TEST REPORT

Dt&C

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1. Report No : DRTFCC1704-0062
2. Customer
   - Name : DRTECH Corporation
   - Address : Suite No.2, 3 Floor, 29, Dunchon-daero 541beon-gil Seongnam-si, Gyeonggi-do, Republic of Korea
3. Use of Report : FCC Original Grant
4. Product Name / Model Name : Flat Panel Digital X-ray Detector / EVS 2430Wi
   FCC ID : RNH-EVS2430WI
5. Test Method Used : KDB 558074, ANSI C63.10-2013
   Test Specification : FCC Part 15 Subpart C.247
6. Date of Test : 2016.12.26 ~ 2017.02.10
7. Testing Environment : See appended test report.
8. Test Result : Refer to the attached test result.

Affirmation	Tested by Name : JungWoo Kim (Signature)	Technical Manager Name : HyunSu Son (Signature)

. The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

2017 . 04 . 24 .

DT&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

Test Report Version

Test Report No.	Date	Description
DRTFCC1704-0062	Apr. 24, 2017	Initial issue

Table of Contents

1. EUT DESCRIPTION

FCC Equipment Class	Digital Transmission System(DTS)
Product	Flat Panel Digital X-ray Detector
Model Name	EVS 2430Wi
Add Model Name	EVS 2430GWi
Software version	0.0.07
Hardware version	EVS_2430W V0.1
Serial Number	Identical prototype
Power Supply	DC 7.4 V
Frequency Range	▪ 802.11b/g/n(20 MHz) : 2412 MHz ~ 2462 MHz ▪ 802.11n(40 MHz) : 2422 MHz ~ 2452 MHz
Modulation Type	▪ 802.11b/g: CCK, DSSS ▪ 802.11n: OFDM
Transmissions category	Completely uncorrelated signal
Antenna Specification	**Antenna type**: Internal Antenna **Antenna gain** ▪ 2.4 GHz Band: ANT 1 : -5.50 dBi & ANT 2 : -5.50 dBi **Antenna configuration** ▪ 802.11b/g: Single Transmitting (ANT 1 or ANT 2) ▪ 802.11n(MCS 0 ~ 7): Single Transmitting (ANT 1 or ANT 2) ▪ 802.11n(MCS 8 ~ 15): Multiple Transmitting (ANT 1 and ANT 2)

2. INFORMATION ABOUT TESTING

2.1 Test mode

Test mode	Worst case data rate	Tested Frequency(MHz)		
		Lowest	Middle	Highest
TM 1	802.11b 1 Mbps	2412	2437	2462
TM 2	802.11g 6 Mbps	2412	2437	2462
TM 3	802.11n(HT20) MCS 8	2412	2437	2462
TM 4	802.11n(HT40) MCS 8	2422	2437	2452

Note 1: The worst case data rate is determined as above test mode according to the power measurements. And radiated spurious emission was performed at the worst case data rate.

2.2 Auxiliary equipment

Equipment	Model No.	Serial No.	Manufacturer	Note
Notebook	Compaq 6530b	CNU8313PMW	HP	-
-	-	-	-	-

2.3 Tested environment

Temperature	:	22 ~ 25 °C
Relative humidity content	:	42 ~ 48 % R.H..
Details of power supply	:	DC 7.4 V

2.4 EMI suppression Device(s) / Modifications

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

2.5 Measurement Uncertainty

Test items	Measurement uncertainty
Transmitter Output Power	0.71 dB (The confidence level is about 95 %, k = 2)
Conducted spurious emission	0.94 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	RSS Std.	Parameter	Limit	Test Condition	Status Note 1
15.247(a)	RSS-247 [5.2]	6 dB Bandwidth	> 500 kHz	Conducted	C
15.247(b)	RSS-247 [5.4]	Transmitter Output Power	< 1 Watt		C
15.247(d)	RSS-247 [5.5]	Out of Band Emissions / Band Edge	20 dBc in any 100 kHz BW		C
15.247(e)	RSS-247 [5.2]	Transmitter Power Spectral Density	< 8 dBm/3 kHz		C
-	RSS-Gen [6.6]	Occupied Bandwidth (99 %)	RSS-Gen(6.6)		NA
15.247(d) 15.205 15.209	RSS-247 [5.5] RSS-GEN [8.9] RSS-GEN [8.10]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	FCC 15.209 limits	Radiated	C Note 2
15.207	RSS-Gen [8.8]	AC Line Conducted Emissions	FCC 15.207 limits	AC Line Conducted	C
15.203	-	Antenna Requirements	FCC 15.203	-	C

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.

4. TEST METHODOLOGY

Generally the tests were performed according to the KDB558074 v04, KDB662911 D01 v02r01 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 KDB 558074. So this test was fulfilled with the requirements in Section 6.2 of ANSI C63.10.

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 KDB 558074. 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 KDB 558074.

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 equipments, which is traceable to recognized national standards.

6. FACILITIES AND ACCREDITATIONS

6.1 Facilities

The open area test site(OATS) or semi anechoic chamber and conducted measurement facility used to collect the radiated and conducted test data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 449-935. The site is constructed in conformance with the requirements.

- Semi anechoic chamber registration Number: 165783

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 internal antennas of this EUT are permanently attached using the unique connectors. Therefore this module complies with the requirement of §15.203.

7.2 Directional antenna gain(worst case):

Bands	ANT 1 [dBi]	ANT 2 [dBi]	Directional Gain [dBi]
2.4 GHz	-3.60	-5.50	-4.447 Note 2.

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

$$10 \log [(10^{G_1/20} + 10^{G_2/20} + \ldots + 10^{G_N/20})^2 / N^{ANT}] \text{ dBi}$$

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

$$10 \log [(10^{G_1/10} + 10^{G_2/10} + \ldots + 10^{G_N/10}) / N^{ANT}] \text{ dBi}$$

Note 3. Directional gain(spatial multiplexing)

$$G_{ANT\,MAX} + 10 \log (N_{ANT} / N_{SS}) \text{ dBi}$$

8. TEST RESULT

8.1 6dB bandwidth

▣ Test Requirements and limit, §15.247(a) & RSS-247 [5.2]

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**

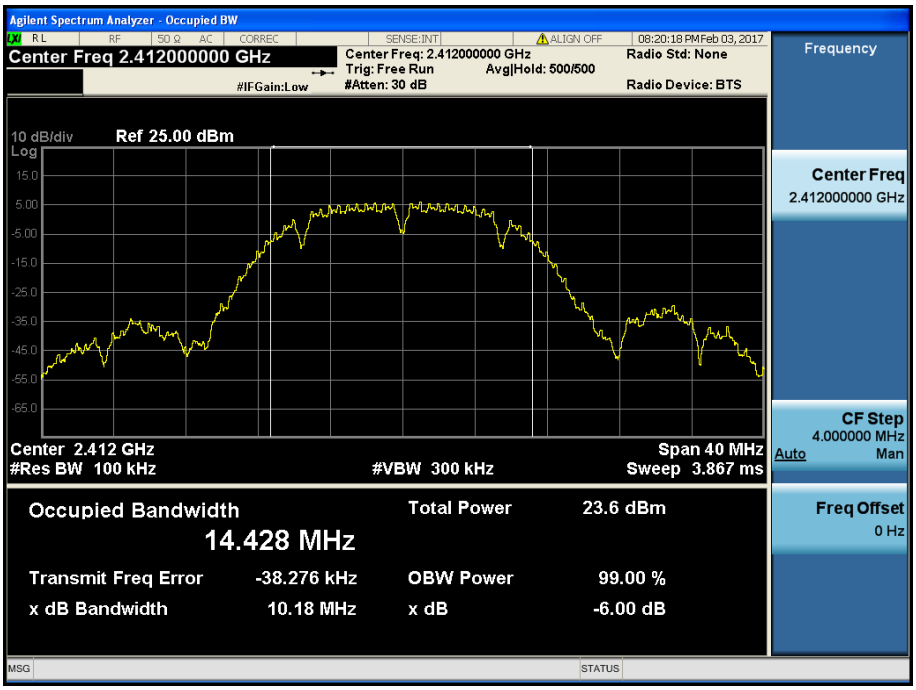
1. Set resolution bandwidth (RBW) = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
   (RBW : 100 kHz / VBW : 300 kHz)
3. Detector = **Peak**.
4. Trace mode = **Max hold**.
5. Sweep = **Auto couple**.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained 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

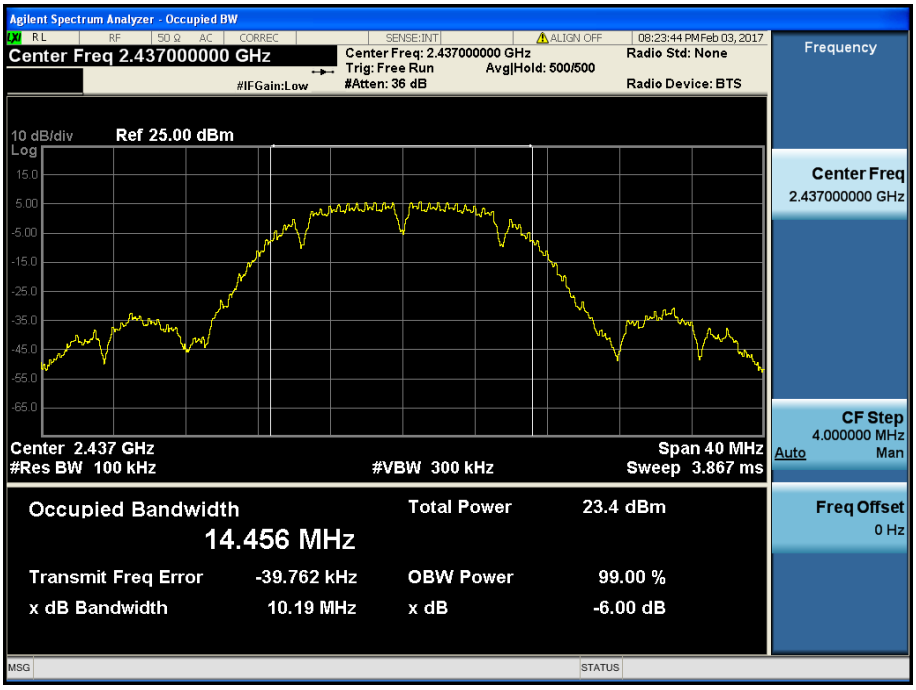
Test Mode	Frequency	Test Results[MHz]	
		ANT 1	ANT 2
TM 1	Lowest	10.180	11.080
	Middle	10.190	10.180
	Highest	11.130	12.070
TM 2	Lowest	15.950	16.290
	Middle	16.290	16.080
	Highest	16.090	15.930
TM 3	Lowest	16.350	16.130
	Middle	16.380	16.550
	Highest	16.400	16.330
TM 4	Lowest	35.240	35.260
	Middle	35.240	35.240
	Highest	35.240	35.250

▣ RESULT PLOTS

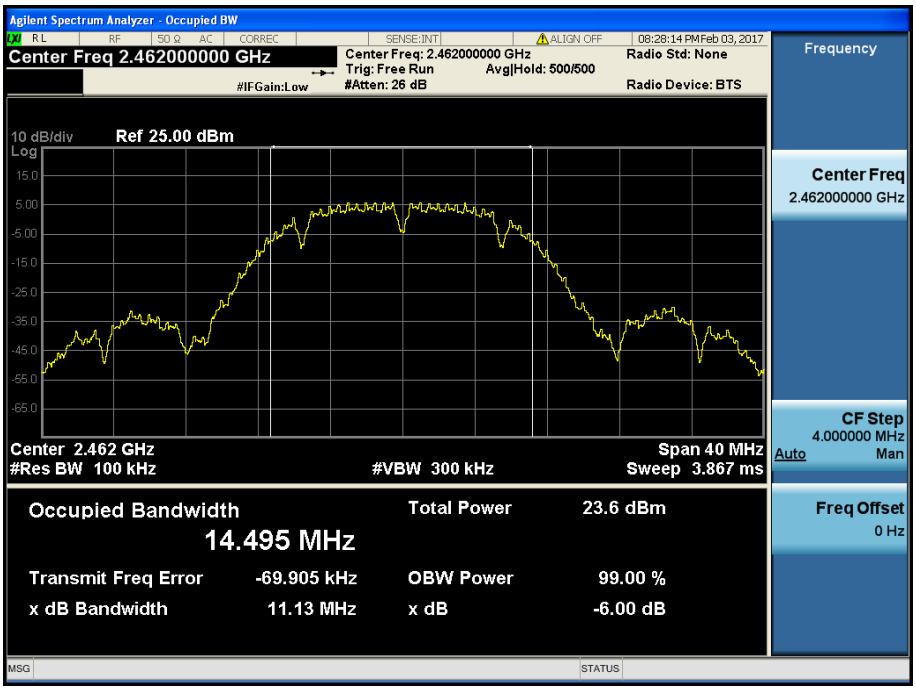
6 dB Bandwidth TM 1 & ANT 1 & Lowest



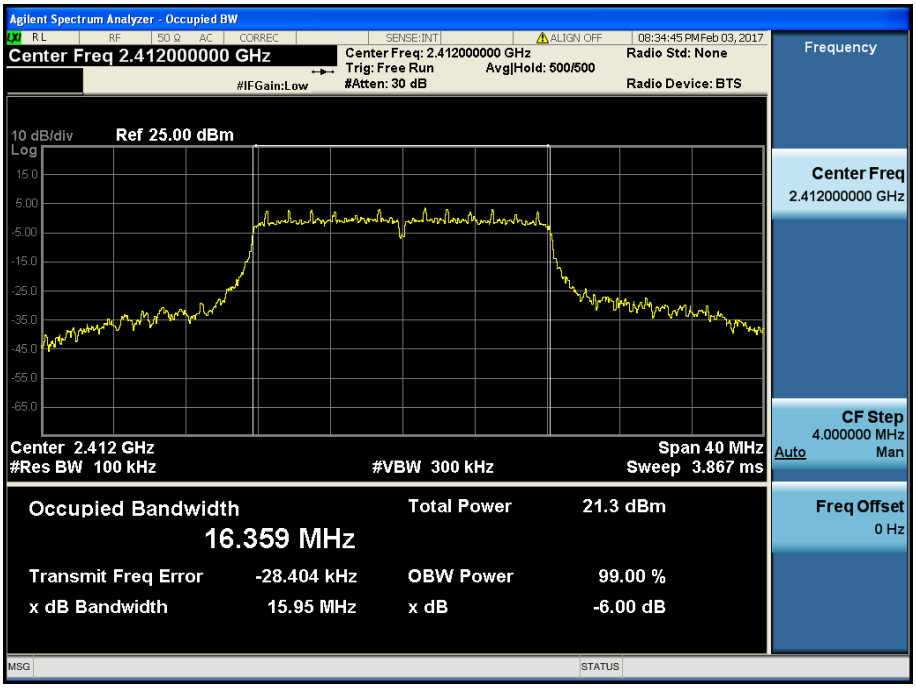
6 dB Bandwidth TM 1 & ANT 1 & Middle



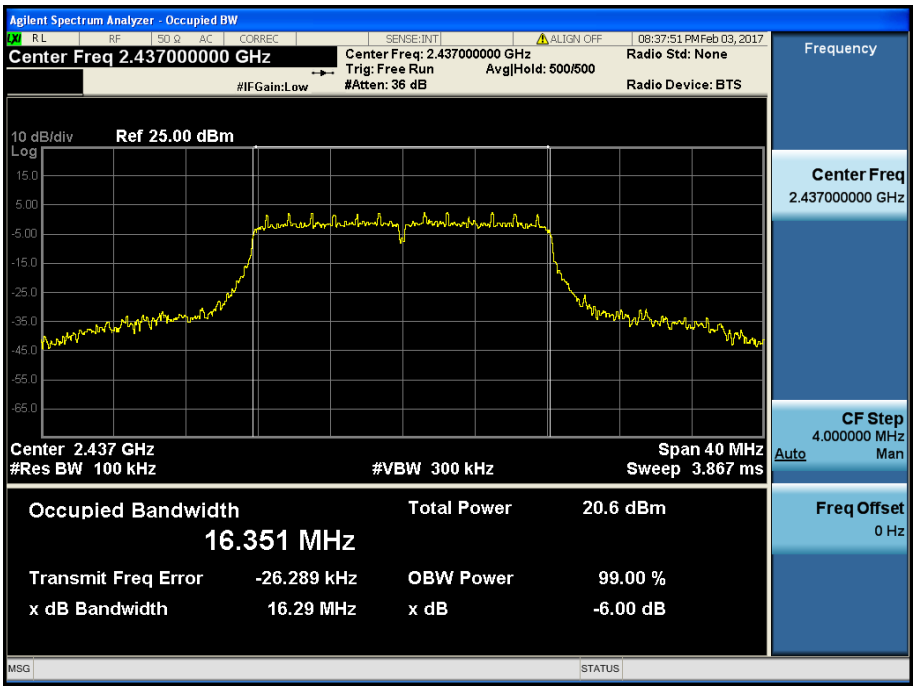
6 dB Bandwidth **TM 1 & ANT 1 & Highest**



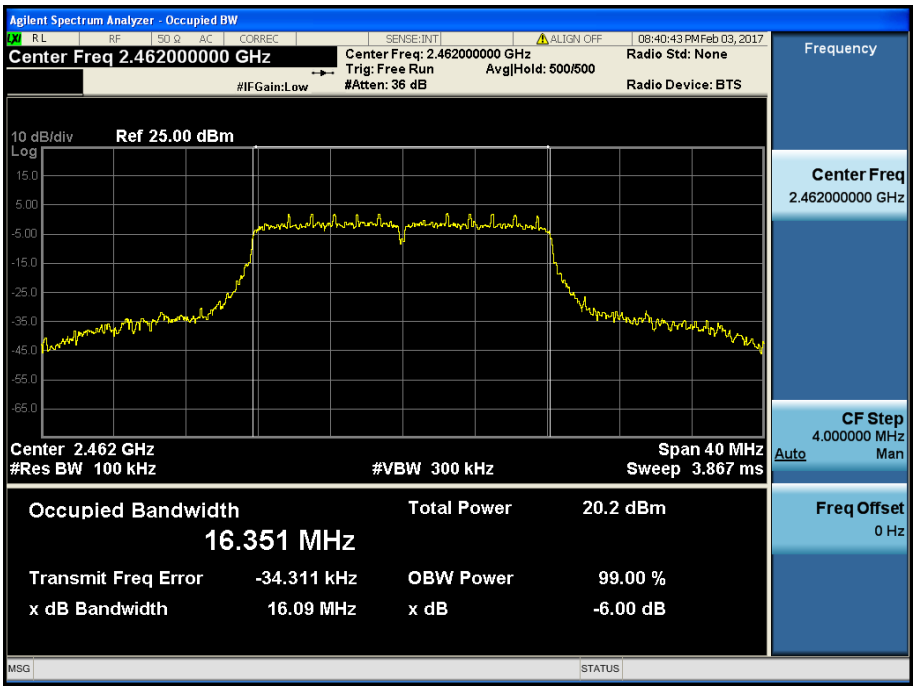
6 dB Bandwidth TM 2 & ANT 1 & Lowest



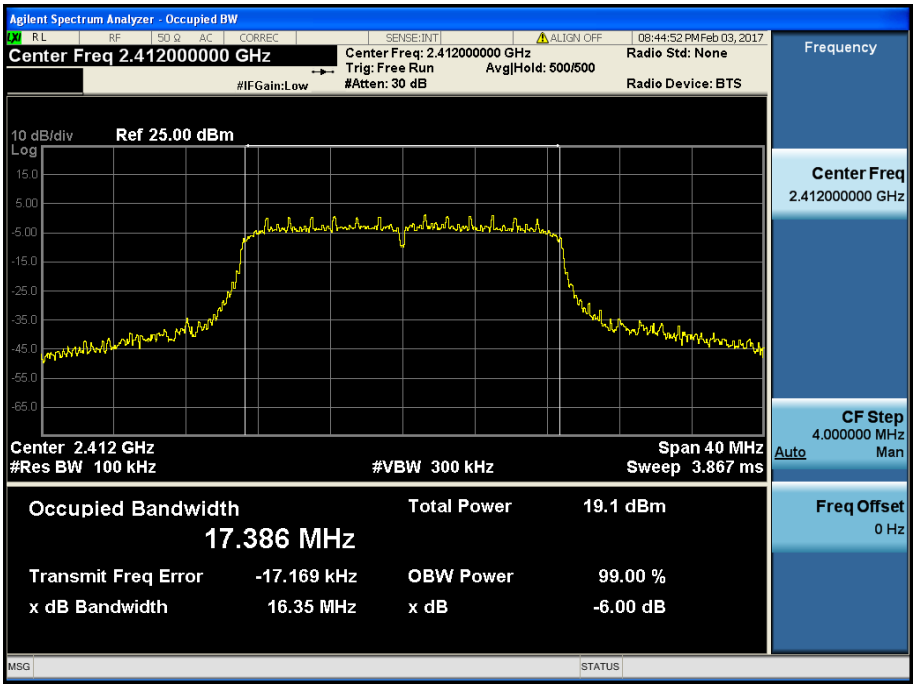
6 dB Bandwidth TM 2 & ANT 1 & Middle



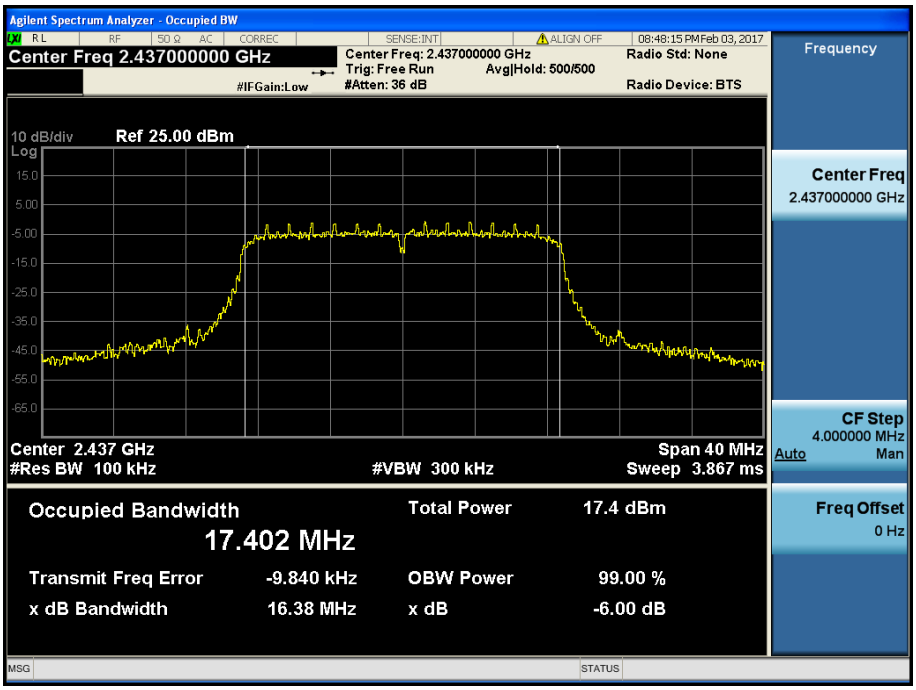
6 dB Bandwidth **TM 2 & ANT 1 & Highest**



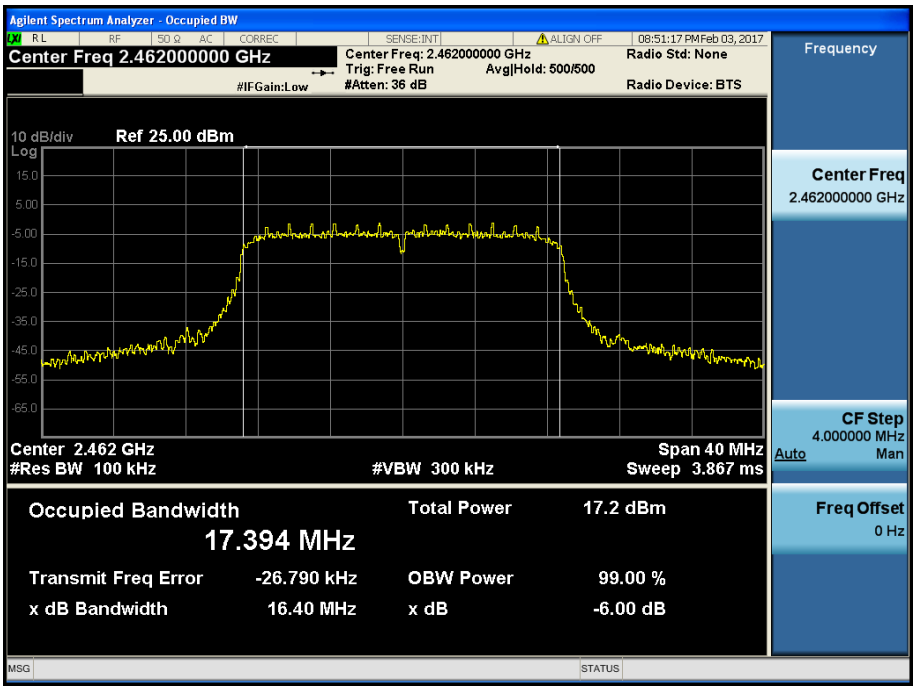
6 dB Bandwidth TM 3 & ANT 1 & Lowest



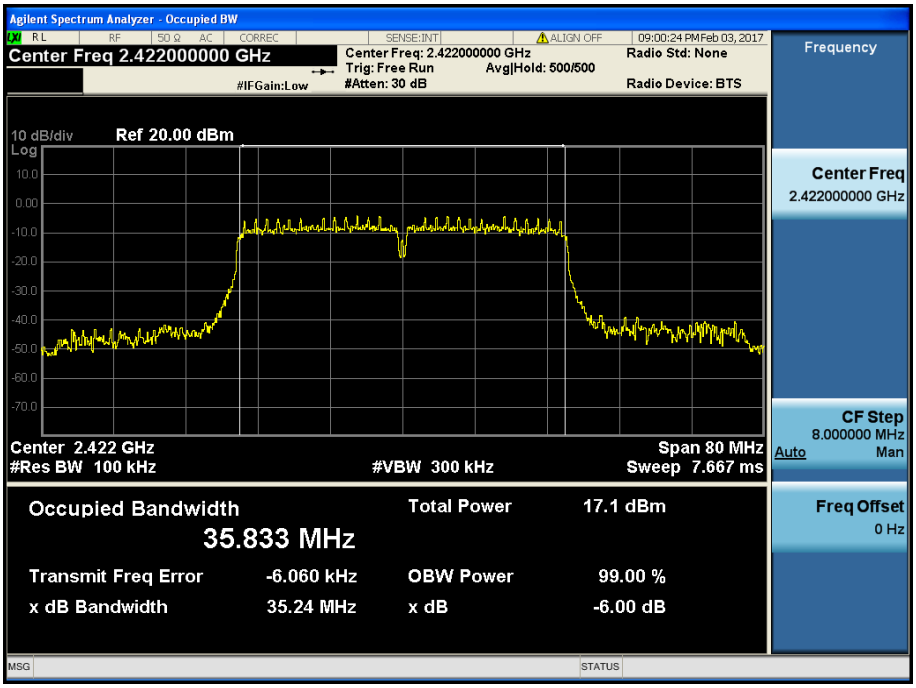
6 dB Bandwidth TM 3 & ANT 1 & Middle



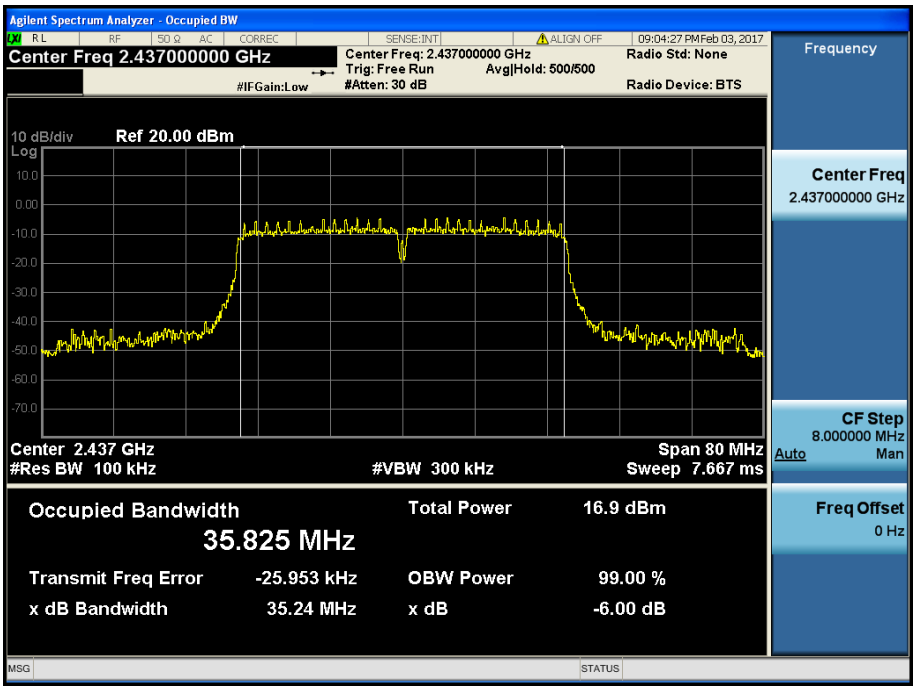
6 dB Bandwidth **TM 3 & ANT 1 & Highest**



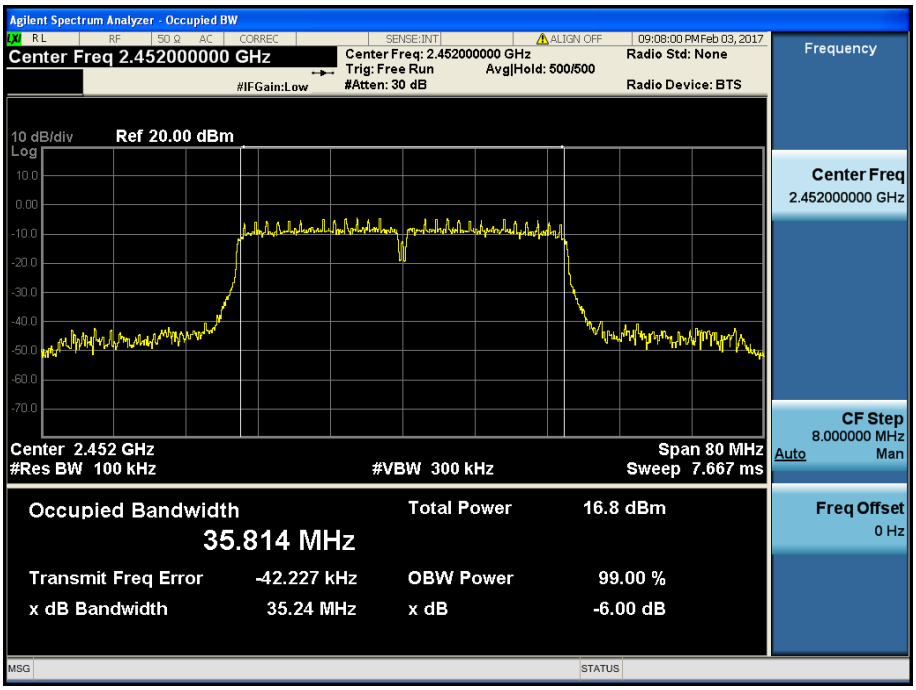
6 dB Bandwidth TM 4 & ANT 1 & Lowest



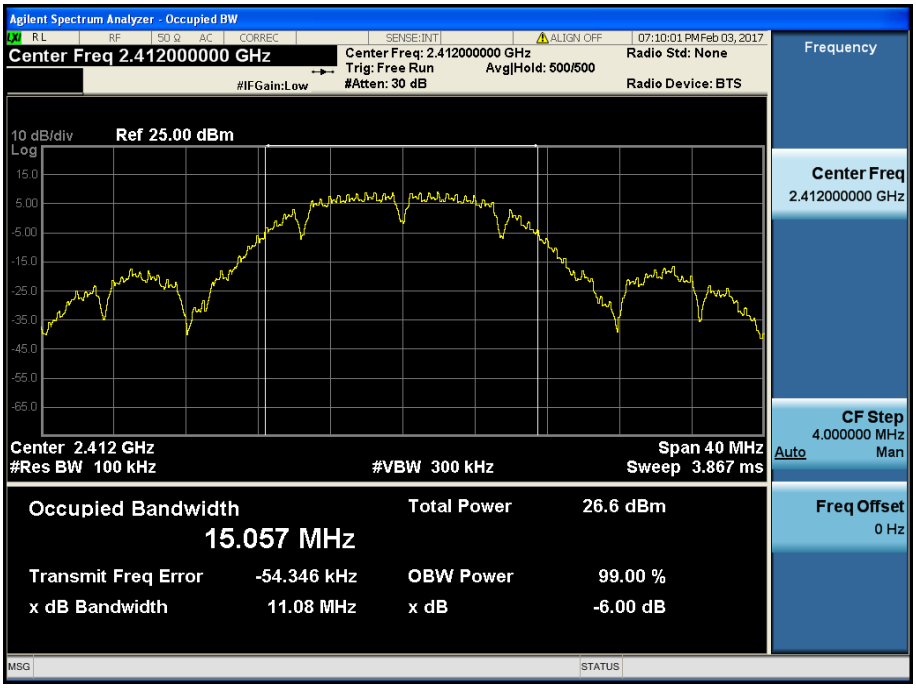
6 dB Bandwidth TM 4 & ANT 1 & Middle



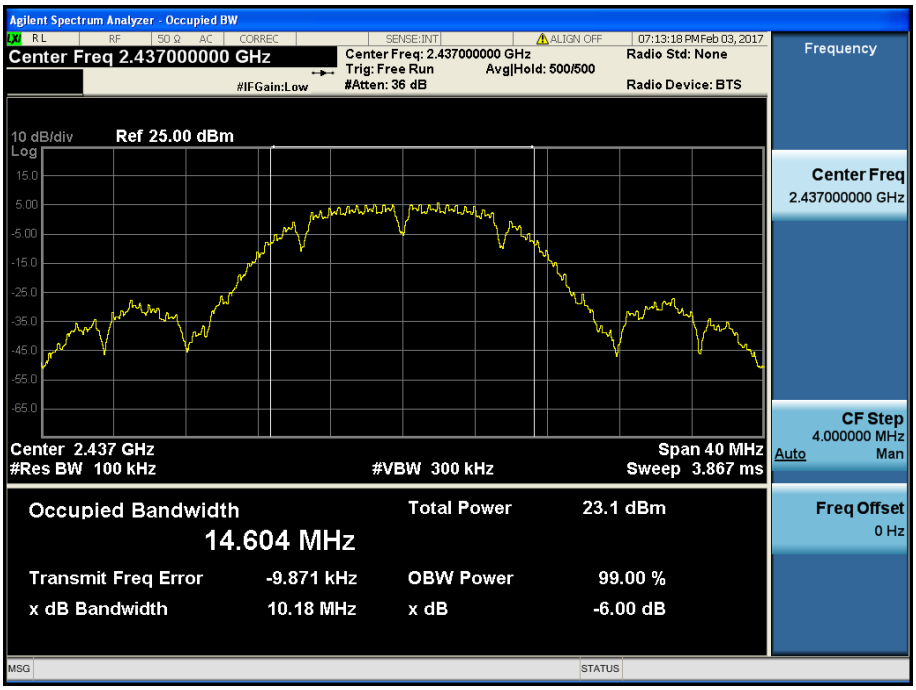
6 dB Bandwidth **TM 4 & ANT 1 & Highest**



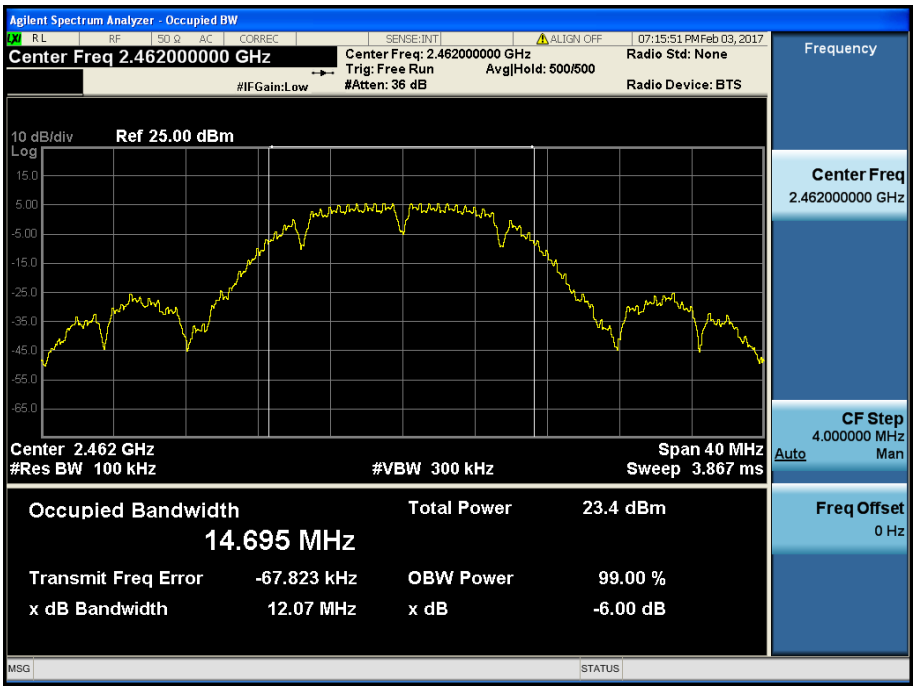
6 dB Bandwidth TM 1 & ANT 2 & Lowest



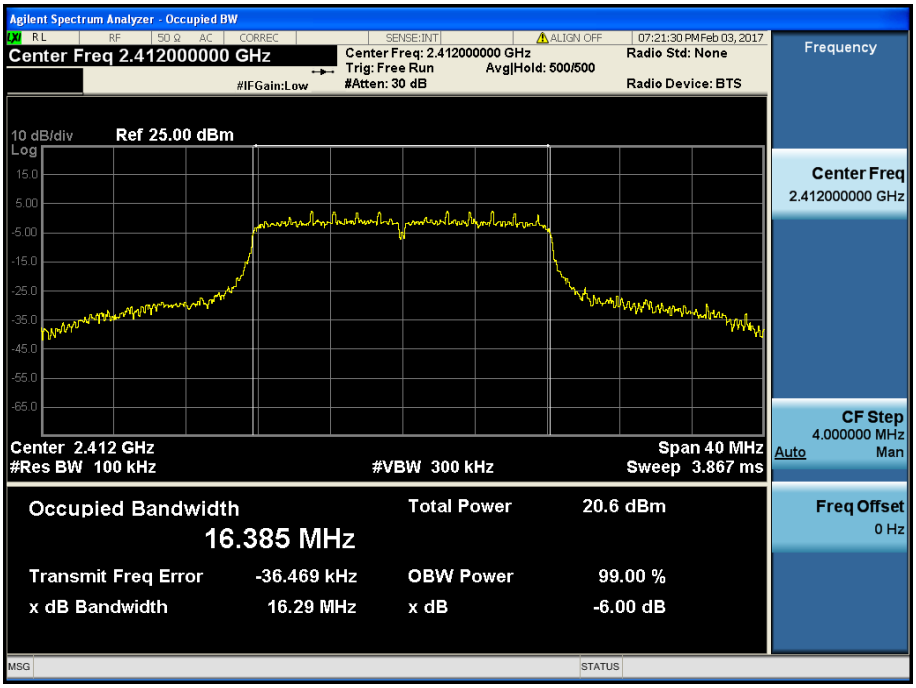
6 dB Bandwidth TM 1 & ANT 2 & Middle



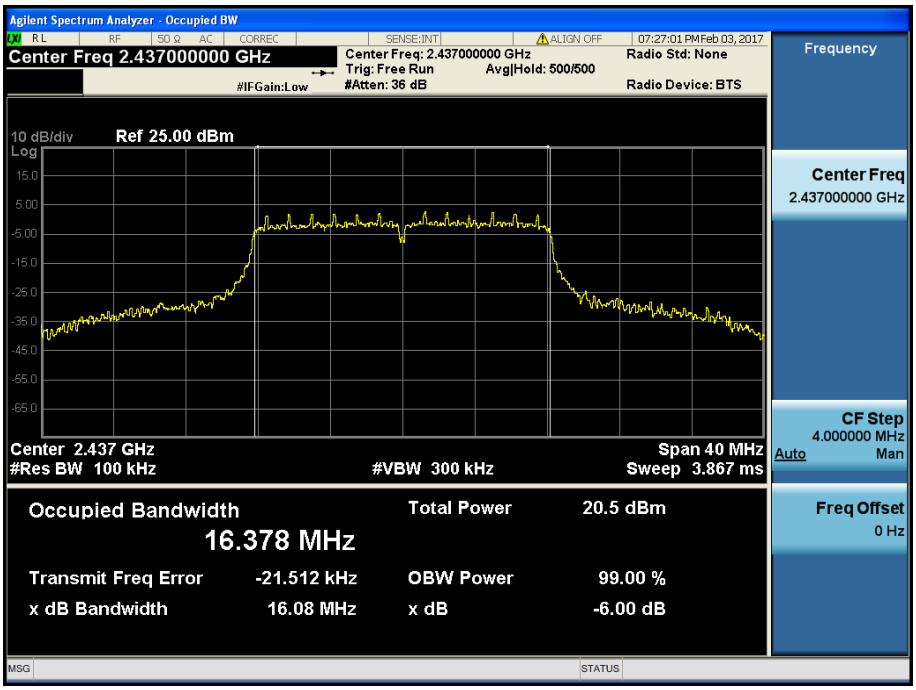
6 dB Bandwidth **TM 1 & ANT 2 & Highest**



6 dB Bandwidth TM 2 & ANT 2 & Lowest



6 dB Bandwidth TM 2 & ANT 2 & Middle



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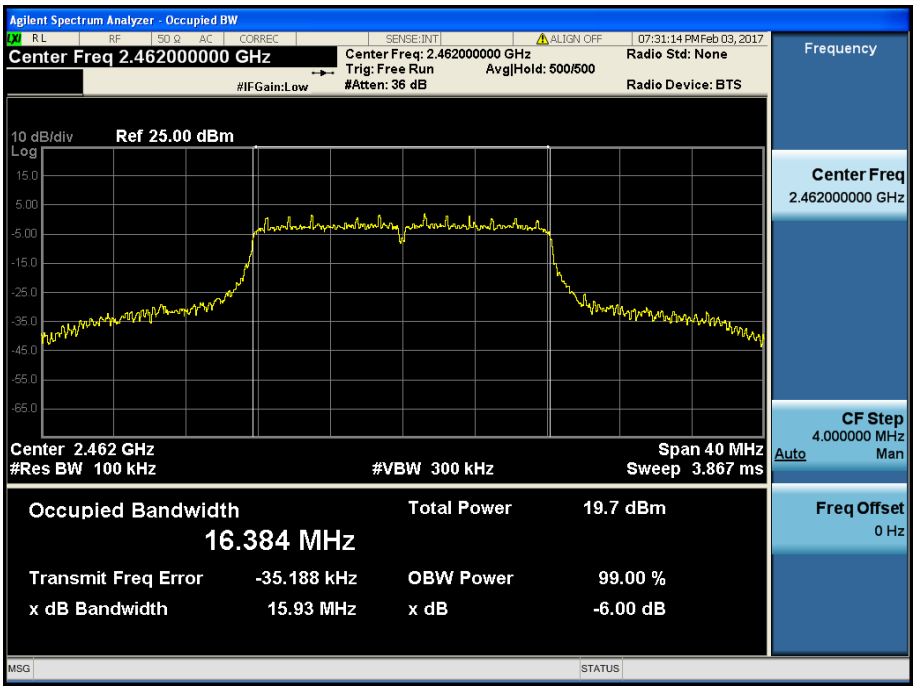

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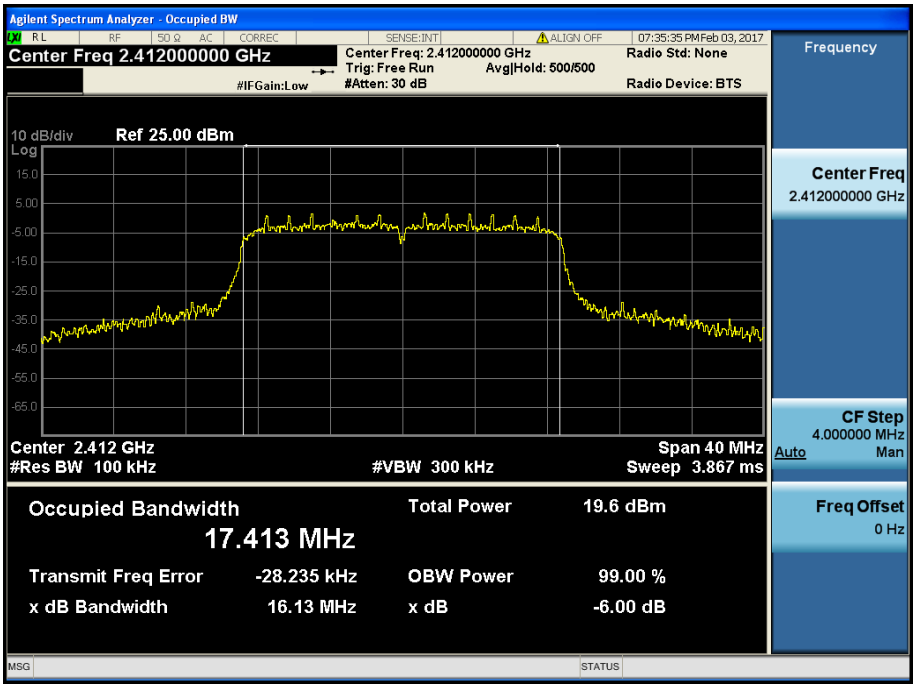
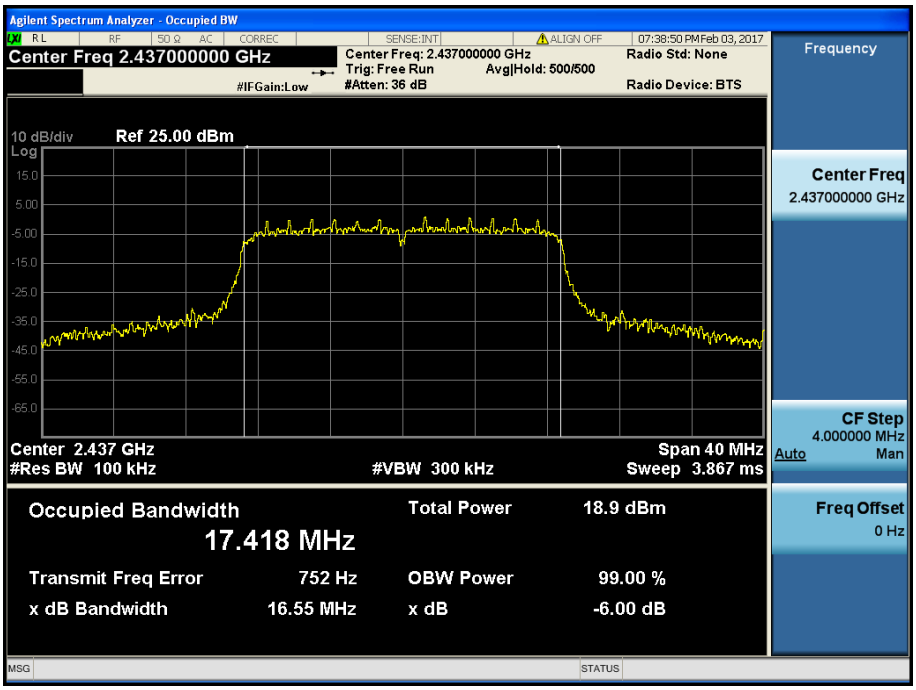
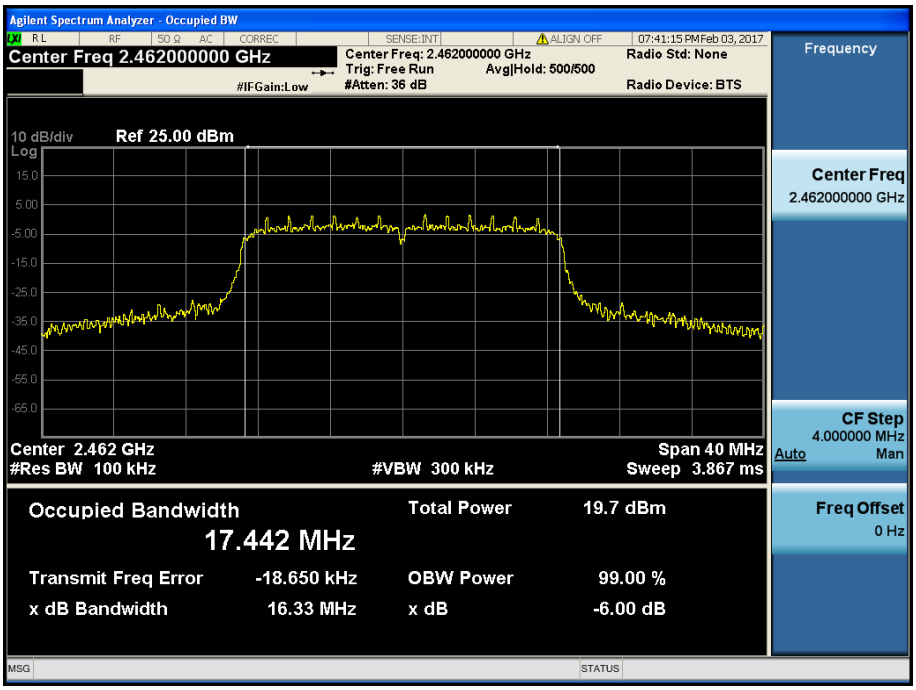


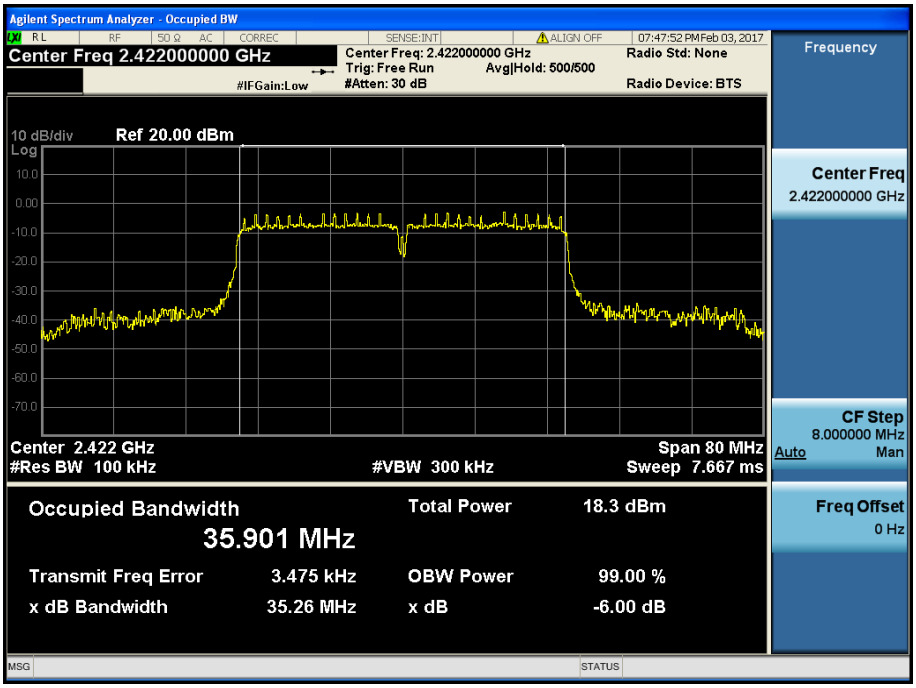
6 dB Bandwidth TM 3 & ANT 2 & Middle



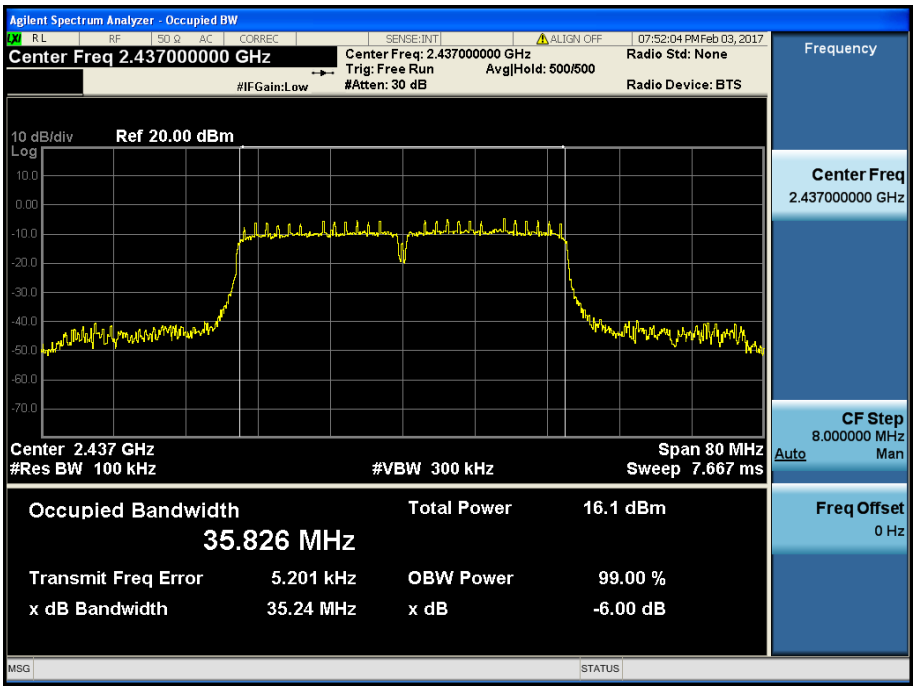
6 dB Bandwidth **TM 3 & ANT 2 & Highest**



6 dB Bandwidth TM 4 & ANT 2 & Lowest



6 dB Bandwidth TM 4 & ANT 2 & Middle



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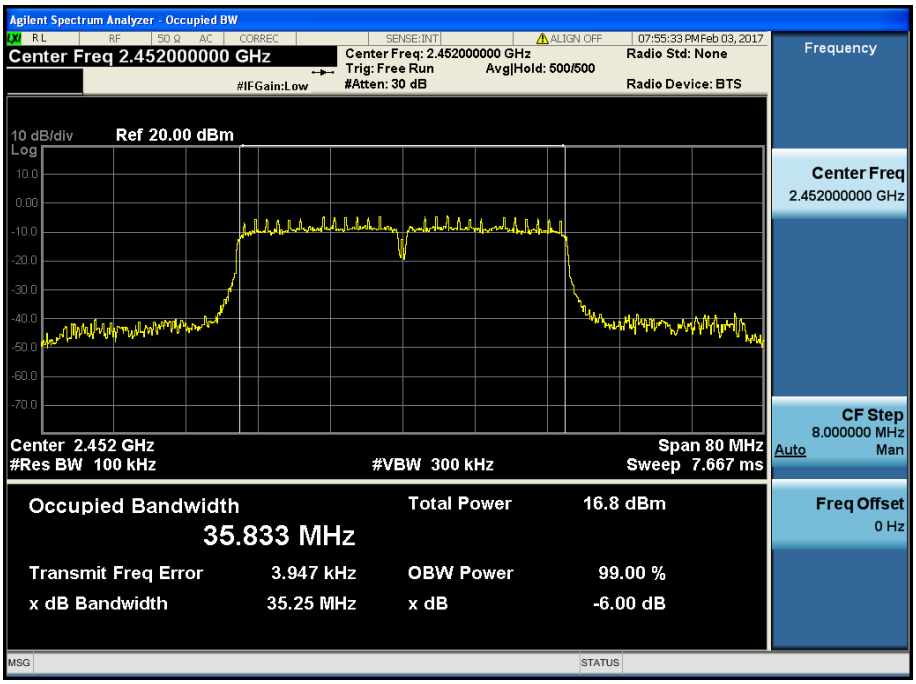
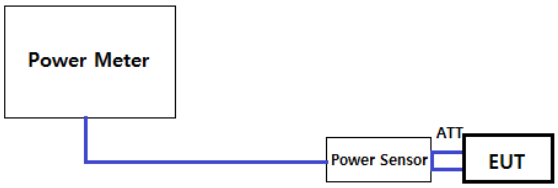


8.2 Maximum peak conducted output power

▣ Test Requirements and limit, §15.247(b) & RSS-247 [5.4]

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

▣ Test Configuration



▣ Test Procedure

1. **PKPM1 Peak power meter method of KDB558074**

   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**

   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 mode**
  - **Single transmitting**

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for *802.11b*			
			Data Rate [Mbps]			
			1	2	5.5	11
ANT 1	2412	PK	19.940	19.900	19.790	19.750
		AV	17.860	17.850	17.830	17.730
	2437	PK	19.430	19.340	19.300	19.280
		AV	17.320	17.240	17.080	16.950
	2462	PK	**20.020**	19.940	19.920	19.770
		AV	17.890	17.850	17.770	17.660
ANT 2	2412	PK	19.500	19.470	19.460	19.360
		AV	17.430	17.420	17.380	17.300
	2437	PK	19.110	19.020	18.910	18.880
		AV	16.960	16.880	16.850	16.840
	2462	PK	**19.560**	19.530	19.460	19.360
		AV	17.430	17.360	17.260	17.220

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for *802.11g*							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
ANT 1	2412	PK	**24.490**	24.470	24.320	24.260	24.210	24.140	23.870	23.800
		AV	15.060	15.050	14.920	14.850	14.820	14.790	14.540	14.510
	2437	PK	24.280	24.260	24.120	24.000	23.960	23.940	23.760	23.760
		AV	14.780	14.690	14.680	14.550	14.530	14.500	14.300	14.280
	2462	PK	23.720	23.630	23.620	23.610	23.610	23.520	23.350	23.280
		AV	14.030	13.980	13.870	13.830	13.800	13.790	13.490	13.400
ANT 2	2412	PK	**24.180**	24.170	24.030	24.020	23.990	23.920	23.870	23.810
		AV	14.680	14.620	14.420	14.390	14.340	14.240	13.990	13.970
	2437	PK	23.940	23.860	23.790	23.740	23.700	23.600	23.570	23.540
		AV	14.550	14.470	14.330	14.250	14.220	14.150	13.770	13.680
	2462	PK	23.540	23.440	23.280	23.170	23.150	23.140	23.060	22.980
		AV	13.940	13.920	13.880	13.880	13.830	13.820	13.660	13.590

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for ***802.11n(HT20)***							
			Data Rate [MCS]							
			0	1	2	3	4	5	6	7
ANT 1	2412	PK	**21.400**	21.310	21.240	21.220	21.180	20.990	20.950	20.940
		AV	12.810	12.650	12.580	12.530	12.500	12.330	12.270	12.170
	2437	PK	20.670	20.630	20.510	20.470	20.430	19.960	19.960	19.920
		AV	11.890	11.760	11.720	11.710	11.610	11.170	11.140	11.110
	2462	PK	20.210	20.200	20.180	20.170	20.110	19.890	19.860	19.840
		AV	11.570	11.510	11.450	11.430	11.410	11.140	11.100	11.020
ANT 2	2412	PK	21.210	21.030	20.990	20.960	20.900	20.720	20.700	20.640
		AV	13.300	13.220	13.120	13.090	13.020	12.540	12.440	12.390
	2437	PK	20.810	20.750	20.620	20.610	20.530	20.480	20.450	20.370
		AV	13.100	13.030	12.900	12.860	12.790	12.550	12.540	12.490
	2462	PK	**21.500**	21.440	21.400	21.400	21.360	21.270	21.260	21.240
		AV	13.710	13.650	13.610	13.590	13.550	13.050	13.040	12.970

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for ***802.11n(HT40)***							
			Data Rate [MCS]							
			0	1	2	3	4	5	6	7
ANT 1	2422	PK	**20.250**	20.240	20.200	20.170	20.160	20.110	20.080	20.070
		AV	10.870	10.830	10.820	10.790	10.790	10.720	10.660	10.650
	2437	PK	20.180	20.170	20.120	20.050	19.990	19.970	19.960	19.940
		AV	10.410	10.380	10.360	10.290	10.240	10.170	10.100	10.080
	2452	PK	20.010	19.970	19.930	19.860	19.820	19.750	19.730	19.650
		AV	10.380	10.320	10.270	10.200	10.130	10.100	10.090	10.030
ANT 2	2422	PK	**20.480**	20.450	20.430	20.410	20.380	20.330	20.300	20.280
		AV	11.960	11.940	11.940	11.910	11.840	11.820	11.780	11.720
	2437	PK	18.610	18.590	18.560	18.480	18.440	18.420	18.380	18.360
		AV	9.720	9.700	9.680	9.620	9.550	9.530	9.450	9.370
	2452	PK	18.680	18.620	18.560	18.540	18.500	18.420	18.380	18.310
		AV	9.920	9.880	9.820	9.790	9.770	9.700	9.630	9.560

- **Multiple transmitting**

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for 802.11n(HT20)							
			Data Rate [MCS]							
			8	9	10	11	12	13	14	15
ANT 1	2412	PK	**21.520**	21.430	21.260	21.160	21.130	21.070	21.010	20.990
		AV	12.910	12.890	12.720	12.710	12.680	12.620	12.380	12.360
	2437	PK	20.840	20.750	20.700	20.670	20.660	20.620	20.400	20.380
		AV	12.020	11.960	11.810	11.700	11.650	11.590	11.490	11.430
	2462	PK	20.260	20.250	20.090	20.050	20.000	19.930	19.680	19.630
		AV	11.670	11.600	11.420	11.380	11.350	11.270	11.270	11.200
ANT 2	2412	PK	21.270	21.260	21.160	21.120	21.100	21.090	20.960	20.920
		AV	13.310	13.230	13.190	13.140	13.140	13.080	12.810	12.810
	2437	PK	20.840	20.780	20.770	20.650	20.650	20.630	20.550	20.540
		AV	13.150	13.050	12.950	12.950	12.950	12.940	12.550	12.550
	2462	PK	**21.590**	21.500	21.420	21.420	21.420	21.340	20.860	20.820
		AV	13.740	13.650	13.490	13.370	13.330	13.310	13.150	13.070
Sum (ANT 1+2)	2412	PK	**24.408**	24.357	24.221	24.151	24.126	24.091	23.996	23.966
	2437	PK	23.851	23.776	23.746	23.671	23.666	23.636	23.486	23.472
	2462	PK	23.987	23.931	23.817	23.800	23.779	23.703	23.321	23.276

ANT	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm) for 802.11n(HT40)							
			Data Rate [MCS]							
			8	9	10	11	12	13	14	15
ANT 1	2422	PK	**20.280**	20.260	20.250	20.220	20.190	20.150	20.150	20.130
		AV	10.920	10.910	10.860	10.820	10.740	10.700	10.690	10.610
	2437	PK	20.190	20.130	20.060	20.010	19.950	19.920	19.890	19.850
		AV	10.420	10.380	10.320	10.310	10.300	10.240	10.180	10.180
	2452	PK	20.060	20.010	20.000	19.970	19.930	19.910	19.890	19.830
		AV	10.410	10.400	10.340	10.300	10.260	10.210	10.120	10.040
ANT 2	2422	PK	**20.490**	20.460	20.460	20.460	20.420	20.410	20.370	20.350
		AV	12.010	11.950	11.930	11.910	11.870	11.820	11.790	11.790
	2437	PK	18.650	18.630	18.580	18.560	18.490	18.470	18.390	18.330
		AV	9.770	9.730	9.710	9.700	9.700	9.670	9.590	9.560
	2452	PK	18.730	18.690	18.620	18.560	18.530	18.470	18.410	18.390
		AV	9.970	9.920	9.900	9.890	9.820	9.770	9.770	9.710
Sum (ANT 1+2)	2422	PK	**23.397**	23.372	23.367	23.352	23.317	23.293	23.272	23.252
	2437	PK	22.499	22.455	22.394	22.356	22.292	22.266	22.215	22.167
	2452	PK	22.457	22.411	22.375	22.333	22.297	22.260	22.224	22.180

8.3 Maximum power spectral density

▣ Test requirements and limit, §15.247(e) & RSS-247 [5.2]

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 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 1	Lowest	3 kHz	-8.700	-6.340	-
	Middle	3 kHz	-10.060	-9.650	-
	Highest	3 kHz	-8.830	-9.970	-
TM 2	Lowest	3 kHz	-12.530	-12.300	-
	Middle	3 kHz	-12.440	-12.690	-
	Highest	3 kHz	-13.360	-13.740	-
TM 3	Lowest	3 kHz	-14.830	-14.270	-11.531
	Middle	3 kHz	-17.250	-14.860	-12.883
	Highest	3 kHz	-17.240	-13.480	-11.955
TM 4	Lowest	3 kHz	-16.450	-15.300	-12.827
	Middle	3 kHz	-16.330	-16.610	-13.458
	Highest	3 kHz	-16.850	-16.780	-13.805

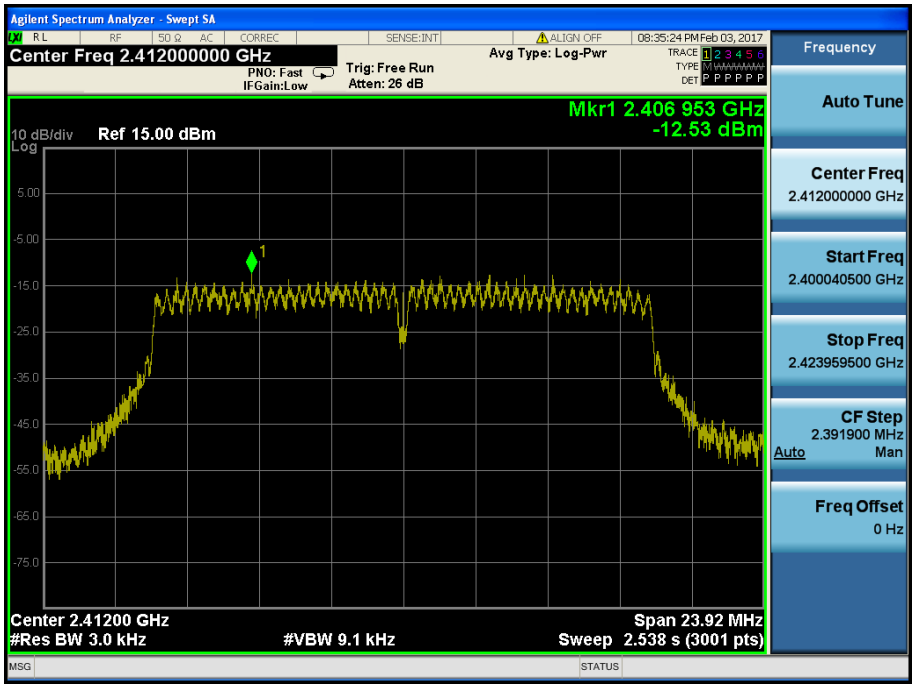
▣ RESULT PLOTS

Maximum PKPSD **TM 1 & ANT 1 & Lowest**

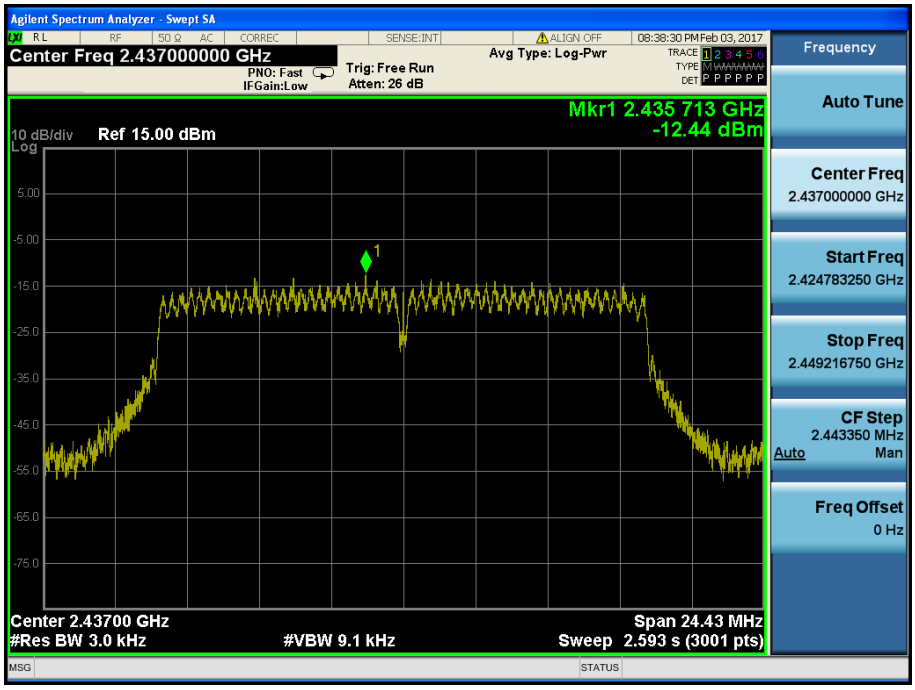
Maximum PKPSD **TM 1 & ANT 1 & Middle**

Maximum PKPSD **TM 1 & ANT 1 & Highest**

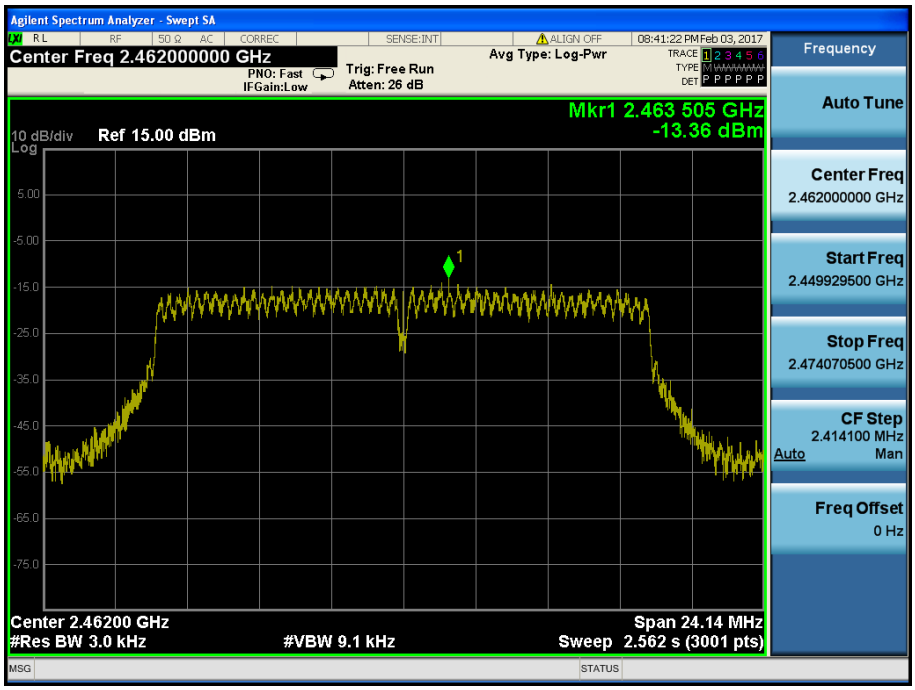
Maximum PKPSD **TM 2 & ANT 1 & Lowest**



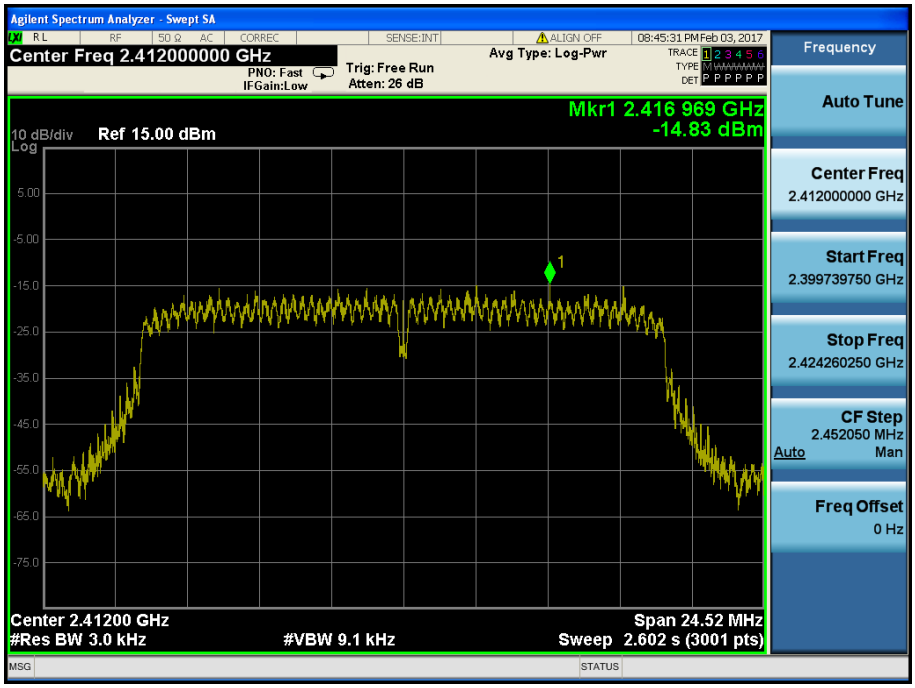
Maximum PKPSD **TM 2 & ANT 1 & Middle**



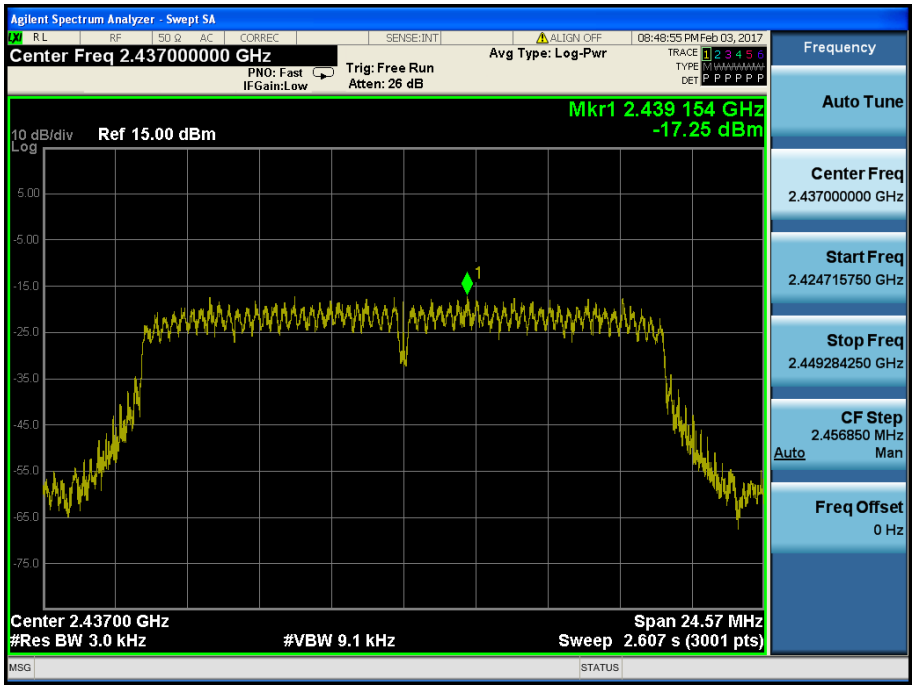
Maximum PKPSD **TM 2 & ANT 1 & Highest**



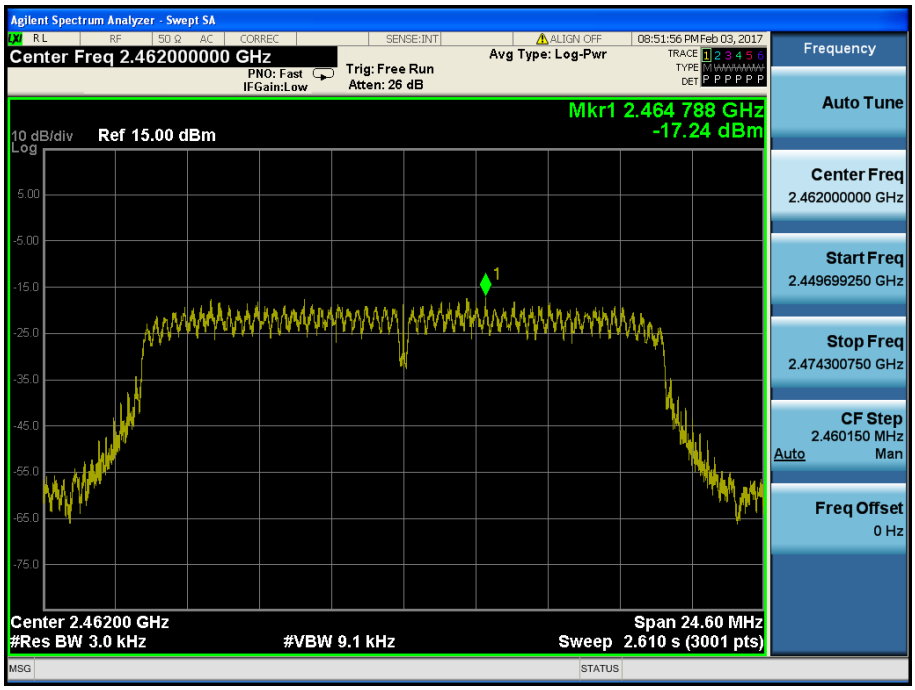
Maximum PKPSD **TM 3 & ANT 1 & Lowest**



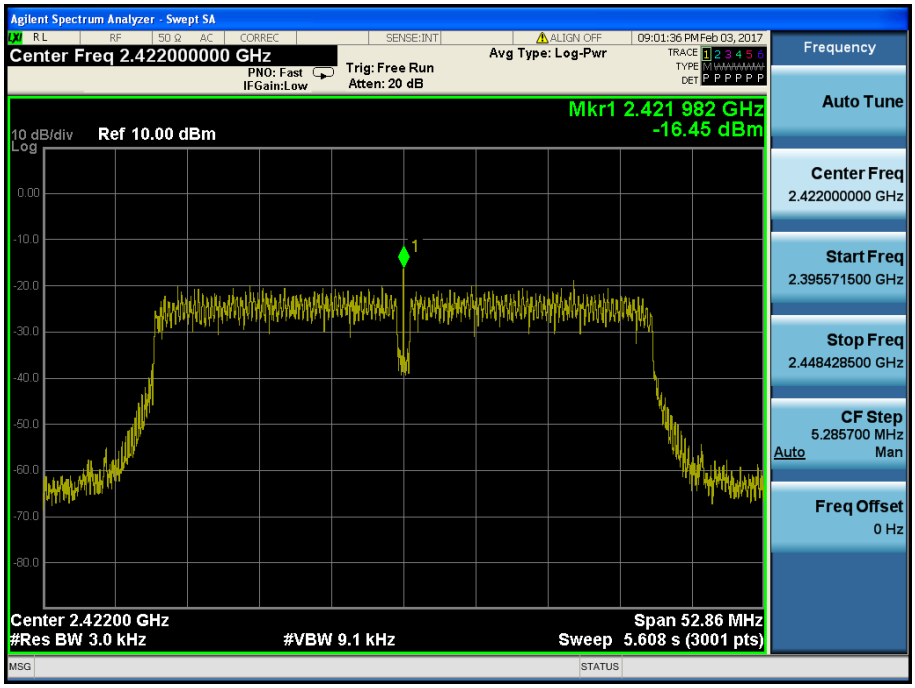
Maximum PKPSD **TM 3 & ANT 1 & Middle**



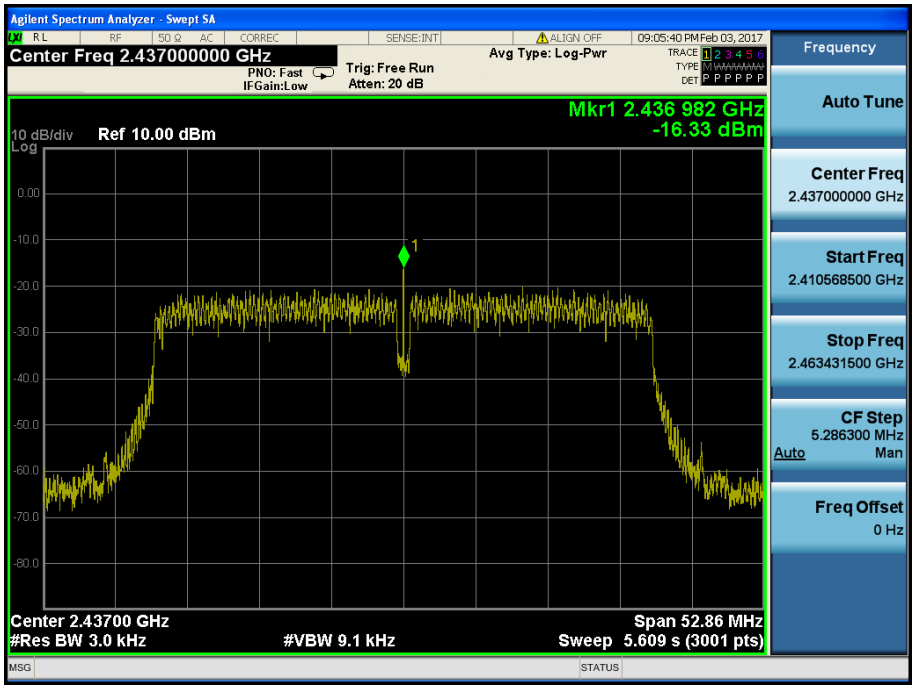
Maximum PKPSD **TM 3 & ANT 1 & Highest**



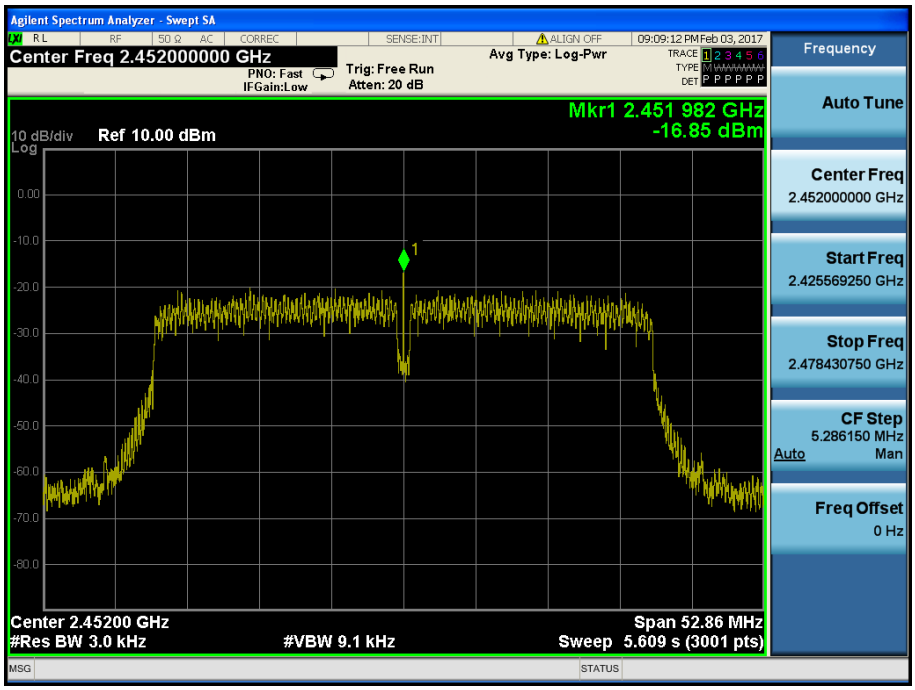
Maximum PKPSD **TM 4 & ANT 1 & Lowest**



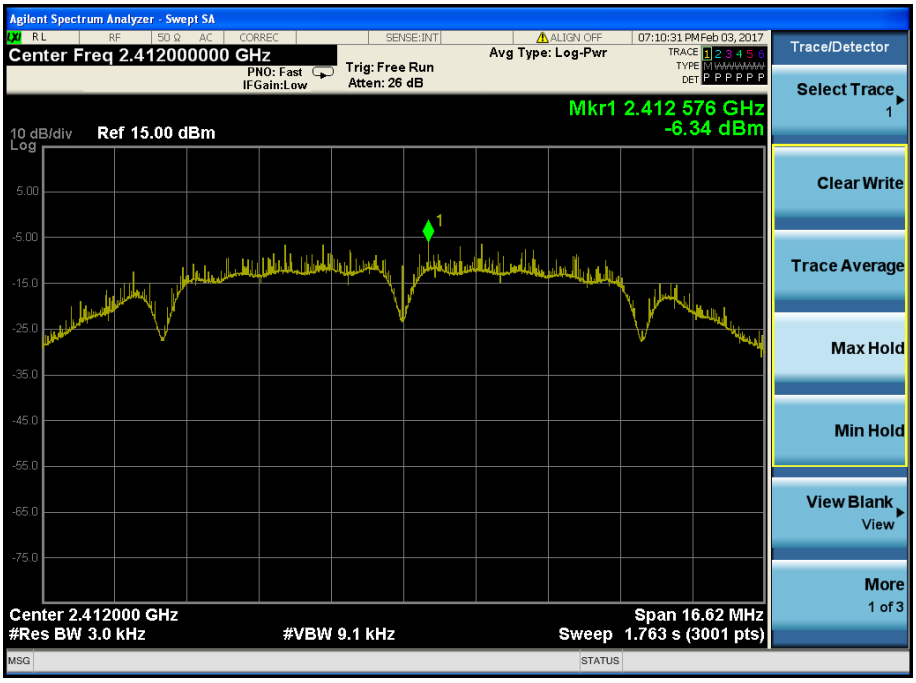
Maximum PKPSD **TM 4 & ANT 1 & Middle**



Maximum PKPSD **TM 4 & ANT 1 & Highest**



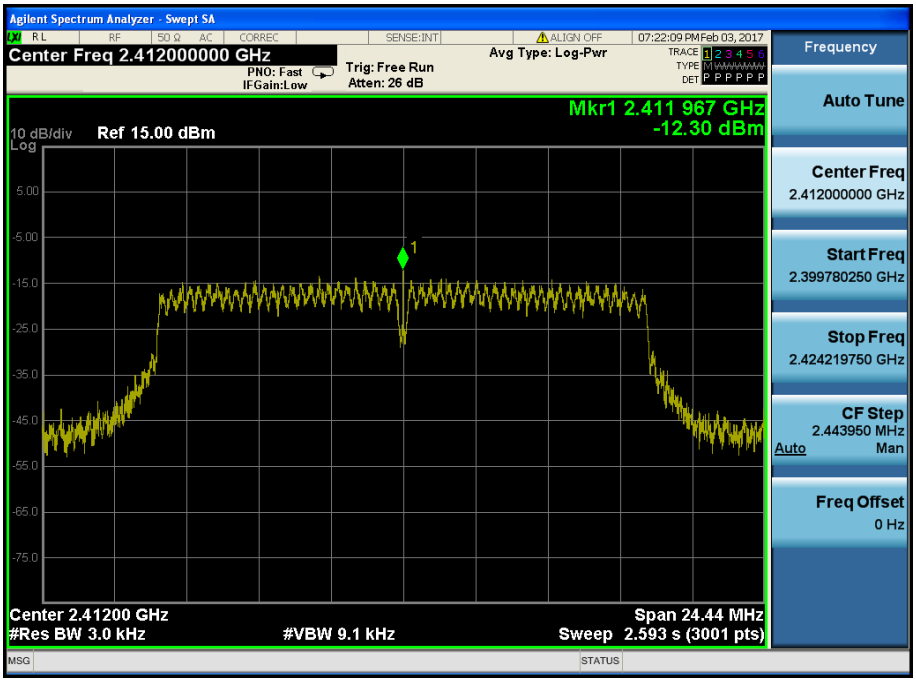
Maximum PKPSD **TM 1 & ANT 2 & Lowest**



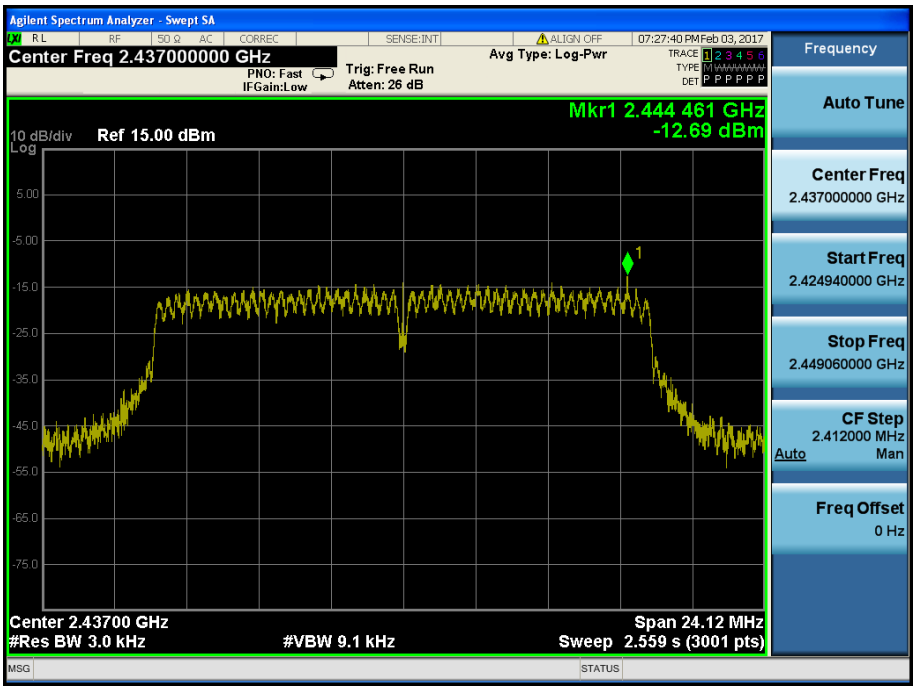
Maximum PKPSD **TM 1 & ANT 2 & Middle**

Maximum PKPSD **TM 1 & ANT 2 & Highest**

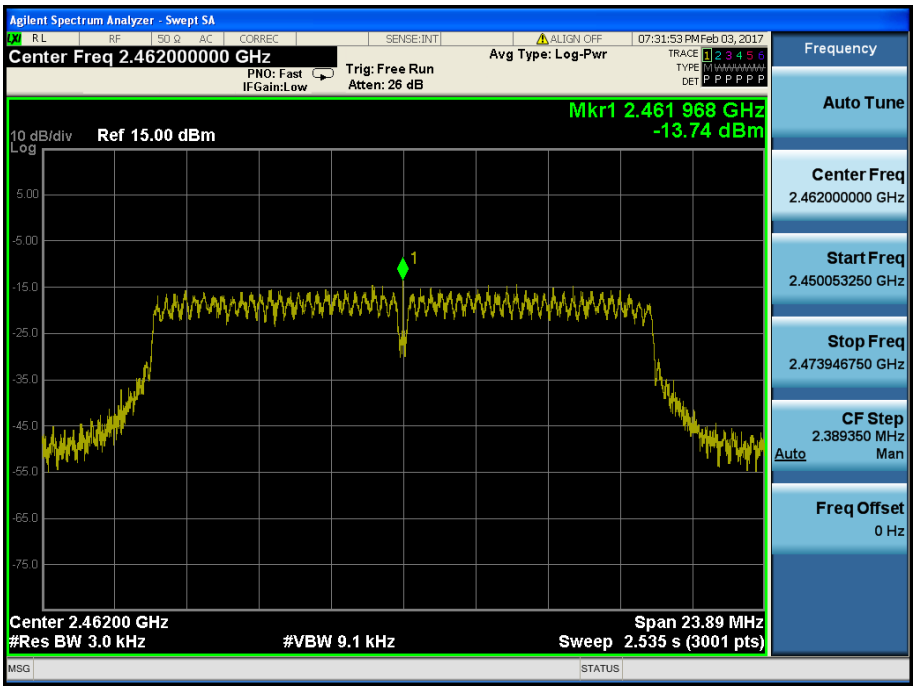
Maximum PKPSD **TM 2 & ANT 2 & Lowest**



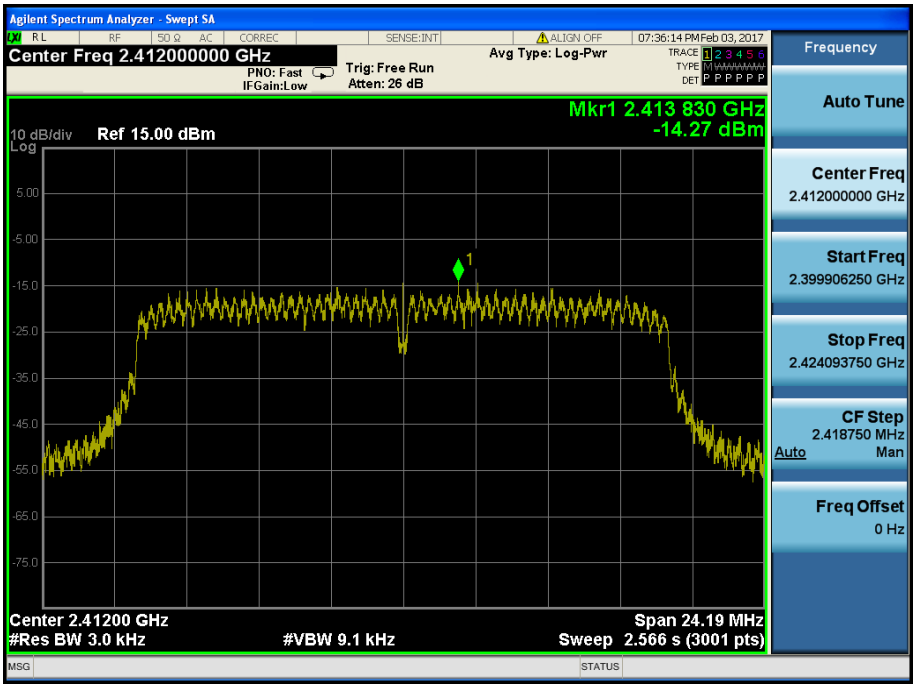
Maximum PKPSD **TM 2 & ANT 2 & Middle**



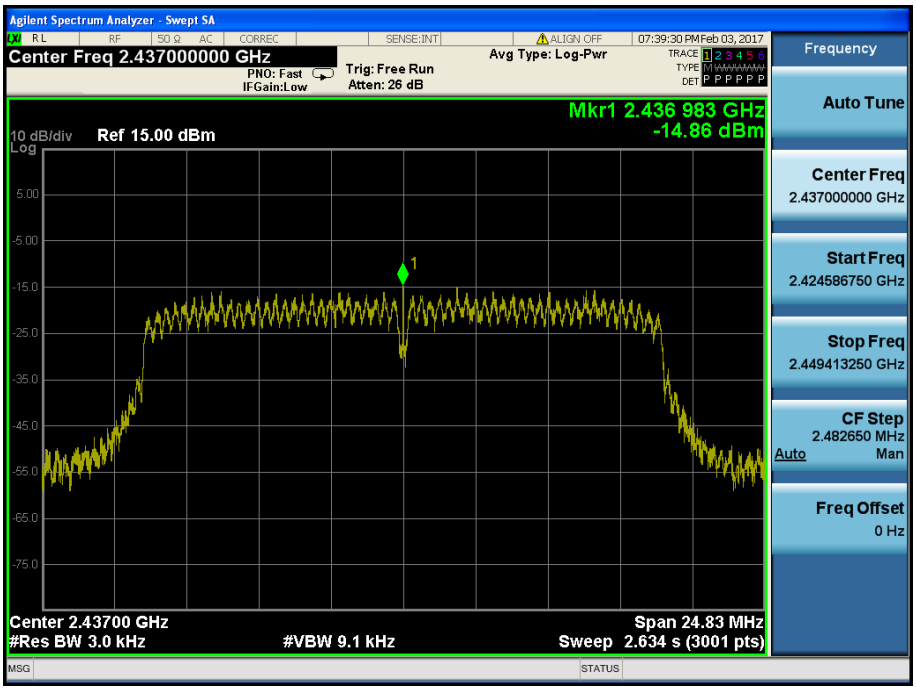
Maximum PKPSD **TM 2 & ANT 2 & Highest**



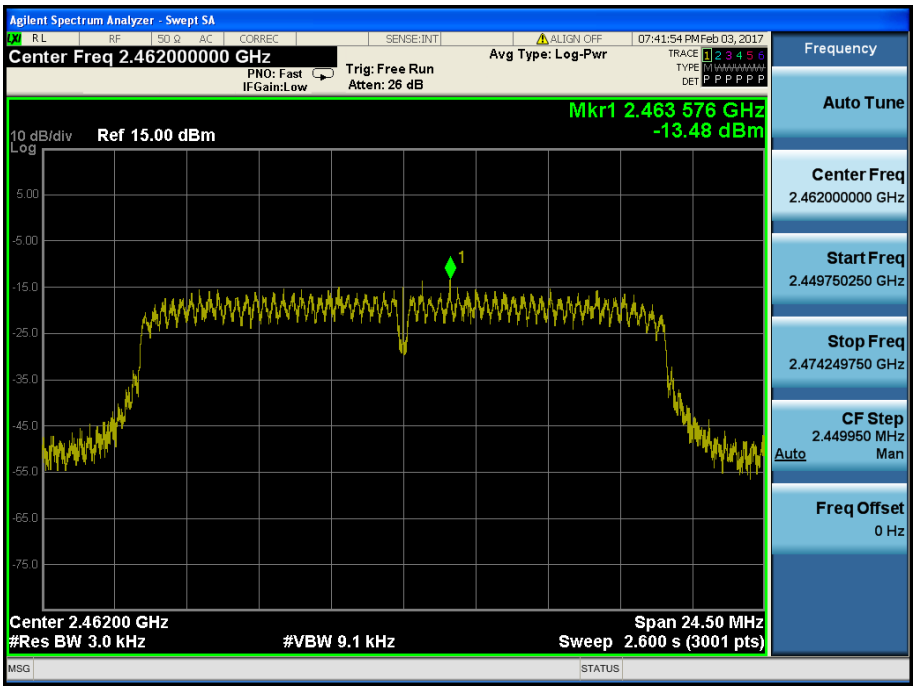
Maximum PKPSD **TM 3 & ANT 2 & Lowest**



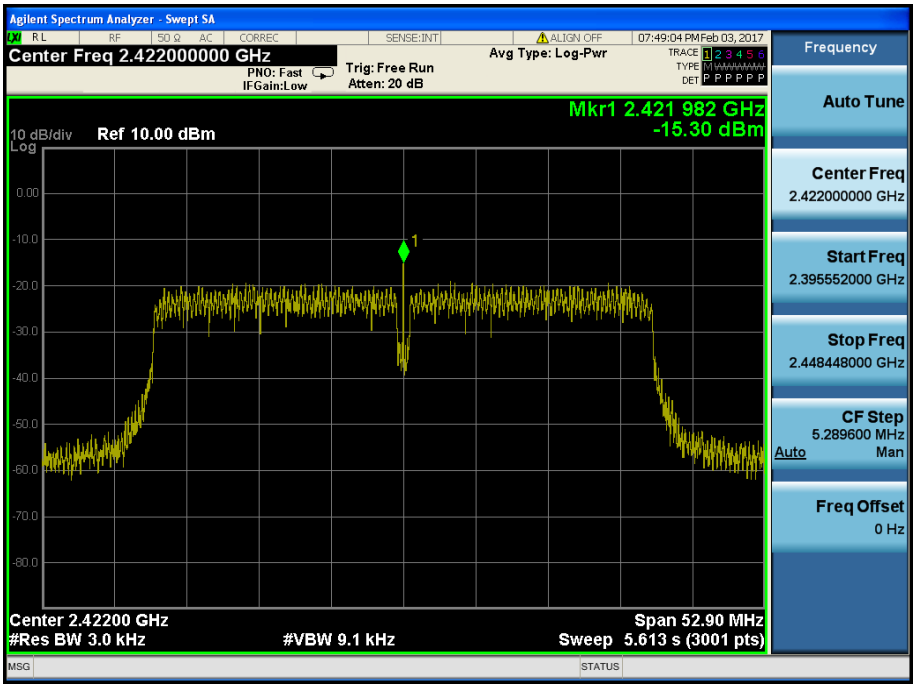
Maximum PKPSD **TM 3 & ANT 2 & Middle**



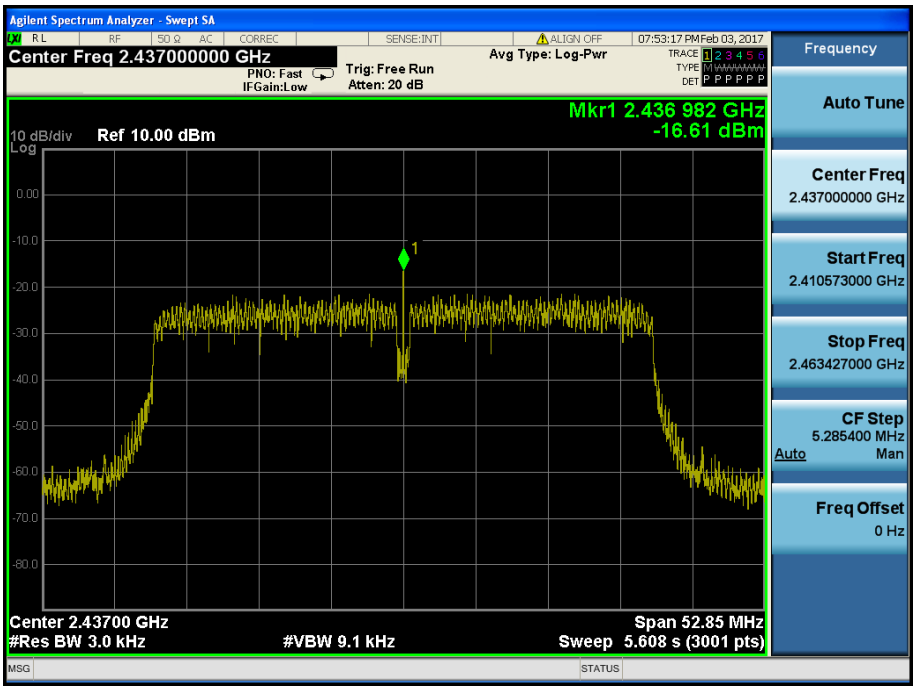
Maximum PKPSD **TM 3 & ANT 2 & Highest**



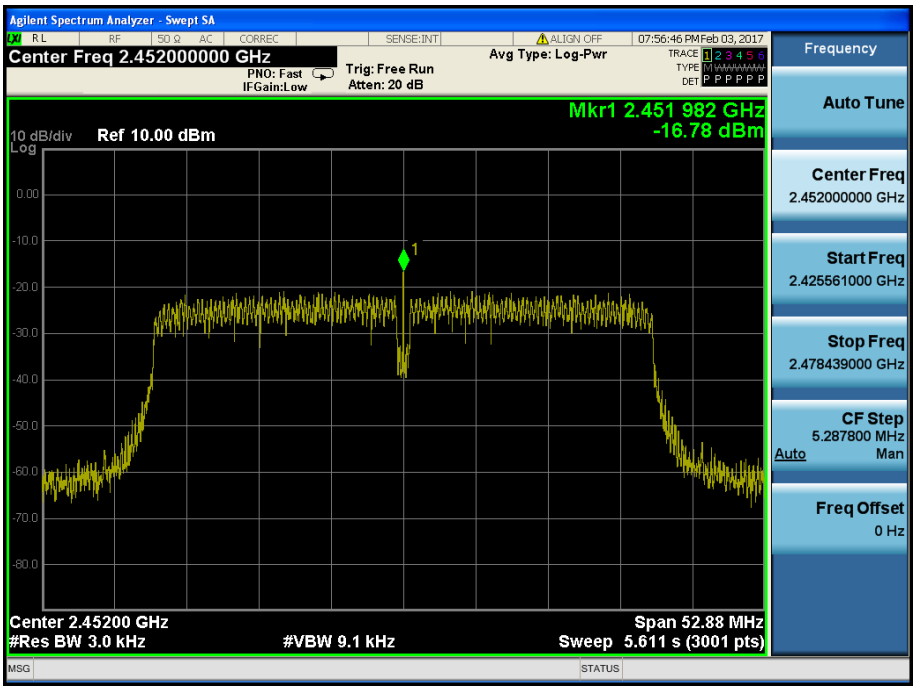
Maximum PKPSD **TM 4 & ANT 2 & Lowest**



Maximum PKPSD **TM 4 & ANT 2 & Middle**



Maximum PKPSD **TM 4 & ANT 2 & Highest**



8.4 Out of band emissions at the band edge / conducted spurious emissions

▣ Test requirements and limit, §15.247(d) & RSS-247 [5.5]

§15.247(d) specifies that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

If **the peak output power procedure** is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated **by at least 20 dB** relative to the maximum measured in-band peak PSD level.

If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in band average PSD level.
In either case, attenuation to levels below the general emission limits specified in **§15.209(a)** is not required.

▣ Test Configuration

Refer to the APPENDIX I.

▣ Test Procedure

The transmitter output is connected to a spectrum analyzer.

- Measurement Procedure 1 – Reference Level

1. Set instrument center frequency to DTS channel center frequency.
2. Set the span to ≥ 1.5 times the DTS bandwidth.
3. Set the 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 PSD level.

- Measurement Procedure 2 - Unwanted Emissions

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = **100 kHz. (Actual 1 MHz , See below note)**
3. Set the VBW ≥ **3 x RBW. (Actual 3 MHz, See below note)**
4. Detector = **Peak**.
5. Ensure that the number of measurement points ≥ Span / RBW.
6. Sweep time = **Auto couple.**
7. Trace mode = **Max hold.**
8. **Allow the trace to stabilize.** (this may take some time, depending on the extent of the span)
9. Use the peak marker function to determine the maximum amplitude level.

Note : The conducted spurious emission was tested with below settings.
Frequency range: 9 kHz ~ 30 MHz
RBW = 100 kHz, VBW = 300 kHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD, SWEEP POINT : 40001

Frequency range: 30 MHz ~ 10 GHz, 10 GHz ~25 GHz
RBW = 1 MHz, VBW = 3 MHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD, SWEEP POINT : 40001

LIMIT LINE = 20 dB below of the reference level of above measurement procedure Step 2. (RBW = 100 kHz, VBW = 300 kHz)

If the emission level with above setting was close to the limit (ie, less than 3 dB margin) then zoom scan is required using RBW = 100 kHz, VBW = 300 kHz, SPAN = 100 MHz and BINS = 2001 to get accurate emission level within 100 kHz BW.

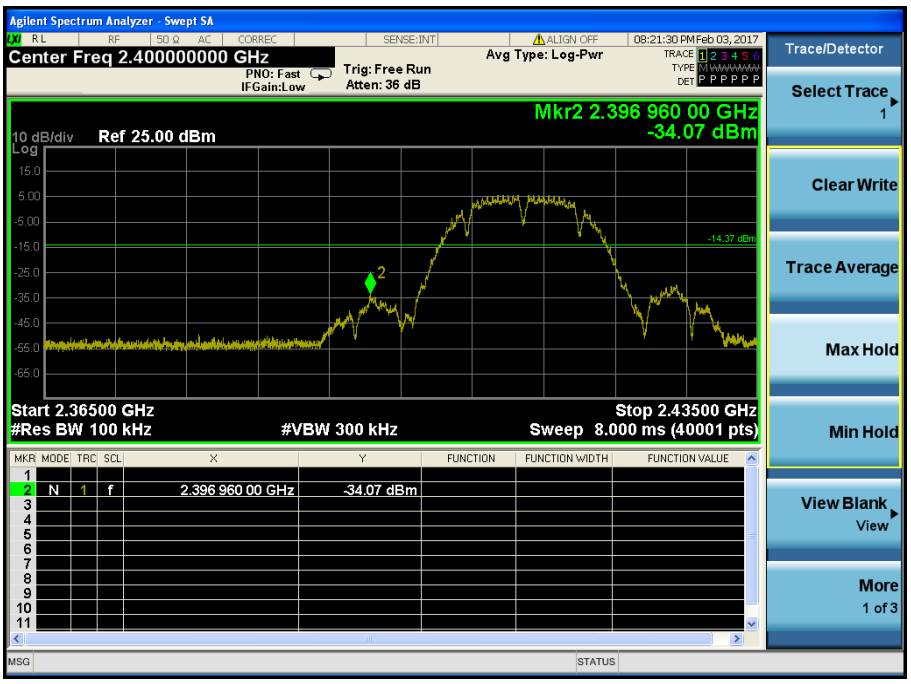
Also the path loss for conducted measurement setup was used as described on the Appendix I of this test report.

▣ RESULT PLOTS

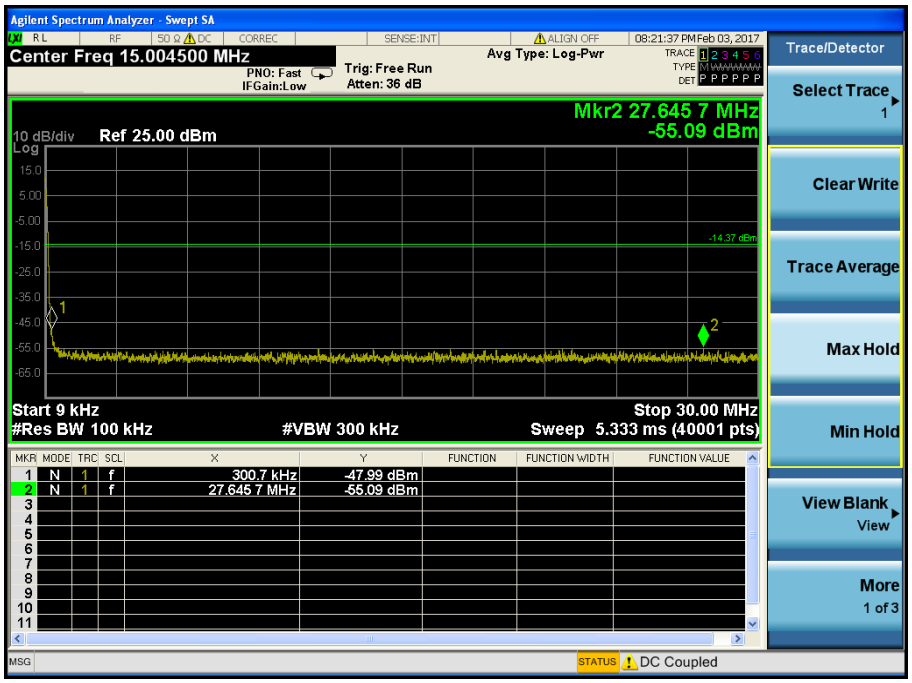
<TM 1 & ANT 1>

Reference (Test Channel : Lowest)

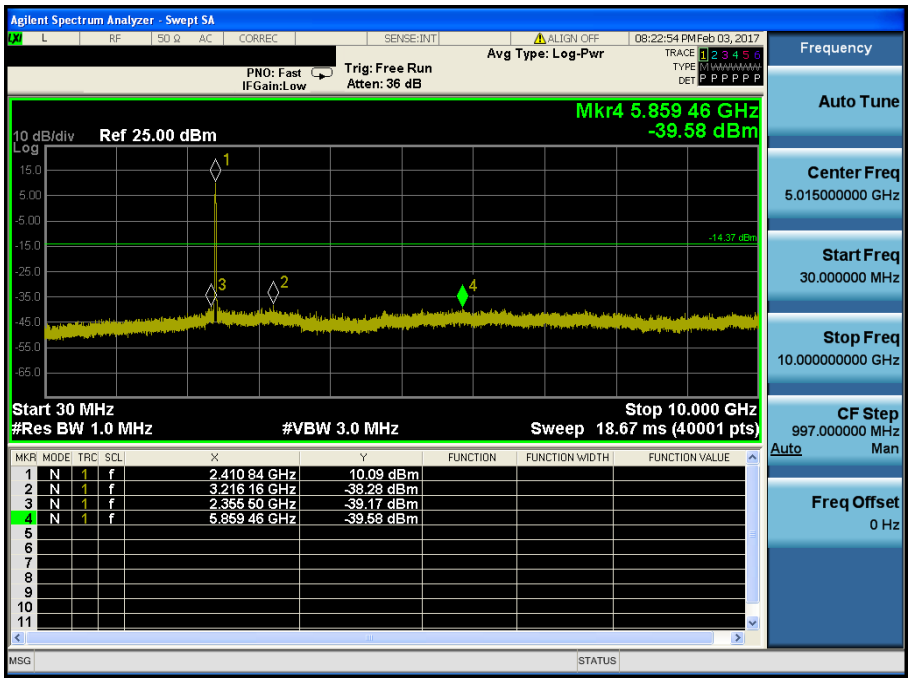
Low Band-edge (Test Channel : Lowest)



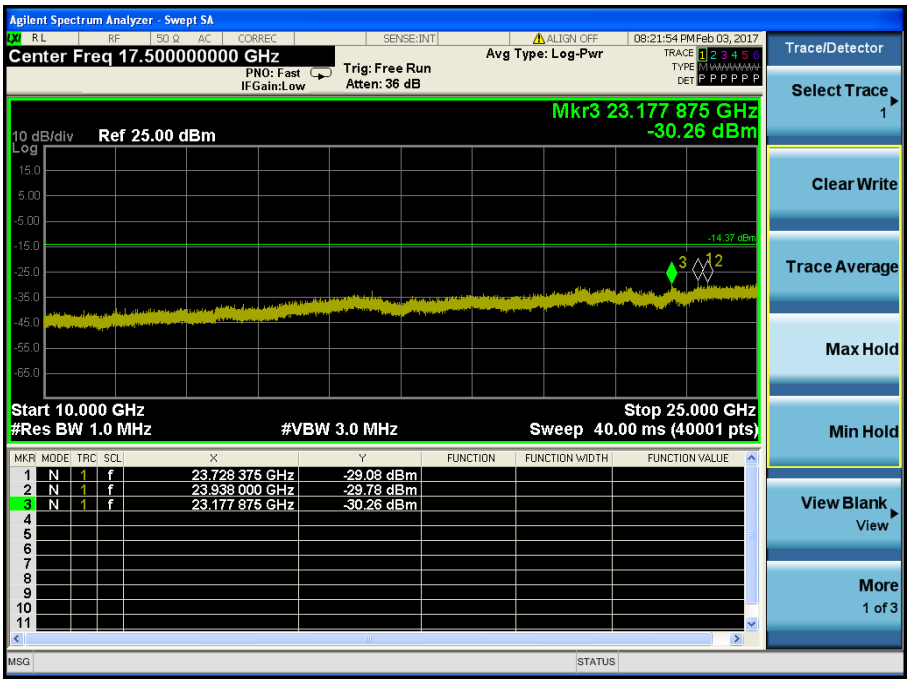
Conducted Spurious Emissions 1 (Test Channel : Lowest)



Conducted Spurious Emissions 2 (Test Channel : Lowest)

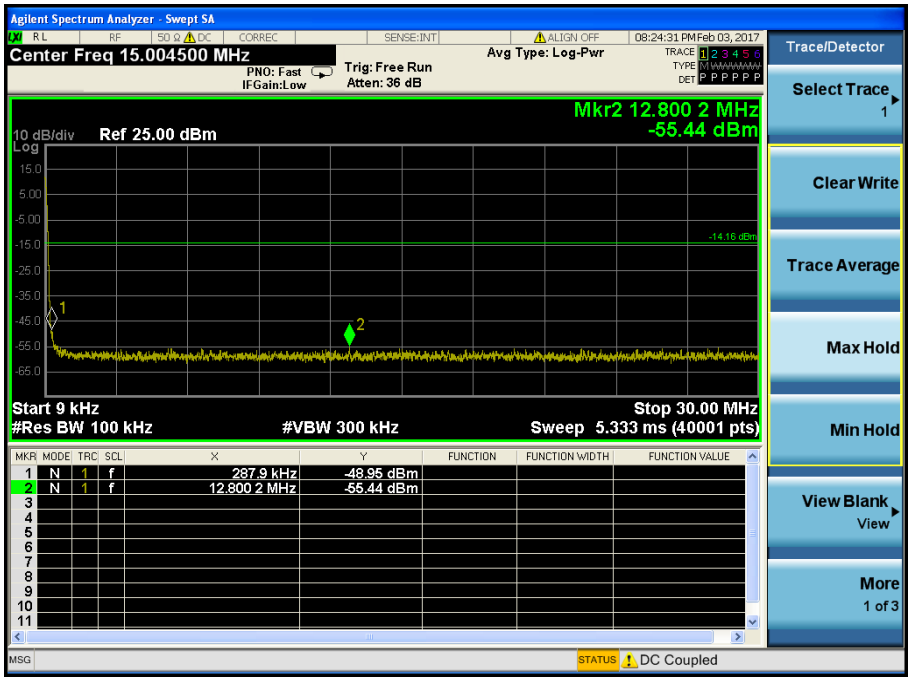


Conducted Spurious Emissions 3 (Test Channel : Lowest)

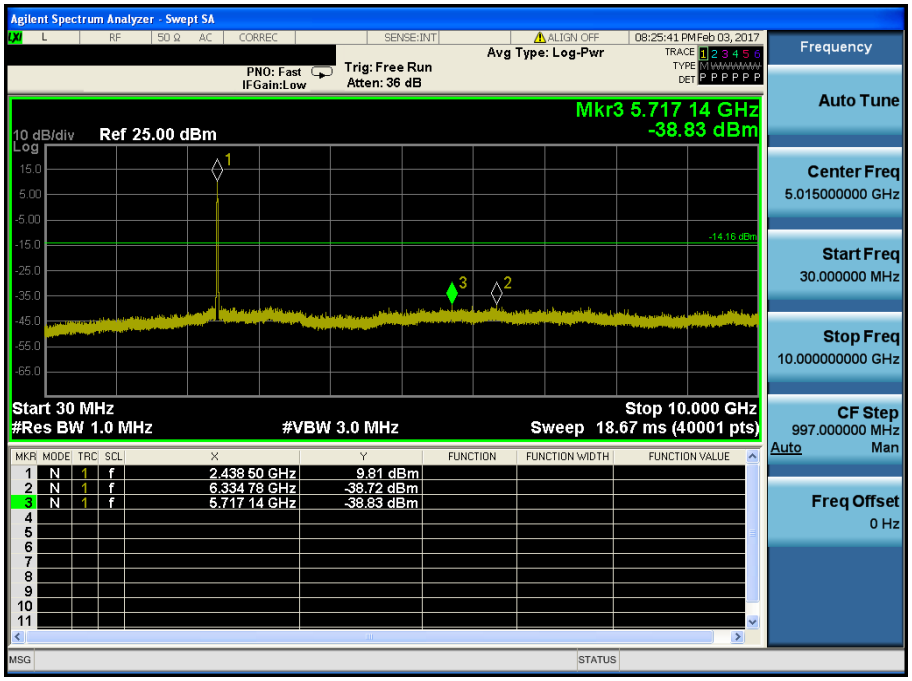


Reference (Test Channel : Middle)

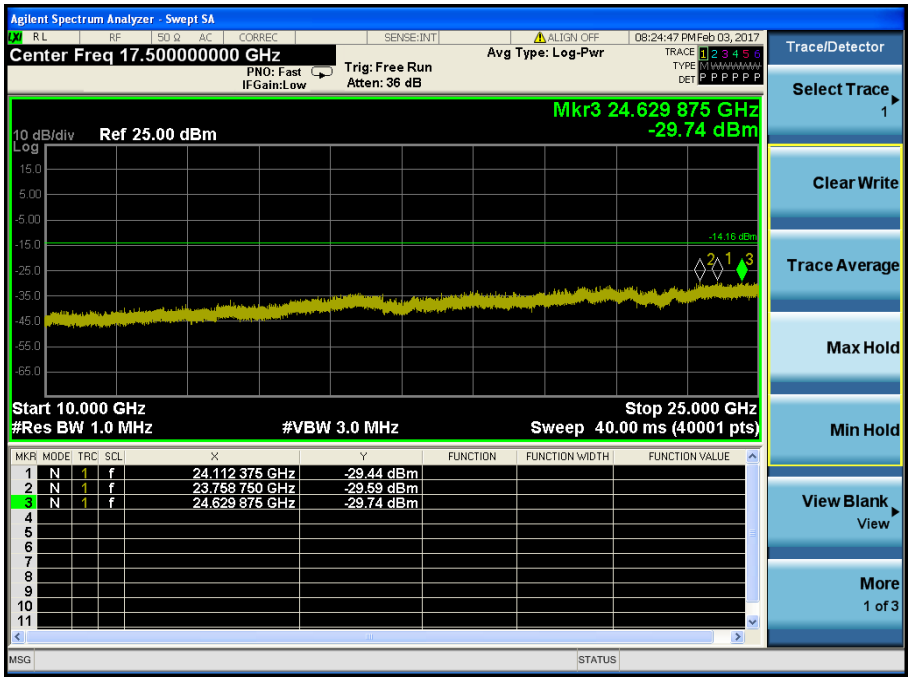
Conducted Spurious Emissions 1 (Test Channel : Middle)



Conducted Spurious Emissions 2 (Test Channel : Middle)

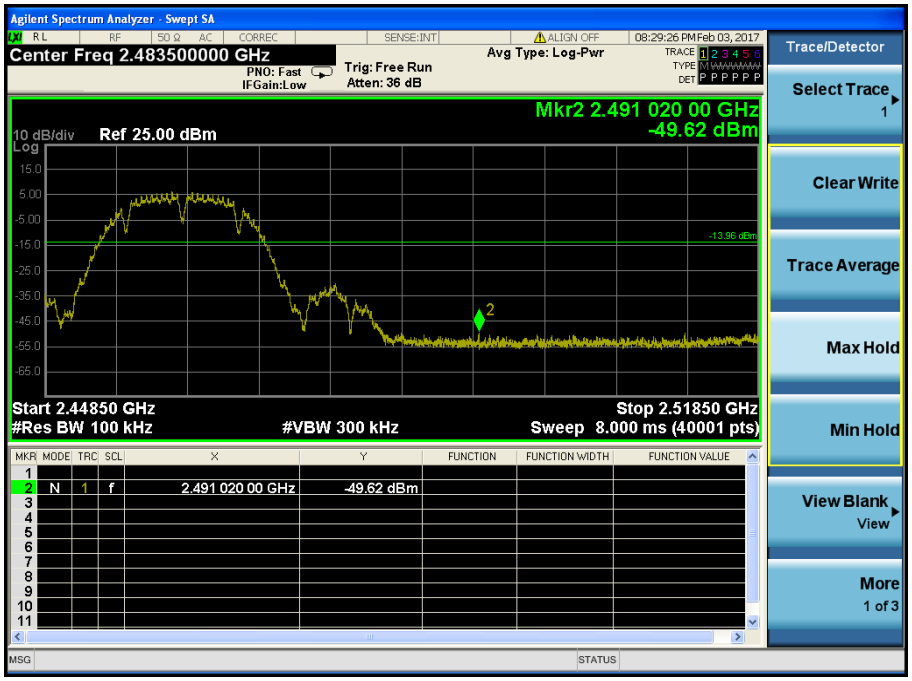


Conducted Spurious Emissions 3 (Test Channel : Middle)

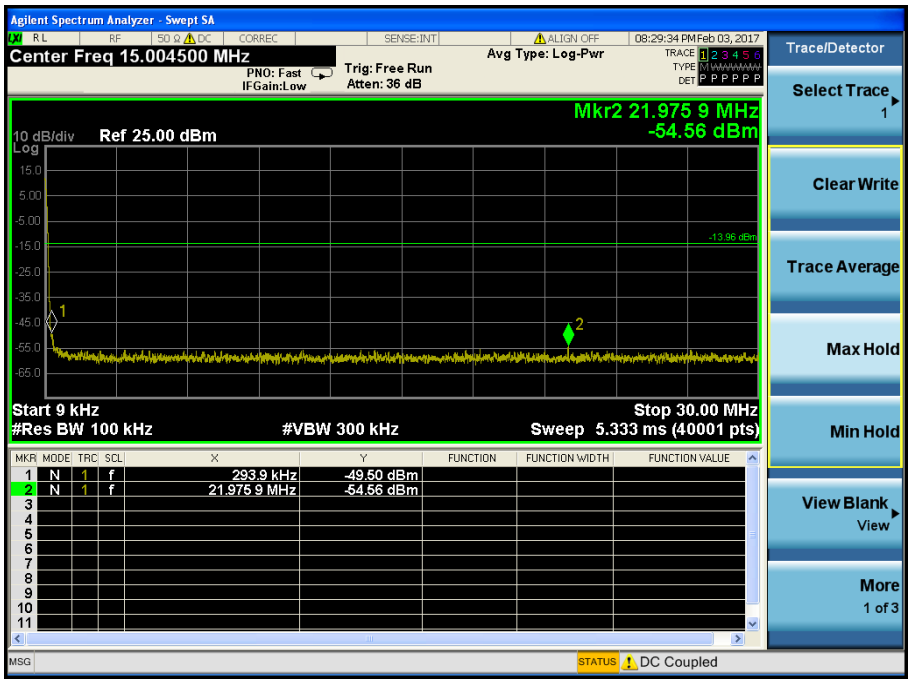


Reference (Test Channel : Highest)

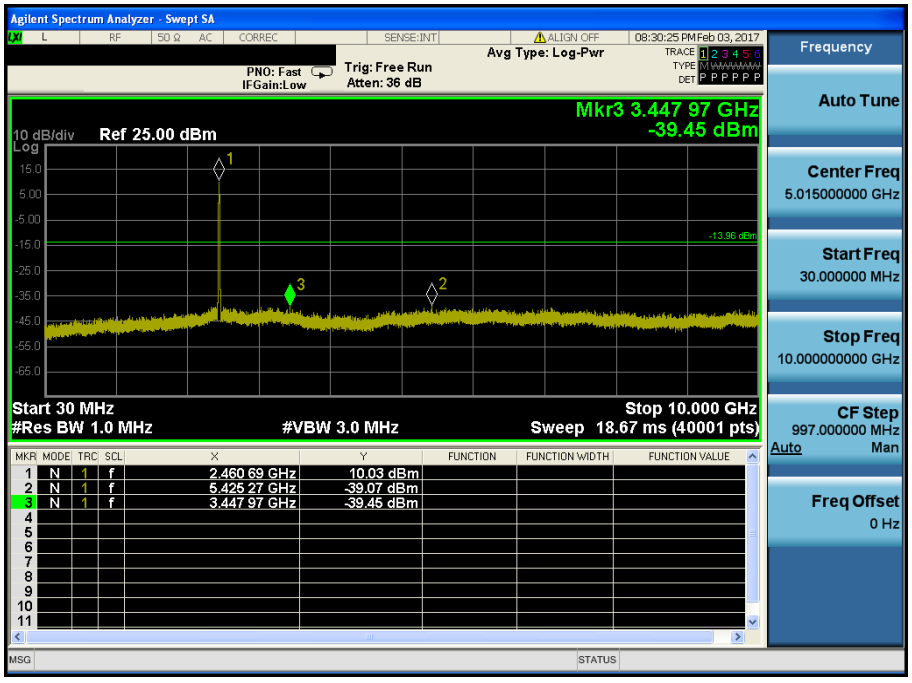
High Band-edge (Test Channel : Highest)



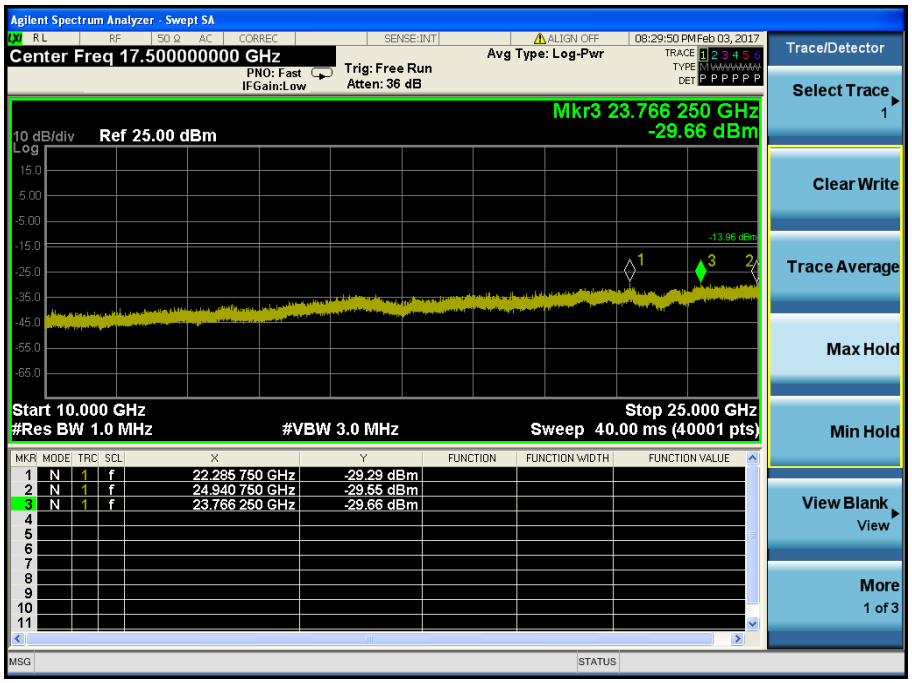
Conducted Spurious Emissions 1 (Test Channel : Highest)



Conducted Spurious Emissions 2 (Test Channel : Highest)

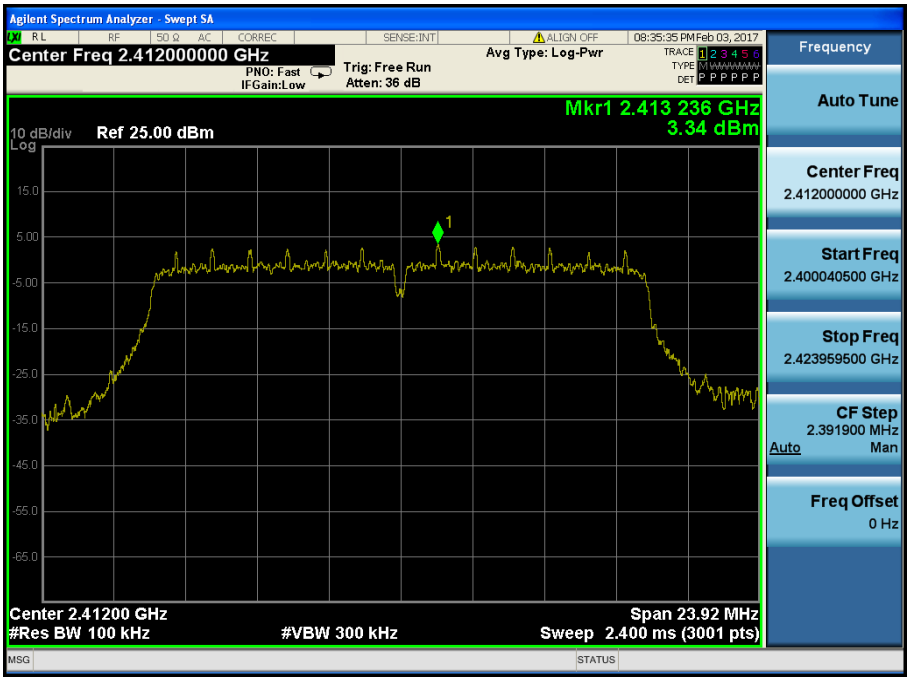


Conducted Spurious Emissions 3 (Test Channel : Highest)

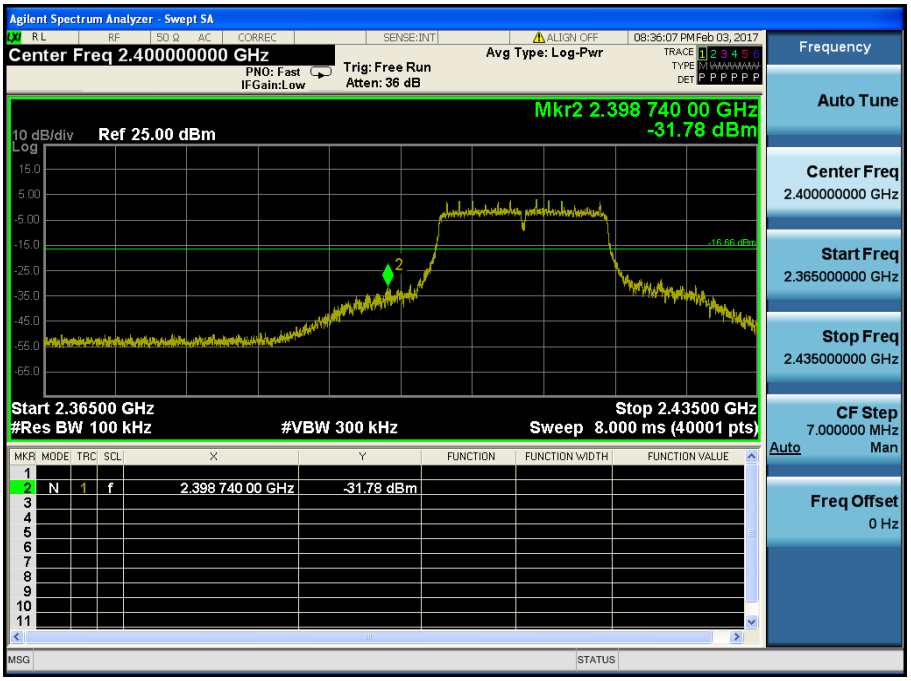


<TM 2 & ANT 1>

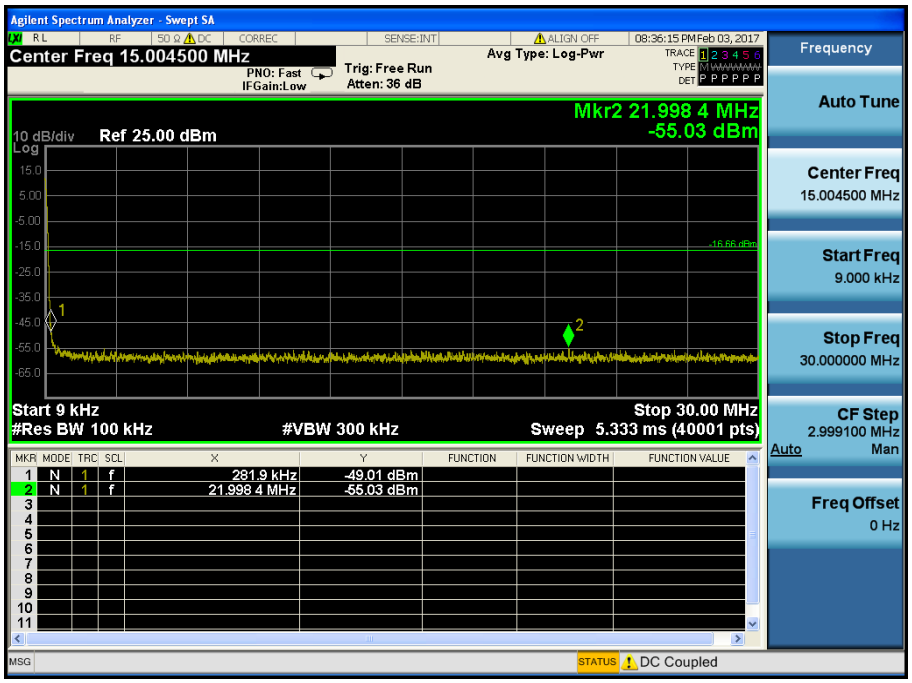
Reference (Test Channel : Lowest)



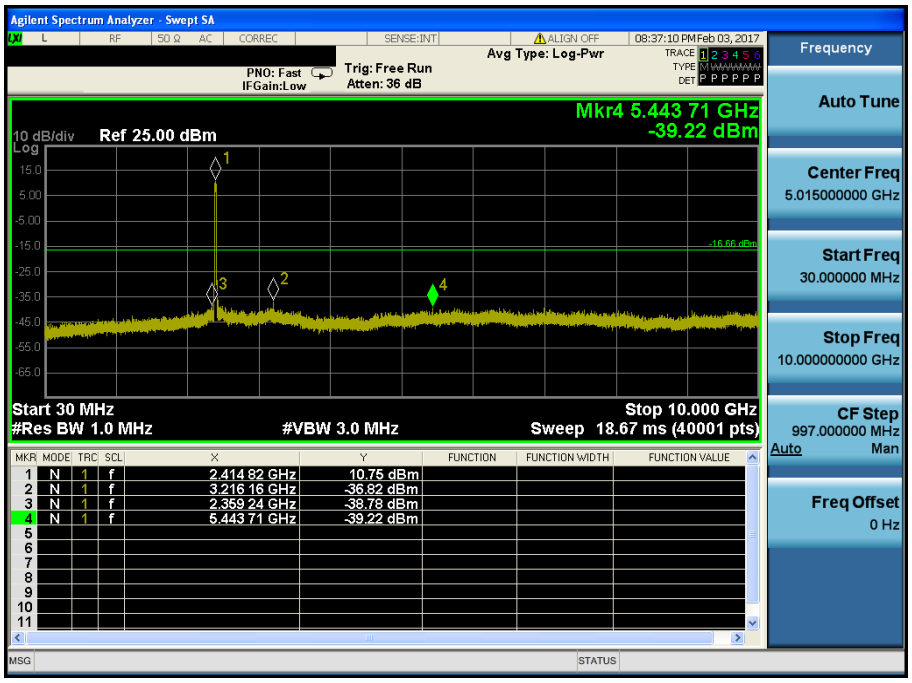
Low Band-edge (Test Channel : Lowest)



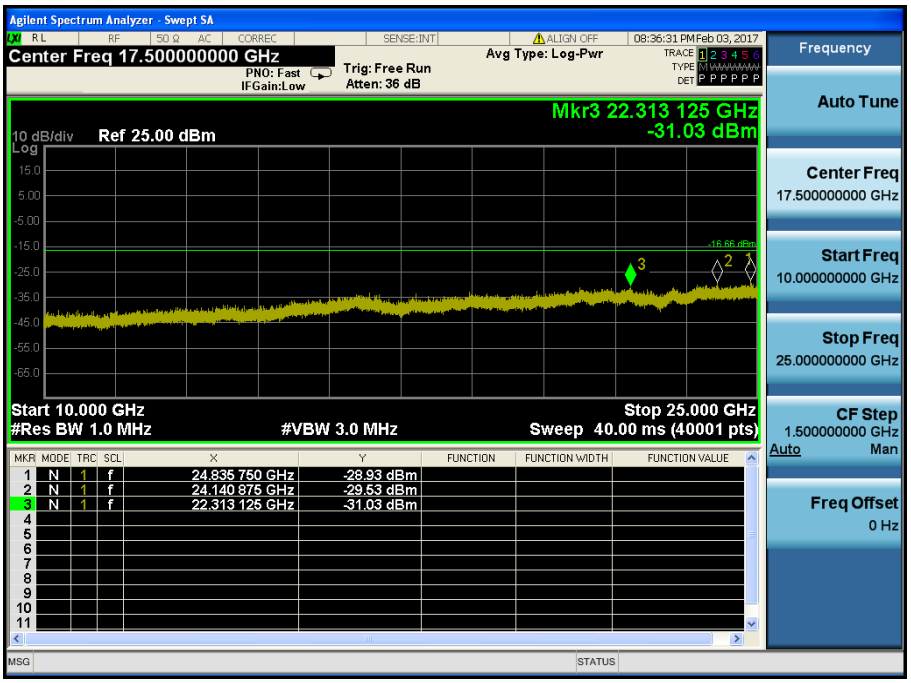
Conducted Spurious Emissions 1 (Test Channel : Lowest)



Conducted Spurious Emissions 2 (Test Channel : Lowest)

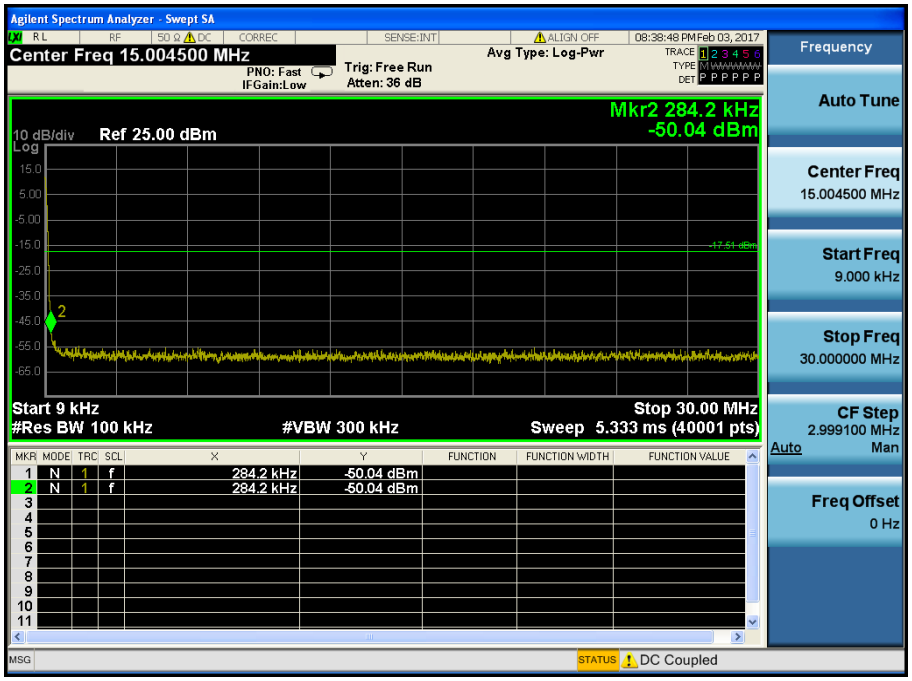


Conducted Spurious Emissions 3 (Test Channel : Lowest)

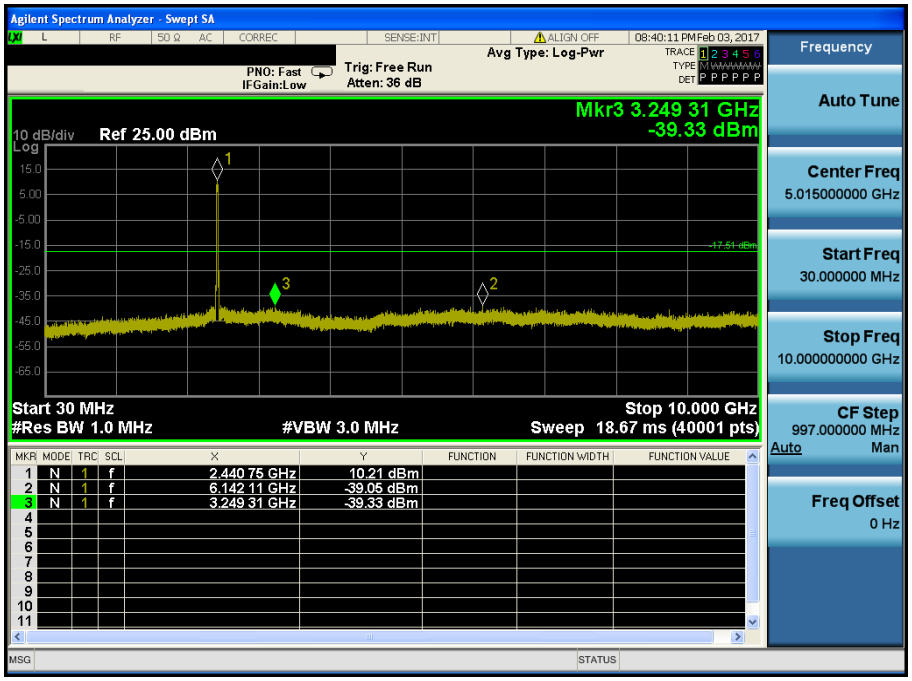


Reference (Test Channel : Middle)

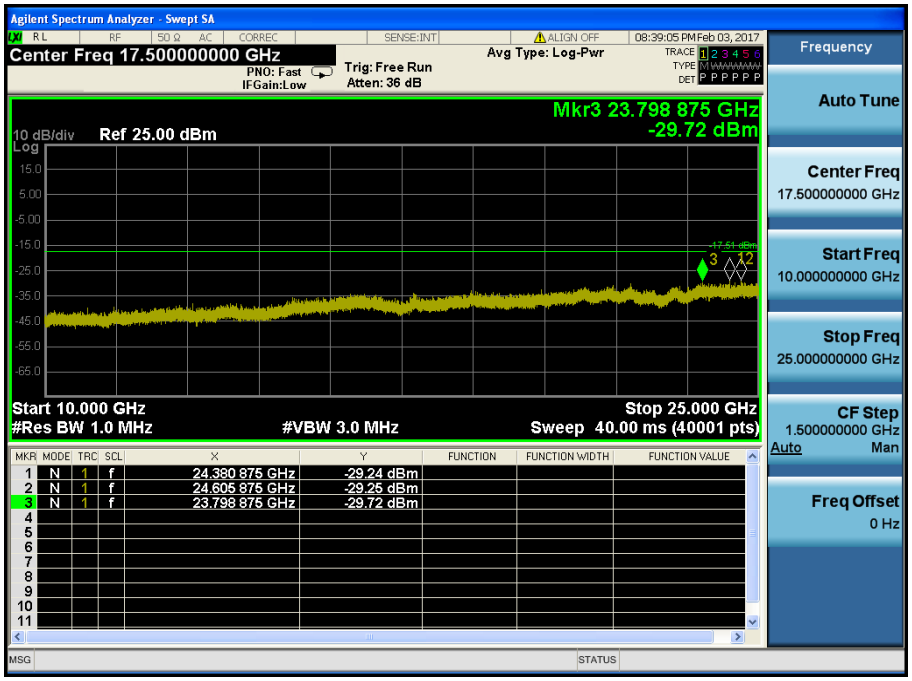
Conducted Spurious Emissions 1 (Test Channel : Middle)



Conducted Spurious Emissions 2 (Test Channel : Middle)

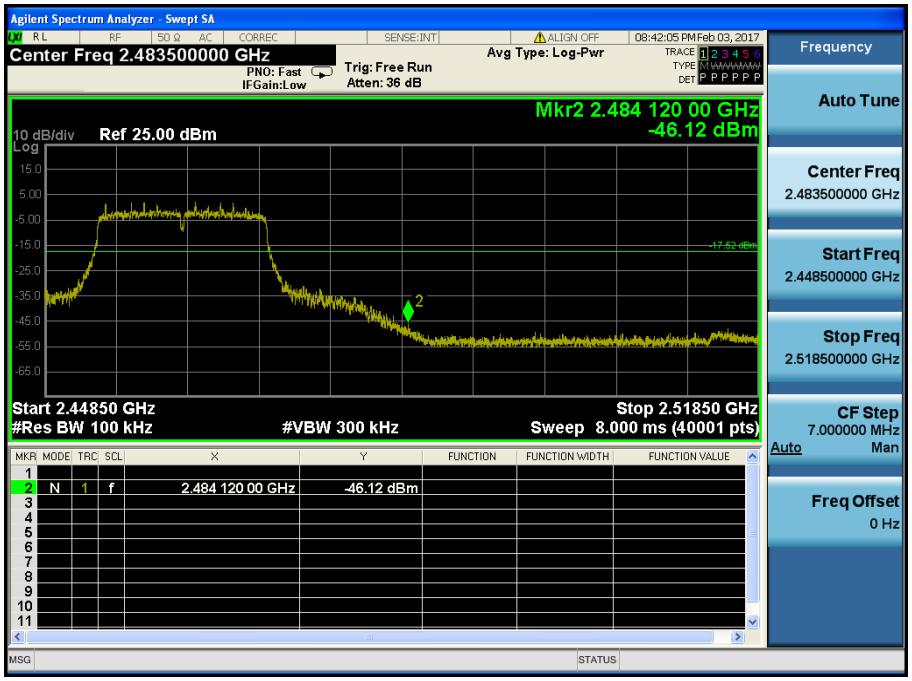


Conducted Spurious Emissions 3 (Test Channel : Middle)

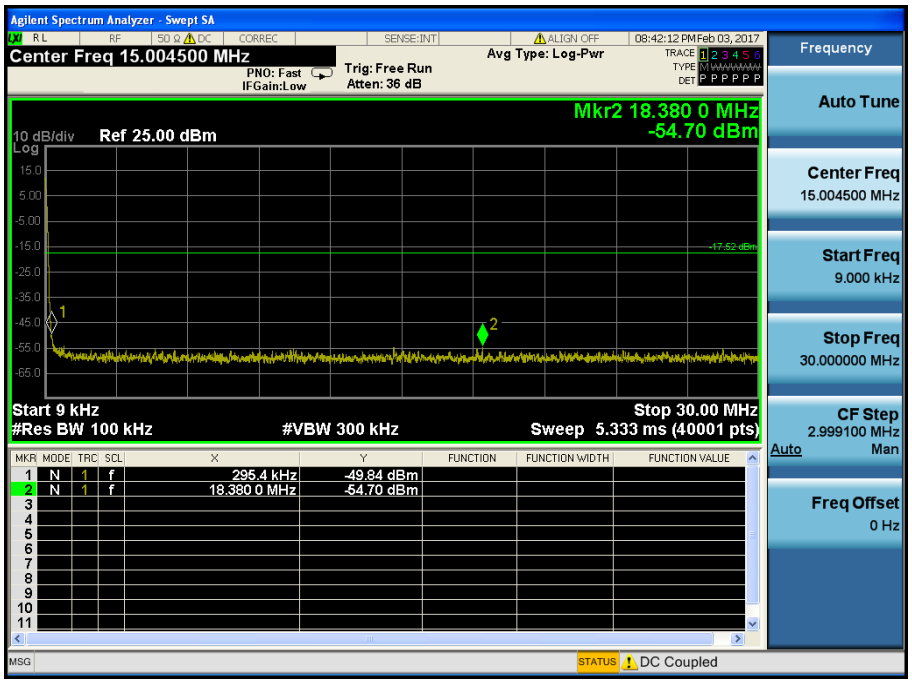


Reference (Test Channel : Highest)

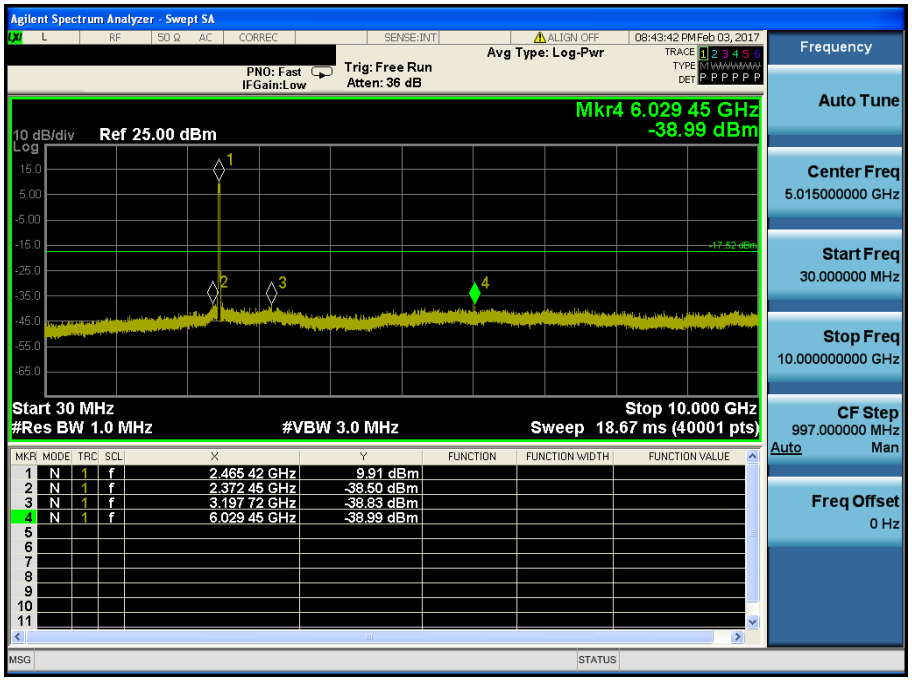
High Band-edge (Test Channel : Highest)



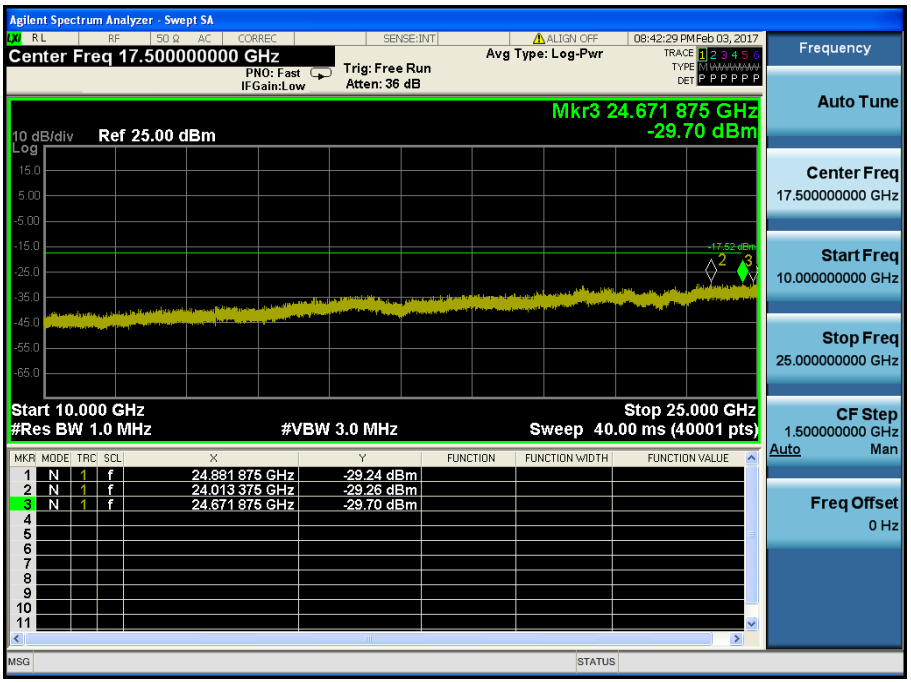
Conducted Spurious Emissions 1 (Test Channel : Highest)



Conducted Spurious Emissions 2 (Test Channel : Highest)

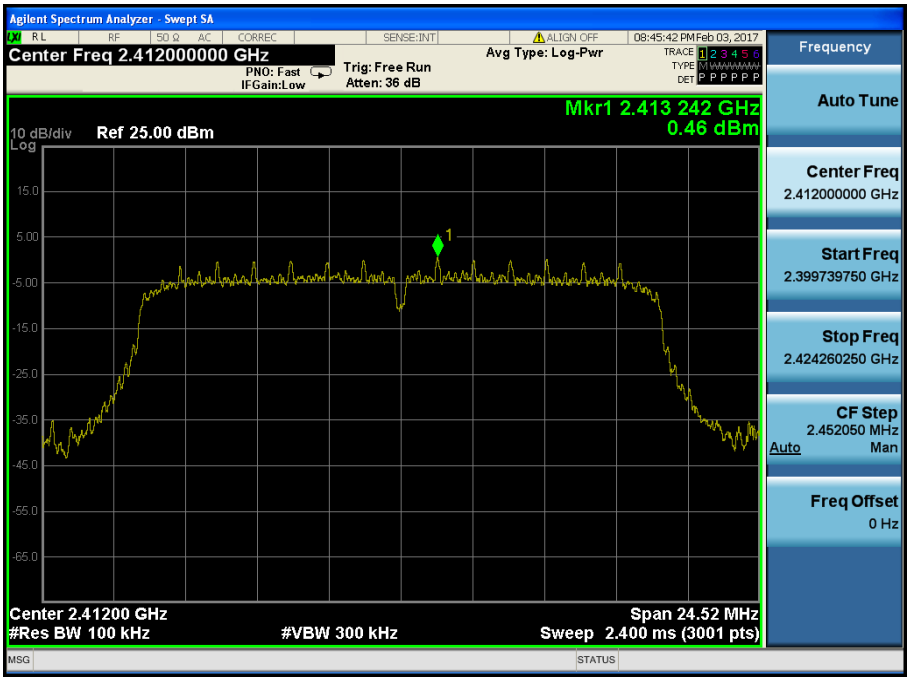


Conducted Spurious Emissions 3 (Test Channel : Highest)

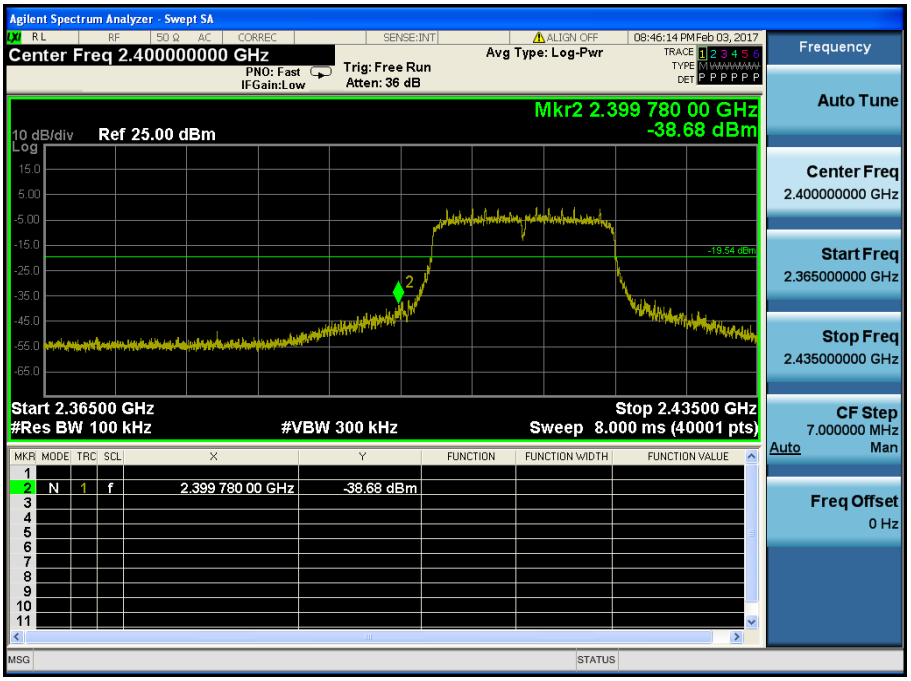


<TM 3 & ANT 1>

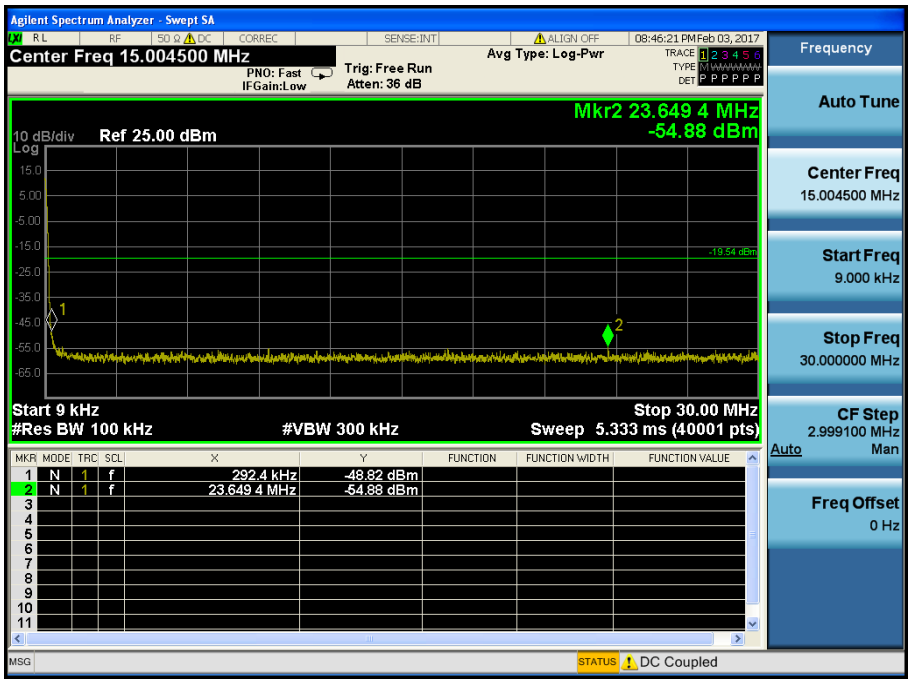
Reference (Test Channel : Lowest)



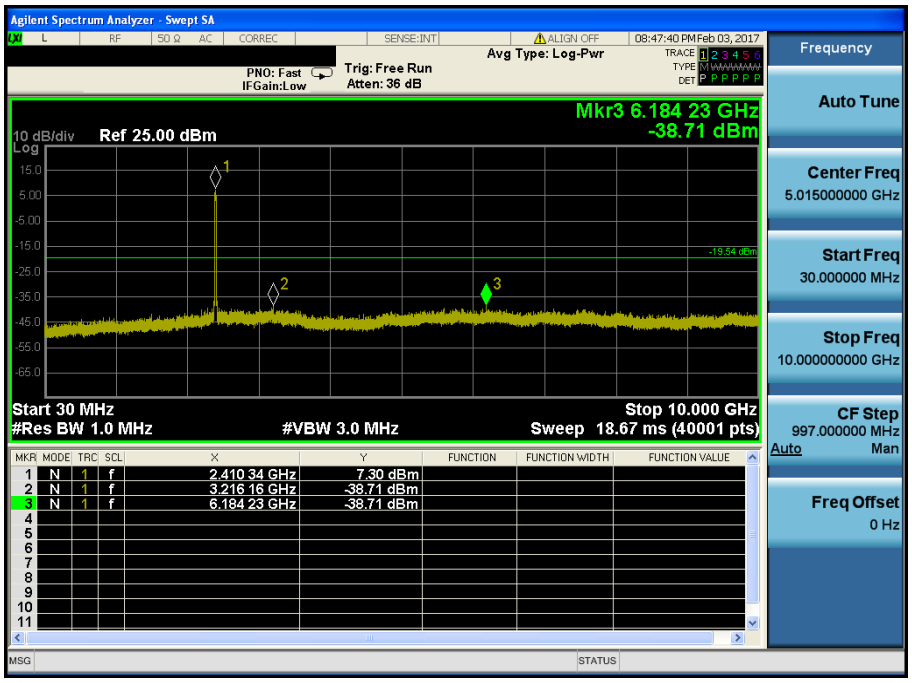
Low Band-edge (Test Channel : Lowest)



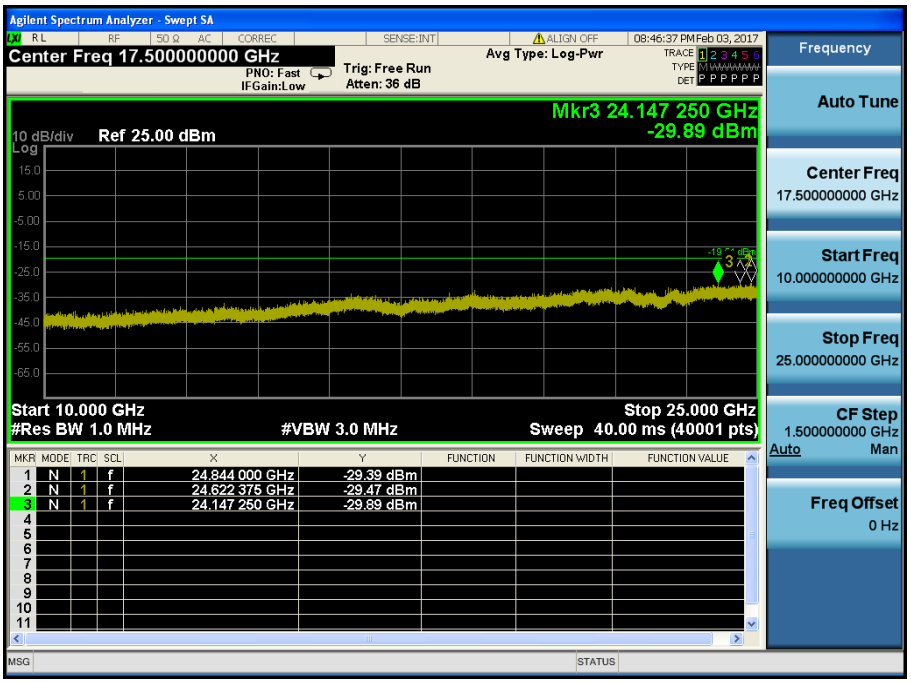
Conducted Spurious Emissions 1 (Test Channel : Lowest)



Conducted Spurious Emissions 2 (Test Channel : Lowest)

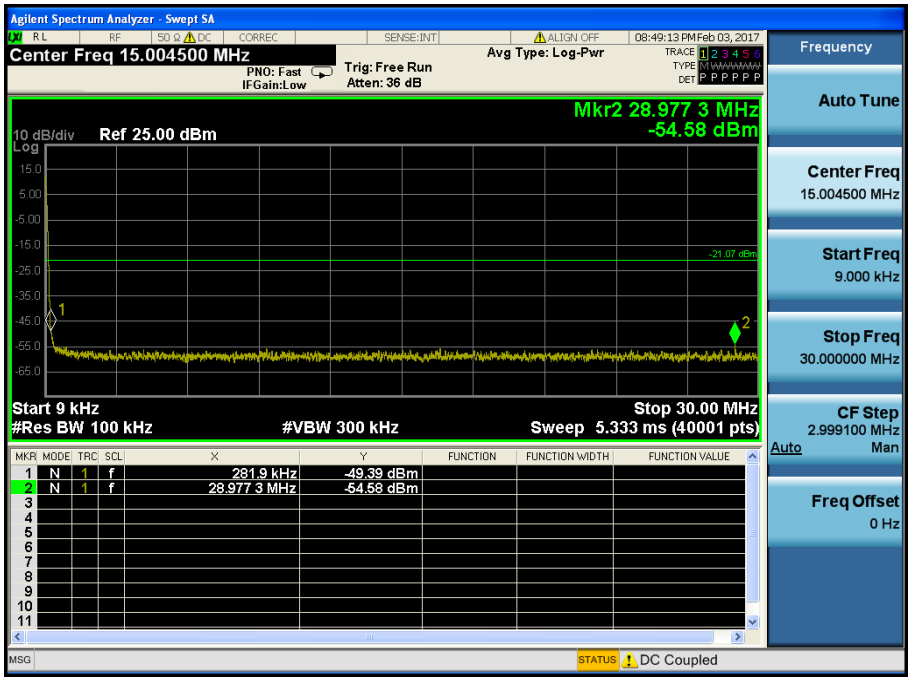


Conducted Spurious Emissions 3 (Test Channel : Lowest)

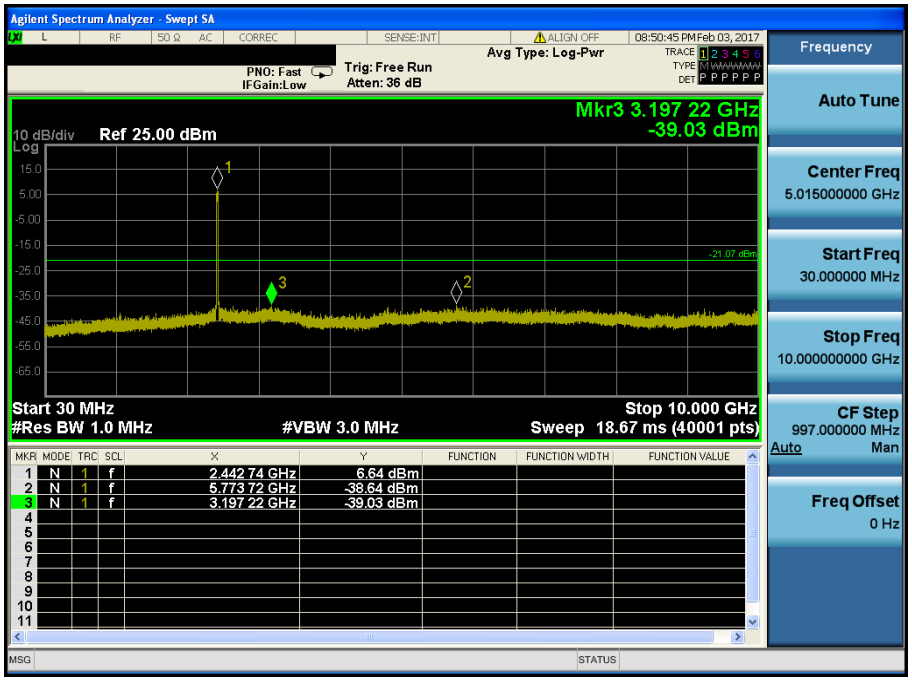


Reference (Test Channel : Middle)

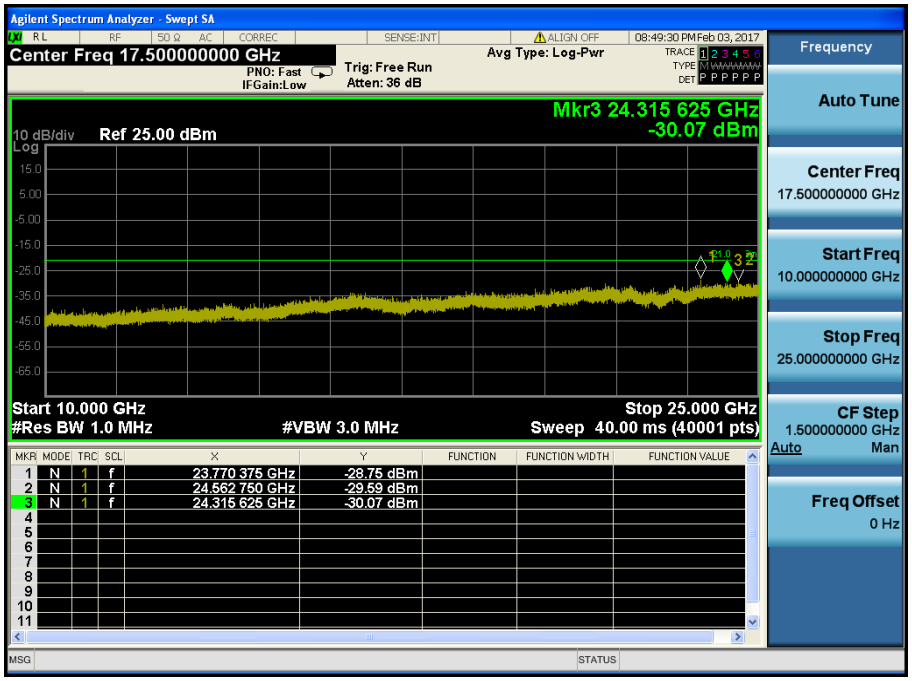
Conducted Spurious Emissions 1 (Test Channel : Middle)



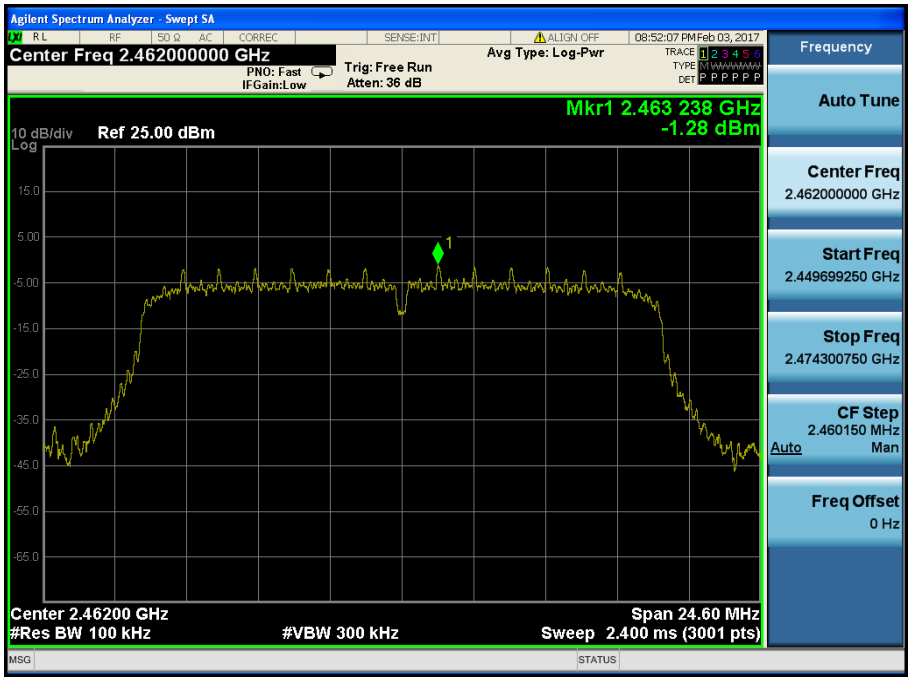
Conducted Spurious Emissions 2 (Test Channel : Middle)



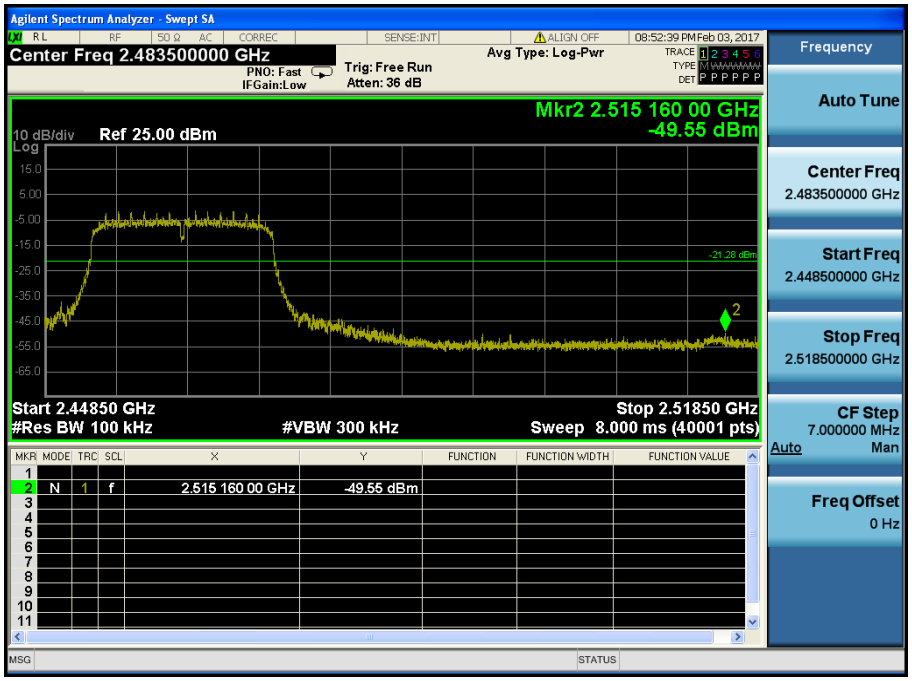
Conducted Spurious Emissions 3 (Test Channel : Middle)



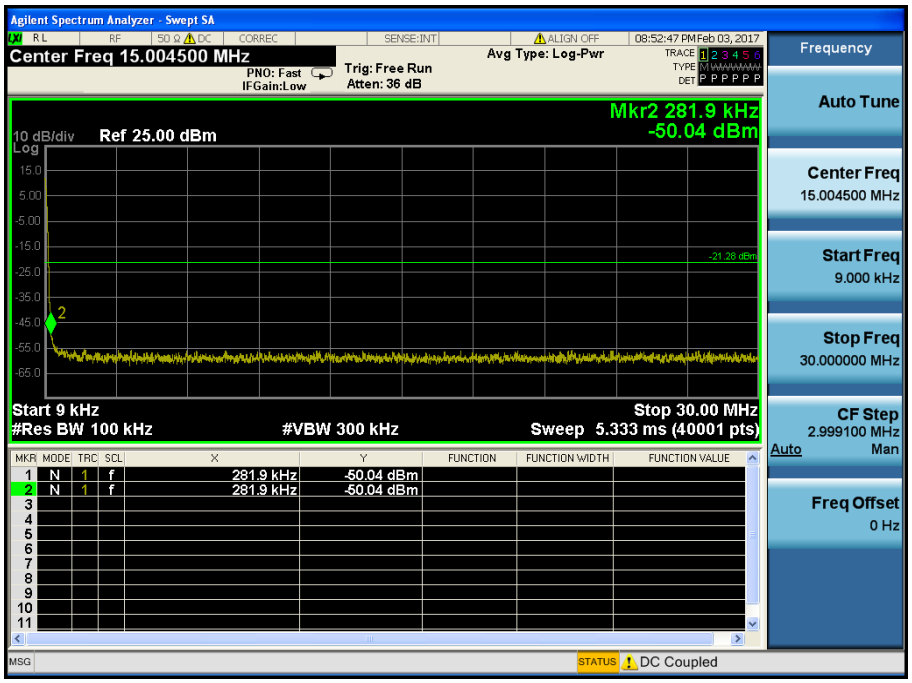
Reference (Test Channel : Highest)



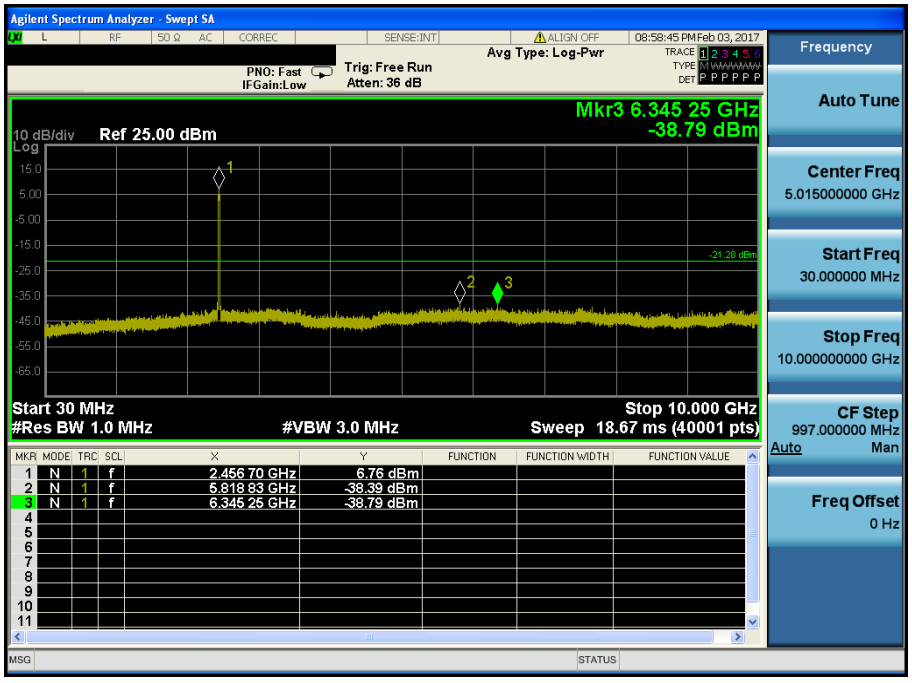
High Band-edge (Test Channel : Highest)



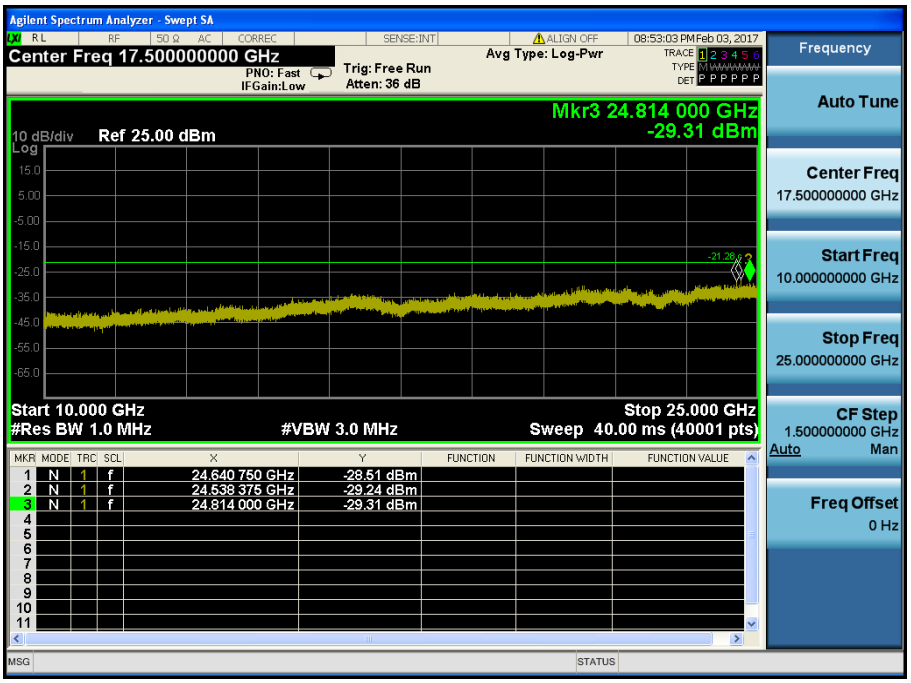
Conducted Spurious Emissions 1 (Test Channel : Highest)



Conducted Spurious Emissions 2 (Test Channel : Highest)

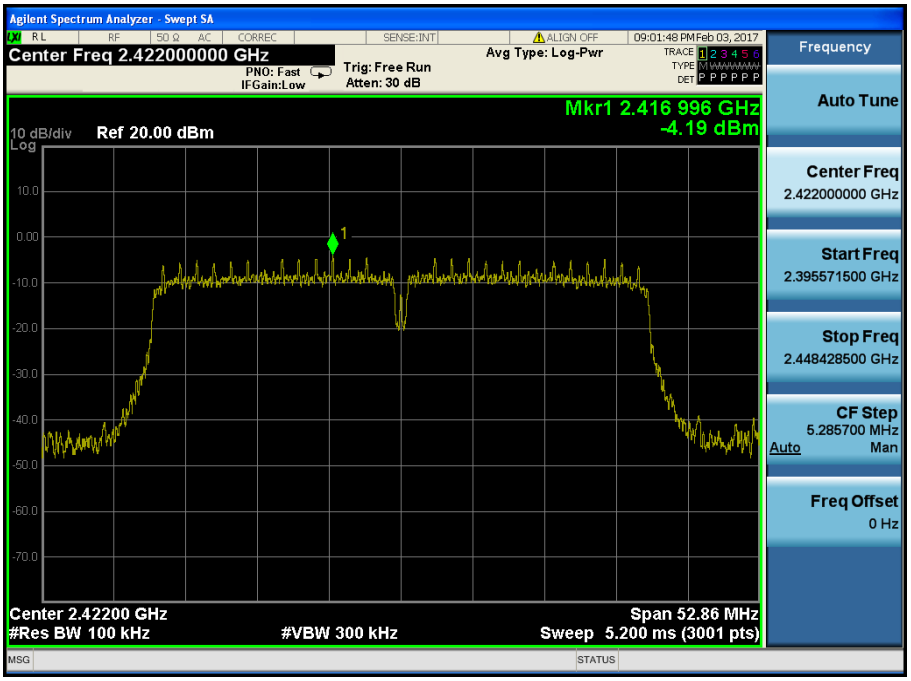


Conducted Spurious Emissions 3 (Test Channel : Highest)

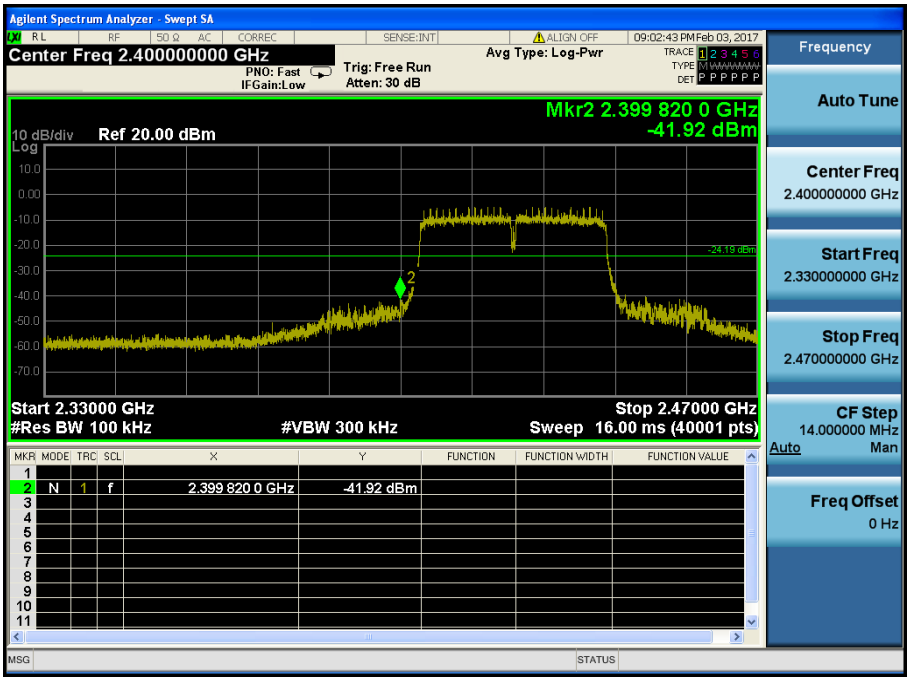


<TM 4 & ANT 1>

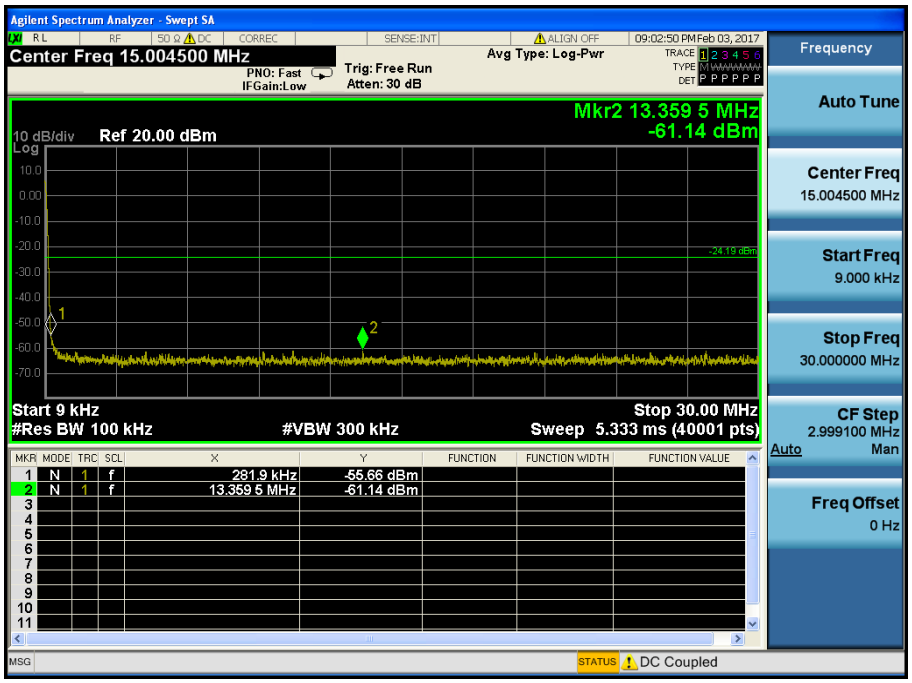
Reference (Test Channel : Lowest)



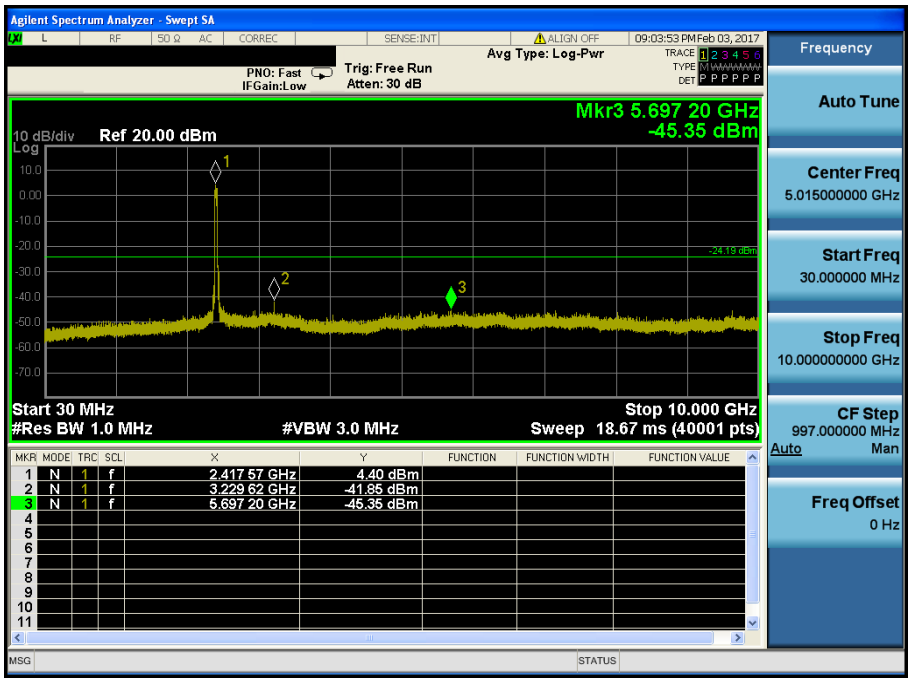
Low Band-edge (Test Channel : Lowest)



Conducted Spurious Emissions 1 (Test Channel : Lowest)



Conducted Spurious Emissions 2 (Test Channel : Lowest)



Conducted Spurious Emissions 3 (Test Channel : Lowest)