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

Test requirements and limit, §15.247(d) & RSS-210 [A8.5]

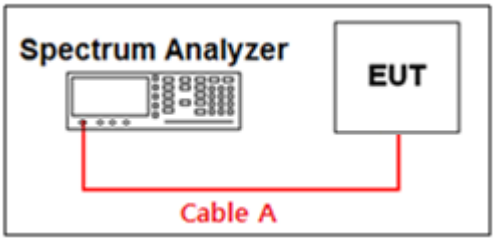
§15.247(d) specifies that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

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



▣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 for below 1 GHz, 1 MHz for above 1 GHz(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

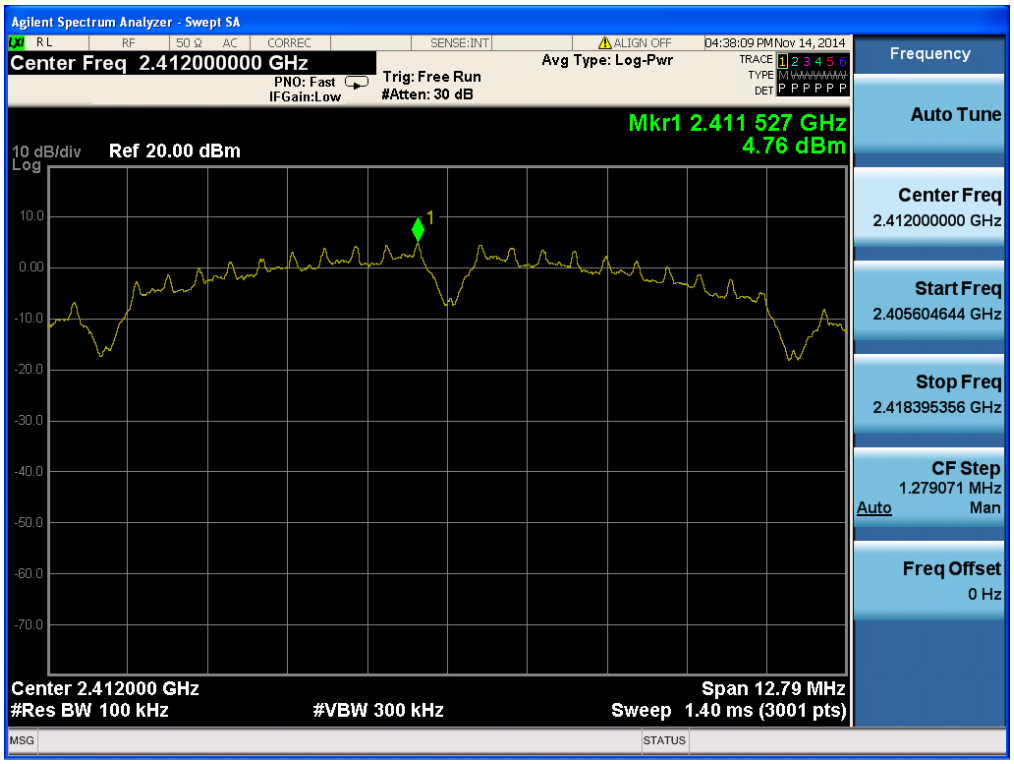
RBW= 1MHz, VBW= 3 MHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD, SWEEP POINT: 40001

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, SAPN = 100 MHz and BINS = 2001 to get accurate emission level within 100 kHz BW.

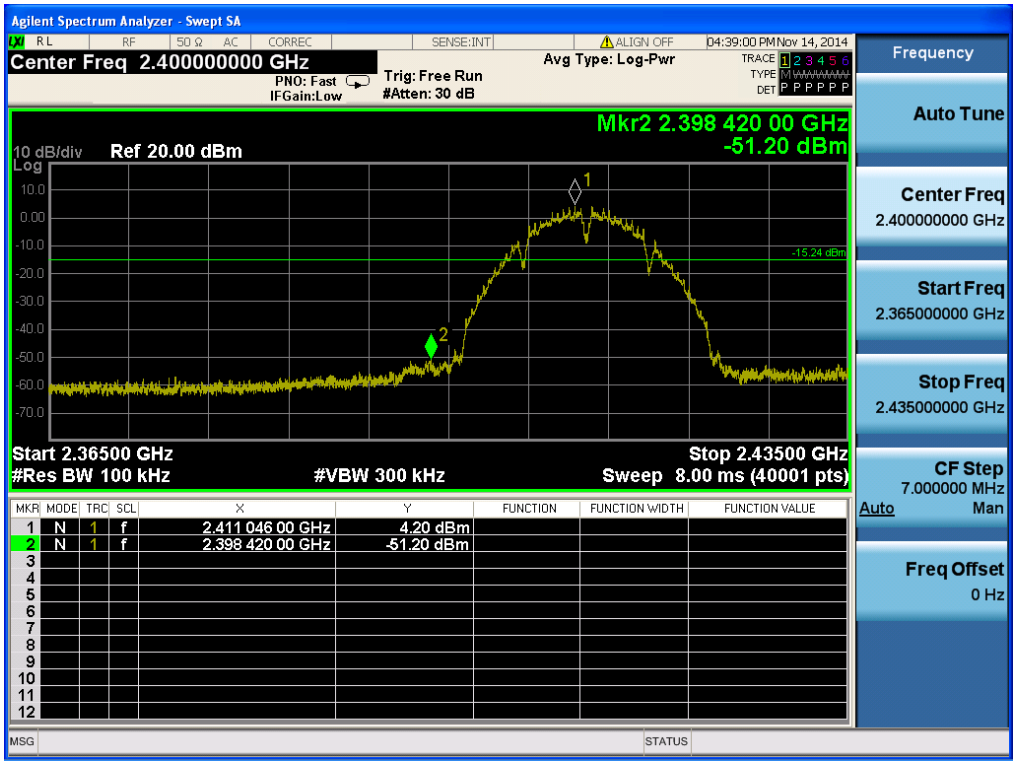
▣ RESULT PLOTS

TM 1 & ANT 1 & Lowest

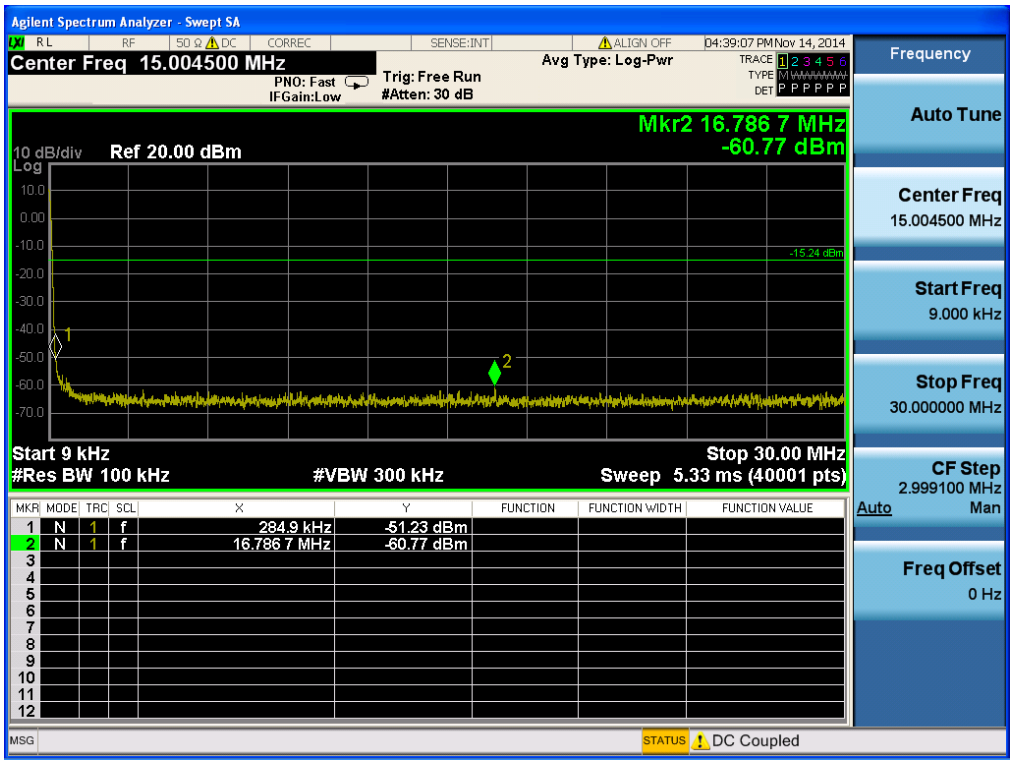
Reference

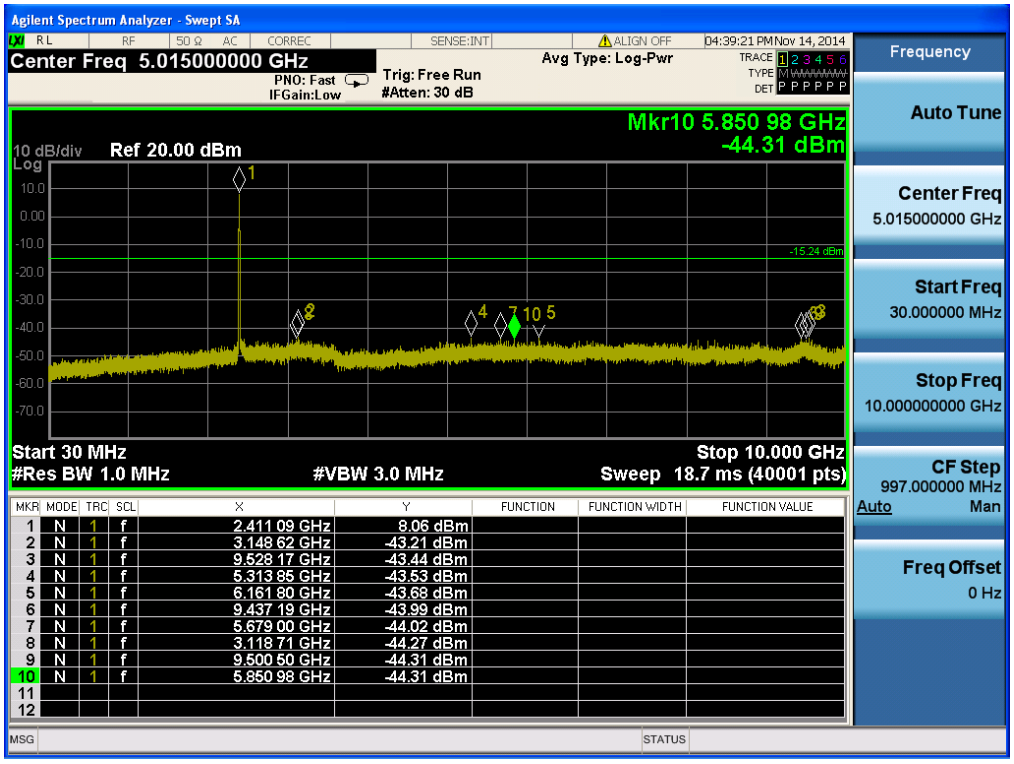


Low Band-edge

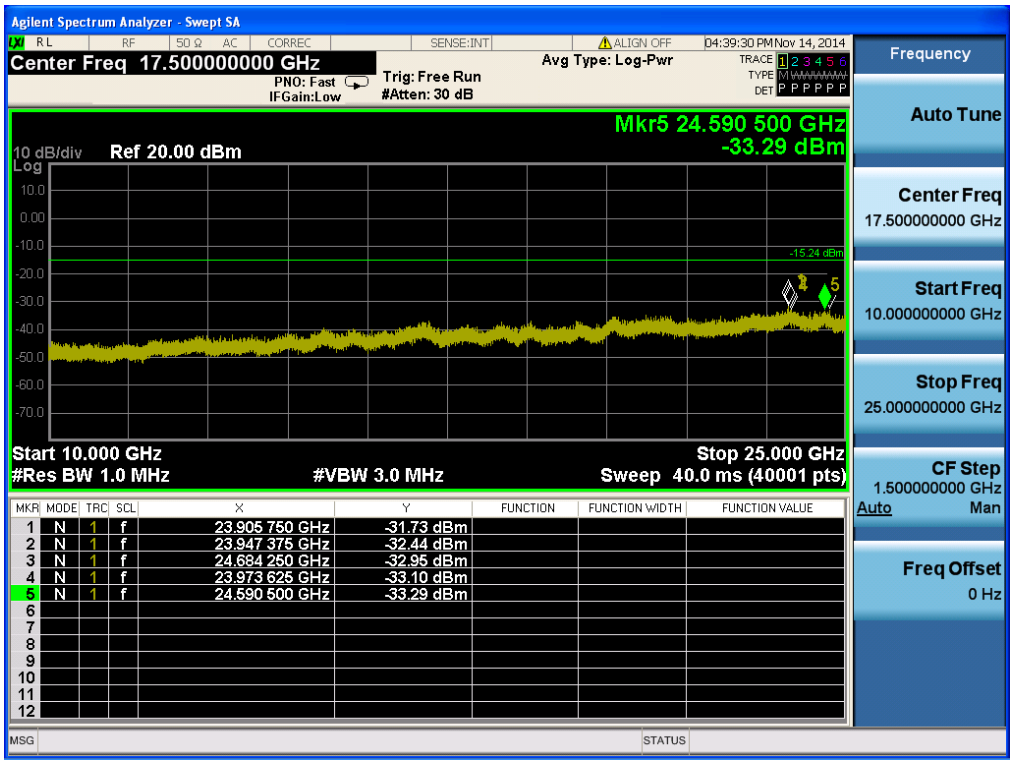


Conducted Spurious Emissions



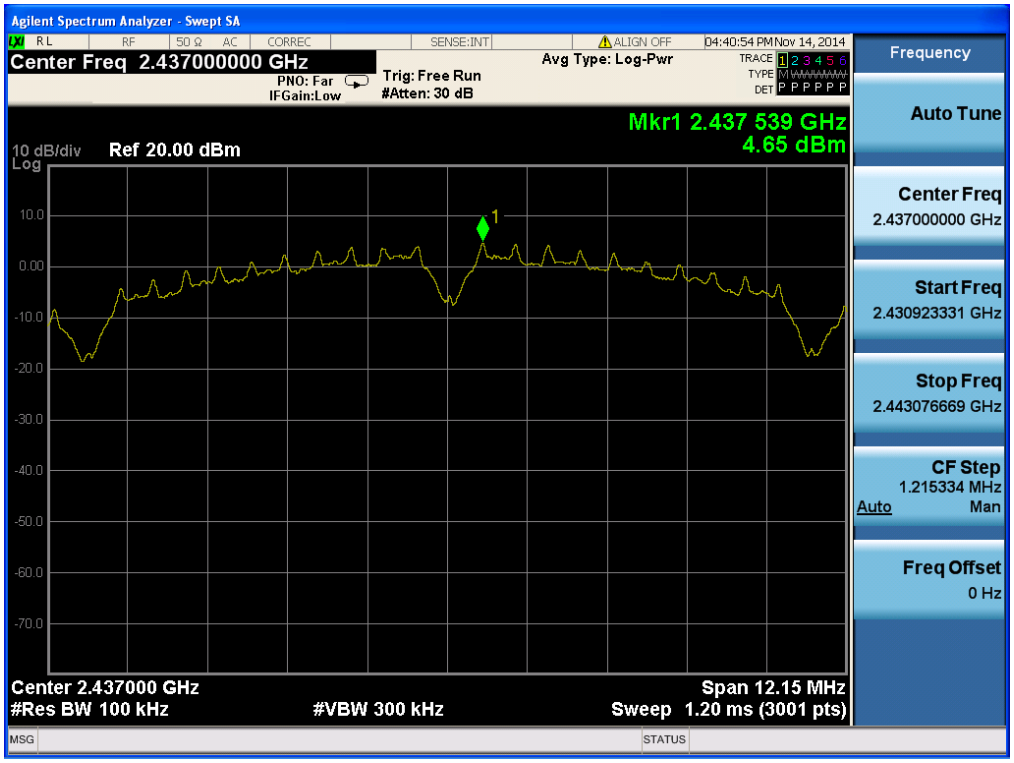


Conducted Spurious Emissions

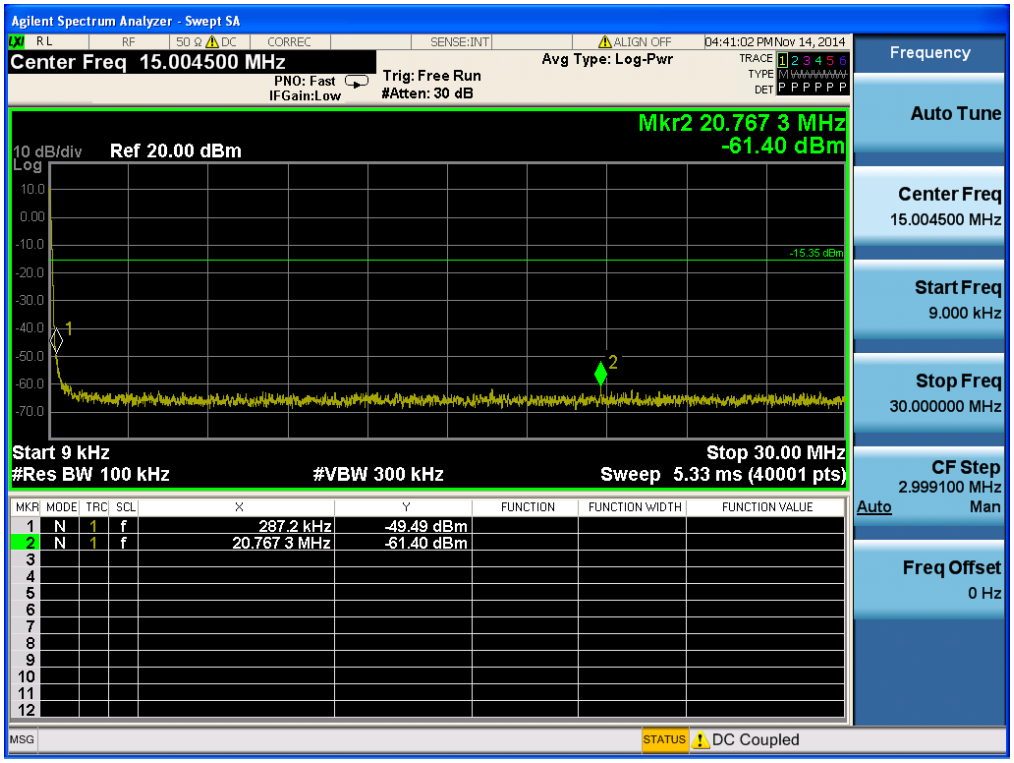


TM 1 & ANT 1 & Middle

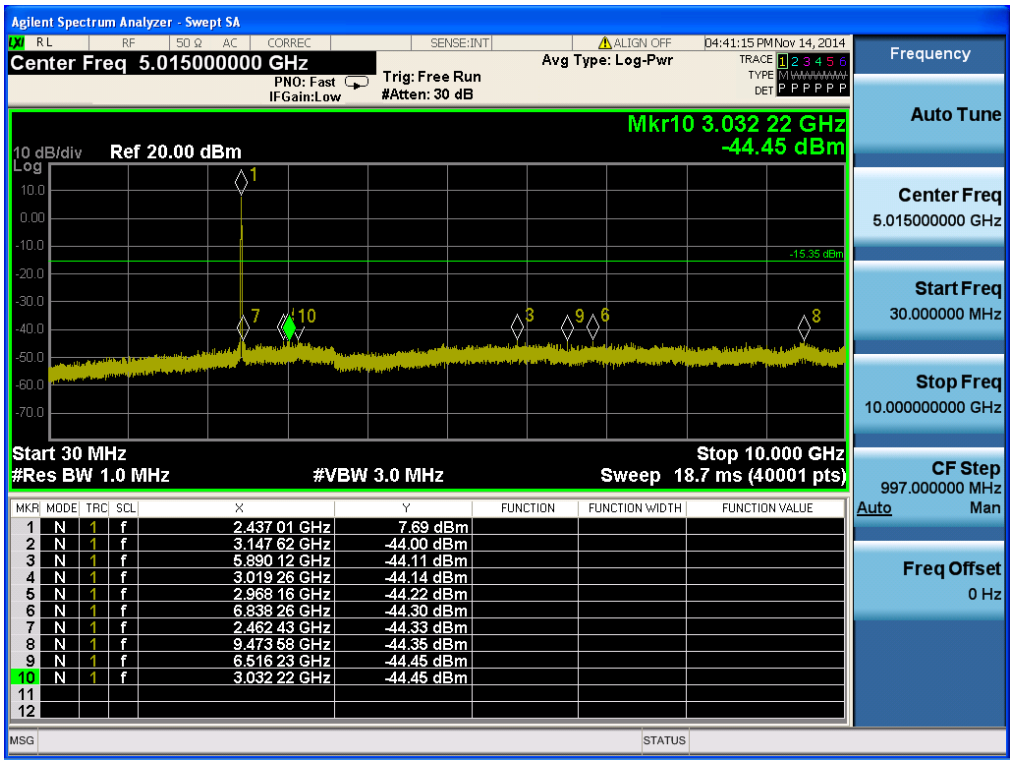
Reference

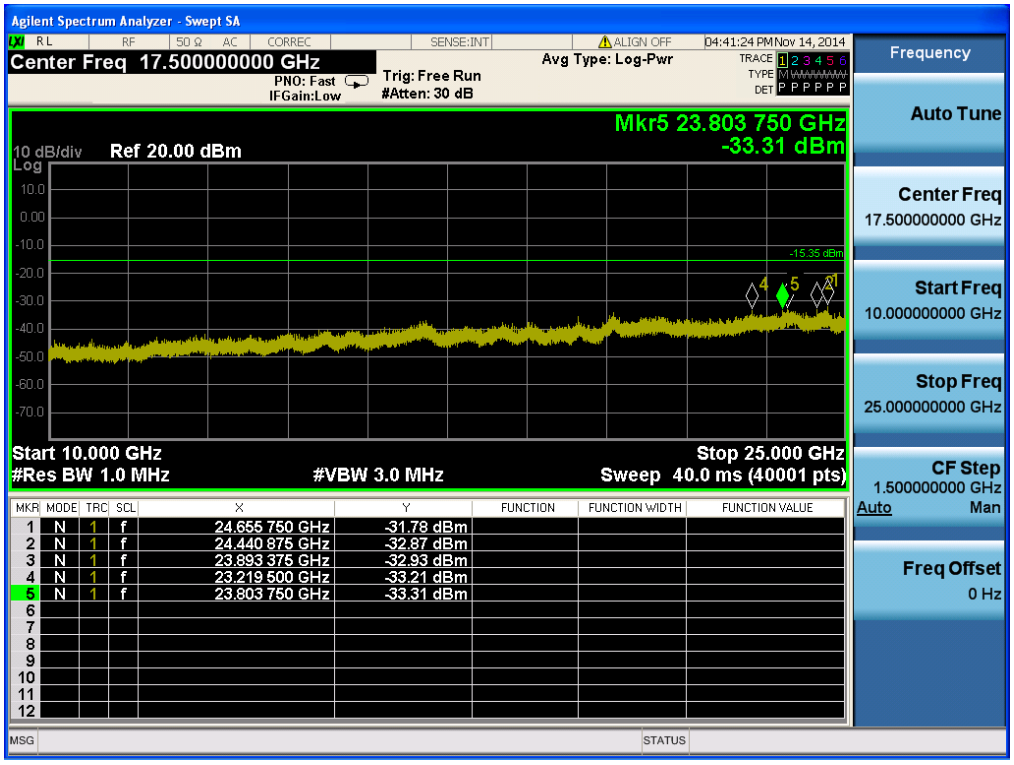


Conducted Spurious Emissions



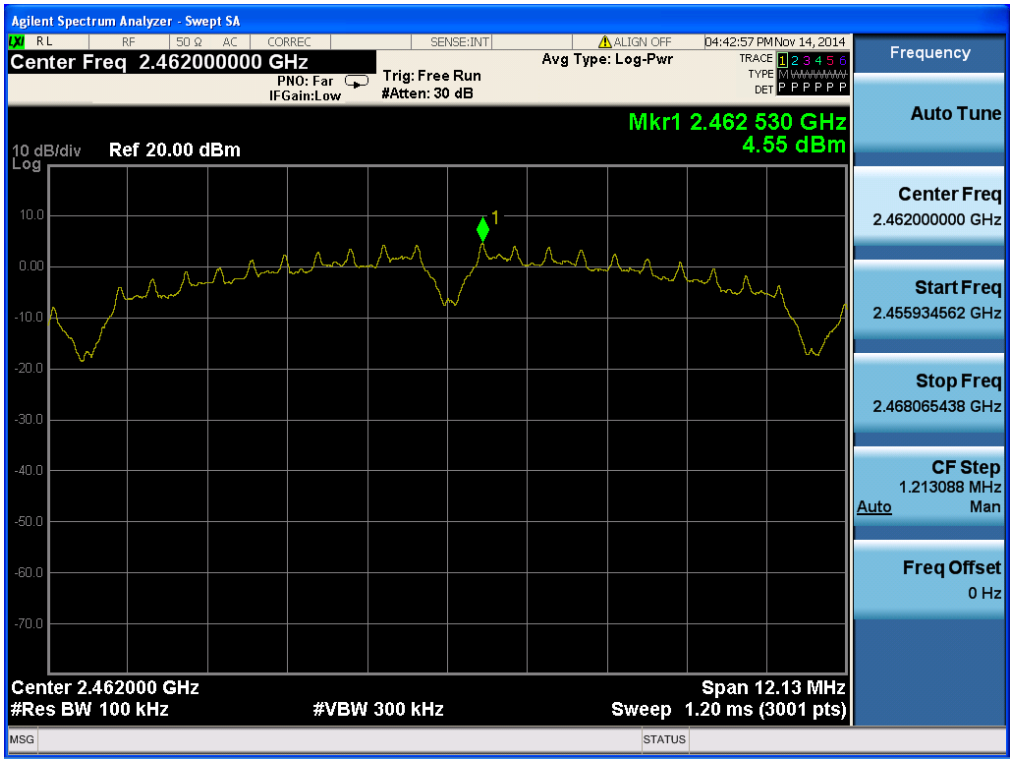
Conducted Spurious Emissions



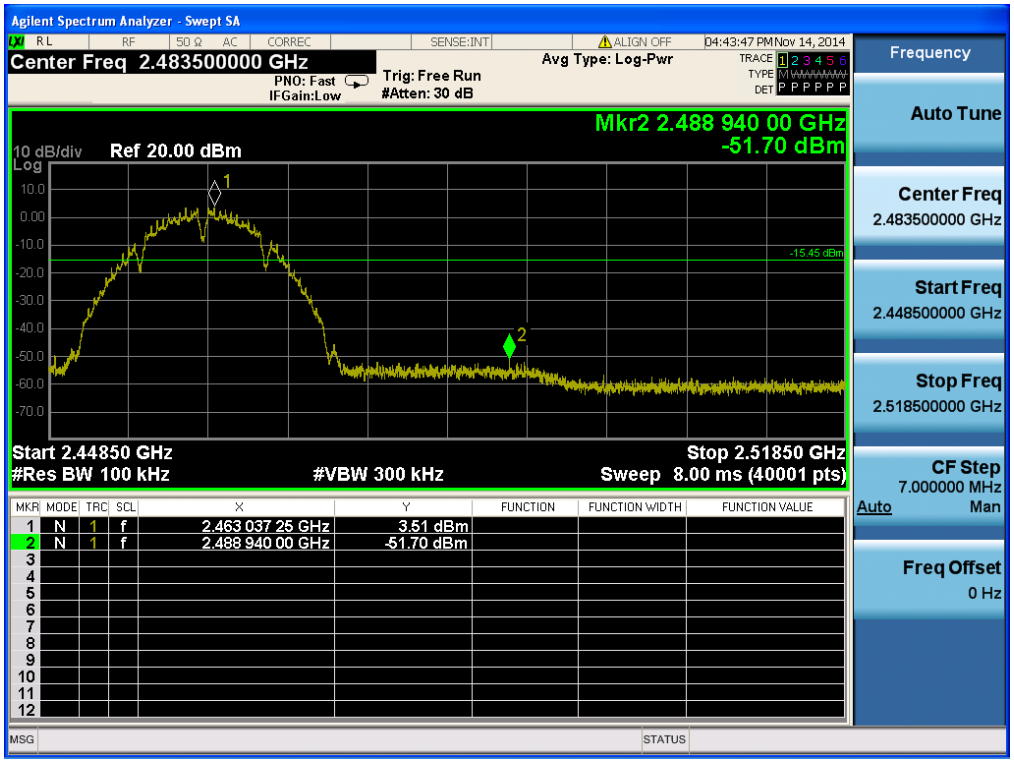


TM 1 & ANT 1 & Highest

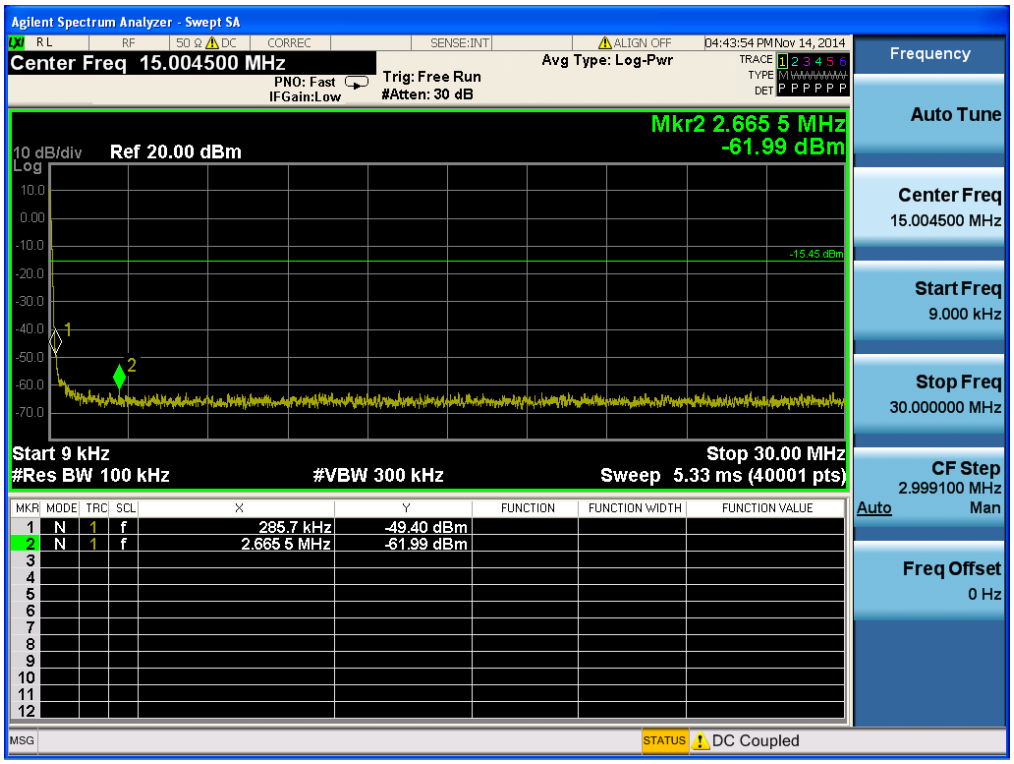
Reference

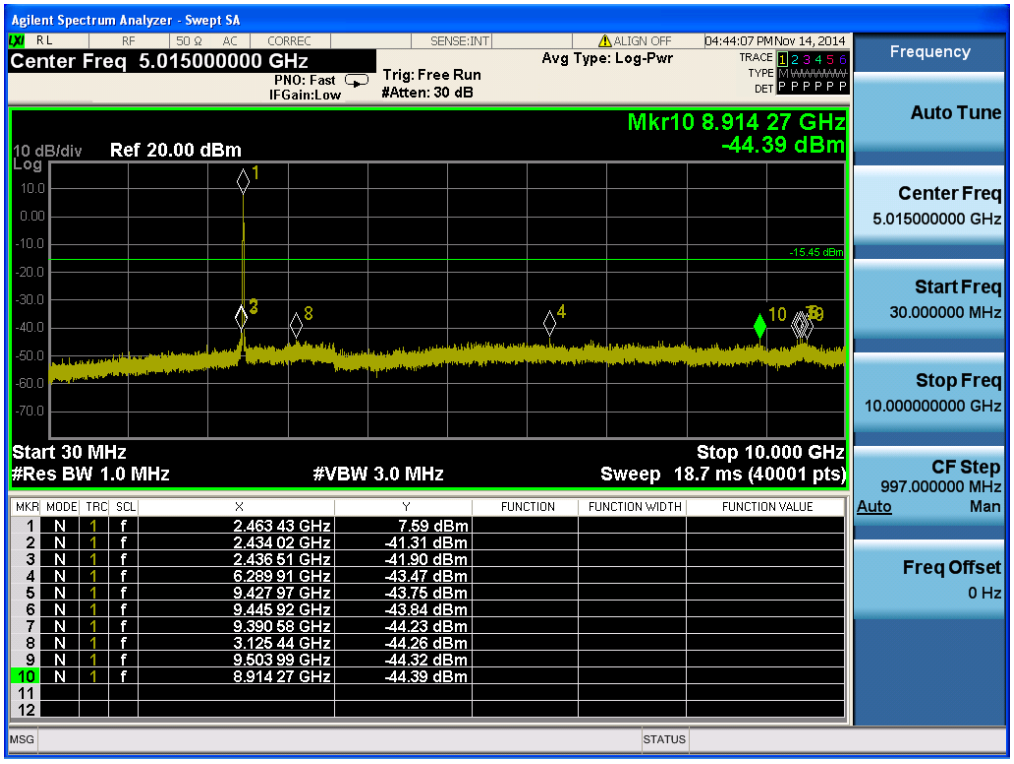


High Band-edge

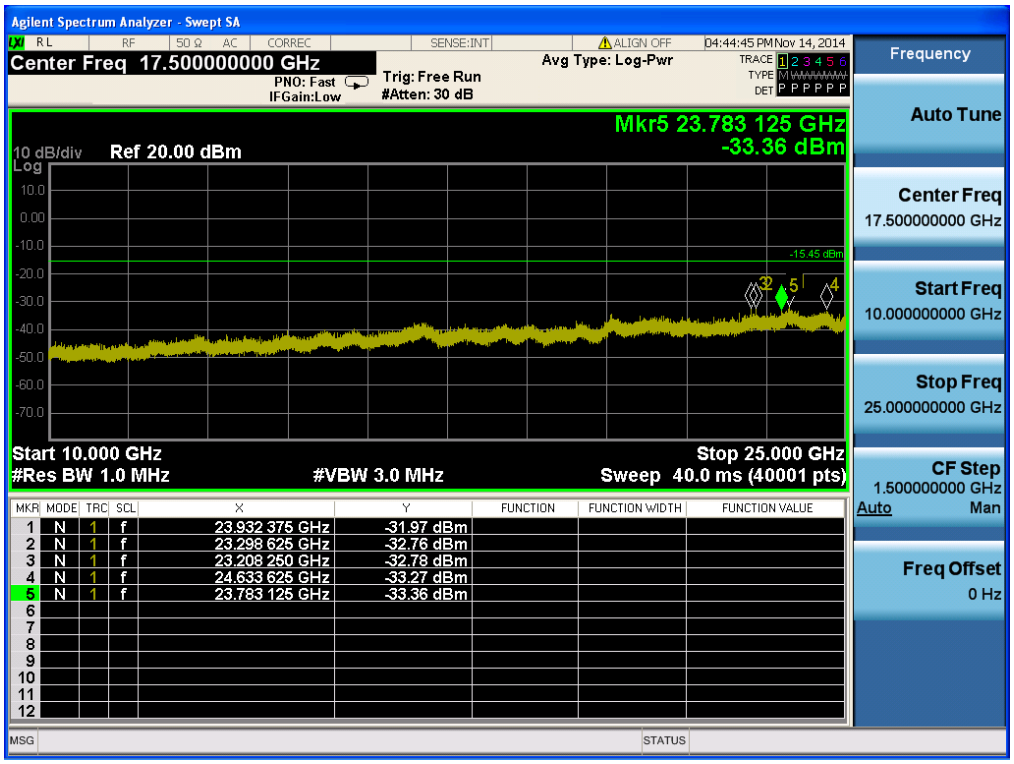


Conducted Spurious Emissions



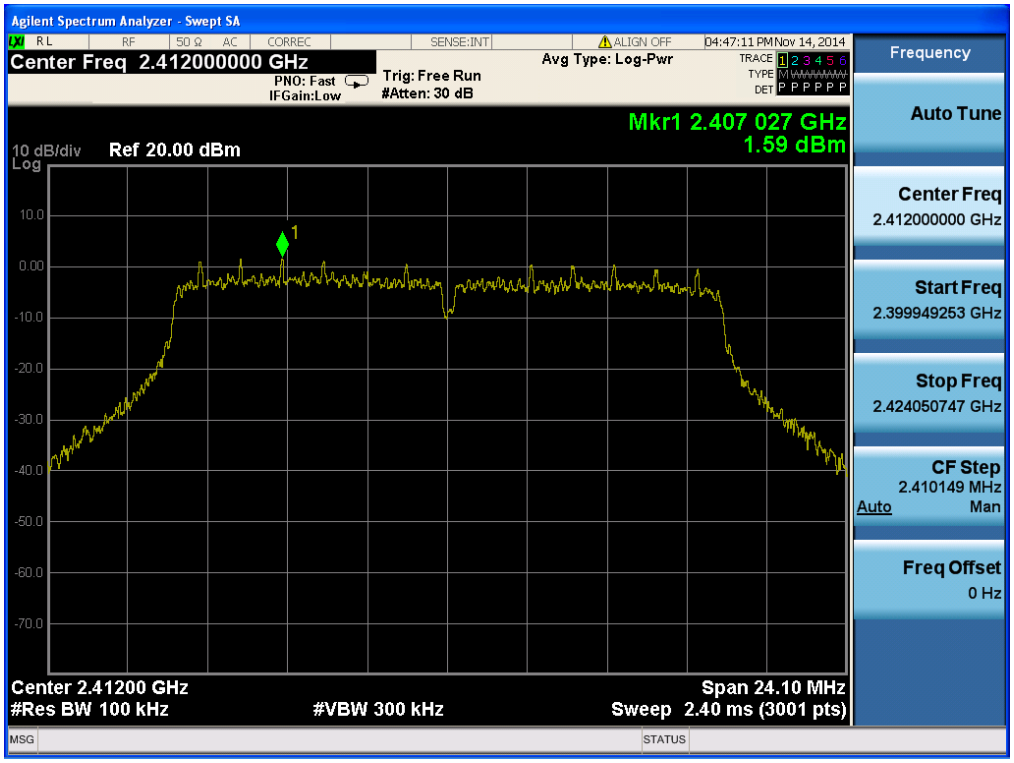


Conducted Spurious Emissions

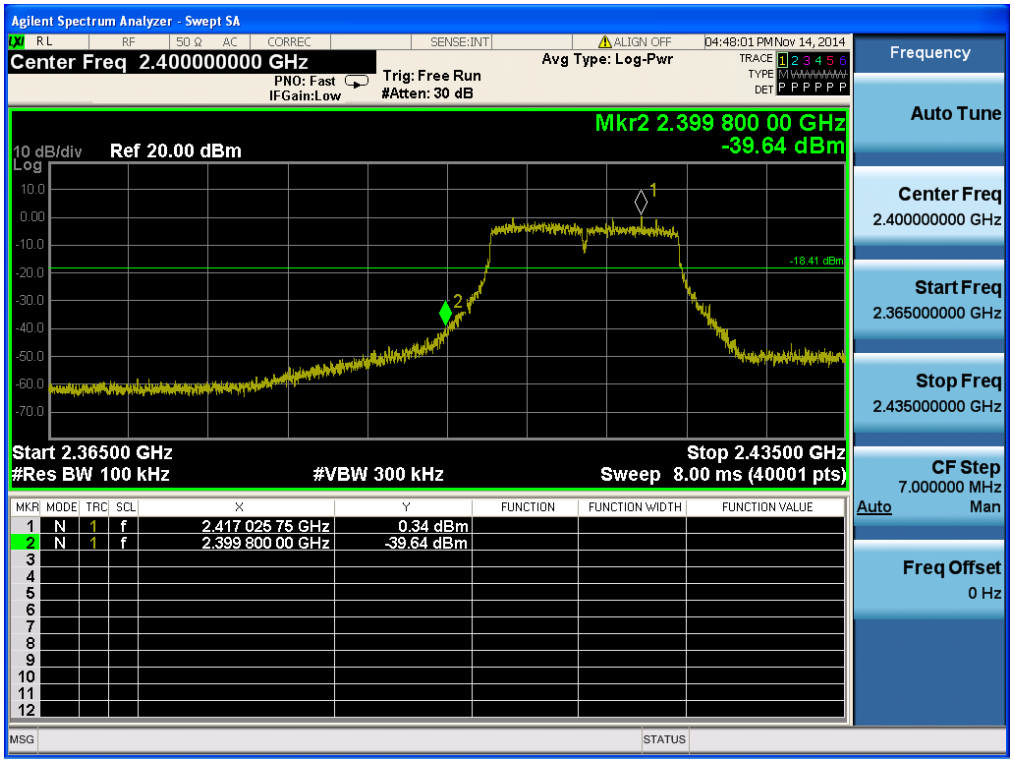


TM 2 & ANT 1 & Lowest

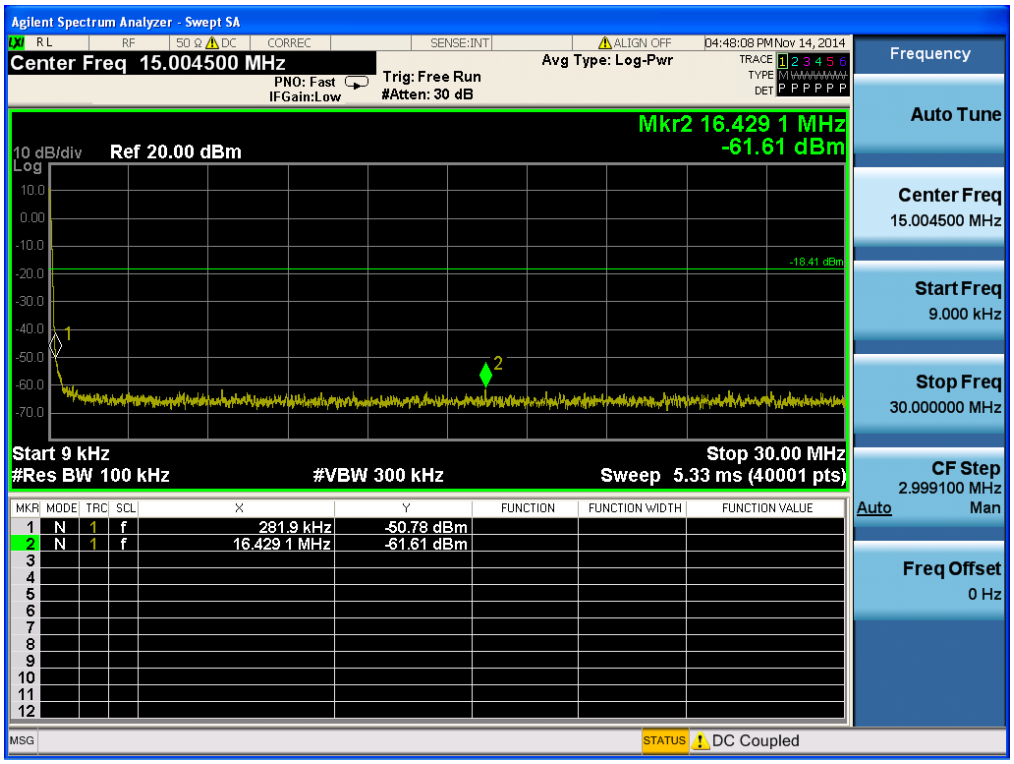
Reference

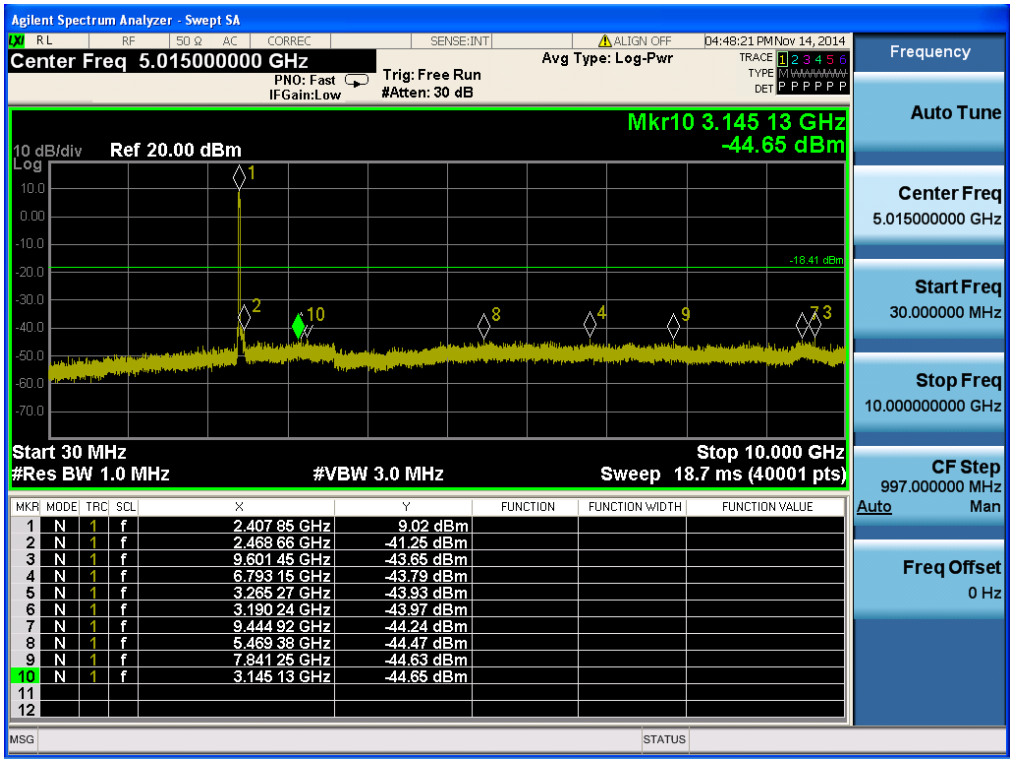


Low Band-edge



Conducted Spurious Emissions





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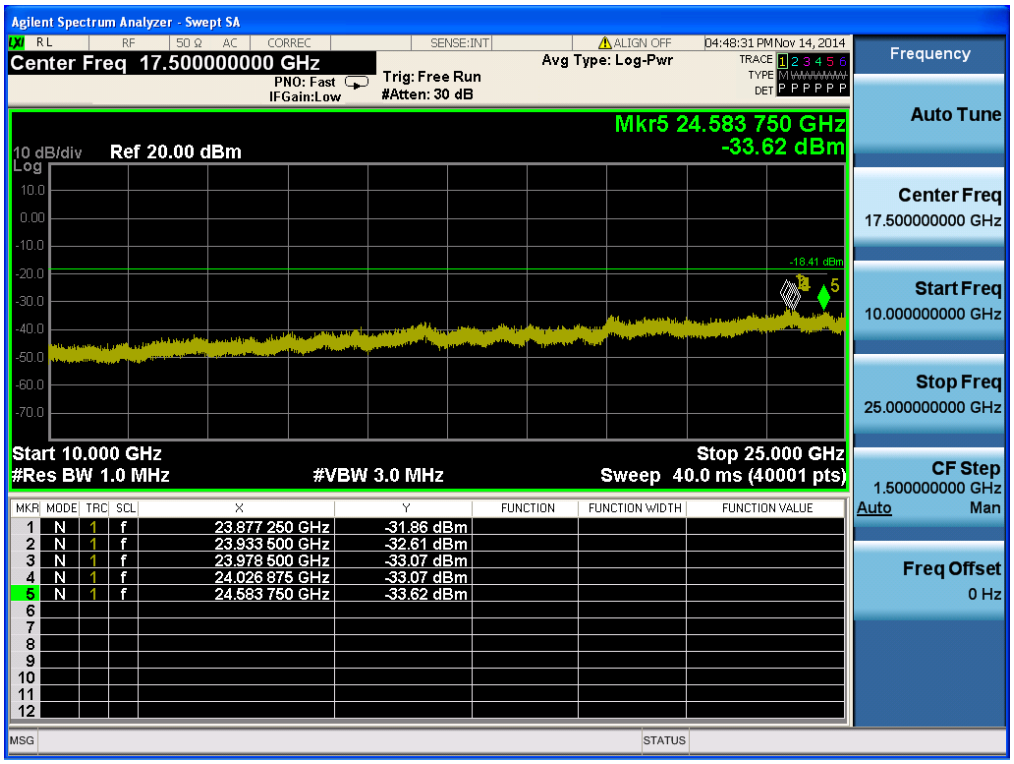

TM 2 & ANT 1 & Middle

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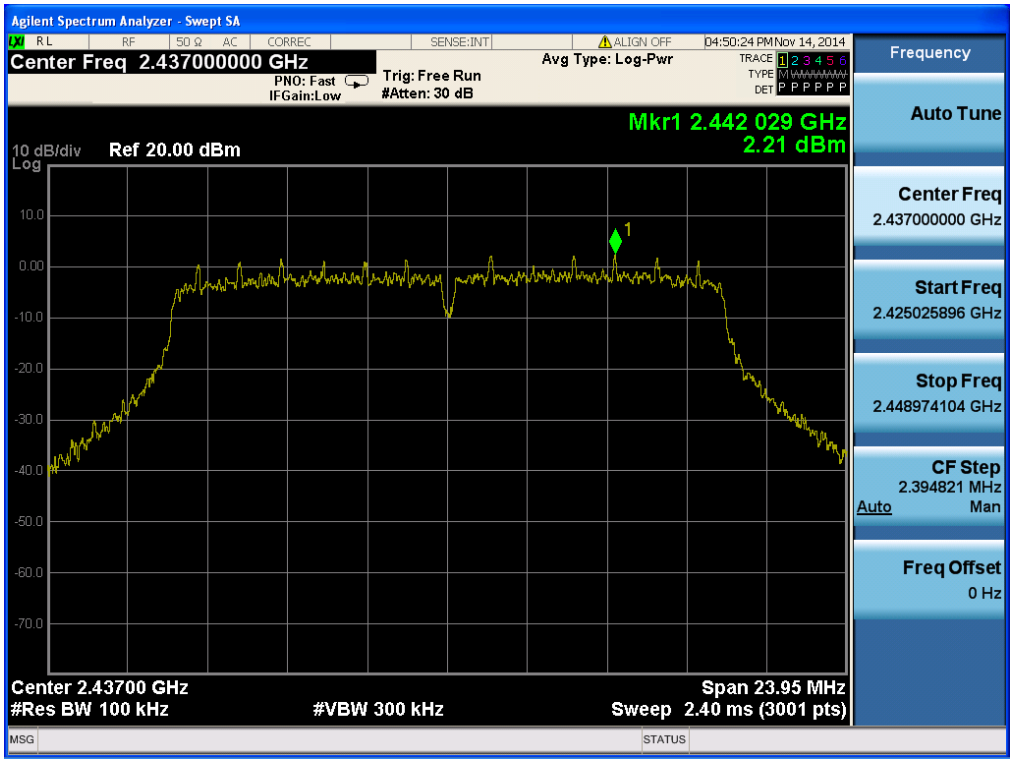

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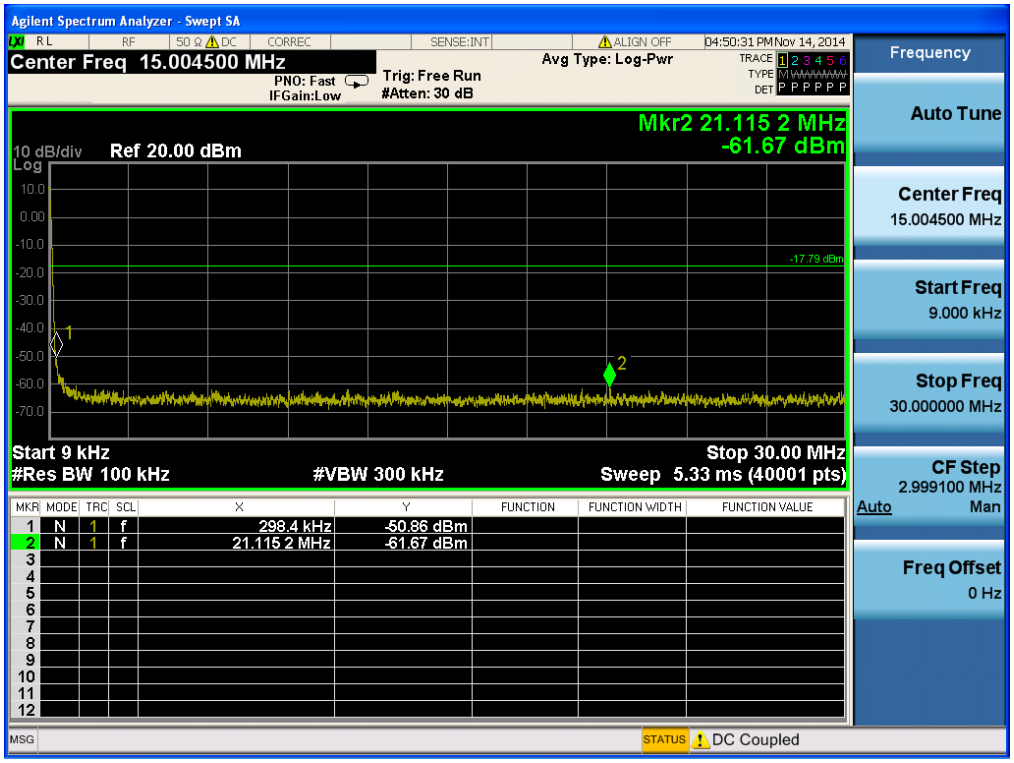
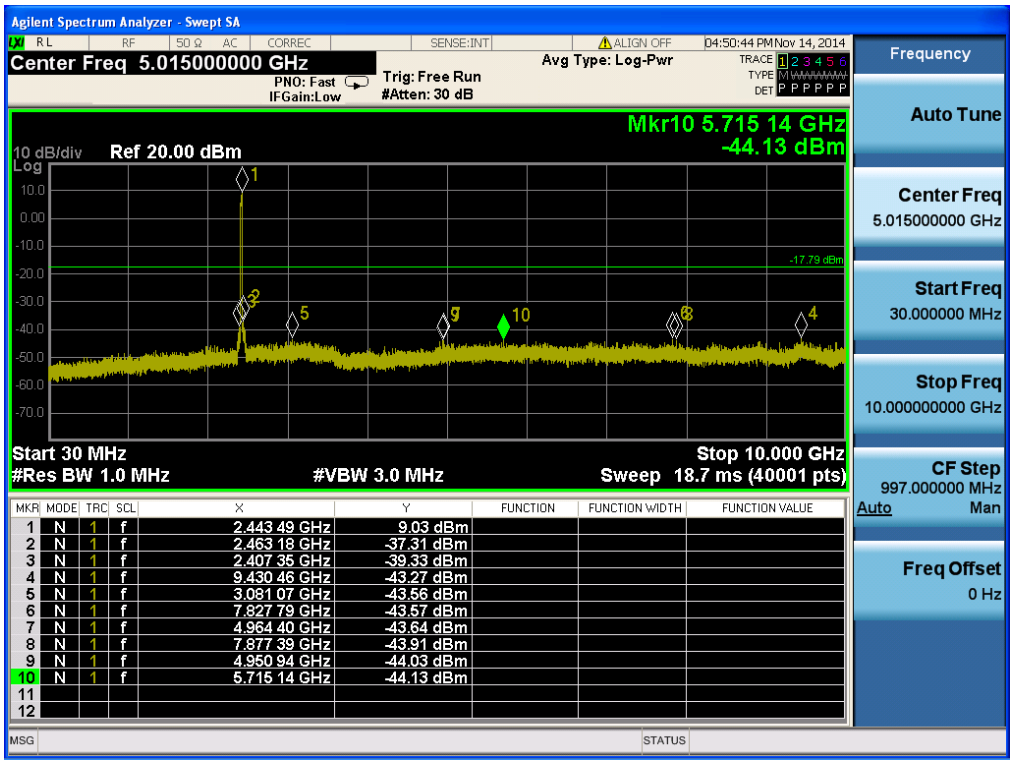
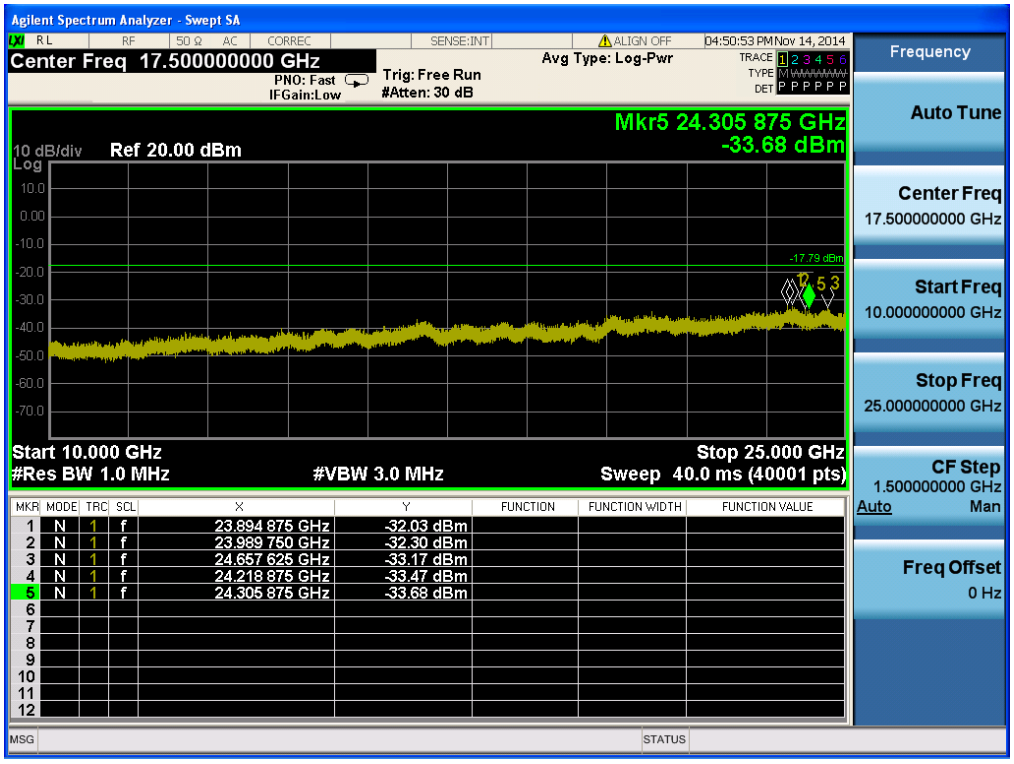


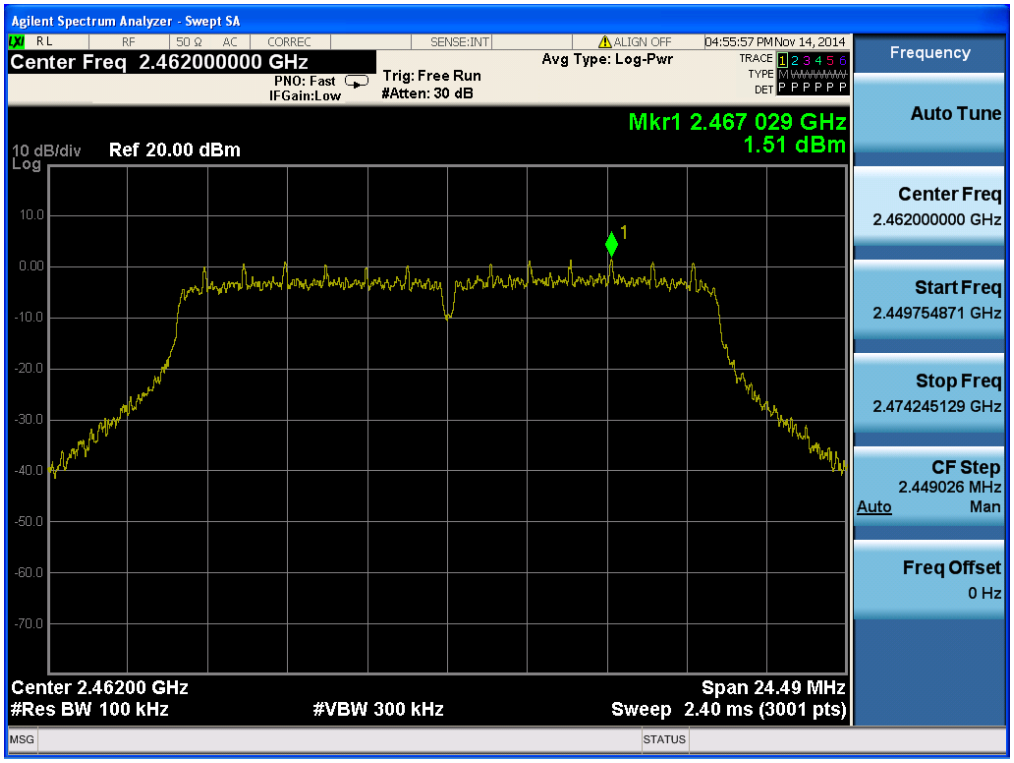
Conducted Spurious Emissions



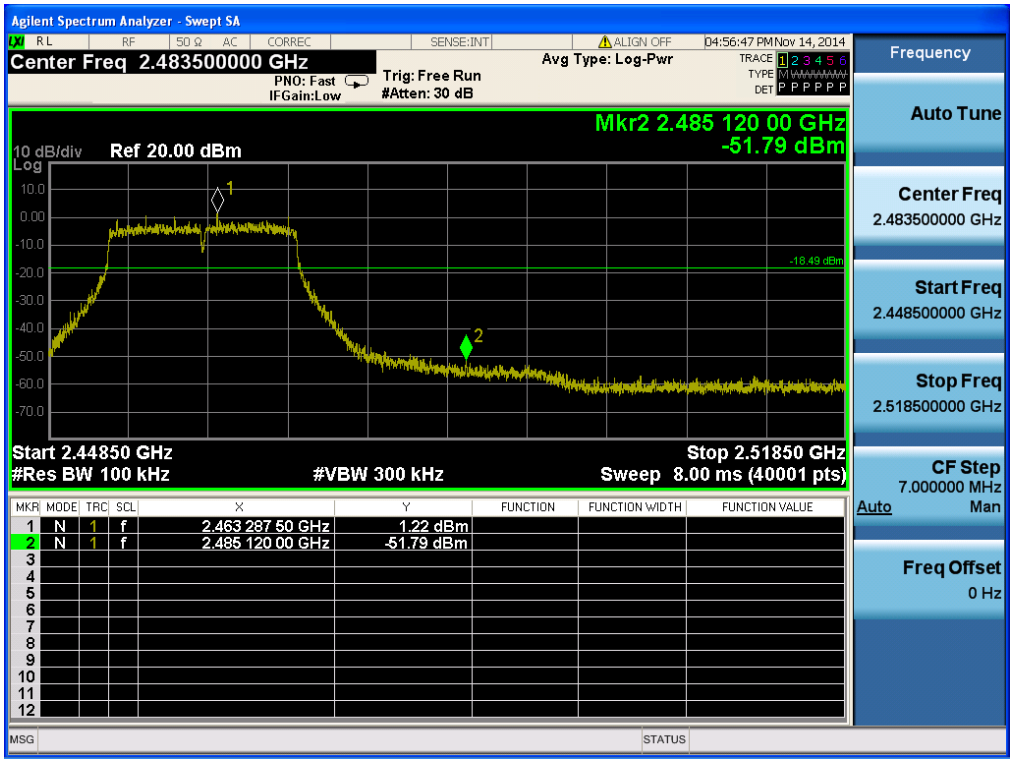


TM 2 & ANT 1 & Highest

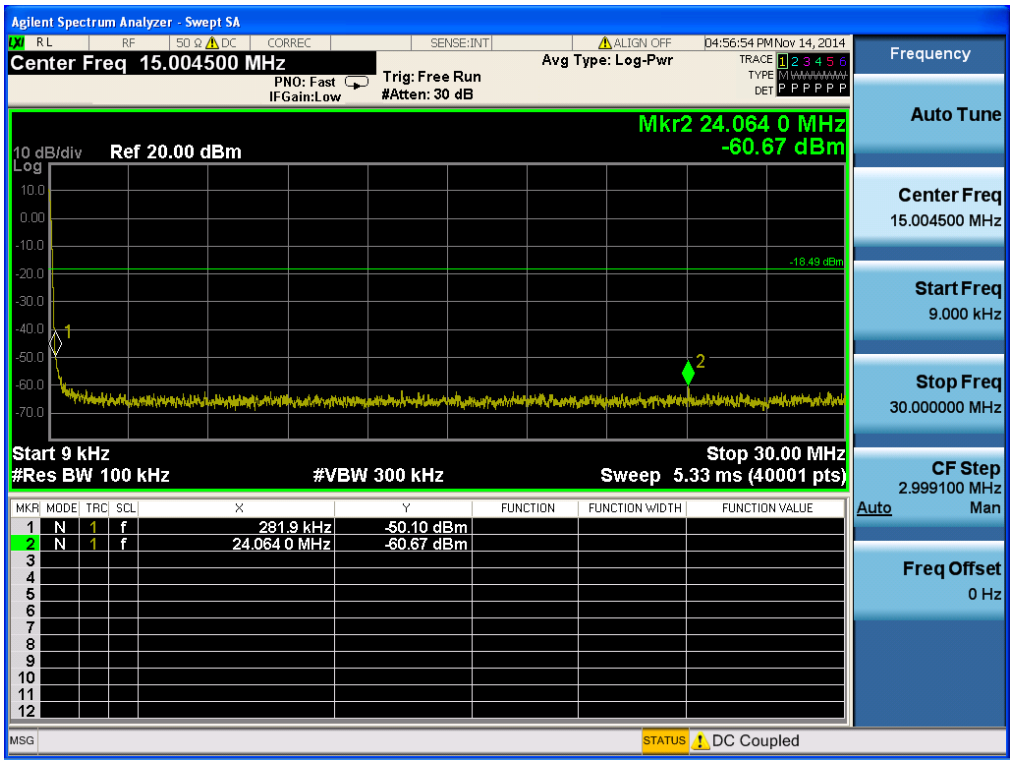
Reference

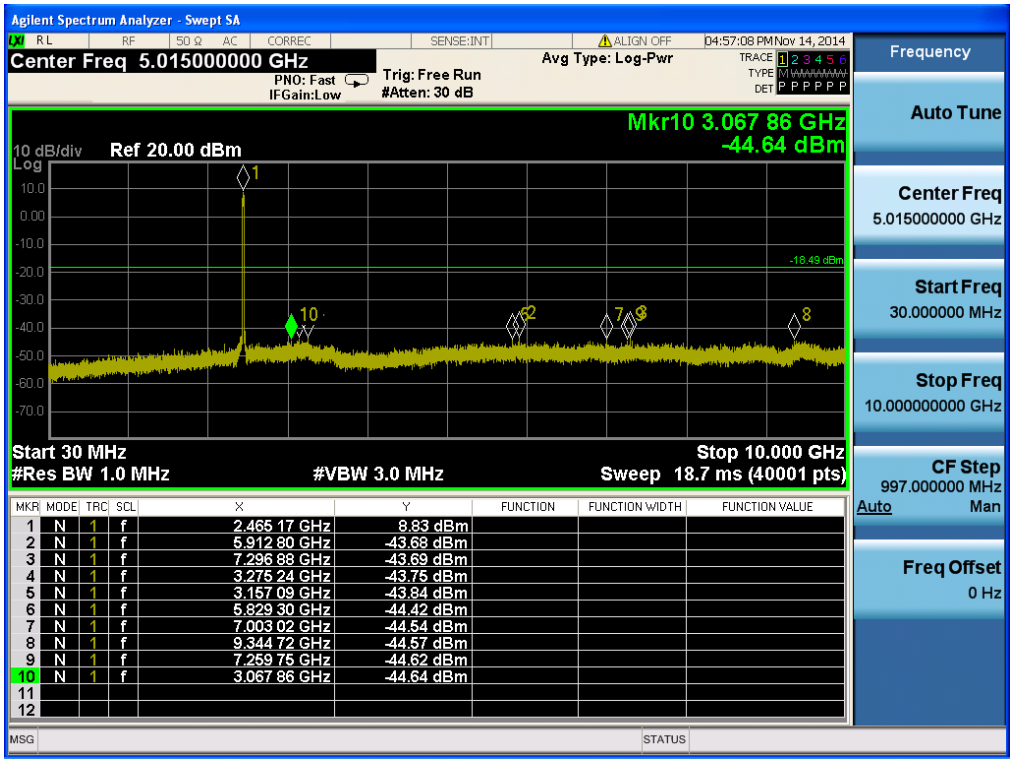


High Band-edge



Conducted Spurious Emissions





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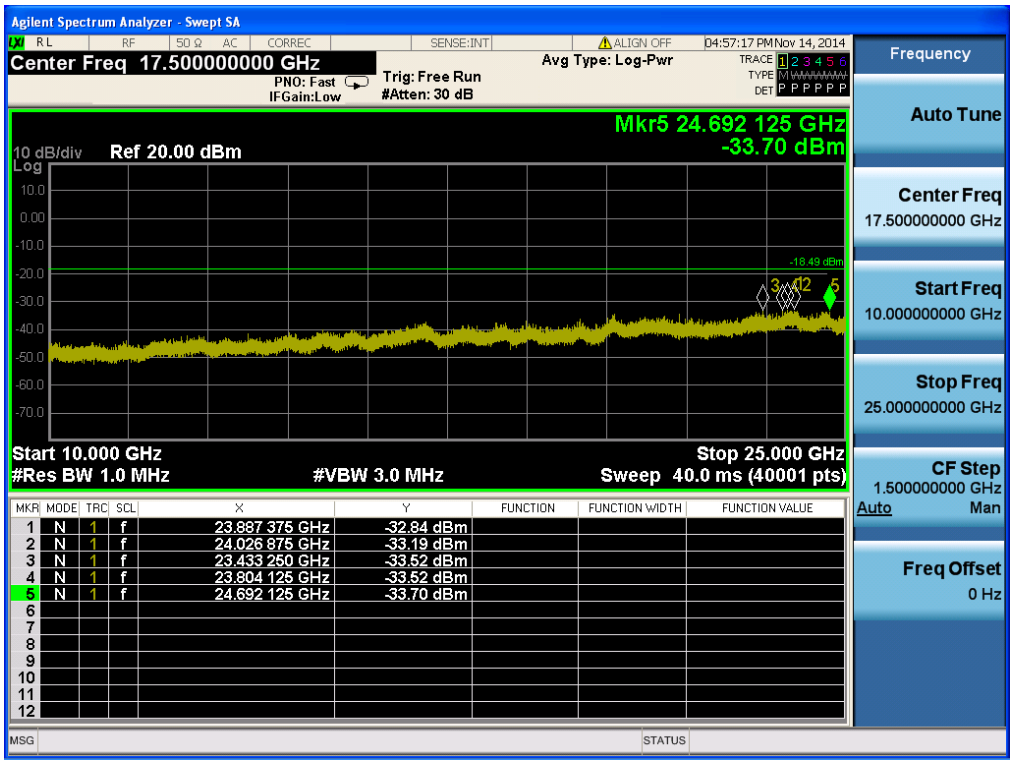
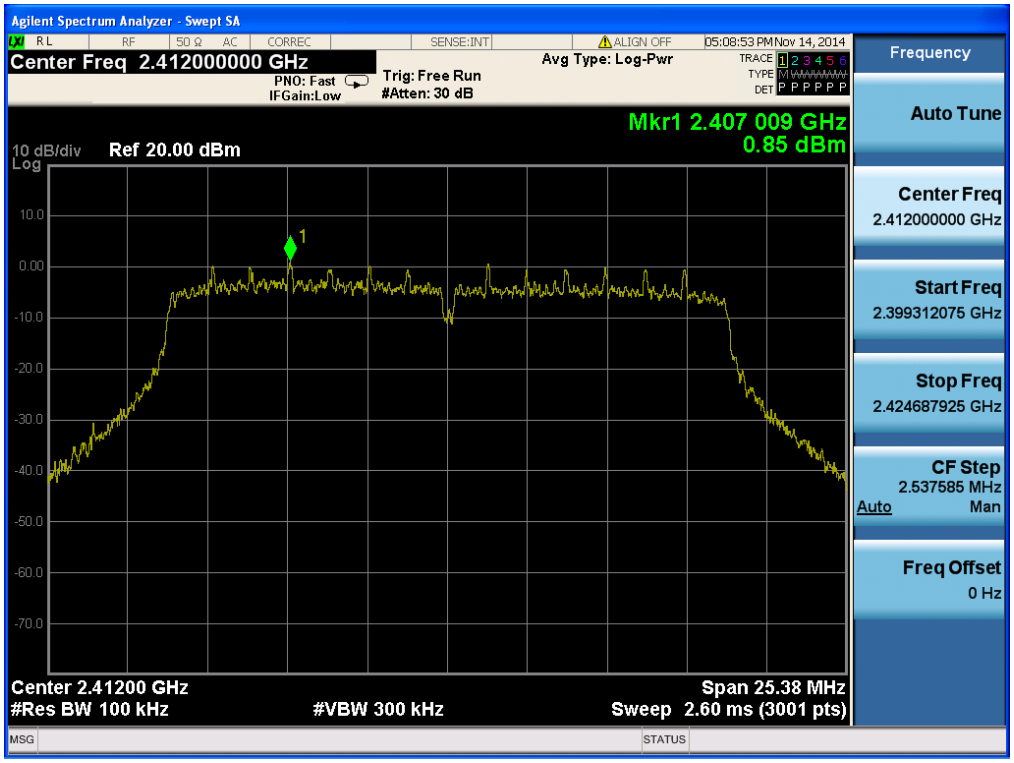
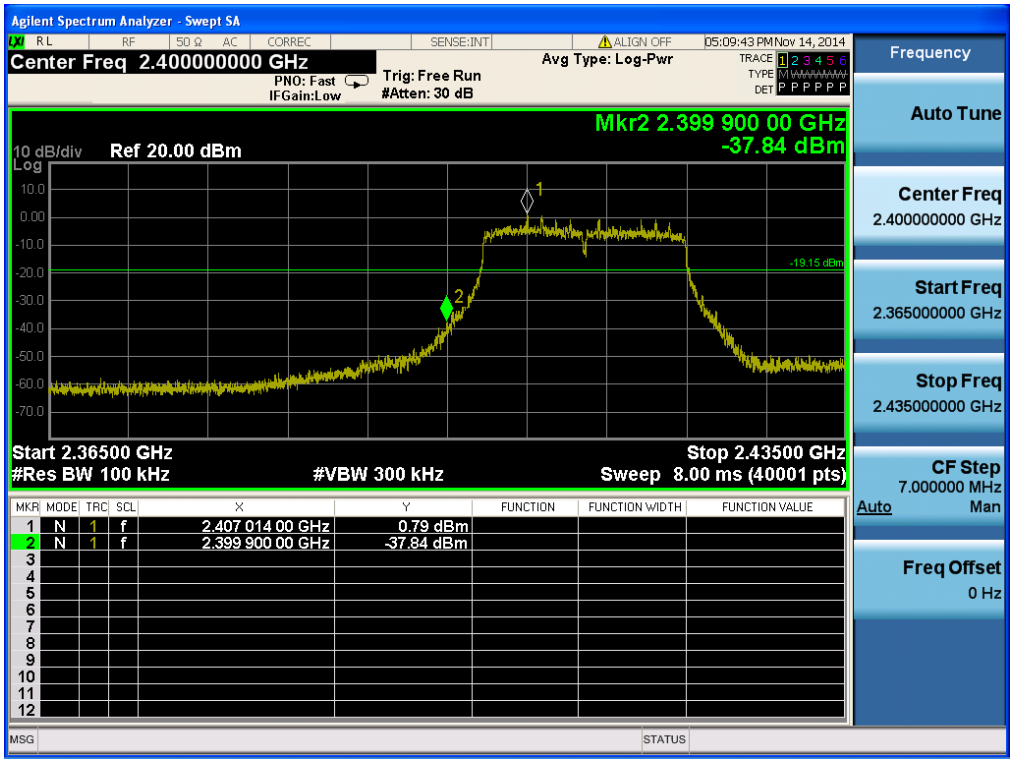


TM 3 & ANT 1 & Lowest

Reference



Low Band-edge



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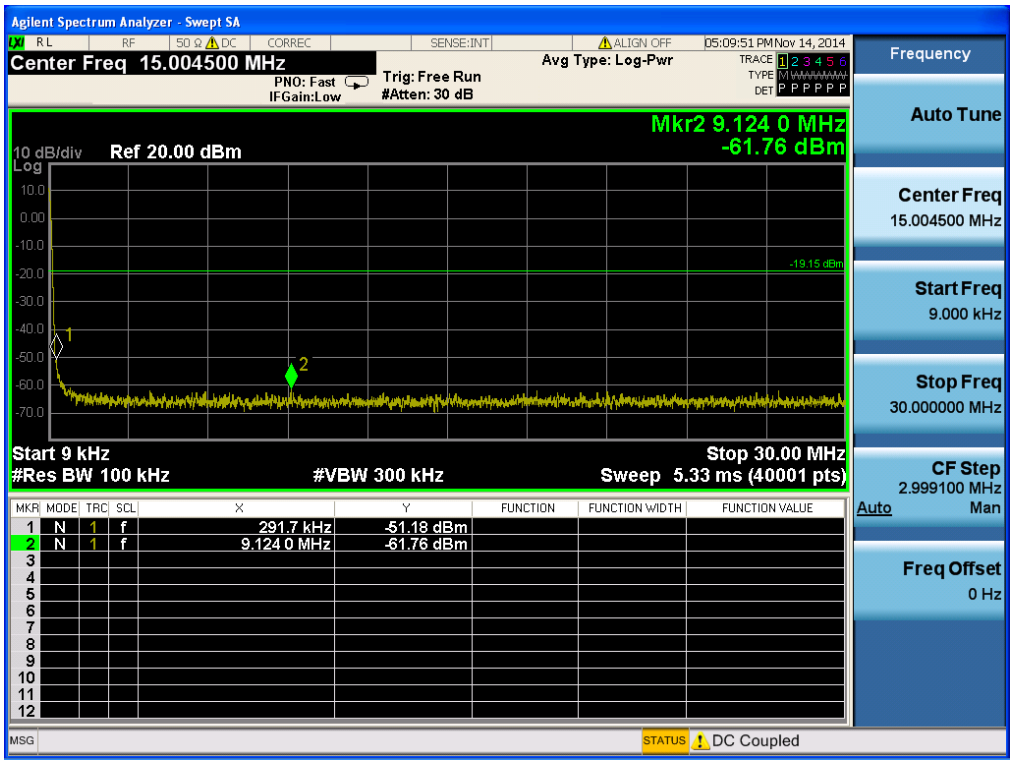

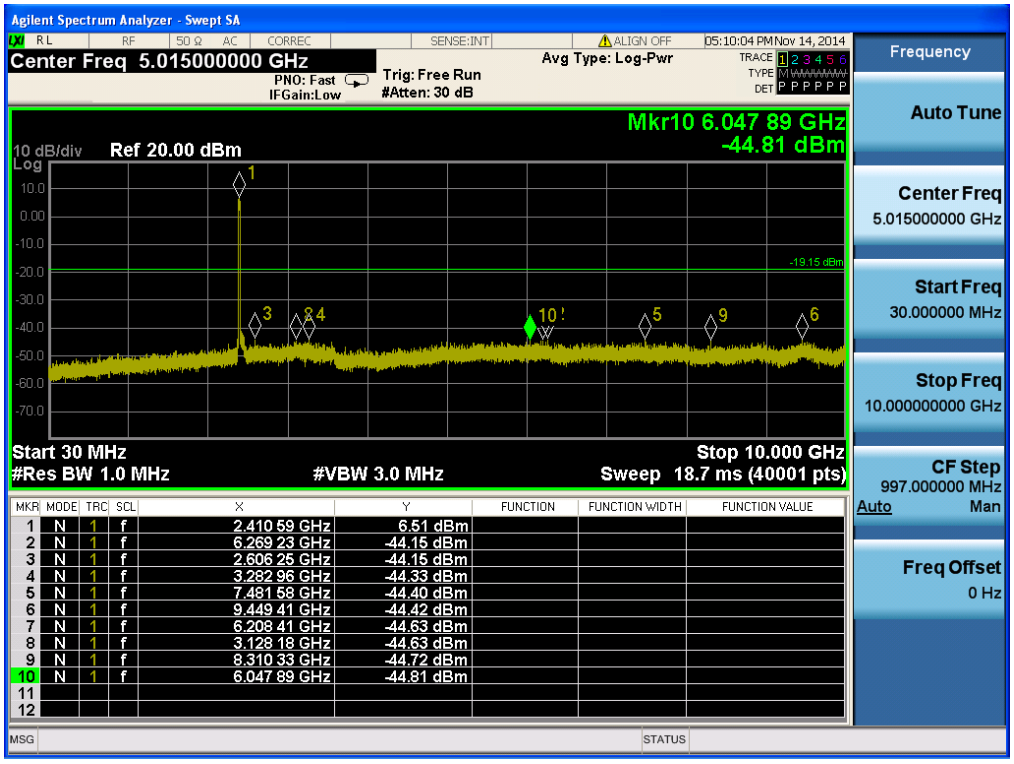

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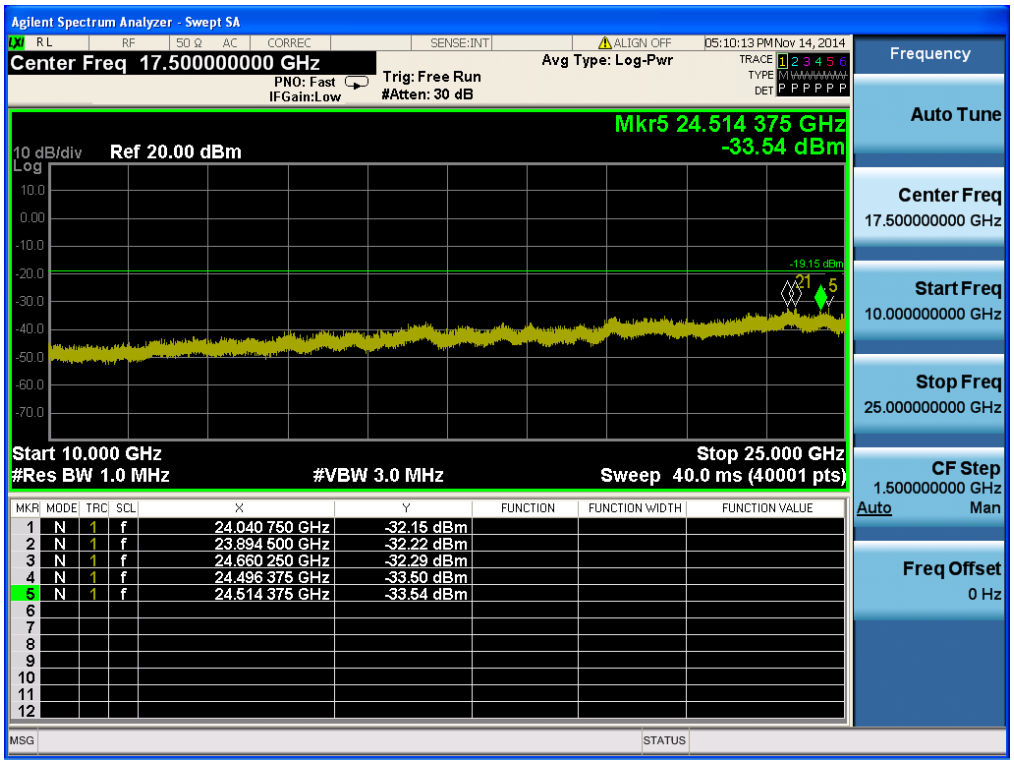
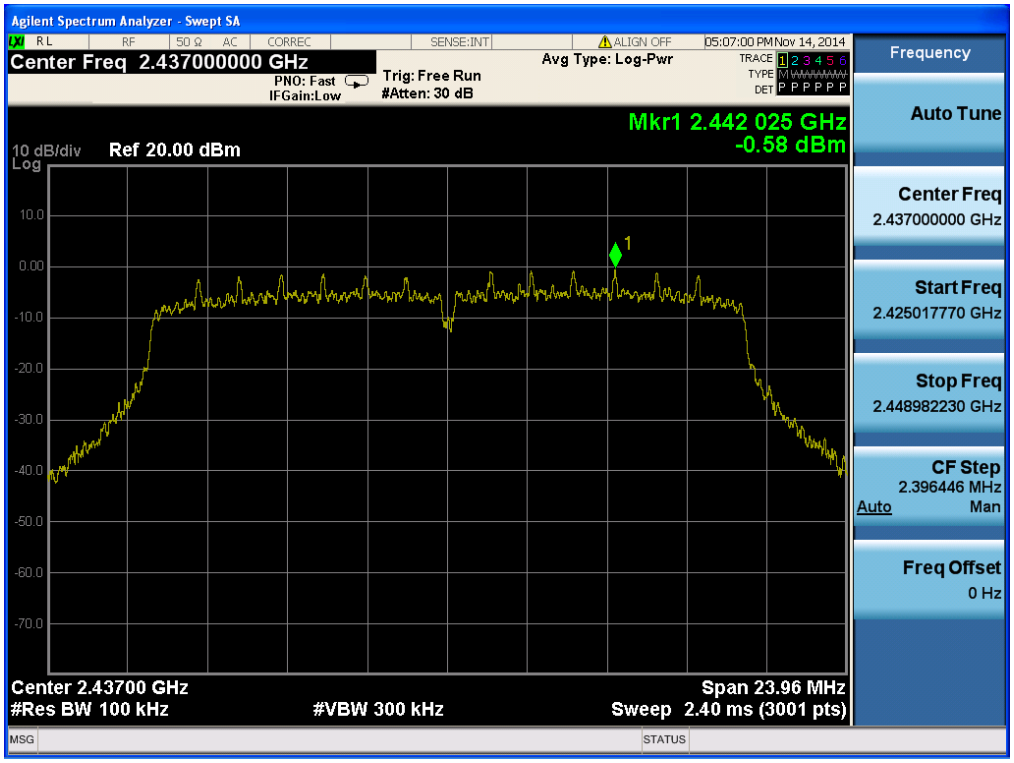


TM 3 & ANT 1 & Middle

Reference



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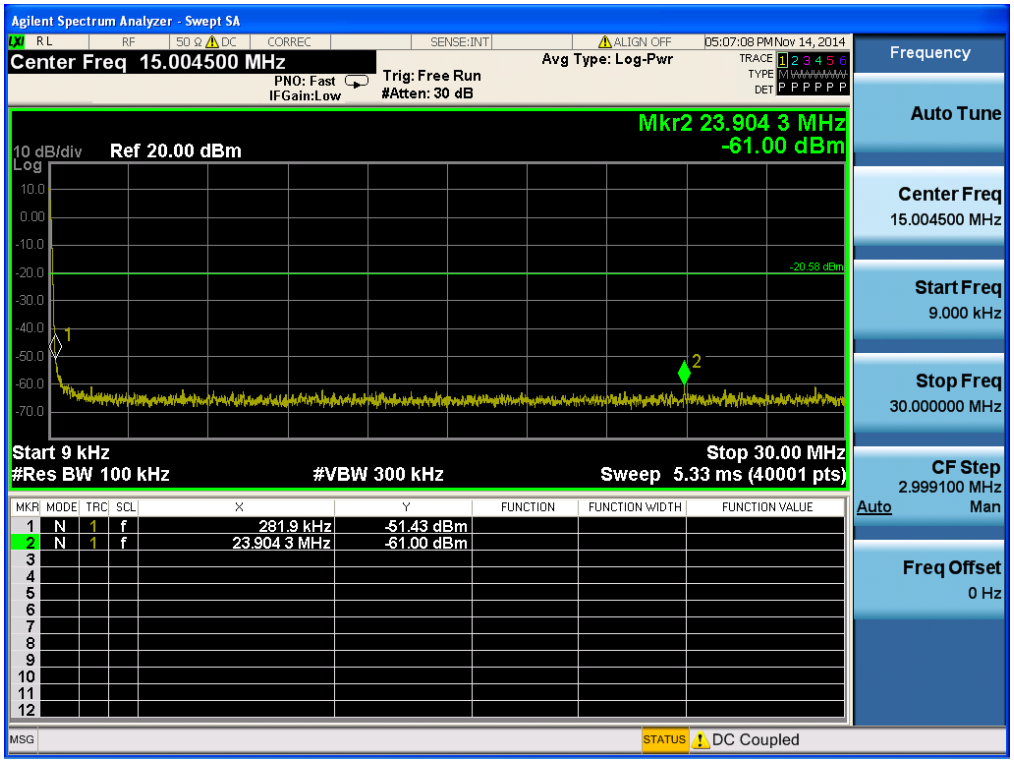
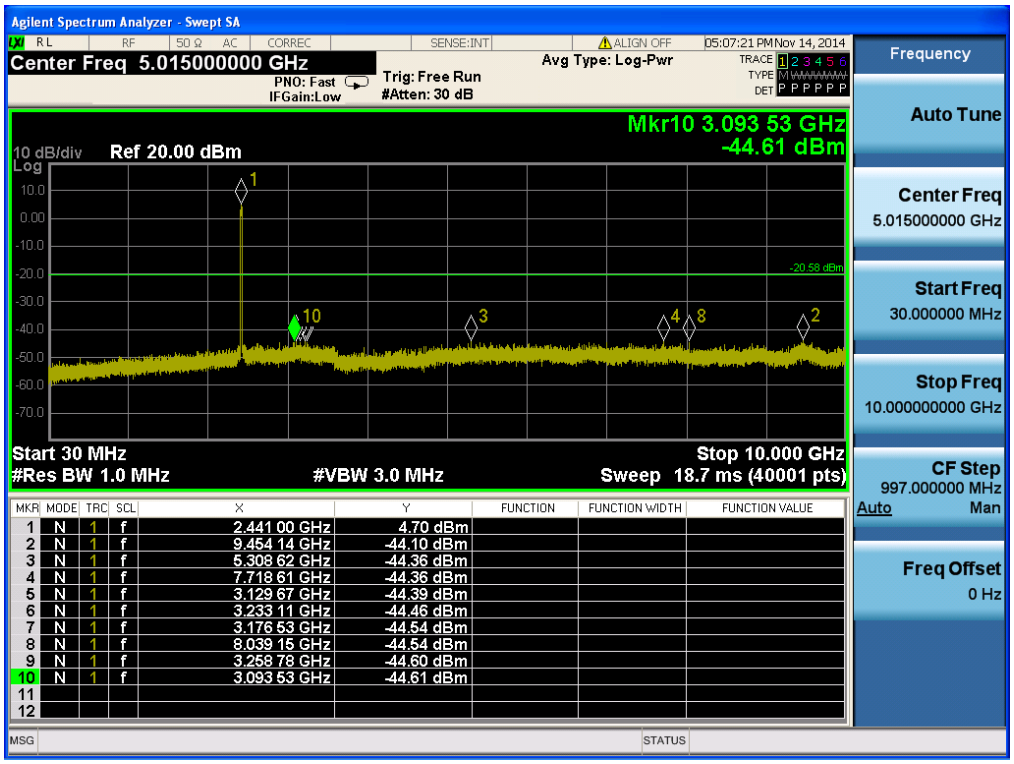
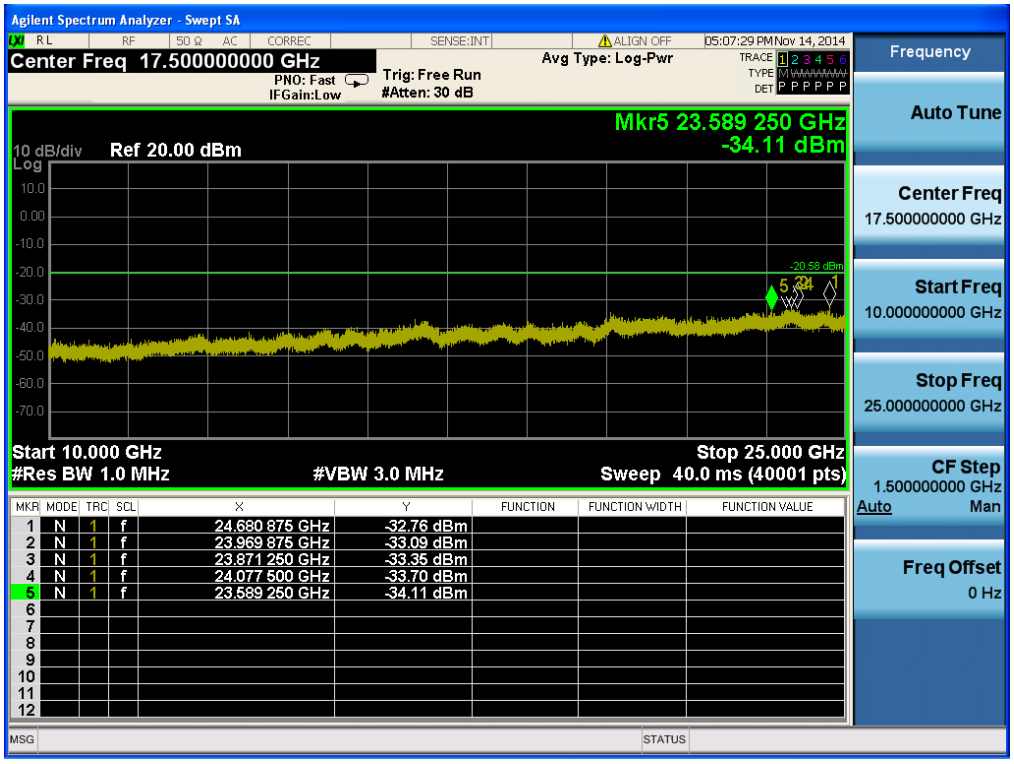


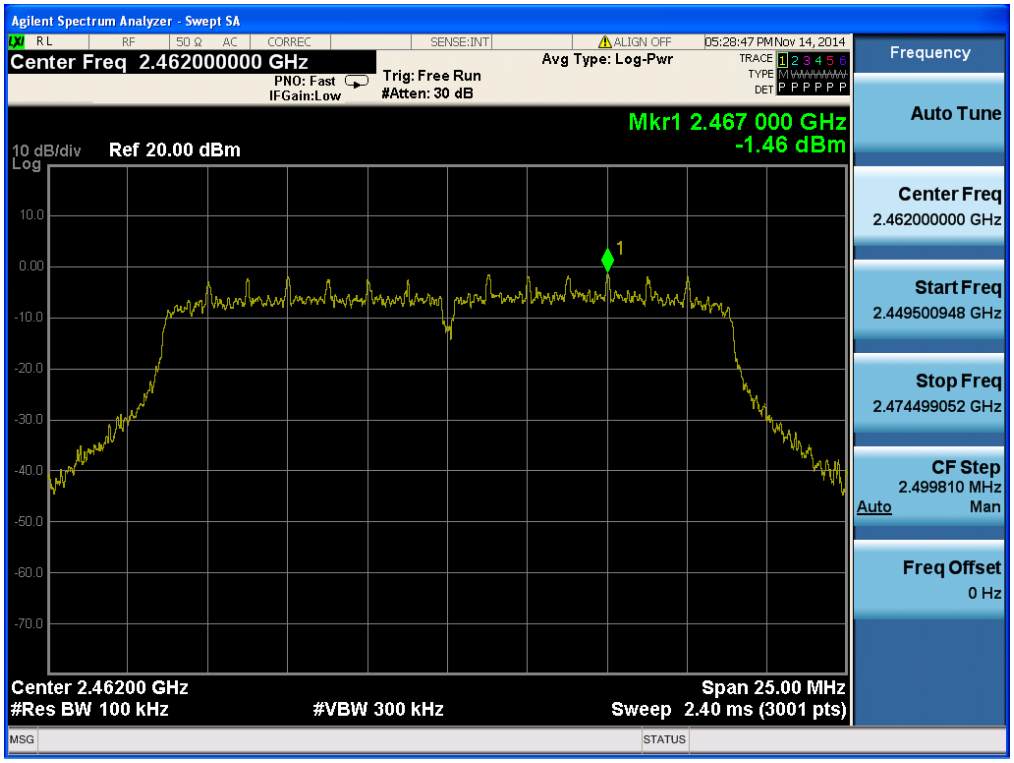
Conducted Spurious Emissions



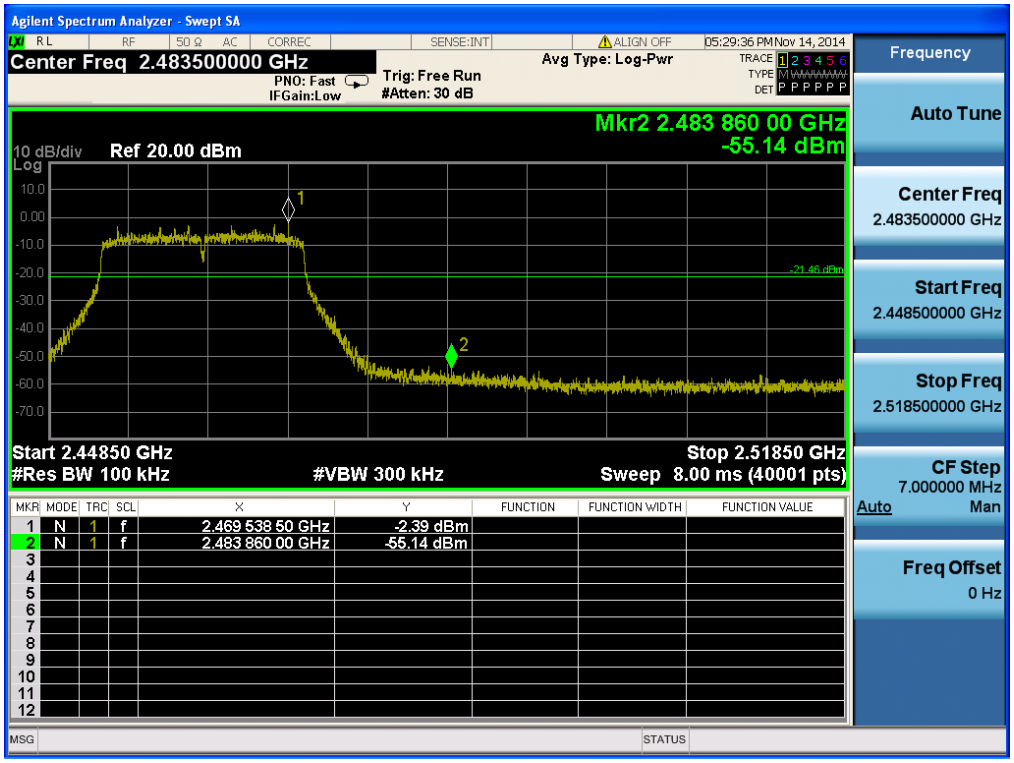


TM 3 & ANT 1 & Highest

Reference



High Band-edge



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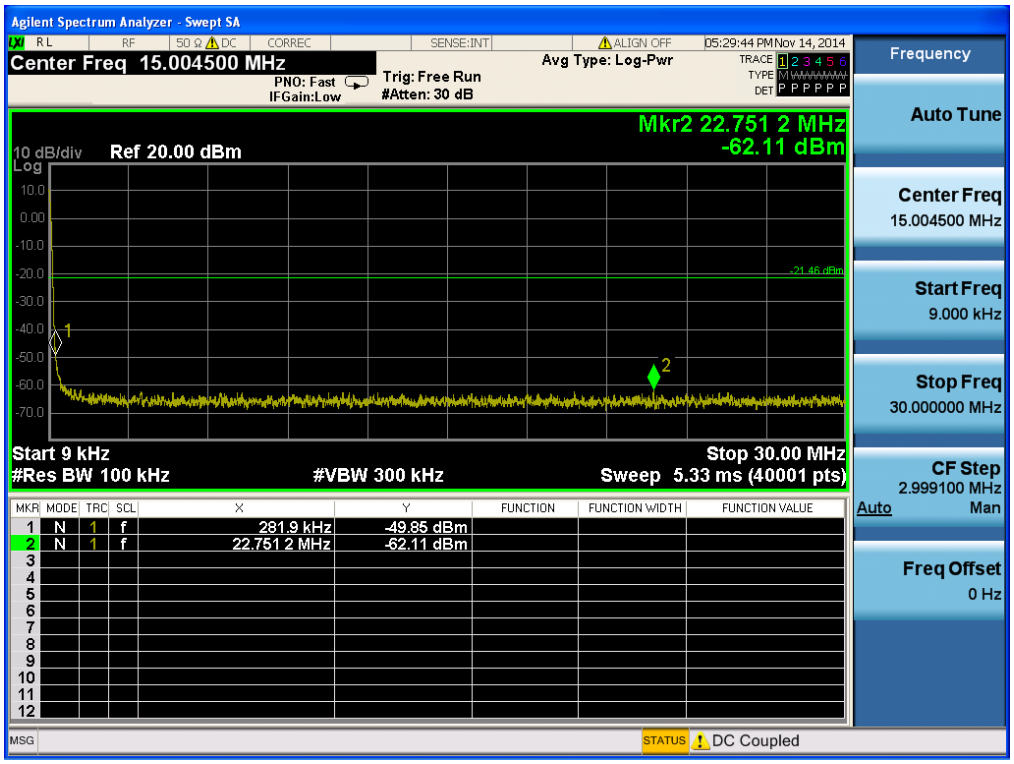
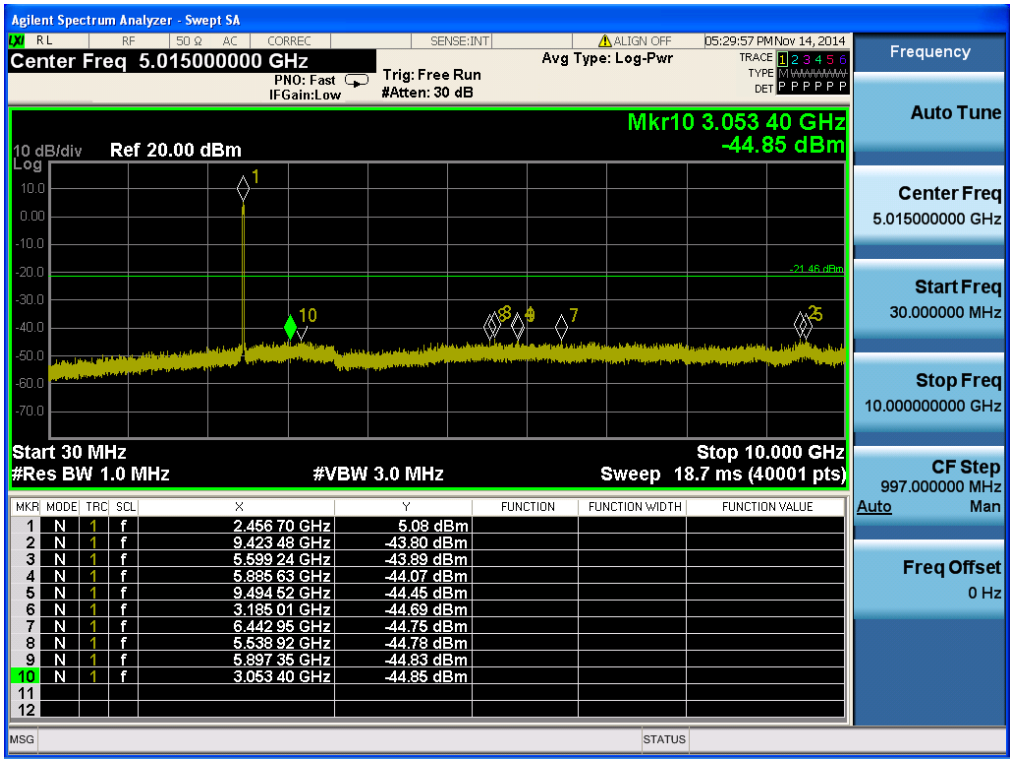
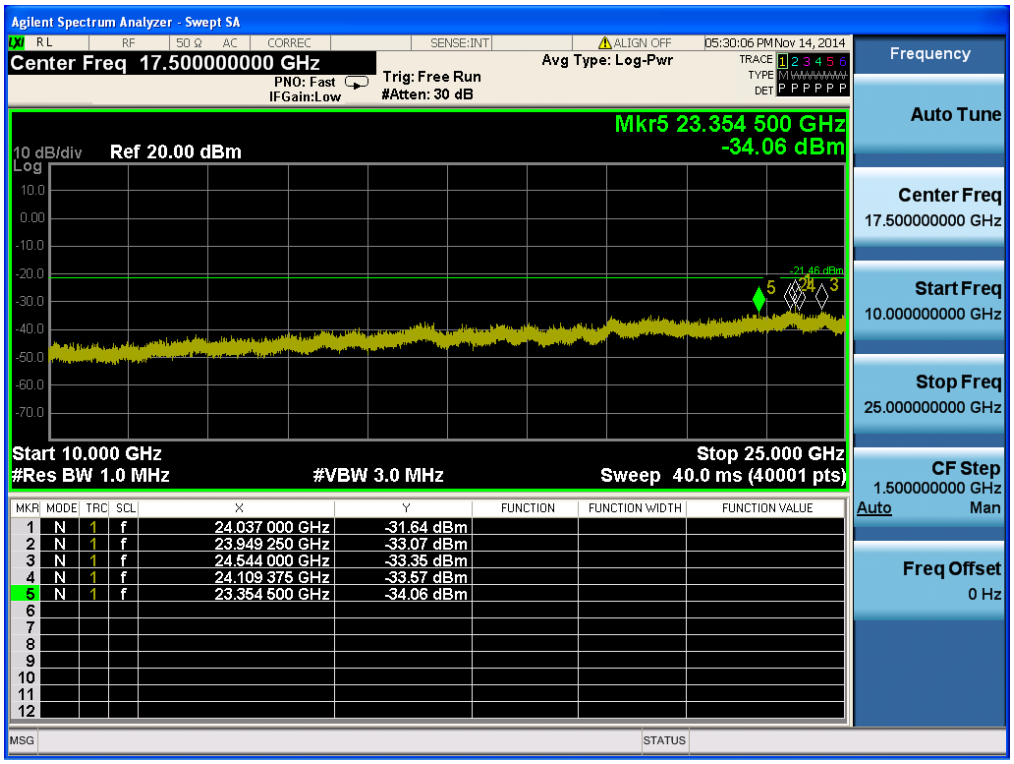


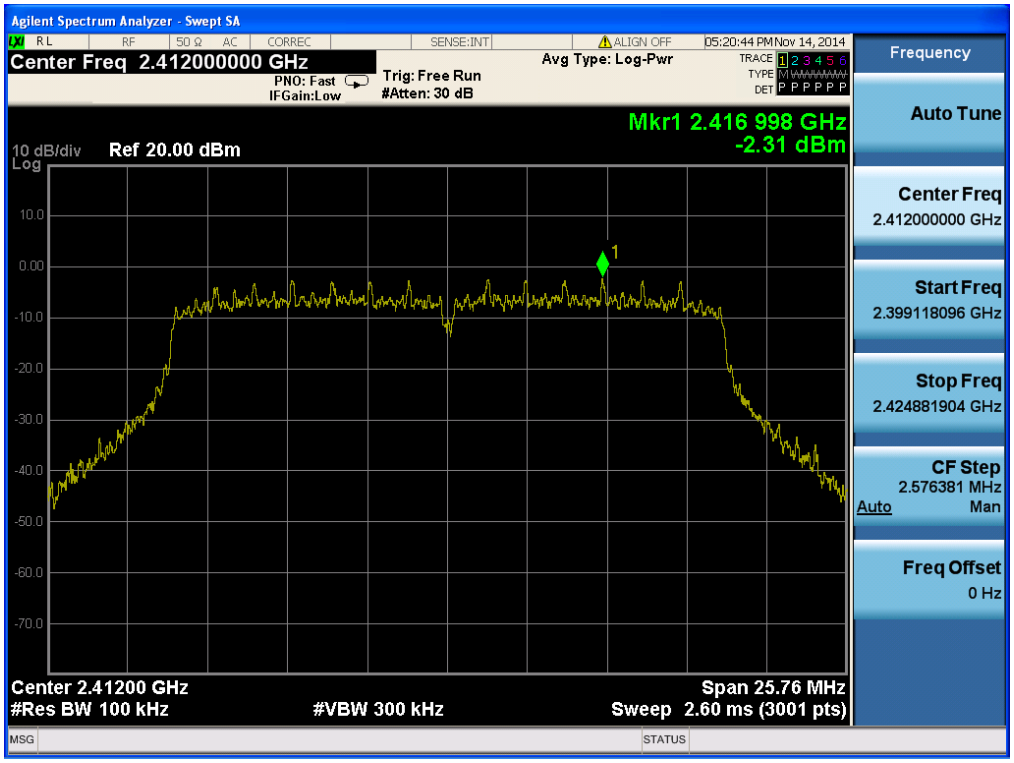


Conducted Spurious Emissions

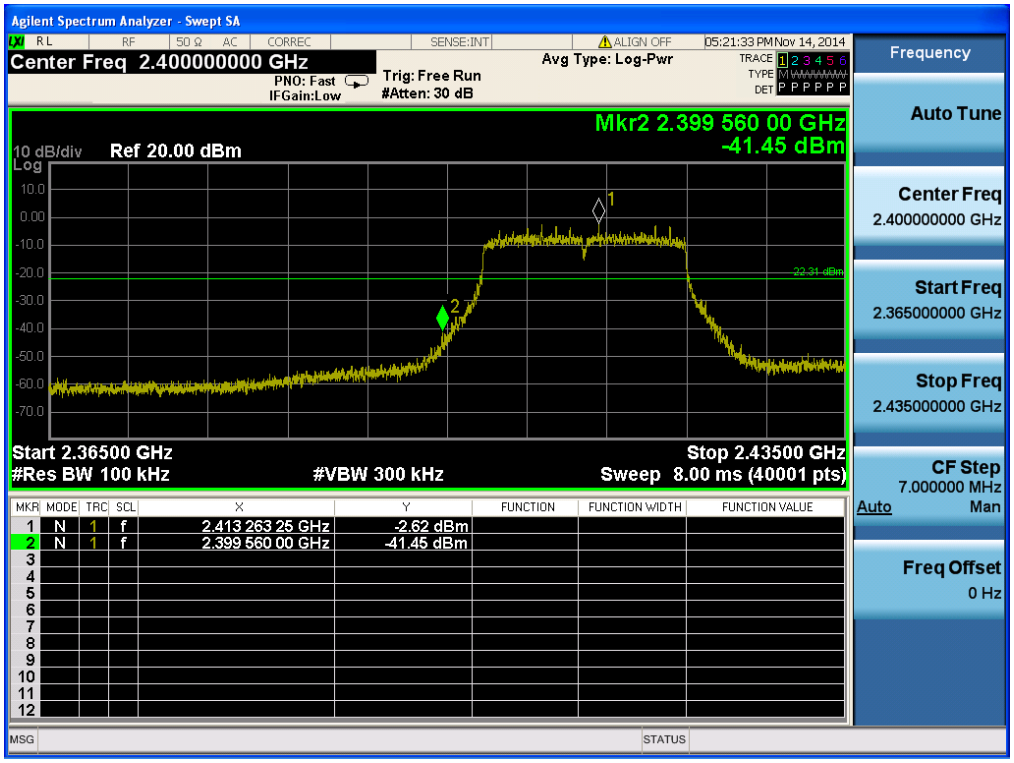


TM 3 & ANT 2 & Lowest

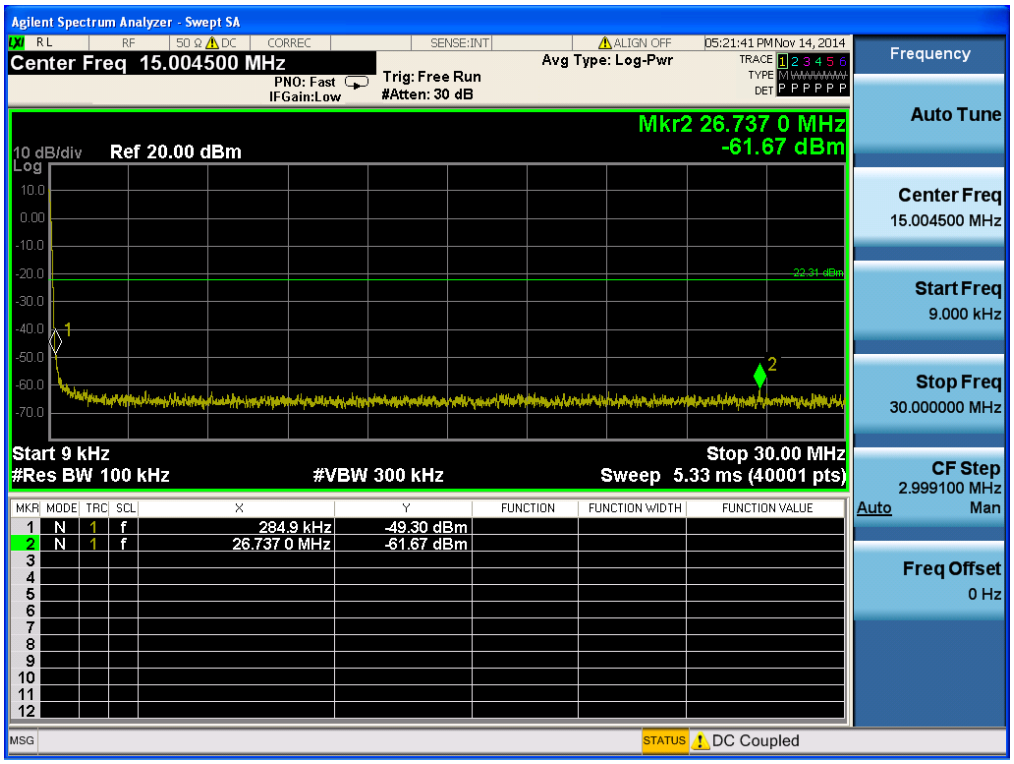
Reference

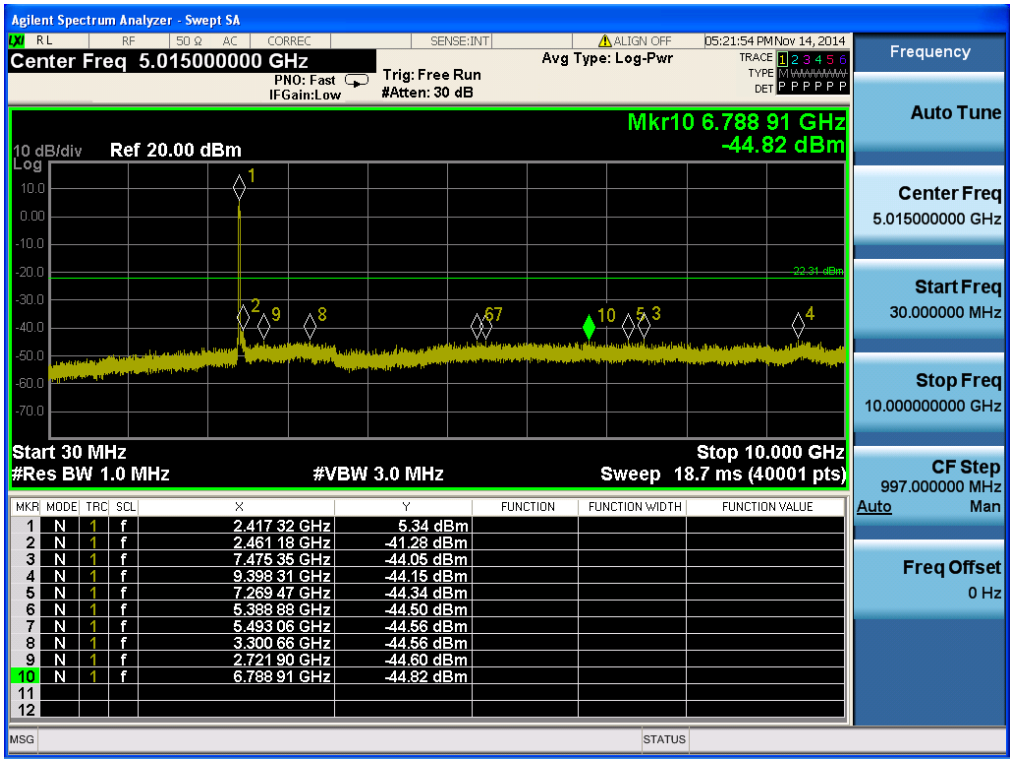


Low Band-edge

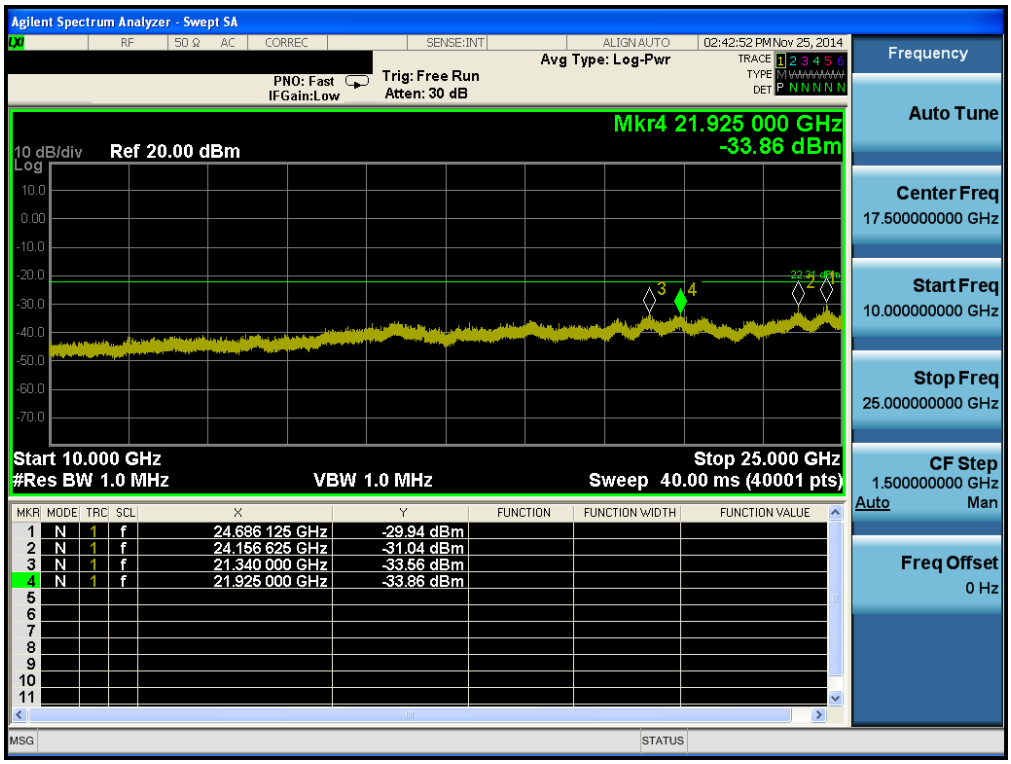


Conducted Spurious Emissions



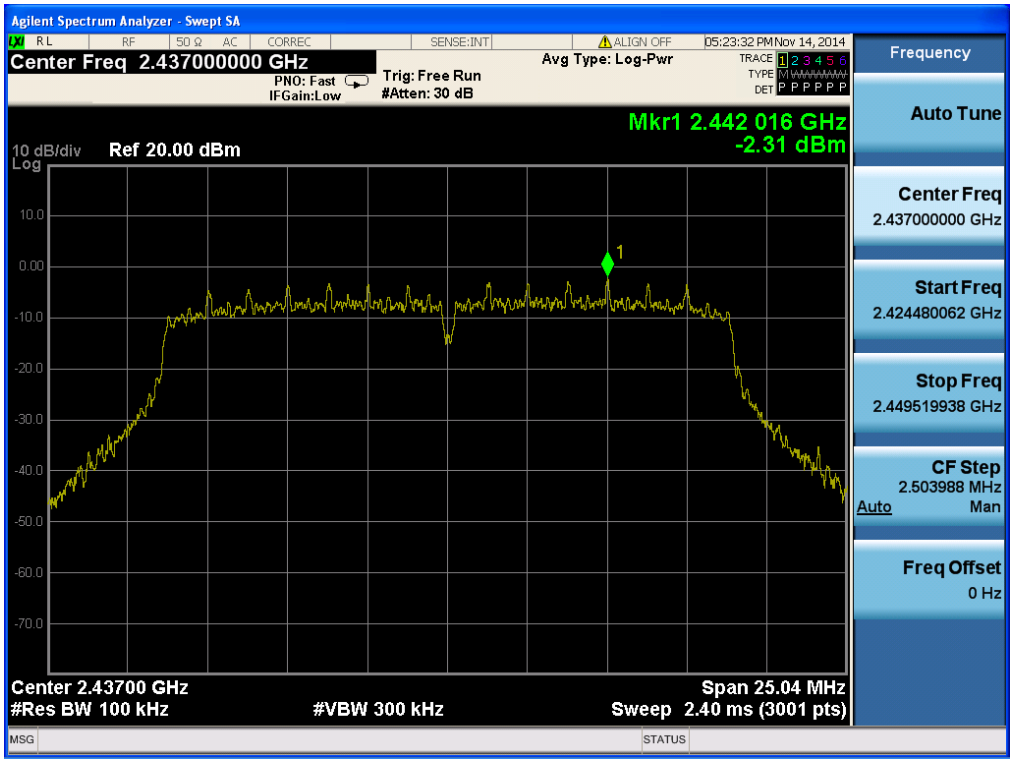


Conducted Spurious Emissions

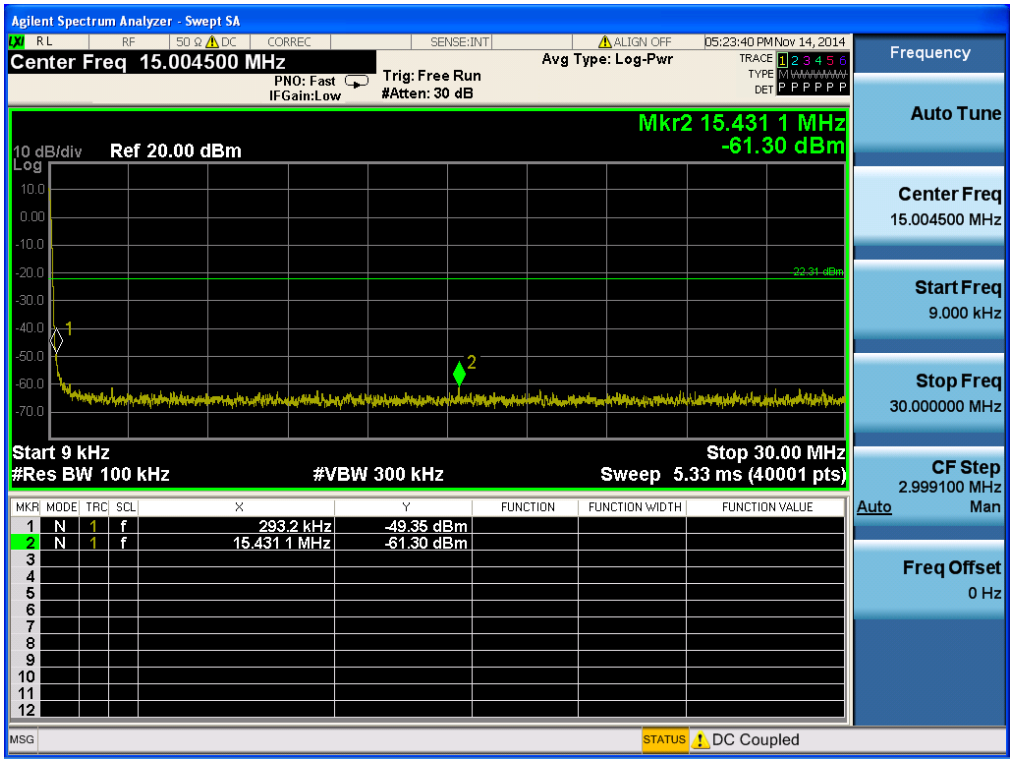


TM 3 & ANT 2 & Middle

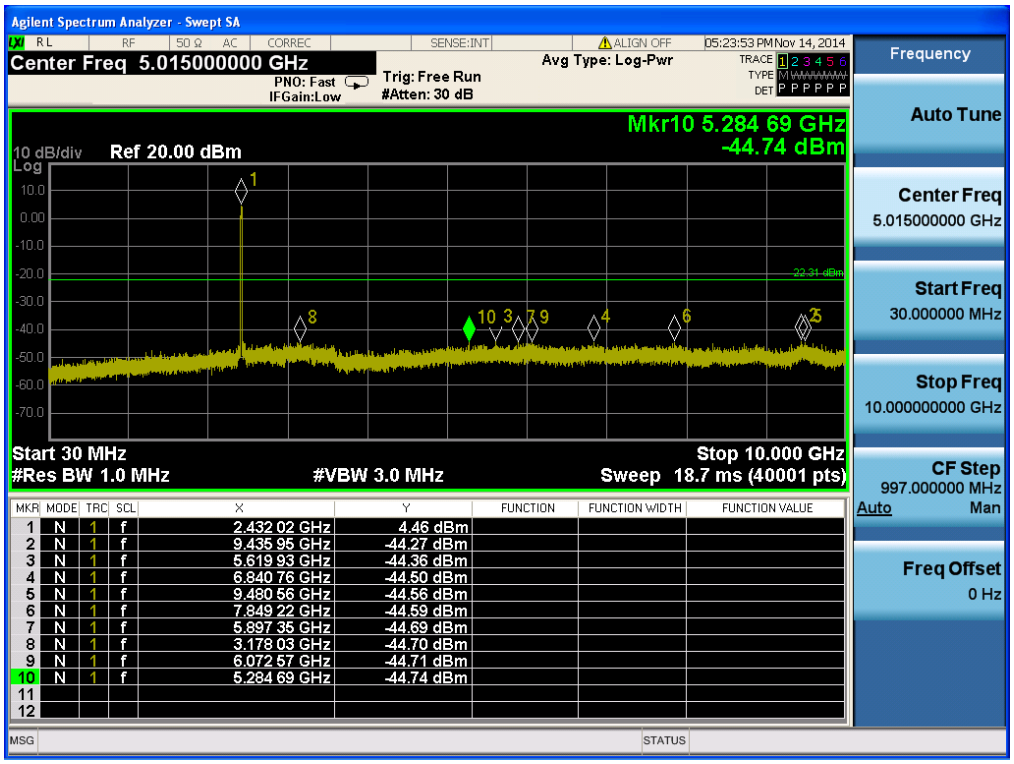
Reference

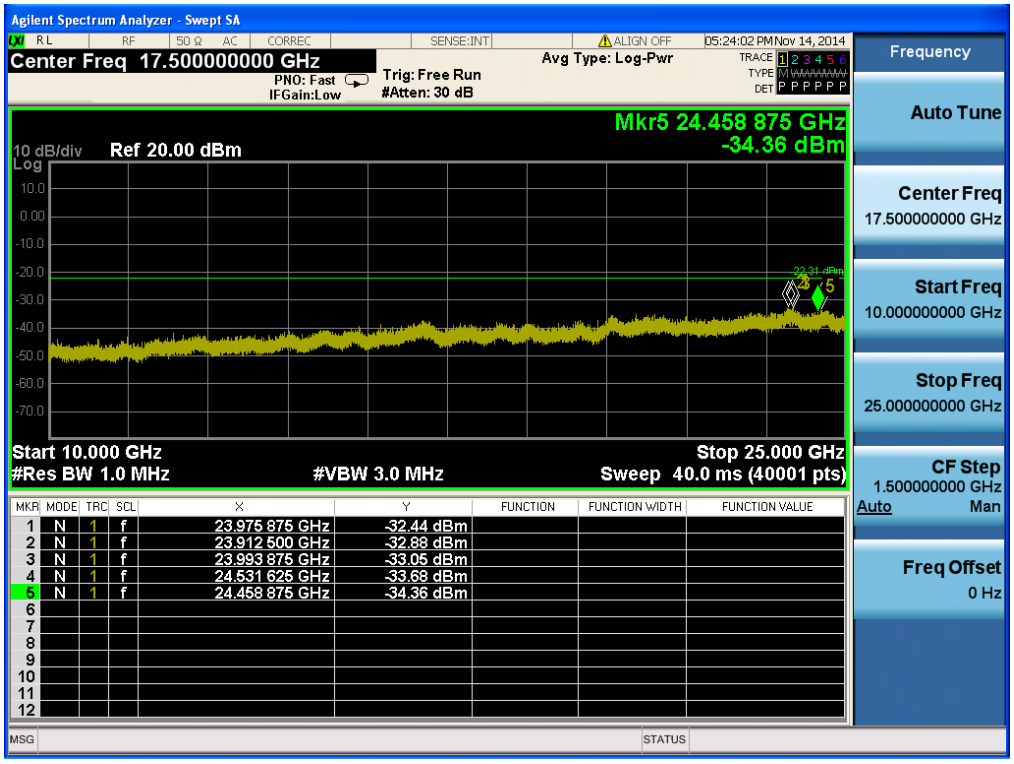


Conducted Spurious Emissions



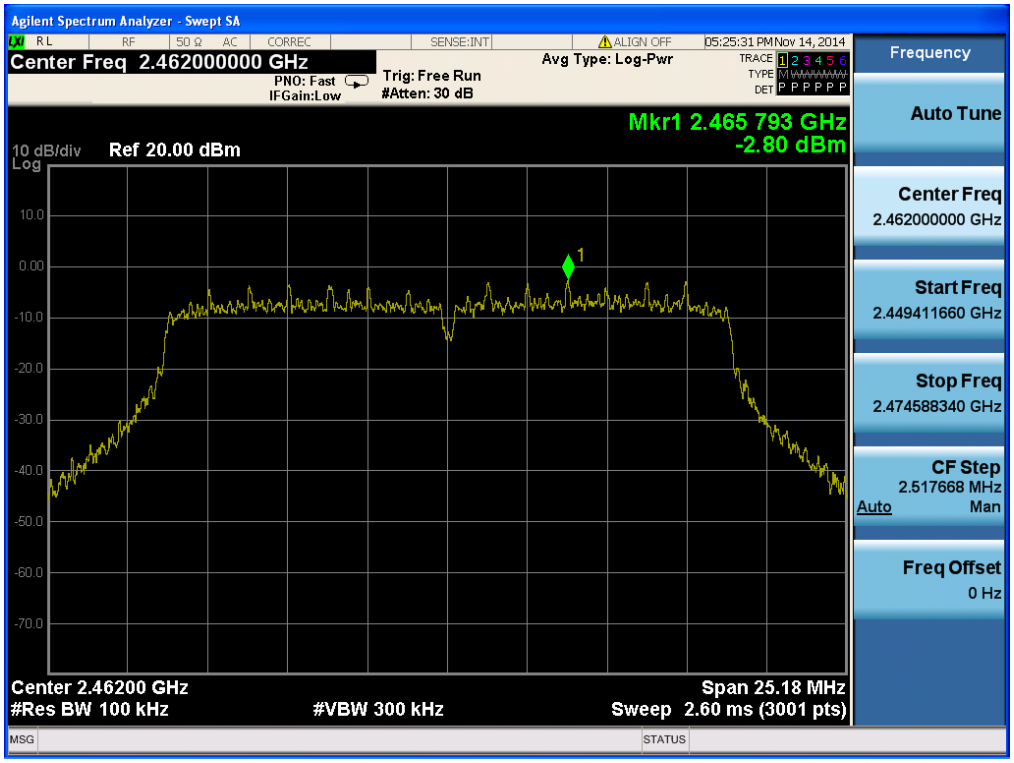
Conducted Spurious Emissions



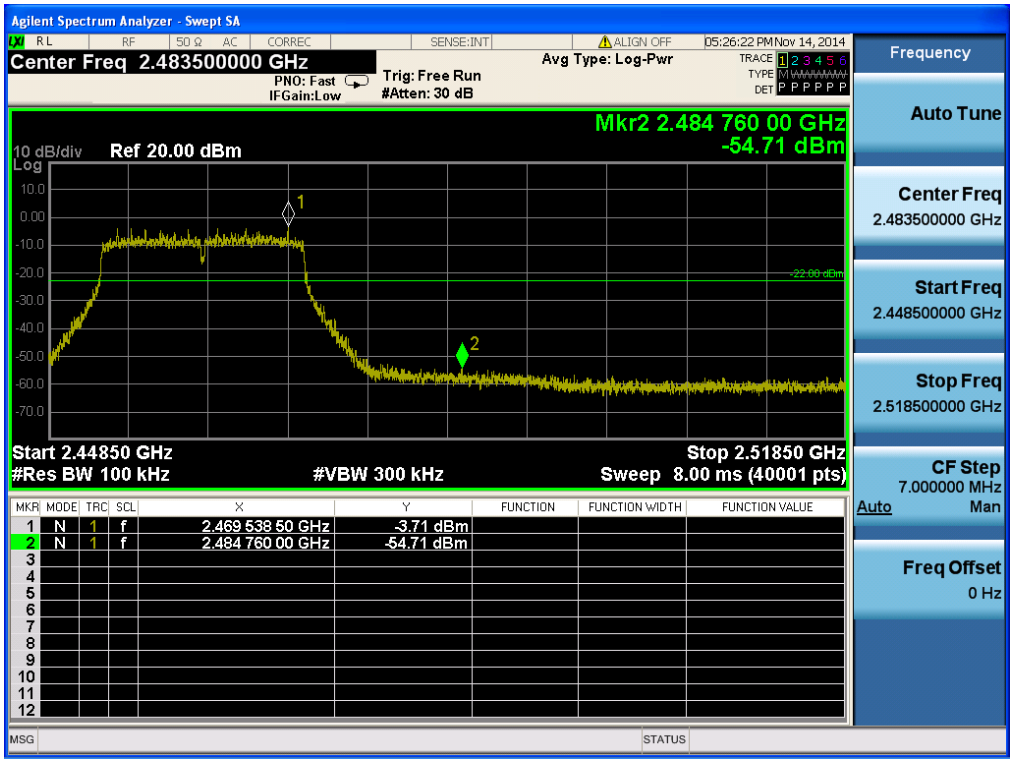


TM 3 & ANT 2 & Highest

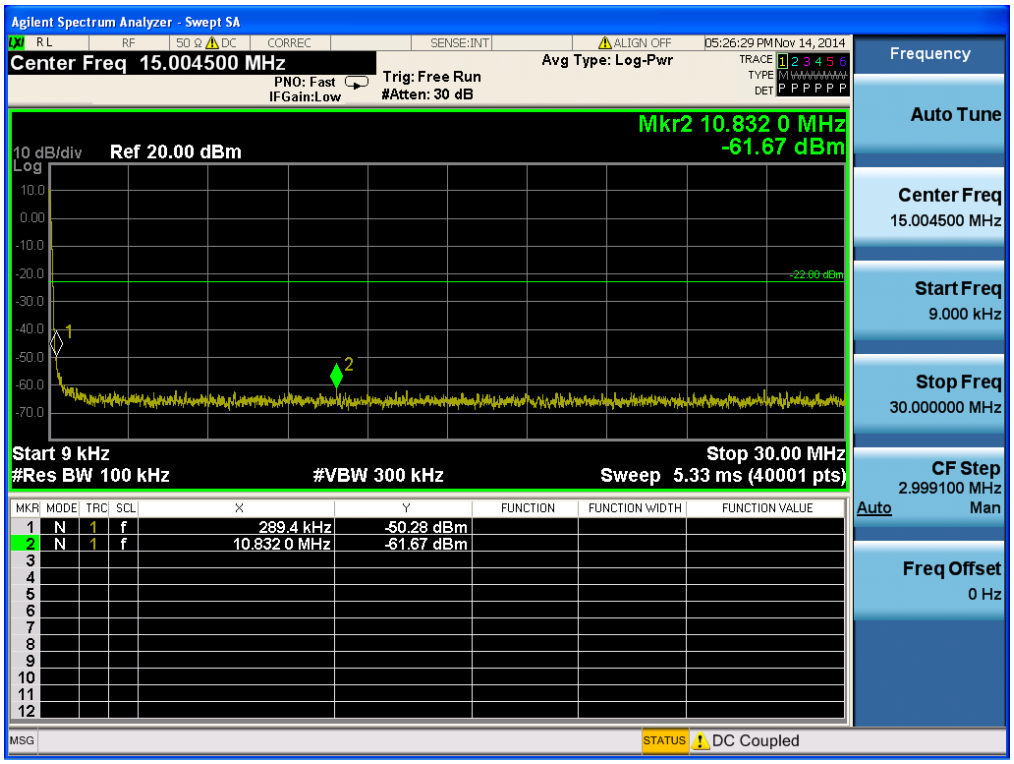
Reference

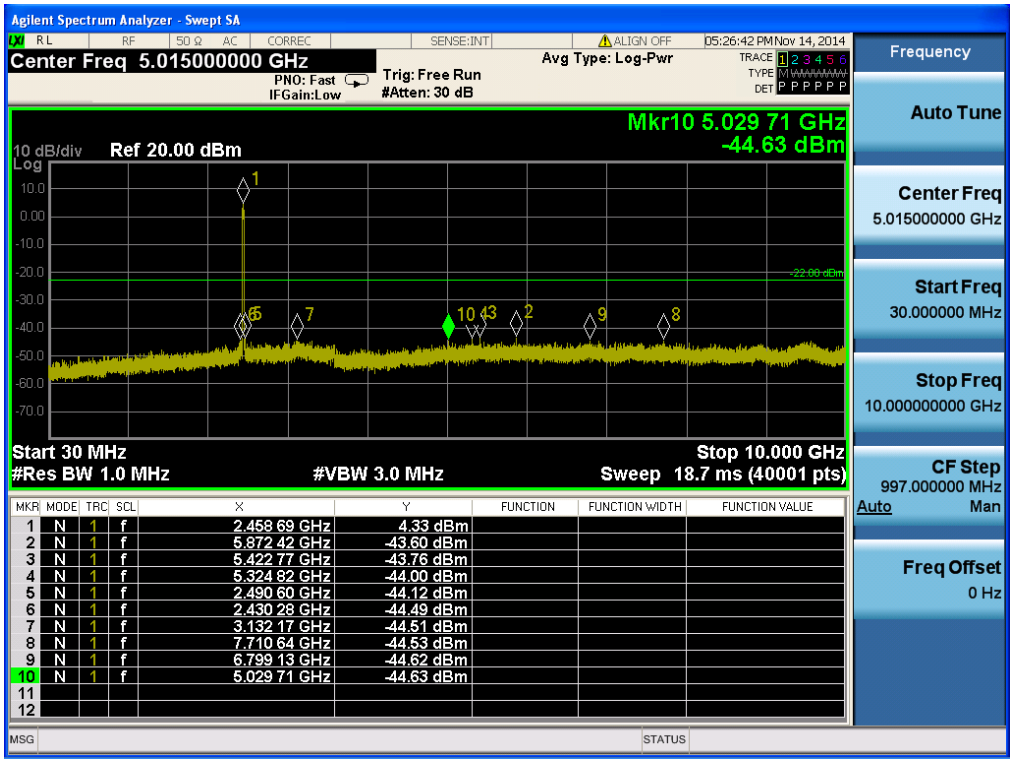


High Band-edge

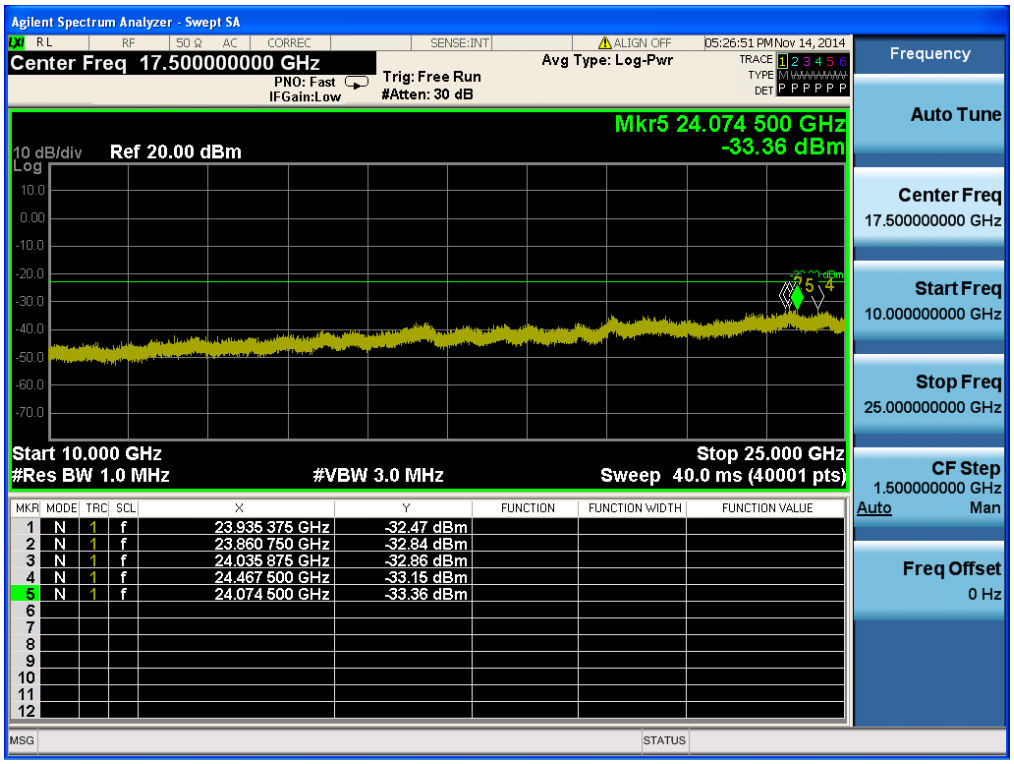


Conducted Spurious Emissions



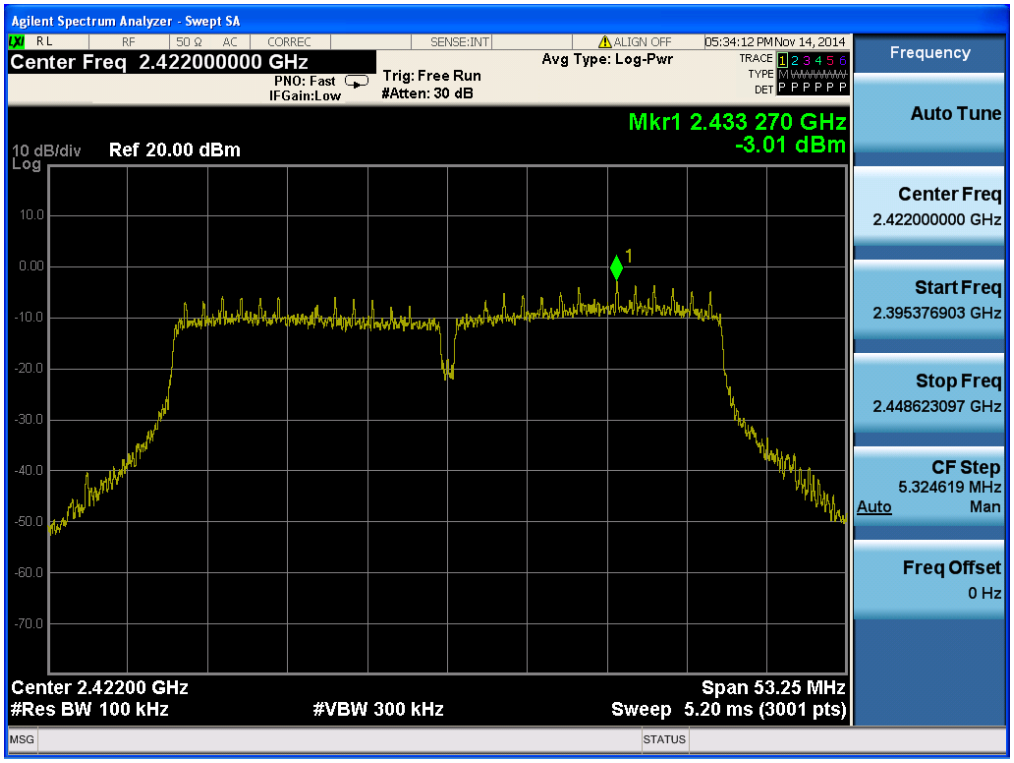


Conducted Spurious Emissions

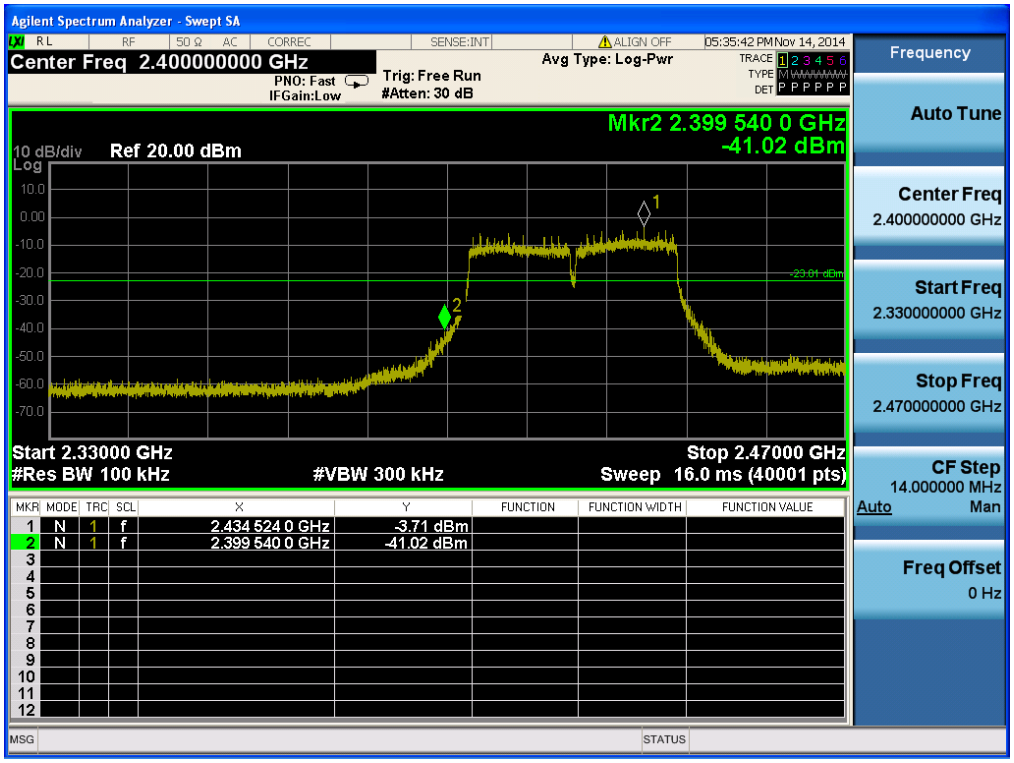


TM 4 & ANT 1 & Lowest

Reference



Low Band-edge



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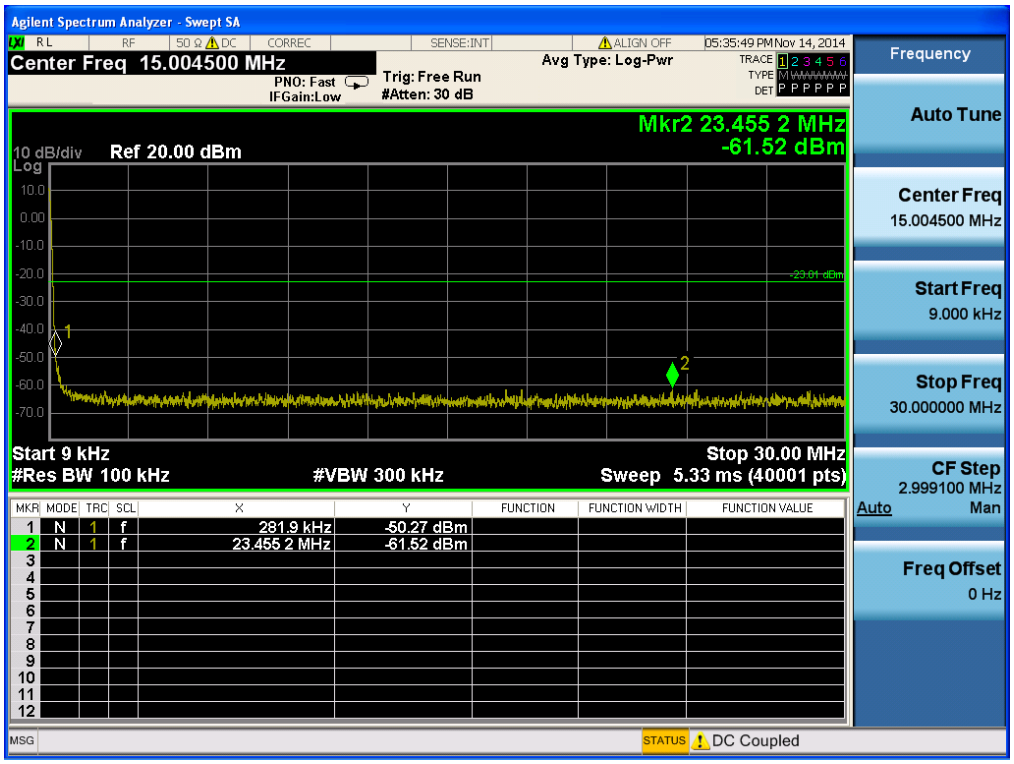
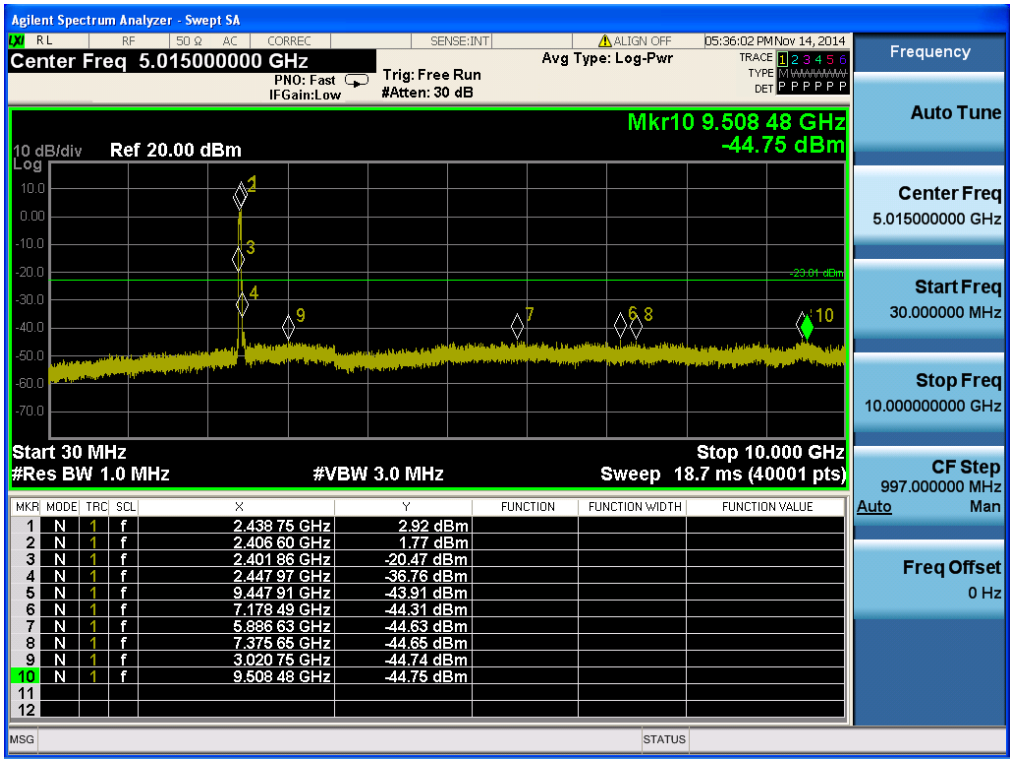
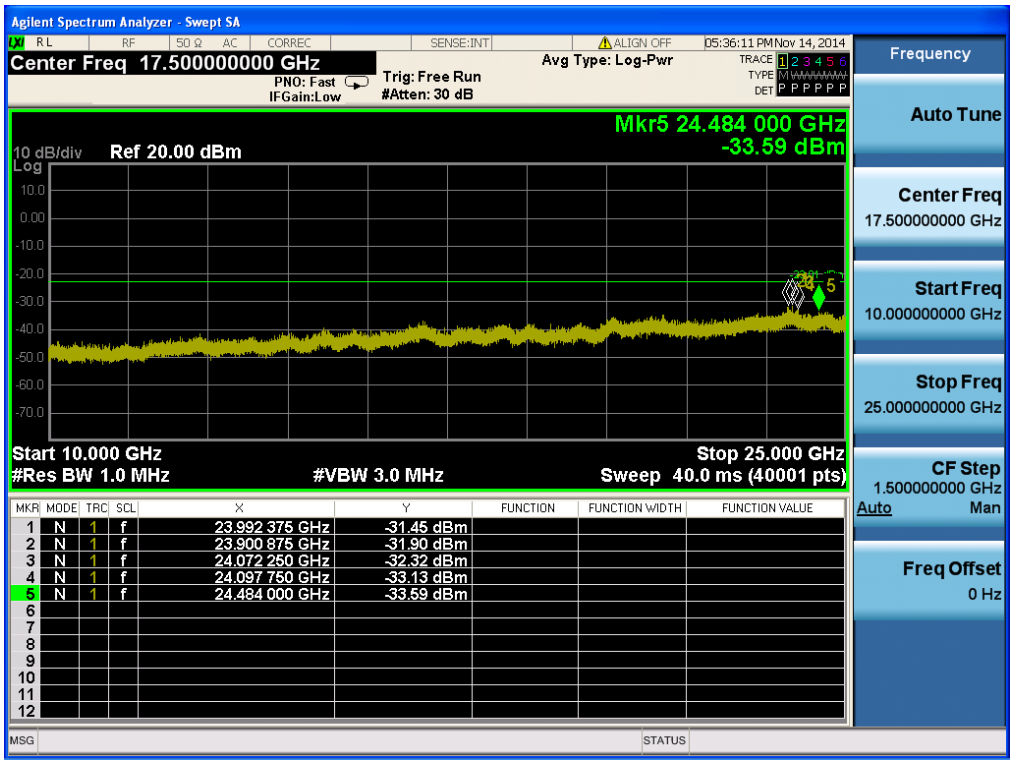


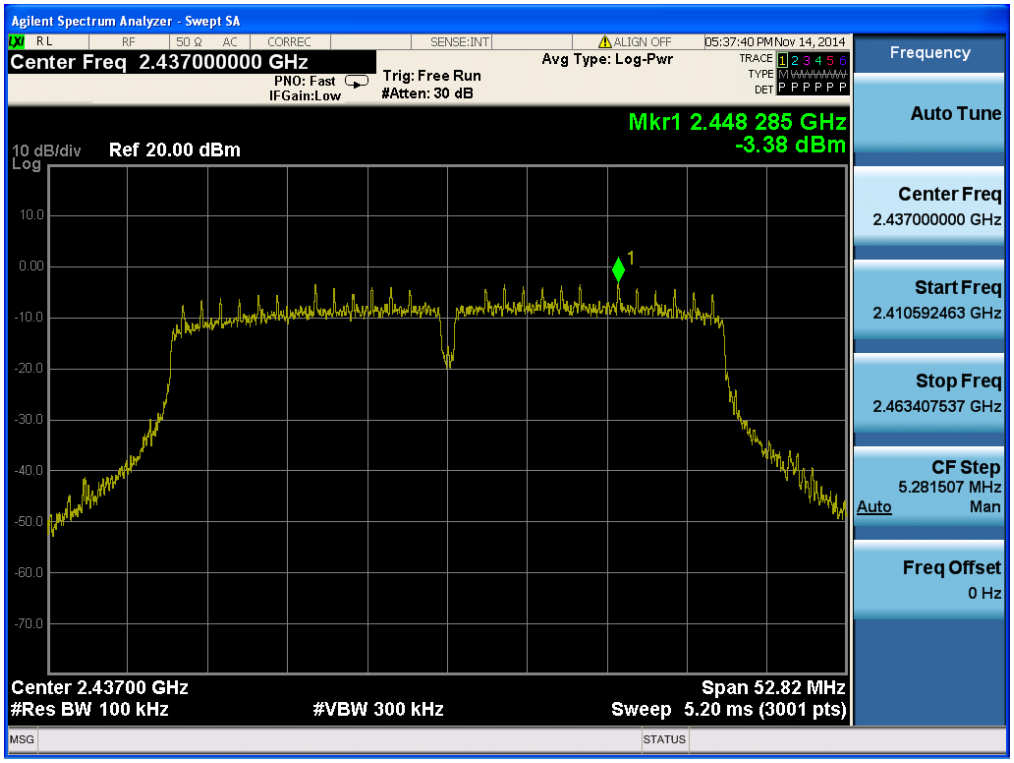


Conducted Spurious Emissions



TM 4 & ANT 1 & Middle

Reference



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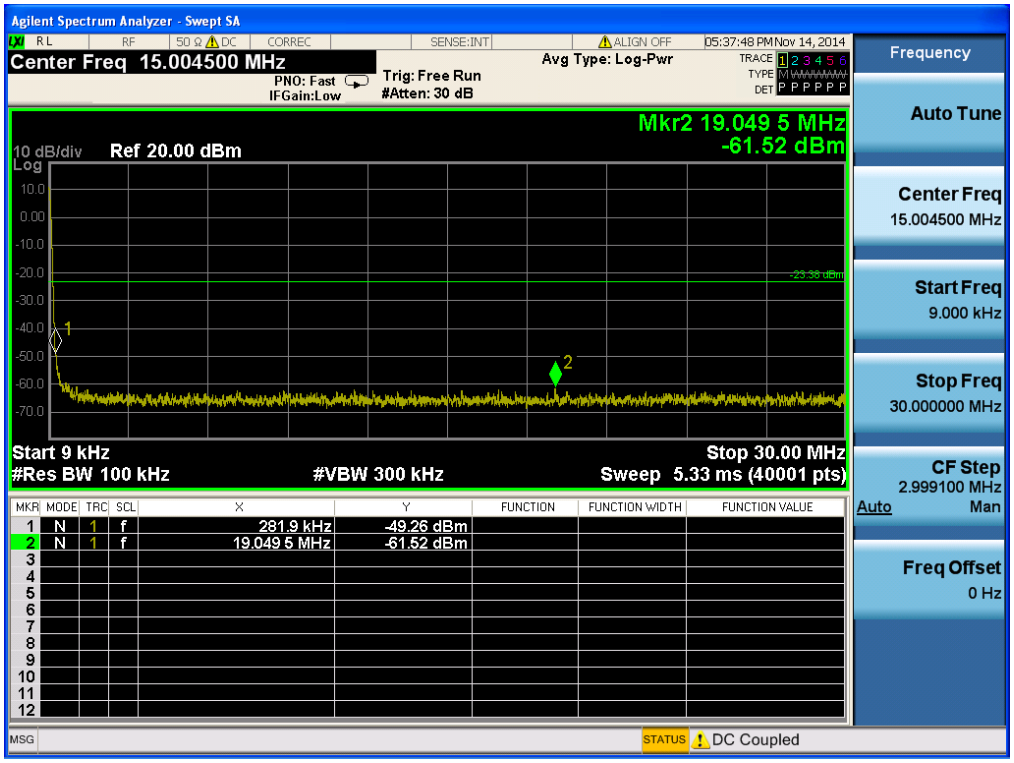
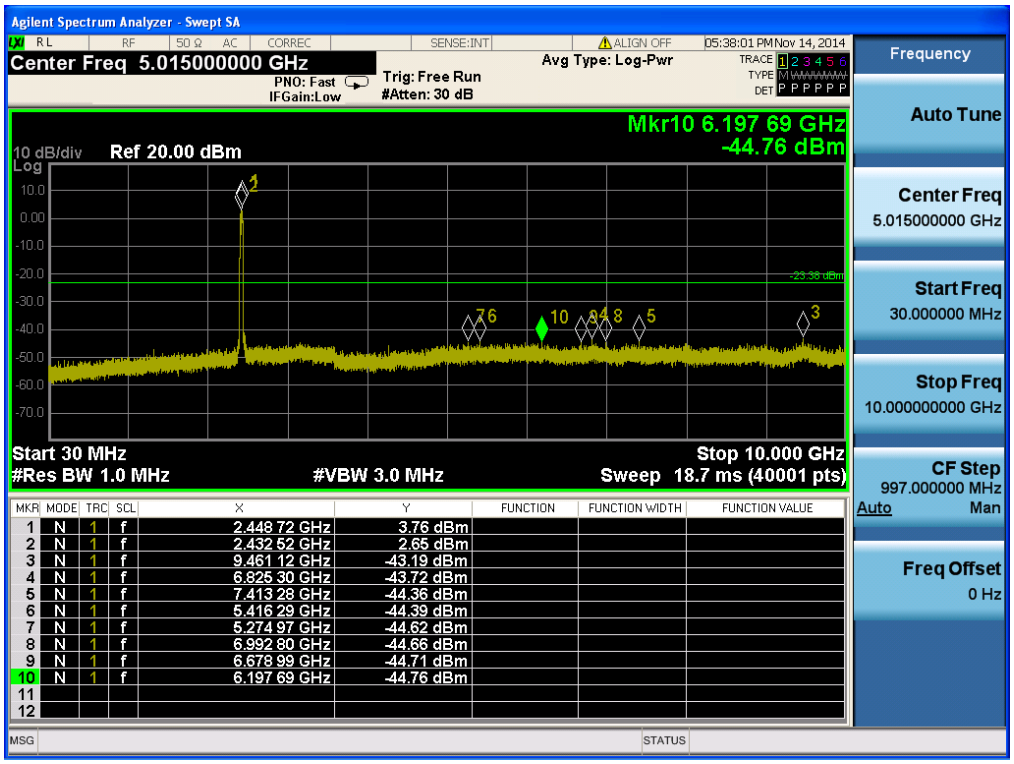
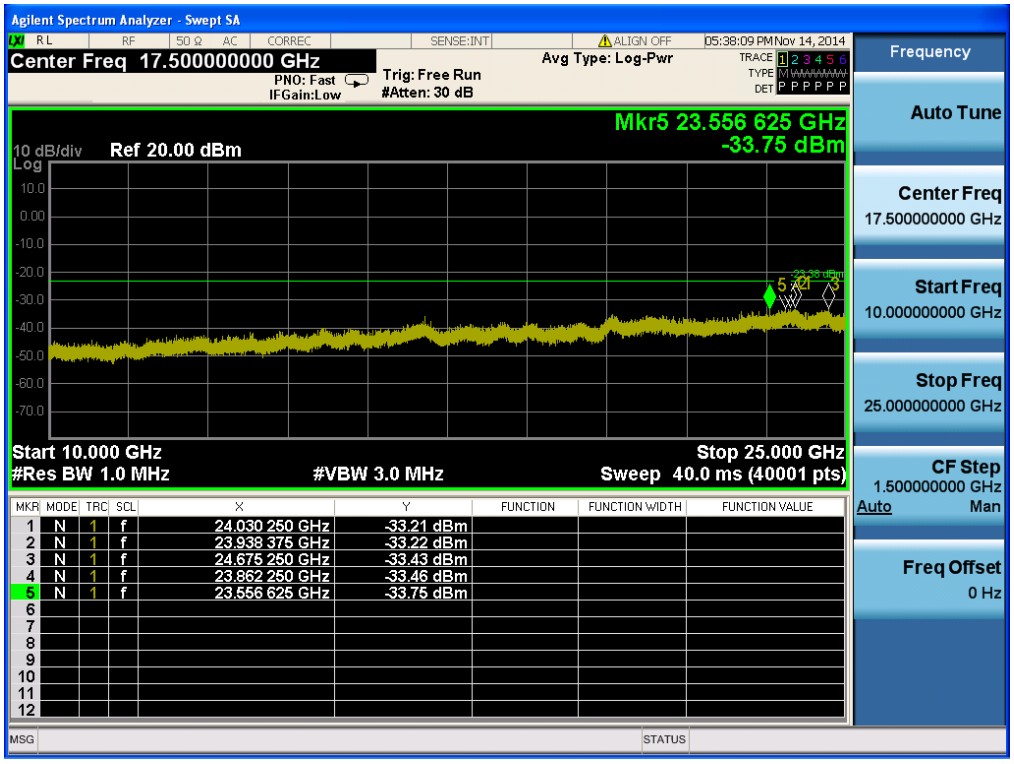


Conducted Spurious Emissions





TM 4 & ANT 1 & Highest

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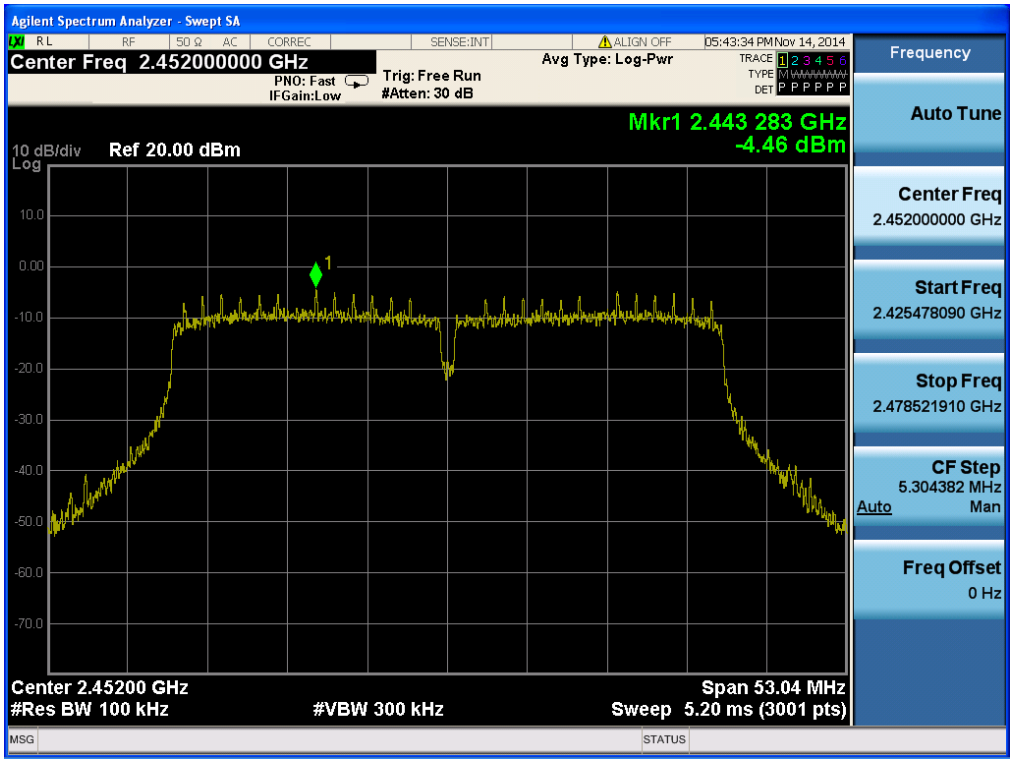
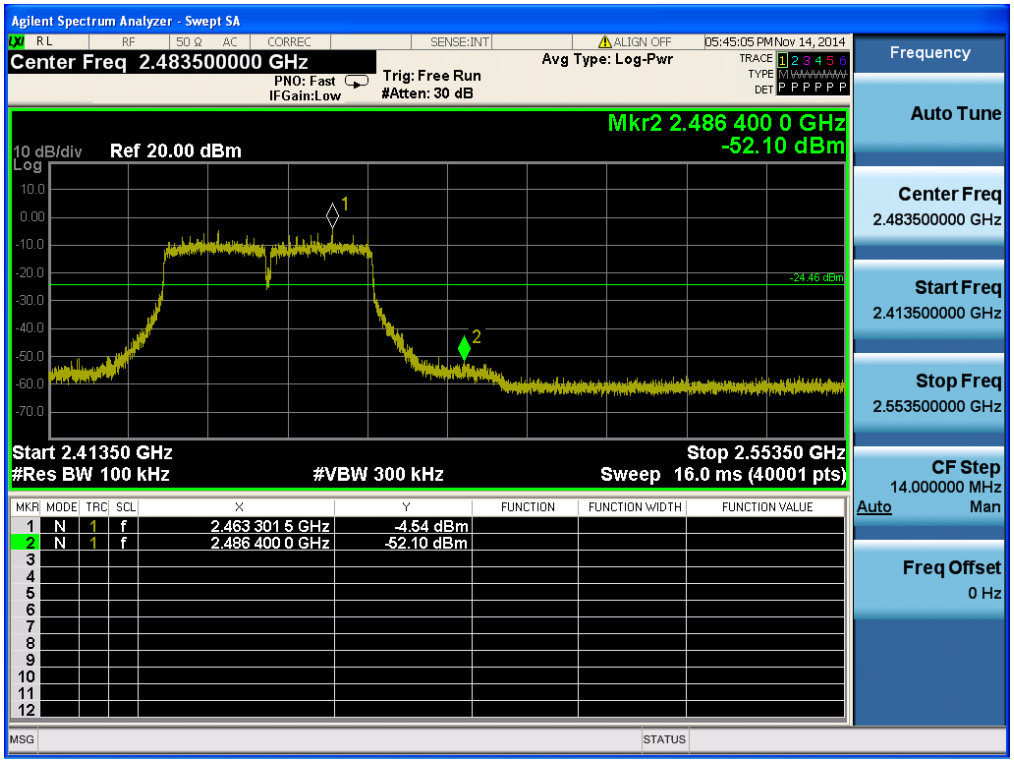


High Band-edge



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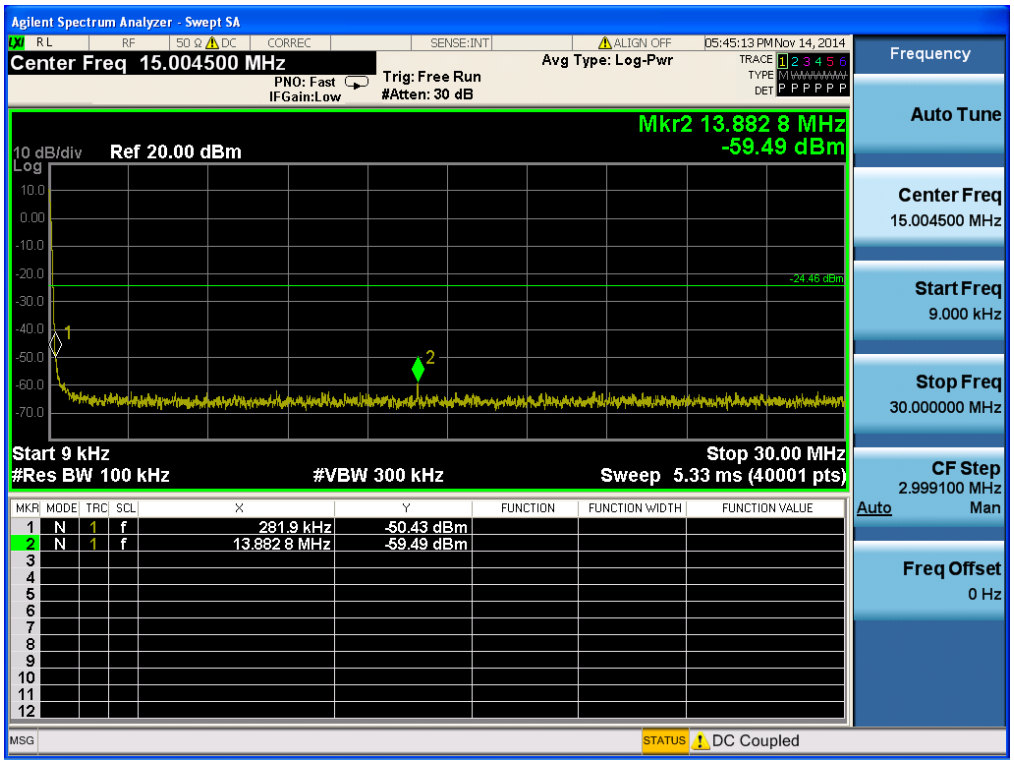
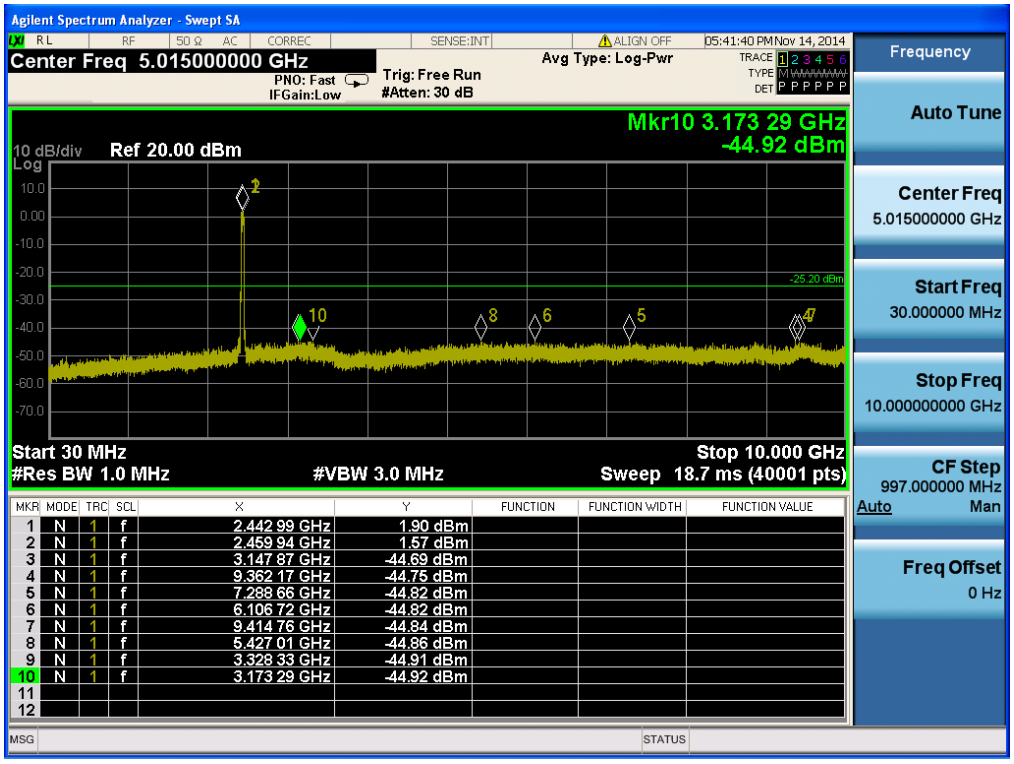
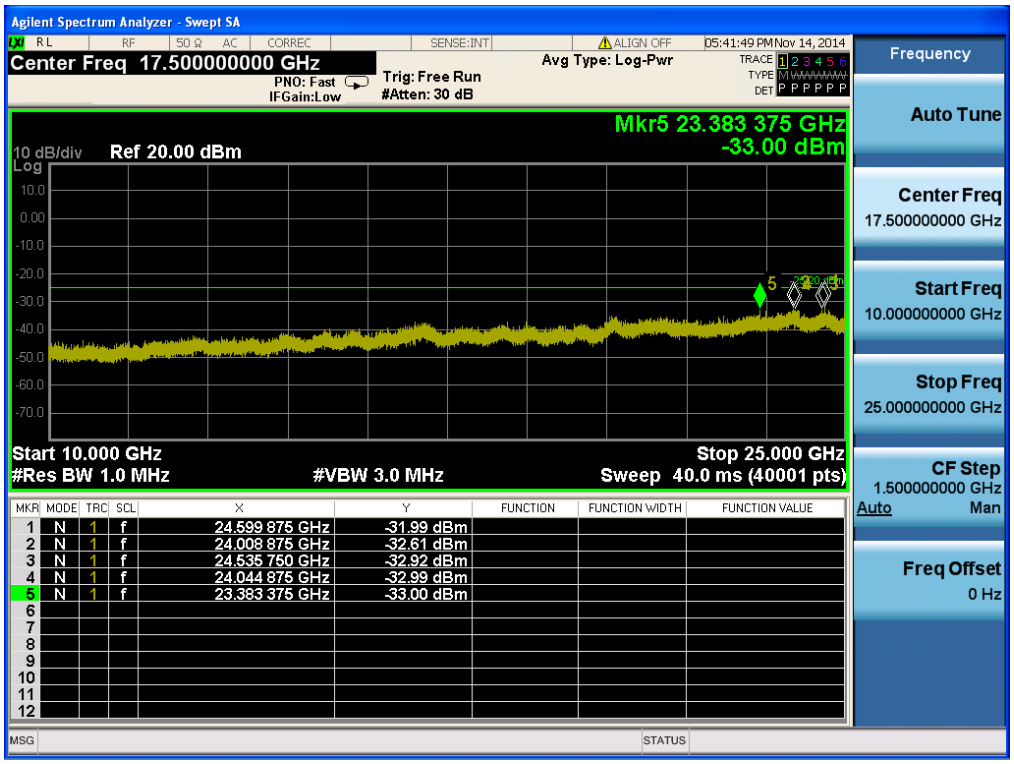


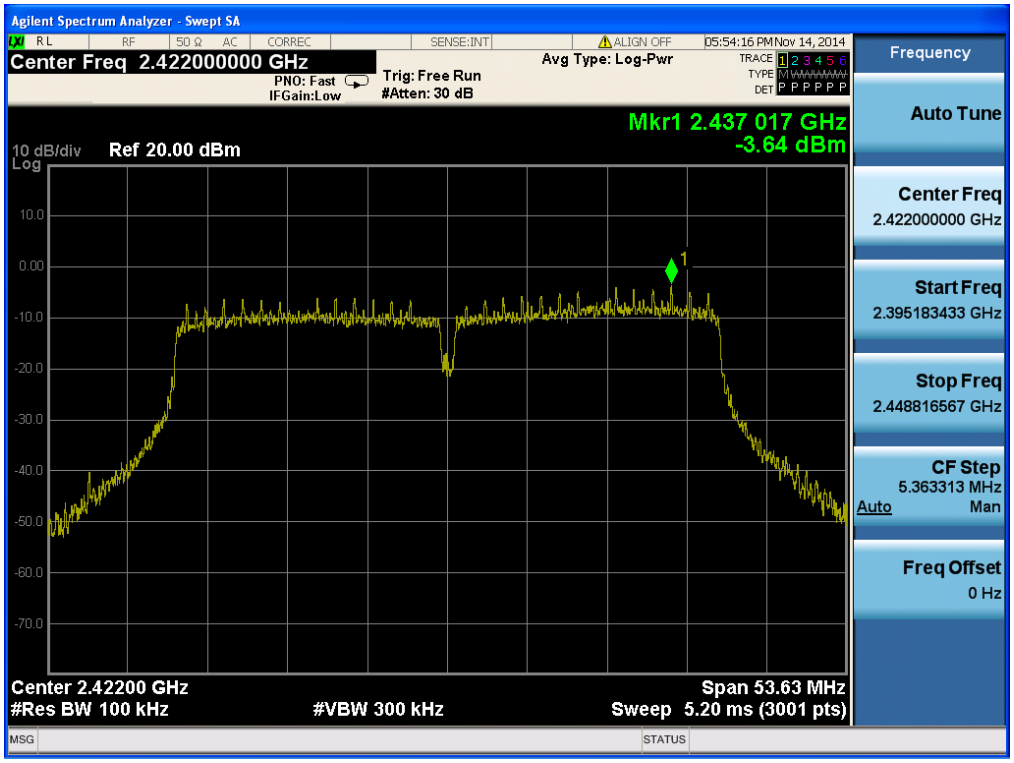


Conducted Spurious Emissions

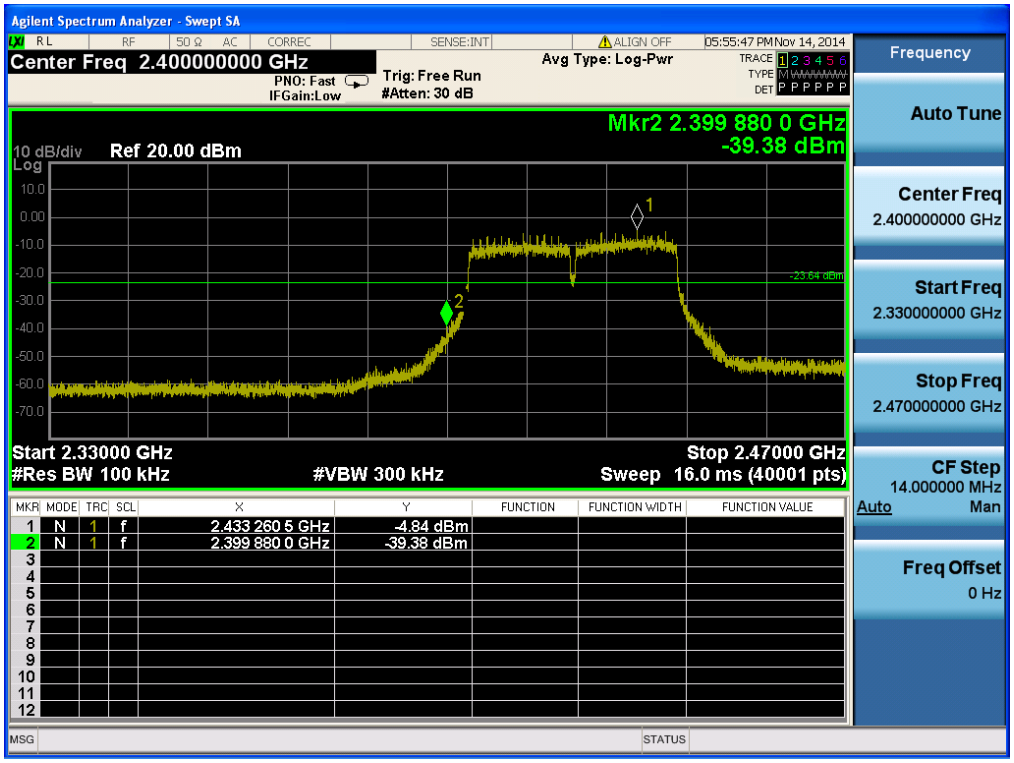


TM 4 & ANT 2 & Lowest

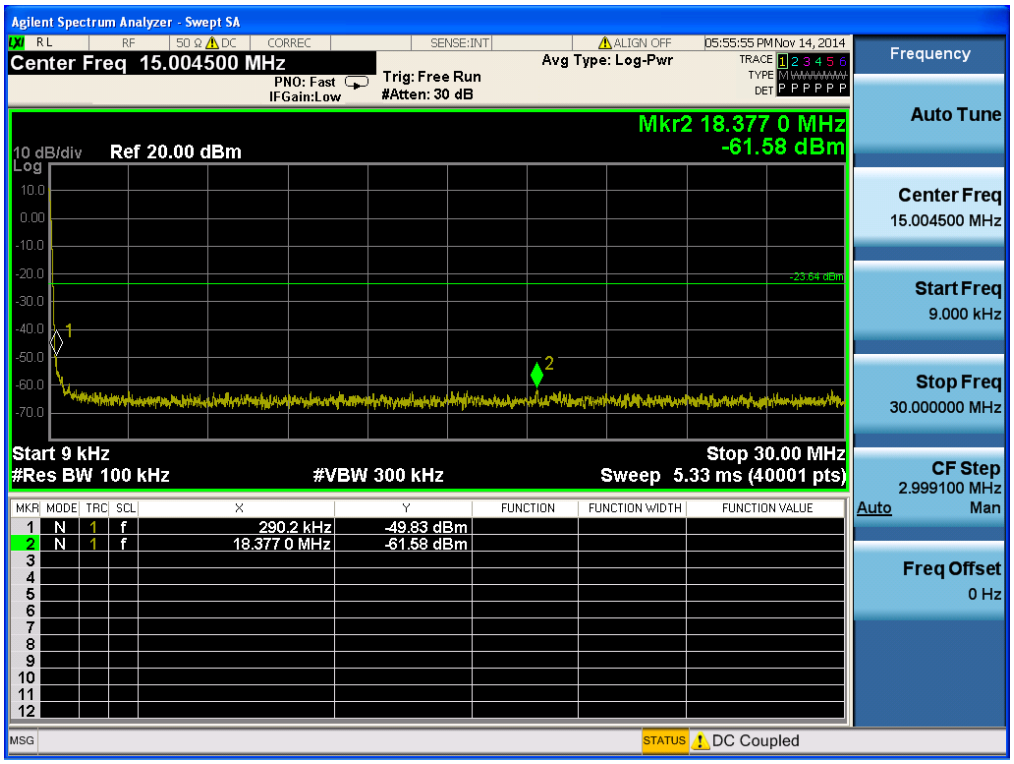
Reference

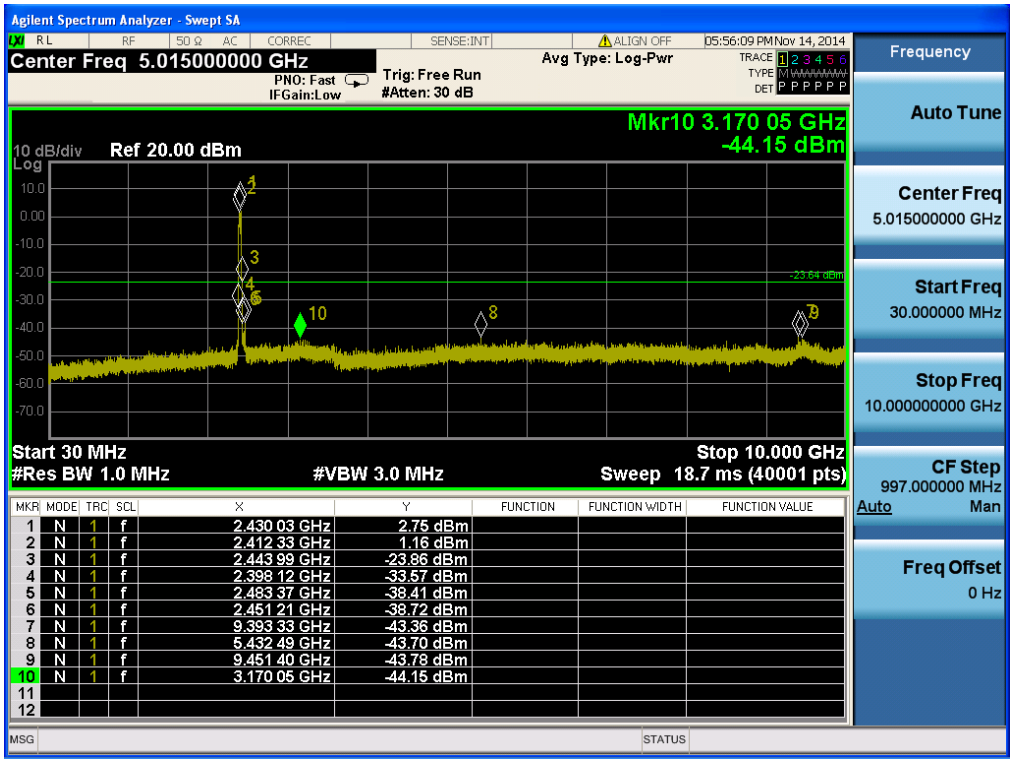


Low Band-edge

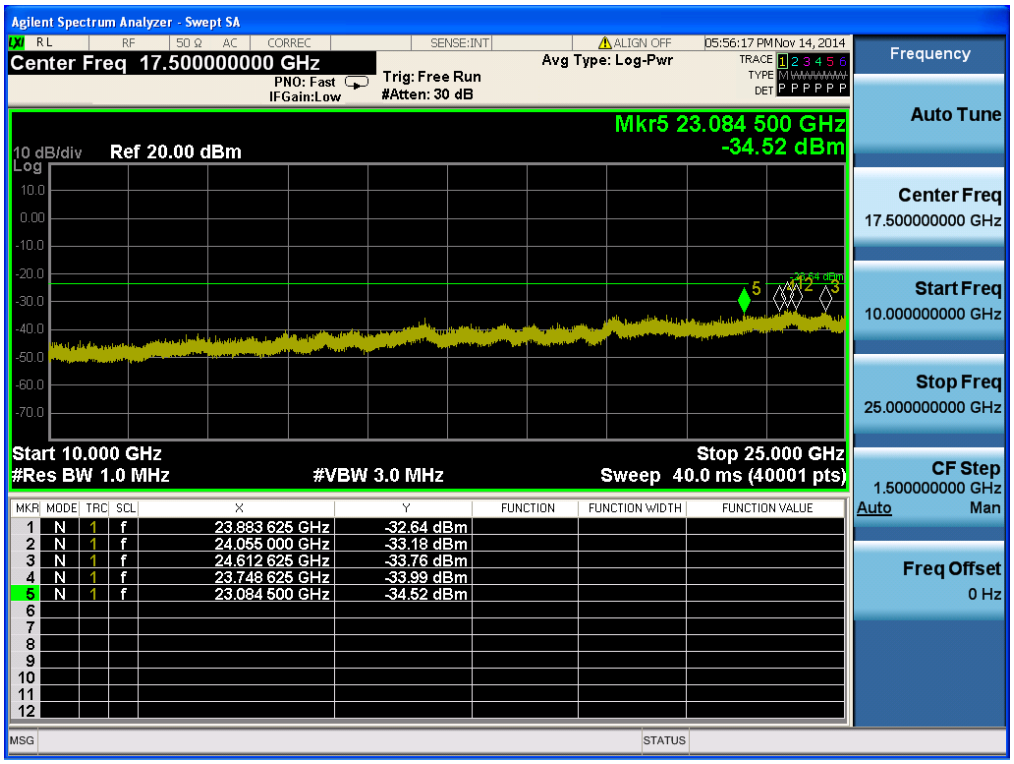


Conducted Spurious Emissions



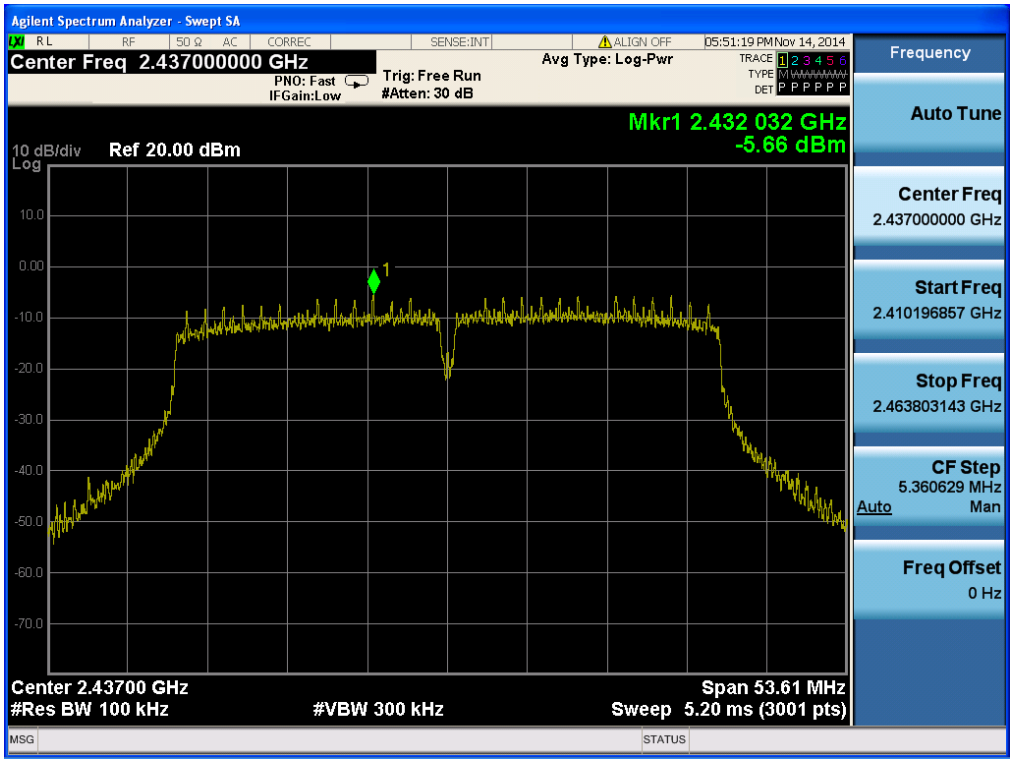


Conducted Spurious Emissions



TM 4 & ANT 2 & Middle

Reference



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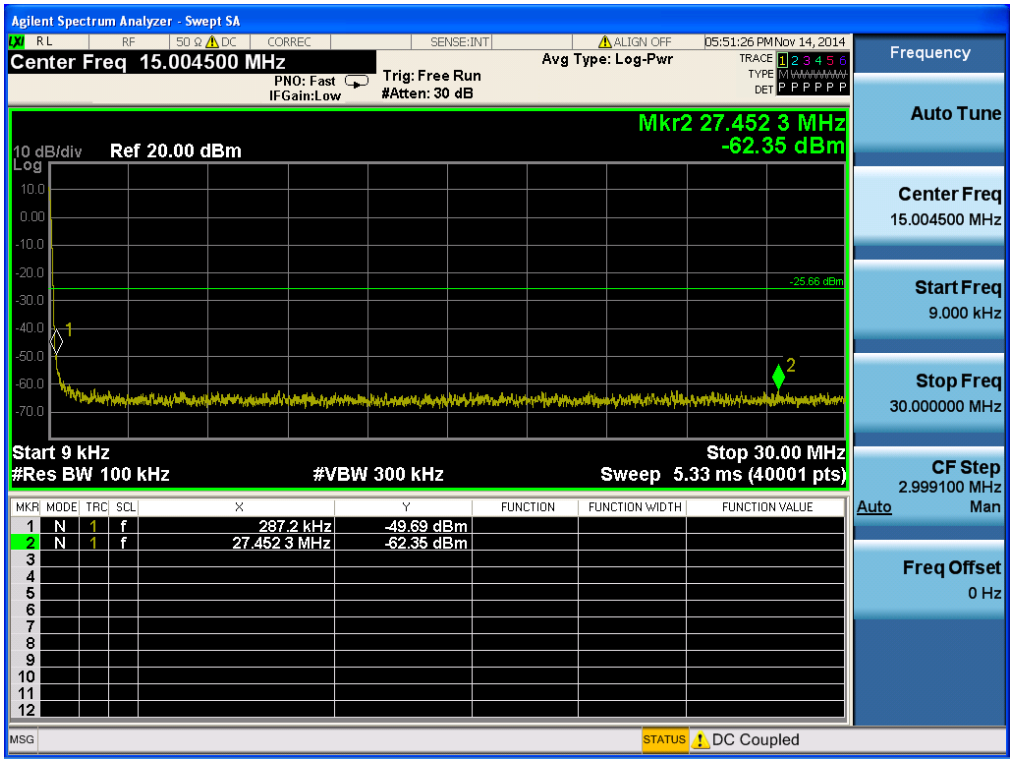

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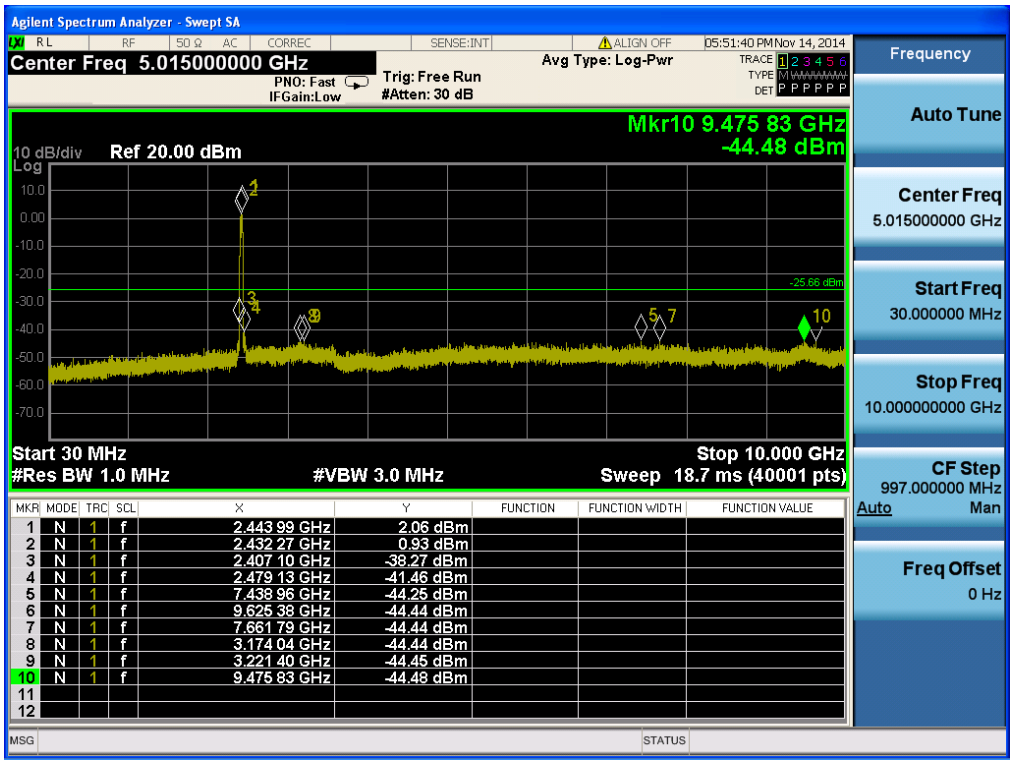
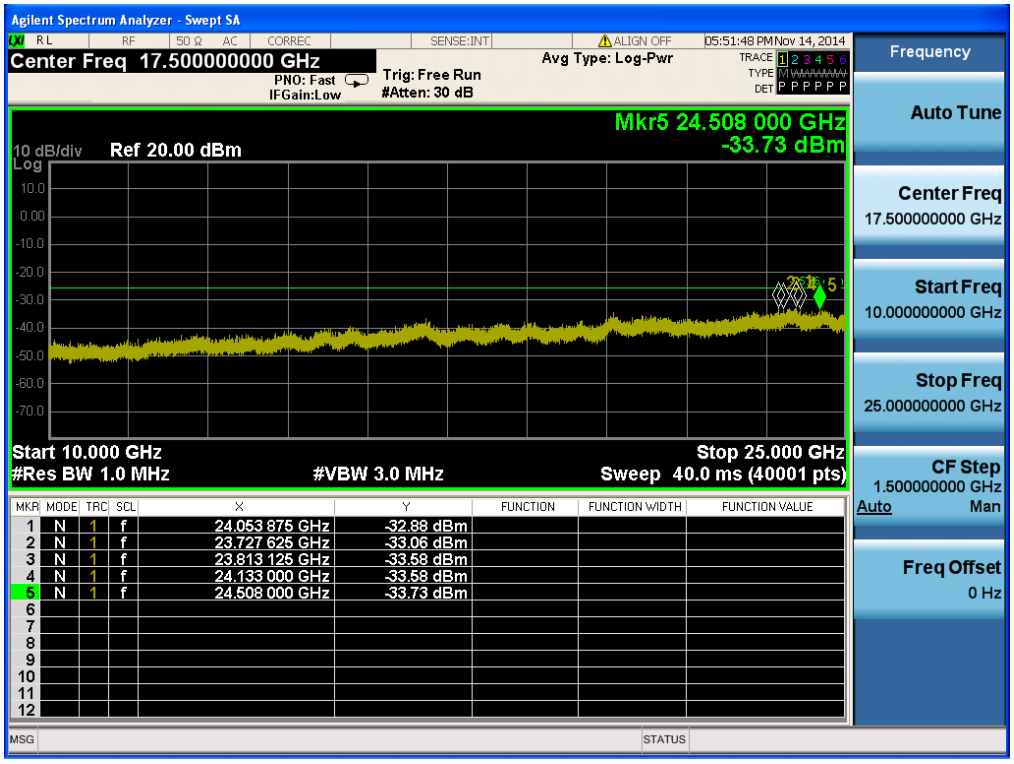
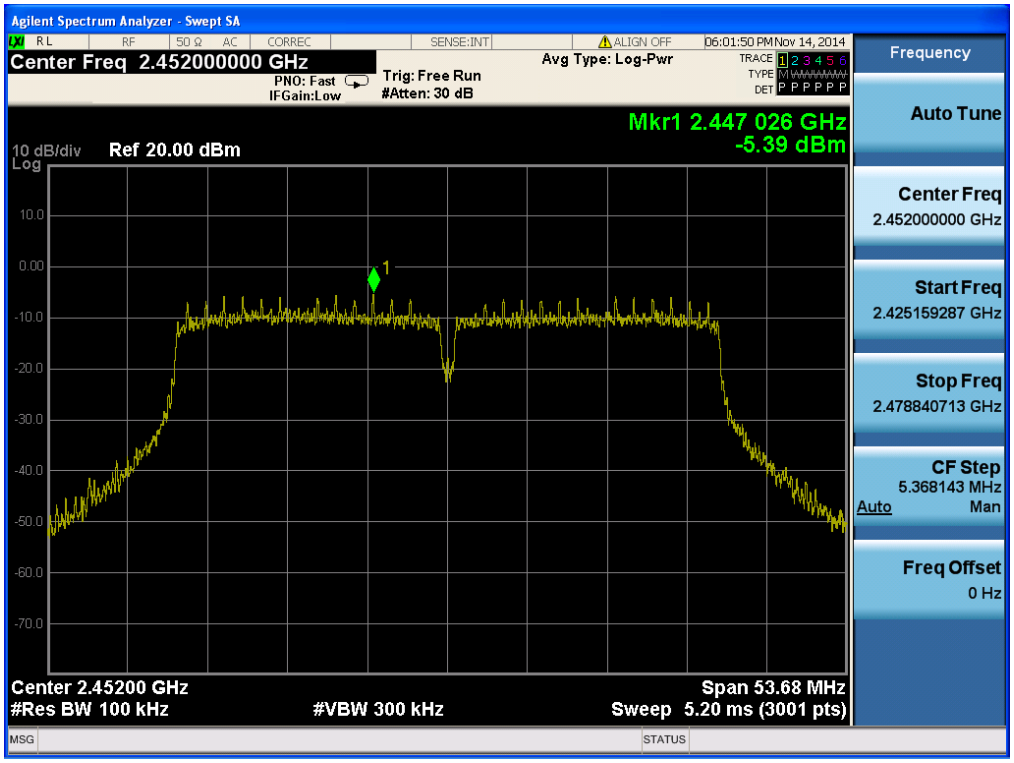


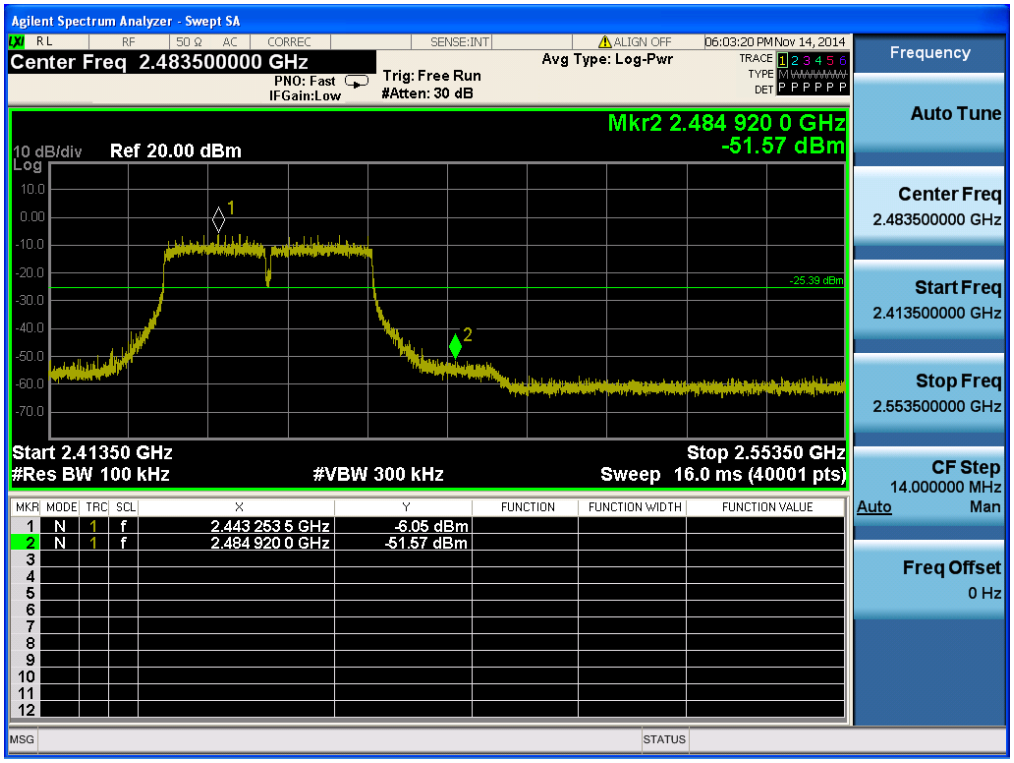


TM 4 & ANT 2 & Highest

Reference



High Band-edge



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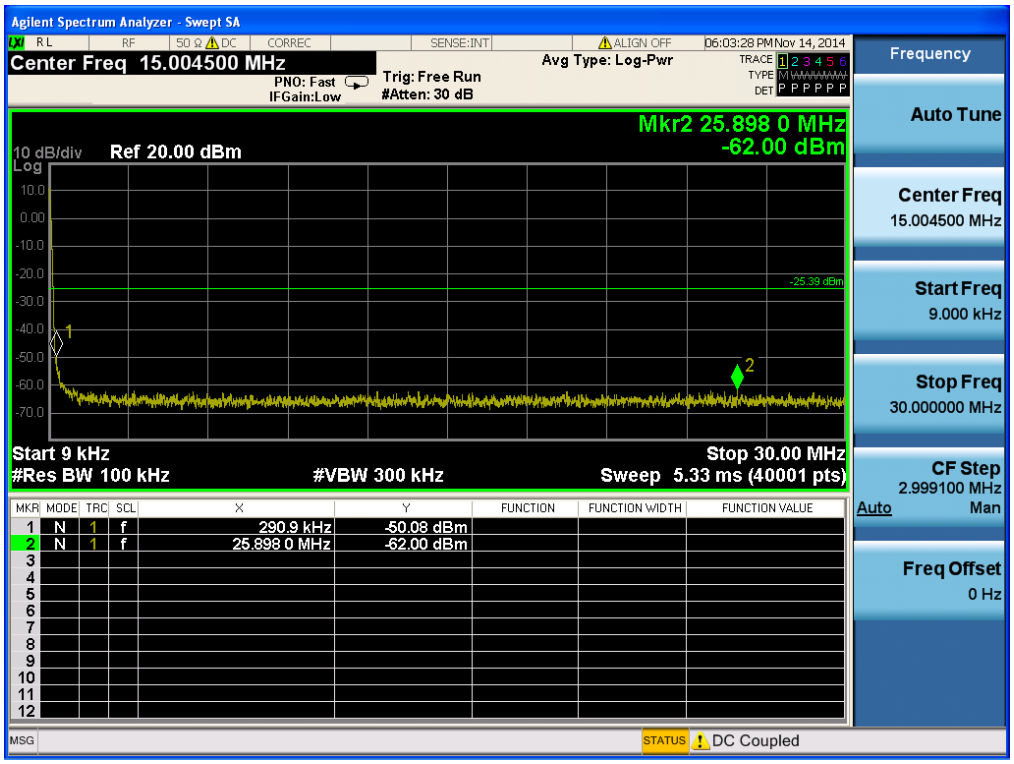
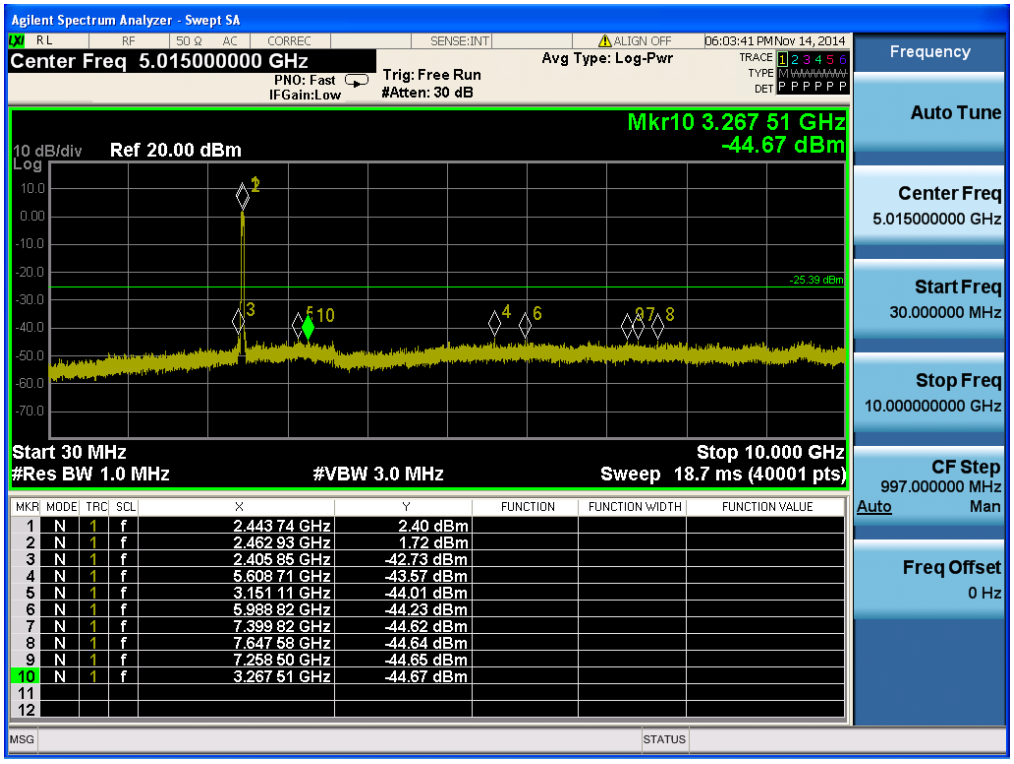
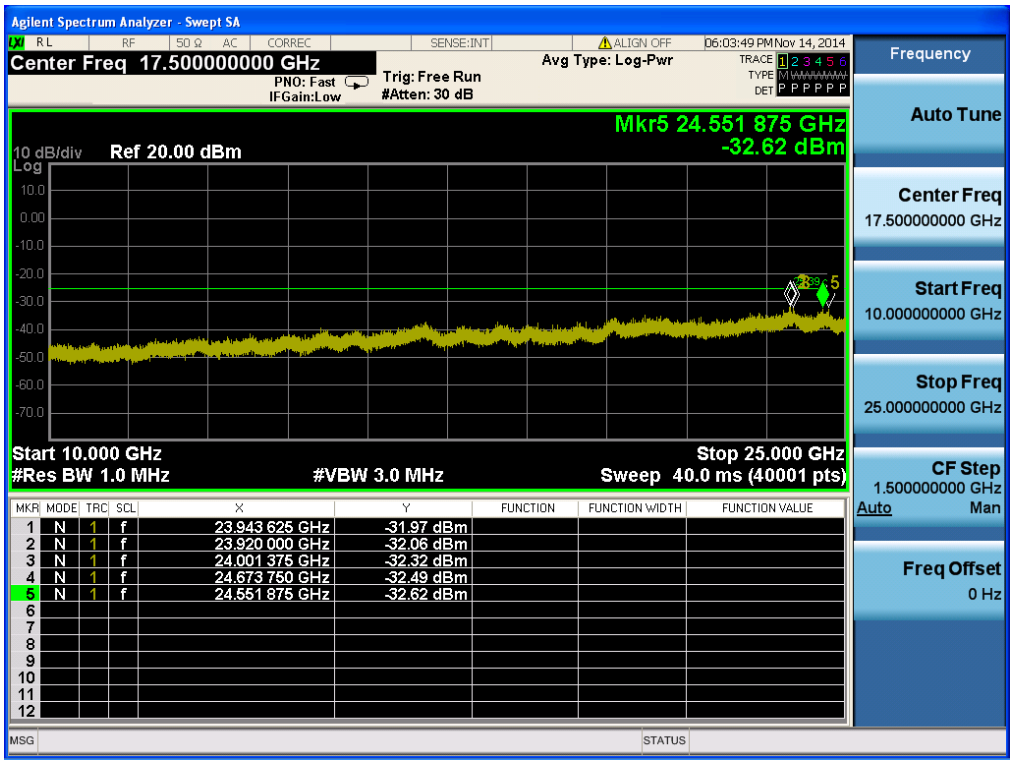




Conducted Spurious Emissions



8.5 Radiated spurious emissions

Test Requirements and limit, §15.247(d), §15.205, §15.209& RSS-210 [A8.5], RSS-GEN [8.9], RSS-GEN [8.10]

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a) and (b), then the 15.209(a) limit in the table below has to be followed

▪ **FCC Part 15.209(a) and (b)**

Frequency (MHz)	Limit (uV/m)	Measurement Distance (meter)
0.009 – 0.490	2400/F (kHz)	300
0.490 – 1.705	24000/F (kHz)	30
1.705 – 30.0	30	30
30 ~ 88	100 **	3
88 ~ 216	150 **	3
216 ~ 960	200 **	3
Above 960	500	3

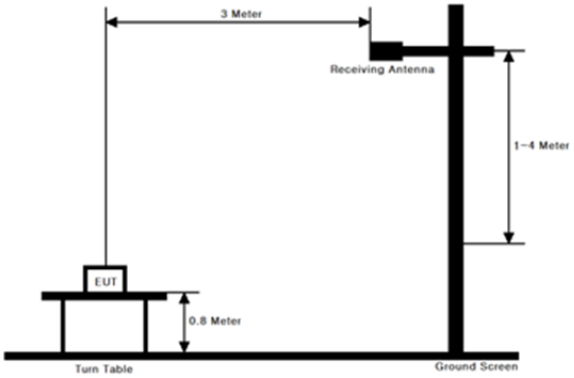
** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

▪ **FCC Part 15.205 (a):** Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.52025	156.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	12.57675 ~	156.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	12.57725	156.7 ~ 156.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	13.36 ~ 13.41	162.0125 ~ 167.17	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.42 ~ 16.423	167.72 ~ 173.2	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	16.69475 ~	240 ~ 285	2655 ~ 2900		
8.291 ~ 8.294	16.69525	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	16.80425 ~	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	16.80475	608 ~ 614	3345.8 ~ 3358		
	25.5 ~ 25.67	960 ~ 1240	3600 ~ 4400		
	37.5 ~ 38.25				
	73 ~ 74.6				
	74.8 ~ 75.2				

▪ **FCC Part 15.205(b):** The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

Test Configuration



▣ TEST PROCEDURE

1. The EUT is placed on a non-conductive table, which is 0.8 m above ground plane.
2. The turn table shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

▣ Measurement Instrument Setting for Radiated Emission Measurements.

Peak Measurement: 12.2.4 of KDB 558074 D01 meas Guidance v03r2

RBW = As specified in below table , VBW ≥ 3 x RBW, Sweep = Auto, Detector = Peak, Trace mode = Max Hold until the trace stabilizes.

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

Average Measurement: 12.2.5.2 of KDB 558074 D01 meas Guidance v03r2

1. RBW = 1MHz(unless otherwise specified)
2. VBW ≥ 3 X RBW
3. Detector = RMS, if span / sweep point ≤ (RBW/2)
4. Averaging type = Power
5. Sweep time = auto
6. Trace average = At least 100 traces
7. A duty cycle correction factor(10log(1/x), where x is the duty cycle) shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle.

Test Mode	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
TM 1	98.79	0.06
TM 2	92.36	0.35
TM 3	83.59	0.78
TM 4	72.79	1.38

Note: Please refer to Appendix I for detailed information.

Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : *Test Mode 1(TM 1)*

Tested ANT	Tested Frequency	Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
ANT 1	Lowest	2388.26	V	Z	PK	53.97	2.51	N/A	N/A	56.48	74.00	17.52
		2389.35	V	Z	AV	42.63	2.51	N/A	N/A	45.14	54.00	8.86
		4824.03	V	Y	PK	44.76	8.70	N/A	N/A	53.46	74.00	20.54
		4824.03	V	Y	AV	34.39	8.70	N/A	N/A	43.09	54.00	10.91
		-	-	-	-	-	-	-	-	-	-	-
	Middle	4874.01	V	Y	PK	44.09	8.71	N/A	N/A	52.80	74.00	21.20
		4873.98	V	Y	AV	35.43	8.71	N/A	N/A	44.14	54.00	9.86
		-	-	-	-	-	-	-	-	-	-	-
	Highest	2489.31	V	Z	PK	54.86	3.10	N/A	N/A	57.96	74.00	16.04
		2489.79	V	Z	AV	43.88	3.10	N/A	N/A	46.98	54.00	7.02
		4924.02	V	Z	PK	44.72	8.72	N/A	N/A	53.44	74.00	20.56
		4923.99	V	Z	AV	34.55	8.72	N/A	N/A	43.27	54.00	10.73
		-	-	-	-	-	-	-	-	-	-	-

Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F+ DCCF + DCF / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
3. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
   Therefore Distance Correction Factor(DCF) : -9.54 dB = 20*log(1m/3m)

Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : *Test Mode 2(TM 2)*

Tested ANT	Tested Frequency	Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
ANT 1	Lowest	2388.94	V	Z	PK	54.29	2.51	N/A	N/A	56.80	74.00	17.20
		2390.00	V	Z	AV	43.48	2.51	0.35	N/A	46.34	54.00	7.66
		4824.00	V	Y	PK	44.36	8.70	N/A	N/A	53.06	74.00	20.94
		4823.98	V	Y	AV	34.32	8.70	0.35	N/A	43.37	54.00	10.63
		-	-	-	-	-	-	-	-	-	-	-
	Middle	4874.01	V	Y	PK	44.71	8.71	N/A	N/A	53.42	74.00	20.58
		4874.01	V	Y	AV	34.35	8.71	0.35	N/A	43.41	54.00	10.59
		-	-	-	-	-	-	-	-	-	-	-
	Highest	2485.91	V	Z	PK	58.53	3.10	N/A	N/A	61.63	74.00	12.37
		2483.52	V	Z	AV	47.00	3.10	0.35	N/A	50.45	54.00	3.55
		4924.00	V	Y	PK	44.65	8.72	N/A	N/A	53.37	74.00	20.63
		4924.02	V	Y	AV	34.22	8.72	0.35	N/A	43.29	54.00	10.71
		-	-	-	-	-	-	-	-	-	-	-

Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F+ DCCF + DCF / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
3. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
   Therefore Distance Correction Factor(DCF) : -9.54 dB = 20*log(1m/3m)

Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : *Test Mode 3(TM 3)*

Tested ANT	Tested Frequency	Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
ANT 1 + ANT 2	Lowest	2388.45	V	Z	PK	55.22	2.51	N/A	N/A	57.73	74.00	16.27
		2389.80	V	Z	AV	43.27	2.51	0.78	N/A	46.56	54.00	7.44
		4824.02	V	Y	PK	43.67	8.70	N/A	N/A	52.37	74.00	21.63
		4823.98	V	Y	AV	33.38	8.70	0.78	N/A	42.86	54.00	11.14
		-	-	-	-	-	-	-	-	-	-	-
	Middle	4873.99	V	Y	PK	44.06	8.71	N/A	N/A	52.77	74.00	21.23
		4873.99	V	Y	AV	34.27	8.71	0.78	N/A	43.76	54.00	10.24
		-	-	-	-	-	-	-	-	-	-	-
	Highest	2483.83	V	Z	PK	56.51	3.10	N/A	N/A	59.61	74.00	14.39
		2484.19	V	Z	AV	44.85	3.10	0.78	N/A	48.73	54.00	5.27
		4924.01	V	Y	PK	44.89	8.72	N/A	N/A	53.61	74.00	20.39
		4923.98	V	Y	AV	34.58	8.72	0.78	N/A	44.08	54.00	9.92
		-	-	-	-	-	-	-	-	-	-	-

Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F+ DCCF + DCF / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
3. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
   Therefore Distance Correction Factor(DCF) : -9.54 dB = 20*log(1m/3m)

Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : *Test Mode 4(TM 4)*

Tested ANT	Tested Frequency	Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
ANT 1 + ANT 2	Lowest	2388.10	V	Z	PK	68.03	2.51	N/A	N/A	70.54	74.00	3.46
		2389.80	V	Z	AV	44.39	2.51	1.38	N/A	48.28	54.00	5.72
		4844.02	V	Y	PK	44.18	8.70	N/A	N/A	52.88	74.00	21.12
		4843.99	V	Y	AV	33.92	8.70	1.38	N/A	44.00	54.00	10.00
		-	-	-	-	-	-	-	-	-	-	-
	Middle	4874.00	V	Y	PK	44.87	8.71	N/A	N/A	53.58	74.00	20.42
		4874.00	V	Y	AV	34.16	8.71	1.38	N/A	44.25	54.00	9.75
		-	-	-	-	-	-	-	-	-	-	-
	Highest	2483.70	V	Z	PK	64.89	3.10	N/A	N/A	67.99	74.00	6.01
		2483.52	V	Z	AV	44.69	3.10	1.38	N/A	49.17	54.00	4.83
		4904.01	V	Y	PK	44.58	8.72	N/A	N/A	53.30	74.00	20.70
		4904.02	V	Y	AV	34.96	8.72	1.38	N/A	45.06	54.00	8.94
		-	-	-	-	-	-	-	-	-	-	-

Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F+ DCCF + DCF / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
3. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
   Therefore Distance Correction Factor(DCF) : -9.54 dB = 20*log(1m/3m)

8.6 Power-line conducted emissions

Test Requirements and limit, §15.207& RSS-Gen [8.8]

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

▣ **TEST PROCEDURE**

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to the test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.

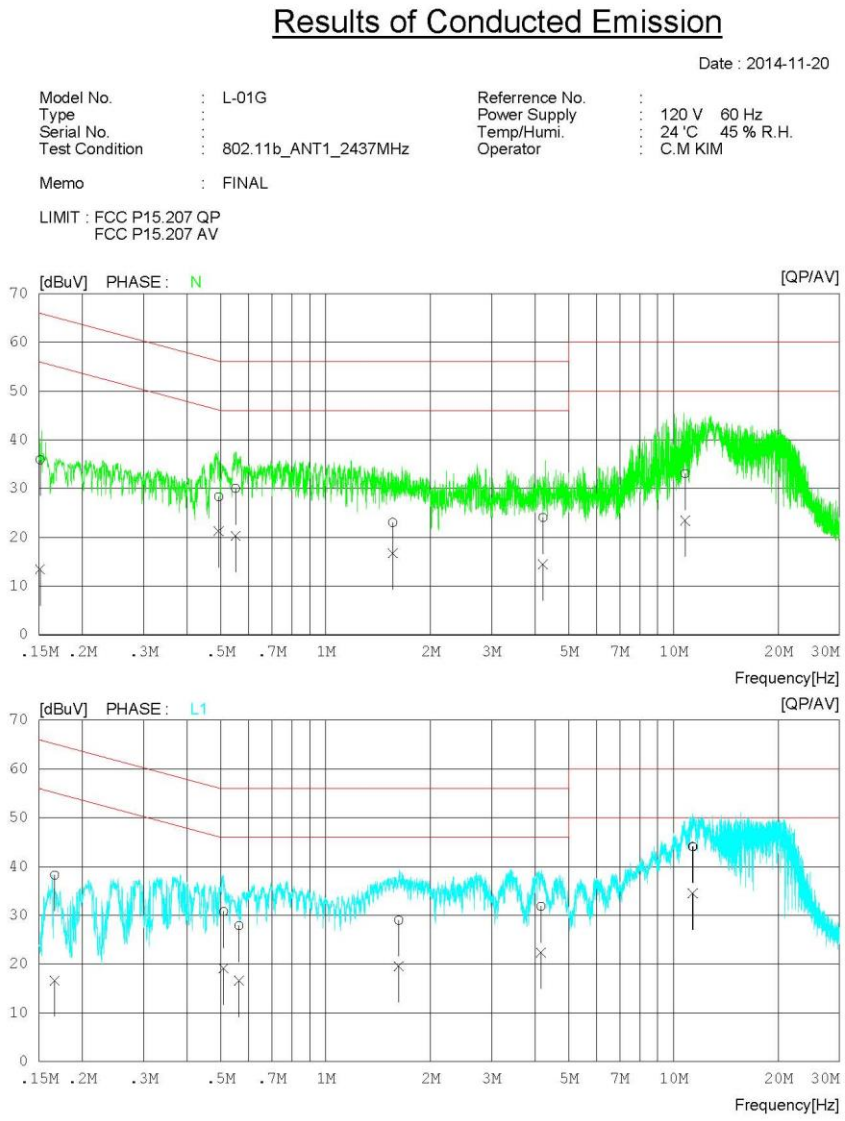
▣ **Test Results:** **Comply**(Refer to next page.)

The worst data was reported.

▣ RESULT PLOTS

AC Line Conducted Emissions (Graph)

Test mode 1(TM 1) & Middle



AC Line Conducted Emissions (List)

Test mode 1(TM 1) & Middle

Results of Conducted Emission

Date : 2014-11-20

Model No.	: L-01G		Referrence No.	:	
Type	:		Power Supply	: 120 V 60 Hz	
Serial No.	:		Temp/Humi.	: 24 'C 45 % R.H.	
Test Condition	: 802.11b_ANT1_2437MHz		Operator	: C.M KIM	

Memo : FINAL

LIMIT : FCC P15.207 QP
FCC P15.207 AV

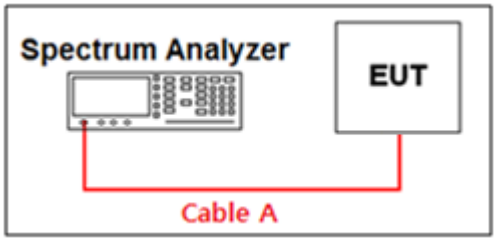
NO	FREQ	READING QP	READING AV	C.FACTOR	RESULT QP	RESULT AV	LIMIT QP	LIMIT AV	MARGIN QP	MARGIN AV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.15079	26.0	3.6	9.9	35.9	13.5	66.0	56.0	30.1	42.5	N
2	0.49239	18.4	11.4	9.9	28.3	21.3	56.1	46.1	27.8	24.8	N
3	0.55003	20.1	10.4	9.9	30.0	20.3	56.0	46.0	26.0	25.7	N
4	1.55900	13.0	6.8	10.0	23.0	16.8	56.0	46.0	33.0	29.2	N
5	4.21340	14.0	4.4	10.1	24.1	14.5	56.0	46.0	31.9	31.5	N
6	10.79460	22.9	13.3	10.2	33.1	23.5	60.0	50.0	26.9	26.5	N
7	0.16627	28.3	6.7	9.9	38.2	16.6	65.1	55.1	26.9	38.5	L1
8	0.50869	20.9	9.2	9.9	30.8	19.1	56.0	46.0	25.2	26.9	L1
9	0.56350	18.0	6.7	9.9	27.9	16.6	56.0	46.0	28.1	29.4	L1
10	1.62240	19.0	9.6	10.0	29.0	19.6	56.0	46.0	27.0	26.4	L1
11	4.15720	21.7	12.2	10.1	31.8	22.3	56.0	46.0	24.2	23.7	L1
12	11.34480	33.9	24.3	10.2	44.1	34.5	60.0	50.0	15.9	15.5	L1
13	11.37260	33.8	24.3	10.2	44.0	34.5	60.0	50.0	16.0	15.5	L1

8.7 Occupied bandwidth

Test Requirements, RSS-Gen [6.6]

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99 % emission bandwidth, as calculated or measured.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%.
The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted.
Where practical, a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual.

▣ TEST RESULTS: N/A

Test Mode	Frequency	Test Results[MHz]	
		ANT 1	ANT 2
TM 1	Lowest	-	-
	Middle	-	-
	Highest	-	-
TM 2	Lowest	-	-
	Middle	-	-
	Highest	-	-
TM 3	Lowest	-	-
	Middle	-	-
	Highest	-	-
TM 4	Lowest	-	-
	Middle	-	-
	Highest	-	-

9. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
MXA Signal Analyzer	Agilent	N9020A	14/09/15	15/09/15	MY50200867
Digital Multimeter	H.P	34401A	14/02/27	15/02/27	3146A13475
Dynamic Measurement DC Source	Agilent	66332A	14/09/11	15/09/11	US37473627
Thermohygrometer	BODYCOM	BJ5478	14/03/03	15/03/03	1209
Vector Signal Generator	Rohde Schwarz	SMJ100A	14/01/07	15/01/07	100148
Signal Generator	Rohde Schwarz	SMF100A	14/07/01	15/07/01	102341
Attenuator(3dB)	SMAJK	SMAJK-2-3	14/10/21	15/10/21	3
High-pass filter	Wainwright	WHKX3.0	14/09/11	15/09/11	9
LOOP Antenna	Schwarzbeck	FMZB1513	14/04/29	16/04/29	1513-128
BILOG ANTENNA	Schwarzbeck	VULB 9160	14/04/04	16/04/04	3357
Horn Antenna	ETS-LINDGREN	3117	14/05/12	16/05/12	00140394
HORN ANT	A.H.Systems	SAS-574	13/03/20	15/03/20	154
Amplifier (22dB)	H.P	8447E	14/01/07	15/01/07	2945A02865
Amplifier (30dB)	Agilent	8449B	14/02/27	15/02/27	3008A00370
EMI TEST RECEIVER	R&S	ESU	14/01/07	15/01/07	100014
EMI TEST RECEIVER	R&S	ESCI	14/02/27	15/02/27	100910
CVCF	NF	4420	14/05/26	15/05/26	3049354420023
LISN	R&S	ESH2-Z5	14/09/11	15/09/11	828739/006
PULSE LIMITER	R&S	ESH3-Z2	14/01/08	15/01/08	101334

APPENDIX I

Duty cycle information

TEST PROCEDURE

Duty cycle measured using **section 6.0 b) of KDB 558074 D01 meas Guidance v03r2 :**

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal.

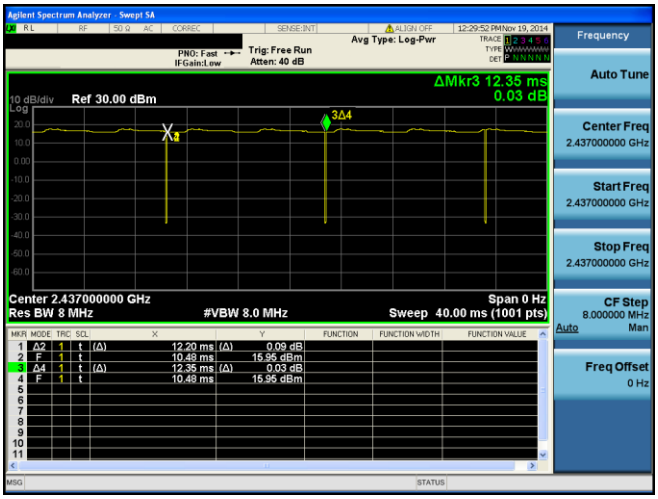
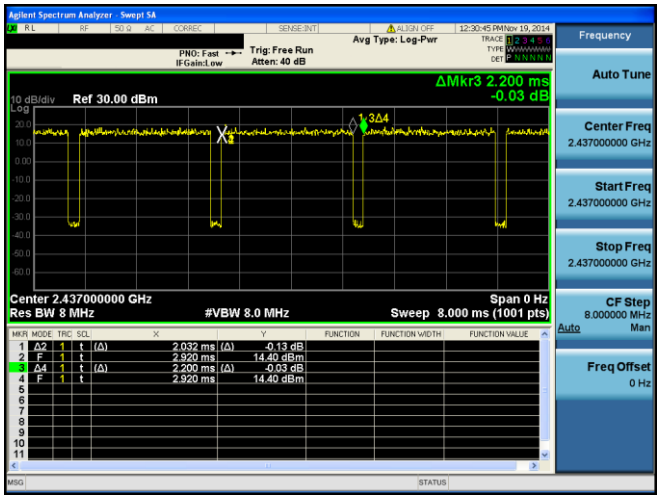
Set the center frequency of the instrument to the center frequency of the transmission. Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ RBW. Set detector = peak or average.

The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T ≤ 16.7 microseconds.)

TEST DATA

Test Mode	Tested frequency	T_{ON} (ms)	T_{ON+OFF} (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
TM 1	Middle	12.200	12.350	98.79	0.06
TM 2	Middle	2.032	2.200	92.36	0.35
TM 3	Middle	0.876	1.048	83.59	0.78
TM 4	Middle	0.444	0.610	72.79	1.38

Please refer to next page for actual test plot.

Duty cycle data : **TM 1** & **ANT 1**	Duty cycle data : **TM 2** & **ANT 1**
	

Duty cycle data : **TM 3** & **ANT 1**	Duty cycle data : **TM 4** & **ANT 1**