

RF Test Report

Applicant : D-Link Corporation
Product Type : AC1300 MU-MIMO Wi-Fi Nano USB Adapter
Trade Name : D-Link
Model Number : DWA-181
Applicable Standard : FCC 47 CFR PART 15 SUBPART C
ANSI C63.10:2013
Receive Date : Jul. 27, 2016
Test Period : Aug. 02 ~ Nov. 07, 2016
Issue Date : Mar. 20, 2019

Issue by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade District,
Taoyuan City 33465, Taiwan (R.O.C)
Tel : +886-3-2710188 / Fax : +886-3-2710190



Taiwan Accreditation Foundation accreditation number: 1330

Test Firm MRA designation number: TW0010

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Mar. 20, 2019	Initial Issue	Nina Lin

Verification of Compliance

Issued Date: Mar. 20, 2019

Applicant : D-Link Corporation

Product Type : AC1300 MU-MIMO Wi-Fi Nano USB Adapter

Trade Name : D-Link

Model Number : DWA-181

FCC ID : KA2WA181A1

EUT Rated Voltage : DC 5 V

Test Voltage : 120 Vac / 60 Hz

Applicable Standard : FCC 47 CFR PART 15 SUBPART C
ANSI C63.10:2013

Test Result : Complied

Performing Lab. : A Test Lab Techno Corp.
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Taoyuan City 33465, Taiwan (R.O.C)
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Taiwan Accreditation Foundation accreditation number: 1330
<http://www.atl-lab.com.tw/e-index.htm>

A Test Lab Techno Corp. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By : Fly Lu Reviewed By : Eric Ou Yang
(Manager) (Fly Lu) (Testing Engineer) (Eric Ou Yang)

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1 General Information

1.1. Summary of Test Result

Standard	Item	Result	Remark
FCC			
15.207	AC Power Conducted Emission	PASS	-----
15.247(d)	Transmitter Radiated Emissions	PASS	-----
15.247(b)(3)	Max. Output Power	PASS	-----
15.247(a)(2)	6 dB RF Bandwidth	PASS	-----
15.247(e)	Maximum Power Spectral Density	PASS	-----
15.247(d)	Out of Band Conducted Spurious Emission	PASS	-----
15.203	Antenna Requirement	PASS	-----

The test results of this report relate only to the tested sample(s) identified in this report.

Standard	Description
CFR47, Part 15, Subpart C	Intentional Radiators
ANSI C63. 10: 2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB 558074 D01 v05	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES

1.2. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conducted Emission	9 kHz ~ 150 kHz	2.7
	150 kHz ~ 30 MHz	2.7
Radiated Emission	9 kHz ~ 30 MHz	1.7
	30 MHz ~ 1000 MHz	5.7
	1000 MHz ~ 18000 MHz	5.5
	18000 MHz ~ 26500 MHz	4.8
	26500 MHz ~ 40000 MHz	4.8
Conducted Output Power	+0.27 dB / -0.28 dB	
RF Bandwidth	4.96 %	
Power Spectral Density	+0.71 dB / -0.77 dB	

2 EUT Description

Applicant	D-Link Corporation 17595 Mt. Herrmann, Fountain Valley, CA 92708, United States			
Manufacturer	EDIMAX TECHNOLOGY CO., LTD. No.278, Xinhua 1st Rd., Neihu Dist., Taipei City, Taiwan			
Product Type	AC1300 MU-MIMO Wi-Fi Nano USB Adapter			
Trade Name	D-Link			
Model Number	DWA-181			
FCC ID	KA2WA181A1			
Operate Freq. Band	Frequency Range (MHz)	Modulation	Channel Bandwidth	Data Rate 400 / 800 GI (ns)
IEEE 802.11b	2412 ~ 2462	DSSS	20 MHz	Up to 11 Mbps
IEEE 802.11g	2412 ~ 2462	OFDM	20 MHz	Up to 54 Mbps
IEEE 802.11n 2.4 GHz 20 MHz	2412 ~ 2462	OFDM (256QAM)	20 MHz	Up to 173.4 Mbps
IEEE 802.11n 2.4 GHz 40 MHz	2422 ~ 2452	OFDM (256QAM)	40 MHz	Up to 400 Mbps
Antenna information	Antennna	Type	Max. Gain (dBi)	
	ANT-0 (Main)	Monopole Antenna	1.81	
	ANT-1 (AUX)	Monopole Antenna	0.36	
Antenna Delivery	See section 3.1			
Operate Temp. Range	0 ~ +40 ℃			

EUT Modify Description :

Modify Description:

Change the applicant, applicant address, manufacturer address, product type, trade name, model number, FCC ID, the logo of the product and remove label.

All differences won't influence the test results. Therefore, all test items don't need to be re-evaluated.

Original Report : 1611FR20

Modify: 1903FR13

Frequency Band	Max. RF Output Power (W)
IEEE 802.11b	0.028
IEEE 802.11g	0.042
IEEE 802.11n 2.4 GHz 20 MHz	0.070
IEEE 802.11n 2.4 GHz 40 MHz	0.070
Beamforming on	
Frequency Band	Max. RF Output Power (W)
IEEE 802.11n 2.4 GHz 20 MHz	0.081
IEEE 802.11n 2.4 GHz 40 MHz	0.065

3 Test Methodology

3.1. Mode of Operation

Decision of Test ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmit mode
Mode 2: IEEE 802.11b Continuous TX mode
Mode 3: IEEE 802.11g Continuous TX mode
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes.

By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "X axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

Test Mode	ANT-0	ANT-1	ANT-0+1
Mode 2: IEEE 802.11b link mode	V	---	---
Mode 3: IEEE 802.11g link mode	V	---	---
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode	V	V	V
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode	V	V	V

Test Mode	Antenna Delivery	Test Channel	Data Rate (Mbps)
Mode 2: IEEE 802.11b link mode	1TX / 1RX (ANT-0)	1, 6, 11	1
Mode 3: IEEE 802.11g link mode	1TX / 1RX (ANT-0)	1, 6, 11	6
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode	2TX / 2RX (MIMO)	1, 6, 11	13
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode	2TX / 2RX (MIMO)	3, 6, 9	27



Duty cycle

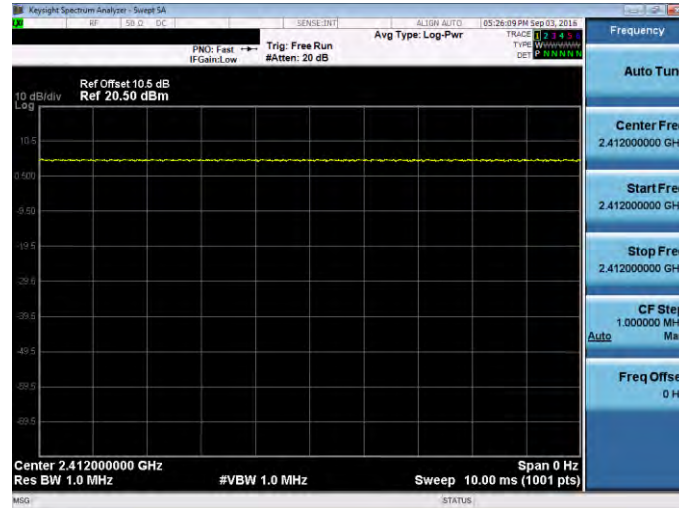
Test Mode	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle	Duty Factor (dB)	1/T Minimum VBW (kHz)
Mode 2: IEEE 802.11b link mode	2412.0	10.000	10.000	1.000	0.000	0.010
Mode 3: IEEE 802.11g link mode	2412.0	10.000	10.000	1.000	0.000	0.010
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode	2412.0	10.000	10.000	1.000	0.000	0.010
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode	2422.0	10.000	10.000	1.000	0.000	0.010
Beamforming on						
Test Mode	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle	Duty Factor (dB)	1/T Minimum VBW (kHz)
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode	2412.0	10.000	10.000	1.000	0.000	0.010
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode	2422.0	10.000	10.000	1.000	0.000	0.010



Duty Cycle Graphs

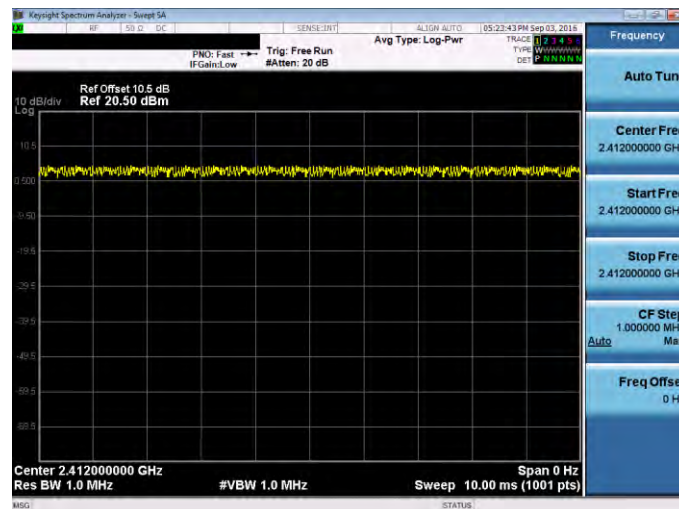
Mode 2: IEEE 802.11b link mode

On+off time



Mode 3: IEEE 802.11g Mode

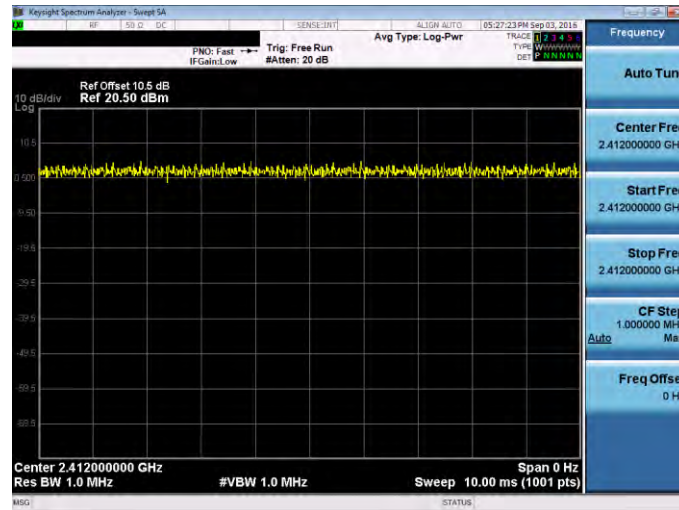
On+off time





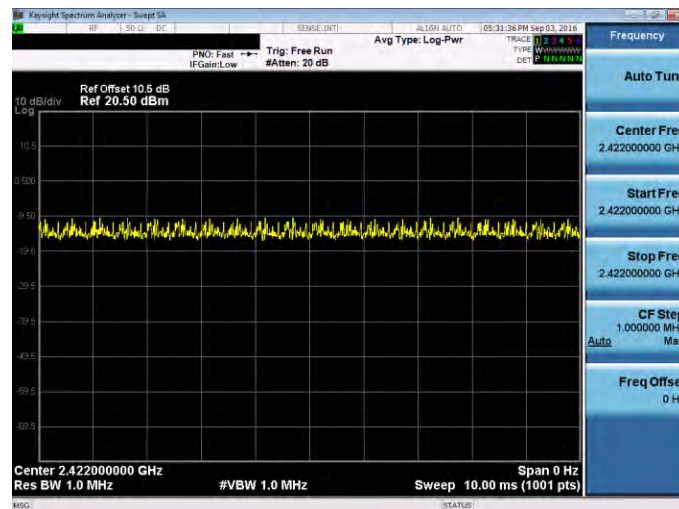
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Mode

On+off time



Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Mode

On+off time

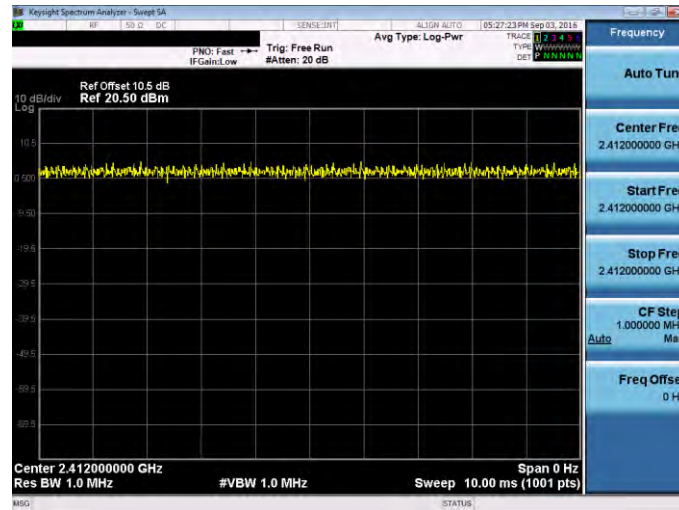




Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Mode

Beamforming on

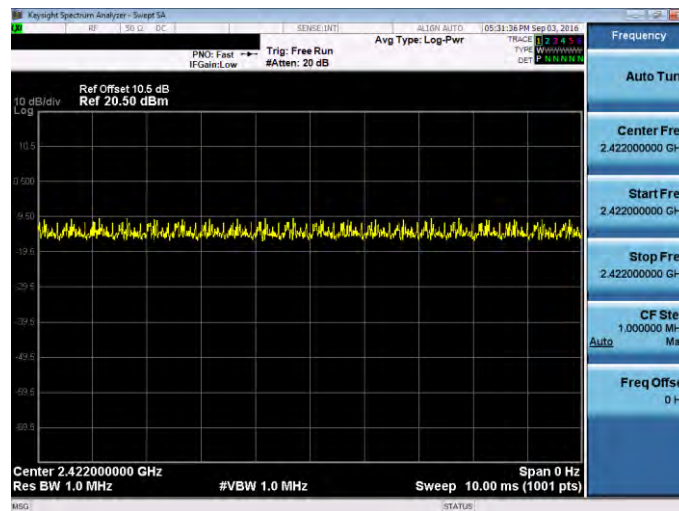
On+off time



Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Mode

Beamforming on

On+off time





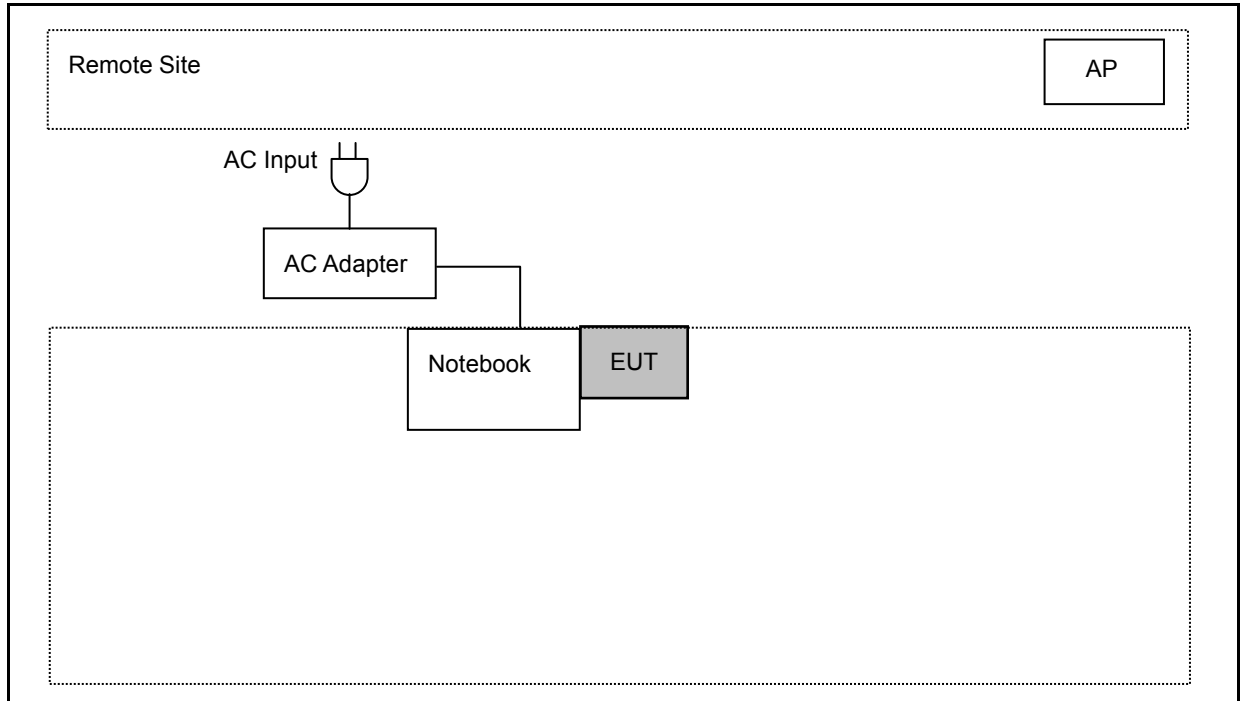
3.2. EUT Test Step

1.	Setup the EUT shown on “Configuration of Test System Details”.
2.	Turn on the power of all equipment.
3.	Turn on TX function
4.	EUT run test program.

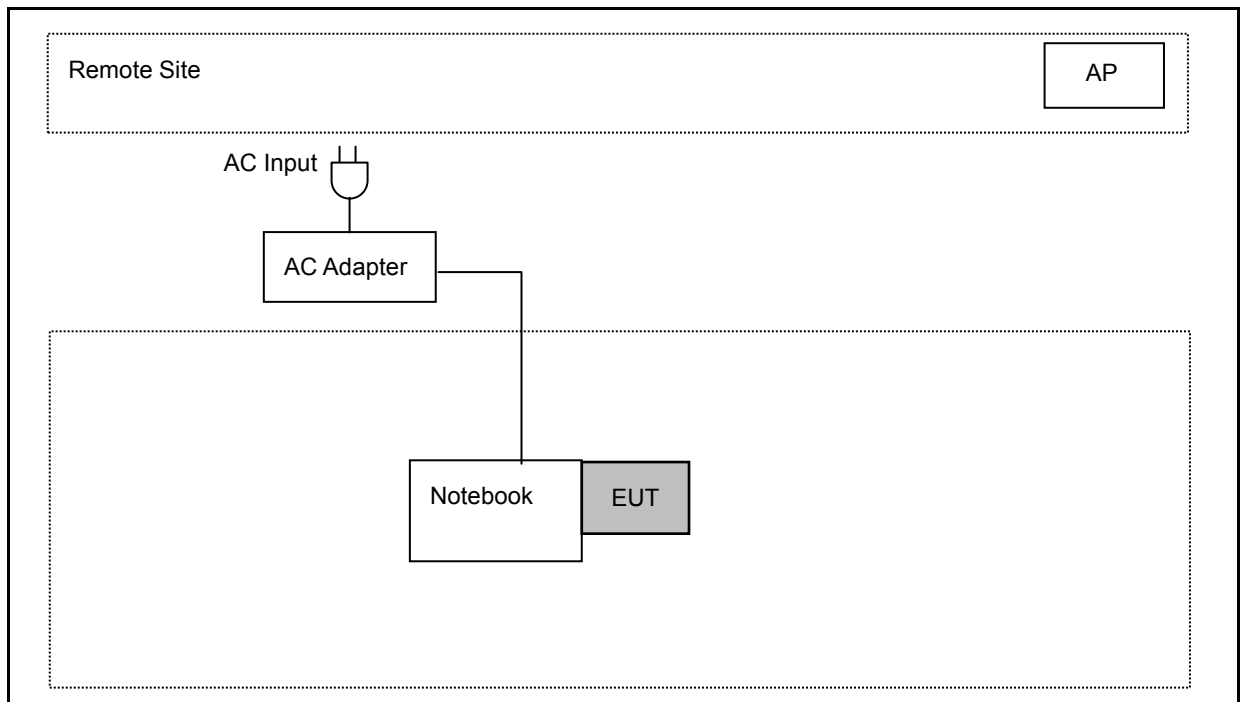
Measurement Software			
No.	Description	Software	Version
1	Conducted Emission	EZ EMC	1.1.4.3
2	Radiated Emission	EZ EMC	1.1.4.4

3.3. Configuration of Test System Details

Conducted Emissions



Radiated Emission





3.4. Test Instruments

For Conducted Emission

Test Period: Aug. 22, 2016

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Test Receiver	R&S	ESCI	100367	05/31/2016	1 year
LISN	R&S	ENV216	101040	03/15/2016	1 year
LISN	R&S	ENV216	101041	03/07/2016	1 year
RF Cable	Woken	00100D1380194M	TE-02-02	05/31/2016	1 year
Test Site	ATL	TE02	TE02	N.C.R.	-----

For Radiated Emissions

Test Period: Aug. 02 ~ Oct. 07, 2016

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
RF Pre-selector	Agilent	N9039A	MY46520256	01/08/2016	1 year
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/08/2016	1 year
Pre Amplifier	Agilent	8449B	3008A02237	10/11/2016	1 year
Pre Amplifier	Agilent	8447D	2944A11119	01/11/2016	1 year
Broadband Antenna	Schwarzbeck	VULB9168	416	10/13/2016	1 year
Horn Antenna (1~18 GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/06/2016	1 year
Horn Antenna (18~40 GHz)	ETS	3116	86467	09/05/2016	1 year
Loop Antenna	COM-POWER CORPORATION	AL-130	121014	02/01/2016	1 year
Microwave Cable	EMCI	EMC102-KM-KM-1 4000	151001	02/23/2016	1 year
Microwave Cable	EMCI	EMC-104-SM-SM- 14000	140202	02/23/2016	1 year
Microwave Cable	EMCI	EMC104-SM-SM-6 00	140301	02/23/2016	1 year
Test Site	ATL	TE01	888001	08/29/2016	1 year

Note: N.C.R. = No Calibration Request.



For Conducted

Test Period: Aug. 02 ~ Nov. 07, 2016

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Power Sensor	Anritsu	MA2411B	1126022	08/29/2016	1 year
Power Meter	Anritsu	ML2495A	1135009	08/29/2016	1 year
Microwave Cable	EMCI	EMC104-SM-SM-1 500	140303	02/23/2016	1 year
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/15/2015	1 year
Spectrum Analyzer	Agilent	E4408B	MY45107753	08/08/2016	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

3.5. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	990

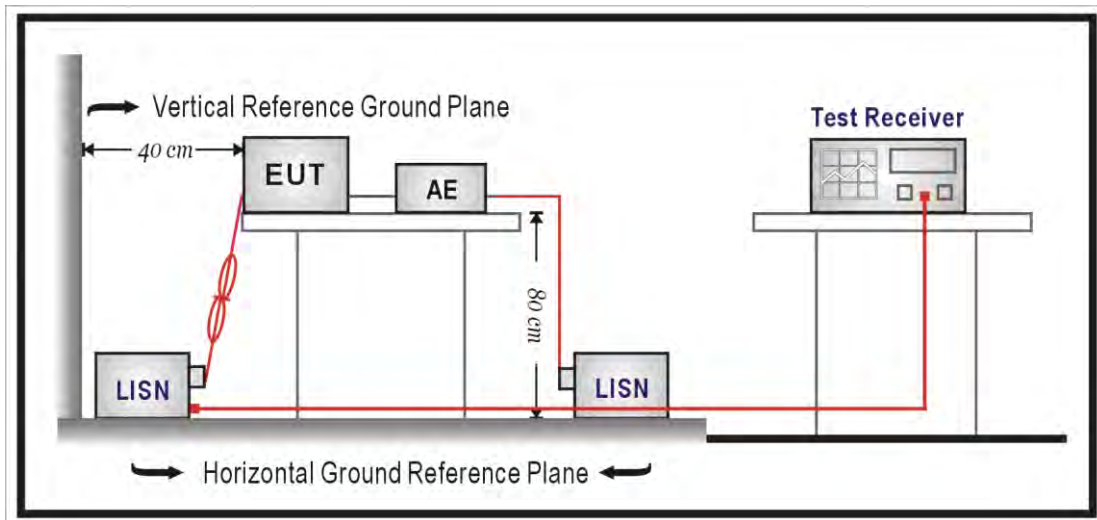
4 Measurement Procedure

4.1. AC Power Line Conducted Emission Measurement

■ Limit

Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

■ Test Setup



■ Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a $50\ \Omega // 50\ \mu\text{H}$ coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a $50\ \Omega // 50\ \mu\text{H}$ coupling impedance with 50 ohm termination.

Tabletop device shall be placed on a non-conducting platform, of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The wall of screened room shall be located 40 cm to the rear of the EUT. Other surfaces of tabletop or floor standing EUT shall be at least 80 cm from any other ground conducting surface including one or more LISNs. For floor-standing device shall be placed under the EUT with a 12 mm insulating material.

Conducted emissions were investigated over the frequency range from 0.15 MHz to 30 MHz using a resolution bandwidth of 9 kHz. The equipment under test (EUT) shall be meet the limits in section 4.1, as applicable, including the average limit and the quasi-peak limit when using respectively, an average detector and quasi-peak detector measured in accordance with the methods described of related standard. When all of peak value were complied with quasi-peak and average limit from 150 kHz to 30 MHz then quasi-peak and average measurement was unnecessary.

The AMN shall be placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for AMNs mounted on top of the ground reference plane. This distance is between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8 m from the AMN. If the mains power cable is longer than 1 m then the cable shall be folded back and forth at the centre of the lead to form a bundle no longer than 0.4 m. All of interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long. All of EUT and AE shall be separate place more than 0.1 m. All 50 Ω ports of the LISN shall be resistively terminated into 50 Ω loads when not connected to the measuring instrument.

If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the higher reading shall be recorded with the exception of any brief isolated high reading which shall be ignored.



4.2. Radiated Emission Measurement

■ Limit

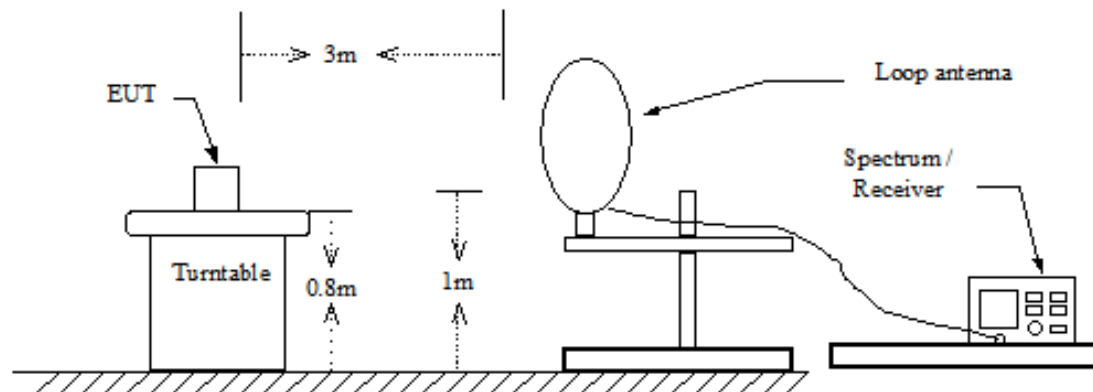
According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$ at meter)	Measurement Distance (meters)
0.009 – 0.490	$2400 / F$ (kHz)	300
0.490 – 1.705	$24000 / F$ (kHz)	30
1.705 – 30.0	30	30
30 - 88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

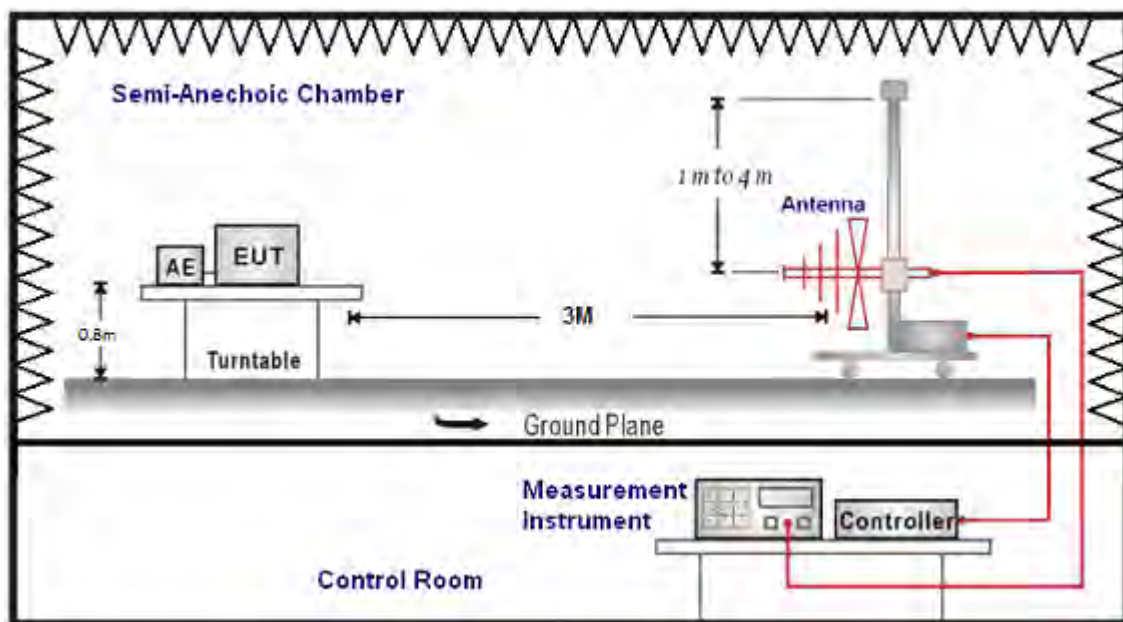
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

■ Setup

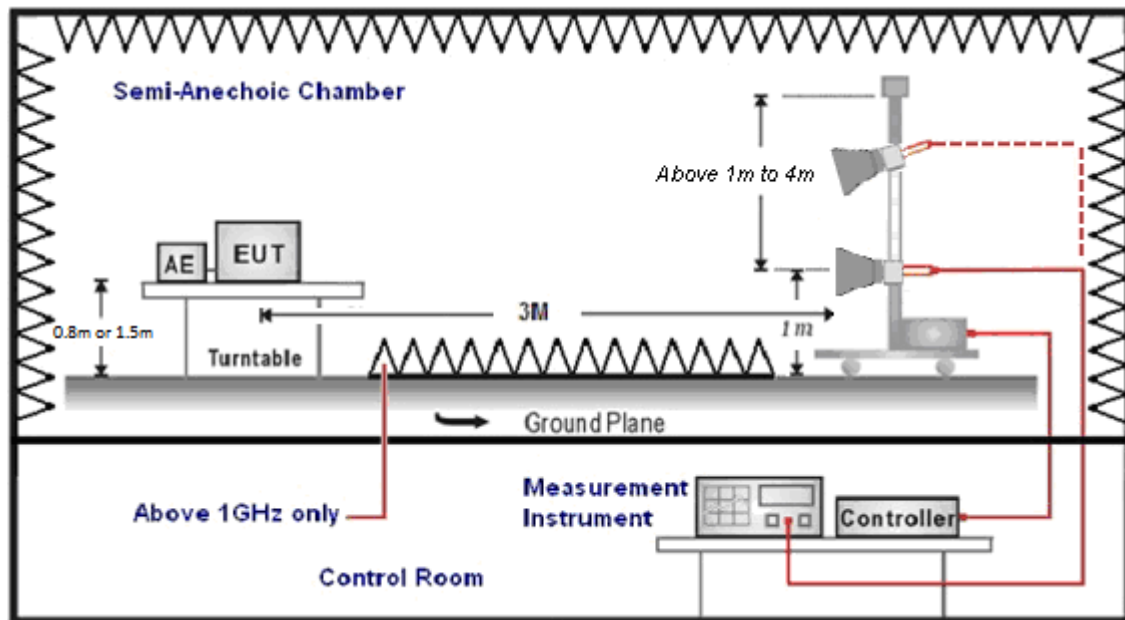
9 kHz ~ 30 MHz



Below 1 GHz



Above 1 GHz



■ Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 or 1.5 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 9 kHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 3 MHz for peak measurements and 10 Hz for average measurements when Duty cycle >0.98 / $1/T$ for average measurements when Duty cycle <0.98 . A nonconductive material surrounded the EUT to supporting the EUT for standing on three orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna was used in frequencies 1 –26.5 GHz at a distance of 3 meter. The antenna at an angle toward the source of the emission. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20 dB/decade).

For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts pre meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro volts per meter (dBuV/m).

The actual field intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

(1) $\text{Amplitude (dBuV/m)} = \text{FI (dBuV)} + \text{AF (dBuV)} + \text{CL (dBuV)} - \text{Gain (dB)}$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

(2) $\text{Actual Amplitude (dBuV/m)} = \text{Amplitude (dBuV)} - \text{Dis(dB)}$

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(a) For fundamental frequency : Transmitter Output < +30 dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.

4.3. Maximum Conducted Output Power Measurement

■ Limit

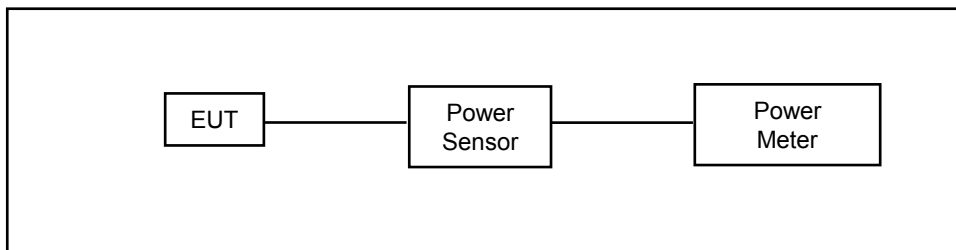
For systems using digital modulation in the 2400-2483.5 MHz, the limit for maximum output power is 30 dBm.

And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

* SISO mode for ANT-0 : Directional Gain = Max. Gain = 1.81 dBi < 6 dBi.

* MIMO/BF mode : Directional Gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / N_{ANT}\}$ = 4.13 dBi < 6 dBi

■ Test Setup



■ Test Procedure

The testing follows the Measurement Procedure of ANSI C63.10:2013 section 11.9.2.3.2 Method AVGPM.

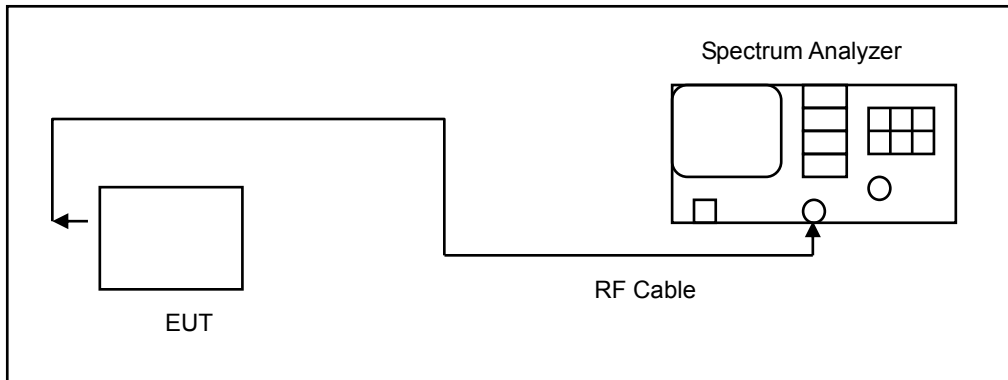
The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to power sensor.

4.4. 6 dB RF Bandwidth Measurement

■ Limit

6 dB RF Bandwidth: Systems using digital modulation techniques may operate in the 2400–2483.5 MHz bands. The minimum 6 dB band-width shall be at least 500 kHz.

■ Test Setup



■ Test Procedure

The EUT tested to DTS test procedure of ANSI C63.10:2013 section 11.8.2 option2 for compliance to FCC 47CFR 15.247 requirements.

6 dB RF Bandwidth: The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A peak output reading was taken, a DISPLAY line was drawn 6 dB lower than peak level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.

The test was performed at 3 channels (Channel low, middle, high)

4.5. Maximum Power Spectral Density Measurement

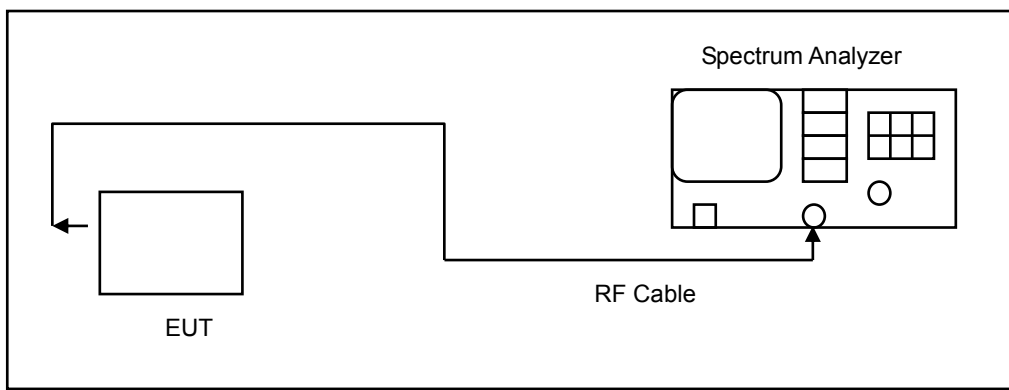
■ Limit

For digitally modulated systems, the 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.

* SISO mode for ANT-0 : Directional Gain = Max. Gain = 1.81 dBi < 6 dBi.

* MIMO/BF mode : Directional Gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / N_{ANT}\}$ = 4.13 dBi < 6 dBi

■ Test Setup



■ Test Procedure

The EUT tested to DTS test procedure of ANSI C63.10:2013 section 11.10.2 Method PKPSD for compliance to FCC 47CFR 15.247 requirements.

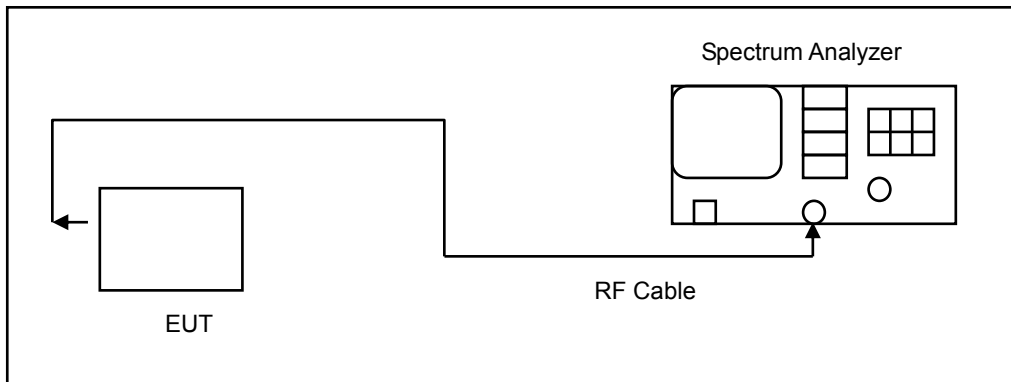
1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.6. Out of Band Conducted Emissions Measurement

■ Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or 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

■ Test Setup



■ Test Procedure

In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 30 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band. The test was performed at 3 channels.



4.7. Antenna Measurement

■ Limit

For intentional device, according to 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ Antenna Description

See section 2 – antenna information.

■ Directional Gain Calculated

Directional Gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / NANT\}$ = 4.13 dBi < 6 dBi

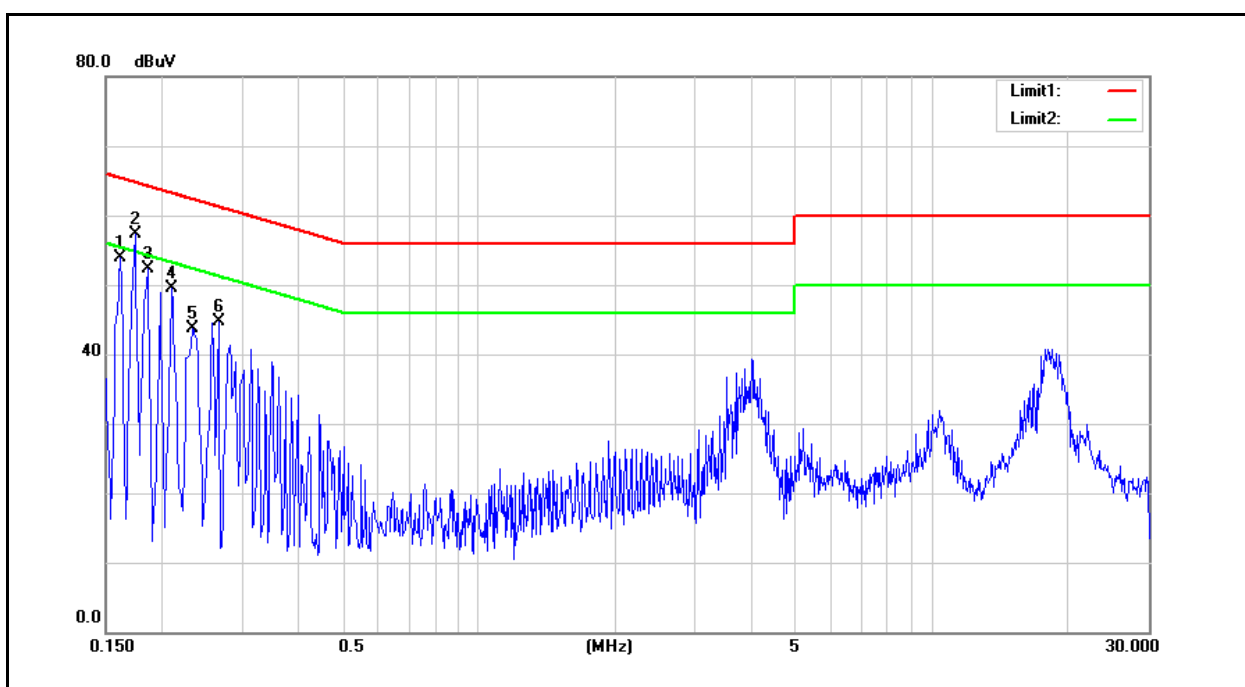
Operate Freq. Band	Directional Gain (dBi)
IEEE 802.11n 2.4 GHz 20 MHz	4.13
IEEE 802.11n 2.4 GHz 40 MHz	4.13



5 Test Results

Annex A. Conducted Emission

Standard:	FCC Part 15C	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Model Number:	DWA-181	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	Mode 1	Date:	08/22/2016
		Test By:	Eric Ou Yang
Description:			



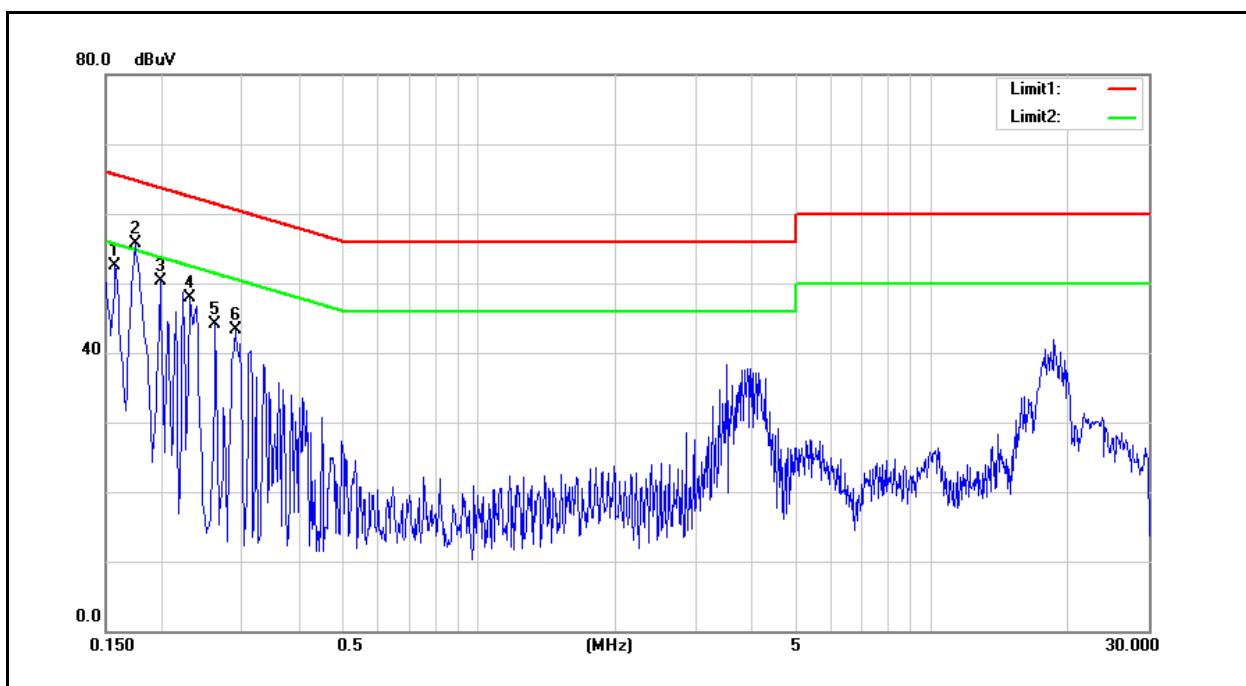
No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1620	38.83	10.82	9.60	48.43	20.42	65.36	55.36	-16.93	-34.94	Pass
2	0.1740	42.40	29.74	9.60	52.00	39.34	64.77	54.77	-12.77	-15.43	Pass
3	0.1860	35.94	10.40	9.59	45.53	19.99	64.21	54.21	-18.68	-34.22	Pass
4	0.2100	32.89	5.70	9.59	42.48	15.29	63.21	53.21	-20.73	-37.92	Pass
5	0.2340	35.01	23.17	9.59	44.60	32.76	62.31	52.31	-17.71	-19.55	Pass
6	0.2660	27.38	1.90	9.60	36.98	11.50	61.24	51.24	-24.26	-39.74	Pass

Note: 1. Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).



Standard:	FCC Part 15C	Line:	N
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Model Number:	DWA-181	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	Mode 1	Date:	08/22/2016
		Test By:	Eric Ou Yang
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1580	39.57	10.79	9.59	49.16	20.38	65.57	55.57	-16.41	-35.19	Pass
2	0.1740	42.36	29.07	9.59	51.95	38.66	64.77	54.77	-12.82	-16.11	Pass
3	0.1980	34.19	7.25	9.58	43.77	16.83	63.69	53.69	-19.92	-36.86	Pass
4	0.2300	32.39	18.47	9.58	41.97	28.05	62.45	52.45	-20.48	-24.40	Pass
5	0.2620	27.72	2.17	9.59	37.31	11.76	61.37	51.37	-24.06	-39.61	Pass
6	0.2900	28.47	15.73	9.59	38.06	25.32	60.52	50.52	-22.46	-25.20	Pass

Note: 1. Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).



Annex B. Conducted Test Results

Maximum Conducted Output Power Measurement

Model Number	DWA-181				
Test Item	Maximum Conducted Output Power				
Date of Test	08/02/2016				
ANT-0					
Test Mode	Frequency (MHz)	Data Rate	Average Output Power		
			Measurement Results		Limit
			dBm	W	dBm
Mode 2	2412	1 M	14.25	0.027	< 30
	2437		14.23	0.026	< 30
	2462		14.45	0.028	< 30
	2437	2 M	14.20	0.026	< 30
	2437	5.5 M	14.19	0.026	< 30
	2437	11 M	14.15	0.026	< 30
Mode 3	2412	6 M	14.62	0.029	< 30
	2437		16.26	0.042	< 30
	2462		14.20	0.026	< 30
	2437	9 M	16.25	0.042	< 30
	2437	12 M	16.20	0.042	< 30
	2437	18 M	16.24	0.042	< 30
	2437	24 M	16.19	0.042	< 30
	2437	36 M	16.22	0.042	< 30
	2437	48 M	16.20	0.042	< 30
	2437	54 M	16.18	0.041	< 30

Note: The relevant measured result has the offset with cable loss already.



Model Number	DWA-181				
Test Item	Maximum Conducted Output Power				
Date of Test	08/02/2016				
ANT-0					
Test Mode	Frequency (MHz)	Data Rate	Average Output Power		
			Measurement Results		Limit
			dBm	W	dBm
Mode 4	2412	13 M	15.41	0.035	< 30
	2437		15.46	0.035	< 30
	2462		15.44	0.035	< 30
	2437	26 M	15.26	0.034	< 30
	2437	39 M	15.40	0.035	< 30
	2437	52 M	15.45	0.035	< 30
	2437	78 M	15.43	0.035	< 30
	2437	104M	15.39	0.035	< 30
	2437	117 M	15.37	0.034	< 30
	2437	130 M	15.44	0.035	< 30
	2437	156 M	15.41	0.035	< 30
Mode 5	2422	27 M	15.26	0.034	< 30
	2437		15.37	0.034	< 30
	2452		15.45	0.035	< 30
	2437	54 M	15.35	0.034	< 30
	2437	81 M	15.30	0.034	< 30
	2437	108 M	15.36	0.034	< 30
	2437	162 M	15.34	0.034	< 30
	2437	216 M	15.29	0.034	< 30
	2437	243 M	15.36	0.034	< 30
	2437	135 M	15.32	0.034	< 30
	2437	324 M	15.31	0.034	< 30
	2437	360 M	15.33	0.034	< 30

Note: The relevant measured result has the offset with cable loss already.



Model Number	DWA-181				
Test Item	Maximum Conducted Output Power				
Date of Test	08/02/2016				
ANT-1					
Test Mode	Frequency (MHz)	Data Rate	Average Output Power		
			Measurement Results		Limit
			dBm	W	dBm
Mode 4	2412	13 M	15.49	0.035	< 30
	2437		15.48	0.035	< 30
	2462		15.42	0.035	< 30
	2437	26 M	15.18	0.033	< 30
	2437	39 M	15.45	0.035	< 30
	2437	52 M	15.47	0.035	< 30
	2437	78 M	15.40	0.035	< 30
	2437	104 M	15.42	0.035	< 30
	2437	117 M	15.41	0.035	< 30
	2437	130 M	15.46	0.035	< 30
	2437	156 M	15.38	0.035	< 30
Mode 5	2422	27 M	15.39	0.035	< 30
	2437		15.47	0.035	< 30
	2452		15.48	0.035	< 30
	2437	54 M	15.41	0.035	< 30
	2437	81 M	15.39	0.035	< 30
	2437	108 M	15.45	0.035	< 30
	2437	162 M	15.44	0.035	< 30
	2437	216 M	15.38	0.035	< 30
	2437	243 M	15.42	0.035	< 30
	2437	135 M	15.40	0.035	< 30
	2437	324 M	15.36	0.034	< 30
	2437	360 M	15.38	0.035	< 30

Note: The relevant measured result has the offset with cable loss already.



Model Number	DWA-181				
Test Item	Maximum Conducted Output Power				
Date of Test	08/02/2016				
ANT-0+1					
Test Mode	Frequency (MHz)	Data Rate	Average Output Power		
			Measurement Results		Limit
			dBm	W	dBm
Mode 4	2412	13 M	18.46	0.070	< 30
	2437		18.48	0.070	< 30
	2462		18.44	0.070	< 30
	2437	26 M	18.23	0.067	< 30
	2437	39 M	18.44	0.070	< 30
	2437	52 M	18.47	0.070	< 30
	2437	78 M	18.43	0.070	< 30
	2437	104 M	18.42	0.069	< 30
	2437	117 M	18.40	0.069	< 30
	2437	130 M	18.46	0.070	< 30
	2437	156 M	18.41	0.069	< 30
Mode 5	2422	27 M	18.34	0.068	< 30
	2437		18.43	0.070	< 30
	2452		18.48	0.070	< 30
	2437	54 M	18.39	0.069	< 30
	2437	81 M	18.36	0.068	< 30
	2437	108 M	18.42	0.069	< 30
	2437	162 M	18.40	0.069	< 30
	2437	216 M	18.35	0.068	< 30
	2437	243 M	18.40	0.069	< 30
	2437	135 M	18.37	0.069	< 30
	2437	324 M	18.35	0.068	< 30
	2437	360 M	18.37	0.069	< 30

Note: The relevant measured result has the offset with cable loss already.



Model Number	DWA-181				
Test Item	Maximum Conducted Output Power				
Date of Test	08/02/2016				
Beamforming on					
ANT-0					
Test Mode	Frequency (MHz)	Data Rate	Average Output Power		
			Measurement Results		Limit
			dBm	W	dBm
Mode 4	2412	13 M	14.05	0.025	< 30
	2437		15.73	0.037	< 30
	2462		14.94	0.031	< 30
	2437	26 M	15.60	0.036	< 30
	2437	39 M	15.57	0.036	< 30
	2437	52 M	15.70	0.037	< 30
	2437	78 M	15.68	0.037	< 30
	2437	104 M	15.65	0.037	< 30
	2437	117 M	15.71	0.037	< 30
	2437	130 M	15.66	0.037	< 30
	2437	156 M	15.63	0.037	< 30
Mode 5	2422	27 M	13.84	0.024	< 30
	2437		15.26	0.034	< 30
	2452		12.39	0.017	< 30
	2437	54 M	15.20	0.033	< 30
	2437	81 M	15.23	0.033	< 30
	2437	108 M	15.17	0.033	< 30
	2437	162 M	15.12	0.033	< 30
	2437	216 M	15.15	0.033	< 30
	2437	243 M	15.21	0.033	< 30
	2437	135 M	15.19	0.033	< 30
	2437	324 M	15.13	0.033	< 30
	2437	360 M	15.12	0.033	< 30

Note: The relevant measured result has the offset with cable loss already.



Model Number	DWA-181				
Test Item	Maximum Conducted Output Power				
Date of Test	08/02/2016				
Beamforming on					
ANT-1					
Test Mode	Frequency (MHz)	Data Rate	Average Output Power		
			Measurement Results		Limit
			dBm	W	dBm
Mode 4	2412	13 M	14.17	0.026	< 30
	2437		16.36	0.043	< 30
	2462		15.02	0.032	< 30
	2437	26 M	16.27	0.042	< 30
	2437	39 M	16.32	0.043	< 30
	2437	52 M	16.30	0.043	< 30
	2437	78 M	16.25	0.042	< 30
	2437	104 M	16.20	0.042	< 30
	2437	117 M	16.29	0.043	< 30
	2437	130 M	16.22	0.042	< 30
	2437	156 M	16.25	0.042	< 30
Mode 5	2422	27 M	13.98	0.025	< 30
	2437		15.02	0.032	< 30
	2452		12.37	0.017	< 30
	2437	54 M	15.00	0.032	< 30
	2437	81 M	14.95	0.031	< 30
	2437	108 M	14.97	0.031	< 30
	2437	162 M	14.98	0.031	< 30
	2437	216 M	14.92	0.031	< 30
	2437	243 M	14.99	0.032	< 30
	2437	135 M	14.99	0.032	< 30
	2437	324 M	14.95	0.031	< 30
	2437	360 M	14.91	0.031	< 30

Note: The relevant measured result has the offset with cable loss already.



Model Number	DWA-181				
Test Item	Maximum Conducted Output Power				
Date of Test	08/02/2016				
Beamforming on					
ANT-0+1					
Test Mode	Frequency (MHz)	Data Rate	Average Output Power		
			Measurement Results		Limit
			dBm	W	dBm
Mode 4	2412	13 M	17.12	0.052	< 30
	2437		19.07	0.081	< 30
	2462		17.99	0.063	< 30
	2437	26 M	18.96	0.079	< 30
	2437	39 M	18.97	0.079	< 30
	2437	52 M	19.02	0.080	< 30
	2437	78 M	18.98	0.079	< 30
	2437	104 M	18.94	0.078	< 30
	2437	117 M	19.02	0.080	< 30
	2437	130 M	18.96	0.079	< 30
	2437	156 M	18.96	0.079	< 30
Mode 5	2422	27 M	16.92	0.049	< 30
	2437		18.15	0.065	< 30
	2452		15.39	0.035	< 30
	2437	54 M	18.11	0.065	< 30
	2437	81 M	18.10	0.065	< 30
	2437	108 M	18.08	0.064	< 30
	2437	162 M	18.06	0.064	< 30
	2437	216 M	18.05	0.064	< 30
	2437	243 M	18.11	0.065	< 30
	2437	135 M	18.10	0.065	< 30
	2437	324 M	18.05	0.064	< 30
	2437	360 M	18.03	0.063	< 30

Note: The relevant measured result has the offset with cable loss already.



6 dB RF Bandwidth Measurement

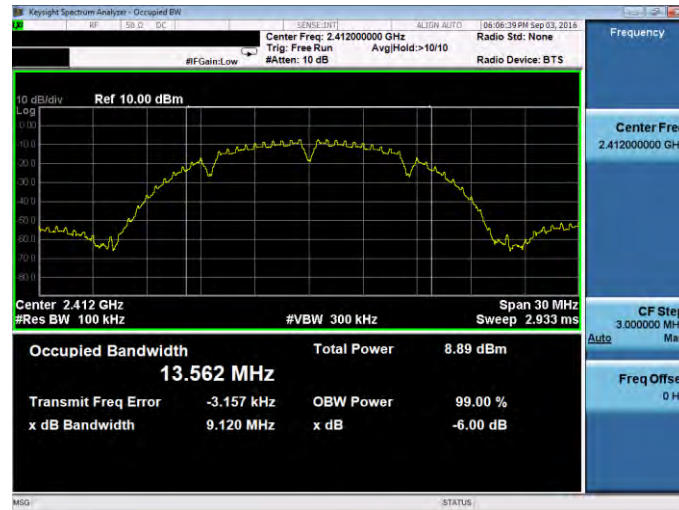
Model Number	DWA-181			
Test Item	6 dB RF Bandwidth			
Date of Test	09/03/2016, 11/07/2016			
Test Mode	Frequency (MHz)	Measurement (kHz)		Limit (kHz)
		ANT-0	ANT-1	
Mode 2	2412	9120	---	> 500
	2437	9123	---	> 500
	2462	9123	---	> 500
Mode 3	2412	16570	---	> 500
	2437	16570	---	> 500
	2462	16550	---	> 500
Mode 4	2412	17820	17670	> 500
	2437	17800	17660	> 500
	2462	17820	17690	> 500
Mode 5	2422	36550	36380	> 500
	2437	36510	36390	> 500
	2452	36570	36380	> 500
Beamforming on				
Test Mode	Frequency (MHz)	Measurement (kHz)		Limit (kHz)
		ANT-0	ANT-1	
Mode 4	2412	17560	17060	> 500
	2437	17540	16810	> 500
	2462	17300	17040	> 500
Mode 5	2422	35860	35780	> 500
	2437	36280	35490	> 500
	2452	36270	35550	> 500



■ Test Graphs

Mode 2: IEEE 802.11b link mode_ANT-0

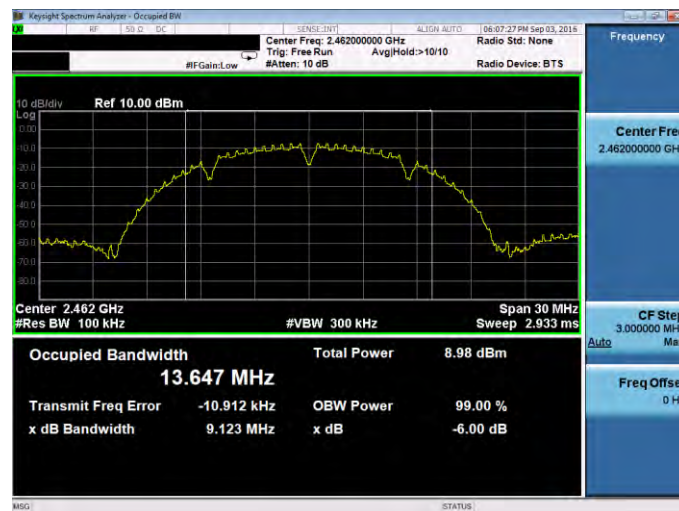
2412 MHz



2437 MHz



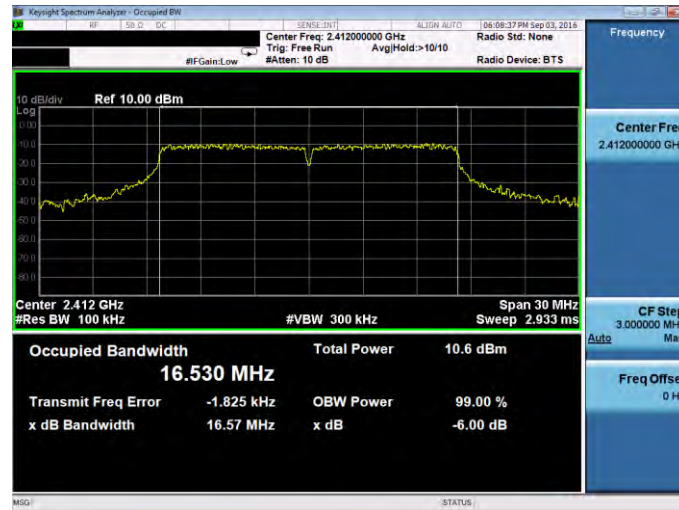
2462 MHz



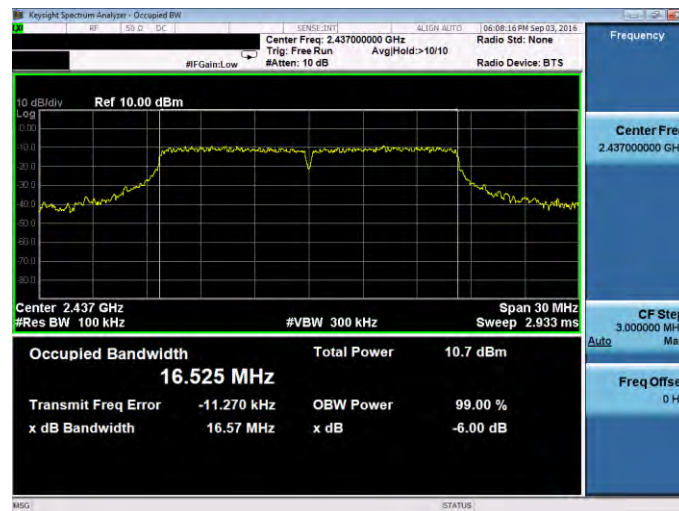


Mode 3: IEEE 802.11g link mode_ANT-0

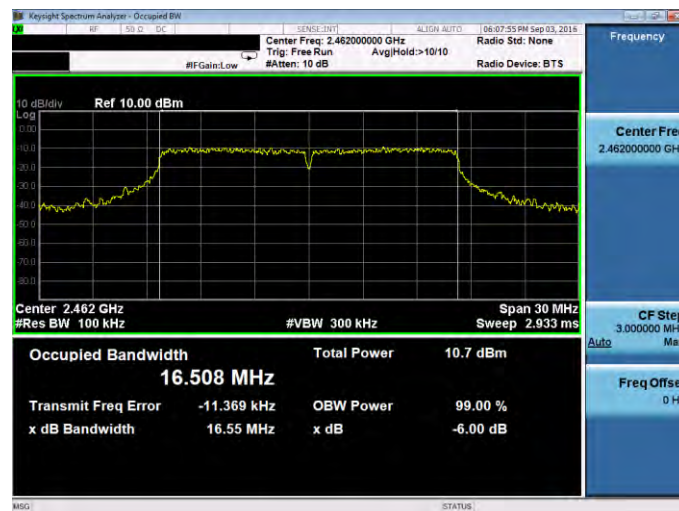
2412 MHz



2437 MHz



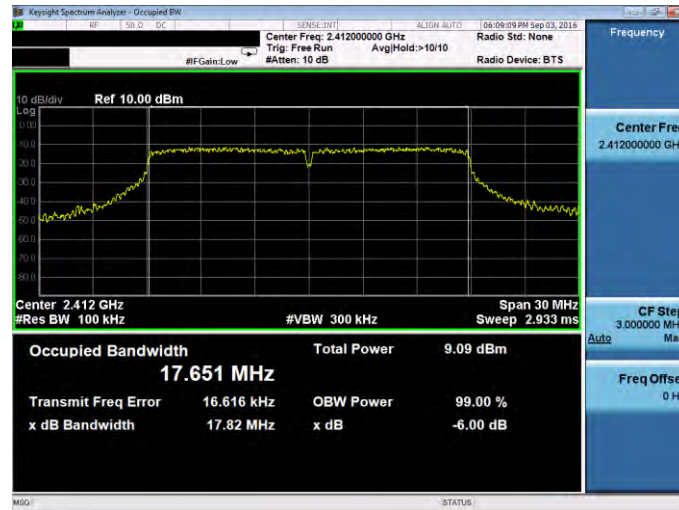
2462 MHz



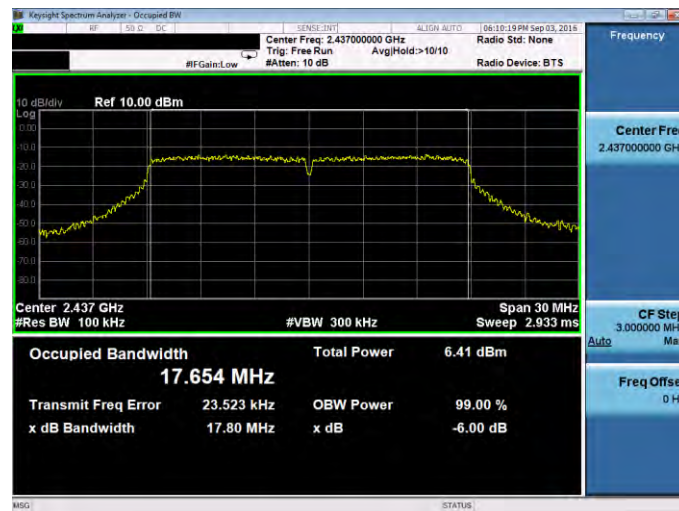


Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-0

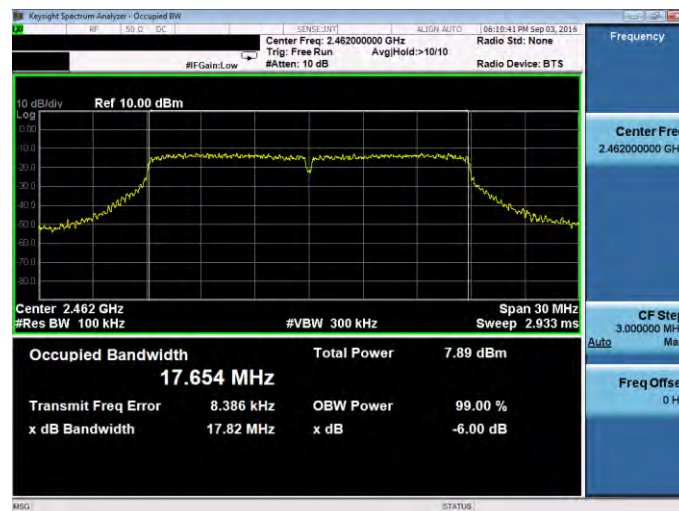
2412 MHz



2437 MHz



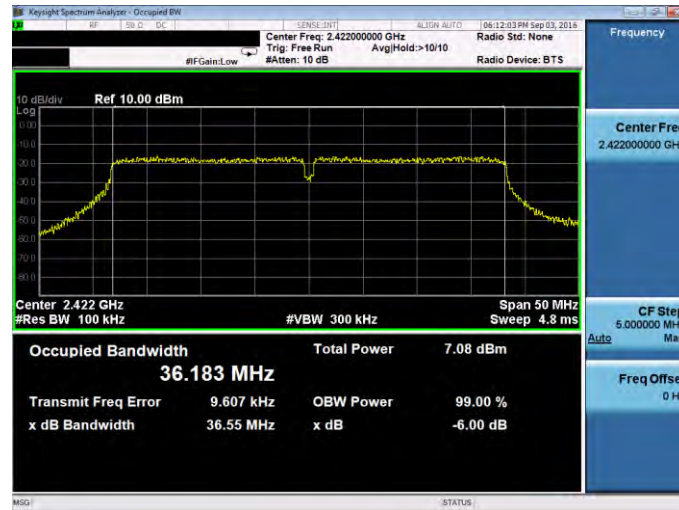
2462 MHz



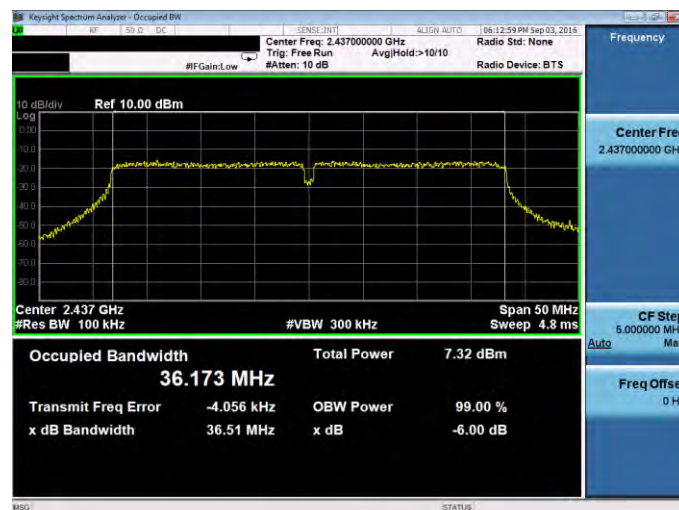


Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-0

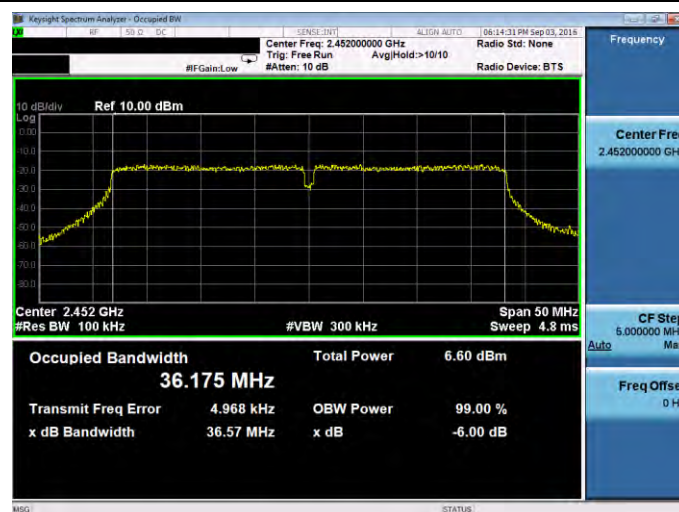
2422 MHz



2437 MHz



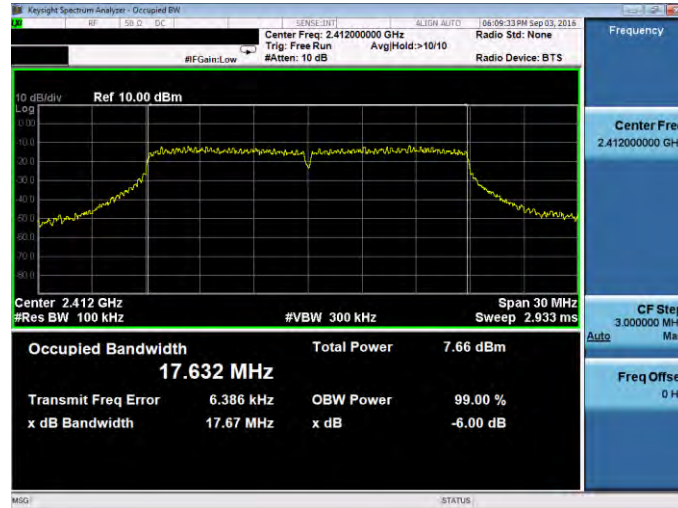
2452 MHz



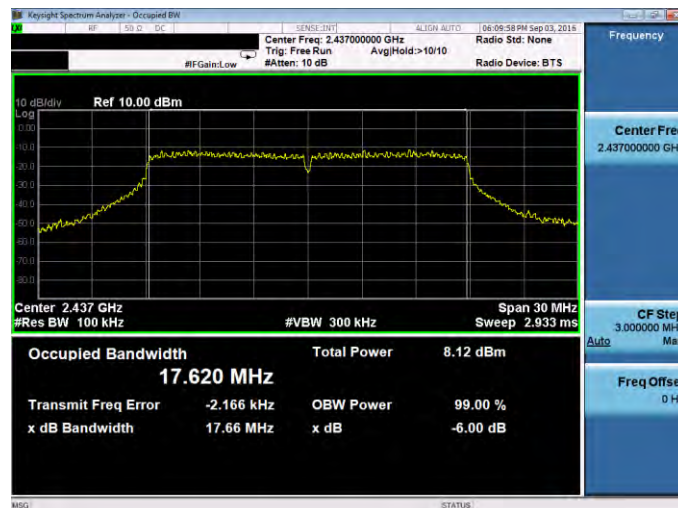


Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-1

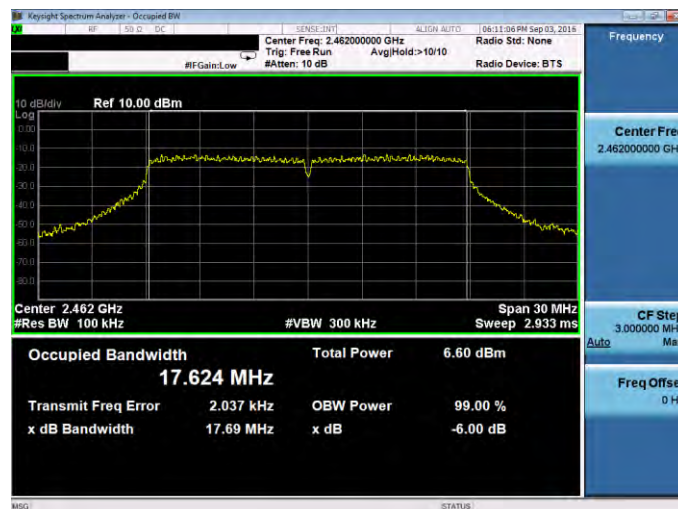
2412 MHz



2437 MHz



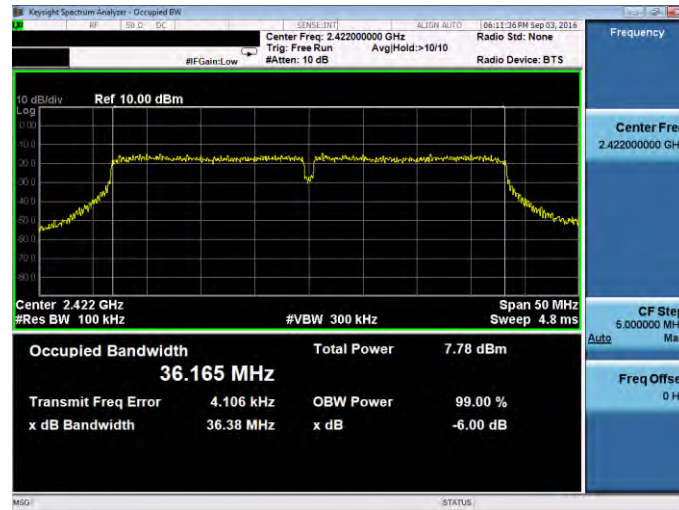
2462 MHz



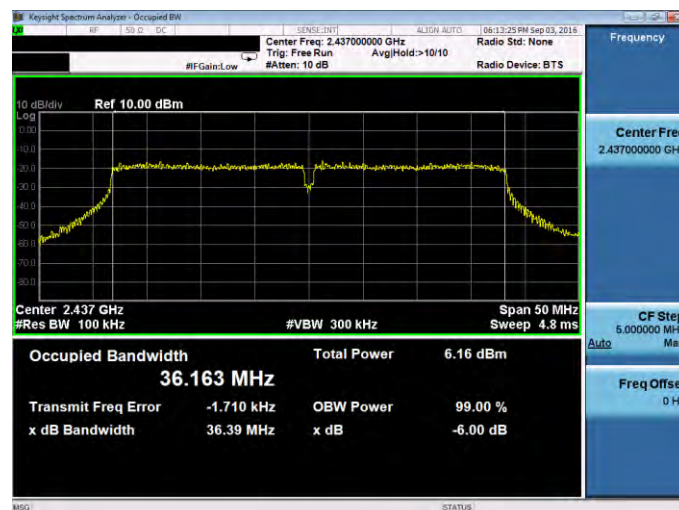


Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-1

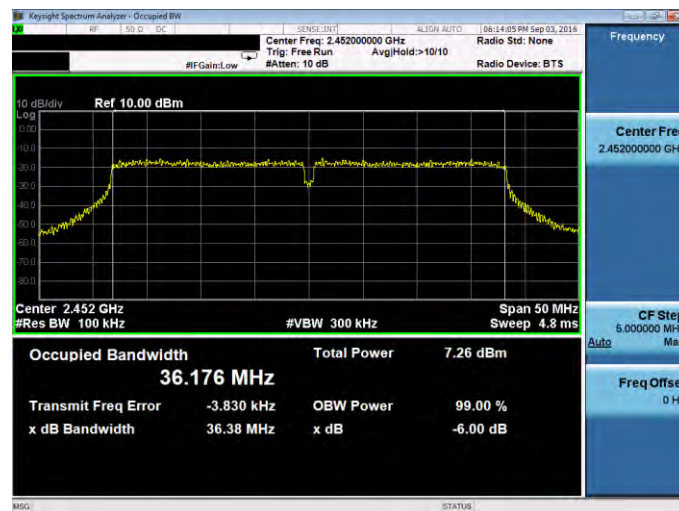
2422 MHz



2437 MHz



2452 MHz

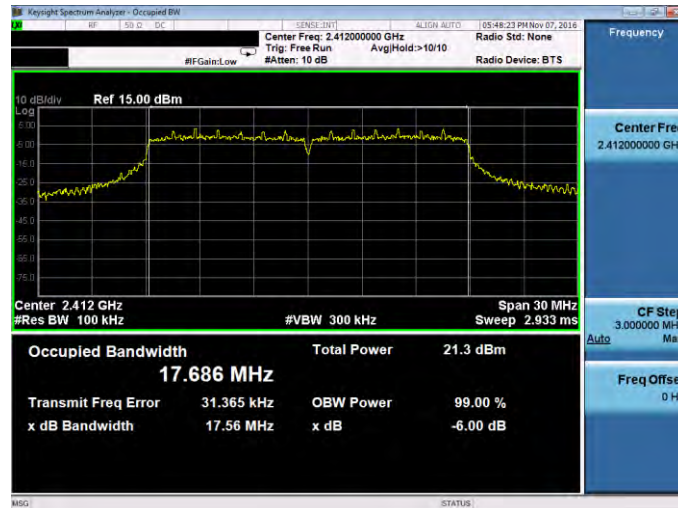




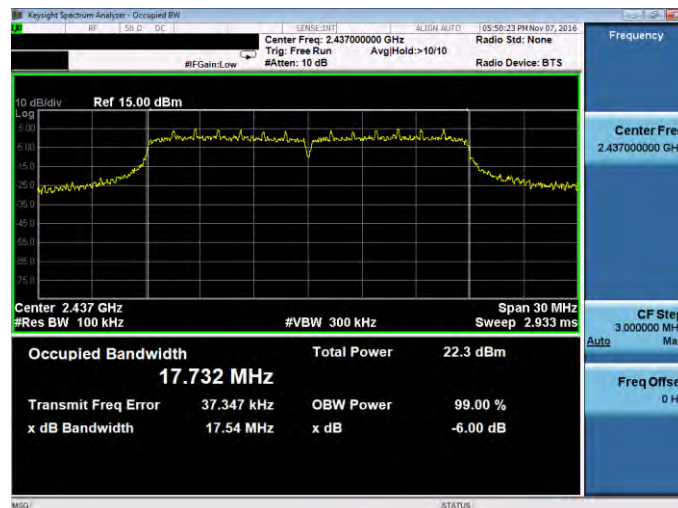
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-0

Beamforming on

2412 MHz



2437 MHz



2462 MHz

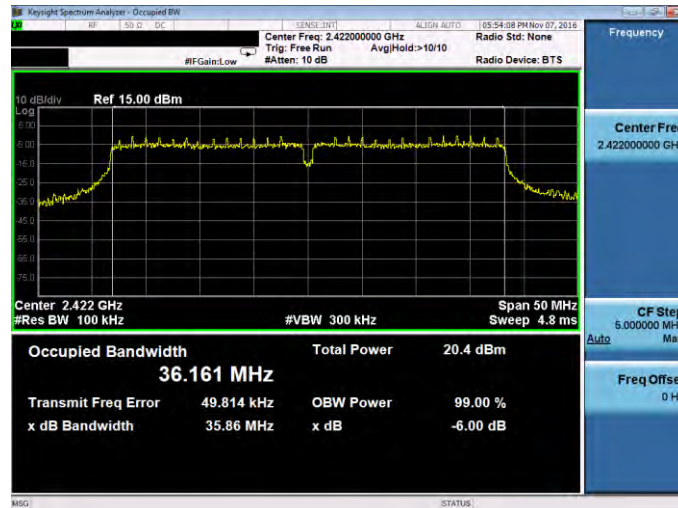




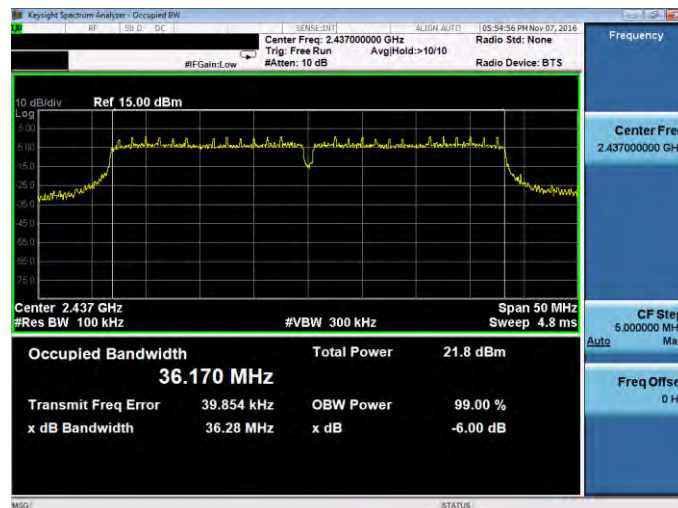
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-0

Beamforming on

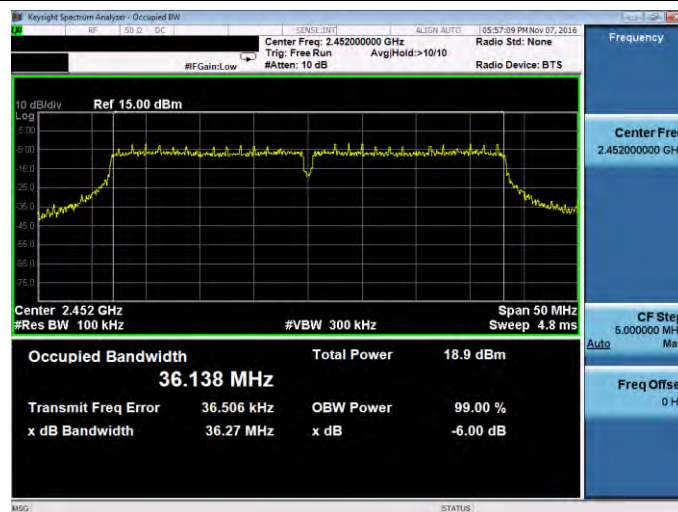
2422 MHz



2437 MHz



2452 MHz

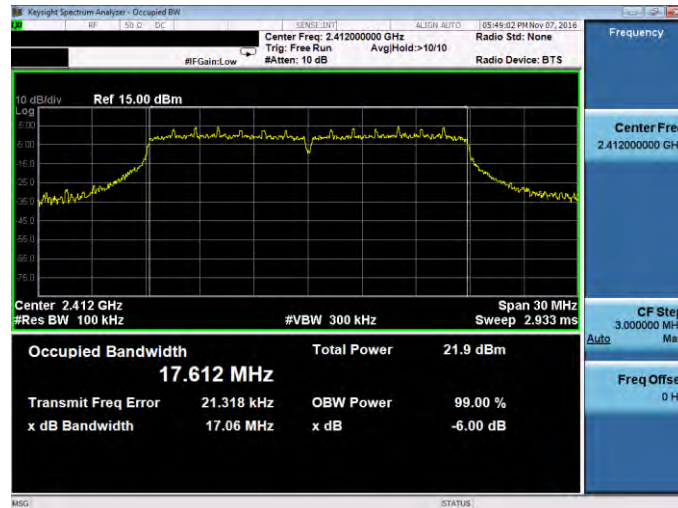




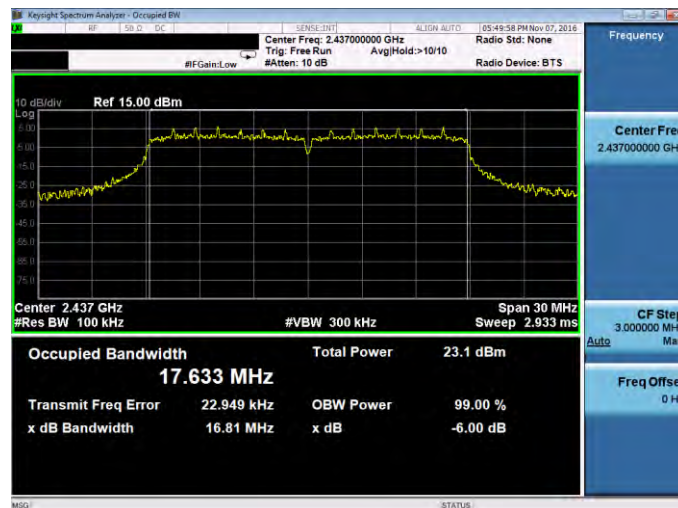
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-1

Beamforming on

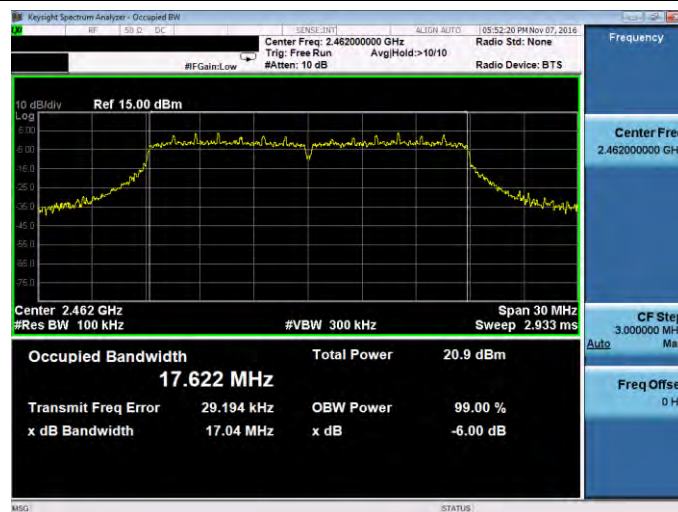
2412 MHz



2437 MHz



2462 MHz

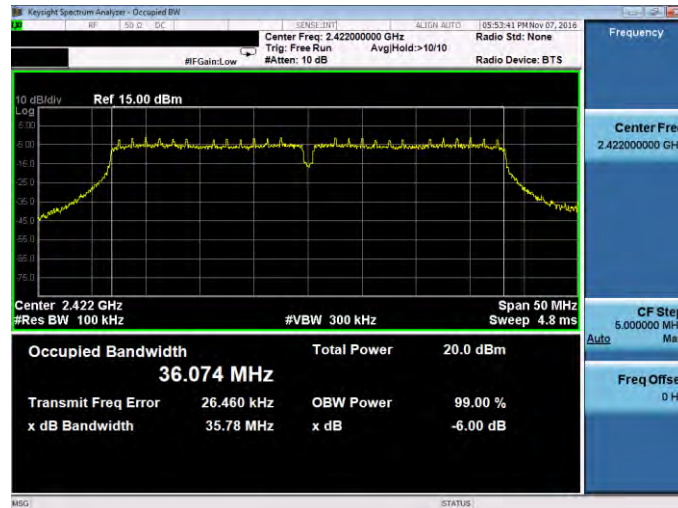




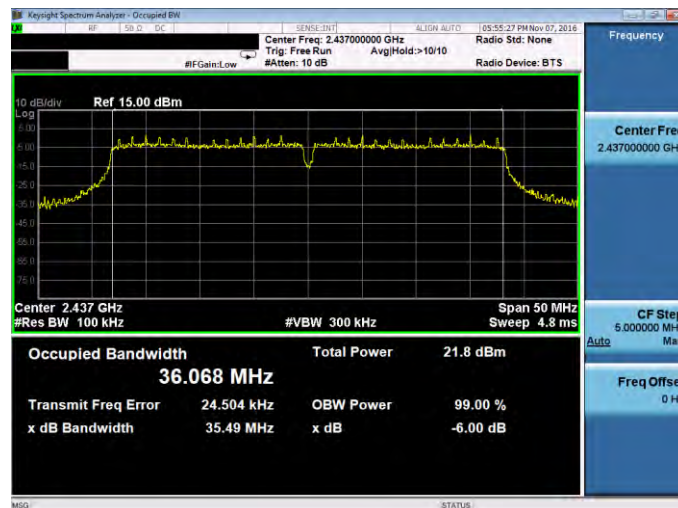
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-1

Beamforming on

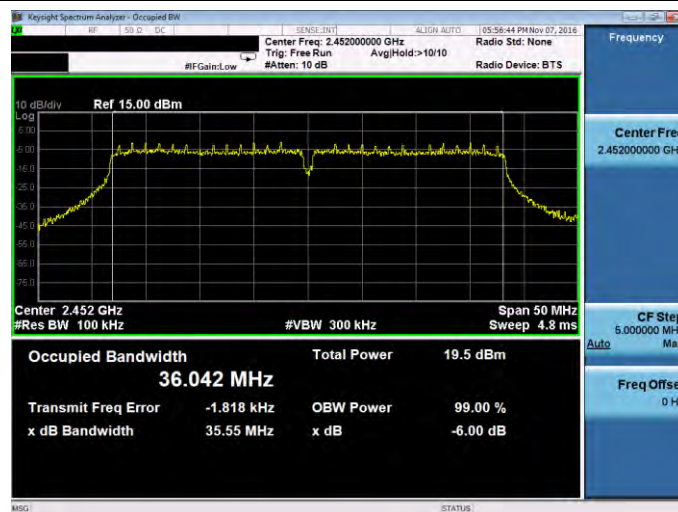
2422 MHz



2437 MHz



2452 MHz





Maximum Power Spectral Density Measurement

Model Number	DWA-181				
Test Item	Maximum Power Density				
Date of Test	09/03/2016, 11/07/2016				
Test Mode	Frequency (MHz)	Measurement (dBm/3 kHz)			Limit (dBm/3 kHz)
		ANT-0	ANT-1	ANT-0+1	
Mode 2	2412	-17.462	---	---	< 8
	2437	-17.305	---	---	< 8
	2462	-17.104	---	---	< 8
Mode 3	2412	-13.762	---	---	< 8
	2437	-13.915	---	---	< 8
	2462	-13.937	---	---	< 8
Mode 4	2412	-16.205	-15.334	-12.737	< 8
	2437	-15.403	-16.283	-12.810	< 8
	2462	-16.436	-15.650	-13.015	< 8
Mode 5	2422	-17.025	-18.495	-14.688	< 8
	2437	-19.043	-18.862	-15.941	< 8
	2452	-17.528	-18.595	-15.019	< 8
Beamforming on					
Test Mode	Frequency (MHz)	Measurement (dBm/3 kHz)			Limit (dBm/3 kHz)
		ANT-0	ANT-1	ANT-0+1	
Mode 4	2412	-10.264	-9.500	-6.855	< 8
	2437	-9.152	-8.731	-5.926	< 8
	2462	-8.977	-10.698	-6.743	< 8
Mode 5	2422	-14.550	-15.607	-12.036	< 8
	2437	-11.441	-13.278	-9.253	< 8
	2452	-15.029	-13.812	-11.368	< 8

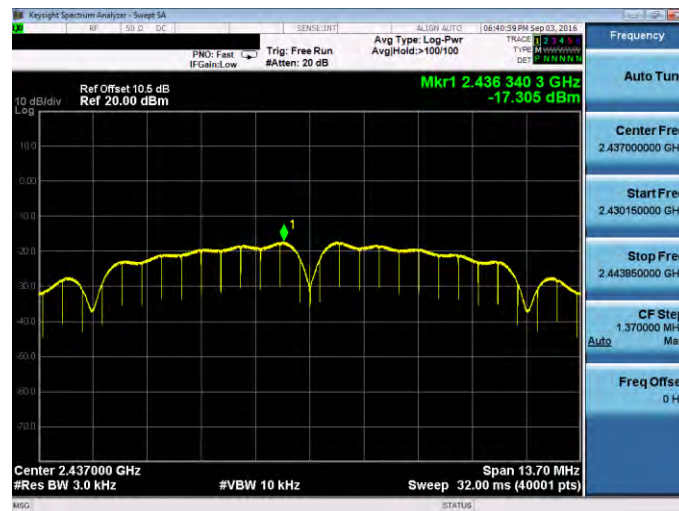
■ Test Graphs

Mode 2: IEEE 802.11b link mode_ANT-0

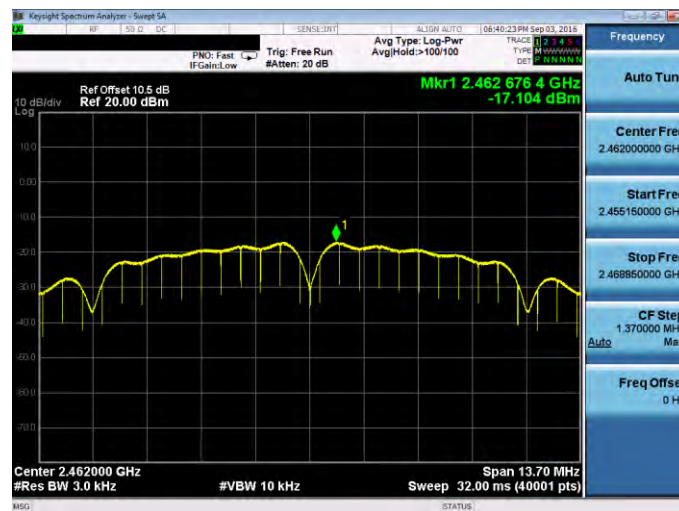
2412 MHz



2437 MHz



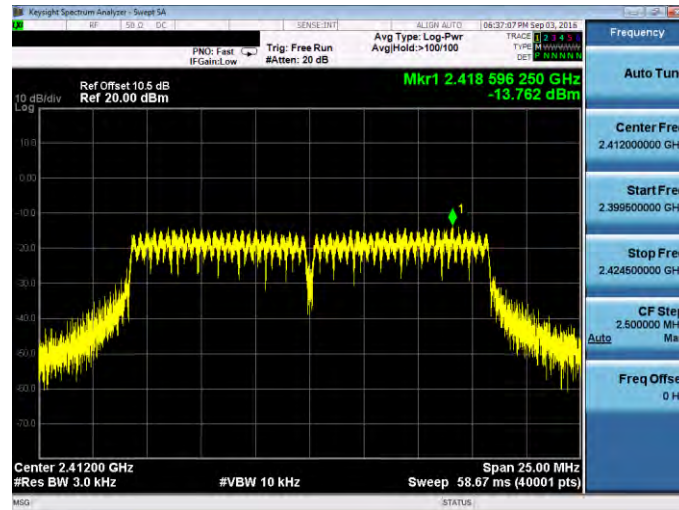
2462 MHz



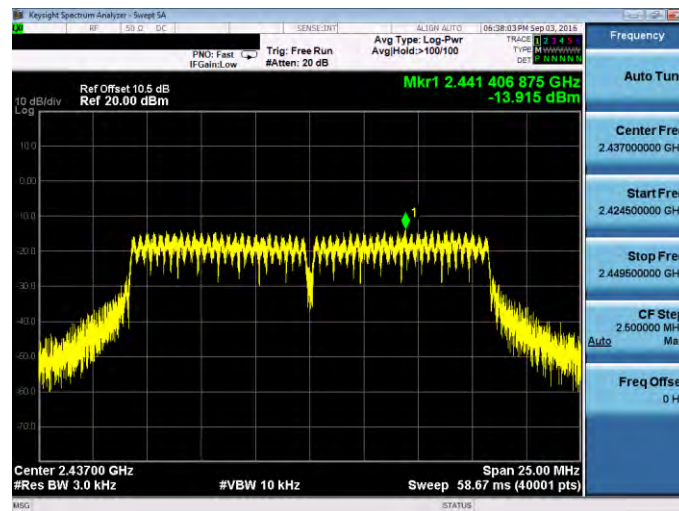


Mode 3: IEEE 802.11g link mode_ANT-0

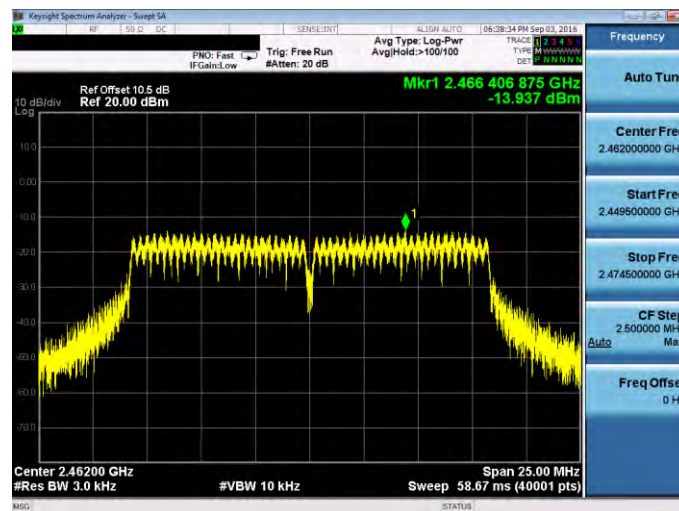
2412 MHz



2437 MHz



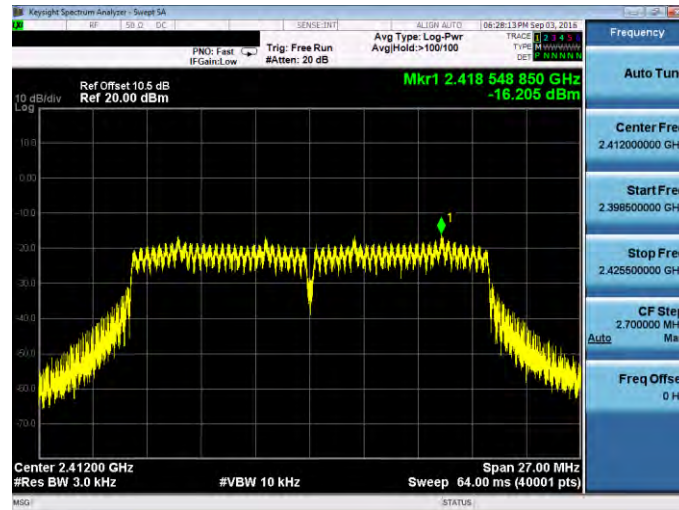
2462 MHz



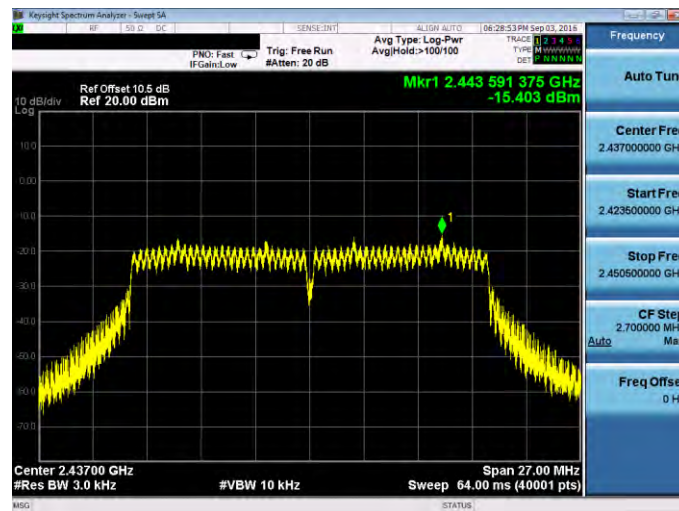


Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-0

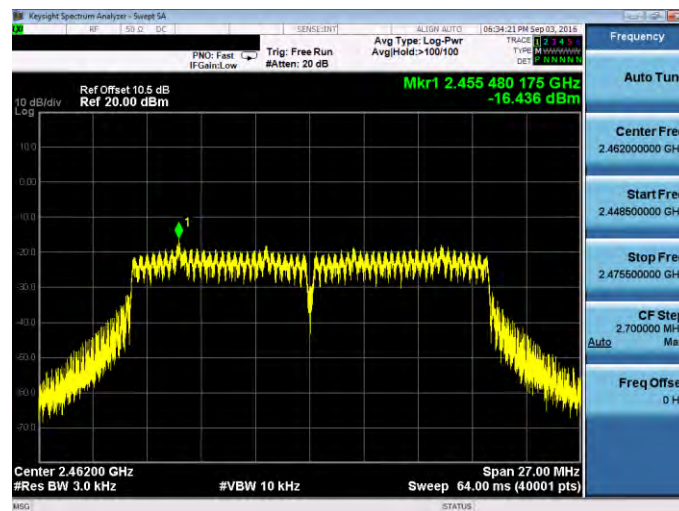
2412 MHz



2437 MHz



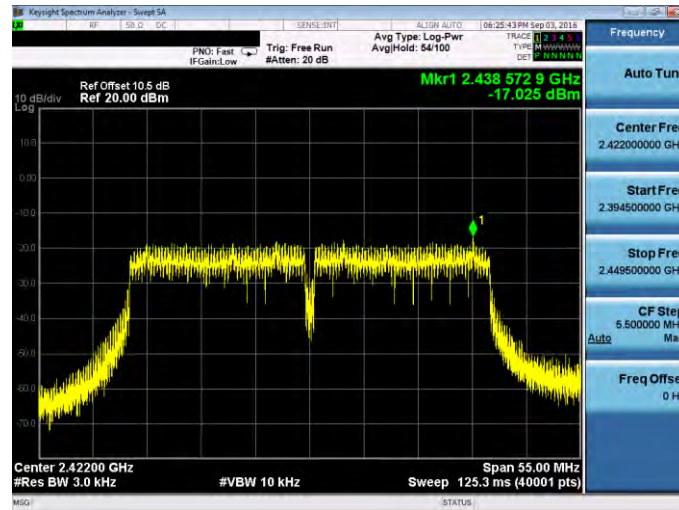
2462 MHz



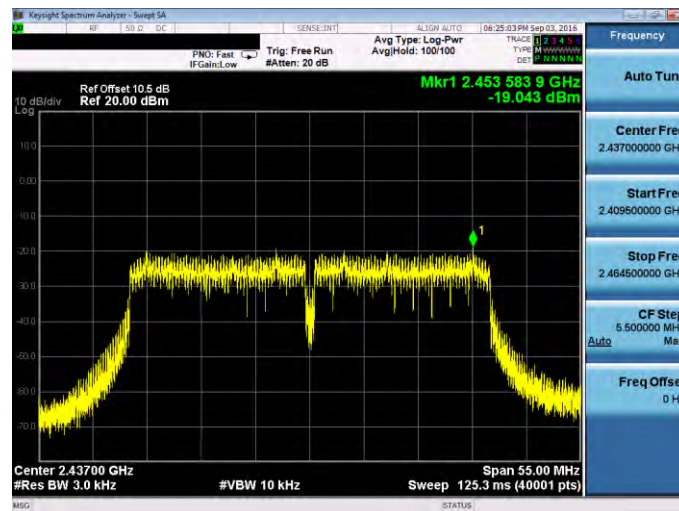


Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-0

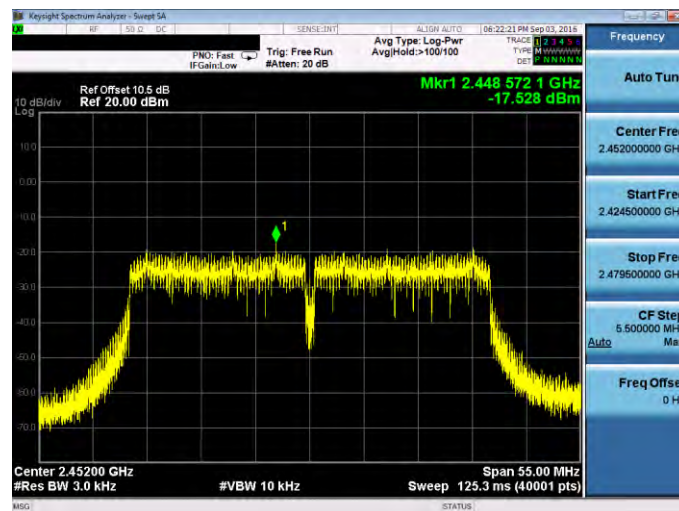
2422 MHz



2437 MHz



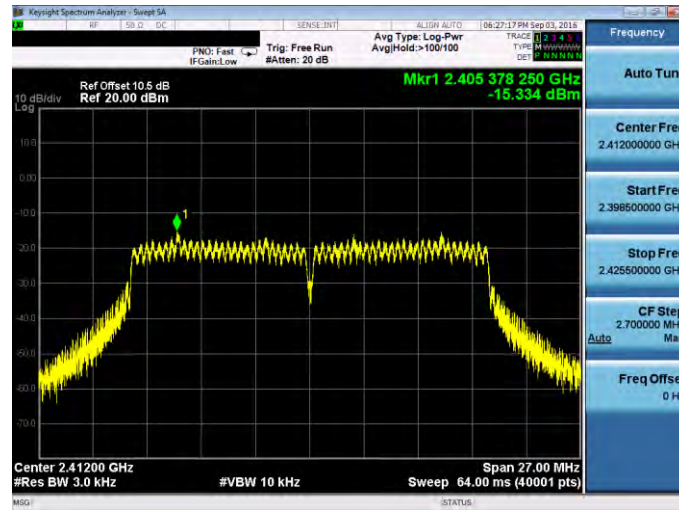
2452 MHz



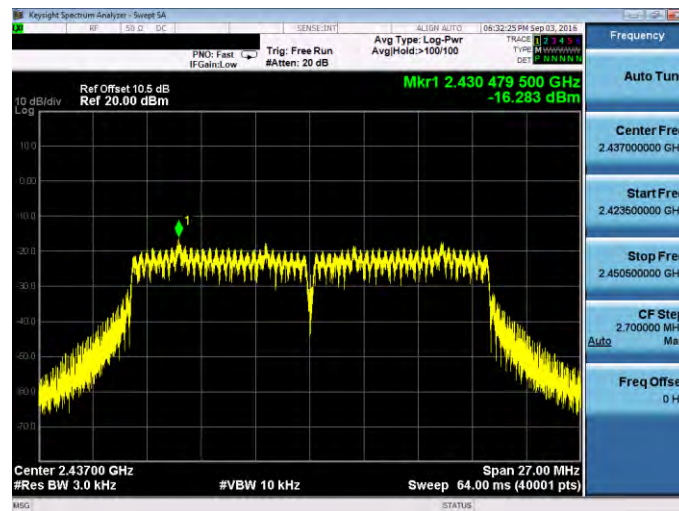


Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-1

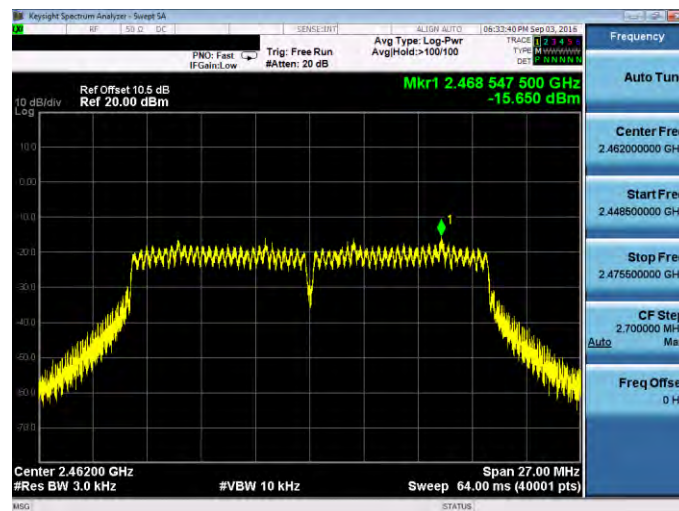
2412 MHz



2437 MHz



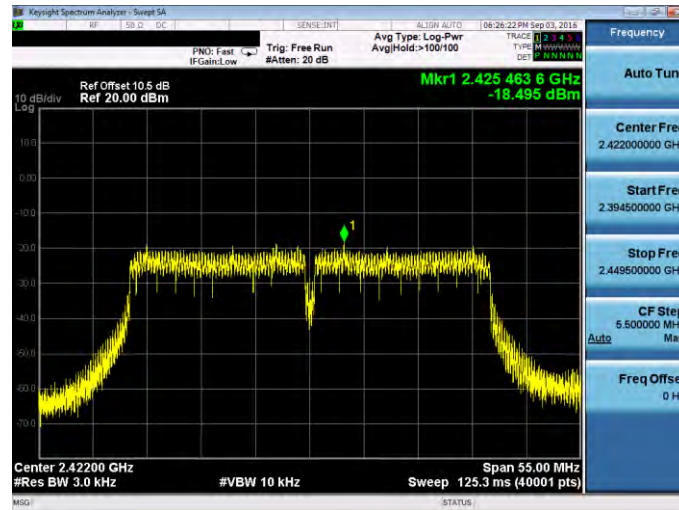
2462 MHz



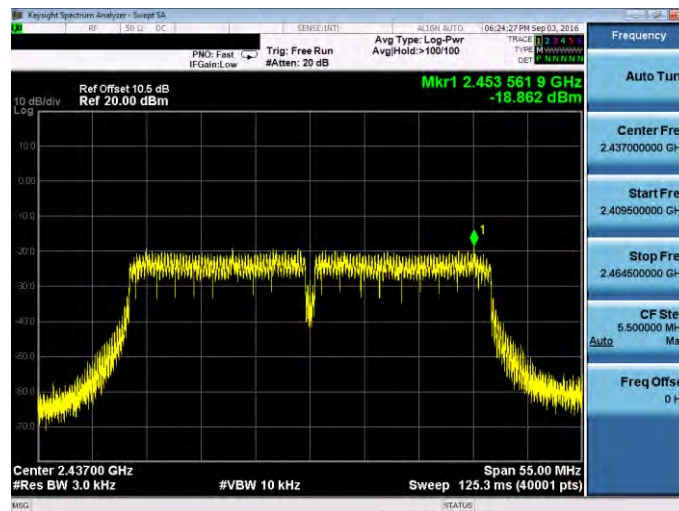


Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-1

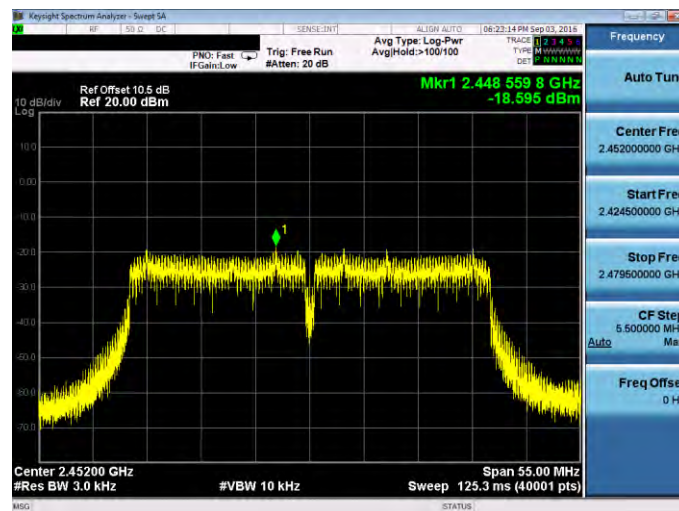
2422 MHz



2437 MHz



2452 MHz

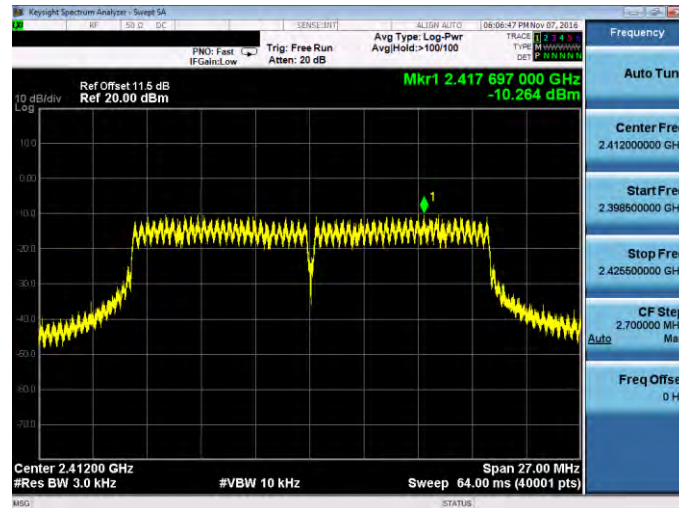




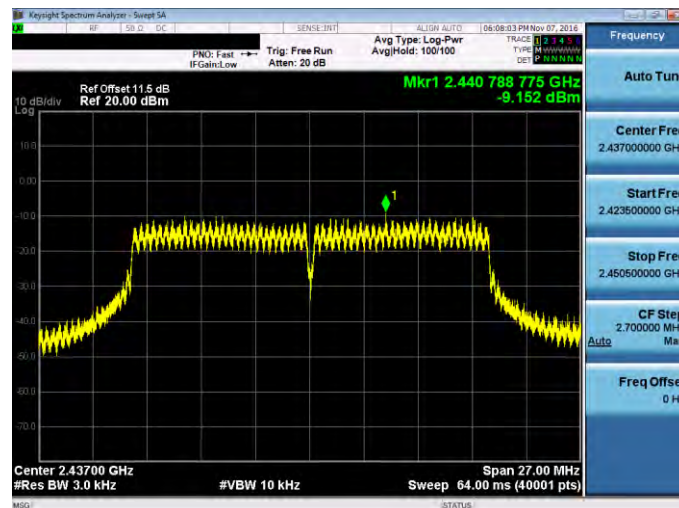
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-0

Beamforming on

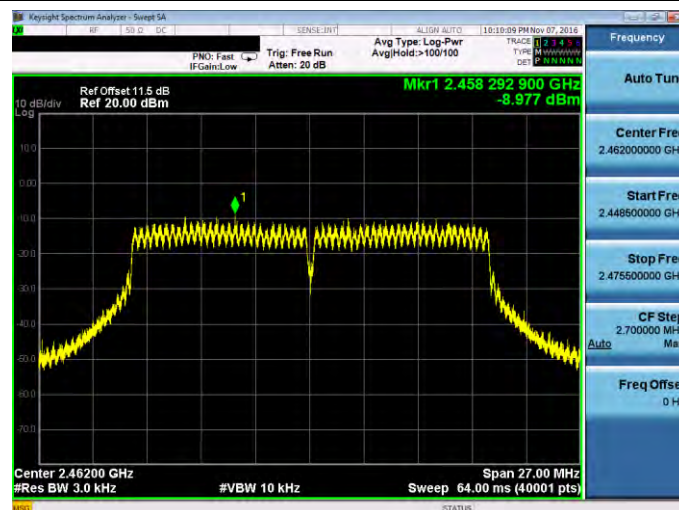
2412 MHz



2437 MHz



2462 MHz

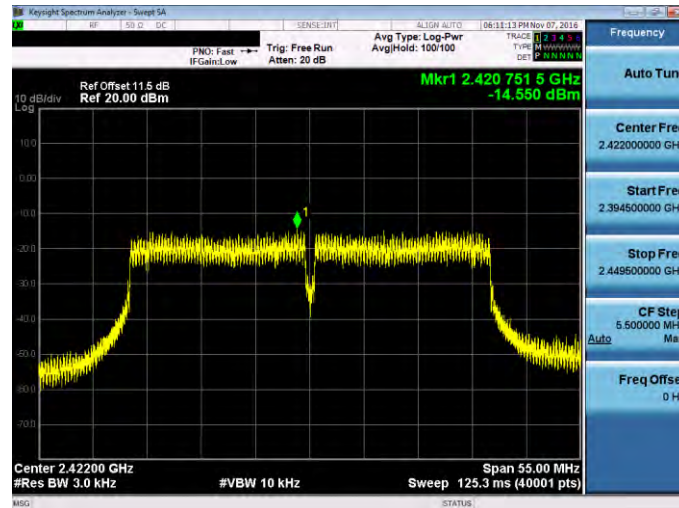




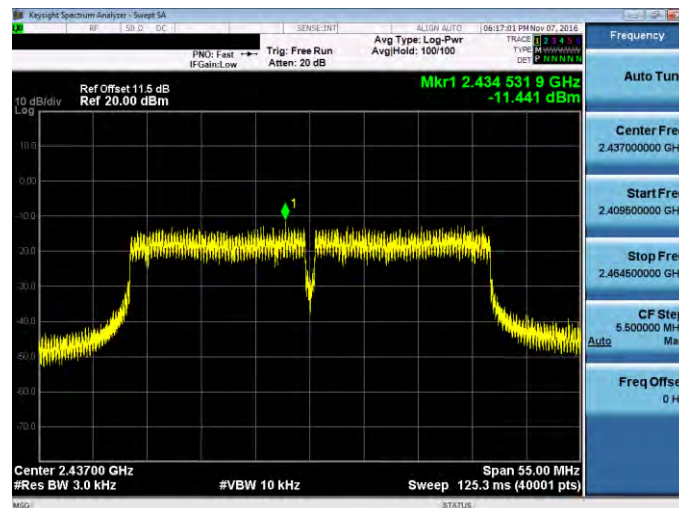
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-0

Beamforming on

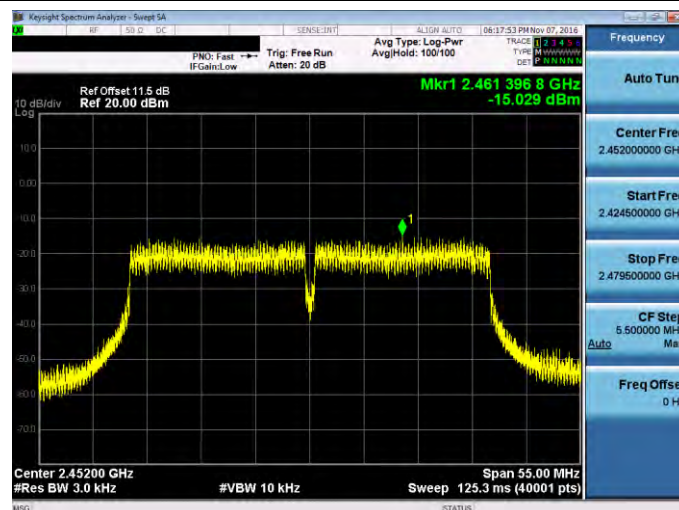
2422 MHz



2437 MHz



2452 MHz

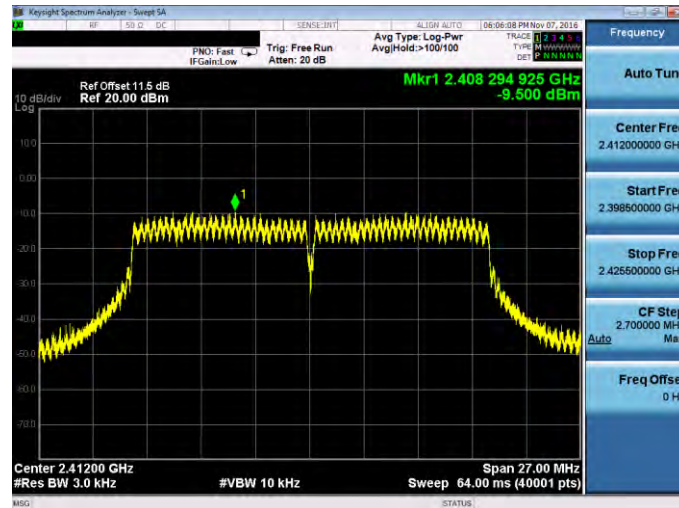




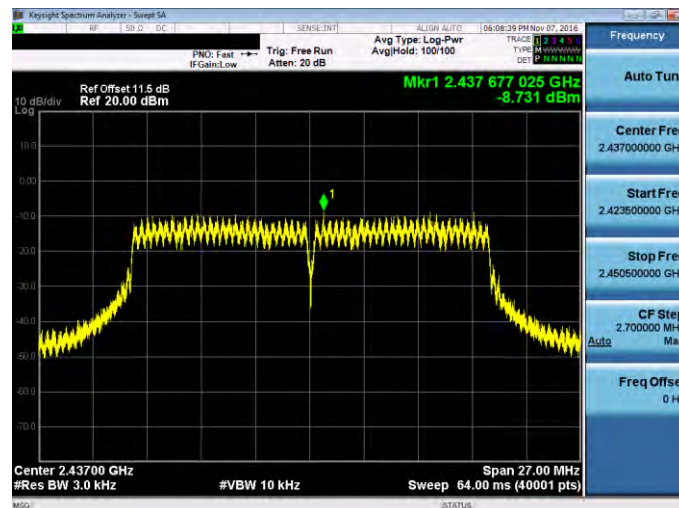
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-1

Beamforming on

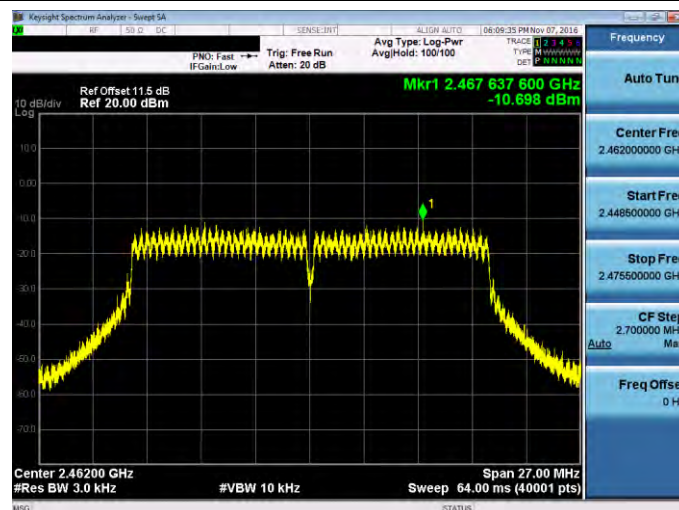
2412 MHz



2437 MHz



2462 MHz

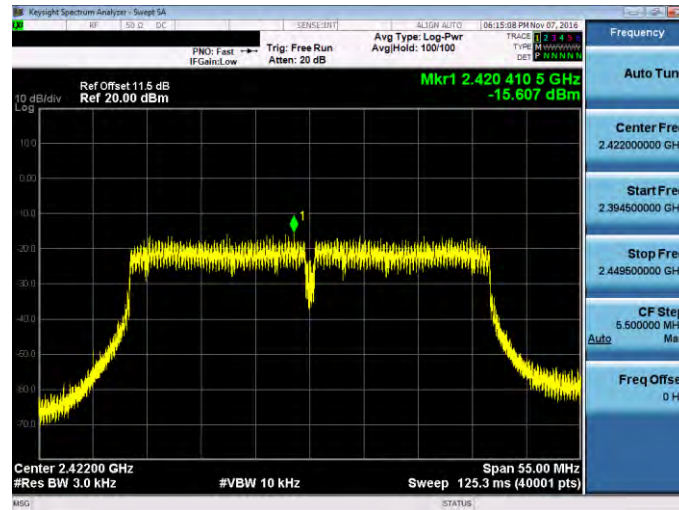




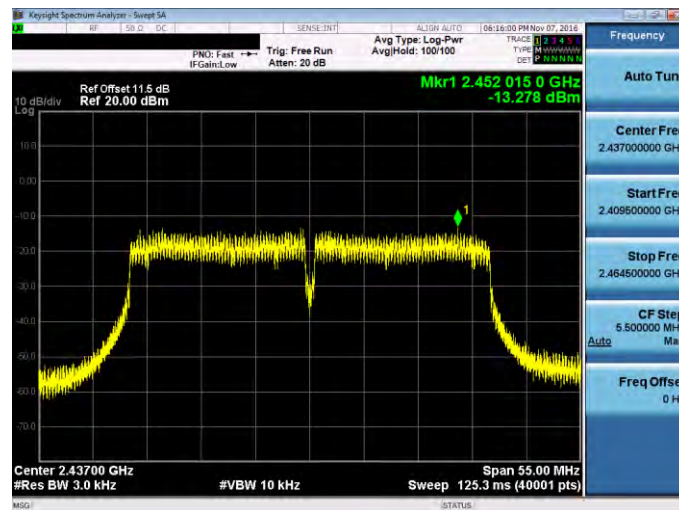
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-1

Beamforming on

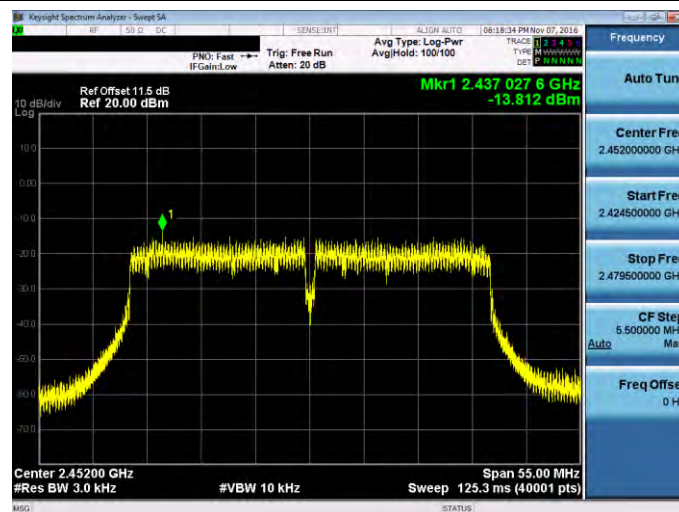
2422 MHz



2437 MHz



2452 MHz



Out of Band Conducted Emissions Measurement

■ Test Graphs

Reference level

Mode 2: IEEE 802.11b link mode_ANT-0

2412 MHz



2437 MHz



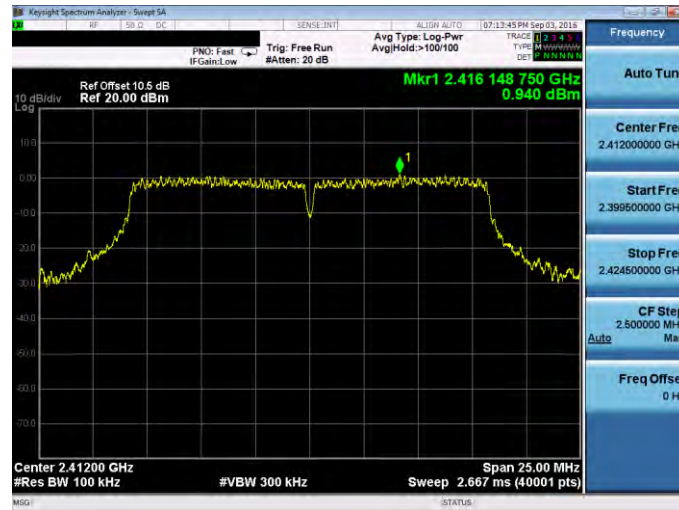
2462 MHz



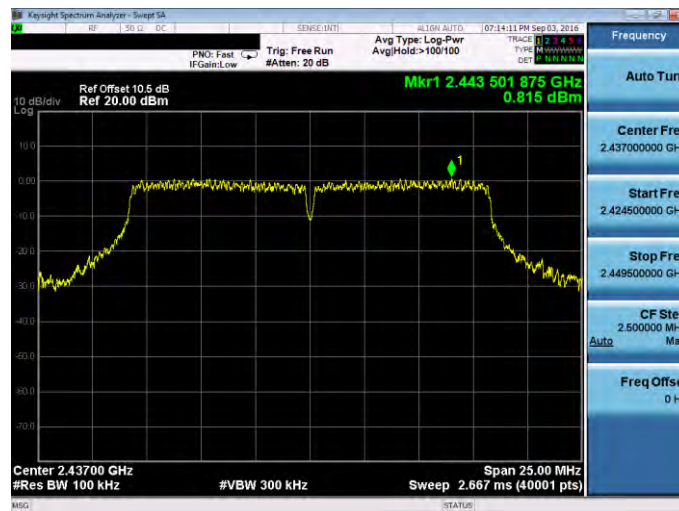


Mode 3: IEEE 802.11g link mode_ANT-0

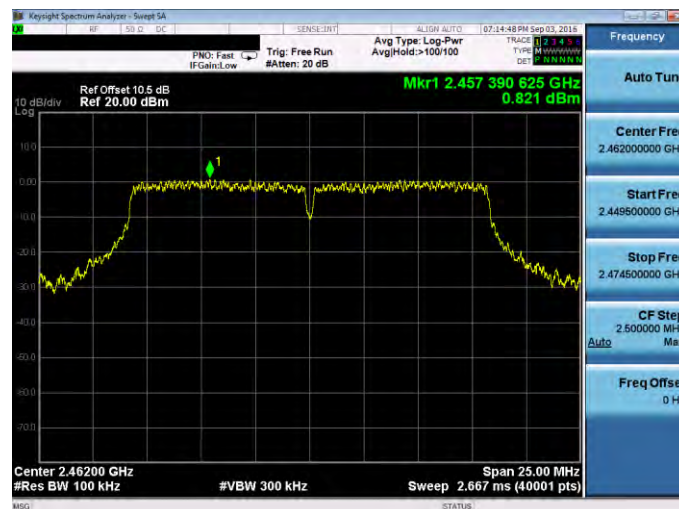
2412 MHz



2437 MHz



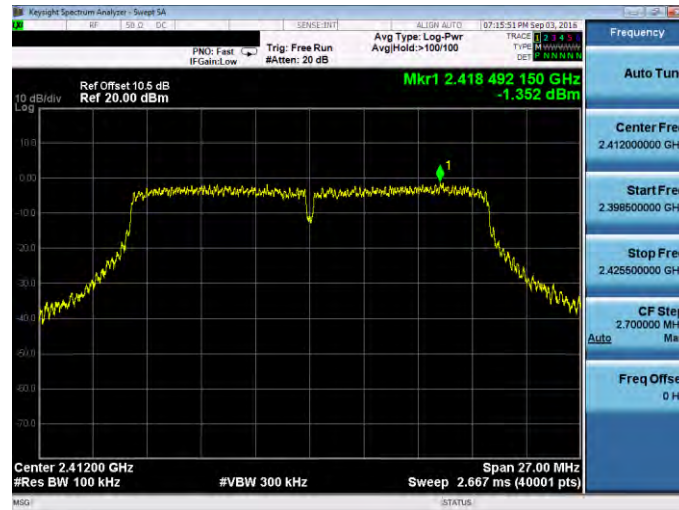
2462 MHz



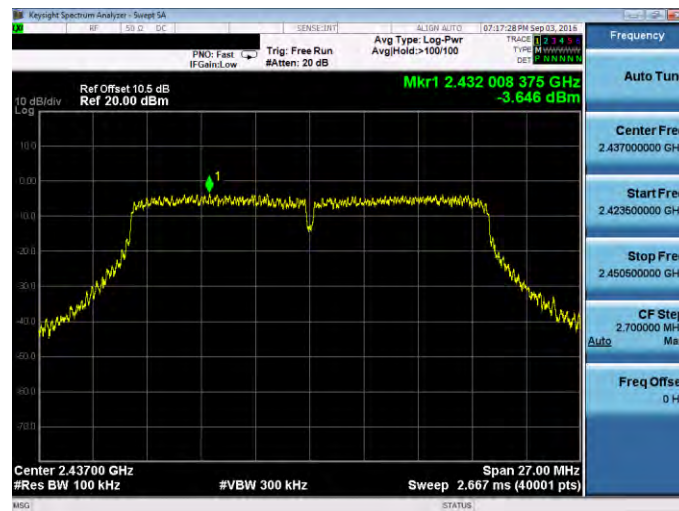


Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-0

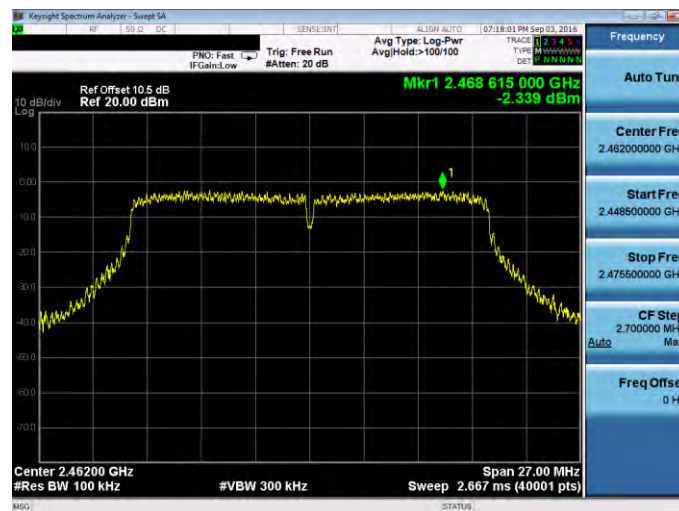
2412 MHz



2437 MHz



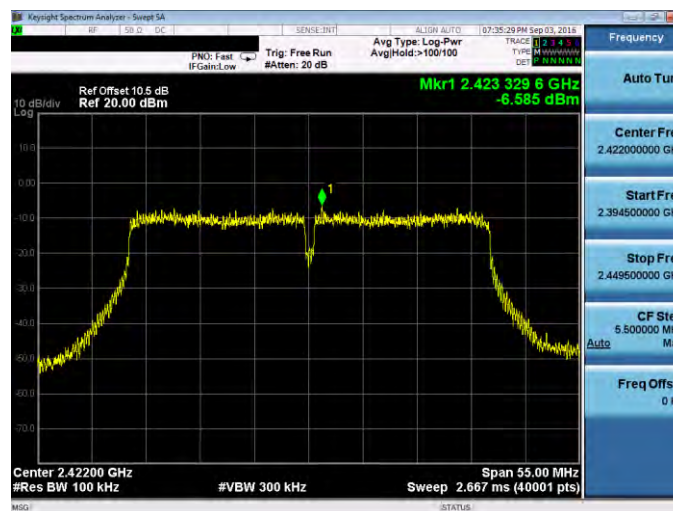
2462 MHz



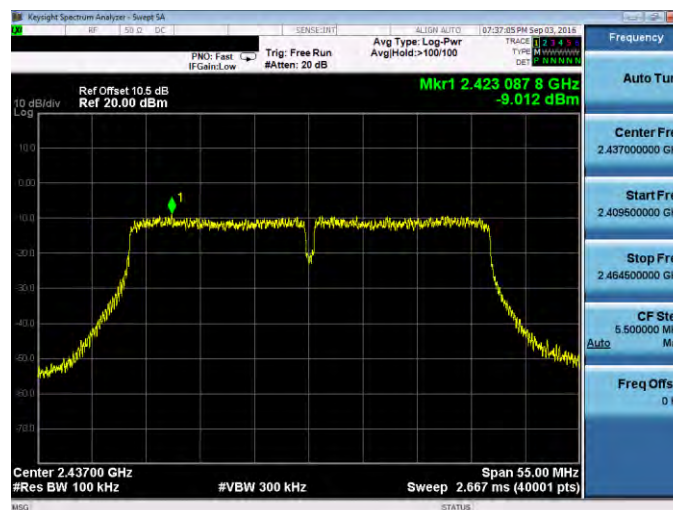


Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-0

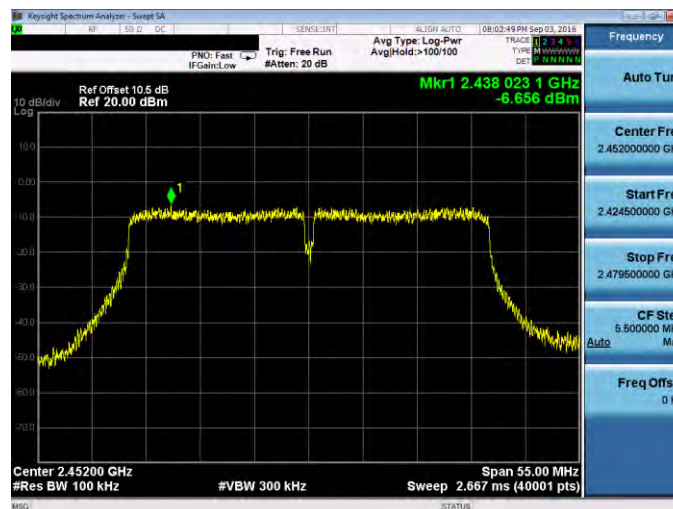
2422 MHz



2437 MHz



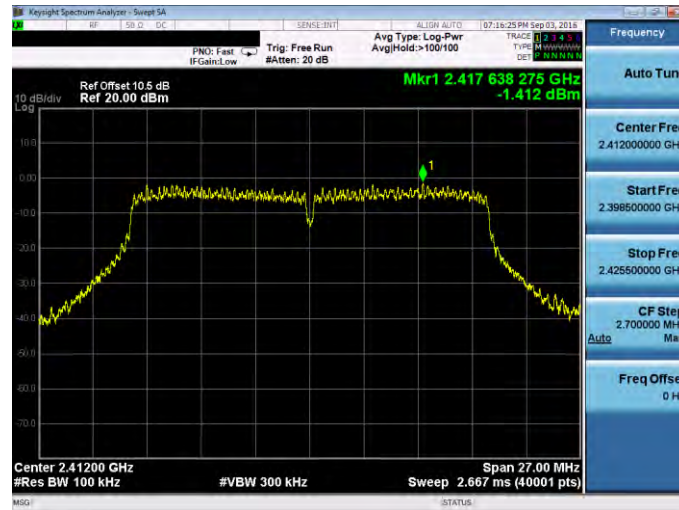
2452 MHz



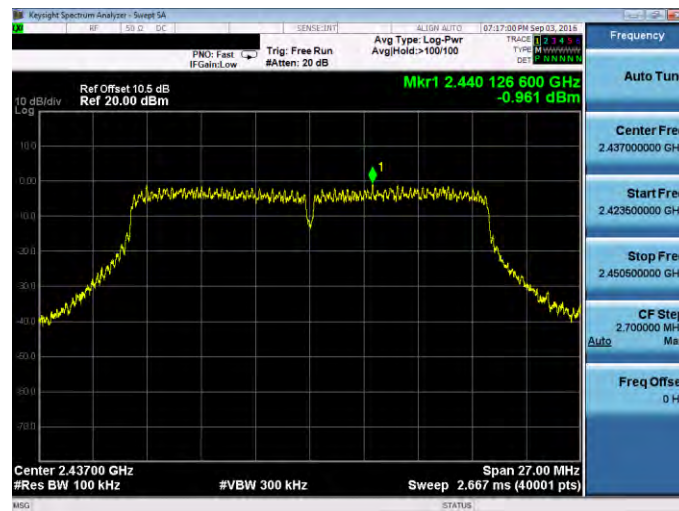


Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-1

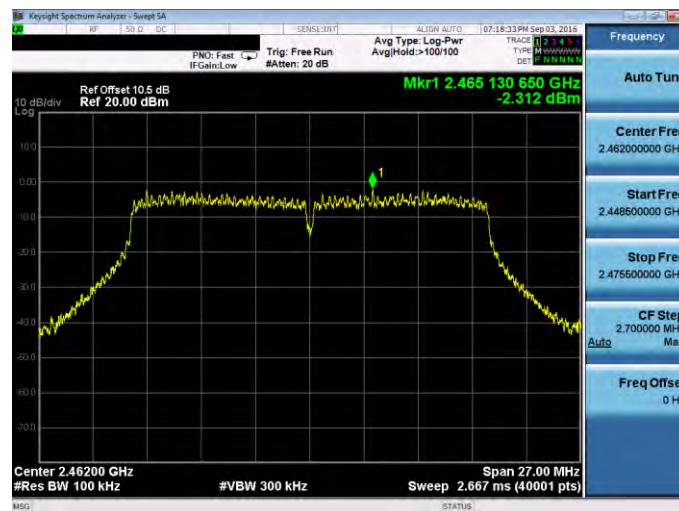
2412 MHz



2437 MHz



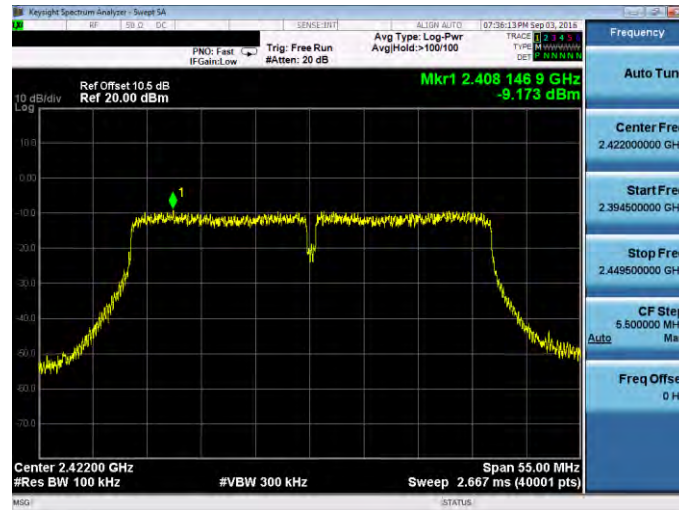
2462 MHz



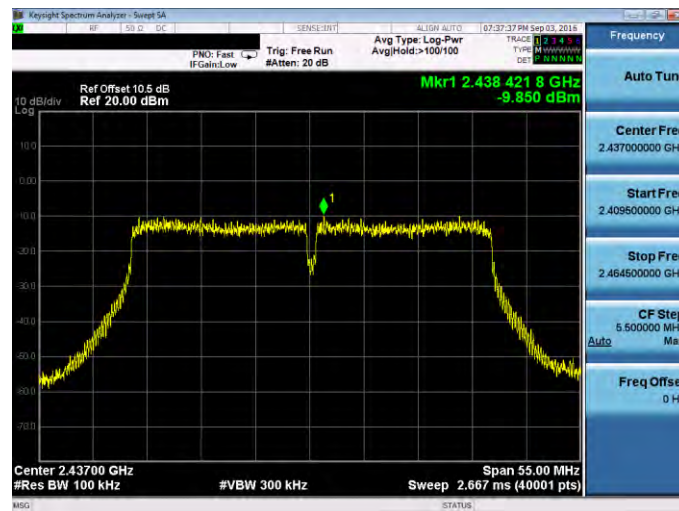


Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-1

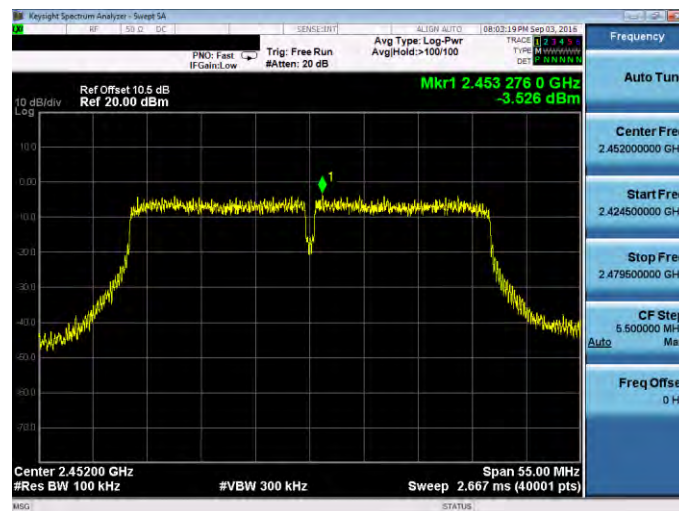
2422 MHz



2437 MHz



2452 MHz

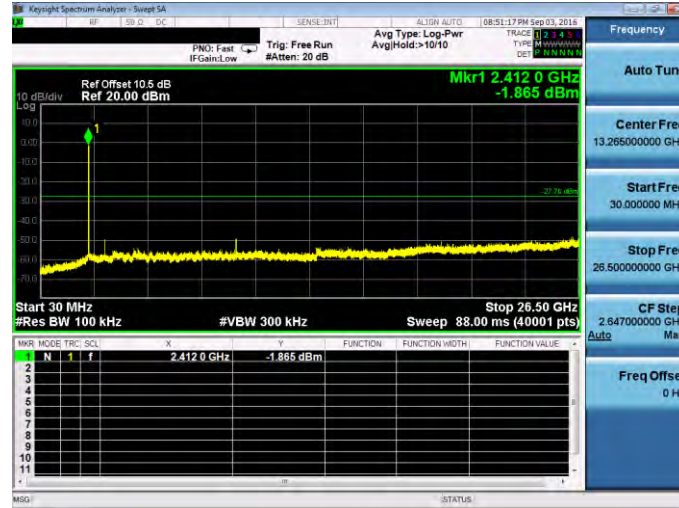




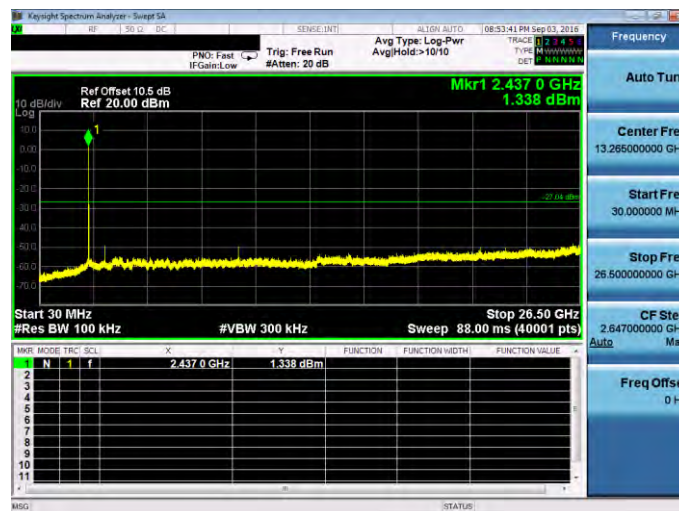
Out of Band Conducted Emissions

Mode 2: IEEE 802.11b link mode_ANT-0

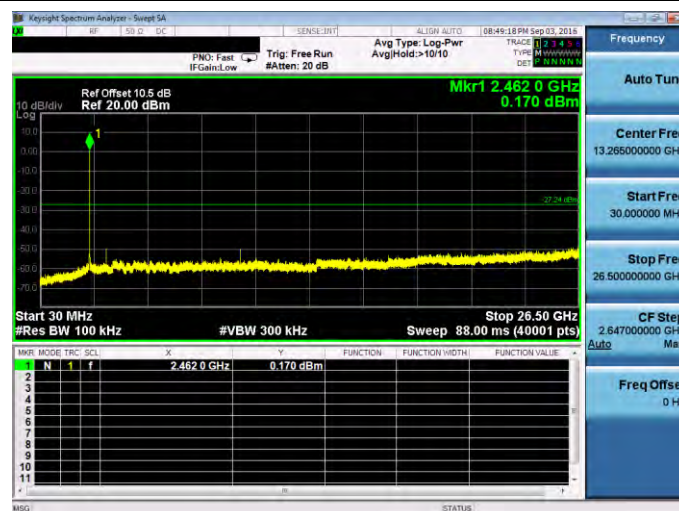
2412 MHz



2437 MHz



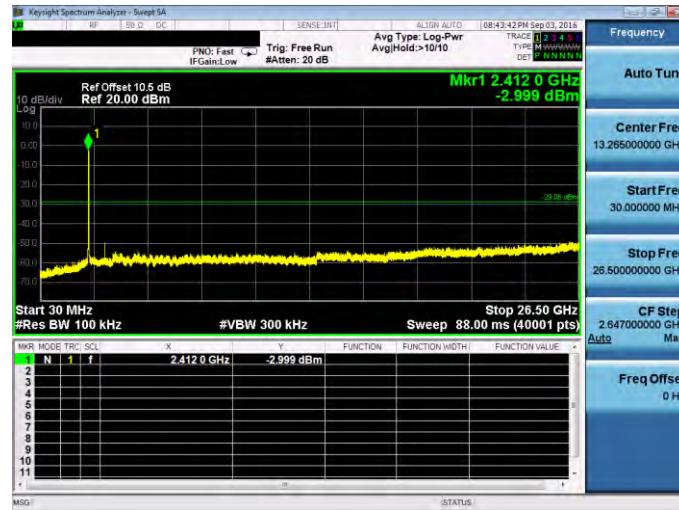
2462 MHz



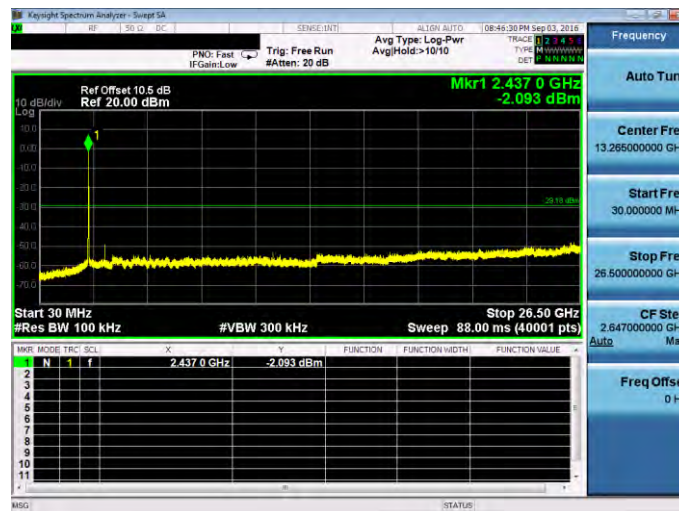


Mode 3: IEEE 802.11g link mode_ANT-0

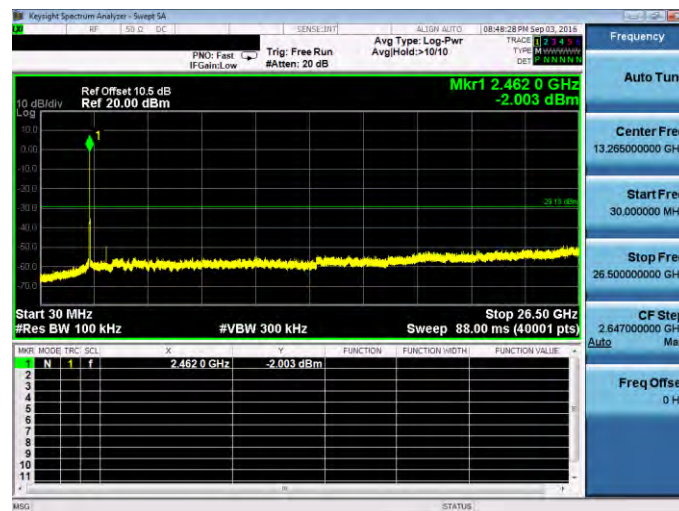
2412 MHz



2437 MHz



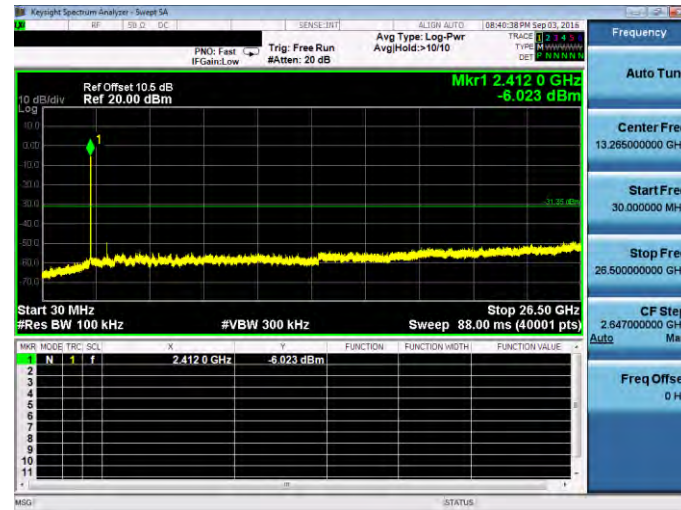
2462 MHz



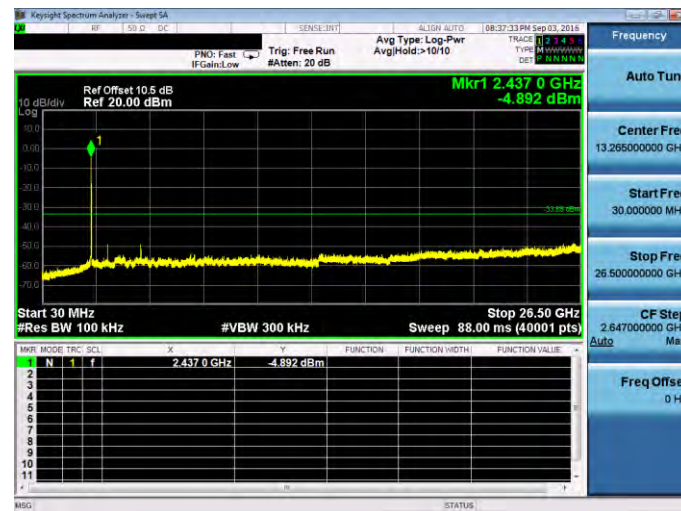


Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-0

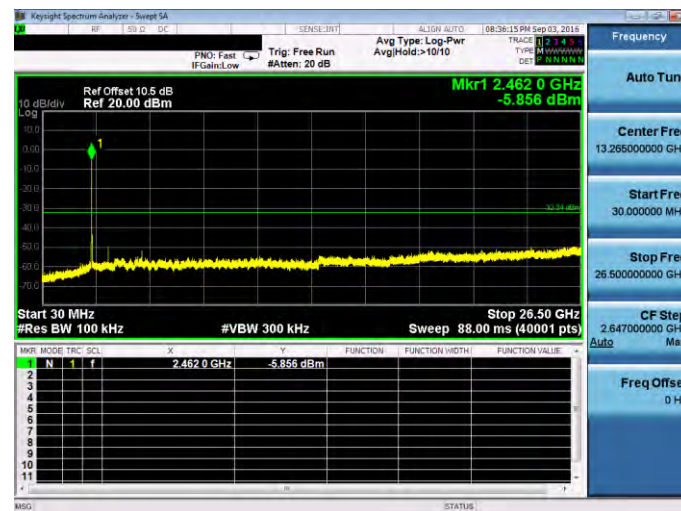
2412 MHz



2437 MHz



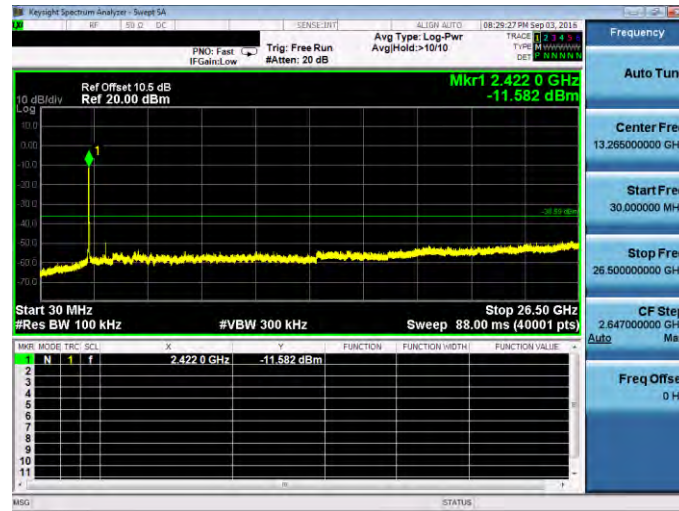
2462 MHz



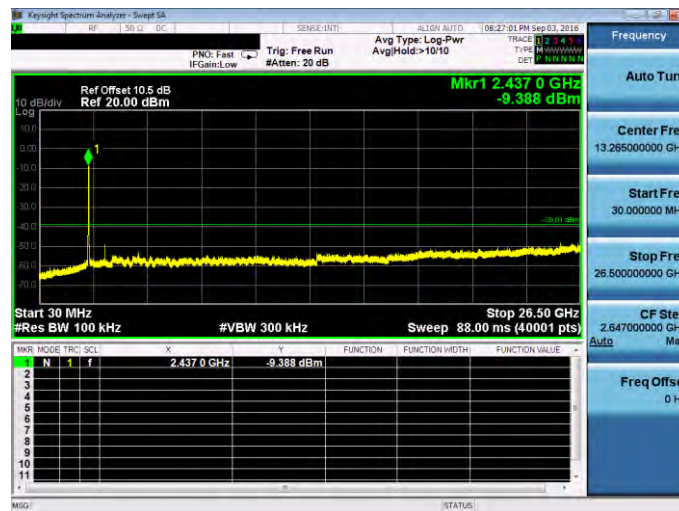


Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-0

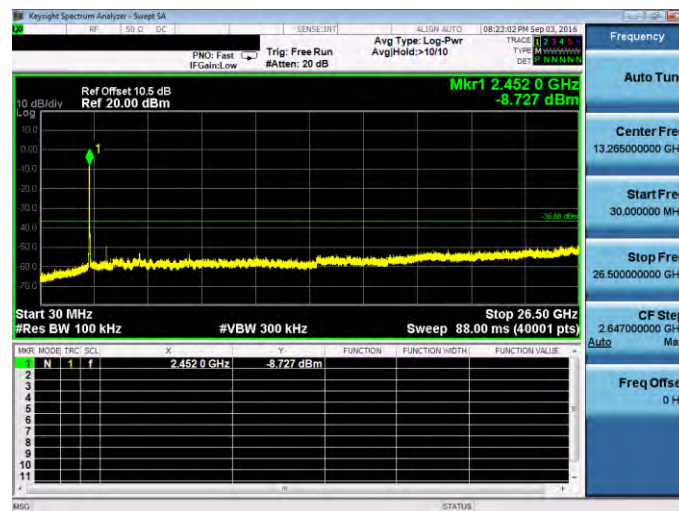
2422 MHz



2437 MHz



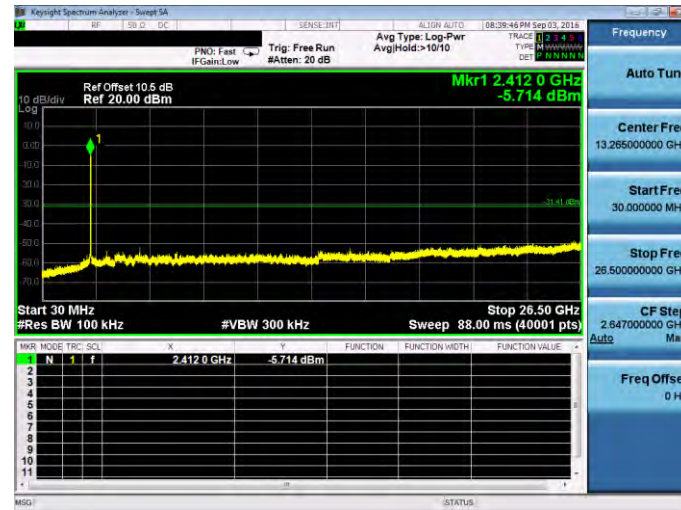
2452 MHz



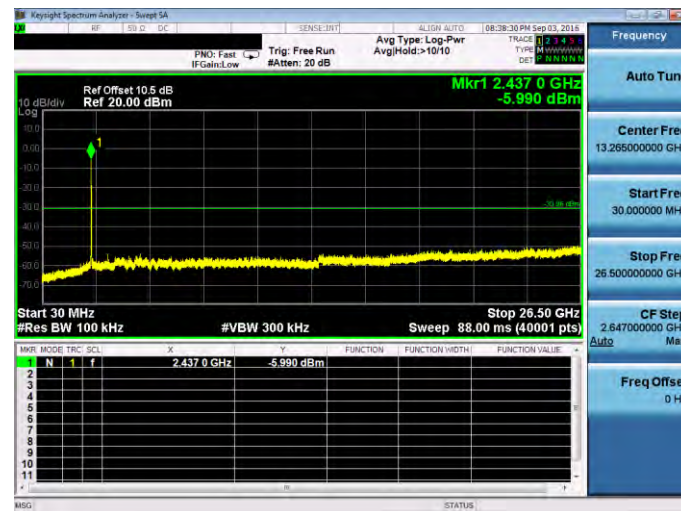


Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-1

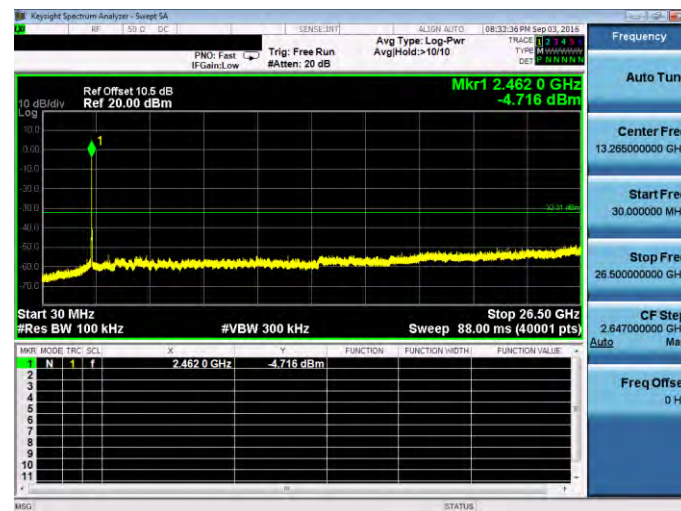
2412 MHz



2437 MHz



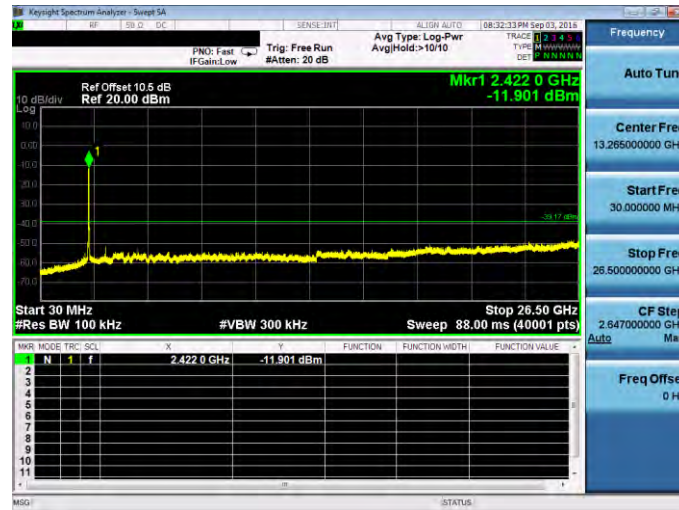
2462 MHz



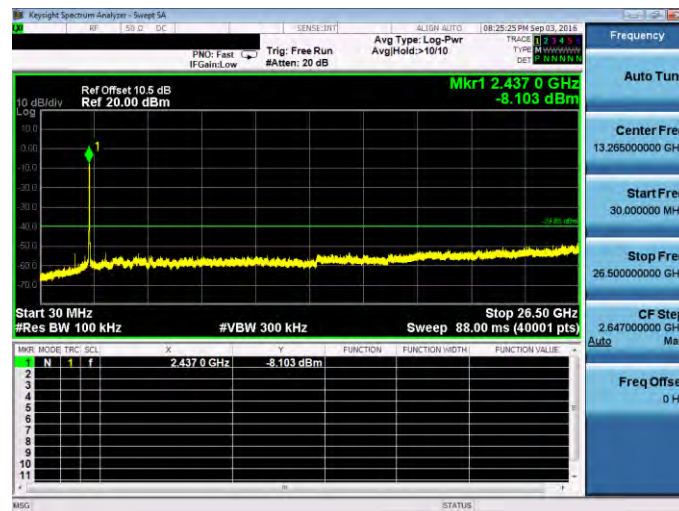


Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-1

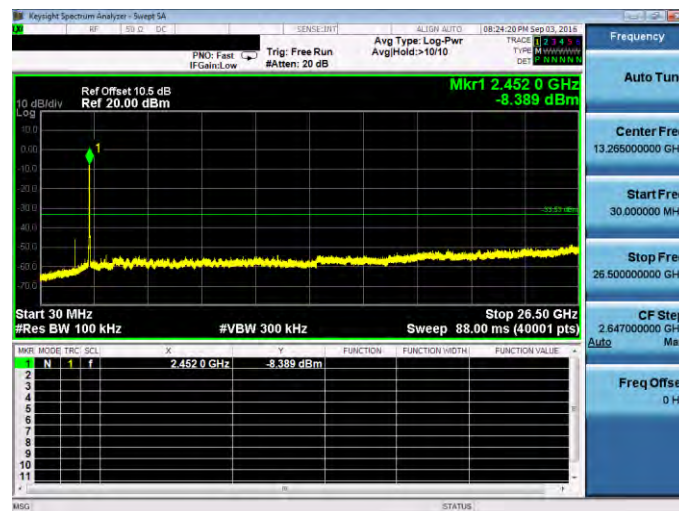
2422 MHz



2437 MHz



2452 MHz

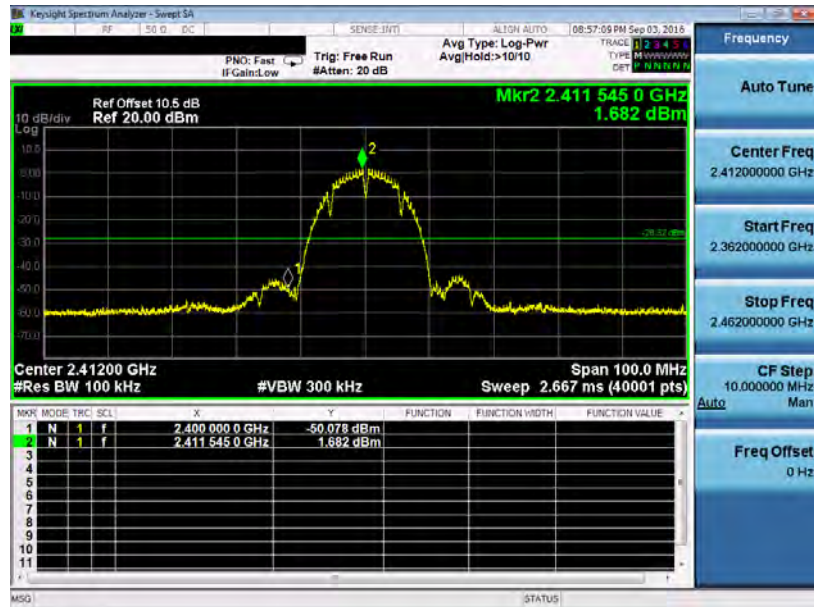




Conducted Band Edge

Mode 2: IEEE 802.11b link mode_ANT-0

2412 MHz



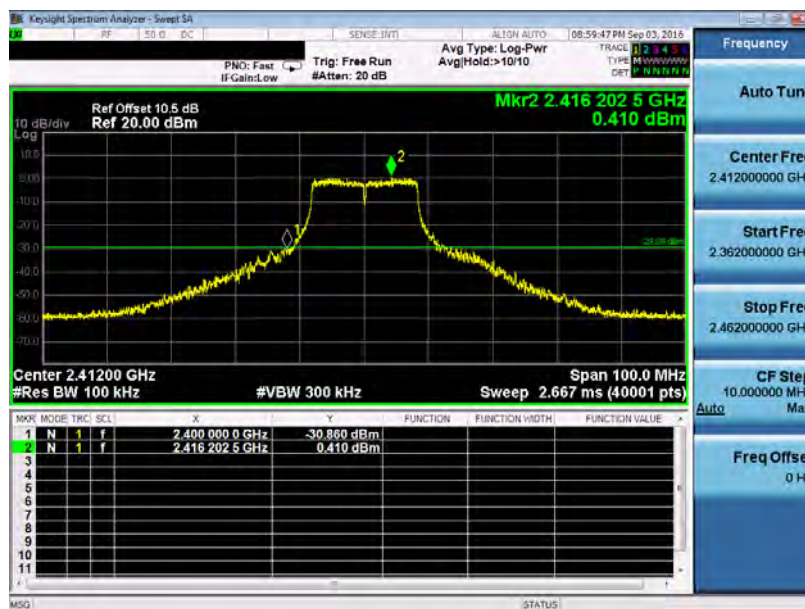
2462 MHz



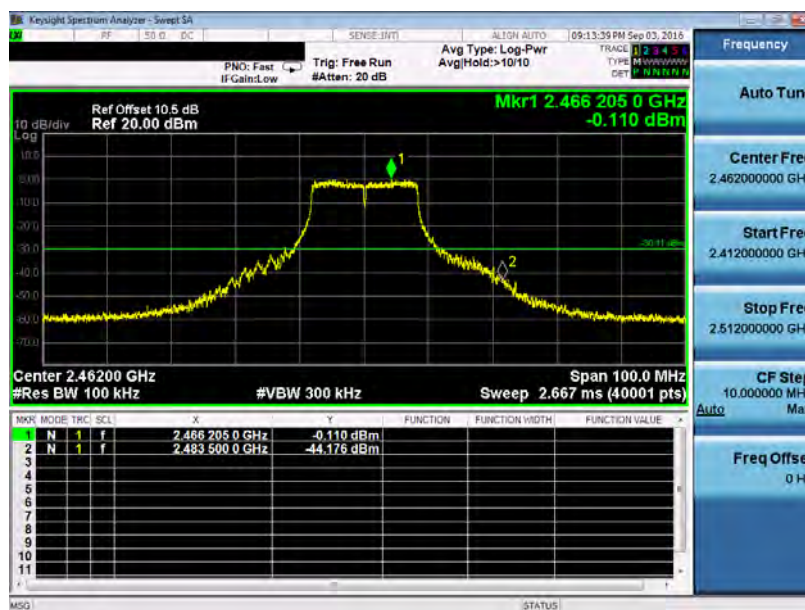


Mode 3: IEEE 802.11g link mode_ANT-0

2412 MHz



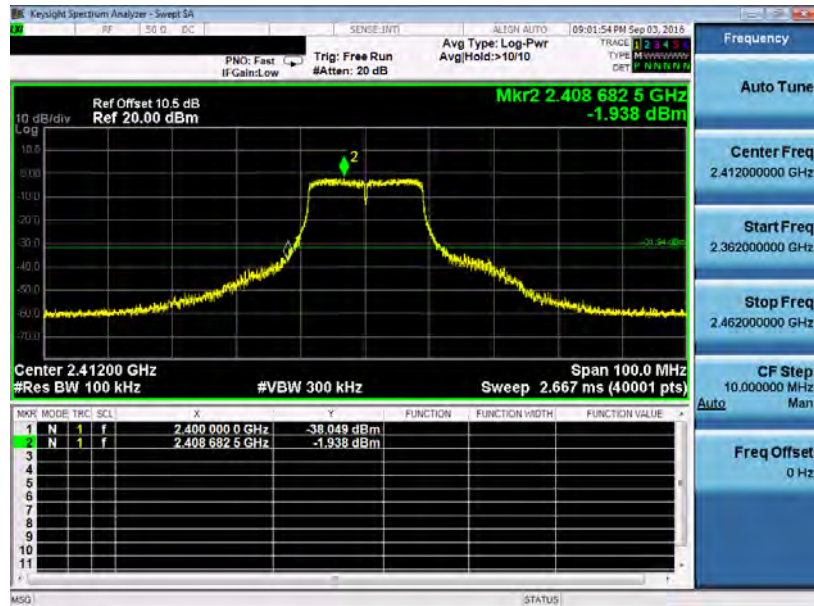
2462 MHz



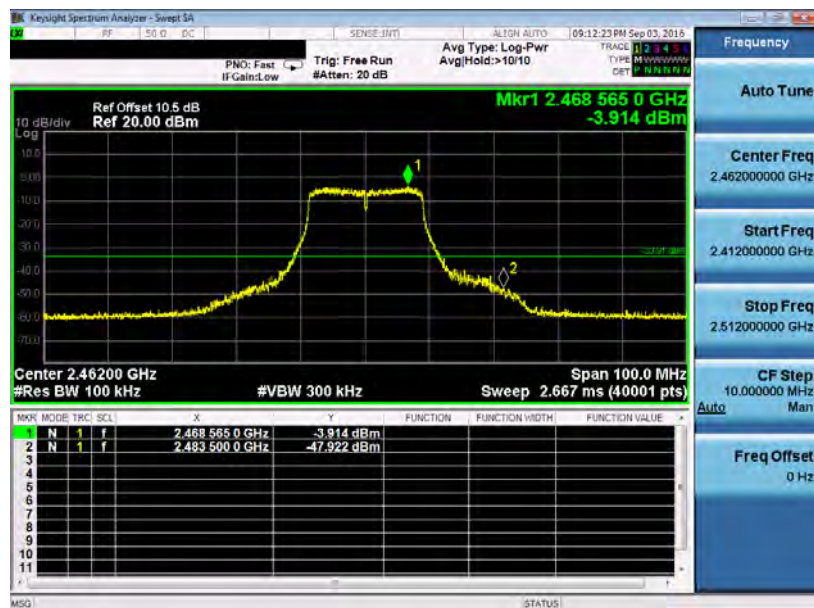


Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-0

2412 MHz



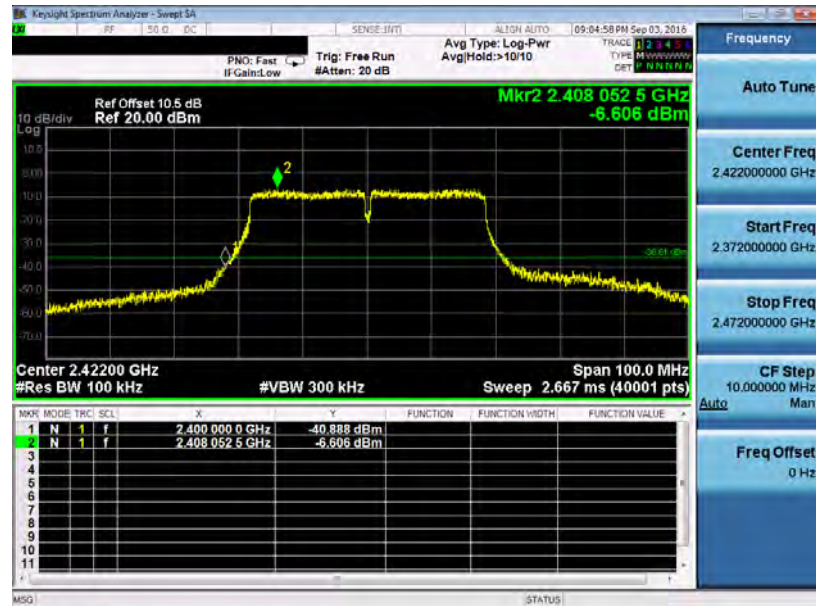
2462 MHz





Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-0

2422 MHz



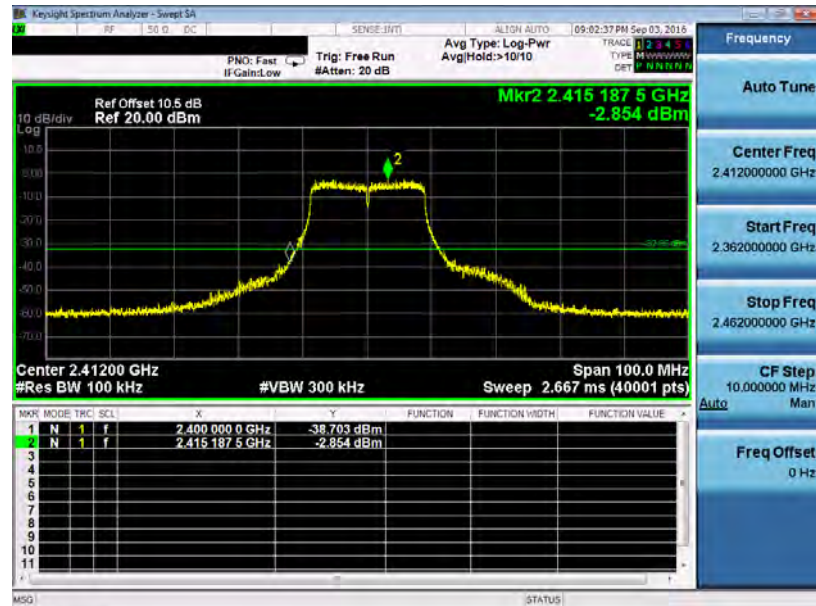
2452 MHz



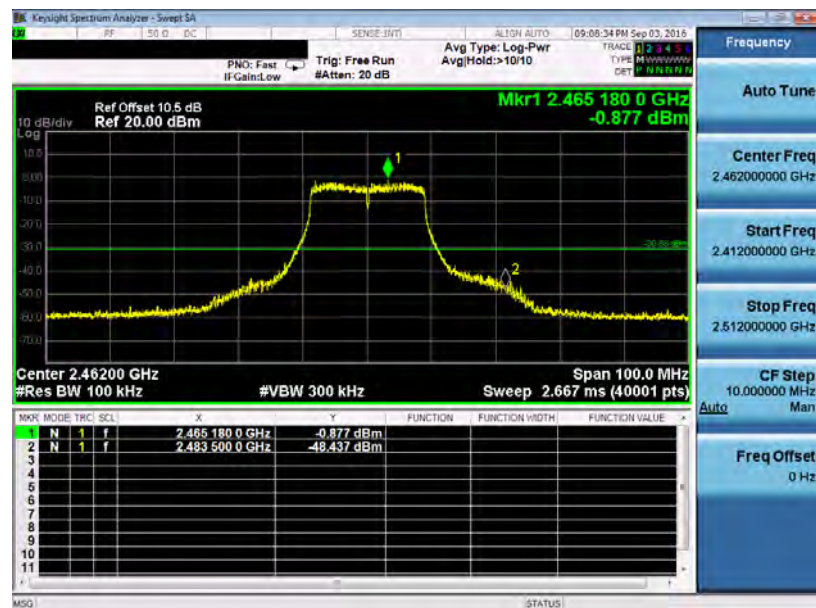


Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-1

2412 MHz



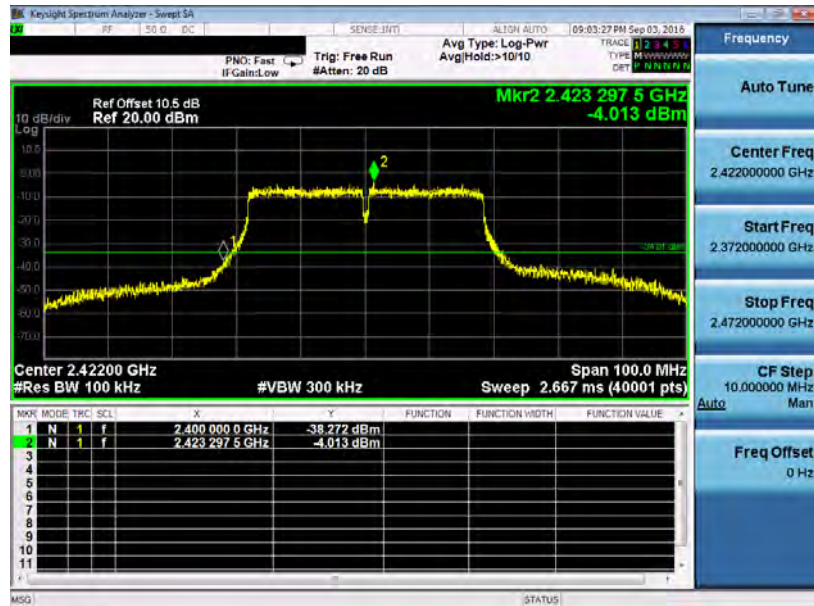
2462 MHz



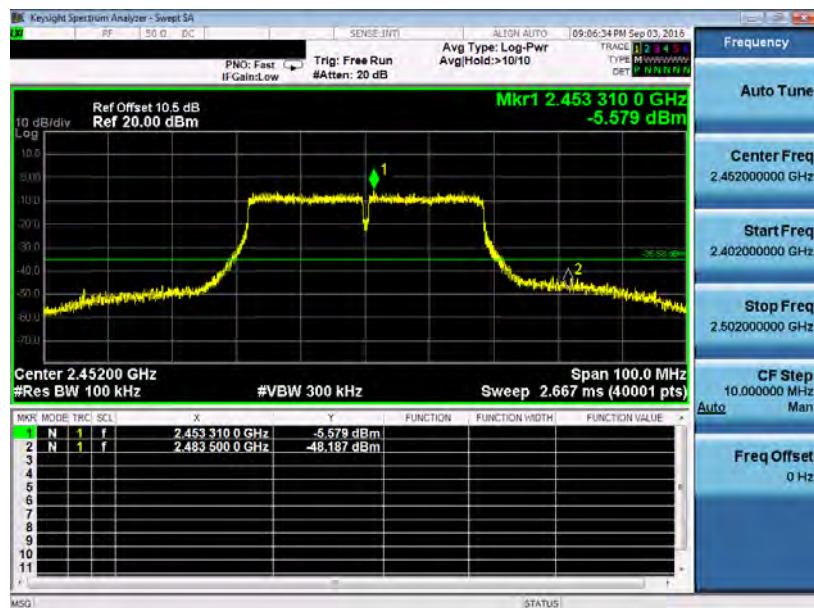


Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-1

2422 MHz



2452 MHz



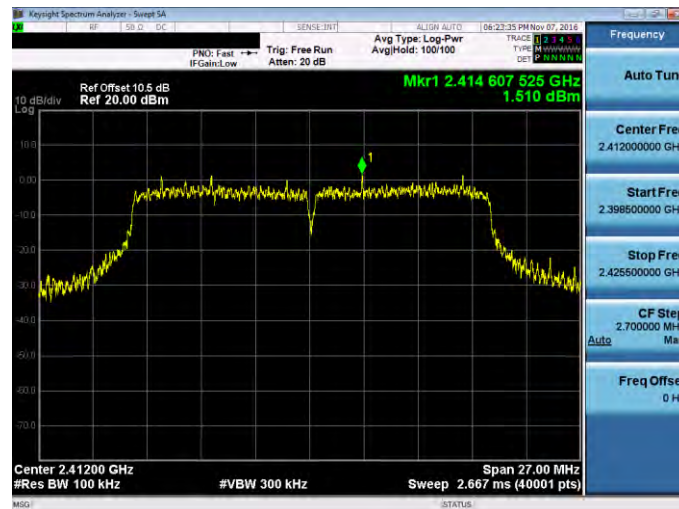


Reference level

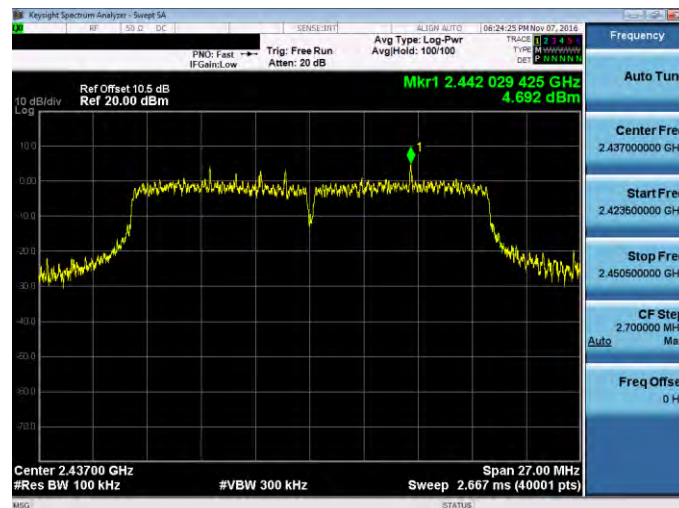
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-0

Beamforming on

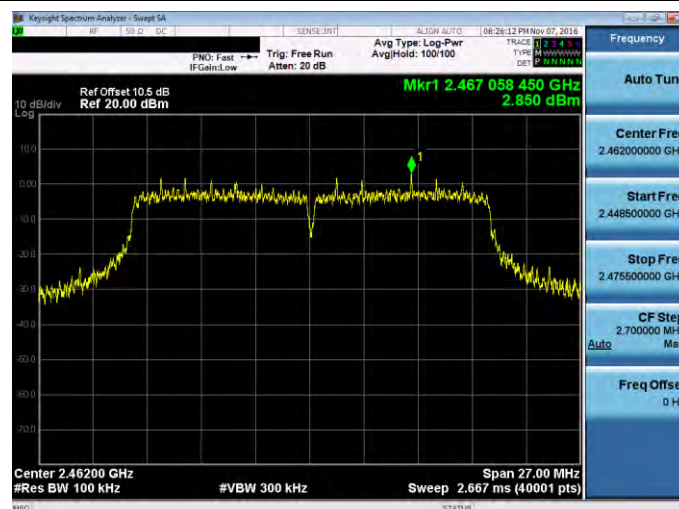
2412 MHz



2437 MHz



2462 MHz

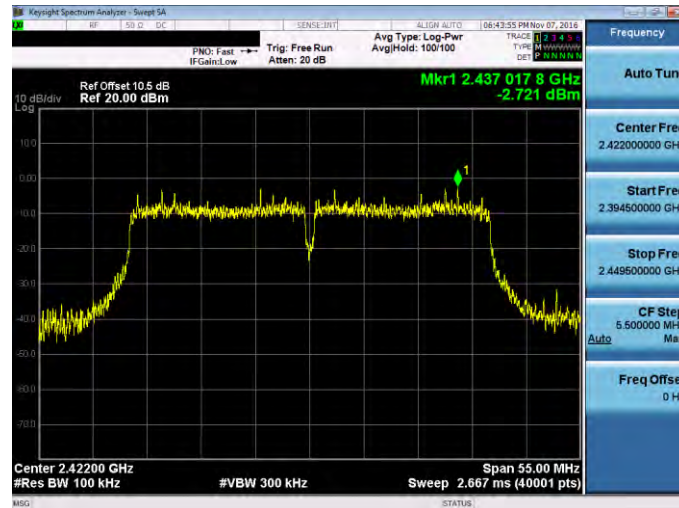




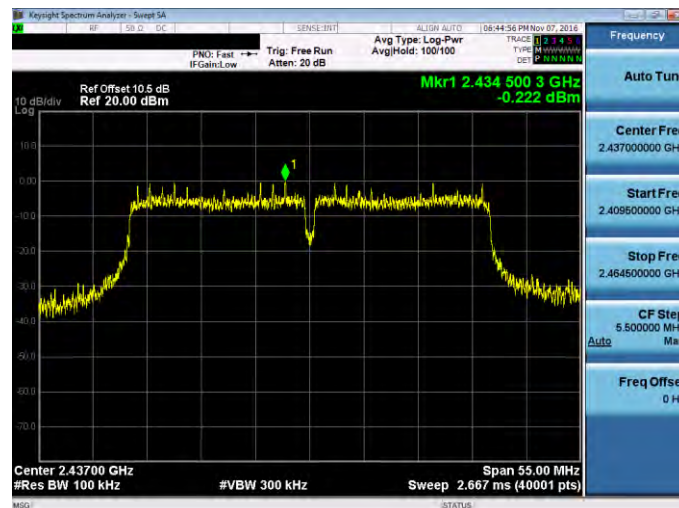
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-0

Beamforming on

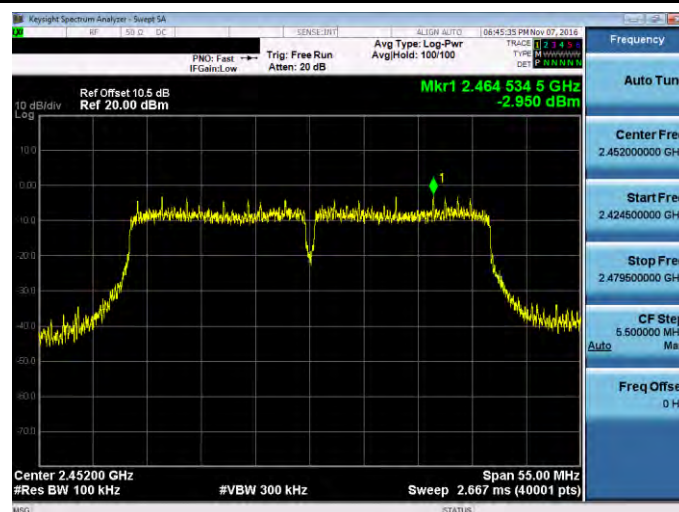
2422 MHz



2437 MHz



2452 MHz

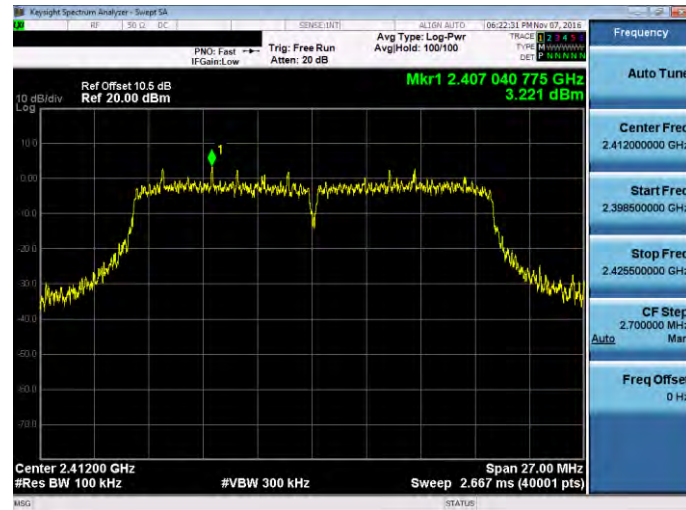




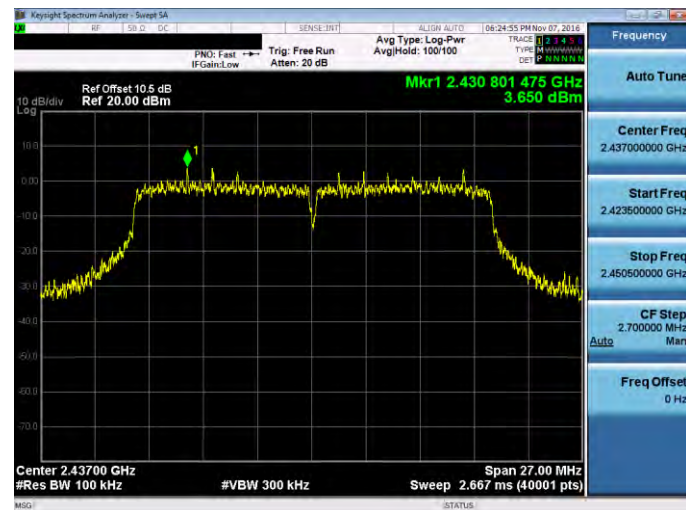
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-1

Beamforming on

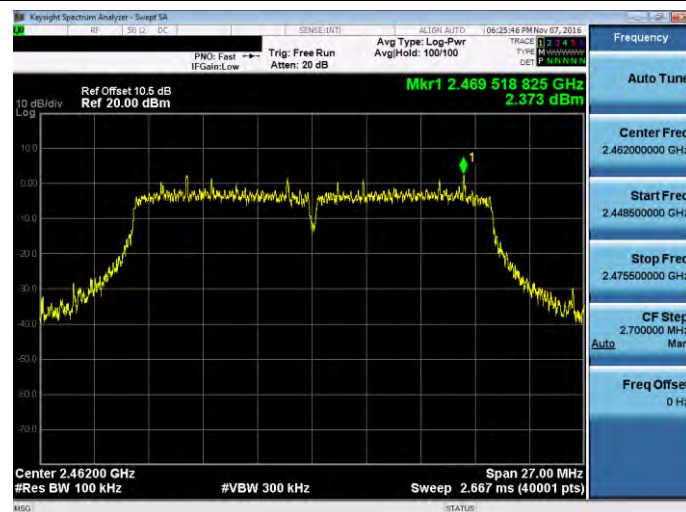
2412 MHz



2437 MHz



2462 MHz

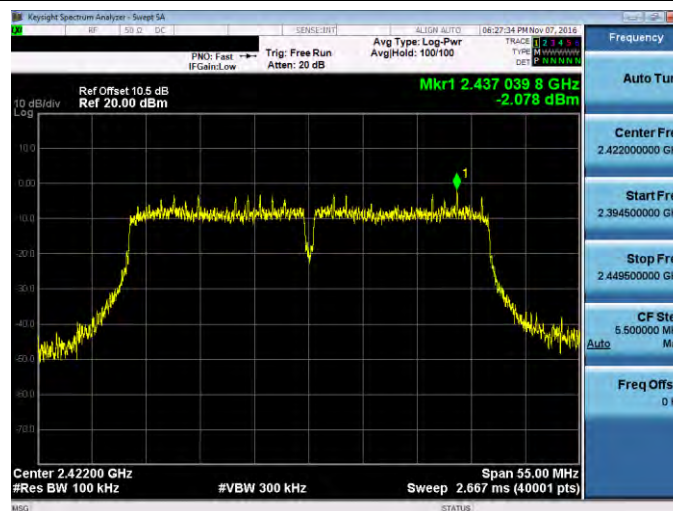




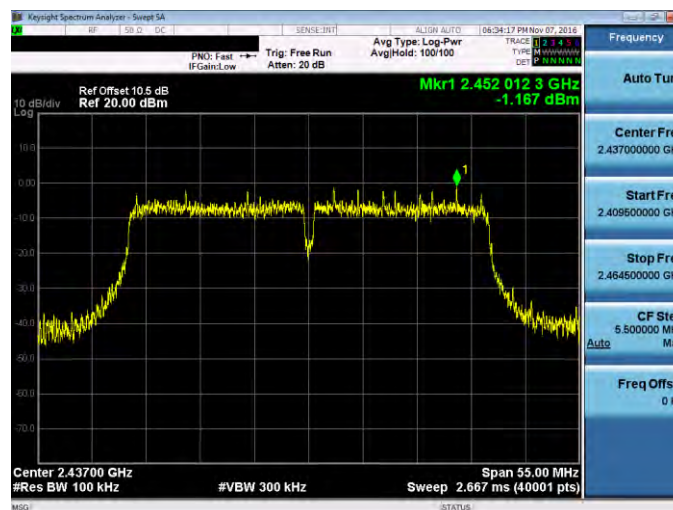
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-1

Beamforming on

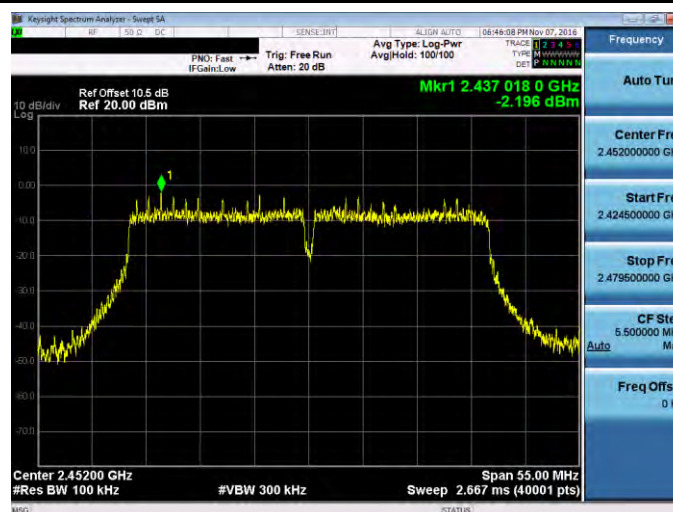
2422 MHz



2437 MHz



2452 MHz



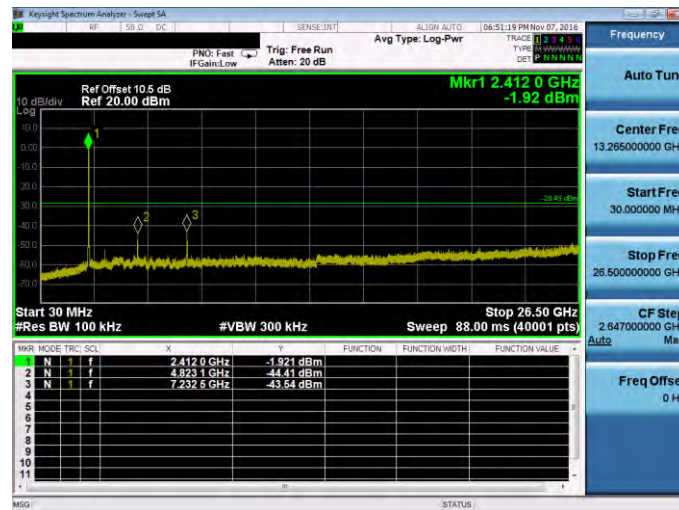


Out of Band Conducted Emissions

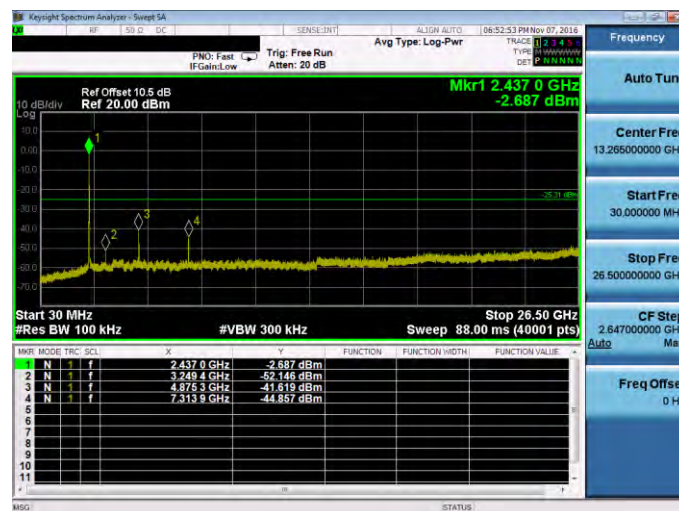
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-0

Beamforming on

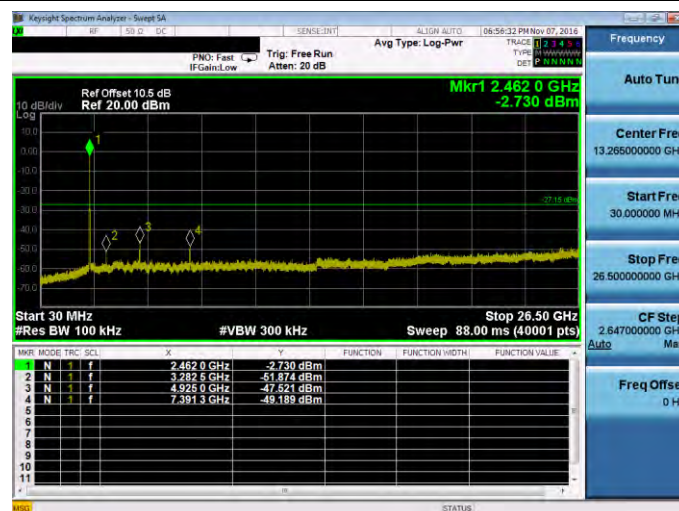
2412 MHz



2437 MHz



2462 MHz

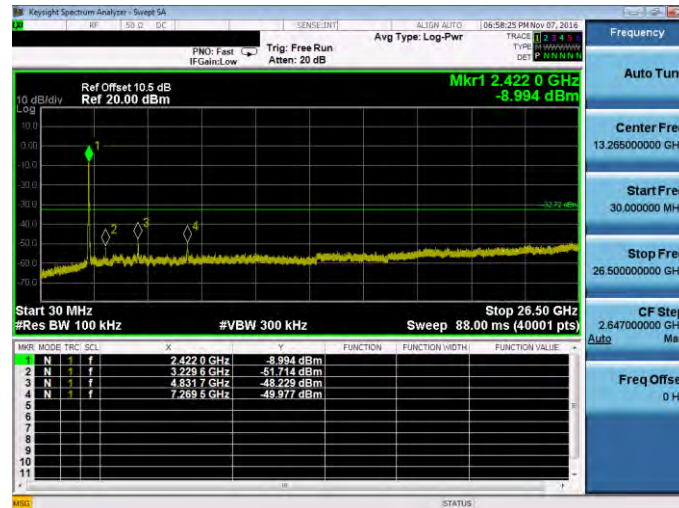




Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-0

Beamforming on

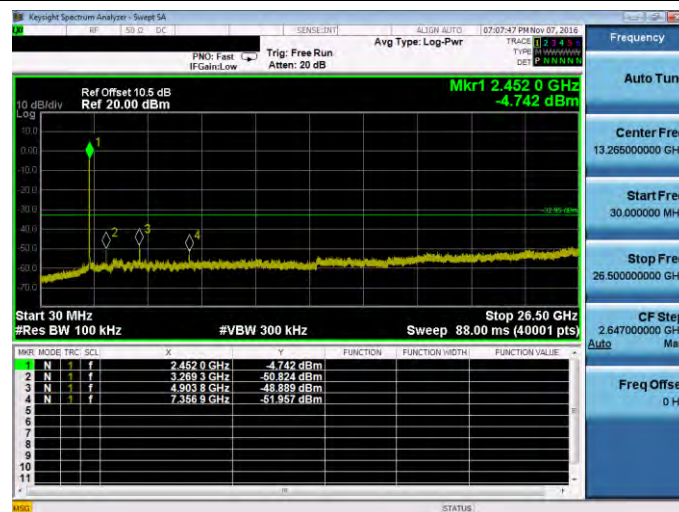
2422 MHz



2437 MHz



2452 MHz

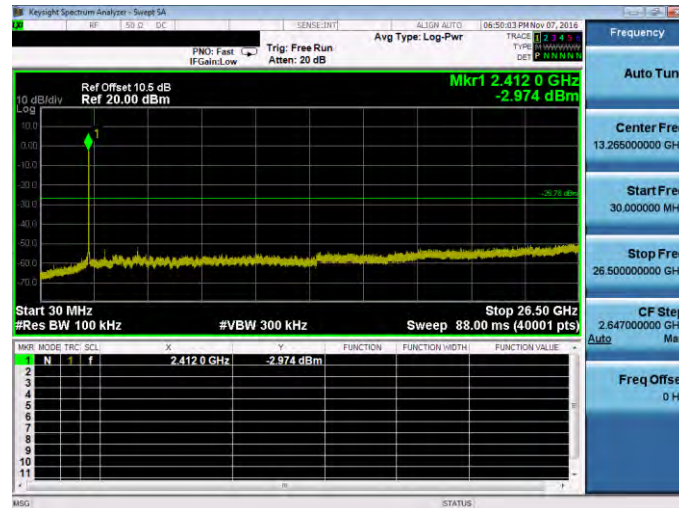




Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-1

Beamforming on

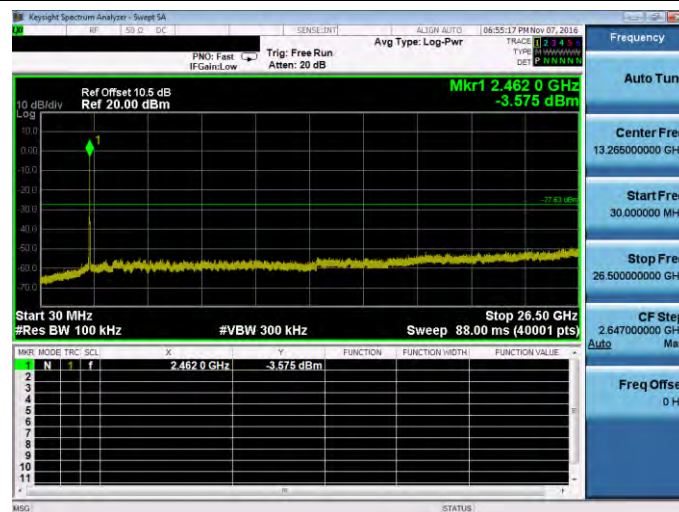
2412 MHz



2437 MHz



2462 MHz

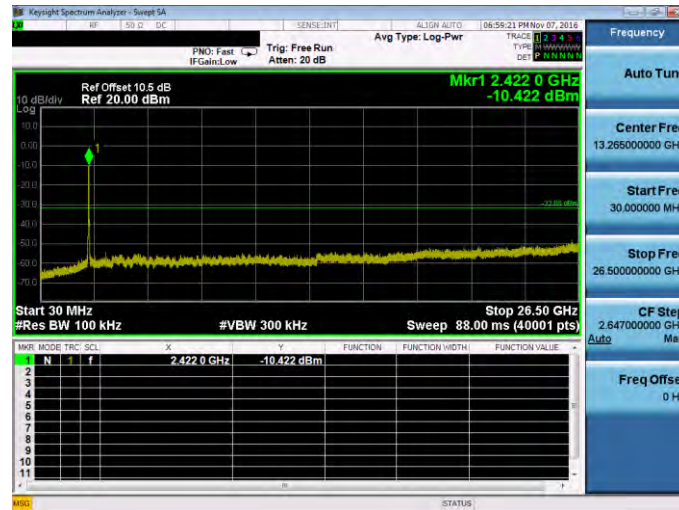




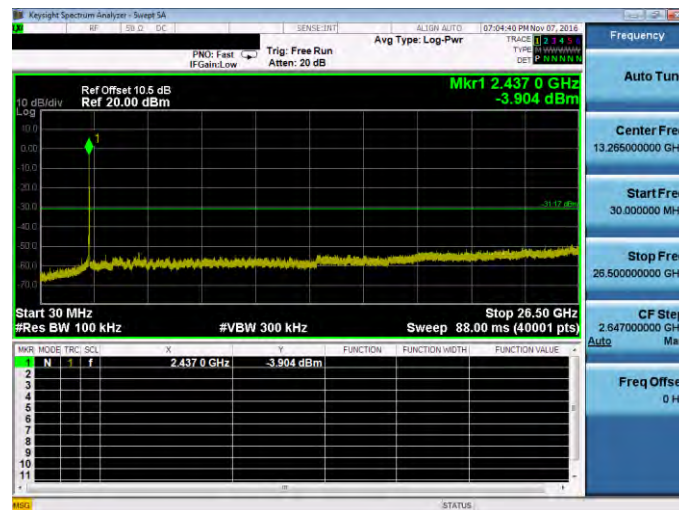
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-1

Beamforming on

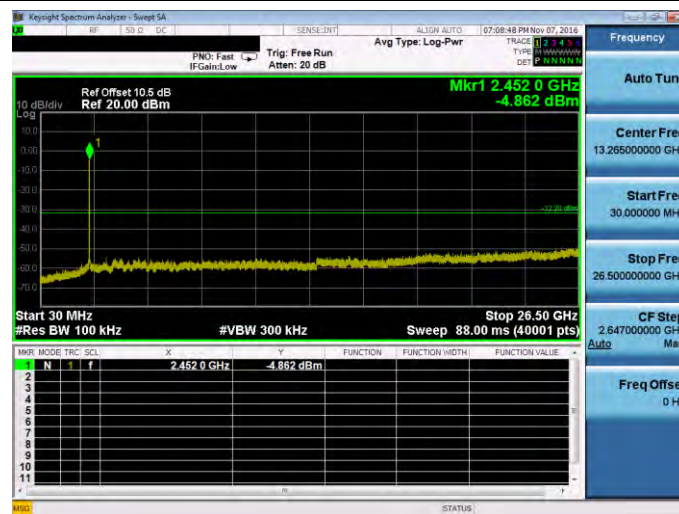
2422 MHz



2437 MHz



2452 MHz



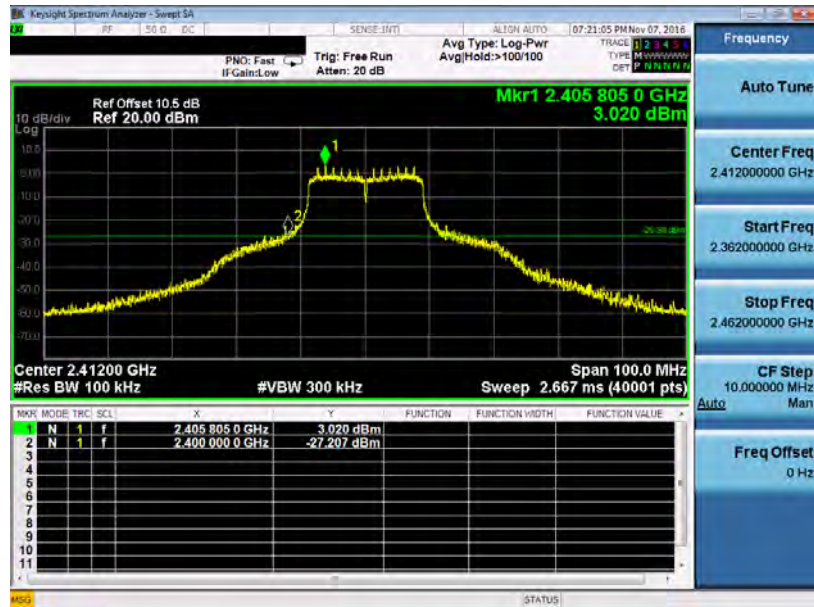


Conducted Band Edge

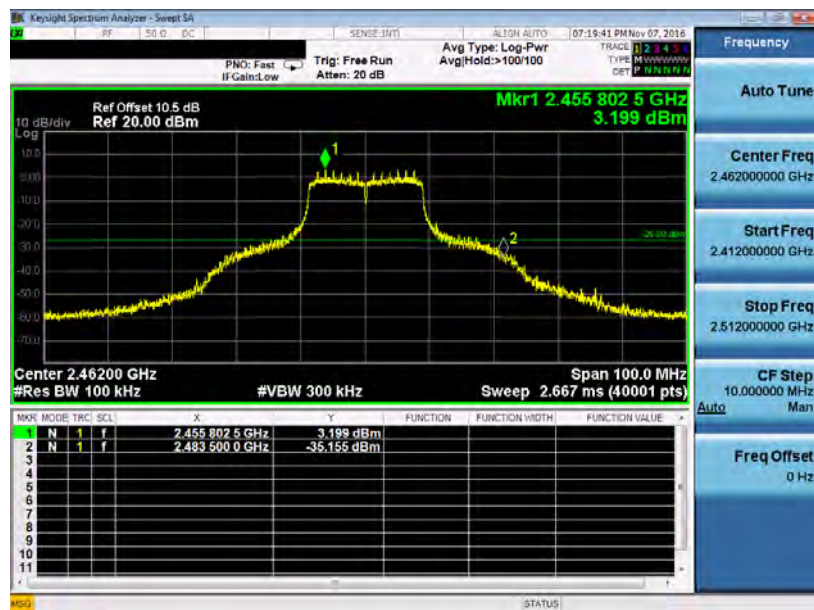
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-0

Beamforming on

2412 MHz



2462 MHz



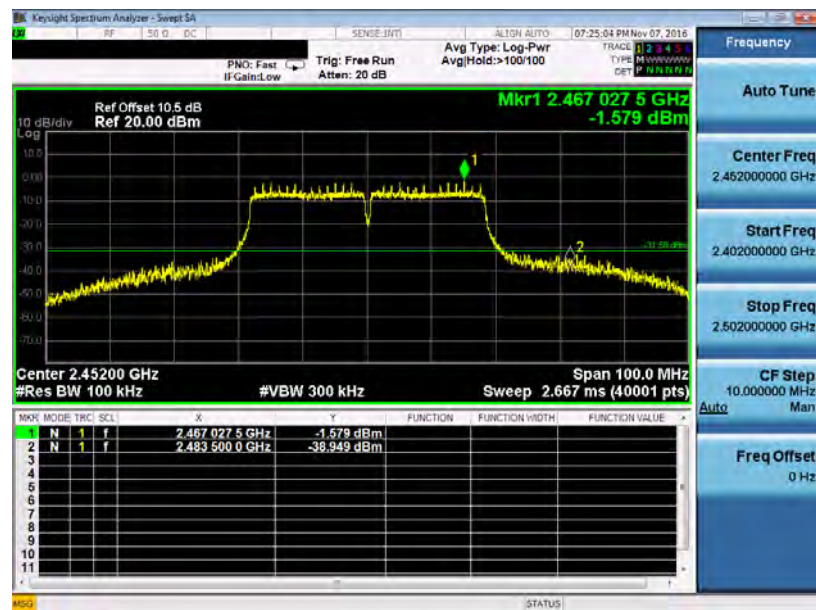
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-0

Beamforming on

2422 MHz



2452 MHz

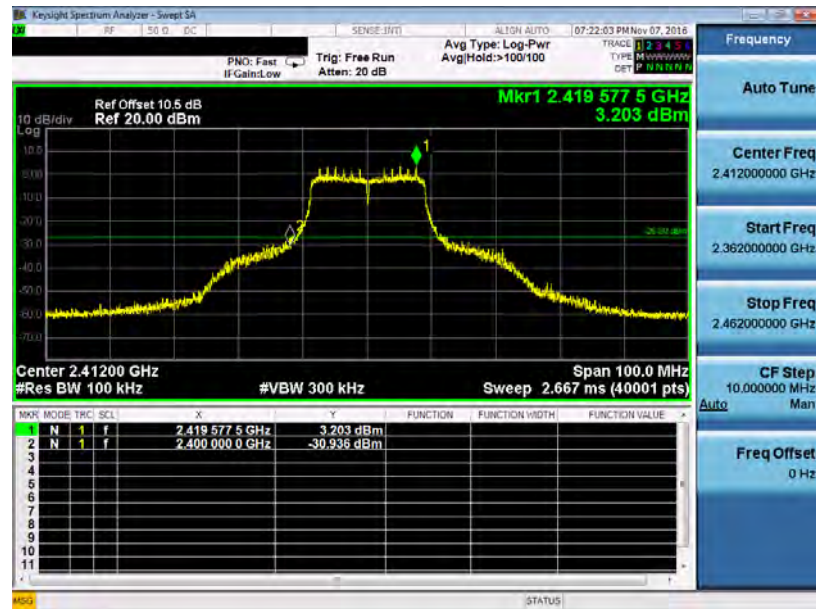




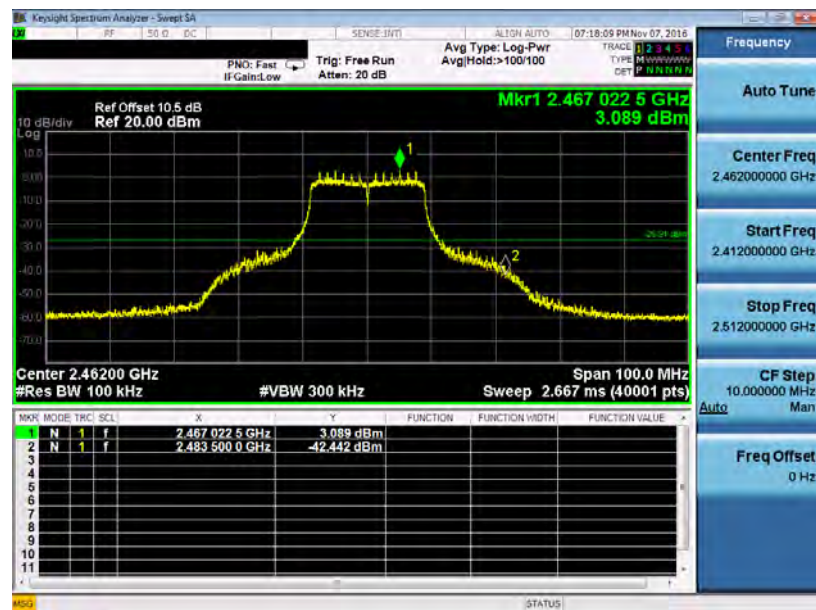
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz link mode_ANT-1

Beamforming on

2412 MHz



2462 MHz

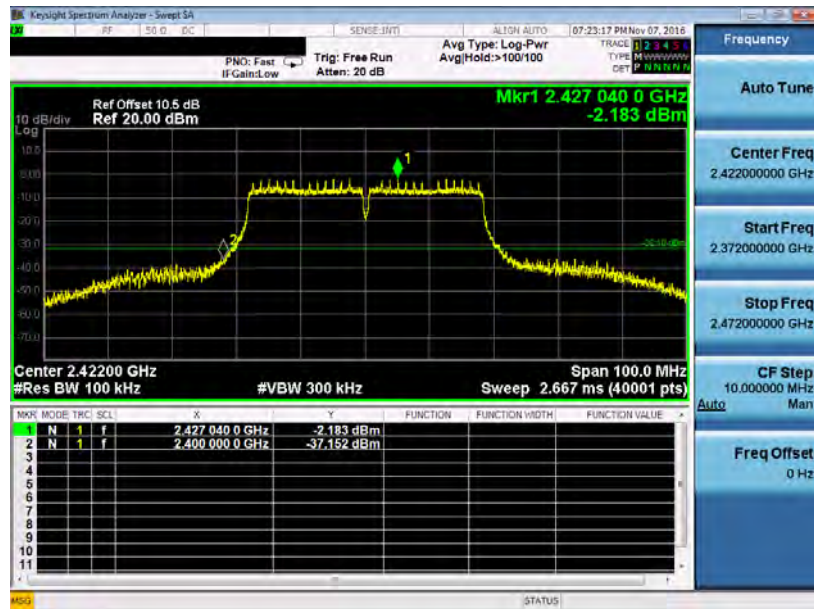




Mode 5: IEEE 802.11n 2.4 GHz 40 MHz link mode_ANT-1

Beamforming on

2422 MHz



2452 MHz

