

Appendix A U-NII: Emission Bandwidth & DTS (6 dB) Bandwidth

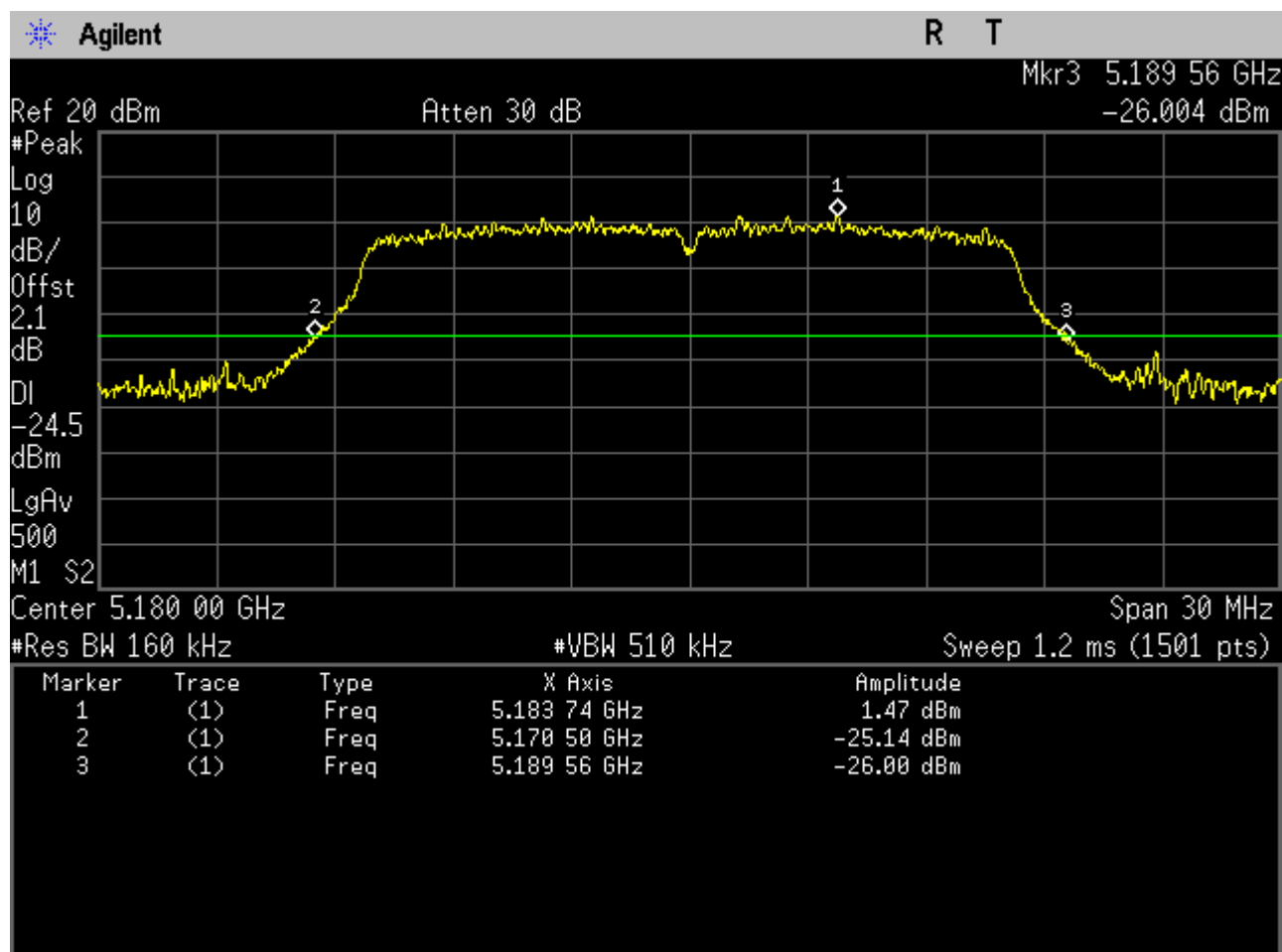
1 Result Table

Test Mode	Test Channel	Frequency[M Hz]	Ant	26dB Emission Bandwidth [MHz]	Verdict
11A	36	5180	Ant 1	19.06	pass
11A	36	5180	Ant 2	18.98	pass
11A	40	5200	Ant 1	19.16	pass
11A	40	5200	Ant 2	19.06	pass
11A	48	5240	Ant 1	19.04	pass
11A	48	5240	Ant 2	19.18	pass
11N20	36	5180	Ant 1	19.8	pass
11N20	36	5180	Ant 2	19.64	pass
11N20M	36	5180	Ant 1	19.28	pass
11N20M	36	5180	Ant 2	19.54	pass
11N20	40	5200	Ant 1	19.5	pass
11N20	40	5200	Ant 2	19.48	pass
11N20M	40	5200	Ant 1	19.42	pass
11N20M	40	5200	Ant 2	19.4	pass
11N20	48	5240	Ant 1	19.42	pass
11N20	48	5240	Ant 2	19.66	pass
11N20M	48	5240	Ant 1	19.6	pass
11N20M	48	5240	Ant 2	19.6	pass
11N40	38	5190	Ant 1	45.46	pass
11N40	38	5190	Ant 2	45.1	pass
11N40M	38	5190	Ant 1	45.4	pass
11N40M	38	5190	Ant 2	45.1	pass
11N40	46	5230	Ant 1	45.52	pass
11N40	46	5230	Ant 2	45.52	pass
11N40M	46	5230	Ant 1	46.02	pass
11N40M	46	5230	Ant 2	45.26	pass
Test Mode	Test Channel	Frequency[M Hz]	Ant	6dB Emission Bandwidth [MHz]	Verdict
11A	149	5745	Ant 1	15.68	pass
11A	149	5745	Ant 2	15.86	pass
11A	157	5785	Ant 1	15.44	pass
11A	157	5785	Ant 2	15.42	pass

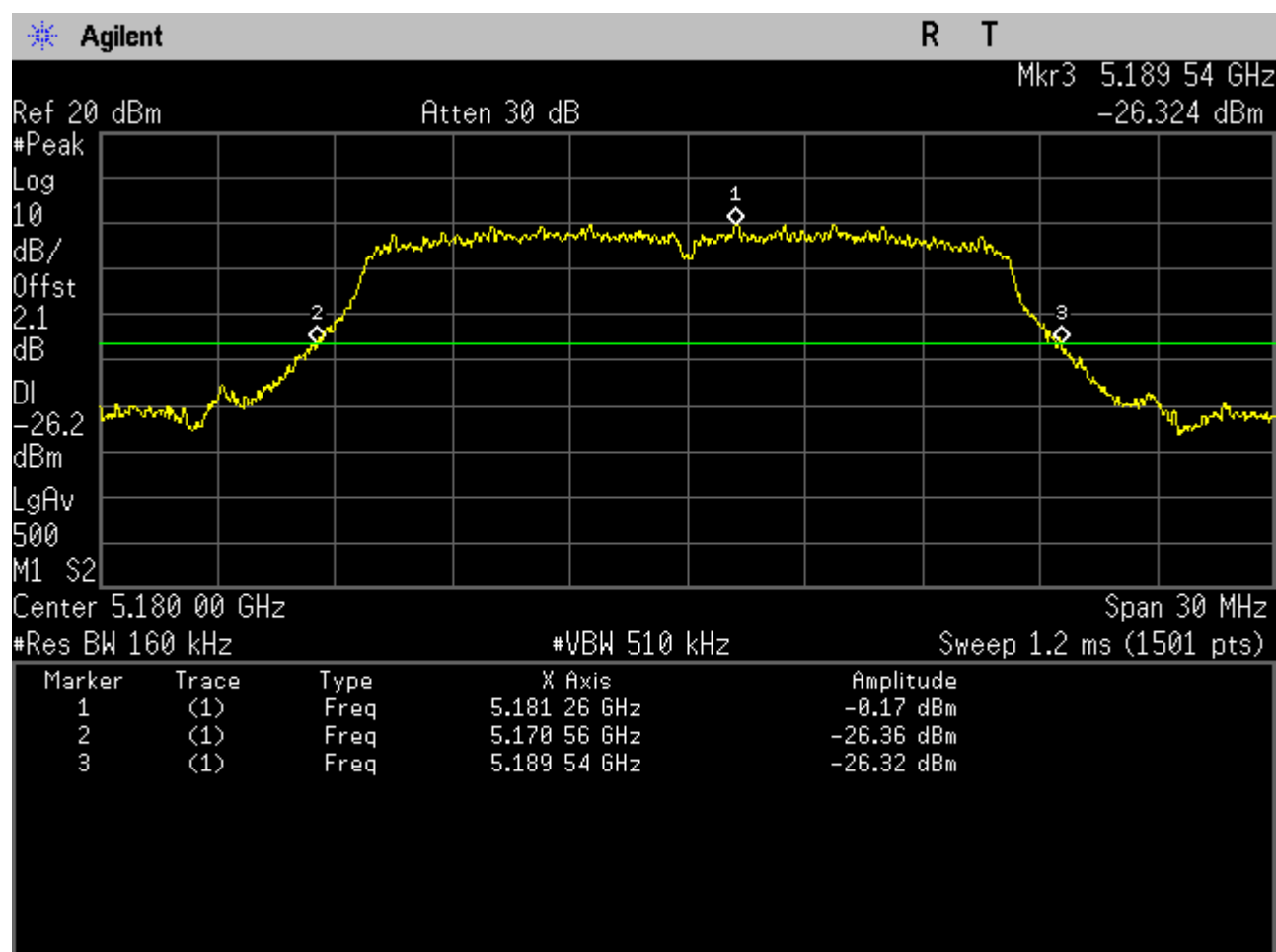
Test Mode	Test Channel	Frequency[MHz]	Ant	6dB Emission Bandwidth [MHz]	Verdict
11A	165	5825	Ant 1	15.5	pass
11A	165	5825	Ant 2	15.82	pass
11N20	149	5745	Ant 1	15.16	pass
11N20	149	5745	Ant 2	15.14	pass
11N20M	149	5745	Ant 1	16.4	pass
11N20M	149	5745	Ant 2	16.32	pass
11N20	157	5785	Ant 1	15.64	pass
11N20	157	5785	Ant 2	15.96	pass
11N20M	157	5785	Ant 1	16.42	pass
11N20M	157	5785	Ant 2	16.96	pass
11N20	165	5825	Ant 1	15.54	pass
11N20	165	5825	Ant 2	15.42	pass
11N20M	165	5825	Ant 1	16.68	pass
11N20M	165	5825	Ant 2	16.42	pass
11N40	151	5755	Ant 1	36.34	pass
11N40	151	5755	Ant 2	36.34	pass
11N40M	151	5755	Ant 1	36.42	pass
11N40M	151	5755	Ant 2	36.4	pass
11N40	159	5795	Ant 1	36.34	pass
11N40	159	5795	Ant 2	36.38	pass
11N40M	159	5795	Ant 1	36.48	pass
11N40M	159	5795	Ant 2	36.4	pass

2 Test Plot

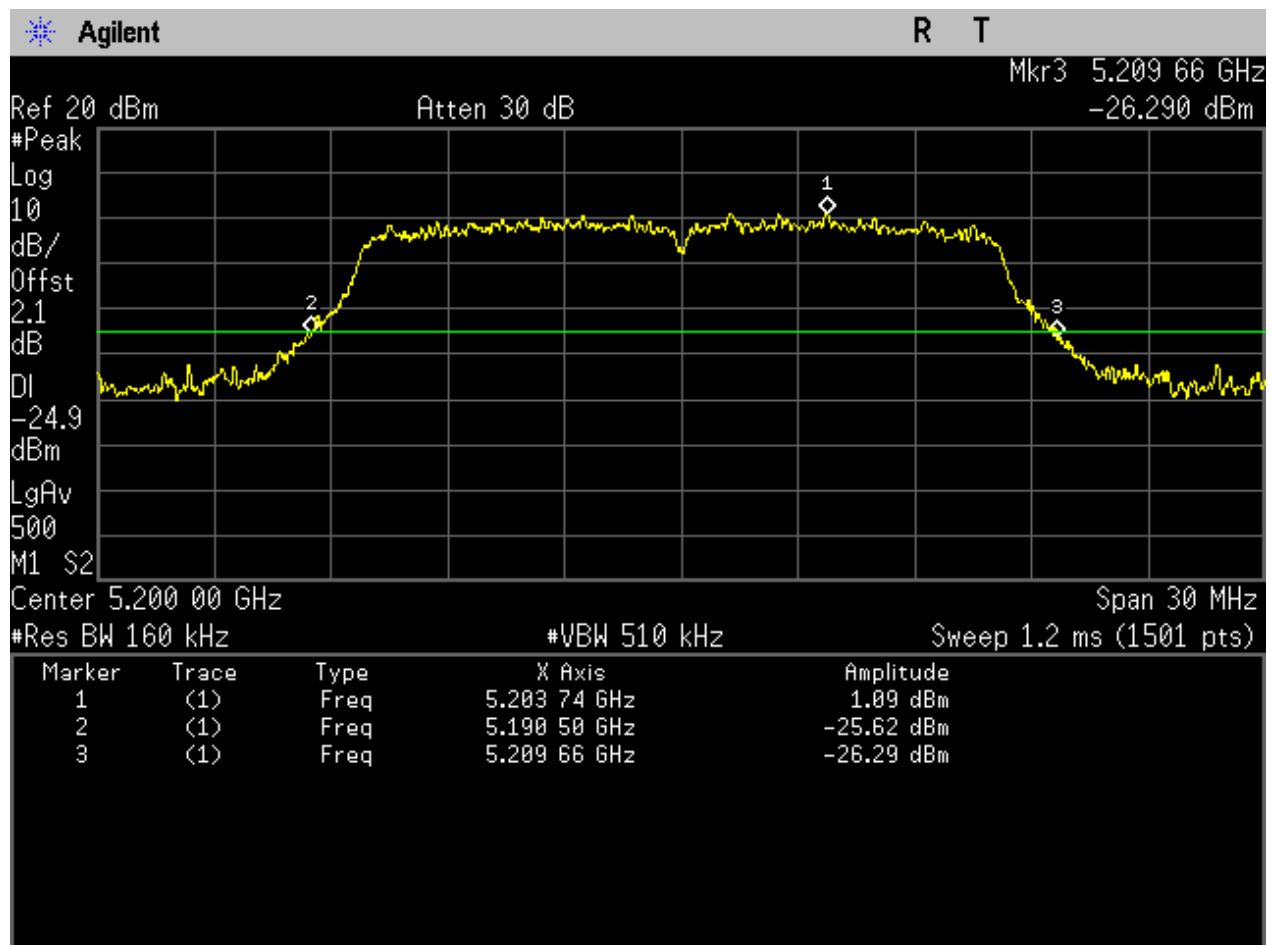
2.1 11A_36 Ant 1



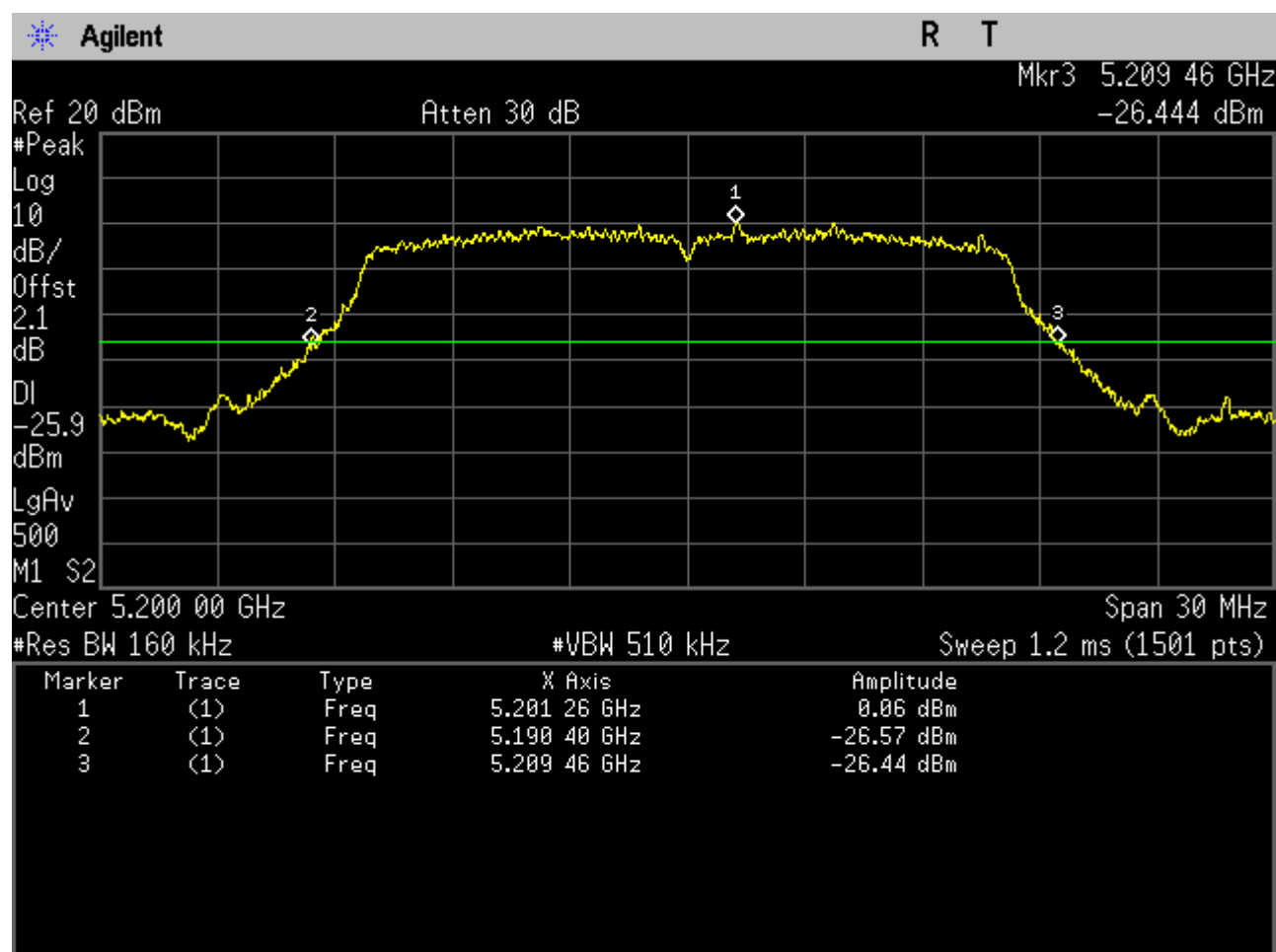
2.2 11A_36 Ant 2



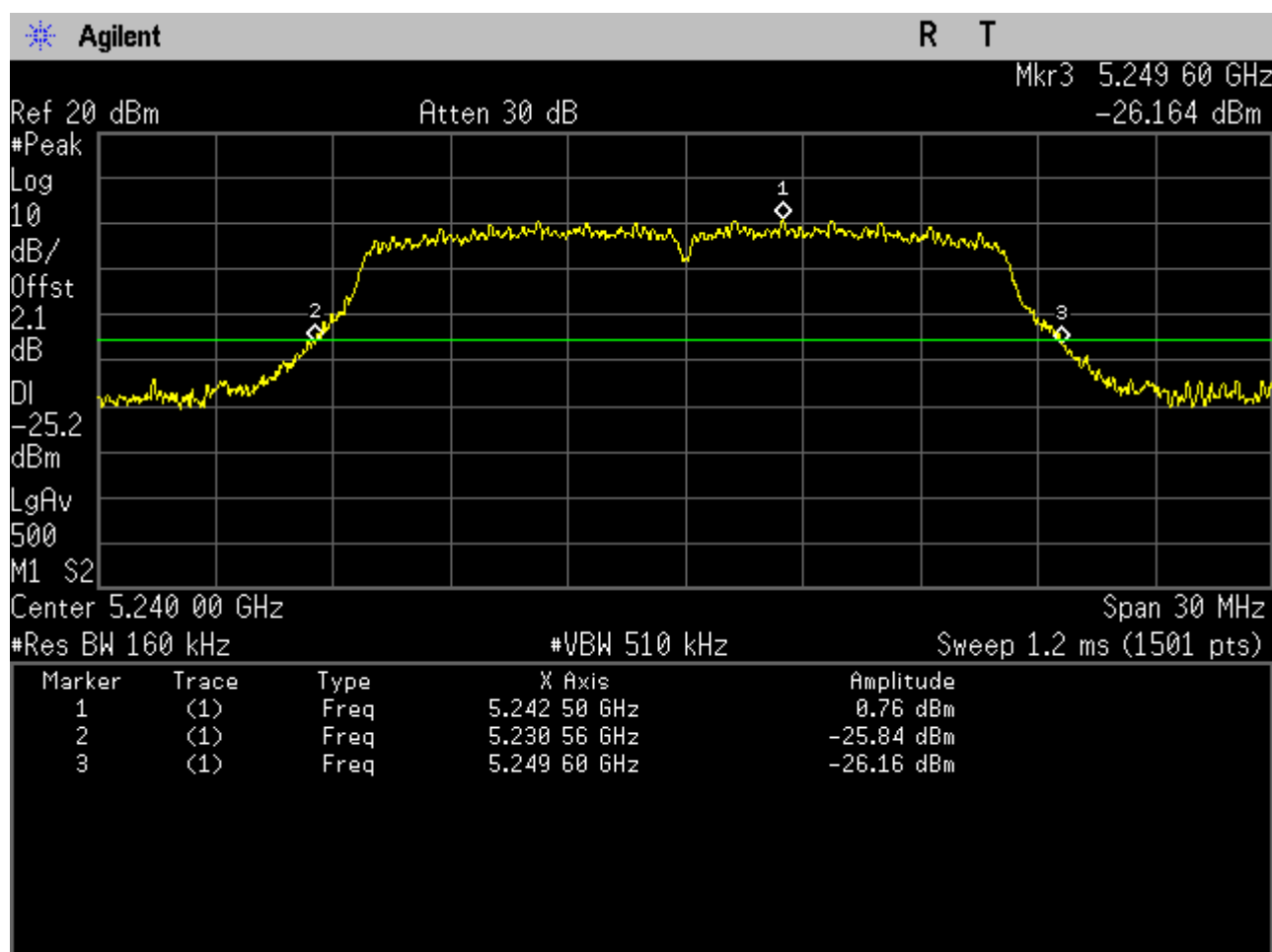
2.3 11A_40 Ant 1



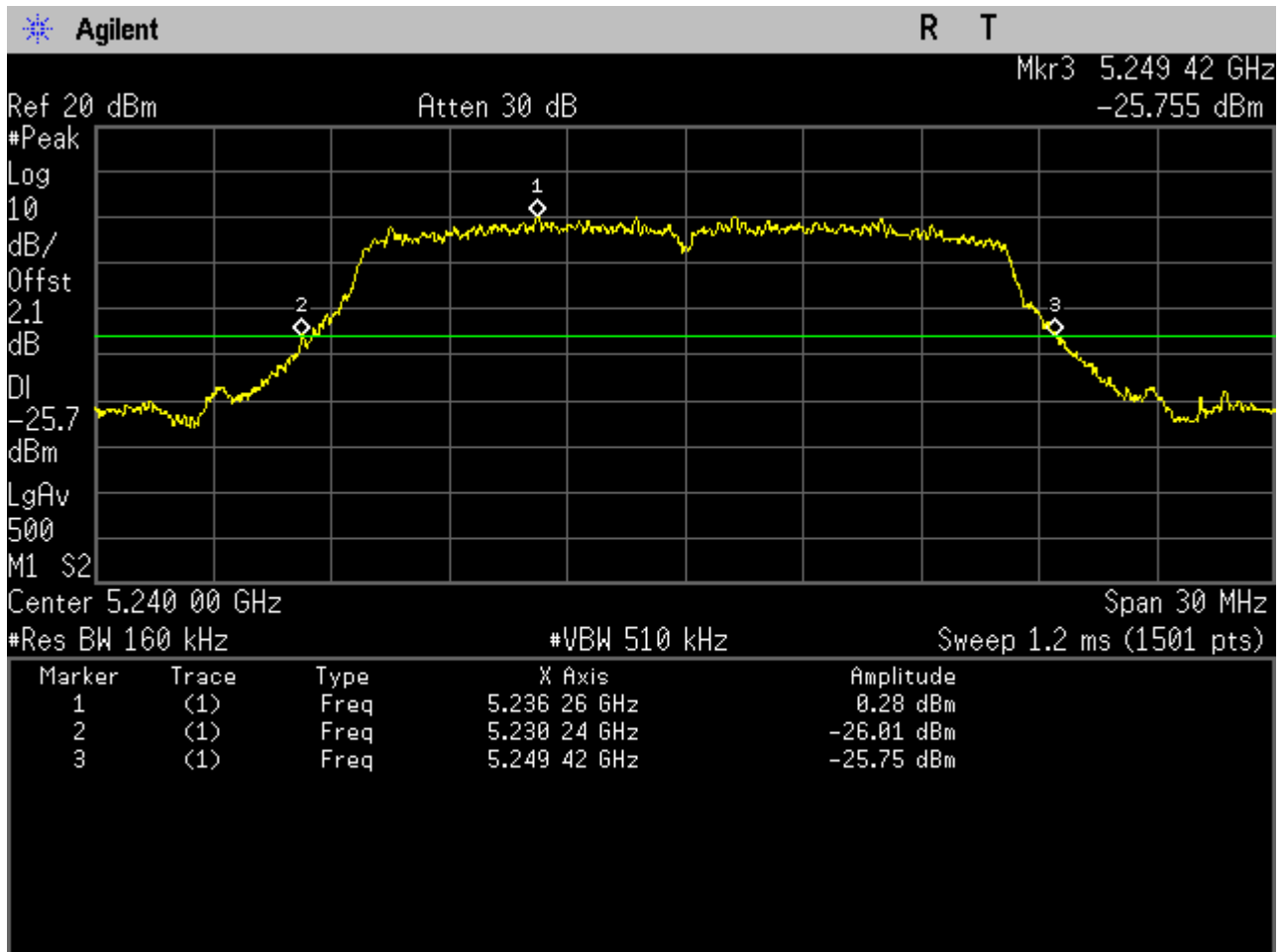
2.4 11A_40 Ant 2



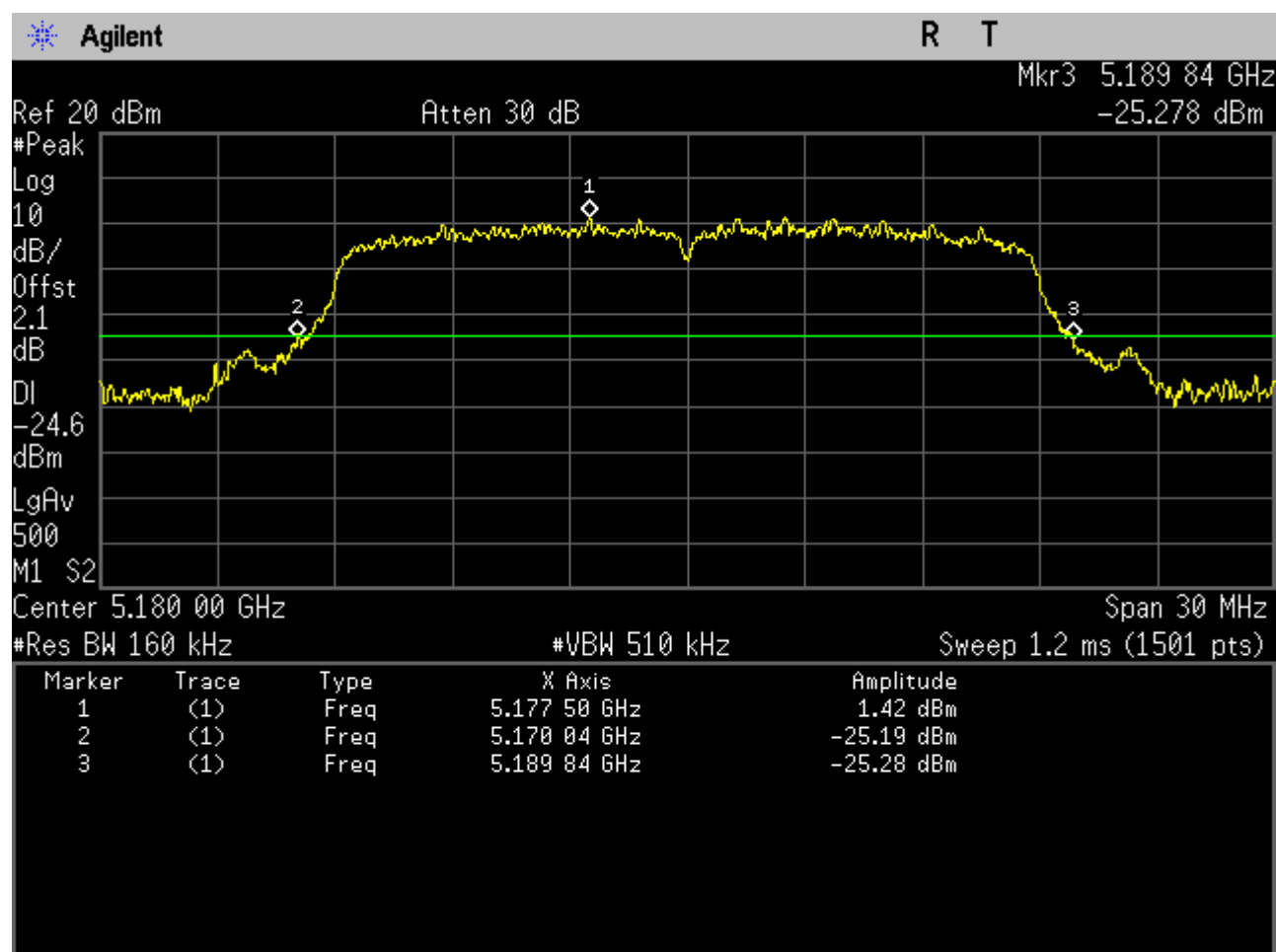
2.5 11A_48 Ant 1



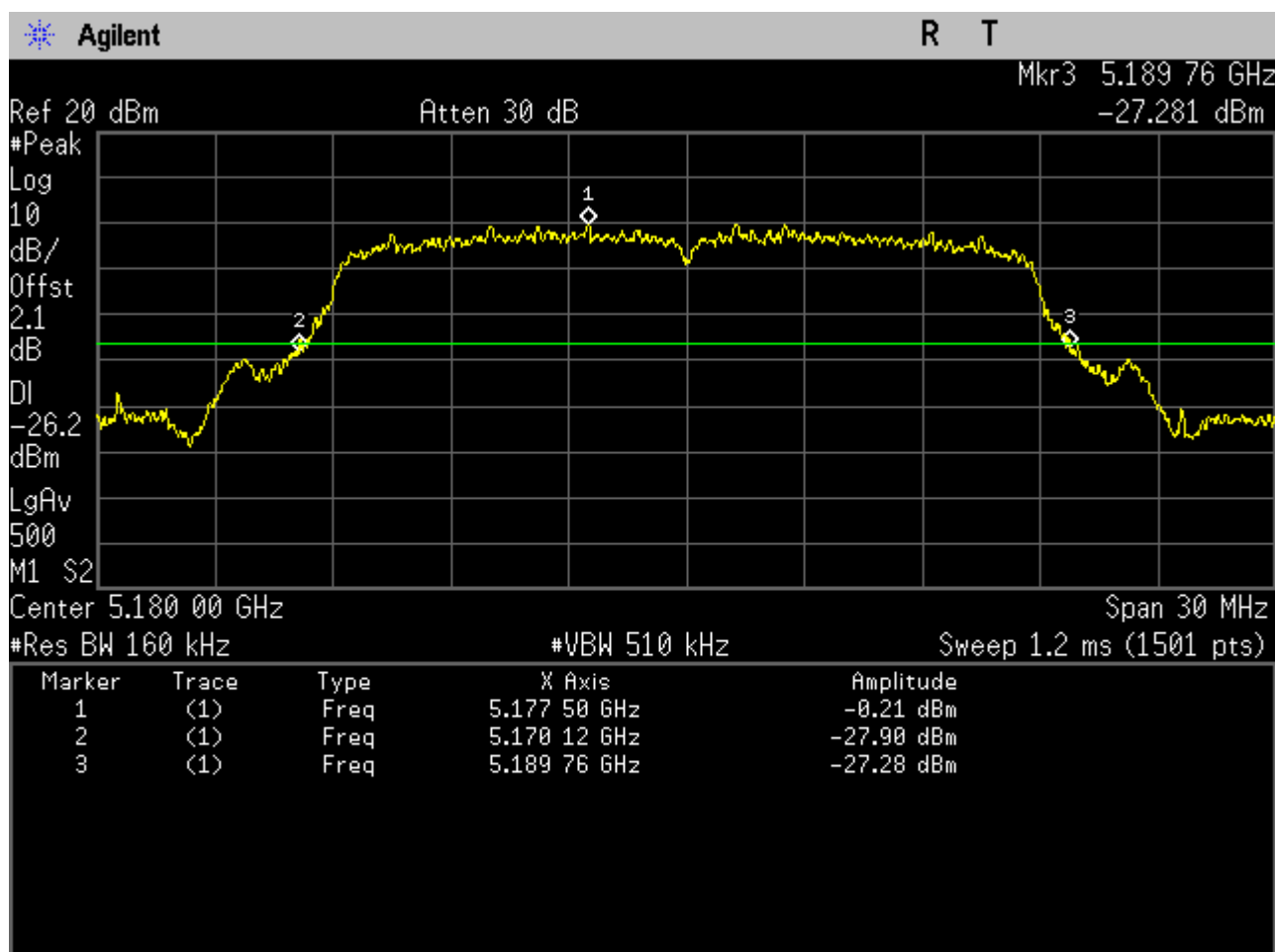
2.6 11A_48 Ant 2



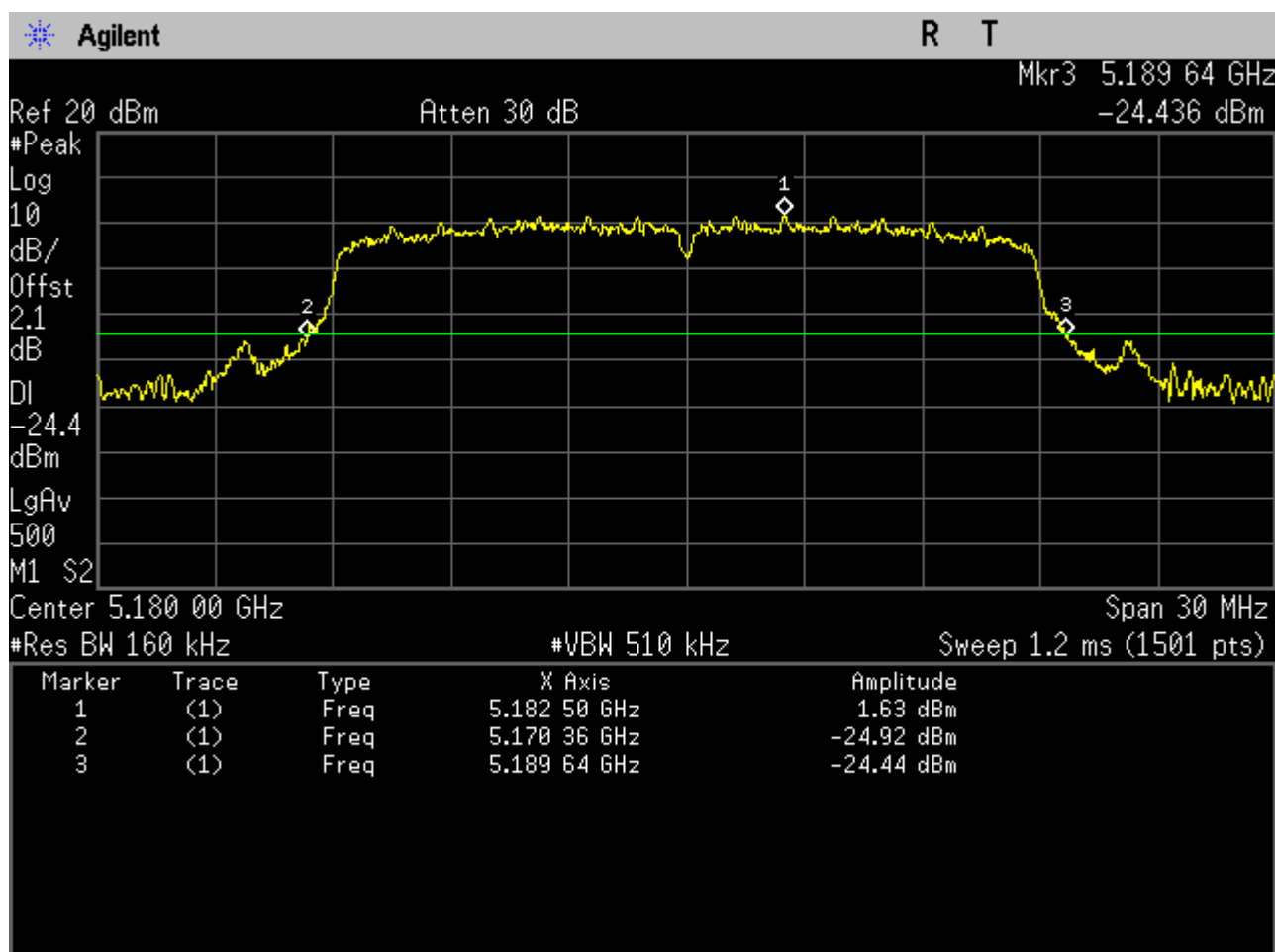
2.7 11N20_36 Ant 1



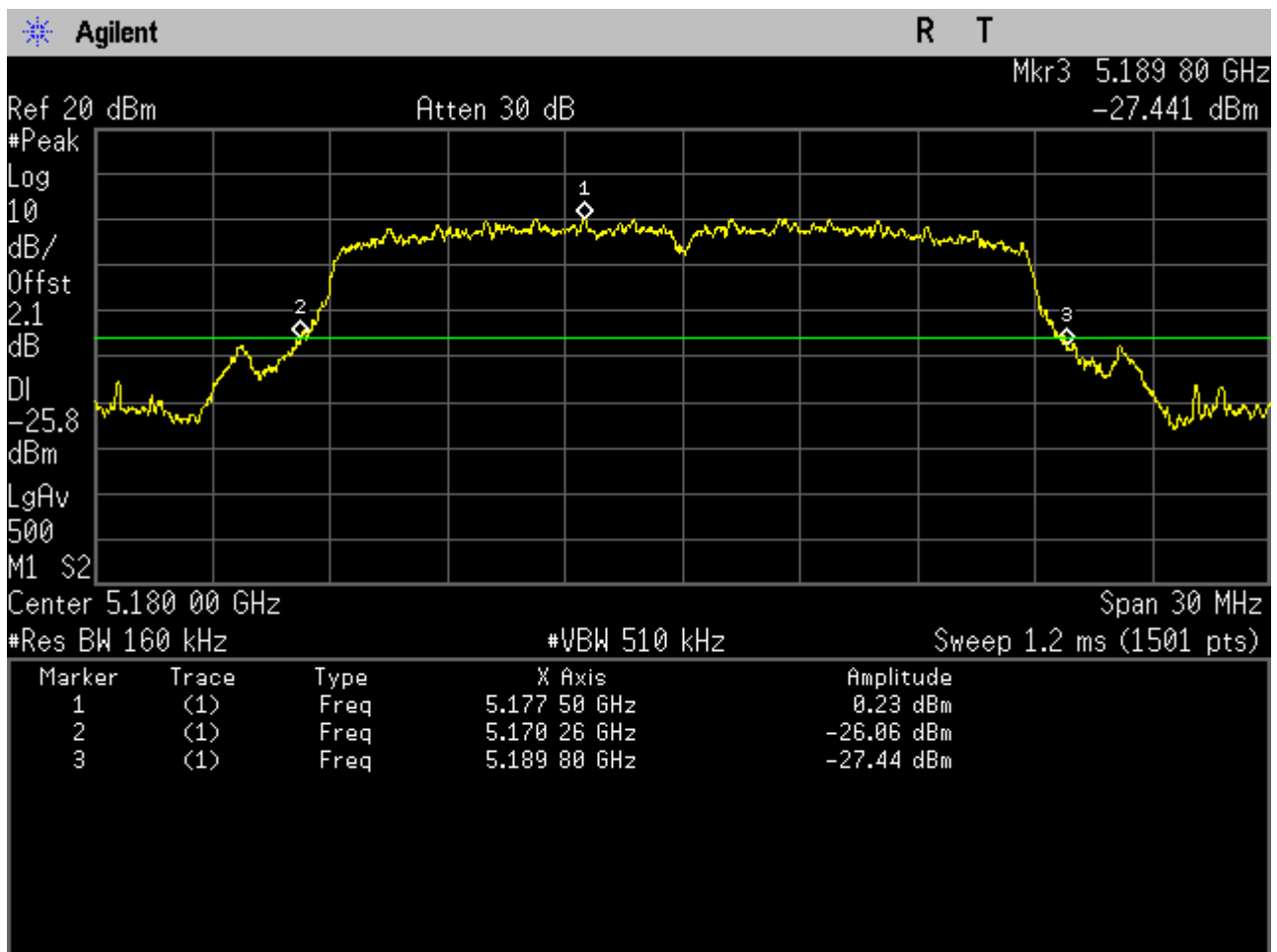
2.8 11N20_36 Ant 2



2.9 11N20M_36 Ant 1

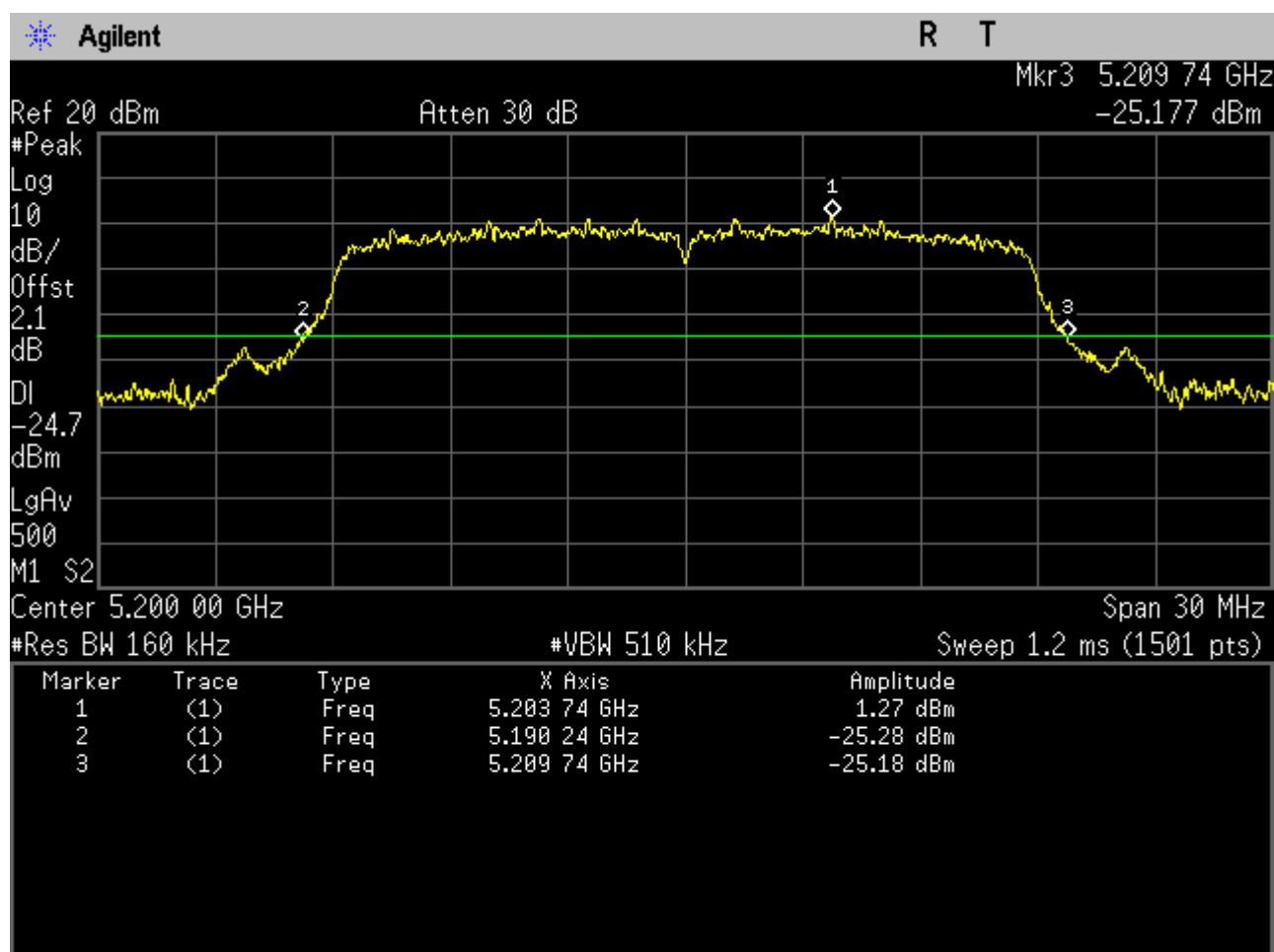


2.1011N20M_36 Ant 2

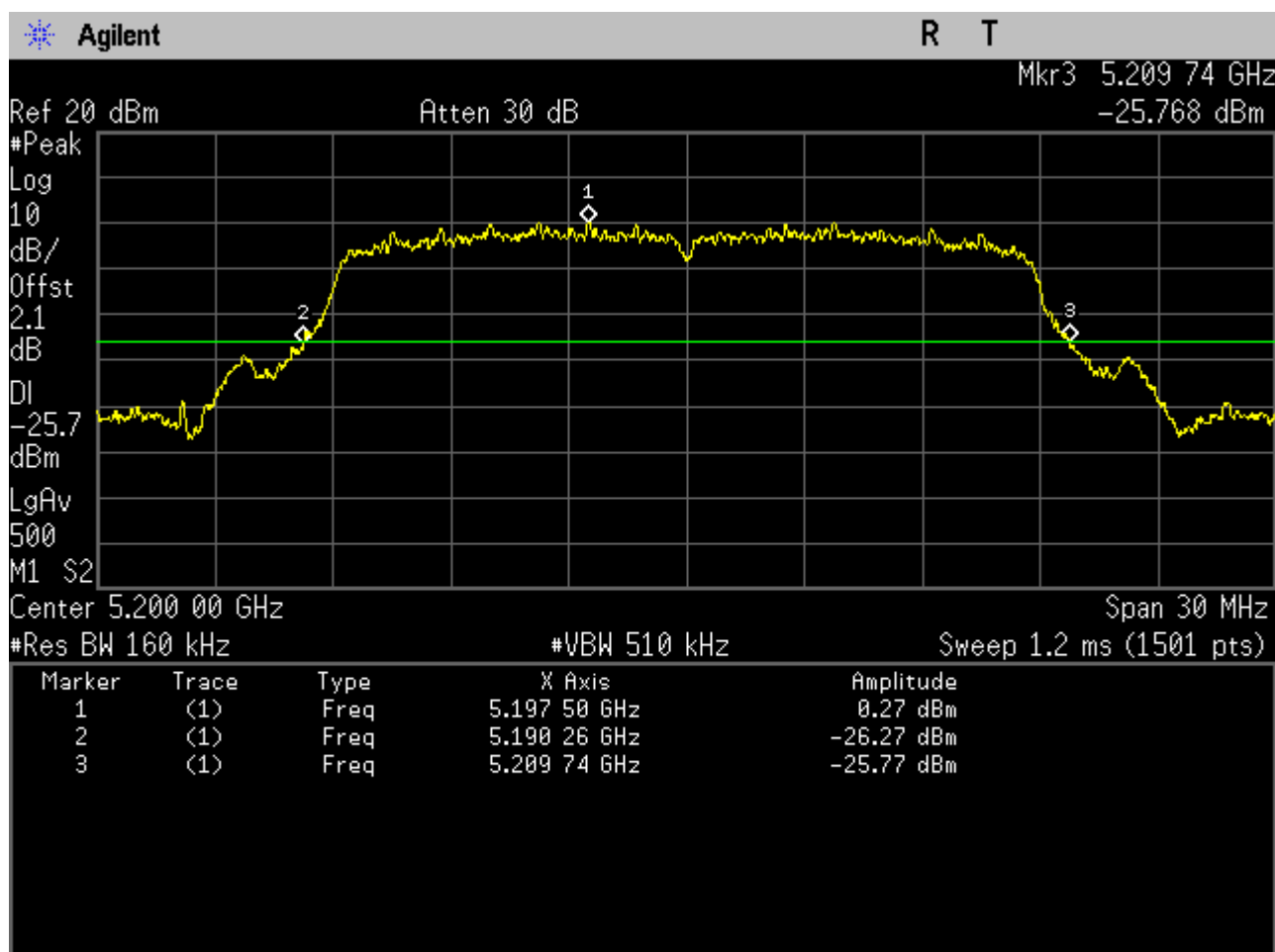




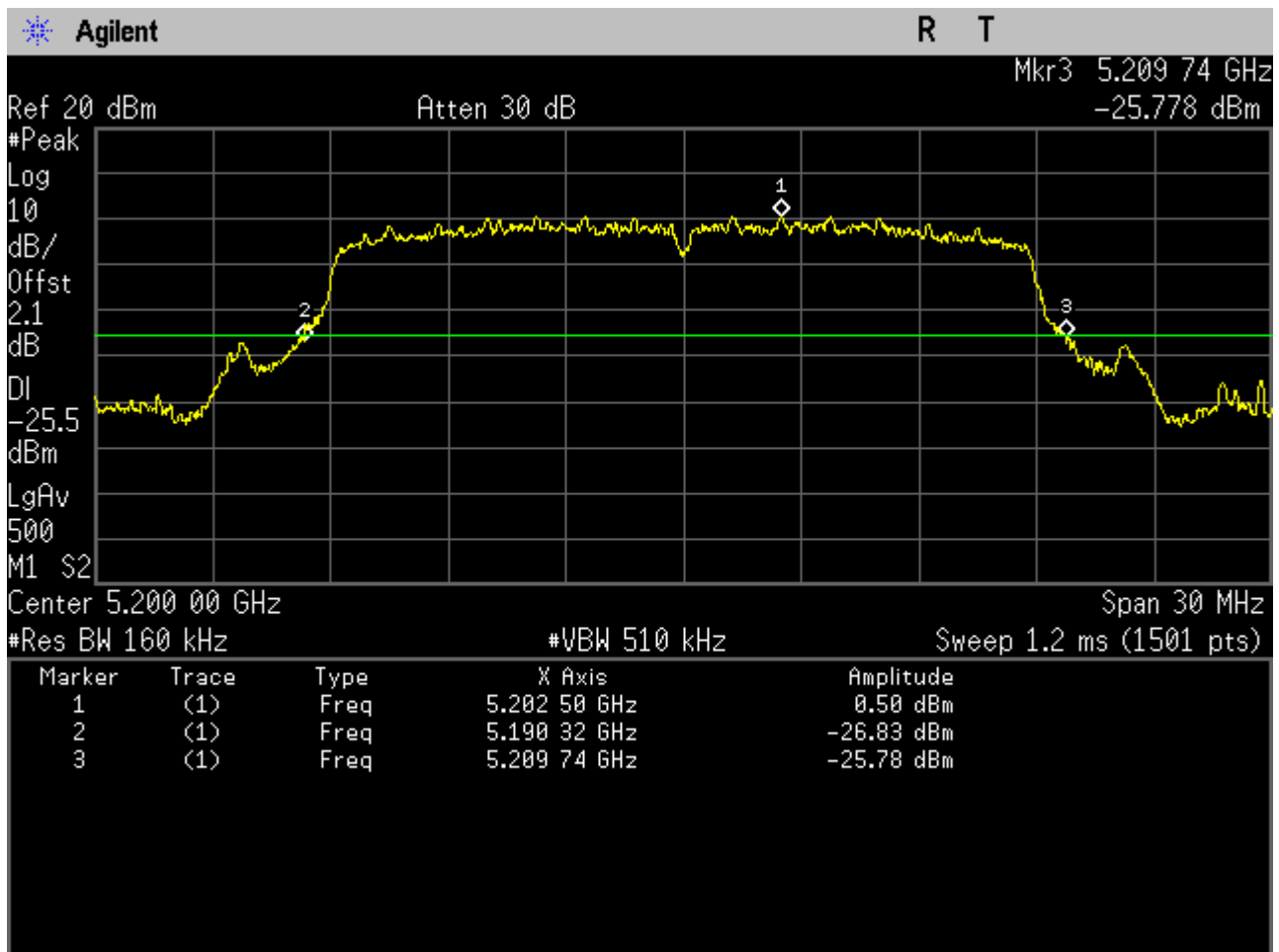
2.1111N20_40 Ant 1



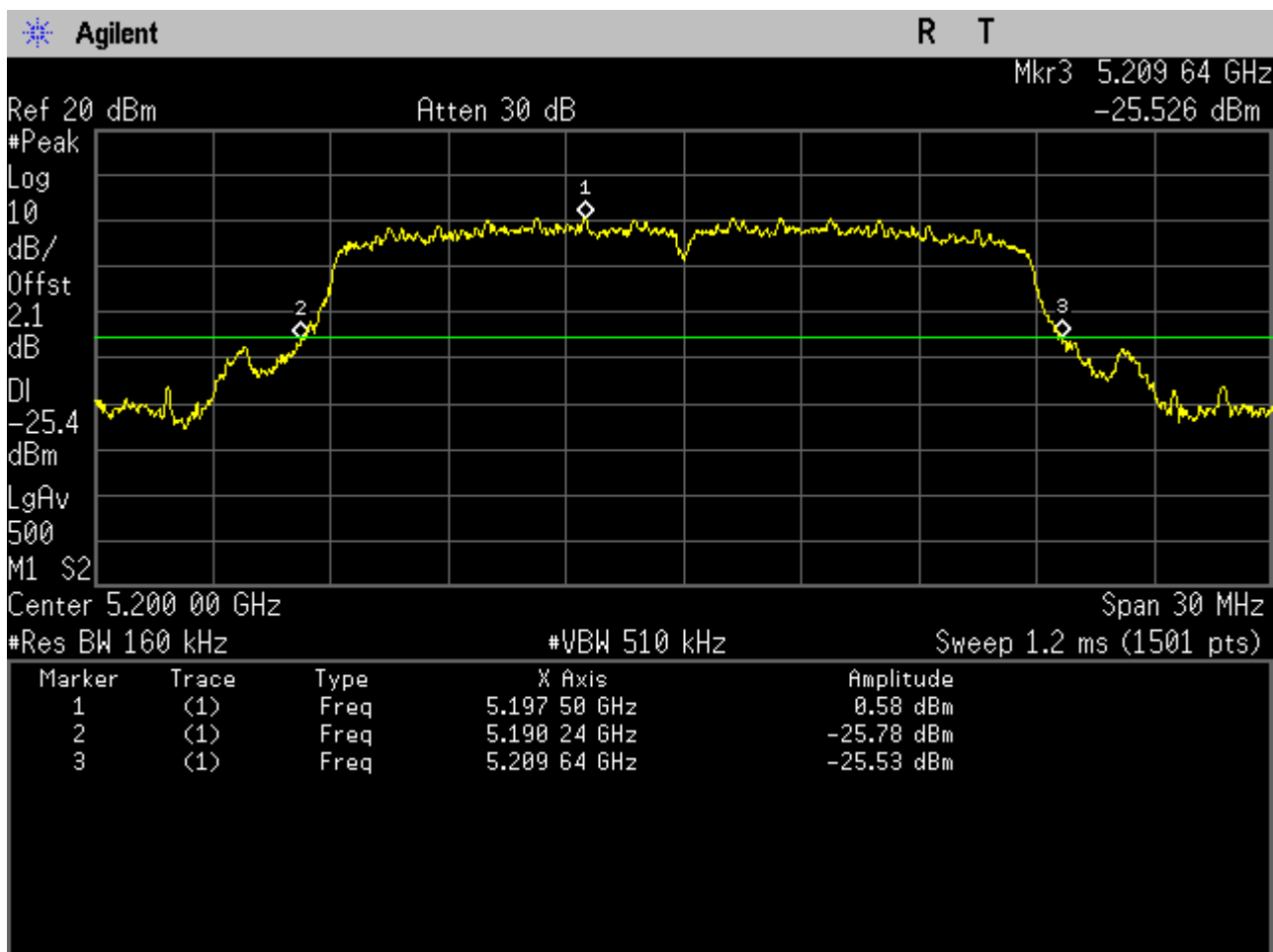
2.1211N20_40 Ant 2



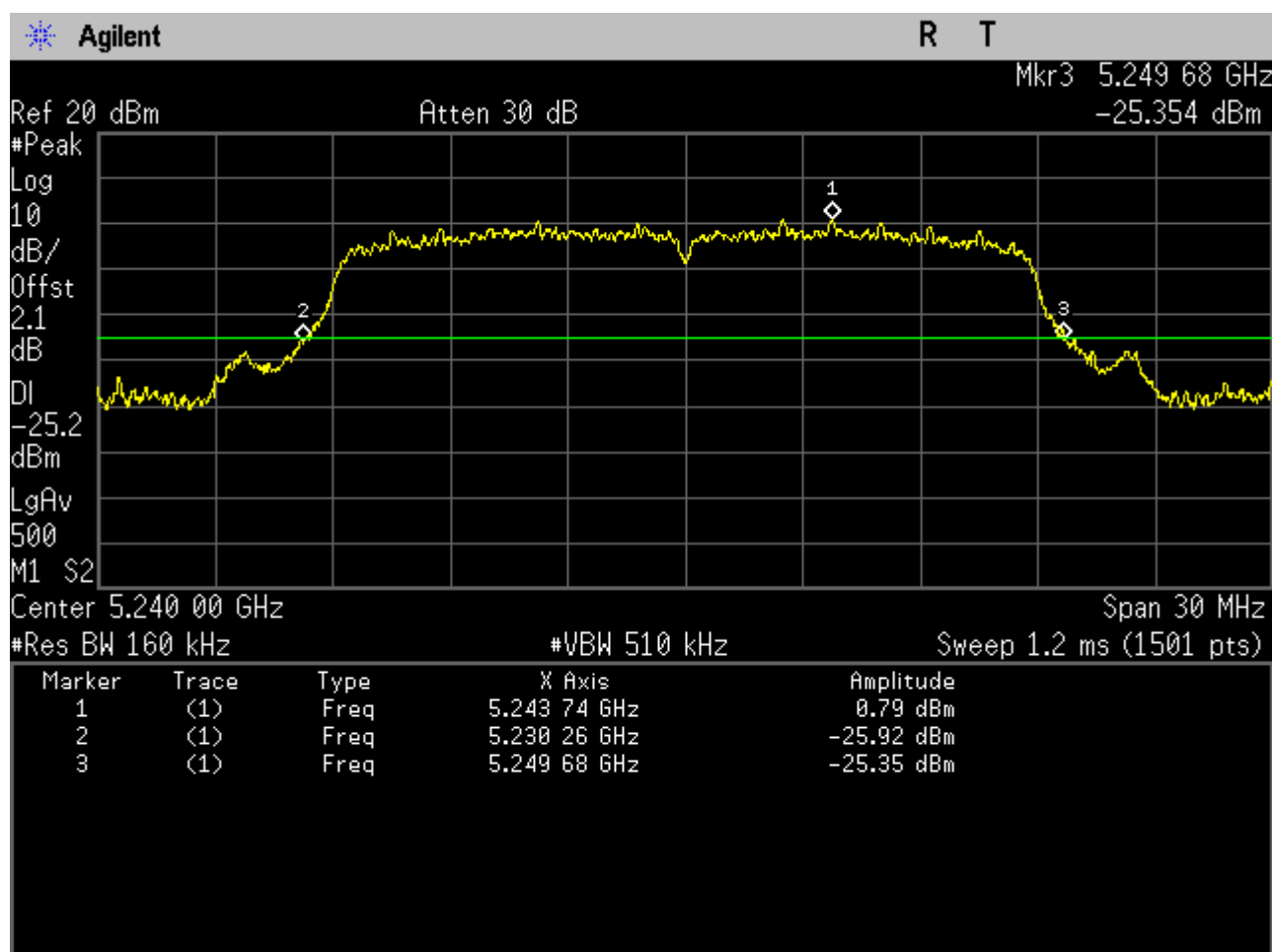
2.1311N20M_40 Ant 1



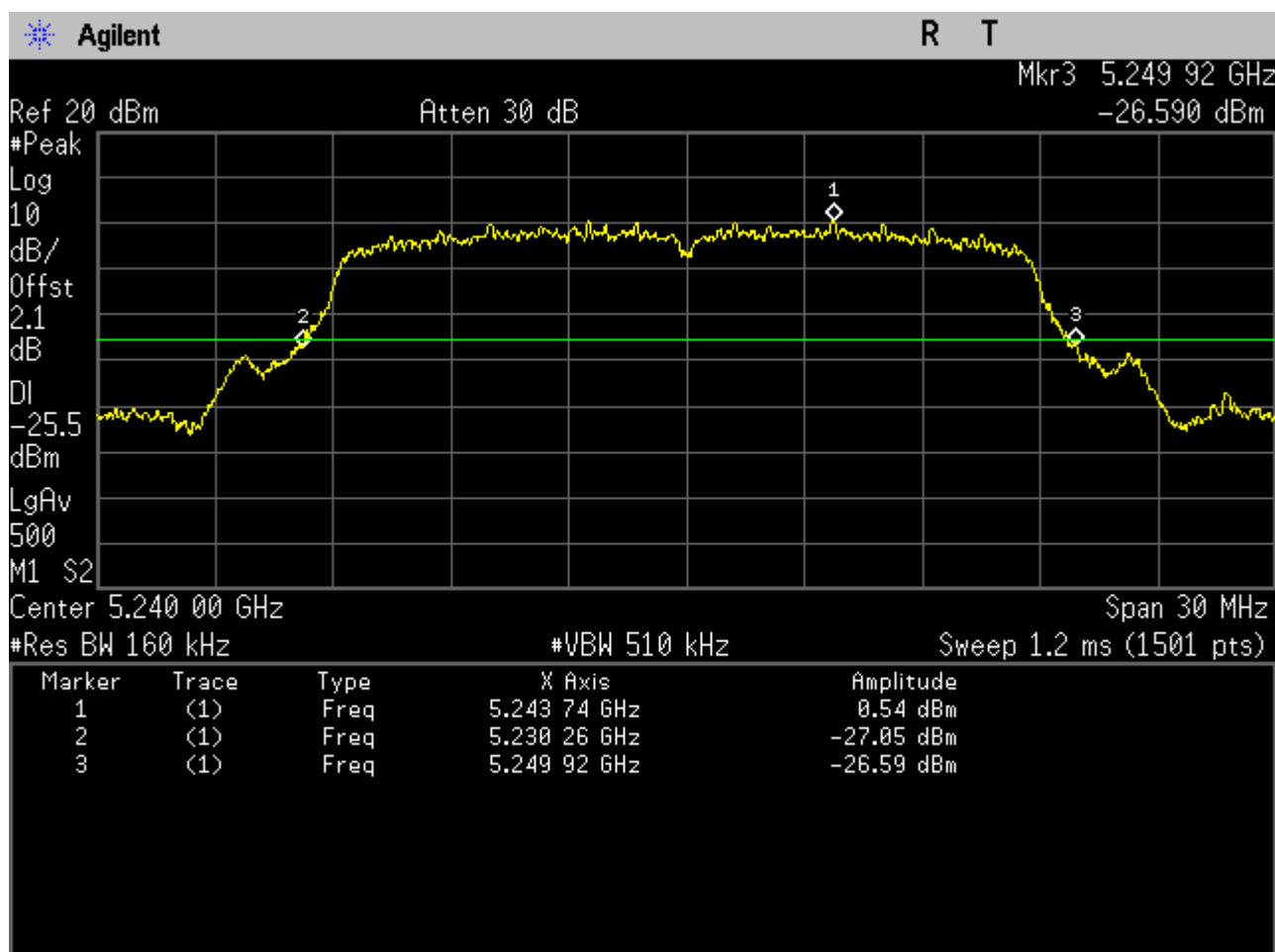
2.1411N20M_40 Ant 2



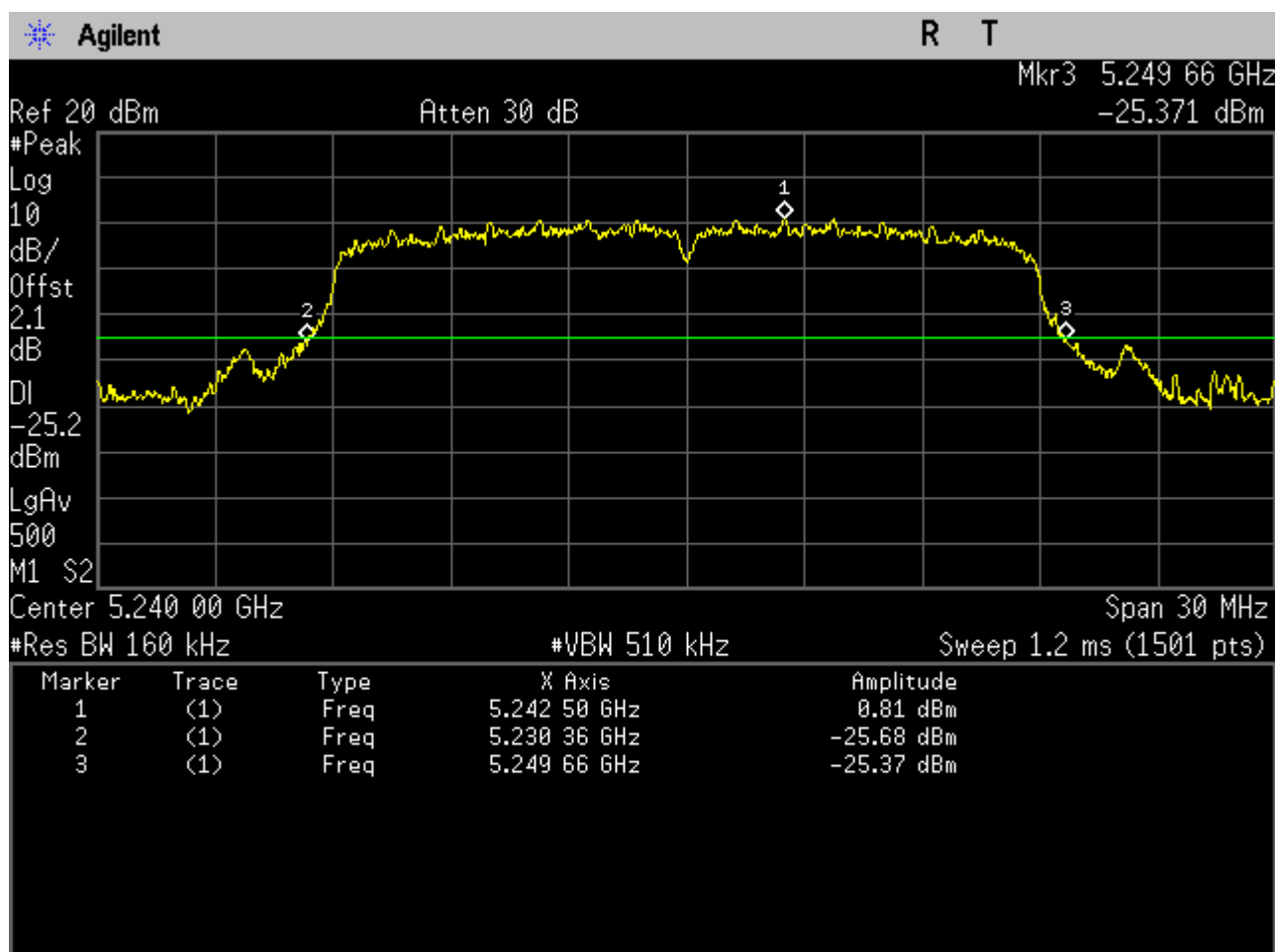
2.1511N20_48 Ant 1



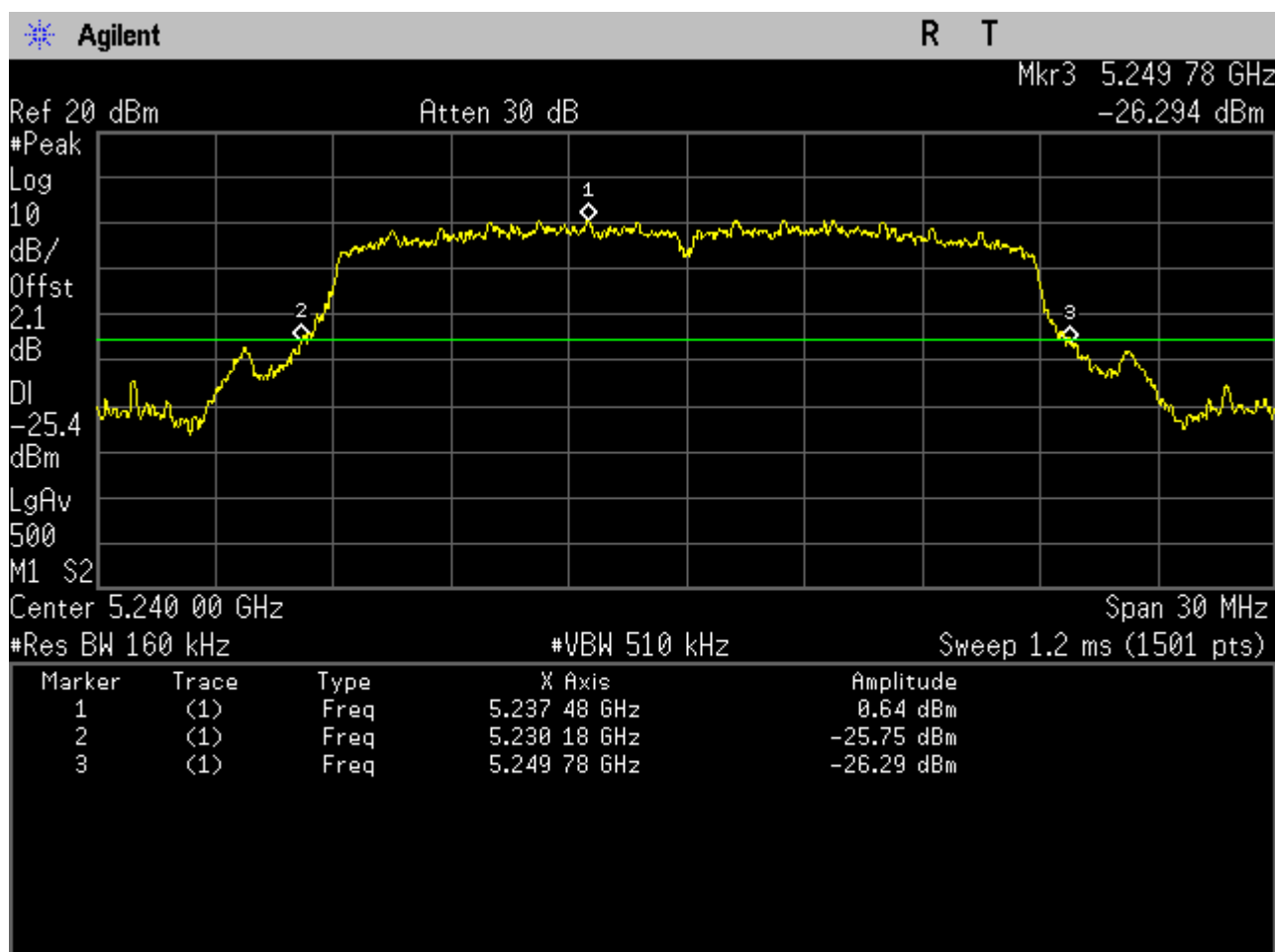
2.1611N20_48 Ant 2



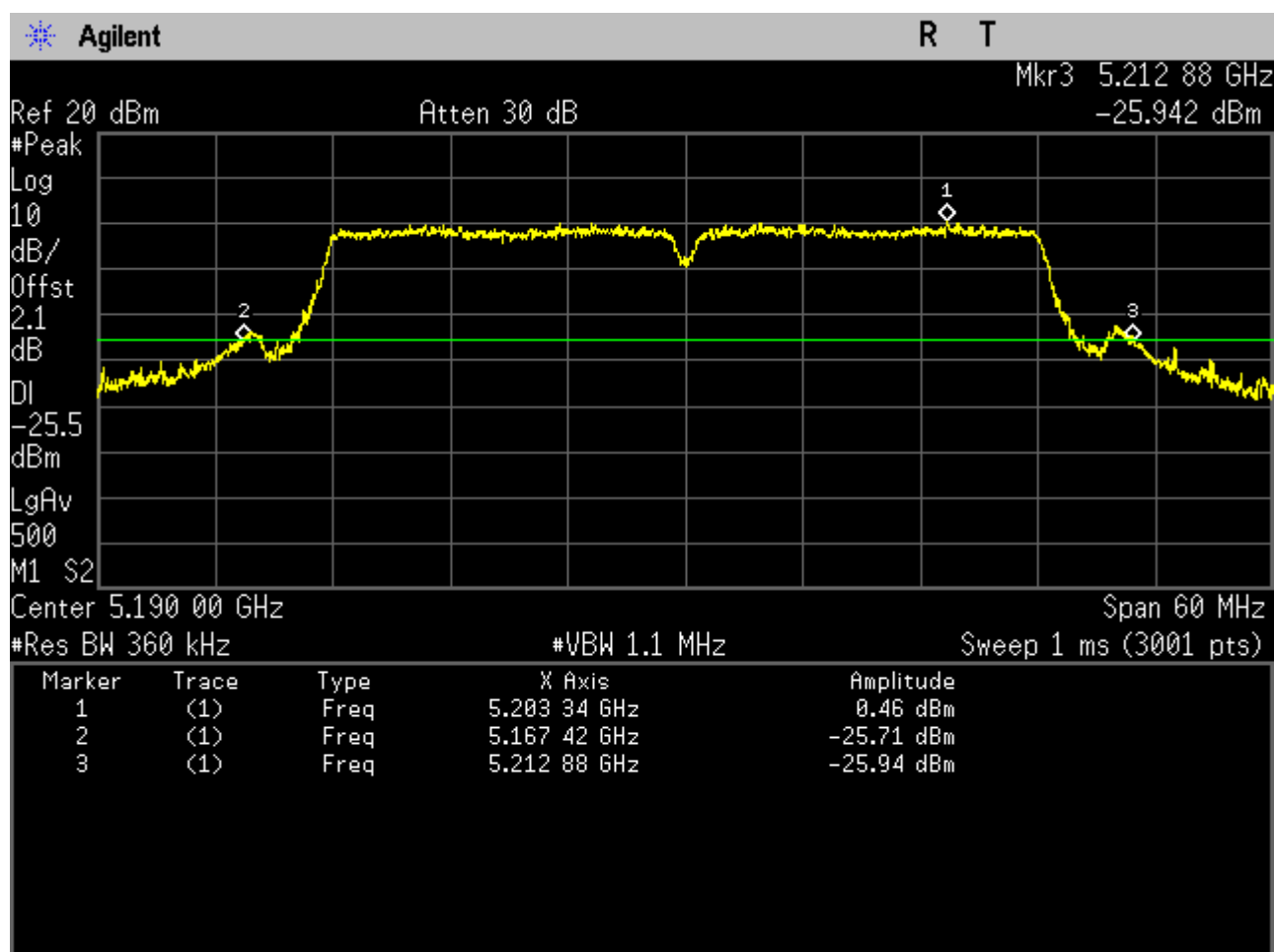
2.1711N20M_48 Ant 1



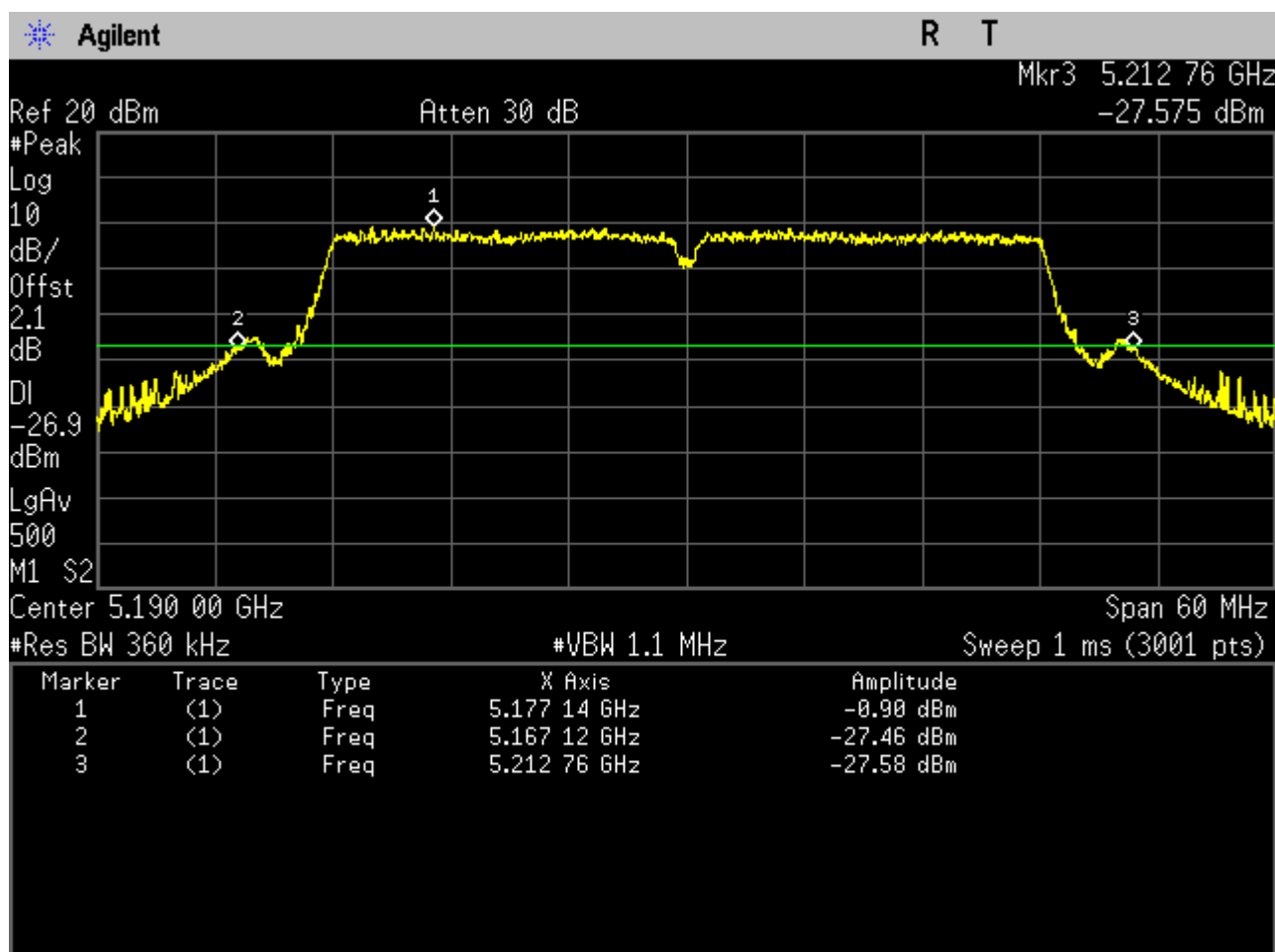
2.1811N20M_48 Ant 2



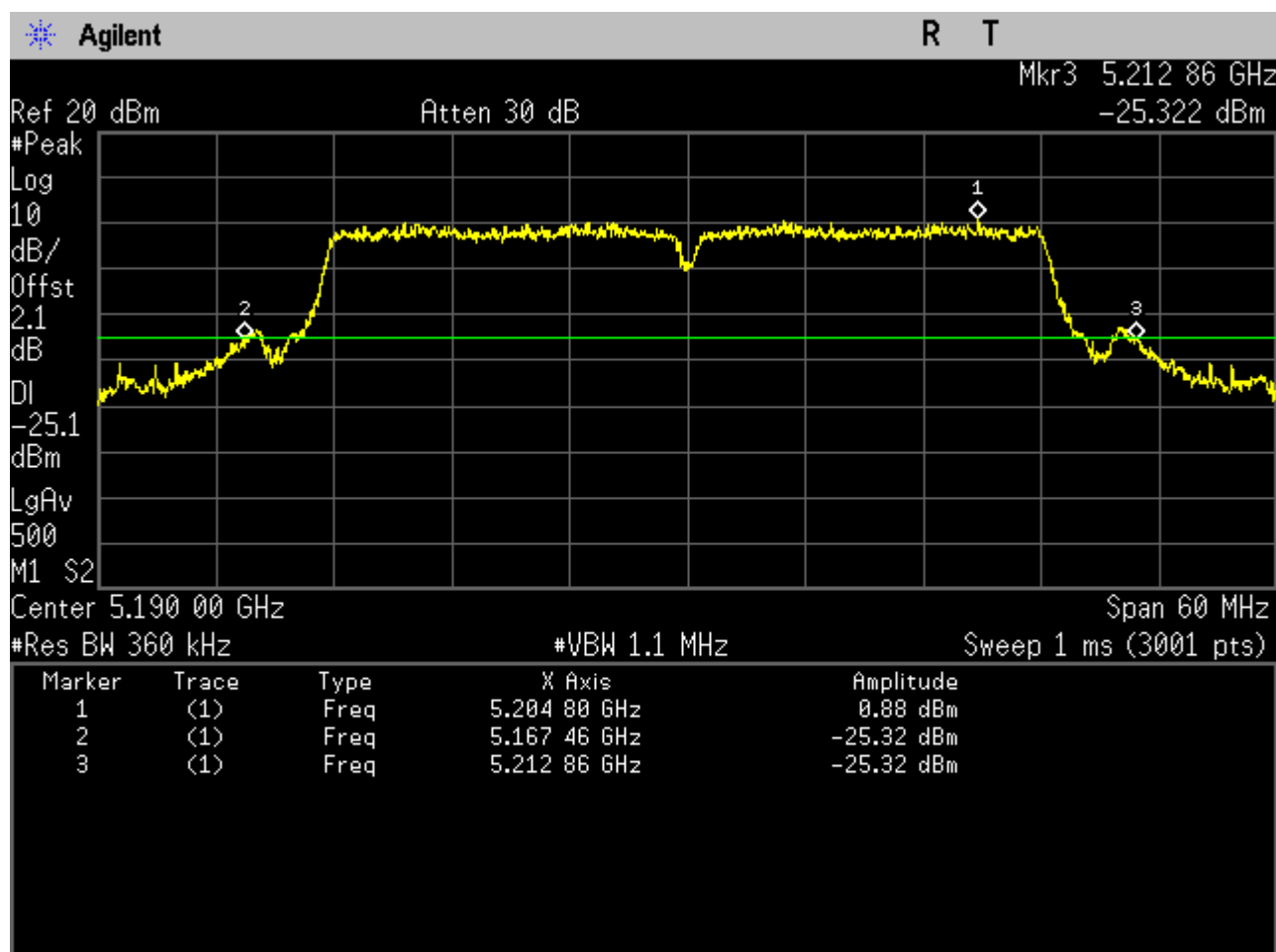
2.1911N40_38 Ant 1



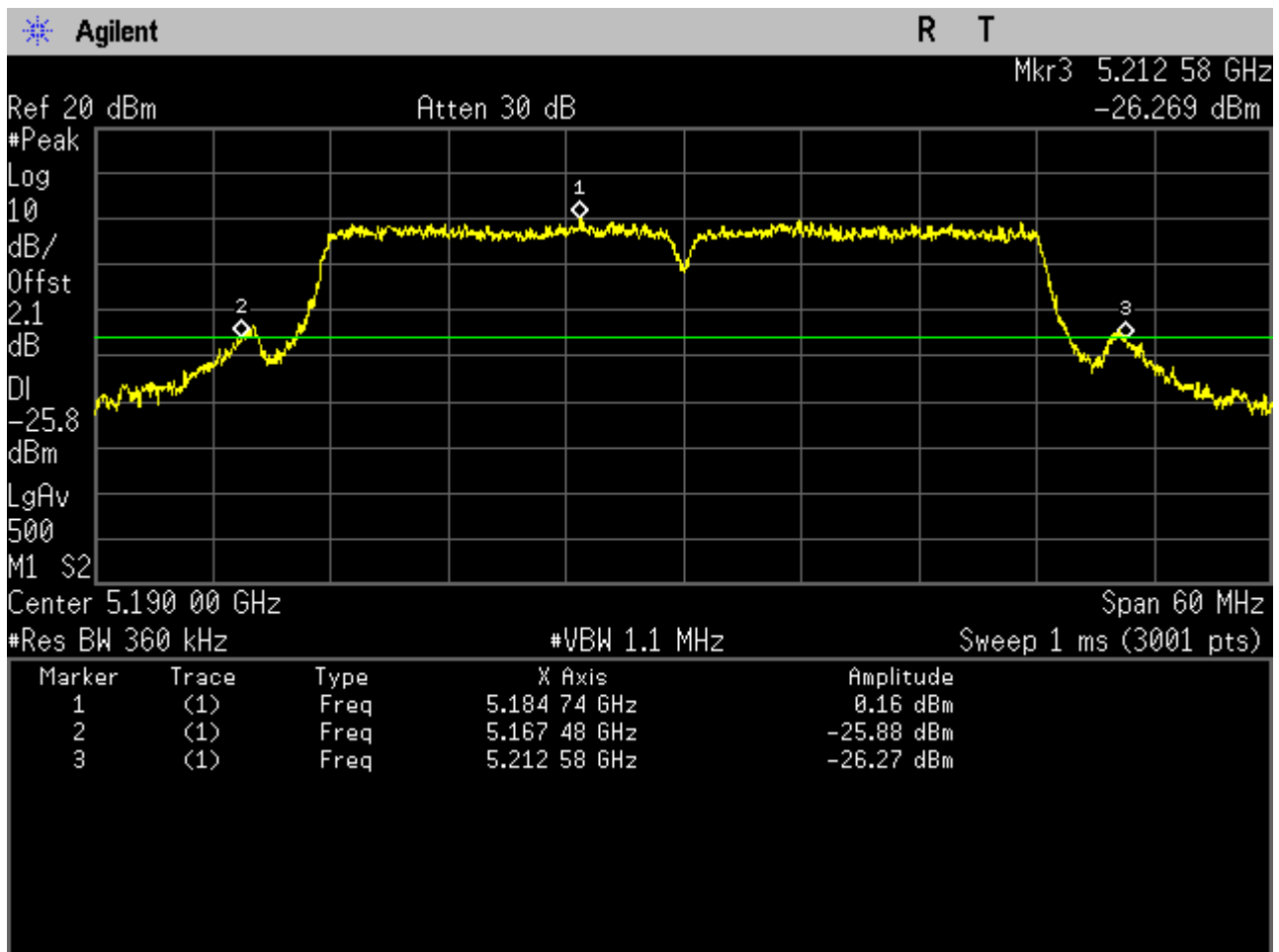
2.2011N40_38 Ant 2



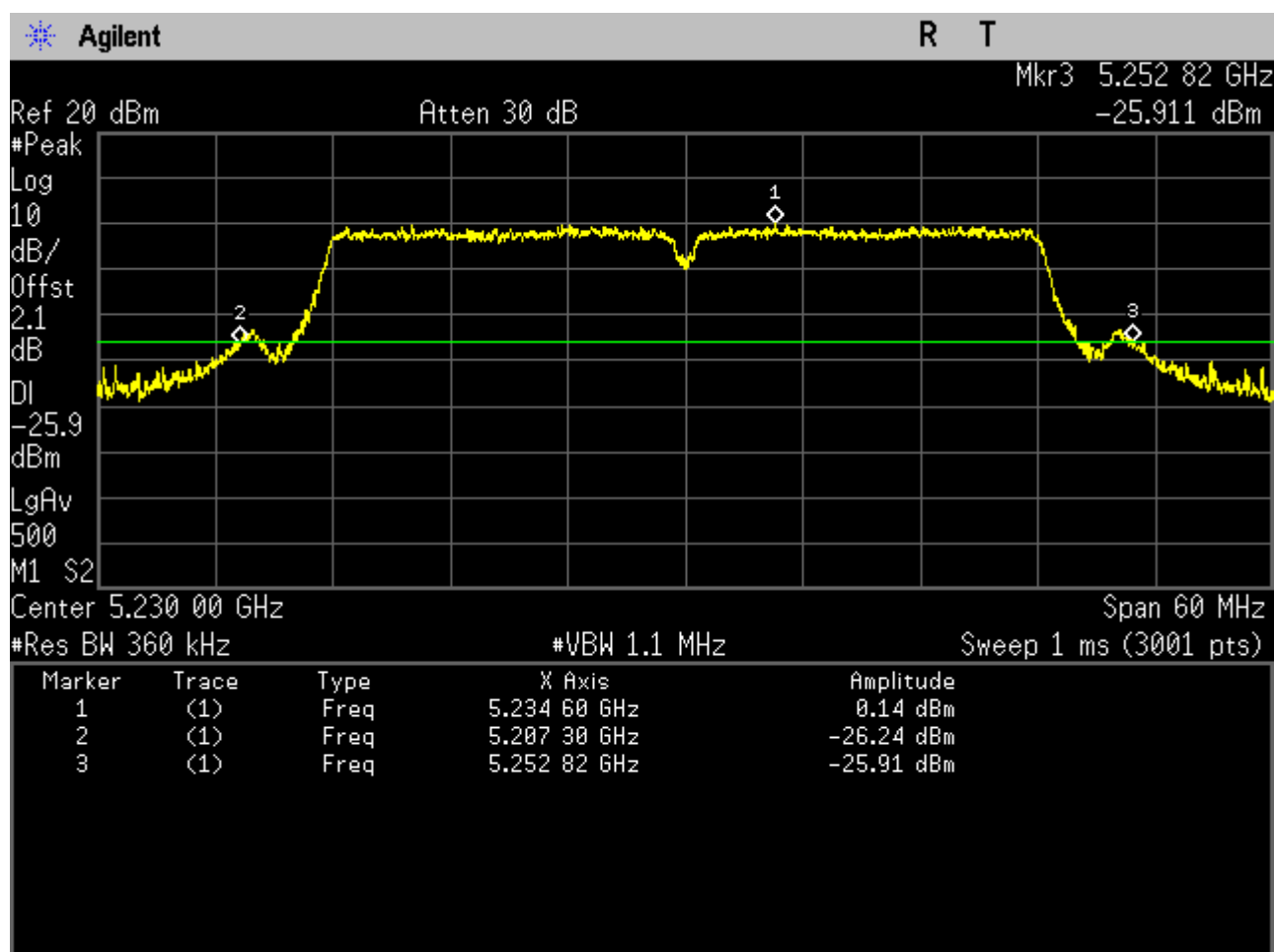
2.2111N40M_38 Ant 1



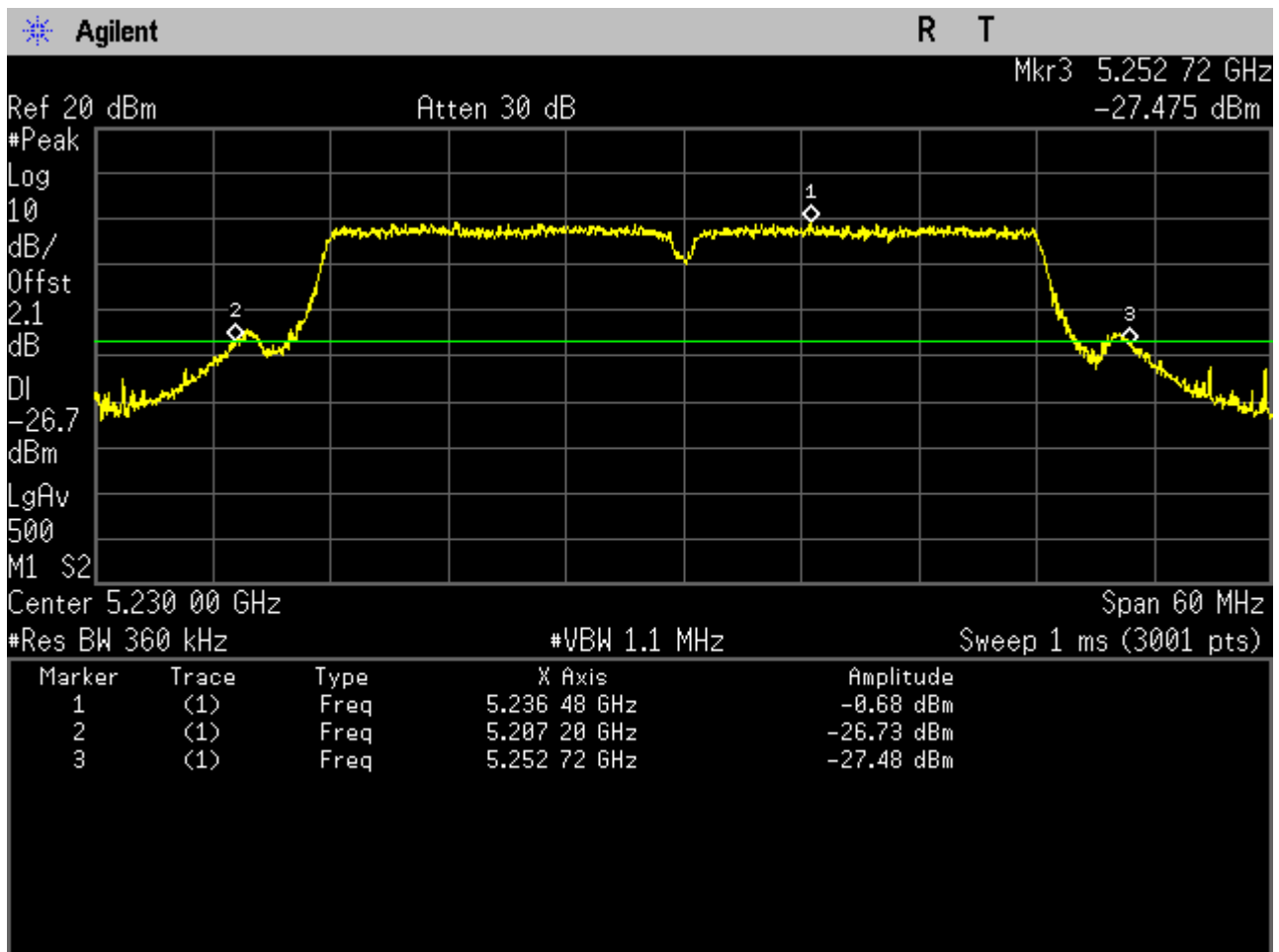
2.2211N40M_38 Ant 2



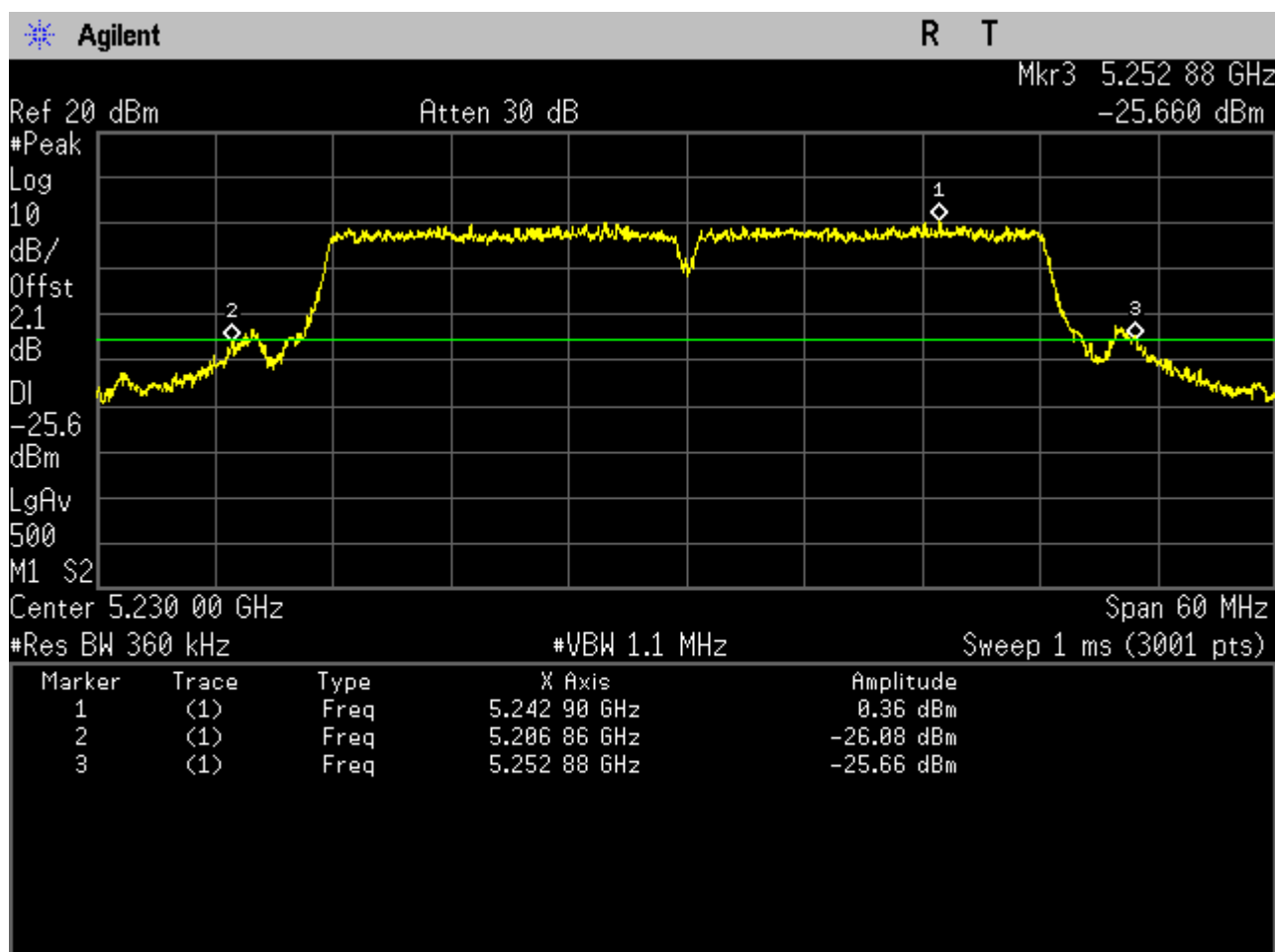
2.2311N40_46 Ant 1



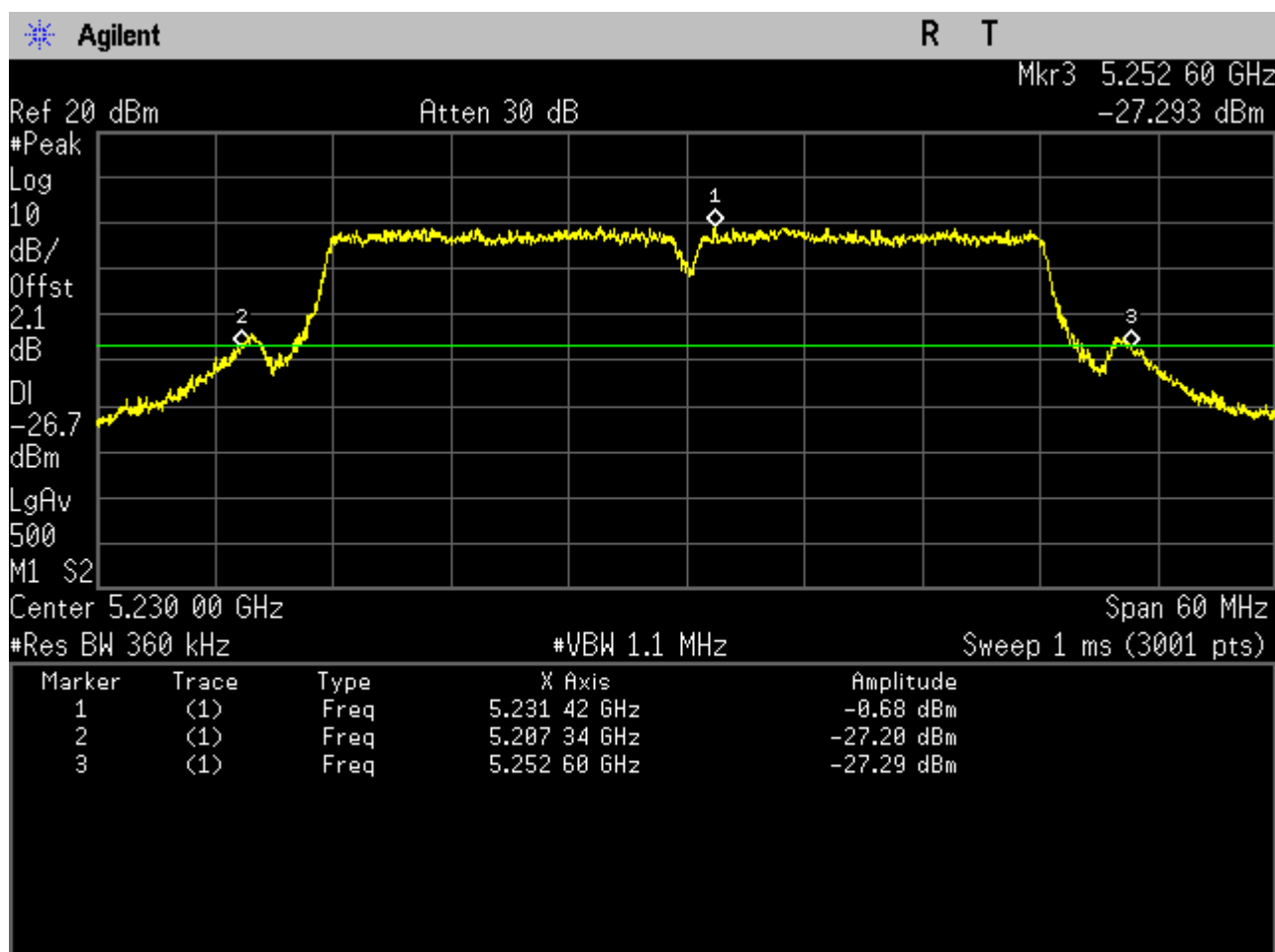
2.2411N40_46 Ant 2



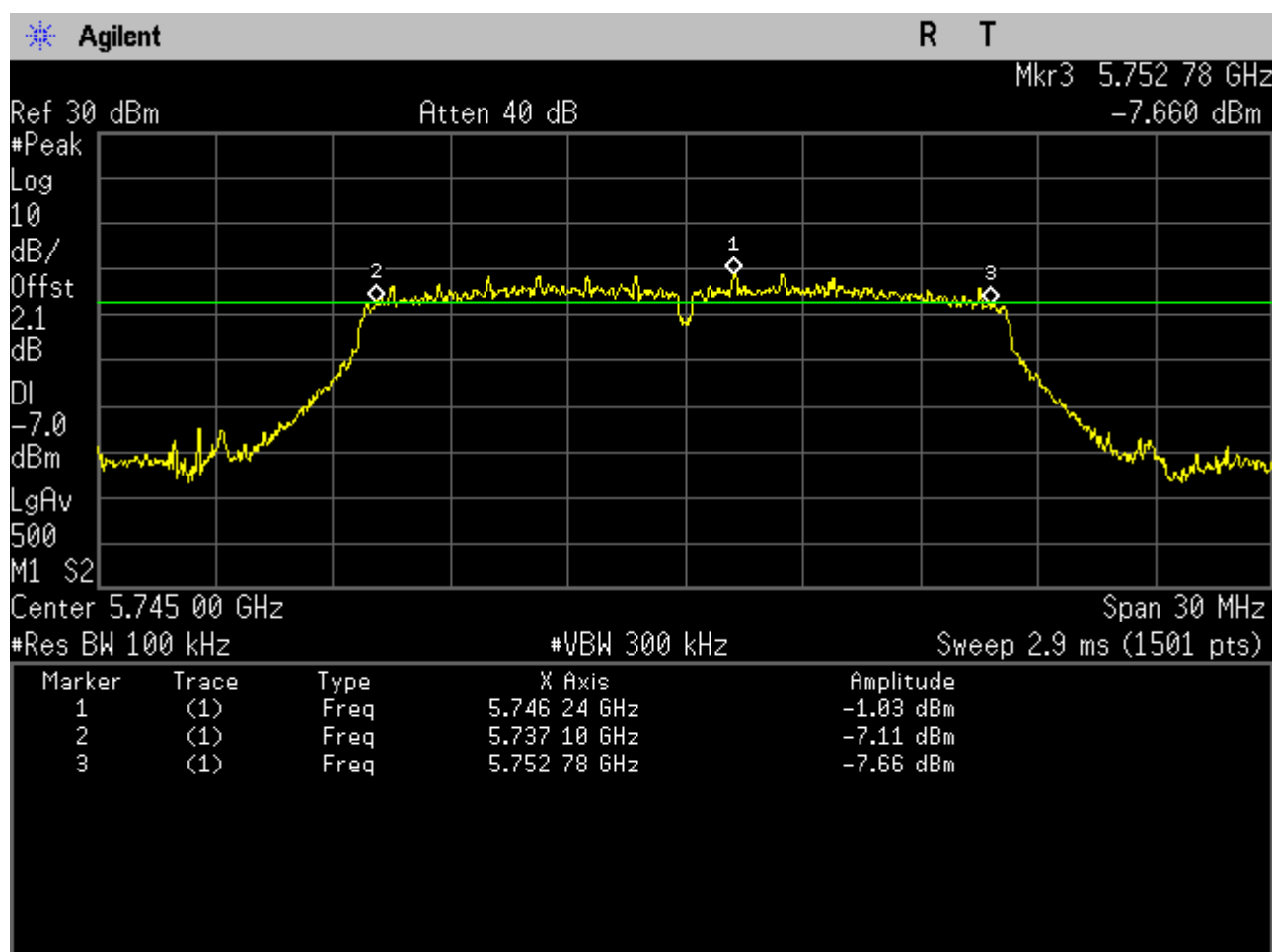
2.2511N40M_46 Ant 1



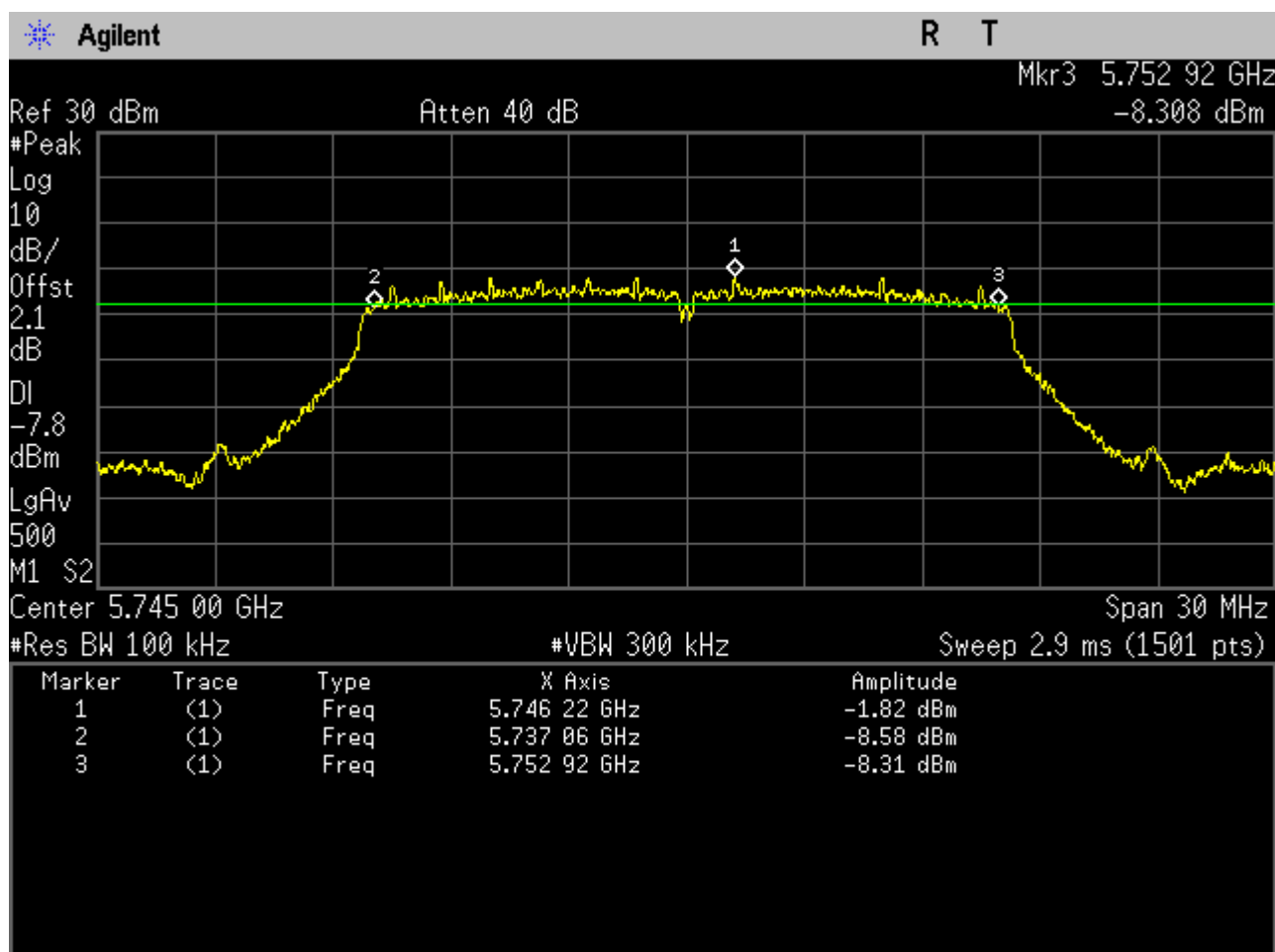
2.2611N40M_46 Ant 2



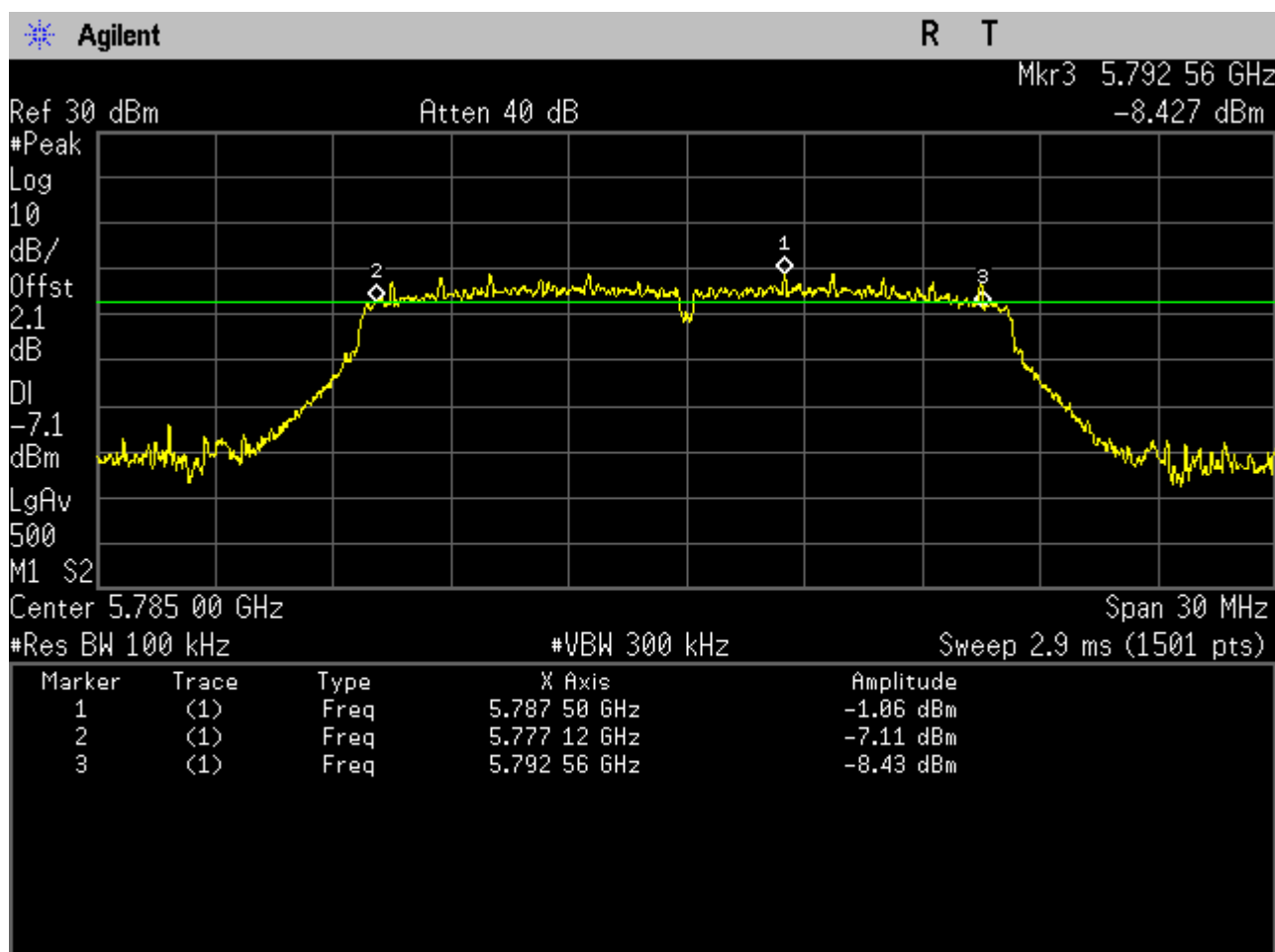
2.2711A20_149 Ant 1



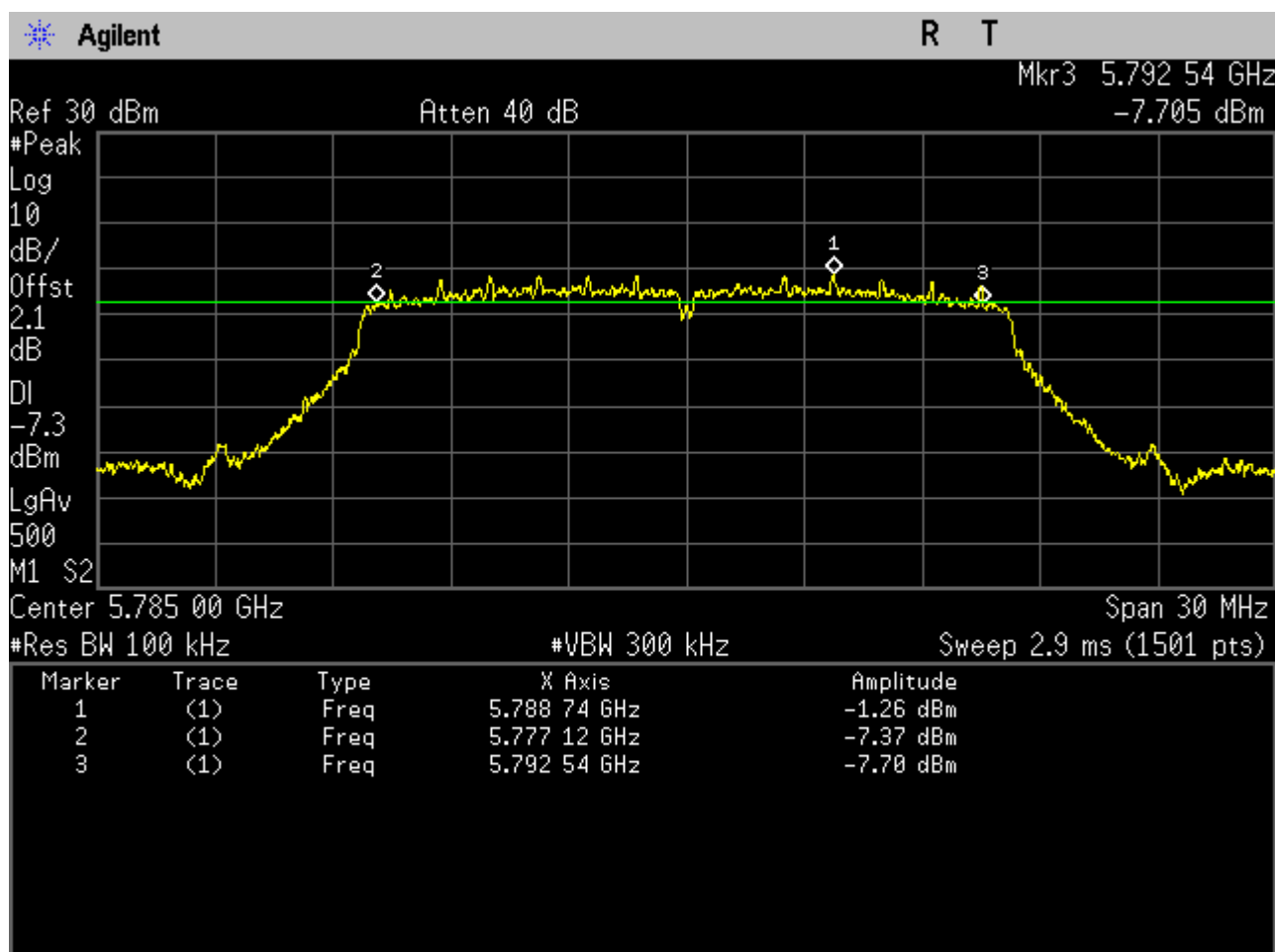
2.2811A20_149 Ant 2



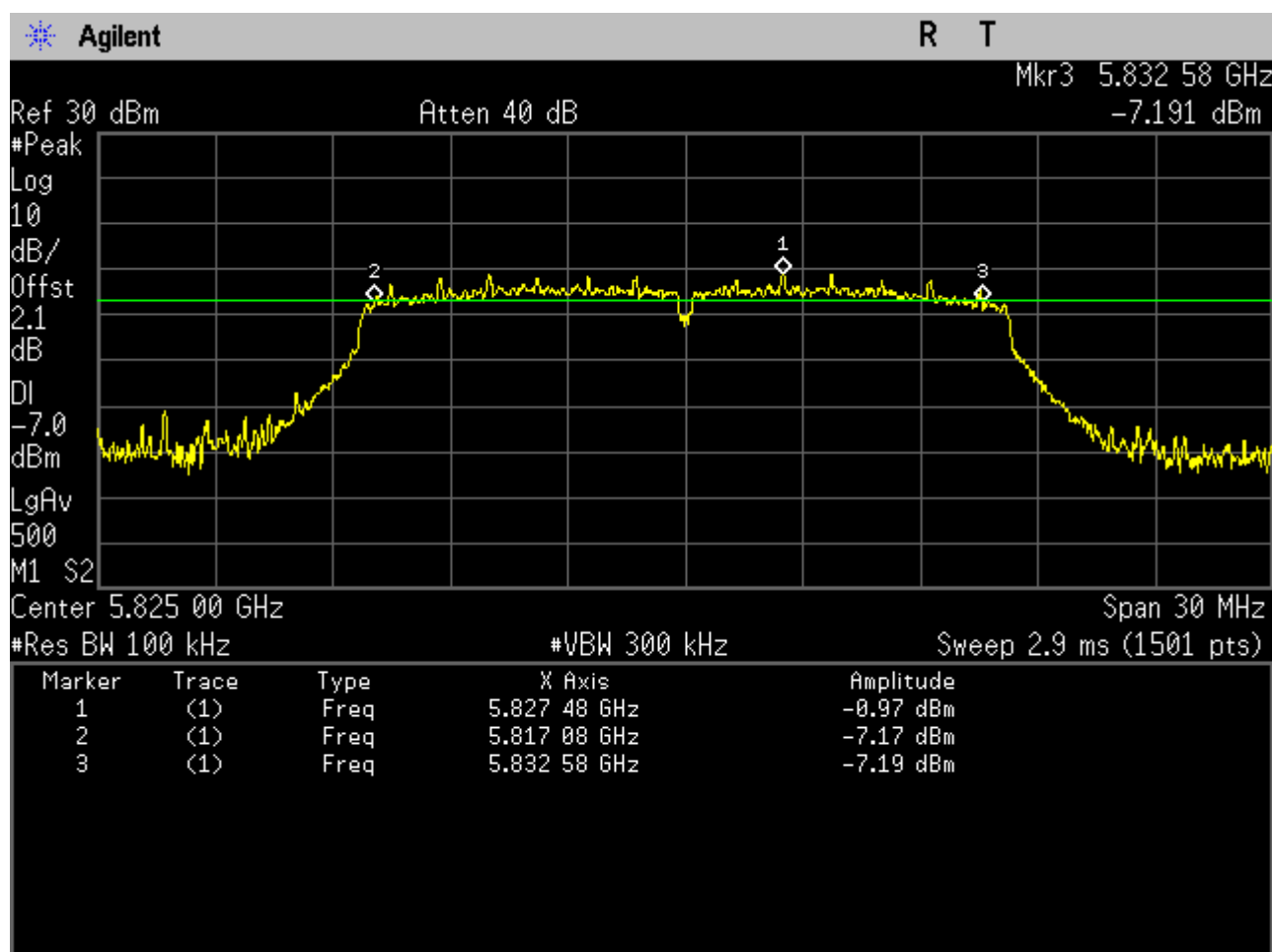
2.2911A20_157 Ant 1



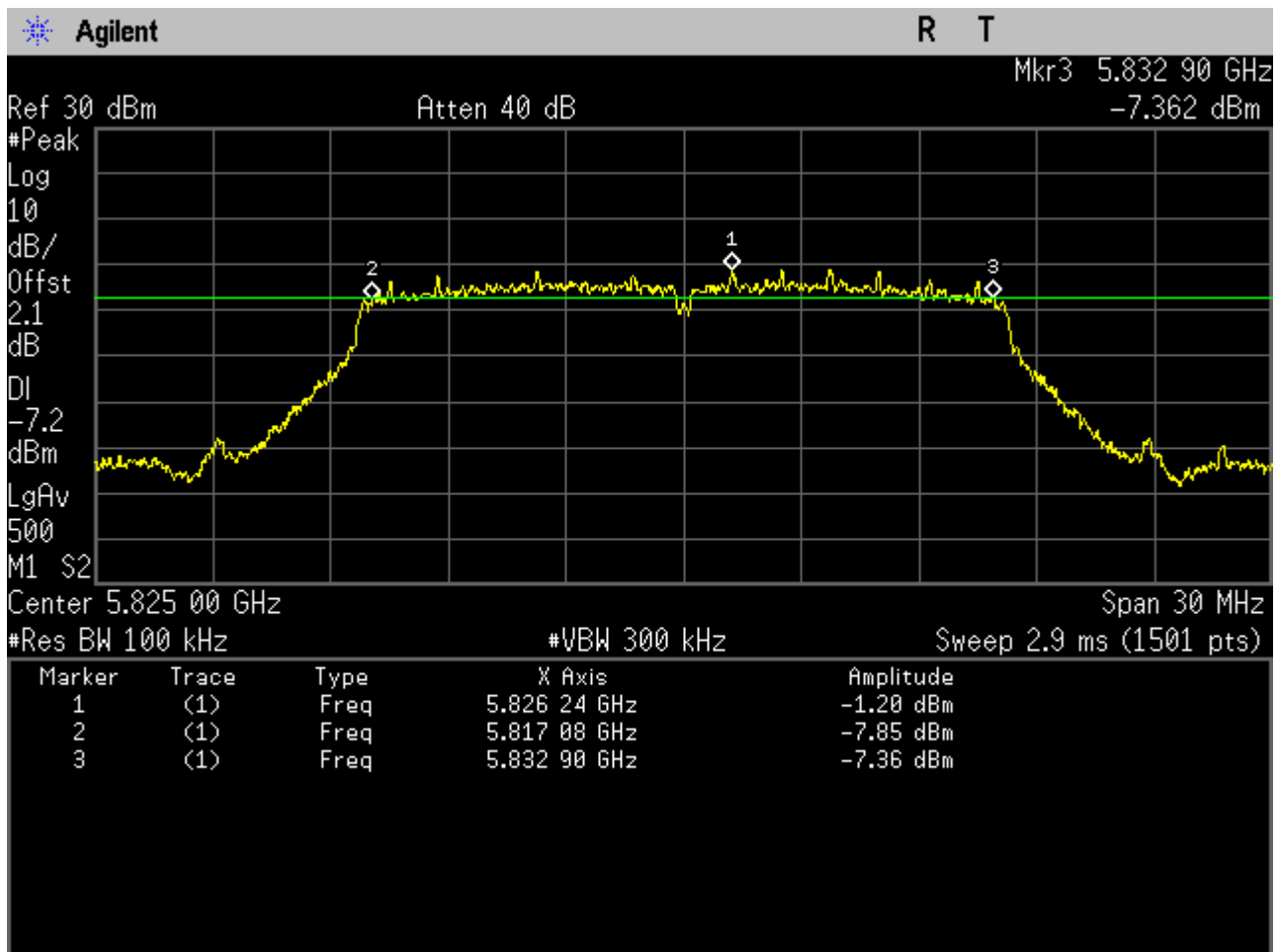
2.3011A20_157 Ant 2



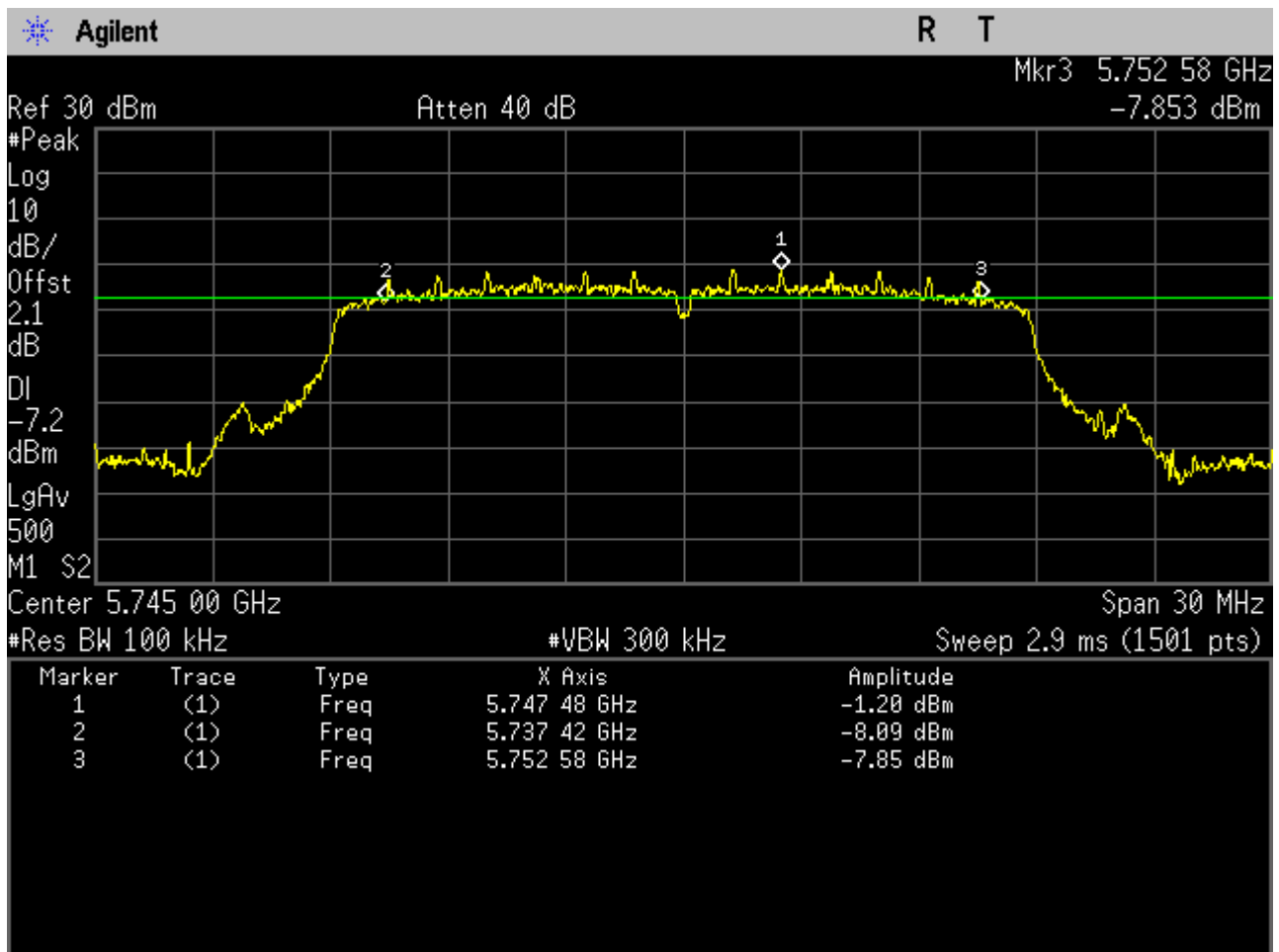
2.3111A20_165 Ant 1



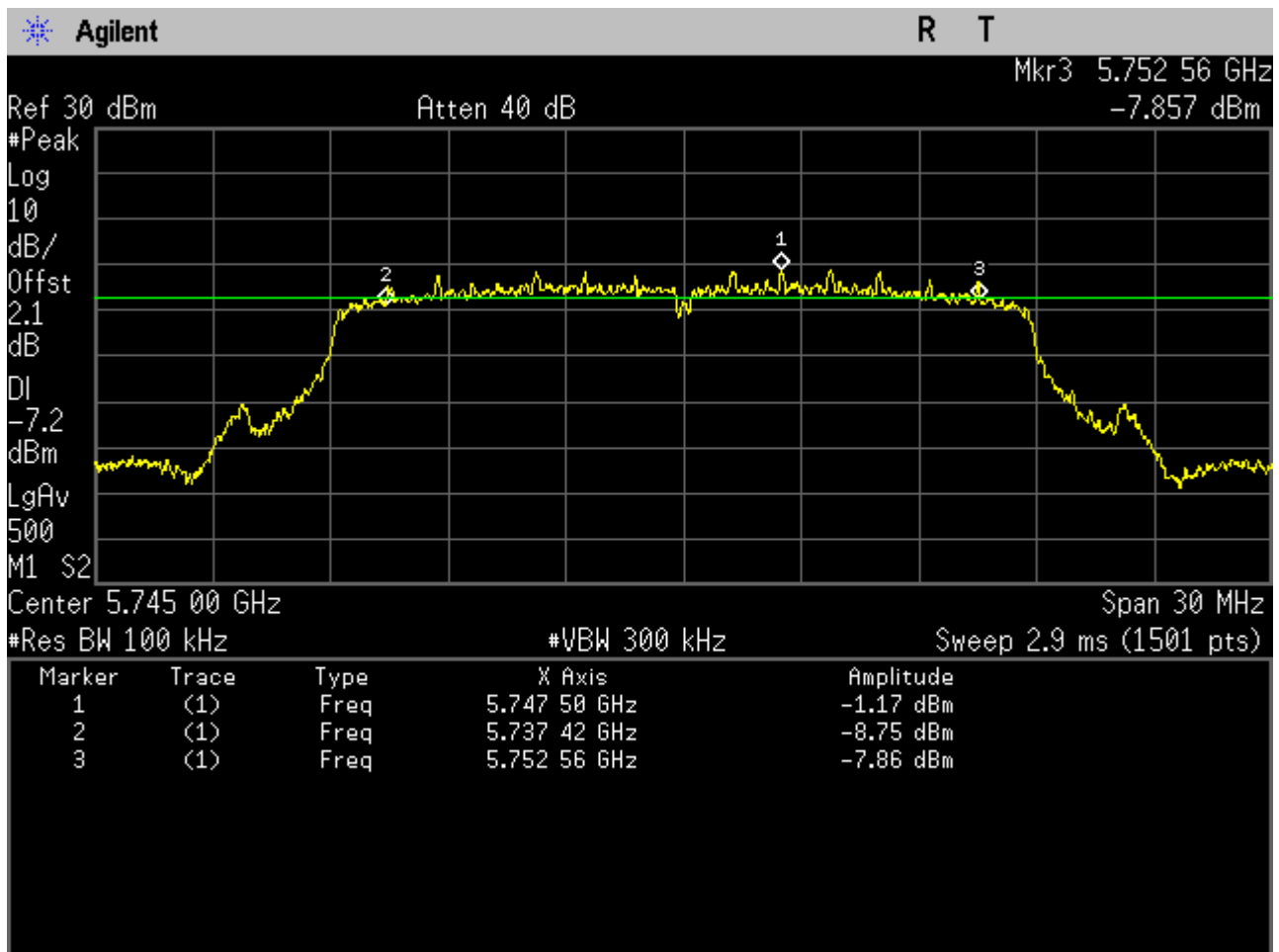
2.3211A20_165 Ant 2



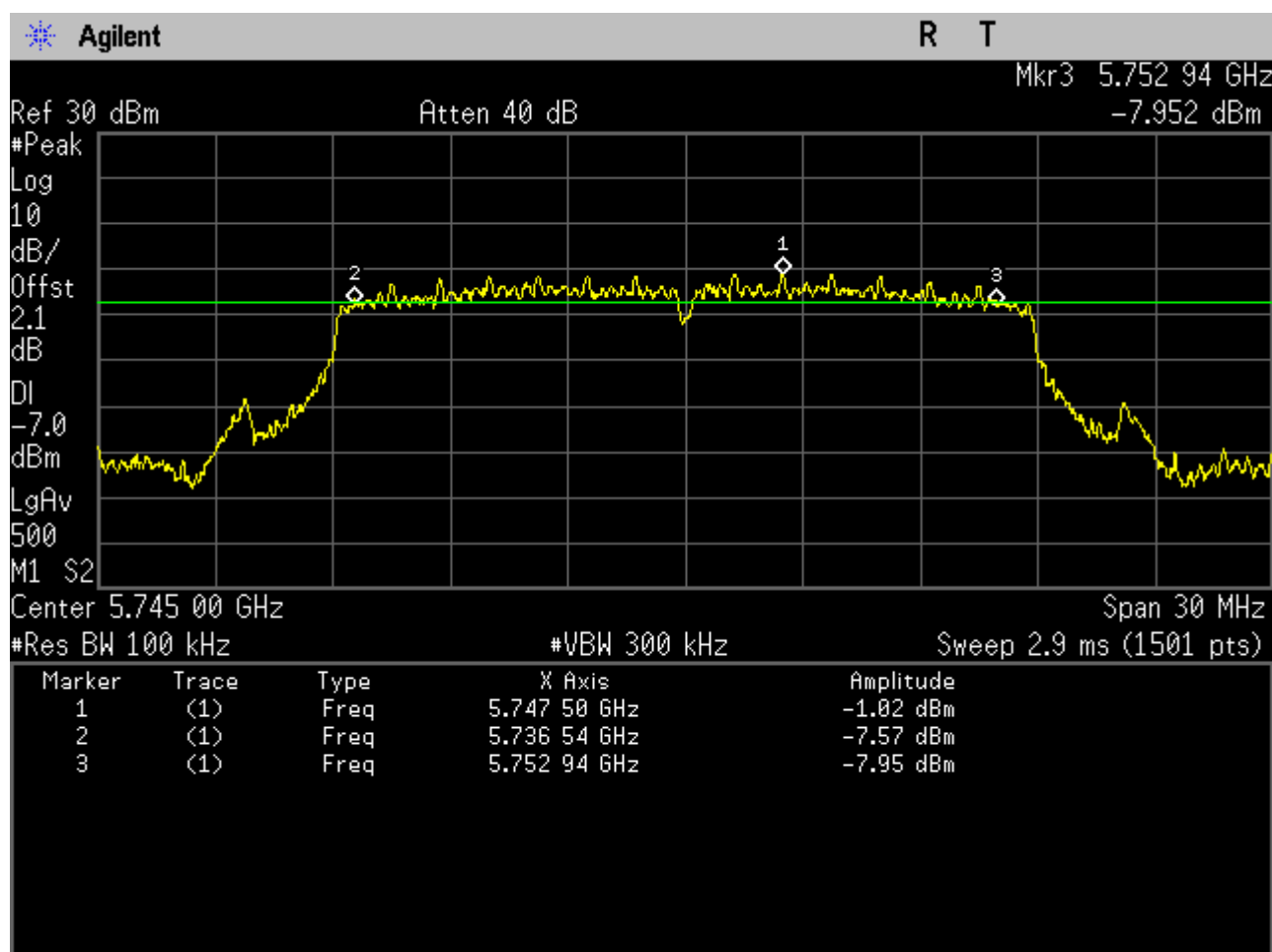
2.3311N20_149 Ant 1



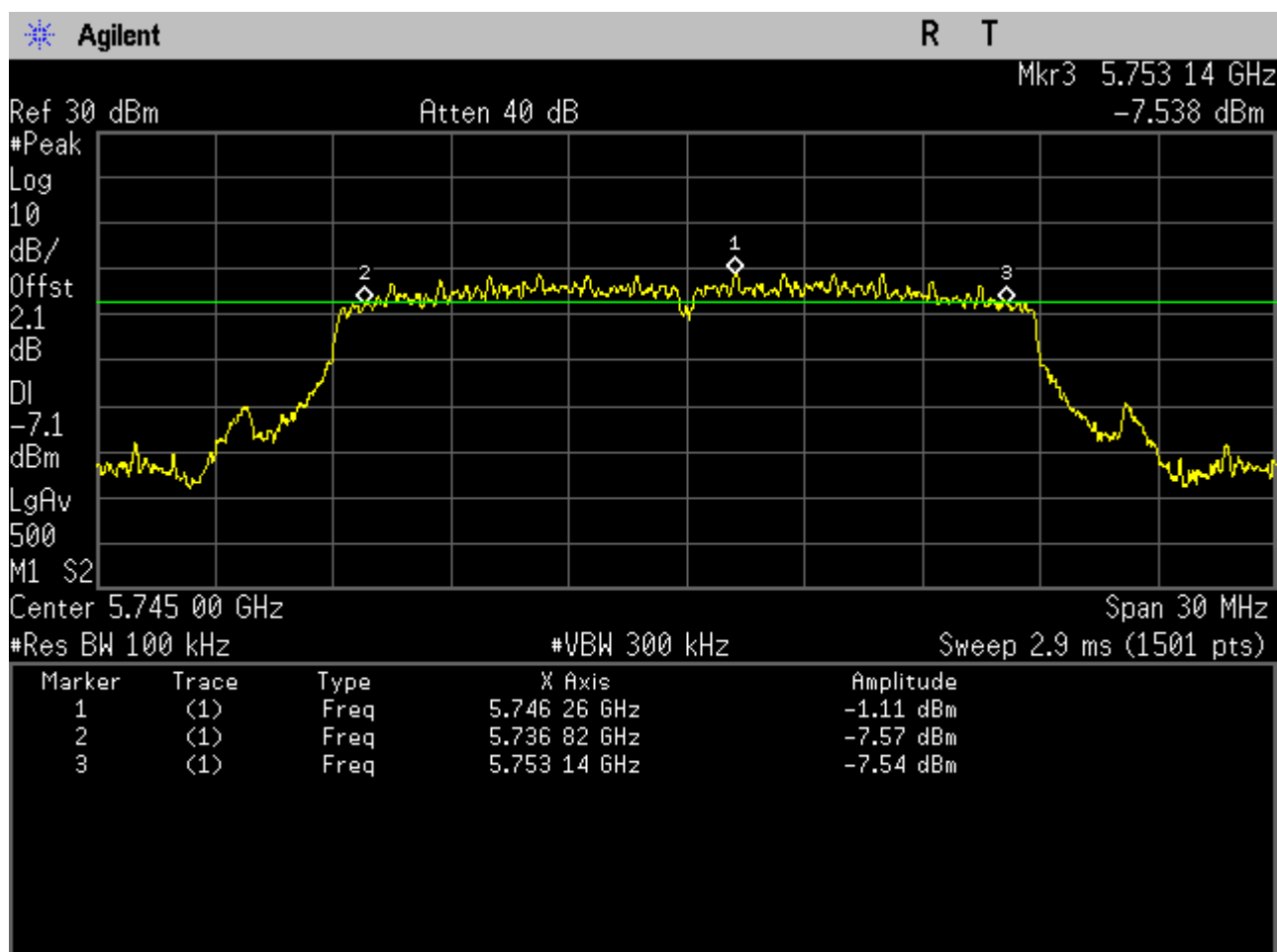
2.3411N20_149 Ant 2



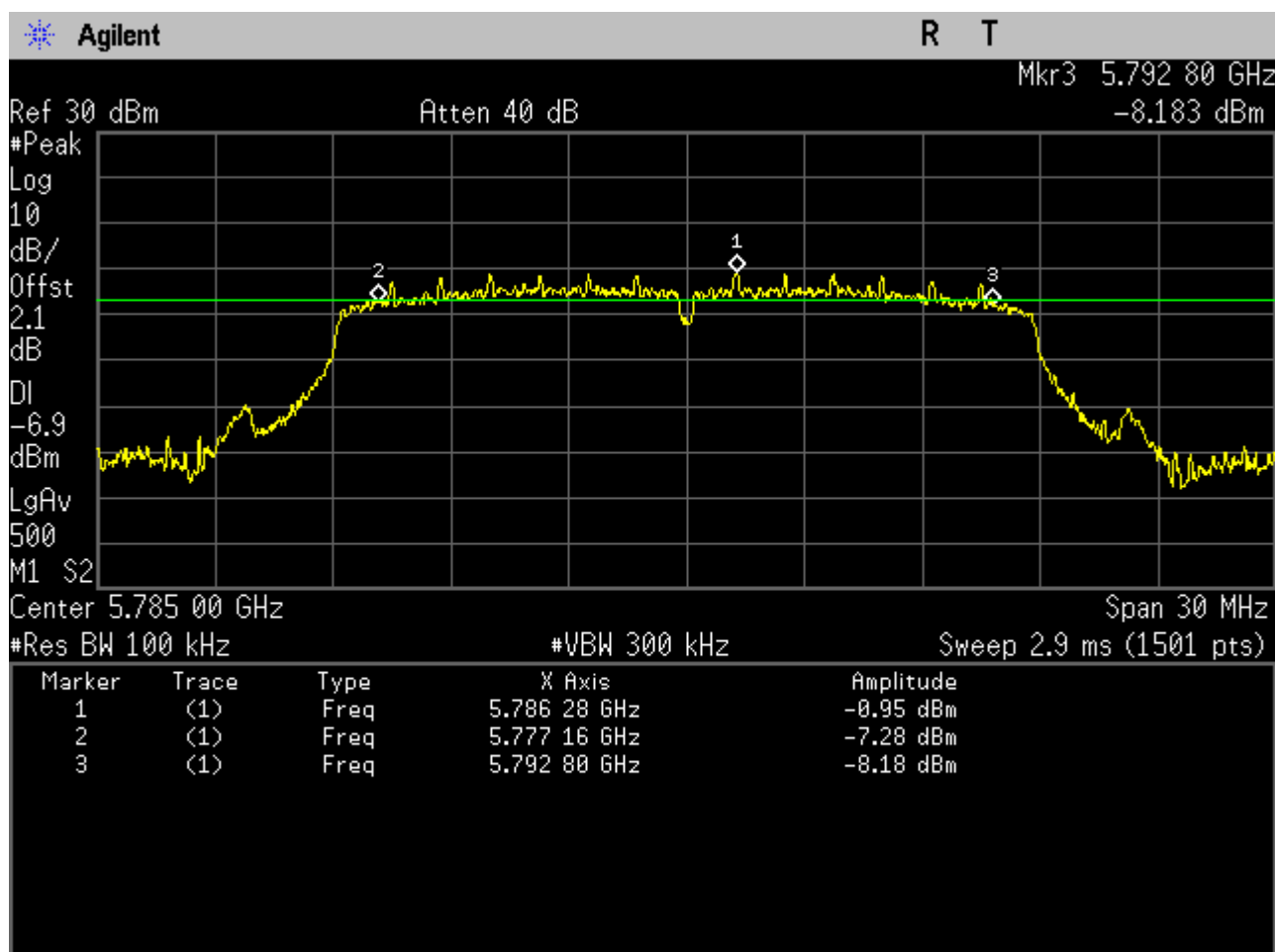
2.3511N20M_149Ant 1



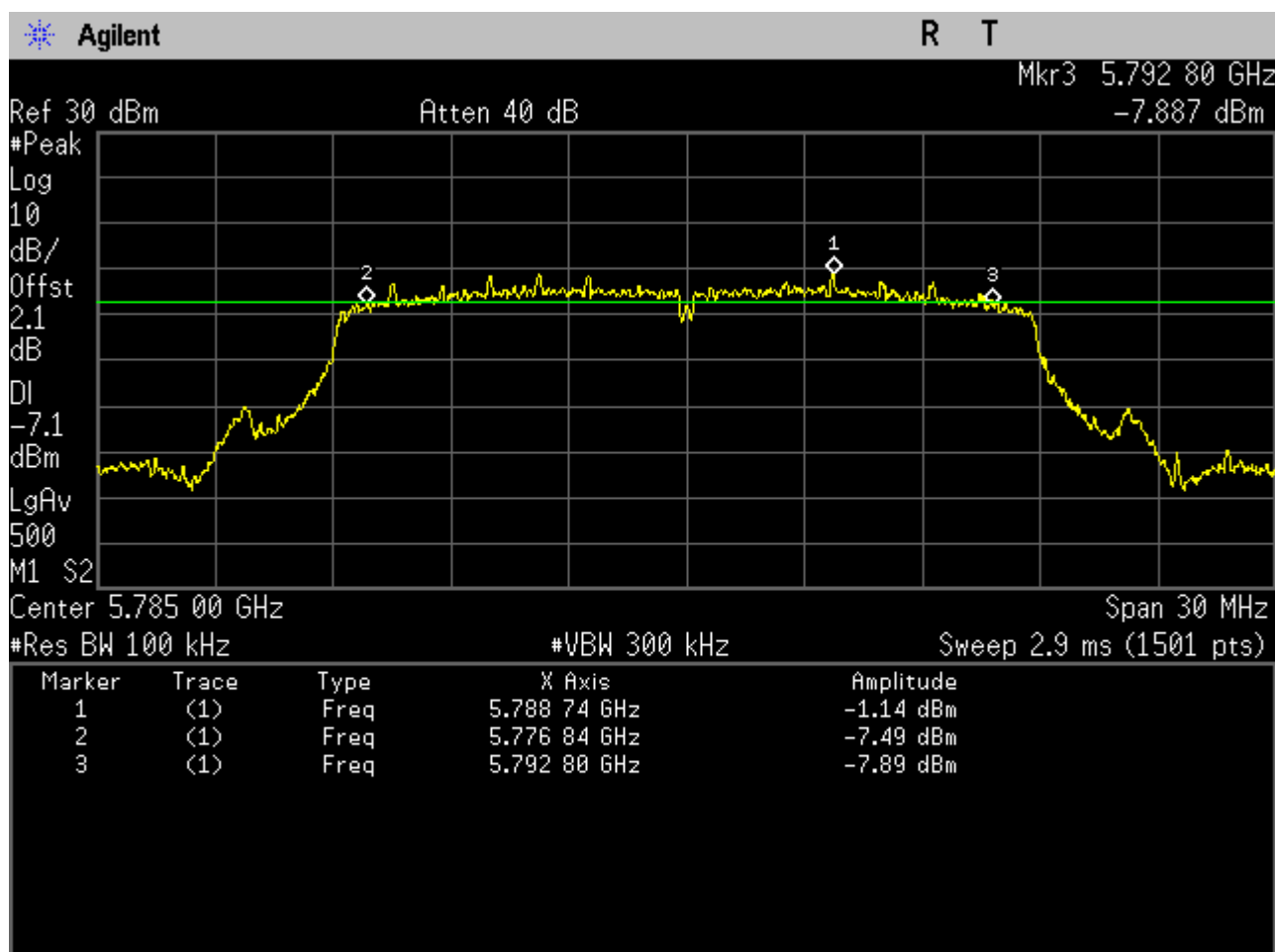
2.3611N20M_149 Ant 2



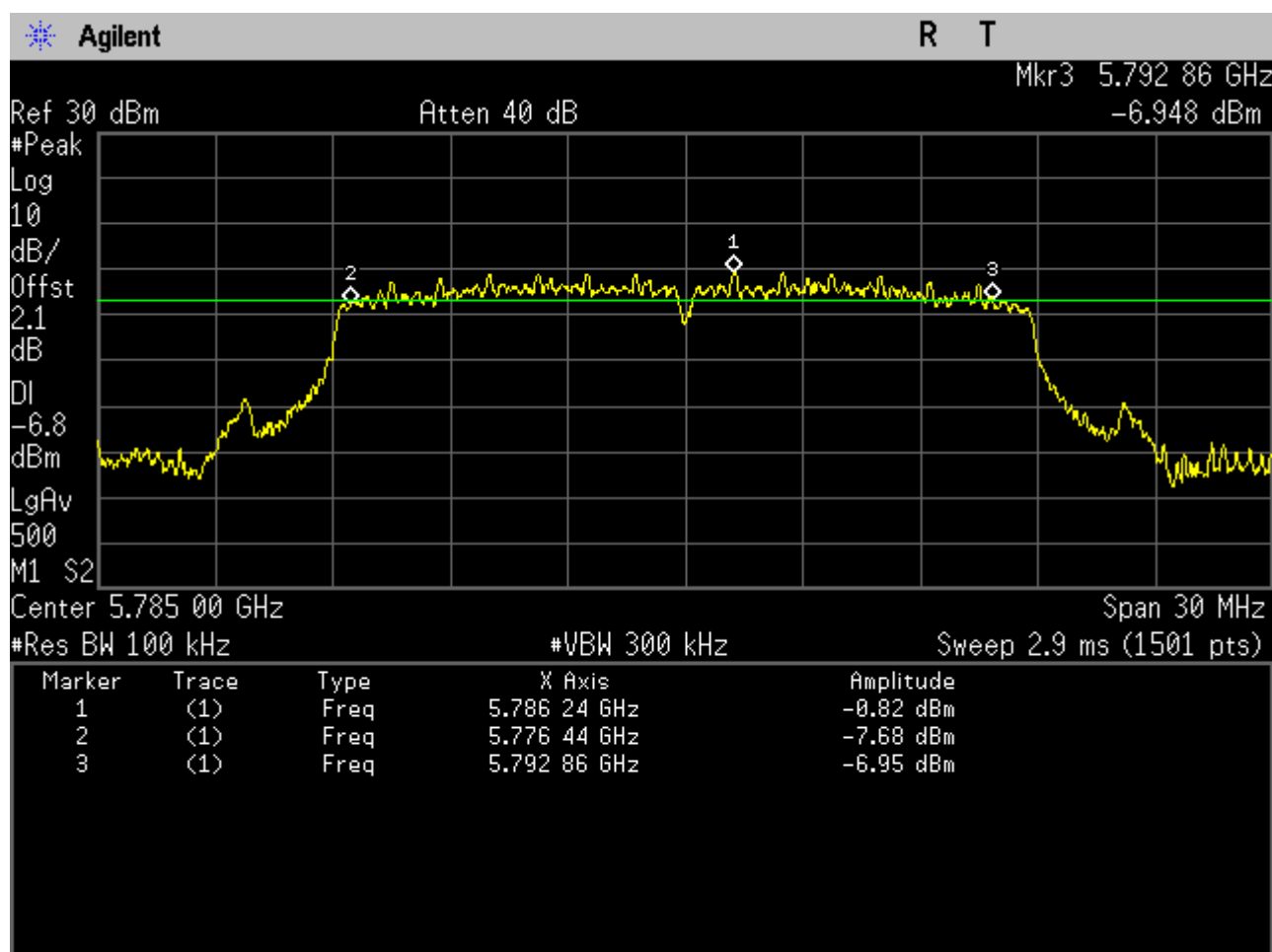
2.3711N20_157 Ant 1



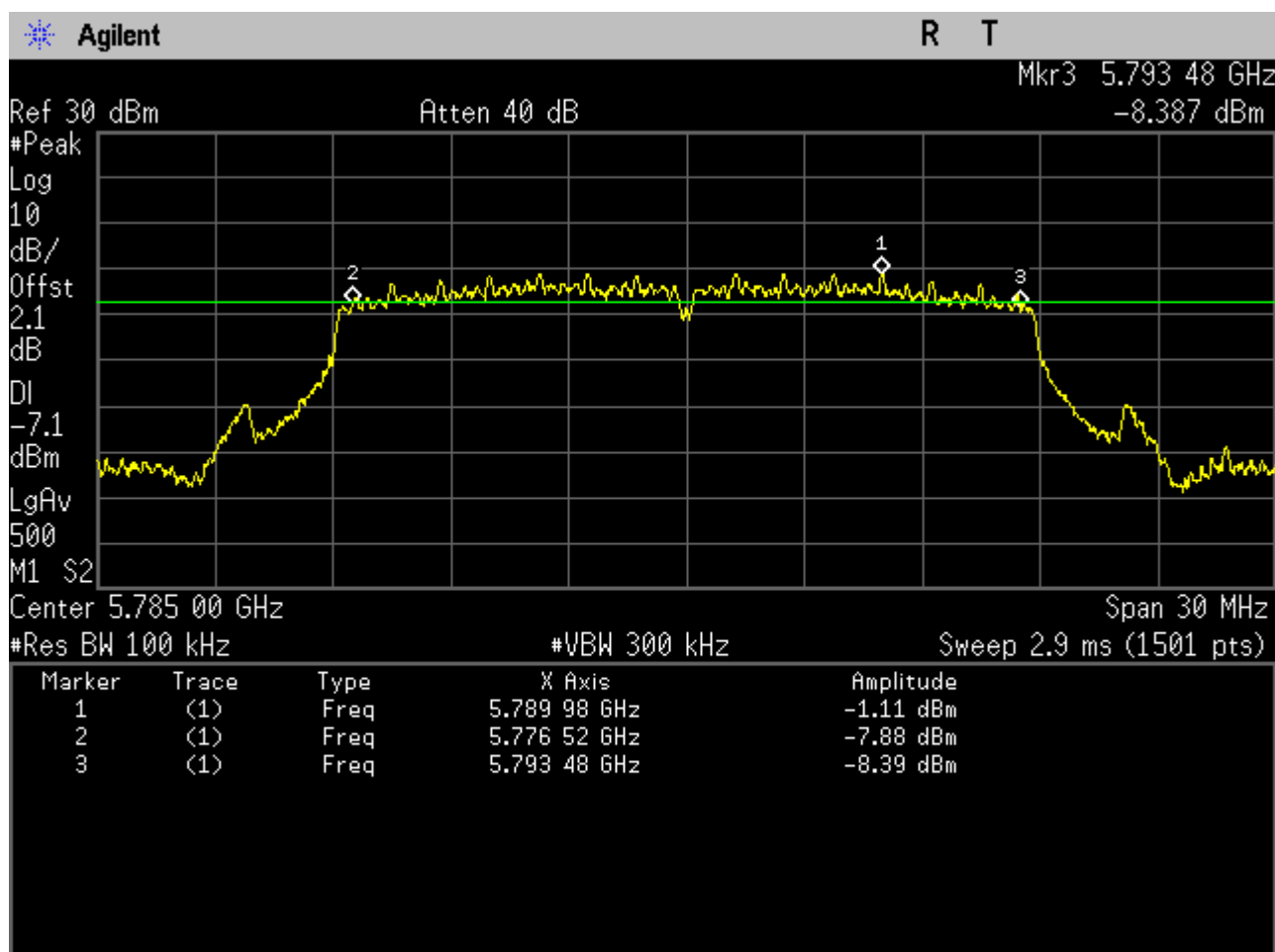
2.3811N20_157 Ant 2



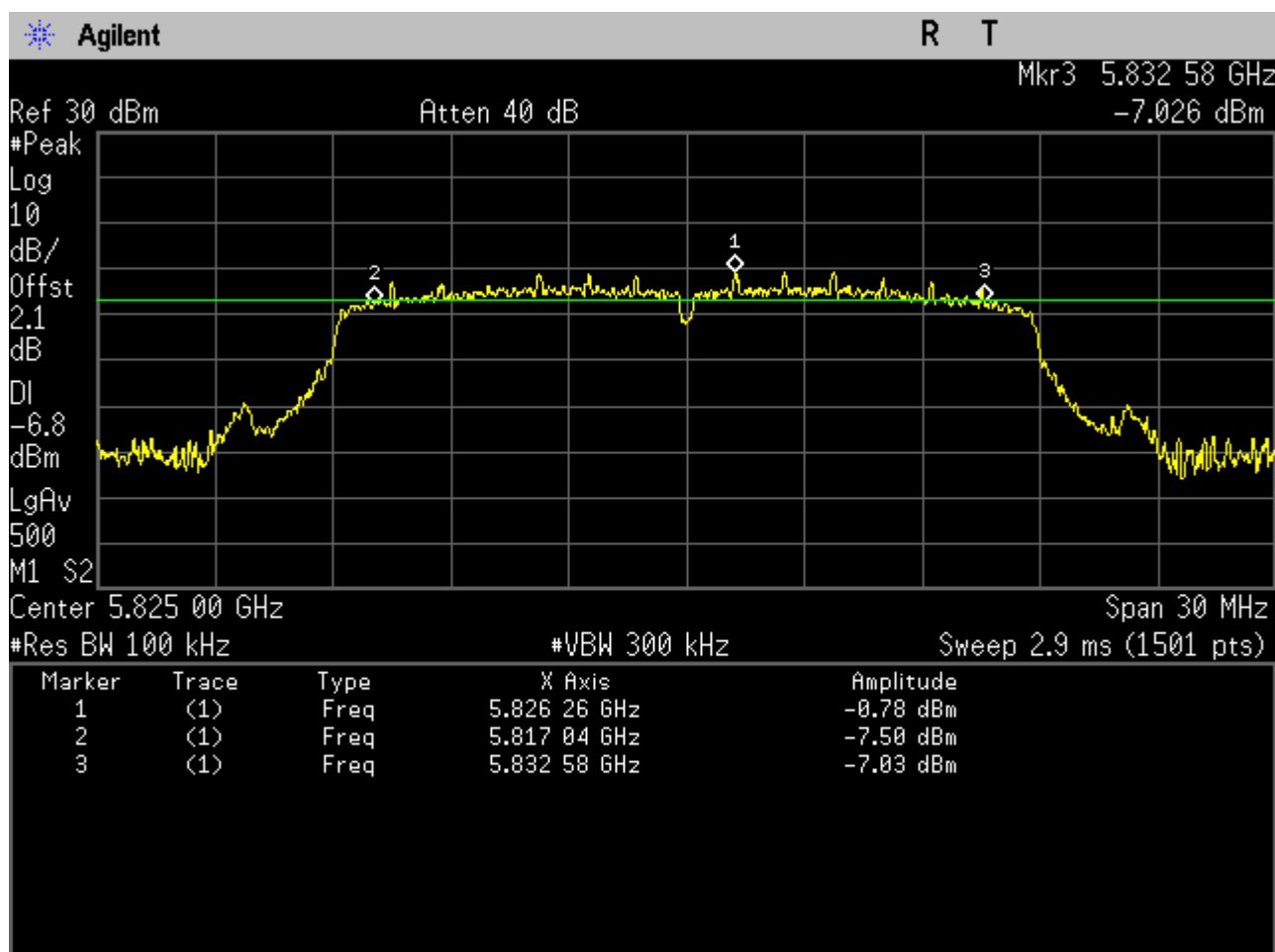
2.3911N20M_157 Ant 1



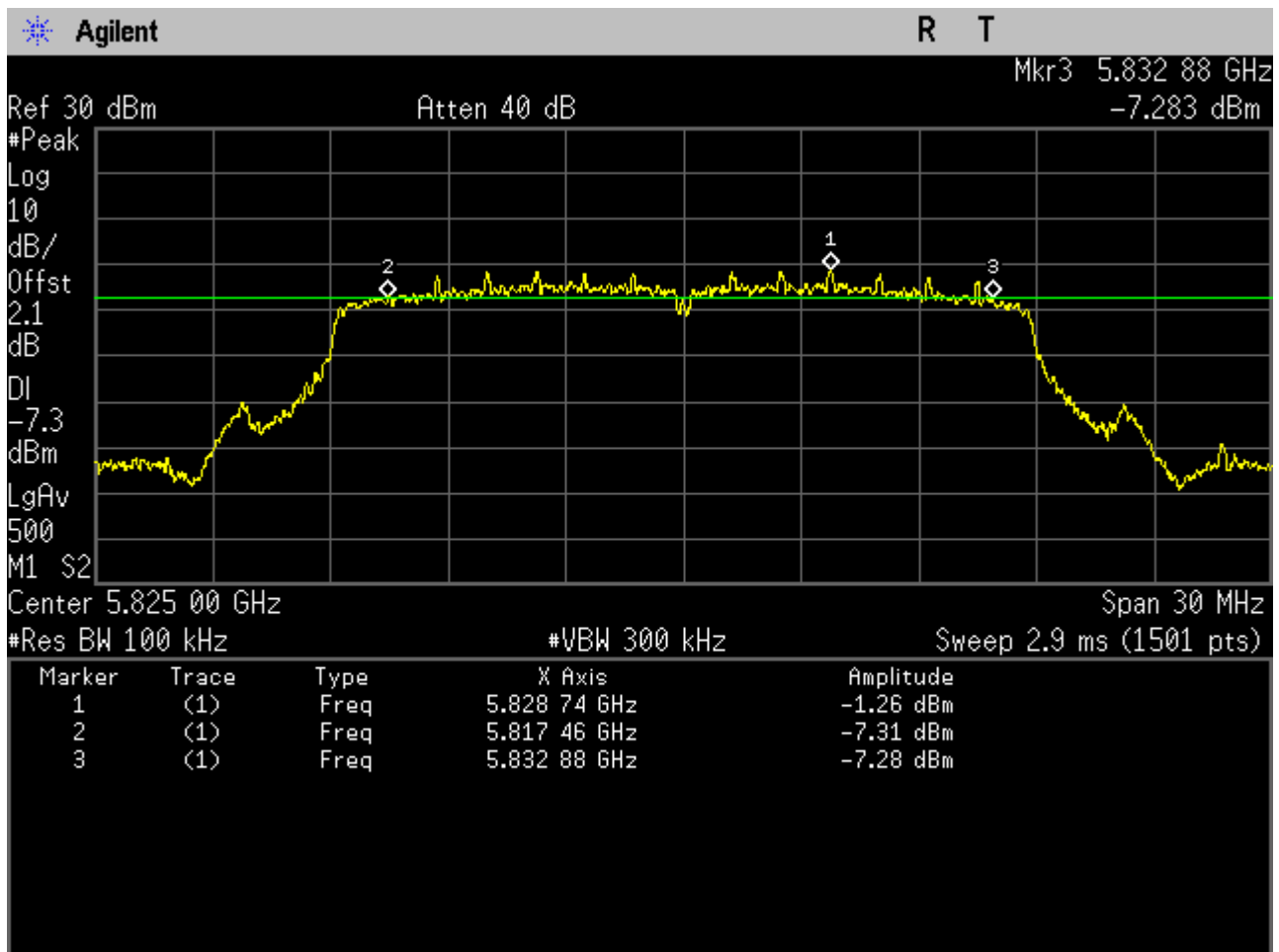
2.4011N20M_157 Ant 2



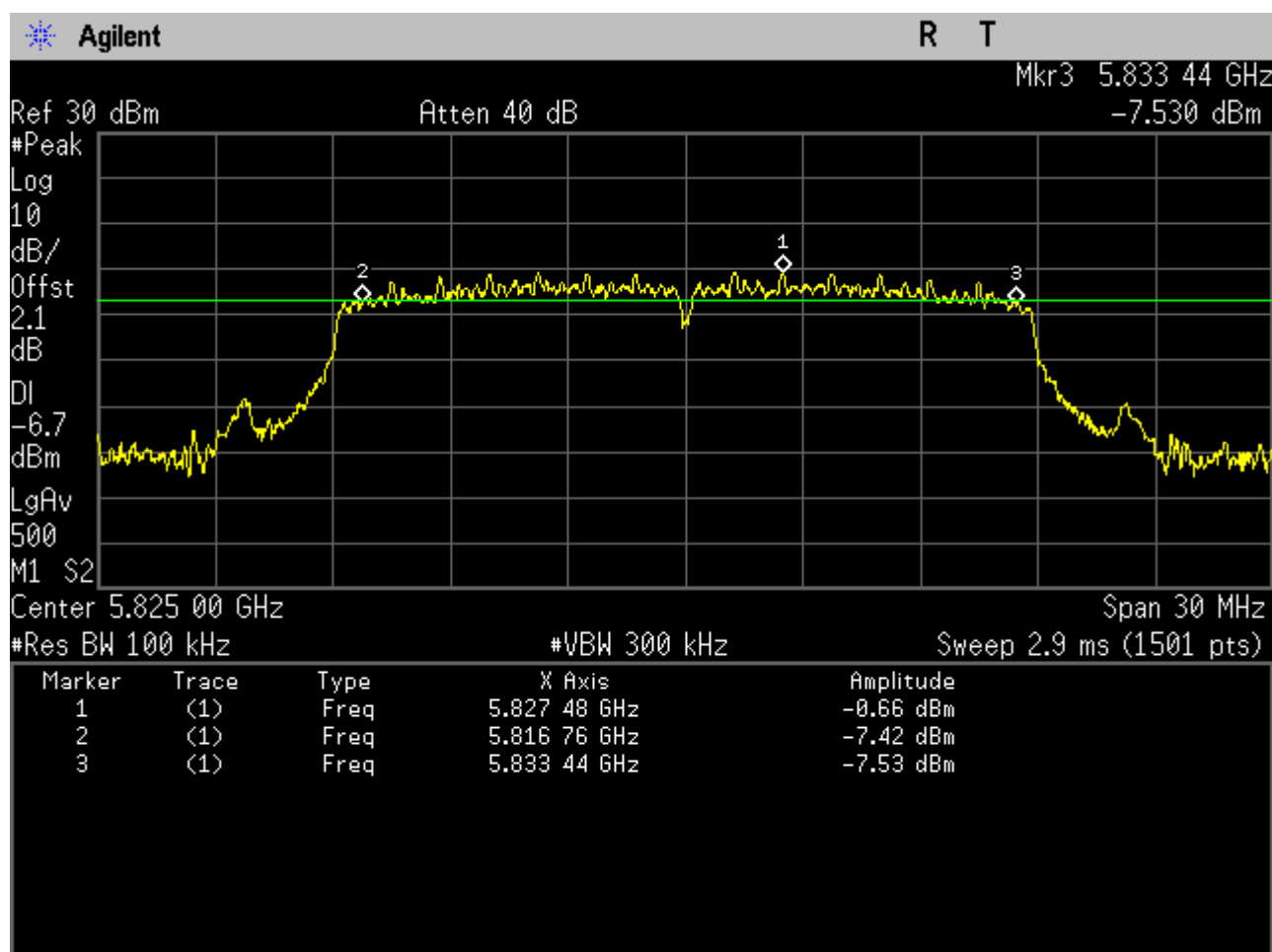
2.4111N20_165 Ant 1



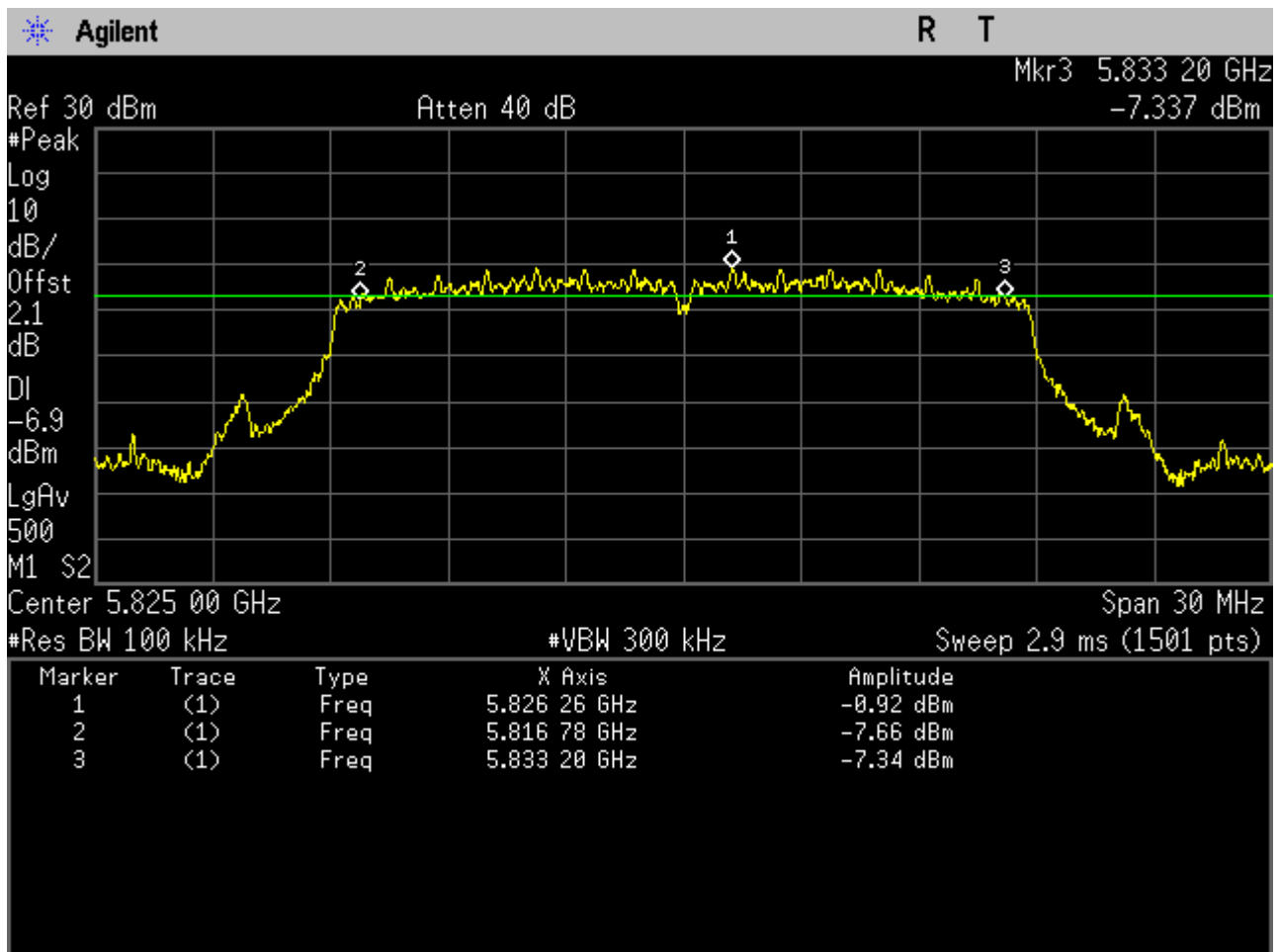
2.4211N20_165 Ant 2



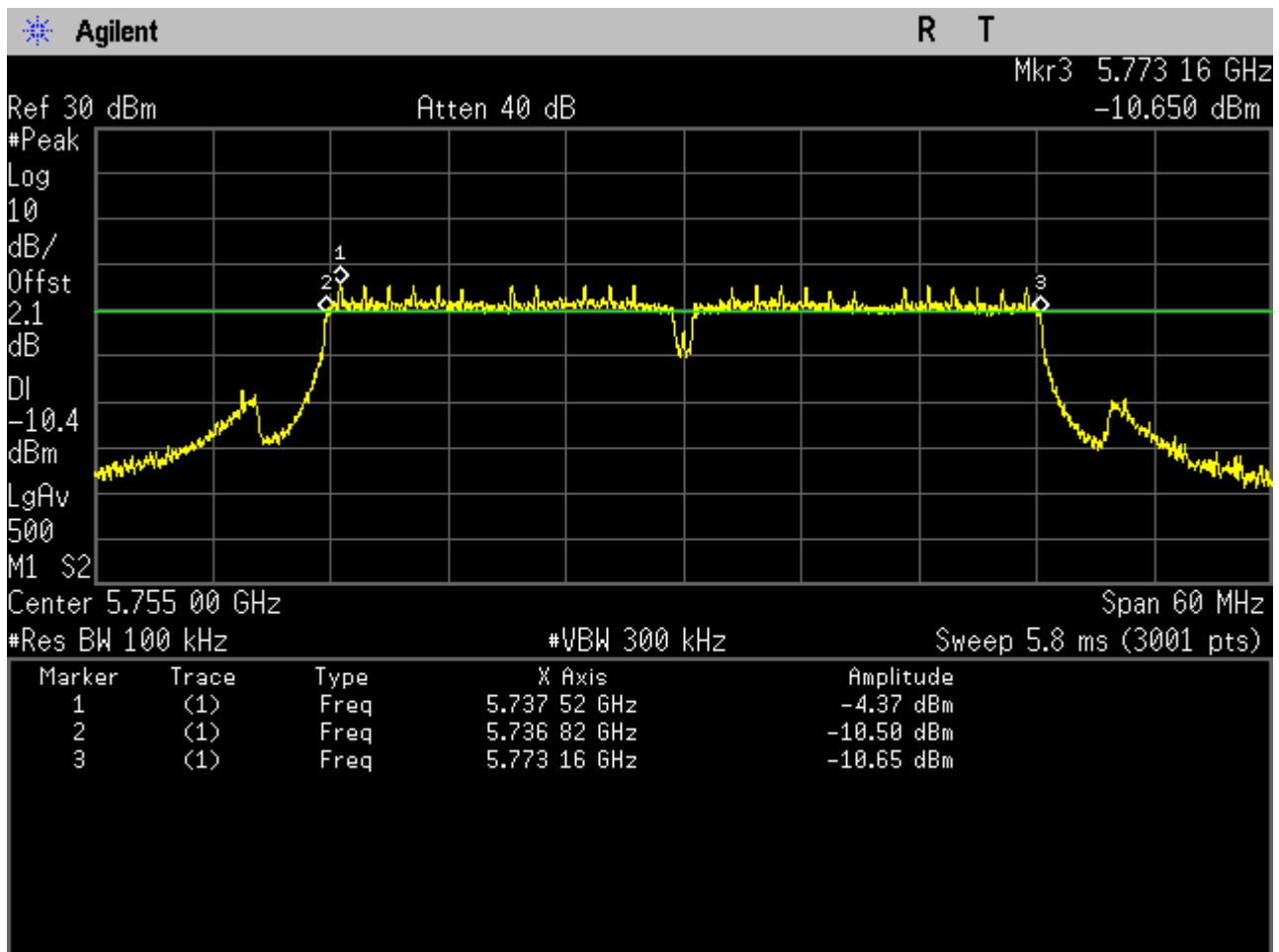
2.4311N20M_165 Ant 1



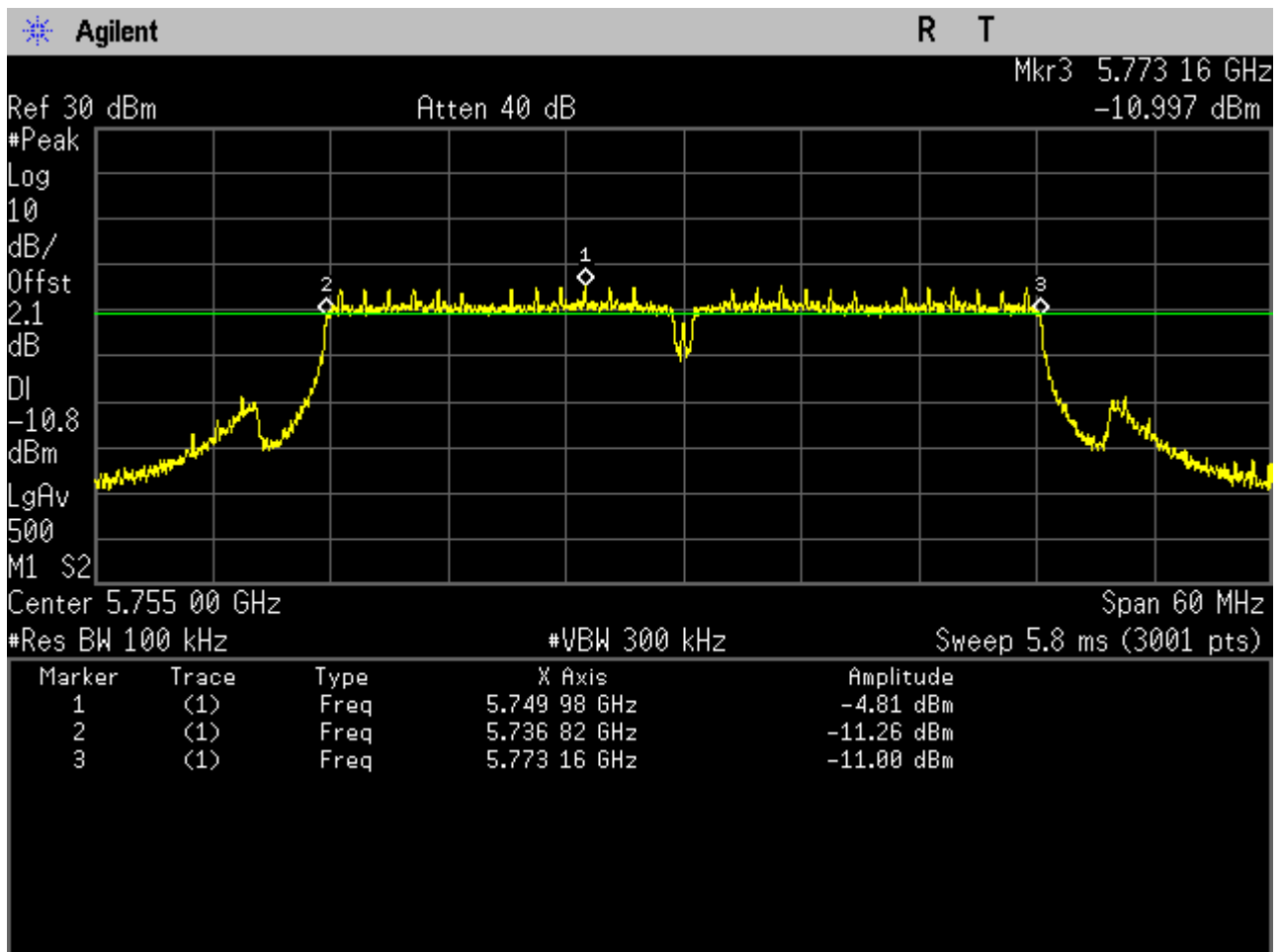
2.4411N20M_165 Ant 2



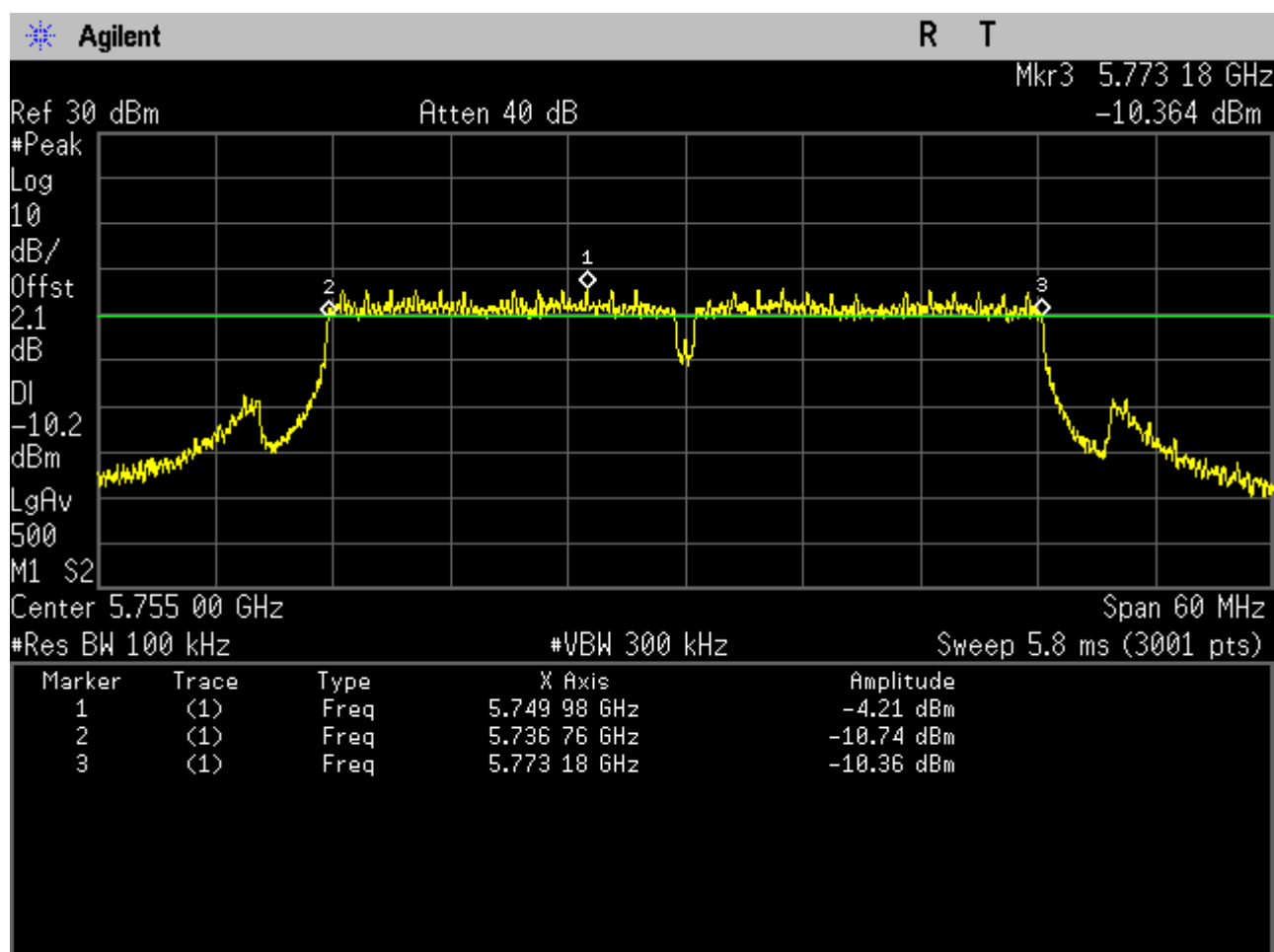
2.4511N40_151 Ant 1



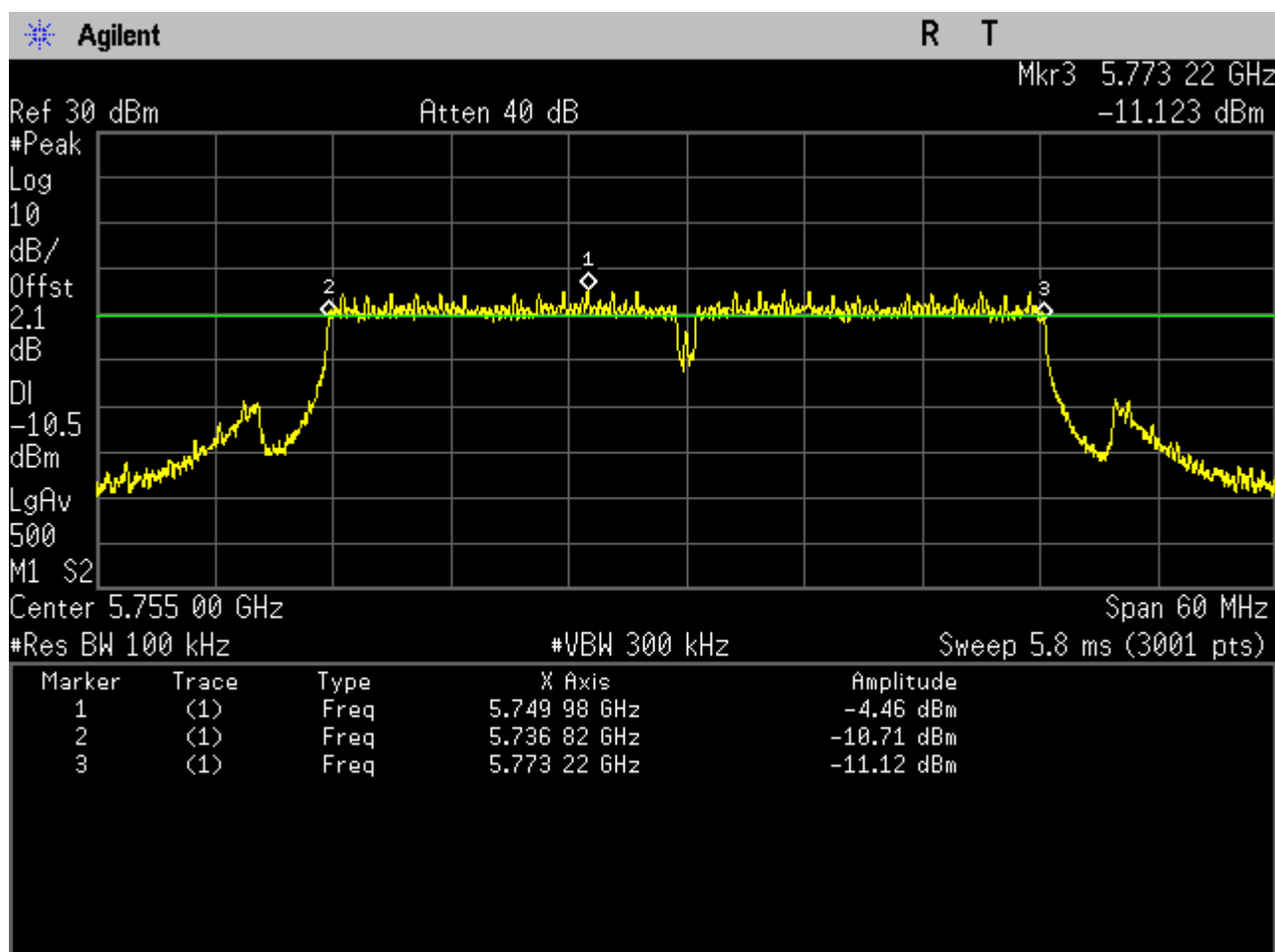
2.4611N40_151 Ant 2



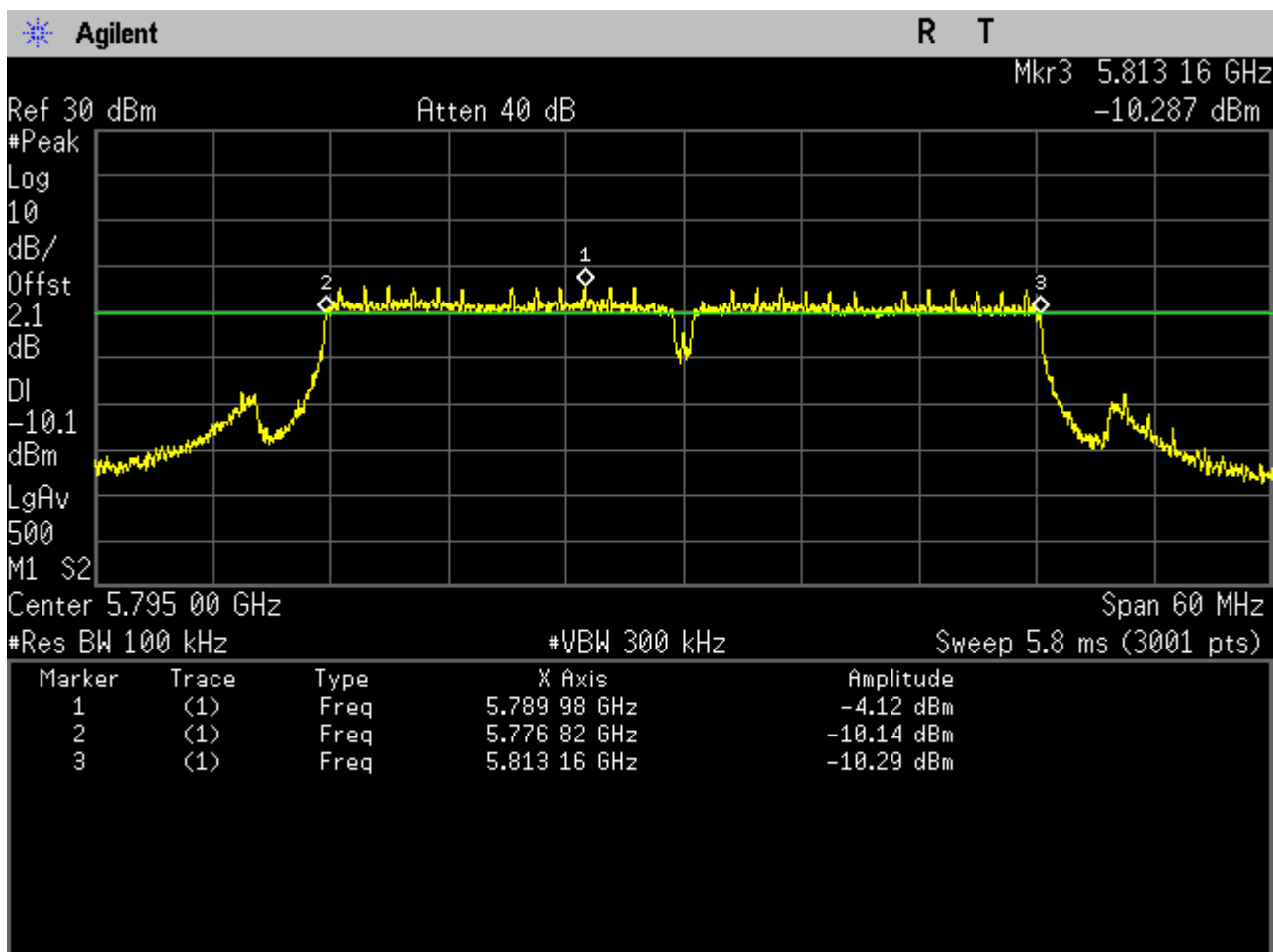
2.4711N40M_151 Ant 1



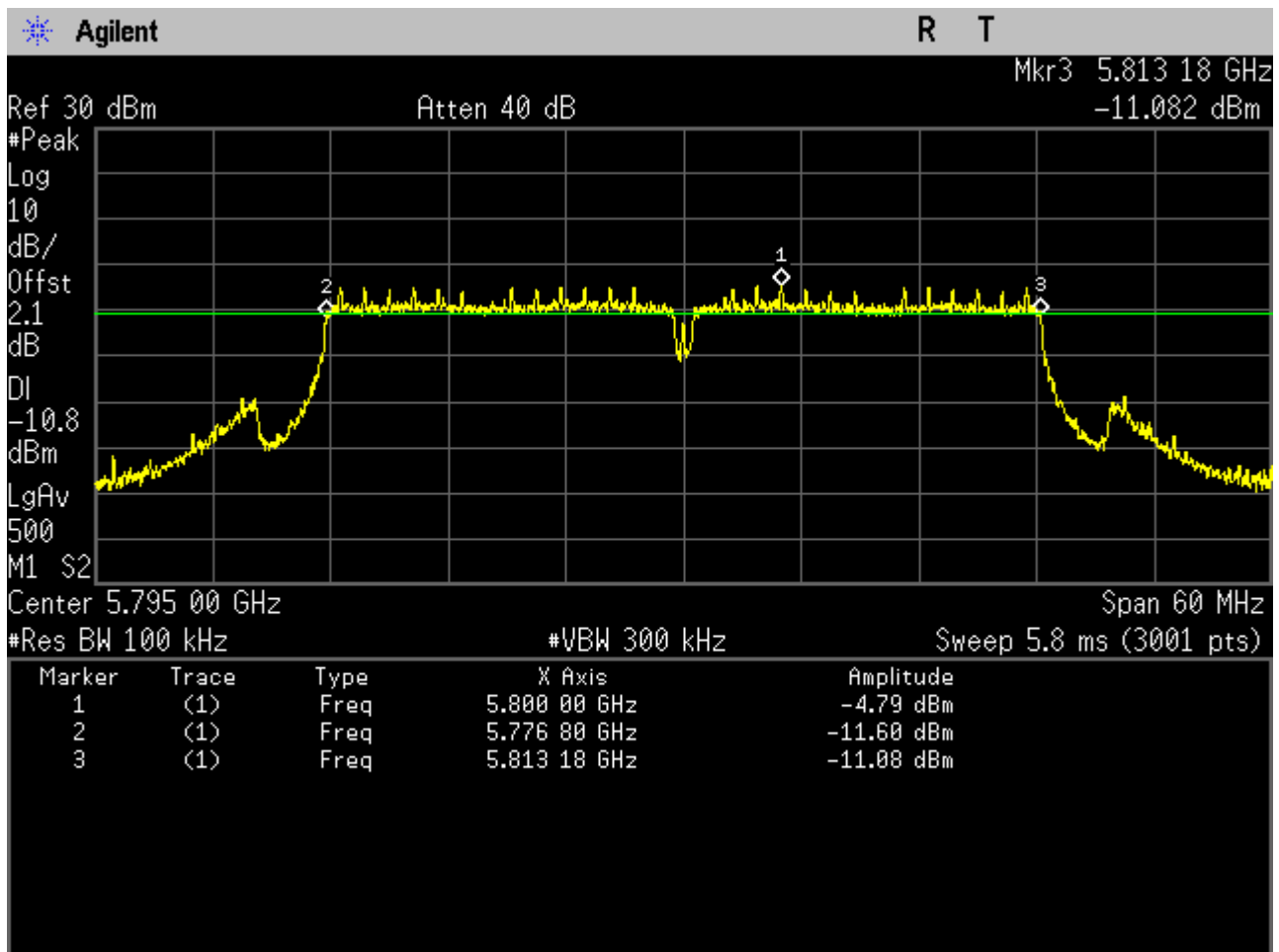
2.4811N40M_151 Ant 2



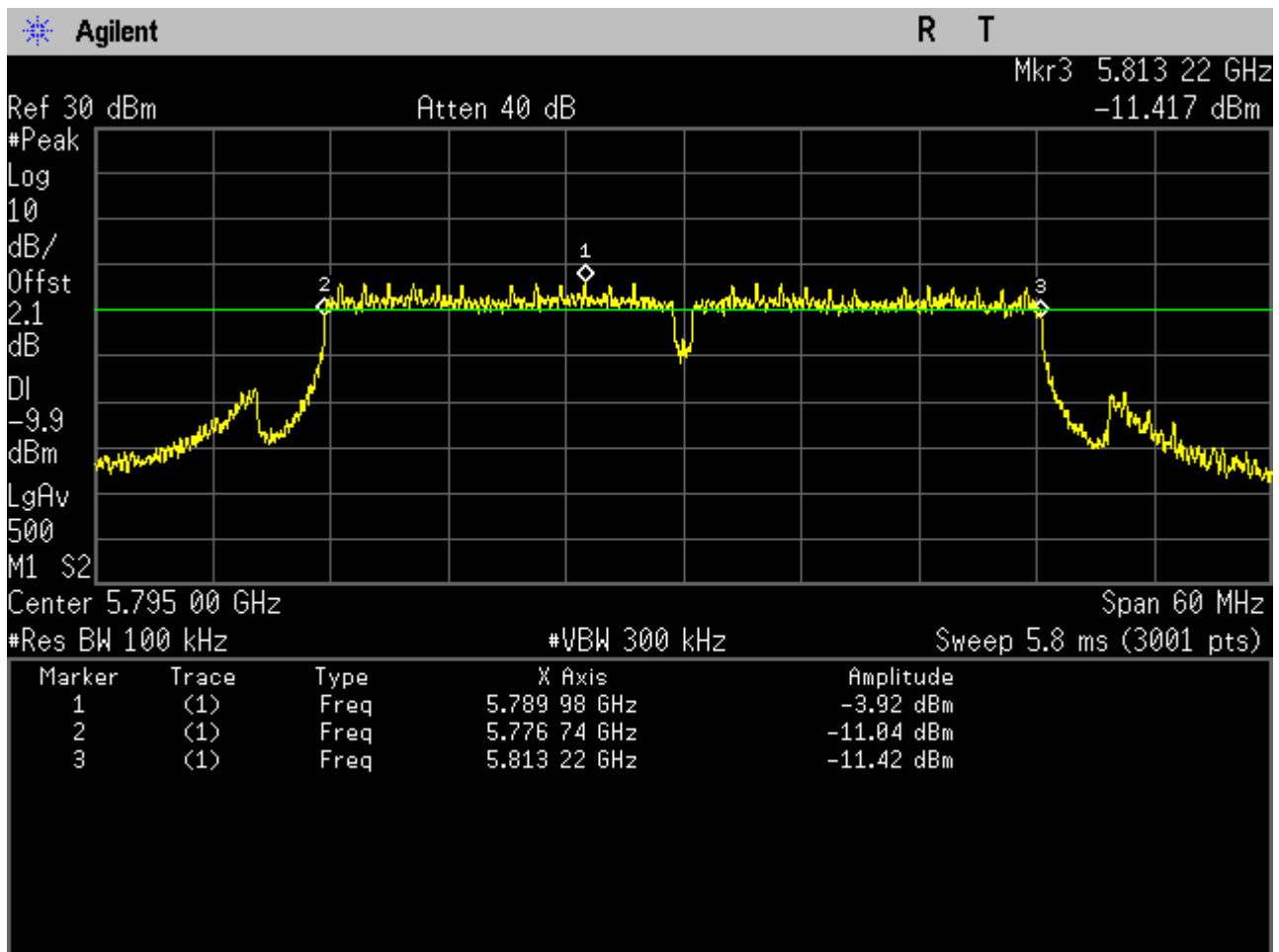
2.4911 N40_159 Ant 1



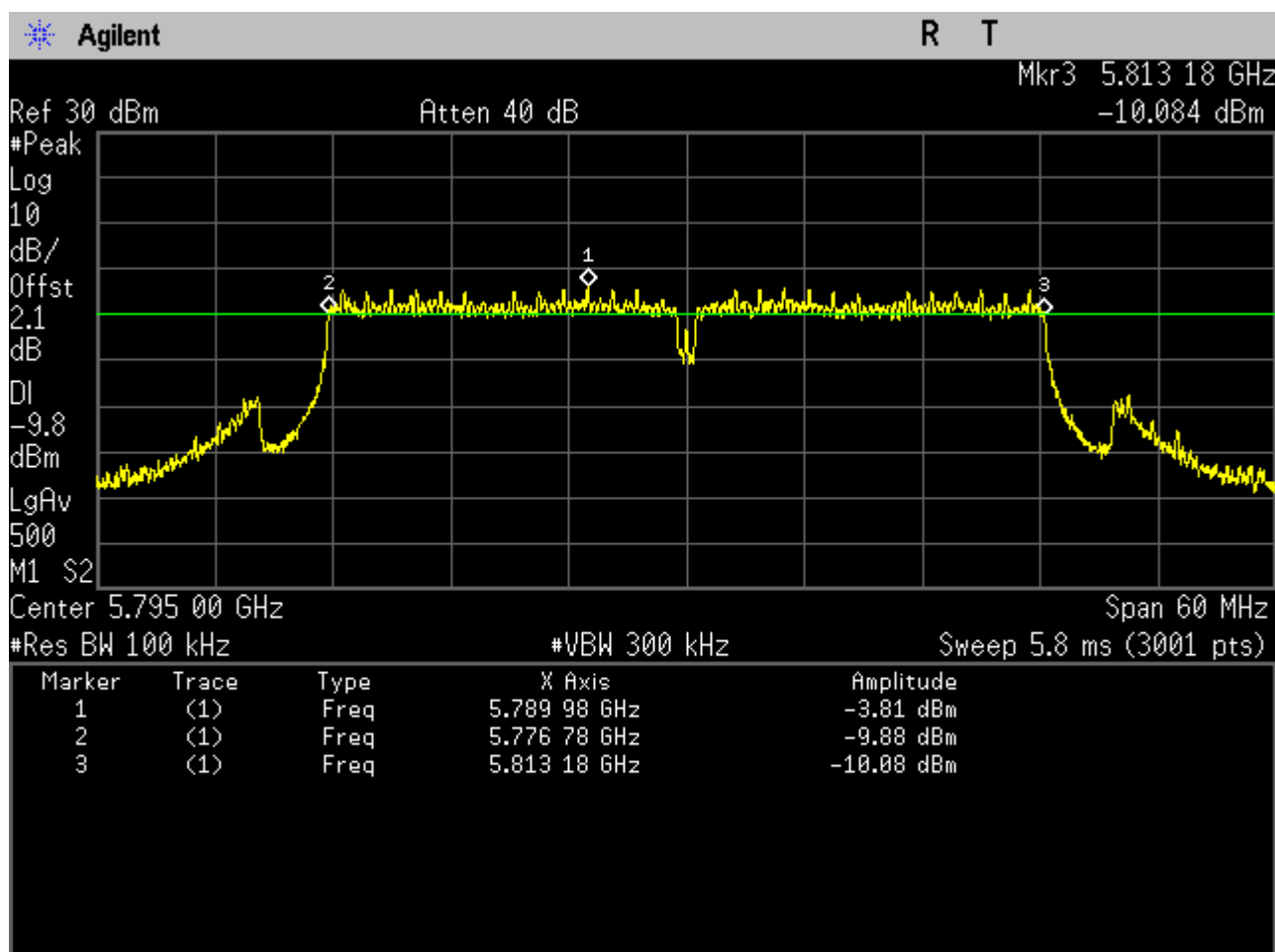
2.5011 N40_159 Ant 2



2.5111 N40M_159 Ant 1



2.5211 N40M_159 Ant 2



Appendix B: Maximum Conducted Output Power

3 Result Table

Test Mode	Test Channel	Frequency[M Hz]	Ant	Meas. Level (Cond.) [dBm]	Verdict
11A	36	5180	Ant 1	11.58	pass
11A	36	5180	Ant 2	10.21	pass
11A	40	5200	Ant 1	11.11	pass
11A	40	5200	Ant 2	10.51	pass
11A	48	5240	Ant 1	10.75	pass
11A	48	5240	Ant 2	10.5	pass
11N20	36	5180	Ant 1	11.44	pass
11N20	36	5180	Ant 2	10.33	pass
11N20M	36	5180	Ant 1	11.56	pass
11N20M	36	5180	Ant 2	10.28	pass
11N20M	36	5180	Sum	13.98	pass
11N20	40	5200	Ant 1	11.09	pass
11N20	40	5200	Ant 2	10.33	pass
11N20M	40	5200	Ant 1	10.51	pass
11N20M	40	5200	Ant 2	10.58	pass
11N20M	40	5200	Sum	13.56	pass
11N20	48	5240	Ant 1	10.68	pass
11N20	48	5240	Ant 2	10.56	pass
11N20M	48	5240	Ant 1	10.76	pass
11N20M	48	5240	Ant 2	10.6	pass
11N20M	48	5240	Sum	13.69	pass
11N40	38	5190	Ant 1	11.25	pass
11N40	38	5190	Ant 2	10.1	pass
11N40M	38	5190	Ant 1	11.19	pass
11N40M	38	5190	Ant 2	10.03	pass
11N40M	38	5190	Sum	13.66	pass
11N40	46	5230	Ant 1	10.95	pass
11N40	46	5230	Ant 2	10.27	pass
11N40M	46	5230	Ant 1	10.68	pass
11N40M	46	5230	Ant 2	10.44	pass
11N40M	46	5230	Sum	13.57	pass
11A	149	5745	Ant 1	9.79	pass
11A	149	5745	Ant 2	9.43	pass
11A	157	5785	Ant 1	9.82	pass
11A	157	5785	Ant 2	9.6	pass

11A	165	5825	Ant 1	9.98	pass
11A	165	5825	Ant 2	9.63	pass
11N20	149	5745	Ant 1	9.43	pass
11N20	149	5745	Ant 2	9.42	pass
11N20M	149	5745	Ant 1	7.86	pass
11N20M	149	5745	Ant 2	7.92	pass
11N20M	149	5745	Sum	10.90	pass
11N20	157	5785	Ant 1	9.72	pass
11N20	157	5785	Ant 2	9.59	pass
11N20M	157	5785	Ant 1	8.27	pass
11N20M	157	5785	Ant 2	7.99	pass
11N20M	157	5785	Sum	11.14	pass
11N20	165	5825	Ant 1	9.84	pass
11N20	165	5825	Ant 2	9.41	pass
11N20M	165	5825	Ant 1	8.26	pass
11N20M	165	5825	Ant 2	8.16	pass
11N20M	165	5825	Sum	11.22	pass
11N40	151	5755	Ant 1	9.24	pass
11N40	151	5755	Ant 2	8.91	pass
11N40M	151	5755	Ant 1	6.83	pass
11N40M	151	5755	Ant 2	6.41	pass
11N40M	151	5755	Sum	9.64	pass
11N40	159	5795	Ant 1	9.41	pass
11N40	159	5795	Ant 2	8.96	pass
11N40M	159	5795	Ant 1	7.01	pass
11N40M	159	5795	Ant 2	6.94	pass
11N40M	159	5795	Sum	9.99	pass

Appendix C: Peak Power Spectral Density Level

4 Result Table

Test Mode	Test Channel	Frequency[M Hz]	Ant	Meas. Level [dBm/MHz]	Verdict
11A	36	5180	Ant 1	0.57	pass
11A	36	5180	Ant 2	-0.73	pass
11A	40	5200	Ant 1	0.18	pass
11A	40	5200	Ant 2	0.43	pass
11A	48	5240	Ant 1	-0.17	pass
11A	48	5240	Ant 2	-0.52	pass
11N20	36	5180	Ant 1	0.24	pass
11N20	36	5180	Ant 2	-1.06	pass
11N20M	36	5180	Ant 1	0.64	pass
11N20M	36	5180	Ant 2	-0.65	pass
11N20M	36	5180	Sum	3.05	pass
11N20	40	5200	Ant 1	0.14	pass
11N20	40	5200	Ant 2	-0.87	pass
11N20M	40	5200	Ant 1	-0.44	pass
11N20M	40	5200	Ant 2	-0.36	pass
11N20M	40	5200	Sum	2.61	pass
11N20	48	5240	Ant 1	-0.43	pass
11N20	48	5240	Ant 2	-0.54	pass
11N20M	48	5240	Ant 1	-0.02	pass
11N20M	48	5240	Ant 2	-0.38	pass
11N20M	48	5240	Sum	2.81	pass
11N40	38	5190	Ant 1	-3.42	pass
11N40	38	5190	Ant 2	-4.37	pass
11N40M	38	5190	Ant 1	-3.37	pass
11N40M	38	5190	Ant 2	-4.24	pass
11N40M	38	5190	Sum	0.77	pass
11N40	46	5230	Ant 1	-3.74	pass
11N40	46	5230	Ant 2	-4.39	pass
11N40M	46	5230	Ant 1	-3.86	pass
11N40M	46	5230	Ant 2	-3.78	pass
11N40M	46	5230	Sum	0.81	pass
11A	149	5745	Ant 1	1.42	pass
11A	149	5745	Ant 2	1.1	pass
11A	157	5785	Ant 1	1.58	pass
11A	157	5785	Ant 2	1.67	pass
11A	165	5825	Ant 1	1.24	pass

11A	165	5825	Ant 2	0.73	pass
11N20	149	5745	Ant 1	1.02	pass
11N20	149	5745	Ant 2	0.64	pass
11N20M	149	5745	Ant 1	3.38	pass
11N20M	149	5745	Ant 2	3.02	pass
11N20M	149	5745	Sum	6.21	pass
11N20	157	5785	Ant 1	1.05	pass
11N20	157	5785	Ant 2	1.33	pass
11N20M	157	5785	Ant 1	3.31	pass
11N20M	157	5785	Ant 2	2.73	pass
11N20M	157	5785	Sum	6.04	pass
11N20	165	5825	Ant 1	1.22	pass
11N20	165	5825	Ant 2	1.4	pass
11N20M	165	5825	Ant 1	2.84	pass
11N20M	165	5825	Ant 2	3.53	pass
11N20M	165	5825	Sum	6.21	pass
11N40	151	5755	Ant 1	-3.25	pass
11N40	151	5755	Ant 2	-3.77	pass
11N40M	151	5755	Ant 1	-0.79	pass
11N40M	151	5755	Ant 2	-1.27	pass
11N40M	151	5755	Sum	1.99	pass
11N40	159	5795	Ant 1	-3.2	pass
11N40	159	5795	Ant 2	-3.96	pass
11N40M	159	5795	Ant 1	-0.34	pass
11N40M	159	5795	Ant 2	-0.55	pass
11N40M	159	5795	Sum	2.57	pass

Appendix D: Unwanted Emissions into Non-Restricted Frequency Bands

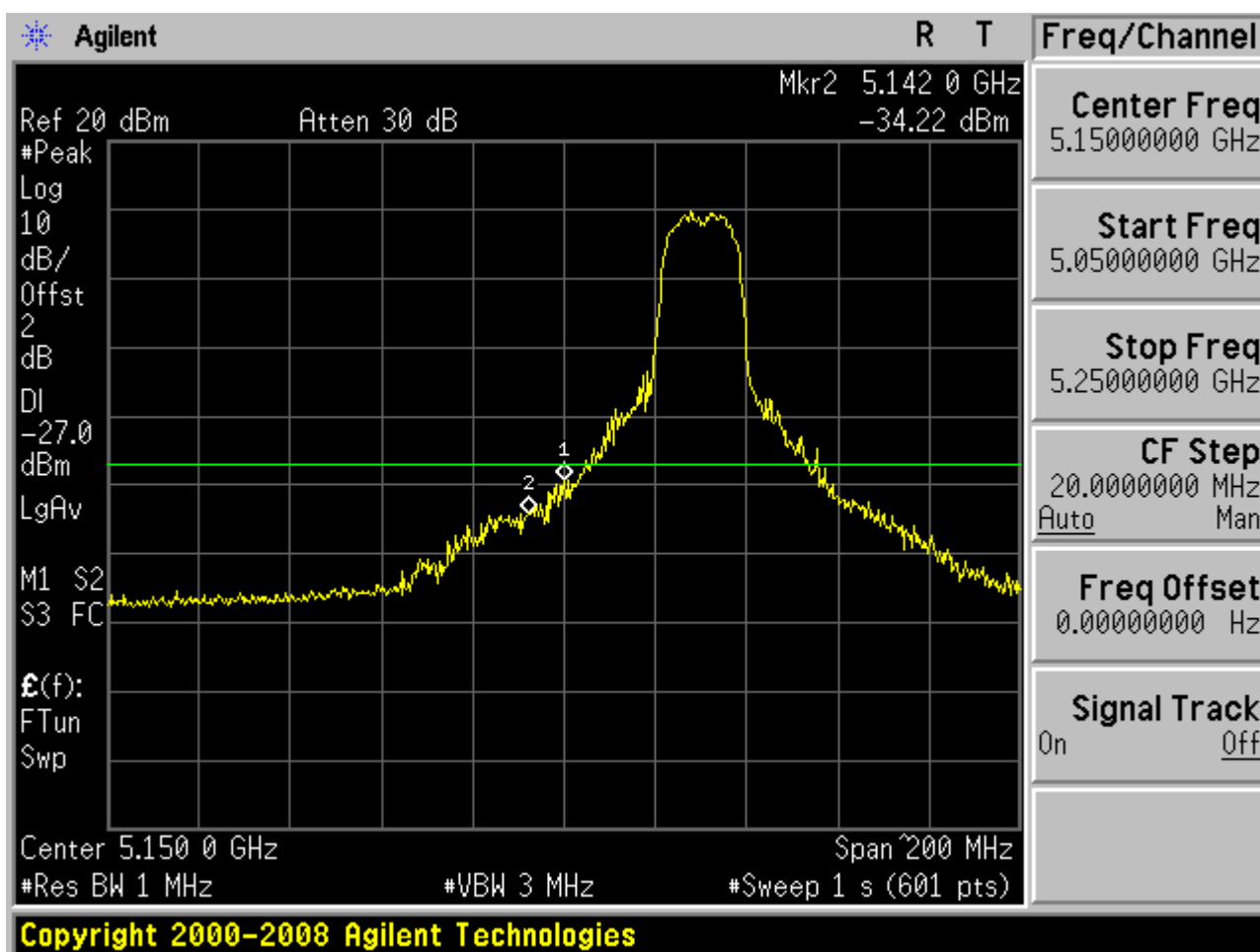
5 Result Table

FCC Part15, Subpart E		
Test Item	Frequency Range	Result
Unwanted Emissions into Non-Restricted Frequency Bands	5150-5250	pass
	5725-5825	pass

Note: We tested all modes, but the data presented below is the worst case.

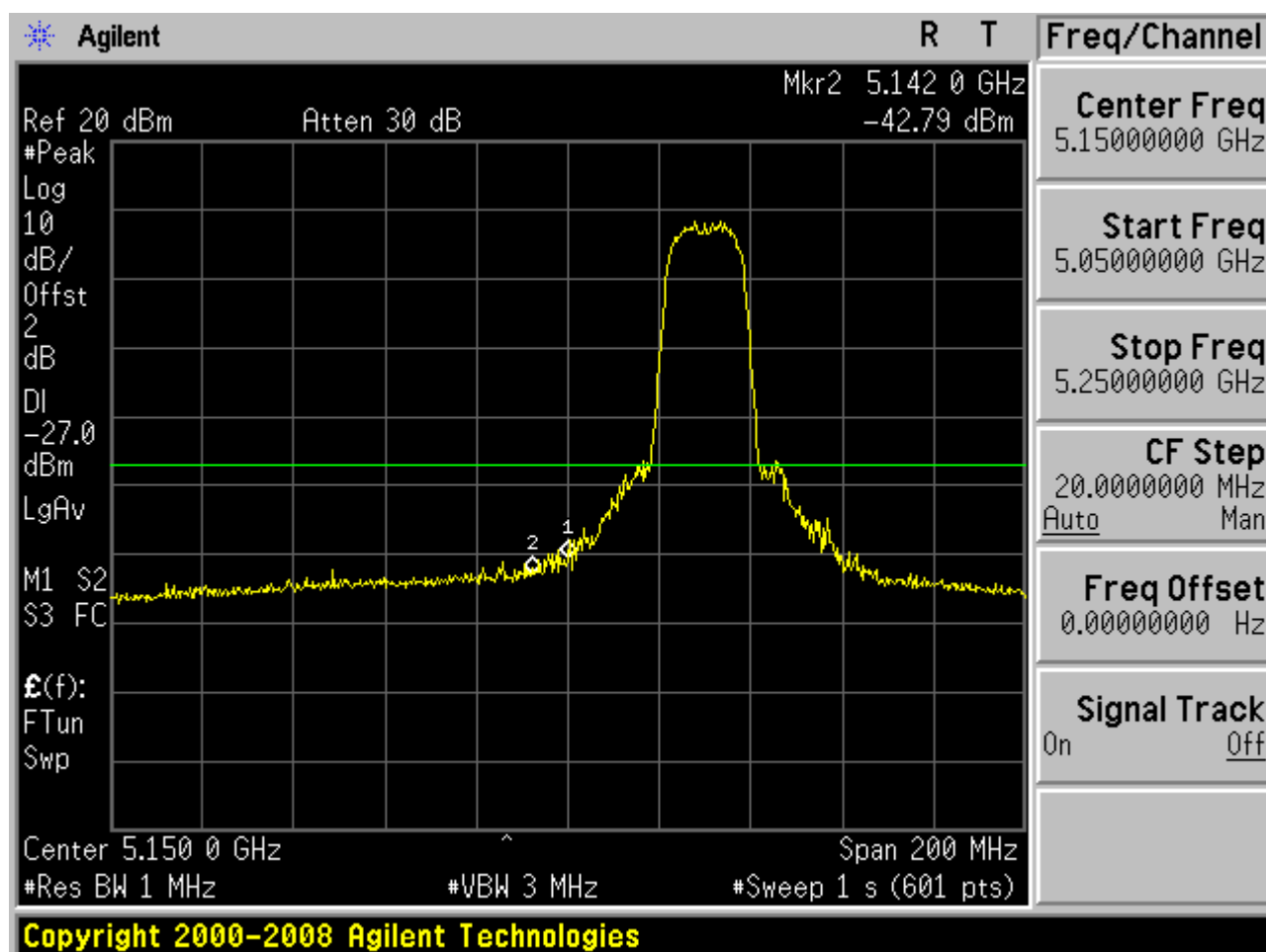
6 Test Plot

6.1 11A_36 Ant 1

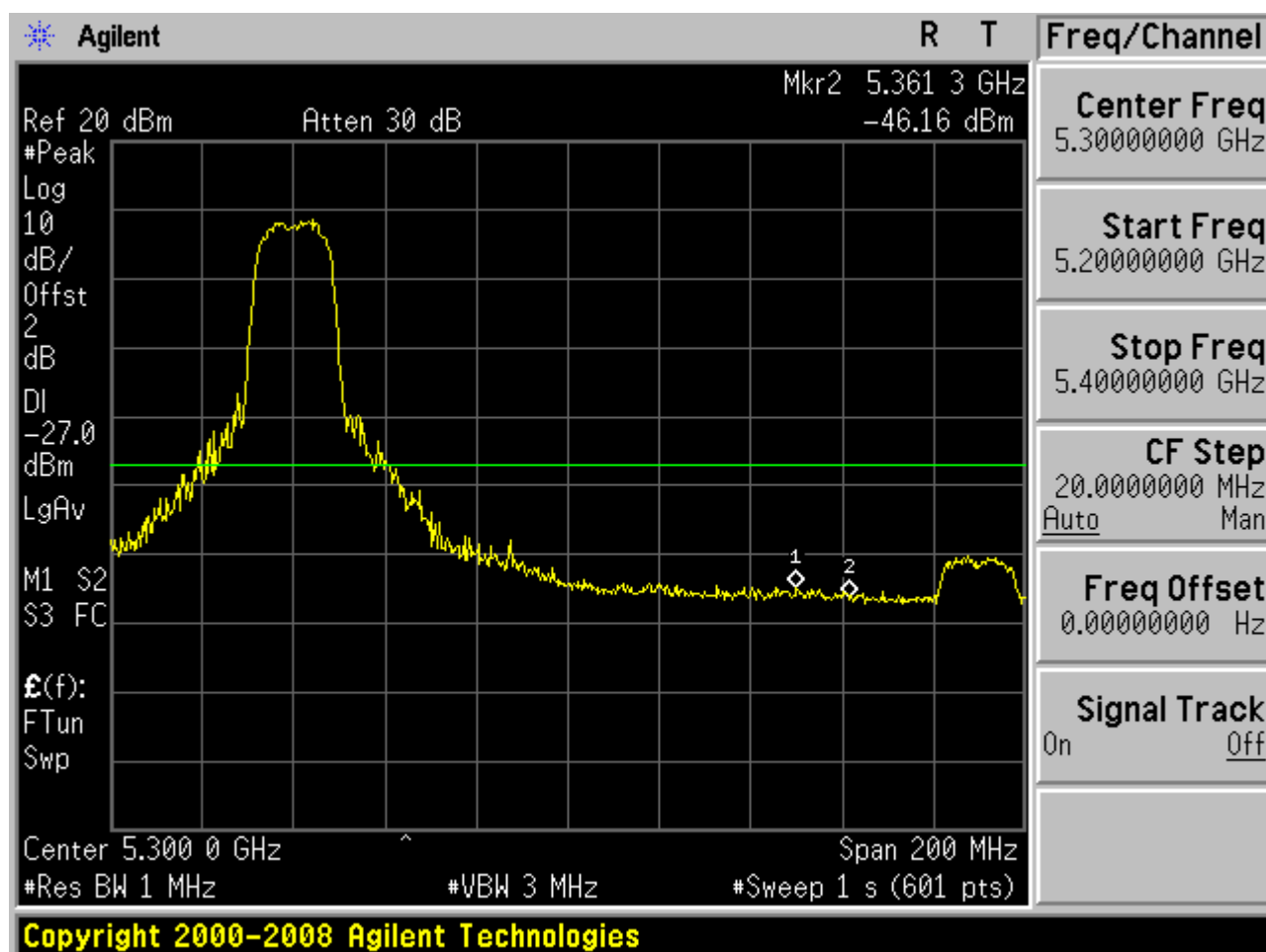




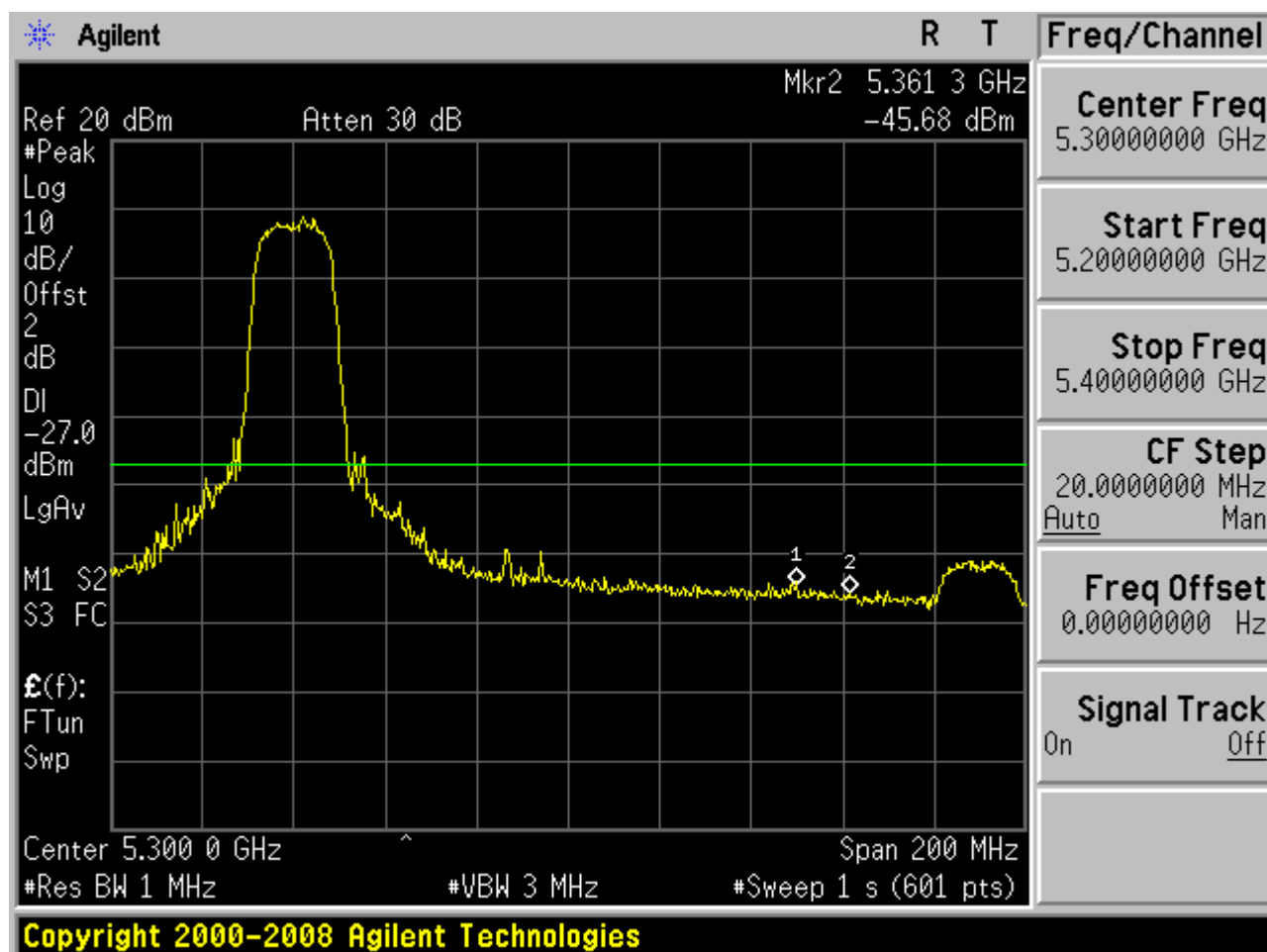
6.2 11A_36 Ant 2



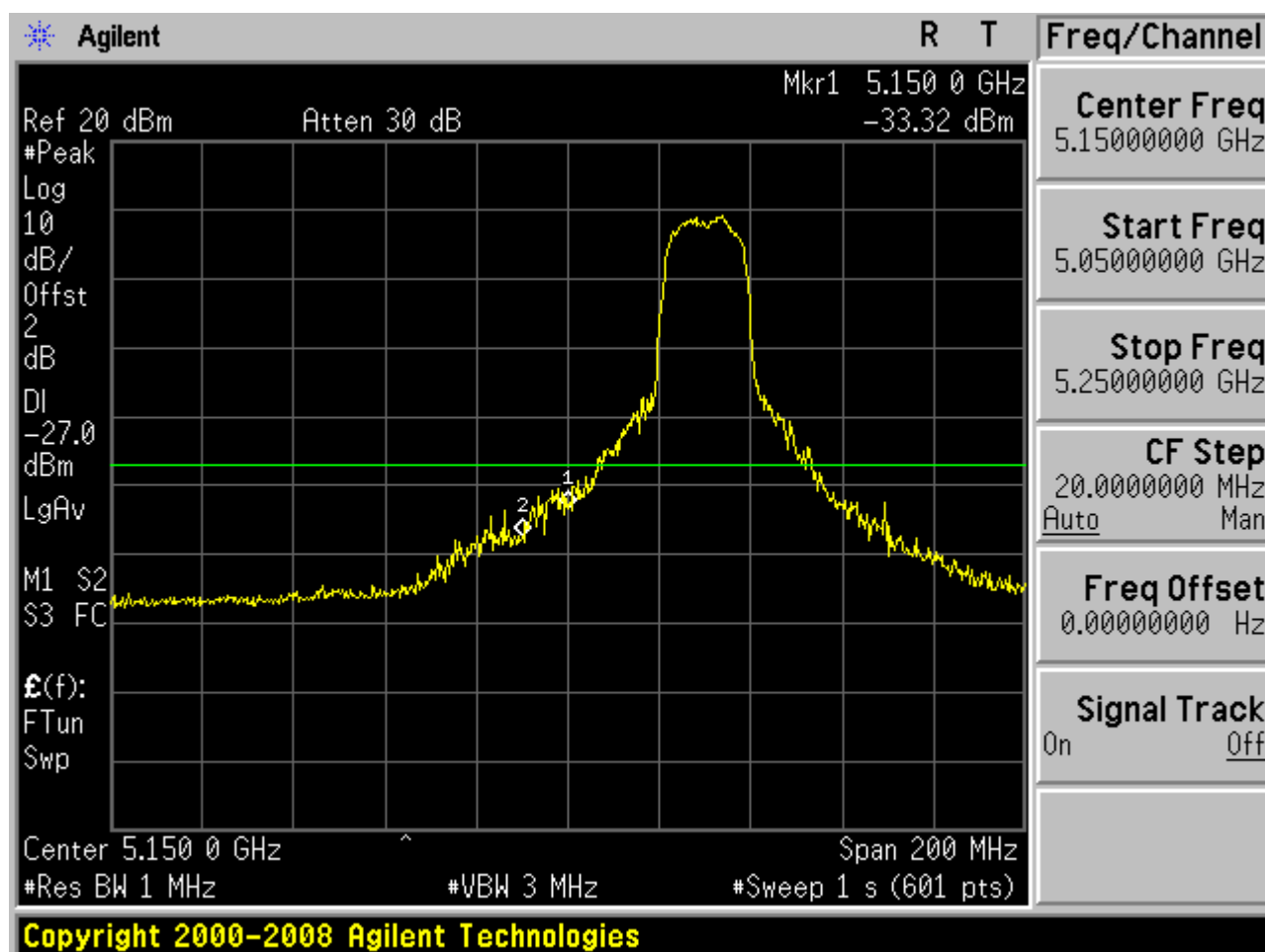
6.3 11A_48 Ant 1



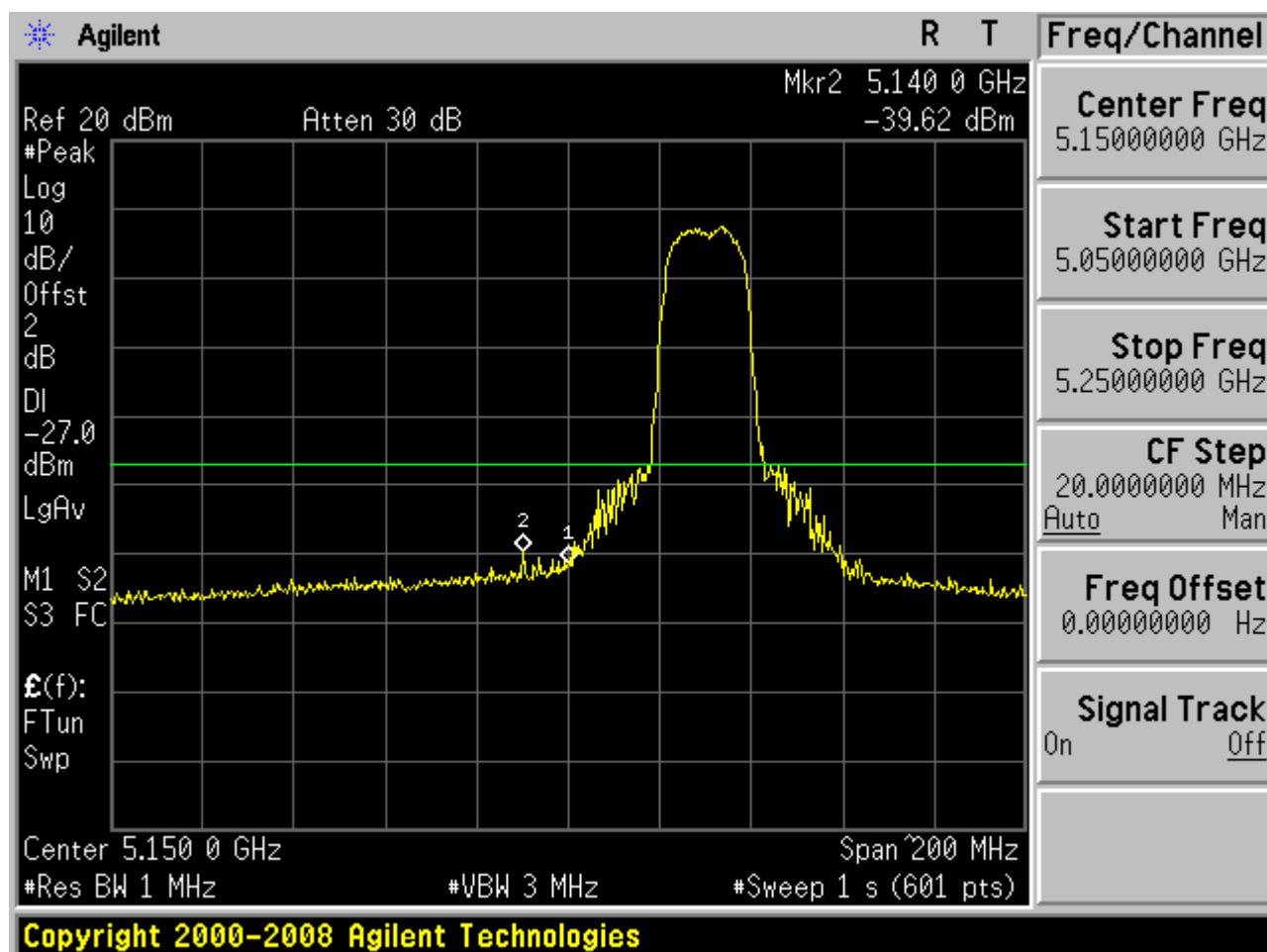
6.4 11A_48 Ant 2



6.5 11N20_36 Ant 1

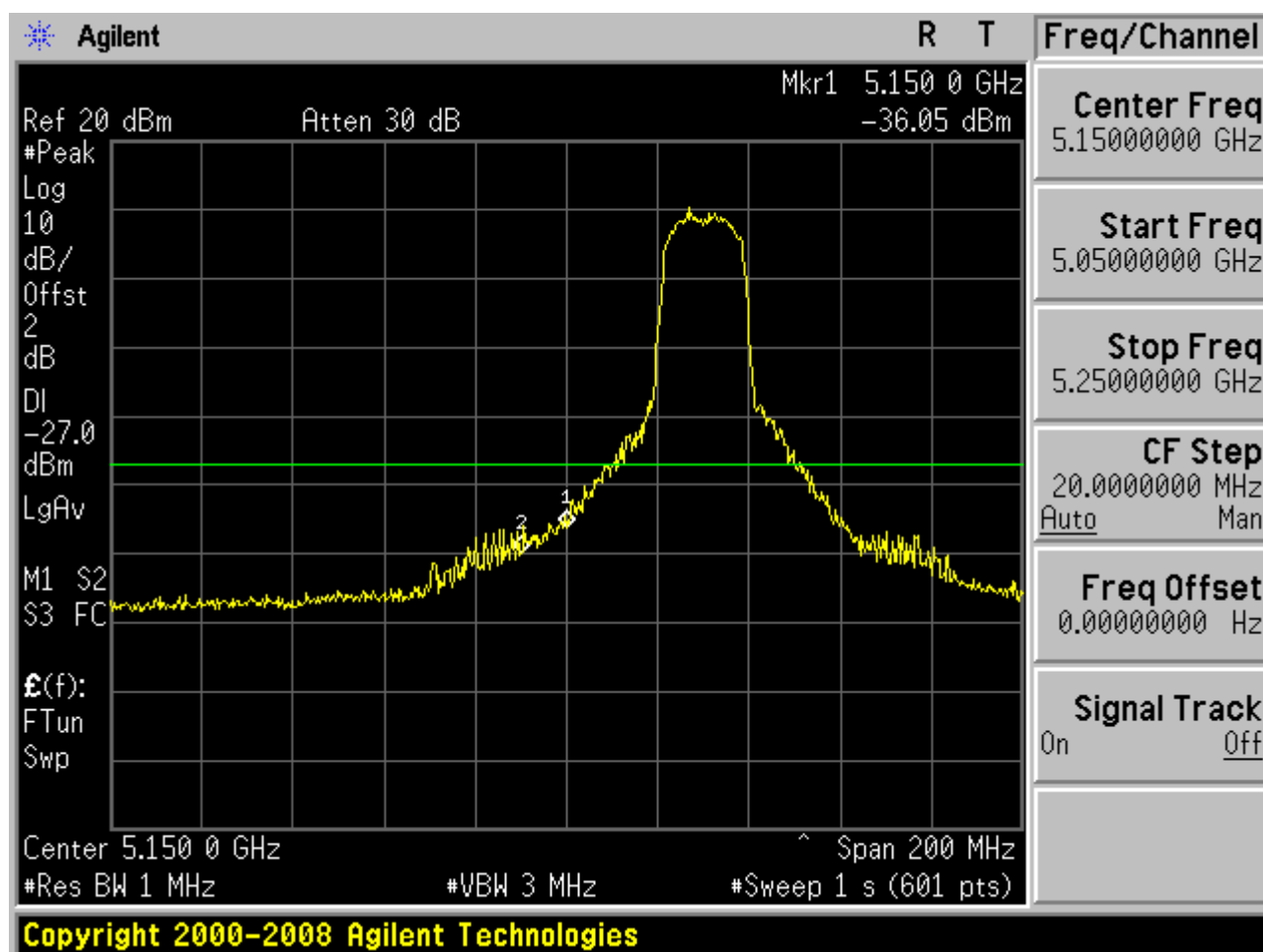


6.6 11N20_36 Ant 2



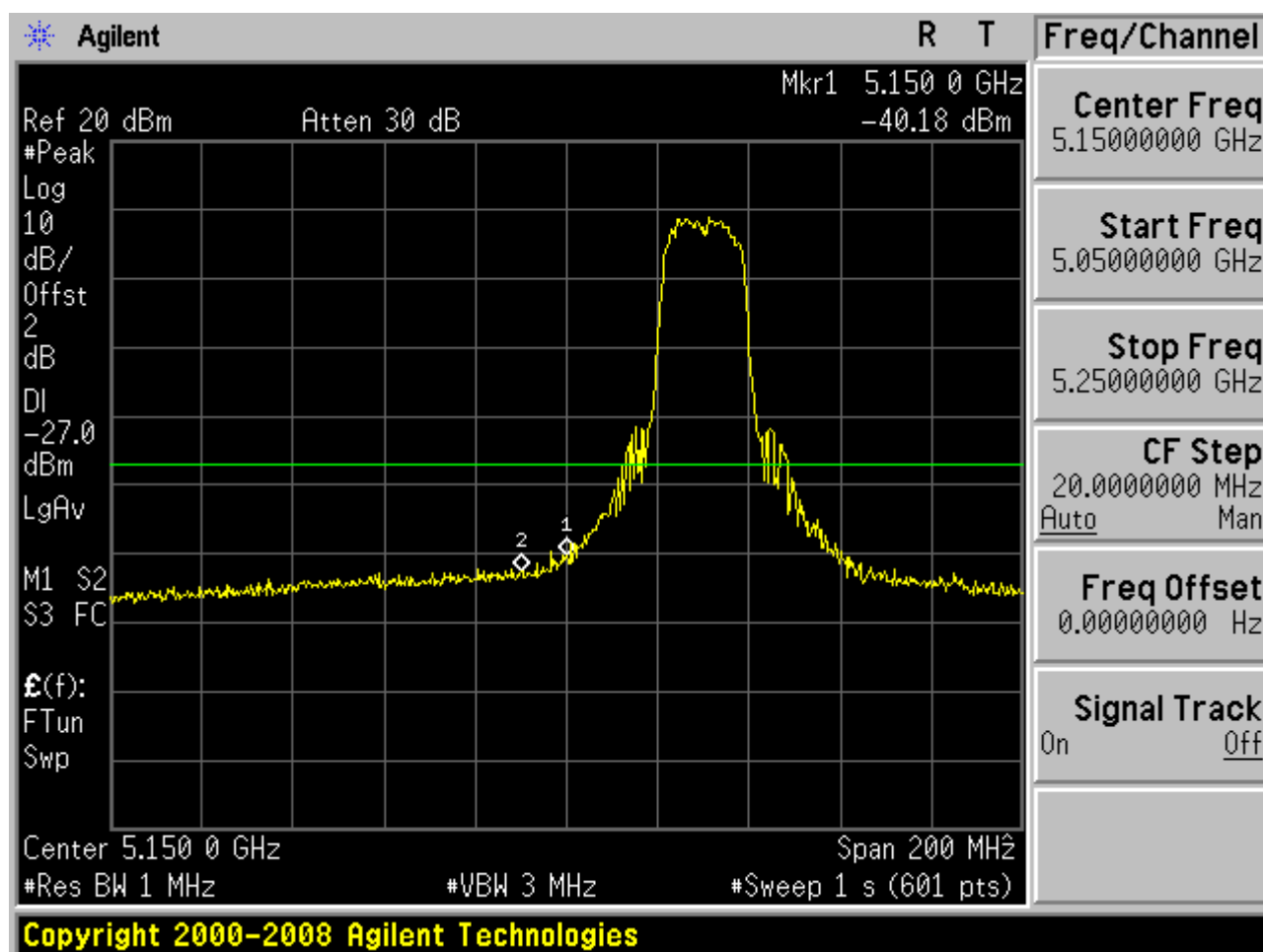


6.7 11N20M_36 Ant 1



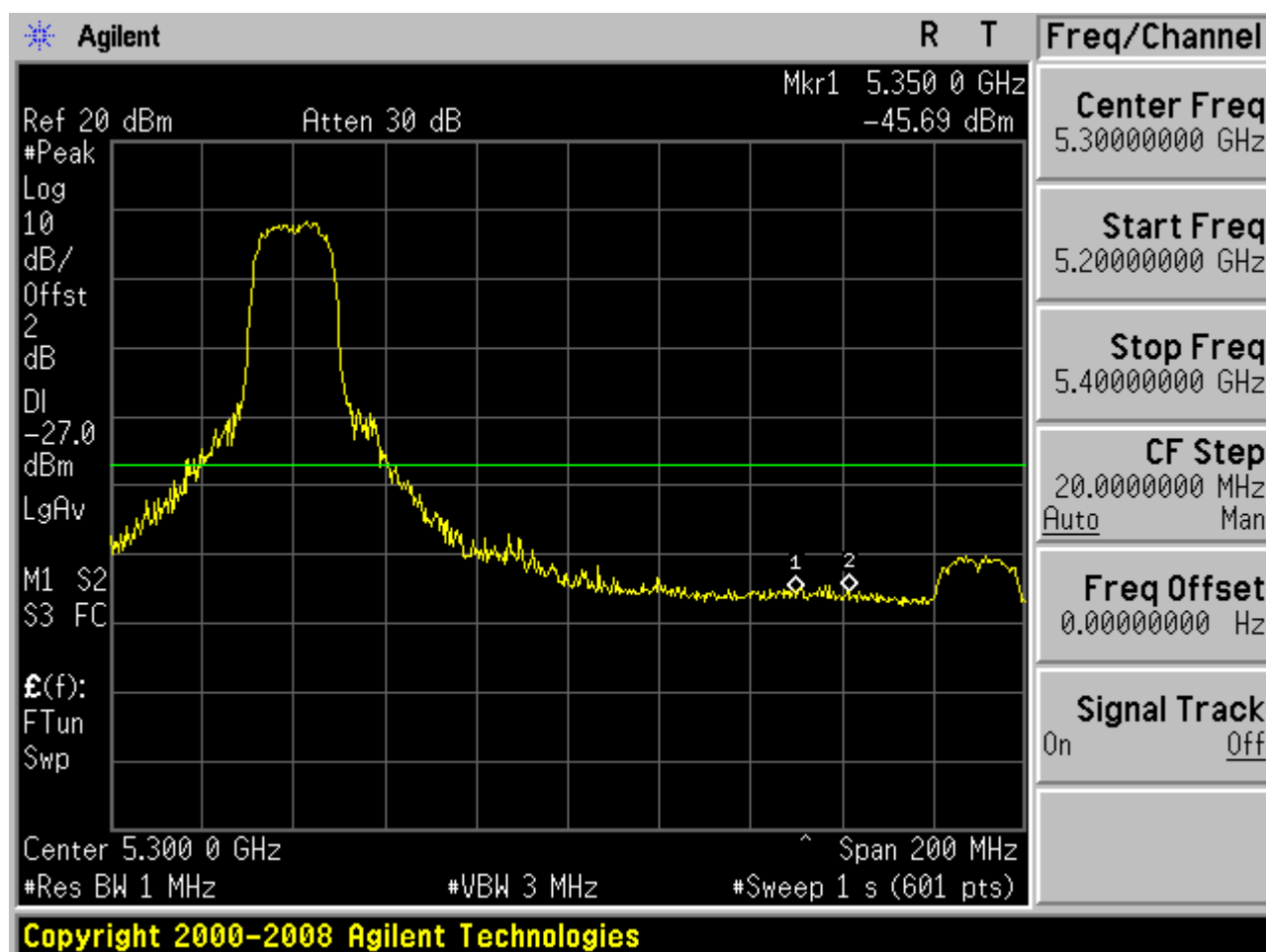


6.8 11N20M_36 Ant 2



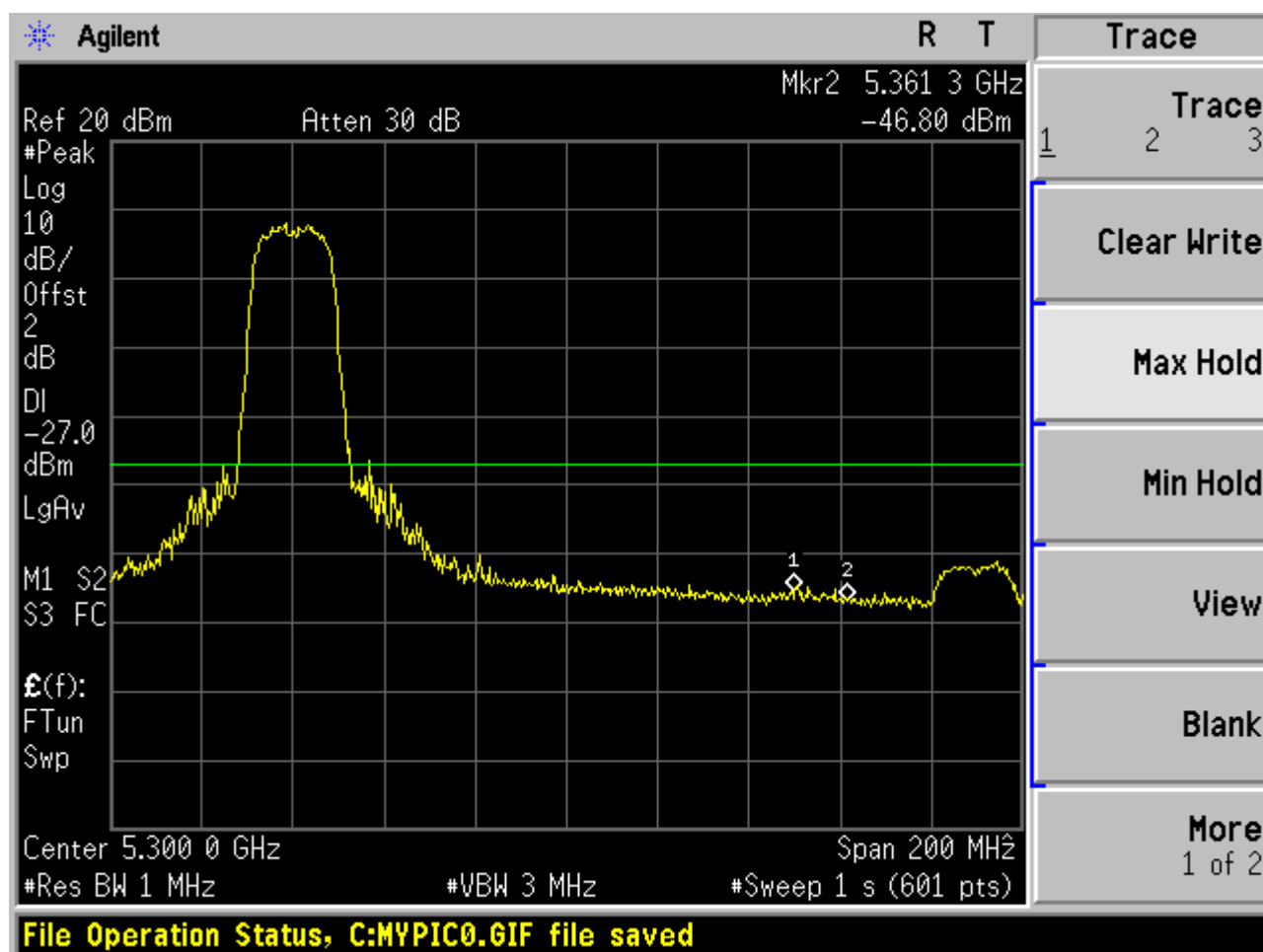


6.9 11N20_48 Ant 1



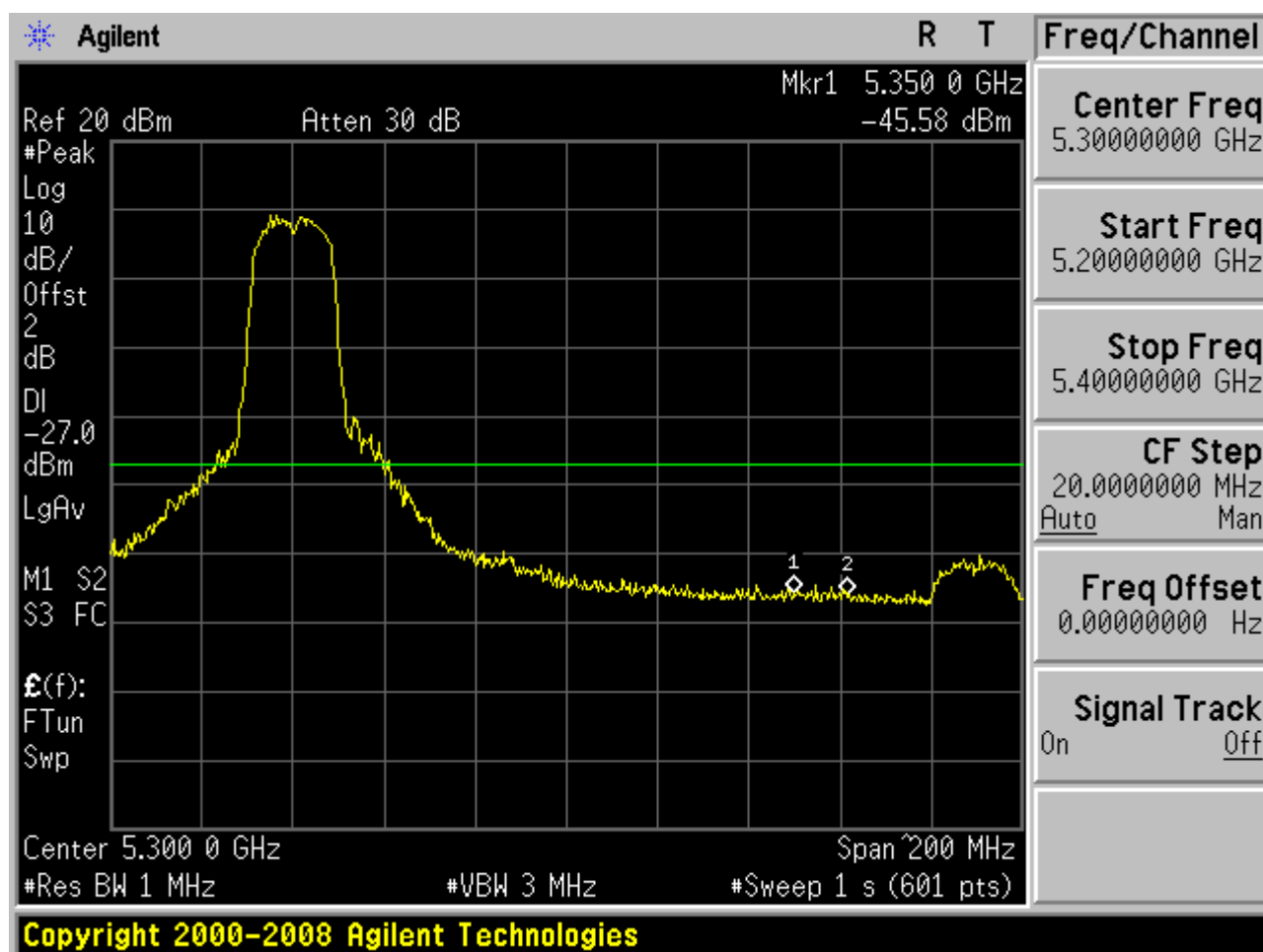


6.1011N20_48 Ant 2

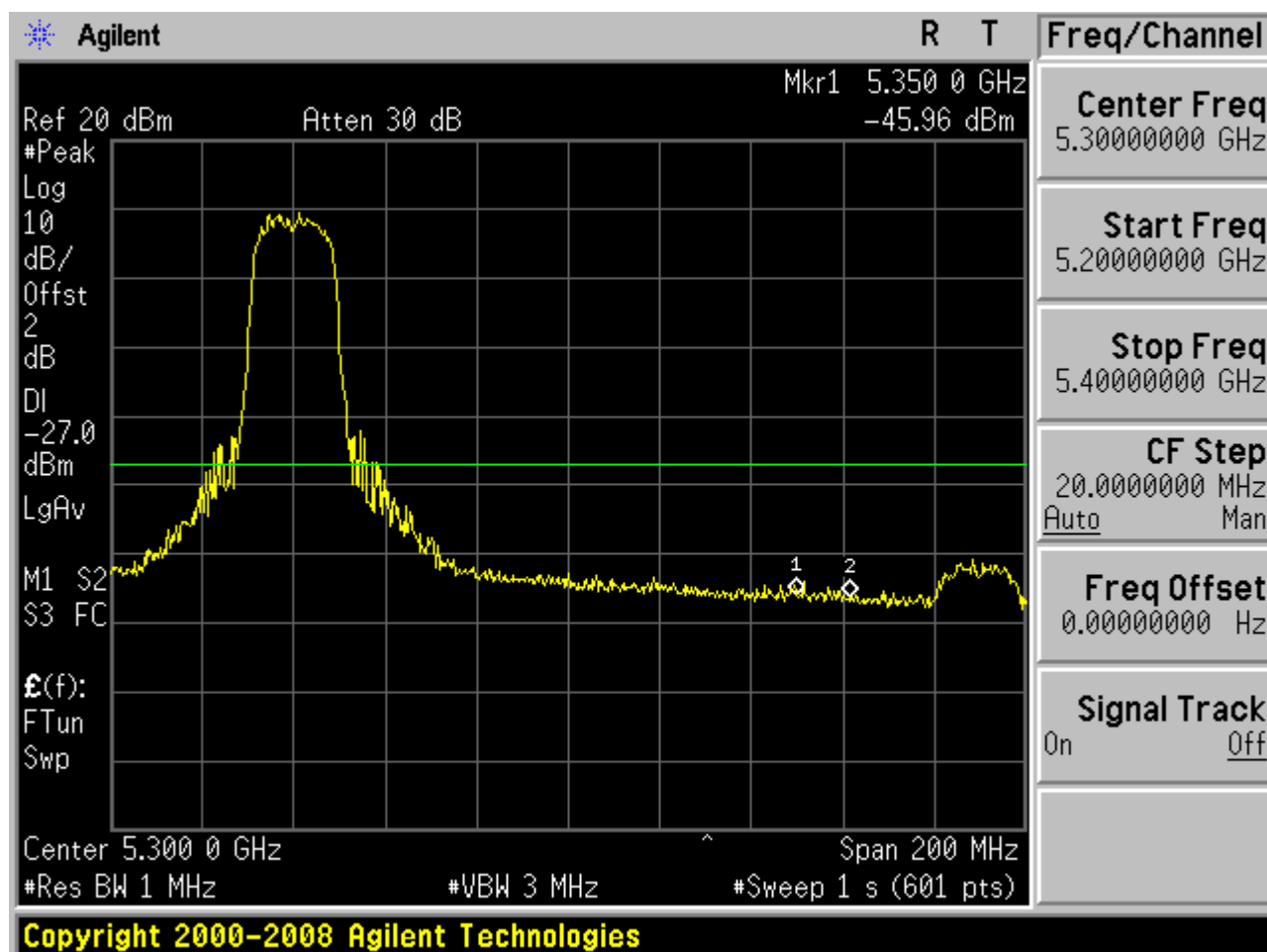




6.1111N20M_48 Ant 1

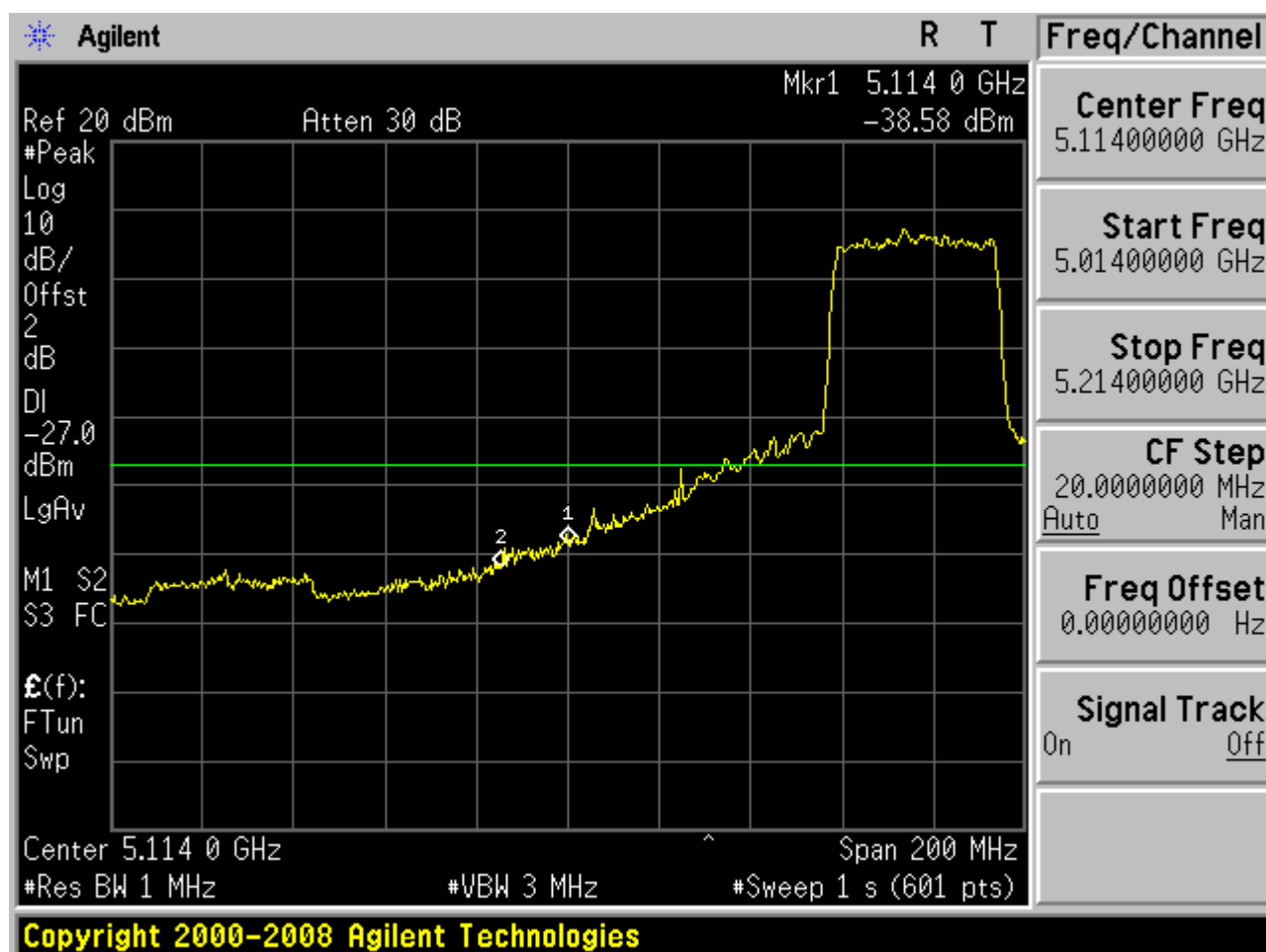


6.1211N20M_48 Ant 2



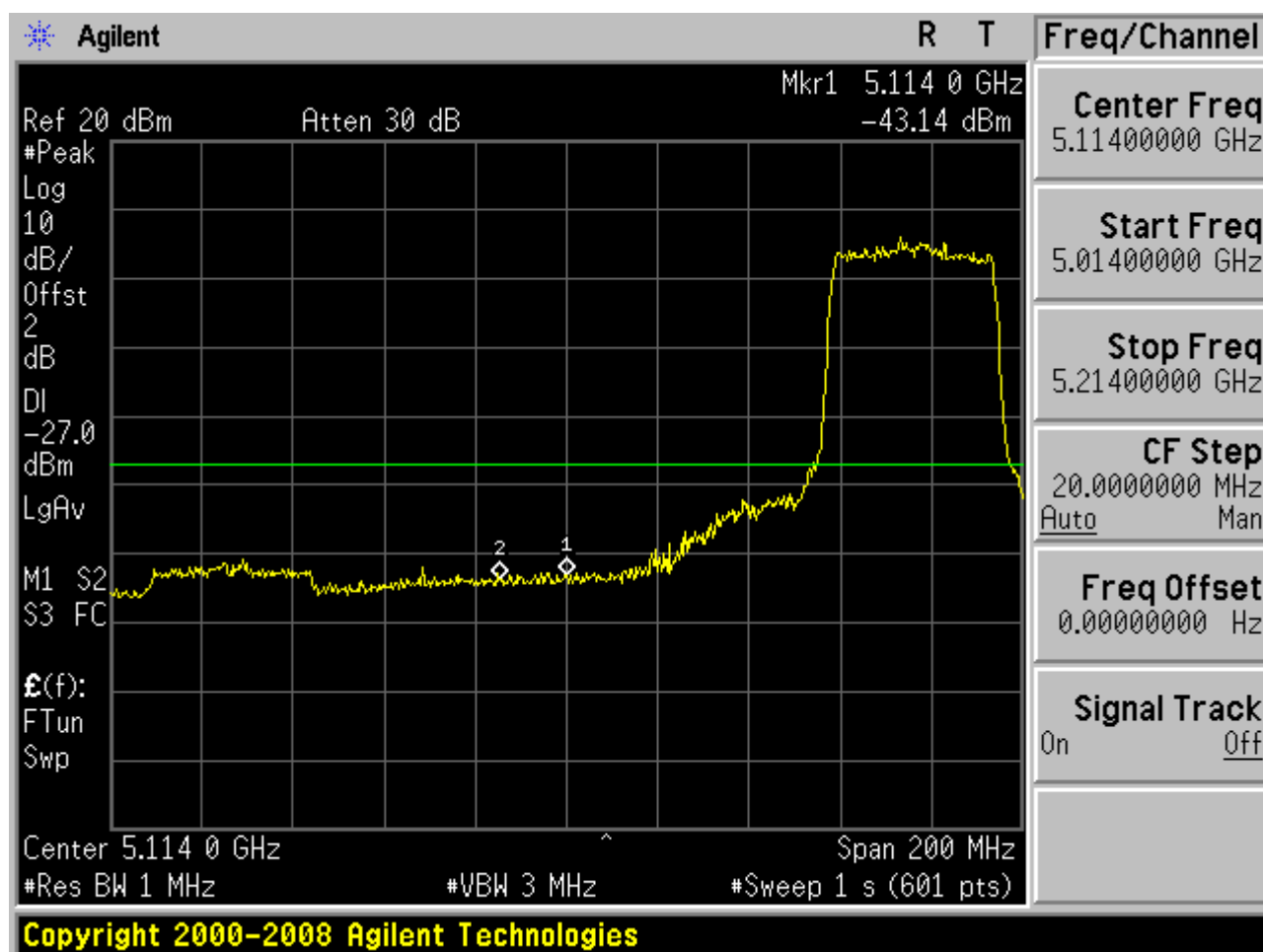


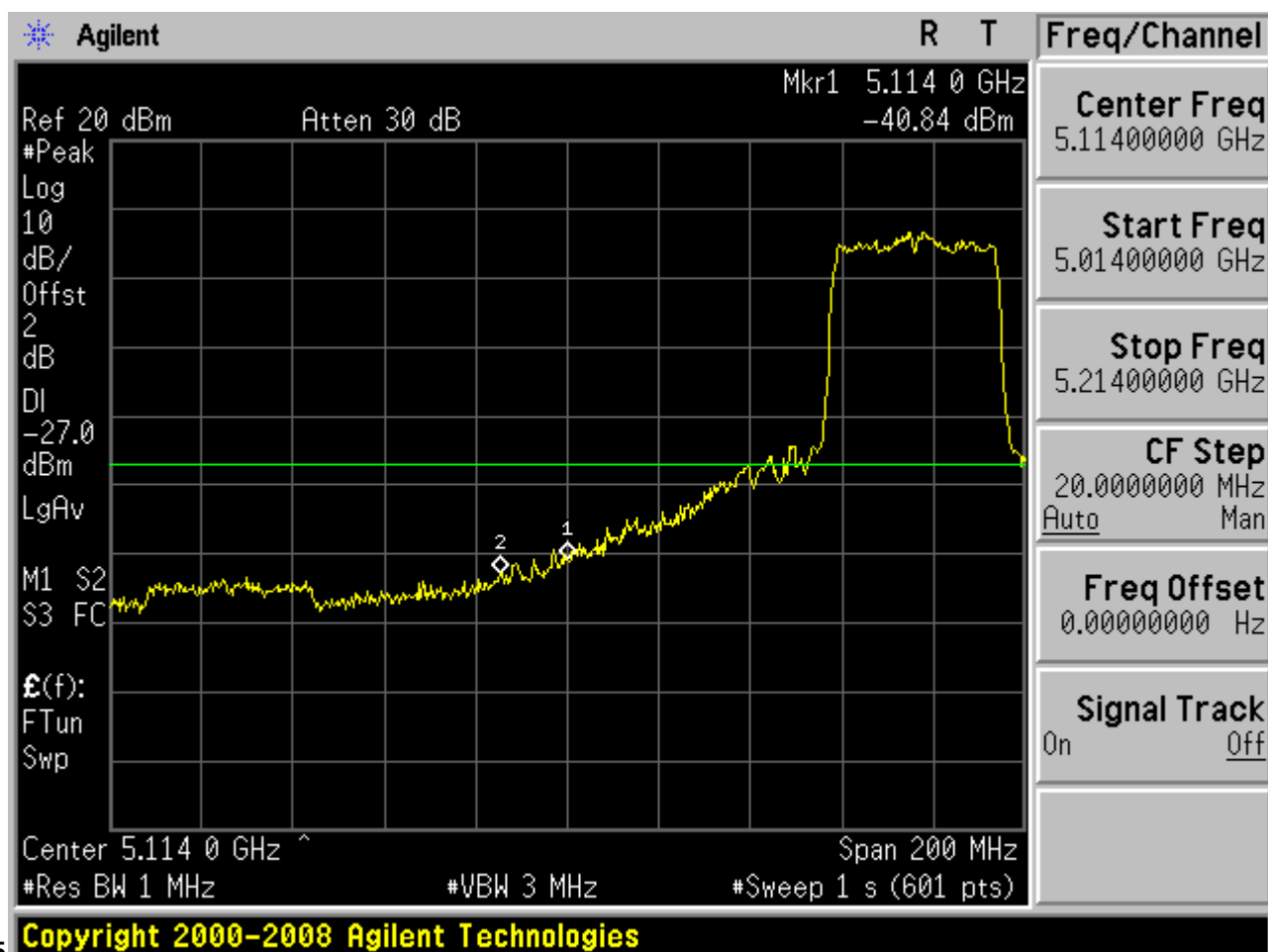
6.1311N40_38 Ant 1





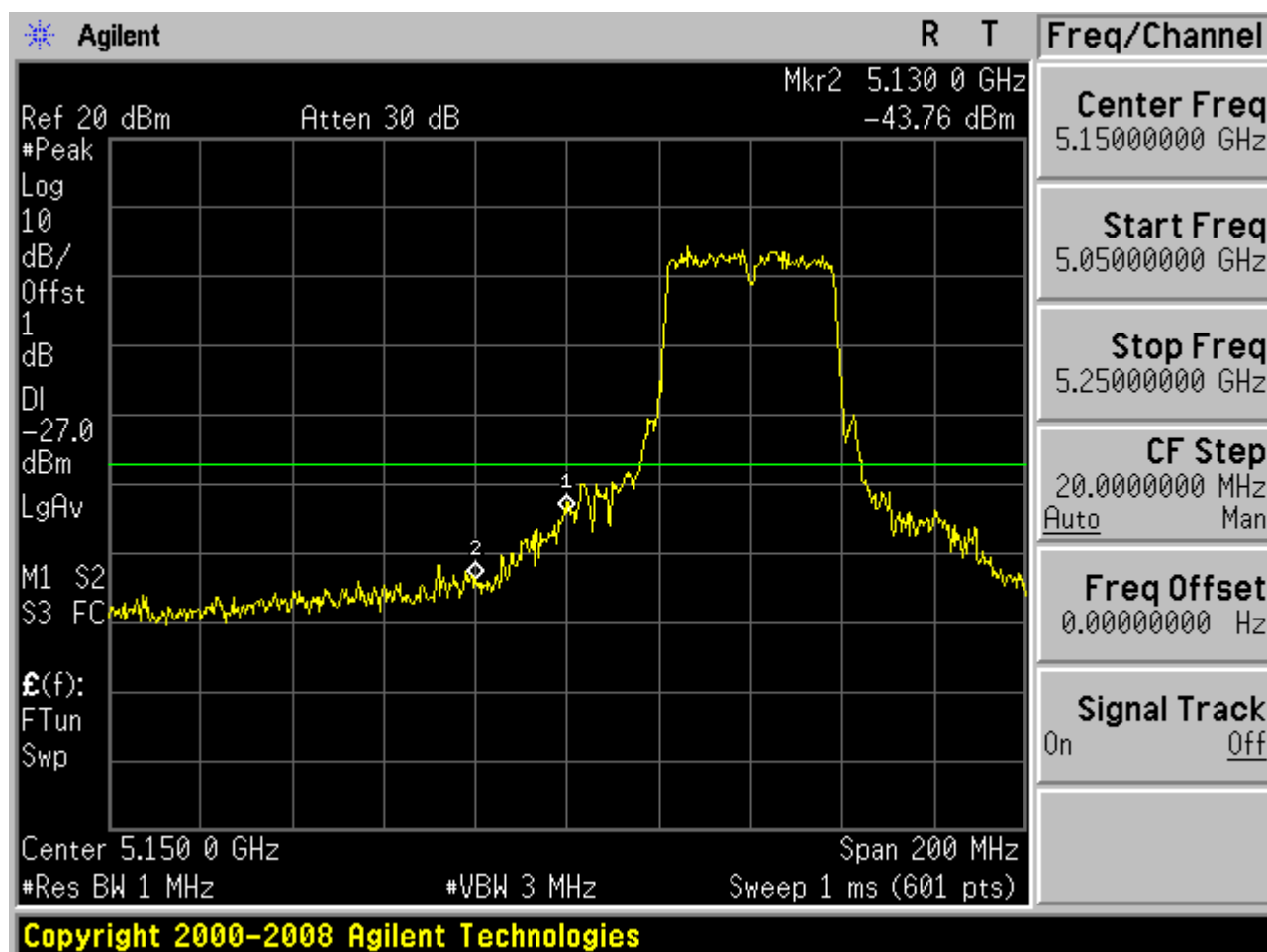
6.1411N40_38 Ant 2





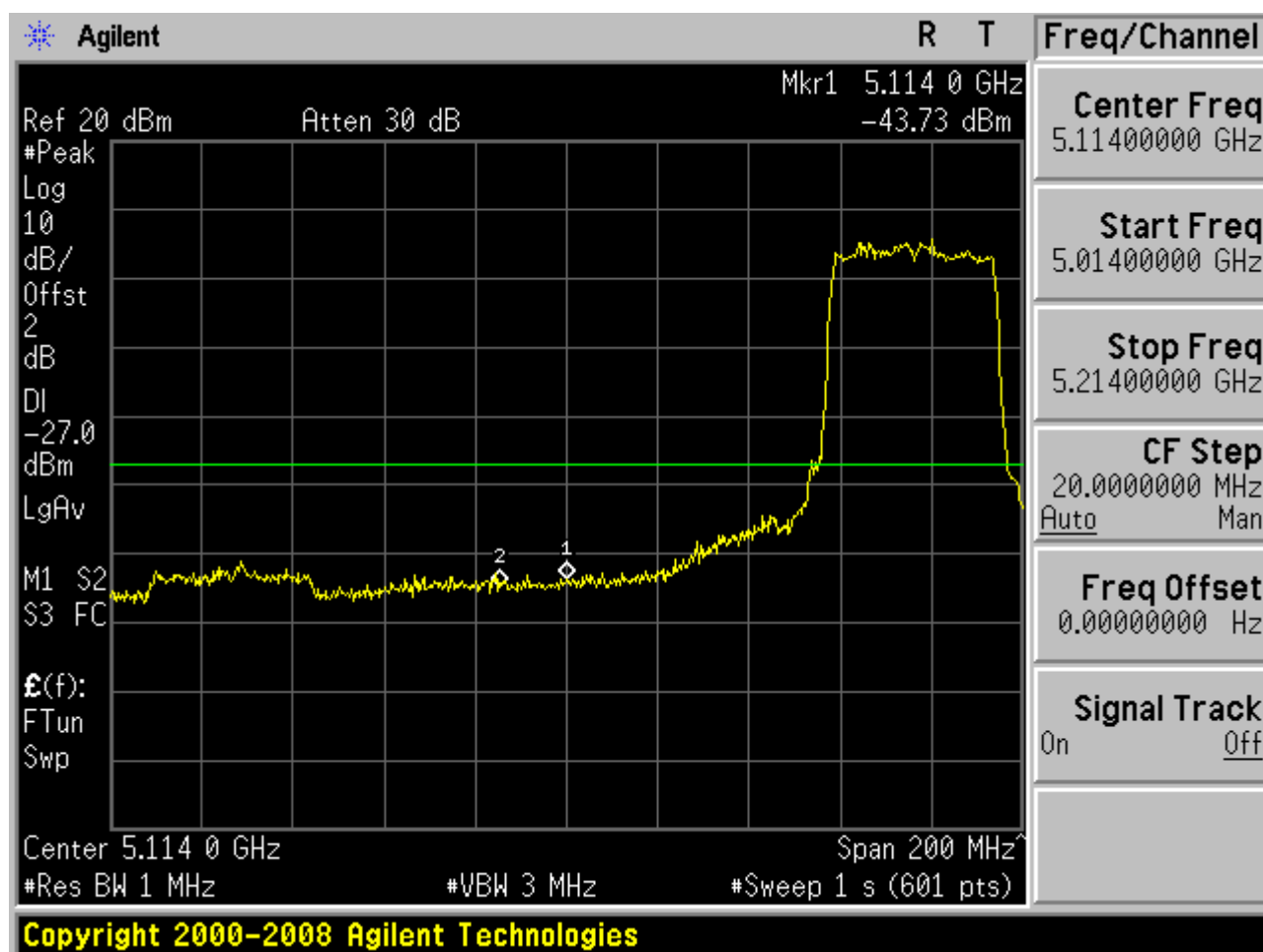
6.15

11N40M_38 Ant 1

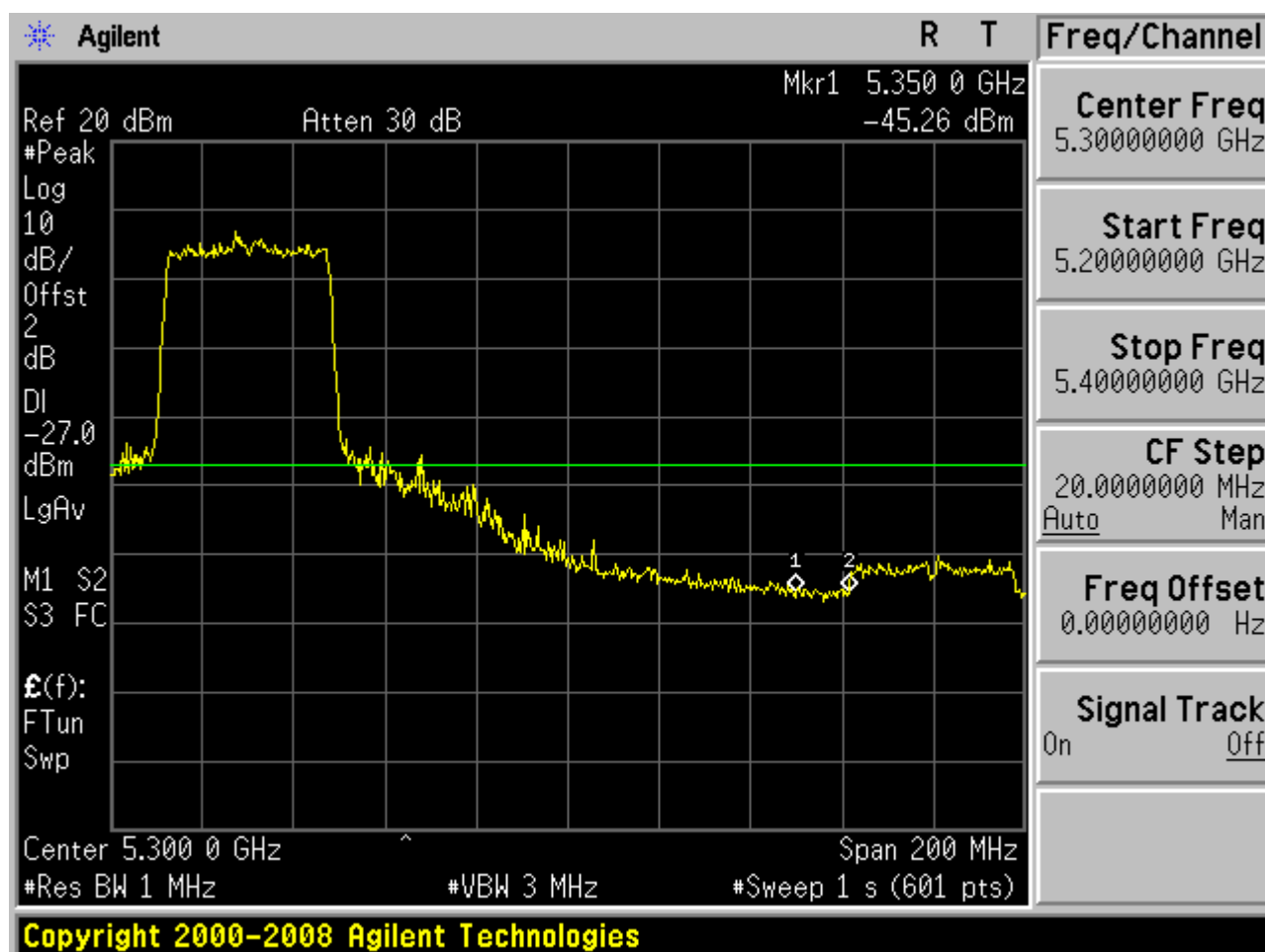




6.1611N40M_38 Ant 2

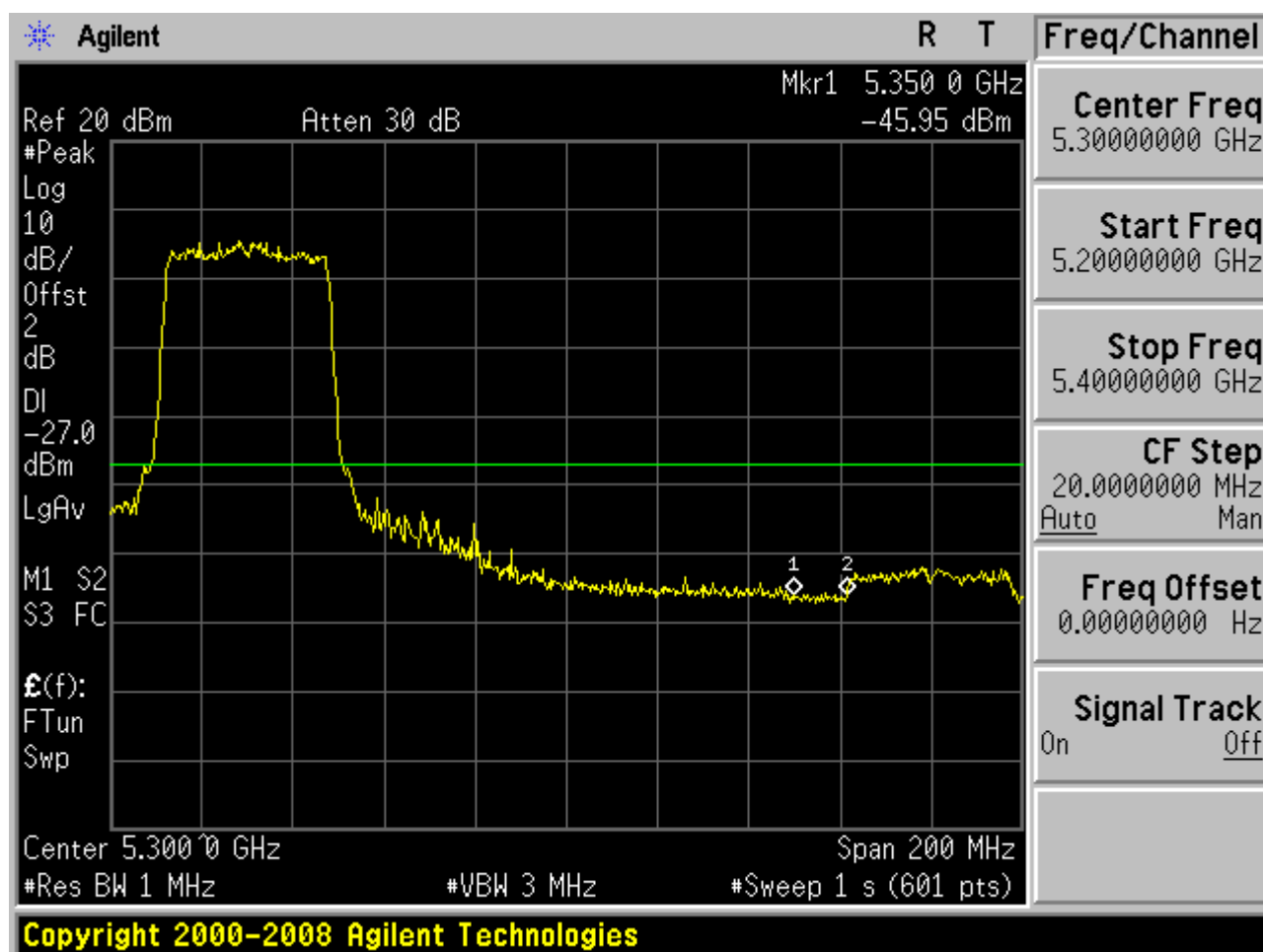


6.1711N40_46 Ant 1



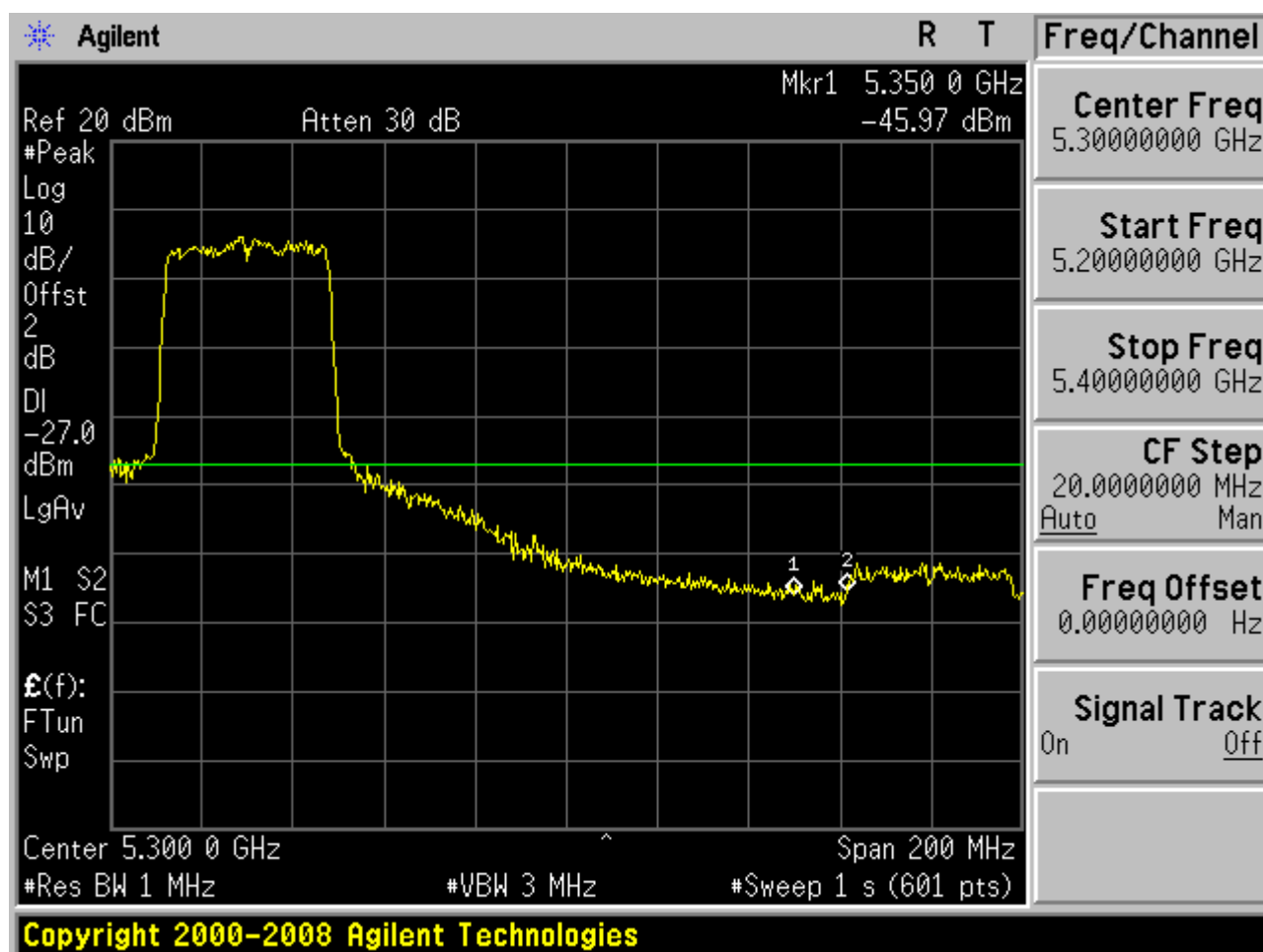


6.1811N40_46 Ant 2



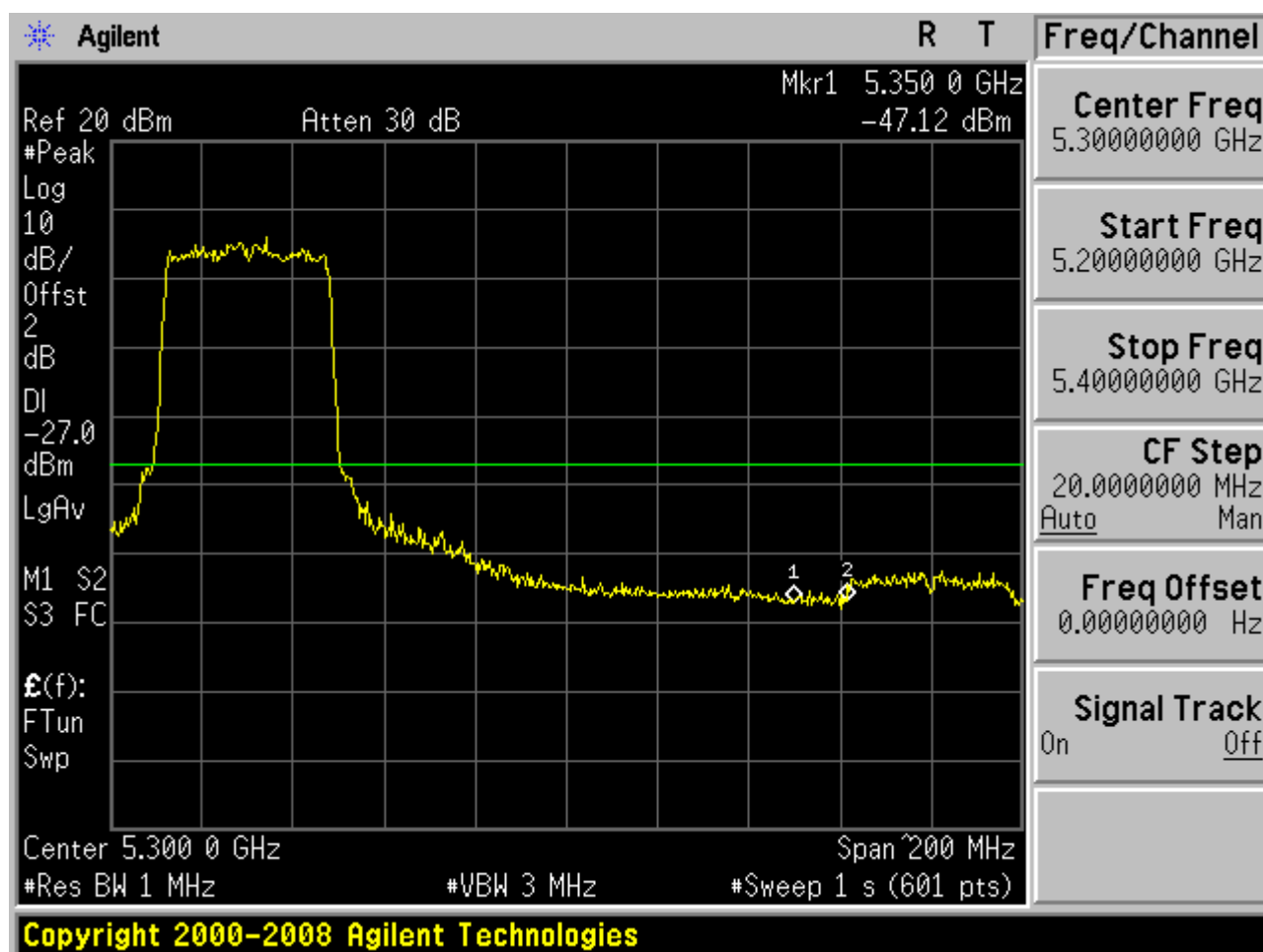


6.1911N40M_46 Ant 1



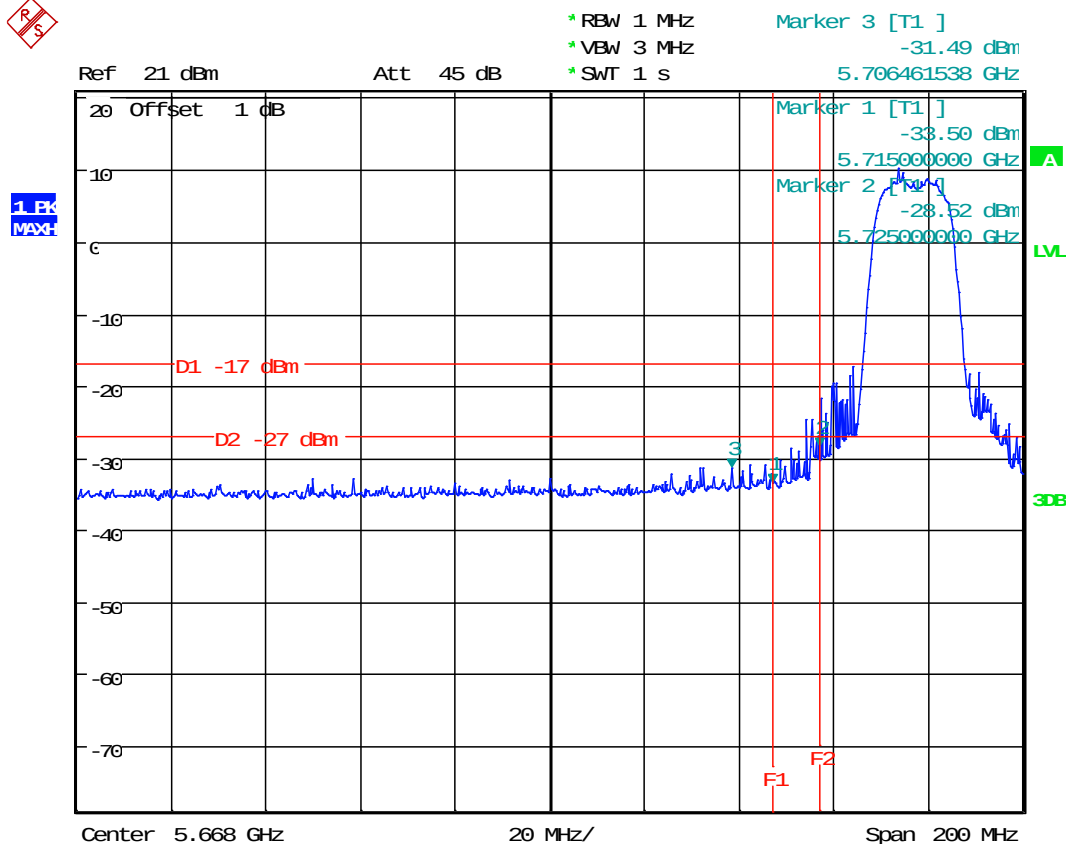


6.2011N40M_46 Ant 2





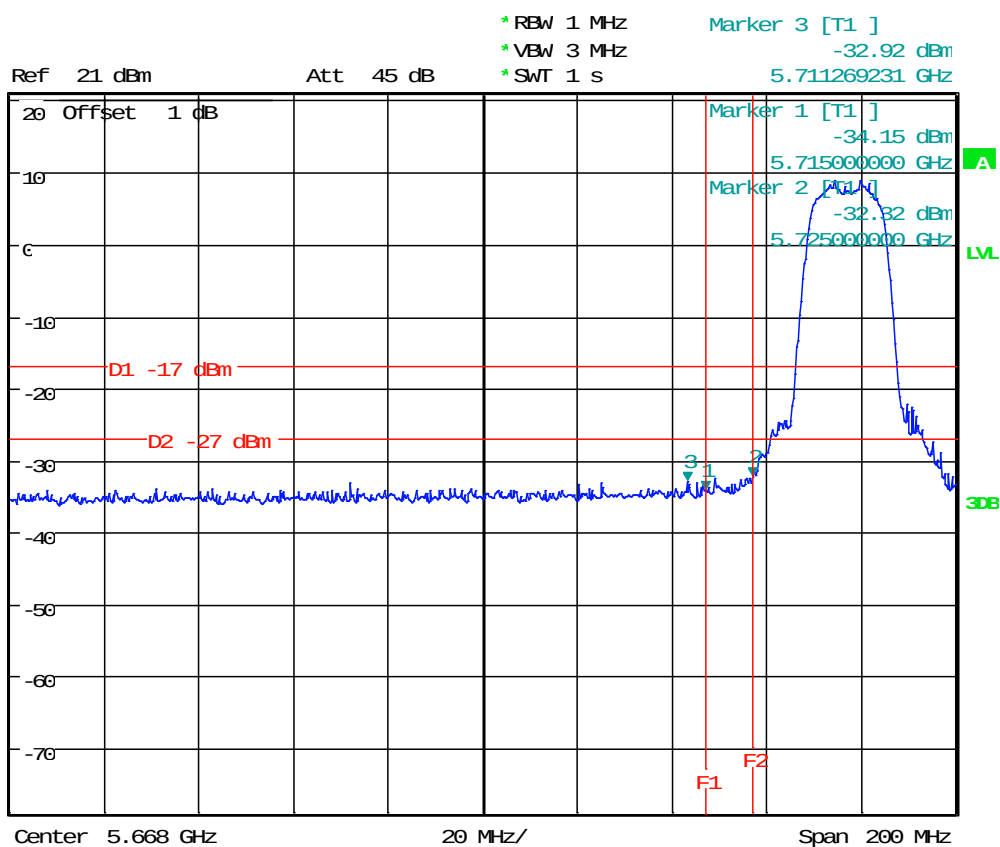
6.2111A20_149 Ant 1



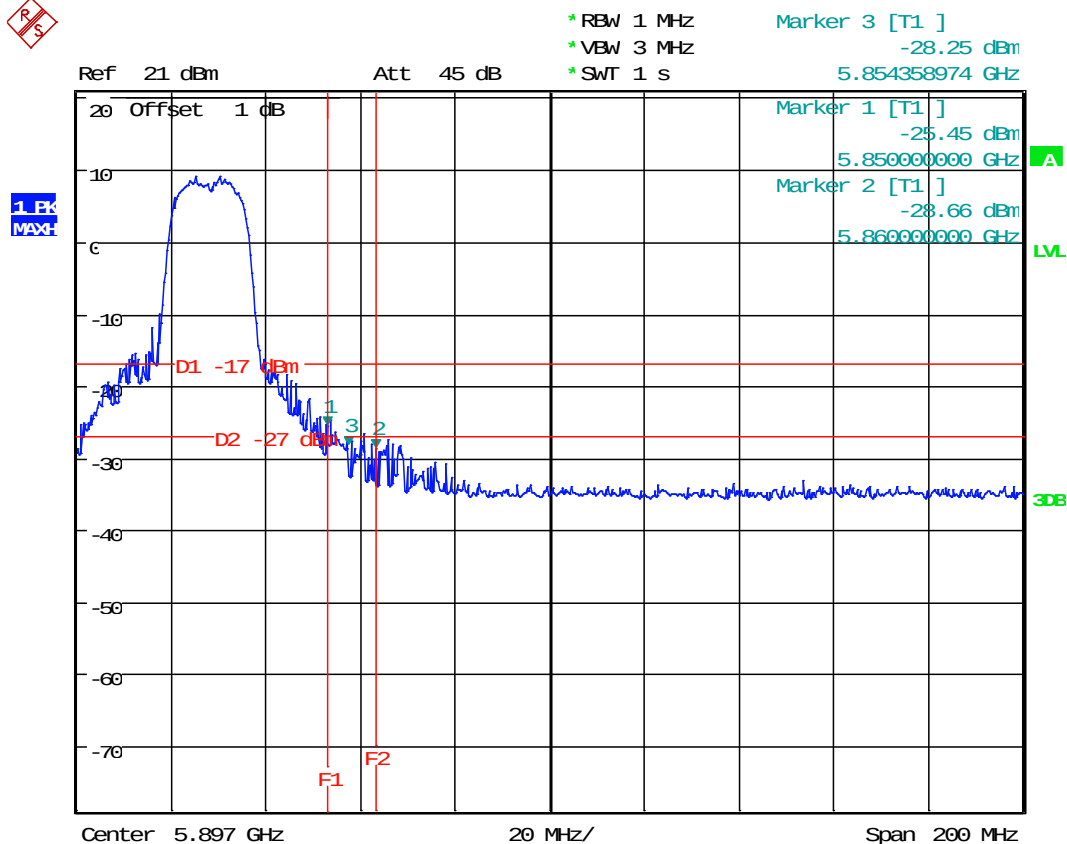
6.2211A20_149 Ant 2



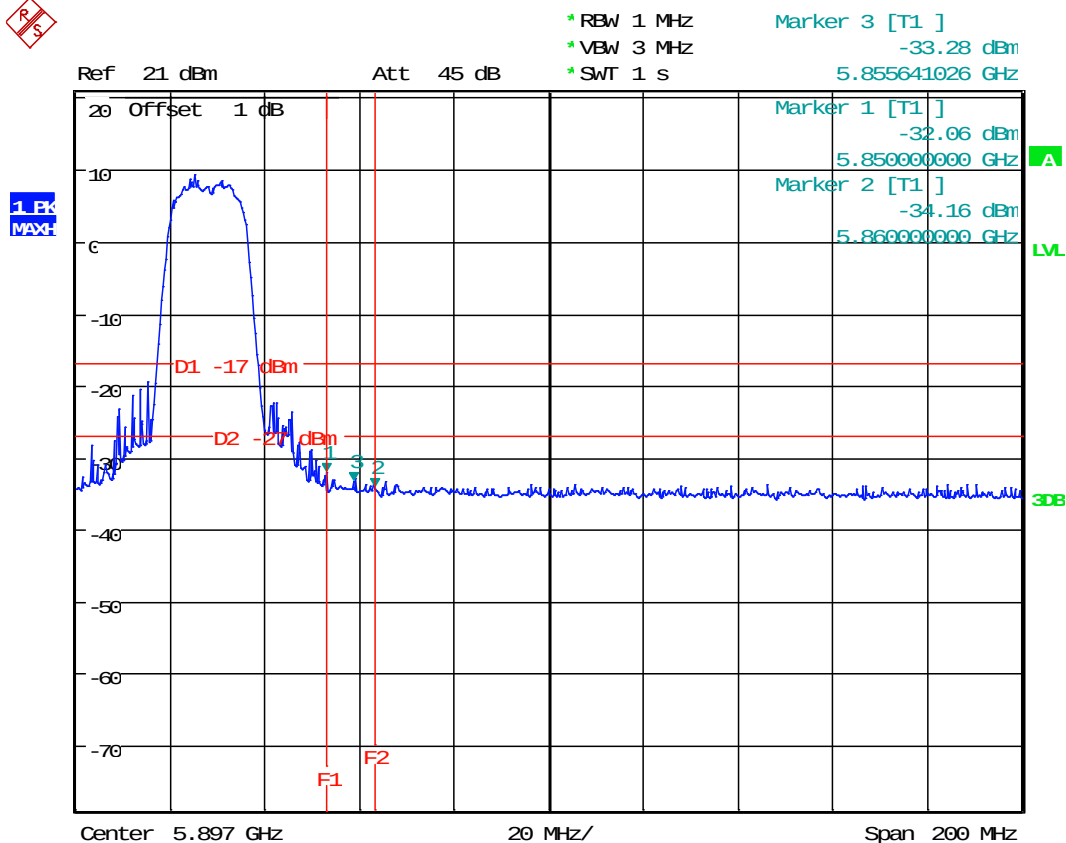
1 PK
MAX



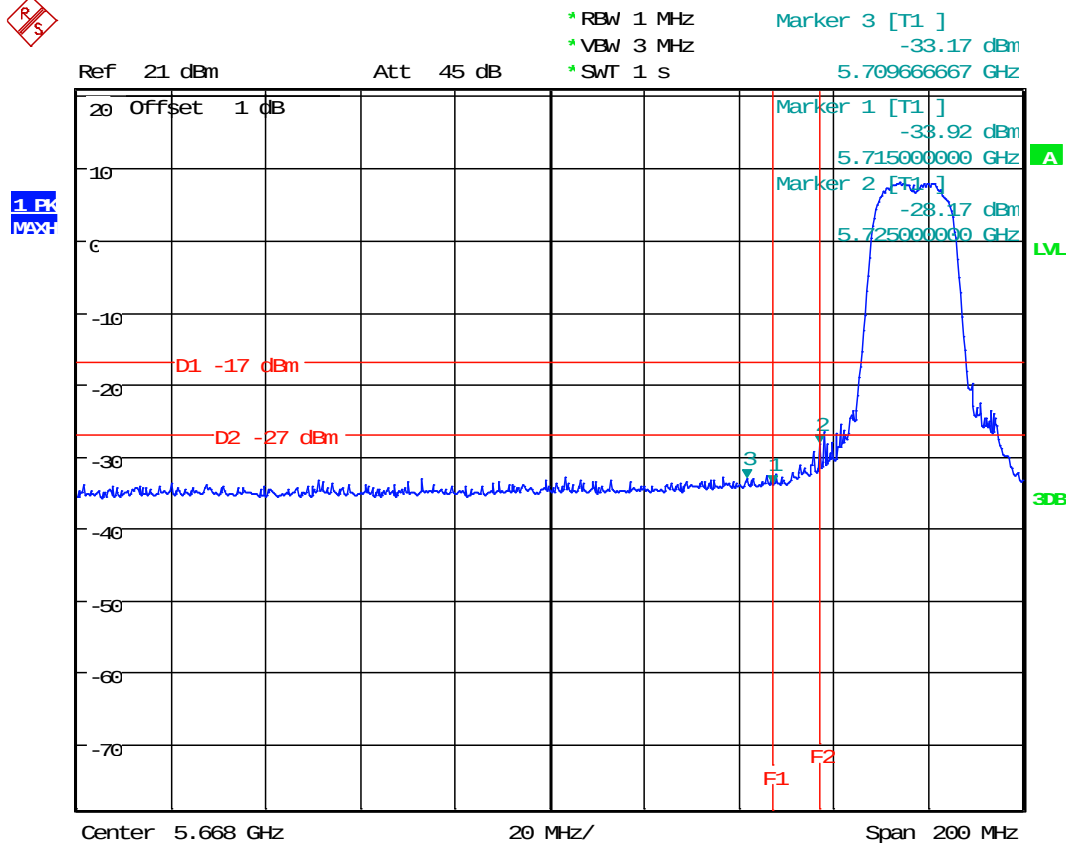
6.2311A20_165 Ant 1



6.2411A20_165 Ant 2



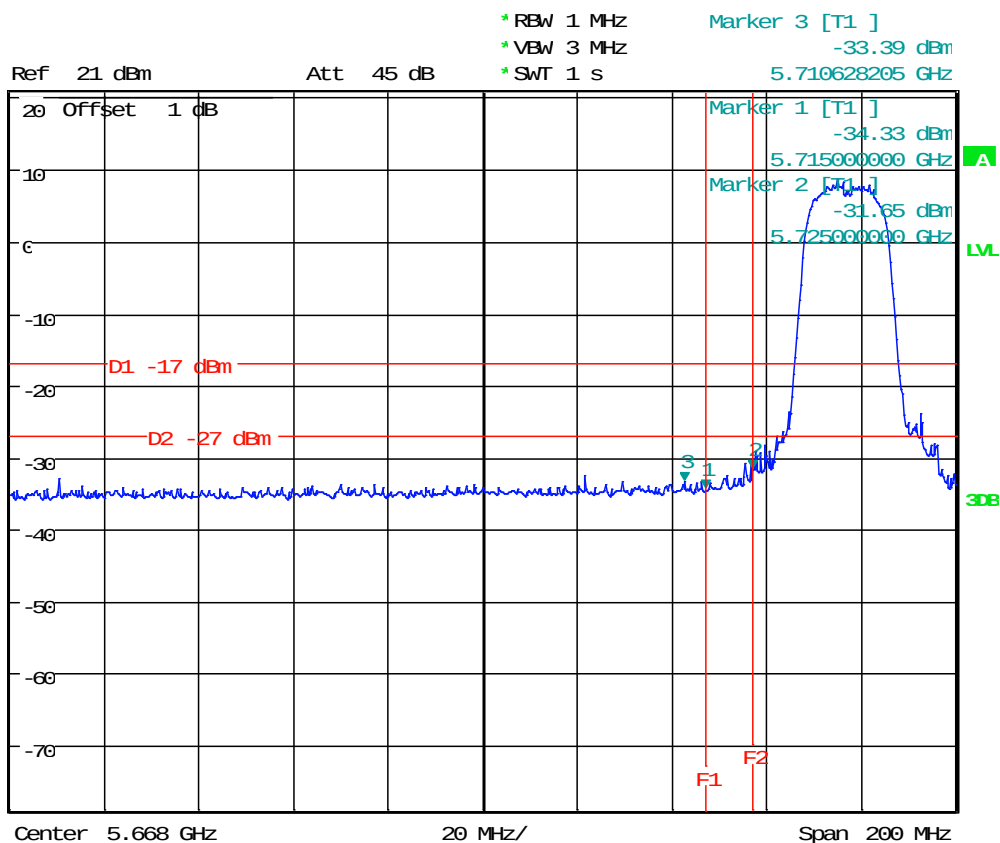
6.2511N20_149 Ant 1



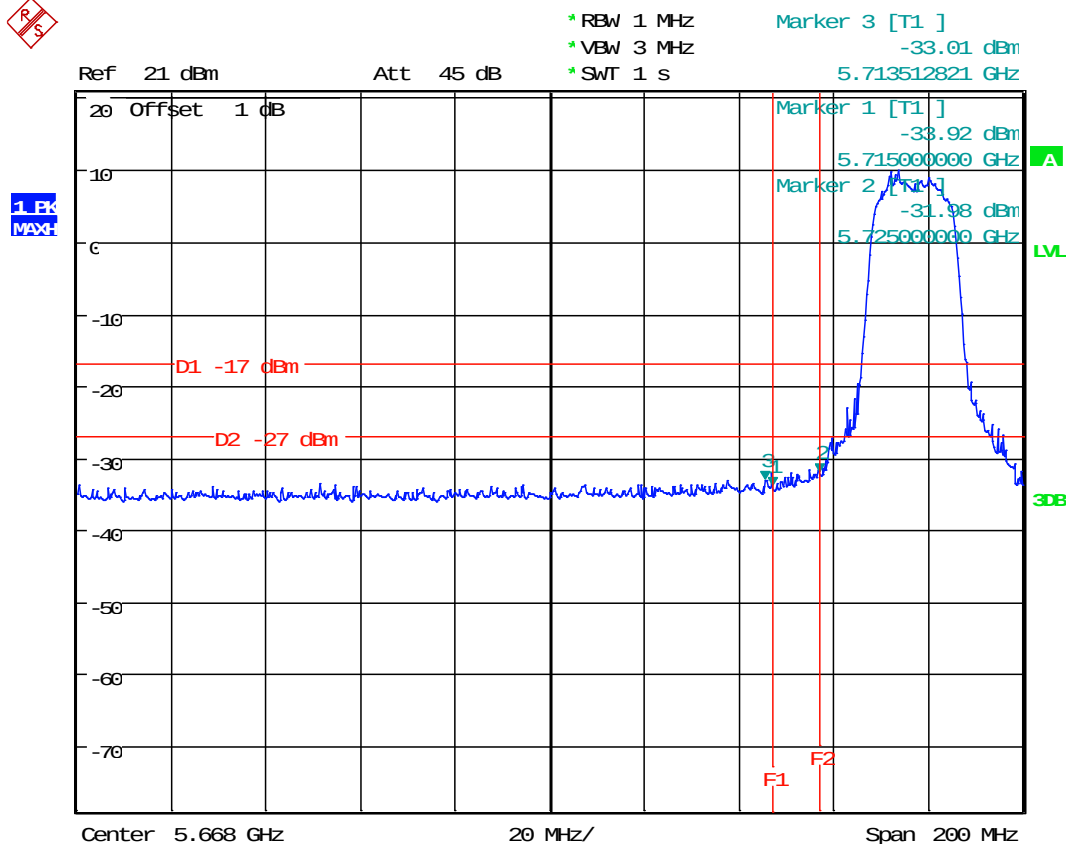
6.2611N20_149 Ant 2



1. Fk
MAX



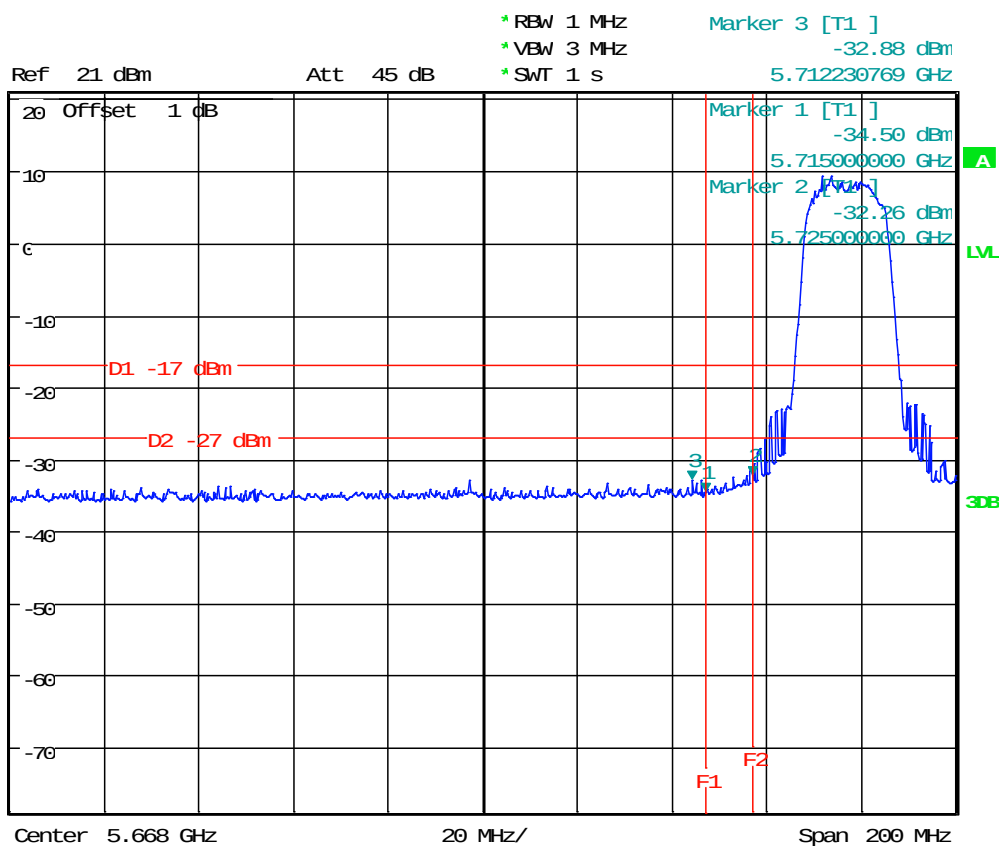
6.2711N20M_149 Ant 1



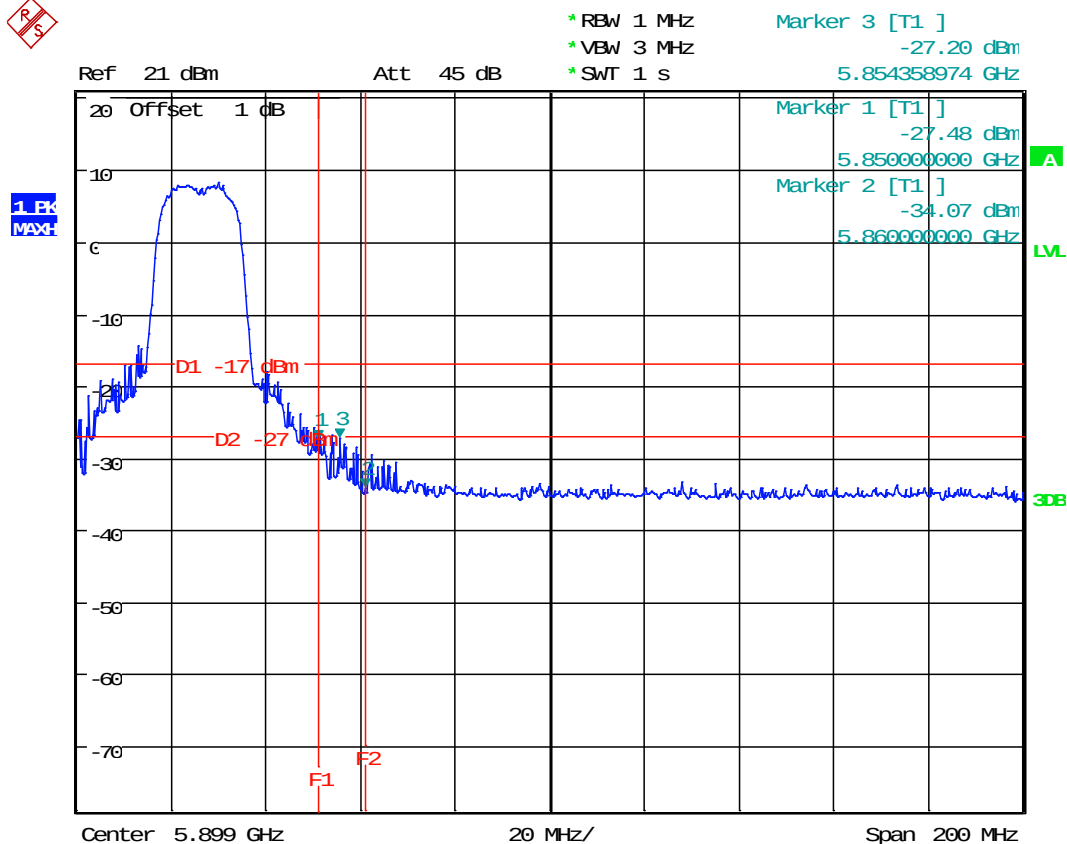
6.2811N20M_149 Ant 2



1 PK
MAX

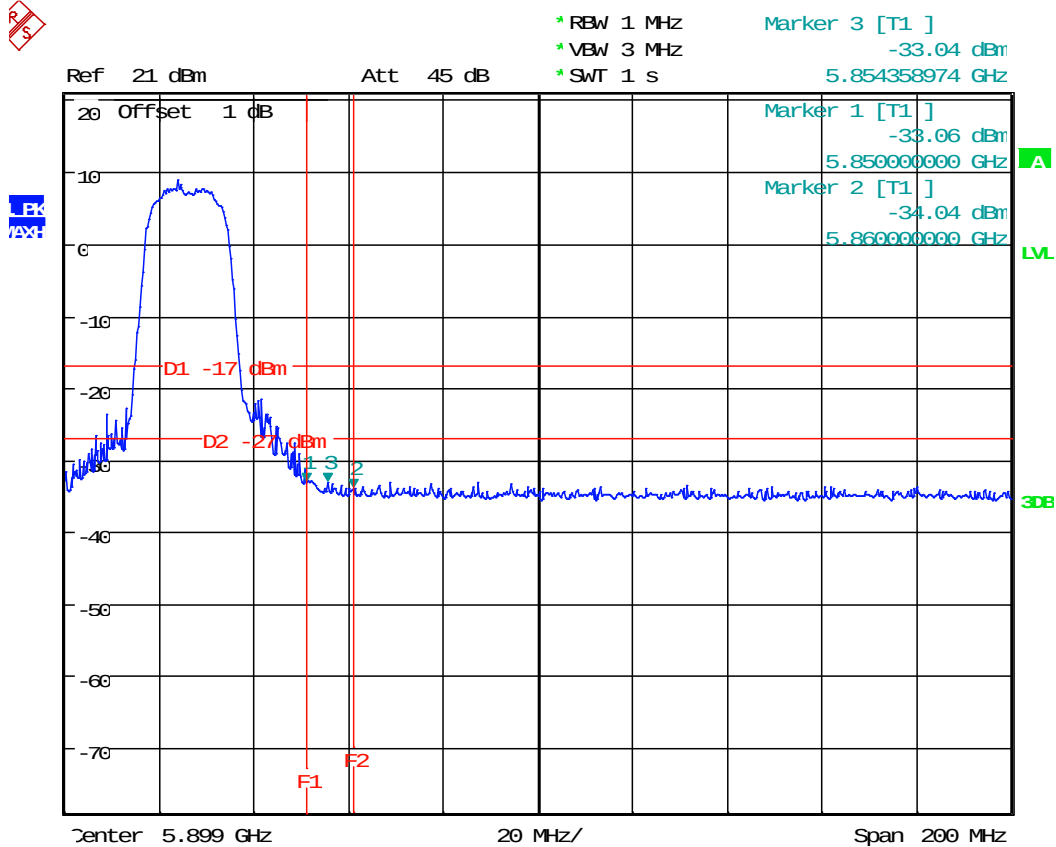


6.2911N20_165 Ant 1



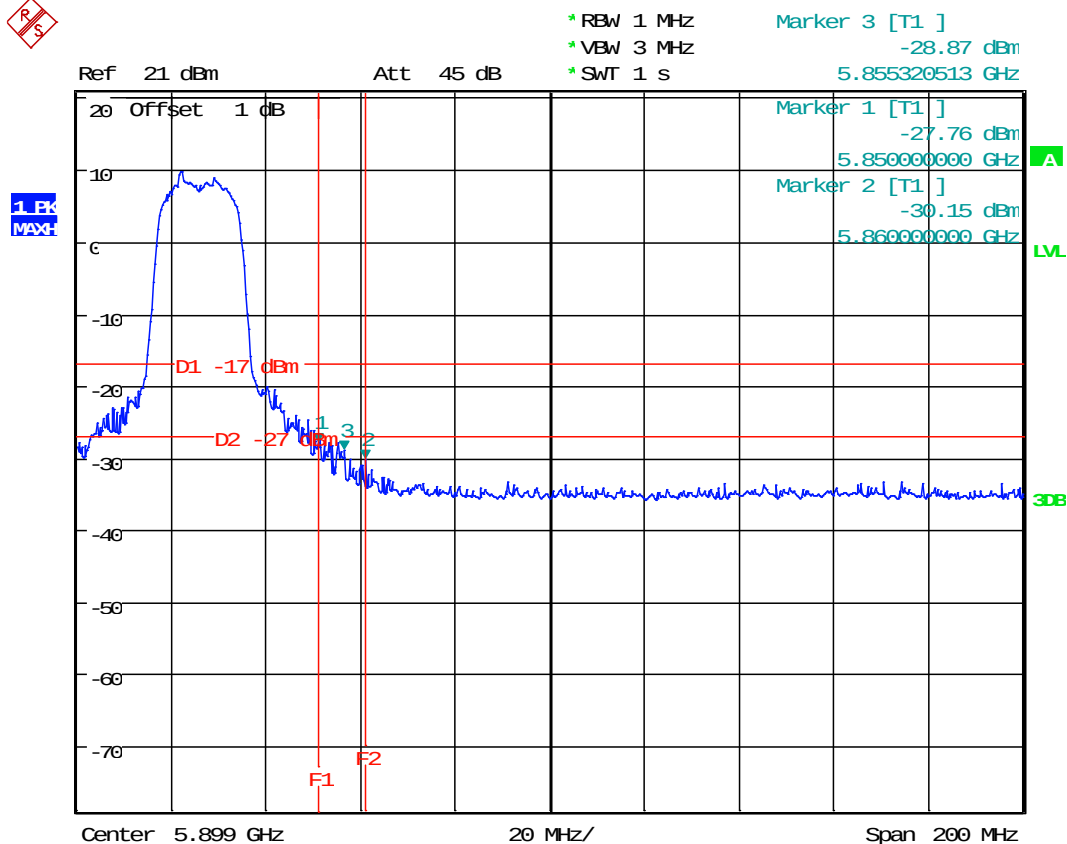


6.3011N20_165 Ant 2

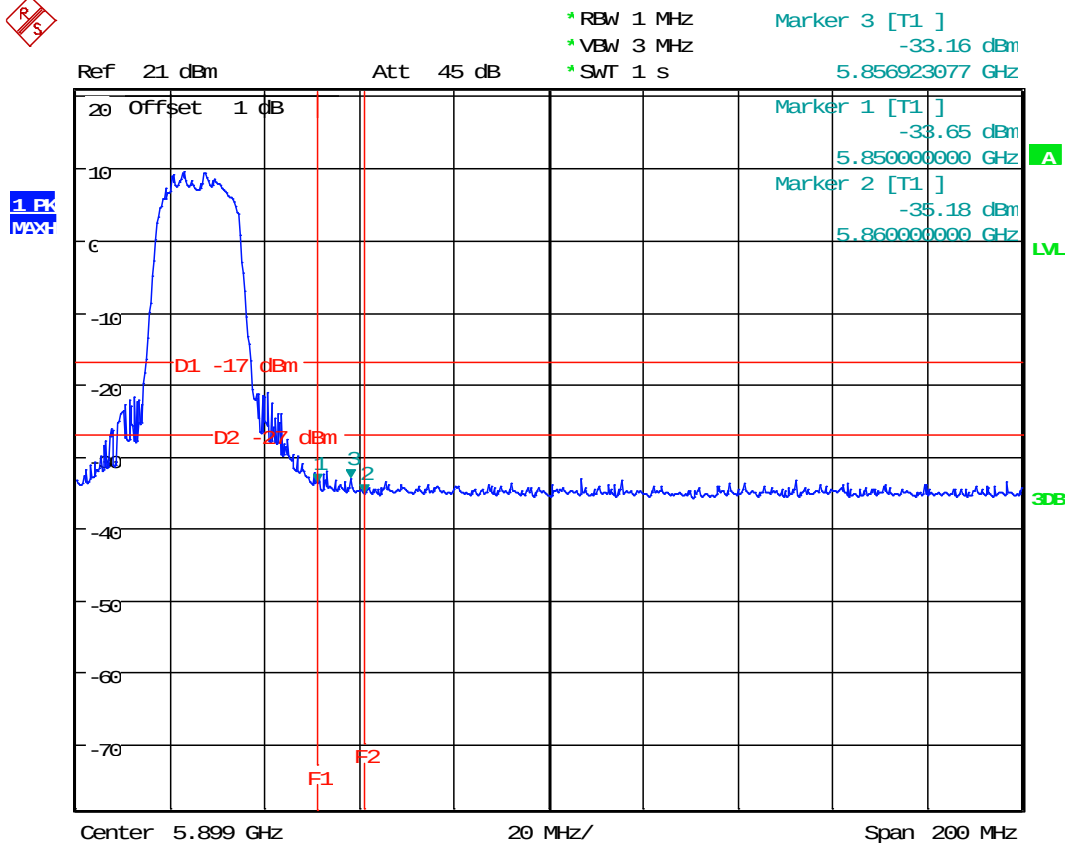




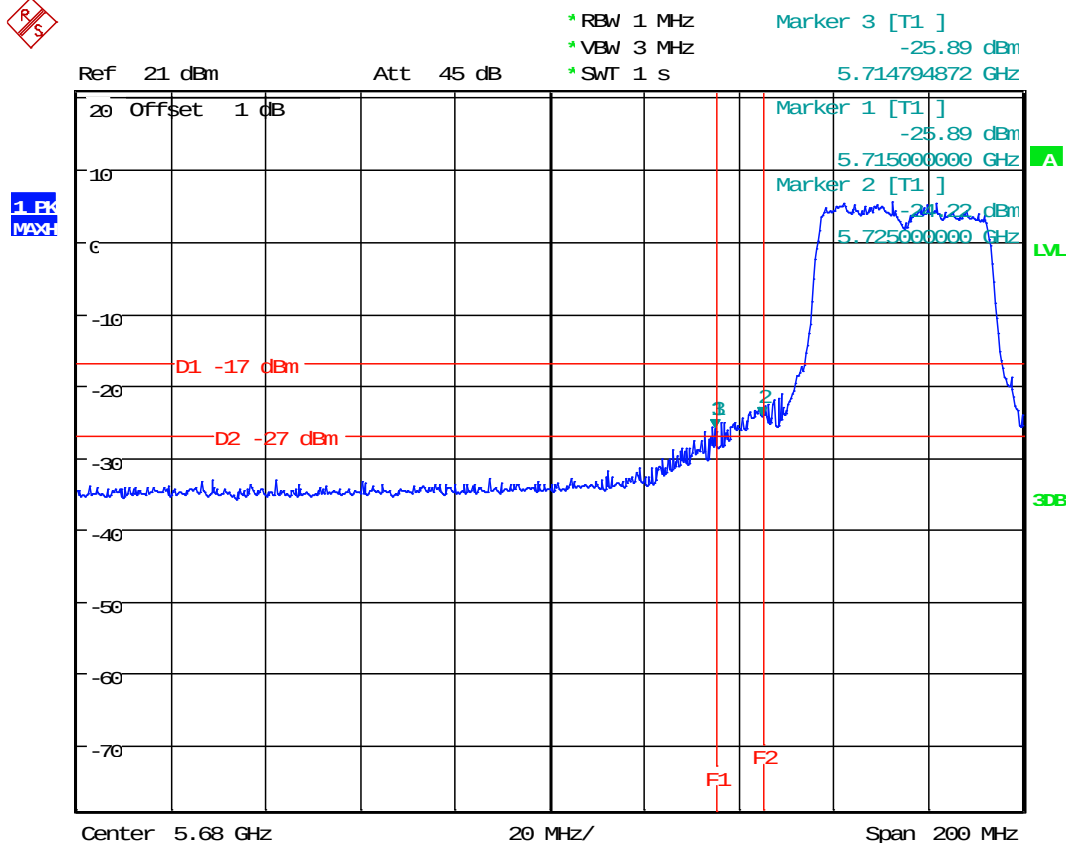
6.3111N20M_165 Ant 1



6.3211N20M_165 Ant 2



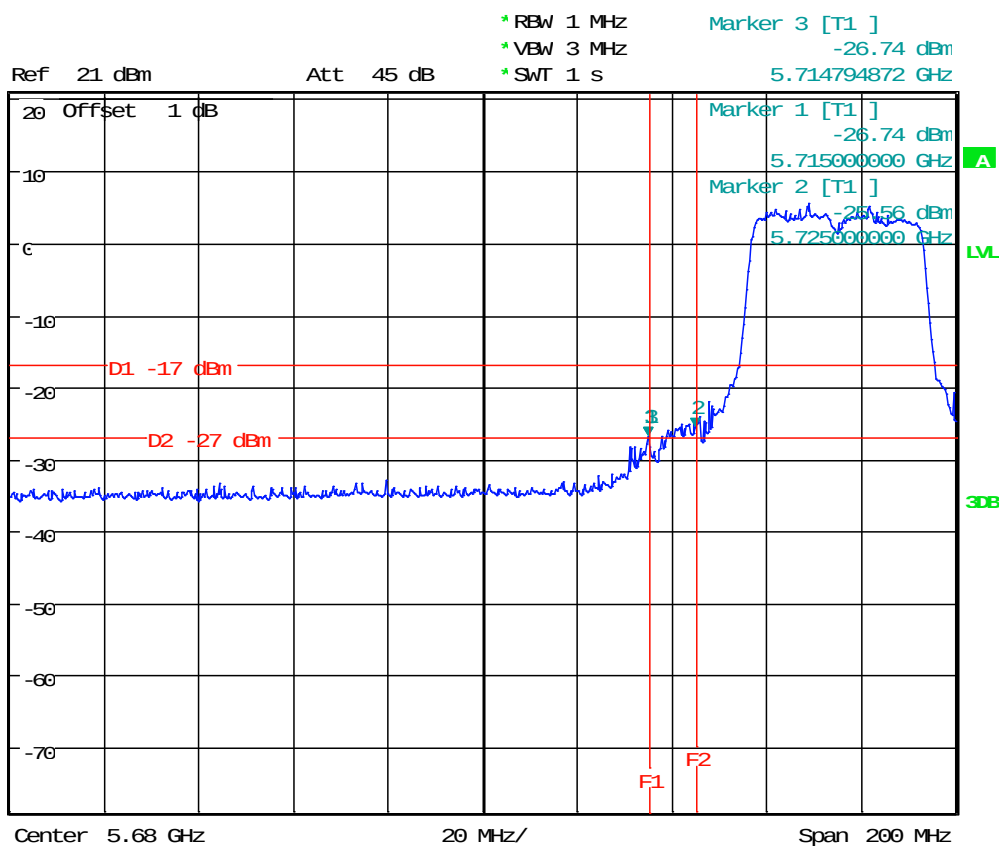
6.3311N40_151 Ant 1



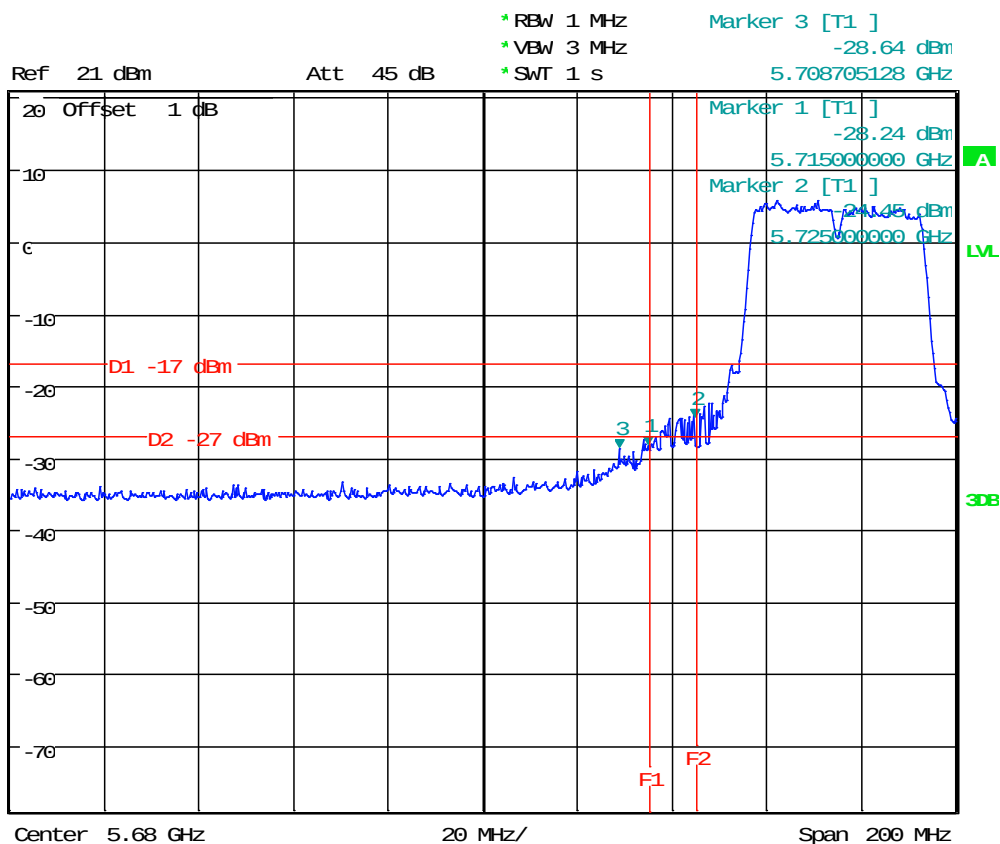
6.3411N40_151 Ant 2



1 PK
MAX

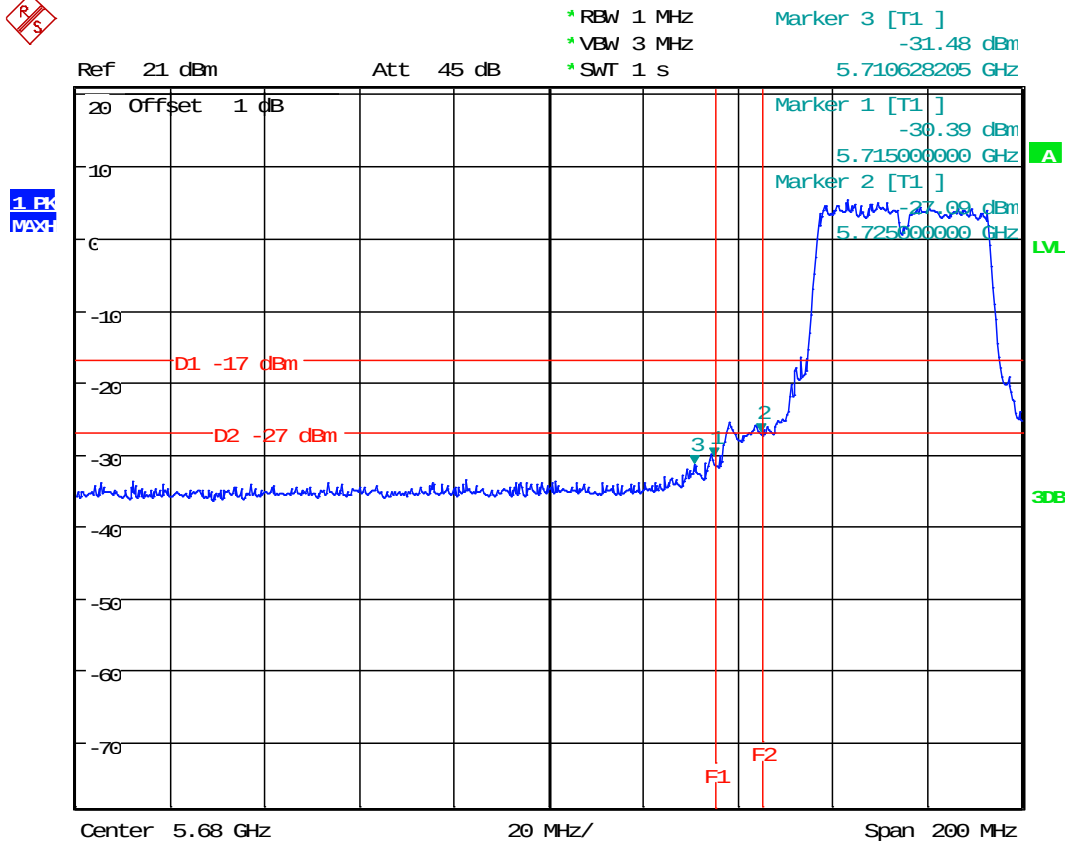


6.3511N40M_151 Ant 1

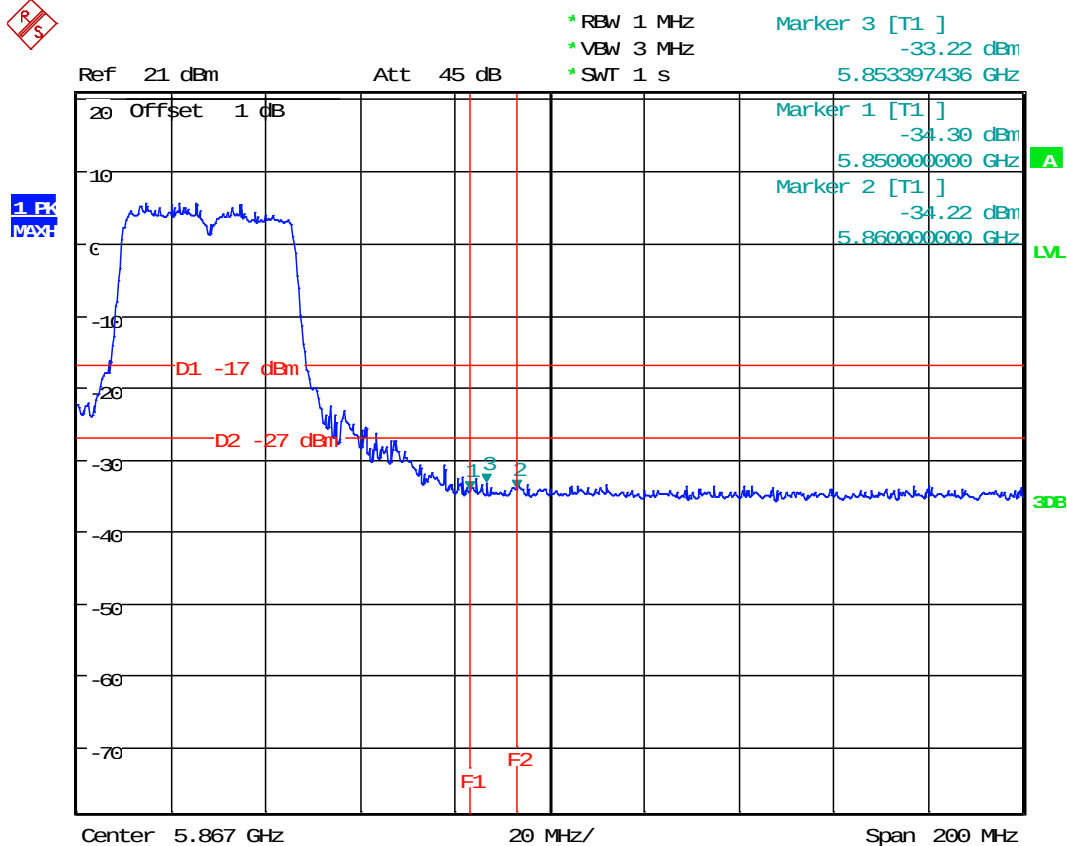

1. PK
MAX




6.3611N40M_151 Ant 2

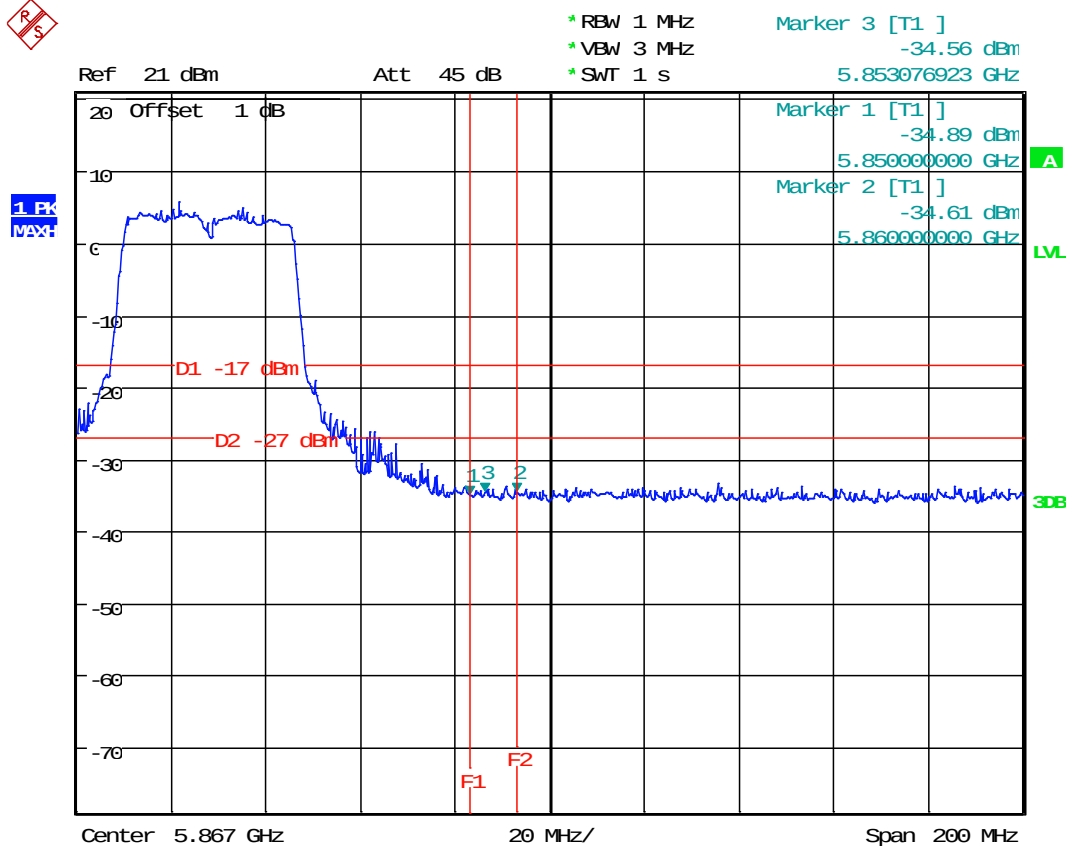


6.3711N40_159 Ant 1

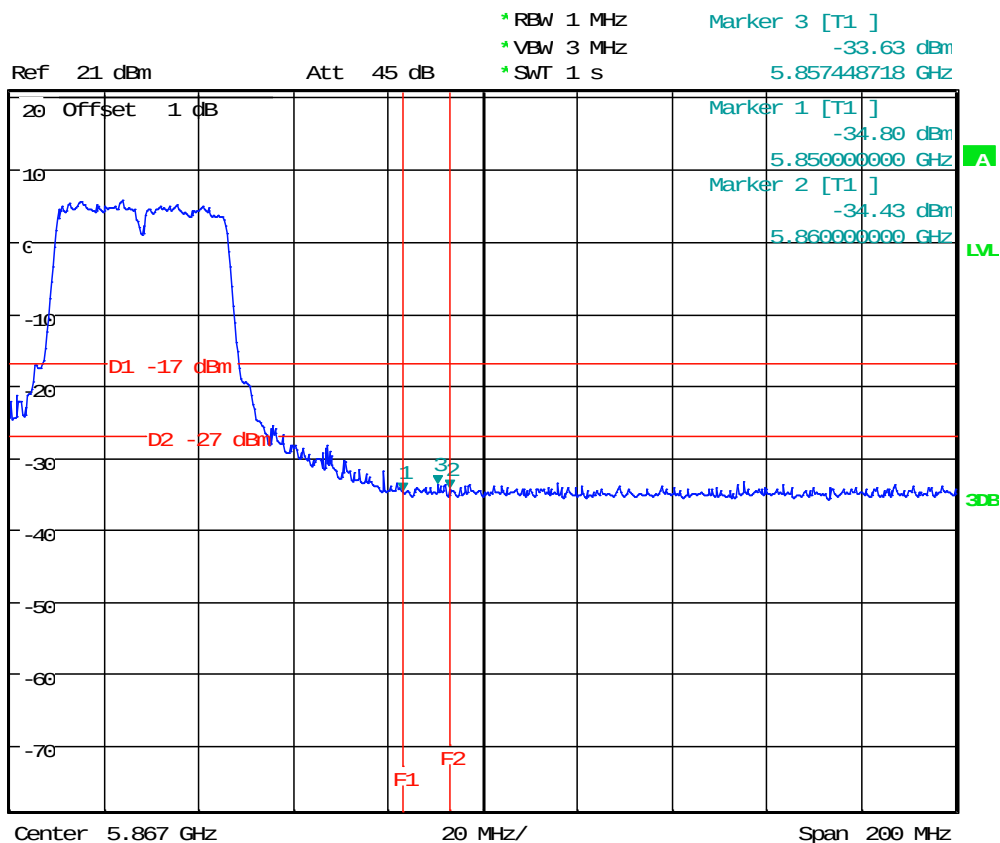




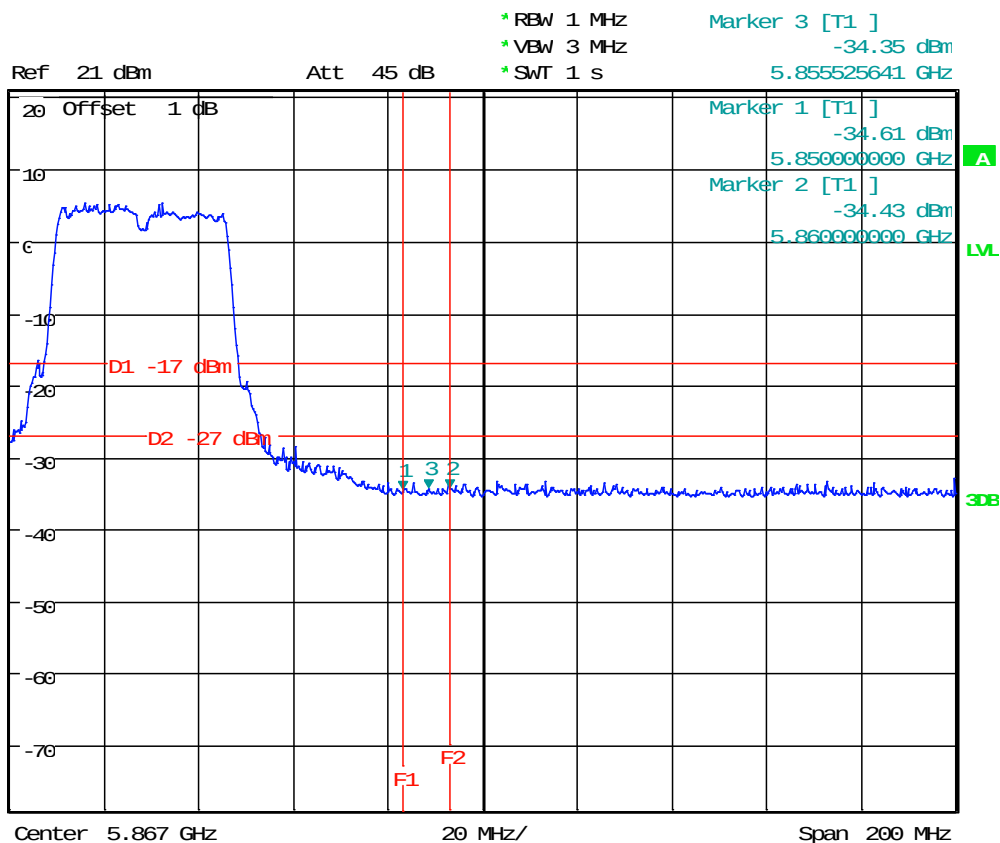
6.3811N40_159 Ant 2



6.3911N40M_159 Ant 1


1. Pk
MAX


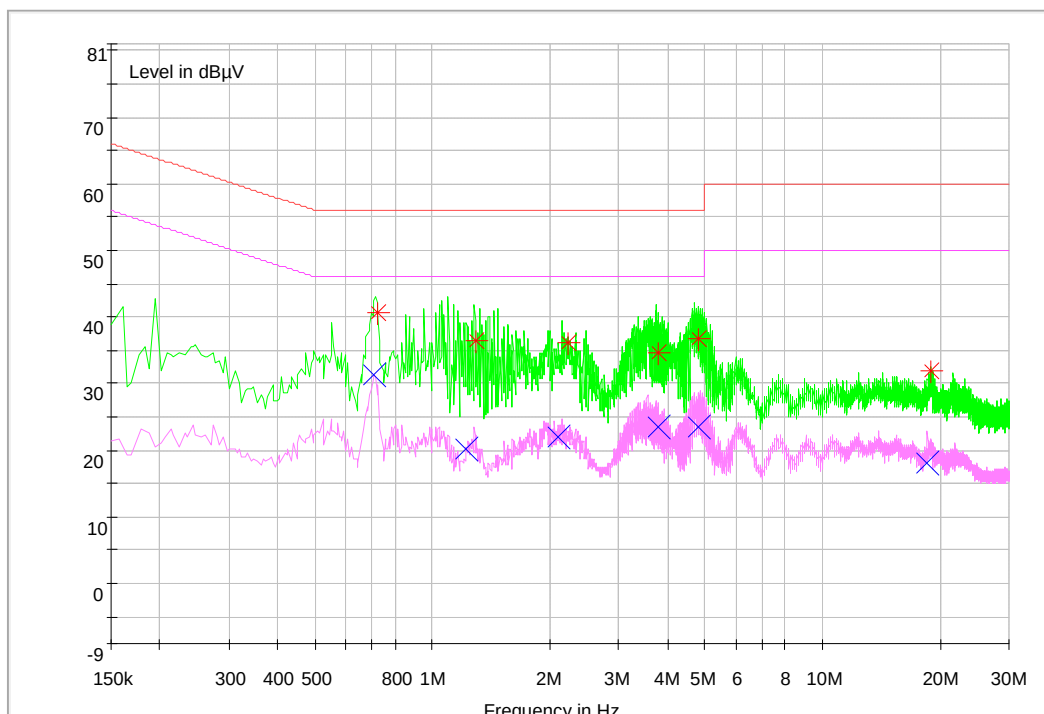
6.4011N40M_159 Ant 2

1 PK
MAX

Appendix E: AC Power Line Conducted Emissions

Note: RBW = 9 kHz, VBW = 30 kHz

Line



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.719246	40.6	9.7	56.0	15.4	L1	FLO
1.294796	36.3	9.7	56.0	19.7	N	FLO
2.227606	36.2	9.7	56.0	19.8	L1	FLO
3.804278	34.7	9.7	56.0	21.3	N	FLO
4.774860	36.8	9.8	56.0	19.2	N	FLO
18.870356	31.9	10.1	60.0	28.1	L1	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.707441	31.5	9.7	46.0	14.5	L1	FLO
1.221428	20.1	9.7	46.0	25.9	N	FLO
2.097416	21.9	9.7	46.0	24.1	L1	FLO
3.772616	23.4	9.7	46.0	22.6	N	FLO
4.786170	23.4	9.8	46.0	22.6	L1	FLO
18.537442	18.2	10.1	50.0	31.8	L1	FLO

Appendix F: Unwanted Emissions

Note1: We Testing in Manual mode, without test plot.

Note2: We tested all modes, but the data presented below is the worst case.

802.11a SISO test channels, 5180MHz (36), 5200MHz (40), 5240MHz (48), 5745MHz (149), 5765MHz (153), 5805 MHz (161)

TX channel No.	freq. (MHz)	Peak(dBμV/m)	AV(dBμV/m)
36	10360	62.0	48.2
	15540	Floor noise	Floor noise
40	10400	61.9	47.8
	15600	Floor noise	Floor noise
48	10480	62.8	48.4
	15720	Floor noise	Floor noise
149	11490	68.0	51.9
	17235	Floor noise	Floor noise
153	11530	67.8	51.6
	17295	Floor noise	Floor noise
161	11610	66.9	51.1
	17415	Floor noise	Floor noise

802.11n-HT20 SISO test channels, 5180MHz (36), 5200MHz (40), 5240MHz (48), 5745MHz (149), 5765MHz (153), 5805 MHz (161)

TX channel No.	freq. (MHz)	Peak(dBμV/m)	AV(dBμV/m)
36	10360	62.0	48.2
	15540	Floor noise	Floor noise
40	10400	62.4	48.5
	15600	Floor noise	Floor noise
48	10480	61.9	47.8
	15720	Floor noise	Floor noise
149	11490	68.2	51.4
	17235	Floor noise	Floor noise
153	11530	66.0	50.3
	17295	Floor noise	Floor noise
161	11610	67.5	50.8
	17415	Floor noise	Floor noise

802.11n-HT20 MIMO test channels, 5180MHz (36), 5200MHz (40), 5240MHz (48), 5745MHz (149), 5765MHz (153), 5805 MHz (161)

TX channel No.	freq. (MHz)	Peak(dBμV/m)	AV(dBμV/m)
36	10360	61.9	46.7
	15540	Floor noise	Floor noise
40	10400	62.5	47.1
	15600	Floor noise	Floor noise
48	10480	62.8	47.3
	15720	Floor noise	Floor noise
149	11490	65.5	49.7
	17235	Floor noise	Floor noise
153	11530	65.9	49.6
	17295	Floor noise	Floor noise
161	11610	66.2	49.5
	17415	Floor noise	Floor noise

802.11 n-HT40 SISO test channels, 5190MHz(38), 5230MHz(46), 5755MHz(151), 5795MHz(159)

TX channel No.	freq. (MHz)	Peak(dBμV/m)	AV(dBμV/m)
38	10380	62.5	46.8
	15570	Floor noise	Floor noise
46	10460	61.8	47.3
	15690	Floor noise	Floor noise
151	11550	63.3	47.5
	17325	Floor noise	Floor noise
159	11590	62.9	47.0
	17385	Floor noise	Floor noise

802.11 n-HT40 MIMO test channels, 5190MHz(38), 5230MHz(46), 5755MHz(151), 5795MHz(159)

TX channel No.	freq. (MHz)	Peak(dBμV/m)	AV(dBμV/m)
38	10380	62.3	47.0
	15570	Floor noise	Floor noise
46	10460	62.5	46.9
	15690	Floor noise	Floor noise

151	11550	63.0	47.2
	17325	Floor noise	Floor noise
159	11590	64.2	47.5
	17385	Floor noise	Floor noise

Appendix G: Frequency Stability

Frequency Error vs. Voltage:

Test Conditions	Measured Frequency (MHz)
	5180
V nom(V)	5180.0087
V max(V)	5180.0085
V min(V)	5180.0088
Max. Deviation Frequency	0.0088
Max. Frequency Error (ppm)	1.7

Frequency Error vs. Temperature:

Test Conditions (° C)	Measured Frequency (MHz)
	5180
-5	5180.0075
5	5180.0062
15	5180.0053
25	5180.0070
35	5180.0066
45	5180.0071
50	5180.0089
Max. Deviation Frequency	0.0089
Max. Frequency Error (ppm)	1.7181

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Frequency Error vs. Voltage:

Test Conditions	Measured Frequency (MHz)
	5825
V nom(V)	5825.00159
V max(V)	5825.00647
V min(V)	5825.00672
Max. Deviation Frequency	0.00672
Max. Frequency Error (ppm)	1.15

Frequency Error vs. Temperature:

Test Conditions (° C)	Measured Fequency (MHz)
	5825
-5	5825.00458
5	5825.00458
15	5825.00455
25	5825.00453
35	5825.00454
45	5825.00445
50	5825.00453
Max. Deviation Frequency	0.00458
Max. Frequency Error (ppm)	0.78626

END