

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART E REQUIREMENT

OF

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

Product Name: 7 inch POS Terminal

Brand Name: Quanta, CASTLES

Model No.: KI1, SATURN7000

Model Difference: Marketing Purpose

FCC ID: HFS-KI1

Report Number: E2/2018/70096

FCC Rule Part: §15.407, Cat: NII

Issue Date: Oct. 24, 2018

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

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

We hereby certify that:

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

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

Tested By:

Vito Pei

Vito Pei / Sr. Engineer

Jim Chang

Approved By:**Jim Chang / Enignner**

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Revision History

Report Number	Revision	Description	Effected Page	Issue Date	Revised By
E2/2018/70096	Rev.00	Initial creation of document	All	Oct. 24, 2018	Elle Chang

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1 GENERAL INFORMATION

1.1 Product Description

General:

Product Name:	7 inch POS Terminal	
Brand Name:	Quanta, CASTLES	
Model No.:	K11, SATURN7000	
Model Difference:	Marketing Purpose	
Hardware Version:	B2	
Software Version:	01.000	
Power Supply:	3.8V from Rechargeable Li-ion Battery or 5V from AC/DC Adapter	
	Battery:	Model no.: K11 Supplier: Ningbo Veken Battery Co., Ltd.
	Adapter:	Model No.: CYSF12G-050200U, Supplier: JIANGSU CHENYANG ELECTRON Co., LTD

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WLAN 5GHz:

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

Antenna Designation:

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

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1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

ANSI C63.10:2013

Note:

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

1.3 Test Facility

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

FCC Registration Number and Designation are: 735305 / TW0002

1.4 Special Accessories

There are no special accessories used while test was conducted.

1.5 Equipment Modifications

There was no modification incorporated into the EUT.

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2 SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

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

2.2 EUT Exercise

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

2.3 Test Procedure

2.3.1 Conducted Emissions

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

2.3.2 Radiated Emissions

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

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2.4 Measurement Results Explanation Example

For all conducted test items:

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

Note:

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

Following shows an offset computation example.

MIMO mode offset

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

2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission



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



Table 2-1 Equipment Used in Tested System

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

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3 SUMMARY OF TEST RESULT

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

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4 DESCRIPTION OF TEST MODES

4.1 Operated in U-NII Bands

Operated band in 5150 MHz ~5250 MHz:

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

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

802.11ac VHT80 Mode	
channel	Frequency
42	5210

Operated band in 5250 MHz ~5350 MHz:

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

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

802.11ac VHT80 Mode	
Channel	Frequency
58	5290

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Operated band in 5500 MHz ~5700 MHz:

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

Operated band in 5745 MHz ~5850 MHz:

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

802.11 n HT40 Mode, 802.11ac VHT40 Mode	
channel	Frequency
151	5755
159	5795

802.11ac VHT80 Mode	
channel	Frequency
155	5775

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4.2 The Worst Test Modes and Channel Details

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

RADIATED EMISSION TEST:

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

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

Note:

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

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ANTENNA PORT CONDUCTED MEASUREMENT:

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

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5 MEASUREMENT UNCERTAINTY

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

Radiated Spurious Emission:

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

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

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

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6 CONDUCTED EMISSION TEST

6.1 Standard Applicable

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

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

Note

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

6.2 Measurement Equipment Used

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

6.3 EUT Setup

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

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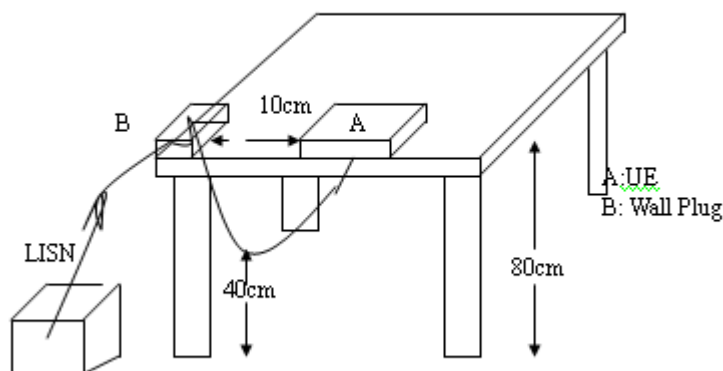
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6.4 Test SET-UP



6.5 Measurement Procedure

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

6.6 Measurement Result

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

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

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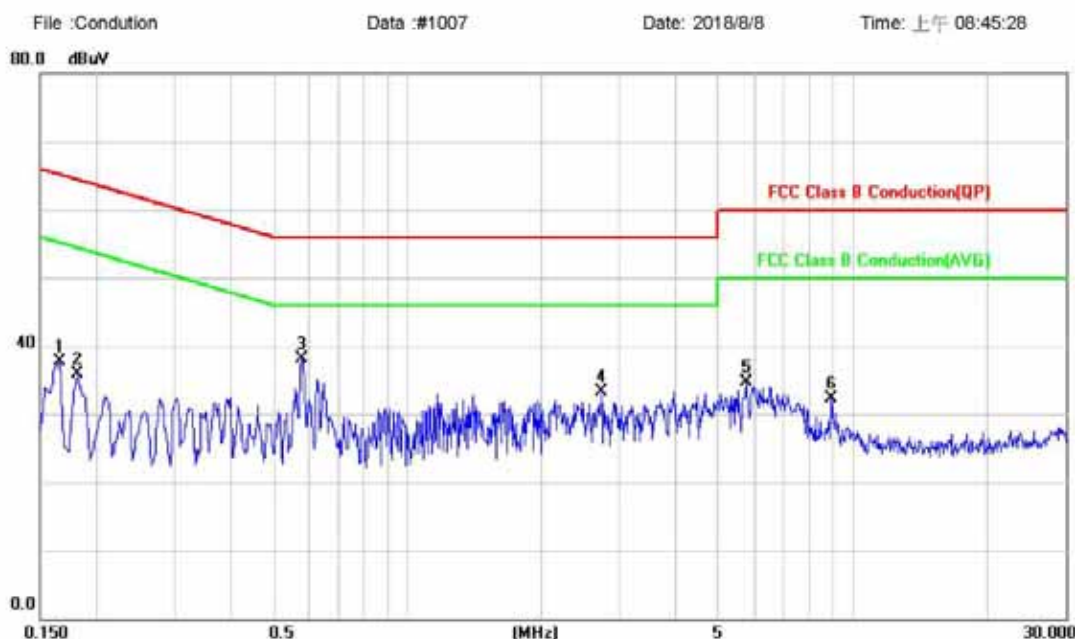
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AC POWER LINE CONDUCTED EMISSION TEST DATA

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

Conducted Emission



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

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Site : Conduction Room

Phase: **N**

Temperature: 23 °C

Limit: FCC Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 69 %

Mode:

Note:

Conducted Emission

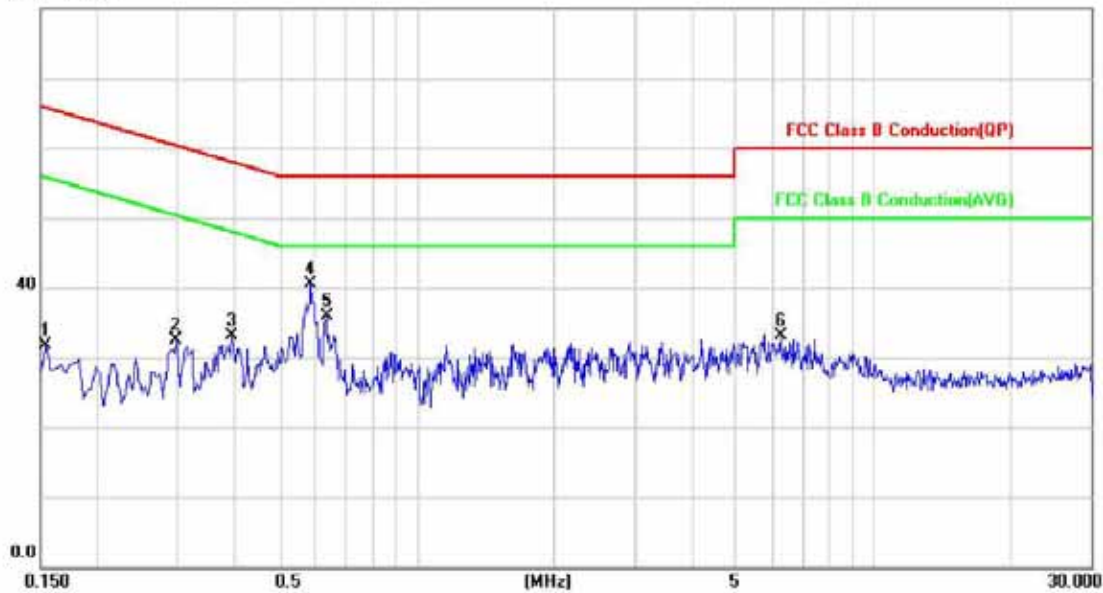
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Data :#1008

Date: 2018/8/8

Time: 上午 08:46:54

80.0 dBuV



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

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7 DUTY CYCLE TEST SIGNAL

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

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

Formula:

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

Measurement Procedure:

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

Duty Cycle:

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

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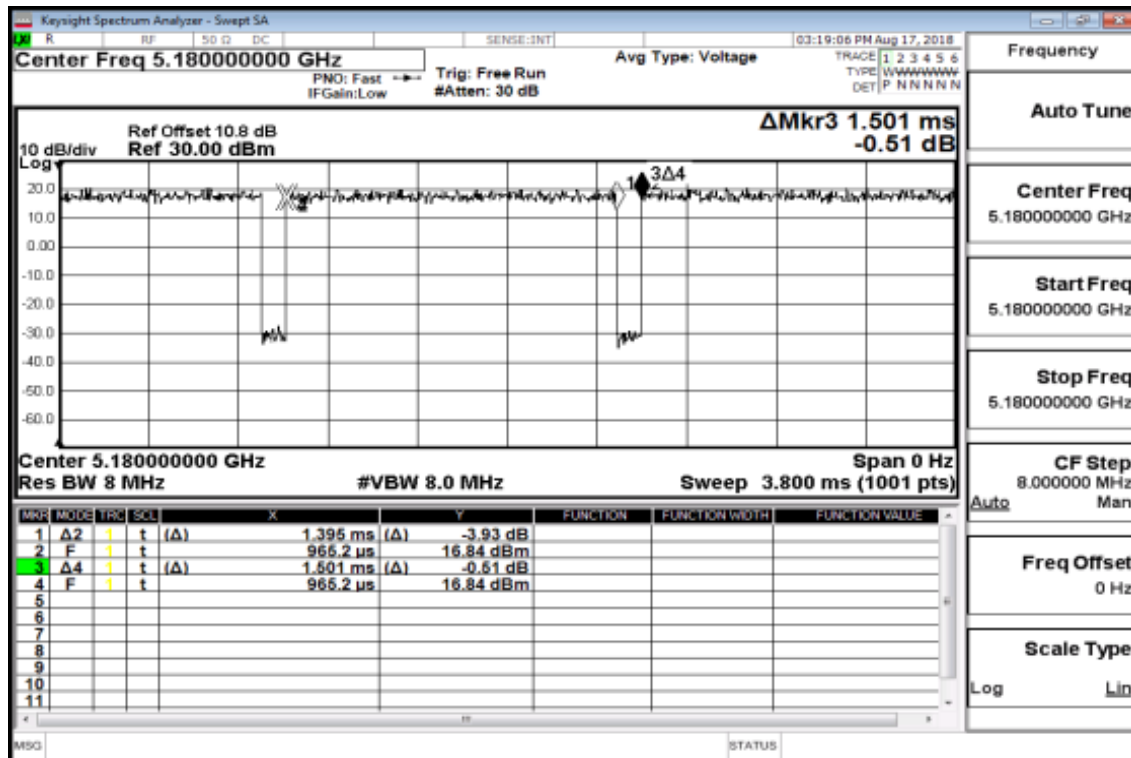
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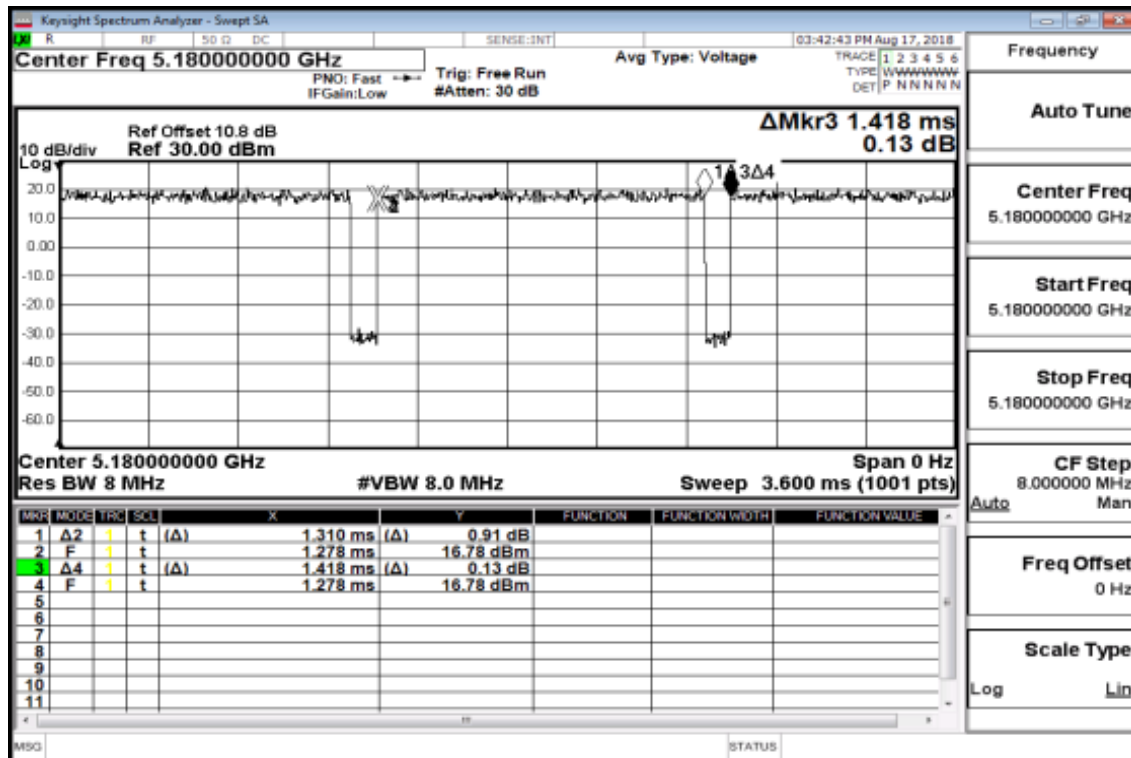
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DUTY CYCLE TEST SIGNAL Measurement Result 802.11a



802.11n HT20



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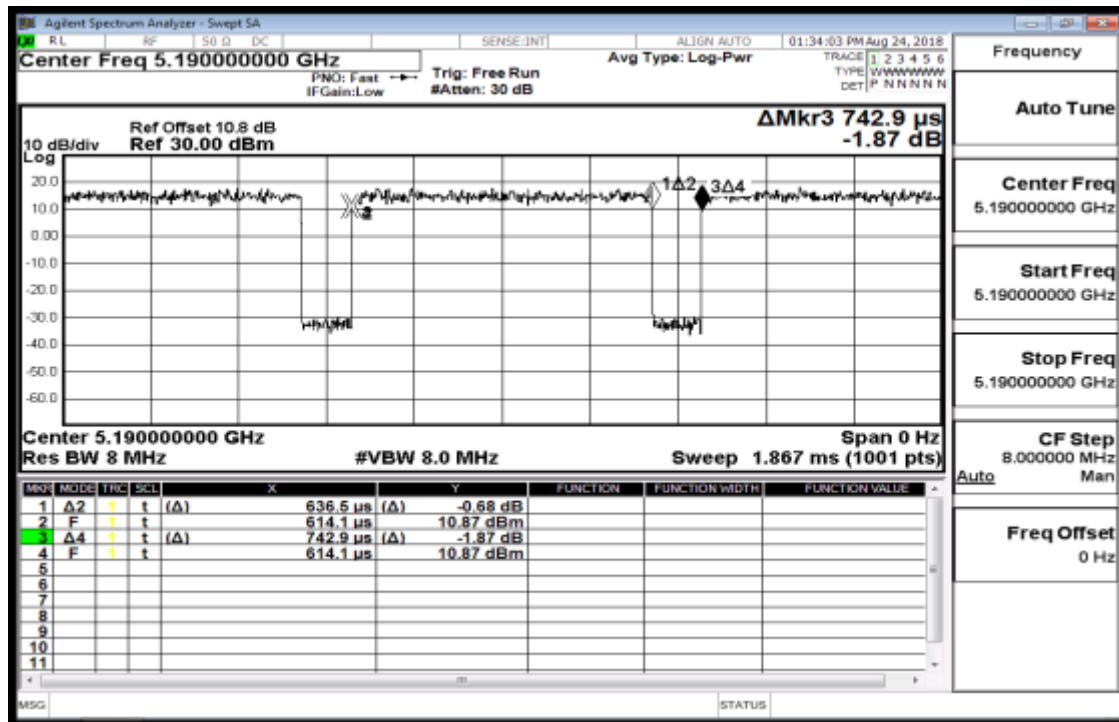
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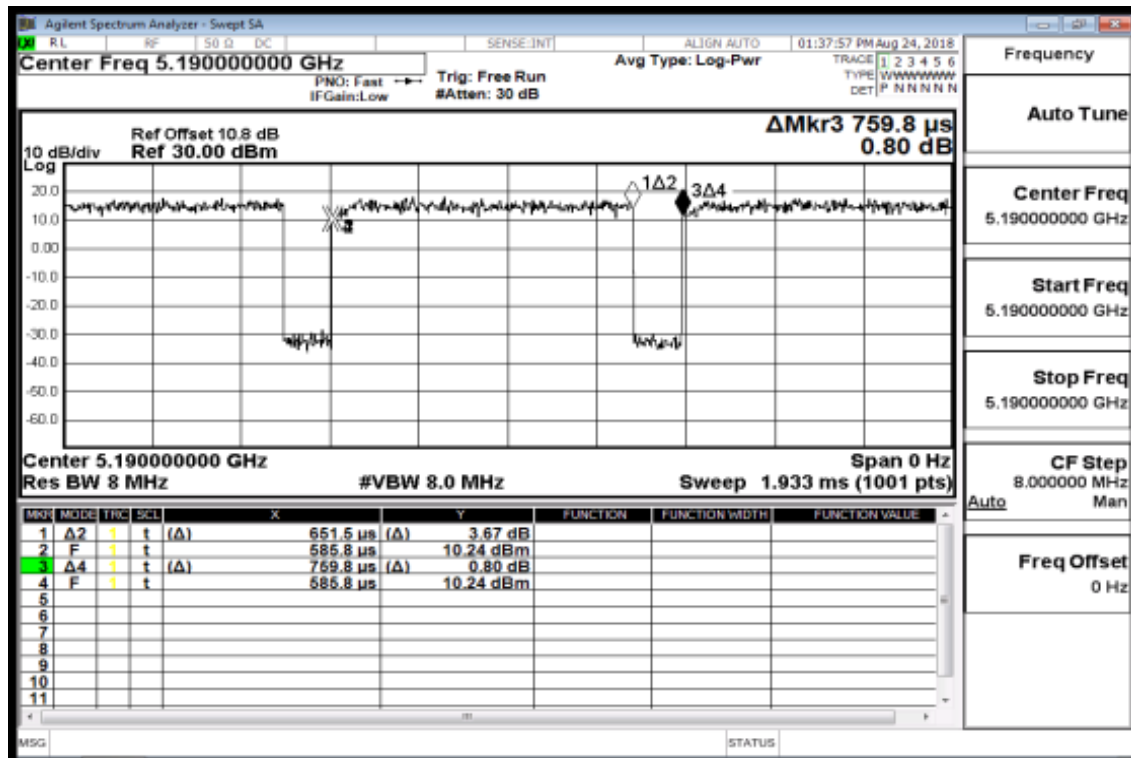
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802.11n HT 40



802.11 ac VHT 40



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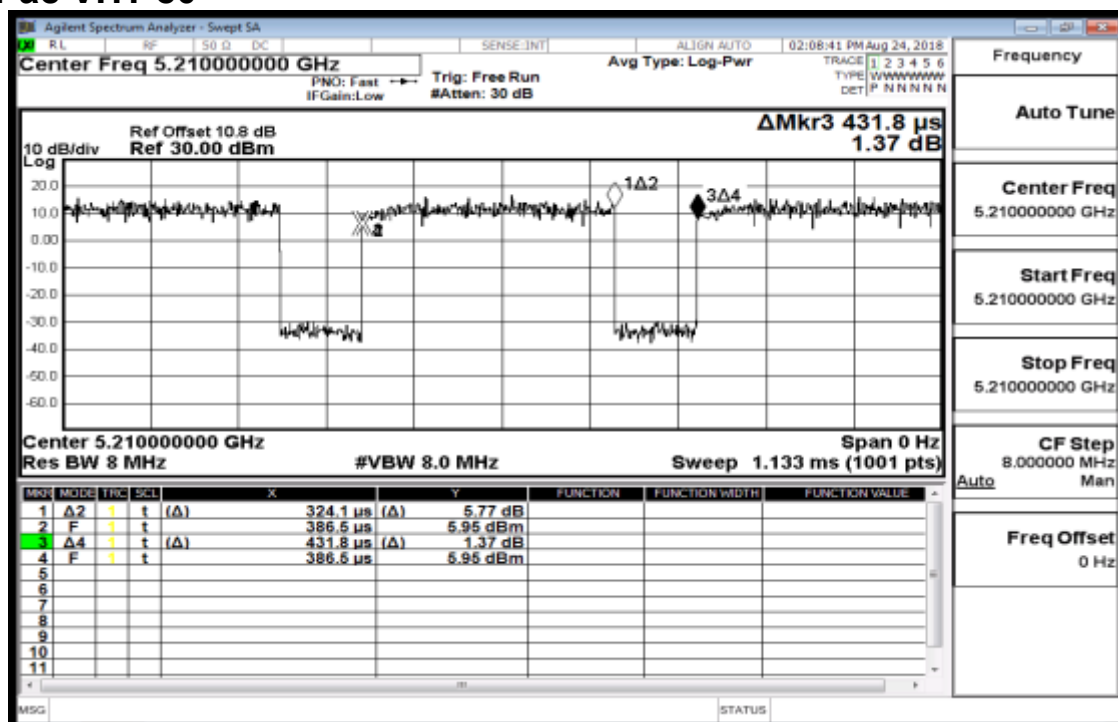
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802.11 ac VHT 80



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8 26DB & 6DB EMISSION BANDWIDTH MEASUREMENT

8.1 Standard Applicable

There is no limit bandwidth for U-NII-1, U-NII-2-A and U-NII-2-C.
The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3

8.2 Measurement Procedure

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

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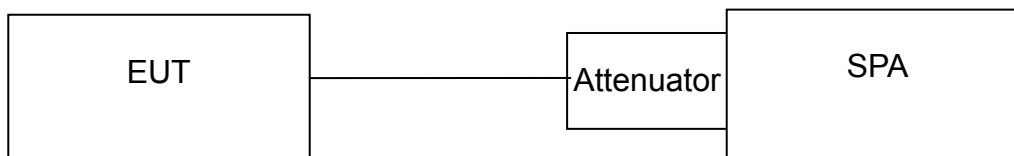
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8.3 Measurement Equipment Used

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

8.4 Test Set-up



8.5 Measurement Result

26dB Bandwidth

802.11a_Ch0

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

802.11n_HT20_Ch0

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

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802.11n_HT40_Ch0

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

802.11ac_VHT80_Ch0

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

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

802.11a_Ch0

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

802.11n_HT20_Ch0

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

802.11n_HT40_Ch0

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

802.11ac_VHT80_Ch0

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

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802.11a_Ch0

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

802.11n_HT20_Ch0

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

802.11n_HT40_Ch0

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

802.11ac_VHT80_Ch0

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

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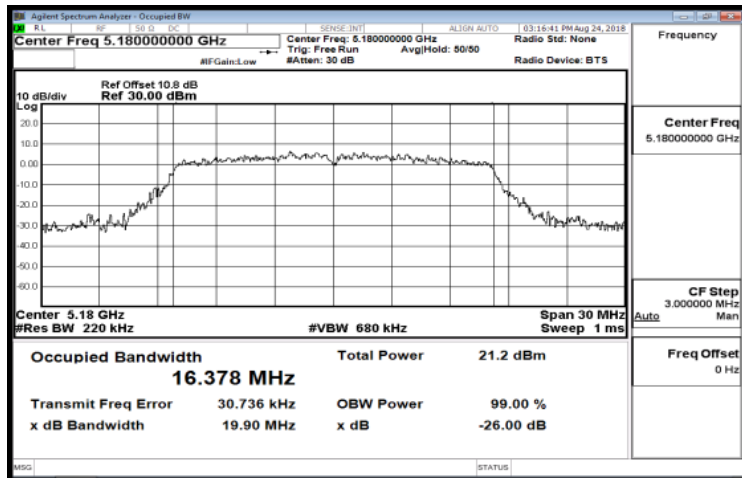
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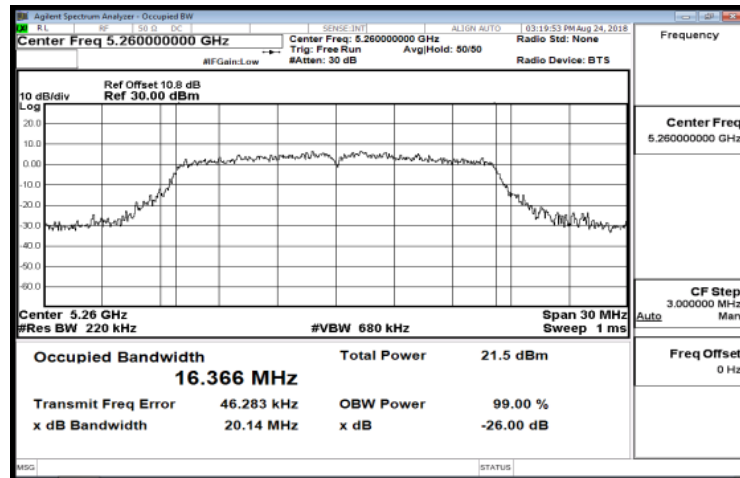
802.11a, 5150~5250 MHz

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

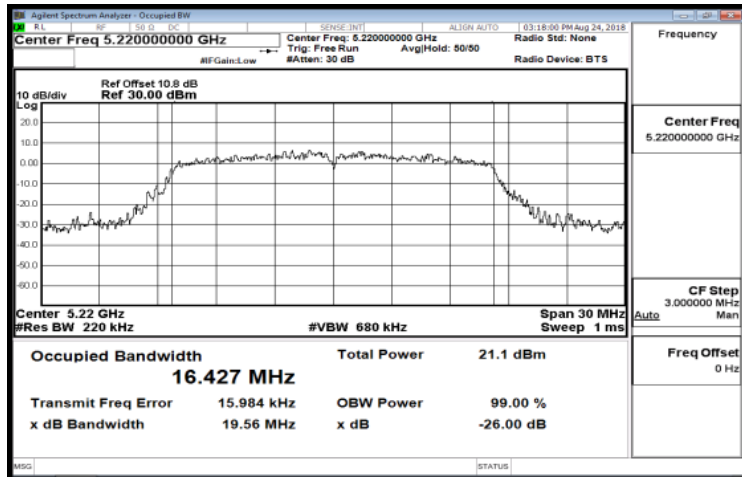


802.11a, 5250~5350 MHz

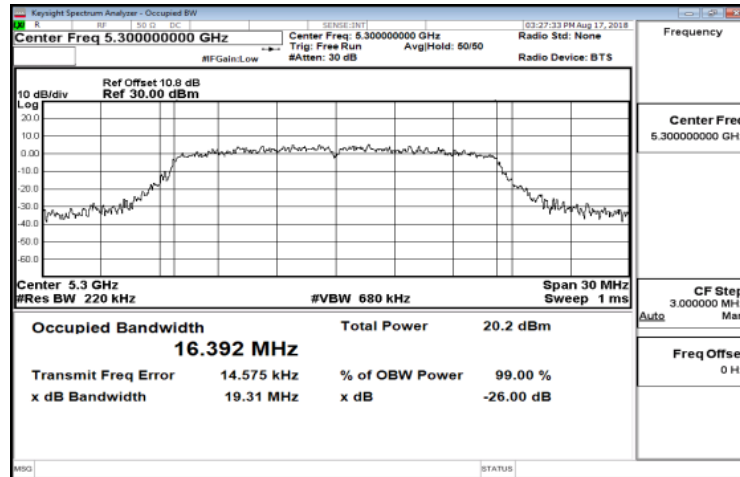
26dB Band Width Test Data CH-Low (5260MHz)



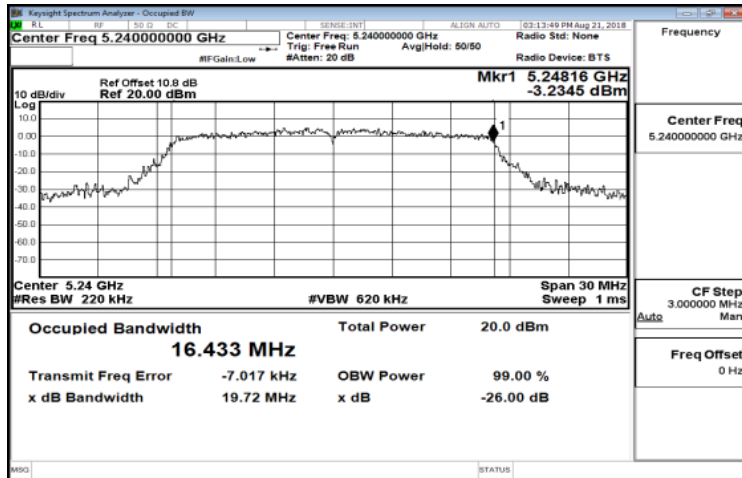
26dB Band Width Test Data CH-Mid (5220MHz)



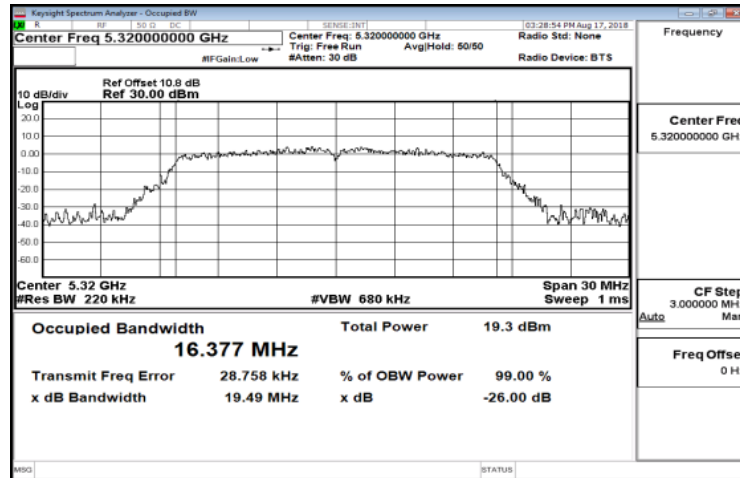
26dB Band Width Test Data CH-Mid (5300MHz)



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



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



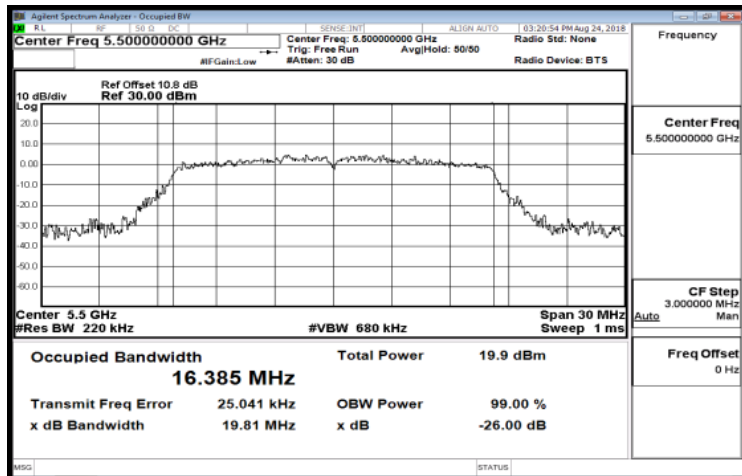
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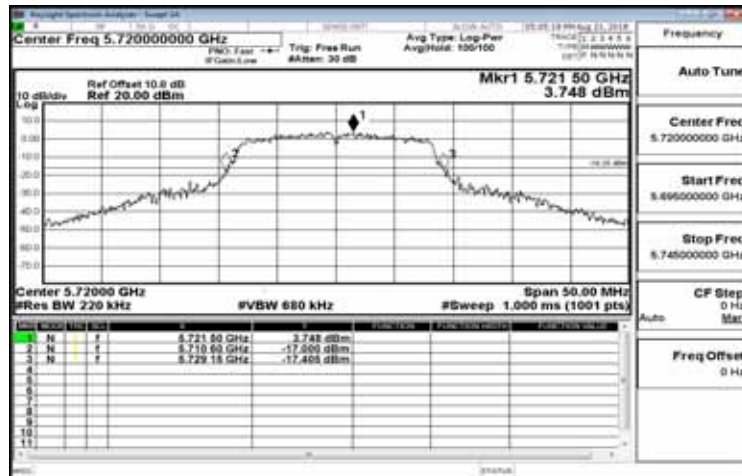
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802.11a, 5470~5725 MHz

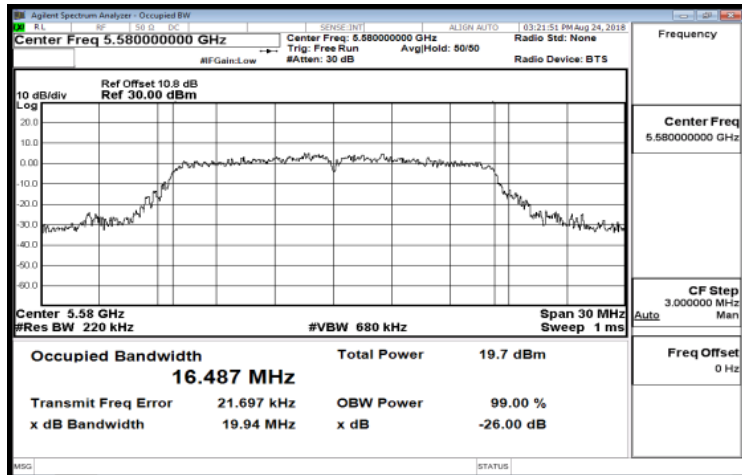
26dB Band Width Test Data CH-Low (5500MHz)



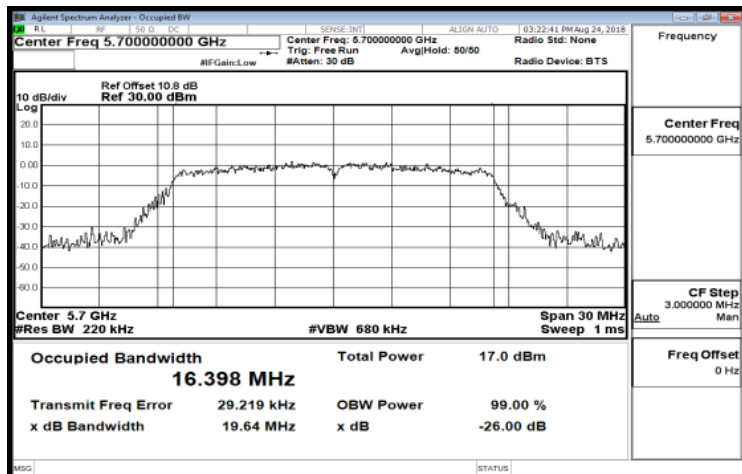
26dB Band Width Test Data CH-High (5720MHz)



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



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



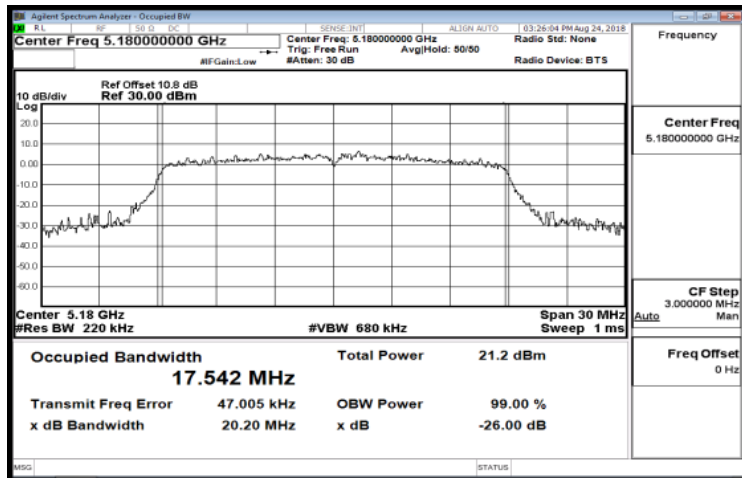
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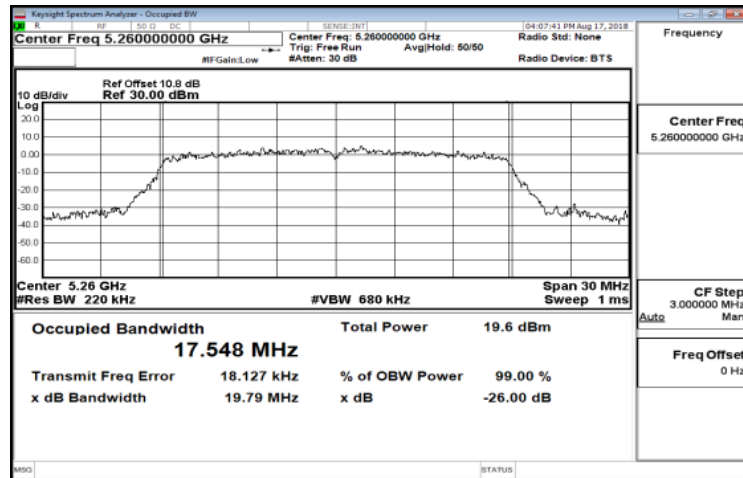
802.11n HT20, 5150~5250 MHz

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

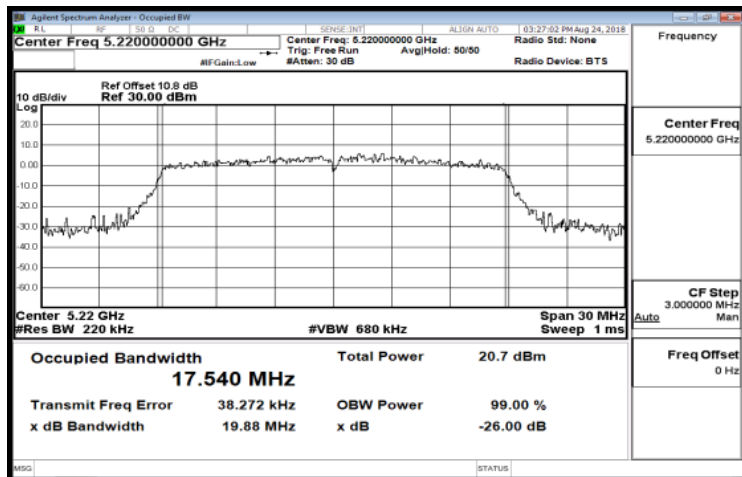


802.11n HT20, 5250~5350 MHz

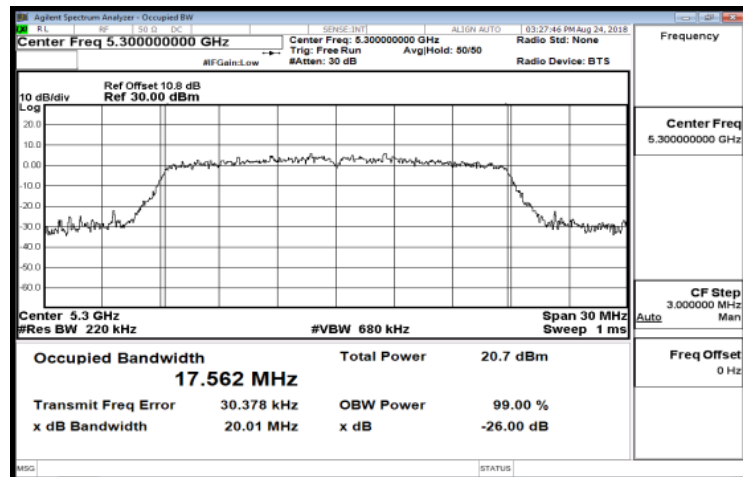
26dB Band Width Test Data CH-Low (5260 MHz)



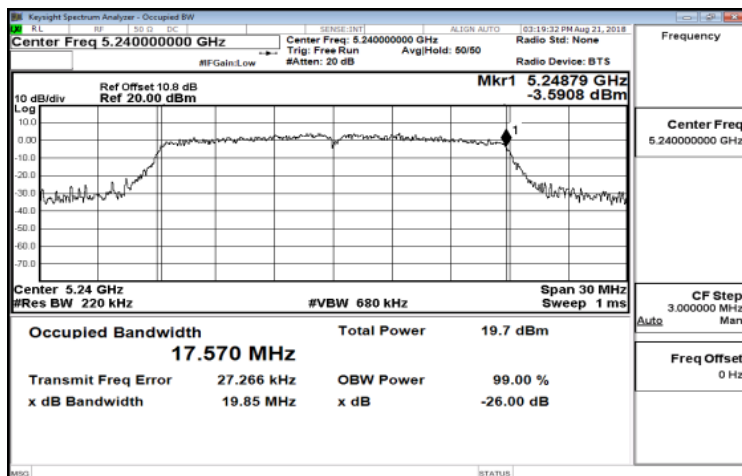
26dB Band Width Test Data CH-Mid (5220 MHz)



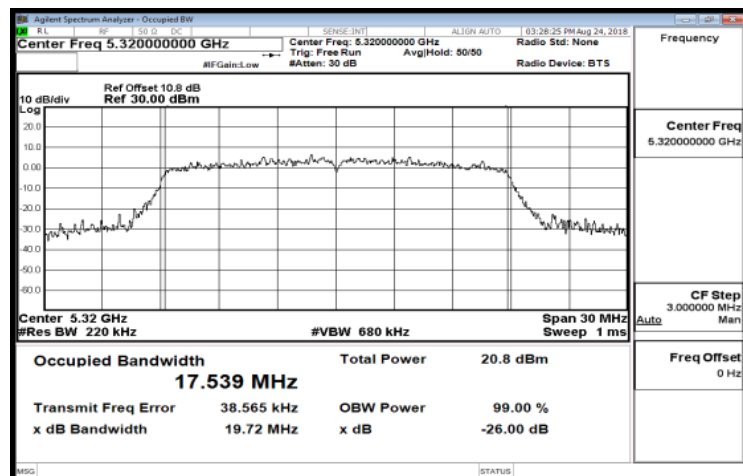
26dB Band Width Test Data CH-Mid (5300 MHz)



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



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



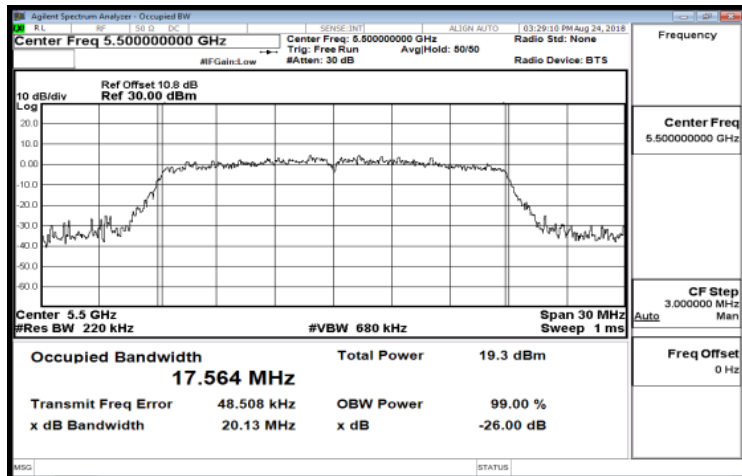
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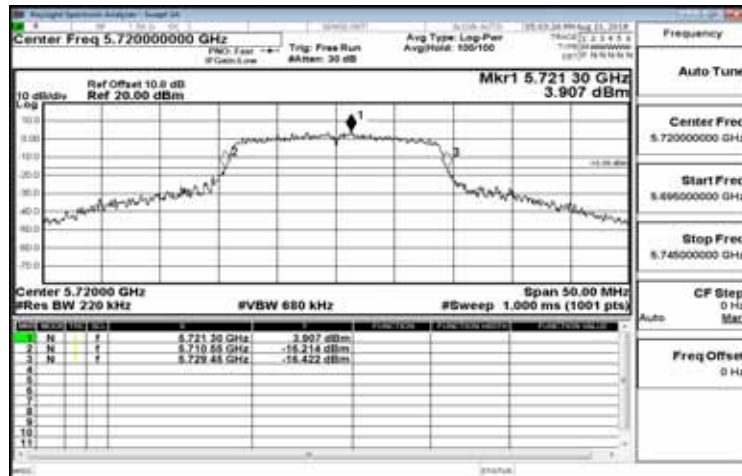
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802.11n HT20, 5470~5725 MHz

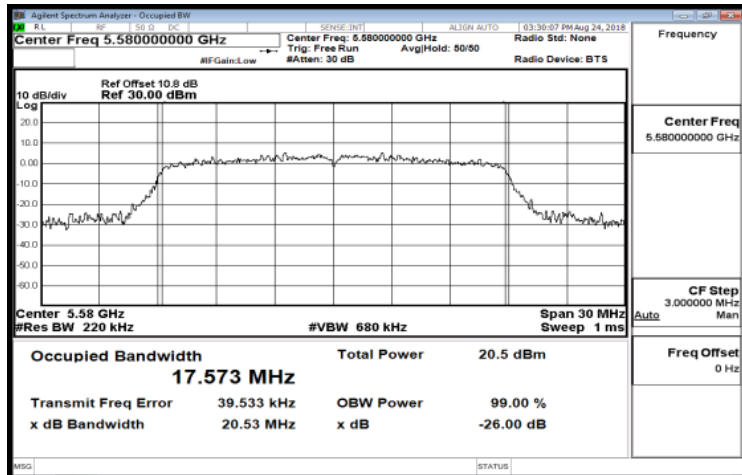
26dB Band Width Test Data CH-Low (5500 MHz)



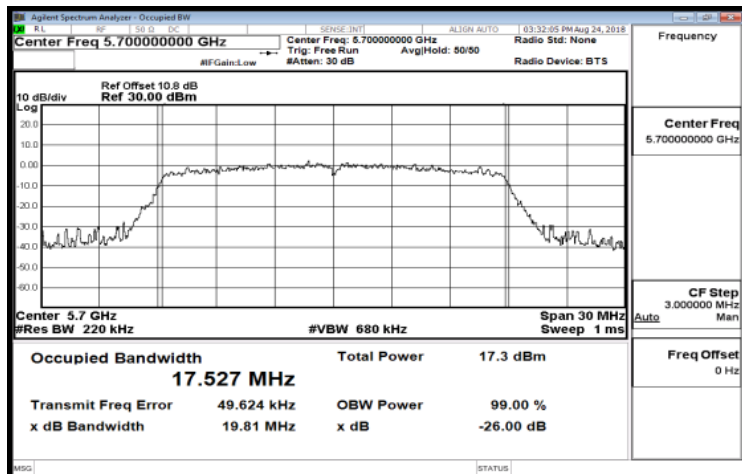
26dB Band Width Test Data CH-High (5720 MHz)



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



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



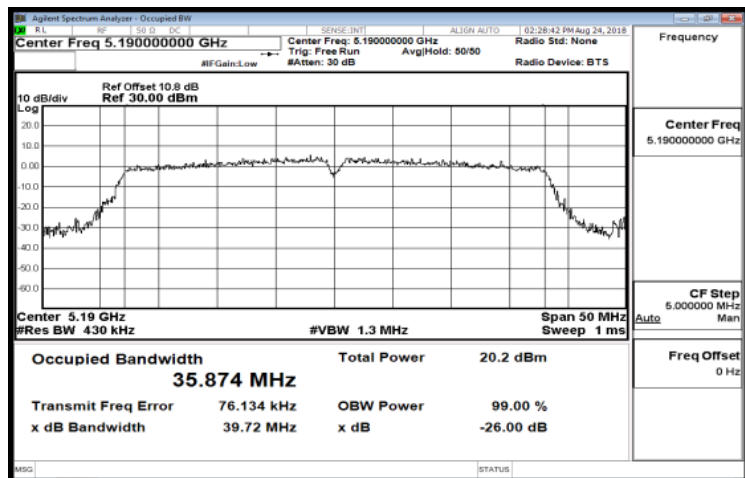
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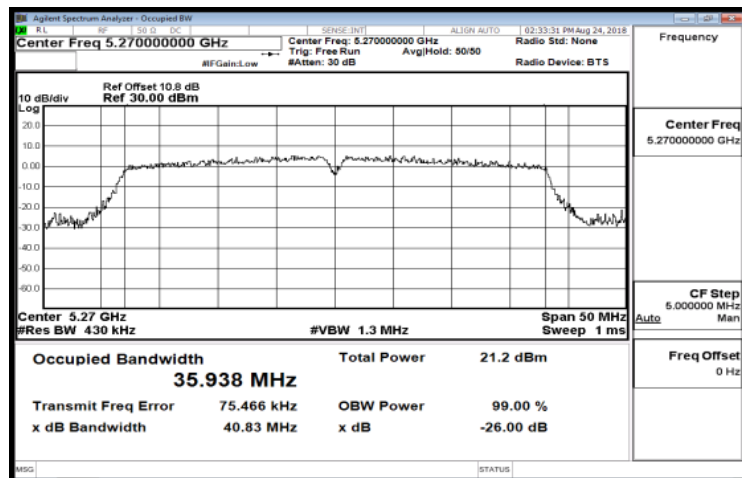
802.11n HT40, 5150~5250 MHz

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

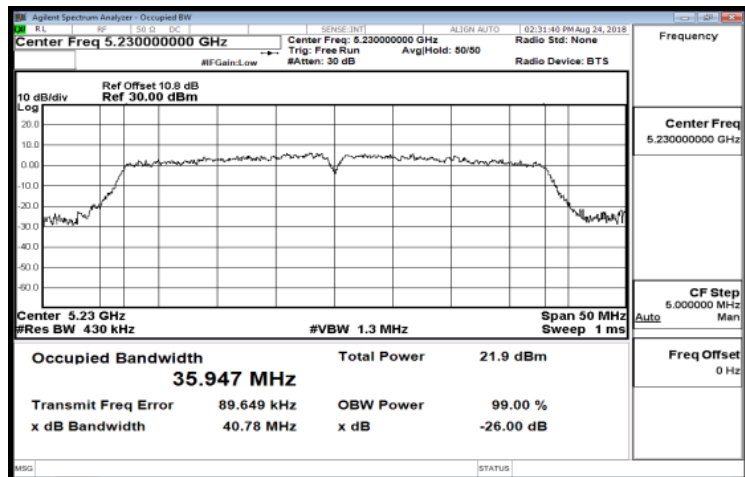


802.11n HT40, 5250~5350 MHz

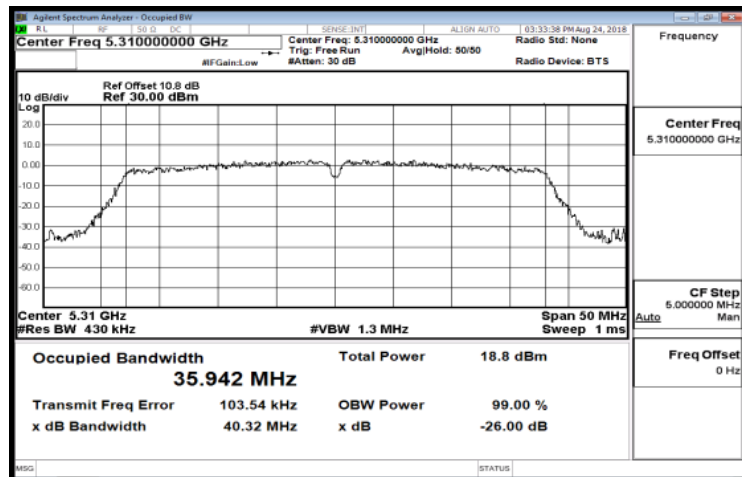
26dB Band Width Test Data CH-Low (5270 MHz)



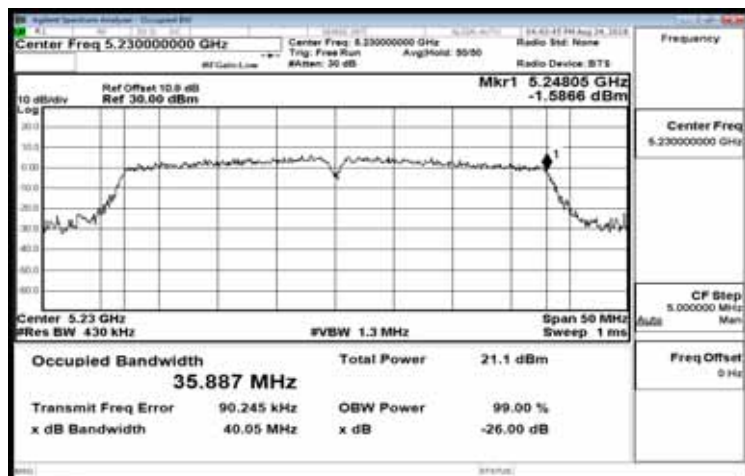
26dB Band Width Test Data CH-High (5230 MHz)



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



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



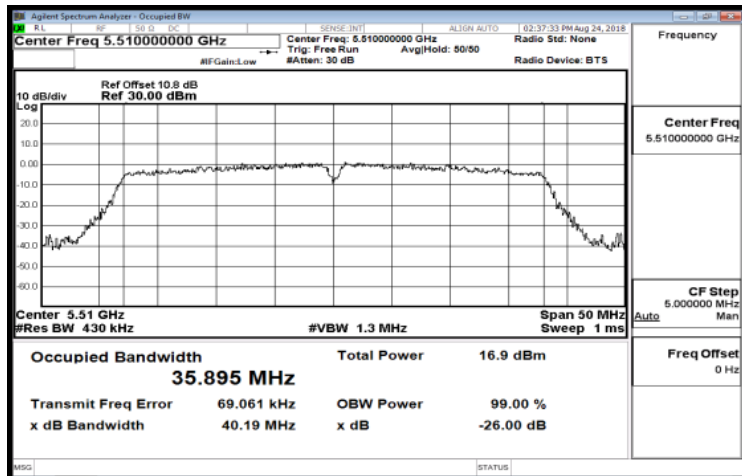
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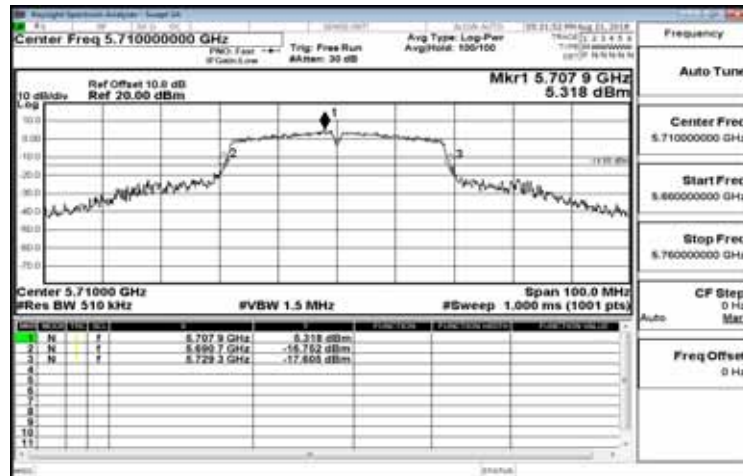
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802.11n HT40, 5470~5725 MHz

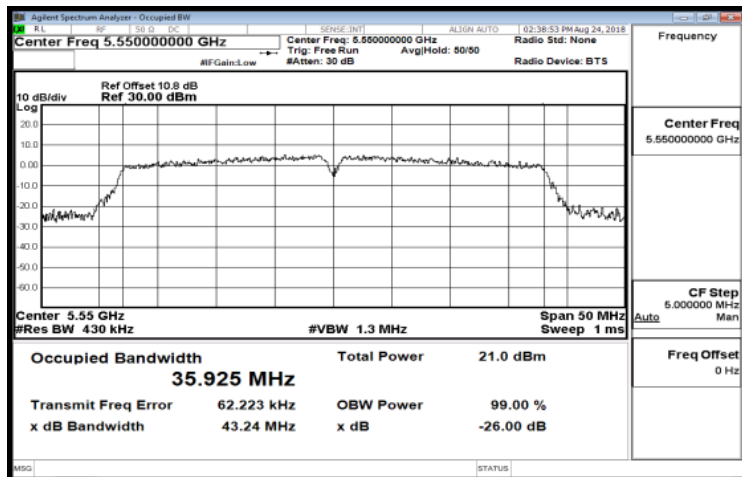
26dB Band Width Test Data CH-Low (5510 MHz)



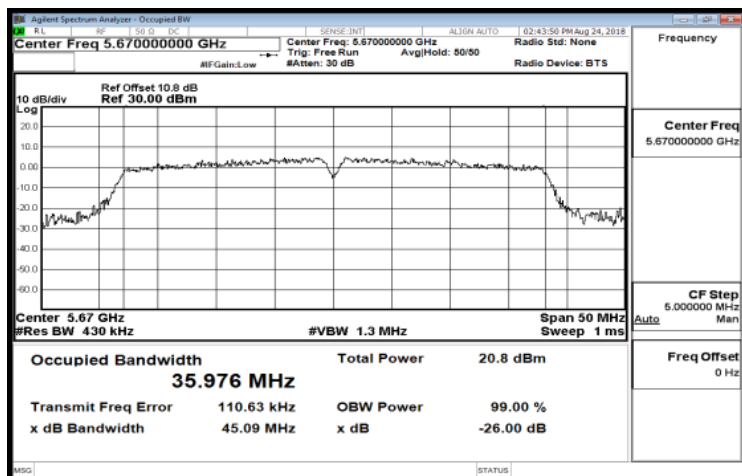
26dB Band Width Test Data CH-High (5710 MHz)



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



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



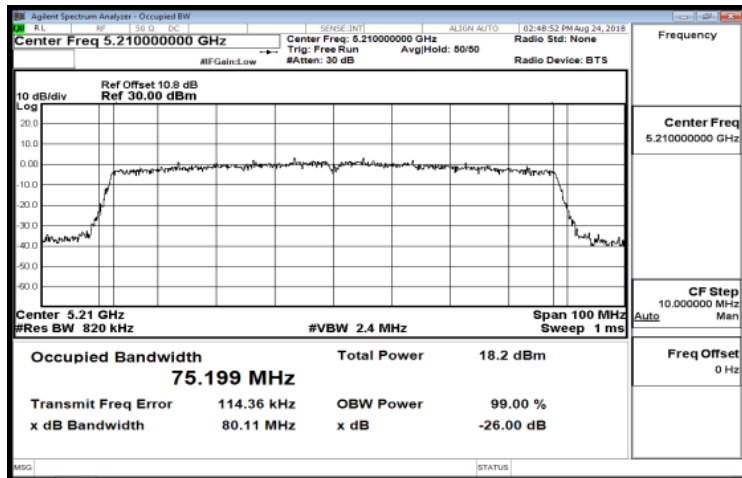
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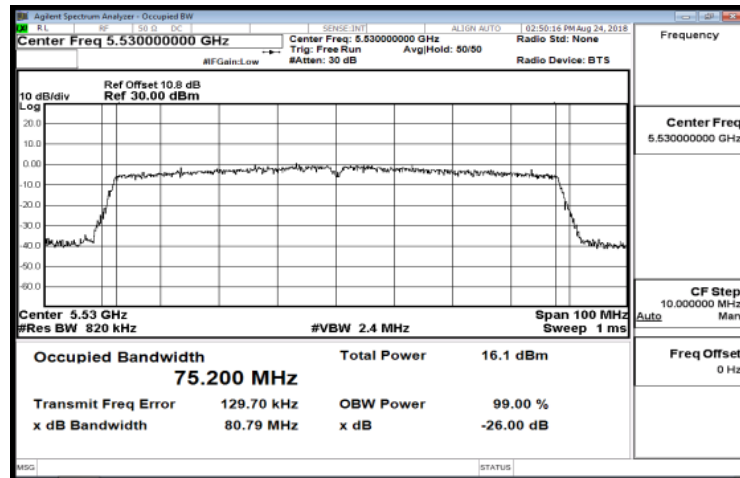
802.11ac VHT80, 5150~5250 MHz

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

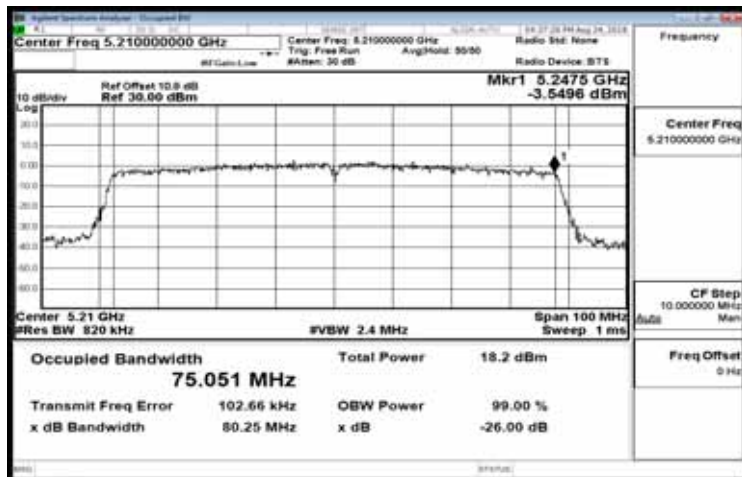


802.11ac VHT80, 5470~5725 MHz

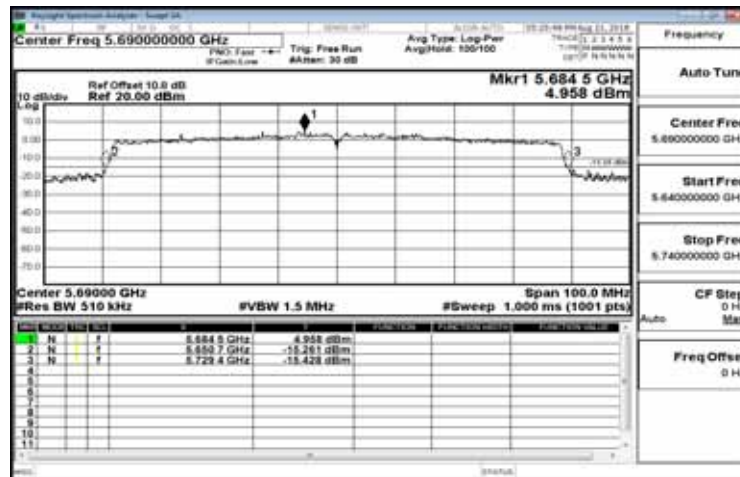
26dB Band Width Test Data CH-Low (5530 MHz)



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

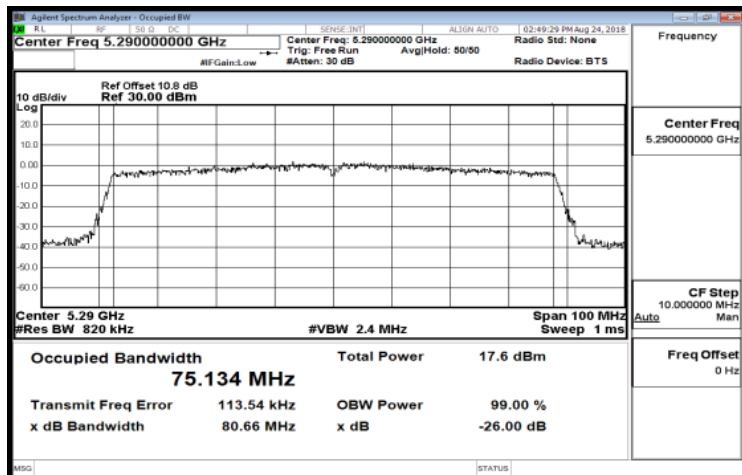


26dB Band Width Test Data CH-High (5690 MHz)



802.11ac VHT80, 5250~5350 MHz

26dB Band Width Test Data CH-Mid (5290 MHz)



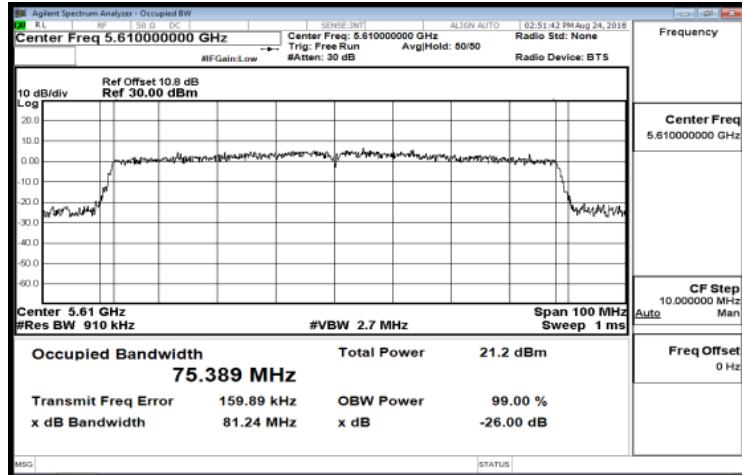
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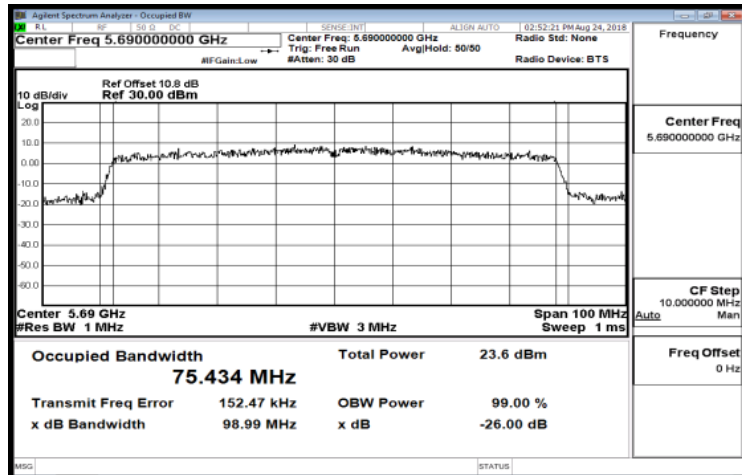
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802.11ac VHT80, 5470~5725 MHz

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



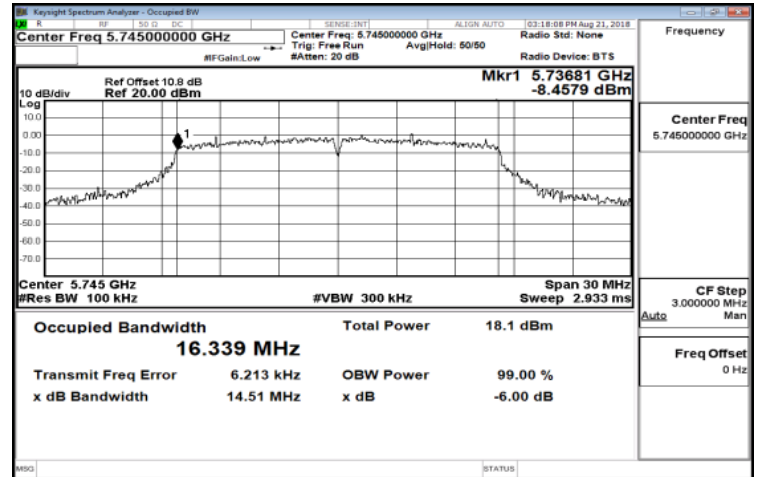
26dB Band Width Test Data CH-High (5690 MHz)



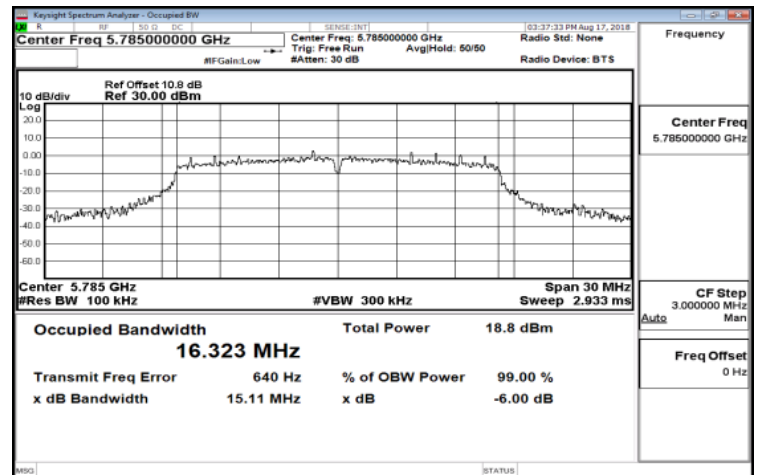
6dB Band Width measure with Peak detector for FCC

802.11a, 5725~5850 MHz

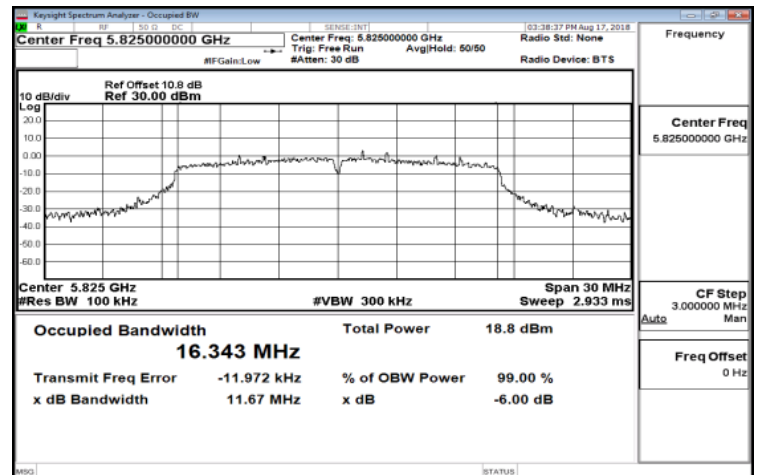
6dB Band Width Test Data CH-Low (5745 MHz)



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



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



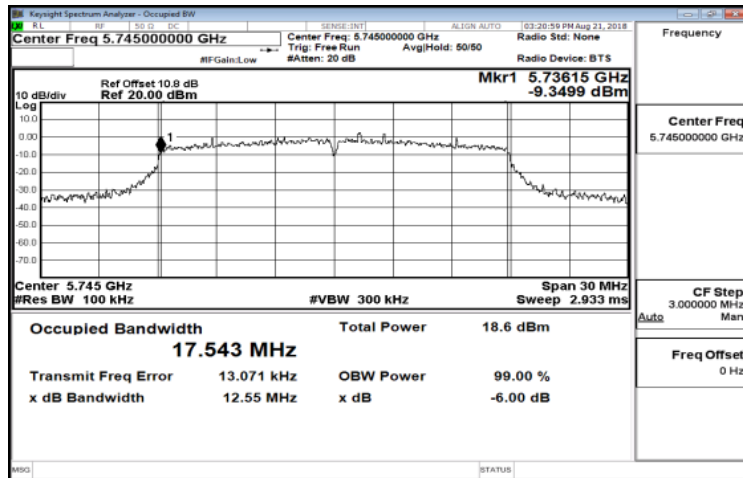
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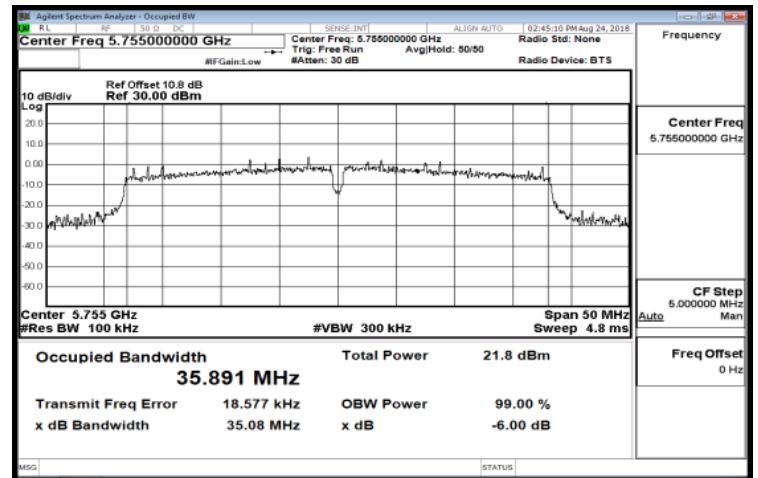
802.11n_HT20, 5725~5850 MHz

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

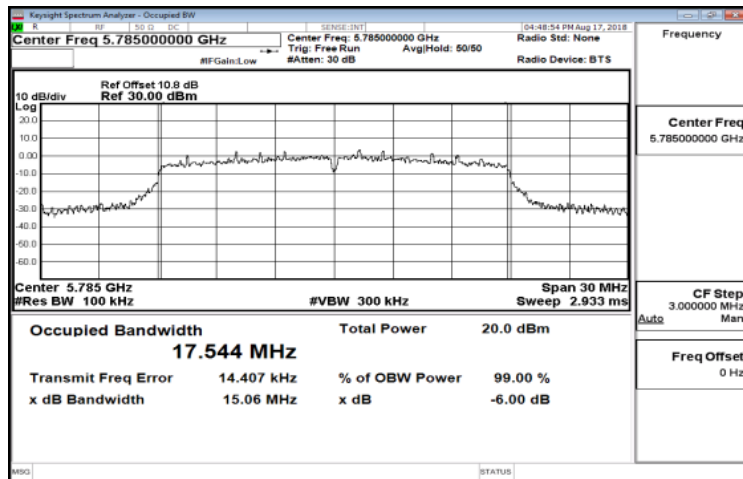


802.11n_HT40, 5725~5850 MHz

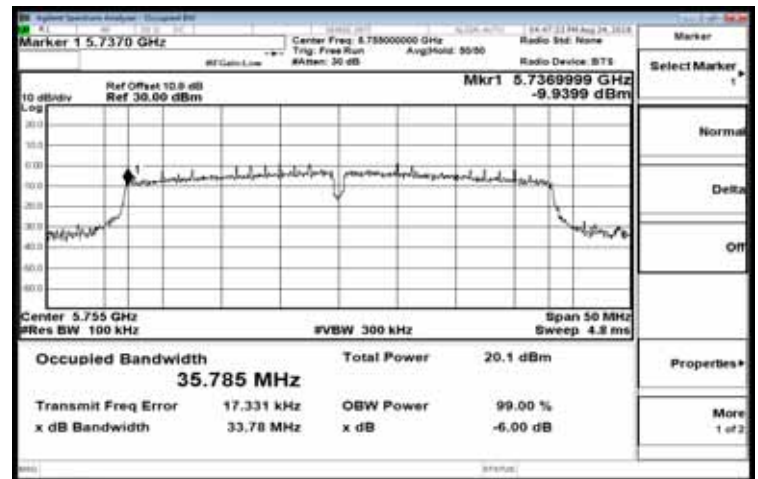
6dB Band Width Test Data CH-Low (5755 MHz)



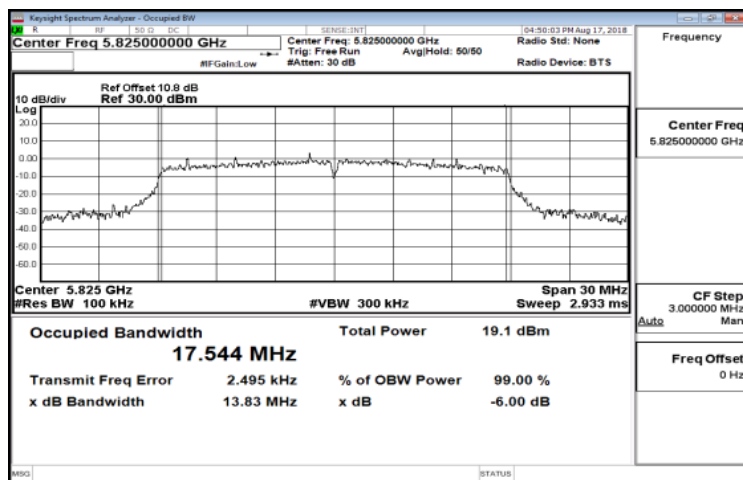
6dB Band Width Test Data CH-Mid (5785 MHz)



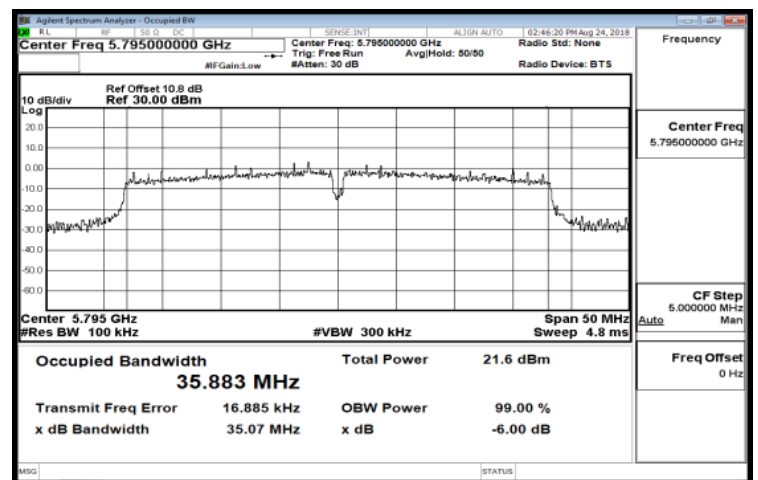
6dB Band Width Test Data CH-Low (5755 MHz)-High



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



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



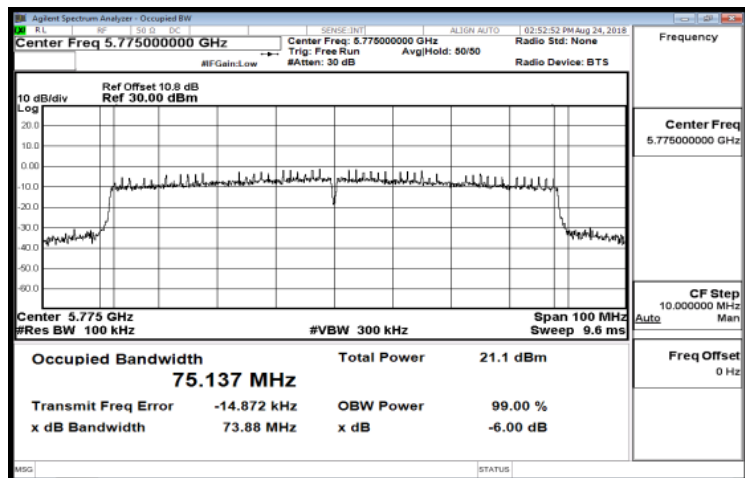
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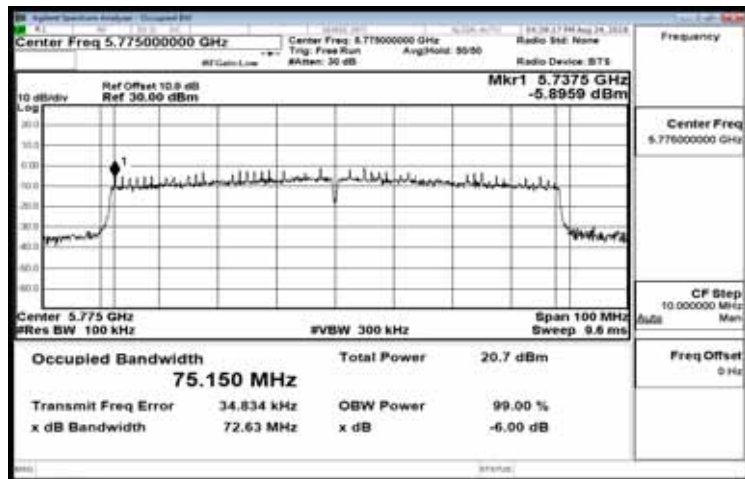
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802.11ac VHT80, 5725~5850 MHz

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



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

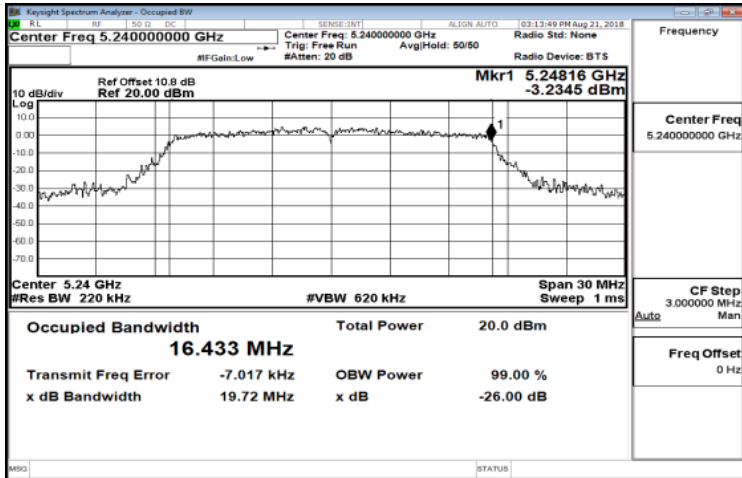


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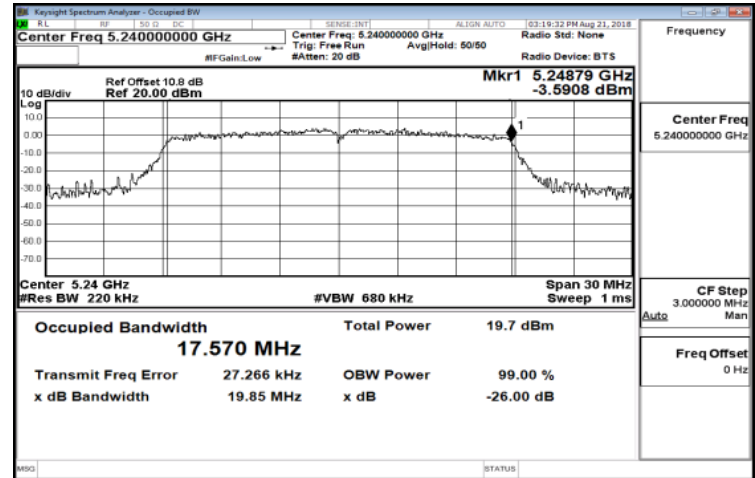
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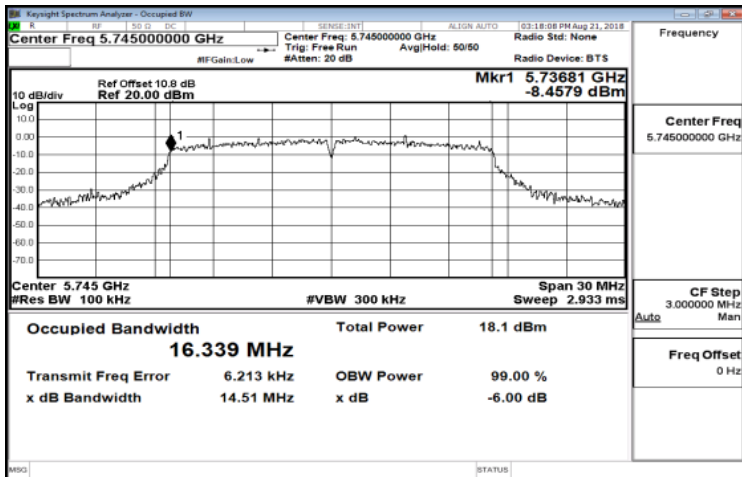
99% BW verification for DFS Function 802.11a_5240MHz



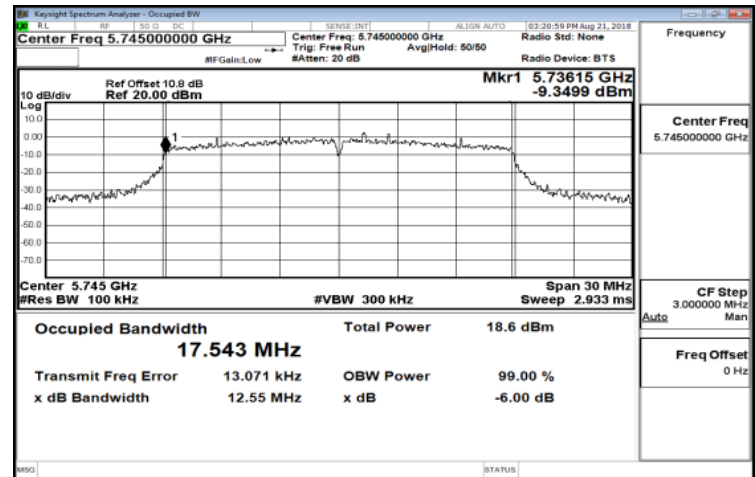
802.11n_20MHz_5240MHz



802.11a_5745MHz



802.11n_20MHz_5745MHz



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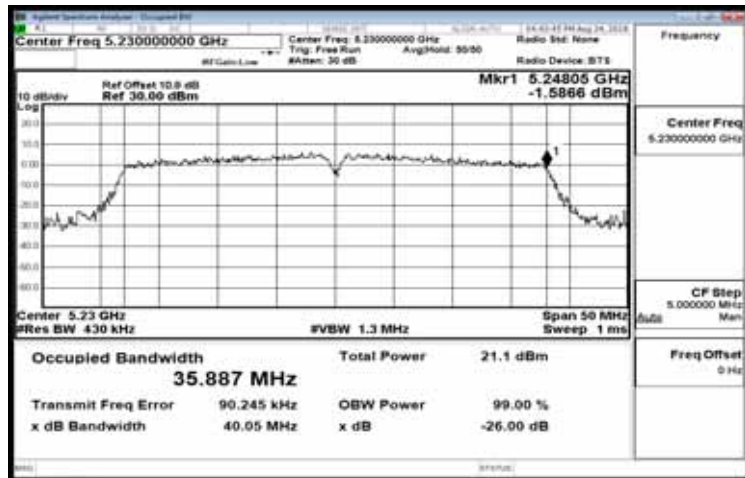
t (886-2) 2299-3279

f (886-2) 2298-0488

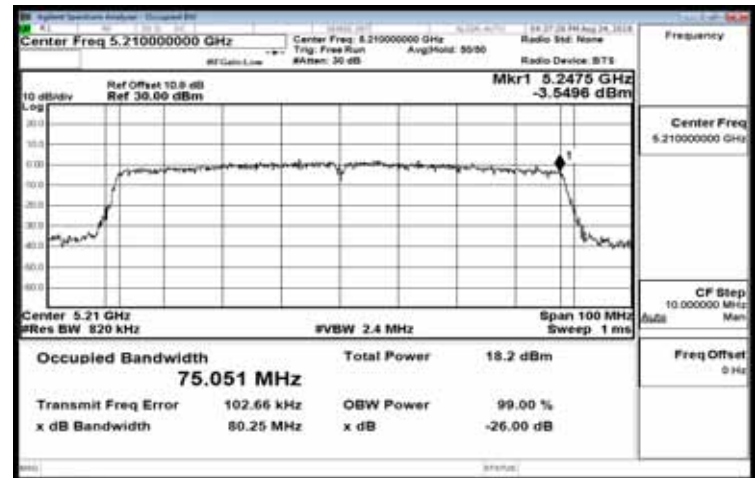
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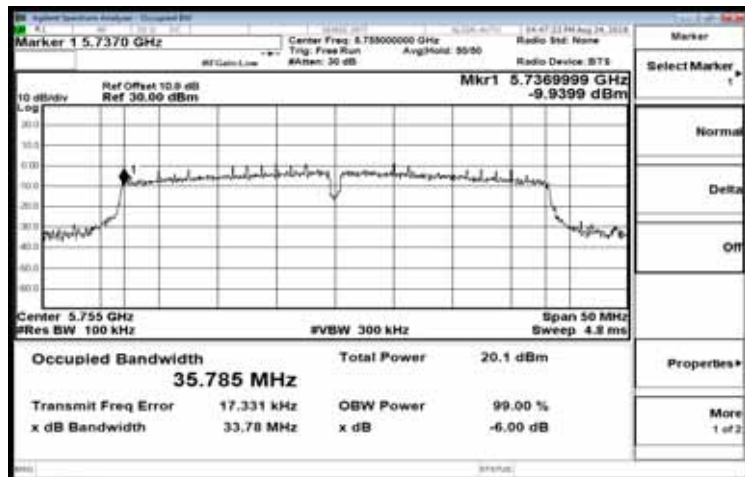
802.11n_40MHz_5230MHz



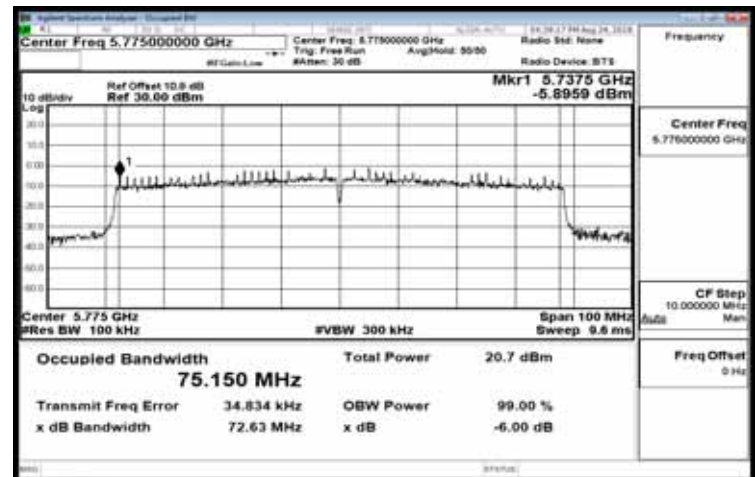
802.11ac_80MHz_5210MHz



802.11n_40MHz_5755MHz



802.11ac_80MHz_5775MHz



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9 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

9.1 Standard Applicable

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

9.2 Measurement Procedure

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

9.3 Measurement Equipment Used

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

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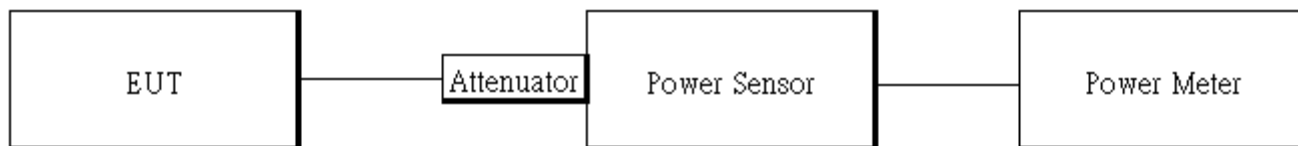
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9.4 Test Set-up



9.5 Measurement Result

Conducted output power (FCC)

802.11a_Ch0

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

802.11n_HT20_Ch0

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

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802.11ac_VHT20_Ch0

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

802.11n_HT40_Ch0

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

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802.11ac_VHT40_Ch0

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

802.11ac_VHT80_Ch0

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

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10 PEAK POWER SPECTRAL DENSITY

10.1 Standard Applicable

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

10.2 Measurement Procedure

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

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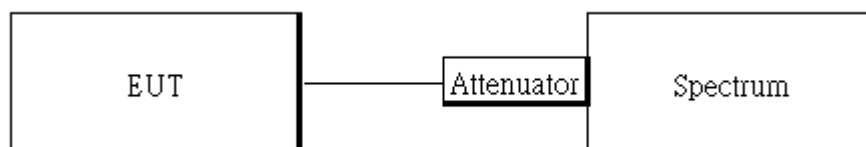
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10.3 Measurement Equipment Used

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

10.4 Test Set-up



10.5 Measurement Result

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

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

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

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

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台灣檢驗科技股份有限公司

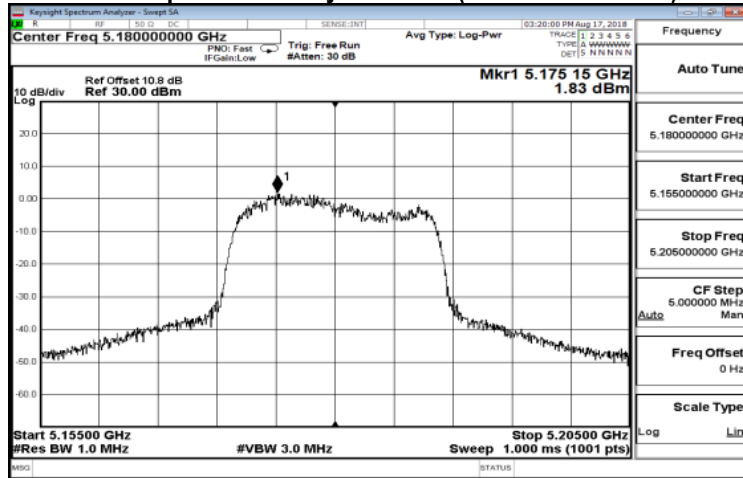
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f (886-2) 2298-0488

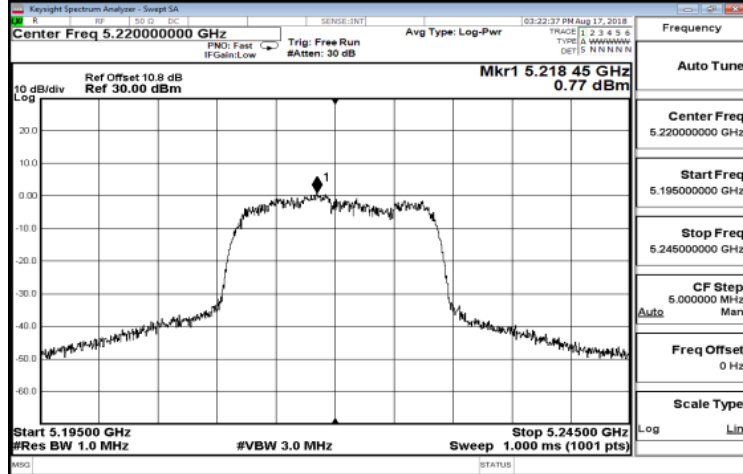
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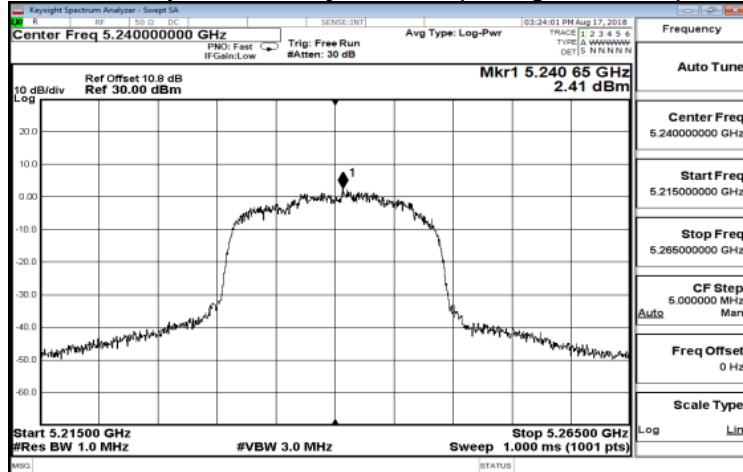
802.11a 5150~5250 MHz Peak Power Spectral Density Data Plot (CH Low 5180 MHz)



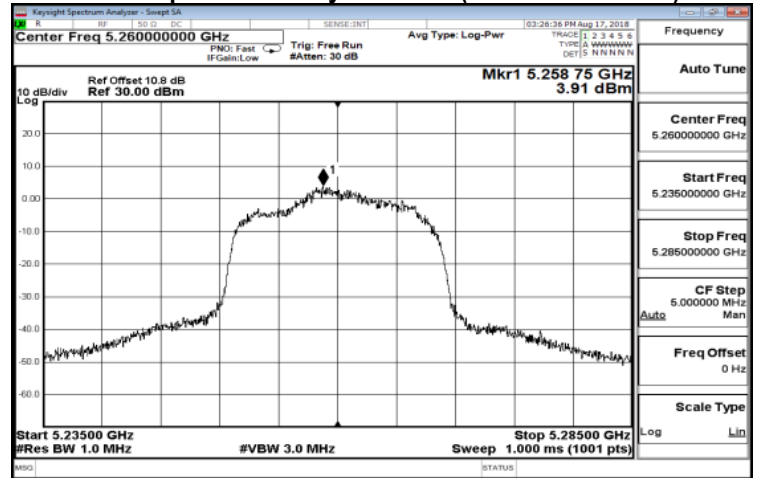
Peak Power Spectral Density Data Plot (CH Mid 5220 MHz)



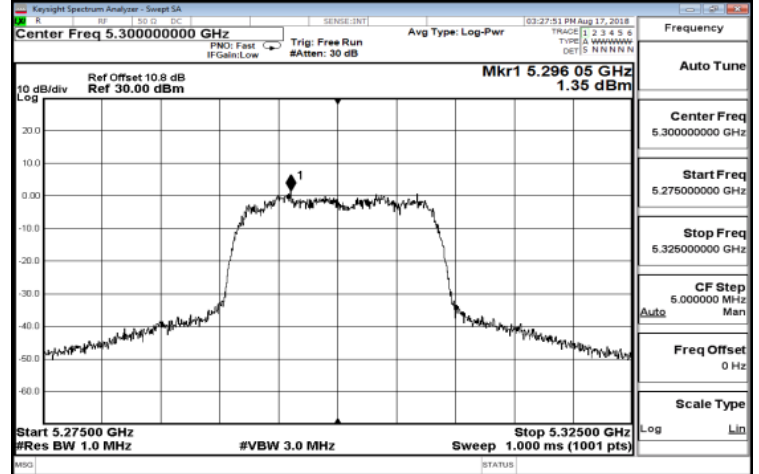
Peak Power Spectral Density Data Plot (CH High 5240 MHz)



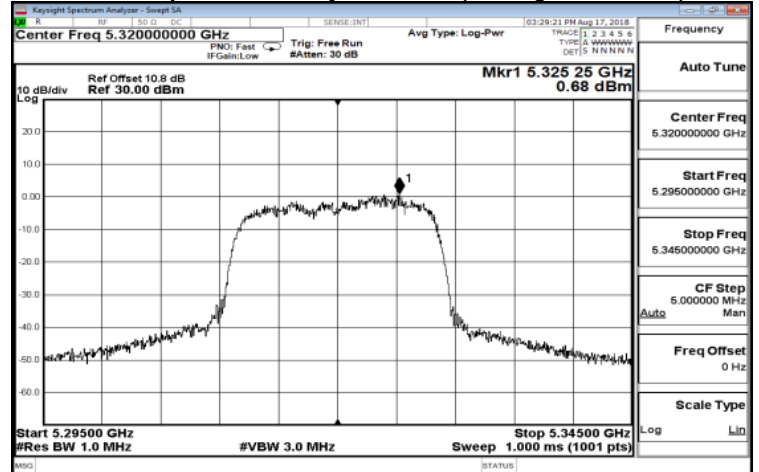
802.11a 5250~5350 MHz Peak Power Spectral Density Data Plot (CH Low 5260 MHz)



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



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



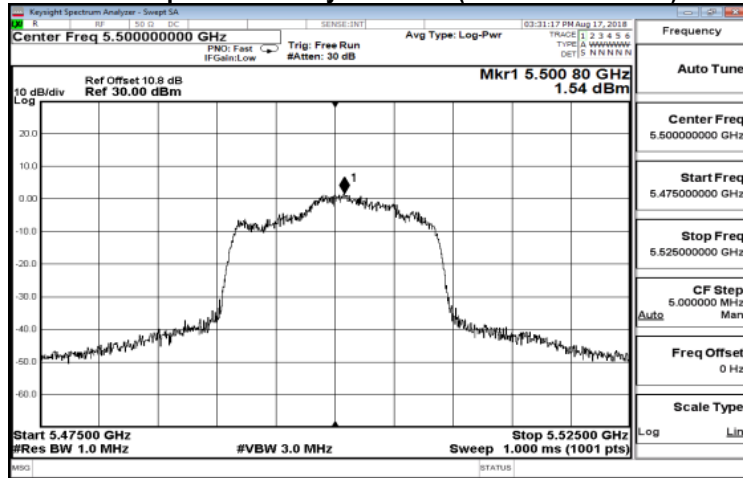
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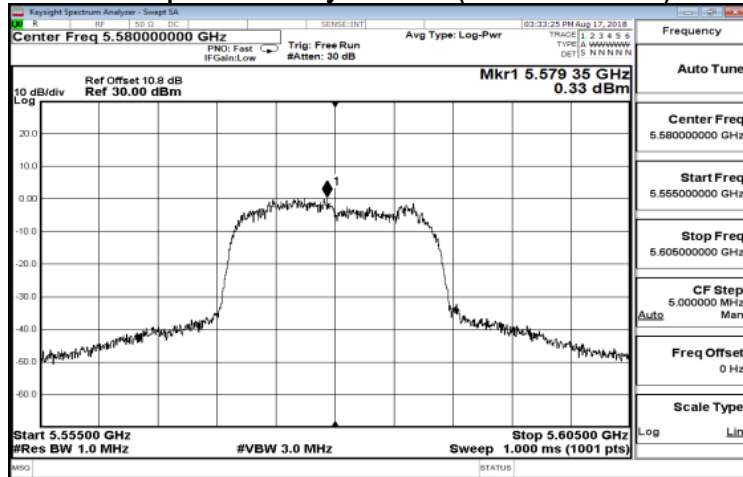
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802.11a 5470~5725 MHz

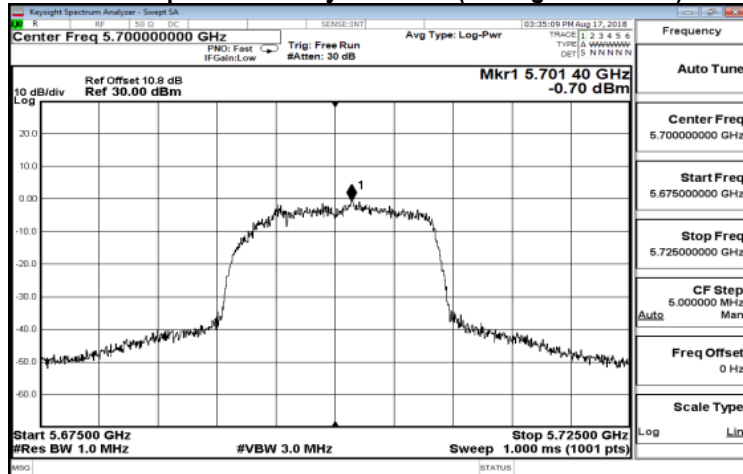
Peak Power Spectral Density Data Plot (CH Low 5500 MHz)



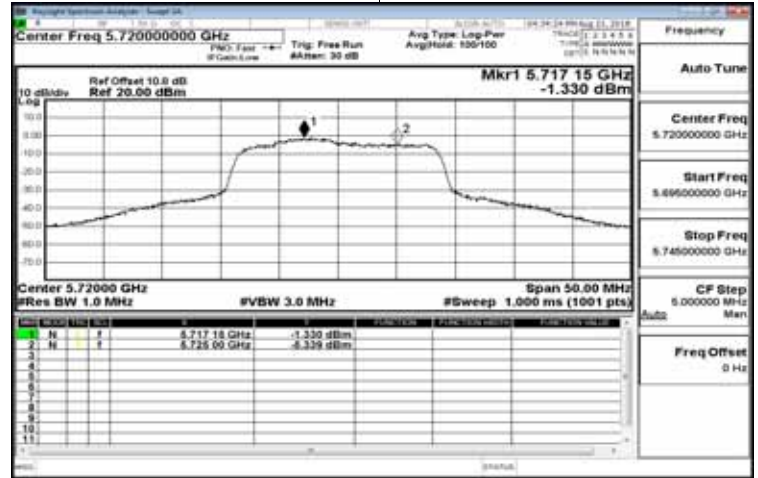
Peak Power Spectral Density Data Plot (CH Mid 5580 MHz)



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



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

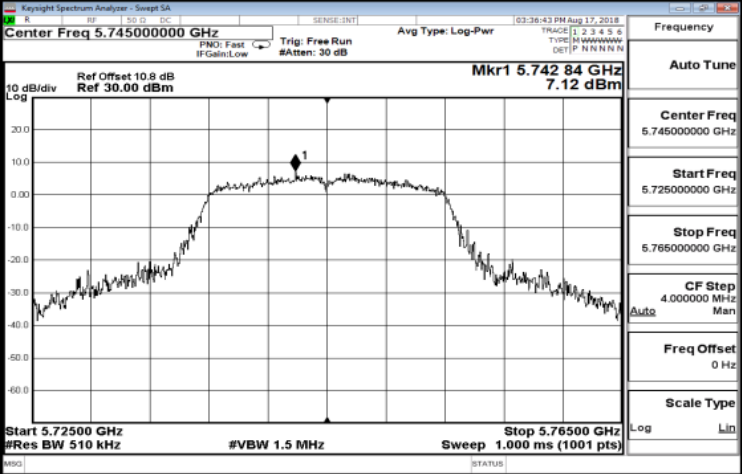


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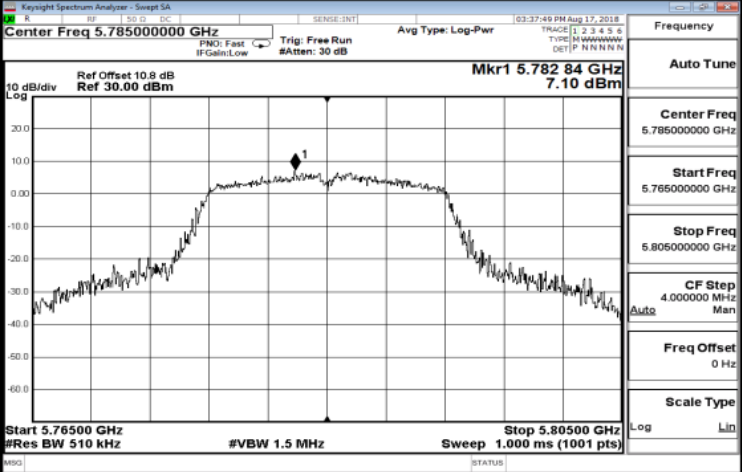
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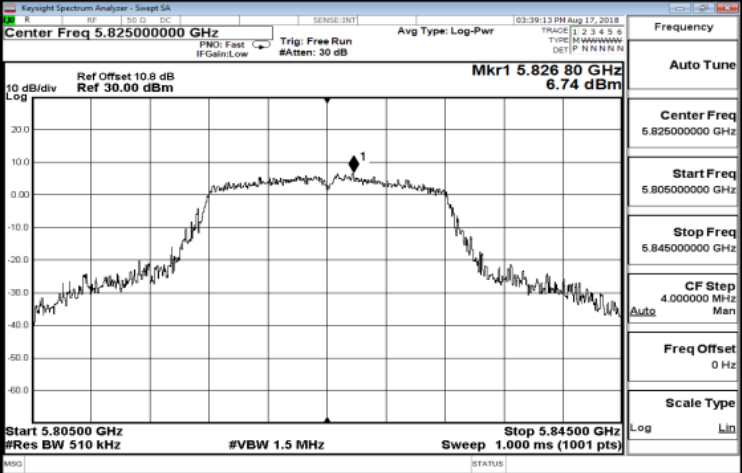
802.11a 5725~5850 MHz
Peak Power Spectral Density Data Plot (CH Low 5745 MHz)



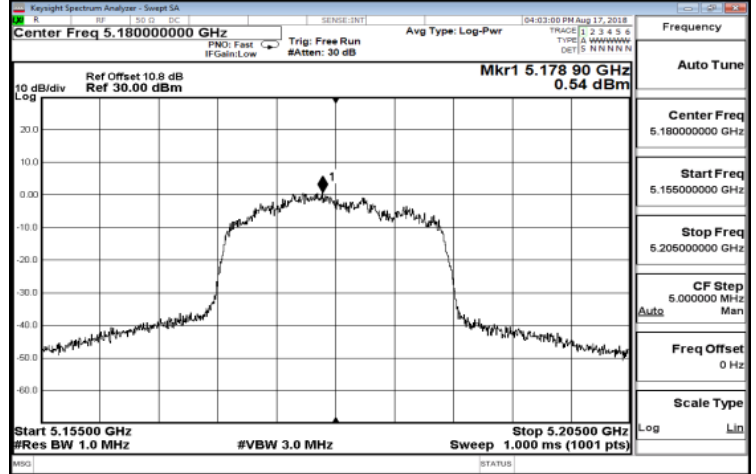
Peak Power Spectral Density Data Plot (CH Mid 5785 MHz)



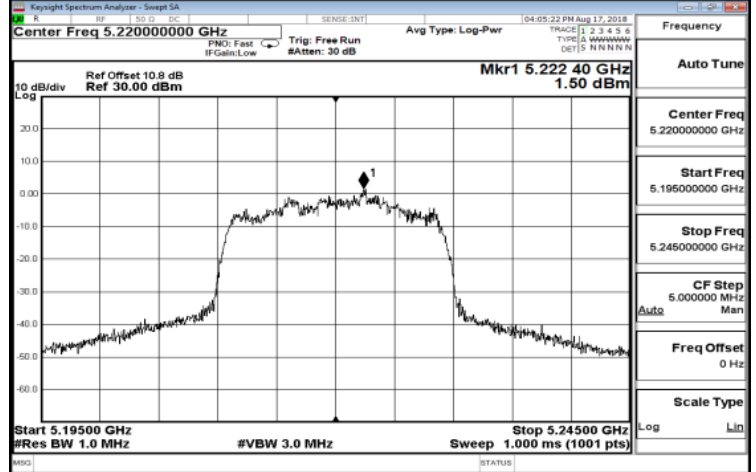
Peak Power Spectral Density Data Plot (CH High 5825 MHz)



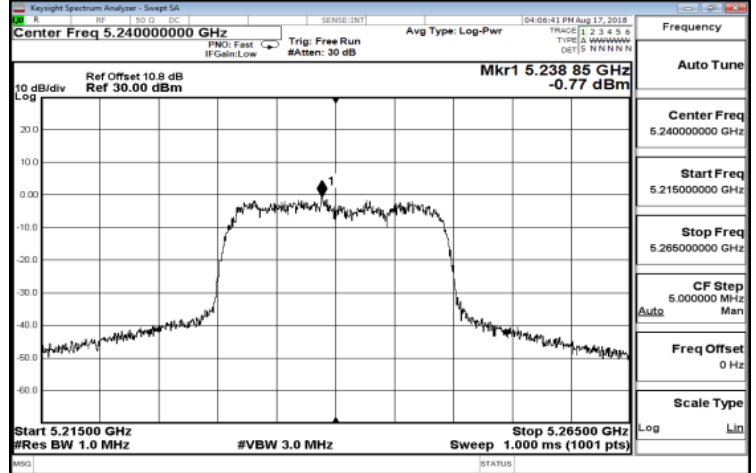
802.11n HT20, 5150~5250 MHz
Peak Power Spectral Density Data Plot (CH Low 5180 MHz)



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



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



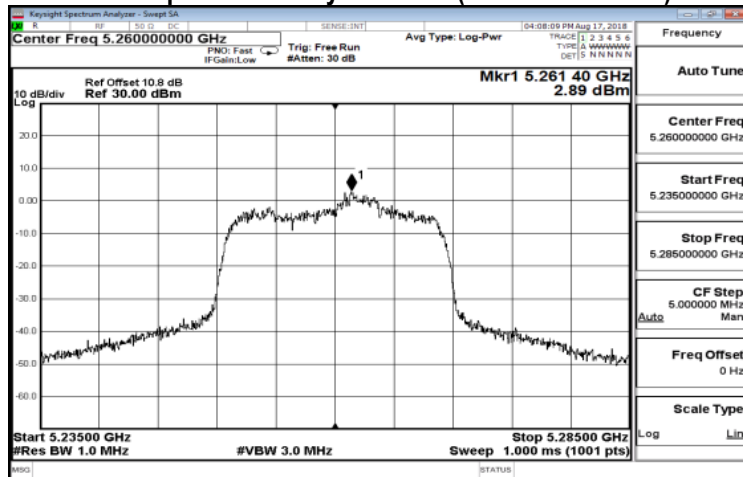
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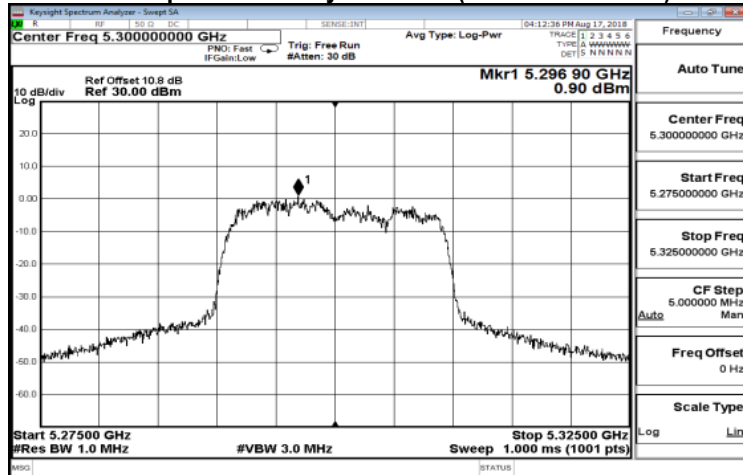
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802.11n HT20, 5250~5350 MHz

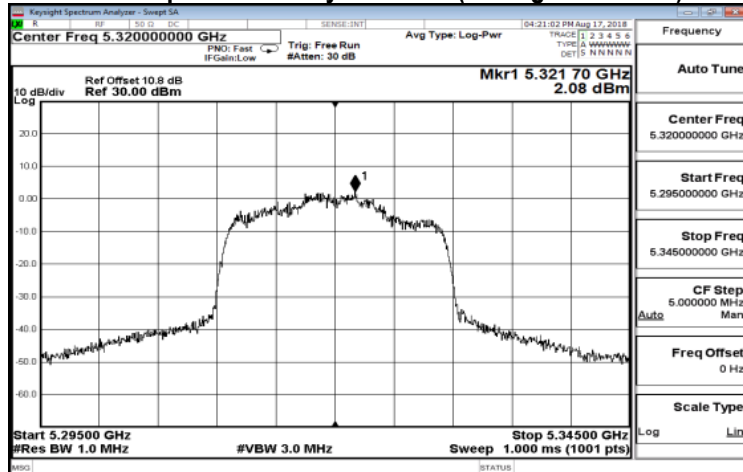
Peak Power Spectral Density Data Plot (CH Low 5260MHz)



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

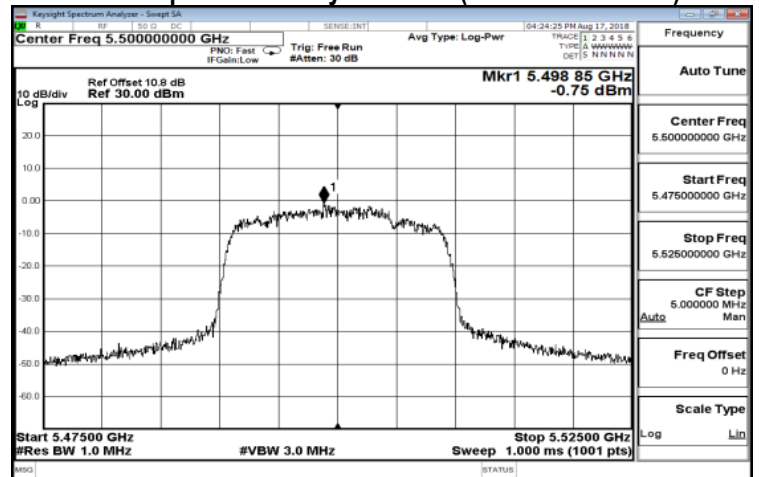


Peak Power Spectral Density Data Plot (CH High 5320 MHz)

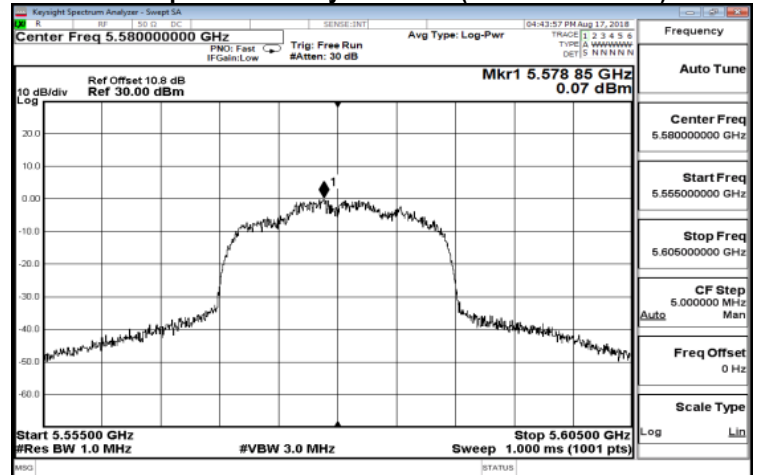


802.11n HT20, 5470~5725 MHz

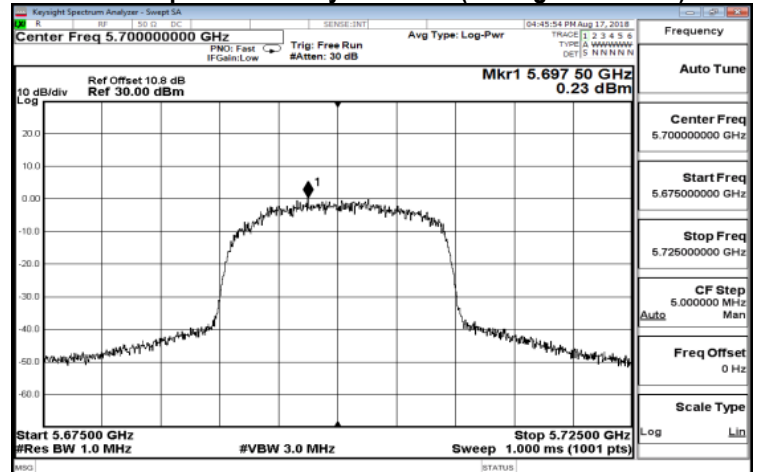
Peak Power Spectral Density Data Plot (CH Low 5500 MHz)



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



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

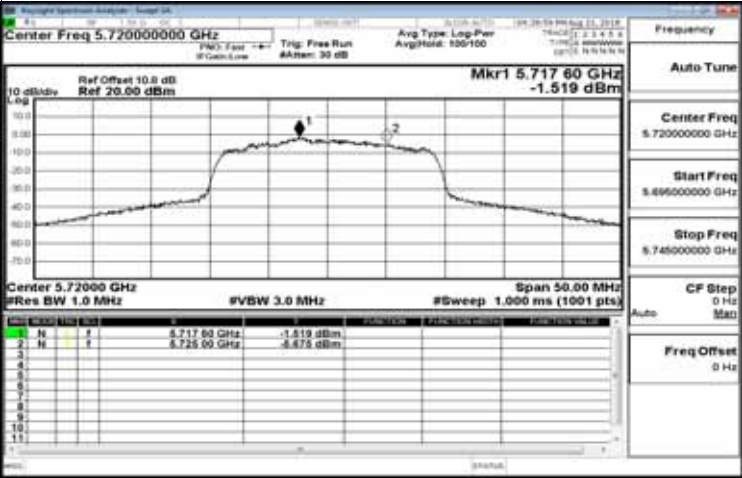


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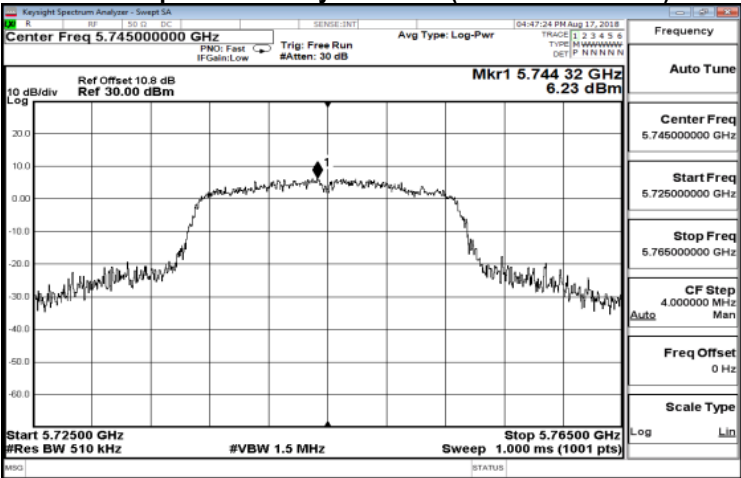
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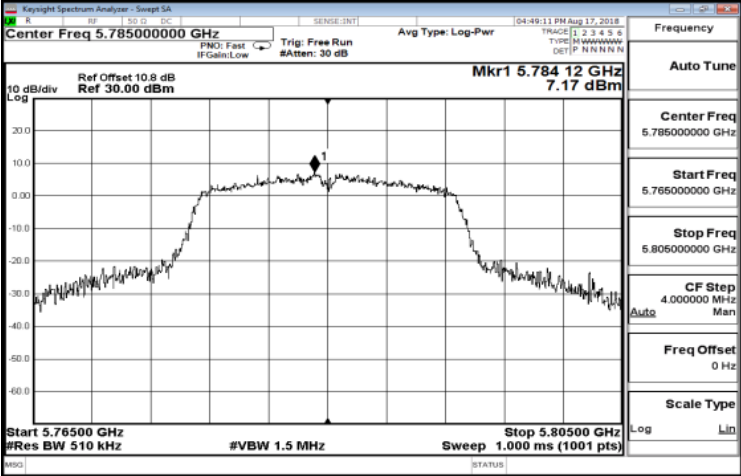
Peak Power Spectral Density Data Plot (CH High 5720 MHz)



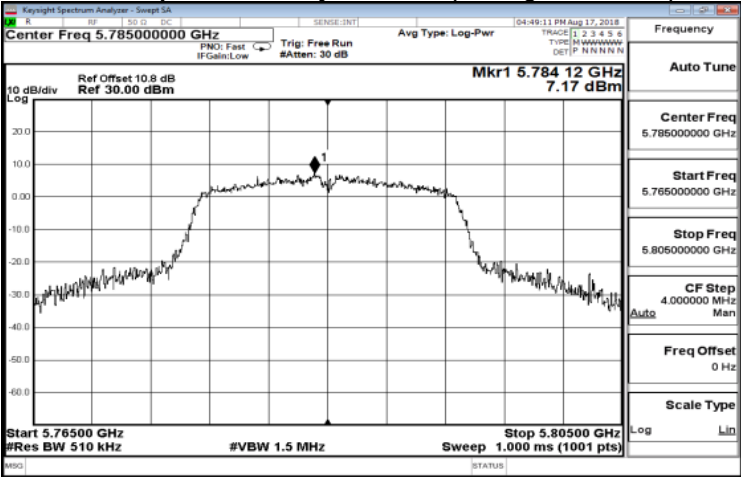
802.11n HT20, 5725~5850 MHz
Peak Power Spectral Density Data Plot (CH Low 5745 MHz)



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



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



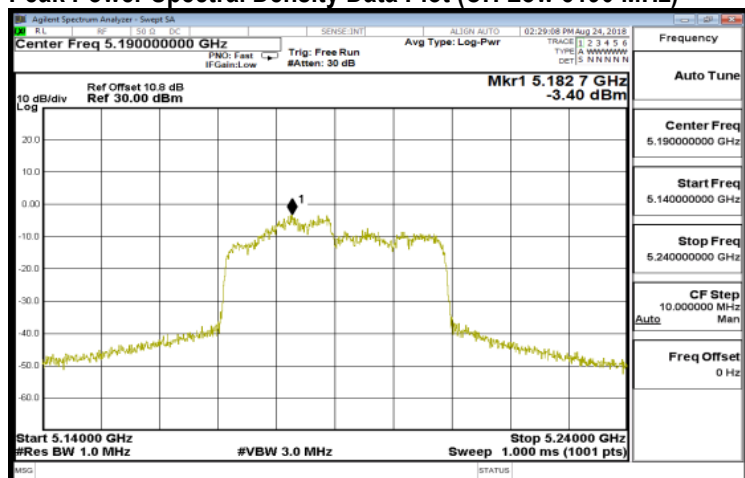
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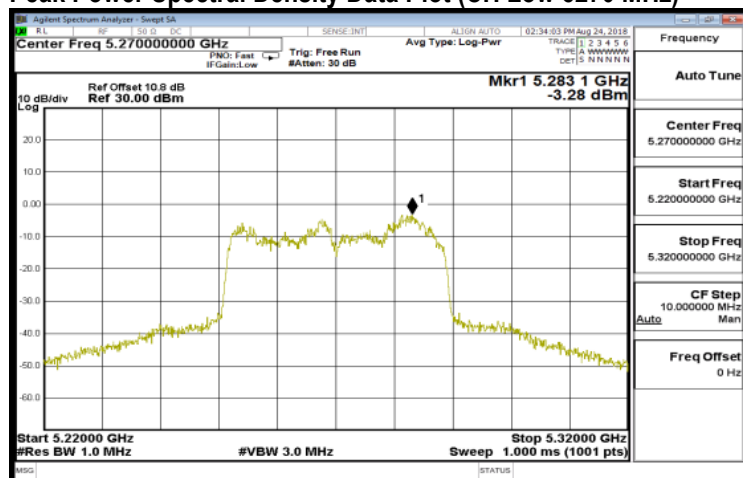
802.11n HT40, 5150~5250 MHz

Peak Power Spectral Density Data Plot (CH Low 5190 MHz)

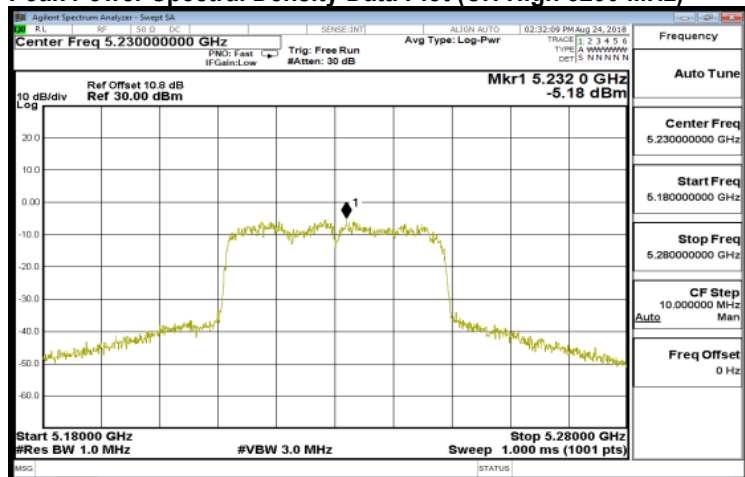


802.11n HT40, 5250~5350 MHz

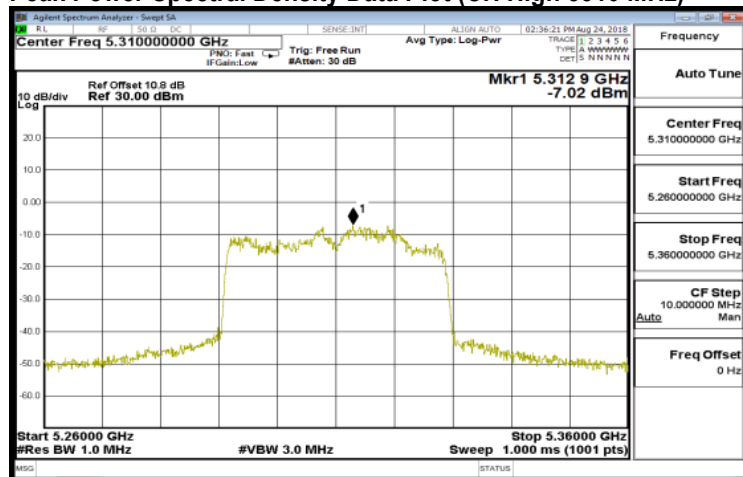
Peak Power Spectral Density Data Plot (CH Low 5270 MHz)



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



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



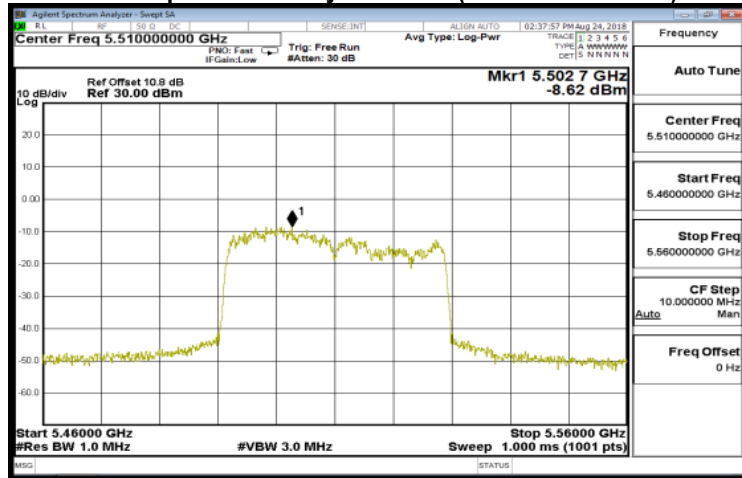
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802.11n HT40, 5470~5725 MHz

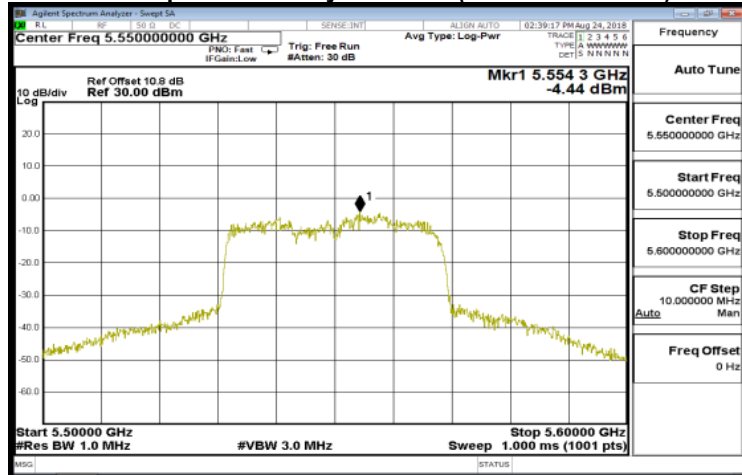
Peak Power Spectral Density Data Plot (CH Low 5510 MHz)



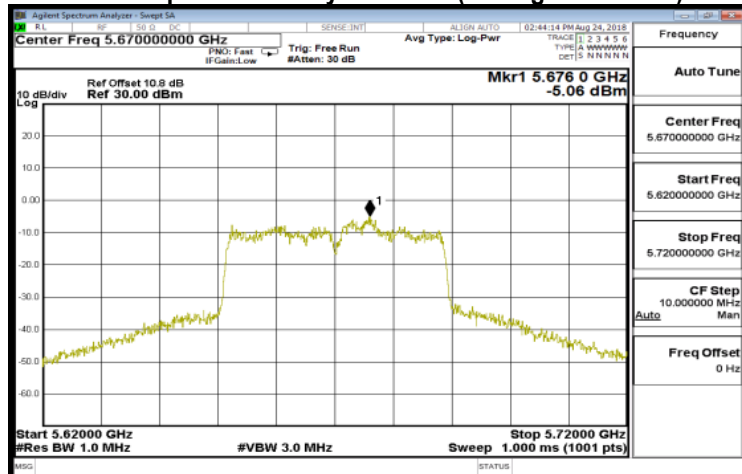
Peak Power Spectral Density Data Plot (CH High 5710 MHz)



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



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



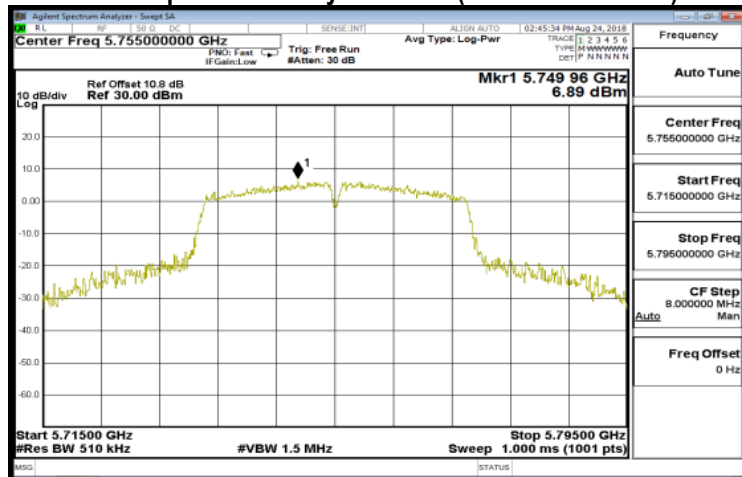
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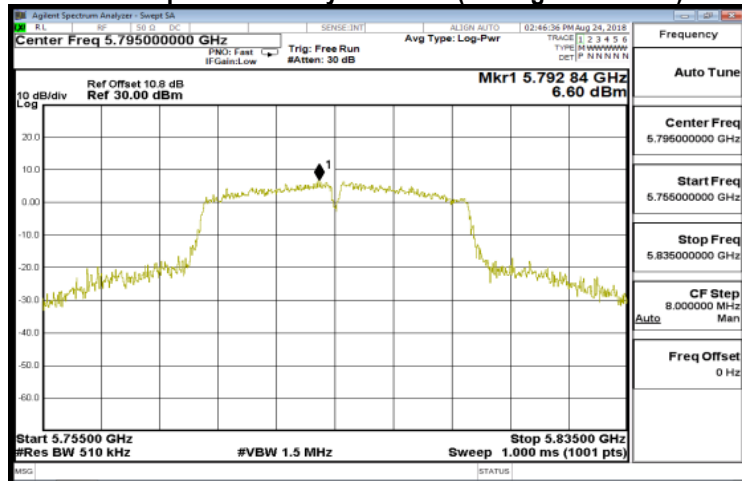
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802.11n HT40, 5725~5850 MHz

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

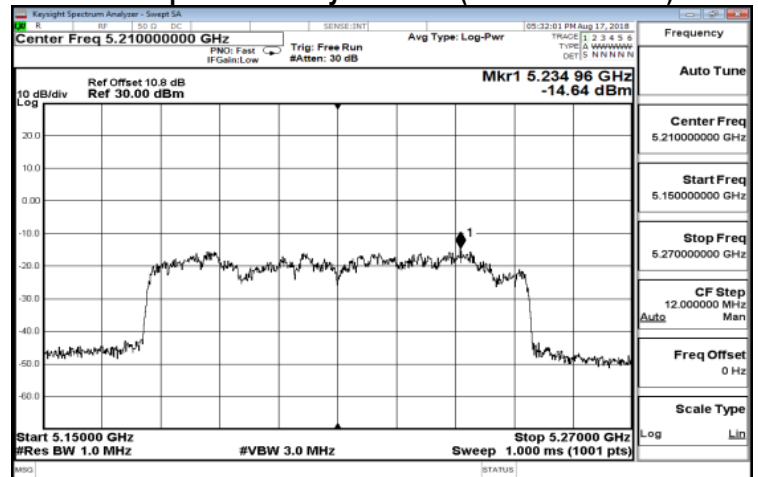


Peak Power Spectral Density Data Plot (CH High 5795 MHz)



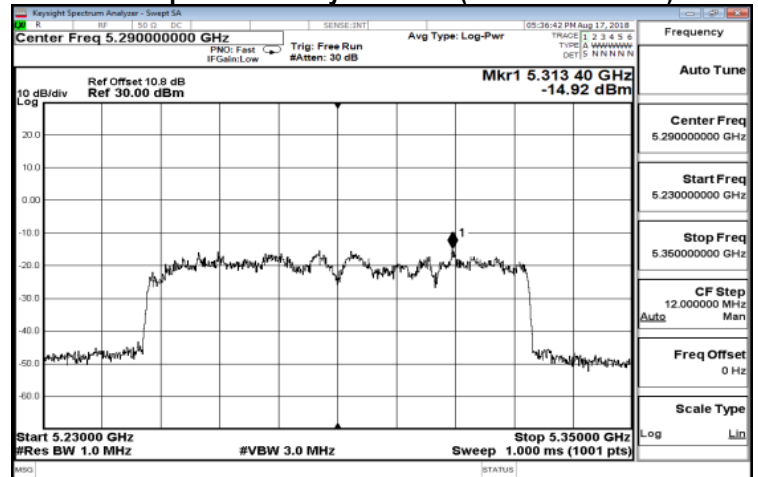
802.11ac VHT80, 5150~5250 MHz

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



802.11ac VHT80, 5250~5350 MHz

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



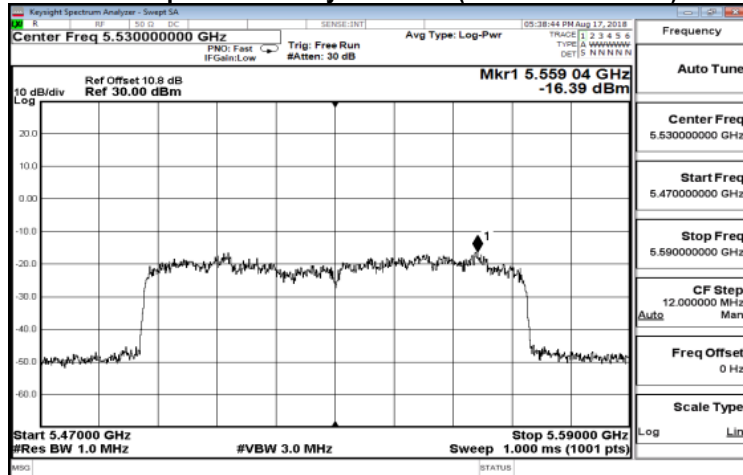
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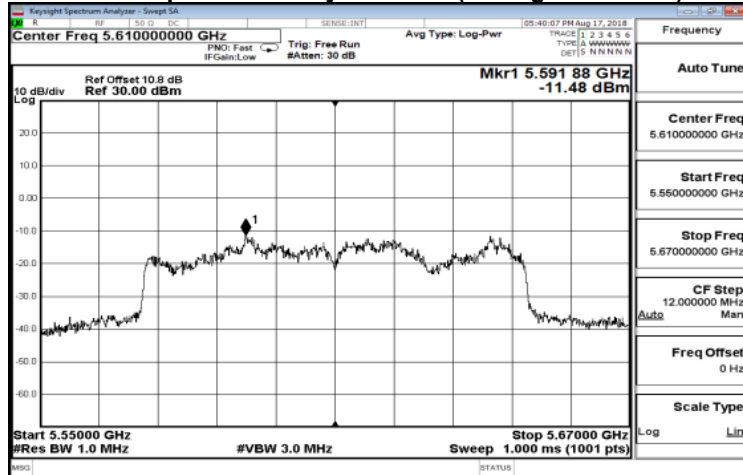
802.11ac VHT80, 5470~5725 MHz

Peak Power Spectral Density Data Plot (CH Low 5530 MHz)



802.11ac VHT80, 5470~5725 MHz

Peak Power Spectral Density Data Plot (CH High 5610 MHz)

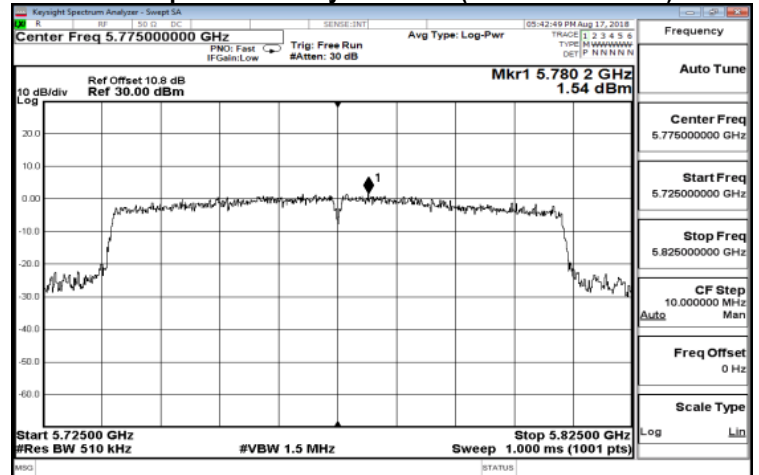


Peak Power Spectral Density Data Plot (CH High 5690 MHz)



802.11ac VHT80, 5725~5850 MHz

Peak Power Spectral Density Data Plot (CH Mid 5775 MHz)



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11 UNDESIRABLE RADIATED EMISSION MEASUREMENT

11.1 Standard Applicable

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

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

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

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

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

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

Note:

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

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11.2 Measurement Equipment Used

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

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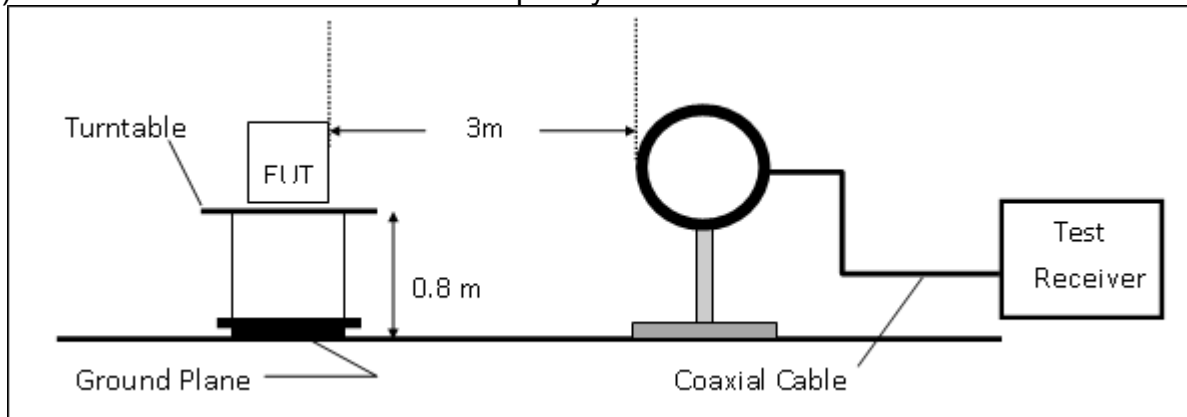
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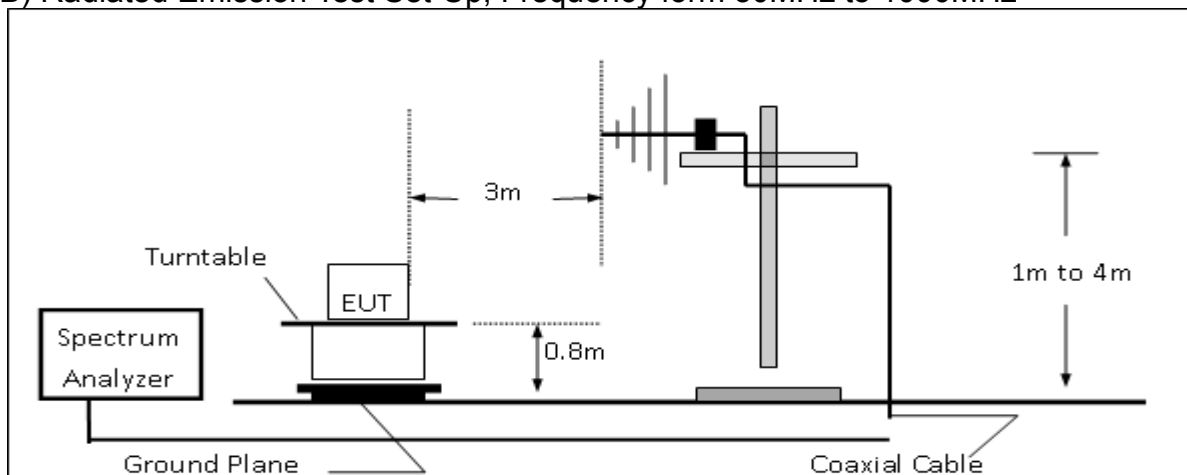
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11.3 Test SET-UP

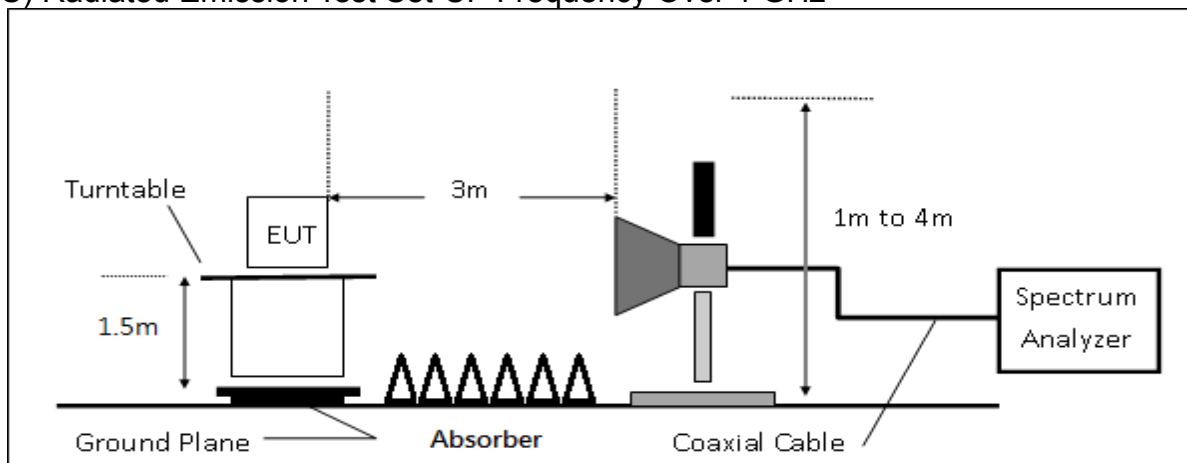
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



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



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



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11.4 Measurement Procedure

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

11.5 Field Strength Calculation

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

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

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

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

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

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

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

11.7 Measurement Result

Refer to attach tabular data sheets.

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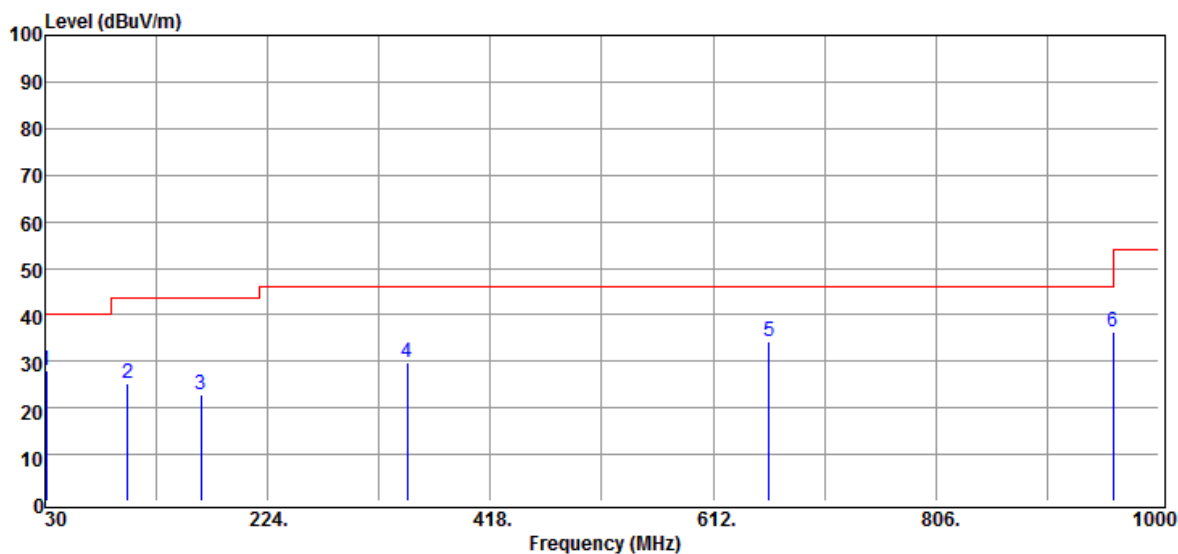
Radiated Spurious Emission Measurement Result

Below 1GHz Worst-Case Data:

802.11a 5150~5250 MHz

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

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



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

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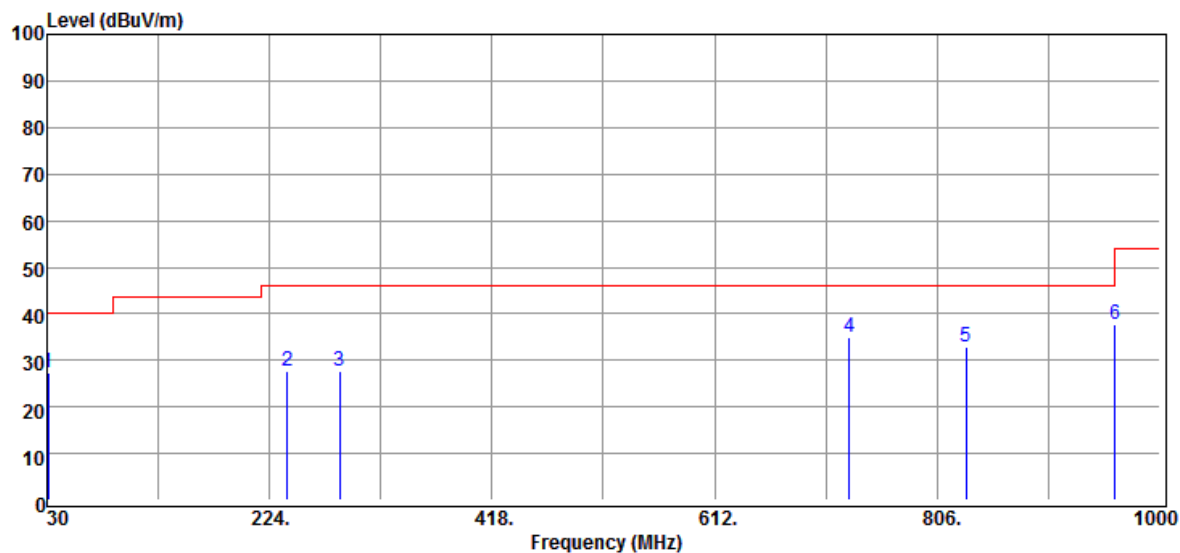
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Operation Mode :802.11a /Band 1
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5220 MHz

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



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

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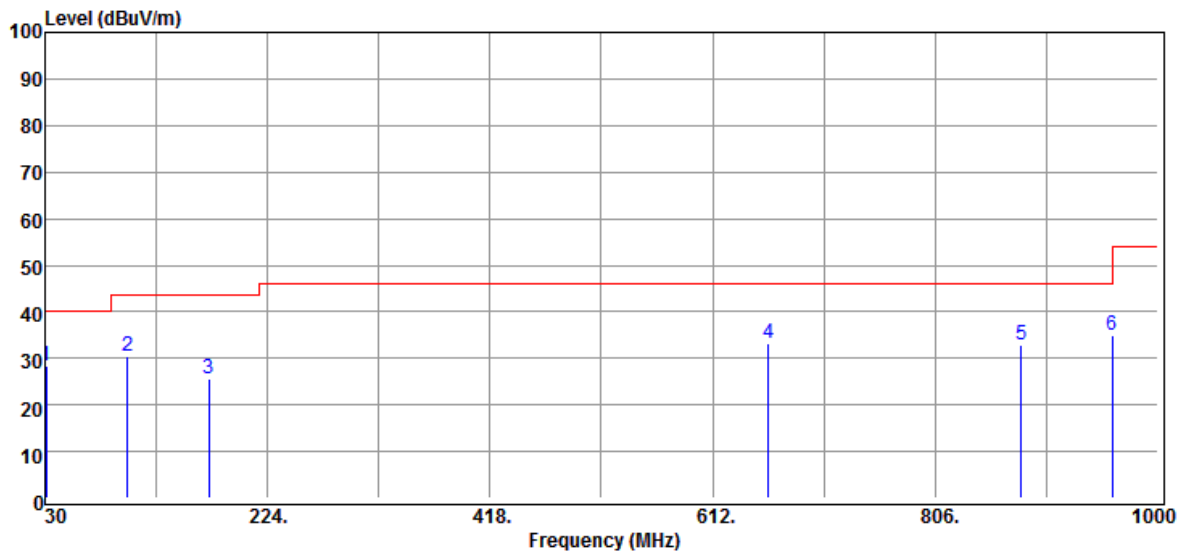
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802.11a 5250~5350 MHz

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

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



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

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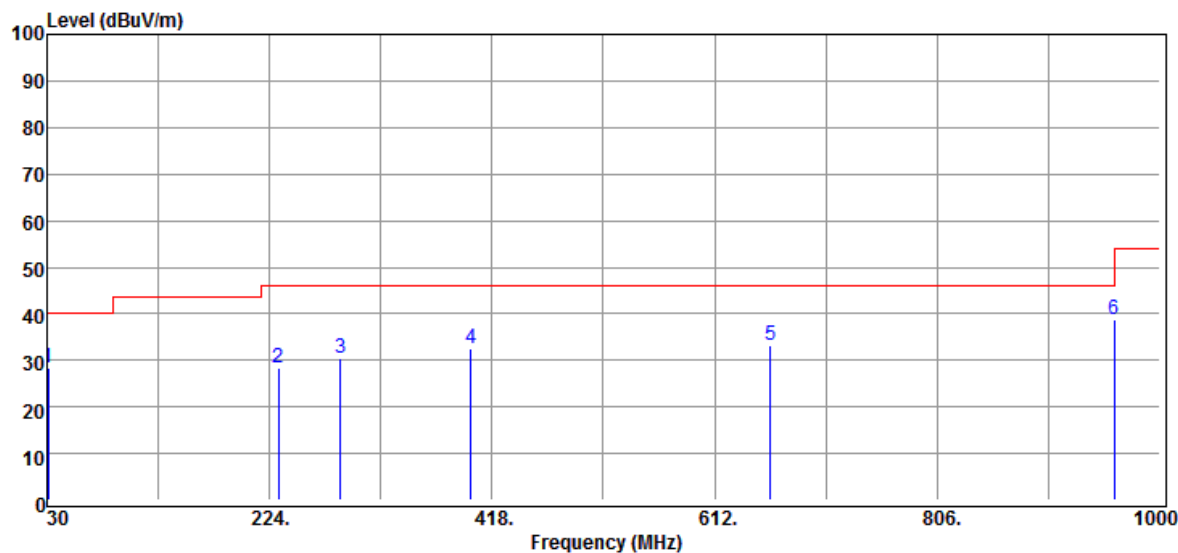
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Operation Mode :802.11a /Band 2
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5300 MHz

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



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

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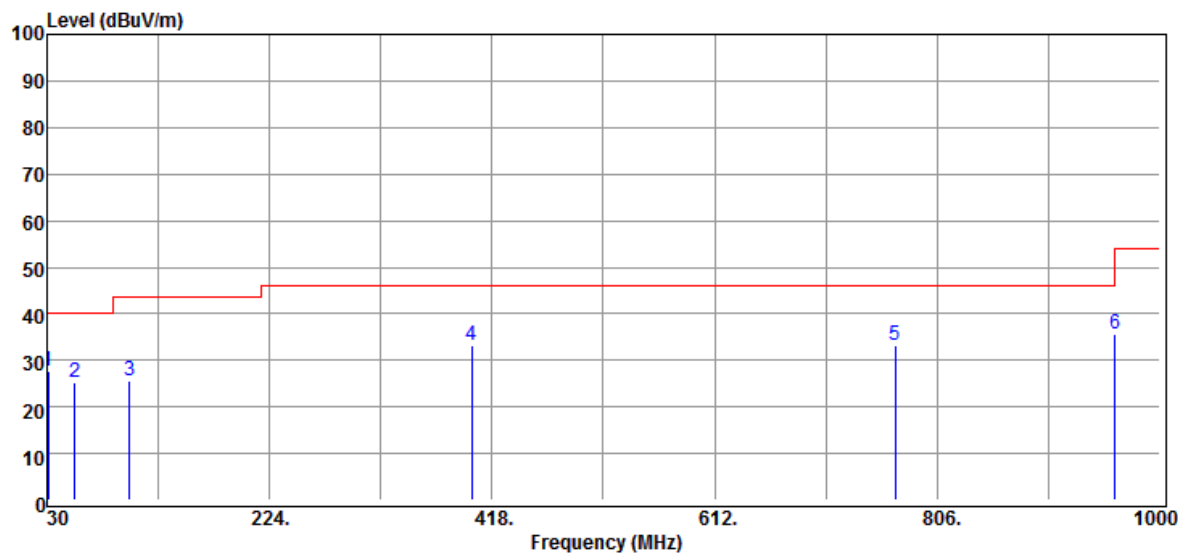
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802.11a, 5470~5725 MHz

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

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



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

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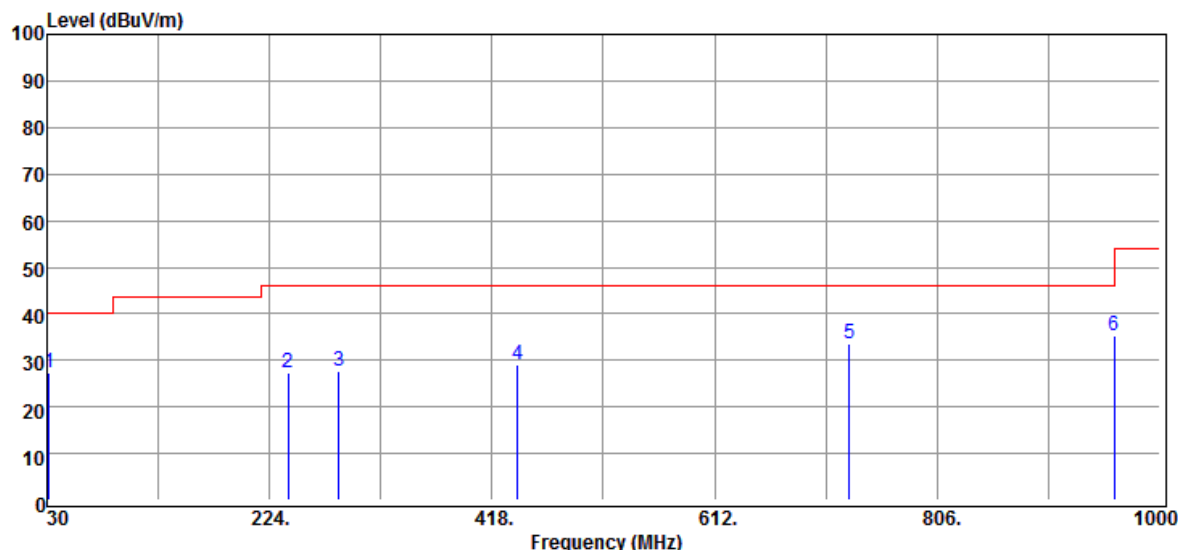
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Operation Mode :802.11a /Band 3
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5580 MHz

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



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

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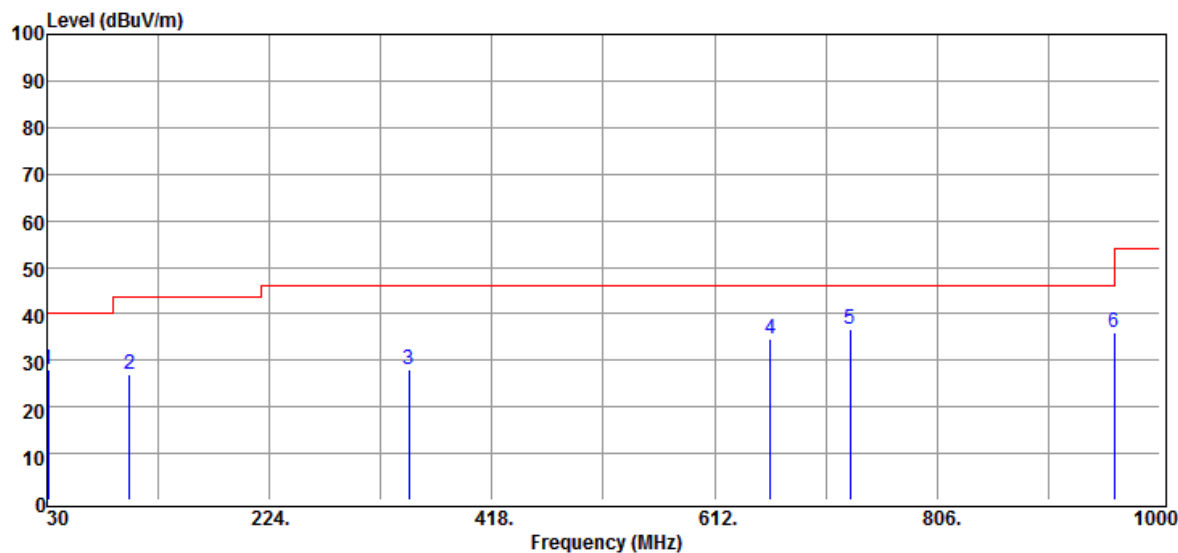
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802.11a, 5725~5850 MHz

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

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



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

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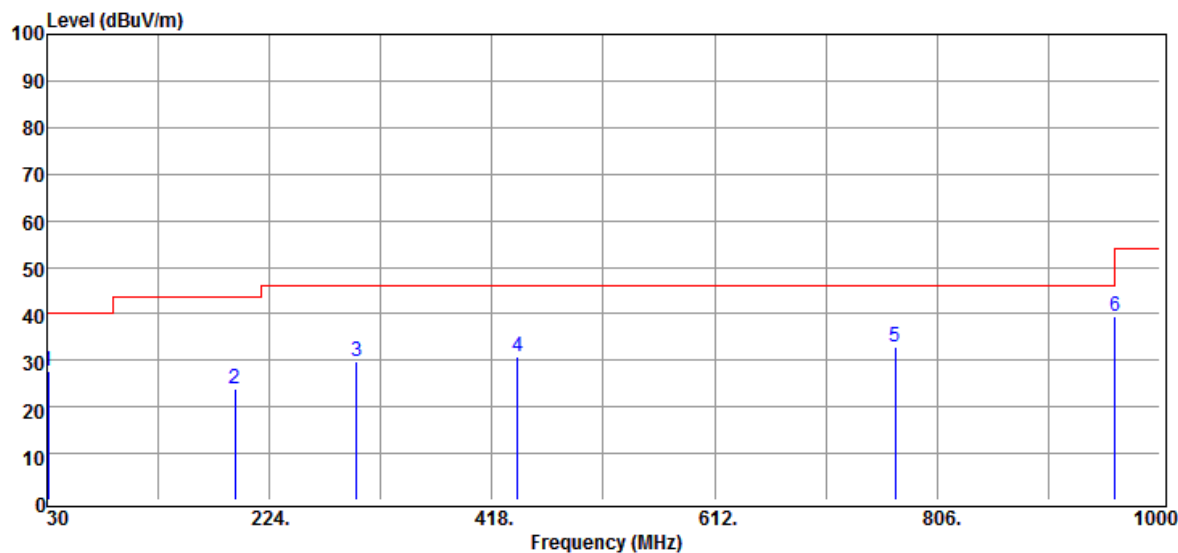
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Operation Mode :802.11a /Band 4
Test Mode :TX CH MID
EUT Pol :H Plan
Test Channel :5785 MHz

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



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

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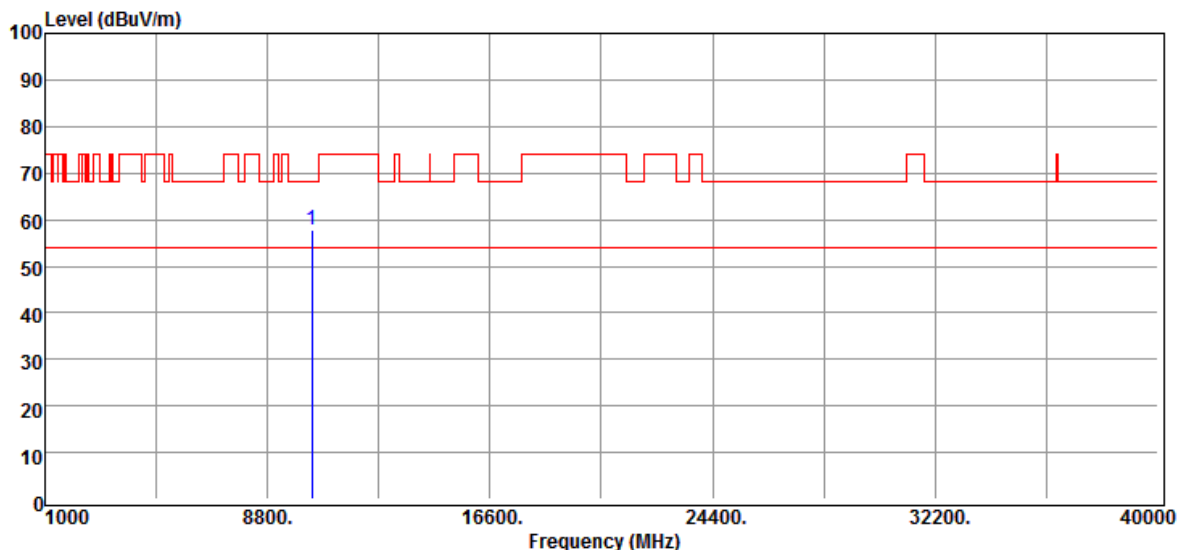
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Above 1GHz Worst-Case Data:

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

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



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

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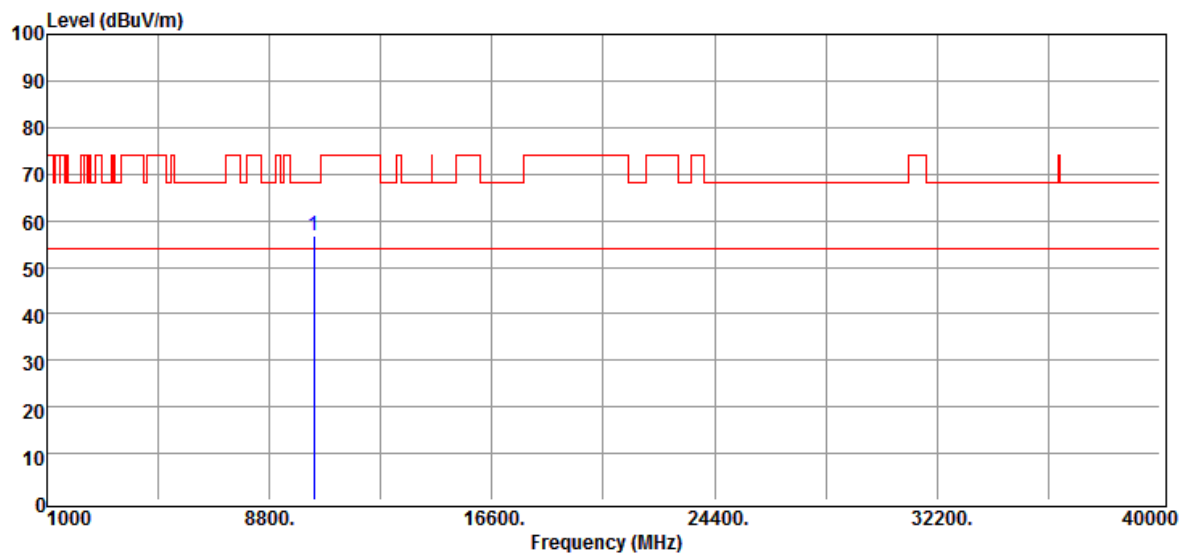
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Operation Mode :802.11a/Band 1
 Test Mode :TX CH LOW
 EUT Pol :H Plan
 Test Channel :5180 MHz

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



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

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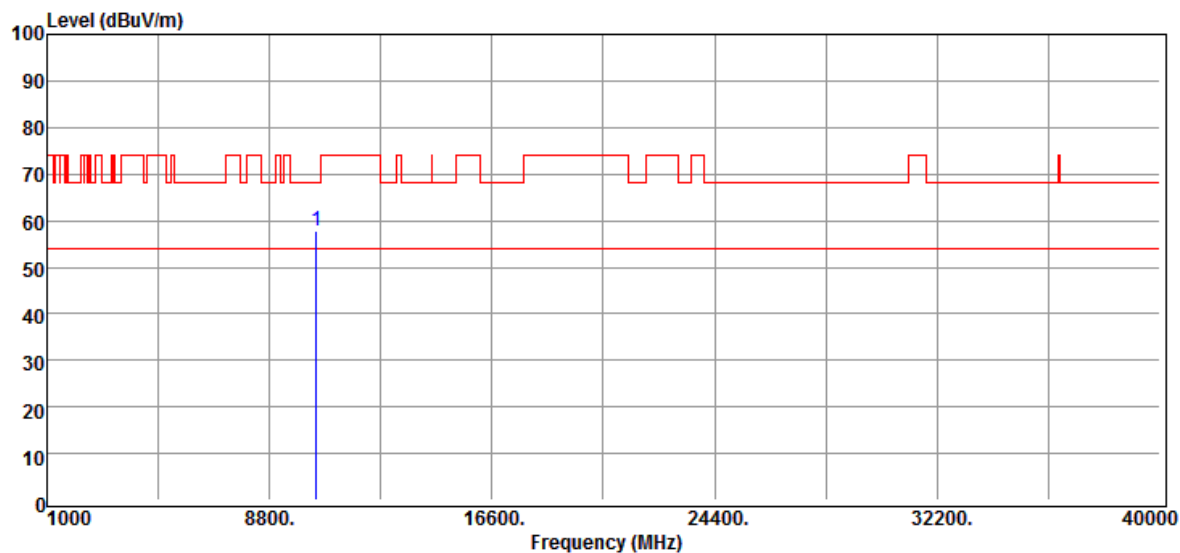
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Operation Mode	:802.11a/Band 1	Test Date	:2018-08-08
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5220 MHz	Engineer	:Ashton



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

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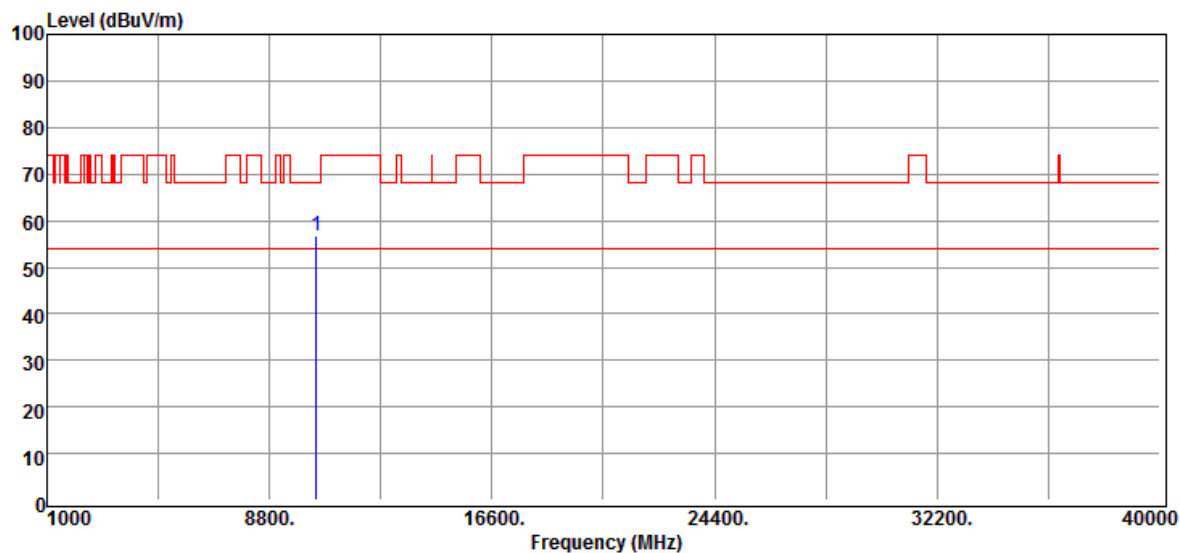
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Operation Mode	:802.11a/Band 1	Test Date	:2018-08-08
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5220 MHz	Engineer	:Ashton



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

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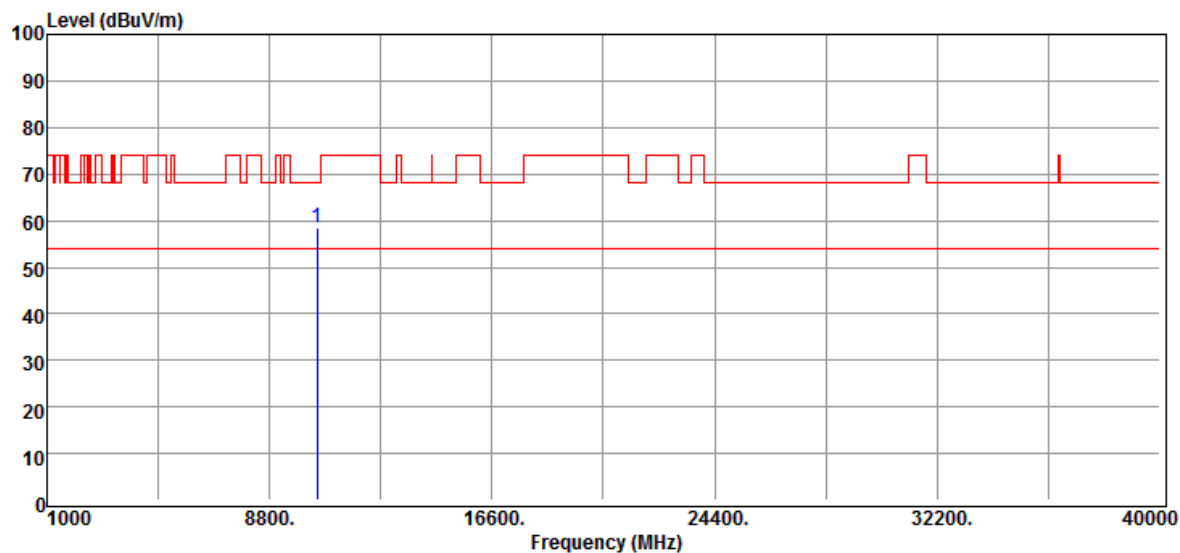
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Operation Mode	:802.11a/Band 1	Test Date	:2018-08-08
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5240 MHz	Engineer	:Ashton



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

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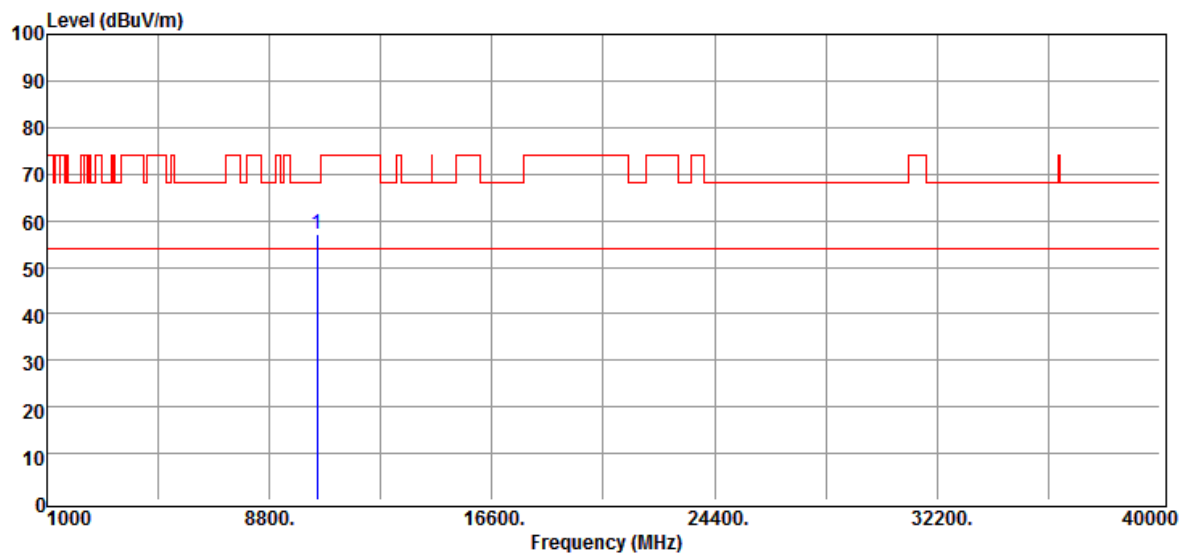
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Operation Mode	:802.11a/Band 1	Test Date	:2018-08-08
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5240 MHz	Engineer	:Ashton



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

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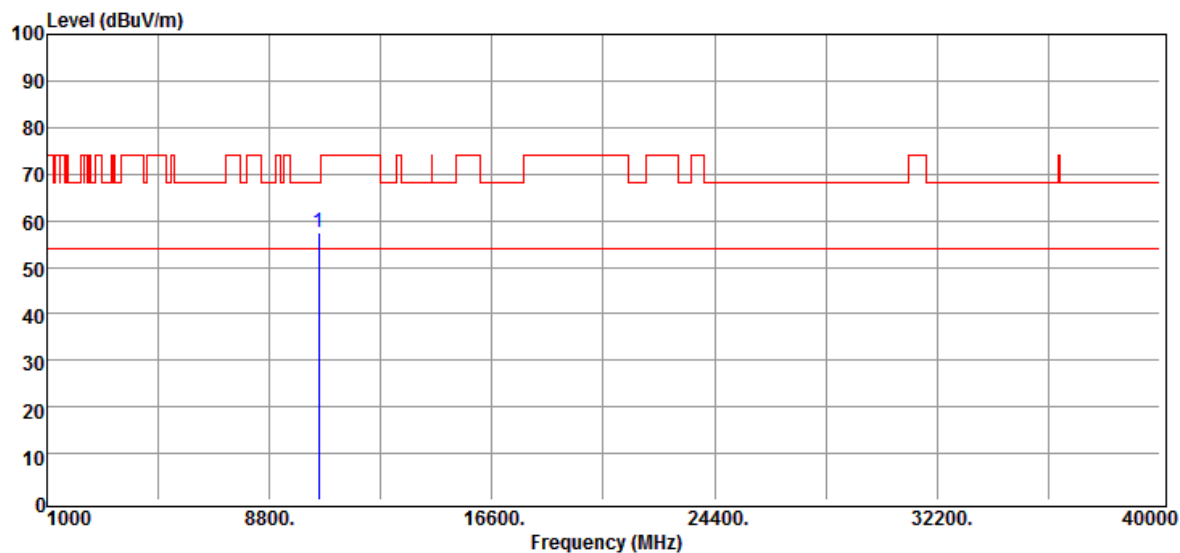
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Radiated Spurious Emission Measurement Result 802.11a, 5250MHz-5350MHz

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



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

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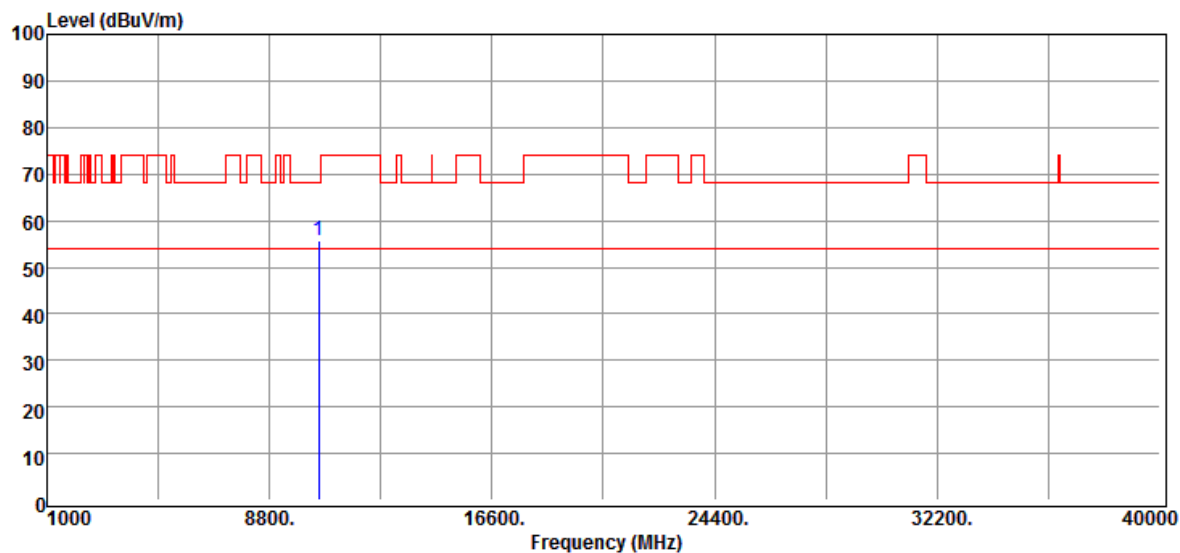
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Operation Mode	:802.11a/Band 2	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5260 MHz	Engineer	:Ashton



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

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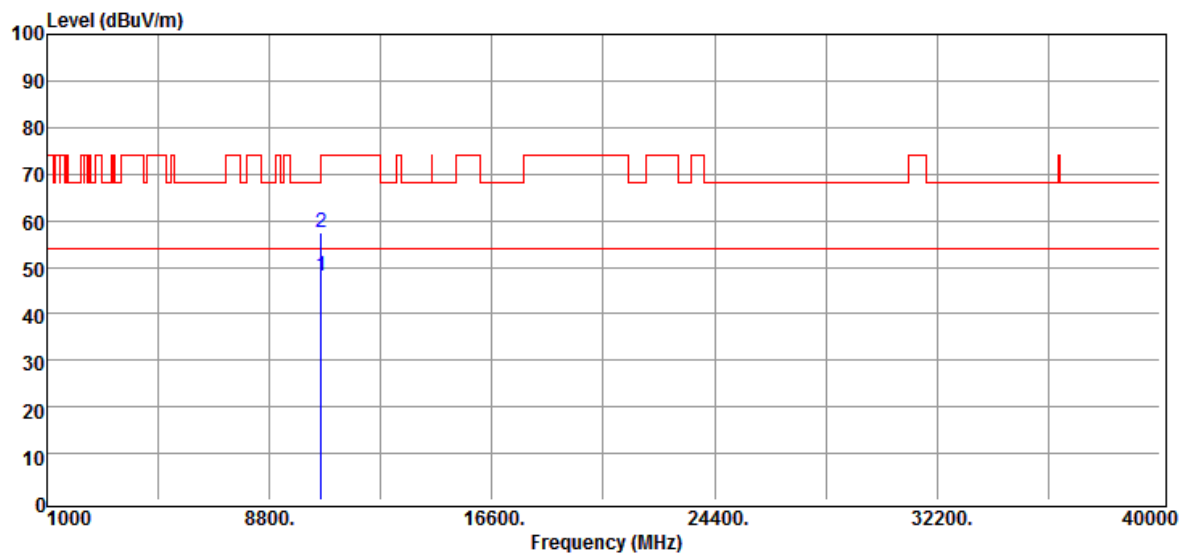
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Operation Mode	:802.11a/Band 2	Test Date	:2018-08-08
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5300 MHz	Engineer	:Ashton



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

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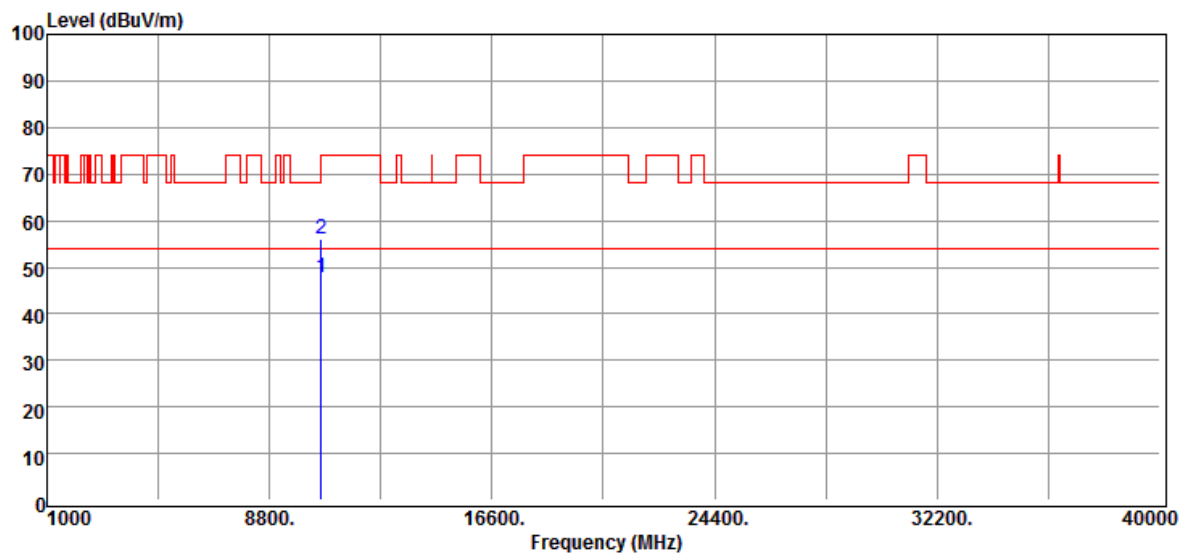
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Operation Mode	:802.11a/Band 2	Test Date	:2018-08-08
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5300 MHz	Engineer	:Ashton



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

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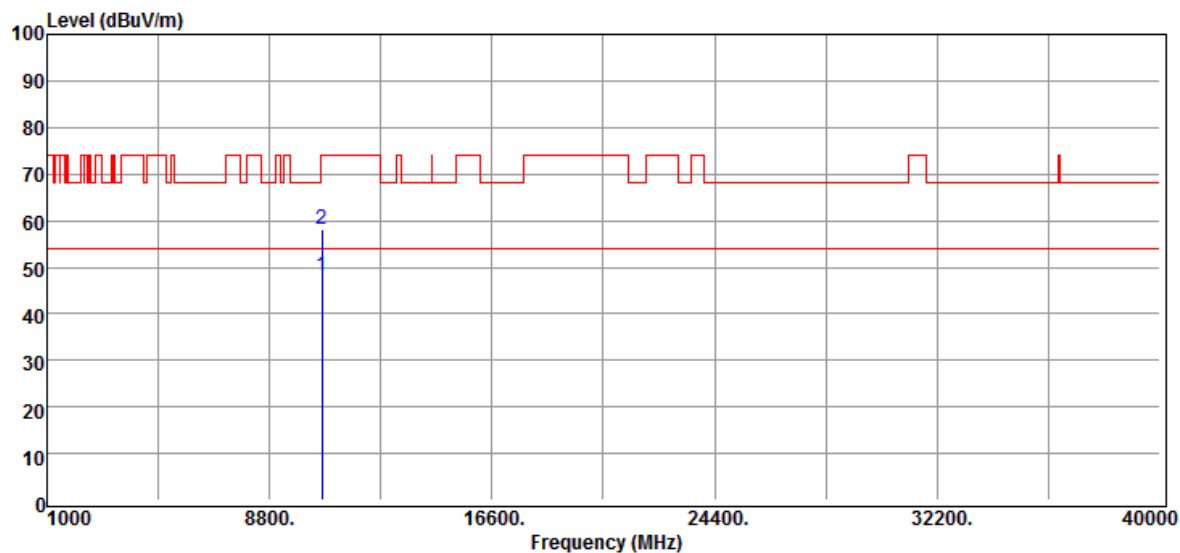
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Operation Mode	:802.11a/Band 2	Test Date	:2018-08-08
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5320 MHz	Engineer	:Ashton



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

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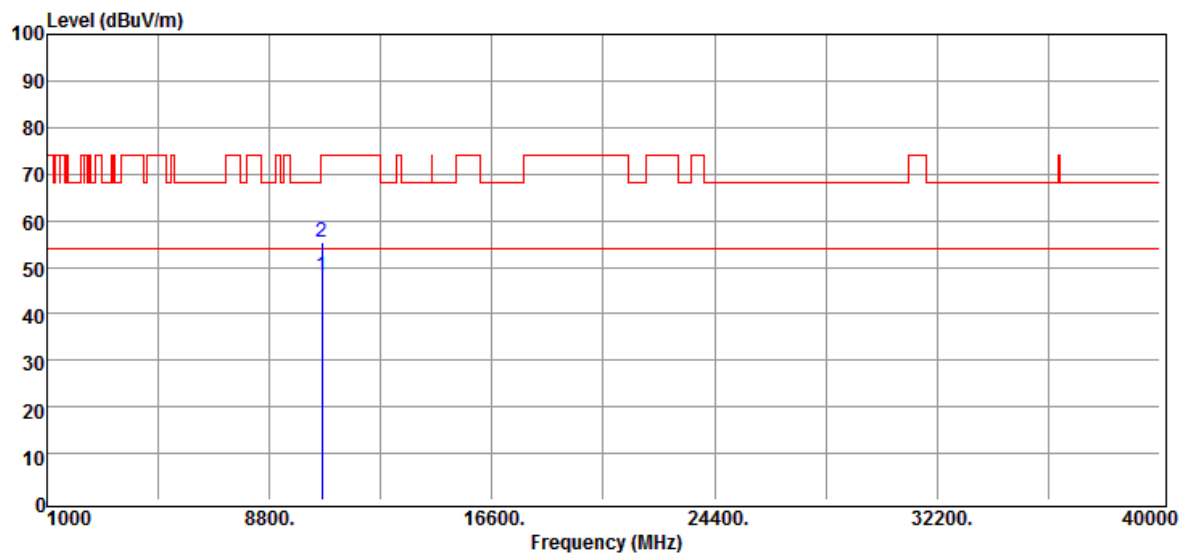
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Operation Mode	:802.11a/Band 2	Test Date	:2018-08-08
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5320 MHz	Engineer	:Ashton



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

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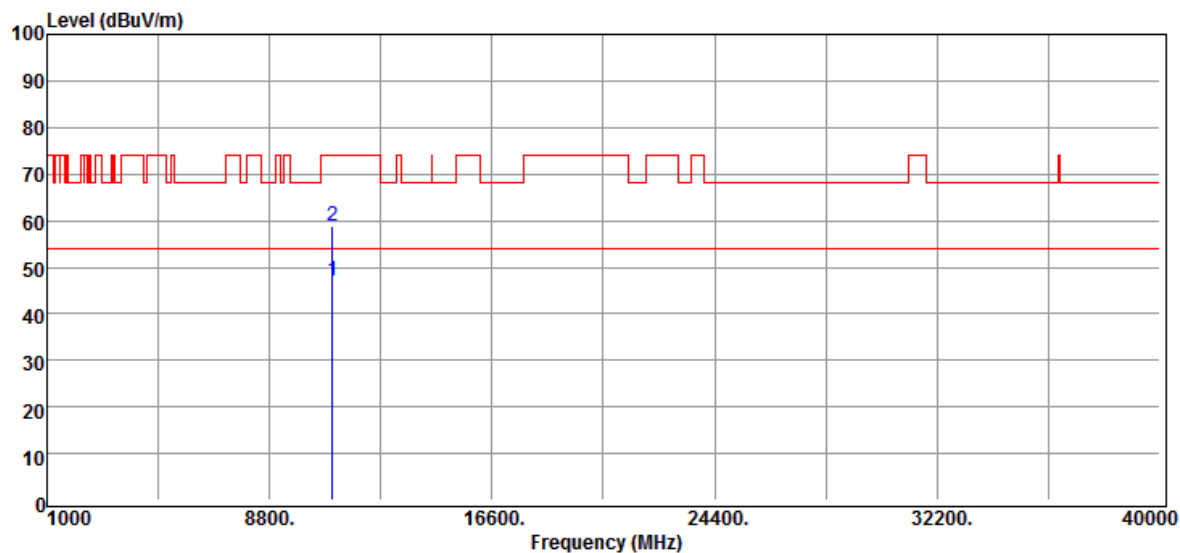
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Radiated Spurious Emission Measurement Result 802.11a, 5470~5725 MHz

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



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

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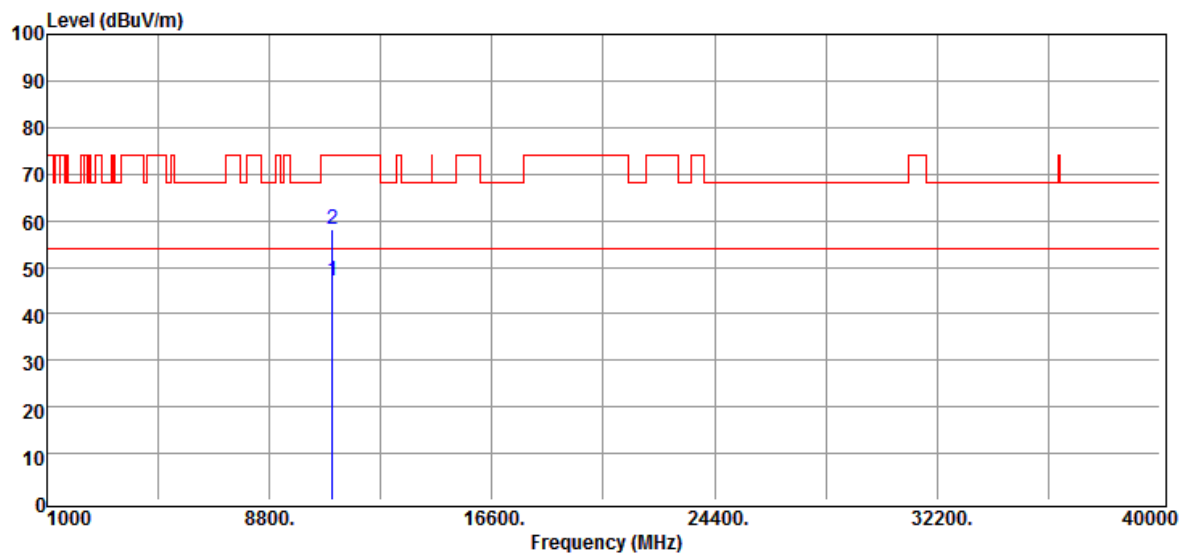
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Operation Mode	:802.11a / Band 3	Test Date	:2018-08-08
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5500 MHz	Engineer	:Enzo



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

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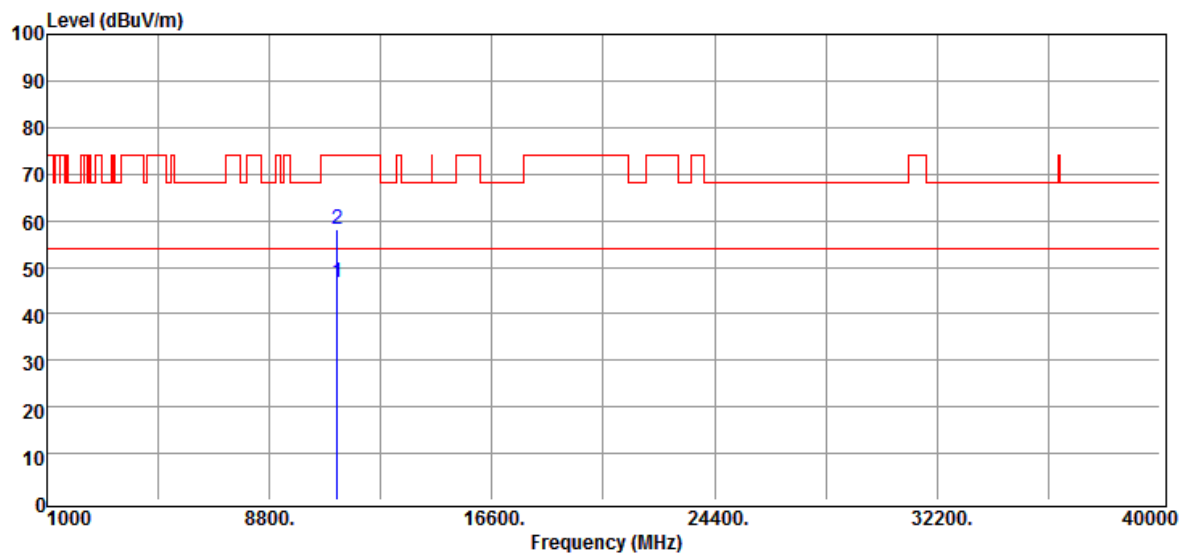
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Operation Mode :802.11a / Band 3
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5580 MHz

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



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

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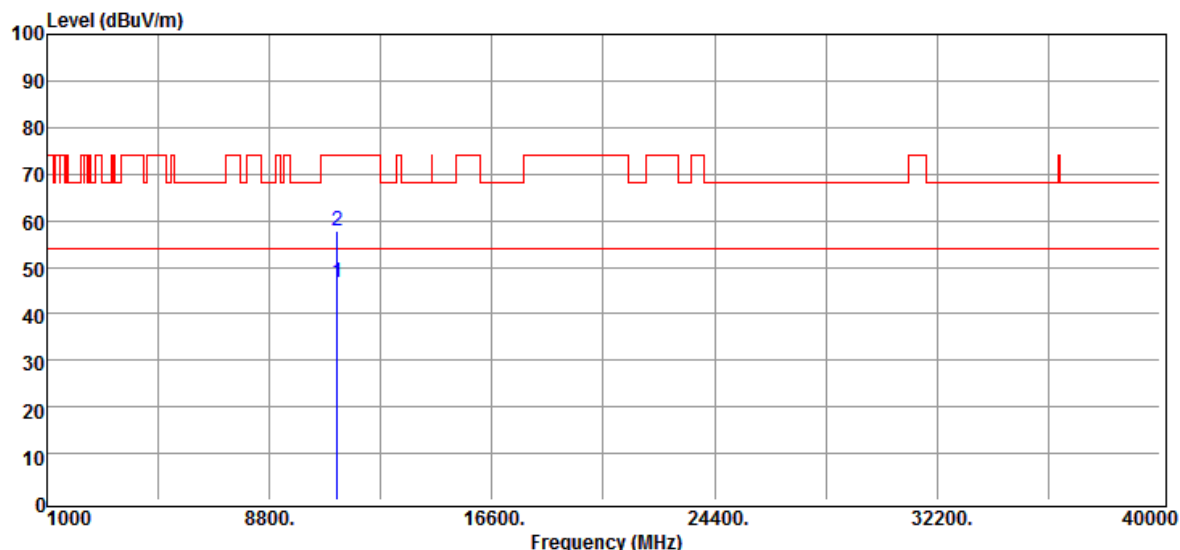
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Operation Mode :802.11a / Band 3
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5580 MHz

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



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

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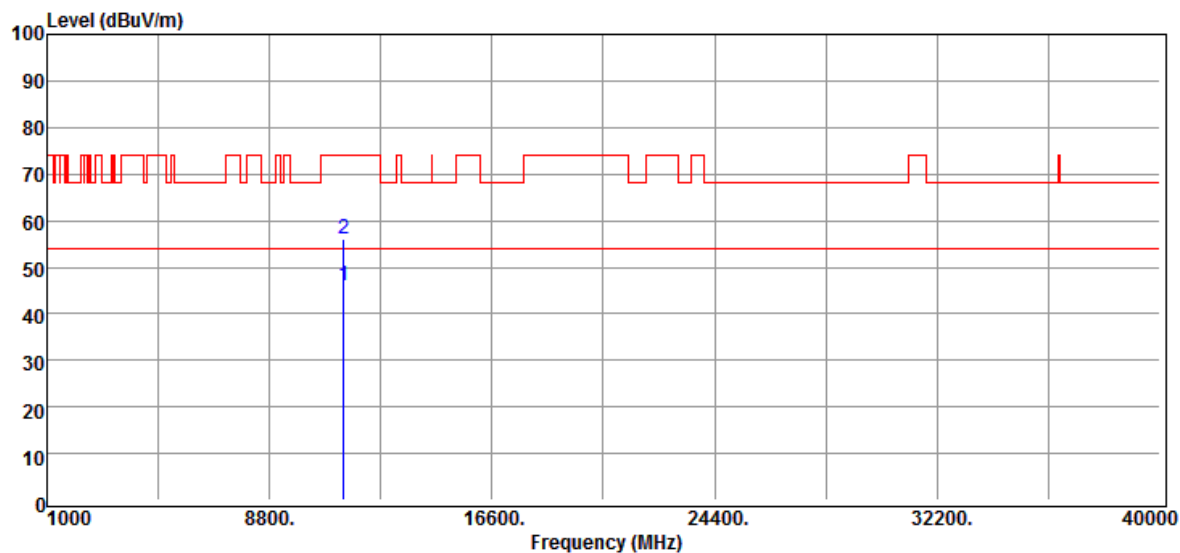
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Operation Mode	:802.11a / Band 3	Test Date	:2018-08-08
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:5700 MHz	Engineer	:Enzo



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

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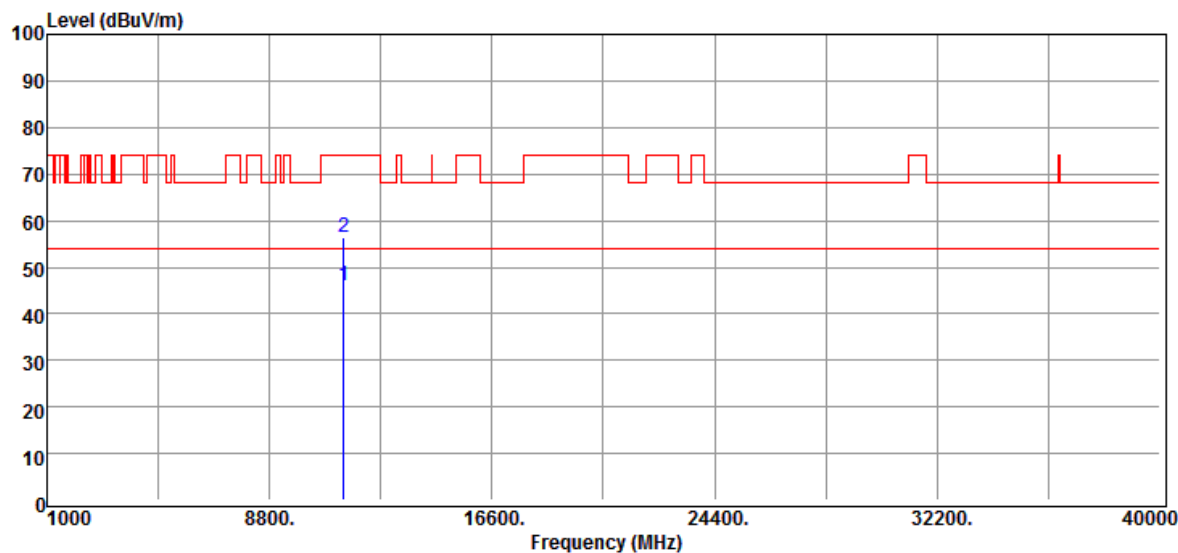
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Operation Mode :802.11a / Band 3
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5700 MHz

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



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

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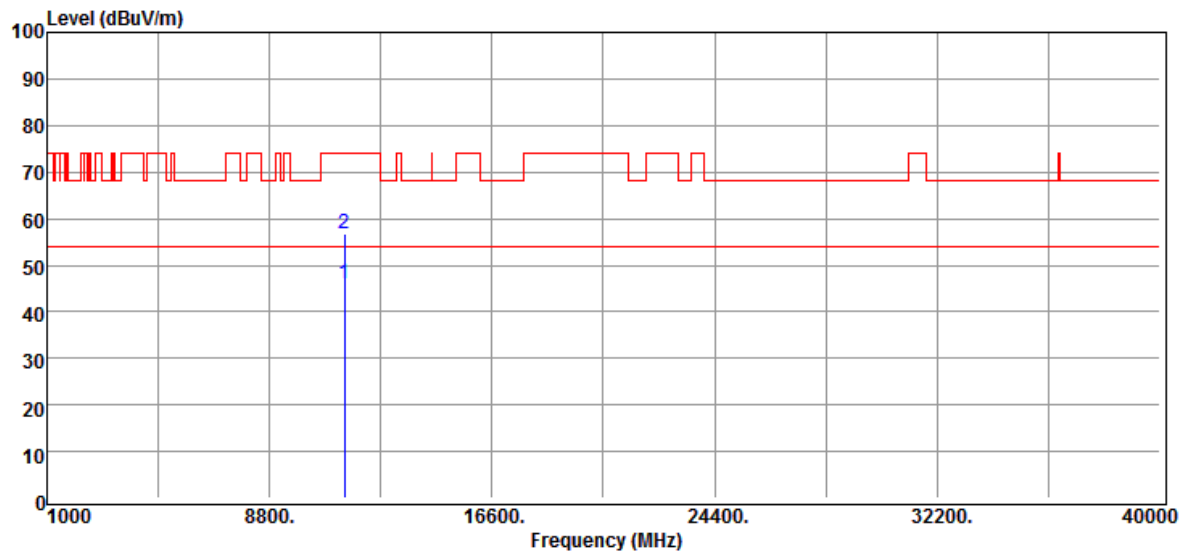
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Radiated Spurious Emission Measurement Result 802.11a, 5725~5850 MHz

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



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

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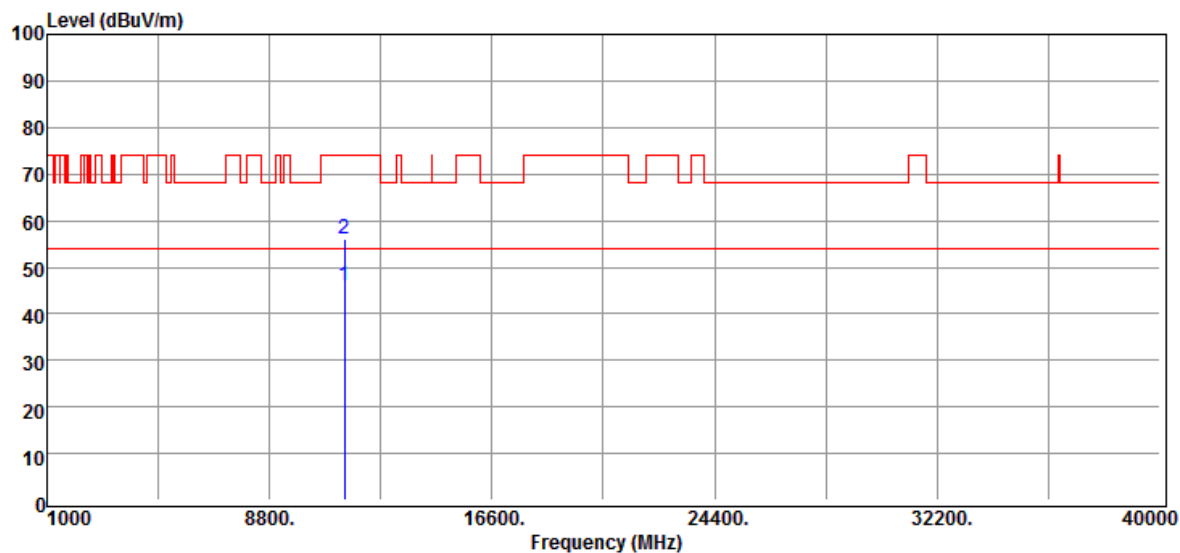
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Operation Mode :802.11a / Band 3/4
 Test Mode :TX CH 144
 EUT Pol :H Plan
 Test Channel :5720 MHz

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



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

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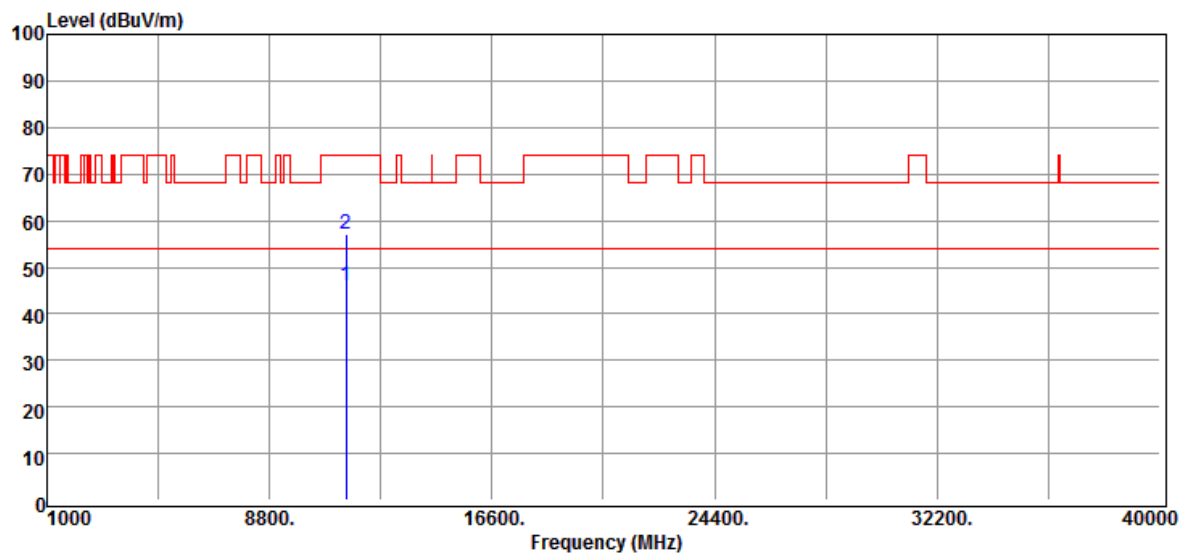
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Operation Mode :802.11a / Band 4
 Test Mode :TX CH LOW
 EUT Pol :H Plan
 Test Channel :5745 MHz

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



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

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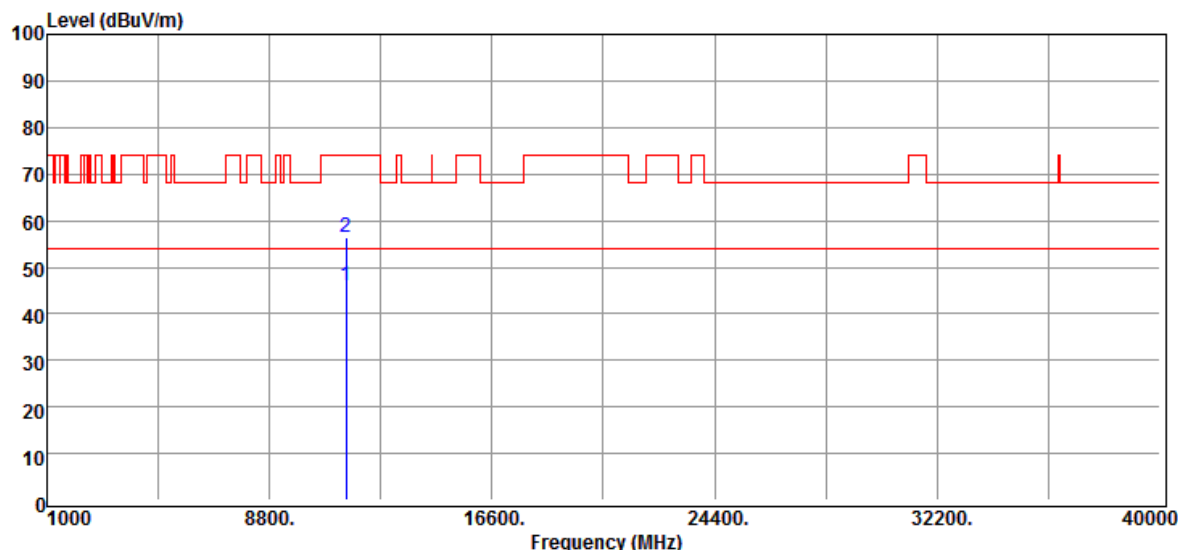
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Operation Mode :802.11a / Band 4
 Test Mode :TX CH LOW
 EUT Pol :H Plan
 Test Channel :5745 MHz

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



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

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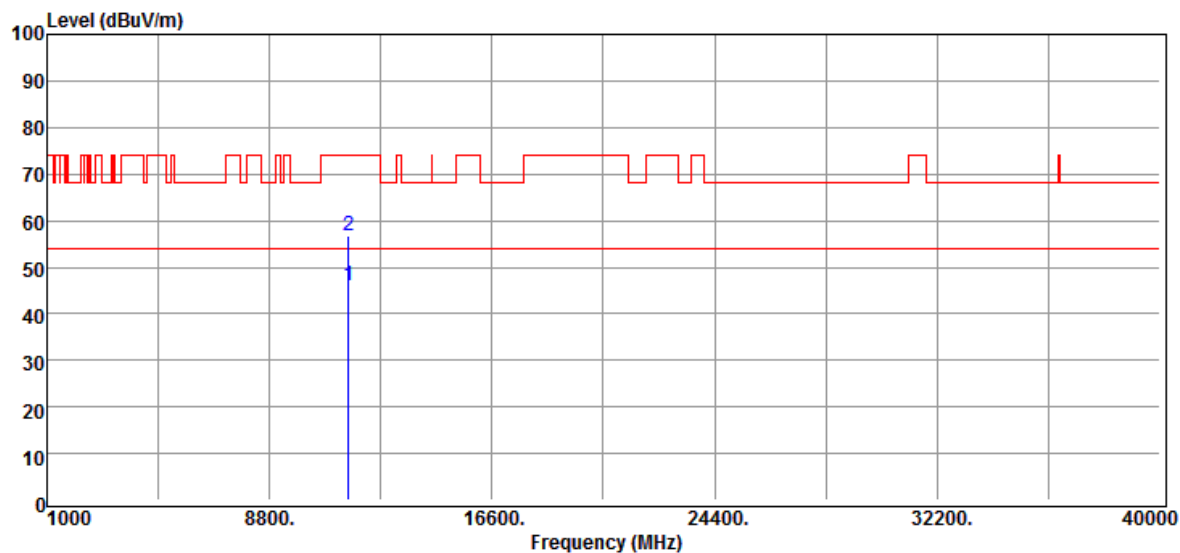
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Operation Mode :802.11a / Band 4
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5785 MHz

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



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

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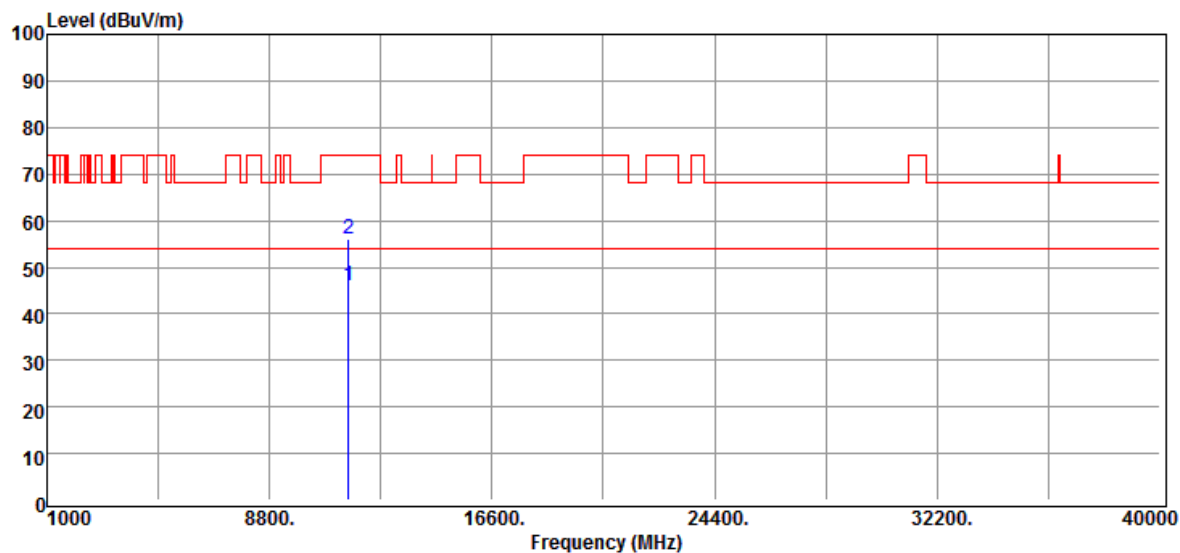
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Operation Mode :802.11a / Band 4
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5785 MHz

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



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

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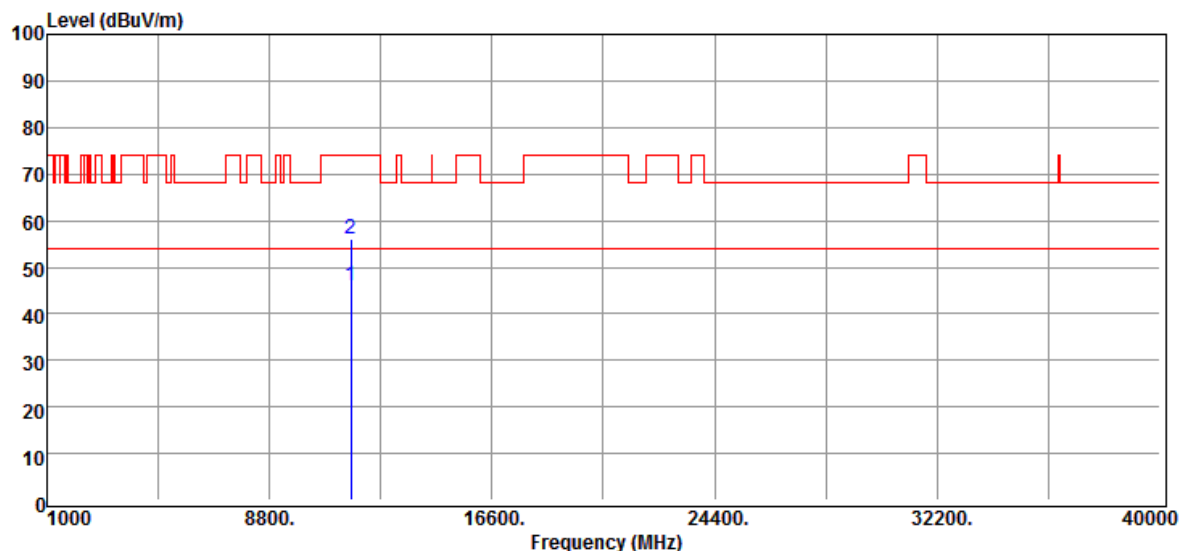
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Operation Mode :802.11a / Band 4
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5825 MHz

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



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

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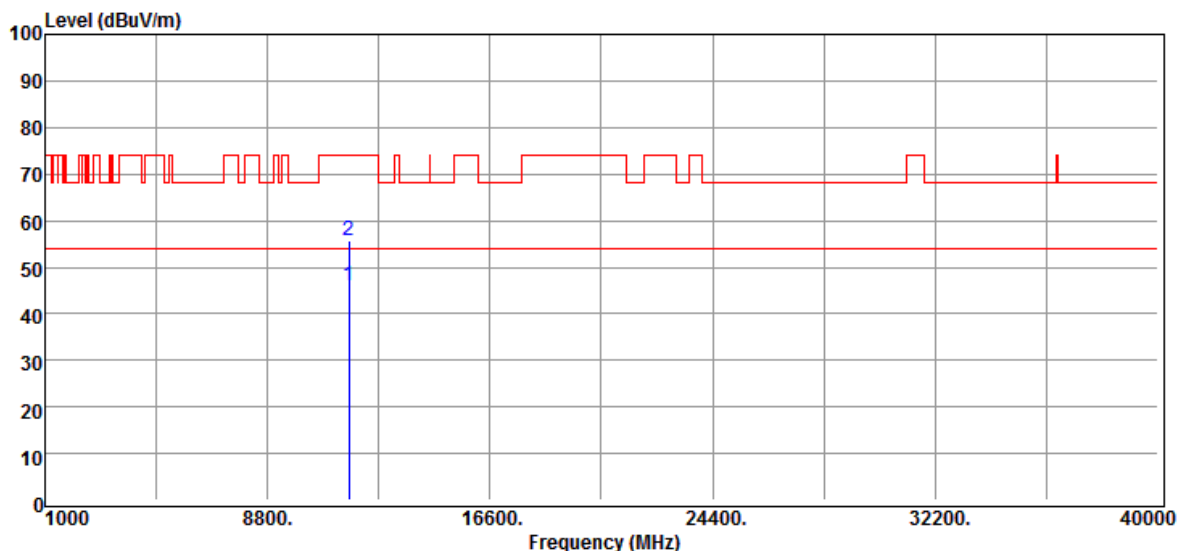
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Operation Mode :802.11a / Band 4
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5825 MHz

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



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

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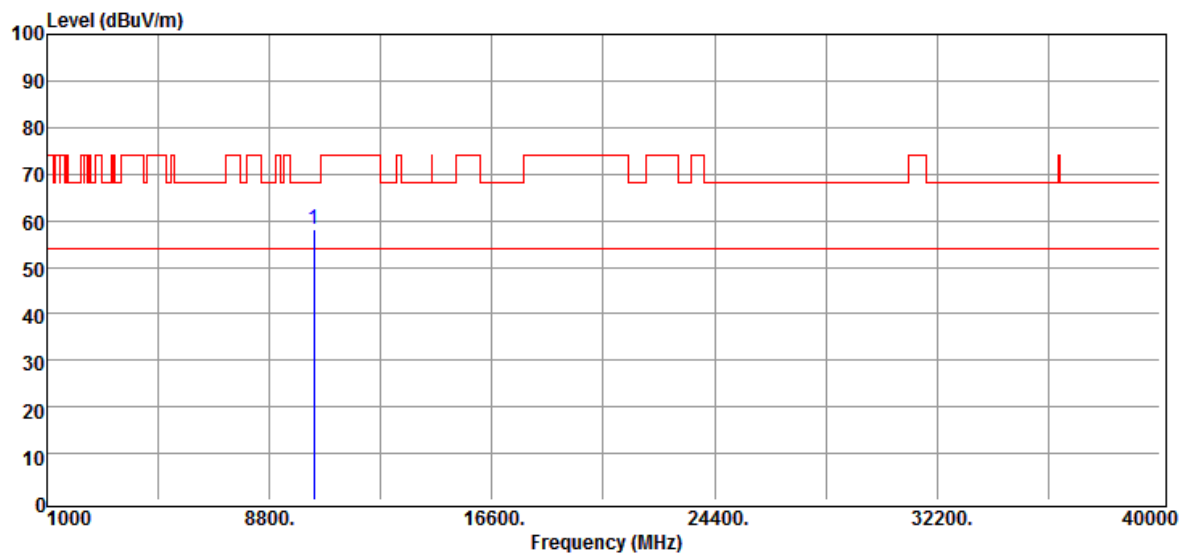
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Radiated Spurious Emission Measurement Result 802.11n HT20, 5150~5250 MHz

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



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

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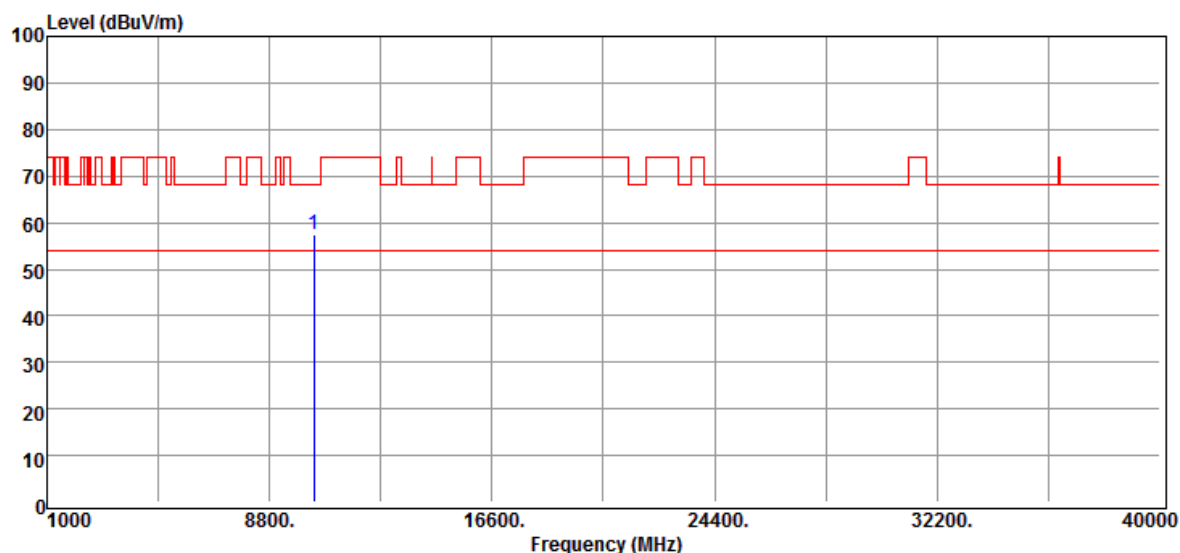
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Operation Mode :802.11n20 / Band 1
 Test Mode :TX CH LOW
 EUT Pol :H Plan
 Test Channel :5180 MHz

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



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

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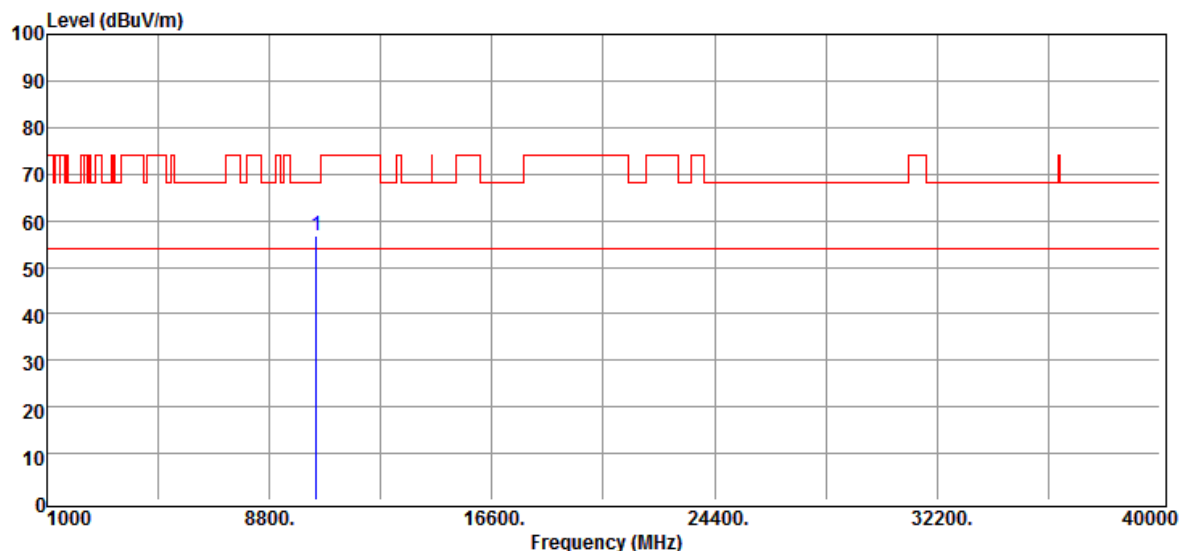
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Operation Mode :802.11n20 / Band 1
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5220 MHz

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



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

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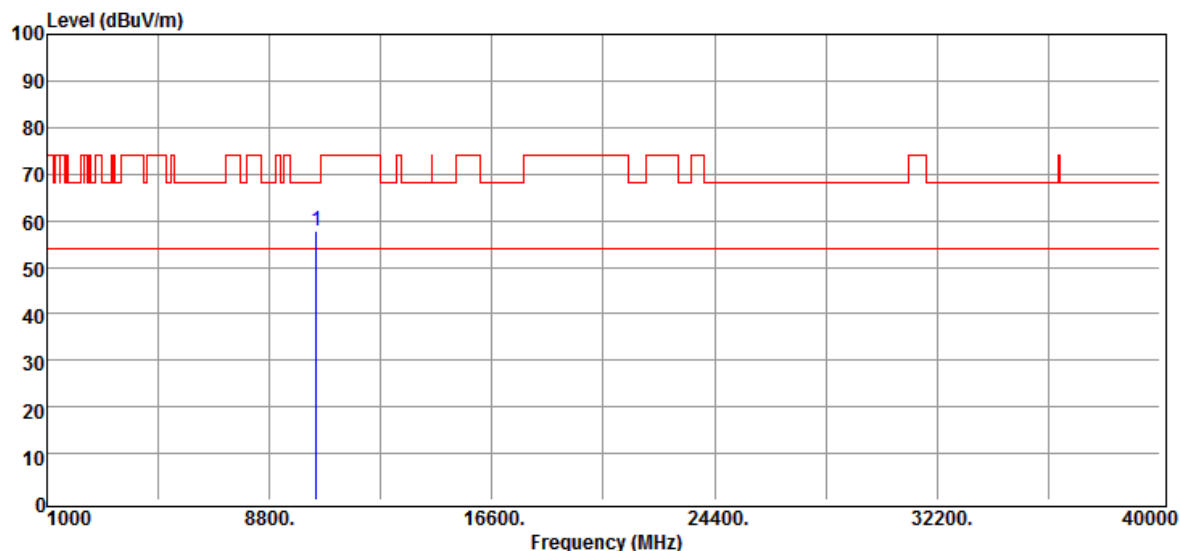
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Member of SGS Group

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

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



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

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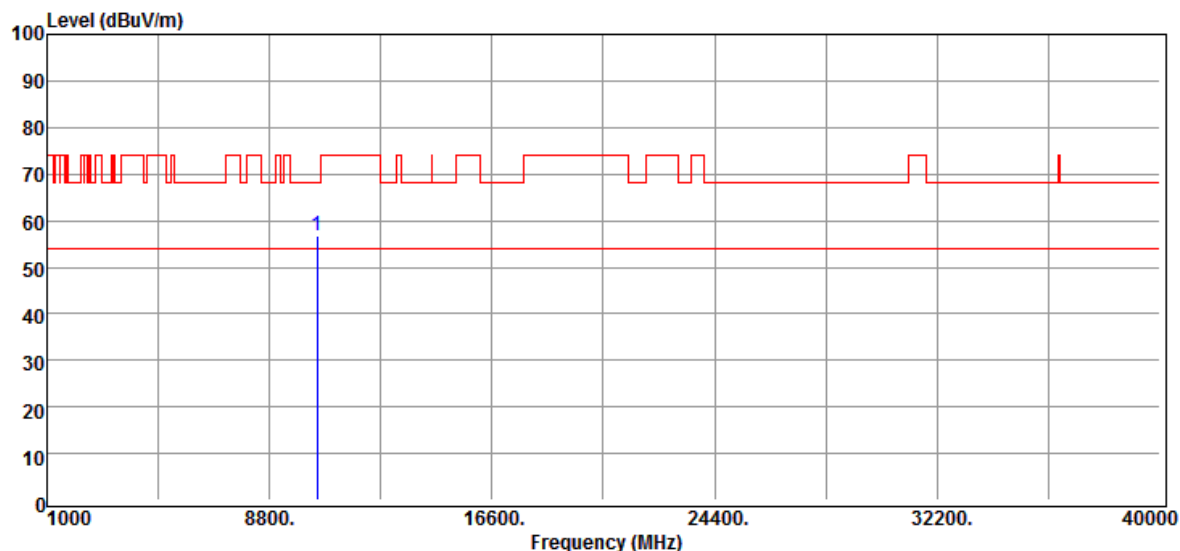
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www.tw.sgs.com

Member of SGS Group

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

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



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

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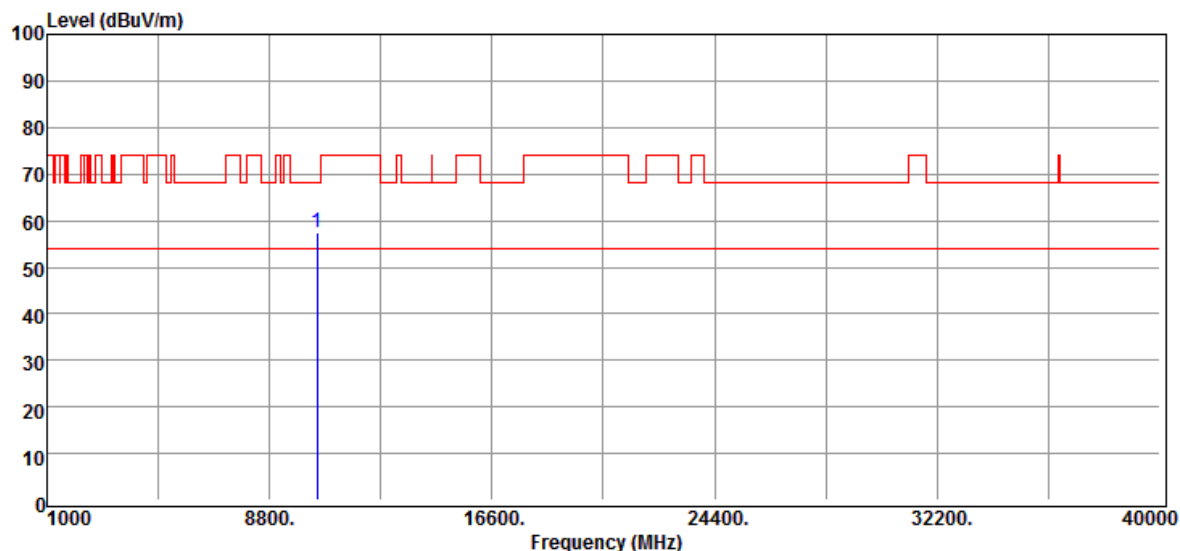
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Operation Mode :802.11n20 / Band 1
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5240 MHz

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



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

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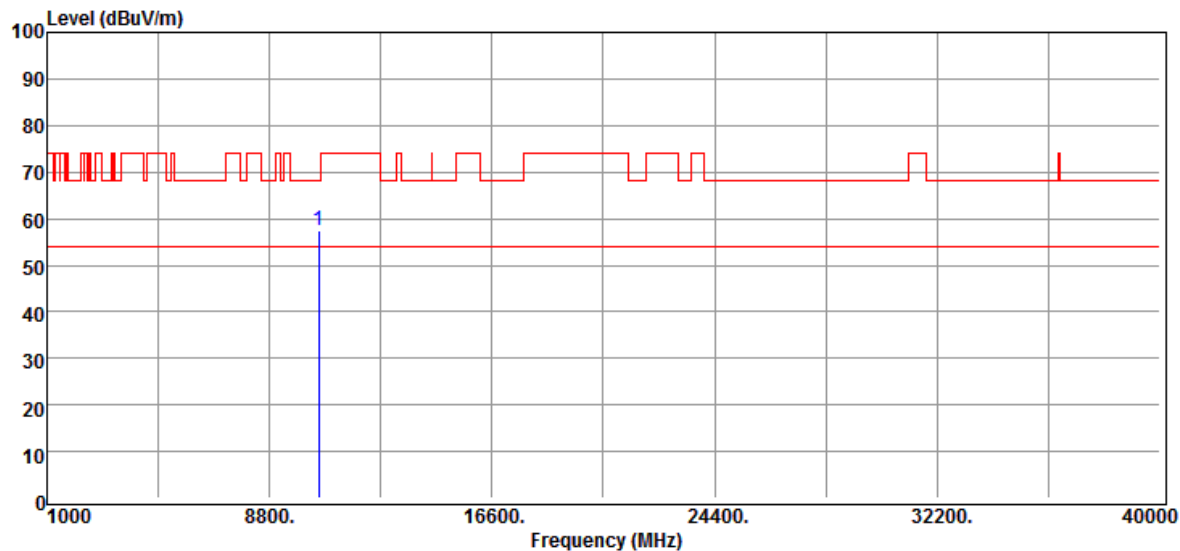
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Radiated Spurious Emission Measurement Result 802.11n HT20, 5250~5350 MHz

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



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

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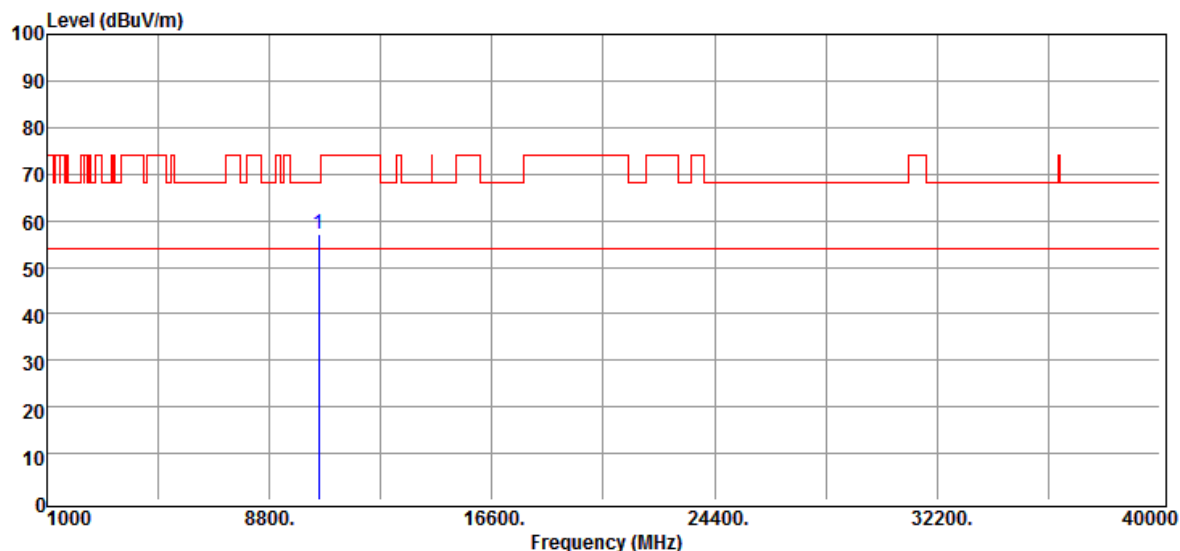
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Operation Mode :802.11n20 / Band 2
 Test Mode :TX CH LOW
 EUT Pol :H Plan
 Test Channel :5260 MHz

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



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

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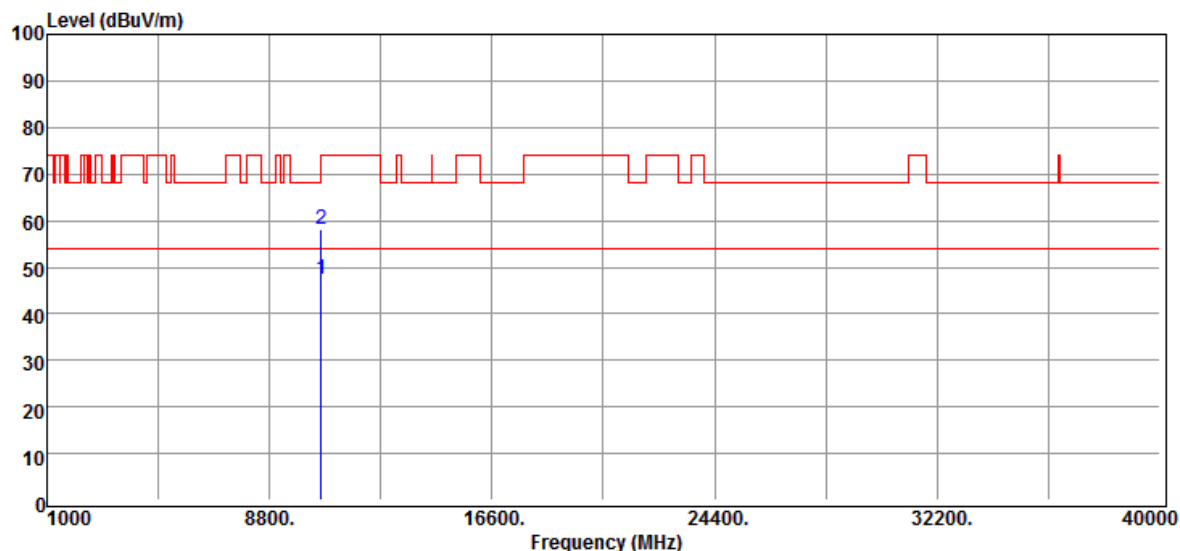
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Operation Mode :802.11n20 / Band 2
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5300 MHz

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



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

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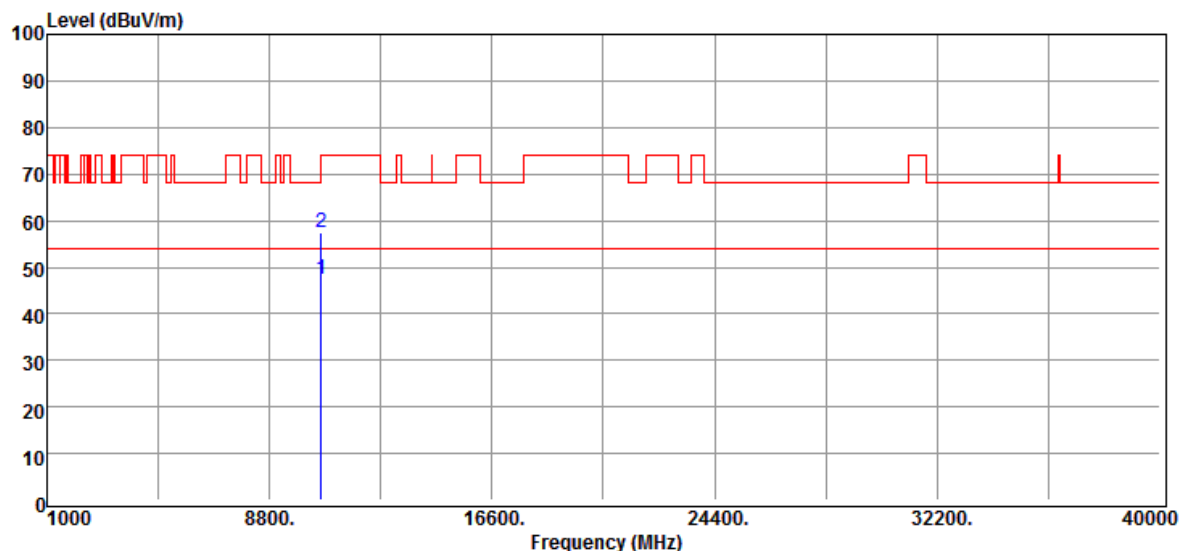
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Operation Mode :802.11n20 / Band 2
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5300 MHz

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



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

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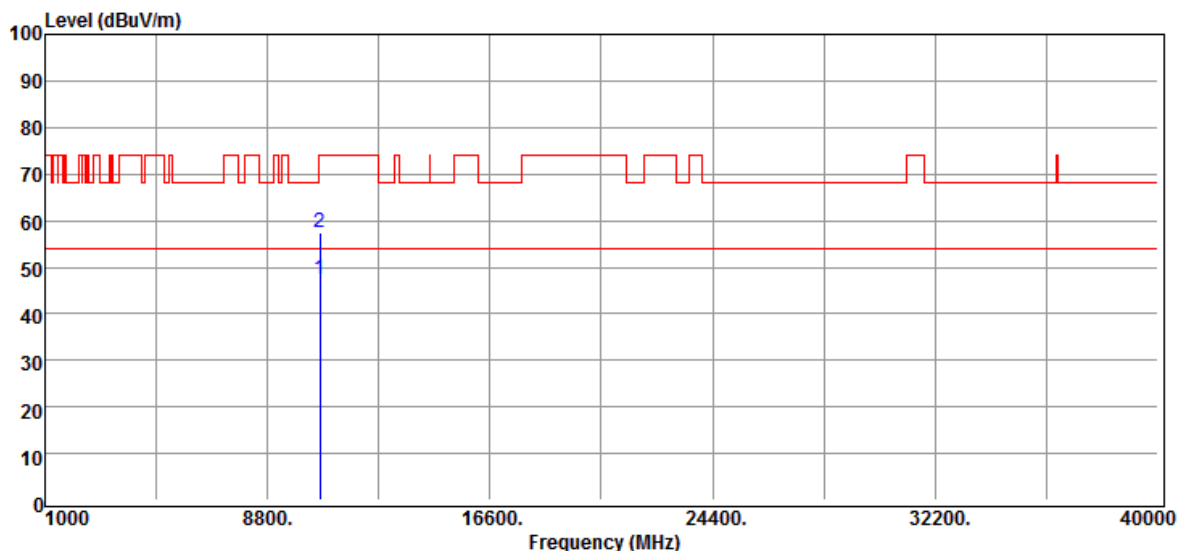
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Operation Mode :802.11n20 / Band 2
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5320 MHz

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



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

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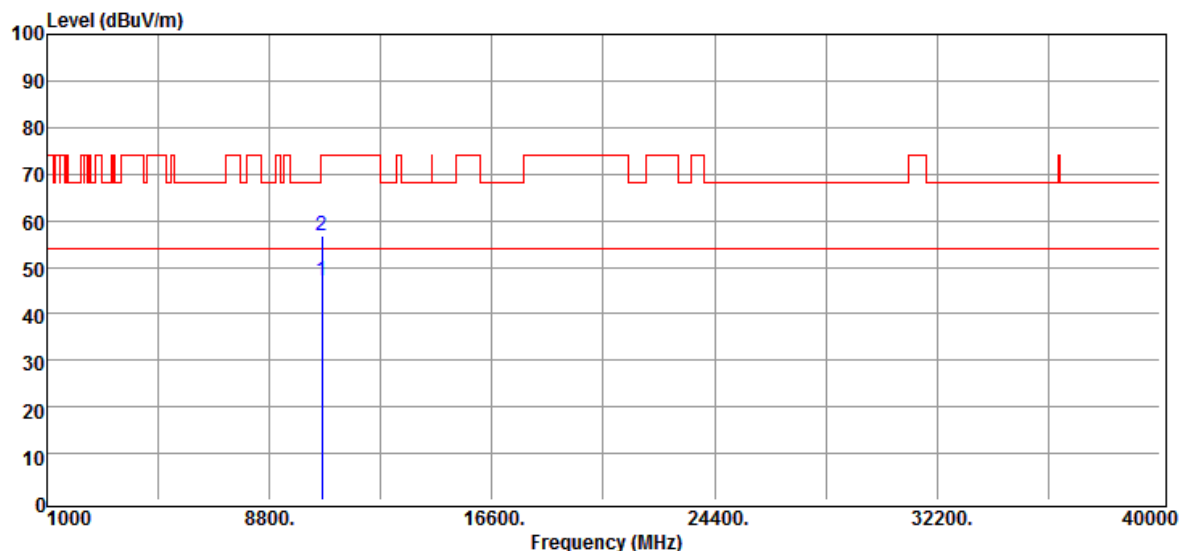
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Operation Mode :802.11n20 / Band 2
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5320 MHz

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



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

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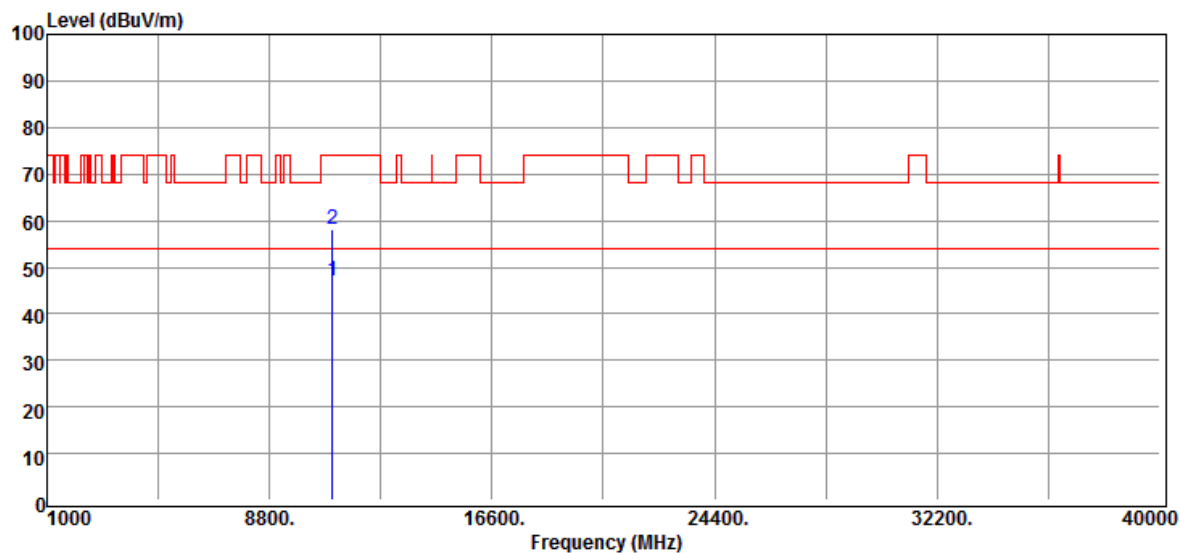
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Radiated Spurious Emission Measurement Result 802.11n HT20, 5470~5725 MHz

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



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

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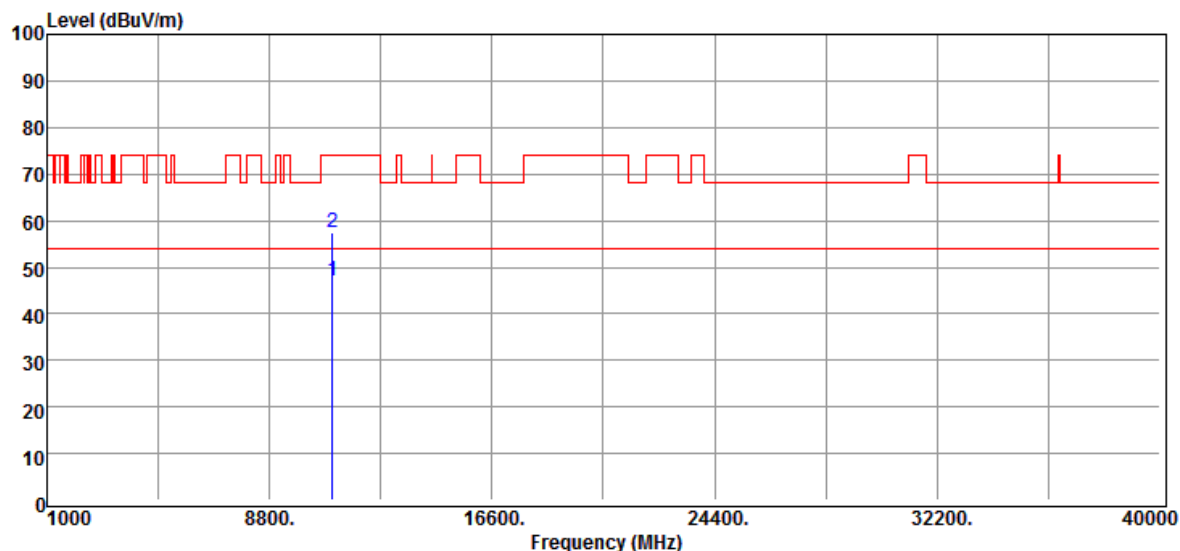
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Operation Mode :802.11n20 / Band 3
 Test Mode :TX CH LOW
 EUT Pol :H Plan
 Test Channel :5500 MHz

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



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

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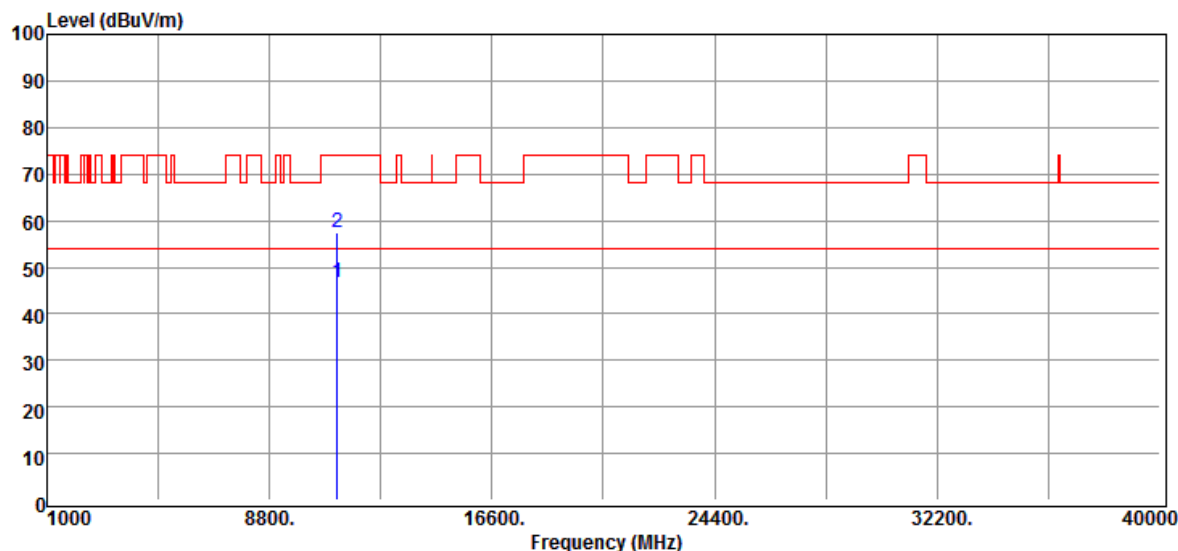
f (886-2) 2298-0488

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

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



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

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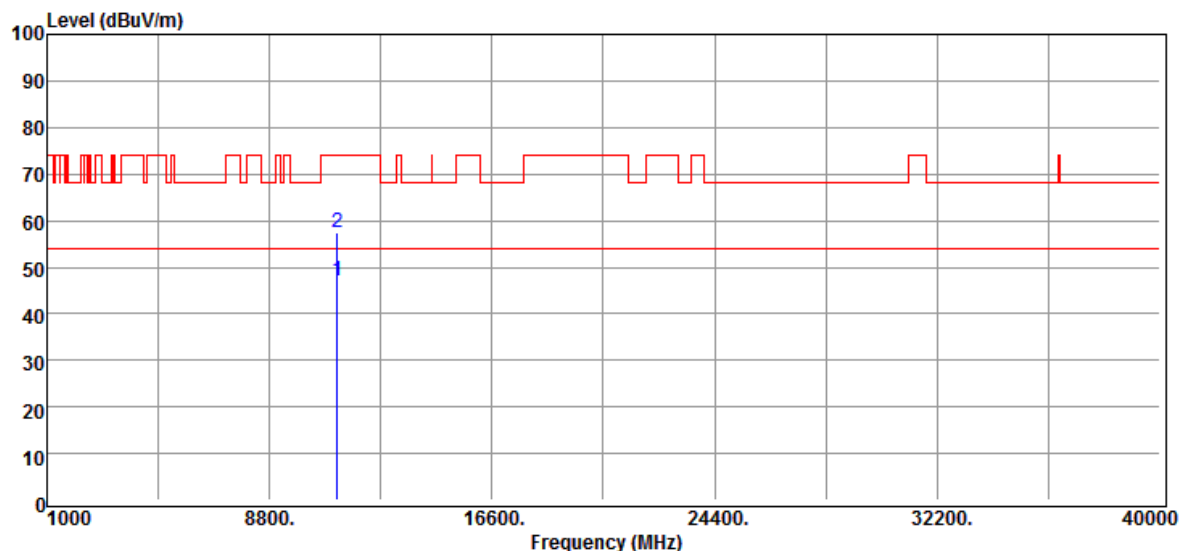
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Member of SGS Group

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

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



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

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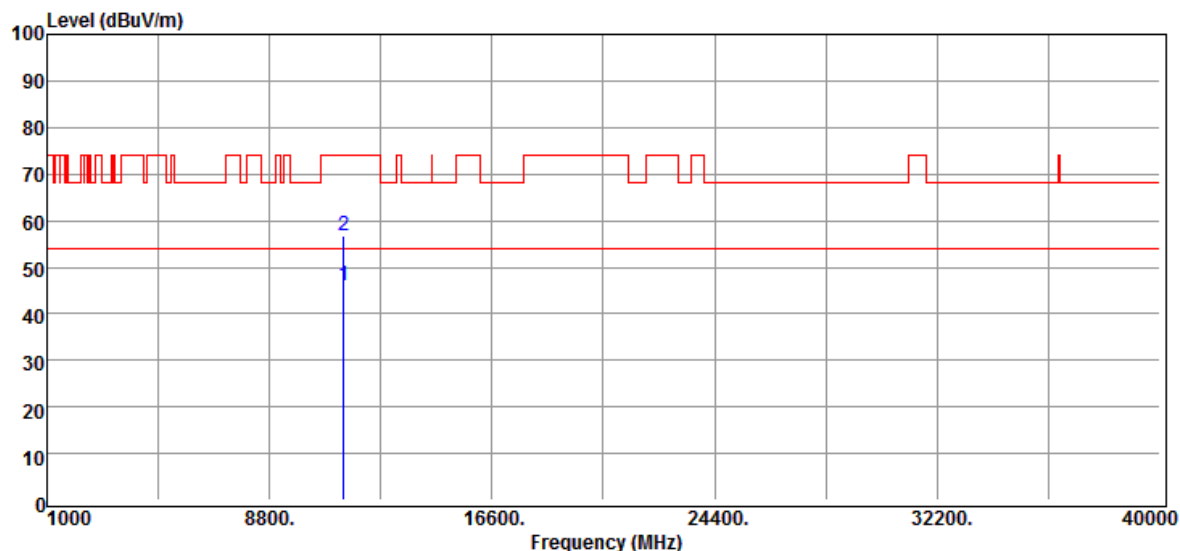
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Member of SGS Group

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

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



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

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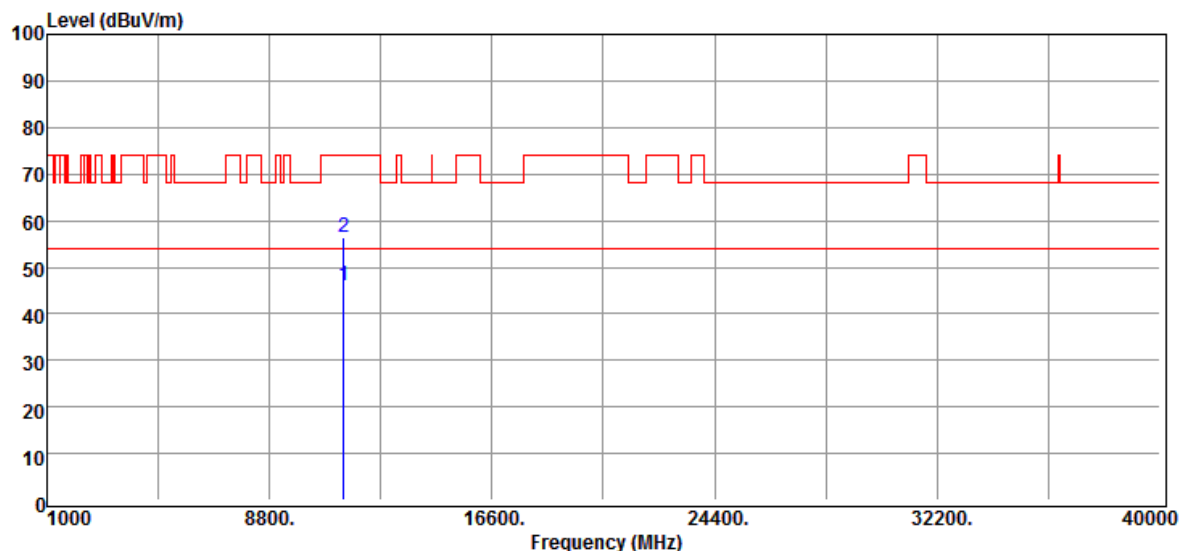
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Operation Mode :802.11n20 / Band 3
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5700 MHz

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



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

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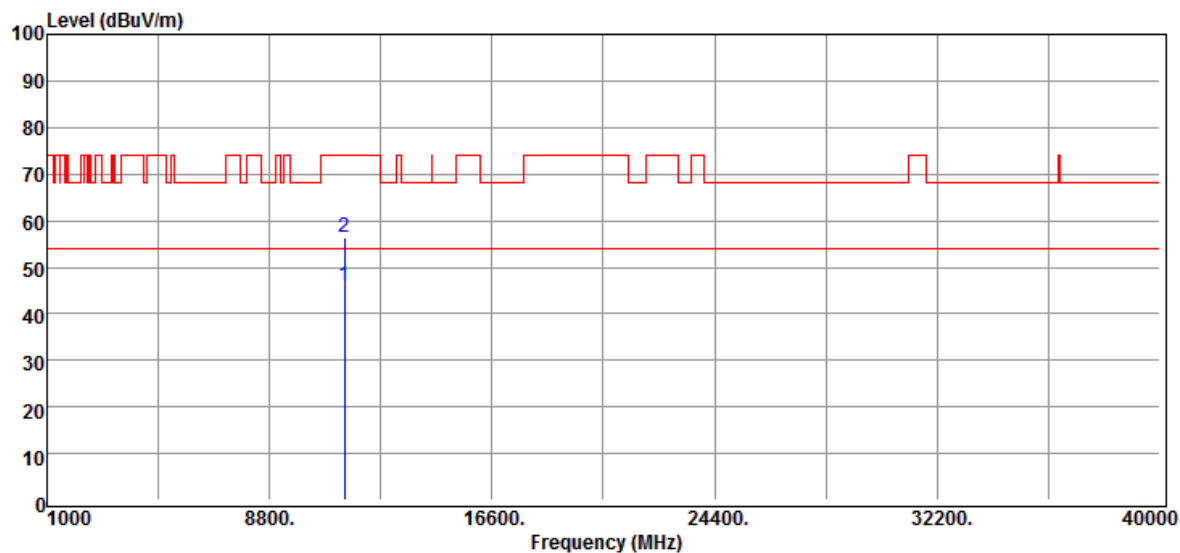
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Radiated Spurious Emission Measurement Result 802.11n HT20, 5725~5850 MHz

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



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

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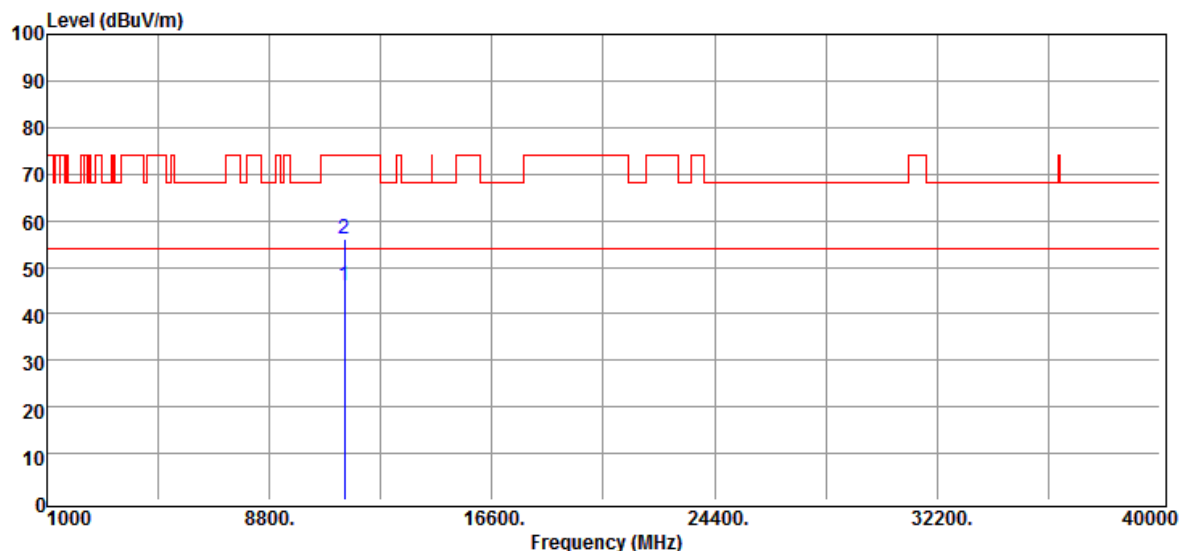
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Operation Mode :802.11n20 / Band 3/4
 Test Mode :TX CH 144
 EUT Pol :H Plan
 Test Channel :5720 MHz

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



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

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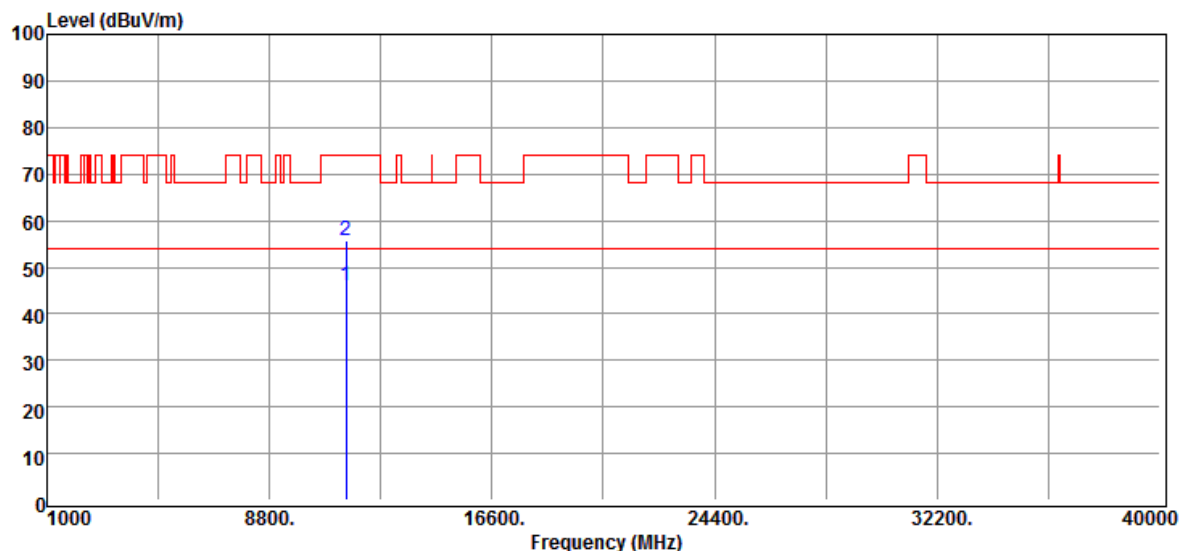
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Operation Mode :802.11n20 / Band 4
 Test Mode :TX CH LOW
 EUT Pol :H Plan
 Test Channel :5745 MHz

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



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

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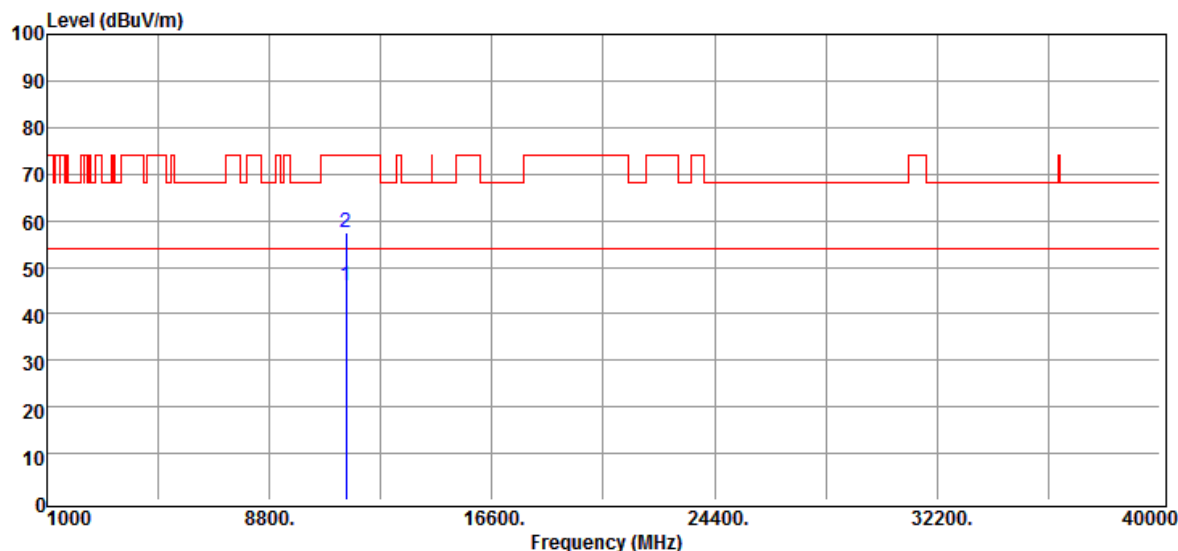
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Member of SGS Group

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

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



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

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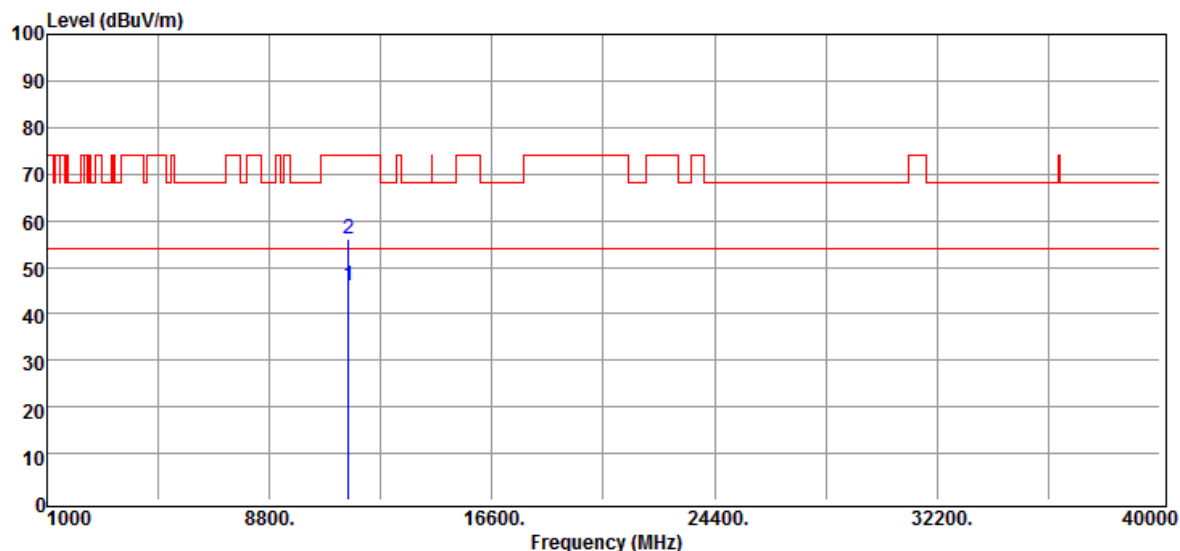
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Operation Mode :802.11n20 / Band 4
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5785 MHz

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



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

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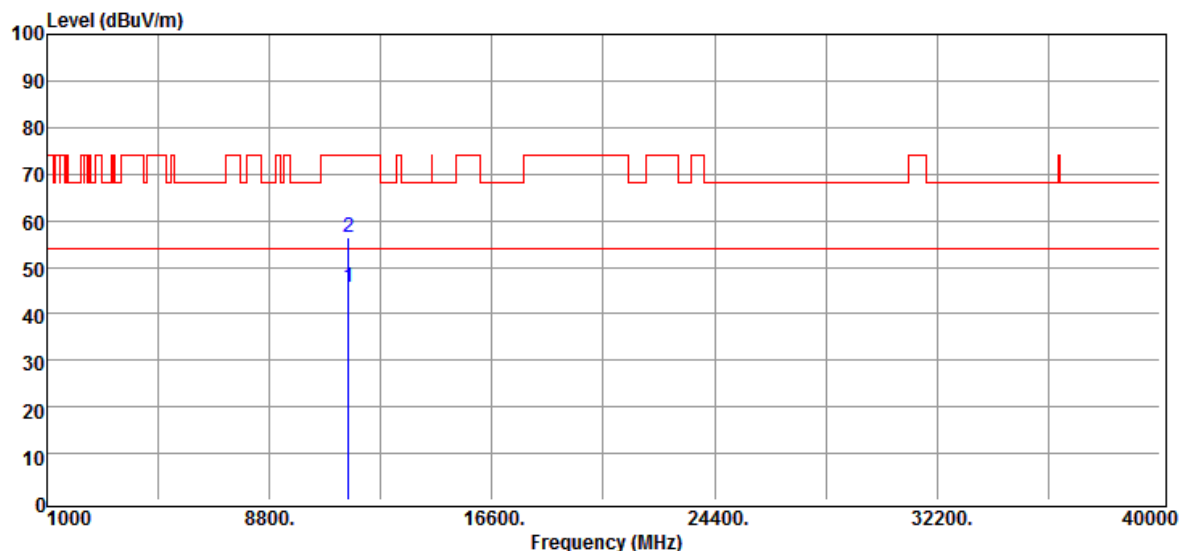
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Operation Mode :802.11n20 / Band 4
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5785 MHz

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



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

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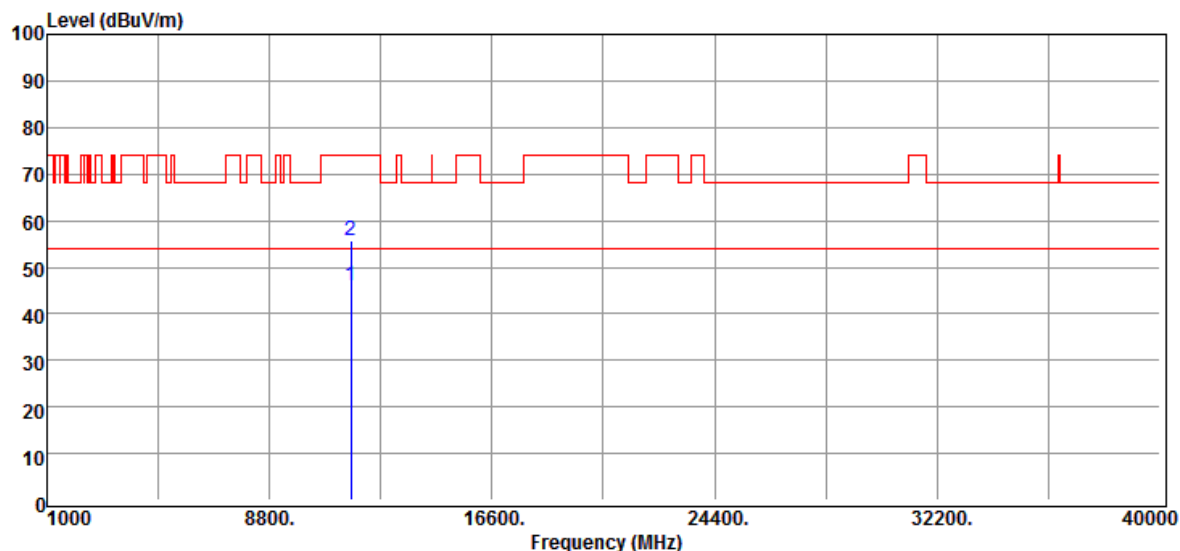
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Operation Mode :802.11n20 / Band 4
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5825 MHz

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



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

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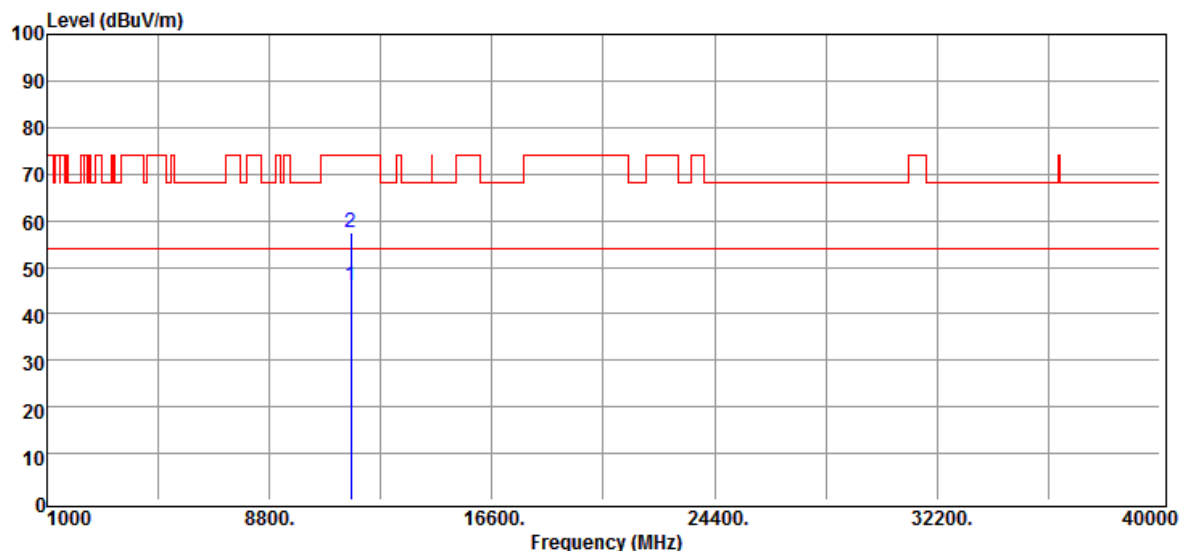
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Operation Mode :802.11n20 / Band 4
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5825 MHz

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



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

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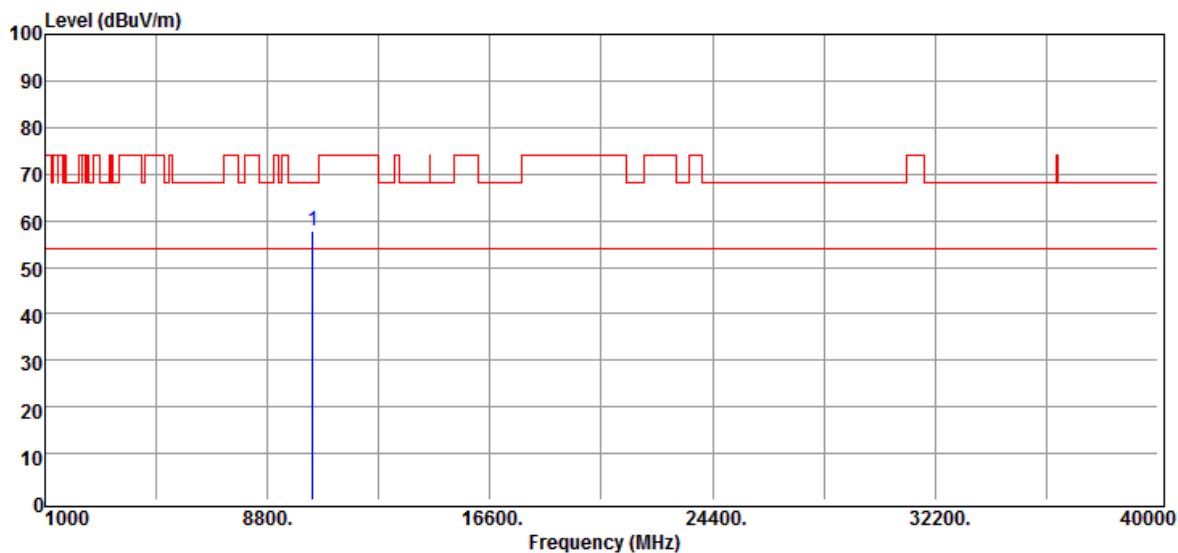
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Radiated Spurious Emission Measurement Result 802.11n HT40, 5150~5250 MHz

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



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

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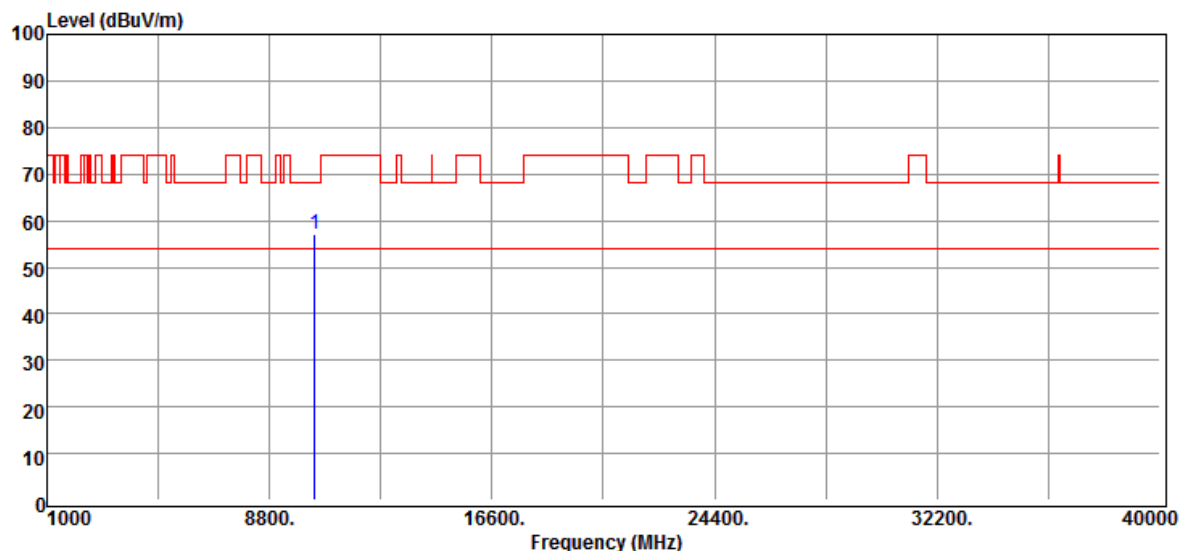
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Operation Mode :802.11n40 / Band 1
 Test Mode :TX CH LOW
 EUT Pol :H Plan
 Test Channel :5190 MHz

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



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

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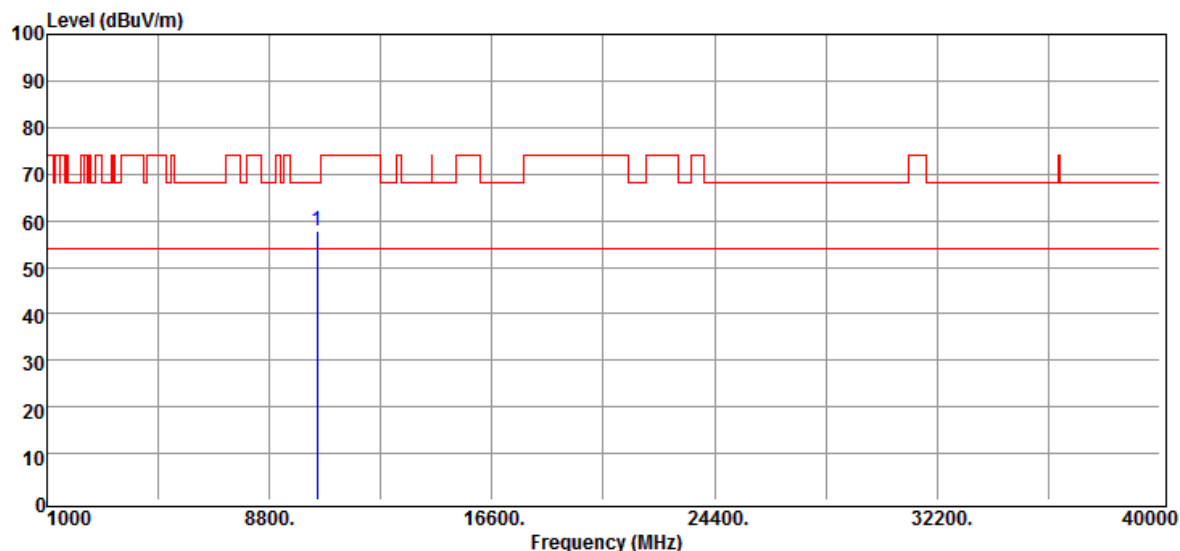
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Operation Mode :802.11n40 / Band 1
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5230 MHz

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



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

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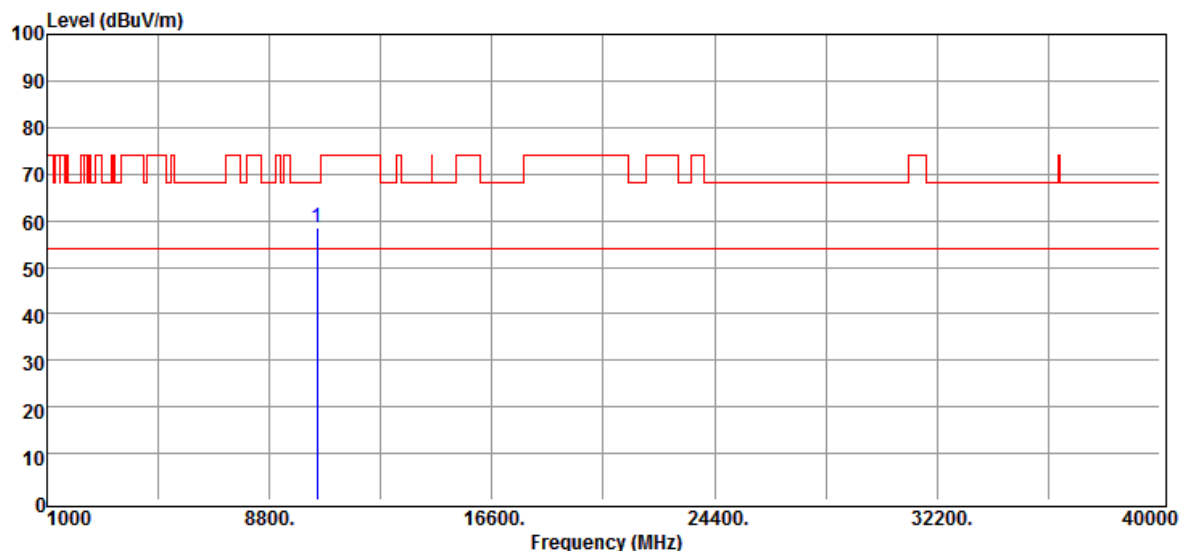
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Operation Mode :802.11n40 / Band 1
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5230 MHz

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



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

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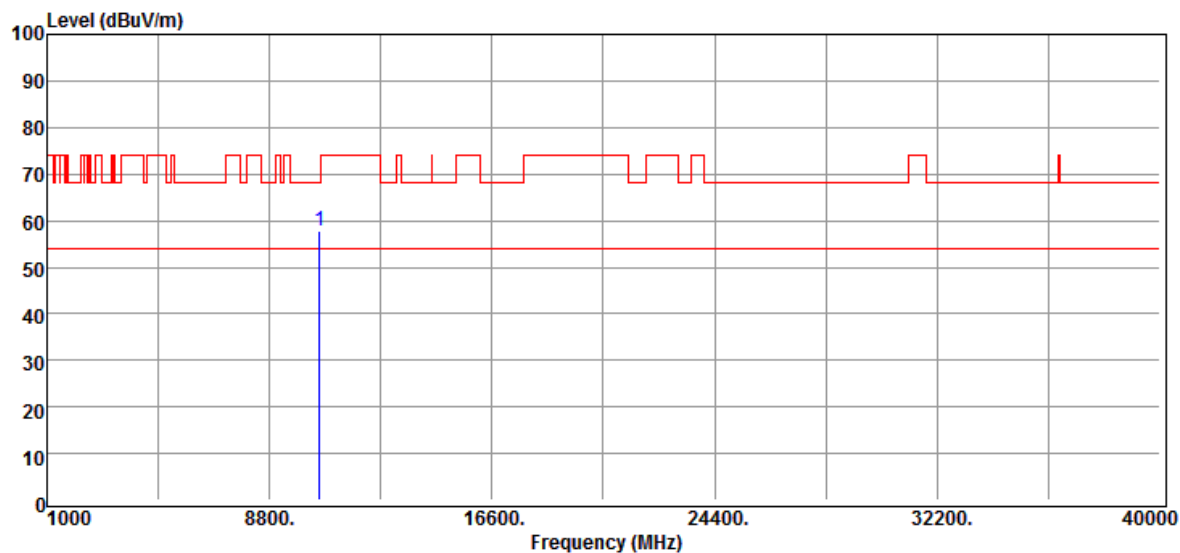
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Radiated Spurious Emission Measurement Result 802.11n HT40, 5250~5350 MHz

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



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

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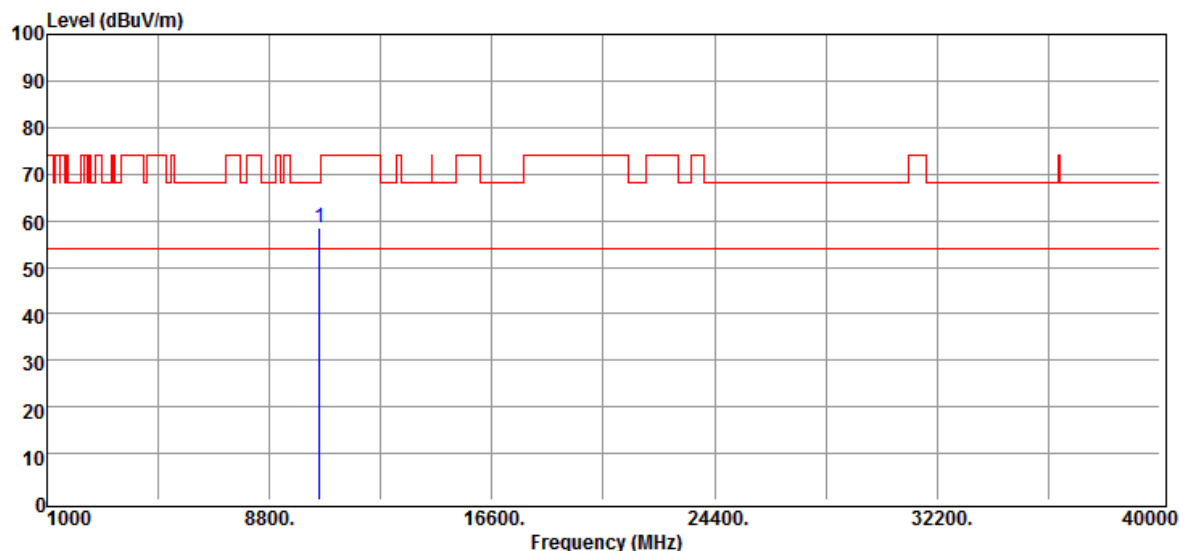
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Operation Mode :802.11n40 / Band 2
 Test Mode :TX CH LOW
 EUT Pol :H Plan
 Test Channel :5270 MHz

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



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

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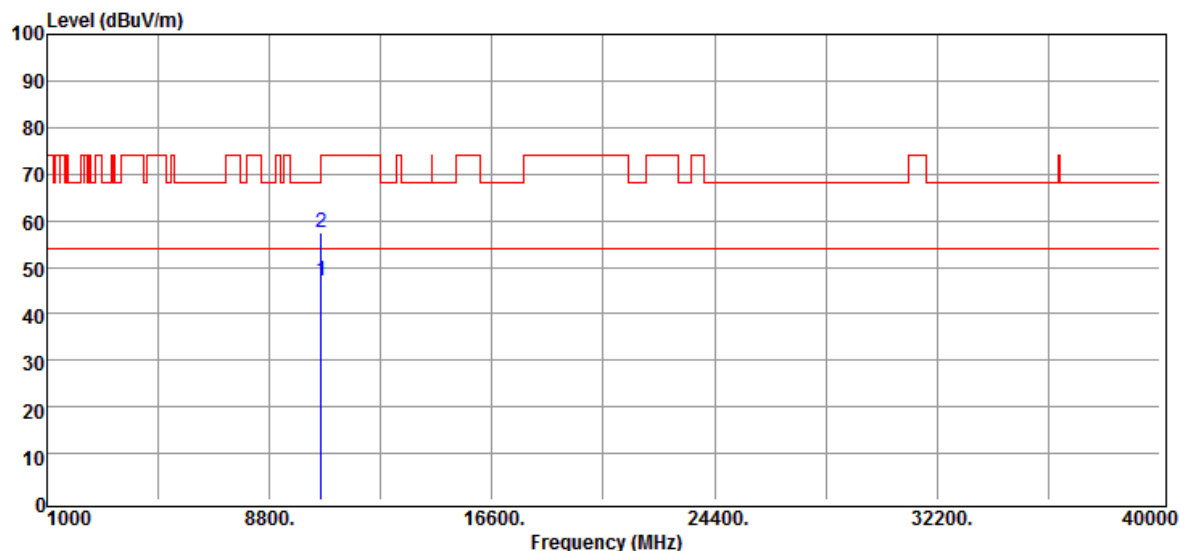
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Operation Mode :802.11n40 / Band 2
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5310 MHz

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



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

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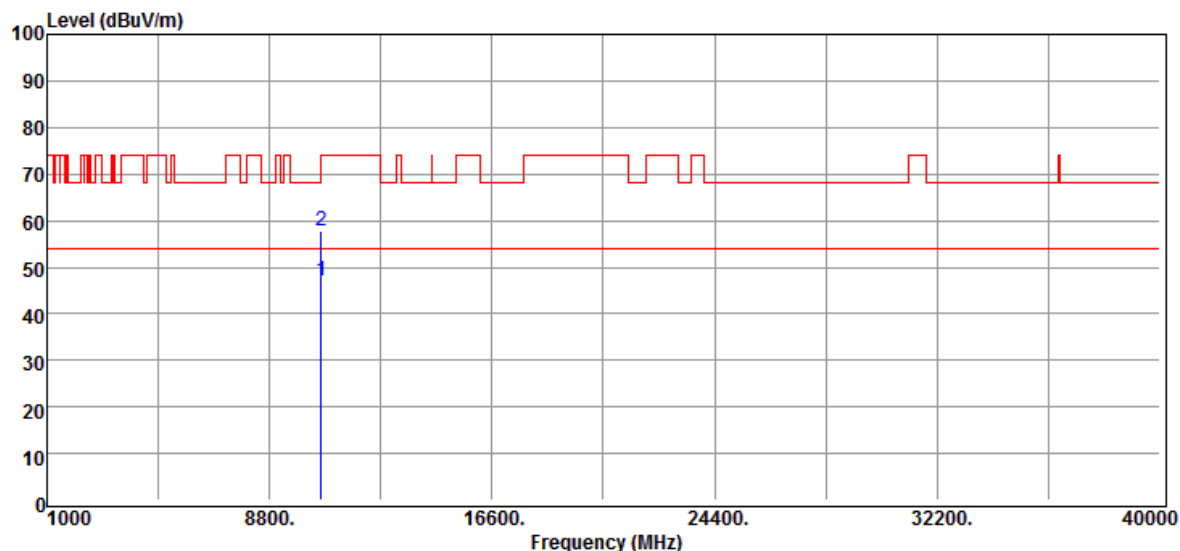
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Operation Mode :802.11n40 / Band 2
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5310 MHz

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



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

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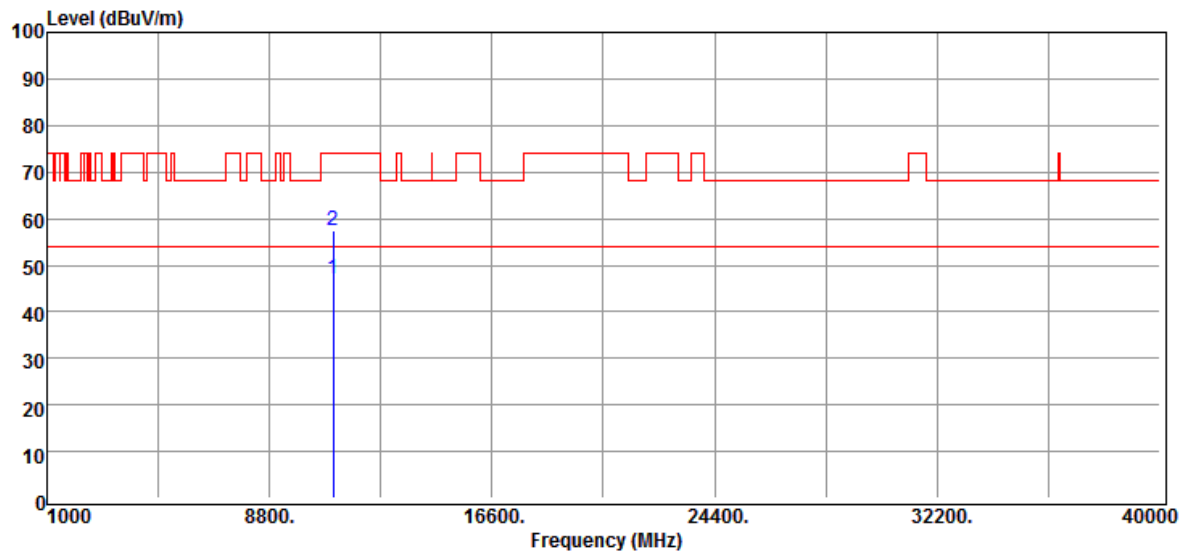
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Radiated Spurious Emission Measurement Result 802.11n HT40, 5470~5725 MHz

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



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

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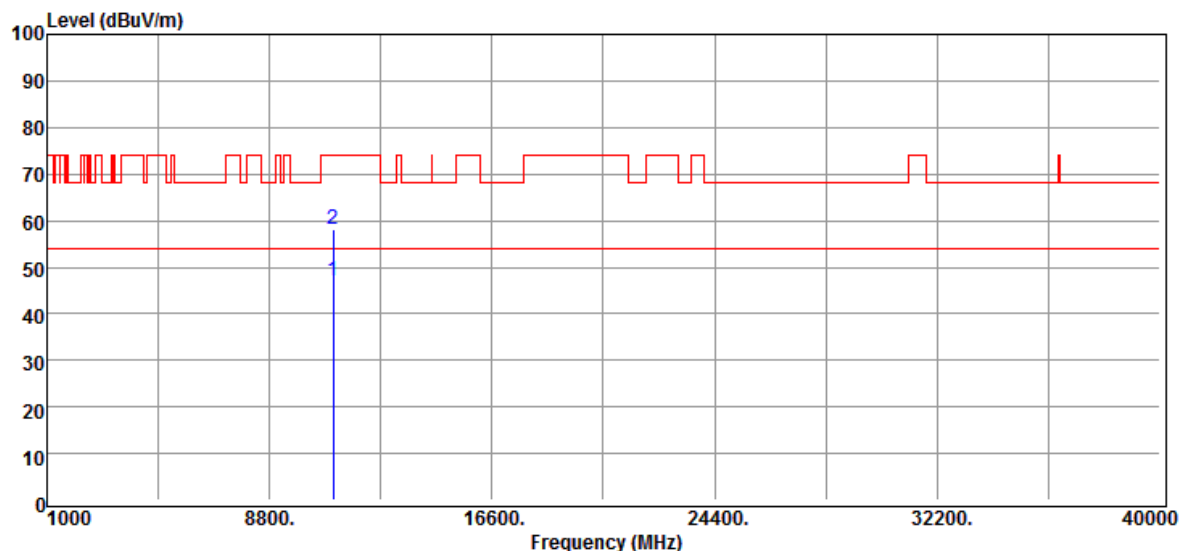
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Operation Mode :802.11n40 / Band 3
 Test Mode :TX CH LOW
 EUT Pol :H Plan
 Test Channel :5510 MHz

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



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

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台灣檢驗科技股份有限公司

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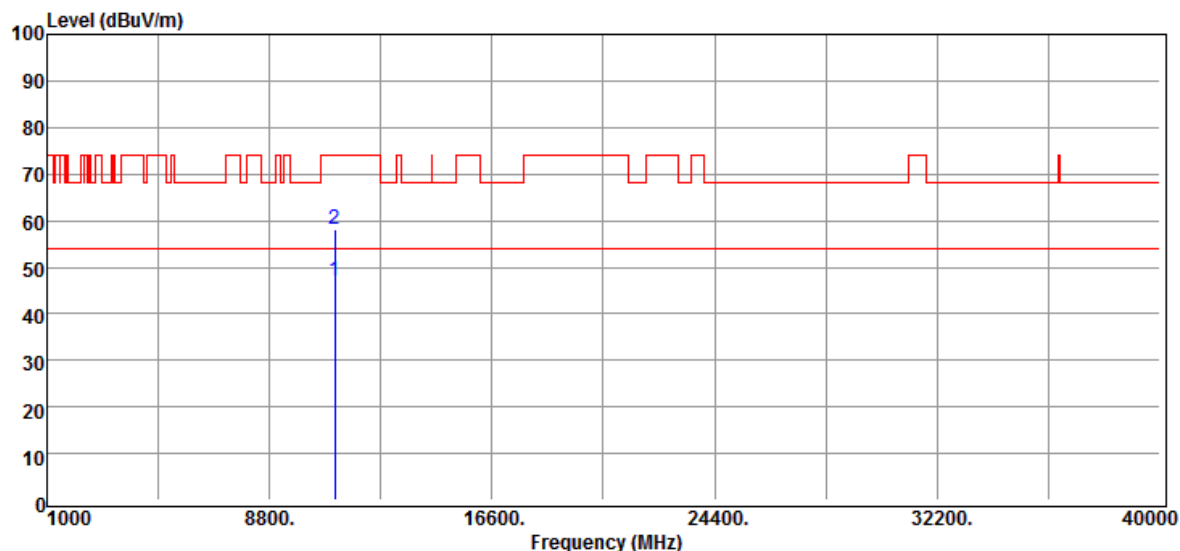
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Operation Mode :802.11n40 / Band 3
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5550 MHz

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



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

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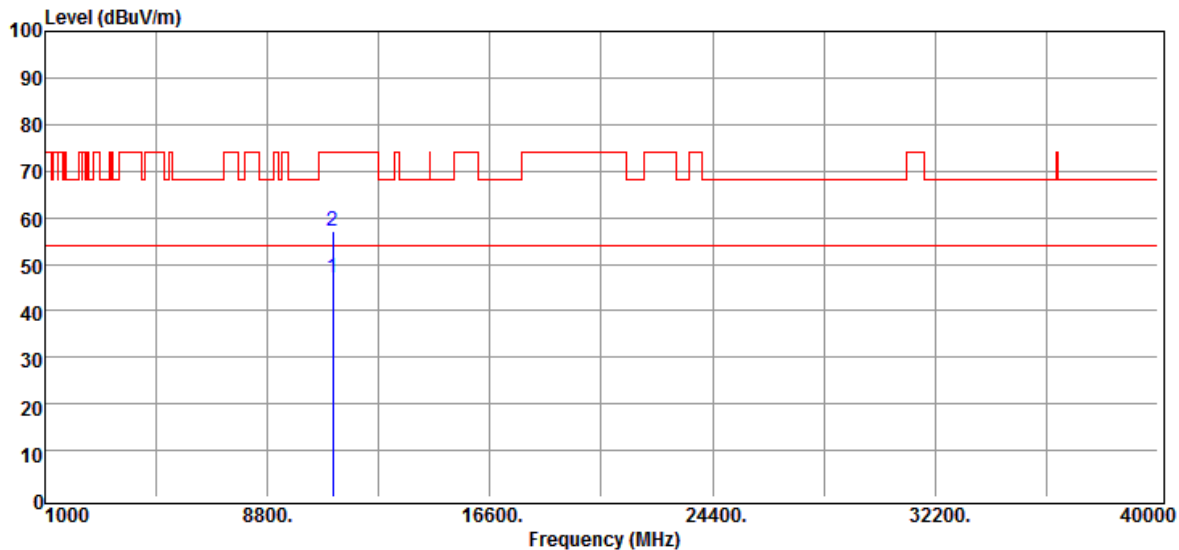
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Operation Mode :802.11n40 / Band 3
 Test Mode :TX CH MID
 EUT Pol :H Plan
 Test Channel :5550 MHz

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



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

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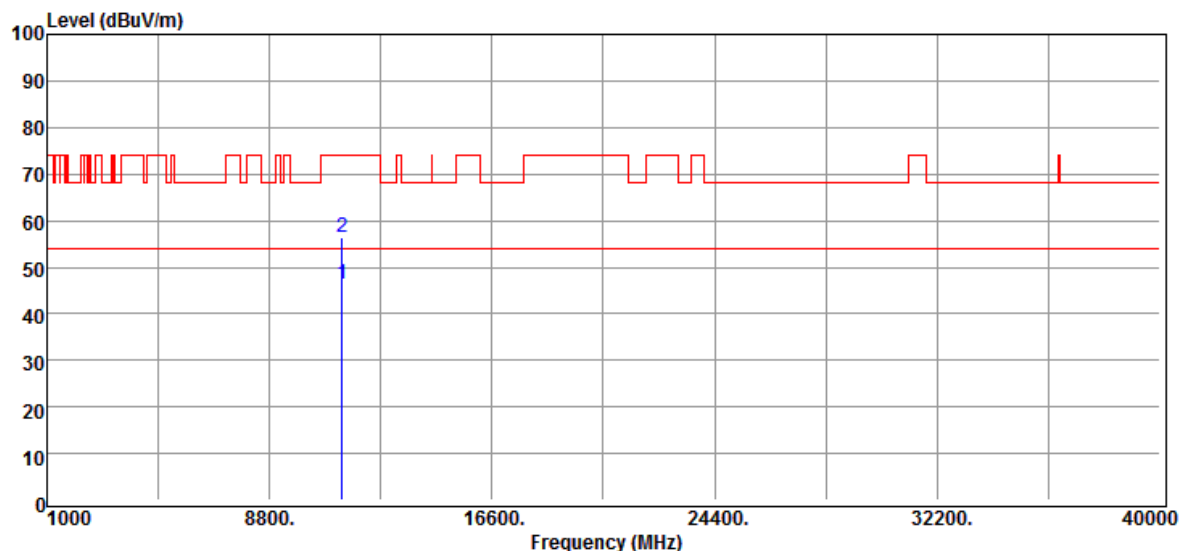
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Operation Mode :802.11n40 / Band 3
 Test Mode :TX CH HIGH
 EUT Pol :H Plan
 Test Channel :5670 MHz

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



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

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