



Test Report

AIR-RM3000AC-A-K9

Cisco Aironet 802.11ac Module

FCC ID: LDK102086

IC: 2461B-102086

Also covers:

AIR-RM3000AC-N-K9

AIR-RM3000AC-T-K9

AIR-RM3000AC-Z-K9

5470-5725 MHz

Against the following Specifications:

CFR47 Part 15.407

RSS210

Cisco Systems

170 West Tasman Drive

San Jose, CA 95134



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Section 1: Overview

1.1 Test Summary

samples were assessed against the tests detailed in section 3 under the requirements of the following specifications:

Emission	Immunity
CFR47 Part 15.407 RSS210	N/A

The specifications listed above represent actual tests performed to demonstrate compliance against the specifications and basic standards listed on the front cover of this report. This list is not a one to one match to the front cover for one or more of the following reasons.

1. Basic standards call up many different test phenomena specifications such as the 61000-4-X series. The basic standards define which elements and levels shall be applied from these specifications and as such it is not appropriate to list the individual specifications on the front cover.
2. A Standard listed on the front cover may be required in a particular country but is not appropriate for the particular technologies included in the equipment under test. E.g. You cannot test a DC product to the mains Harmonics requirements in EN61000-3-2. See section 3.2.
3. Test results against a particular standard or specification may be included in a different test report. See section 3.2 for an EDCS reference of this data.
4. Where appropriate, Cisco may have substituted a later revision of a basic standard to those referenced in the specification on the front sheet of this test report. This decision was based upon improved test methodology and repeatability and/or where the newer revision represented a more stringent test.
5. Where relevant, testing has been carried out to the requirements of both EN and IEC Specifications. This was possible because of the similarities of the test methods involved and the Cisco EMC test procedures.
6. Testing may have been performed to an equivalent test that satisfies the requirements of the standards and specifications listed on the front cover of the report. See section 3.2.
7. Where radiated emissions testing has been performed to EN55022/CISPR22 the additional requirements of VCCI: V- 3/2006.04, EN55022: 1994 +A1/2 and CAN/CSA- CISPR 22-02 have also been evaluated unless otherwise stated.
8. Testing to the requirements of CFR47 Part 15 was performed against the CISPR22 limits. The results are therefore deemed satisfactory evidence of compliance with Industry Canada Interference Causing Equipment Standard ICES-003.
9. Where assessment has been performed to CISPR24, all the applicable test requirements may have not been covered. Refer to the results section for the tests performed.

Notes:

- 1) Where a specification listed on the front cover of this report has deviations from the basic standards listed above, the additional technical requirements of the specification were also assessed.
- 2) Where appropriate, Cisco may have substituted a later revision of a basic standard to those referenced in the specification on the front sheet of this test report. This decision was based upon improved test methodology and repeatability and/or where the newer revision represented a more stringent test.
- 3) Where relevant, testing has been carried out to the requirements of both EN and IEC Specifications. This was possible because of the similarities of the test methods involved and the Cisco EMC test procedures.



Section 2: Assessment Information

2.1 General

This report contains an assessment of an apparatus against Electromagnetic Compatibility Standards based upon tests carried out on the samples submitted. The testing was performed by and for the use of Cisco systems Inc:

With regard to this assessment, the following points should be noted:

- a) The results contained in this report relate only to the items tested and were obtained in the period between the date of the initial assessment and the date of issue of the report. Manufactured products will not necessarily give identical results due to production and measurement tolerances.
- b) The apparatus was set up and exercised using the configuration and modes of operation defined in this report only.
- c) Where relevant, the apparatus was only assessed using the susceptibility criteria defined in this report and the Test Assessment Plan (TAP).
- d) All testing was performed under the following environmental conditions:

Temperature	15°C to 35°C (54°F to 95°F)
Atmospheric Pressure	860mbar to 1060mbar (25.4" to 31.3")
Humidity	10% to 75*%

*[Where applicable] For ESD testing the humidity limits used were 30% to 60% and for EFT/B tests the humidity limits used were 25% to 75%.
- e) All AC testing was performed at one or more of the following supply voltages:

110V 60 Hz (+/-20%)
220V 50 Hz (+/-20%)

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2.2 Date of testing

January 29, 2013

2.3 Report Issue Date

Cisco uses an electronic system to issue, store and control the revision of test reports. This system is called the Engineering Document Control System (EDCS). The actual report issue date is embedded into the original file on EDCS. Any copies of this report, either electronic or paper, that are not on EDCS must be considered uncontrolled

2.4 Testing facilities

This assessment was performed by:

Testing Laboratory

Cisco Systems, Inc.,	Cisco Systems, Inc.
4125 Highlander Parkway	170 West Tasman Drive
Richfield, OH 44286	San Jose, CA 95134
USA	USA

Test Engineers

James Nicholson

2.5 Equipment Assessed (EUT)

AIR-RM3000AC-A-K9 Cisco Aironet 802.11ac Radio Module



2.6 EUT Description

The RM3000 Series Cisco Aironet 802.11ac Radio Modules support the following modes of operation. The modes are further defined in the radio Theory of Operation. The modes included in this report represent the worst case data for all modes.

Non HT/VHT-20, One Antenna, 6 to 54 Mbps
Non HT/VHT-20, Two Antennas, 6 to 54 Mbps
Non HT/VHT-20, Three Antennas, 6 to 54 Mbps

Non HT/VHT-20 Beam Forming, Two Antennas, 6 to 54 Mbps
Non HT/VHT-20 Beam Forming, Three Antennas, 6 to 54 Mbps

HT/VHT-20, One Antenna, M0 to M7
HT/VHT-20, Two Antennas, M0 to M15
HT/VHT-20, Three Antennas, M0 to M23

HT/VHT-20 STBC, Two Antennas, M0 to M7
HT/VHT-20 STBC, Three Antennas, M0 to M7

HT/VHT-20 Beam Forming, Two Antennas, M0 to M15
HT/VHT-20 Beam Forming, Three Antennas, M0 to M23

Non HT/VHT-40 Duplicate, One Antenna, 6-54 Mbps
Non HT/VHT-40 Duplicate, Two Antennas, 6-54 Mbps
Non HT/VHT-40 Duplicate, Three Antennas, 6-54 Mbps

HT/VHT-40, One Antenna, M0 to M7
HT/VHT-40, Two Antennas, M0 to M15
HT/VHT-40, Three Antennas, M0 to M23

HT/VHT-40 STBC, Two Antennas, M0 to M7
HT/VHT-40 STBC, Three Antennas, M0 to M7

HT/VHT-80 Beam Forming, Two Antennas, M0 to M15
HT/VHT-80 Beam Forming, Three Antennas, M0 to M23

Non HT/VHT-80 Duplicate, One Antenna, 6-54 Mbps
Non HT/VHT-80 Duplicate, Two Antennas, 6-54 Mbps
Non HT/VHT-80 Duplicate, Three Antennas, 6-54 Mbps

HT/VHT-80, One Antenna, M0 to M7
HT/VHT-80, Two Antennas, M0 to M15
HT/VHT-80, Three Antennas, M0 to M23

HT/VHT-80 STBC, Two Antennas, M0 to M7
HT/VHT-80 STBC, Three Antennas, M0 to M7



HT/VHT-80 Beam Forming, Two Antennas, M0 to M15
HT/VHT-80 Beam Forming, Three Antennas, M0 to M23

The following antennas are supported by this product series.

The data included in this report represent the worst case data for all antennas.

Frequency	Part Number	Antenna Type	Antenna Gain (dBi)
2.4 / 5 GHz	Internal	Dual-resonant Omni	2 / 5



Section 4: Sample Details

Note: Each sample was evaluated to ensure that its condition was suitable to be used as a test sample prior to the commencement of testing.

4.1 Sample Details (Photographs of the test samples, where appropriate can be found in appendix H)

Sample No.	Equipment Details	Part Number	Manufacturer	Hardware Rev.	Firmware Rev.	Software Rev.	Serial Number
S01	AIR-CAP3602E-A-K9		Cisco Systems	NA	NA	NA	
S02	AIR-PWR-B	341-0306-01	Cisco Systems	NA	NA	NA	
S03	AIR-RM3000AC-A-K9						

4.2 System Details

System #	Description	Samples
1	EUT	S01, S02, S03

4.3 Mode of Operation Details

Mode#	Description	Comments
1	Continuous Transmitting	Continuous Transmitting

**Appendix A:****Emission Test Results**

Testing Laboratory: Cisco Systems, Inc., 4125 Highlander Parkway, Richfield, OH, USA

Target Maximum Channel Power

The following table details the maximum supported Total Channel Power for all operating modes.

Operating Mode	Maximum Channel Power (dBm)		
	Frequency (MHz)		
	5500	5580	5700
Non HT-20, 6 to 54 Mbps	19	20	18
Non HT-20 Beam Forming, 6 to 54 Mbps	16	20	16
HT-20, M0 to M23, M0.1 to M9.3	20	22	17
HT-20 STBC, M0 to M7, M0.1 to M9.1	20	22	17
HT-20 Beam Forming, M0 to M23, M0.1 to M9.3	20	22	17
	5500/5520	5540/5560	5660/5680
Non HT-40 Duplicate, 6 to 54 Mbps	19	21	20
HT-40, M0 to M23, M0.1 to M9.3	18	23	21
HT-40 STBC, M0 to M7, M0.1 to M9.1	18	22	21
HT-40 Beam Forming, M0 to M23, M0.1 to M9.3	19	22	21
	5500/5520/5540/5560		
Non HT-80 Duplicate, 6 to 54 Mbps	15		
HT-80, M0 to M23, M0.1 to M9.3	17		
HT-80 STBC, M0 to M7, M0.1 to M9.1	16		
HT-80 Beam Forming, M0 to M23, M0.1 to M9.3	16		



99% and 26dB Bandwidth

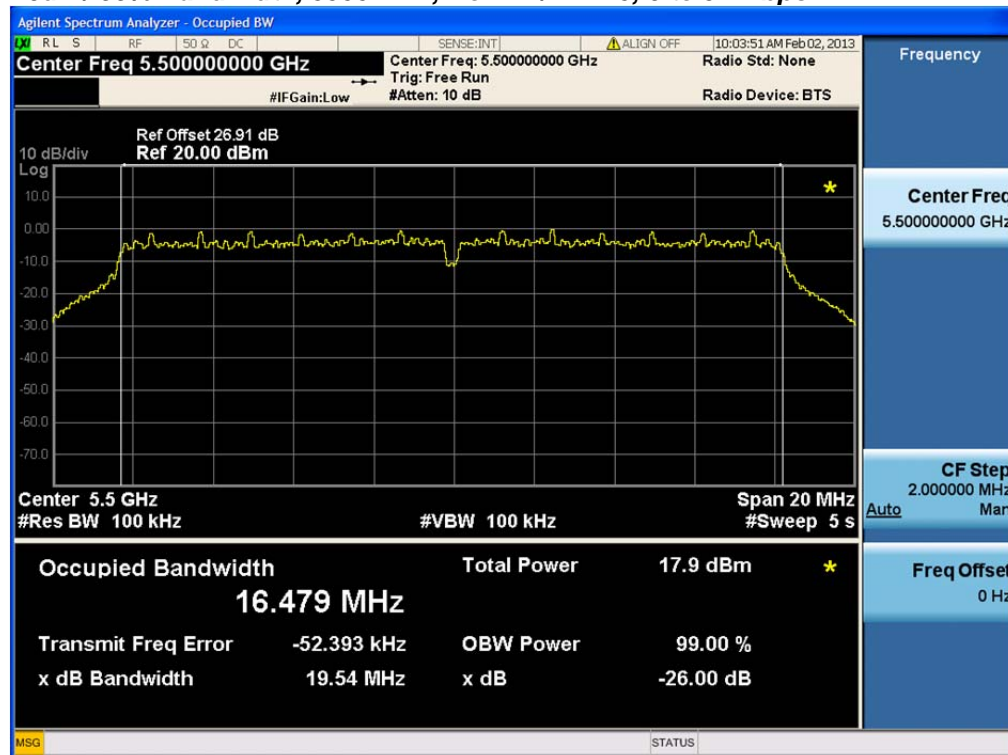
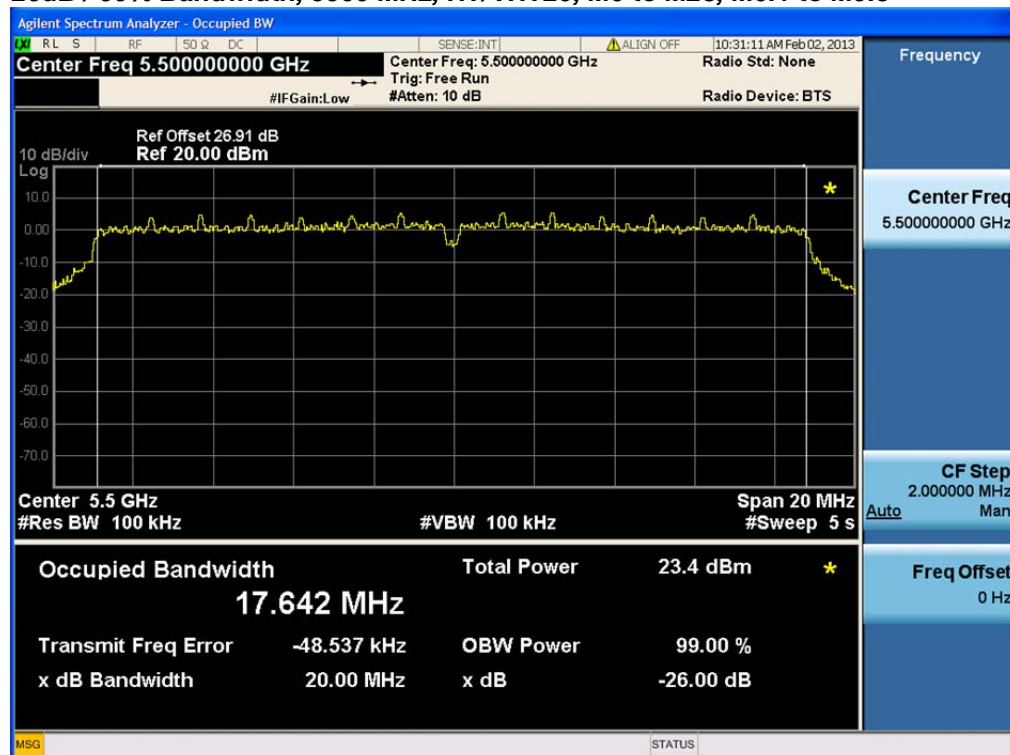
Connect the antenna port(s) to the spectrum analyzer input. Using the spectrum analyzer Channel Bandwidth mode, configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).

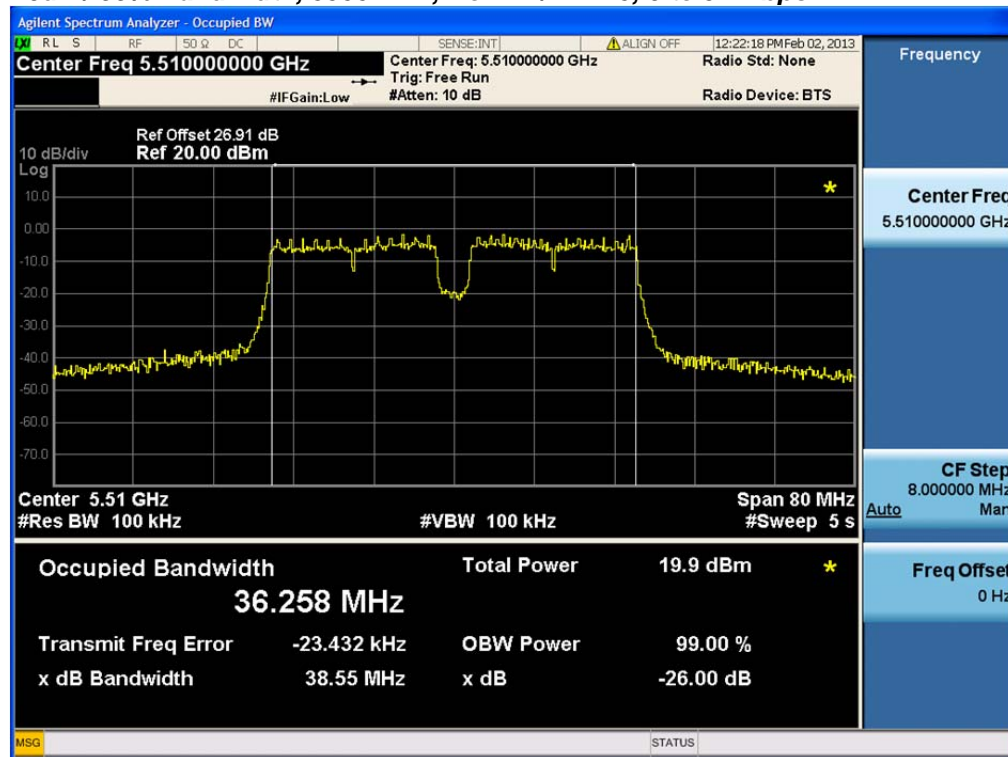
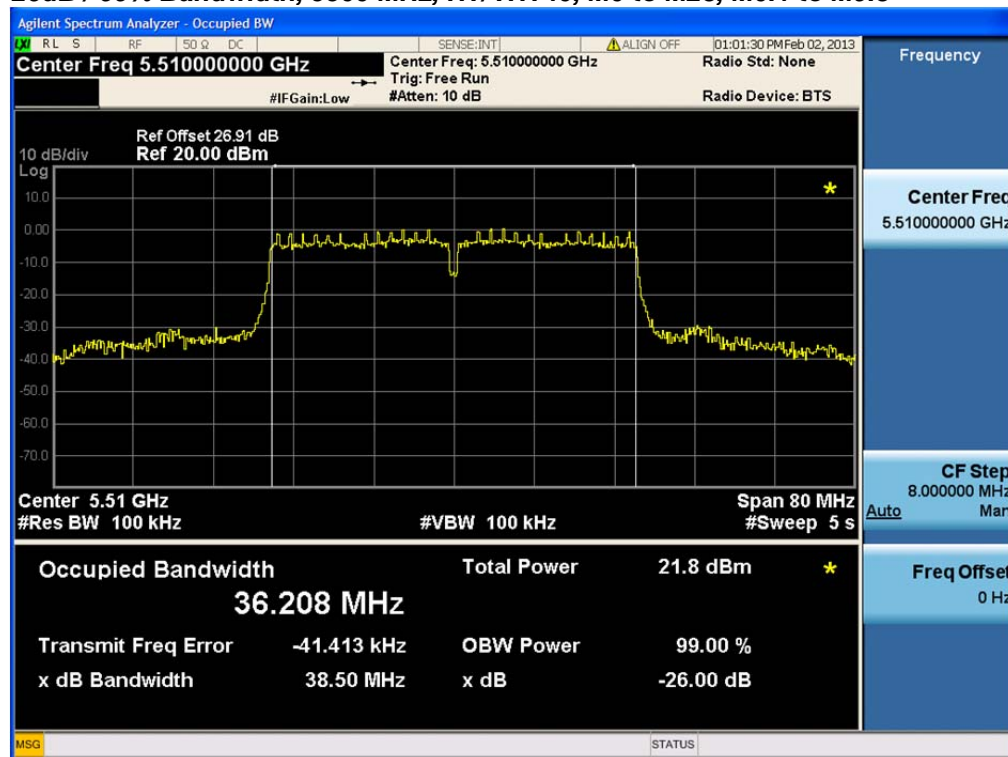
Center Frequency:	Frequency from table below
Span:	2 x Nominal Bandwidth (e.g. 40MHz for a 20MHz channel)
Reference Level:	20 dBm
Attenuation:	10 dB
Sweep Time:	5 s
Resolution Bandwidth:	1%-3% of 26 dB Bandwidth
Video Bandwidth:	≥Resolution Bandwidth
X dB Bandwidth:	26 dB
Detector:	Peak
Trace:	Single

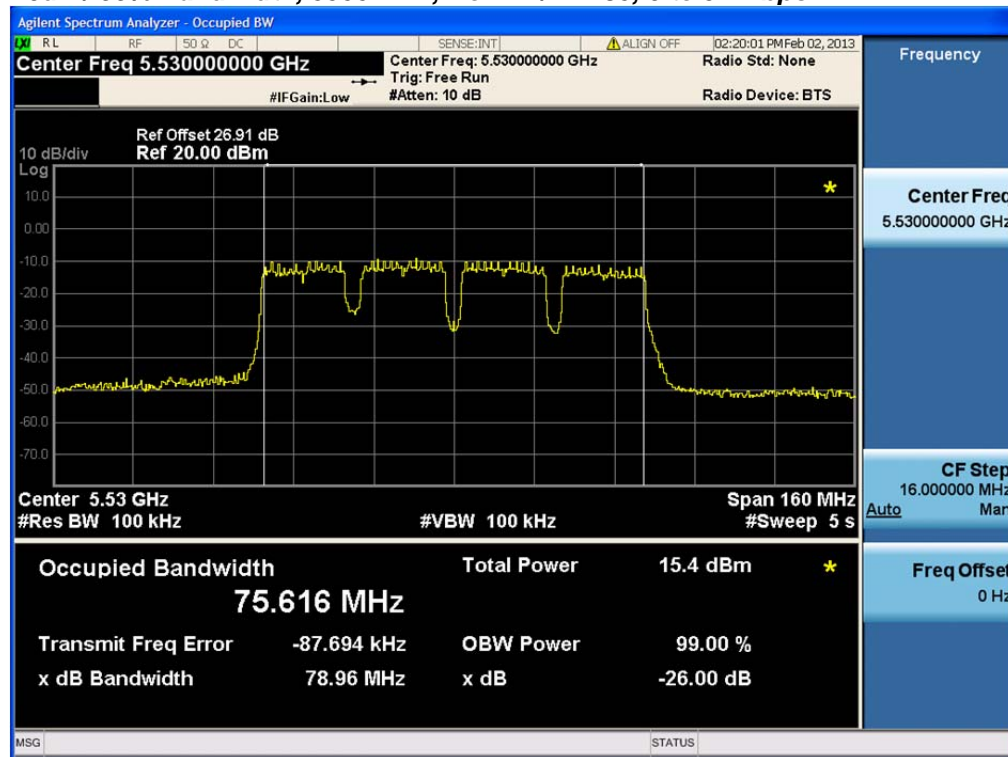
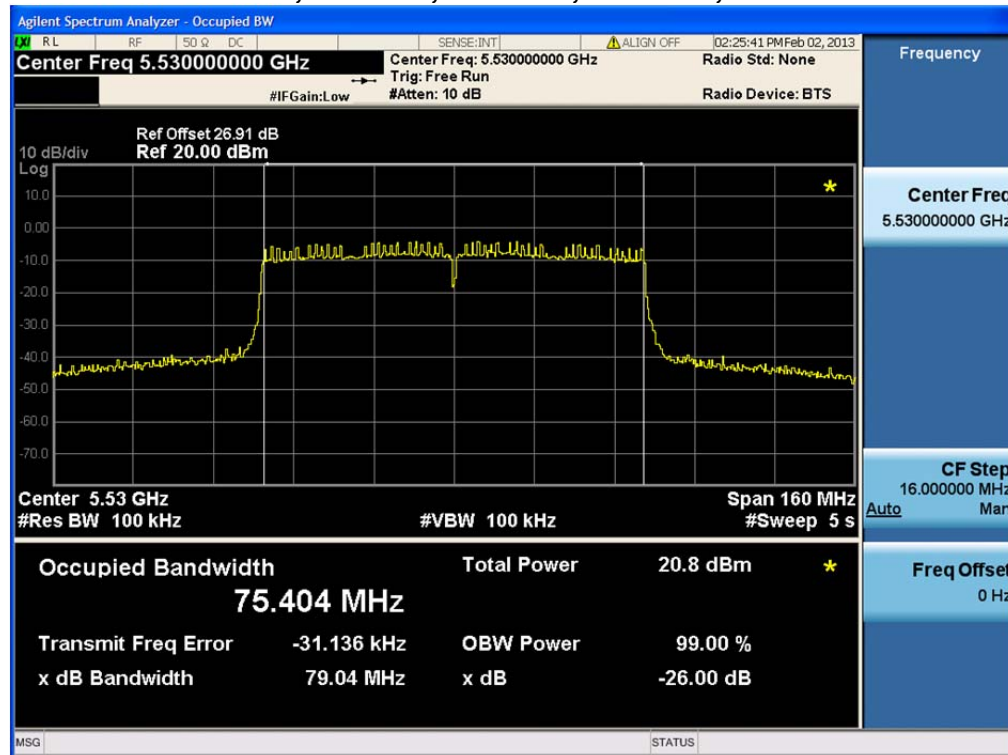
Place the radio in continuous transmit mode. View the transmitter waveform on the spectrum analyzer, and record the pertinent measurements:

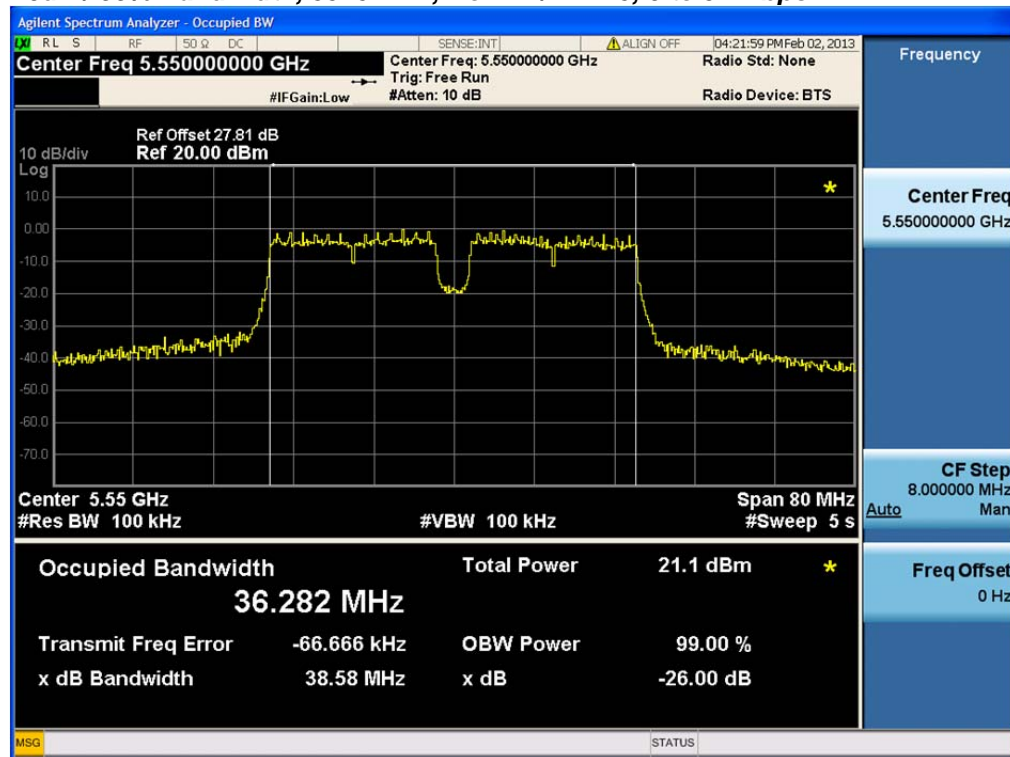
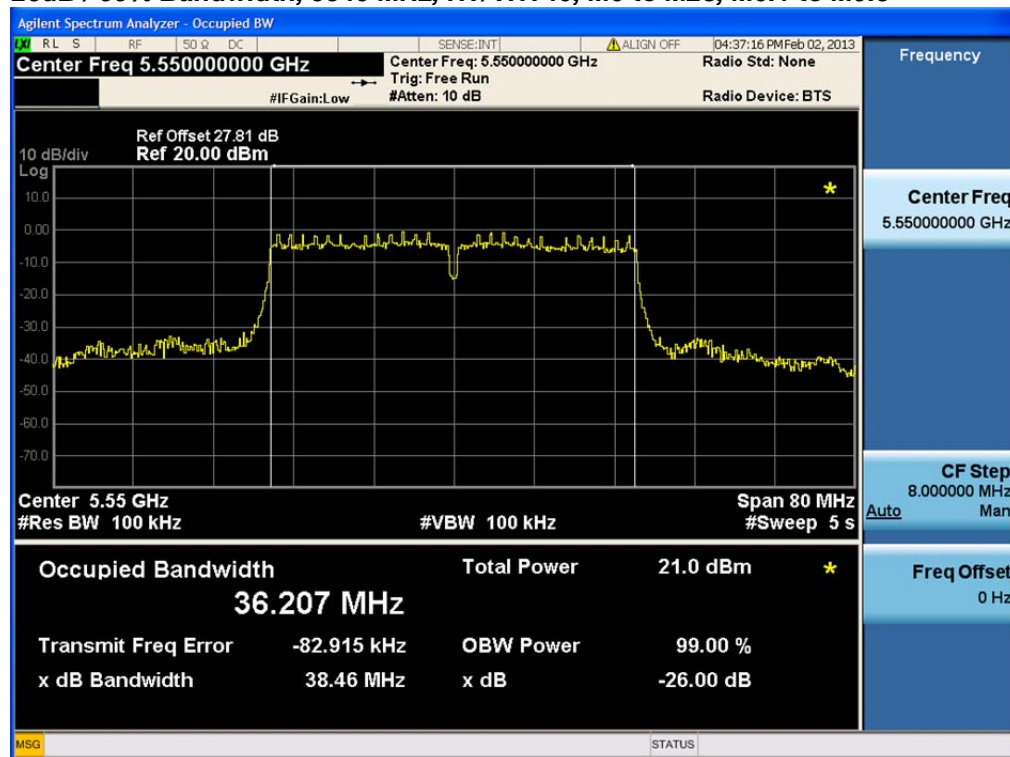


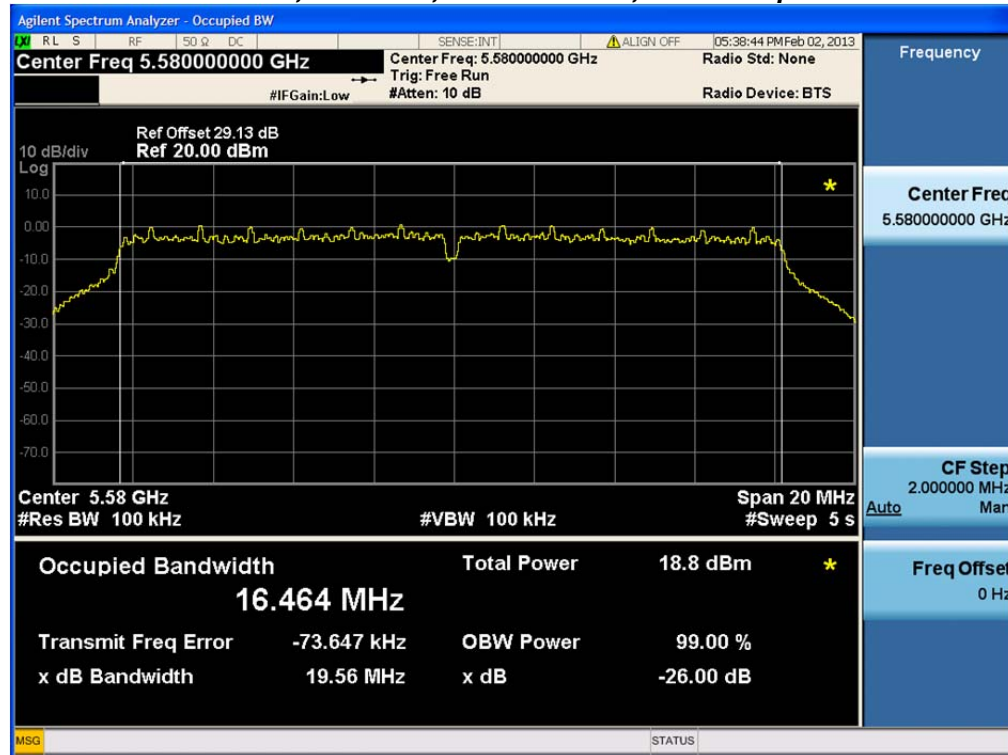
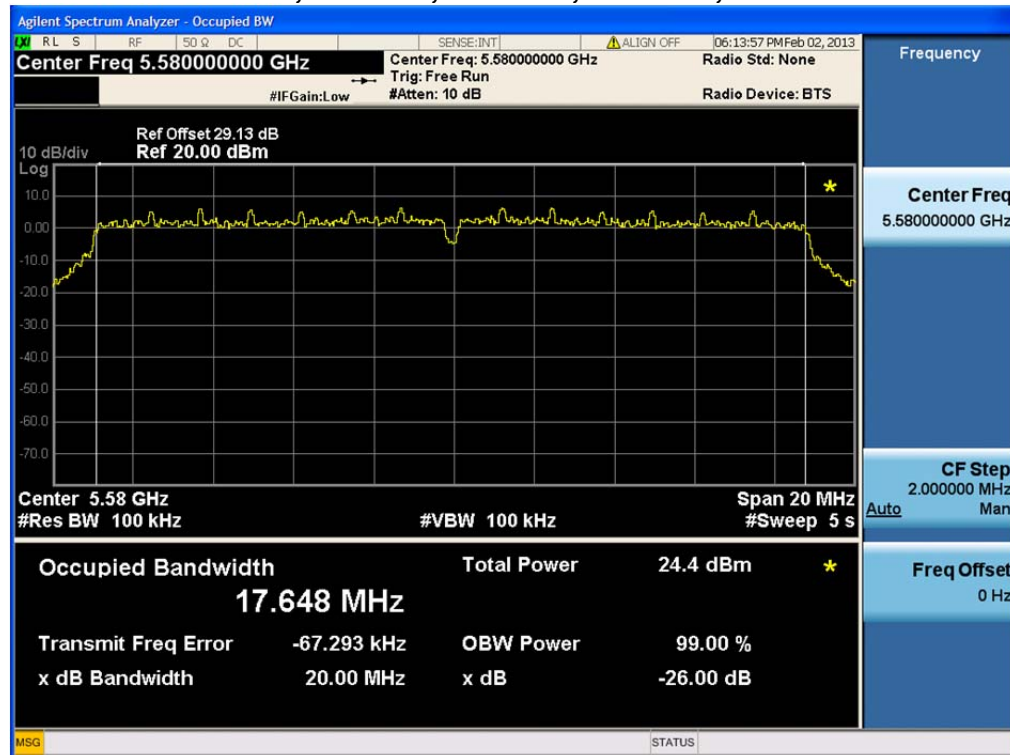
Frequency (MHz)	Mode	Data Rate (Mbps)	26dB BW (MHz)	99% BW (MHz)
5500	Non HT/VHT20, 6 to 54 Mbps	6	19.5	16.5
	HT/VHT20, M0 to M23, M0.1 to M9.3	M0.	20	17.6
	Non HT/VHT40, 6 to 54 Mbps	6	38.5	36.3
	HT/VHT40, M0 to M23, M0.1 to M9.3	M0.	38.5	36.2
	Non HT/VHT80, 6 to 54 Mbps	6	78.9	75.6
	HT/VHT80, M0 to M23, M0.1 to M9.3	M0x1	79	75.4
5540	Non HT/VHT40, 6 to 54 Mbps	6	38.6	36.3
	HT/VHT40, M0 to M23, M0.1 to M9.3	M0.	38.5	36.2
5580	Non HT/VHT20, 6 to 54 Mbps	6	19.6	16.5
	HT/VHT20, M0 to M23, M0.1 to M9.3	M0.	20	17.6
5660	Non HT/VHT40, 6 to 54 Mbps	6	38.6	36.3
	HT/VHT40, M0 to M23, M0.1 to M9.3	M0.	38.5	36.2
5700	Non HT/VHT20, 6 to 54 Mbps	6	19.6	16.5
	HT/VHT20, M0 to M23, M0.1 to M9.3	M0.	19.9	17.6

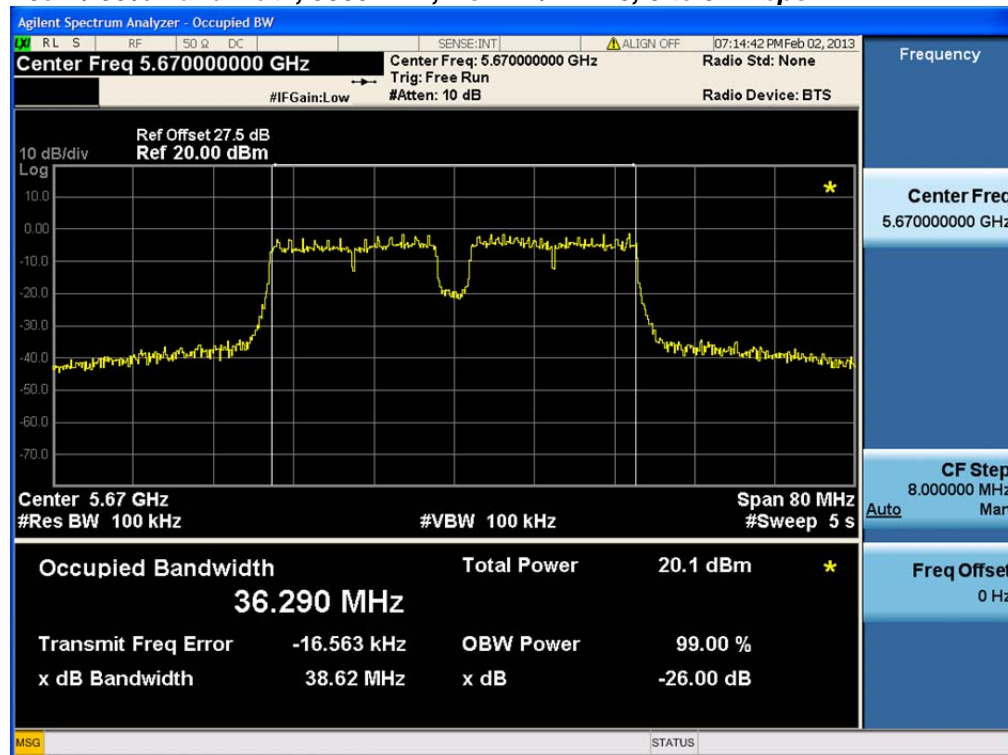
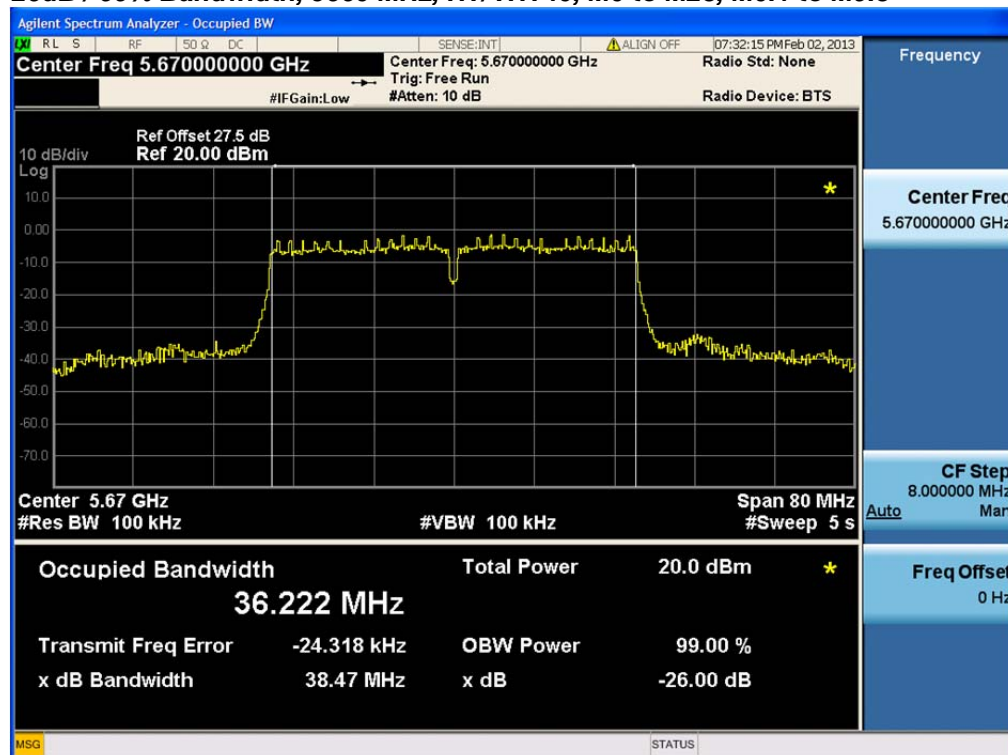
26dB / 99% Bandwidth, 5500 MHz, Non HT/VHT20, 6 to 54 Mbps**26dB / 99% Bandwidth, 5500 MHz, HT/VHT20, M0 to M23, M0.1 to M9.3**

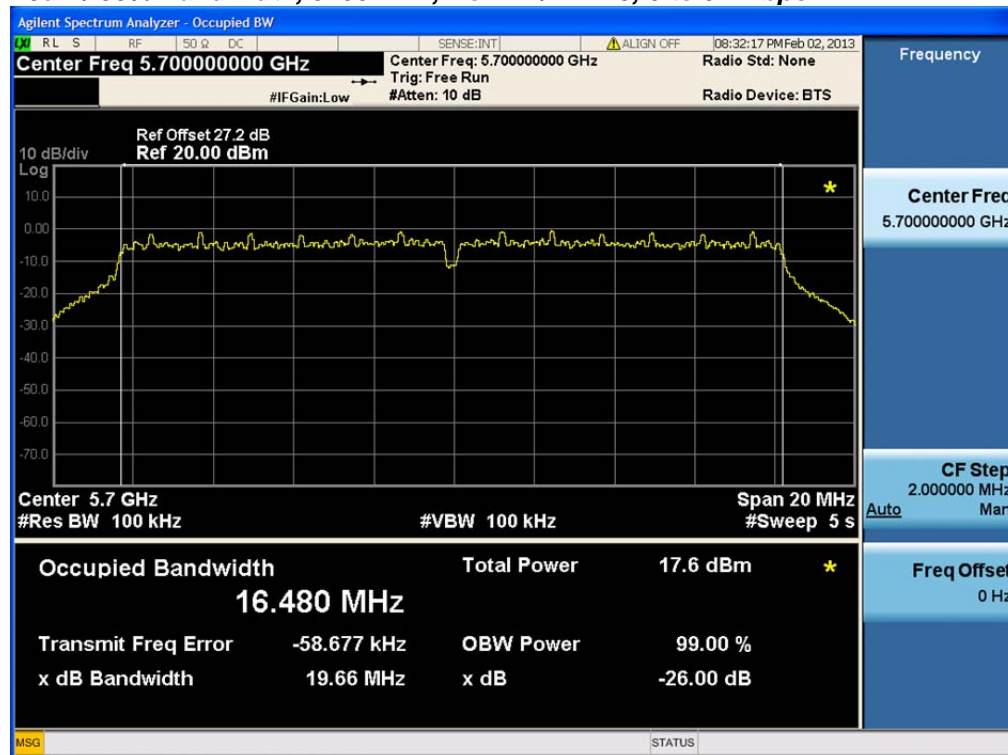
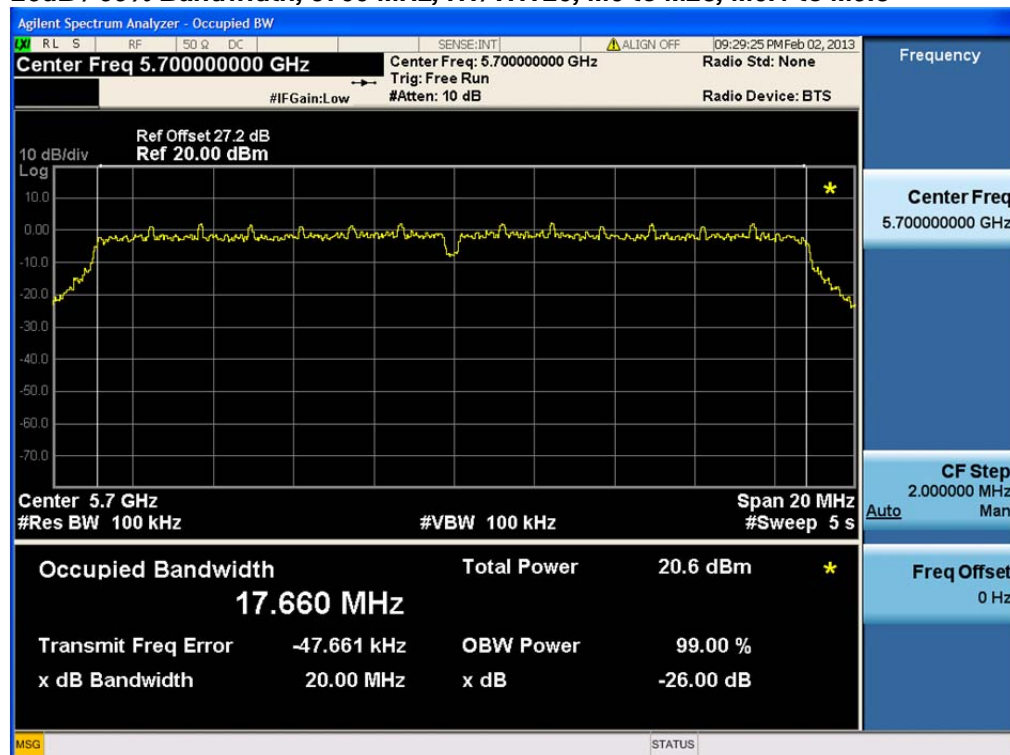
26dB / 99% Bandwidth, 5500 MHz, Non HT/VHT40, 6 to 54 Mbps**26dB / 99% Bandwidth, 5500 MHz, HT/VHT40, M0 to M23, M0.1 to M9.3**

26dB / 99% Bandwidth, 5500 MHz, Non HT/VHT80, 6 to 54 Mbps**26dB / 99% Bandwidth, 5500 MHz, HT/VHT80, M0 to M23, M0.1 to M9.3**

26dB / 99% Bandwidth, 5540 MHz, Non HT/VHT40, 6 to 54 Mbps**26dB / 99% Bandwidth, 5540 MHz, HT/VHT40, M0 to M23, M0.1 to M9.3**

26dB / 99% Bandwidth, 5580 MHz, Non HT/VHT20, 6 to 54 Mbps**26dB / 99% Bandwidth, 5580 MHz, HT/VHT20, M0 to M23, M0.1 to M9.3**

26dB / 99% Bandwidth, 5660 MHz, Non HT/VHT40, 6 to 54 Mbps**26dB / 99% Bandwidth, 5660 MHz, HT/VHT40, M0 to M23, M0.1 to M9.3**

26dB / 99% Bandwidth, 5700 MHz, Non HT/VHT20, 6 to 54 Mbps**26dB / 99% Bandwidth, 5700 MHz, HT/VHT20, M0 to M23, M0.1 to M9.3**



Peak Output Power

15.407: For the bands 5.25-5.35 and 5.47-5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The smallest 26dB bandwidth for 20 MHz channels is 16.5 MHz. The maximum conducted output power is calculated as $11\text{dBm} + 10 \cdot \log(16.5) = 23.2\text{dBm}$

The maximum supported antenna gain for all bands is 6dBi. The peak correlated gain for each mode is listed in the table below.

The “measure-and-sum technique” is used for measuring in-band transmit power of a device. In the measure-and-sum approach, the conducted emission level is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in linear power units.

Power Spectral Density

15.407: For the bands 5.25-5.35 and 5.47-5.725 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum supported antenna gain is 6dBi. The peak correlated gain for each mode is listed in the table below.

The “Measure and add $10 \log(N)$ dB technique”, where N is the number of outputs, is used for measuring in-band Power Spectral Density. With this technique, spectrum measurements are performed at each output of the device, and the quantity $10 \log(n)$ is added to the worst case spectrum value before comparing to the emission limit.



Connect the antenna port(s) to the spectrum analyzer input. Place the radio in continuous transmit mode.
Configure the spectrum analyzer as shown below.

Enable "Channel Power" function of analyzer	
Center Frequency:	Frequency from table below
Span:	20 MHz (must be greater than 26dB bandwidth, adjust as necessary)
Ref Level Offset:	Correct for attenuator and cable loss.
Reference Level:	20 dBm
Attenuation:	20 dB
Sweep Time:	100ms, Single sweep
Resolution Bandwidth:	1 MHz
Video Bandwidth:	3 MHz
Detector:	Sample
Trace:	Trace Average 100 traces in Power Averaging Mode
Integration BW:	=99% BW from 99% Bandwidth Data

After averaging 100 traces of the transmitter waveform on the spectrum analyzer, record the spectrum analyzer Channel Power. Perform a Marker Peak Search function, and record this value as the Power Spectral Density.



Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Maximum Power (dBm)	Tx 2 Maximum Power (dBm)	Tx 3 Maximum Power (dBm)	Total Tx Channel Power (dBm)	Limit (dBm)	Margin (dB)
5500	Non HT/VHT20, 6 to 54 Mbps	1	5	17.047			17.05	23.2	6.15
	Non HT/VHT20, 6 to 54 Mbps	2	5	15.303	16.639		19.03	23.2	4.17
	Non HT/VHT20, 6 to 54 Mbps	3	5	12.361	13.848	11.331	17.41	23.2	5.79
	Non HT/VHT20 Beam Forming, 6 to 54 Mbps	2	8	12.359	13.885		16.20	21.2	5
	Non HT/VHT20 Beam Forming, 6 to 54 Mbps	3	10	7.394	8.729	6.759	12.48	19.2	6.72
	HT/VHT20, M0 to M7, M0.1 to M9.1	1	5	16.843			16.84	23.2	6.36
	HT/VHT20, M0 to M7, M0.1 to M9.1	2	5	15.091	16.358		18.78	23.2	4.42
	HT/VHT20, M8 to M15, M0.2 to M9.2	2	5	16.025	17.13		19.62	23.2	3.58
	HT/VHT20, M0 to M7, M0.1 to M9.1	3	5	11.87	13.678	11.241	17.16	23.2	6.04
	HT/VHT20, M8 to M15, M0.2 to M9.2	3	5	13.103	14.504	12.235	18.15	23.2	5.05
	HT/VHT20, M16 to M23, M0.3 to M9.3	3	5	13.11	14.671	12.238	18.23	23.2	4.97
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	11.89	13.653		15.87	21.2	5.33
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	15.961	17.203		19.64	23.2	3.56
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	7.314	8.422	6.621	12.29	19.2	6.91
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	12.173	13.717	11.171	17.25	22.2	4.95
	HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	13.957	15.588	13.068	19.10	23.2	4.1
	HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	2	5	15.939	17.162		19.60	23.2	3.6
	HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	3	5	13.999	15.675	13.337	19.22	23.2	3.98
	Non HT/VHT40, 6 to 54 Mbps	1	5	14.726			14.73	24	9.27
	Non HT/VHT40, 6 to 54 Mbps	2	5	14.726	15.543		18.16	24	5.84
	Non HT/VHT40, 6 to 54 Mbps	3	5	13.777	14.622	12.83	18.58	24	5.42
	HT/VHT40, M0 to M7, M0.1 to M9.1	1	5	15.255			15.26	24	8.75

HT/VHT40, M0 to M7, M0.1 to M9.1	2	5	13.411	14.46		16.98	24	7.02
HT/VHT40, M8 to M15, M0.2 to M9.2	2	5	14.436	15.502		18.01	24	5.99
HT/VHT40, M0 to M7, M0.1 to M9.1	3	5	13.404	14.439	12.312	18.24	24	5.76
HT/VHT40, M8 to M15, M0.2 to M9.2	3	5	13.415	14.466	12.337	18.26	24	5.74
HT/VHT40, M16 to M23, M0.3 to M9.3	3	5	13.419	14.462	12.337	18.26	24	5.74
HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	13.422	14.467		16.99	22	5.01
HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	14.343	15.394		17.91	24	6.09
HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	10.533	11.56	9.522	15.39	20.2	4.81
HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	12.361	13.569	11.372	17.30	23.2	5.90
HT/VHT40 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	14.268	15.352	13.485	19.21	24	4.79
HT/VHT40 STBC, M0 to M7, M0.1 to M9.1	2	5	14.28	15.323		17.84	24	6.16
HT/VHT40 STBC, M0 to M7, M0.1 to M9.1	3	5	12.436	13.491	11.411	17.30	24	6.70
Non HT/VHT80, 6 to 54 Mbps	2	5	9.499	12.318		14.14	24	9.86
Non HT/VHT80, 6 to 54 Mbps	3	5	9.453	12.326	8.201	15.12	24	8.88
HT/VHT80, M0 to M7, M0.1 to M9.1	2	5	12.743	15.11		17.10	24	6.90
HT/VHT80, M8 to M15, M0.2 to M9.2	2	5	11.685	14.354		16.23	24	7.77
HT/VHT80, M0 to M7, M0.1 to M9.1	3	5	10.809	13.379	9.731	16.36	24	7.64
HT/VHT80, M8 to M15, M0.2 to M9.2	3	5	10.827	13.389	9.722	16.36	24	7.64
HT/VHT80, M16 to M23, M0.3 to M9.3	3	5	11.716	14.364	10.632	17.30	24	6.70
HT/VHT80 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	10.752	13.343		15.25	22	6.75
HT/VHT80 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	11.687	14.364		16.24	24	7.76
HT/VHT80 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	8.899	11.779	7.71	14.58	20.2	5.62
HT/VHT80 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	10.824	13.386	9.717	16.36	23.2	6.84



	to M15, M0.2 to M9.2								
	HT/VHT80 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	10.82	13.397	9.728	16.37	24	7.63
	HT/VHT80 STBC, M0 to M7, M0.1 to M9.1	2	5	11.674	14.297		16.19	24	7.81
	HT/VHT80 STBC, M0 to M7, M0.1 to M9.1	3	5	10.809	13.387	9.719	16.36	24	7.64
5540	Non HT/VHT40, 6 to 54 Mbps	2	5	18.106	18.512		21.32	24	2.68
	Non HT/VHT40, 6 to 54 Mbps	3	5	15.407	15.87	13.946	19.92	24	4.08
	HT/VHT40, M0 to M7, M0.1 to M9.1	2	5	17.668	18.219		20.96	24	3.04
	HT/VHT40, M8 to M15, M0.2 to M9.2	2	5	17.651	18.264		20.98	24	3.02
	HT/VHT40, M0 to M7, M0.1 to M9.1	3	5	15.062	15.838	13.713	19.73	24	4.27
	HT/VHT40, M8 to M15, M0.2 to M9.2	3	5	18.721	19.076	17.478	23.25	24	0.75
	HT/VHT40, M16 to M23, M0.3 to M9.3	3	5	17.735	18.296	16.589	22.37	24	1.63
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	17.775	18.258		21.03	22	0.97
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	18.722	19.166		21.96	24	2.04
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	15.069	15.833	13.761	19.74	20.2	0.46
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	16.997	17.462	15.684	21.55	23.2	1.65
	HT/VHT40 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	17.737	18.292	16.6	22.37	24	1.63
	HT/VHT40 STBC, M0 to M7, M0.1 to M9.1	3	5	17.735	18.289	16.586	22.36	24	1.64
5580	Non HT/VHT20, 6 to 54 Mbps	1	5	18.429			18.43	23.2	4.77
	Non HT/VHT20, 6 to 54 Mbps	2	5	16.632	17.52		20.11	23.2	3.09
	Non HT/VHT20, 6 to 54 Mbps	3	5	13.514	14.87	12.309	18.46	23.2	4.74
	Non HT/VHT20 Beam Forming, 6 to 54 Mbps	2	8	16.438	17.574		20.05	21.2	1.15
	Non HT/VHT20 Beam Forming, 6 to 54 Mbps	3	10	13.52	14.886	12.163	18.44	19.2	0.76
	HT/VHT20, M0 to M7, M0.1 to M9.1	1	5	18.179			18.18	23.2	5.02



	HT/VHT20, M0 to M7, M0.1 to M9.1	2	5	16.309	17.32		19.85	23.2	3.35
	HT/VHT20, M8 to M15, M0.2 to M9.2	2	5	18.176	18.95		21.59	23.2	1.61
	HT/VHT20, M0 to M7, M0.1 to M9.1	3	5	13.091	14.677	12.042	18.18	23.2	5.02
	HT/VHT20, M8 to M15, M0.2 to M9.2	3	5	16.157	17.335	14.882	21.01	23.2	2.19
	HT/VHT20, M16 to M23, M0.3 to M9.3	3	5	17.116	18.209	16.009	21.97	23.2	1.23
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	16.343	17.341		19.88	21.2	1.32
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	18.159	18.928		21.57	23.2	1.63
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	13.279	14.694	12.061	18.25	19.2	0.95
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	15.286	16.571	14.124	20.21	22.2	1.99
	HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	16.163	17.314	15.045	21.04	23.2	2.16
	HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	2	5	18.048	18.875		21.49	23.2	1.71
	HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	3	5	17.228	18.212	16.044	22.02	23.2	1.18
5660	Non HT/VHT40, 6 to 54 Mbps	2	5	16.409	17.846		20.20	24	3.80
	Non HT/VHT40, 6 to 54 Mbps	3	5	13.702	15.274	13.008	18.87	24	5.13
	HT/VHT40, M0 to M7, M0.1 to M9.1	2	5	16.158	17.601		19.95	24	4.05
	HT/VHT40, M8 to M15, M0.2 to M9.2	3	5	16.133	17.767	15.537	21.36	24	2.64
	HT/VHT40, M0 to M7, M0.1 to M9.1	3	5	13.376	15.17	12.731	18.66	24	5.34
	HT/VHT40, M16 to M23, M0.3 to M9.3	3	5	16.167	17.605	15.543	21.30	24	2.70
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	16.129	17.766		20.03	22	1.97
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	16.136	17.75		20.03	24	3.97
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	13.363	15.141	12.72	18.64	20.2	1.56
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	15.232	16.918	14.623	20.47	23.2	2.73

	HT/VHT40 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	16.136	17.737	15.521	21.34	24	2.66
	HT/VHT40 STBC, M0 to M7, M0.1 to M9.1	3	5	16.143	17.756	15.51	21.35	24	2.65
5700	Non HT/VHT20, 6 to 54 Mbps	1	5	14.991			14.99	23.2	8.21
	Non HT/VHT20, 6 to 54 Mbps	2	5	13.842	15.793		17.94	23.2	5.26
	Non HT/VHT20, 6 to 54 Mbps	3	5	12.023	14.023	11.132	17.34	23.2	5.86
	Non HT/VHT20 Beam Forming, 6 to 54 Mbps	2	8	11.937	14.001		16.10	21.2	5.1
	Non HT/VHT20 Beam Forming, 6 to 54 Mbps	3	10	6.199	7.685	5.502	11.33	19.2	7.87
	HT/VHT20, M0 to M7, M0.1 to M9.1	1	5	12.848			12.85	23.2	10.35
	HT/VHT20, M0 to M7, M0.1 to M9.1	2	5	11.563	13.657		15.75	23.2	7.45
	HT/VHT20, M8 to M15, M0.2 to M9.2	2	5	11.826	13.591		15.81	23.2	7.39
	HT/VHT20, M0 to M7, M0.1 to M9.1	3	5	11.49	13.586	10.869	16.91	23.2	6.29
	HT/VHT20, M8 to M15, M0.2 to M9.2	3	5	11.757	13.66	10.913	17.04	23.2	6.16
	HT/VHT20, M16 to M23, M0.3 to M9.3	3	5	10.701	12.795	9.885	16.08	23.2	7.12
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	10.637	12.773		14.85	21.2	6.35
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	12.841	14.629		16.84	23.2	6.36
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	7.039	8.516	6.347	12.17	19.2	7.03
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	9.86	11.701	9.118	15.14	22.2	7.06
	HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	10.731	12.797	9.957	16.10	23.2	7.1
	HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	2	5	12.836	14.658		16.85	23.2	6.35
	HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	3	5	10.704	12.809	10.018	16.12	23.2	7.08



Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	PSD / Antenna (dBm/MHz)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
5500	Non HT/VHT20, 6 to 54 Mbps	1	10	0.102	0.10	7.23	7.13
	Non HT/VHT20 Beam Forming, 6 to 54 Mbps	2	10	-4.321	-1.31	7.23	8.54
	HT/VHT20, M0 to M7, M0.1 to M9.1	1	8	4.006	4.01	8.99	4.98
	HT/VHT20, M8 to M15, M0.2 to M9.2	2	5	4.734	7.74	11.00	3.26
	HT/VHT20, M0 to M7, M0.1 to M9.1	3	10	0.126	4.90	7.23	2.33
	HT/VHT20, M8 to M15, M0.2 to M9.2	3	7	1.131	5.90	10.24	4.34
	HT/VHT20, M16 to M23, M0.3 to M9.3	3	5	1.122	5.89	11.00	5.11
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	0.793	3.80	8.99	5.19
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	4.862	7.87	11.00	3.13
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	-4.519	0.25	7.23	6.98
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	0.043	4.81	10.24	5.42
	HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	1.964	6.74	11.00	4.26
	HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	2	7	2.228	5.24	10.24	5.00
	Non HT/VHT40, 6 to 54 Mbps	1	10	-1.144	-1.14	7.23	8.37
	HT/VHT40, M0 to M7, M0.1 to M9.1	1	8	-0.849	-0.85	8.99	9.84
	HT/VHT40, M8 to M15, M0.2 to M9.2	2	5	0.134	3.14	11.00	7.86
	HT/VHT40, M0 to M7, M0.1 to M9.1	3	10	-1.977	2.79	7.23	4.43
	HT/VHT40, M8 to M15, M0.2 to M9.2	3	7	-1.996	2.78	10.24	7.46
	HT/VHT40, M16 to M23, M0.3 to M9.3	3	5	-2.037	2.73	11.00	8.27
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	-0.891	2.12	8.99	6.87
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	0.006	3.02	11.00	7.98
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	-4.835	-0.06	7.23	7.29
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	-3.003	1.77	10.24	8.47
	HT/VHT40 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	-0.843	3.93	11.00	7.07



	HT/VHT40 STBC, M0 to M7, M0.1 to M9.1	2	7	-2.992	0.02	10.24	10.22
	Non HT/VHT80, 6 to 54 Mbps	2	10	-8.572	-5.56	7.23	12.79
	HT/VHT80, M0 to M7, M0.1 to M9.1	2	8	-4.76	-1.75	8.99	10.74
	HT/VHT80, M8 to M15, M0.2 to M9.2	2	5	-5.762	-2.75	11.00	13.75
	HT/VHT80, M0 to M7, M0.1 to M9.1	3	10	-7.503	-2.73	7.23	9.96
	HT/VHT80, M8 to M15, M0.2 to M9.2	3	7	-7.526	-2.75	10.24	12.99
	HT/VHT80, M16 to M23, M0.3 to M9.3	3	5	-6.566	-1.79	11.00	12.79
	HT/VHT80 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	-6.743	-3.73	8.99	12.72
	HT/VHT80 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	-5.724	-2.71	11.00	13.71
	HT/VHT80 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	-9.403	-4.63	7.23	11.86
	HT/VHT80 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	-7.585	-2.81	10.24	13.05
	HT/VHT80 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	-7.62	-2.85	11.00	13.85
	HT/VHT80 STBC, M0 to M7, M0.1 to M9.1	2	7	-7.642	-4.63	10.24	14.87
5540	Non HT/VHT40, 6 to 54 Mbps	2	10	-0.015	3.00	7.23	4.23
	HT/VHT40, M0 to M7, M0.1 to M9.1	2	8	3.364	6.37	8.99	2.62
	HT/VHT40, M8 to M15, M0.2 to M9.2	2	5	3.349	6.36	11.00	4.64
	HT/VHT40, M0 to M7, M0.1 to M9.1	3	10	-0.56	4.21	7.23	3.02
	HT/VHT40, M8 to M15, M0.2 to M9.2	3	7	3.165	7.94	10.24	2.30
	HT/VHT40, M16 to M23, M0.3 to M9.3	3	5	2.285	7.06	11.00	3.94
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	3.479	6.49	8.99	2.50
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	4.409	7.42	11.00	3.58
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	-0.536	4.24	7.23	2.99
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	1.356	6.13	10.24	4.11
	HT/VHT40 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	2.345	7.12	11.00	3.88
	HT/VHT40 STBC, M0 to M7, M0.1 to M9.1	3	7	2.29	7.06	10.24	3.18

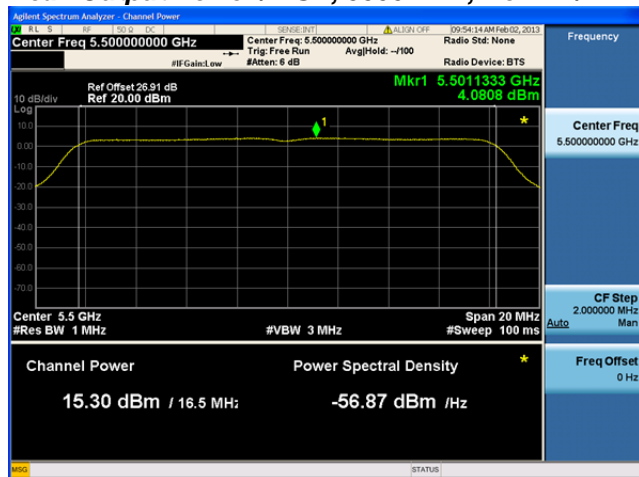
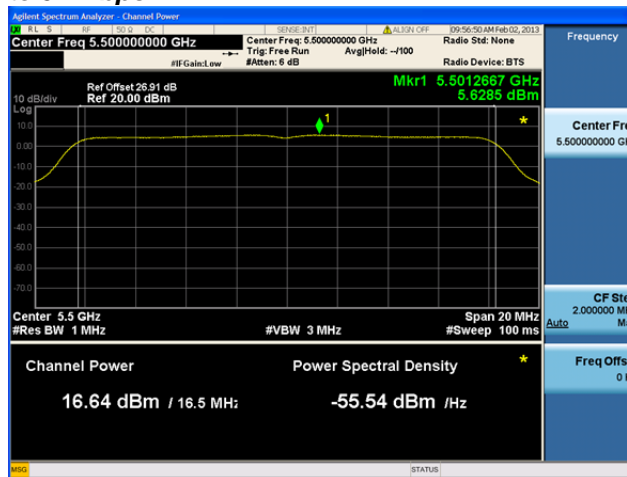


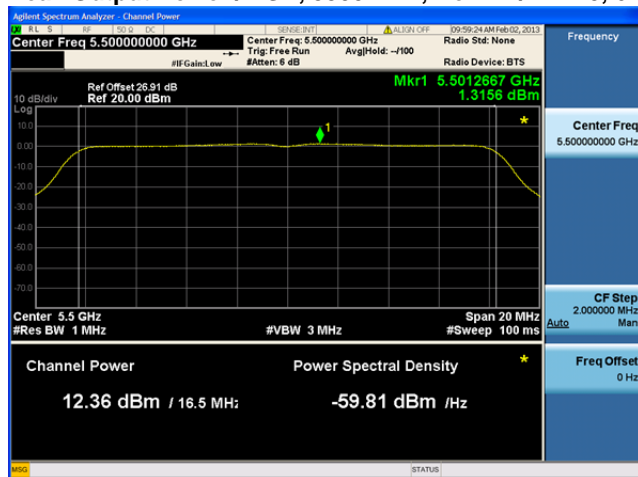
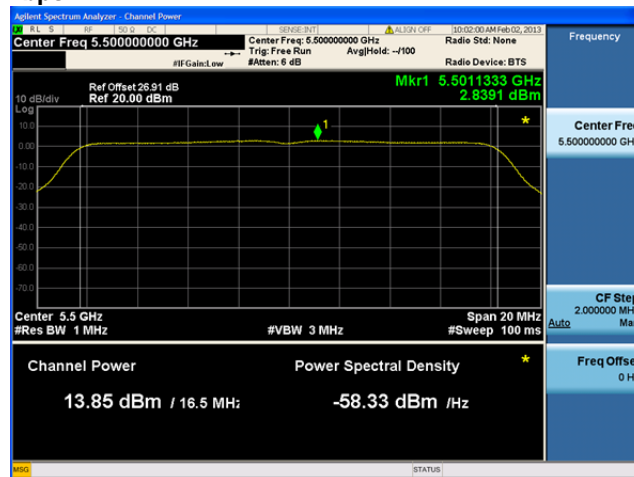
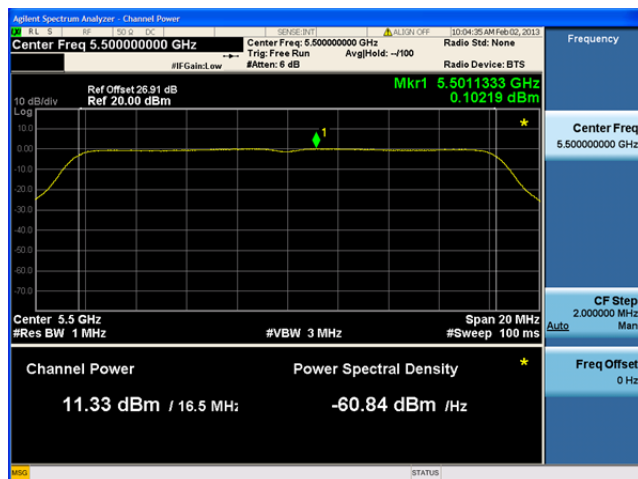
5580	Non HT/VHT20, 6 to 54 Mbps	1	10	1.263	1.26	7.23	5.97
	Non HT/VHT20 Beam Forming, 6 to 54 Mbps	2	10	1.14	4.15	7.23	3.08
	HT/VHT20, M0 to M7, M0.1 to M9.1	1	8	5.233	5.23	8.99	3.76
	HT/VHT20, M8 to M15, M0.2 to M9.2	2	5	6.929	9.94	11.00	1.06
	HT/VHT20, M0 to M7, M0.1 to M9.1	3	10	0.93	5.70	7.23	1.53
	HT/VHT20, M8 to M15, M0.2 to M9.2	3	7	3.768	8.54	10.24	1.70
	HT/VHT20, M16 to M23, M0.3 to M9.3	3	5	4.876	9.65	11.00	1.35
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	5.247	8.26	8.99	0.73
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	6.892	9.90	11.00	1.10
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	0.945	5.72	7.23	1.51
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	2.99	7.76	10.24	2.48
	HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	3.777	8.55	11.00	2.45
	HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	2	7	4.951	7.96	10.24	2.28
5660	Non HT/VHT40, 6 to 54 Mbps	2	10	-0.952	2.06	7.23	5.17
	HT/VHT40, M0 to M7, M0.1 to M9.1	2	8	1.825	4.84	8.99	4.15
	HT/VHT40, M8 to M15, M0.2 to M9.2	3	7	1.232	6.00	10.24	4.24
	HT/VHT40, M0 to M7, M0.1 to M9.1	3	10	-1.615	3.16	7.23	4.07
	HT/VHT40, M16 to M23, M0.3 to M9.3	3	5	1.244	6.02	11.00	4.98
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	1.792	4.80	8.99	4.19
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	1.839	4.85	11.00	6.15
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	-1.575	3.20	7.23	4.03
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	0.29	5.06	10.24	5.18
	HT/VHT40 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	1.162	5.93	11.00	5.07
	HT/VHT40 STBC, M0 to M7, M0.1 to M9.1	3	7	1.142	5.91	10.24	4.33
5700	Non HT/VHT20, 6 to 54 Mbps	1	10	-0.049	-0.05	7.23	7.28

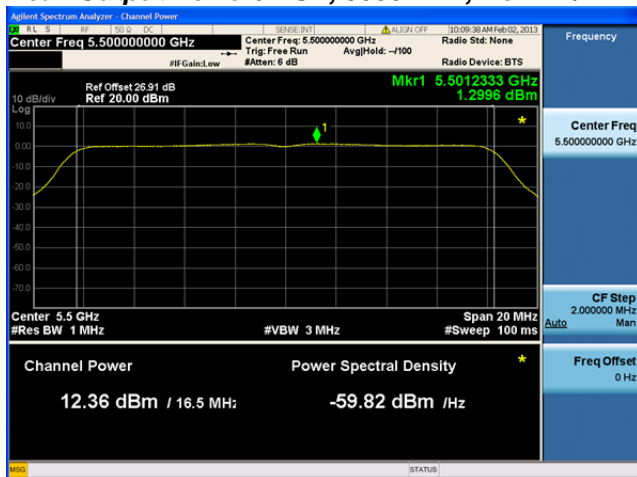
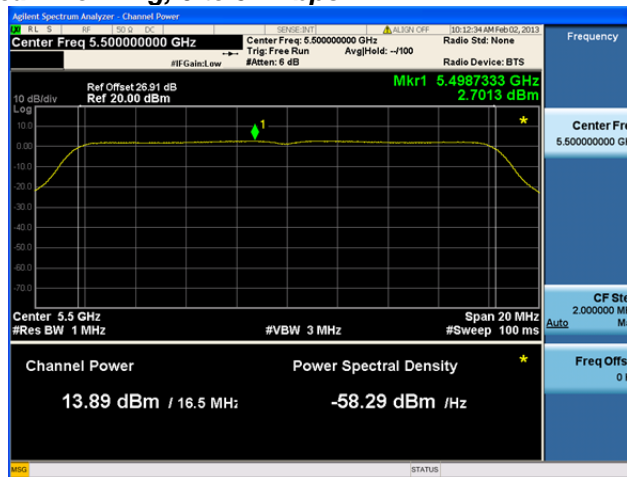


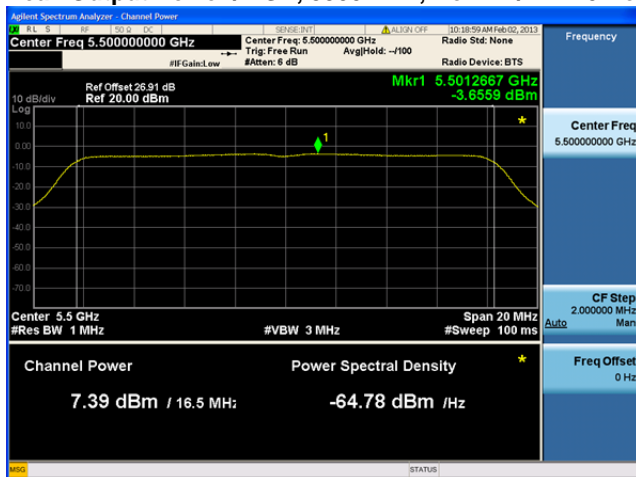
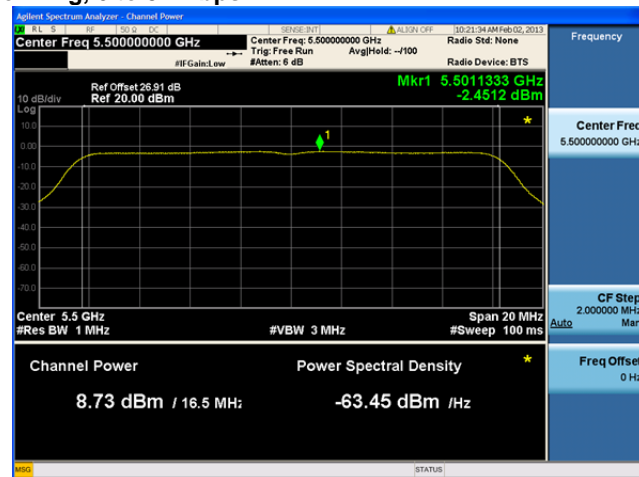
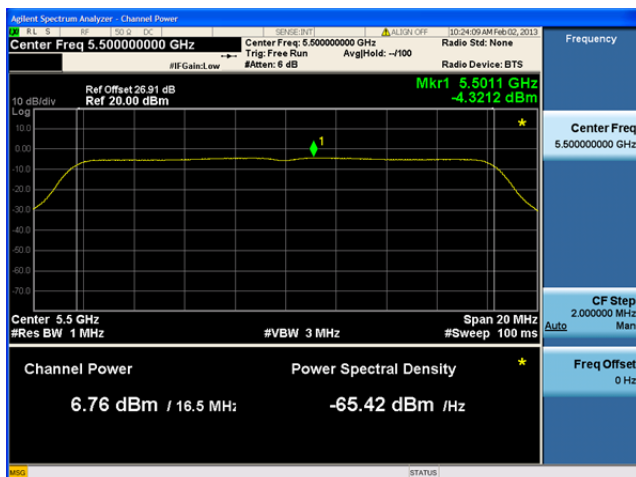
Non HT/VHT20 Beam Forming, 6 to 54 Mbps	2	10	-5.602	-2.59	7.23	9.82
HT/VHT20, M0 to M7, M0.1 to M9.1	1	8	0.399	0.40	8.99	8.59
HT/VHT20, M8 to M15, M0.2 to M9.2	2	5	0.67	3.68	11.00	7.32
HT/VHT20, M0 to M7, M0.1 to M9.1	3	10	-0.287	4.48	7.23	2.74
HT/VHT20, M8 to M15, M0.2 to M9.2	3	7	-0.433	4.34	10.24	5.90
HT/VHT20, M16 to M23, M0.3 to M9.3	3	5	-1.286	3.49	11.00	7.51
HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	-0.55	2.46	8.99	6.53
HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	1.701	4.71	11.00	6.29
HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	-4.814	-0.04	7.23	7.27
HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	-2.041	2.73	10.24	7.51
HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	-1.215	3.56	11.00	7.44
HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	2	7	-1.16	1.85	10.24	8.39

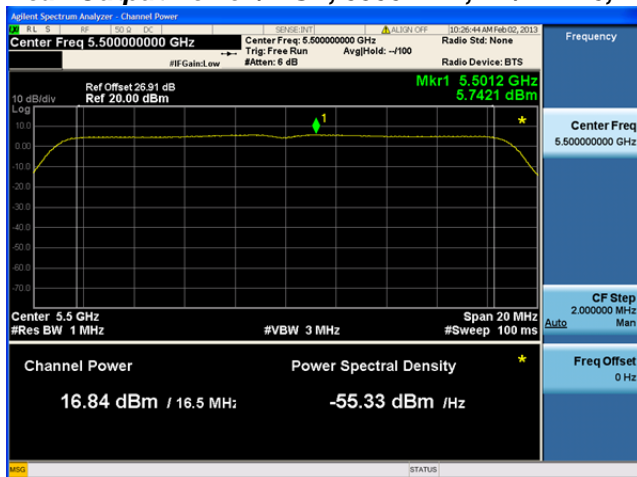
**Peak Output Power / PSD, 5500 MHz, Non HT/VHT20, 6 to 54 Mbps****Antenna A**

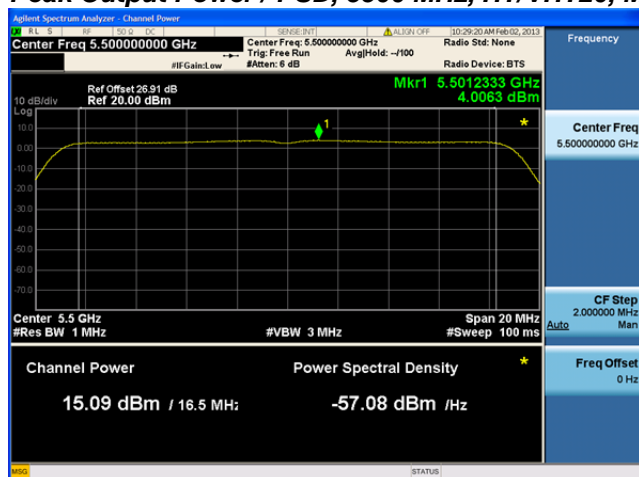
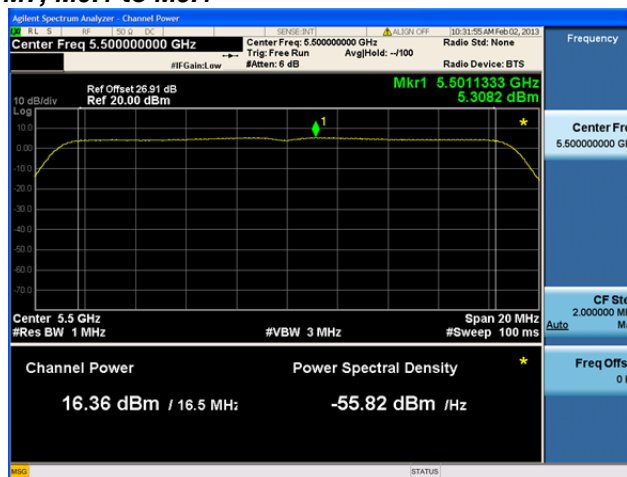
**Peak Output Power / PSD, 5500 MHz, Non HT/VHT20, 6 to 54 Mbps****Antenna A****Antenna B**

**Peak Output Power / PSD, 5500 MHz, Non HT/VHT20, 6 to 54 Mbps****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5500 MHz, Non HT/VHT20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B**

**Peak Output Power / PSD, 5500 MHz, Non HT/VHT20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B****Antenna C**

Peak Output Power / PSD, 5500 MHz, HT/VHT20, M0 to M7, M0.1 to M9.1**Antenna A**

Peak Output Power / PSD, 5500 MHz, HT/VHT20, M0 to M7, M0.1 to M9.1**Antenna A****Antenna B**