

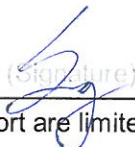

# TEST REPORT



**DT&C Co., Ltd.**

42, Yurim-ro, 154Beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea, 17042  
Tel : 031-321-2664, Fax : 031-321-1664

1. Report No : DRTFCC1709-0206
2. Customer
  - Name : LG Electronics MobileComm USA, Inc.
  - Address : 1000 Sylvan Ave., Englewood Cliffs, New Jersey, United States, 07632
3. Use of Report : FCC Original Grant
4. Product Name / Model Name : Mobile Phone / QVR  
FCC ID : ZNFQVR
5. Test Method Used : KDB558074 D01v04  
Test Specification : FCC Part 15.247
6. Date of Test : 2017.09.04 ~ 2017.09.22
7. Testing Environment : See appended test report.
8. Test Result : Refer to the attached test result.

Affirmation	Tested by	Technical Manager
	Name : SunGeun Lee  (Signature)	Name : Geunki Son  (Signature)

The test results presented in this test report are limited only to the sample supplied by applicant and the use of this test report is inhibited other than its purpose. This test report shall not be reproduced except in full, without the written approval of DT&C Co., Ltd.

2017 . 09 . 27 .

**DT&C Co., Ltd.**

If this report is required to confirmation of authenticity, please contact to [report@dtnc.net](mailto:report@dtnc.net)

## Test Report Version

Test Report No.	Date	Description
DRTFCC1709-0206	Sep. 27, 2017	Initial issue

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## 1. EUT DESCRIPTION

<b>FCC Equipment Class</b>	Digital Transmission System(DTS)
<b>Product</b>	Mobile Phone
<b>Model Name</b>	QVR
<b>Add Model Name</b>	NA
<b>Power Supply</b>	DC 3.85 V
<b>Frequency Range</b>	▪ 802.11b/g/n/ac(20 MHz) : 2412 MHz ~ 2462 MHz
<b>Max. RF Output Power</b>	2.4GHz Band ▪ 802.11b : 21.497 dBm ▪ 802.11g : 25.283 dBm ▪ 802.11n (HT20) : 25.285 dBm ▪ 802.11ac (VHT20) : 25.505 dBm
<b>Modulation Type</b>	▪ 802.11b: CCK, DSSS ▪ 802.11g/n/ac: OFDM
<b>Antenna Specification</b>	<b>Antenna type:</b> Internal Antenna <b>Antenna gain:</b> Refer to the clause 7 in test report.

### Transmitting configuration of EUT

Mode	SISO		MIMO(CDD)	MIMO(SDM)
	Ant 1	Ant 2	Ant 1 & 2	Ant 1 & 2
	Data rate			
802.11b	1~11 Mbps	1~11 Mbps	1~11 Mbps	-
802.11a	6~54Mbps	6~54Mbps	6~54Mbps	-
802.11n(HT20)	MCS 0 ~ 7	MCS 0 ~ 7	MCS 0 ~ 7	MCS 8 ~ 15
802.11ac(VHT20)	MCS 0 ~ 8	MCS 0 ~ 8	MCS 0 ~ 8	MCS 0 ~ 8

Note1: SDM = Spatial Diversity Multiplexing, CDD = Cycle Delay Diversity

Note2: This device supports WiFi DBS(dual-band simultaneous) transmission operation, which allows for two SISO channels to operate independent of one another in the 2.4GHz and 5GHz bands simultaneously on each antenna. (Ant 1: 5GHz band transmitting & ANT 2: 2.4GHz band transmitting)  
 And the test results for WiFi DBS were included in UNII test report of this device.

## . INFORMATION ABOUT TESTING

### 2.1 Test mode

Test mode	Worst case data rate	Tested Frequency(MHz)		
		Lowest	Middle	Highest
TM 1	802.11b 11 Mbps (Single transmitting)	2412	2437	2462
TM 2	802.11g 54 Mbps (Single transmitting)	2412	2437	2462
TM 3	802.11n(HT20) MCS 7 (Single transmitting)	2412	2437	2462
TM 4	802.11ac(VHT20) NSS1 MCS 8 (Single transmitting)	2412	2437	2462
TM 5	802.11b 11 Mbps (CDD Multiple transmitting)	2412	2437	2462
TM 6	802.11g 54 Mbps (CDD Multiple transmitting)	2412	2437	2462
TM 7	802.11n(HT20) MCS 7 (CDD Multiple transmitting)	2412	2437	2462
TM 8	802.11ac(VHT20) NSS1 MCS 8 (CDD Multiple transmitting)	2412	2437	2462
TM 9	802.11n(HT20) MCS 7 (SDM Multiple transmitting)	2412	2437	2462
TM 10	802.11ac(VHT20) NSS2 MCS 8 (SDM Multiple transmitting)	2412	2437	2462

Note 1: The worst case data rate is determined as above test mode according to the power measurements.

Also radiated spurious emission was performed at lowest data rate.

Note 2: We have done all TX test cases and attached the MIMO test result of 802.11b/g/n/ac mode since MIMO is the worst case.

Note 3: The power measurement results for all modes and data rate were reported.

### 2.2 Auxiliary equipment

Equipment	Model No.	Serial No.	Manufacturer	Note
-	-	-	-	-
-	-	-	-	-

## 2.3 Tested environment

Temperature	: 20 ~ 25 °C
Relative humidity content	: 40 ~ 45 % R.H..
Details of power supply	: DC 3.85 V

## 2.4 EMI suppression Device(s) / Modifications

EMI suppression device(s) added and/or modifications made during testing  
 → None

## 2.5 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with requirements of ANSI C 63.4-2014 and ANSI C 63.10-2013. All measurement uncertainty values are shown with a coverage factor of  $k = 2$  to indicate a 95 % level of confidence.

Test items	Measurement uncertainty
Transmitter Output Power	0.7 dB (The confidence level is about 95 %, $k = 2$ )
Conducted spurious emission	1.0 dB (The confidence level is about 95 %, $k = 2$ )
AC conducted emission	2.4 dB (The confidence level is about 95 %, $k = 2$ )
Radiated spurious emission (1 GHz Below)	5.1 dB (The confidence level is about 95 %, $k = 2$ )
Radiated spurious emission (1 GHz ~ 18 GHz)	5.4 dB (The confidence level is about 95 %, $k = 2$ )
Radiated spurious emission (18 GHz Above)	5.3 dB (The confidence level is about 95 %, $k = 2$ )

### 3. SUMMARY OF TESTS

FCC Part Section(s)	Parameter	Limit	Test Condition	Status Note 1
15.247(a)	6 dB Bandwidth	> 500 kHz	Conducted	<b>C</b>
15.247(b)	Transmitter Output Power	< 1 Watt		<b>C</b>
15.247(d)	Out of Band Emissions / Band Edge	20 dBc in any 100 kHz BW		<b>C</b>
15.247(e)	Transmitter Power Spectral Density	< 8 dBm/3 kHz		<b>C</b>
-	RSS-Gen [6.6]	Occupied Bandwidth (99 %)		<b>NA</b>
15.247(d) 15.205 15.209	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	FCC 15.209 limits	Radiated	<b>C</b> Note 2, 3, 4
15.207	AC Line Conducted Emissions	FCC 15.207 limits	AC Line Conducted	<b>C</b>
15.203	Antenna Requirements	FCC 15.203	-	<b>C</b>

Note 1: **C**=Comply **NC**=Not Comply **NT**=Not Tested **NA**=Not Applicable

Note 2: This test item was performed in each axis and the worst case data was reported.

Note 3: This device supports wireless charging capability.

So per KDB648474 D03v01r04, the radiated test items were performed both normal and charging conditions. For wireless charging condition, the handset is placed on the representative charging pad under normal conditions and in a simulated call configuration.

Note 4: For radiated emission tests below 30 MHz were performed on semi-anechoic chamber which is correlated with OATS.

## 4. TEST METHODOLOGY

Generally the tests were performed according to the KDB558074 D01v04, KDB662911 D01v02r01. And ANSI C63.10-2013 was used to reference appropriate EUT setup and maximizing procedures of radiated spurious emission and AC line conducted emission testing

### 4.1 EUT configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

### 4.2 EUT exercise

The EUT was operated in the test mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

### 4.3 General test procedures

#### Conducted Emissions

The power-line conducted emission test procedure is not described on the KDB558074 D01v04.

So this test was fulfilled with the requirements in Section 6.2 of ANSI C63.10-2013.

The EUT is placed on the wooden table, which is 0.8 m above ground plane and the conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-peak and Average detector

#### Radiated Emissions

Basically the radiated tests were performed with KDB558074 D01v04. But some requirements and procedures like test site requirements, EUT setup and maximizing procedure were fulfilled with the requirements in Section 5 and 6 of the ANSI C63.10 as stated on section 12.1 of the KDB558074 D01V04.

The EUT is placed on a non-conductive table. For emission measurements at or below 1 GHz, the table height is 80 cm. For emission measurements above 1 GHz, the table height is 1.5 m. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the highest emission, the relative positions of the EUT were rotated through three orthogonal axes.

### 4.4 Description of test modes

The EUT has been tested with all modes of operating conditions to determine the worst case emission characteristics. A test program is used to control the EUT for staying in continuous transmitting mode.



## 5. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

## 6. FACILITIES AND ACCREDITATIONS

### 6.1 Facilities

<b>DT&amp;C Co., Ltd.</b>		
The 3 m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042. The site is constructed in conformance with the requirements. - FCC MRA Accredited Test Firm No. : KR0034		
<a href="http://www.dtn.net">www.dtn.net</a>		
Telephone	:	+ 82-31-321-2664
FAX	:	+ 82-31-321-1664

### 6.2 Equipment

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, loop, horn. Spectrum analyzers with pre-selectors and peak, quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

## 7. ANTENNA REQUIREMENTS

### 7.1 According to FCC 47 CFR §15.203

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

**The antenna is attached on the device by means of unique coupling method (Spring Tension).  
Therefore this E.U.T Complies with the requirement of §15.203**

### 7.2 Directional antenna gain:

Bands	SISO		MIMO (CDD) <sup>Note 1.</sup>	MIMO (SDM) <sup>Note 2</sup>
	ANT 1 [dBi]	ANT 2 [dBi]	Directional Gain [dBi]	Directional Gain [dBi]
2.4 GHz	-2.700	-3.700	-0.175	-3.171

**Note 1. Directional gain (Correlated signal with unequal antenna gain and equal transmit power)**

$$10 \log \left[ \left( 10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20} \right)^2 / N_{ANT} \right] \text{ dBi}$$

**Note 2. Directional gain (Completely uncorrelated signal with unequal antenna gain and equal transmit power)**

$$10 \log \left[ \left( 10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10} \right) / N_{ANT} \right] \text{ dBi}$$

## 8. TEST RESULT

### 8.1 6dB bandwidth

#### ■ Test Requirements and limit, §15.247(a)

The bandwidth at 6 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

**The minimum permissible 6 dB bandwidth is 500 kHz.**

#### ■ Test Configuration:

Refer to the APPENDIX I.

#### ■ Test Procedure:

The transmitter output is connected to the Spectrum Analyzer and used following test procedure of **KDB558074 D01V04**

1. Set resolution bandwidth (RBW) = 100 kHz.
2. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.  
**(RBW : 100 kHz / VBW : 300 kHz)**
3. Detector = **Peak**.
4. Trace mode = **Max hold**.
5. Sweep = **Auto couple**.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

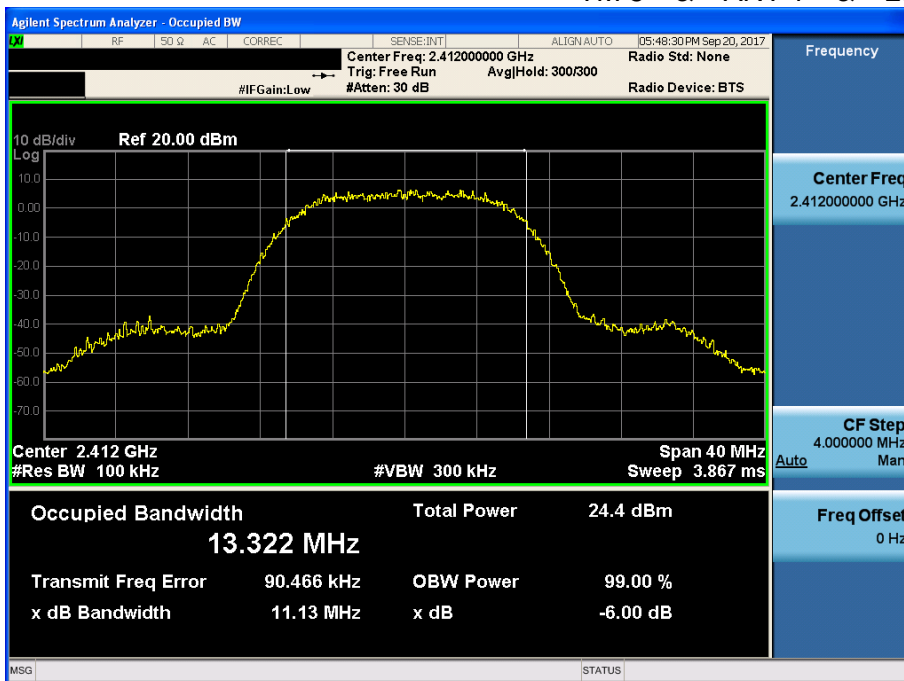
#### ■ Test Results: **Comply**

Test Mode	Frequency	Test Results[MHz]	
		ANT 1	ANT 2
TM 5	Lowest	11.130	11.110
	Middle	11.300	11.140
	Highest	11.300	11.190
TM 6	Lowest	16.460	16.490
	Middle	16.560	16.520
	Highest	16.500	16.510
TM 7	Lowest	17.700	17.680
	Middle	17.750	17.700
	Highest	17.690	17.710
TM 8	Lowest	17.660	17.700
	Middle	17.760	17.750
	Highest	17.720	17.730
TM 9	Lowest	17.660	17.710
	Middle	17.740	17.710
	Highest	17.640	17.720
TM 10	Lowest	17.650	17.720
	Middle	17.760	17.730
	Highest	17.670	17.700

RESULT PLOTS

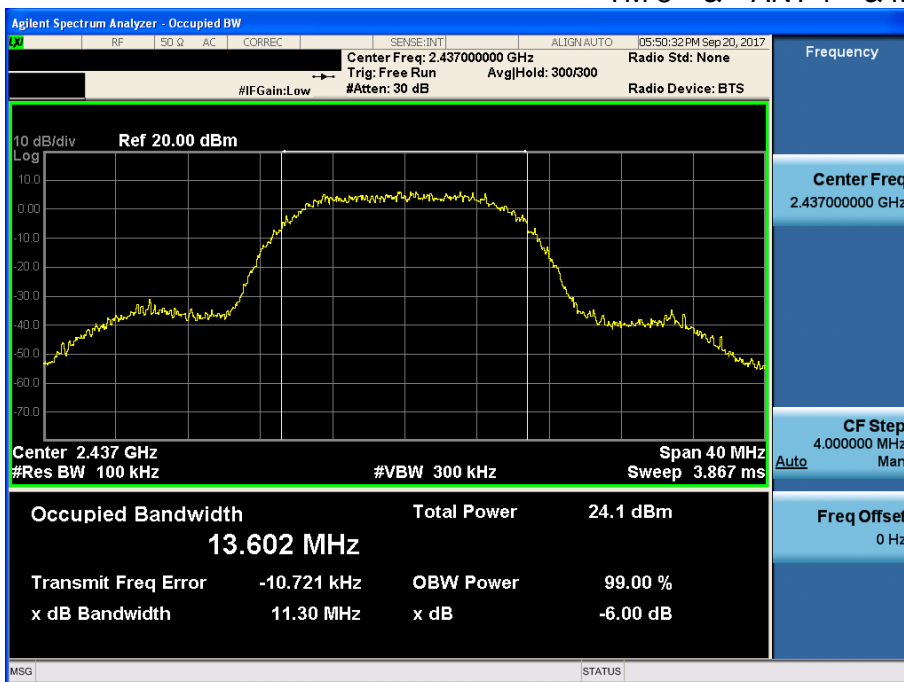
6 dB Bandwidth

TM 5 & ANT 1 & Lowest



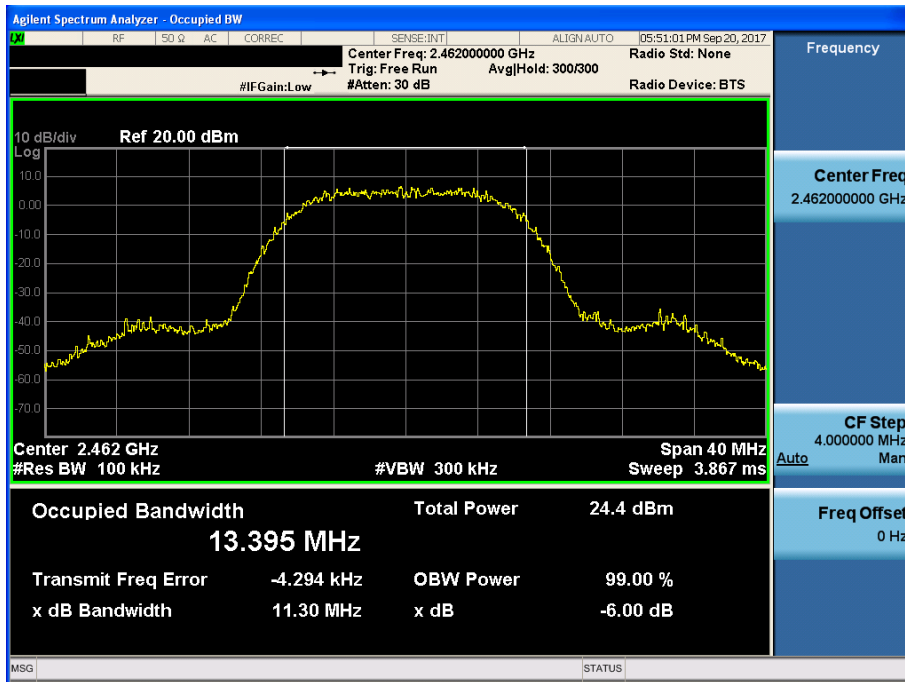
6 dB Bandwidth

TM 5 & ANT 1 & Middle



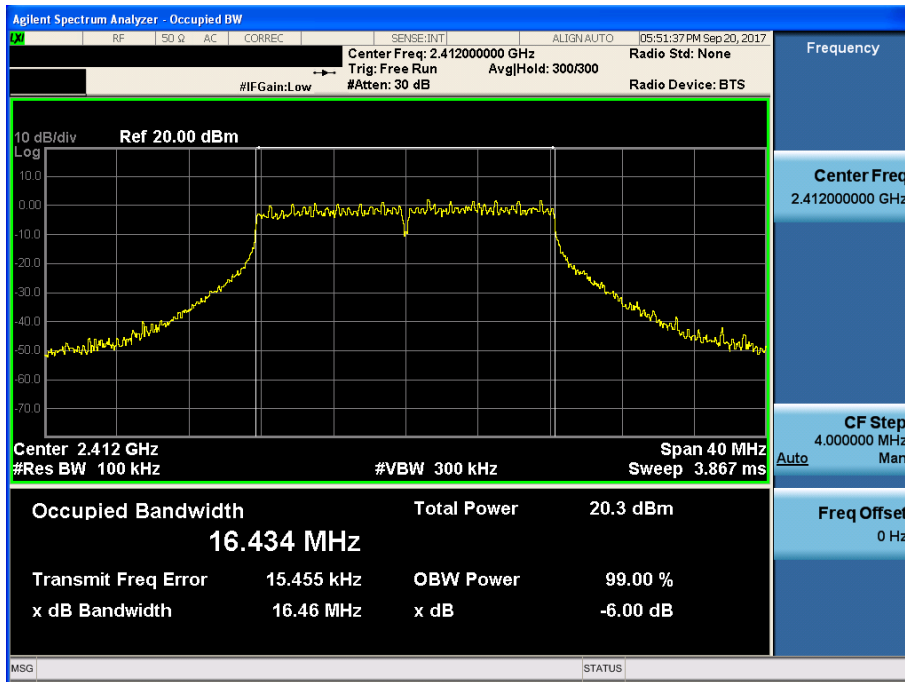
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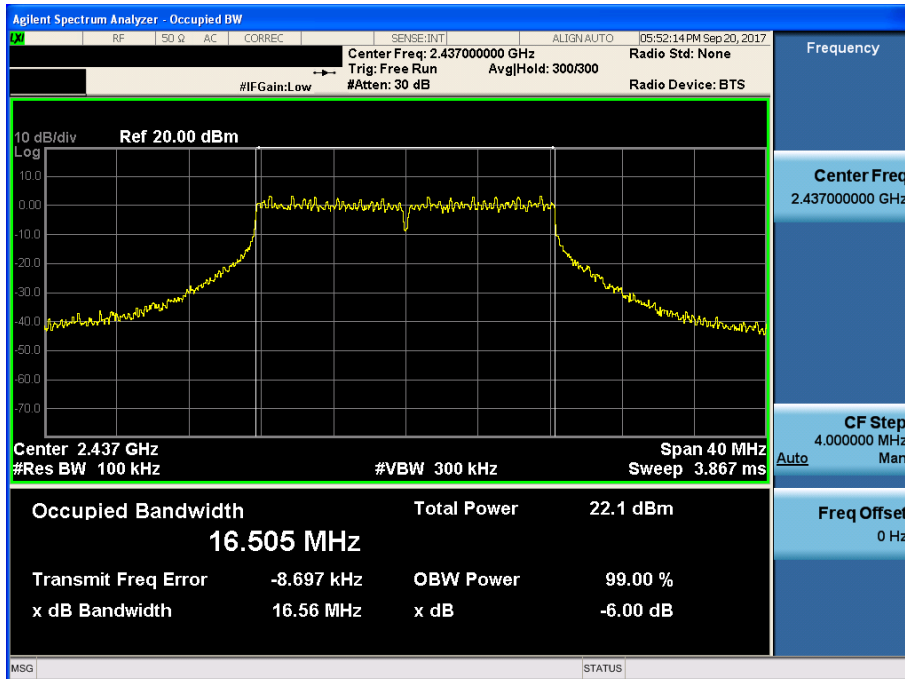
6 dB Bandwidth

TM 6 & ANT 1 & Lowest



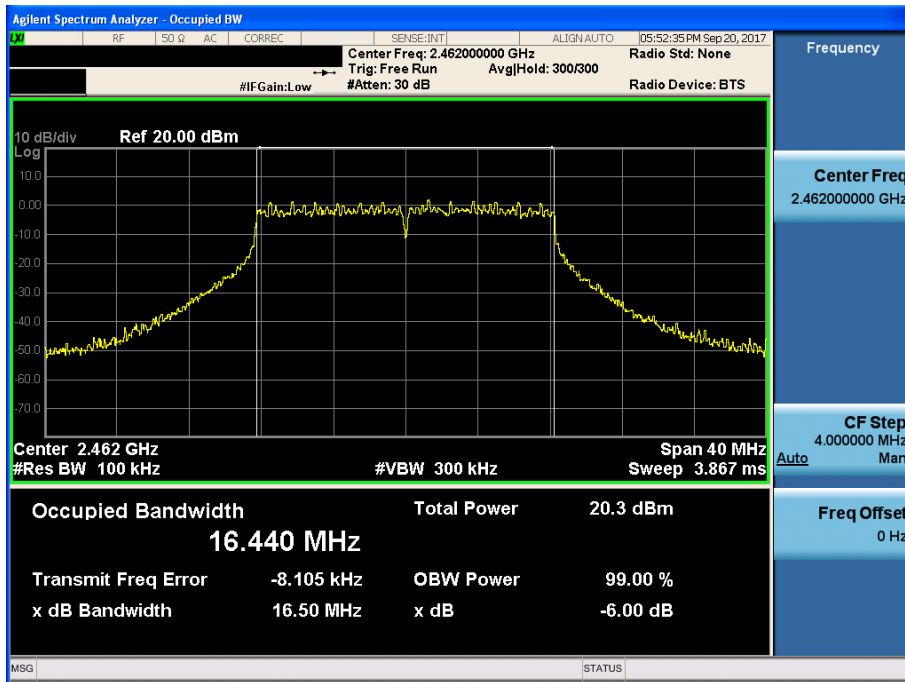
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TM 6 & ANT 1 & Middle



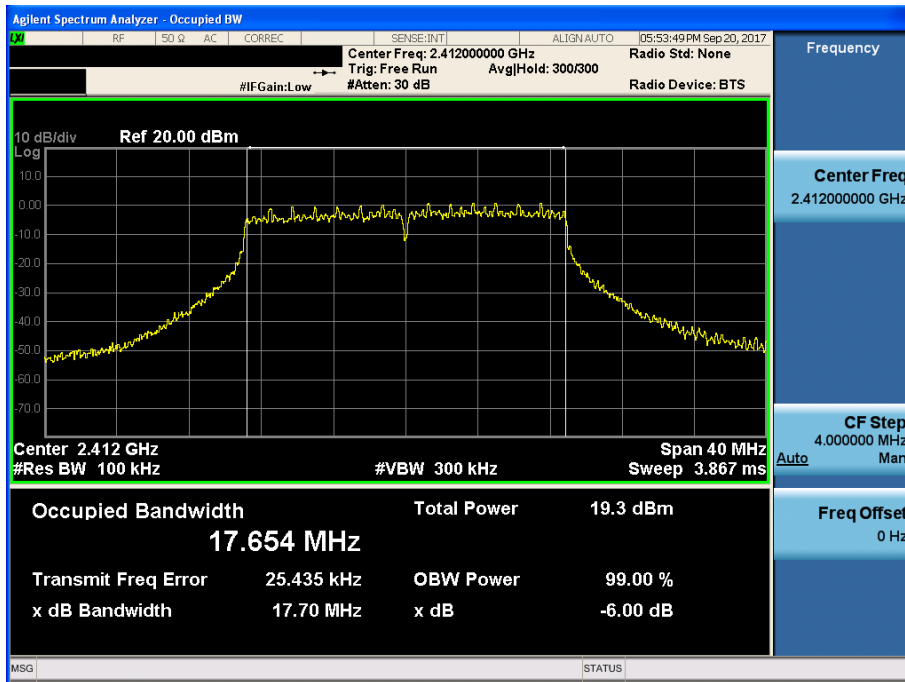
6 dB Bandwidth

TM 6 & ANT 1 & Highest



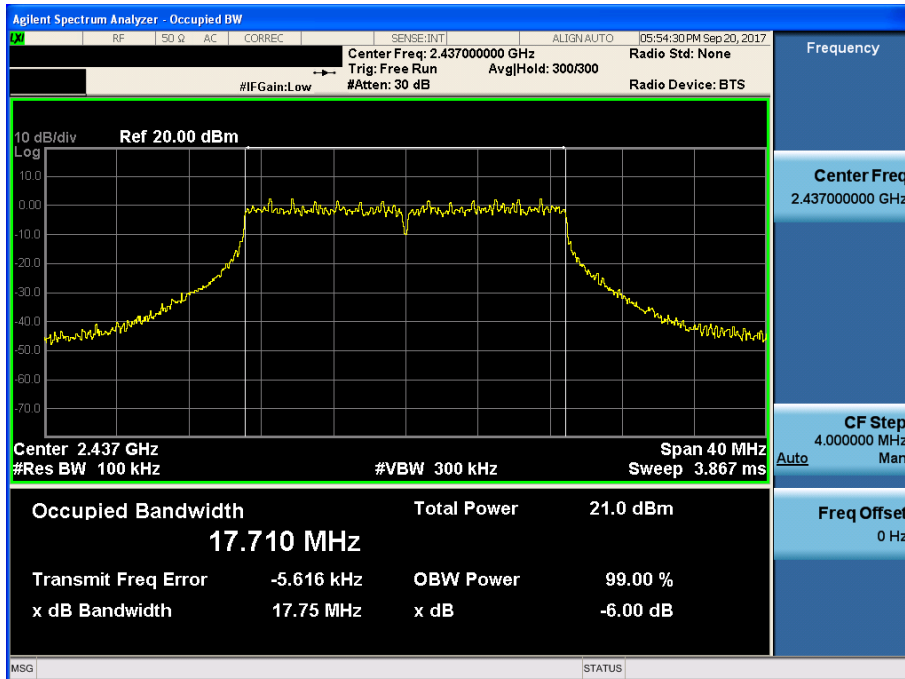
6 dB Bandwidth

TM 7 & ANT 1 & Lowest



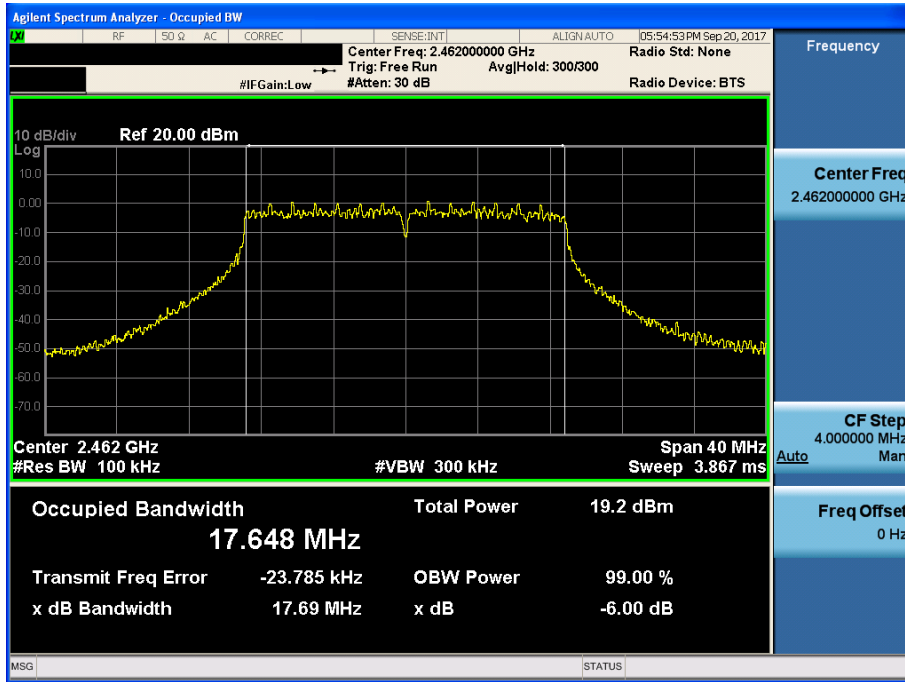
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TM 7 & ANT 1 & Middle



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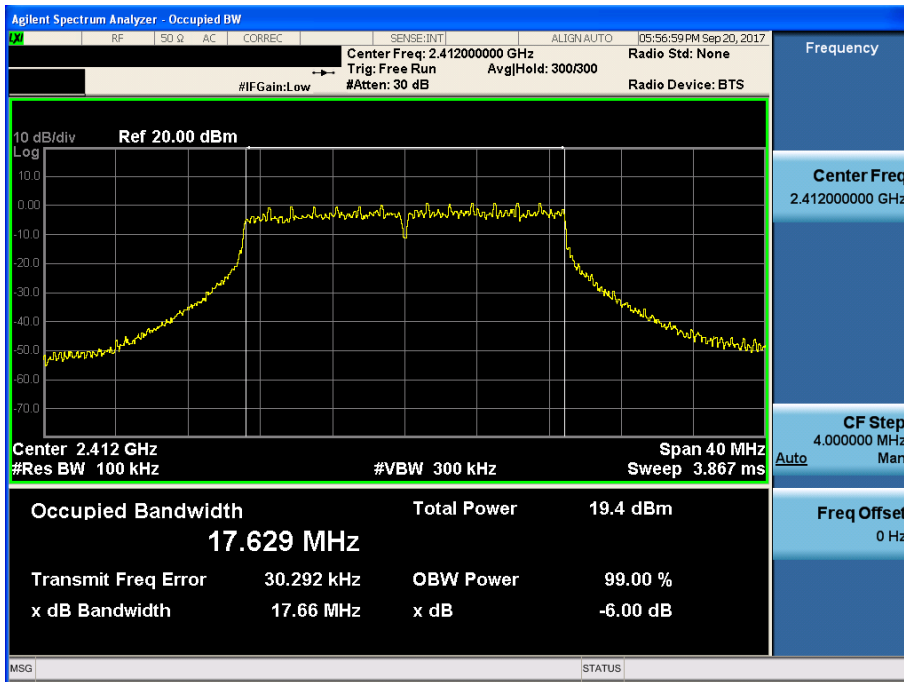
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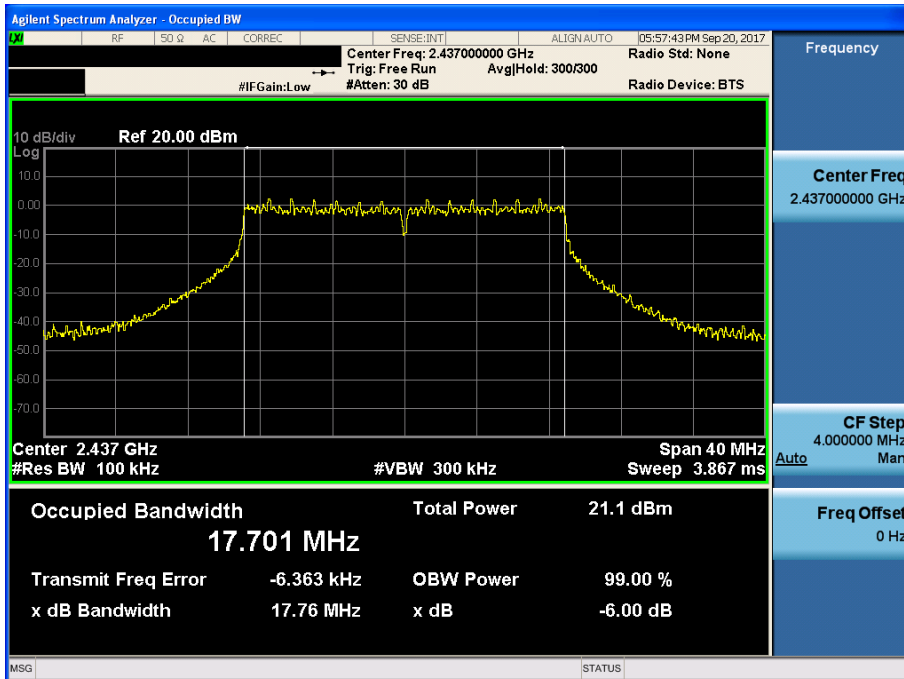
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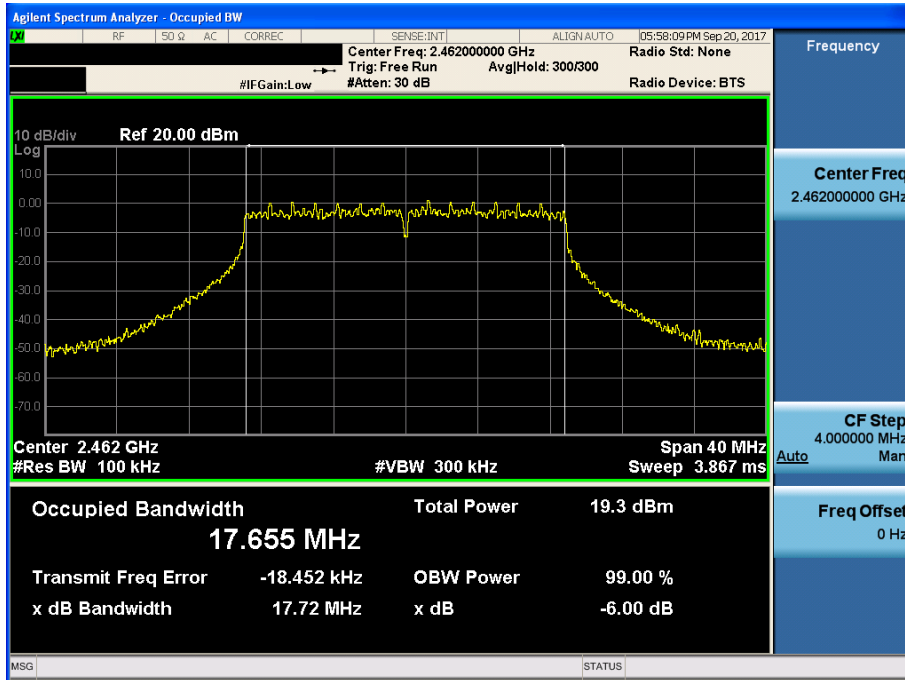
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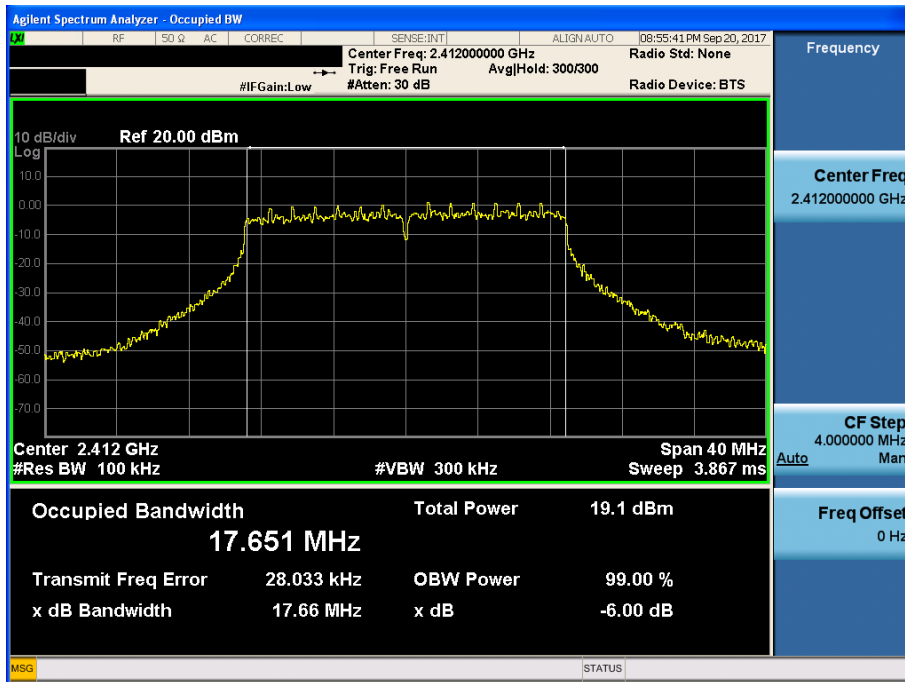
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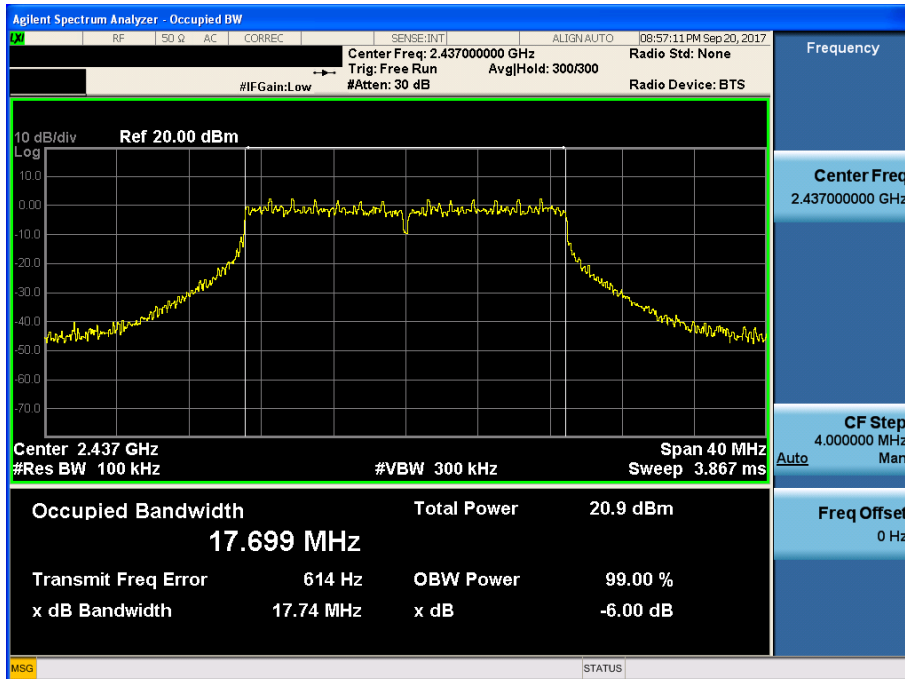
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TM 9 & ANT 1 & Lowest



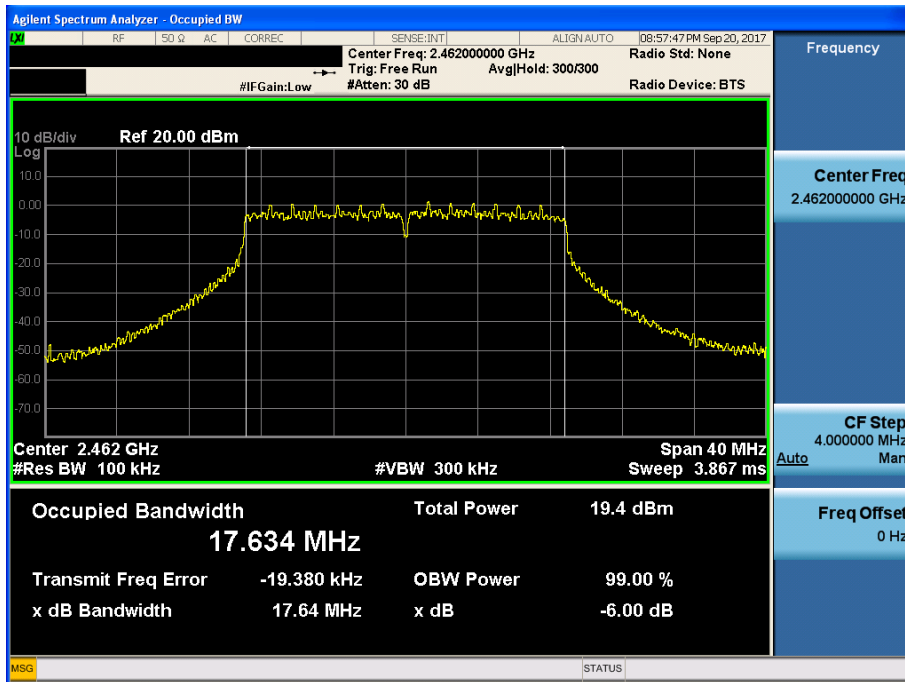
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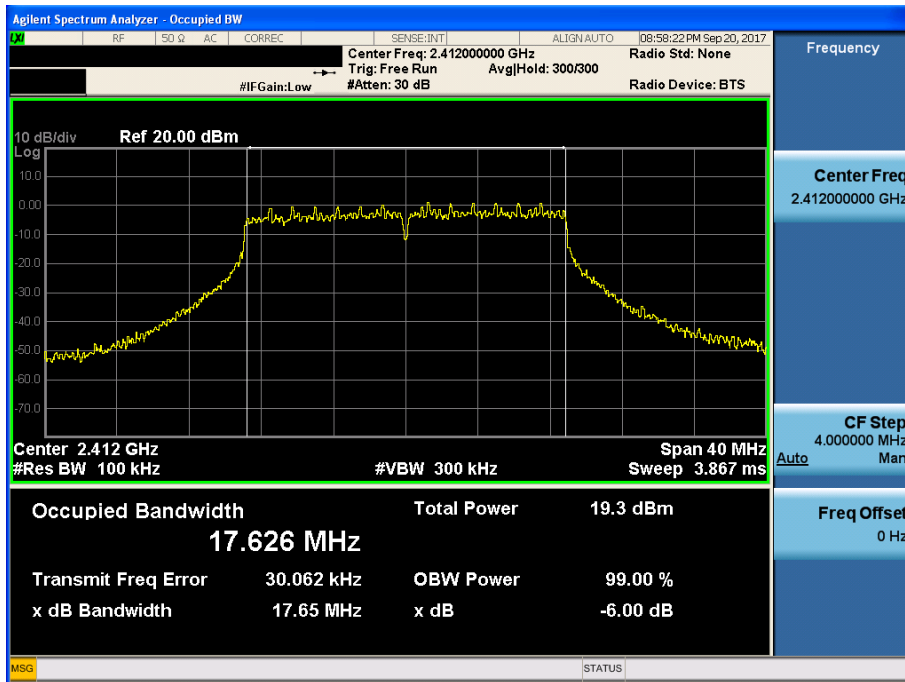
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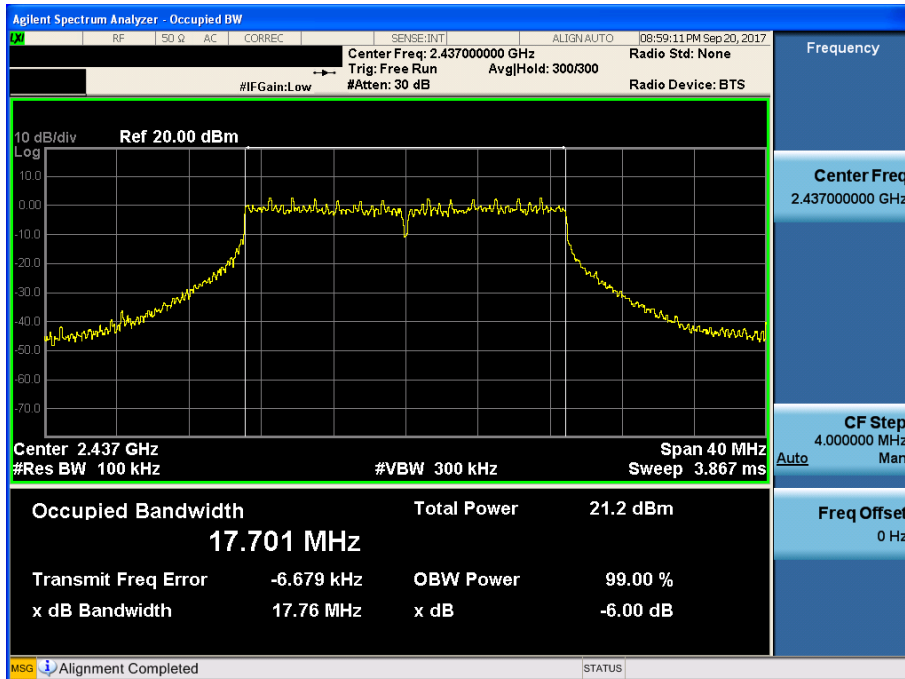
6 dB Bandwidth

TM 10 & ANT 1 & Lowest



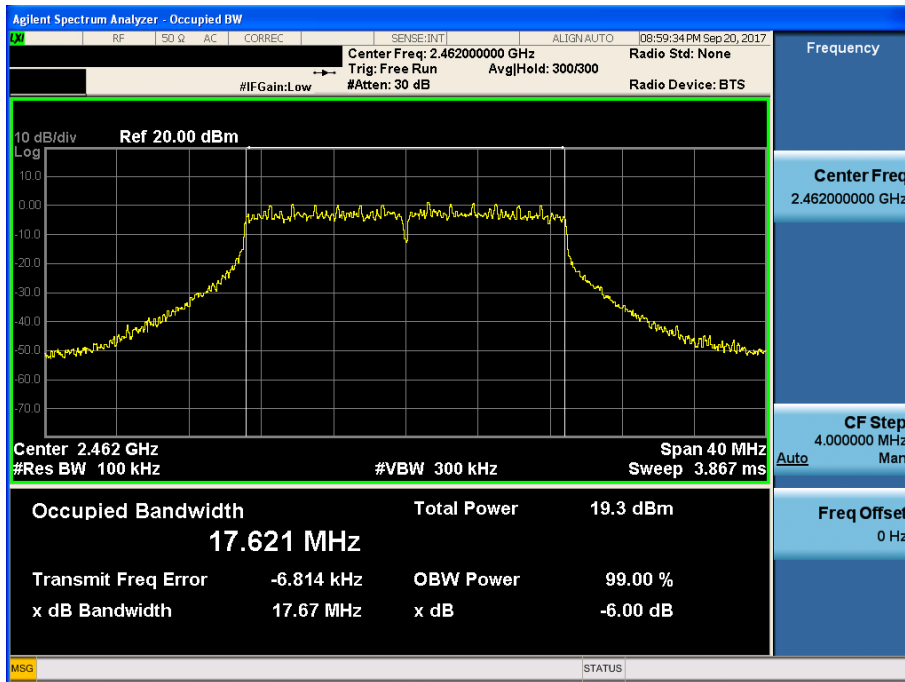
6 dB Bandwidth

TM 10 & ANT 1 & Middle



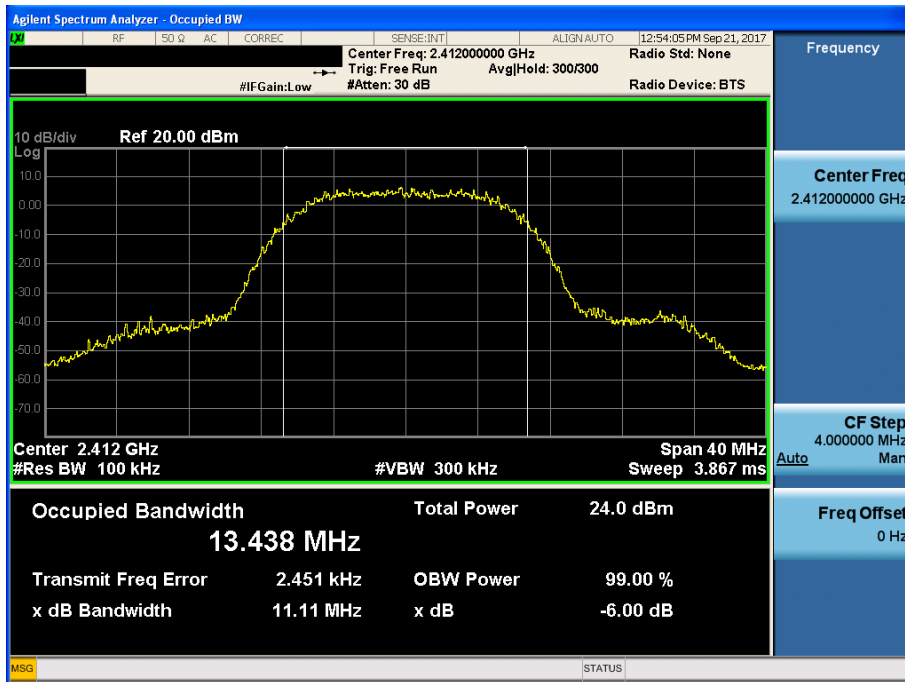
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TM 10 & ANT 1 & Highest



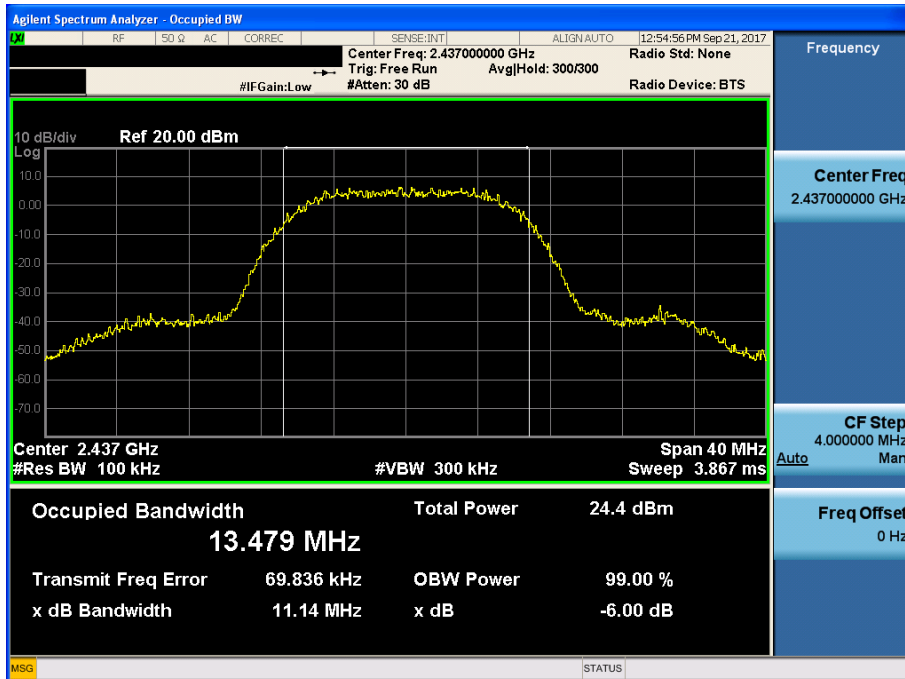
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TM 5 & ANT 2 & Lowest



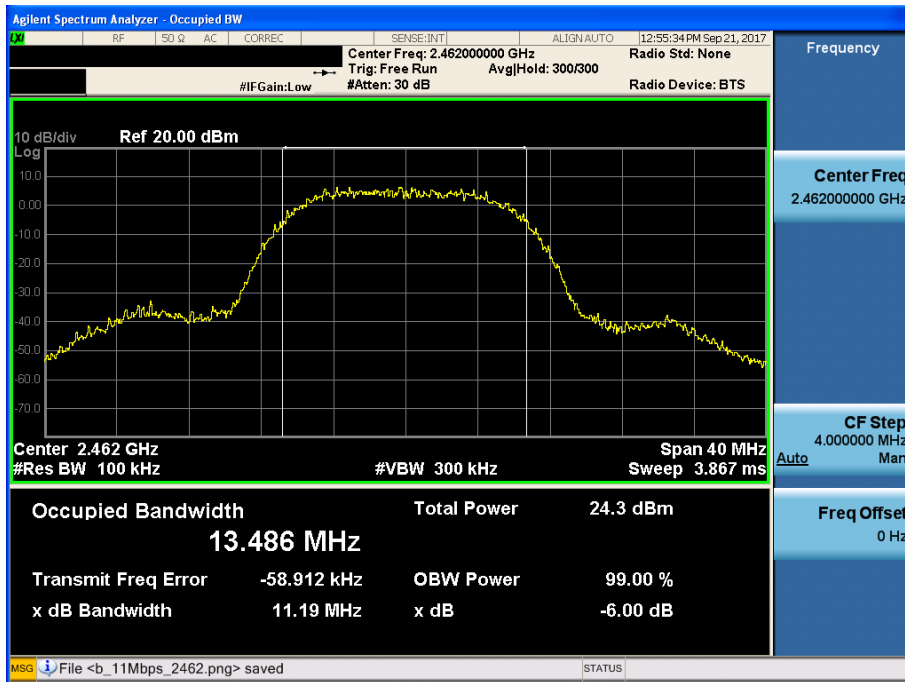
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6 dB Bandwidth

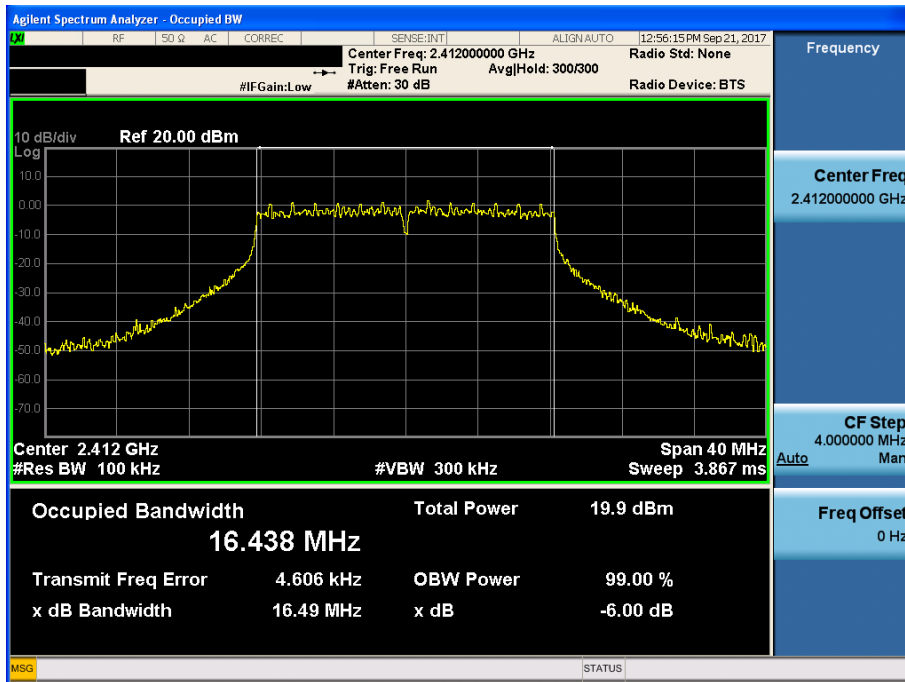
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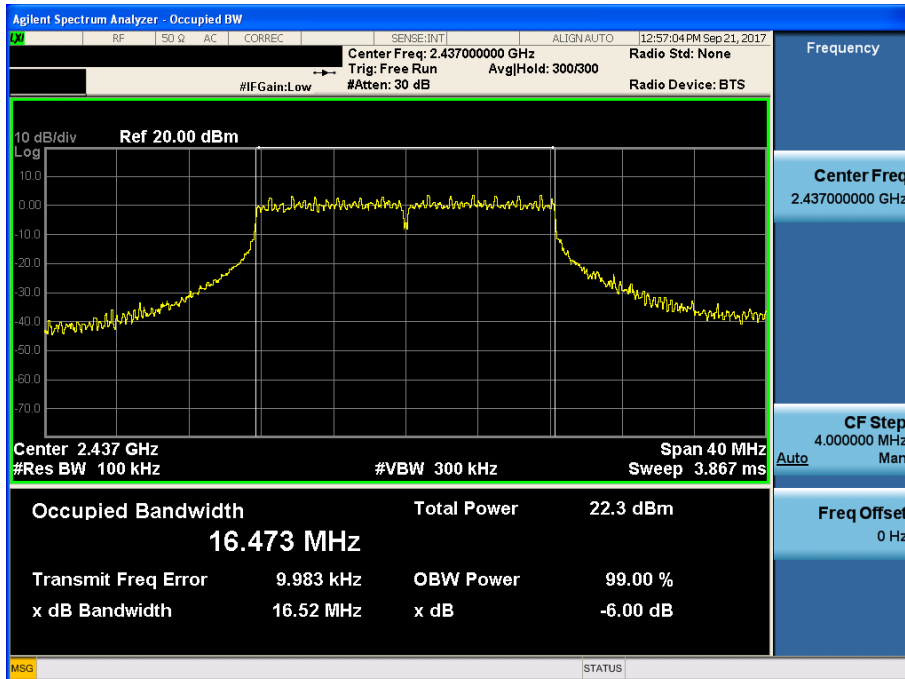
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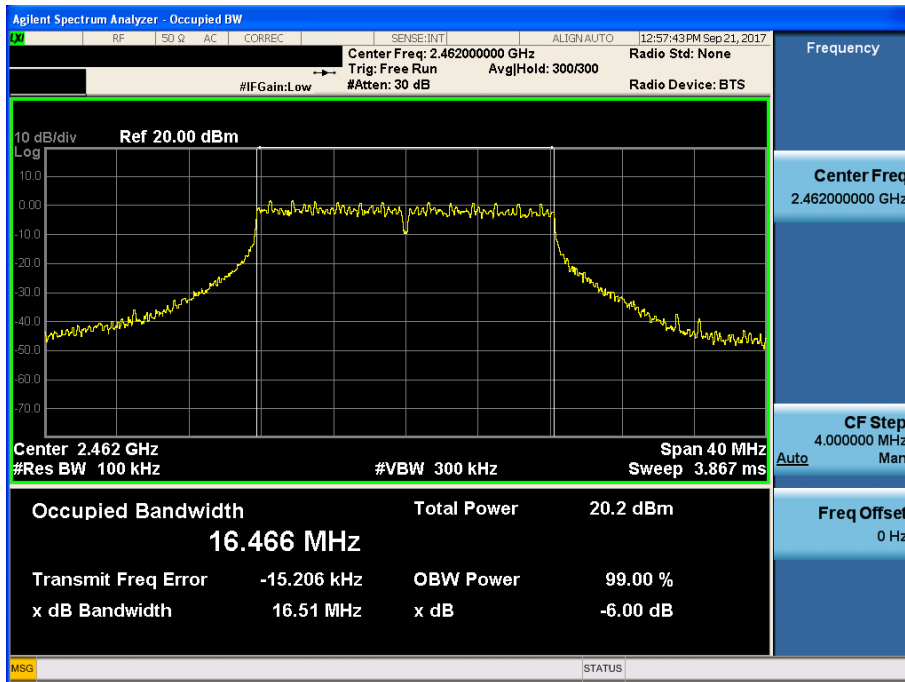
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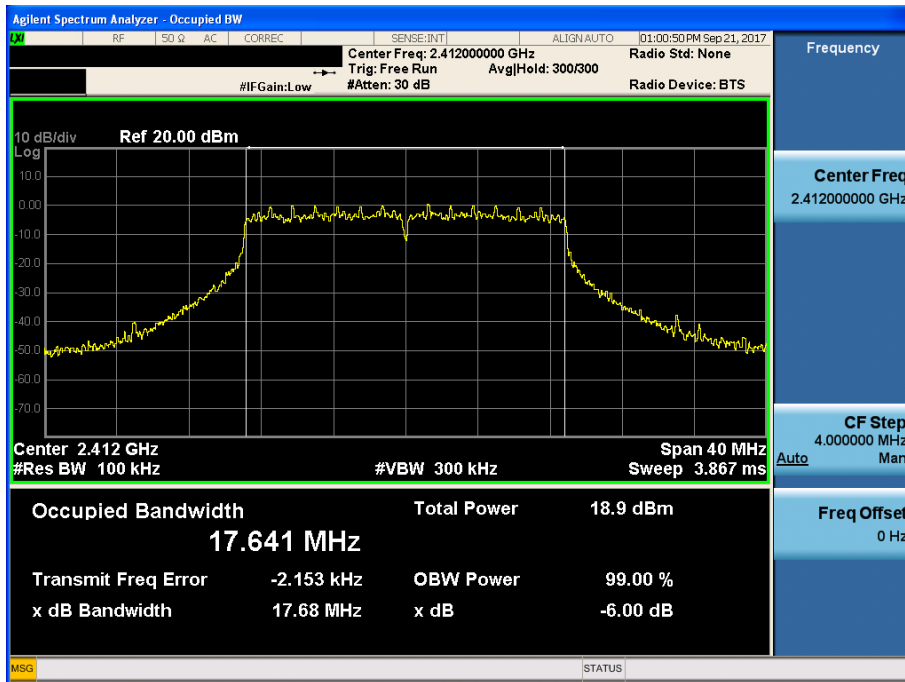
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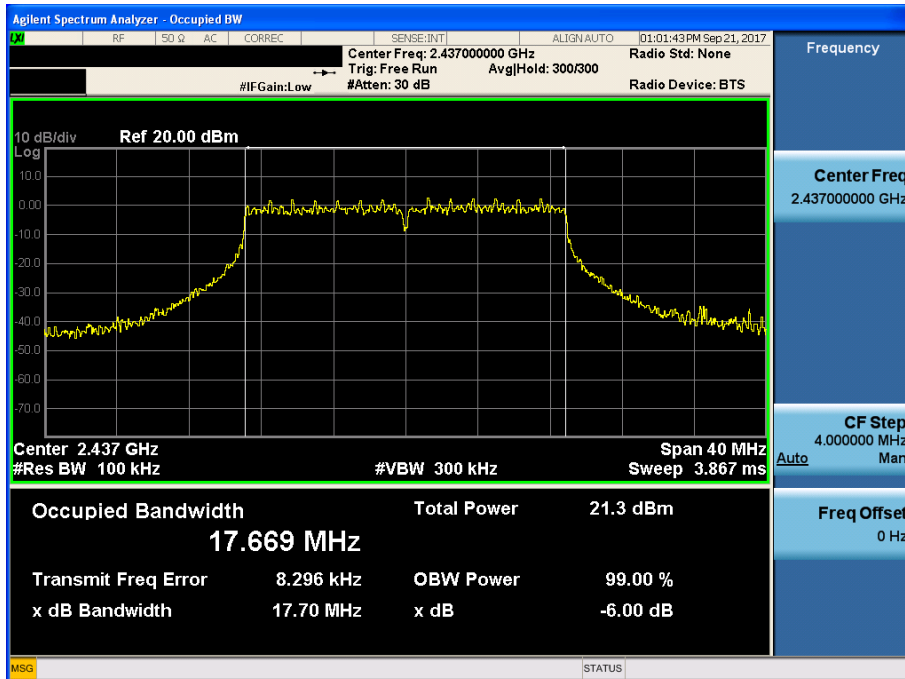
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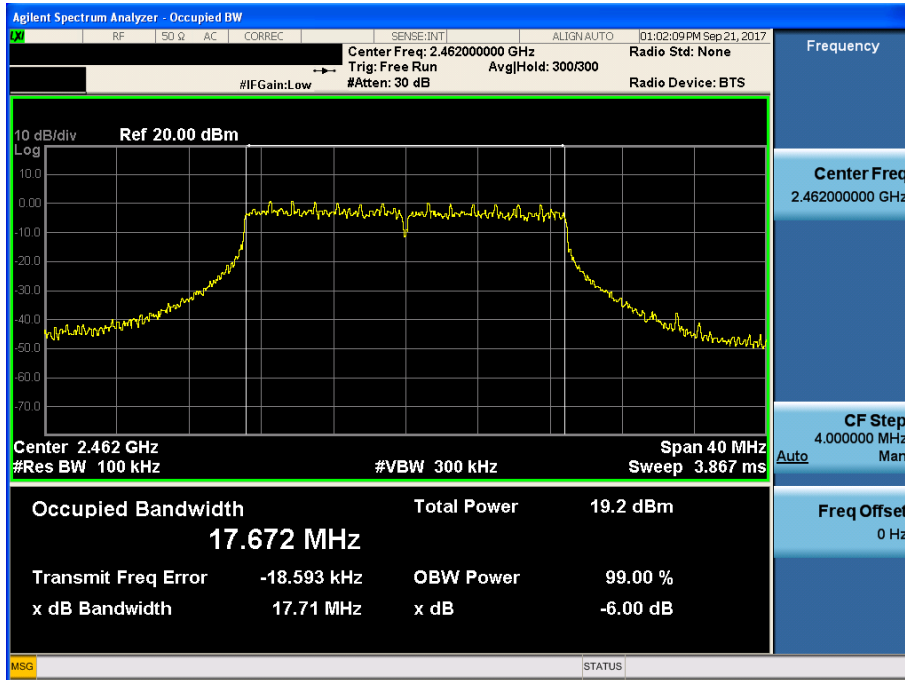
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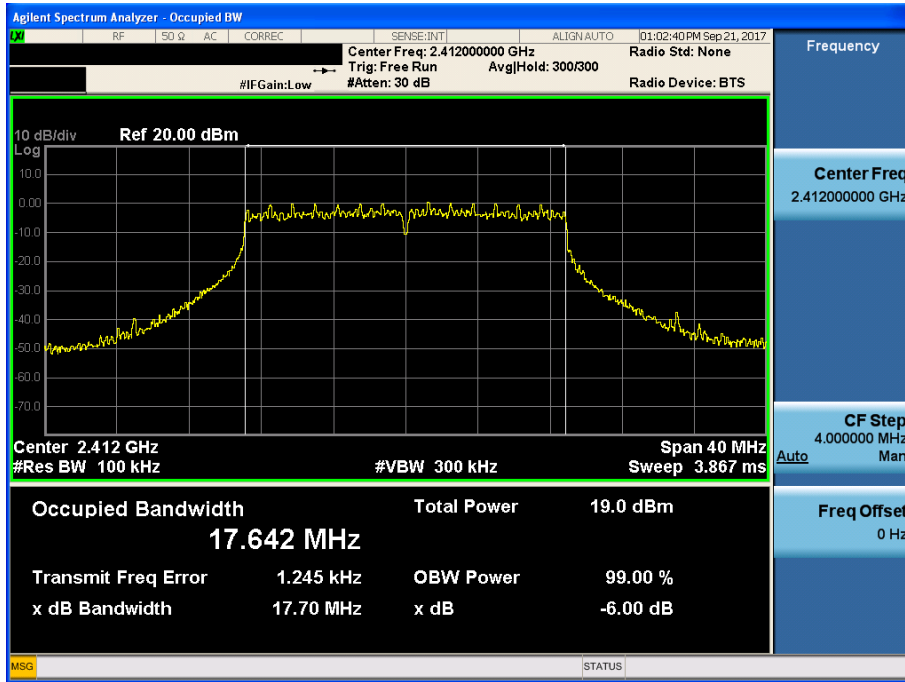
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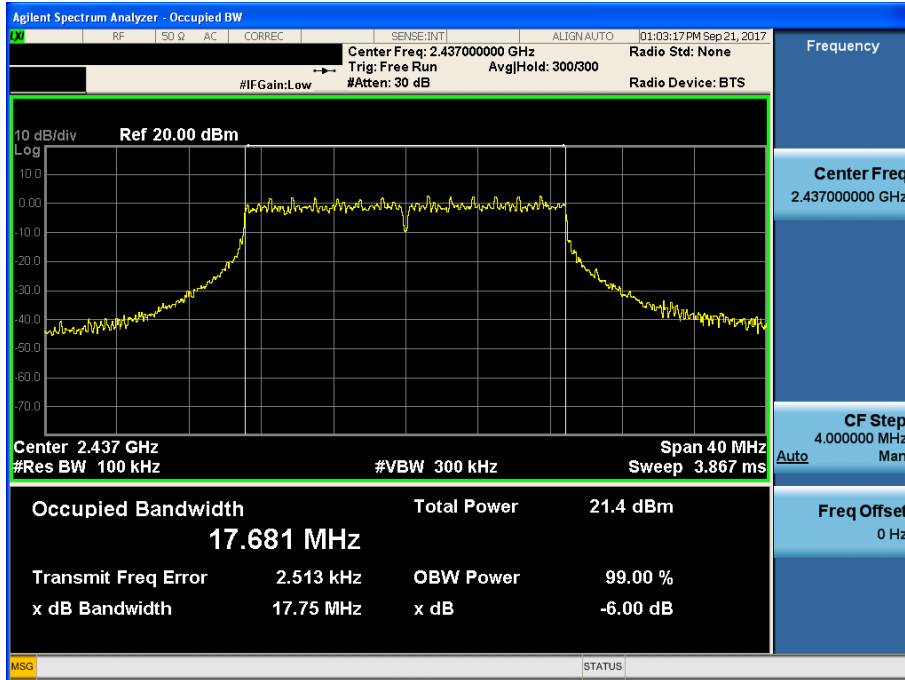
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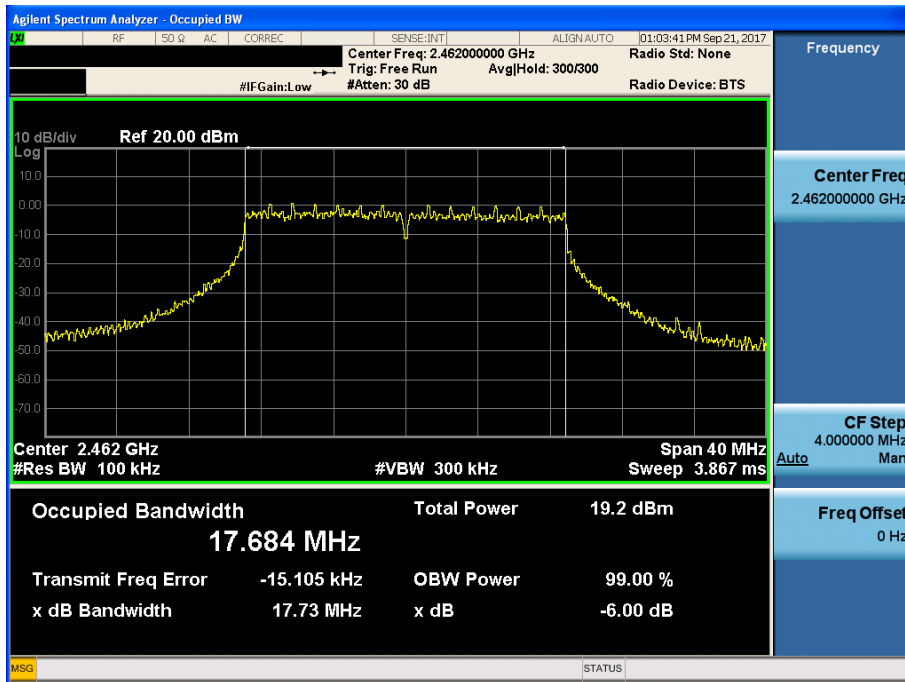
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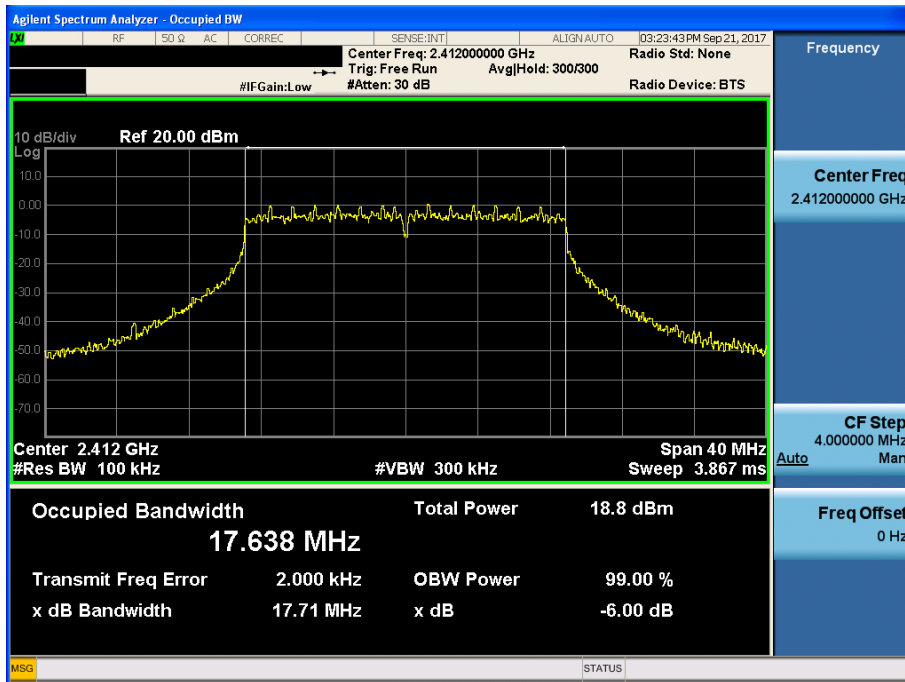
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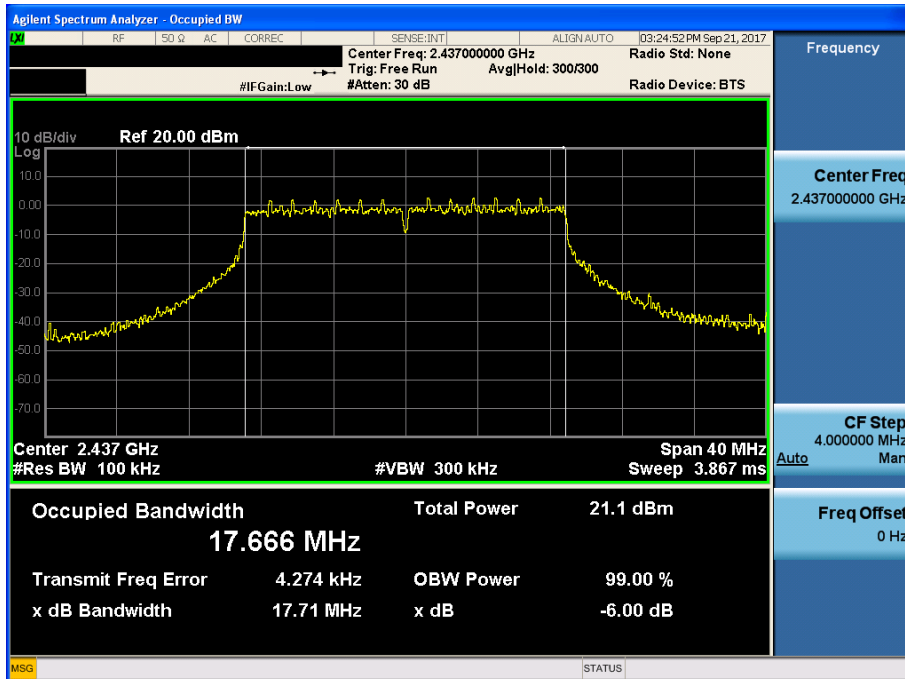
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TM 9 & ANT 2 & Lowest



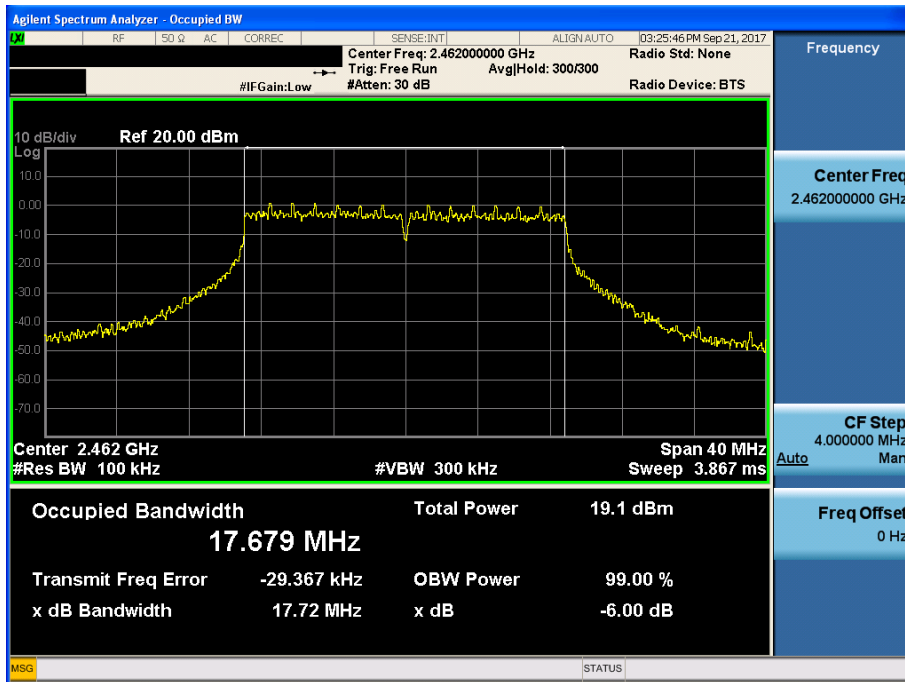
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TM 9 & ANT 2 & Middle



6 dB Bandwidth

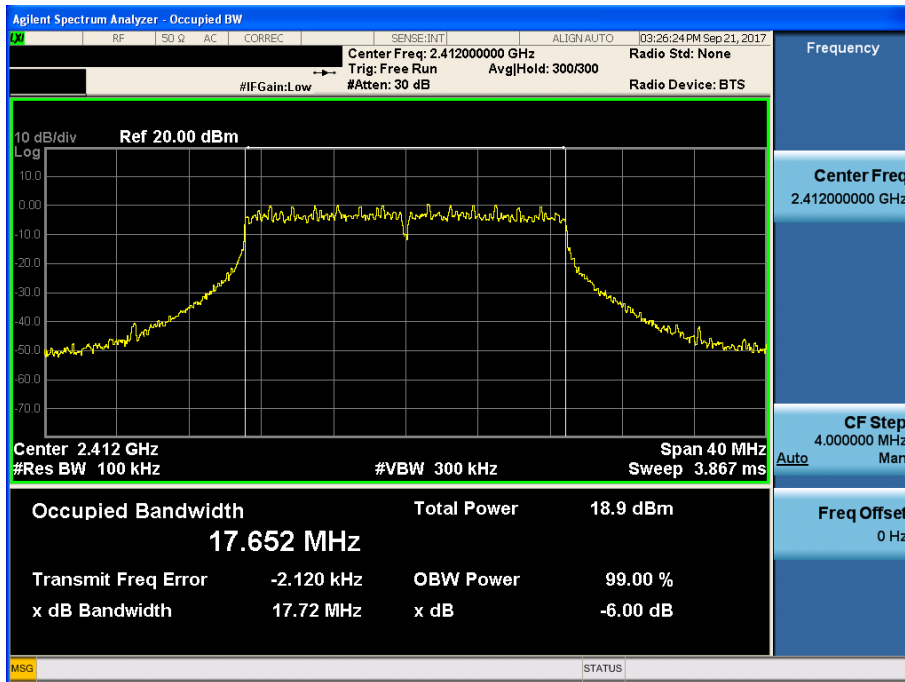
TM 9 & ANT 2 & Highest





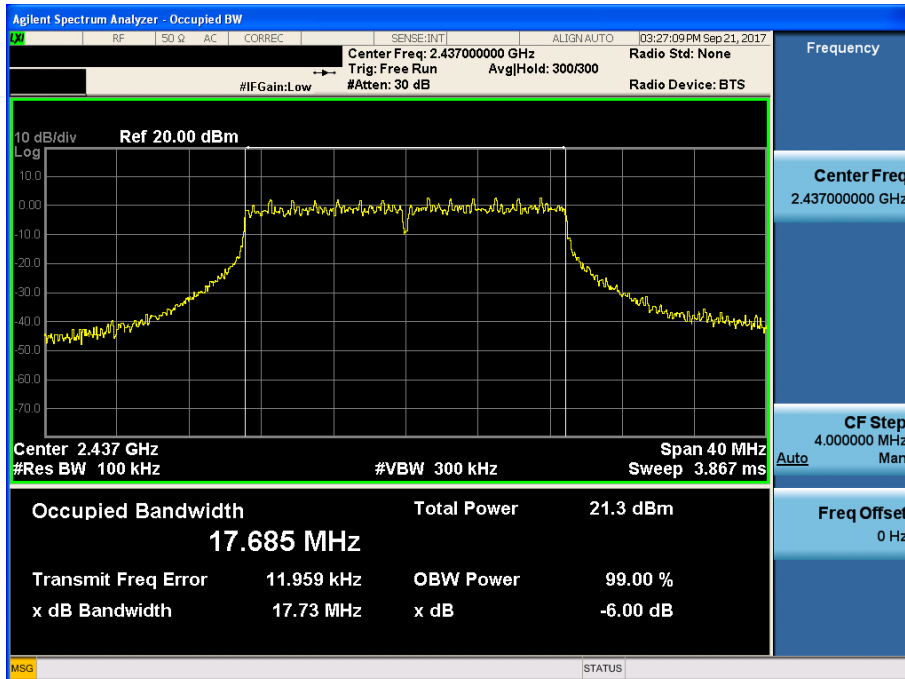
6 dB Bandwidth

TM 10 & ANT 2 & Lowest



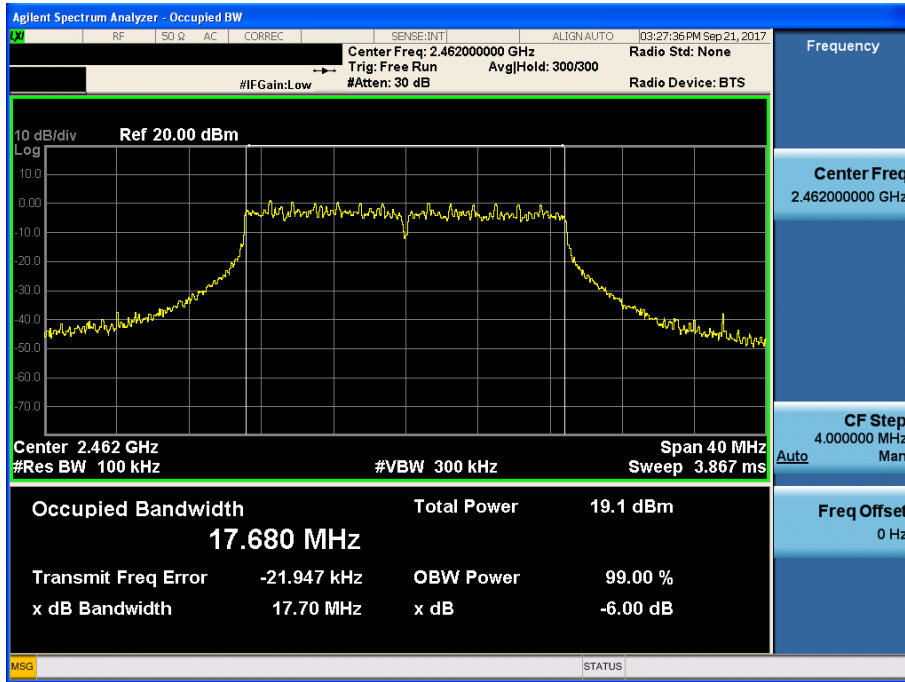
6 dB Bandwidth

TM 10 & ANT 2 & Middle



6 dB Bandwidth

TM 10 & ANT 2 & Highest

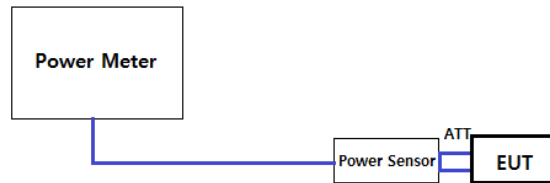


## 8.2 Maximum peak conducted output power

### ■ Test Requirements and limit, §15.247(b)

The maximum permissible conducted output power is **1 Watt**.

### ■ Test Configuration



### ■ Test Procedure

#### 1. PKPM1 Peak power meter method of KDB558074 D01V04

The maximum conducted output powers were measured using a broadband peak RF power meter which has greater video bandwidth than DUT's DTS bandwidth and utilize a fast-responding diode detector.

#### 2. Method AVGPM-G (Measurement using a gated RF average power meter) of KDB558074 D01V04

The average conducted output powers were measured using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.

Note: The measure-and-sum technique is used for test mode with multiple transmitting.

■ Test Results: **Comply**

▪ Single transmitting

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for <b>802.11b</b>							
			Data Rate [Mbps]							
			1	2	5.5	11	-	-	-	-
ANT 1	2412	PK	18.430	18.470	18.460	18.490	-	-	-	-
		AV	15.570	15.680	15.870	15.750	-	-	-	-
	2437	PK	18.430	18.510	18.460	18.480	-	-	-	-
		AV	15.690	15.820	15.980	15.910	-	-	-	-
	2462	PK	18.470	18.550	18.550	<b>18.570</b>	-	-	-	-
		AV	15.670	15.830	15.820	15.930	-	-	-	-
ANT 2	2412	PK	18.410	18.440	18.460	<b>18.480</b>	-	-	-	-
		AV	15.740	15.720	15.920	15.940	-	-	-	-
	2437	PK	18.280	18.360	18.380	18.380	-	-	-	-
		AV	15.550	15.660	15.870	15.890	-	-	-	-
	2462	PK	18.190	18.340	18.330	18.400	-	-	-	-
		AV	15.500	15.680	15.850	15.860	-	-	-	-

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for <b>802.11g</b>							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
ANT 1	2412	PK	17.670	17.680	17.700	19.990	19.850	21.820	21.740	21.960
		AV	12.580	12.520	12.520	13.150	13.000	12.000	12.060	12.040
	2437	PK	20.020	20.070	20.320	21.110	21.290	22.290	22.360	<b>22.400</b>
		AV	15.250	15.200	15.190	14.900	14.750	13.790	13.840	13.820
	2462	PK	17.530	17.580	17.610	19.730	19.770	21.790	21.760	21.830
		AV	12.600	12.540	12.530	13.150	13.020	11.980	12.030	12.030
ANT 2	2412	PK	17.440	17.410	17.410	19.510	19.460	21.320	21.470	21.570
		AV	12.210	12.170	12.160	12.810	12.680	11.780	11.840	11.820
	2437	PK	19.910	19.910	19.920	20.990	20.980	22.070	22.130	<b>22.140</b>
		AV	15.010	14.930	14.960	14.680	14.600	13.600	13.670	13.680
	2462	PK	22.030	17.420	17.360	19.640	19.630	21.410	21.540	21.600
		AV	12.440	12.260	12.260	12.940	12.870	11.730	11.810	11.800

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for <u>802.11n(HT20)</u>							
			Data Rate [MCS]							
			0	1	2	3	4	5	6	7
ANT 1	2412	PK	16.820	16.770	18.930	18.880	21.020	20.750	20.830	20.920
		AV	11.420	11.340	11.970	12.000	11.050	11.080	11.090	11.060
	2437	PK	19.000	19.060	20.540	20.450	22.260	22.310	22.420	<b>22.460</b>
		AV	14.070	14.000	13.780	13.790	12.850	12.910	12.880	12.850
	2462	PK	16.730	16.640	18.860	18.750	21.080	20.800	20.910	20.890
		AV	11.450	11.370	11.970	12.010	11.090	11.120	11.090	11.090
ANT 2	2412	PK	16.550	16.550	18.620	18.560	20.670	20.520	20.930	20.640
		AV	11.120	11.060	11.720	11.740	10.910	10.920	10.930	10.890
	2437	PK	19.170	19.220	20.320	20.300	21.890	21.640	22.010	<b>22.080</b>
		AV	13.970	13.920	13.750	13.730	12.850	12.830	12.880	12.810
	2462	PK	16.410	16.390	18.630	18.560	21.020	20.510	21.140	20.660
		AV	11.180	11.120	11.830	11.810	10.860	10.870	10.900	10.850

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for <u>802.11ac(VHT20)</u>								
			Data Rate [MCS]								
			0	1	2	3	4	5	6	7	8
ANT 1	2422	PK	16.810	16.780	18.910	18.890	20.750	20.910	21.170	20.970	21.240
		AV	11.420	11.340	12.010	11.990	11.060	11.080	11.100	11.050	11.090
	2437	PK	19.160	19.210	20.710	20.650	22.250	22.280	22.480	22.580	<b>22.690</b>
		AV	14.060	13.990	13.830	13.800	12.890	12.890	12.960	12.850	12.890
	2452	PK	16.750	16.640	18.840	18.770	20.810	20.910	21.060	21.250	21.260
		AV	11.440	11.380	12.020	12.020	11.090	11.120	11.140	11.080	11.140
ANT 2	2422	PK	16.540	16.560	18.540	18.570	20.620	20.700	20.770	20.540	20.890
		AV	11.140	11.050	11.710	11.720	10.910	10.890	10.940	10.890	10.910
	2437	PK	18.750	19.520	20.600	20.620	22.030	22.210	22.270	22.280	<b>22.290</b>
		AV	14.160	13.940	13.710	13.710	12.850	12.830	12.860	12.800	12.830
	2452	PK	16.380	16.370	18.600	18.540	20.580	20.470	20.710	20.890	20.910
		AV	11.210	11.120	11.780	11.780	10.850	10.840	10.910	10.850	10.880

**Multiple transmitting CDD**

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for <u>802.11b</u>							
			Data Rate [Mbps]							
			1	2	5.5	11	-	-	-	-
ANT 1	2412	PK	18.430	18.470	18.460	18.490	-	-	-	-
		AV	15.570	15.680	15.870	15.750	-	-	-	-
	2437	PK	18.430	18.510	18.460	18.480	-	-	-	-
		AV	15.690	15.820	15.980	15.910	-	-	-	-
	2462	PK	18.470	18.550	18.550	<b>18.570</b>	-	-	-	-
		AV	15.670	15.830	15.820	15.930	-	-	-	-
ANT 2	2412	PK	18.410	18.440	18.460	<b>18.480</b>	-	-	-	-
		AV	15.740	15.720	15.920	15.940	-	-	-	-
	2437	PK	18.280	18.360	18.380	18.380	-	-	-	-
		AV	15.550	15.660	15.870	15.890	-	-	-	-
	2462	PK	18.190	18.340	18.330	18.400	-	-	-	-
		AV	15.500	15.680	15.850	15.860	-	-	-	-
Sum (ANT 1+2)	2412	PK	21.431	21.466	21.471	21.496	-	-	-	-
	2437	PK	21.366	21.446	21.431	21.441	-	-	-	-
	2462	PK	21.343	21.457	21.452	<b>21.497</b>	-	-	-	-

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for <u>802.11g</u>							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
ANT 1	2412	PK	17.670	17.680	17.700	19.990	19.850	21.820	21.740	21.960
		AV	12.580	12.520	12.520	13.150	13.000	12.000	12.060	12.040
	2437	PK	20.020	20.070	20.320	21.110	21.290	22.290	22.360	<b>22.400</b>
		AV	15.250	15.200	15.190	14.900	14.750	13.790	13.840	13.820
	2462	PK	17.530	17.580	17.610	19.730	19.770	21.790	21.760	21.830
		AV	12.600	12.540	12.530	13.150	13.020	11.980	12.030	12.030
ANT 2	2412	PK	17.440	17.410	17.410	19.510	19.460	21.320	21.470	21.570
		AV	12.210	12.170	12.160	12.810	12.680	11.780	11.840	11.820
	2437	PK	19.910	19.910	19.920	20.990	20.980	22.070	22.130	<b>22.140</b>
		AV	15.010	14.930	14.960	14.680	14.600	13.600	13.670	13.680
	2462	PK	22.030	17.420	17.360	19.640	19.630	21.410	21.540	21.600
		AV	12.440	12.260	12.260	12.940	12.870	11.730	11.810	11.800
Sum (ANT 1+2)	2412	PK	20.567	20.558	20.568	22.767	22.670	24.588	24.618	24.780
	2437	PK	22.976	23.002	23.135	24.061	24.149	25.192	25.257	<b>25.283</b>
	2462	PK	23.349	20.512	20.498	22.696	22.711	24.615	24.662	24.727

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for <u>802.11n(HT20)</u>							
			Data Rate [MCS]							
			0	1	2	3	4	5	6	7
ANT 1	2412	PK	16.820	16.770	18.930	18.880	21.020	20.750	20.830	20.920
		AV	11.420	11.340	11.970	12.000	11.050	11.080	11.090	11.060
	2437	PK	19.000	19.060	20.540	20.450	22.260	22.310	22.420	<b>22.460</b>
		AV	14.070	14.000	13.780	13.790	12.850	12.910	12.880	12.850
	2462	PK	16.730	16.640	18.860	18.750	21.080	20.800	20.910	20.890
		AV	11.450	11.370	11.970	12.010	11.090	11.120	11.090	11.090
ANT 2	2412	PK	16.550	16.550	18.620	18.560	20.670	20.520	20.930	20.640
		AV	11.120	11.060	11.720	11.740	10.910	10.920	10.930	10.890
	2437	PK	19.170	19.220	20.320	20.300	21.890	21.640	22.010	<b>22.080</b>
		AV	13.970	13.920	13.750	13.730	12.850	12.830	12.880	12.810
	2462	PK	16.410	16.390	18.630	18.560	21.020	20.510	21.140	20.660
		AV	11.180	11.120	11.830	11.810	10.860	10.870	10.900	10.850
Sum (ANT 1+2)	2412	PK	19.698	19.672	21.789	21.734	23.859	23.647	23.891	23.793
	2437	PK	22.097	22.152	23.442	23.386	25.090	24.999	25.231	<b>25.285</b>
	2462	PK	19.584	19.528	21.757	21.667	24.061	23.668	24.037	23.787

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for <u>802.11ac(VHT20)</u>								
			Data Rate [MCS]								
			0	1	2	3	4	5	6	7	8
ANT 1	2422	PK	16.810	16.780	18.910	18.890	20.750	20.910	21.170	20.970	21.240
		AV	11.420	11.340	12.010	11.990	11.060	11.080	11.100	11.050	11.090
	2437	PK	19.160	19.210	20.710	20.650	22.250	22.280	22.480	22.580	<b>22.690</b>
		AV	14.060	13.990	13.830	13.800	12.890	12.890	12.960	12.850	12.890
	2452	PK	16.750	16.640	18.840	18.770	20.810	20.910	21.060	21.250	21.260
		AV	11.440	11.380	12.020	12.020	11.090	11.120	11.140	11.080	11.140
ANT 2	2422	PK	16.540	16.560	18.540	18.570	20.620	20.700	20.770	20.540	20.890
		AV	11.140	11.050	11.710	11.720	10.910	10.890	10.940	10.890	10.910
	2437	PK	18.750	19.520	20.600	20.620	22.030	22.210	22.270	22.280	<b>22.290</b>
		AV	14.160	13.940	13.710	13.710	12.850	12.830	12.860	12.800	12.830
	2452	PK	16.380	16.370	18.600	18.540	20.580	20.470	20.710	20.890	20.910
		AV	11.210	11.120	11.780	11.780	10.850	10.840	10.910	10.850	10.880
Sum (ANT 1+2)	2412	PK	19.688	19.682	21.740	21.744	23.696	23.817	23.985	23.771	24.079
	2437	PK	21.971	22.379	23.666	23.646	25.152	25.256	25.387	25.443	<b>25.505</b>
	2462	PK	19.580	19.518	21.732	21.667	23.707	23.706	23.899	24.085	24.099

**Multiple transmitting SDM**

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for <u>802.11n(HT20)</u>							
			Data Rate [MCS]							
			8	9	10	11	12	13	14	15
ANT 1	2412	PK	16.750	16.730	18.730	18.880	20.860	20.690	20.910	20.860
		AV	11.380	11.490	11.950	11.970	11.040	11.020	11.020	11.050
	2437	PK	19.090	19.090	20.240	20.480	21.770	22.200	22.360	<b>22.450</b>
		AV	13.960	14.130	13.710	13.790	12.760	12.890	12.760	12.810
	2462	PK	16.690	16.650	18.620	18.900	20.560	20.440	20.740	20.760
		AV	11.410	11.520	11.960	12.030	11.140	11.110	11.020	11.060
ANT 2	2412	PK	16.410	16.430	18.260	18.390	20.150	20.080	20.290	20.280
		AV	11.130	11.090	11.640	11.710	10.810	10.840	10.800	10.760
	2437	PK	19.150	19.080	20.180	20.230	21.460	21.690	21.820	<b>22.040</b>
		AV	14.030	13.950	13.710	13.720	12.740	12.730	12.740	12.650
	2462	PK	16.340	16.350	18.460	18.510	20.050	20.330	20.280	20.300
		AV	11.190	11.130	11.730	11.790	10.730	10.790	10.760	10.670
Sum (ANT 1+2)	2412	PK	19.594	19.593	21.512	21.653	23.530	23.407	23.622	23.590
	2437	PK	22.131	22.096	23.221	23.368	24.629	24.963	25.109	<b>25.261</b>
	2462	PK	19.529	19.513	21.552	21.720	23.323	23.396	23.527	23.547

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for <u>802.11ac(VHT20)</u>								
			Data Rate [MCS]								
			0	1	2	3	4	5	6	7	8
ANT 1	2422	PK	16.820	16.730	18.810	18.940	20.730	20.660	21.060	21.050	21.080
		AV	11.390	11.460	11.940	11.980	11.000	11.020	11.040	11.020	11.030
	2437	PK	19.100	19.190	20.420	20.490	22.050	22.330	22.250	22.320	<b>22.470</b>
		AV	14.030	14.140	13.770	13.690	12.830	12.910	12.890	12.920	12.900
	2452	PK	16.750	16.730	18.690	18.910	20.260	20.730	21.900	20.780	20.820
		AV	11.410	11.560	12.010	12.020	11.030	11.100	11.100	11.020	11.120
ANT 2	2422	PK	16.410	16.400	18.220	18.410	20.180	19.600	20.220	19.690	20.060
		AV	11.070	11.070	11.650	11.730	10.760	10.830	10.750	10.820	10.810
	2437	PK	19.090	19.140	20.060	20.200	21.630	21.430	21.750	21.770	<b>21.840</b>
		AV	13.990	13.950	13.680	13.770	12.700	12.810	12.670	12.800	12.710
	2452	PK	16.350	16.310	18.460	18.490	20.110	20.200	20.250	19.500	20.330
		AV	11.150	11.110	11.770	11.820	10.720	10.720	10.690	10.770	10.770
Sum (ANT 1+2)	2412	PK	19.631	19.579	21.536	21.694	23.475	23.173	23.671	23.434	23.611
	2437	PK	22.106	22.176	23.255	23.358	24.856	24.914	25.018	25.065	<b>25.177</b>
	2462	PK	19.565	19.536	21.587	21.716	23.196	23.484	24.164	23.198	23.593



### 8.3 Maximum power spectral density

#### ■ Test requirements and limit, §15.247(e)

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.

#### ■ Test Configuration:

Refer to the APPENDIX I.

#### ■ Test Procedure

Method PKPSD of KDB558074 D01V04 is used.

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 kHz ≤ RBW ≤ 100 kHz**
4. Set the VBW ≥ **3 x 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.

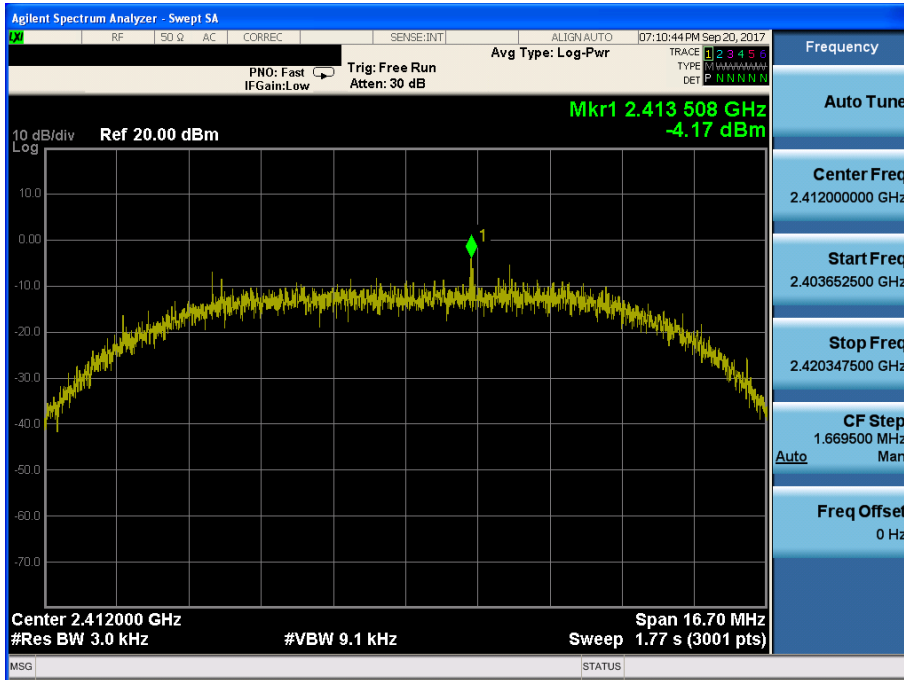
#### ■ Test Results: **Comply**

Test Mode	Frequency	RBW	PKPSD [dBm]		
			ANT 1	ANT 2	SUM (ANT 1 + ANT 2)
TM 5	Lowest	3 kHz	-4.170	-7.650	-2.561
	Middle	3 kHz	-7.850	-6.660	-4.205
	Highest	3 kHz	-6.820	-7.090	-3.943
TM 6	Lowest	3 kHz	-13.130	-13.080	-10.095
	Middle	3 kHz	-11.060	-11.120	-8.080
	Highest	3 kHz	-12.440	-13.040	-9.720
TM 7	Lowest	3 kHz	-13.740	-13.880	-10.800
	Middle	3 kHz	-11.130	-11.890	-8.484
	Highest	3 kHz	-13.230	-13.640	-10.420
TM 8	Lowest	3 kHz	-12.310	-13.890	-10.019
	Middle	3 kHz	-10.750	-10.610	-7.670
	Highest	3 kHz	-13.240	-14.040	-10.612
TM 9	Lowest	3 kHz	-13.750	-13.860	-10.795
	Middle	3 kHz	-11.830	-11.040	-8.407
	Highest	3 kHz	-13.530	-13.070	-10.284
TM 10	Lowest	3 kHz	-14.340	-13.150	-10.695
	Middle	3 kHz	-12.070	-10.880	-8.425
	Highest	3 kHz	-14.250	-13.120	-10.639

RESULT PLOTS

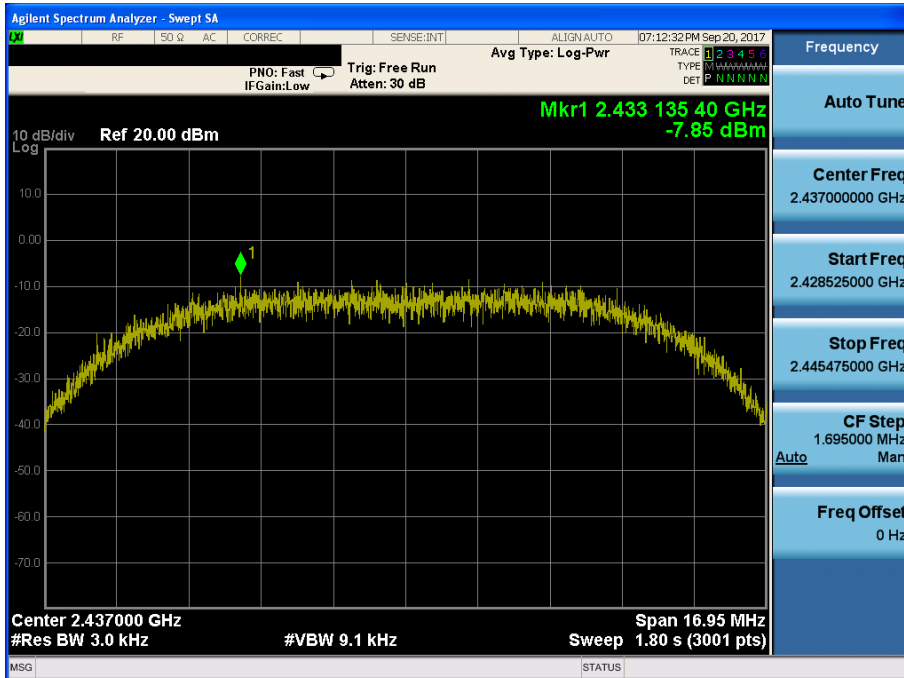
Maximum PPSD

TM 5 & ANT 1 & Lowest



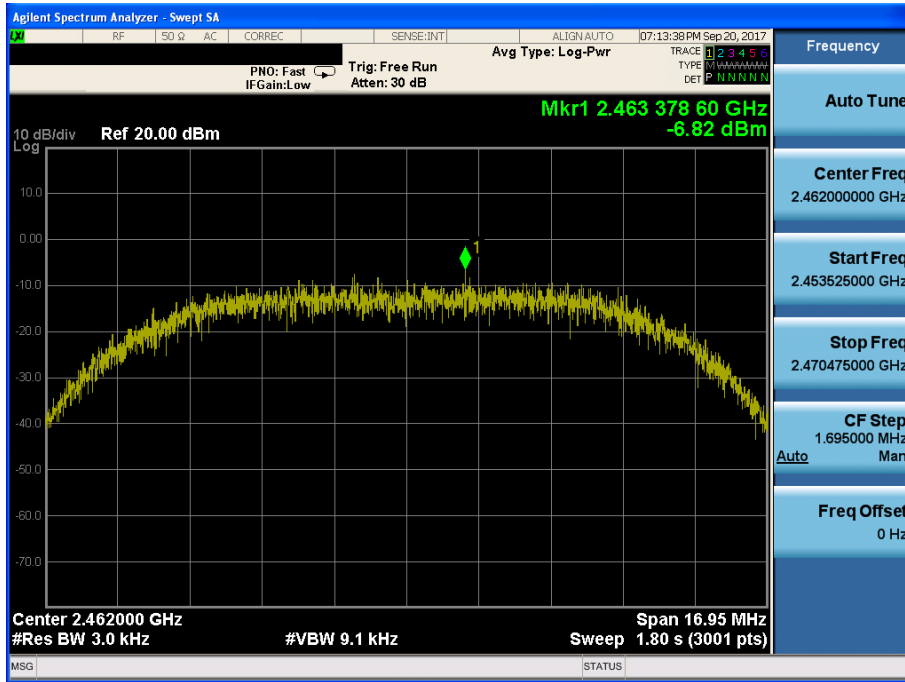
Maximum PPSD

TM 5 & ANT 1 & Middle



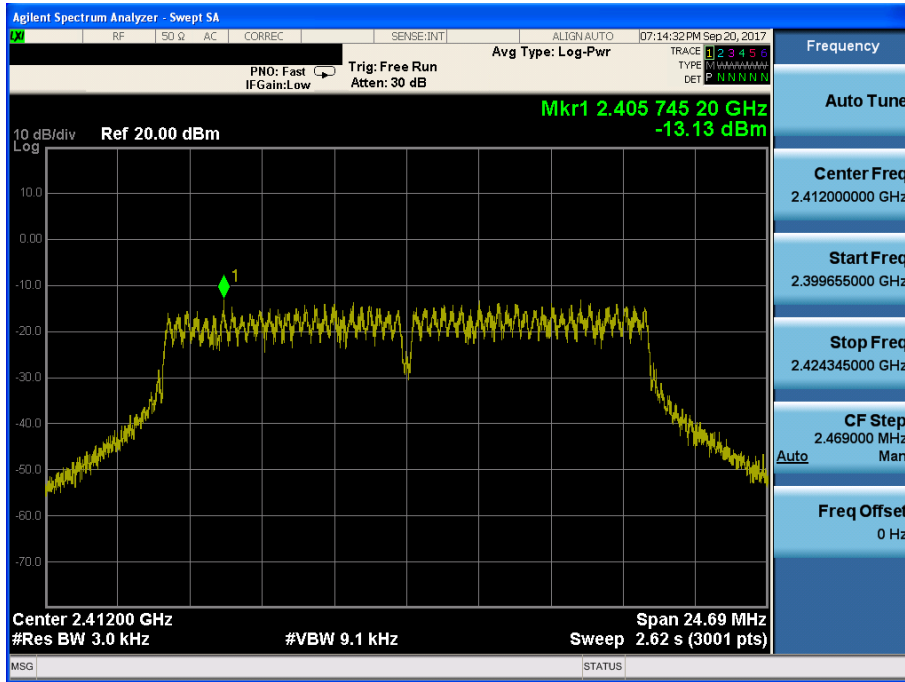
Maximum PPSD

TM 5 & ANT 1 & Highest



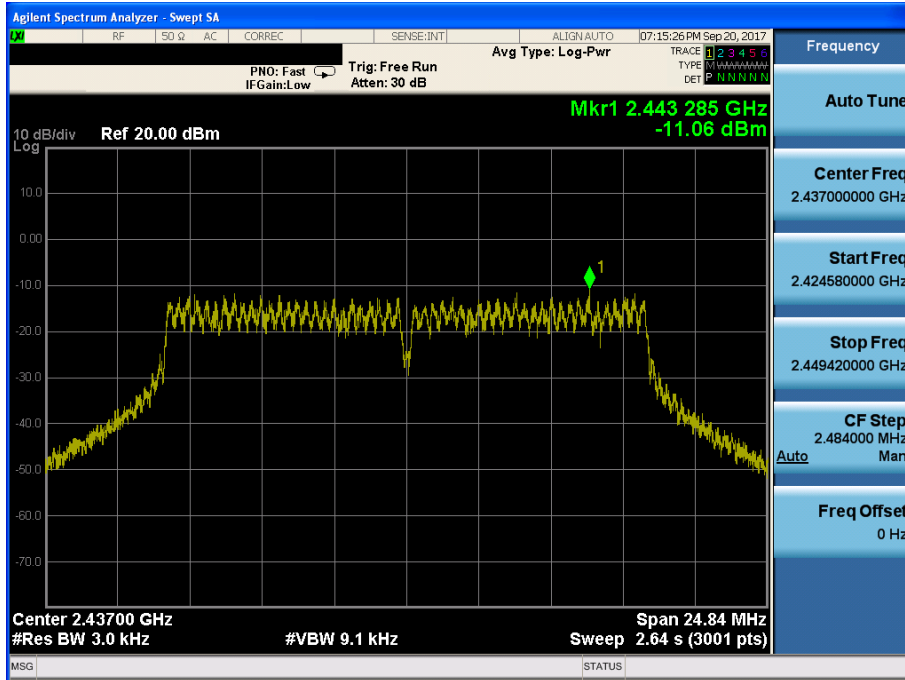
Maximum PPSD

TM 6 & ANT 1 & Lowest



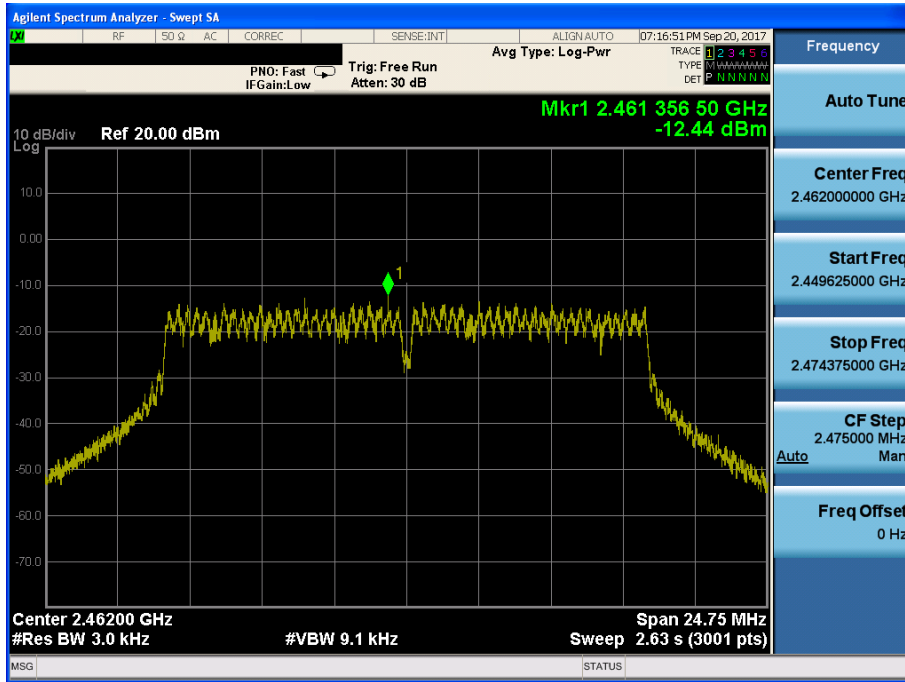
Maximum PPSD

TM 6 & ANT 1 & Middle



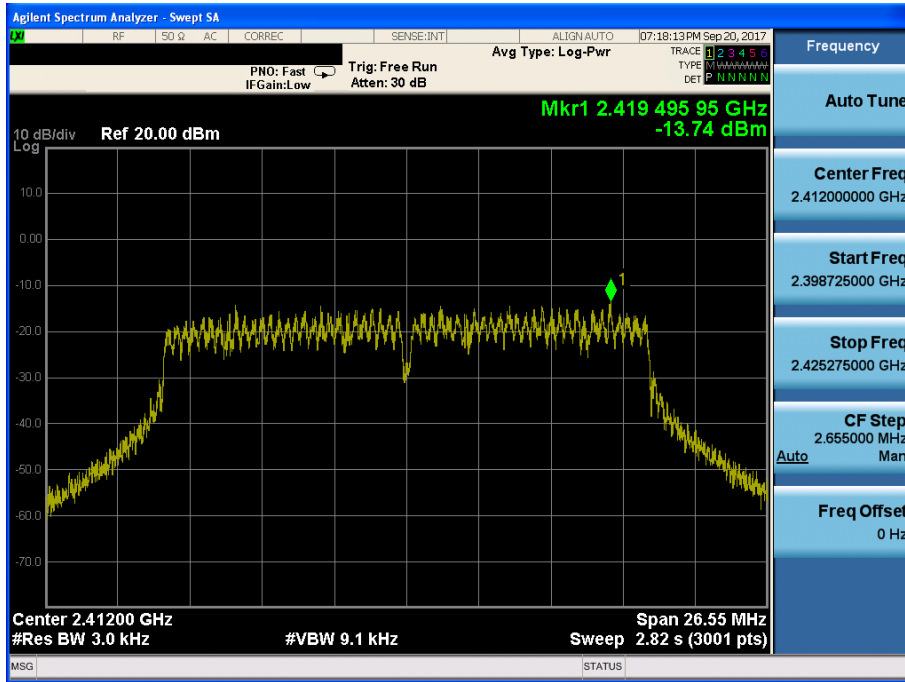
Maximum PPSD

TM 6 & ANT 1 & Highest



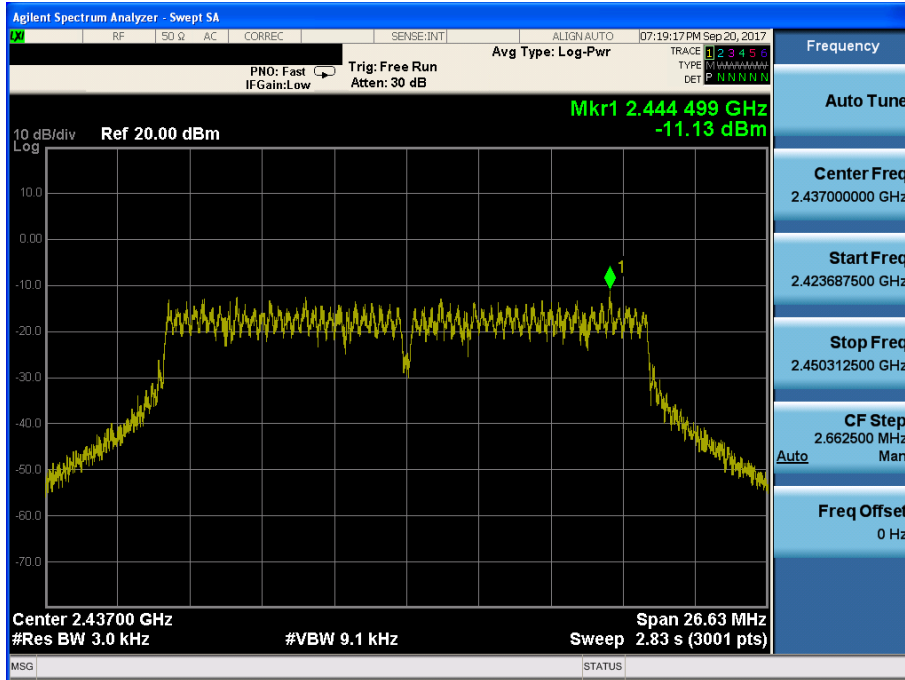
Maximum PPSD

TM 7 & ANT 1 & Lowest



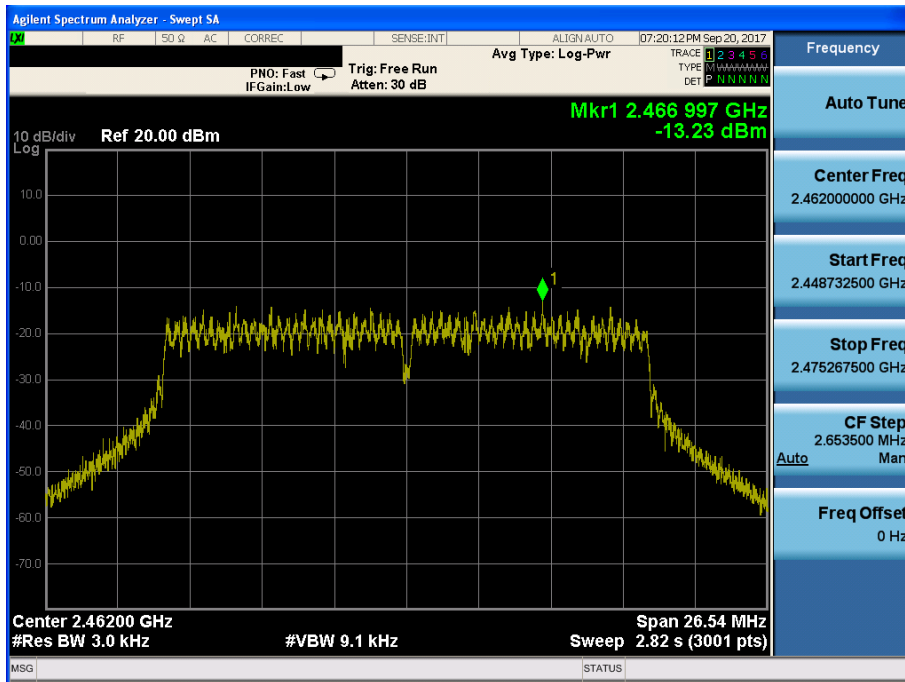
Maximum PPSD

TM 7 & ANT 1 & Middle



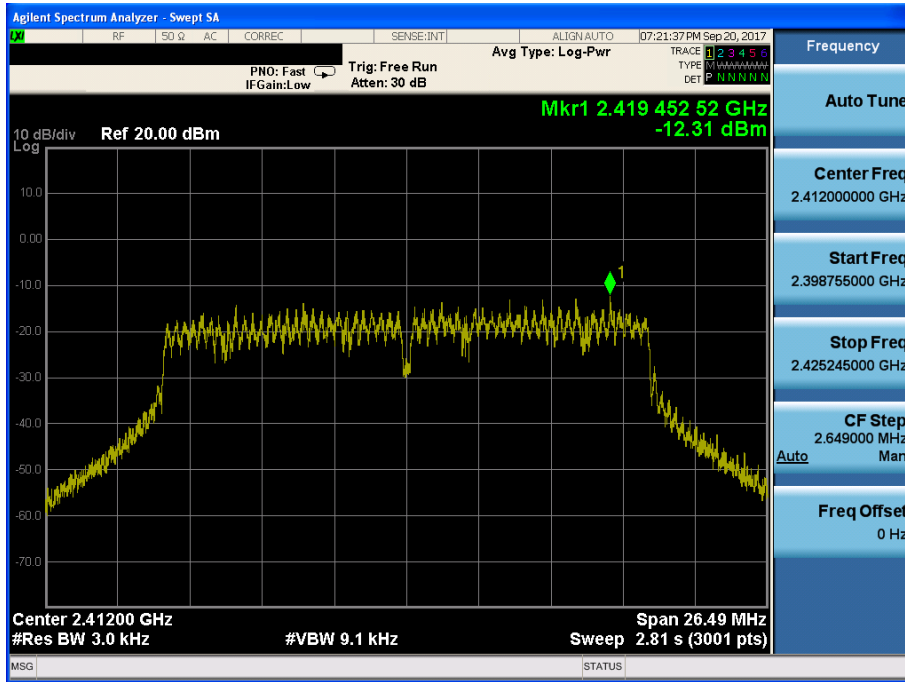
Maximum PPSD

TM 7 & ANT 1 & Highest



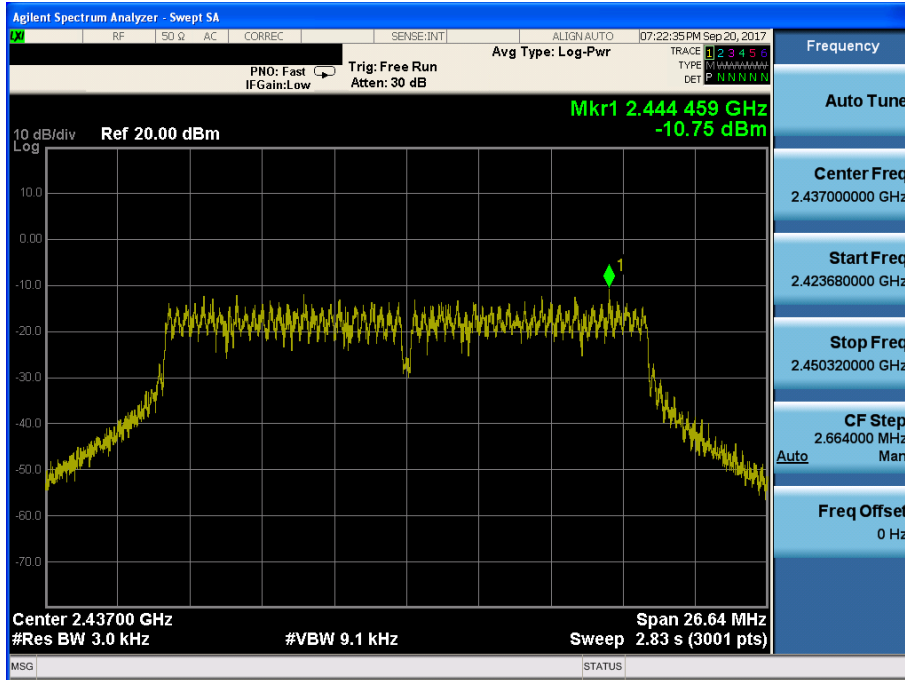
Maximum PPSD

TM 8 & ANT 1 & Lowest



Maximum PPSD

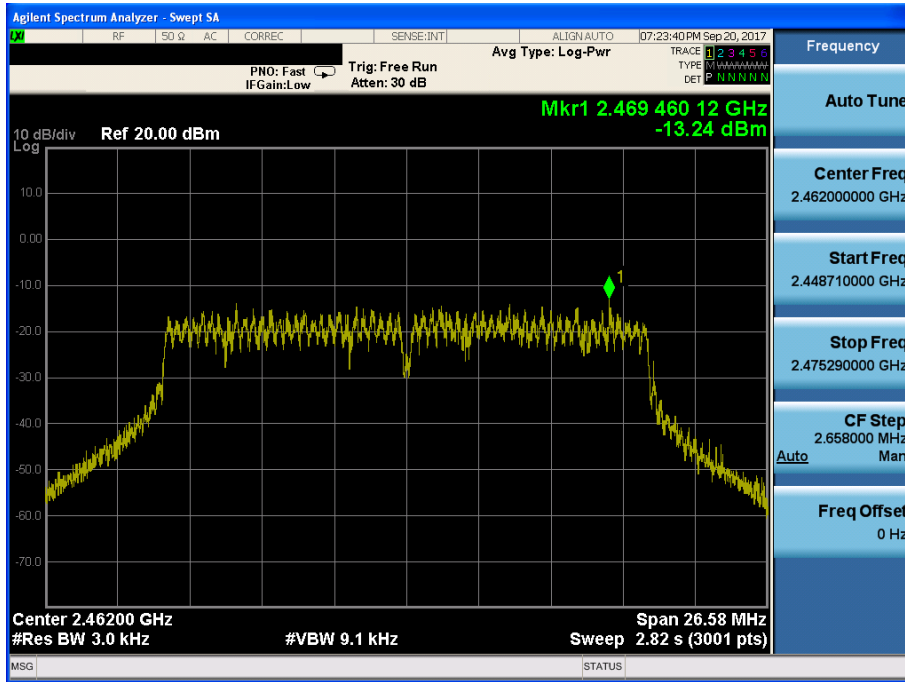
TM 8 & ANT 1 & Middle





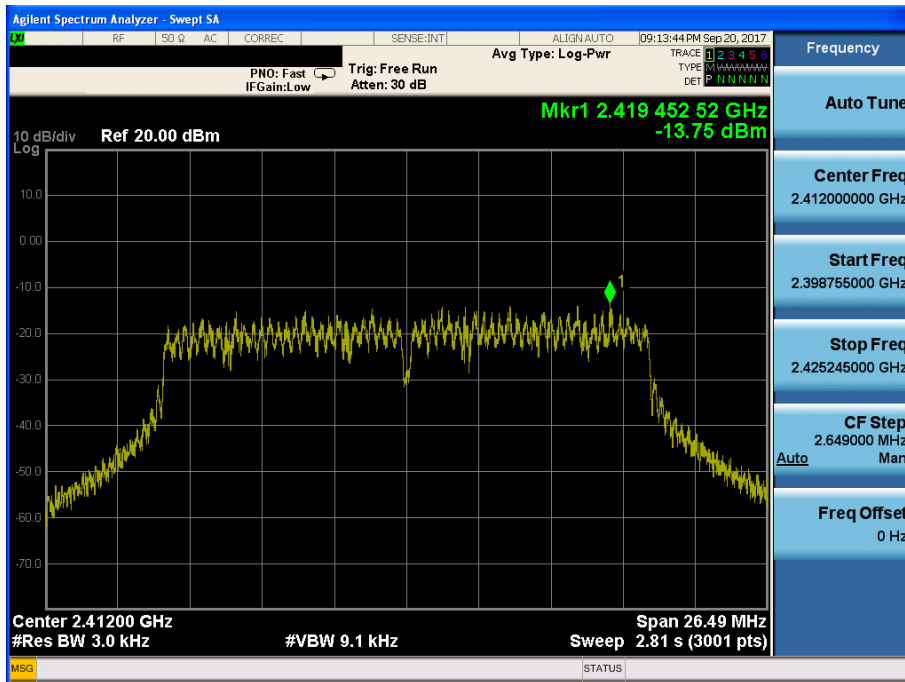
Maximum PPSD

TM 8 & ANT 1 & Highest



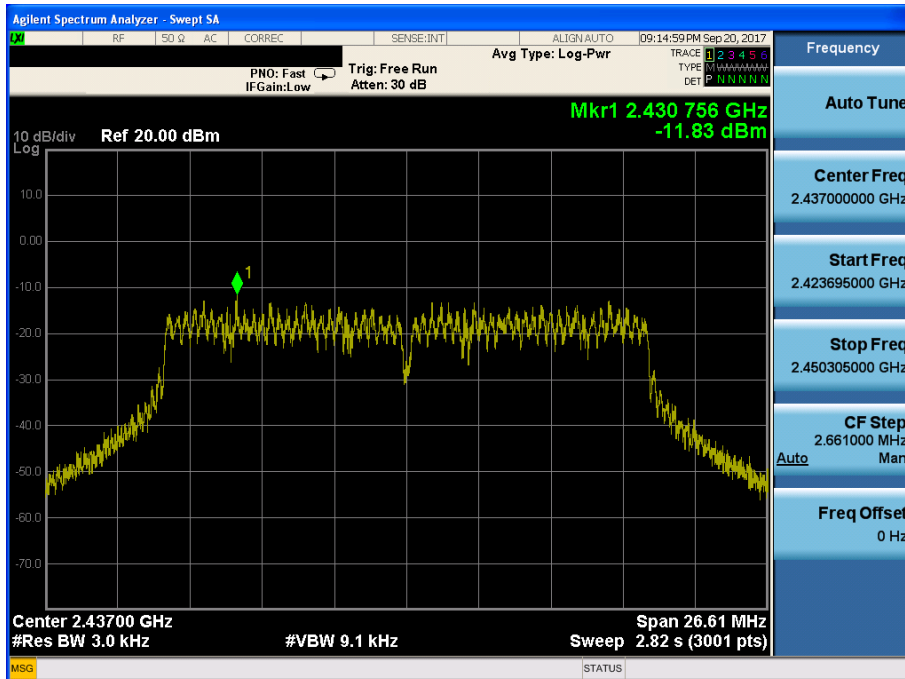
Maximum PPSD

TM 9 & ANT 1 & Lowest



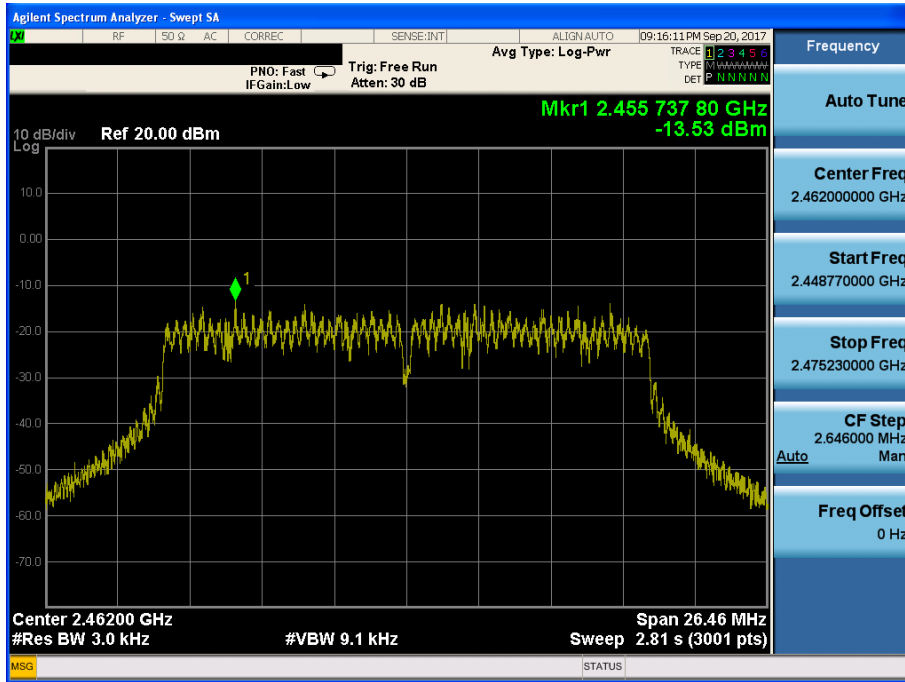
Maximum PPSD

TM 9 & ANT 1 & Middle



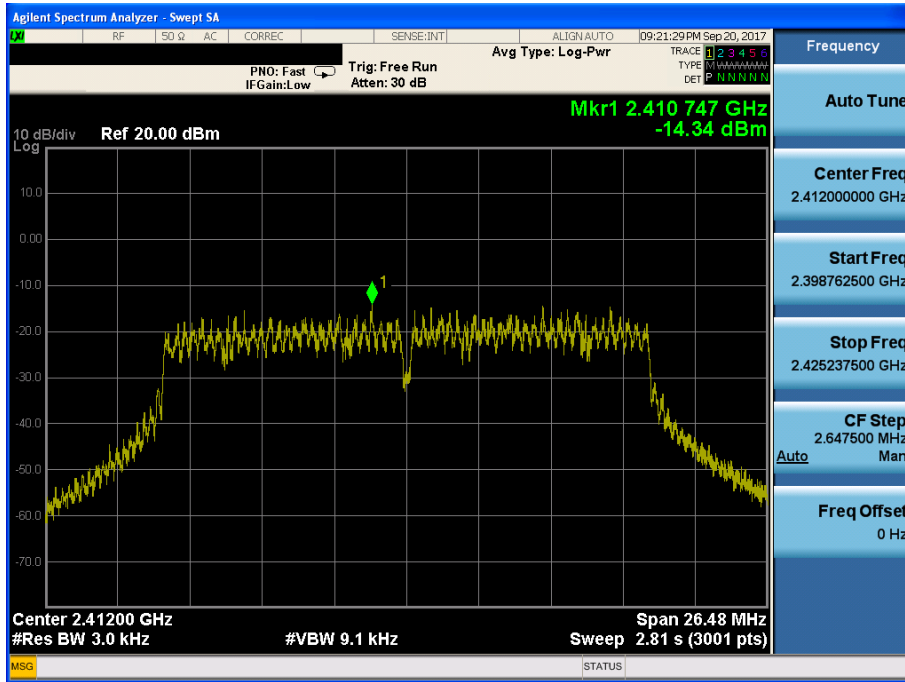
Maximum PPSD

TM 9 & ANT 1 & Highest



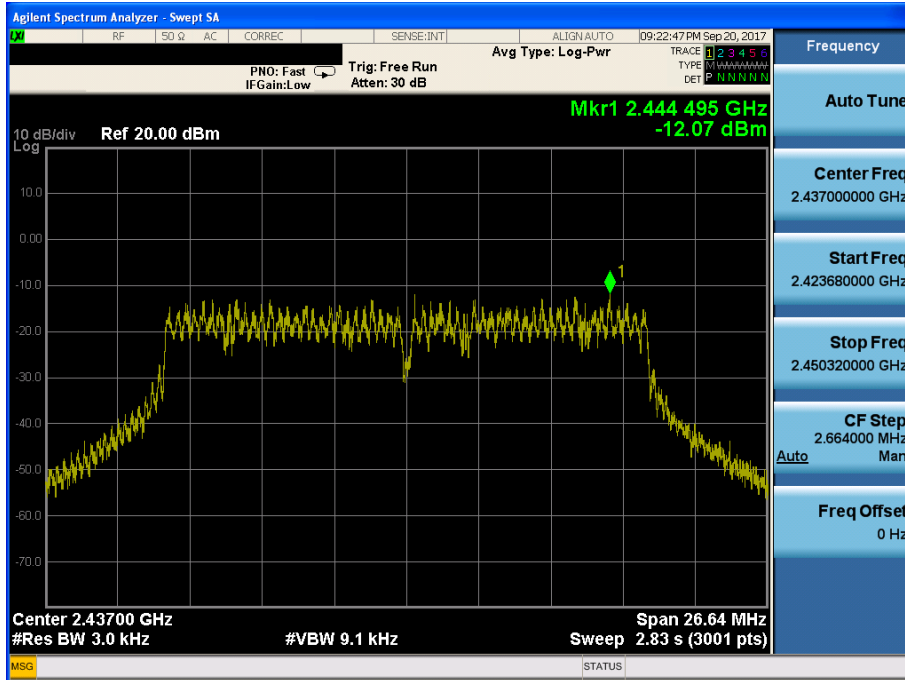
Maximum PPSD

TM 10 & ANT 1 & Lowest



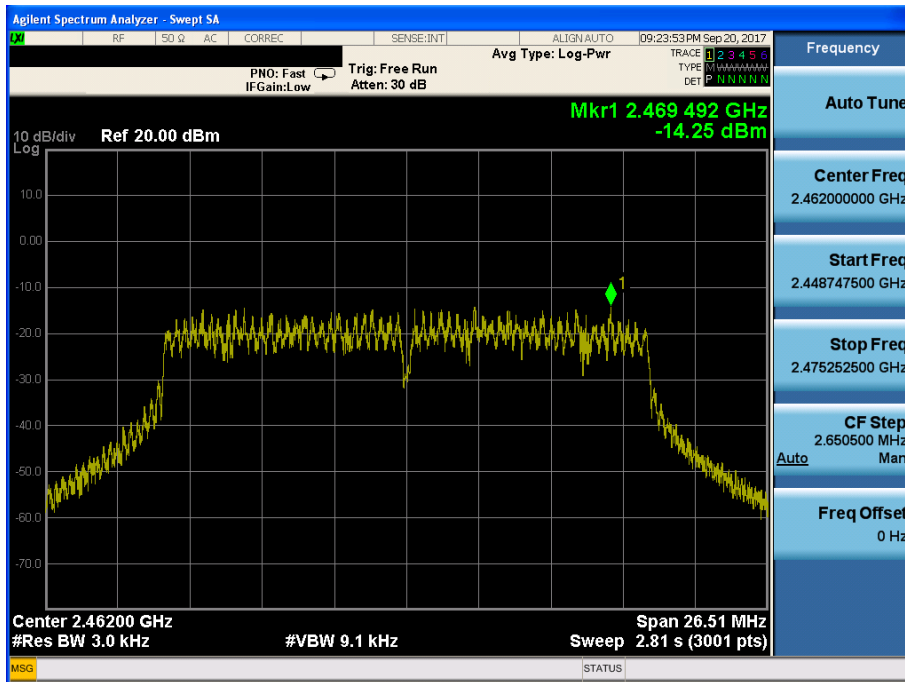
Maximum PPSD

TM 10 & ANT 1 & Middle



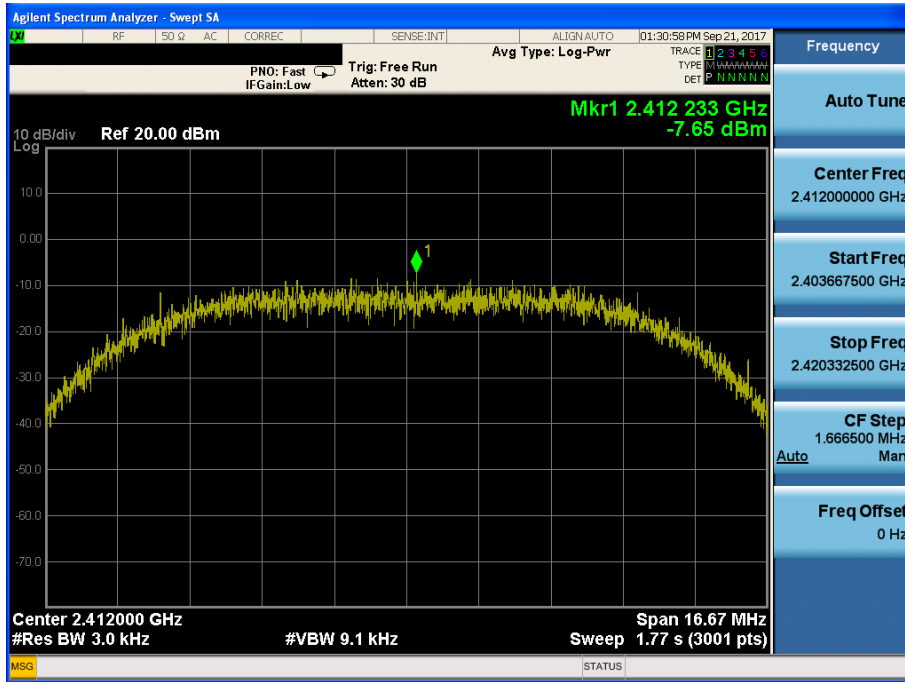
Maximum PPSD

TM 10 & ANT 1 & Highest



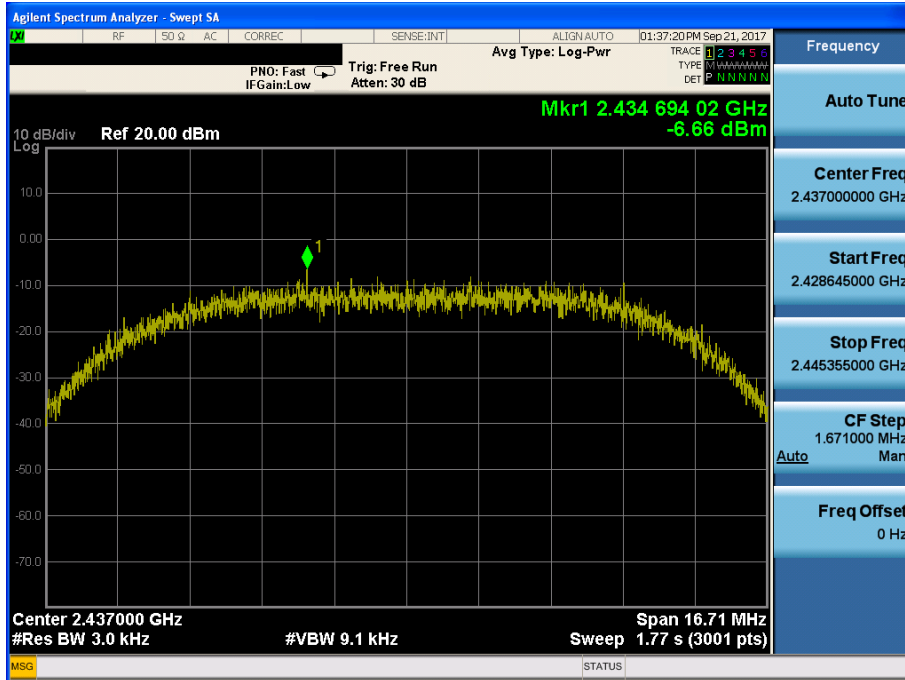
Maximum PPSD

TM 5 & ANT 2 & Lowest



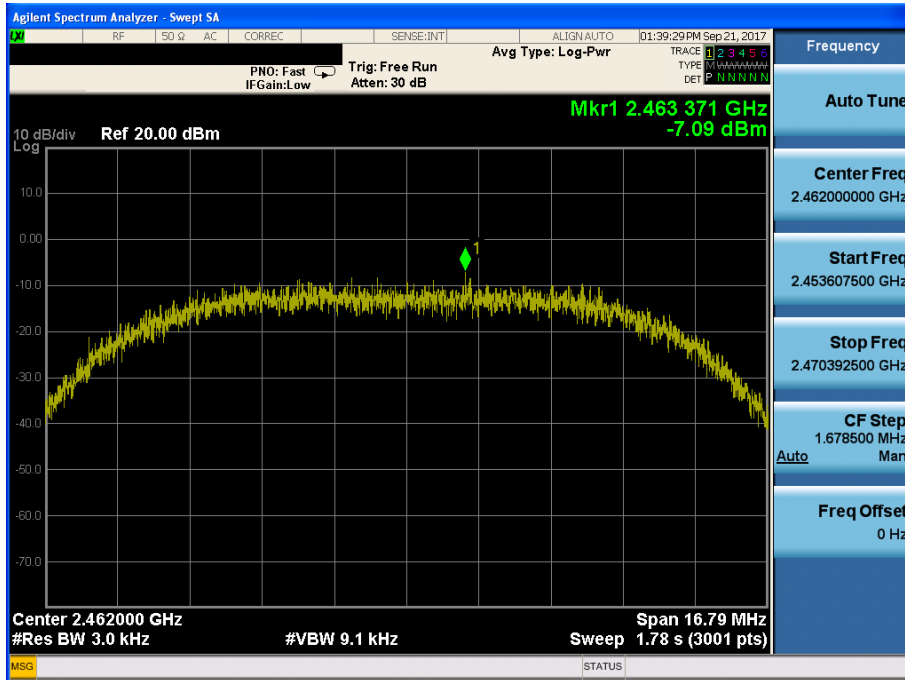
Maximum PPSD

TM 5 & ANT 2 & Middle



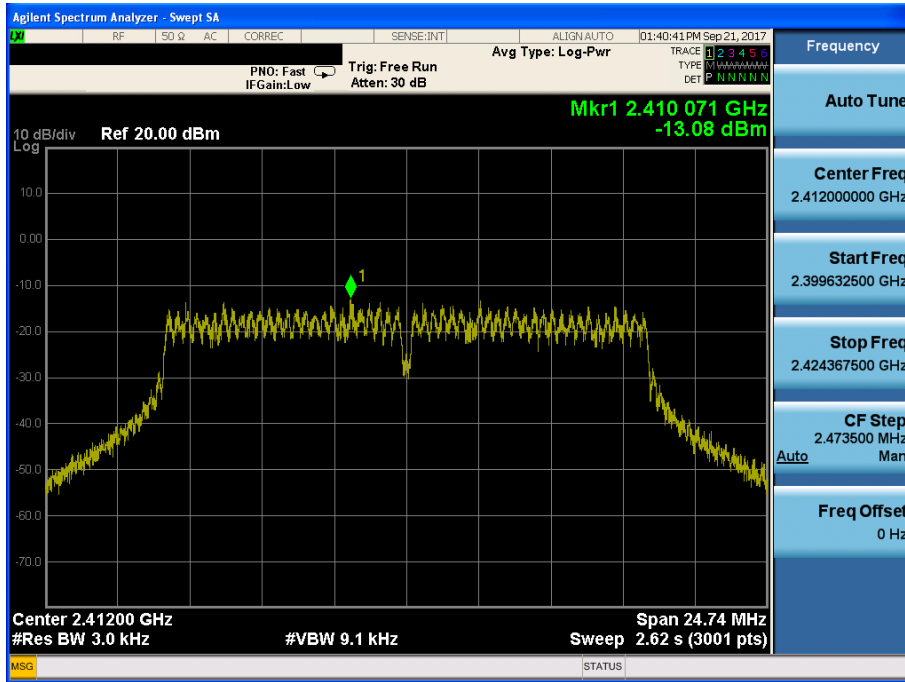
Maximum PPSD

TM 5 & ANT 2 & Highest



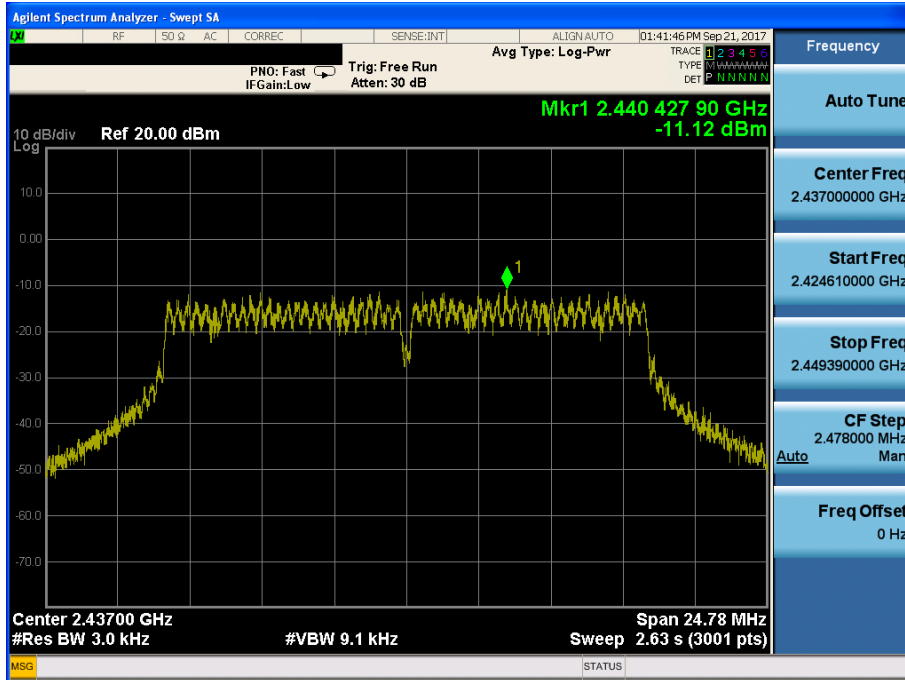
Maximum PPSD

TM 6 & ANT 2 & Lowest



Maximum PPSD

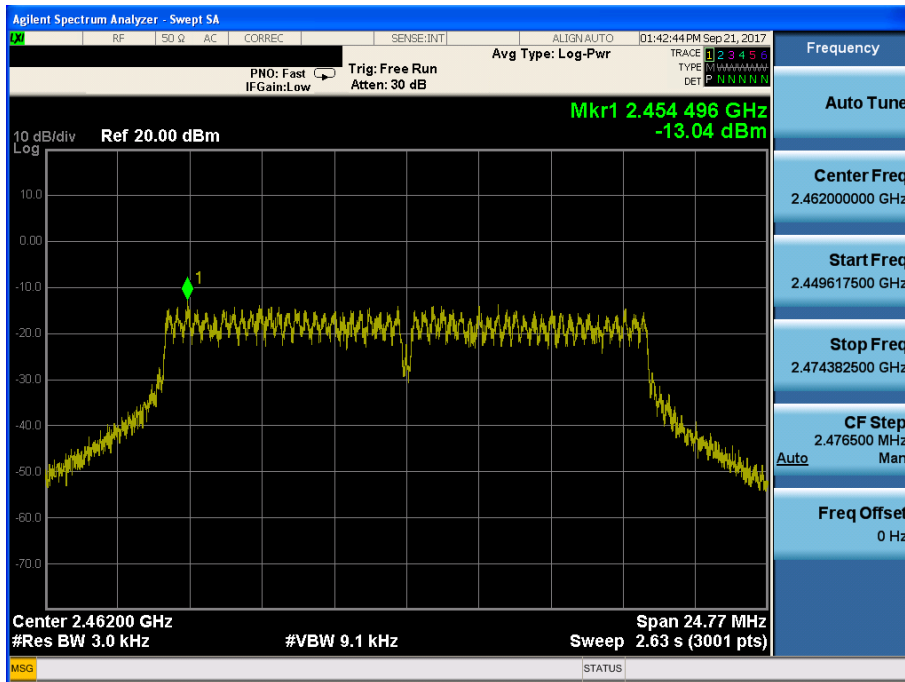
TM 6 & ANT 2 & Middle





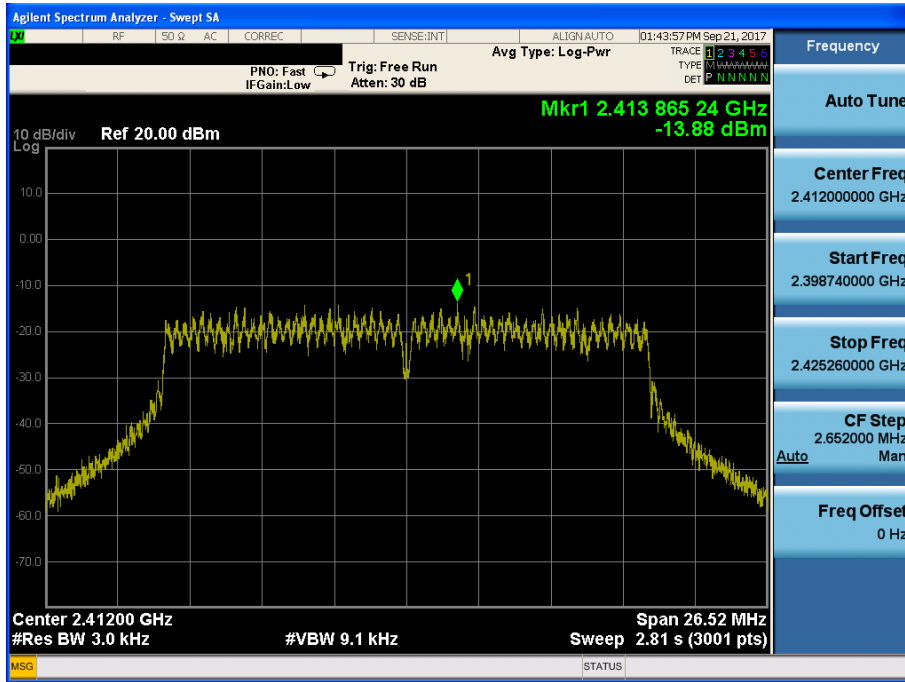
Maximum PPSD

TM 6 & ANT 2 & Highest



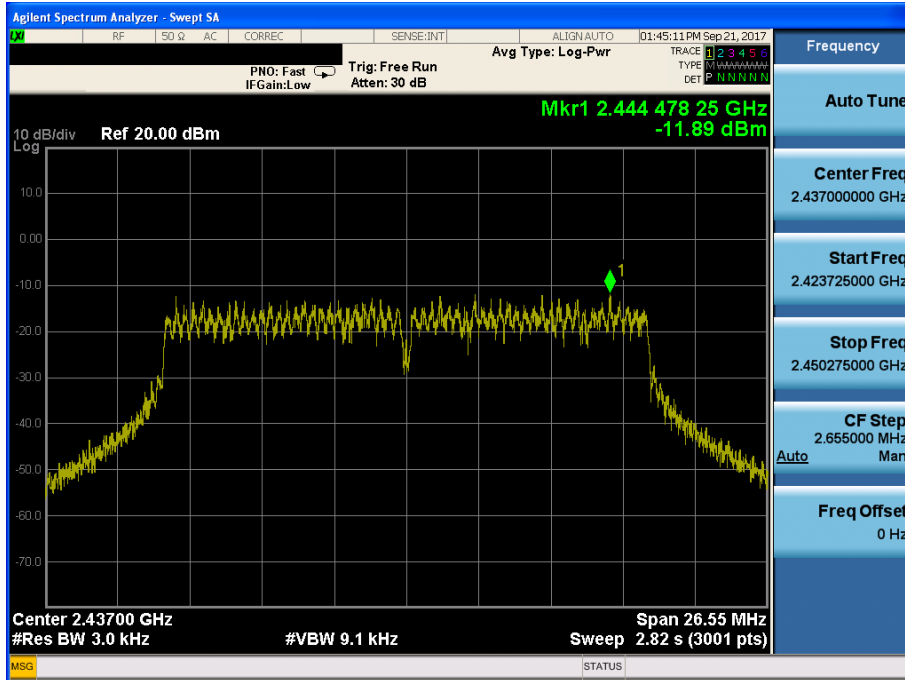
Maximum PPSD

TM 7 & ANT 2 & Lowest



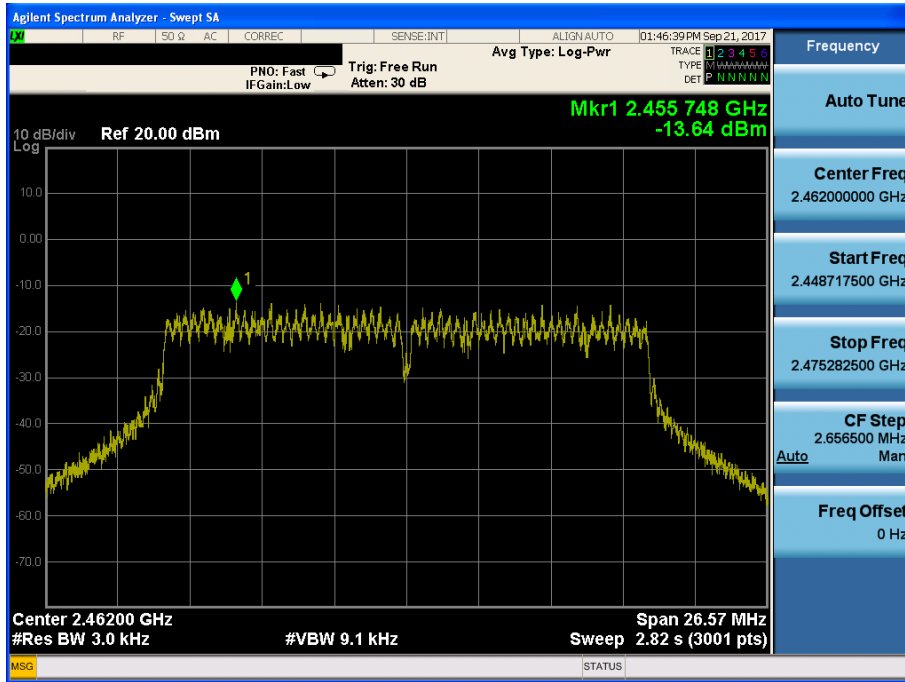
Maximum PPSD

TM 7 & ANT 2 & Middle



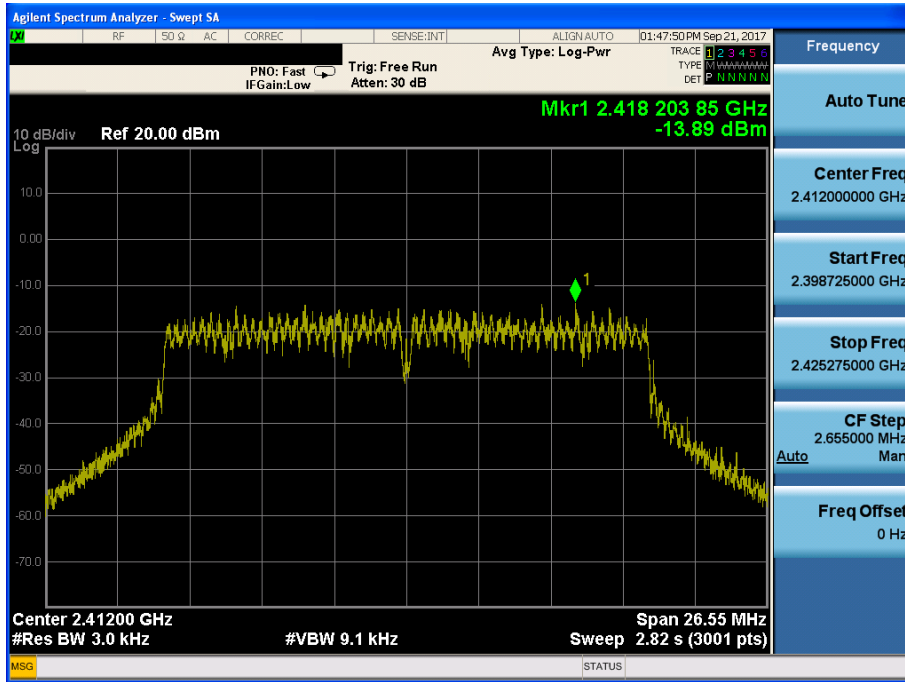
Maximum PPSD

TM 7 & ANT 2 & Highest



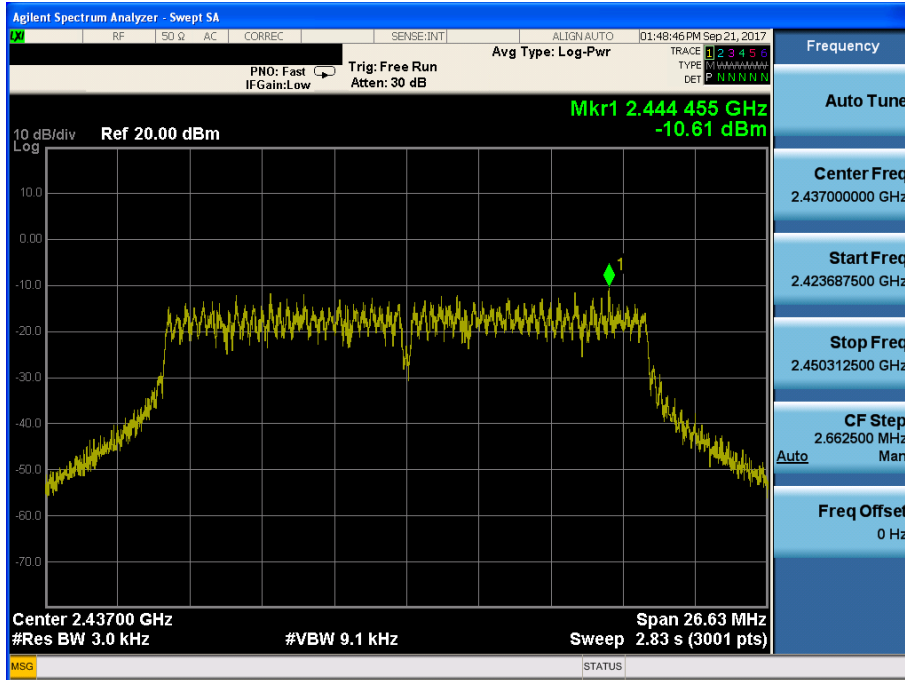
Maximum PPSD

TM 8 & ANT 2 & Lowest



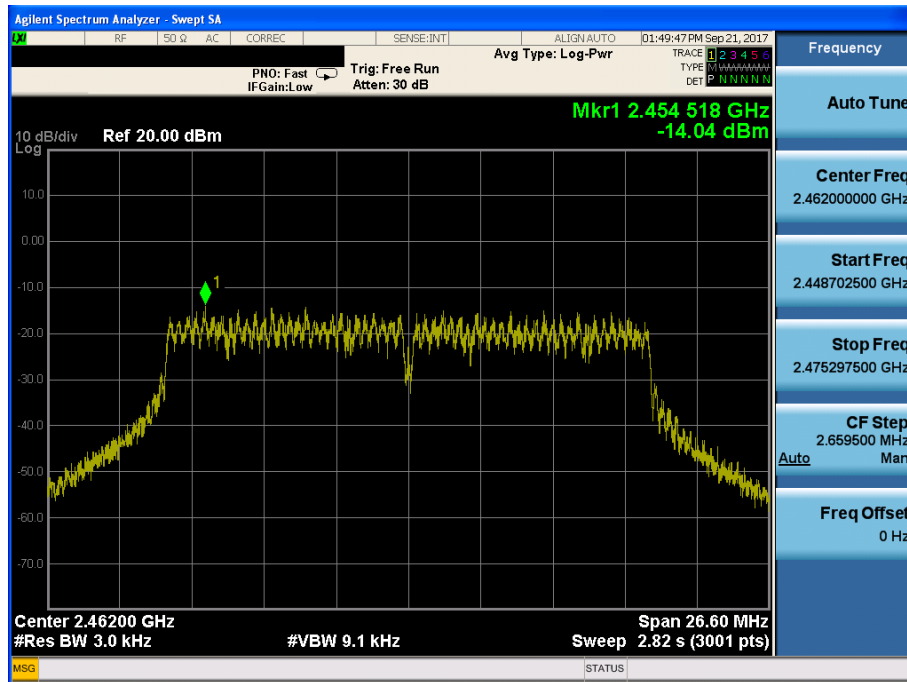
Maximum PPSD

TM 8 & ANT 2 & Middle



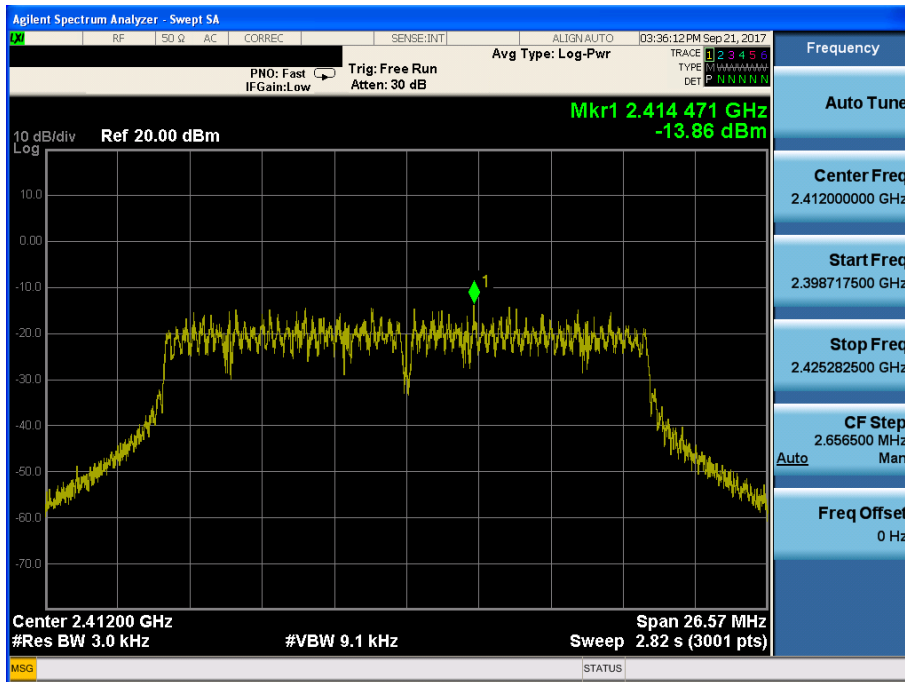
Maximum PPSD

TM 8 & ANT 2 & Highest



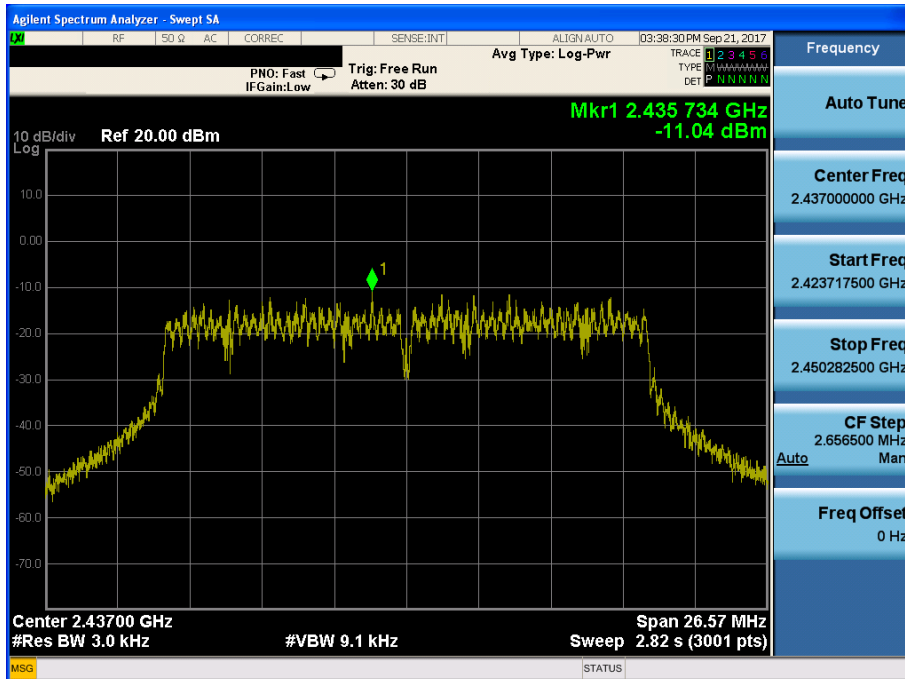
Maximum PPSD

TM 9 & ANT 2 & Lowest



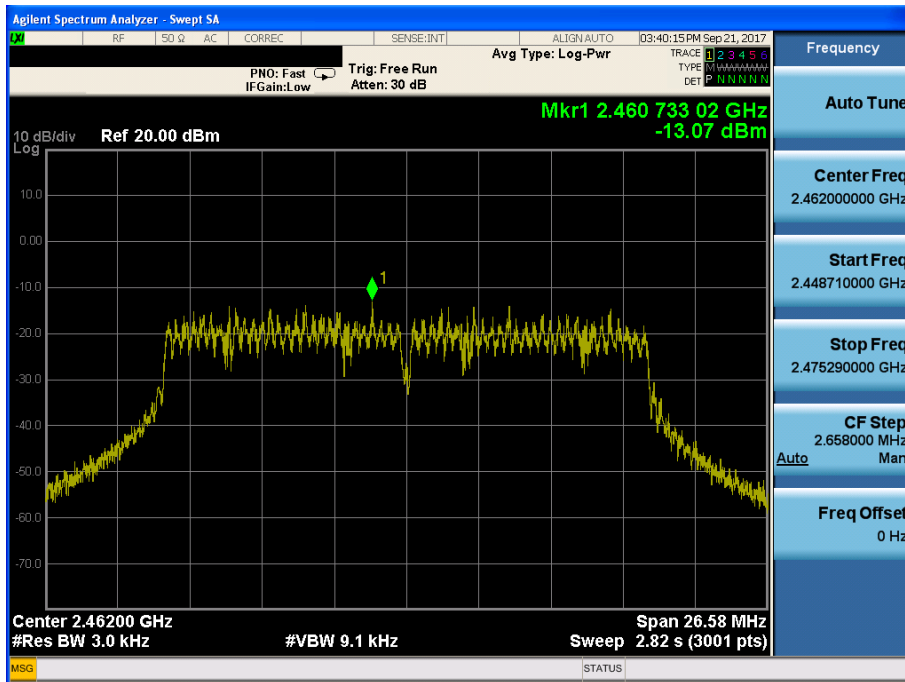
Maximum PPSD

TM 9 & ANT 2 & Middle



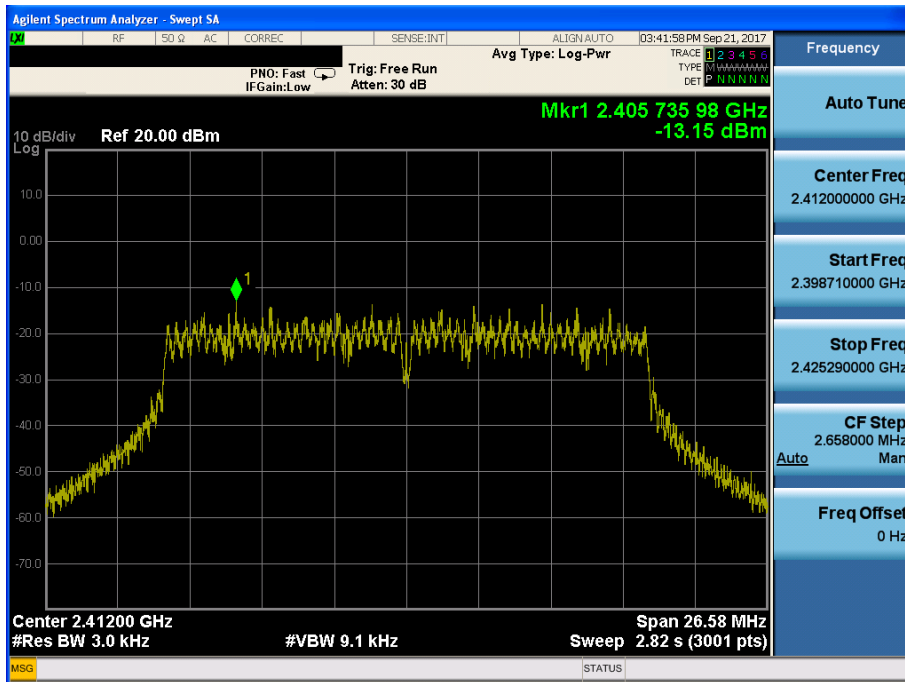
Maximum PPSD

TM 9 & ANT 2 & Highest



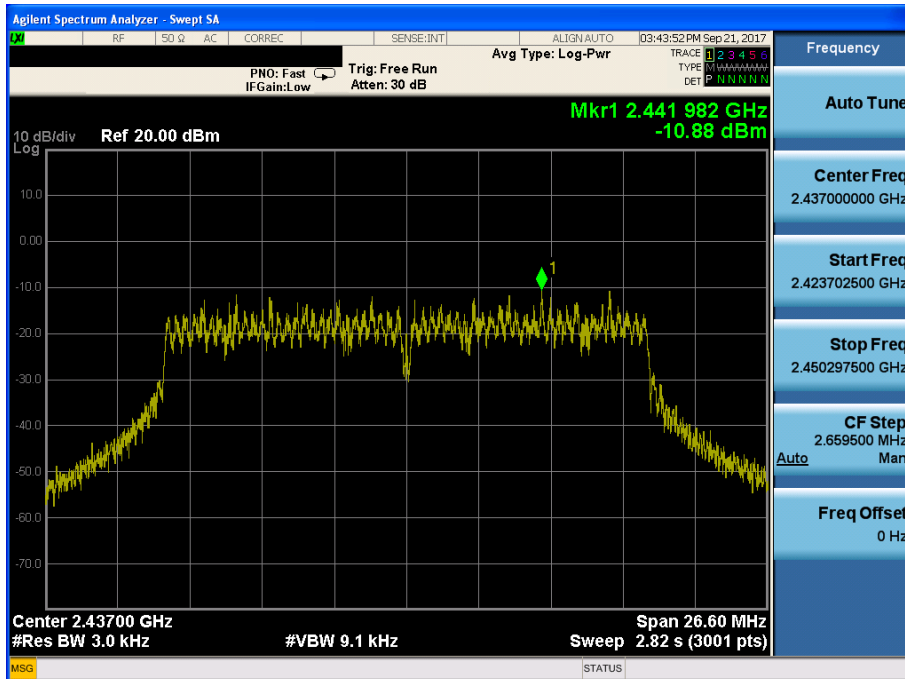
Maximum PPSD

TM 10 & ANT 2 & Lowest



Maximum PPSD

TM 10 & ANT 2 & Middle





Maximum PPSD

TM 10 & ANT 2 & Highest

