



中国认可
国际互认
检测
TESTING
CNAS L2264

RF TEST REPORT

Applicant	Alcatel-Lucent Shanghai Bell Co.,Ltd.
FCC ID	2ADZRXS250WXA
Product	XGSPON ONU
Brand	NOKIA
Model	XS-250WX-A/XS-240W-A
Report No.	YBA1612-0108RF02R3
Issue Date	March 29, 2017

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15E (2016)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Performed by: Xianqing Li

Approved by: Kai Xu

TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000

TABLE OF CONTENT

1. Test Laboratory	4
1.1. Notes of the test report.....	4
1.2. Test facility	4
1.3. Testing Location	5
2. General Description of Equipment under Test.....	6
3. Test Information	8
4. Test Configuration	9
5. Test Case Results	11
5.1. Occupied Bandwidth	11
5.2. Average Power Output –Conducted.....	19
5.3. Frequency Stability.....	24
5.4. Power Spectral Density	28
5.5. Unwanted Emission	52
5.6. Conducted Emission	230
6. Main Test Instruments	250
ANNEX A: EUT Appearance and Test Setup	251
A.1 EUT Appearance	251
A.2 Test Setup	253

Summary of measurement results

Number	Summary of measurements of results	Clause in FCC rules	Verdict
1	Average Power Output –Conducted	15.407(a)	PASS
2	Occupied bandwidth	15.407(e)	PASS
3	Frequency stability	15.407(g)	PASS
4	Maximum power spectral density	15.407(a)	PASS
5	Unwanted Emissions	15.407(b)	PASS
6	Conducted Emissions	15.207	PASS
Date of Testing: December 20, 2016 ~ February 4, 2017			

1. Test Laboratory

1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement by CNAS or any government agencies.

1.2. Test facility

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (recognition number is 428261)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



1.3. Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City: Shanghai
Post code: 201201
Country: P. R. China
Contact: Xu Kai
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2. General Description of Equipment under Test

Client Information

Applicant	Alcatel-Lucent Shanghai Bell Co.,Ltd.
Applicant address	388-389#,Ningqiao Road,Pudong Jinqiao, Shanghai, P.R. China
Manufacturer	Alcatel-Lucent Shanghai Bell Co.,Ltd.
Manufacturer address	388-389#,Ningqiao Road,Pudong Jinqiao, Shanghai, P.R. China

General information

XS-250WX-A	XS-240W-A
With 10GE port	Without 10GE port
Note: Customer declaration, two models is the same except 10GE port, This report tested XS-250WX-A.	

	Model	ONU Part number	Kit Part number
US ONU	XS-250WX-A	3FE 46307 AA	-
US Kit	XS-250WX-A	3FE 46307 AA	3FE 46439 AA
US ONU	XS-240W-A	3FE 46631 AA	-
US Kit	XS-240W-A	3FE 46631 AA	3FE 46626 AA

EUT Description	
Model:	XS-250WX-A/XS-240W-A
SN:	/
Hardware Version:	3FE 46307 AAAA 3FE 46631 AAAA
Software Version:	3FE46346
Power Supply:	AC Power Supply
Antenna Type:	Internal Antenna*2 External Antenna*2
Antenna Gain:	Antenna 1: 3.00 dBi Antenna 2: 3.00 dBi Antenna 3: 3.00 dBi Antenna 4: 3.00 dBi
Directional Gain:	3.0 dBi
Rated Power Supply Voltage:	120V
Extreme Voltage:	Minimum: 90V Maximum: 264V
Test Mode:	U-NII-1(5150MHz-5250MHz) U-NII-3(5725MHz-5850MHz)
Modulation Type:	802.11a/n (HT20/HT40): OFDM 802.11ac (HT20.HT40/HT80): OFDM
Max. Conducted Power	802.11a: 26.02 dBm 802.11n: 28.17 dBm 802.11ac: 28.06 dBm
Operating Frequency Range(s)	U-NII-1: 5150-5250MHz U-NII-3: 5725-5850MHz
EUT Accessory	
Adapter	Manufacturer: DELTA electronics, INC. Model: ADP-66CR BC
Note: The information of the EUT is declared by the manufacturer. Please refer to the specifications or user manual for details.	



3. Test Information

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC CFR47 Part 15E (2016) Unlicensed National Information Infrastructure Devices

ANSI C63.10 (2013)

KDB 789033 D02 General UNII Test Procedures New Rules v01r03

KDB 662911 D01 Multiple Transmitter Output v02r01

4. Test Configuration

Test Mode

XS-250WX-A	XS-240W-A
With 10GE port	Without 10GE port
Note: Customer declaration, two models is the same except 10GE port, This report tested XS-250WX-A.	

The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The radiated 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 worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates are shown as following table.

Band	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS24
802.11n HT40	MCS24
802.11ac HT20	MCS0NSS4
802.11ac HT40	MCS0NSS4
802.11ac HT80	MCS0NSS4
The device supports non-beamforming and beamforming function in 802.11n/ac, after pre-testing, beamforming mode has the worst emission value, so the worst case was recorded.	



Test Cases	Antenna1	Antenna2	Antenna3	Antenna4	MIMO
Maximum peak conducted output power	802.11a	802.11a	802.11a	802.11a	802.11n HT20/40 802.11ac HT20/40/80
Occupied bandwidth	--	--	--	802.11a	802.11n HT20/40 802.11ac HT20/40/80
Frequency stability	--	--	--	--	802.11n HT20
Maximum power spectral density	802.11a	802.11a	802.11a	802.11a	802.11n HT20/40 802.11ac HT20/40/80
Unwanted Emissions	--	--	--	802.11a	802.11n HT20/40 802.11ac HT20/40/80
Conducted Emissions	--	--	--	802.11a	802.11n HT20/40 802.11ac HT20/40/80

5. Test Case Results

5.1. Occupied Bandwidth

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.

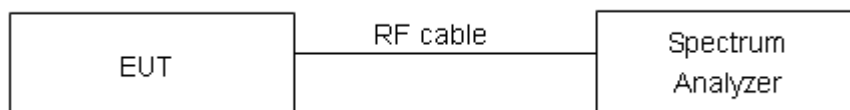
For U-NII-1, set RBW $\approx$ 1% OCB kHz, VBW $\geq$ 3 $\times$ RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

For U-NII-3, Set RBW = 100 kHz, VBW $\geq$ 3 $\times$ RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

Use the 99 % power bandwidth function of the instrument

Test Setup



Limits

Rule FCC Part 15.407(a)(5)/15.407(e)

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Measurement Uncertainty

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

**Test Results:****SISO Antenna 4 U-NII-1**

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Limit(kHz)	Conclusion
802.11a	5180	17.344	30.00	500	PASS
	5200	17.208	29.79	500	PASS
	5240	17.263	29.26	500	PASS

SISO Antenna 4 U-NII-3

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit(kHz)	Conclusion
802.11a	5745	16.570	16.40	500	PASS
	5785	16.554	16.41	500	PASS
	5825	16.551	16.37	500	PASS

U-NII-1, 802.11a
Carrier frequency (MHz): 5180



U-NII-3, 802.11a
Carrier frequency (MHz): 5745



U-NII-1, 802.11a
Carrier frequency (MHz): 5200



U-NII-3, 802.11a
Carrier frequency (MHz): 5785



U-NII-1, 802.11a
Carrier frequency (MHz): 5240



U-NII-3, 802.11a
Carrier frequency (MHz): 5825



**MIMO Antenna 3 U-NII-1**

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Limit(kHz)	Conclusion
802.11n HT20	5180	17.963	27.24	500	PASS
	5200	17.905	26.77	500	PASS
	5240	17.939	25.93	500	PASS
802.11n HT40	5190	36.240	39.40	500	PASS
	5230	36.261	39.59	500	PASS
802.11ac HT20	5180	17.966	29.55	500	PASS
	5200	17.967	26.69	500	PASS
	5240	17.959	26.96	500	PASS
802.11ac HT40	5190	36.275	39.73	500	PASS
	5230	36.304	39.57	500	PASS
802.11ac HT80	5210	74.873	78.06	500	PASS

MIMO Antenna 3 U-NII-3

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit(kHz)	Conclusion
802.11n HT20	5745	17.707	17.62	500	PASS
	5785	17.707	17.65	500	PASS
	5825	17.738	17.64	500	PASS
802.11n HT40	5755	36.179	36.09	500	PASS
	5795	36.230	36.42	500	PASS
802.11ac HT20	5745	17.715	17.63	500	PASS
	5785	17.701	17.63	500	PASS
	5825	17.756	17.63	500	PASS
802.11ac HT40	5755	36.175	36.09	500	PASS
	5795	36.219	36.41	500	PASS
802.11ac HT80	5775	75.490	75.87	500	PASS

U-NII-1, 802.11n HT20 Carrier frequency (MHz): 5180



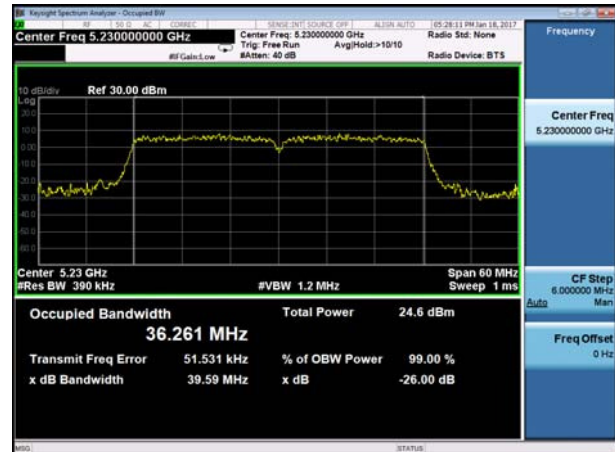
U-NII-1, 802.11n HT40 Carrier frequency (MHz): 5190



U-NII-1, 802.11n HT20 Carrier frequency (MHz): 5200



U-NII-1, 802.11n HT40 Carrier frequency (MHz): 5230



U-NII-1, 802.11n HT20 Carrier frequency (MHz): 5240



U-NII-1, 802.11ac HT40 Carrier frequency (MHz): 5190



U-NII-1, 802.11ac HT20
Carrier frequency (MHz): 5180



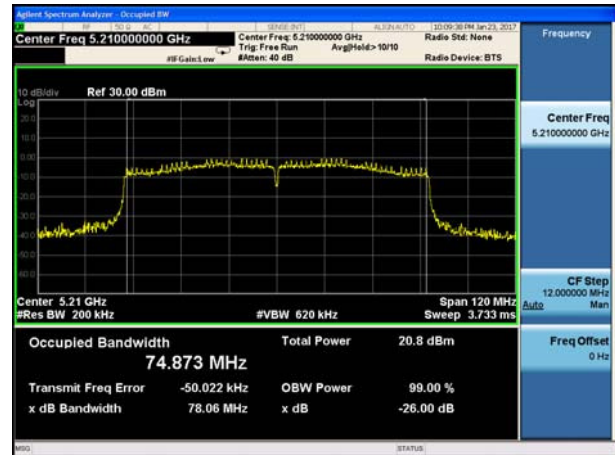
U-NII-1, 802.11ac HT40
Carrier frequency (MHz): 5230



U-NII-1, 802.11ac HT20
Carrier frequency (MHz): 5200



U-NII-1, 802.11ac HT80
Carrier frequency (MHz): 5210



U-NII-1, 802.11ac HT20
Carrier frequency (MHz): 5240

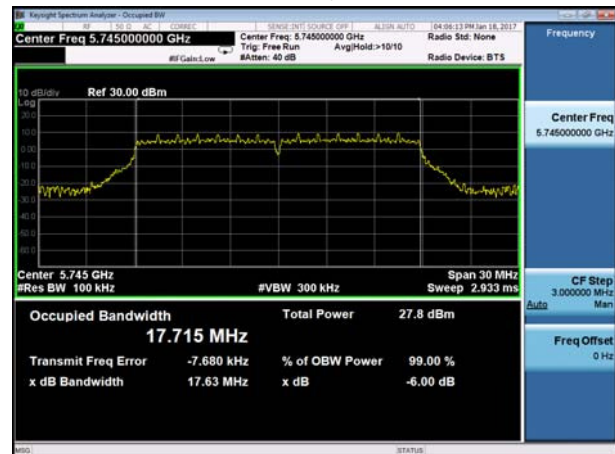




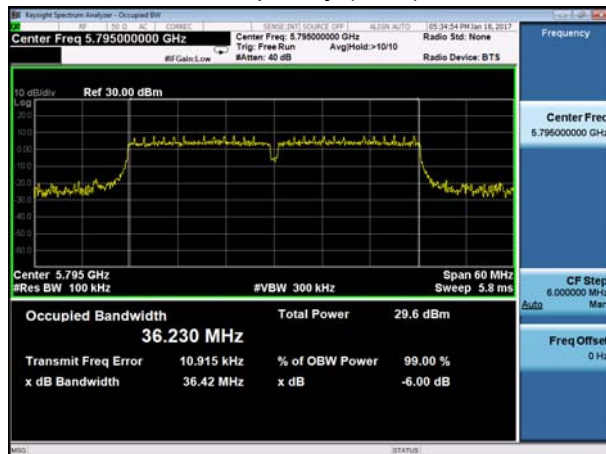
U-NII-3, 802.11n HT40
Carrier frequency (MHz): 5755



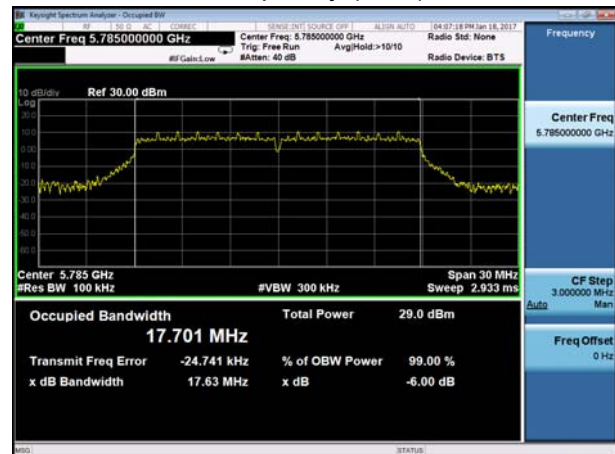
U-NII-3, 802.11ac HT20
Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT40
Carrier frequency (MHz): 5795



U-NII-3, 802.11ac HT20
Carrier frequency (MHz): 5785





U-NII-3, 802.11ac HT40
Carrier frequency (MHz): 5755



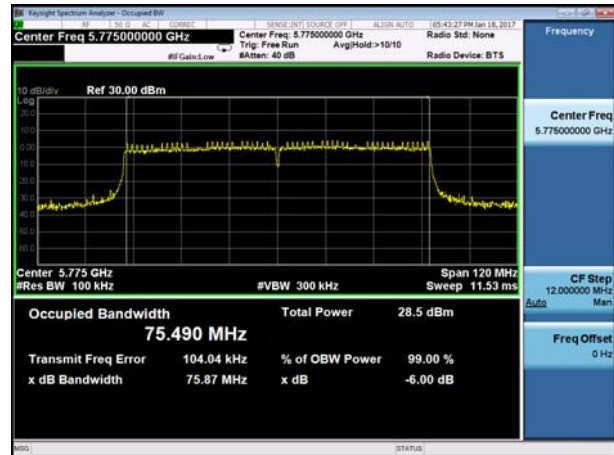
U-NII-3, 802.11ac HT20
Carrier frequency (MHz): 5825



U-NII-3, 802.11ac HT40
Carrier frequency (MHz): 5795



U-NII-3, 802.11ac HT80
Carrier frequency (MHz): 5775



5.2. Average Power Output –Conducted

Ambient condition

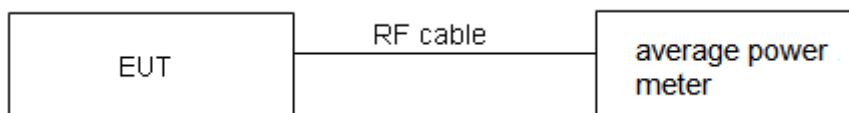
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the average power meter through an external attenuator and a known loss cable. The EUT is max power transmission with proper modulation. We use Maximum average Conducted Output Power Level Method in KDB789033 for this test

The conducted Power 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) (3)

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, 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 the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.44$ dB.

Test Results

Single Antenna 1&2&3&4 Power Index (U-NII-1)				Single Antenna 1&2&3&4 Power Index (U-NII-3)		
Packet Type	CH36	CH40	CH48	CH149	CH157	CH165
802.11a	88	88	88	92	92	92

MIMO Antenna 1&2&3&4 Power Index (U-NII-1)				MIMO Antenna 1&2&3&4 Power Index (U-NII-3)			
Packet Type	CH36	CH40	CH48	Packet Type	CH36	CH40	CH48
802.11n HT20	84	84	84	802.11n HT20	84	84	84
802.11ac HT20	84	84	84	802.11ac HT20	84	84	84
Packet Type	CH38	CH46	/	Packet Type	CH38	CH46	/
802.11n HT40	72	72	/	802.11n HT40	84	84	/
802.11ac HT40	72	72	/	802.11ac HT40	84	84	/
Packet Type	CH42	/	/	Packet Type	CH42	/	/
802.11ac HT80	72	/	/	802.11ac HT80	84	/	/

Test results

SISO Antenna 1 U-NII-1

Network Standards	Channel/ Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	22.12	30	PASS
	40/5200	23.08	30	PASS
	48/5240	22.08	30	PASS

SISO Antenna 2 U-NII-1

Network Standards	Channel/ Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	23.19	30	PASS
	40/5200	23.96	30	PASS
	48/5240	22.74	30	PASS

SISO Antenna 3 U-NII-1

Network Standards	Channel/ Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	22.51	30	PASS
	40/5200	23.24	30	PASS
	48/5240	22.36	30	PASS

SISO Antenna 4 U-NII-1

Network Standards	Channel/ Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	23.91	30	PASS
	40/5200	24.81	30	PASS
	48/5240	23.92	30	PASS

SISO Antenna 1 U-NII-3

Network Standards	Channel/Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	22.76	30	PASS
	157/5785	23.22	30	PASS
	165/5825	22.90	30	PASS

SISO Antenna 2 U-NII-3

Network Standards	Channel/Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	23.20	30	PASS
	157/5785	23.41	30	PASS
	165/5825	23.14	30	PASS

SISO Antenna 3 U-NII-3

Network Standards	Channel/Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	25.18	30	PASS
	157/5785	26.02	30	PASS
	165/5825	25.53	30	PASS

SISO Antenna 4 U-NII-3

Network Standards	Channel/Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	22.31	30	PASS
	157/5785	22.77	30	PASS
	165/5825	22.40	30	PASS

**MIMO U-NII-1**

Network Standards		Channel/ Frequency (MHz)	Average Output Power (dBm)					Limit (dBm)	Conclusion
MIMO Antenna			ANT1	ANT2	ANT3	ANT4	MIMO		
802.11n HT20	U-NII-1	36/5180	20.36	21.59	21.18	22.44	27.48	30	PASS
		40/5200	21.40	22.26	21.78	23.00	28.17	30	PASS
		48/5240	20.74	21.83	21.27	22.37	27.62	30	PASS
802.11n HT40	U-NII-1	38/5190	17.41	18.25	17.73	18.79	24.10	30	PASS
		46/5230	17.51	18.55	17.98	19.06	24.33	30	PASS
802.11ac HT20	U-NII-1	36/5180	20.73	21.63	21.22	22.37	27.55	30	PASS
		40/5200	21.31	22.03	21.85	22.82	28.06	30	PASS
		48/5240	21.01	21.78	21.13	22.56	27.69	30	PASS
802.11ac HT40	U-NII-1	38/5190	17.45	18.31	17.82	18.75	24.13	30	PASS
		46/5230	17.49	18.61	18.07	19.00	24.35	30	PASS
802.11ac HT80	U-NII-1	42/5210	17.51	18.25	17.91	19.09	24.25	30	PASS

MIMO U-NII-3

Network Standards		Channel/ Frequency (MHz)	Average Output Power (dBm)					Limit (dBm)	Conclusion
MIMO Antenna			ANT1	ANT2	ANT3	ANT4	MIMO		
U-NII-1	U-NII-3	149/5745	20.38	20.81	22.62	19.62	27.02	30	PASS
		157/5785	21.21	21.43	23.48	20.34	27.80	30	PASS
		165/5825	20.49	20.76	22.83	19.90	27.17	30	PASS
802.11n HT40	U-NII-3	151/5755	20.88	21.07	23.29	20.25	27.56	30	PASS
		159/5795	20.79	20.92	23.07	20.22	27.42	30	PASS
802.11ac HT20	U-NII-3	149/5745	20.24	20.76	22.7	19.68	27.02	30	PASS
		157/5785	20.81	21.38	23.31	20.46	27.66	30	PASS
		165/5825	20.62	20.63	23.05	19.81	27.23	30	PASS
802.11ac HT40	U-NII-3	151/5755	20.94	21.05	23.23	20.31	27.55	30	PASS
		159/5795	20.83	20.89	23.14	20.33	27.46	30	PASS
802.11ac HT80	U-NII-3	155/5775	19.35	19.87	22.26	19.05	26.35	30	PASS

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 than 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 $k = 2$, $U = 936\text{Hz}$

Test Results

Voltage (V)	Temperature (°C)	U-NII-1 Test Results			
		5200MHz			
		1min	2min	5min	10min
120	-20	5199.957	5199.957	5199.952	5199.951
120	-10	5199.952	5199.952	5199.958	5199.955
120	0	5199.957	5199.957	5199.951	5199.954
120	10	5199.959	5199.959	5199.951	5199.951
120	20	5199.954	5199.954	5199.960	5199.951
120	30	5199.955	5199.955	5199.958	5199.958
120	40	5199.958	5199.958	5199.958	5199.958
120	50	5199.956	5199.956	5199.958	5199.958
90	20	5199.952	5199.952	5199.960	5199.955
264	20	5199.951	5199.951	5199.959	5199.952
MHz		0.049	0.050	0.049	0.049
PPM		0.001	0.001	0.001	0.001

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
120	-20	5784.954	5784.955	5784.952	5784.954
120	-10	5784.957	5784.953	5784.953	5784.951
120	0	5784.952	5784.954	5784.954	5784.959
120	10	5784.955	5784.956	5784.958	5784.952
120	20	5784.951	5784.954	5784.953	5784.950
120	30	5784.954	5784.957	5784.959	5784.957
120	40	5784.955	5784.958	5784.956	5784.956
120	50	5784.952	5784.958	5784.950	5784.958
90	20	5784.959	5784.957	5784.959	5784.954
264	20	5784.952	5784.960	5784.958	5784.958
MHz		0.049	0.047	0.050	0.050
PPM		0.00095	0.00090	0.00096	0.00096

5.4. Power Spectral Density

Ambient condition

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

Method of Measurement

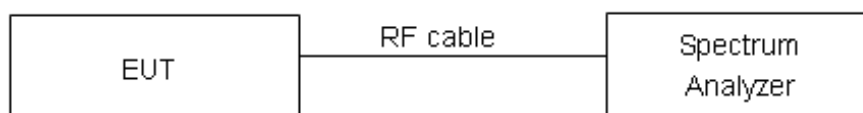
The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

Set RBW = 510 kHz, VBW =1.5MHz for the band 5.725-5.85 GHz

Set RBW = 1 MHz, VBW =3MHz for the band 5.150-5.250 GHz

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)(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 the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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.

Frequency Bands/MHz	Limits
5150-5250	17dBm/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 $k = 2$, $U = 0.75\text{dB}$.

Test Results:
SISO Antenna 1 U-NII-1

Network Standards	Channel Number	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	9.507	17	PASS
	40	9.408	17	PASS
	48	9.399	17	PASS

SISO Antenna 2 U-NII-1

Network Standards	Channel Number	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	10.193	17	PASS
	40	10.334	17	PASS
	48	9.522	17	PASS

SISO Antenna 3 U-NII-1

Network Standards	Channel Number	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	9.594	17	PASS
	40	9.480	17	PASS
	48	9.338	17	PASS

SISO Antenna 4 U-NII-1

Network Standards	Channel Number	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	10.830	17	PASS
	40	10.534	17	PASS
	48	10.166	17	PASS

SISO Antenna 1 U-NII-3

Network Standards	Channel Number	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	5.753	30	PASS
	157	5.949	30	PASS
	165	6.237	30	PASS

SISO Antenna 2 U-NII-3

Network Standards	Channel Number	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	6.454	30	PASS
	157	7.001	30	PASS
	165	7.909	30	PASS

SISO Antenna 3 U-NII-3

Network Standards	Channel Number	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	7.045	30	PASS
	157	7.508	30	PASS
	165	8.017	30	PASS

SISO Antenna 4 U-NII-3

Network Standards	Channel Number	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	5.276	30	PASS
	157	5.351	30	PASS
	165	5.994	30	PASS

**MIMO U-NII-1**

Network Standards		Channel/ Frequency (MHz)	Power Spectral Density (dBm /MHz)					Limit (dBm / MHz)	Conclusion
MIMO Antenna			ANT1	ANT2	ANT3	ANT4	MIMO		
802.11n HT20	U-NII-1	36/5180	8.101	8.508	8.083	9.066	14.48	17	PASS
		40/5200	7.997	8.693	8.287	9.259	14.61	17	PASS
		48/5240	7.925	8.296	7.829	8.815	14.25	17	PASS
802.11n HT40	U-NII-1	38/5190	1.918	2.809	1.731	2.075	8.17	17	PASS
		46/5230	1.519	1.591	0.977	2.053	7.85	17	PASS
802.11ac HT20	U-NII-1	36/5180	8.097	8.765	7.917	9.175	14.54	17	PASS
		40/5200	8.607	8.641	8.569	8.962	14.72	17	PASS
		48/5240	7.898	8.633	7.761	8.581	14.26	17	PASS
802.11ac HT40	U-NII-1	38/5190	1.494	2.605	1.702	2.180	8.04	17	PASS
		46/5230	1.029	1.951	0.853	2.299	7.60	17	PASS
802.11ac HT80	U-NII-1	42/5210	-0.556	0.089	-0.646	0.589	5.92	17	PASS

MIMO U-NII-3

Network Standards		Channel/ Frequency (MHz)	Peak Output Power (dBm)					Limit (dBm)	Conclusion
MIMO Antenna			ANT1	ANT2	ANT3	ANT4	MIMO		
U-NII-1	U-NII-3	149/5745	3.049	4.235	4.263	2.840	9.67	30	PASS
		157/5785	3.385	4.144	5.094	2.898	9.98	30	PASS
		165/5825	4.284	4.679	5.497	3.355	10.54	30	PASS
802.11n HT40	U-NII-3	151/5755	-0.601	1.266	1.242	-0.215	6.52	30	PASS
		159/5795	1.182	1.469	2.107	-0.064	7.26	30	PASS
802.11ac HT20	U-NII-3	149/5745	3.133	4.233	4.566	2.478	9.70	30	PASS
		157/5785	3.815	4.442	4.691	2.786	10.01	30	PASS
		165/5825	3.902	4.823	5.660	3.079	10.49	30	PASS
802.11ac HT40	U-NII-3	151/5755	-0.176	1.379	1.164	-0.164	6.63	30	PASS
		159/5795	0.876	0.860	2.007	-0.130	6.99	30	PASS
802.11ac HT80	U-NII-3	155/5775	-3.930	-2.968	-2.464	-5.093	2.52	30	PASS



SISO Antenna 1

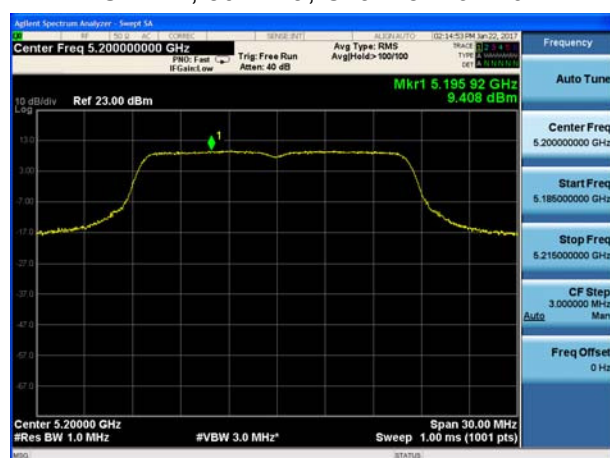
U-NII-1, 802.11a, Channel No.: 36



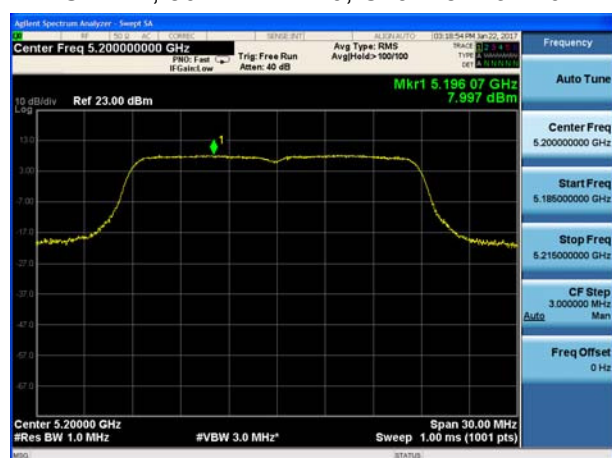
U-NII-1, 802.11n HT20, Channel No.: 36



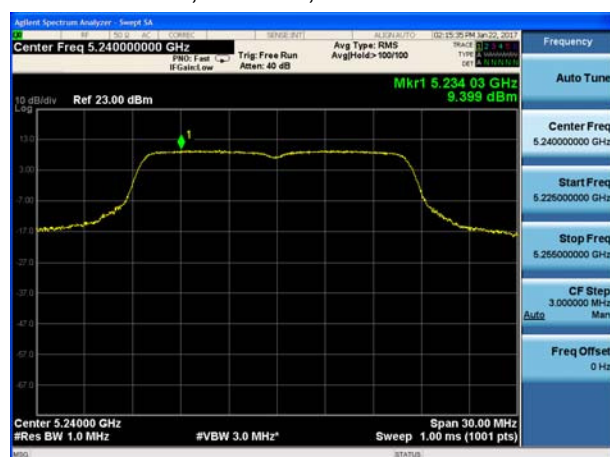
U-NII-1, 802.11a, Channel No.: 40



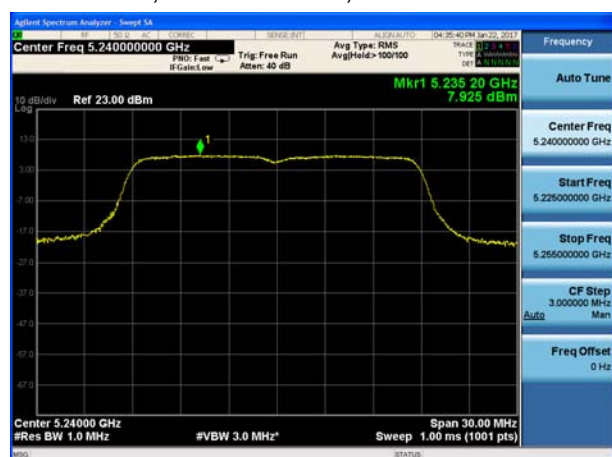
U-NII-1, 802.11n HT20, Channel No.: 40



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 HT20, Channel No.: 36



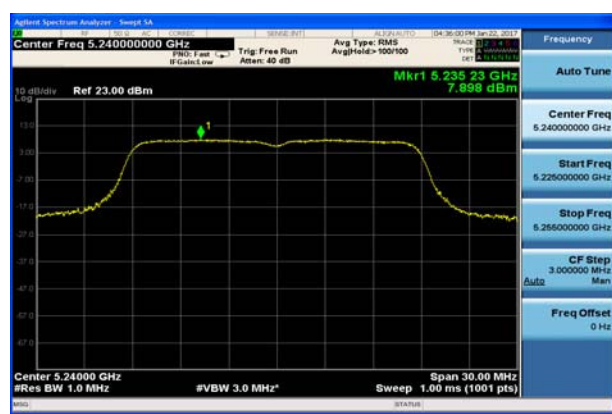
U-NII-1, 802.11n HT40, Channel No.: 46



U-NII-1, 802.11ac HT20, Channel No.: 40



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





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



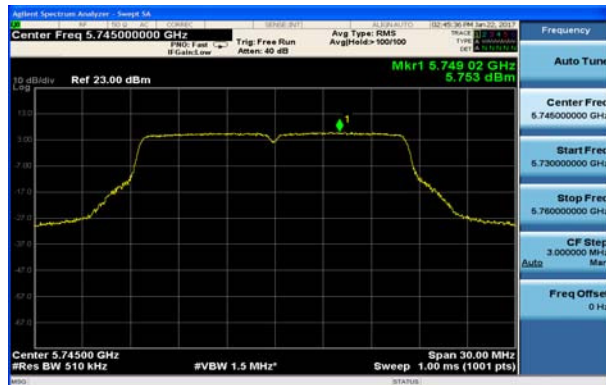
U-NII-1 802.11ac HT40, Channel No.:46



U-NII-1, 802.11ac HT80, Channel No.: 42



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

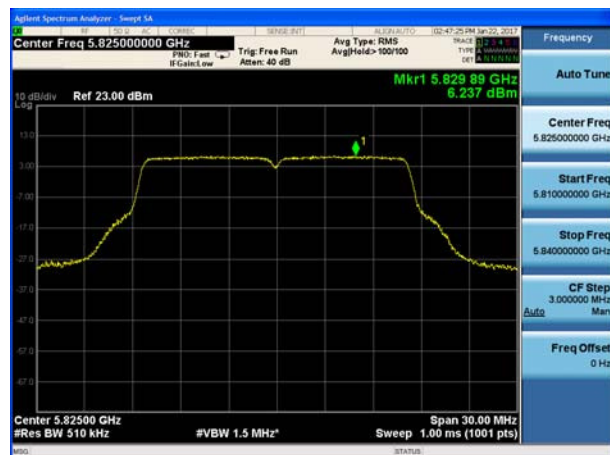


U-NII-3, 802.11n HT20, Channel No.: 157





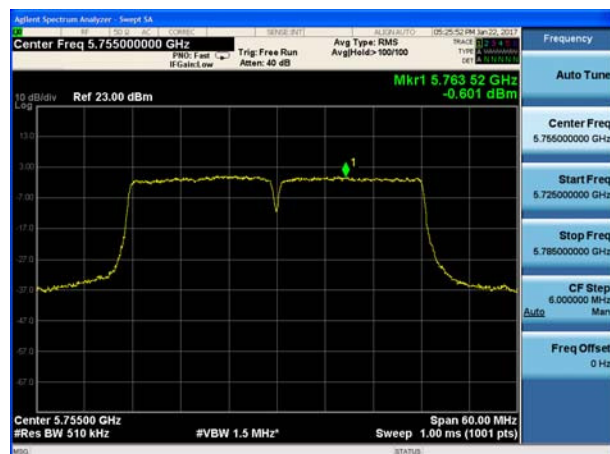
U-NII-3, 802.11a, Channel No.: 165



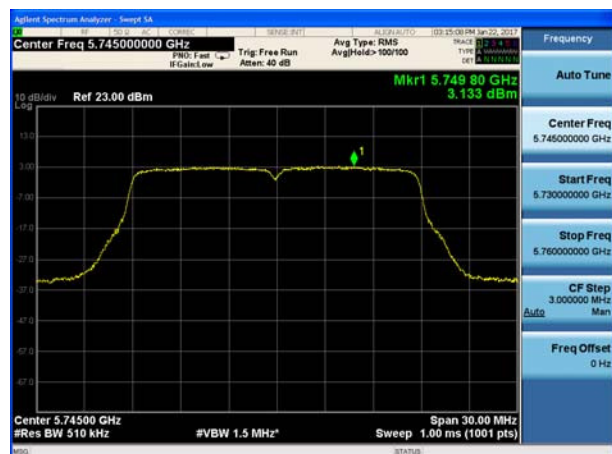
U-NII-3, 802.11n HT20, Channel No.: 165



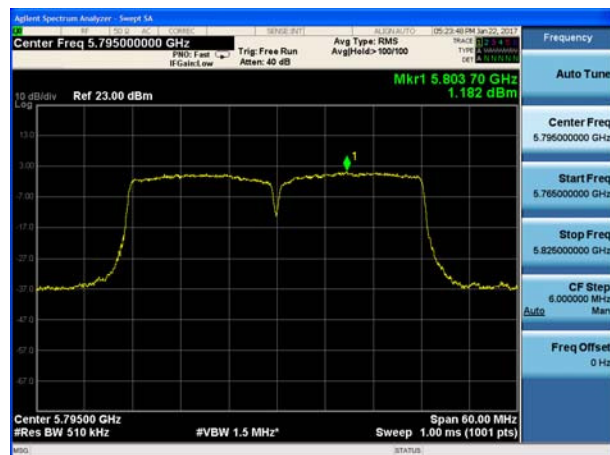
U-NII-3, 802.11n HT40, Channel No.: 151



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



U-NII-3, 802.11n HT40, Channel No.: 159

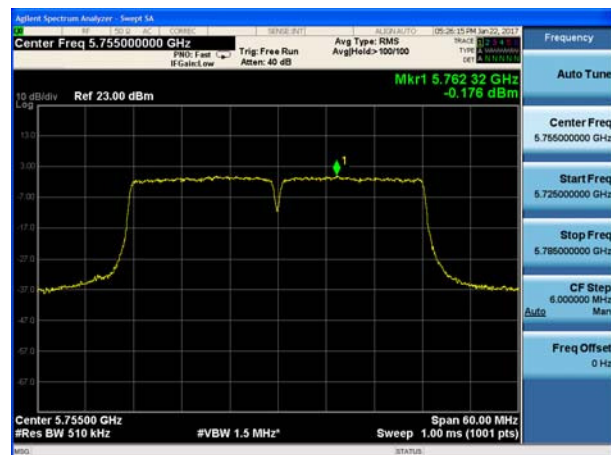


U-NII-3, 802.11ac HT20, Channel No.: 157

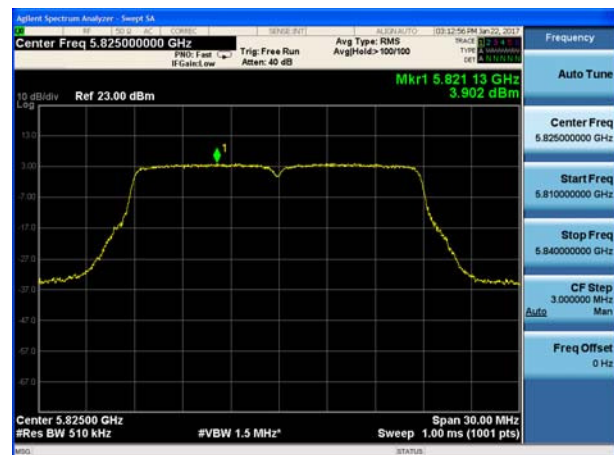




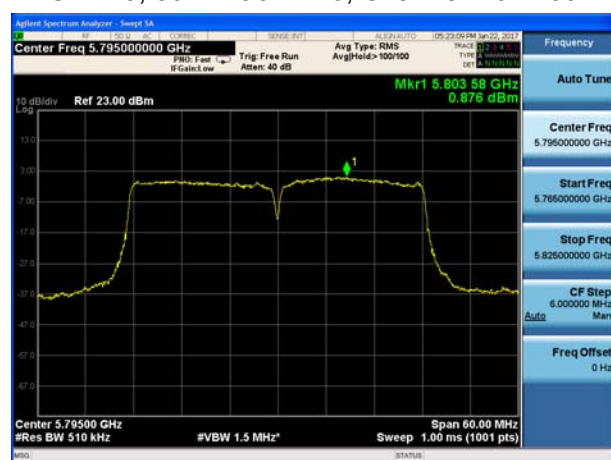
U-NII-3, 802.11ac HT40, Channel No.: 151



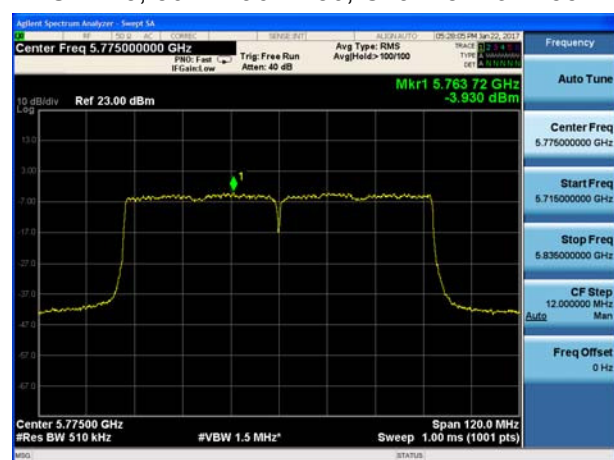
U-NII-3, 802.11ac HT20, Channel No.: 165



U-NII-3, 802.11ac HT40, Channel No.: 159



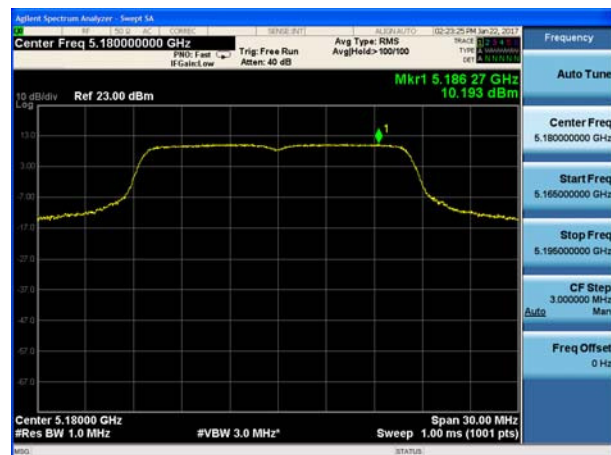
U-NII-3, 802.11ac HT80, Channel No.: 155





SISO Antenna 2

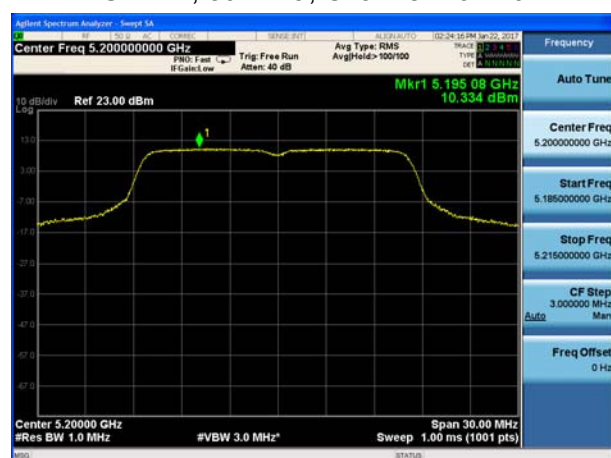
U-NII-1, 802.11a, Channel No.: 36



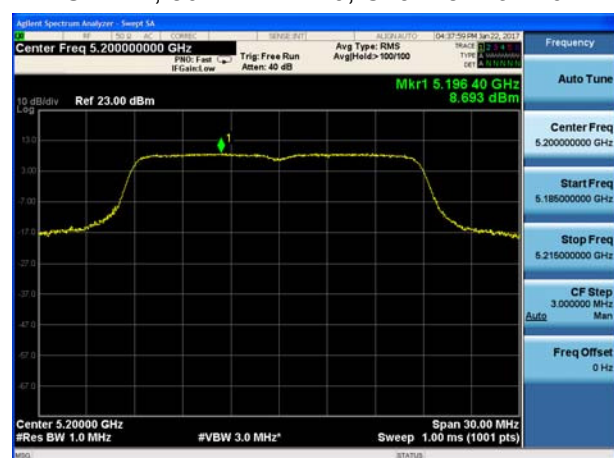
U-NII-1, 802.11n HT20, Channel No.: 36



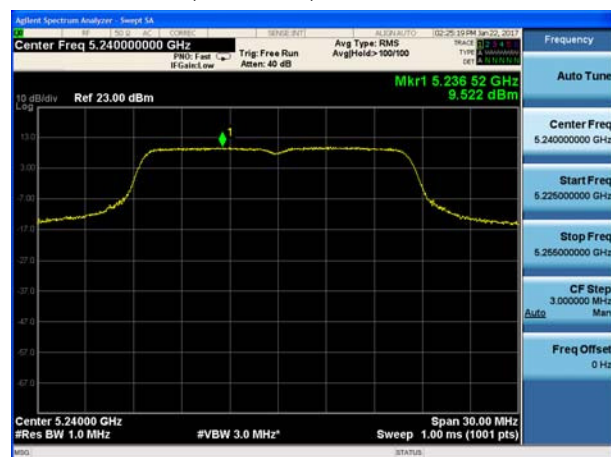
U-NII-1, 802.11a, Channel No.: 40



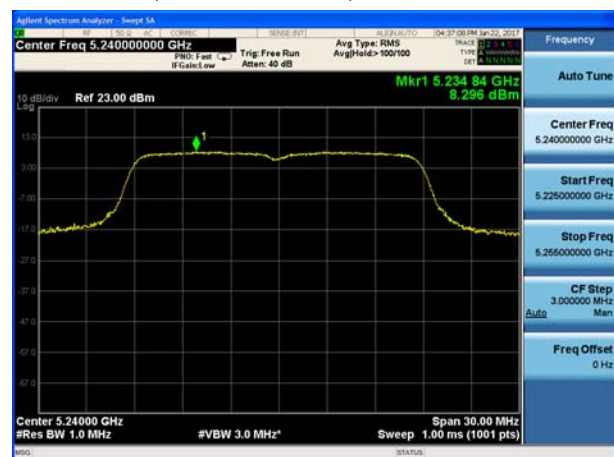
U-NII-1, 802.11n HT20, Channel No.: 40



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

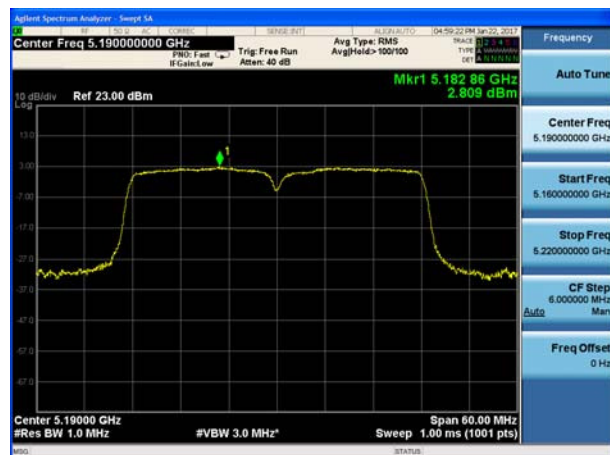


U-NII-1, 802.11n HT20, Channel No.: 48

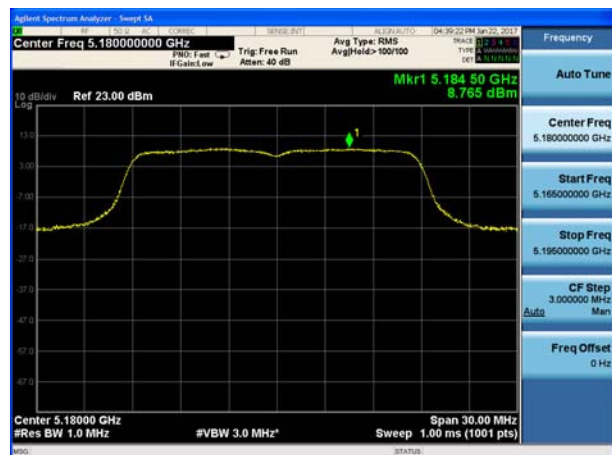




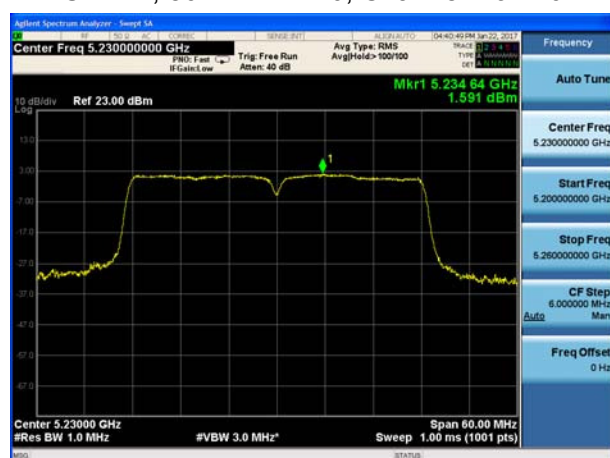
U-NII-1, 802.11n HT40, Channel No.: 38



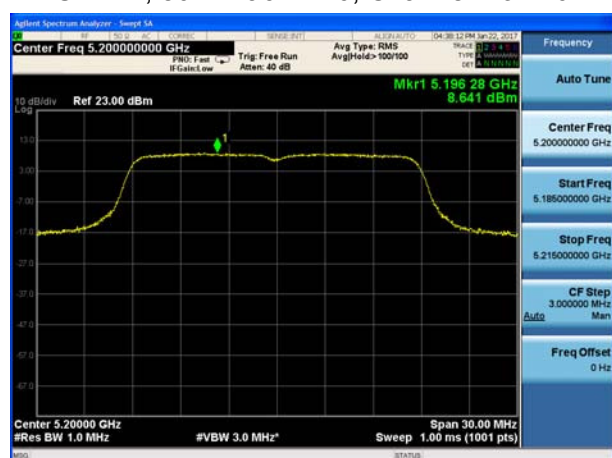
U-NII-1, 802.11ac HT20, Channel No.: 36



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



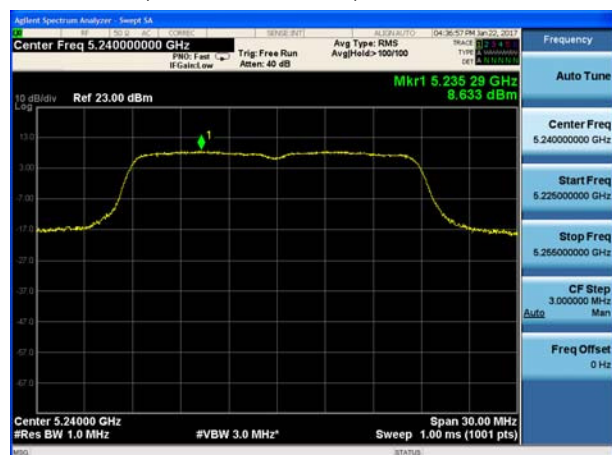
U-NII-1, 802.11ac HT20, Channel No.: 40



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



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

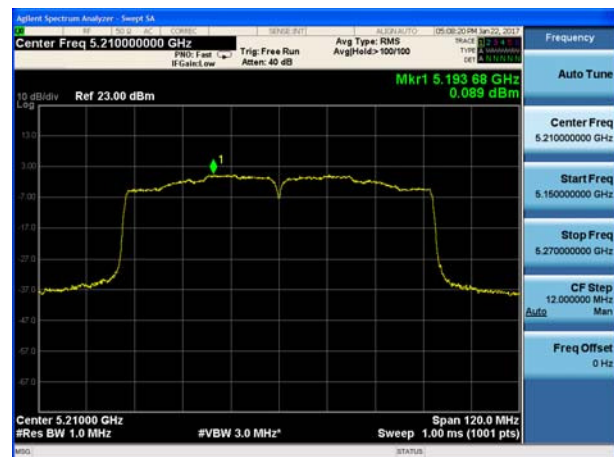




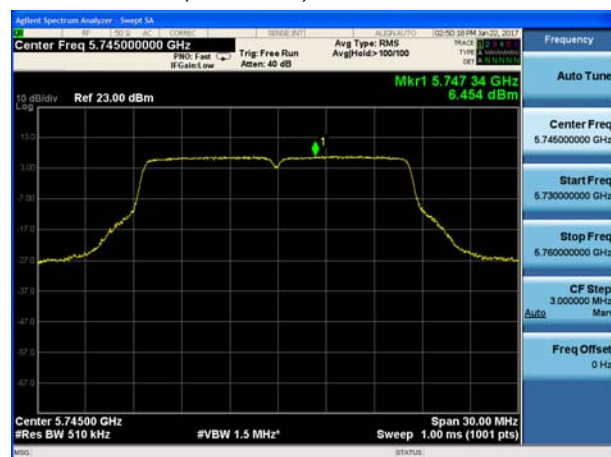
U-NII-1, 802.11ac HT40, Channel No.: 46



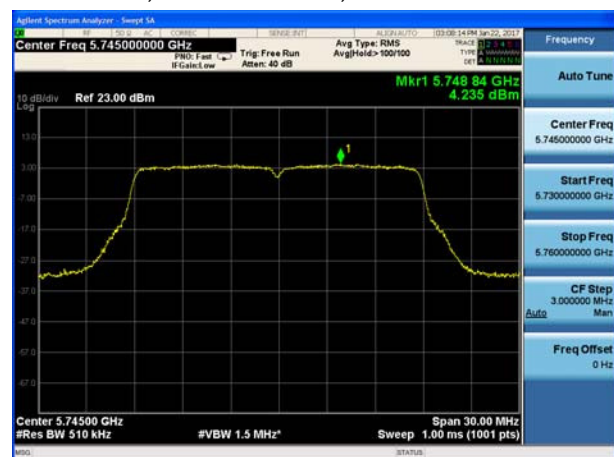
U-NII-1, 802.11ac HT80, Channel No.: 42



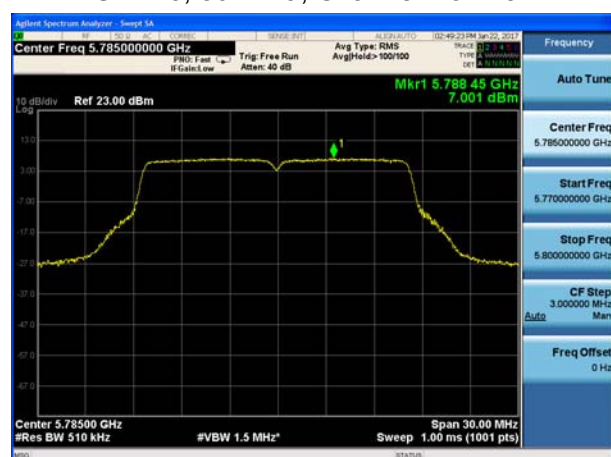
U-NII-3, 802.11a, Channel No.: 149



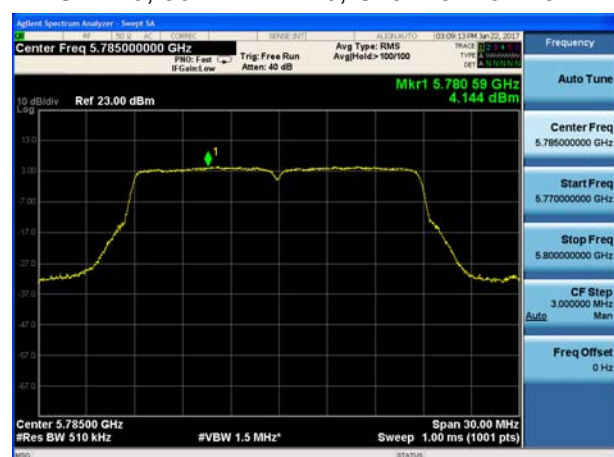
U-NII-3, 802.11n HT20, Channel No.: 149



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

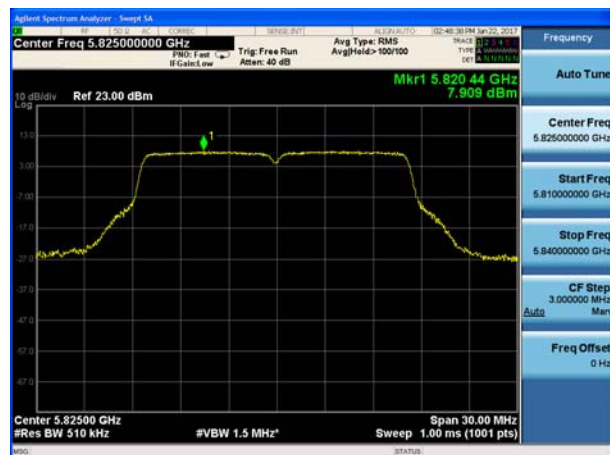


U-NII-3, 802.11n HT20, Channel No.: 157





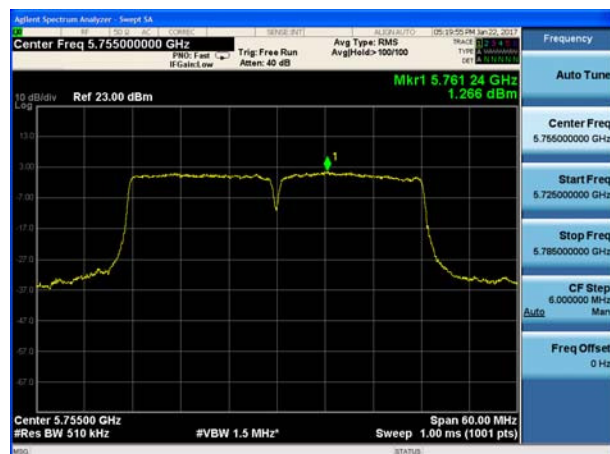
U-NII-3, 802.11a, Channel No.: 165



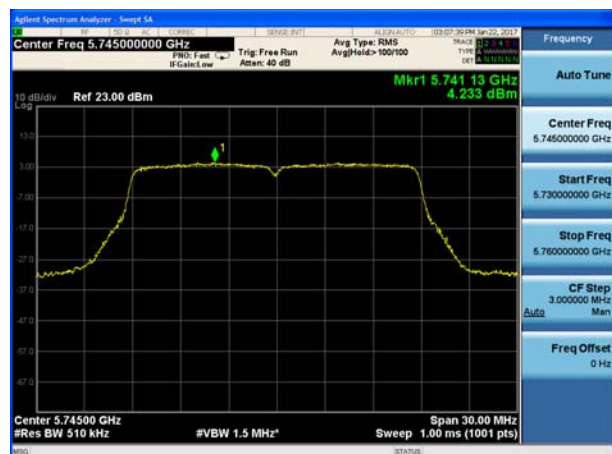
U-NII-3, 802.11n HT20, Channel No.: 165



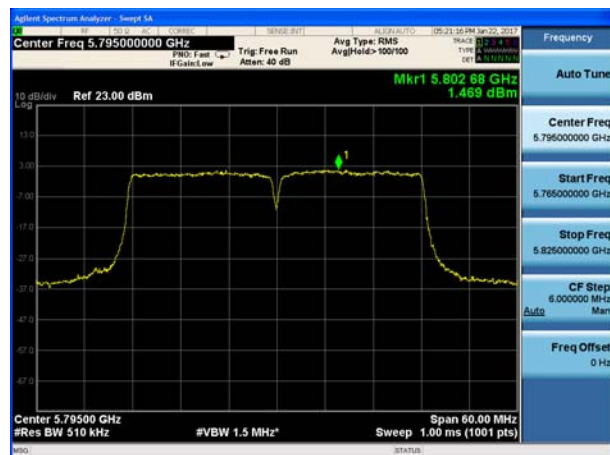
U-NII-3, 802.11n HT40, Channel No.: 151



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



U-NII-3, 802.11n HT40, Channel No.: 159

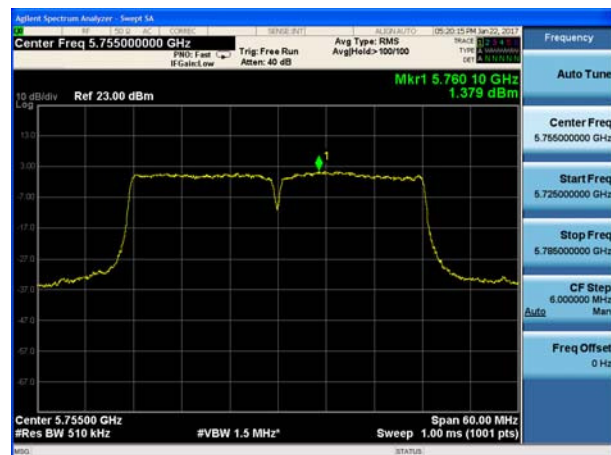


U-NII-3, 802.11ac HT20, Channel No.: 157





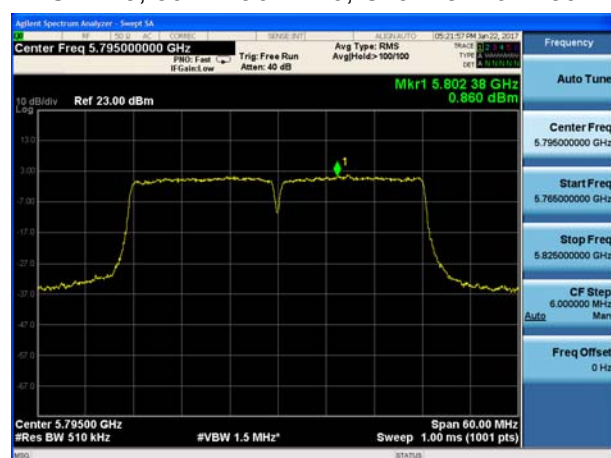
U-NII-3, 802.11ac HT40, Channel No.: 151



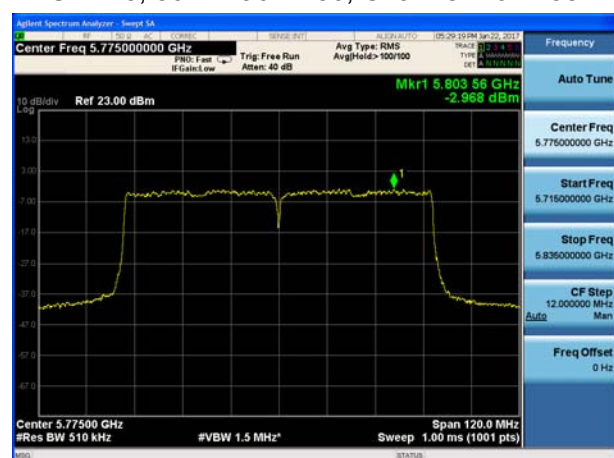
U-NII-3, 802.11ac HT20, Channel No.: 165



U-NII-3, 802.11ac HT40, Channel No.: 159



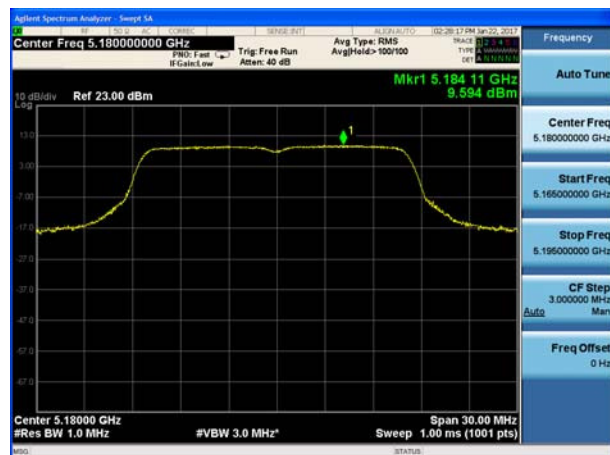
U-NII-3, 802.11ac HT80, Channel No.: 155





SISO Antenna 3

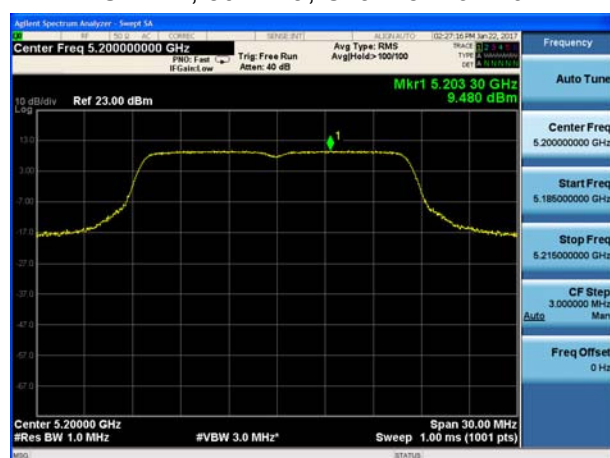
U-NII-1, 802.11a, Channel No.: 36



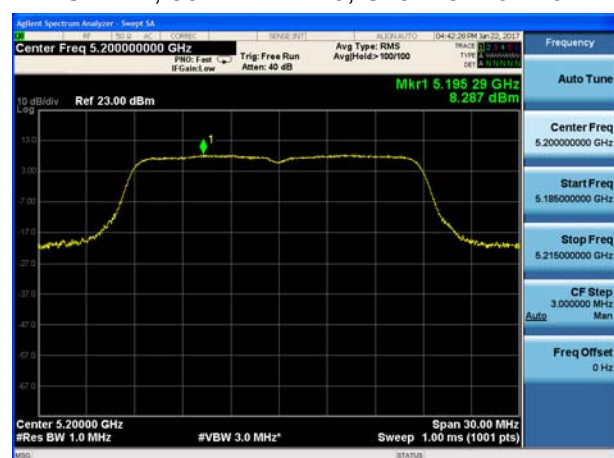
U-NII-1, 802.11n HT20, Channel No.: 36



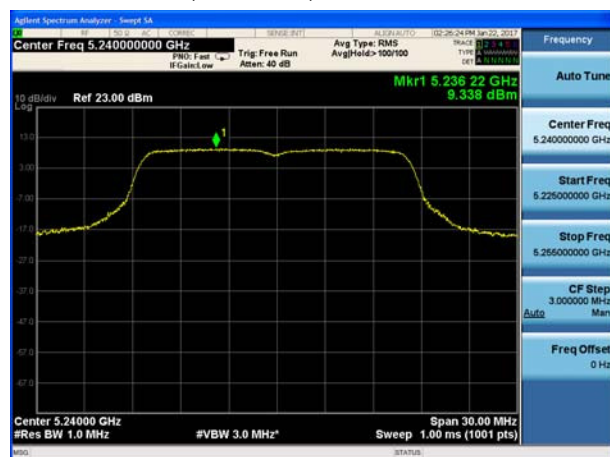
U-NII-1, 802.11a, Channel No.: 40



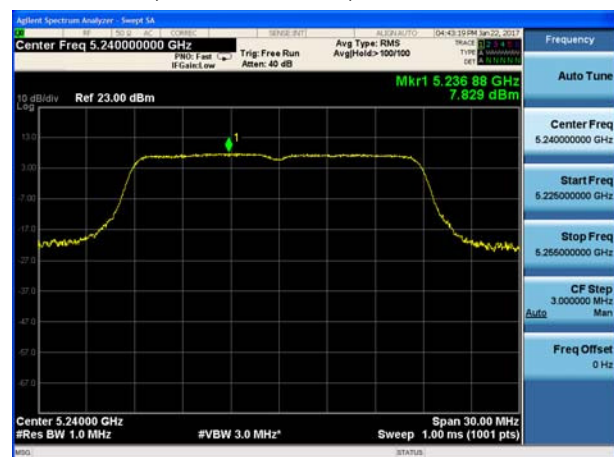
U-NII-1, 802.11n HT20, Channel No.: 40



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

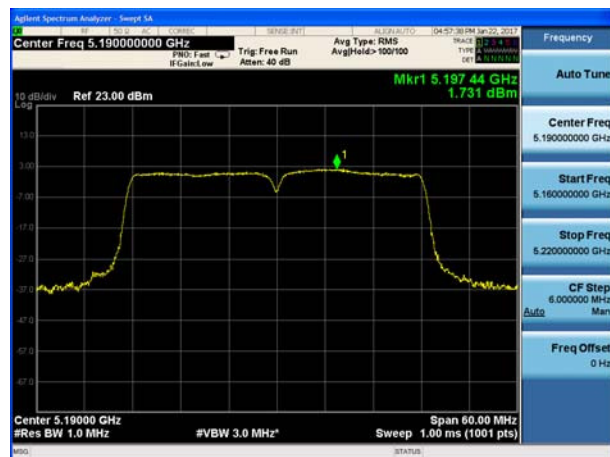


U-NII-1, 802.11n HT20, Channel No.: 48

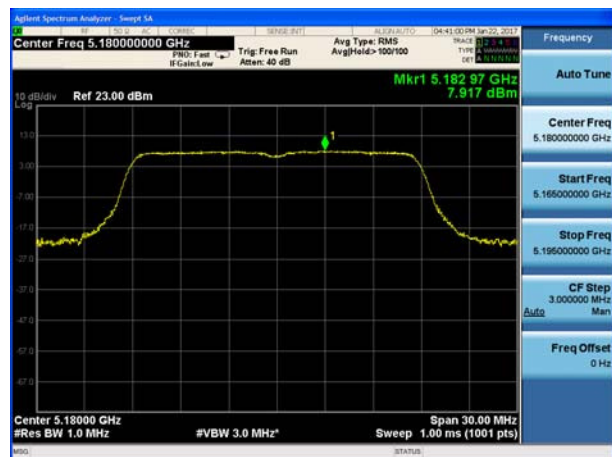




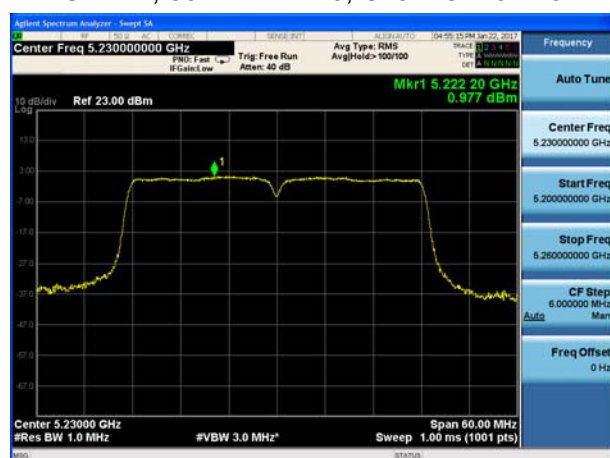
U-NII-1, 802.11n HT40, Channel No.: 38



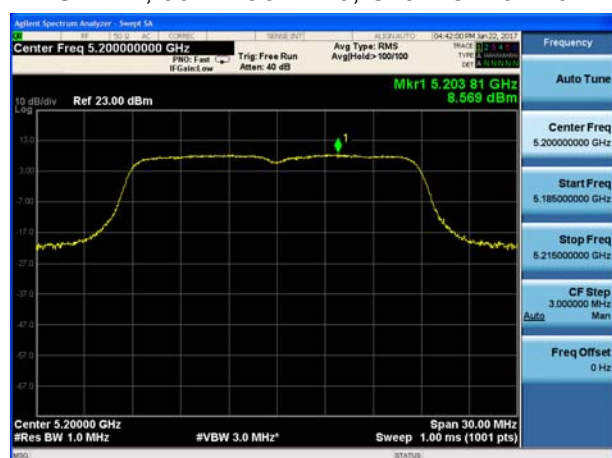
U-NII-1, 802.11ac HT20, Channel No.: 36



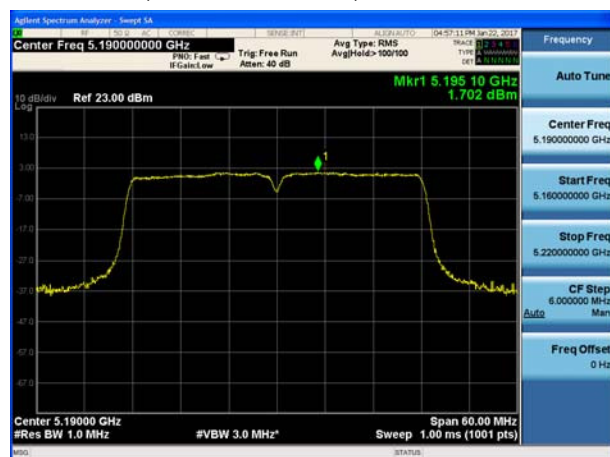
U-NII-1, 802.11n HT40, Channel No.: 46



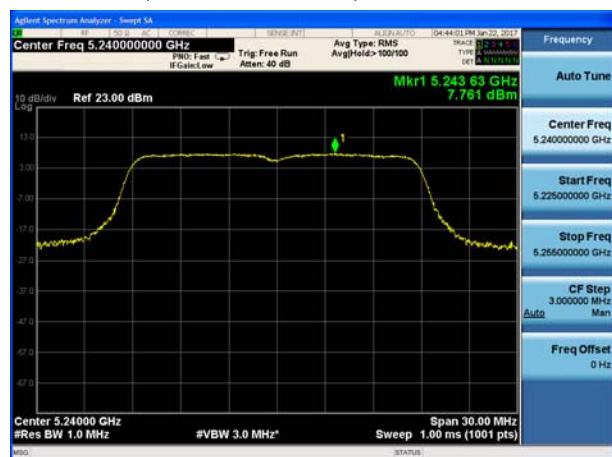
U-NII-1, 802.11ac HT20, Channel No.: 40



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

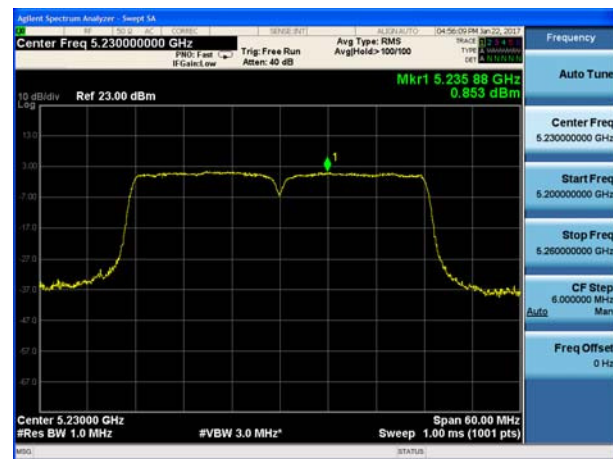


U-NII-1, 802.11ac HT20, Channel No.: 48

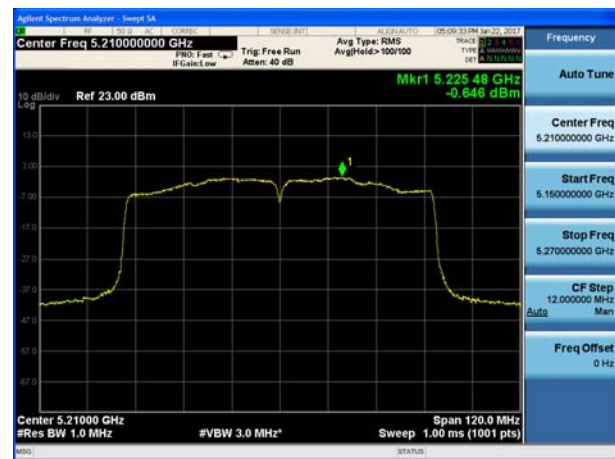




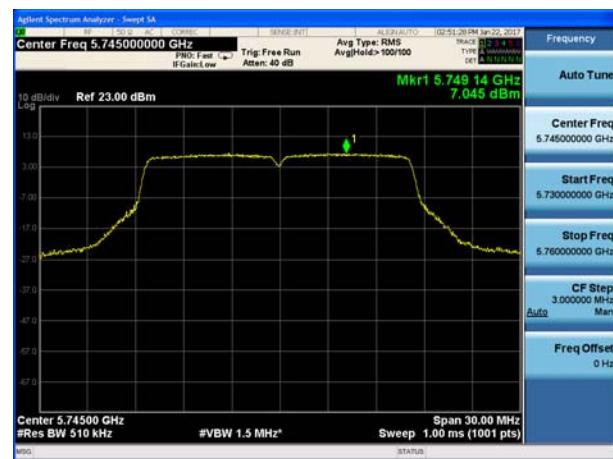
U-NII-1, 802.11ac HT40, Channel No.: 46



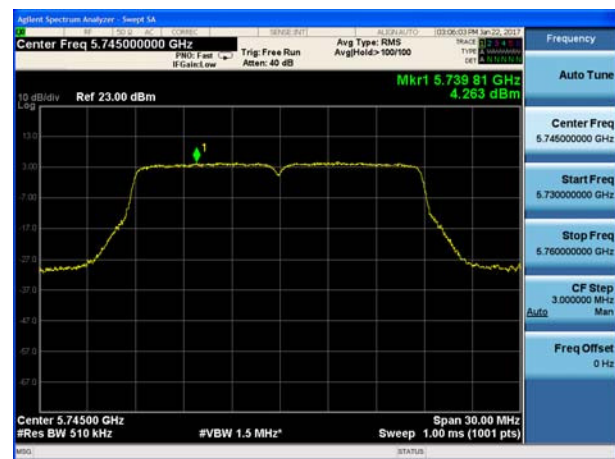
U-NII-1, 802.11ac HT80, Channel No.: 42



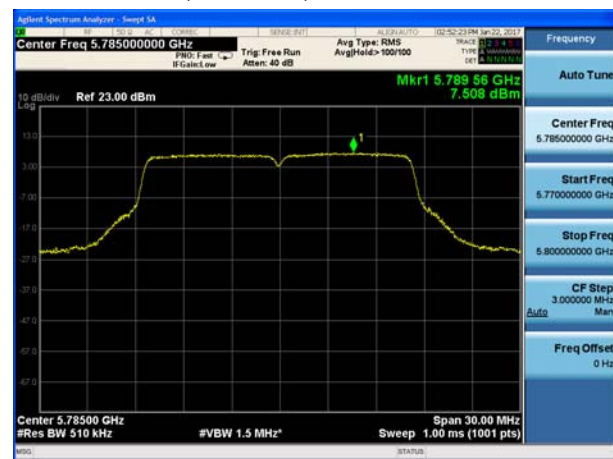
U-NII-3, 802.11a, Channel No.: 149



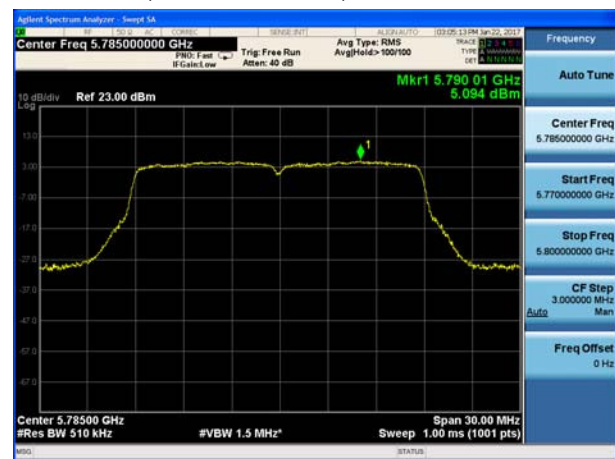
U-NII-3, 802.11n HT20, Channel No.: 149



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



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

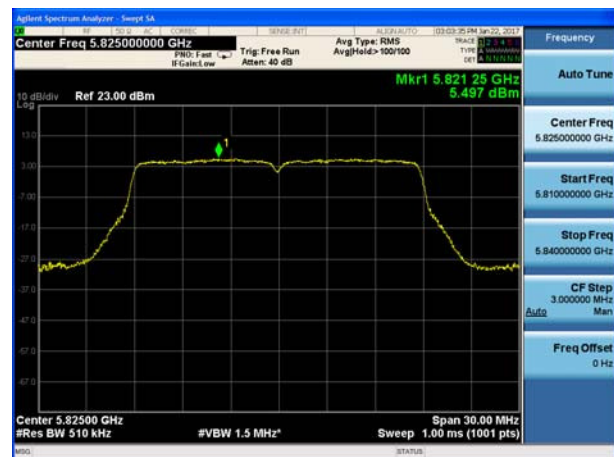




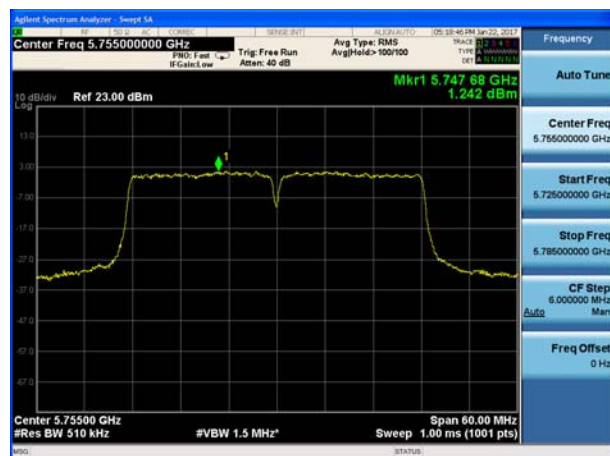
U-NII-3, 802.11a, Channel No.: 165



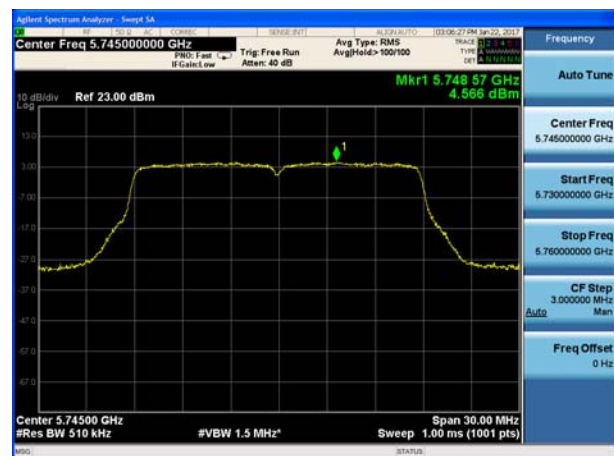
U-NII-3, 802.11n HT20, Channel No.: 165



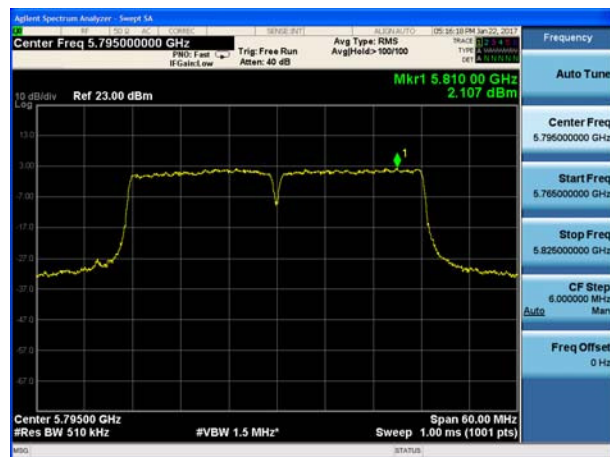
U-NII-3, 802.11n HT40, Channel No.: 151



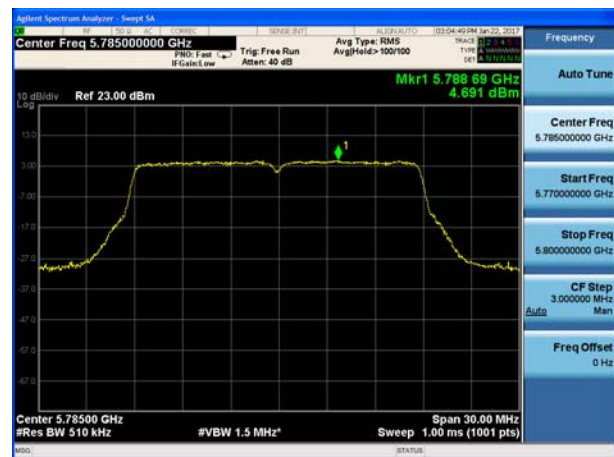
U-NII-3, 802.11ac HT20, Channel No.: 149



U-NII-3, 802.11n HT40, Channel No.: 159

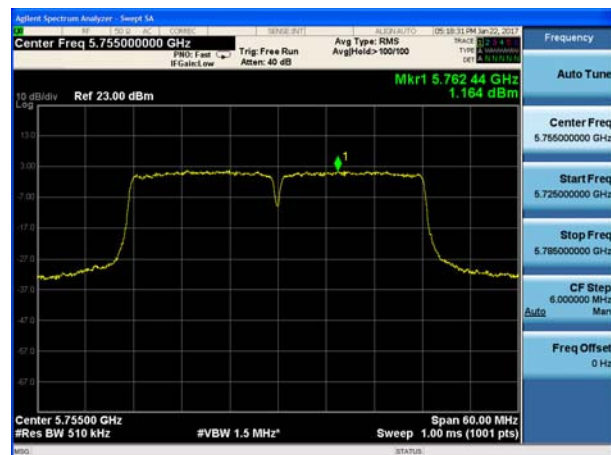


U-NII-3, 802.11ac HT20, Channel No.: 157





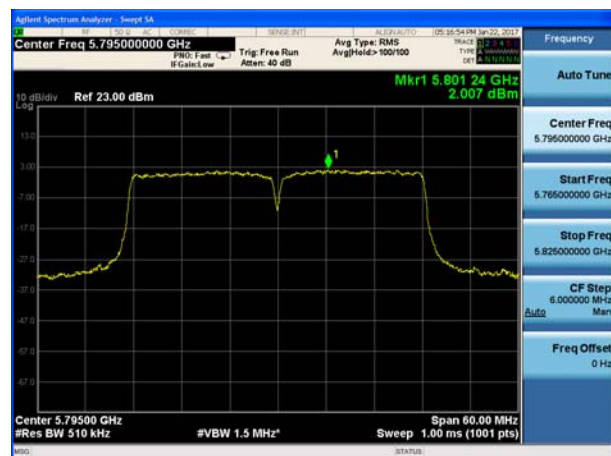
U-NII-3, 802.11ac HT40, Channel No.: 151



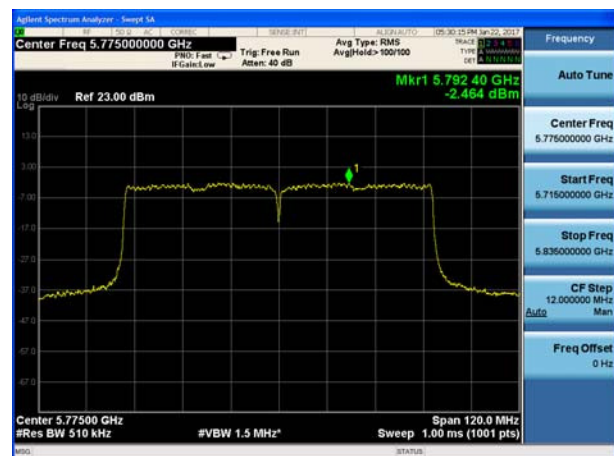
U-NII-3, 802.11ac HT20, Channel No.: 165



U-NII-3, 802.11ac HT40, Channel No.: 159



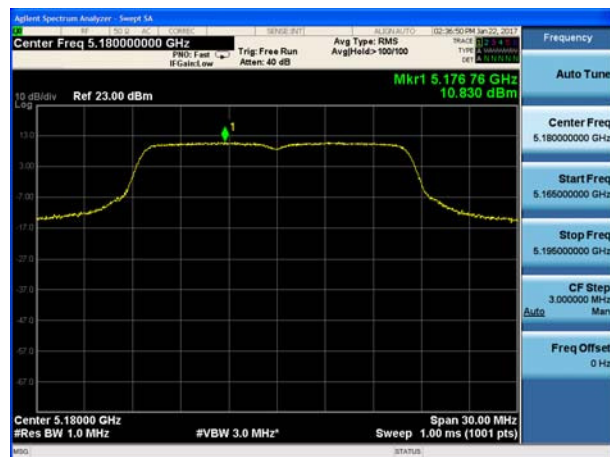
U-NII-3, 802.11ac HT80, Channel No.: 155



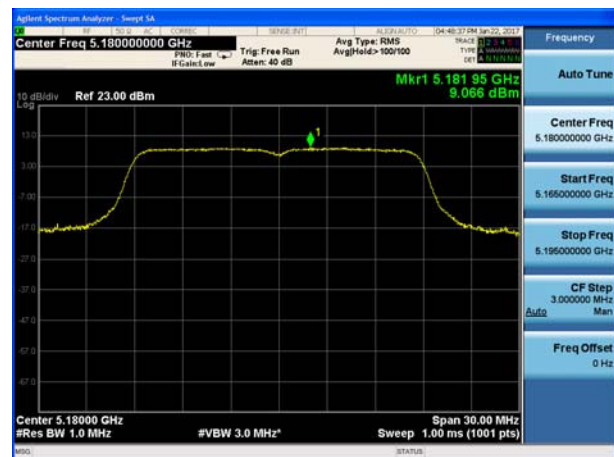


SISO Antenna 4

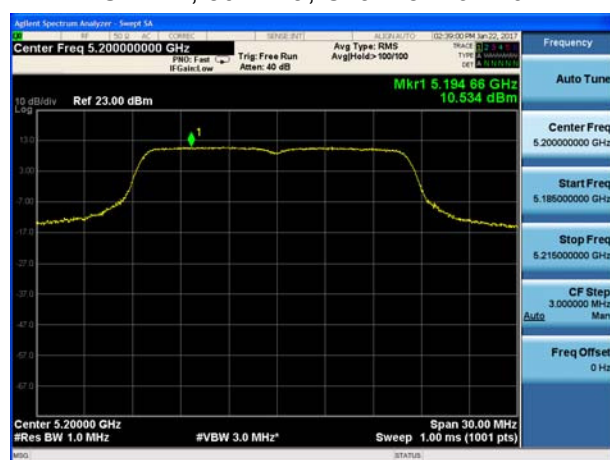
U-NII-1, 802.11a, Channel No.: 36



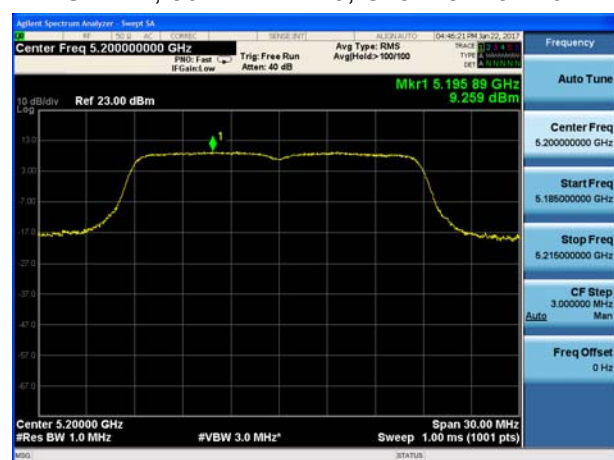
U-NII-1, 802.11n HT20, Channel No.: 36



U-NII-1, 802.11a, Channel No.: 40



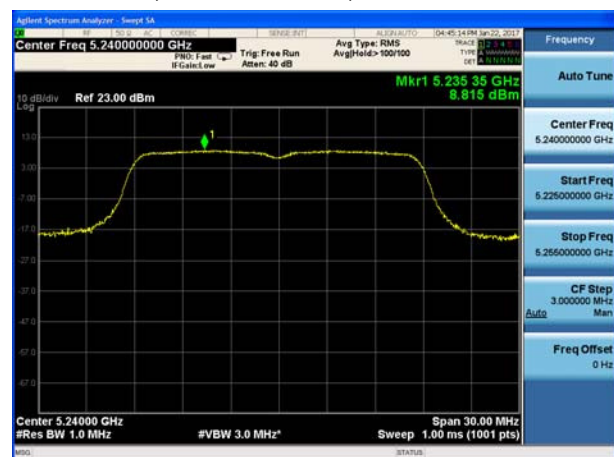
U-NII-1, 802.11n HT20, Channel No.: 40



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

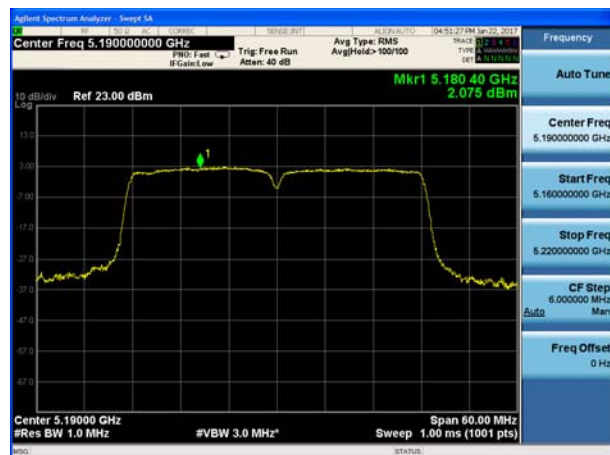


U-NII-1, 802.11n HT20, Channel No.: 48

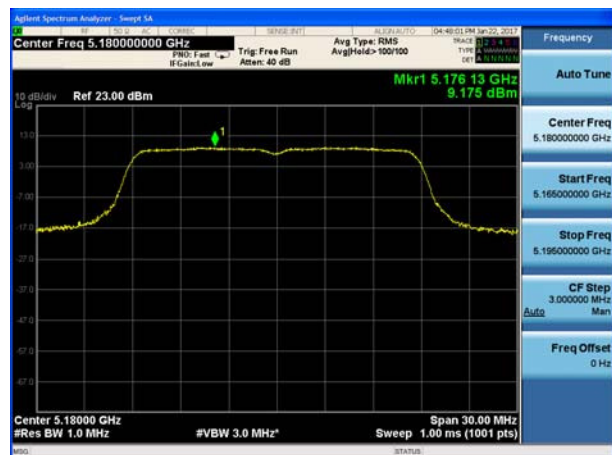




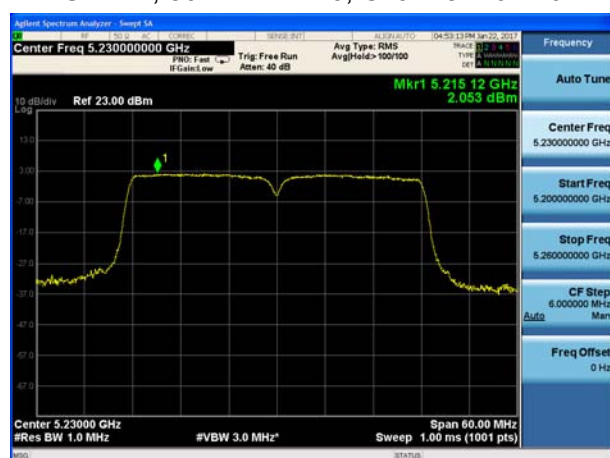
U-NII-1, 802.11n HT40, Channel No.: 38



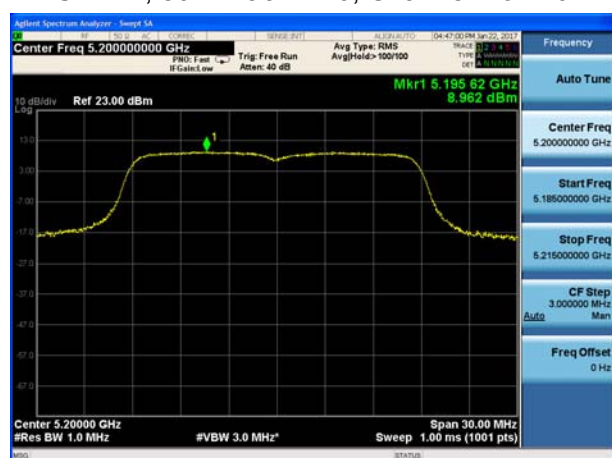
U-NII-1, 802.11ac HT20, Channel No.: 36



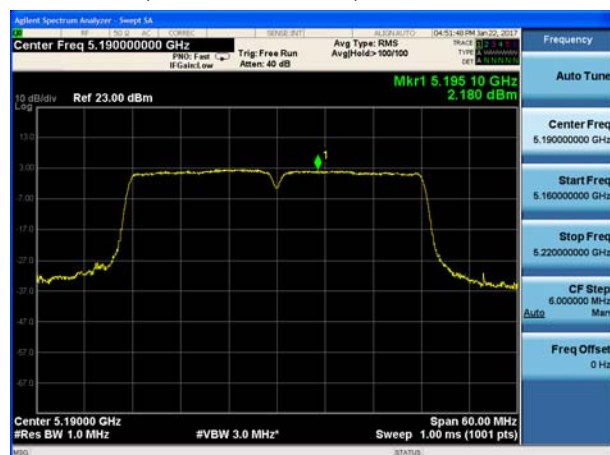
U-NII-1, 802.11n HT40, Channel No.: 46



U-NII-1, 802.11ac HT20, Channel No.: 40



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

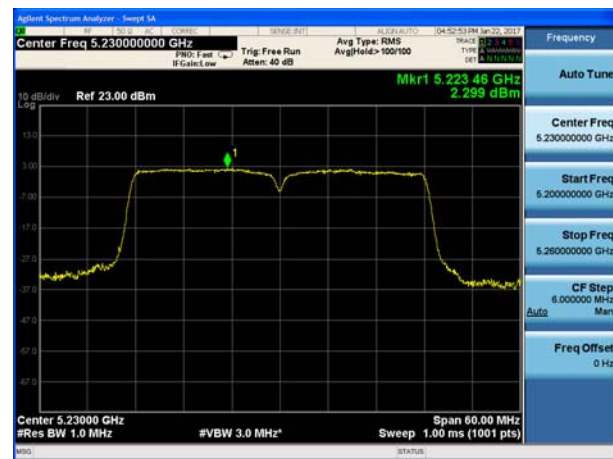


U-NII-1, 802.11ac HT20, Channel No.: 48

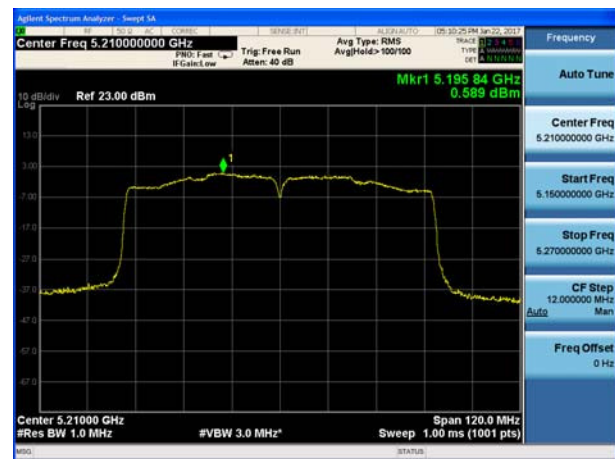




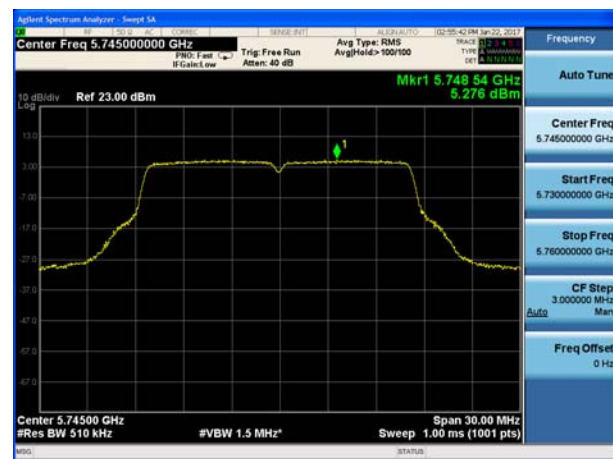
U-NII-1, 802.11ac HT40, Channel No.: 46



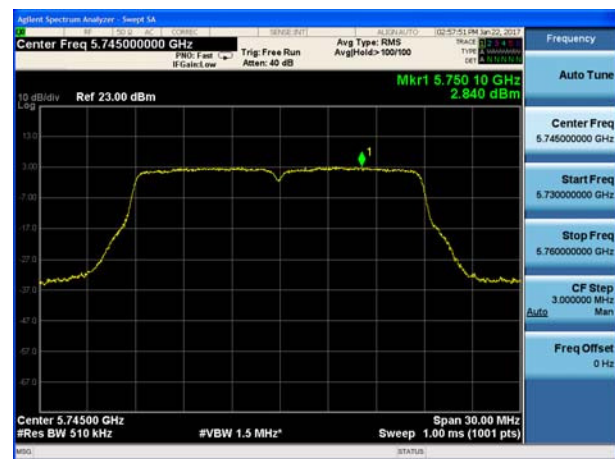
U-NII-1, 802.11ac HT80, Channel No.: 42



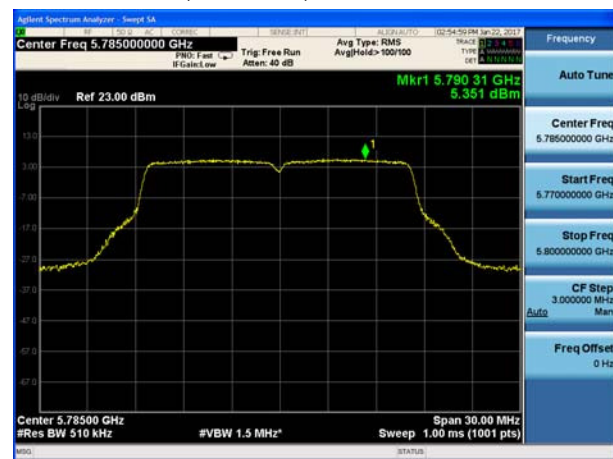
U-NII-3, 802.11a, Channel No.: 149



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



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



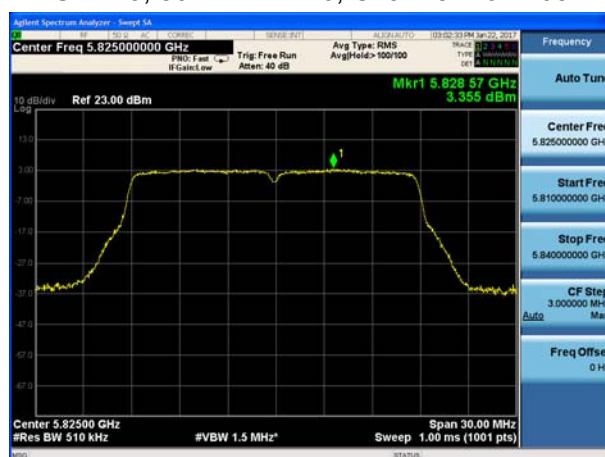
U-NII-3, 802.11n HT20, Channel No.: 157



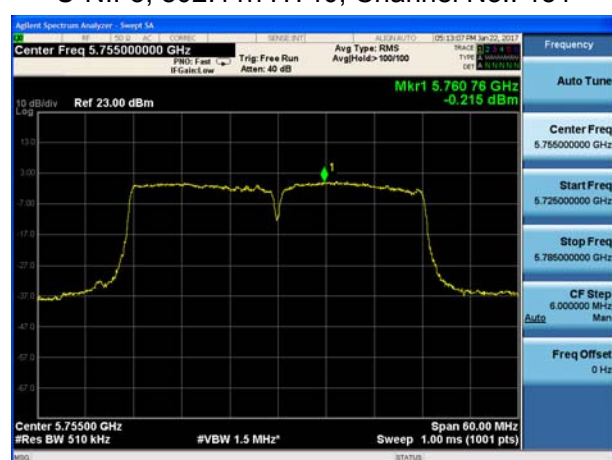
U-NII-3, 802.11a, Channel No.: 165



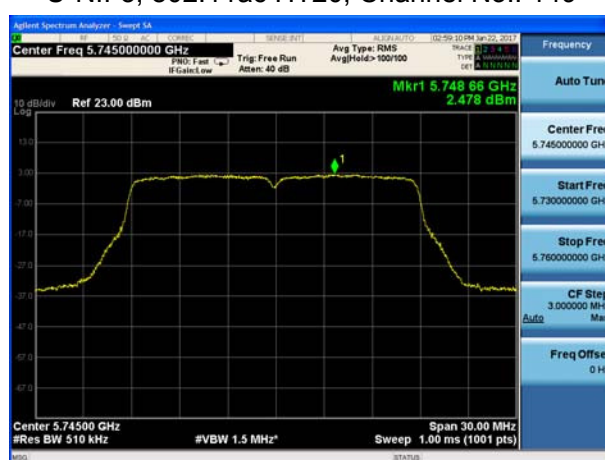
U-NII-3, 802.11n HT20, Channel No.: 165



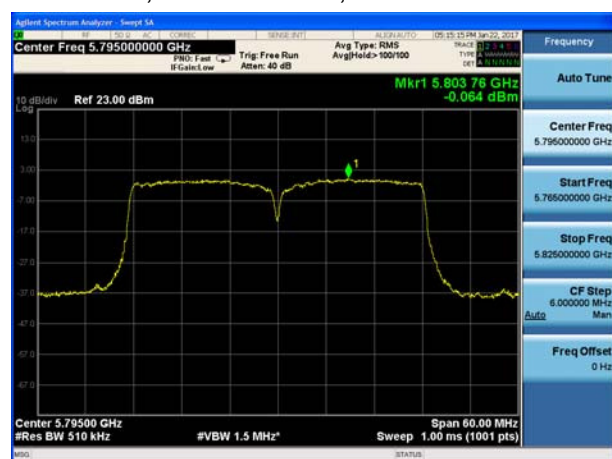
U-NII-3, 802.11n HT40, Channel No.: 151



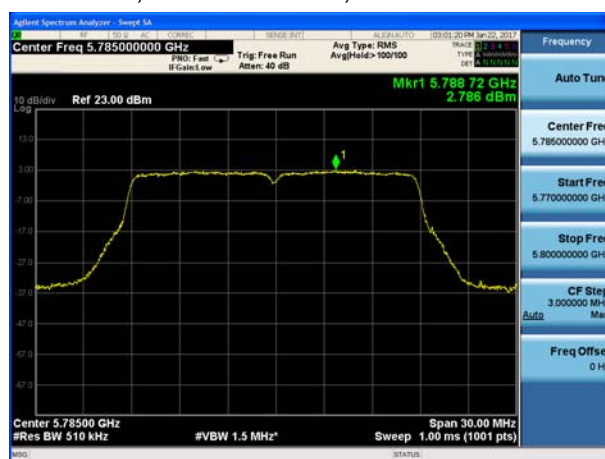
U-NII-3, 802.11ac HT20, Channel No.: 149



U-NII-3, 802.11n HT40, Channel No.: 159

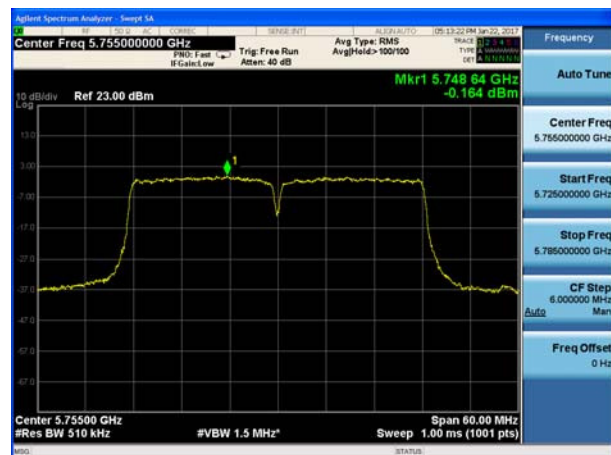


U-NII-3, 802.11ac HT20, Channel No.: 157

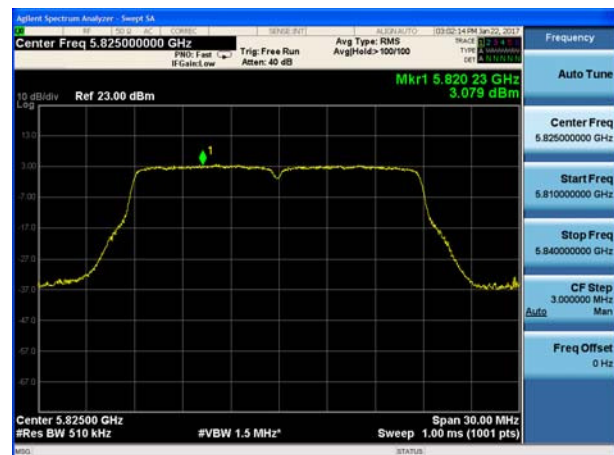




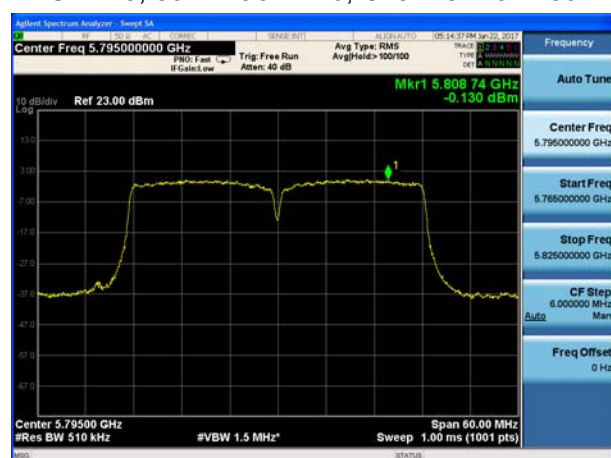
U-NII-3, 802.11ac HT40, Channel No.: 151



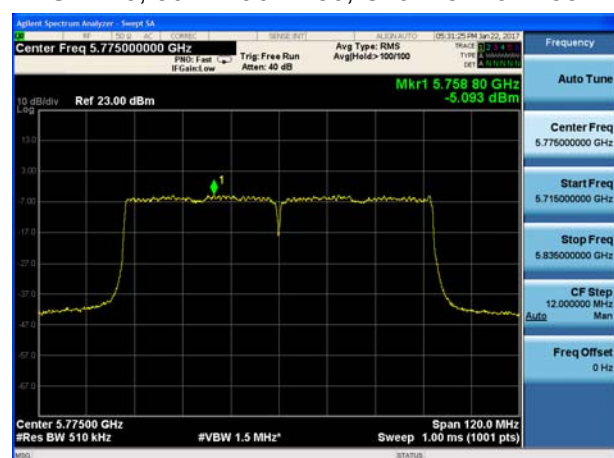
U-NII-3, 802.11ac HT20, Channel No.: 165



U-NII-3, 802.11ac HT40, Channel No.: 159



U-NII-3, 802.11ac HT80, 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 C63.10-2013. 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:

Below 1GHz (detector: Peak and Quasi-Peak)

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz (detector: Peak):

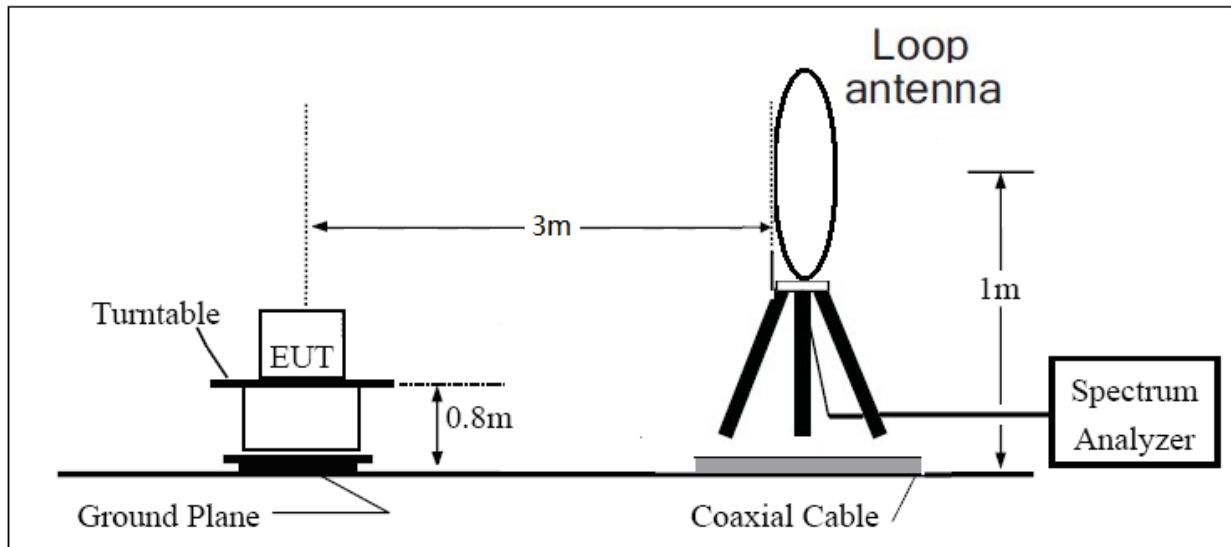
(a) PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO

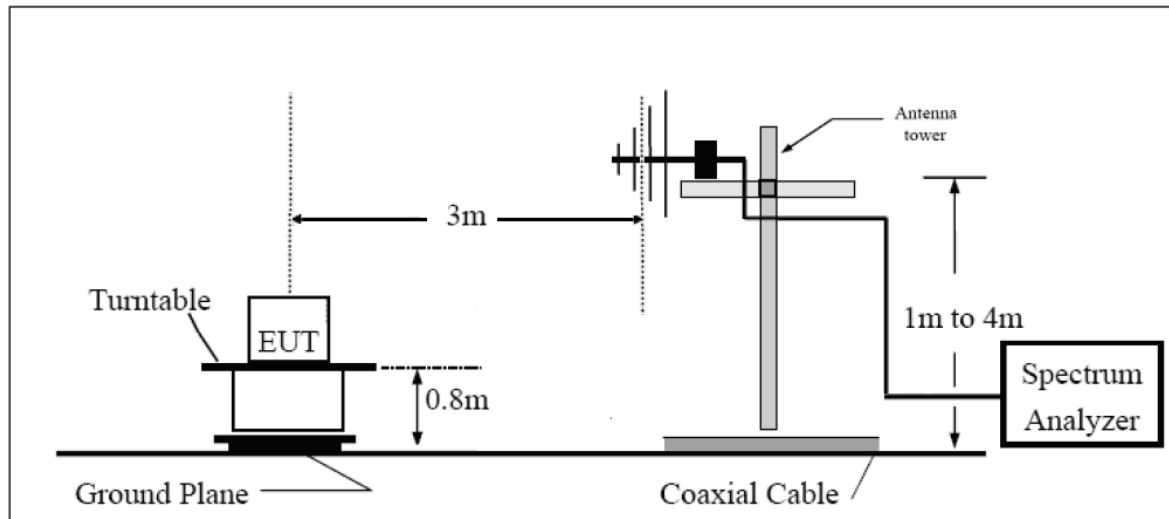
The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

The test is in transmitting mode.

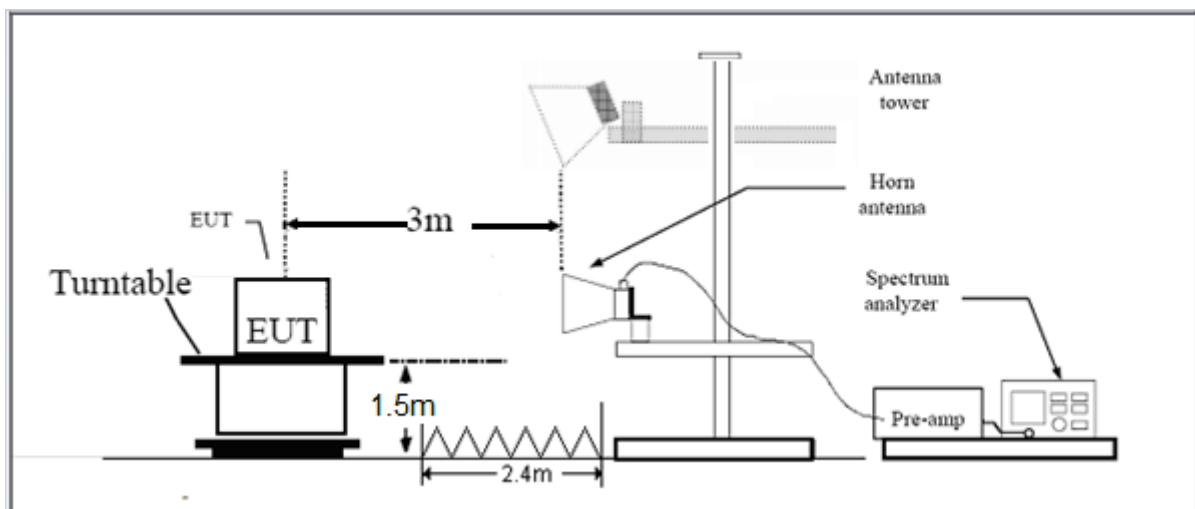
9KHz~~~30MHz



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).

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

§1、 $E[\text{dB}\mu\text{V/m}] = \text{EIRP}[\text{dBm}] - 20 \log(d[\text{meters}]) + 104.77$, where E = field strength and

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

§2、 $E[\text{dB}\mu\text{V/m}] = \text{EIRP}[\text{dBm}] + 95.2$, 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.

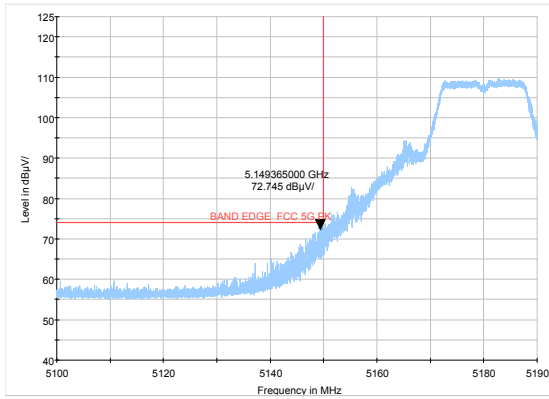
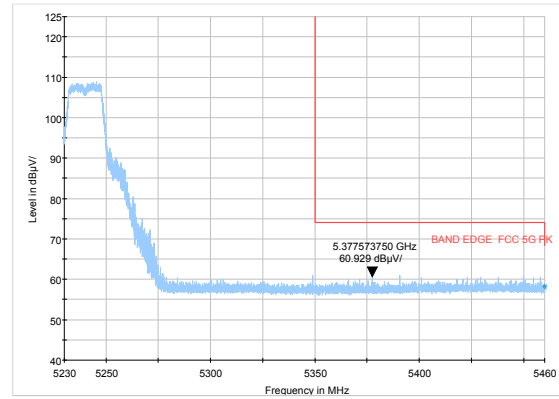
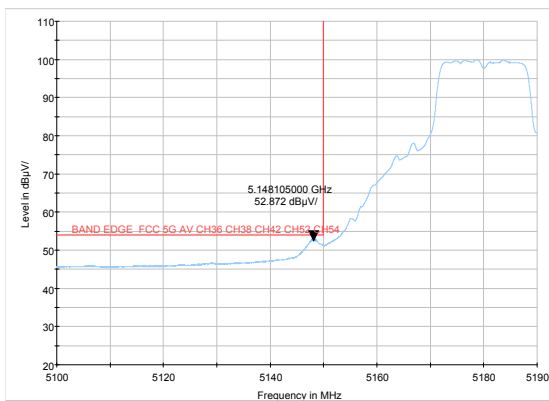
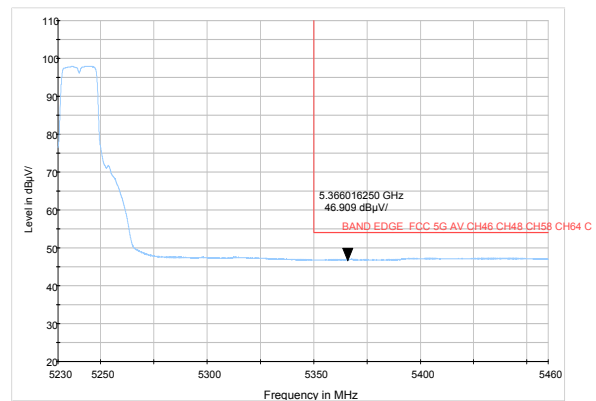
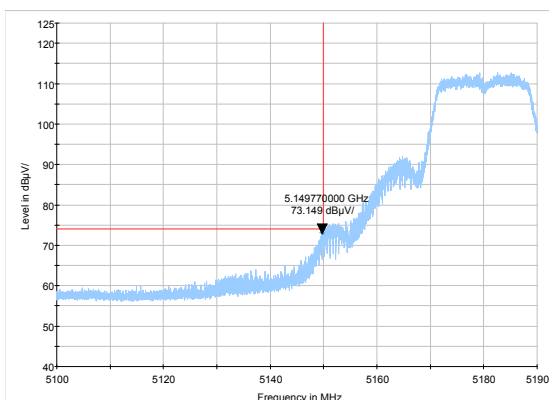
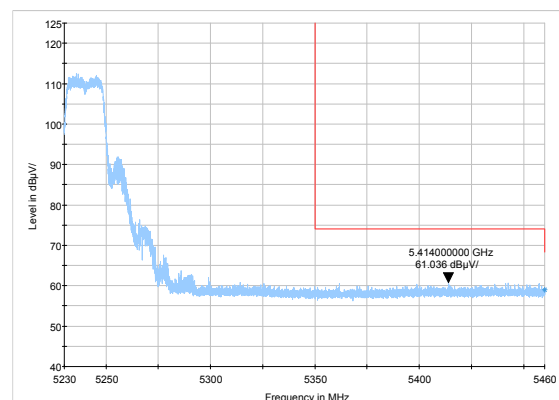
Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

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			

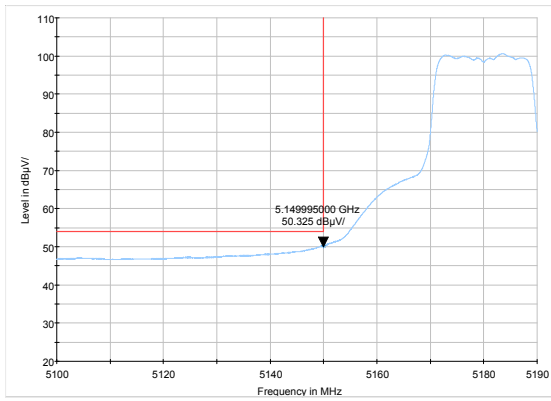
Measurement Uncertainty

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

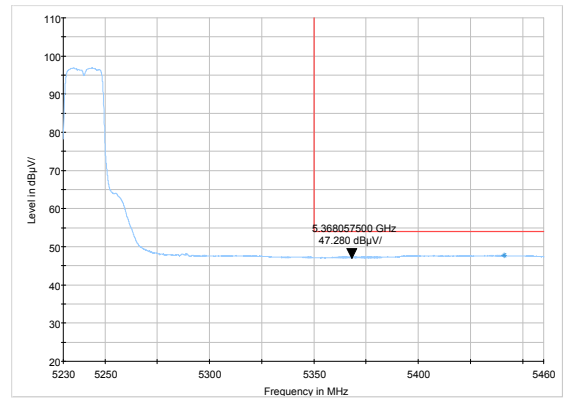
Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.19 dB
200MHz-1GHz	3.63 dB
1GHz-26.5G	3.68 dB
26.5G-40GHz	4.76dB

**Test Results:****PASS****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**

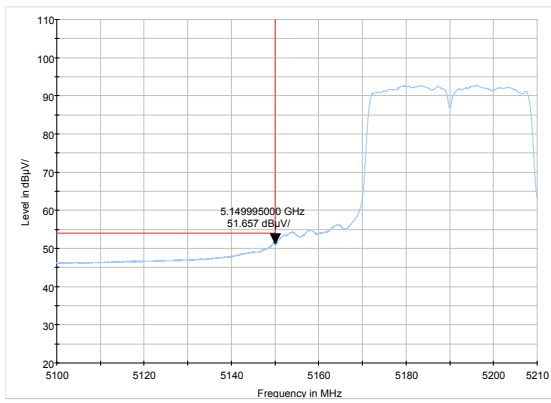
802.11n HT20-Channel 36: Average



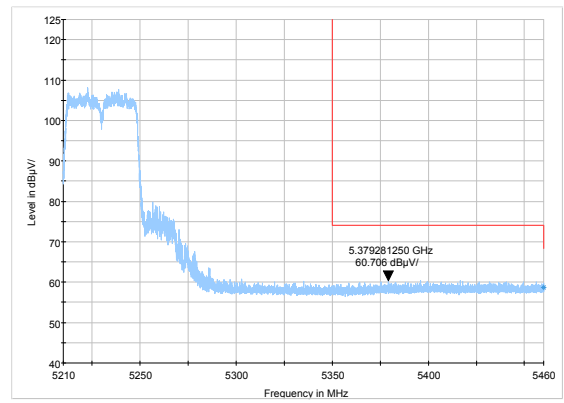
802.11n HT20-Channel 48: Average



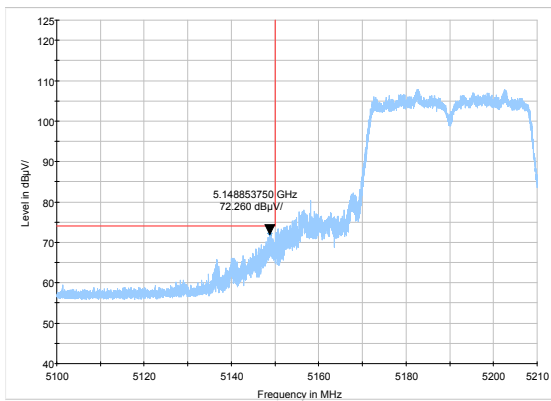
802.11n HT40-Channel 38: Peak



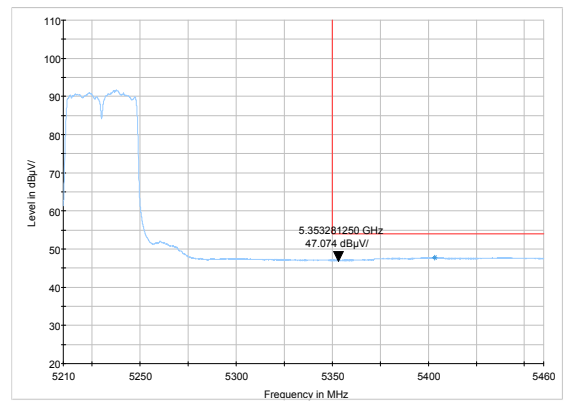
802.11n HT40-Channel 46: Peak



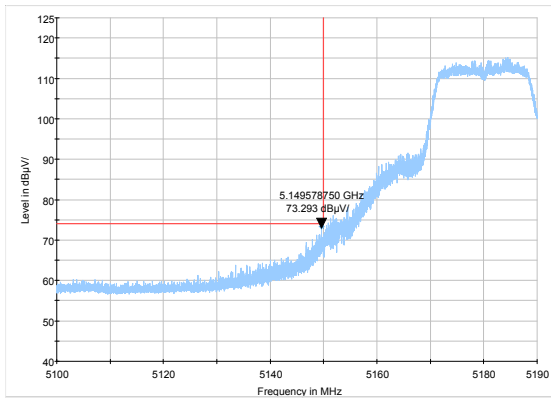
802.11n HT40-Channel 38: Average



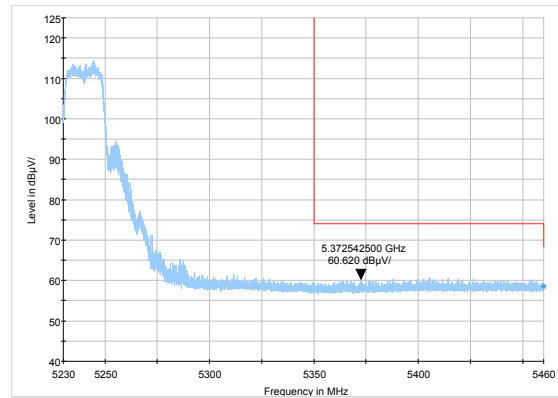
802.11n HT40-Channel 46: Average



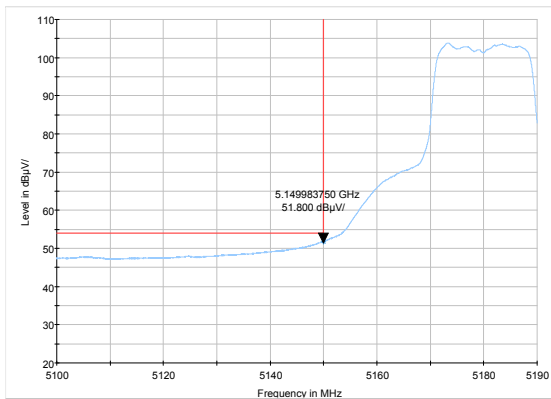
802.11ac HT20 -Channel 36: Peak



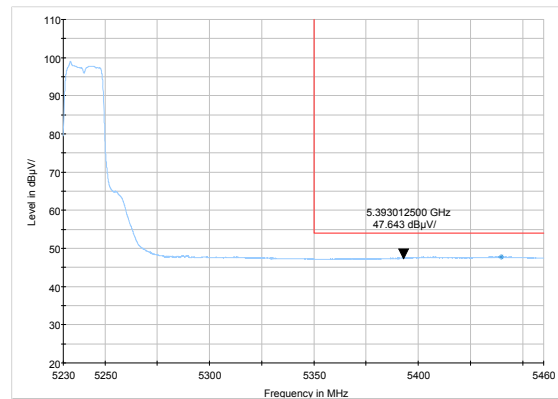
802.11ac HT20 -Channel 48: Peak



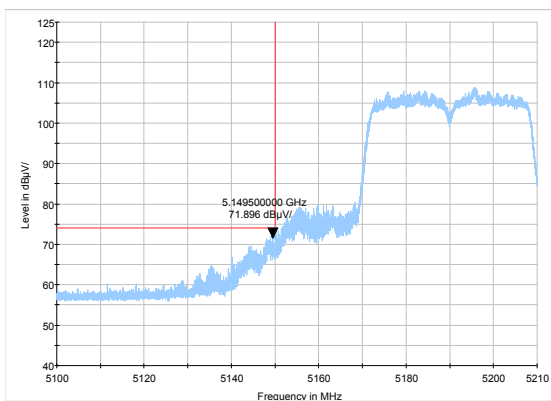
802.11ac HT20-Channel 36: Average



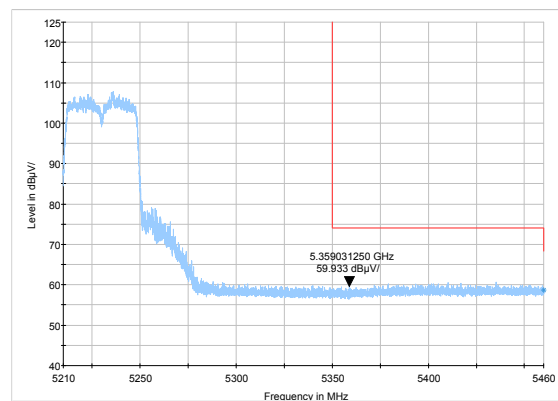
802.11ac HT20 -Channel 48: Average



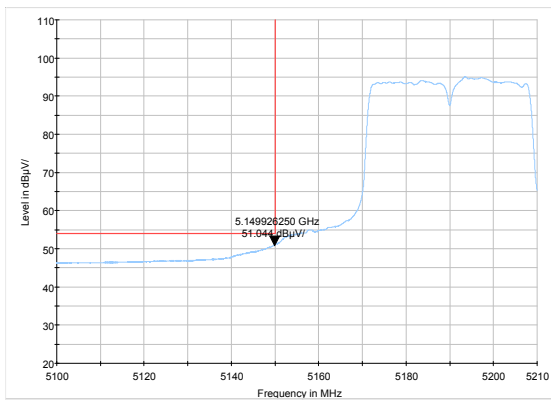
802.11ac HT40-Channel 38: Peak



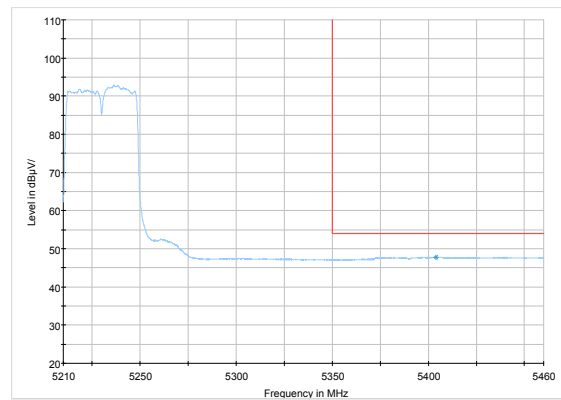
802.11ac HT40-Channel 46: Peak



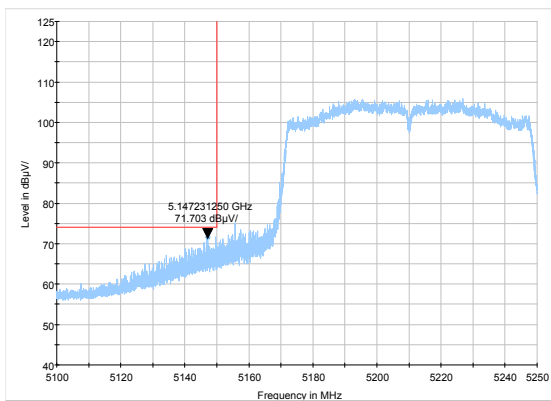
802.11ac HT40-Channel 38: Average



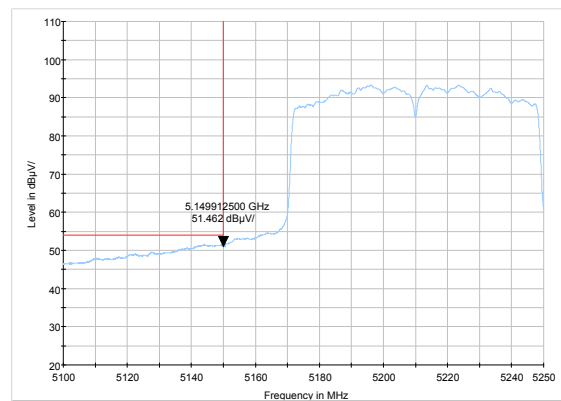
802.11ac HT40-Channel 46: Average



802.11ac HT80 –Channel 42: Peak



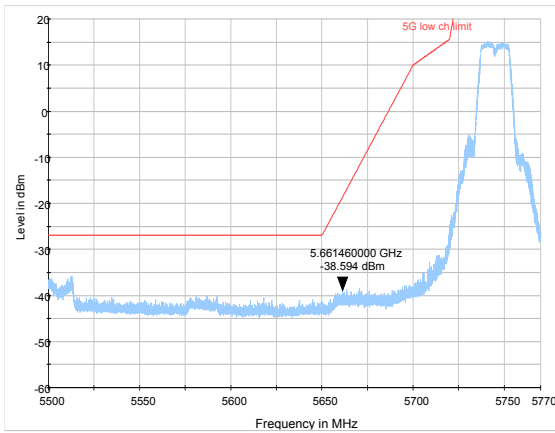
802.11ac HT80- Channel 42: Average



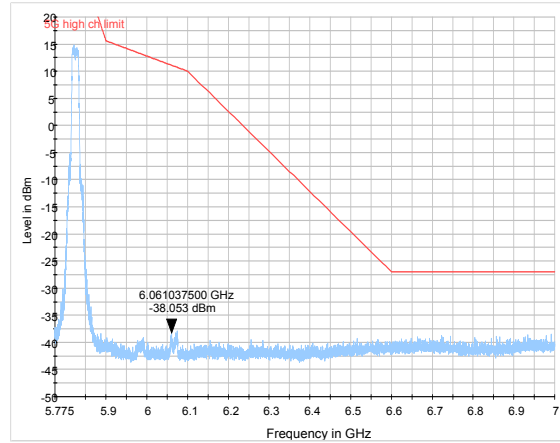


U-NII-3

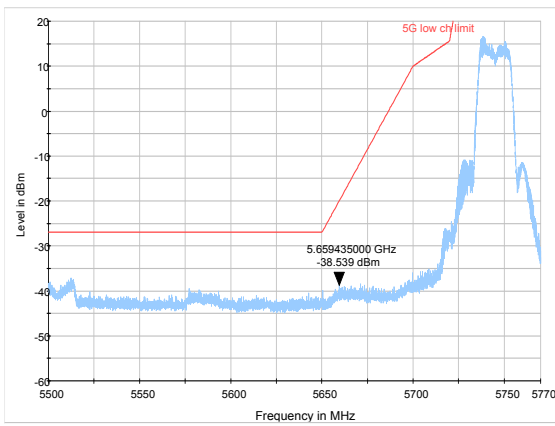
802.11a-Channel 149: Peak



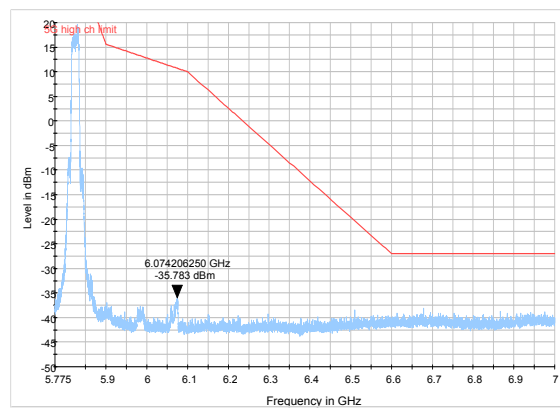
802.11a-Channel 165: Peak



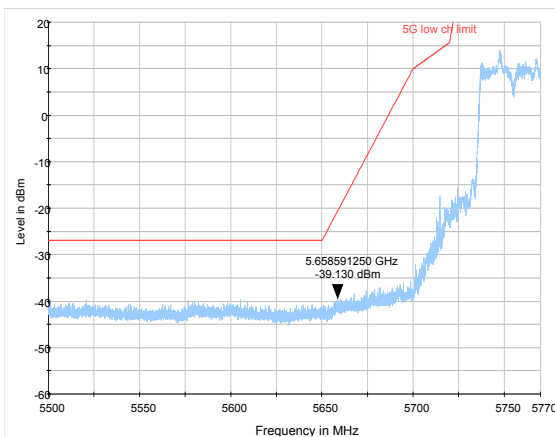
802.11n HT20-Channel 149: Peak



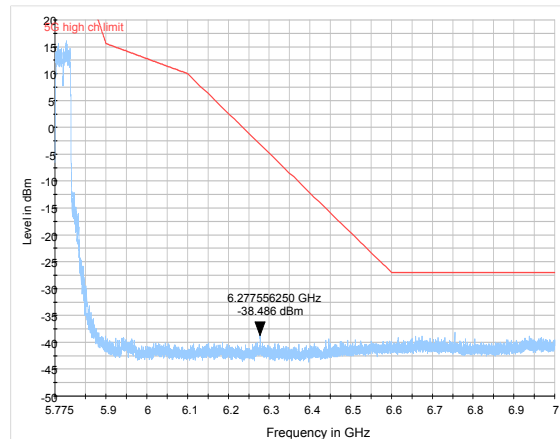
802.11n HT20-Channel 165: Peak



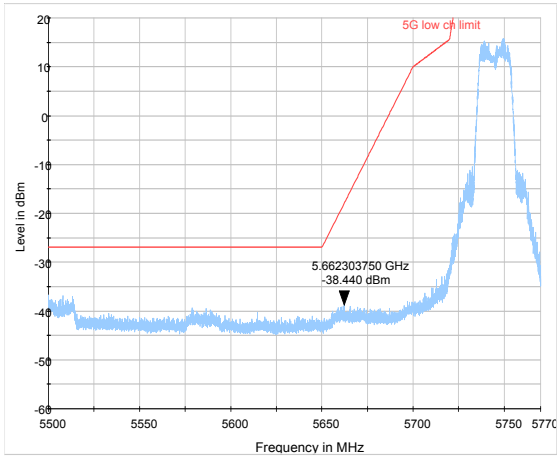
802.11n HT40-Channel 151: Peak



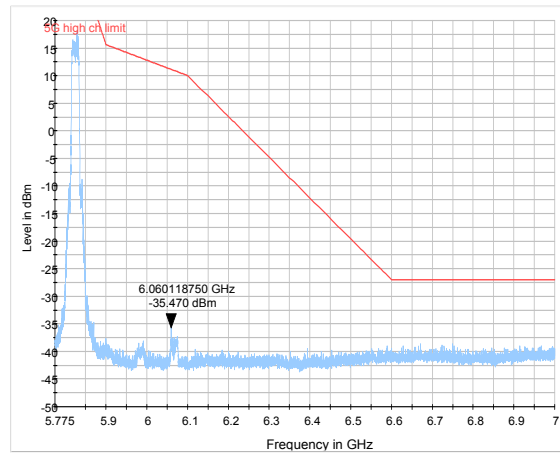
802.11n HT40-Channel 159: Peak



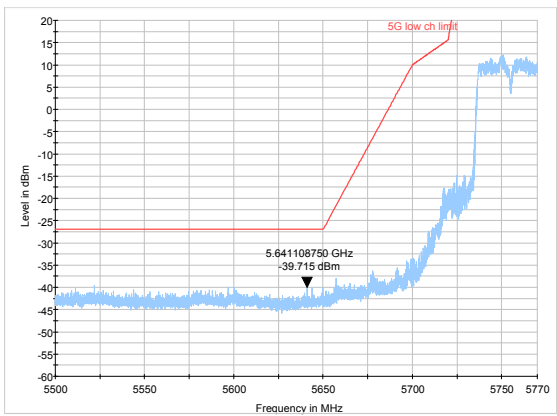
802.11ac HT20-Channel 149: Peak



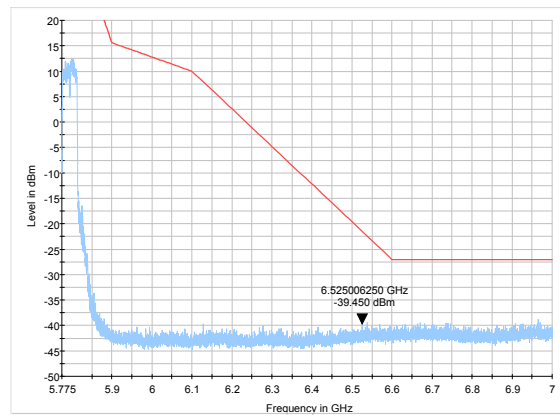
802.11ac HT20-Channel 165: Peak



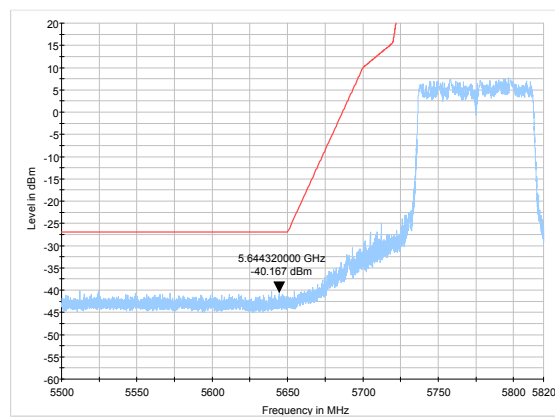
802.11ac HT40-Channel 151: Peak



802.11ac HT40-Channel 159: Peak



802.11ac HT80- Channel 155: Peak



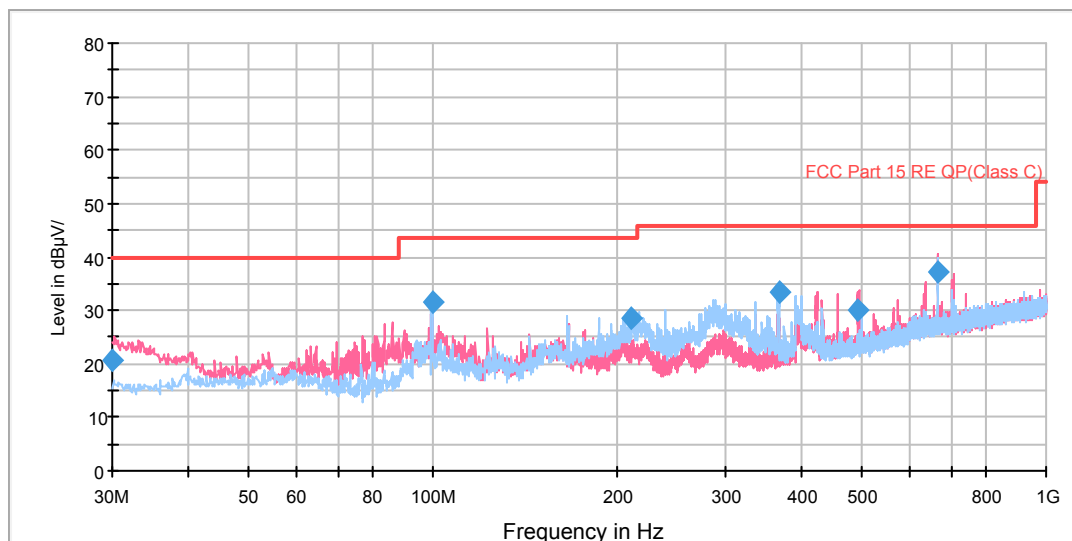
Result of RE

Test result

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, and 9KHz-30MHz, the emissions more than 20 dB below the permissible value are not reported.

SISO Antenna 4 802.11a CH36

RE 0.03-1GHz QP Class B



Radiates Emission from 30MHz to 1GHz

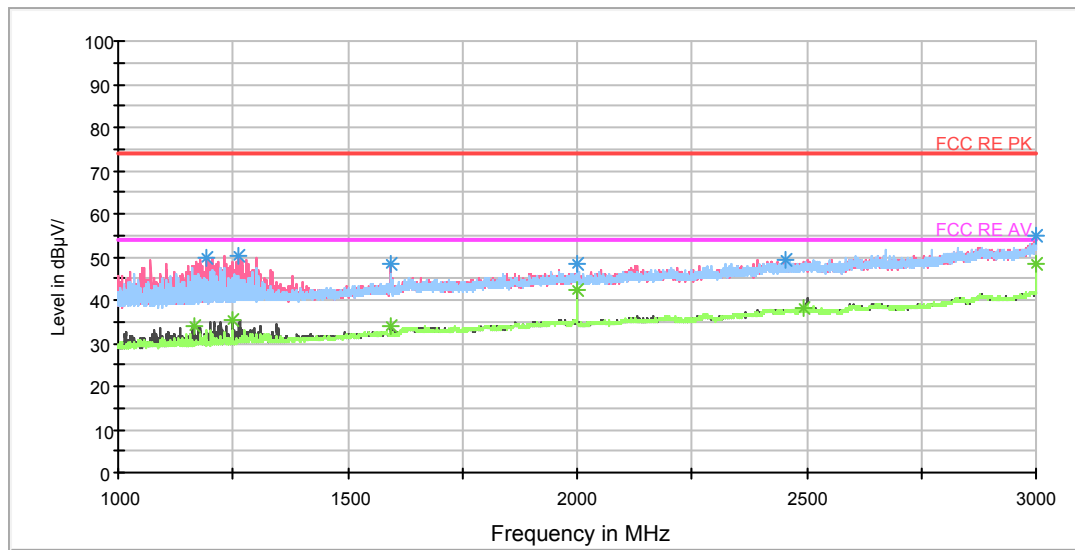
Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
30.000000	20.6	100.0	V	191.0	32.5	-11.9	19.4	40.0
99.920000	31.7	125.0	H	0.0	44.9	-13.2	11.8	43.5
211.272500	28.6	125.0	H	79.0	41.1	-12.5	14.9	43.5
366.508750	33.6	100.0	H	259.0	50.7	-17.1	12.4	46.0
494.792500	30.2	100.0	V	0.0	50.0	-19.8	15.8	46.0
663.855000	37.2	100.0	V	196.0	59.8	-22.6	8.8	46.0

Remark: 1. Quasi-Peak = Reading value + Correction factor

2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

3. Margin = Limit – Quasi-Peak

RE 1G-3GHz PK+AV



Radiates Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1192.500000	49.9	102.0	V	71.0	58.1	-8.2	24.1	74
1263.750000	50.3	102.0	V	83.0	58.0	-7.7	23.7	74
1593.750000	48.4	102.0	V	182.0	54.8	-6.4	25.6	74
2000.250000	48.5	202.0	V	24.0	51.9	-3.4	25.5	74
2456.000000	49.4	102.0	V	139.0	49.9	-0.5	24.6	74
2999.750000	54.8	202.0	H	181.0	57.1	-2.3	19.2	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1164.000000	34.1	102.0	V	35.0	42.4	-8.3	19.9	54
1248.500000	35.4	102.0	V	94.0	43.4	-8.0	18.6	54
1595.750000	34.0	102.0	V	171.0	40.4	-6.4	20.0	54
2000.000000	42.4	102.0	V	60.0	45.8	-3.4	11.6	54
2493.750000	38.0	102.0	V	160.0	38.2	-0.2	16.0	54
3000.000000	48.3	202.0	V	202.0	50.6	-2.3	5.7	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)