Test Report
AIR-CAP1532E-A-K9

FCC ID: LDK102089P
IC: 2461B-102089P

Also Covers:

AIR-CAP1532E-D-K9

AIR-CAP1532E-N-K9

AIR-CAP1532E-T-K9

AIR-CAP1532E-Z-K9

5250-5350 MHz

Antenna Gain = 7 dBi

Against the following Specifications:

CFR47 Part 15.407

RSS210

LP0002

Cisco Systems
170 West Tasman Drive
San Jose, CA 95134

Test Engineer Brad Antle
Date 11/21/13

This test report has been electronically authorized and archived using the CISCO Engineering Document Control system.

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%)

2.2 Date of testing

31-October-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

Bud Chiller

2.5 Equipment Assessed (EUT)

AIR-CAP1532E-A-K9

2.6 EUT Description

The AIR-CAP1532 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

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

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

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

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

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

The following antennas are supported by this product series.
The data included in this report represent the worst case data for 7 dBi antennas.

Frequency	Part Number	Antenna Type	Antenna Gain (dBi)
5 GHz	AIR-ANT5180V-N	Single Band Omni	8
	AIR-ANT5114P2M-N	Single Band, Directional Patch	14
2.4/5 GHz	AIR-ANT2547V-N=	Dual-band Omni	4/7
	AIR-ANT2547VG-N=	Dual-band Omni, Gray	4/7
	AIR-ANT2588P3M-N=	Dual-band/Dual Polarized Directional, Patch	8/8

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-CAP1532E-A-K9		Cisco Systems	NA	NA	NA	
S02	AIR-PWR-B	341-0306-01	Cisco Systems	NA	NA	NA	

4.2 System Details

System #	Description	Samples
1	EUT	S01, S02,

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)	
	Frequency (MHz)	
Operating Mode	5280	5320
Non HT-20, 6 to 54 Mbps	17	20
HT-20, M0 to M15	20	20
HT-20 STBC, M0 to M7	20	20
	5310	
Non HT-40, 6 to 54 Mbps	18	
HT-40, M0 to M15	18	
HT-40 STBC, M0 to M7	18	

99% and 26dB Bandwidth

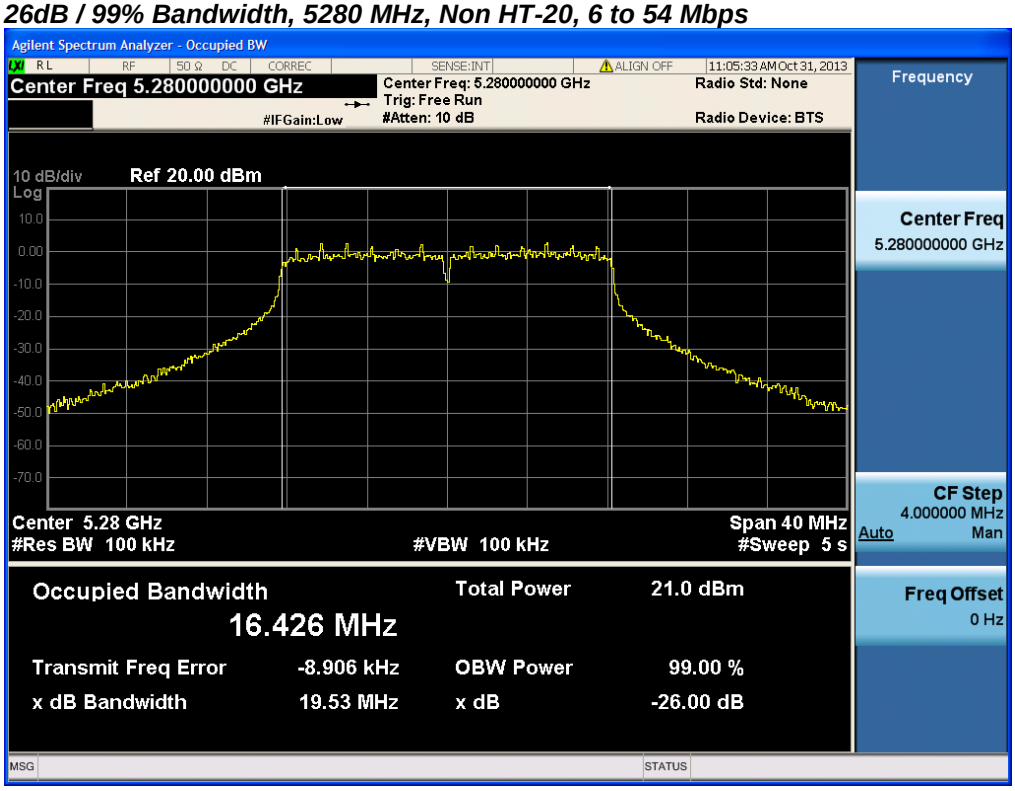
Connect the antenna port(s) to the spectrum analyzer input. Using the spectrum analyzer Channel Bandwidth mode, configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).

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

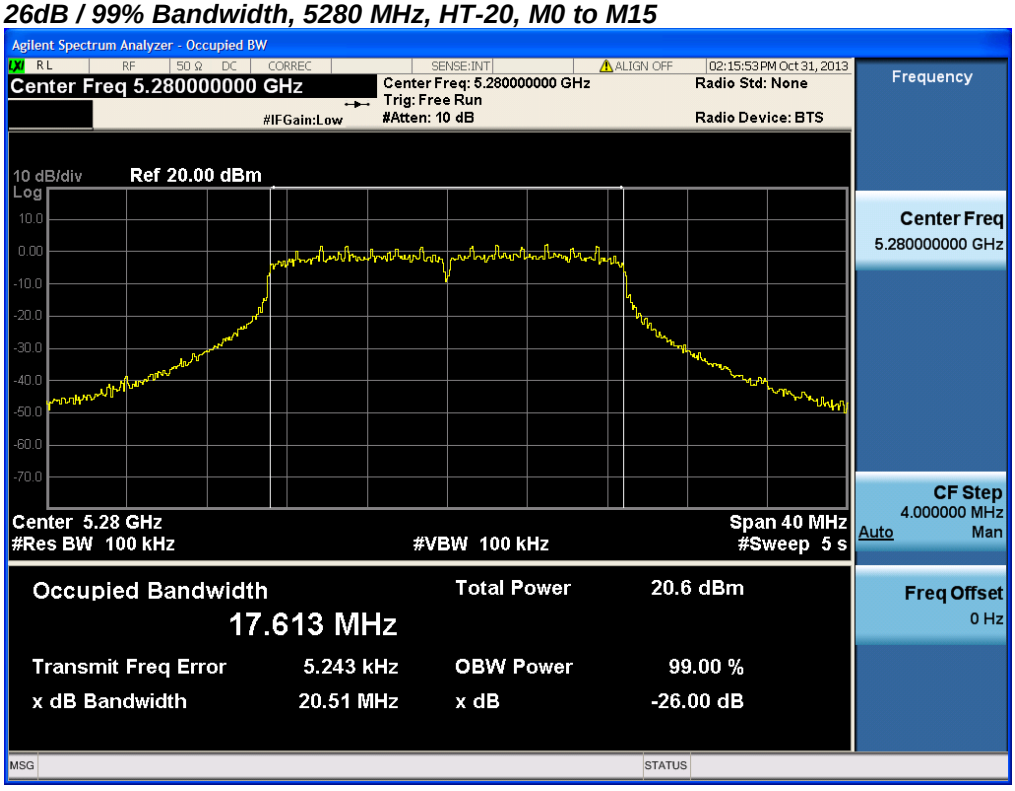
Place the radio in continuous transmit mode. View the transmitter waveform on the spectrum analyzer, and record the pertinent measurements:

Frequency (MHz)	Mode	Data Rate (Mbps)	26dB BW (MHz)	99% BW (MHz)
5280	Non HT-20, 6 to 54 Mbps	6	19.5	16.4
	HT-20, M0 to M15	m0	20.5	17.6
5310	Non HT-40, 6 to 54 Mbps	6	39.9	36.1
	HT-40, M0 to M23	m0	40	36.1
5320	Non HT-20, 6 to 54 Mbps	6	19.4	16.4
	HT-20, M0 to M15	m0	20.6	17.6

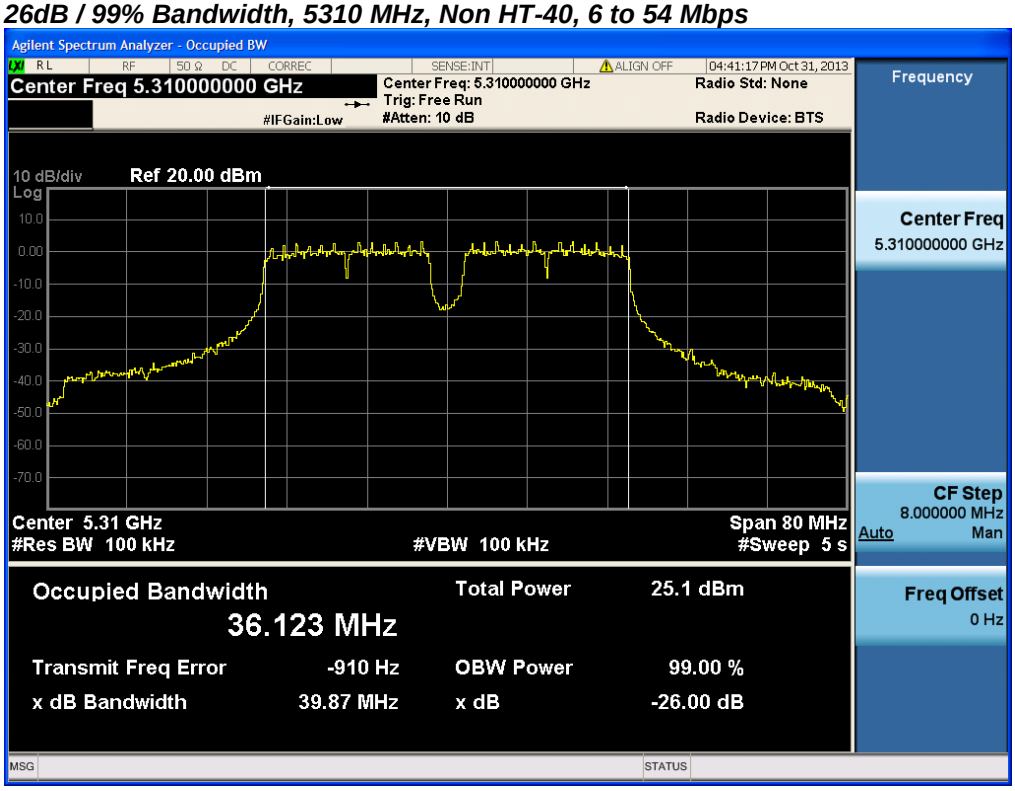
26dB / 99% Bandwidth, 5280 MHz, Non HT-20, 6 to 54 Mbps



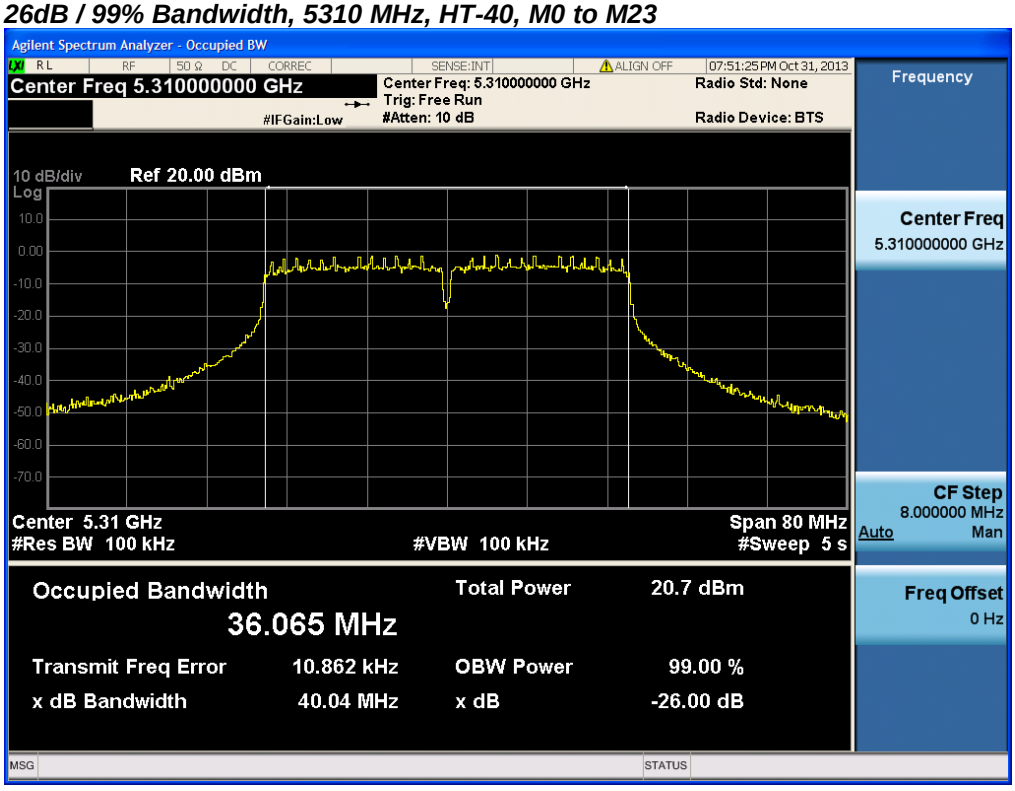
26dB / 99% Bandwidth, 5280 MHz, HT-20, M0 to M15



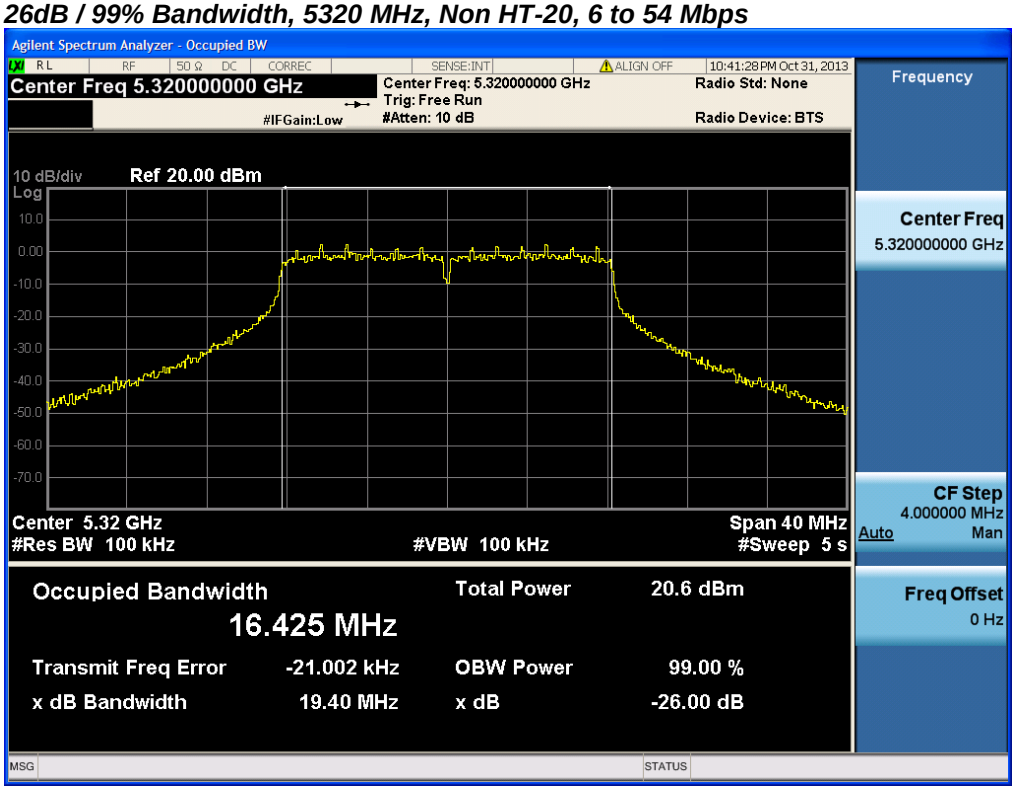
26dB / 99% Bandwidth, 5310 MHz, Non HT-40, 6 to 54 Mbps



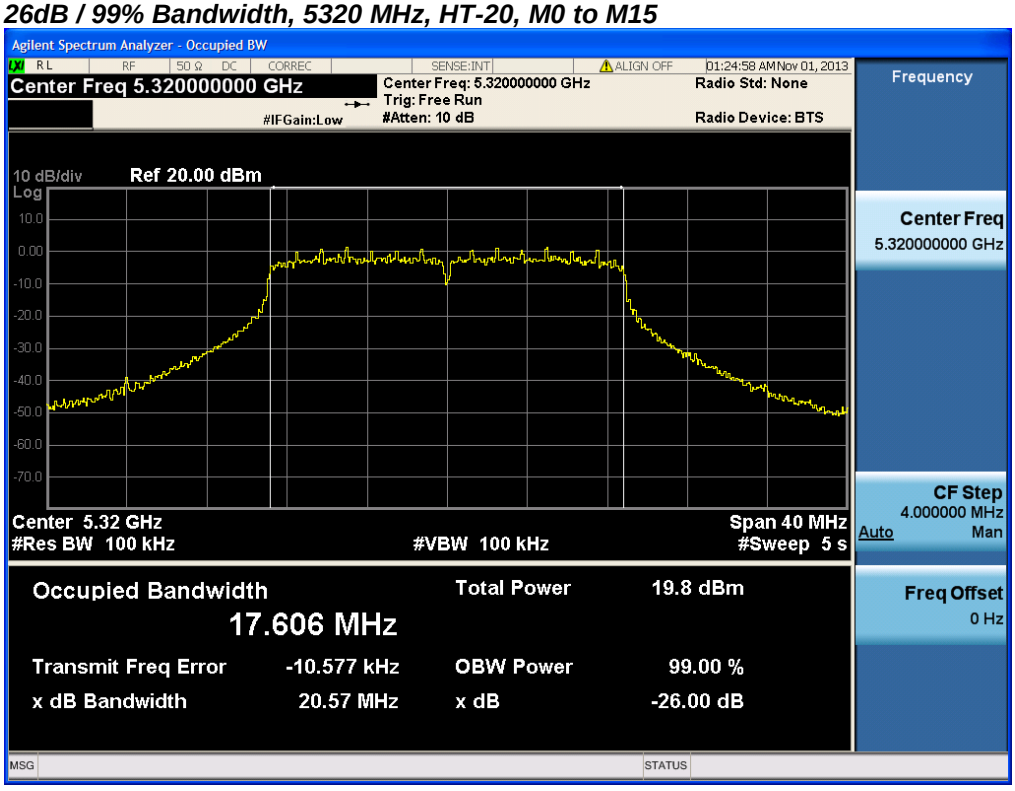
26dB / 99% Bandwidth, 5310 MHz, HT-40, M0 to M23



26dB / 99% Bandwidth, 5320 MHz, Non HT-20, 6 to 54 Mbps



26dB / 99% Bandwidth, 5320 MHz, HT-20, M0 to M15



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 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 11dBm+10*log(20.4MHz) = 24dBm

This report covers antennas with 7 dBi gain. 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.

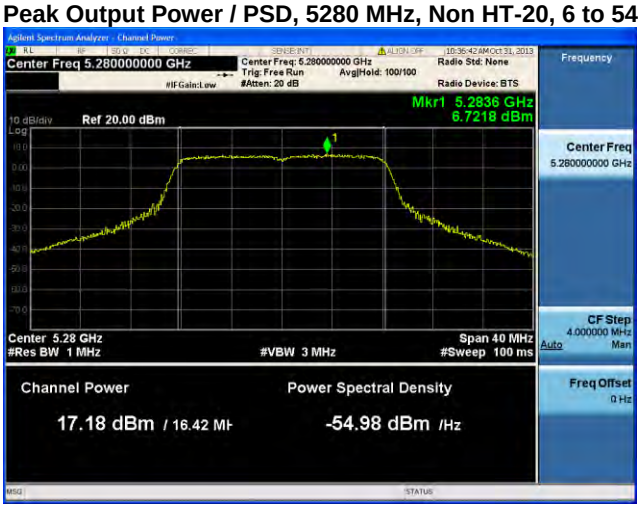
Enable "Channel Power" function of analyzer	
Center Frequency:	Frequency from table below
Span:	20 MHz (must be greater than 26dB bandwidth, adjust as necessary)
Ref Level Offset:	Correct for attenuator and cable loss.
Reference Level:	20 dBm
Attenuation:	20 dB
Sweep Time:	100ms, Single sweep
Resolution 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 Max Power (dBm)	Tx 2 Max Power (dBm)	Total Tx Channel Power (dBm)	Limit (dBm)	Margin (dB)
5280	Non HT-20, 6 to 54 Mbps	1	7	17.2		17.2	23	5.8
	Non HT-20, 6 to 54 Mbps	2	7	14.3	14.6	17.5	23	5.5
	HT-20, M0 to M7	1	7	17.9		17.9	23	5.1
	HT-20, M0 to M7	2	7	14.0	14.5	17.3	23	5.7
	HT-20, M8 to M15	2	7	16.9	17.4	20.2	23	2.8
	HT-20 STBC, M0 to M7	2	7	16.9	17.4	20.2	23	2.8
5310	Non HT-40, 6 to 54 Mbps	1	7	18.5		18.5	23	4.5
	Non HT-40, 6 to 54 Mbps	2	7	14.6	15.3	18.0	23	5.0
	HT-40, M0 to M7	1	7	16.2		16.2	23	6.8
	HT-40, M0 to M7	2	7	14.1	15.0	17.6	23	5.4
	HT-40, M8 to M15	2	7	14.1	15.0	17.6	23	5.4
	HT-40 STBC, M0 to M7	2	7	14.1	15.0	17.6	23	5.4
5320	Non HT-20, 6 to 54 Mbps	1	7	19.6		19.6	23	3.4
	Non HT-20, 6 to 54 Mbps	2	7	13.5	14.3	16.9	23	6.1
	HT-20, M0 to M7	1	7	19.3		19.3	23	3.7
	HT-20, M0 to M7	2	7	13.3	14.0	16.7	23	6.3
	HT-20, M8 to M15	2	7	16.3	17.2	19.8	23	3.2
	HT-20 STBC, M0 to M7	2	7	16.3	17.2	19.8	23	3.2

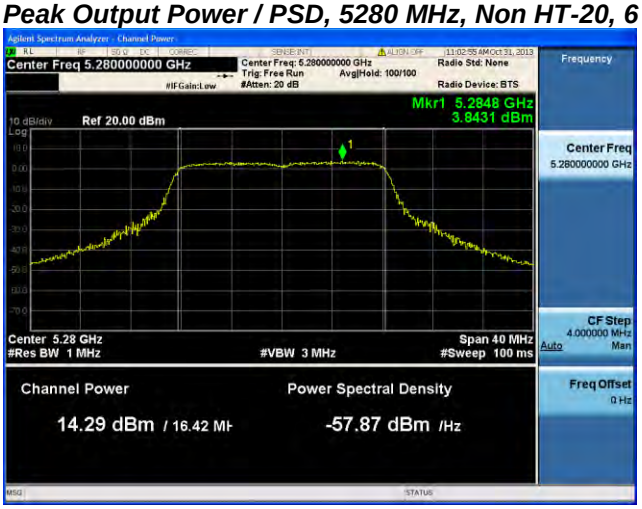
Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
5280	Non HT-20, 6 to 54 Mbps	1	7	9.8		9.8	10.0	0.2
	Non HT-20, 6 to 54 Mbps	2	10	3.8	4.1	7.0	7.0	0.0
	HT-20, M0 to M7	1	7	9.3		9.3	10.0	0.7
	HT-20, M0 to M7	2	10	3.5	3.9	6.7	7.0	0.3
	HT-20, M8 to M15	2	7	6.2	7.2	9.7	10.0	0.3
	HT-20 STBC, M0 to M7	2	7	6.2	7.2	9.7	10.0	0.3
5310	Non HT-40, 6 to 54 Mbps	1	7	6.8		6.8	10.0	3.2
	Non HT-40, 6 to 54 Mbps	2	10	3.0	4.1	6.6	7.0	0.4
	HT-40, M0 to M7	1	7	6.0		6.0	10.0	4.0
	HT-40, M0 to M7	2	10	3.6	4.0	6.8	7.0	0.2
	HT-40, M8 to M15	2	7	3.6	4.0	6.8	10.0	3.2
	HT-40 STBC, M0 to M7	2	7	3.6	4.0	6.8	10.0	3.2
5320	Non HT-20, 6 to 54 Mbps	1	7	9.1		9.1	10.0	0.9
	Non HT-20, 6 to 54 Mbps	2	10	2.8	4.3	6.6	7.0	0.4
	HT-20, M0 to M7	1	7	8.6		8.6	10.0	1.4
	HT-20, M0 to M7	2	10	2.8	3.5	6.2	7.0	0.8
	HT-20, M8 to M15	2	7	5.8	6.3	9.1	10.0	0.9
	HT-20 STBC, M0 to M7	2	7	5.8	6.3	9.1	10.0	0.9

Peak Output Power / PSD, 5280 MHz, Non HT-20, 6 to 54 Mbps

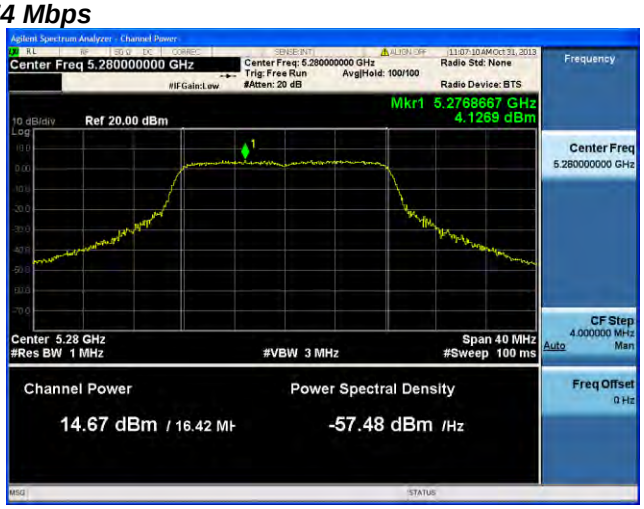


Antenna A

Peak Output Power / PSD, 5280 MHz, Non HT-20, 6 to 54 Mbps

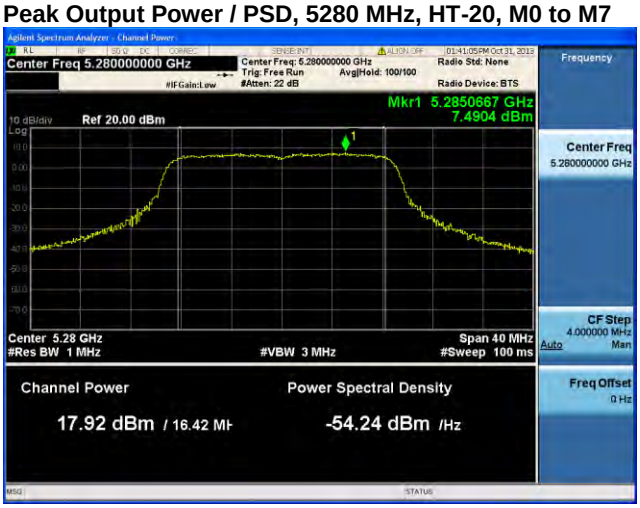


Antenna A



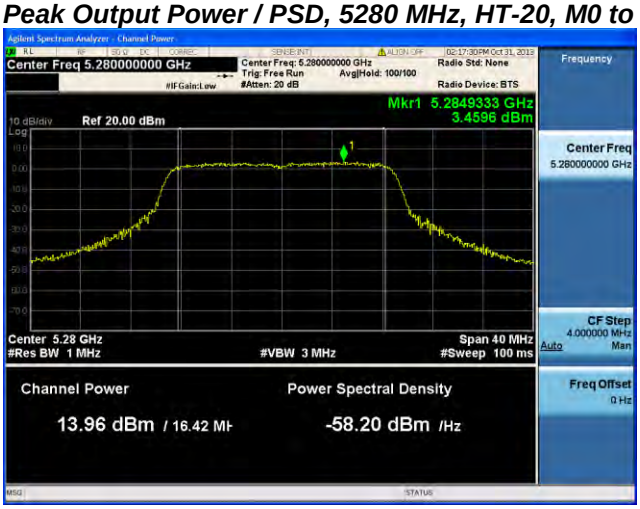
Antenna B

Peak Output Power / PSD, 5280 MHz, HT-20, M0 to M7



Antenna A

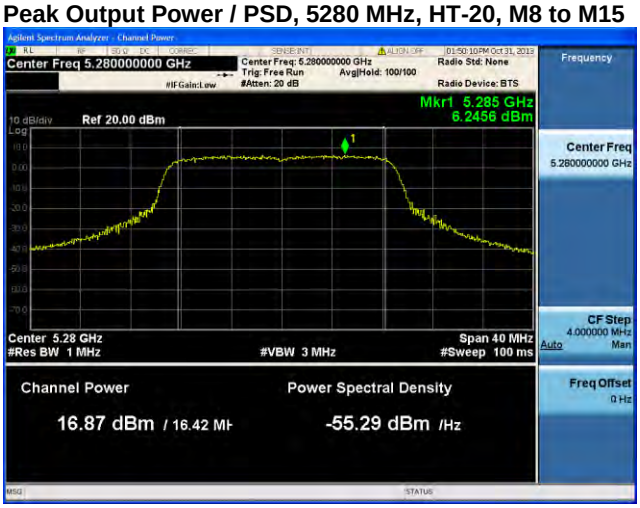
Peak Output Power / PSD, 5280 MHz, HT-20, M0 to M7



Antenna A

Antenna B

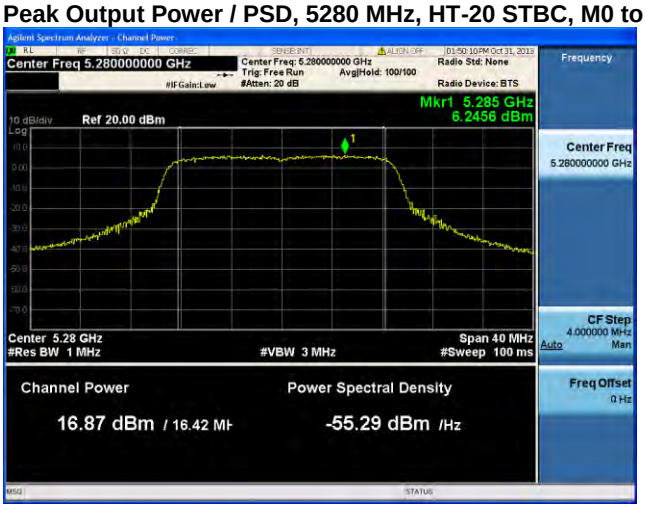
Peak Output Power / PSD, 5280 MHz, HT-20, M8 to M15



Antenna A

Antenna B

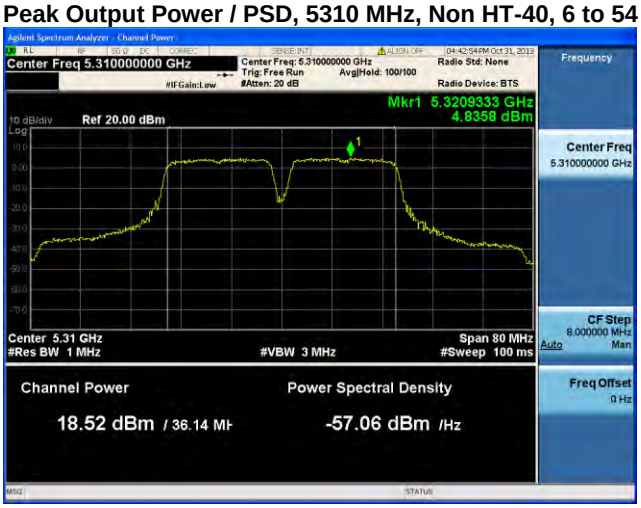
Peak Output Power / PSD, 5280 MHz, HT-20 STBC, M0 to M7



Antenna A

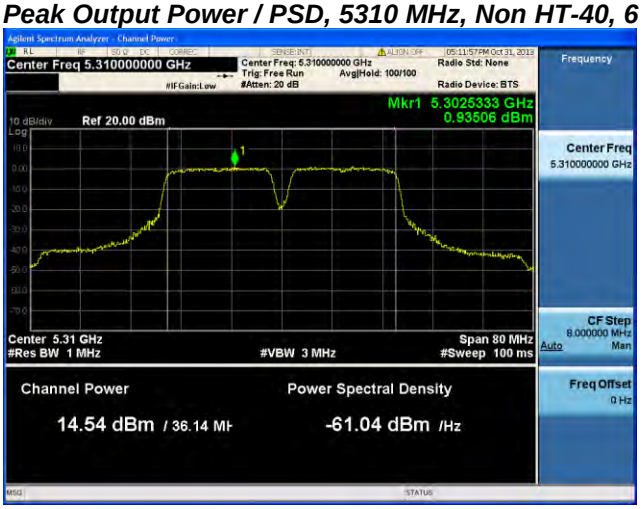
Antenna B

Peak Output Power / PSD, 5310 MHz, Non HT-40, 6 to 54 Mbps

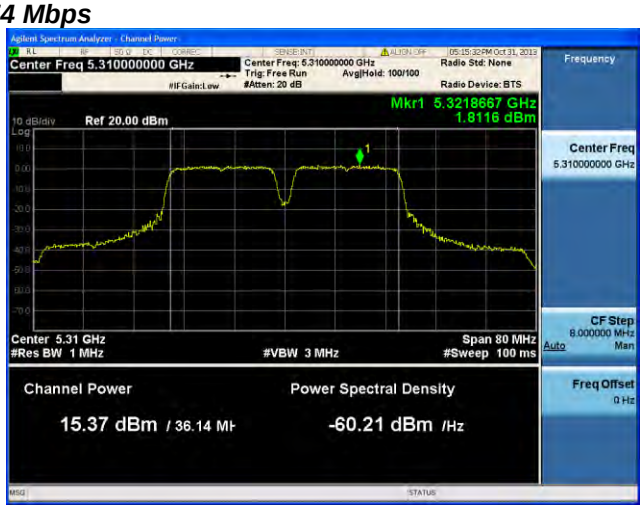


Antenna A

Peak Output Power / PSD, 5310 MHz, Non HT-40, 6 to 54 Mbps



Antenna A



Antenna B

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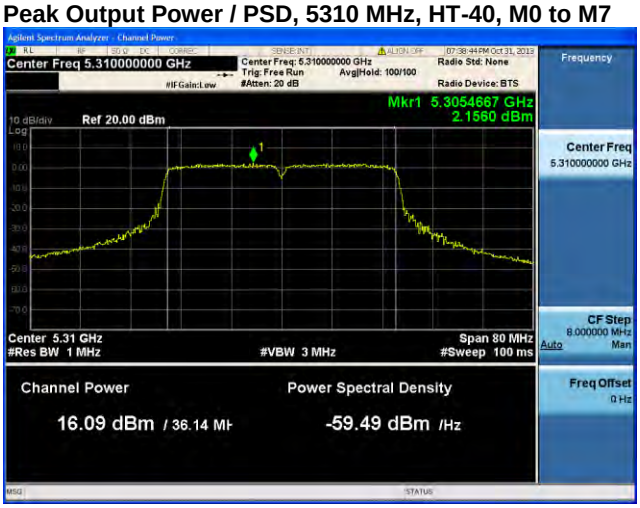
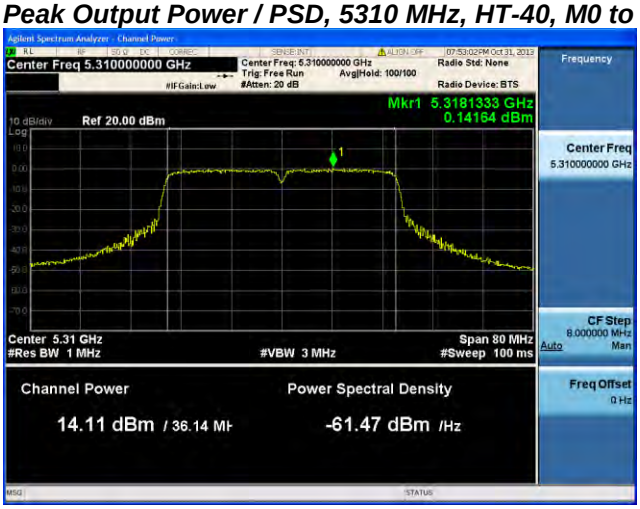


Antenna A

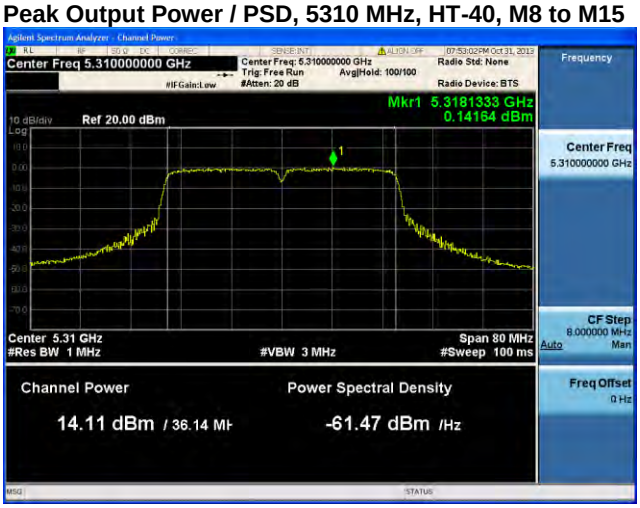
Peak Output Power / PSD, 5310 MHz, HT-40, M0 to M7



Antenna A

Antenna B

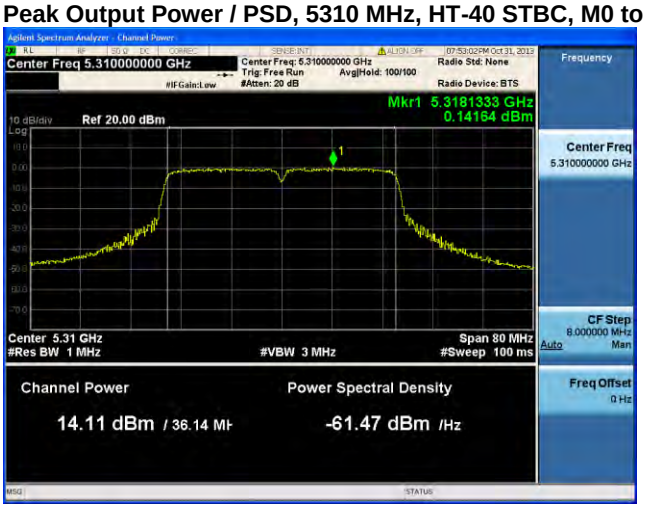
Peak Output Power / PSD, 5310 MHz, HT-40, M8 to M15



Antenna A

Antenna B

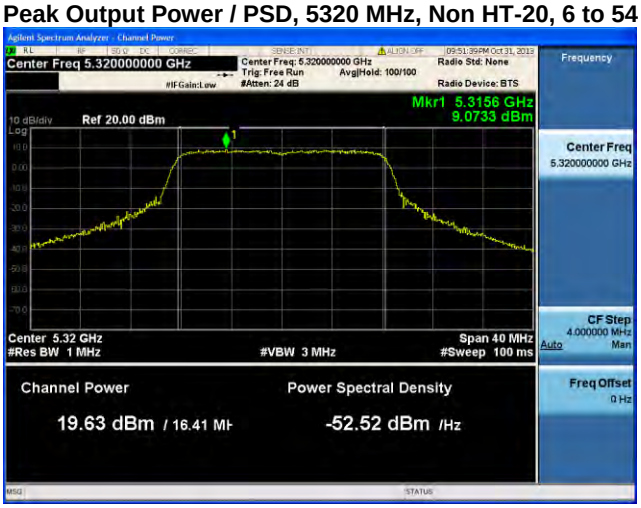
Peak Output Power / PSD, 5310 MHz, HT-40 STBC, M0 to M7



Antenna A

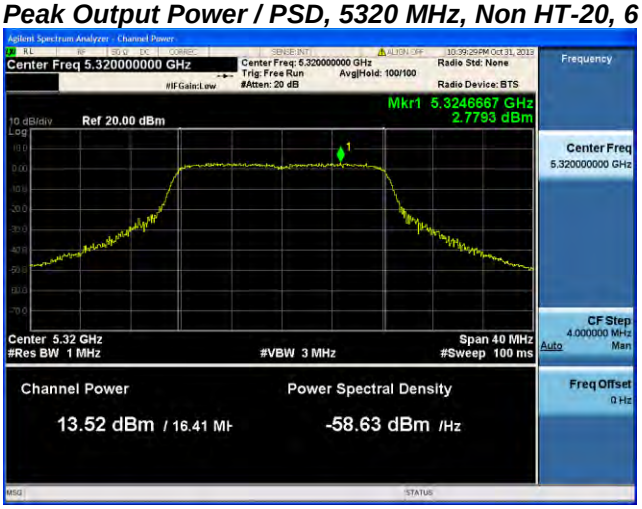
Antenna B

Peak Output Power / PSD, 5320 MHz, Non HT-20, 6 to 54 Mbps

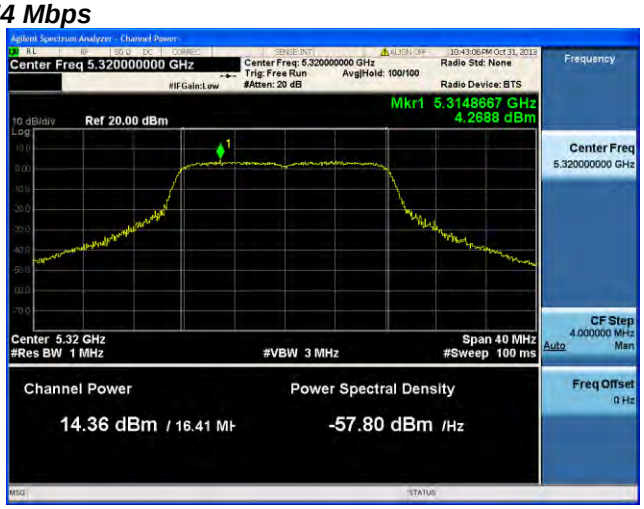


Antenna A

Peak Output Power / PSD, 5320 MHz, Non HT-20, 6 to 54 Mbps

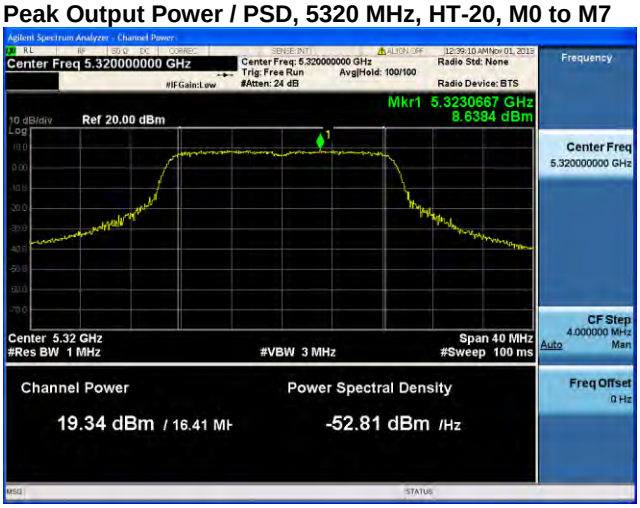


Antenna A



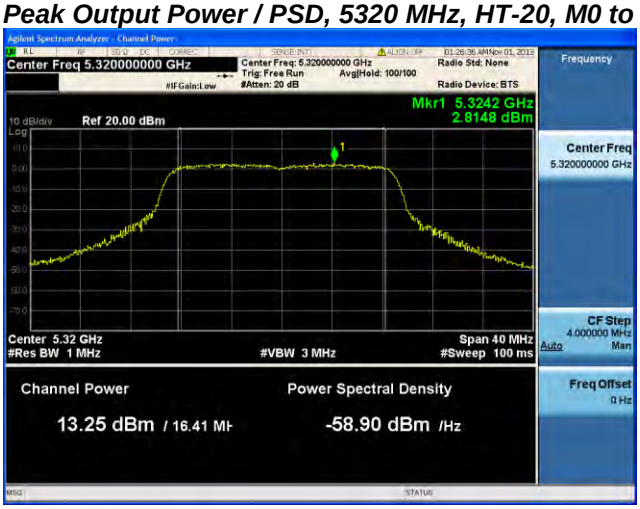
Antenna B

Peak Output Power / PSD, 5320 MHz, HT-20, M0 to M7



Antenna A

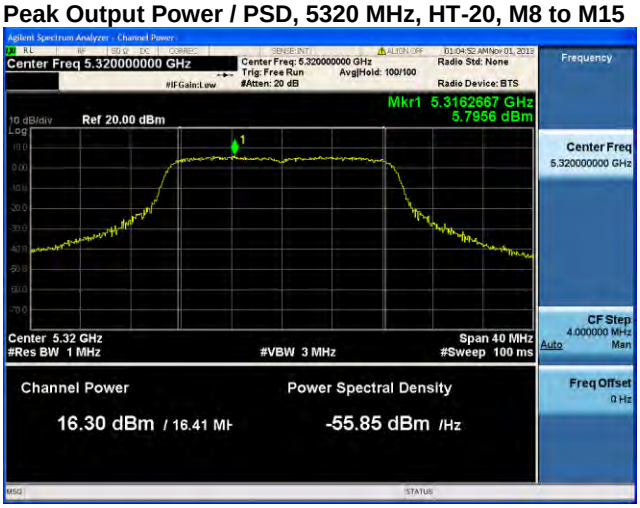
Peak Output Power / PSD, 5320 MHz, HT-20, M0 to M7



Antenna A

Antenna B

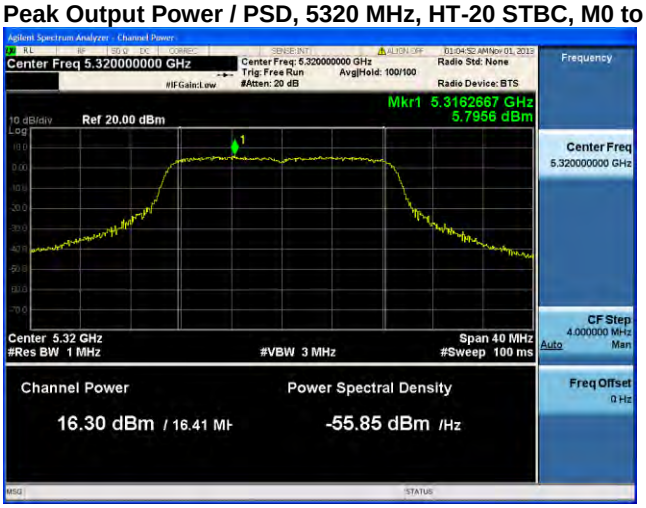
Peak Output Power / PSD, 5320 MHz, HT-20, M8 to M15



Antenna A

Antenna B

Peak Output Power / PSD, 5320 MHz, HT-20 STBC, M0 to M7



Antenna A

Antenna B

Peak Excursion

15.407: The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

Set the spectrum analyzer span to view the entire emission bandwidth. The largest difference between the following two traces must be <= 13 dB for all frequencies across the emission bandwidth.

Set the spectrum analyzer span to view the entire emission bandwidth. The largest difference between the following two traces must be <= 13 dB for all frequencies across the emission bandwidth.

1st Trace: (Peak)

- Set Span to encompass the entire emission bandwidth of the signal.
- RBW = 1 MHz, VBW = 3 MHz
- Detector = Peak
- Sweep = Auto
- Trace 1 = Max-hold
- Ref Level Offset = correct for attenuator and cable loss
- Ref Level = 20dBm
- Atten = 10dBm

2nd Trace: (Average)

- Trace 2 = clear right
- Detector = Sample
- Avg/VBW type = Pwr(RMS)
- Average = 100
- Sweep = single

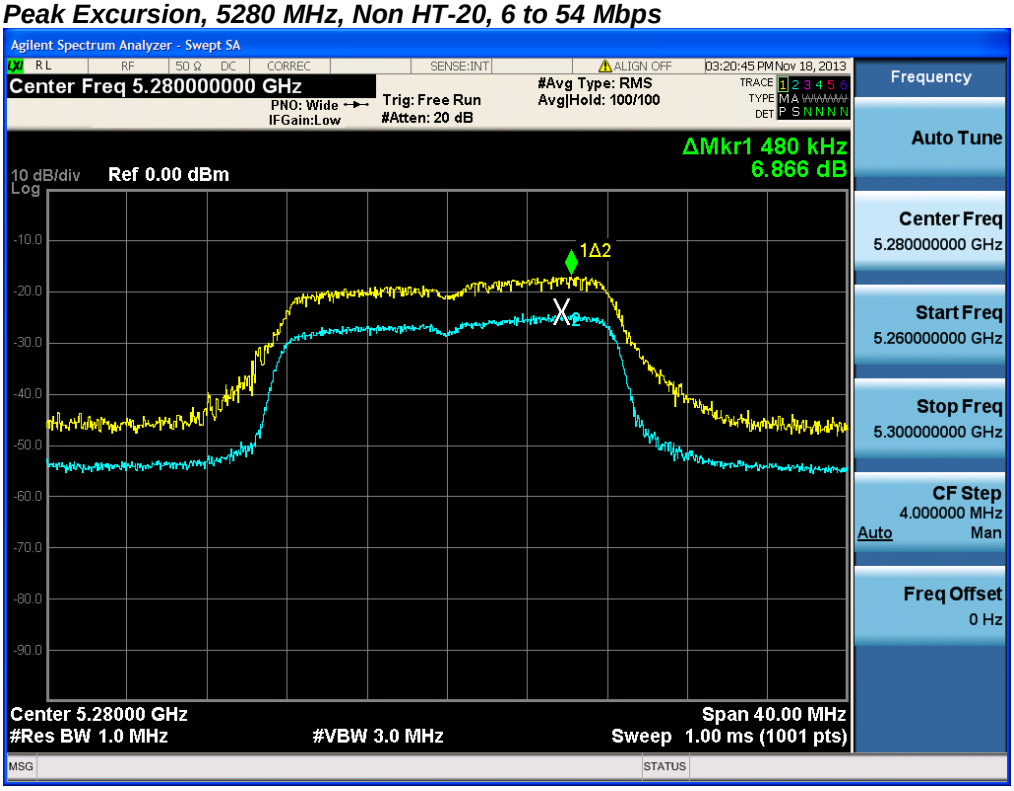
Set marker Deltas

- Trace 1 & Peak search
- Marker Delta
- Trace 2 & Peak search

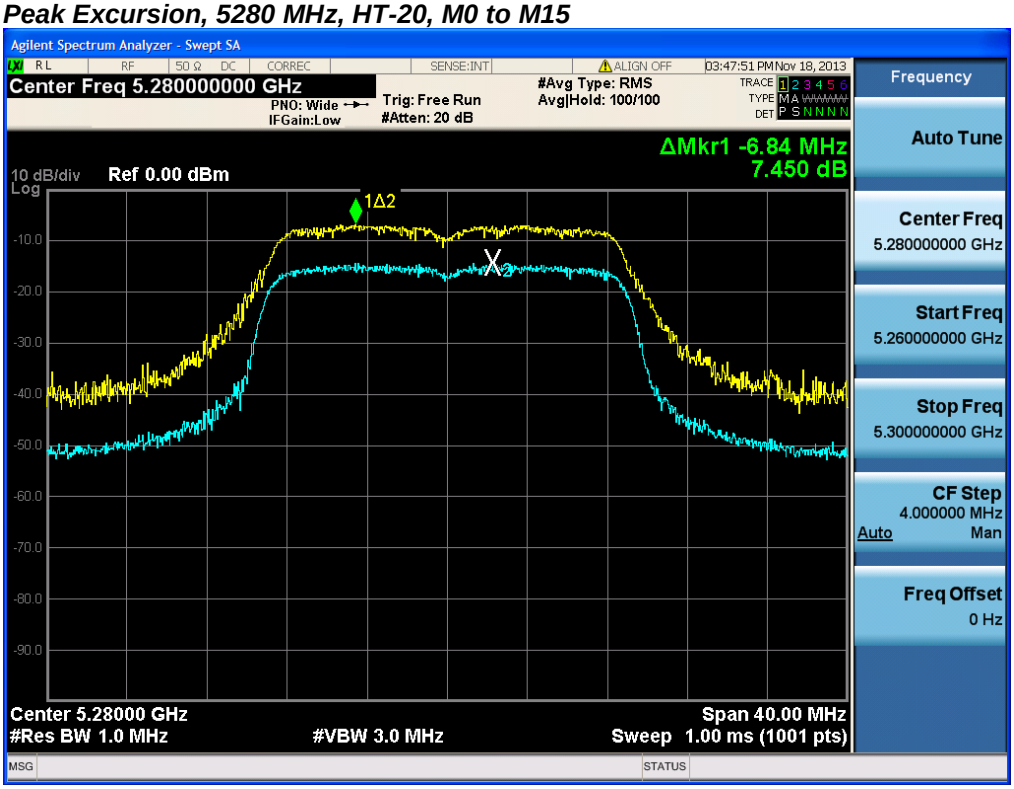
Record the difference between the Peak and Average Markers

Frequency (MHz)	Mode	Data Rate (Mbps)	Peak Excursion (dB)	Limit (dBm/MHz)	Margin (dB)
5280	Non HT-20, 6 to 54 Mbps	6	6.7	13	6.3
	HT-20, M0 to M15	m0	7.3	13	5.7
5310	Non HT-40, 6 to 54 Mbps	6	7.2	13	5.8
	HT-40, M0 to M23	m0	7.5	13	5.5
5320	Non HT-20, 6 to 54 Mbps	6	7.4	13	5.6
	HT-20, M0 to M15	m0	7	13	6.0

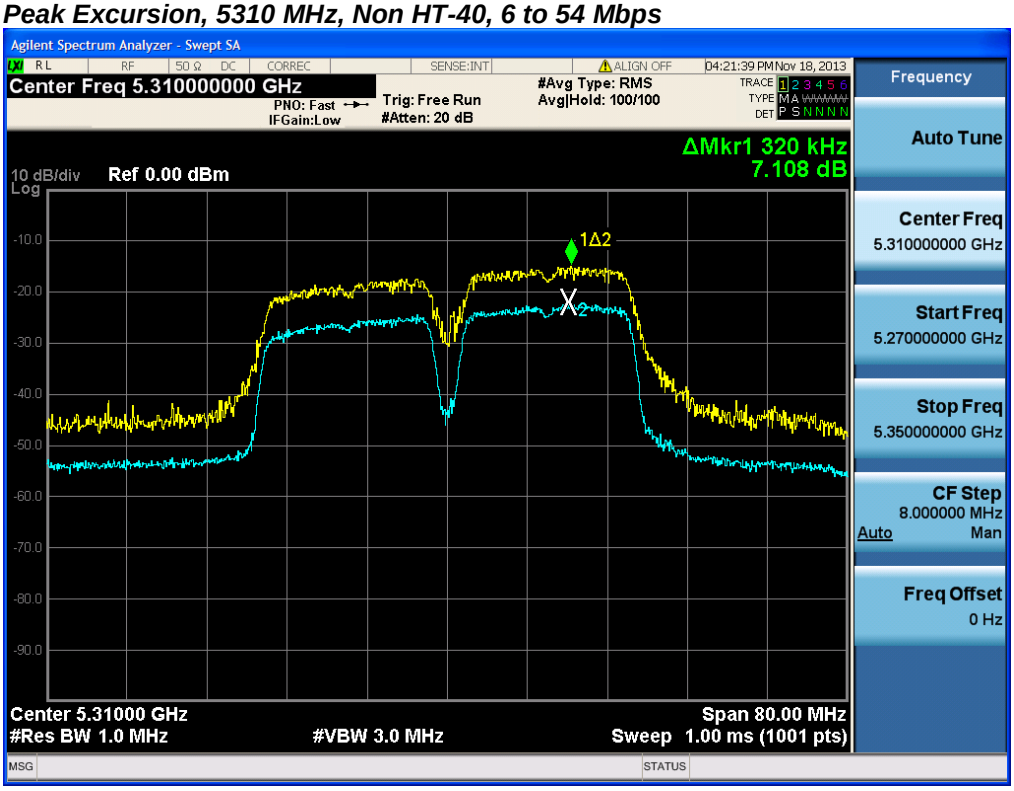
Peak Excursion, 5280 MHz, Non HT-20, 6 to 54 Mbps



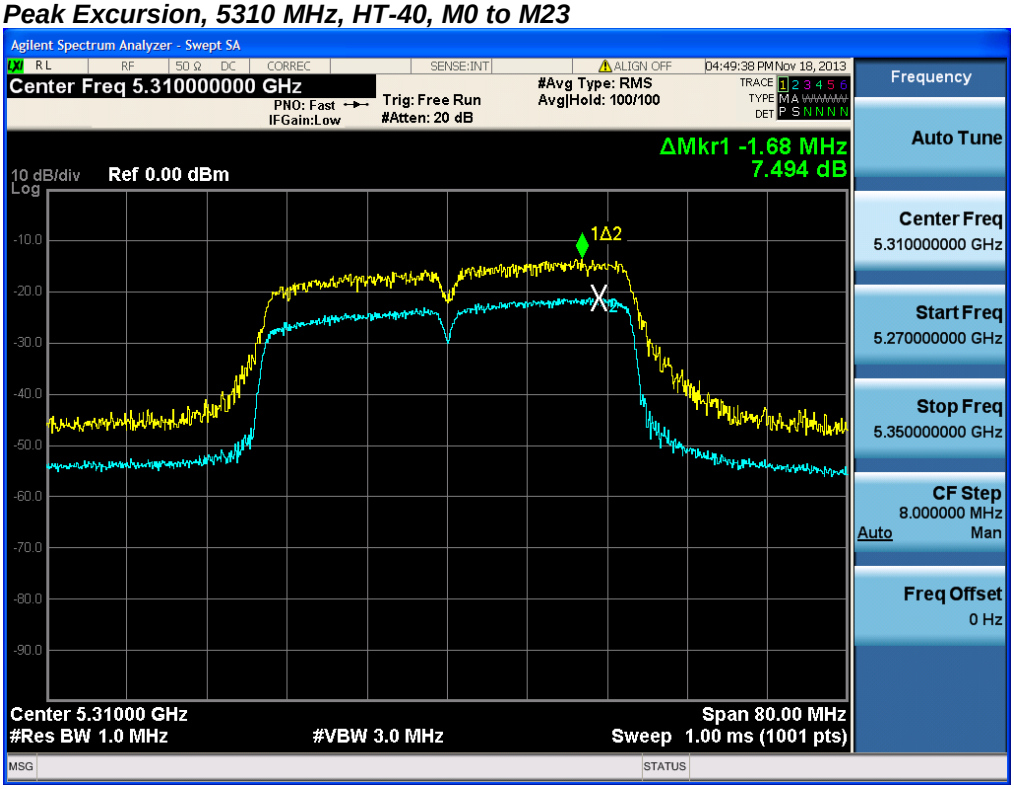
Peak Excursion, 5280 MHz, HT-20, M0 to M15



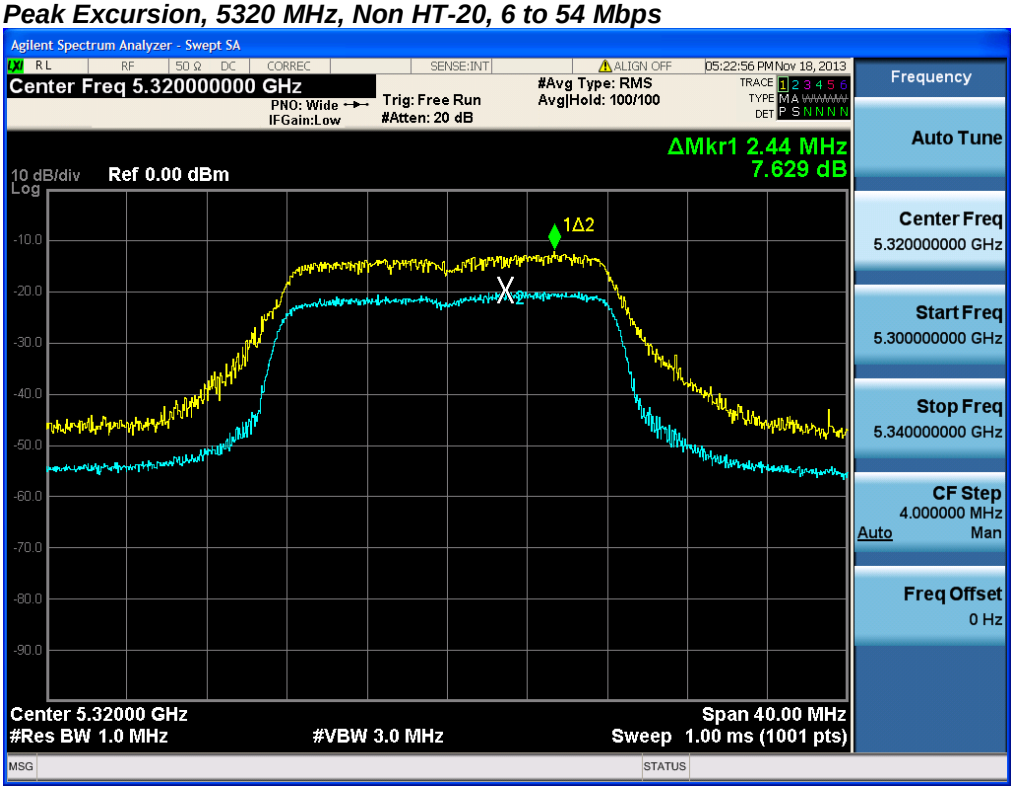
Peak Excursion, 5310 MHz, Non HT-40, 6 to 54 Mbps



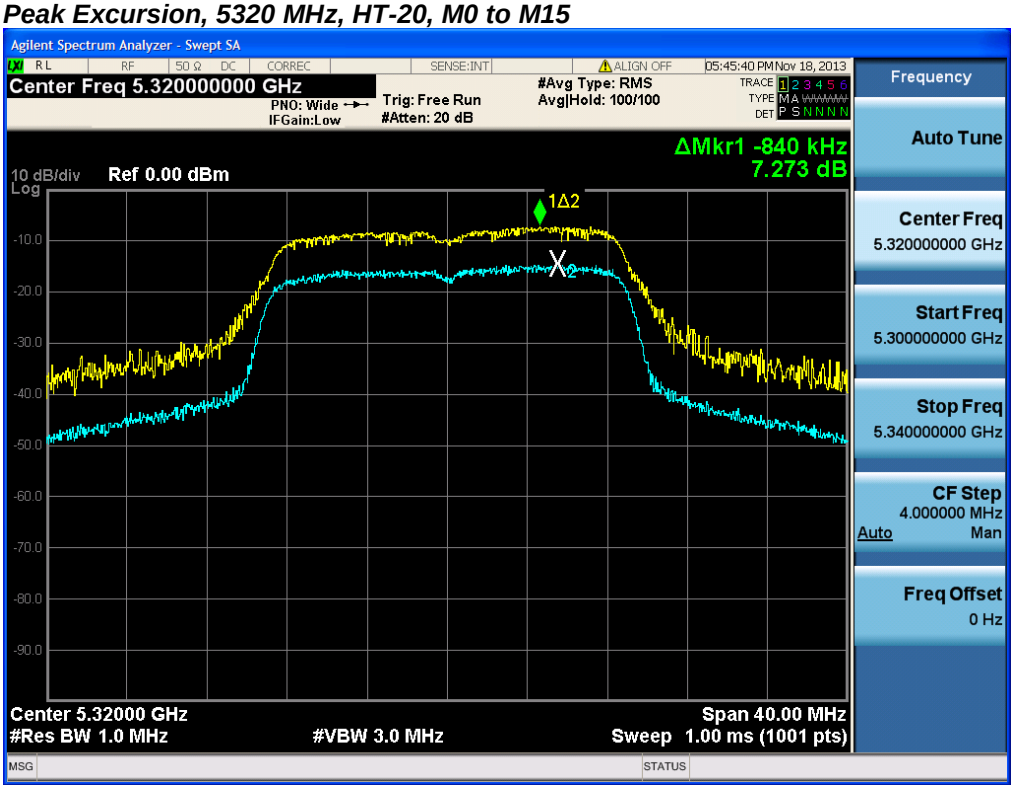
Peak Excursion, 5310 MHz, HT-40, M0 to M23



Peak Excursion, 5320 MHz, Non HT-20, 6 to 54 Mbps



Peak Excursion, 5320 MHz, HT-20, M0 to M15



Conducted Spurious Emissions

15.407: For transmitters operating in the 5.25-5.35 and 5.47-5.725 GHz band: all emissions outside of the 5.25-5.35 and 5.47-5.725 GHz bands shall not exceed an EIRP of -27dBm/MHz.

Connect the antenna port(s) to the spectrum analyzer input. Place the radio in continuous transmit mode. Configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer).

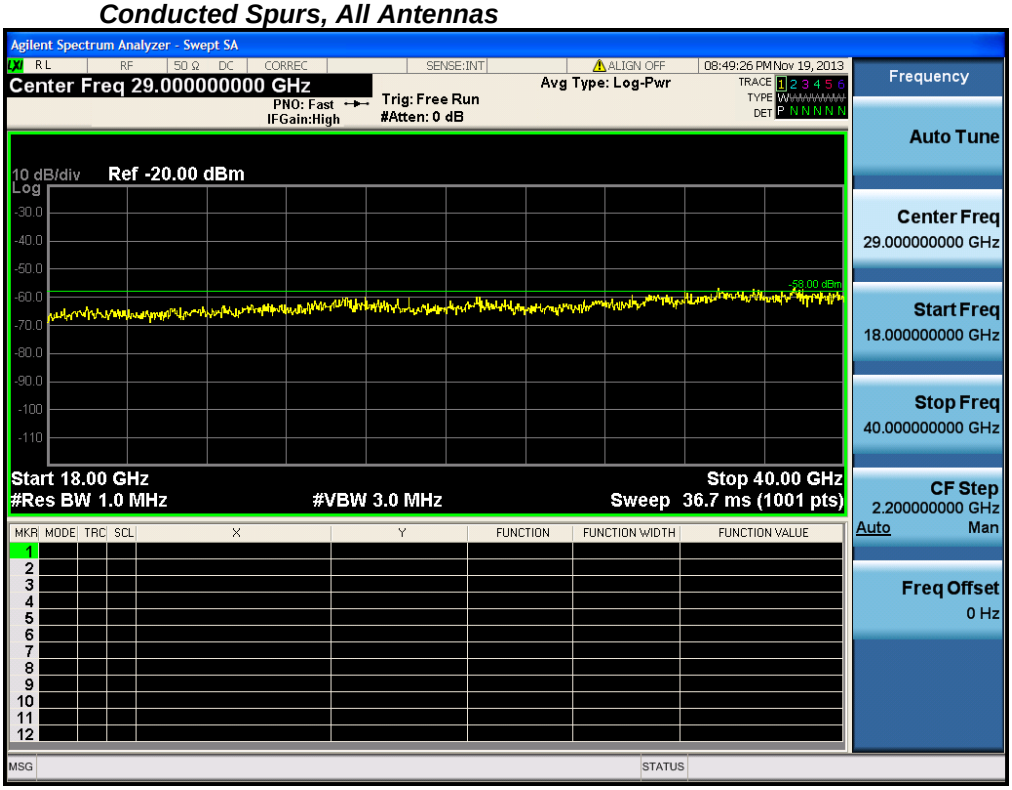
Span:	30 MHz-40 GHz
Reference Level:	20 dBm
Attenuation:	10 dB
Sweep Time:	10 s
Resolution Bandwidth:	1 MHz
Video Bandwidth:	3 MHz
Detector:	Peak
Trace:	Single
Marker:	Peak

Record the marker waveform peak to spur difference

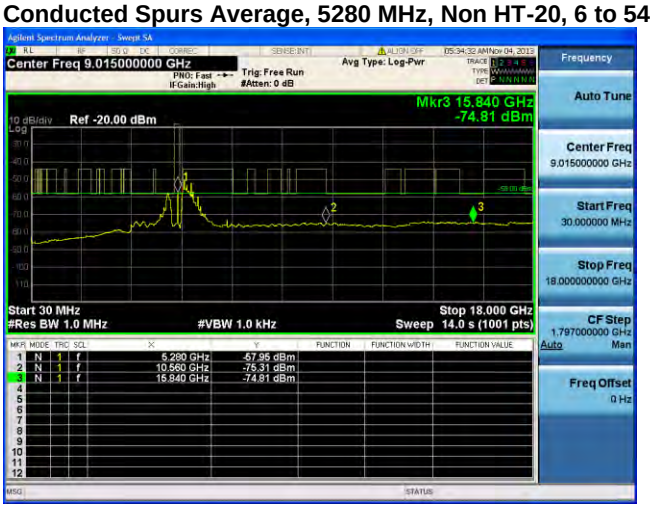
Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm)	Tx 2 Spur Power (dBm)	Total Conducted Spur (dBm)	Limit (dBm)	MargIn (dB)
5280	Non HT-20, 6 to 54 Mbps	1	7	-74.8		-67.8	-41.25	26.6
	Non HT-20, 6 to 54 Mbps	2	7	-74.8	-74.9	-64.8	-41.25	23.6
	HT-20, M0 to M7	1	7	-74.7		-67.7	-41.25	26.5
	HT-20, M0 to M7	2	7	-75.0	-74.8	-64.9	-41.25	23.6
	HT-20, M8 to M15	2	7	-74.9	-74.8	-64.8	-41.25	23.6
	HT-20 STBC, M0 to M7	2	7	-74.9	-74.8	-64.8	-41.25	23.6
5310	Non HT-40, 6 to 54 Mbps	1	7	-75.1		-68.1	-41.25	26.9
	Non HT-40, 6 to 54 Mbps	2	7	-74.9	-74.8	-64.8	-41.25	23.6
	HT-40, M0 to M7	1	7	-75.0		-68.0	-41.25	26.8
	HT-40, M0 to M7	2	7	-74.8	-74.8	-64.8	-41.25	23.5
	HT-40, M8 to M15	2	7	-74.8	-74.8	-64.8	-41.25	23.5
	HT-40 STBC, M0 to M7	2	7	-74.8	-74.8	-64.8	-41.25	23.5
5320	Non HT-20, 6 to 54 Mbps	1	7	-74.6		-67.6	-41.25	26.4
	Non HT-20, 6 to 54 Mbps	2	7	-74.8	-74.7	-64.7	-41.25	23.5
	HT-20, M0 to M7	1	7	-74.6		-67.6	-41.25	26.4
	HT-20, M0 to M7	2	7	-74.8	-74.8	-64.8	-41.25	23.5
	HT-20, M8 to M15	2	7	-75.0	-74.7	-64.8	-41.25	23.6
	HT-20 STBC, M0 to M7	2	7	-75.0	-74.7	-64.8	-41.25	23.6

Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm)	Tx 2 Spur Power (dBm)	Total Conducted Spur (dBm)	Limit (dBm)	MargIn (dB)
5280	Non HT-20, 6 to 54 Mbps	1	7	-79.5		-72.5	-27	45.5
	Non HT-20, 6 to 54 Mbps	2	7	-78.4	-77.5	-67.9	-27	40.9
	HT-20, M0 to M7	1	7	-78.2		-71.2	-27	44.2
	HT-20, M0 to M7	2	7	-78.0	-79.4	-68.6	-27	41.6
	HT-20, M8 to M15	2	7	-79.8	-77.3	-68.4	-27	41.4
	HT-20 STBC, M0 to M7	2	7	-79.8	-77.3	-68.4	-27	41.4
5310	Non HT-40, 6 to 54 Mbps	1	7	-77.6		-70.6	-27	43.6
	Non HT-40, 6 to 54 Mbps	2	7	-78.9	-79.0	-68.9	-27	41.9
	HT-40, M0 to M7	1	7	-77.9		-70.9	-27	43.9
	HT-40, M0 to M7	2	7	-76.7	-76.9	-66.8	-27	39.8
	HT-40, M8 to M15	2	7	-76.7	-76.9	-66.8	-27	39.8
	HT-40 STBC, M0 to M7	2	7	-76.7	-76.9	-66.8	-27	39.8
5320	Non HT-20, 6 to 54 Mbps	1	7	-79.3		-72.3	-27	45.3
	Non HT-20, 6 to 54 Mbps	2	7	-77.4	-79.6	-68.4	-27	41.4
	HT-20, M0 to M7	1	7	-78.1		-71.1	-27	44.1
	HT-20, M0 to M7	2	7	-79.5	-79.1	-69.3	-27	42.3
	HT-20, M8 to M15	2	7	-78.1	-78.5	-68.3	-27	41.3
	HT-20 STBC, M0 to M7	2	7	-78.1	-78.5	-68.3	-27	41.3

Conducted Spurs, All Antennas

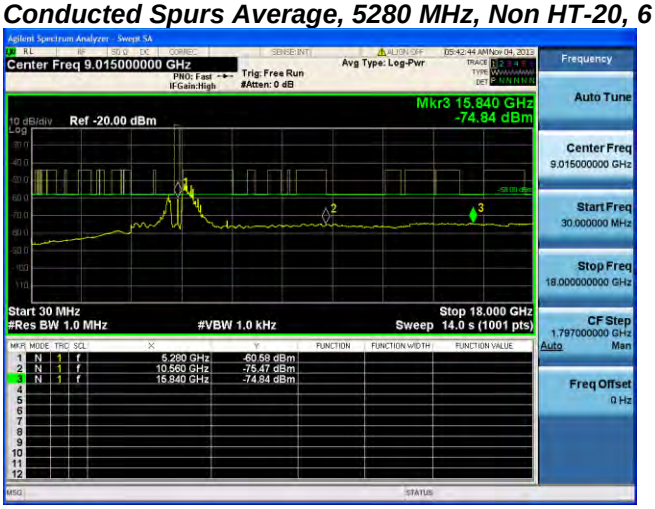


Conducted Spurs Average, 5280 MHz, Non HT-20, 6 to 54 Mbps

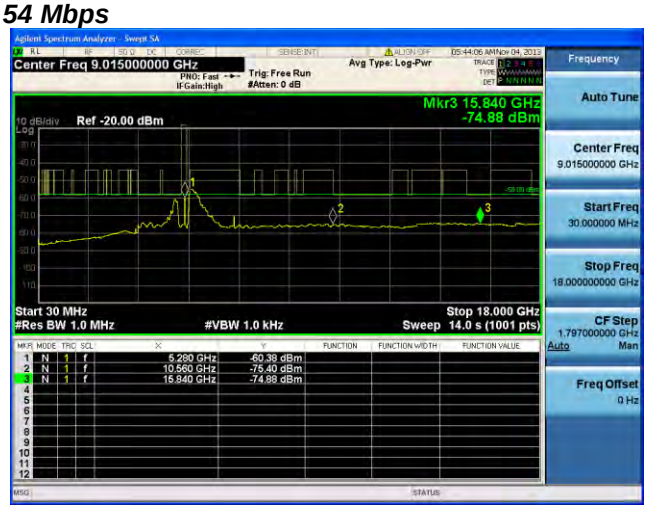


Antenna A

Conducted Spurs Average, 5280 MHz, Non HT-20, 6 to 54 Mbps

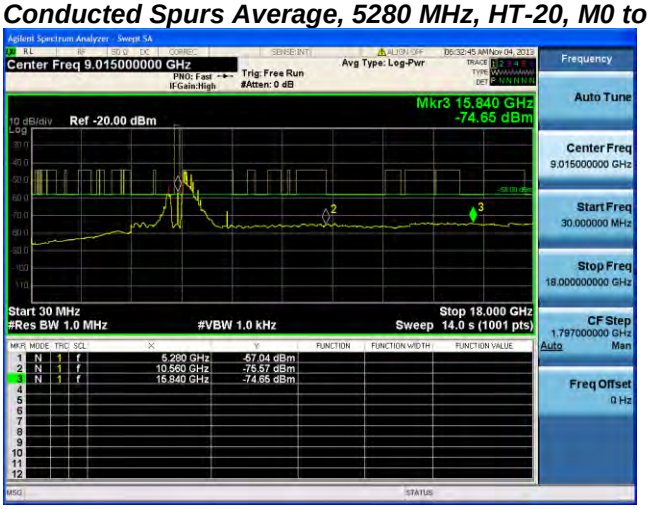


Antenna A



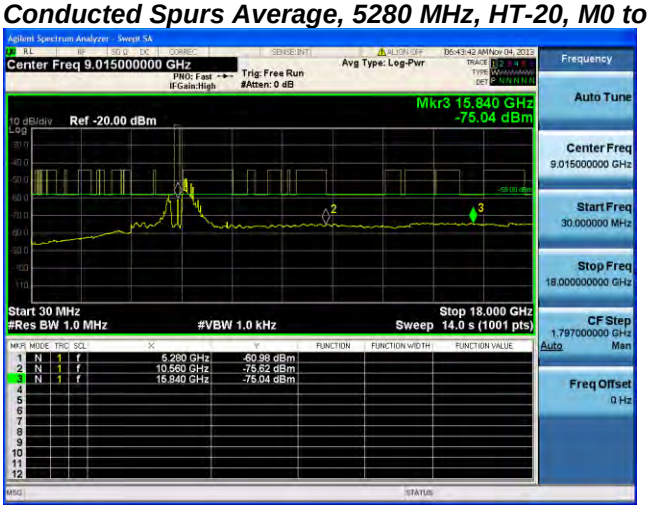
Antenna B

Conducted Spurs Average, 5280 MHz, HT-20, M0 to M7



Antenna A

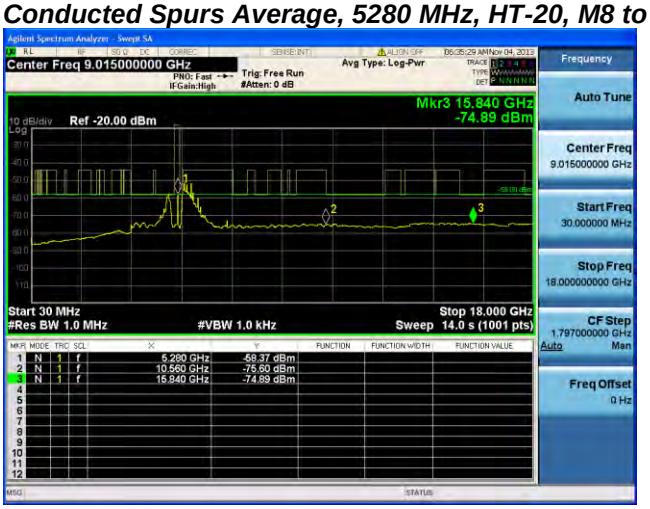
Conducted Spurs Average, 5280 MHz, HT-20, M0 to M7



Antenna A

Antenna B

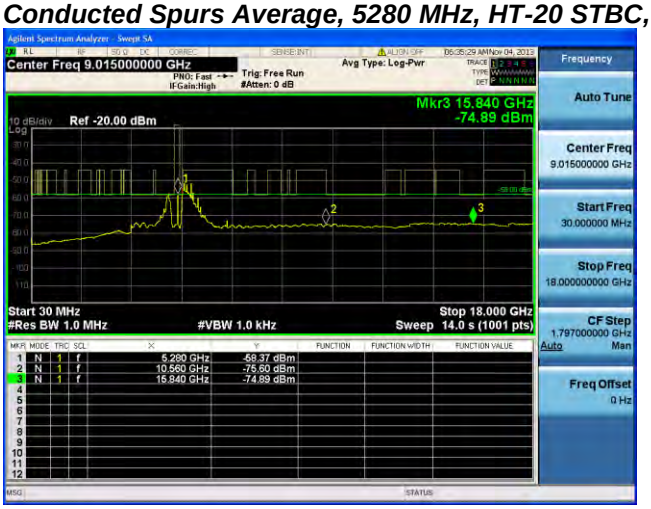
Conducted Spurs Average, 5280 MHz, HT-20, M8 to M15



Antenna A

Antenna B

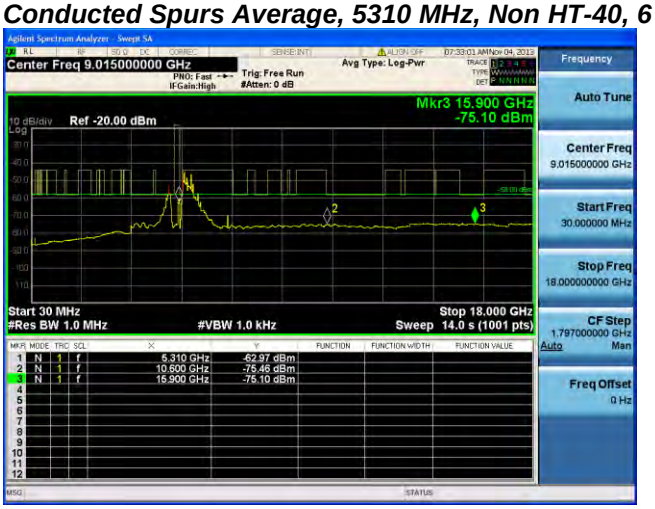
Conducted Spurs Average, 5280 MHz, HT-20 STBC, M0 to M7



Antenna A

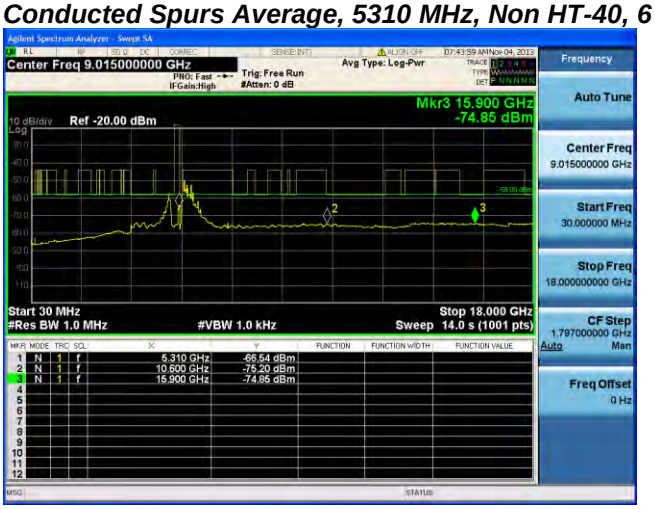
Antenna B

Conducted Spurs Average, 5310 MHz, Non HT-40, 6 to 54 Mbps

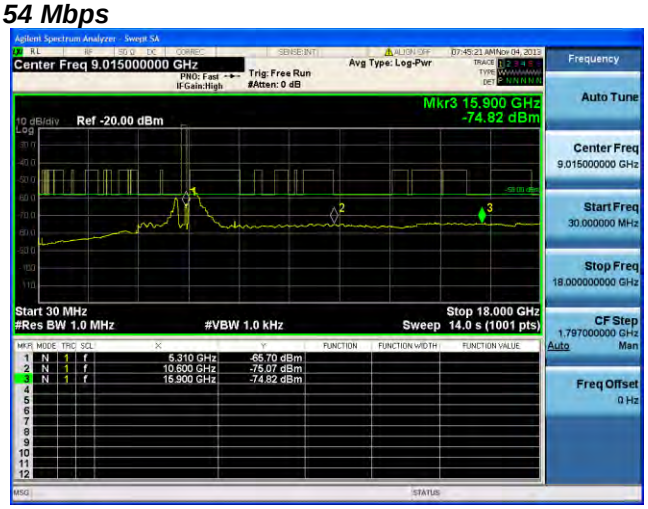


Antenna A

Conducted Spurs Average, 5310 MHz, Non HT-40, 6 to 54 Mbps

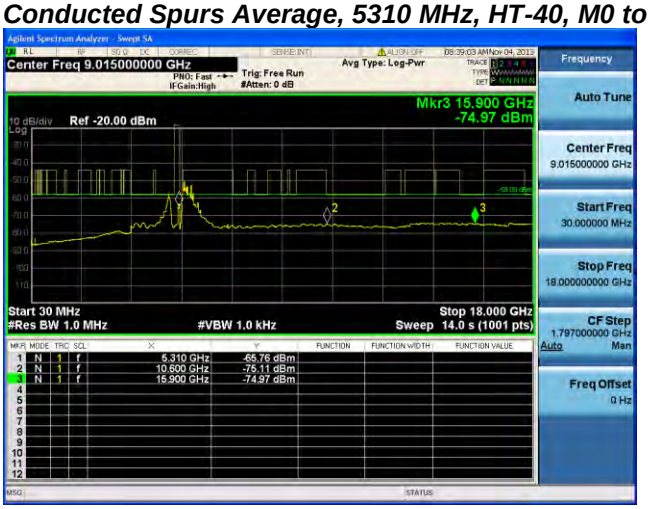


Antenna A



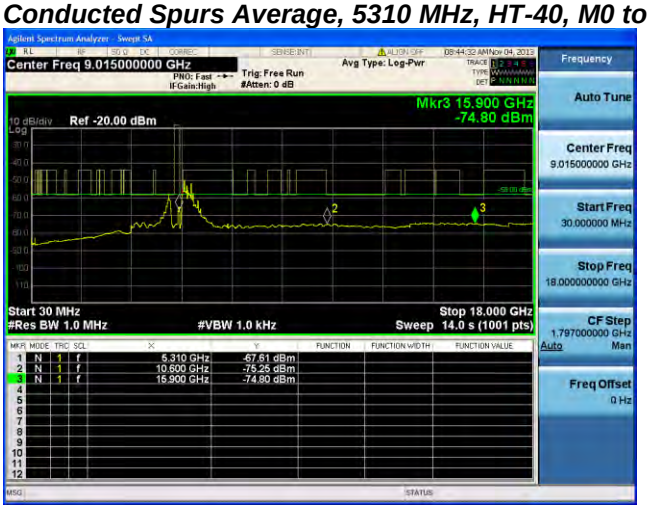
Antenna B

Conducted Spurs Average, 5310 MHz, HT-40, M0 to M7



Antenna A

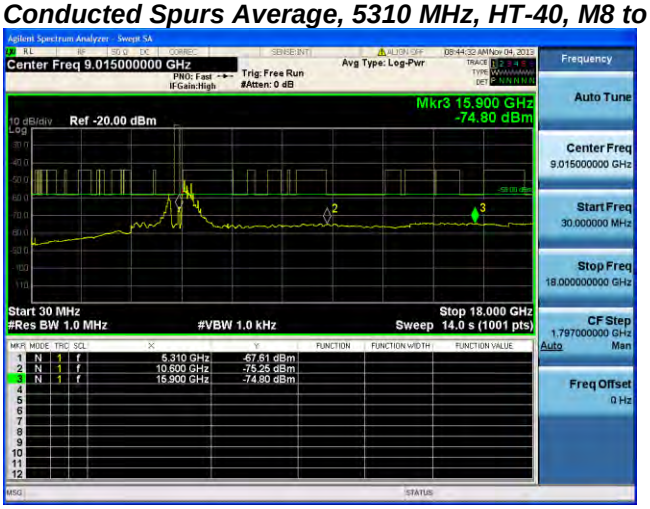
Conducted Spurs Average, 5310 MHz, HT-40, M0 to M7



Antenna A

Antenna B

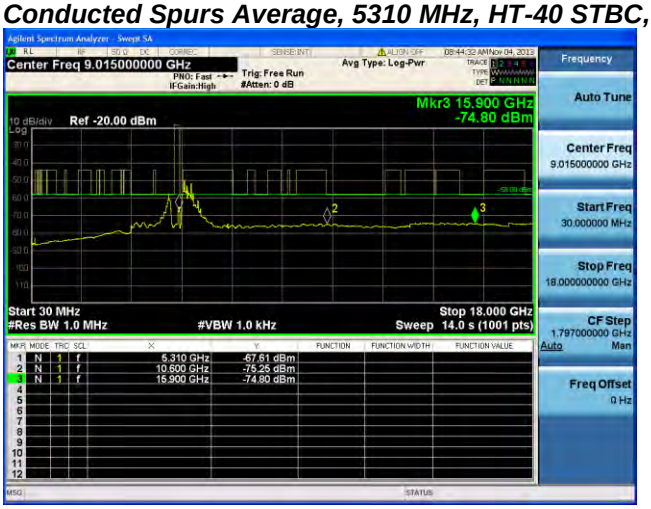
Conducted Spurs Average, 5310 MHz, HT-40, M8 to M15



Antenna A

Antenna B

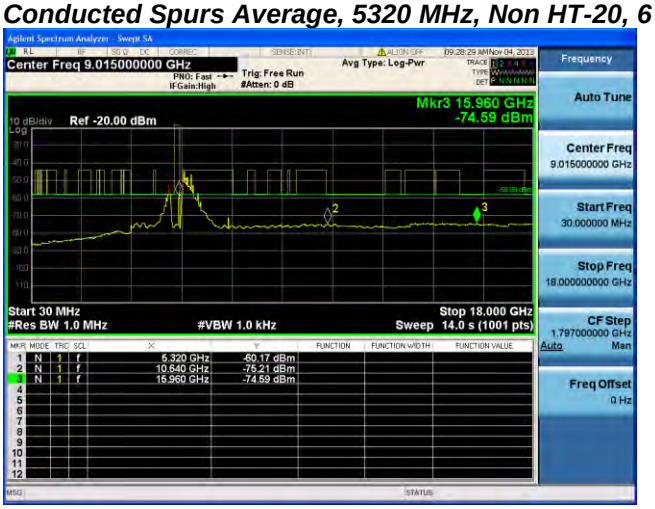
Conducted Spurs Average, 5310 MHz, HT-40 STBC, M0 to M7



Antenna A

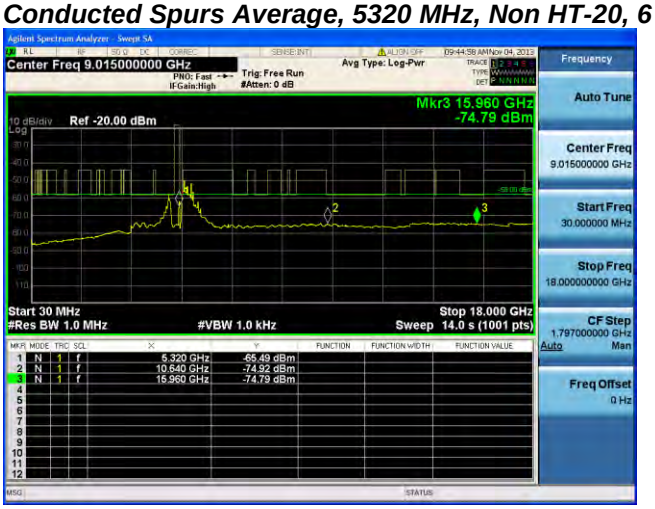
Antenna B

Conducted Spurs Average, 5320 MHz, Non HT-20, 6 to 54 Mbps

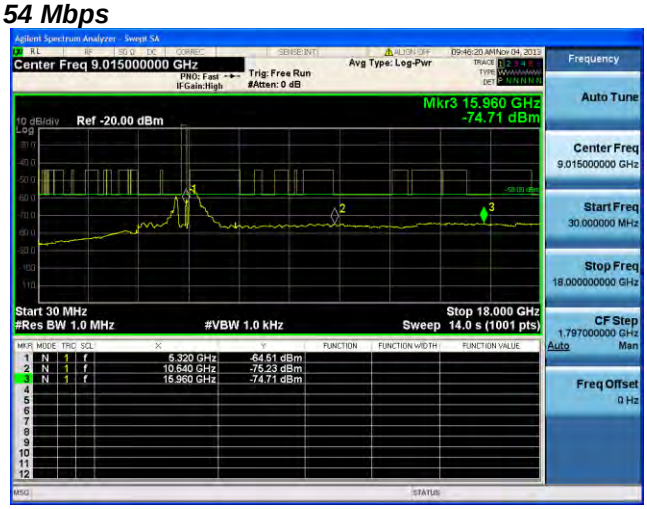


Antenna A

Conducted Spurs Average, 5320 MHz, Non HT-20, 6 to 54 Mbps

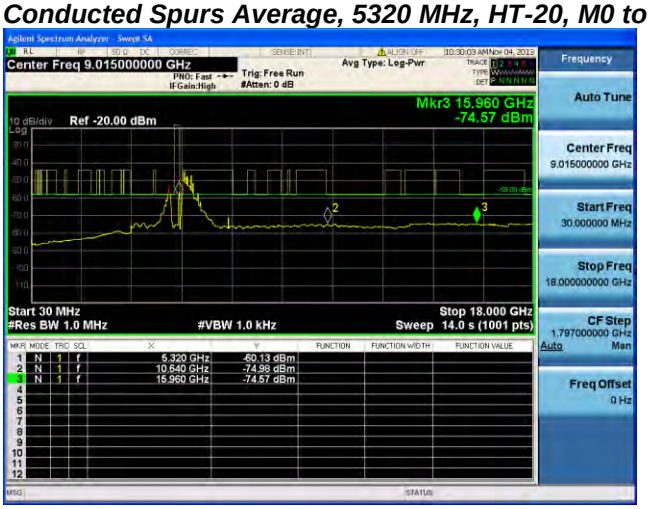


Antenna A



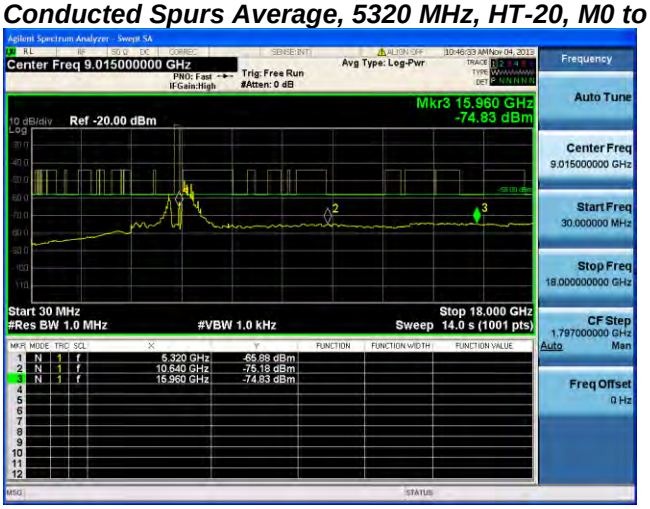
Antenna B

Conducted Spurs Average, 5320 MHz, HT-20, M0 to M7



Antenna A

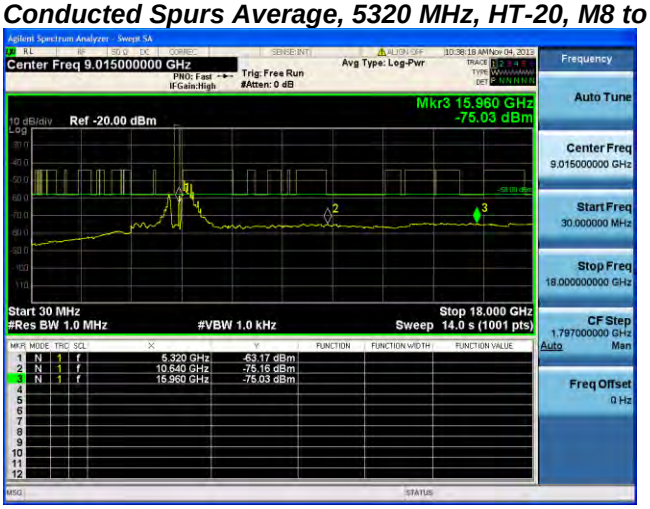
Conducted Spurs Average, 5320 MHz, HT-20, M0 to M7



Antenna A

Antenna B

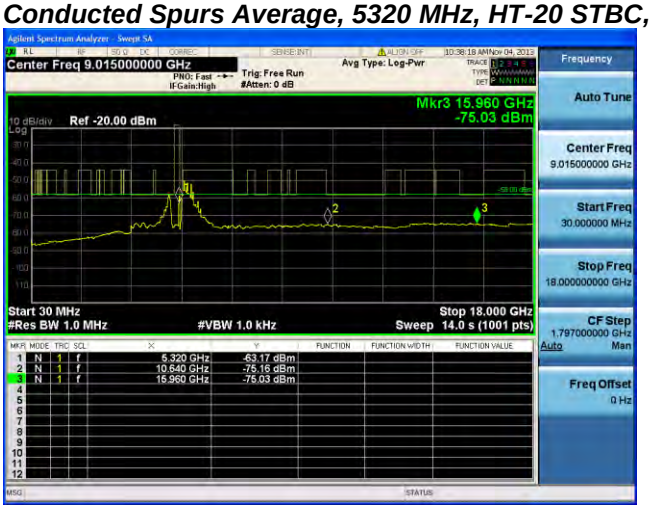
Conducted Spurs Average, 5320 MHz, HT-20, M8 to M15



Antenna A

Antenna B

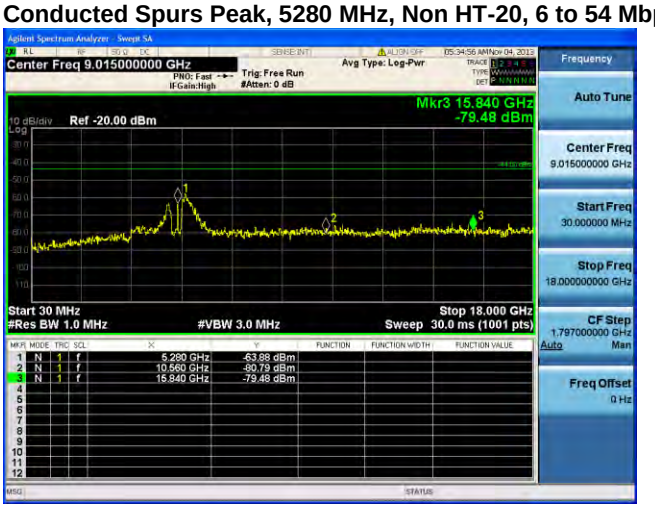
Conducted Spurs Average, 5320 MHz, HT-20 STBC, M0 to M7



Antenna A

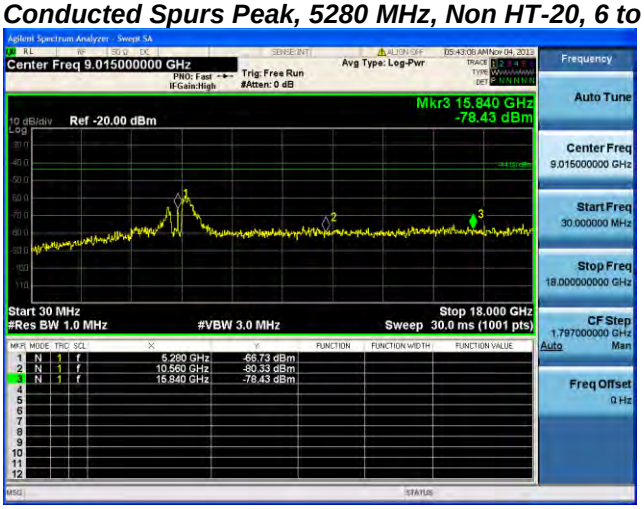
Antenna B

Conducted Spurs Peak, 5280 MHz, Non HT-20, 6 to 54 Mbps

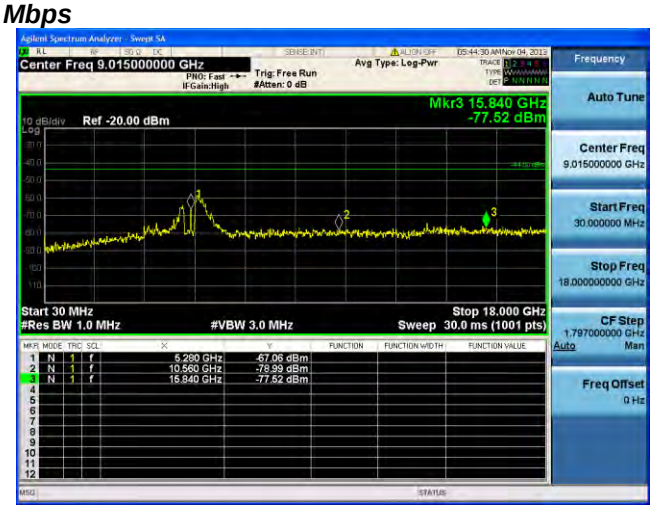


Antenna A

Conducted Spurs Peak, 5280 MHz, Non HT-20, 6 to 54 Mbps

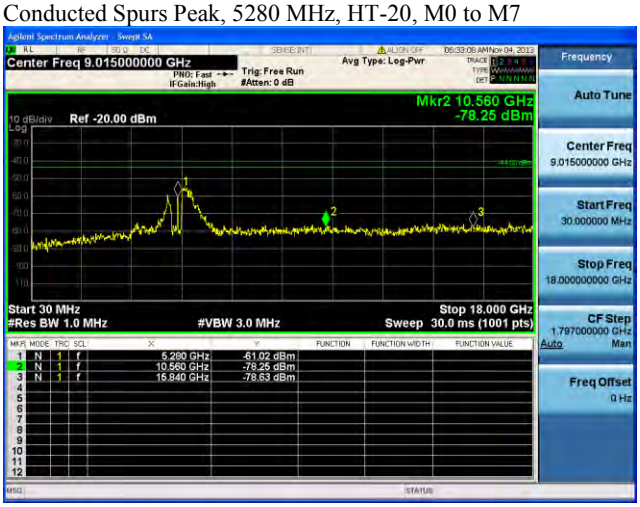


Antenna A



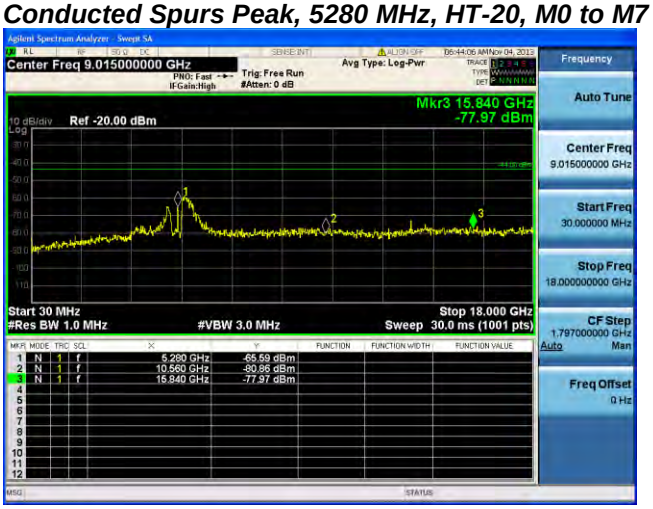
Antenna B

Conducted Spurs Peak, 5280 MHz, HT-20, M0 to M7



Antenna A

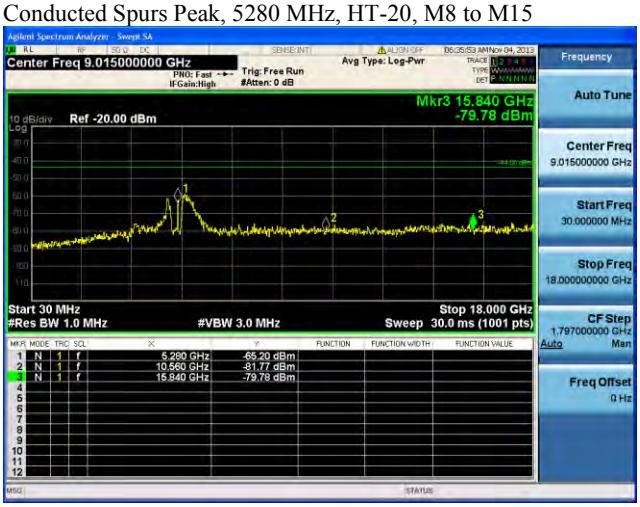
Conducted Spurs Peak, 5280 MHz, HT-20, M0 to M7



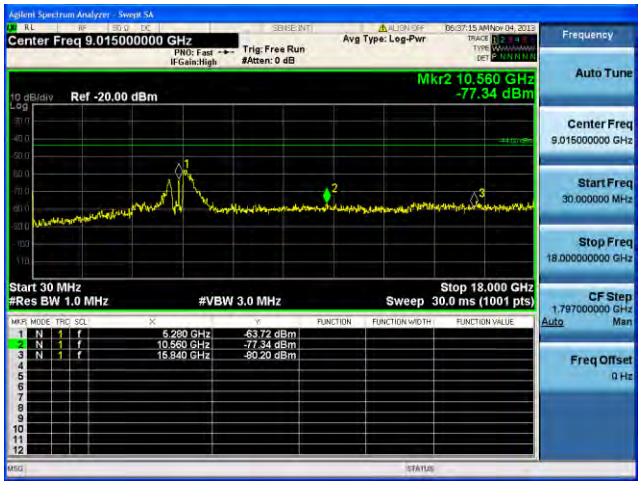
Antenna A

Antenna B

Conducted Spurs Peak, 5280 MHz, HT-20, M8 to M15

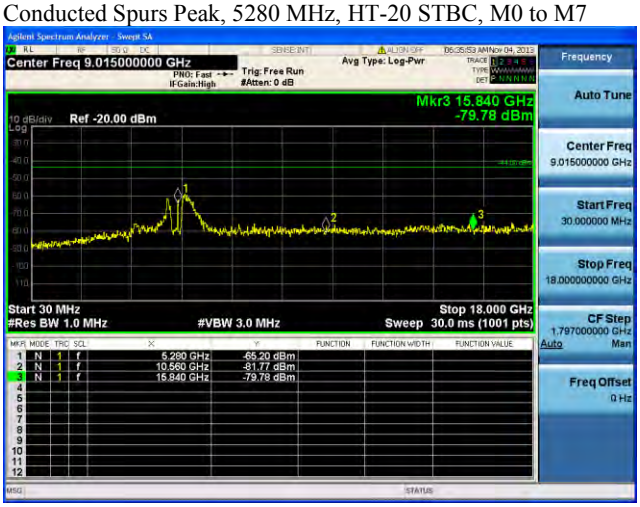


Antenna A



Antenna B

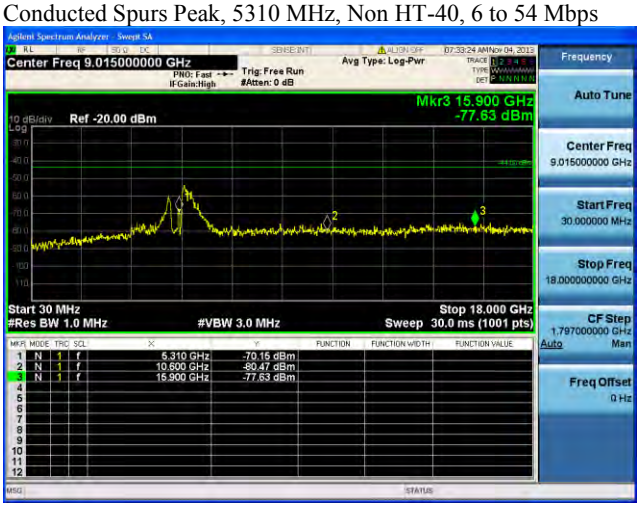
Conducted Spurs Peak, 5280 MHz, HT-20 STBC, M0 to M7



Antenna A

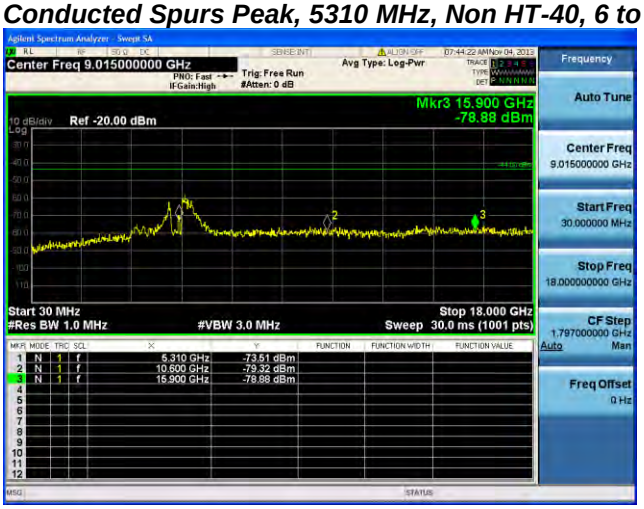
Antenna B

Conducted Spurs Peak, 5310 MHz, Non HT-40, 6 to 54 Mbps

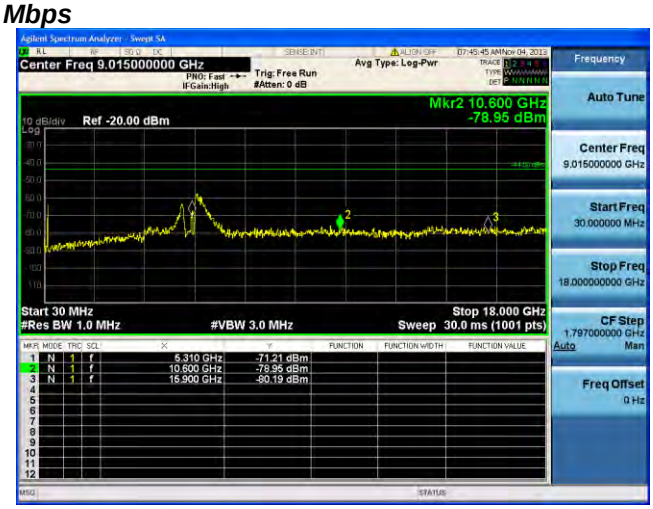


Antenna A

Conducted Spurs Peak, 5310 MHz, Non HT-40, 6 to 54 Mbps

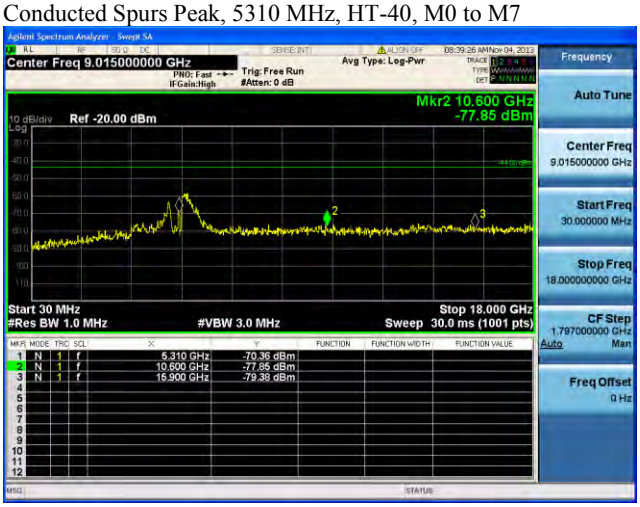


Antenna A



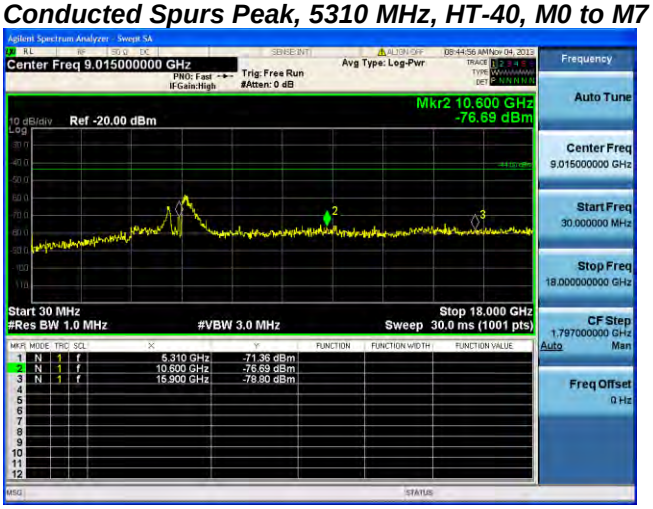
Antenna B

Conducted Spurs Peak, 5310 MHz, HT-40, M0 to M7



Antenna A

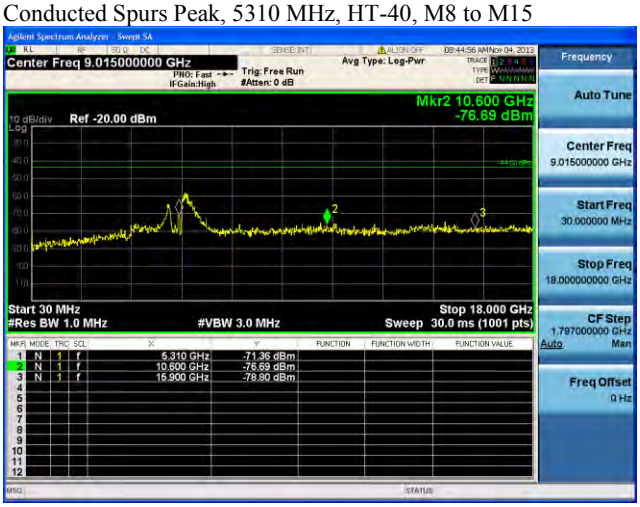
Conducted Spurs Peak, 5310 MHz, HT-40, M0 to M7



Antenna A

Antenna B

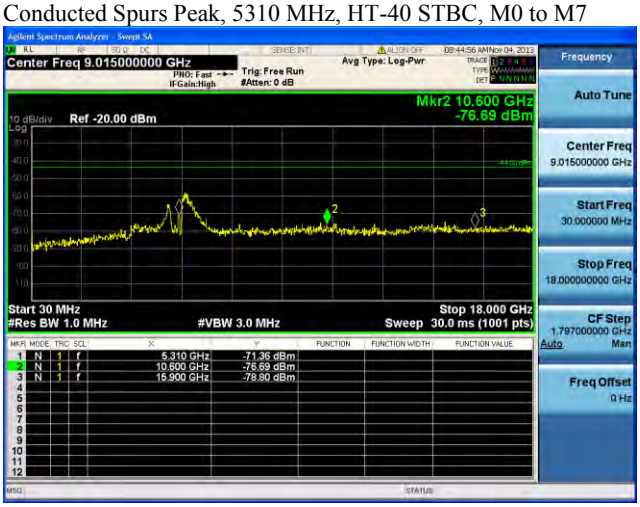
Conducted Spurs Peak, 5310 MHz, HT-40, M8 to M15



Antenna A

Antenna B

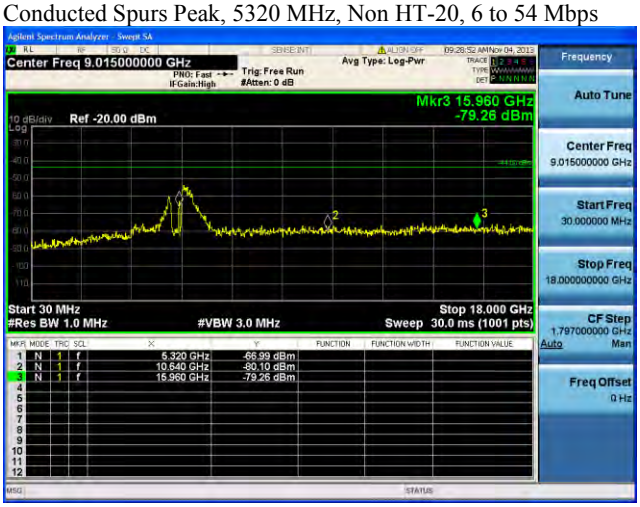
Conducted Spurs Peak, 5310 MHz, HT-40 STBC, M0 to M7



Antenna A

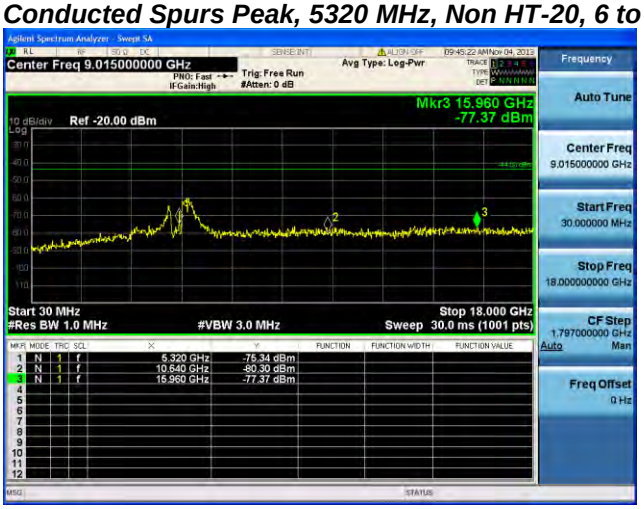
Antenna B

Conducted Spurs Peak, 5320 MHz, Non HT-20, 6 to 54 Mbps

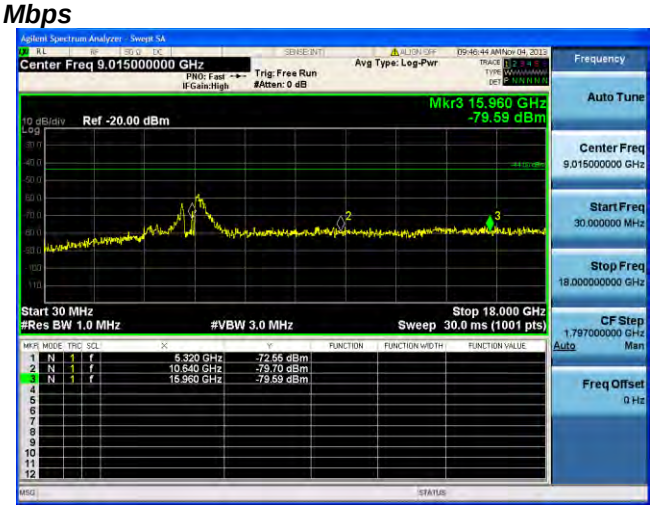


Antenna A

Conducted Spurs Peak, 5320 MHz, Non HT-20, 6 to 54 Mbps

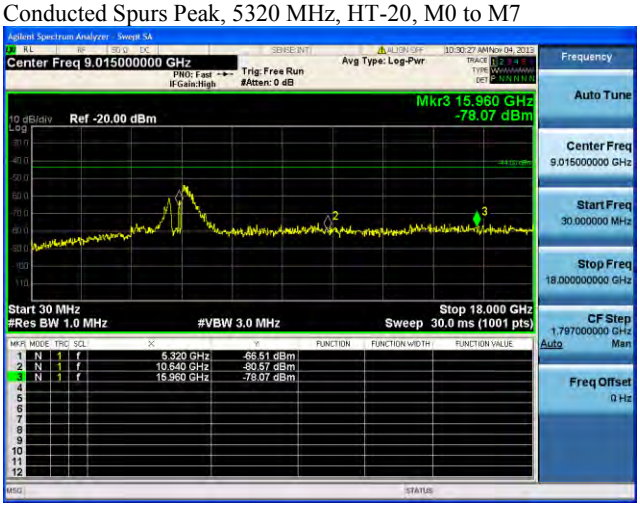


Antenna A



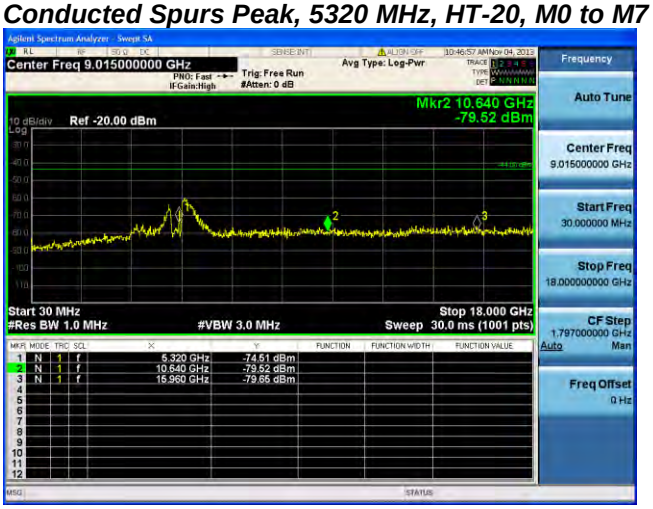
Antenna B

Conducted Spurs Peak, 5320 MHz, HT-20, M0 to M7



Antenna A

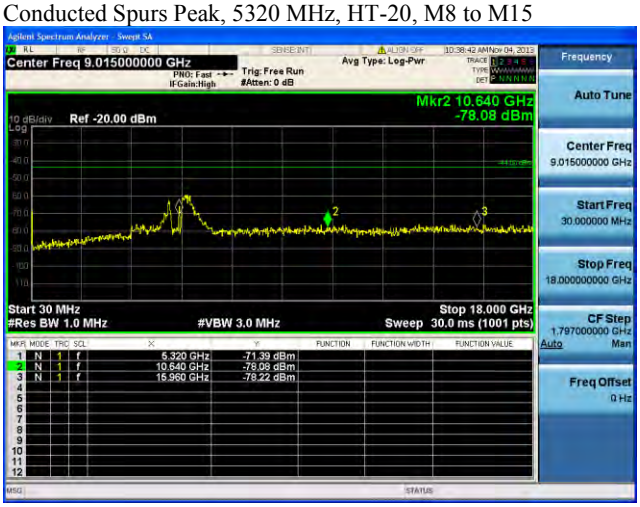
Conducted Spurs Peak, 5320 MHz, HT-20, M0 to M7



Antenna A

Antenna B

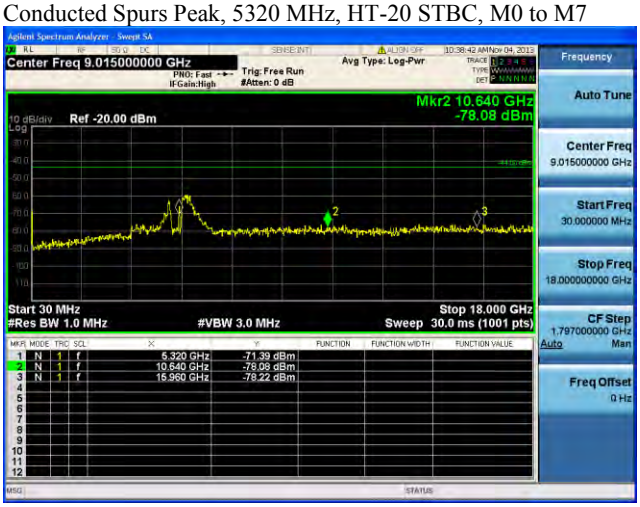
Conducted Spurs Peak, 5320 MHz, HT-20, M8 to M15



Antenna A

Antenna B

Conducted Spurs Peak, 5320 MHz, HT-20 STBC, M0 to M7



Antenna A

Antenna B

Conducted Bandedge

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Use the procedures in 718828 D01 DTS Meas Guidance v01 to substitute conducted measurements in place of radiated measurements.
Connect the antenna port(s) to the spectrum analyzer input. Place the radio in continuous transmit mode. Be sure to enter all losses between the transmitter output and the spectrum analyzer.

Reference Level:	10 dBm
Attenuation:	4 dB
Sweep Time:	Coupled
Resolution Bandwidth:	1MHz
Video Bandwidth:	1 MHz for peak, 100 Hz for average
Detector:	Peak

Save 2 plots: 1) Average Plot (Vertical and Horizontal), Limit= -41.25 dBm eirp (54dBuV @3m)
2) Peak plot (Vertical and Horizontal), Limit = -21.25 dBm eirp (74dBuV @3m)

Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands.

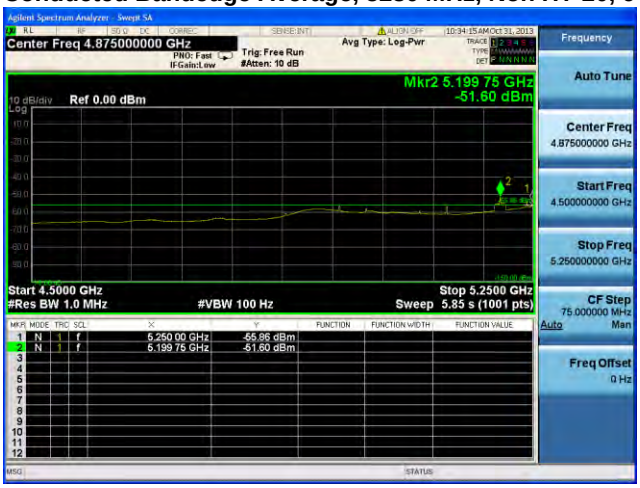
The “measure-and-sum technique” is used for measuring in-band transmit power of a device. In the measure-and-sum approach, the conducted emission level is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level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

This report represents the worst case data for all supported operating modes and antennas.

Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Bandedge Level (dBm)	Tx 2 Bandedge Level (dBm)	Total Tx Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
5280	Non HT-20, 6 to 54 Mbps	1	7	-51.6		-44.6	-41.25	3.4
	Non HT-20, 6 to 54 Mbps	2	7	-52.3	-56.5	-43.9	-41.25	2.7
	HT-20, M0 to M7	1	7	-48.3		-41.3	-41.25	0.1
	HT-20, M0 to M7	2	7	-52.5	-56.2	-44.0	-41.25	2.7
	HT-20, M8 to M15	2	7	-52.2	-55.6	-43.4	-41.25	2.3
	HT-20 STBC, M0 to M7	2	7	-52.2	-55.6	-43.4	-41.25	2.3
5310	Non HT-40, 6 to 54 Mbps	1	7	-49.0		-42.0	-41.25	0.8
	Non HT-40, 6 to 54 Mbps	2	7	-52.9	-50.5	-41.5	-41.25	0.3
	HT-40, M0 to M7	1	7	-49.5		-42.5	-41.25	1.3
	HT-40, M0 to M7	2	7	-52.9	-50.3	-41.4	-41.25	0.1
	HT-40, M8 to M15	2	7	-52.9	-50.3	-41.4	-41.25	0.1
	HT-40 STBC, M0 to M7	2	7	-52.9	-50.3	-41.4	-41.25	0.1
5320	Non HT-20, 6 to 54 Mbps	1	7	-49.9		-42.9	-41.25	1.7
	Non HT-20, 6 to 54 Mbps	2	7	-55.0	-56.9	-45.8	-41.25	4.6
	HT-20, M0 to M7	1	7	-49.6		-42.6	-41.25	1.4
	HT-20, M0 to M7	2	7	-55.1	-56.9	-45.9	-41.25	4.6
	HT-20, M8 to M15	2	7	-54.8	-55.7	-45.2	-41.25	4.0
	HT-20 STBC, M0 to M7	2	7	-54.8	-55.7	-45.2	-41.25	4.0

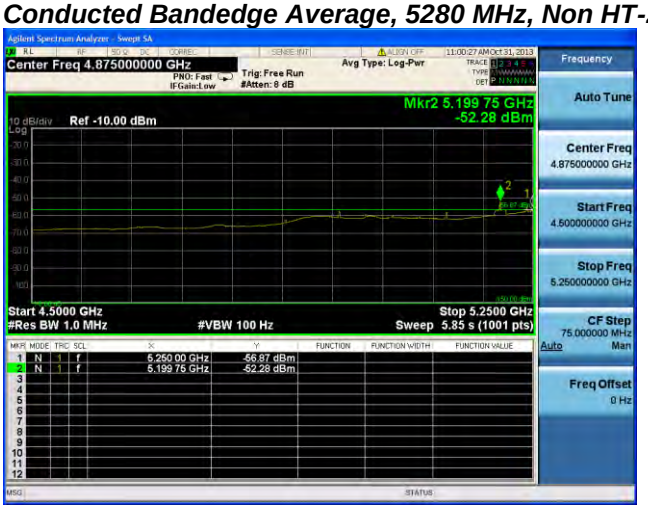
Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Bandedge Level (dBm)	Tx 2 Bandedge Level (dBm)	Total Tx Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
5280	Non HT-20, 6 to 54 Mbps	1	7	-43.8		-36.8	-21.25	15.6
	Non HT-20, 6 to 54 Mbps	2	7	-44.8	-45.8	-35.3	-21.25	14.0
	HT-20, M0 to M7	1	7	-41.3		-34.3	-21.25	13.1
	HT-20, M0 to M7	2	7	-46.2	-44.9	-35.5	-21.25	14.2
	HT-20, M8 to M15	2	7	-43.5	-44.1	-33.8	-21.25	12.5
	HT-20 STBC, M0 to M7	2	7	-43.5	-44.1	-33.8	-21.25	12.5
5310	Non HT-40, 6 to 54 Mbps	1	7	-34.3		-27.3	-21.25	6.1
	Non HT-40, 6 to 54 Mbps	2	7	-38.0	-34.9	-26.2	-21.25	4.9
	HT-40, M0 to M7	1	7	-38.9		-31.9	-21.25	10.7
	HT-40, M0 to M7	2	7	-42.4	-37.8	-29.5	-21.25	8.3
	HT-40, M8 to M15	2	7	-42.4	-37.8	-29.5	-21.25	8.3
	HT-40 STBC, M0 to M7	2	7	-42.4	-37.8	-29.5	-21.25	8.3
5320	Non HT-20, 6 to 54 Mbps	1	7	-38.7		-31.7	-21.25	10.5
	Non HT-20, 6 to 54 Mbps	2	7	-42.9	-43.3	-33.1	-21.25	11.8
	HT-20, M0 to M7	1	7	-39.4		-32.4	-21.25	11.2
	HT-20, M0 to M7	2	7	-44.1	-42.8	-33.4	-21.25	12.1
	HT-20, M8 to M15	2	7	-43.3	-43.5	-33.4	-21.25	12.1
	HT-20 STBC, M0 to M7	2	7	-43.3	-43.5	-33.4	-21.25	12.1

Conducted Bandedge Average, 5280 MHz, Non HT-20, 6 to 54 Mbps

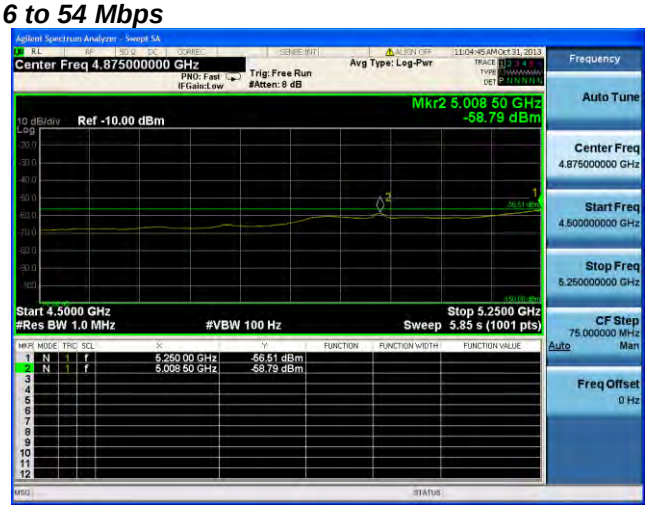


Antenna A

Conducted Bandedge Average, 5280 MHz, Non HT-20, 6 to 54 Mbps



Antenna A

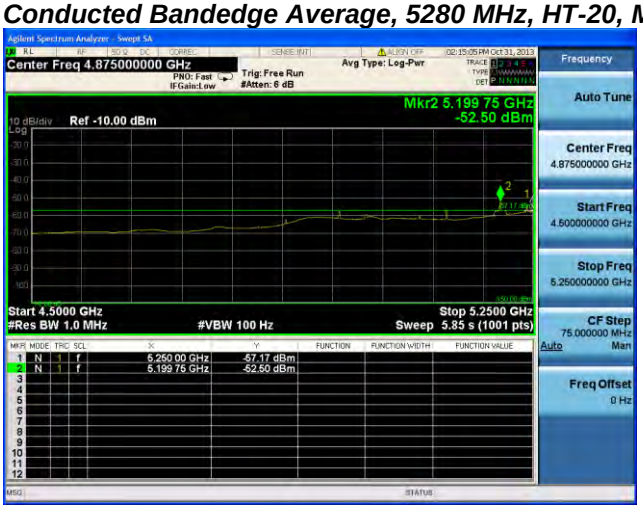


Antenna B

Conducted Bandedge Average, 5280 MHz, HT-20, M0 to M7

Antenna A

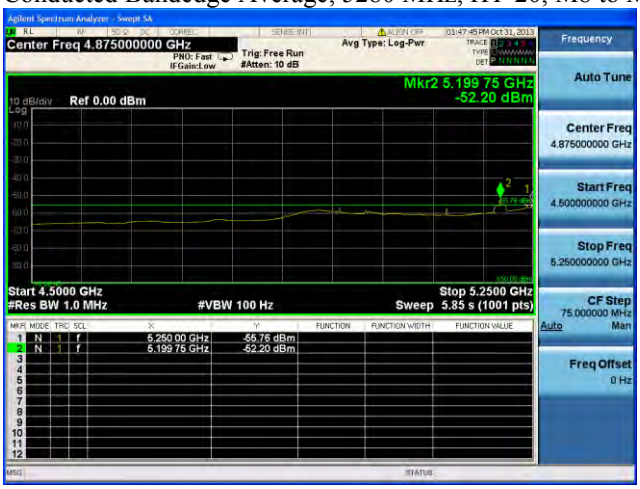
Conducted Bandedge Average, 5280 MHz, HT-20, M0 to M7



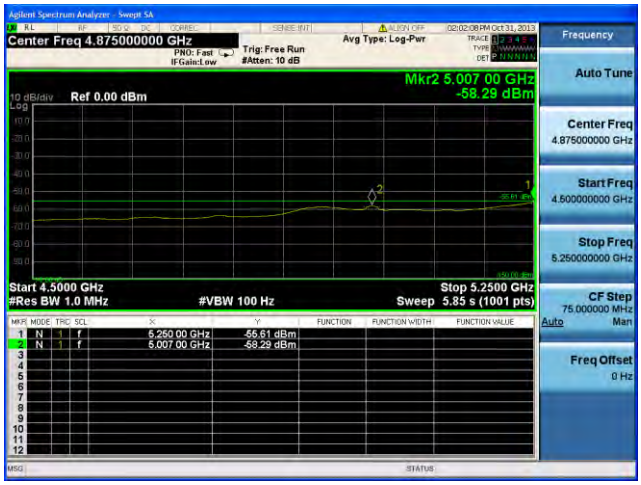
Antenna A

Antenna B

Conducted Bandedge Average, 5280 MHz, HT-20, M8 to M15

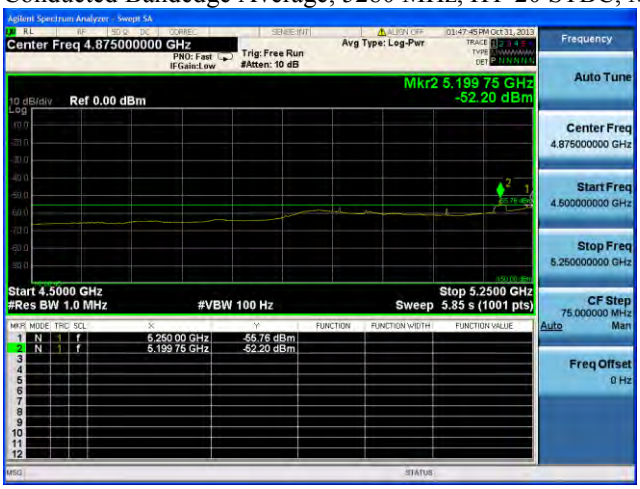


Antenna A

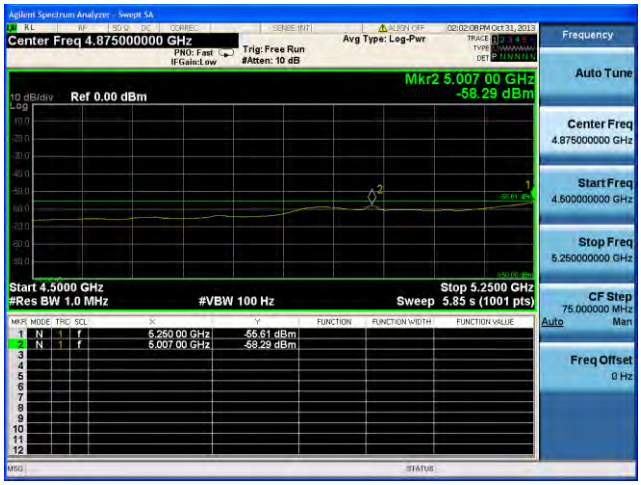


Antenna B

Conducted Bandedge Average, 5280 MHz, HT-20 STBC, M0 to M7

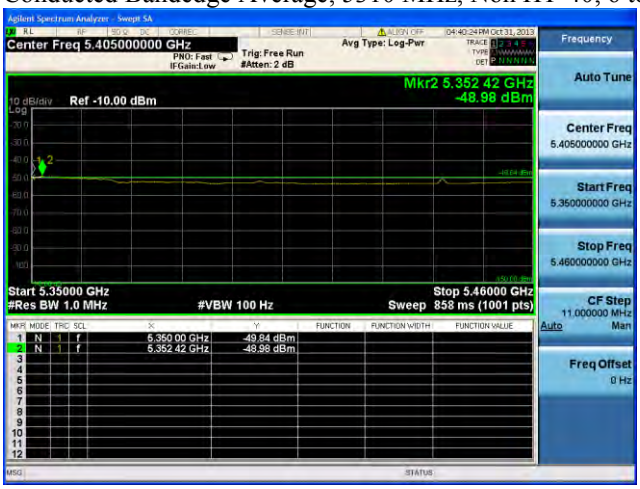


Antenna A



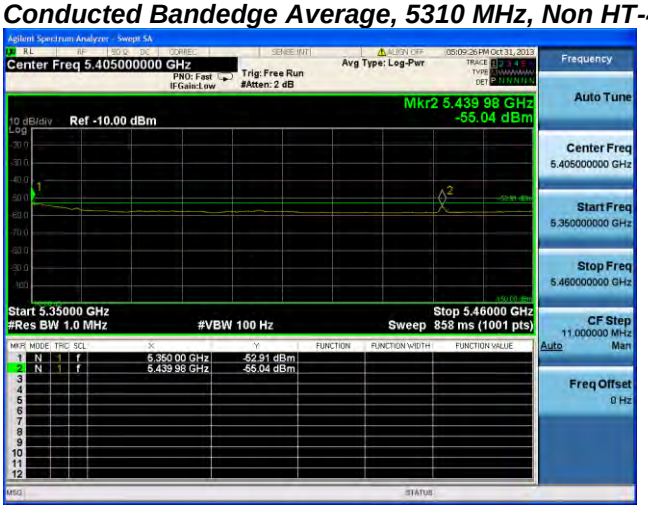
Antenna B

Conducted Bandedge Average, 5310 MHz, Non HT-40, 6 to 54 Mbps

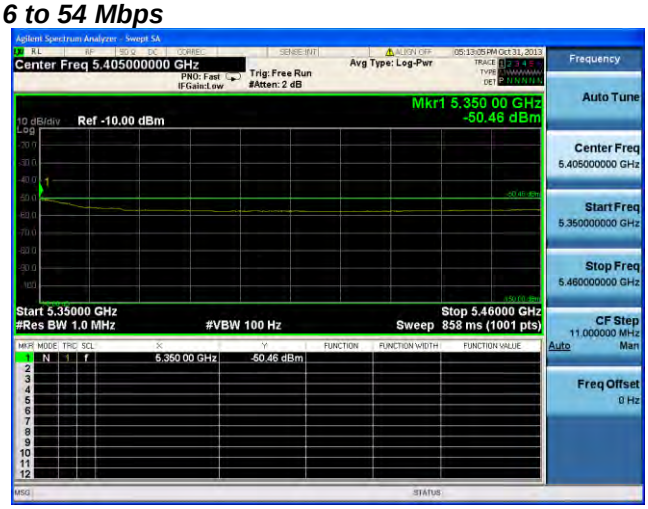


Antenna A

Conducted Bandedge Average, 5310 MHz, Non HT-40, 6 to 54 Mbps

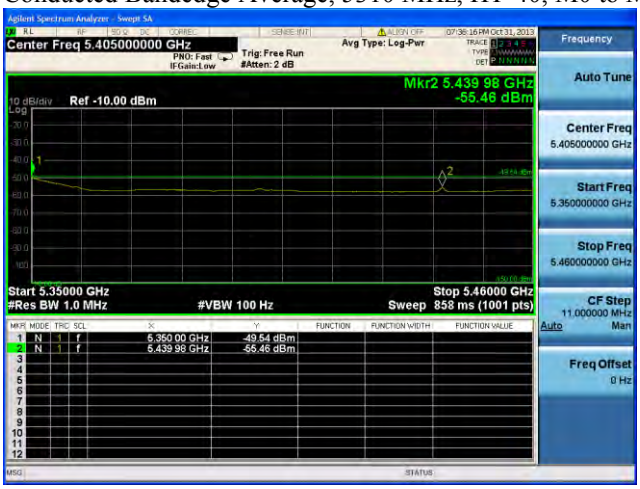


Antenna A



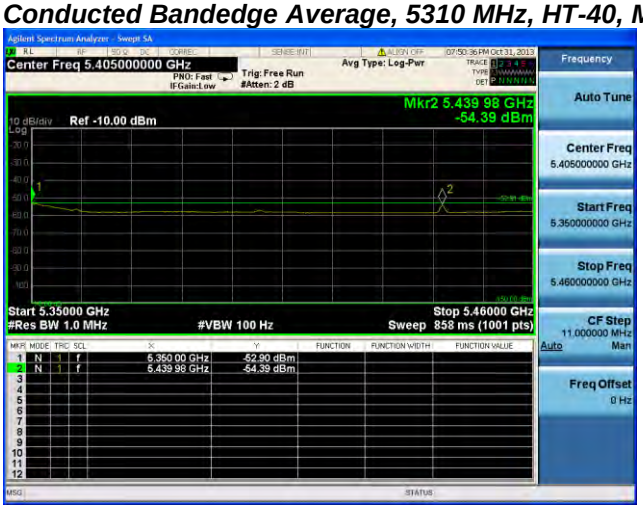
Antenna B

Conducted Bandedge Average, 5310 MHz, HT-40, M0 to M7

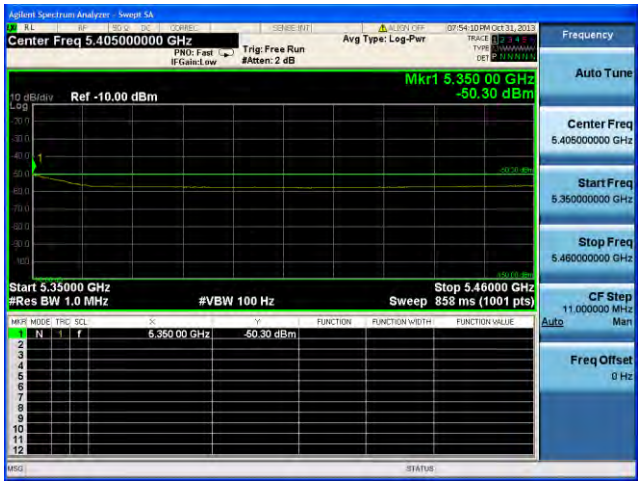


Antenna A

Conducted Bandedge Average, 5310 MHz, HT-40, M0 to M7

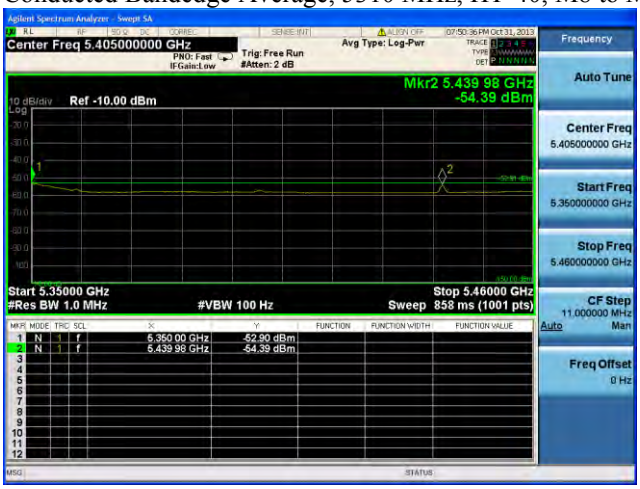


Antenna A

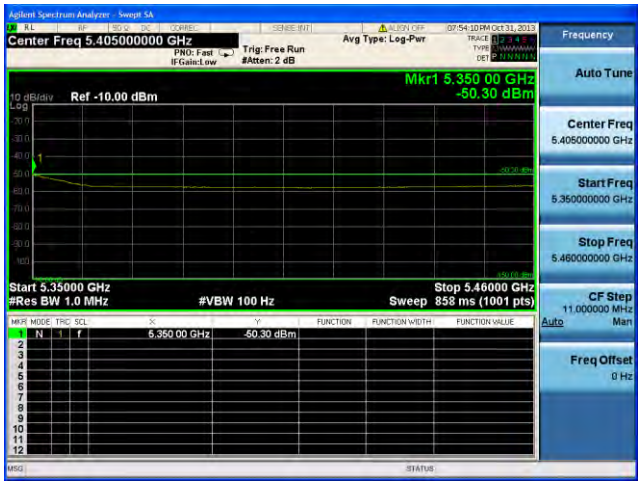


Antenna B

Conducted Bandedge Average, 5310 MHz, HT-40, M8 to M15

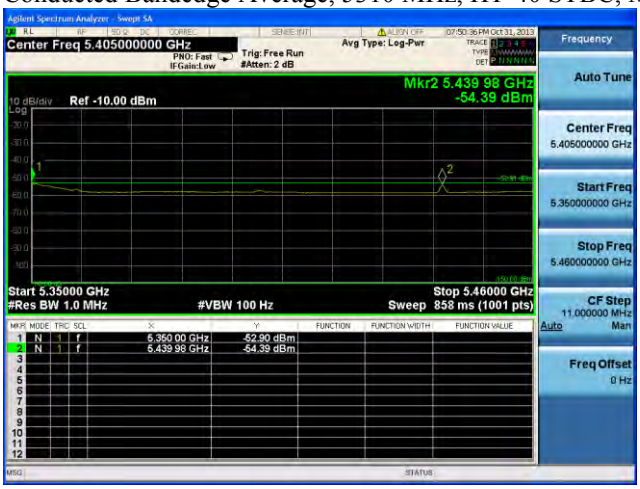


Antenna A

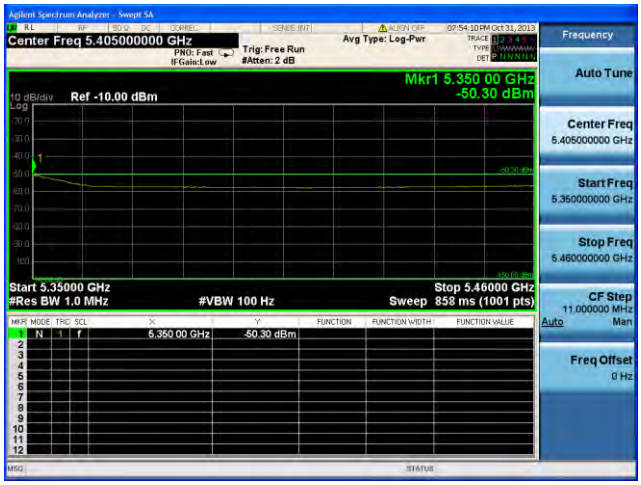


Antenna B

Conducted Bandedge Average, 5310 MHz, HT-40 STBC, M0 to M7

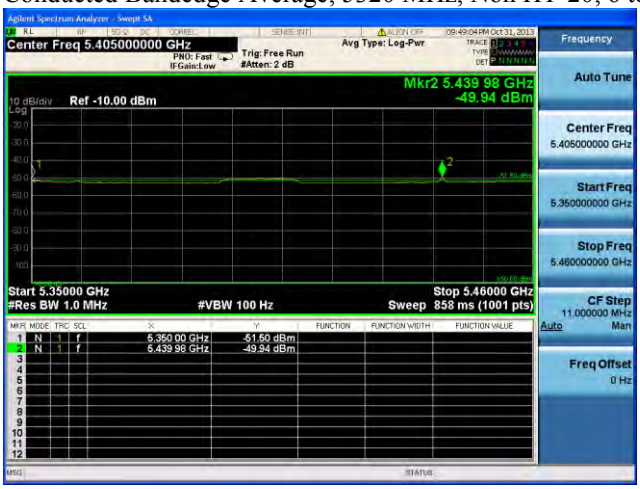


Antenna A



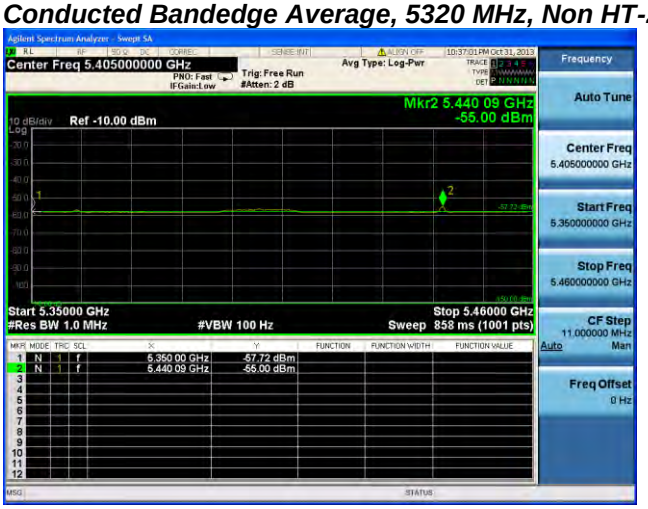
Antenna B

Conducted Bandedge Average, 5320 MHz, Non HT-20, 6 to 54 Mbps

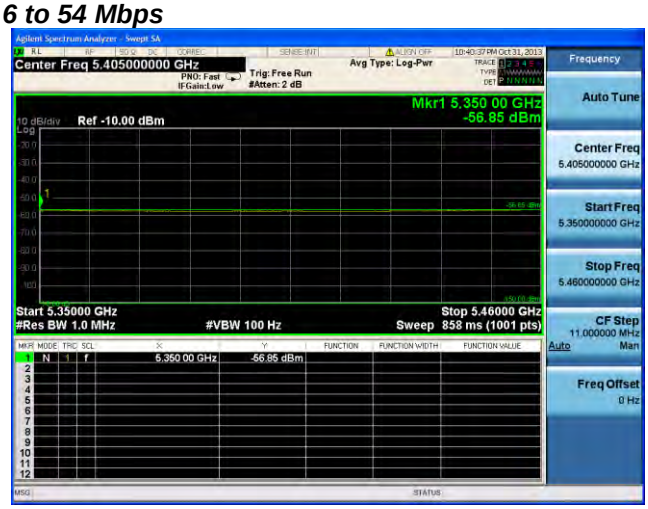


Antenna A

Conducted Bandedge Average, 5320 MHz, Non HT-20, 6 to 54 Mbps

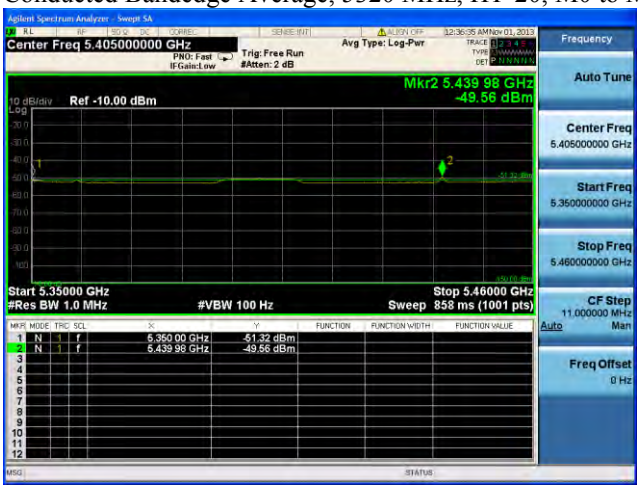


Antenna A



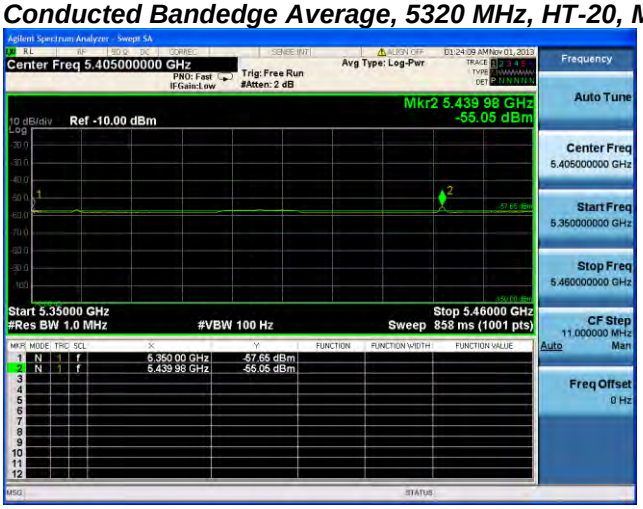
Antenna B

Conducted Bandedge Average, 5320 MHz, HT-20, M0 to M7

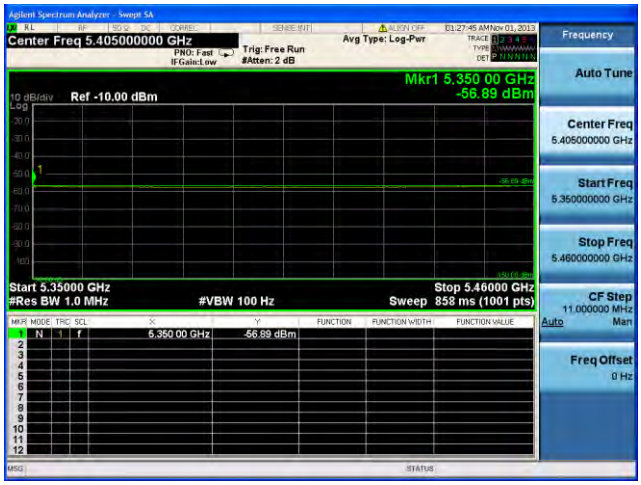


Antenna A

Conducted Bandedge Average, 5320 MHz, HT-20, M0 to M7

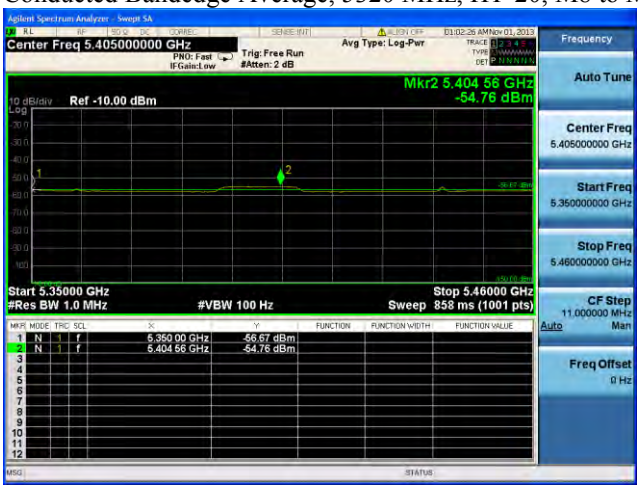


Antenna A

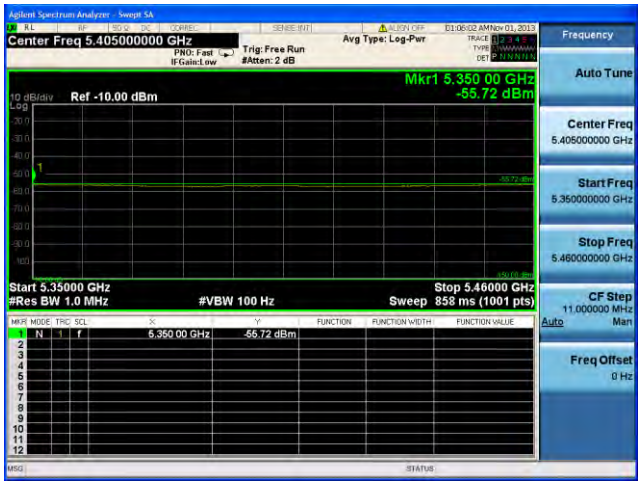


Antenna B

Conducted Bandedge Average, 5320 MHz, HT-20, M8 to M15

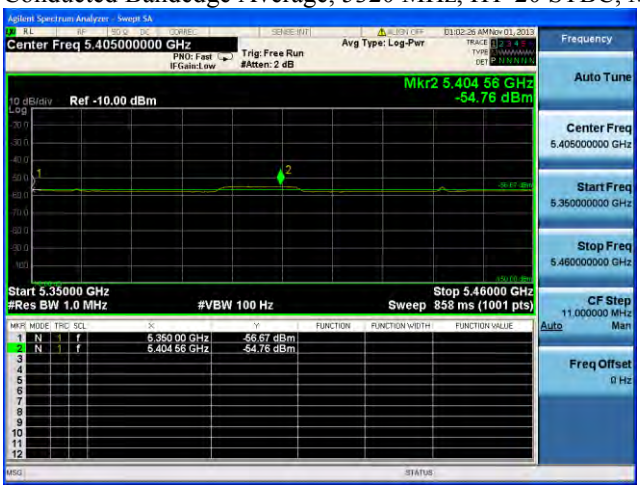


Antenna A

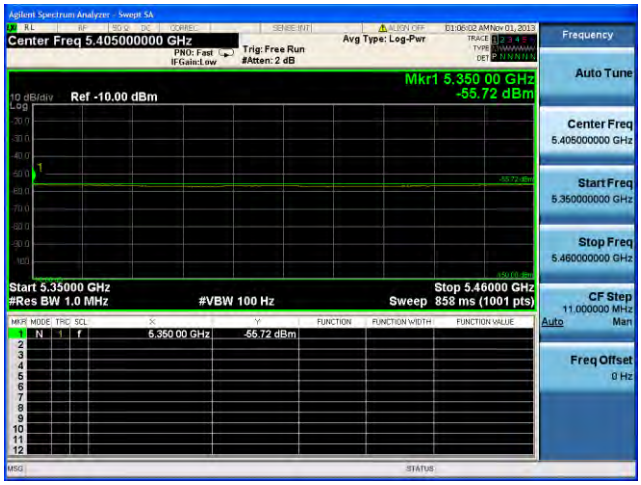


Antenna B

Conducted Bandedge Average, 5320 MHz, HT-20 STBC, M0 to M7

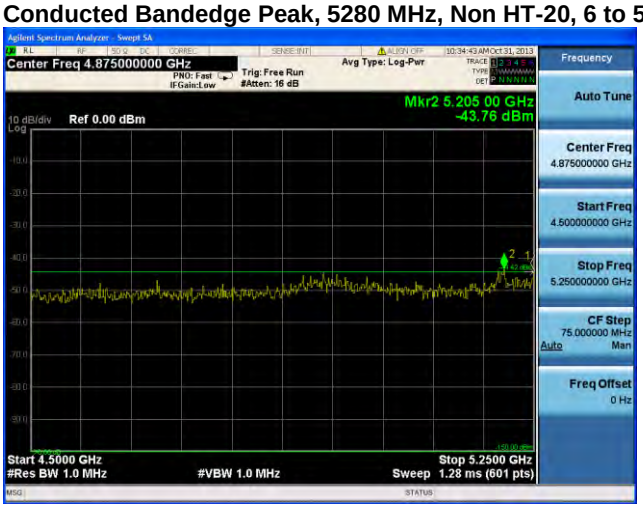


Antenna A



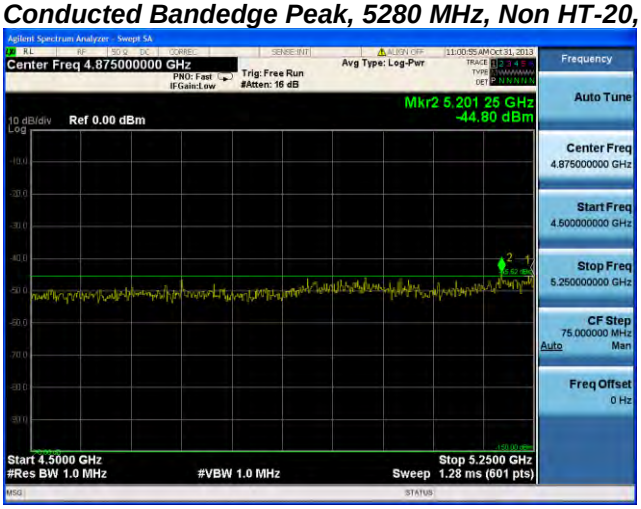
Antenna B

Conducted Bandedge Peak, 5280 MHz, Non HT-20, 6 to 54 Mbps

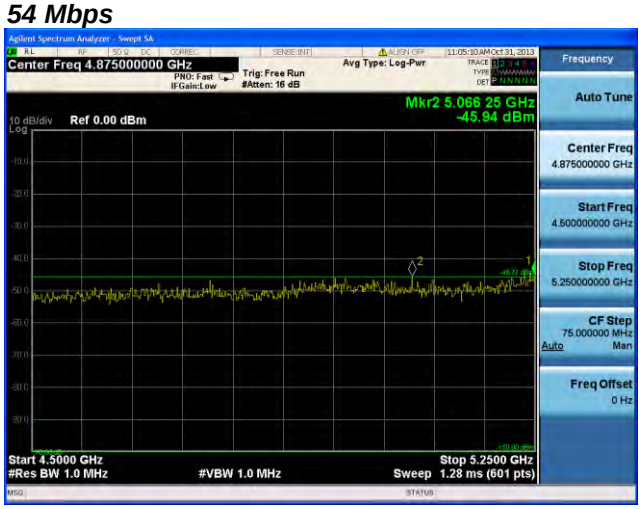


Antenna A

Conducted Bandedge Peak, 5280 MHz, Non HT-20, 6 to 54 Mbps

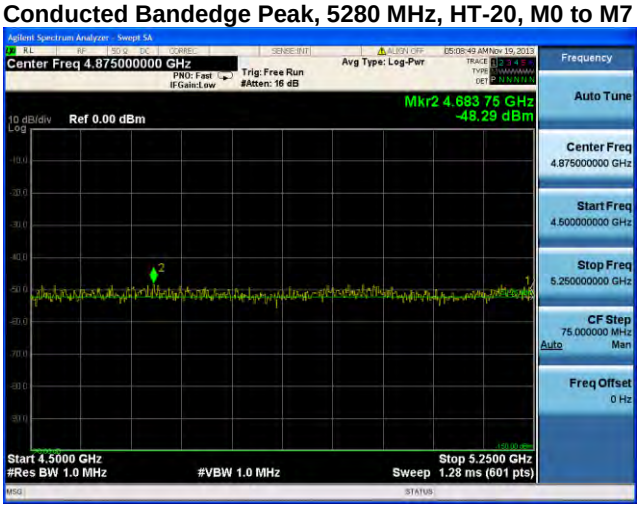


Antenna A



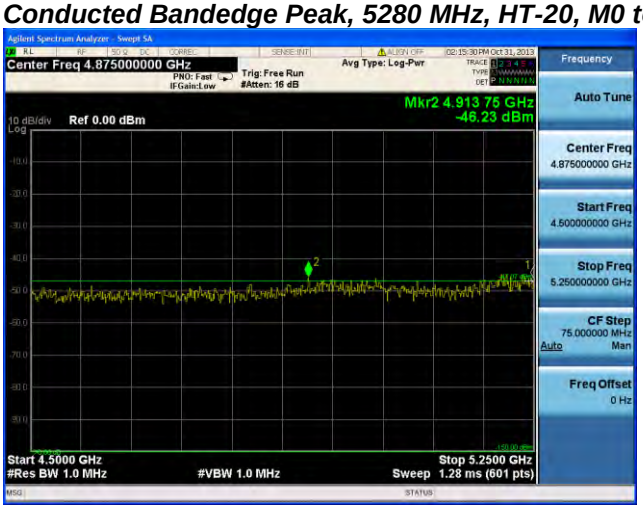
Antenna B

Conducted Bandedge Peak, 5280 MHz, HT-20, M0 to M7

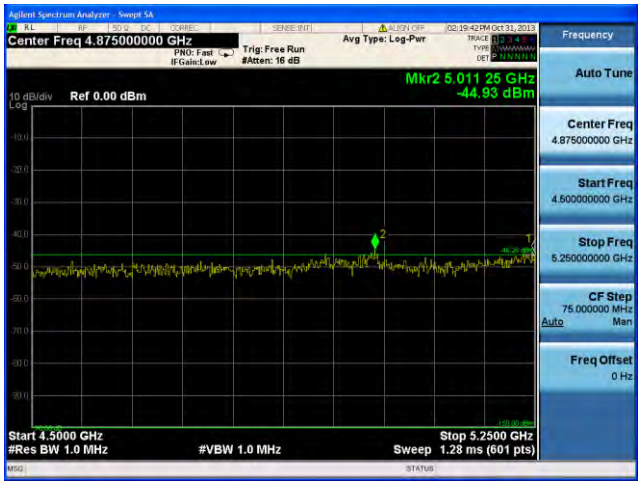


Antenna A

Conducted Bandedge Peak, 5280 MHz, HT-20, M0 to M7

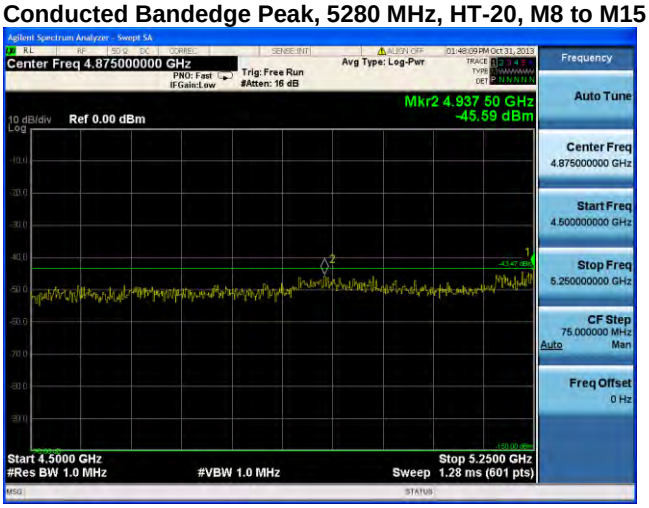


Antenna A

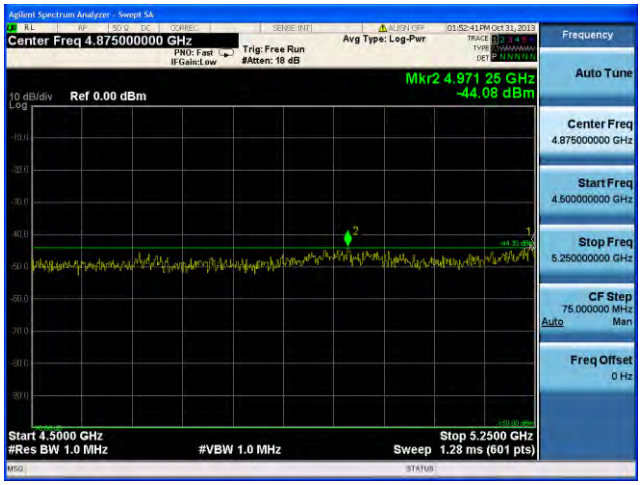


Antenna B

Conducted Bandedge Peak, 5280 MHz, HT-20, M8 to M15

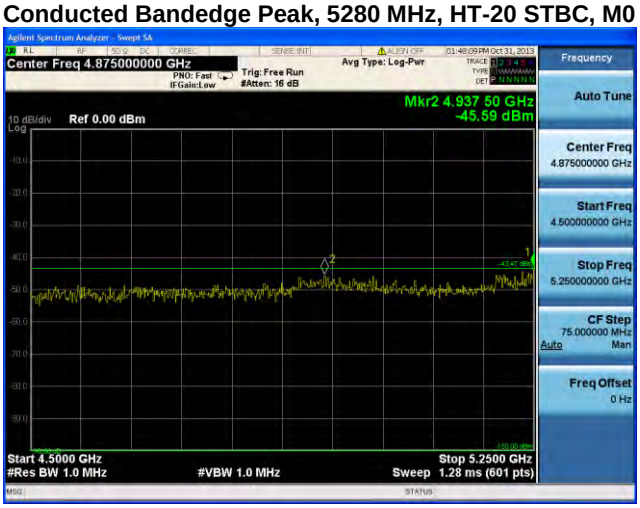


Antenna A

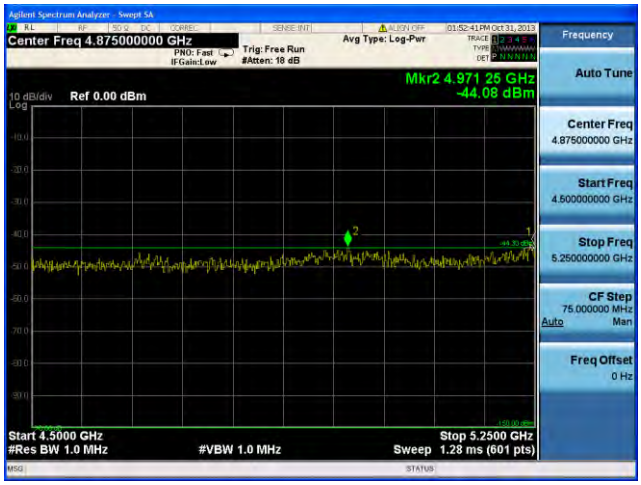


Antenna B

Conducted Bandedge Peak, 5280 MHz, HT-20 STBC, M0 to M7

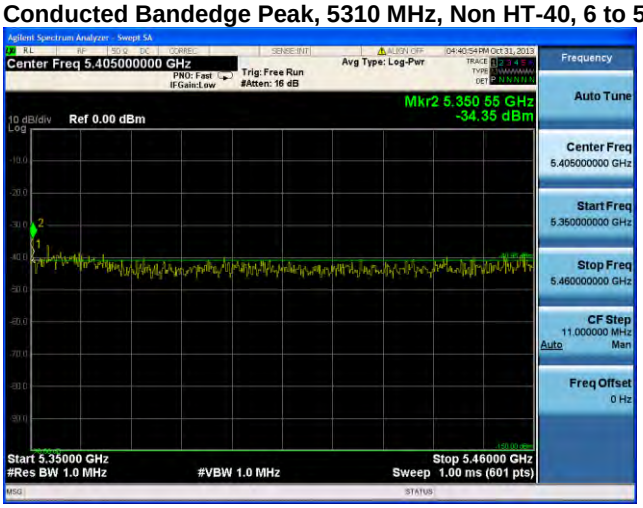


Antenna A



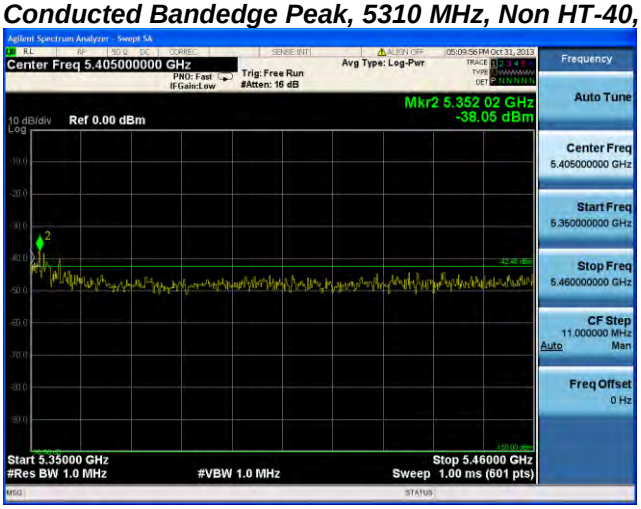
Antenna B

Conducted Bandedge Peak, 5310 MHz, Non HT-40, 6 to 54 Mbps

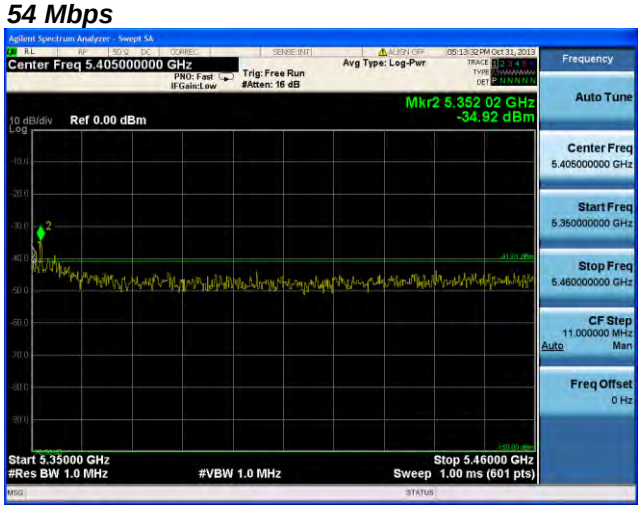


Antenna A

Conducted Bandedge Peak, 5310 MHz, Non HT-40, 6 to 54 Mbps

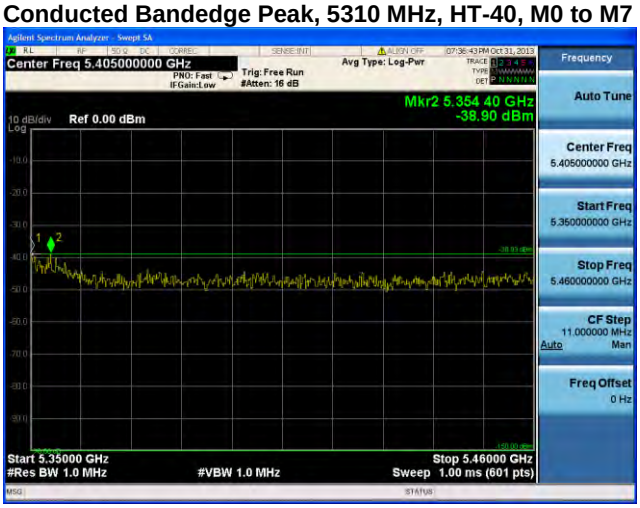


Antenna A



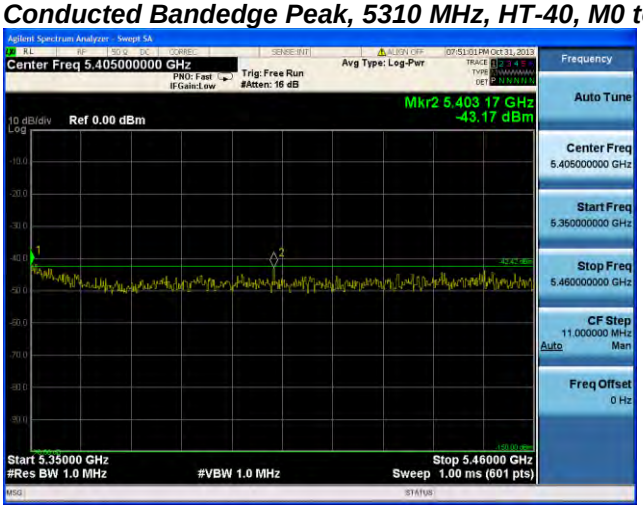
Antenna B

Conducted Bandedge Peak, 5310 MHz, HT-40, M0 to M7

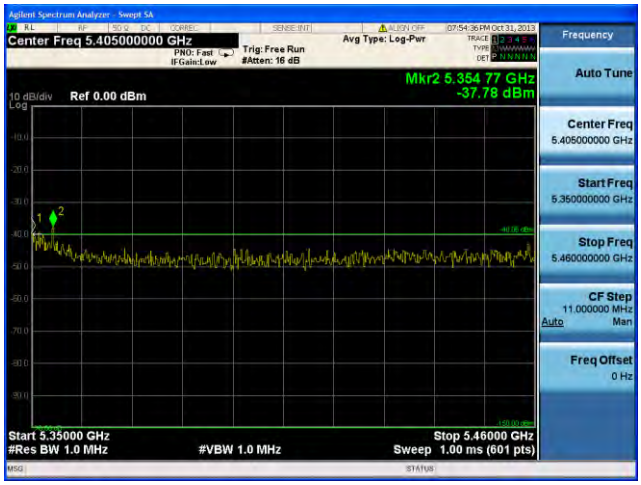


Antenna A

Conducted Bandedge Peak, 5310 MHz, HT-40, M0 to M7

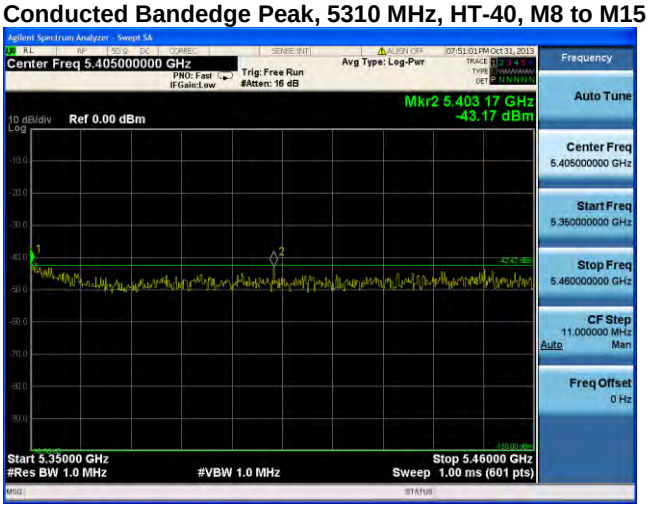


Antenna A

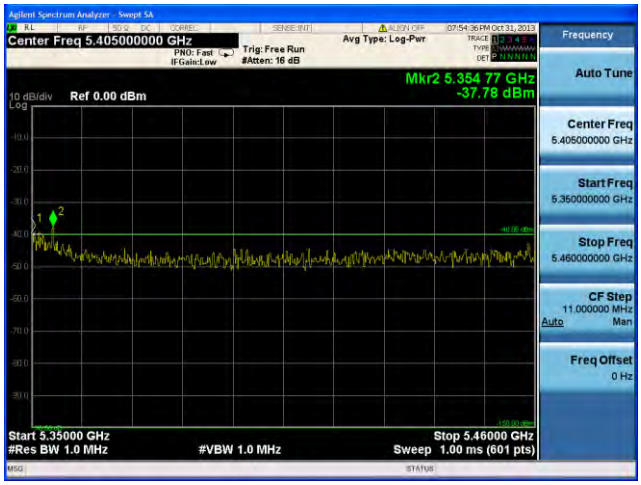


Antenna B

Conducted Bandedge Peak, 5310 MHz, HT-40, M8 to M15

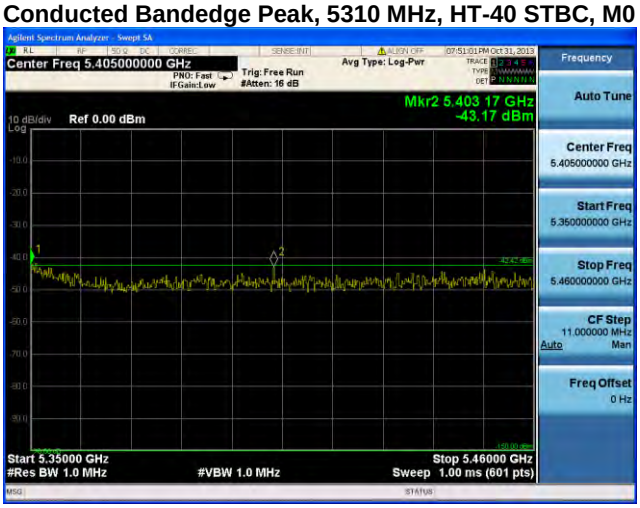


Antenna A

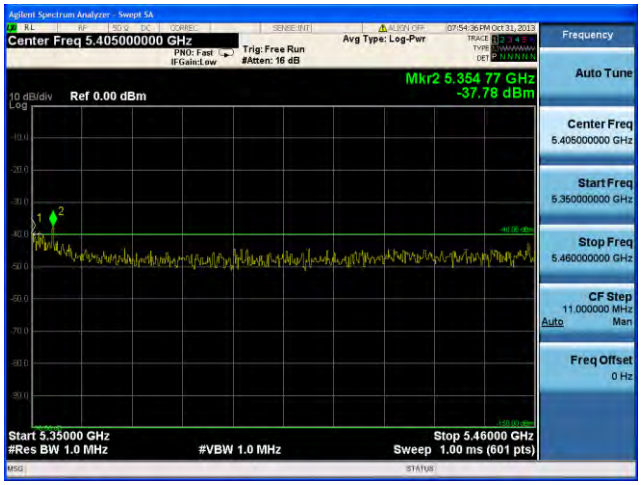


Antenna B

Conducted Bandedge Peak, 5310 MHz, HT-40 STBC, M0 to M7

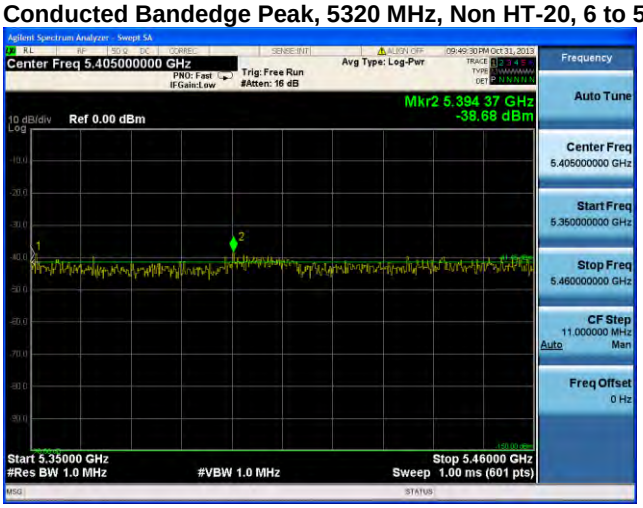


Antenna A



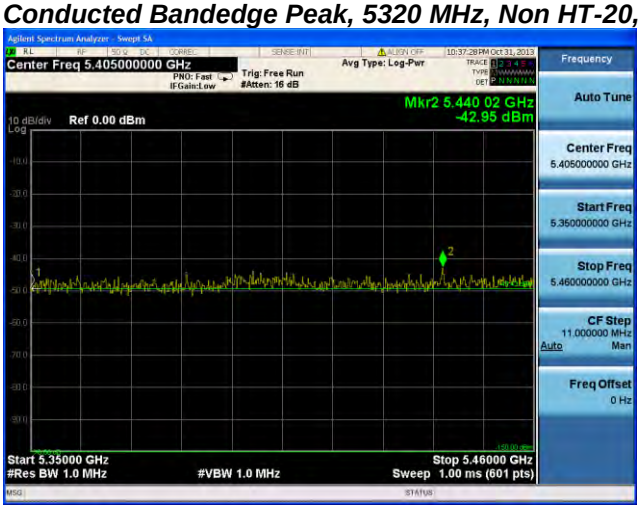
Antenna B

Conducted Bandedge Peak, 5320 MHz, Non HT-20, 6 to 54 Mbps

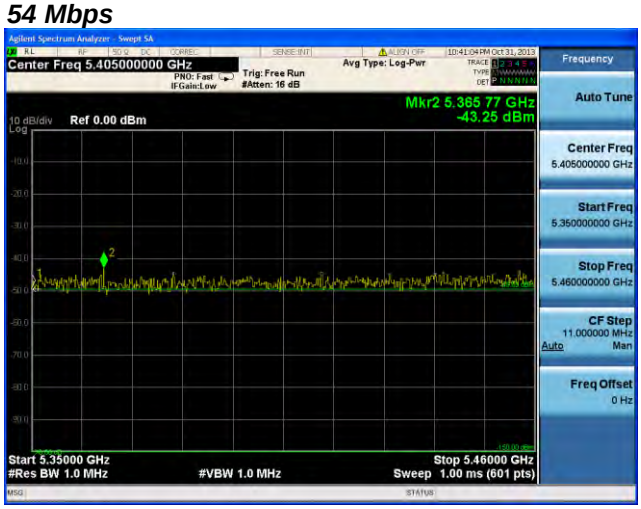


Antenna A

Conducted Bandedge Peak, 5320 MHz, Non HT-20, 6 to 54 Mbps

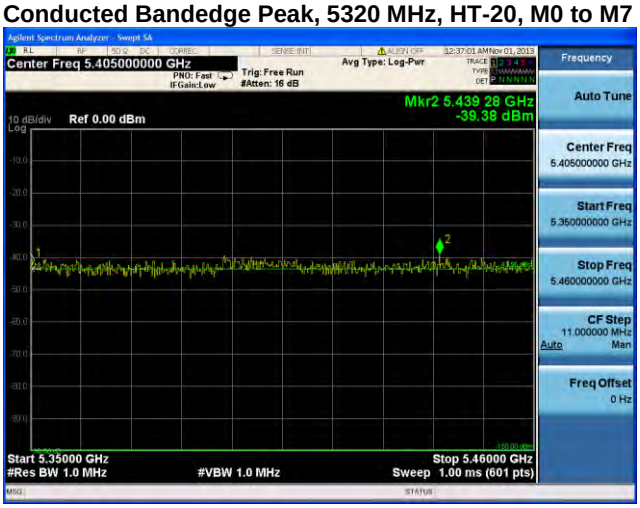


Antenna A



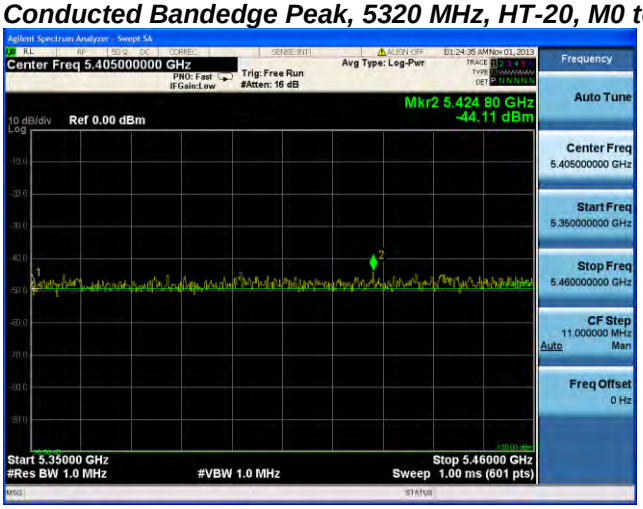
Antenna B

Conducted Bandedge Peak, 5320 MHz, HT-20, M0 to M7

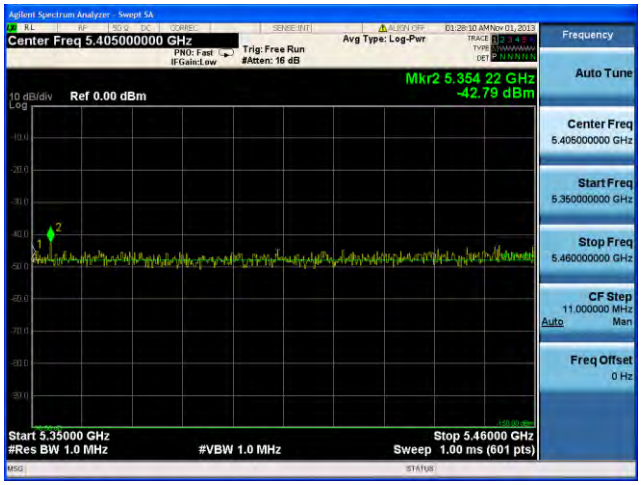


Antenna A

Conducted Bandedge Peak, 5320 MHz, HT-20, M0 to M7

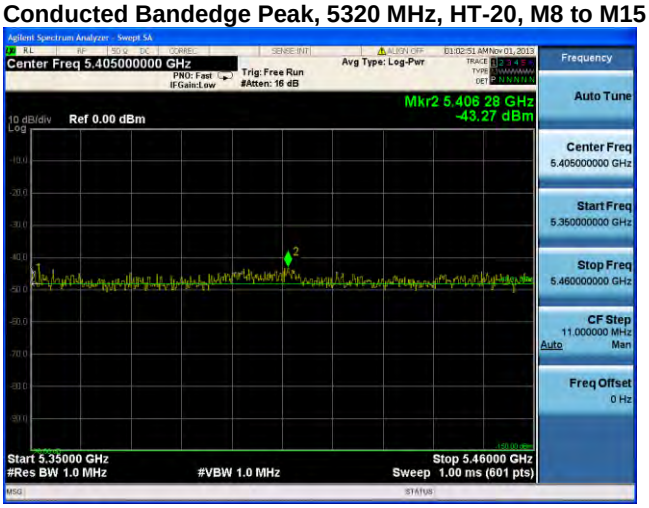


Antenna A

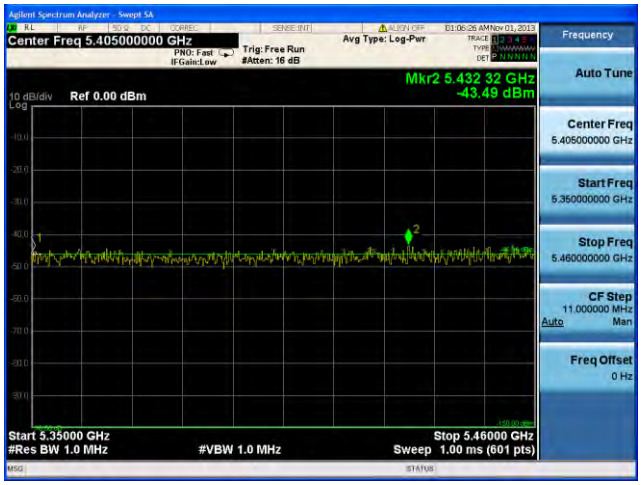


Antenna B

Conducted Bandedge Peak, 5320 MHz, HT-20, M8 to M15

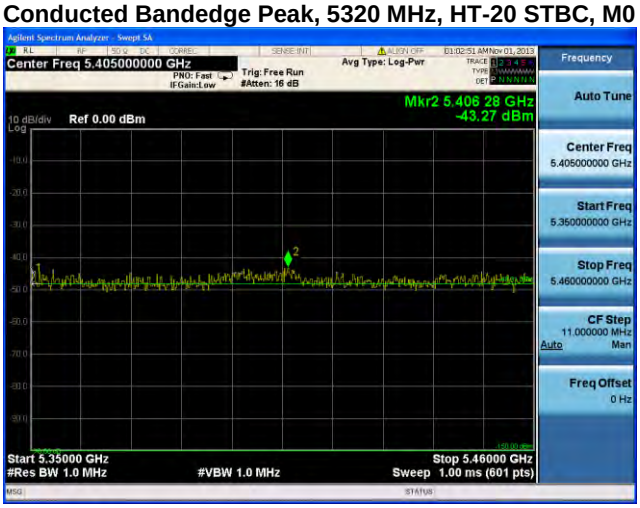


Antenna A

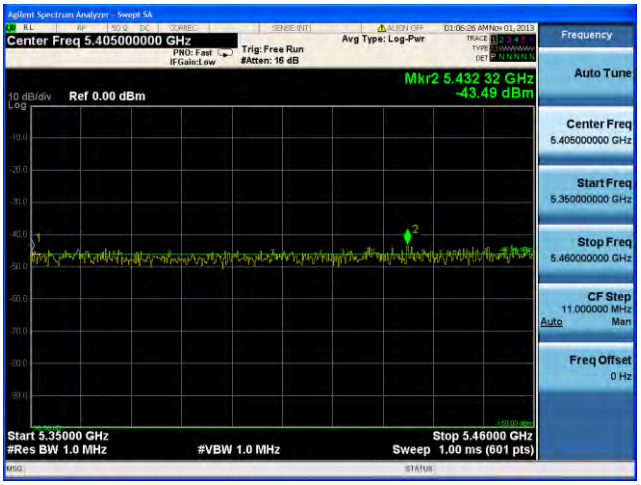


Antenna B

Conducted Bandedge Peak, 5320 MHz, HT-20 STBC, M0 to M7



Antenna A



Antenna B