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Emissions Test Report

EUT Name: Secure Wireless Satellite Norton Core Mini

Model No.: 518

CFR 47 Part 15.247:2018, CFR47 part15.409:2018 and RSS-247:2017

Prepared for: Symantec Inc.

Prepared by:

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Report Date: 07/19/2018

Revisions

Revision No.	Date MM/DD/YYYY	Reason for Change	Author
1	7/10/2018	Initial	D. Foster
2	8/28/2018	Revisions per reviewer	D. Foster

Note: Latest revision report will replace all previous reports.

Statement of Compliance

Manufacturer:Symantec Inc.

Requester / Applicant: Vijay Poojari

Name of Equipment: Norton Core Mini

Model No. 518

Type of Equipment: Access point router

Application of Regulations: CFR 47 Part 15.247:2018, CFR47 part15.409:2018 and RSS-247:2017

Test Dates: 4/12-8/15 2018

Guidance Documents:

Emissions: ANSI C63.10:2013, CFR47 part 15.247:2018, CFR47 part 15.409:2018, RSS247: 2017

The electromagnetic compatibility test and documented data described in this report has been performed and recorded by TUV Rheinland, in accordance with the standards and procedures listed herein. As the responsible authorized agent of the EMC laboratory, I hereby declare that the equipment described above has been shown to be compliant with the EMC requirements of the stated regulations and standards based on these results. If any special accessories and/or modifications were required for compliance, they are listed in the Executive Summary of this report.This report must not be used to claim product endorsement by A2LA or any agency of the U.S. Government. This report shall not be reproduced except in full, without the written authorization of TUV Rheinland of North America.

Douglas Antioco	08/28/2018
Test Engineer (Power, PPSD)	Date

Donn Foster	08/28/2018
Test Engineer	Date

Josie Sabado	08/28/2018
Laboratory Signature	Date

Testing Cert #3331.02 **US1131** **2932M-1**

1 Executive Summary

1.1 Scope

The purpose of the following report is to demonstrate compliance of the Symantec Norton Core Mini to the various regulatory requirements further listed in this Report.

It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components. This report is further intended to document changes and modifications to the EUT throughout its life cycle. All documentation will be included as a supplement.

1.2 Purpose

Testing was performed to evaluate the EMC performance of the EUT in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report.

1.3 Summary of Test Results

Table 1: Summary of Test Results

Test	Test Method	Test Parameters	Result
AC Power Conducted Emission	CFR47 15.207, RSS-GEN Sect.8.8	Class B	**Complied**
DTS Bandwidth (6dB)	CFR47 15.247 (a)(2), RSS 247 Sect. 5.2(a)	Limit	**Complied**
Maximum Output Power	CFR47 15.247 (b), RSS 247 Sect. 5.4 (d)	Limit	**Complied**
Peak Power Spectral Density	CFR47 15.247 (e), RSS 247 Sect. 5.2	Limit	**Complied**
Out of Band Emissions	CFR47 15.247 (d), RSS 247 Sect.5.5	Limit	**Complied**
Transmit Radiated Spurious Emissions	CFR47 15.247 (d), RSS 247 Sect.5.5	Limit	**Complied**

Test	Test Method	Test Parameters	Result
Maximum Output Power	CFR47 15.407 (a)	Limit	**Complied**
Maximum Output Power	RSS 247 Sect.6.2.1.1	Limit	**Complied**
Bandwidth (26dB)	CFR47 15.407 (a) RSS-247 5.2(a)	Limit	**Complied**
Peak Power Spectral Density	CFR47 15.407 (a)	Limit	**Complied**
Peak Power Spectral Density	RSS 247 Sect.6.2	Limit	**Complied**
Out of Band Emissions: U-NII-1 Restricted Band Edge	CFR47 15.407 (a)	Limit	**Complied**
Out of Band Emissions: U-NII-3 Unrestricted Band Edge	*CFR47 15.407 (b)(4)(i) RSS 247 Sect.6.2.1.2*	Limit	**Complied**
Transmitter Spurious Emissions	CFR47 15.209, CFR47 15.407 (b) RSS-GEN Sect.8.9, RSS-247 Sect. 6.2.1.2	Limit	**Complied**
AC Power Conducted Emission	CFR47 15.207 RSS-GEN Sect.8.8	Class B	**Complied**
Frequency Stability	CFR47 15.407 (g) RSS-GEN Sect. 6.11	Manufacturer Declaration	**Complied**

1.4 Special Accessories

QRCT software was used to set the transmitter parameters

1.5 Equipment Modifications

None

2 Laboratory Information

2.1 Accreditations & Endorsements

2.1.1 US Federal Communications Commission

TUV Rheinland of North America at 1279 Quarry Ln, Pleasanton, CA 94566 is recognized by the commission for performing testing services for the general public on a fee basis. These laboratory test facilities have been fully described in reports submitted to and accepted by the FCC (US1131). The laboratory scope of accreditation includes: Title 47 CFR Parts 15, 18, and 90. The accreditation is updated every 3 years.

2.1.2 NIST / A2LA

TUV Rheinland of North America is accredited by the National Voluntary Laboratory Accreditation Program, which is administered under the auspices of the National Institute of Standards and Technology. The laboratory has been assessed and accredited in accordance with ISO Guide 17025:2005 and ISO 9002 (Lab Code 3331.02). The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

2.1.3 Canada – Industry Canada

TUV Rheinland of North America at the 1279 Quarry Ln, Pleasanton, CA 94566 address is accredited by Industry Canada for performing testing services for the general public on a fee basis. This laboratory test facilities have been fully described in reports submitted to and accepted by Industry Canada (File Number 2932M). The accreditation is updated every 3 years.

2.1.4 Japan – VCCI

The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) is a group that consists of Information Technology Equipment (ITE) manufacturers and EMC test laboratories. The purpose of the Council is to take voluntary control measures against electromagnetic interference from Information Technology Equipment, and thereby contribute to the development of a socially beneficial and responsible state of affairs in the realm of Information Technology Equipment in Japan. TUV Rheinland of North America at 1279 Quarry Ln, Pleasanton, CA 94566 has been assessed and approved in accordance with the Regulations for Voluntary Control Measures.

VCCI Registration No. for Pleasanton: A-0268

2.1.5 Acceptance by Mutual Recognition Arrangement

The United States has an established agreement with specific countries under the Asia Pacific Laboratory Accreditation Corporation (APLAC) Mutual Recognition Arrangement. Under this agreement, all TUV Rheinland at 1279 Quarry Ln, Pleasanton, CA 94566 test results and test reports within the scope of the laboratory NIST / A2LA accreditation will be accepted by each member country.

2.2 Test Facilities

All of the test facilities are located at 1279 Quarry Lane, Pleasanton, California 94566, USA.

2.2.1 Emission Test Facility

The Semi-Anechoic chamber and AC Line Conducted measurement facility used to collect the radiated and conducted data has been constructed in accordance with ANSI C63.7:1992. The site has been measured in accordance with and verified to comply with the theoretical normalized site attenuation requirements of ANSI C63.4-2014, at a test distance of 3 and 5 meters. The site is listed with the FCC and accredited by A2LA (Lab Code 3331.02). The 3/5-meter semi-anechoic chamber used to collect the radiated data has been verified to comply with the theoretical normalized site attenuation requirements of ANSI C63.4-2014, at a test distance of 3 meter and 5 meters. A report detailing this site can be obtained from TUV Rheinland of North America.

2.2.2 Measurement Uncertainty

Two types of measurement uncertainty are expressed in this report, per *ISO Guide To The Expression Of Uncertainty In Measurement*, 1st Edition, 1995.

The Combined Standard Uncertainty is the standard uncertainty of the result of a measurement when that result is obtained from the values of a number of other quantities; it is equal to the positive square root of the sum of the variances or co-variances of these other quantities, weighted according to how the measurement result varies with changes in these quantities. The term *standard uncertainty* is the result of a measurement expressed as a standard deviation.

2.2.3 Sample Calculation – radiated & conducted emissions

The field strength is calculated by subtracting the Amplifier Gain and adding the Cable Loss and Antenna Correction Factor to the measured reading. The basic equation is as follows:

$$\text{Field Strength (dB}\mu\text{V/m)} = \text{RAW} - \text{AMP} + \text{CBL} + \text{ACF}$$

Where: RAW = Measured level before correction (dBµV)

AMP = Amplifier Gain (dB)

CBL = Cable Loss (dB)

ACF = Antenna Correction Factor (dB/m)

$$\mu\text{V/m} = 10^{\frac{dB\mu V/m}{20}}$$

Sample radiated emissions calculation @ 30 MHz

Measurement +Antenna Factor–Amplifier Gain+Cable loss=Radiated Emissions (dBuV/m)

25 dBuV/m + 17.5 dB – 20 dB + 1.0 dB = 23.5 dBuV/m

2.2.4 Measurement Uncertainty Emissions

Per CISPR 16-4-2	**U_{lab}**	**U_{cispr}**
Radiated Disturbance @ 10 meters		
30 – 1,000 MHz	2.25 dB	4.51 dB
Radiated Disturbance @ 3 meters		
30 – 1,000 MHz	2.26 dB	4.52 dB
1 – 6 GHz	2.12 dB	4.25 dB

6 – 18 GHz	2.47 dB	4.93 dB
Conducted Disturbance @ Mains Terminals		
150 kHz – 30 MHz	1.09 dB	2.18 dB
Disturbance Power		
30 MHz– 300 MHz	3.92 dB	4.3 dB

2.3 Calibration Traceability

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Standard 17025:2005.

3 Duty Cycle 2.4GHz

Test Method

The ANSI C63.10-2013 Section 11.6 Conducted method was used to measure the duty cycle. The preliminary investigation was performed at different data rate to determine the highest power output for each mode. The system was powered on and port 1 connected to the Spectrum analyzer. A diag program called QRCT was used to set the AP in continuous Tx mode and also to set the channel, channel power and data rate. This test was conducted on 3 channels for each of the throughput modes. The analyzer was configured as follows.

Cable loss was entered as an offset

RBW=8MHz

VBW= 50MHz

Span = 0Hz

Reference level= as needed to maintain headroom

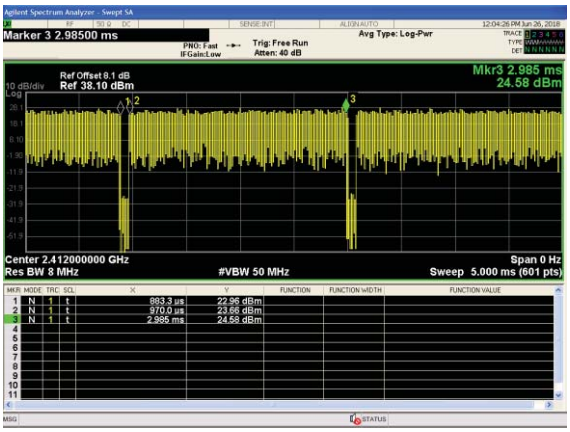
SWT= 5ms adjusted as needed to capture approx. 1.5 cycles

The off time and cycle time were were captured using the marker functions and the duty cycle calculated.

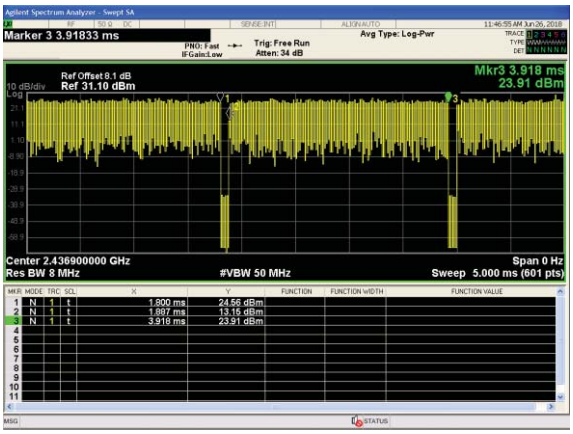
Test Conditions: Conducted Measurement (SA), Normal Temperature	**Date**: 6/26/2018
Antenna Type:	Stamped metal dipole
Duty cycle correction: table below	Data Rate: CCK=802.11b 1mbps, nonHT=802.11g 6mbps, HT/VHT=802.11ac MCS0
Ambient Temp.: 22º C	Relative Humidity: 39 %RH

Duty cycle					
Mode	Channel 1	Channel 6	Channel 11	Channel 3	DCCF
nonHT	0.96	0.96	0.96	n/a	0.17
HT20	0.98	0.98	0.98	n/a	0.00
HT40				0.97	0.13
VHT20	0.99	0.98	0.99	n/a	0.00
VHT40				0.97	0.13
CCK	0.99	0.99	0.99	n/a	0.00

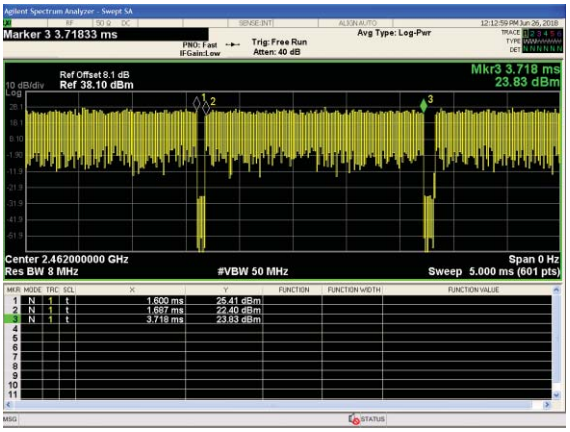
3.1 Duty cycle plots



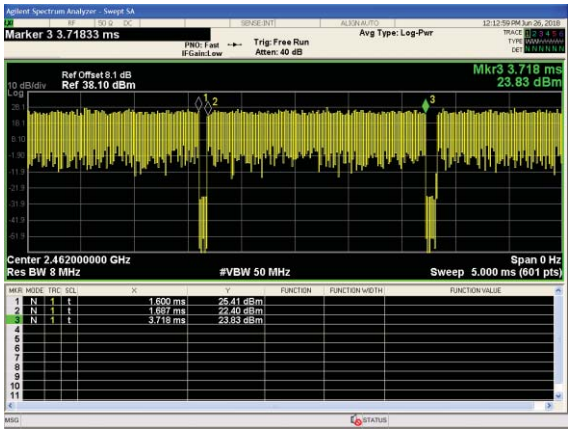
Duty cycle channel 1 nonHT



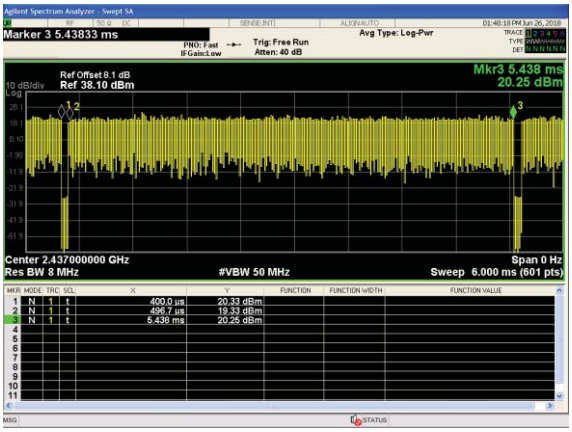
Duty cycle channel 6 nonHT



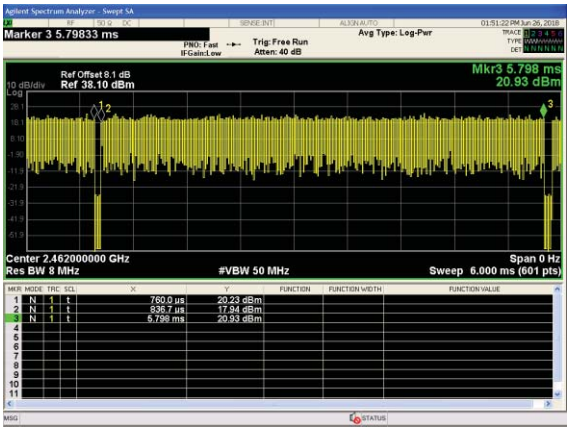
Duty cycle channel 11 nonHT



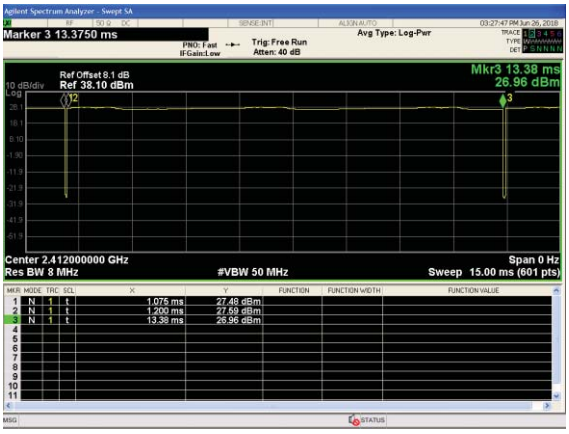
Duty cycle channel 1 HT20



Duty cycle channel 6 HT20

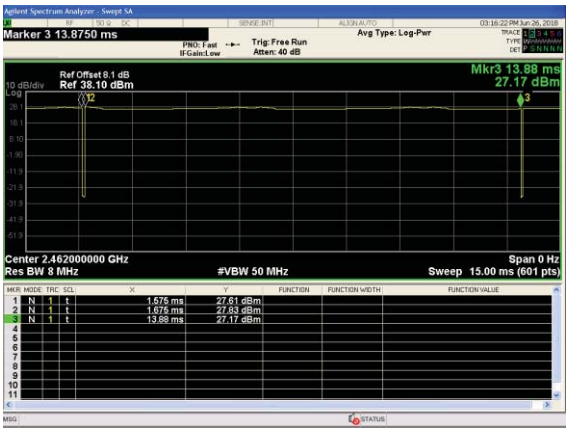


Duty cycle channel 11 HT20

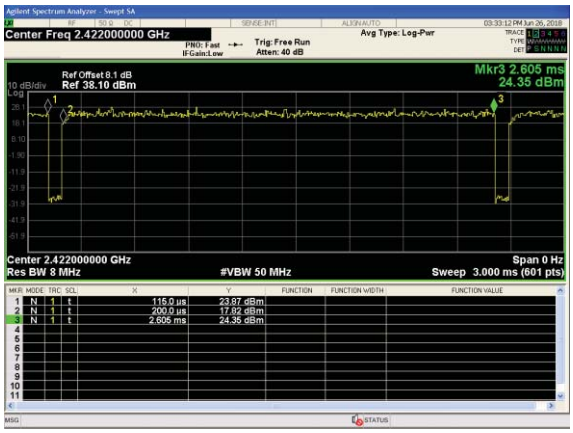


Duty cycle channel 1 CCK

Duty cycle channel 6 CCK

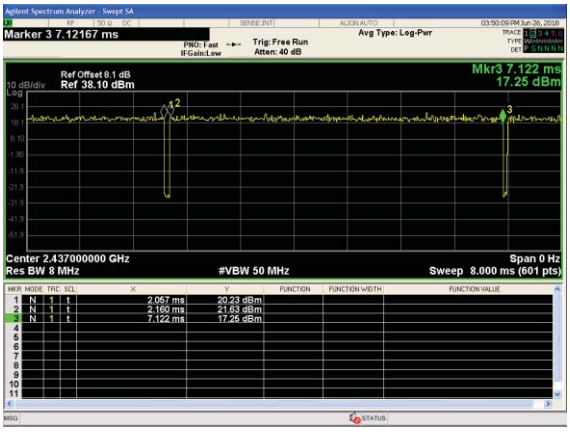


Duty cycle channel 11 CCK

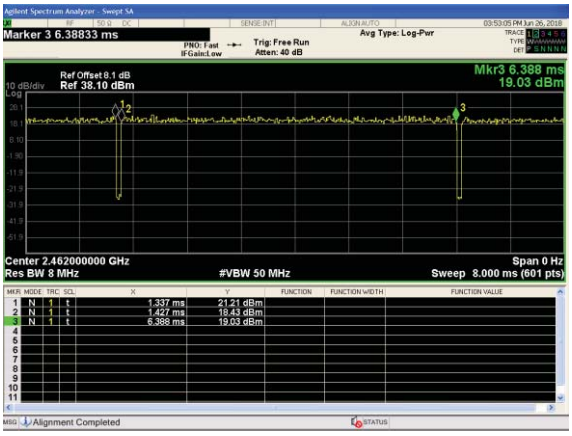


Duty cycle channel 3 VHT40

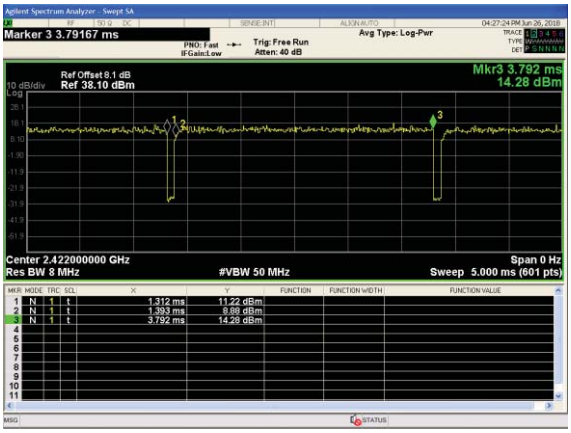
Duty cycle channel 1 VHT20



Duty cycle channel 6 VHT20



Duty cycle channel 11 VHT20



Duty cycle channel 3 HT40

4 2.4GHz test results

4.1 Occupied bandwidth 99% and 6db

Test Method

The ANSI C63.10-2013 Section 11.8.2 option 2 Conducted method was used to measure the occupied bandwidth and DTS bandwidth. The preliminary investigation was performed at different data rate to determine the highest power output for each mode. The system was powered on and port 1 connected to the Spectrum analyzer. A diag program called QRCT was used to set the AP in continuous Tx mode and also to set the channel, channel power and data rate. This test was conducted on 3 channels for each of the throughput modes. The analyzer was configured as follows.

Cable loss and duty cycle correction were entered as an offset

The measure function of the instrument was used to capture the 99% and 6db bandwidths

RBW= 100 kHz.

VBW= 300 kHz.

Span+~1.5xOBW

SWT= auto

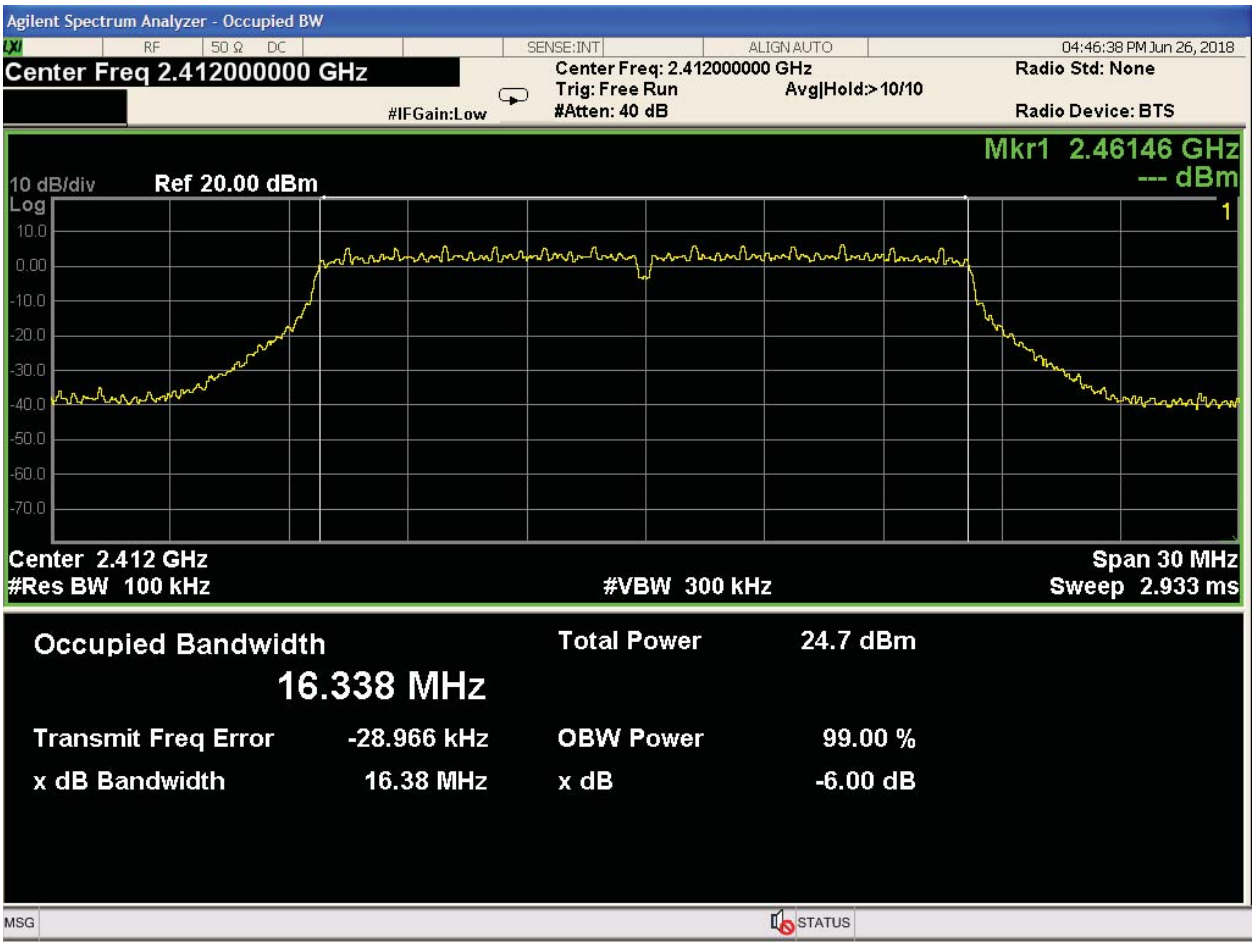
Detector = peak

The occupied bandwidth function was selected the xdb BW set to -6db and max hold.

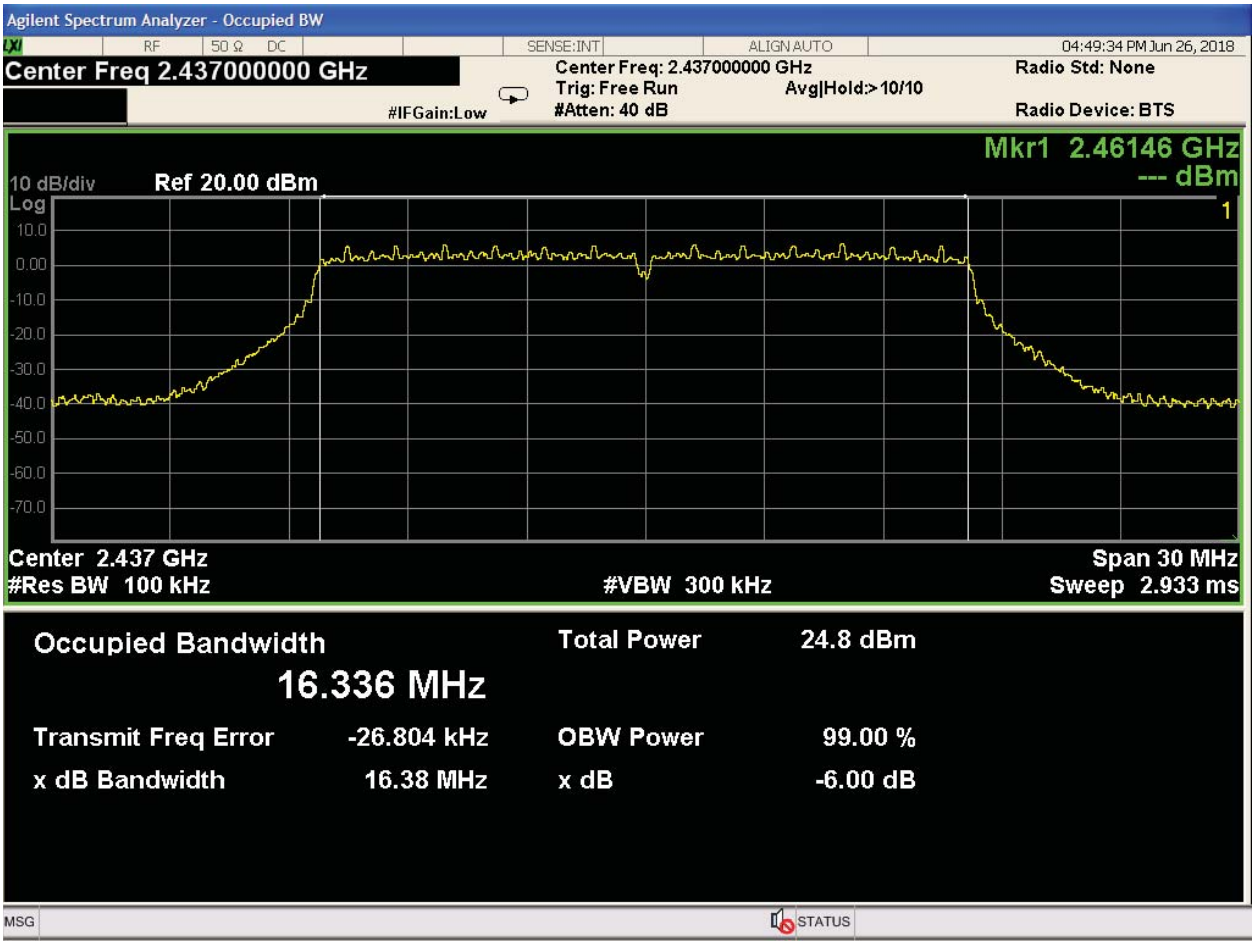
Test Conditions: Conducted Measurement (SA), Normal Temperature	**Date**: 6/26/2018
Antenna Type:	Stamped metal dipole
Duty cycle correction: see sect. 3	Data Rate: 1mbps,6mbps, MCS0
Ambient Temp.: 22º C	Relative Humidity: 39 %RH

4.2 Results and plots

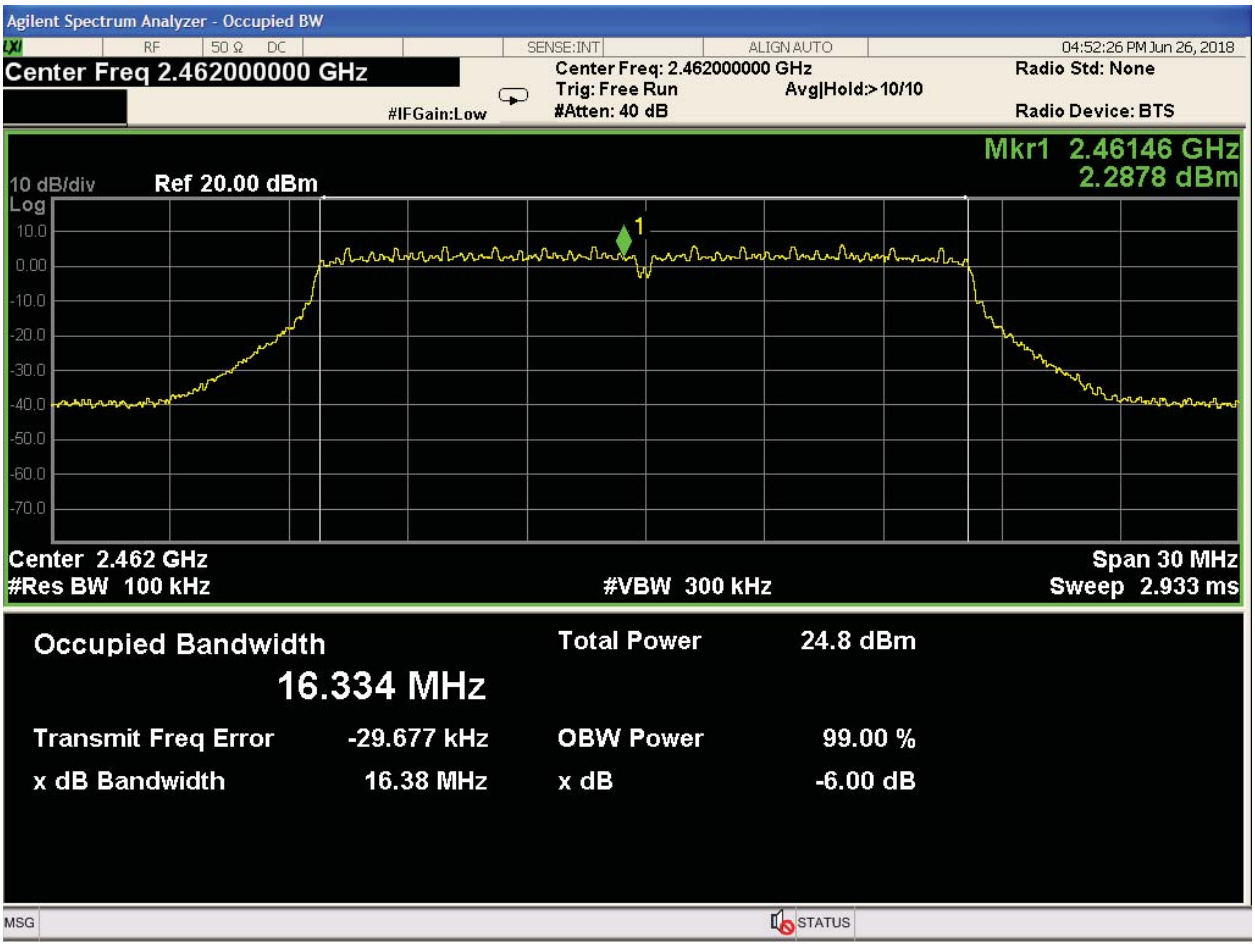
Occupied Bandwidth MHz.					
Mode	Channel 1	Channel 6	Channel 11	Channel 3	BW type
nonHT	16.33	16.33	16.33	n/a	99%
nonHT	16.38	16.38	16.38	n/a	6db
HT20	17.54	17.55	17.54	n/a	99%
HT20	17.60	17.59	17.60	n/a	6db
HT40				35.83	99%
HT40				35.19	6db
VHT20	17.54	17.55	17.55	n/a	99%
VHT20	17.60	17.59	17.60	n/a	6db
VHT40				35.82	99%
VHT40				35.19	6db
CCK	12.87	12.97	12.90	n/a	99%
CCK	8.09	8.55	8.09	n/a	6db



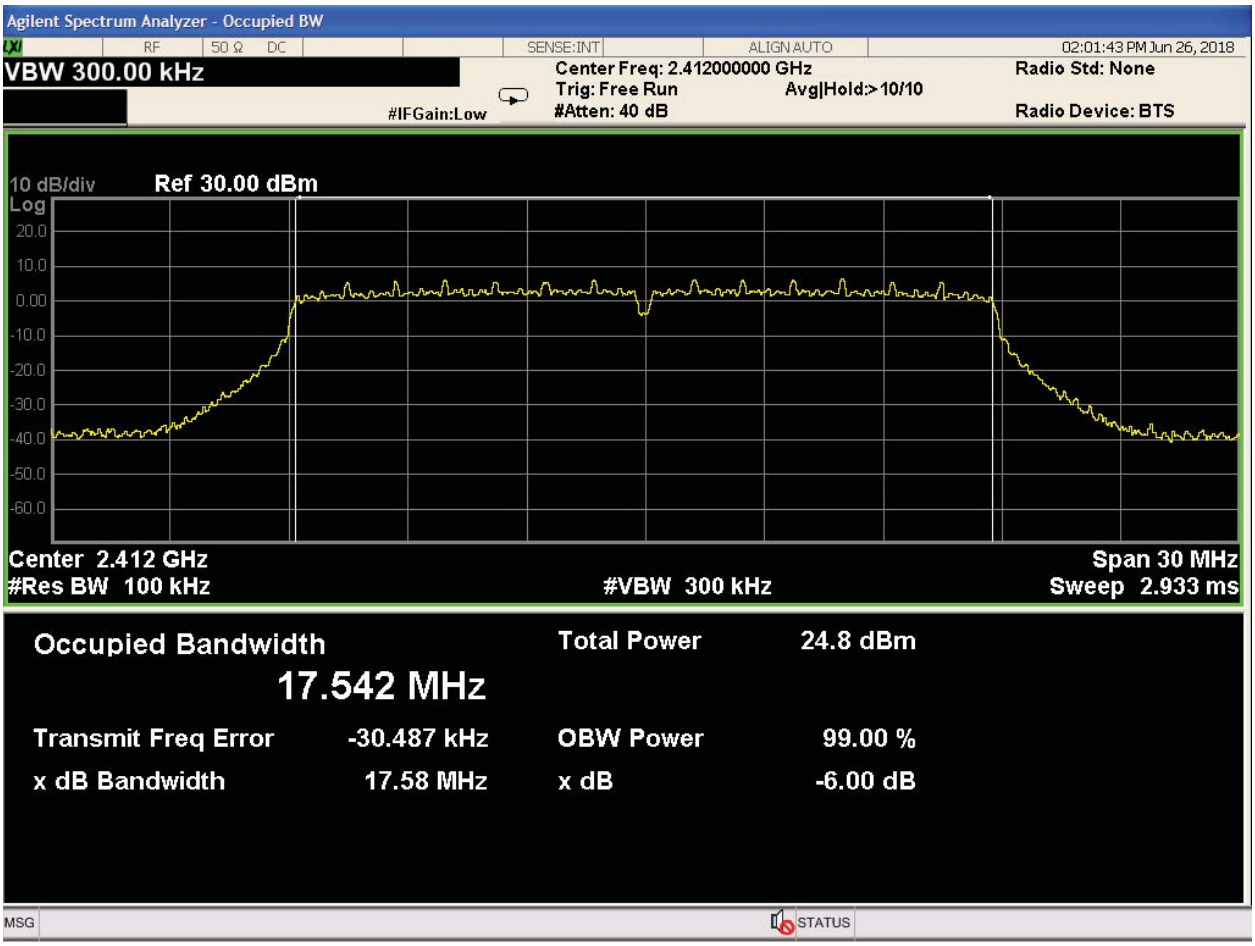
Bandwidth 99% and 6db channel 1 nonHT



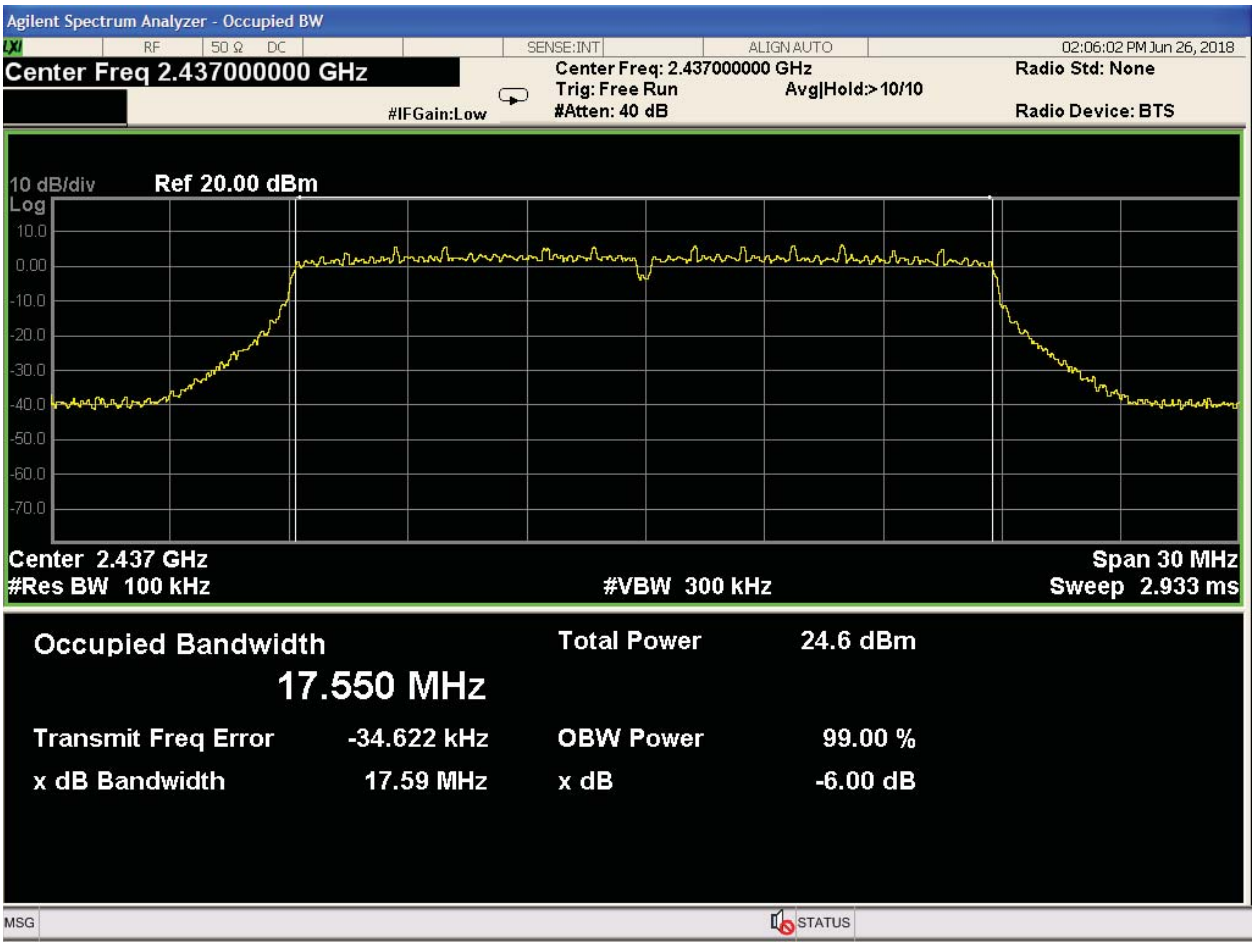
Bandwidth 99% and 6db channel 6 nonHT



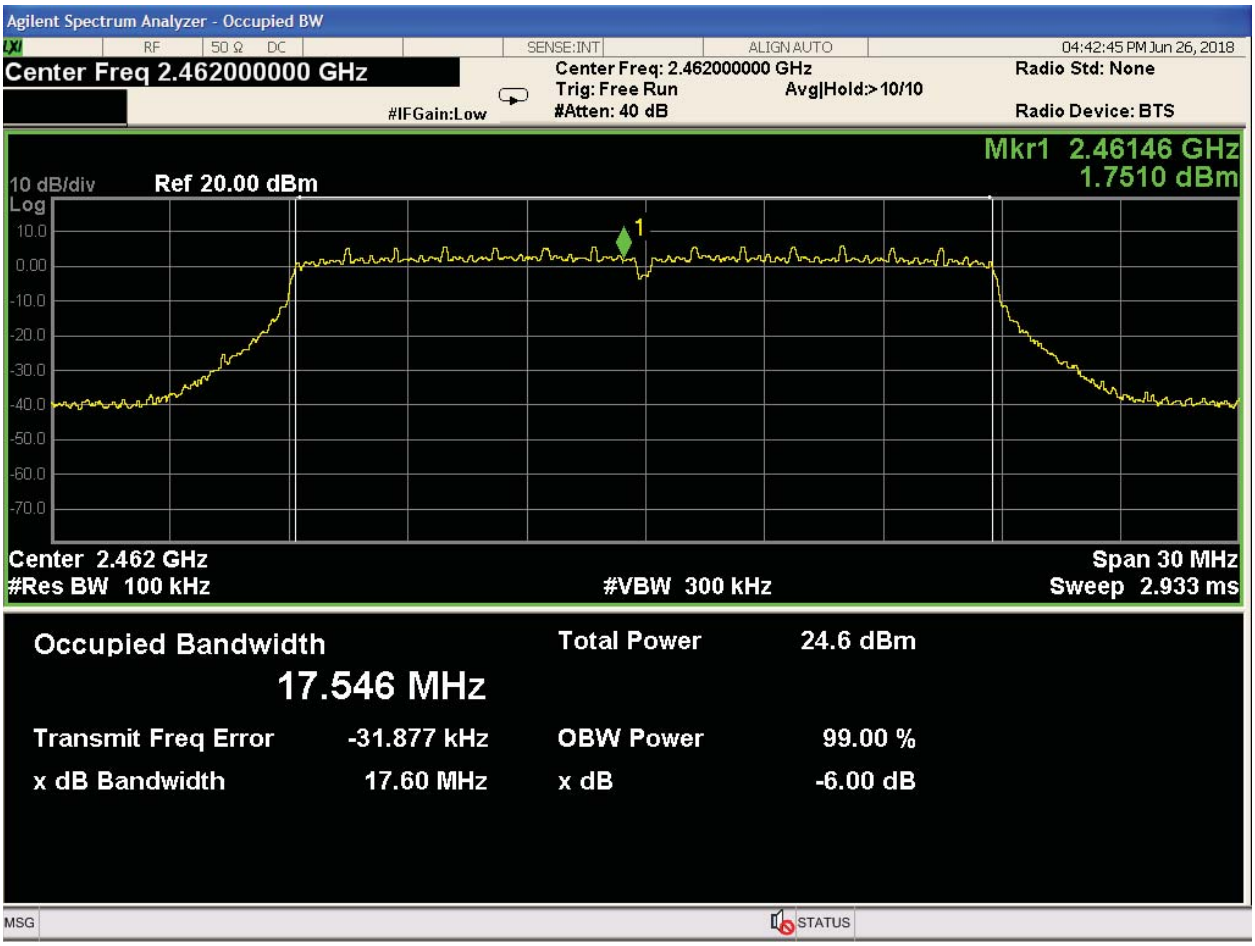
Bandwidth 99% and 6db channel 11 nonHT



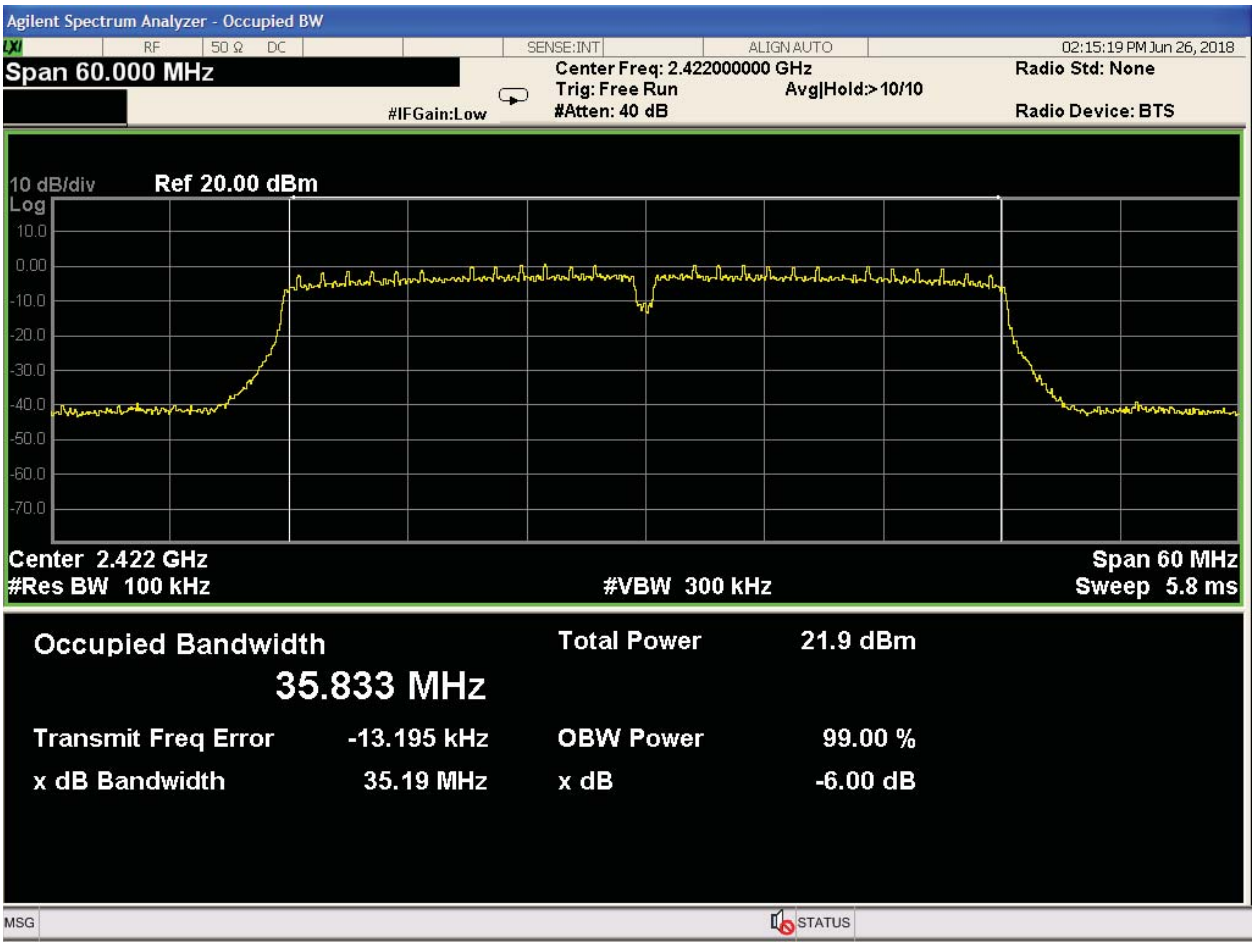
Bandwidth 99% and 6db channel 1 HT20



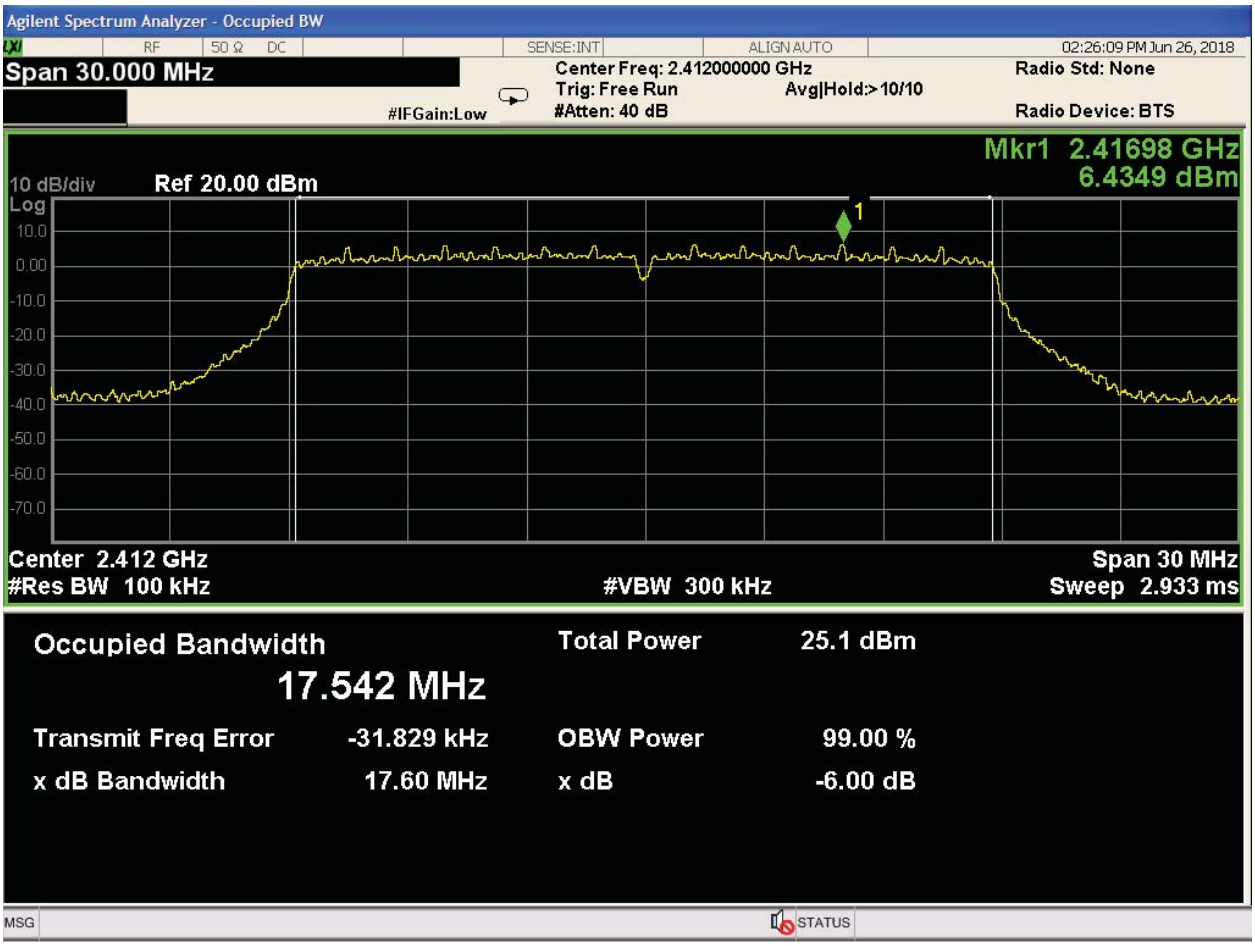
Bandwidth 99% and 6db channel 6 HT20



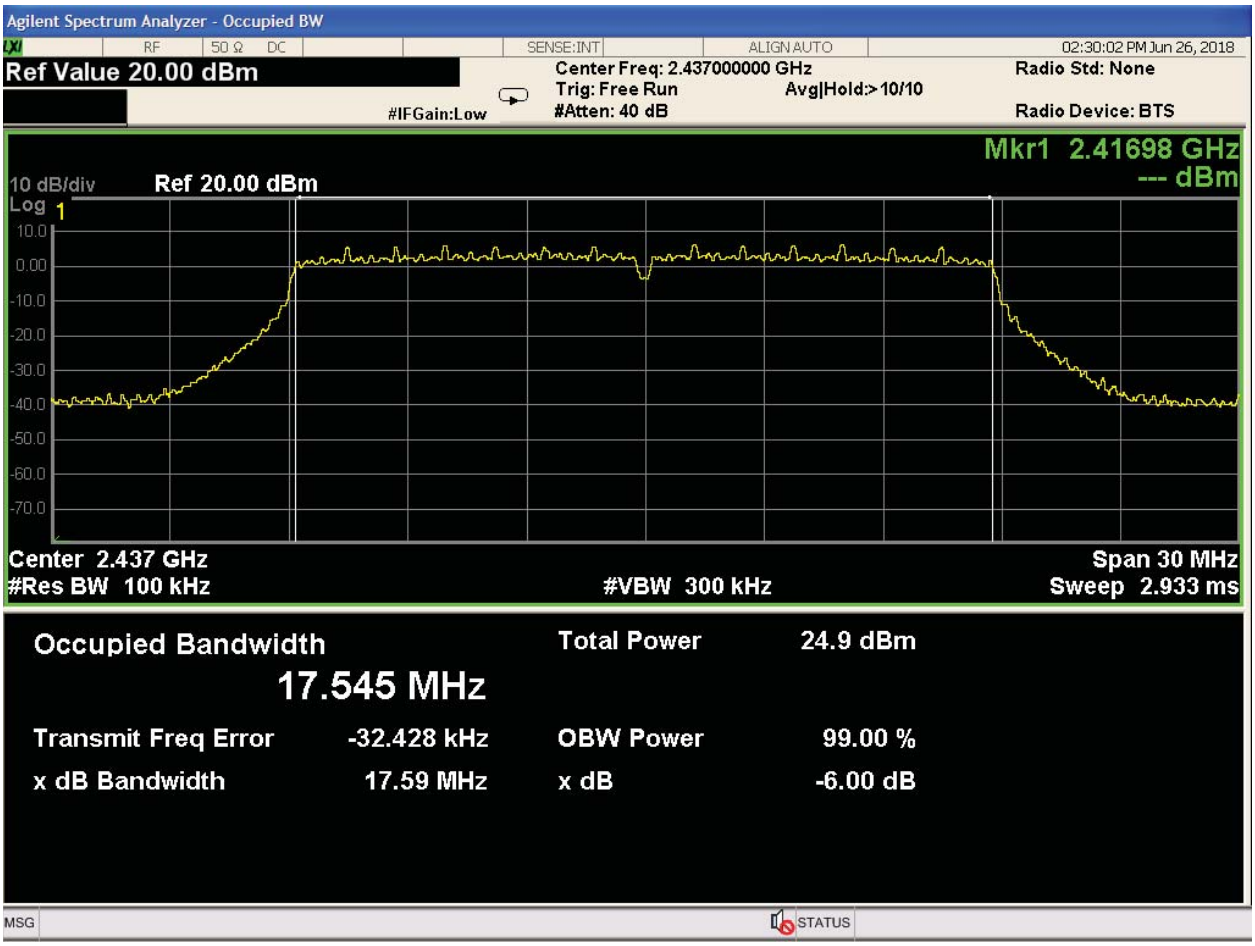
Bandwidth 99% and 6db channel 11 HT20



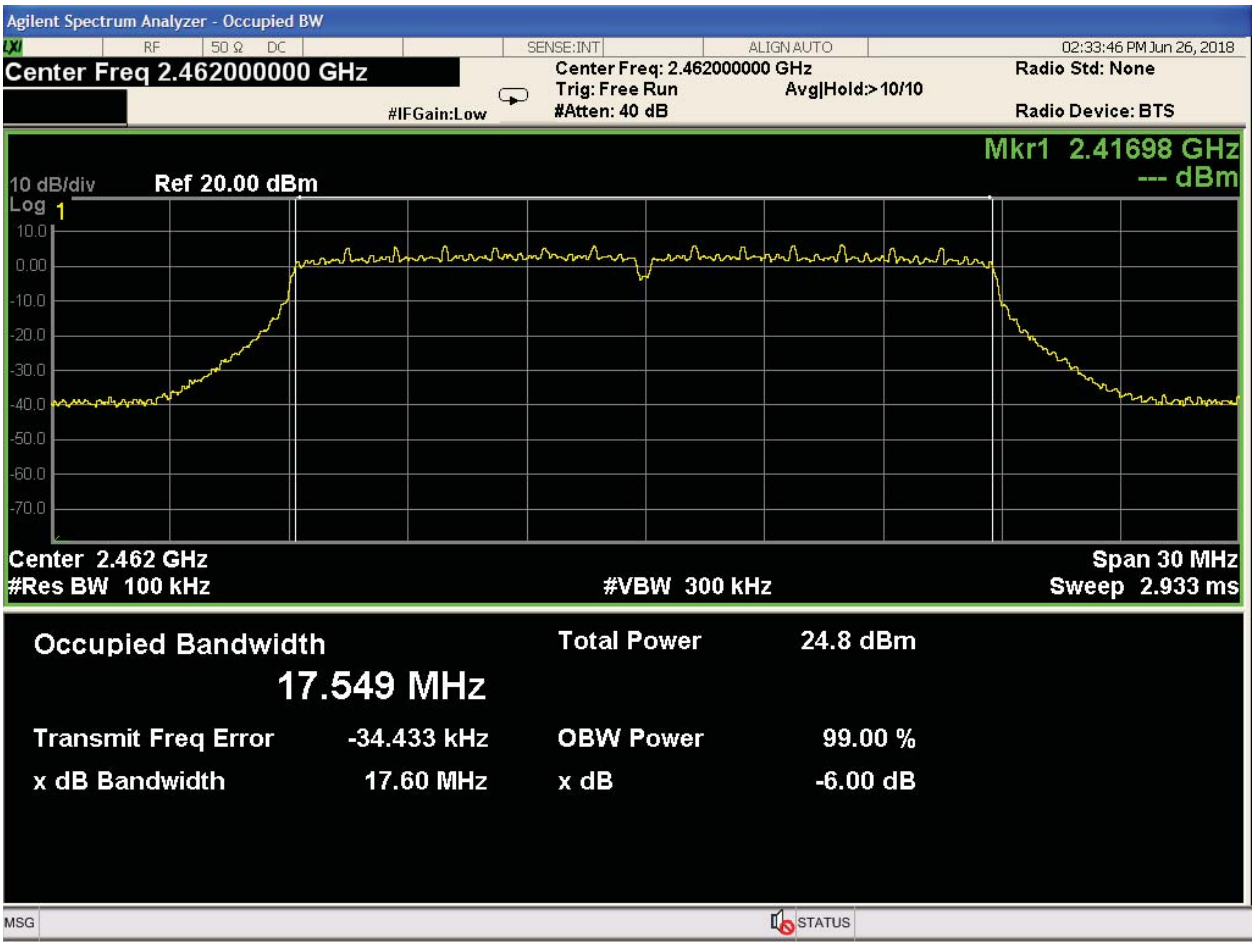
Bandwidth 99% and 6db channel 3 HT40



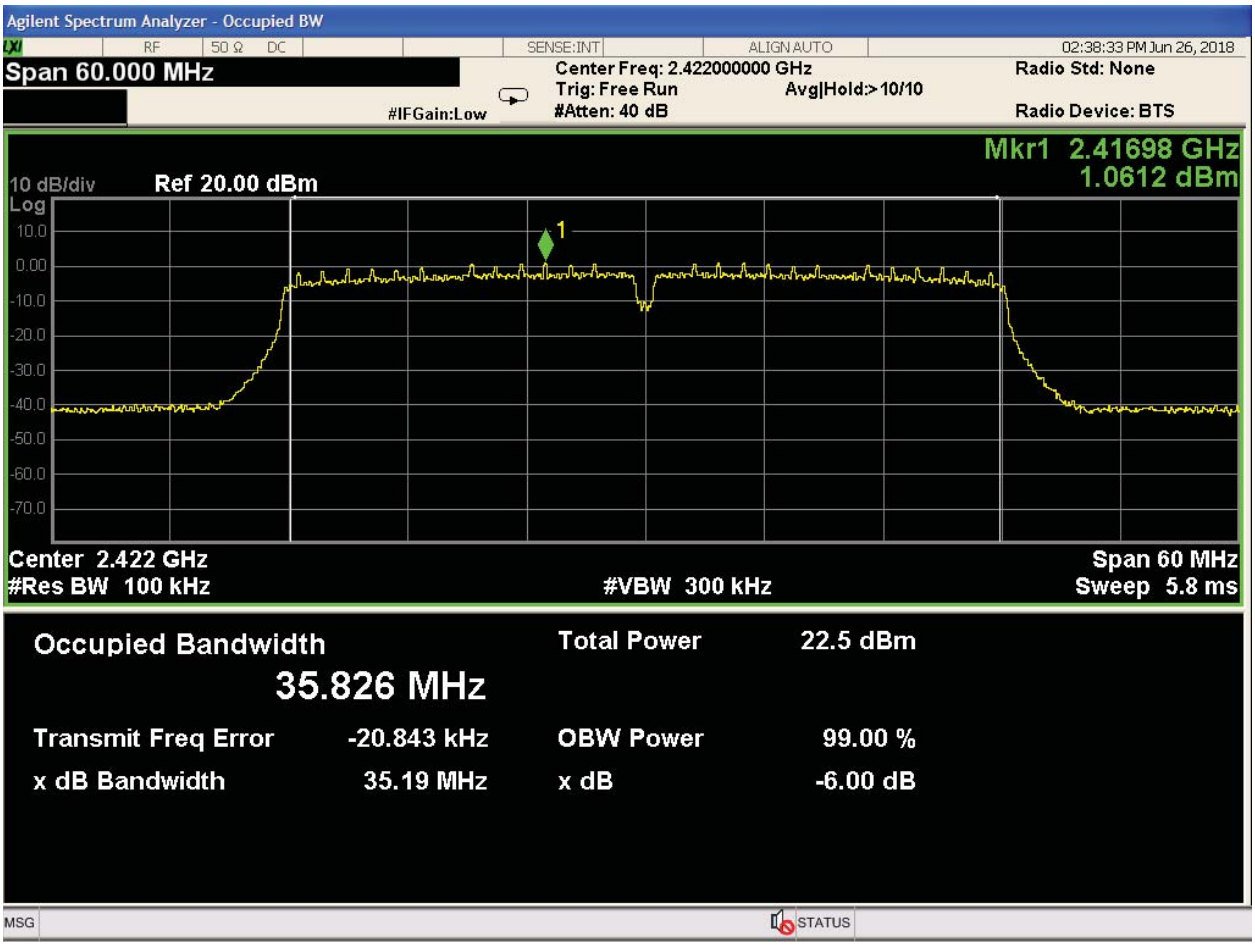
Bandwidth 99% and 6db channel 1 VHT20



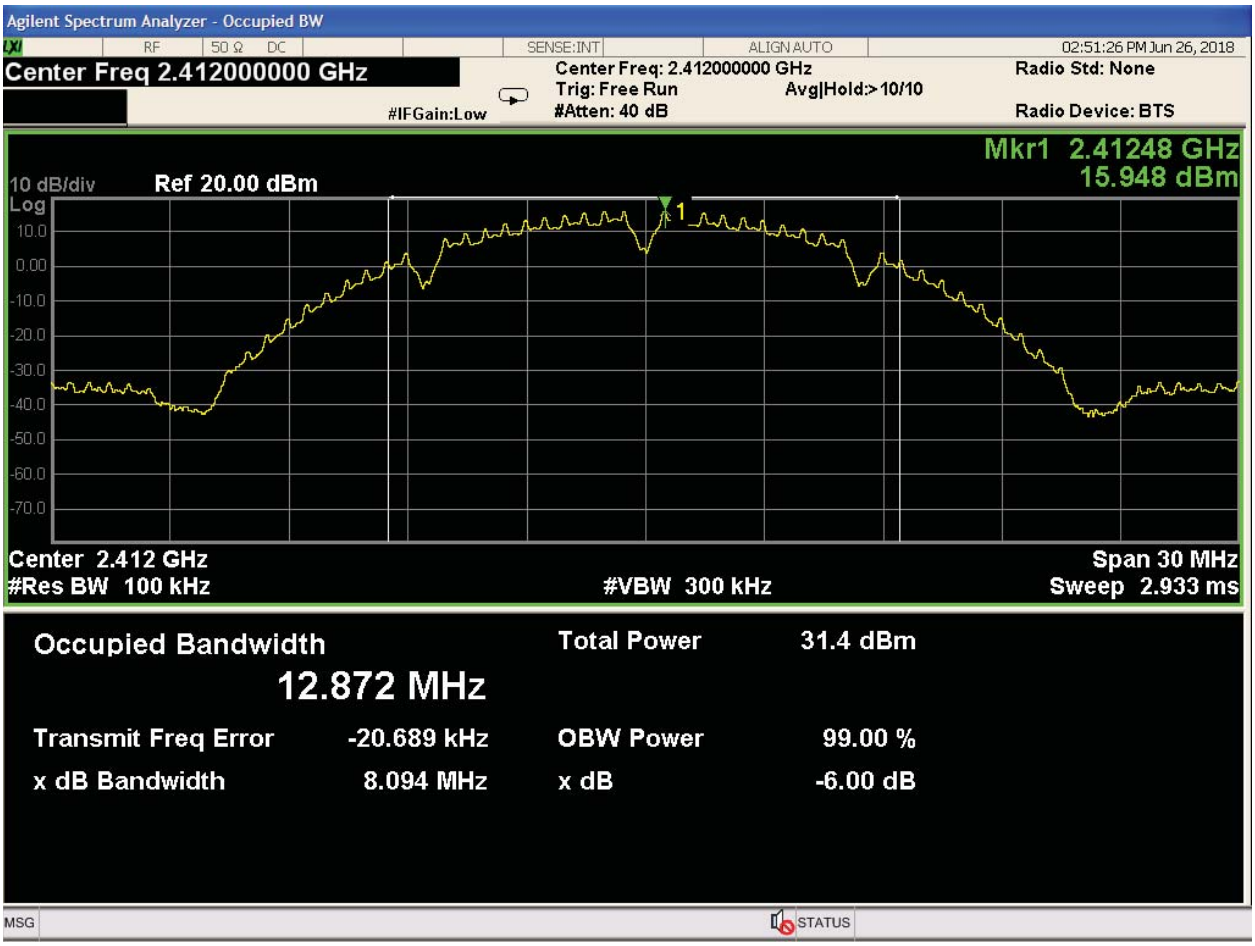
Bandwidth 99% and 6db channel 6 VHT20



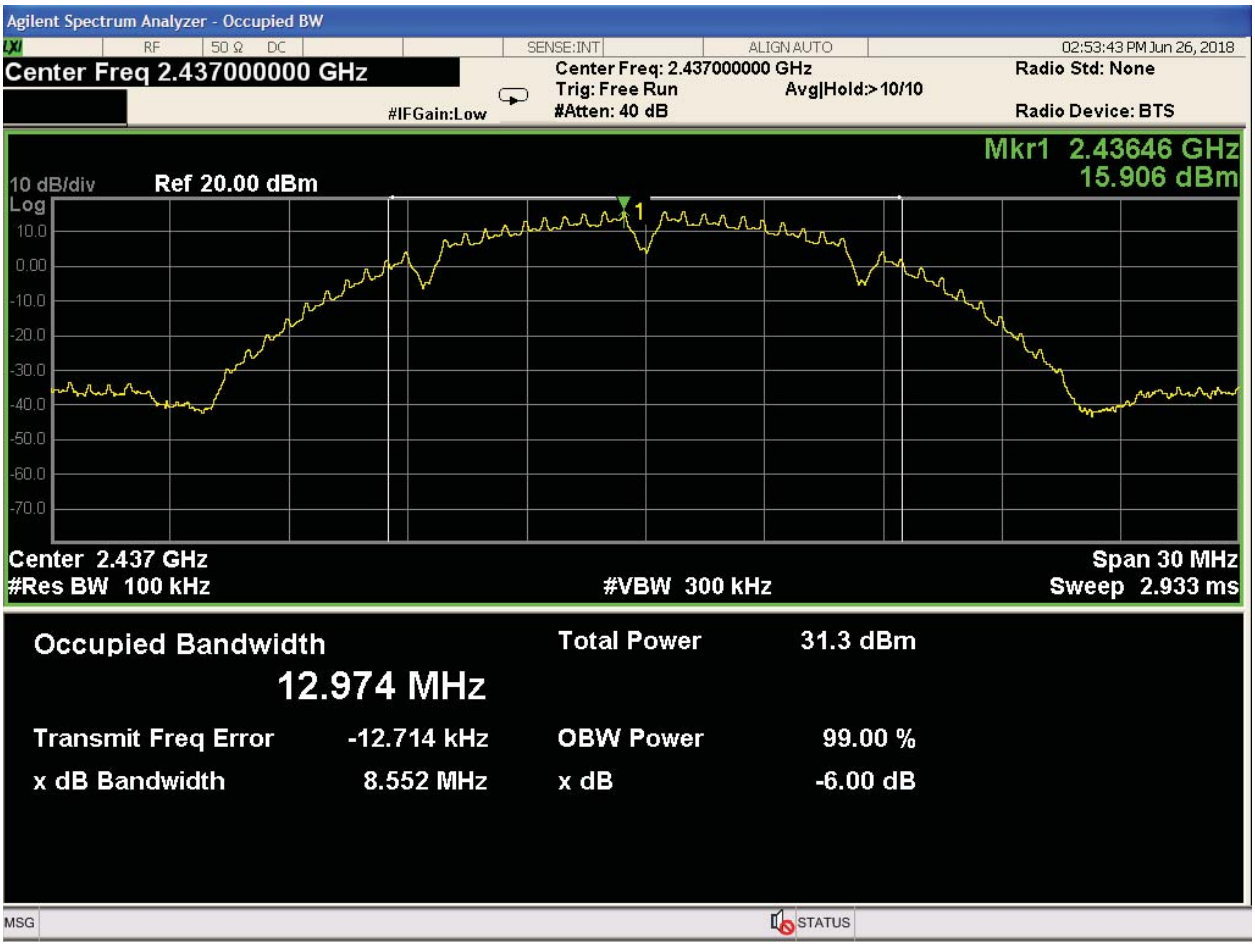
Bandwidth 99% and 6db channel 11 VHT20



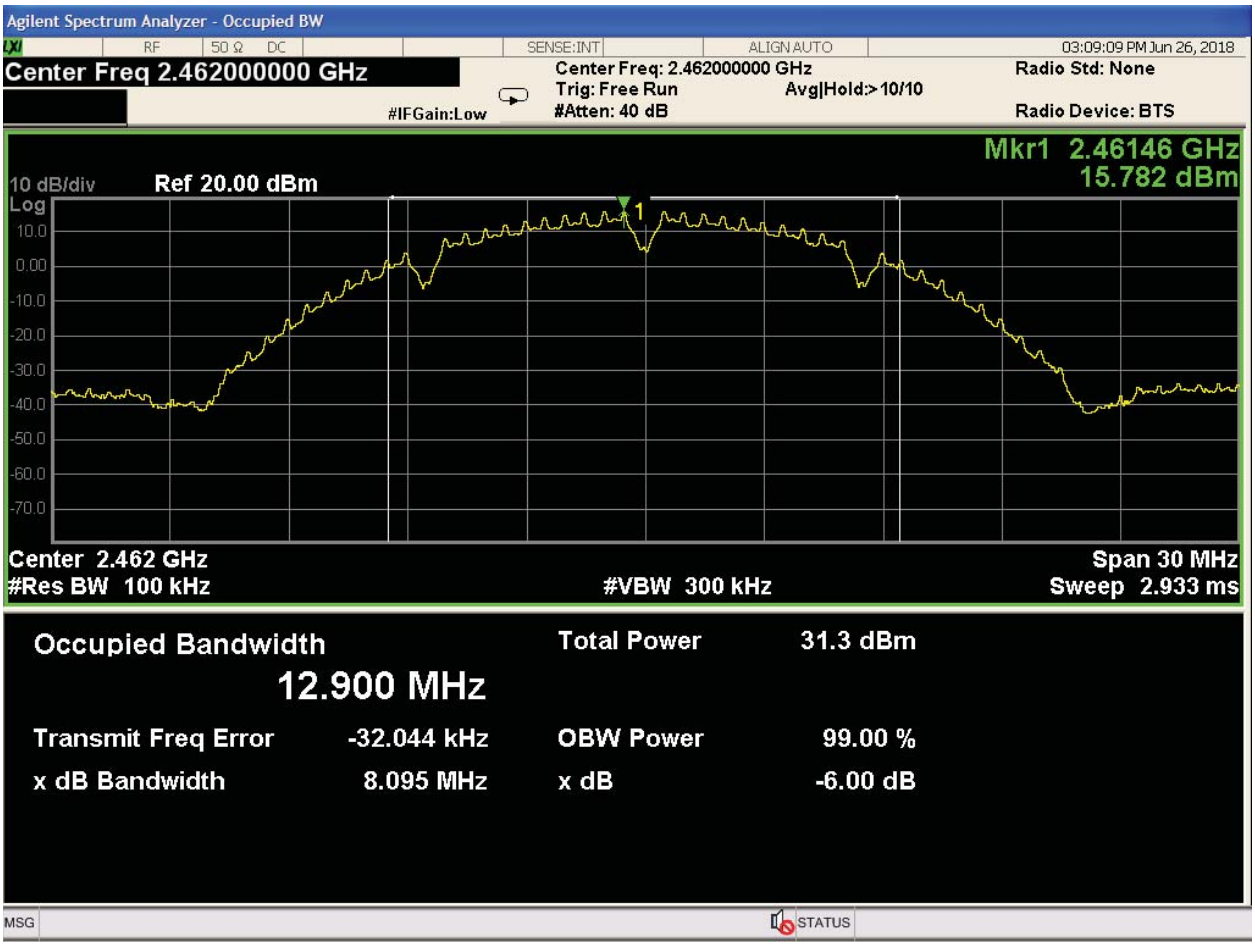
Bandwidth 99% and 6db channel 3 VHT40



Bandwidth 99% and 6db channel 1 CCK



Bandwidth 99% and 6db channel 6 CCK



Bandwidth 99% and 6db channel 11 CCK

4.3 Output Power

4.3.1 Limits

The maximum output power requirement is the maximum equivalent isotropic radiated power delivering at the transmitting antenna under specified conditions of measurements in the presence of modulation.

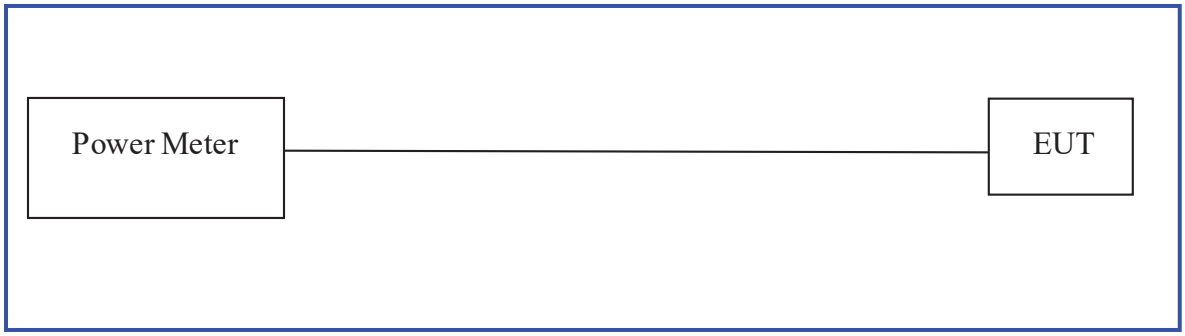
The maximum output power and harmonics shall not exceed CFR47 Part 15.247 (b):2016 and RSS 247: 2017 Sect. 5.4 (d).

The maximum transmitted power in the band 2400-2483.5 MHz: 1 W

4.3.2 Test Method

Conducted method was used to measure the channel power output. The preliminary investigation was performed at different data rate / chain to determine the highest power output for each mode. The worst findings were conducted on 3 channels in each operating range per CFR47 Part 15.247(b) and RSS 247 Sect. 5.4(d); 2400 MHz to 2483.5 MHz. The worst mode results indicated below.

Test Setup:



For CCK and HT20 Mode, the measurement method from ANSI C63.10-2013 Section 11.9.2.3.2 was used. Each chain was measured individually and applied the measure-and-sum approach per section 14.3.2.2 of ANSI C63.10-2013.

4.3.3 Results

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

RF Output Power at the Antenna Port – Test Results – Non Beamforming

Test Conditions: Conducted Measurement, Normal Temperature			
Antenna Type: Stamped Metal		**Power Setting:** 23.5 (CCK), 17 (HT20)	
Max. Antenna Gain: Chain 0 = 2.7 dBi, Chain 1 = 1.8 dBi			
Signal State: Modulated at 99.3% (CCK) and 98.4% (HT20) Duty Cycle.			
Ambient Temp.: 22° C		**Relative Humidity:** 36%	
802.11b (CCK)			
Operating Channel (MHz)	**Limit [dBm]**	**Total Power (RMS) [dBm]**	**Margin [dB]**
2412.00	30.00	25.6	4.4
2437.00	30.00	25.9	4.1
2462.00	30.00	25.8	4.2
Note: 1.The highest output power was observed at 802.11b mode, 1.0 Mbps, 1 Data Streams. 2. The sum of Chains 0 and 1 is the total power.			
802.11n (HT20)			
Operating Channel (MHz)	**Limit [dBm]**	**Total Power (RMS) [dBm]**	**Margin [dB]**
2412.00	30.00	20.0	10.0
2437.00	30.00	20.1	9.9
2462.00	30.00	20.0	10.0
Note: 1. The highest output power was observed at HT20 MCS0, 1 Data Streams. 2. The sum of Chains 0 and 1 is the total power.			

Table 2: RF Output Power at the Antenna Port – Test Results – Non Beamforming Continued

Test Conditions: Conducted Measurement, Normal Temperature			
Antenna Type: Stampled Metal		**Power Setting:** 13.5	
Antenna Gain: Chain 0 = 2.7 dBi, Chain 1 = 1.8 dBi			
Signal State: Modulated at 96.8% Duty Cycle.			
Ambient Temp.: 22° C		**Relative Humidity:** 36%	
802.11n (HT40)			
Operating Channel (MHz)	**Limit [dBm]**	**Total Power (RMS) [dBm]**	**Margin [dB]**
2422.00	30.00	16.7	13.3
2437.00	30.00	16.7	13.3
2452.00	30.00	16.6	13.4
Note: 1. The highest output power was observed at HT40 MCS0, 1 Data Streams. 2. The sum of Chains 0 and 1 is the total power.			

Beamforming Mode:
The same power settings and modulations that are used for 802.11n mode are are used for Beamforming mode (802.11ac). In a conducted setup, there is no difference in output power from the antenna port since beamforming is a spatially dependent phenomena.

The only difference is the directional gain (in a radiated setup), thus for a 2x2 system the beamforming gain is 3 dB, which accounts for a total maximum directional gain of 5.3 dBi (for antenna gains of 2.7 and 1.8). This gain has no effect on the RF Output power limit of 30 dBm for Beamforming mode per 15.247 (c)(2)(ii). The margin showed by the same modulation family in non-beamforming mode (802.11n) is sufficient to prove compliance to the reduced output power limits for beamforming mode. Spotchecks were done to verify that 802.11ac mode power setting consistency in relation to 802.11n modes.

4.4 Power Spectral Density

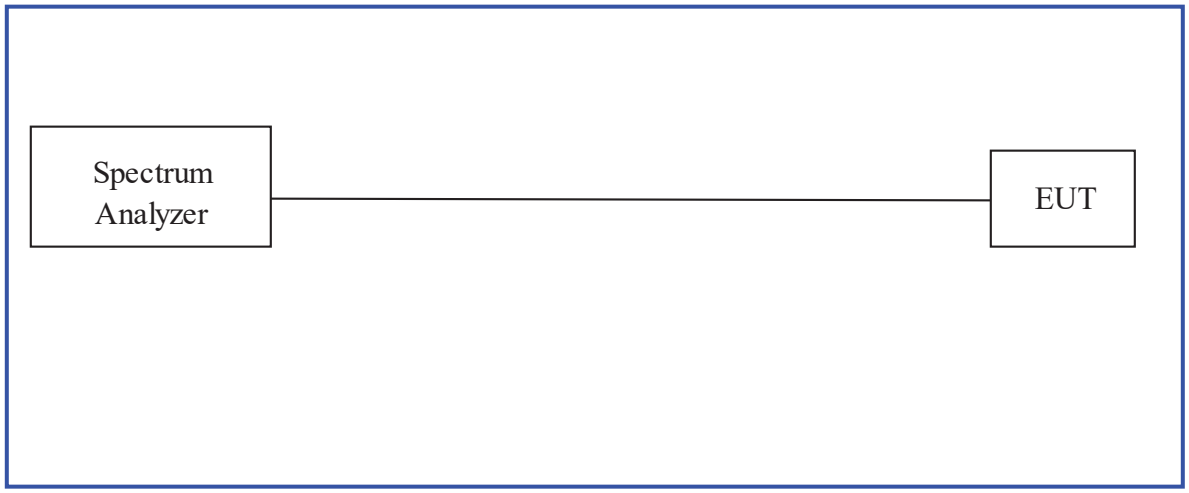
4.4.1 Limit

According to the CFR47 Part 15.247 (e) and RSS 247 Sect.5.2 (b), 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.

4.4.2 Test Method

The conducted method was used to measure the channel power output per ANSI C63.10-2013 Section 11.10.2. The measurement was performed with modulation per CFR47 Part 15.247 (e) and RSS 247 Sect.5.2 (b). A pre-evaluation was performed to find the worst case chains and modes. The worst findings were conducted on 3 channels in each operating frequency range of 2400 MHz to 2483.5 MHz. The worst sample result indicated below. Beamforming mode (802.11ac) was not measured since they have the same output powers and modulation characteristics as 802.11n mode (OFDM).

Test Setup:



Method PKPSD of "KDB 558074 – DTS Measurement Guidance v04" was used.

The worst case chain (Chain 1) was measured and a correction factor of $10*\log(N_{ant})$ dB applied per ANSI C63.10-2013 Section 14.3.2.3.

4.4.3 Results

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

: Peak Power Spectral Density – Test Results – Non Beamforming

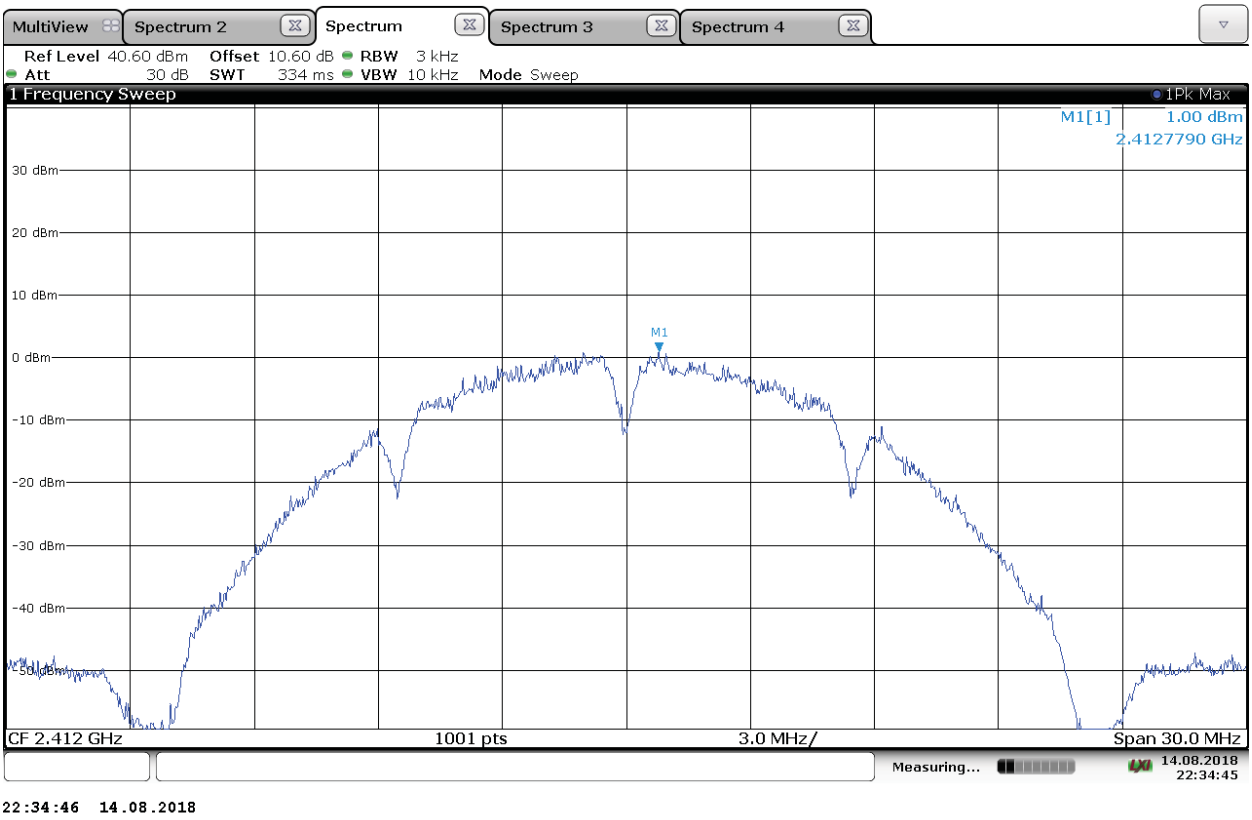
Test Conditions: Conducted Measurement, Normal Temperature				
Antenna Type: Stamped Metal		**Power Setting:** 23.5 (CCK), 17 (HT20)		
Max. Antenna Gain: Chain 0 = 2.7 dBi, Chain 1 = 1.8 dBi				
Signal State: Modulated at 99.3% (CCK) and 98.4% (HT20) Duty Cycle.				
Ambient Temp.: 22° C		**Relative Humidity:** 38%		
Peak Power Spectral Density				
802.11b CCK				
Freq. (MHz)	**Chain 1 [dBm]**	**Total PSD [dBm]**	**Limit [dBm]**	**Margin [dB]**
2412	1.0	4.0	8.0	4.0
2437	1.9	4.9	8.0	3.1
2462	1.2	4.2	8.0	3.8
Note: 1. The highest peak output power was observed at **802.11b 1Mbps** per data stream.				
802.11n HT20				
Freq. (MHz)	**Chain 1 [dBm]**	**Total PSD [dBm]**	**Limit [dBm]**	**Margin [dB]**
2412	-8.5	-5.5	8.0	13.5
2437	-8.6	-5.6	8.0	13.6
2462	-8.7	-5.7	8.0	13.7
Note: 1. The highest peak output power was observed at **HT20 MCS0** per data stream.				

Table 3: Peak Power Spectral Density – Test Results – Non Beamforming Continued

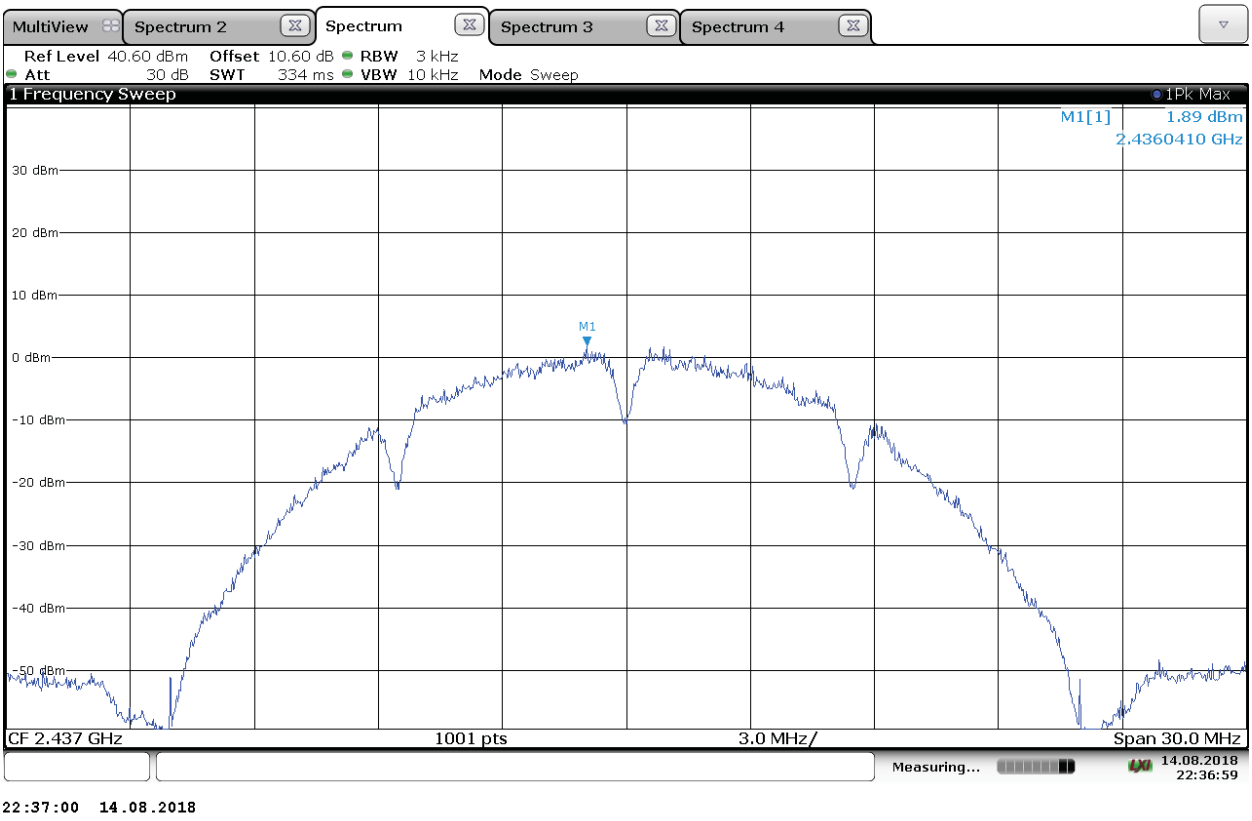
Test Conditions: Conducted Measurement, Normal Temperature				
Antenna Type: Stamped Metal		**Power Setting:** 13.5		
Antenna Gain: Chain 0 = 2.7 dBi, Chain 1 = 1.8 dBi				
Signal State: Modulated at 96.8% Duty Cycle.				
Ambient Temp.: 22° C		**Relative Humidity:** 38%		
Peak Power Spectral Density				
802.11n HT40				
Freq. (MHz)	**Chain 1 [dBm]**	**Total PSD [dBm]**	**Limit [dBm]**	**Margin [dB]**
2422	-13.5	-10.5	8.0	-18.5
2437	-13.9	-10.9	8.0	-18.9
2452	-14.9	-11.9	8.0	-19.9
Note: 1. The highest peak output power was observed at **HT40 MCS0** per data stream.				

4.4.4 Power spectral density plots

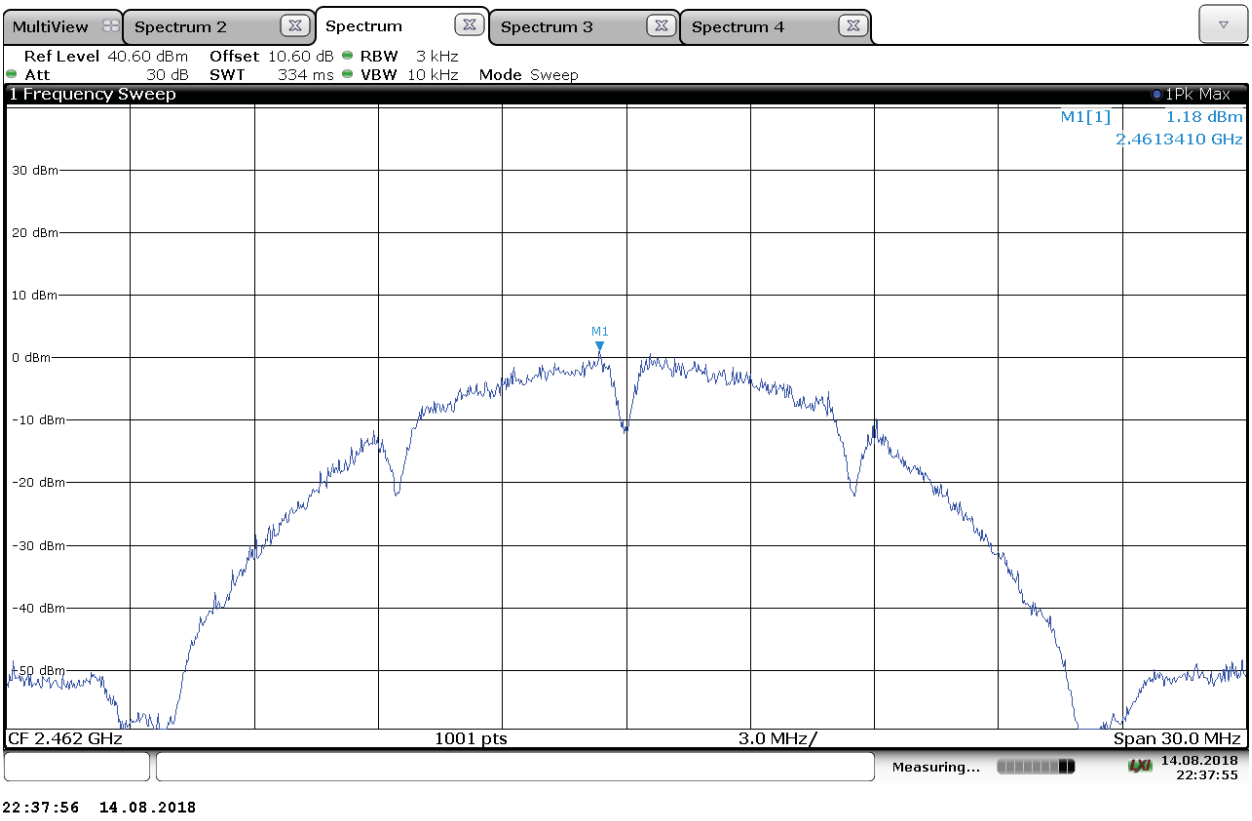
Note: Plots are corrected only for cable and attenuator losses



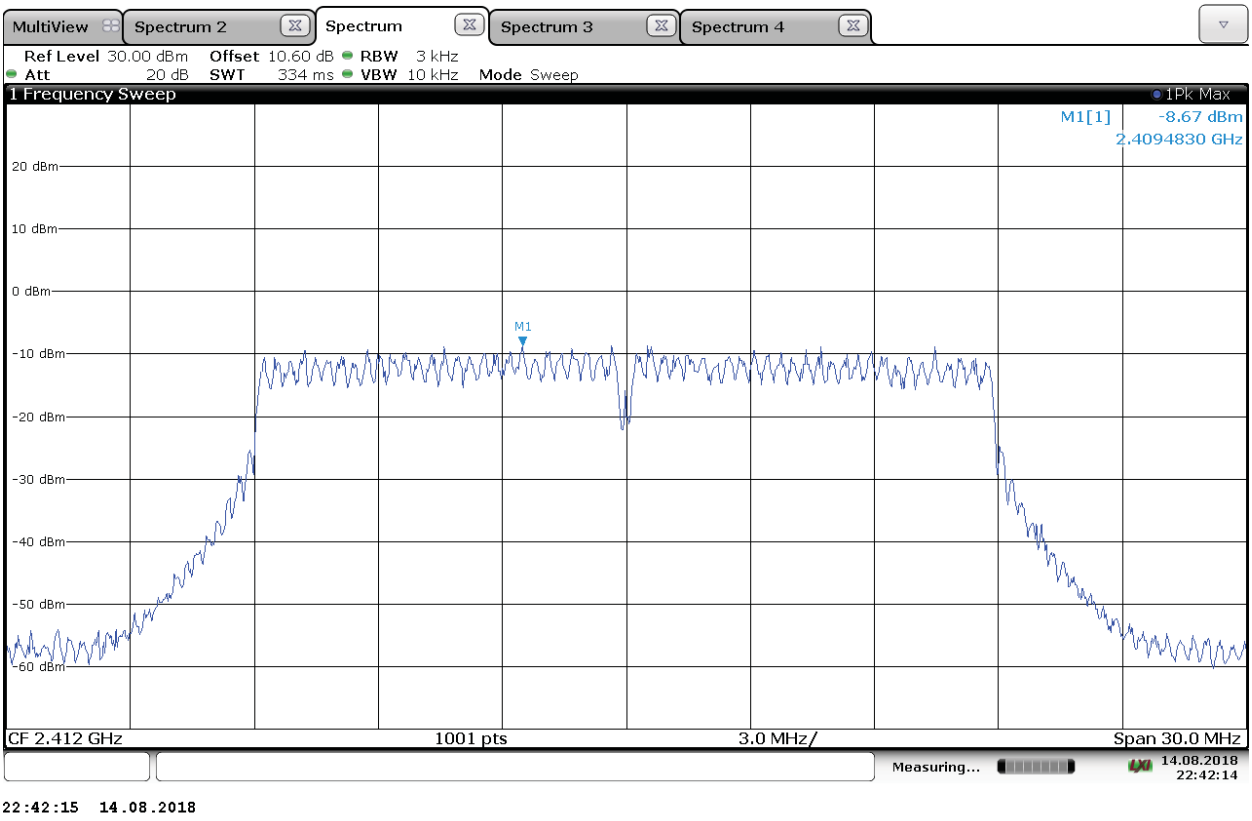
Channel 1 Power Spectral Density CCK Mode



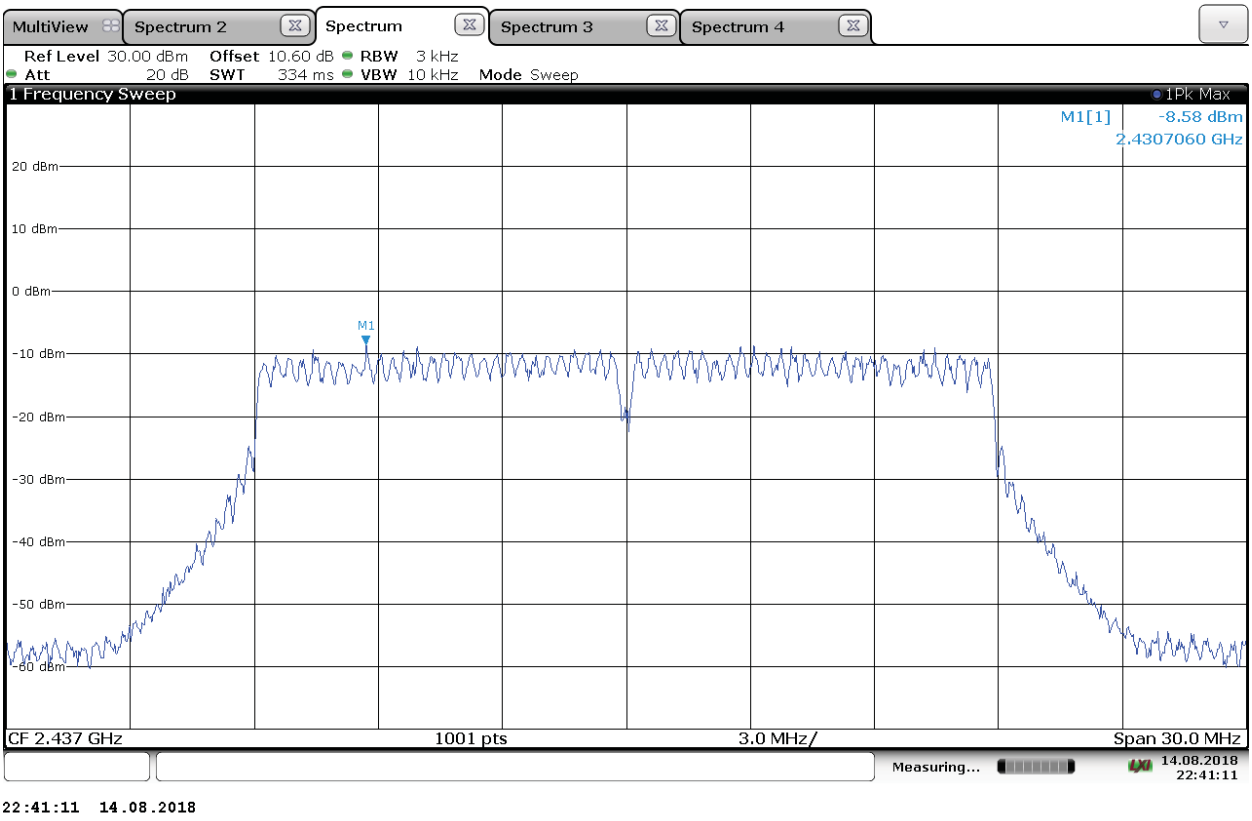
Channel 6 Power Spectral Density CCK Mode



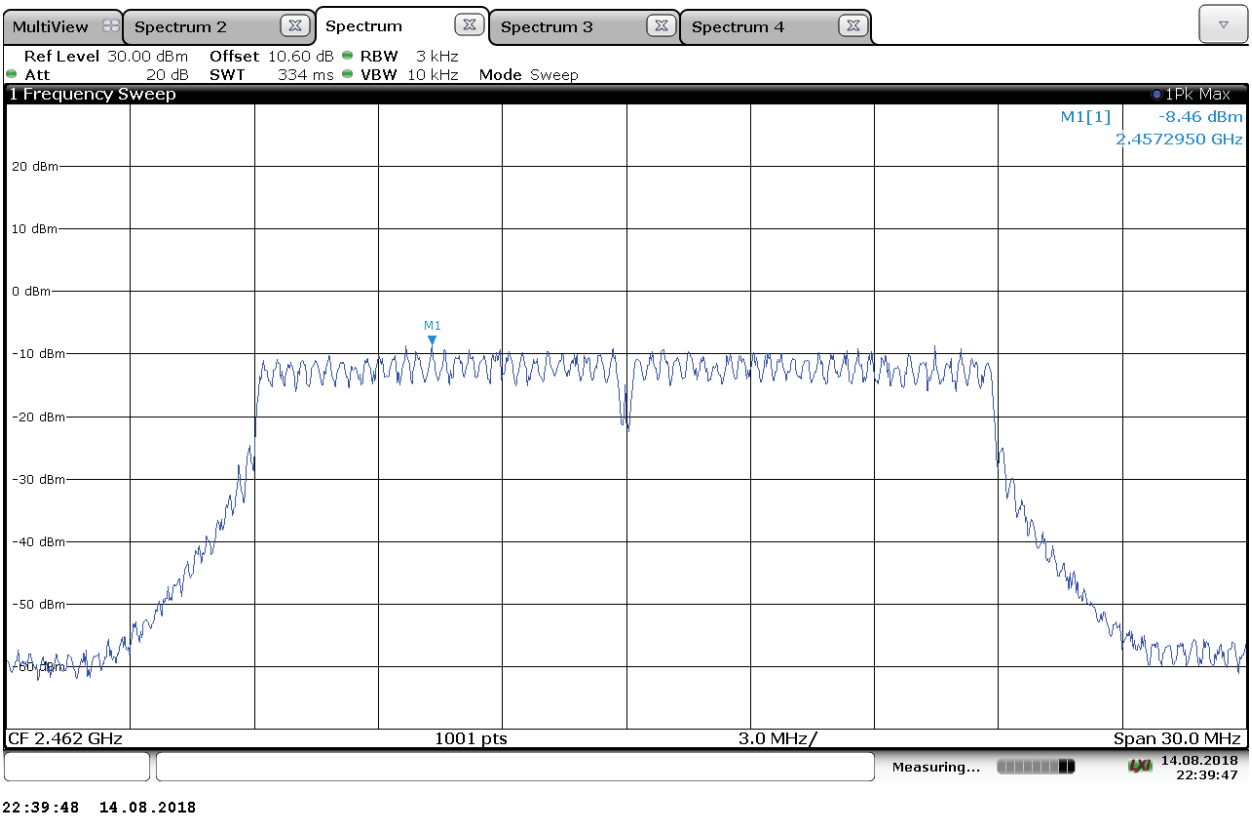
Channel 11 Power Spectral Density CCK Mode



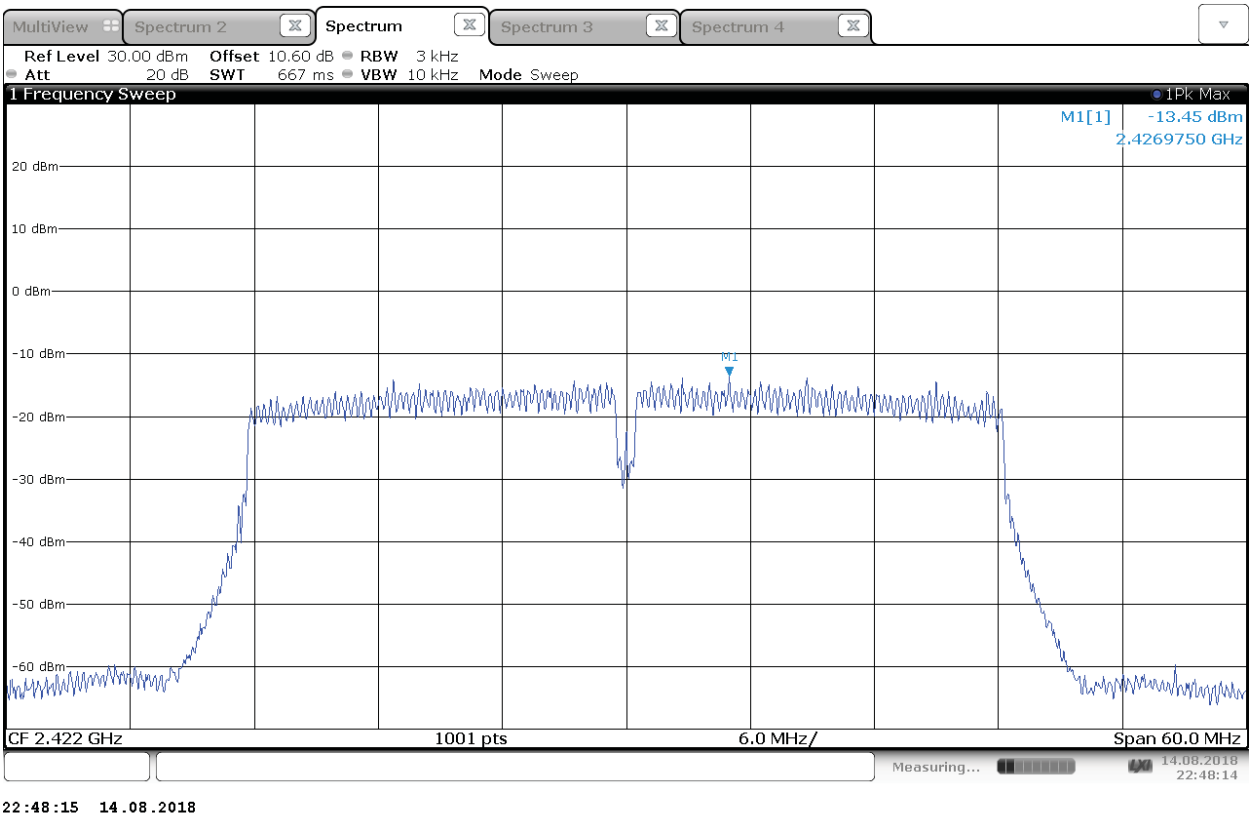
Channel 1 Power Spectral Density HT20 Mode



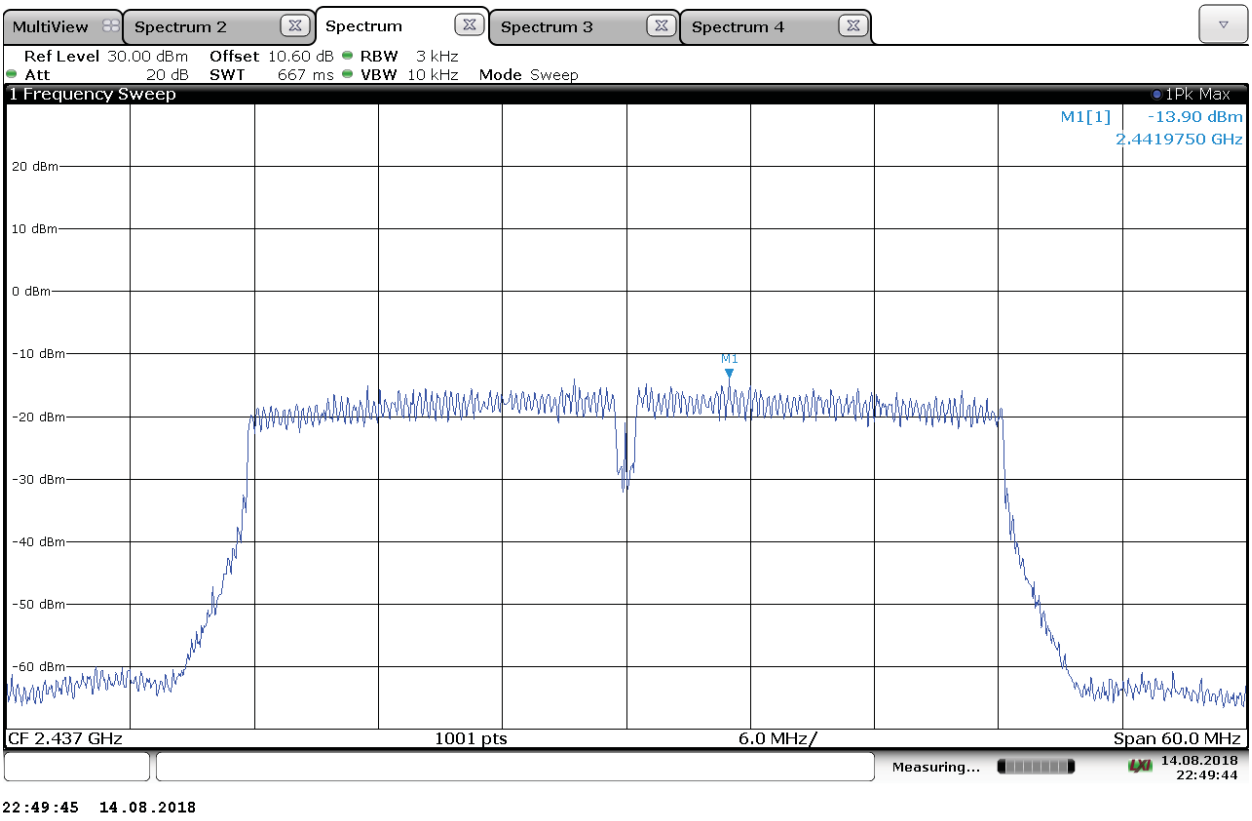
Channel 6 Power Spectral Density HT20 Mode



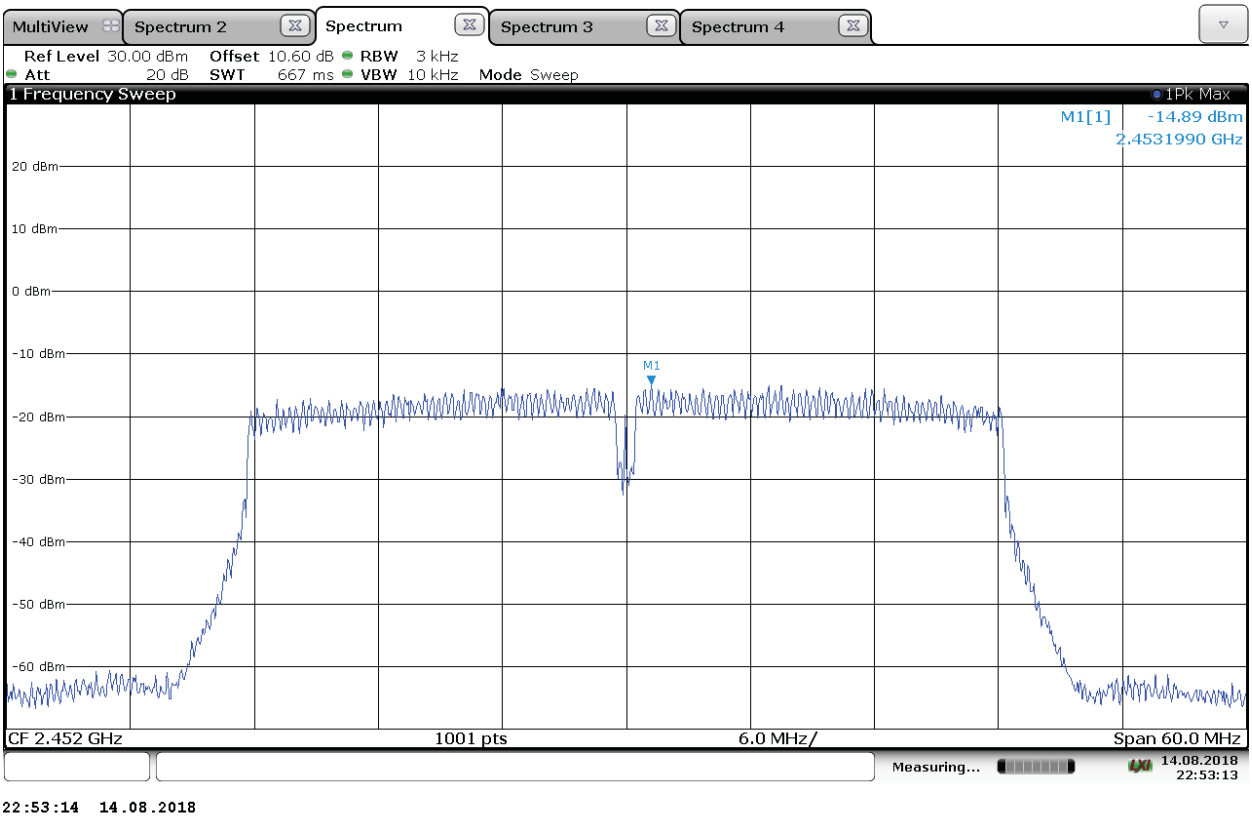
Channel 11 Power Spectral Density HT20 Mode



Channel 3 Power Spectral Density HT40+ Mode



Channel 6 Power Spectral Density HT40+ Mode



Channel 9 Power Spectral Density HT40+ Mode

4.5 Non-Restricted band emissions

Test Method

The ANSI C63.10-2013 Section 11.11.1 Conducted method was used to measure the Emissions in the nonrestricted band. The preliminary investigation was performed at different data rate to determine the highest power output for each mode. The system was powered on and port 1 connected to the Spectrum analyzer. A diag program called QRCT was used to set the AP in continuous Tx mode and also to set the channel, channel power and data rate. This test was conducted on 3 channels for each of the throughput modes. The analyzer was configured as follows.

Cable loss and duty cycle correction were entered as an offset

RBW= 100kHz.

VBW= 300kHz.

Span= 2390-2500 MHz.

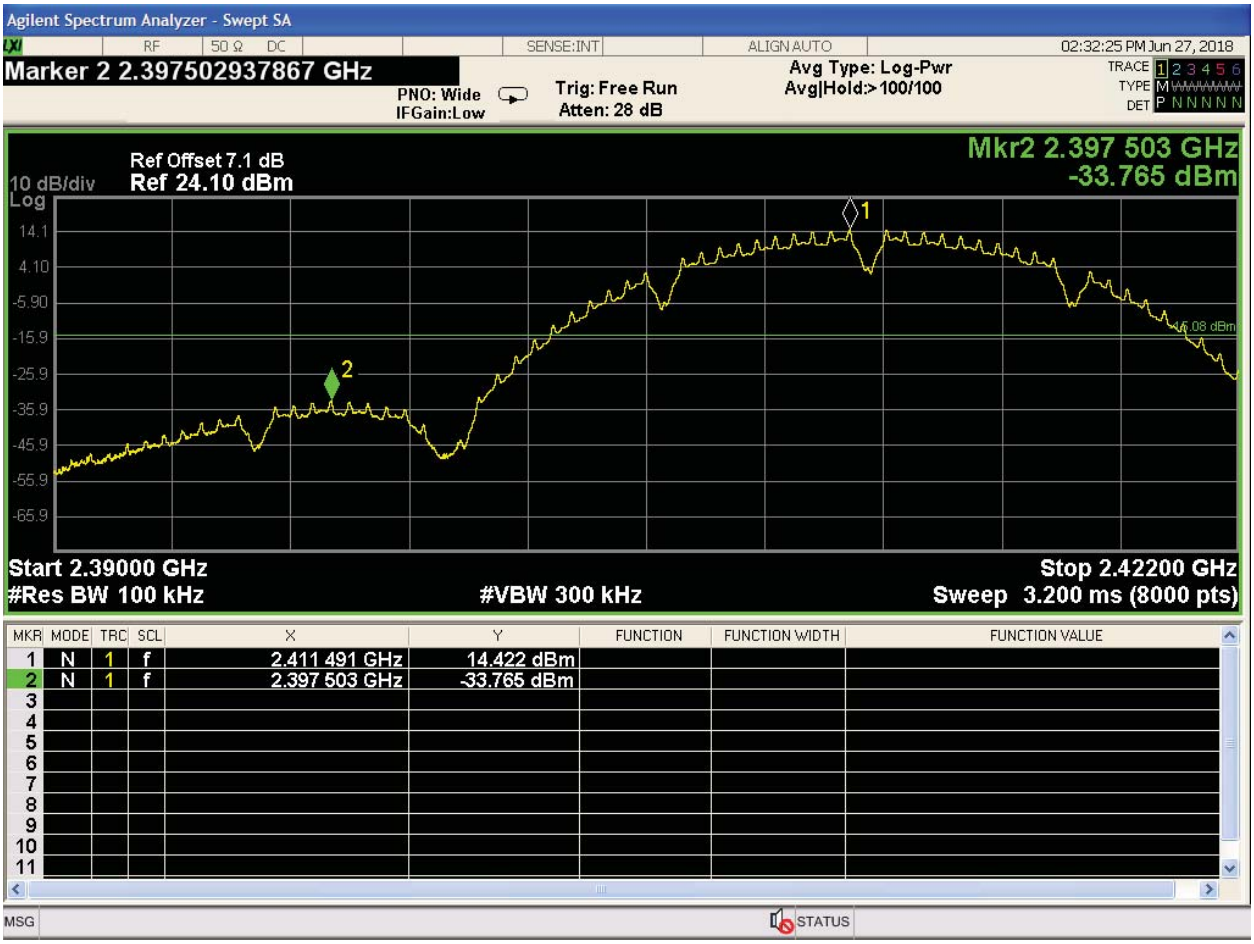
SWT= auto

Detector = peak

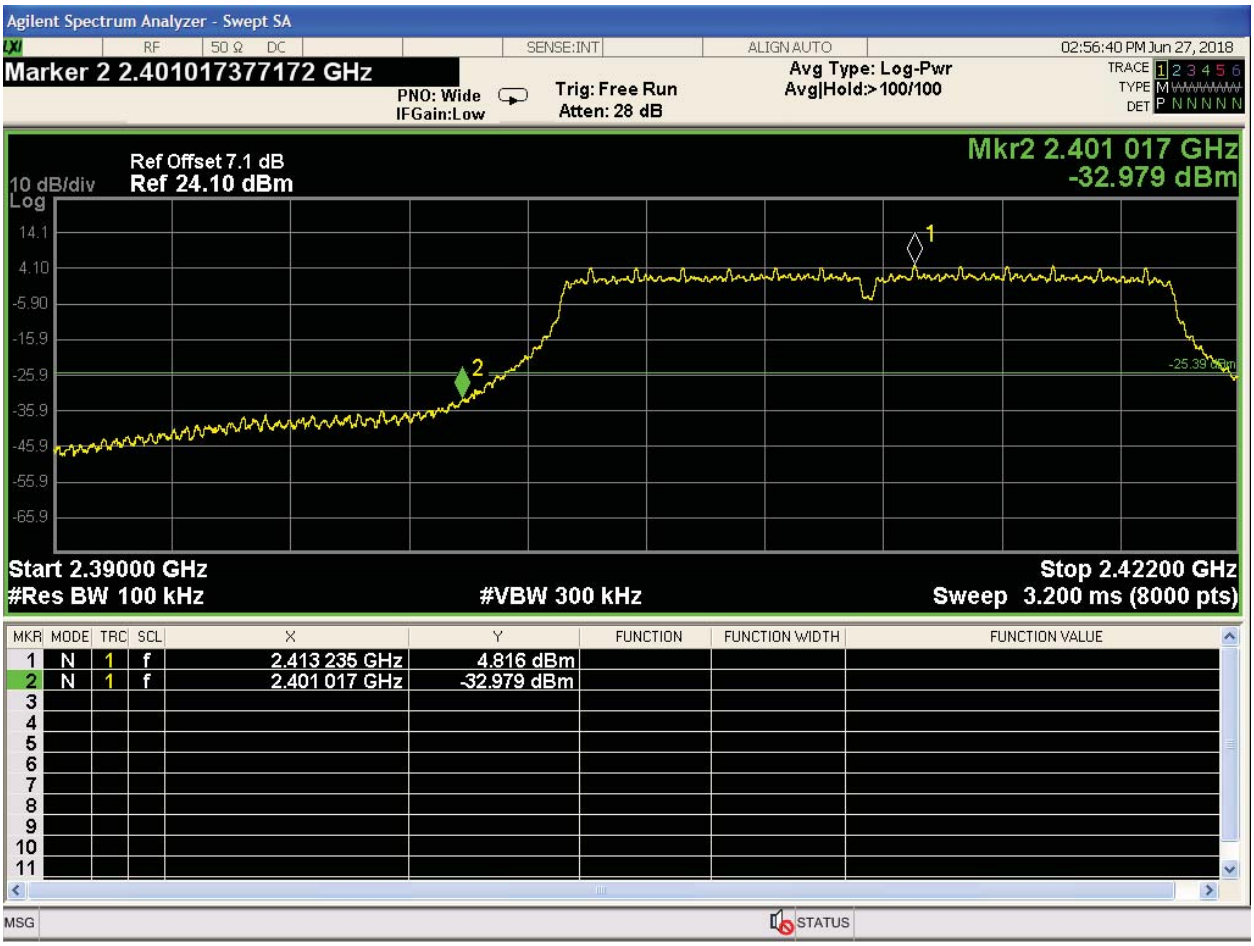
Test Conditions: Conducted Measurement (SA), Normal Temperature	**Date**: 6/26/2018
Antenna Type:	Stamped metal dipole
Duty cycle correction: see sect. 3	Data Rate: 1mbps,6mbps, MCS0
Ambient Temp.: 23º C	Relative Humidity: 38 %RH

nonrestricted band worst case emissions dbm			
Mode	Channel 1	Channel 11	Channel 3
nonHT	-32.98dbm	-47.61 dbm	
HT20	-32.21 dbm	-45.15 dbm	
HT40	n/a	n/a	-42.21 dbm
VHT20	-30.95 dbm	-46.74 dbm	
VHT40	n/a	n/a	-41.05 dbm
CCK	-33.76 dbm	-53.60 dbm	

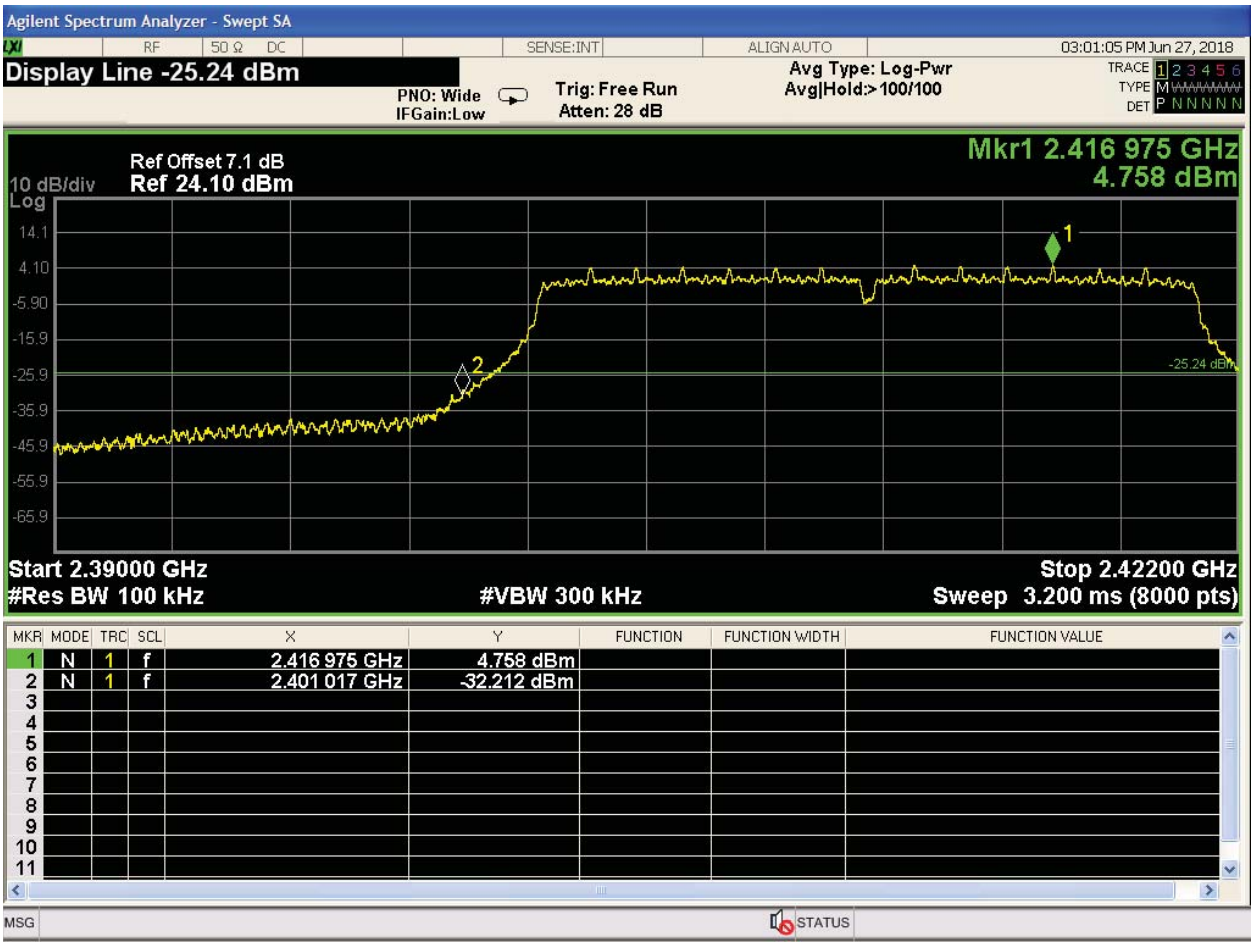
4.5.1 Emissions in the non-restricted band



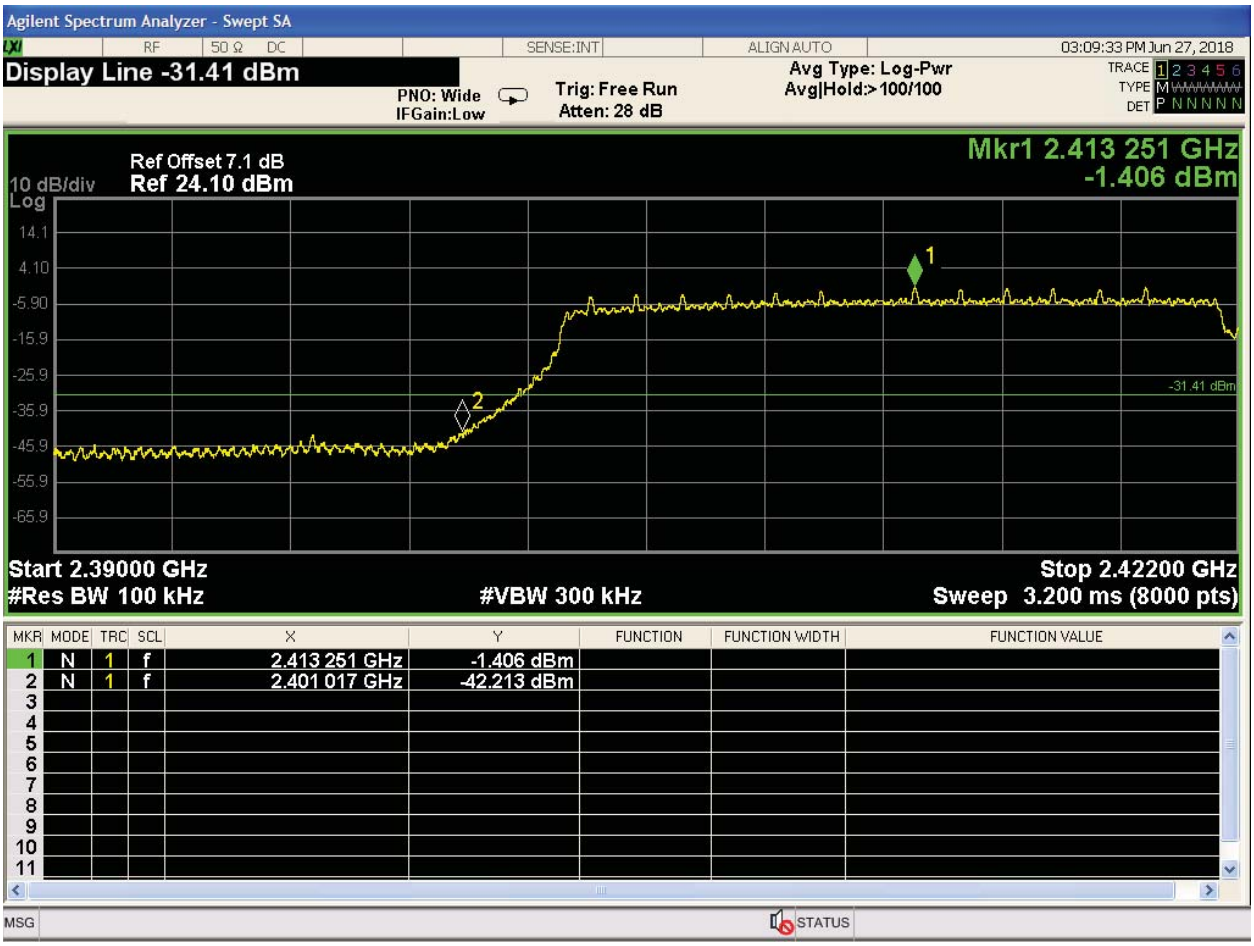
Non-restricted band emissions 2390MHz CCK



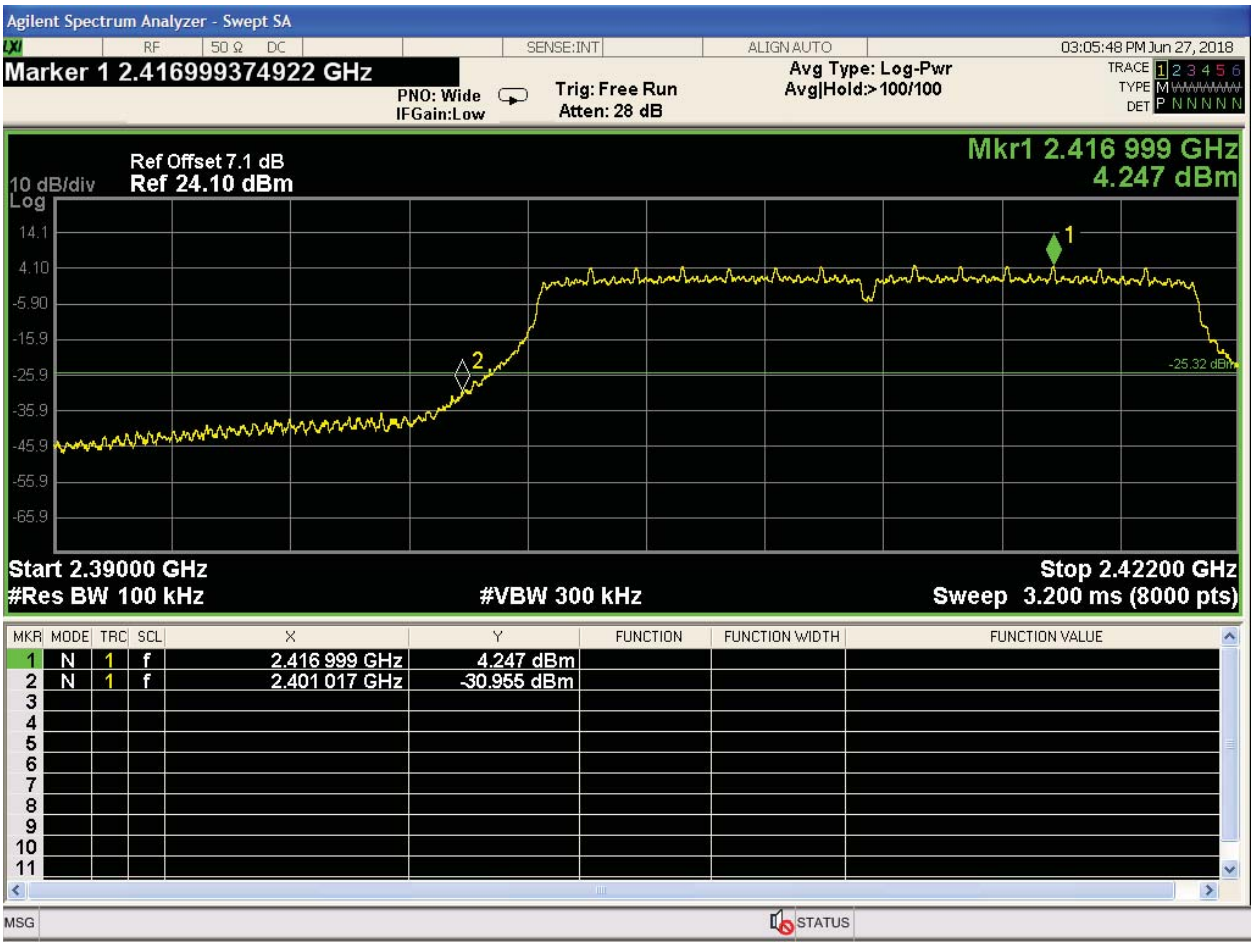
Non-restricted band emissions 2390MHz nonHT



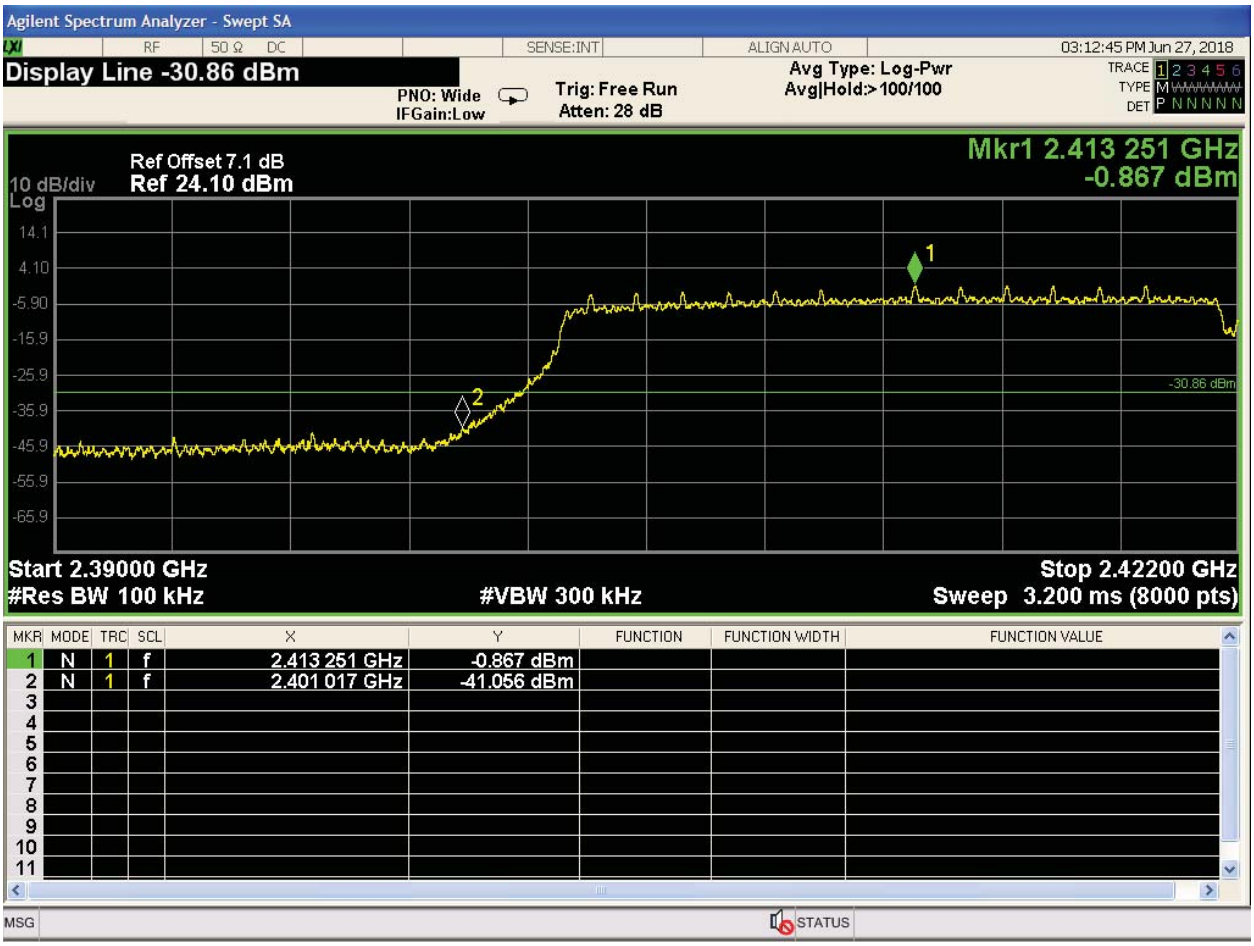
Non-restricted band emissions 2390MHz HT20



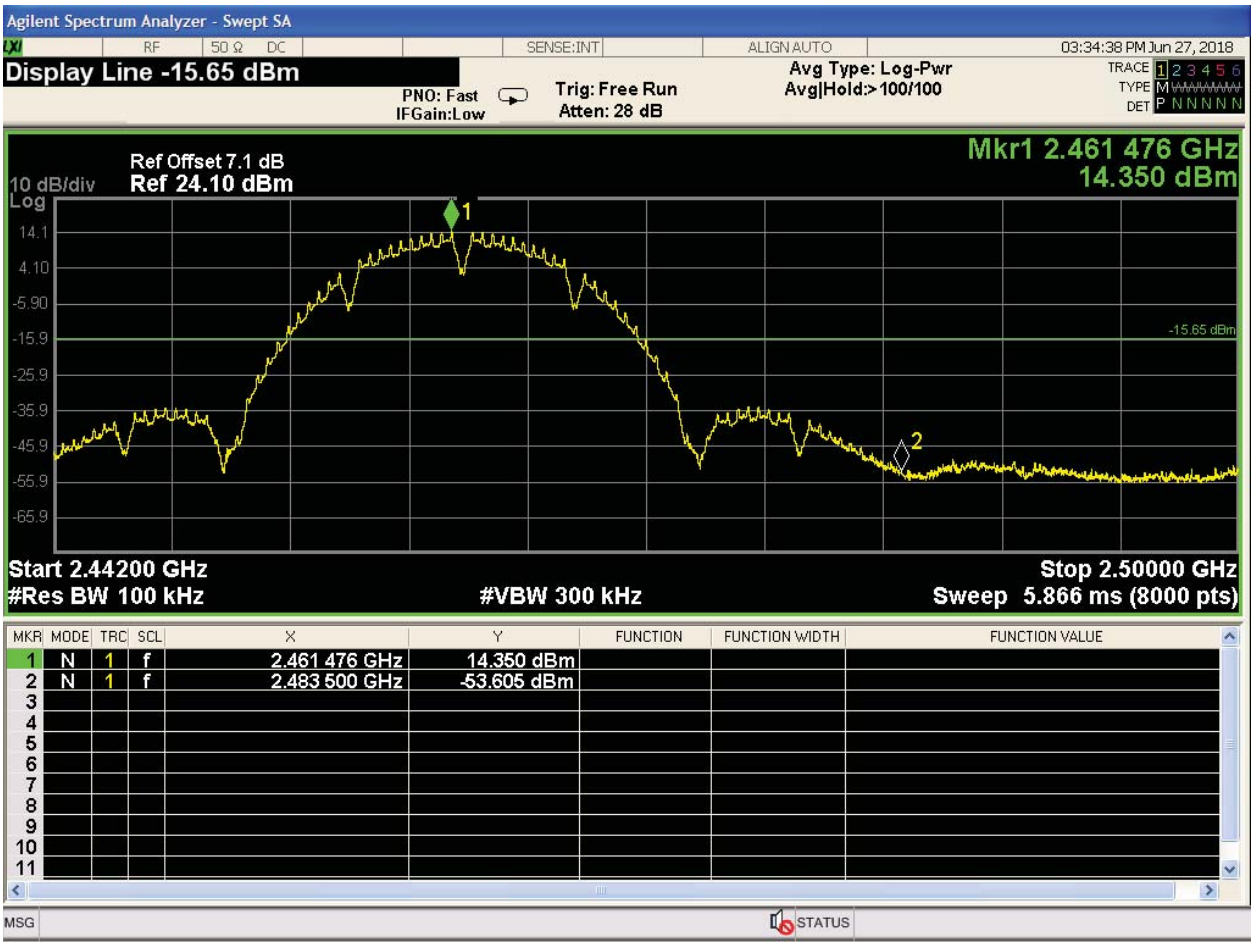
Non-restricted band emissions 2390MHz HT40



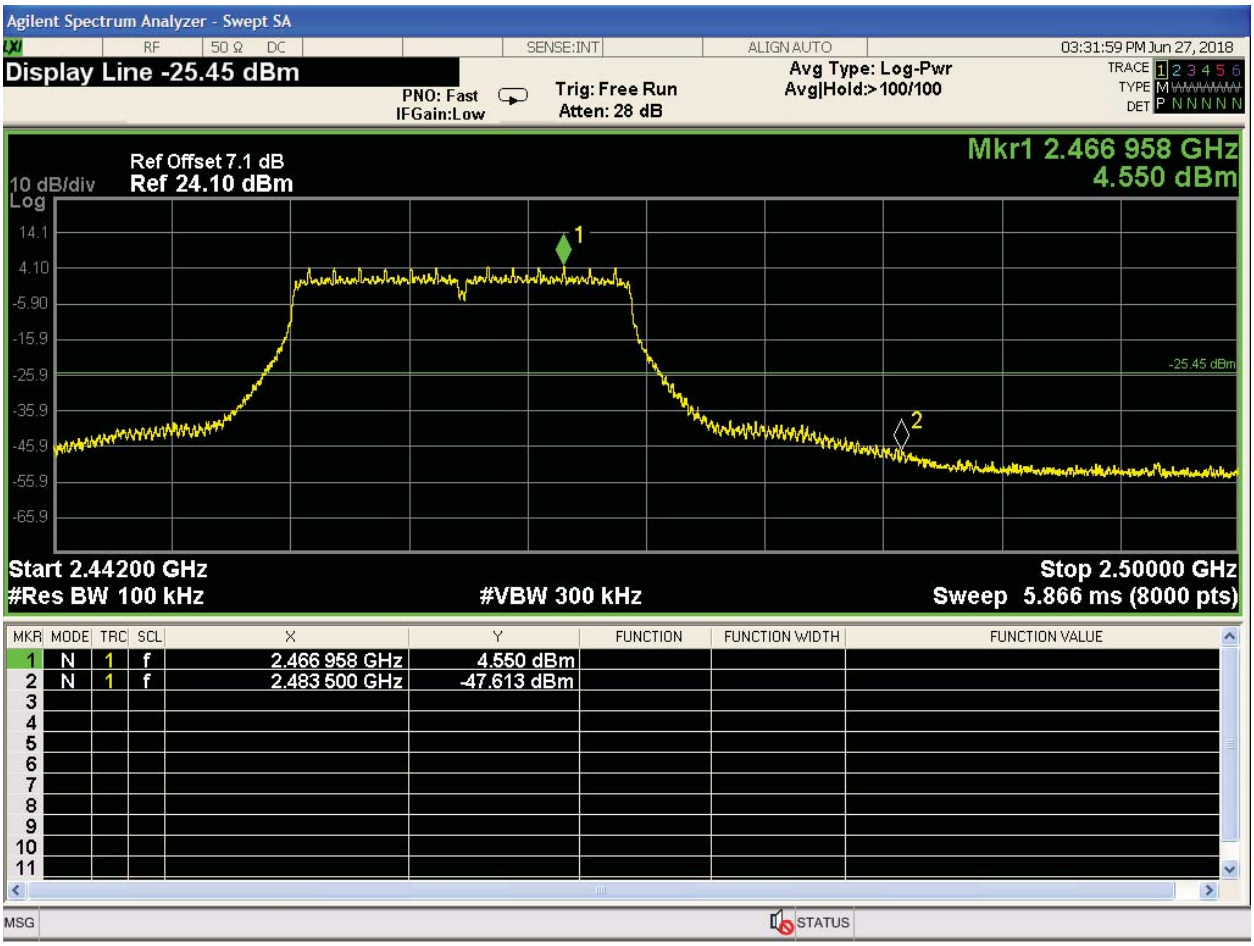
Non-restricted band emissions 2390MHz VHT20



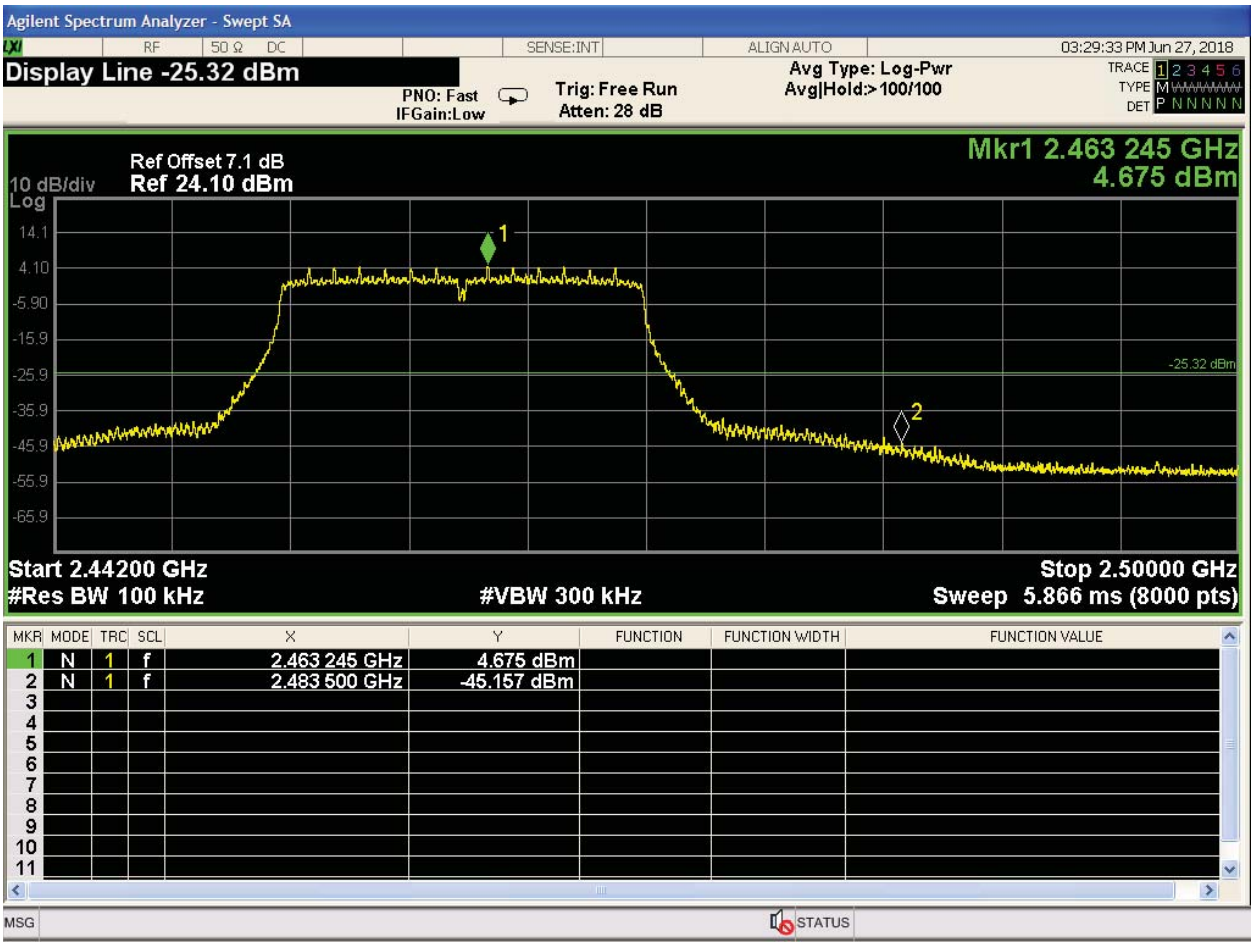
Non restricted band emissions 2390MHz VHT40



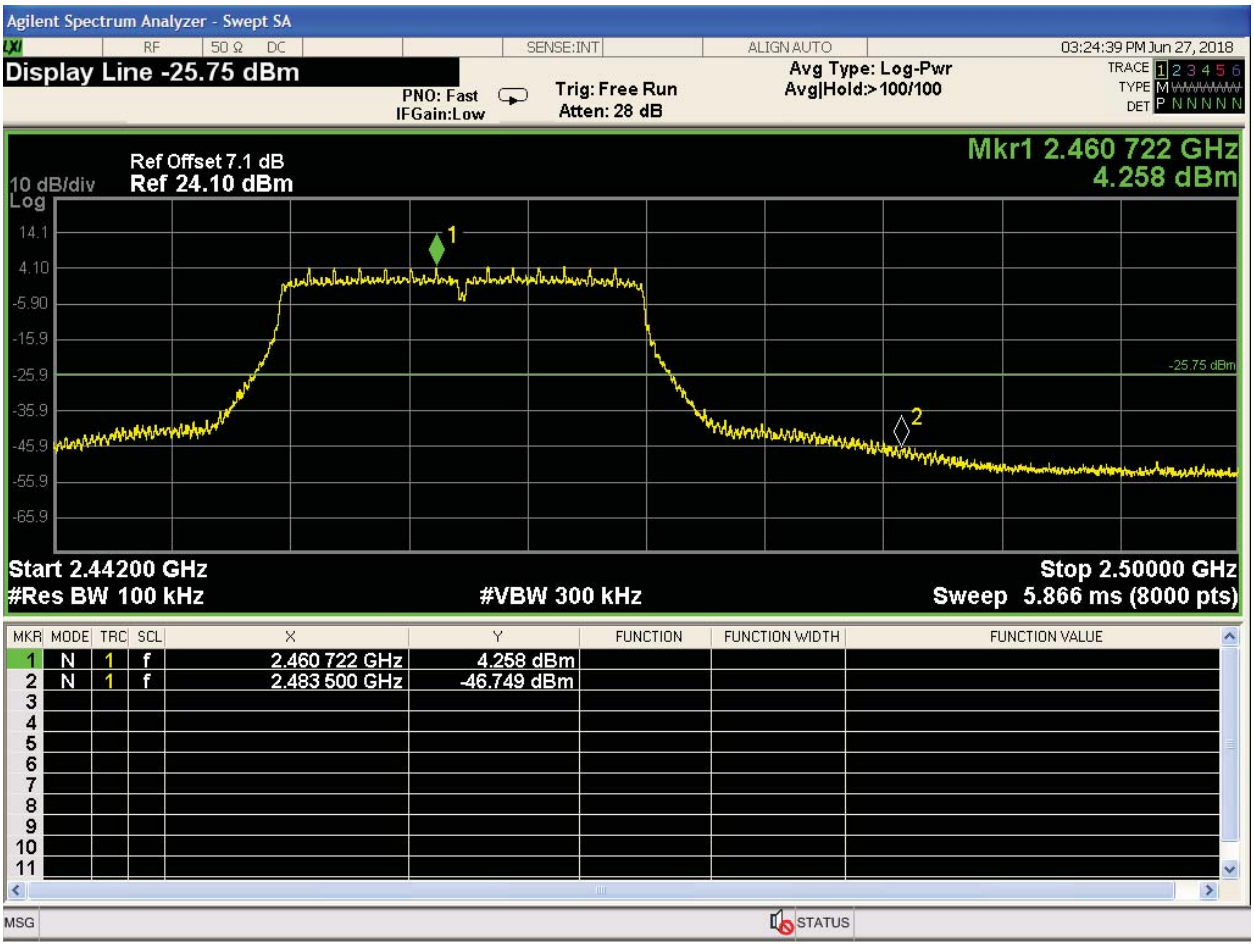
Non-restricted band emissions 2483.5MHz CCK



Non-restricted band emissions 2483.5MHz nonHT



Non-restricted band emissions 2483.5MHz HT20



Non-restricted band emissions 2483.5MHz VHT20

4.6 Restricted Bands Radiated emissions in the DTS band

Test Method

The ANSI C63.10-2013 Section 11.12.1 were followed as applicable. The preliminary investigation was performed at different data rate to determine the highest power output for each mode. Adiag program called QRCT was used to set the AP in continuous Tx mode and also to set the channel, channel power and data rate. This test was conducted on 3 channels for each of the throughput modes. The analyzer was configured as follows.

RBW= 120 kHz< 1 GHz.< 1 MHz

VBW= 3 x RBW

Span= Per the band under test

SWT= auto

Detector = Per the measurement being made

Test Conditions: Conducted Measurement (SA), Normal Temperature	**Date**: 5/2-5/12 2018
Antenna Type:	Stamped metal dipole
Duty cycle correction: see sect.	Data Rate:1 mbps, 6mbps, MCS0
Ambient Temp.: 23º C	Relative Humidity: 38 %RH

9KHz-30MHz

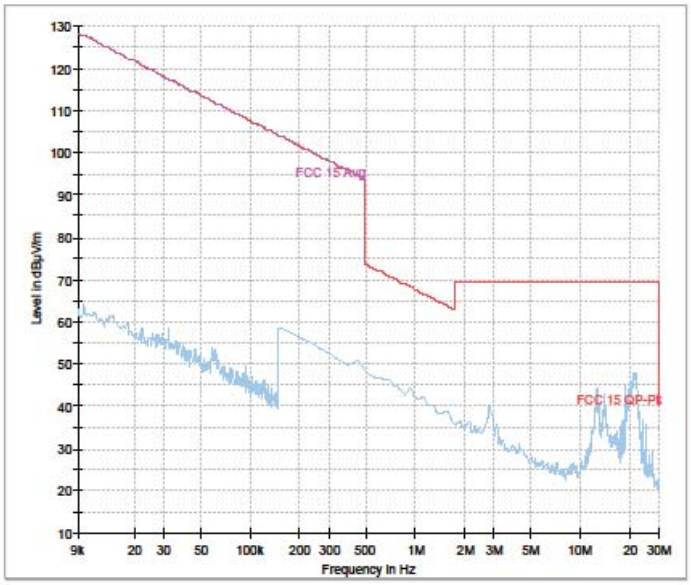
9KHz-30MHz_Ch_1_VHT20_2x2_(Tx-17dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



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1 / 1

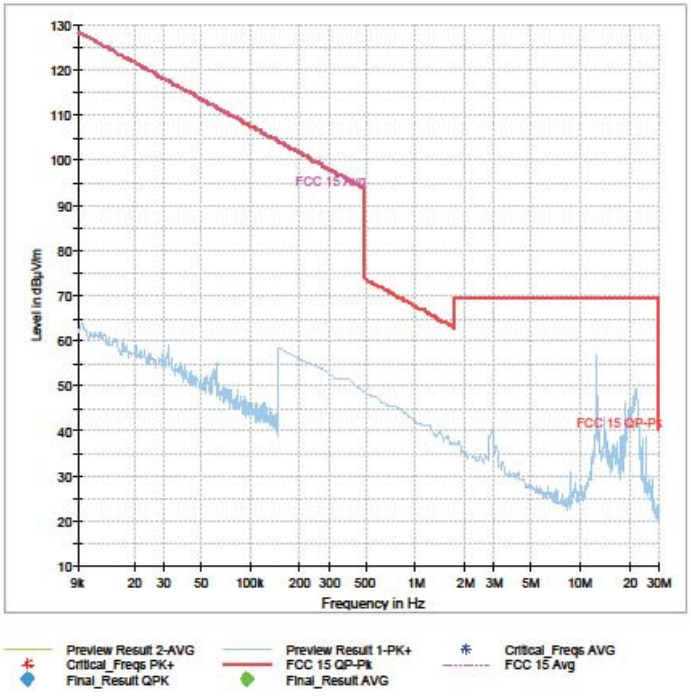
9KHz-30MHz_Ch_3_VHT40_2x2_(Tx-14dBm)_BF

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



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1 / 1

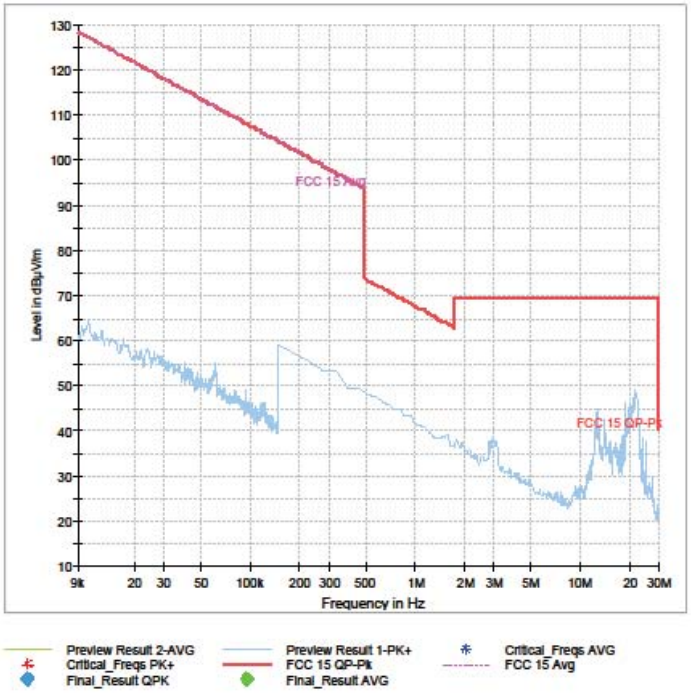
9KHz-30MHz_Ch_6_VHT20_2x2_(Tx-17dBm)_BF

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



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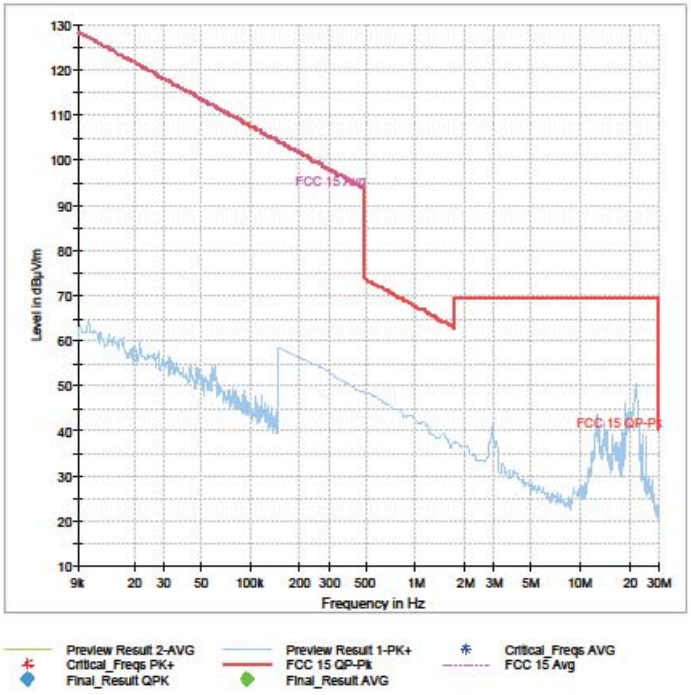
9KHz-30MHz_Ch_11_VHT20_2x2_(Tx-17dBm)_BF

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



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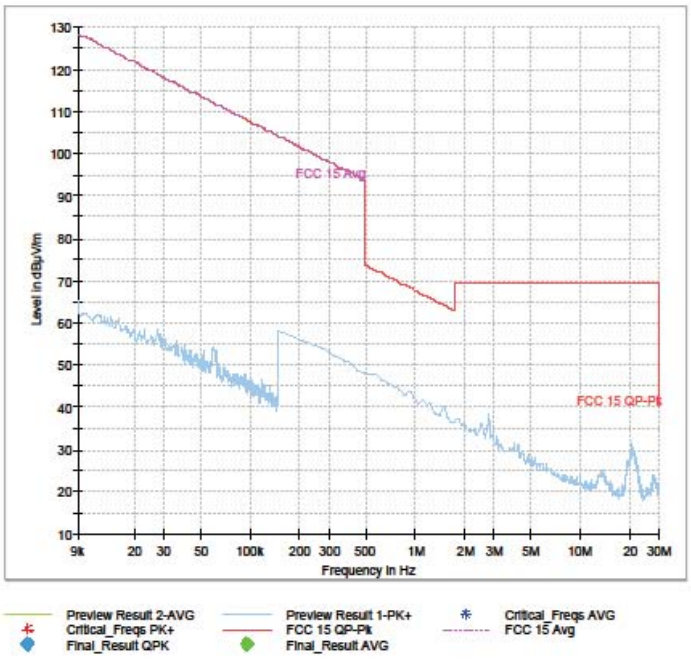
9KHz-30MHz_Ch_3_HT40_2x2_(Tx-13.5dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



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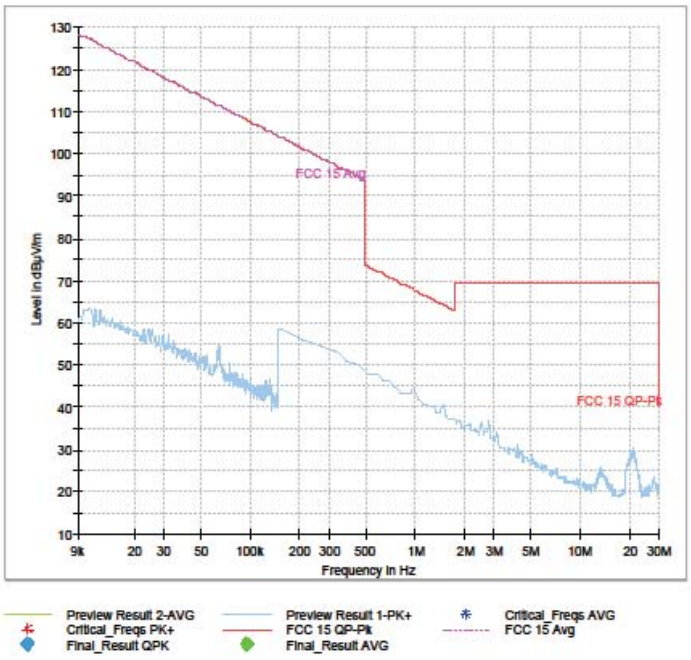
9KHz-30MHz_Ch_6_CCK_2x2_(Tx-23.5dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



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1 / 1

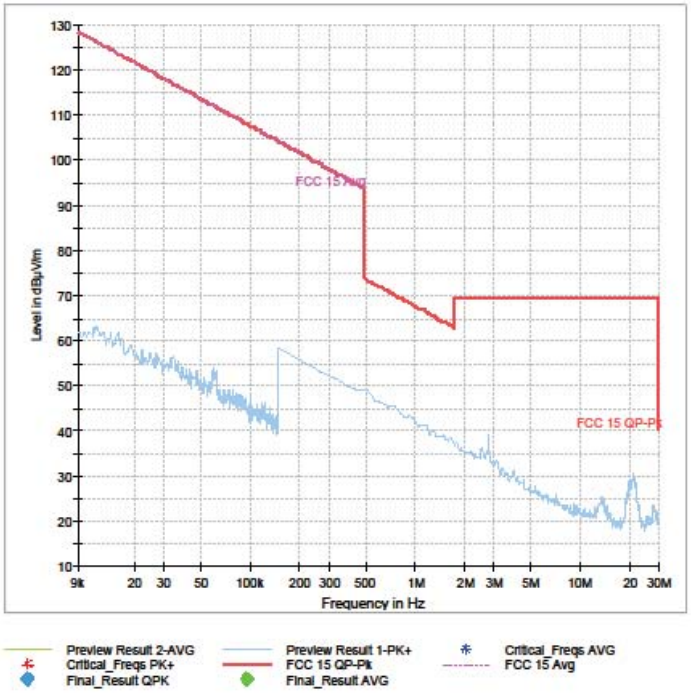
9KHz-30MHz_Ch_6_HT20_2x2_(Tx-17dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



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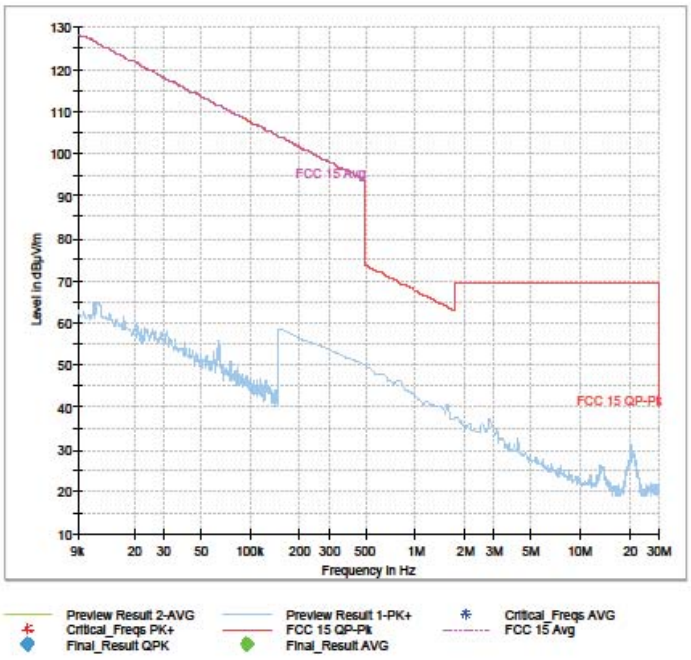
9KHz-30MHz_Ch_1_CCK_2x2_(Tx-23.5dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



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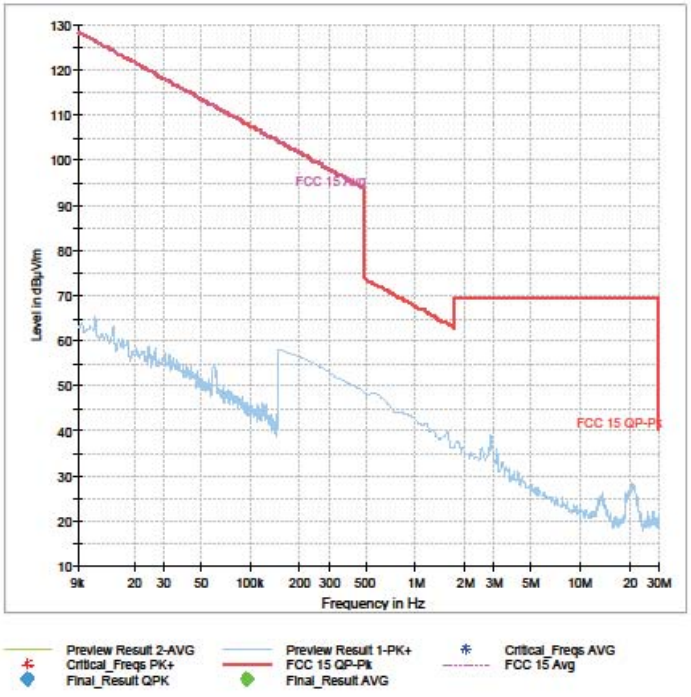
9KHz-30MHz_Ch_1_HT20_2x2_(Tx-17dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



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1 / 1

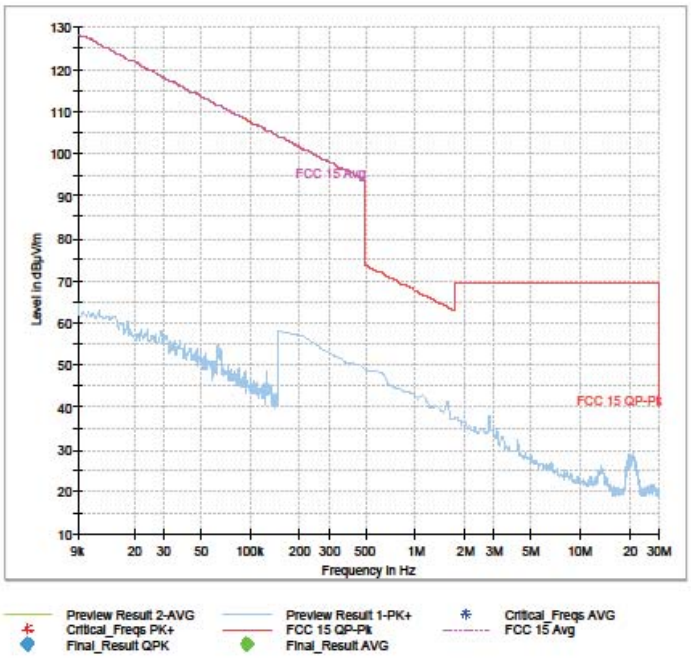
9KHz-30MHz_Ch_11_CCK_2x2_(Tx-23.5dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



5/14/2018 5:58:53 PM

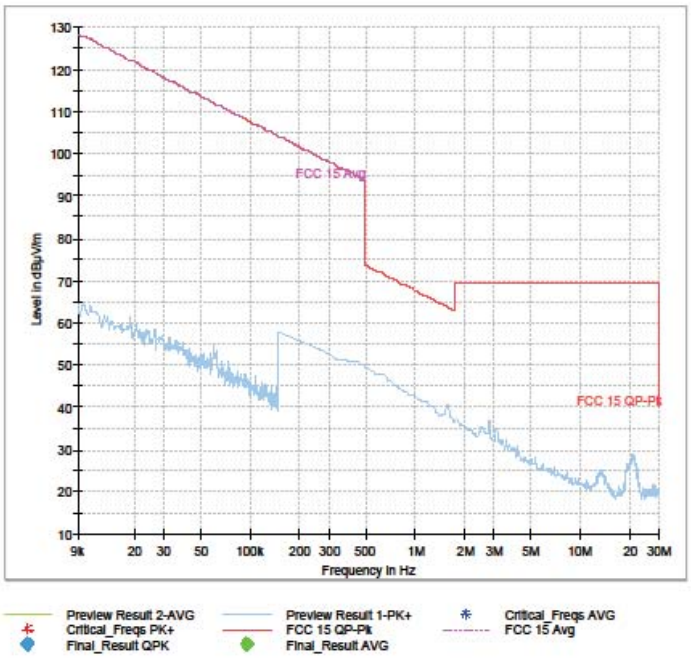
9KHz-30MHz_Ch_11_HT20_2x2_(Tx-17dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



5/14/2018 6:31:46 PM

30MHz-1GHz

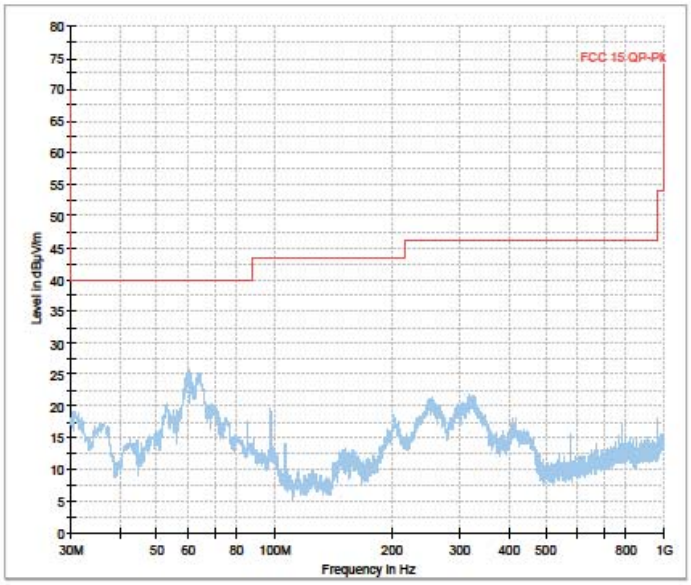
30MHz-1GHz_Ch_1_CCK_2x2_(Tx-23.5dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



5/3/2018 11:29:47 PM

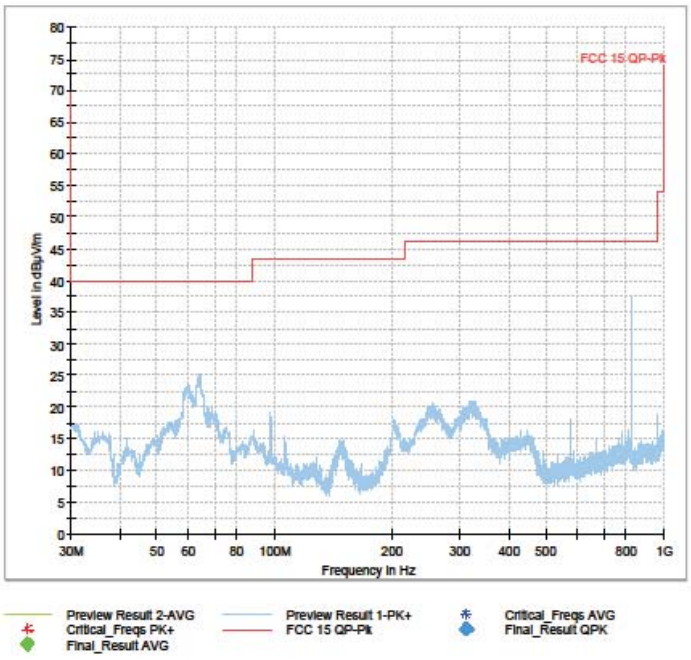
30MHz-1GHz_Ch_6_CCK_2x2_(Tx-23.5dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



5/3/2018 11:40:46 PM

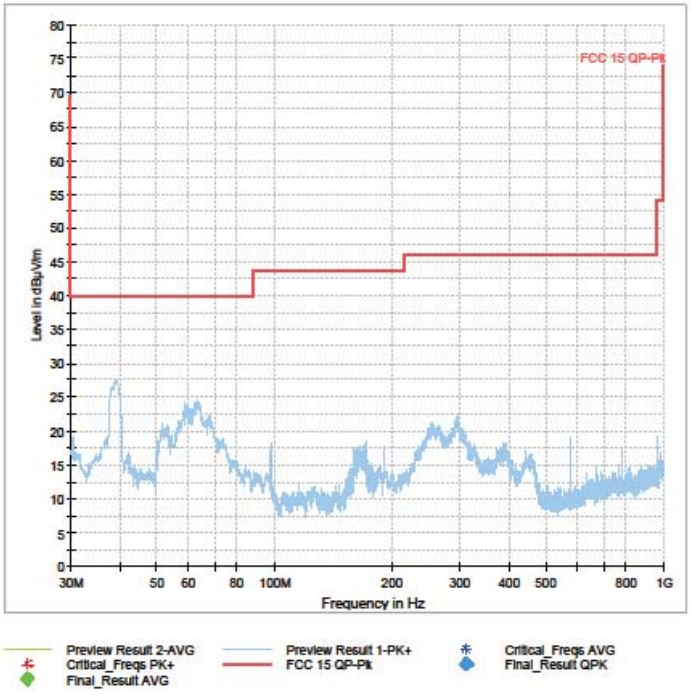
30MHz-1GHz_Ch_1_HT20_2x2_(Tx-17dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



5/4/2018 3:51:07 PM

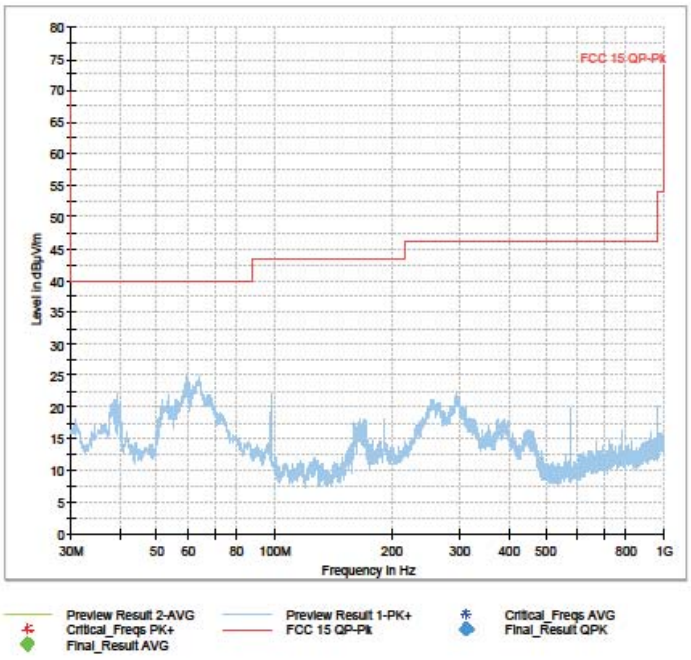
30MHz-1GHz_Ch_3_HT40_2x2_(Tx-13.5dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



5/4/2018 4:24:25 PM

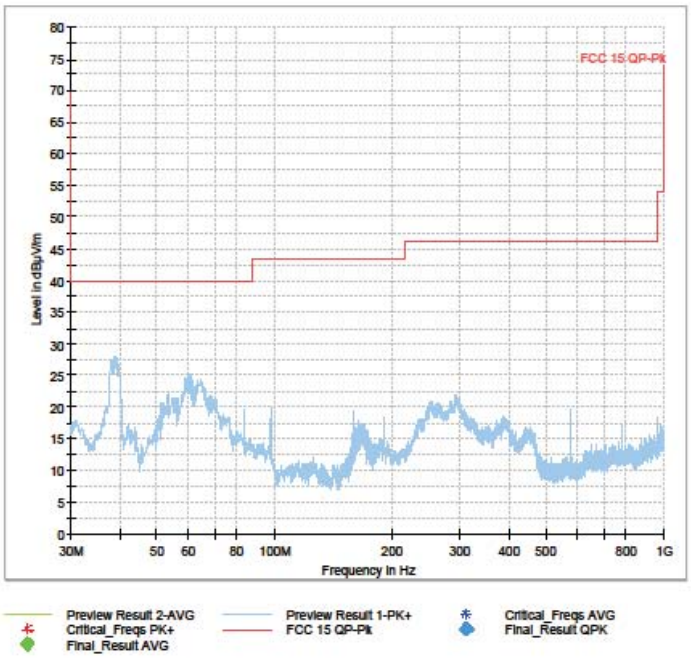
30MHz-1GHz_Ch_6_CCK_2x2_(Tx-23.5dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



5/4/2018 3:26:51 PM

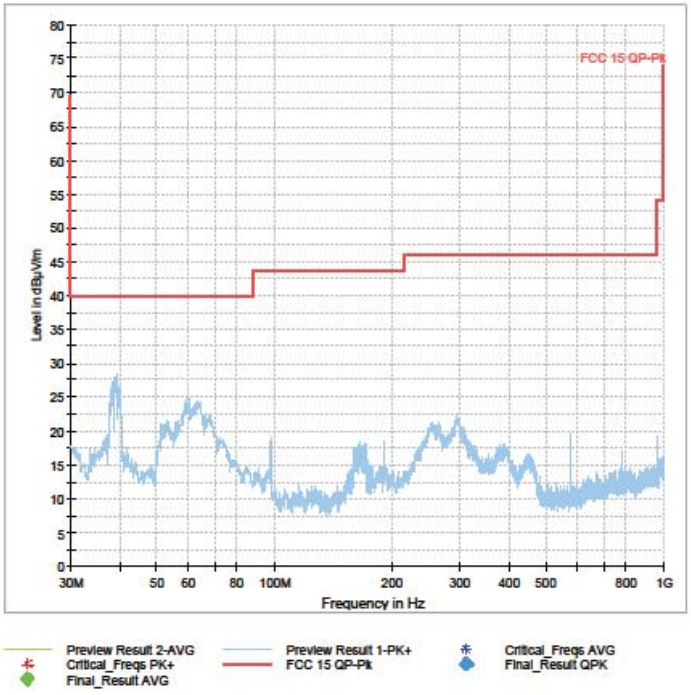
30MHz-1GHz_Ch_6_HT20_2x2_(Tx-17dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



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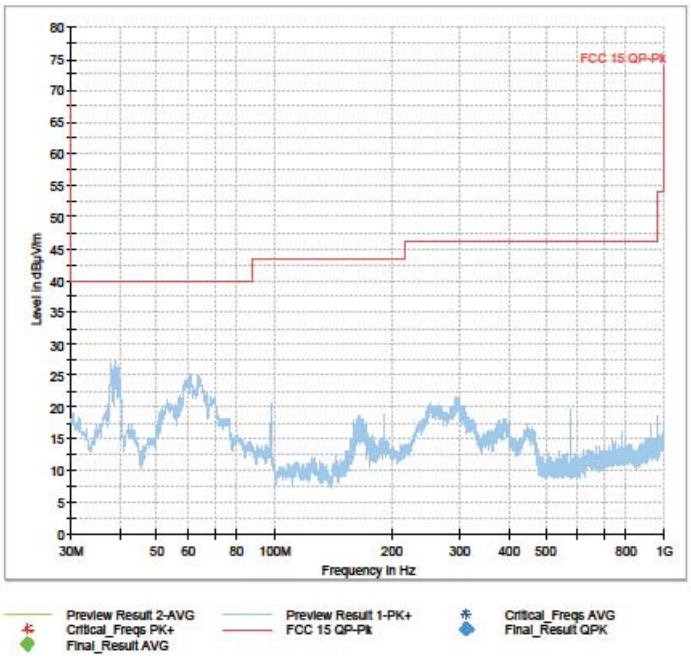
30MHz-1GHz_Ch_11_CCK_2x2_(Tx-23.5dBm)_CDD

Final_Result

Frequency (MHz)	Quasi Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
—	—	—	—	—	—	—	—		—	—

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
—	



5/4/2018 3:38:39 PM