



Test Report

AIR-CAP3702P-A-K9

Cisco Aironet 802.11ac Dual Band Access Points

FCC ID: LDK102087P

IC: 2461B-102087P

Also covers:

AIR-CAP3702P-D-K9,

AIR-CAP3702P-N-K9,

AIR-CAP3702P-Z-K9,

2400-2483.5 MHz

Against the following Specifications:

CFR47 Part 15.247

RSS210

Cisco Systems

170 West Tasman Drive

San Jose, CA 95134



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Section 1: Overview

1.1 Test Summary

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

Emission	Immunity
CFR47 Part 15.247 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

22-May-2013 to 5-June-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-SAP3702P-A-K9 Cisco Aironet 802.11ac Dual Band Access Point



2.6 EUT Description

The 3700 Series Cisco Aironet 802.11ac Dual Band Access Points 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-20, One Antenna, 6 to 54 Mbps
 Non HT-20, Two Antennas, 6 to 54 Mbps
 Non HT-20, Three Antennas, 6 to 54 Mbps
 Non HT-20, Four Antennas, 6 to 54 Mbps

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

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

HT-20 STBC, Two Antennas, M0 to M7
 HT-20 STBC, Three Antennas, M0 to M7
 HT-20 STBC, Four Antennas, M0 to M7

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

The following antennas are supported by this product series.

The data included in this report represent the antennas in **bold** below.

Part Number	Antenna Type	Antenna Gain (dBi)
AIR-ANT2524DB-R	Dual-resonant black dipole	2 / 4
AIR-ANT2524DW-R	Dual-resonant white dipole	2 / 4
AIR-ANT2524DG-R	Dual-resonant gray dipole	2 / 4
AIR-ANT2524V4C-R	Dual-resonant ceiling mount omni (4-pack)	2 / 4
AIR-ANT2544V4M-R	Dual-resonant omni (4-pack)	4 / 4
AIR-ANT2566P4W-R	Dual-resonant "directional" antenna (4-pack)	6 / 6
AIR-ANT2513P4M-N	Dual-resonant cross-pol "directional" antenna (4-pack)	13 / 13
AIR-ANT2534V4C-R	Dual-resonant ceiling mount omni (4-pack)	3 / 4



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-SAP3702P-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

All tests in this report were performed as described in FCC KDB 662911 D01

**Appendix A: Emission Test Results**

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

Target Maximum Channel Power

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

Operating Mode	Maximum Channel Power (dBm)		
	Frequency (MHz)		
	2412	2437	2462
Legacy CCK, 1 to 11 Mbps	21	21	21
Non HT-20, 6 to 54 Mbps	21	21	21
Non HT-20 Beam Forming, 6 to 54 Mbps	20	21	20
HT-20, M0 to M23	21	21	21
HT-20 STBC, M0 to M7	21	21	21
HT-20 Beam Forming, M0 to M23	21	21	20



Peak Output Power

15.247 / RSS-210 A8.4: The maximum conducted output power of the intentional radiator for systems using digital modulation in the 2400-2483.5 MHz band shall not exceed 1 Watt (30dBm). 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 maximum supported antenna gain is 3dBi. 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.

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:	=26 dB BW from 26 dB Bandwidth Data

After averaging 100 traces of the transmitter waveform on the spectrum analyzer, record the spectrum analyzer Channel Power.

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.



Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Max Power (dBm)	Tx 2 Max Power (dBm)	Tx 3 Max Power (dBm)	Tx 4 Max Power (dBm)	Total Tx Channel Power (dBm)	Limit (dBm)	Margin (dB)
2412	Legacy CCK, 1 to 11 Mbps	1	3	14.3				14.3	30	15.7
	Legacy CCK, 1 to 11 Mbps	2	3	14.3	15.7			18.1	30	11.9
	Legacy CCK, 1 to 11 Mbps	3	3	14.3	15.7	14.8		19.7	30	10.3
	Legacy CCK, 1 to 11 Mbps	4	3	14.3	15.7	14.8	15.6	21.2	30	8.8
	Non HT-20, 6 to 54 Mbps	1	3	14.7				14.7	30	15.3
	Non HT-20, 6 to 54 Mbps	2	3	14.7	15.5			18.1	30	11.9
	Non HT-20, 6 to 54 Mbps	3	3	14.7	15.5	14.8		19.8	30	10.2
	Non HT-20, 6 to 54 Mbps	4	3	14.7	15.5	14.8	15.4	21.1	30	8.9
	Non HT-20 Beam Forming, 6 to 54 Mbps	2	6	14.7	15.5			18.1	30	11.9
	Non HT-20 Beam Forming, 6 to 54 Mbps	3	8	14.7	15.5	14.8		19.8	28.2	8.4
	Non HT-20 Beam Forming, 6 to 54 Mbps	4	9	13.6	14.2	13.8	14.3	20.0	27	7.0
	HT-20, M0 to M7	1	3	14.1				14.1	30	15.9
	HT-20, M0 to M7	2	3	14.1	15.4			17.8	30	12.2
	HT-20, M8 to M15	2	3	14.1	15.4			17.8	30	12.2
	HT-20, M0 to M7	3	3	14.1	15.4	14.6		19.5	30	10.5
	HT-20, M8 to M15	3	3	14.1	15.4	14.6		19.5	30	10.5
	HT-20, M16 to M23	3	3	14.1	15.4	14.6		19.5	30	10.5
	HT-20, M0 to M7	4	3	14.1	15.4	14.6	15.1	20.8	30	9.2
	HT-20, M8 to M15	4	3	14.1	15.4	14.6	15.1	20.8	30	9.2
	HT-20, M16 to M23	4	3	14.1	15.4	14.6	15.1	20.8	30	9.2
	HT-20 Beam Forming, M0 to M7	2	6	14.1	15.4			17.8	30	12.2
	HT-20 Beam Forming, M8 to M15	2	3	14.1	15.4			17.8	30	12.2
	HT-20 Beam Forming, M0 to M7	3	8	14.1	15.4	14.6		19.5	28.2	8.7
	HT-20 Beam Forming, M8 to M15	3	5	14.1	15.4	14.6		19.5	30	10.5
	HT-20 Beam Forming, M16 to M23	3	3	14.1	15.4	14.6		19.5	30	10.5
	HT-20 Beam Forming, M0 to M7	4	9	13.1	14.1	13.6	14.2	19.8	27	7.2
	HT-20 Beam Forming, M8 to M15	4	6	14.1	15.4	14.6	15.1	20.8	30	9.2
	HT-20 Beam Forming, M16 to M23	4	4	14.1	15.4	14.6	15.1	20.8	30	9.2
	HT-20 STBC, M0 to M7	2	3	14.1	15.4			17.8	30	12.2
	HT-20 STBC, M0 to M7	3	3	14.1	15.4	14.6		19.5	30	10.5
	HT-20 STBC, M0 to M7	4	3	14.1	15.4	14.6	15.1	20.8	30	9.2

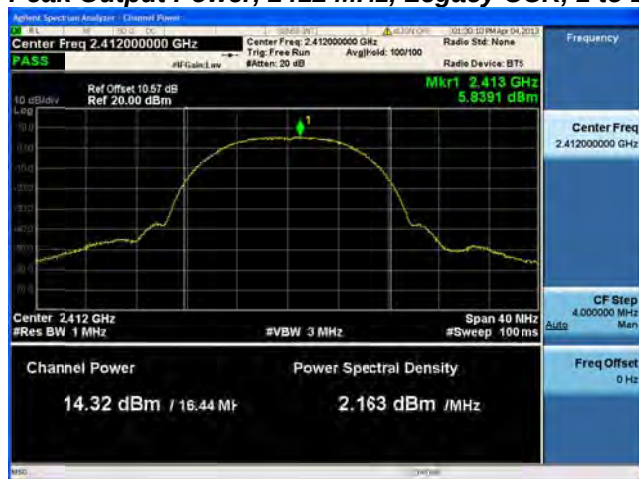


2437	Legacy CCK, 1 to 11 Mbps	1	3	<u>14.2</u>				14.2	30	15.8
	Legacy CCK, 1 to 11 Mbps	2	3	<u>14.2</u>	<u>15.5</u>			17.9	30	12.1
	Legacy CCK, 1 to 11 Mbps	3	3	<u>14.2</u>	<u>15.5</u>	<u>14.8</u>		19.6	30	10.4
	Legacy CCK, 1 to 11 Mbps	4	3	<u>14.2</u>	<u>15.5</u>	<u>14.8</u>	<u>15.6</u>	21.1	30	8.9
	Non HT-20, 6 to 54 Mbps	1	3	<u>14.4</u>				14.4	30	15.6
	Non HT-20, 6 to 54 Mbps	2	3	<u>14.4</u>	<u>15.6</u>			18.1	30	11.9
	Non HT-20, 6 to 54 Mbps	3	3	<u>14.4</u>	<u>15.6</u>	<u>14.6</u>		19.7	30	10.3
	Non HT-20, 6 to 54 Mbps	4	3	<u>14.4</u>	<u>15.6</u>	<u>14.6</u>	<u>15.5</u>	21.1	30	8.9
	Non HT-20 Beam Forming, 6 to 54 Mbps	2	6	<u>14.4</u>	<u>15.6</u>			18.1	30	11.9
	Non HT-20 Beam Forming, 6 to 54 Mbps	3	8	<u>14.4</u>	<u>15.6</u>	<u>14.6</u>		19.7	28.2	8.5
	Non HT-20 Beam Forming, 6 to 54 Mbps	4	9	<u>14.4</u>	<u>15.6</u>	<u>14.6</u>	<u>15.5</u>	21.1	27	5.9
	HT-20, M0 to M7	1	3	<u>14.2</u>				14.2	30	15.8
	HT-20, M0 to M7	2	3	<u>14.2</u>	<u>15.4</u>			17.9	30	12.1
	HT-20, M8 to M15	2	3	<u>14.2</u>	<u>15.4</u>			17.9	30	12.1
	HT-20, M0 to M7	3	3	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>		19.6	30	10.4
	HT-20, M8 to M15	3	3	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>		19.6	30	10.4
	HT-20, M16 to M23	3	3	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>		19.6	30	10.4
	HT-20, M0 to M7	4	3	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>	<u>15.2</u>	20.9	30	9.1
	HT-20, M8 to M15	4	3	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>	<u>15.2</u>	20.9	30	9.1
	HT-20, M16 to M23	4	3	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>	<u>15.2</u>	20.9	30	9.1
	HT-20 Beam Forming, M0 to M7	2	6	<u>14.2</u>	<u>15.4</u>			17.9	30	12.1
	HT-20 Beam Forming, M8 to M15	2	3	<u>14.2</u>	<u>15.4</u>			17.9	30	12.1
	HT-20 Beam Forming, M0 to M7	3	8	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>		19.6	28.2	8.6
	HT-20 Beam Forming, M8 to M15	3	5	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>		19.6	30	10.4
	HT-20 Beam Forming, M16 to M23	3	3	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>		19.6	30	10.4
	HT-20 Beam Forming, M0 to M7	4	9	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>	<u>15.2</u>	20.9	27	6.1
	HT-20 Beam Forming, M8 to M15	4	6	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>	<u>15.2</u>	20.9	30	9.1
	HT-20 Beam Forming, M16 to M23	4	4	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>	<u>15.2</u>	20.9	30	9.1
	HT-20 STBC, M0 to M7	2	3	<u>14.2</u>	<u>15.4</u>			17.9	30	12.1
	HT-20 STBC, M0 to M7	3	3	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>		19.6	30	10.4
	HT-20 STBC, M0 to M7	4	3	<u>14.2</u>	<u>15.4</u>	<u>14.7</u>	<u>15.2</u>	20.9	30	9.1



2462	Legacy CCK, 1 to 11 Mbps	1	3	<u>14.6</u>				14.6	30	15.4
	Legacy CCK, 1 to 11 Mbps	2	3	<u>14.6</u>	<u>15.6</u>			18.1	30	11.9
	Legacy CCK, 1 to 11 Mbps	3	3	<u>14.6</u>	<u>15.6</u>	<u>15.0</u>		19.9	30	10.1
	Legacy CCK, 1 to 11 Mbps	4	3	<u>14.6</u>	<u>15.6</u>	<u>15.0</u>	<u>15.3</u>	21.2	30	8.8
	Non HT-20, 6 to 54 Mbps	1	3	<u>14.5</u>				14.5	30	15.5
	Non HT-20, 6 to 54 Mbps	2	3	<u>14.5</u>	<u>15.5</u>			18.0	30	12.0
	Non HT-20, 6 to 54 Mbps	3	3	<u>14.5</u>	<u>15.5</u>	<u>14.9</u>		19.8	30	10.2
	Non HT-20, 6 to 54 Mbps	4	3	<u>14.5</u>	<u>15.5</u>	<u>14.9</u>	<u>15.2</u>	21.1	30	8.9
	Non HT-20 Beam Forming, 6 to 54 Mbps	2	6	<u>14.5</u>	<u>15.5</u>			18.0	30	12.0
	Non HT-20 Beam Forming, 6 to 54 Mbps	3	8	<u>14.5</u>	<u>15.5</u>	<u>14.9</u>		19.8	28.2	8.4
	Non HT-20 Beam Forming, 6 to 54 Mbps	4	9	<u>13.5</u>	<u>14.1</u>	<u>14.0</u>	<u>14.4</u>	20.0	27	7.0
	HT-20, M0 to M7	1	3	<u>14.3</u>				14.3	30	15.7
	HT-20, M0 to M7	2	3	<u>14.3</u>	<u>15.3</u>			17.8	30	12.2
	HT-20, M8 to M15	2	3	<u>14.3</u>	<u>15.3</u>			17.8	30	12.2
	HT-20, M0 to M7	3	3	<u>14.3</u>	<u>15.3</u>	<u>14.7</u>		19.6	30	10.4
	HT-20, M8 to M15	3	3	<u>14.3</u>	<u>15.3</u>	<u>14.7</u>		19.6	30	10.4
	HT-20, M16 to M23	3	3	<u>14.3</u>	<u>15.3</u>	<u>14.7</u>		19.6	30	10.4
	HT-20, M0 to M7	4	3	<u>14.3</u>	<u>15.3</u>	<u>14.7</u>	<u>15.0</u>	20.9	30	9.1
	HT-20, M8 to M15	4	3	<u>14.3</u>	<u>15.3</u>	<u>14.7</u>	<u>15.0</u>	20.9	30	9.1
	HT-20, M16 to M23	4	3	<u>14.3</u>	<u>15.3</u>	<u>14.7</u>	<u>15.0</u>	20.9	30	9.1
	HT-20 Beam Forming, M0 to M7	2	6	<u>14.3</u>	<u>15.3</u>			17.8	30	12.2
	HT-20 Beam Forming, M8 to M15	2	3	<u>14.3</u>	<u>15.3</u>			17.8	30	12.2
	HT-20 Beam Forming, M0 to M7	3	8	<u>13.3</u>	<u>13.9</u>	<u>13.5</u>		18.3	28.2	9.9
	HT-20 Beam Forming, M8 to M15	3	5	<u>14.3</u>	<u>15.3</u>	<u>14.7</u>		19.6	30	10.4
	HT-20 Beam Forming, M16 to M23	3	3	<u>14.3</u>	<u>15.3</u>	<u>14.7</u>		19.6	30	10.4
	HT-20 Beam Forming, M0 to M7	4	9	<u>12.4</u>	<u>12.9</u>	<u>12.4</u>	<u>12.7</u>	18.6	27	8.4
	HT-20 Beam Forming, M8 to M15	4	6	<u>13.3</u>	<u>13.9</u>	<u>13.5</u>	<u>14.0</u>	19.7	30	10.3
	HT-20 Beam Forming, M16 to M23	4	4	<u>13.3</u>	<u>13.9</u>	<u>13.5</u>	<u>14.0</u>	19.7	30	10.3
	HT-20 STBC, M0 to M7	2	3	<u>14.3</u>	<u>15.3</u>			17.8	30	12.2
	HT-20 STBC, M0 to M7	3	3	<u>14.3</u>	<u>15.3</u>	<u>14.7</u>		19.6	30	10.4
	HT-20 STBC, M0 to M7	4	3	<u>14.3</u>	<u>15.3</u>	<u>14.7</u>	<u>15.0</u>	20.9	30	9.1

Peak Output Power, 2412 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A**

Peak Output Power, 2412 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A****Antenna B**



Peak Output Power, 2412 MHz, Legacy CCK, 1 to 11 Mbps



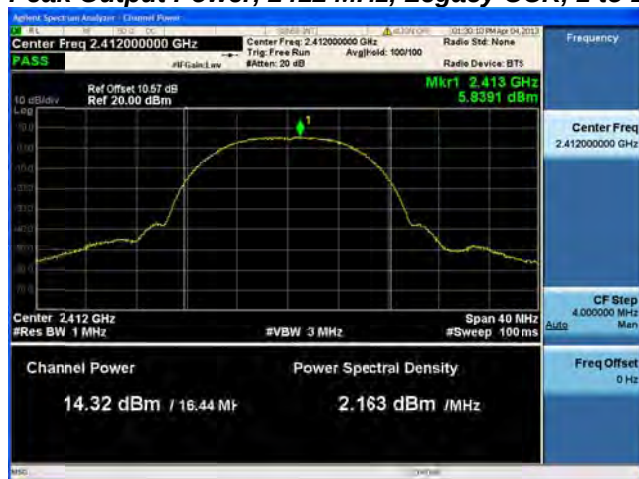
Antenna A



Antenna B



Antenna C

Peak Output Power, 2412 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

**Peak Output Power, 2412 MHz, Non HT-20, 6 to 54 Mbps****Antenna A**

Peak Output Power, 2412 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B**

Peak Output Power, 2412 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C**

Peak Output Power, 2412 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2412 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps**Antenna A****Antenna B**

Peak Output Power, 2412 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C**

Software: Spectrum Analyzer - Channel Freq

Center Freq 2.412000000 GHz

Center Freq: 2.412000000 GHz

Trig: Free Run

AvgHold: 100/100

Radio Std: None

Radio Device: BTS

PASS

#F Gain: Low

Ref Offset 10.57 dB

Ref 20.00 dBm

Mkr1 2.4190867 GHz

2.7289 dBm

10 dB/div

Center 2.412 GHz

#Res BW 1 MHz

#VBW 3 MHz

Span 40 MHz

#Sweep 100 ms

Channel Power

Power Spectral Density

13.61 dBm / 16.44 MHz

1.455 dBm / MHz

Frequency

Center Freq

2.412000000 GHz

CF Step

4.000000 MHz

Auto

Freq Offset

0 Hz

Channel Spectrum Analyzer - Channel View

Center Freq 2.412000000 GHz
 #Res BW 1 MHz
 #VBW 3 MHz
 Span 40 MHz
 #Sweep 100 ms

Ref Offset 10.57 dB
 Ref 20.40 dBm

Center Freq 2.412000000 GHz
 Trig Free Run
 #Att: 20 dB

Radio Std: None
 Radio Device: BTS

Channel Power: 14.23 dBm / 16.44 MHz
 Power Spectral Density: 2.067 dBm / MHz

Frequency: 2.412000000 GHz

CF Step: 4.000000 MHz

Freq Offset: 0 Hz

Vector Signal Analyzer - Channel Power

Center Freq 2.41200000 GHz

PASS

Ref Offset 10.57 dB
Ref 20.00 dBm

Center Freq: 2.412000000 GHz
Trig: Free Run
Ave/Hold: 100/100
Radio Std: None
Radio Device: BT3

Frequency

Center Freq
2.412000000 GHz

CF Step
4.000000 MHz

Channel Power

Power Spectral Density

13.76 dBm / 16.44 MHz

1.602 dBm / MHz

Freq Offset
0 Hz

Channel Power

Center Freq 2.412000000 GHz

Ref Offst 10.57 dB

Ref 20.90 dBm

Center Freq: 2.412000000 GHz

Trig: Free Run

Avg/Hold: 100/H00

Radio Std: None

Radio Device: BT5

Frequency

2.412000000 GHz

CF Step 4.000000 MHz

Freq Offset 0 Hz

Channel Power: 14.29 dBm / 16.44 MHz

Power Spectral Density 2.133 dBm / MHz

Span 40 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms

Auto

1

MR1 2.4092 GHz

3.3981 dBm

10.0 dBm

9.0

8.0

7.0

6.0

5.0

4.0

3.0

2.0

1.0

0.0

-1.0

-2.0

-3.0

-4.0

-5.0

-6.0

-7.0

-8.0

-9.0

-10.0

-11.0

-12.0

-13.0

-14.0

-15.0

-16.0

-17.0

-18.0

-19.0

-20.0

-21.0

-22.0

-23.0

-24.0

-25.0

-26.0

-27.0

-28.0

-29.0

-30.0

-31.0

-32.0

-33.0

-34.0

-35.0

-36.0

-37.0

-38.0

-39.0

-40.0

-41.0

-42.0

-43.0

-44.0

-45.0

-46.0

-47.0

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-50.0

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-60.0

-61.0

-62.0

-63.0

-64.0

-65.0

-66.0

-67.0

-68.0

-69.0

-70.0

0.0

1.0

2.0

3.0

4.0

5.0

6.0

7.0

8.0

9.0

10.0

11.0

12.0

13.0

14.0

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16.0

17.0

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89.0

90.0

91.0

92.0

93.0

94.0

95.0

96.0

97.0

98.0

99.0

100.0

101.0

102.0

103.0

104.0

105.0

106.0

107.0

108.0

109.0

110.0

111.0

112.0

113.0

114.0

115.0

116.0

117.0

118.0

119.0

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255.0

256.0

257.0

258.0

259.0

260

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**Peak Output Power, 2412 MHz, HT-20, M0 to M7****Antenna A**

Peak Output Power, 2412 MHz, HT-20, M0 to M7**Antenna A****Antenna B**

Peak Output Power, 2412 MHz, HT-20, M8 to M15**Antenna A****Antenna B**

Peak Output Power, 2412 MHz, HT-20, M0 to M7**Antenna A****Antenna B****Antenna C**

Peak Output Power, 2412 MHz, HT-20, M8 to M15**Antenna A****Antenna B****Antenna C**

**Peak Output Power, 2412 MHz, HT-20, M16 to M23****Antenna A****Antenna B****Antenna C**

Peak Output Power, 2412 MHz, HT-20, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**

**Peak Output Power, 2412 MHz, HT-20, M8 to M15****Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2412 MHz, HT-20, M16 to M23**Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2412 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B**

Peak Output Power, 2412 MHz, HT-20 Beam Forming, M8 to M15**Antenna A****Antenna B**

Peak Output Power, 2412 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B****Antenna C**

Peak Output Power, 2412 MHz, HT-20 Beam Forming, M8 to M15**Antenna A****Antenna B****Antenna C**

**Peak Output Power, 2412 MHz, HT-20 Beam Forming, M16 to M23****Antenna A****Antenna B****Antenna C**

Software: Spectrum Analyzer - Channel Power

Center Freq 2.412000000 GHz

Center Freq: 2.412000000 GHz

Trig: Free Run

AvgHold: 100/100

Radio Sts: None

Radio Device: BT3

PASS

#F Grain: Low

Ref Offset 10.57 dB

Ref 20.00 dBm

Mkr1 2.4110857 GHz

2.8777 dBm

to dBmV

Center 2.412 GHz

#Res BW 1 MHz

#VBW 3 MHz

Span 40 MHz

#Sweep 100 ms

Channel Power

Power Spectral Density

13.14 dBm / 16.44 MHz

0.9801 dBm / MHz

Frequency

Center Freq

2.412000000 GHz

CF Step

4.000000 MHz

Audio

Freq Offset

0 Hz

The screenshot displays the Agilent Spectrum Analyzer interface. At the top, the title bar reads "Agilent Spectrum Analyzer - Channel 000". The main display area shows a signal trace (yellow line) on a grid. The trace is a rectangular pulse centered at 2.412 GHz. The vertical axis is labeled "10 dB/div" and ranges from -70.0 to 10.0. The horizontal axis is labeled "Span 40 MHz" and ranges from 2.400 MHz to 2.440 MHz. The signal trace is labeled "Mkr1 2.4109667 GHz 3.3659 dBm".

Key parameters displayed on the right side of the interface include:

- Center Freq: 2.412000000 GHz
- Ref Offset: 10.57 dB
- Ref: 20.40 dBm
- Trig: Free Run
- Avg/Hold: 100/100
- Radio Std: None
- Radio Device: BTS
- #F Gain Low
- #F Gain: 20 dB
- #VBW: 3 MHz
- #Res BW: 1 MHz
- #Sweep: 100 ms
- CF Step: 4.000000 MHz
- Frequency: 2.41200000 GHz
- CF Step: 4.000000 MHz
- Frequency Offset: 0 Hz

At the bottom, the Channel Power is displayed as 14.06 dBm / 16.44 MHz, and the Power Spectral Density is displayed as 1.903 dBm / MHz.

Active Spectrum Analyzer - Channel 1 09/14/2012 14:52 PM Page 54/1013

Center Freq 2.412000000 GHz PASS

Center Freq: 2.412000000 GHz
Trig: Free Run
Avg/hold: 100/100
Radio Stn: None
Radio Device: BT5

Ref Offset 10.57 dB
Ref 20.00 dBm

10 dB/div

10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
-7.0
-8.0
-9.0
-10.0

2.405 2.406 2.407 2.408 2.409 2.410 2.411 2.412 2.413 2.414 2.415 2.416 2.417 2.418 2.419

Center 2.412 GHz
#Res BW 1 MHz

#VBW 3 MHz

Span 40 MHz
#Sweep 100 ms

Channel Power
13.61 dBm / 16.44 MHz

Power Spectral Density
1.451 dBm / MHz

Frequency
Center Freq 2.412000000 GHz

CF Step 4.000000 MHz
Auto Man

Freq Offset 0 Hz

Channel Power Analyzer - Channel Power

Center Freq 2.412000000 GHz

Ref Offst 10.57 dB

Ref 20.90 dBm

Center Freq: 2.412000000 GHz

Trig Freq Run

Avg/Hold: 100/H00

Radio Std: None

RF Device: BT5

Power Spectral Density

14.18 dBm / 16.44 MHz

2.020 dBm /MHz

Center Freq 2.412000000 GHz

CF Step 4.000000 MHz

Freq Offset 0 Hz

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Software: Spectrum Analyzer - Channel Freq

Center Freq 2.412000000 GHz

Center Freq: 2.412000000 GHz
 Trig: Free Run
 #atten: 20 dB

Radio Std: None
 AvgHold: 100/100
 Radio Device: BT3

PASS

#F (Grid Line)

Ref Offset 10.57 dB
 Ref 20.00 dBm

Mkr1 2.416 GHz
 3.4662 dBm

10 dB/div

Center 2.412 GHz
 #Res BW 1 MHz

#VBW 3 MHz

Span 40 MHz
 #Sweep 100 ms

Channel Power

Power Spectral Density

14.13 dBm / 16.44 MHz

1.973 dBm / MHz

Frequency

Center Freq
 2.412000000 GHz

CF Step
 4.000000 MHz

Auto

Freq Offset
 0 Hz

Advent Spectrum Analyzer - Channel View

REF 10.57 dBm

Center Freq 2.412000000 GHz

Center Freq: 2.412000000 GHz

Trig: Free Run

Avg/Hold: 100/100

Radio Std: None

Radio Device: BTS

Frequency

PASS

#Ref Gain Low

#Mkr1 2.4194667 GHz

4.5709 dBm

10 dB/div

Ref Offset 10.57 dB

Ref 20.00 dBm

Center Freq 2.41200000 GHz

2.41200000 GHz

CF Step 4.000000 MHz

Man

CF Step 4.000000 MHz

Man

Span 40 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms

Channel Power

Power Spectral Density

15.43 dBm / 16.44 MHz

3.266 dBm / MHz

Freq Offset 0 Hz

dBm

dBm/Hz

Active Spectrum Analyzer - Channel Power

Center Freq 2.412000000 GHz

PASS

Ref Offset 10.57 dB

Ref 20.00 dBm

Center Freq: 2.412000000 GHz

Trig: Free Run

Avg: Hold: 100/100

Radio Std: None

Radio Device: BT5

Frequency

Center Freq 2.412000000 GHz

CF Step 4.000000 MHz

Span 40 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms

Channel Power

Power Spectral Density

14.57 dBm / 16.44 MHz

2.413 dBm / MHz

Freq Offset 0 Hz

The screenshot displays a Spectrum Analyzer interface with the following details:

- Header:** "Active Spectrum Analyzer - Channel Power" and a date/time stamp "10/24/2015 10:45:29 PM".
- Top Panel:**
 - Center Freq: 2.412000000 GHz
 - Center Freq: 2.412000000 GHz
 - Radio Std: None
 - PASS (highlighted in green)
 - #dB Gain: 1.00
 - Trig: Free Run
 - Avg/Hold: 100/H00
 - Radio Device: BT5
- Graph Area:**
 - Y-axis: 10 to -70 dBm.
 - X-axis: Frequency in MHz.
 - Trace: A yellow signal trace showing a peak at approximately 2.411333 GHz.
 - Annotations: "Ref Offset 10.57 dB", "Ref 20.90 dBm", "Mkr1 2.4111333 GHz 4.3463 dBm" (highlighted in green).
- Bottom Panel:**
 - Center: 2.412 GHz
 - #Res BW: 1 MHz
 - #VBW: 3 MHz
 - Span: 40 MHz
 - #Sweep: 100 ms
- Summary Section:**
 - Channel Power: 15.12 dBm / 16.44 M
 - Power Spectral Density: 2.963 dBm /MHz
- Right Panel:**
 - Frequency: 2.412000000 GHz
 - Center Freq: 2.412000000 GHz
 - CF Step: 4.000000 MHz
 - Freq Offset: 0 Hz

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Peak Output Power, 2412 MHz, HT-20 Beam Forming, M16 to M23**Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2412 MHz, HT-20 STBC, M0 to M7**Antenna A****Antenna B**

Peak Output Power, 2412 MHz, HT-20 STBC, M0 to M7**Antenna A****Antenna B****Antenna C**

Software: Spectrum Analyzer - Channel F /

Center Freq 2.412000000 GHz

Center Freq: 2.412000000 GHz

Trig: Free Run

AvgHold: 100/100

Radio Sts: None

Radio Device: BT3

PASS

#F Error Low

Ref Offset 10.57 dB

Ref 20.00 dBm

Mkr1 2.416 GHz

3.4662 dBm

10 dBdiv

Center Freq 2.412 GHz

#Res BW 1 MHz

#VBW 3 MHz

Span 40 MHz

#Sweep 100 ms

Channel Power

Power Spectral Density

14.13 dBm / 16.44 MHz

1.973 dBm / MHz

Frequency

Center Freq 2.412000000 GHz

CF Step 4.000000 MHz

Auto

Freq Offset 0 Hz

[illegible]

Active Spectrum Analyzer - Channel Power

Center Freq 2.412000000 GHz

PASS

Ref Offset 10.57 dB
Ref 20.00 dBm

Center Freq: 2.412000000 GHz
Trig: Free Run
Avaltoid: 100/100
Radio Std: None
Radio Device: BT5

Frequency

Center Freq
2.412000000 GHz

CF Step
4.000000 MHz

Channel Power

14.57 dBm / 16.44 MHz

Power Spectral Density

2.413 dBm /MHz

Freq Offset
0 Hz

Active Spectrum Analyzer - Channel Power

Center Freq 2.412000000 GHz

Center Freq: 2.412000000 GHz

Trig: Free Run

Avg/Hold: 100/H00

Radio Std: None

Radio Device: BTS

Ref Offset 10.57 dB

Ref 20.90 dBm

Mkr1 2.4111333 GHz

4.3463 dBm

Center Freq 2.412000000 GHz

CF Step 4.000000 MHz

Span 40 MHz

#Res BW 1 MHz

#VBW 3 MHz

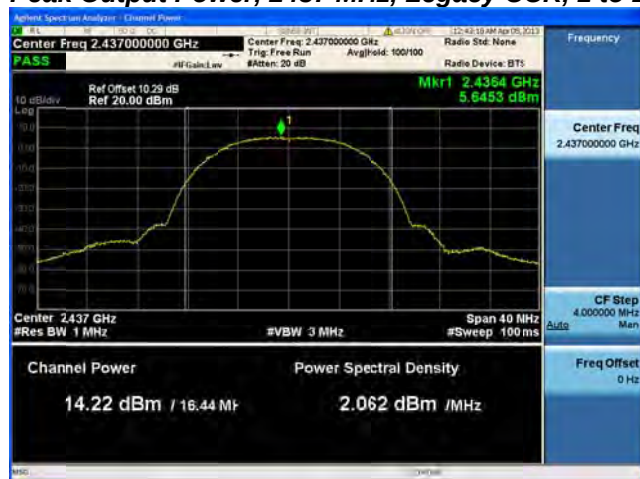
#Sweep 100 ms

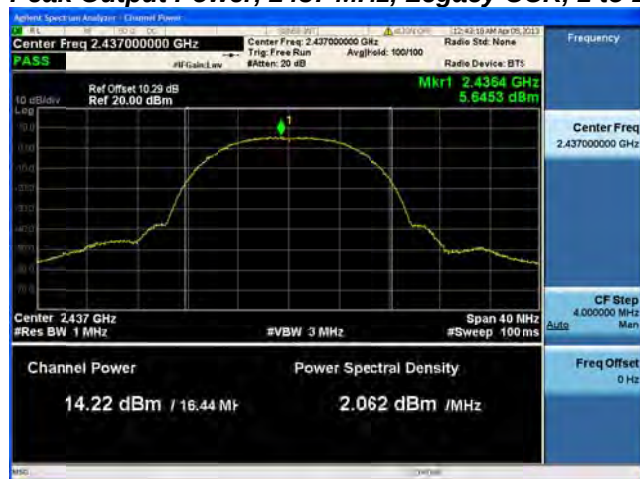
Channel Power: 15.12 dBm / 16.44 MHz

Power Spectral Density 2.963 dBm / MHz

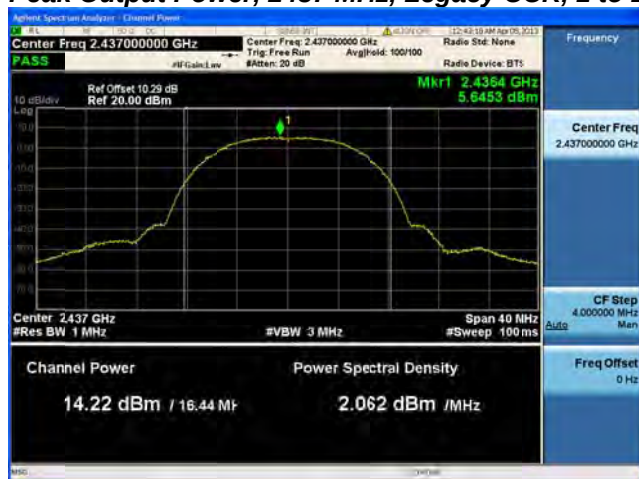
Freq Offset 0 Hz

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Peak Output Power, 2437 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A**

Peak Output Power, 2437 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A****Antenna B**

Peak Output Power, 2437 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A****Antenna B****Antenna C**

Peak Output Power, 2437 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2437 MHz, Non HT-20, 6 to 54 Mbps**Antenna A**

Peak Output Power, 2437 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B**

**Peak Output Power, 2437 MHz, Non HT-20, 6 to 54 Mbps****Antenna A****Antenna B****Antenna C**

Peak Output Power, 2437 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2437 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps**Antenna A****Antenna B**



Peak Output Power, 2437 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps



Antenna A



Antenna B



Antenna C

**Peak Output Power, 2437 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2437 MHz, HT-20, M0 to M7**Antenna A**

Peak Output Power, 2437 MHz, HT-20, M0 to M7**Antenna A****Antenna B**

Peak Output Power, 2437 MHz, HT-20, M8 to M15**Antenna A****Antenna B**

Peak Output Power, 2437 MHz, HT-20, M0 to M7



Antenna A



Antenna B



Antenna C

**Peak Output Power, 2437 MHz, HT-20, M8 to M15****Antenna A****Antenna B****Antenna C**

Software Spectrum Analyzer - Element 1/1

Center Freq 2.437000000 GHz

Center Freq 2.437000000 GHz

Trig: Free Run

AvgHld: 100/100

Radio Std: None

Radio Device: BT5

Frequency

Center Freq 2.437000000 GHz

CF Step 4.000000 MHz

Auto

Manual

Freq Offset 0 Hz

0.275 GHz

05:36:50 AM Apr 05, 2013

PASS

#F Gain Low

Ref Offset 10.29 dB

Ref 20.00 dBm

Mkr1 2.4357333 GHz

3.6005 dBm

10 dBdiv

1

Center 2437 GHz

#Res BW 1 MHz

#VBW 3 MHz

Span 40 MHz

#Sweep 100 ms

Channel Power

Power Spectral Density

14.22 dBm / 16.44 MHz

2.058 dBm / MHz

MWD

CH01000

Agilent Spectrum Analyzer: Channel Power

Center Freq 2.43700000 GHz

Ref Offst 10.29 dB

Ref 20.40 dBm

Center Freq: 2.437000000 GHz

Trig: Free Run

Avg/Hold: 100/100

Radio Std: None

Radio Device: BTS

Center Freq 2.43700000 GHz

CF Step 4.000000 MHz

Span 40 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms

Channel Power: 15.41 dBm / 18.44 MHz

Power Spectral Density: 3.247 dBm / MHz

Vector Signal Analyzer - Channel Power

Center Freq 2.437000000 GHz

PASS

Ref Offset 10.29 dB
Ref 20.00 dBm

Center Freq: 2.437000000 GHz
Trig: Free Run
AvgHold: 100/100
#Attenu: 20 dB

Radio Std: None
Rzle Device: BT7

Frequency

Center Freq: 2.437000000 GHz

CF Step: 4.000000 MHz

Span 40 MHz
#Res BW 1 MHz
#VBW 3 MHz
#Sweep 100 ms

Channel Power

Power Spectral Density

14.70 dBm / 16.44 MHz

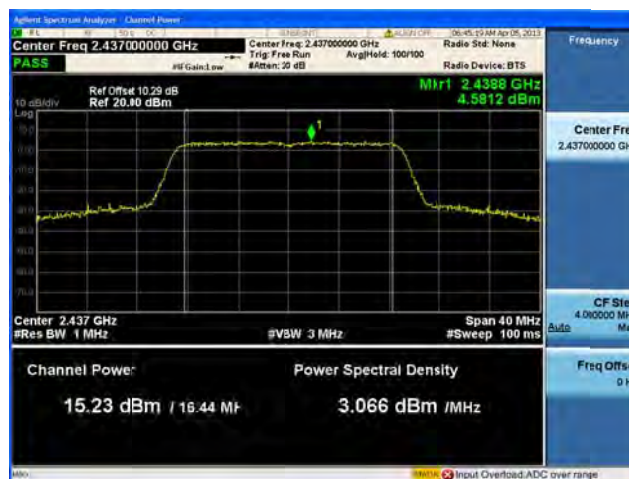
2.537 dBm / MHz

Freq Offset: 0 Hz

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Peak Output Power, 2437 MHz, HT-20, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2437 MHz, HT-20, M8 to M15**Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2437 MHz, HT-20, M16 to M23**Antenna A****Antenna B****Antenna C****Antenna D**

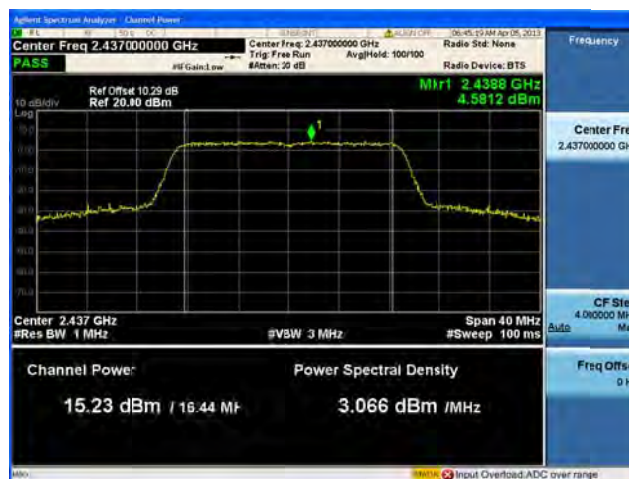
Peak Output Power, 2437 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B**

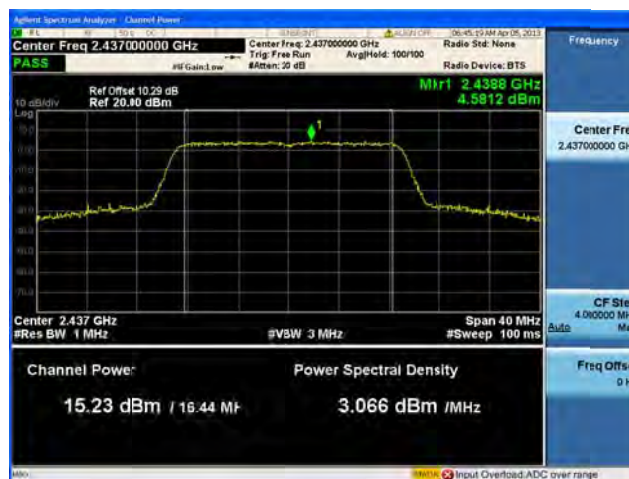
Peak Output Power, 2437 MHz, HT-20 Beam Forming, M8 to M15**Antenna A****Antenna B**

Peak Output Power, 2437 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B****Antenna C**

**Peak Output Power, 2437 MHz, HT-20 Beam Forming, M8 to M15****Antenna A****Antenna B****Antenna C**

Peak Output Power, 2437 MHz, HT-20 Beam Forming, M16 to M23**Antenna A****Antenna B****Antenna C**

Peak Output Power, 2437 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2437 MHz, HT-20 Beam Forming, M8 to M15**Antenna A****Antenna B****Antenna C****Antenna D**

[illegible]

Channel Power: 15.41 dBm / 16.44 MHz
Power Spectral Density: 3.247 dBm / MHz

Center Freq: 2.437000000 GHz
Span: 40 MHz
Res BW: 1 MHz
Sweep: 100 ms
VBW: 3 MHz

Channel Power: 15.41 dBm / 16.44 MHz
Power Spectral Density: 3.247 dBm / MHz

Center Freq: 2.437000000 GHz
Span: 40 MHz
Res BW: 1 MHz
Sweep: 100 ms
VBW: 3 MHz

Vector Signal Analyzer - Channel Power

Center Freq 2.437000000 GHz
 Ref Offset 10.28 dB
 Ref 20.00 dBm

Trig: Free Run
 AvgHold: 100/100
 Radio Device: BT

Frequency 2.437000000 GHz

Log

Mkr1 2.438 GHz
 4.1984 dBm

Center 2.437 GHz
 Res BW 1 MHz

Span 40 MHz
 Sweep 100 ms

VBW 3 MHz

Channel Power
 14.70 dBm / 16.44 MHz

Power Spectral Density
 2.537 dBm / MHz

CF Step 4.000000 MHz

Auto

Freq Offset 0 Hz

Channel Power: 15.23 dBm / 16.44 MHz
Power Spectral Density: 3.066 dBm / 1MHz

Center Freq: 2.437000000 GHz
 Span: 40 MHz
 Res BW: 1 MHz
 Sweep: 100 ms
 #VBW: 3 MHz

Ref Offset: 10.29 dB
 Ref: 20.90 dBm

Mkr1: 2.438 GHz
 4.5812 dBm

Center Freq: 2.437000000 GHz
 CF Step: 4.000000 MHz
 Freq Offset: 0 Hz

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Peak Output Power, 2437 MHz, HT-20 STBC, M0 to M7**Antenna A****Antenna B**

Peak Output Power, 2437 MHz, HT-20 STBC, M0 to M7**Antenna A****Antenna B****Antenna C**

The screenshot displays a software-defined radio (SDR) interface with the following components:

- Top Bar:**
 - Left: "Software Spectrum Analyzer - Element 1" and "1.0.0.0" version.
 - Right: System clock "06:36:55 AM Apr 09, 2013".
- Control Panel (Top):**
 - Center Freq:** 2.437000000 GHz
 - Trig:** Free Run
 - AvgHold:** 100/100
 - Radio Std:** None
 - Radio Device:** BT1
 - #F Gain:** Low
 - #atten:** 20 dB
- Status Bar (Top Left):** "PASS" in green.
- Frequency Tuning (Top Right):**
 - Center Freq: 2.43700000 GHz
 - CF Step: 4.000000 MHz
 - Auto: [checked]
- Spectrum Plot (Center):**
 - Y-axis: "10 dBdV" (range 0 to -40).
 - X-axis: Frequency (range 2.435 to 2.437 GHz).
 - Plot shows a signal with a peak at 2.437333 GHz, labeled "Mkr1 2.437333 GHz 3.6005 dBm".
 - Reference levels: "Ref Offset 10.29 dB", "Ref 20.00 dBm".
 - Span: 40 MHz, #Sweep: 100 ms.
 - Resolution Bandwidth: #Res BW 1 MHz.
 - Video Bandwidth: #VBW 3 MHz.
- Measurement Readouts (Bottom):**
 - Channel Power:** 14.22 dBm / 16.44 MHz
 - Power Spectral Density:** 2.058 dBm / MHz
- Frequency Offset (Bottom Right):** Freq Offset: 0 Hz.

Advent Spectrum Analyzer - Channel View

REF 10.00 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

Center Freq 2.437000000 GHz

Center Freq: 2.437000000 GHz

Trig Free Run

Avg/Hold: 100/100

Radio Std: None

Radio Device: BTS

PASS

#F Gain Low

#F Gain: 22 dB

Ref Offst 10.28 dB

Ref 20.40 dBm

Mkr1 2.4412667 GHz

4.5230 dBm

10 dB/div

Center Freq 2.437 GHz

#Res BW 1 MHz

#VBW 3 MHz

Span 40 MHz

#Sweep 100 ms

Channel Power:

Power Spectral Density

15.41 dBm / 16.44 MHz

3.247 dBm /MHz

Frequency

Center Freq 2.43700000 GHz

CF Step 4.000000 MHz

Auto

Freq Offset 0 Hz

Vector Signal Analyzer - Channel Power

Center Freq 2.437000000 GHz
 Ref Offset 10.25 dB
 Ref 20.00 dBm
 Mkr1 2.438 GHz
 4.1984 dBm

Center 2.437 GHz
 Res BW 1 MHz
 Span 40 MHz
 Sweep 100 ms
 VBW 3 MHz
 Channel Power 14.70 dBm / 16.44 MHz
 Power Spectral Density 2.537 dBm / MHz

Advent Spectral Analysis - Channel Power

Center Freq 2.437000000 GHz
 Trg: Free Run
 Avg/Hold: 100/H00
 Radio Std: None
 Radio Device: BT5

PASS
 dB Gain: 1.00

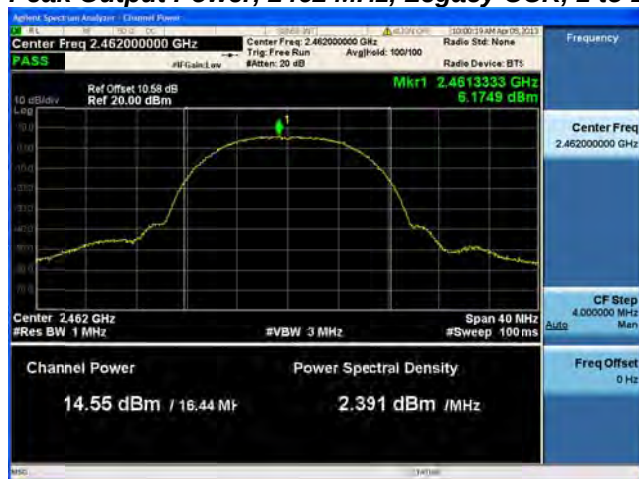
Ref Offset 10.29 dB
 Ref 20.90 dBm

Mkr1 2.438 GHz
 4.5812 dBm

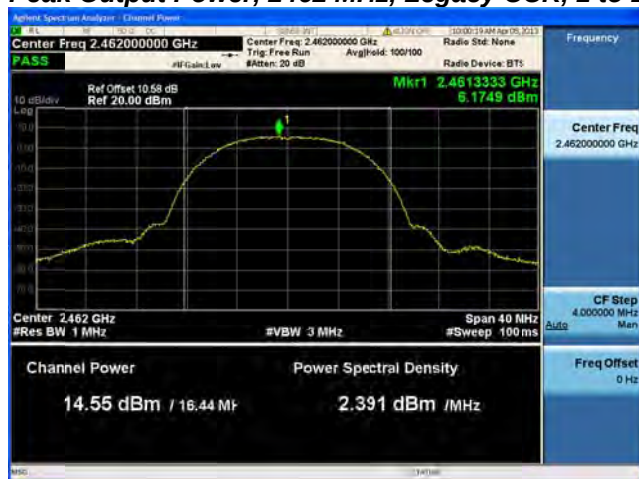
Center 2.437 GHz
 Res BW 1 MHz
 Span 40 MHz
 Sweep 100 ms
 VSWR 3 MHz
 Power Spectral Density 3.066 dBm /MHz

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Peak Output Power, 2462 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A**

Peak Output Power, 2462 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A****Antenna B**

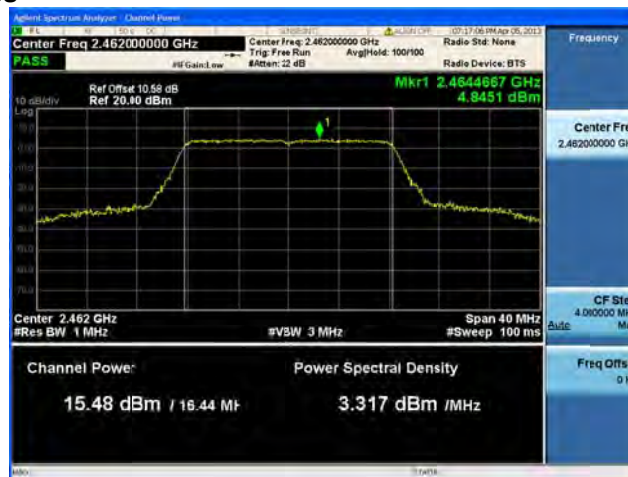
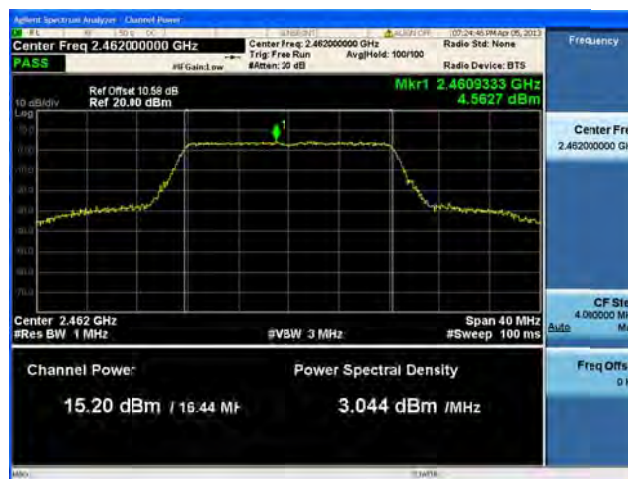
Peak Output Power, 2462 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A****Antenna B****Antenna C**

Peak Output Power, 2462 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2462 MHz, Non HT-20, 6 to 54 Mbps**Antenna A**

Peak Output Power, 2462 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B**

Peak Output Power, 2462 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C**

Peak Output Power, 2462 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2462 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps**Antenna A****Antenna B**

**Peak Output Power, 2462 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B****Antenna C**

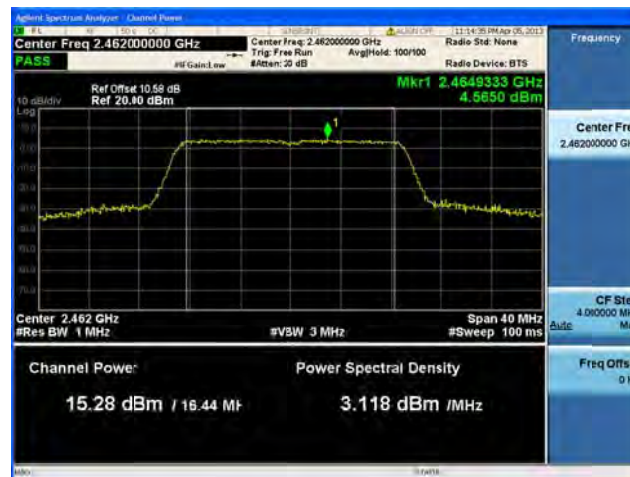
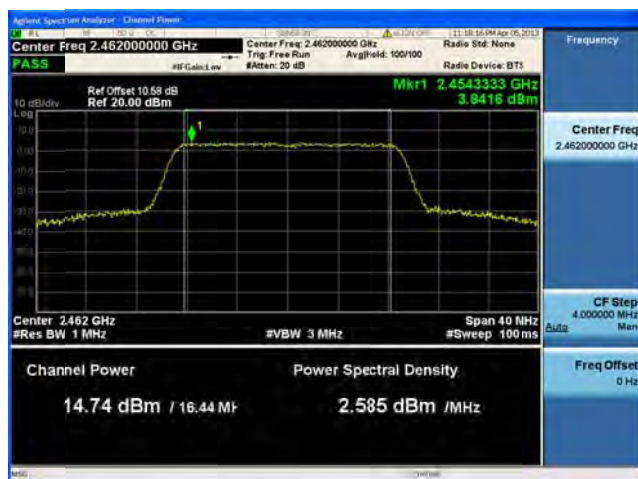
Peak Output Power, 2462 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2462 MHz, HT-20, M0 to M7**Antenna A**

Peak Output Power, 2462 MHz, HT-20, M0 to M7**Antenna A****Antenna B**

Peak Output Power, 2462 MHz, HT-20, M8 to M15**Antenna A****Antenna B**

Peak Output Power, 2462 MHz, HT-20, M0 to M7**Antenna A****Antenna B****Antenna C**

Peak Output Power, 2462 MHz, HT-20, M8 to M15**Antenna A****Antenna B****Antenna C**

**Peak Output Power, 2462 MHz, HT-20, M16 to M23****Antenna A****Antenna B****Antenna C**

Peak Output Power, 2462 MHz, HT-20, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2462 MHz, HT-20, M8 to M15**Antenna A****Antenna B****Antenna C****Antenna D**

Peak Output Power, 2462 MHz, HT-20, M16 to M23**Antenna A****Antenna B****Antenna C****Antenna D**

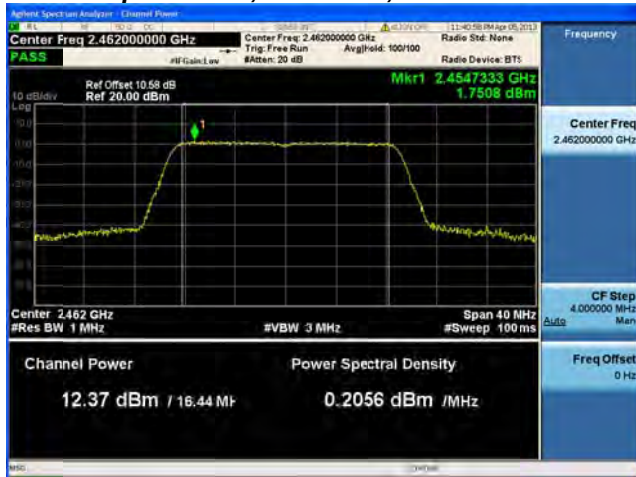
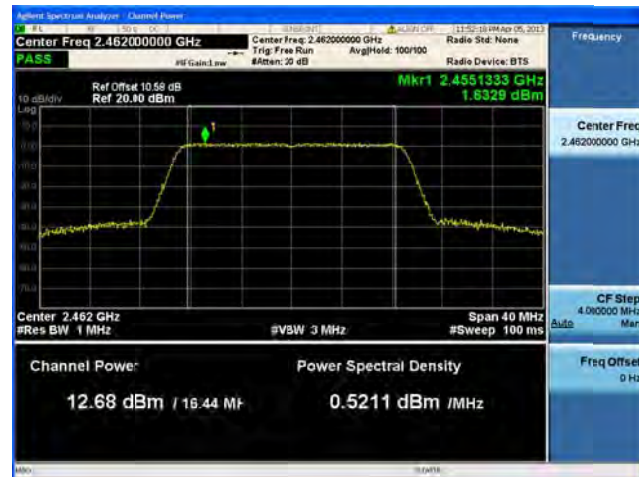
Peak Output Power, 2462 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B**

Peak Output Power, 2462 MHz, HT-20 Beam Forming, M8 to M15**Antenna A****Antenna B**

Peak Output Power, 2462 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B****Antenna C**

**Peak Output Power, 2462 MHz, HT-20 Beam Forming, M8 to M15****Antenna A****Antenna B****Antenna C**

**Peak Output Power, 2462 MHz, HT-20 Beam Forming, M16 to M23****Antenna A****Antenna B****Antenna C**

**Peak Output Power, 2462 MHz, HT-20 Beam Forming, M0 to M7****Antenna A****Antenna B****Antenna C****Antenna D**

**Peak Output Power, 2462 MHz, HT-20 Beam Forming, M8 to M15****Antenna A****Antenna B****Antenna C****Antenna D**

Vector Signal Analyzer - Channel Power
 1 2.462 GHz 2.462000000 GHz 11:25:51 PM Page 15, 2013
 Center Freq 2.462000000 GHz Radio Std: None
 Trig: Free Run AvgHold: 100/100
 #F Chain: Low #atten: 20 dB Radio Device: BT3
PASS
 Ref Offset 10.58 dB
 Ref 20.00 dBm
 Mkr1 2.4659333 GHz
 2.4752 dBm
 10 dB/div
 100
 90
 80
 70
 60
 50
 40
 30
 20
 10
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 -10
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 -4280
 -429

Agilent Spectrum Analyzer - Channel 1

Center Freq: 2.46200000 GHz

Center Freq: 2.46200000 GHz

Radio Std: None

Trig: Free Run

Avg/Hold: 100/100

Ref Level: 10.58 dB

Ref: 20.40 dBm

Wkr1 2.461 GHz 3.0757 dBm

Channel Power: 13.87 dBm / 16.44 MHz

Power Spectral Density: 1.708 dBm / MHz

[illegible]

Channel Power: 14.04 dBm / 16.44 MHz
Power Spectral Density: 1.881 dBm / MHz

Center Freq: 2.462000000 GHz
 Span: 40 MHz
 Res BW: 1 MHz
 Sweep: 100 ms

Mkr1: 2.4578 GHz
 3.3759 dBm

Ref Offset: 10.58 dB
 Ref: 20.90 dBm

#F Gain: Low
 #VSW: 3 MHz

Center Freq: 2.462000000 GHz
 Radio Std: None
 Radio Device: BTS

CF Step: 4.000000 MHz
 Freq Offset: 0 Hz

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Peak Output Power, 2462 MHz, HT-20 STBC, M0 to M7**Antenna A****Antenna B**

Peak Output Power, 2462 MHz, HT-20 STBC, M0 to M7**Antenna A****Antenna B****Antenna C**

Peak Output Power, 2462 MHz, HT-20 STBC, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**



Power Spectral Density

15.247 / RSS-210 A8.2: For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

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

Center Frequency:	Frequency from table below
Span:	20 MHz
Ref Level Offset:	Correct for attenuator and cable loss.
Reference Level:	20 dBm
Attenuation:	20 dB
Sweep Time:	10s
Resolution Bandwidth:	3 kHz
Video Bandwidth:	10 kHz
Detector:	Peak
Trace:	Single
Marker:	Peak Search

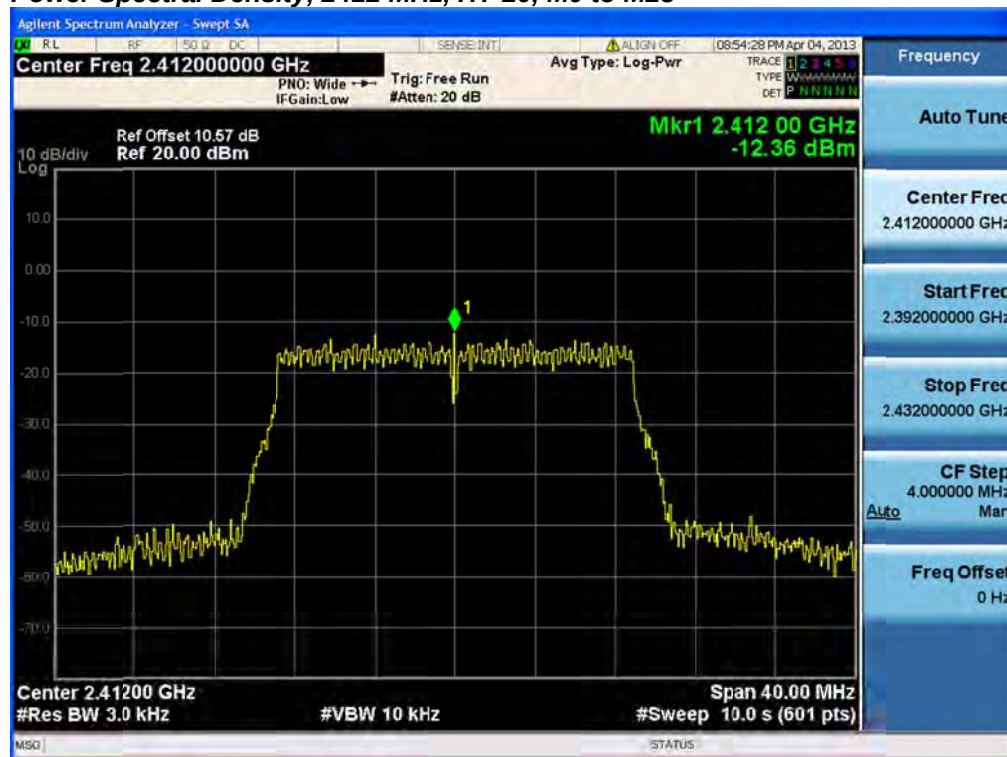
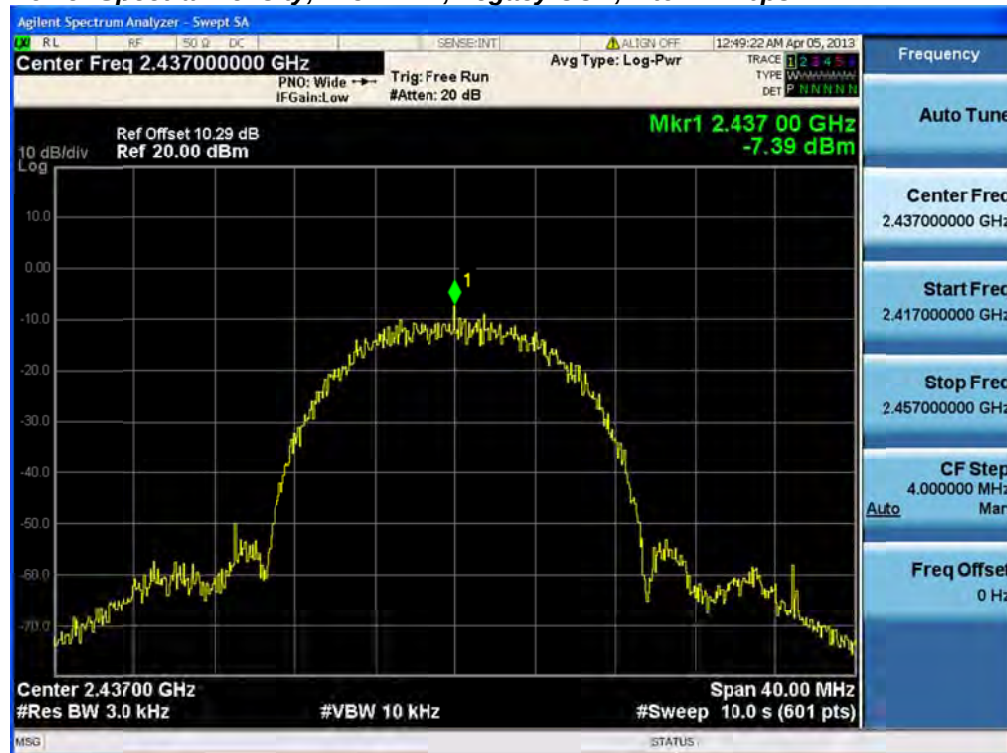
Record the Marker value.

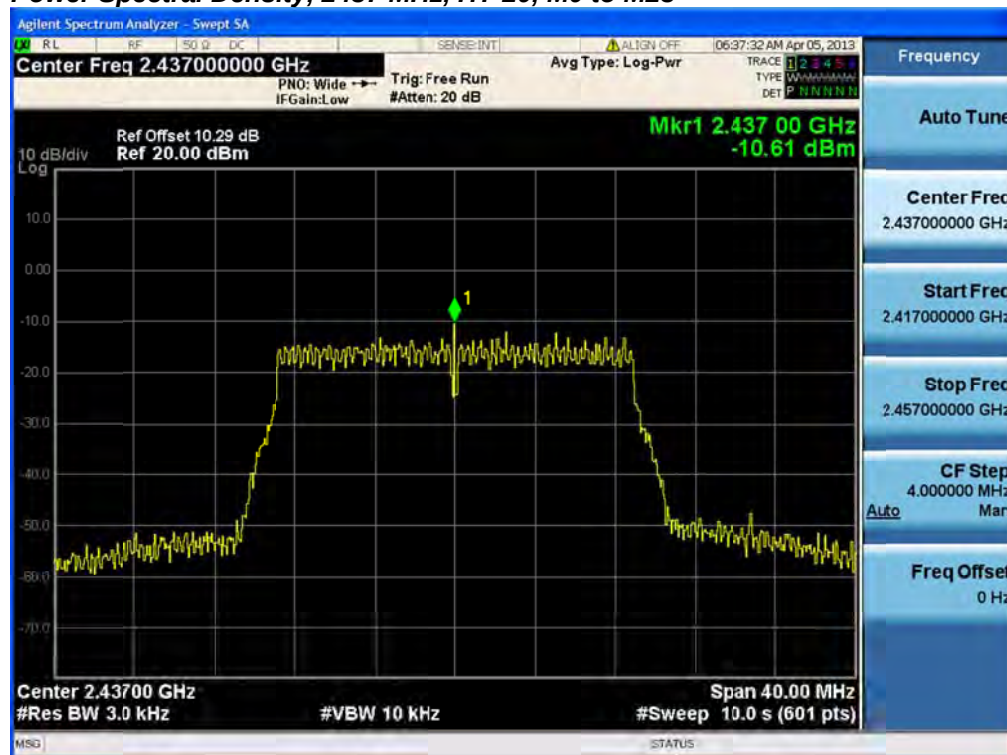
The “Measure and add $10 \log(N)$ dB technique”, where N is the number of outputs, is used for measuring in-band Power Spectral Density. With this technique, spectrum measurements are performed at each output of the device, and the quantity $10 \log(4)$ (or 6dB) is added to the worst case spectrum value before comparing to the emission limit.

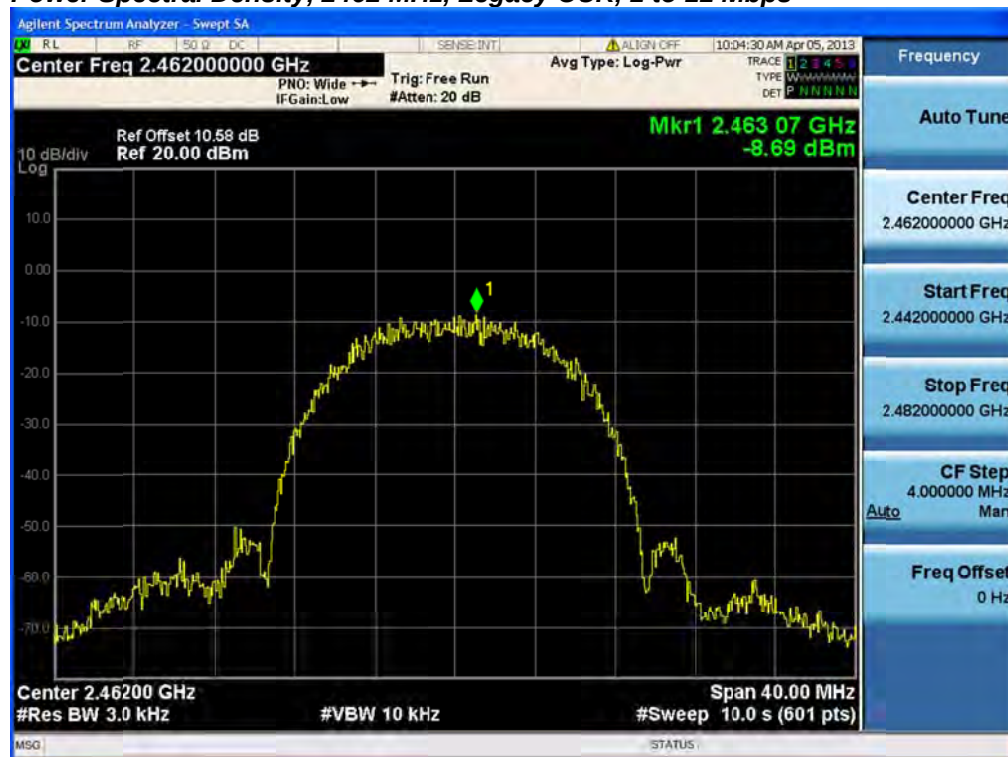
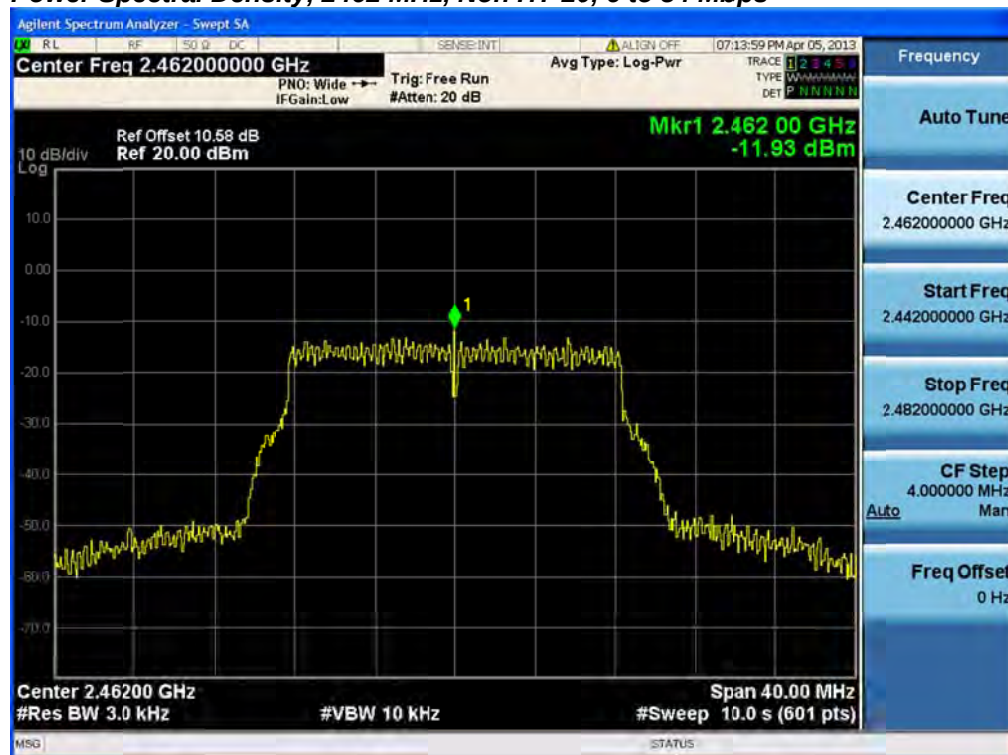


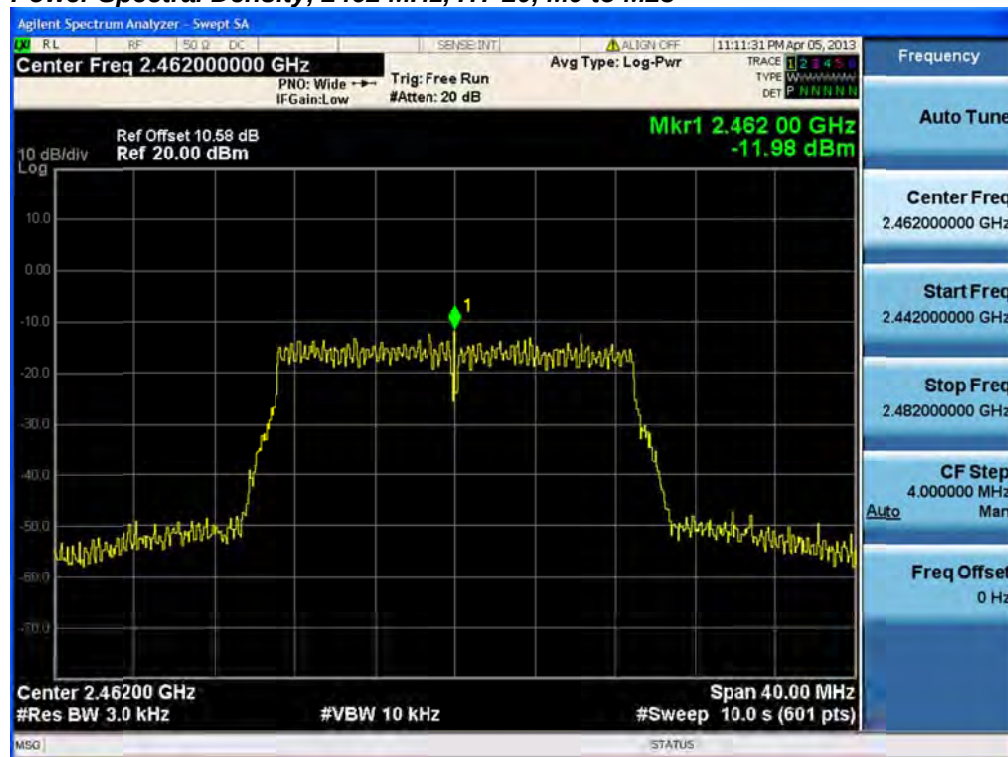
Frequency (MHz)	Mode	Data Rate (Mbps)	PSD / Antenna (dBm/3kHz)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
2412	Legacy CCK, 1 to 11 Mbps	11	<u>-8.7</u>	-2.7	8.0	10.7
	Non HT-20, 6 to 54 Mbps	6	<u>-11.7</u>	-5.7	8.0	13.7
	HT-20, M0 to M23	m0	<u>-12.4</u>	-6.4	8.0	14.4
2437	Legacy CCK, 1 to 11 Mbps	11	<u>-7.4</u>	-1.4	8.0	9.4
	Non HT-20, 6 to 54 Mbps	6	<u>-12.9</u>	-6.9	8.0	14.9
	HT-20, M0 to M23	m0	<u>-10.6</u>	-4.6	8.0	12.6
2462	Legacy CCK, 1 to 11 Mbps	11	<u>-8.7</u>	-2.7	8.0	10.7
	Non HT-20, 6 to 54 Mbps	6	<u>-11.9</u>	-5.9	8.0	13.9
	HT-20, M0 to M23	m0	<u>-12</u>	-6.0	8.0	14.0

Power Spectral Density, 2412 MHz, Legacy CCK, 1 to 11 Mbps**Power Spectral Density, 2412 MHz, Non HT-20, 6 to 54 Mbps**

Power Spectral Density, 2412 MHz, HT-20, M0 to M23**Power Spectral Density, 2437 MHz, Legacy CCK, 1 to 11 Mbps**

Power Spectral Density, 2437 MHz, Non HT-20, 6 to 54 Mbps**Power Spectral Density, 2437 MHz, HT-20, M0 to M23**

Power Spectral Density, 2462 MHz, Legacy CCK, 1 to 11 Mbps**Power Spectral Density, 2462 MHz, Non HT-20, 6 to 54 Mbps**

Power Spectral Density, 2462 MHz, HT-20, M0 to M23



Conducted Spurious Emissions

15.247 / RSS-210 A8.5: In any 100 kHz bandwidth outside the frequency band in which the digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

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).

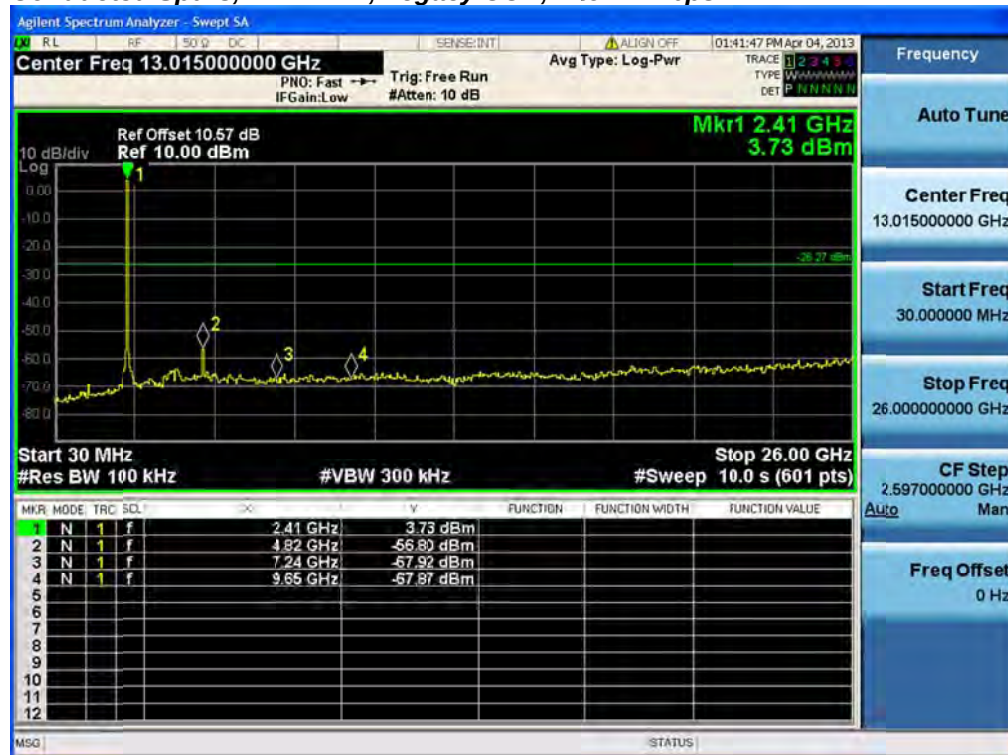
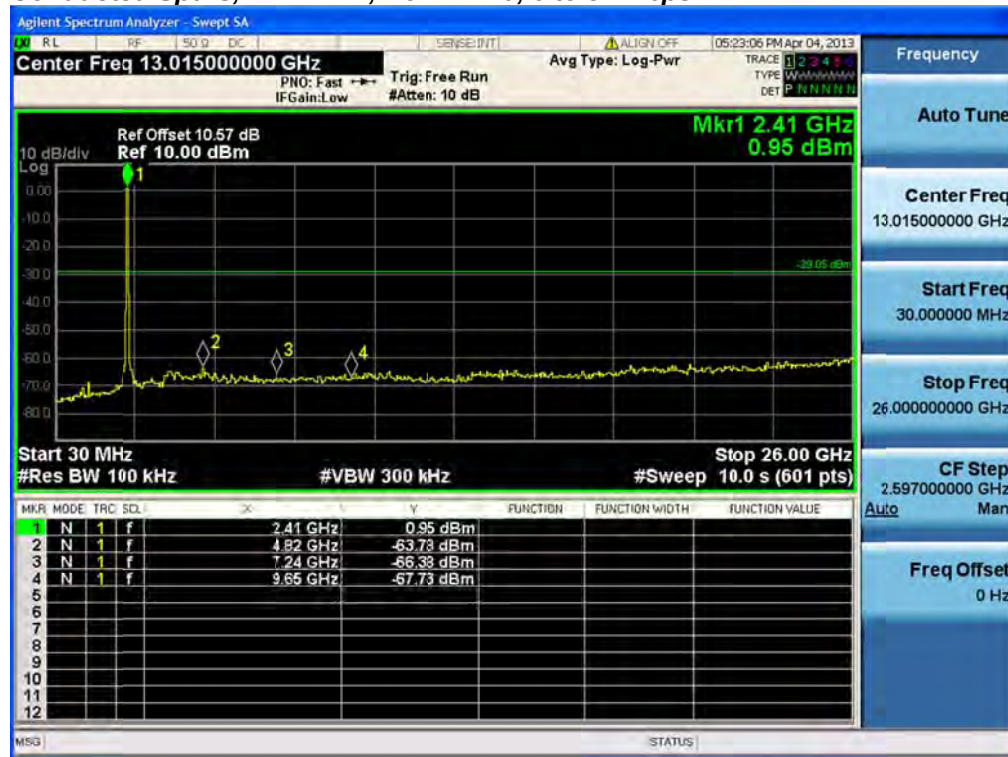
Span:	30 MHz-26 GHz
Reference Level:	20 dBm
Attenuation:	10 dB
Sweep Time:	5s
Resolution Bandwidth:	100 kHz
Video Bandwidth:	300 kHz
Detector:	Peak
Trace:	Single
Marker:	Peak

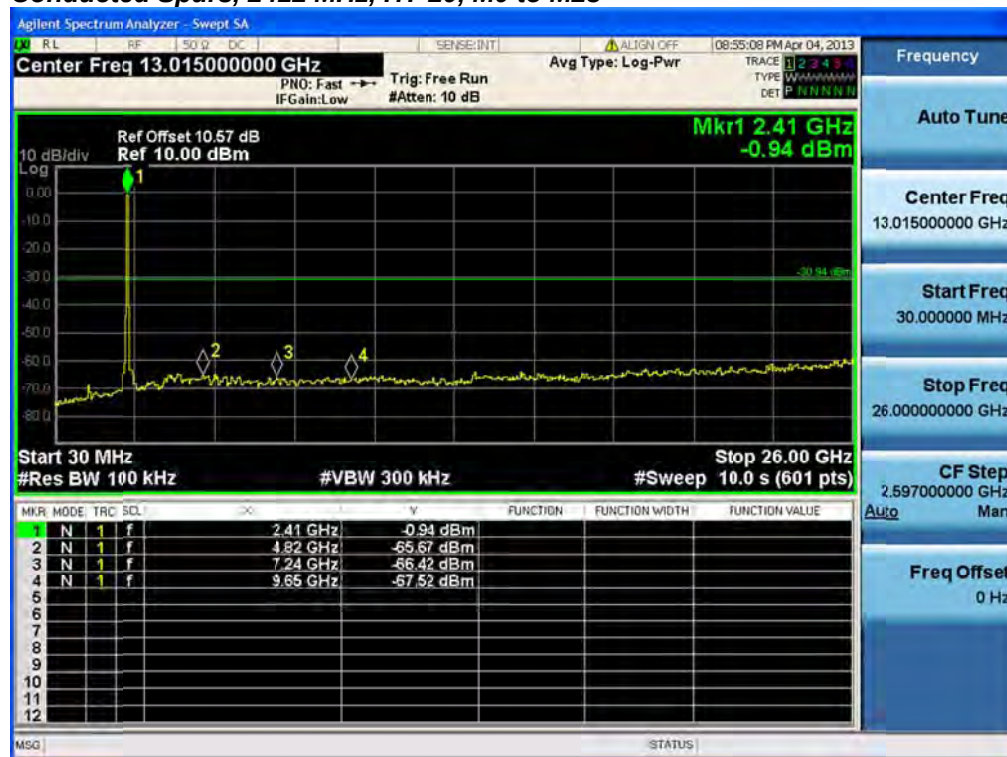
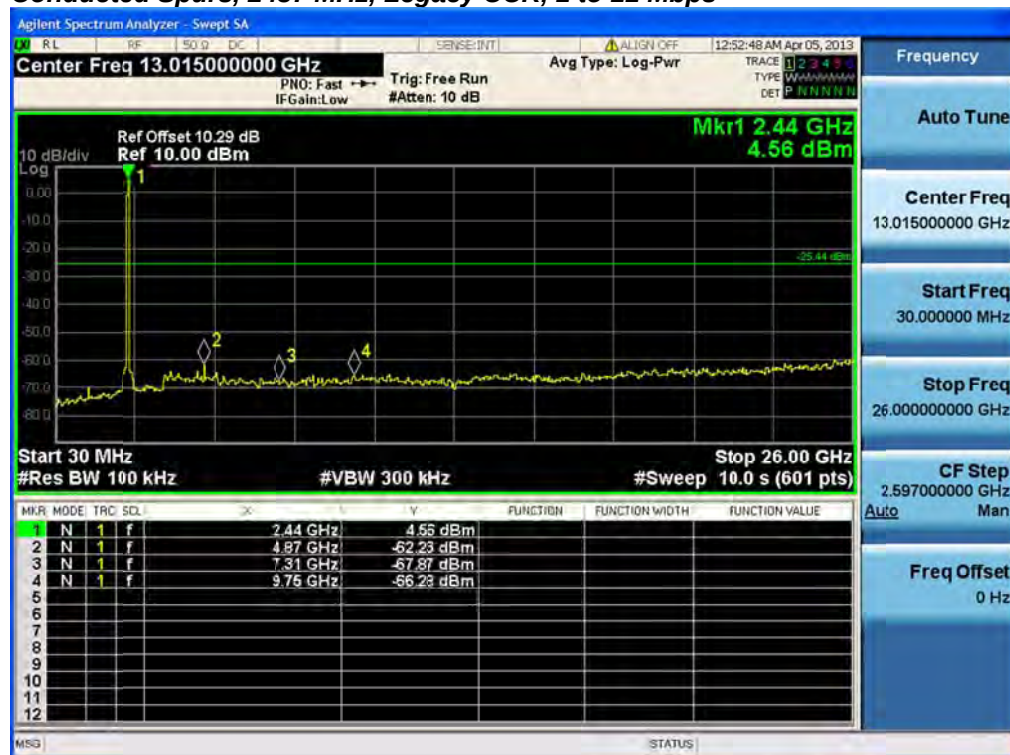
Record the marker waveform peak to spur difference

Out-of-band and spurious emissions tests are performed on each output individually without summing or adding $10 \log(N)$ since the measurements are made relative to the in-band emissions on the individual outputs. The worst case output is recorded.



Frequency (MHz)	Mode	Data Rate (Mbps)	Conducted Spurs Delta (MHz)	Limit (kHz)	Margin (MHz)
2412	Legacy CCK, 1 to 11 Mbps	11	<u>60.5</u>	30	30.5
	Non HT-20, 6 to 54 Mbps	6	<u>64.7</u>	30	34.7
	HT-20, M0 to M23	m0	<u>64.7</u>	30	34.7
2437	Legacy CCK, 1 to 11 Mbps	11	<u>66.8</u>	30	36.8
	Non HT-20, 6 to 54 Mbps	6	<u>61.5</u>	30	31.5
	HT-20, M0 to M23	m0	<u>64.5</u>	30	34.5
2462	Legacy CCK, 1 to 11 Mbps	11	<u>66.1</u>	30	36.1
	Non HT-20, 6 to 54 Mbps	6	<u>60.0</u>	30	30.0
	HT-20, M0 to M23	m0	<u>61.0</u>	30	31.0

**Conducted Spurs, 2412 MHz, Legacy CCK, 1 to 11 Mbps****Conducted Spurs, 2412 MHz, Non HT-20, 6 to 54 Mbps**

Conducted Spurs, 2412 MHz, HT-20, M0 to M23**Conducted Spurs, 2437 MHz, Legacy CCK, 1 to 11 Mbps**

Agilent Spectrum Analyzer - Swept SA

Center Freq 13.01500000 GHz
PNO: Fast → Trig: Free Run
IFGain: Low #Atten: 10 dB

Avg Type: Log-Pwr

Ref Offset 10.29 dB
Ref 10.00 dBm

Mkr1 2.44 GHz
0.43 dBm

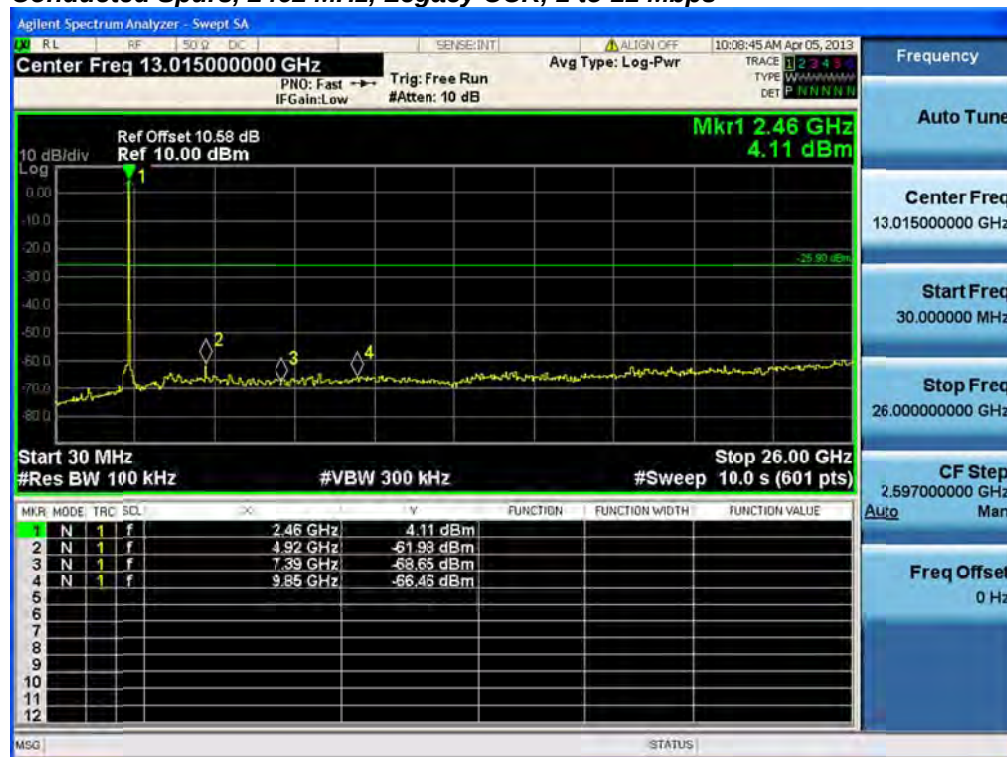
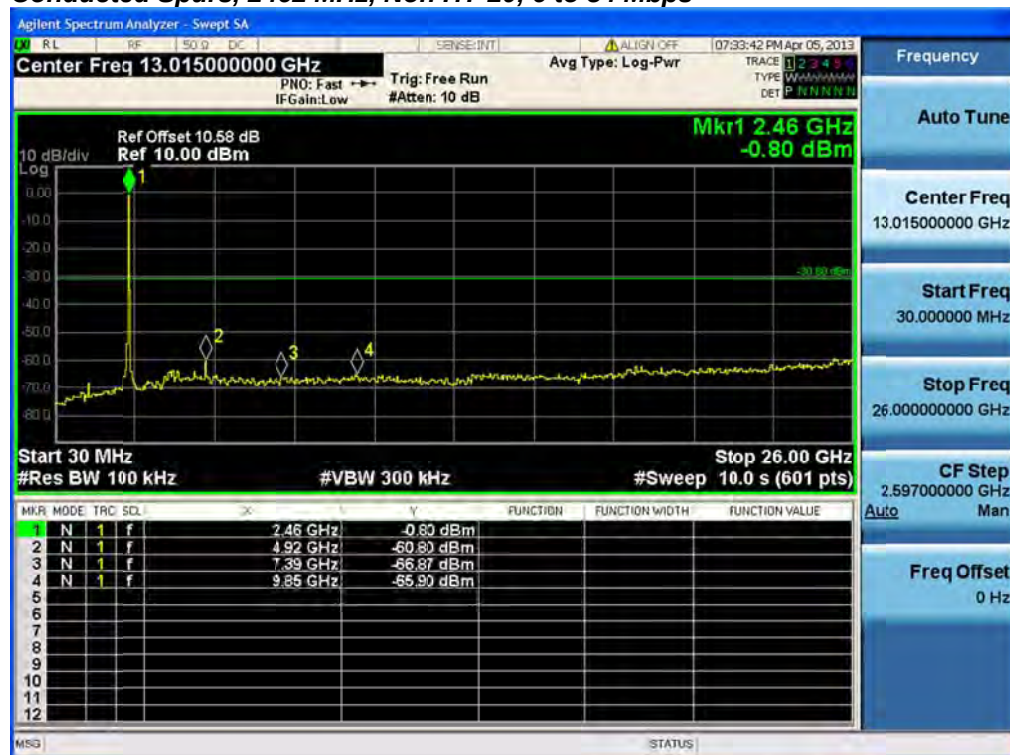
MKR	MODE	TRC	SOL	F	P	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.44 GHz	0.43 dBm			
2	N	1	f	4.87 GHz	-61.10 dBm			
3	N	1	f	7.31 GHz	-67.12 dBm			
4	N	1	f	9.75 GHz	-66.30 dBm			

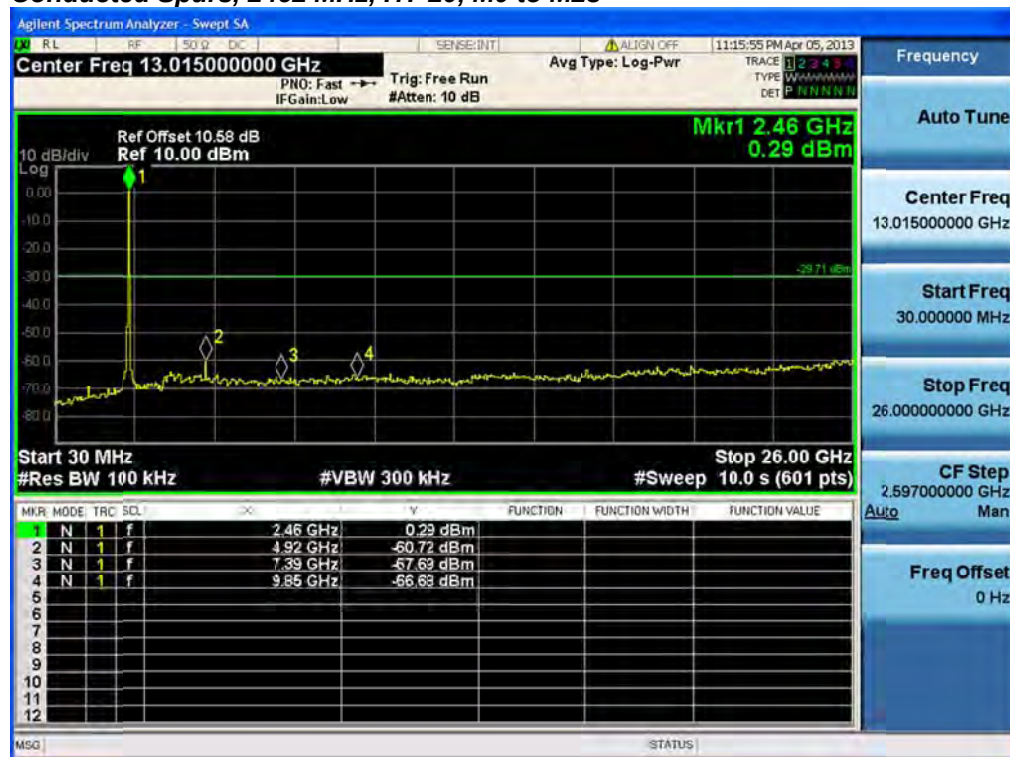
Start 30 MHz
#Res BW 100 kHz

Stop 26.00 GHz
#Sweep 10.0 s (601 pts)

#VBW 300 kHz

[illegible]

Conducted Spurs, 2462 MHz, Legacy CCK, 1 to 11 Mbps**Conducted Spurs, 2462 MHz, Non HT-20, 6 to 54 Mbps**

Conducted Spurs, 2462 MHz, HT-20, M0 to M23



Conducted Bandedge

15.205 / RSS-210 2.7: 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/m @3m)
 2) Peak plot (Vertical and Horizontal), Limit = -21.25 dBm eirp (74dBuV/m @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)	Tx 3 Bandedge Level (dBm)	Tx 4 Bandedge Level (dBm)	Total Tx Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	Legacy CCK, 1 to 11 Mbps	1	3	<u>-71.2</u>				-68.2	-41.25	27.0
	Legacy CCK, 1 to 11 Mbps	2	3	<u>-71.2</u>	<u>-69.0</u>			-64.0	-41.25	22.7
	Legacy CCK, 1 to 11 Mbps	3	3	<u>-71.2</u>	<u>-69.0</u>	<u>-71.0</u>		-62.5	-41.25	21.3
	Legacy CCK, 1 to 11 Mbps	4	3	<u>-71.2</u>	<u>-69.0</u>	<u>-71.0</u>	<u>-70.2</u>	-61.2	-41.25	20.0
	Non HT-20, 6 to 54 Mbps	1	3	<u>-57.6</u>				-54.6	-41.25	13.4
	Non HT-20, 6 to 54 Mbps	2	3	<u>-57.6</u>	<u>-54.4</u>			-49.7	-41.25	8.5
	Non HT-20, 6 to 54 Mbps	3	3	<u>-57.6</u>	<u>-54.4</u>	<u>-57.1</u>		-48.4	-41.25	7.1
	Non HT-20, 6 to 54 Mbps	4	3	<u>-57.6</u>	<u>-54.4</u>	<u>-57.1</u>	<u>-54.4</u>	-46.6	-41.25	5.4
	Non HT-20 Beam Forming, 6 to 54 Mbps	2	6	<u>-57.6</u>	<u>-54.4</u>			-46.7	-41.25	5.5
	Non HT-20 Beam Forming, 6 to 54 Mbps	3	8	<u>-57.6</u>	<u>-54.4</u>	<u>-57.1</u>		-43.6	-41.25	2.3
	Non HT-20 Beam Forming, 6 to 54 Mbps	4	9	<u>-61.7</u>	<u>-59.0</u>	<u>-60.7</u>	<u>-58.7</u>	-44.8	-41.25	3.6
	HT-20, M0 to M7	1	3	<u>-58.1</u>				-55.1	-41.25	13.9
	HT-20, M0 to M7	2	3	<u>-58.1</u>	<u>-52.4</u>			-48.4	-41.25	7.1
	HT-20, M8 to M15	2	3	<u>-58.1</u>	<u>-52.4</u>			-48.4	-41.25	7.1
	HT-20, M0 to M7	3	3	<u>-58.1</u>	<u>-52.4</u>	<u>-54.3</u>		-46.6	-41.25	5.3
	HT-20, M8 to M15	3	3	<u>-58.1</u>	<u>-52.4</u>	<u>-54.3</u>		-46.6	-41.25	5.3
	HT-20, M16 to M23	3	3	<u>-58.1</u>	<u>-52.4</u>	<u>-54.3</u>		-46.6	-41.25	5.3
	HT-20, M0 to M7	4	3	<u>-58.1</u>	<u>-52.4</u>	<u>-54.3</u>	<u>-52.5</u>	-44.8	-41.25	3.5
	HT-20, M8 to M15	4	3	<u>-58.1</u>	<u>-52.4</u>	<u>-54.3</u>	<u>-52.5</u>	-44.8	-41.25	3.5
	HT-20, M16 to M23	4	3	<u>-58.1</u>	<u>-52.4</u>	<u>-54.3</u>	<u>-52.5</u>	-44.8	-41.25	3.5
	HT-20 Beam Forming, M0 to M7	2	6	<u>-58.1</u>	<u>-52.4</u>			-45.4	-41.25	4.1
	HT-20 Beam Forming, M8 to M15	2	3	<u>-58.1</u>	<u>-52.4</u>			-48.4	-41.25	7.1
	HT-20 Beam Forming, M0 to M7	3	8	<u>-58.1</u>	<u>-52.4</u>	<u>-54.3</u>		-41.8	-41.25	0.5
	HT-20 Beam Forming, M8 to M15	3	5	<u>-58.1</u>	<u>-52.4</u>	<u>-54.3</u>		-44.8	-41.25	3.5
	HT-20 Beam Forming, M16 to M23	3	3	<u>-58.1</u>	<u>-52.4</u>	<u>-54.3</u>		-46.6	-41.25	5.3
	HT-20 Beam Forming, M0 to M7	4	9	<u>-61.7</u>	<u>-57.8</u>	<u>-57.7</u>	<u>-56.4</u>	-43.0	-41.25	1.7
	HT-20 Beam Forming, M8 to M15	4	6	<u>-58.1</u>	<u>-52.4</u>	<u>-54.3</u>	<u>-52.5</u>	-41.8	-41.25	0.5
	HT-20 Beam Forming, M16 to M23	4	4	<u>-58.1</u>	<u>-52.4</u>	<u>-54.3</u>	<u>-52.5</u>	-43.6	-41.25	2.3
	HT-20 STBC, M0 to M7	2	3	<u>-58.1</u>	<u>-52.4</u>			-48.4	-41.25	7.1
	HT-20 STBC, M0 to M7	3	3	<u>-58.1</u>	<u>-52.4</u>	<u>-54.3</u>		-46.6	-41.25	5.3
	HT-20 STBC, M0 to M7	4	3	<u>-58.1</u>	<u>-52.4</u>	<u>-54.3</u>	<u>-52.5</u>	-44.8	-41.25	3.5



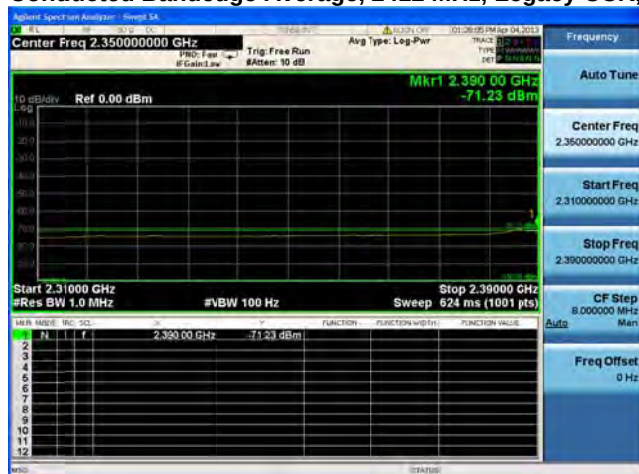
2462	Legacy CCK, 1 to 11 Mbps	1	3	<u>-71.8</u>				-68.8	-41.25	27.6
	Legacy CCK, 1 to 11 Mbps	2	3	<u>-71.8</u>	<u>-70.1</u>			-64.9	-41.25	23.6
	Legacy CCK, 1 to 11 Mbps	3	3	<u>-71.8</u>	<u>-70.1</u>	<u>-71.2</u>		-63.2	-41.25	22.0
	Legacy CCK, 1 to 11 Mbps	4	3	<u>-71.8</u>	<u>-70.1</u>	<u>-71.2</u>	<u>-71.1</u>	-62.0	-41.25	20.7
	Non HT-20, 6 to 54 Mbps	1	3	<u>-58.2</u>				-55.2	-41.25	14.0
	Non HT-20, 6 to 54 Mbps	2	3	<u>-58.2</u>	<u>-53.5</u>			-49.2	-41.25	8.0
	Non HT-20, 6 to 54 Mbps	3	3	<u>-58.2</u>	<u>-53.5</u>	<u>-56.2</u>		-47.8	-41.25	6.5
	Non HT-20, 6 to 54 Mbps	4	3	<u>-58.2</u>	<u>-53.5</u>	<u>-56.2</u>	<u>-52.5</u>	-45.5	-41.25	4.3
	Non HT-20 Beam Forming, 6 to 54 Mbps	2	6	<u>-58.2</u>	<u>-53.5</u>			-46.2	-41.25	5.0
	Non HT-20 Beam Forming, 6 to 54 Mbps	3	8	<u>-58.2</u>	<u>-53.5</u>	<u>-56.2</u>		-43.0	-41.25	1.7
	Non HT-20 Beam Forming, 6 to 54 Mbps	4	9	<u>-62.2</u>	<u>-58.9</u>	<u>-59.6</u>	<u>-57.5</u>	-44.2	-41.25	3.0
	HT-20, M0 to M7	1	3	<u>-55.8</u>				-52.8	-41.25	11.6
	HT-20, M0 to M7	2	3	<u>-55.8</u>	<u>-50.9</u>			-46.7	-41.25	5.4
	HT-20, M8 to M15	2	3	<u>-55.8</u>	<u>-50.9</u>			-46.7	-41.25	5.4
	HT-20, M0 to M7	3	3	<u>-55.8</u>	<u>-50.9</u>	<u>-53.2</u>		-45.1	-41.25	3.8
	HT-20, M8 to M15	3	3	<u>-55.8</u>	<u>-50.9</u>	<u>-53.2</u>		-45.1	-41.25	3.8
	HT-20, M16 to M23	3	3	<u>-55.8</u>	<u>-50.9</u>	<u>-53.2</u>		-45.1	-41.25	3.8
	HT-20, M0 to M7	4	3	<u>-55.8</u>	<u>-50.9</u>	<u>-53.2</u>	<u>-50.7</u>	-43.2	-41.25	1.9
	HT-20, M8 to M15	4	3	<u>-55.8</u>	<u>-50.9</u>	<u>-53.2</u>	<u>-50.7</u>	-43.2	-41.25	1.9
	HT-20, M16 to M23	4	3	<u>-55.8</u>	<u>-50.9</u>	<u>-53.2</u>	<u>-50.7</u>	-43.2	-41.25	1.9
	HT-20 Beam Forming, M0 to M7	2	6	<u>-55.8</u>	<u>-50.9</u>			-43.7	-41.25	2.4
	HT-20 Beam Forming, M8 to M15	2	3	<u>-55.8</u>	<u>-50.9</u>			-46.7	-41.25	5.4
	HT-20 Beam Forming, M0 to M7	3	8	<u>-60.1</u>	<u>-57.2</u>	<u>-57.7</u>		-45.6	-41.25	4.3
	HT-20 Beam Forming, M8 to M15	3	5	<u>-55.8</u>	<u>-50.9</u>	<u>-53.2</u>		-43.3	-41.25	2.0
	HT-20 Beam Forming, M16 to M23	3	3	<u>-55.8</u>	<u>-50.9</u>	<u>-53.2</u>		-45.1	-41.25	3.8
	HT-20 Beam Forming, M0 to M7	4	9	<u>-64.1</u>	<u>-61.5</u>	<u>-62.1</u>	<u>-59.4</u>	-46.4	-41.25	5.2
	HT-20 Beam Forming, M8 to M15	4	6	<u>-60.1</u>	<u>-57.2</u>	<u>-57.7</u>	<u>-54.2</u>	-44.8	-41.25	3.5
	HT-20 Beam Forming, M16 to M23	4	4	<u>-60.1</u>	<u>-57.2</u>	<u>-57.7</u>	<u>-54.2</u>	-46.6	-41.25	5.3
	HT-20 STBC, M0 to M7	2	3	<u>-55.8</u>	<u>-50.9</u>			-46.7	-41.25	5.4
	HT-20 STBC, M0 to M7	3	3	<u>-55.8</u>	<u>-50.9</u>	<u>-53.2</u>		-45.1	-41.25	3.8
	HT-20 STBC, M0 to M7	4	3	<u>-55.8</u>	<u>-50.9</u>	<u>-53.2</u>	<u>-50.7</u>	-43.2	-41.25	1.9

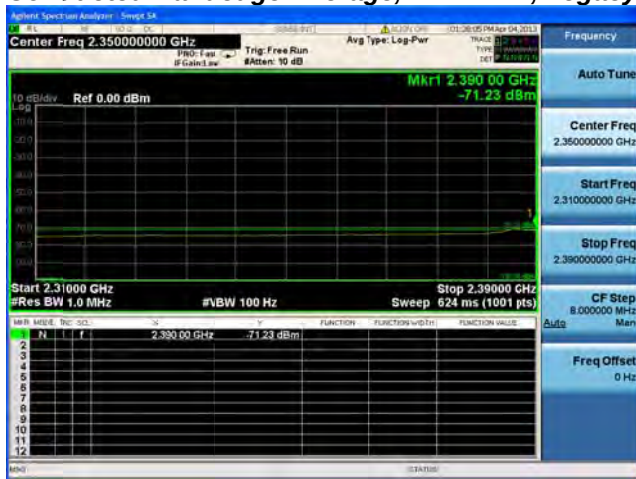
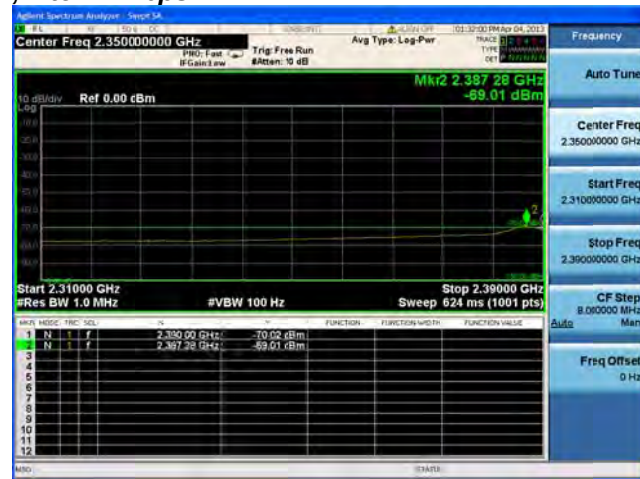


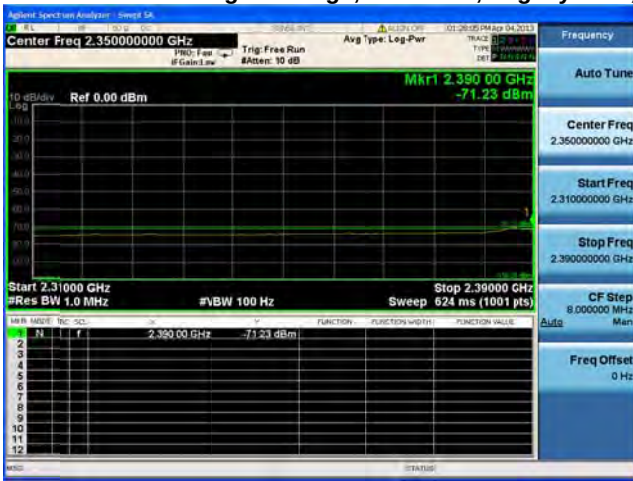
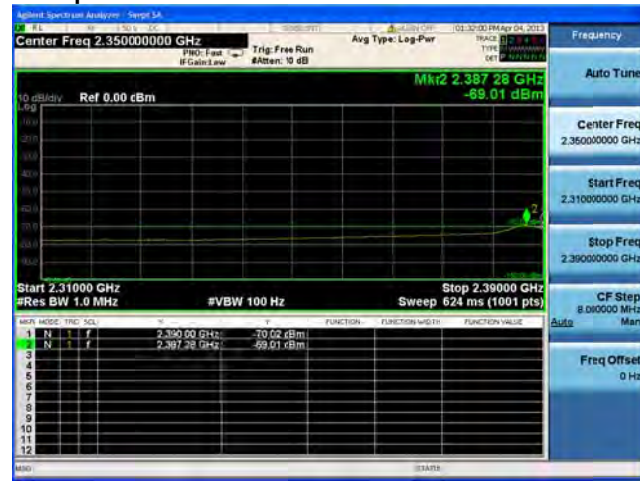
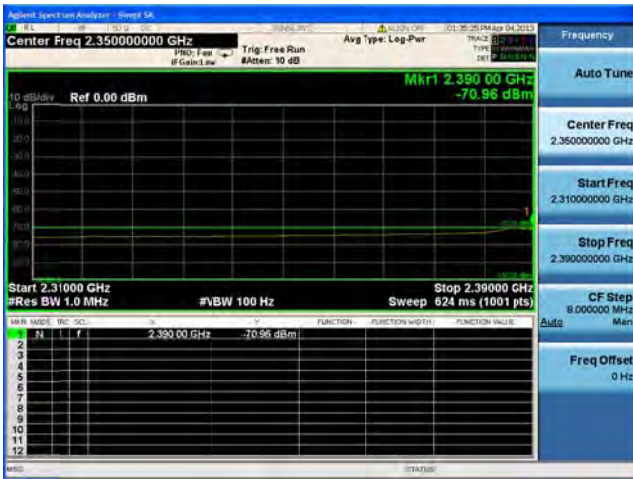
Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Bandedge Level (dBm)	Tx 2 Bandedge Level (dBm)	Tx 3 Bandedge Level (dBm)	Tx 4 Bandedge Level (dBm)	Total Tx Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	Legacy CCK, 1 to 11 Mbps	1	3	<u>-60.6</u>				-57.6	-21.25	36.4
	Legacy CCK, 1 to 11 Mbps	2	3	<u>-60.6</u>	<u>-60.5</u>			-54.5	-21.25	33.3
	Legacy CCK, 1 to 11 Mbps	3	3	<u>-60.6</u>	<u>-60.5</u>	<u>-61.2</u>		-53.0	-21.25	31.7
	Legacy CCK, 1 to 11 Mbps	4	3	<u>-60.6</u>	<u>-60.5</u>	<u>-61.2</u>	<u>-59.3</u>	-51.3	-21.25	30.1
	Non HT-20, 6 to 54 Mbps	1	3	<u>-40.6</u>				-37.6	-21.25	16.4
	Non HT-20, 6 to 54 Mbps	2	3	<u>-40.6</u>	<u>-37.9</u>			-33.0	-21.25	11.8
	Non HT-20, 6 to 54 Mbps	3	3	<u>-40.6</u>	<u>-37.9</u>	<u>-39.9</u>		-31.5	-21.25	10.3
	Non HT-20, 6 to 54 Mbps	4	3	<u>-40.6</u>	<u>-37.9</u>	<u>-39.9</u>	<u>-36.9</u>	-29.6	-21.25	8.3
	Non HT-20 Beam Forming, 6 to 54 Mbps	2	6	<u>-40.6</u>	<u>-37.9</u>			-30.0	-21.25	8.8
	Non HT-20 Beam Forming, 6 to 54 Mbps	3	8	<u>-40.6</u>	<u>-37.9</u>	<u>-39.9</u>		-26.7	-21.25	5.5
	Non HT-20 Beam Forming, 6 to 54 Mbps	4	9	<u>-42.3</u>	<u>-41.8</u>	<u>-44.3</u>	<u>-41.4</u>	-27.3	-21.25	6.0
	HT-20, M0 to M7	1	3	<u>-38.3</u>				-35.3	-21.25	14.1
	HT-20, M0 to M7	2	3	<u>-38.3</u>	<u>-36.2</u>			-31.1	-21.25	9.9
	HT-20, M8 to M15	2	3	<u>-38.3</u>	<u>-36.2</u>			-31.1	-21.25	9.9
	HT-20, M0 to M7	3	3	<u>-38.3</u>	<u>-36.2</u>	<u>-34.6</u>		-28.3	-21.25	7.1
	HT-20, M8 to M15	3	3	<u>-38.3</u>	<u>-36.2</u>	<u>-34.6</u>		-28.3	-21.25	7.1
	HT-20, M16 to M23	3	3	<u>-38.3</u>	<u>-36.2</u>	<u>-34.6</u>		-28.3	-21.25	7.1
	HT-20, M0 to M7	4	3	<u>-38.3</u>	<u>-36.2</u>	<u>-34.6</u>	<u>-30.8</u>	-25.1	-21.25	3.8
	HT-20, M8 to M15	4	3	<u>-38.3</u>	<u>-36.2</u>	<u>-34.6</u>	<u>-30.8</u>	-25.1	-21.25	3.8
	HT-20, M16 to M23	4	3	<u>-38.3</u>	<u>-36.2</u>	<u>-34.6</u>	<u>-30.8</u>	-25.1	-21.25	3.8
	HT-20 Beam Forming, M0 to M7	2	6	<u>-38.3</u>	<u>-36.2</u>			-28.1	-21.25	6.9
	HT-20 Beam Forming, M8 to M15	2	3	<u>-38.3</u>	<u>-36.2</u>			-31.1	-21.25	9.9
	HT-20 Beam Forming, M0 to M7	3	8	<u>-38.3</u>	<u>-36.2</u>	<u>-34.6</u>		-23.5	-21.25	2.3
	HT-20 Beam Forming, M8 to M15	3	5	<u>-38.3</u>	<u>-36.2</u>	<u>-34.6</u>		-26.5	-21.25	5.3
	HT-20 Beam Forming, M16 to M23	3	3	<u>-38.3</u>	<u>-36.2</u>	<u>-34.6</u>		-28.3	-21.25	7.1
	HT-20 Beam Forming, M0 to M7	4	9	<u>-39.2</u>	<u>-36.2</u>	<u>-40.1</u>	<u>-37.7</u>	-23.0	-21.25	1.8
	HT-20 Beam Forming, M8 to M15	4	6	<u>-38.3</u>	<u>-36.2</u>	<u>-34.6</u>	<u>-30.8</u>	-22.1	-21.25	0.8
	HT-20 Beam Forming, M16 to M23	4	4	<u>-38.3</u>	<u>-36.2</u>	<u>-34.6</u>	<u>-30.8</u>	-23.9	-21.25	2.6
	HT-20 STBC, M0 to M7	2	3	<u>-38.3</u>	<u>-36.2</u>			-31.1	-21.25	9.9
	HT-20 STBC, M0 to M7	3	3	<u>-38.3</u>	<u>-36.2</u>	<u>-34.6</u>		-28.3	-21.25	7.1
	HT-20 STBC, M0 to M7	4	3	<u>-38.3</u>	<u>-36.2</u>	<u>-34.6</u>	<u>-30.8</u>	-25.1	-21.25	3.8

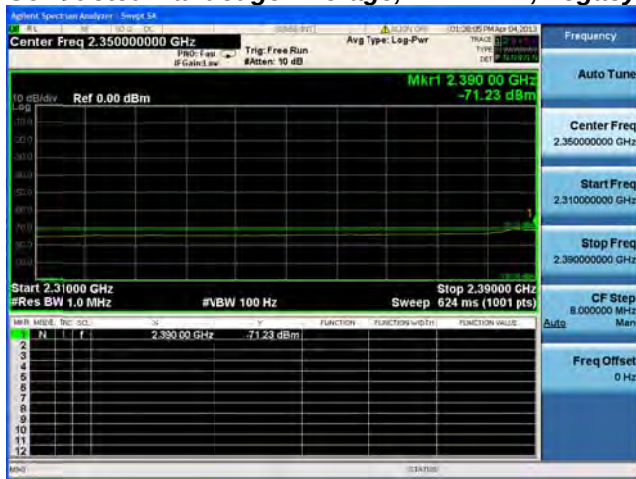
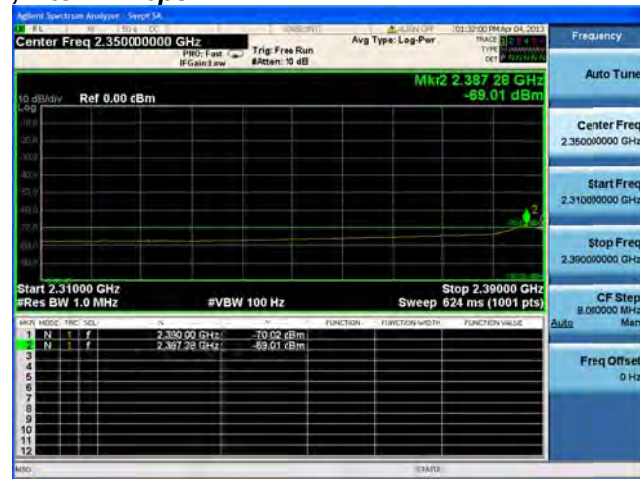
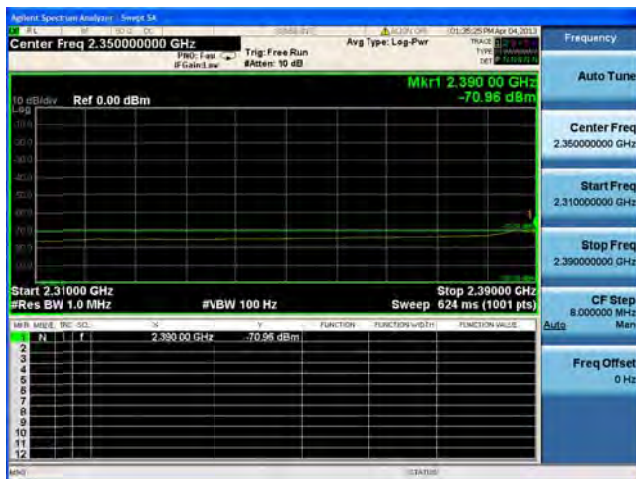
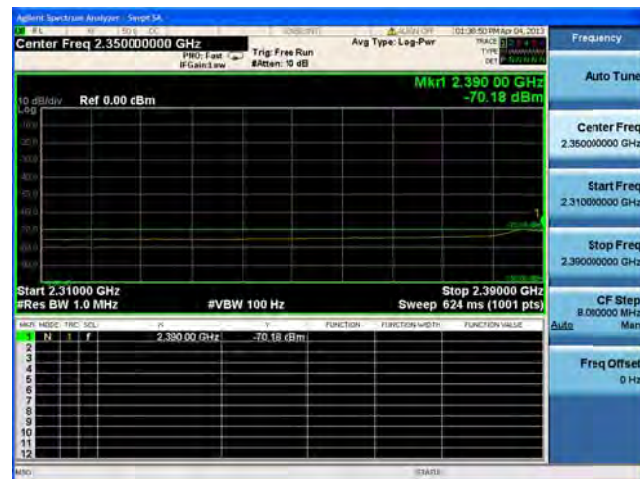


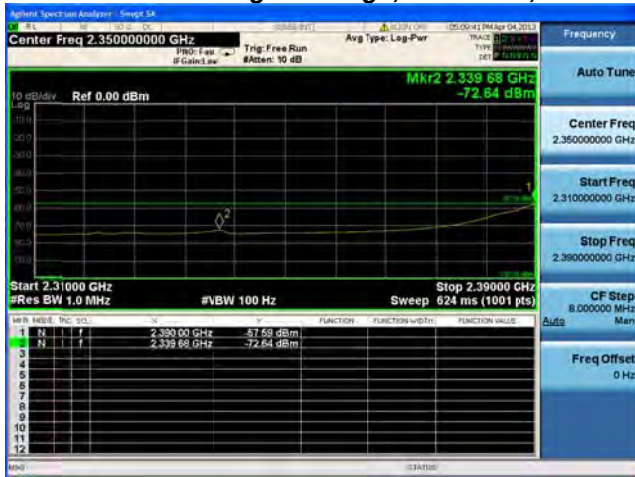
2462	Legacy CCK, 1 to 11 Mbps	1	3	<u>-61.2</u>				-58.2	-21.25	37.0
	Legacy CCK, 1 to 11 Mbps	2	3	<u>-61.2</u>	<u>-59.9</u>			-54.5	-21.25	33.2
	Legacy CCK, 1 to 11 Mbps	3	3	<u>-61.2</u>	<u>-59.9</u>	<u>-55.4</u>		-50.3	-21.25	29.1
	Legacy CCK, 1 to 11 Mbps	4	3	<u>-61.2</u>	<u>-59.9</u>	<u>-55.4</u>	<u>-59.6</u>	-49.4	-21.25	28.1
	Non HT-20, 6 to 54 Mbps	1	3	<u>-36.2</u>				-33.2	-21.25	12.0
	Non HT-20, 6 to 54 Mbps	2	3	<u>-36.2</u>	<u>-33.0</u>			-28.3	-21.25	7.1
	Non HT-20, 6 to 54 Mbps	3	3	<u>-36.2</u>	<u>-33.0</u>	<u>-37.8</u>		-27.4	-21.25	6.2
	Non HT-20, 6 to 54 Mbps	4	3	<u>-36.2</u>	<u>-33.0</u>	<u>-37.8</u>	<u>-32.6</u>	-25.4	-21.25	4.1
	Non HT-20 Beam Forming, 6 to 54 Mbps	2	6	<u>-36.2</u>	<u>-33.0</u>			-25.3	-21.25	4.1
	Non HT-20 Beam Forming, 6 to 54 Mbps	3	8	<u>-36.2</u>	<u>-33.0</u>	<u>-37.8</u>		-22.6	-21.25	1.4
	Non HT-20 Beam Forming, 6 to 54 Mbps	4	9	<u>-44.8</u>	<u>-38.9</u>	<u>-42.4</u>	<u>-36.1</u>	-24.3	-21.25	3.1
	HT-20, M0 to M7	1	3	<u>-31.2</u>				-28.2	-21.25	7.0
	HT-20, M0 to M7	2	3	<u>-31.2</u>	<u>-31.1</u>			-25.1	-21.25	3.9
	HT-20, M8 to M15	2	3	<u>-31.2</u>	<u>-31.1</u>			-25.1	-21.25	3.9
	HT-20, M0 to M7	3	3	<u>-31.2</u>	<u>-31.1</u>	<u>-34.9</u>		-24.3	-21.25	3.1
	HT-20, M8 to M15	3	3	<u>-31.2</u>	<u>-31.1</u>	<u>-34.9</u>		-24.3	-21.25	3.1
	HT-20, M16 to M23	3	3	<u>-31.2</u>	<u>-31.1</u>	<u>-34.9</u>		-24.3	-21.25	3.1
	HT-20, M0 to M7	4	3	<u>-31.2</u>	<u>-31.1</u>	<u>-34.9</u>	<u>-27.6</u>	-21.4	-21.25	0.2
	HT-20, M8 to M15	4	3	<u>-31.2</u>	<u>-31.1</u>	<u>-34.9</u>	<u>-27.6</u>	-21.4	-21.25	0.2
	HT-20, M16 to M23	4	3	<u>-31.2</u>	<u>-31.1</u>	<u>-34.9</u>	<u>-27.6</u>	-21.4	-21.25	0.2
	HT-20 Beam Forming, M0 to M7	2	6	<u>-31.2</u>	<u>-31.1</u>			-22.1	-21.25	0.9
	HT-20 Beam Forming, M8 to M15	2	3	<u>-31.2</u>	<u>-31.1</u>			-25.1	-21.25	3.9
	HT-20 Beam Forming, M0 to M7	3	8	<u>-37.3</u>	<u>-34.9</u>	<u>-34.3</u>		-22.7	-21.25	1.5
	HT-20 Beam Forming, M8 to M15	3	5	<u>-31.2</u>	<u>-31.1</u>	<u>-34.9</u>		-22.5	-21.25	1.3
	HT-20 Beam Forming, M16 to M23	3	3	<u>-31.2</u>	<u>-31.1</u>	<u>-34.9</u>		-24.3	-21.25	3.1
	HT-20 Beam Forming, M0 to M7	4	9	<u>-42.7</u>	<u>-38.0</u>	<u>-42.4</u>	<u>-40.8</u>	-25.5	-21.25	4.3
	HT-20 Beam Forming, M8 to M15	4	6	<u>-37.3</u>	<u>-34.9</u>	<u>-34.9</u>	<u>-31.7</u>	-22.2	-21.25	1.0
	HT-20 Beam Forming, M16 to M23	4	4	<u>-37.3</u>	<u>-34.9</u>	<u>-34.3</u>	<u>-31.7</u>	-23.9	-21.25	2.6
	HT-20 STBC, M0 to M7	2	3	<u>-31.2</u>	<u>-31.1</u>			-25.1	-21.25	3.9
	HT-20 STBC, M0 to M7	3	3	<u>-31.2</u>	<u>-31.1</u>	<u>-34.9</u>		-24.3	-21.25	3.1
	HT-20 STBC, M0 to M7	4	3	<u>-31.2</u>	<u>-31.1</u>	<u>-34.9</u>	<u>-27.6</u>	-21.4	-21.25	0.2

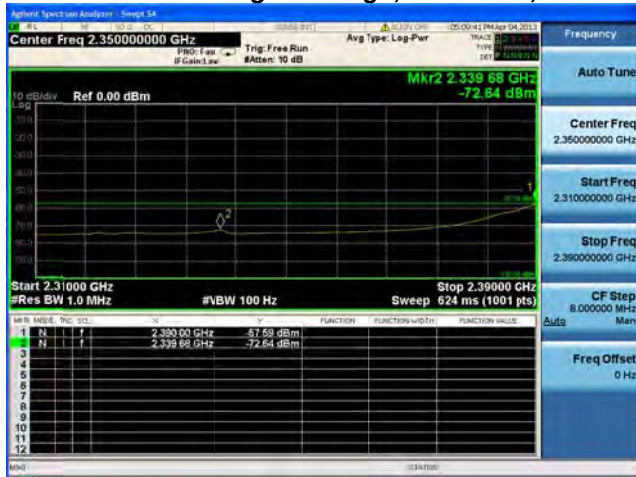
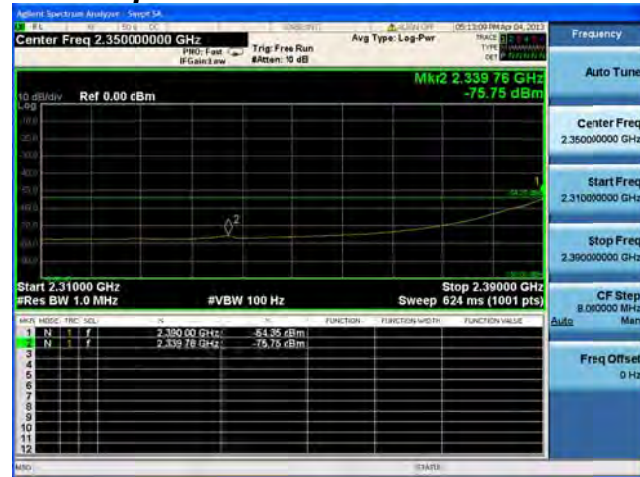
Conducted Bandedge Average, 2412 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A**

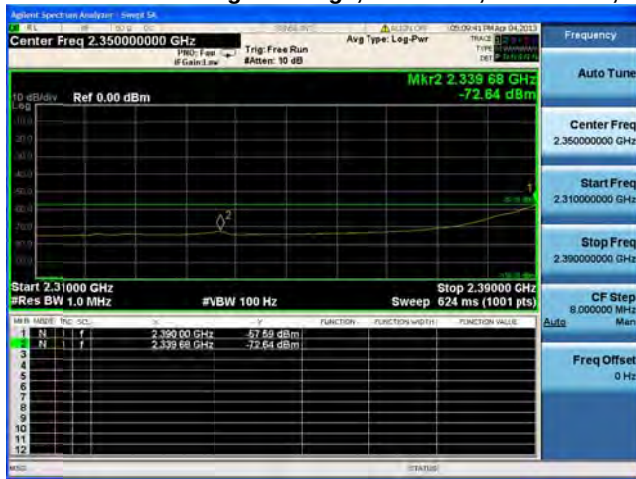
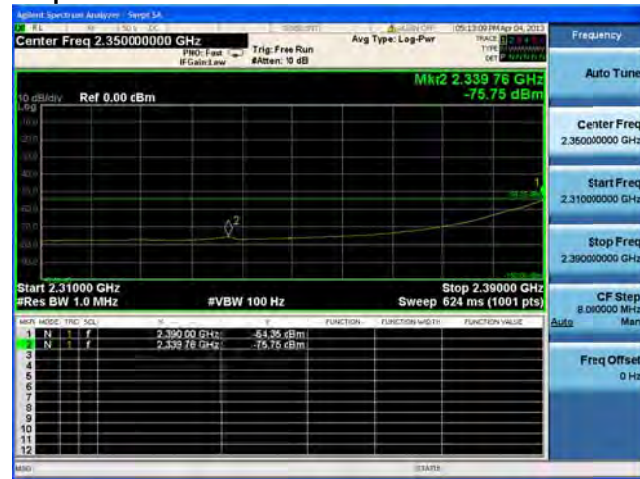
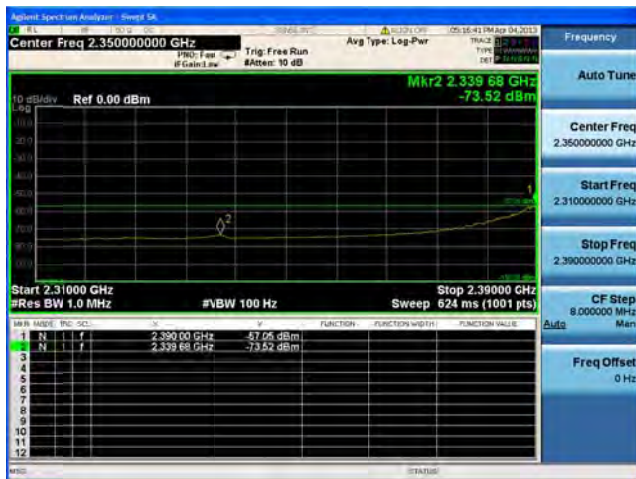
**Conducted Bandedge Average, 2412 MHz, Legacy CCK, 1 to 11 Mbps****Antenna A****Antenna B**

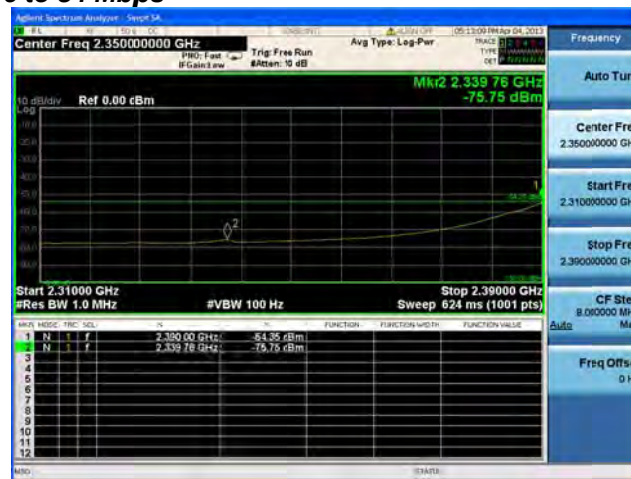
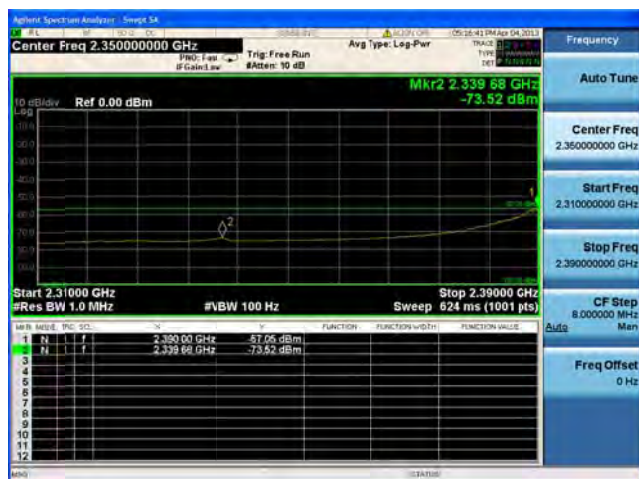
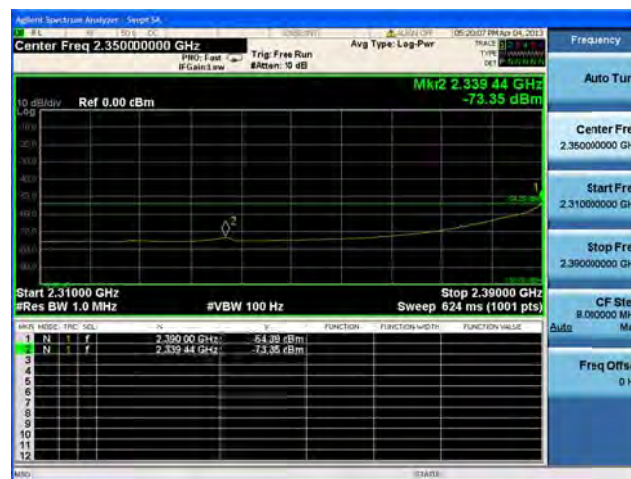
**Conducted Bandedge Average, 2412 MHz, Legacy CCK, 1 to 11 Mbps****Antenna A****Antenna B****Antenna C**

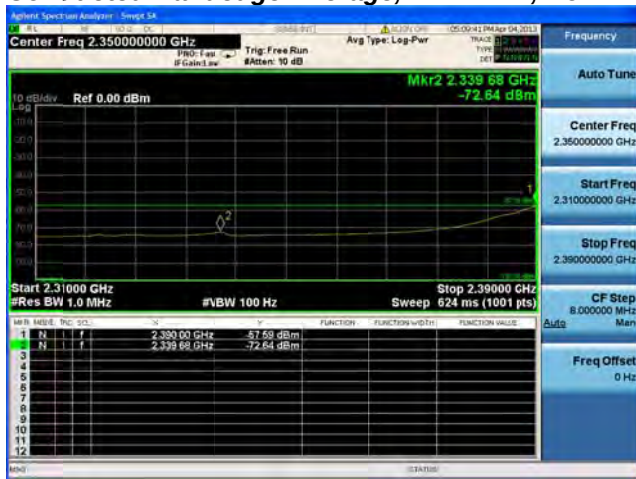
**Conducted Bandedge Average, 2412 MHz, Legacy CCK, 1 to 11 Mbps****Antenna A****Antenna B****Antenna C****Antenna D**

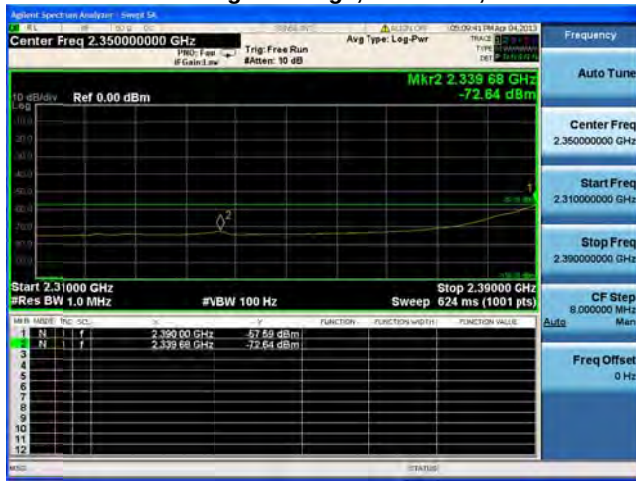
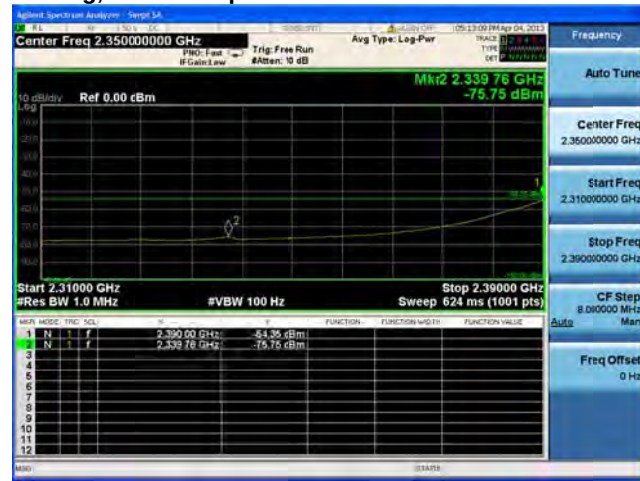
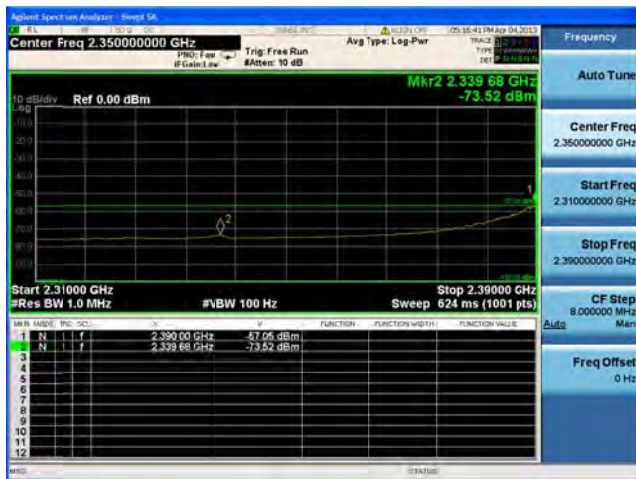
**Conducted Bandedge Average, 2412 MHz, Non HT-20, 6 to 54 Mbps****Antenna A**

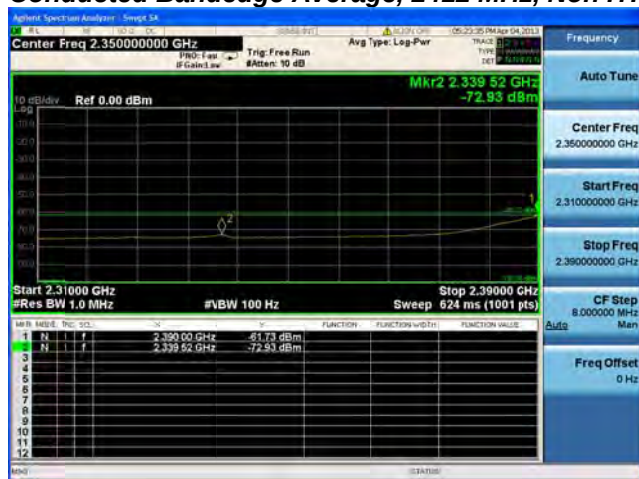
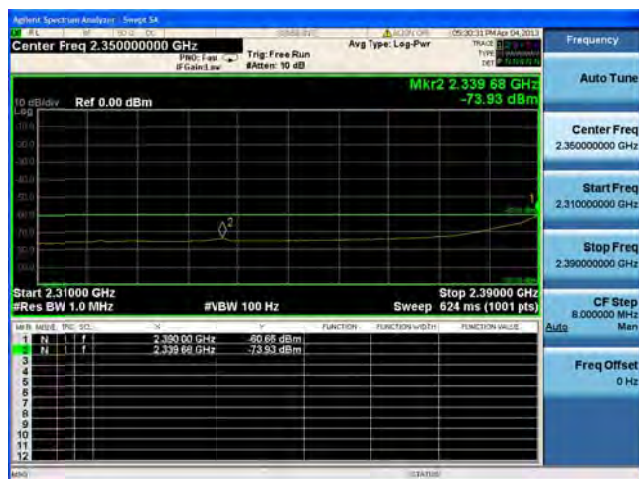
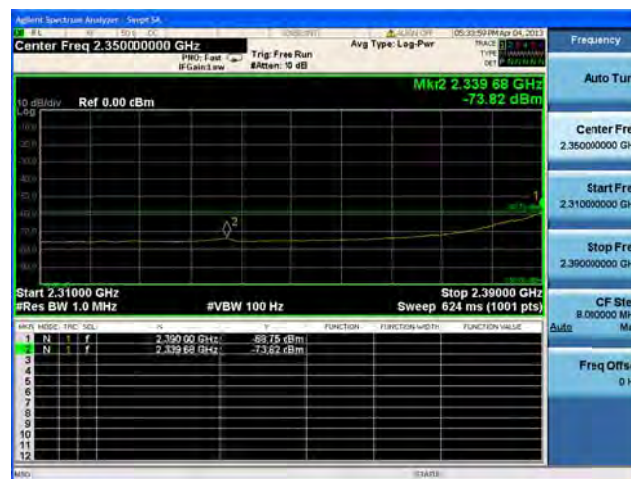
**Conducted Bandedge Average, 2412 MHz, Non HT-20, 6 to 54 Mbps****Antenna A****Antenna B**

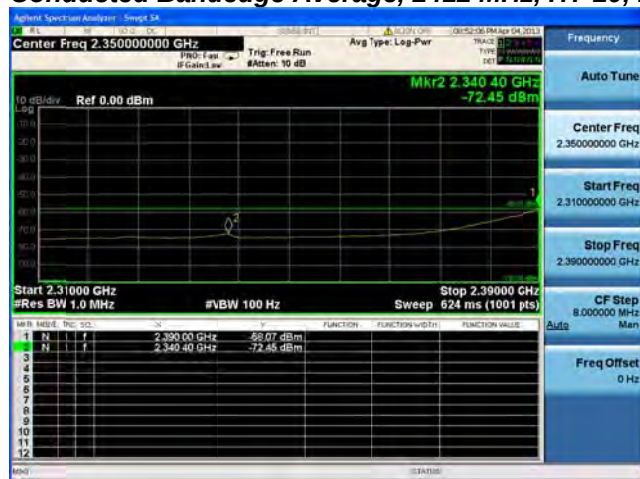
**Conducted Bandedge Average, 2412 MHz, Non HT-20, 6 to 54 Mbps****Antenna A****Antenna B****Antenna C**

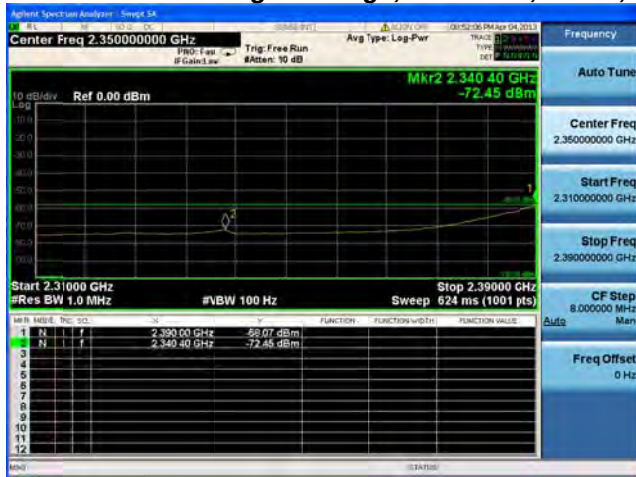
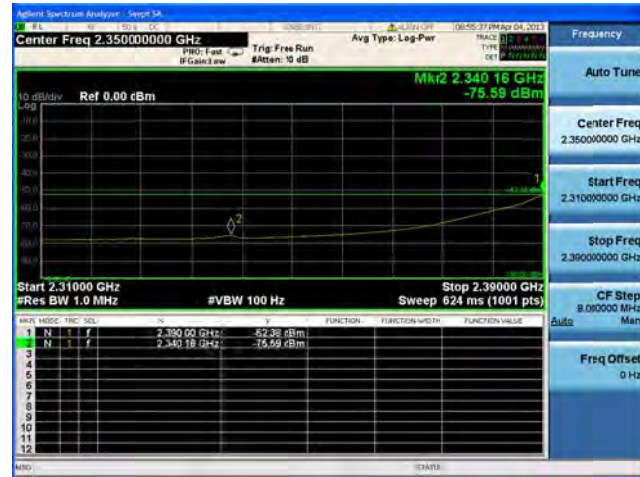
Conducted Bandedge Average, 2412 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

**Conducted Bandedge Average, 2412 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B**

**Conducted Bandedge Average, 2412 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B****Antenna C**

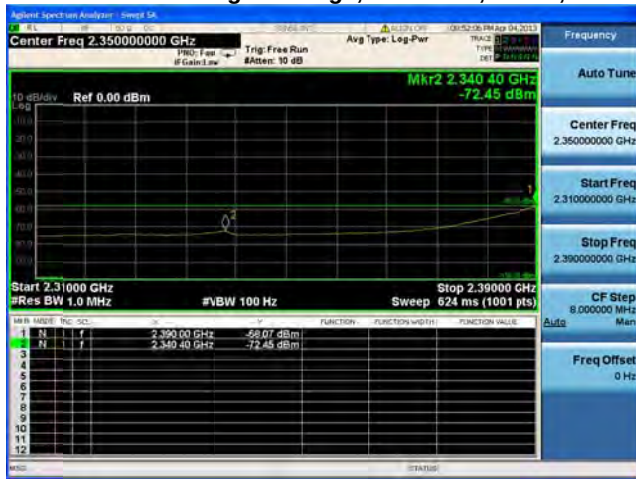
Conducted Bandedge Average, 2412 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Average, 2412 MHz, HT-20, M0 to M7**Antenna A**

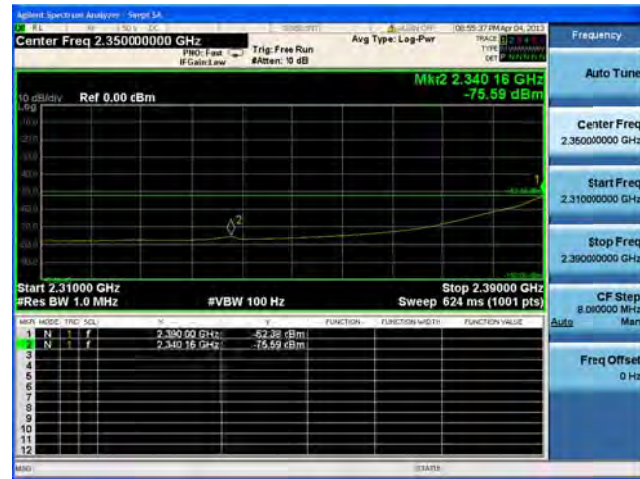
**Conducted Bandedge Average, 2412 MHz, HT-20, M0 to M7****Antenna A****Antenna B**



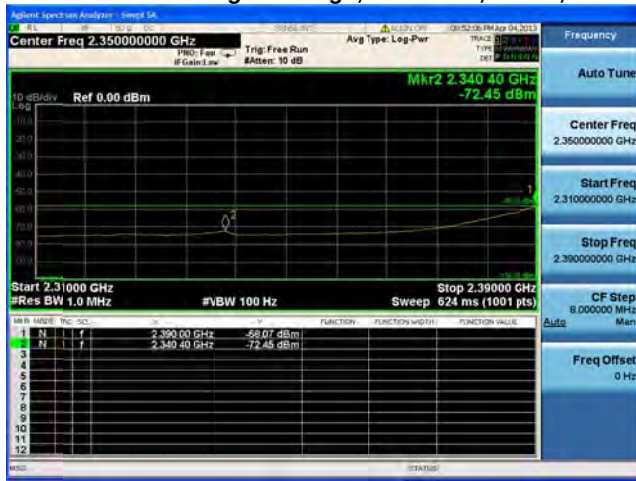
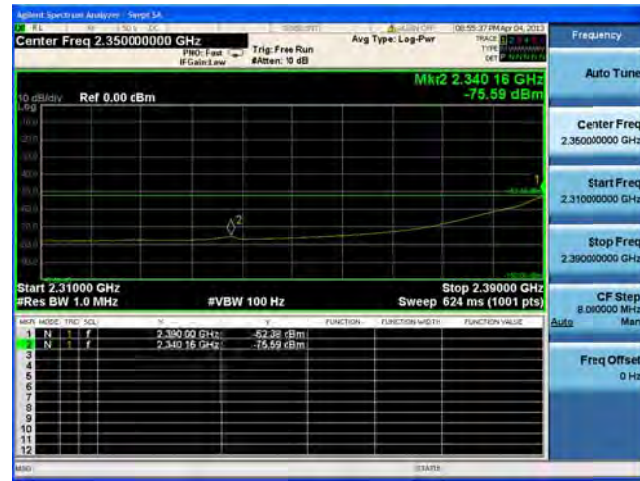
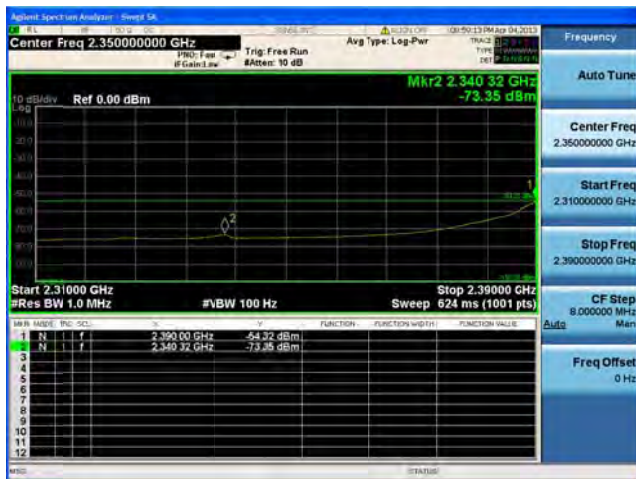
Conducted Bandedge Average, 2412 MHz, HT-20, M8 to M15

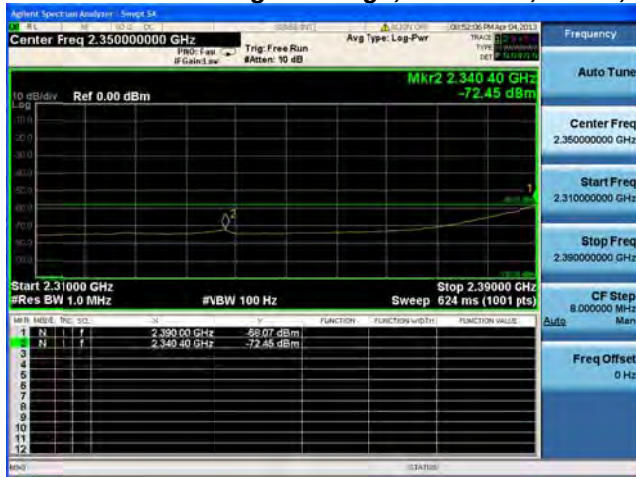
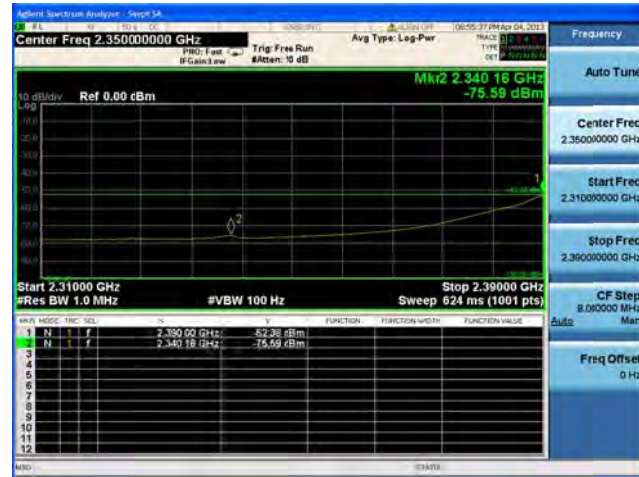
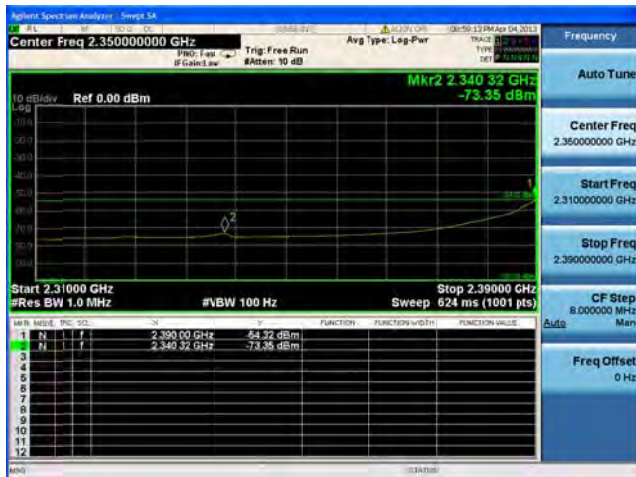


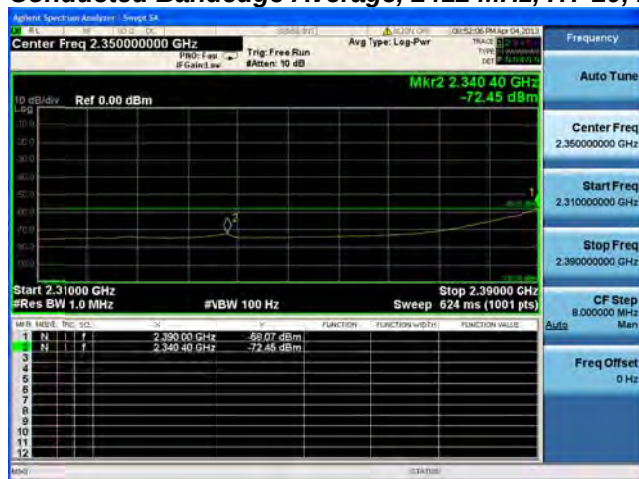
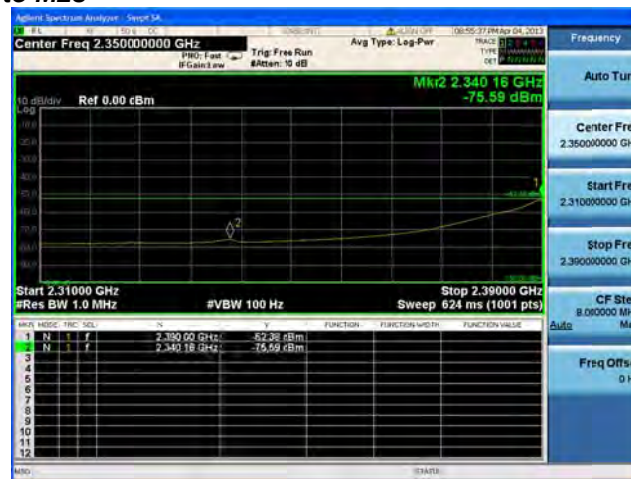
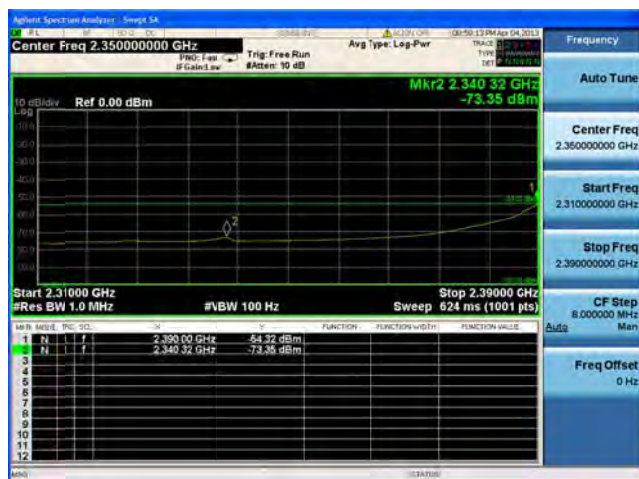
Antenna A

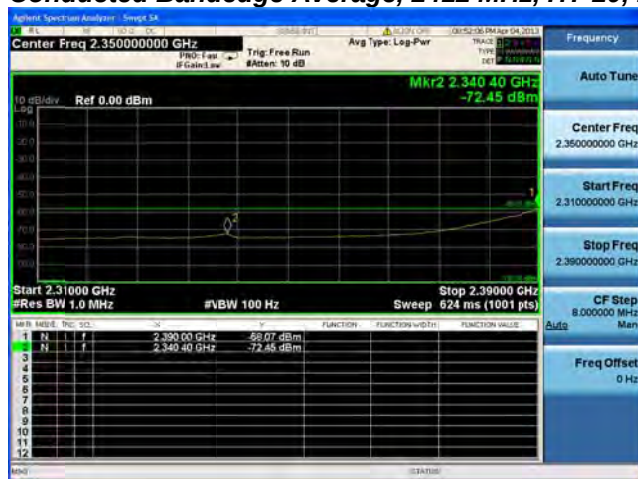
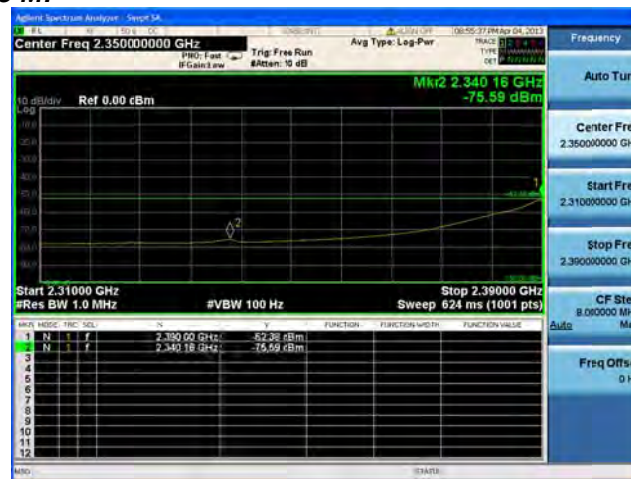
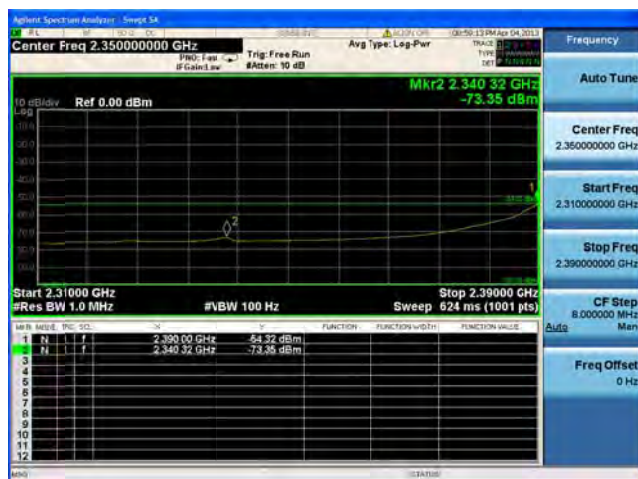
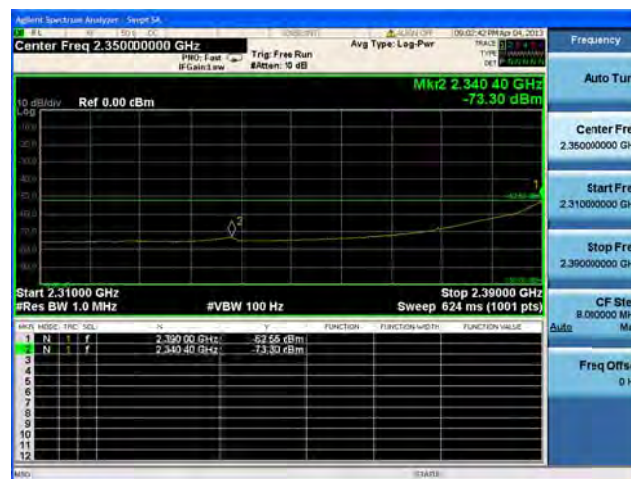


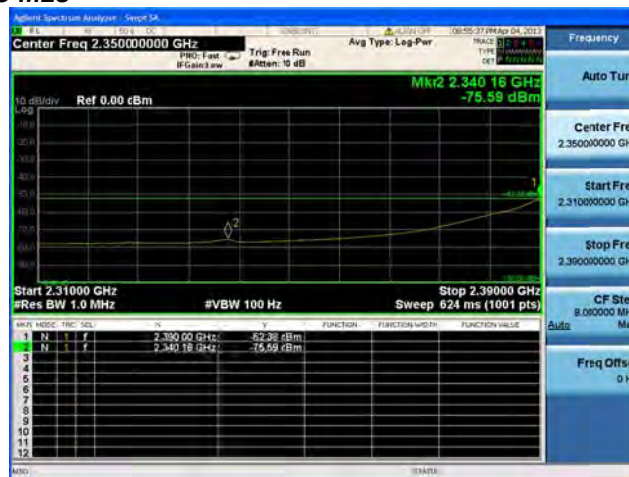
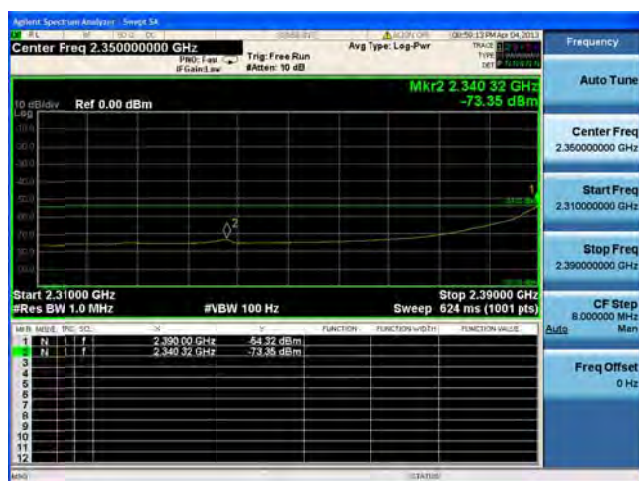
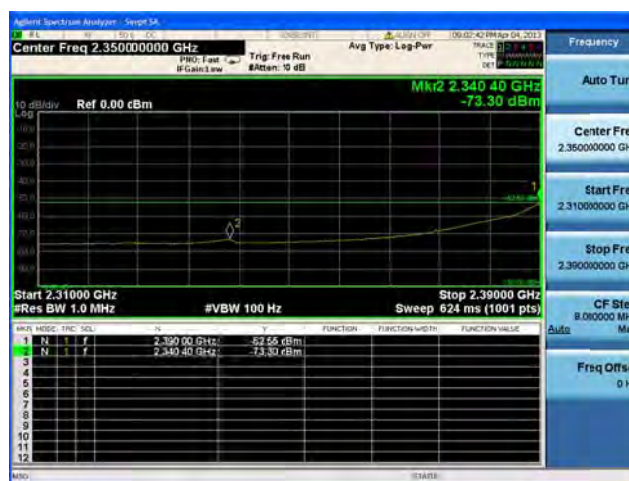
Antenna B

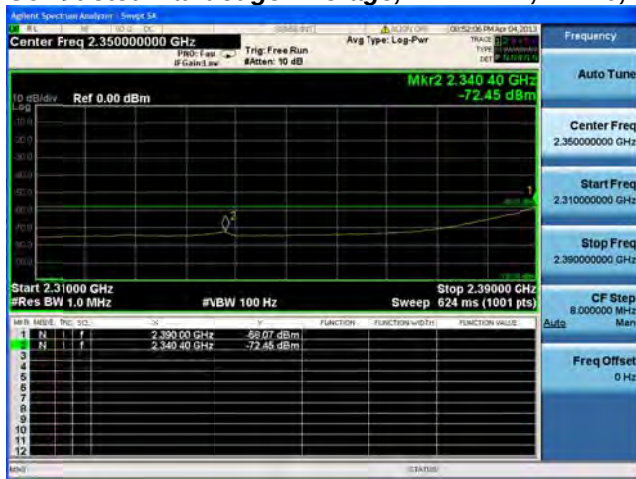
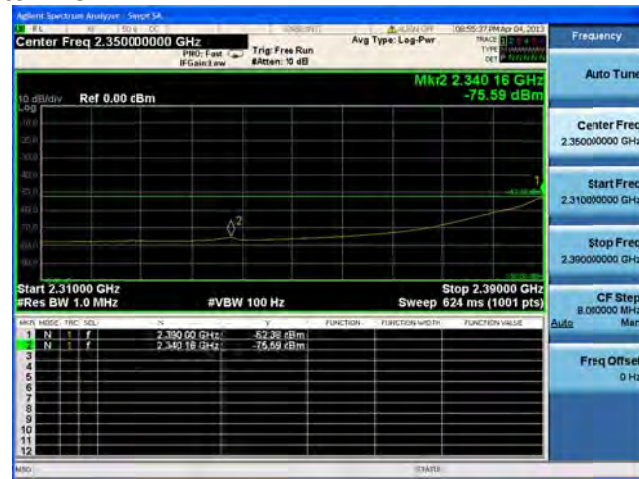
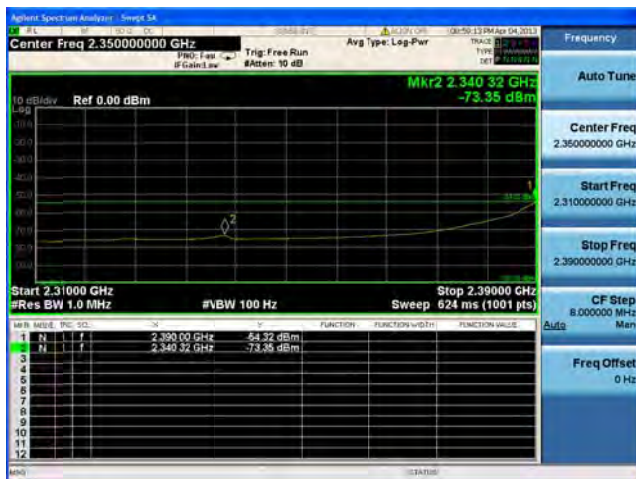
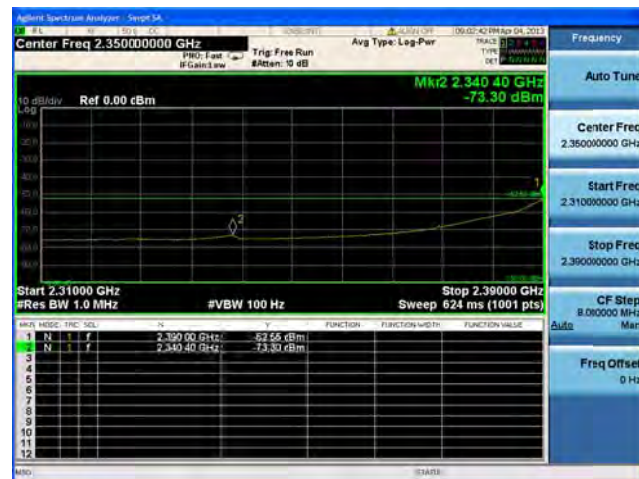
**Conducted Bandedge Average, 2412 MHz, HT-20, M0 to M7****Antenna A****Antenna B****Antenna C**

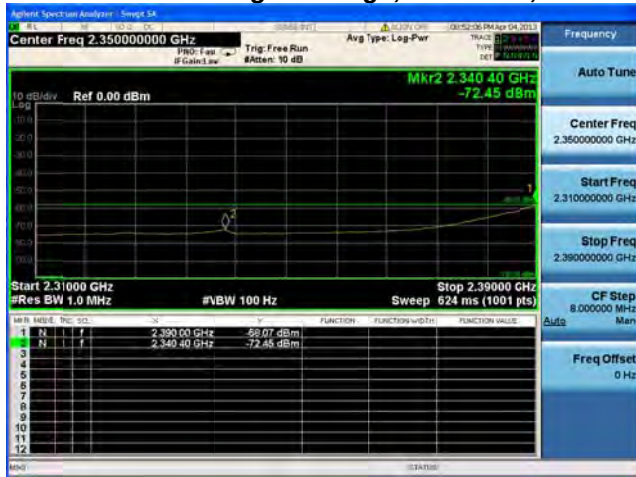
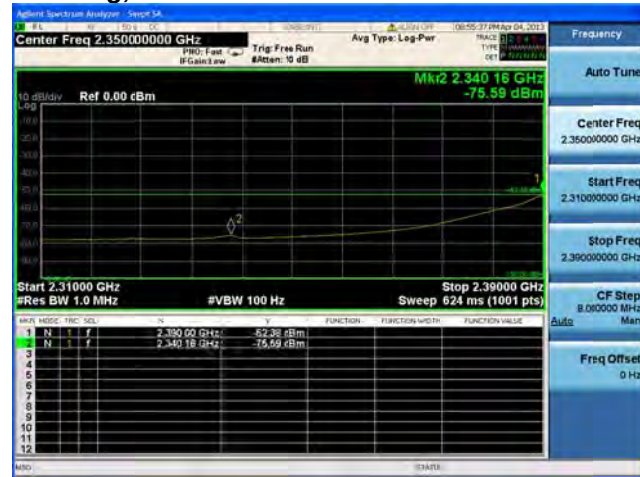
Conducted Bandedge Average, 2412 MHz, HT-20, M8 to M15**Antenna A****Antenna B****Antenna C**

Conducted Bandedge Average, 2412 MHz, HT-20, M16 to M23**Antenna A****Antenna B****Antenna C**

Conducted Bandedge Average, 2412 MHz, HT-20, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Average, 2412 MHz, HT-20, M8 to M15**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Average, 2412 MHz, HT-20, M16 to M23**Antenna A****Antenna B****Antenna C****Antenna D**

**Conducted Bandedge Average, 2412 MHz, HT-20 Beam Forming, M0 to M7****Antenna A****Antenna B**

Agilent Spectrum Analyzer - Simul 5.0

File Edit View Windows Help

Center Freq 2.350000000 GHz

Span 10 dB

Trace 2: Freq Run

IF Center Freq

Attenu: 10 dB

Avg Type: Log-Par

Trace 2: 2.340 40 GHz

Type: Power

Det: RMS

Auto Tune

Center Freq 2.350000000 GHz

Start Freq 2.310000000 GHz

Stop Freq 2.390000000 GHz

CF Step 8.000000 MHz

Auto Man

Freq Offset 0 Hz

Start 2.310000 GHz

Stop 2.390000 GHz

RBW 1.0 MHz

VBW 100 Hz

Sweep 624 ms (1001 pts)

Mkr2 2.340 40 GHz -72.45 dBm

Marker	Freq (GHz)	Power (dBm)
1	2.390000	-58.07
2	2.34040	-72.45

Agilent Spectrum Analyzer - Center Freq

Center Freq 2.350000000 GHz

Auto Tune

Frequency

Center Freq 2.350000000 GHz

Start Freq 2.310000000 GHz

Stop Freq 2.390000000 GHz

CF Step 8.000000 MHz

Auto Man

Freq Offset 0 Hz

Start 2.310000 GHz

Stop 2.390000 GHz

#Res BW 1.0 MHz

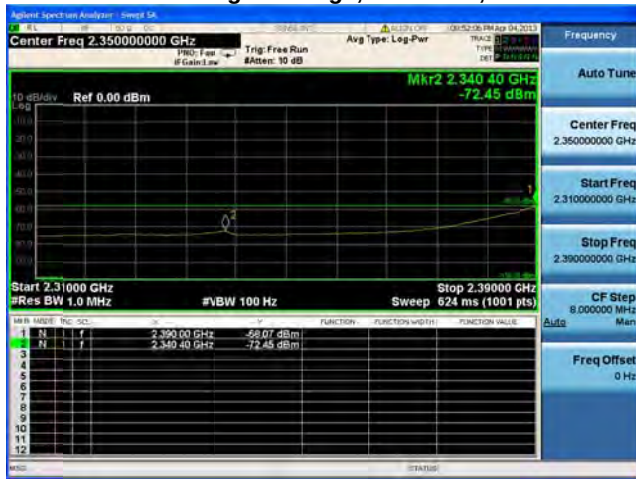
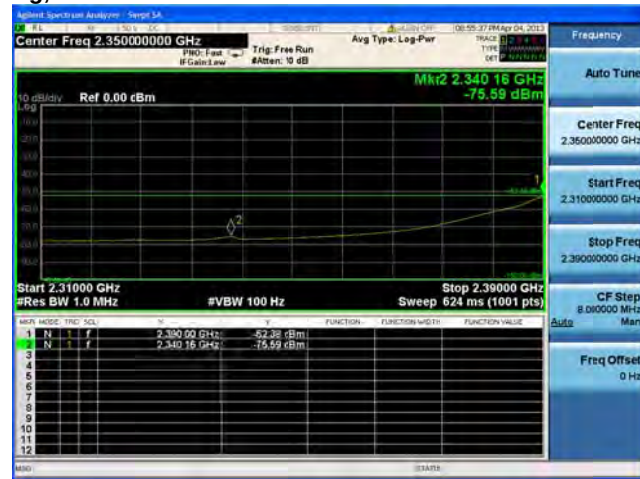
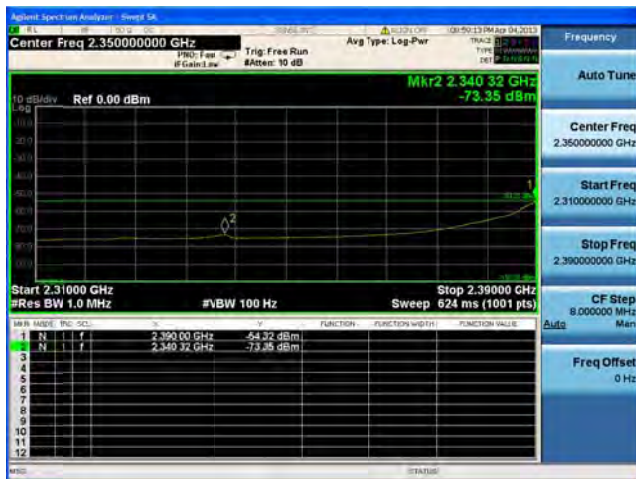
#VBW 100 Hz

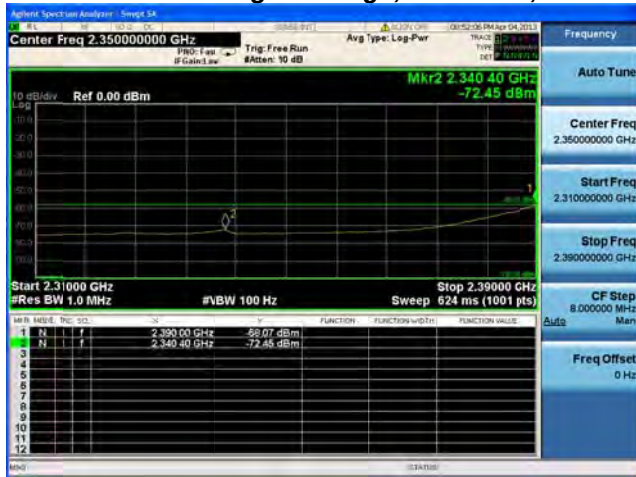
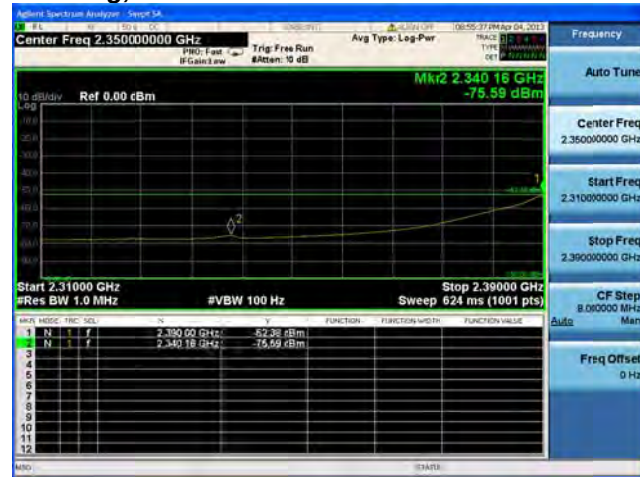
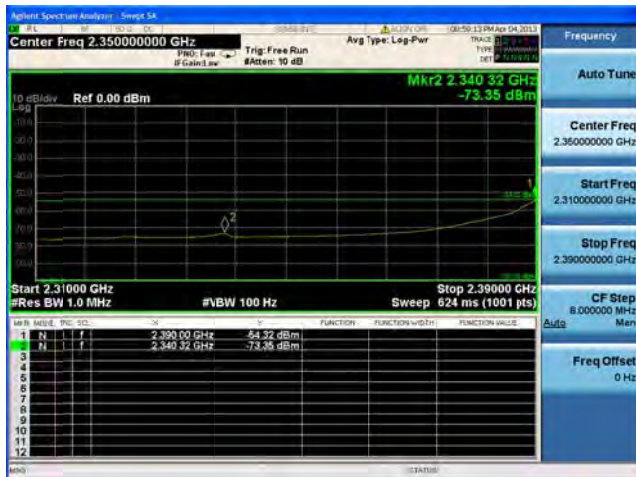
Sweep 624 ms (1001 pts)

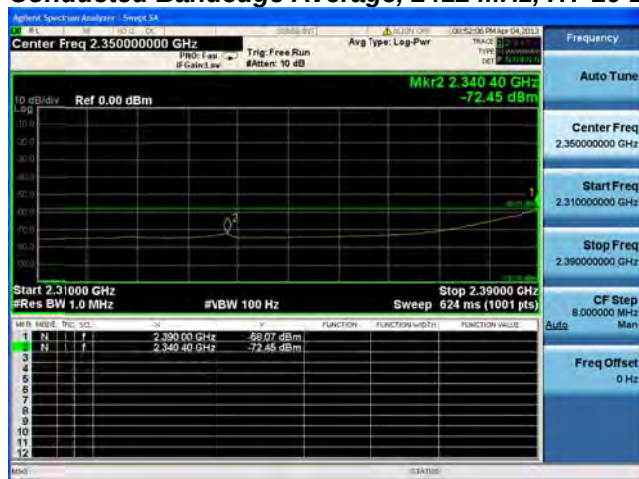
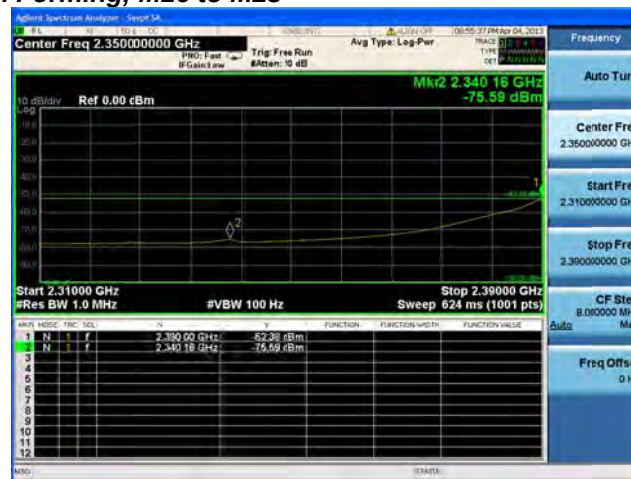
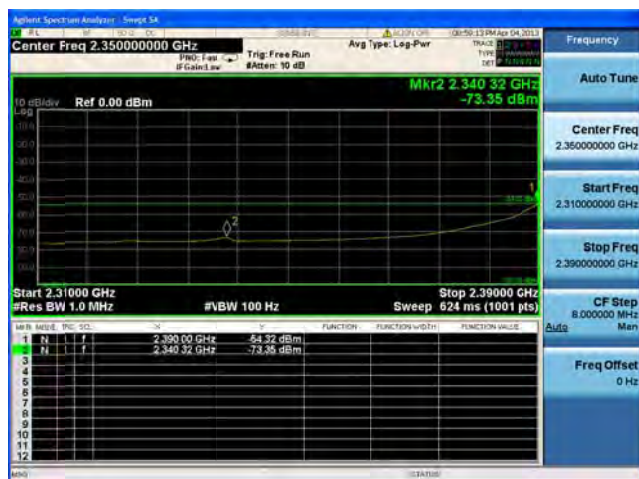
Mkr2 2.340 16 GHz -75.59 dBm

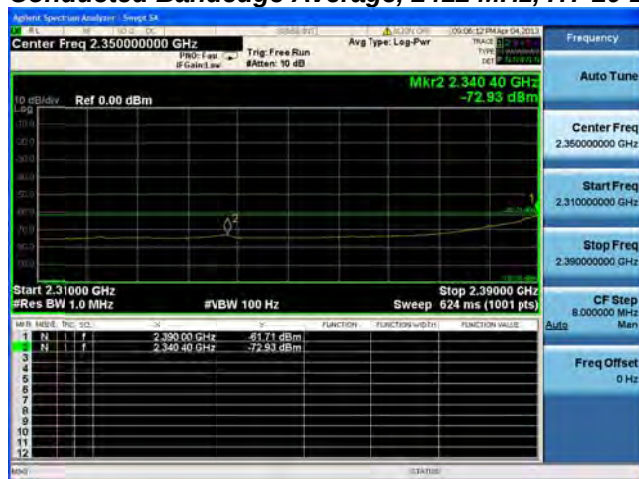
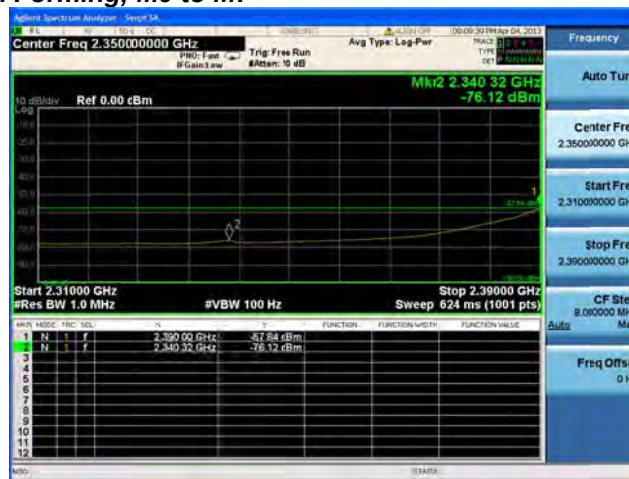
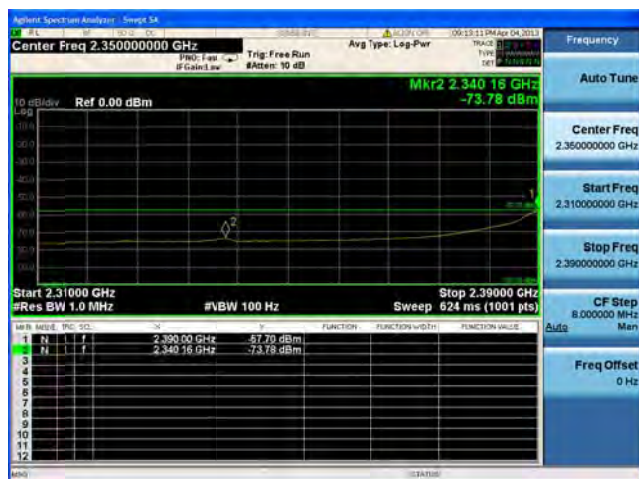
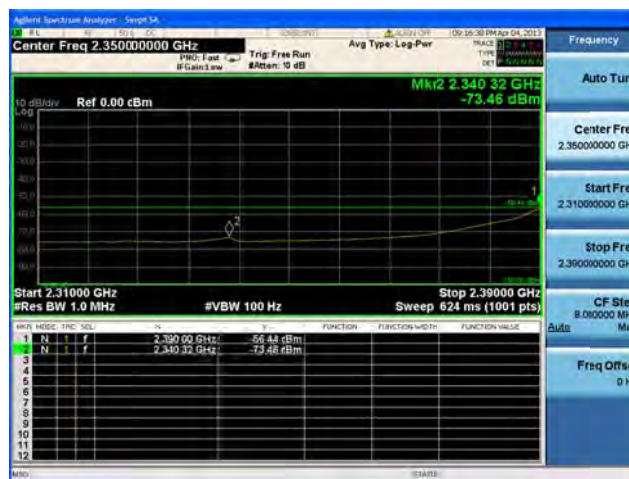
MARK	MODE	FREQ	SQL	dB	FUNCTION	FUNCTION VALUE	FUNCTION VALUE
1	N	2.340 00 GHz	-72.38 dBm				
2	N	2.340 16 GHz	-75.59 dBm				
3							
4							
5							
6							
7							
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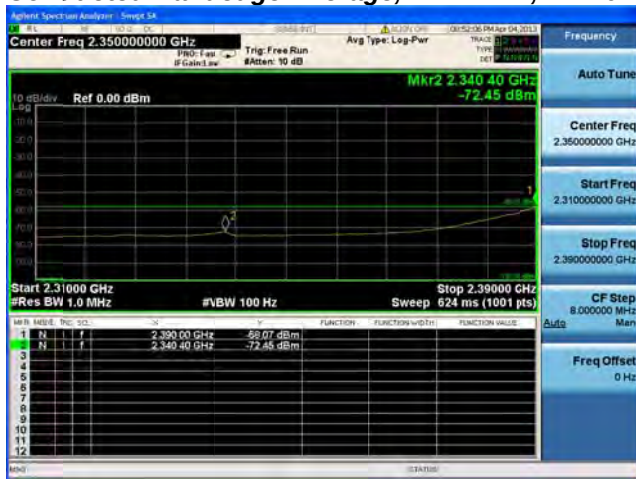
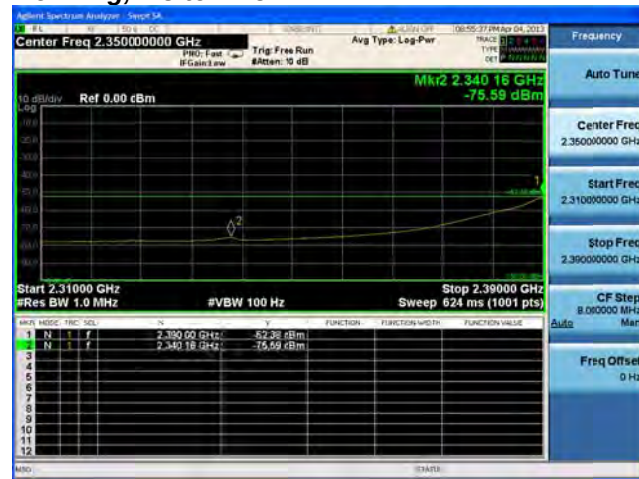
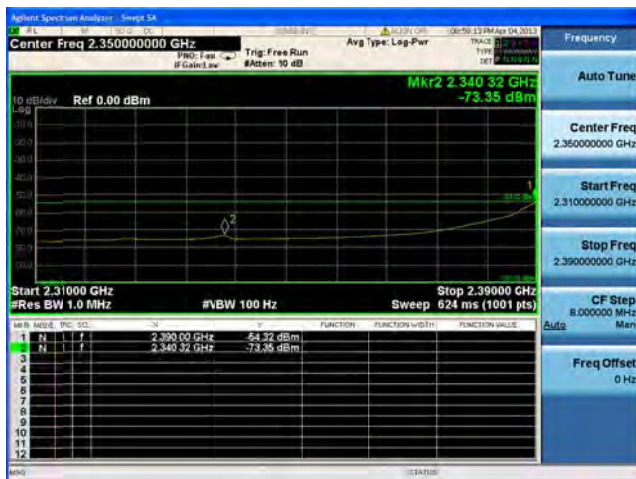
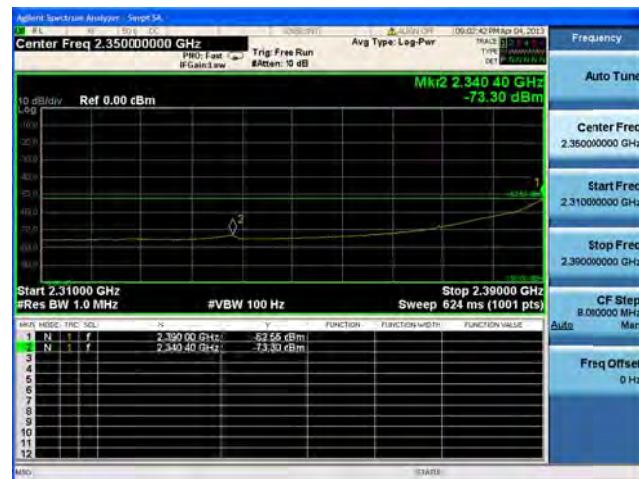
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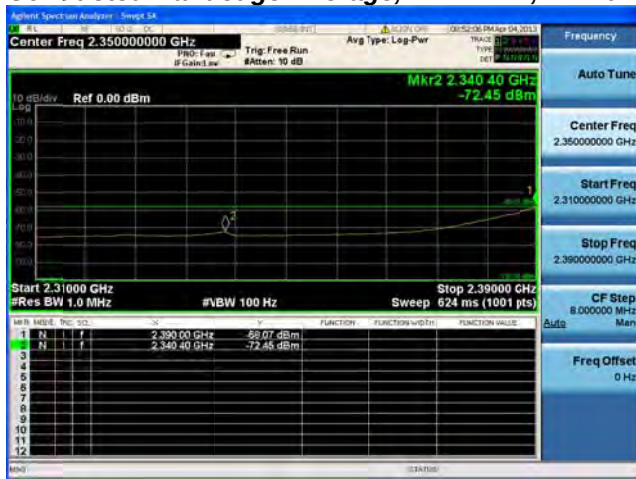
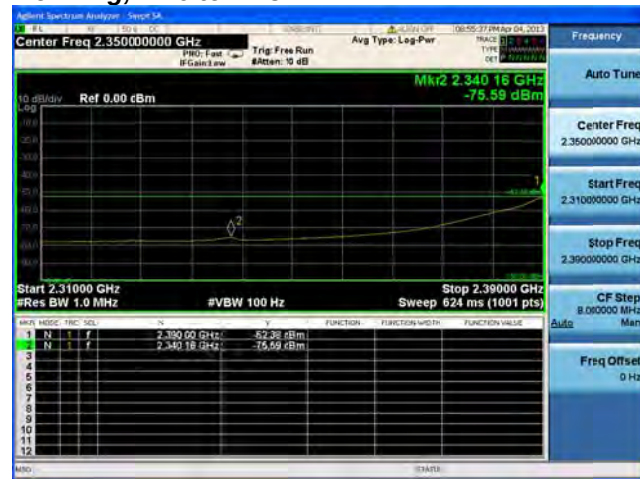
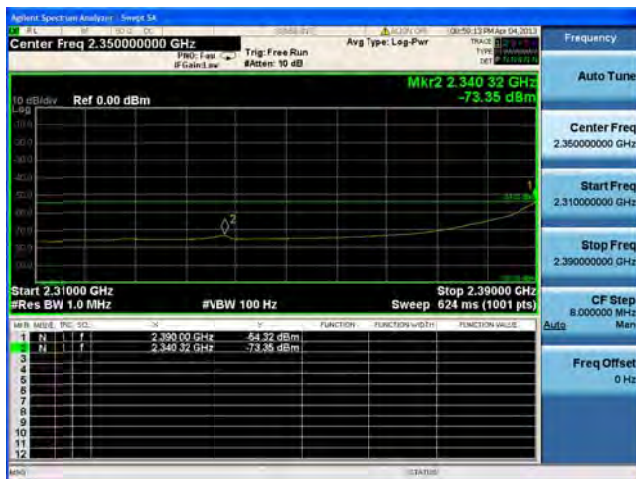
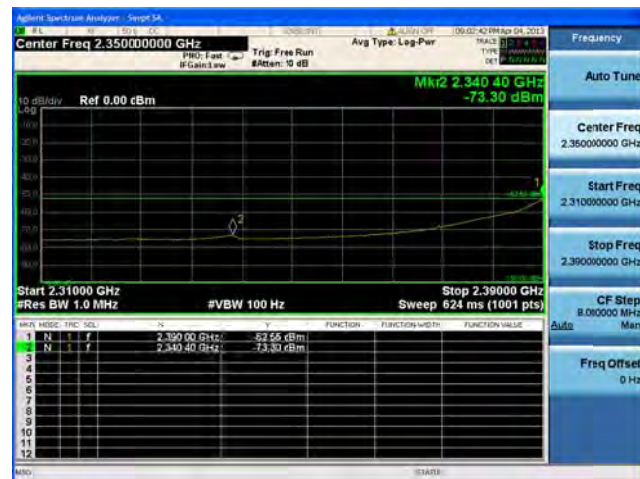
**Conducted Bandedge Average, 2412 MHz, HT-20 Beam Forming, M0 to M7****Antenna A****Antenna B****Antenna C**

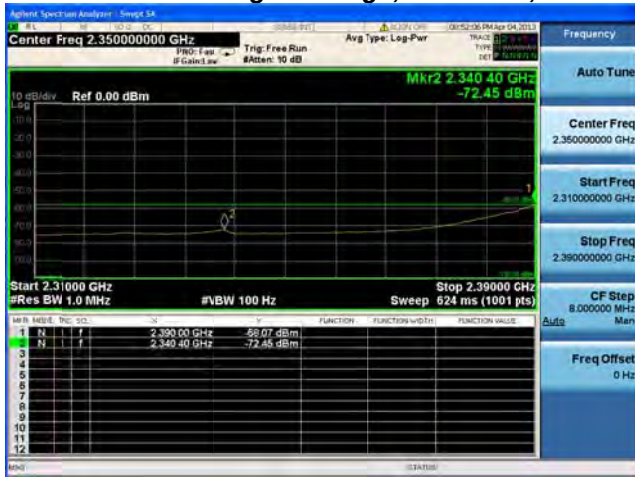
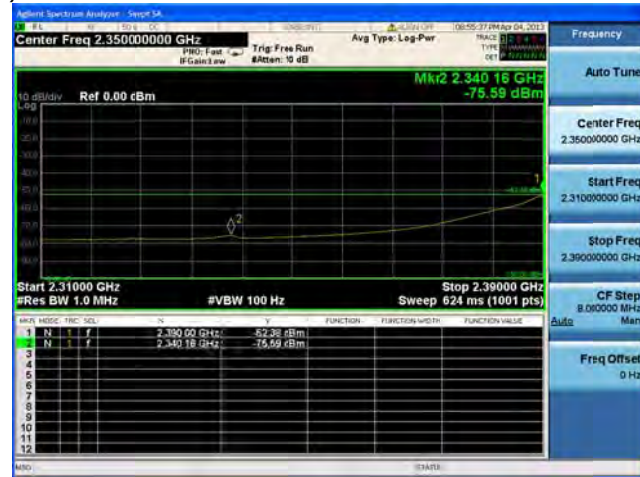
**Conducted Bandedge Average, 2412 MHz, HT-20 Beam Forming, M8 to M15****Antenna A****Antenna B****Antenna C**

Conducted Bandedge Average, 2412 MHz, HT-20 Beam Forming, M16 to M23**Antenna A****Antenna B****Antenna C**

Conducted Bandedge Average, 2412 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**

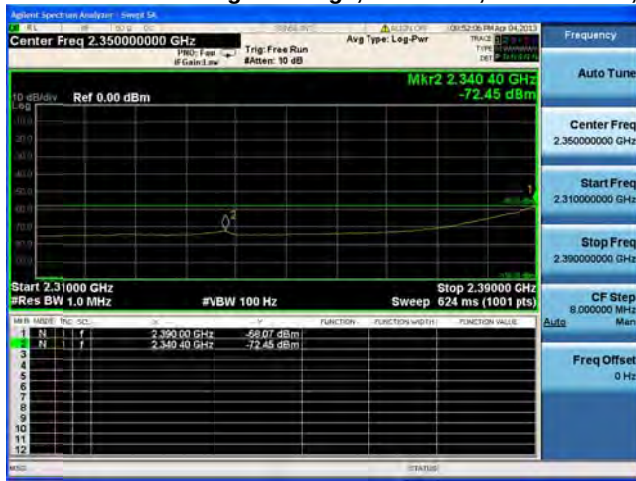
Conducted Bandedge Average, 2412 MHz, HT-20 Beam Forming, M8 to M15**Antenna A****Antenna B****Antenna C****Antenna D**

**Conducted Bandedge Average, 2412 MHz, HT-20 Beam Forming, M16 to M23****Antenna A****Antenna B****Antenna C****Antenna D**

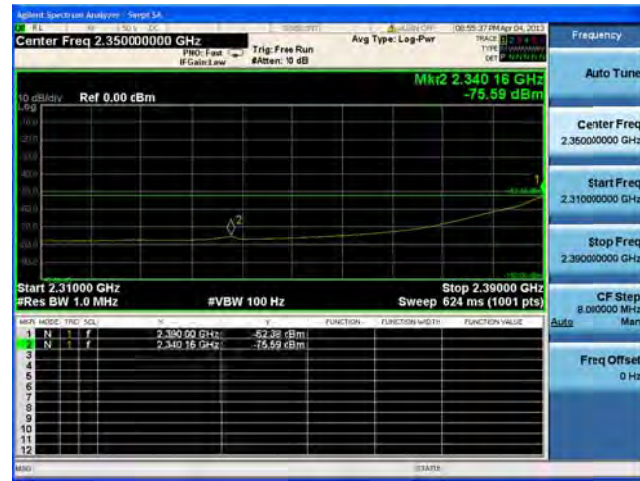
**Conducted Bandedge Average, 2412 MHz, HT-20 STBC, M0 to M7****Antenna A****Antenna B**



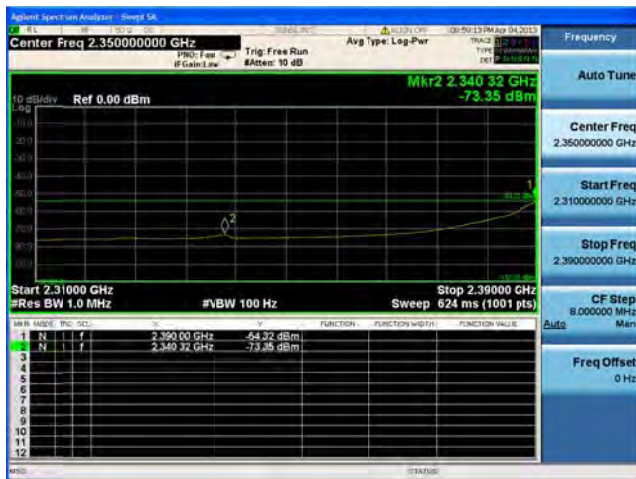
Conducted Bandedge Average, 2412 MHz, HT-20 STBC, M0 to M7



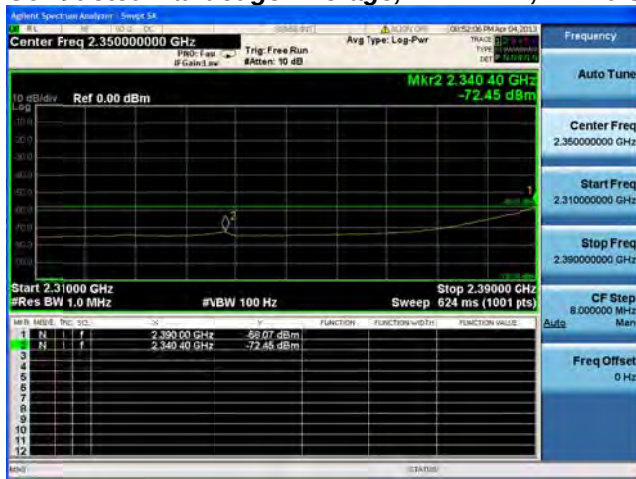
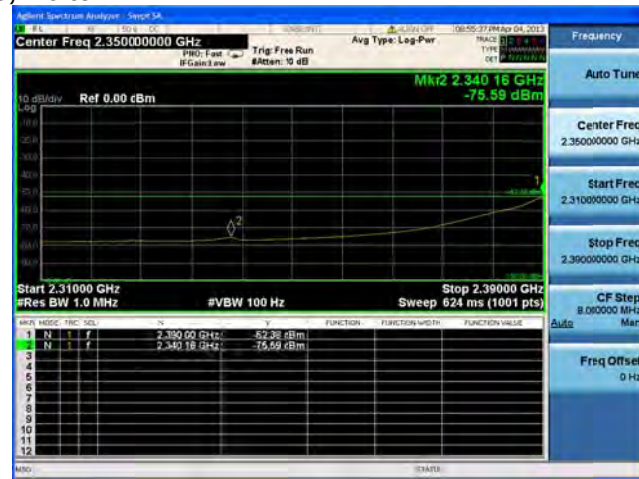
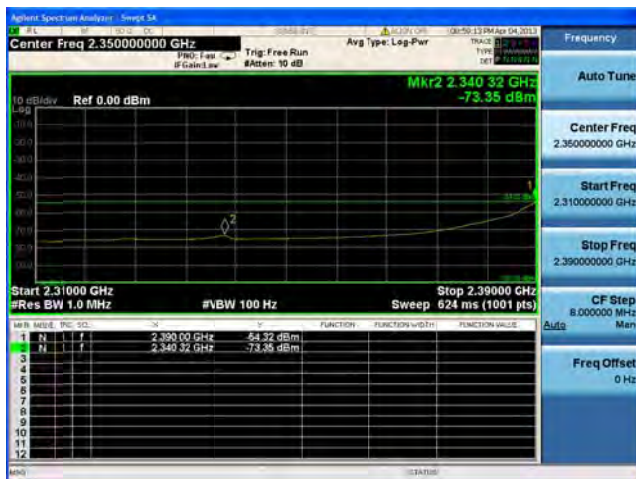
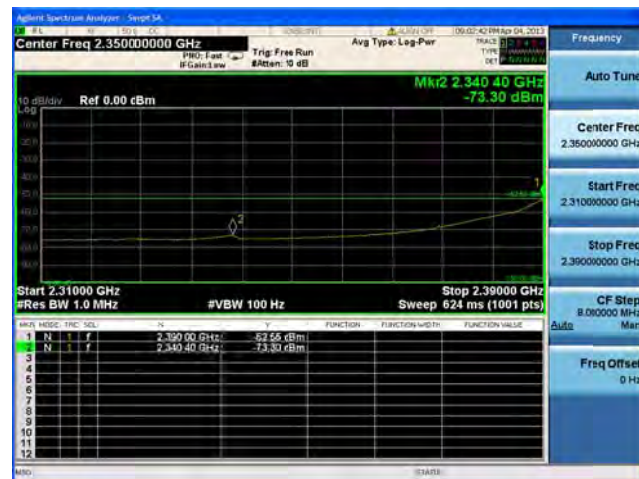
Antenna A

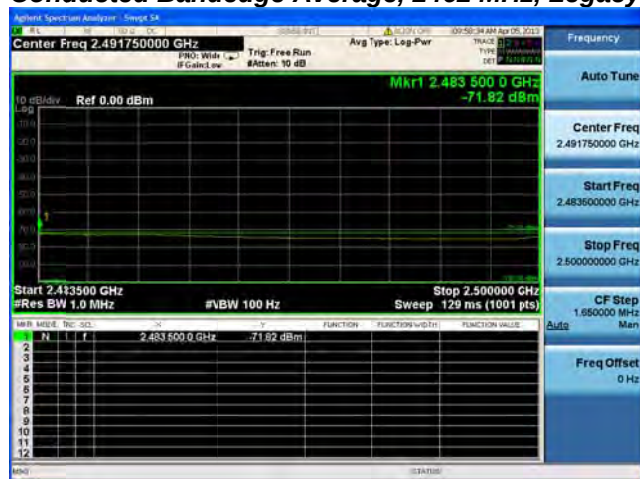


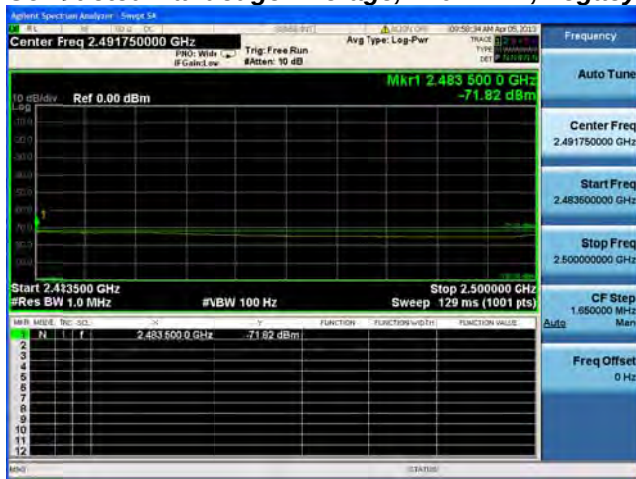
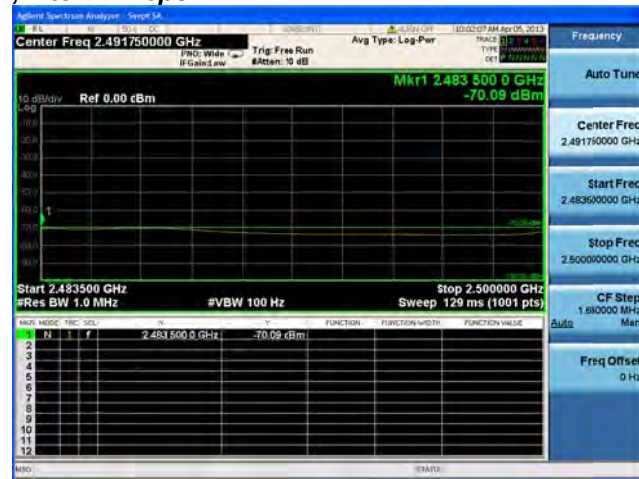
Antenna B

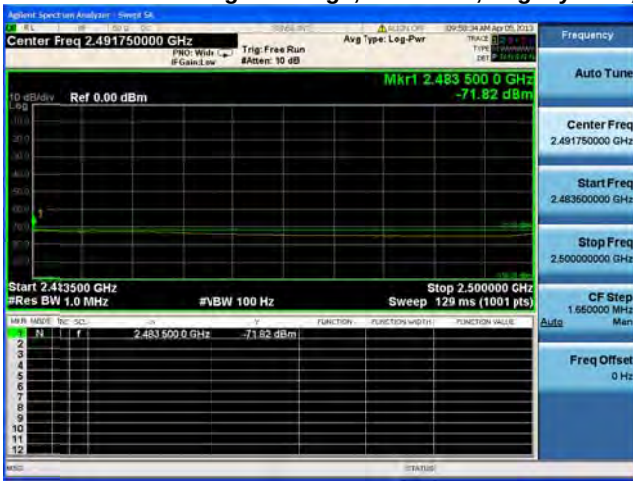
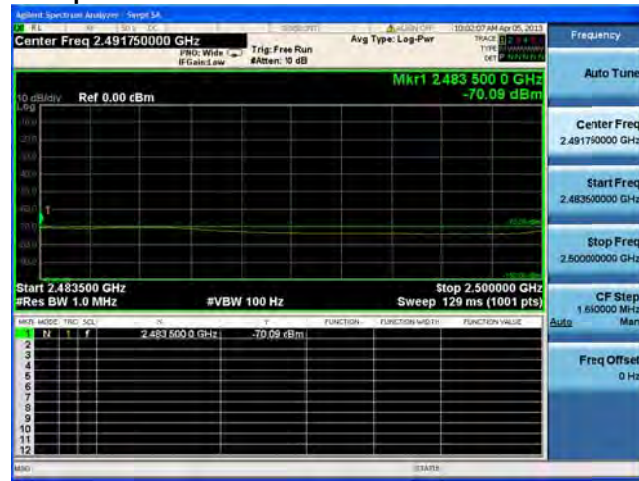
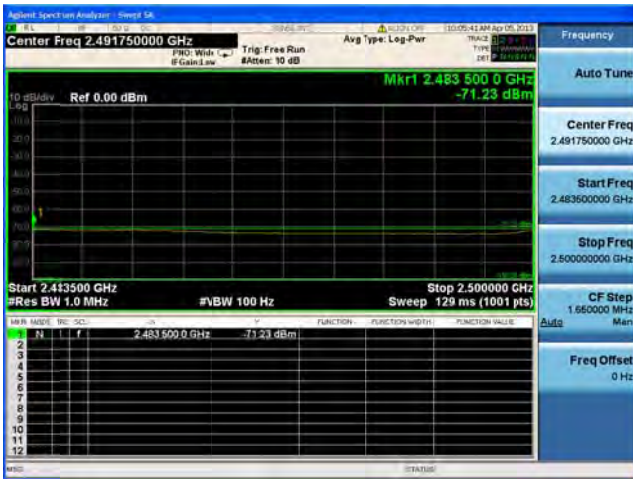


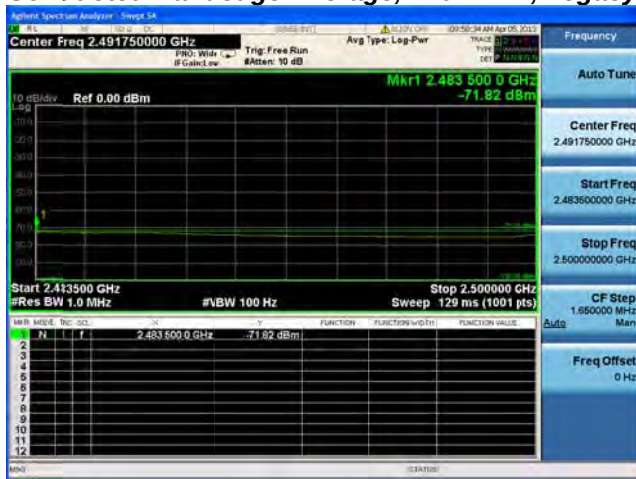
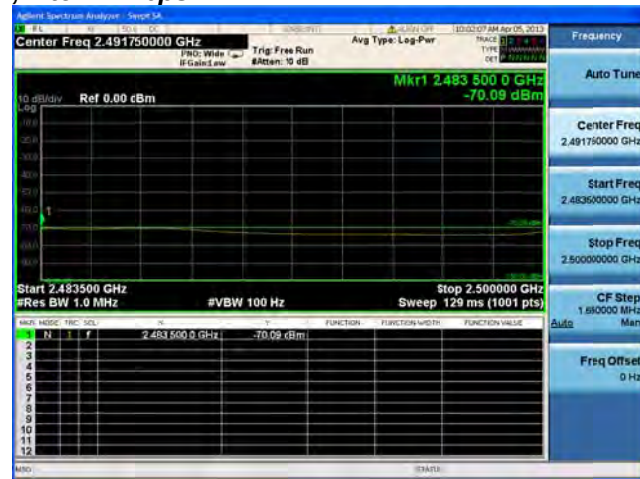
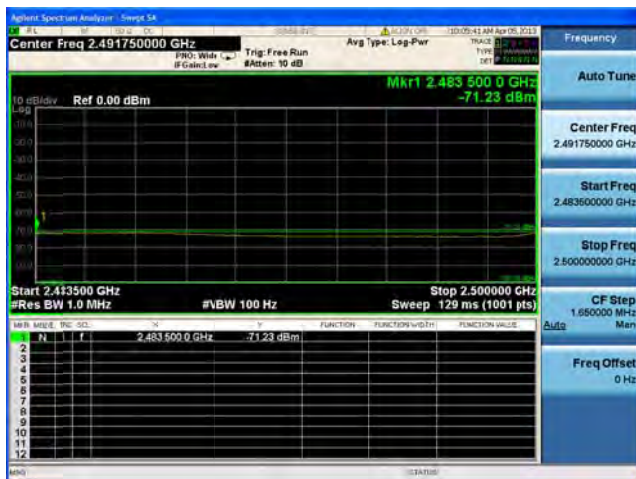
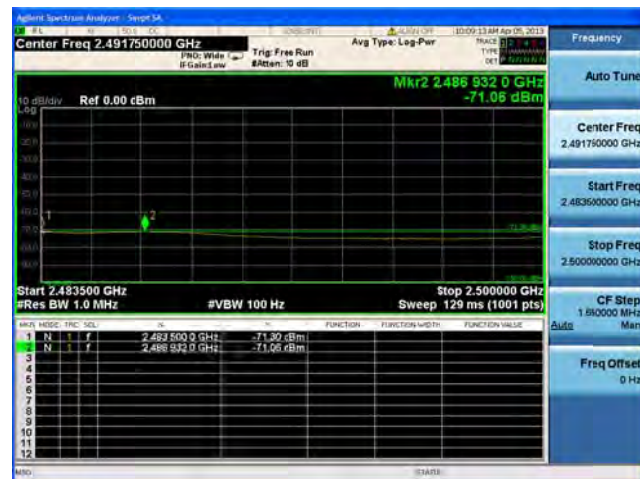
Antenna C

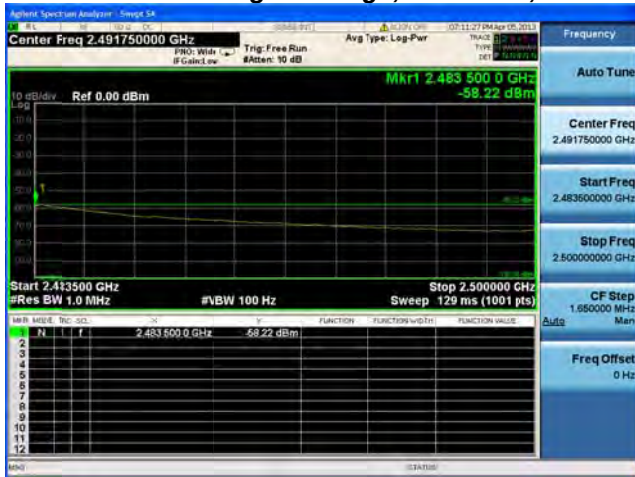
**Conducted Bandedge Average, 2412 MHz, HT-20 STBC, M0 to M7****Antenna A****Antenna B****Antenna C****Antenna D**

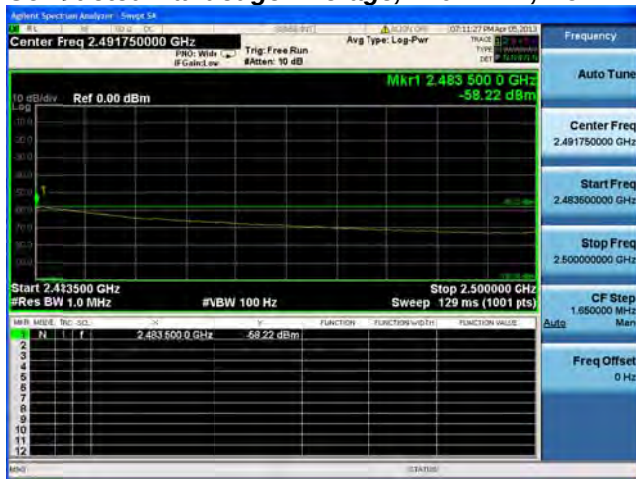
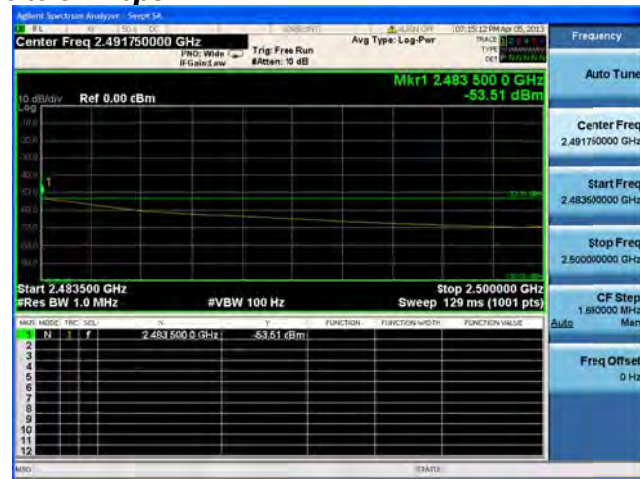
Conducted Bandedge Average, 2462 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A**

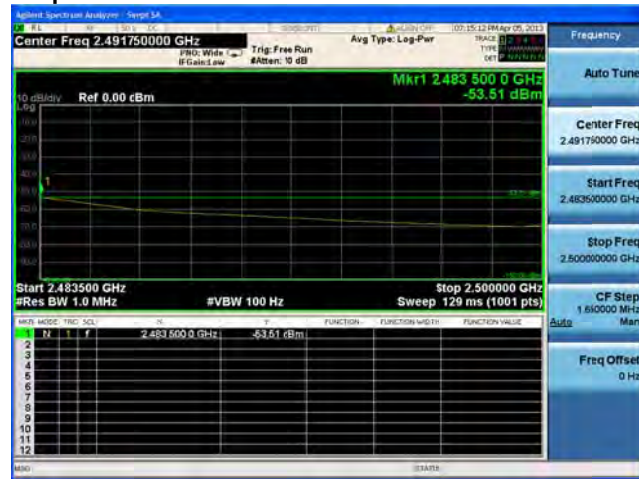
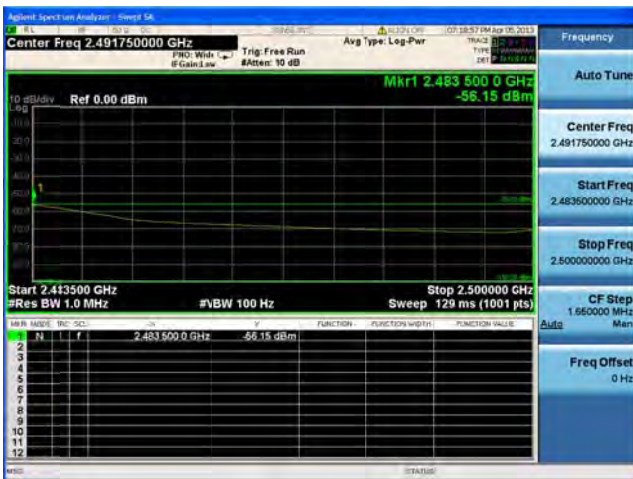
**Conducted Bandedge Average, 2462 MHz, Legacy CCK, 1 to 11 Mbps****Antenna A****Antenna B**

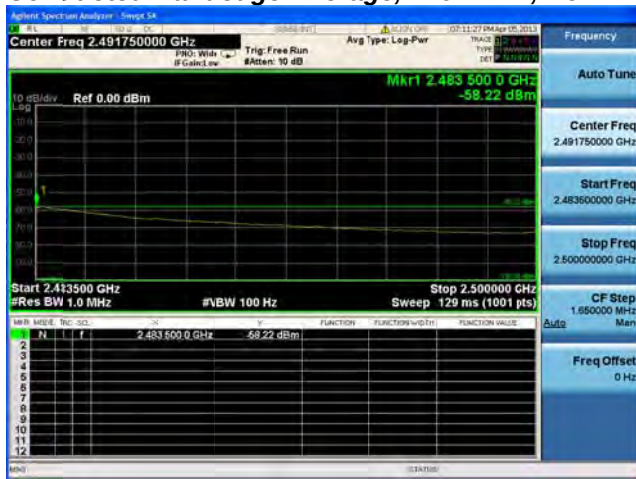
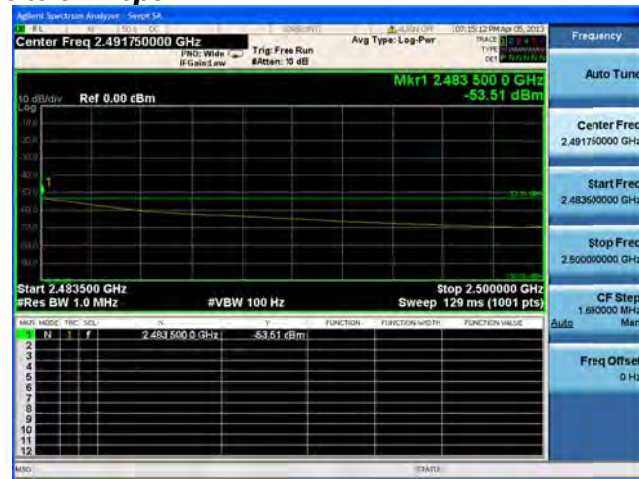
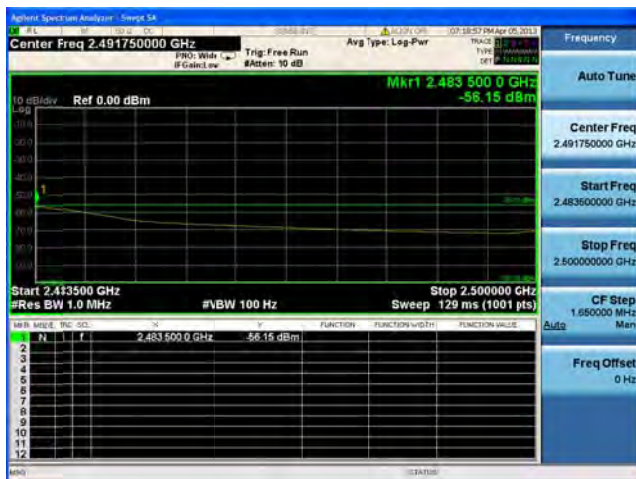
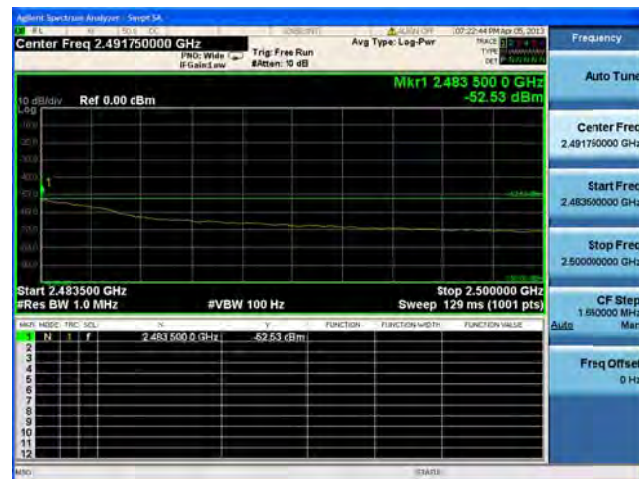
**Conducted Bandedge Average, 2462 MHz, Legacy CCK, 1 to 11 Mbps****Antenna A****Antenna B****Antenna C**

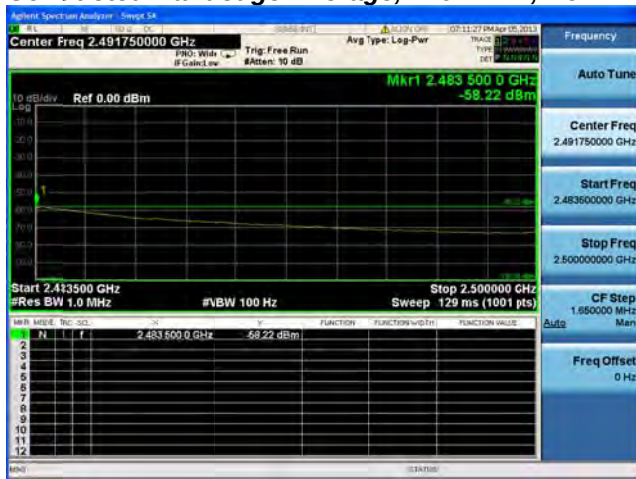
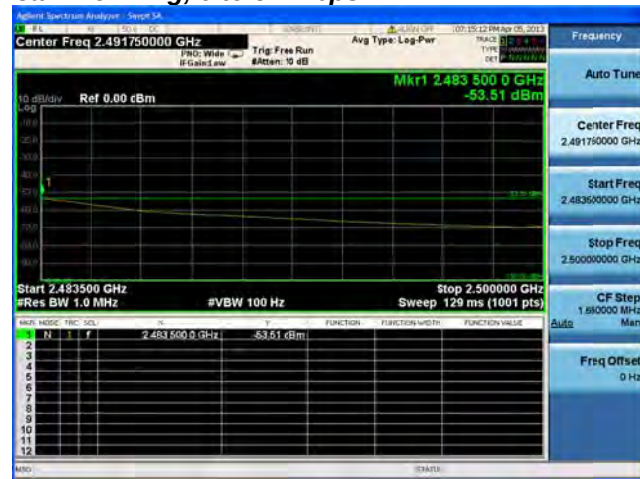
**Conducted Bandedge Average, 2462 MHz, Legacy CCK, 1 to 11 Mbps****Antenna A****Antenna B****Antenna C****Antenna D**

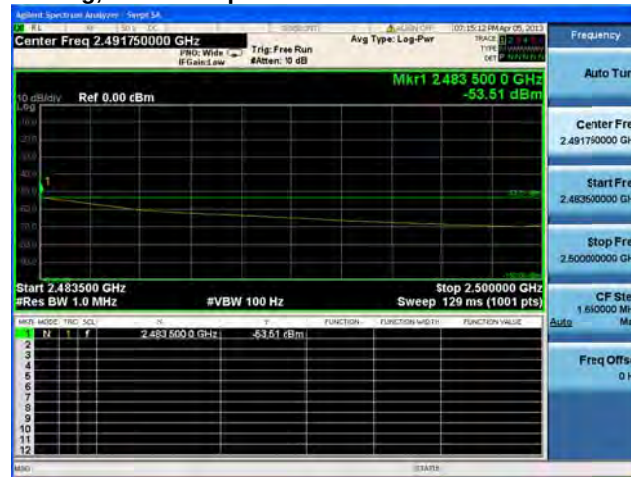
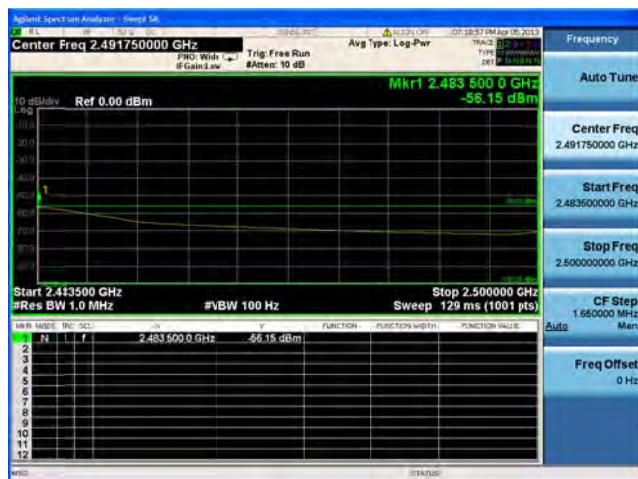
**Conducted Bandedge Average, 2462 MHz, Non HT-20, 6 to 54 Mbps****Antenna A**

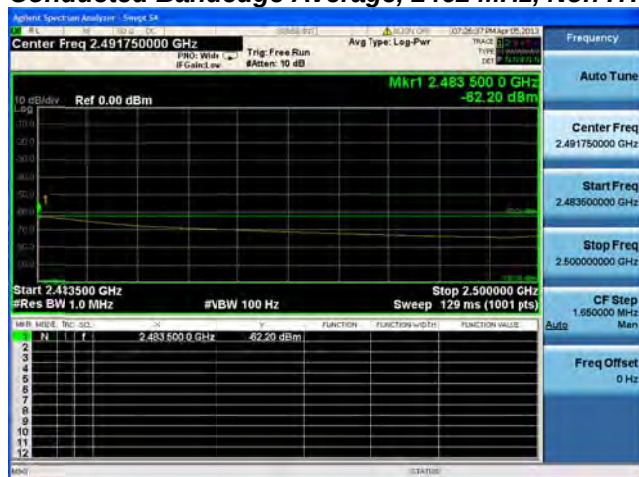
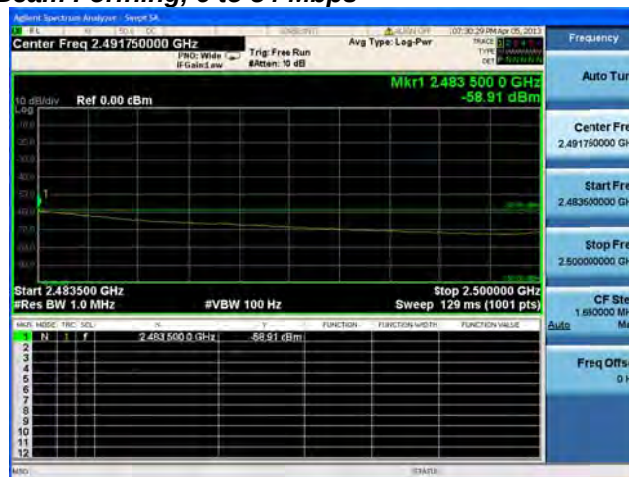
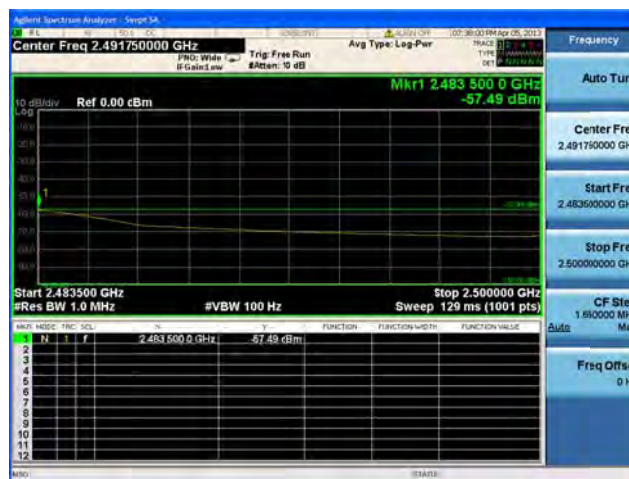
**Conducted Bandedge Average, 2462 MHz, Non HT-20, 6 to 54 Mbps****Antenna A****Antenna B**

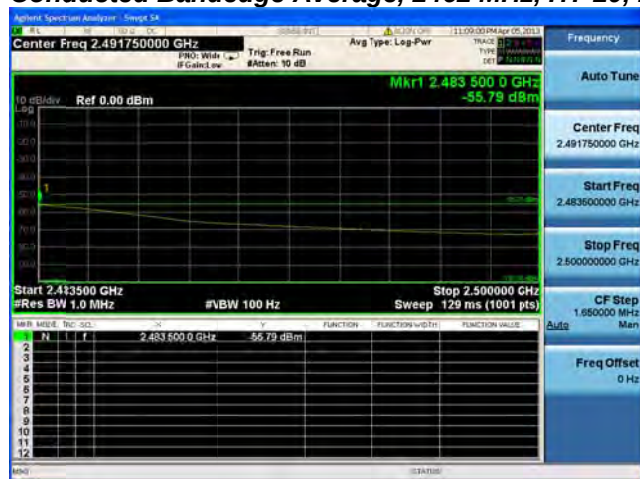
**Conducted Bandedge Average, 2462 MHz, Non HT-20, 6 to 54 Mbps****Antenna A****Antenna B****Antenna C**

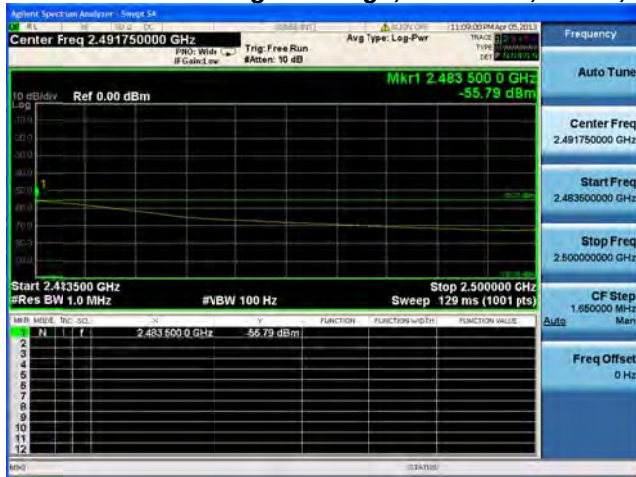
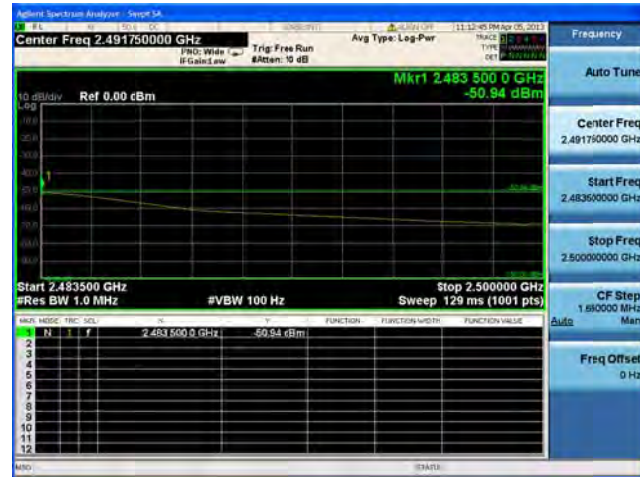
**Conducted Bandedge Average, 2462 MHz, Non HT-20, 6 to 54 Mbps****Antenna A****Antenna B****Antenna C****Antenna D**

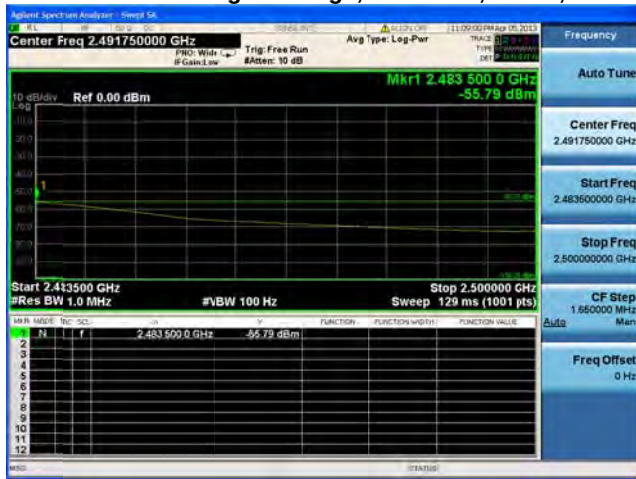
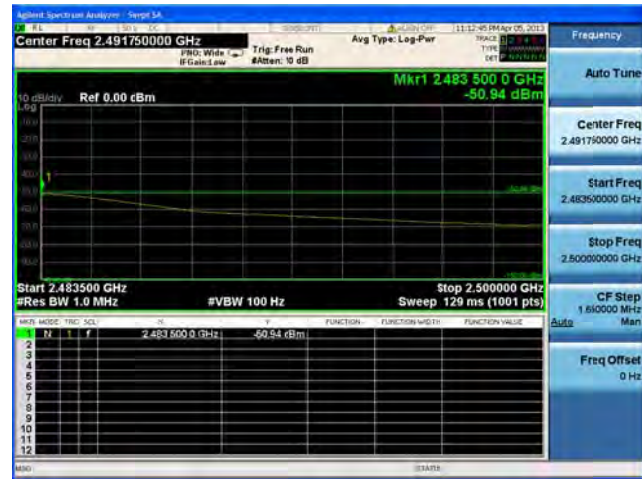
**Conducted Bandedge Average, 2462 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B**

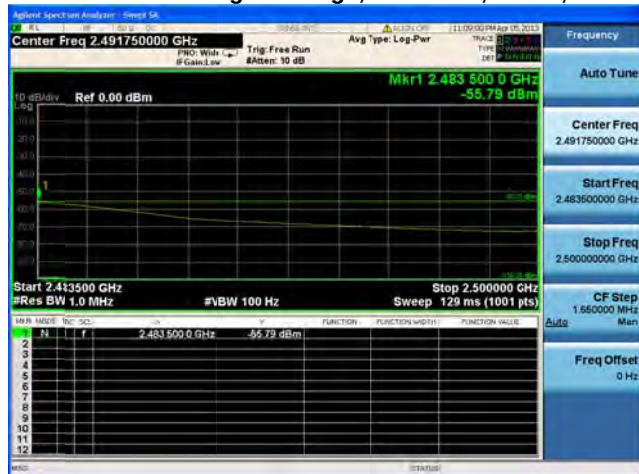
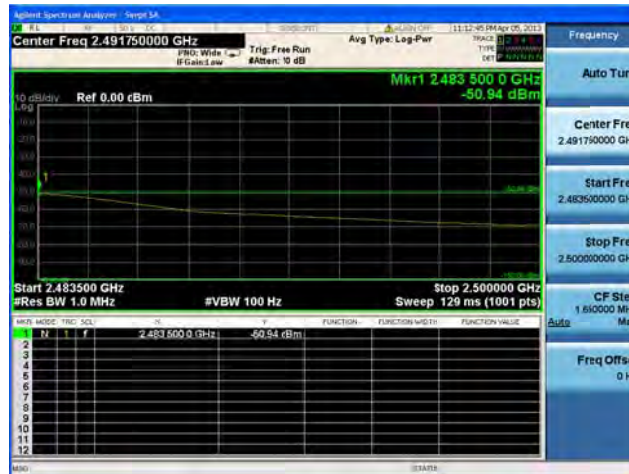
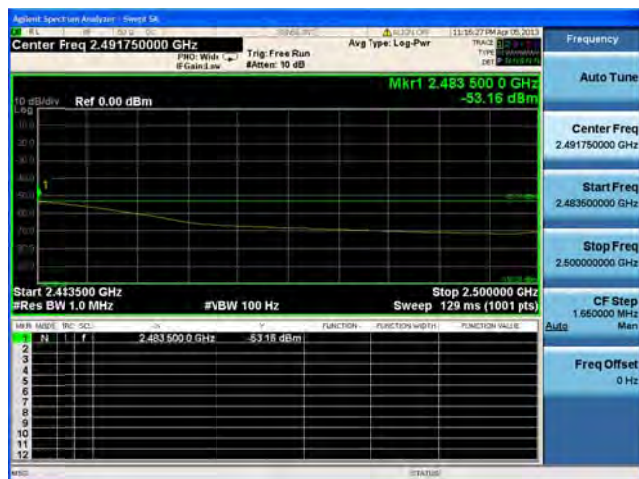
Conducted Bandedge Average, 2462 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C**

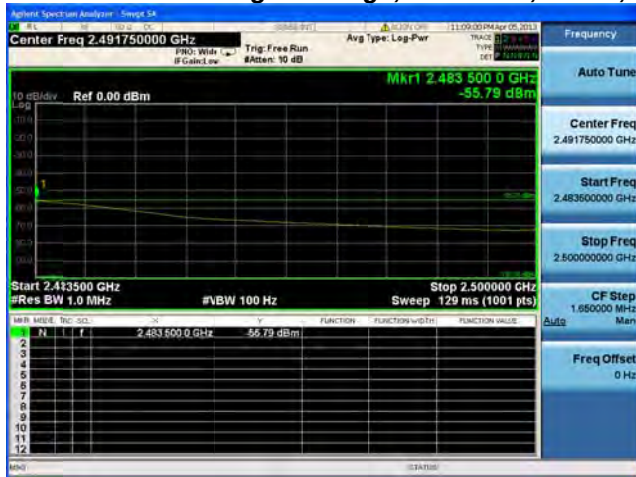
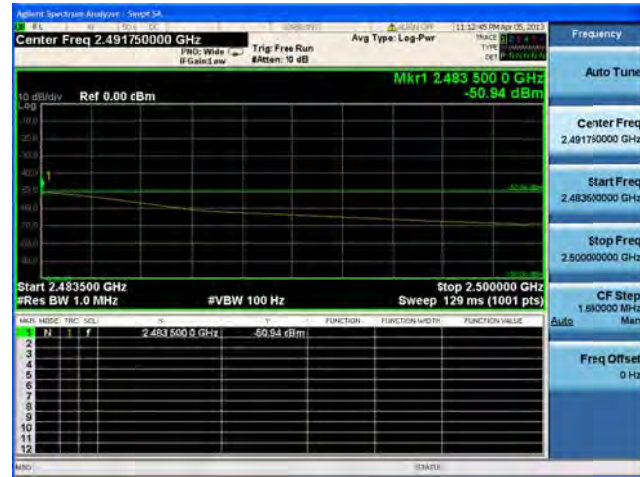
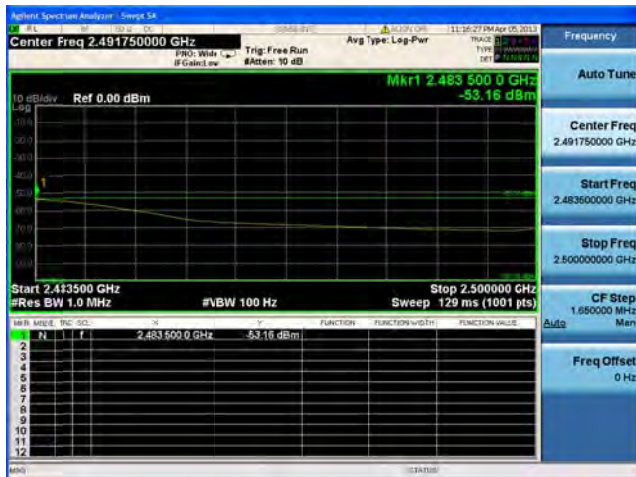
Conducted Bandedge Average, 2462 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

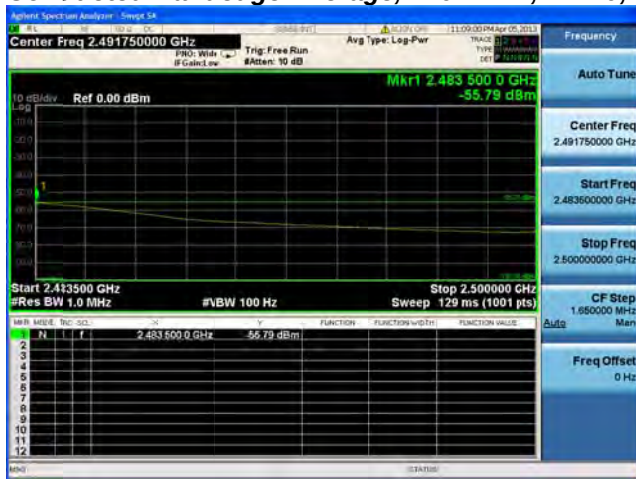
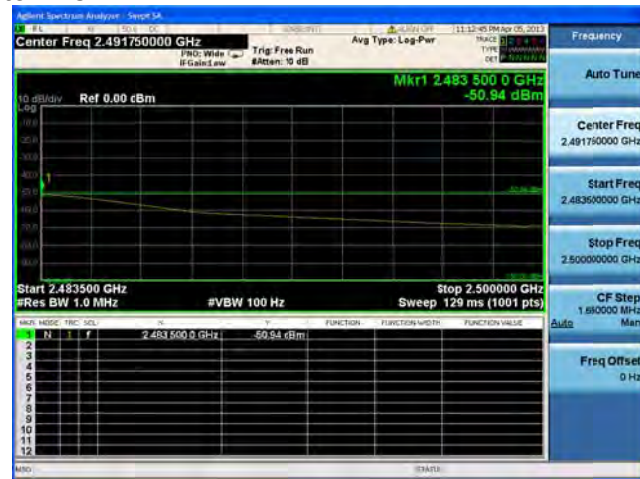
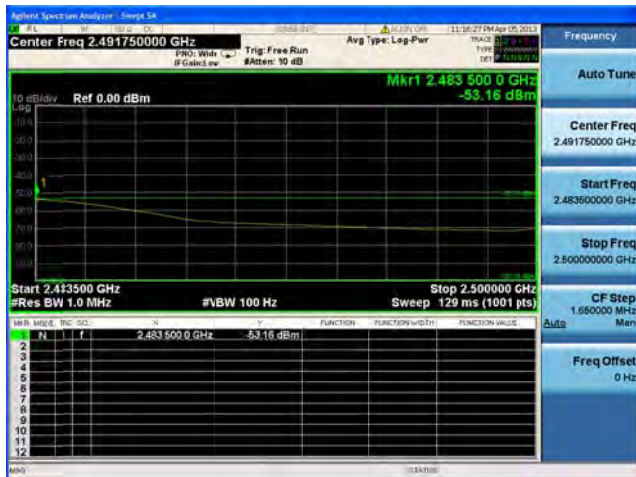
Conducted Bandedge Average, 2462 MHz, HT-20, M0 to M7**Antenna A**

**Conducted Bandedge Average, 2462 MHz, HT-20, M0 to M7****Antenna A****Antenna B**

**Conducted Bandedge Average, 2462 MHz, HT-20, M8 to M15****Antenna A****Antenna B**

Conducted Bandedge Average, 2462 MHz, HT-20, M0 to M7**Antenna A****Antenna B****Antenna C**

**Conducted Bandedge Average, 2462 MHz, HT-20, M8 to M15****Antenna A****Antenna B****Antenna C**

**Conducted Bandedge Average, 2462 MHz, HT-20, M16 to M23****Antenna A****Antenna B****Antenna C**

[illegible]

Figure 1: Spectrum Analyzer screenshot showing a signal at 2.491750000 GHz. The plot displays a single peak at the center frequency, labeled "Mkr1 2.493 500 0 GHz -50.94 dBm". The x-axis represents frequency in GHz, and the y-axis represents power in dBm. The signal is identified as "Center Freq 2.491750000 GHz".

Ref 0.00 dBm

Mkr1 2.483 500 0 GHz -53.16 dBm

Start 2.4135000 GHz #Res BW 1.0 MHz #VBW 100 Hz Stop 2.5000000 GHz Sweep 129 ms (1001 pts)

MkR	MEAS	UNIT	VAL	FUNCTION	FUNCTION=DEFN	FUNCTION=VALUE
1	N	f	2.483 500 0 GHz	-53.16 dBm		
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

Figure 1: Spectrum Analyzer screenshot showing a signal at 2.491750000 GHz. The plot displays a single peak at the center frequency, labeled "Mkr1 2.493 500 0 GHz -50.65 dBm". The x-axis represents frequency in GHz, and the y-axis represents power in dBm. The signal is identified as "PRO: White" and "Trig: Free Run". The average type is "Log-Pwr". The plot shows a reference level of 0.00 dBm and a noise floor of -50.65 dBm. The signal is centered at 2.493500 GHz with a resolution bandwidth (RBW) of 1.0 MHz and a sweep time of 129 ms (1001 pts).

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Vector Signal Analyzer - Swept

Center Freq 2.491750000 GHz Trig: Free Run Avg Type: Log-Pwr TRACE 1: 2.483500000 GHz TYPE: SSB DETP: ENVELOPE

Mkr1 2.483 500 0 GHz
-55.79 dBm

10 dB/div Ref 0.00 dBm

Start 2.413500 GHz #Res BW 1.0 MHz #VBW 100 Hz Stop 2.500000 GHz Sweep 129 ms (1001 pts)

MR IN MEAS.	FREQ [GHz]	AMPL [dBm]	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
N	f	2.483 500 0 GHz	-55.79 dBm		
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

Frequency: Auto Tune
Center Freq: 2.491750000 GHz
Start Freq: 2.483500000 GHz
Stop Freq: 2.500000000 GHz
CF Step: 1.650000 MHz
Auto

Agilent Spectrum Analyzer - Setup SA

Center Freq 2.491750000 GHz

PRO: Wide () Trig: Free Run Avg Type: Log-Pwr

PRF: 10.000 MHz Span: 10.000 MHz

Auto Tun

Center Freq 2.4835000 GHz

Start Freq 2.483350000 GHz

Stop Freq 2.500000000 GHz

CF Step 1.600000 MHz

Resolution BW 1.0 MHz

Sweep 129 ms (1001 pts)

Marker 1 2.483500 GHz -50.94 dBm

MARK	FREQ	POW	UNIT	FUNCTION	FUNCTION MARK	FUNCTION VALUE
1	2.483500 GHz	-50.94	dBm			

Ref 0.00 dBm

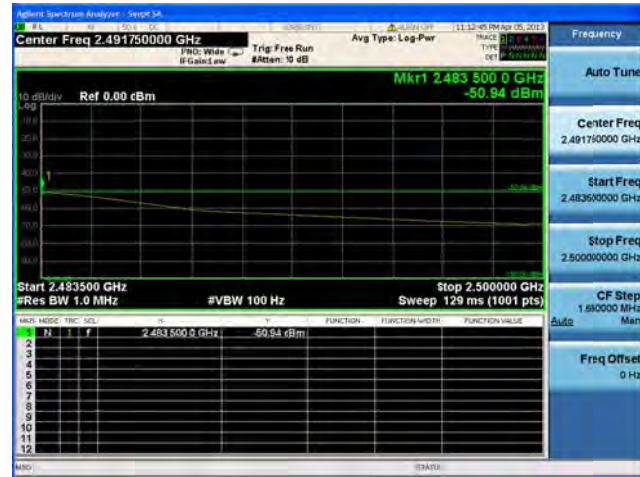
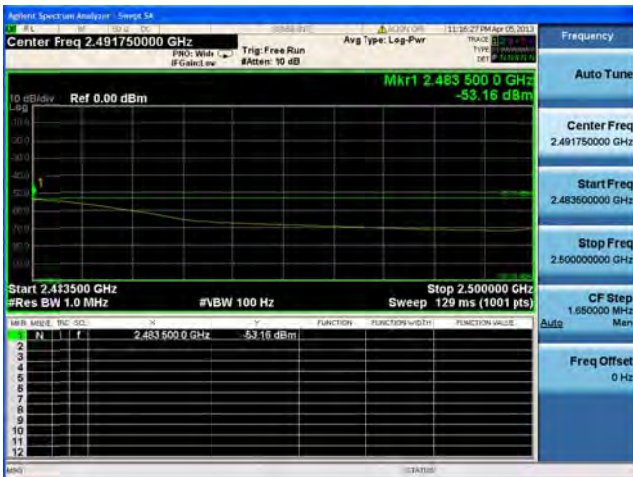
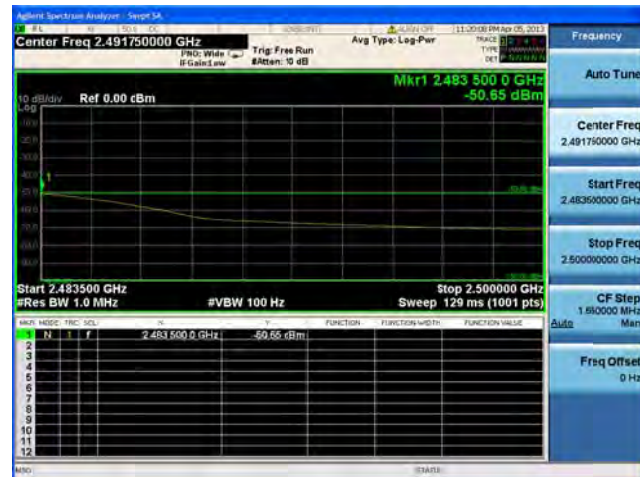
Mkr1 2.483 500 0 GHz -53.16 dBm

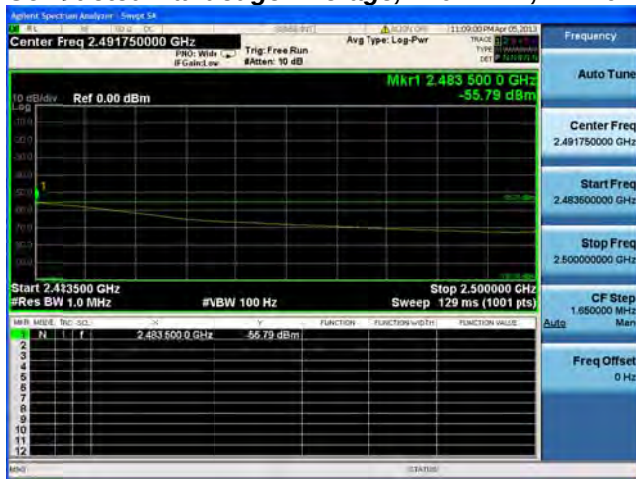
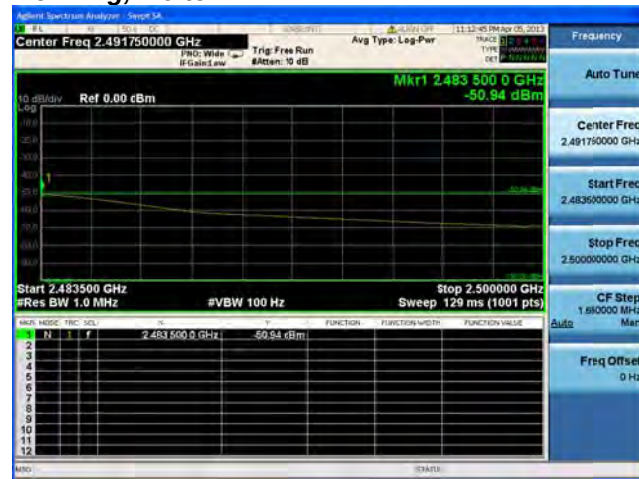
Start 2.4135000 GHz #Res BW 1.0 MHz #VBW 100 Hz Stop 2.5000000 GHz Sweep 129 ms (1001 pts)

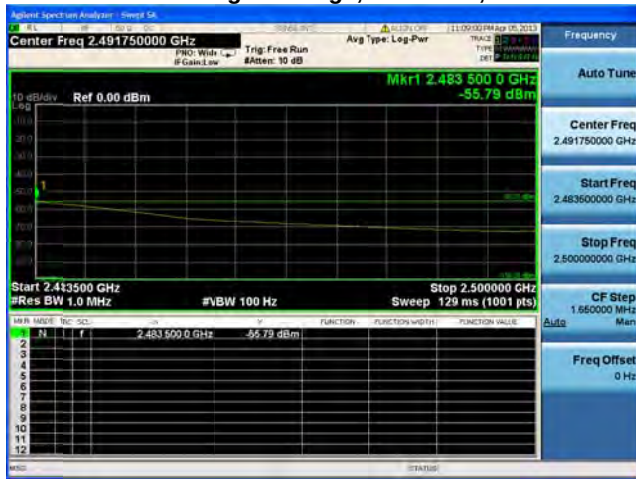
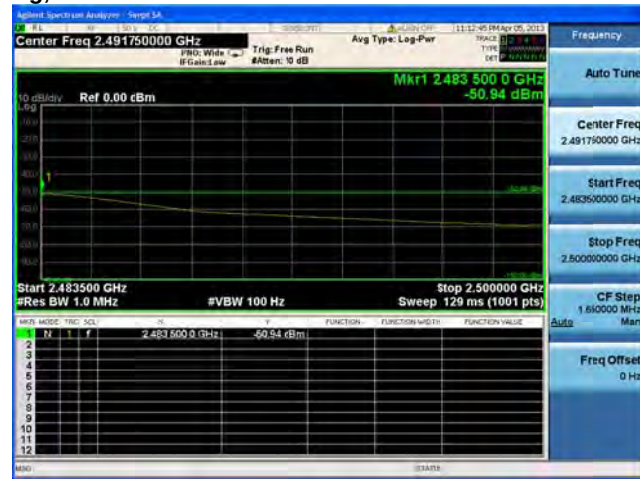
MHz	Mag	Hz	SQL	N	P	FUNCTION	FUNCTION=DEFN	FUNCTION=VALUE
2.4835000	-53.16	0	GHz	-53.16	dBm			

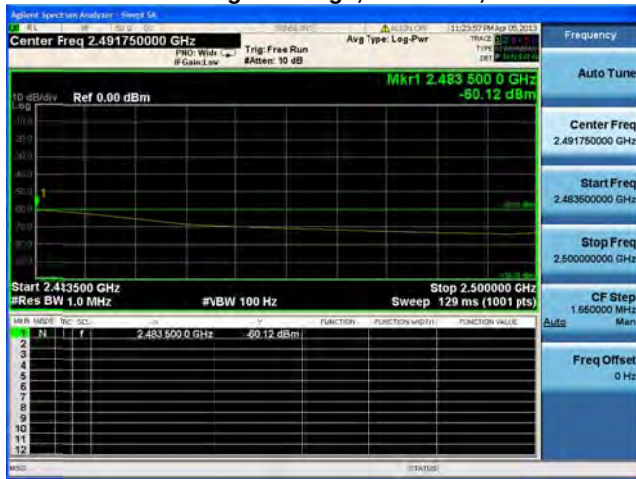
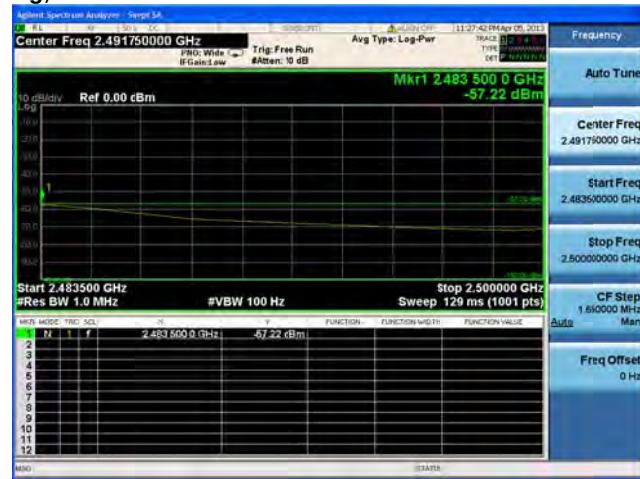
Spectrum Analyzer - Script SA
 (11-2018) 194 Apr 08, 2013
 Center Freq 2.491750000 GHz
 Avg Type: Log-Pwr
 PRO: Wide (1) (1 Gain) Low
 Trig: Free Run
 #Reten: 10 dB
 Mkr1 2.493 500 0 GHz
 -0.05 dBm
 Ref 0.00 dBm
 10 dB/div
 -90
 -80
 -70
 -60
 -50
 -40
 -30
 -20
 -10
 0
 10
 20
 30
 40
 50
 60
 70
 80
 90
 100
 110
 120
 130
 140
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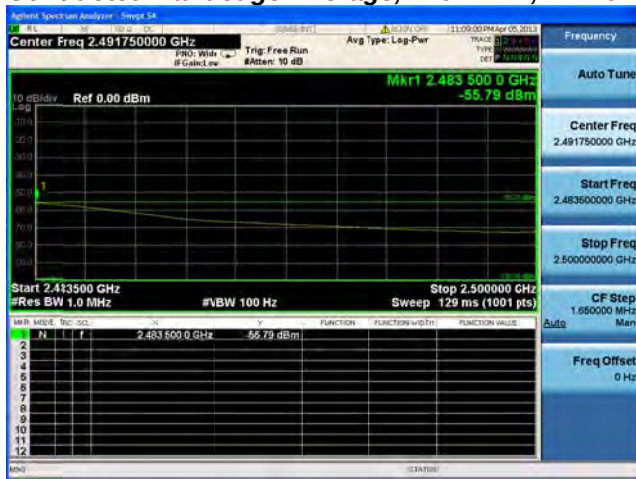
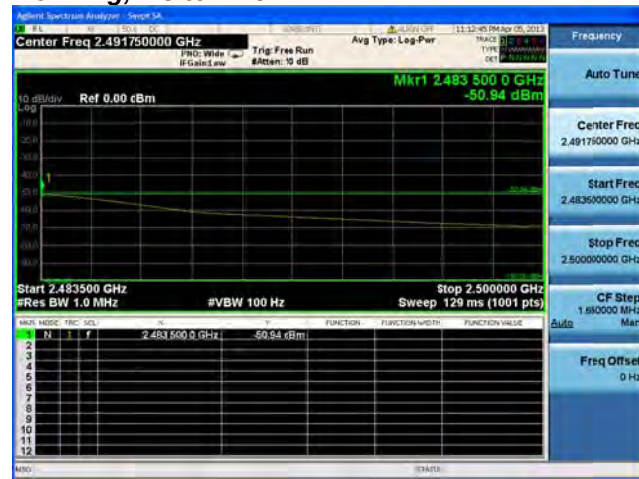
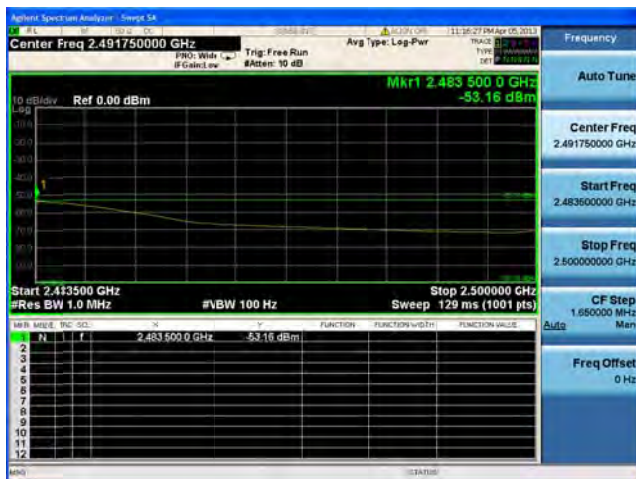
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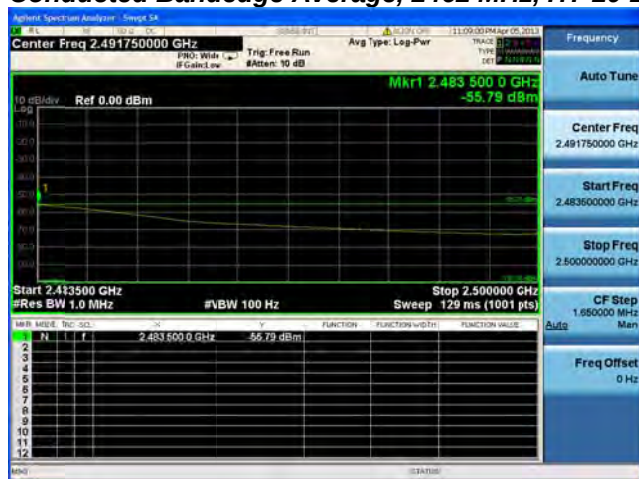
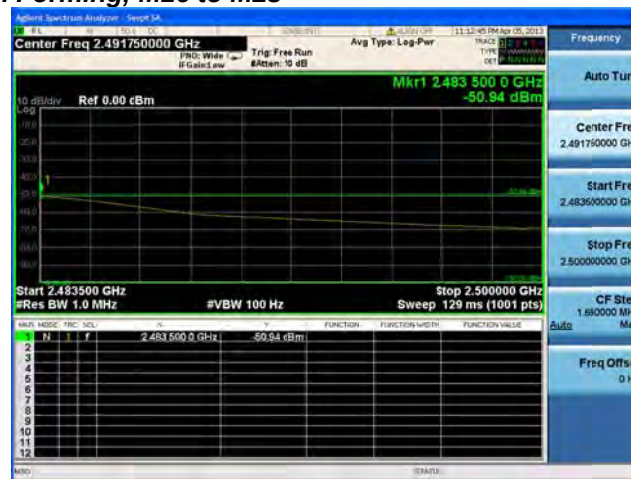
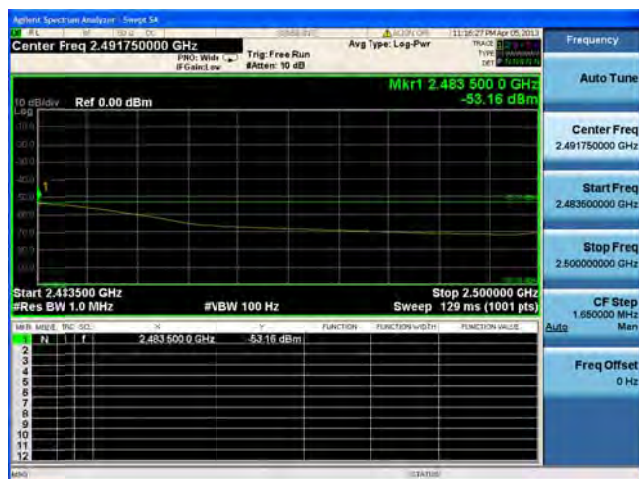
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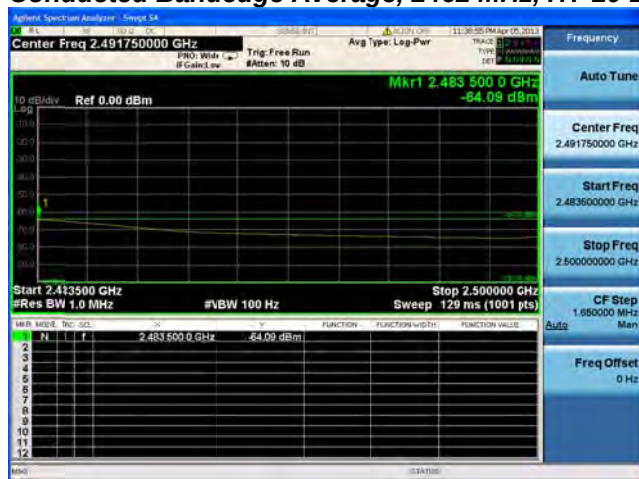
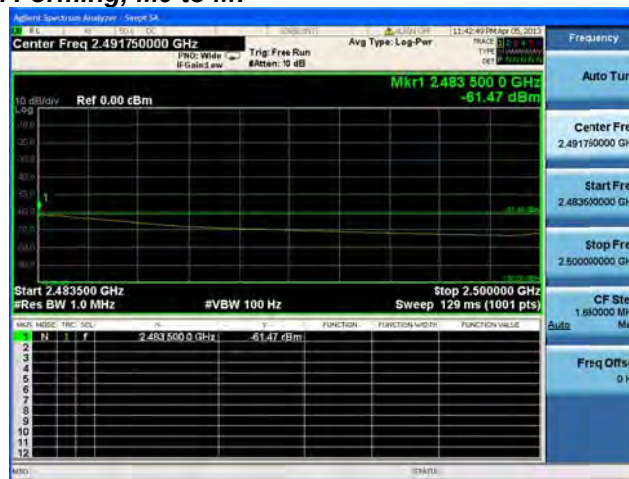
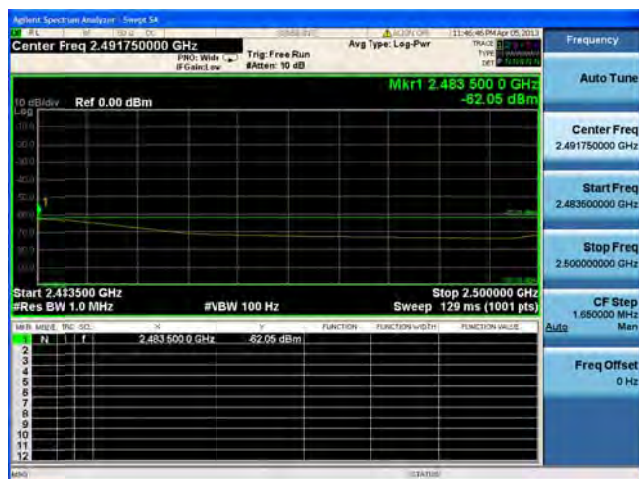
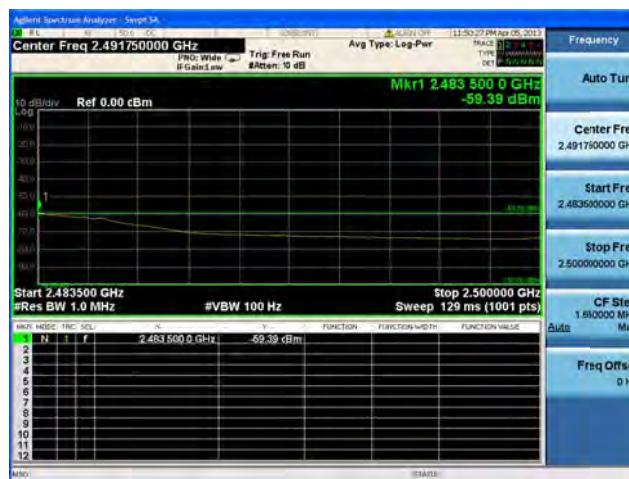
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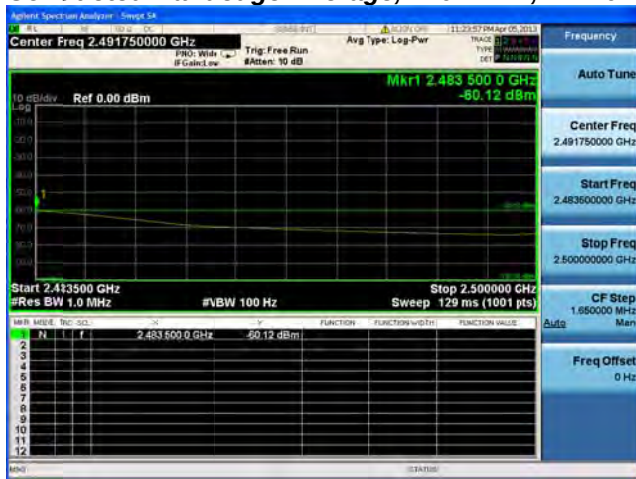
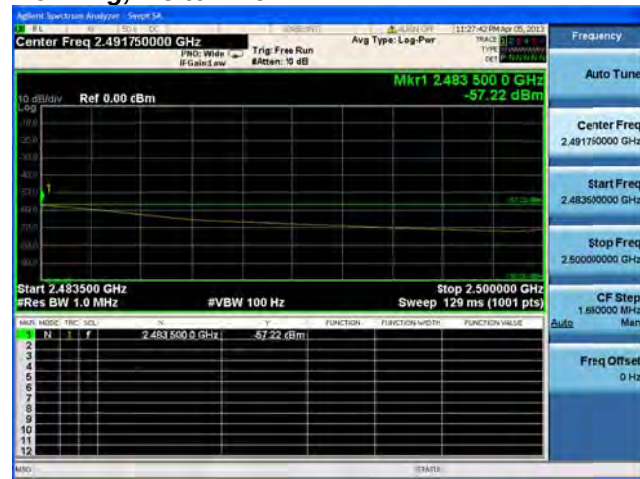
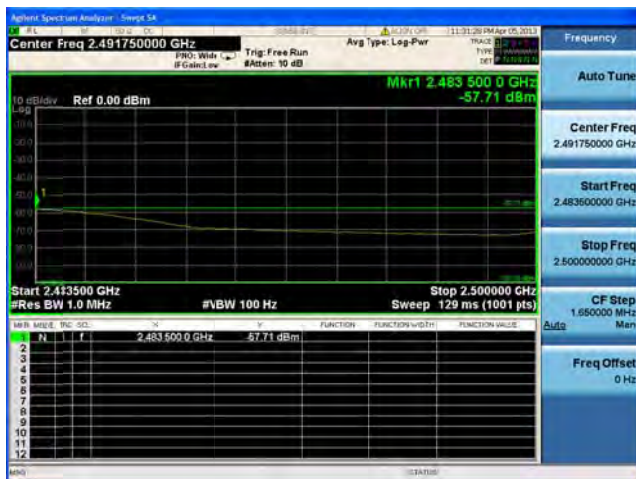
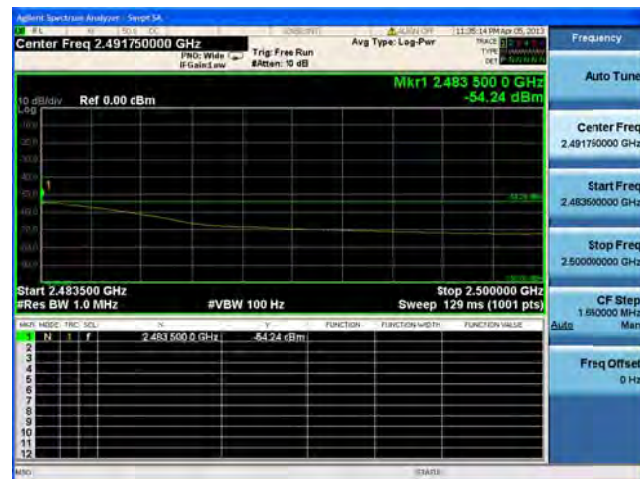
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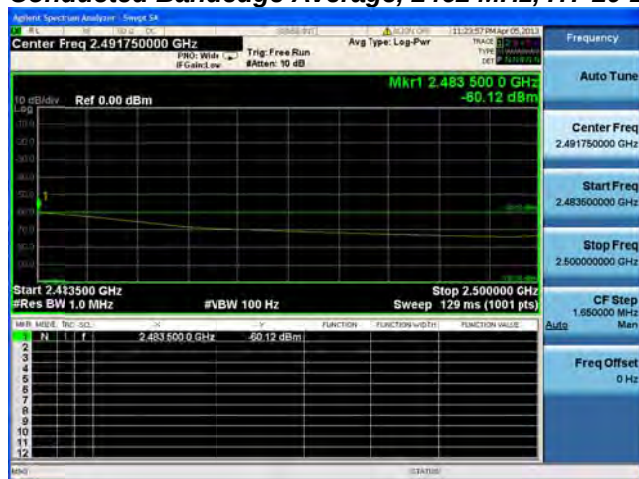
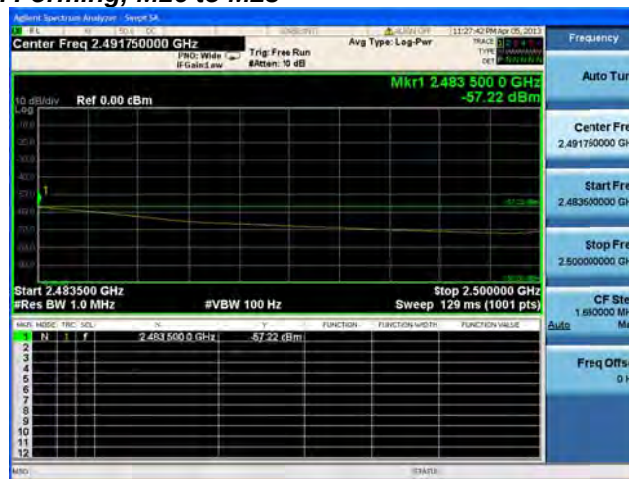
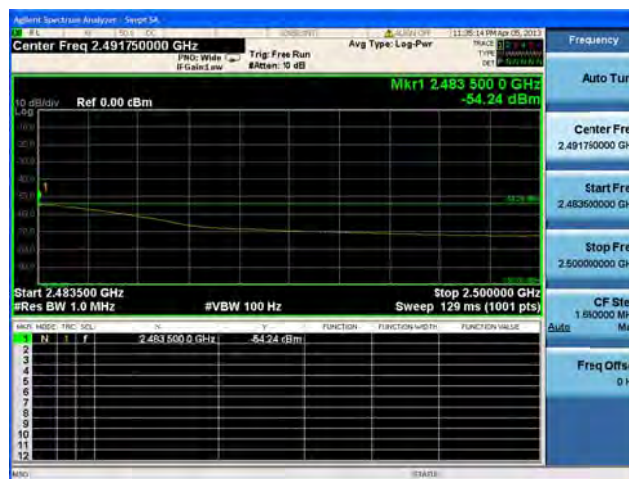
**Conducted Bandedge Average, 2462 MHz, HT-20 Beam Forming, M0 to M7****Antenna A****Antenna B****Antenna C**

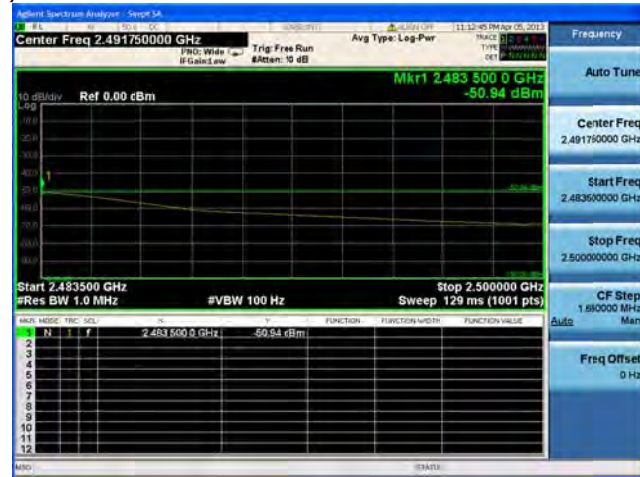
**Conducted Bandedge Average, 2462 MHz, HT-20 Beam Forming, M8 to M15****Antenna A****Antenna B****Antenna C**

Conducted Bandedge Average, 2462 MHz, HT-20 Beam Forming, M16 to M23**Antenna A****Antenna B****Antenna C**

Conducted Bandedge Average, 2462 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**

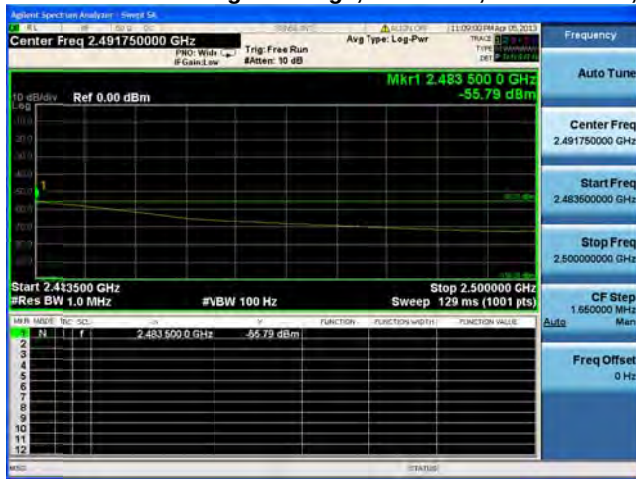
**Conducted Bandedge Average, 2462 MHz, HT-20 Beam Forming, M8 to M15****Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Average, 2462 MHz, HT-20 Beam Forming, M16 to M23**Antenna A****Antenna B****Antenna C****Antenna D**

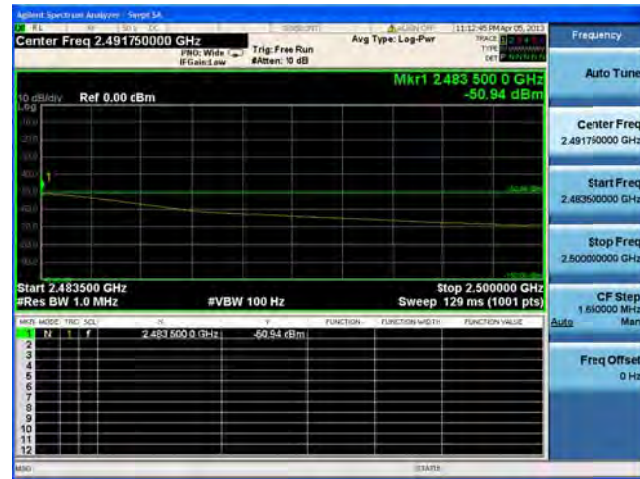
**Conducted Bandedge Average, 2462 MHz, HT-20 STBC, M0 to M7****Antenna A****Antenna B**



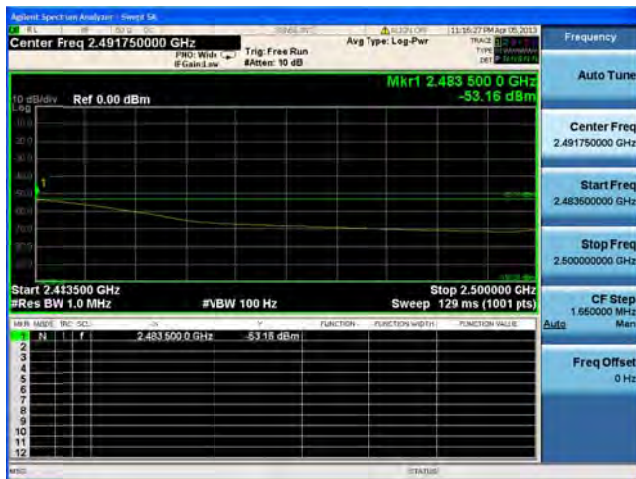
Conducted Bandedge Average, 2462 MHz, HT-20 STBC, M0 to M7



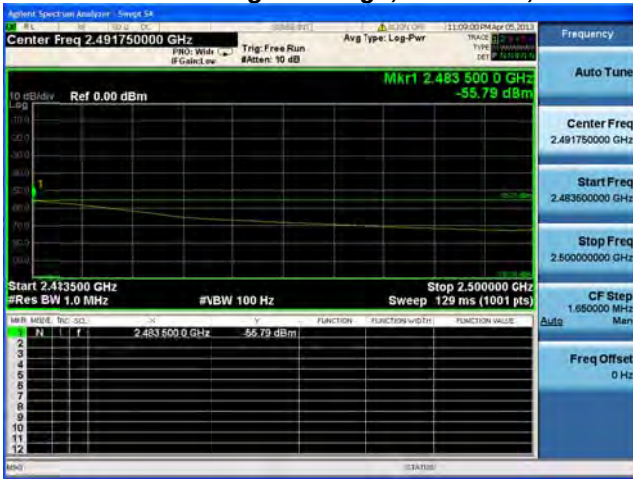
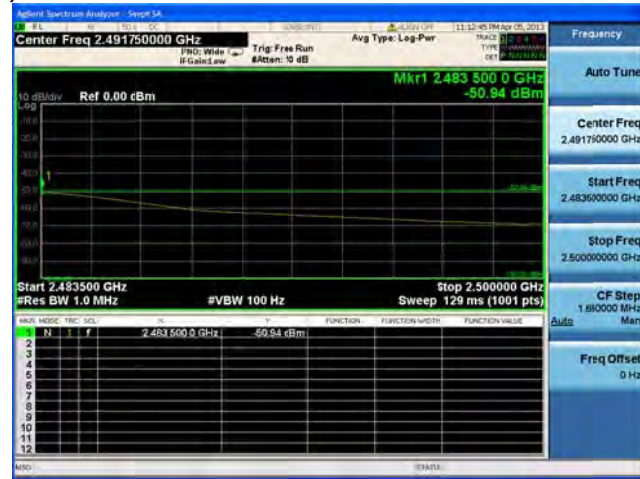
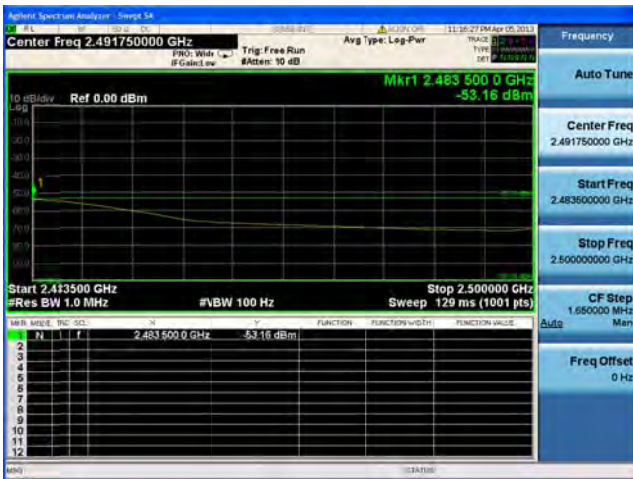
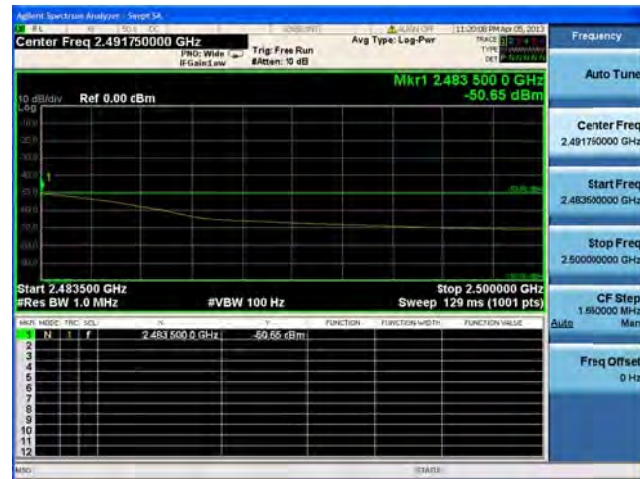
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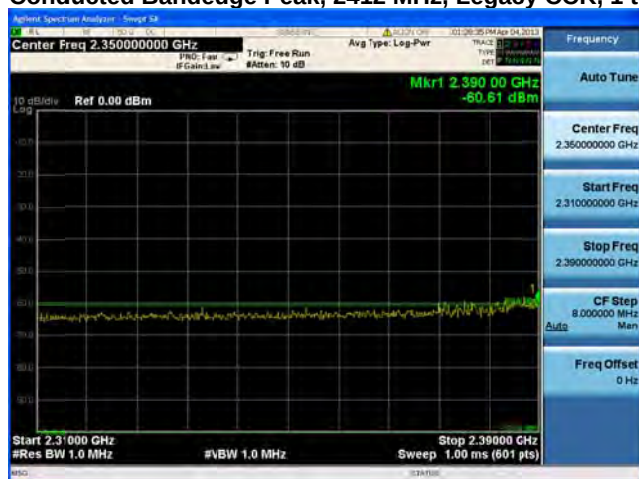


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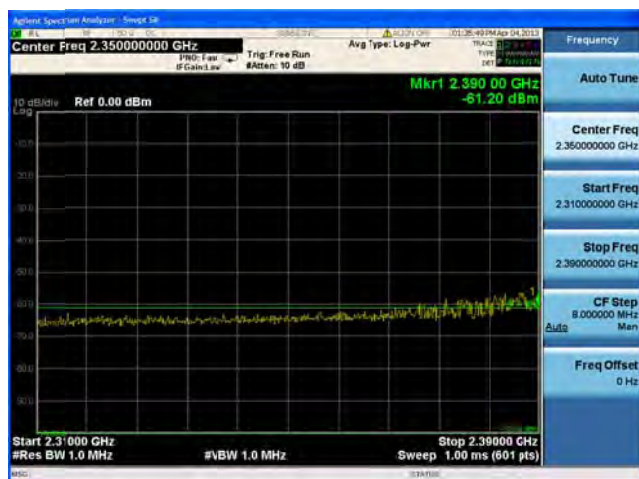


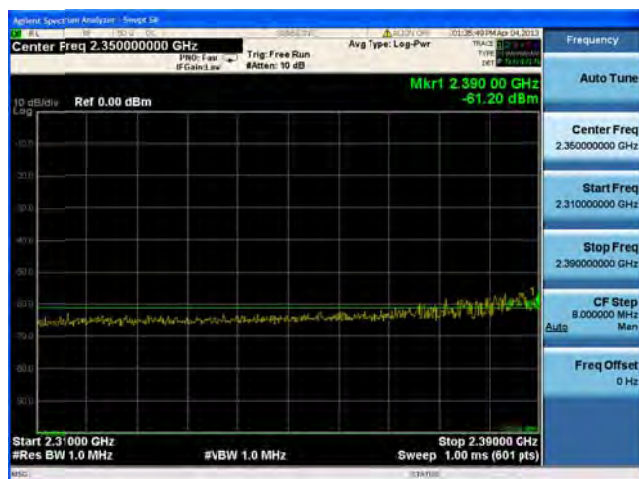
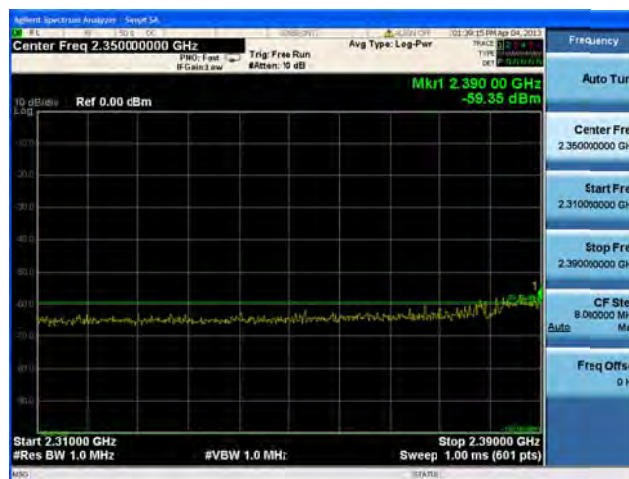
Antenna C

**Conducted Bandedge Average, 2462 MHz, HT-20 STBC, M0 to M7****Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Peak, 2412 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A**

Conducted Bandedge Peak, 2412 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A****Antenna B**

Conducted Bandedge Peak, 2412 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A****Antenna B****Antenna C**

**Conducted Bandedge Peak, 2412 MHz, Legacy CCK, 1 to 11 Mbps****Antenna A****Antenna B****Antenna C****Antenna D**

**Conducted Bandedge Peak, 2412 MHz, Non HT-20, 6 to 54 Mbps****Antenna A**

Conducted Bandedge Peak, 2412 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B**

Conducted Bandedge Peak, 2412 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C**

Conducted Bandedge Peak, 2412 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Peak, 2412 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps**Antenna A****Antenna B**

Conducted Bandedge Peak, 2412 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C**

Conducted Bandedge Peak, 2412 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Peak, 2412 MHz, HT-20, M0 to M7**Antenna A**

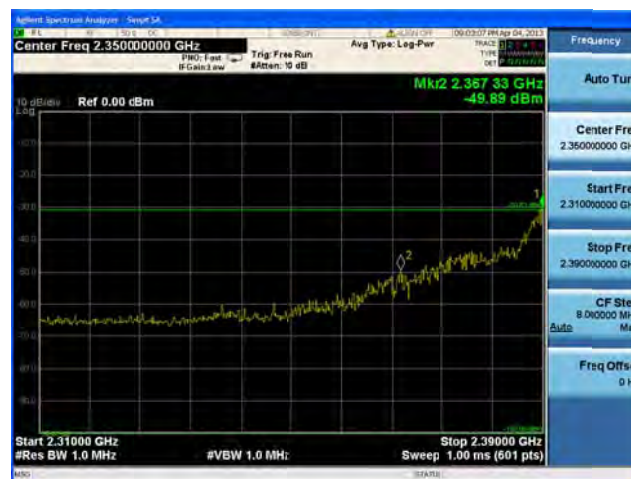
Conducted Bandedge Peak, 2412 MHz, HT-20, M0 to M7**Antenna A****Antenna B**

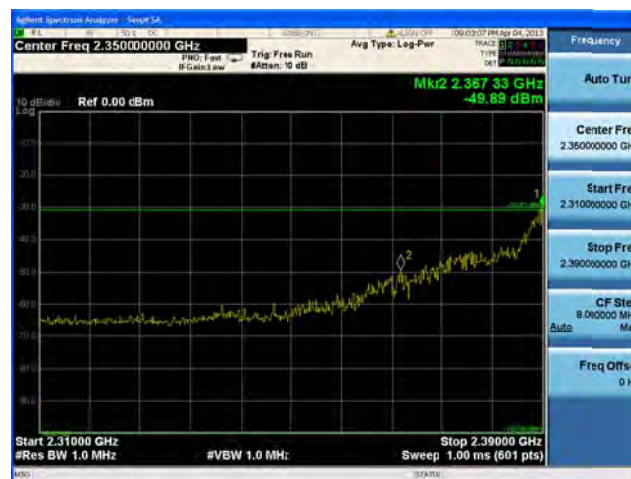
Conducted Bandedge Peak, 2412 MHz, HT-20, M8 to M15**Antenna A****Antenna B**

Conducted Bandedge Peak, 2412 MHz, HT-20, M0 to M7**Antenna A****Antenna B****Antenna C**

Conducted Bandedge Peak, 2412 MHz, HT-20, M8 to M15**Antenna A****Antenna B****Antenna C**

Conducted Bandedge Peak, 2412 MHz, HT-20, M16 to M23**Antenna A****Antenna B****Antenna C**

Conducted Bandedge Peak, 2412 MHz, HT-20, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Peak, 2412 MHz, HT-20, M8 to M15**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Peak, 2412 MHz, HT-20, M16 to M23**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Peak, 2412 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B**

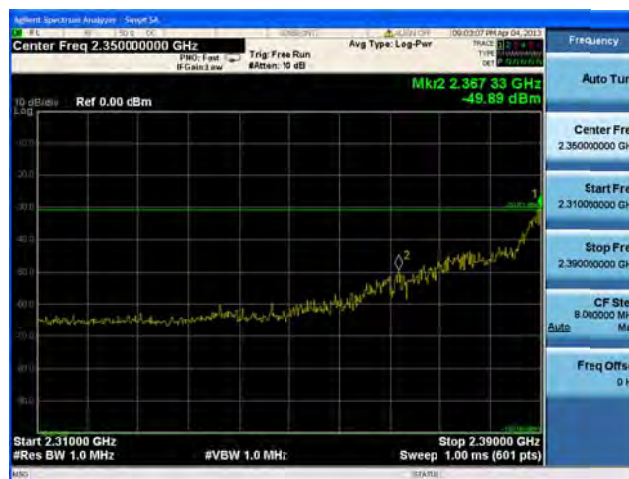
Conducted Bandedge Peak, 2412 MHz, HT-20 Beam Forming, M8 to M15**Antenna A****Antenna B**

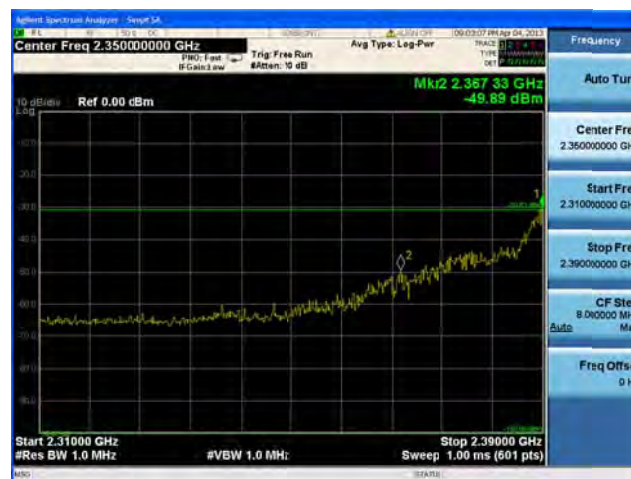
Conducted Bandedge Peak, 2412 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B****Antenna C**

Conducted Bandedge Peak, 2412 MHz, HT-20 Beam Forming, M8 to M15**Antenna A****Antenna B****Antenna C**

Conducted Bandedge Peak, 2412 MHz, HT-20 Beam Forming, M16 to M23**Antenna A****Antenna B****Antenna C**

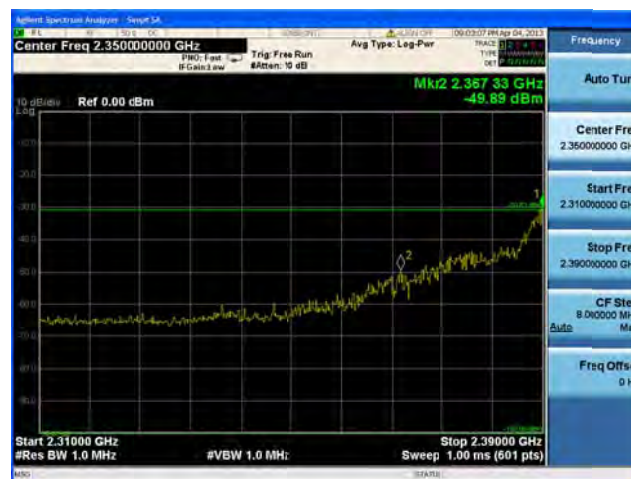
Conducted Bandedge Peak, 2412 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Peak, 2412 MHz, HT-20 Beam Forming, M8 to M15**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Peak, 2412 MHz, HT-20 Beam Forming, M16 to M23**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Peak, 2412 MHz, HT-20 STBC, M0 to M7**Antenna A****Antenna B**

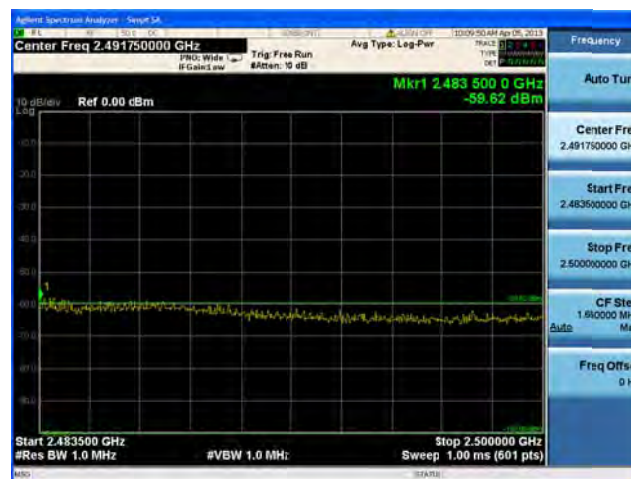
Conducted Bandedge Peak, 2412 MHz, HT-20 STBC, M0 to M7**Antenna A****Antenna B****Antenna C**

Conducted Bandedge Peak, 2412 MHz, HT-20 STBC, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**

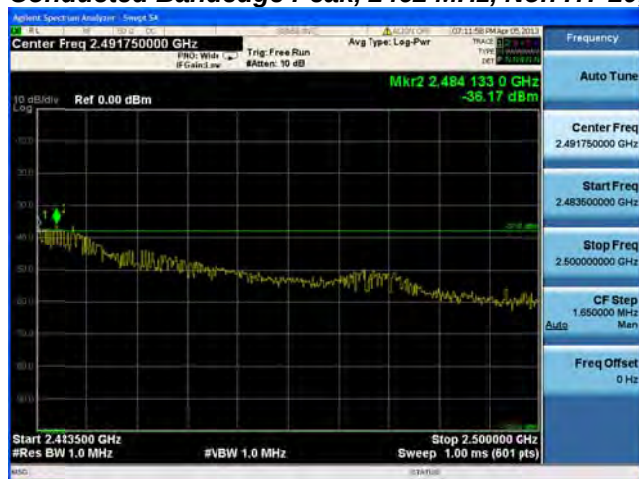
Conducted Bandedge Peak, 2462 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A**

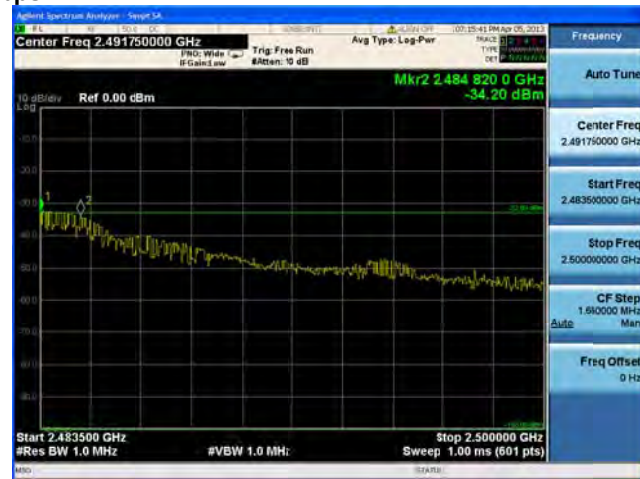
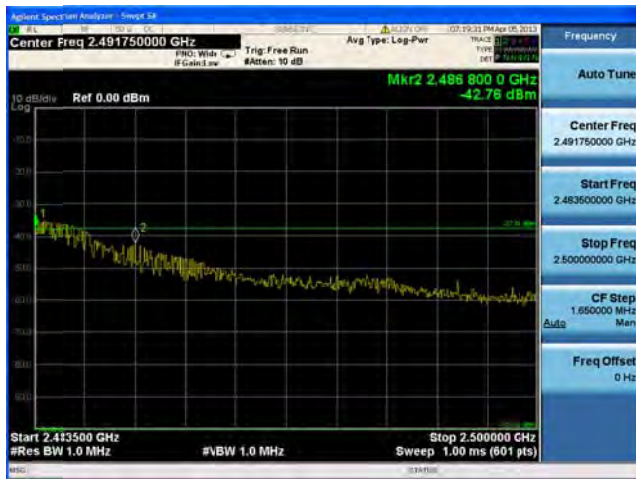
Conducted Bandedge Peak, 2462 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A****Antenna B**

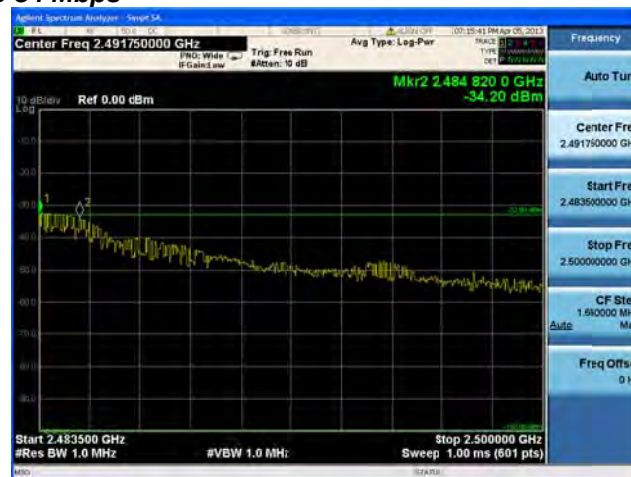
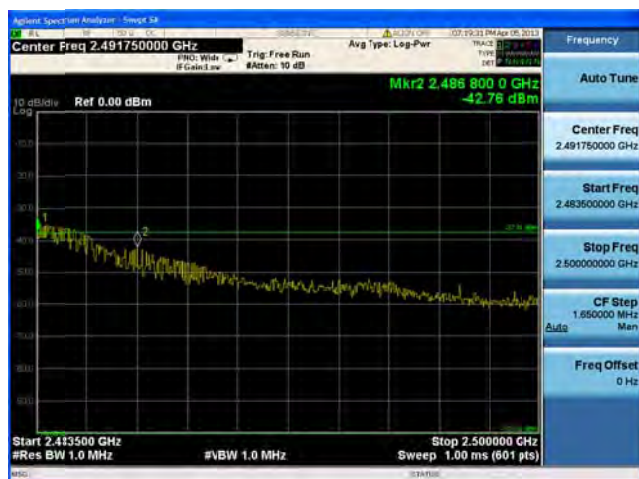
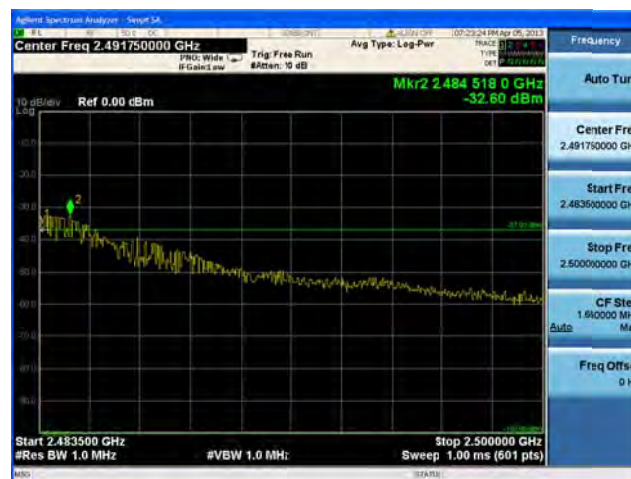
Conducted Bandedge Peak, 2462 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A****Antenna B****Antenna C**

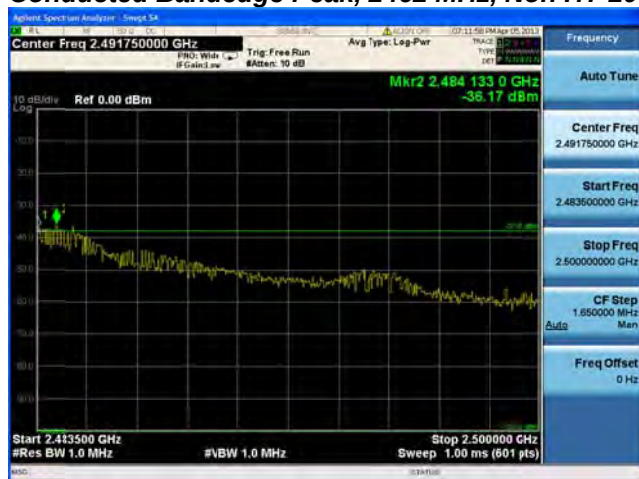
Conducted Bandedge Peak, 2462 MHz, Legacy CCK, 1 to 11 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

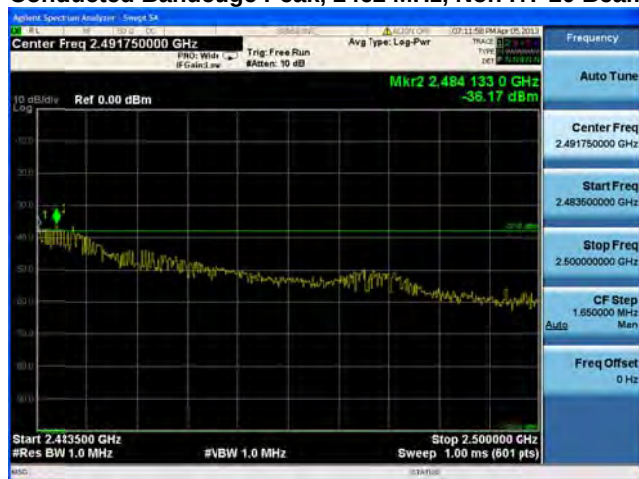
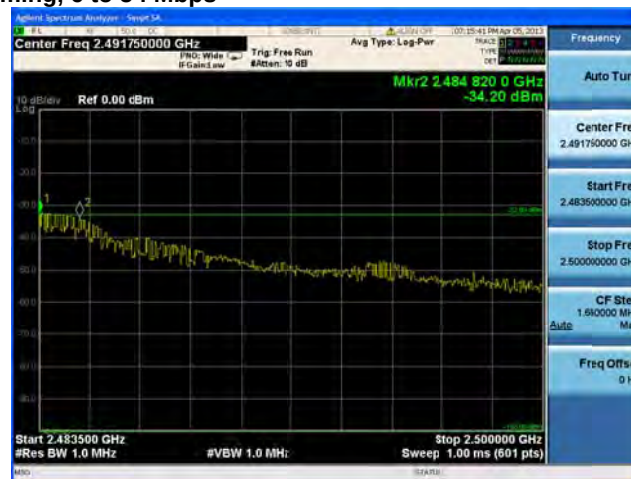
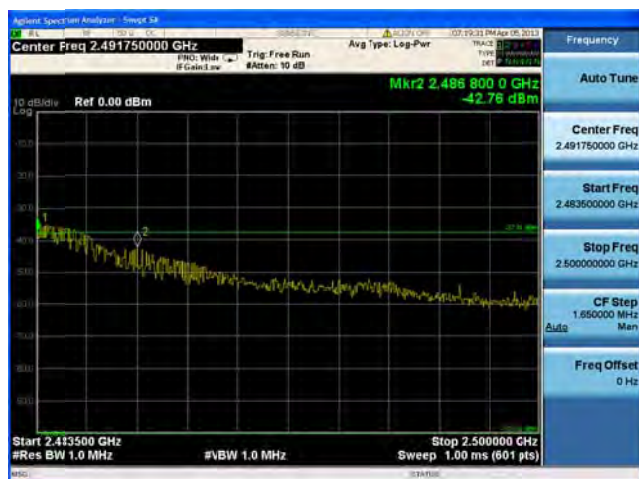
Conducted Bandedge Peak, 2462 MHz, Non HT-20, 6 to 54 Mbps**Antenna A**

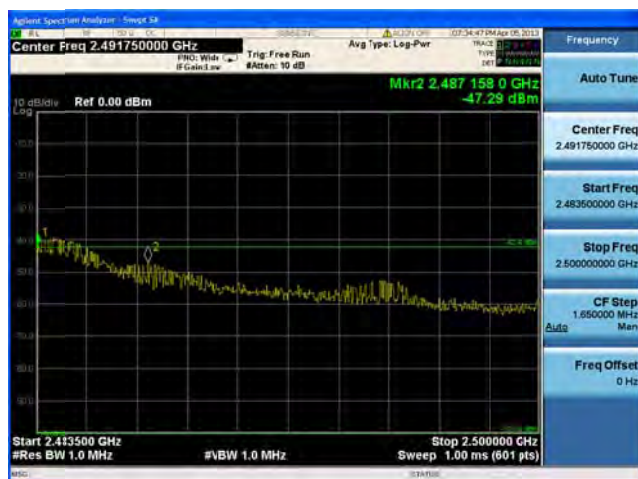
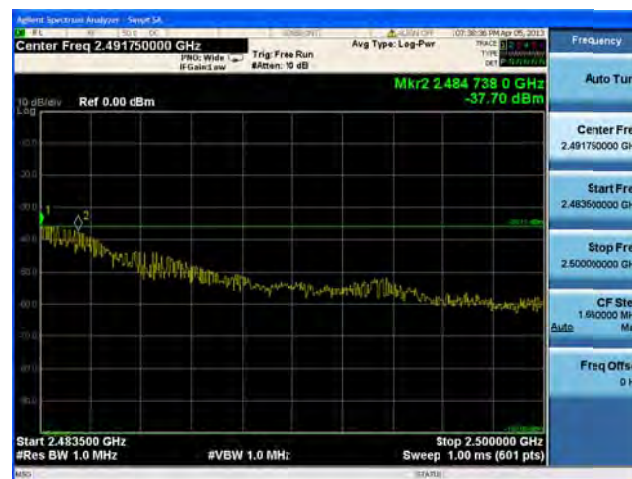
Conducted Bandedge Peak, 2462 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B**

**Conducted Bandedge Peak, 2462 MHz, Non HT-20, 6 to 54 Mbps****Antenna A****Antenna B****Antenna C**

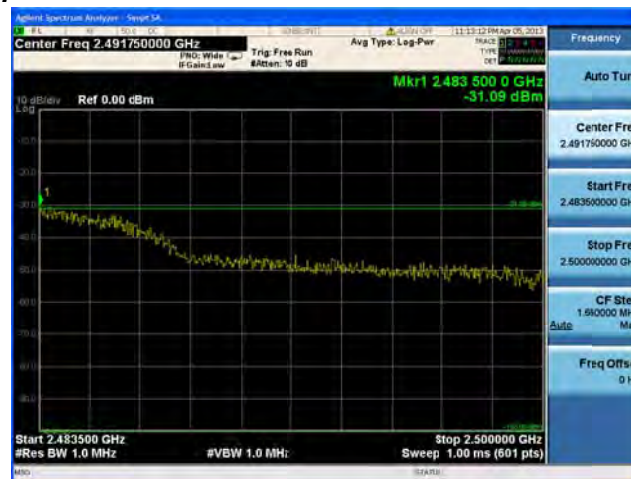
Conducted Bandedge Peak, 2462 MHz, Non HT-20, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

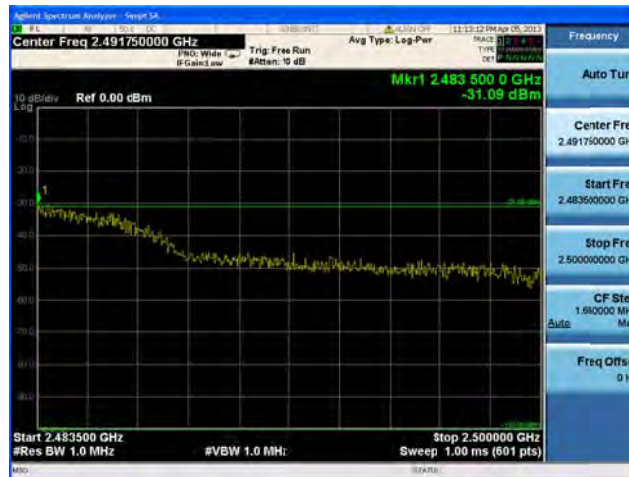
Conducted Bandedge Peak, 2462 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps**Antenna A****Antenna B**

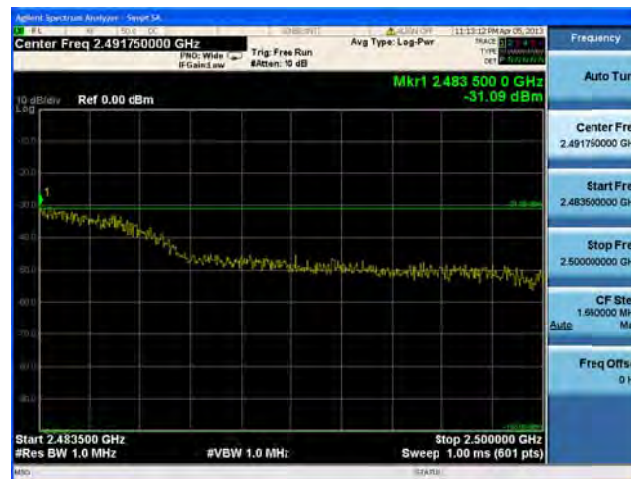
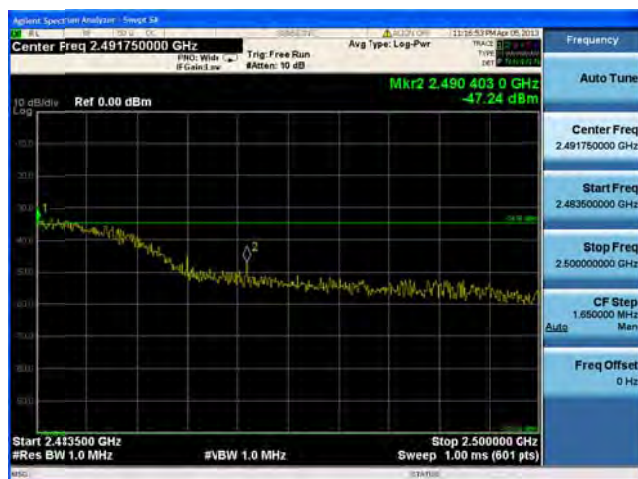
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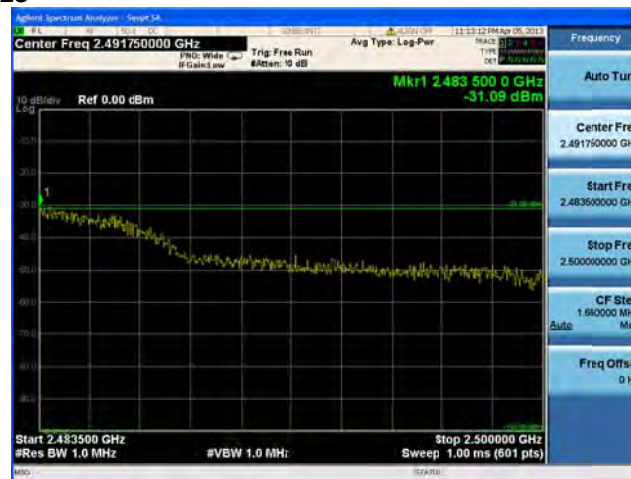
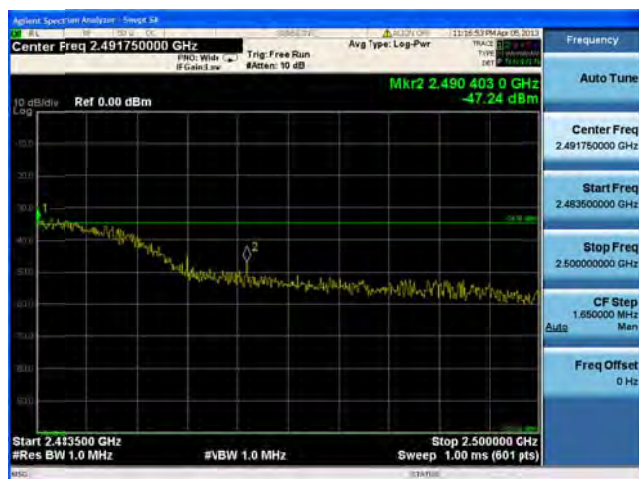
Conducted Bandedge Peak, 2462 MHz, Non HT-20 Beam Forming, 6 to 54 Mbps**Antenna A****Antenna B****Antenna C****Antenna D**

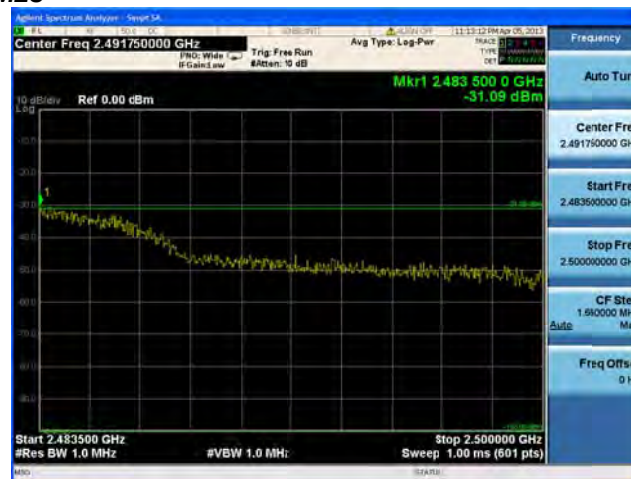
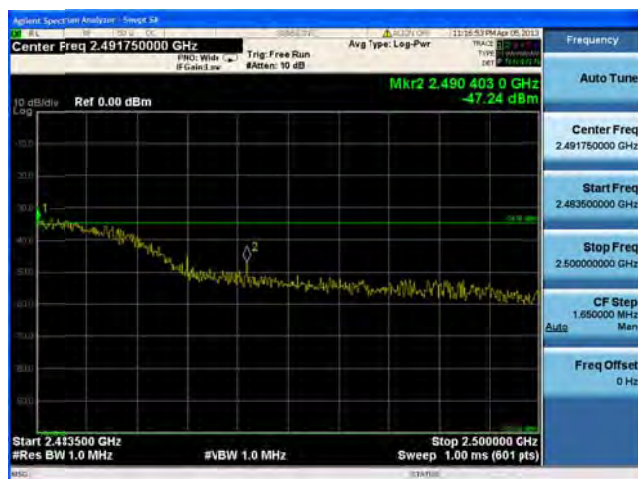
Conducted Bandedge Peak, 2462 MHz, HT-20, M0 to M7**Antenna A**

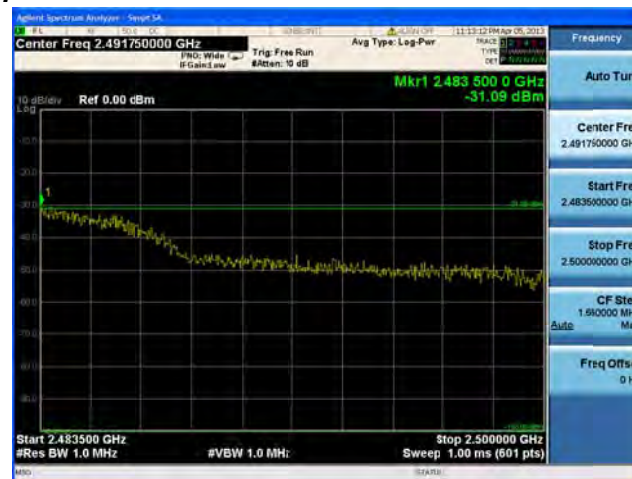
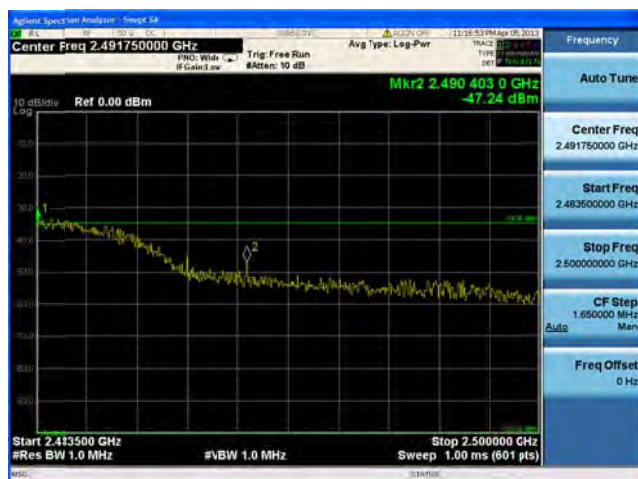
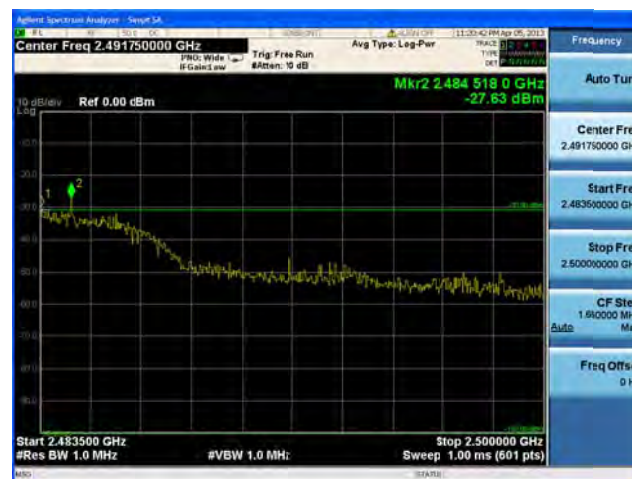
Conducted Bandedge Peak, 2462 MHz, HT-20, M0 to M7**Antenna A****Antenna B**

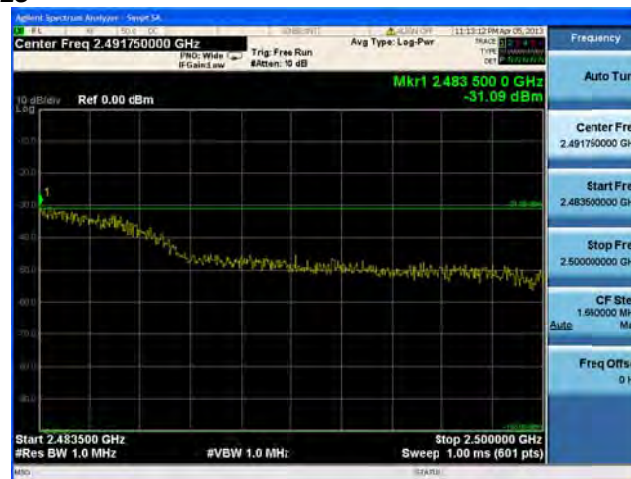
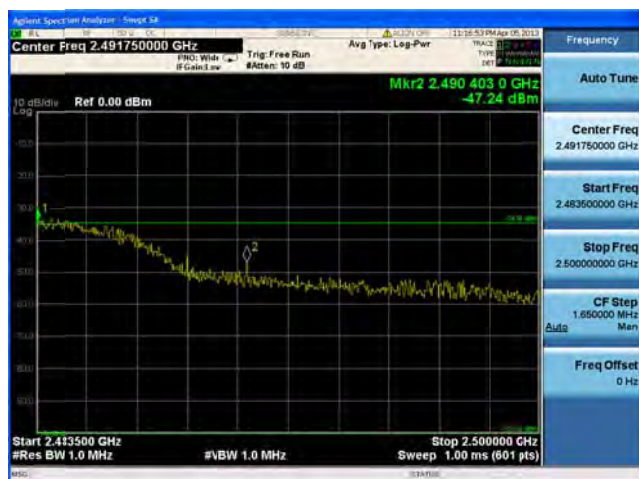
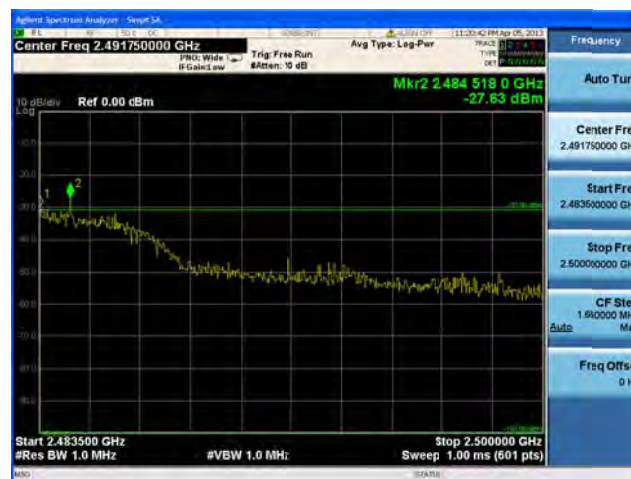
Conducted Bandedge Peak, 2462 MHz, HT-20, M8 to M15**Antenna A****Antenna B**

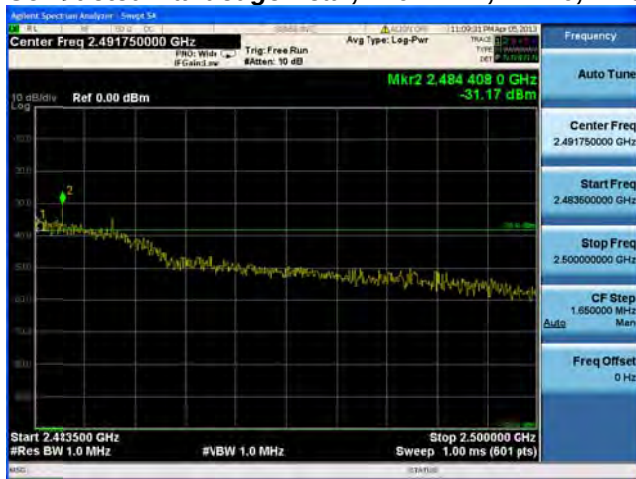
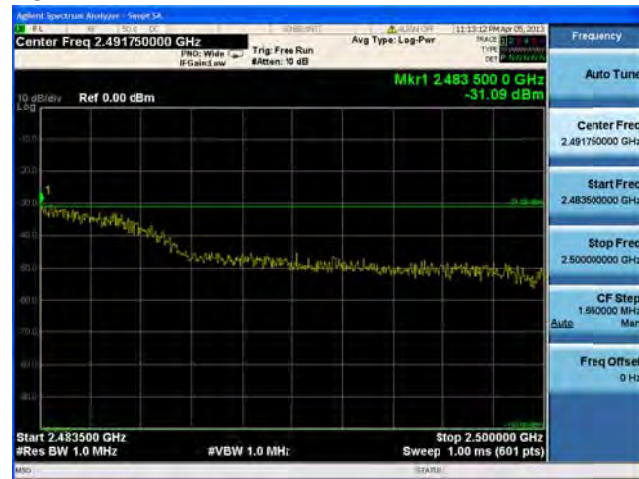
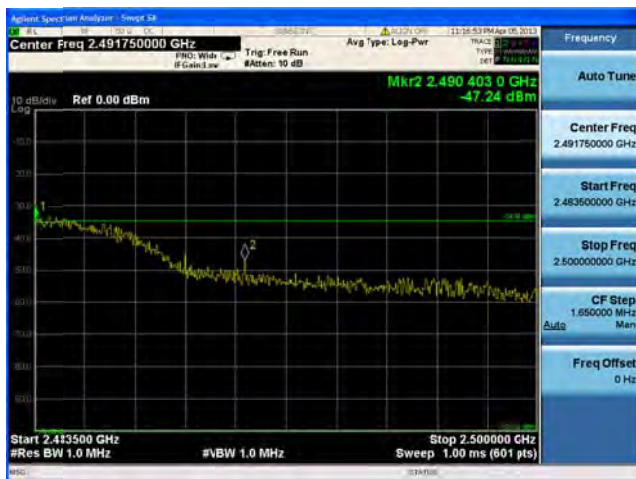
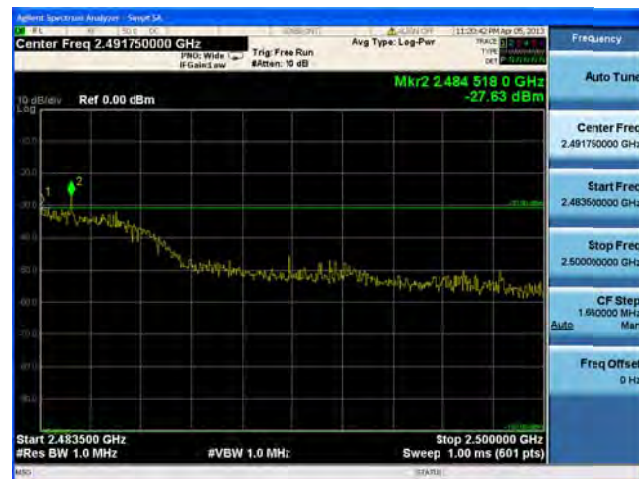
Conducted Bandedge Peak, 2462 MHz, HT-20, M0 to M7**Antenna A****Antenna B****Antenna C**

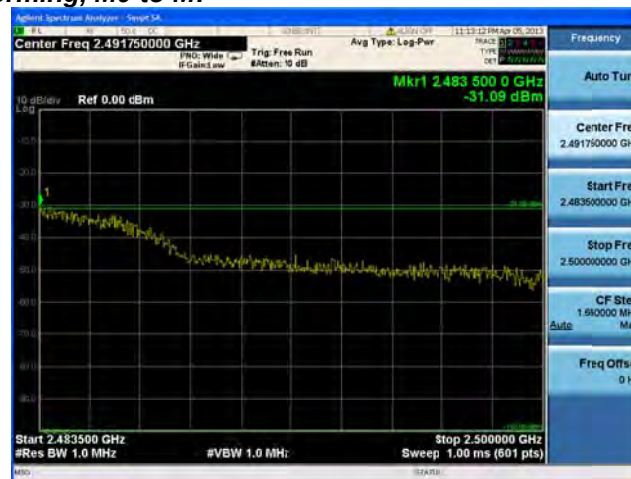
Conducted Bandedge Peak, 2462 MHz, HT-20, M8 to M15**Antenna A****Antenna B****Antenna C**

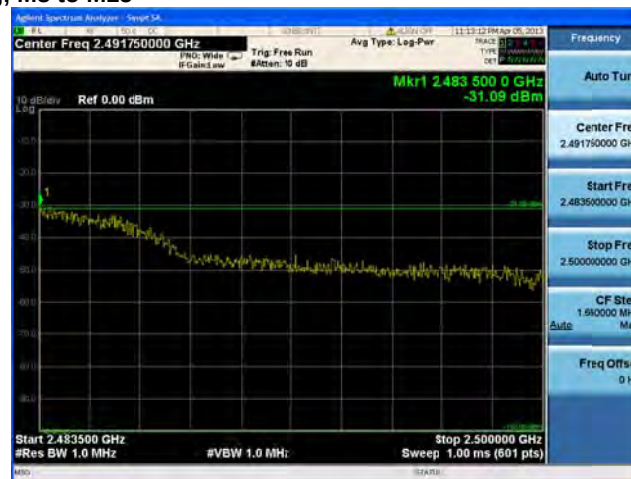
Conducted Bandedge Peak, 2462 MHz, HT-20, M16 to M23**Antenna A****Antenna B****Antenna C**

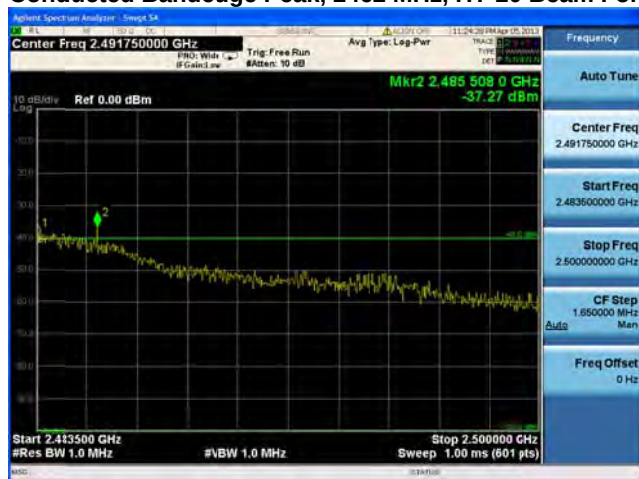
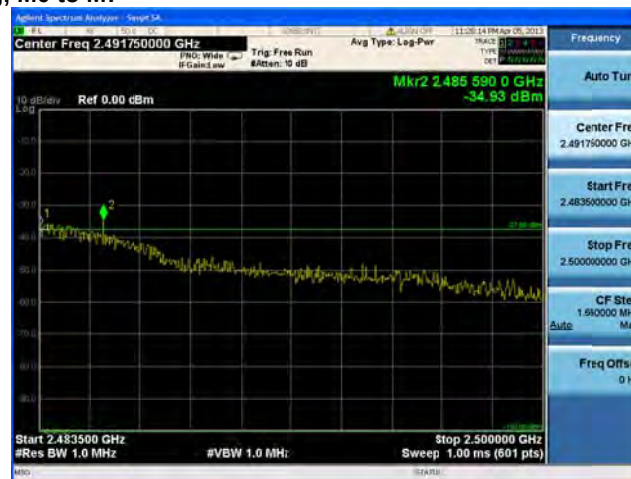
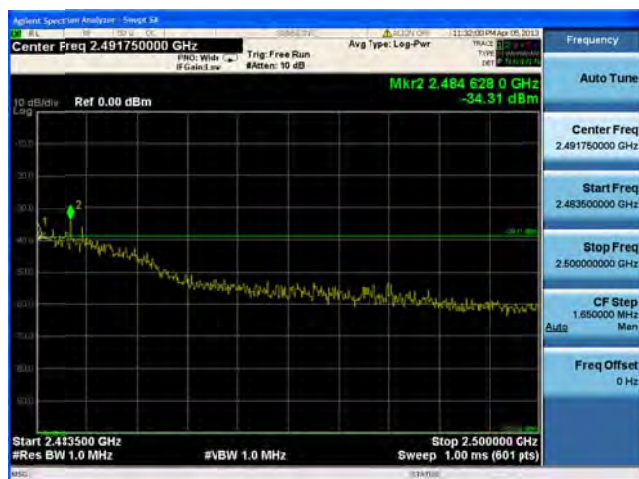
Conducted Bandedge Peak, 2462 MHz, HT-20, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**

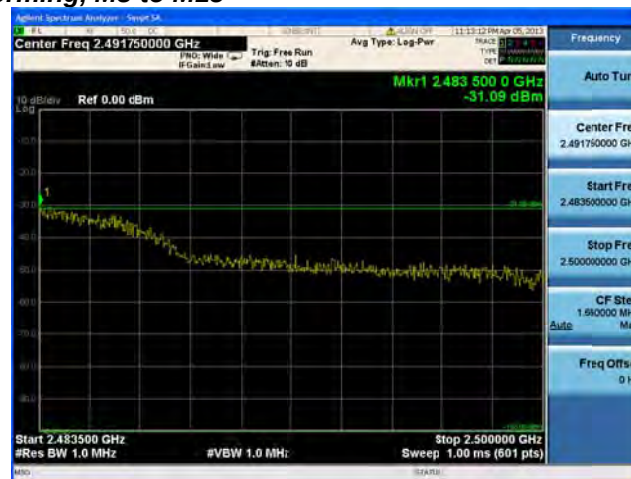
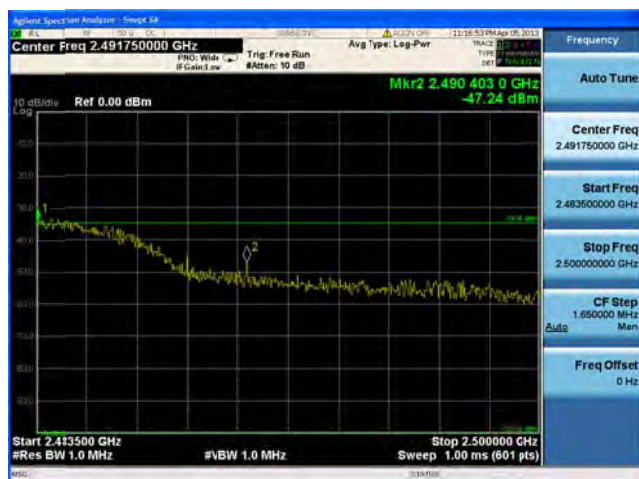
Conducted Bandedge Peak, 2462 MHz, HT-20, M8 to M15**Antenna A****Antenna B****Antenna C****Antenna D**

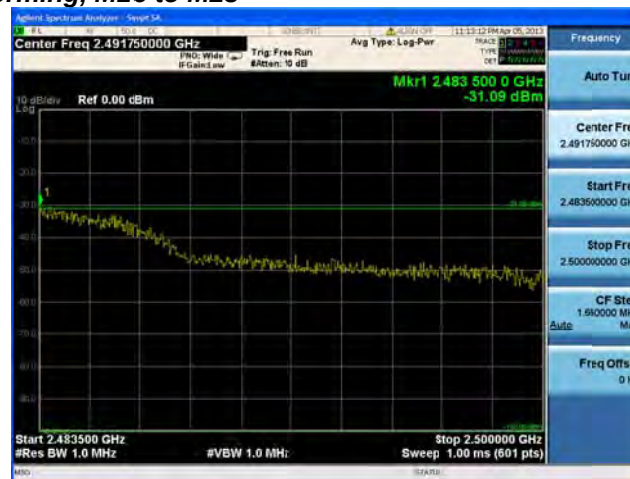
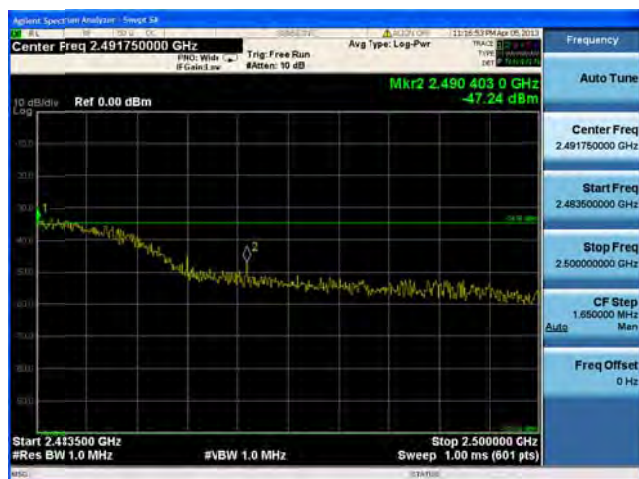
Conducted Bandedge Peak, 2462 MHz, HT-20, M16 to M23**Antenna A****Antenna B****Antenna C****Antenna D**

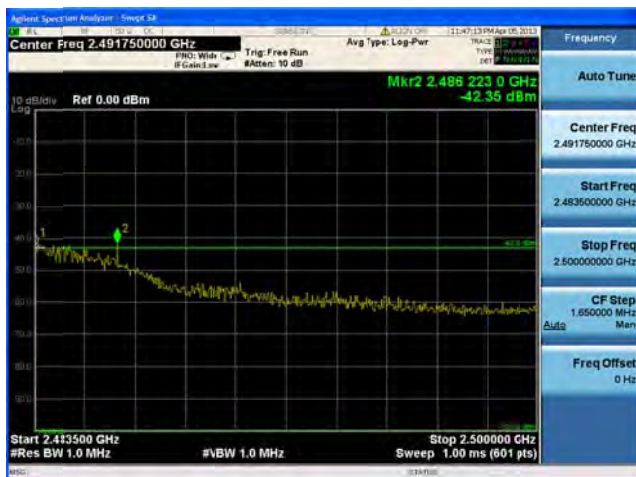
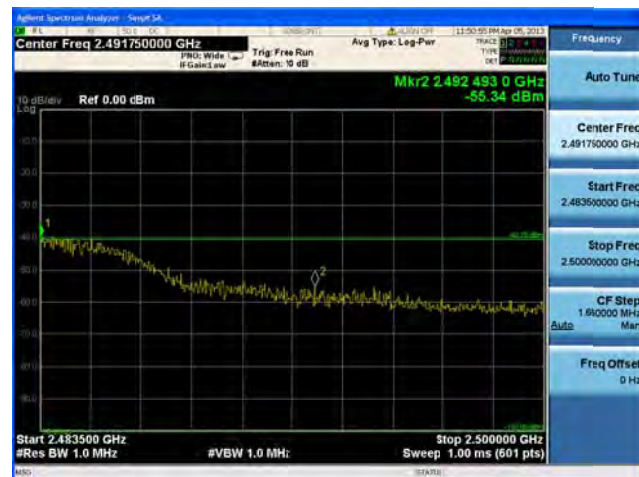
Conducted Bandedge Peak, 2462 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B**

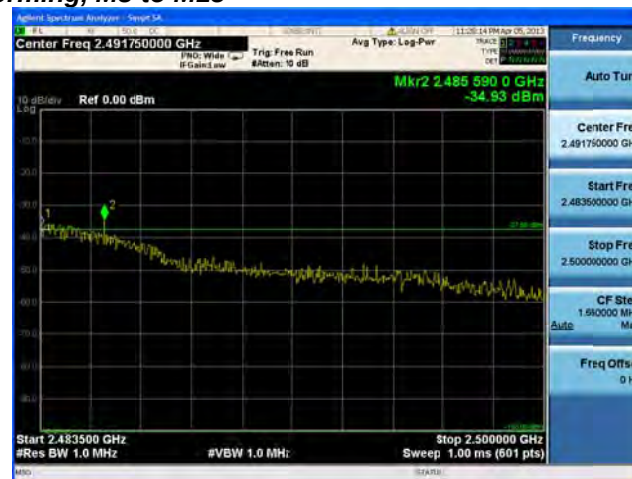
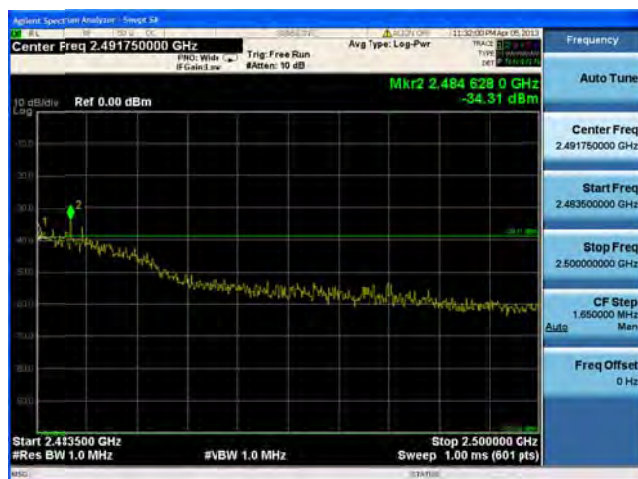
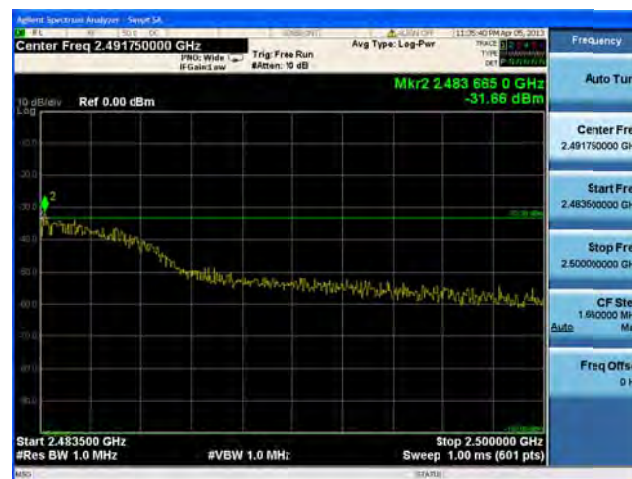
Conducted Bandedge Peak, 2462 MHz, HT-20 Beam Forming, M8 to M15**Antenna A****Antenna B**

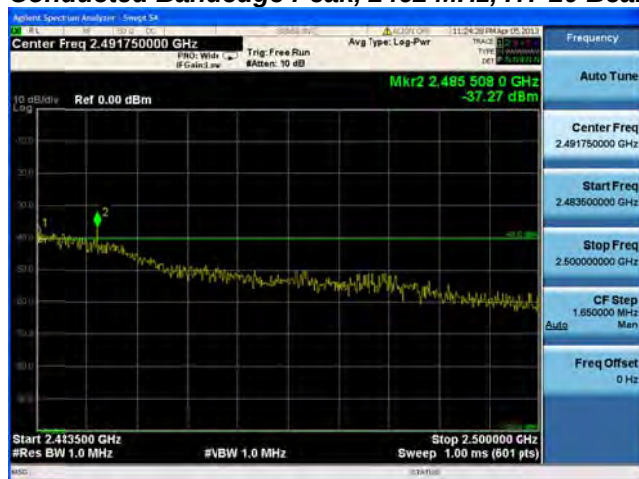
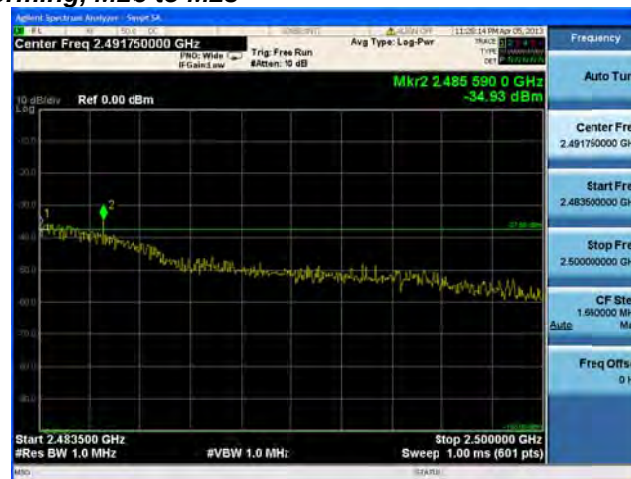
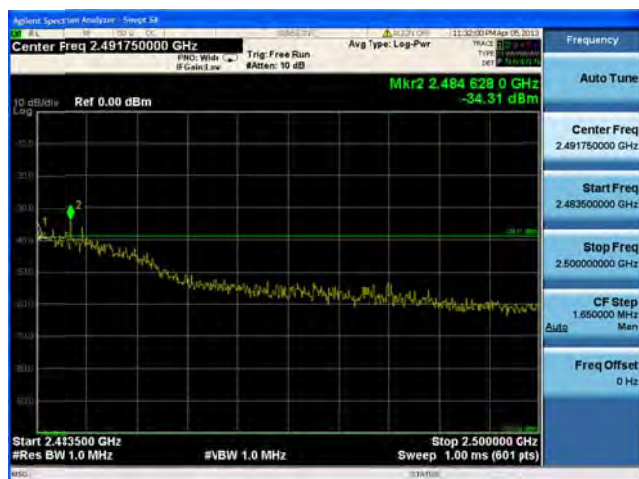
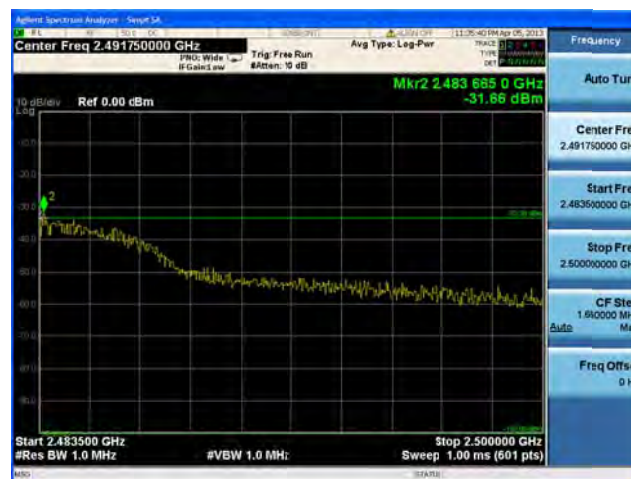
Conducted Bandedge Peak, 2462 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B****Antenna C**

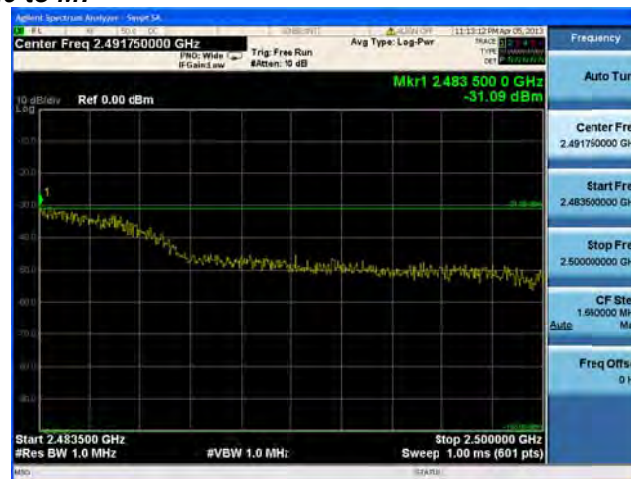
Conducted Bandedge Peak, 2462 MHz, HT-20 Beam Forming, M8 to M15**Antenna A****Antenna B****Antenna C**

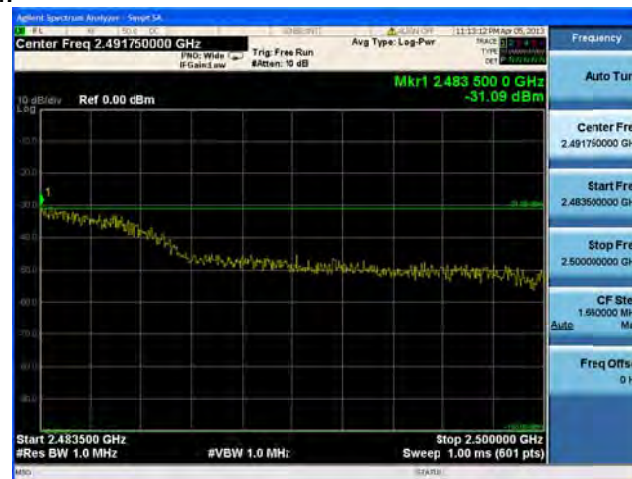
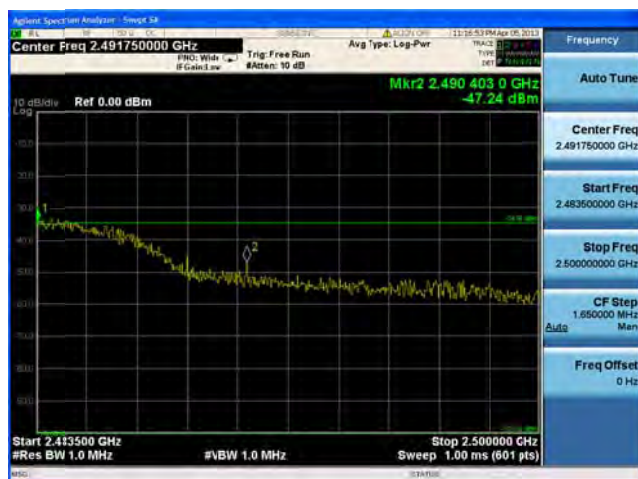
Conducted Bandedge Peak, 2462 MHz, HT-20 Beam Forming, M16 to M23**Antenna A****Antenna B****Antenna C**

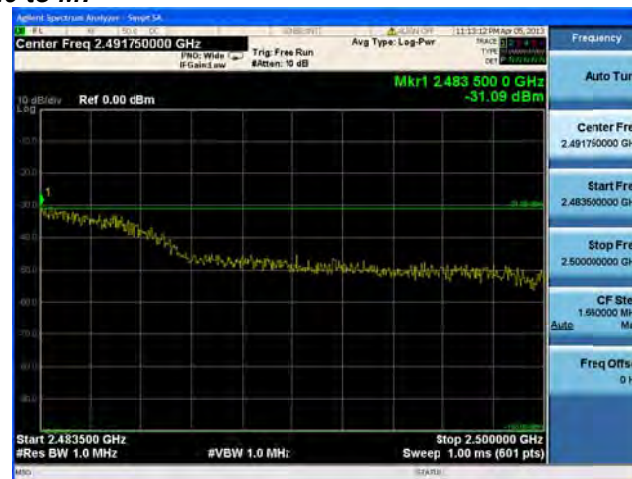
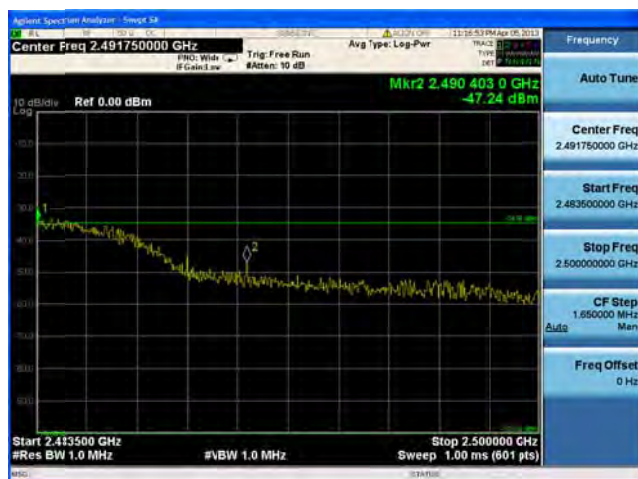
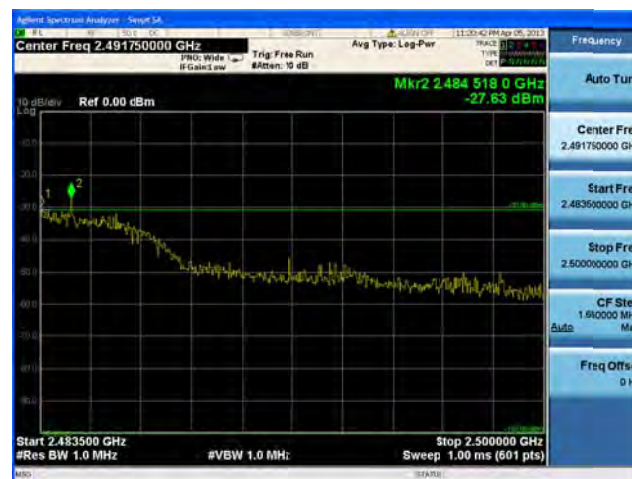
Conducted Bandedge Peak, 2462 MHz, HT-20 Beam Forming, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Peak, 2462 MHz, HT-20 Beam Forming, M8 to M15**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Peak, 2462 MHz, HT-20 Beam Forming, M16 to M23**Antenna A****Antenna B****Antenna C****Antenna D**

Conducted Bandedge Peak, 2462 MHz, HT-20 STBC, M0 to M7**Antenna A****Antenna B**

Conducted Bandedge Peak, 2462 MHz, HT-20 STBC, M0 to M7**Antenna A****Antenna B****Antenna C**

Conducted Bandedge Peak, 2462 MHz, HT-20 STBC, M0 to M7**Antenna A****Antenna B****Antenna C****Antenna D**

Maximum Permissible Exposure (MPE) Calculations

15.247: U-NII devices are subject to the radio frequency radiation exposure requirements specified in Sec. 1.1307(b), Sec. 2.1091 and Sec. 2.1093 of this chapter, as appropriate. All equipment shall be considered to operate in a "general population/uncontrolled" environment. Applications for equipment authorization of devices operating under this section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. Technical information showing the basis for this statement must be submitted to the Commission upon request.

Given

$$E = \sqrt{(30 \cdot P \cdot G)/d} \quad \text{and} \quad S = E^2/3770$$

where

E=Field Strength in Volts/meter

P=Power in Watts

G=Numeric Antenna Gain

d=Distance in meters

S=Power Density in mW/cm²

Combine equations and rearrange the terms to express the distance as a function of the remaining variables:

$$d = \sqrt{((30 \cdot P \cdot G)/(3770 \cdot S))}$$

Changing to units of power in mW and distance in cm, using:

$$P(\text{mW}) = P(\text{W})/1000 \quad d(\text{cm}) = 100 \cdot d(\text{m})$$

yields

$$d = 100 \cdot \sqrt{((30 \cdot (P/1000) \cdot G)/(3770 \cdot S))}$$

$$d = 0.282 \cdot \sqrt{(P \cdot G/S)}$$

where

d=Distance in cm

P=Power in mW

G=Numerica Antenna Gain

S=Power Density in mW/cm²

Substituting the logarithmic form of power and gain using:

$$P(\text{mW}) = 10^{(P(\text{dBm})/10)} \quad G(\text{numeric}) = 10^{(G(\text{dBi})/10)}$$

yields

$$d = 0.282 \cdot 10^{((P+G)/20)} / \sqrt{S} \quad \text{Equation (1)}$$

and

$$S = ((0.282 \cdot 10^{((P+G)/20)})/d)^2 \quad \text{Equation (2)}$$

where

d=MPE distance in cm

P=Power in dBm

G=Antenna Gain in dBi

S=Power Density in mW/cm²



Equation (1) and the measured peak power are used to calculate the MPE distance. Note that for mobile or fixed location transmitters such as an access point, the minimum separation distance is 20 cm even if the calculations indicate that the MPE distance may be less.

$S=1\text{mW/cm}^2$ maximum. The highest supported antenna gain is 3 dBi (9dBi with beamforming). Using the peak power levels recorded in the test report along with Equation 1 above, the MPE distances are calculated as follows.

Frequency (GHz)	Power Density (mW/cm ²)	Peak Transmit Power (dBm)	Antenna Gain (dBi)	MPE Distance (cm)	Limit (cm)	Margin (cm)
2.4	1	21.1	9	9.02	20	10.98

MPE Calculations

To maintain compliance, installations will assure a separation distance of at least 20cm.

Using Equation 2, the MPE levels (s) at 20 cm are calculated as follows:

Frequency (GHz)	MPE Distance (cm)	Peak Transmit Power (dBm)	Antenna Gain (dBi)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Margin (mW/cm ²)
2.4	20	21.1	9	0.20	1	0.80



Appendix C: Test Equipment/Software Used to perform the test

Equip #	Manufacturer	Model	Description	Last Cal	Next Due
CIS049381	Agilent	N9030A	Spectrum Analyzer	28-Aug-12	28-Aug-13