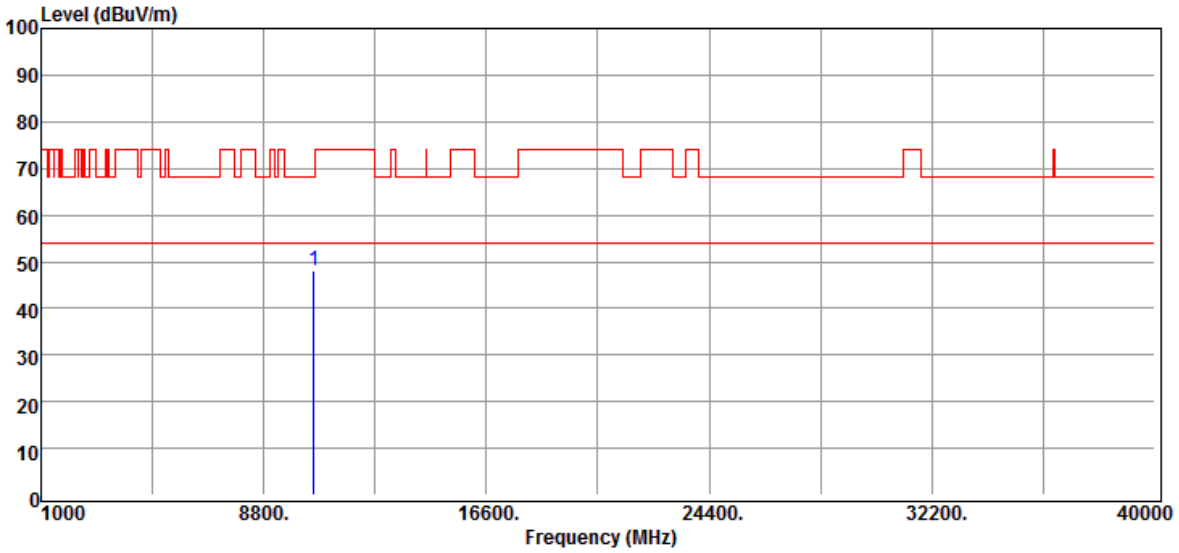
Radiated Spurious Emission Measurement Result 802.11n HT40, 5250~5350 MHz

Operation Band	:802.11n40 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5270 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



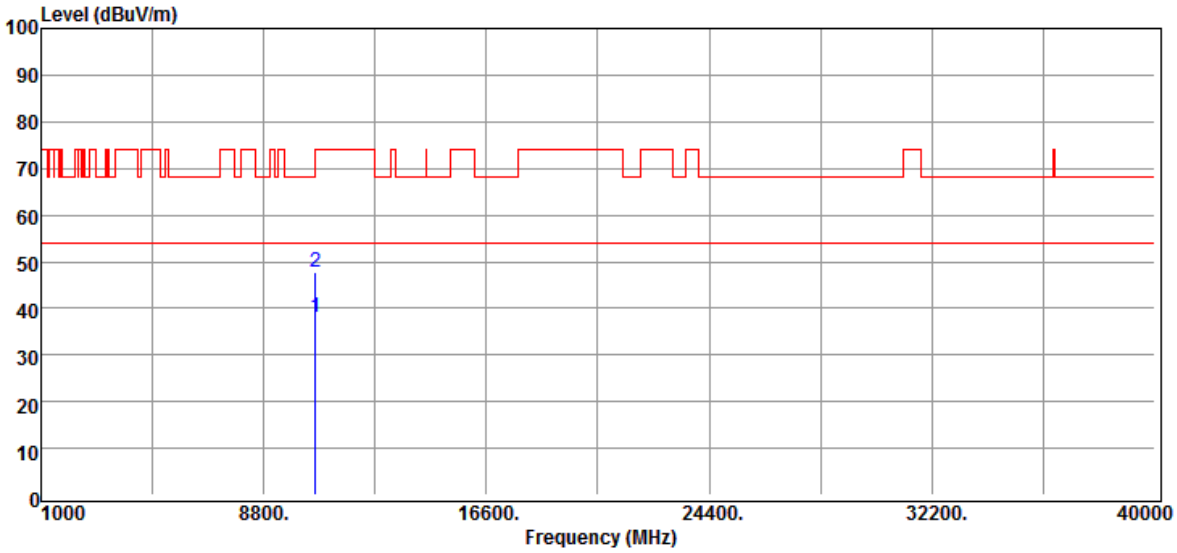
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10540.00	Peak	32.25	15.67	47.92	68.20	-20.28

Operation Band	:802.11n40 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5270 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



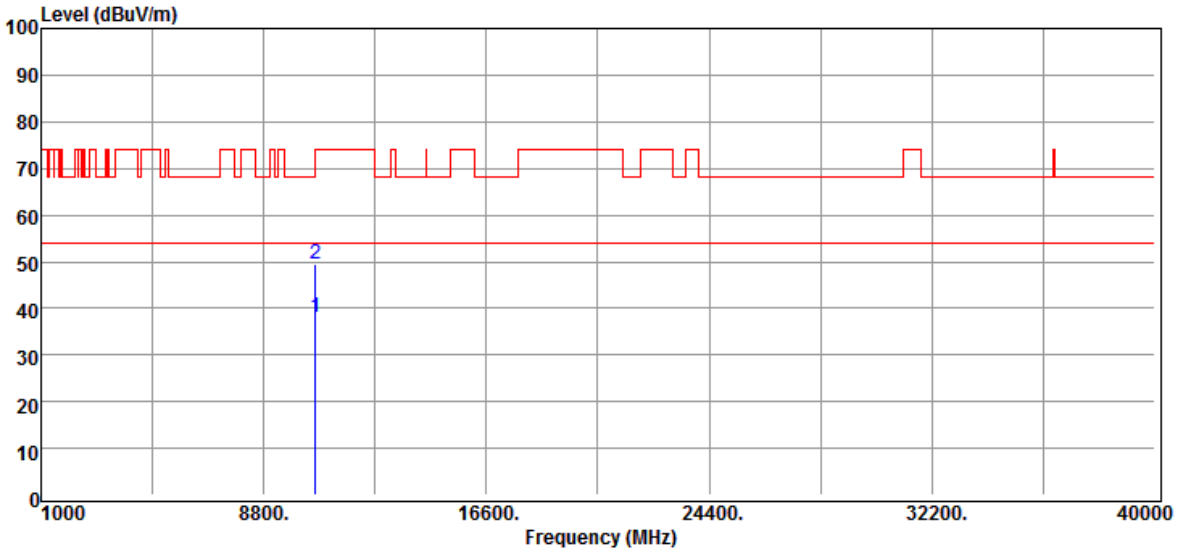
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10540.00	Peak	32.29	15.67	47.96	68.20	-20.24

Operation Band	:802.11n40 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5310 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10620.00	Average	22.35	15.78	38.13	54.00	-15.87
10620.00	Peak	31.94	15.78	47.72	74.00	-26.28

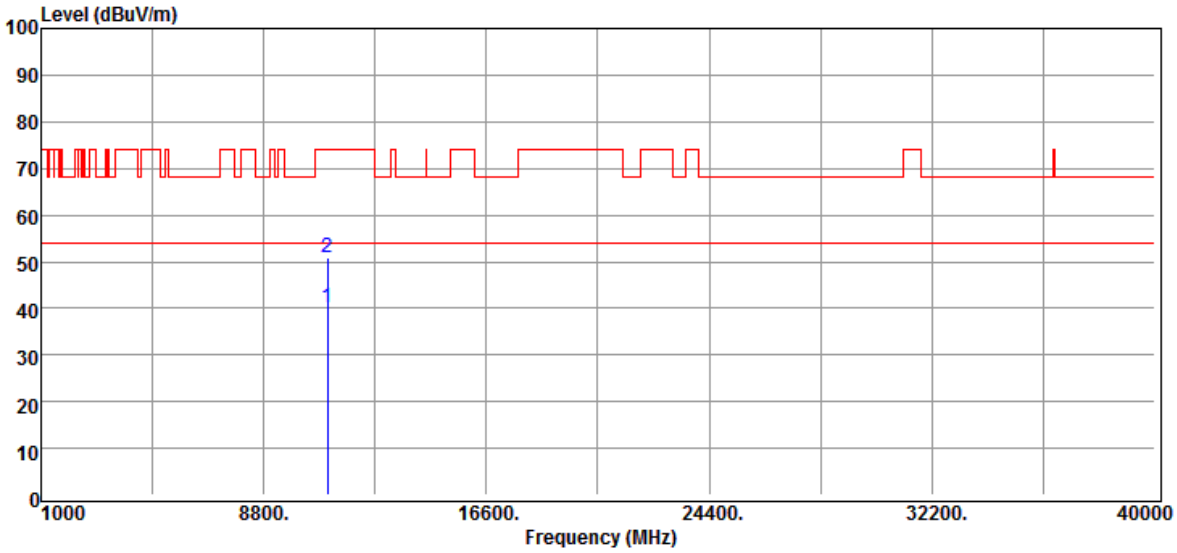
Operation Band	:802.11n40 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5310 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10620.00	Average	22.42	15.78	38.20	54.00	-15.80
10620.00	Peak	33.54	15.78	49.32	74.00	-24.68

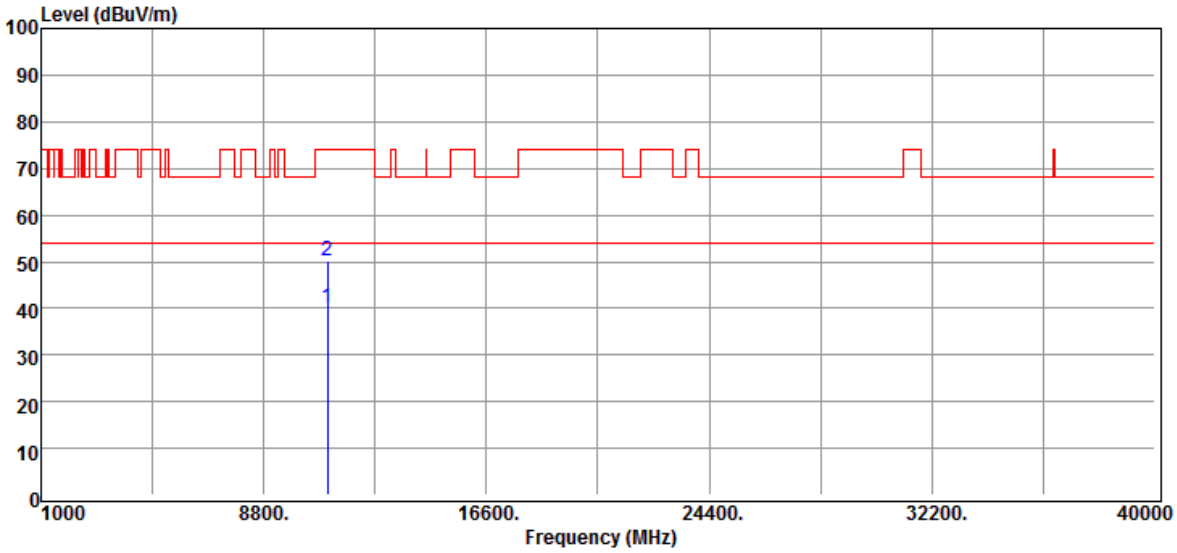
Radiated Spurious Emission Measurement Result 802.11n HT40, 5470~5725 MHz

Operation Band	:802.11n40 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5510 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



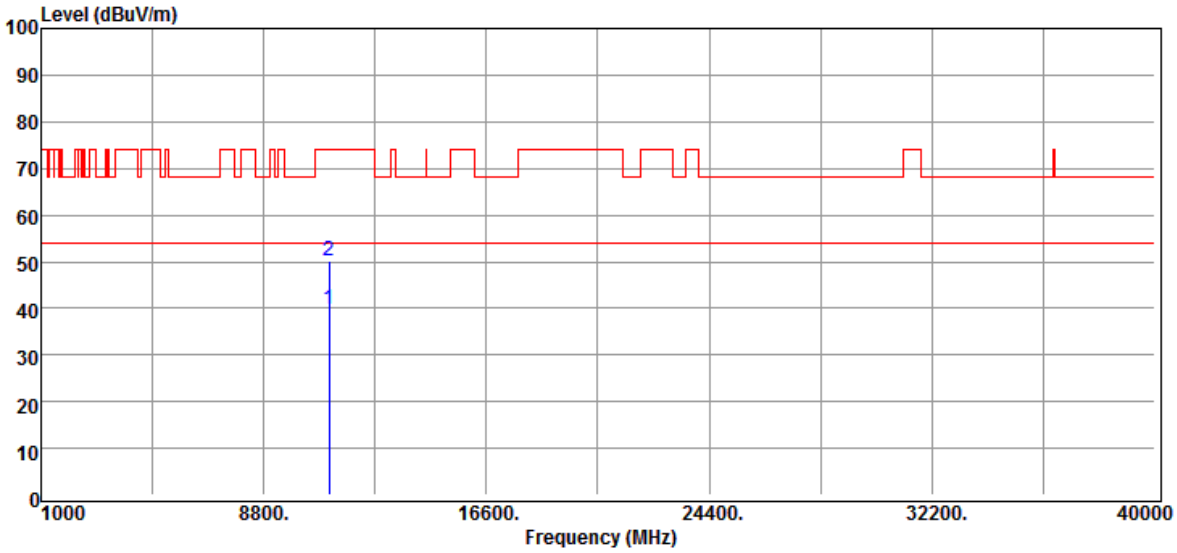
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11020.00	Average	22.42	17.87	40.29	54.00	-13.71
11020.00	Peak	32.84	17.87	50.71	74.00	-23.29

Operation Band	:802.11n40 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5510 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



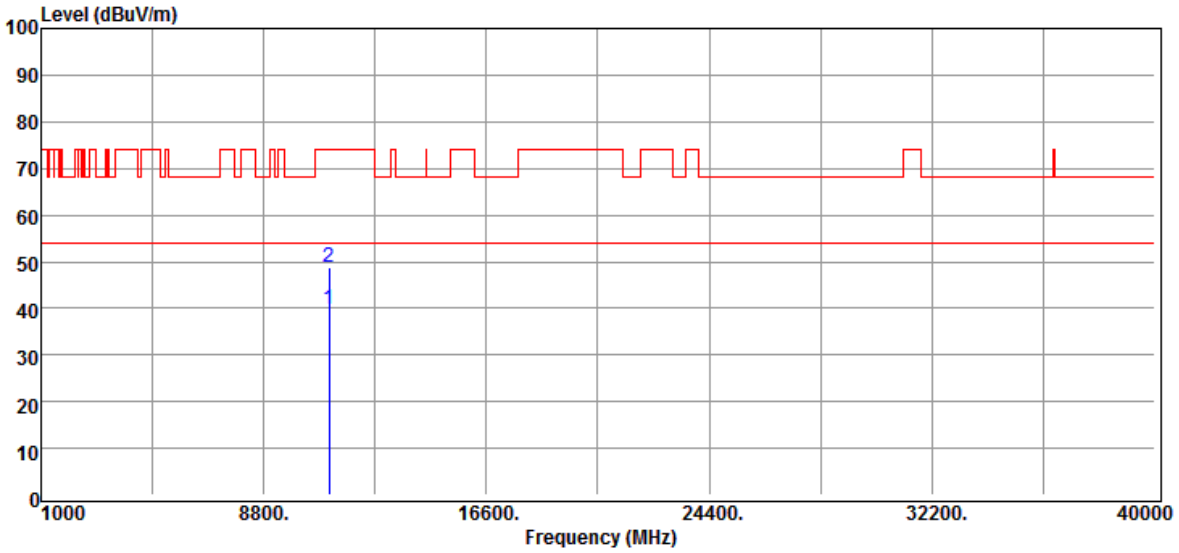
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11020.00	Average	22.39	17.87	40.26	54.00	-13.74
11020.00	Peak	32.24	17.87	50.11	74.00	-23.89

Operation Band	:802.11n40 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5550 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



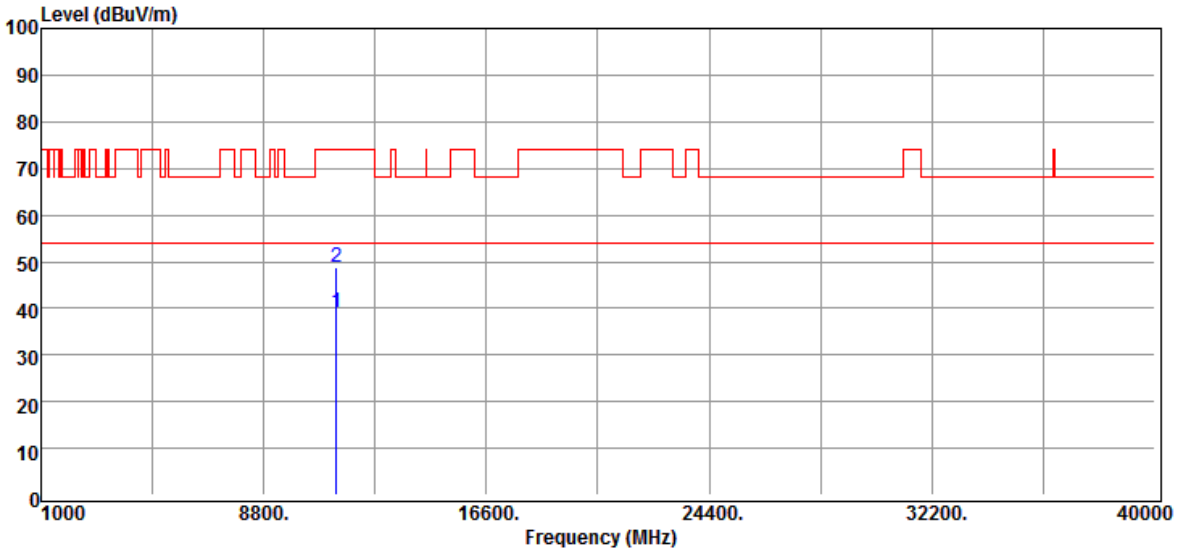
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11100.00	Average	22.68	17.25	39.93	54.00	-14.07
11100.00	Peak	33.01	17.25	50.26	74.00	-23.74

Operation Band	:802.11n40 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5550 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



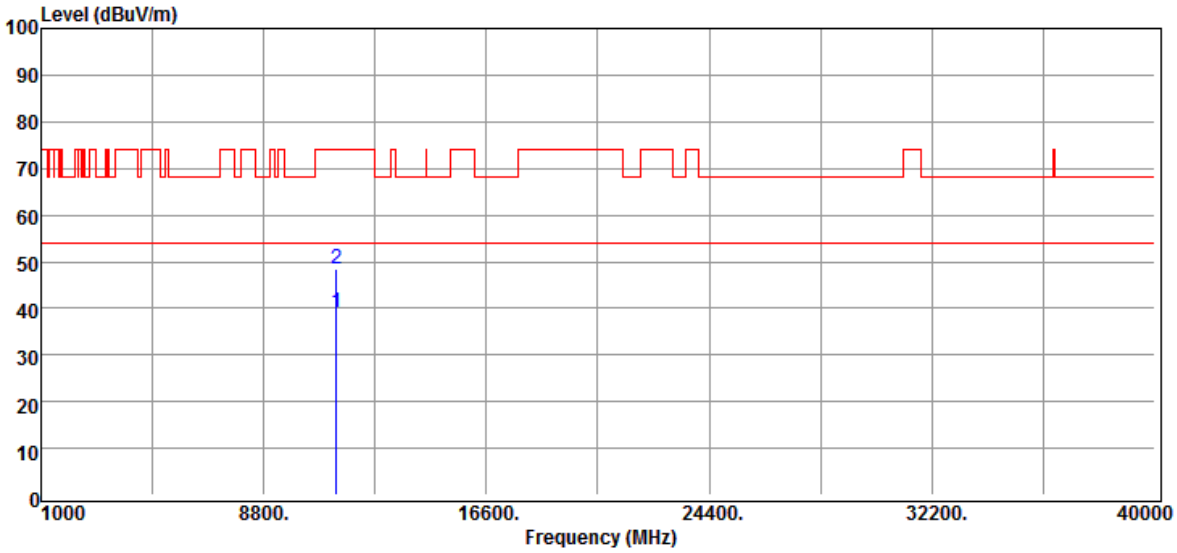
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11100.00	Average	22.46	17.25	39.71	54.00	-14.29
11100.00	Peak	31.60	17.25	48.85	74.00	-25.15

Operation Band	:802.11n40 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5670 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11340.00	Average	22.61	16.36	38.97	54.00	-15.03
11340.00	Peak	32.44	16.36	48.80	74.00	-25.20

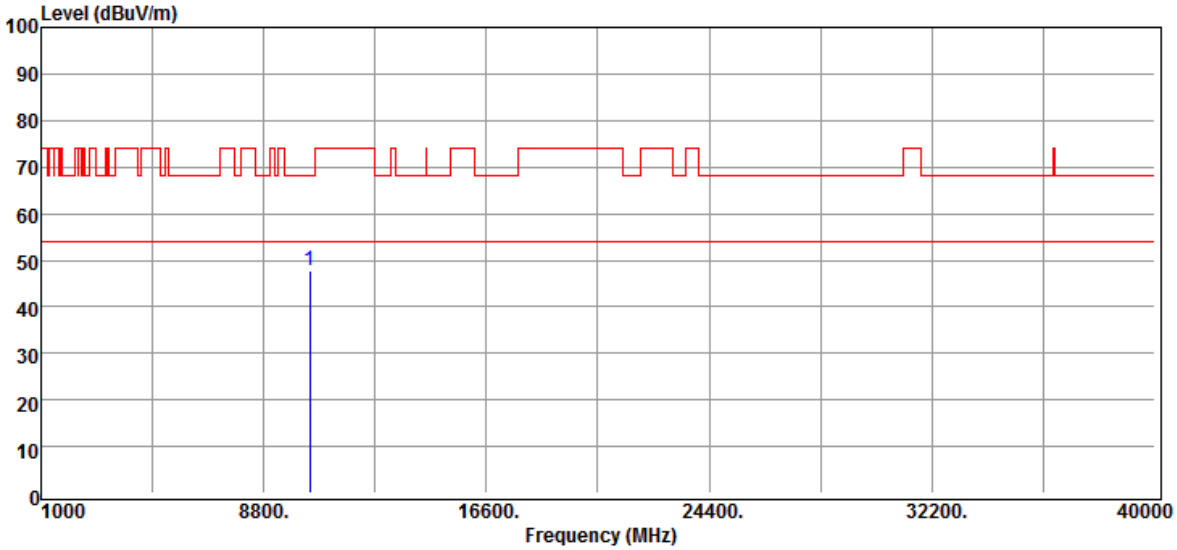
Operation Band	:802.11n40 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5670 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11340.00	Average	22.63	16.36	38.99	54.00	-15.01
11340.00	Peak	32.17	16.36	48.53	74.00	-25.47

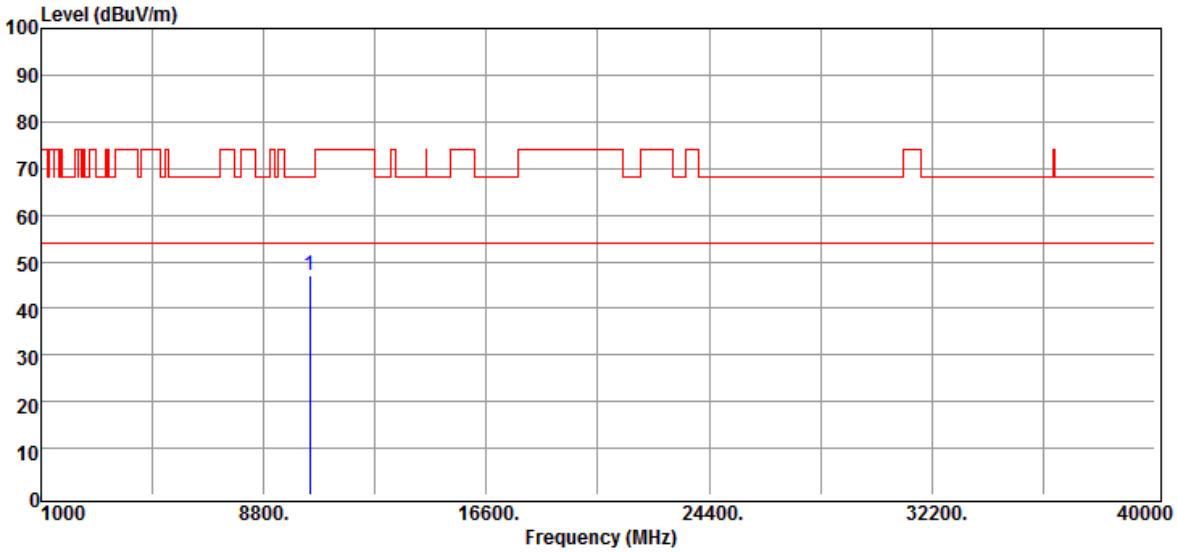
Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5150~5250 MHz

Operation Band	:802.11ac80 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5210 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10420.00	Peak	32.67	15.12	47.79	68.20	-20.41

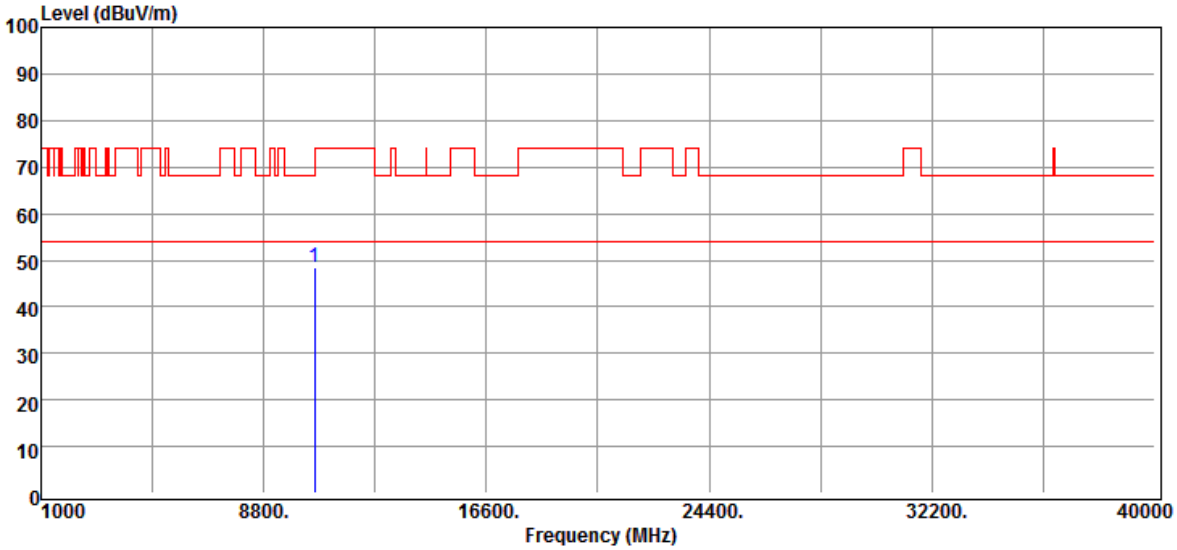
Operation Band	:802.11ac80 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5210 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10420.00	Peak	32.08	15.12	47.20	68.20	-21.00

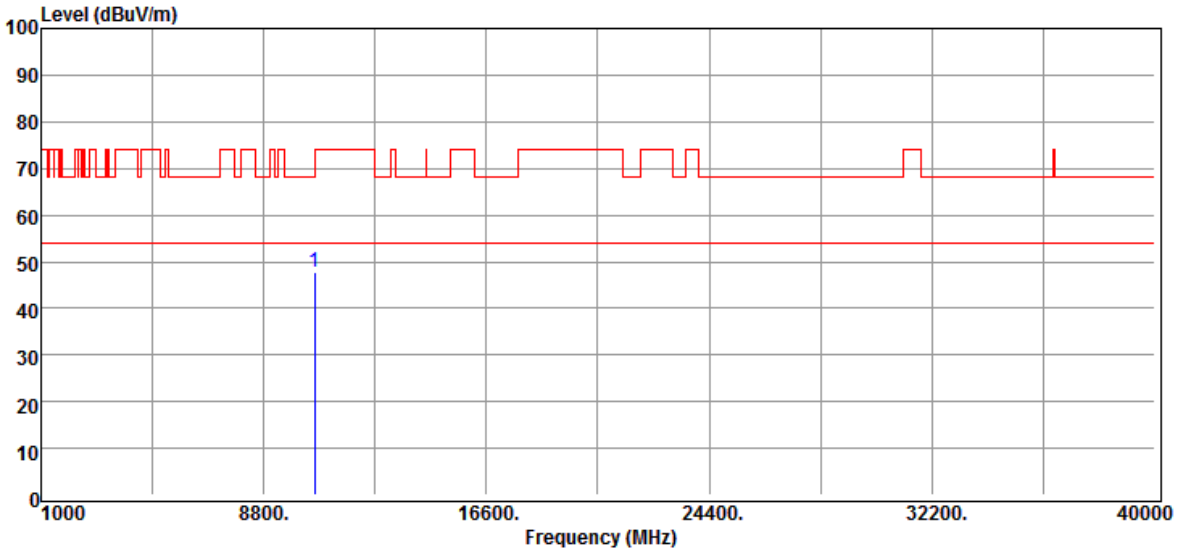
Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5250~5350 MHz

Operation Band	:802.11ac80 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5290 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10580.00	Peak	33.05	15.43	48.48	68.20	-19.72

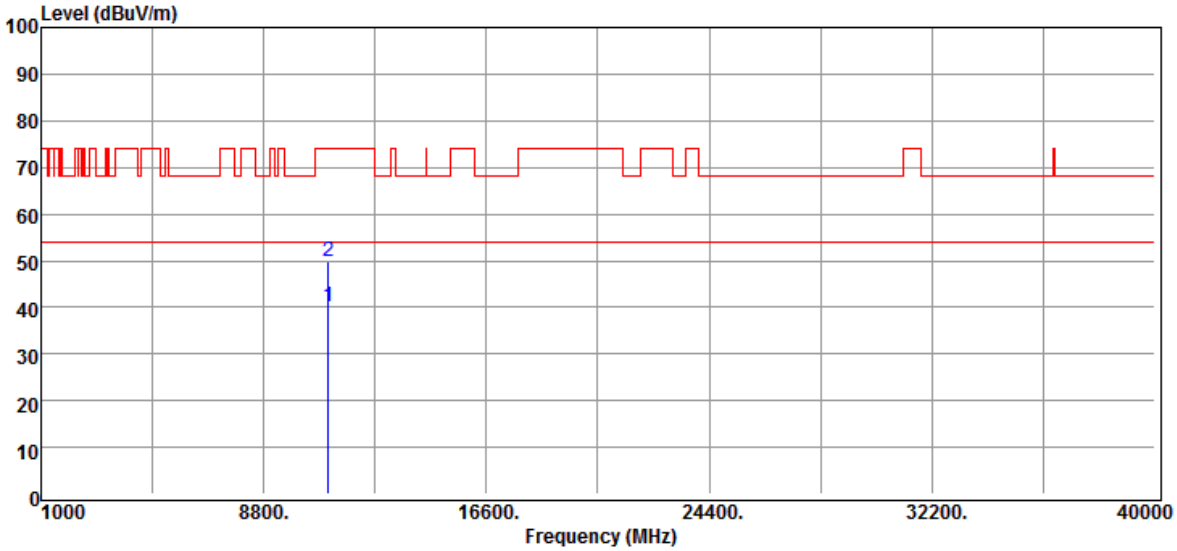
Operation Band	:802.11ac80 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5290 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10580.00	Peak	32.49	15.43	47.92	68.20	-20.28

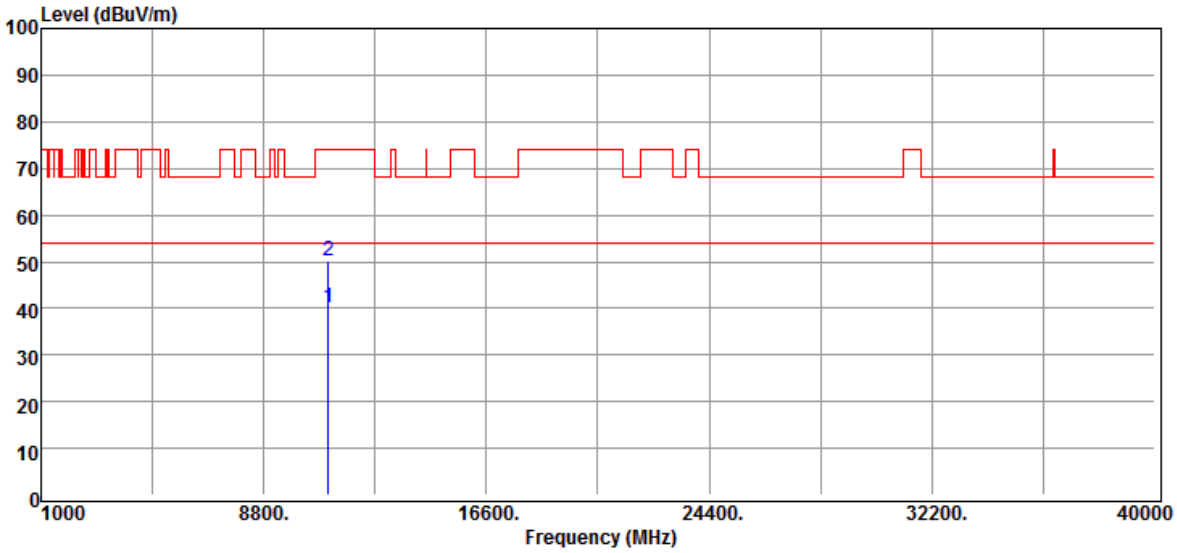
Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5470~5725 MHz

Operation Band	:802.11ac80 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5530 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



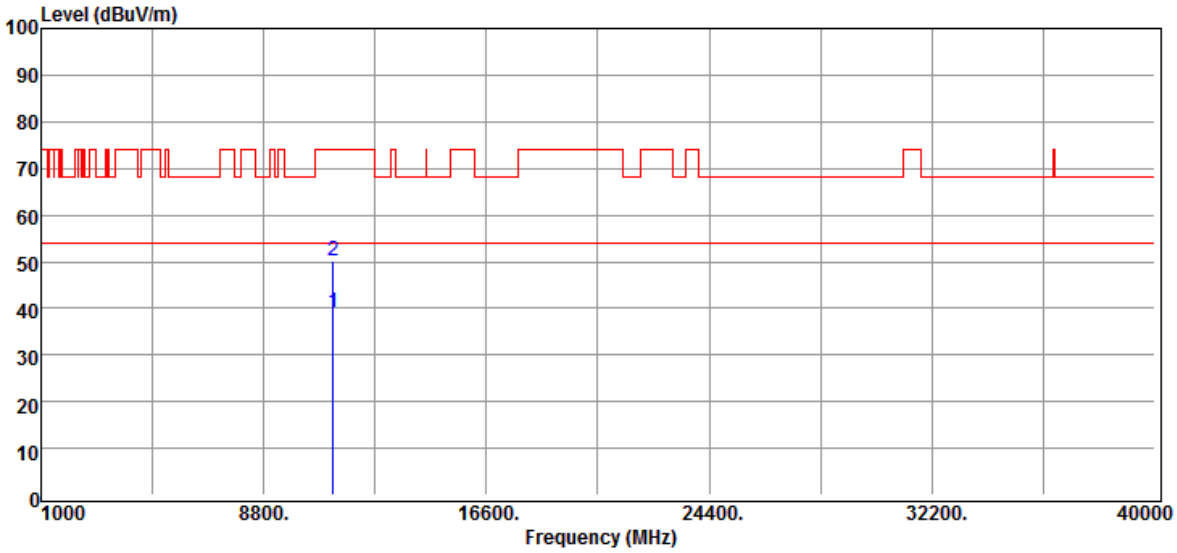
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11060.00	Average	22.57	17.50	40.07	54.00	-13.93
11060.00	Peak	32.26	17.50	49.76	74.00	-24.24

Operation Band	:802.11ac80 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5530 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



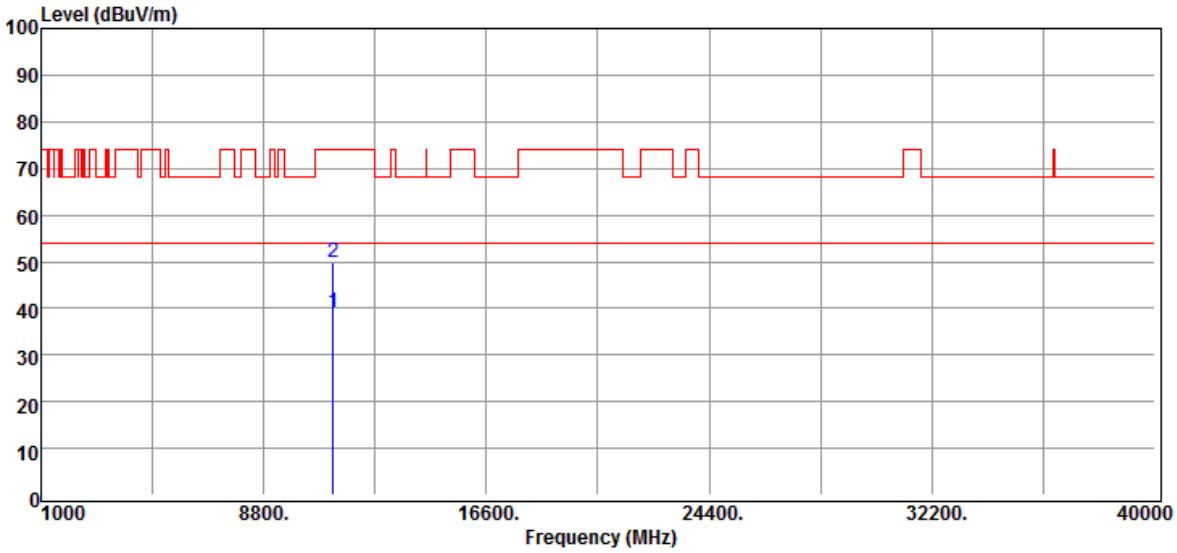
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11060.00	Average	22.51	17.50	40.01	54.00	-13.99
11060.00	Peak	32.63	17.50	50.13	74.00	-23.87

Operation Band	:802.11ac80 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5610 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11220.00	Average	22.43	16.53	38.96	54.00	-15.04
11220.00	Peak	33.55	16.53	50.08	74.00	-23.92

Operation Band	:802.11ac80 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5610 MHz	Temp./Humi.	:19/54
Operation Mode	:Tx CH Mid	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL

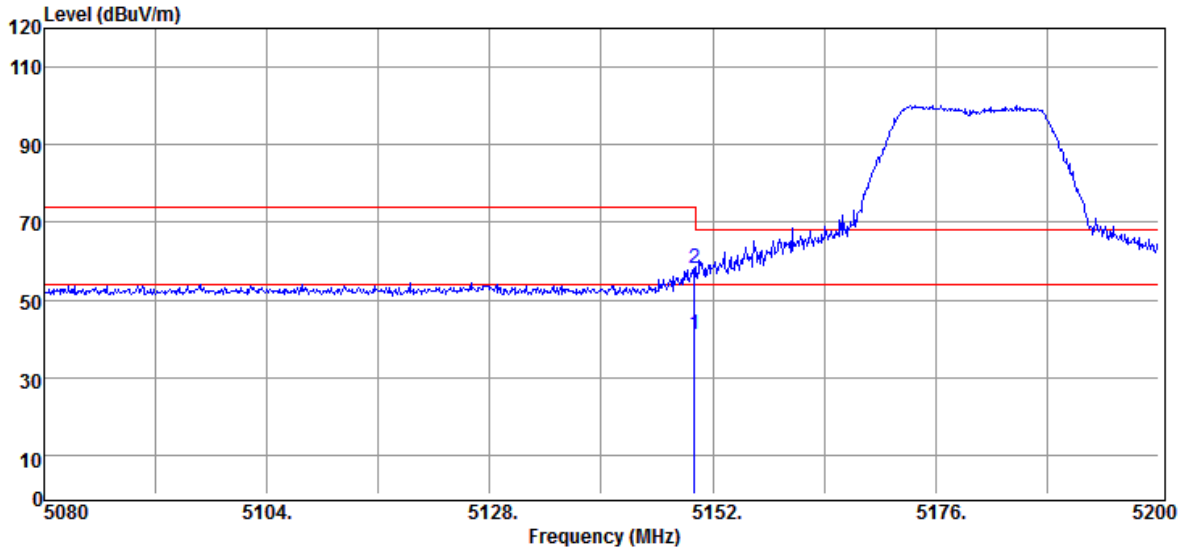


Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11220.00	Average	22.71	16.53	39.24	54.00	-14.76
11220.00	Peak	33.27	16.53	49.80	74.00	-24.20

Band Edge falling to restricted band

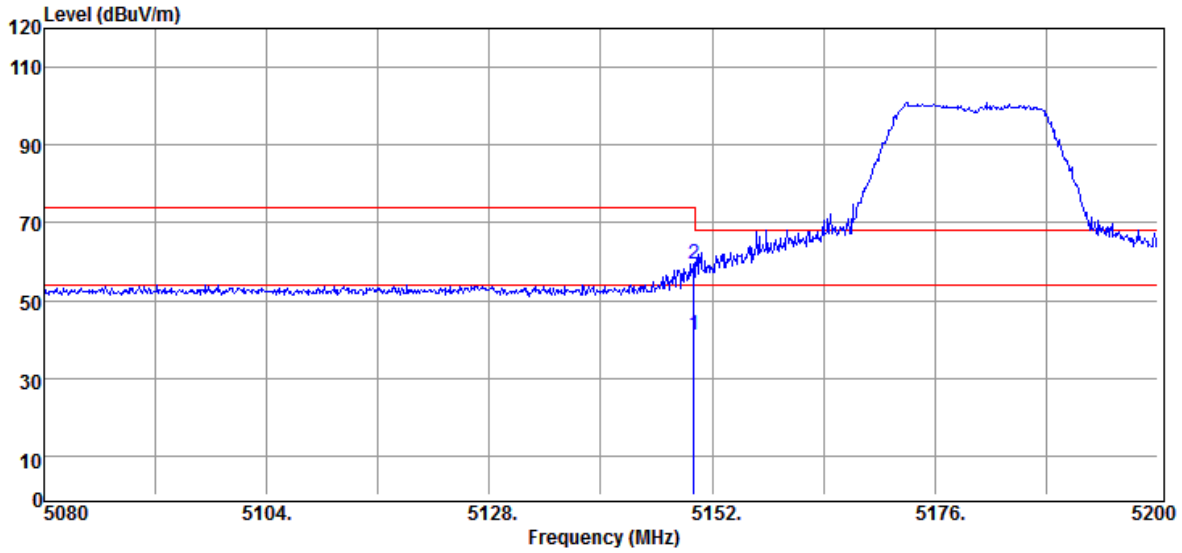
802.11a mode

Operation Band	:802.11a / Band1	Test Date	:2019-04-11
Fundamental Frequency	:5180 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



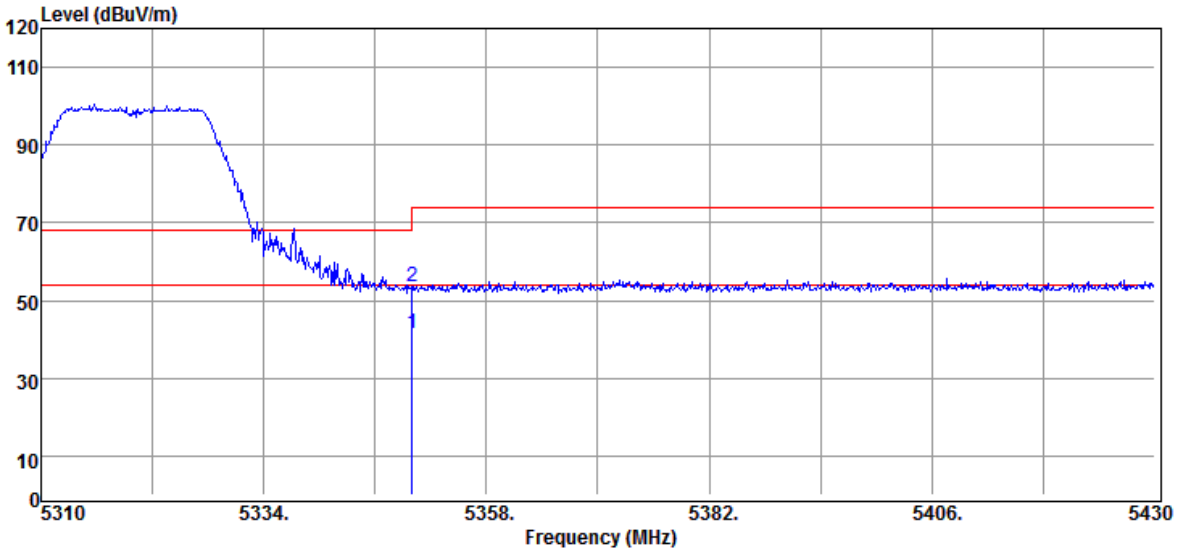
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	36.70	4.55	41.25	54.00	-12.75
5150.00	Peak	53.69	4.55	58.24	74.00	-15.76

Operation Band	:802.11a / Band1	Test Date	:2019-04-11
Fundamental Frequency	:5180 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



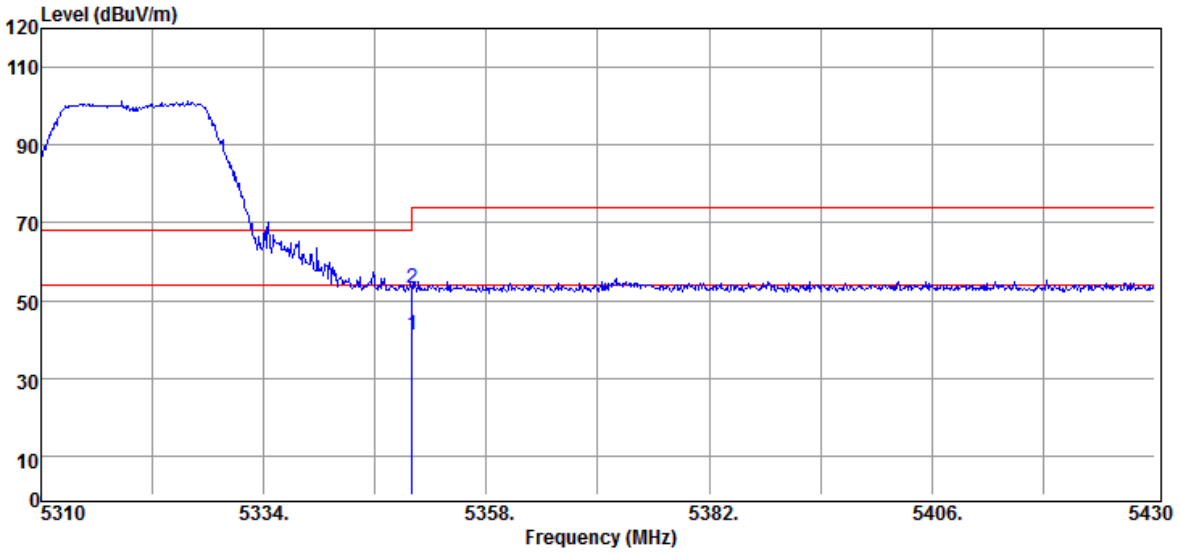
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	36.76	4.55	41.31	54.00	-12.69
5150.00	Peak	54.88	4.55	59.43	74.00	-14.57

Operation Band	:802.11a / Band2	Test Date	:2019-04-11
Fundamental Frequency	:5320 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



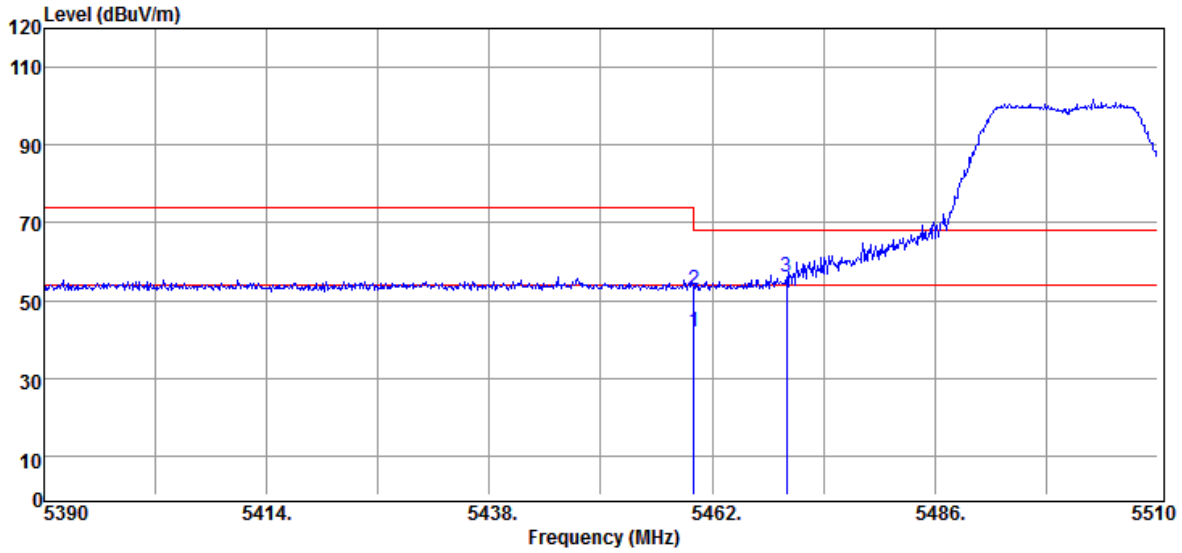
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	36.25	5.19	41.44	54.00	-12.56
5350.00	Peak	48.46	5.19	53.65	74.00	-20.35

Operation Band	:802.11a / Band2	Test Date	:2019-04-11
Fundamental Frequency	:5320 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



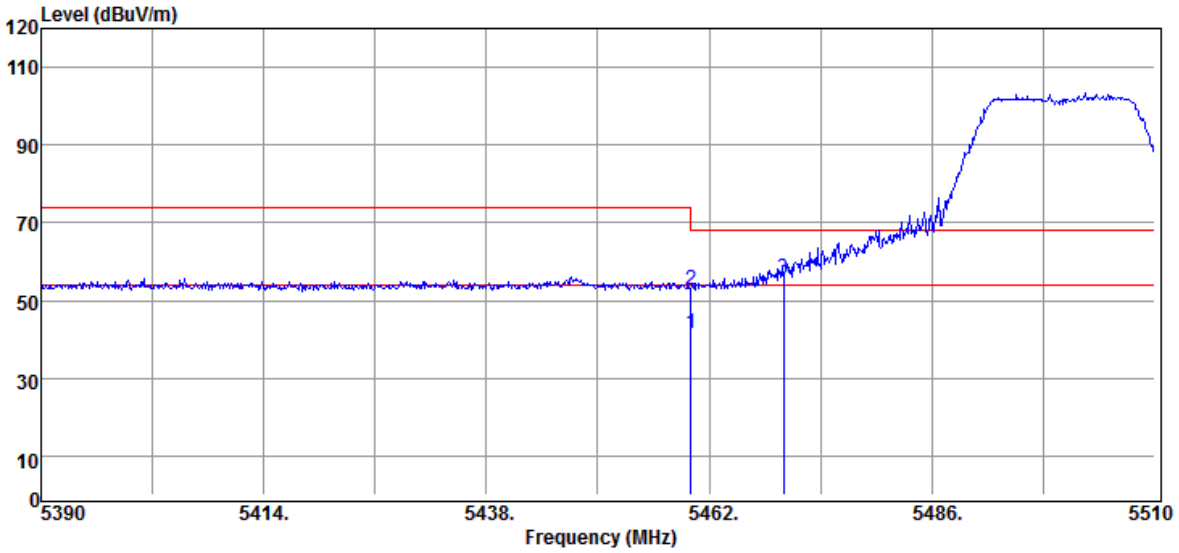
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	36.07	5.19	41.26	54.00	-12.74
5350.00	Peak	47.80	5.19	52.99	74.00	-21.01

Operation Band	:802.11a / Band3	Test Date	:2019-04-11
Fundamental Frequency	:5500 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



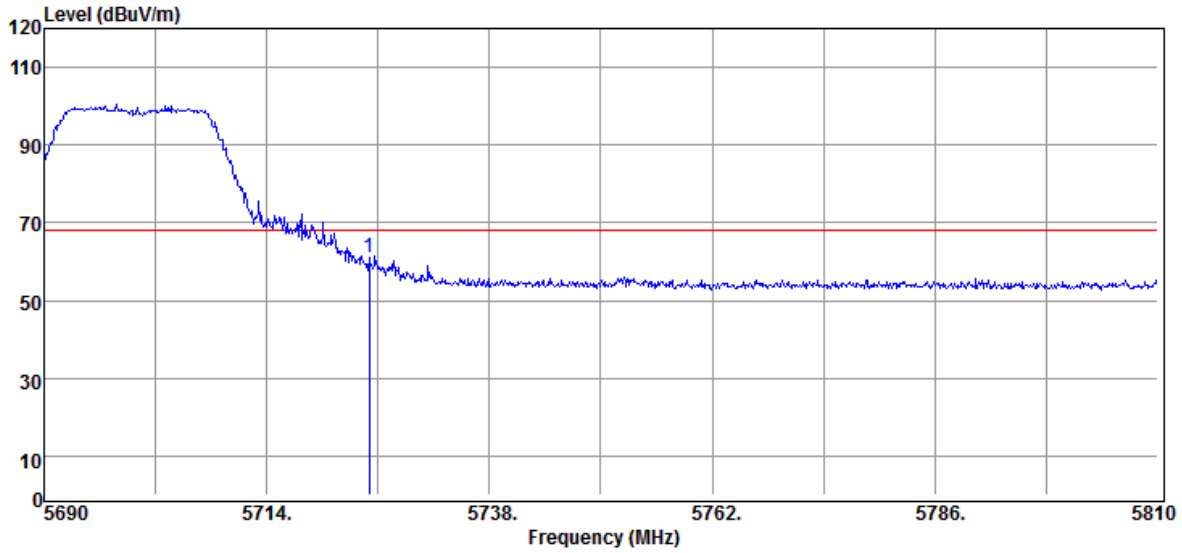
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5460.00	Average	36.22	5.54	41.76	54.00	-12.24
5460.00	Peak	47.32	5.54	52.86	74.00	-21.14
5470.00	Peak	50.34	5.52	55.86	68.20	-12.34

Operation Band	:802.11a / Band3	Test Date	:2019-04-11
Fundamental Frequency	:5500 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



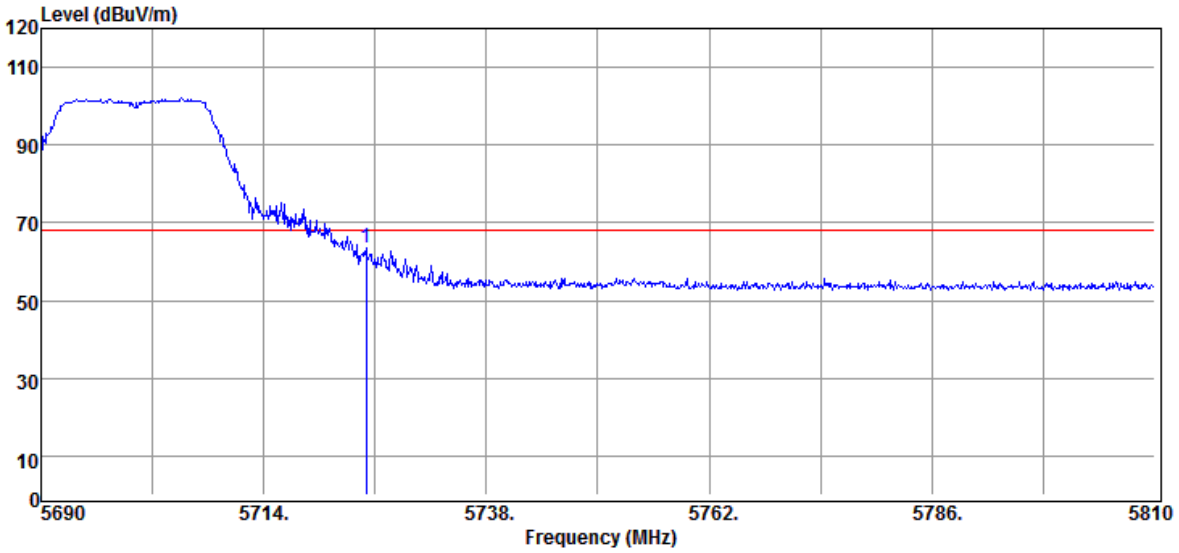
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5460.00	Average	36.15	5.54	41.69	54.00	-12.31
5460.00	Peak	47.38	5.54	52.92	74.00	-21.08
5470.00	Peak	49.98	5.52	55.50	68.20	-12.70

Operation Band	:802.11a / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5700 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.00	Peak	54.29	6.55	60.84	68.20	-7.36

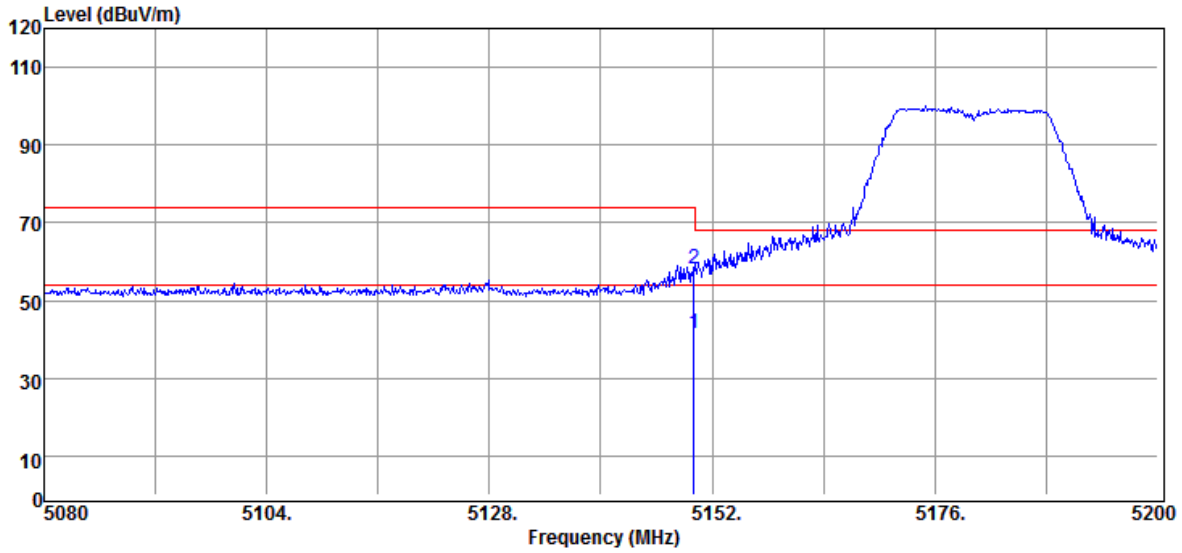
Operation Band	:802.11a / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5700 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.00	Peak	56.79	6.55	63.34	68.20	-4.86

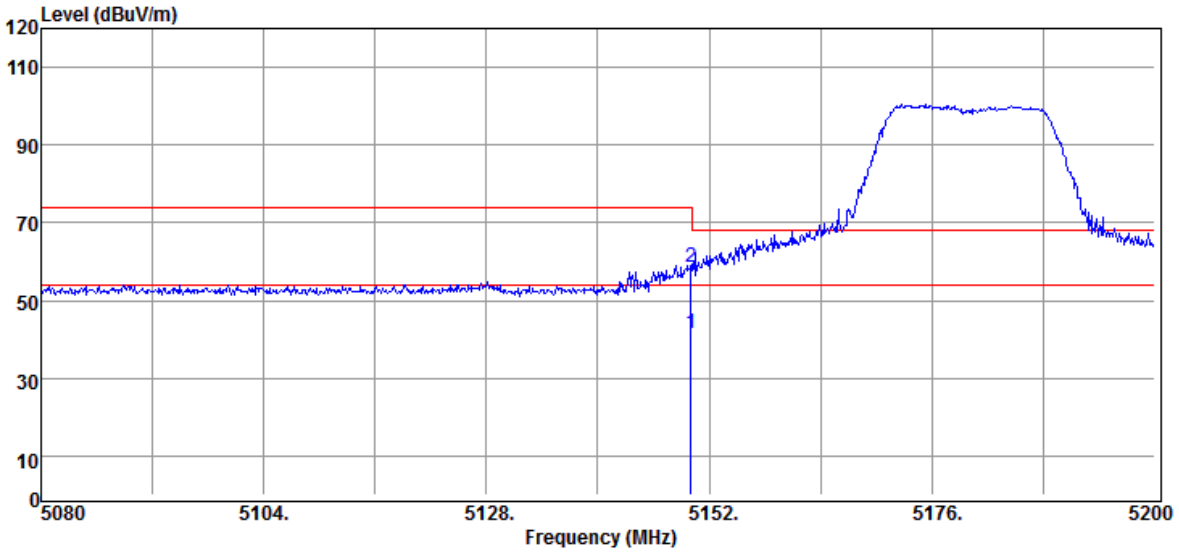
802.11n20 HT mode

Operation Band	:802.11n20 / Band1	Test Date	:2019-04-11
Fundamental Frequency	:5180 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



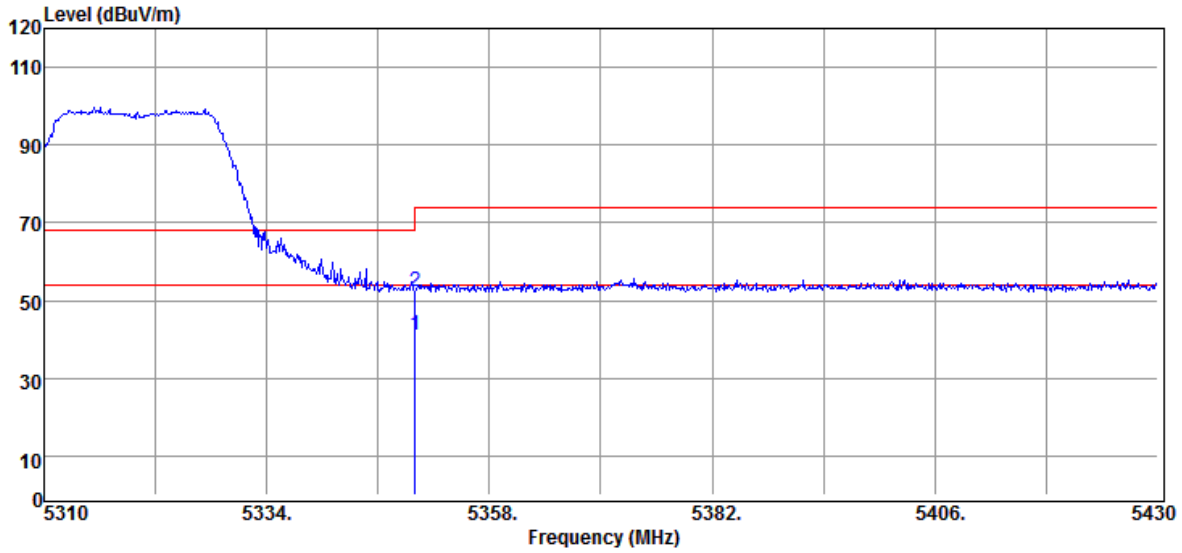
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	36.85	4.55	41.40	54.00	-12.60
5150.00	Peak	53.59	4.55	58.14	74.00	-15.86

Operation Band	:802.11n20 / Band1	Test Date	:2019-04-11
Fundamental Frequency	:5180 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



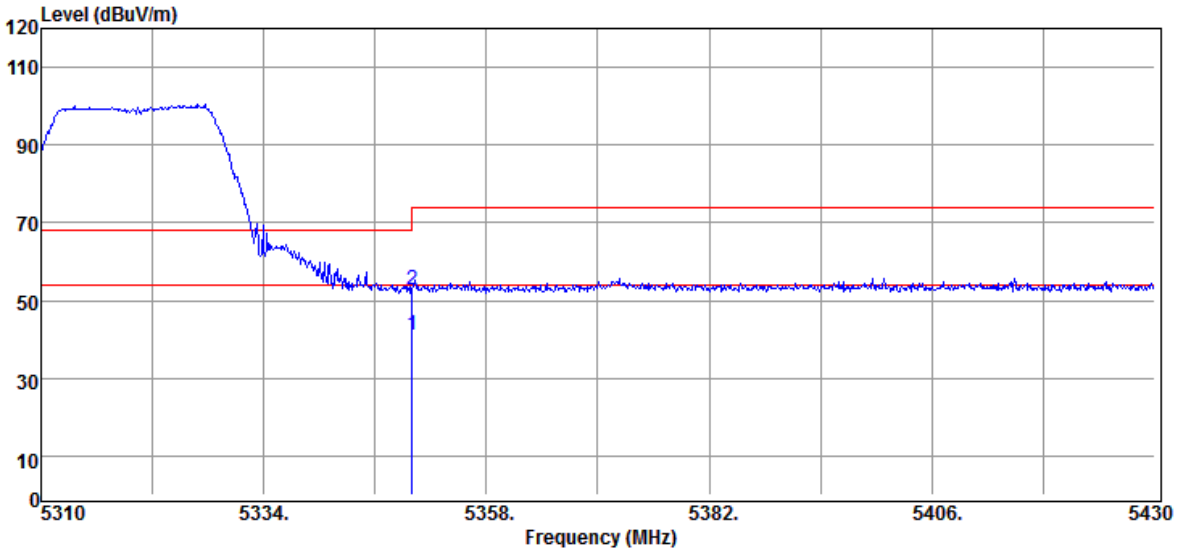
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	36.95	4.55	41.50	54.00	-12.50
5150.00	Peak	54.00	4.55	58.55	74.00	-15.45

Operation Band	:802.11n20 / Band2	Test Date	:2019-04-11
Fundamental Frequency	:5320 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



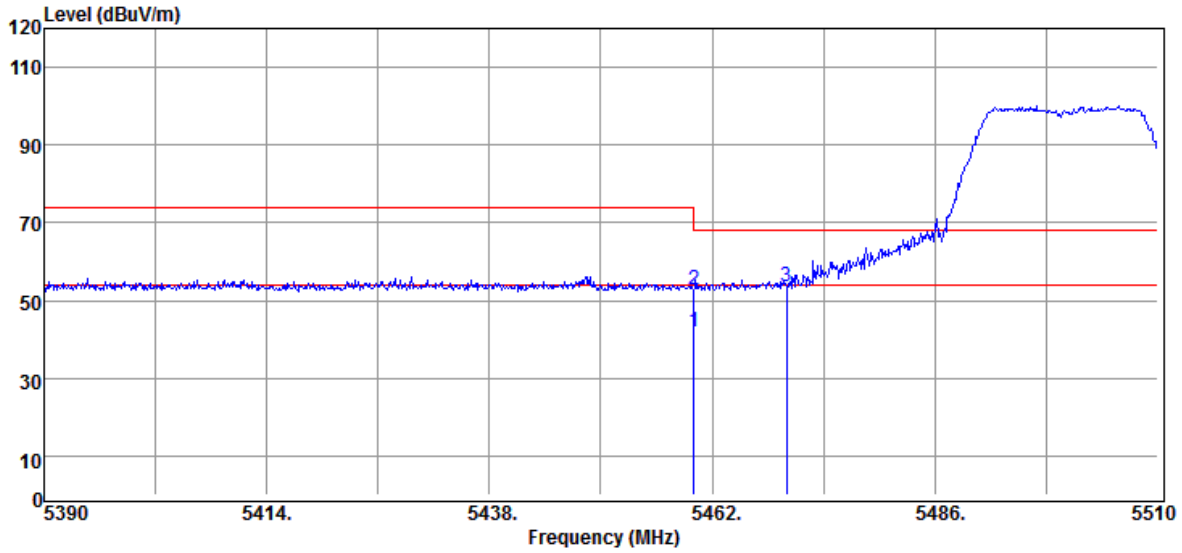
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	36.03	5.19	41.22	54.00	-12.78
5350.00	Peak	47.10	5.19	52.29	74.00	-21.71

Operation Band	:802.11n20 / Band2	Test Date	:2019-04-11
Fundamental Frequency	:5320 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



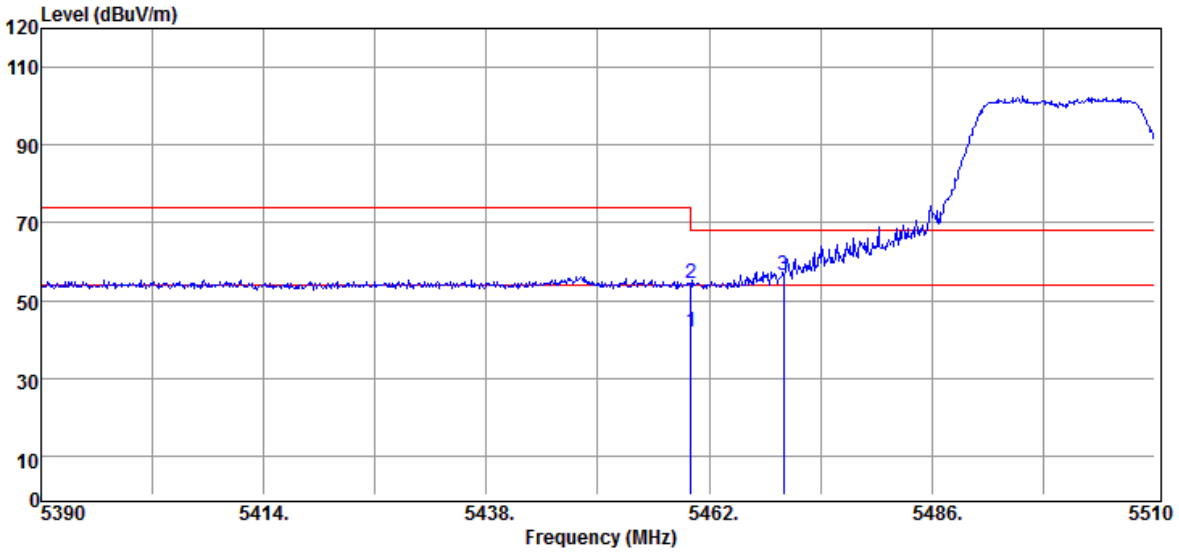
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	36.05	5.19	41.24	54.00	-12.76
5350.00	Peak	47.59	5.19	52.78	74.00	-21.22

Operation Band	:802.11n20 / Band3	Test Date	:2019-04-11
Fundamental Frequency	:5500 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



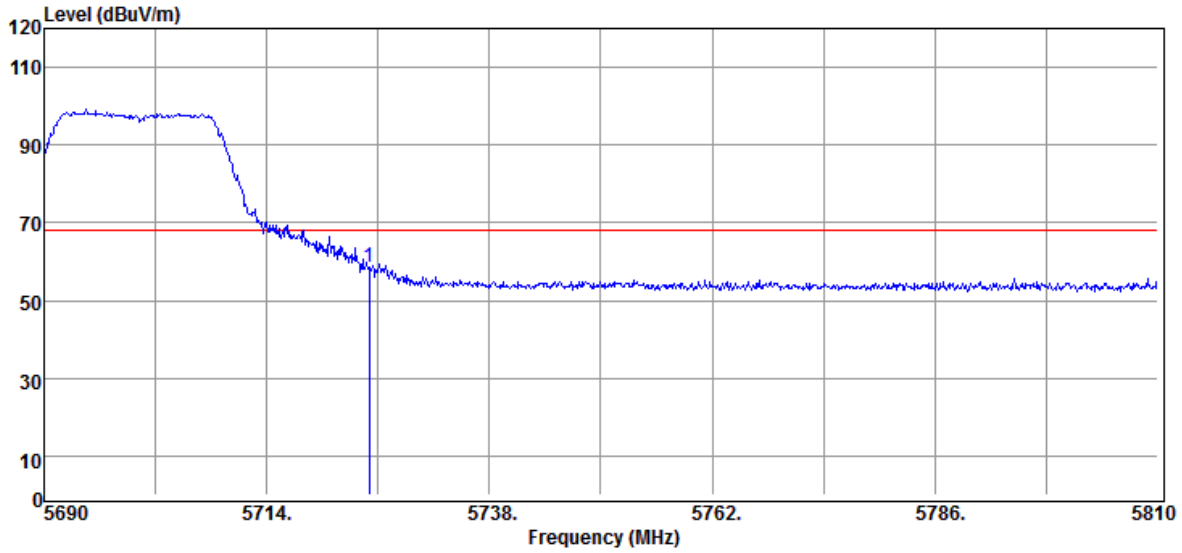
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5460.00	Average	36.31	5.54	41.85	54.00	-12.15
5460.00	Peak	47.12	5.54	52.66	74.00	-21.34
5470.00	Peak	47.98	5.52	53.50	68.20	-14.70

Operation Band	:802.11n20 / Band3	Test Date	:2019-04-11
Fundamental Frequency	:5500 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



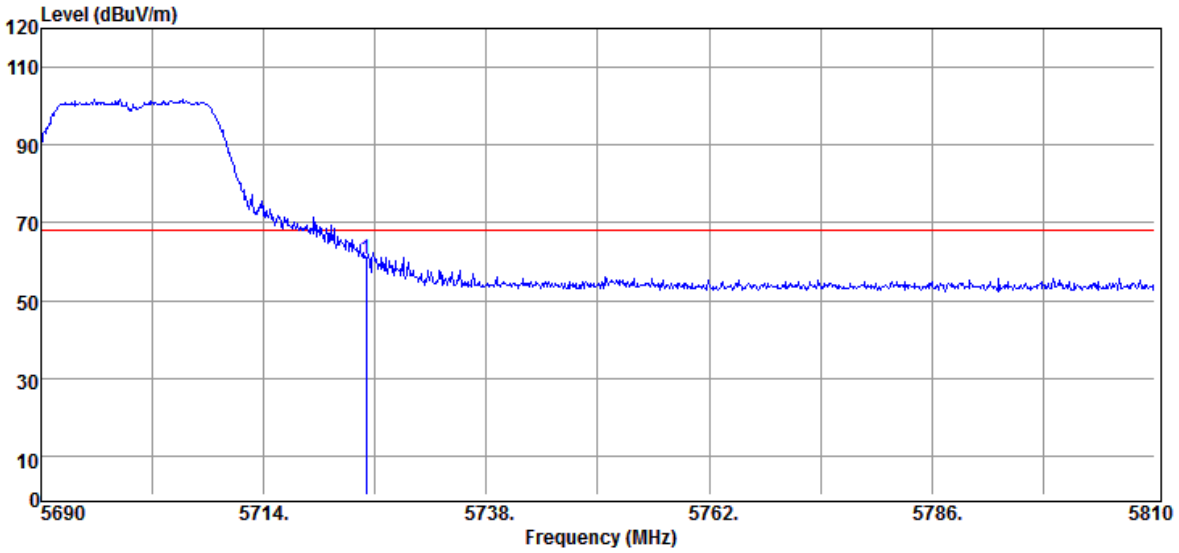
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5460.00	Average	36.32	5.54	41.86	54.00	-12.14
5460.00	Peak	48.67	5.54	54.21	74.00	-19.79
5470.00	Peak	50.82	5.52	56.34	68.20	-11.86

Operation Band	:802.11n20 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5700 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.00	Peak	51.94	6.55	58.49	68.20	-9.71

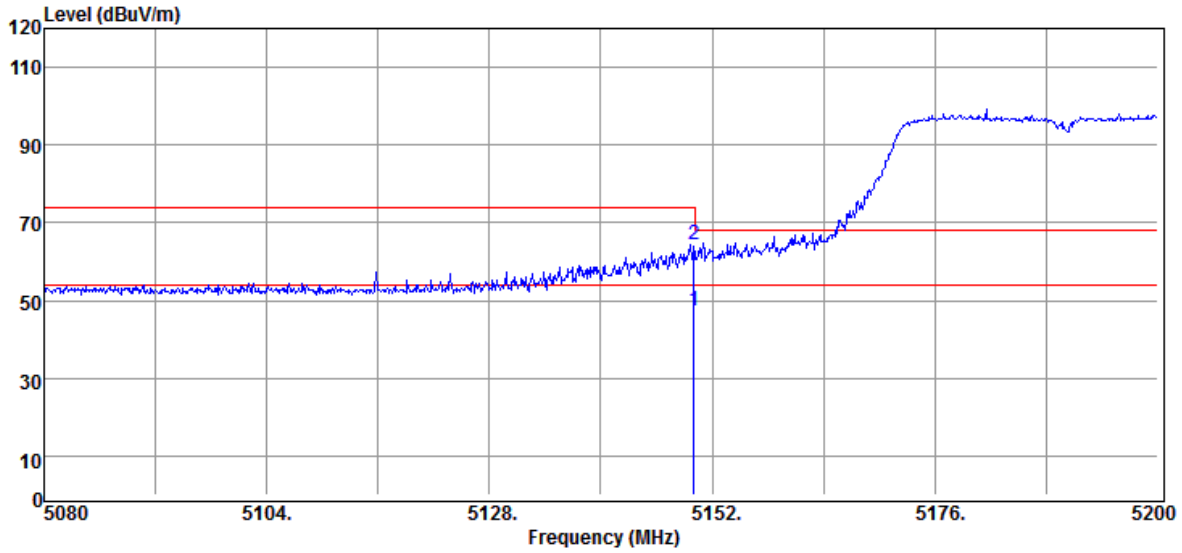
Operation Band	:802.11n20 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5700 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.00	Peak	54.26	6.55	60.81	68.20	-7.39

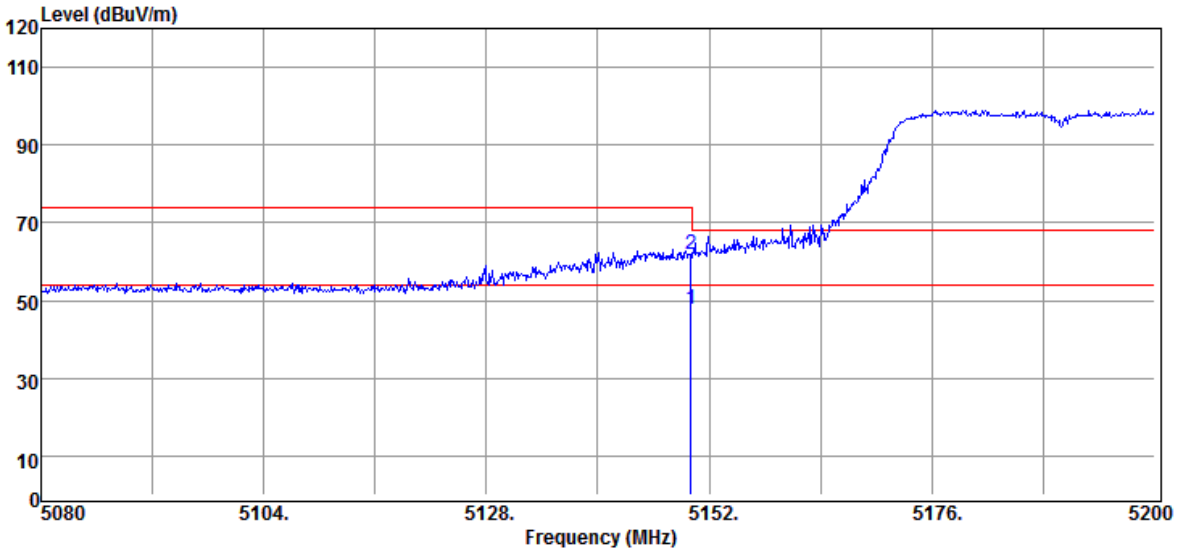
802.11n40 HT mode

Operation Band	:802.11n40 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5190 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



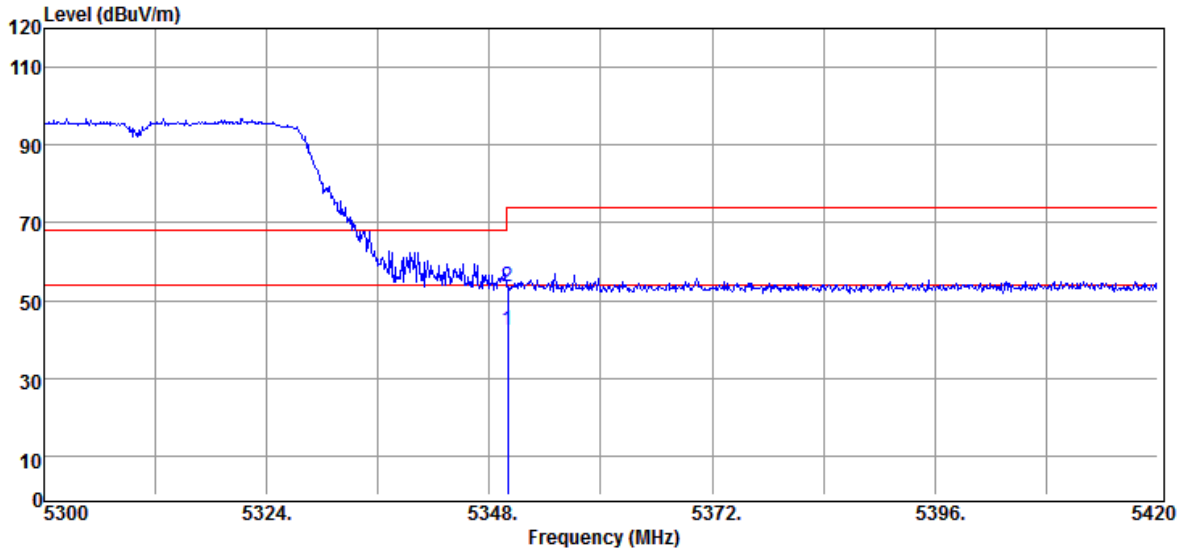
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	42.63	4.55	47.18	54.00	-6.82
5150.00	Peak	59.77	4.55	64.32	74.00	-9.68

Operation Band	:802.11n40 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5190 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



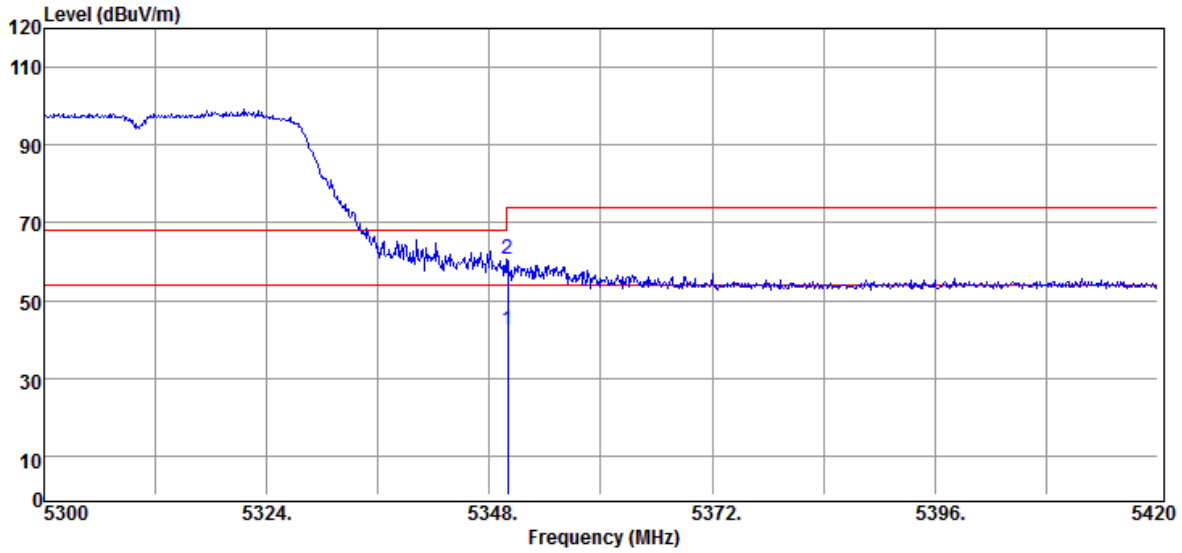
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	43.24	4.55	47.79	54.00	-6.21
5150.00	Peak	57.35	4.55	61.90	74.00	-12.10

Operation Band	:802.11n40 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5310 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



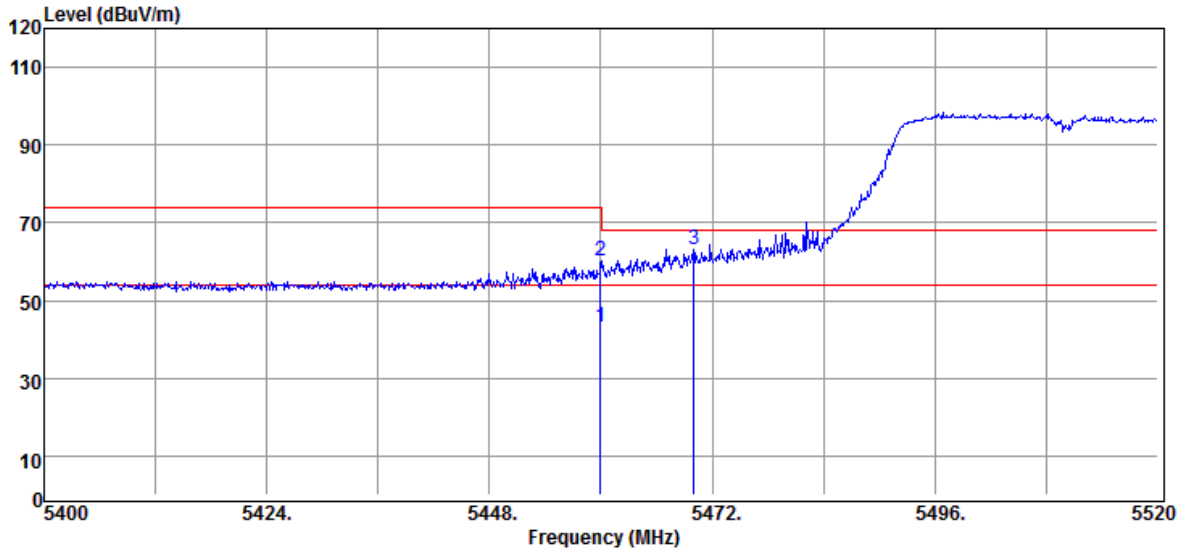
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	37.15	5.19	42.34	54.00	-11.66
5350.00	Peak	48.51	5.19	53.70	74.00	-20.30

Operation Band	:802.11n40 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5310 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



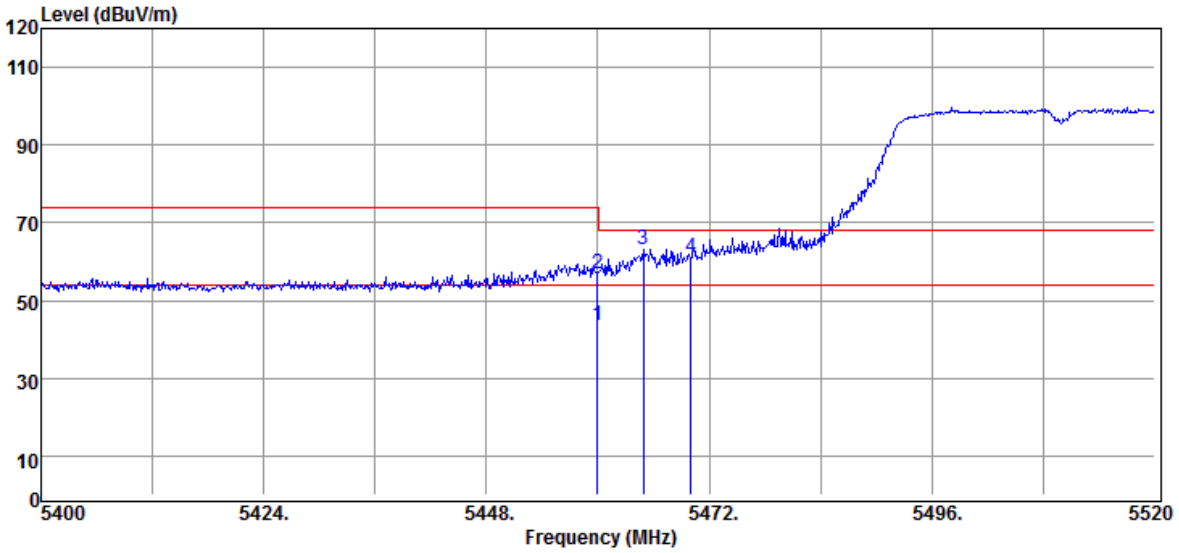
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	37.17	5.19	42.36	54.00	-11.64
5350.00	Peak	55.50	5.19	60.69	74.00	-13.31

Operation Band	:802.11n40 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5510 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



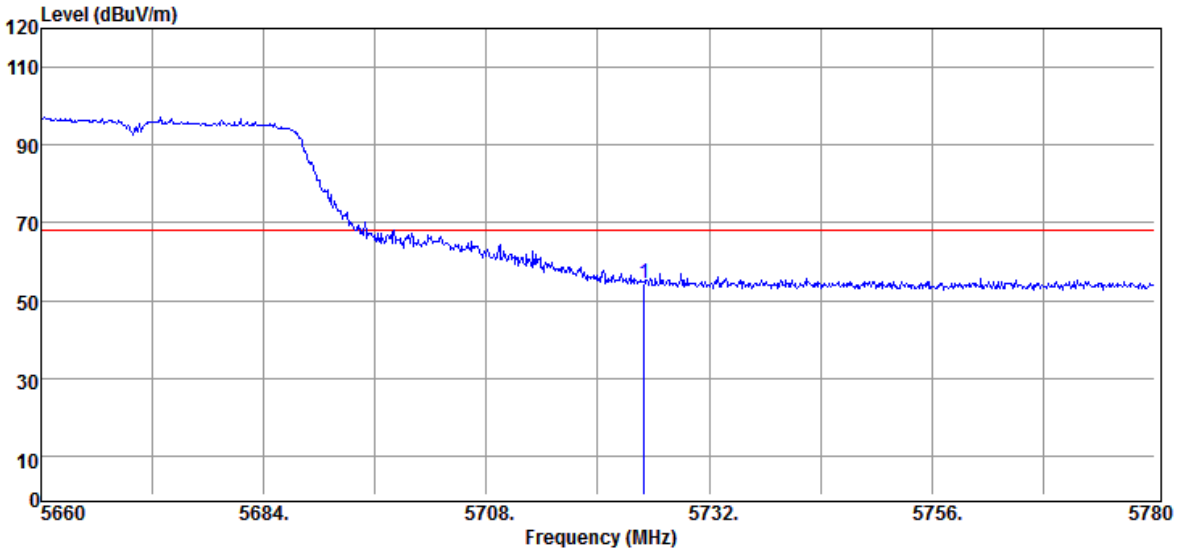
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5460.00	Average	37.85	5.54	43.39	54.00	-10.61
5460.00	Peak	54.62	5.54	60.16	74.00	-13.84
5470.00	Peak	57.42	5.52	62.94	68.20	-5.26

Operation Band	:802.11n40 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5510 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



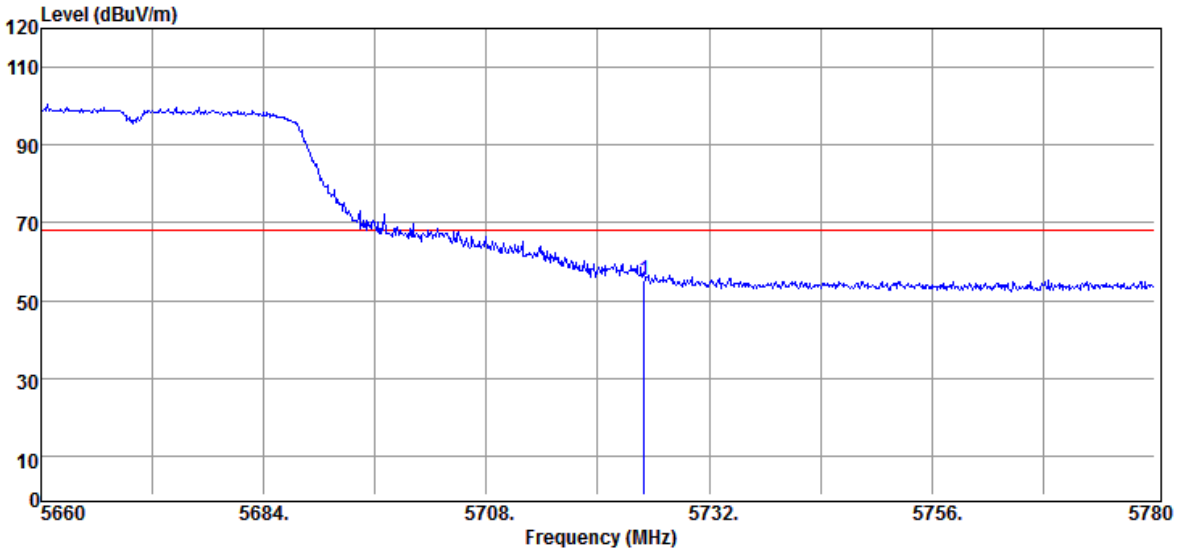
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5460.00	Average	37.97	5.54	43.51	54.00	-10.49
5460.00	Peak	51.55	5.54	57.09	74.00	-16.91
5464.92	Peak	57.60	5.53	63.13	68.20	-5.07
5470.00	Peak	55.60	5.52	61.12	68.20	-7.08

Operation Band	:802.11n40 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5670 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.00	Peak	47.99	6.55	54.54	68.20	-13.66

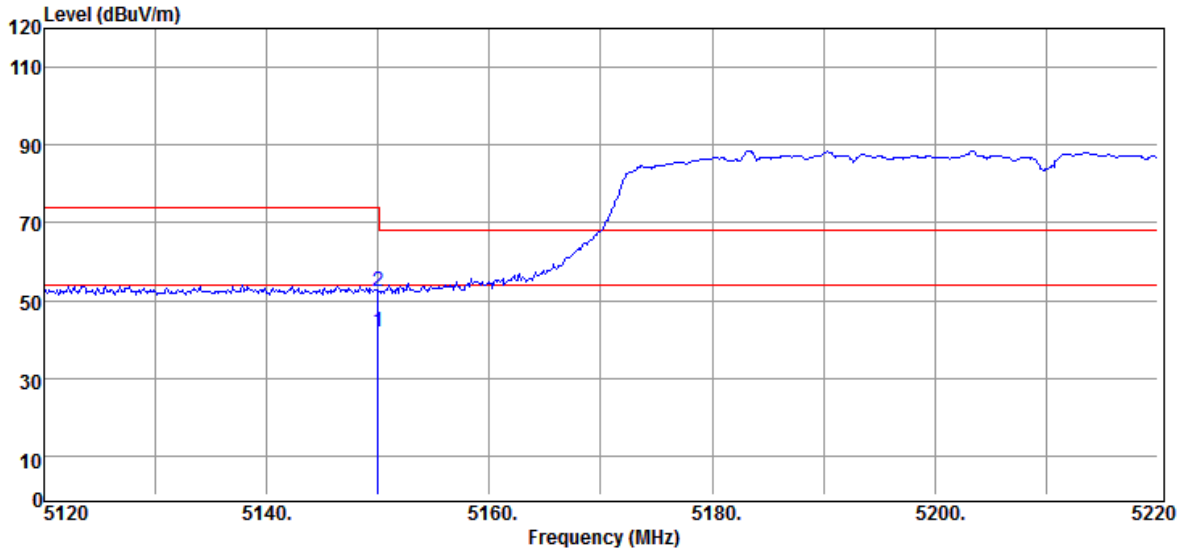
Operation Band	:802.11n40 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5670 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.00	Peak	48.80	6.55	55.35	68.20	-12.85

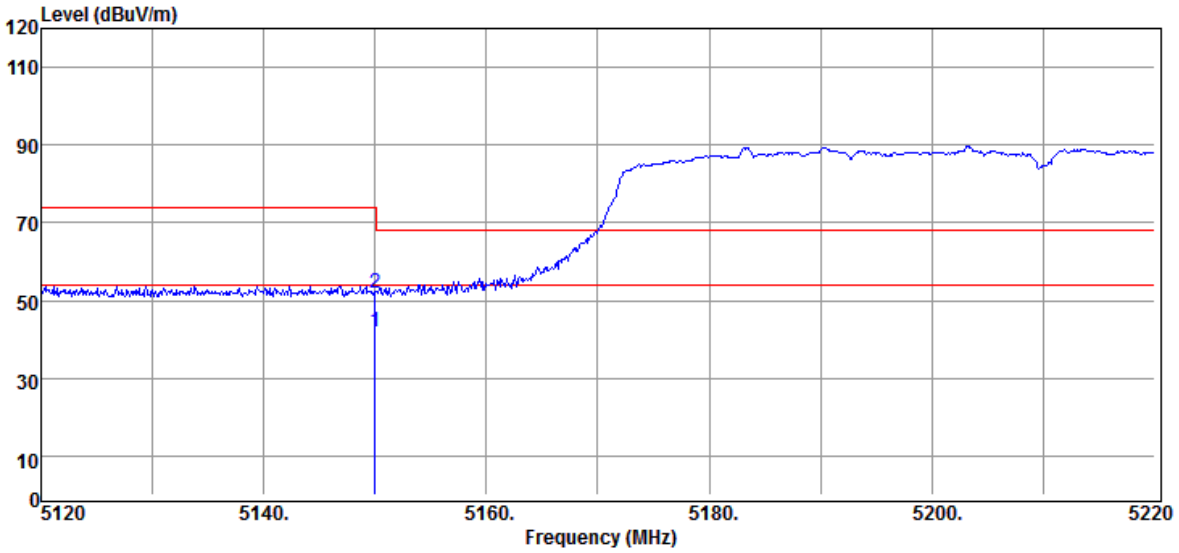
802.11ac VHT80 mode

Operation Band	:802.11ac80 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5210 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



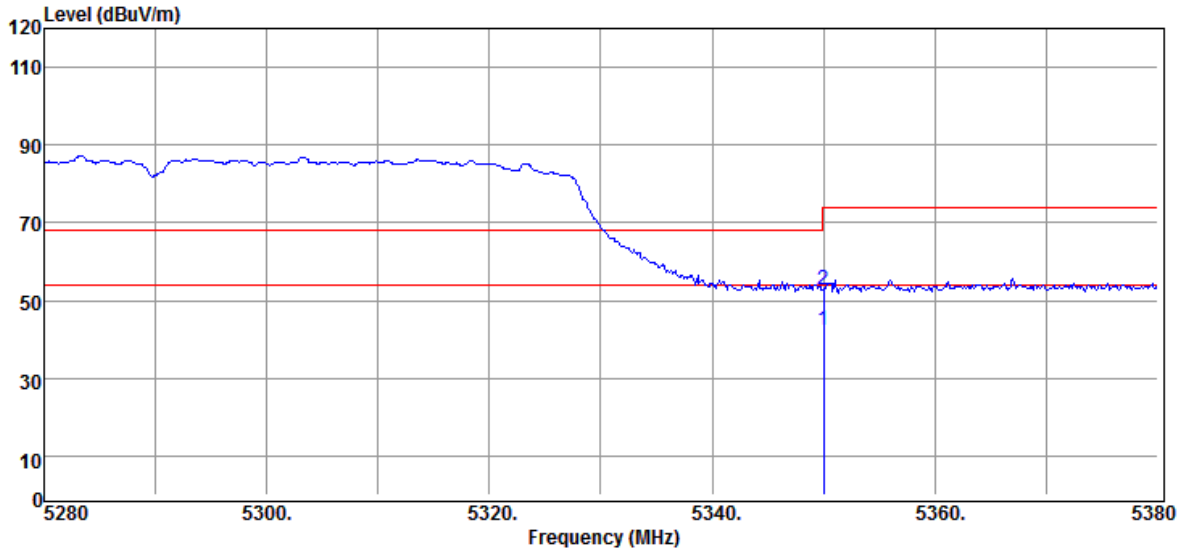
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	37.34	4.55	41.89	54.00	-12.11
5150.00	Peak	47.84	4.55	52.39	74.00	-21.61

Operation Band	:802.11ac80 / Band1	Test Date	:2019-04-12
Fundamental Frequency	:5210 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



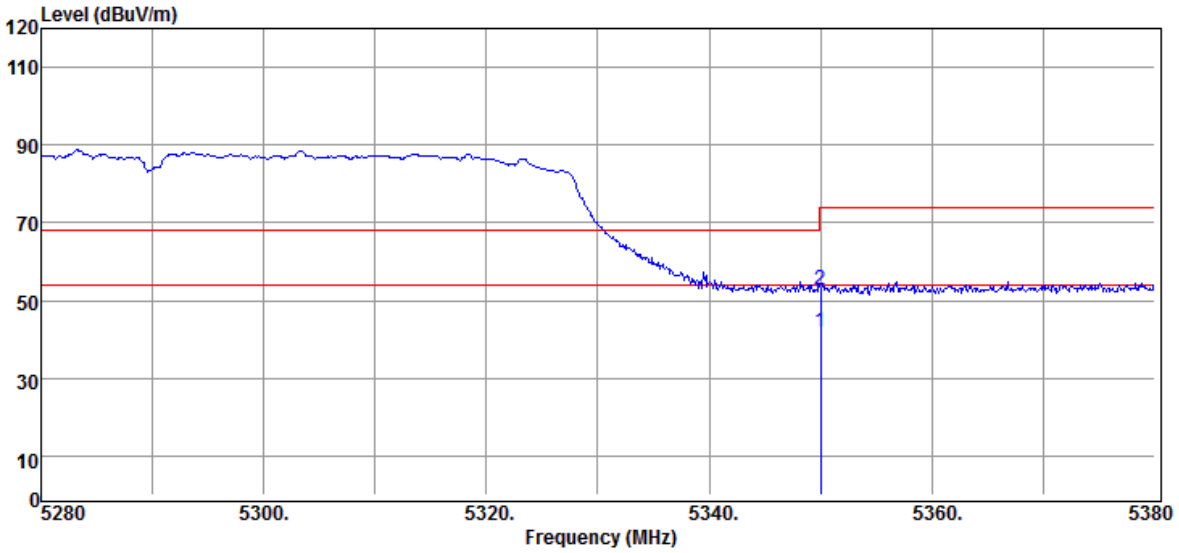
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	37.25	4.55	41.80	54.00	-12.20
5150.00	Peak	47.21	4.55	51.76	74.00	-22.24

Operation Band	:802.11ac80 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5290 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



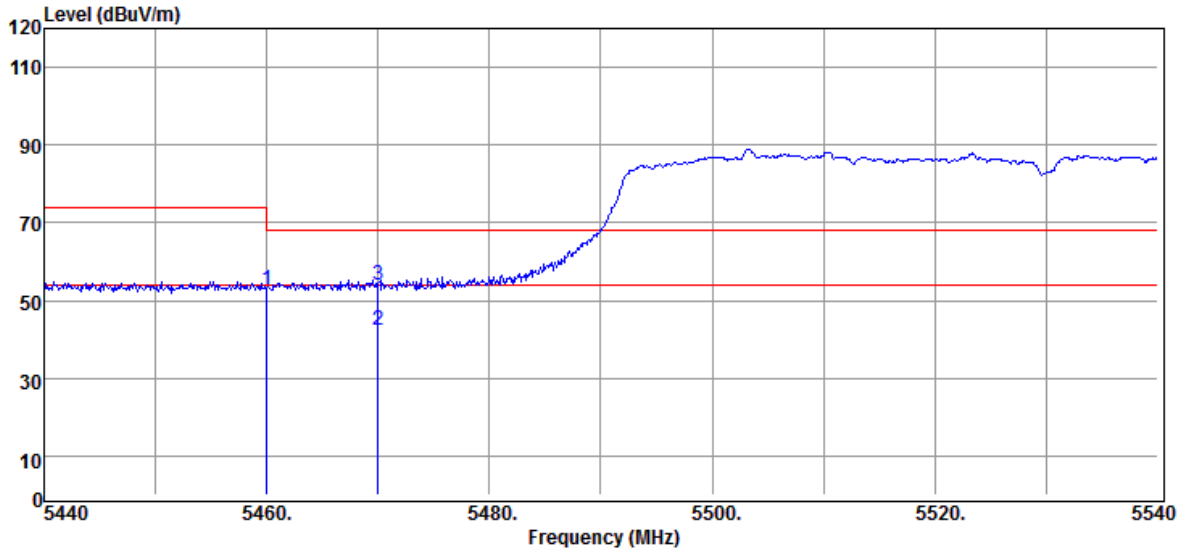
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	37.31	5.19	42.50	54.00	-11.50
5350.00	Peak	47.70	5.19	52.89	74.00	-21.11

Operation Band	:802.11ac80 / Band2	Test Date	:2019-04-12
Fundamental Frequency	:5290 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



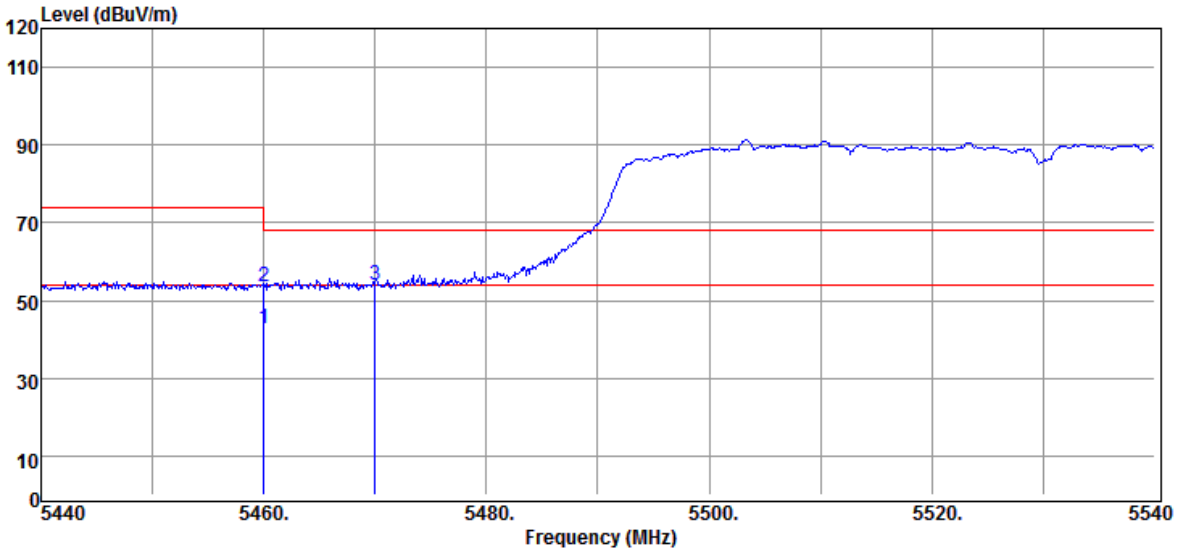
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	36.92	5.19	42.11	54.00	-11.89
5350.00	Peak	47.40	5.19	52.59	74.00	-21.41

Operation Band	:802.11ac80 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5530 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



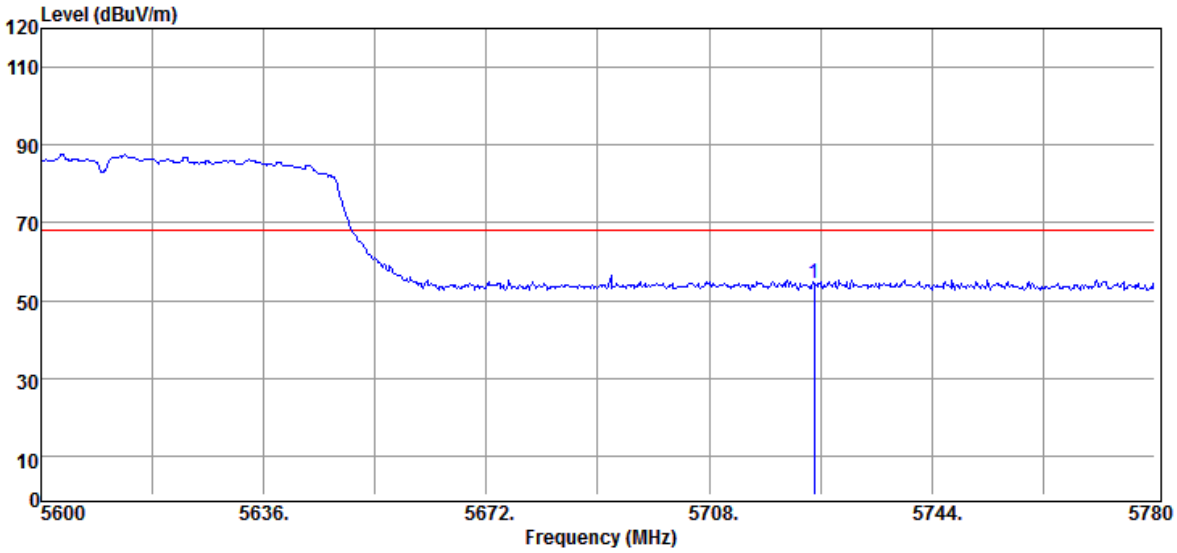
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5460.00	Peak	47.39	5.54	52.93	74.00	-21.07
5470.00	Average	36.87	5.52	42.39	54.00	-11.61
5470.00	Peak	48.47	5.52	53.99	68.20	-14.21

Operation Band	:802.11ac80 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5530 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH Low	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



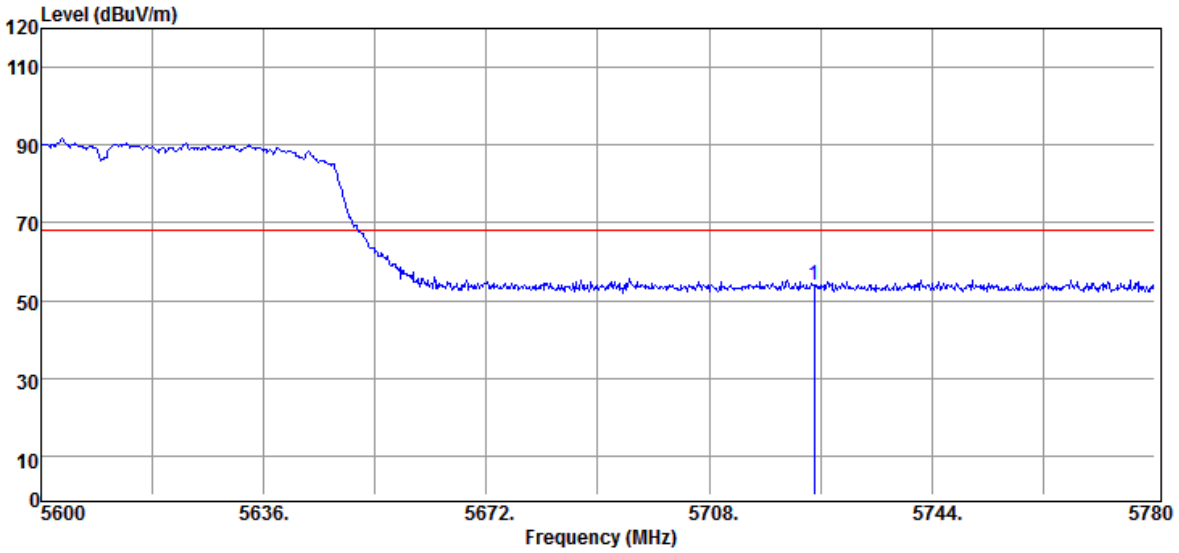
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5460.00	Average	37.27	5.54	42.81	54.00	-11.19
5460.00	Peak	48.11	5.54	53.65	74.00	-20.35
5470.00	Peak	48.61	5.52	54.13	68.20	-14.07

Operation Band	:802.11ac80 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5610 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.00	Peak	47.81	6.55	54.36	68.20	-13.84

Operation Band	:802.11ac80 / Band3	Test Date	:2019-04-12
Fundamental Frequency	:5610 MHz	Temp./Humi.	:20/54
Operation Mode	:BE CH High	Engineer	:Jerry
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.00	Peak	47.35	6.55	53.90	68.20	-14.30

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.

13. FREQUENCY STABILITY

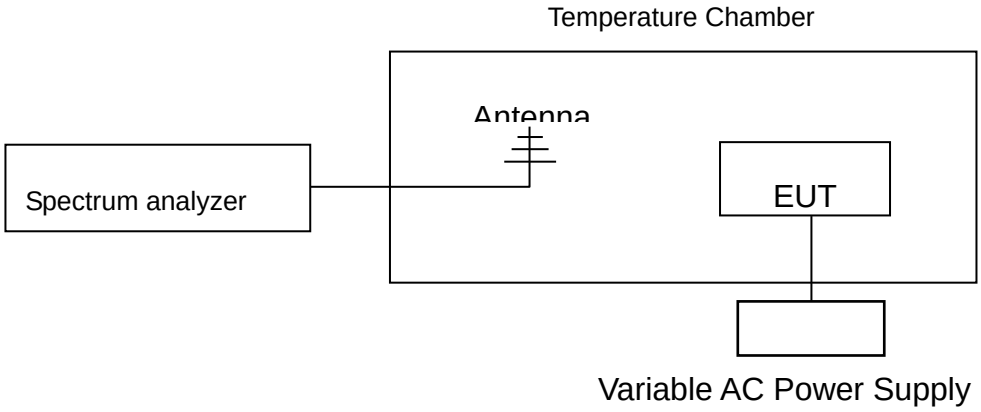
13.1 Standard Applicable

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

13.2 Measurement Procedure

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

13.3 Test SET-UP



13.4 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
DC Power Supply	Agilent	E3640A	KR93300208	Aug. 15th, 2018	Aug. 14th, 2019
EXA Spectrum Analyz-er	KEYSIGHT	N9010A	MY57120290	Feb. 13th, 2019	Feb. 12th, 2020
Thermostat-ic/Hrgrosatic Chamber	TAICHY	MHG-150LF	930619	Oct. 08th, 2018	Oct. 07th, 2019
DC Block	Mini-Circuits	BLK-18-S+	31129(1)	Feb. 26th, 2019	Feb. 25th, 2020
Attenuator	Mini-Circuit	BW-S10W2+	1	Feb. 26th, 2019	Feb. 25th, 2020

13.5Measurement Result

Startup:

Operation Mode	802.11 a	Test Date	2019.04.08
Temperature	:25 ℃	Test By	Peter
Humidity	: 53%		

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.24	36	5180	5,179.99210	0.00000153
	3.5	36	5180	5,179.99334	0.00000129
25	3.85	36	5180	5,180.00060	-0.00000012
55	4.24	36	5180	5,180.00668	-0.00000129
	3.5	36	5180	5,180.00752	-0.00000145

2 Minutes:

Operation Mode	802.11 a	Test Date	2019.04.08
Temperature	:25 ℃	Test By	Peter
Humidity	: 53%		

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.24	36	5180	5,179.99030	0.00000187
	3.5	36	5180	5,179.99043	0.00000185
25	3.85	36	5180	5,180.00109	-0.00000021
55	4.24	36	5180	5,180.00565	-0.00000109
	3.5	36	5180	5,180.00987	-0.00000191

5 Minutes:

Operation Mode	802.11 a	Test Date	2019.04.08
Temperature	:25 ℃	Test By	Peter
Humidity	: 53%		

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.24	36	5180	5,179.99636	0.00000070
	3.5	36	5180	5,179.99220	0.00000151
25	3.85	36	5180	5,180.00150	-0.00000029
55	4.24	36	5180	5,180.00781	-0.00000151
	3.5	36	5180	5,180.00971	-0.00000188

10 Minutes:

Operation Mode	802.11 a	Test Date	2019.04.08
Temperature	:25 ℃	Test By	Peter
Humidity	: 53%		

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.24	36	5180	5,179.99419	0.00000112
	3.5	36	5180	5,179.99458	0.00000105
25	3.85	36	5180	5,180.00029	-0.00000006
55	4.24	36	5180	5,180.00742	-0.00000143
	3.5	36	5180	5,180.00984	-0.00000190

14. ANTENNA REQUIREMENT

14.1 Standard Applicable

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

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

14.2 Antenna Connected Construction

The antenna is designed as permanently attached and no consideration of replacement. Please see EUT photo for details.

~ End of Report ~