U-NII-2A

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	52/5260	15.42	15.65	24.00	PASS
	60/5300	14.73	14.96	24.00	PASS
	64/5320	14.64	14.87	23.97	PASS
802.11n HT20	52/5260	13.76	14.13	23.99	PASS
	60/5300	13.09	13.46	24.00	PASS
	64/5320	13.02	13.39	23.96	PASS
802.11n HT40	54/5270	13.42	14.07	24.00	PASS
	62/5310	12.87	13.52	24.00	PASS
802.11ac VHT20	52/5260	12.96	13.20	24.00	PASS
	60/5300	12.02	12.26	24.00	PASS
	64/5320	12.03	12.27	23.99	PASS
802.11ac VHT40	54/5270	11.71	12.43	24.00	PASS
	62/5310	11.38	12.10	24.00	PASS
802.11ac VHT80	58/5290	11.95	13.05	24.00	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-2C

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	100/5500	16.20	16.43	23.98	PASS
	116/5580	16.53	16.76	23.88	PASS
	140/5700	16.63	16.86	23.89	PASS
	144/5720	16.42	16.65	23.99	PASS
802.11n HT20	100/5500	14.52	14.89	23.93	PASS
	116/5580	14.76	15.13	23.98	PASS
	140/5700	14.95	15.32	23.93	PASS
	144/5720	14.73	15.10	23.95	PASS
802.11n HT40	102/5510	14.24	14.89	24.00	PASS
	110/5550	13.97	14.62	24.00	PASS
	134/5670	14.17	14.82	24.00	PASS
	142/5710	14.74	15.39	24.00	PASS
802.11ac	100/5500	13.64	13.88	23.93	PASS

VHT20	116/5580	13.92	14.16	23.93	PASS
	140/5700	14.07	14.31	23.97	PASS
	144/5720	13.95	14.19	24.00	PASS
802.11ac VHT40	102/5510	12.88	13.60	24.00	PASS
	110/5550	12.37	13.09	24.00	PASS
	134/5670	13.16	13.88	24.00	PASS
	142/5710	12.56	13.28	24.00	PASS
802.11ac VHT80	106/5530	12.18	13.28	24.00	PASS
	138/5690	12.72	13.82	24.00	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-3

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	16.23	16.46	30	PASS
	157/5785	16.53	16.76	30	PASS
	165/5825	16.58	16.81	30	PASS
802.11n HT20	149/5745	14.45	14.82	30	PASS
	157/5785	14.92	15.29	30	PASS
	165/5825	14.96	15.33	30	PASS
802.11n HT40	151/5755	14.53	15.18	30	PASS
	159/5795	14.69	15.34	30	PASS
802.11ac VHT20	149/5745	13.64	13.88	30	PASS
	157/5785	14.06	14.30	30	PASS
	165/5825	14.03	14.27	30	PASS
802.11ac VHT40	151/5755	13.14	13.86	30	PASS
	159/5795	13.15	13.87	30	PASS
802.11ac VHT80	155/5775	12.79	13.89	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

5.3. Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

1. Frequency stability with respect to ambient temperature

a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in 5.6.

b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.

c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).

d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.

e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.

f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

g) Measure the frequency at each of frequencies specified in 5.6.

h) Switch OFF the EUT but do not switch OFF the oscillator heater.

i) Lower the chamber temperature by not more that 10°C, and allow the temperature inside the chamber to stabilize.

j) Repeat step f) through step i) down to the lowest specified temperature.

2. Frequency stability when varying supply voltage

Unless otherwise specified, these tests shall be made at ambient room temperature (+15°C to +25 °C). An antenna shall be connected to the antenna output terminals of the EUT if possible. If the EUT is equipped with or uses an adjustable-length antenna, then it shall be fully extended.

a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.

b) Tune the EUT to one of the number of frequencies required in 5.6. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
c) Measure the frequency at each of the frequencies specified in 5.6.
d) Repeat the above procedure at 85% and 115% of the nominal supply voltage.

Limit

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

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936Hz

Test Results

Voltage (V)	Temperature (°C)	U-NII-1 Test Results			
		5200MHz			
		1min	2min	5min	10min
3.3	-20	5200.006576	5199.998061	5199.996112	5199.995413
3.3	-10	5199.997195	5199.991136	5199.993678	5199.987575
3.3	0	5199.993685	5199.982671	5199.987203	5199.985037
3.3	10	5199.988610	5199.980717	5199.983095	5199.977033
3.3	20	5199.987512	5199.974944	5199.976155	5199.968025
3.3	30	5199.979896	5199.969282	5199.966164	5199.962725
3.3	40	5199.976713	5199.964608	5199.963619	5199.960385
3.3	50	5199.976601	5199.962508	5199.957681	5199.956292
3.14	20	5199.971616	5199.960453	5199.949627	5199.955576
3.46	20	5199.965953	5199.954215	5199.946097	5199.954274
MHz		-0.034047	-0.045785	-0.053903	-0.045726
PPM		-6.547538	-8.804865	-10.365875	-8.793400

Voltage (V)	Temperature (°C)	U-NII-2A Test Results			
		5300MHz			
		1min	2min	5min	10min
3.3	-20	5300.002528	5299.997932	5299.988423	5299.981900
3.3	-10	5299.993565	5299.992525	5299.985591	5299.975558
3.3	0	5299.986282	5299.984374	5299.975793	5299.969388
3.3	10	5299.976796	5299.979671	5299.971759	5299.968163
3.3	20	5299.969565	5299.978312	5299.966940	5299.959028
3.3	30	5299.965114	5299.970654	5299.960605	5299.953590
3.3	40	5299.964446	5299.962674	5299.958080	5299.951043
3.3	50	5299.958752	5299.954733	5299.956546	5299.944775
3.14	20	5299.957924	5299.947086	5299.955103	5299.937567
3.46	20	5299.948973	5299.937821	5299.951624	5299.933984
MHz		-0.051027	-0.062179	-0.048376	-0.066016
PPM		-9.627673	-11.731881	-9.127631	-12.455779

Voltage (V)	Temperature (°C)	U-NII-2C Test Results			
		5580MHz			
		1min	2min	5min	10min
3.3	-20	5580.003954	5579.995396	5579.990882	5579.990160
3.3	-10	5579.998522	5579.991239	5579.986589	5579.983592
3.3	0	5579.996010	5579.988932	5579.986335	5579.977573
3.3	10	5579.990810	5579.986752	5579.978886	5579.973082
3.3	20	5579.988833	5579.977821	5579.970705	5579.966204
3.3	30	5579.986498	5579.974276	5579.967374	5579.960050
3.3	40	5579.984594	5579.970122	5579.959833	5579.955633
3.3	50	5579.978892	5579.962591	5579.955978	5579.953688
3.14	20	5579.975948	5579.956022	5579.948773	5579.953262
3.46	20	5579.973882	5579.946654	5579.948113	5579.945335
MHz		-0.026118	-0.053346	-0.051887	-0.054665
PPM		-4.680623	-9.560298	-9.298712	-9.796659

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
3.3	-20	5785.003427	5785.000939	5784.998895	5784.994947
3.3	-10	5784.998455	5784.991307	5784.996493	5784.991340
3.3	0	5784.991028	5784.983854	5784.993433	5784.989475
3.3	10	5784.986170	5784.976412	5784.989633	5784.984000
3.3	20	5784.977372	5784.972146	5784.984924	5784.976990
3.3	30	5784.971998	5784.968114	5784.977267	5784.975418
3.3	40	5784.966488	5784.961422	5784.972979	5784.968525
3.3	50	5784.957635	5784.954963	5784.967339	5784.968422
3.14	20	5784.947946	5784.948641	5784.966282	5784.967053
3.46	20	5784.939827	5784.943823	5784.961929	5784.960285
MHz		-0.060173	-0.056177	-0.038071	-0.039715
PPM		-10.401528	-9.710853	-6.580971	-6.865133

5.4. Power Spectral Density

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

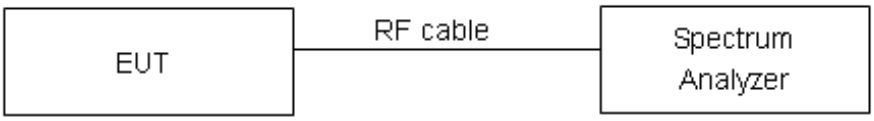
Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

Set RBW = 1MHz, VBW =3MHz for the band 5.150-5.250GHz, 5.250-5.350GHz, 5.470-5.725GHz.
Set RBW = 470kHz, VBW =1.5MHz for the band 5.725-5.850GHz

The conducted PSD is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Test setup



Limits

Rule FCC Part 15.407(a)(1)/ Part 15.407(a)(2) / Part 15.407(a)(3)
For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500kHz band. If transmittingantennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Frequency Bands/MHz	Limits
5150-5250	11dBm/MHz
5.25-5.35 GHz and 5.47-5.725 GHz	11dBm/MHz
5725-5850	30dBm/500kHz

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.75dB.

Test Results:

Note: Power Spectral Density =Read Value+Duty cycle correction factor

U-NII-1

Mode	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	4.242	4.47	11	PASS
	40	3.523	3.75	11	PASS
	48	3.511	3.74	11	PASS
802.11n HT20	36	2.452	2.82	11	PASS
	40	2.241	2.61	11	PASS
	48	2.135	2.51	11	PASS
802.11n HT40	38	-0.843	-0.19	11	PASS
	46	-1.639	-0.99	11	PASS
802.11ac VHT20	36	1.123	1.36	11	PASS
	40	1.264	1.50	11	PASS
	48	1.039	1.28	11	PASS
802.11ac VHT40	38	-2.120	-1.40	11	PASS
	46	-3.237	-2.52	11	PASS
802.11ac VHT80	42	-5.409	-4.30	11	PASS

U-NII-2A

Mode	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52	3.848	4.07	11	PASS
	60	3.585	3.81	11	PASS
	64	3.181	3.41	11	PASS
802.11n HT20	52	1.923	2.29	11	PASS
	60	1.124	1.49	11	PASS
	64	1.440	1.81	11	PASS
802.11n HT40	54	-1.729	-1.08	11	PASS
	62	-2.288	-1.64	11	PASS
802.11ac VHT20	52	1.685	1.92	11	PASS
	60	0.338	0.58	11	PASS
	64	-0.11	0.13	11	PASS
802.11ac VHT40	54	-2.239	-1.52	11	PASS
	62	-3.188	-2.47	11	PASS
802.11ac VHT80	58	-5.353	-4.25	11	PASS

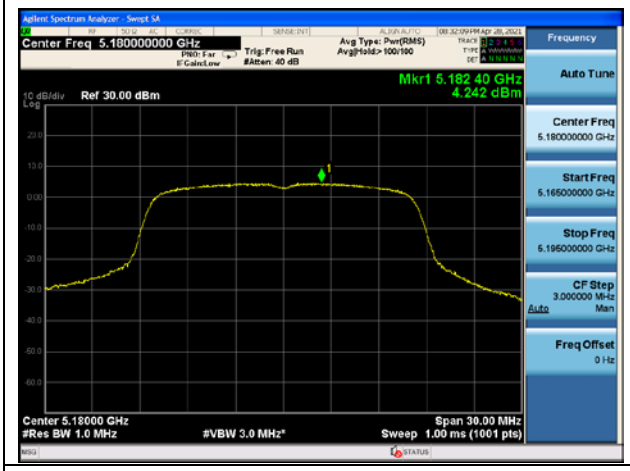
U-NII-2C

Mode	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	100	5.036	5.26	11	PASS
	116	5.381	5.61	11	PASS
	140	5.552	5.78	11	PASS
	144	5.115	5.34	11	PASS
802.11n HT20	100	2.844	3.21	11	PASS
	116	3.250	3.62	11	PASS
	140	3.997	4.37	11	PASS
	144	3.255	3.63	11	PASS
802.11n HT40	102	-0.483	0.17	11	PASS
	110	-1.228	-0.58	11	PASS
	134	-0.587	0.06	11	PASS
	142	0.245	0.89	11	PASS
802.11ac VHT20	100	1.869	2.11	11	PASS
	116	2.146	2.39	11	PASS
	140	2.571	2.81	11	PASS
	144	2.565	2.80	11	PASS
802.11ac VHT40	102	-2.293	-1.58	11	PASS
	110	-3.016	-2.30	11	PASS
	134	-1.799	-1.08	11	PASS
	142	-1.245	-0.53	11	PASS
802.11ac VHT80	106	-5.936	-4.83	11	PASS
	138	-5.173	-4.07	11	PASS

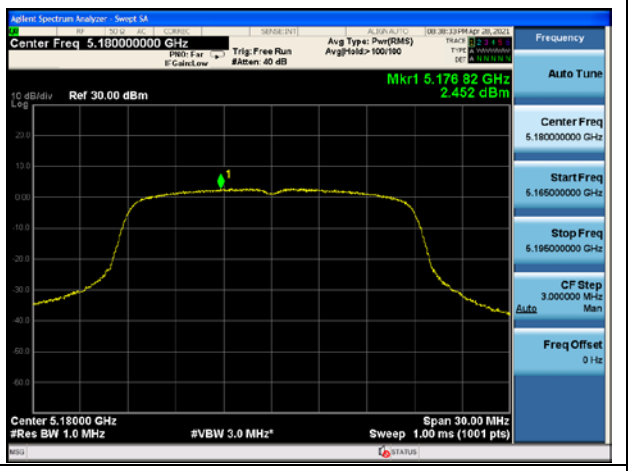
U-NII-3

Mode	Channel Number	Read Value (dBm/470kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	1.309	1.80	30	PASS
	157	2.086	2.58	30	PASS
	165	2.077	2.57	30	PASS
802.11n HT20	149	-0.43	0.21	30	PASS
	157	0.236	0.88	30	PASS
	165	0.431	1.07	30	PASS
802.11n HT40	151	-3.535	-2.62	30	PASS
	159	-2.501	-1.58	30	PASS
802.11ac VHT20	149	-1.072	-0.56	30	PASS
	157	-0.624	-0.11	30	PASS
	165	-0.508	0.00	30	PASS
802.11ac VHT40	151	-4.777	-3.79	30	PASS
	159	-3.857	-2.87	30	PASS
802.11ac VHT80	155	-7.443	-6.07	30	PASS
Note:PSD=Read Value+Duty cycle+10*LOG(500/470) correction factor					

U-NII-1, 802.11a, Channel No.: 36



U-NII-1, 802.11n HT20, Channel No.: 36



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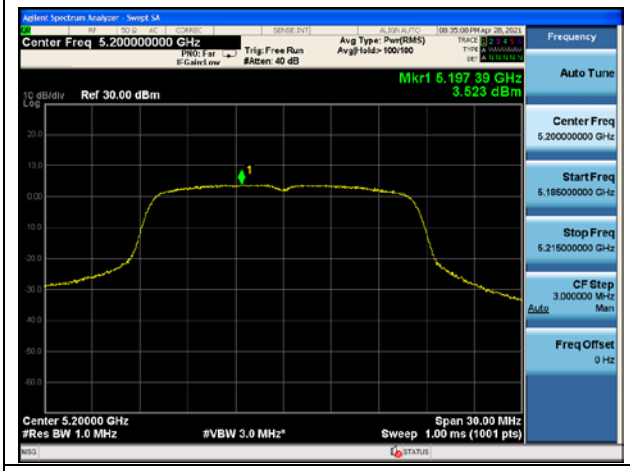

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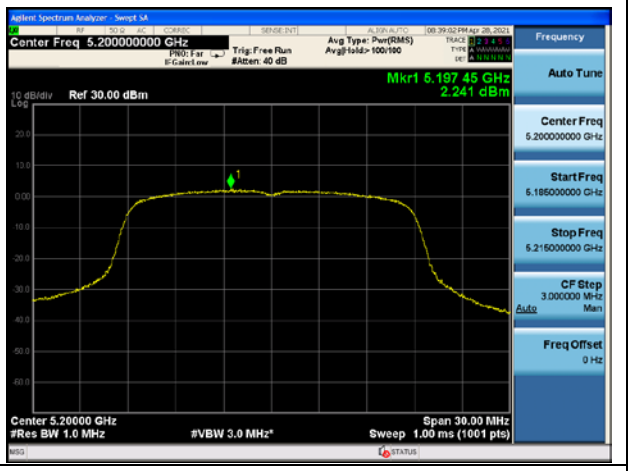
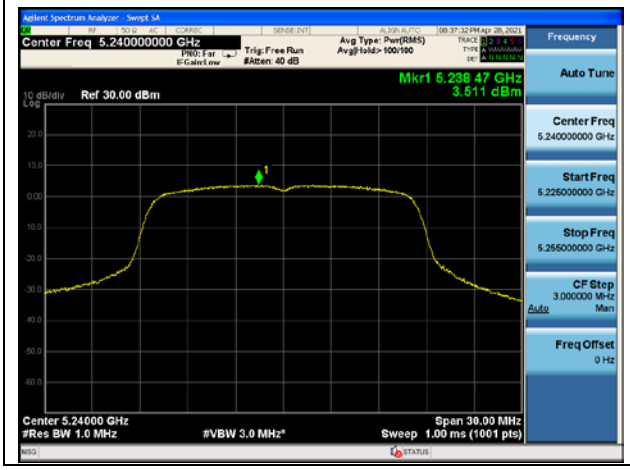
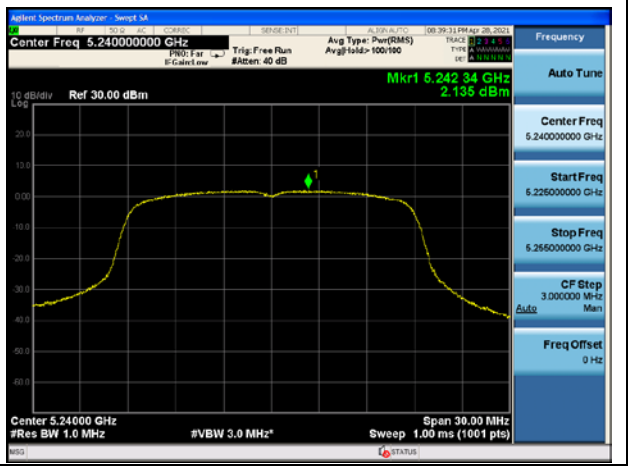


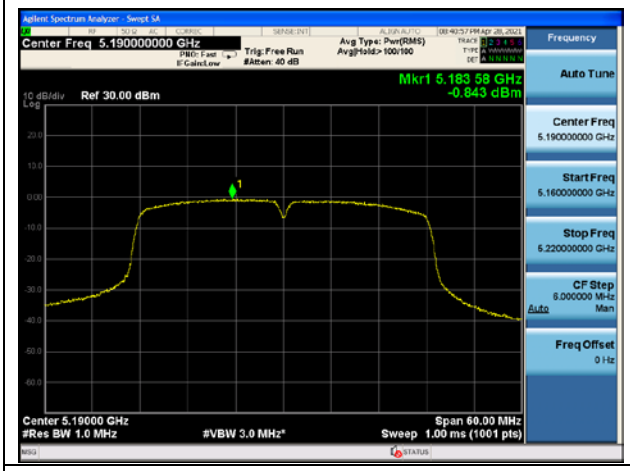
U-NII-1, 802.11a, Channel No.: 48



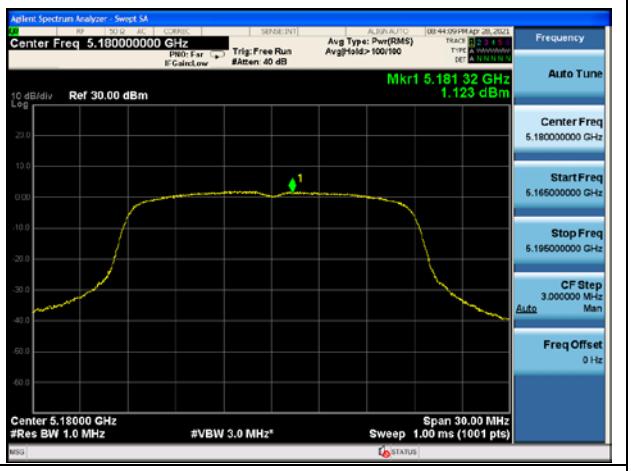
U-NII-1, 802.11n HT20, Channel No.: 48



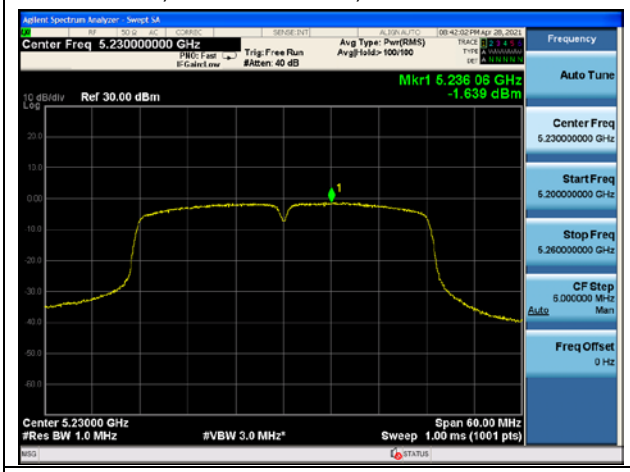
U-NII-1, 802.11n HT40, Channel No.: 38



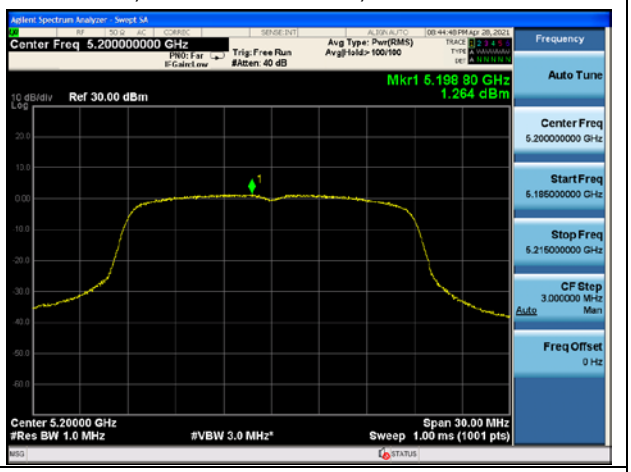
U-NII-1, 802.11ac VHT20, Channel No.: 36



U-NII-1, 802.11n HT40, Channel No.: 46



U-NII-1, 802.11ac VHT20, Channel No.: 40



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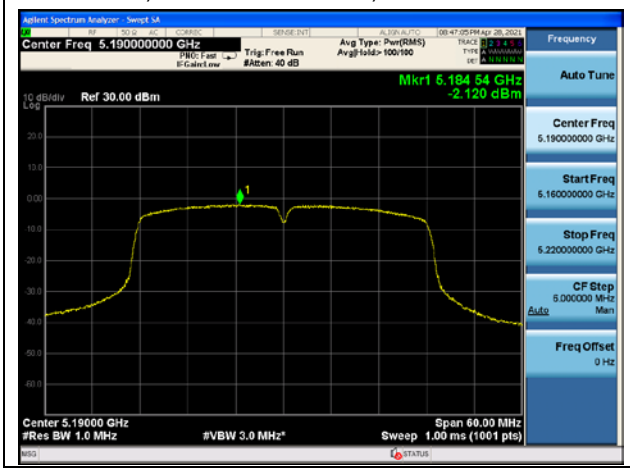

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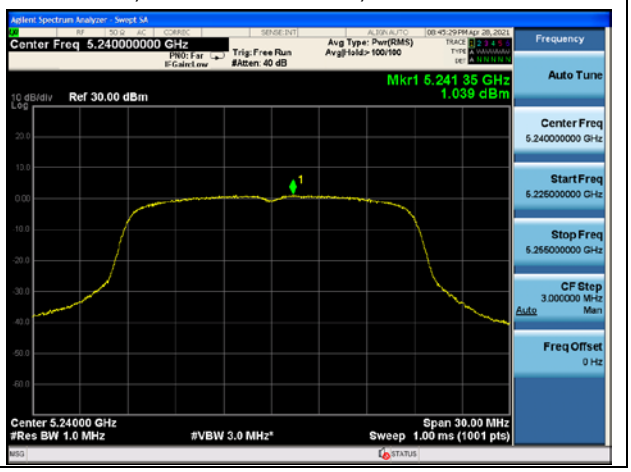
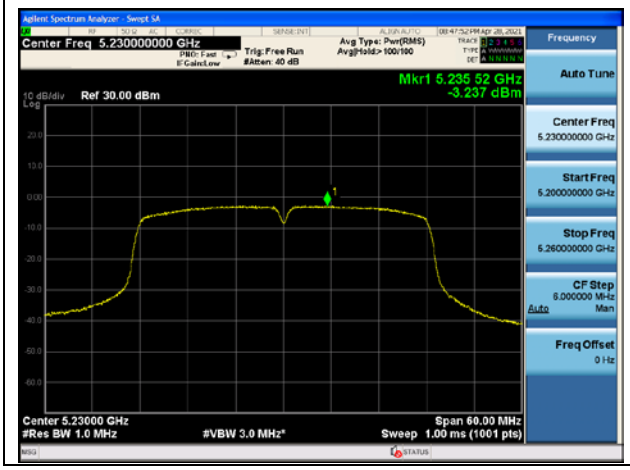


U-NII-1, 802.11ac VHT40, Channel No.: 46



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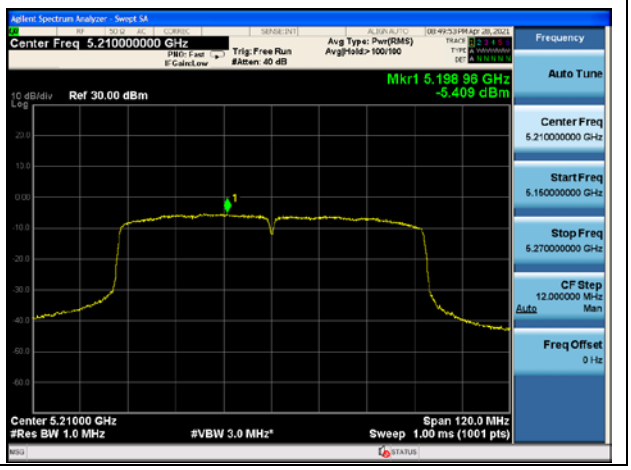
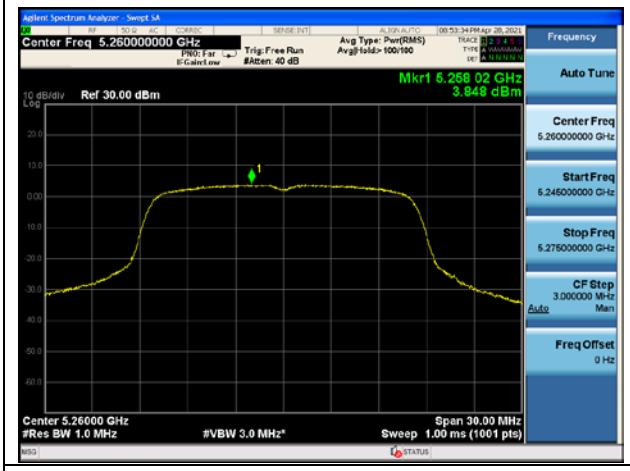


U-NII-2A, 802.11a, Channel No.: 52



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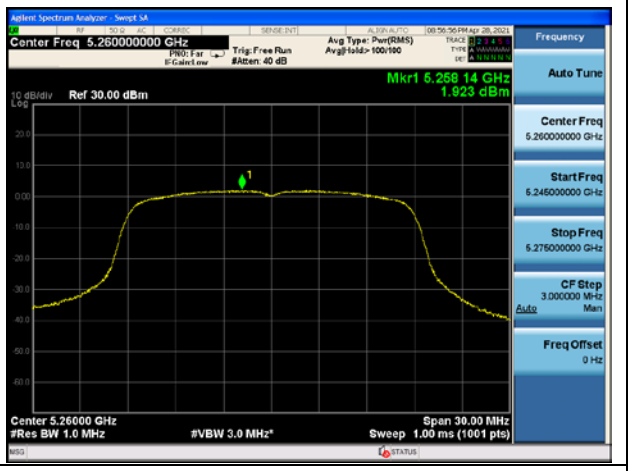

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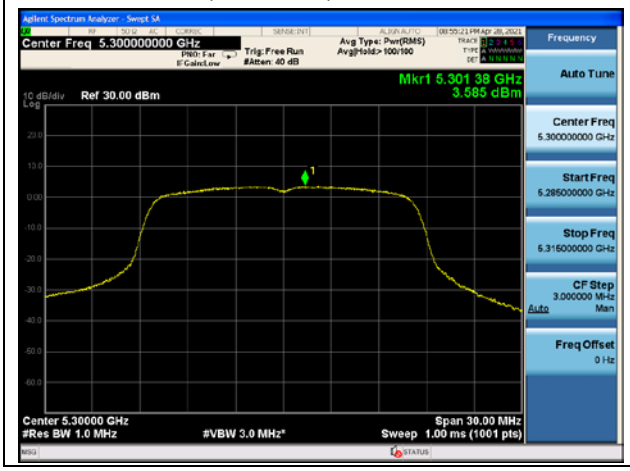

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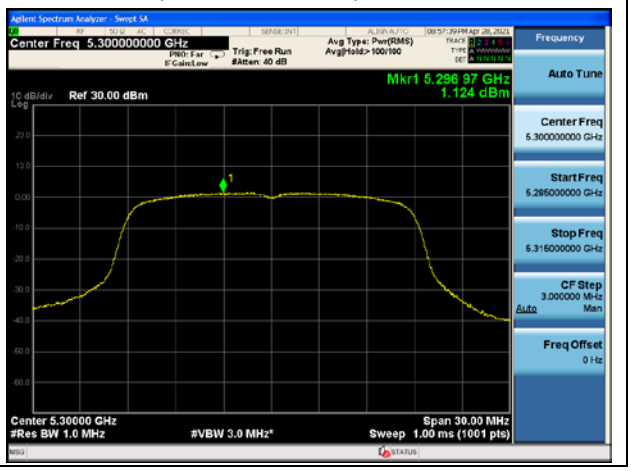

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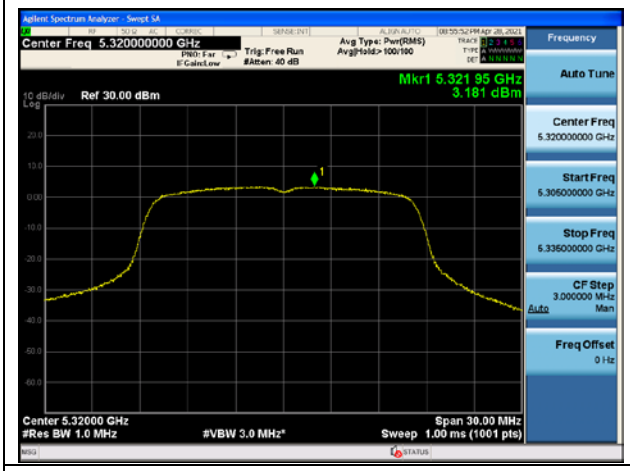

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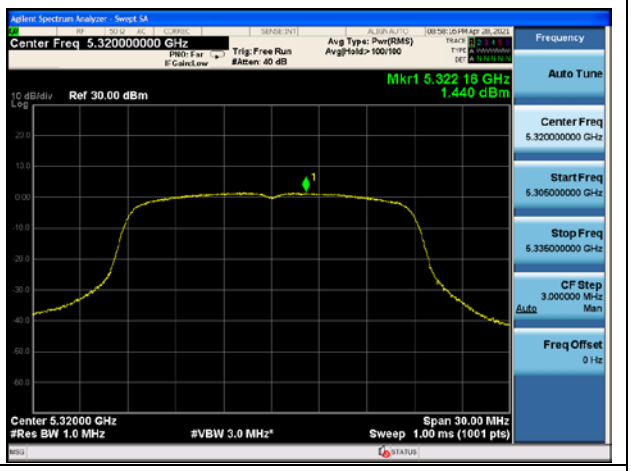

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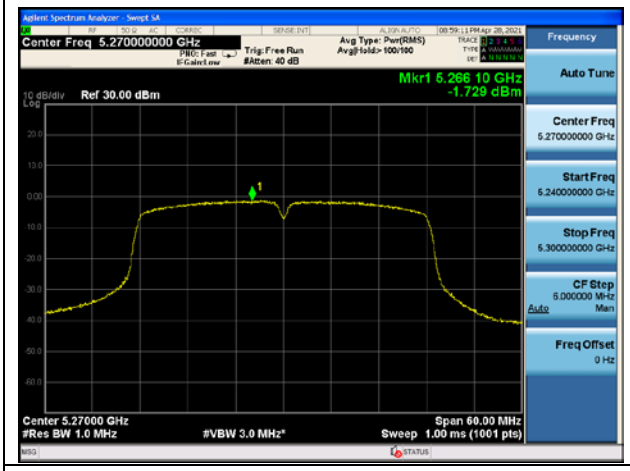

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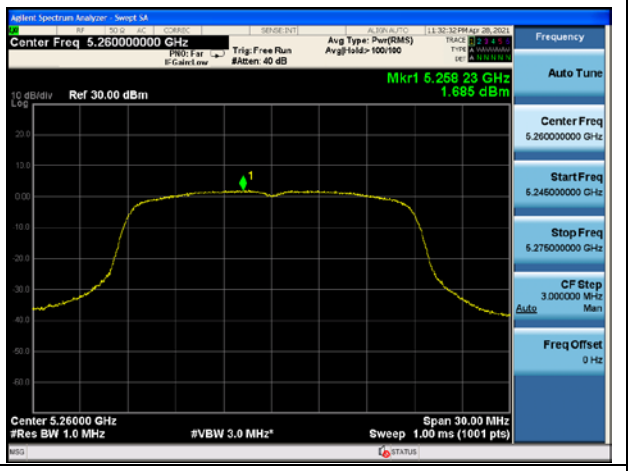

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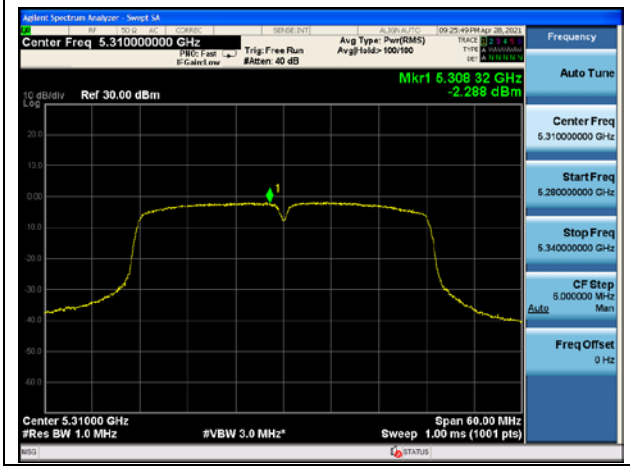

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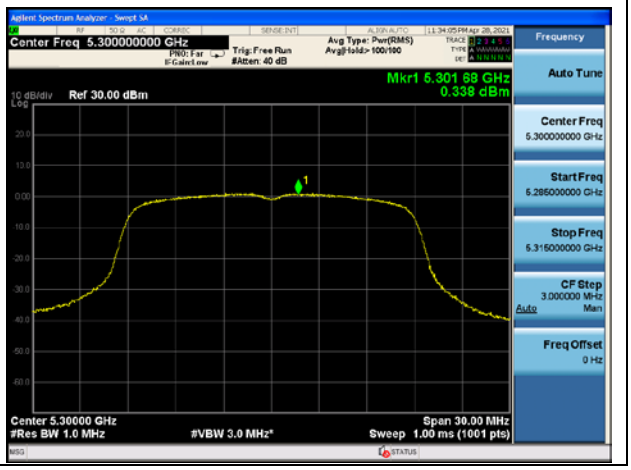

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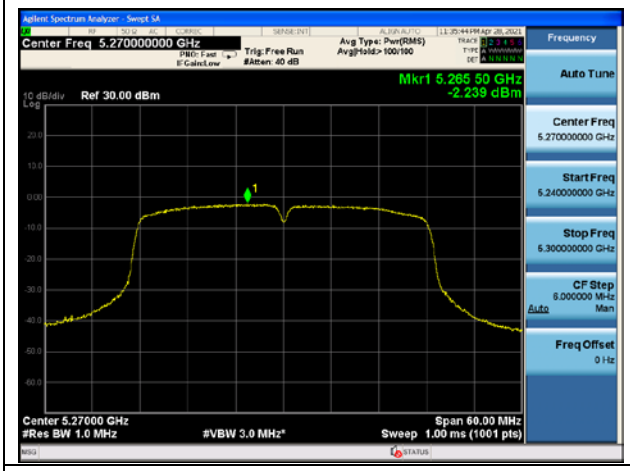

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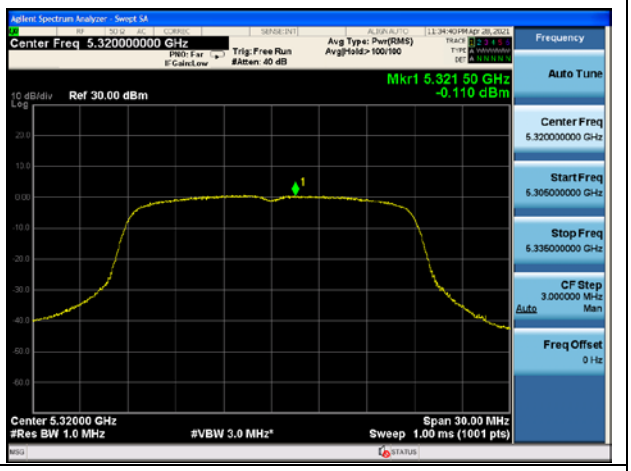

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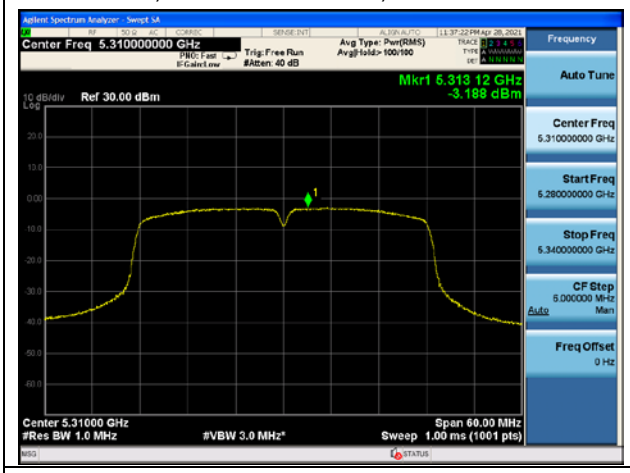
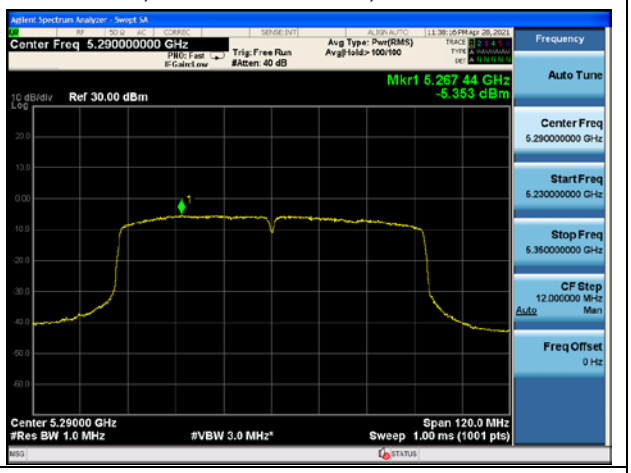
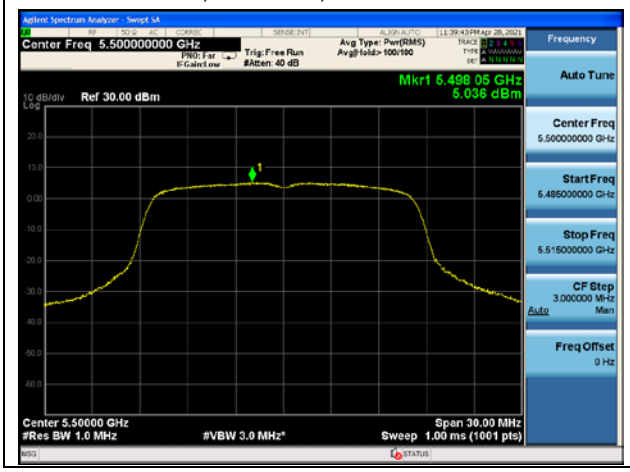


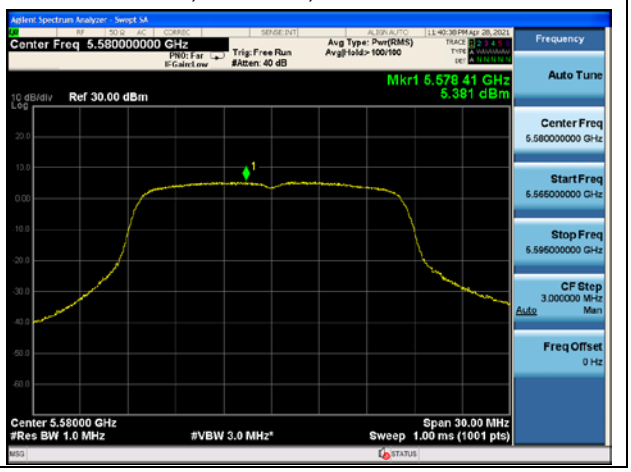
U-NII-2A, 802.11ac VHT80, Channel No.: 58



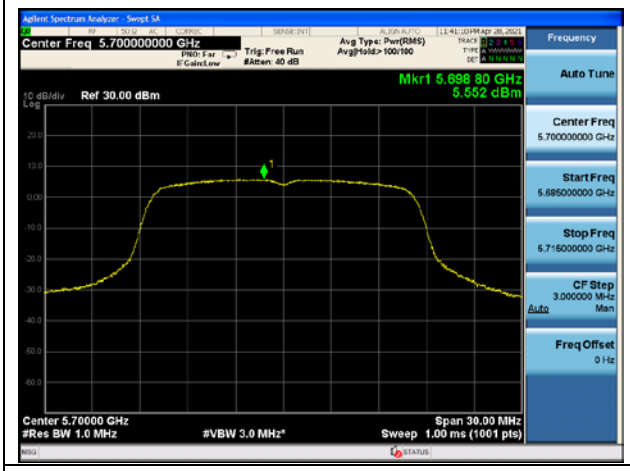
U-NII-2C, 802.11a, Channel No.: 100



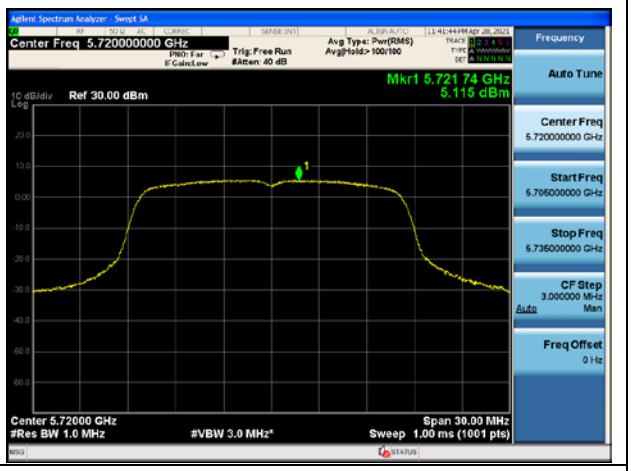
U-NII-2C, 802.11a, Channel No.: 116



U-NII-2C, 802.11a, Channel No.: 140



U-NII-2C, 802.11a, Channel No.: 144



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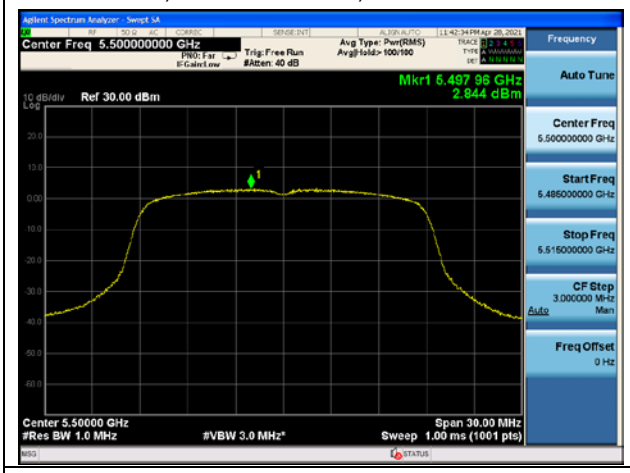

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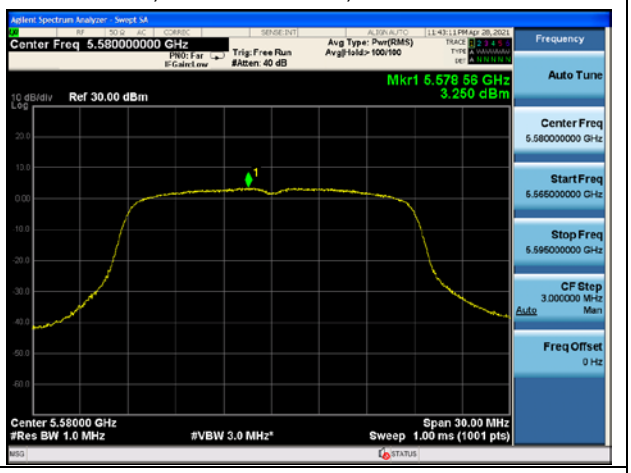

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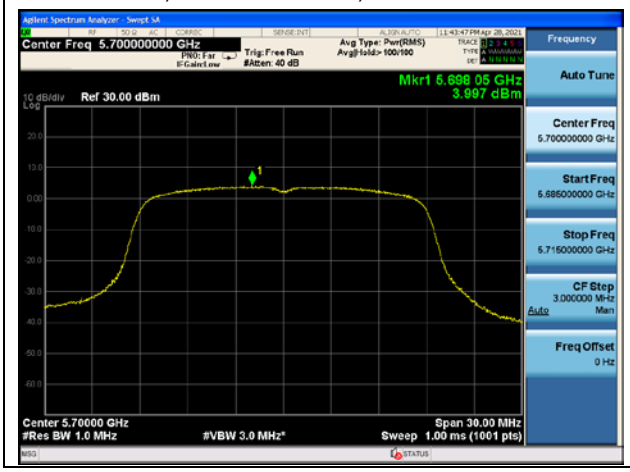

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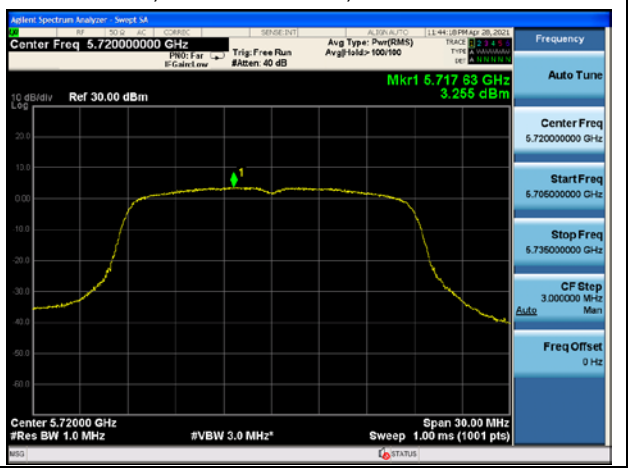
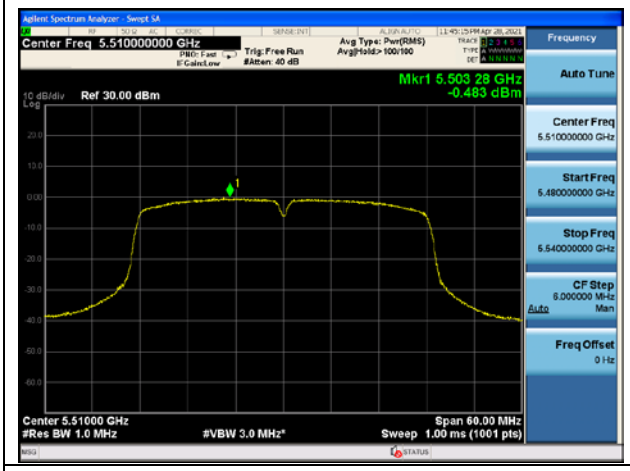
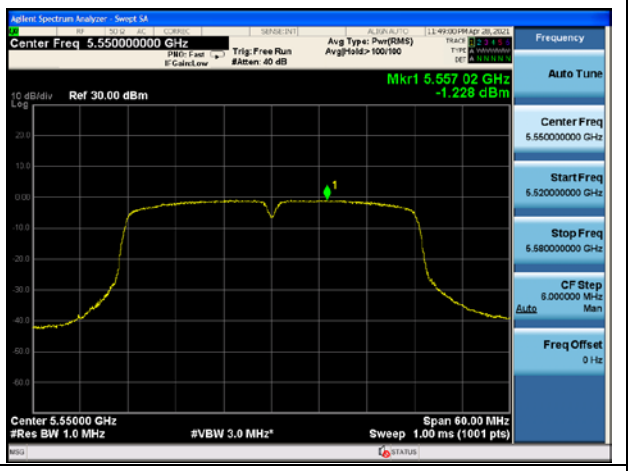


U-NII-2C, 802.11n HT40, Channel No.: 102



U-NII-2C, 802.11n HT40, Channel No.: 110



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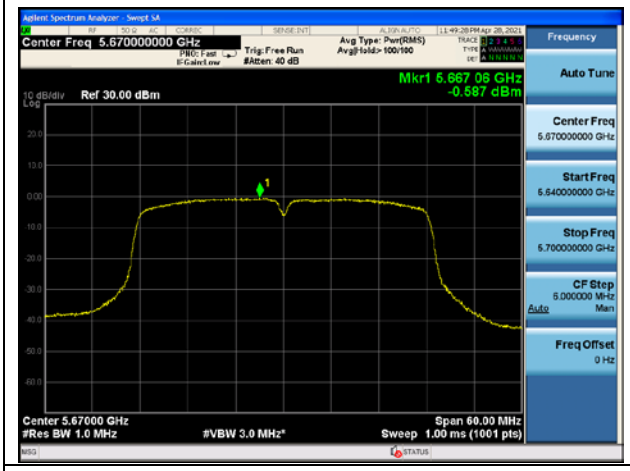

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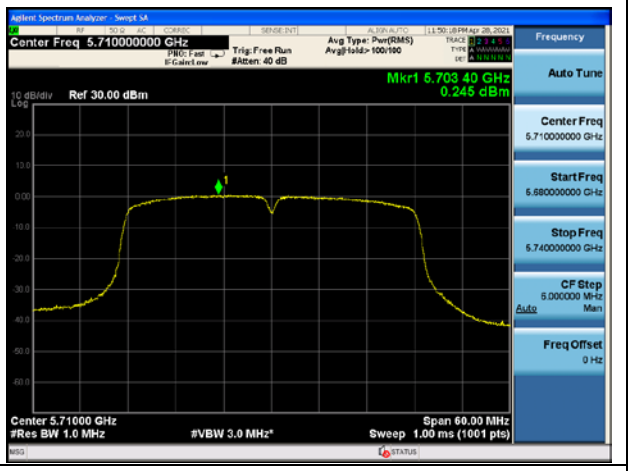
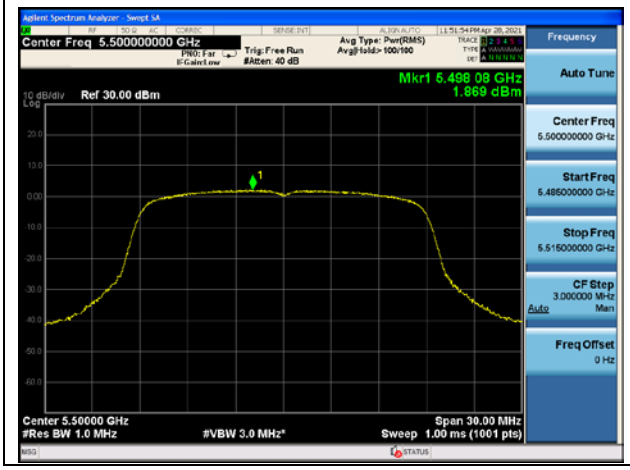


U-NII-2C, 802.11ac VHT20, Channel No.: 100



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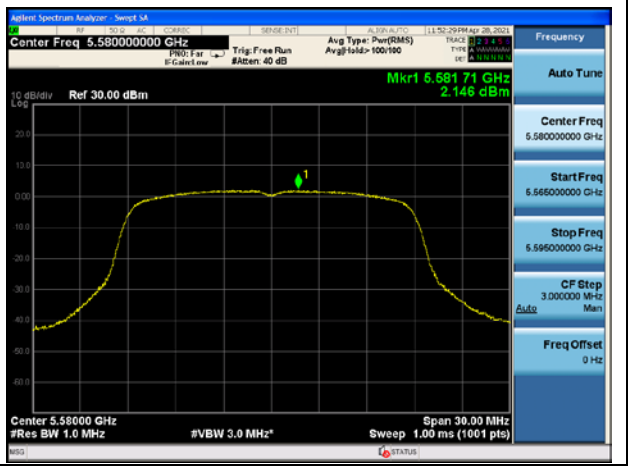

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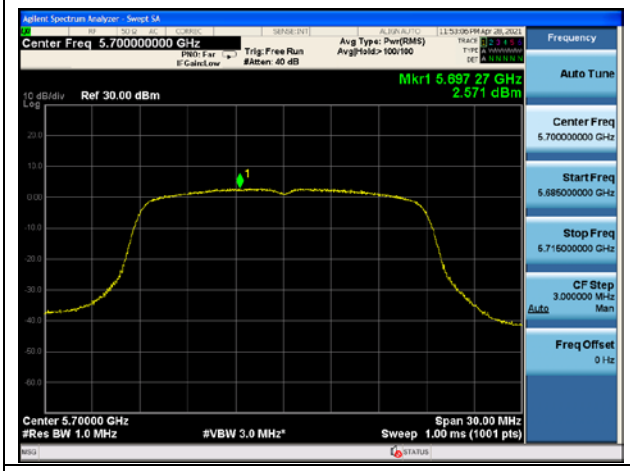

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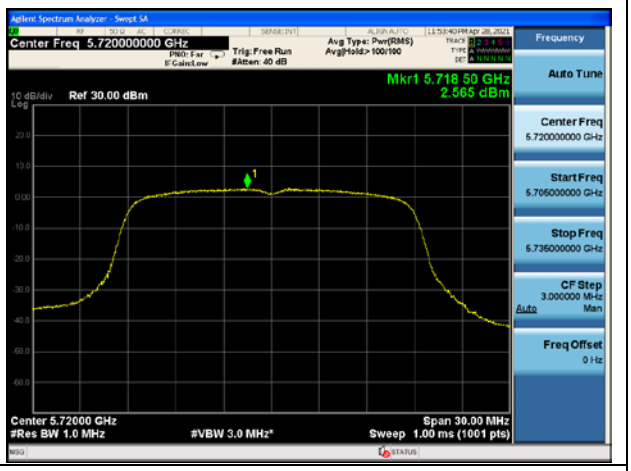

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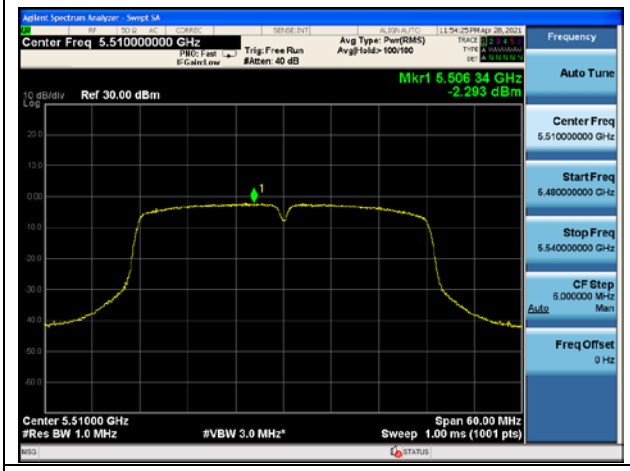

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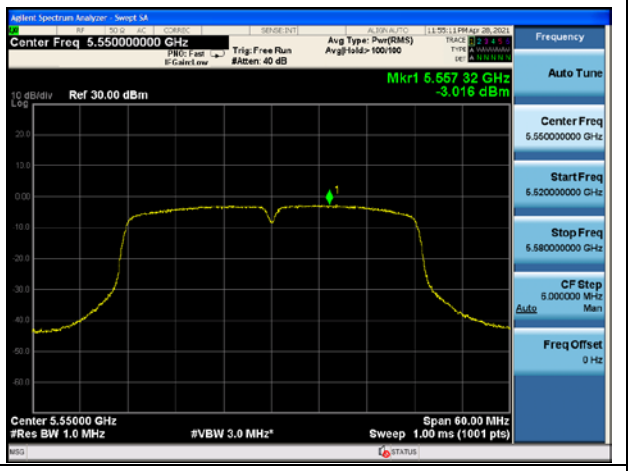

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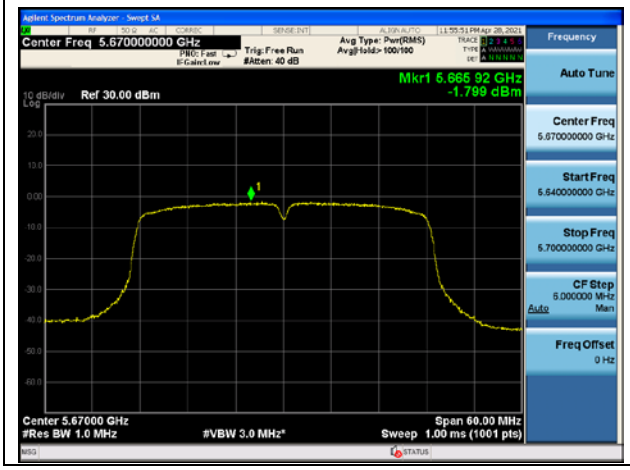

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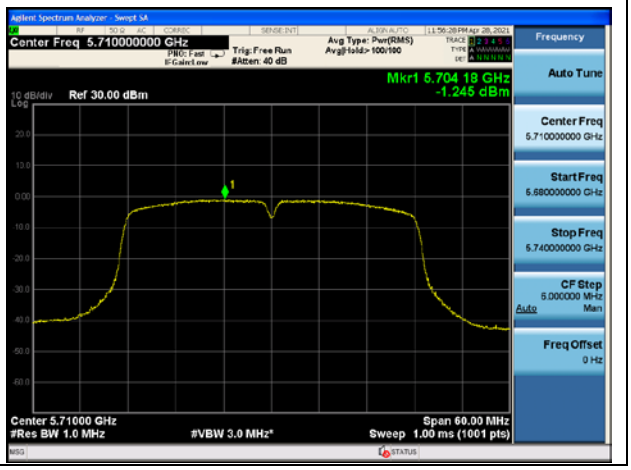

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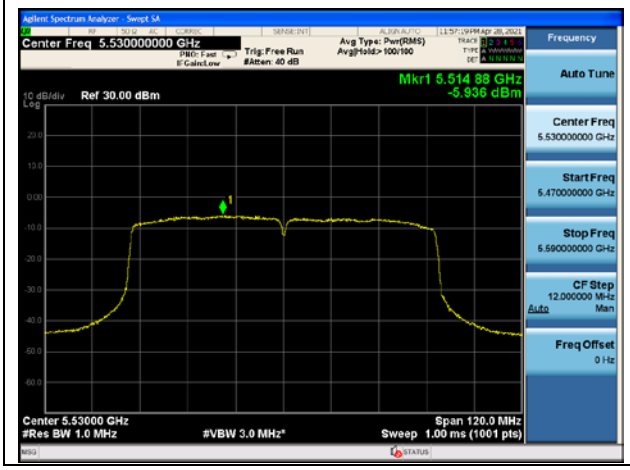

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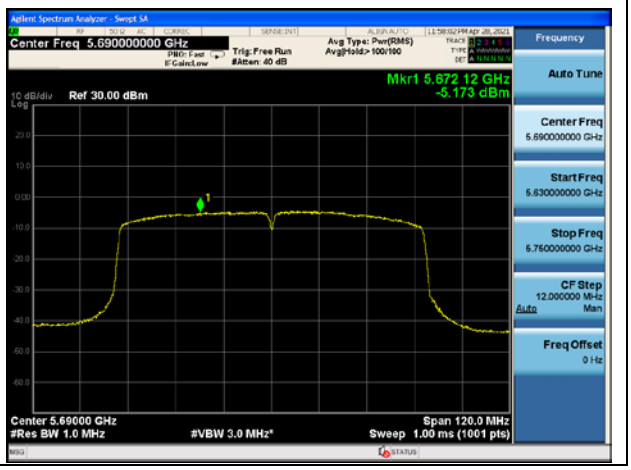
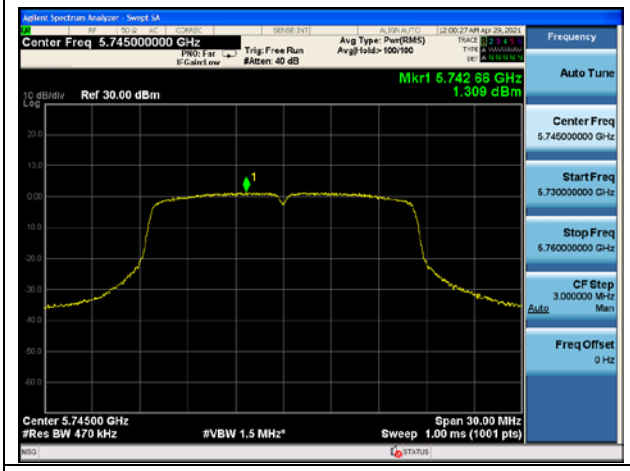
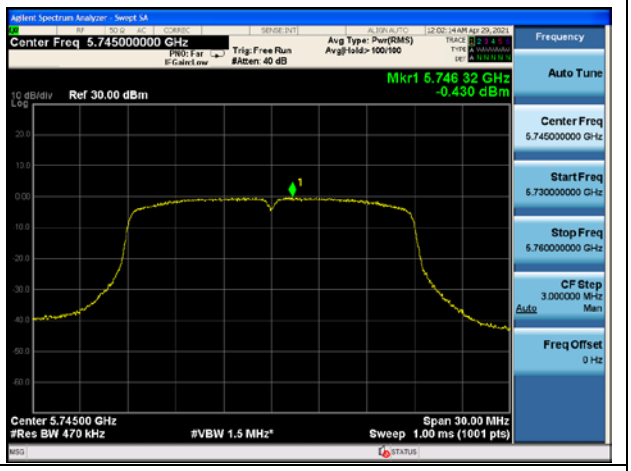


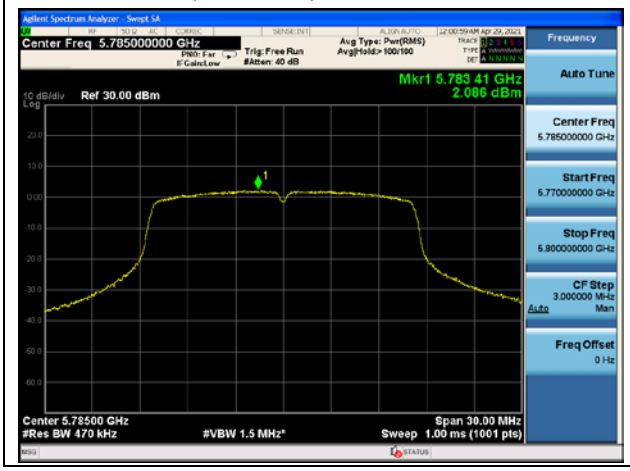
U-NII-3, 802.11a, Channel No.: 149



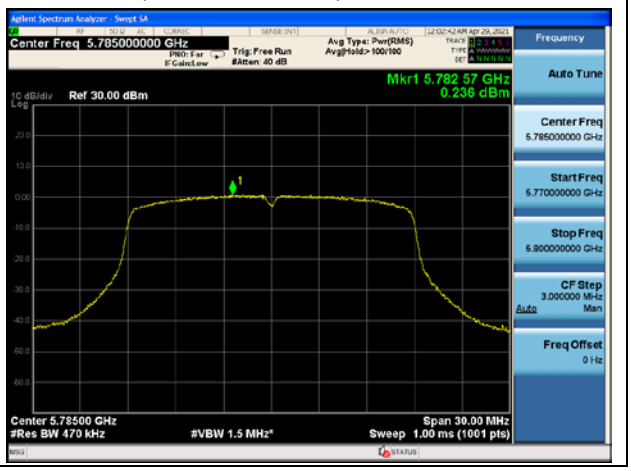
U-NII-3, 802.11n HT20, Channel No.: 149



U-NII-3, 802.11a, Channel No.: 157



U-NII-3, 802.11n HT20, Channel No.: 157



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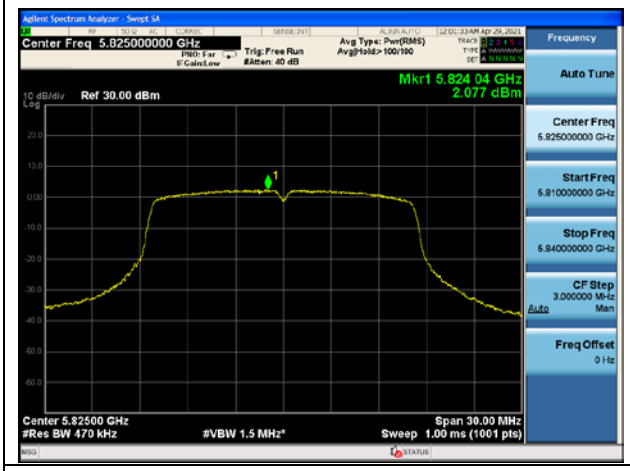

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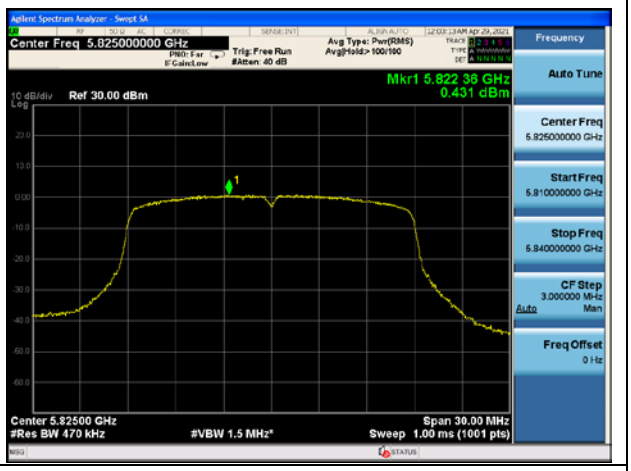

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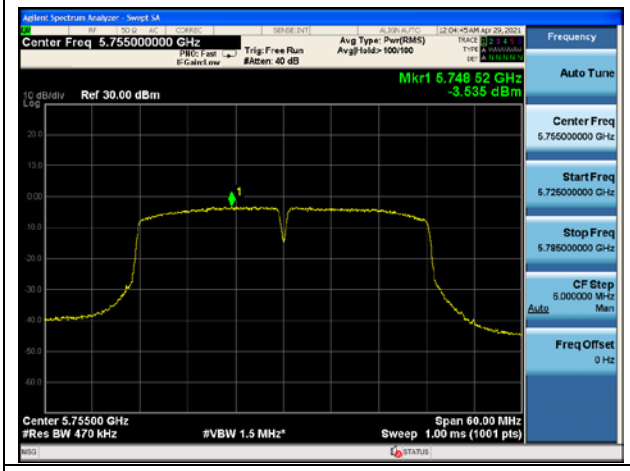

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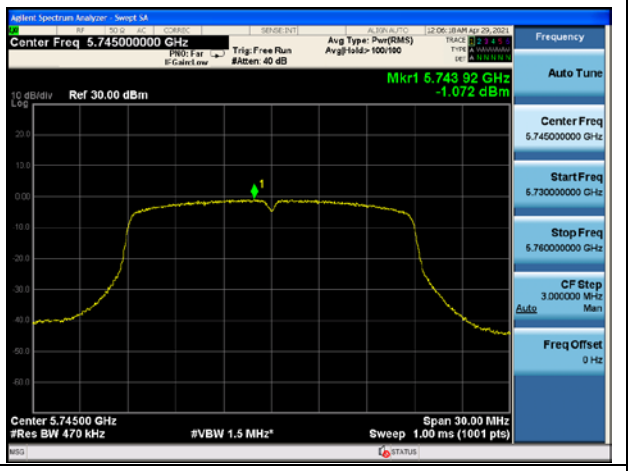

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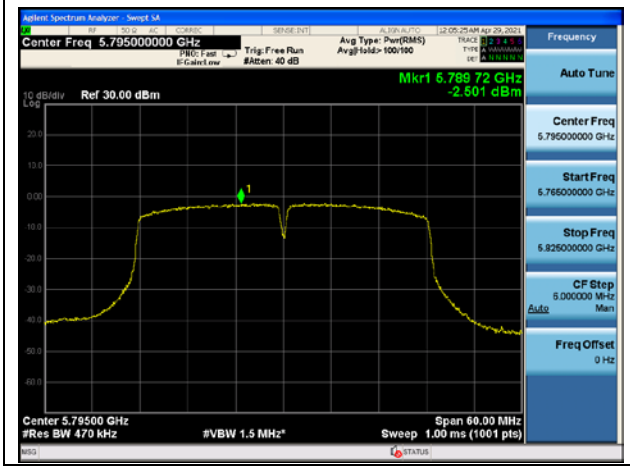

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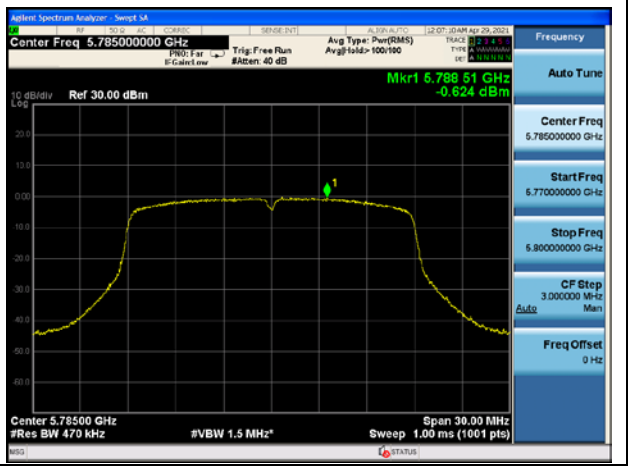

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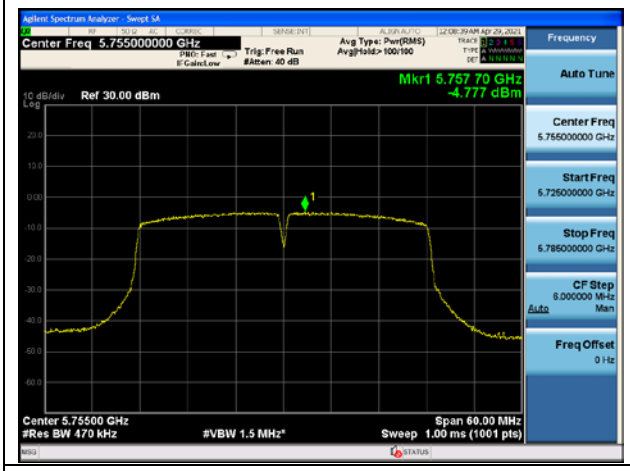

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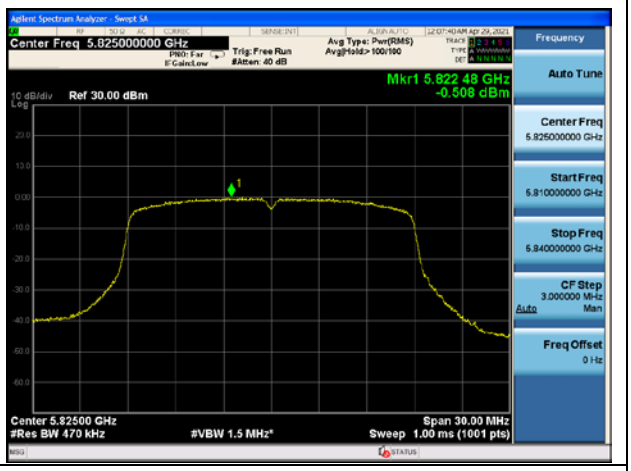

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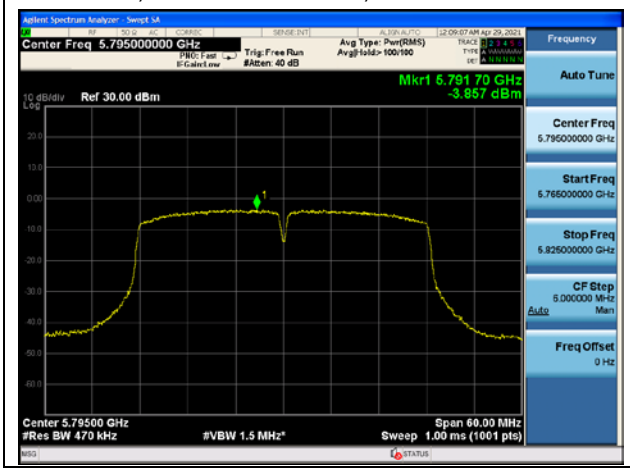
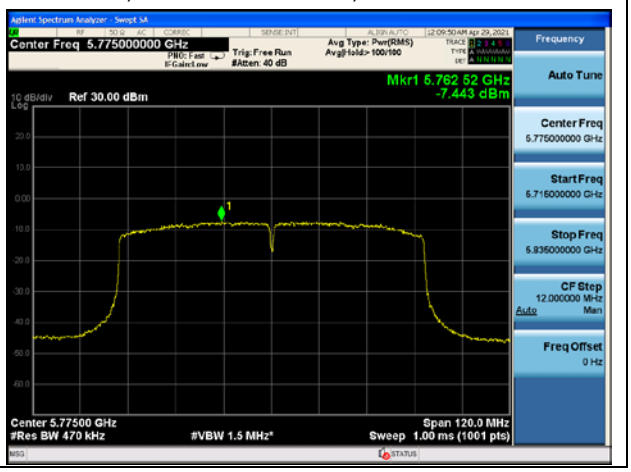


U-NII-3, 802.11ac VHT80, Channel No.: 155



5.5. Unwanted Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.10. The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration.
Sweep the whole frequency band range from 9kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.
Set the spectrum analyzer in the following:
9kHz~150 kHz
RBW=200Hz, VBW=1kHz/ Sweep=AUTO
150 kHz~30MHz
RBW=9KHz, VBW=30KHz,/ Sweep=AUTO
Below 1GHz
RBW=100kHz / VBW=300kHz / Sweep=AUTO
a) Peak emission levels are measured by setting the instrument as follows:
Above 1GHz
PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO
b) Average emission levels are measured by setting the instrument as follows:
Above 1GHz
AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO
c) Detector: The measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)
e) Sweep time = auto.
f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of 1 / D, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and

OFF with the transmit cycle, at least 100 traces shall be averaged.)

g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:

1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is [10 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.

2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is [20 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.

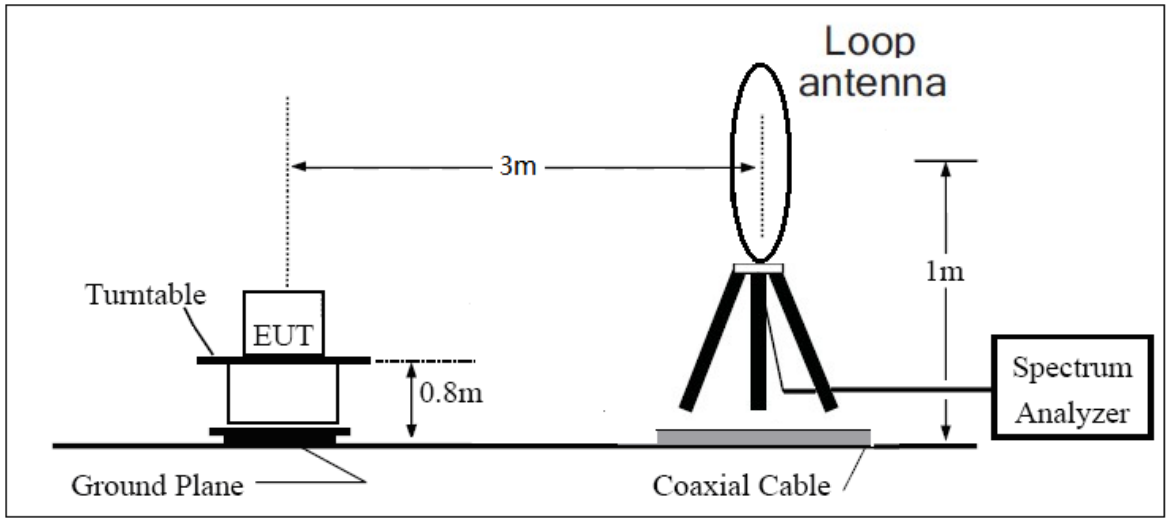
3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

Reduce the video bandwidth until no significant variations in the displayed signal are observed in subsequent traces, provided the video bandwidth is no less than 1 Hz. For regulatory requirements that specify averaging only over the transmit duration (e.g., digital transmission system [DTS] and Unlicensed National Information Infrastructure [U-NII]), the video bandwidth shall be greater than [1 / (minimum transmitter on time)] and no less than 1 Hz.

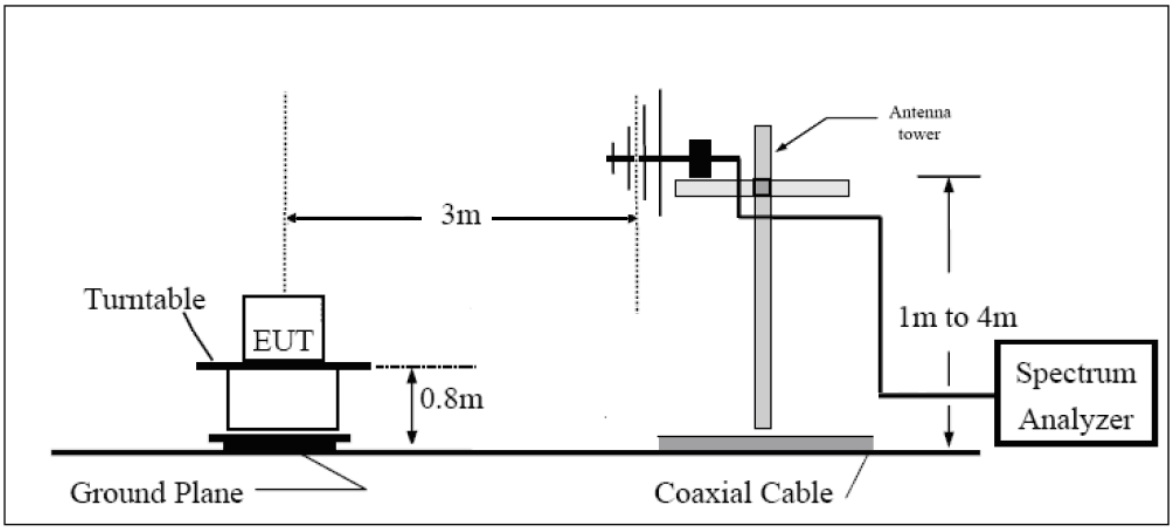
The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the loop antenna is vertical, others antenna are vertical and horizontal.

The test is in transmitting mode.

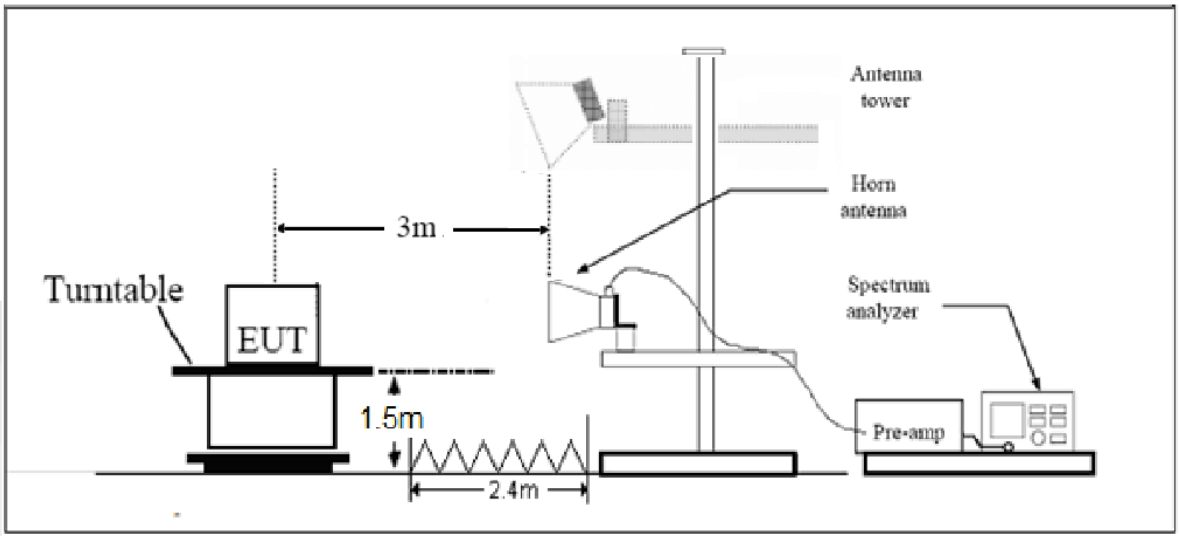
9KHz~~~30MHz



30MHz~~~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits

(1) For transmitters operating in the 5725-5850 MHz 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.

(2) 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(68.2dBμV/m).

(3) For transmitters operating in the 5.25-5.35 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(68.2dBμV/m).

(4) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz(68.2dBμV/m).

Straddle channels 138, 142 and 144 are considered to be operating in both U-NII-2C and U-NII-3. The worst case out-of-band emission limit, i.e., −27 dBm/MHz peak EIRP, applies at the band edges. The band edges are considered to be 5.47 GHz and 5.85 GHz.

Note: the following formula is used to convert the EIRP to field strength

§1、E[dBμV/m] = EIRP[dBm] - 20 log(d[meters]) + 104.77, where E = field strength and

d = distance at which field strength limit is specified in the rules;

§2、E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters

(5) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table.

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96.

Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.17 dB
200MHz-1GHz	4.84 dB
1-18GHz	4.35 dB
18-26.5GHz	5.90 dB
26.5GHz~40GHz	5.92 dB

Test Results:

The modulation and bandwidth are similar for 802.11n mode for HT20/HT40 and 802.11ac mode for VHT20/VHT40, therefore investigated worst case to representative mode in test report.

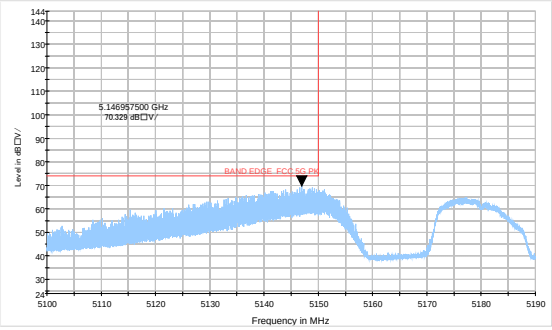
A font (Level in dB礦/m)in the test plot =(level in dB μ V/m)

A font (Level in dBμV/)in the test plot =(level in dB μ V/m)

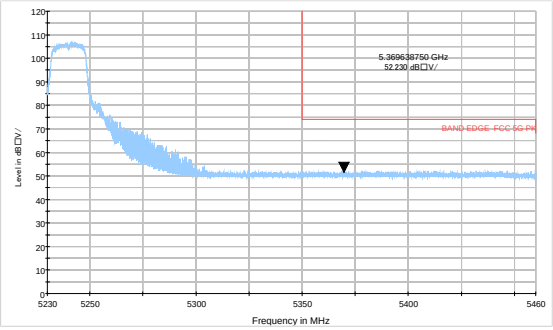
The signal beyond the limit is carrier.

U-NII-1

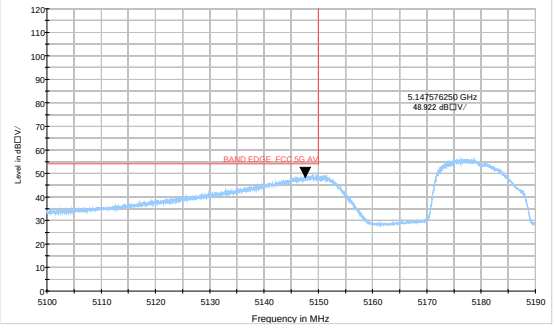
802.11a-Channel 36: Peak



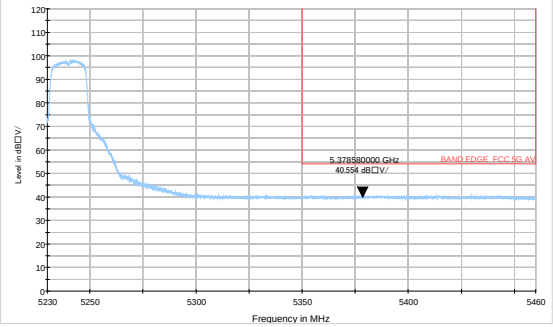
802.11a-Channel 48: Peak



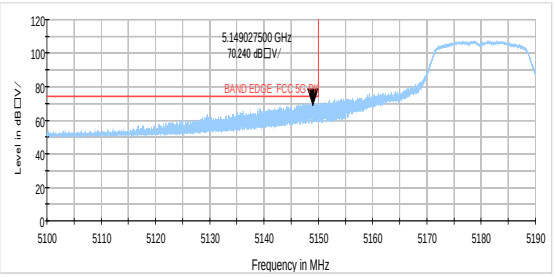
802.11a-Channel 36: Average



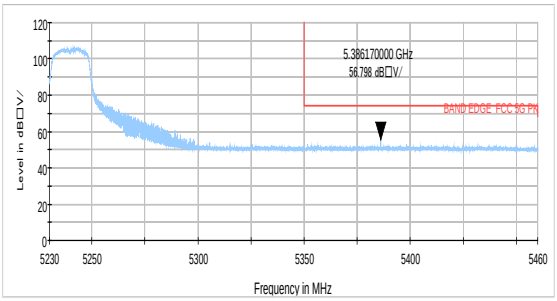
802.11a-Channel 48: Average



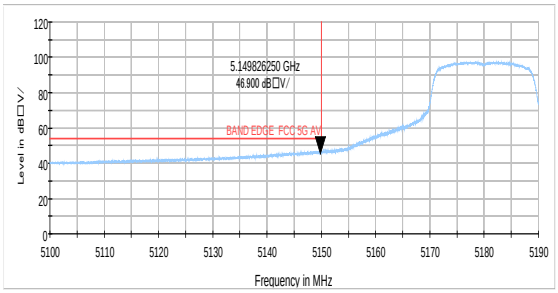
802.11n HT20-Channel 36: Peak



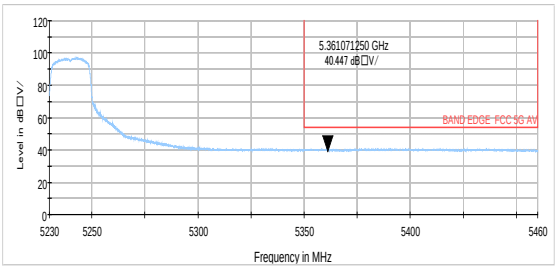
802.11n HT20-Channel 48: Peak



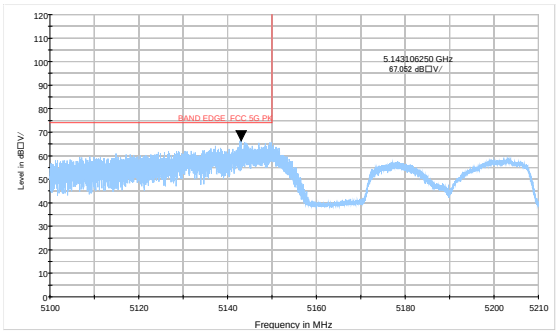
802.11n HT20-Channel 36: Average



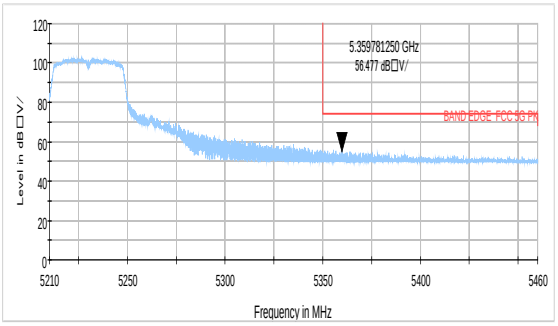
802.11n HT20-Channel 48: Average



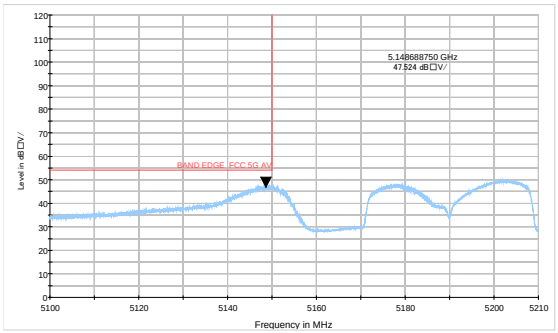
802.11n HT40-Channel 38: Peak



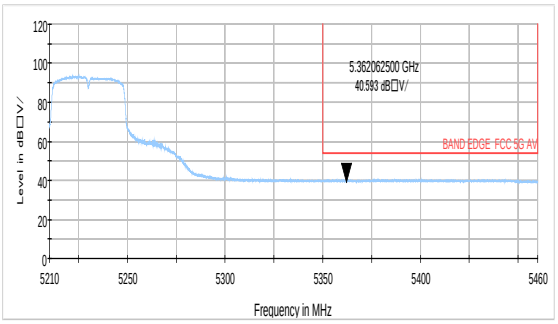
802.11n HT40-Channel 46: Peak



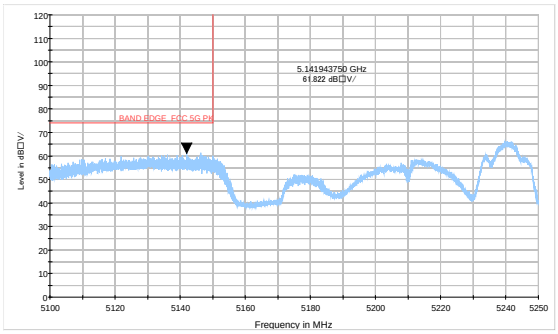
802.11n HT40-Channel 38: Average



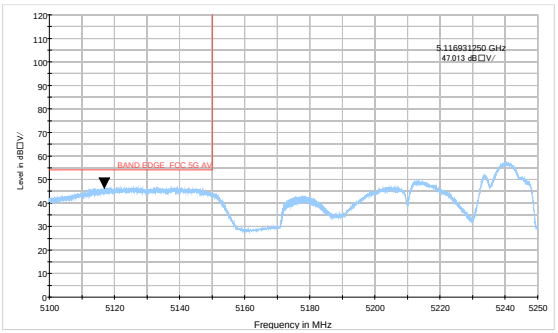
802.11n HT40-Channel 46: Average



802.11ac VHT80 –Channel 42: Peak

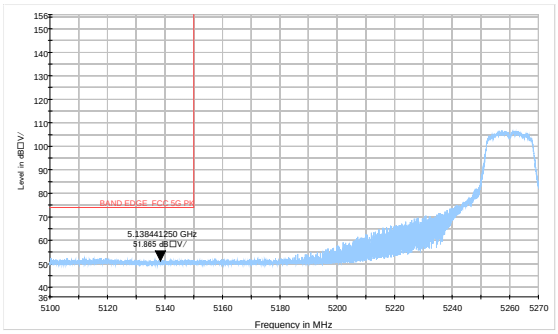


802.11ac VHT80- Channel 42: Average

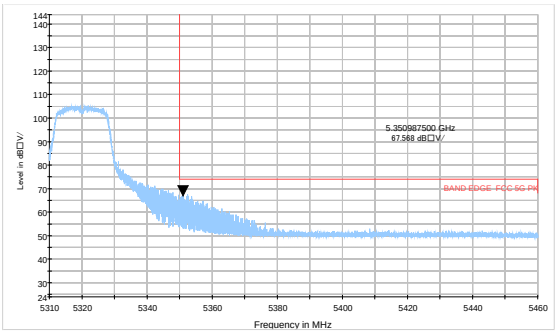


U-NII-2A

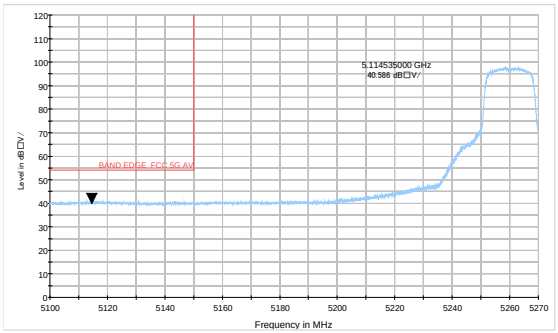
802.11a-Channel 52: Peak



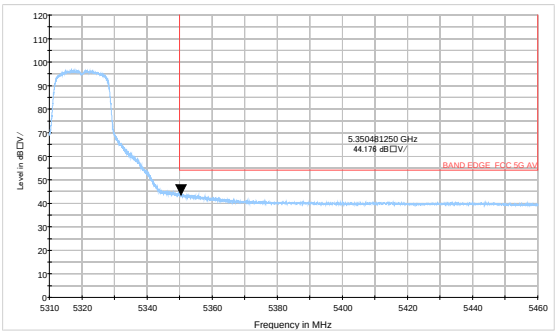
802.11a-Channel 64: Peak



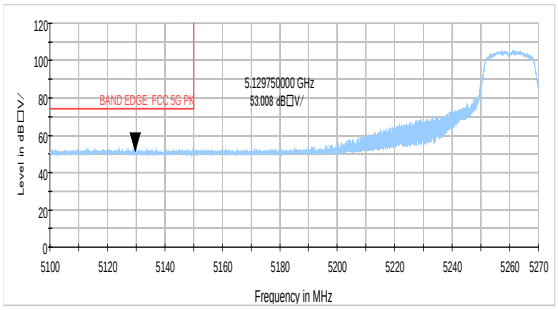
802.11a-Channel 52: Average



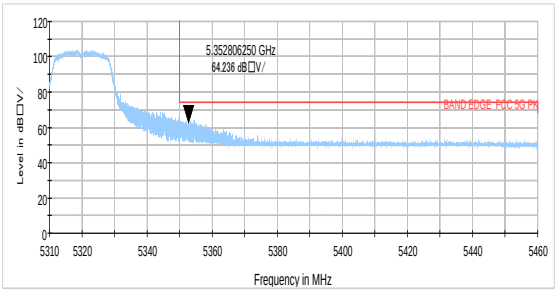
802.11a-Channel 64: Average



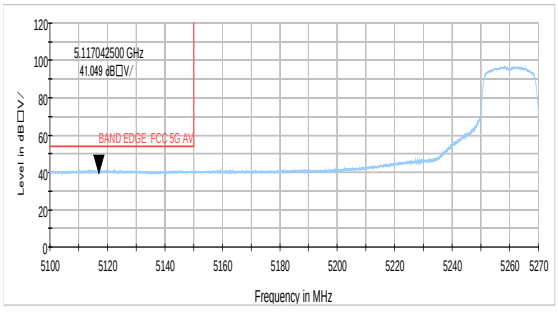
802.11n HT20-Channel 52: Peak



802.11n HT20-Channel 64: Peak



802.11n HT20-Channel 52: Average



802.11n HT20-Channel 64: Average