



Test Report

AIR-RM3000AC-A-K9

Cisco Aironet 802.11ac Module

FCC ID: LDK102086

IC: 2461B-102086

5250-5350 MHz

Against the following Specifications:

CFR47 Part 15.407

RSS210

Cisco Systems

170 West Tasman Drive

San Jose, CA 95134



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BOOKMARK NOT DEFINED.	

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. Please also refer to the "Justification for worst Case test Configuration" section of this report for further details on the selection of EUT samples.

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.

	Maximum Channel Power (dBm)	
Operating Mode	Frequency (MHz)	
	5260	5320
Non HT-20, 6 to 54 Mbps	19	17
Non HT-20 Beam Forming, 6 to 54 Mbps	18	16
HT-20, M0 to M23	21	20
HT-20 STBC, M0 to M7	20	20
HT-20 Beam Forming, M0 to M23	21	21
	5260/5280	5300/5320
Non HT-40 Duplicate, 6-54 Mbps	20	11
HT-40, M0 to M23	21	12
HT-40 STBC, M0 to M7	21	12
HT-40 Beam Forming, M0 to M23	21	19



99% and 26dB Bandwidth

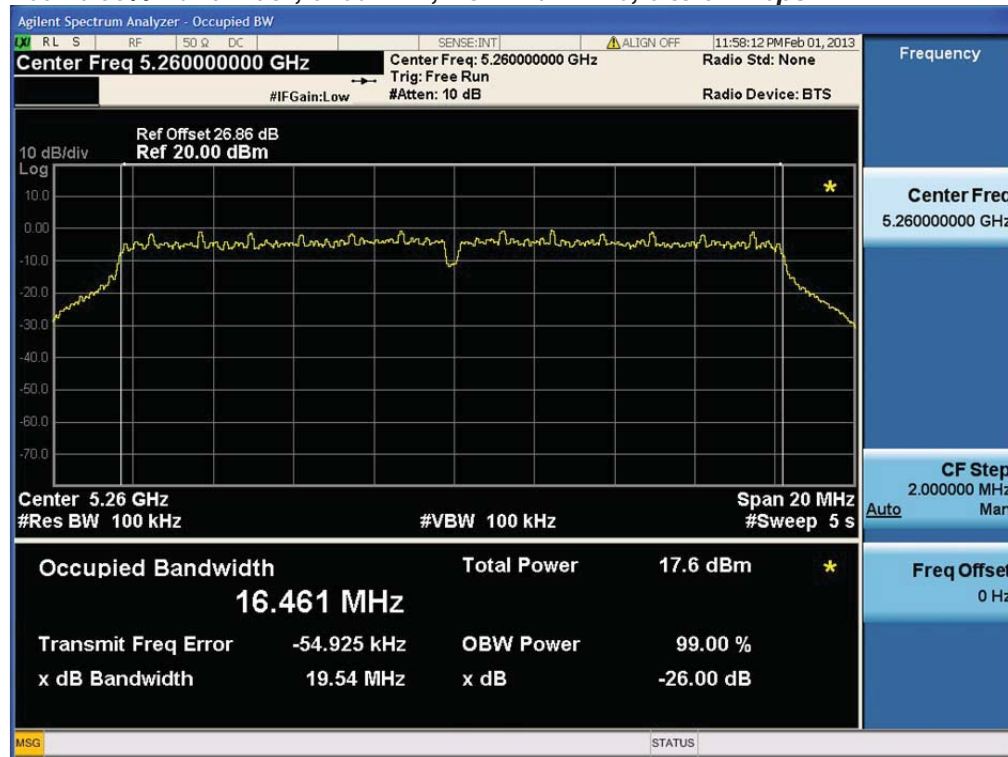
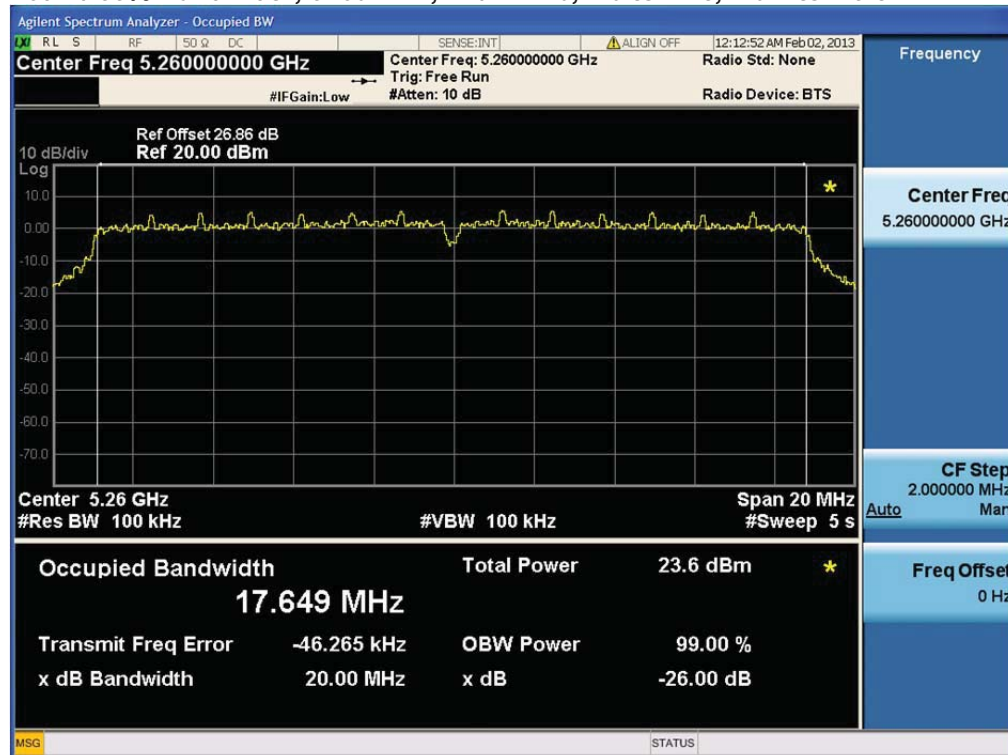
Connect the antenna port(s) to the spectrum analyzer input. Using the spectrum analyzer Channel Bandwidth mode, configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).

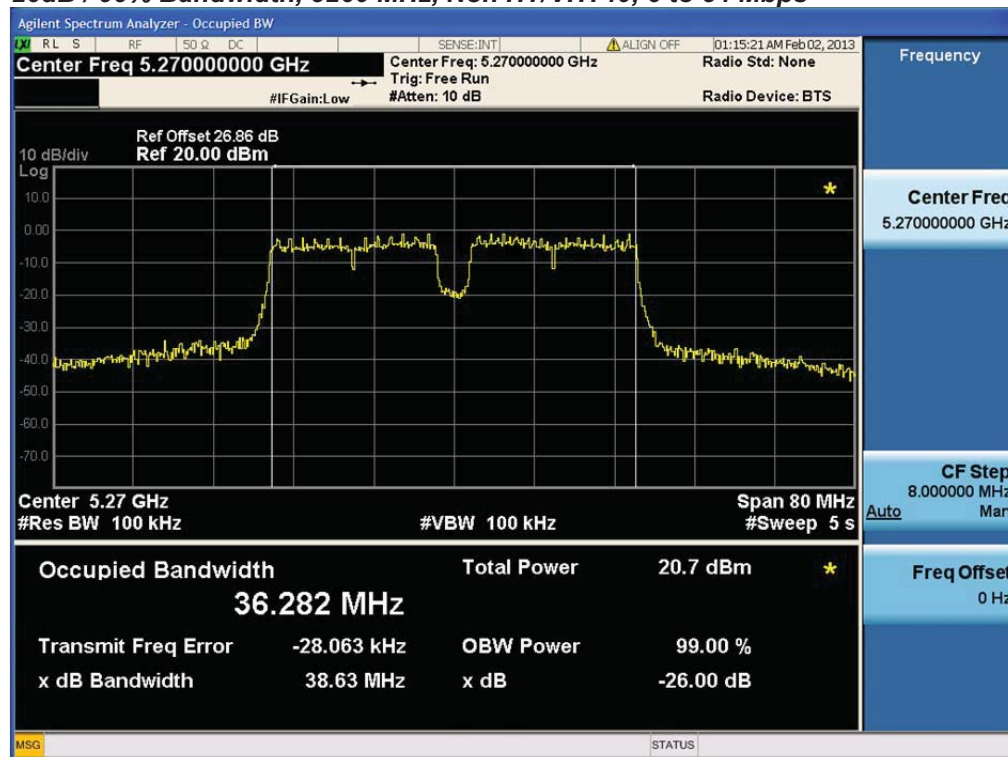
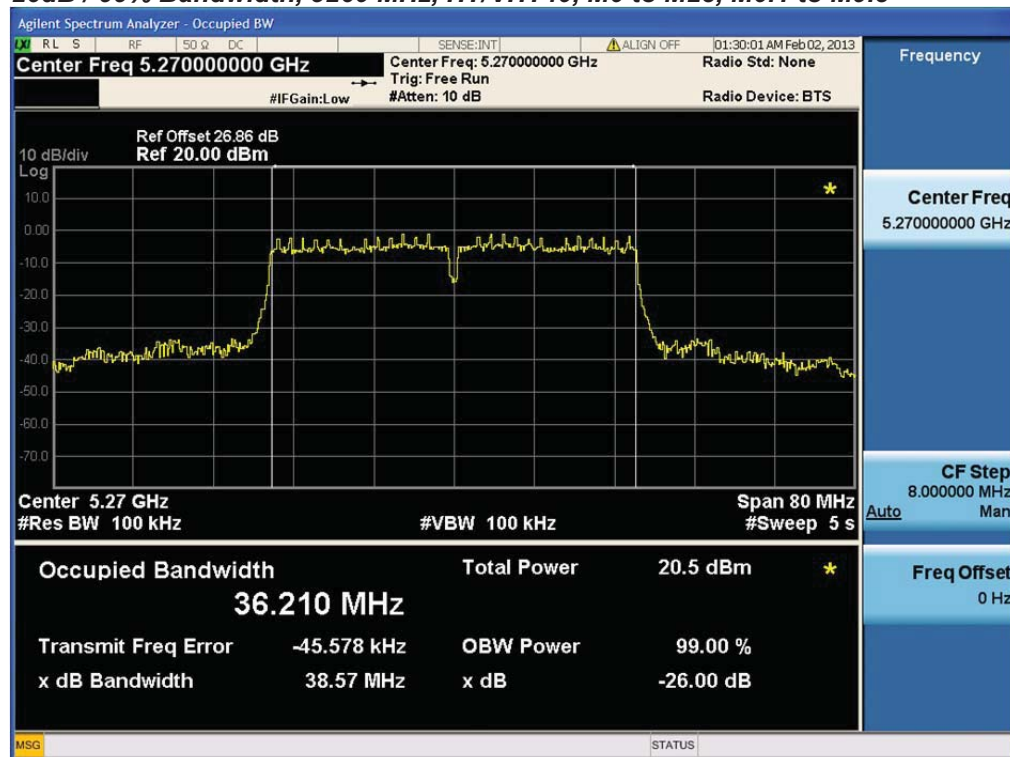
Center Frequency:	Frequency from table below
Span:	2 x Nominal Bandwidth (e.g. 40MHz for a 20MHz channel)
Reference Level:	20 dBm
Attenuation:	10 dB
Sweep Time:	5 s
Resolution Bandwidth:	1%-3% of 26 dB Bandwidth
Video Bandwidth:	≥Resolution Bandwidth
X dB Bandwidth:	26 dB
Detector:	Peak
Trace:	Single

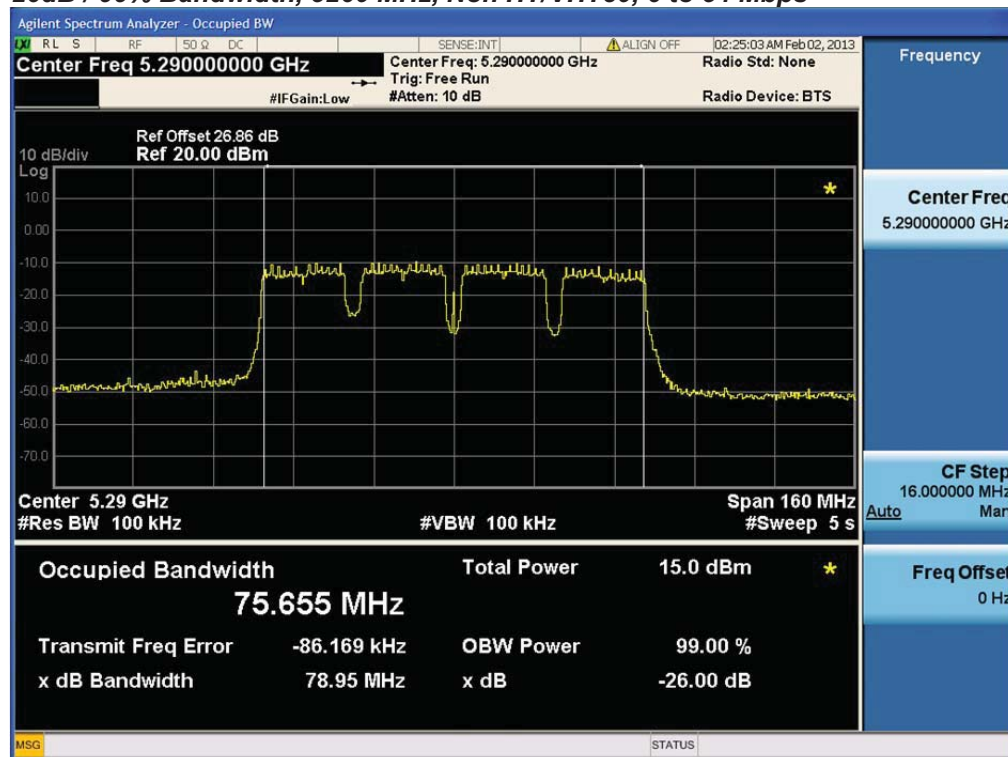
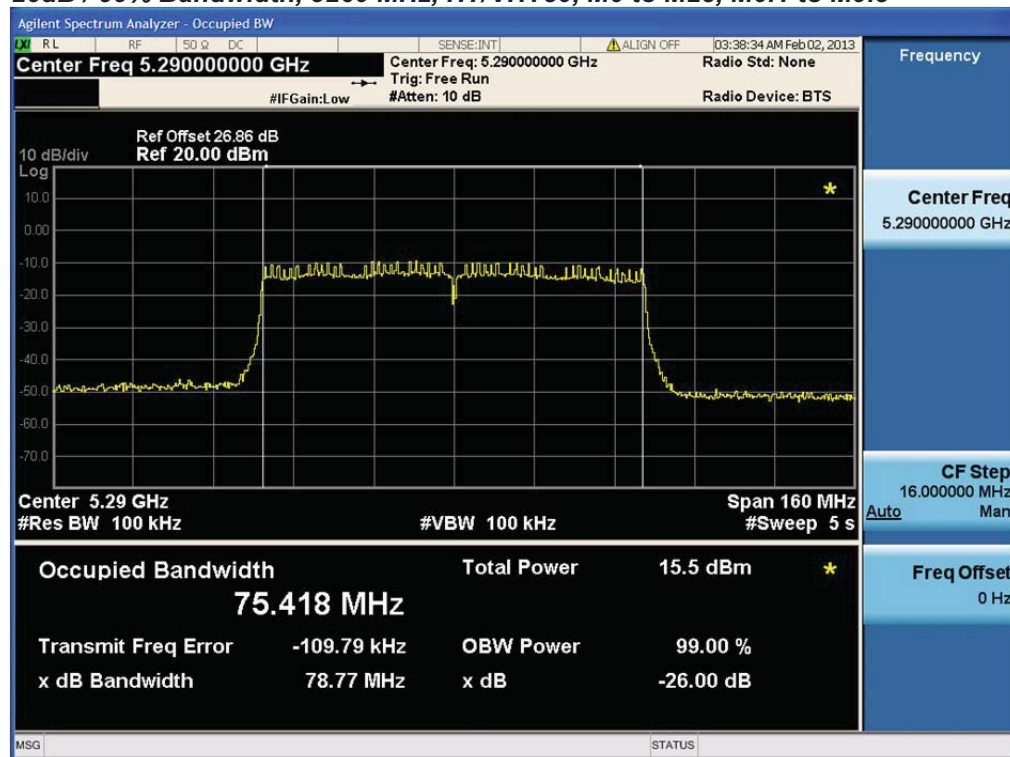
Place the radio in continuous transmit mode. View the transmitter waveform on the spectrum analyzer, and record the pertinent measurements:

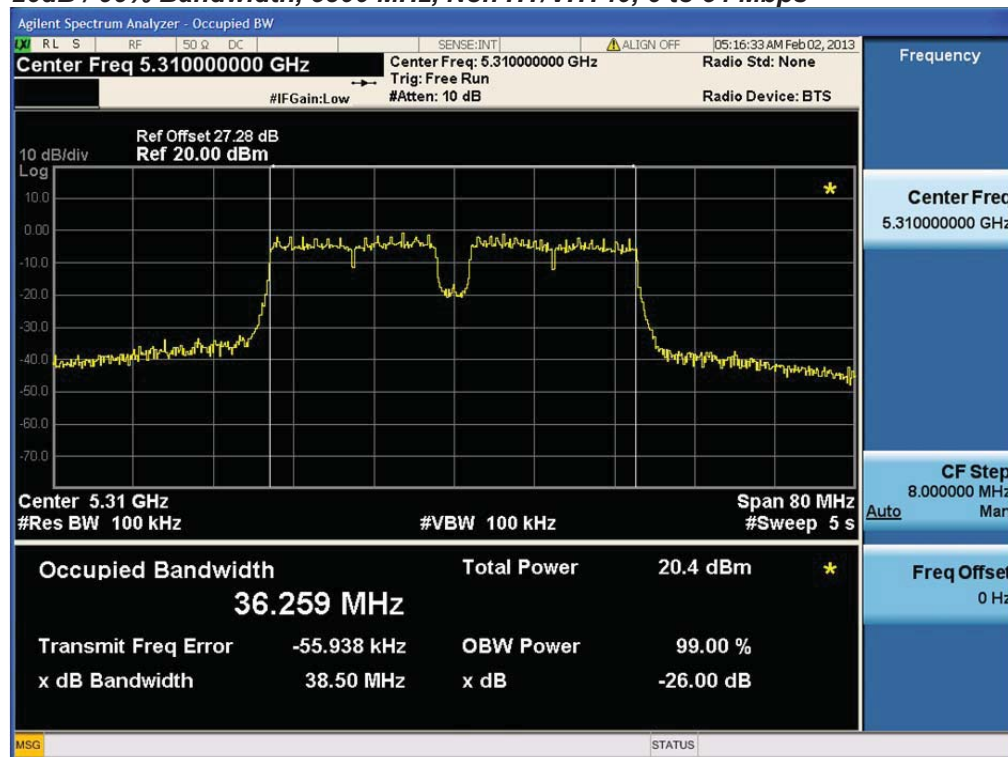
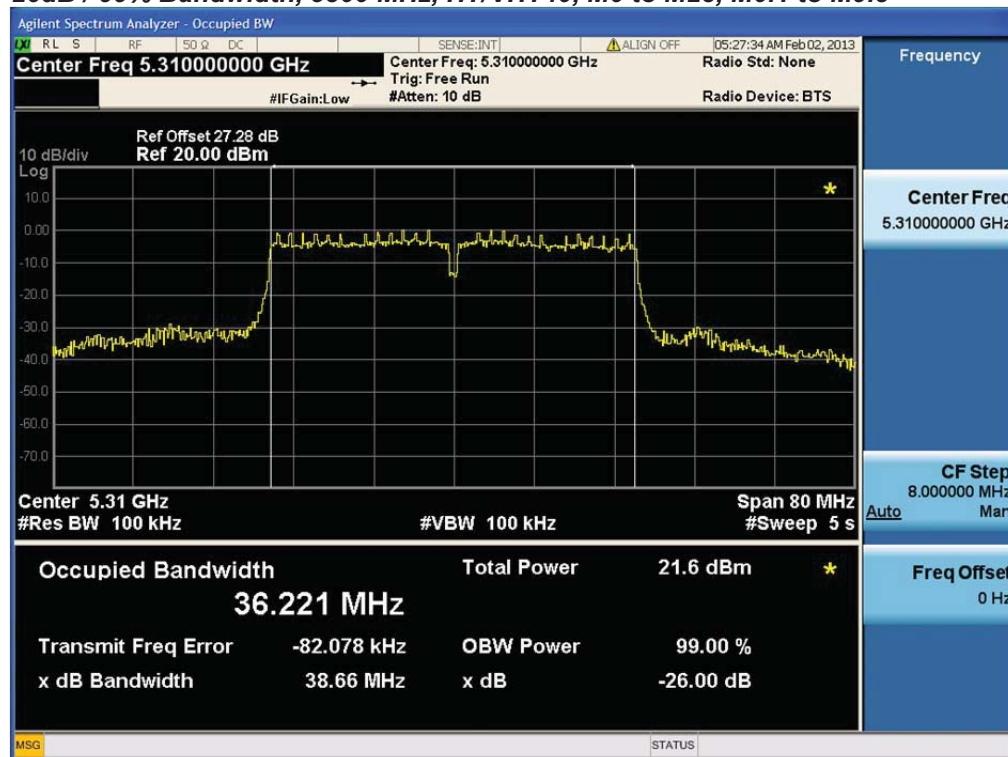


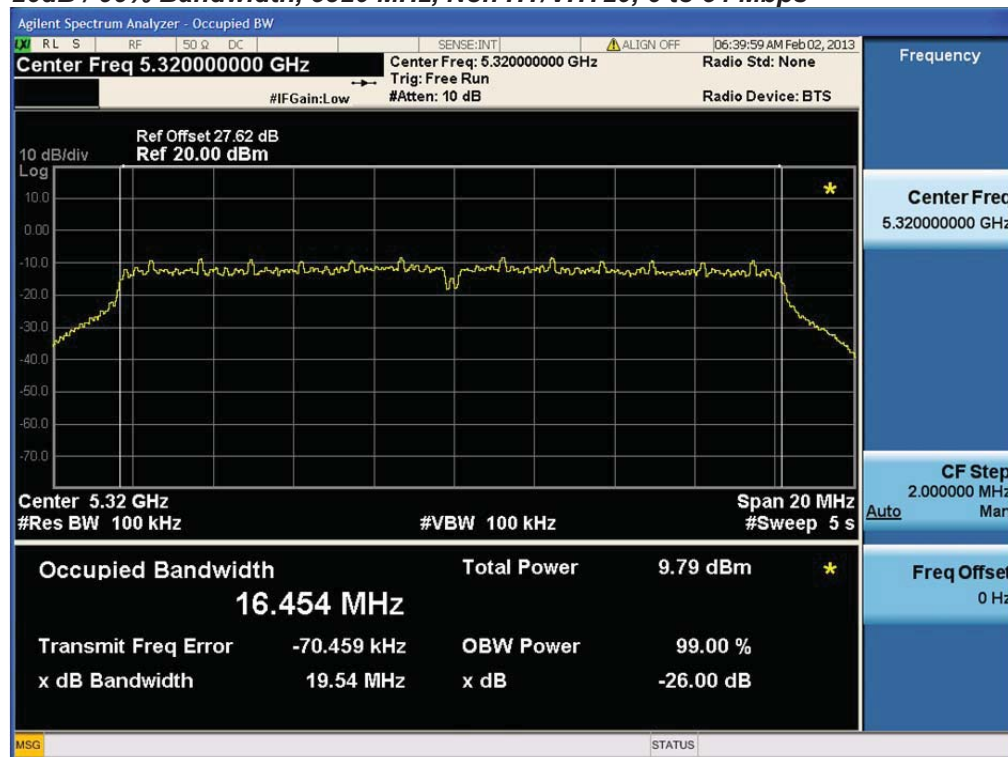
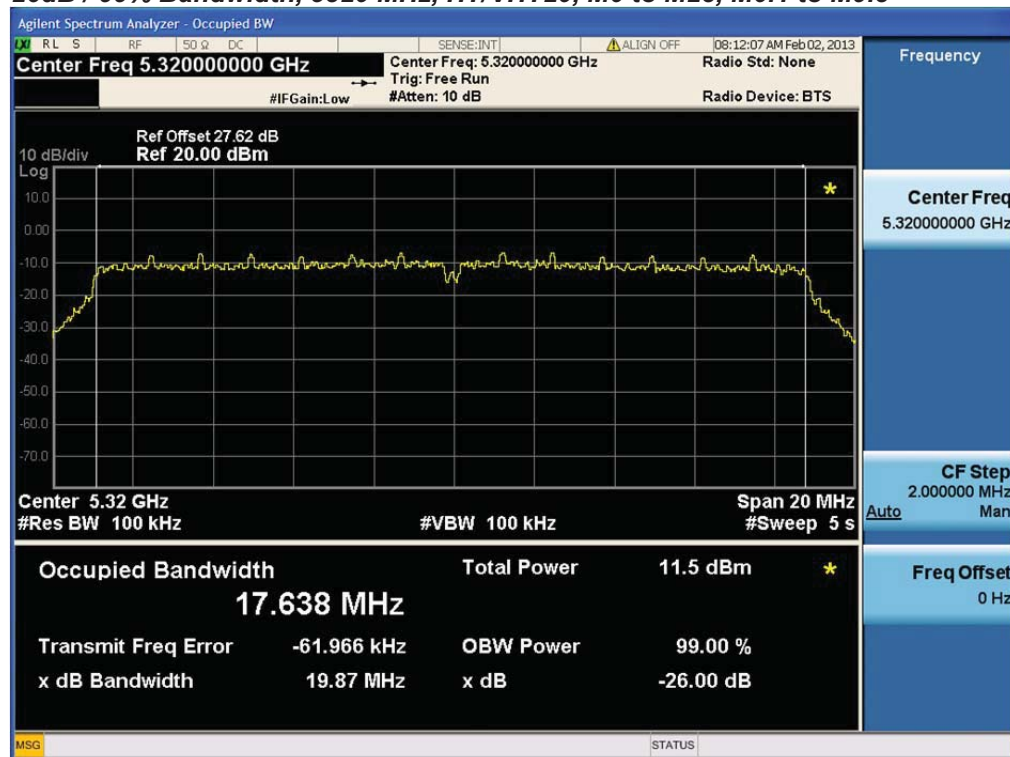
Frequency (MHz)	Mode	Data Rate (Mbps)	26dB BW (MHz)	99% BW (MHz)
5260	Non HT/VHT20, 6 to 54 Mbps	6	19.5	16.5
	HT/VHT20, M0 to M23, M0.1 to M9.3	M0.	20	17.6
	Non HT/VHT40, 6 to 54 Mbps	6	38.6	36.3
	HT/VHT40, M0 to M23, M0.1 to M9.3	M0.	38.5	36.2
	Non HT/VHT80, 6 to 54 Mbps	6	78.9	75.6
	HT/VHT80, M0 to M23, M0.1 to M9.3	M0x1	78.7	75.4
5300	Non HT/VHT40, 6 to 54 Mbps	6	38.5	36.2
	HT/VHT40, M0 to M23, M0.1 to M9.3	M0.	38.3	36.2
5320	Non HT/VHT20, 6 to 54 Mbps	6	19.5	16.5
	HT/VHT20, M0 to M23, M0.1 to M9.3	M0.	19.9	17.6

26dB / 99% Bandwidth, 5260 MHz, Non HT/VHT20, 6 to 54 Mbps**26dB / 99% Bandwidth, 5260 MHz, HT/VHT20, M0 to M23, M0.1 to M9.3**

26dB / 99% Bandwidth, 5260 MHz, Non HT/VHT40, 6 to 54 Mbps**26dB / 99% Bandwidth, 5260 MHz, HT/VHT40, M0 to M23, M0.1 to M9.3**

26dB / 99% Bandwidth, 5260 MHz, Non HT/VHT80, 6 to 54 Mbps**26dB / 99% Bandwidth, 5260 MHz, HT/VHT80, M0 to M23, M0.1 to M9.3**

26dB / 99% Bandwidth, 5300 MHz, Non HT/VHT40, 6 to 54 Mbps**26dB / 99% Bandwidth, 5300 MHz, HT/VHT40, M0 to M23, M0.1 to M9.3**

26dB / 99% Bandwidth, 5320 MHz, Non HT/VHT20, 6 to 54 Mbps**26dB / 99% Bandwidth, 5320 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 all channels is 20.4 MHz. The maximum conducted output power is calculated as $11\text{dBm} + 10 \cdot \log(20.4\text{MHz}) = 24\text{dBm}$

The maximum supported antenna gain for all bands is 6dBi. The peak correlated gain for each mode is listed in the table below. See the Theory of Operation for details on the correlated gain for each mode.

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. See the Theory of Operation for details on the correlated gain for each mode.

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 $10 \log(4)$ (or 6dB) 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 Peak Power (dBm)	Tx 2 Peak Power (dBm)	Tx 3 Peak Power (dBm)	Tx 4 Peak Power (dBm)	Total Tx Channel Power (dBm)	Limit (dBm)	Margin (dB)
5260	Non HT/VHT20, 6 to 54 Mbps	1	5	16.151				16.15	24	7.85
	Non HT/VHT20, 6 to 54 Mbps	2	5	14.147	16.82			18.70	24	5.30
	Non HT/VHT20, 6 to 54 Mbps	3	5	10.922	14.147	11.114		17.10	24	6.90
	Non HT/VHT20 Beam Forming, 6 to 54 Mbps	2	8	14.226	16.87			18.76	22	3.24
	Non HT/VHT20 Beam Forming, 6 to 54 Mbps	3	10	11.042	14.155	11.177		17.15	20.2	3.05
	HT/VHT20, M0 to M7, M0.1 to M9.1	1	5	15.787				15.79	24	8.21
	HT/VHT20, M0 to M7, M0.1 to M9.1	2	5	13.933	16.66			18.52	24	5.48
	HT/VHT20, M8 to M15, M0.2 to M9.2	2	5	15.797	18.181			20.16	24	3.84
	HT/VHT20, M0 to M7, M0.1 to M9.1	3	5	10.804	13.938	11.009		16.94	24	7.06
	HT/VHT20, M8 to M15, M0.2 to M9.2	3	5	14.925	17.435	14.942		20.71	24	3.29
	HT/VHT20, M16 to M23, M0.3 to M9.3	3	5	14.919	17.38	14.785		20.64	24	3.36
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	13.926	16.682			18.53	22	3.47
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	15.849	18.218			20.20	24	3.80
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	10.874	13.944	11.039		16.97	20.2	3.23
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	12.918	15.74	12.973		18.86	23.2	4.34
	HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	14.936	17.308	14.793		20.61	24	3.39
	HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	2	5	15.72	18.227			20.16	24	3.84
	HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	3	5	14.918	17.447	14.936		20.71	24	3.29
	Non HT/VHT40, 6 to 54 Mbps	2	5	16.616	18.253			20.52	24	3.48
	Non HT/VHT40, 6 to 54 Mbps	3	5	13.612	15.615	13.509		19.13	24	4.87
	HT/VHT40, M0 to M7, M0.1 to M9.1	2	5	16.11	18.013			20.18	24	3.82
	HT/VHT40, M8 to M15, M0.2	3	5	16.238	18.101	16.066		21.67	24	2.33



	to M9.2									
	HT/VHT40, M0 to M7, M0.1 to M9.1	3	5	13.333	15.628	13.249		18.99	24	5.01
	HT/VHT40, M16 to M23, M0.3 to M9.3	3	5	16.181	18.03	15.982		21.60	24	2.40
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	16.189	18.02			20.21	22	1.79
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	16.258	18.094			20.28	24	3.72
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	13.423	15.667	13.127		19.00	20.2	1.20
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	15.225	17.298	14.999		20.74	23.2	2.46
	HT/VHT40 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	16.18	18.019	15.99		21.60	24	2.40
	HT/VHT40 STBC, M0 to M7, M0.1 to M9.1	3	5	16.238	18.113	16.042		21.67	24	2.33
	Non HT/VHT80, 6 to 54 Mbps	1	5	12.24				12.24	24	11.76
	Non HT/VHT80, 6 to 54 Mbps	2	5	2.942	7.944			9.14	24	14.86
	Non HT/VHT80, 6 to 54 Mbps	3	5	2.947	7.941	2.373		9.97	24	14.03
	HT/VHT80, M0 to M7, M0.1 to M9.1	1	5	12.777				12.78	24	11.22
	HT/VHT80, M0 to M7, M0.1 to M9.1	2	5	2.418	7.614			8.76	24	15.24
	HT/VHT80, M8 to M15, M0.2 to M9.2	2	5	2.444	7.517			8.69	24	15.31
	HT/VHT80, M0 to M7, M0.1 to M9.1	3	5	2.432	7.544	1.707		9.50	24	14.50
	HT/VHT80, M8 to M15, M0.2 to M9.2	3	5	2.425	7.616	1.968		9.59	24	14.41
	HT/VHT80, M16 to M23, M0.3 to M9.3	3	5	2.431	7.511	1.92		9.52	24	14.48
	HT/VHT80 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	2.428	7.632			8.78	22	13.22
	HT/VHT80 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	2.455	7.512			8.69	24	15.31
	HT/VHT80 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	2.418	7.506	1.753		9.48	20.2	10.72
	HT/VHT80 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	2.393	7.513	1.71		9.47	23.2	13.73
	HT/VHT80 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	2.393	7.59	1.699		9.52	24	14.48



	HT/VHT80 STBC, M0 to M7, M0.1 to M9.1	2	5	2.443	7.509			8.69	24	15.31
	HT/VHT80 STBC, M0 to M7, M0.1 to M9.1	3	5	2.418	7.592	1.725		9.53	24	14.47
5300	Non HT/VHT40, 6 to 54 Mbps	1	5	13.962				13.96	24	10.04
	Non HT/VHT40, 6 to 54 Mbps	2	5	12.995	14.555			16.85	24	7.15
	Non HT/VHT40, 6 to 54 Mbps	3	5	11.955	13.637	11.939		17.36	24	6.64
	HT/VHT40, M0 to M7, M0.1 to M9.1	1	5	13.576				13.58	24	10.42
	HT/VHT40, M0 to M7, M0.1 to M9.1	2	5	12.734	14.592			16.77	24	7.23
	HT/VHT40, M8 to M15, M0.2 to M9.2	2	5	12.649	14.584			16.73	24	7.27
	HT/VHT40, M0 to M7, M0.1 to M9.1	3	5	11.529	13.364	11.533		17.00	24	7.00
	HT/VHT40, M8 to M15, M0.2 to M9.2	3	5	11.542	13.382	11.68		17.06	24	6.94
	HT/VHT40, M16 to M23, M0.3 to M9.3	3	5	11.599	13.435	11.711		17.10	24	6.90
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	12.652	14.594			16.74	22	5.26
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	12.575	14.506			16.66	24	7.34
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	11.536	13.366	11.636		17.04	20.2	3.16
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	11.656	13.459	11.514		17.07	23.2	6.13
	HT/VHT40 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	11.623	13.404	11.703		17.10	24	6.90
	HT/VHT40 STBC, M0 to M7, M0.1 to M9.1	2	5	12.578	14.531			16.67	24	7.33
	HT/VHT40 STBC, M0 to M7, M0.1 to M9.1	3	5	11.535	13.36	11.467		16.98	24	7.02
5320	Non HT/VHT20, 6 to 54 Mbps	1	5	15.66				15.66	24	8.34
	Non HT/VHT20, 6 to 54 Mbps	2	5	3.667	4.957			7.37	24	16.63
	Non HT/VHT20, 6 to 54 Mbps	3	5	3.376	4.974	3.405		8.76	24	15.24
	Non HT/VHT20 Beam Forming, 6 to 54 Mbps	2	8	3.432	5.029			7.31	22	14.69
	Non HT/VHT20 Beam Forming, 6 to 54 Mbps	3	10	3.379	4.977	3.395		8.76	20.2	11.44



HT/VHT20, M0 to M7, M0.1 to M9.1	1	5	15.325				15.33	24	8.68
HT/VHT20, M0 to M7, M0.1 to M9.1	2	5	3.238	4.801			7.10	24	16.90
HT/VHT20, M8 to M15, M0.2 to M9.2	2	5	3.287	4.783			7.11	24	16.89
HT/VHT20, M0 to M7, M0.1 to M9.1	3	5	7.464	9.623	7.91		13.21	24	10.79
HT/VHT20, M8 to M15, M0.2 to M9.2	3	5	3.278	4.789	3.26		8.61	24	15.39
HT/VHT20, M16 to M23, M0.3 to M9.3	3	5	3.28	4.833	3.267		8.63	24	15.37
HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	3.265	4.813			7.12	22	14.88
HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	3.32	4.643			7.04	24	16.96
HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	3.334	4.79	3.265		8.63	20.2	11.57
HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	3.327	4.801	3.01		8.56	23.2	14.64
HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	3.46	4.859	3.278		8.70	24	15.30
HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	2	5	3.279	4.783			7.11	24	16.89
HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	3	5	3.037	4.644	3.286		8.49	24	15.51



Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	PSD / Antenna (dBm/3kHz)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
5260	Non HT/VHT20, 6 to 54 Mbps	1	10	-0.335	-0.34	7.23	7.56
	Non HT/VHT20 Beam Forming, 6 to 54 Mbps	2	10	-0.008	3.00	7.23	4.23
	HT/VHT20, M0 to M7, M0.1 to M9.1	1	8	2.585	2.59	8.99	6.40
	HT/VHT20, M8 to M15, M0.2 to M9.2	2	5	4.475	7.49	11.00	3.51
	HT/VHT20, M0 to M7, M0.1 to M9.1	3	10	-0.408	4.36	7.23	2.87
	HT/VHT20, M8 to M15, M0.2 to M9.2	3	7	3.575	8.35	10.24	1.89
	HT/VHT20, M16 to M23, M0.3 to M9.3	3	5	3.417	8.19	11.00	2.81
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	2.738	5.75	8.99	3.24
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	4.514	7.52	11.00	3.48
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	-0.466	4.31	7.23	2.92
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	1.563	6.33	10.24	3.90
	HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	3.418	8.19	11.00	2.81
	HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	2	7	3.711	6.72	10.24	3.52
	Non HT/VHT40, 6 to 54 Mbps	2	10	-0.553	2.46	7.23	4.77
	HT/VHT40, M0 to M7, M0.1 to M9.1	2	8	1.814	4.82	8.99	4.17
	HT/VHT40, M8 to M15, M0.2 to M9.2	3	7	1.89	6.66	10.24	3.58
	HT/VHT40, M0 to M7, M0.1 to M9.1	3	10	-0.953	3.82	7.23	3.41
	HT/VHT40, M16 to M23, M0.3 to M9.3	3	5	1.738	6.51	11.00	4.49
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	2.01	5.02	8.99	3.97
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	2.083	5.09	11.00	5.91
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	-1.06	3.71	7.23	3.52
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	0.843	5.61	10.24	4.62
	HT/VHT40 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	1.726	6.50	11.00	4.50
	HT/VHT40 STBC, M0 to M7, M0.1 to M9.1	3	7	1.817	6.59	10.24	3.65

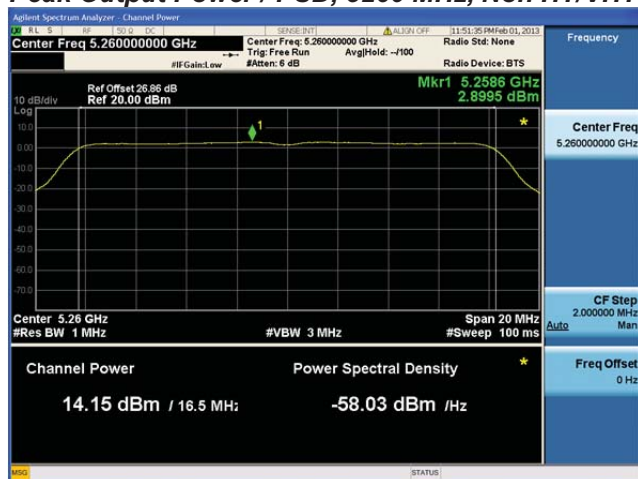


	Non HT/VHT80, 6 to 54 Mbps	1	10	-14.573	-14.57	7.23	21.80
	HT/VHT80, M0 to M7, M0.1 to M9.1	1	8	-15.173	-15.17	8.99	24.16
	HT/VHT80, M8 to M15, M0.2 to M9.2	2	5	-15.062	-12.05	11.00	23.05
	HT/VHT80, M0 to M7, M0.1 to M9.1	3	10	-15.824	-11.05	7.23	18.28
	HT/VHT80, M8 to M15, M0.2 to M9.2	3	7	-15.58	-10.81	10.24	21.05
	HT/VHT80, M16 to M23, M0.3 to M9.3	3	5	-15.604	-10.83	11.00	21.83
	HT/VHT80 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	-15.04	-12.03	8.99	21.02
	HT/VHT80 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	-15.077	-12.07	11.00	23.07
	HT/VHT80 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	-15.83	-11.06	7.23	18.29
	HT/VHT80 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	-15.865	-11.09	10.24	21.33
	HT/VHT80 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	-15.864	-11.09	11.00	22.09
	HT/VHT80 STBC, M0 to M7, M0.1 to M9.1	2	7	-15.769	-12.76	10.24	23.00
5300	Non HT/VHT40, 6 to 54 Mbps	1	10	-2.045	-2.05	7.23	9.27
	HT/VHT40, M0 to M7, M0.1 to M9.1	1	8	-1.431	-1.43	8.99	10.42
	HT/VHT40, M8 to M15, M0.2 to M9.2	2	5	-1.508	1.50	11.00	9.50
	HT/VHT40, M0 to M7, M0.1 to M9.1	3	10	-2.617	2.15	7.23	5.07
	HT/VHT40, M8 to M15, M0.2 to M9.2	3	7	-2.632	2.14	10.24	8.10
	HT/VHT40, M16 to M23, M0.3 to M9.3	3	5	-2.525	2.25	11.00	8.75
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	-1.448	1.56	8.99	7.43
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	-1.542	1.47	11.00	9.53
	HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	-2.589	2.18	7.23	5.05
	HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	-2.554	2.22	10.24	8.02
	HT/VHT40 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	-2.508	2.26	11.00	8.74
	HT/VHT40 STBC, M0 to M7, M0.1 to M9.1	2	7	-2.659	0.35	10.24	9.89
5320	Non HT/VHT20, 6 to 54 Mbps	1	10	-7.736	-7.74	7.23	14.96
	Non HT/VHT20 Beam Forming, 6 to	2	10	-7.753	-4.74	7.23	11.97



	54 Mbps						
	HT/VHT20, M0 to M7, M0.1 to M9.1	1	8	-7.987	-7.99	8.99	16.98
	HT/VHT20, M8 to M15, M0.2 to M9.2	2	5	-7.946	-4.94	11.00	15.94
	HT/VHT20, M0 to M7, M0.1 to M9.1	3	10	-3.789	0.98	7.23	6.25
	HT/VHT20, M8 to M15, M0.2 to M9.2	3	7	-7.96	-3.19	10.24	13.43
	HT/VHT20, M16 to M23, M0.3 to M9.3	3	5	-7.958	-3.19	11.00	14.19
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	2	8	-7.962	-4.95	8.99	13.94
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	2	5	-7.899	-4.89	11.00	15.89
	HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1	3	10	-7.952	-3.18	7.23	10.41
	HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2	3	7	-8.218	-3.45	10.24	13.69
	HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3	3	5	-7.963	-3.19	11.00	14.19
	HT/VHT20 STBC, M0 to M7, M0.1 to M9.1	2	7	-8.188	-5.18	10.24	15.42

**Peak Output Power / PSD, 5260 MHz, Non HT/VHT20, 6 to 54 Mbps****Antenna A**

**Peak Output Power / PSD, 5260 MHz, Non HT/VHT20, 6 to 54 Mbps****Antenna A****Antenna B**



Peak Output Power / PSD, 5260 MHz, Non HT/VHT20, 6 to 54 Mbps



Antenna A

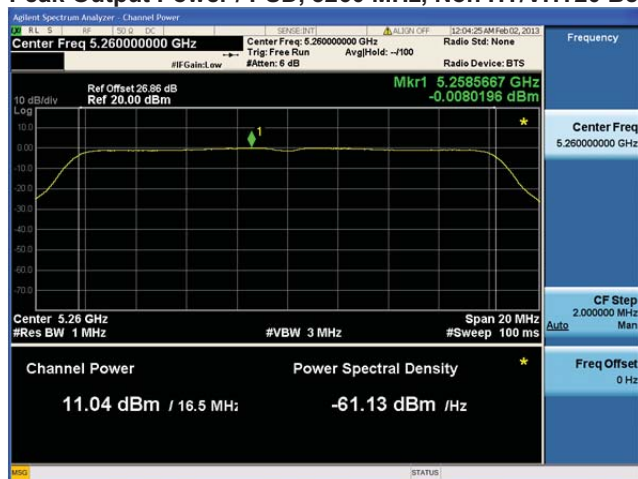


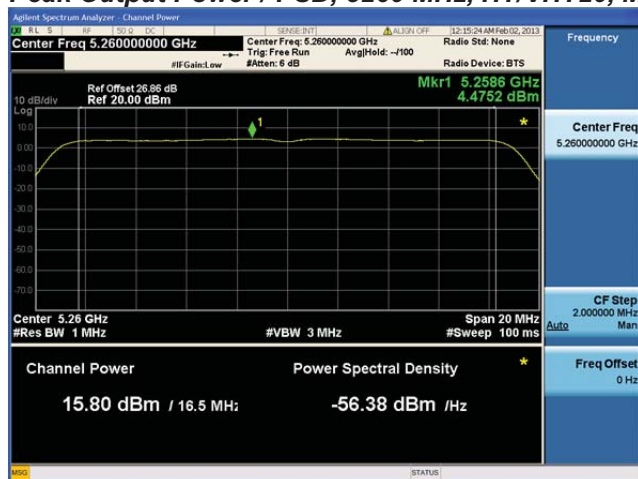
Antenna B

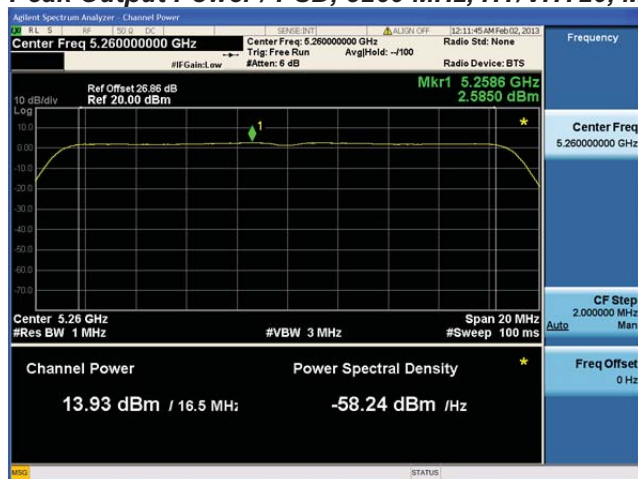


Antenna C

**Peak Output Power / PSD, 5260 MHz, Non HT/VHT20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B**

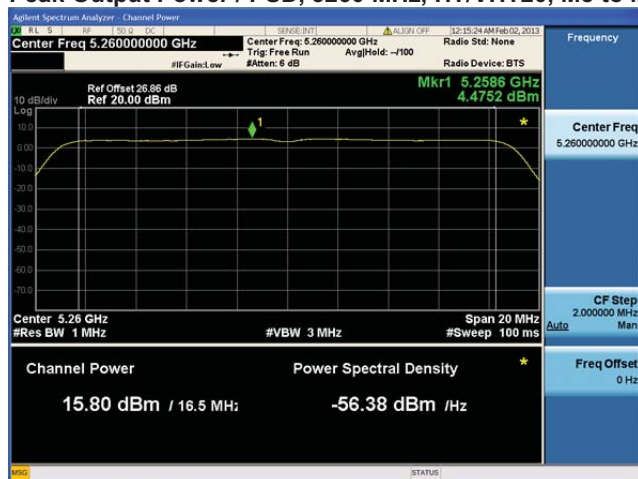
**Peak Output Power / PSD, 5260 MHz, Non HT/VHT20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5260 MHz, HT/VHT20, M0 to M7, M0.1 to M9.1****Antenna A**

**Peak Output Power / PSD, 5260 MHz, HT/VHT20, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B**



Peak Output Power / PSD, 5260 MHz, HT/VHT20, M8 to M15, M0.2 to M9.2



Antenna A



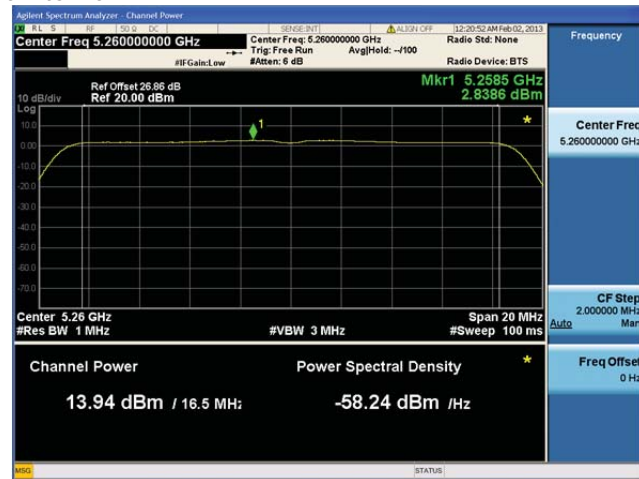
Antenna B



Peak Output Power / PSD, 5260 MHz, HT/VHT20, M0 to M7, M0.1 to M9.1



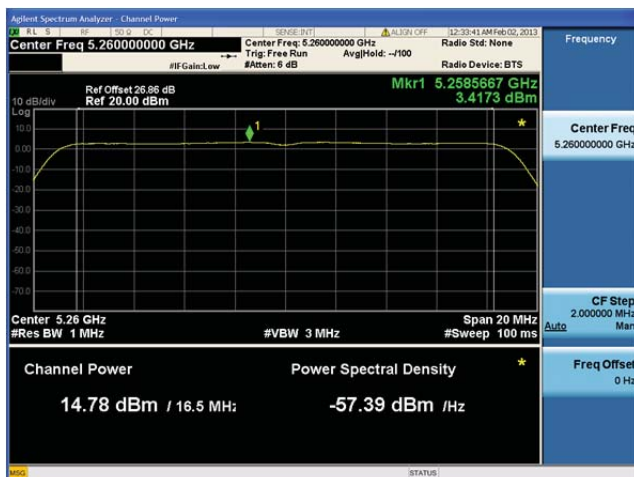
Antenna A

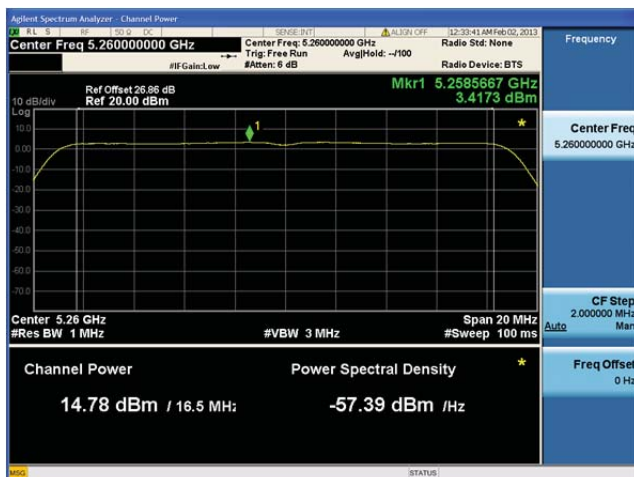


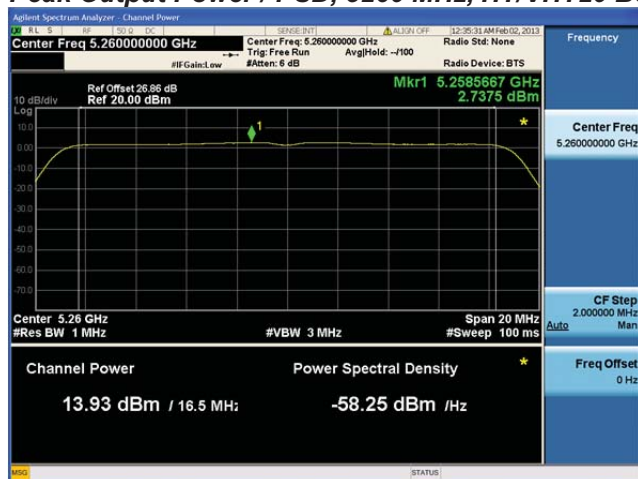
Antenna B



Antenna C

**Peak Output Power / PSD, 5260 MHz, HT/VHT20, M8 to M15, M0.2 to M9.2****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5260 MHz, HT/VHT20, M16 to M23, M0.3 to M9.3****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5260 MHz, HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B**

**Peak Output Power / PSD, 5260 MHz, HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2****Antenna A****Antenna B**



Peak Output Power / PSD, 5260 MHz, HT/VHT20 Beam Forming, M0 to M7, M0.1 to M9.1



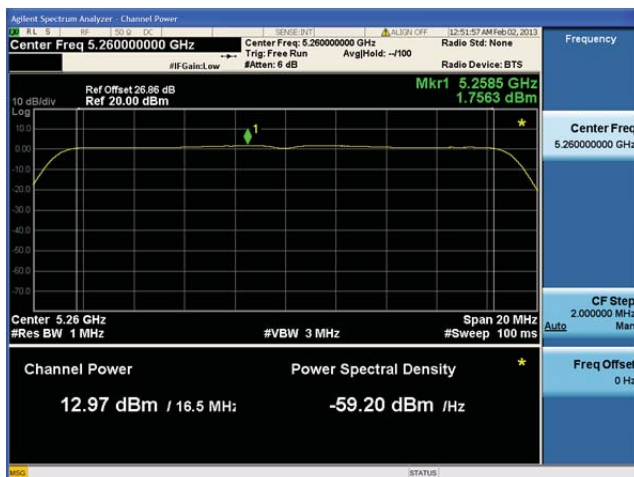
Antenna A

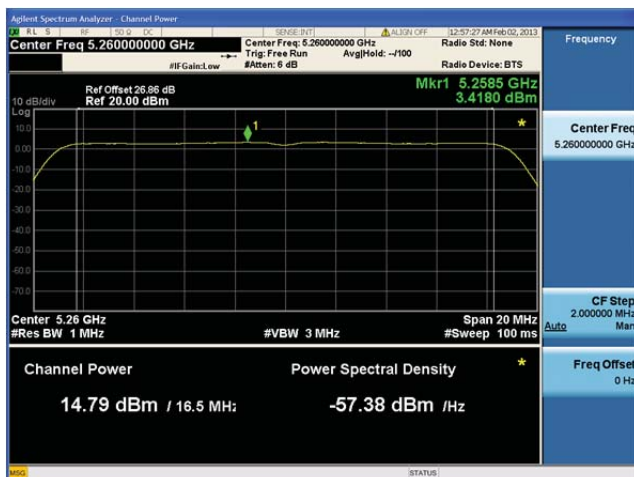


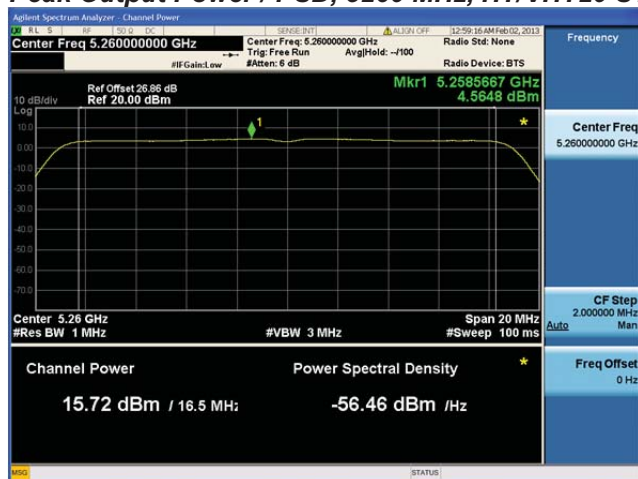
Antenna B



Antenna C

**Peak Output Power / PSD, 5260 MHz, HT/VHT20 Beam Forming, M8 to M15, M0.2 to M9.2****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5260 MHz, HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5260 MHz, HT/VHT20 STBC, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B**



Peak Output Power / PSD, 5260 MHz, HT/VHT20 STBC, M0 to M7, M0.1 to M9.1



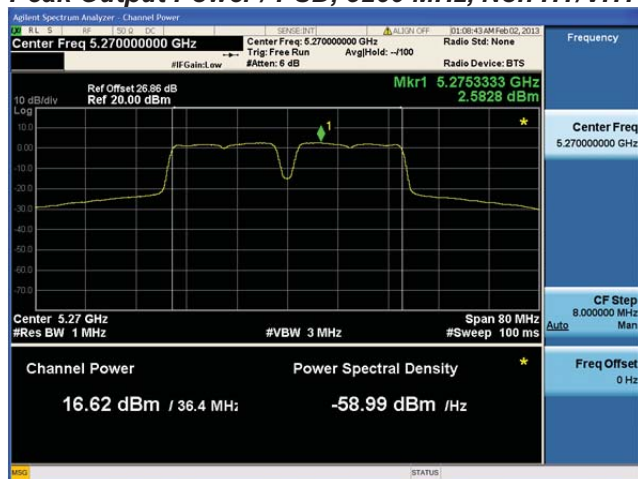
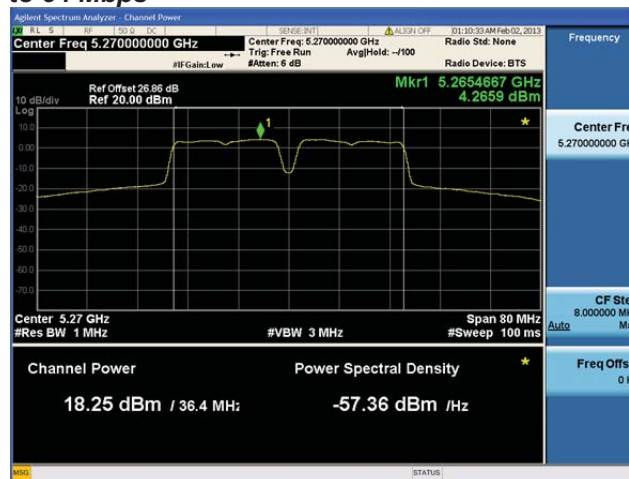
Antenna A

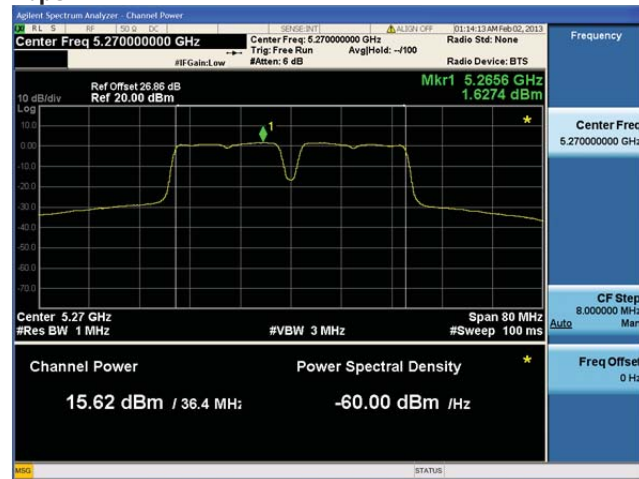
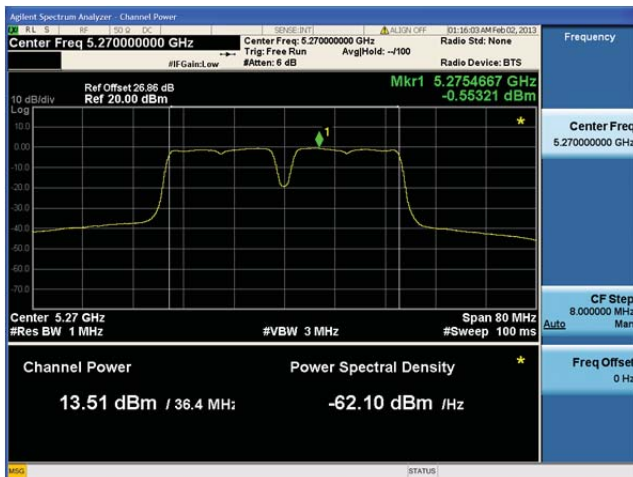


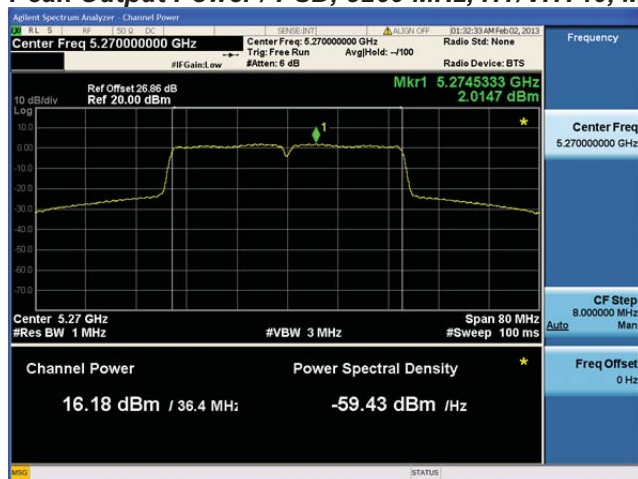
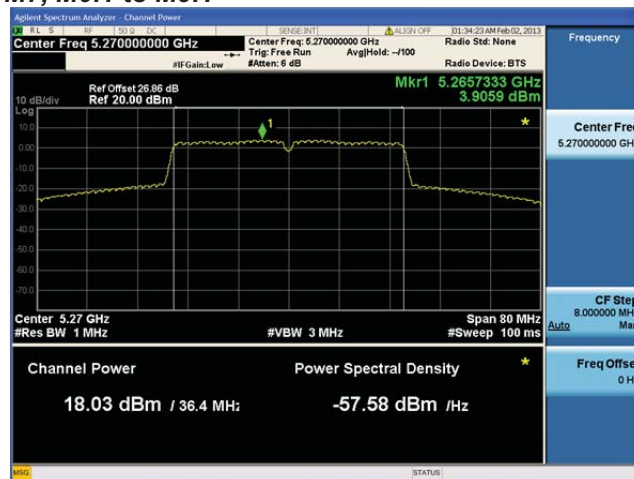
Antenna B



Antenna C

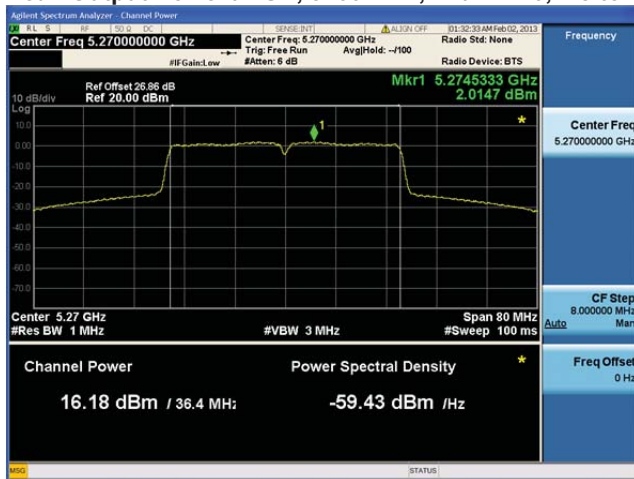
**Peak Output Power / PSD, 5260 MHz, Non HT/VHT40, 6 to 54 Mbps****Antenna A****Antenna B**

Peak Output Power / PSD, 5260 MHz, Non HT/VHT40, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C**

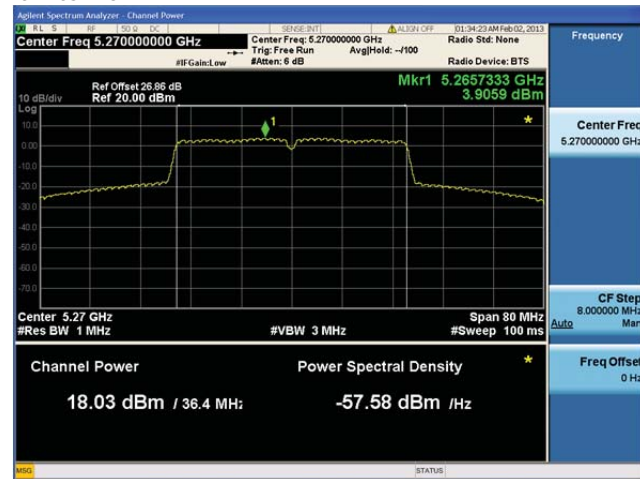
**Peak Output Power / PSD, 5260 MHz, HT/VHT40, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B**



Peak Output Power / PSD, 5260 MHz, HT/VHT40, M8 to M15, M0.2 to M9.2



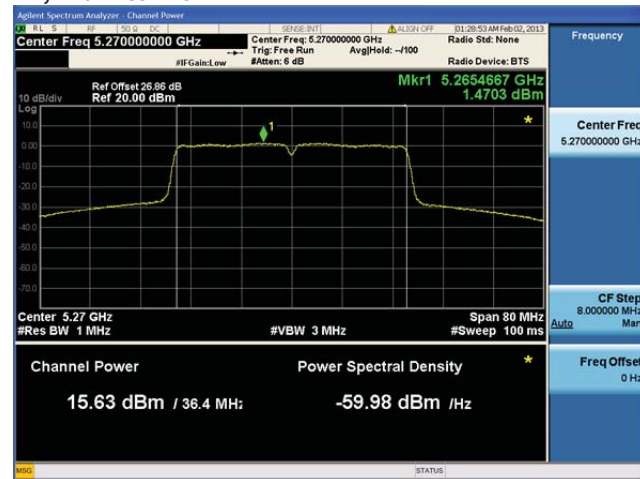
Antenna A

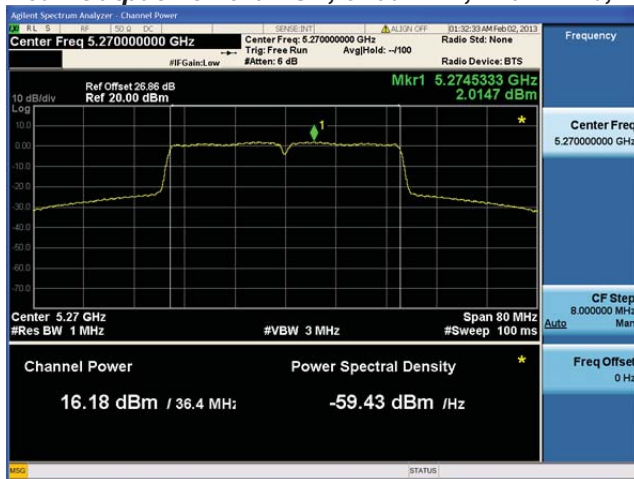
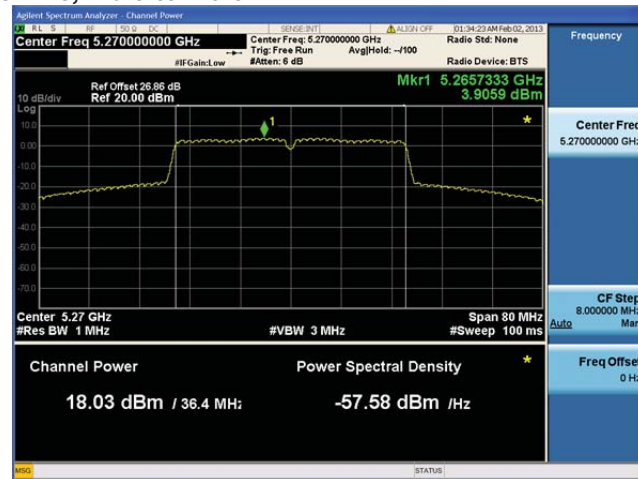


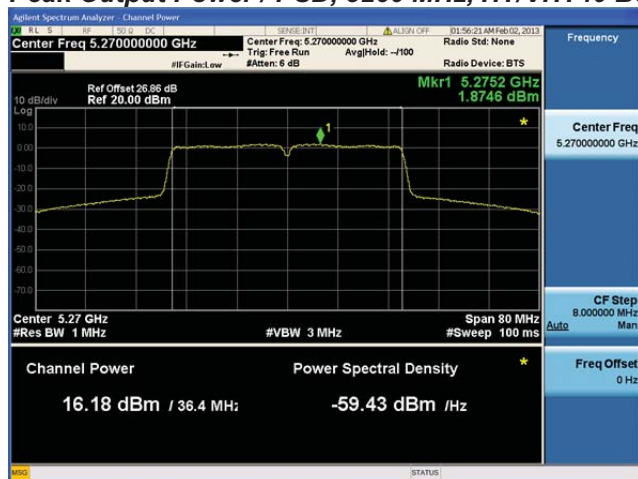
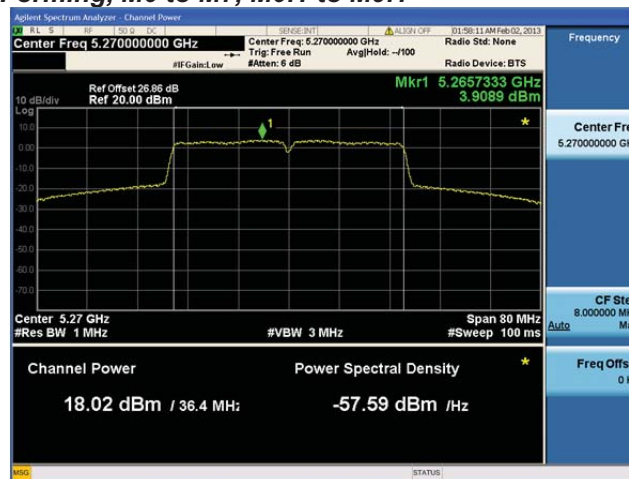
Antenna B



Antenna C

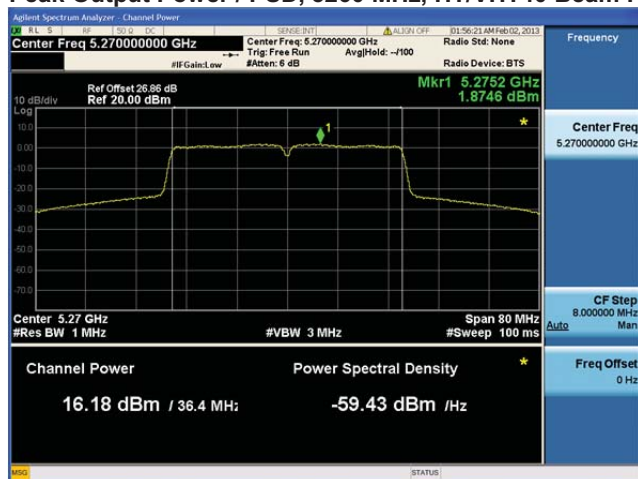
**Peak Output Power / PSD, 5260 MHz, HT/VHT40, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5260 MHz, HT/VHT40, M16 to M23, M0.3 to M9.3****Antenna A****Antenna B****Antenna C**

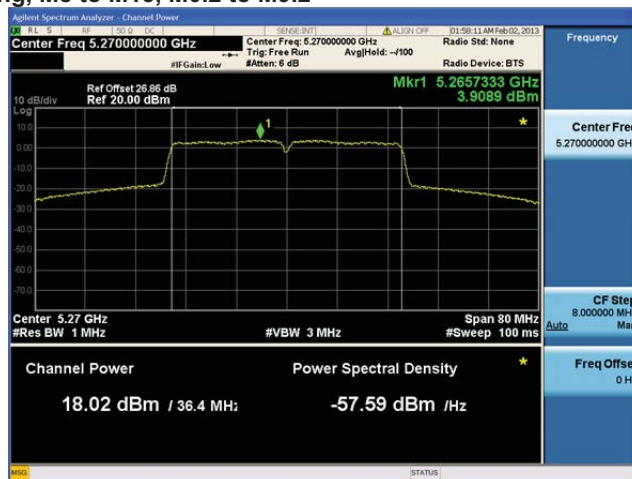
**Peak Output Power / PSD, 5260 MHz, HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B**



Peak Output Power / PSD, 5260 MHz, HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2



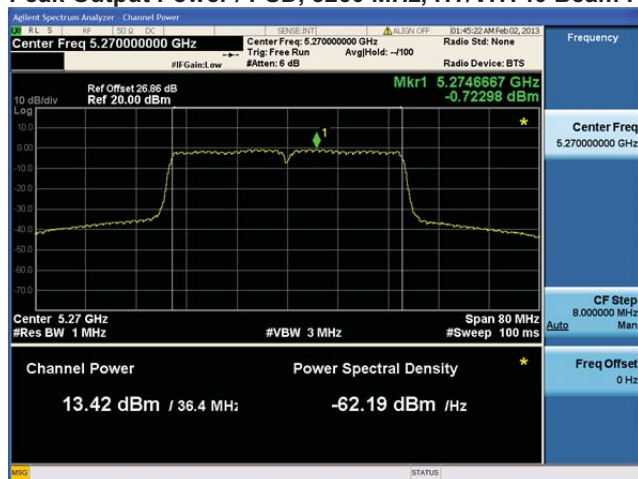
Antenna A



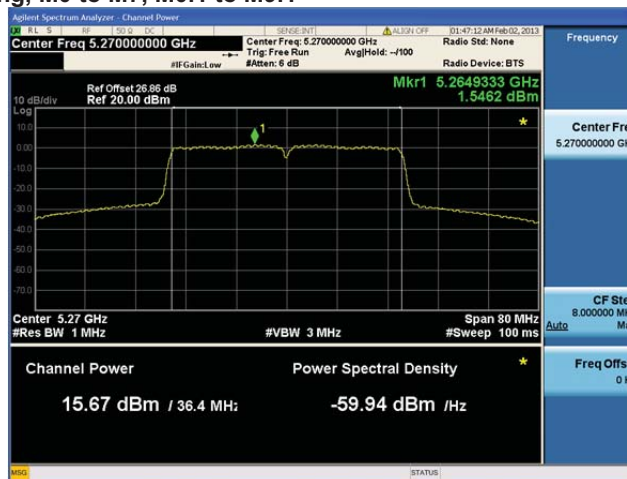
Antenna B



Peak Output Power / PSD, 5260 MHz, HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1



Antenna A

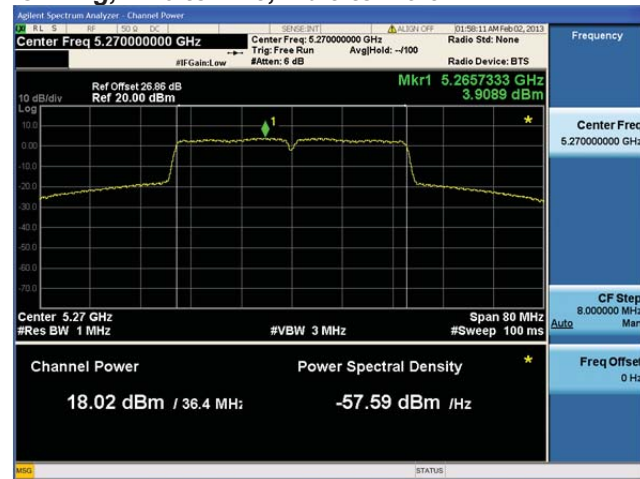


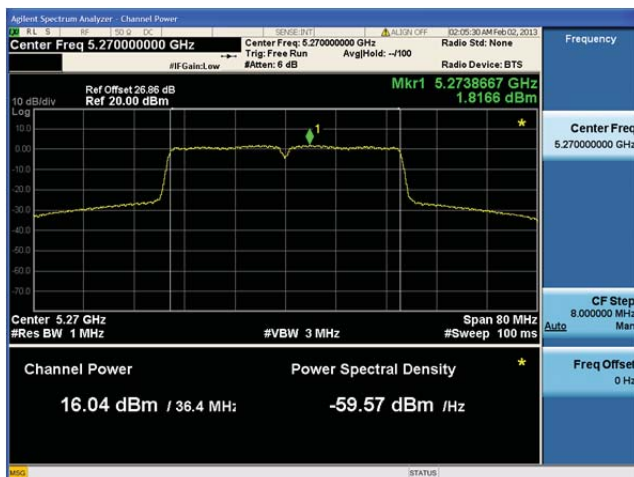
Antenna B



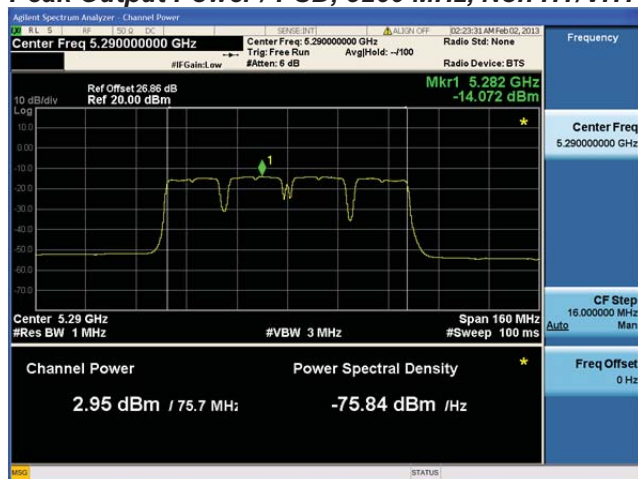
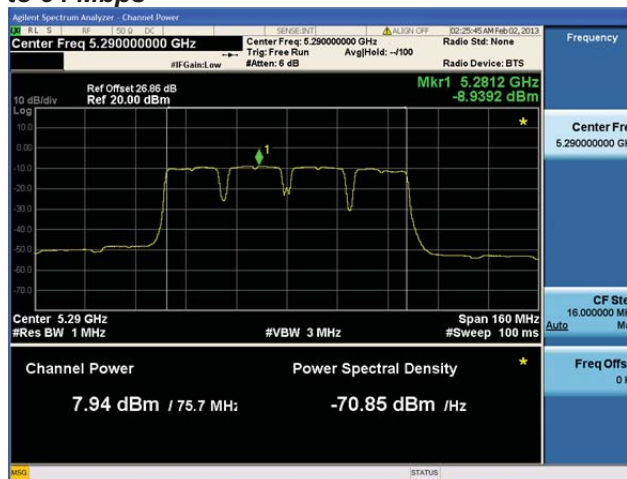
Antenna C

**Peak Output Power / PSD, 5260 MHz, HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5260 MHz, HT/VHT40 Beam Forming, M16 to M23, M0.3 to M9.3****Antenna A****Antenna B****Antenna C**

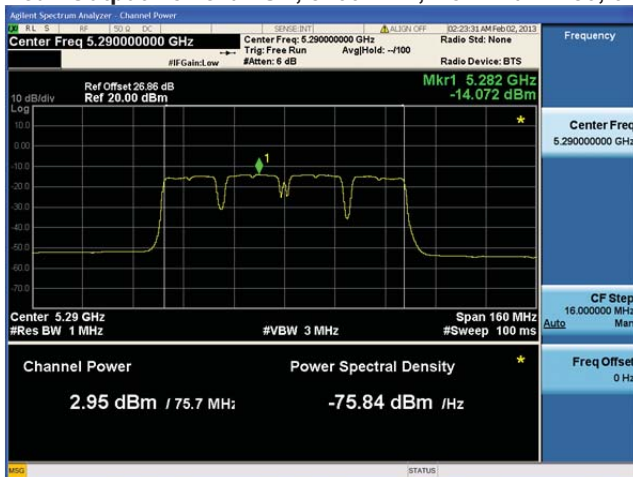
**Peak Output Power / PSD, 5260 MHz, HT/VHT40 STBC, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5260 MHz, Non HT/VHT80, 6 to 54 Mbps****Antenna A**

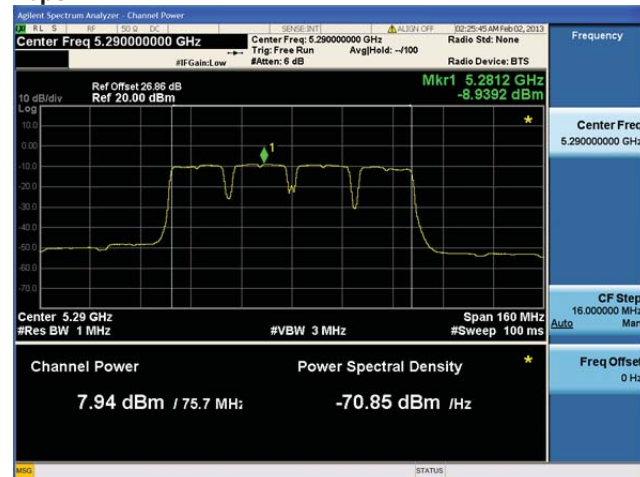
**Peak Output Power / PSD, 5260 MHz, Non HT/VHT80, 6 to 54 Mbps****Antenna A****Antenna B**



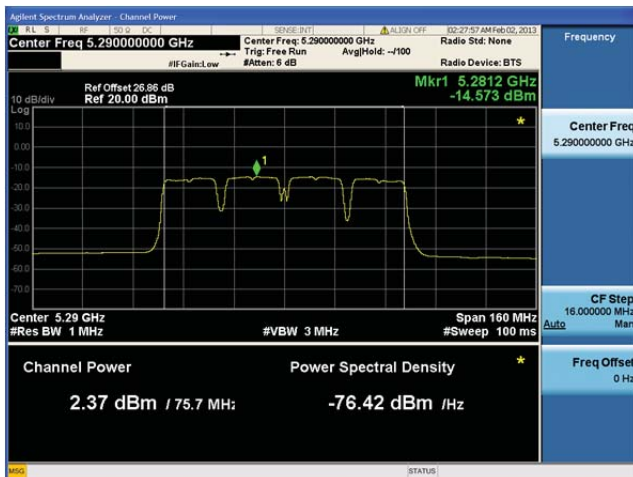
Peak Output Power / PSD, 5260 MHz, Non HT/VHT80, 6 to 54 Mbps



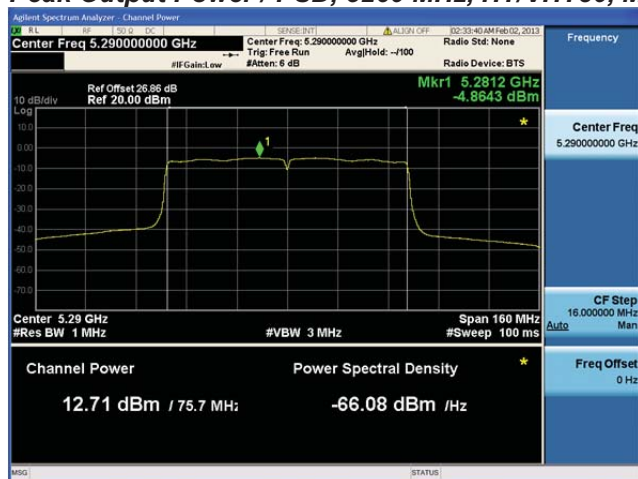
Antenna A

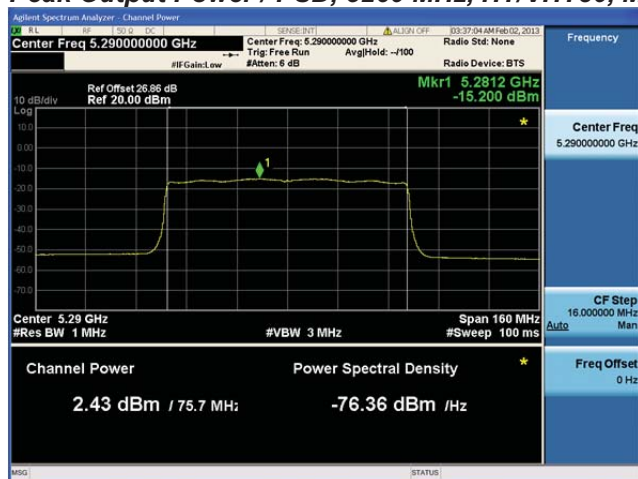
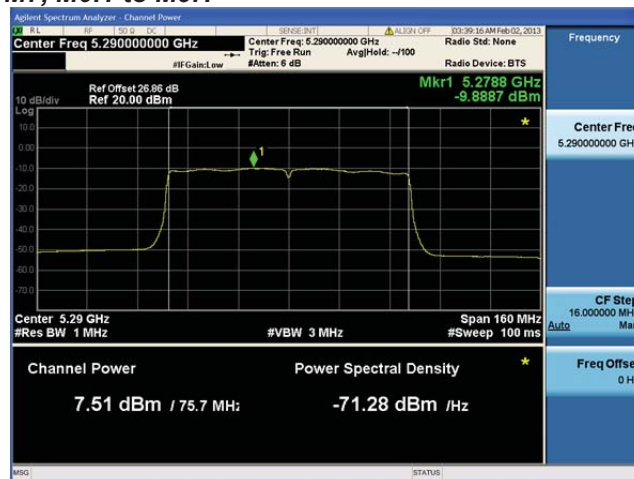


Antenna B



Antenna C

Peak Output Power / PSD, 5260 MHz, HT/VHT80, M0 to M7, M0.1 to M9.1**Antenna A**

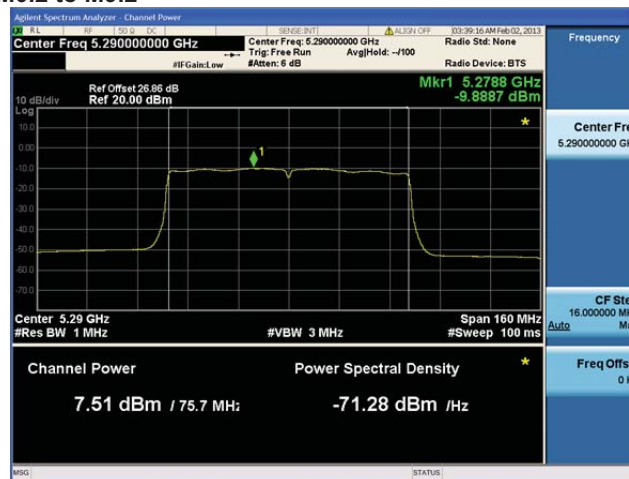
**Peak Output Power / PSD, 5260 MHz, HT/VHT80, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B**



Peak Output Power / PSD, 5260 MHz, HT/VHT80, M8 to M15, M0.2 to M9.2

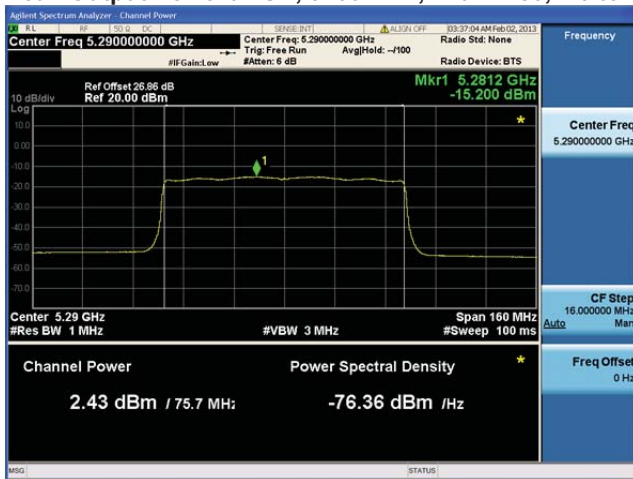


Antenna A

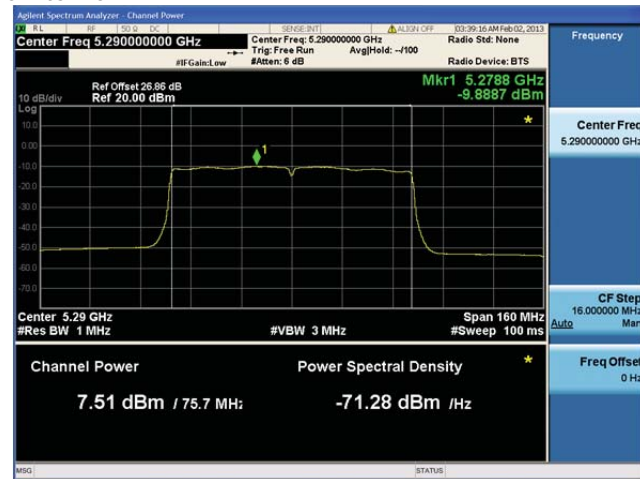


Antenna B

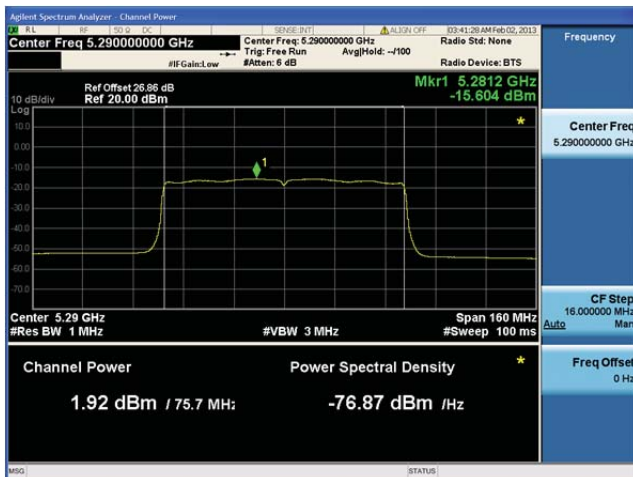
Peak Output Power / PSD, 5260 MHz, HT/VHT80, M0 to M7, M0.1 to M9.1



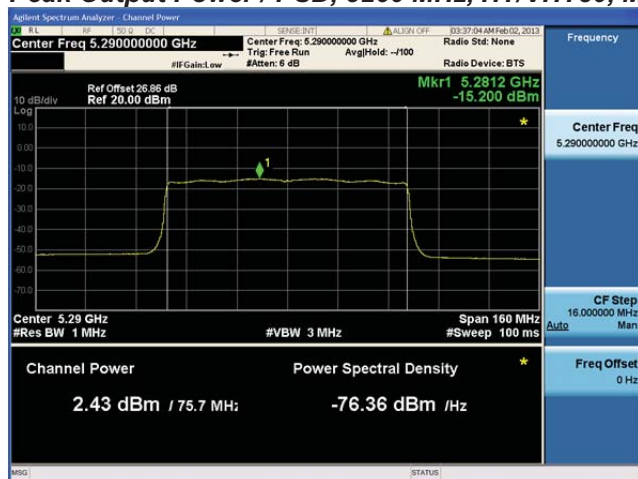
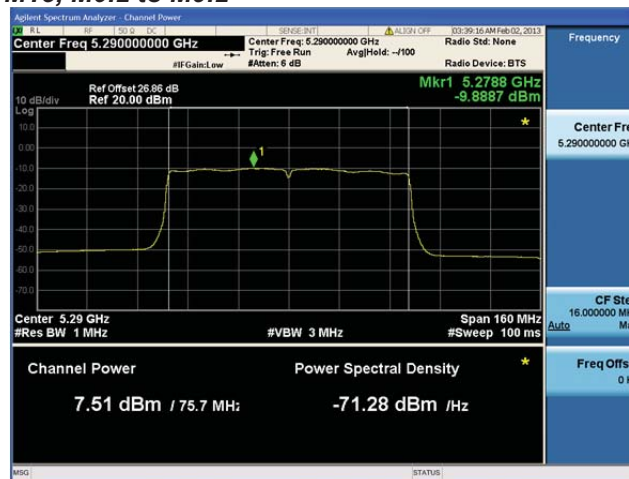
Antenna A



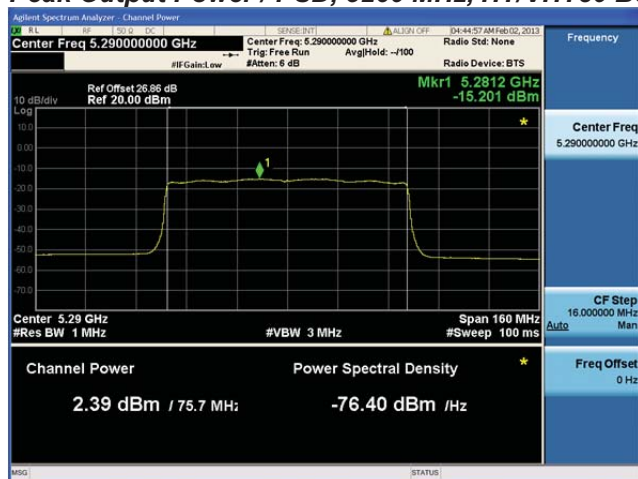
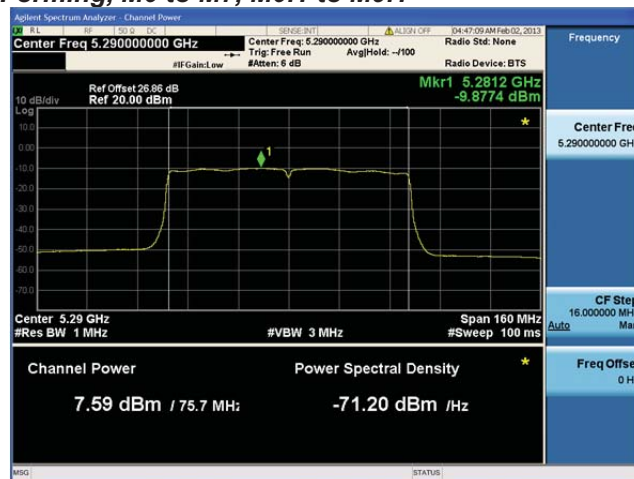
Antenna B



Antenna C

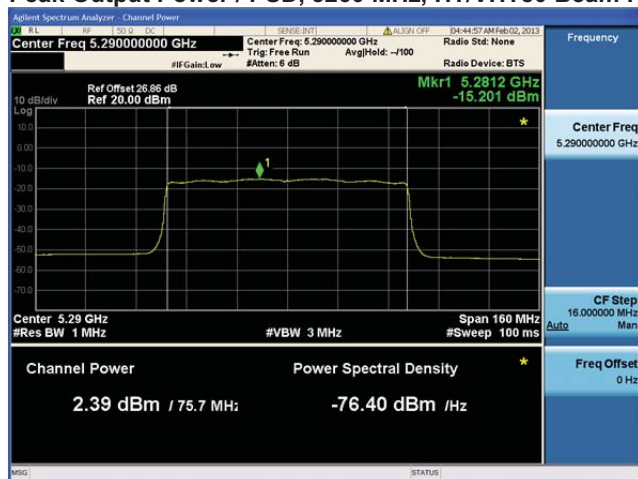
Peak Output Power / PSD, 5260 MHz, HT/VHT80, M8 to M15, M0.2 to M9.2**Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5260 MHz, HT/VHT80, M16 to M23, M0.3 to M9.3****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5260 MHz, HT/VHT80 Beam Forming, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B**



Peak Output Power / PSD, 5260 MHz, HT/VHT80 Beam Forming, M8 to M15, M0.2 to M9.2



Antenna A

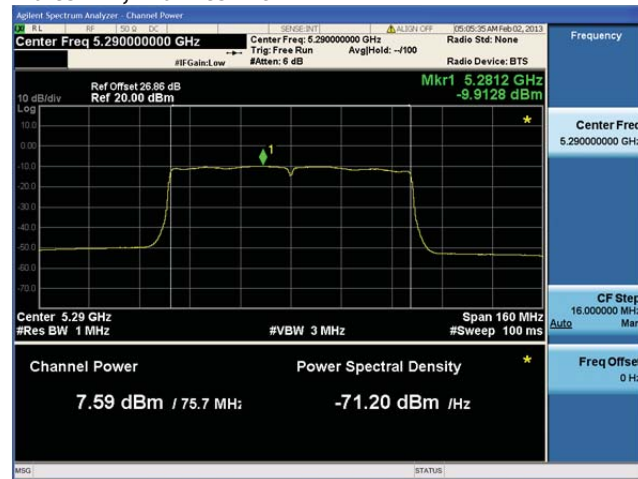


Antenna B

**Peak Output Power / PSD, 5260 MHz, HT/VHT80 Beam Forming, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5260 MHz, HT/VHT80 Beam Forming, M8 to M15, M0.2 to M9.2****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5260 MHz, HT/VHT80 Beam Forming, M16 to M23, M0.3 to M9.3****Antenna A****Antenna B****Antenna C**

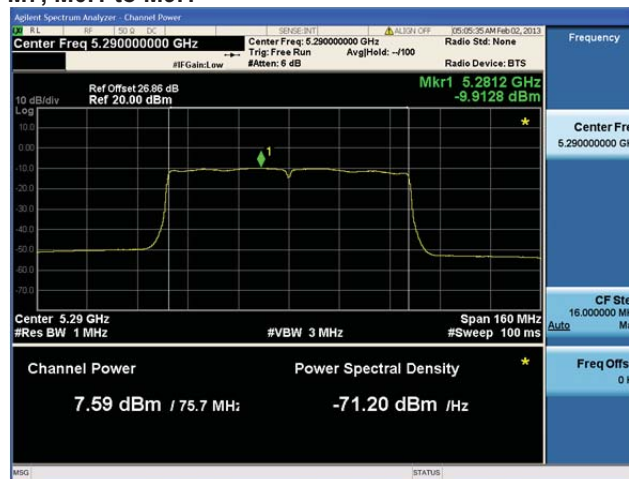
**Peak Output Power / PSD, 5260 MHz, HT/VHT80 STBC, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B**



Peak Output Power / PSD, 5260 MHz, HT/VHT80 STBC, M0 to M7, M0.1 to M9.1



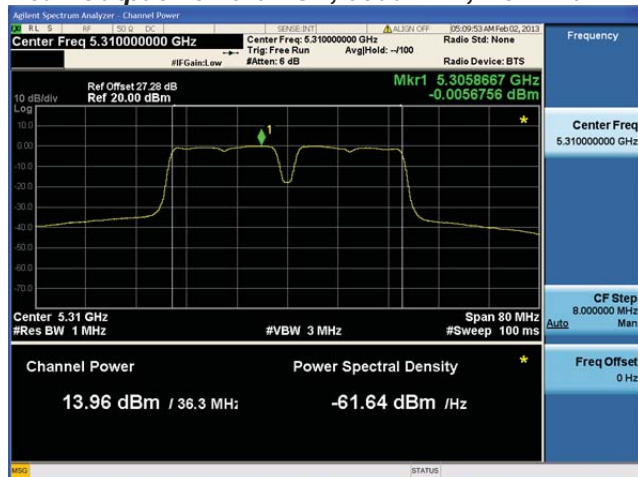
Antenna A

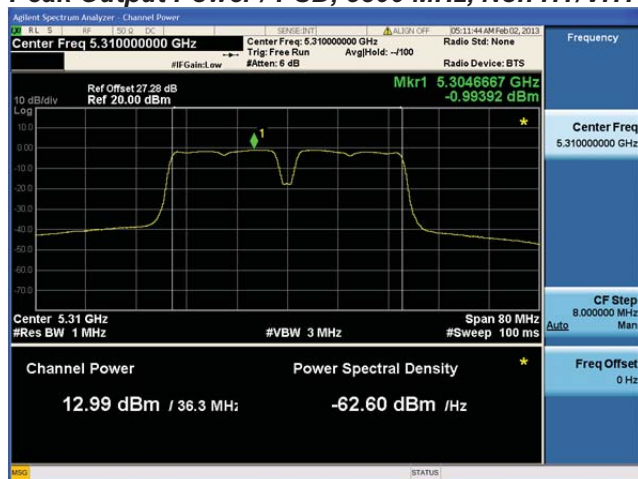


Antenna B



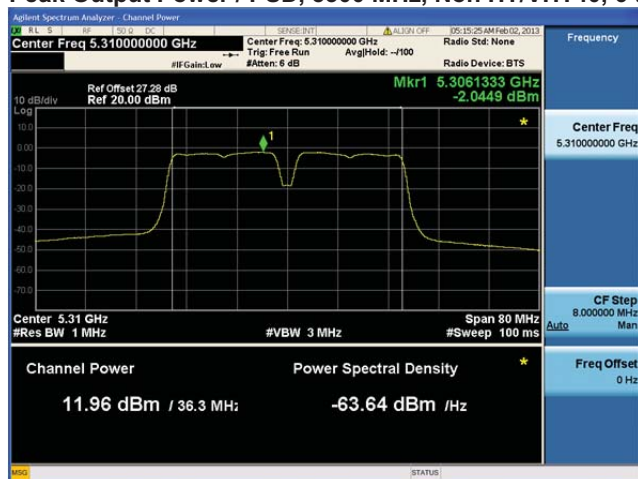
Antenna C

**Peak Output Power / PSD, 5300 MHz, Non HT/VHT40, 6 to 54 Mbps****Antenna A**

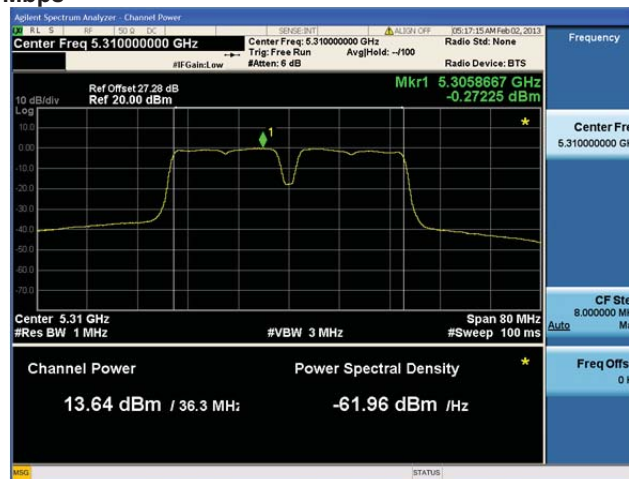
**Peak Output Power / PSD, 5300 MHz, Non HT/VHT40, 6 to 54 Mbps****Antenna A****Antenna B**



Peak Output Power / PSD, 5300 MHz, Non HT/VHT40, 6 to 54 Mbps



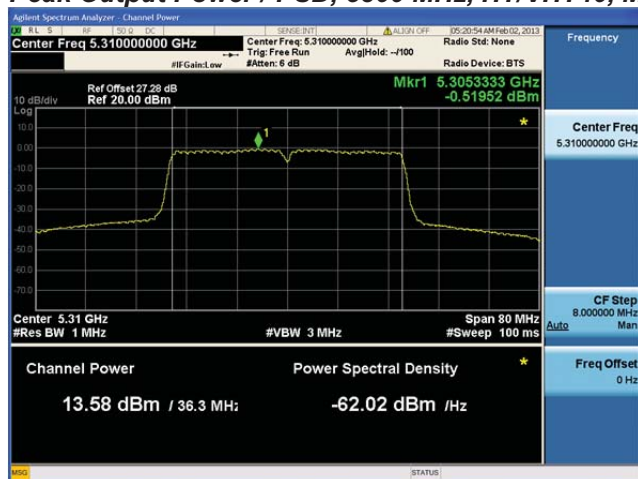
Antenna A

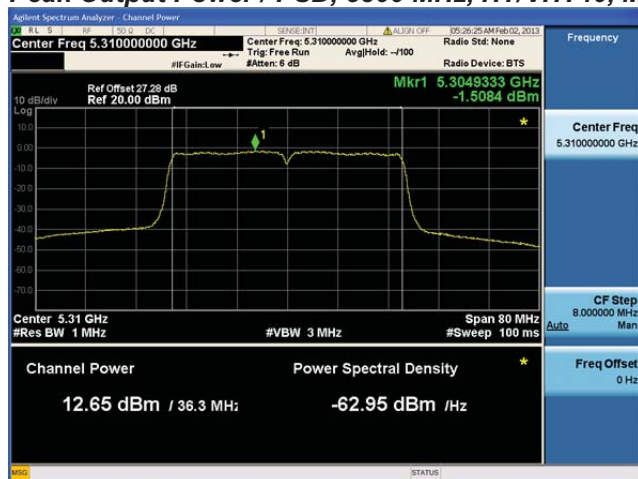


Antenna B



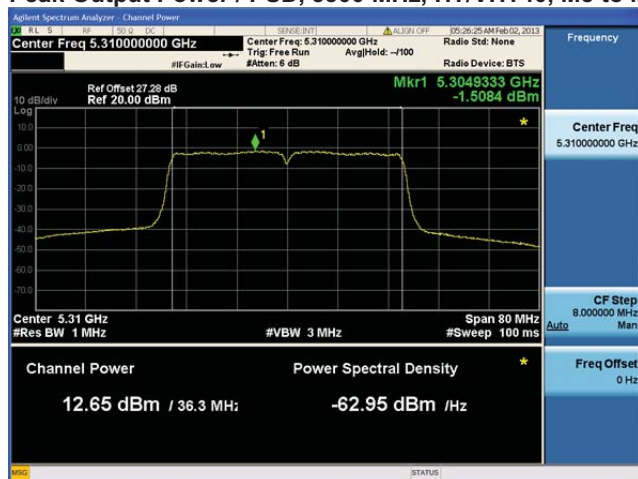
Antenna C

Peak Output Power / PSD, 5300 MHz, HT/VHT40, M0 to M7, M0.1 to M9.1**Antenna A**

**Peak Output Power / PSD, 5300 MHz, HT/VHT40, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B**



Peak Output Power / PSD, 5300 MHz, HT/VHT40, M8 to M15, M0.2 to M9.2



Antenna A



Antenna B



Peak Output Power / PSD, 5300 MHz, HT/VHT40, M0 to M7, M0.1 to M9.1



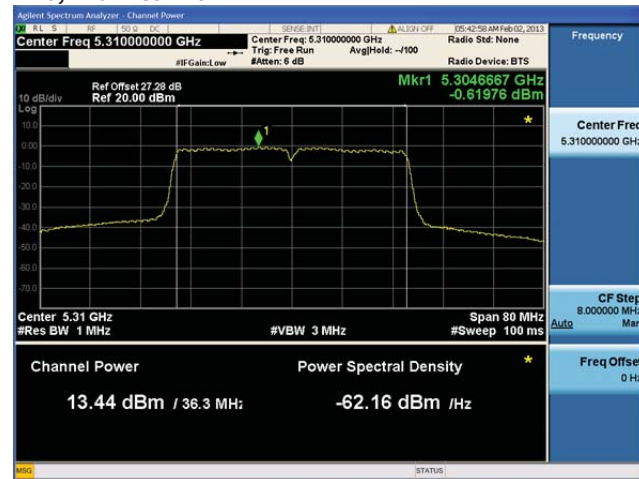
Antenna A

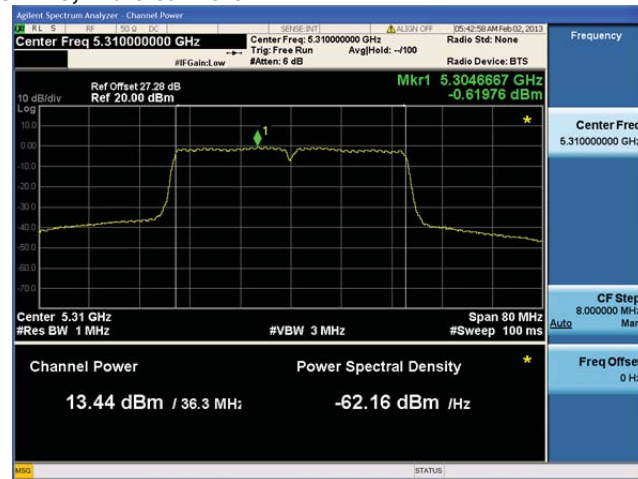


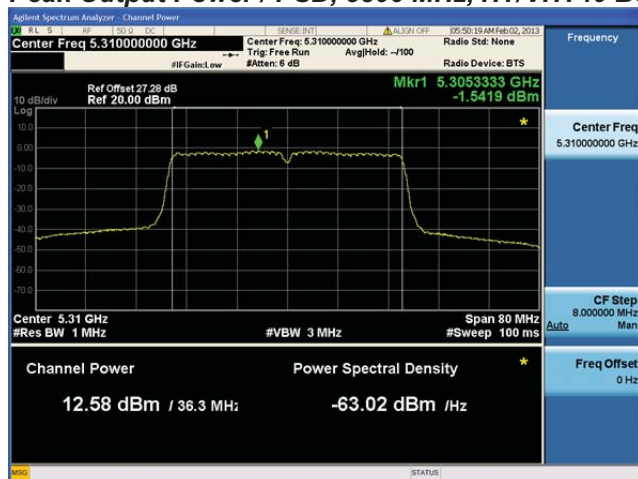
Antenna B

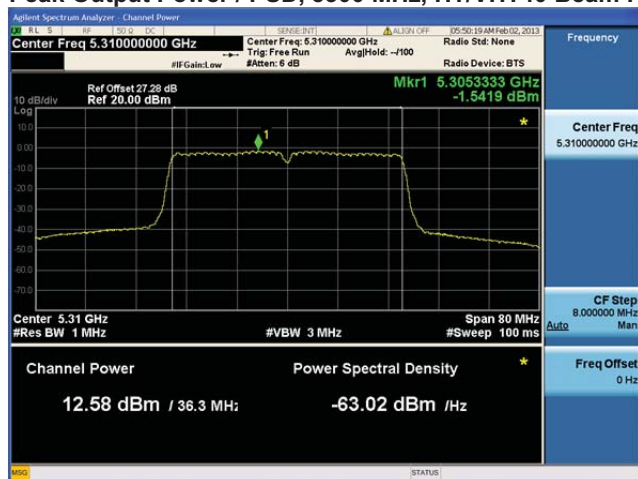


Antenna C

**Peak Output Power / PSD, 5300 MHz, HT/VHT40, M8 to M15, M0.2 to M9.2****Antenna A****Antenna B****Antenna C**

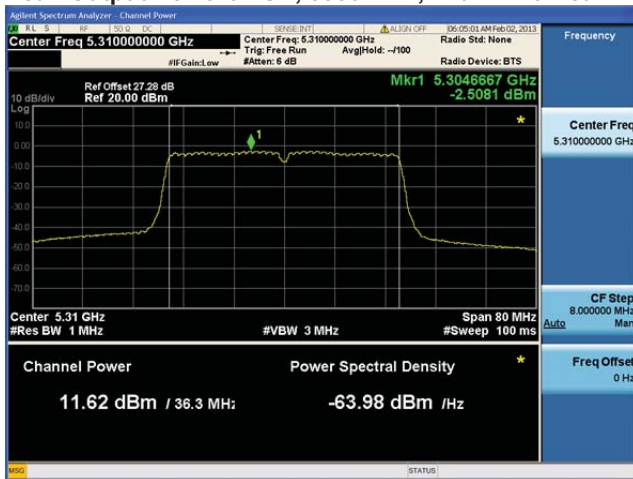
**Peak Output Power / PSD, 5300 MHz, HT/VHT40, M16 to M23, M0.3 to M9.3****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5300 MHz, HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B**

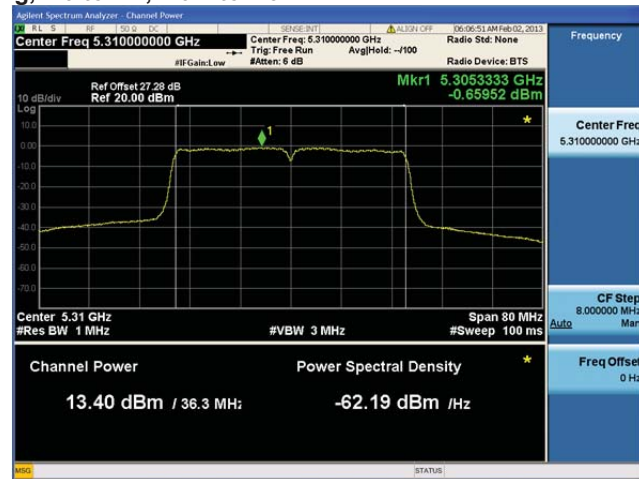
Peak Output Power / PSD, 5300 MHz, HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2**Antenna A****Antenna B**



Peak Output Power / PSD, 5300 MHz, HT/VHT40 Beam Forming, M0 to M7, M0.1 to M9.1



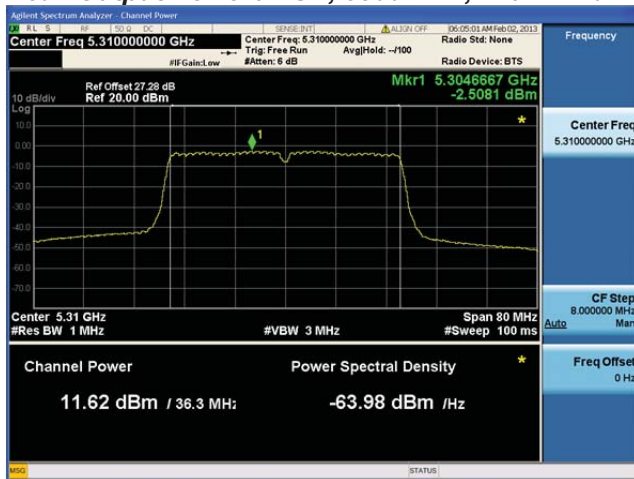
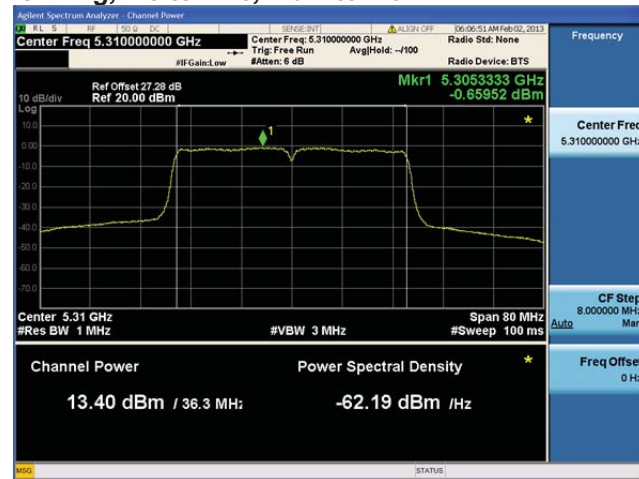
Antenna A

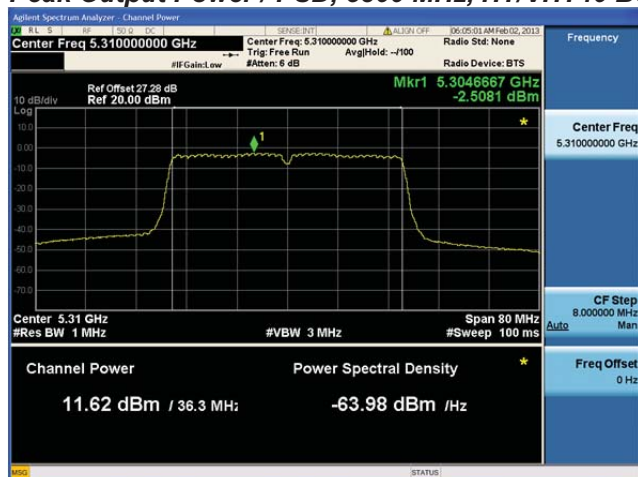
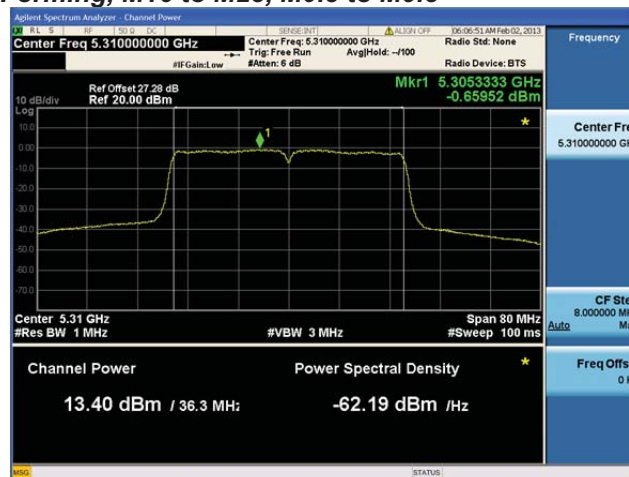
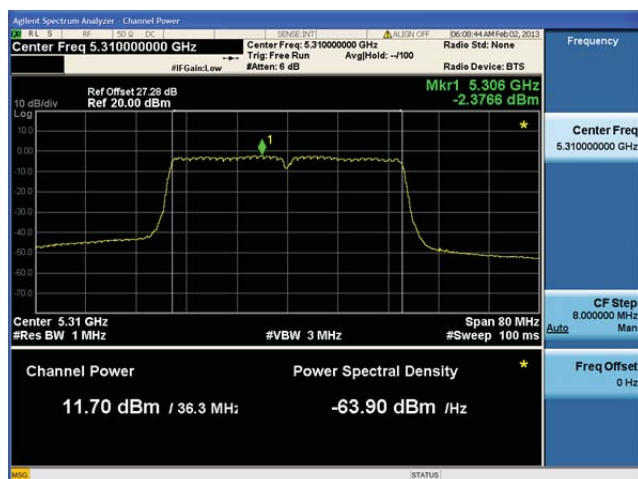


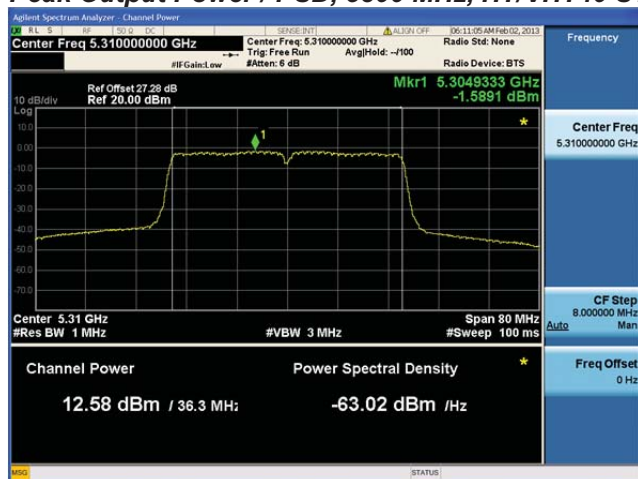
Antenna B



Antenna C

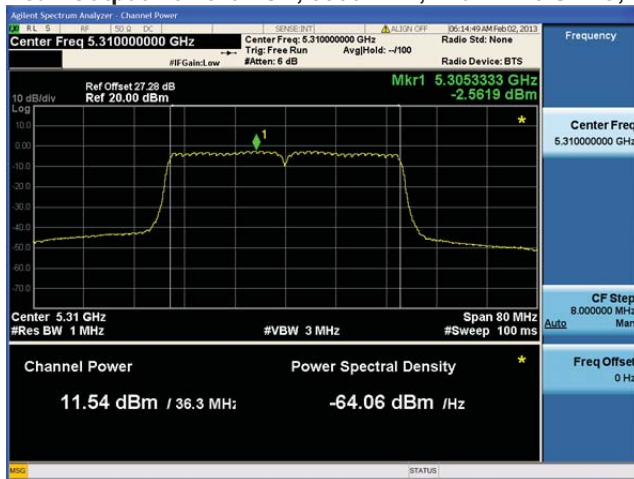
**Peak Output Power / PSD, 5300 MHz, HT/VHT40 Beam Forming, M8 to M15, M0.2 to M9.2****Antenna A****Antenna B****Antenna C**

**Peak Output Power / PSD, 5300 MHz, HT/VHT40 Beam Forming, M16 to M23, M0.3 to M9.3****Antenna A****Antenna B****Antenna C**

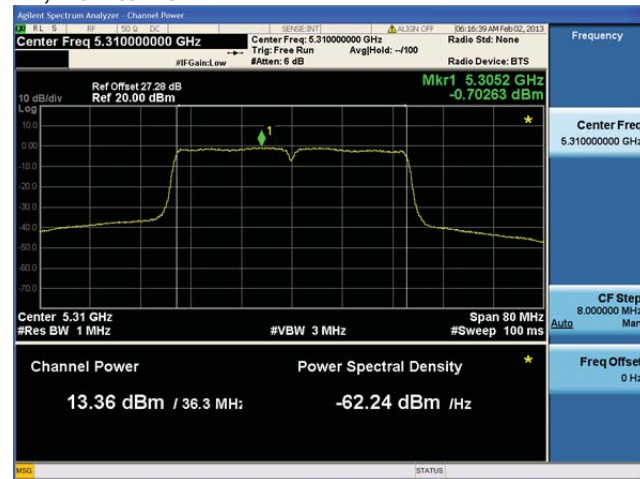
**Peak Output Power / PSD, 5300 MHz, HT/VHT40 STBC, M0 to M7, M0.1 to M9.1****Antenna A****Antenna B**



Peak Output Power / PSD, 5300 MHz, HT/VHT40 STBC, M0 to M7, M0.1 to M9.1



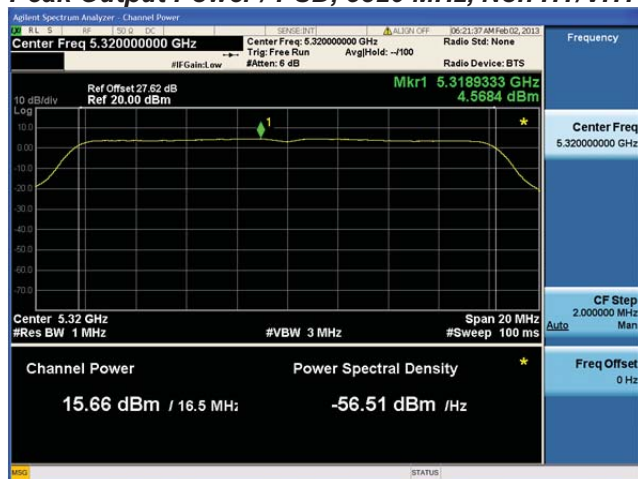
Antenna A

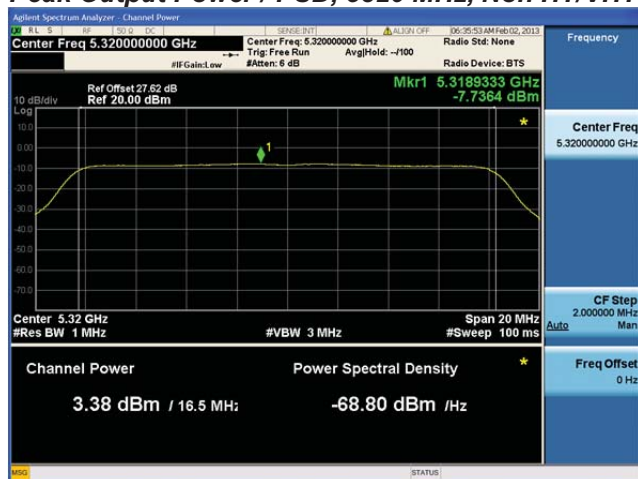


Antenna B



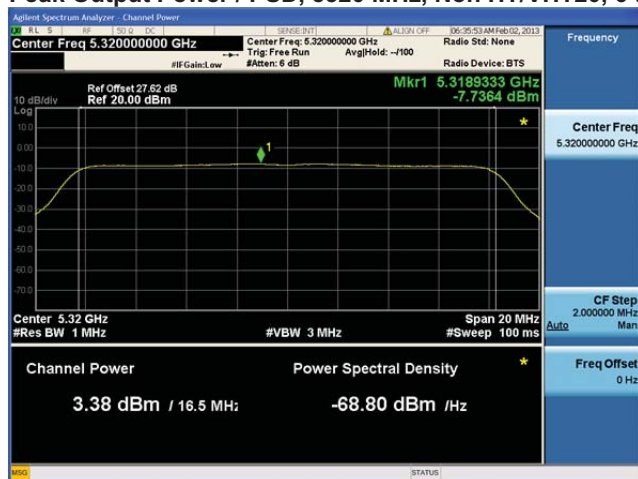
Antenna C

**Peak Output Power / PSD, 5320 MHz, Non HT/VHT20, 6 to 54 Mbps****Antenna A**

**Peak Output Power / PSD, 5320 MHz, Non HT/VHT20, 6 to 54 Mbps****Antenna A****Antenna B**



Peak Output Power / PSD, 5320 MHz, Non HT/VHT20, 6 to 54 Mbps



Antenna A



Antenna B



Antenna C