TM 3 & ANT 2 & 2412

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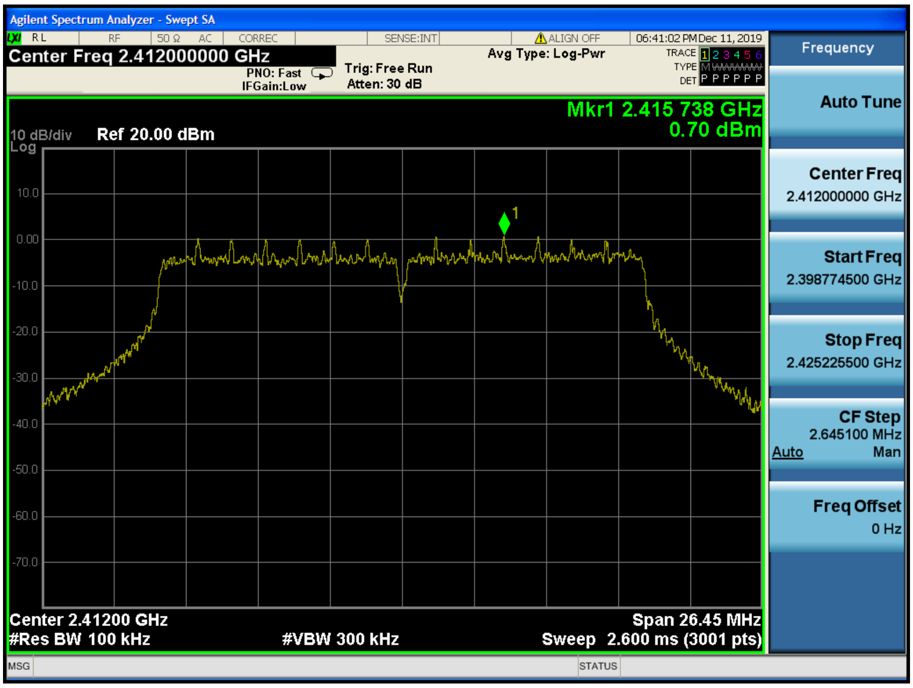
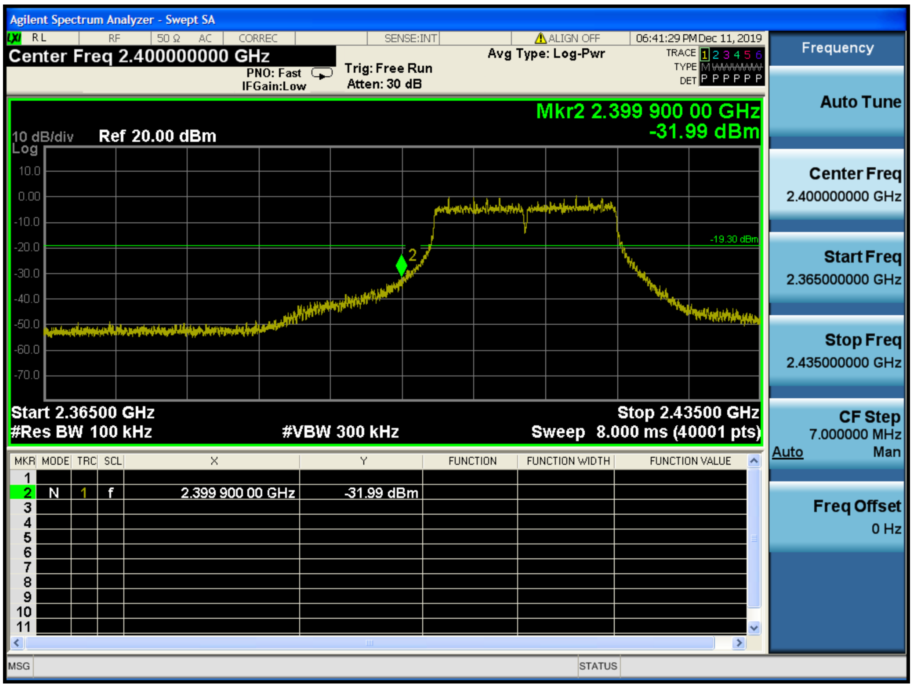


Low Band-edge



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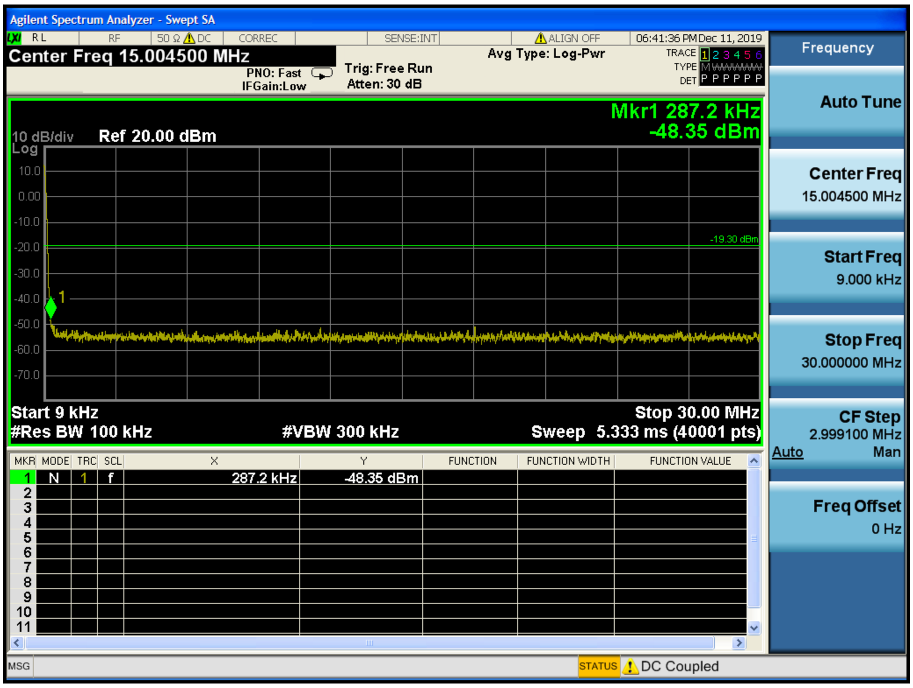

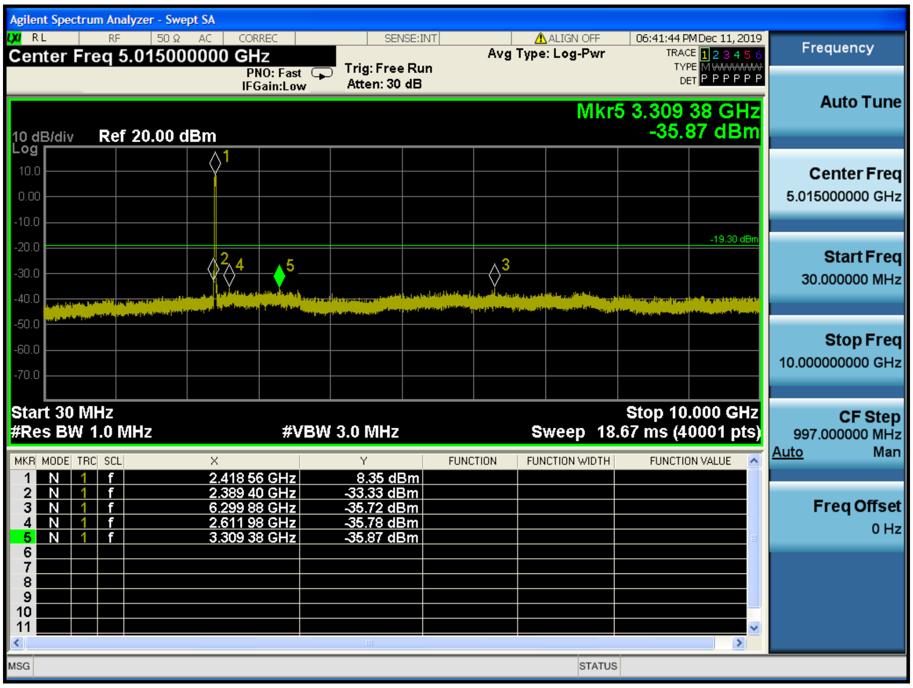

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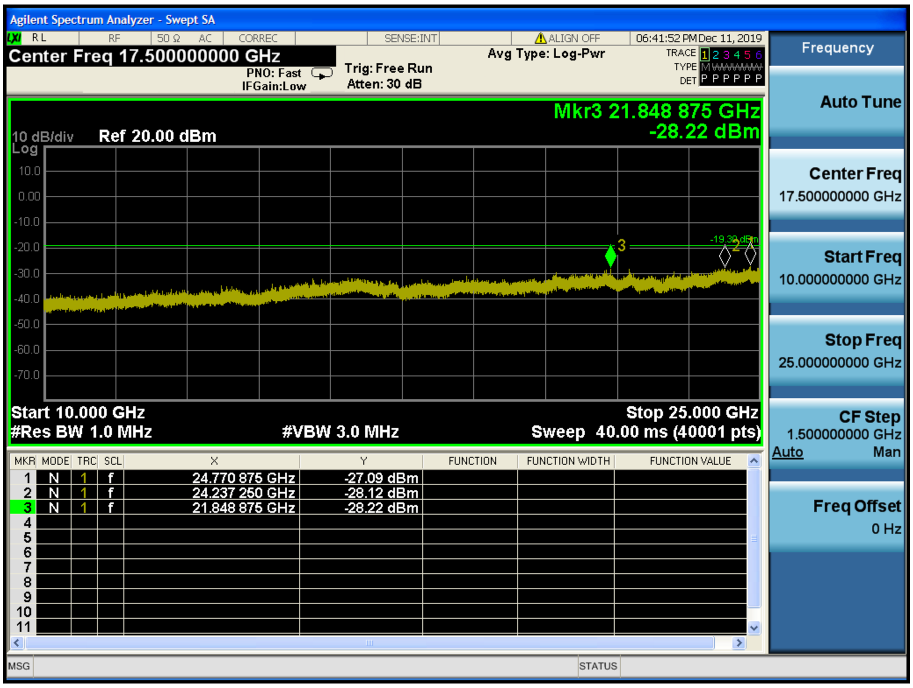

TM 3 & ANT 2 & 2437

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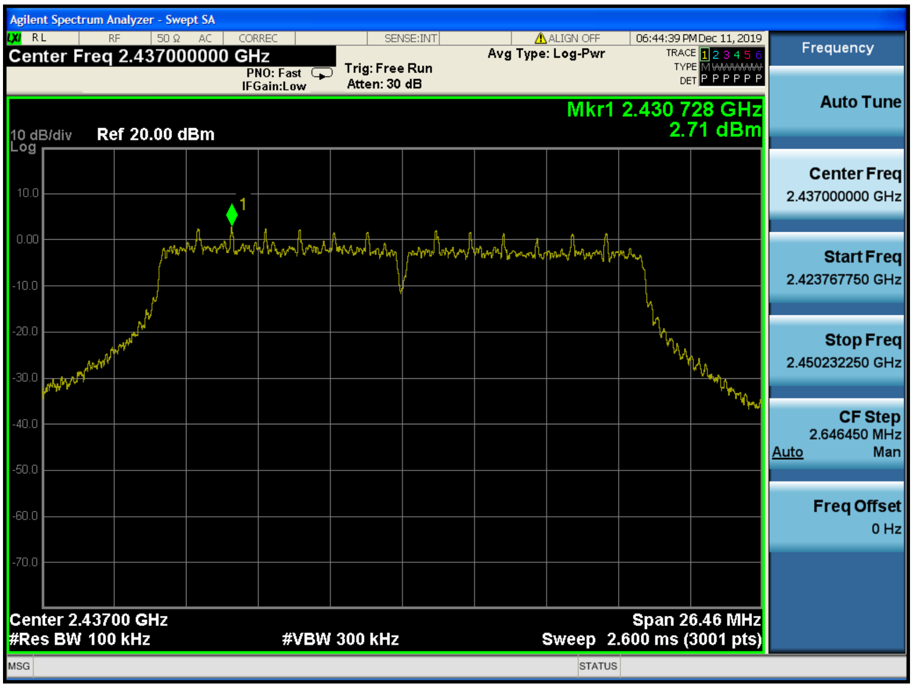

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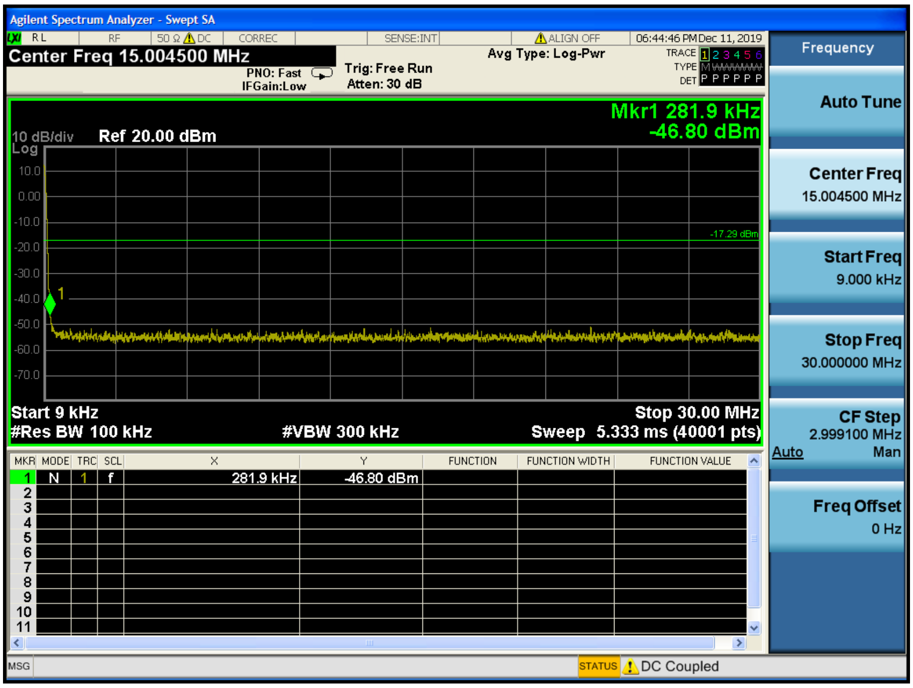

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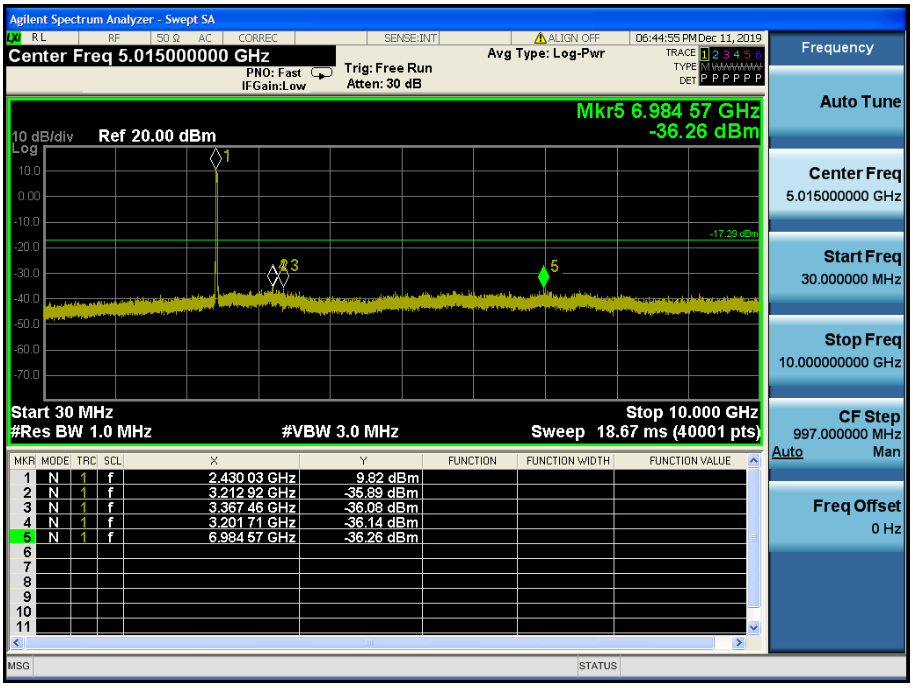

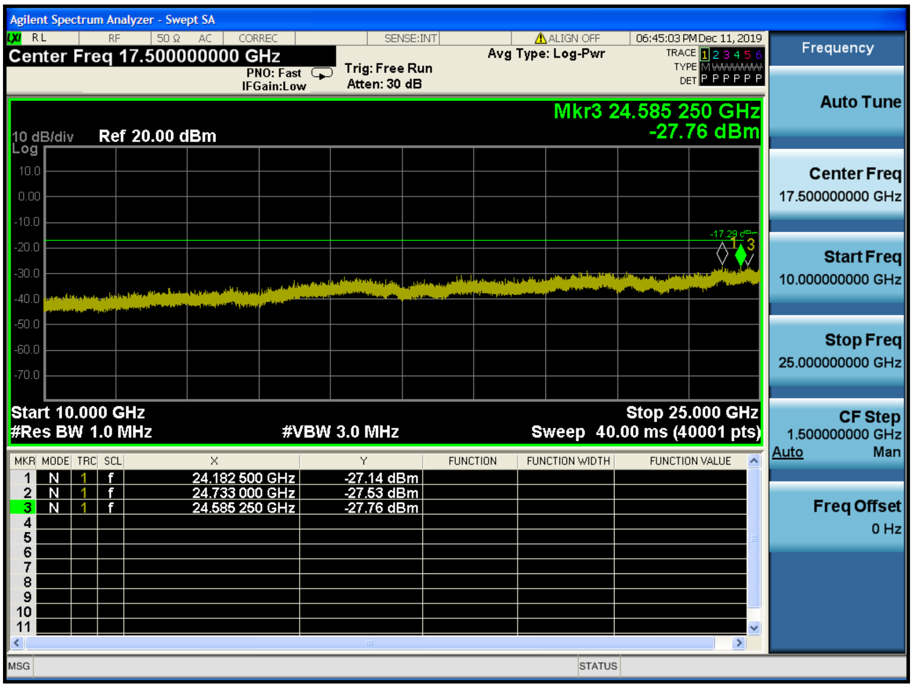

TM 3 & ANT 2 & 2462

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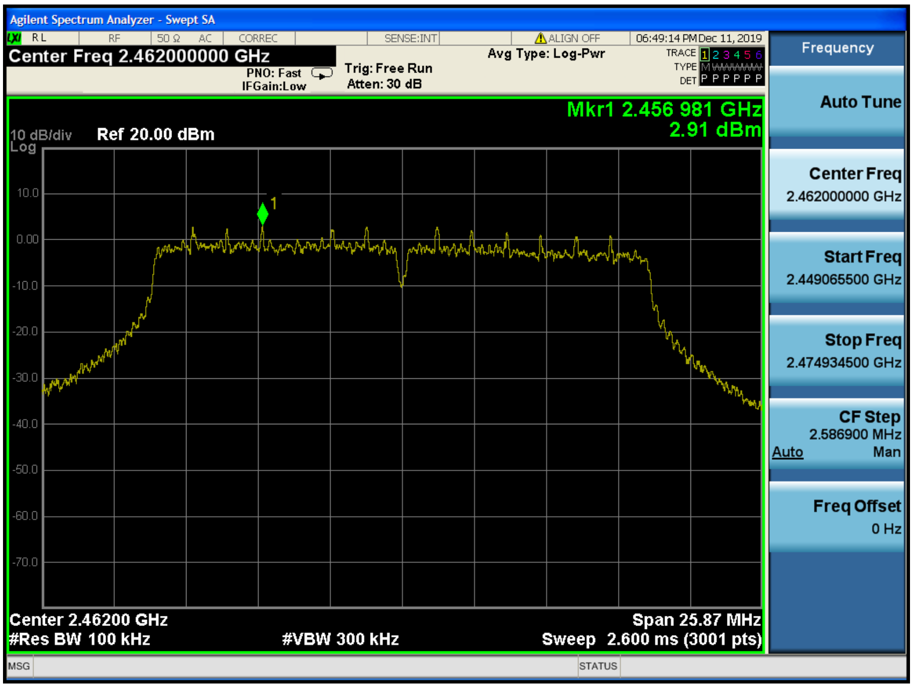

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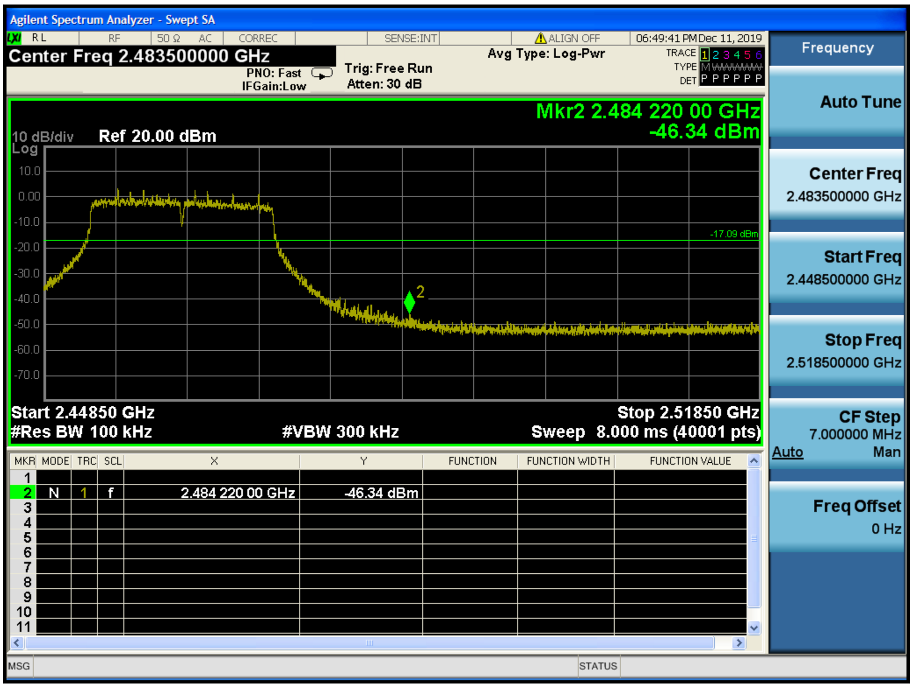

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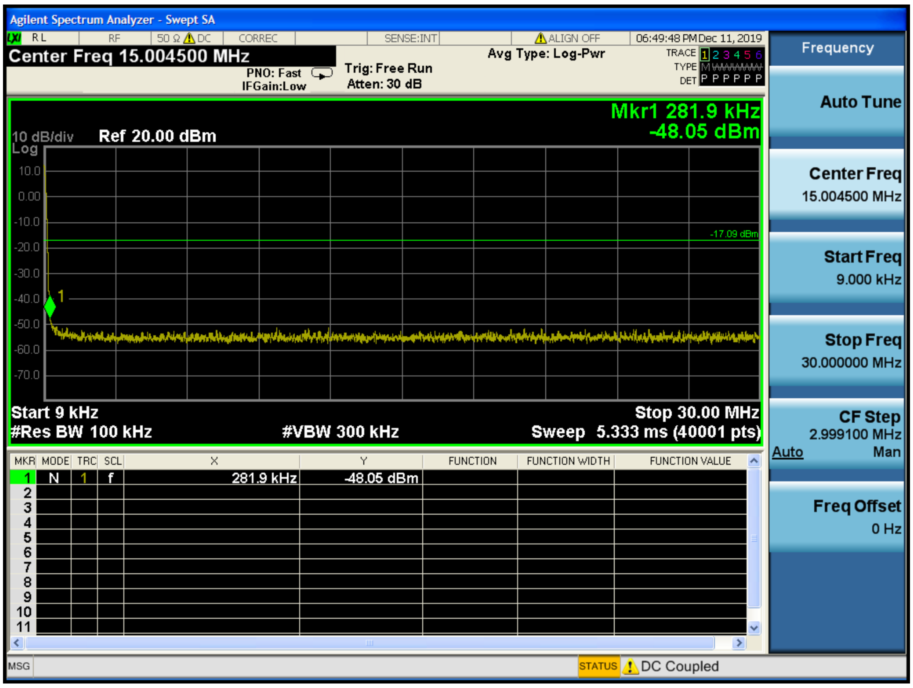

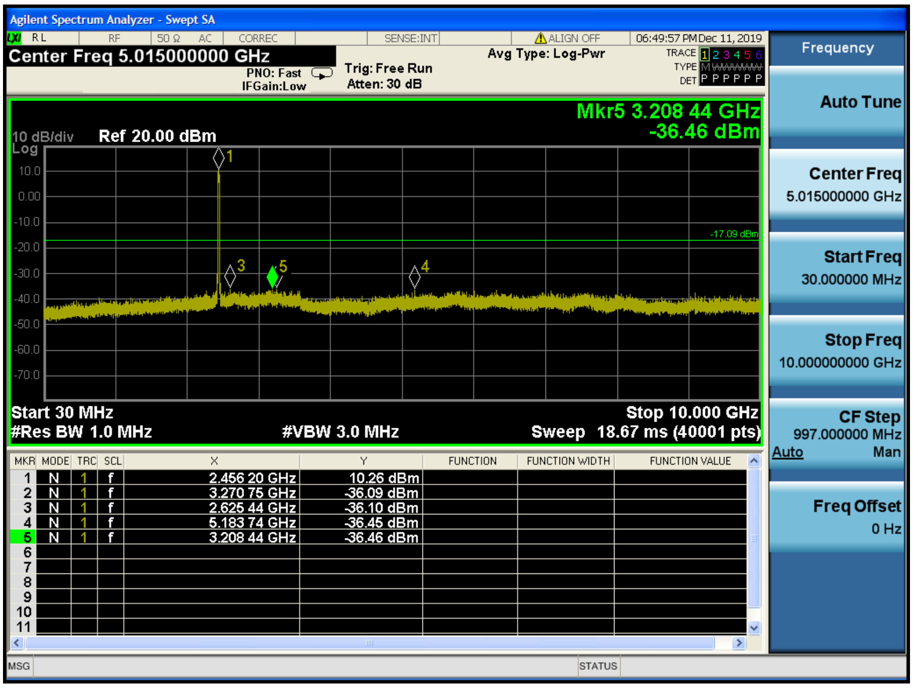

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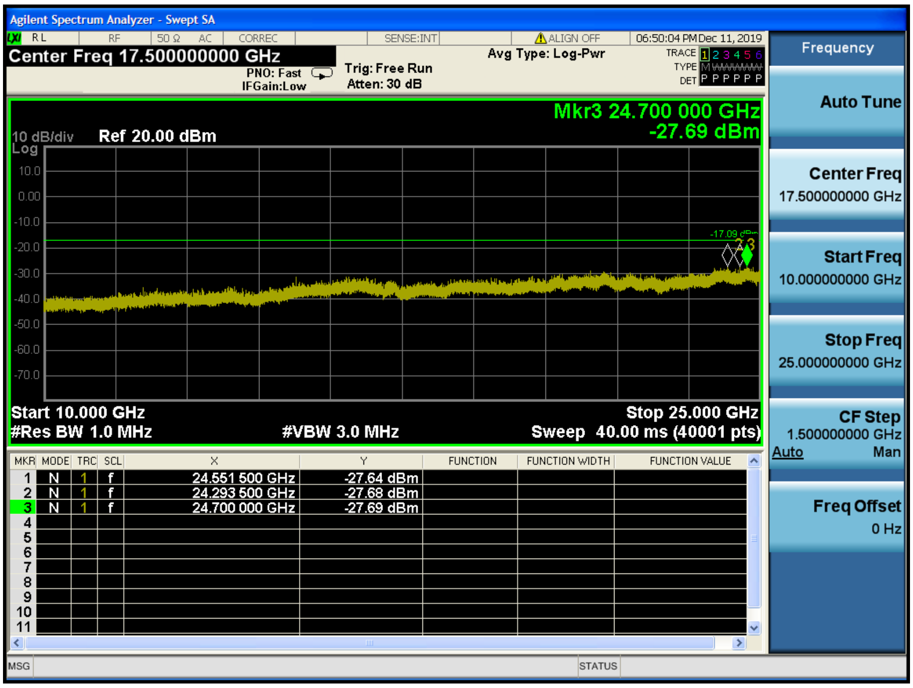

TM 4 & ANT 2 & 2422

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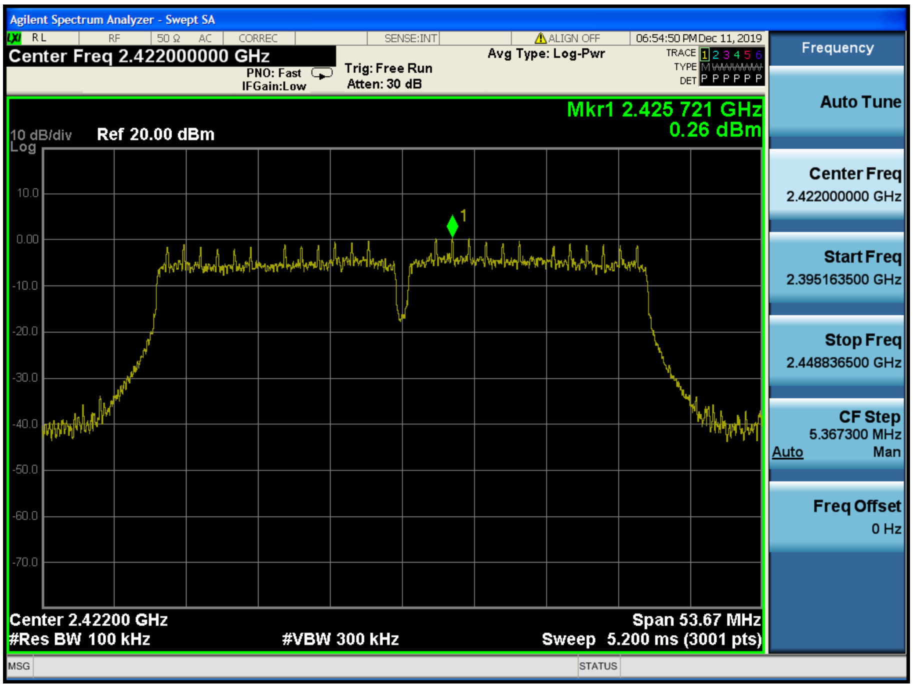
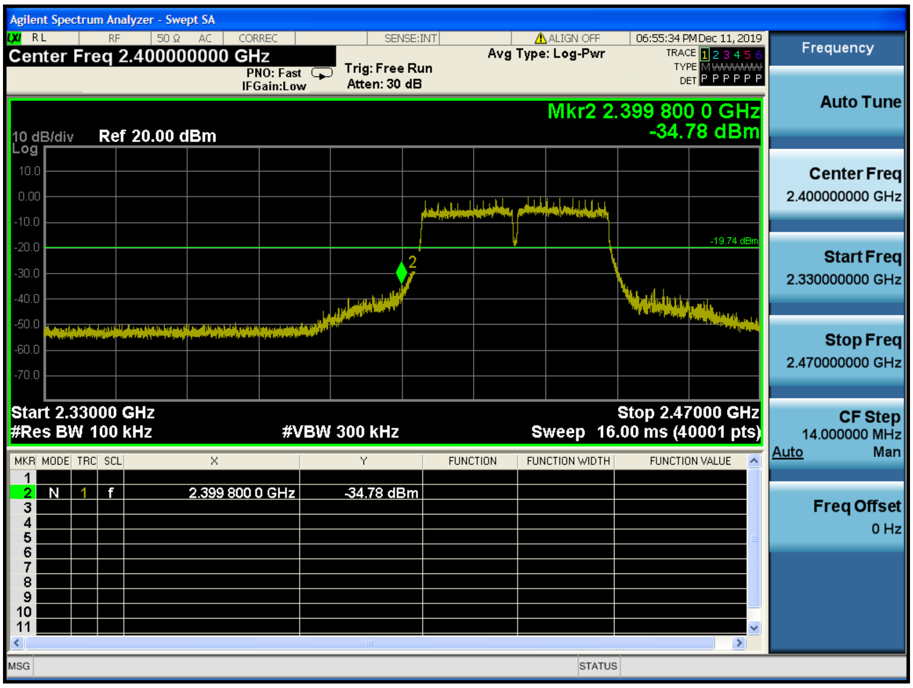


Low Band-edge



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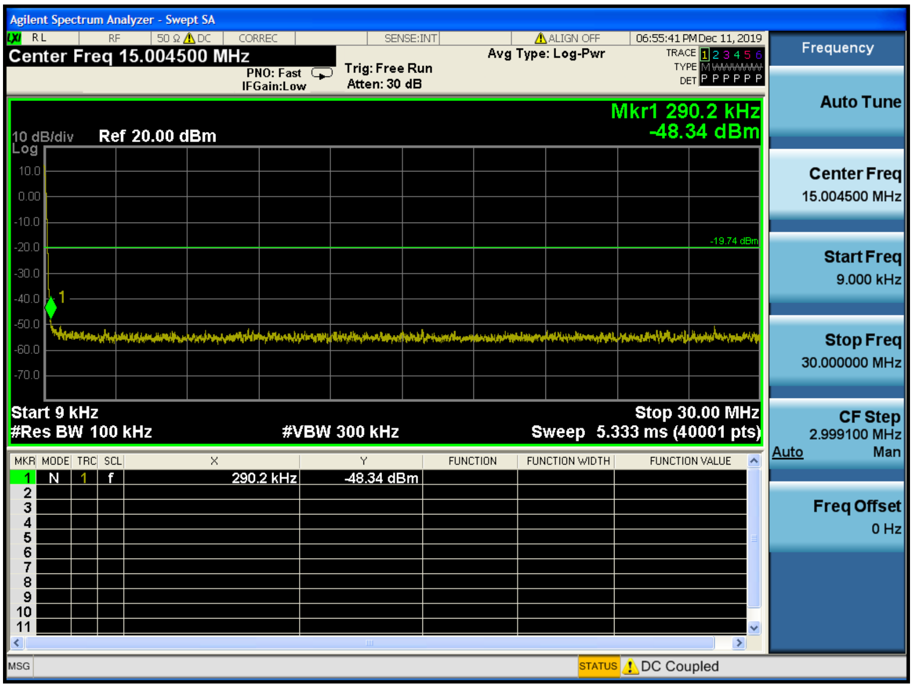

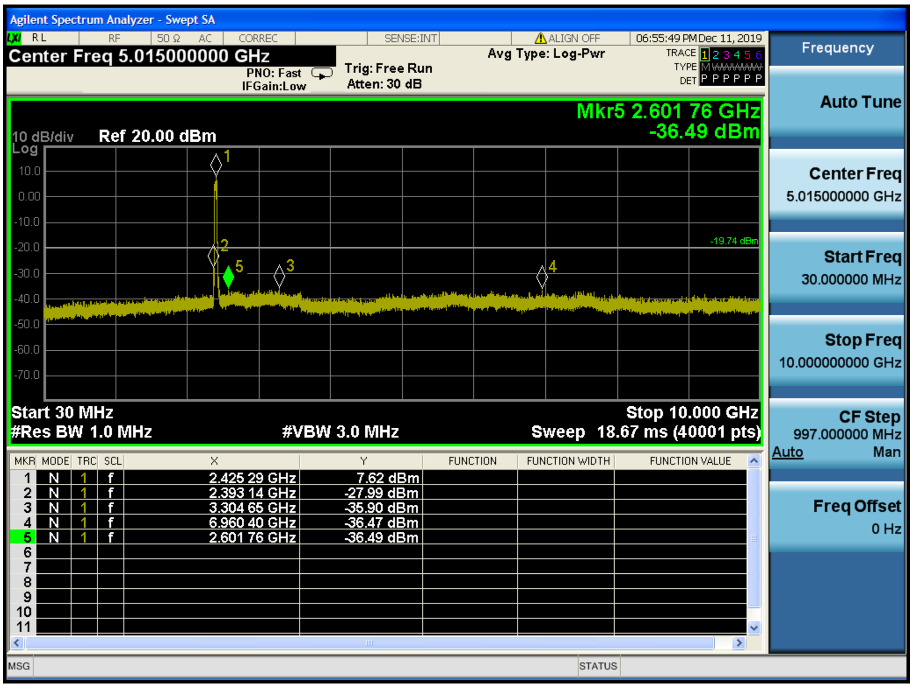

Conducted Spurious Emissions

TM 4 & ANT 2 & 2437

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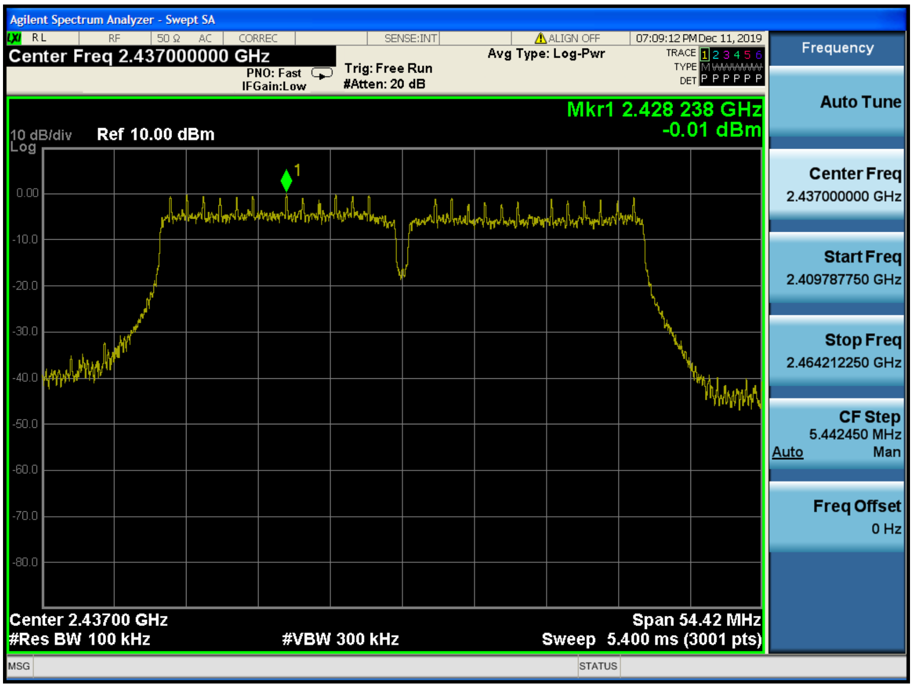

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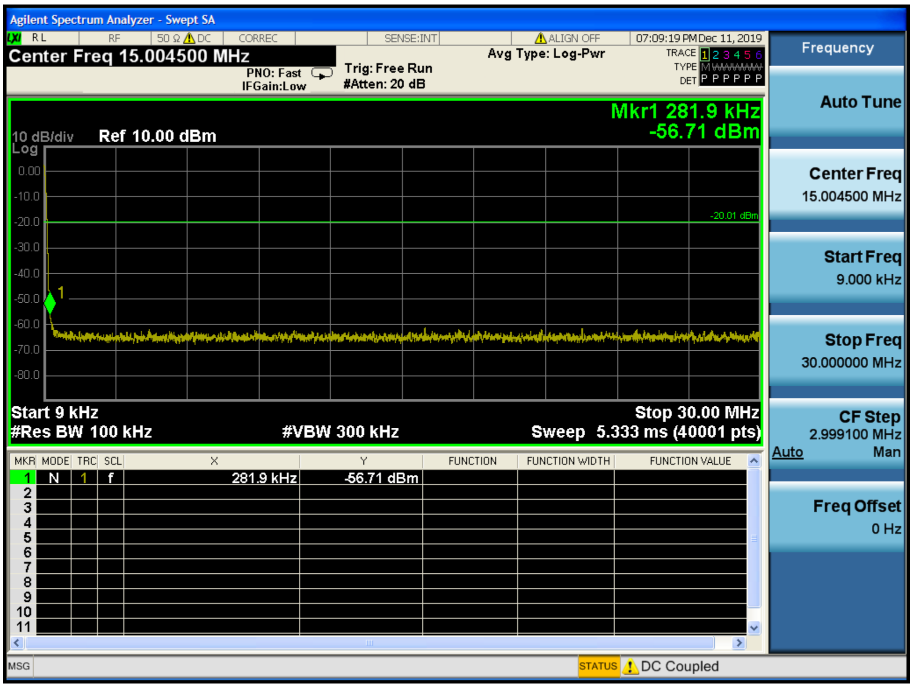

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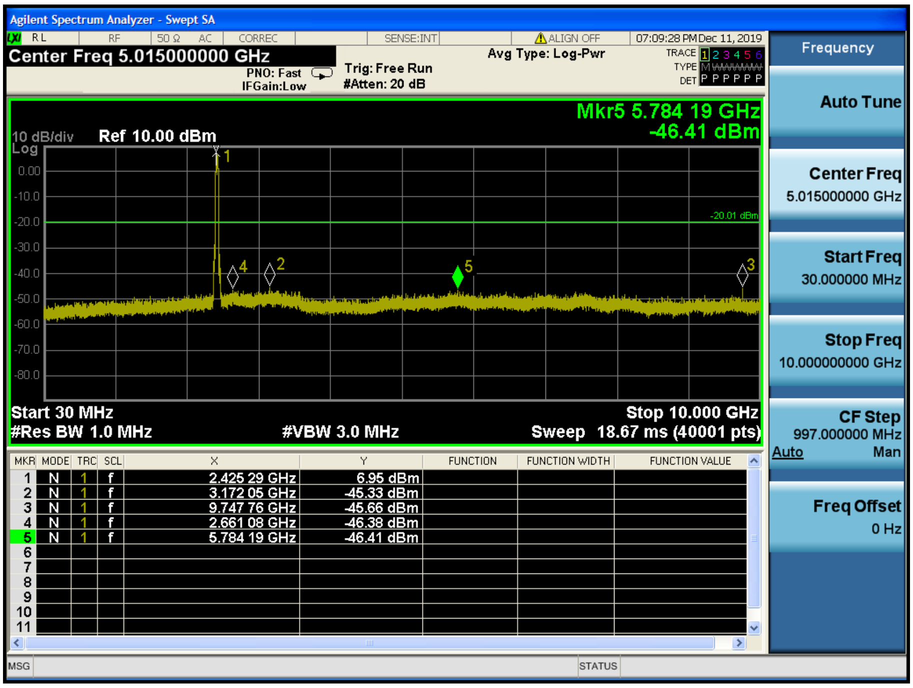

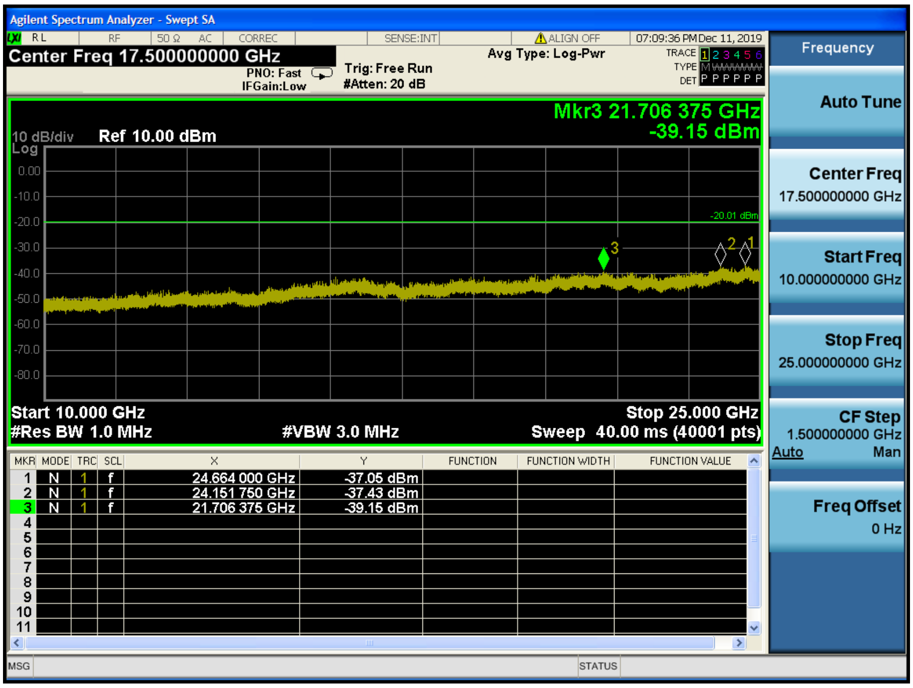

TM 4 & ANT 2 & 2452

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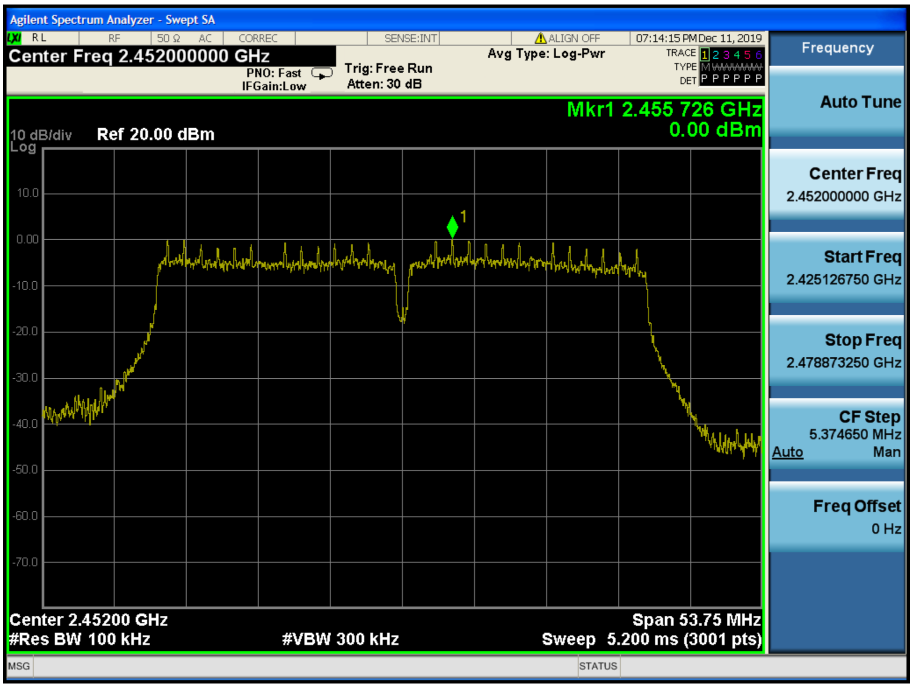
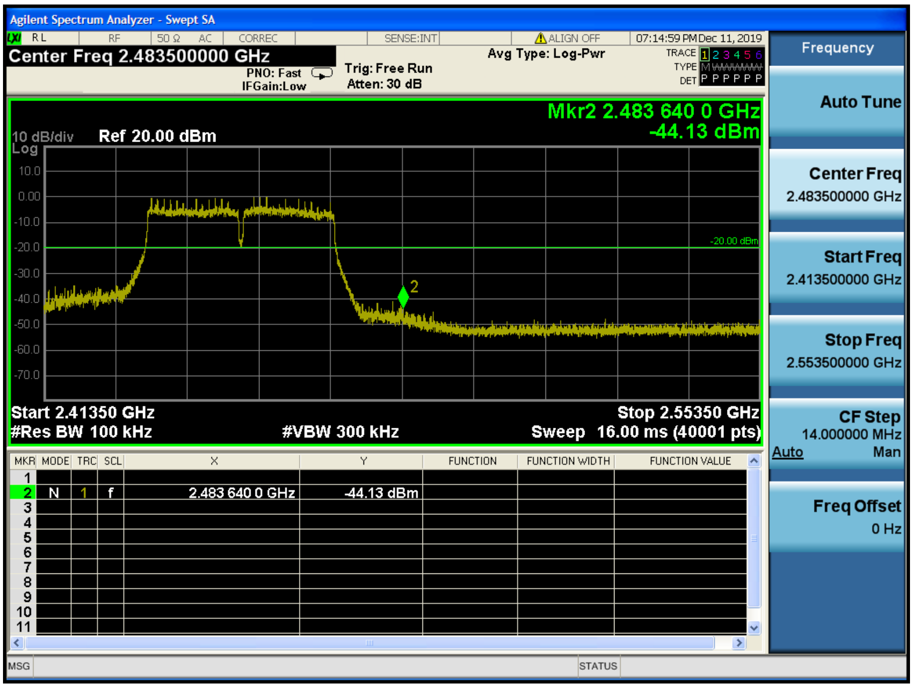


High Band-edge



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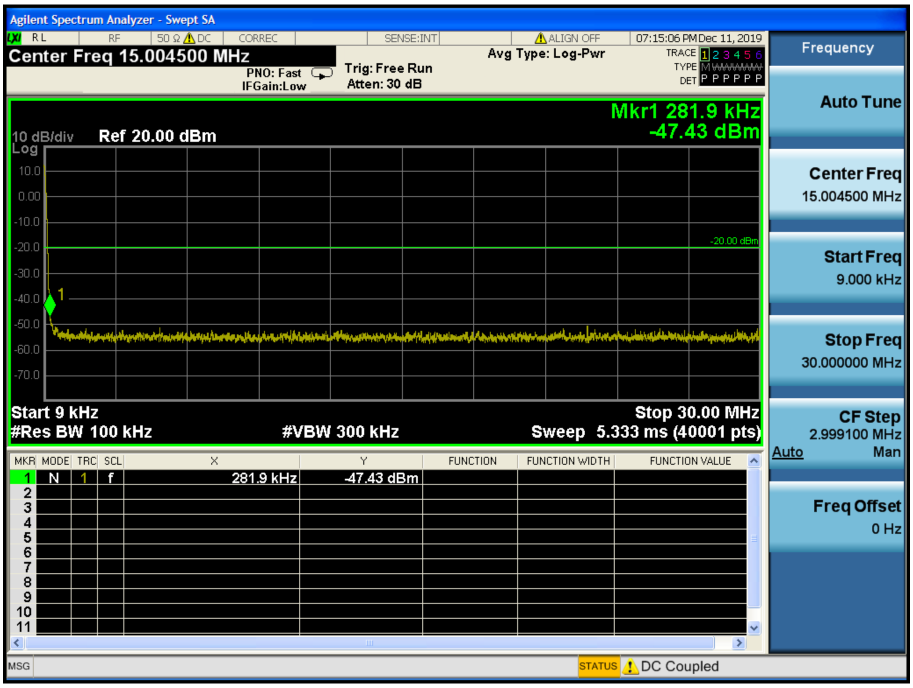

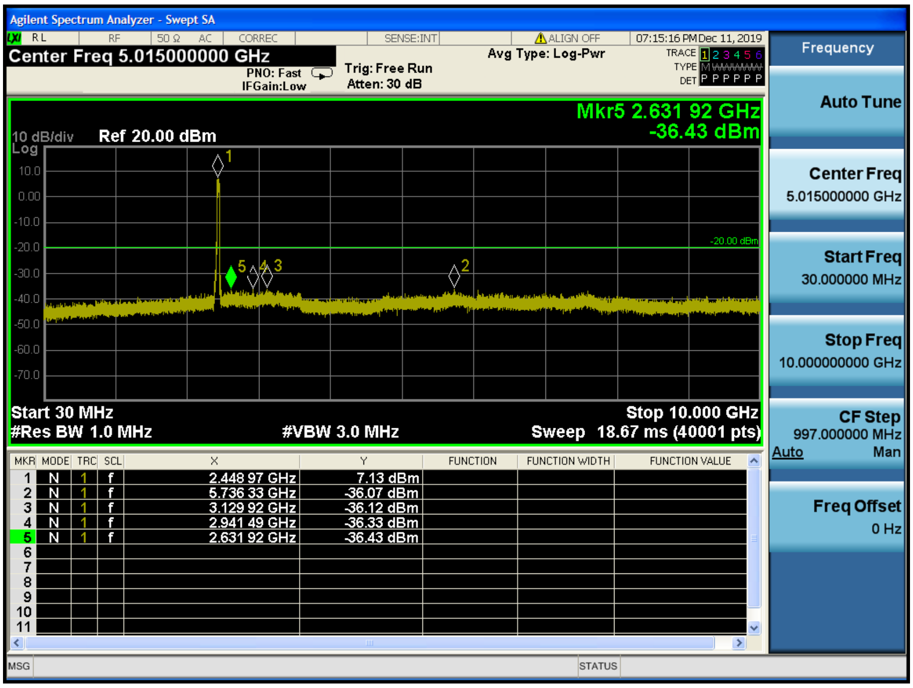

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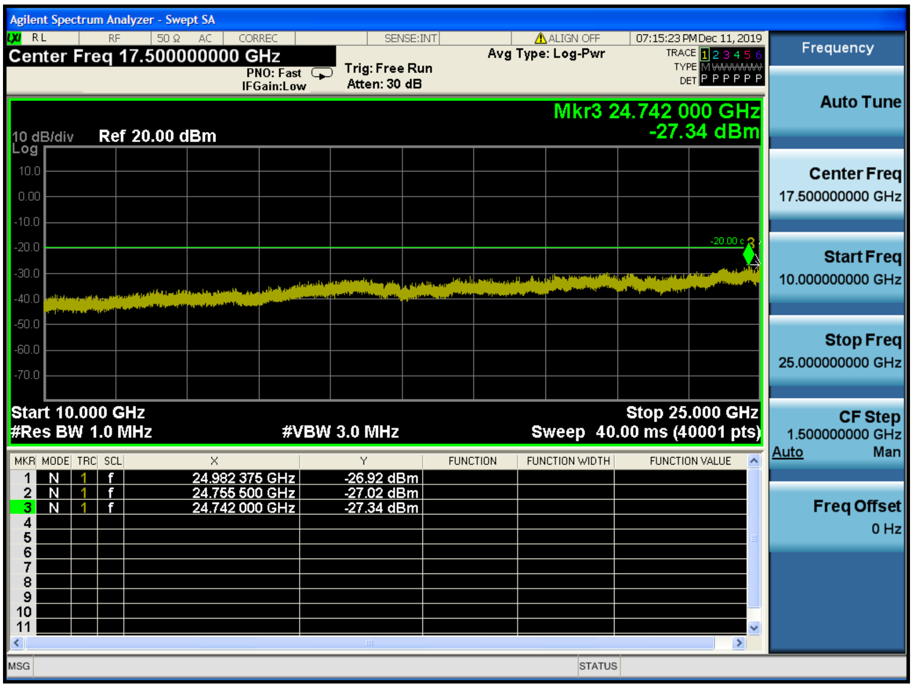

TM 5 & ANT 2 & 2412

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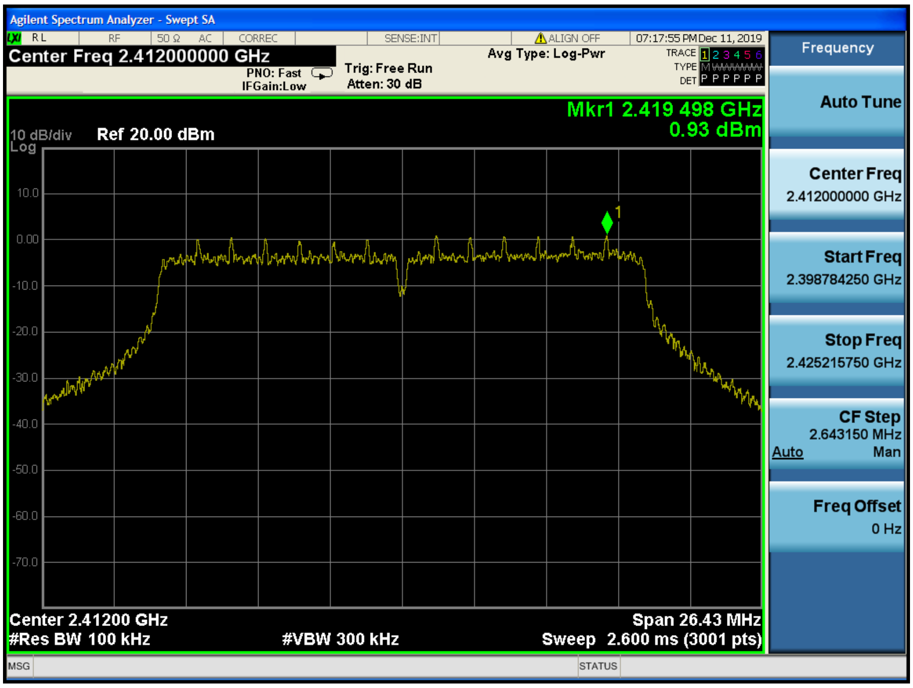
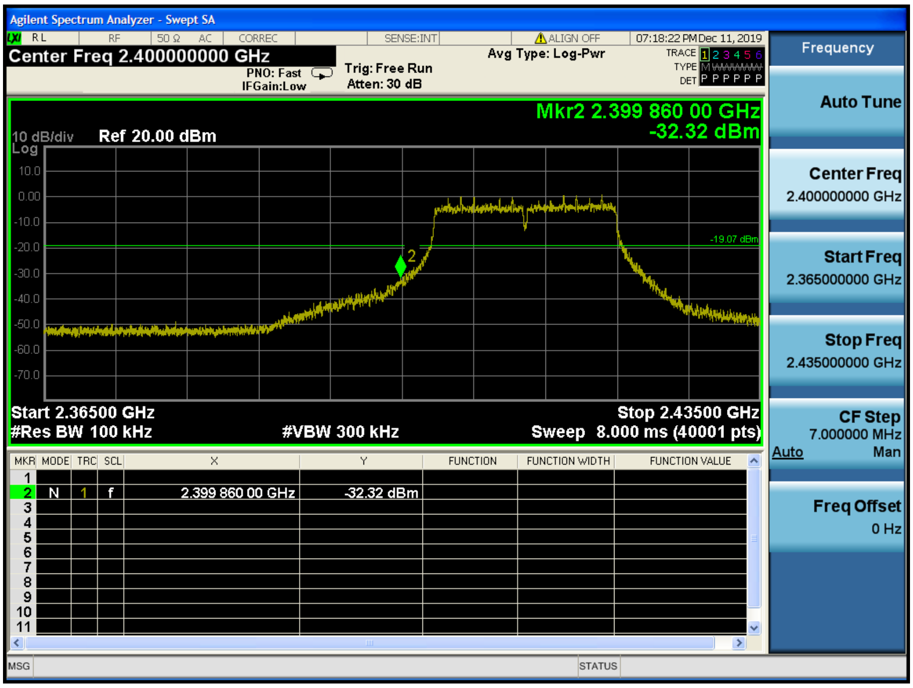


Low Band-edge



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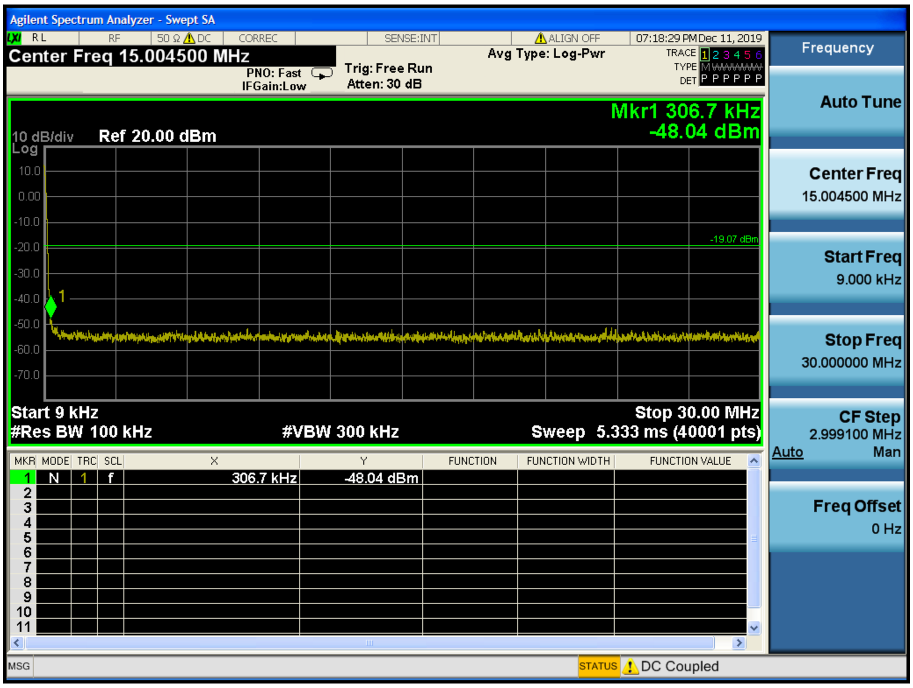

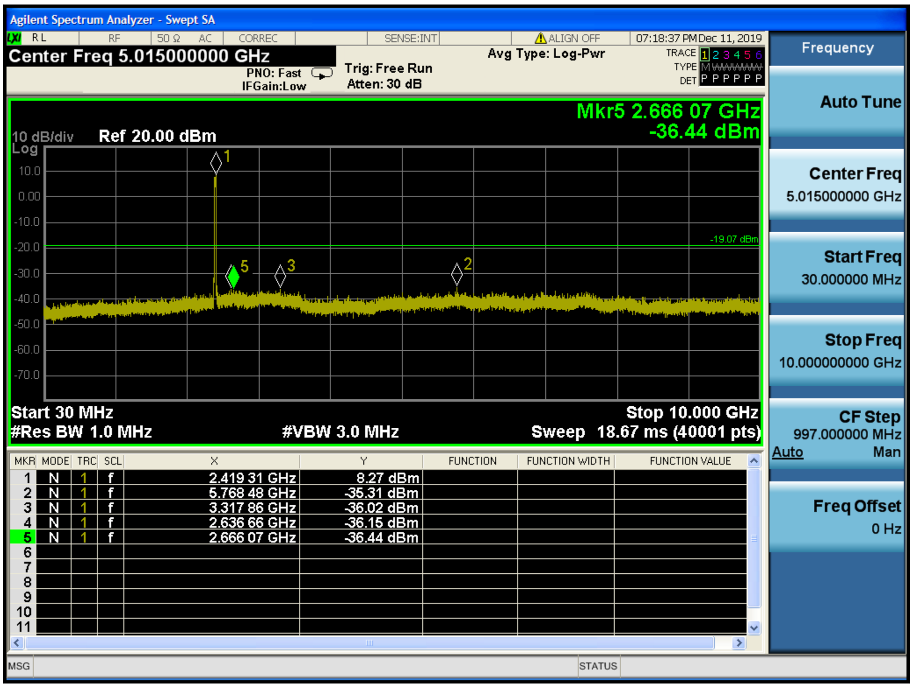

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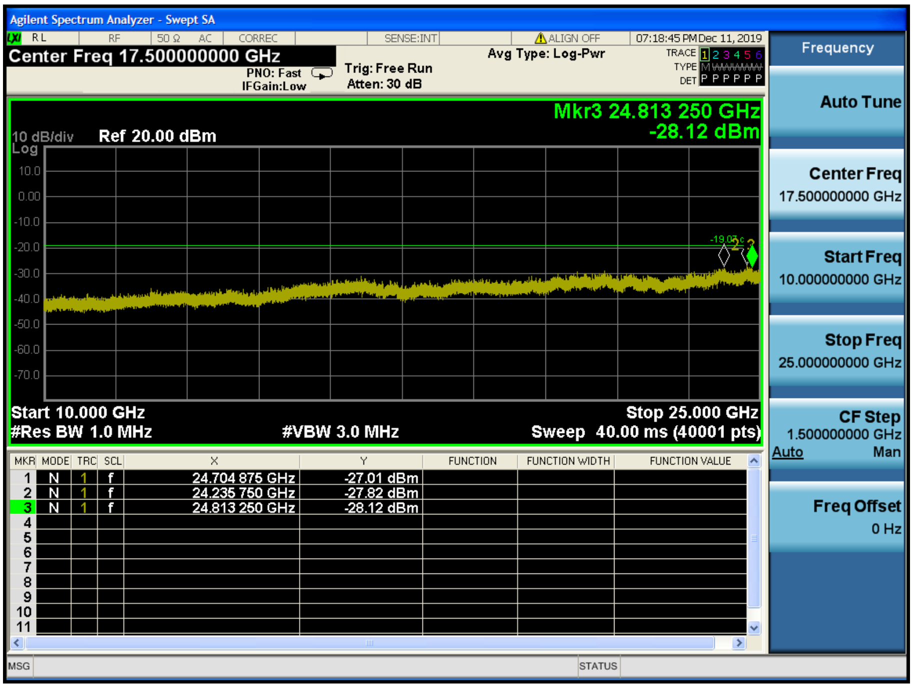

TM 5 & ANT 2 & 2437

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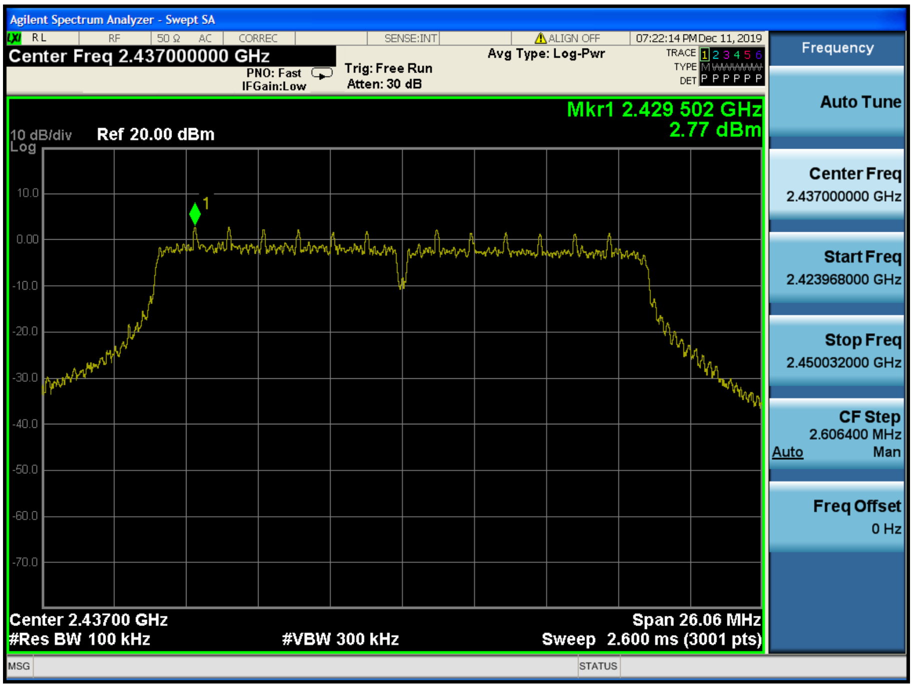

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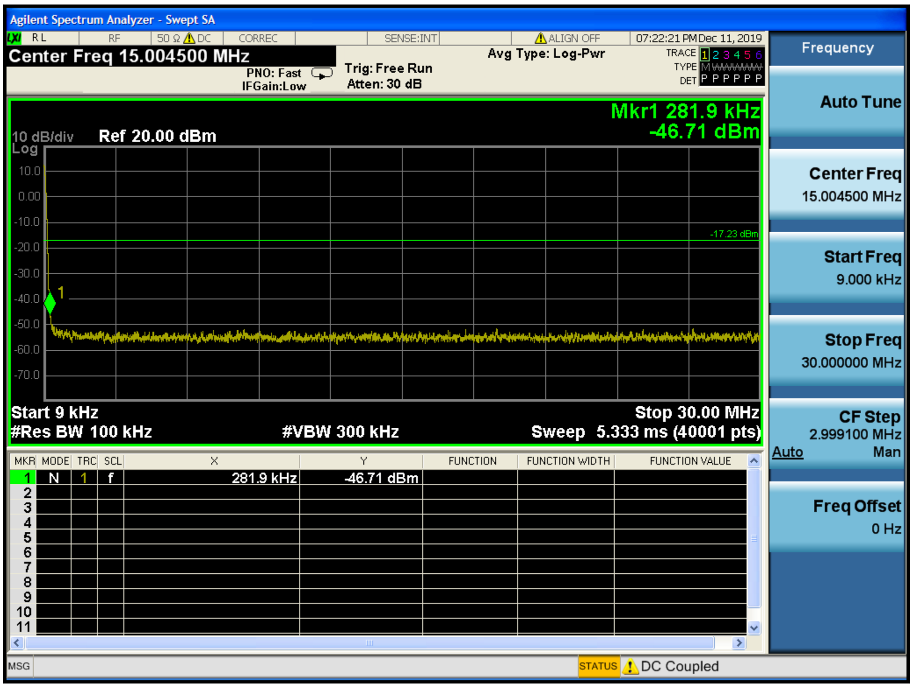

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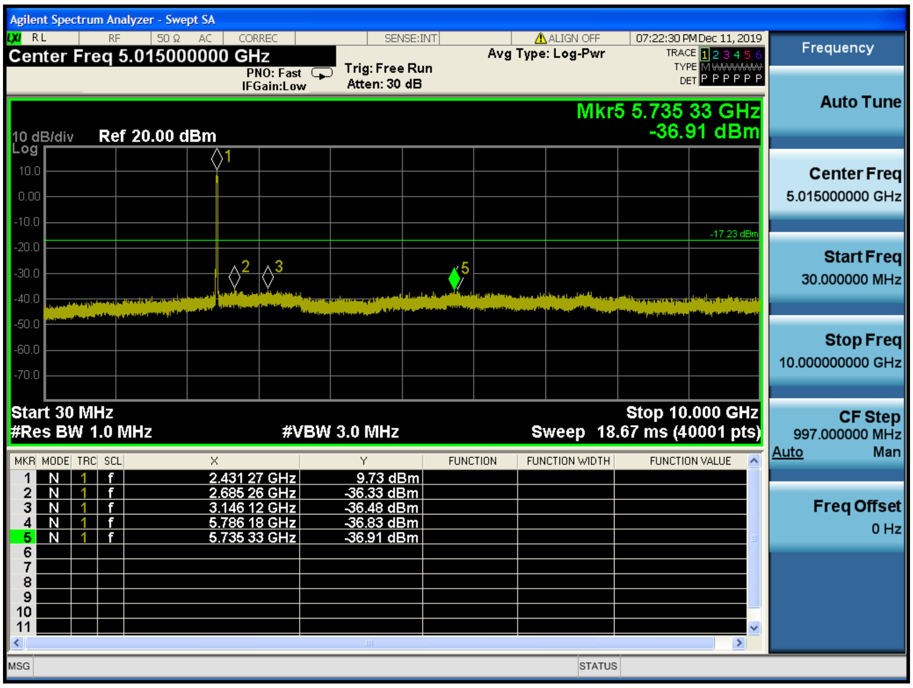

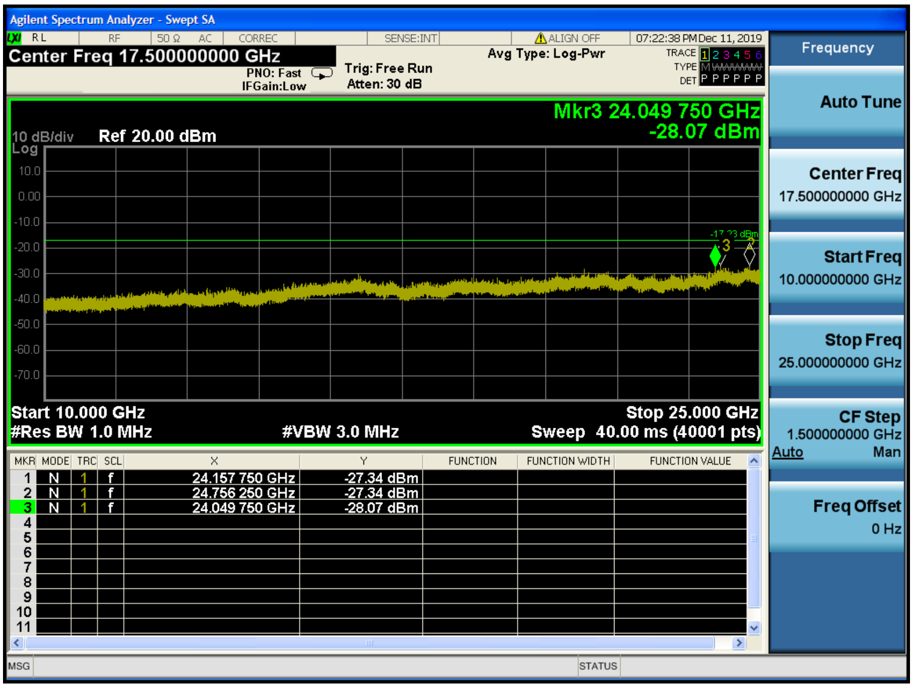

TM 5 & ANT 2 & 2462

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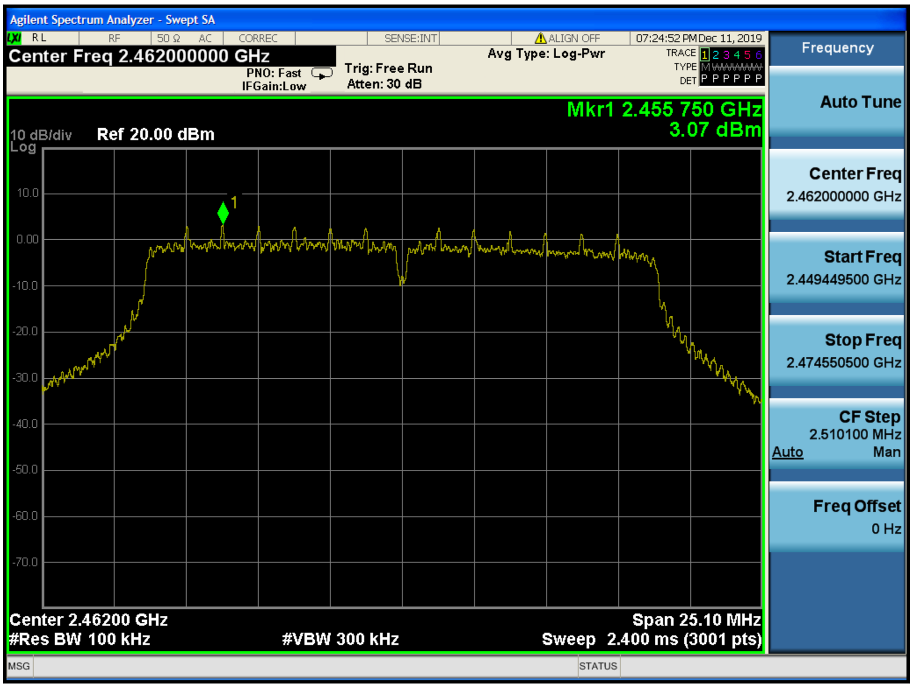
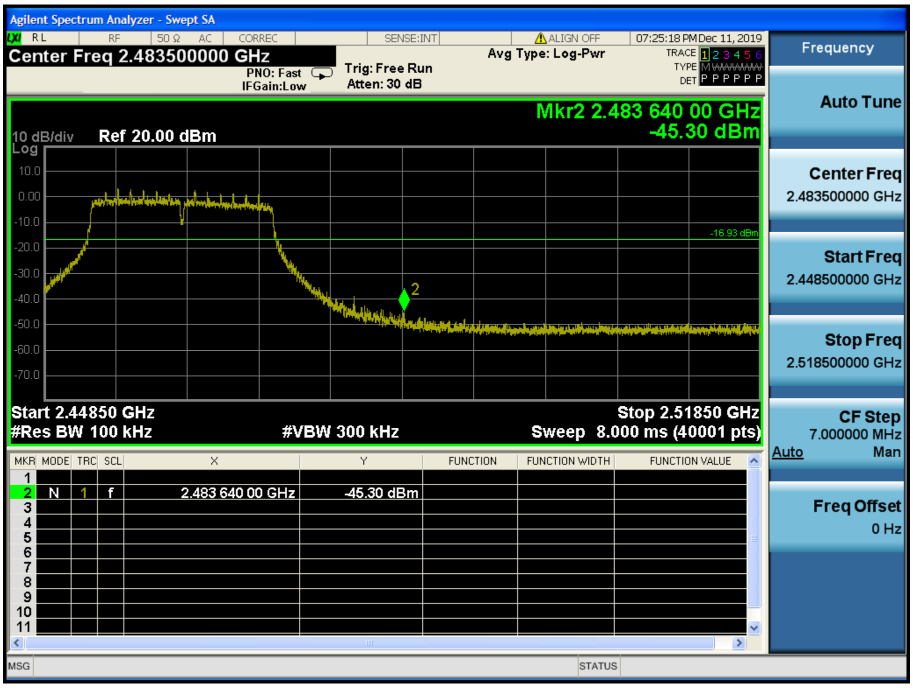


High Band-edge



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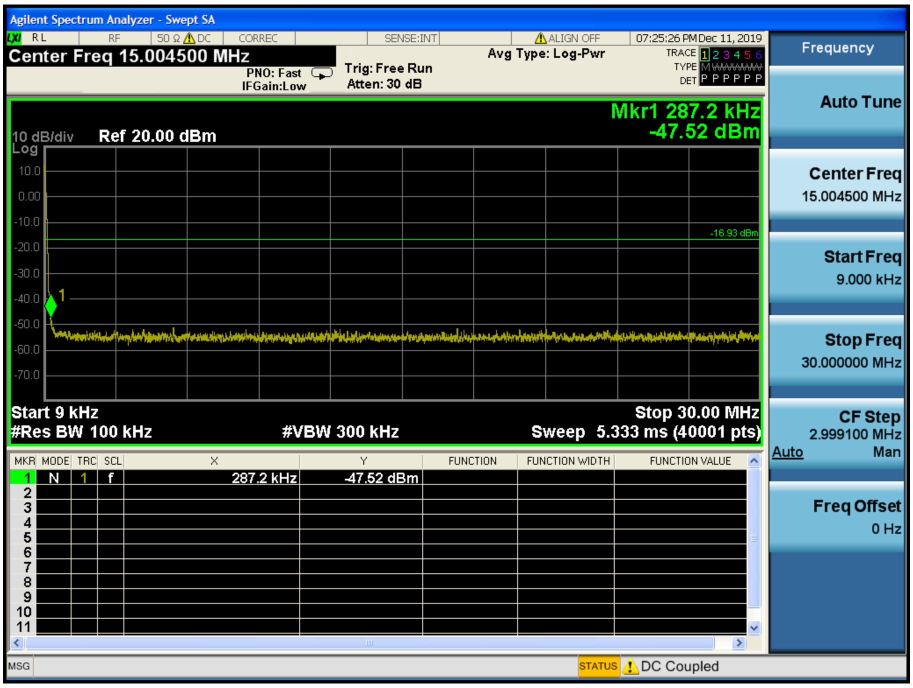

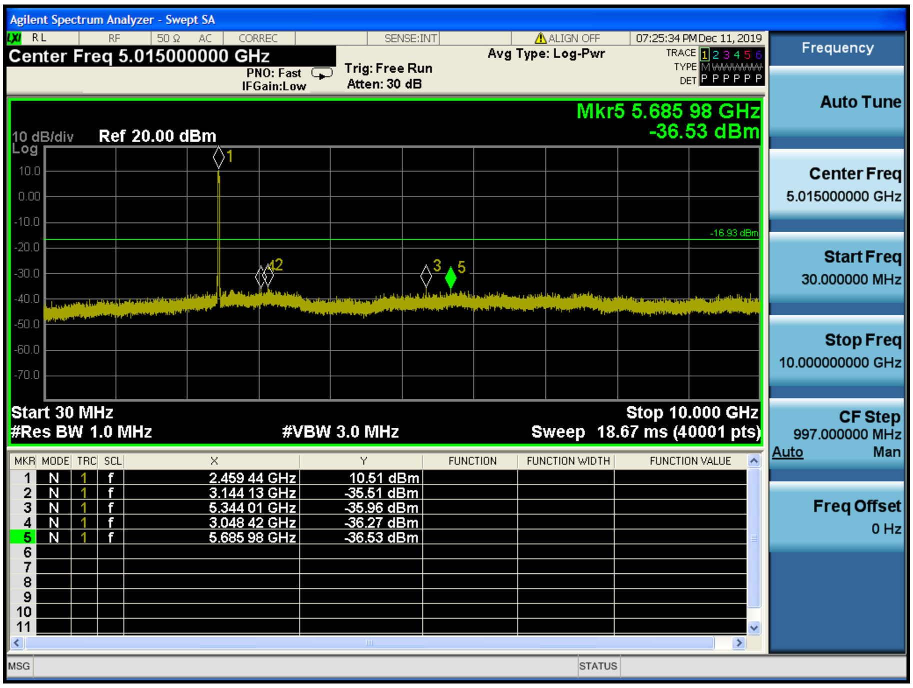

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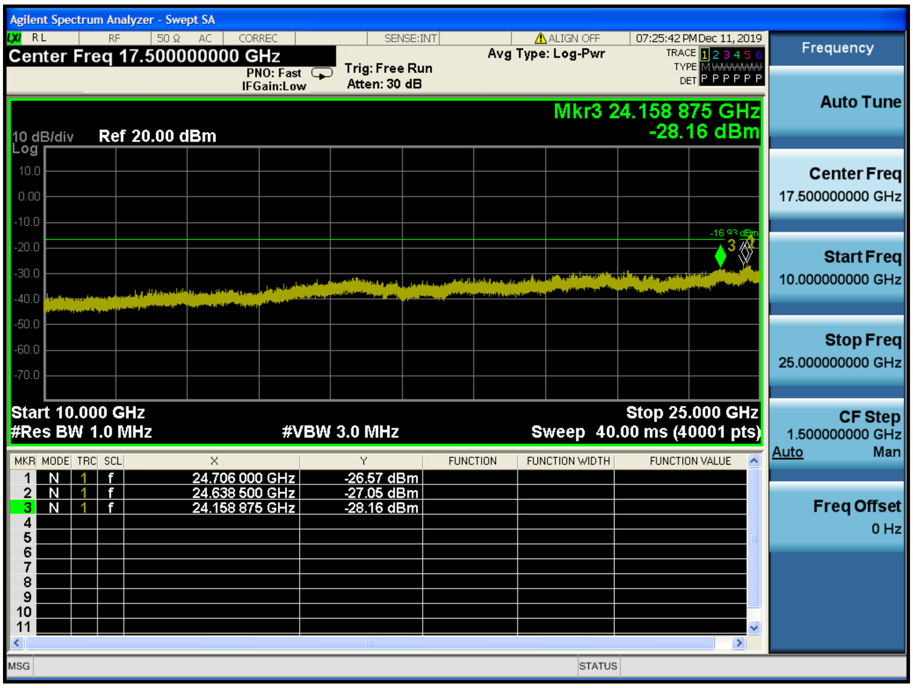

TM 6 & ANT 2 & 2422

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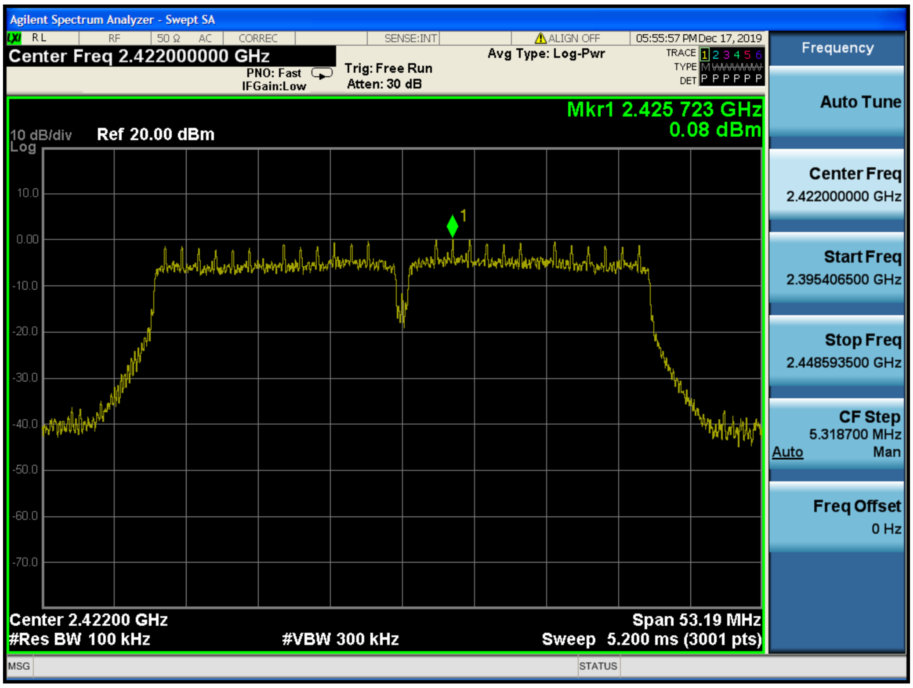
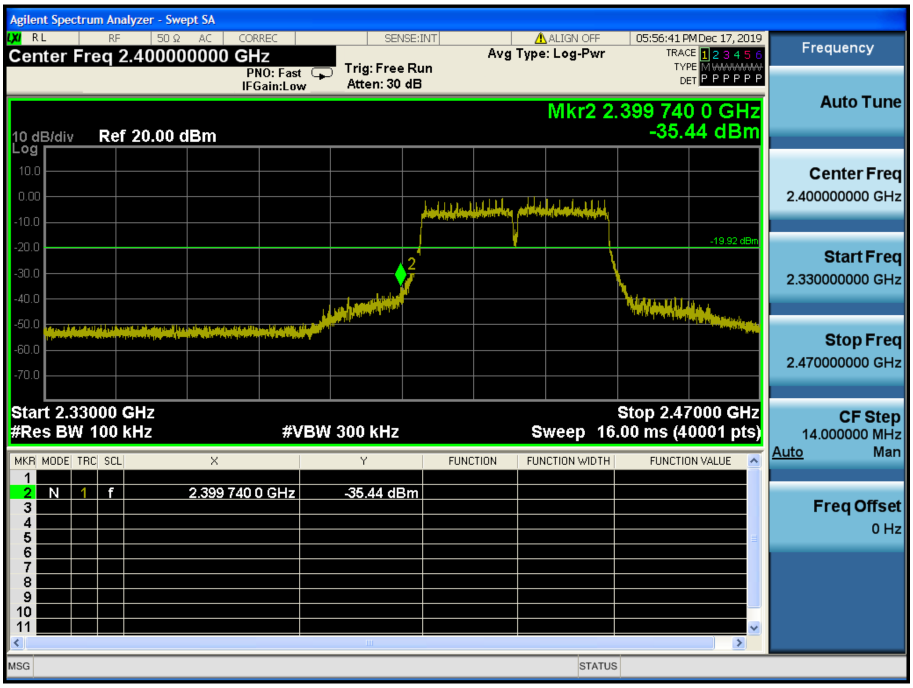


Low Band-edge



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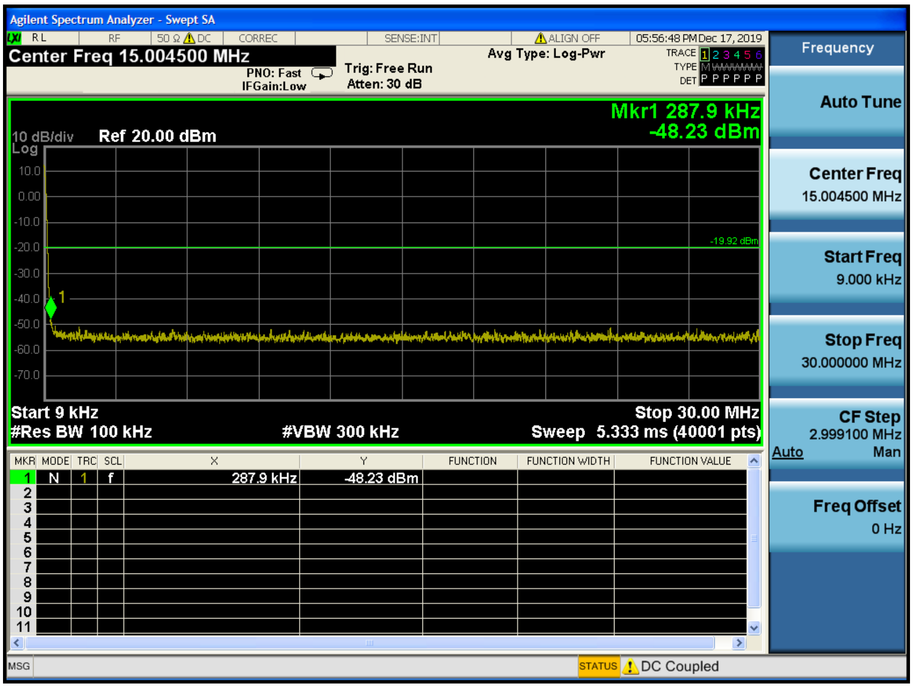

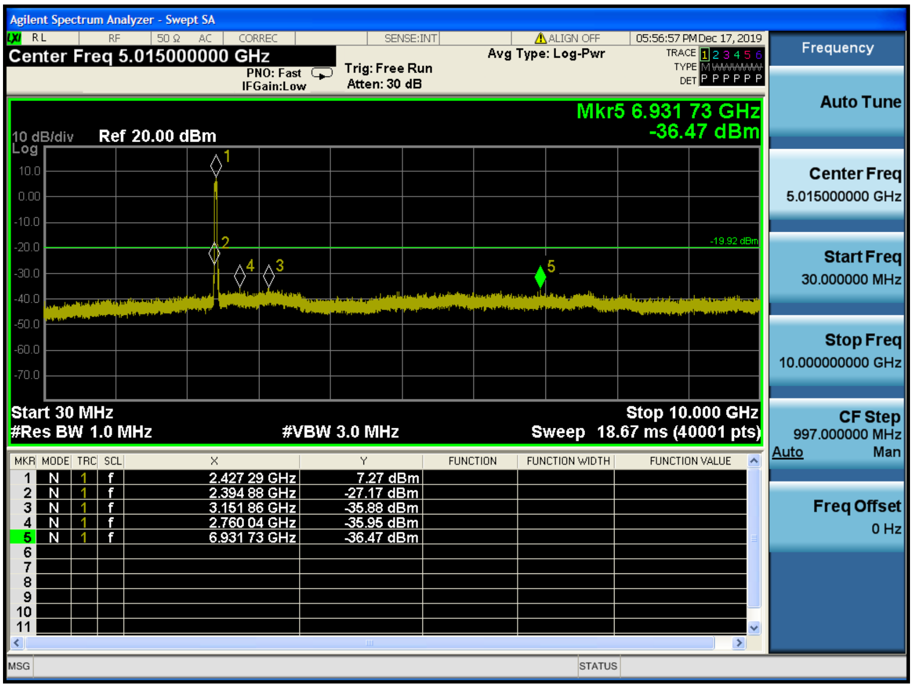

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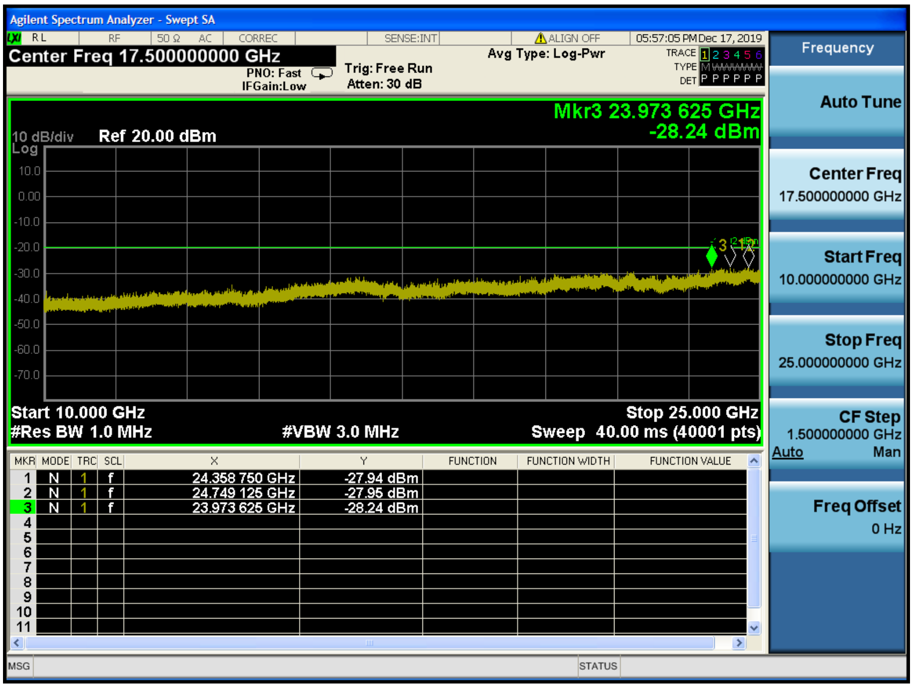

TM 6 & ANT 2 & 2437

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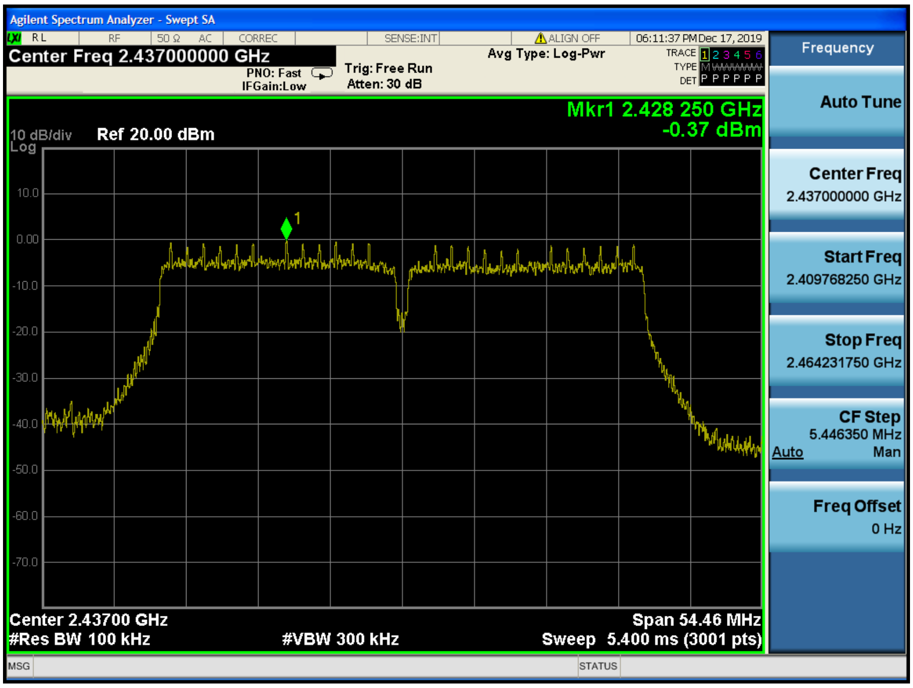

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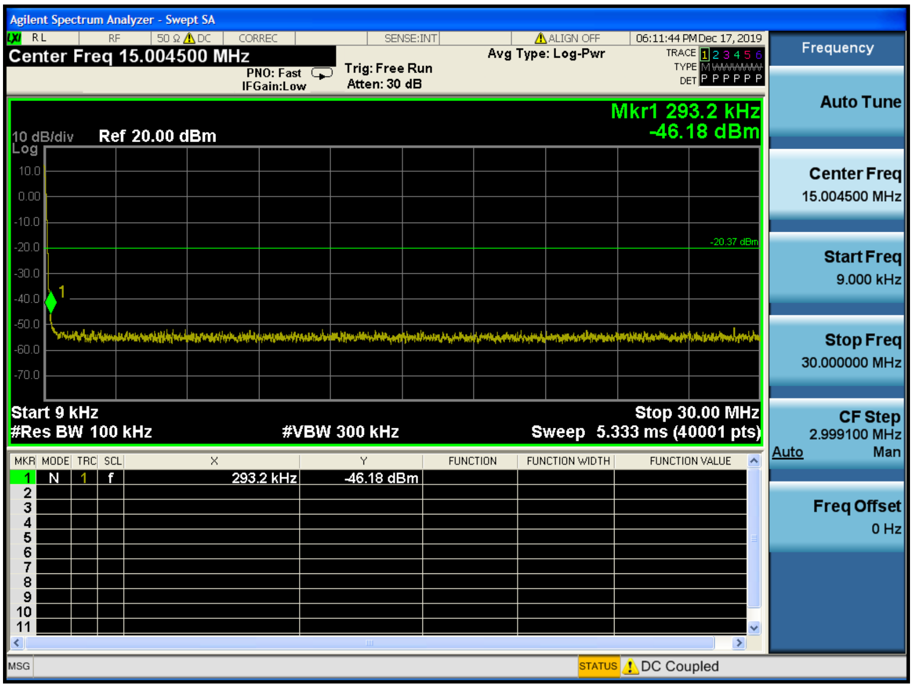

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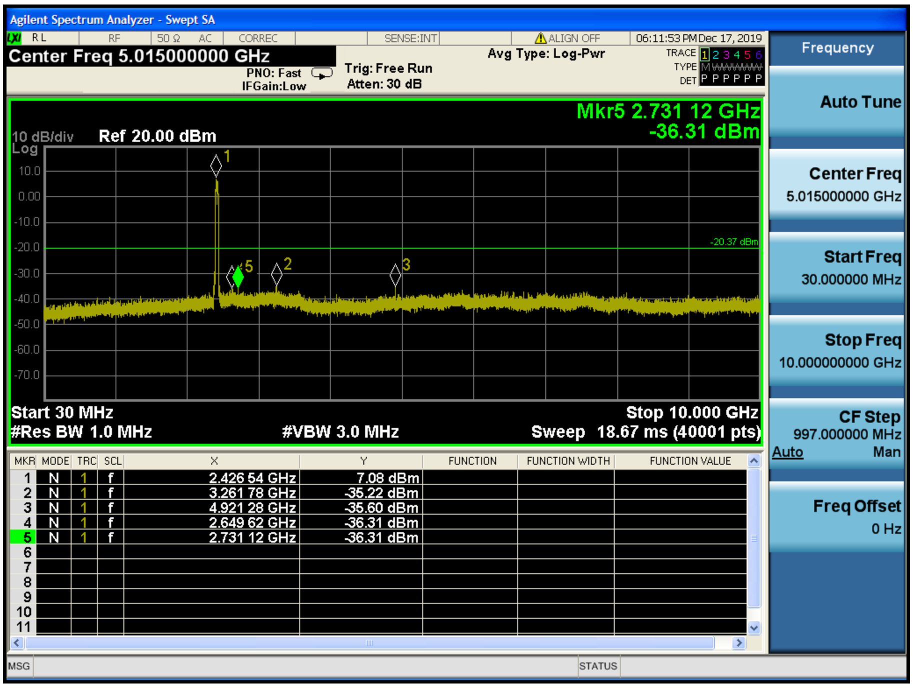

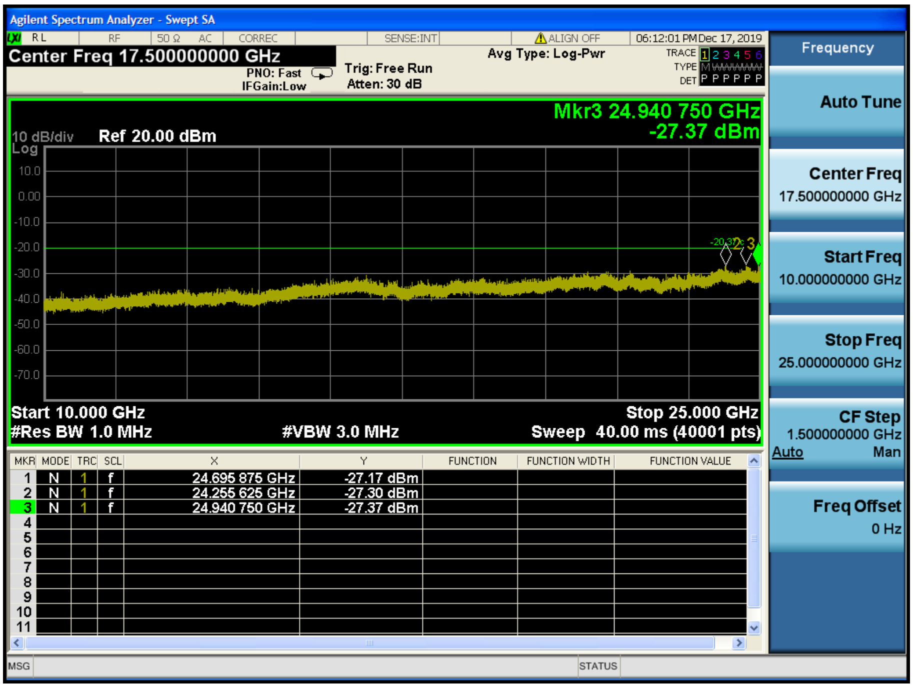

TM 6 & ANT 2 & 2452

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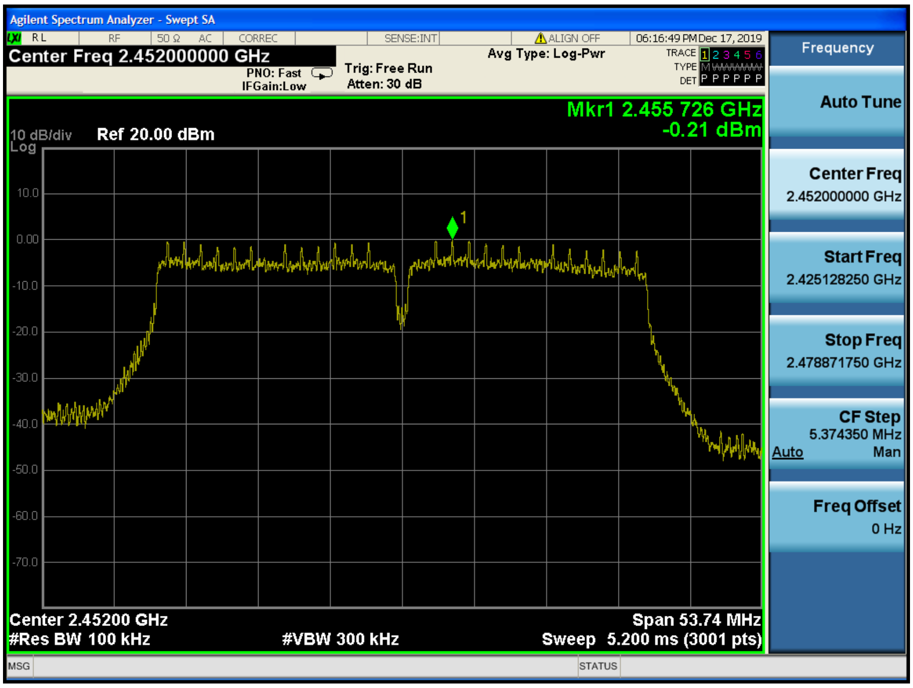
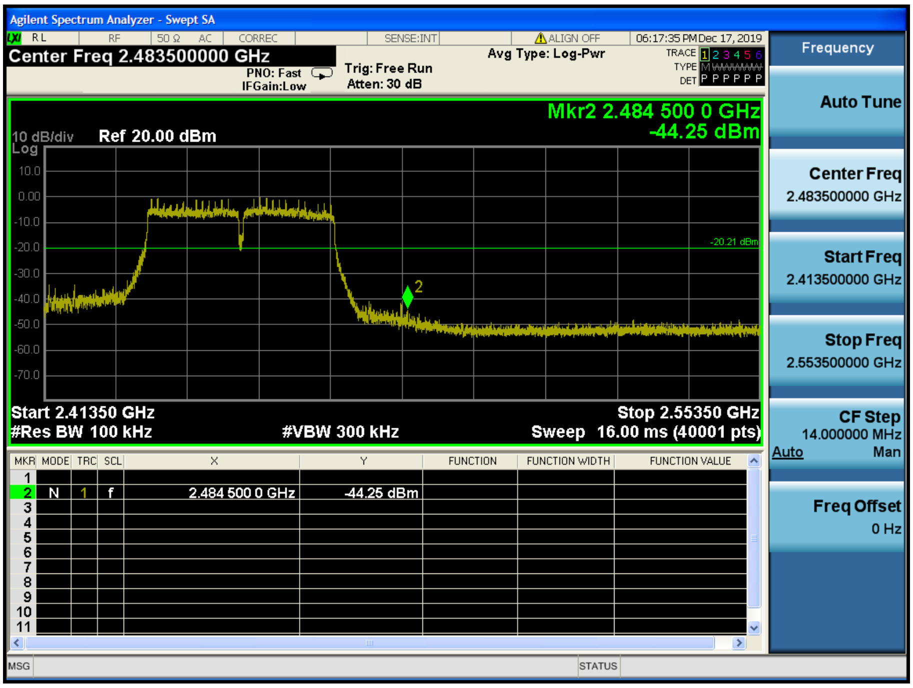


High Band-edge



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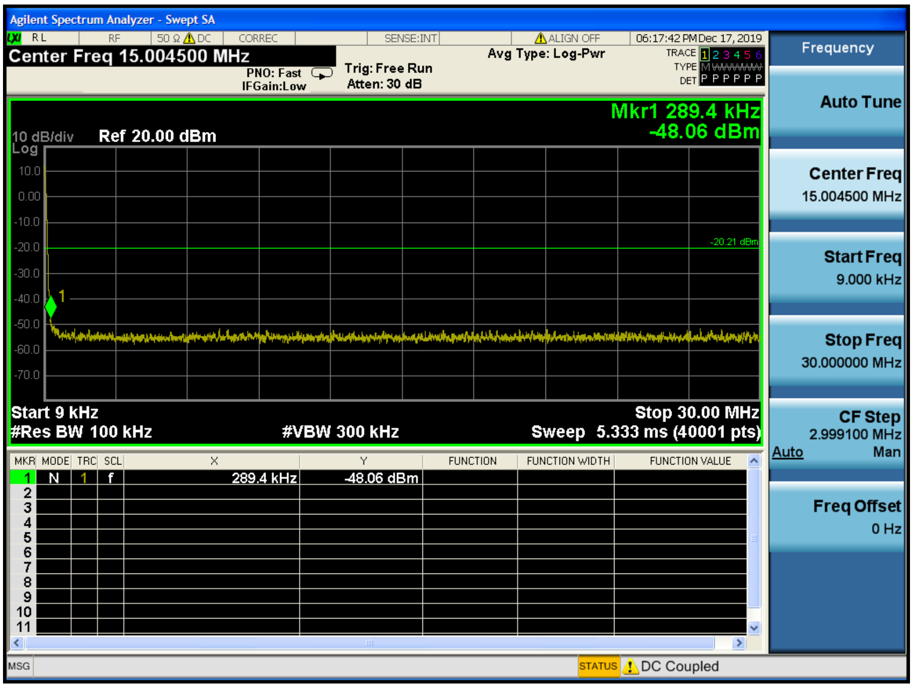

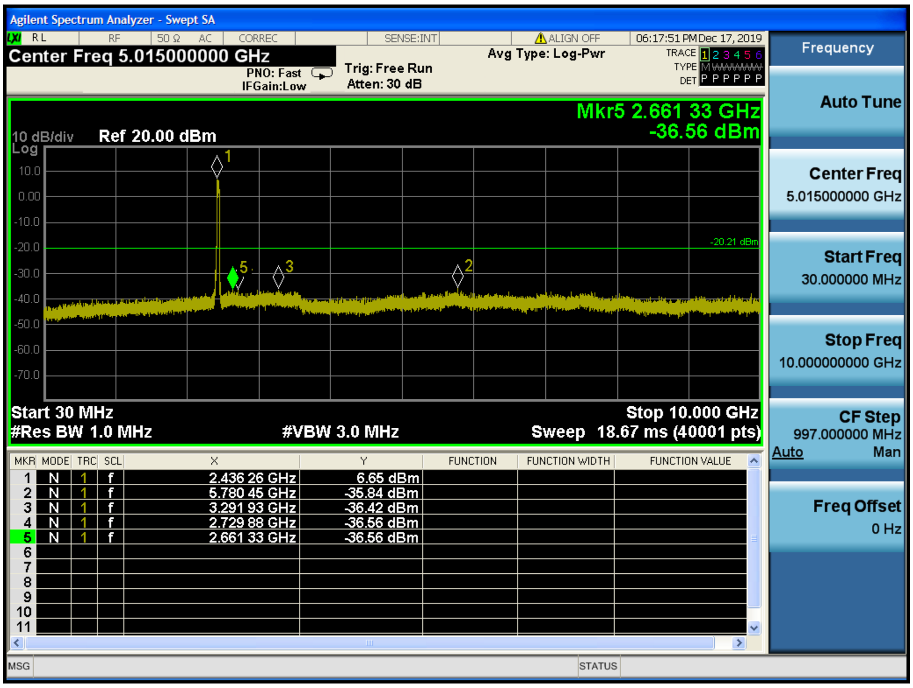

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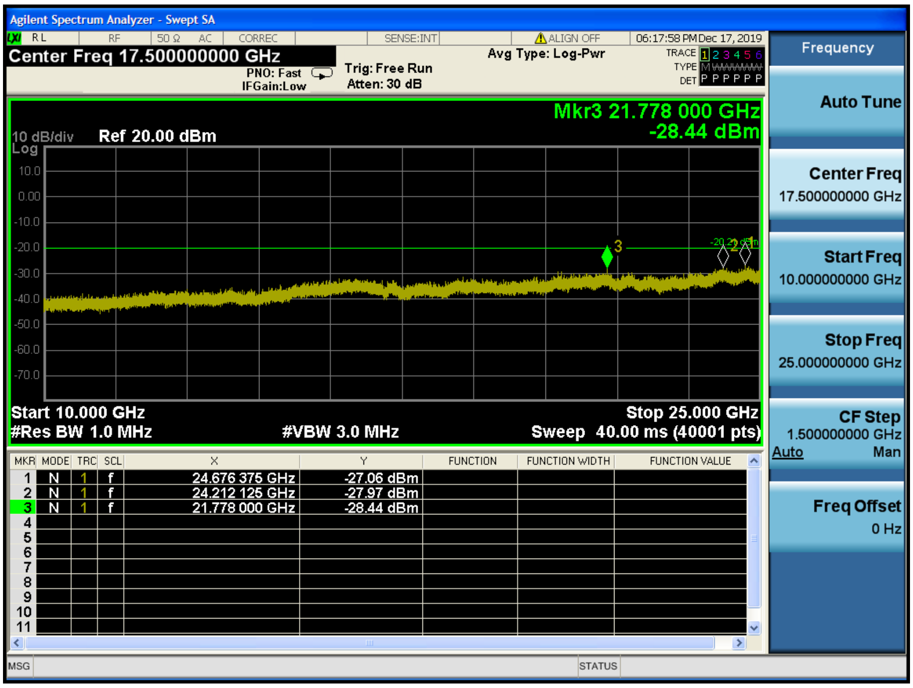


8.5 Radiated spurious emissions

▣ Test Requirements and limit, §15.247(d), §15.205, §15.209

In any 100 kHz bandwidth outside the operating frequency band, the radio frequency power that is produced by the

adiator shall be at least 20 dB below that in the 100 KHz bandwidth within the 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

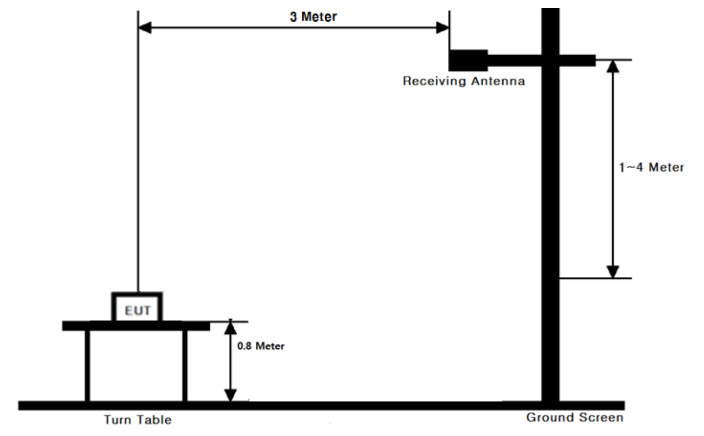
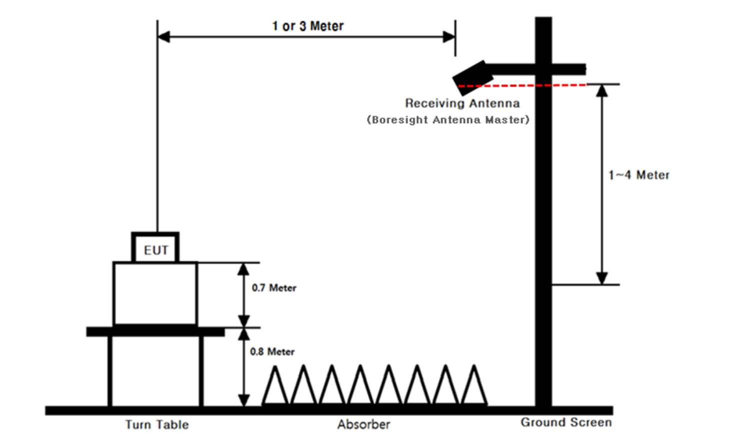
** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 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 ~ 12.52025	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.57675 ~ 12.57725	156.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	13.36 ~ 13.41	156.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	16.42 ~ 16.423	156.7 ~ 156.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.69475 ~ 16.69525	162.0125 ~ 167.17	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.80425 ~ 16.80475	167.72 ~ 173.2	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	25.5 ~ 25.67	240 ~ 285	2655 ~ 2900		
8.291 ~ 8.294	37.5 ~ 38.25	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	73 ~ 74.6	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	74.8 ~ 75.2	608 ~ 614	3345.8 ~ 3358		
		960 ~ 1240	3600 ~ 4400		

▪ **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

<table>
<tr><th>Below 1GHz</th><th>Above 1GHz</th></tr>
<tr><td>
</td><td>
</td></tr>
</table>

▣ Test Procedure

1. The EUT is placed on a non-conductive table, emission measurements at below 1 GHz, the table height is 80 cm and above 1 GHz, the table height is 1.5 m.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 1 or 3 m away from the receiving antenna, which is varied from 1 m to 4 m 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.

The radiated emission was tested according to the section 6.3, 6.4, 6.5 and 6.6 of the ANSI C63.10-2013 with following settings.

Peak Measurement

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:

1. RBW = 1 MHz (unless otherwise specified).
2. VBW ≥ 3 x RBW.
3. Detector = RMS (Number of points ≥ 2 x Span / RBW)
4. Averaging type = power. (i.e., RMS)
5. Sweep time = auto.
6. Perform a trace average of at least 100 traces.
7. A correction factor 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. The correction factor is computed as follows:

1) If power averaging (RMS) mode was used in step 4, then the applicable correction factor is 10 log(1/D), where x is the duty cycle.
2) If linear voltage averaging mode was used in step 4, then the applicable correction factor is 20 log(1/D), where x is the duty cycle.
3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

Duty Cycle Correction factor

Test Mode	Date rate	T_{on}(ms)	T_{on+off} (ms)	D = T_{on} / (T_{on+off})	DCCF = 10 log(1/D) (dB)
TM 1	1 Mbps	12.430	12.520	0.9928	NA
TM 2	6 Mbps	2.064	2.100	0.9829	NA
TM 3	MCS 0	1.924	1.960	0.9816	NA
TM 4	MCS 0	0.948	0.999	0.9489	0.23
TM 5	MCS 8	0.983	1.020	0.9641	0.16
TM 6	MCS 8	0.496	0.547	0.9068	0.42

Note1: Where, T= Transmission duration / D= Duty cycle
Note2: Please refer to the appendix I for duty cycle plots.

▣ Test Results: Comply

Please refer to next page for data table and the appendix I for worst data plots.

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

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)
2412	2387.72	V	Y	PK	50.09	2.42	N/A	N/A	52.51	74.00	21.49
	2387.52	V	Y	AV	39.49	2.42	N/A	N/A	41.91	54.00	12.09
	4824.12	V	X	PK	46.32	6.76	N/A	N/A	53.08	74.00	20.92
	4824.07	V	X	AV	38.43	6.76	N/A	N/A	45.19	54.00	8.81
2437	4874.02	V	X	PK	46.50	6.82	N/A	N/A	53.32	74.00	20.68
	4874.00	V	X	AV	37.82	6.82	N/A	N/A	44.64	54.00	9.36
2462	2483.85	V	Y	PK	49.78	2.68	N/A	N/A	52.46	74.00	21.54
	2483.70	V	Y	AV	39.48	2.68	N/A	N/A	42.16	54.00	11.84
	4923.94	V	X	PK	44.81	6.94	N/A	N/A	51.75	74.00	22.25
	4923.92	V	X	AV	36.02	6.94	N/A	N/A	42.96	54.00	11.04

Note.

1. The radiated emissions were investigated up to 25GHz. And no other spurious and harmonic emissions were found above listed frequencies.
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. Information of Distance Factor
   For finding emissions, the test distance might be reduced from 3 m to 1 m.
   In this case, the distance factor (-9.54 dB) is applied to the result.
   - Calculation of distance factor = 20 log(applied distance / required distance) = 20 log(1 m / 3 m) = -9.54 dB
   When distance factor is "N/A", the distance is 3 m and distance factor is not applied.

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

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)
2412	2389.83	V	Y	PK	62.57	2.43	N/A	N/A	65.00	74.00	9.00
	2389.88	V	Y	AV	48.31	2.43	N/A	N/A	50.74	54.00	3.26
	4822.25	V	Z	PK	44.60	6.76	N/A	N/A	51.36	74.00	22.64
	4822.13	V	Z	AV	34.60	6.76	N/A	N/A	41.36	54.00	12.64
2437	4875.33	V	Z	PK	44.38	6.83	N/A	N/A	51.21	74.00	22.79
	4874.93	V	Z	AV	34.83	6.83	N/A	N/A	41.66	54.00	12.34
2462	2483.86	V	Y	PK	56.80	2.68	N/A	N/A	59.48	74.00	14.52
	2483.62	V	Y	AV	44.28	2.68	N/A	N/A	46.96	54.00	7.04
	4922.98	V	Z	PK	44.09	6.94	N/A	N/A	51.03	74.00	22.97
	4923.66	V	Z	AV	34.16	6.94	N/A	N/A	41.10	54.00	12.90

Note.

1. The radiated emissions were investigated up to 25GHz. And no other spurious and harmonic emissions were found above listed frequencies.
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. Information of Distance Factor
   For finding emissions, the test distance might be reduced from 3 m to 1 m.
   In this case, the distance factor (-9.54 dB) is applied to the result.
   - Calculation of distance factor = 20 log(applied distance / required distance) = 20 log(1 m / 3 m) = -9.54 dB
   When distance factor is "N/A", the distance is 3 m and distance factor is not applied.

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

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)
2412	2389.72	V	Y	PK	62.23	2.43	N/A	N/A	64.66	74.00	9.34
	2389.80	V	Y	AV	46.43	2.43	N/A	N/A	48.86	54.00	5.14
	4823.68	V	Z	PK	44.63	6.76	N/A	N/A	51.39	74.00	22.61
	4823.68	V	Z	AV	34.40	6.76	N/A	N/A	41.16	54.00	12.84
2437	4874.12	V	Z	PK	44.72	6.82	N/A	N/A	51.54	74.00	22.46
	4874.10	V	Z	AV	34.06	6.82	N/A	N/A	40.88	54.00	13.12
2462	2483.85	V	Y	PK	60.57	2.68	N/A	N/A	63.25	74.00	10.75
	2483.63	V	Y	AV	46.28	2.68	N/A	N/A	48.96	54.00	5.04
	4924.04	V	Z	PK	45.12	6.94	N/A	N/A	52.06	74.00	21.94
	4924.25	V	Z	AV	34.34	6.94	N/A	N/A	41.28	54.00	12.72

Note.

1. The radiated emissions were investigated up to 25GHz. And no other spurious and harmonic emissions were found above listed frequencies.
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. Information of Distance Factor
   For finding emissions, the test distance might be reduced from 3 m to 1 m.
   In this case, the distance factor (-9.54 dB) is applied to the result.
   - Calculation of distance factor = 20 log(applied distance / required distance) = 20 log(1 m / 3 m) = -9.54 dB
   When distance factor is “N/A”, the distance is 3 m and distance factor is not applied.

Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : ***TM 5***

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)
2422	2389.95	V	Y	PK	59.64	2.43	N/A	N/A	62.07	74.00	11.93
	2389.95	V	Y	AV	45.36	2.43	0.23	N/A	48.02	54.00	5.98
	4844.36	V	Z	PK	44.94	6.78	N/A	N/A	51.72	74.00	22.28
	4844.36	V	Z	AV	34.32	6.78	0.23	N/A	41.33	54.00	12.67
2437	4874.01	V	Z	PK	45.05	6.82	N/A	N/A	51.87	74.00	22.13
	4874.34	V	Z	AV	33.99	6.82	0.23	N/A	41.04	54.00	12.96
2452	2484.99	V	Y	PK	60.32	2.68	N/A	N/A	63.00	74.00	11.00
	2484.49	V	Y	AV	47.32	2.68	0.23	N/A	50.23	54.00	3.77
	4903.72	V	Z	PK	45.26	6.92	N/A	N/A	52.18	74.00	21.82
	4903.68	V	Z	AV	34.05	6.92	0.23	N/A	41.20	54.00	12.80

Note.

1. The radiated emissions were investigated up to 25GHz. And no other spurious and harmonic emissions were found above listed frequencies.
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. Information of Distance Factor
   For finding emissions, the test distance might be reduced from 3 m to 1 m.
   In this case, the distance factor (-9.54 dB) is applied to the result.
   - Calculation of distance factor = 20 log(applied distance / required distance) = 20 log(1 m / 3 m) = -9.54 dB
   When distance factor is "N/A", the distance is 3 m and distance factor is not applied.

Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : ***TM 5***

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)
2412	2389.93	V	Y	PK	62.97	2.43	N/A	N/A	65.40	74.00	8.60
	2389.68	V	Y	AV	48.68	2.43	0.16	N/A	51.27	54.00	2.73
	4824.44	V	Z	PK	44.69	6.76	N/A	N/A	51.45	74.00	22.55
	4824.06	V	Z	AV	34.31	6.76	0.16	N/A	41.23	54.00	12.77
2437	4874.06	V	Z	PK	44.34	6.82	N/A	N/A	51.16	74.00	22.84
	4874.37	V	Z	AV	34.04	6.82	0.16	N/A	41.02	54.00	12.98
2462	2483.65	V	Y	PK	57.46	2.68	N/A	N/A	60.14	74.00	13.86
	2483.72	V	Y	AV	44.60	2.68	0.16	N/A	47.44	54.00	6.56
	4924.11	V	Z	PK	45.44	6.94	N/A	N/A	52.38	74.00	21.62
	4924.07	V	Z	AV	34.40	6.94	0.16	N/A	41.50	54.00	12.50

Note.

1. The radiated emissions were investigated up to 25GHz. And no other spurious and harmonic emissions were found above listed frequencies.
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. Information of Distance Factor
   For finding emissions, the test distance might be reduced from 3 m to 1 m.
   In this case, the distance factor (-9.54 dB) is applied to the result.
   - Calculation of distance factor = 20 log(applied distance / required distance) = 20 log(1 m / 3 m) = -9.54 dB
   When distance factor is “N/A”, the distance is 3 m and distance factor is not applied.

Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : *TM 6*_ Normal

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)
2422	2389.28	V	Y	PK	60.78	2.43	N/A	N/A	63.21	74.00	10.79
	2389.67	V	Y	AV	48.61	2.43	0.42	N/A	51.46	54.00	2.54
	4843.75	V	Z	PK	45.39	6.78	N/A	N/A	52.17	74.00	21.83
	4843.56	V	Z	AV	34.31	6.78	0.42	N/A	41.51	54.00	12.49
2437	4873.94	V	Z	PK	44.30	6.82	N/A	N/A	51.12	74.00	22.88
	4873.60	V	Z	AV	34.16	6.82	0.42	N/A	41.40	54.00	12.60
2452	2485.94	V	Y	PK	60.38	2.68	N/A	N/A	63.06	74.00	10.94
	2483.82	V	Y	AV	46.86	2.68	0.42	N/A	49.96	54.00	4.04
	4903.96	V	Z	PK	44.02	6.92	N/A	N/A	50.94	74.00	23.06
	4903.78	V	Z	AV	34.08	6.92	0.42	N/A	41.42	54.00	12.58

Note.

1. The radiated emissions were investigated up to 25GHz. And no other spurious and harmonic emissions were found above listed frequencies.
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. Information of Distance Factor
   For finding emissions, the test distance might be reduced from 3 m to 1 m.
   In this case, the distance factor (-9.54 dB) is applied to the result.
   - Calculation of distance factor = 20 log(applied distance / required distance) = 20 log(1 m / 3 m) = -9.54 dB
   When distance factor is “N/A”, the distance is 3 m and distance factor is not applied.

8.6 Power-line conducted emissions

▣ Test Requirements and limit, §15.207

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 the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network(LISN).

Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

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)

TM 2 & Middle

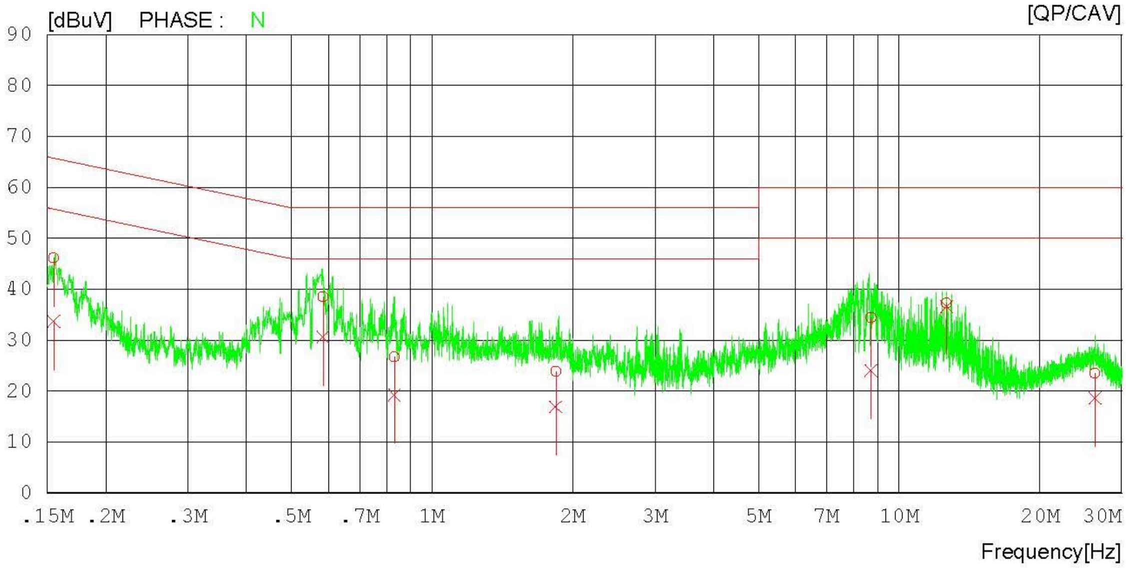
Results of Conducted Emission

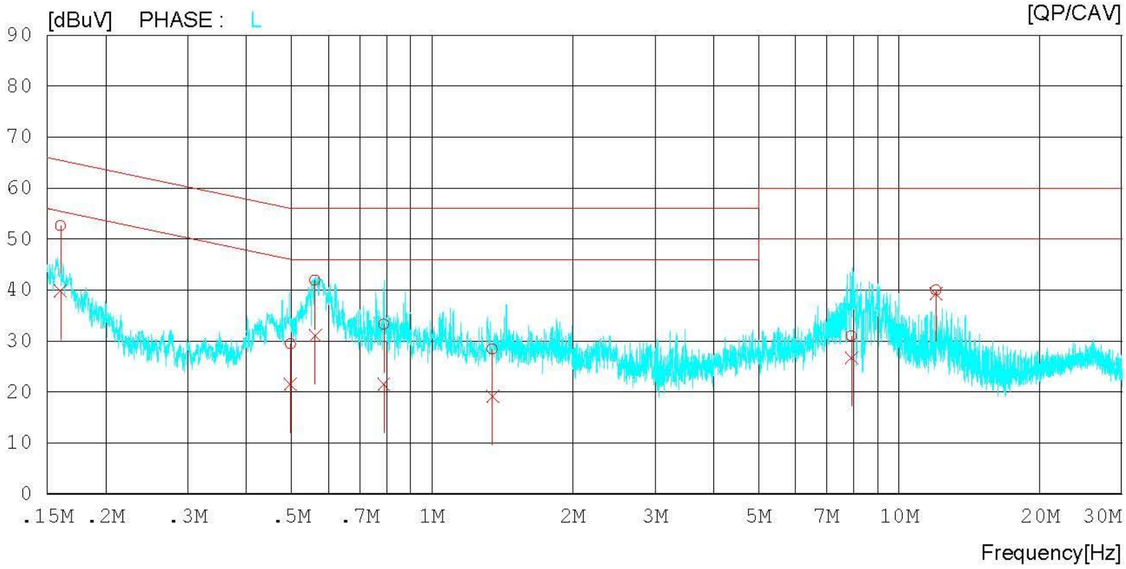
DTNC Date 2019-12-06

Order No.		Referrence No.	
Model No.	LF-F200U	Power Supply	120 V, 60 Hz
Serial No.		Temp/Humi.	23 'C / 39 %
Test Condition	2.4G WLAN	Operator	InHee Bae

Memo

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





AC Line Conducted Emissions (List)

TM 2 & Middle

Results of Conducted Emission

DTNC Date 2019-12-06

Order No.		Referrence No.	
Model No.	LF-F200U	Power Supply	120 V, 60 Hz
Serial No.		Temp/Humi.	23 'C / 39 %
Test Condition	2.4G WLAN	Operator	InHee Bae

Memo

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

NO	FREQ	READING QP	READING CAV	C.FACTOR	RESULT QP	RESULT CAV	LIMIT QP	LIMIT CAV	MARGIN QP	MARGIN CAV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.15490	36.18	23.71	9.94	46.12	33.65	65.73	55.73	19.61	22.08	N
2	0.58432	28.61	20.66	9.95	38.56	30.61	56.00	46.00	17.44	15.39	N
3	0.83016	16.78	9.26	9.97	26.75	19.23	56.00	46.00	29.25	26.77	N
4	1.83940	13.79	6.90	10.03	23.82	16.93	56.00	46.00	32.18	29.07	N
5	8.70100	24.10	13.74	10.29	34.39	24.03	60.00	50.00	25.61	25.97	N
6	12.63820	26.90	26.21	10.42	37.32	36.63	60.00	50.00	22.68	13.37	N
7	26.25900	12.87	7.98	10.68	23.55	18.66	60.00	50.00	36.45	31.34	N
8	0.16003	42.65	29.85	9.94	52.59	39.79	65.46	55.46	12.87	15.67	L
9	0.49727	19.45	11.52	9.95	29.40	21.47	56.05	46.05	26.65	24.58	L
10	0.56136	31.91	21.07	9.95	41.86	31.02	56.00	46.00	14.14	14.98	L
11	0.78859	23.25	11.52	9.96	33.21	21.48	56.00	46.00	22.79	24.52	L
12	1.34580	18.42	9.13	9.98	28.40	19.11	56.00	46.00	27.60	26.89	L
13	7.90820	20.72	16.40	10.26	30.98	26.66	60.00	50.00	29.02	23.34	L
14	11.98220	29.51	28.89	10.39	39.90	39.28	60.00	50.00	20.10	10.72	L

9. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	18/12/19	19/12/19	MY50410357
Spectrum Analyzer	Agilent Technologies	N9020A	18/12/19	19/12/19	MY48011700
DC Power Supply	Agilent Technologies	66332A	19/06/25	20/06/25	MY43000211
Multimeter	FLUKE	17B	18/12/18	19/12/18	26030065WS
Signal Generator	Rohde Schwarz	SMBV100A	18/12/19	19/12/19	255571
Signal Generator	ANRITSU	MG3695C	18/12/20	19/12/20	173501
Thermohygrometer	BODYCOM	BJ5478	18/12/27	19/12/27	120612-1
Thermohygrometer	BODYCOM	BJ5478	18/12/27	19/12/27	120612-2
Thermohygrometer	BODYCOM	BJ5478	19/07/03	20/07/03	N/A
HYGROMETER	TESTO	608-H1	19/01/31	20/01/31	34862883
Loop Antenna	Schwarzbeck	6502	19/09/18	21/09/18	00226186
BILOG ANTENNA	Schwarzbeck	VULB 9160	19/04/23	21/04/23	9160-3362
Horn Antenna	ETS-Lindgren	3115	18/01/30	20/01/30	6419
Horn Antenna	A.H.Systems Inc.	SAS-574	19/07/03	21/07/03	155
PreAmplifier	tsj	MLA-0118-B01-40	18/12/18	19/12/18	1852267
PreAmplifier	tsj	MLA-1840-J02-45	19/06/27	20/06/27	16966-10728
PreAmplifier	H.P	8447D	18/12/18	19/12/18	2944A07774
Attenuator	Aeroflex/Weinschel	20515	19/0627	20/06/27	Y2370
Attenuator	SMAJK	SMAJK-2-3	19/06/27	20/06/27	2
Attenuator	SRTechnology	F01-B0606-01	19/0627	20/06/27	13092403
Attenuator	Hefei Shunze	SS5T2.92-10-40	19/06/27	20/06/27	16012202
Attenuator	SMAJK	SMAJK-50-10	19/08/07	20/08/07	15081901
High Pass Filter	Wainwright Instruments	WHNX8.0/26.5-6SS	19/06/27	20/06/27	3
High Pass Filter	Wainwright Instruments	WHKX12-935-1000-15000-40SS	19/06/26	20/06/26	8
High Pass Filter	Wainwright Instruments	WHKX10-2838-3300-18000-60SS	19/06/26	20/06/26	1
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2496A MA2411B	18/12/19	19/12/19	1338004 1306053
EMI Test Receiver	Rohde Schwarz	ESCI7	19/01/30	20/01/30	100910
PULSE LIMITER	Rohde Schwarz	ESH3-Z2	19/09/17	20/09/17	101333
LISN	SCHWARZBECK	NNLK 8121	19/03/19	20/03/19	06183
Cable	Radiall	TESTPRO3	19/01/16	20/01/16	M-01
Cable	Junkosha	MWX315	19/01/16	20/01/16	M-05
Cable	Junkosha	MWX315	19/01/16	20/01/16	M-06
Cable	Junkosha	MWX241	19/01/14	20/01/14	G-4
Cable	Junkosha	MWX241	19/01/14	20/01/14	G-7
Cable	DT&C	Cable	19/01/14	20/01/14	G-13
Cable	DT&C	Cable	19/01/14	20/01/14	G-14
Cable	HUBER+SUHNER	SUCOFLEX 104	19/01/14	20/01/14	G-15
Cable	DT&C	Cable	19/01/16	20/01/16	RF-82
Test Software	tsj	Radiated EmissionMeasurement	NA	NA	Version Rev.05
Test Software	tsj	Noise Terminal VoltageMeasurement	NA	NA	Version MR5 1.5.1

Note 1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017
Note 2: The cable is not a regular calibration item, so it has been calibrated by DT & C itself.

APPENDIX I

Duty cycle plots

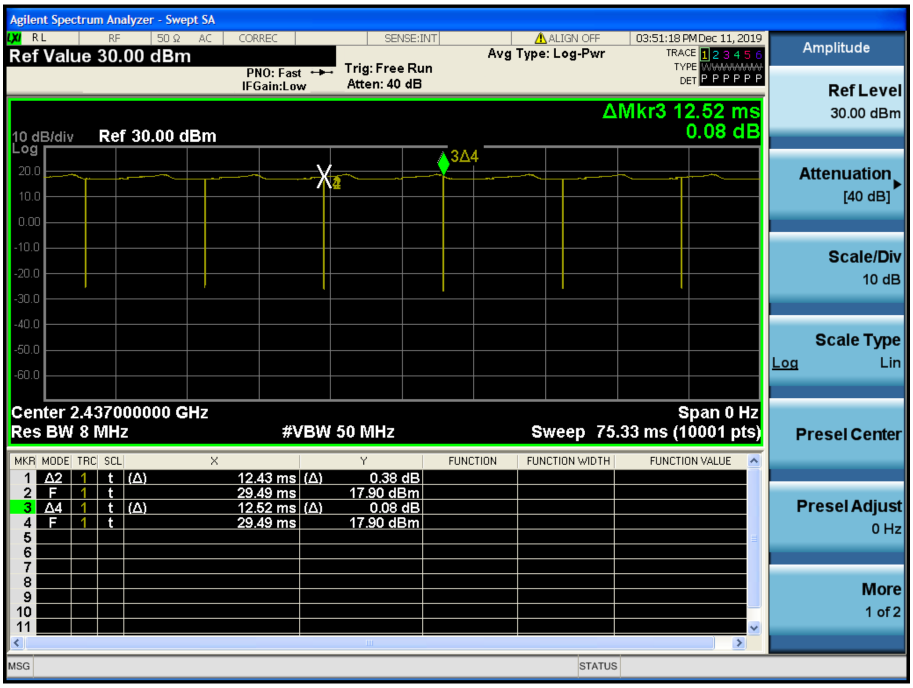
▪ Test Procedure

Duty Cycle was measured using **section 6.0 b) of KDB558074 D01v05r02 :**

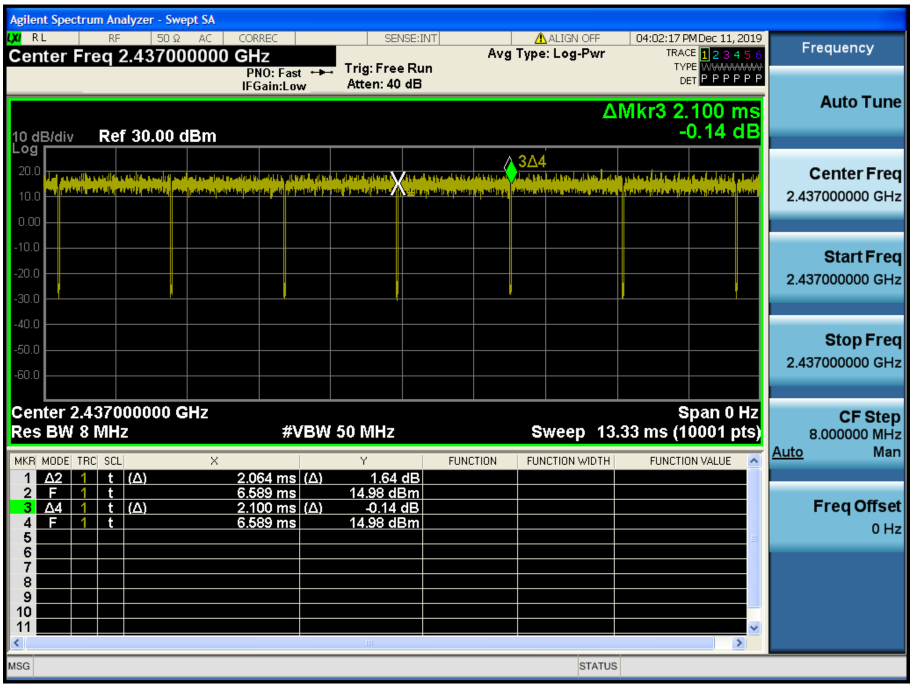
The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission.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

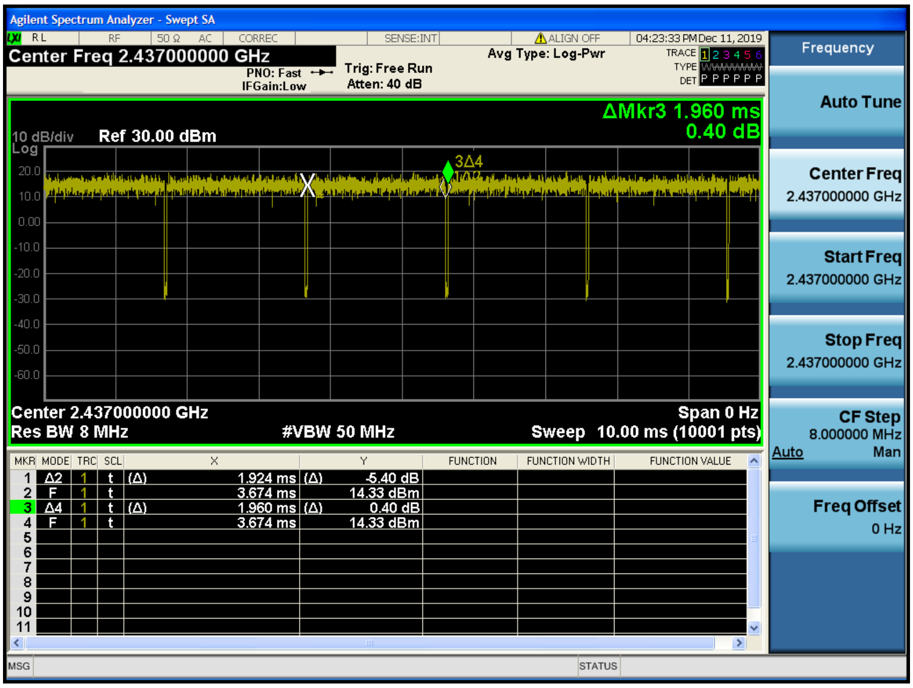
Duty Cycle TM 1 & ANT 1 & 2437 MHz & 1 Mbps



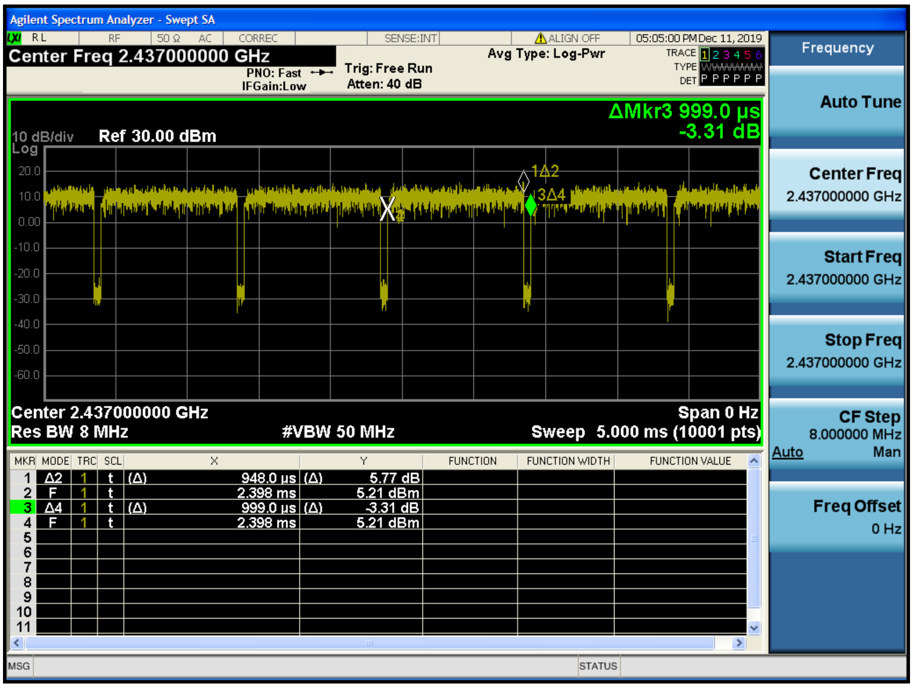
Duty Cycle TM 2 & ANT 1 & 2437 MHz & 6 Mbps



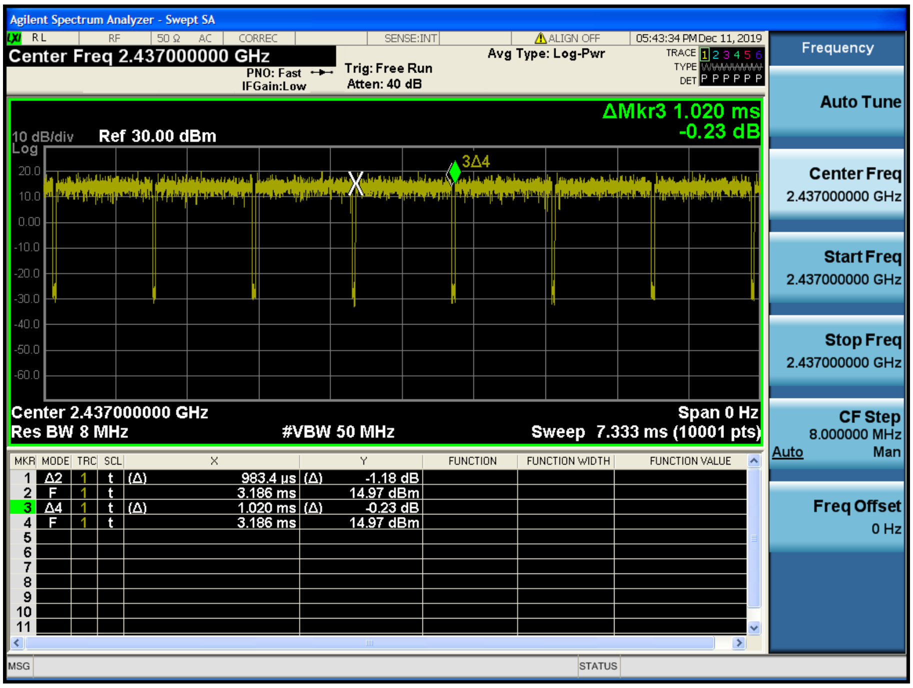
Duty Cycle TM 3 & ANT 1 & 2437 MHz & MCS 0



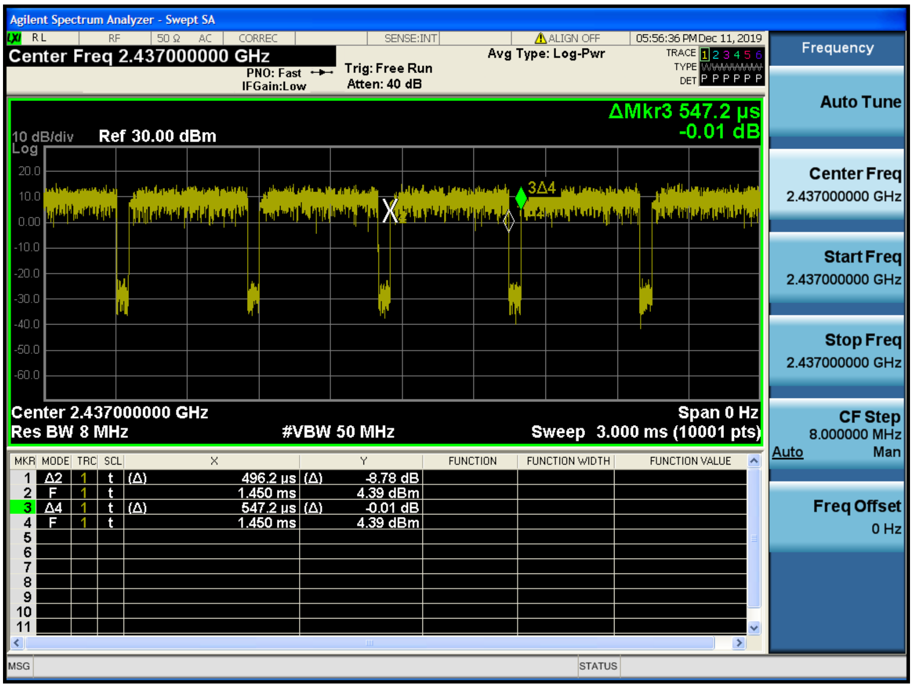
Duty Cycle TM 5 & ANT 1 & 2437 MHz & MCS 0



Duty Cycle TM 5 & ANT 1 & 2437 MHz & MCS 8



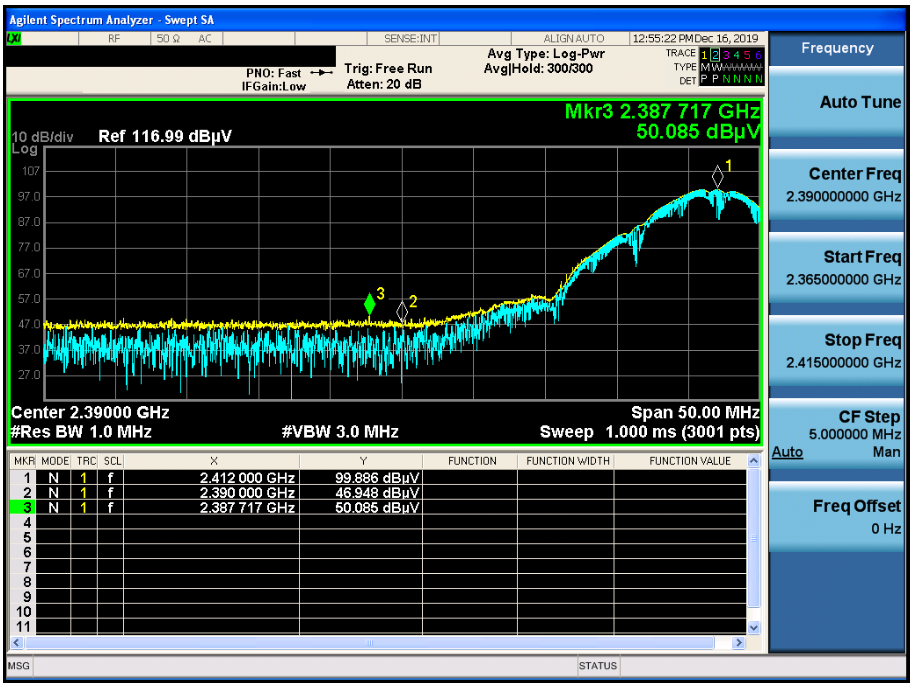
Duty Cycle TM 6 & ANT 1 & 2437 MHz & MCS 8



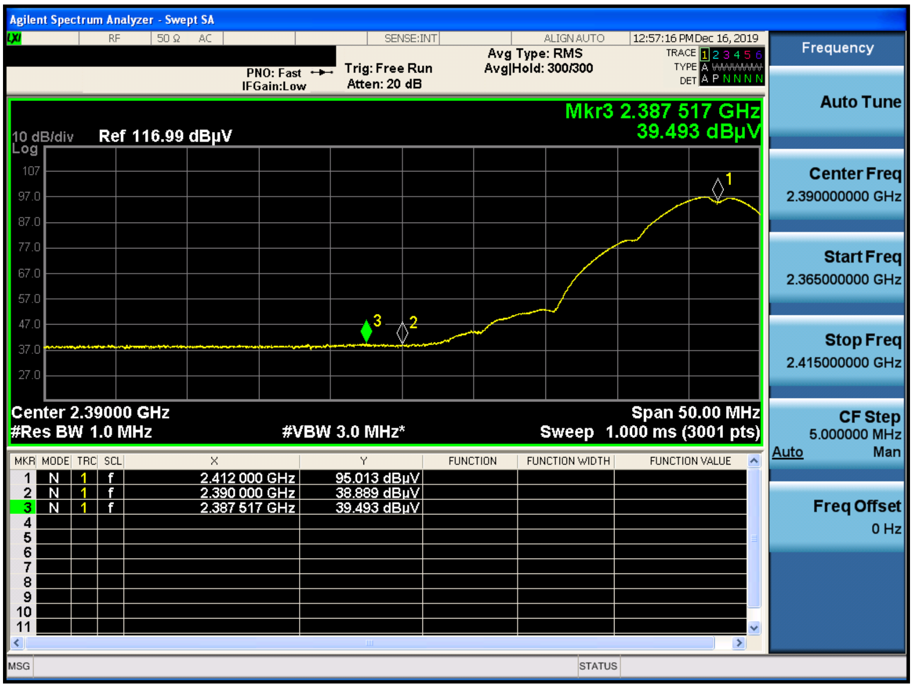
APPENDIX II

Unwanted Emissions (Radiated) Test Plot

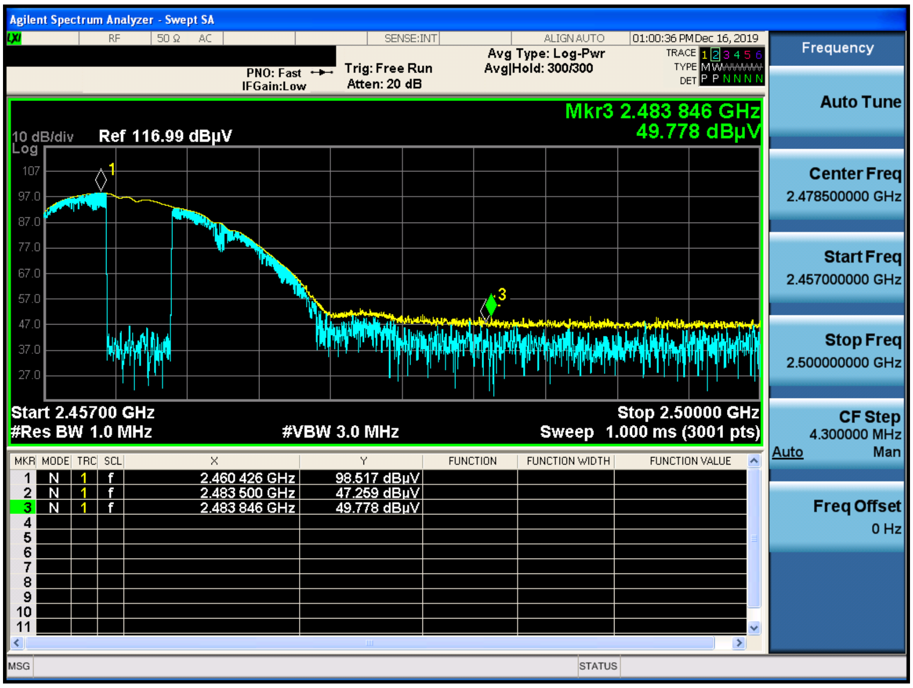
TM 1 & 2412 & Y axis & Ver **Detector Mode : PK**



TM 1 & 2412 & Y axis & Ver **Detector Mode : AV**

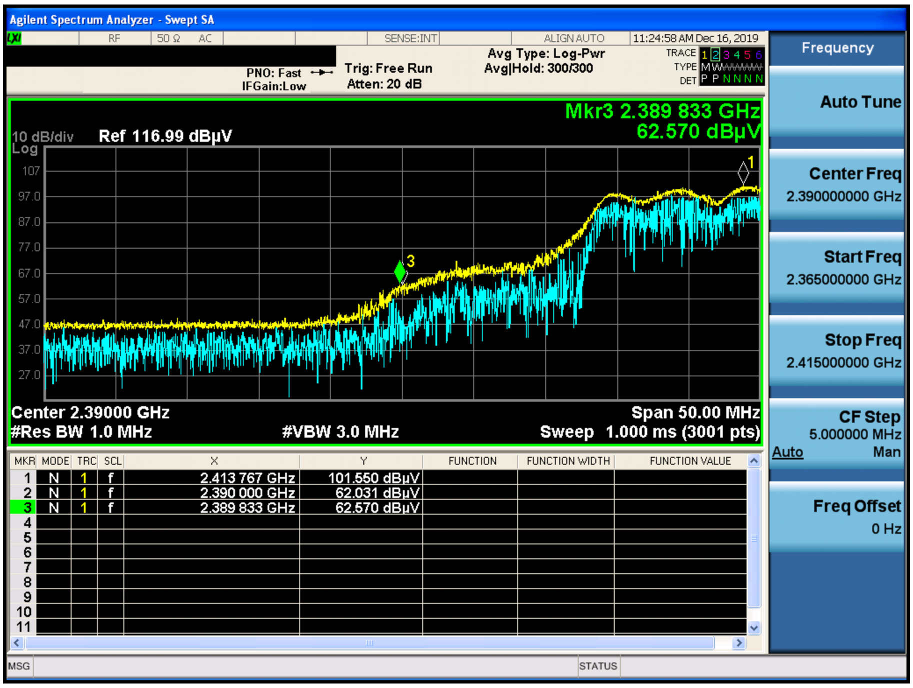


TM 1 & 2462 & Y axis & Ver **Detector Mode : PK**

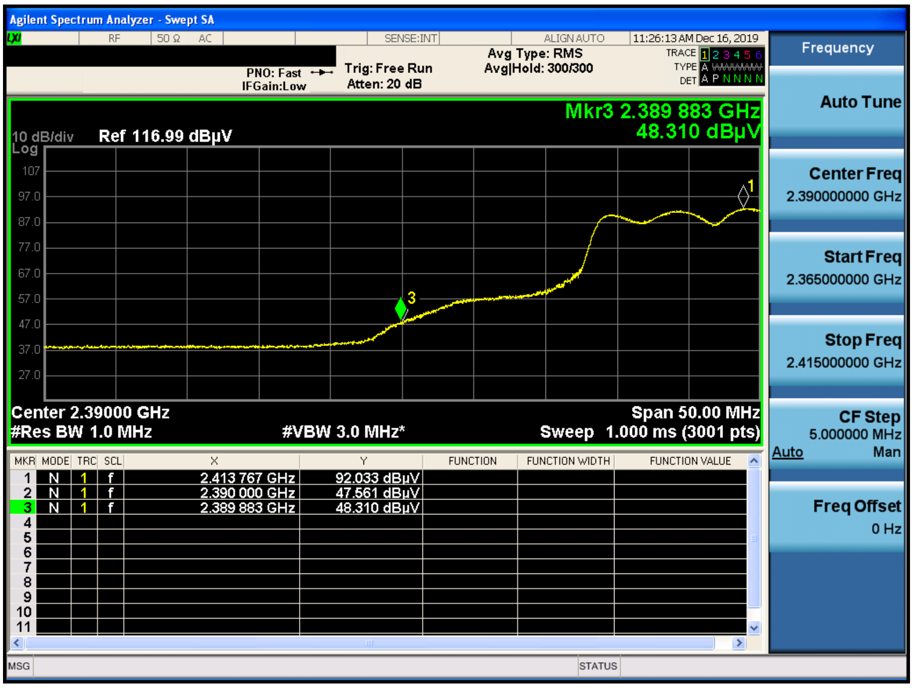


TM 1 & 2462 & Y axis & Ver **Detector Mode : AV**

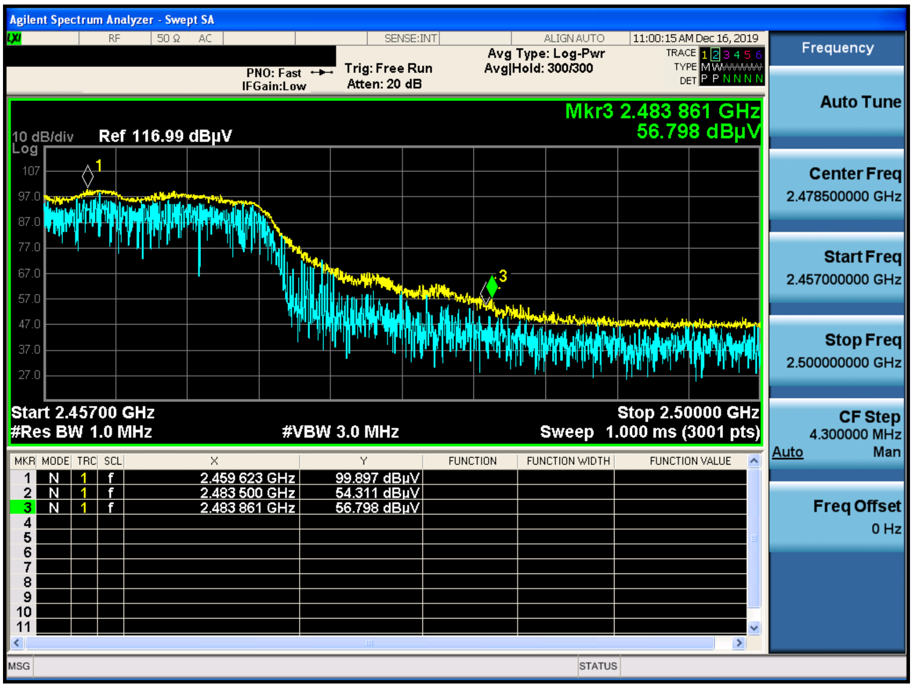
TM 2 & 2412 & Y axis & Ver **Detector Mode : PK**



TM 2 & 2412 & Y axis & Ver **Detector Mode : AV**

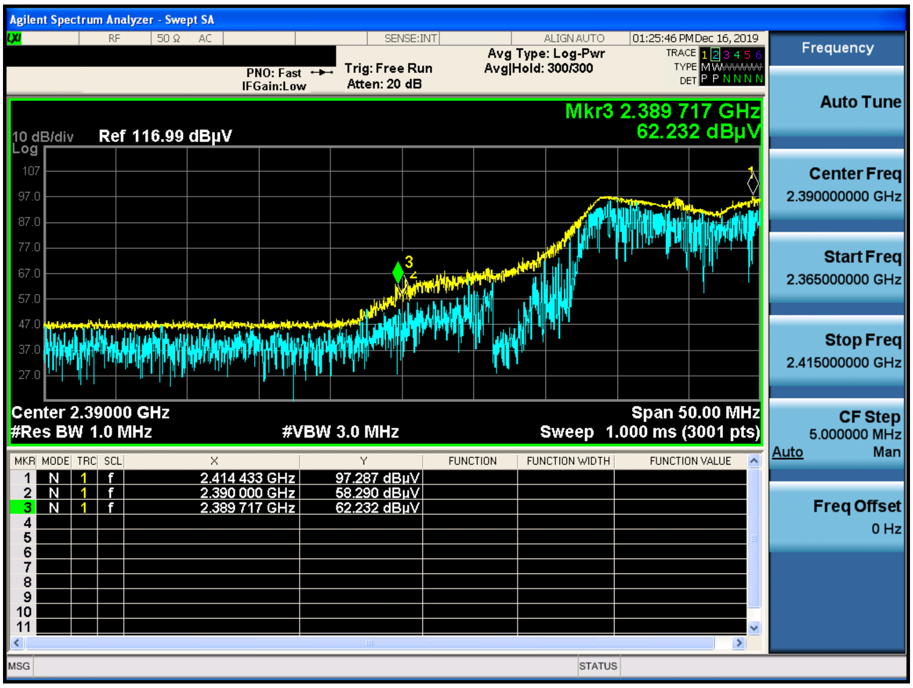


TM 2 & 2462 & Y axis & Ver **Detector Mode : PK**



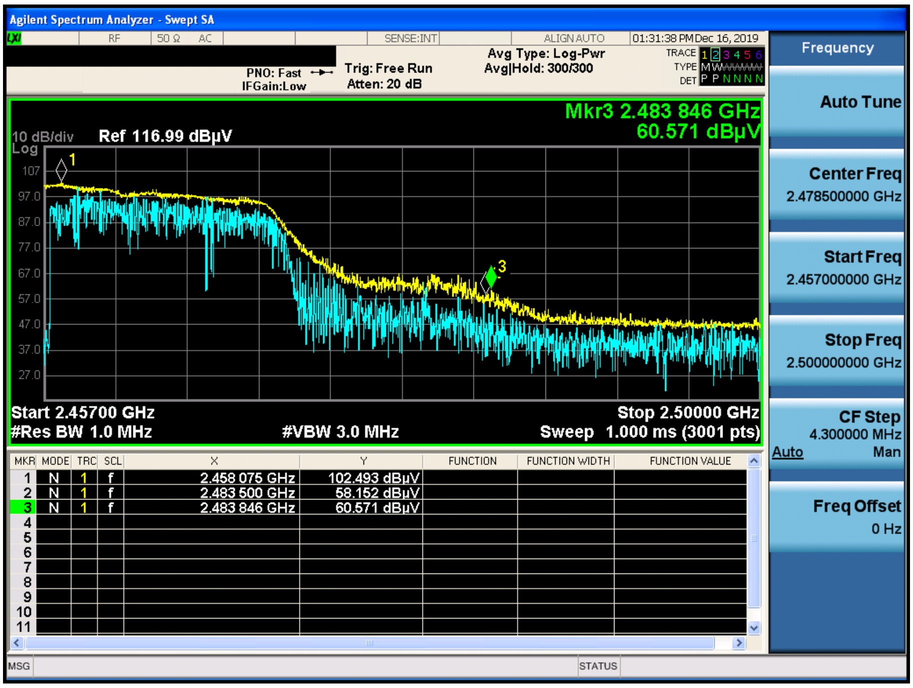
TM 2 & 2462 & Y axis & Ver **Detector Mode : AV**

TM 3 & 2412 & Y axis & Ver Detector Mode : PK



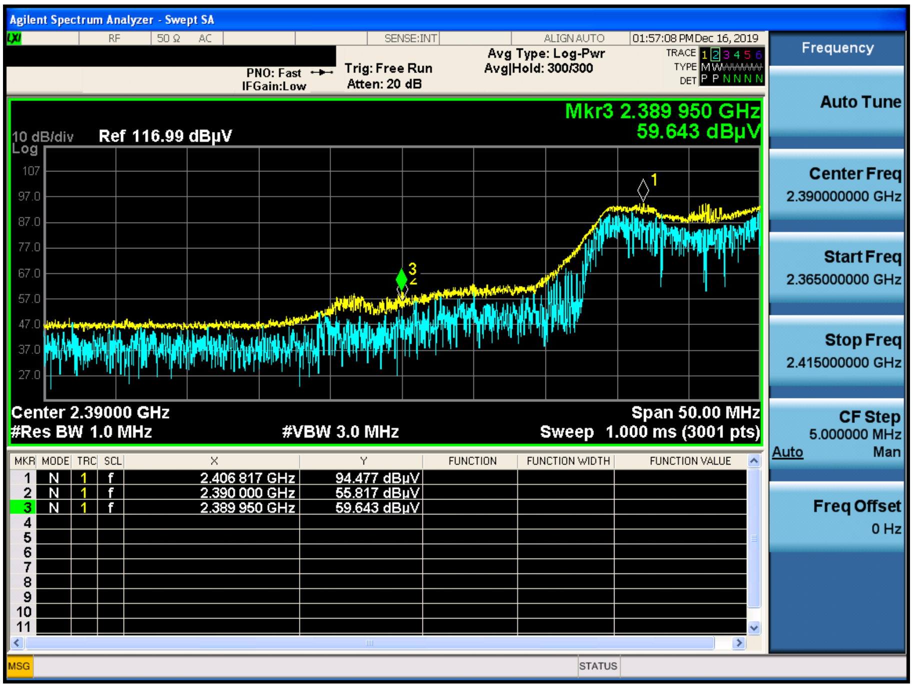
TM 3 & 2412 & Y axis & Ver Detector Mode : AV

TM 3 & 2462 & Y axis & Ver **Detector Mode : PK**



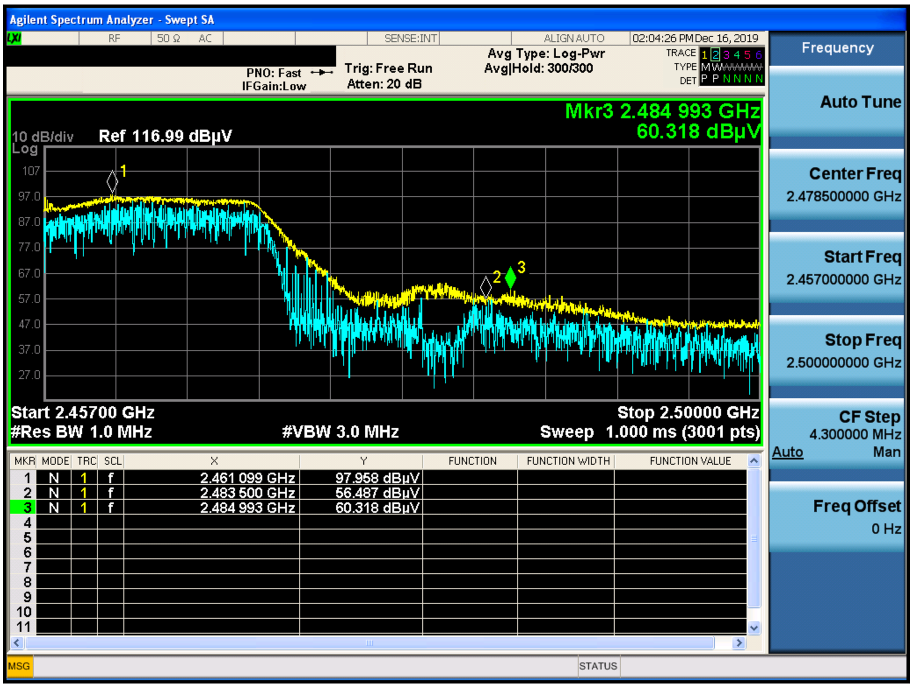
TM 3 & 2462 & Y axis & Ver **Detector Mode : AV**

TM 4 & 2422 & Y axis & Ver **Detector Mode : PK**



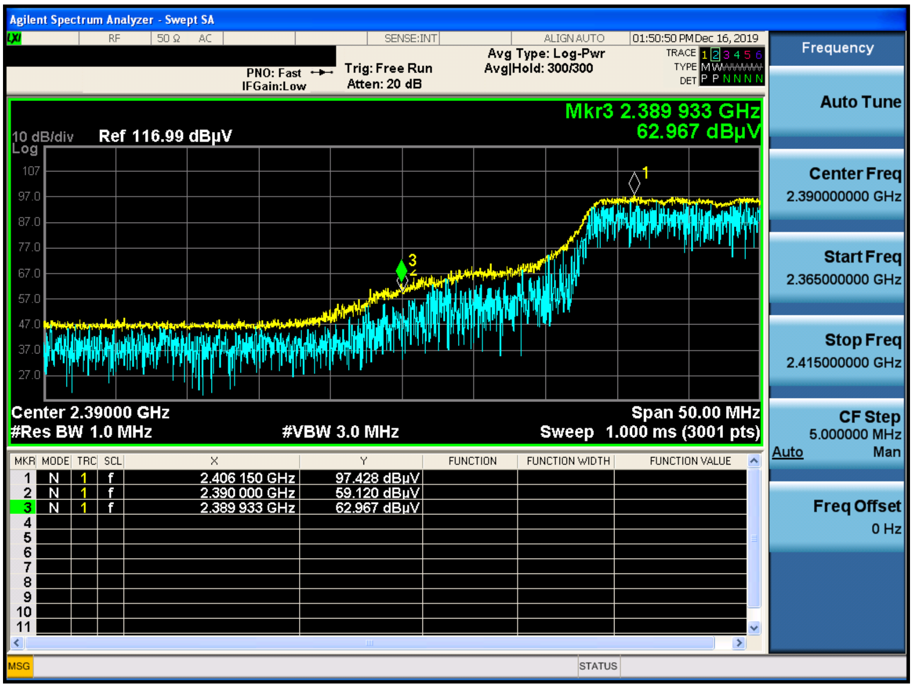
TM 4 & 2422 & Y axis & Ver **Detector Mode : AV**

TM 4 & 2452 & Y axis & Ver **Detector Mode : PK**



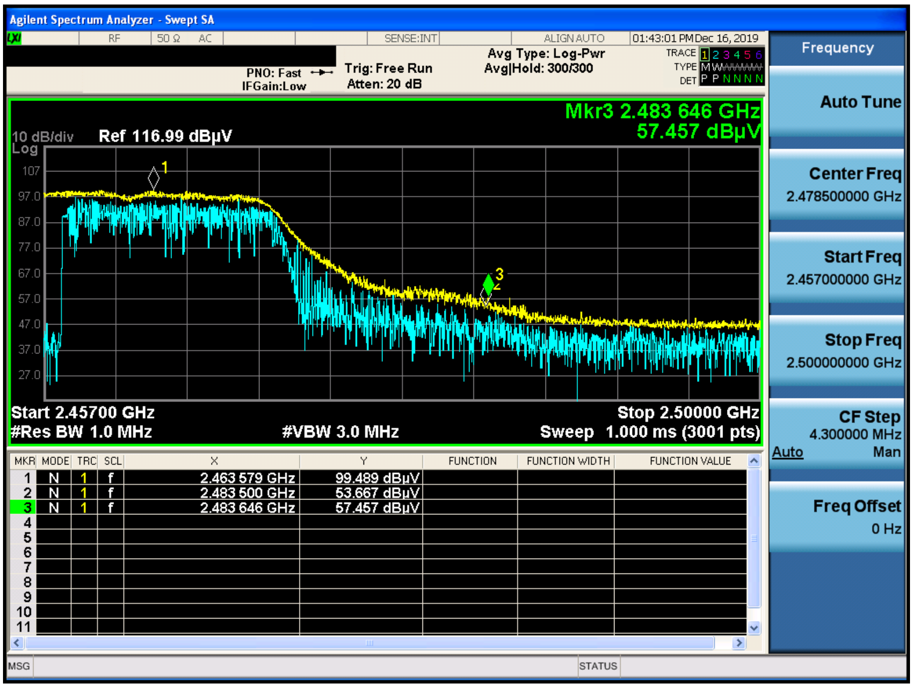
TM 4 & 2452 & Y axis & Ver **Detector Mode : AV**

TM 5 & 2412 & Y axis & Ver **Detector Mode : PK**



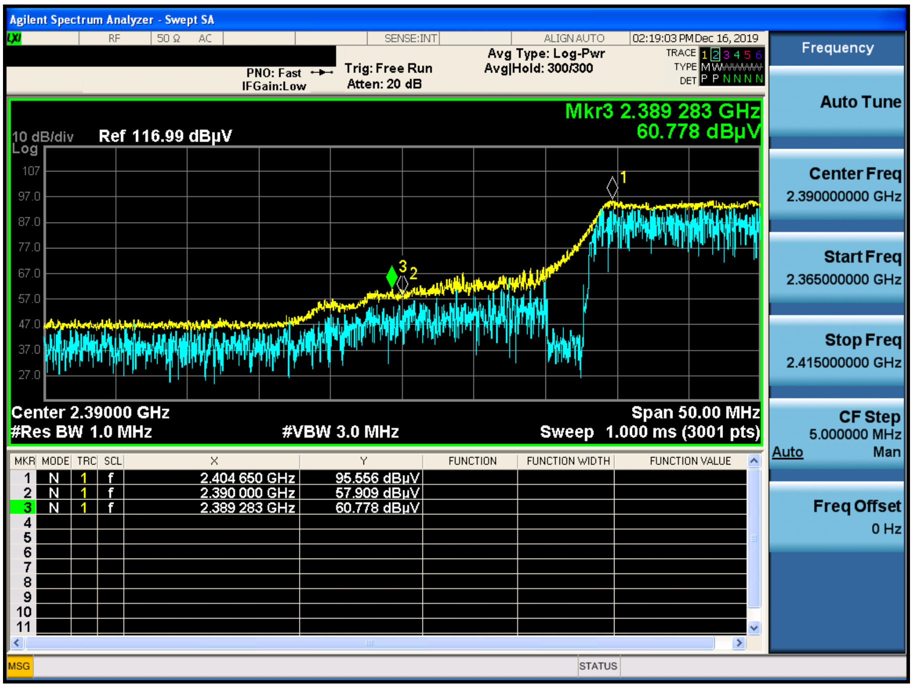
TM 5 & 2412 & Y axis & Ver **Detector Mode : AV**

TM 5 & 2462 & Y axis & Ver **Detector Mode : PK**



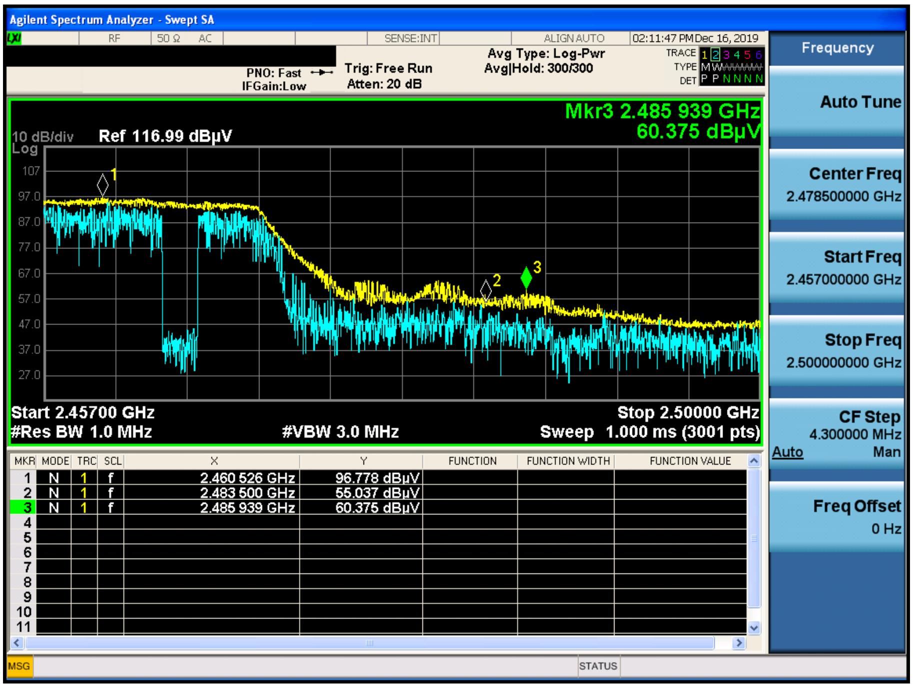
TM 5 & 2462 & Y axis & Ver **Detector Mode : AV**

TM 6 & 2422 & Y axis & Ver **Detector Mode : PK**



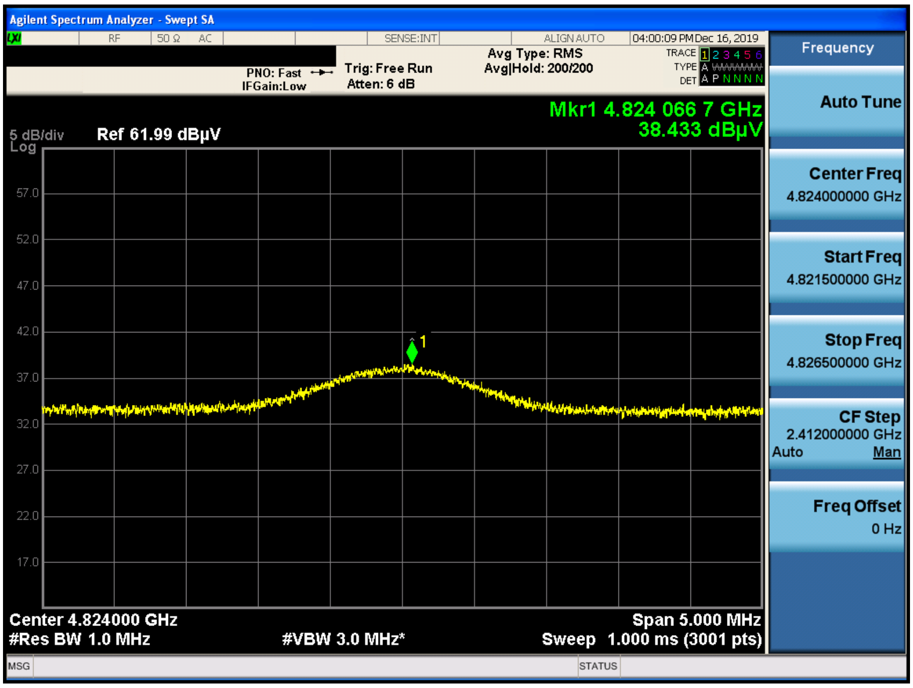
TM 6 & 2422 & Y axis & Ver **Detector Mode : AV**

TM 6 & 2452 & Y axis & Ver Detector Mode : PK

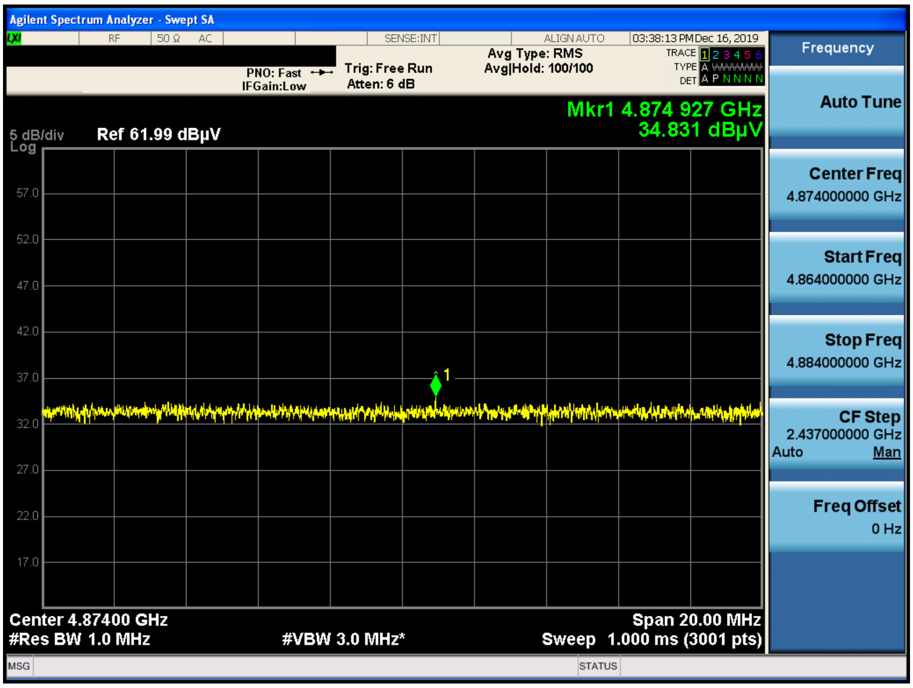


TM 6 & 2452 & Y axis & Ver Detector Mode : AV

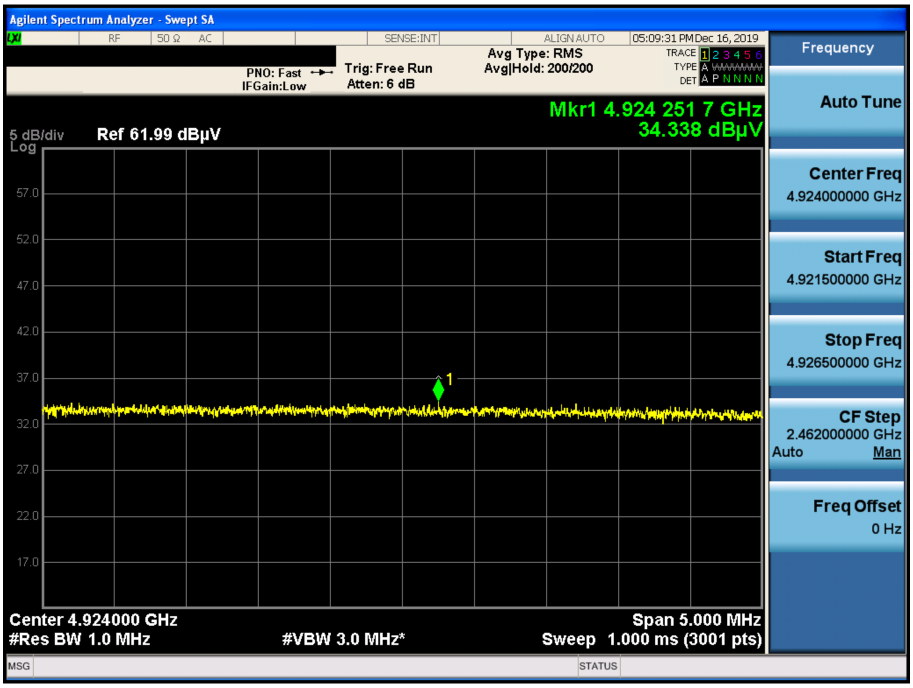
TM 1 & 2412 & X axis & Ver **Detector Mode : AV**



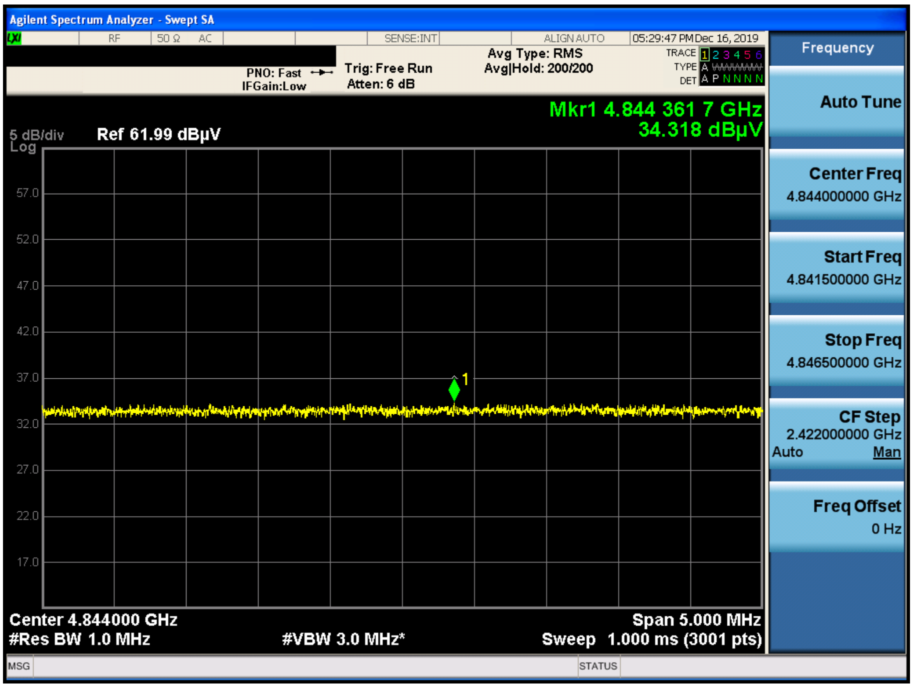
TM 2 & 2437 & Z axis & Ver **Detector Mode : AV**



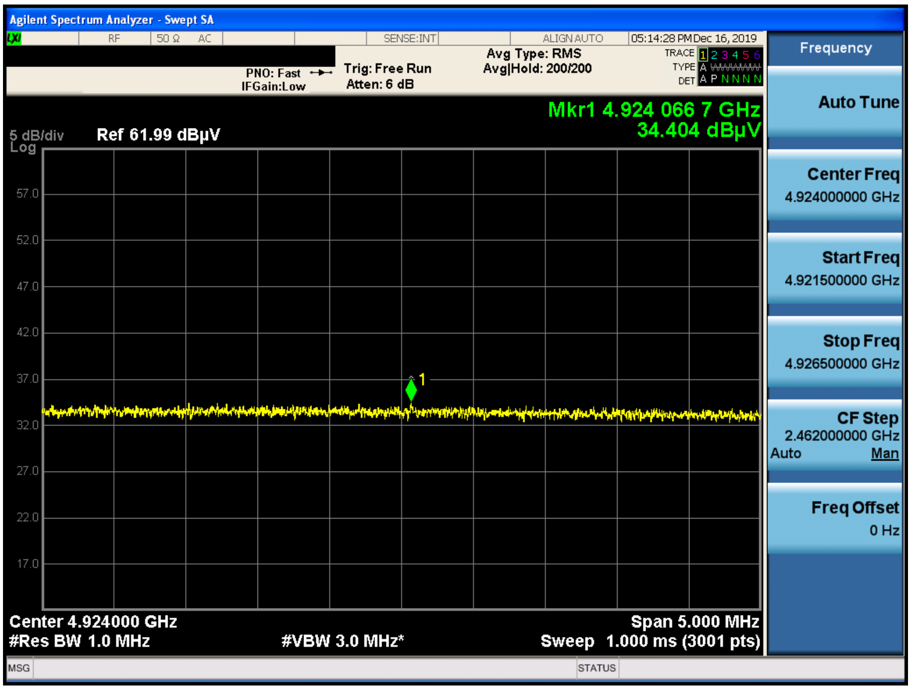
TM 3 & 2462 & Z axis & Ver **Detector Mode : AV**



TM 4 & 2422 & Z axis & Ver **Detector Mode : AV**



TM 5 & 2462 & Z axis & Ver **Detector Mode : AV**



TM 6 & 2422 & Z axis & Ver **Detector Mode : AV**