

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

Applicant: Honeywell International Inc.
9680 Old Bailes Road, Fort Mill, SC 29707, USA
Product Name: Vehicle Mount Computer
Brand Name: Honeywell
Model No.: VM3AL0N
Model Difference: N/A
Report Number: ER/2019/C0048
FCC ID: HD5-VM3AL0N
IC: 1693B-VM3AL0N
FCC Rule Part: §15.407, Cat: NII
ISED RSS: RSS-247 issue 2 Feb. 2017
Issue Date: Mar. 20, 2020
Date of Test: Nov. 25, 2019 ~ Jan. 02, 2020
Date of EUT Received: Nov. 25, 2019

We hereby certify that:

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

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

Approved By:

Vito Pei

Vito Pei / Sr. Engineer



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Revision History

Report Number	Revision	Description	Issue Date	Remark
ER/2019/C0048	Rev.00	Original.	Mar. 20, 2020	Revised By: Stefanie Yu

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1 GENERAL INFORMATION

1.1 Product Description

Product Name:	Vehicle Mount Computer	
Brand Name:	Honeywell	
Model No.:	VM3AL0N	
Model Difference:	N/A	
Hardware Version:	VM3A_MB	
Software Version:	87.07.00-1218	
Power Supply:	7.2Vdc from Rechargeable Li-polymer Battery or 15Vdc from AC/DC Adapter	
	Battery:	Model No.: OVT270L1R01 Supplier: Totex
	Adapter:	Model No.: GT-46600-6015-T3 Supplier: Globtek
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 – 300.0Mbps	802.11 ac_20MHz: 6.5 – 173.3Mbps 802.11 ac_40MHz: 13.5 – 400.0Mbps 802.11 ac_80MHz: 29.3 – 866.7Mbps

FCC WLAN 5GHz:

Wi-Fi 802.11	Frequency Range	Channels	Rated Power (Avg.) (dBm) (Worst case)	Modulation Technology
a	5150~5250	4	13.34	OFDM
	5250~5350	4	20.30	
	5470~5725	12	20.74	
	5725~5850	5	20.28	
n_HT ac_VHT 20M	5150~5250	4	HT: 14.06	OFDM
	5250~5350	4	HT: 20.16	
	5470~5725	12	HT: 20.62	
	5725~5850	5	HT: 20.22	
n_HT ac_VHT 40M	5150~5250	2	HT: 13.36	OFDM
	5250~5350	2	HT: 20.02	
	5470~5725	5	HT: 20.12	
	5725~5850	2	HT: 20.51	
ac_VHT 80M	5150~5250	1	VHT: 13.37	OFDM
	5250~5350	1	VHT: 9.34	
	5470~5725	2	VHT: 20.52	
	5725~5850	1	VHT: 18.76	

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Wi-Fi 802.11	Frequency Range	Channels	Avg. or EIRP	Rated Power(dBm) (Worst Case)	Modulation Technology
11a	5150~5250	4	EIRP	21.65	OFDM
	5250~5350	4	Avg.	20.30	
	5470~5725	12	Avg.	20.74	
	5725~5850	5	Avg.	20.28	
11n_HT / ac_VHT 20M	5150~5250	4	EIRP	HT: 22.37	OFDM
	5250~5350	4	Avg.	HT: 20.16	
	5470~5725	12	Avg.	HT: 20.62	
	5725~5850	5	Avg.	HT: 20.22	
11n_HT / ac_VHT 40M	5150~5250	2	EIRP	HT: 21.67	OFDM
	5250~5350	2	Avg.	HT: 20.02	
	5470~5725	6	Avg.	HT: 20.12	
	5725~5850	2	Avg.	HT: 20.51	
11ac VHT80M	5150~5250	1	EIRP	VHT: 21.68	OFDM
	5250~5350	1	Avg.	VHT: 9.34	
	5470~5725	2	Avg.	VHT: 20.52	
	5725~5850	1	Avg.	VHT: 18.76	

Antenna Designation

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Main/Aux	Peak An- tenna Gain (dBi)	Worst Antenna Gain
Dipole	Laird	WTS 2450	5150~5250	Main/Aux	2.6	
			5250~5350		2.6	
			5470~5725		2.6	
			5725~5850		3.4	
Dipole	LARSEN	R380500314	5150~5250	Main/Aux	5	
			5250~5350		5	
			5470~5725		5	V
			5725~5850		5	V
Printed	N/A	N/A	5150~5250	Main	4.9	
			5250~5350		5.6	V
			5470~5725		3.1	
			5725~5850		3.6	
			5150~5250	Aux	5.3	V
			5250~5350		4.7	
			5470~5725		3.7	
			5725~5850		3.9	

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1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

RSS-247 issue 2 Feb. 2017

RSS-Gen. issue 5, Amendment 1, March 2019

ANSI C63.10:2013

1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory (TAF code 0513)

No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803

FCC Designation number: TW0001

ISED CAB identifier: TW0513

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

2.3.2 Conducted Test (RF)

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

2.3.3 Radiated Emissions

The EUT is 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.

2.5 Configuration of Tested System

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Fig. 2-1 Radiated Emission & Conducted (Antenna Port) Emission Configuration



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

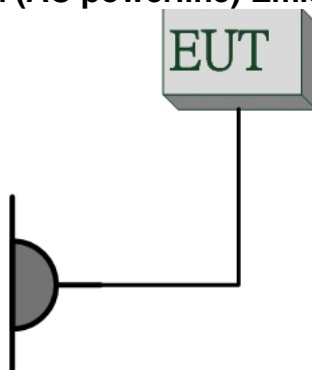


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
1.	Wlan Test Software	Honeywell	FTMTool	N/A	Power Setting: a: 19 n/ac20: 19 n/ac40: 19 ac80: 19

Note:

Product VPN: VM3A-L0N-1B2A20F

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3 SUMMARY OF TEST RESULT

FCC Rules	IC Rules	Description Of Test	Result
§15.207	RSS-Gen §8.8	AC Power Line Conducted Emission	Compliant
§15.403(i) §15.407(e)	RSS-Gen §6.7 RSS-247 §6.2.4.1	26 dB & 6dB & 99% Emission Bandwidth	Compliant
§15.407(a)	RSS-247 §6.2.1~ 4 (1)	Maximum Conducted Output Power	Compliant
§15.407(a)	RSS-247 §6.2.1~ 4 (1)	Power Spectral Density	Compliant
§15.205 §15.209 §15.407(b)	RSS-247 §6.2.1~ 4 (2)	Undesirable Radiated Emissions	Compliant
§15.407(c)	RSS-247 §6.4	Transmission in case of Absence of Information	Compliant
§15.407(g)	RSS-Gen §6.11	Frequency Stability	Compliant
§15.203 §15.407(a)	RSS- Gen §6.8	Antenna Requirement	Compliant

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4 DESCRIPTION OF TEST MODES

4.1 802.11a/n/ac operated in U-NII Bands

Operated band in 5150 MHz ~5250 MHz:

20 M	
CH	Freq (MHz)
36	5180
40	5200
44	5220
48	5240

40 M	
CH	Freq (MHz)
38	5190
46	5230

80 M	
CH	Freq (MHz)
42	5210

Operated band in 5250 MHz ~5350 MHz:

20 M	
CH	Freq (MHz)
52	5260
56	5280
60	5300
64	5320

40 M	
CH	Freq (MHz)
54	5270
62	5310

80 M	
CH	Freq (MHz)
58	5290

160 M	
CH	Freq (MHz)
50	5250

Operated band in 5470 MHz ~5725 MHz:

20 M	
CH	Freq (MHz)
100	5500
104	5520
108	5540
112	5560
116	5580
120	5600
124	5620
128	5640
132	5660
136	5680
140	5700

40 M	
CH	Freq (MHz)
102	5510
110	5550
118	5590
126	5630
134	5670

80 M	
CH	Freq (MHz)
106	5530
122	5610

160 M	
CH	Freq (MHz)
114	5570

Operated band in 5745 MHz ~5850 MHz:

20 M	
CH	Freq (MHz)
149	5745
153	5765
157	5785
161	5805
165	5825

40 M	
CH	Freq (MHz)
151	5755
159	5795

80 M	
CH	Freq (MHz)
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. The given UE is pre-scanned among below modes.

Modulation	Transmission Chain				Multiple Transmission Spatial
<input checked="" type="checkbox"/> 802.11 a	<input checked="" type="checkbox"/> Ch0	<input checked="" type="checkbox"/> Ch1	<input type="checkbox"/> Ch2	<input type="checkbox"/> Ch3	<input checked="" type="checkbox"/> 2TX
<input checked="" type="checkbox"/> 802.11 n	<input checked="" type="checkbox"/> Ch0	<input checked="" type="checkbox"/> Ch1	<input type="checkbox"/> Ch2	<input type="checkbox"/> Ch3	<input checked="" type="checkbox"/> MIMO
<input checked="" type="checkbox"/> 802.11 ac	<input checked="" type="checkbox"/> Ch0	<input checked="" type="checkbox"/> Ch1	<input type="checkbox"/> Ch2	<input type="checkbox"/> Ch3	<input checked="" type="checkbox"/> MIMO

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

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4.2.1 RADIATED EMISSION TEST:

RADIATED EMISSION TEST (BELOW 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	AN-TENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	2TX
	5260~5320	52 to 64	52,60,64			
	5500~5700	100 to 140	100,116,140			
	5745~5825	149 to 165	149,157,165			
802.11ac_VHT80	5210	42	42		MCS8	MIMO
	5290	58	58			
	5530~5610	106 to 122	106,122			
	5775	155	155			

RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	AN-TENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	2TX
	5260~5320	52 to 64	52,60,64			
	5500~5700	100 to 140	100,116,140			
	5745~5825	149 to 165	149,157,165			
802.11n_HT20 802.11ac_VHT20	5180~5240	36 to 48	36,44,48		MCS8	MIMO
	5260~5320	52 to 64	52,60,64			
	5500~5700	100 to 140	100,116,140,			
	5745~5825	149 to 165	149,157,165			
802.11n_HT40 802.11ac_VHT40	5190~5230	38 to 46	38,46		MCS8	MIMO
	5270~5310	54 to 62	54,62			
	5510~5670	102 to 134	102,110,134			
	5755~5795	151 to 159	151,159			
802.11ac_VHT80	5210	42	42		MCS0	MIMO
	5290	58	58			
	5530~5610	106 to 122	106,122			
	5775	155	155			

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 E2 position was reported.

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4.2.2 ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	AN-TENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	2TX
	5260~5320	52 to 64	52,60,64			
	5500~5700	100 to 140	100,116,140,			
	5745~5825	149 to 165	149,157,165			
802.11n_HT20	5180~5240	36 to 48	36,44,48		MCS8	MIMO
	5260~5320	52 to 64	52,60,64			
	5500~5700	100 to 140	100,116,140			
	5745~5825	149 to 165	149,157,165			
802.11ac_VHT20	5180~5240	36 to 48	36,44,48		MCS8	MIMO
	5260~5320	52 to 64	52,60,64			
	5500~5700	100 to 140	100,116,140			
	5745~5825	149 to 165	149,157,165			
802.11n_HT40	5190~5230	38 to 46	38,46		MCS8	MIMO
	5270~5310	54 to 62	54,62			
	5510~5670	102 to 134	102,110,134			
	5755~5795	151 to 159	151,159			
802.11ac_VHT40	5190~5230	38 to 46	38,46		MCS8	MIMO
	5270~5310	54 to 62	54,62			
	5510~5670	102 to 134	102,110,134			
	5755~5795	151 to 159	151,159			
802.11ac_VHT80	5210	42	42		MCS0	MIMO
	5290	58	58			
	5530~5610	106 to 122	106,122			
	5775	155	155			

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

Note:

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

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6 CONDUCTED EMISSION TEST

6.1 Standard Applicable

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

Frequency range MHz	Limits dB(μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note 1.The lower limit shall apply at the transition frequencies 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

6.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI 7	1166.5950.07	07/04/2019	07/03/2020
Coaxial Cables	N/A	WK CE Cable	N/A	11/26/2019	11/25/2020
LISN	SCHWARZ-BECK	NSLK 8127	8127-649	04/02/2019	04/01/2020
Test Software	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R	N.C.R

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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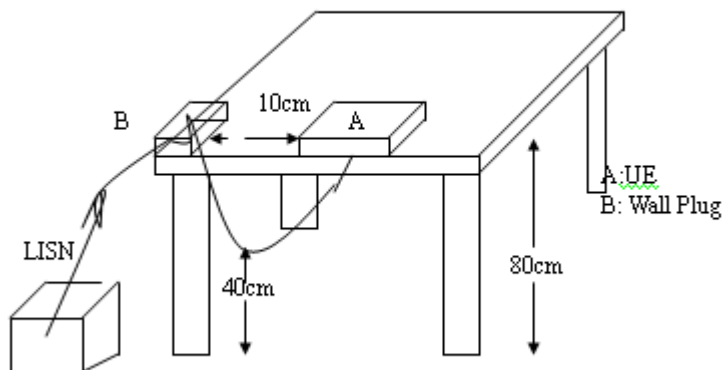
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6.4 Test SET-UP



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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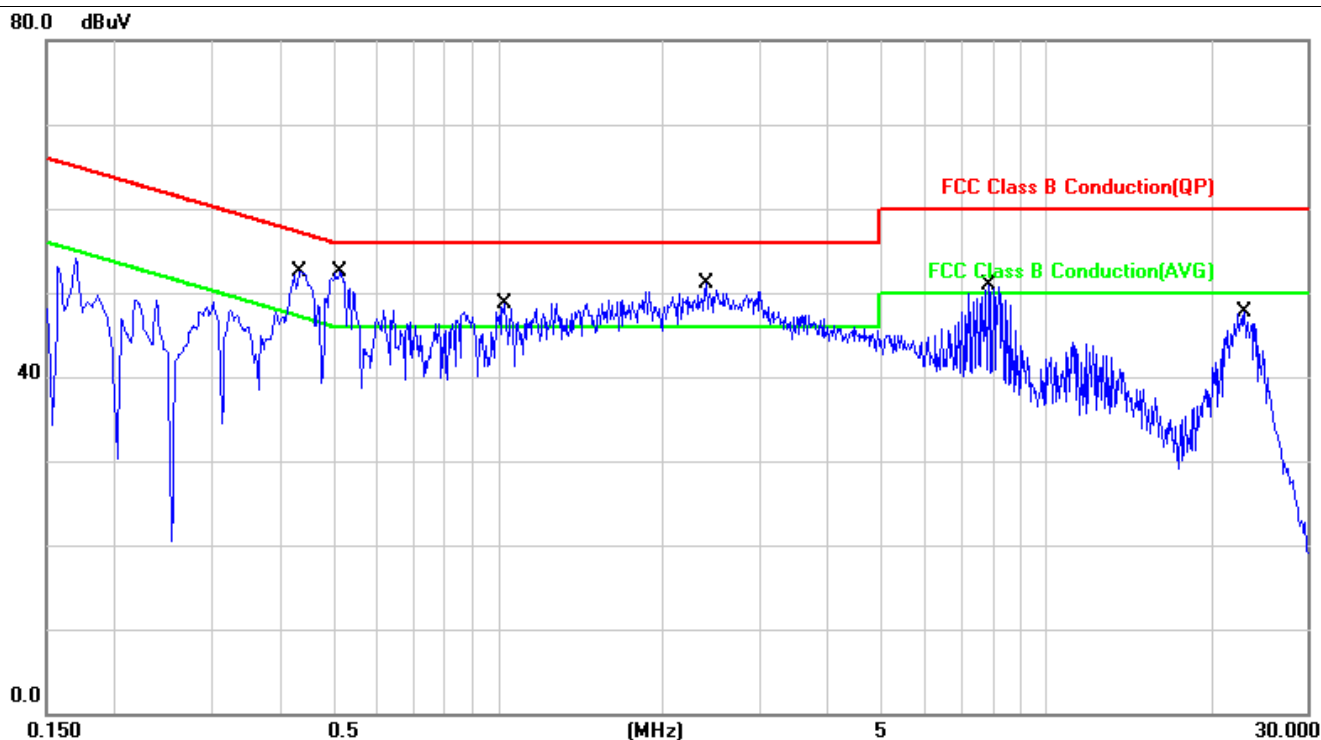
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AC POWER LINE CONDUCTED EMISSION TEST DATA

Description:	Operation	Date:	2019/12/28
Line:	L1	Temp.(°C)/Hum.(%)	22.9(°C)/57%
Test Voltage:	AC 120V/60Hz	Test By:	Kane
Report number:	ER/2019/C0048		



No.	Mk.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Measure- ment (dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1		0.4340	50.90	0.01	50.91	57.18	-6.27	QP	
2		0.4340	40.40	0.01	40.41	47.18	-6.77	AVG	
3		0.5180	49.80	0.01	49.81	56.00	-6.19	QP	
4		0.5180	37.20	0.01	37.21	46.00	-8.79	AVG	
5		1.0300	44.20	0.02	44.22	56.00	-11.78	QP	
6		1.0300	33.70	0.02	33.72	46.00	-12.28	AVG	
7		2.3980	44.80	0.06	44.86	56.00	-11.14	QP	
8		2.3980	37.30	0.06	37.36	46.00	-8.64	AVG	
9		7.8620	48.80	0.24	49.04	60.00	-10.96	QP	
10	*	7.8620	47.90	0.24	48.14	50.00	-1.86	AVG	
11		23.1340	44.20	0.46	44.66	60.00	-15.34	QP	
12		23.1340	40.60	0.46	41.06	50.00	-8.94	AVG	

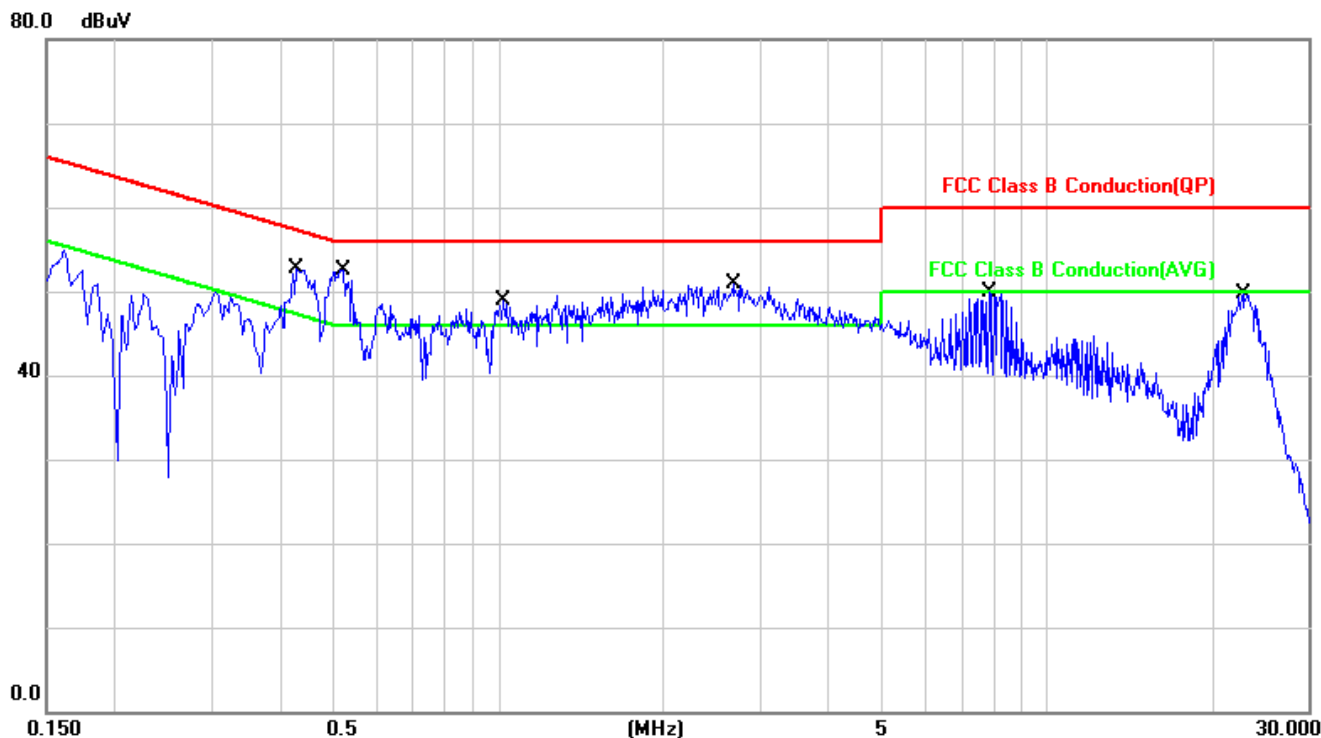
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Description:	Operation	Date:	2019/12/28
Line:	N	Temp.(°C)/Hum.(%):	22.9(°C)/57%
Test Voltage:	AC 120V/60Hz	Test By:	Kane
Report number:	ER/2019/C0048		



No.	Mk.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Measure- ment (dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1		0.4300	50.10	0.03	50.13	57.25	-7.12	QP	
2		0.4300	38.10	0.03	38.13	47.25	-9.12	AVG	
3		0.5220	49.90	0.03	49.93	56.00	-6.07	QP	
4		0.5220	37.50	0.03	37.53	46.00	-8.47	AVG	
5		1.0260	44.20	0.04	44.24	56.00	-11.76	QP	
6		1.0260	33.40	0.04	33.44	46.00	-12.56	AVG	
7		2.6900	45.30	0.09	45.39	56.00	-10.61	QP	
8		2.6900	38.40	0.09	38.49	46.00	-7.51	AVG	
9		7.8700	48.20	0.25	48.45	60.00	-11.55	QP	
10	*	7.8700	47.10	0.25	47.35	50.00	-2.65	AVG	
11		22.9500	44.60	0.46	45.06	60.00	-14.94	QP	
12		22.9500	39.60	0.46	40.06	50.00	-9.94	AVG	

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7 DUTY CYCLE TEST SIGNAL

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle. All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

7.1 Measurement Procedure:

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

Duty Cycle:

Mode	Duty Cycle (%) =Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11a	95.71	0.19	0.48	1.00
802.11n_20	91.11	0.40	1.02	2.00
802.11ac_20	91.23	0.40	1.01	2.00
802.11n_40	85.35	0.69	2.02	3.00
802.11ac_40	85.79	0.67	2.00	3.00
802.11ac_80	75.45	1.22	3.91	4.00

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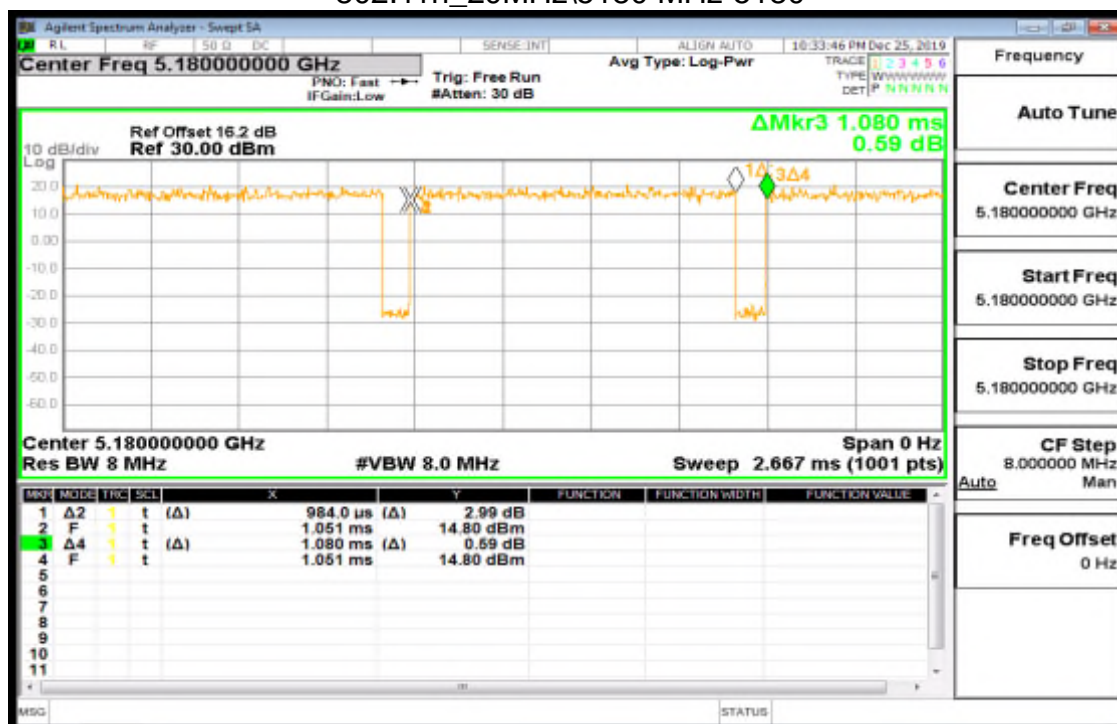
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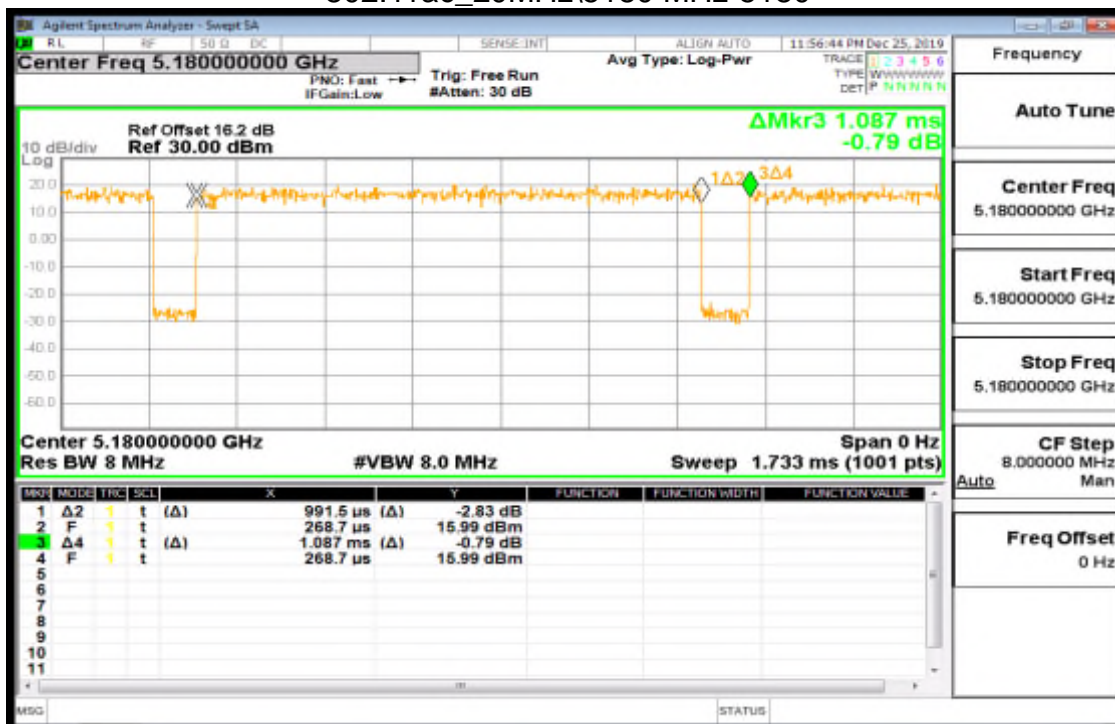
802.11a 20MHz\5180 MHz-5180



802.11n 20MHz\5180 MHz-5180



802.11ac_20MHz\5180 MHz-5180



802.11n_40MHz\5190 MHz-5190



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802.11ac_40MHz\5190 MHz-5190



802.11ac_80MHz\5210 MHz-5210



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8 26DB, 99% & 6DB EMISSION BANDWIDTH MEASUREMENT

8.1 Standard Applicable

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

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

8.2 Measurement Procedure

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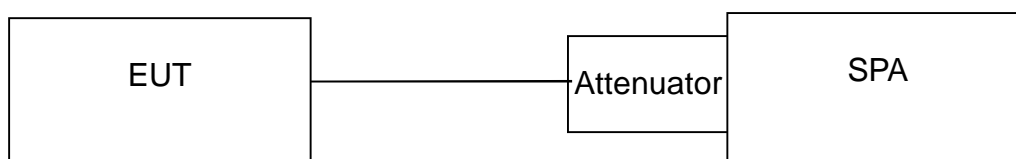
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8.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equip-ment	Manufacturer	Model	Serial Num-ber	Calibration Date	Calibration Due
EXA Spectrum Ana-lyzer	Agilent	N9010A	MY50420195	05/02/2019	05/01/2020
Temperature Cham-ber	TERCHY	MHG-120LF	911009	05/17/2019	05/16/2020
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2019	01/01/2020
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2019	01/01/2020

8.4 Test Set-up



8.5 Measurement Result

8.5.1 FCC 26dB Bandwidth

802.11a_Ch0			802.11a_Ch1		
Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	21.06	13.235	5180	20.59	13.137
5220	20.34	13.084	5220	20.93	13.208
5240	20.52	13.122	5240	20.62	13.143
5260	29.2	14.654	5260	29.84	14.748
5300	28.96	14.618	5300	29.92	14.760
5320	21.74	13.373	5320	25.02	13.983
5500	21.27	13.278	5500	21.21	13.265
5580	29.85	14.749	5580	29.93	14.761
5700	20.92	13.206	5700	20.57	13.132

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802.11n_HT20_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	22.24	13.471
5220	22.51	13.524
5240	22.9	13.598
5260	28.89	14.607
5300	29.74	14.733
5320	22.39	13.501
5500	22.05	13.434
5580	29.93	14.761
5700	22.69	13.558

802.11n_HT20_Ch1

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	21.99	13.422
5220	22.08	13.440
5240	21.82	13.389
5260	29.68	14.725
5300	29.94	14.763
5320	25.94	14.140
5500	22.06	13.436
5580	29.92	14.760
5700	22.71	13.562

802.11n_HT40_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	41.45	16.175
5230	41.62	16.193
5270	47.09	16.729
5310	41.43	16.173
5510	41.45	16.175
5550	49.87	16.978
5670	41.67	16.198

802.11n_HT40_Ch1

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	41.26	16.155
5230	41.17	16.146
5270	48.15	16.826
5310	41.2	16.149
5510	41.43	16.173
5550	49.88	16.979
5670	41.38	16.168

802.11ac_VHT80_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	84.12	19.249
5290	84.63	19.275
5530	84.14	19.250
5610	100	20.000

802.11ac_VHT80_Ch1

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	82.56	19.168
5290	82.95	19.188
5530	82.68	19.174
5610	100	20.000

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

802.11a_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.42	12.154
5785	16.54	12.185
5825	16.34	12.133

802.11a_Ch1

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.36	12.138
5785	16.31	12.125
5825	16.37	12.140

802.11n_HT20_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	17.59	12.453
5785	17.6	12.455
5825	17.6	12.455

802.11n_HT20_Ch1

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	17.59	12.453
5785	17.57	12.448
5825	17.58	12.450

802.11n_HT40_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	35.96	15.558
5795	36.13	15.579

802.11n_HT40_Ch1

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	36.38	15.609
5795	36.36	15.606

802.11ac_VHT80_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	75.81	18.797

802.11ac_VHT80_Ch1

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	75.23	18.764

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8.5.3 ISED 99% Bandwidth

802.11a_Ch0

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5180	16.8	12.253	5180	16.672	12.220
5220	16.816	12.257	5220	16.694	12.226
5240	16.835	12.262	5240	16.649	12.214
5260	17.176	12.349	5260	17.372	12.398
5300	17.04	12.315	5300	17.238	12.365
5320	16.732	12.235	5320	16.772	12.246
5500	16.783	12.249	5500	16.689	12.224
5580	17.016	12.309	5580	17.279	12.375
5700	16.722	12.233	5700	16.68	12.222

802.11a_Ch1

802.11n_HT20_Ch0

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5180	17.977	12.547	5180	17.852	12.517
5220	17.847	12.516	5220	17.83	12.512
5240	17.945	12.539	5240	17.854	12.517
5260	18.144	12.587	5260	18.156	12.590
5300	18.182	12.596	5300	18.148	12.588
5320	17.97	12.545	5320	17.919	12.533
5500	17.975	12.547	5500	17.895	12.527
5580	18.105	12.578	5580	18.239	12.610
5700	17.956	12.542	5700	17.847	12.516

802.11n_HT20_Ch1

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802.11n _HT40_Ch0

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5190	36.335	15.603	5190	36.304	15.600
5230	36.292	15.598	5230	36.332	15.603
5270	36.333	15.603	5270	36.403	15.611
5310	36.267	15.595	5310	36.281	15.597
5510	36.276	15.596	5510	36.302	15.599
5550	36.31	15.600	5550	36.418	15.613
5670	36.323	15.602	5670	36.288	15.598

802.11n _HT40_Ch1

802.11ac _VHT80_Ch0

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5210	75.688	18.790	5210	75.822	18.798
5290	75.705	18.791	5290	75.904	18.803
5530	75.703	18.791	5530	75.745	18.794
5610	76.003	18.808	5610	76.202	18.820

802.11ac _VHT80_Ch1

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8.5.4 6dB Bandwidth (5725 MHz~ 5850 MHz) measure with sample detector for ISED

802.11a_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.43	12.156	5745	16.44	12.159
5785	16.48	12.170	5785	16.42	12.154
5825	16.44	12.159	5825	16.51	12.177

802.11a_Ch1

802.11n_HT20_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	17.71	12.482	5745	17.72	12.485
5785	17.75	12.492	5785	17.77	12.497
5825	17.73	12.487	5825	17.61	12.458

802.11n_HT20_Ch1

802.11n_HT40_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	36.46	15.618	5755	36.38	15.609
5795	36.39	15.610	5795	36.46	15.618

802.11n_HT40_Ch1

802.11ac_VHT80_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	76.46	18.834	5775	76.46	18.834

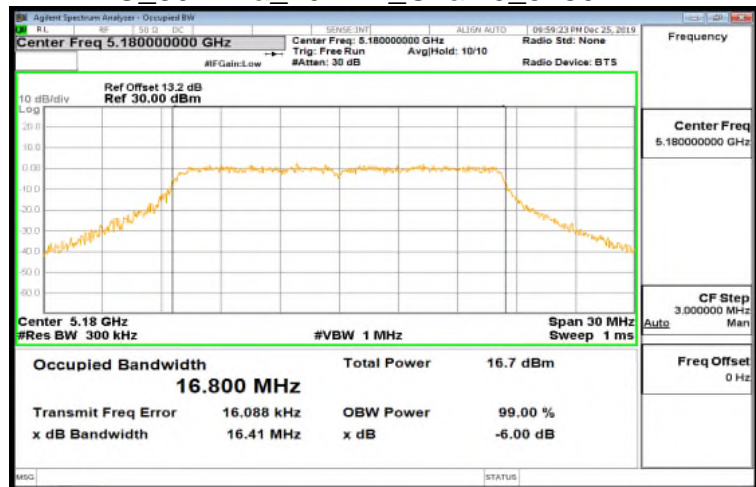
802.11ac_VHT80_Ch1

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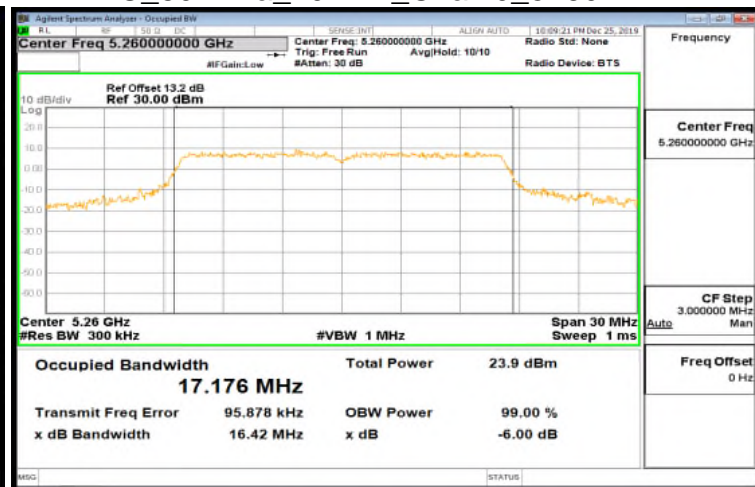
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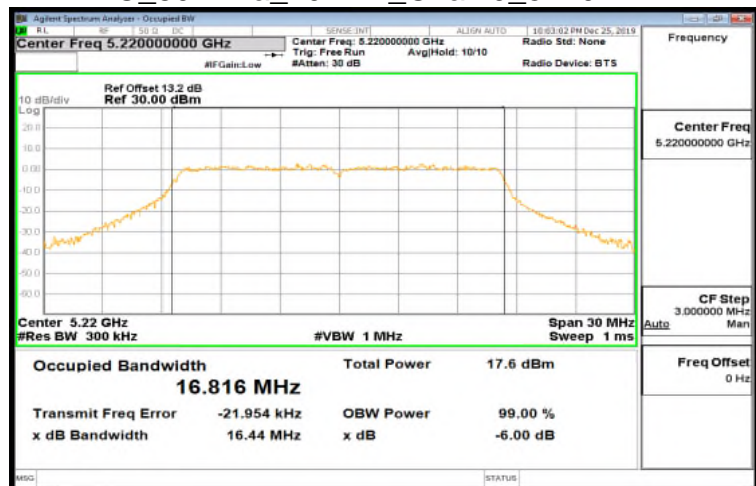
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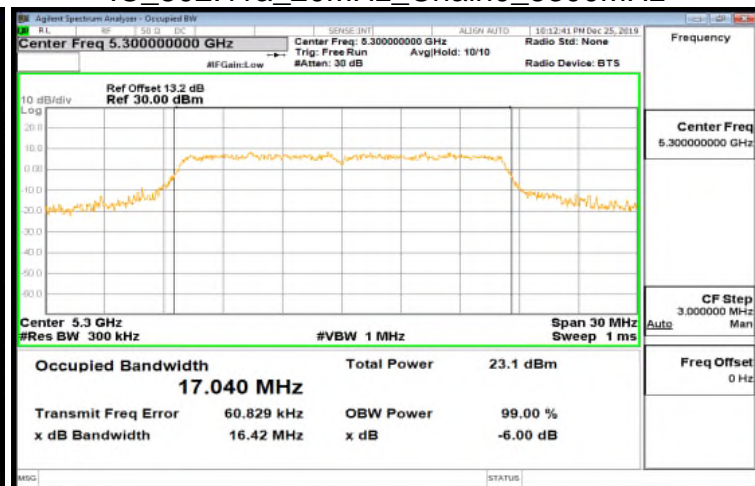
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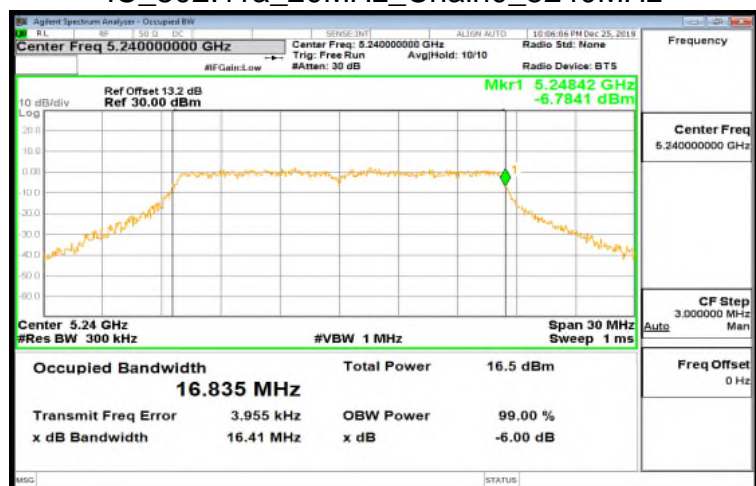
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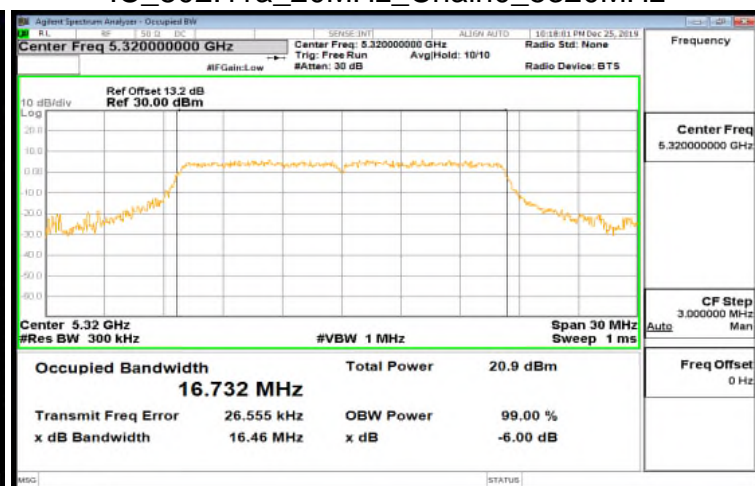
IC_802.11a_20MHz_Chain0_5300MHz



IC_802.11a_20MHz_Chain0_5240MHz



IC_802.11a_20MHz_Chain0_5320MHz



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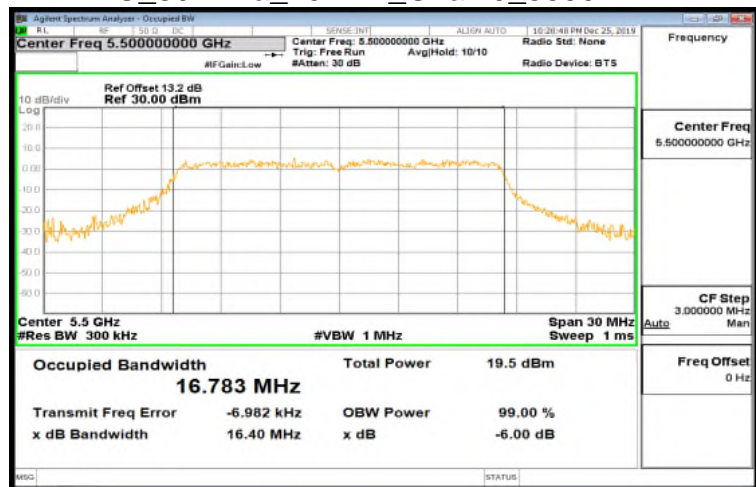
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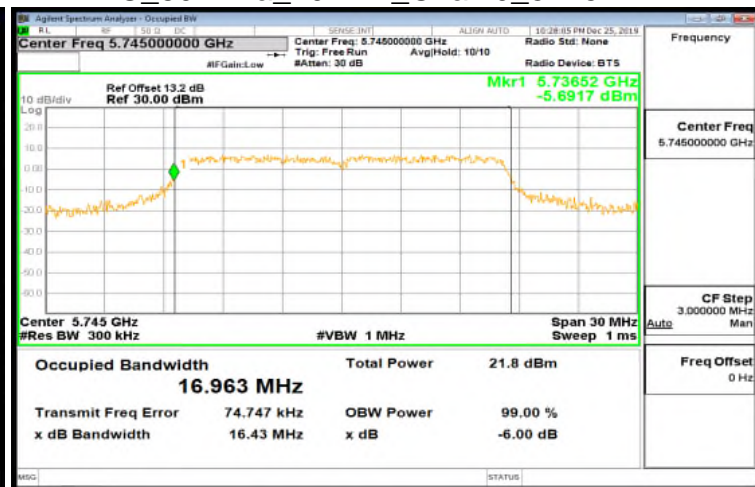
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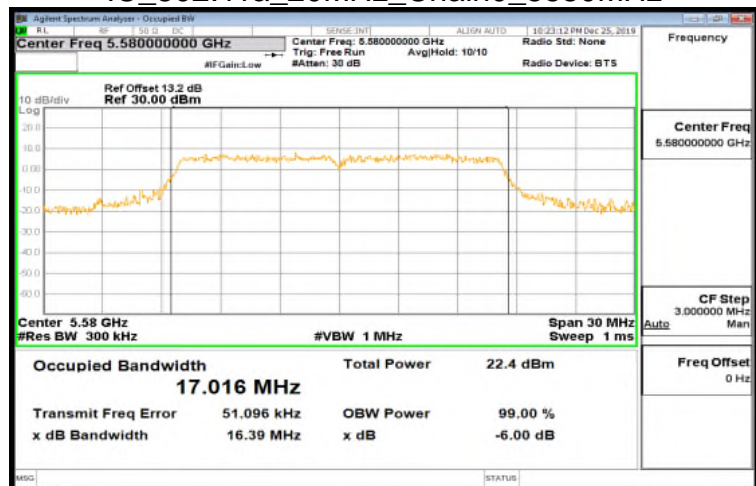
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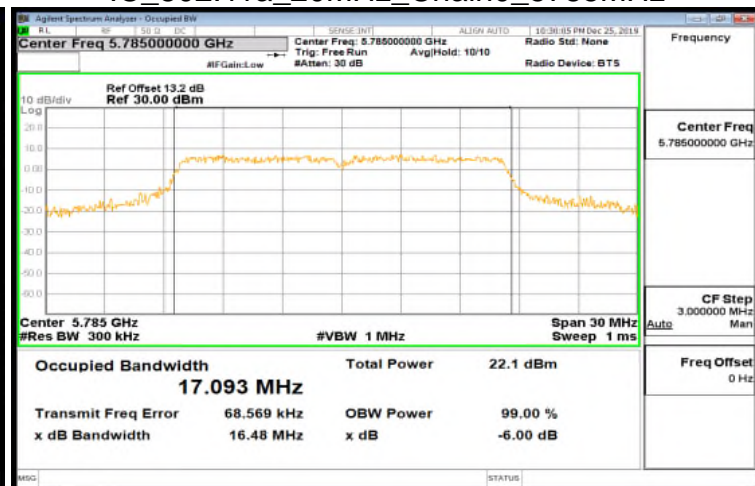
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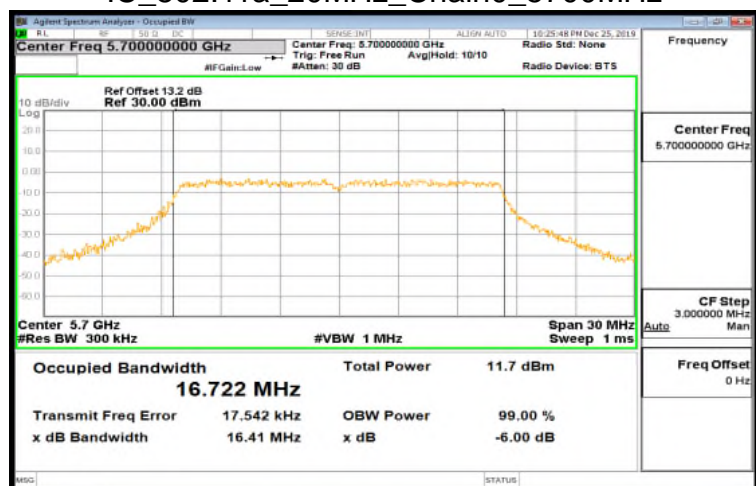
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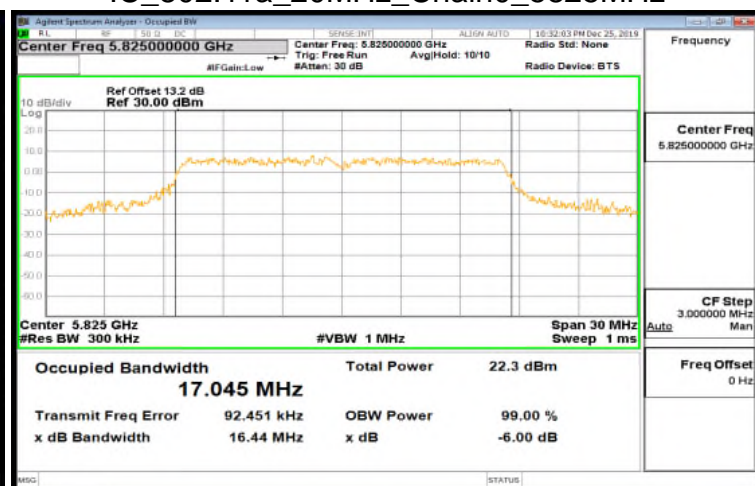
IC_802.11a_20MHz_Chain0_5785MHz



IC_802.11a_20MHz_Chain0_5700MHz



IC_802.11a_20MHz_Chain0_5825MHz



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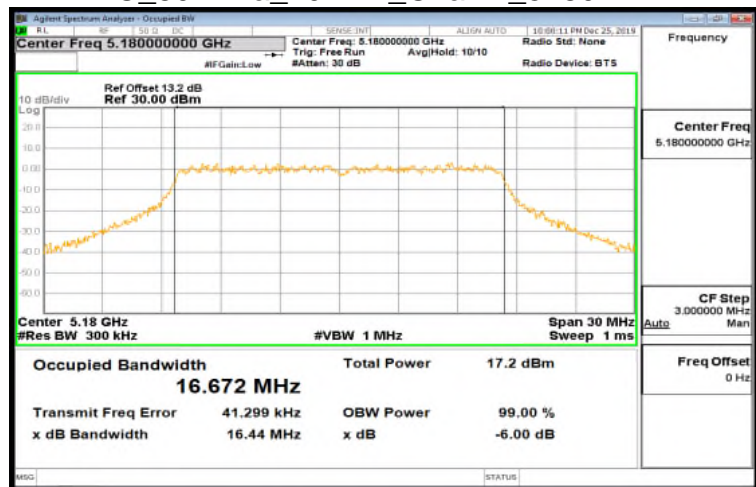
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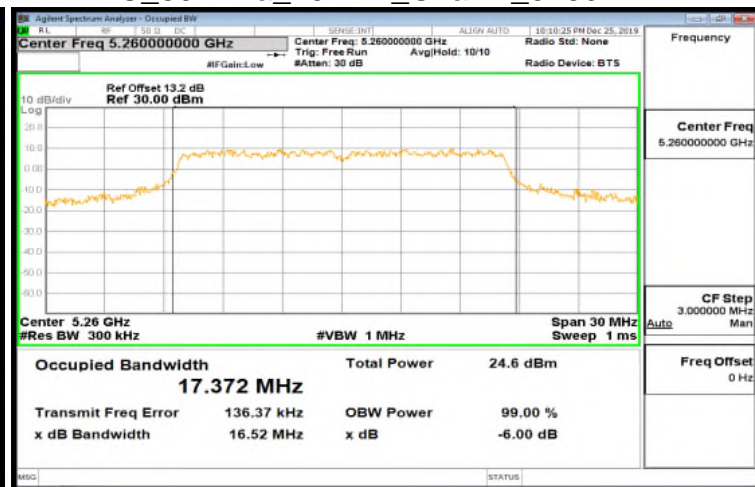
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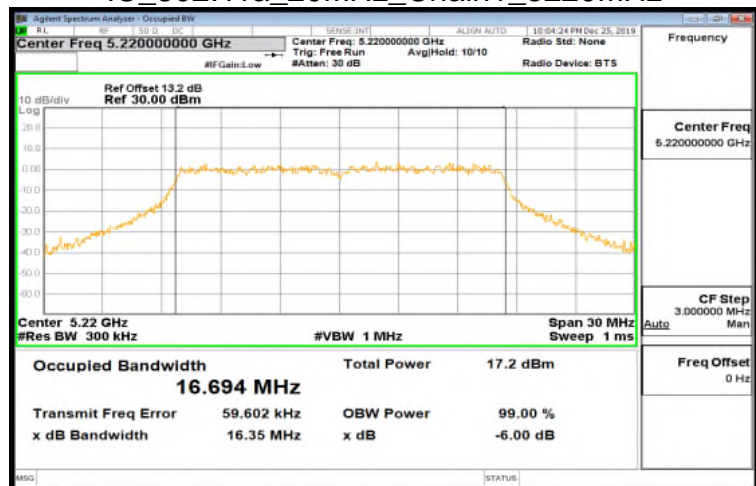
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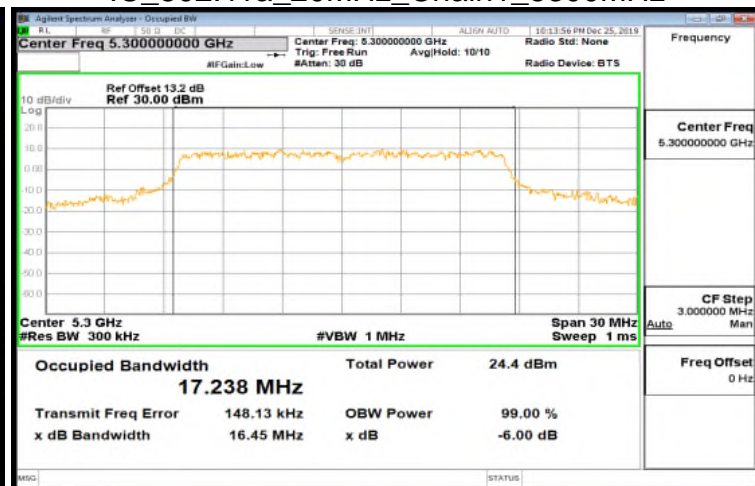
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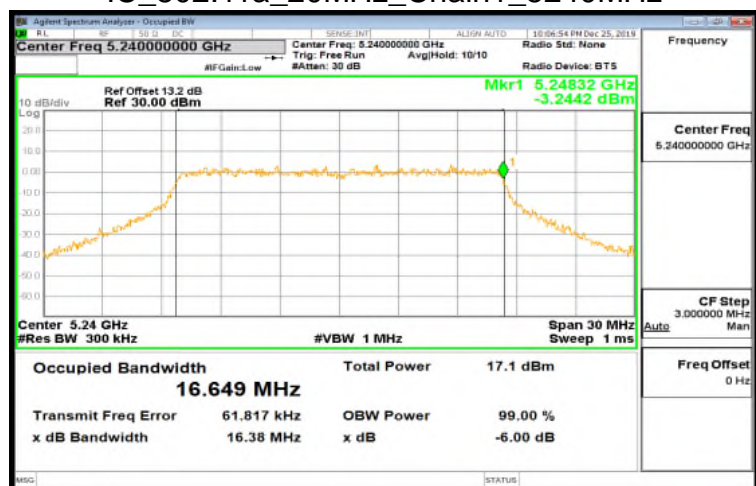
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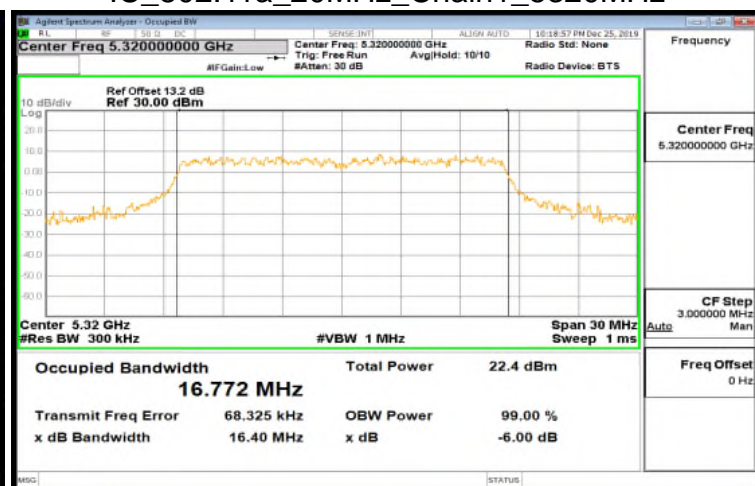
IC_802.11a_20MHz_Chain1_5300MHz



IC_802.11a_20MHz_Chain1_5240MHz



IC_802.11a_20MHz_Chain1_5320MHz



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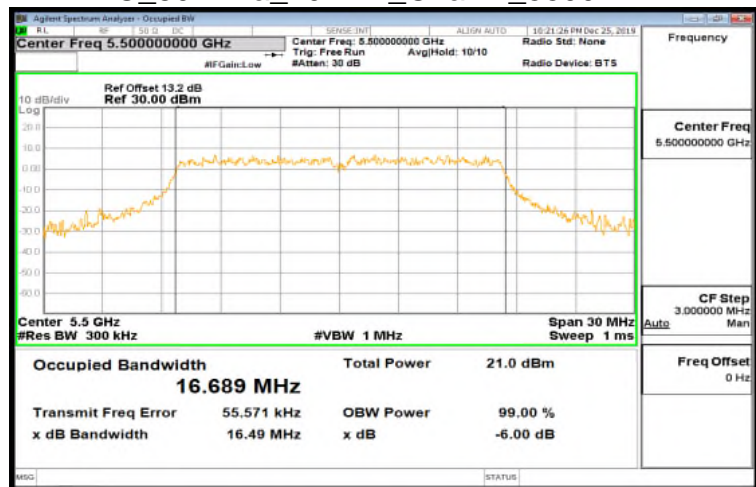
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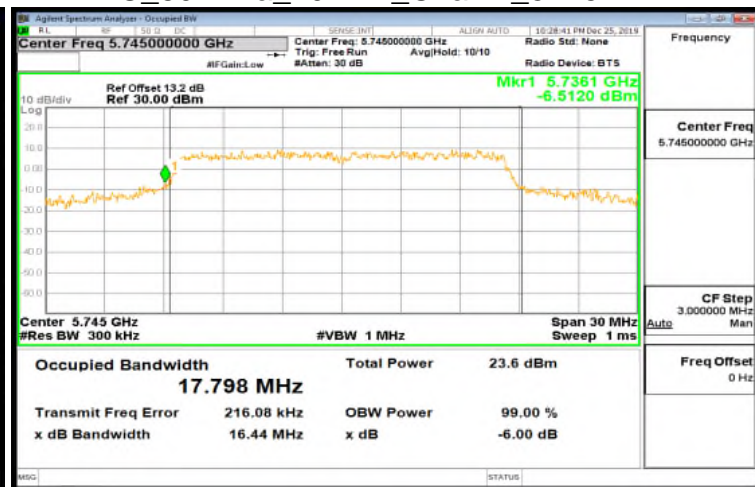
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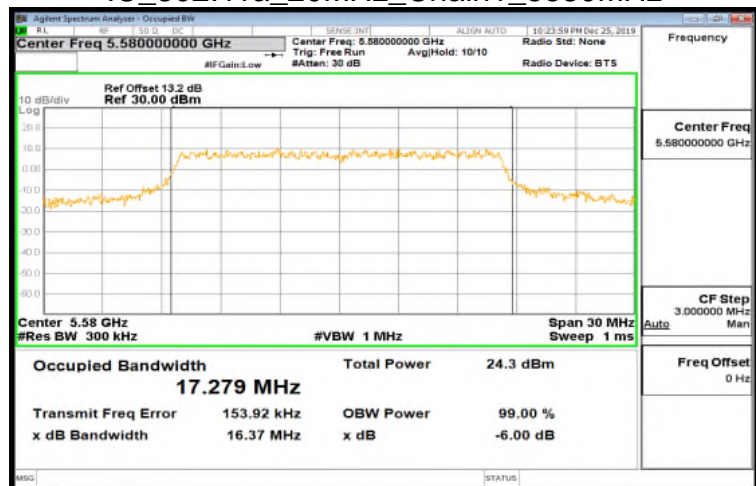
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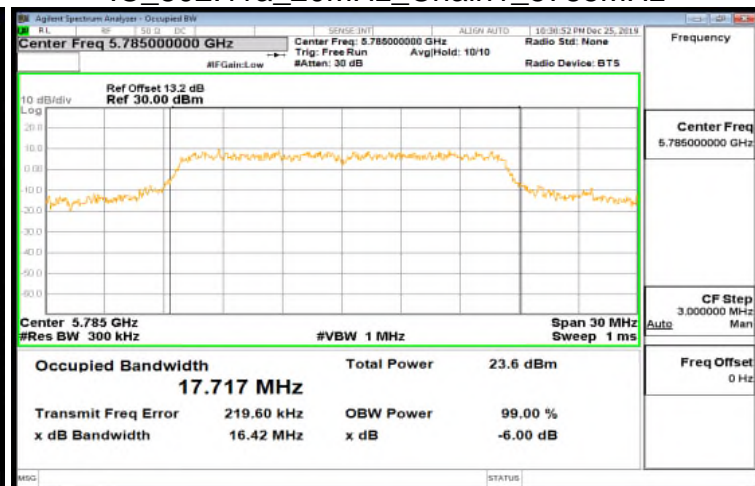
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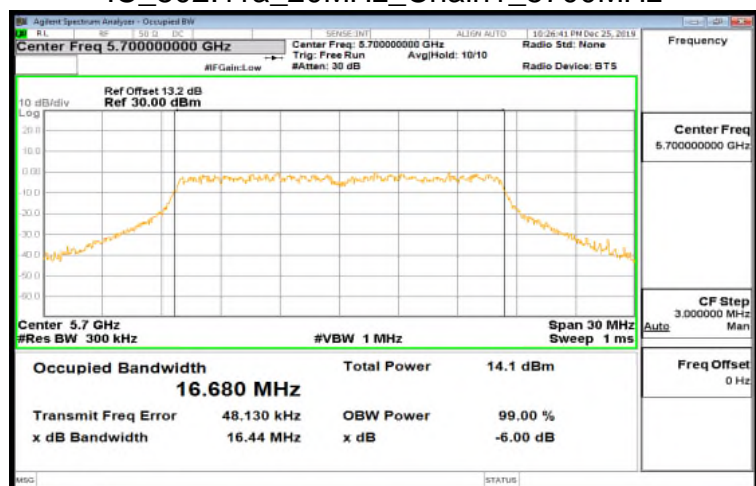
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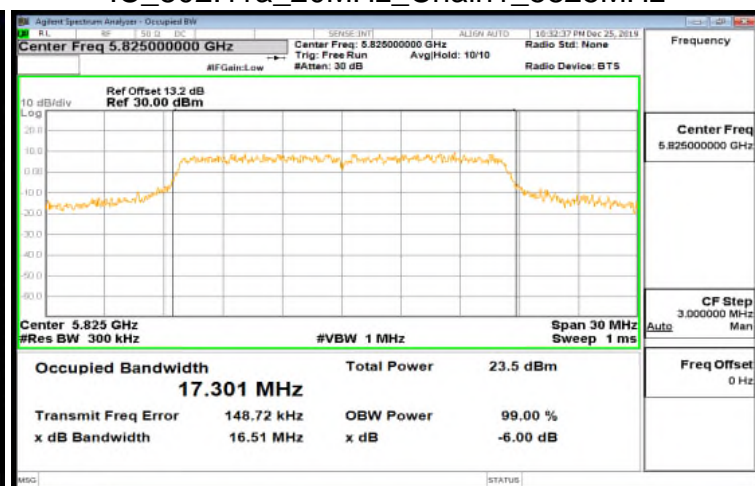
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IC_802.11a_20MHz_Chain1_5700MHz



IC_802.11a_20MHz_Chain1_5825MHz



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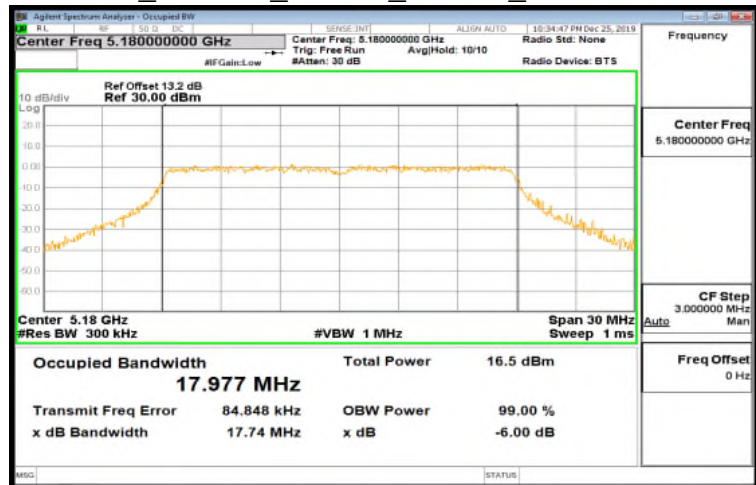
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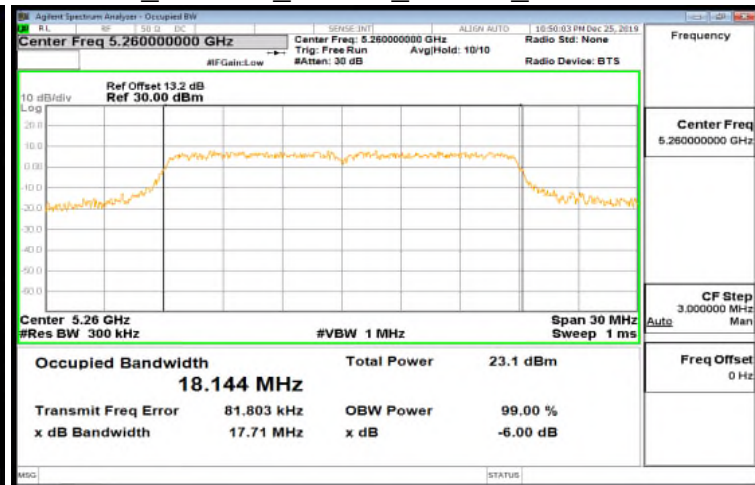
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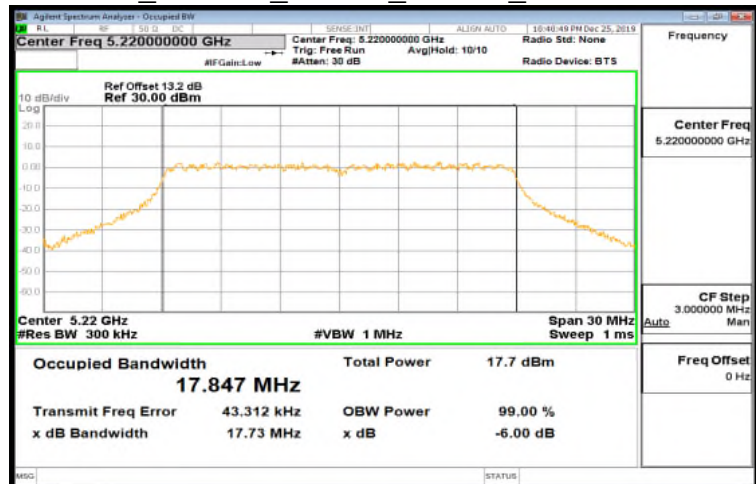
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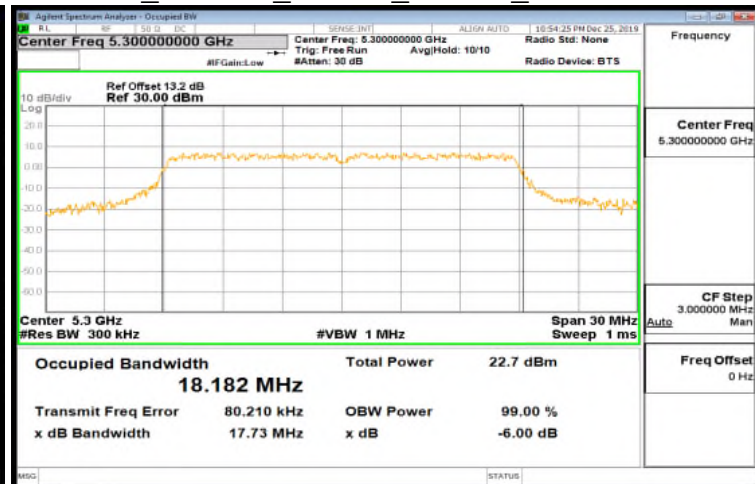
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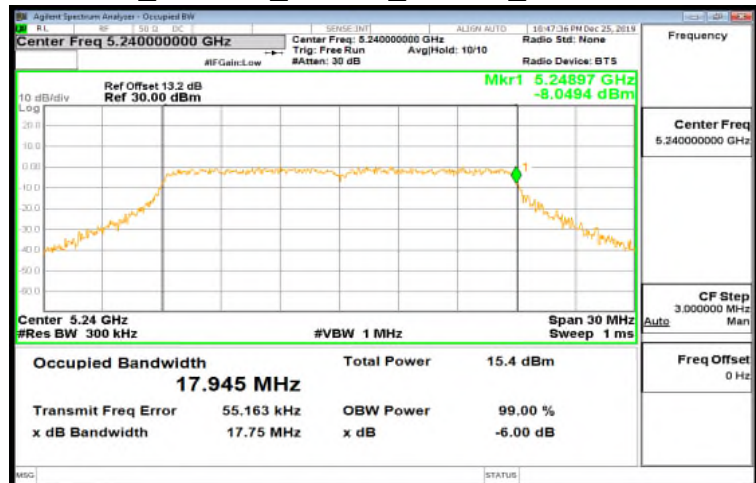
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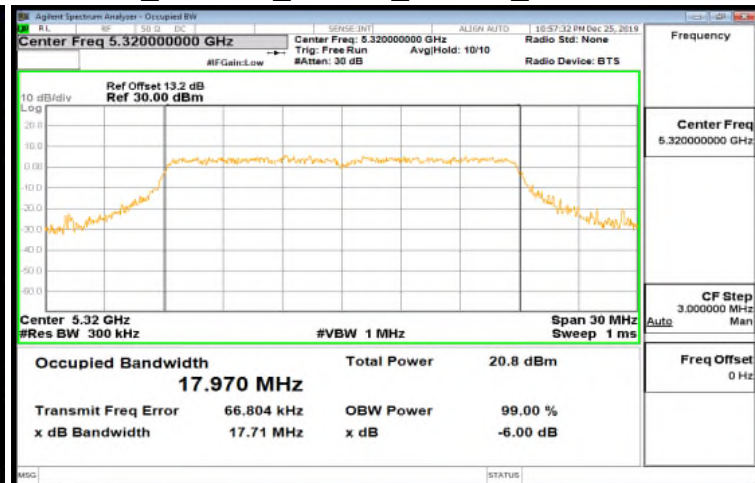
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IC_802.11n_20MHz_Chain0_5240MHz



IC_802.11n_20MHz_Chain0_5320MHz



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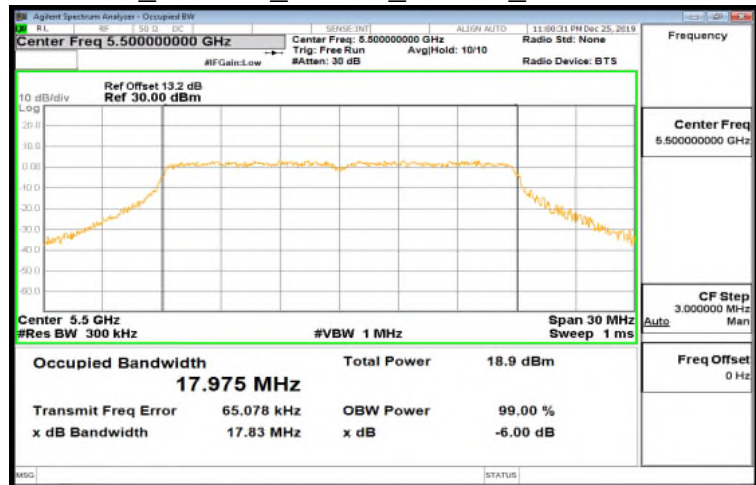
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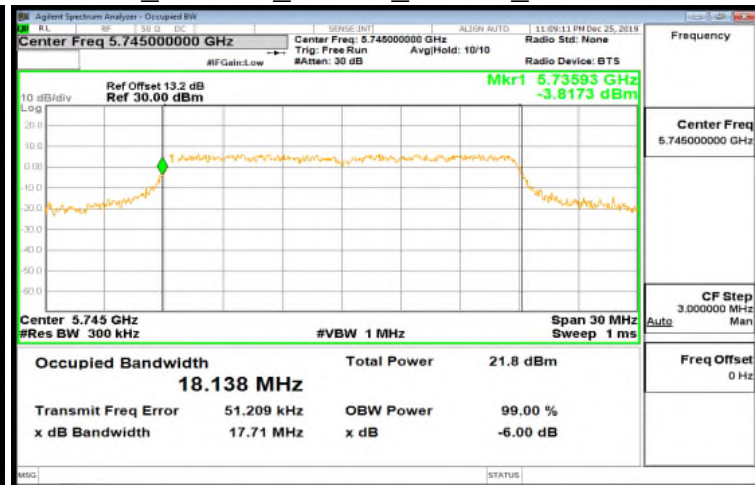
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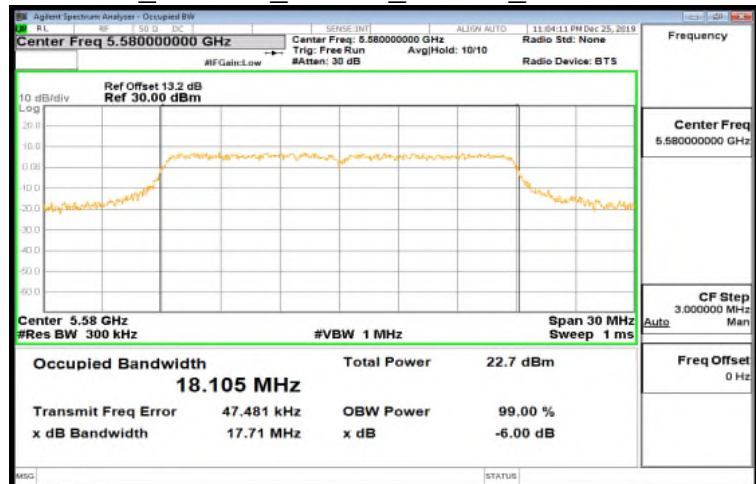
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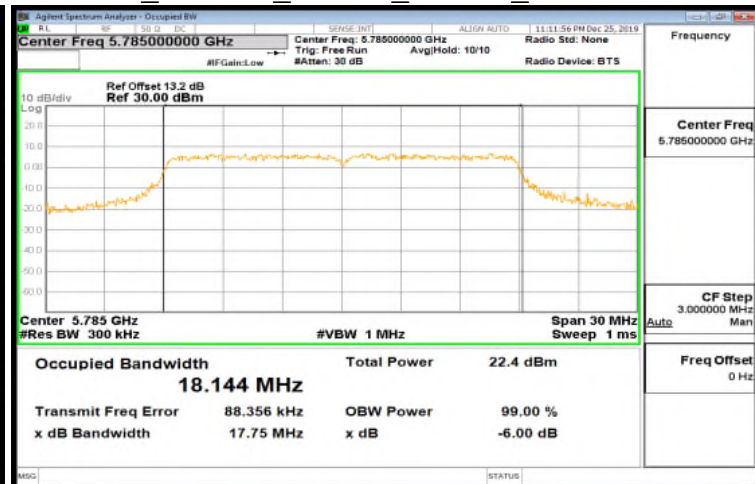
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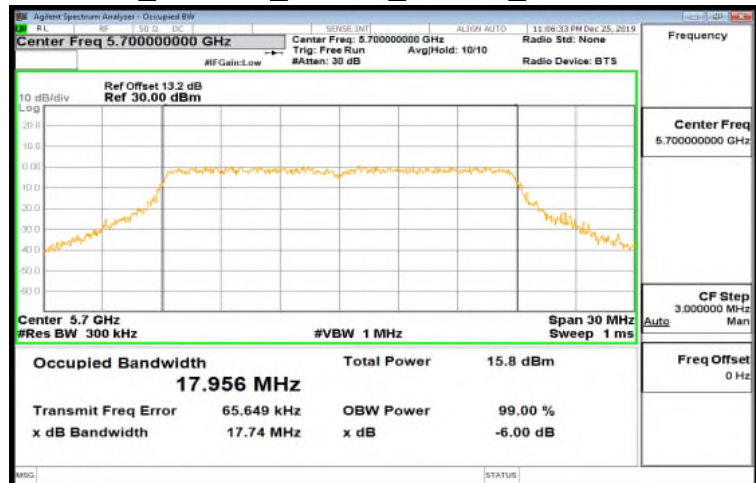
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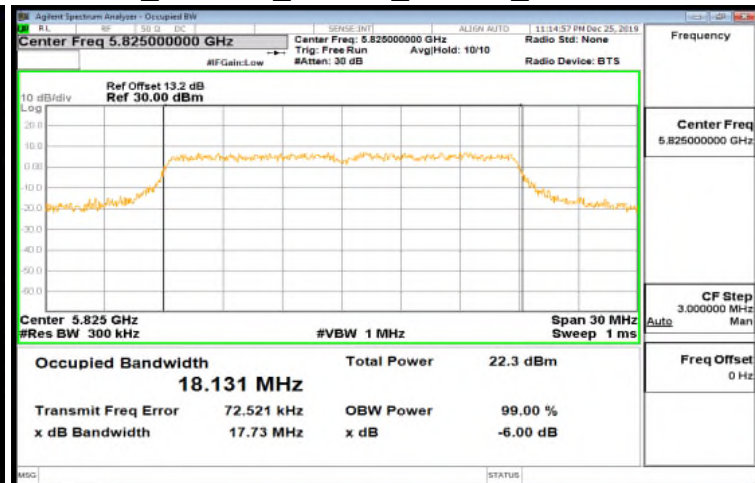
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IC_802.11n_20MHz_Chain0_5700MHz



IC_802.11n_20MHz_Chain0_5825MHz



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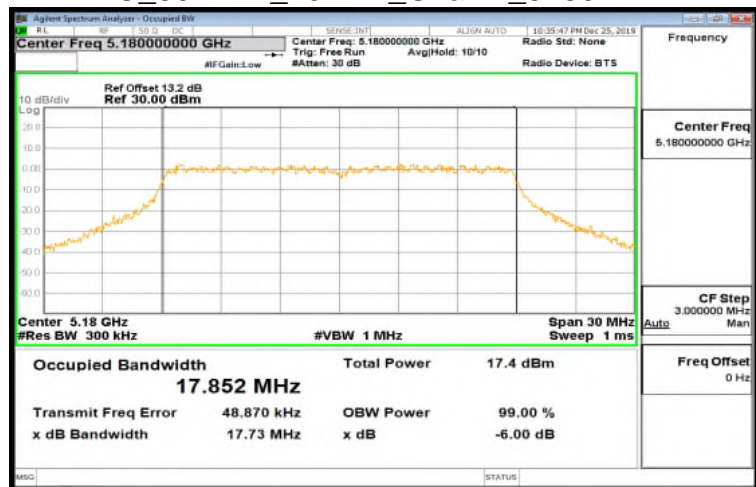
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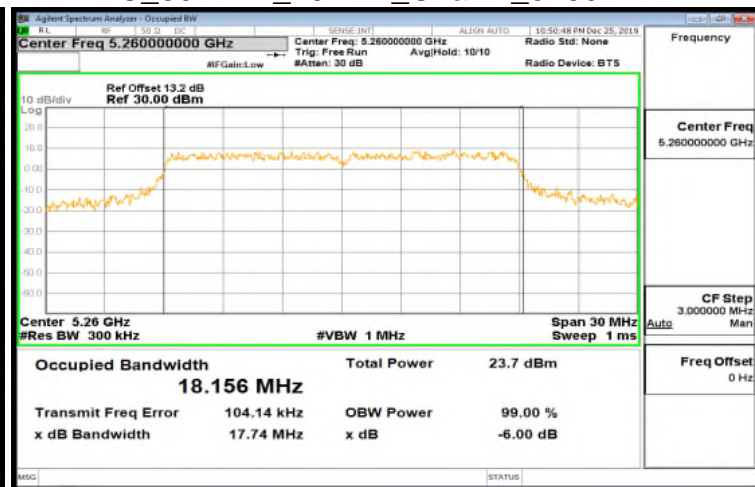
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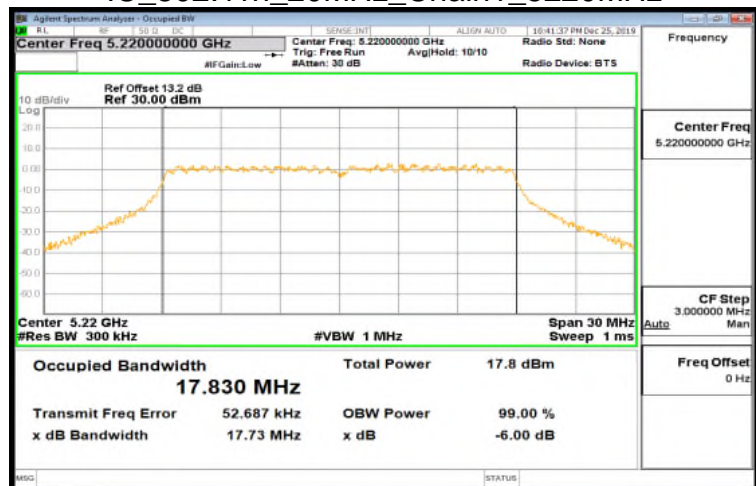
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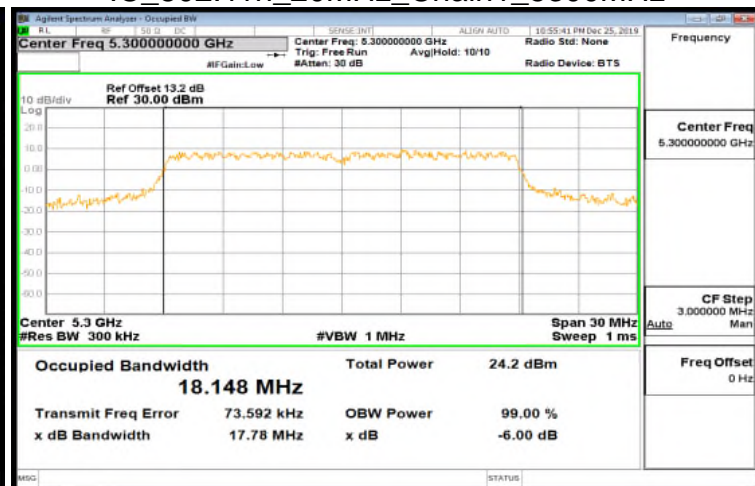
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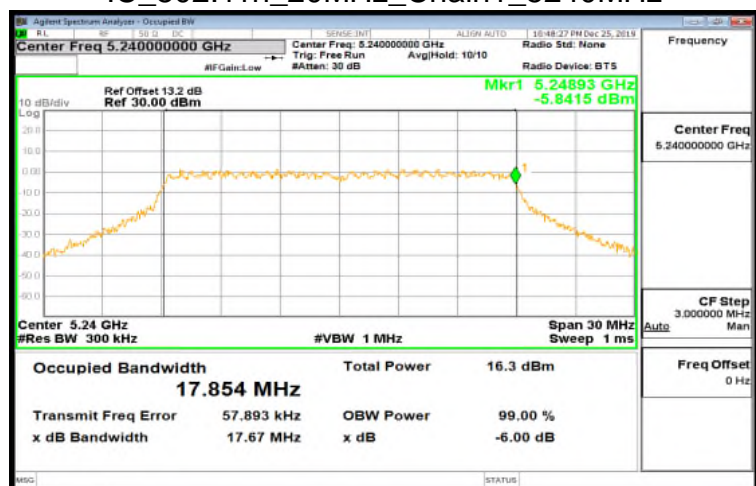
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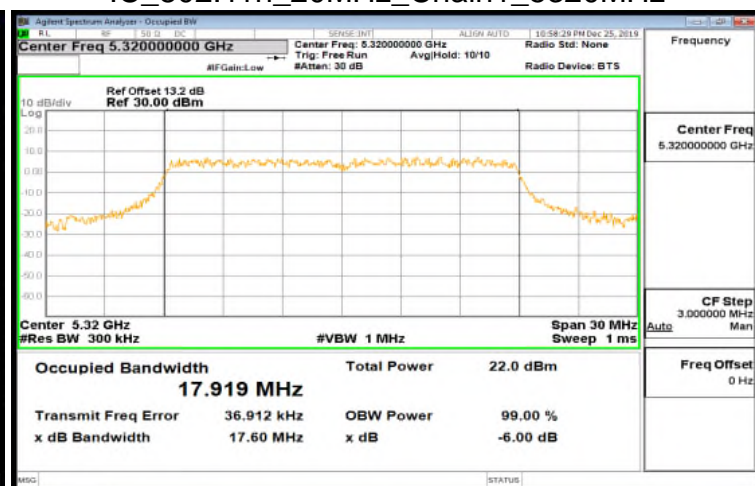
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IC_802.11n_20MHz_Chain1_5240MHz



IC_802.11n_20MHz_Chain1_5320MHz



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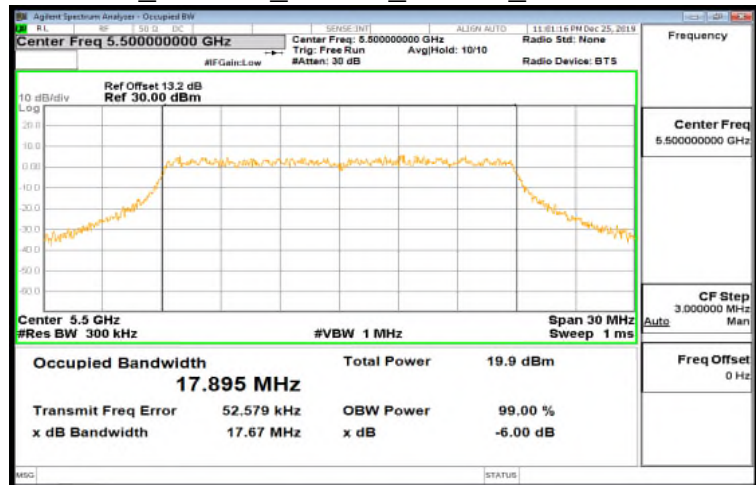
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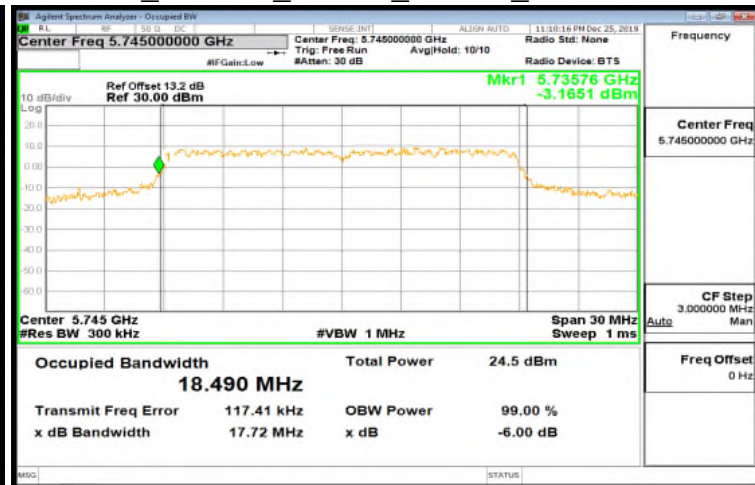
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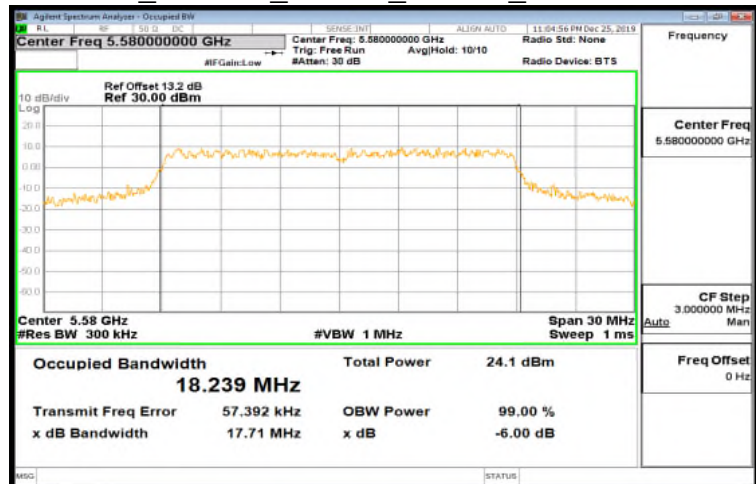
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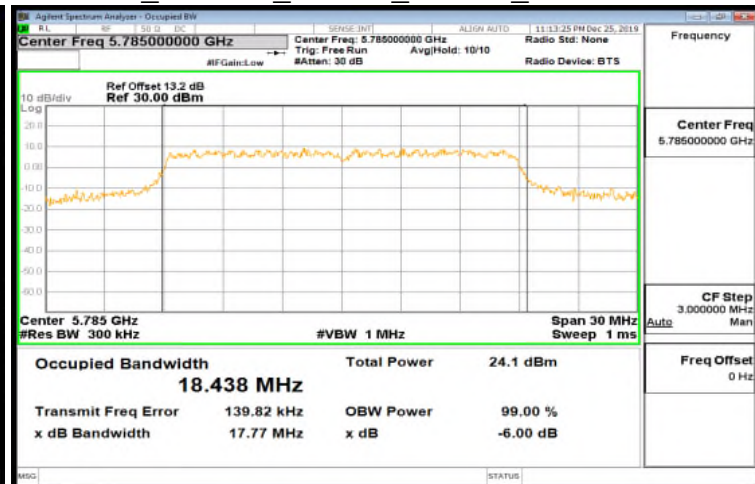
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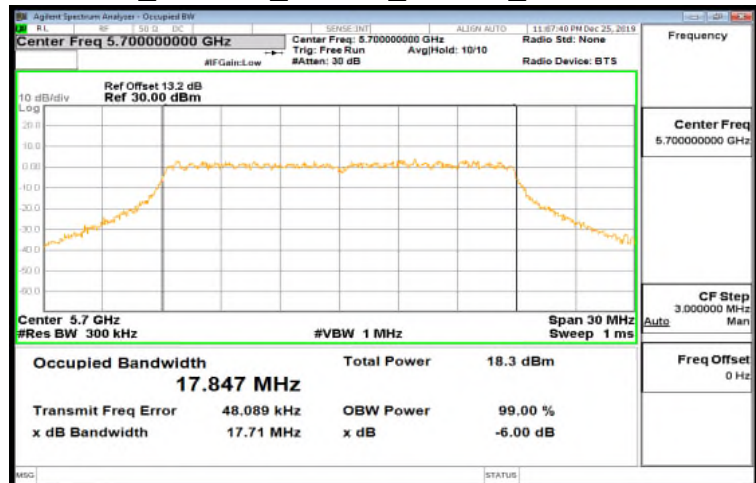
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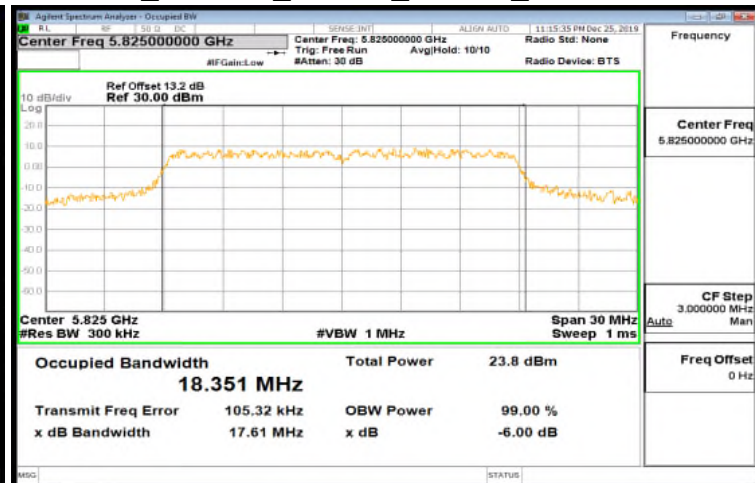
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IC_802.11n_20MHz_Chain1_5700MHz



IC_802.11n_20MHz_Chain1_5825MHz



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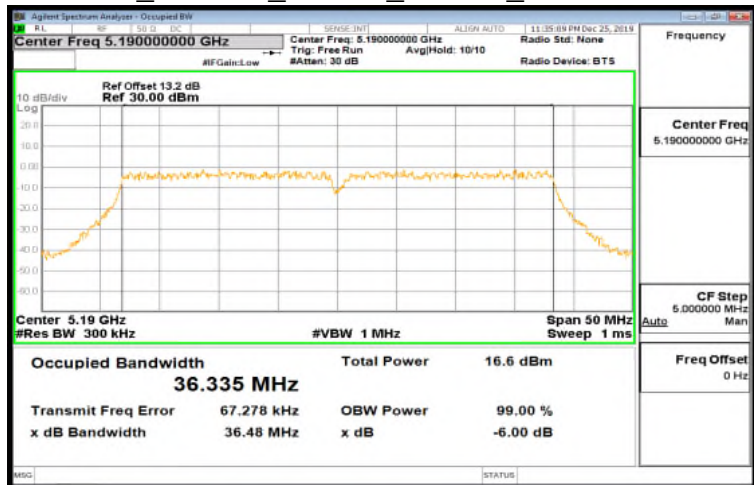
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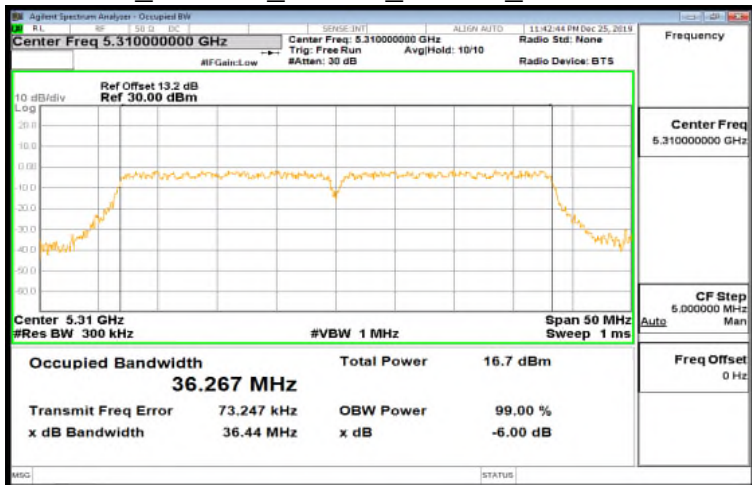
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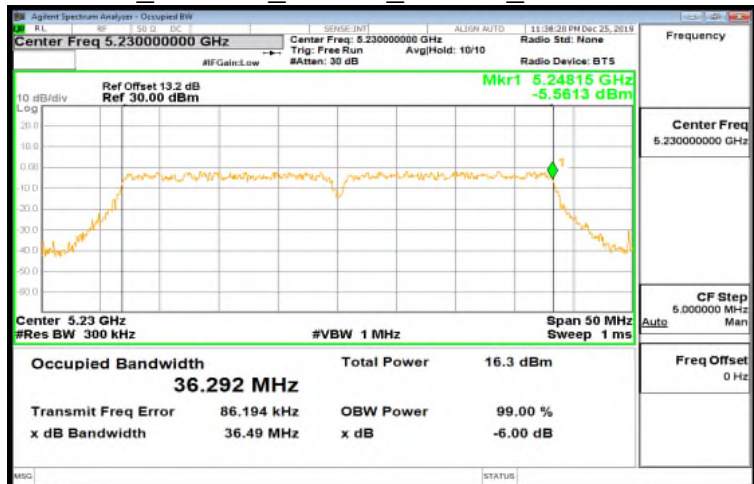
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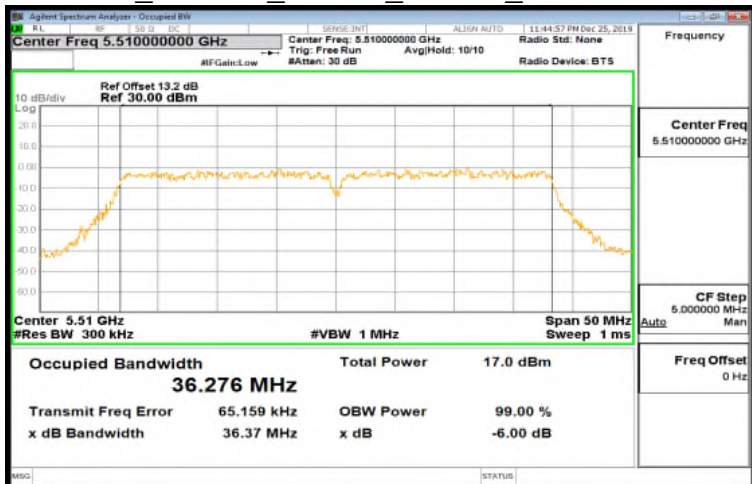
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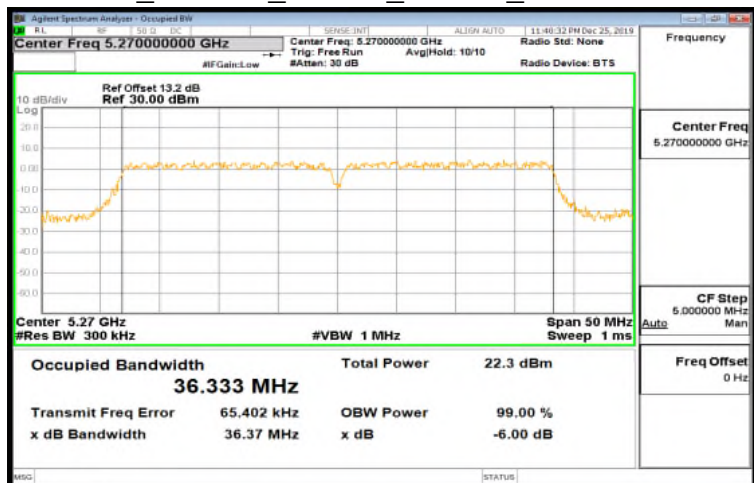
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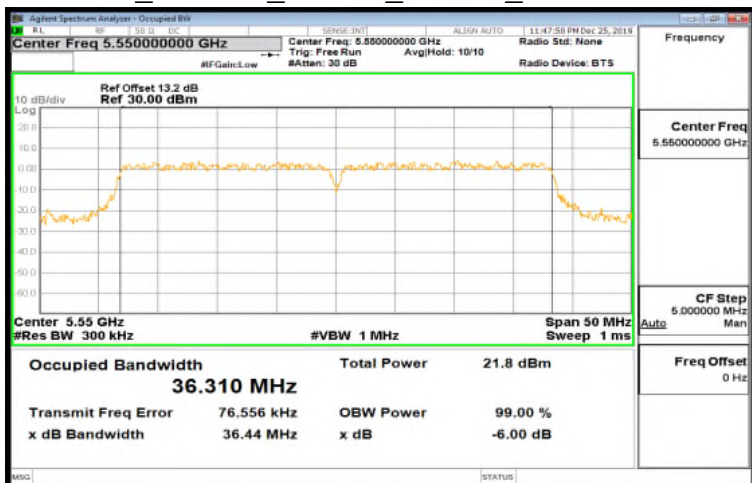
IC_802.11n_40MHz_Chain0_5510MHz



IC_802.11n_40MHz_Chain0_5270MHz



IC_802.11n_40MHz_Chain0_5550MHz



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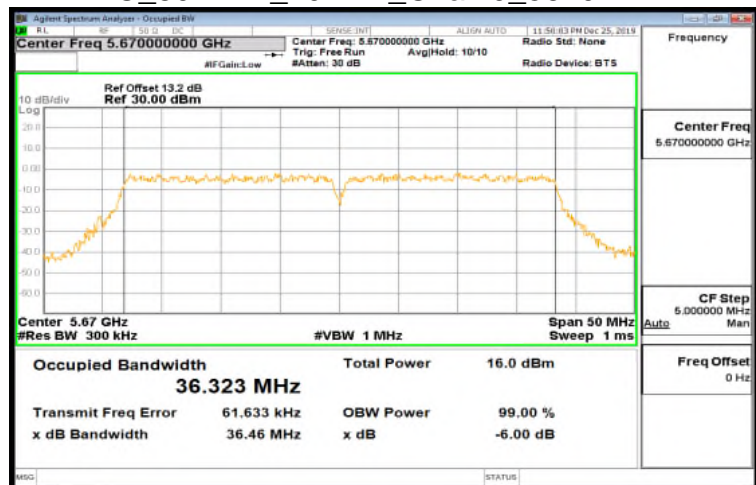
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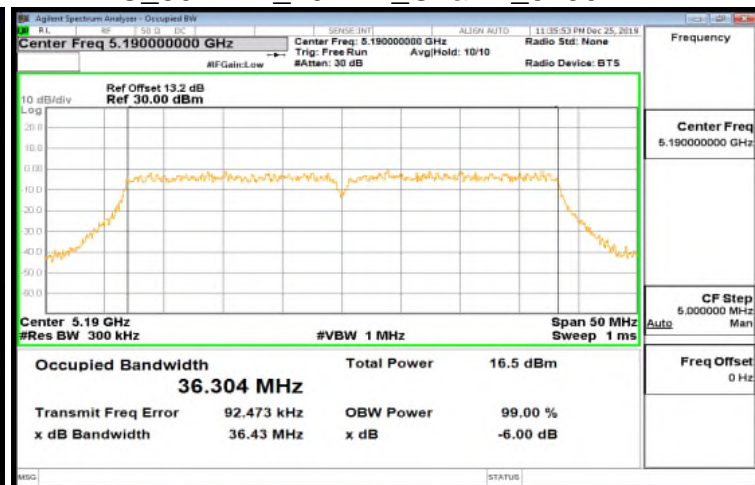
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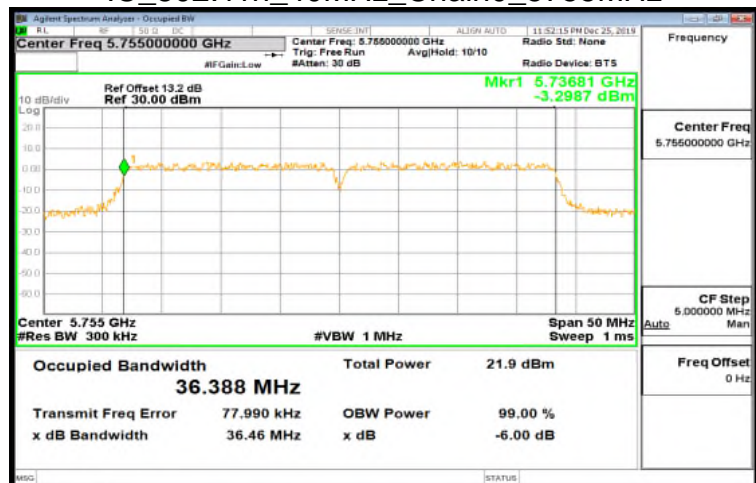
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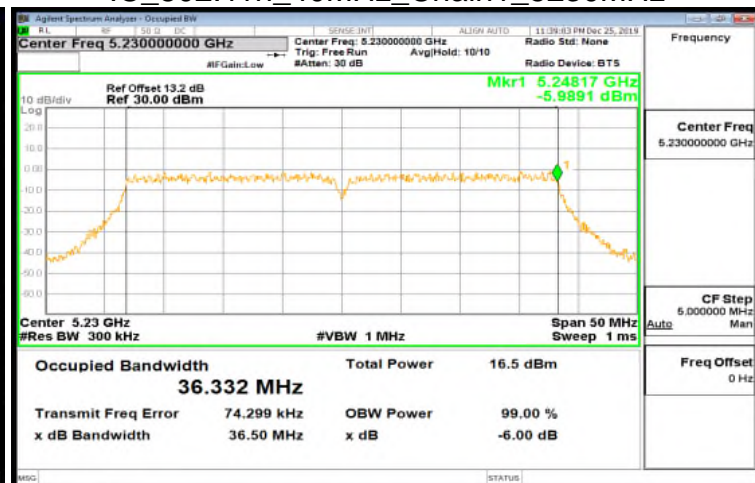
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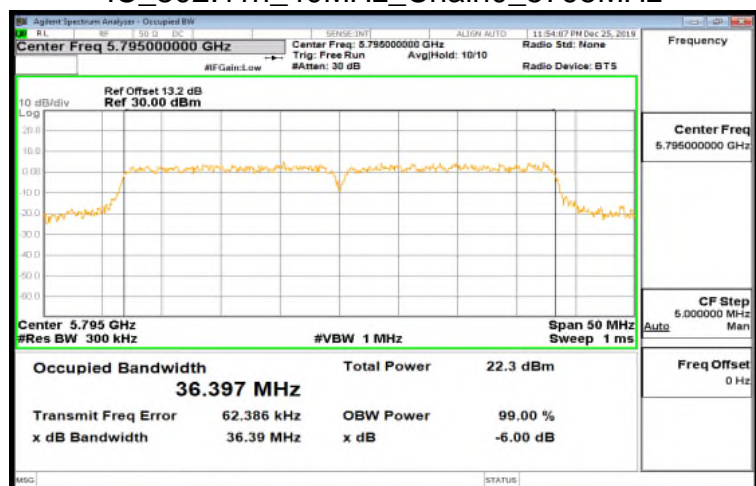
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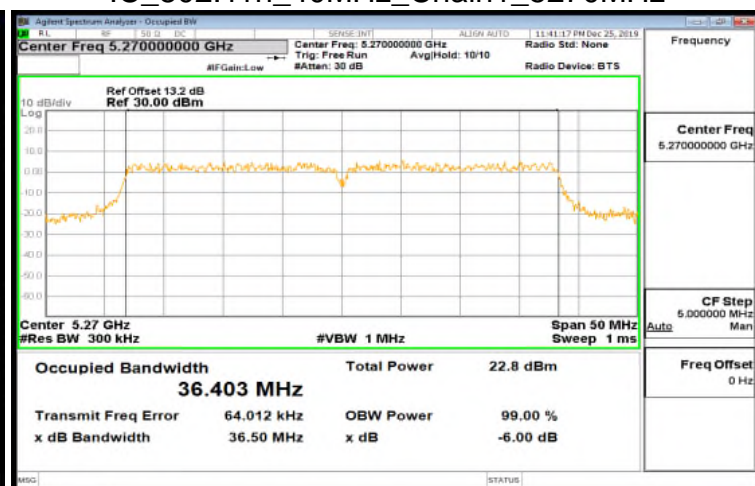
IC_802.11n_40MHz_Chain1_5230MHz



IC_802.11n_40MHz_Chain0_5795MHz



IC_802.11n_40MHz_Chain1_5270MHz



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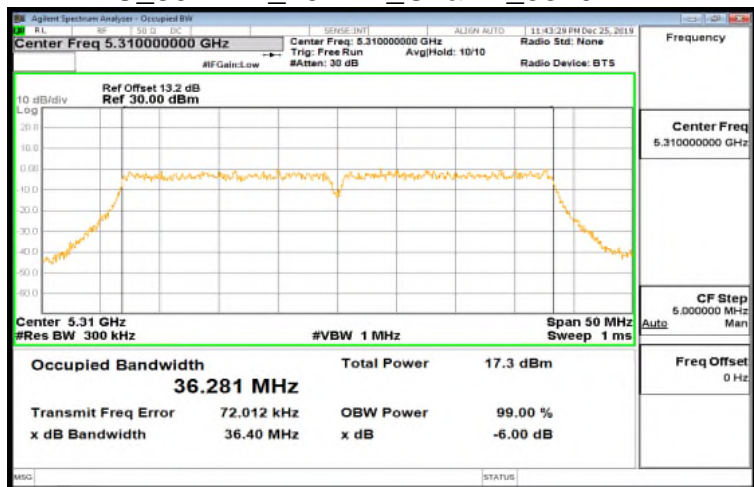
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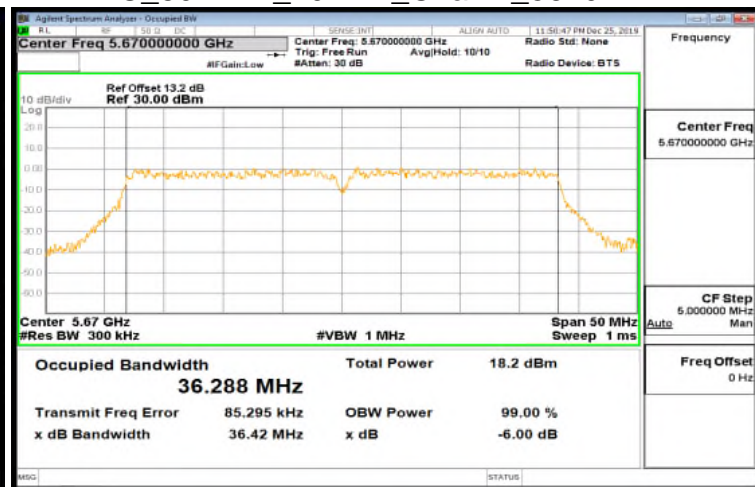
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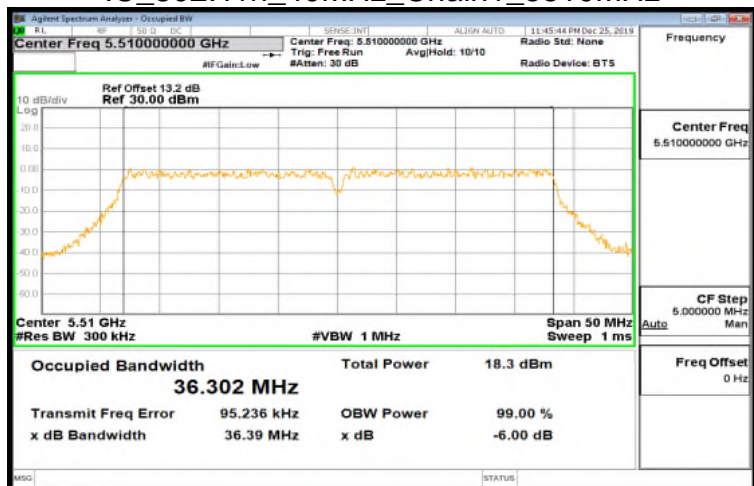
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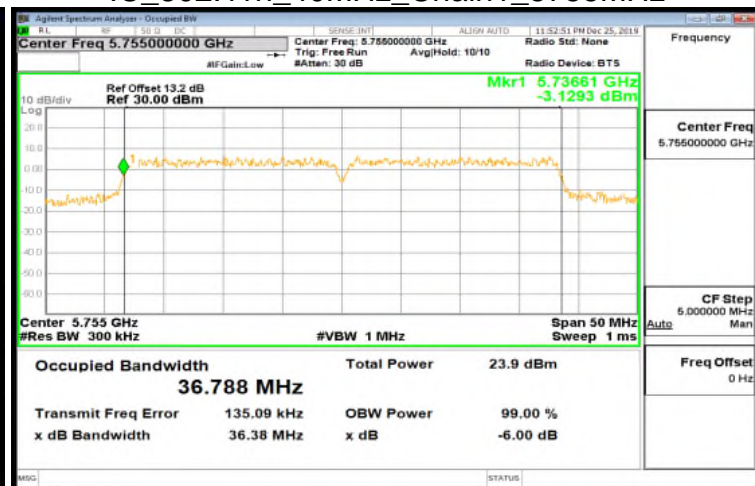
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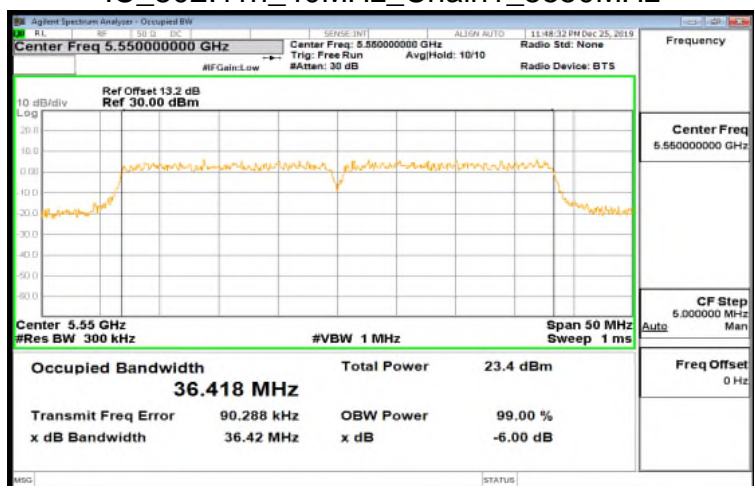
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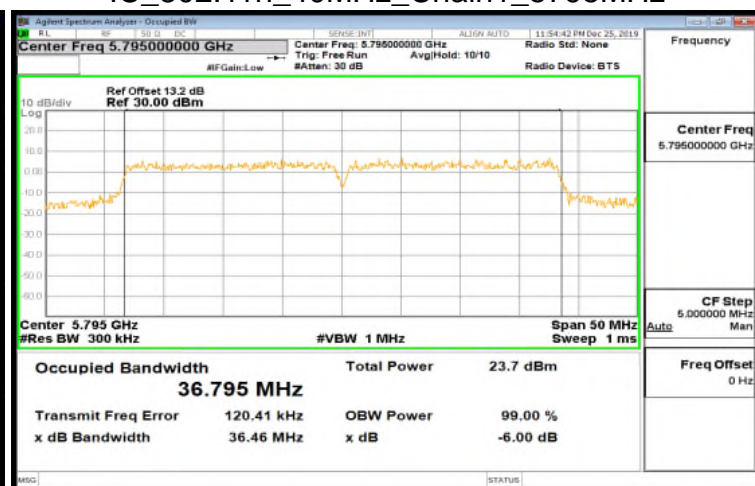
IC_802.11n_40MHz_Chain1_5755MHz



IC_802.11n_40MHz_Chain1_5550MHz



IC_802.11n_40MHz_Chain1_5795MHz



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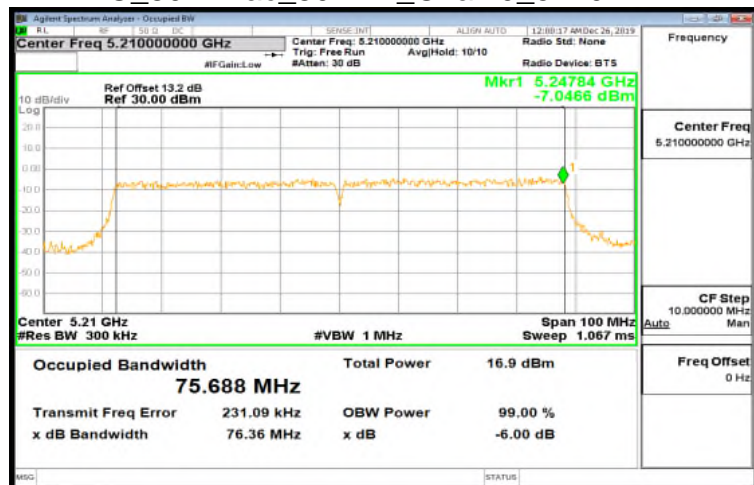
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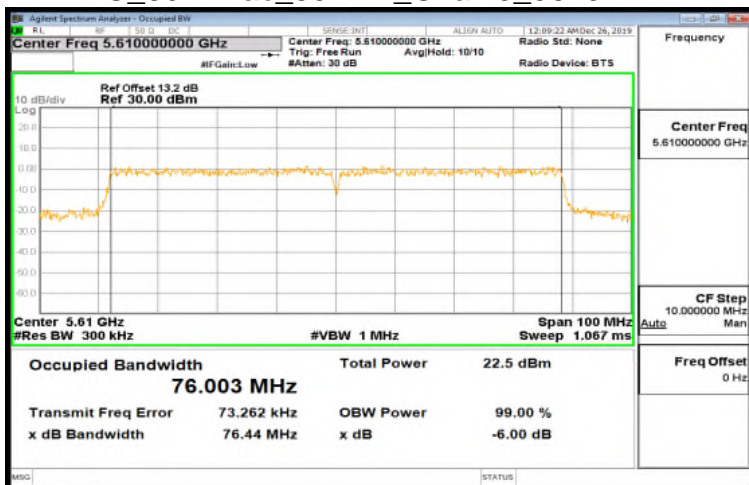
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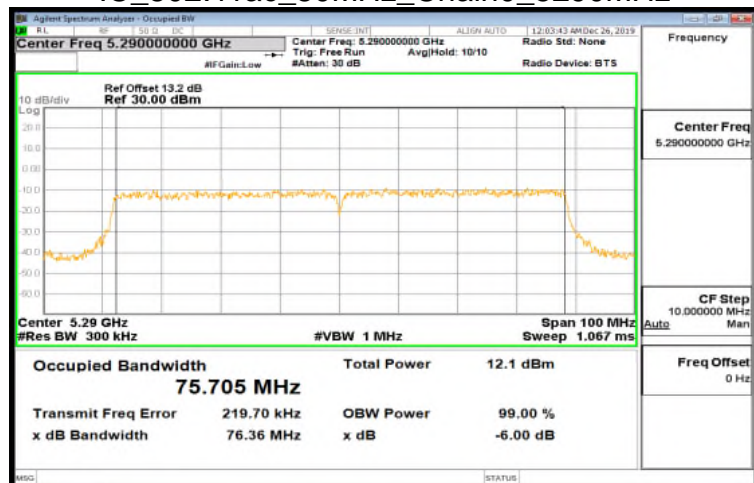
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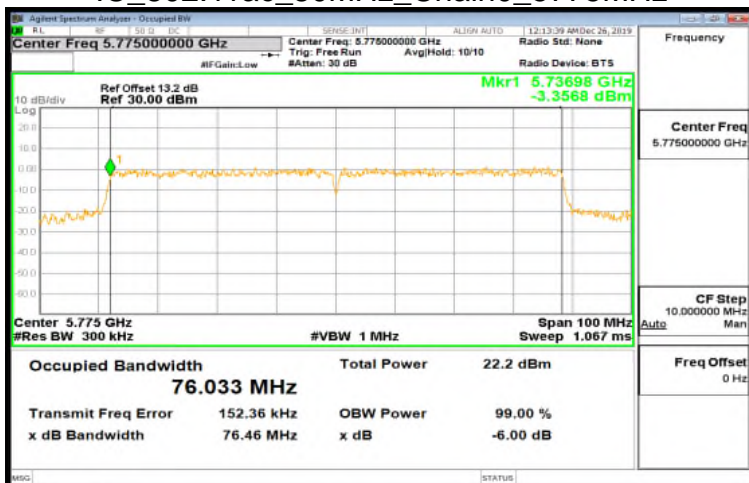
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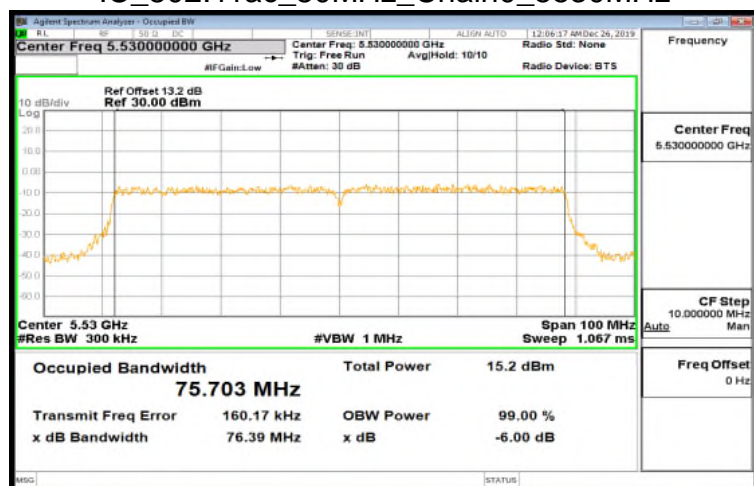
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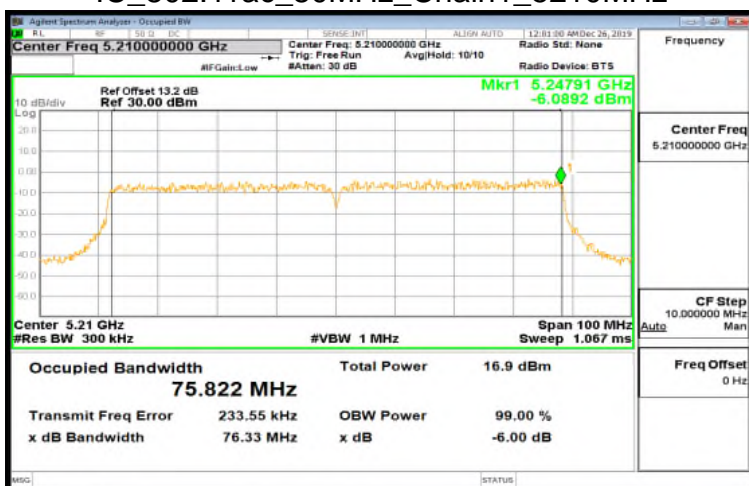
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IC_802.11ac_80MHz_Chain0_5530MHz



IC_802.11ac_80MHz_Chain1_5210MHz



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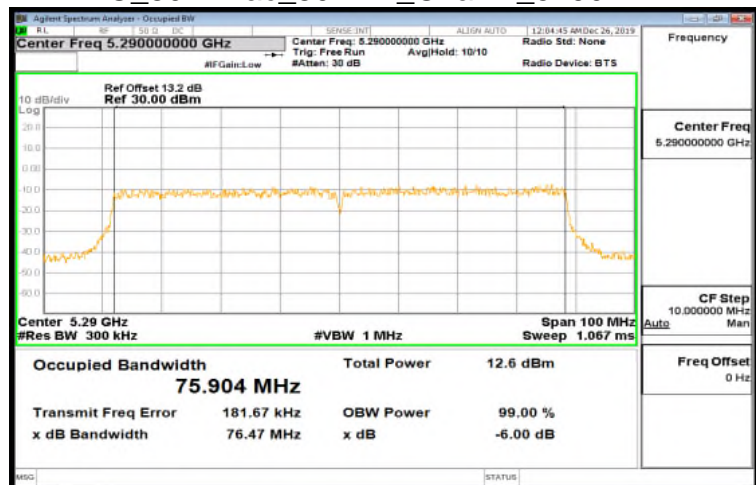
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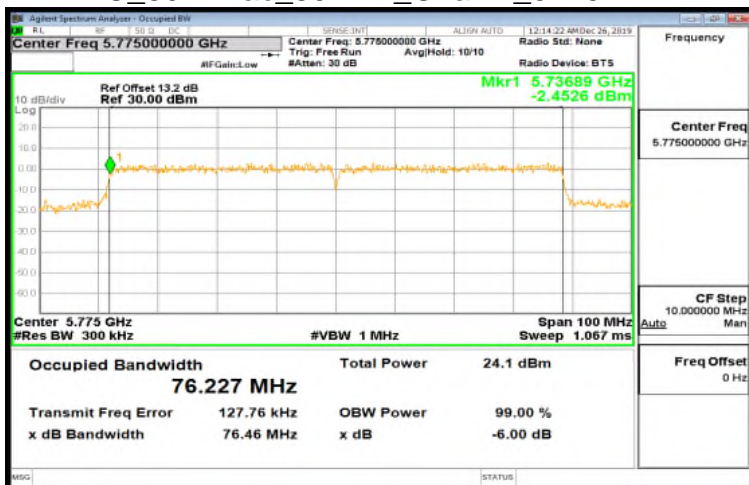
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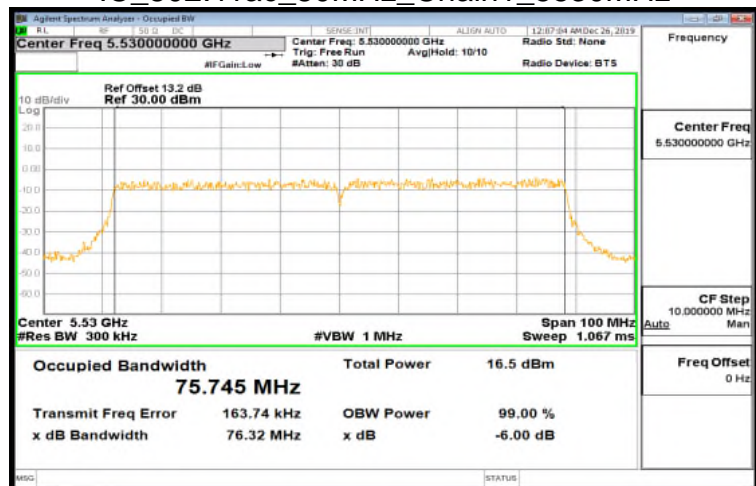
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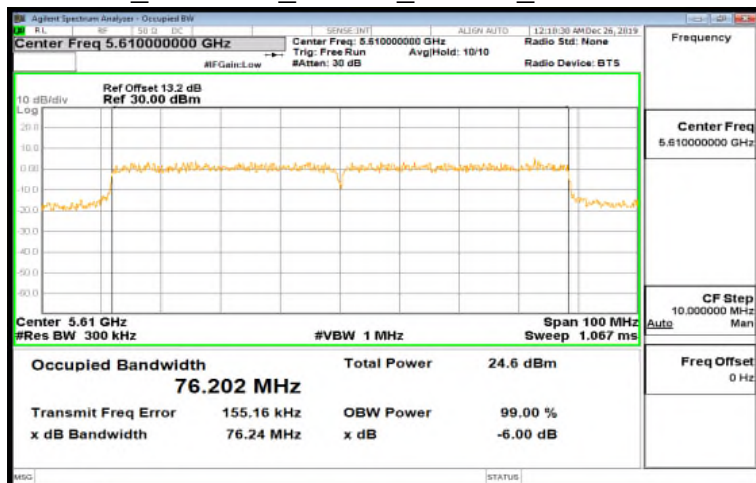
IC_802.11ac_80MHz_Chain1_5775MHz



IC_802.11ac_80MHz_Chain1_5530MHz



IC_802.11ac_80MHz_Chain1_5610MHz



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8.5.5 99% BW Verification for DFS Function

802.11a_Ch0

802.11a_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)	Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.32	< 5250	5240	5248.27	< 5250
5745	5736.69	> 5725	5745	5736.28	> 5725

802.11n_HT20_Ch0

802.11n_HT20_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)	Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.91	< 5250	5240	5248.88	< 5250
5745	5736.12	> 5725	5745	5735.97	> 5725

802.11n_HT40_Ch0

802.11n_HT40_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)	Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5230	5248.18	< 5250	5230	5248.18	< 5250
5755	5736.86	> 5725	5755	5736.76	> 5725

802.11ac_VHT80_Ch0

802.11ac_VHT80_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)	Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5210	5247.93	< 5250	5210	5247.94	< 5250
5775	5737.05	> 5725	5775	5736.97	> 5725

Please see next page for test plot

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9 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

9.1 Standard Applicable

FCC

OPERZTION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Master device)	1 Watt(30dBm)
		Fixed point-to-point Access Ponit	1 Watt(30dBm)
	√	Mobile and portable client device	250mW(23.98dBm)
U-NII-2A	√		250mW(23.98dBm) or 11dBm+10 log B
U-NII-2C	√		250mW(23.98dBm) or 11dBm+10 log B
U-NII-3	√		1 Watt(30dBm)
If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum transmit power shall be reduced by the amount in dB that the direction-al gain of the antenna exceeds 6 dBi.			

ISED

OPERZTION FREQUENCY BAND	LIMIT
5150~5250 MHz	EIRP shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm
5250~5350 MHz	Conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$ EIRP shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm
5470-5600 MHz and 5650-5725 MHz	Conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$ EIRP shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm
5725~5850 MHz	Conducted output power shall not exceed 1 W
For equipment operating in the band 5725-5850 MHz, If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum transmit power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	

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Note:

As per FCC KDB 662911 D01

Unequal antenna gains, with equal transmit powers. For antenna gains given by G_1, G_2, \dots, G_N dBi.

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

$$= 10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}] \text{ dBi}$$

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

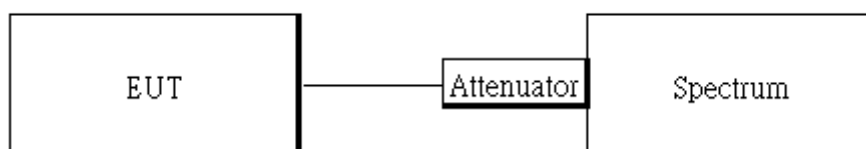
The antenna gain is not greater than 6 dBi. Therefore, reduction of power is not required.

9.2 Measurement Procedure

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

9.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Power Meter	Anritsu	ML2496A	1804001	02/13/2019	02/12/2020
Power Sensor	Anritsu	MA2411B	1726104	02/13/2019	02/12/2020
Power Sensor	Anritsu	MA2411B	1726107	02/13/2019	02/12/2020
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2019	01/01/2020

9.4 Test Set-up

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9.5 Measurement Result

9.5.1 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	8.55	7.157	23.98	PASS
44	5220	6	8.82	7.617	23.98	PASS
48	5240	6	9.07	8.068	23.98	PASS
52	5260	6	16.86	48.502	23.98 or $11+10\log(B) = 25.65$	PASS
60	5300	6	16.93	49.290	23.98 or $11+10\log(B) = 25.62$	PASS
64	5320	6	15.40	34.654	23.98 or $11+10\log(B) = 24.37$	PASS
100	5500	6	13.38	21.765	23.98 or $11+10\log(B) = 24.28$	PASS
116	5580	6	17.00	50.091	23.98 or $11+10\log(B) = 25.75$	PASS
140	5700	6	7.06	5.079	23.98 or $11+10\log(B) = 24.21$	PASS
149	5745	6	16.26	42.243	30	PASS
157	5785	6	16.49	44.541	30	PASS
165	5825	6	16.80	47.836	30	PASS

802.11a_Ch1

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	8.92	7.794	23.98	PASS
44	5220	6	8.88	7.722	23.98	PASS
48	5240	6	9.12	8.161	23.98	PASS
52	5260	6	17.06	50.788	23.98 or $11+10\log(B) = 25.75$	PASS
60	5300	6	17.12	51.494	23.98 or $11+10\log(B) = 25.76$	PASS
64	5320	6	16.41	43.728	23.98 or $11+10\log(B) = 24.98$	PASS
100	5500	6	14.94	31.171	23.98 or $11+10\log(B) = 24.27$	PASS
116	5580	6	18.24	66.643	23.98 or $11+10\log(B) = 25.76$	PASS
140	5700	6	8.72	7.443	23.98 or $11+10\log(B) = 24.13$	PASS
149	5745	6	18.09	64.381	30	PASS
157	5785	6	17.88	61.342	30	PASS
165	5825	6	17.78	59.946	30	PASS

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802.11a_2Tx

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1				
36	5180	6	9.78	10.28	13.24	21.062	21.86739766	PASS
44	5220	6	9.89	10.31	13.30	21.394	21.86739766	PASS
48	5240	6	9.89	10.38	13.34	21.576	21.86739766	PASS
52	5260	6	16.88	17.32	20.30	107.237	21.81 or 11+10log(B) = 25.65	PASS
60	5300	6	16.67	17.42	20.26	106.146	21.81 or 11+10log(B) = 25.62	PASS
64	5320	6	15.37	16.29	19.05	80.393	21.81 or 11+10log(B) = 24.37	PASS
100	5500	6	13.22	14.66	17.20	52.448	21.97 or 11+10log(B) = 24.27	PASS
116	5580	6	16.88	18.12	20.74	118.631	21.97 or 11+10log(B) = 25.75	PASS
140	5700	6	6.95	8.9	11.23	13.278	21.97 or 11+10log(B) = 24.13	PASS
149	5745	6	16.11	17.82	20.25	105.840	27.98970004	PASS
157	5785	6	16.35	17.7	20.28	106.540	27.98970004	PASS
165	5825	6	16.54	17.56	20.28	106.604	27.98970004	PASS

802.11n_HT20_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	9.42	8.753	23.98	PASS
44	5220	MCS0	9.56	9.039	23.98	PASS
48	5240	MCS0	9.77	9.487	23.98	PASS
52	5260	MCS0	15.55	35.904	23.98 or 11+10log(B) = 25.61	PASS
60	5300	MCS0	15.47	35.249	23.98 or 11+10log(B) = 25.73	PASS
64	5320	MCS0	15.43	34.926	23.98 or 11+10log(B) = 24.50	PASS
100	5500	MCS0	12.33	17.106	23.98 or 11+10log(B) = 24.43	PASS
116	5580	MCS0	16.93	49.334	23.98 or 11+10log(B) = 25.76	PASS
140	5700	MCS0	11.02	12.652	23.98 or 11+10log(B) = 24.56	PASS
149	5745	MCS0	16.26	42.281	30	PASS
157	5785	MCS0	16.31	42.770	30	PASS
165	5825	MCS0	16.75	47.331	30	PASS

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802.11n_HT20_Ch1

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	MCS0	9.84	9.641	23.98		PASS
44	5220	MCS0	9.93	9.843	23.98		PASS
48	5240	MCS0	10.19	10.451	23.98		PASS
52	5260	MCS0	16.00	39.824	23.98	or $11+10\log(B) = 25.72$	PASS
60	5300	MCS0	16.05	40.285	23.98	or $11+10\log(B) = 25.76$	PASS
64	5320	MCS0	16.40	43.666	23.98	or $11+10\log(B) = 25.14$	PASS
100	5500	MCS0	13.84	24.218	23.98	or $11+10\log(B) = 24.44$	PASS
116	5580	MCS0	18.29	67.475	23.98	or $11+10\log(B) = 25.76$	PASS
140	5700	MCS0	12.80	19.061	23.98	or $11+10\log(B) = 24.56$	PASS
149	5745	MCS0	17.94	62.251	30		PASS
157	5785	MCS0	17.86	61.114	30		PASS
165	5825	MCS0	17.74	59.449	30		PASS

802.11n_HT20_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
			CH 0	CH 1					
36	5180	MCS8	10.64	11.02	14.06	25.444	21.66970004		PASS
44	5220	MCS8	10.43	11.08	13.99	25.055	21.66970004		PASS
48	5240	MCS8	9.63	9.95	13.01	20.020	21.66970004		PASS
52	5260	MCS8	16.73	17.14	20.16	103.791	21.37	or $11+10\log(B) = 25.61$	PASS
60	5300	MCS8	16.48	17.22	20.09	102.035	21.37	or $11+10\log(B) = 25.73$	PASS
64	5320	MCS8	15.14	16.23	18.94	78.358	21.37	or $11+10\log(B) = 24.50$	PASS
100	5500	MCS8	11.97	13.6	16.08	40.577	21.97	or $11+10\log(B) = 24.43$	PASS
116	5580	MCS8	16.66	18.03	20.62	115.360	21.97	or $11+10\log(B) = 25.76$	PASS
140	5700	MCS8	10.74	12.65	15.02	31.775	21.97	or $11+10\log(B) = 24.56$	PASS
149	5745	MCS8	16.03	17.78	20.21	105.058	27.98970004		PASS
157	5785	MCS8	16.06	17.63	20.14	103.212	27.98970004		PASS
165	5825	MCS8	16.5	17.45	20.22	105.261	27.98970004		PASS

802.11n_HT40_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
38	5190	MCS0	10.44	11.076	23.98		PASS
46	5230	MCS0	10.52	11.282	23.98		PASS
54	5270	MCS0	16.83	48.238	23.98	or $11+10\log(B) = 27.73$	PASS
62	5310	MCS0	11.58	14.401	23.98	or $11+10\log(B) = 27.17$	PASS
102	5510	MCS0	11.34	13.627	23.98	or $11+10\log(B) = 27.18$	PASS
110	5550	MCS0	16.37	43.390	23.98	or $11+10\log(B) = 27.98$	PASS
134	5670	MCS0	11.01	12.630	23.98	or $11+10\log(B) = 27.20$	PASS
151	5755	MCS0	16.58	45.540	30		PASS
159	5795	MCS0	16.78	47.686	30		PASS

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802.11n_HT40_Ch1

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	10.85	12.173	23.98	PASS
46	5230	MCS0	10.96	12.485	23.98	PASS
54	5270	MCS0	17.41	55.130	23.98 or $11+10\log(B) = 27.83$	PASS
62	5310	MCS0	12.13	16.345	23.98 or $11+10\log(B) = 27.15$	PASS
102	5510	MCS0	12.83	19.204	23.98 or $11+10\log(B) = 27.17$	PASS
110	5550	MCS0	17.80	60.310	23.98 or $11+10\log(B) = 27.98$	PASS
134	5670	MCS0	12.94	19.697	23.98 or $11+10\log(B) = 27.17$	PASS
151	5755	MCS0	18.57	72.010	23.98	PASS
159	5795	MCS0	18.45	70.047	30	PASS

802.11n_HT40_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1				
38	5190	MCS8	9.63	10.01	13.23	21.030	21.86739766	PASS
46	5230	MCS8	9.7	10.2	13.36	21.684	21.86739766	PASS
54	5270	MCS8	16.25	16.96	20.02	100.547	21.81 or $11+10\log(B) = 27.73$	PASS
62	5310	MCS8	10.8	11.59	14.62	28.954	21.81 or $11+10\log(B) = 27.15$	PASS
102	5510	MCS8	10.65	12.12	14.85	30.557	21.97 or $11+10\log(B) = 27.17$	PASS
110	5550	MCS8	15.84	17.44	20.12	102.742	21.97 or $11+10\log(B) = 27.98$	PASS
134	5670	MCS8	10.55	12.45	15.01	31.676	21.97 or $11+10\log(B) = 27.17$	PASS
151	5755	MCS8	15.99	17.94	20.48	111.628	27.98970004	PASS
159	5795	MCS8	16.23	17.84	20.51	112.548	27.98970004	PASS

802.11ac_VHT80_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0	10.67	11.675	23.98	PASS
58	5290	MCS0	6.34	4.308	23.98 or $11+10\log(B) = 30.28$	PASS
106	5530	MCS0	10.30	10.722	23.98 or $11+10\log(B) = 30.25$	PASS
122	5610	MCS0	17.64	58.111	23.98 or $11+10\log(B) = 31.00$	PASS
155	5775	MCS0	16.97	49.804	30	PASS

802.11ac_VHT80_Ch1

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0	10.17	10.405	23.98	PASS
58	5290	MCS0	7.16	5.203	23.98 or $11+10\log(B) = 30.19$	PASS
106	5530	MCS0	9.89	9.756	23.98 or $11+10\log(B) = 30.17$	PASS
122	5610	MCS0	17.81	60.431	23.98 or $11+10\log(B) = 31.00$	PASS
155	5775	MCS0	17.97	62.699	23.98	PASS

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802.11ac_VHT80_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)			RESULT
			CH 0	CH 1						
42	5210	MCS0	9.34	9.91	13.37	21.713	21.86739766			PASS
58	5290	MCS0	5.24	5.95	9.34	8.595	21.81	or 11+10log(B) =	30.19	PASS
106	5530	MCS0	8.14	9.76	12.76	18.871	21.97	or 11+10log(B) =	30.17	PASS
122	5610	MCS0	15.65	17.69	20.52	112.761	21.97	or 11+10log(B) =	31.00	PASS
155	5775	MCS0	13.65	16.07	18.76	75.151	27.98970004			PASS

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9.5.2 ISED EIRP

802.11a_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
36	5180	8.55	4.900	13.45	22.119	23.01	or 10+10log(B)=	22.25	PASS
44	5220	8.82	4.900	13.72	23.537	23.01	or 10+10log(B)=	22.26	PASS
48	5240	9.07	4.900	13.97	24.932	23.01	or 10+10log(B)=	22.26	PASS
52	5260	16.86	5.600	22.46	176.099	30	or 17+10log(B)=	29.35	PASS
60	5300	16.93	5.600	22.53	178.960	30	or 17+10log(B)=	29.31	PASS
64	5320	15.40	5.600	21.00	125.822	30	or 17+10log(B)=	29.24	PASS
100	5500	13.38	5.000	18.38	68.827	30	or 17+10log(B)=	29.25	PASS
116	5580	17.00	5.000	22.00	158.401	30	or 17+10log(B)=	29.31	PASS
140	5700	7.06	5.000	12.06	16.060	30	or 17+10log(B)=	29.23	PASS

802.11a_Ch1

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
36	5180	8.92	5.300	14.22	26.409	23.01	or 10+10log(B)=	22.22	PASS
44	5220	8.88	5.300	14.18	26.167	23.01	or 10+10log(B)=	22.23	PASS
48	5240	9.12	5.300	14.42	27.654	23.01	or 10+10log(B)=	22.21	PASS
52	5260	17.06	4.700	21.76	149.885	30	or 17+10log(B)=	29.40	PASS
60	5300	17.12	4.700	21.82	151.970	30	or 17+10log(B)=	29.36	PASS
64	5320	16.41	4.700	21.11	129.050	30	or 17+10log(B)=	29.25	PASS
100	5500	14.94	5.000	19.94	98.573	30	or 17+10log(B)=	29.22	PASS
116	5580	18.24	5.000	23.24	210.745	30	or 17+10log(B)=	29.38	PASS
140	5700	8.72	5.000	13.72	23.537	30	or 17+10log(B)=	29.22	PASS

802.11a_2Tx

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
36	5180	13.24	8.113	21.35	136.385	23.01	or 10+10log(B)=	22.22	PASS
44	5220	13.30	8.113	21.42	138.533	23.01	or 10+10log(B)=	22.23	PASS
48	5240	13.34	8.113	21.45	139.713	23.01	or 10+10log(B)=	22.21	PASS
52	5260	20.30	8.172	28.48	703.946	30	or 17+10log(B)=	29.35	PASS
60	5300	20.26	8.172	28.43	696.785	30	or 17+10log(B)=	29.31	PASS
64	5320	19.05	8.172	27.22	527.732	30	or 17+10log(B)=	29.24	PASS
100	5500	17.20	8.010	25.21	331.710	30	or 17+10log(B)=	29.22	PASS
116	5580	20.74	8.010	28.75	750.287	30	or 17+10log(B)=	29.31	PASS
140	5700	11.23	8.010	19.24	83.979	30	or 17+10log(B)=	29.22	PASS

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802.11n_HT20_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	9.42	4.900	14.32	27.049	23.01	or 10+10log(B)= 22.55	PASS
44	5220	9.56	4.900	14.46	27.935	23.01	or 10+10log(B)= 22.52	PASS
48	5240	9.77	4.900	14.67	29.319	23.01	or 10+10log(B)= 22.54	PASS
52	5260	15.55	5.600	21.15	130.360	30	or 17+10log(B)= 29.59	PASS
60	5300	15.47	5.600	21.07	127.981	30	or 17+10log(B)= 29.60	PASS
64	5320	15.43	5.600	21.03	126.807	30	or 17+10log(B)= 29.55	PASS
100	5500	12.33	5.000	17.33	54.093	30	or 17+10log(B)= 29.55	PASS
116	5580	16.93	5.000	21.93	156.007	30	or 17+10log(B)= 29.58	PASS
140	5700	11.02	5.000	16.02	40.008	30	or 17+10log(B)= 29.54	PASS

802.11n_HT20_Ch1

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	9.84	5.300	15.14	32.670	23.01	or 10+10log(B)= 22.52	PASS
44	5220	9.93	5.300	15.23	33.354	23.01	or 10+10log(B)= 22.51	PASS
48	5240	10.19	5.300	15.49	35.411	23.01	or 10+10log(B)= 22.52	PASS
52	5260	16.00	4.700	20.70	117.529	30	or 17+10log(B)= 29.59	PASS
60	5300	16.05	4.700	20.75	118.890	30	or 17+10log(B)= 29.59	PASS
64	5320	16.40	4.700	21.10	128.868	30	or 17+10log(B)= 29.53	PASS
100	5500	13.84	5.000	18.84	76.585	30	or 17+10log(B)= 29.53	PASS
116	5580	18.29	5.000	23.29	213.375	30	or 17+10log(B)= 29.61	PASS
140	5700	12.80	5.000	17.80	60.276	30	or 17+10log(B)= 29.52	PASS

802.11n_HT20_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	14.06	8.113	22.17	164.759	23.01	or 10+10log(B)= 22.52	PASS
44	5220	13.99	8.113	22.10	162.237	23.01	or 10+10log(B)= 22.51	PASS
48	5240	13.01	8.113	21.13	129.637	23.01	or 10+10log(B)= 22.52	PASS
52	5260	20.16	8.172	28.33	681.323	30	or 17+10log(B)= 29.59	PASS
60	5300	20.09	8.172	28.26	669.797	30	or 17+10log(B)= 29.59	PASS
64	5320	18.94	8.172	27.11	514.375	30	or 17+10log(B)= 29.53	PASS
100	5500	16.08	8.010	24.09	256.630	30	or 17+10log(B)= 29.53	PASS
116	5580	20.62	8.010	28.63	729.599	30	or 17+10log(B)= 29.58	PASS
140	5700	15.02	8.010	23.03	200.965	30	or 17+10log(B)= 29.52	PASS

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802.11n_HT40_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
38	5190	10.44	4.900	15.34	34.229	23.01	or 10+10log(B)=	25.60	PASS
46	5230	10.52	4.900	15.42	34.865	23.01	or 10+10log(B)=	25.60	PASS
54	5270	16.83	5.600	22.43	175.142	30	or 17+10log(B)=	32.60	PASS
62	5310	11.58	5.600	17.18	52.287	30	or 17+10log(B)=	32.60	PASS
102	5510	11.34	5.000	16.34	43.091	30	or 17+10log(B)=	32.60	PASS
110	5550	16.37	5.000	21.37	137.212	30	or 17+10log(B)=	32.60	PASS
134	5670	11.01	5.000	16.01	39.938	30	or 17+10log(B)=	32.60	PASS

802.11n_HT40_Ch1

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
38	5190	10.85	5.300	16.15	41.247	23.01	or 10+10log(B)=	25.60	PASS
46	5230	10.96	5.300	16.26	42.305	23.01	or 10+10log(B)=	25.60	PASS
54	5270	17.41	4.700	22.11	162.701	30	or 17+10log(B)=	32.61	PASS
62	5310	12.13	4.700	16.83	48.238	30	or 17+10log(B)=	32.60	PASS
102	5510	12.83	5.000	17.83	60.728	30	or 17+10log(B)=	32.60	PASS
110	5550	17.80	5.000	22.80	190.718	30	or 17+10log(B)=	32.61	PASS
134	5670	12.94	5.000	17.94	62.286	30	or 17+10log(B)=	32.60	PASS

802.11n_HT40_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
38	5190	13.23	8.113	21.34	136.175	23.01	or 10+10log(B)=	25.60	PASS
46	5230	13.36	8.113	21.47	140.411	23.01	or 10+10log(B)=	25.60	PASS
54	5270	20.02	8.172	28.20	660.033	30	or 17+10log(B)=	32.60	PASS
62	5310	14.62	8.172	22.79	190.069	30	or 17+10log(B)=	32.60	PASS
102	5510	14.85	8.010	22.86	193.260	30	or 17+10log(B)=	32.60	PASS
110	5550	20.12	8.010	28.13	649.798	30	or 17+10log(B)=	32.60	PASS
134	5670	15.01	8.010	23.02	200.336	30	or 17+10log(B)=	32.60	PASS

802.11ac_VHT80_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
42	5210	10.67	4.900	15.57	36.079	23.01	or 10+10log(B)=	28.79	PASS
58	5290	6.34	5.600	11.94	15.641	30	or 17+10log(B)=	35.79	PASS
106	5530	10.30	5.000	15.30	33.905	30	or 17+10log(B)=	35.79	PASS

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802.11ac_VHT80_Ch1

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
42	5210	10.17	5.300	15.47	35.258	23.01	or 10+10log(B)= 28.80	PASS
58	5290	7.16	4.700	11.86	15.355	30	or 17+10log(B)= 35.80	PASS
106	5530	9.89	5.000	14.89	30.850	30	or 17+10log(B)= 35.79	PASS

802.11ac_VHT80_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
42	5210	13.37	8.113	21.48	140.600	23.01	or 10+10log(B)= 28.79	PASS
58	5290	9.34	8.172	17.51	56.420	30	or 17+10log(B)= 35.79	PASS
106	5530	12.76	8.010	20.77	119.352	30	or 17+10log(B)= 35.79	PASS

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9.5.3 Conducted output power (ISED)

802.11a_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	16.86	48.502	23.98 or $11+10\log(B) = 23.35$	PASS
60	5300	16.93	49.290	23.98 or $11+10\log(B) = 23.31$	PASS
64	5320	15.40	34.654	23.98 or $11+10\log(B) = 23.24$	PASS
100	5500	13.38	21.765	23.98 or $11+10\log(B) = 23.25$	PASS
116	5580	17.00	50.091	23.98 or $11+10\log(B) = 23.31$	PASS
140	5700	7.06	5.079	23.98 or $11+10\log(B) = 23.23$	PASS
149	5745	16.26	42.243	30	PASS
157	5785	16.49	44.541	30	PASS
165	5825	16.80	47.836	30	PASS

802.11a_Ch1

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	17.06	50.788	23.98 or $11+10\log(B) = 23.40$	PASS
60	5300	17.12	51.494	23.98 or $11+10\log(B) = 23.36$	PASS
64	5320	16.41	43.728	23.98 or $11+10\log(B) = 23.25$	PASS
100	5500	14.94	31.171	23.98 or $11+10\log(B) = 23.22$	PASS
116	5580	18.24	66.643	23.98 or $11+10\log(B) = 23.38$	PASS
140	5700	8.72	7.443	23.98 or $11+10\log(B) = 23.22$	PASS
149	5745	18.09	64.381	30	PASS
157	5785	17.88	61.342	30	PASS
165	5825	17.78	59.946	30	PASS

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802.11a_2Tx

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
		CH 0	CH 1					
52	5260	16.88	17.32	20.30	107.237	21.81	or $11+10\log(B) = 23.35$	PASS
60	5300	16.67	17.42	20.26	106.146	21.81	or $11+10\log(B) = 23.31$	PASS
64	5320	15.37	16.29	19.05	80.393	21.81	or $11+10\log(B) = 23.24$	PASS
100	5500	13.22	14.66	17.20	52.448	21.97	or $11+10\log(B) = 23.22$	PASS
116	5580	16.88	18.12	20.74	118.631	21.97	or $11+10\log(B) = 23.31$	PASS
140	5700	6.95	8.9	11.23	13.278	21.97	or $11+10\log(B) = 23.22$	PASS
149	5745	16.11	17.82	20.25	105.840	27.98970004		PASS
157	5785	16.35	17.7	20.28	106.540	27.98970004		PASS
165	5825	16.54	17.56	20.28	106.604	27.98970004		PASS

802.11n_HT20_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
52	5260	15.55	35.904	23.98	or $11+10\log(B) = 23.59$	PASS
60	5300	15.47	35.249	23.98	or $11+10\log(B) = 23.60$	PASS
64	5320	15.43	34.926	23.98	or $11+10\log(B) = 23.55$	PASS
100	5500	12.33	17.106	23.98	or $11+10\log(B) = 23.55$	PASS
116	5580	16.93	49.334	23.98	or $11+10\log(B) = 23.58$	PASS
140	5700	11.02	12.652	23.98	or $11+10\log(B) = 23.54$	PASS
149	5745	16.26	42.281	30		PASS
157	5785	16.31	42.770	30		PASS
165	5825	16.75	47.331	30		PASS

802.11n_HT20_Ch1

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
52	5260	16.00	39.824	23.98	or $11+10\log(B) = 23.59$	PASS
60	5300	16.05	40.285	23.98	or $11+10\log(B) = 23.59$	PASS
64	5320	16.40	43.666	23.98	or $11+10\log(B) = 23.53$	PASS
100	5500	13.84	24.218	23.98	or $11+10\log(B) = 23.53$	PASS
116	5580	18.29	67.475	23.98	or $11+10\log(B) = 23.61$	PASS
140	5700	12.80	19.061	23.98	or $11+10\log(B) = 23.52$	PASS
149	5745	17.94	62.251	30		PASS
157	5785	17.86	61.114	30		PASS
165	5825	17.74	59.449	30		PASS

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802.11ac_VHT20_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
52	5260	15.44	34.965	23.98	or $11+10\log(B) = \#NUM!$	#NUM!
60	5300	15.34	34.169	23.98	or $11+10\log(B) = \#NUM!$	#NUM!
64	5320	15.40	34.644	23.98	or $11+10\log(B) = \#NUM!$	#NUM!
100	5500	12.08	16.130	23.98	or $11+10\log(B) = \#NUM!$	#NUM!
116	5580	16.85	48.376	23.98	or $11+10\log(B) = \#NUM!$	#NUM!
140	5700	10.54	11.314	23.98	or $11+10\log(B) = \#NUM!$	#NUM!
149	5745	15.83	38.250	30		PASS
157	5785	15.98	39.594	30		PASS
165	5825	16.32	42.819	30		PASS

802.11ac_VHT20_Ch1

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
52	5260	15.82	38.162	23.98	or $11+10\log(B) = \#NUM!$	#NUM!
60	5300	15.94	39.231	23.98	or $11+10\log(B) = \#NUM!$	#NUM!
64	5320	16.29	42.524	23.98	or $11+10\log(B) = \#NUM!$	#NUM!
100	5500	13.75	23.694	23.98	or $11+10\log(B) = \#NUM!$	#NUM!
116	5580	18.22	66.318	23.98	or $11+10\log(B) = \#NUM!$	#NUM!
140	5700	12.55	17.974	23.98	or $11+10\log(B) = \#NUM!$	#NUM!
149	5745	17.82	60.483	30		PASS
157	5785	17.68	58.564	30		PASS
165	5825	17.67	58.430	30		PASS

802.11n_HT40_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
54	5270	16.83	48.238	23.98	or $11+10\log(B) = 26.60$	PASS
62	5310	11.58	14.401	23.98	or $11+10\log(B) = 26.60$	PASS
102	5510	11.34	13.627	23.98	or $11+10\log(B) = 26.60$	PASS
110	5550	16.37	43.390	23.98	or $11+10\log(B) = 26.60$	PASS
134	5670	11.01	12.630	23.98	or $11+10\log(B) = 26.60$	PASS
151	5755	16.58	45.540	30		PASS
159	5795	16.78	47.686	30		PASS

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802.11n_HT40_Ch1

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
54	5270	17.41	55.130	23.98	or 11+10log(B) = 26.61	PASS
62	5310	12.13	16.345	23.98	or 11+10log(B) = 26.60	PASS
102	5510	12.83	19.204	23.98	or 11+10log(B) = 26.60	PASS
110	5550	17.80	60.310	23.98	or 11+10log(B) = 26.61	PASS
134	5670	12.94	19.697	23.98	or 11+10log(B) = 26.60	PASS
151	5755	18.57	72.010	30		PASS
159	5795	18.45	70.047	30		PASS

802.11n_HT40_MIMO

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
		CH 0	CH 1					
54	5270	16.25	16.96	20.02	100.547	21.81	or 11+10log(B) = 26.60	PASS
62	5310	10.8	11.59	14.62	28.954	21.81	or 11+10log(B) = 26.60	PASS
102	5510	10.65	12.12	14.85	30.557	21.97	or 11+10log(B) = 26.60	PASS
110	5550	15.84	17.44	20.12	102.742	21.97	or 11+10log(B) = 26.60	PASS
134	5670	10.55	12.45	15.01	31.676	21.97	or 11+10log(B) = 26.60	PASS
151	5755	15.99	17.94	20.48	111.628	27.98970004		PASS
159	5795	16.23	17.84	20.51	112.548	27.98970004		PASS

802.11ac_VHT80_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
58	5290	6.34	4.308	23.98	or 11+10log(B) = 29.79	PASS
106	5530	10.30	10.722	23.98	or 11+10log(B) = 29.79	PASS
122	5610	17.64	58.111	23.98	or 11+11log(B) = 29.81	PASS
155	5775	16.97	49.804	30		PASS

802.11ac_VHT80_Ch1

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
58	5290	7.16	5.203	23.98	or 11+10log(B) = 29.80	PASS
106	5530	9.89	9.756	23.98	or 11+10log(B) = 29.79	PASS
122	5610	17.81	60.431	23.98	or 11+10log(B) = 29.82	PASS
155	5775	17.97	62.699	30		PASS

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802.11ac_VHT80_MIMO

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
		CH 0	CH 1					
58	5290	5.24	5.95	9.34	8.595	21.81	or $11+10\log(B) = 29.79$	PASS
106	5530	8.14	9.76	12.76	18.871	21.97	or $11+10\log(B) = 29.79$	PASS
122	5610	15.65	17.69	20.52	112.761	21.97	or $11+10\log(B) = 29.81$	PASS
155	5775	13.65	16.07	18.76	75.151	27.98970004		PASS

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10 MAXIMUM POWER SPECTRAL DENSITY

10.1 Standard Applicable

FCC

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

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

ISED

OPERZTION FREQUENCY BAND	LIMIT
5150~5250 MHz	EIRP spectral density 10 dBm / MHz
5250~5350 MHz	11dBm / MHz
5470-5600 MHz and 5650-5725 MHz	11dBm / MHz
5725~5850 MHz	30dBm / 500 kHz

For equipment operating in the band **5725-5850** MHz, If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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Note:

As per FCC KDB 662911 D01

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

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

$$= 10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}] \text{ dBi}$$

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

The antenna gain is not greater than 6 dBi. Therefore, reduction of power is not required.

	Effective Legacy Gain (dBi)	PSD Limit	
UNII-1	8.11	8.89	dBm/MHz
UNII-2A	8.17	8.83	dBm/MHz
U-NII-2C	8.01	8.99	dBm/MHz
U-NII-3	8.01	27.99	dBm/500 kHz

10.2 Measurement Procedure

- Place the EUT on the table and set it in transmitting mode.
- The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
- Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
- For U-NII1, U-NII-2A, U-NII-2C Band:**
Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
For U-NII-3 Band:
Set RBW=500 kHz, VBW≥ 3RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
- User the cursor on spectrum to peak search the highest level of trace
- Record the max. reading and add 10 log(1/duty cycle).
- Repeat above procedures until all default test channel (low, middle, and high) was complete.
- 802.11n/ac MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure the PSD for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna. N=3 for this given application.

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

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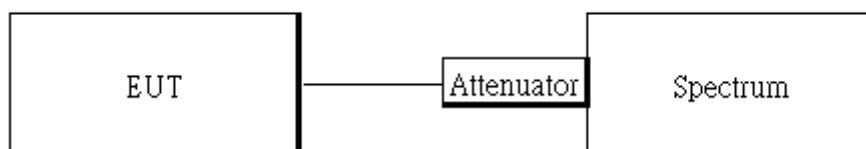
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10.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	05/02/2019	05/01/2020
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2019	05/16/2020
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2019	01/01/2020
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2019	01/01/2020

10.4 Test Set-up



10.5 Measurement Result

10.5.1 Power spectral density

POWER DENSITY 802.11a MODE_2TX					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180.00	0.89	0.19	1.08	8.89	-7.81
5220.00	1.06	0.19	1.25	8.89	-7.64
5240.00	1.25	0.19	1.44	8.89	-7.45
5260.00	8.10	0.19	8.29	8.83	-0.54
5300.00	8.08	0.19	8.27	8.83	-0.56
5320.00	7.03	0.19	7.22	8.83	-1.61
5500.00	5.34	0.19	5.53	8.99	-3.46
5580.00	7.97	0.19	8.16	8.99	-0.83
5700.00	-1.43	0.19	-1.24	8.99	-10.23
5745.00	5.37	0.19	5.56	27.99	-22.43
5785.00	5.33	0.19	5.52	27.99	-22.47
5825.00	5.93	0.19	6.12	27.99	-21.87

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POWER DENSITY 802.11n HT20 MODE_MIMO					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	1.12	0.40	1.52	8.8873977	-7.36
5220	1.25	0.40	1.65	8.8873977	-7.23
5240	1.03	0.40	1.43	8.8873977	-7.45
5260	7.50	0.40	7.90	8.8280484	-0.92
5300	7.34	0.40	7.74	8.8280484	-1.08
5320	6.35	0.40	6.75	8.8280484	-2.07
5500	3.82	0.40	4.22	8.9897	-4.77
5580	7.96	0.40	8.36	8.9897	-0.63
5745	4.75	0.40	5.15	27.9897	-22.84
5785	5.35	0.40	5.75	27.9897	-22.24
5825	5.44	0.40	5.84	27.9897	-22.15
POWER DENSITY 802.11n HT40 MODE_MIMO					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5190	-0.34	0.69	0.35	8.8873977	-8.54
5230	-0.56	0.69	0.13	8.8873977	-8.76
5270	5.36	0.69	6.05	8.8280484	-2.78
5310	-0.69	0.69	0.00	8.8280484	-8.83
5510	-0.41	0.69	0.28	8.9897	-8.71
5550	4.55	0.69	5.24	8.9897	-3.75
5670	-0.78	0.69	-0.09	8.9897	-9.08
5755	2.06	0.69	2.75	27.9897	-25.24
5795	2.69	0.69	3.38	27.9897	-24.61
POWER DENSITY 802.11ac VHT80 MODE_MIMO					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5210	-3.83	1.22	-2.61	8.8873977	-11.49
5290	-8.56	1.22	-7.34	8.8280484	-16.16
5530	-5.64	1.22	-4.42	8.9897	-13.41
5610	1.40	1.22	2.62	8.9897	-6.37
5775	-0.67	1.22	0.55	27.9897	-27.44

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10.5.2 EIRP spectral density (ISED)

EIRP spectral density 802.11a MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5180	1.08	8.11	9.19	10	-0.81
5220	1.25	8.11	9.36	10	-0.64
5240	1.44	8.11	9.55	10	-0.45
EIRP spectral density 802.11n HT20 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5180	1.52	8.11	9.64	10	-0.36
5220	1.65	8.11	9.77	10	-0.23
5240	1.43	8.11	9.55	10	-0.45
EIRP spectral density 802.11n HT40 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5190	0.35	8.11	8.46	10	-1.54
5230	0.13	8.11	8.24	10	-1.76
EIRP spectral density 802.11ac VHT80 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5210	-2.61	8.11	5.51	10	-4.49

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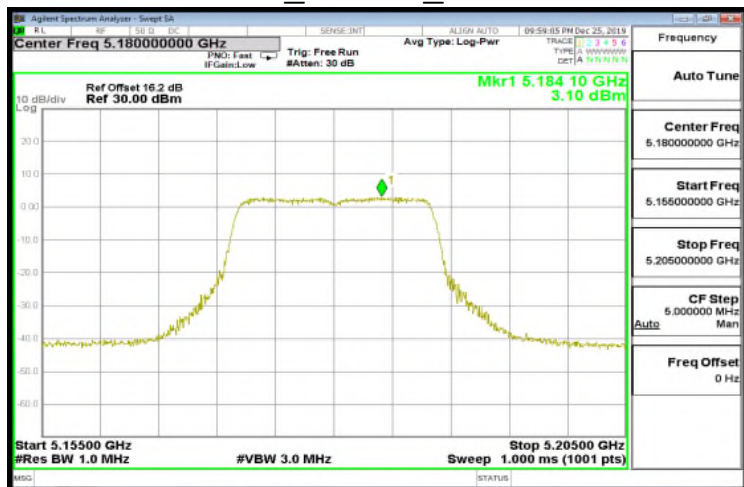
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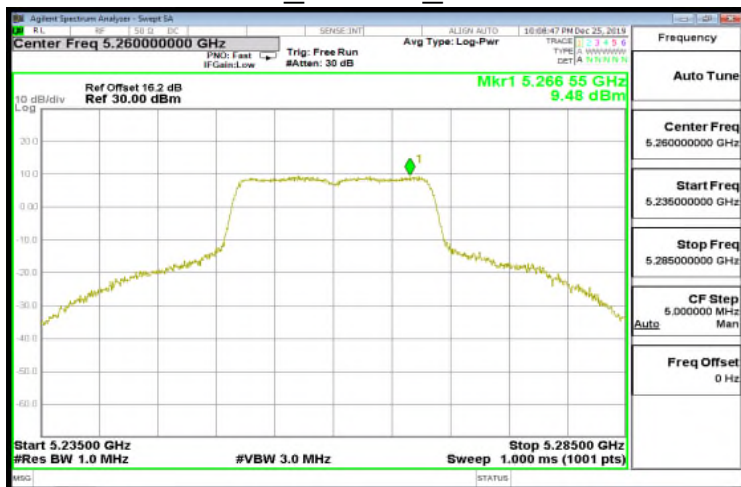
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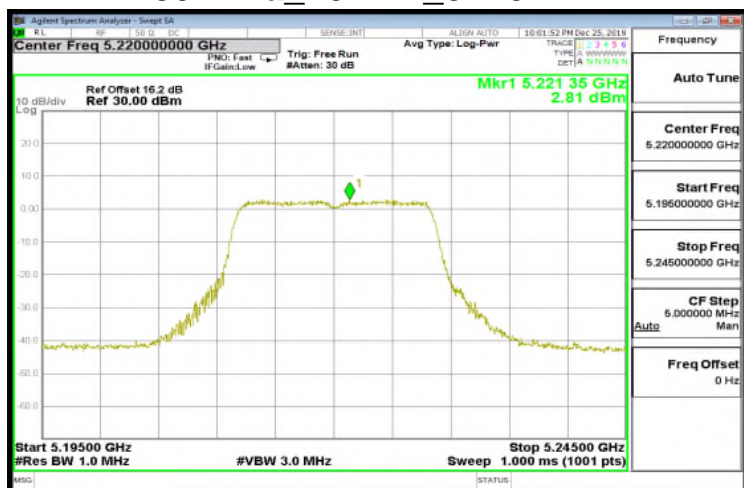
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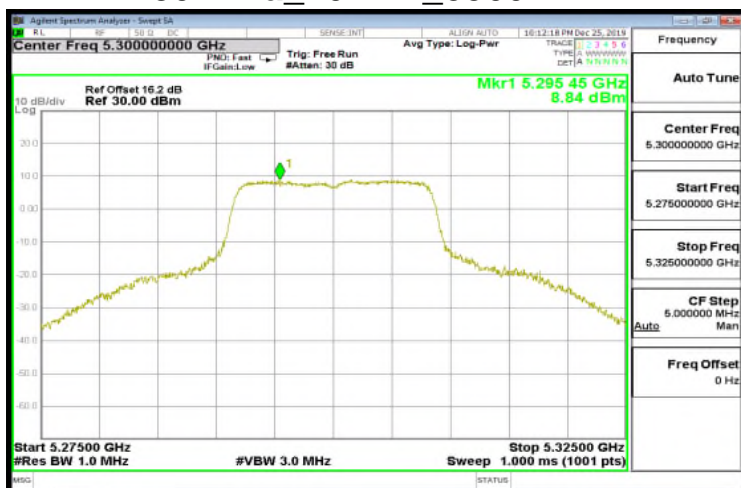
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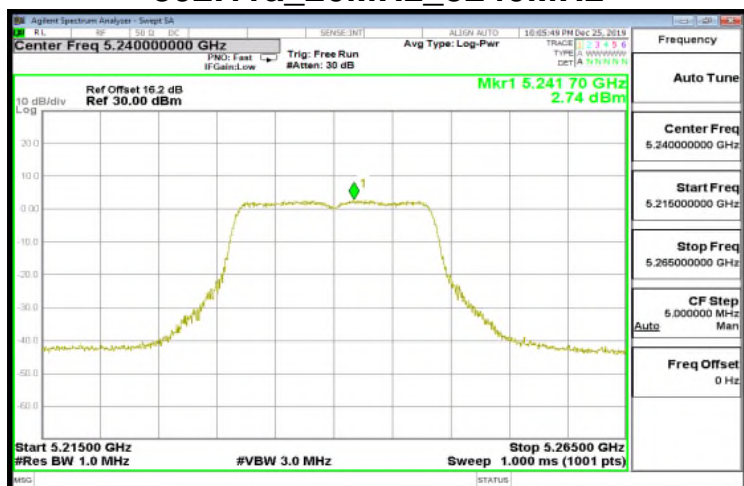
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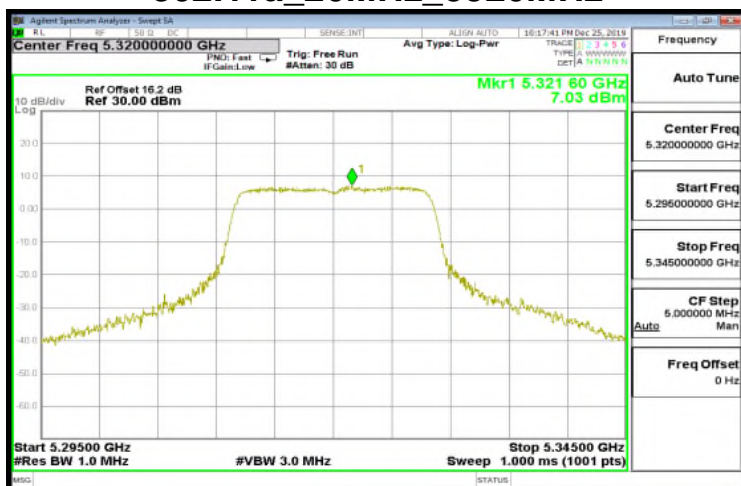
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802.11a_20MHz_5240MHz



802.11a_20MHz_5320MHz



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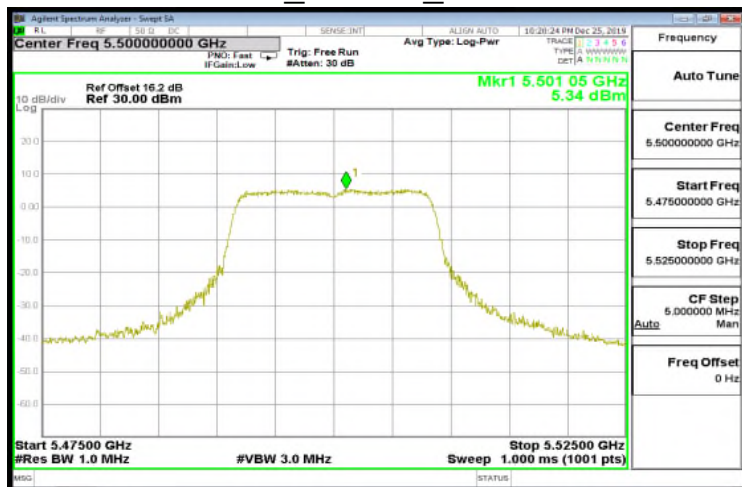
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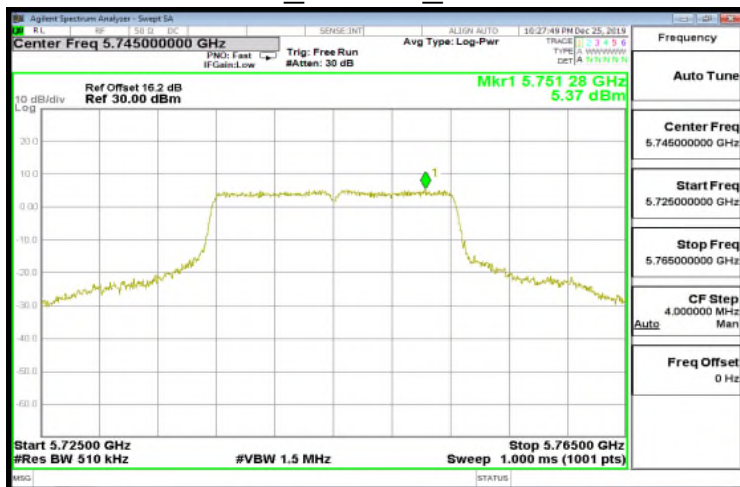
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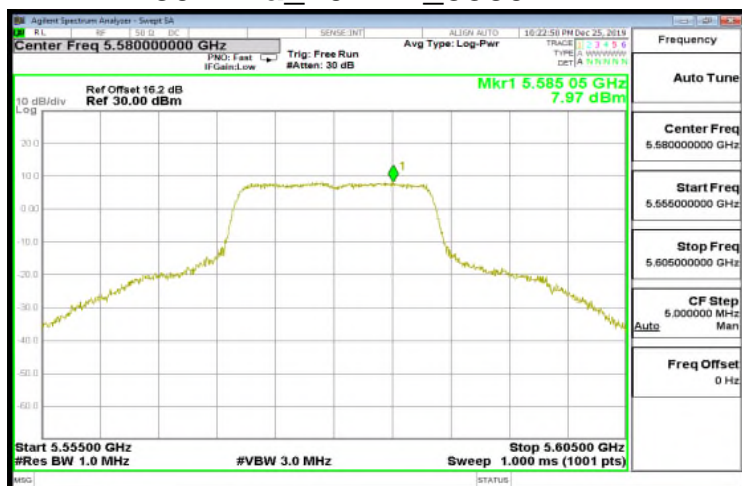
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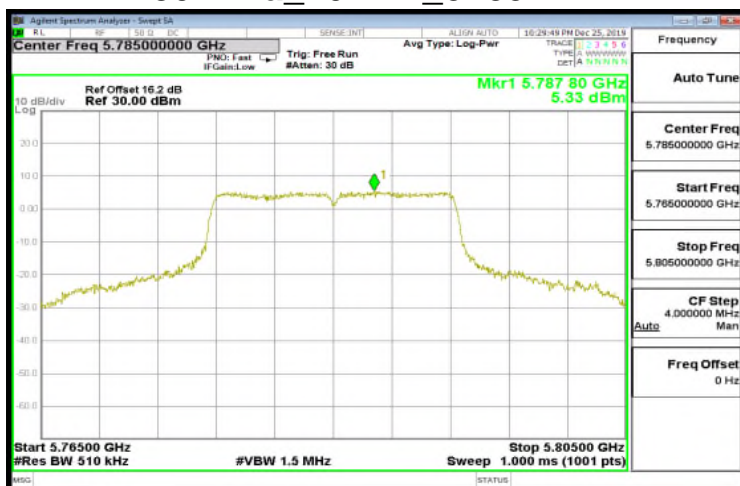
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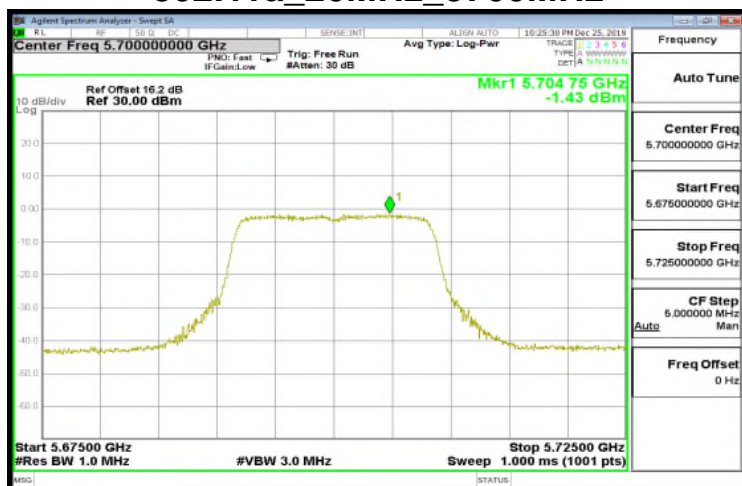
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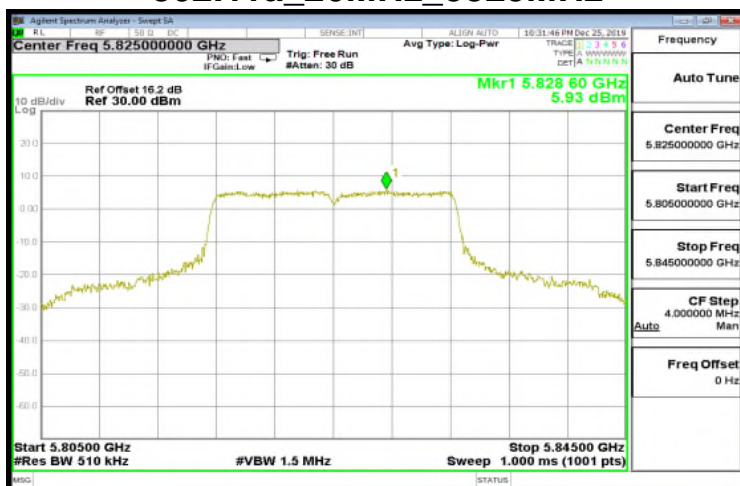
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802.11a_20MHz_5700MHz



802.11a_20MHz_5825MHz



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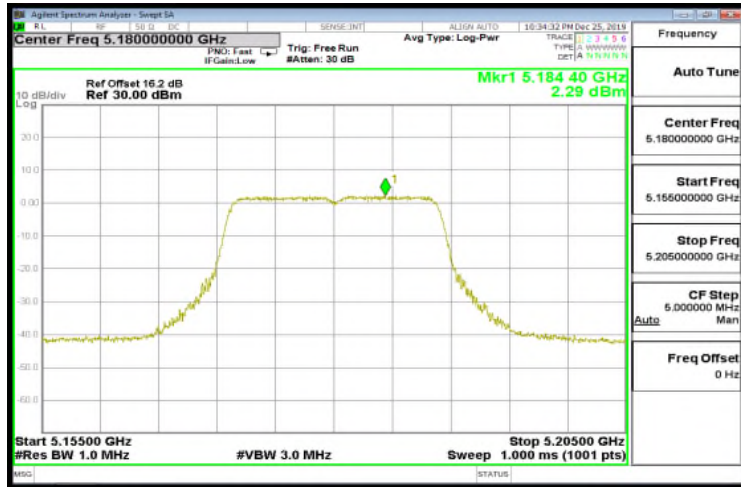
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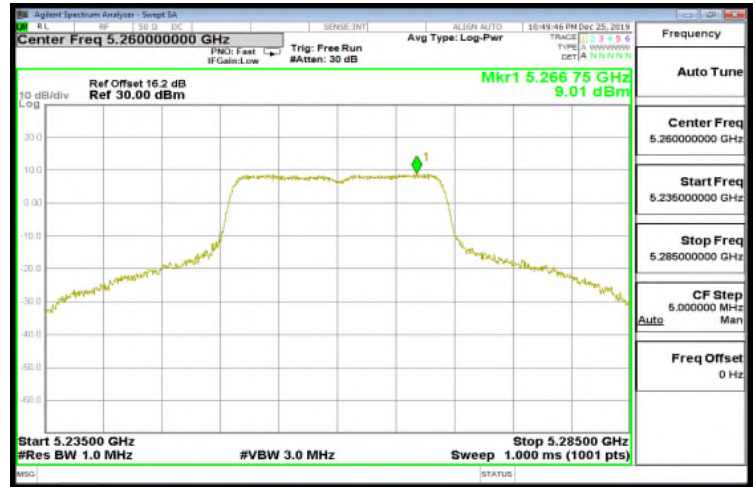
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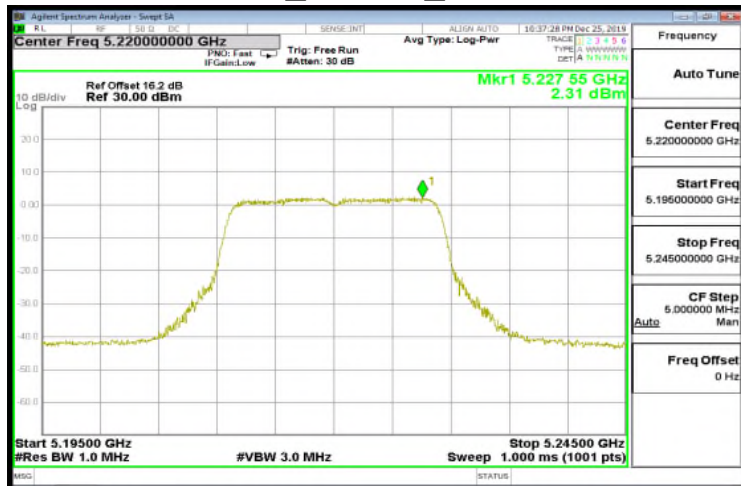
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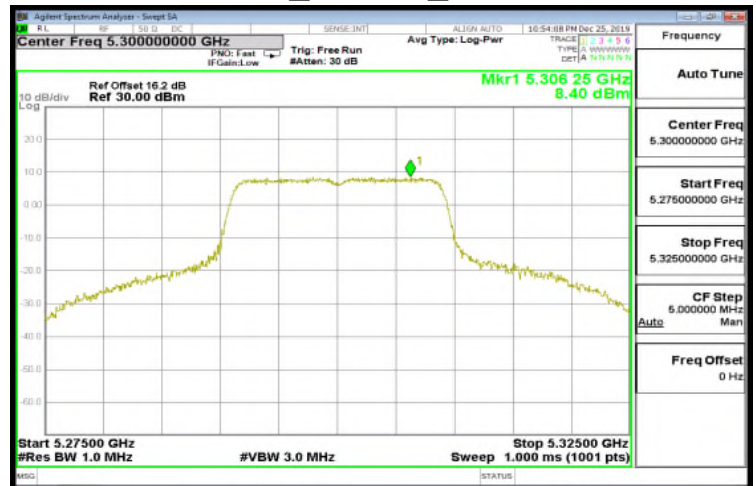
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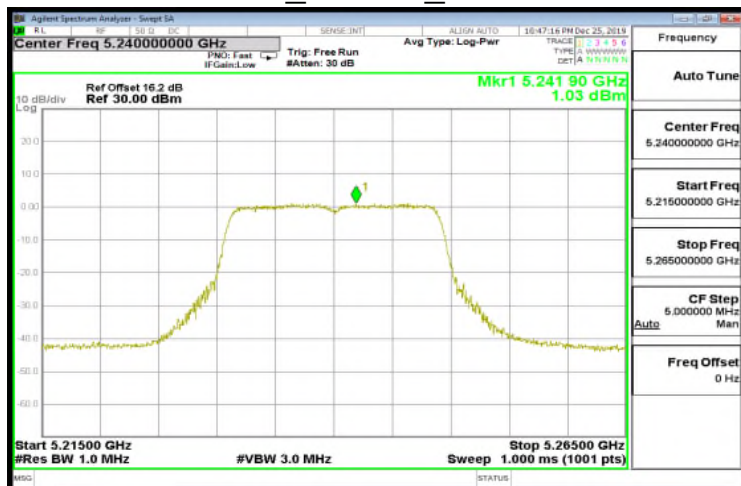
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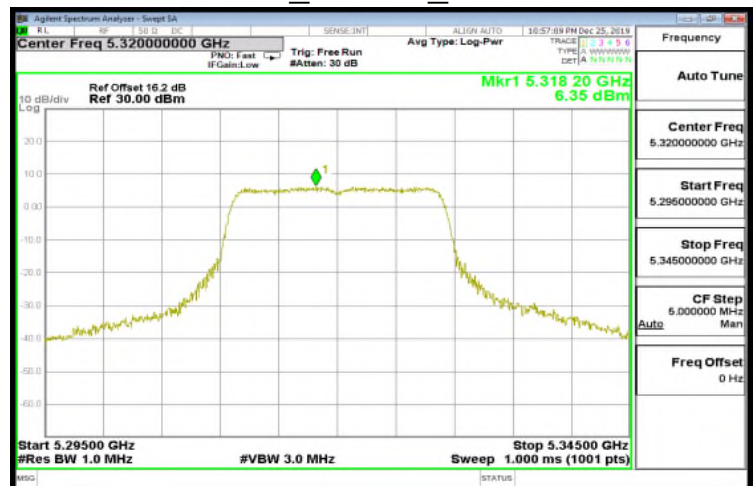
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802.11n_20MHz_5240MHz



802.11n_20MHz_5320MHz



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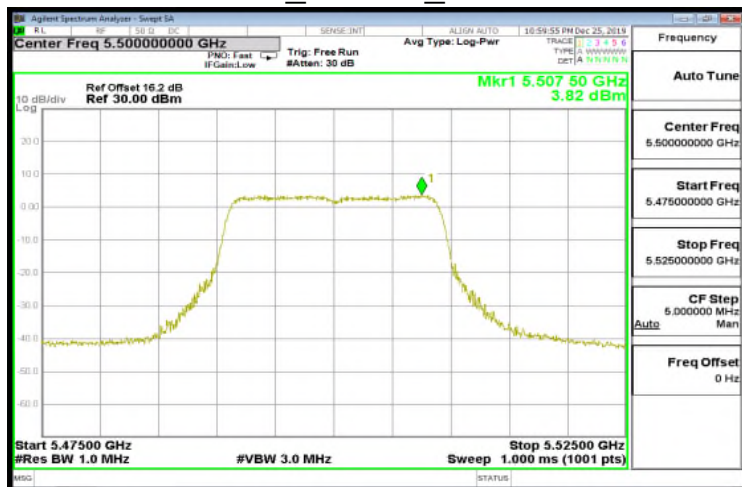
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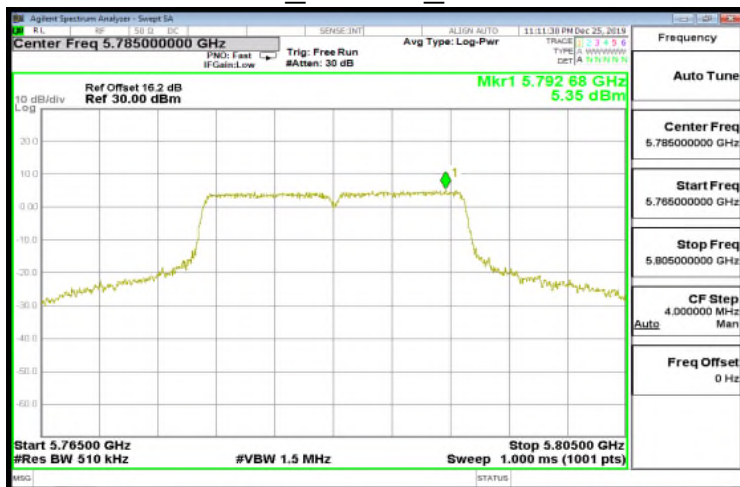
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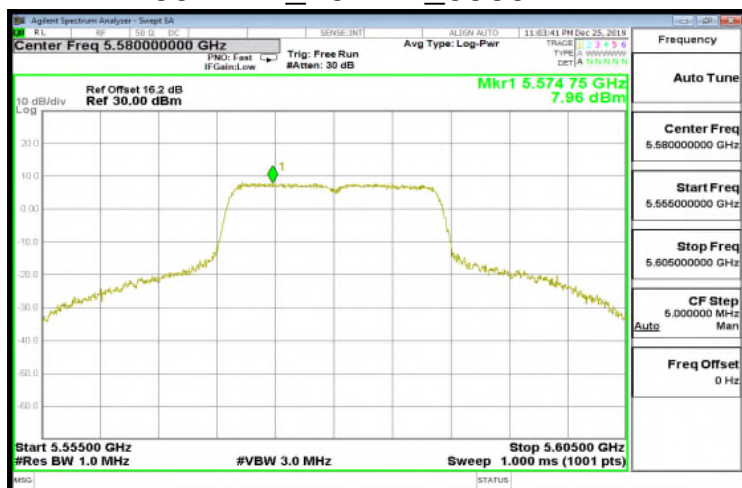
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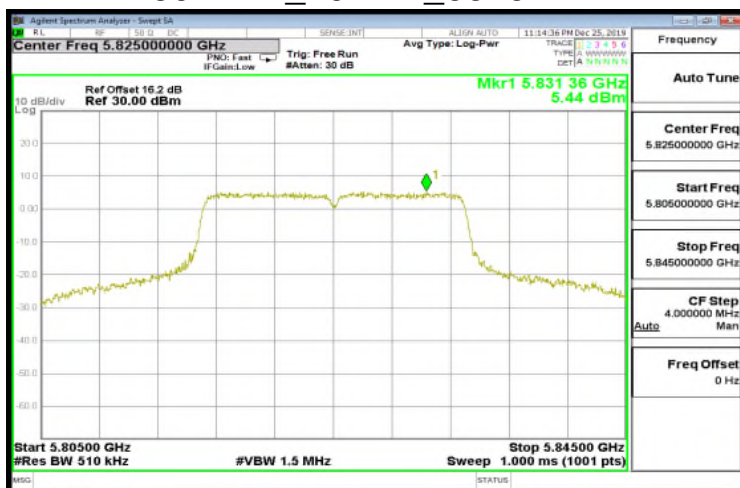
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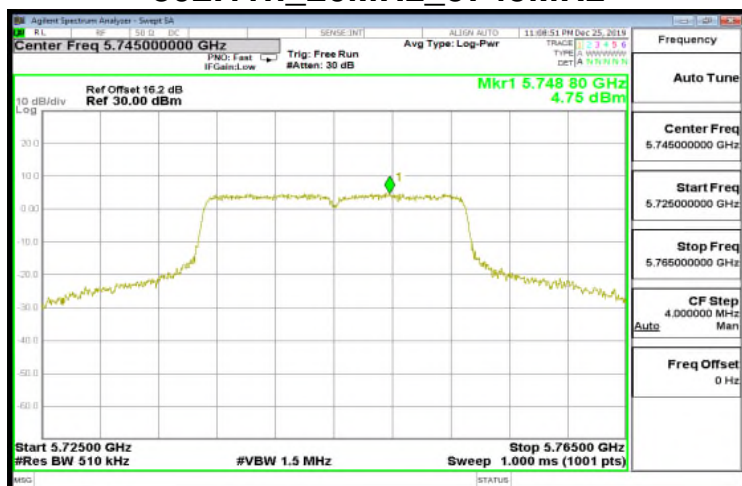
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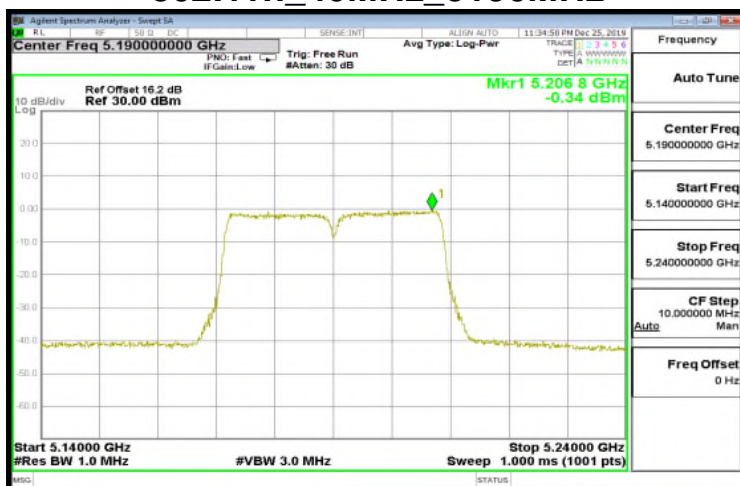
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802.11n_20MHz_5745MHz



802.11n_40MHz_5190MHz



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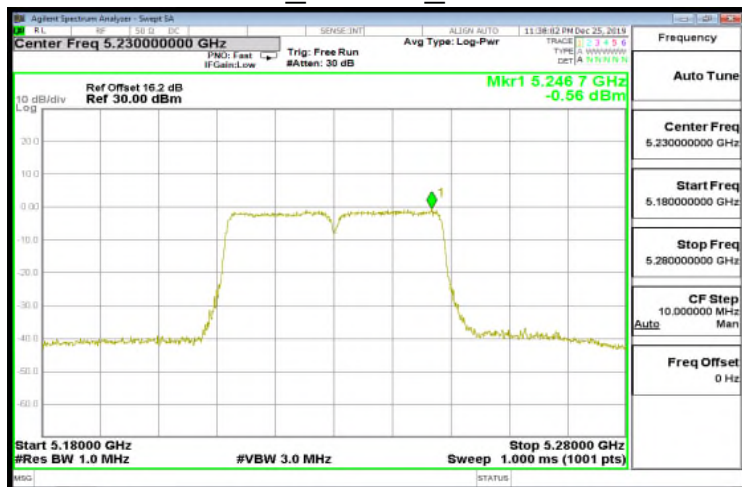
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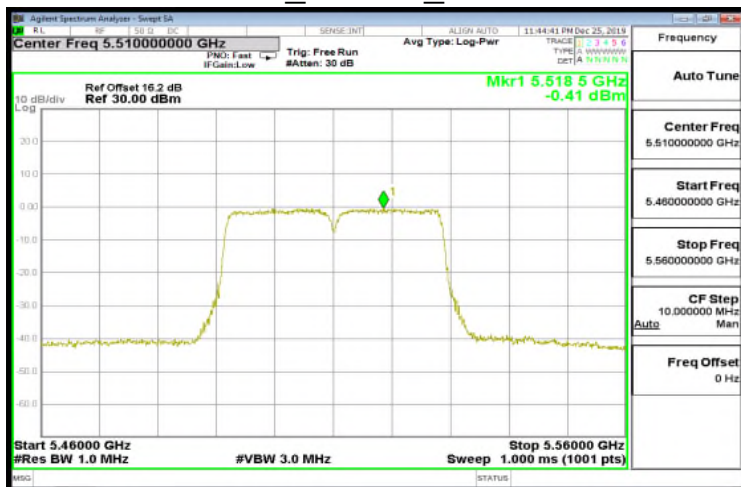
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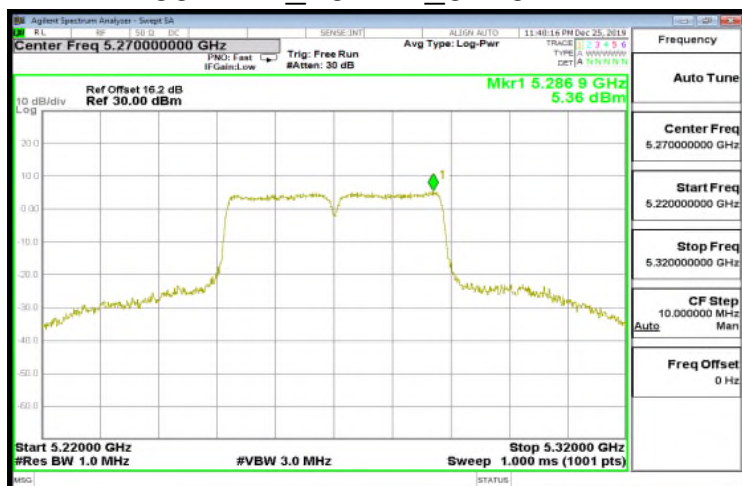
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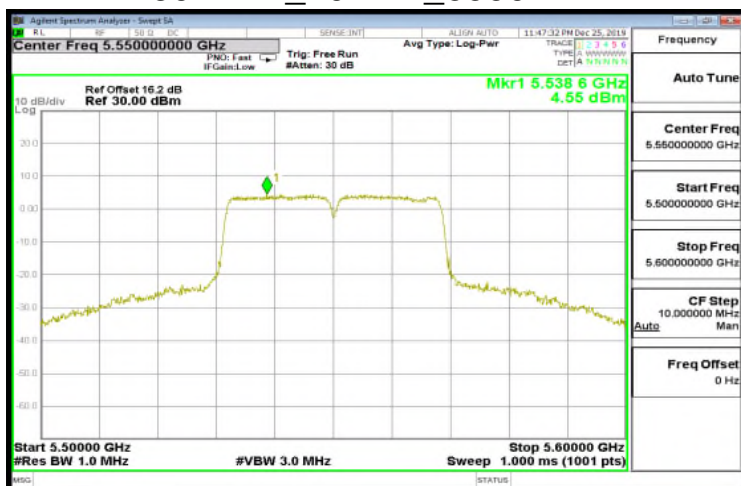
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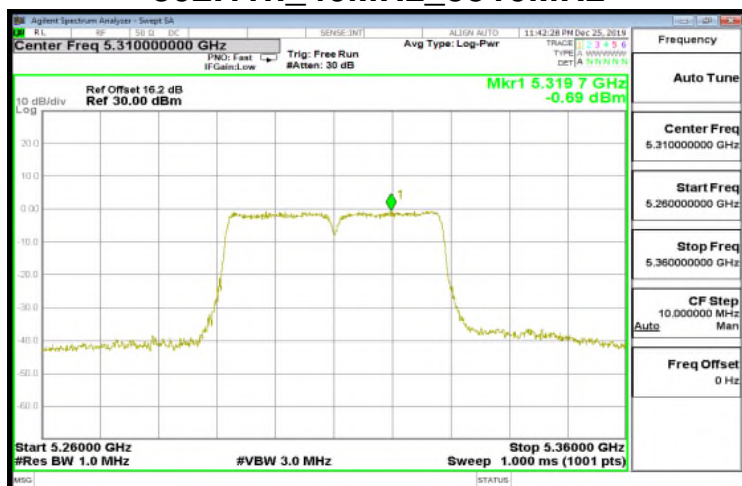
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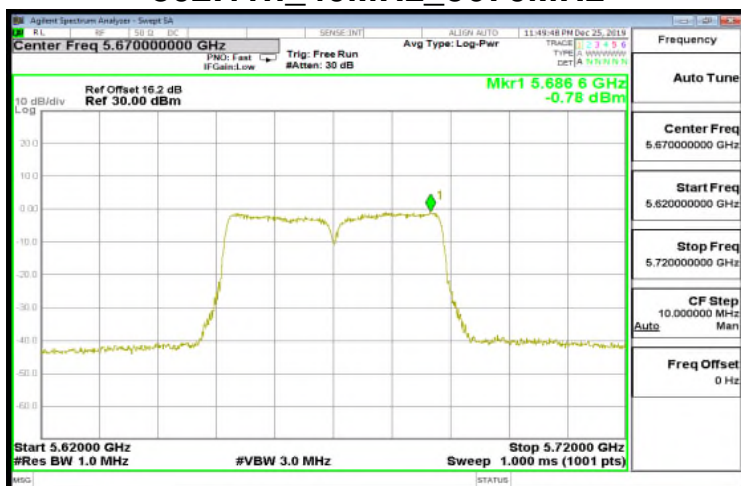
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802.11n_40MHz_5310MHz



802.11n_40MHz_5670MHz



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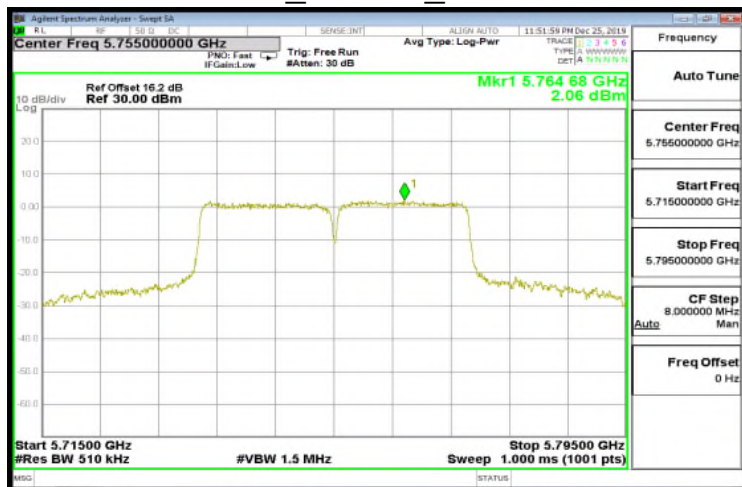
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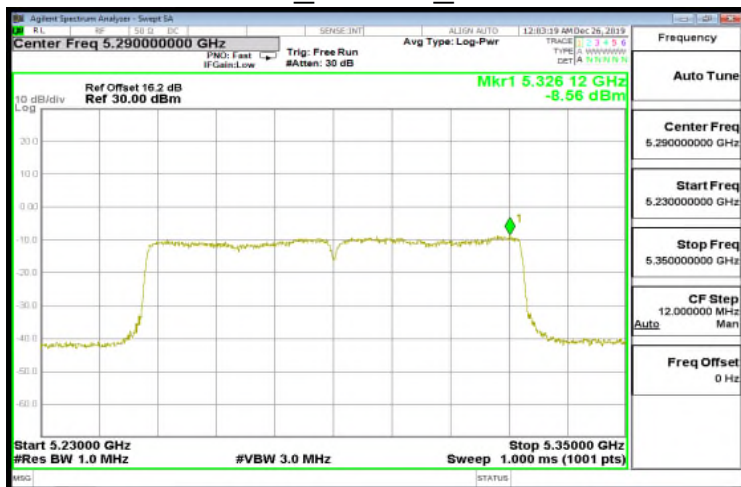
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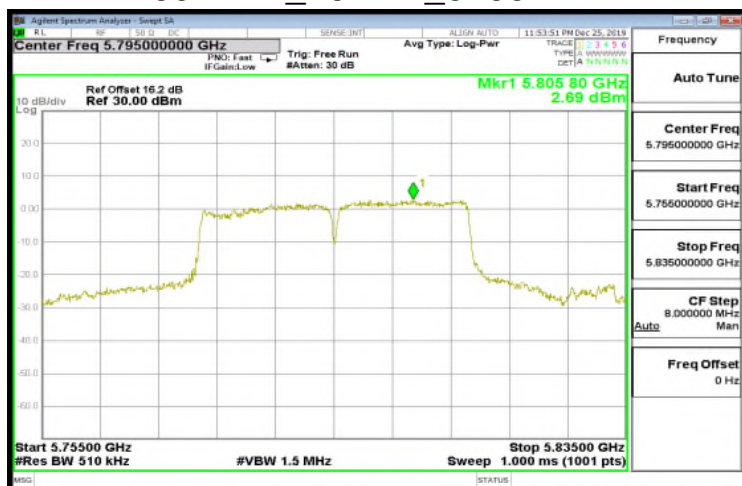
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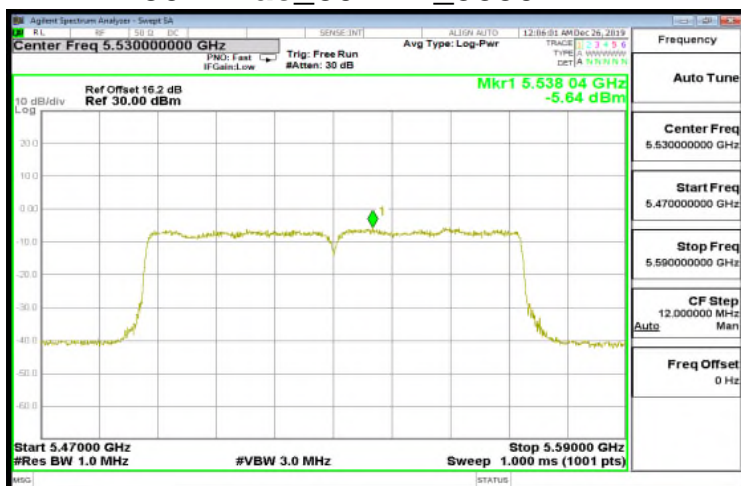
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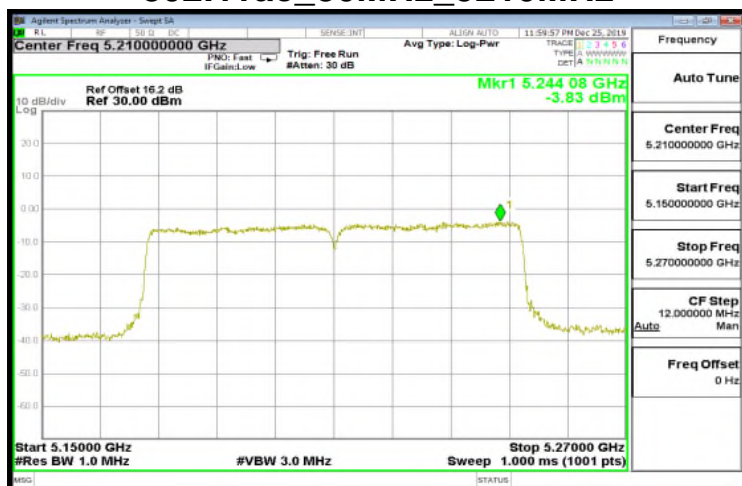
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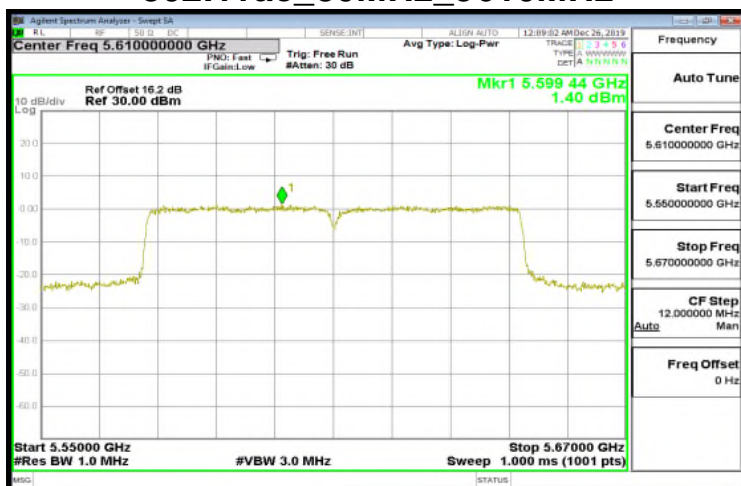
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802.11ac_80MHz_5210MHz



802.11ac_80MHz_5610MHz



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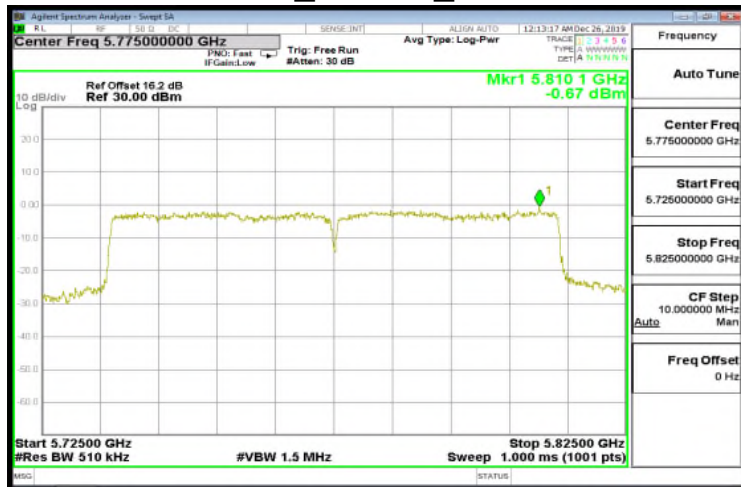
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802.11ac_80MHz_5775MHz



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11 UNDESIRABLE RADIATED EMISSION MEASUREMENT

11.1 Standard Applicable

11.1.1 Band Edge

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

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

APPLICABLE TO	EIRP LIMIT	FIELD STRENGTH AT 3m
15.407(b)(1) RSS-247 §6.2.1.2	PK: -27 (dBm/MHz)	PK: 68.3 (dBμV/m)
15.407(b)(2) RSS-247 §6.2.2.2		
15.407(b)(3) RSS-247 §6.2.3.2		
15.407(b)(4)(i) RSS-247 §6.2.4.2	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2(dBμV/m) *1 PK:105.2 (dBμV/m) *2 PK: 110.8(dBμV/m) *3 PK:122.2 (dBμV/m) *4
*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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11.1.2 Spurious Emission

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

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

Note:

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

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11.2 Measurement Equipment Used

SGS SAC-III					
Name of Equip-ment	Manufacturer	Model	Serial Num-ber	Calibration Date	Calibration Due
Bi-log Antenna	SCHWAZBECK	VULB9168	378	01/04/2020	01/04/2021
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/20/2019	08/19/2020
Horn Antenna	Schwarzbeck	BBHA9170	184	12/27/2018	12/26/2019
3m Site NSA	SGS	966 chamber	N/A	01/02/2020	01/01/2021
Loop Antenna	ETS.LINDGREN	6502	148045	10/15/2019	10/14/2020
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	04/22/2019	04/21/2020
EMI Test Re-ceiver	R&S	ESCI 7	1166.5950.07	07/04/2019	07/03/2020
Pre-Amplifier	HP	8449B	3008A00578	01/02/2020	01/01/2021
Pre-Amplifier	HP	8447D	2944A07676	01/02/2020	01/01/2021
Pre-Amplifier	EMC Instruments	EMC184045B	980135	01/02/2020	01/01/2021
Attenuator	Mini-Circuit	BW-S10W2+	4	01/02/2020	01/01/2021
Filter 5150-5350 MHz	Micro-Tronics	BRM50703	1	01/02/2020	01/01/2021
Filter 5470-5725 MHz	Micro-Tronics	BRM50704	1	01/02/2020	01/01/2021
Filter 5725-5875 MHz	Micro-Tronics	BRM50705	1	01/02/2020	01/01/2021
High Pass Filter	WI	WHKX7.0/18G-8SS	45	01/02/2020	01/01/2021
Low Loss Cable	Huber Suhner	966_RX	9	01/02/2020	01/01/2021

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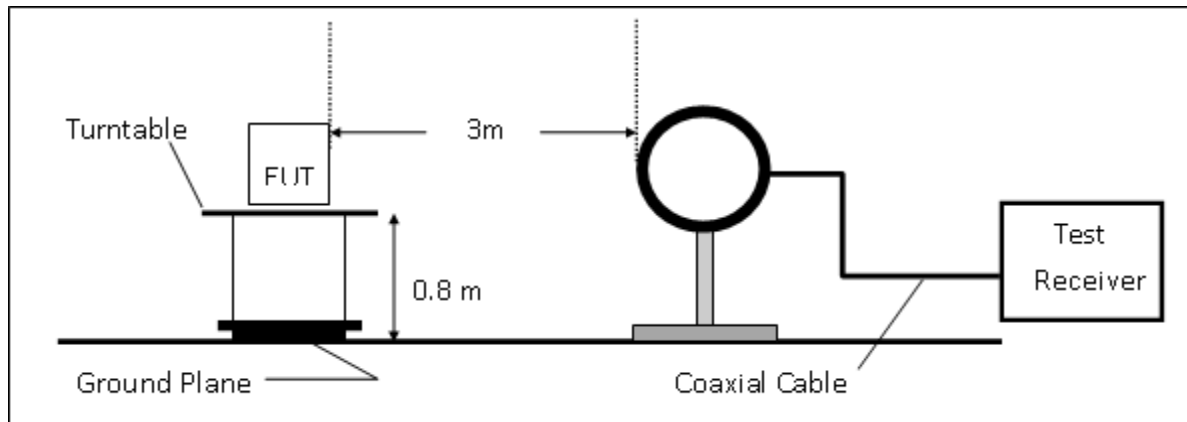
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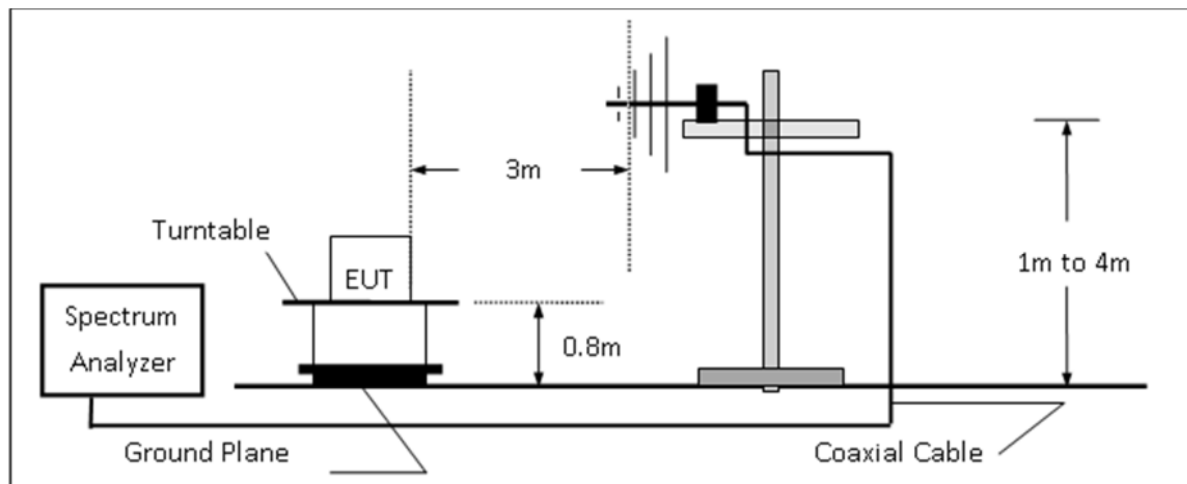
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11.3 Test SET-UP

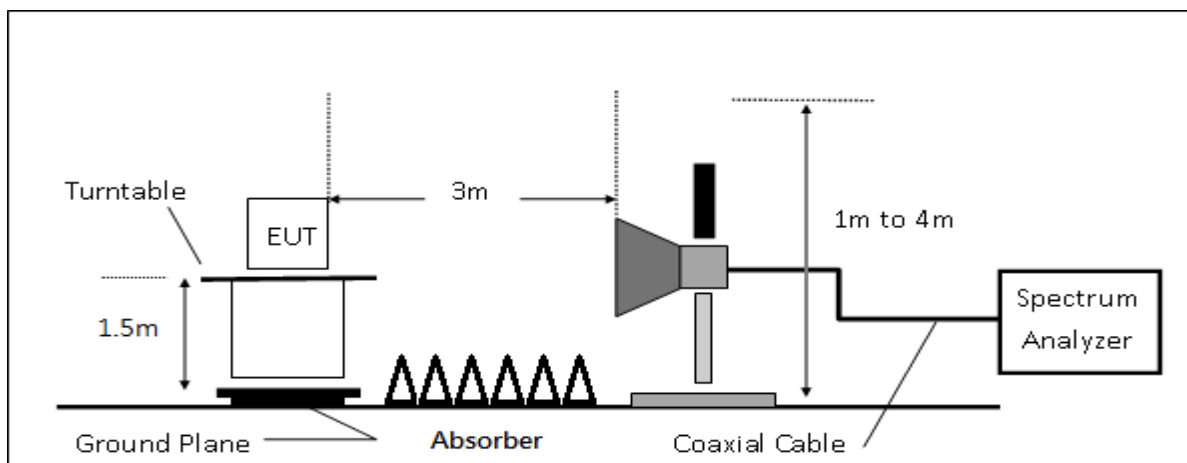
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



(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.

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11.5 Field Strength Calculation

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

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

Where *FS* = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

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

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

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

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

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) & RSS-GEN §6.13.2 was not reported.

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

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11.7 Radiated Spurious Emission Measurement Result

11.7.1 Below 1GHz Worst-Case Data:

External Antenna (Type: Dipole Antenna, Model no: R380500314)

Report Number :ER/2019/C0048

Test Date :2020-01-02

Operation Mode :802.11a B1

Temp./Humi. :21.5/58

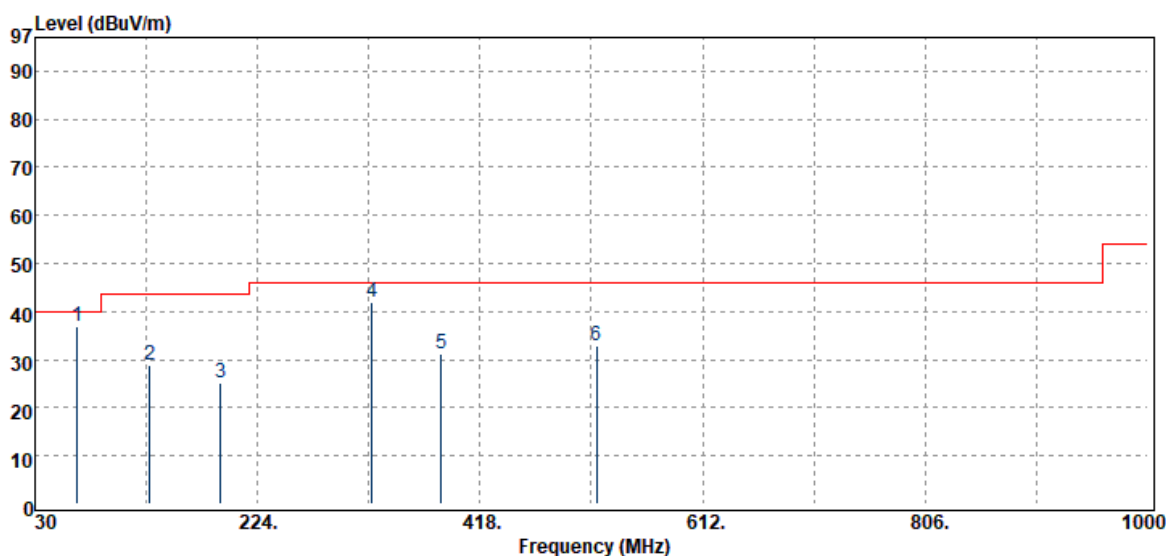
Test Channel :5220 MHz

Antenna Pol. :VERTICAL

Test Mode :Tx CH Mid

Engineer :Kane

EUT Pol :E2 Plane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
66.86	QP	46.28	-9.41	36.87	40.00	-3.13
129.91	Peak	37.72	-9.00	28.72	43.50	-14.78
191.99	Peak	34.51	-9.47	25.04	43.50	-18.46
323.91	Peak	47.33	-5.30	42.03	46.00	-3.97
384.05	Peak	35.64	-4.30	31.34	46.00	-14.66
519.85	Peak	35.05	-1.99	33.06	46.00	-12.94

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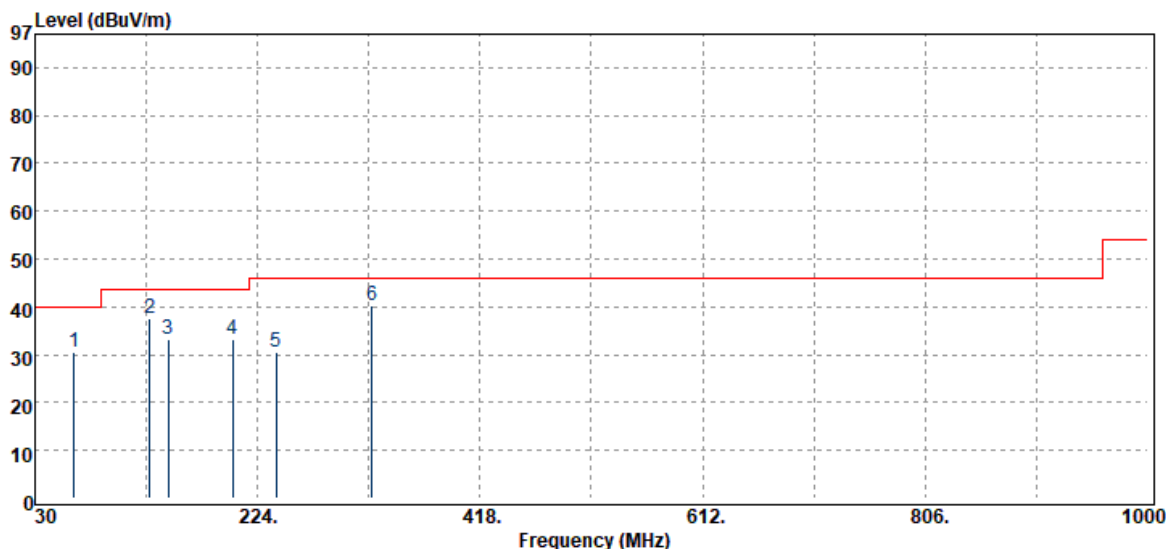
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Report Number :ER/2019/C0048
Operation Mode :802.11a B1
Test Channel :5220 MHz
Test Mode :Tx CH Mid
EUT Pol :E2 Plane

Test Date :2020-01-02
Temp./Humi. :21.5/58
Antenna Pol. :HORIZONTAL
Engineer :Kane



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
63.95	Peak	39.61	-8.97	30.64	40.00	-9.36
129.91	Peak	46.61	-9.00	37.61	43.50	-5.89
146.40	Peak	40.45	-7.08	33.37	43.50	-10.13
202.66	Peak	43.02	-9.66	33.36	43.50	-10.14
240.49	Peak	38.56	-8.09	30.47	46.00	-15.53
323.91	Peak	45.69	-5.30	40.39	46.00	-5.61

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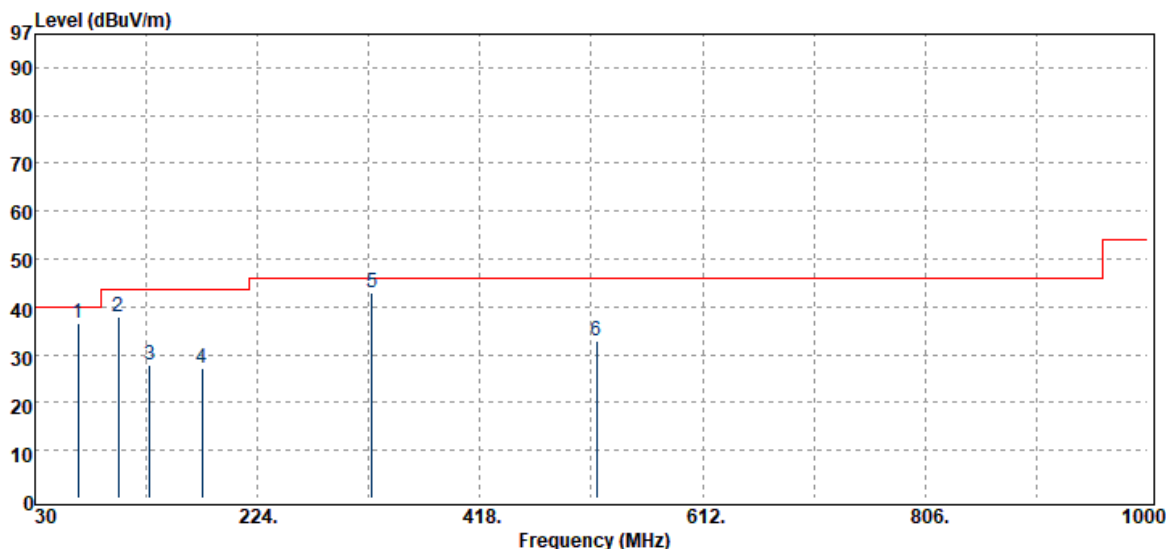
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Report Number :ER/2019/C0048
Operation Mode :802.11a B2
Test Channel :5300 MHz
Test Mode :Tx CH Mid
EUT Pol :E2 Plane

Test Date :2020-01-02
Temp./Humi. :21.5/58
Antenna Pol. :VERTICAL
Engineer :Kane



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
67.83	QP	46.02	-9.57	36.45	40.00	-3.55
102.75	Peak	50.00	-12.06	37.94	43.50	-5.56
129.91	Peak	36.71	-9.00	27.71	43.50	-15.79
175.50	Peak	35.59	-8.29	27.30	43.50	-16.20
323.91	Peak	48.21	-5.30	42.91	46.00	-3.09
519.85	Peak	34.75	-1.99	32.76	46.00	-13.24

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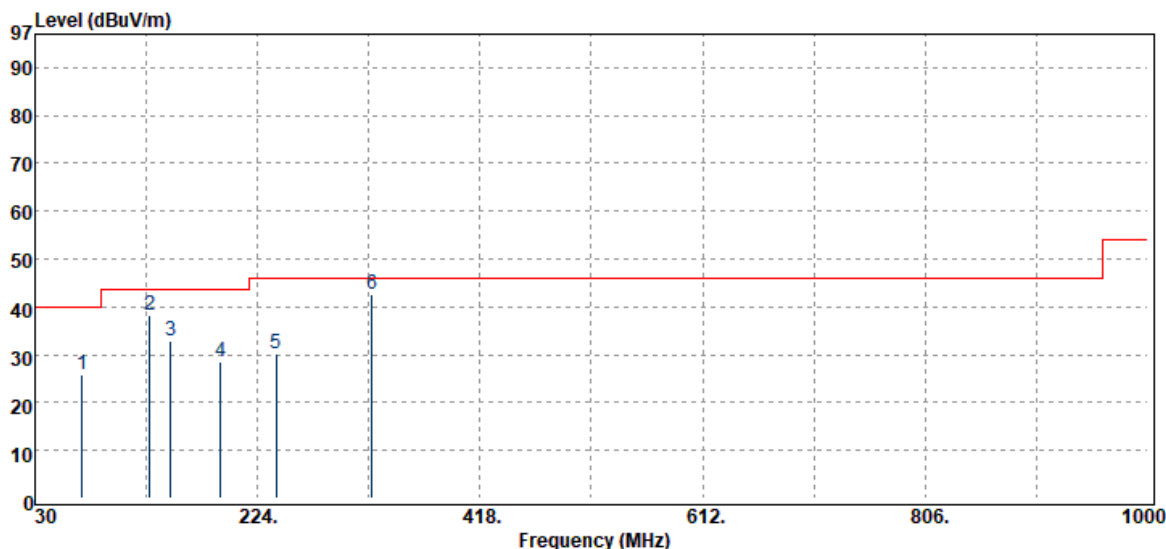
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B2
 Test Channel :5300 MHz
 Test Mode :Tx CH Mid
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
70.74	Peak	36.07	-10.21	25.86	40.00	-14.14
129.91	Peak	47.22	-9.00	38.22	43.50	-5.28
148.34	Peak	39.92	-7.04	32.88	43.50	-10.62
191.99	Peak	38.04	-9.47	28.57	43.50	-14.93
240.49	Peak	38.21	-8.09	30.12	46.00	-15.88
323.91	Peak	48.07	-5.30	42.77	46.00	-3.23

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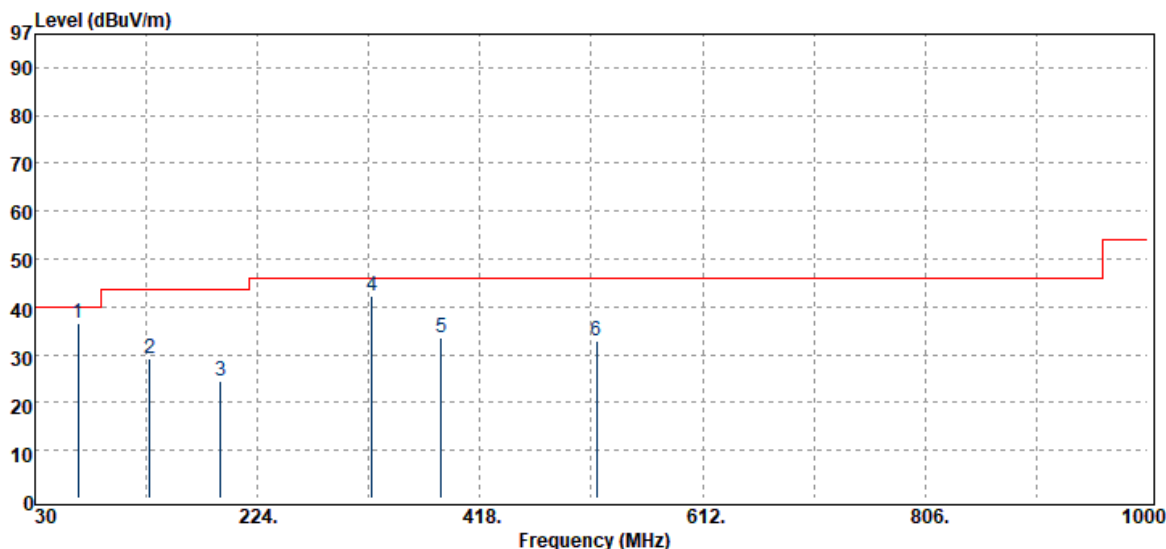
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Report Number :ER/2019/C0048
Operation Mode :802.11a B3
Test Channel :5580 MHz
Test Mode :Tx CH Mid
EUT Pol :E2 Plane

Test Date :2020-01-02
Temp./Humi. :21.5/58
Antenna Pol. :VERTICAL
Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
67.83	QP	46.26	-9.57	36.69	40.00	-3.31
129.91	Peak	38.24	-9.00	29.24	43.50	-14.26
191.99	Peak	34.09	-9.47	24.62	43.50	-18.88
323.91	Peak	47.59	-5.30	42.29	46.00	-3.71
384.05	Peak	38.02	-4.30	33.72	46.00	-12.28
519.85	Peak	35.05	-1.99	33.06	46.00	-12.94

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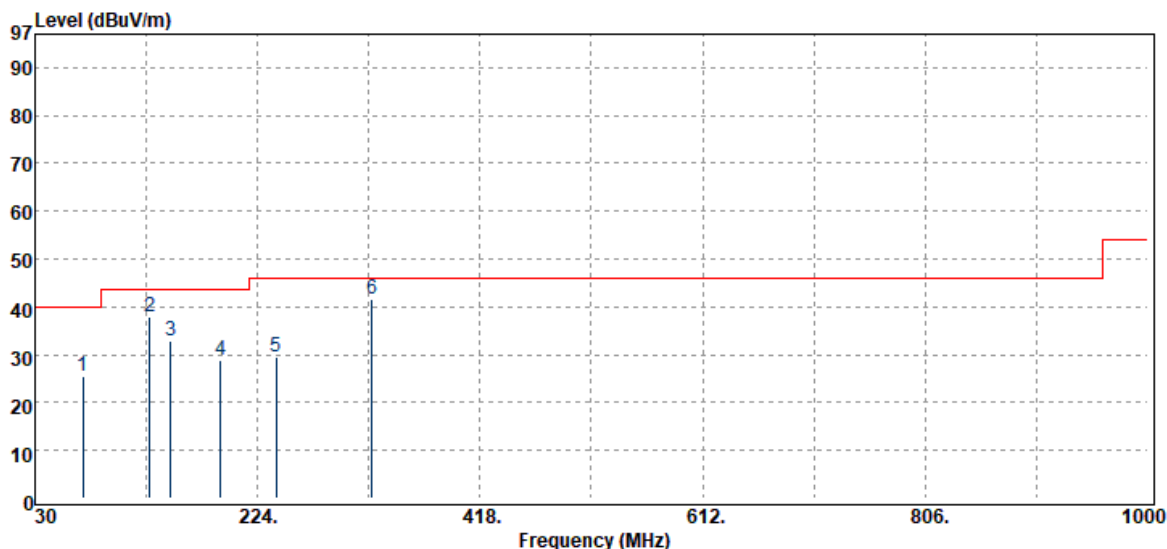
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B3
 Test Channel :5580 MHz
 Test Mode :Tx CH Mid
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



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
71.71	Peak	35.84	-10.40	25.44	40.00	-14.56
129.91	Peak	47.02	-9.00	38.02	43.50	-5.48
148.34	Peak	39.97	-7.04	32.93	43.50	-10.57
191.99	Peak	38.20	-9.47	28.73	43.50	-14.77
240.49	Peak	37.69	-8.09	29.60	46.00	-16.40
323.91	Peak	46.84	-5.30	41.54	46.00	-4.46

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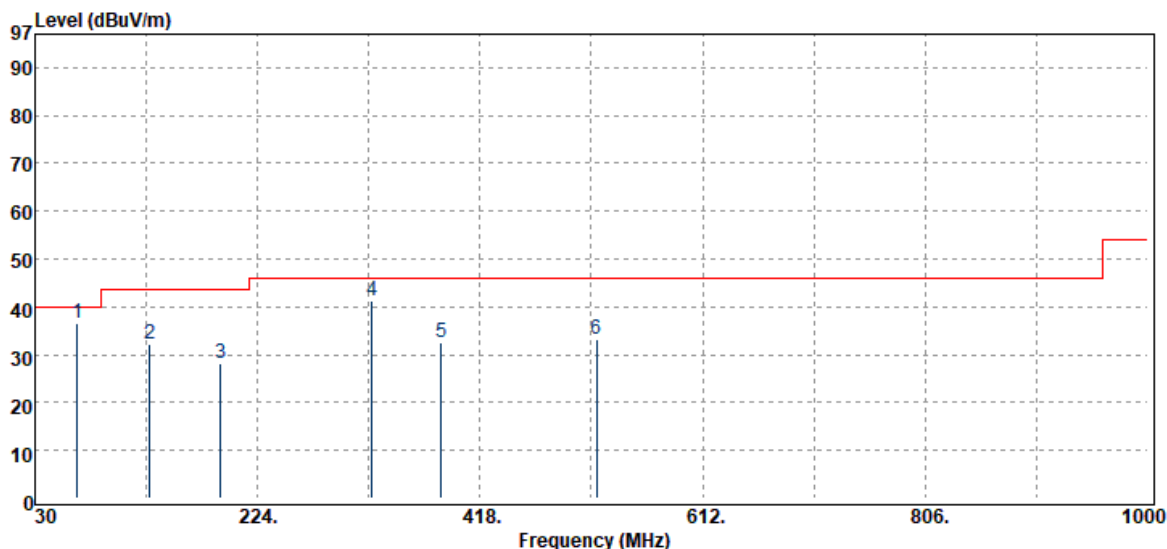
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B4
 Test Channel :5785 MHz
 Test Mode :Tx CH Mid
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :VERTICAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
66.86	QP	46.09	-9.41	36.68	40.00	-3.32
129.91	Peak	41.39	-9.00	32.39	43.50	-11.11
191.99	Peak	37.51	-9.47	28.04	43.50	-15.46
323.91	Peak	46.52	-5.30	41.22	46.00	-4.78
384.05	Peak	36.80	-4.30	32.50	46.00	-13.50
519.85	Peak	35.38	-1.99	33.39	46.00	-12.61

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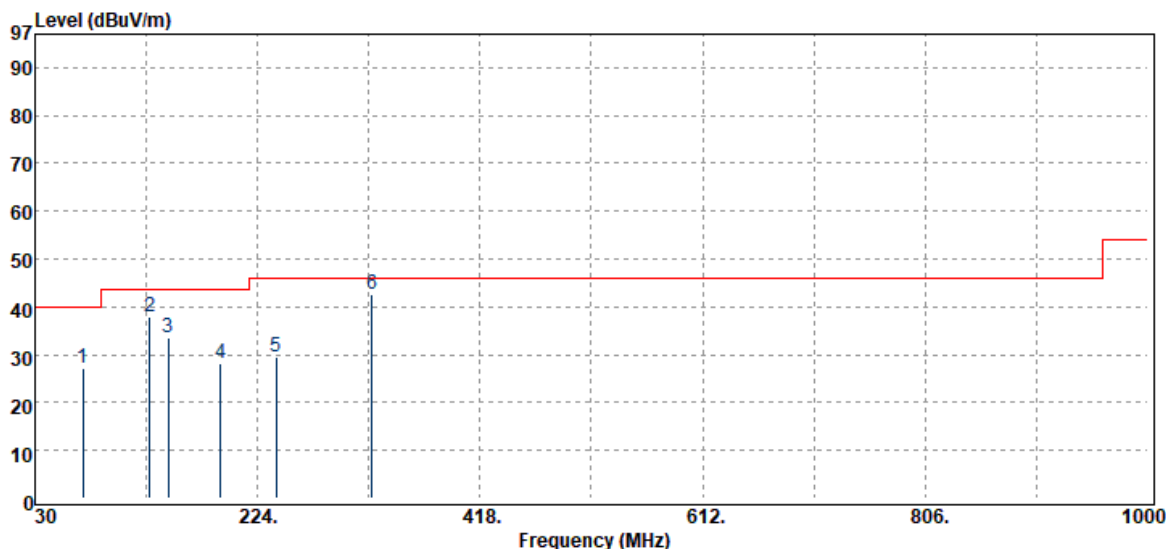
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B4
 Test Channel :5785 MHz
 Test Mode :Tx CH Mid
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	37.65	-10.40	27.25	40.00	-12.75
129.91	Peak	46.99	-9.00	37.99	43.50	-5.51
146.40	Peak	40.51	-7.08	33.43	43.50	-10.07
191.99	Peak	37.80	-9.47	28.33	43.50	-15.17
240.49	Peak	37.69	-8.09	29.60	46.00	-16.40
323.91	Peak	47.77	-5.30	42.47	46.00	-3.53

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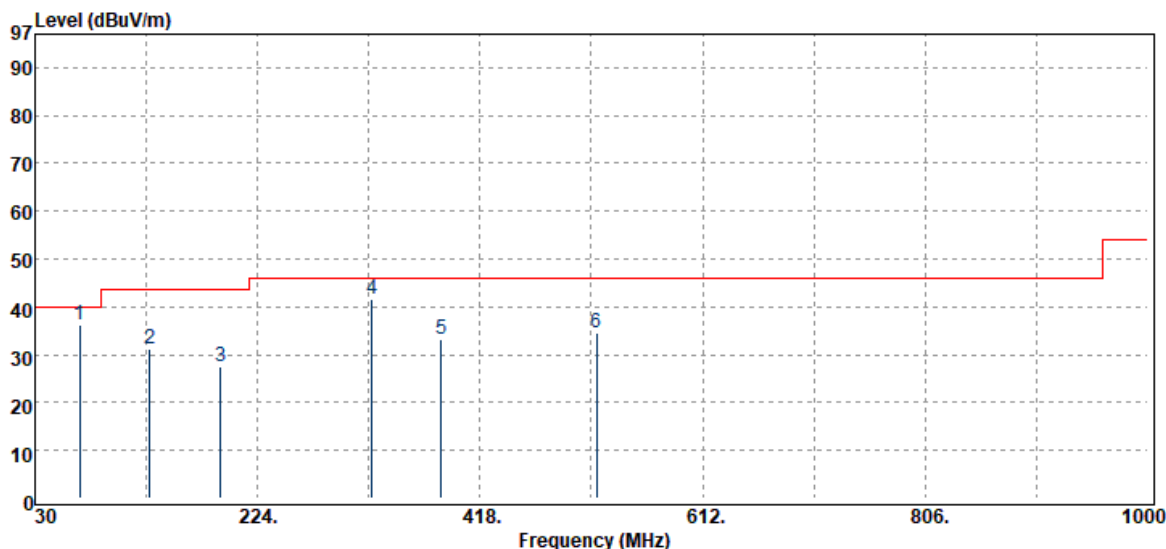
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Report Number :ER/2019/C0048
 Operation Mode :802.11ac80 B1
 Test Channel :5210 MHz
 Test Mode :Tx CH Low
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :VERTICAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
68.80	QP	46.14	-9.82	36.32	40.00	-3.68
129.91	Peak	40.07	-9.00	31.07	43.50	-12.43
191.99	Peak	37.11	-9.47	27.64	43.50	-15.86
323.91	Peak	47.05	-5.30	41.75	46.00	-4.25
384.05	Peak	37.47	-4.30	33.17	46.00	-12.83
519.85	Peak	36.64	-1.99	34.65	46.00	-11.35

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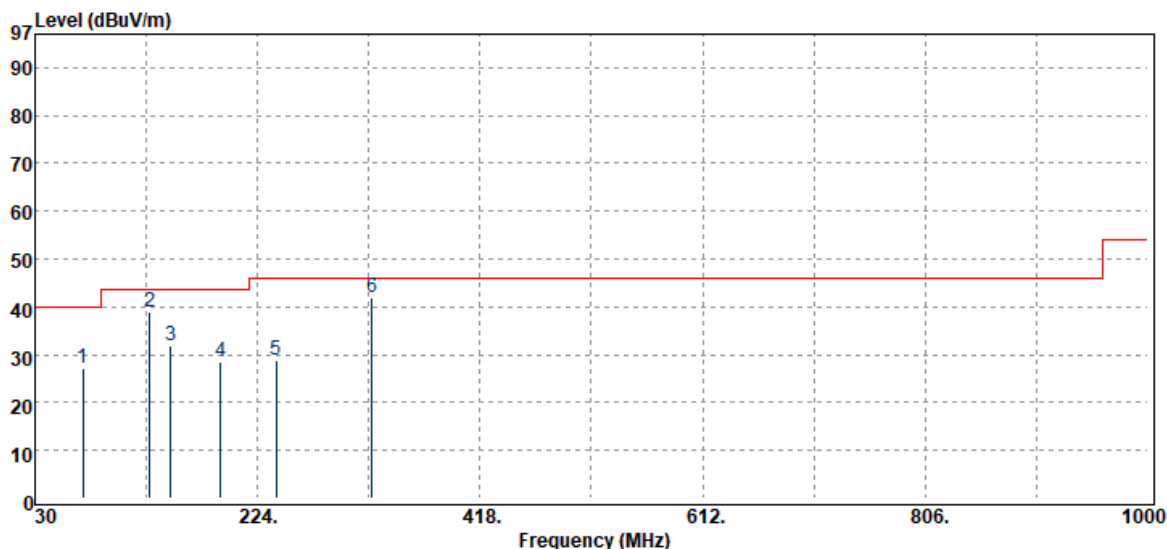
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Report Number :ER/2019/C0048
 Operation Mode :802.11ac80 B1
 Test Channel :5210 MHz
 Test Mode :Tx CH Low
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



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
71.71	Peak	37.54	-10.40	27.14	40.00	-12.86
129.91	Peak	47.91	-9.00	38.91	43.50	-4.59
148.34	Peak	38.98	-7.04	31.94	43.50	-11.56
191.99	Peak	37.93	-9.47	28.46	43.50	-15.04
240.49	Peak	36.96	-8.09	28.87	46.00	-17.13
323.91	Peak	47.25	-5.30	41.95	46.00	-4.05

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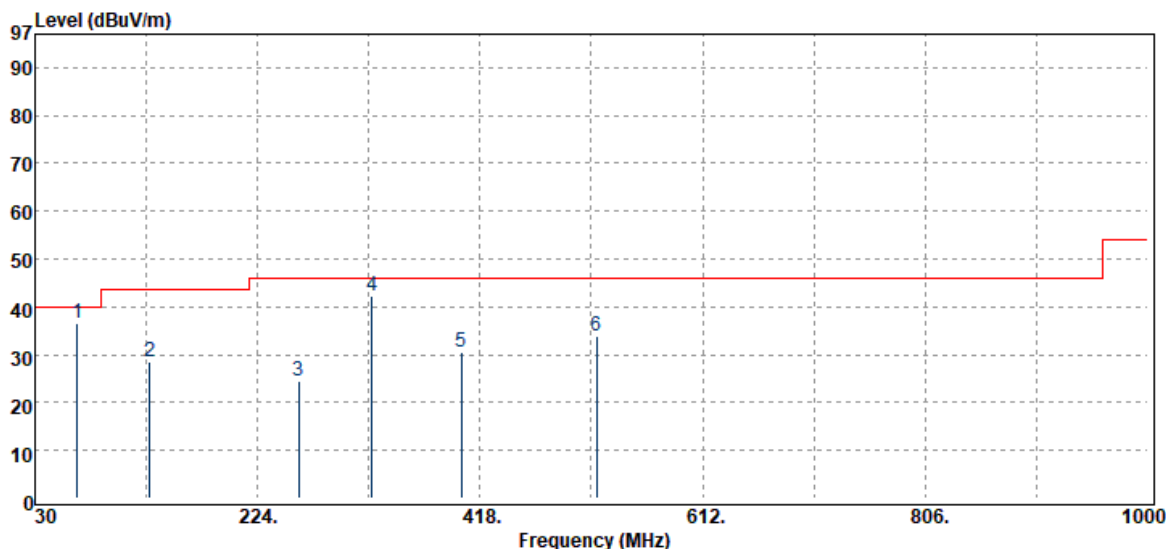
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Report Number :ER/2019/C0048
Operation Mode :802.11ac80 B2
Test Channel :5290 MHz
Test Mode :Tx CH High
EUT Pol :E2 Plane

Test Date :2020-01-02
Temp./Humi. :21.5/58
Antenna Pol. :VERTICAL
Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
66.86	QP	46.11	-9.41	36.70	40.00	-3.30
129.91	Peak	37.41	-9.00	28.41	43.50	-15.09
259.89	Peak	32.03	-7.46	24.57	46.00	-21.43
323.91	Peak	47.61	-5.30	42.31	46.00	-3.69
401.51	Peak	34.30	-3.84	30.46	46.00	-15.54
519.85	Peak	35.99	-1.99	34.00	46.00	-12.00

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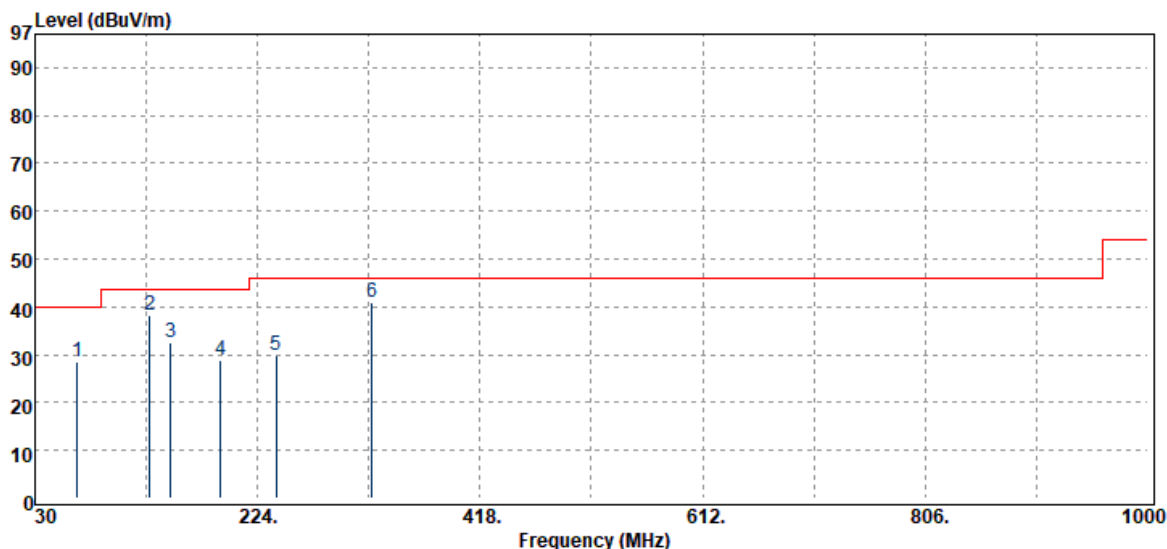
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Report Number :ER/2019/C0048
 Operation Mode :802.11ac80 B2
 Test Channel :5290 MHz
 Test Mode :Tx CH High
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



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
66.86	Peak	38.04	-9.41	28.63	40.00	-11.37
129.91	Peak	47.41	-9.00	38.41	43.50	-5.09
148.34	Peak	39.63	-7.04	32.59	43.50	-10.91
191.99	Peak	38.23	-9.47	28.76	43.50	-14.74
240.49	Peak	37.83	-8.09	29.74	46.00	-16.26
323.91	Peak	46.28	-5.30	40.98	46.00	-5.02

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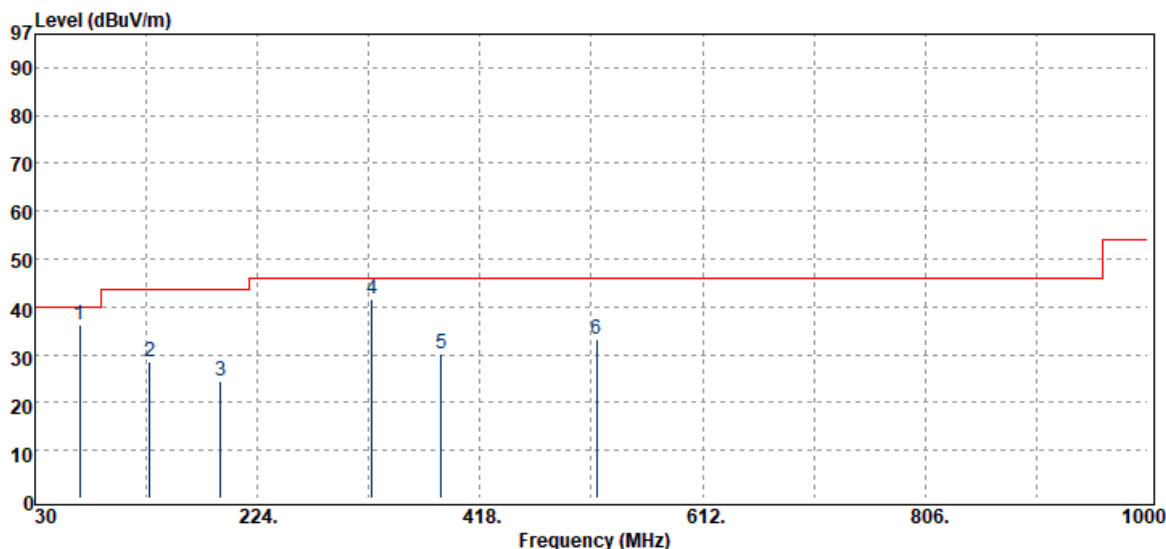
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Report Number :ER/2019/C0048
 Operation Mode :802.11ac80 B3
 Test Channel :5530 MHz
 Test Mode :Tx CH Low
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :VERTICAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
68.80	QP	45.97	-9.82	36.15	40.00	-3.85
129.91	Peak	37.45	-9.00	28.45	43.50	-15.05
191.99	Peak	34.06	-9.47	24.59	43.50	-18.91
323.91	Peak	46.78	-5.30	41.48	46.00	-4.52
384.05	Peak	34.66	-4.30	30.36	46.00	-15.64
519.85	Peak	35.36	-1.99	33.37	46.00	-12.63

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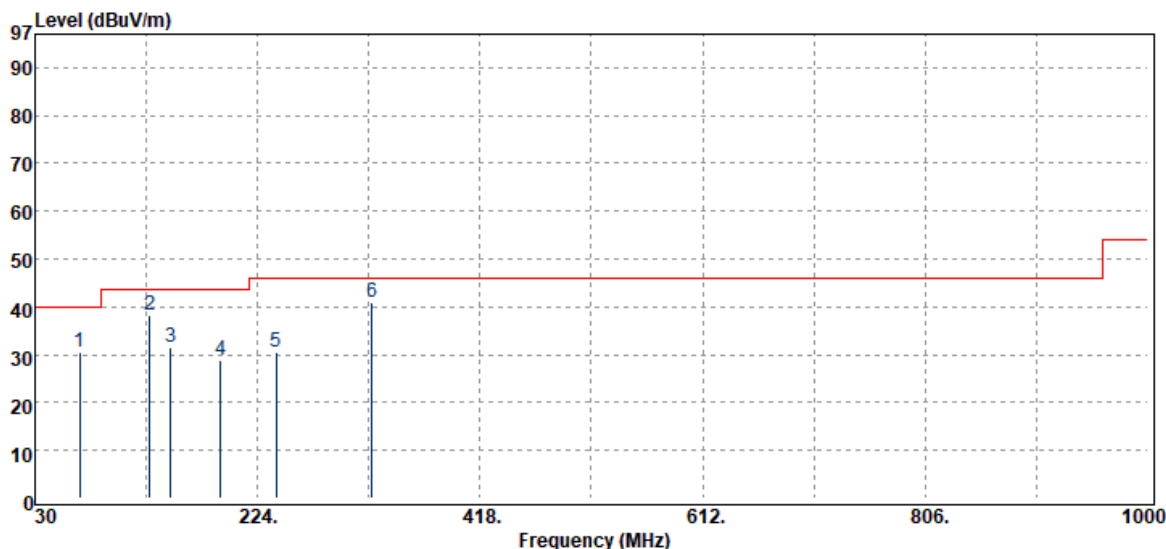
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Report Number :ER/2019/C0048
Operation Mode :802.11ac80 B3
Test Channel :5530 MHz
Test Mode :Tx CH Low
EUT Pol :E2 Plane

Test Date :2020-01-02
Temp./Humi. :21.5/58
Antenna Pol. :HORIZONTAL
Engineer :Kane



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
68.80	Peak	40.43	-9.82	30.61	40.00	-9.39
129.91	Peak	47.36	-9.00	38.36	43.50	-5.14
148.34	Peak	38.71	-7.04	31.67	43.50	-11.83
191.99	Peak	38.35	-9.47	28.88	43.50	-14.62
240.49	Peak	38.74	-8.09	30.65	46.00	-15.35
323.91	Peak	46.34	-5.30	41.04	46.00	-4.96

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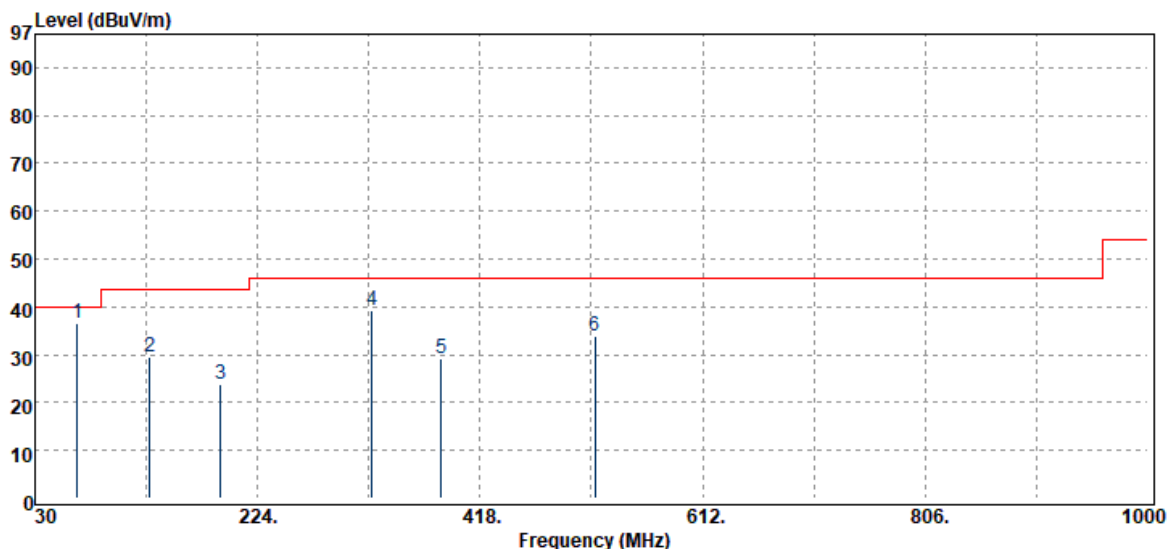
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Report Number :ER/2019/C0048
Operation Mode :802.11ac80 B4
Test Channel :5775 MHz
Test Mode :Tx CH Low
EUT Pol :E2 Plane

Test Date :2020-01-02
Temp./Humi. :21.5/58
Antenna Pol. :VERTICAL
Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
66.86	QP	46.03	-9.41	36.62	40.00	-3.38
129.91	Peak	38.38	-9.00	29.38	43.50	-14.12
191.99	Peak	33.31	-9.47	23.84	43.50	-19.66
323.91	Peak	44.52	-5.30	39.22	46.00	-6.78
384.05	Peak	33.62	-4.30	29.32	46.00	-16.68
517.91	Peak	36.14	-2.12	34.02	46.00	-11.98

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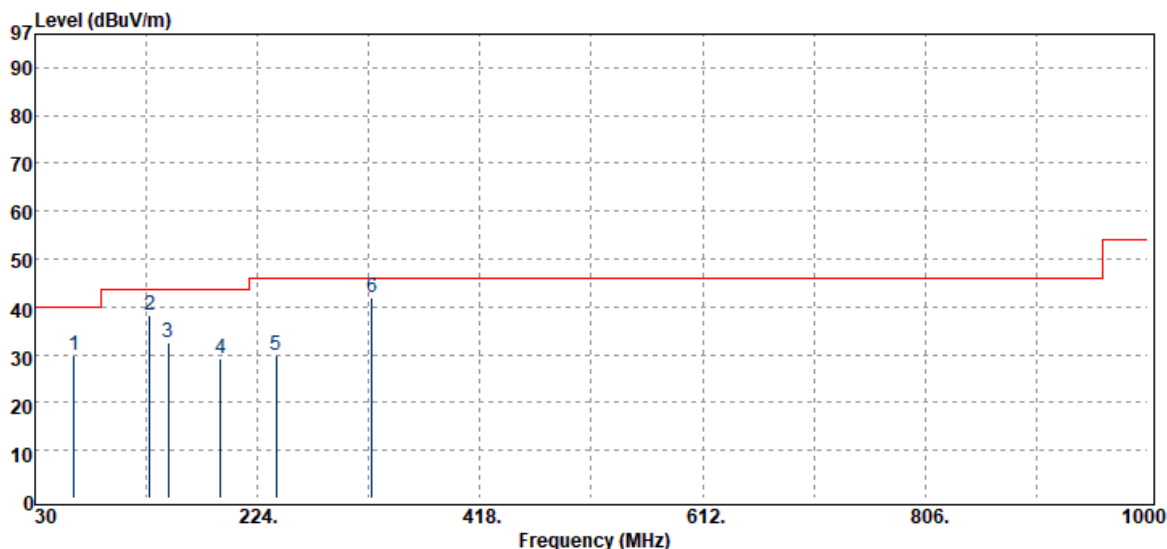
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Report Number :ER/2019/C0048
 Operation Mode :802.11ac80 B4
 Test Channel :5775 MHz
 Test Mode :Tx CH Low
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



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
63.95	Peak	38.91	-8.97	29.94	40.00	-10.06
129.91	Peak	47.32	-9.00	38.32	43.50	-5.18
146.40	Peak	39.53	-7.08	32.45	43.50	-11.05
191.99	Peak	38.58	-9.47	29.11	43.50	-14.39
240.49	Peak	38.07	-8.09	29.98	46.00	-16.02
323.91	Peak	47.42	-5.30	42.12	46.00	-3.88

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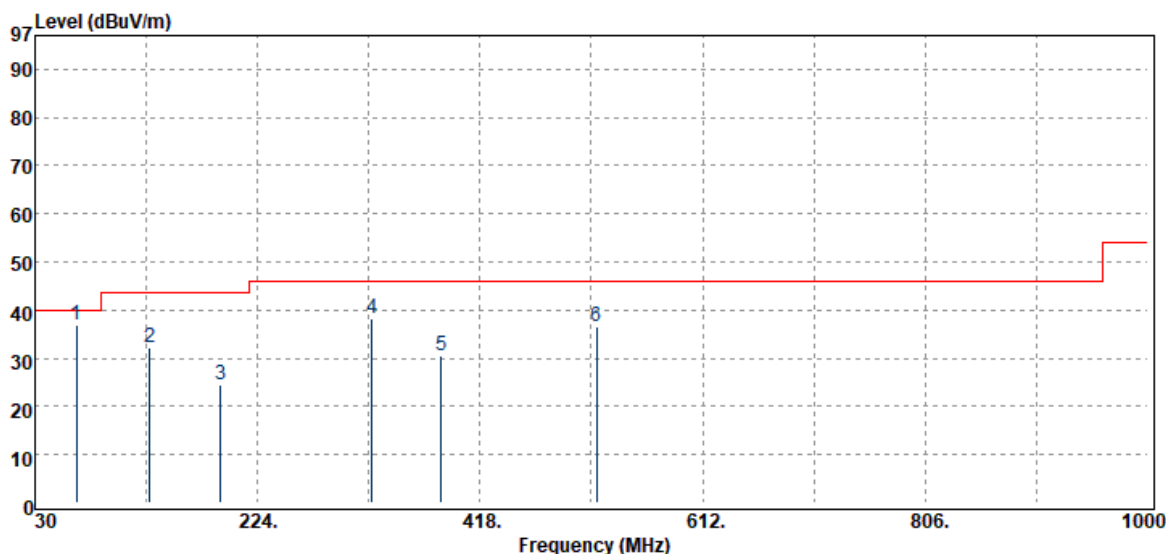
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Internal Antenna

Report Number :ER/2019/C0048
Operation Mode :802.11a B1
Test Channel :5220 MHz
Test Mode :Tx CH Mid
EUT Pol :E2 Plane

Test Date :2019-11-26
Temp./Humi. :23.5/64
Antenna Pol. :VERTICAL
Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
65.89	QP	46.09	-9.31	36.78	40.00	-3.22
129.91	Peak	41.06	-9.00	32.06	43.50	-11.44
191.99	Peak	34.10	-9.47	24.63	43.50	-18.87
323.91	Peak	43.54	-5.30	38.24	46.00	-7.76
384.05	Peak	34.68	-4.30	30.38	46.00	-15.62
519.85	Peak	38.42	-1.99	36.43	46.00	-9.57

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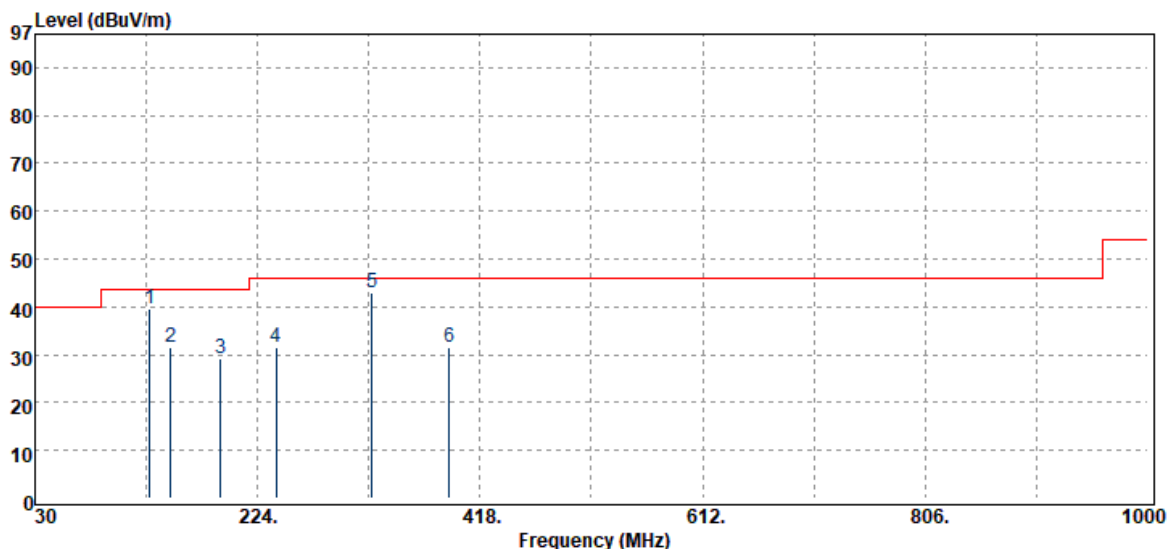
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Report Number :ER/2019/C0048
Operation Mode :802.11a B1
Test Channel :5220 MHz
Test Mode :Tx CH Mid
EUT Pol :E2 Plane

Test Date :2019-11-26
Temp./Humi. :23.5/64
Antenna Pol. :HORIZONTAL
Engineer :Kane



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
129.91	Peak	48.51	-9.00	39.51	43.50	-3.99
148.34	Peak	38.67	-7.04	31.63	43.50	-11.87
191.99	Peak	38.62	-9.47	29.15	43.50	-14.35
240.49	Peak	39.73	-8.09	31.64	46.00	-14.36
323.91	Peak	48.22	-5.30	42.92	46.00	-3.08
390.84	Peak	35.70	-4.17	31.53	46.00	-14.47

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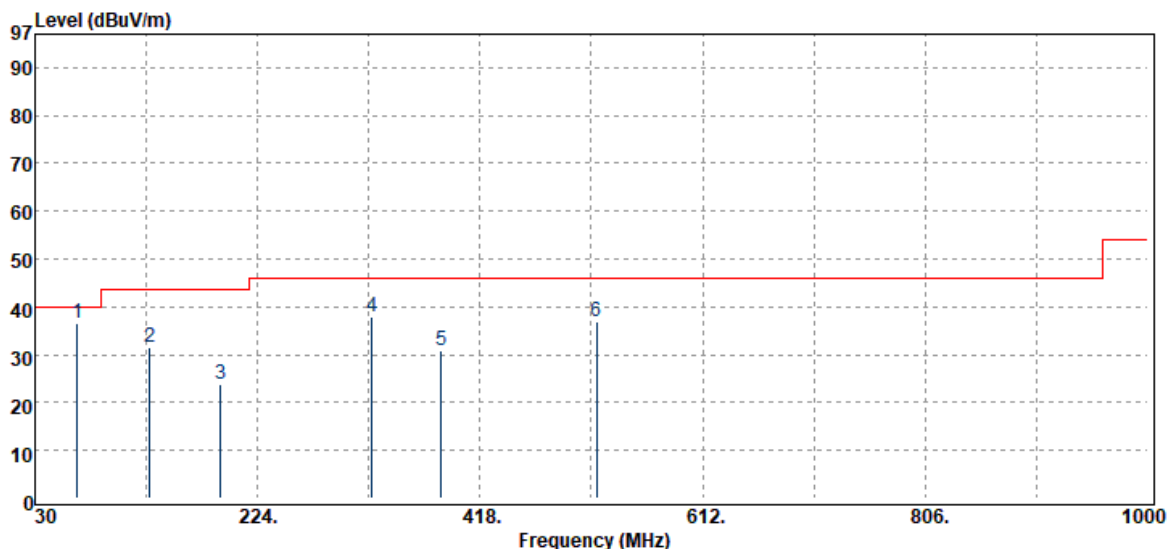
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B2
 Test Channel :5300 MHz
 Test Mode :Tx CH Mid
 EUT Pol :E2 Plane

Test Date :2019-11-26
 Temp./Humi. :23.5/64
 Antenna Pol. :VERTICAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
66.86	QP	46.03	-9.41	36.62	40.00	-3.38
129.91	Peak	40.67	-9.00	31.67	43.50	-11.83
191.99	Peak	33.46	-9.47	23.99	43.50	-19.51
323.91	Peak	43.25	-5.30	37.95	46.00	-8.05
384.05	Peak	35.22	-4.30	30.92	46.00	-15.08
519.85	Peak	38.89	-1.99	36.90	46.00	-9.10

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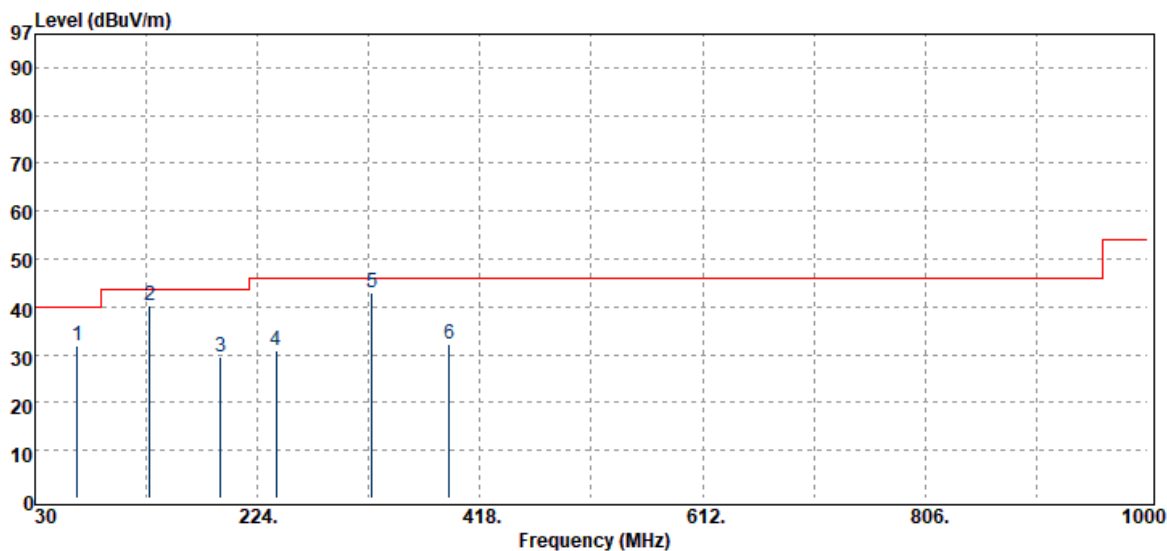
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B2
 Test Channel :5300 MHz
 Test Mode :Tx CH Mid
 EUT Pol :E2 Plane

Test Date :2019-11-26
 Temp./Humi. :23.5/64
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
66.86	Peak	41.37	-9.41	31.96	40.00	-8.04
129.91	Peak	49.25	-9.00	40.25	43.50	-3.25
191.99	Peak	39.00	-9.47	29.53	43.50	-13.97
240.49	Peak	39.13	-8.09	31.04	46.00	-14.96
323.91	Peak	48.16	-5.30	42.86	46.00	-3.14
390.84	Peak	36.49	-4.17	32.32	46.00	-13.68

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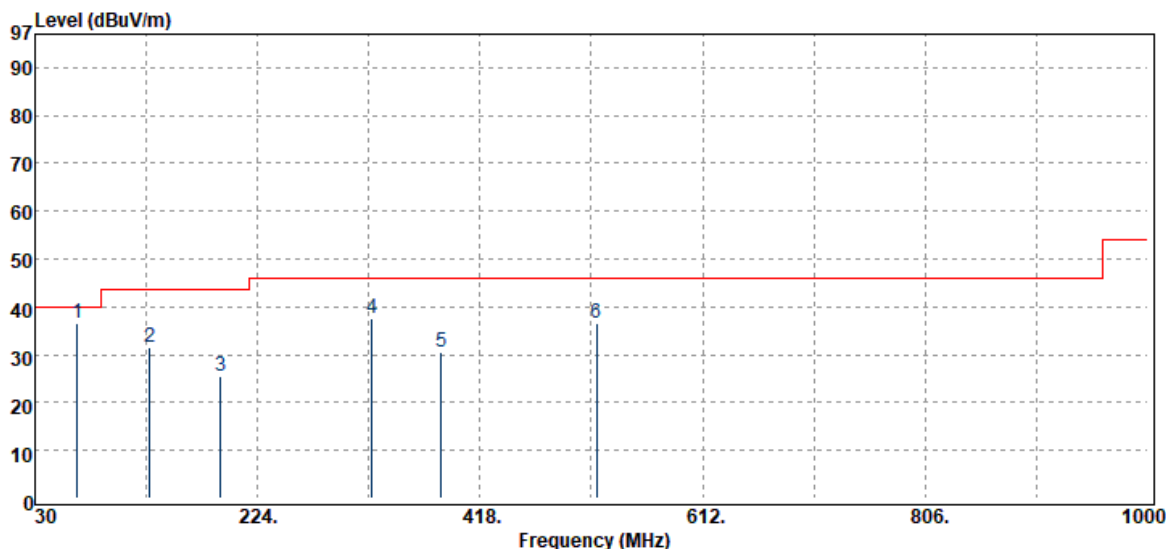
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Report Number :ER/2019/C0048
Operation Mode :802.11a B3
Test Channel :5580 MHz
Test Mode :Tx CH Mid
EUT Pol :E2 Plane

Test Date :2019-11-26
Temp./Humi. :23.5/64
Antenna Pol. :VERTICAL
Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
66.86	QP	46.12	-9.41	36.71	40.00	-3.29
129.91	Peak	40.59	-9.00	31.59	43.50	-11.91
191.99	Peak	34.93	-9.47	25.46	43.50	-18.04
323.91	Peak	42.76	-5.30	37.46	46.00	-8.54
384.05	Peak	34.69	-4.30	30.39	46.00	-15.61
519.85	Peak	38.69	-1.99	36.70	46.00	-9.30

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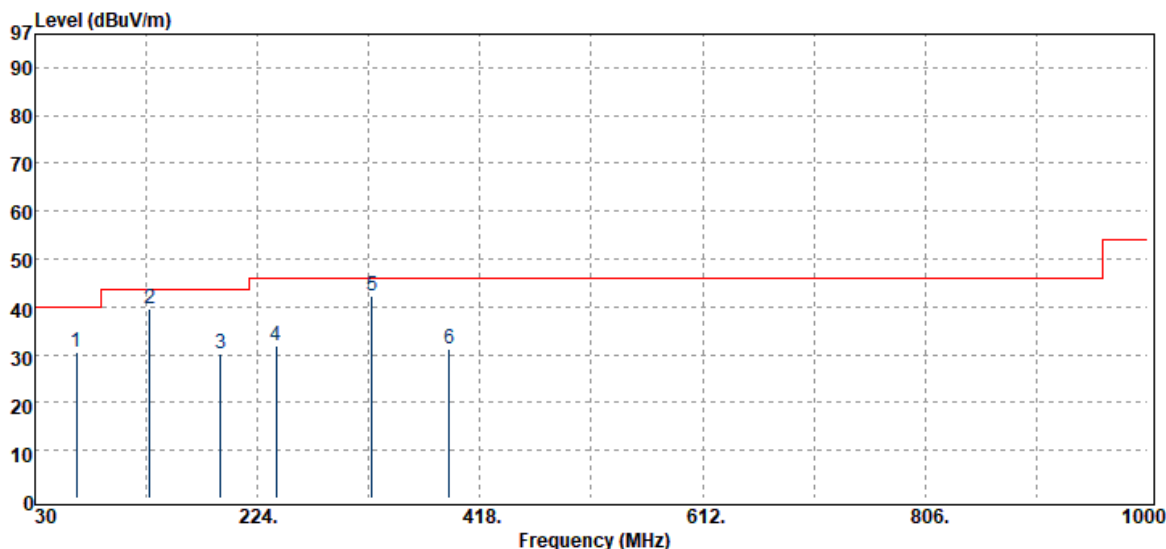
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B3
 Test Channel :5580 MHz
 Test Mode :Tx CH Mid
 EUT Pol :E2 Plane

Test Date :2019-11-26
 Temp./Humi. :23.5/64
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



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
65.89	Peak	40.01	-9.31	30.70	40.00	-9.30
129.91	Peak	48.59	-9.00	39.59	43.50	-3.91
191.99	Peak	39.73	-9.47	30.26	43.50	-13.24
240.49	Peak	39.84	-8.09	31.75	46.00	-14.25
323.91	Peak	47.58	-5.30	42.28	46.00	-3.72
390.84	Peak	35.52	-4.17	31.35	46.00	-14.65

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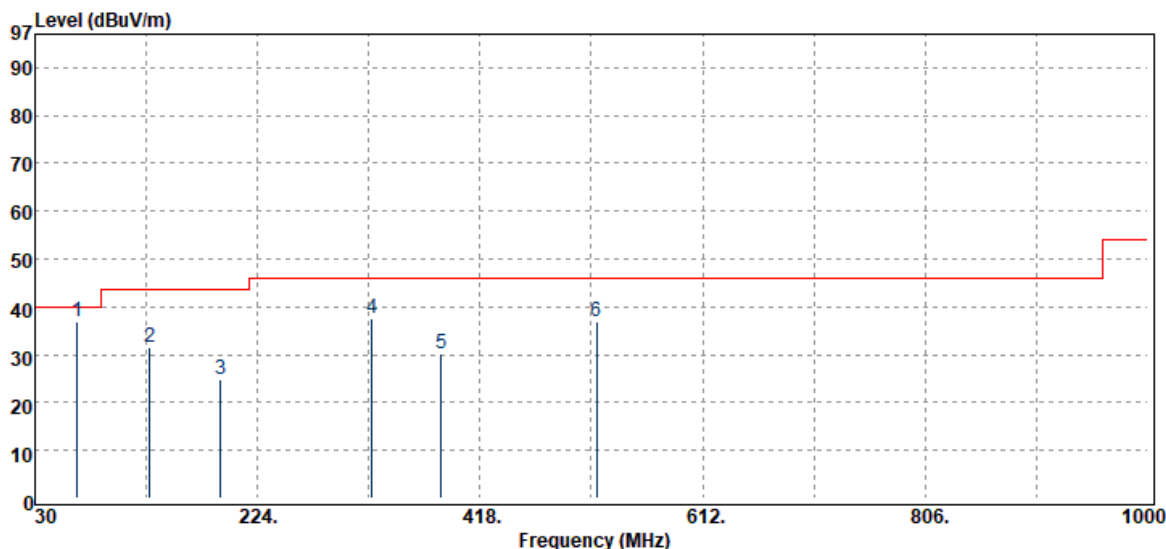
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B4
 Test Channel :5785 MHz
 Test Mode :Tx CH Mid
 EUT Pol :E2 Plane

Test Date :2019-11-26
 Temp./Humi. :23.5/64
 Antenna Pol. :VERTICAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
66.86	QP	46.17	-9.41	36.76	40.00	-3.24
129.91	Peak	40.68	-9.00	31.68	43.50	-11.82
191.99	Peak	34.41	-9.47	24.94	43.50	-18.56
323.91	Peak	42.99	-5.30	37.69	46.00	-8.31
384.05	Peak	34.53	-4.30	30.23	46.00	-15.77
519.85	Peak	39.05	-1.99	37.06	46.00	-8.94

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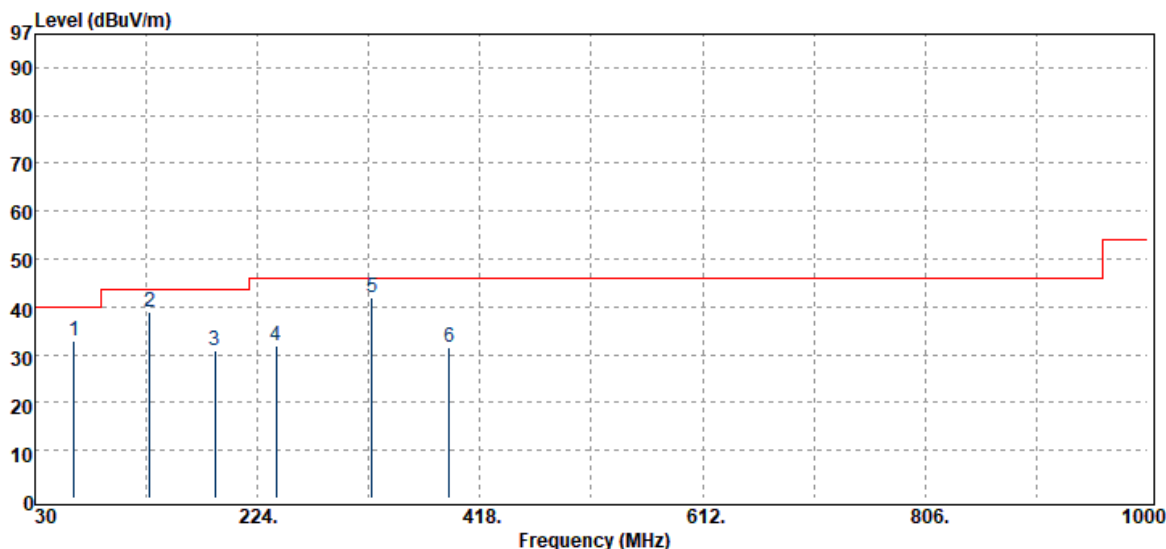
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B4
 Test Channel :5785 MHz
 Test Mode :Tx CH Mid
 EUT Pol :E2 Plane

Test Date :2019-11-26
 Temp./Humi. :23.5/64
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
63.95	Peak	41.91	-8.97	32.94	40.00	-7.06
129.91	Peak	48.00	-9.00	39.00	43.50	-4.50
187.14	Peak	39.99	-9.23	30.76	43.50	-12.74
240.49	Peak	40.00	-8.09	31.91	46.00	-14.09
323.91	Peak	47.17	-5.30	41.87	46.00	-4.13
390.84	Peak	35.82	-4.17	31.65	46.00	-14.35

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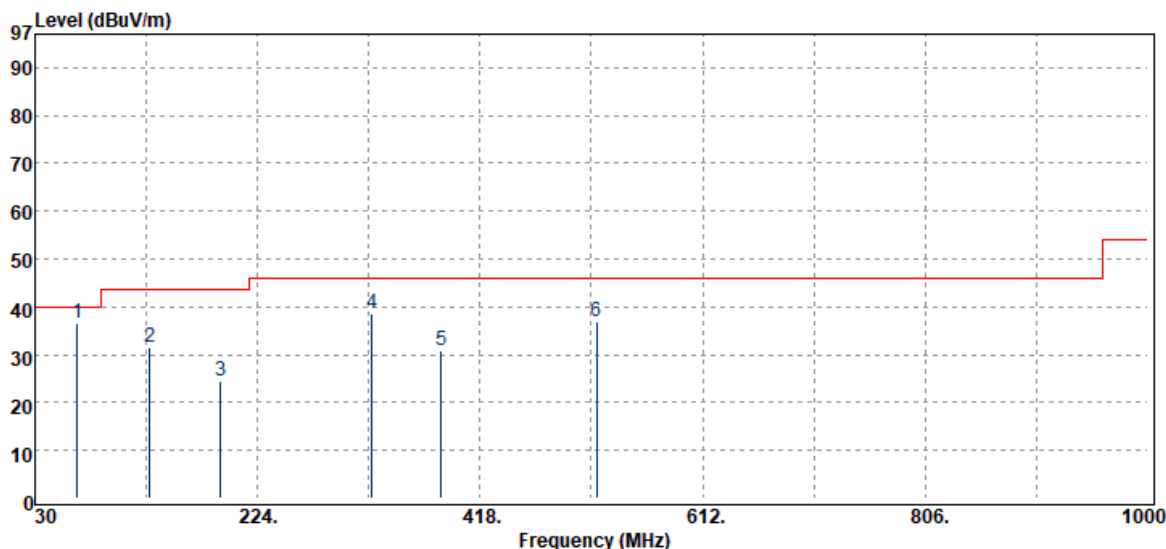
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Report Number :ER/2019/C0048
 Operation Mode :802.11ac80 B1
 Test Channel :5210 MHz
 Test Mode :Tx CH Low
 EUT Pol :E2 Plane

Test Date :2019-11-26
 Temp./Humi. :23.5/64
 Antenna Pol. :VERTICAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
66.86	QP	46.04	-9.41	36.63	40.00	-3.37
129.91	Peak	40.43	-9.00	31.43	43.50	-12.07
191.99	Peak	33.81	-9.47	24.34	43.50	-19.16
323.91	Peak	43.76	-5.30	38.46	46.00	-7.54
384.05	Peak	35.18	-4.30	30.88	46.00	-15.12
519.85	Peak	39.07	-1.99	37.08	46.00	-8.92

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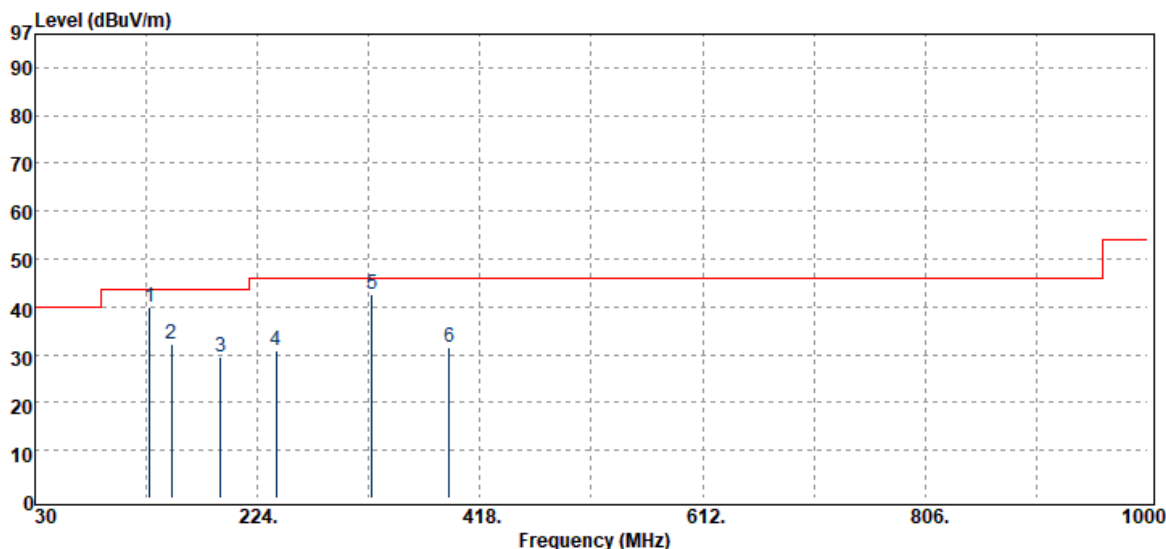
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Report Number :ER/2019/C0048
 Operation Mode :802.11ac80 B1
 Test Channel :5210 MHz
 Test Mode :Tx CH Low
 EUT Pol :E2 Plane

Test Date :2019-11-26
 Temp./Humi. :23.5/64
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



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
129.91	Peak	48.96	-9.00	39.96	43.50	-3.54
149.31	Peak	39.29	-7.01	32.28	43.50	-11.22
191.99	Peak	39.16	-9.47	29.69	43.50	-13.81
240.49	Peak	38.96	-8.09	30.87	46.00	-15.13
323.91	Peak	47.77	-5.30	42.47	46.00	-3.53
390.84	Peak	35.56	-4.17	31.39	46.00	-14.61

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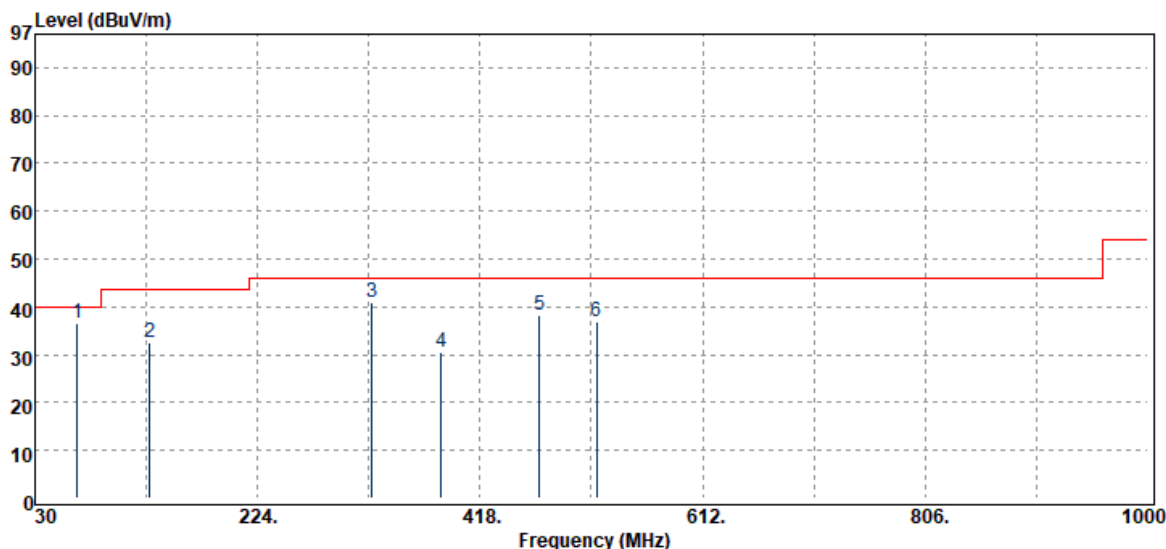
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Report Number :ER/2019/C0048
 Operation Mode :802.11ac80 B2
 Test Channel :5290 MHz
 Test Mode :Tx CH High
 EUT Pol :E2 Plane

Test Date :2019-11-26
 Temp./Humi. :23.5/64
 Antenna Pol. :VERTICAL
 Engineer :Kane



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
66.86	QP	46.08	-9.41	36.67	40.00	-3.33
129.91	Peak	41.62	-9.00	32.62	43.50	-10.88
323.91	Peak	46.09	-5.30	40.79	46.00	-5.21
384.05	Peak	34.73	-4.30	30.43	46.00	-15.57
469.41	Peak	41.21	-2.98	38.23	46.00	-7.77
519.85	Peak	38.79	-1.99	36.80	46.00	-9.20

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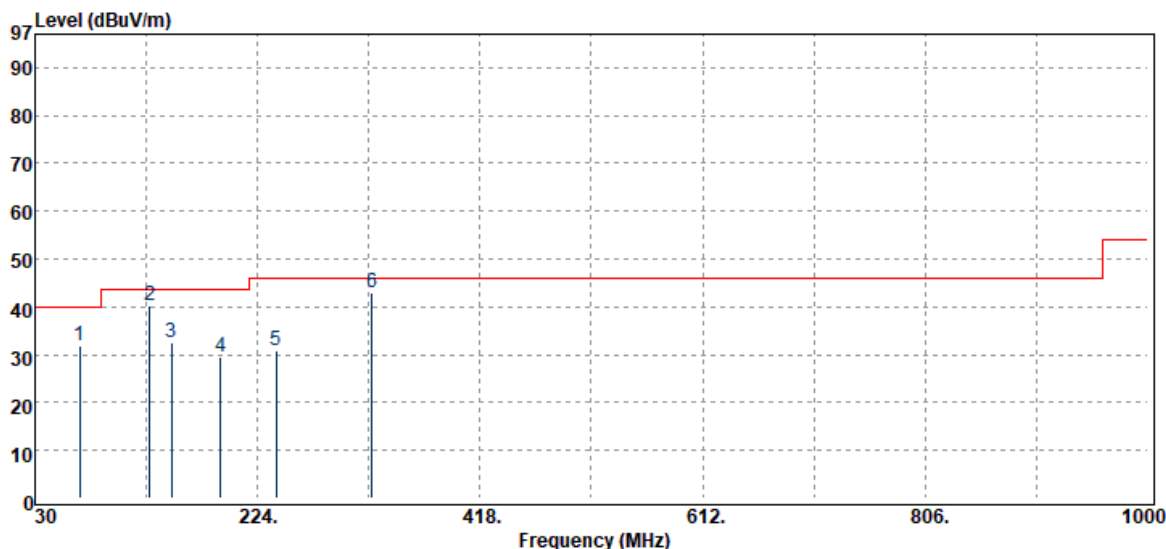
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Report Number :ER/2019/C0048
 Operation Mode :802.11ac80 B2
 Test Channel :5290 MHz
 Test Mode :Tx CH High
 EUT Pol :E2 Plane

Test Date :2019-11-26
 Temp./Humi. :23.5/64
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



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
68.80	Peak	41.60	-9.82	31.78	40.00	-8.22
129.91	Peak	49.42	-9.00	40.42	43.50	-3.08
149.31	Peak	39.59	-7.01	32.58	43.50	-10.92
191.99	Peak	39.14	-9.47	29.67	43.50	-13.83
240.49	Peak	39.00	-8.09	30.91	46.00	-15.09
323.91	Peak	48.13	-5.30	42.83	46.00	-3.17

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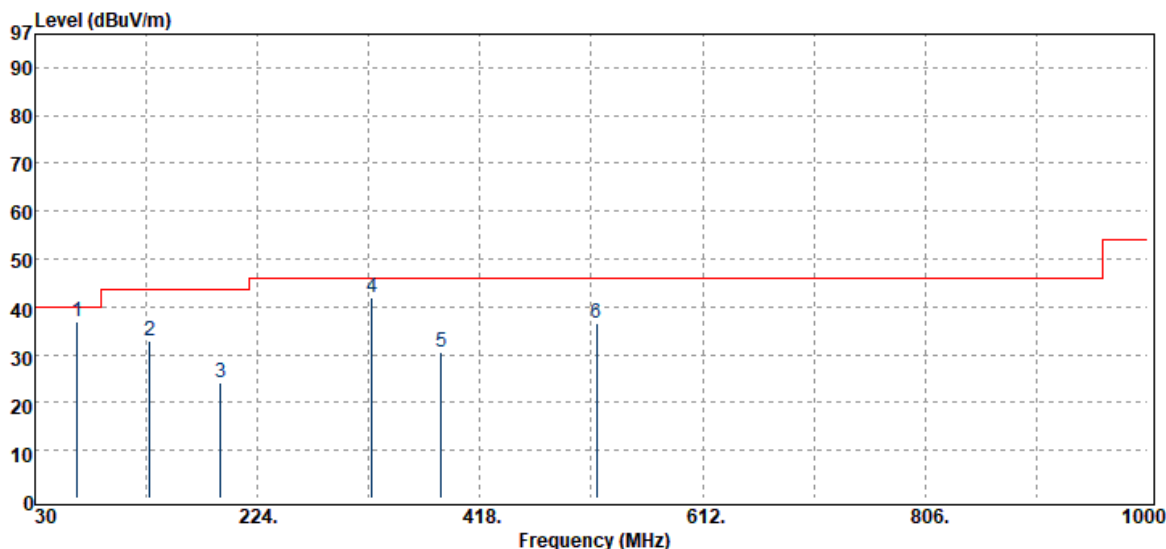
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Report Number :ER/2019/C0048
 Operation Mode :802.11ac80 B3
 Test Channel :5530 MHz
 Test Mode :Tx CH Low
 EUT Pol :E2 Plane

Test Date :2019-11-26
 Temp./Humi. :23.5/64
 Antenna Pol. :VERTICAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
66.86	QP	46.25	-9.41	36.84	40.00	-3.16
129.91	Peak	41.97	-9.00	32.97	43.50	-10.53
191.99	Peak	33.52	-9.47	24.05	43.50	-19.45
323.91	Peak	47.37	-5.30	42.07	46.00	-3.93
384.05	Peak	34.93	-4.30	30.63	46.00	-15.37
519.85	Peak	38.71	-1.99	36.72	46.00	-9.28

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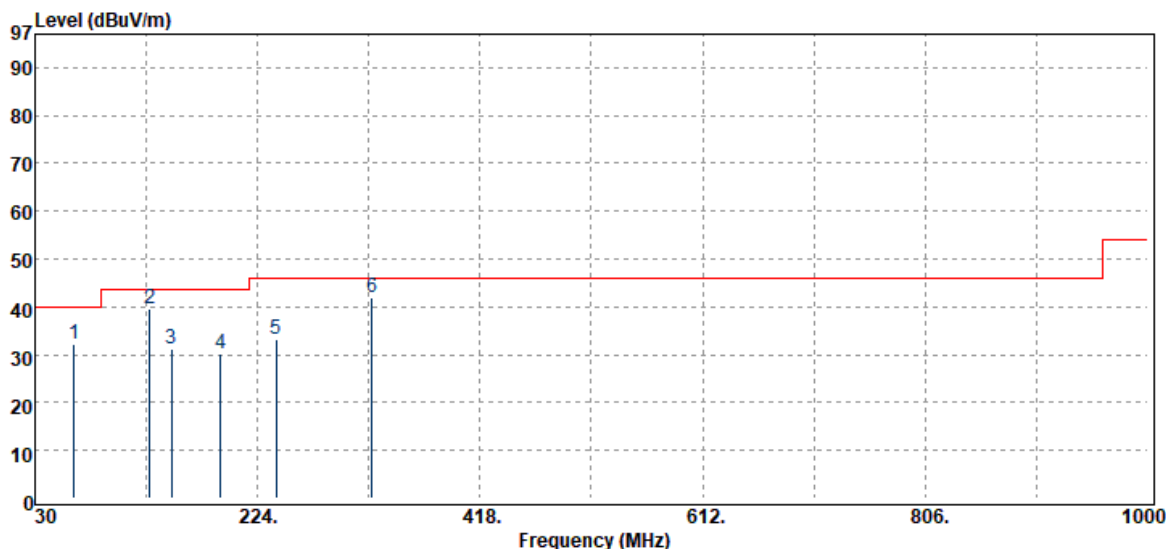
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Report Number :ER/2019/C0048
 Operation Mode :802.11ac80 B3
 Test Channel :5530 MHz
 Test Mode :Tx CH Low
 EUT Pol :E2 Plane

Test Date :2019-11-26
 Temp./Humi. :23.5/64
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



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
63.95	Peak	41.23	-8.97	32.26	40.00	-7.74
129.91	Peak	48.56	-9.00	39.56	43.50	-3.94
149.31	Peak	38.29	-7.01	31.28	43.50	-12.22
191.99	Peak	39.52	-9.47	30.05	43.50	-13.45
240.49	Peak	41.29	-8.09	33.20	46.00	-12.80
323.91	Peak	47.40	-5.30	42.10	46.00	-3.90

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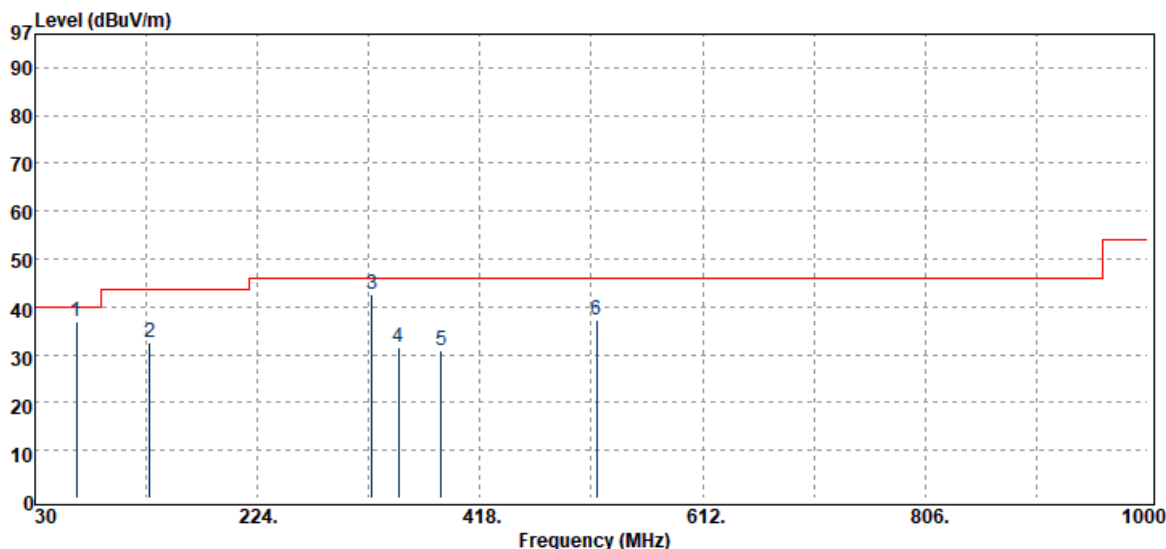
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Report Number :ER/2019/C0048
 Operation Mode :802.11ac80 B4
 Test Channel :5775 MHz
 Test Mode :Tx CH Low
 EUT Pol :E2 Plane

Test Date :2019-11-26
 Temp./Humi. :23.5/64
 Antenna Pol. :VERTICAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
65.89	QP	46.09	-9.31	36.78	40.00	-3.22
129.91	Peak	41.59	-9.00	32.59	43.50	-10.91
323.91	Peak	48.07	-5.30	42.77	46.00	-3.23
347.19	Peak	36.71	-5.15	31.56	46.00	-14.44
384.05	Peak	35.10	-4.30	30.80	46.00	-15.20
519.85	Peak	39.15	-1.99	37.16	46.00	-8.84

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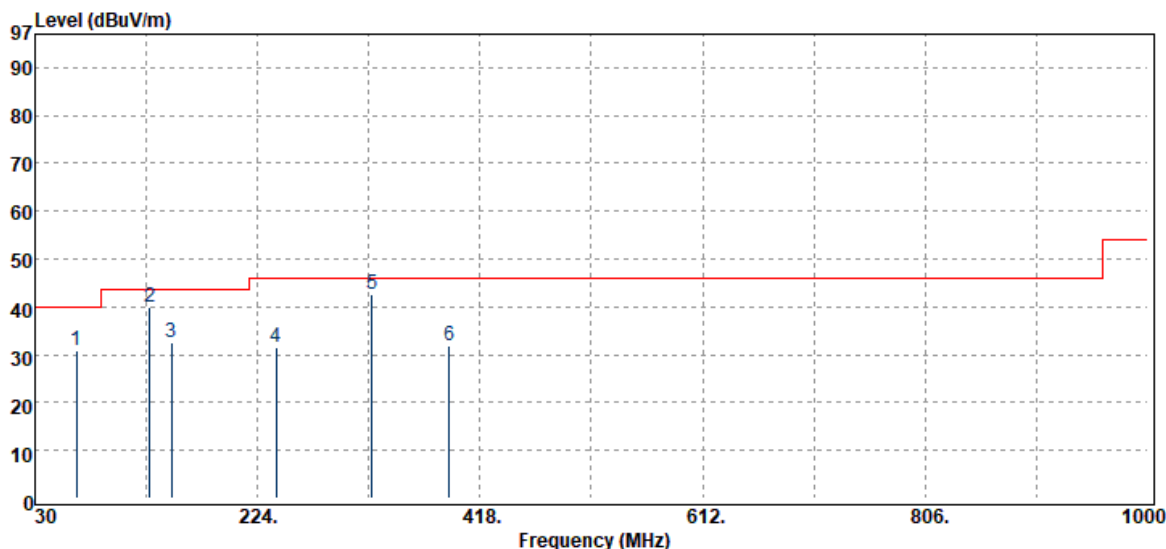
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Member of SGS Group

Report Number :ER/2019/C0048
 Operation Mode :802.11ac80 B4
 Test Channel :5775 MHz
 Test Mode :Tx CH Low
 EUT Pol :E2 Plane

Test Date :2019-11-26
 Temp./Humi. :23.5/64
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



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
65.89	Peak	40.03	-9.31	30.72	40.00	-9.28
129.91	Peak	49.09	-9.00	40.09	43.50	-3.41
149.31	Peak	39.55	-7.01	32.54	43.50	-10.96
240.49	Peak	39.60	-8.09	31.51	46.00	-14.49
323.91	Peak	48.08	-5.30	42.78	46.00	-3.22
390.84	Peak	36.11	-4.17	31.94	46.00	-14.06

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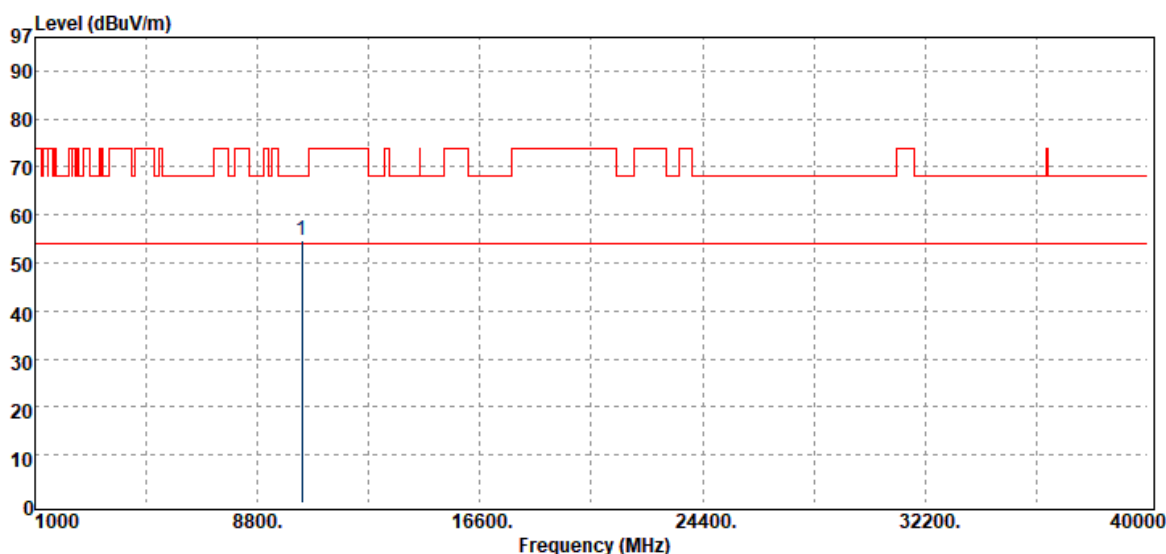
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11.7.2 Above 1GHz Worst-Case Data:

External Antenna (Type: Dipole Antenna, Model no: R380500314)

Report Number	:ER/2019/C0048	Test Date	:2020-01-02
Operation Mode	:802.11a B1	Temp./Humi.	:21.5/58
Test Channel	:5180 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH Low	Engineer	:Kane
EUT Pol	:E2 Plane		



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	35.96	18.72	54.68	68.20	-13.52

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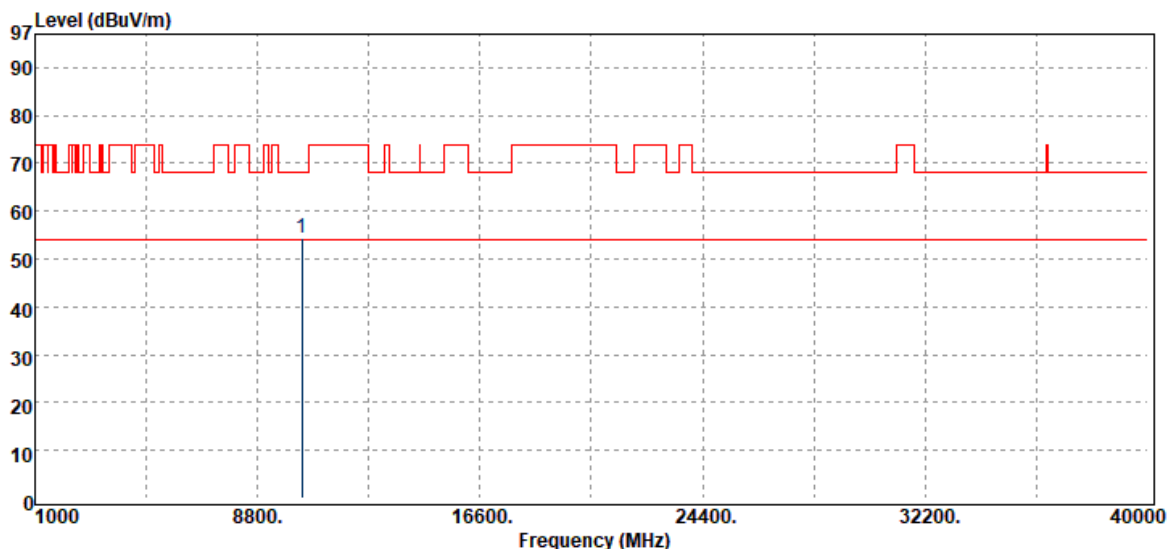
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B1
 Test Channel :5180 MHz
 Test Mode :Tx CH Low
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



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	35.81	18.72	54.53	68.20	-13.67

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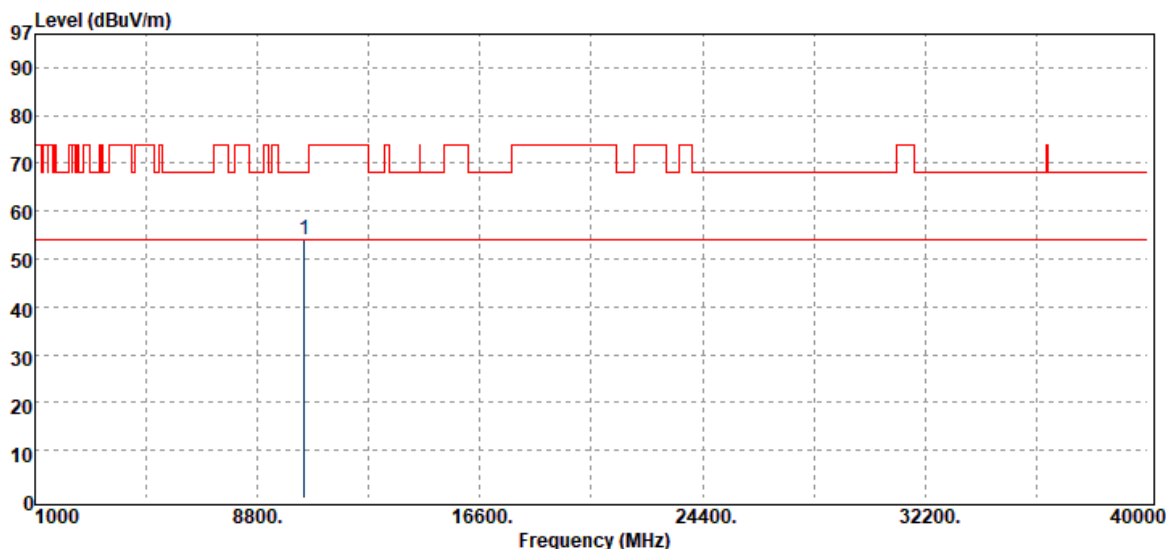
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B1
 Test Channel :5220 MHz
 Test Mode :Tx CH Mid
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :VERTICAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
10440.00	Peak	35.44	18.53	53.97	68.20	-14.23

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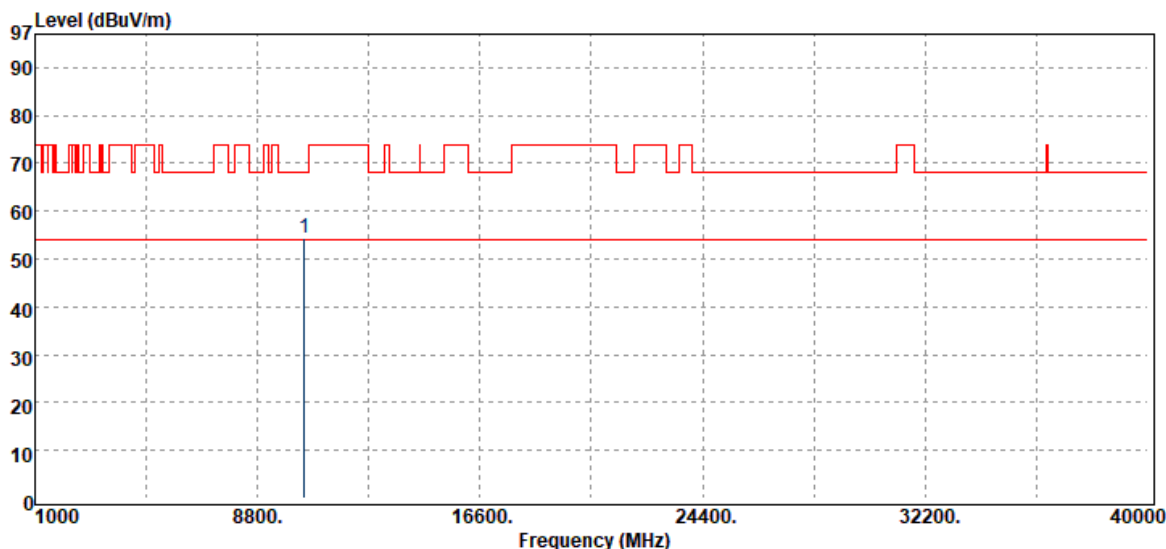
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B1
 Test Channel :5220 MHz
 Test Mode :Tx CH Mid
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



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	35.84	18.53	54.37	68.20	-13.83

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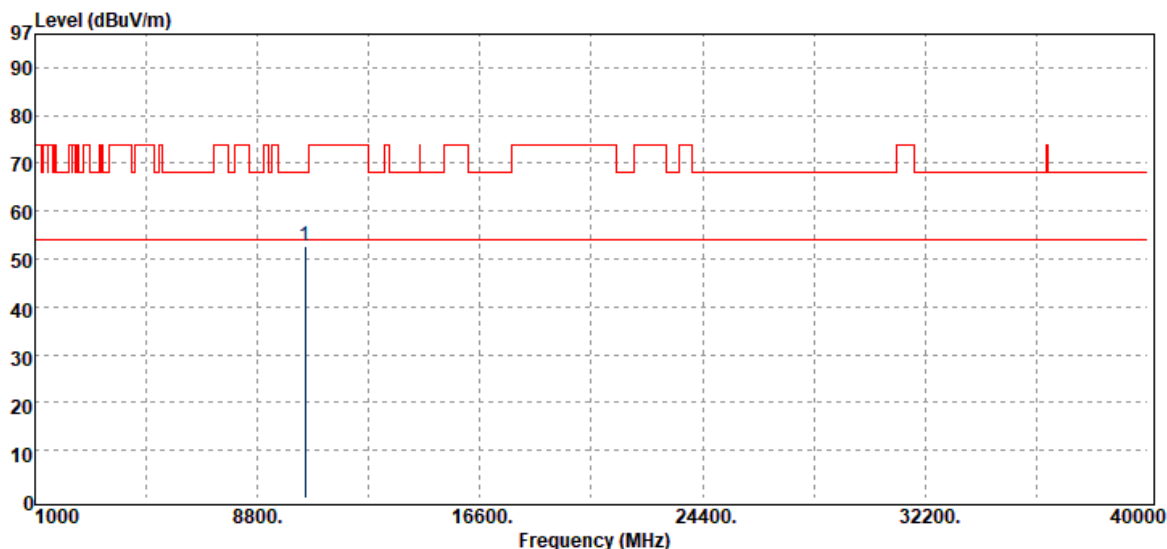
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B1
 Test Channel :5240 MHz
 Test Mode :Tx CH High
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :VERTICAL
 Engineer :Kane



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
10480.00	Peak	35.02	17.83	52.85	68.20	-15.35

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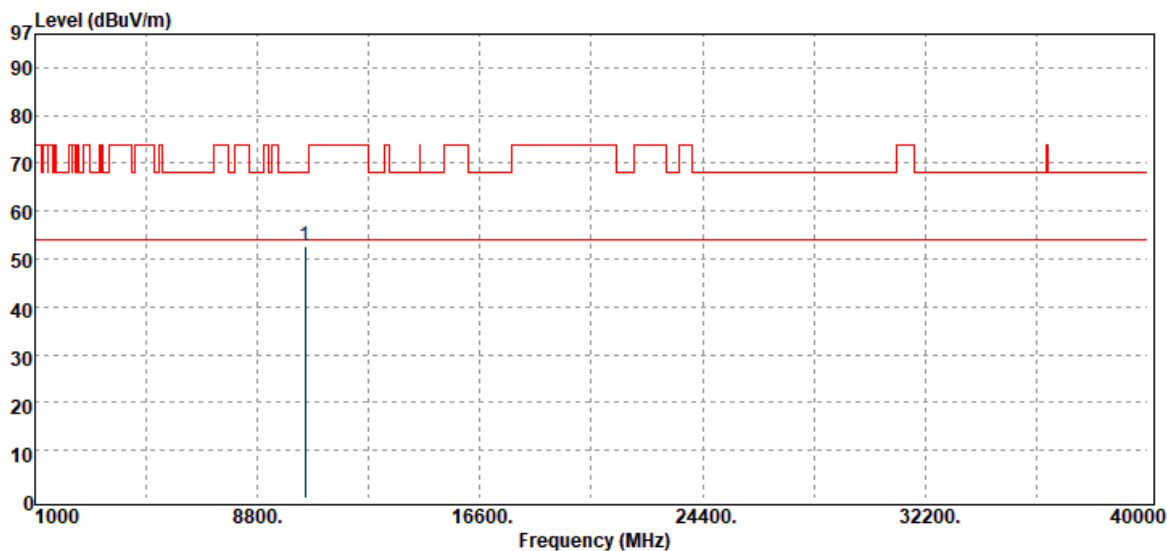
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Member of SGS Group

Report Number :ER/2019/C0048
 Operation Mode :802.11a B1
 Test Channel :5240 MHz
 Test Mode :Tx CH High
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



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	34.96	17.83	52.79	68.20	-15.41

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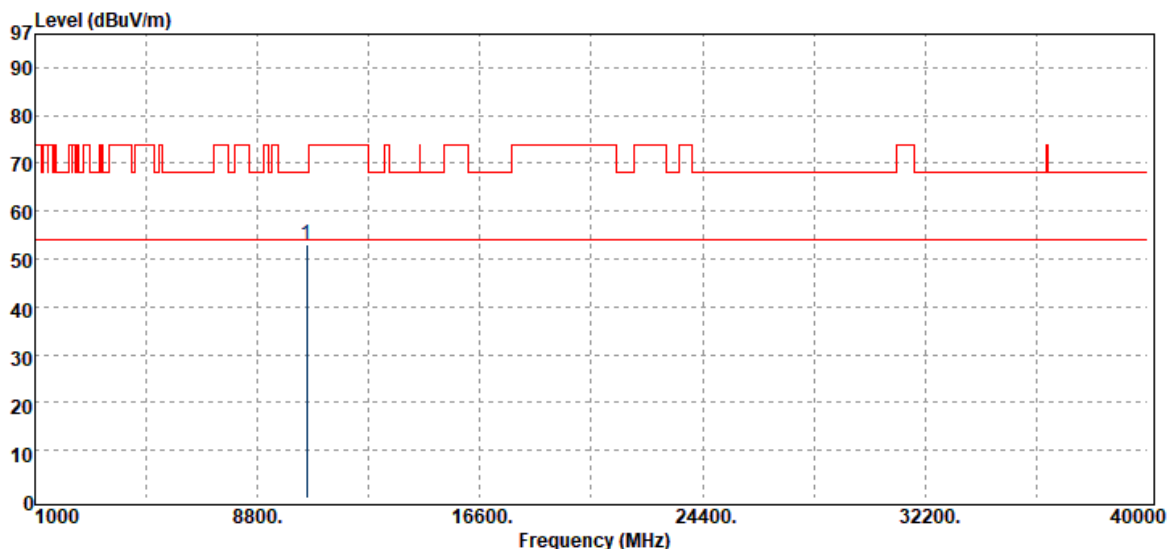
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B2
 Test Channel :5260 MHz
 Test Mode :Tx CH Low
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :VERTICAL
 Engineer :Kane



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	34.92	18.05	52.97	68.20	-15.23

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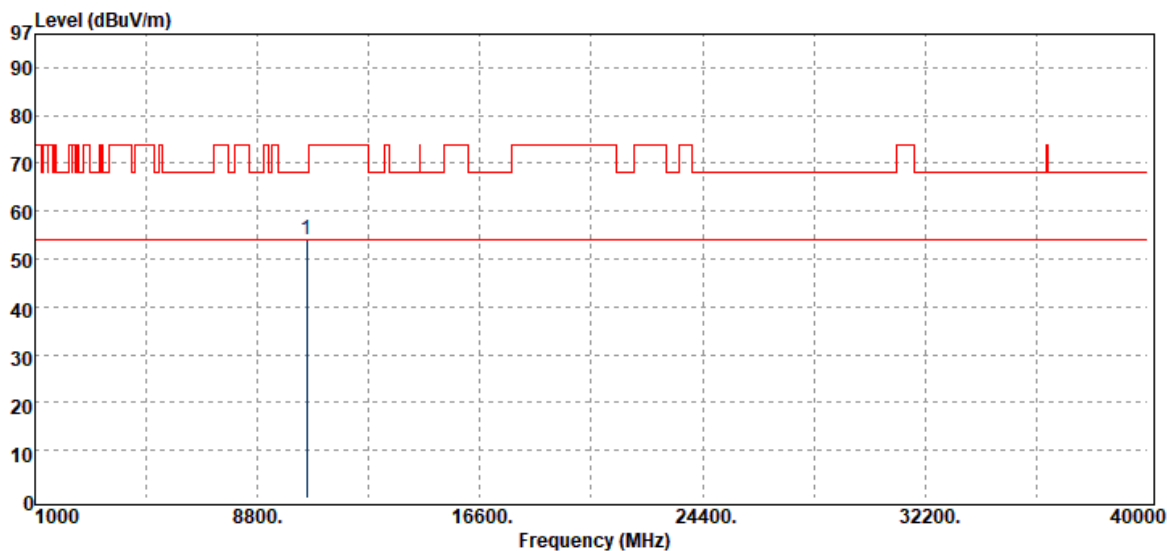
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Report Number :ER/2019/C0048
 Operation Mode :802.11a B2
 Test Channel :5260 MHz
 Test Mode :Tx CH Low
 EUT Pol :E2 Plane

Test Date :2020-01-02
 Temp./Humi. :21.5/58
 Antenna Pol. :HORIZONTAL
 Engineer :Kane



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	35.94	18.05	53.99	68.20	-14.21

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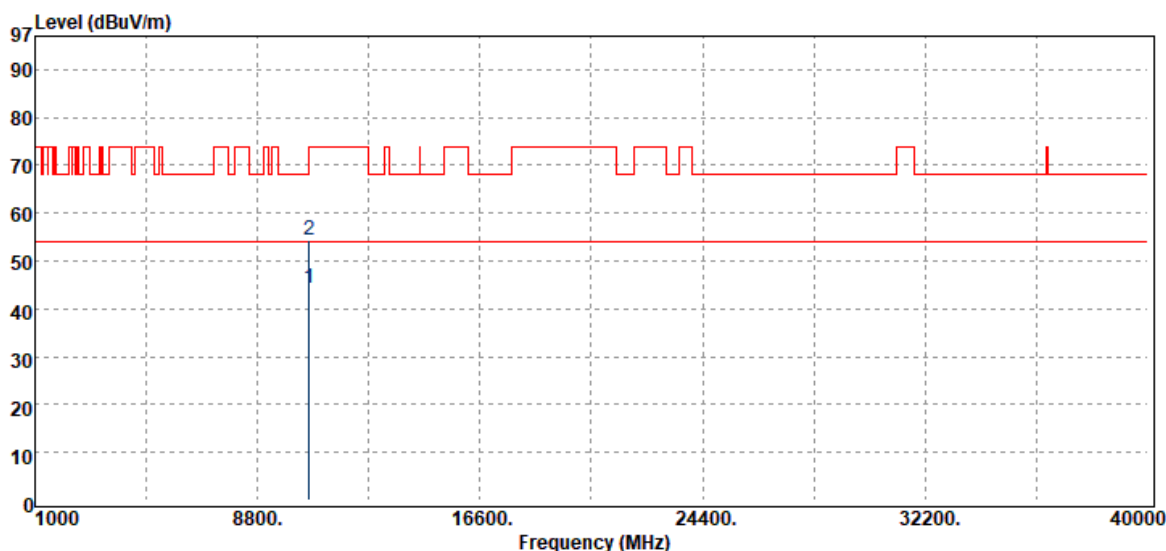
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Report Number :ER/2019/C0048
Operation Mode :802.11a B2
Test Channel :5300 MHz
Test Mode :Tx CH Mid
EUT Pol :E2 Plane

Test Date :2020-01-02
Temp./Humi. :21.5/58
Antenna Pol. :VERTICAL
Engineer :Kane



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	25.02	19.18	44.20	54.00	-9.80
10600.00	Peak	35.31	19.18	54.49	74.00	-19.51

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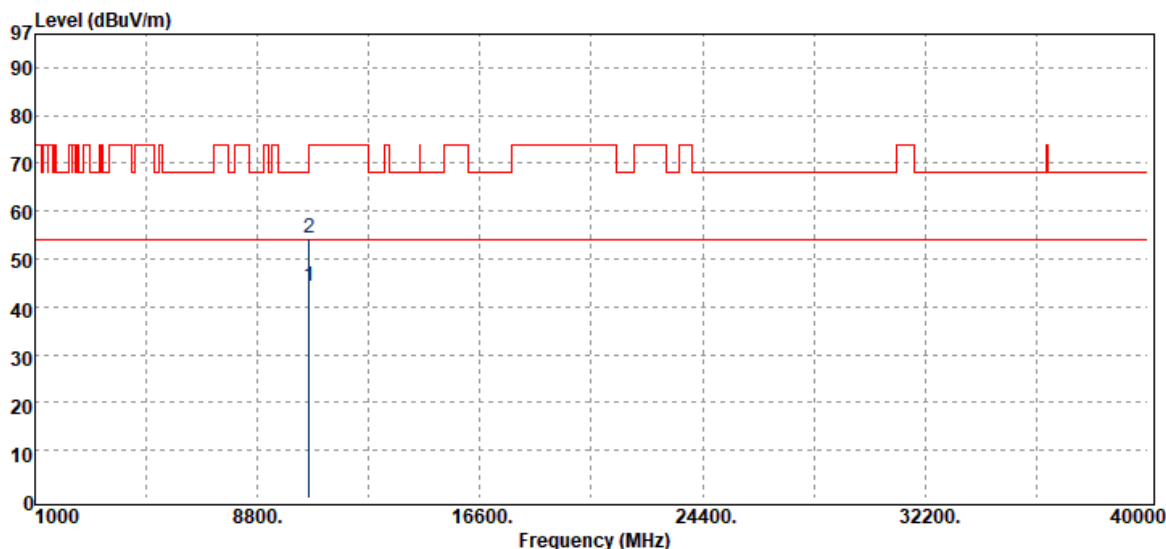
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Report Number :ER/2019/C0048
Operation Mode :802.11a B2
Test Channel :5300 MHz
Test Mode :Tx CH Mid
EUT Pol :E2 Plane

Test Date :2020-01-02
Temp./Humi. :21.5/58
Antenna Pol. :HORIZONTAL
Engineer :Kane



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
10600.00	Average	24.99	19.18	44.17	54.00	-9.83
10600.00	Peak	35.17	19.18	54.35	74.00	-19.65

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