



Appendix for BLE

Appendix A: DTS (6 dB) Bandwidth

In this document, the "DTS6dBBW" refers to the measured "DTS (6 dB) Bandwidth" value. In this Appendix, the "fc(DTS6dBBW)" refers to the centre of the measured "DTS6dBBW". The introduction of the "fc(DTS6dBBW)" is due to that other measurements use it as the spectrum analyzer setting.

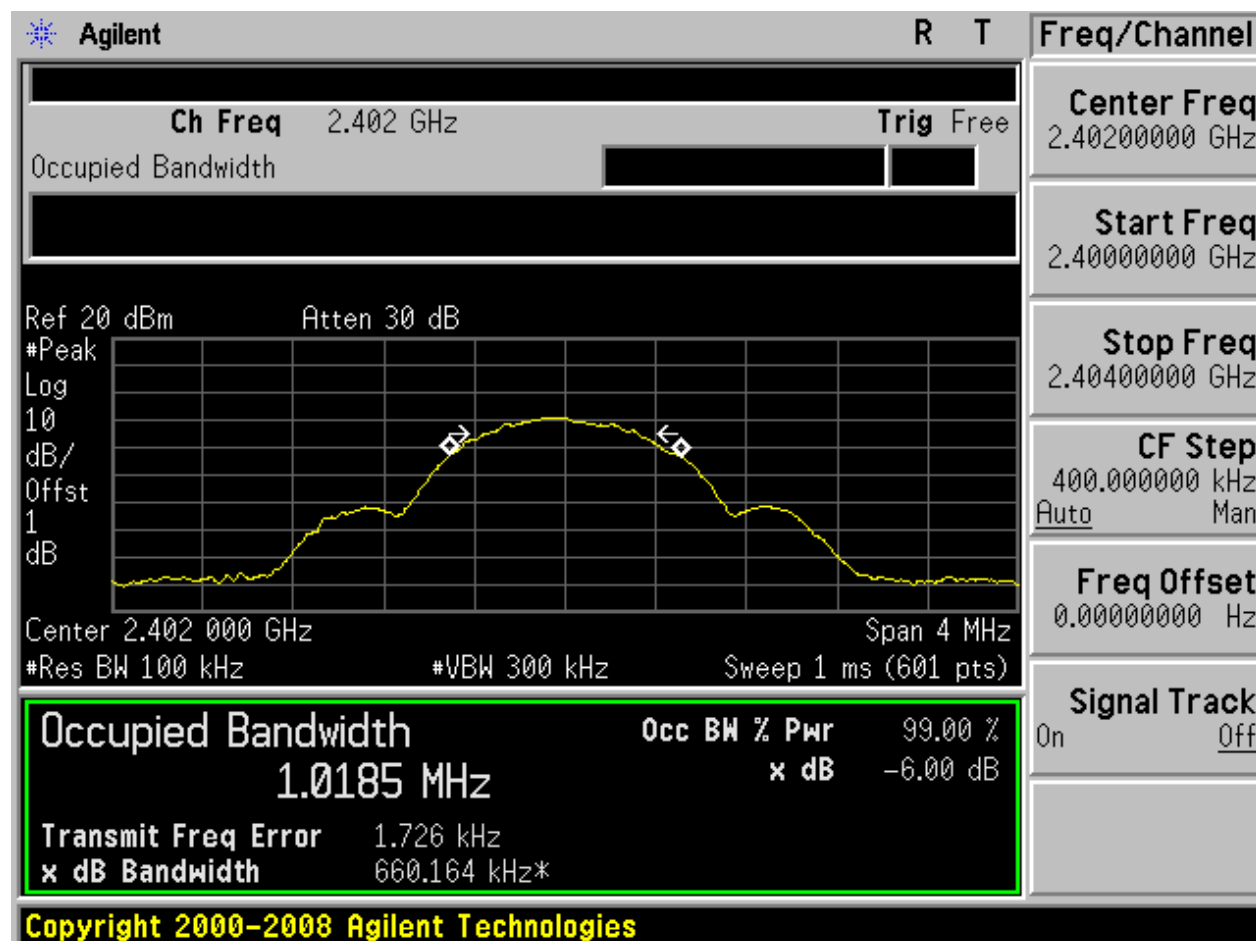
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
TM1_Ch0	L	2402	Ant 1	0.66	pass
TM1_Ch19	M	2440	Ant 1	0.68	pass
TM1_Ch39	H	2480	Ant 1	0.69	pass

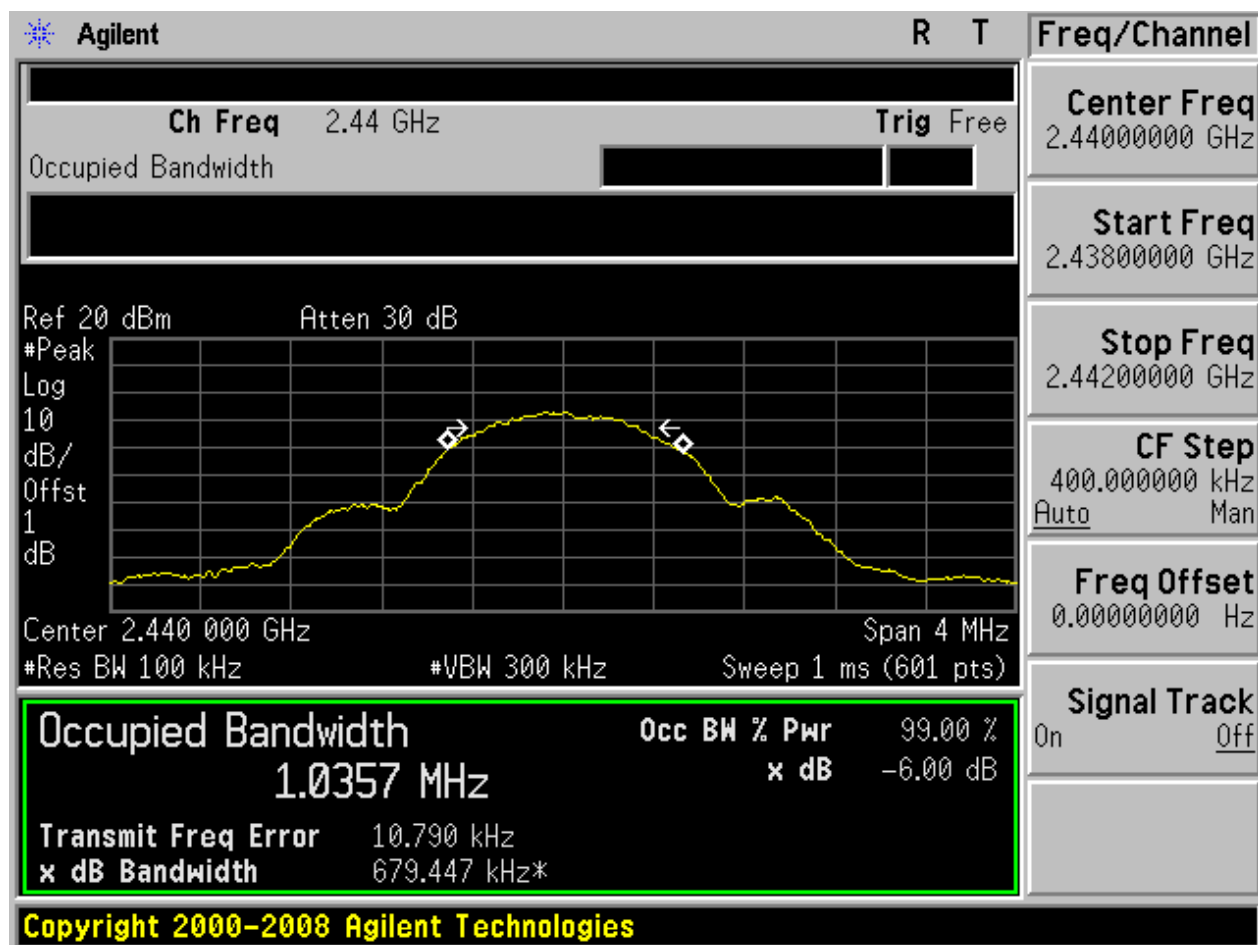
Part II - Test Plots

1.1 TM1_Ch0_L



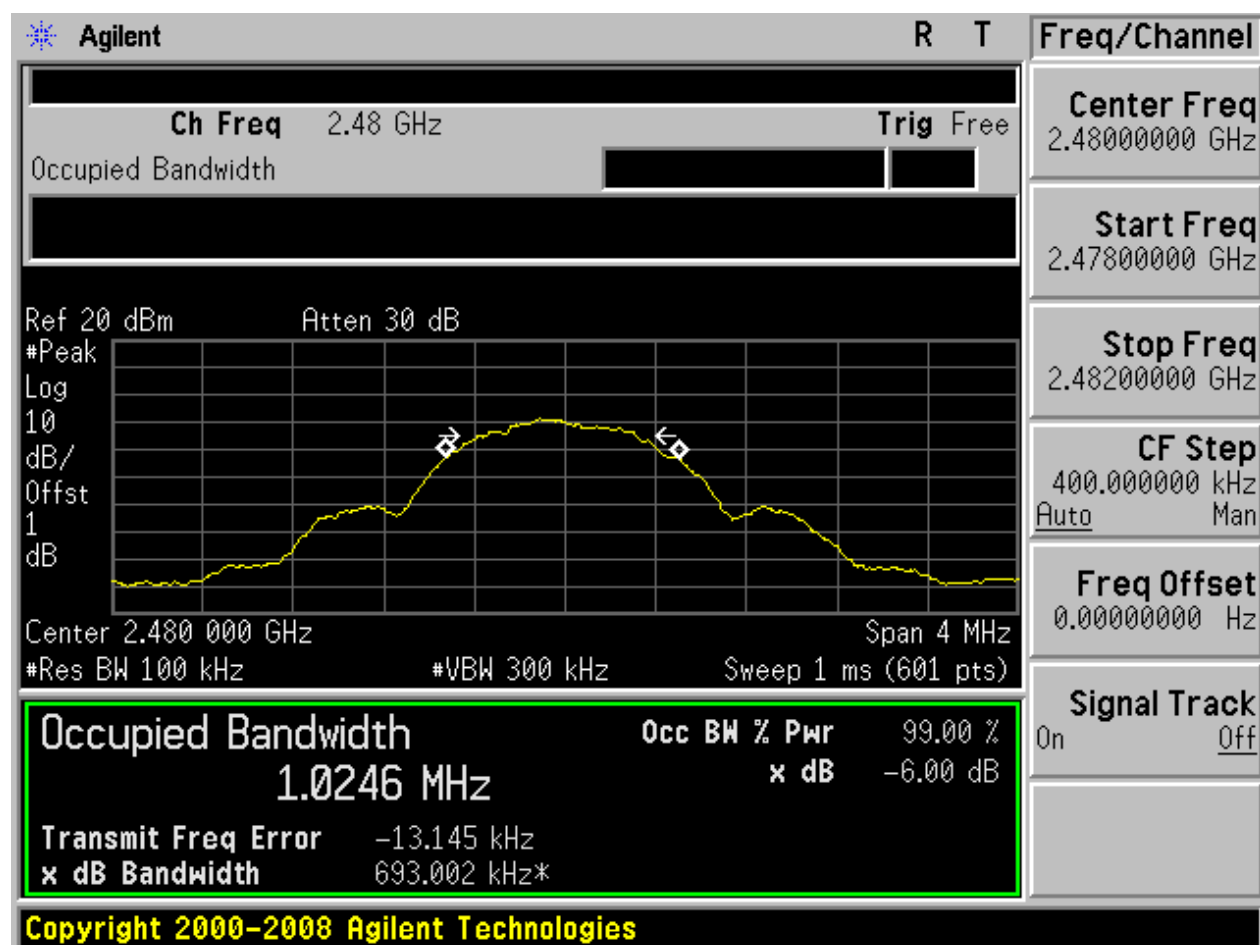


1.2 TM1_Ch19_M





1.3 TM1_Ch39_H





Appendix B: Occupied Bandwidth

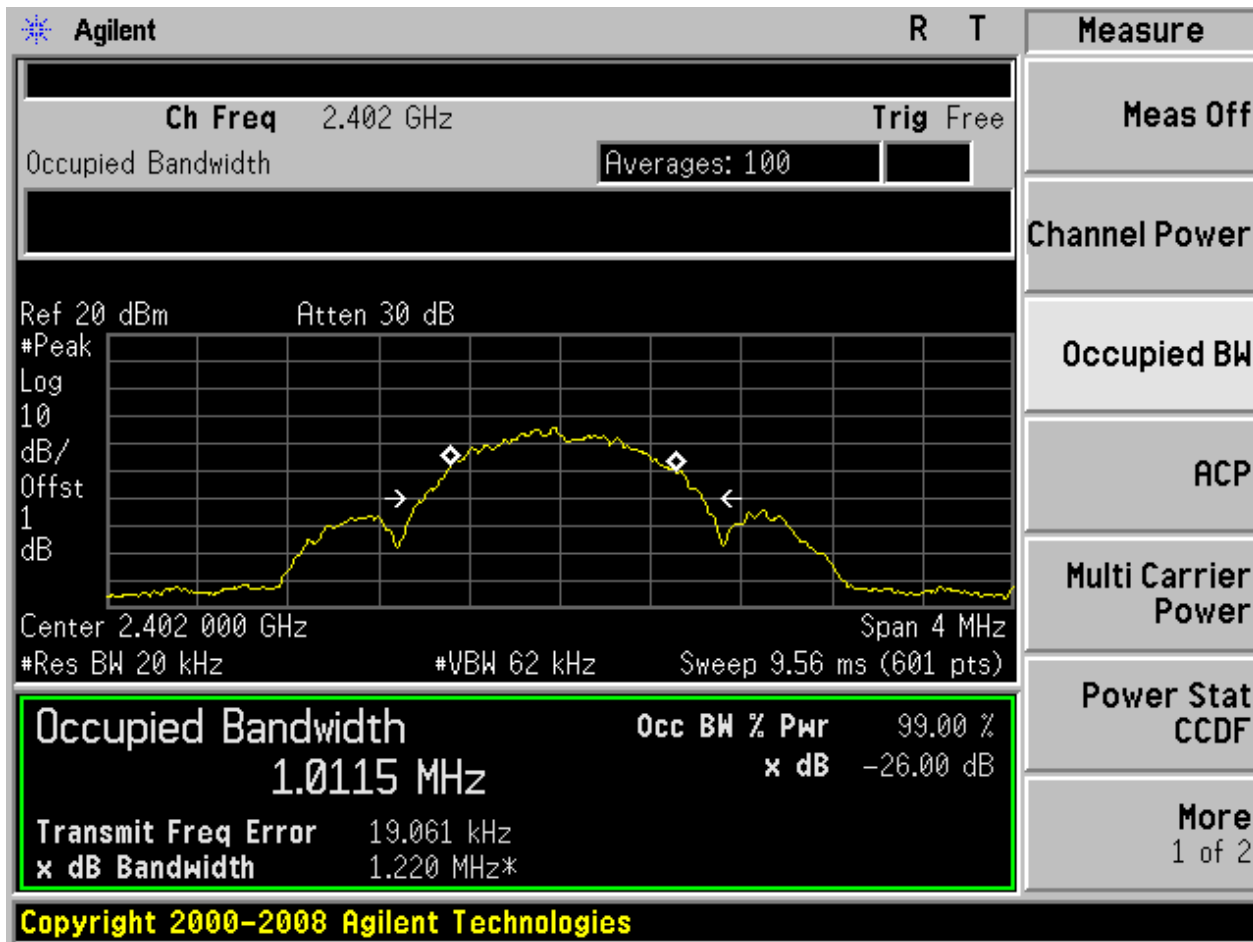
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

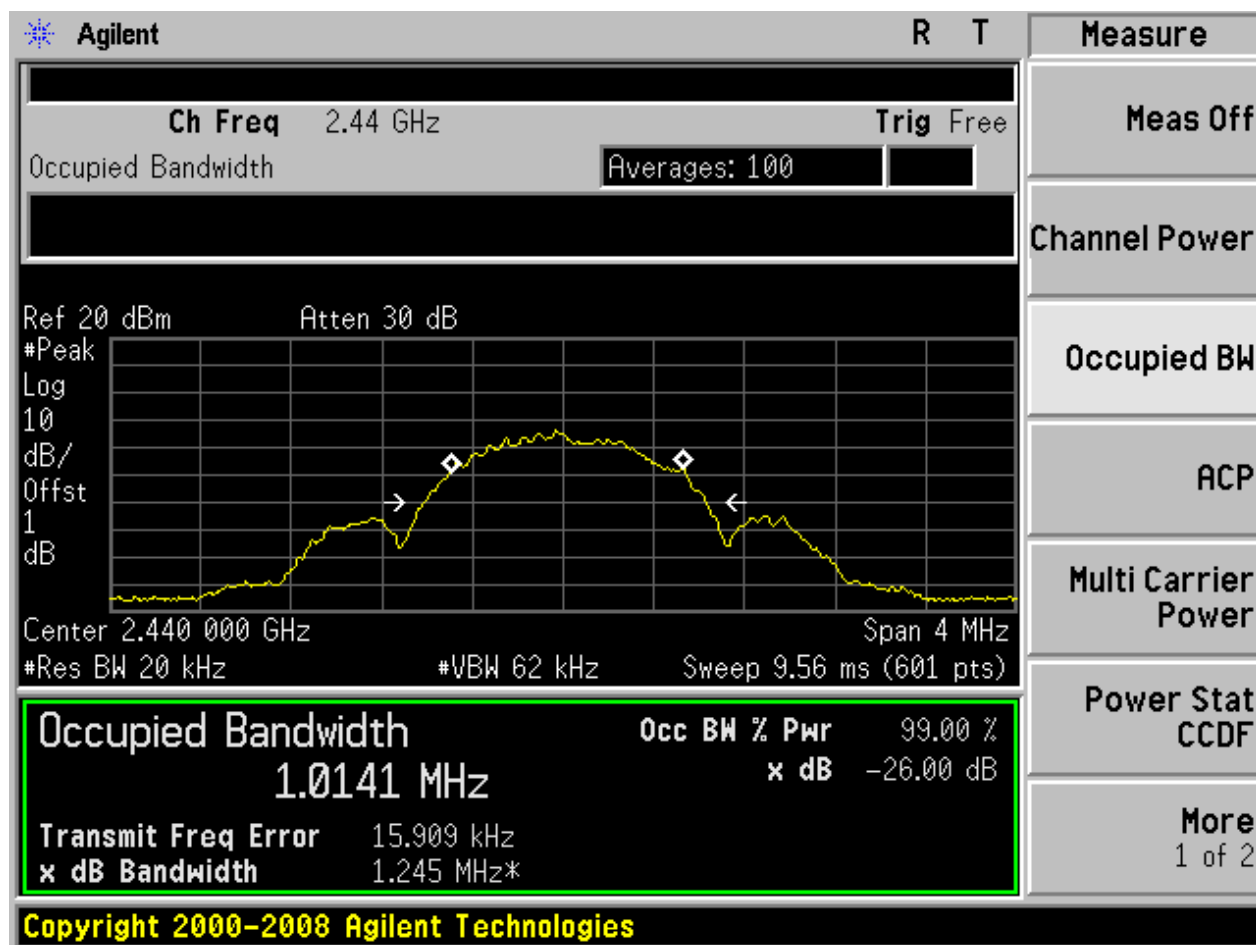
Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
TM1_Ch0	L	2402	Ant 1	1.01	pass
TM1_Ch19	M	2440	Ant 1	1.01	pass
TM1_Ch39	H	2480	Ant 1	1.01	pass

Part II - Test Plots

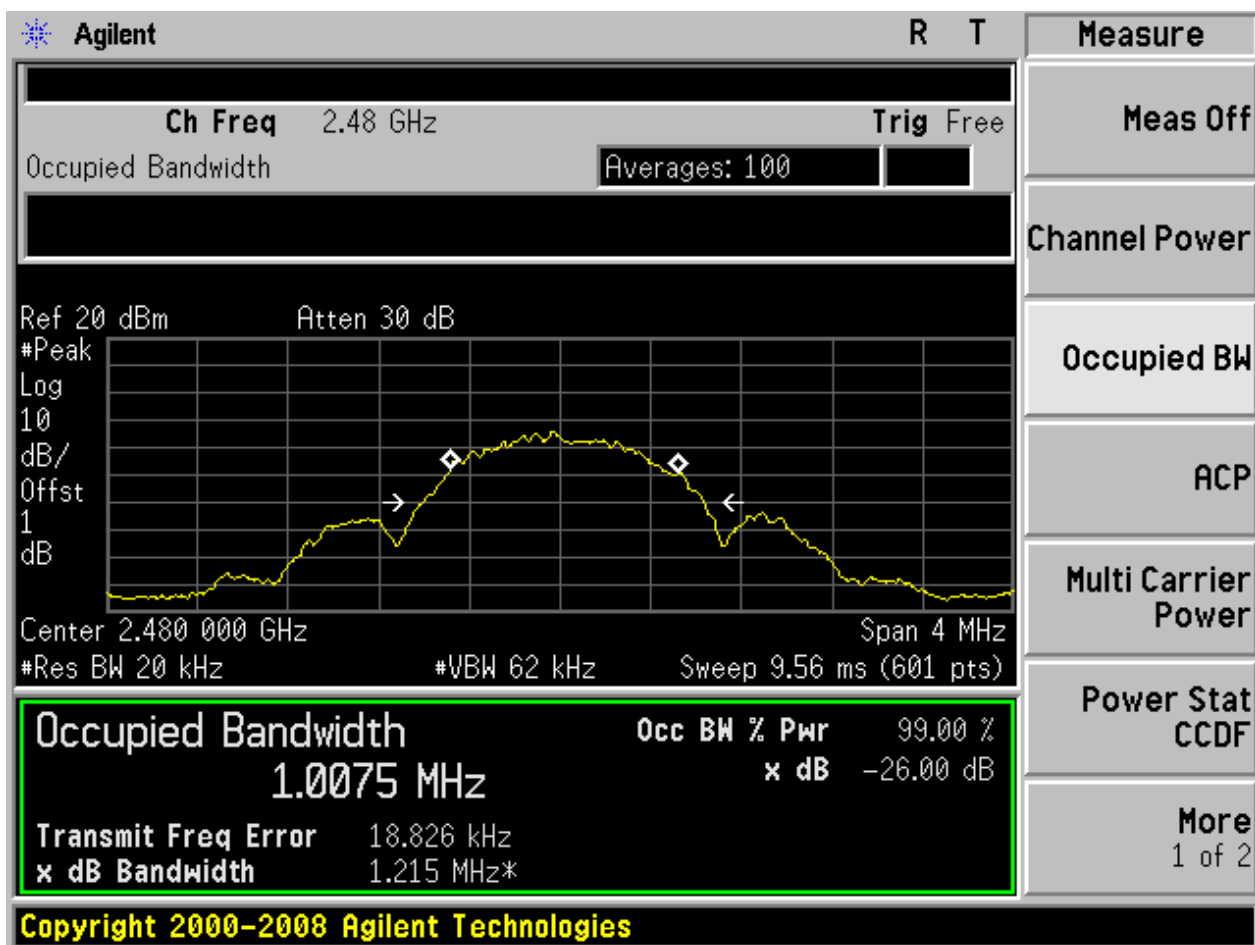
2.1 TM1_Ch0_L



2.2 TM1_Ch19_M



2.3 TM1_Ch39_H

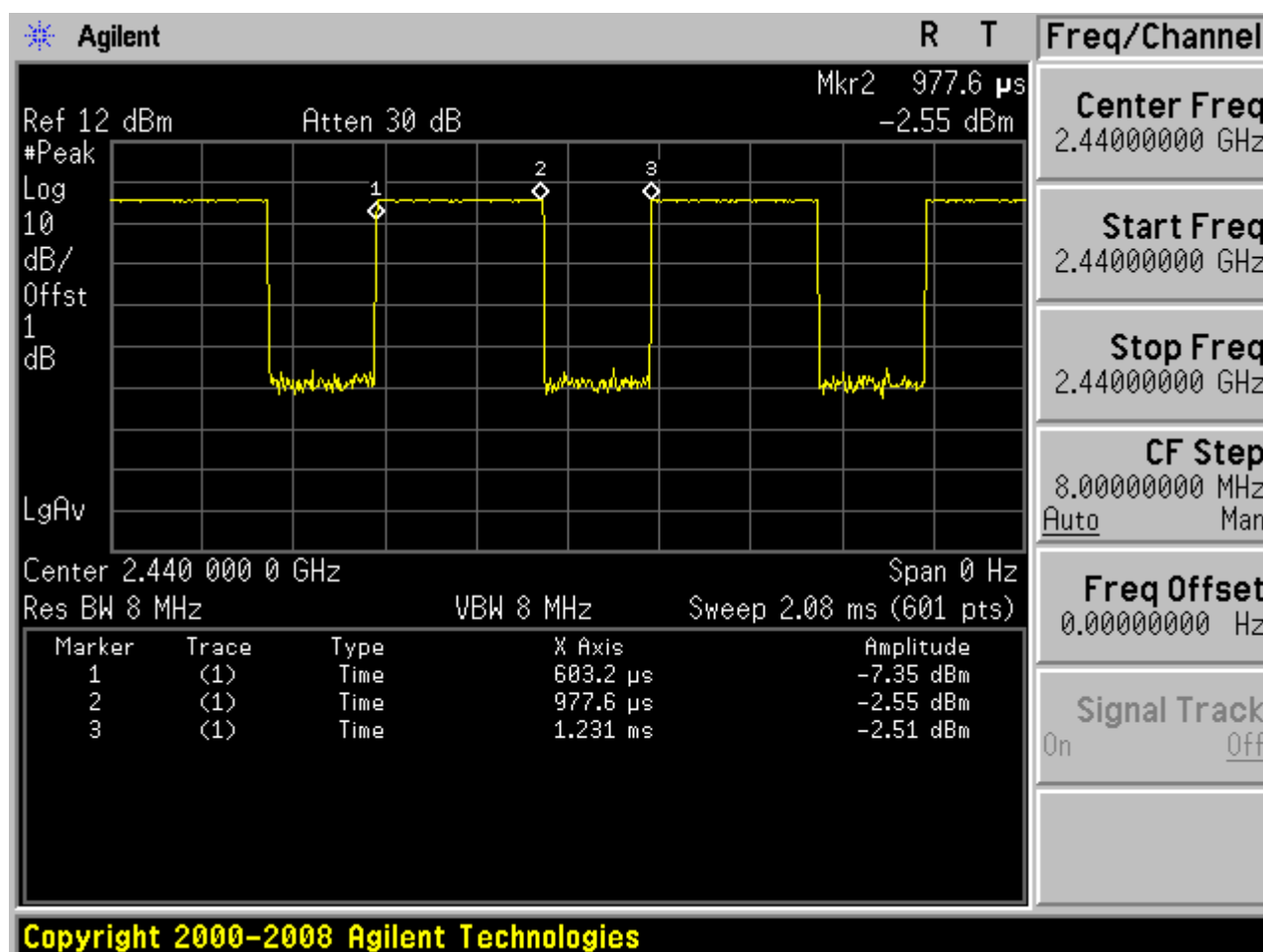


Appendix C: Duty Cycle

Part I - Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
TM1	CH0,CH19,CH39	60

Part II - Test Plots



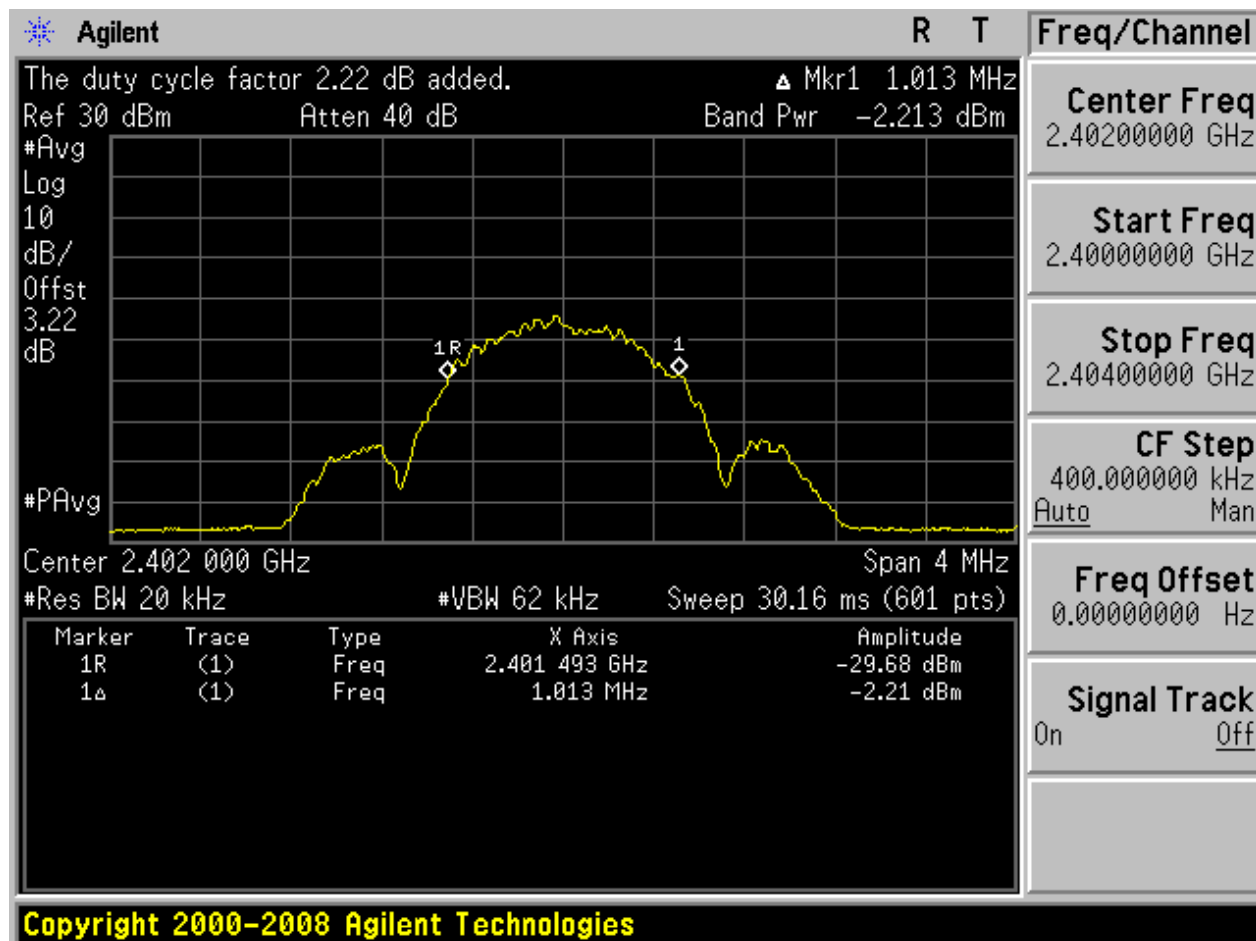
Appendix D: Maximum Conducted Average Output Power

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Power[dBm]	Verdict
TM1_Ch0	L	2402	Ant 1	-2.21	pass
TM1_Ch19	M	2440	Ant 1	-1.95	pass
TM1_Ch39	H	2480	Ant 1	-2.05	pass

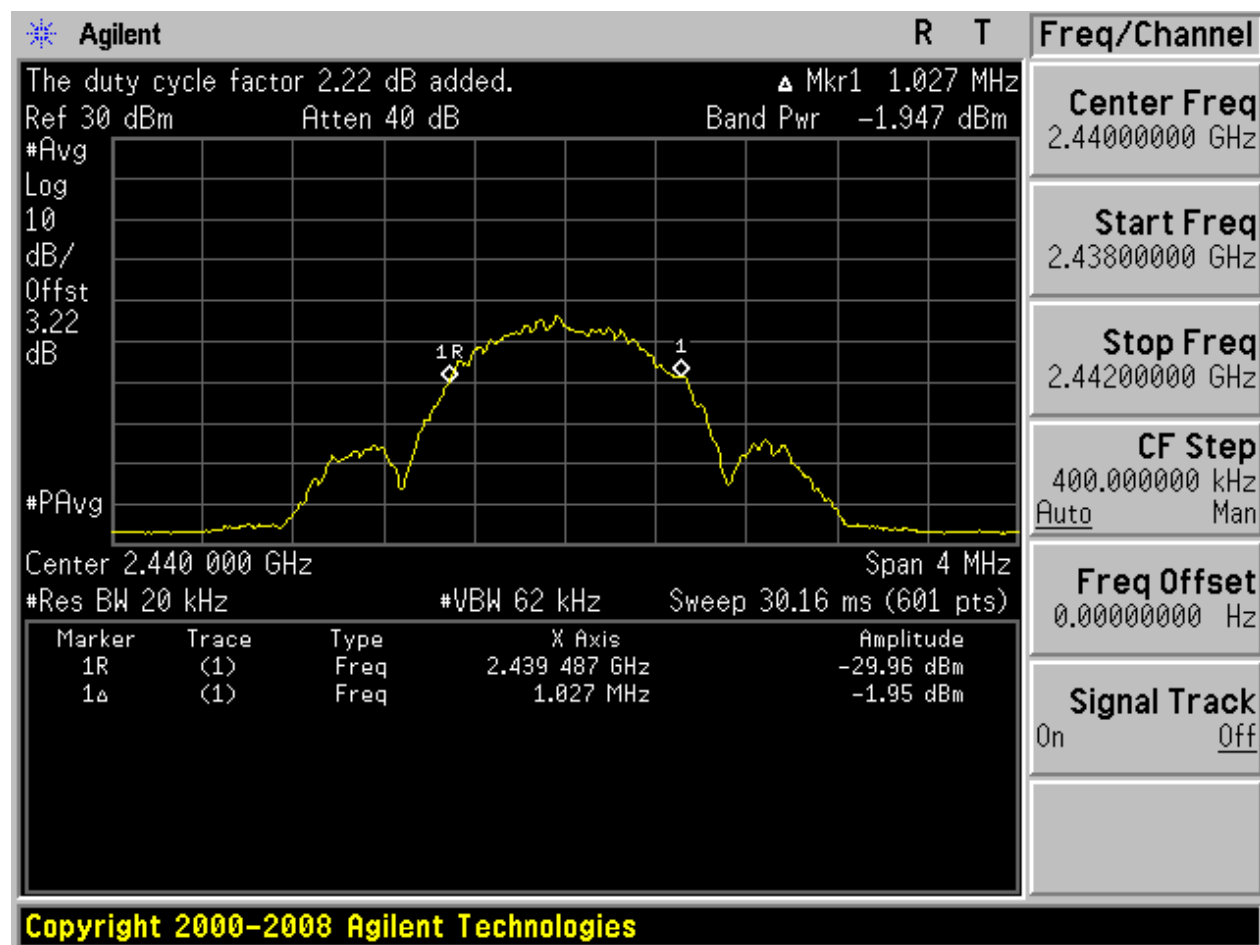
Part II - Test Plots

3.1 TM1_Ch0_L

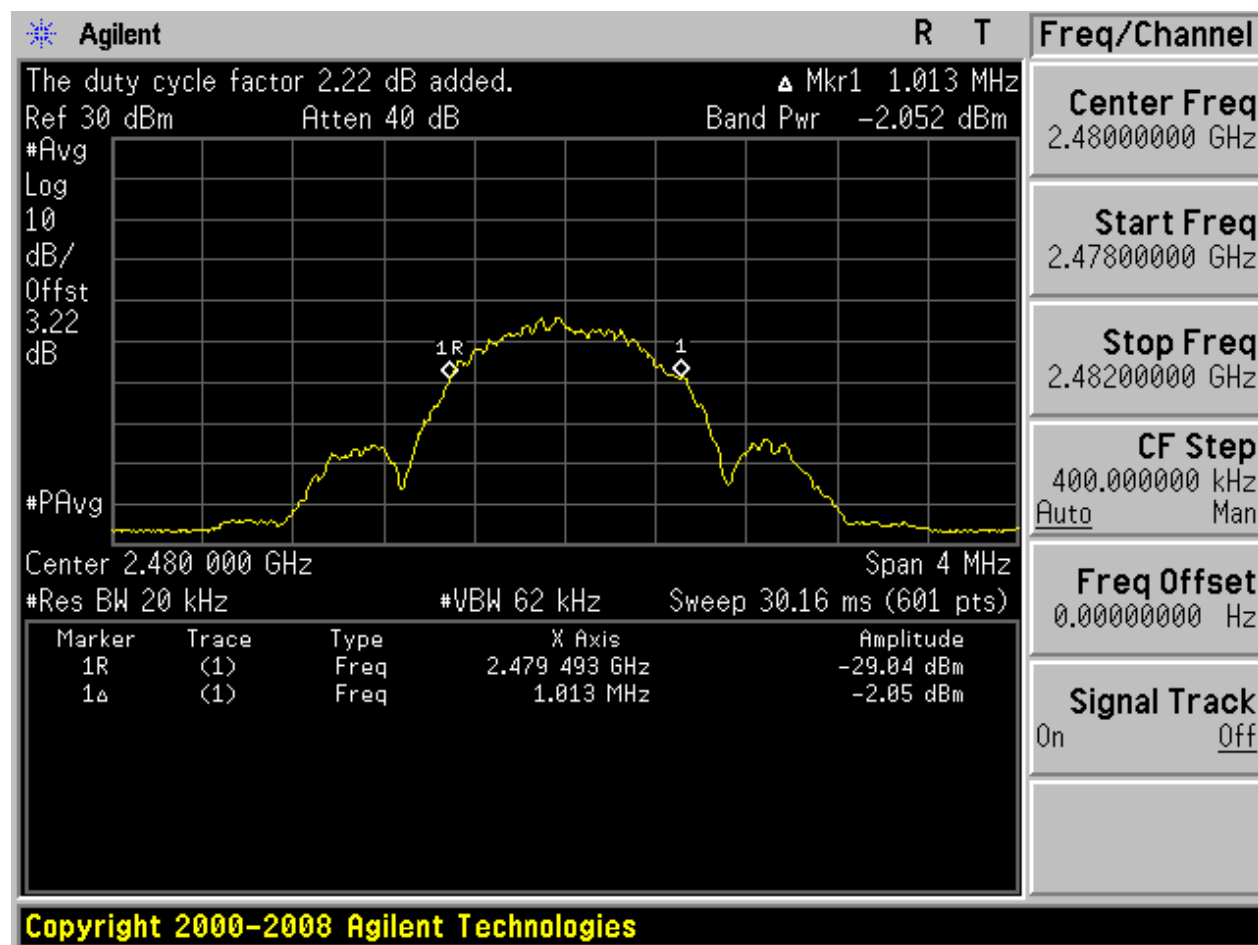




3.2 TM1_Ch19_M



3.3 TM1_Ch39_H





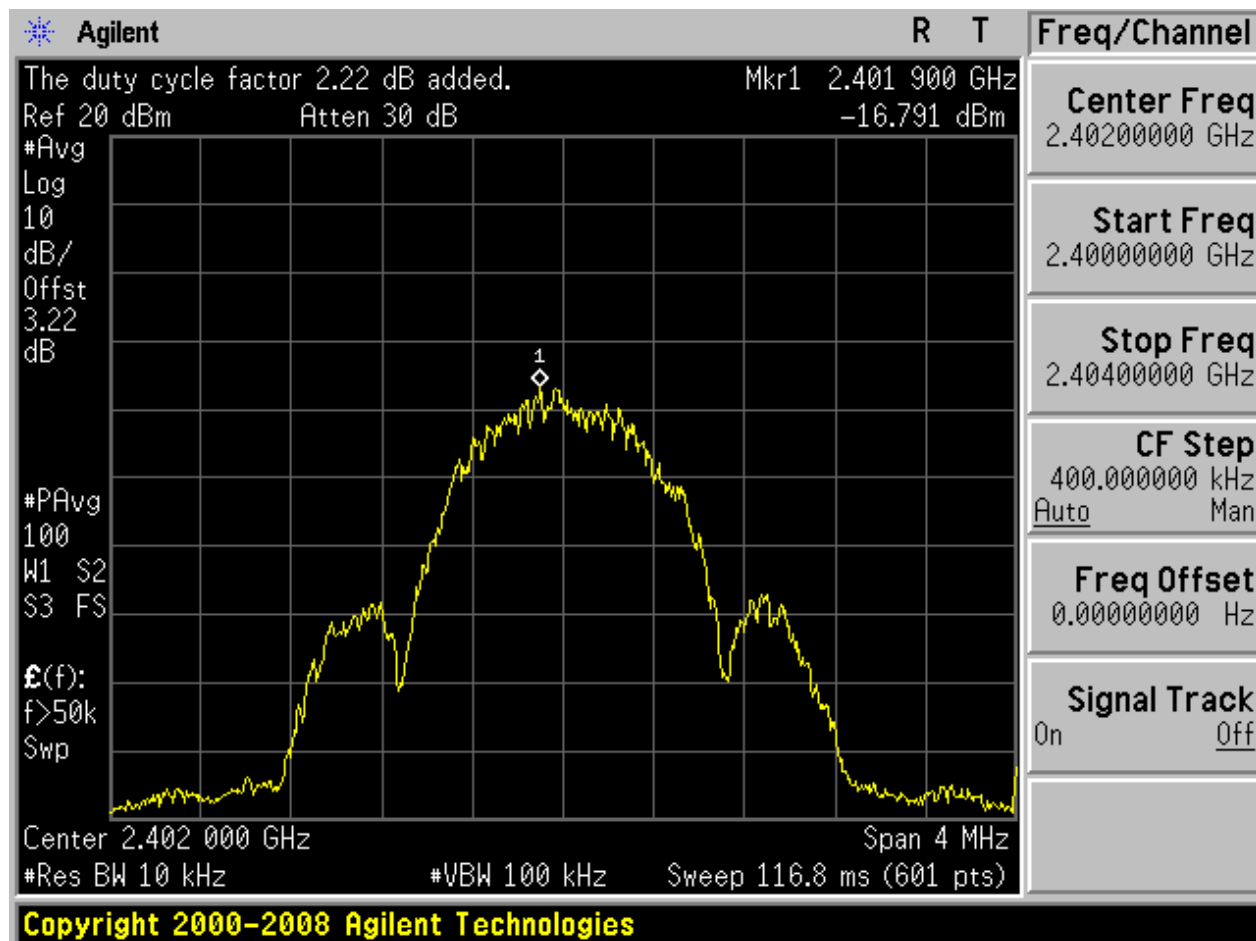
Appendix E: Maximum Power Spectral Density Level

Part I - Test Results

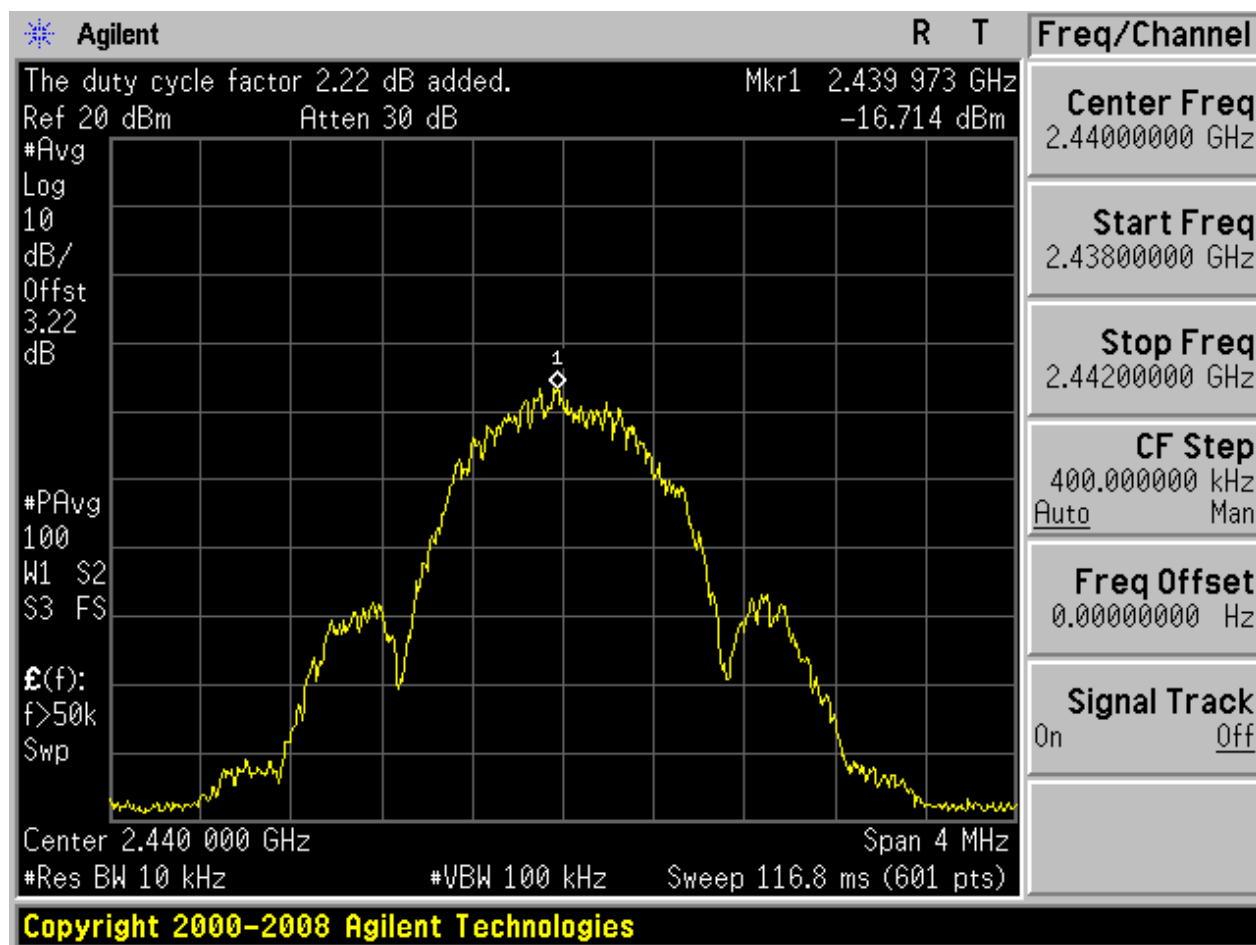
Test Mode	Test Channel	Frequency[MHz]	Ant	PD[MHz]	Verdict
TM1_Ch0	L	2402	Ant 1	-16.79	pass
TM1_Ch19	M	2440	Ant 1	-16.71	pass
TM1_Ch39	H	2480	Ant 1	-16.76	pass

Part II - Test Plots

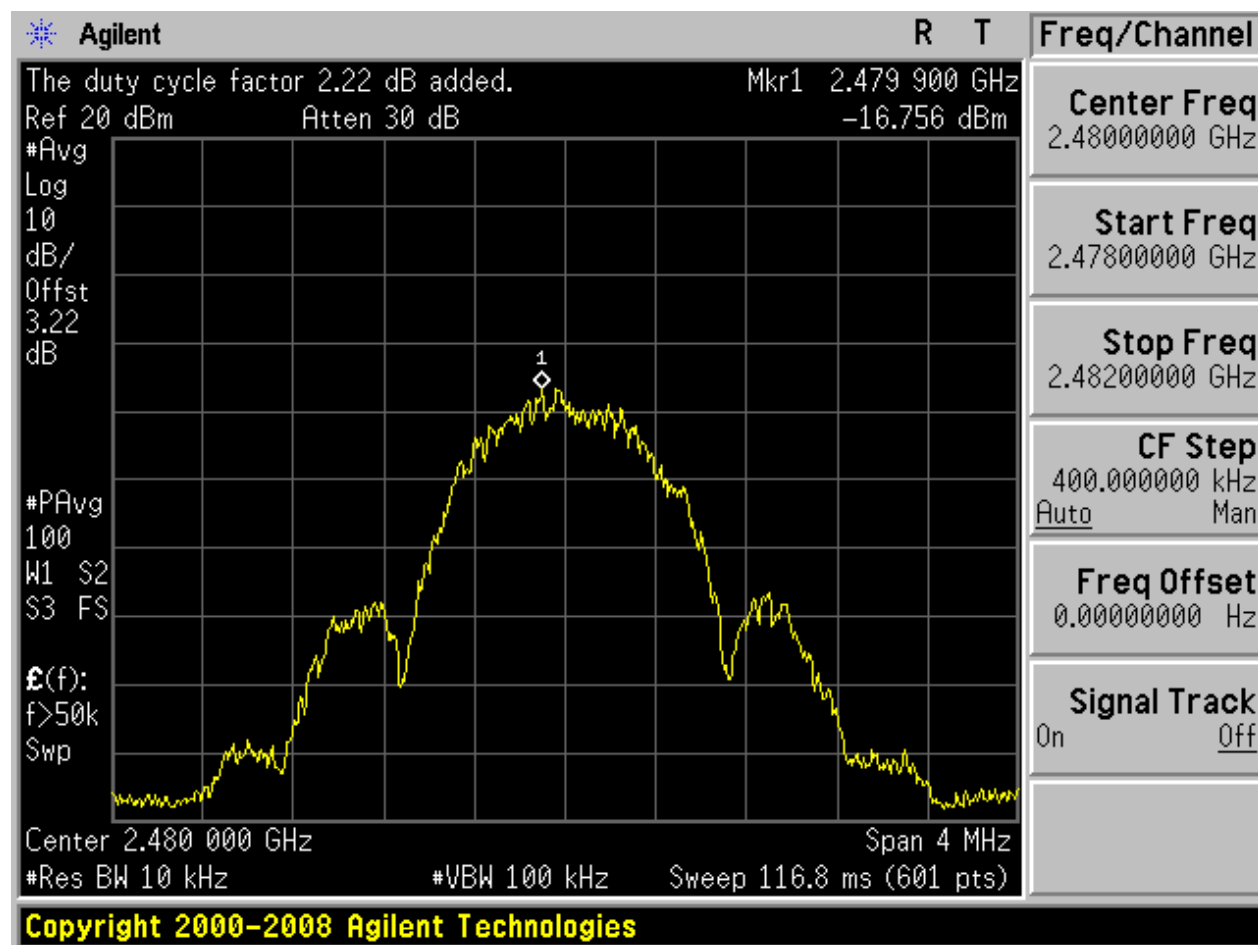
4.1 TM1_Ch0_L



4.2 TM1_Ch19_M



4.3 TM1_Ch39_H



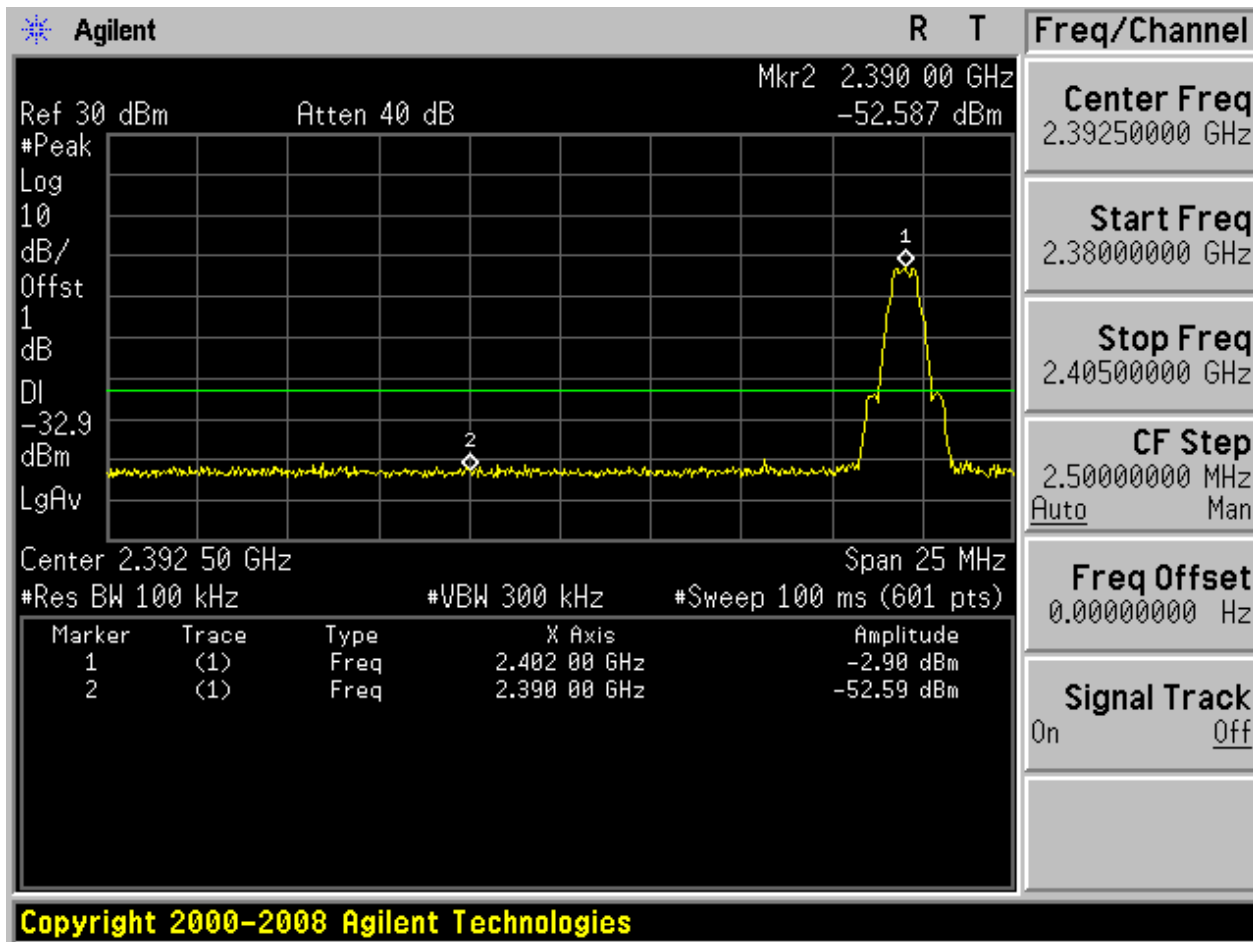
Appendix F: Band Edges Compliance

Part I - Test Results

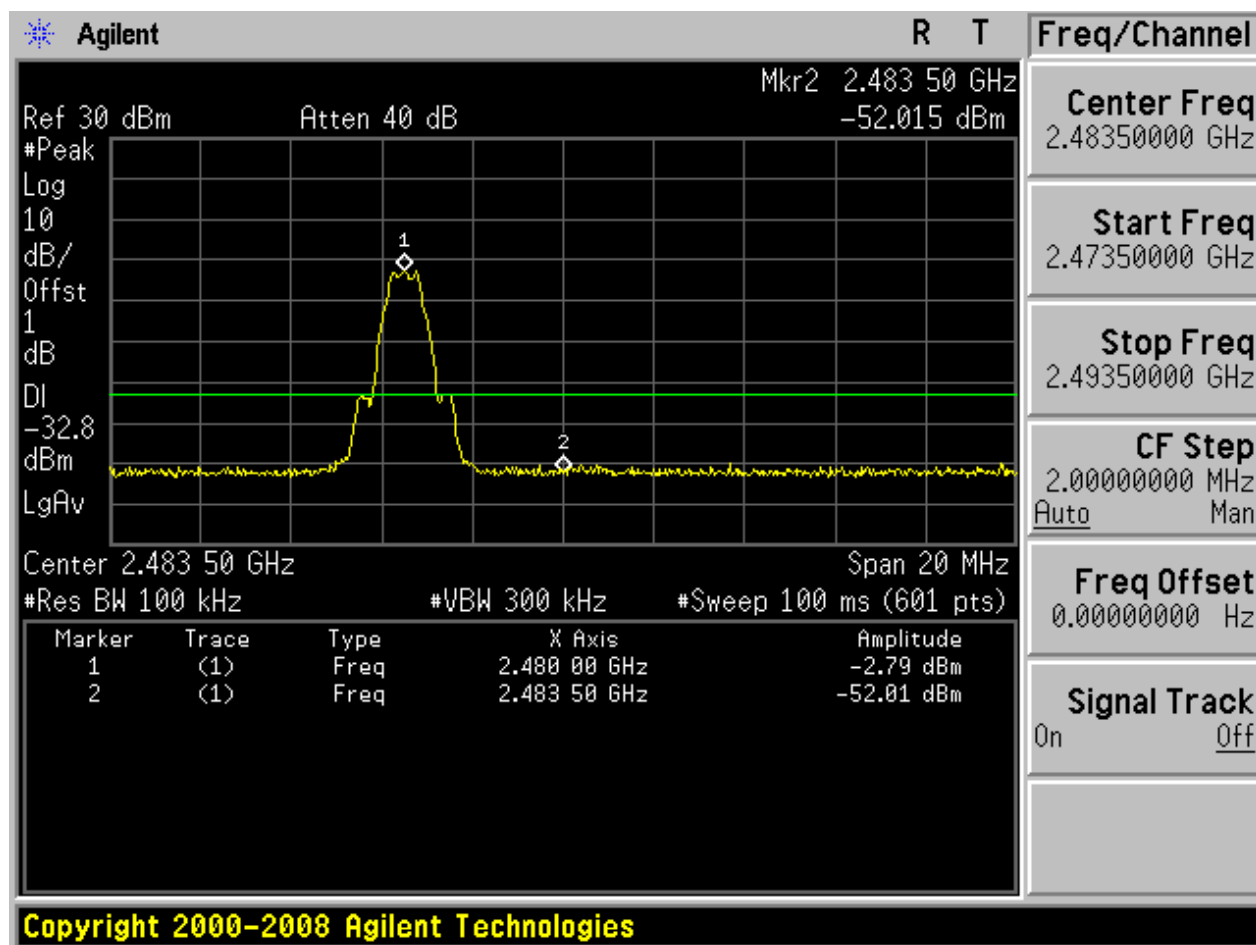
Test Mode	Test Channel	Frequency[MHz]	Ant	Carrier Power[dBm]	Max.Spurious Level[dBm]	Verdict
TM1_Ch0	L	2402	Ant 1	-2.90	-52.59	pass
TM1_Ch39	H	2480	Ant 1	-2.79	-52.02	pass

Part II - Test Plots

5.1 TM1_Ch0_L



5.2 TM1_Ch39_H



AppendixG: Unwanted Emissions into Non-Restricted Frequency

Bands

In this Appendix, the "Pref", which is used as the reference level, refers to the peak power level in any 100 kHz bandwidth within the fundamental emission, the "Puw" refers to the maximum emission power in 100 kHz band segments outside of the authorized frequency band.

Considering that the higher ratio of RBW to the span for the frequency ranges below 30 MHz makes the results determination be complicated, a narrower RBW other than 100 kHz is used for these ranges. The measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \times \lg(100 [kHz]/\text{narrower RBW} [kHz])$. As to this Appendix, the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain and used as respective results for each chain, due to the relative-limit requirement.

In the result table, the "< Limit" denotes that "The Puw [dBm] is less than Pref[dBm]-30[dBm], see test plots for detailed".

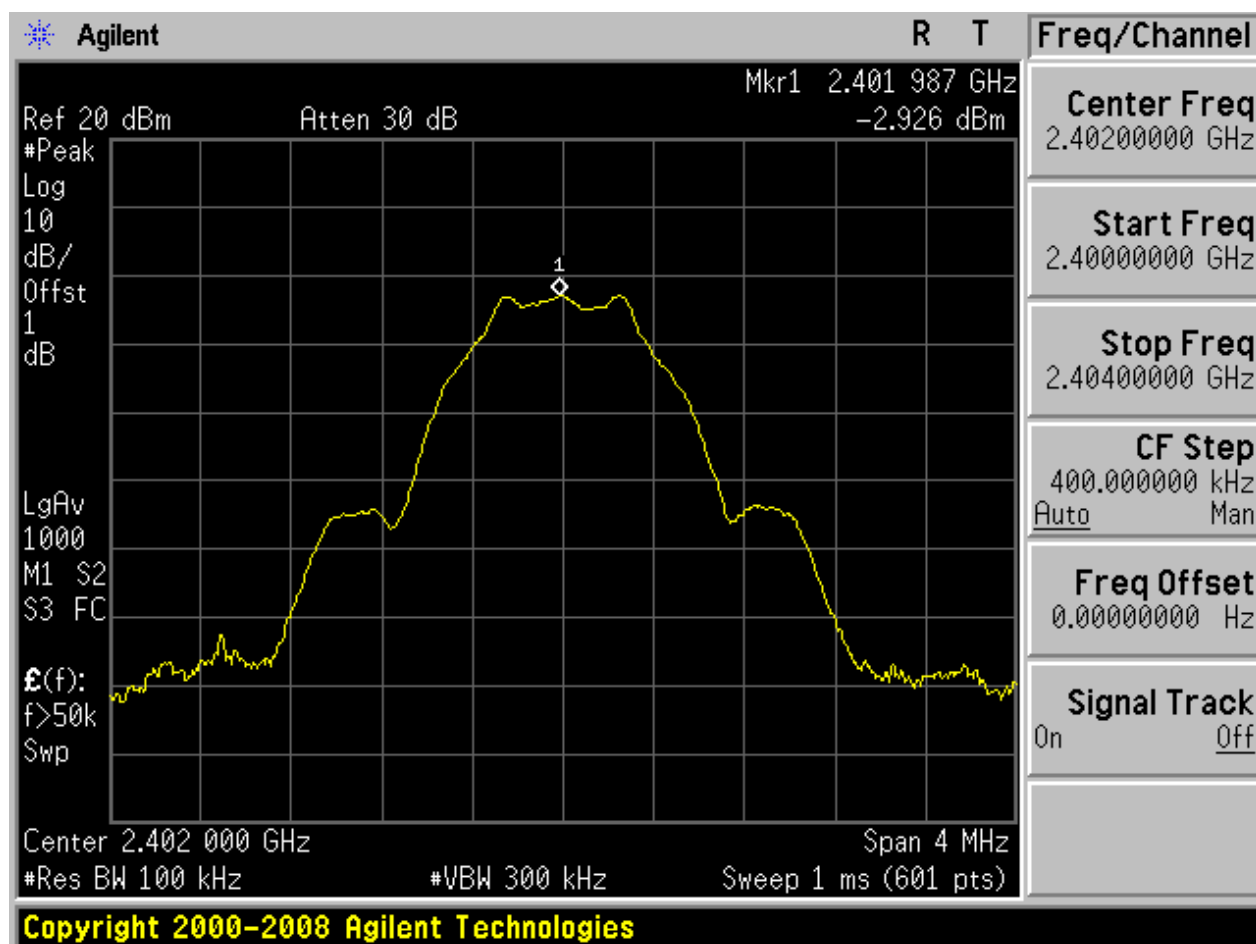
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Pref[dBm]	Puw[dBm]	Verdict
TM1_Ch39	L	2402	Ant 1	-2.93	<limit	pass
TM1_Ch39	M	2440	Ant 1	-2.64	<limit	pass
TM1_Ch39	H	2480	Ant 1	-2.75	<limit	pass

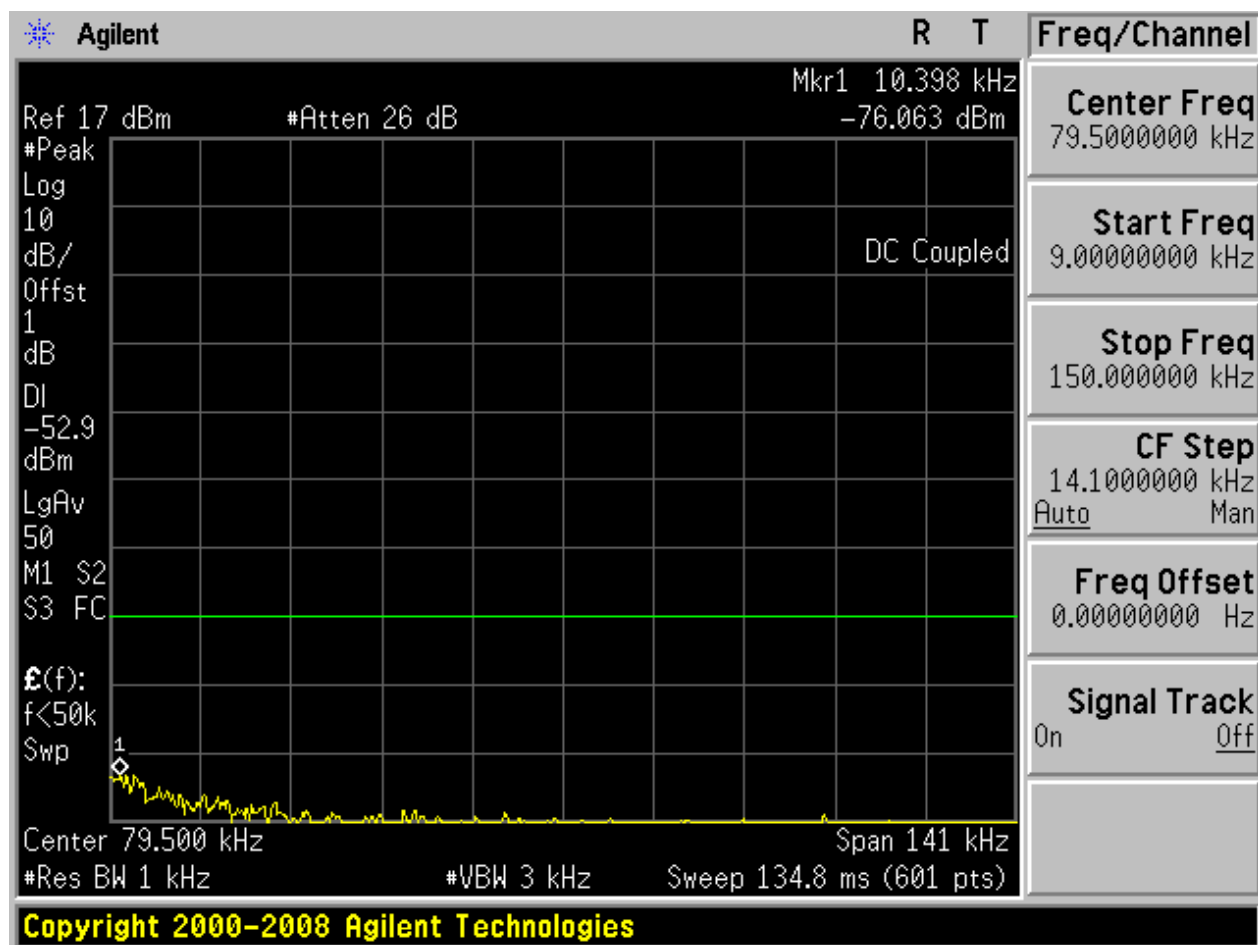
Part II - Test Plots

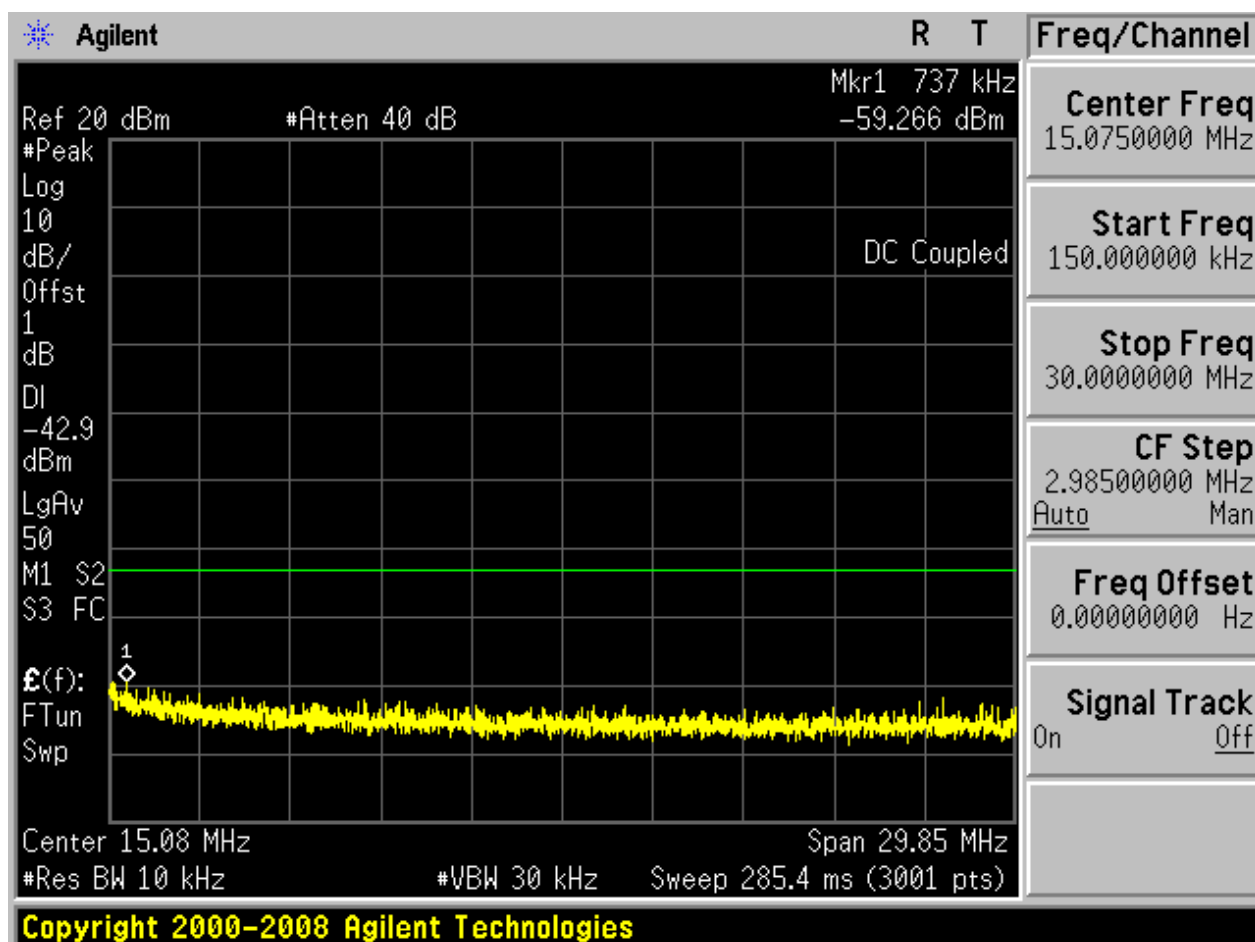
6.1 TM1_Ch0_L

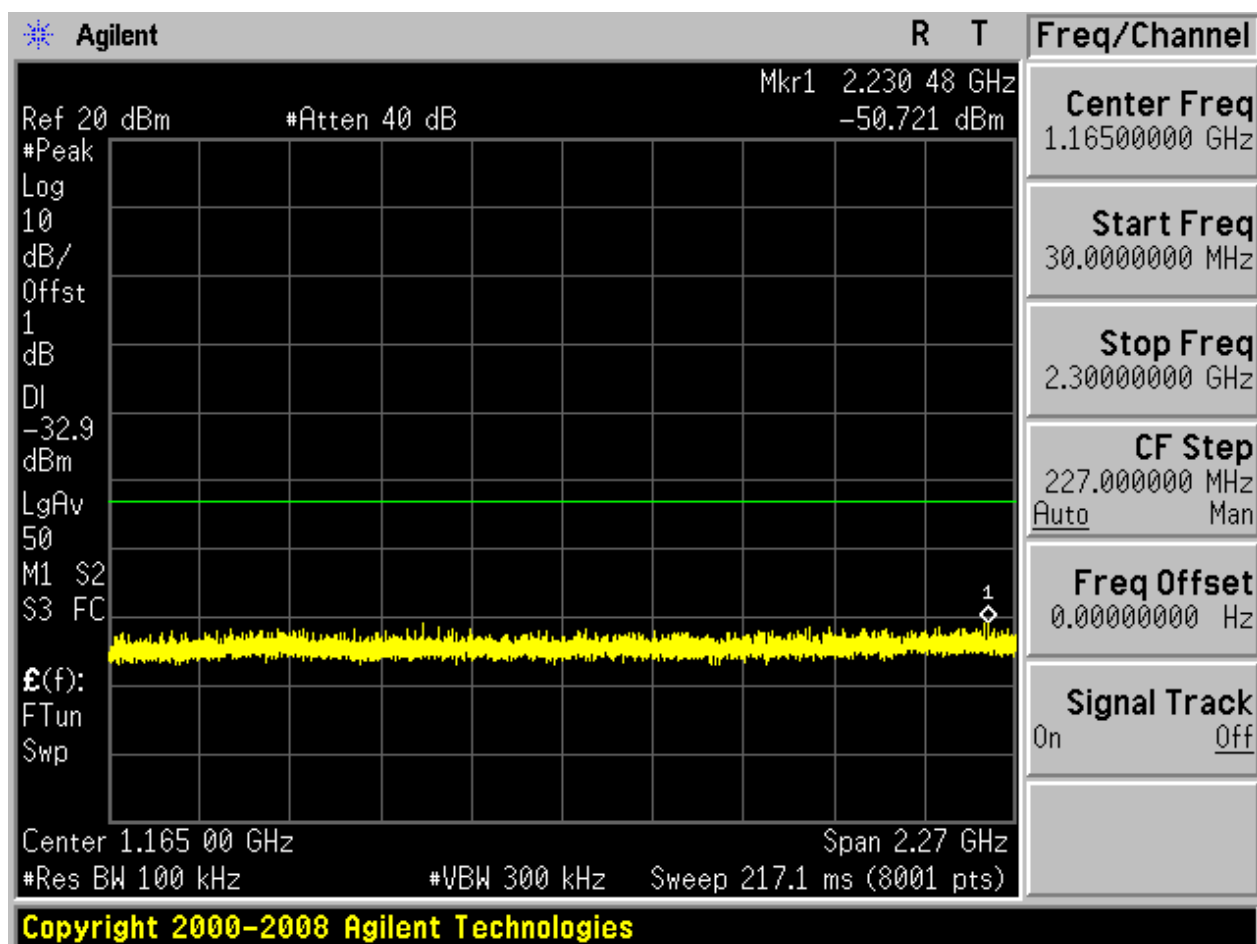
Pref:

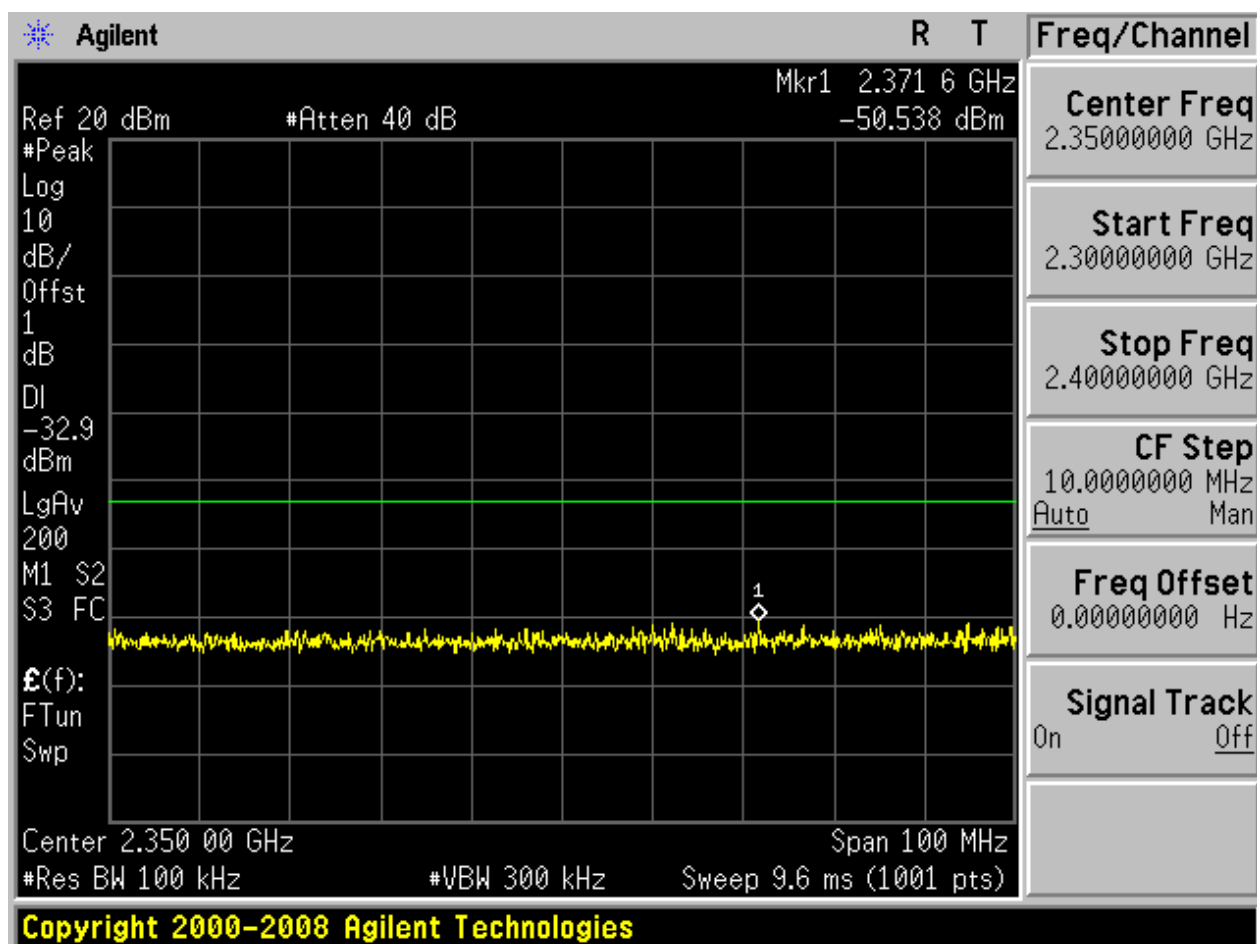


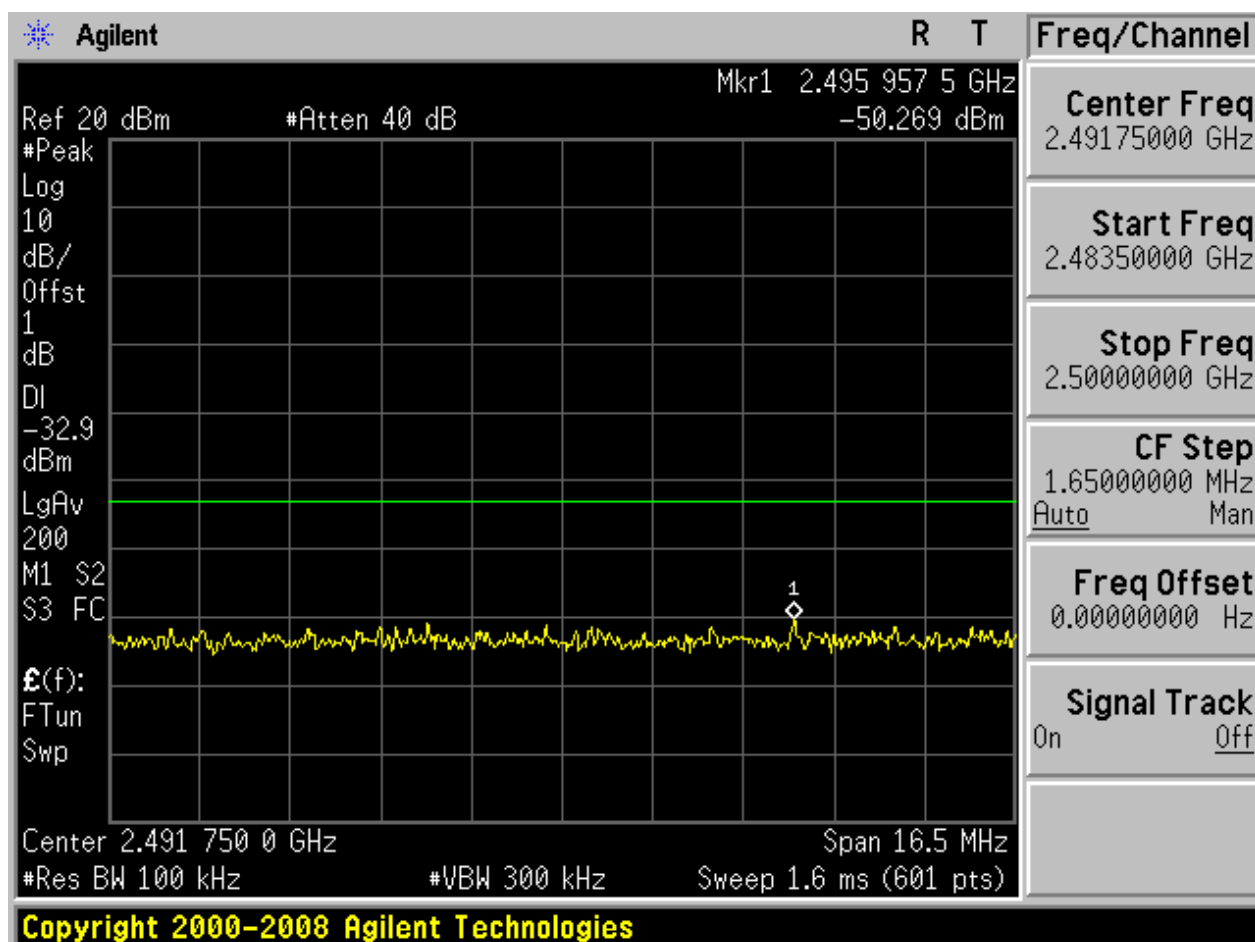
Puw:

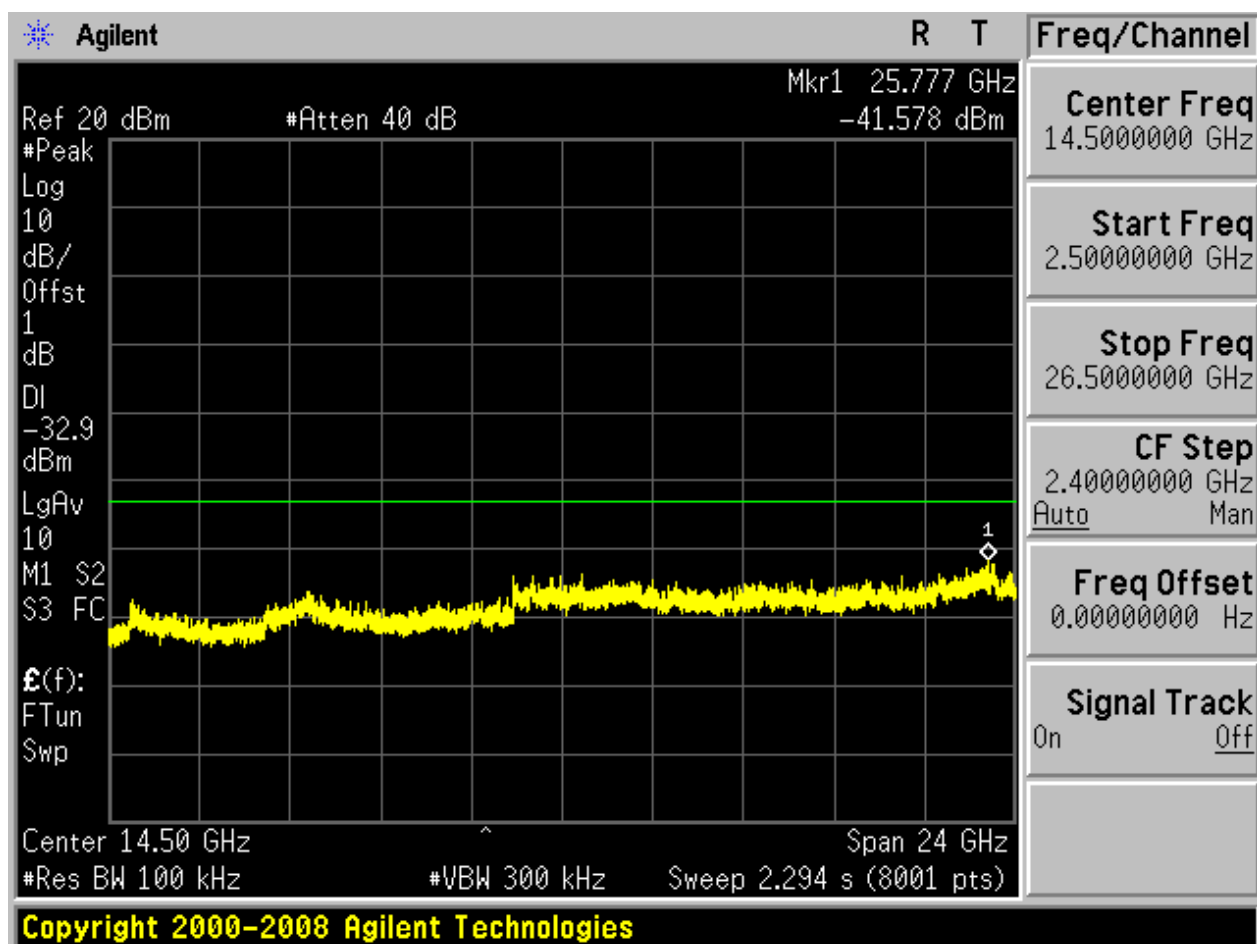






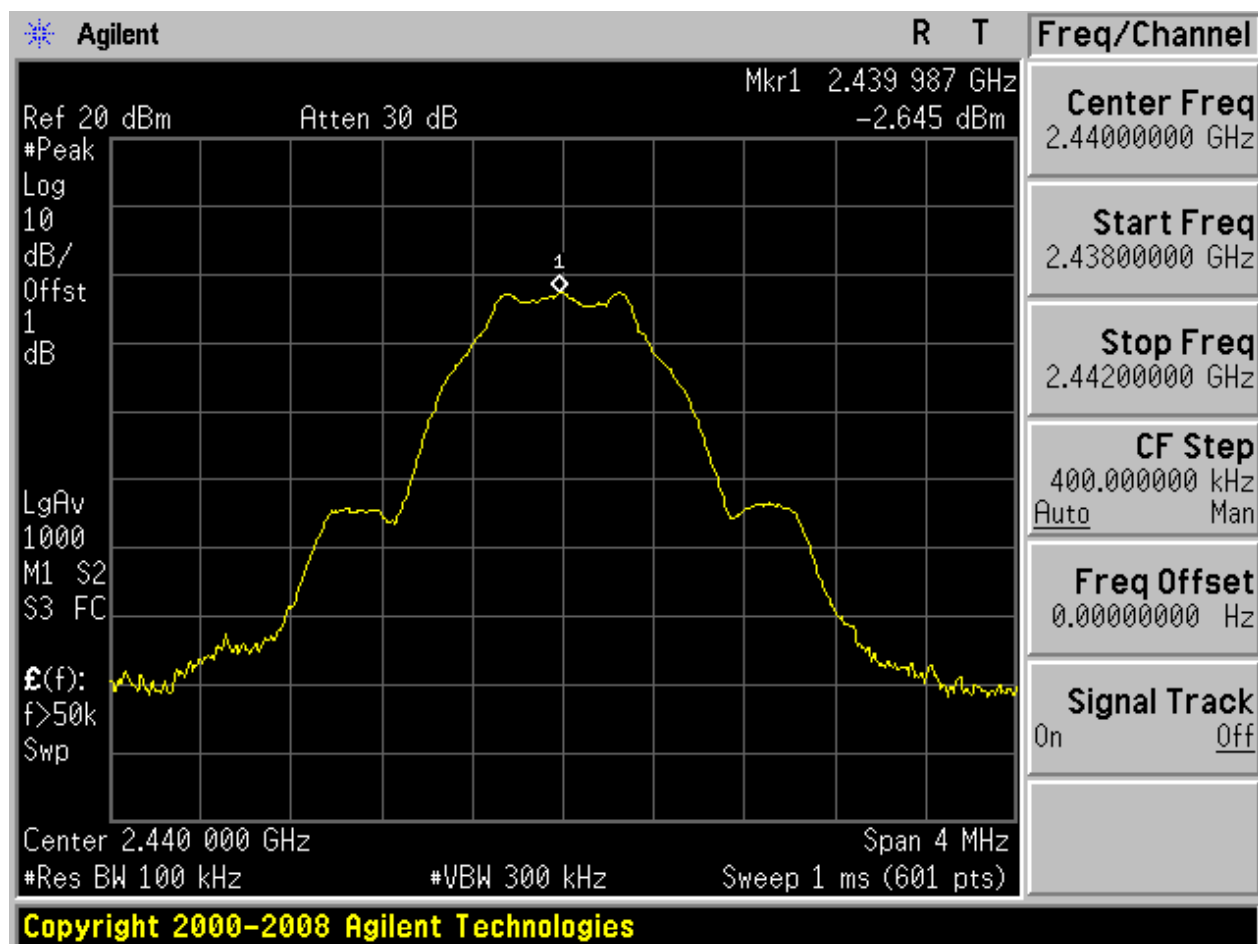




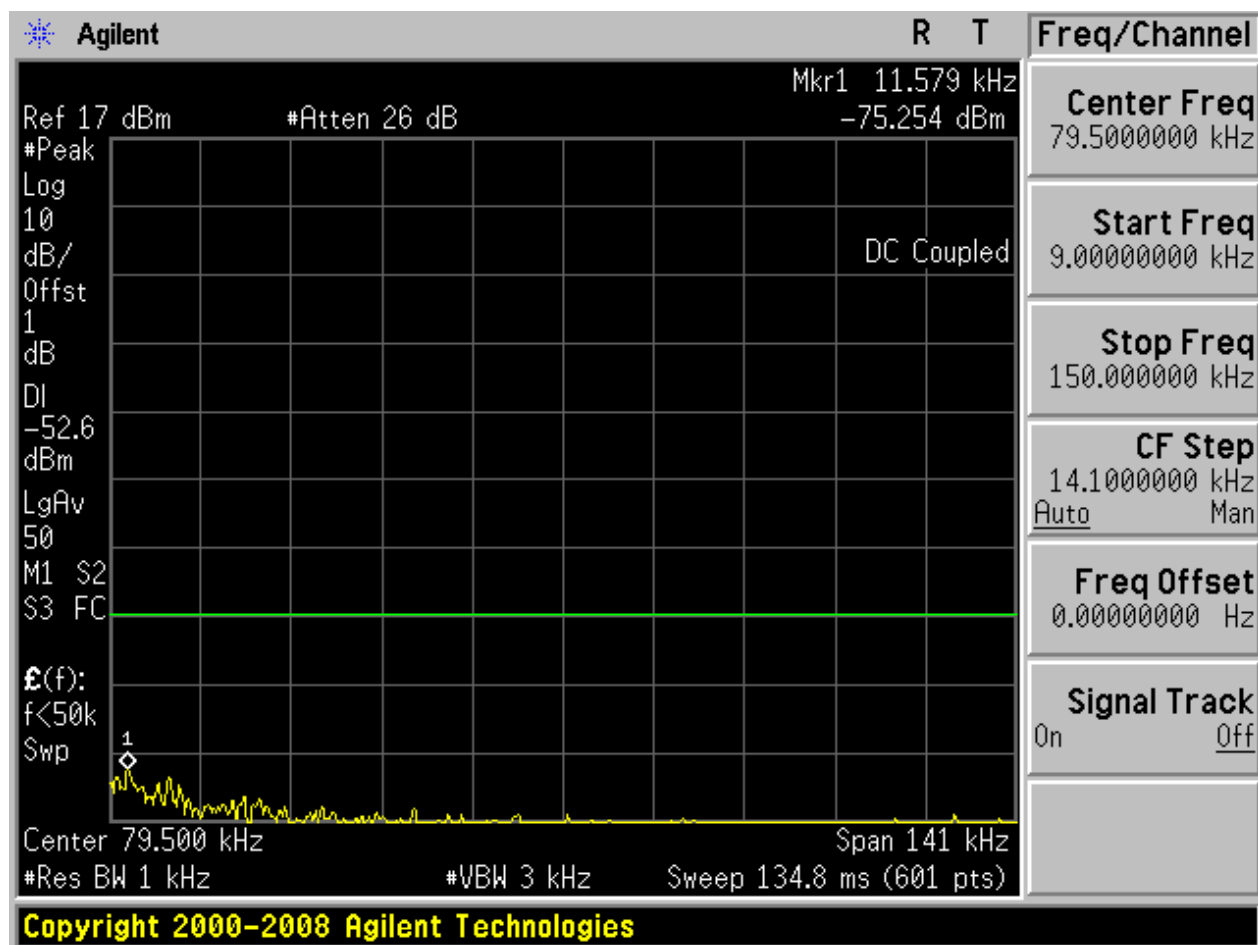


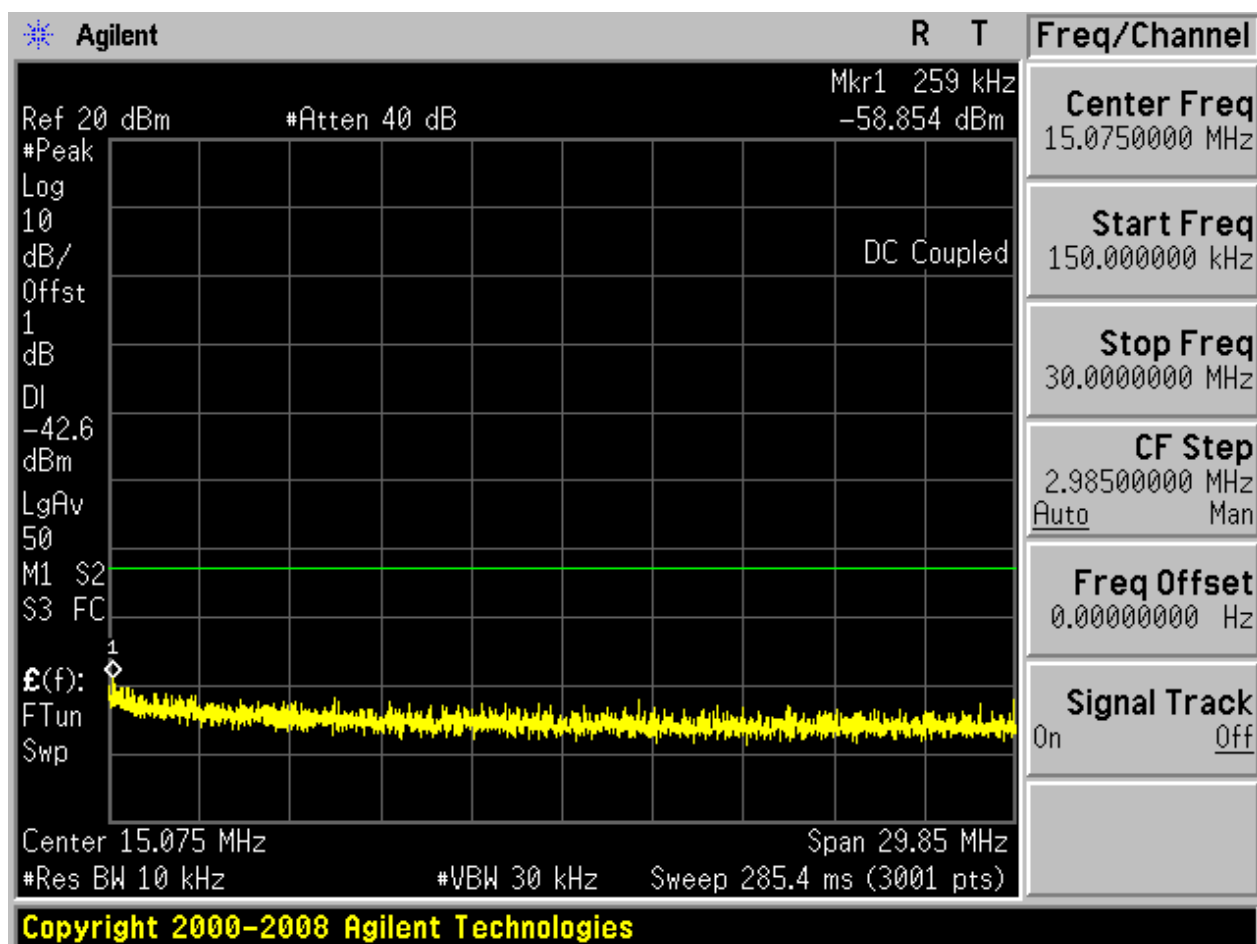
5.2 TM1_Ch19_H

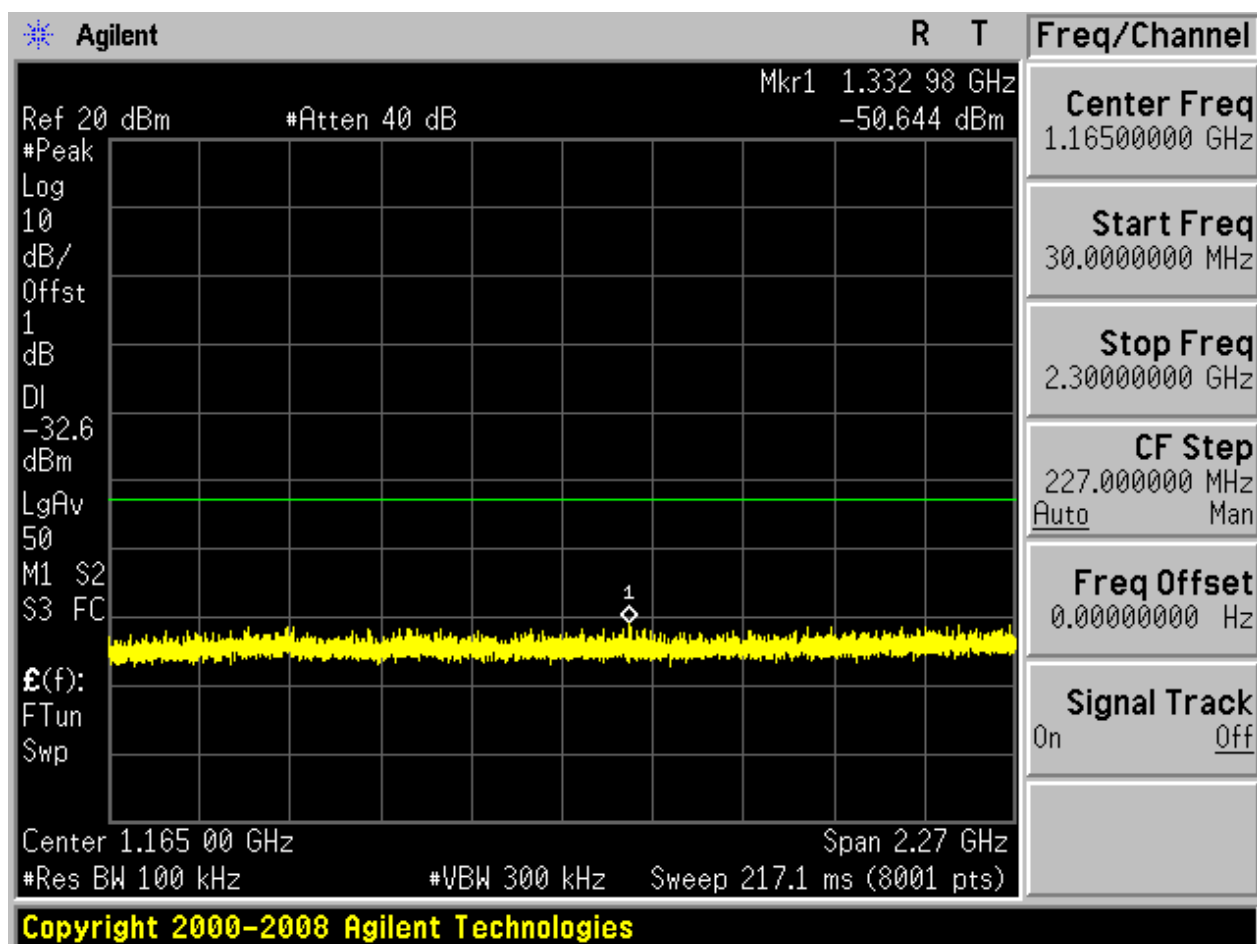
Pref:

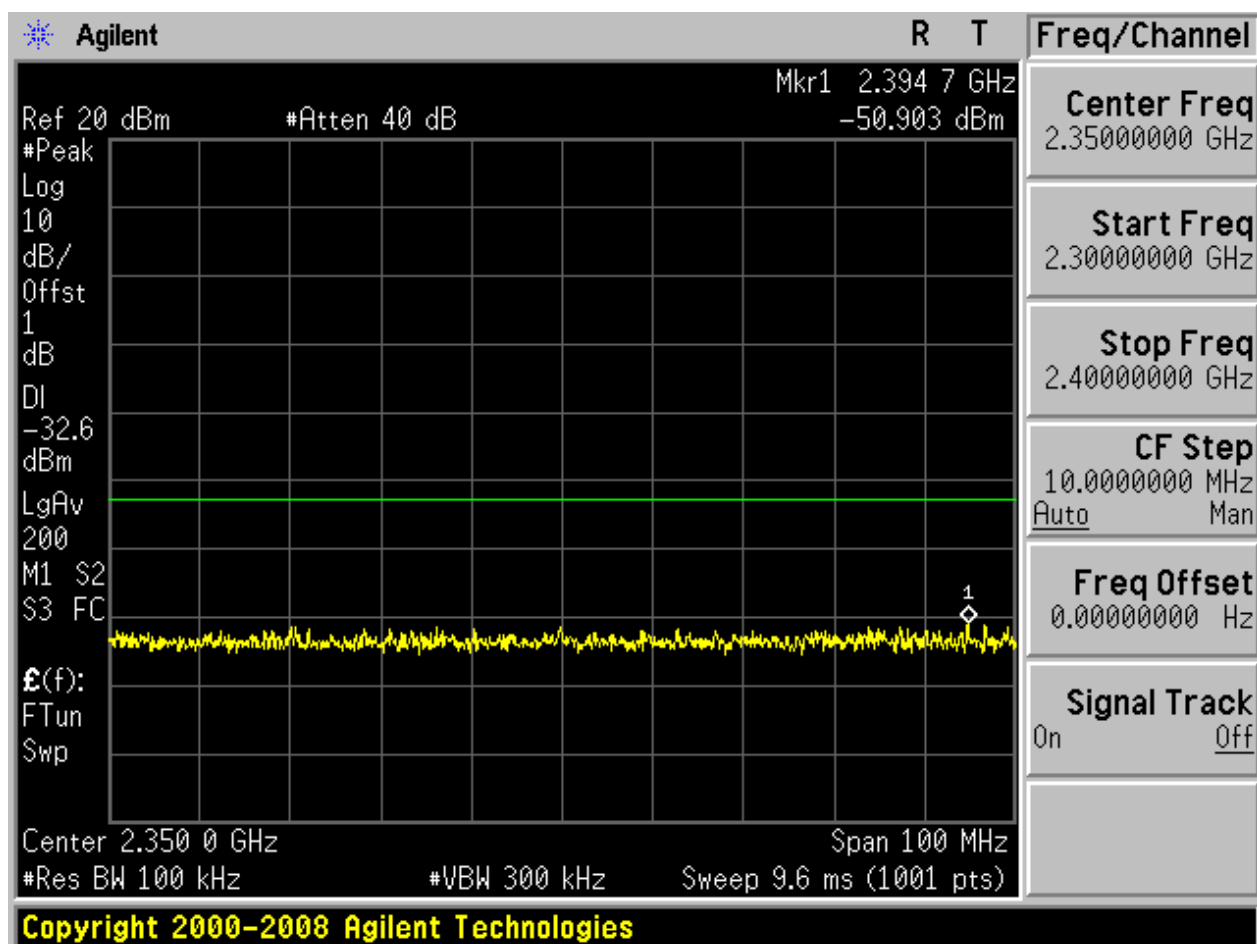


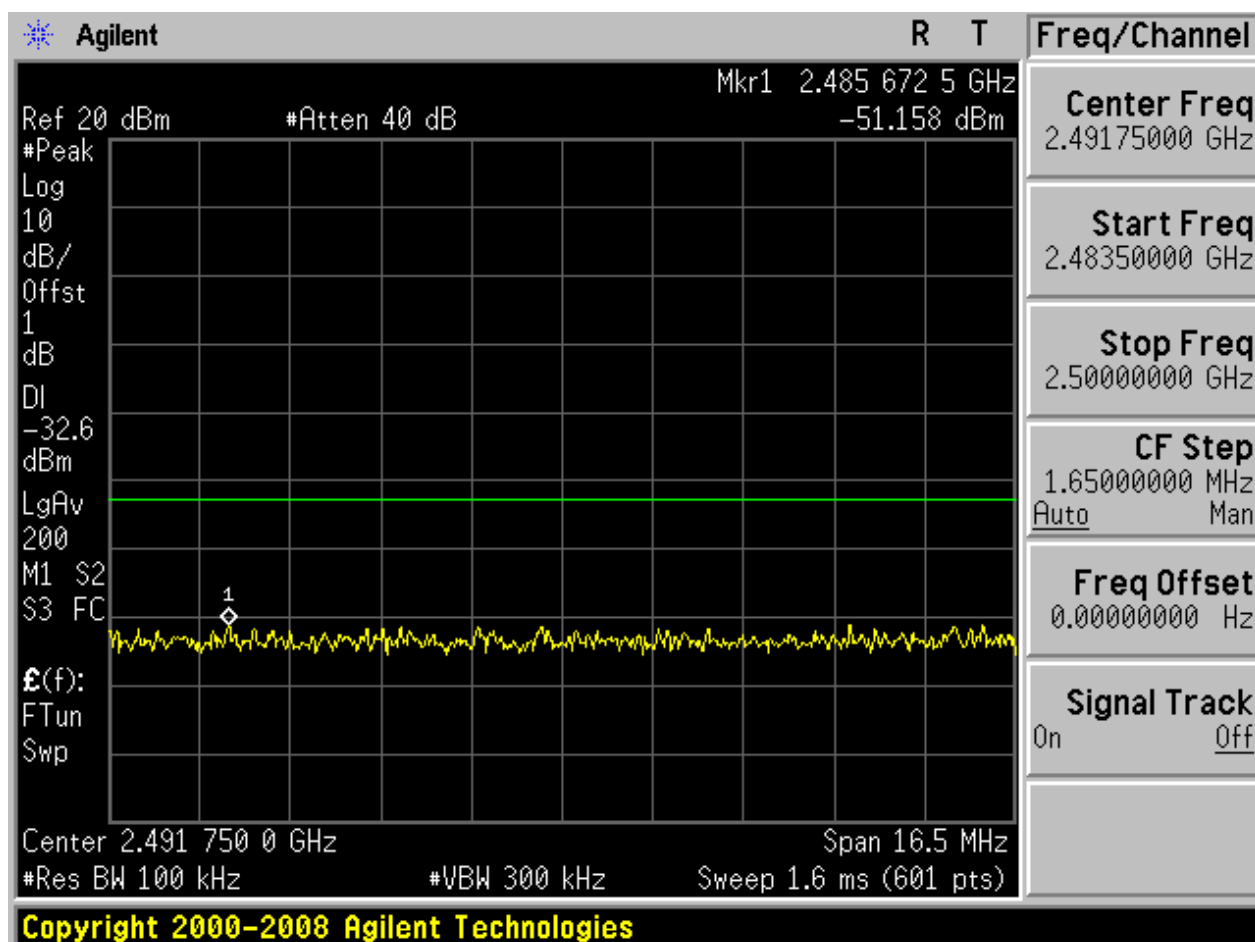
Puw:

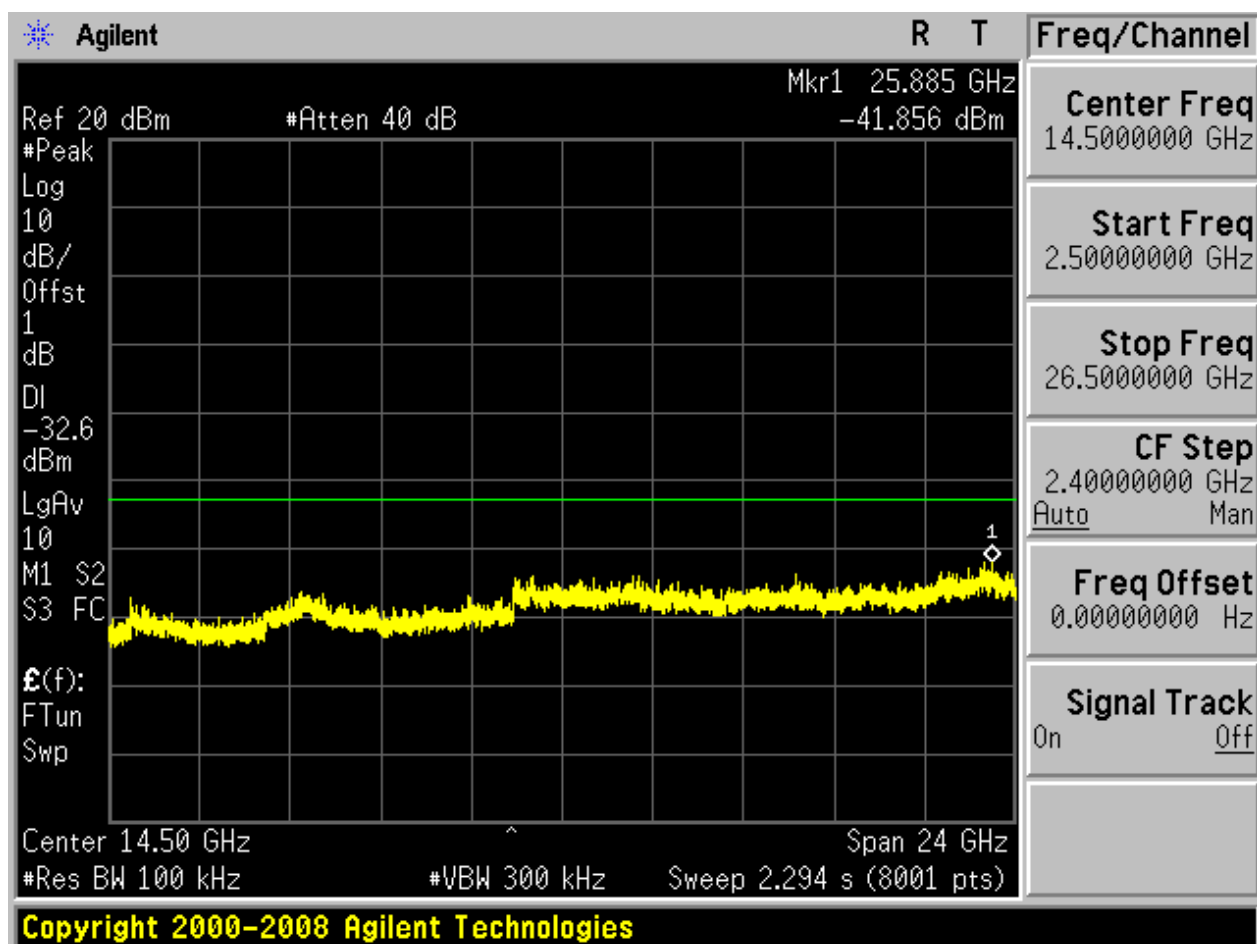






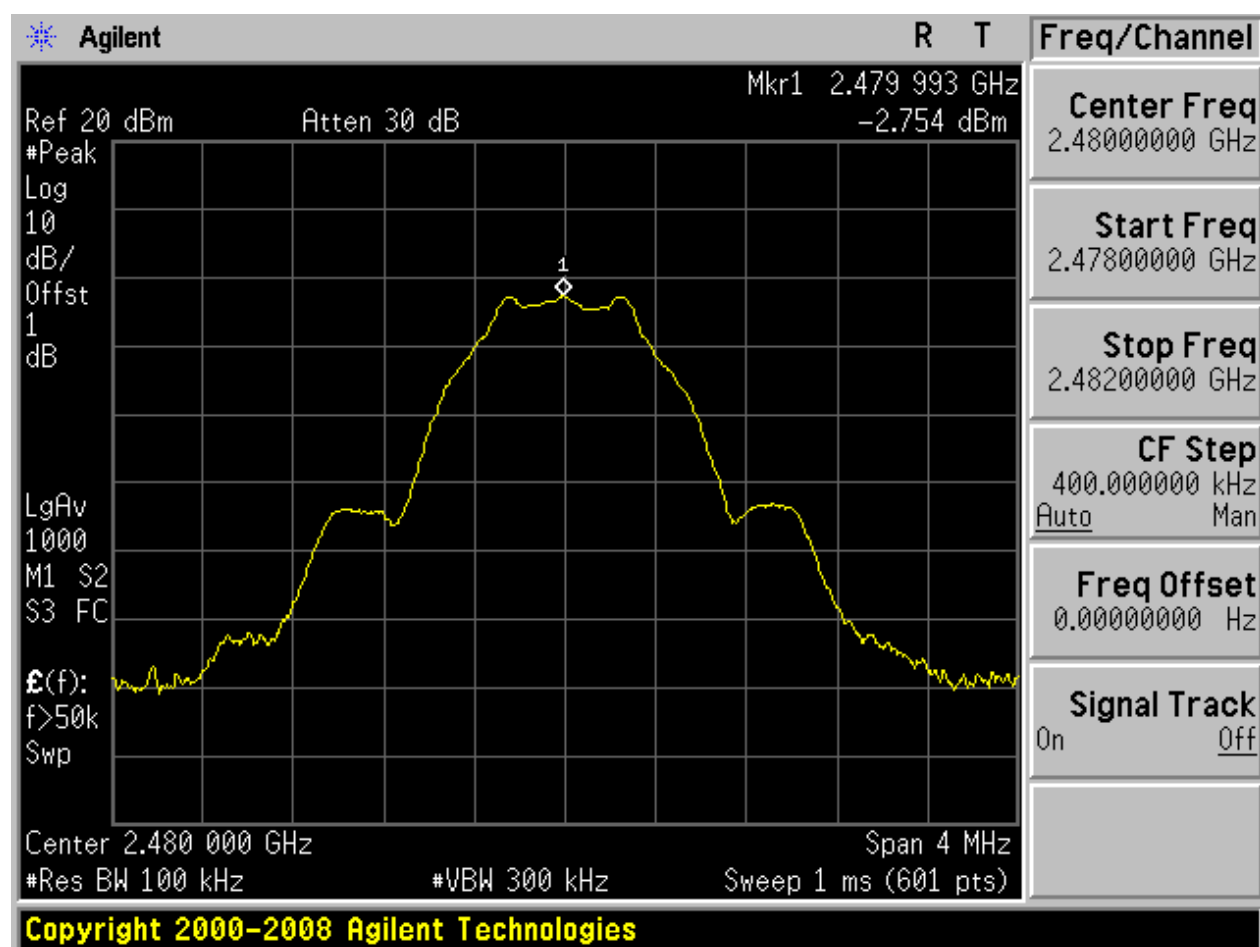




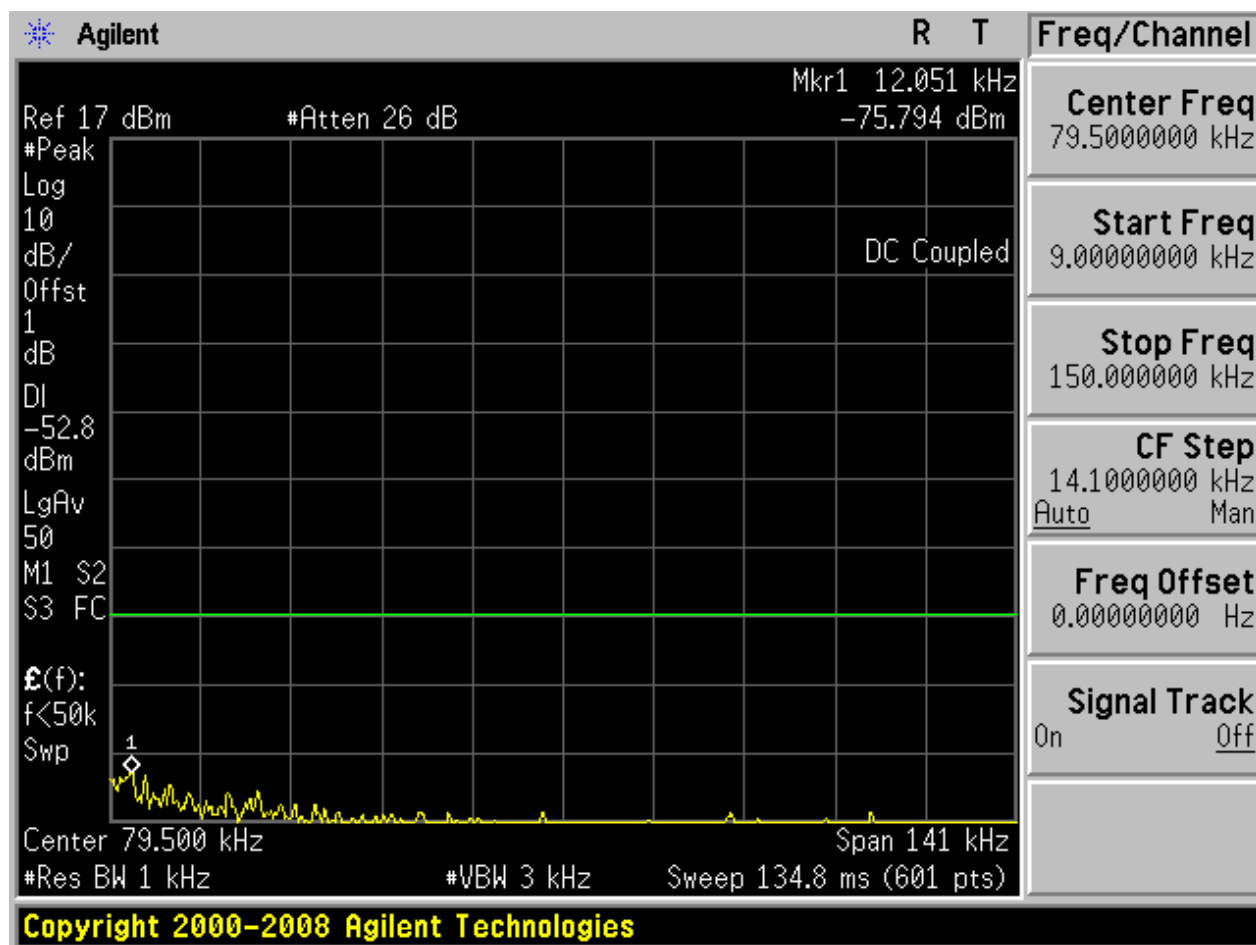


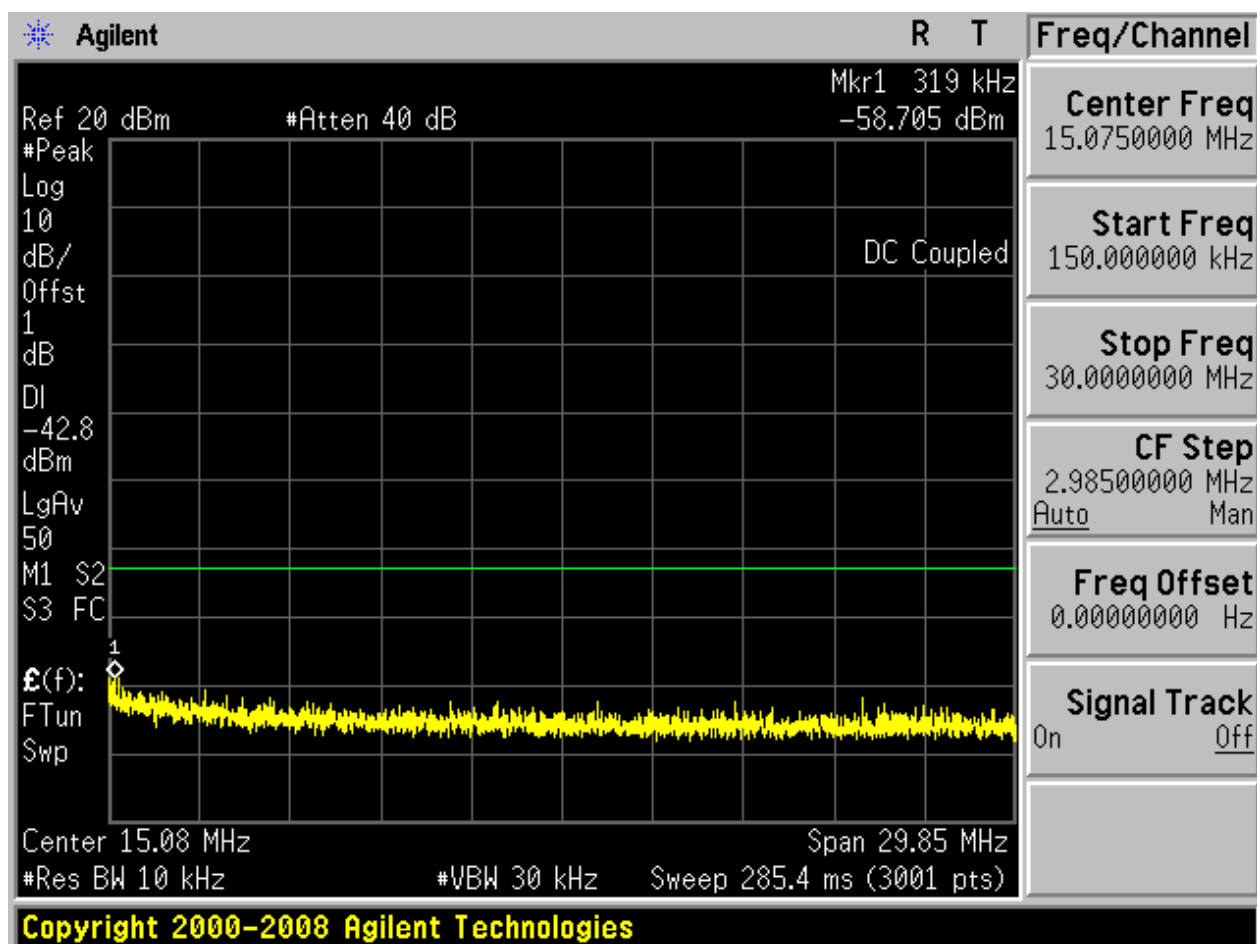
5.3 TM1_Ch39_H

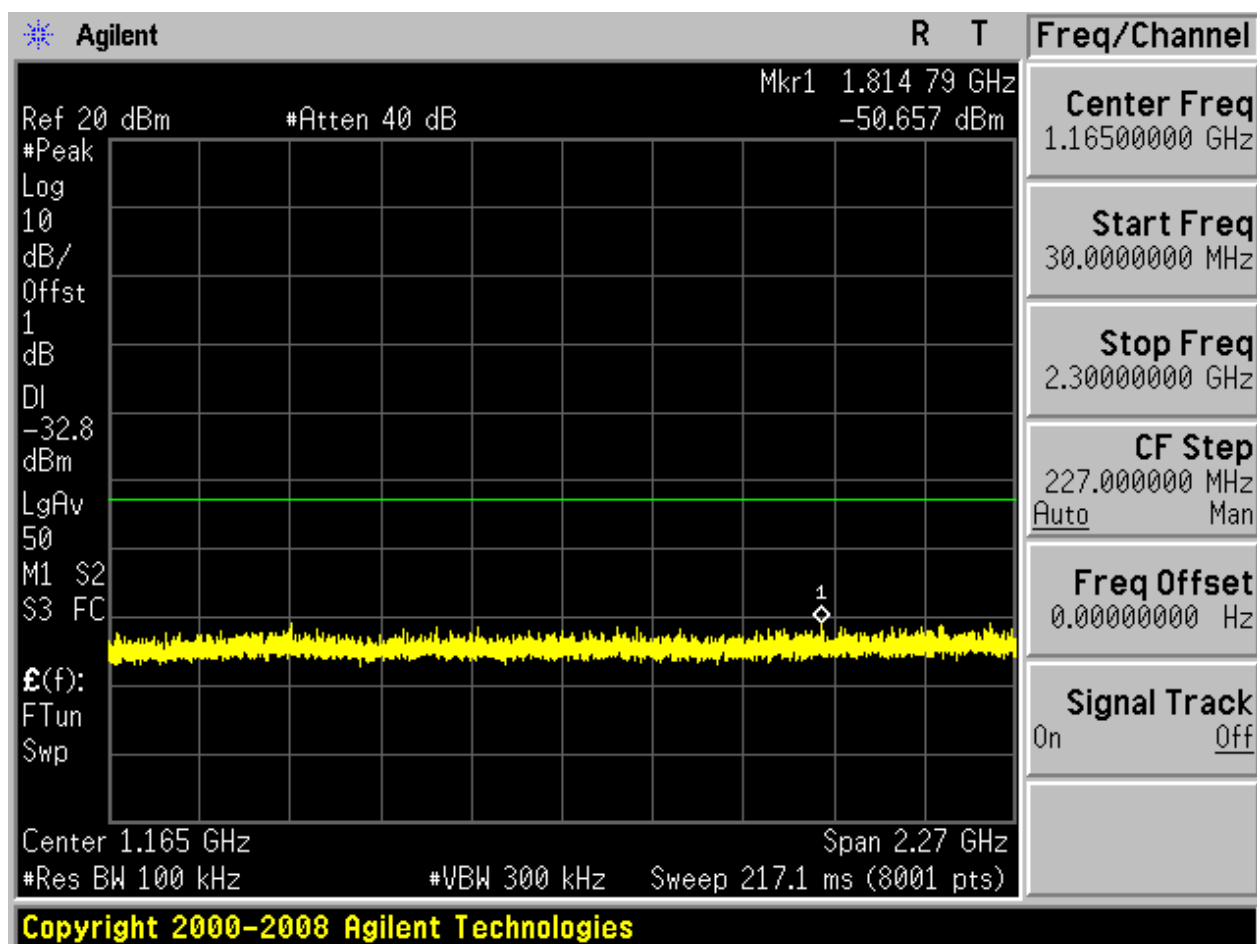
Pref:

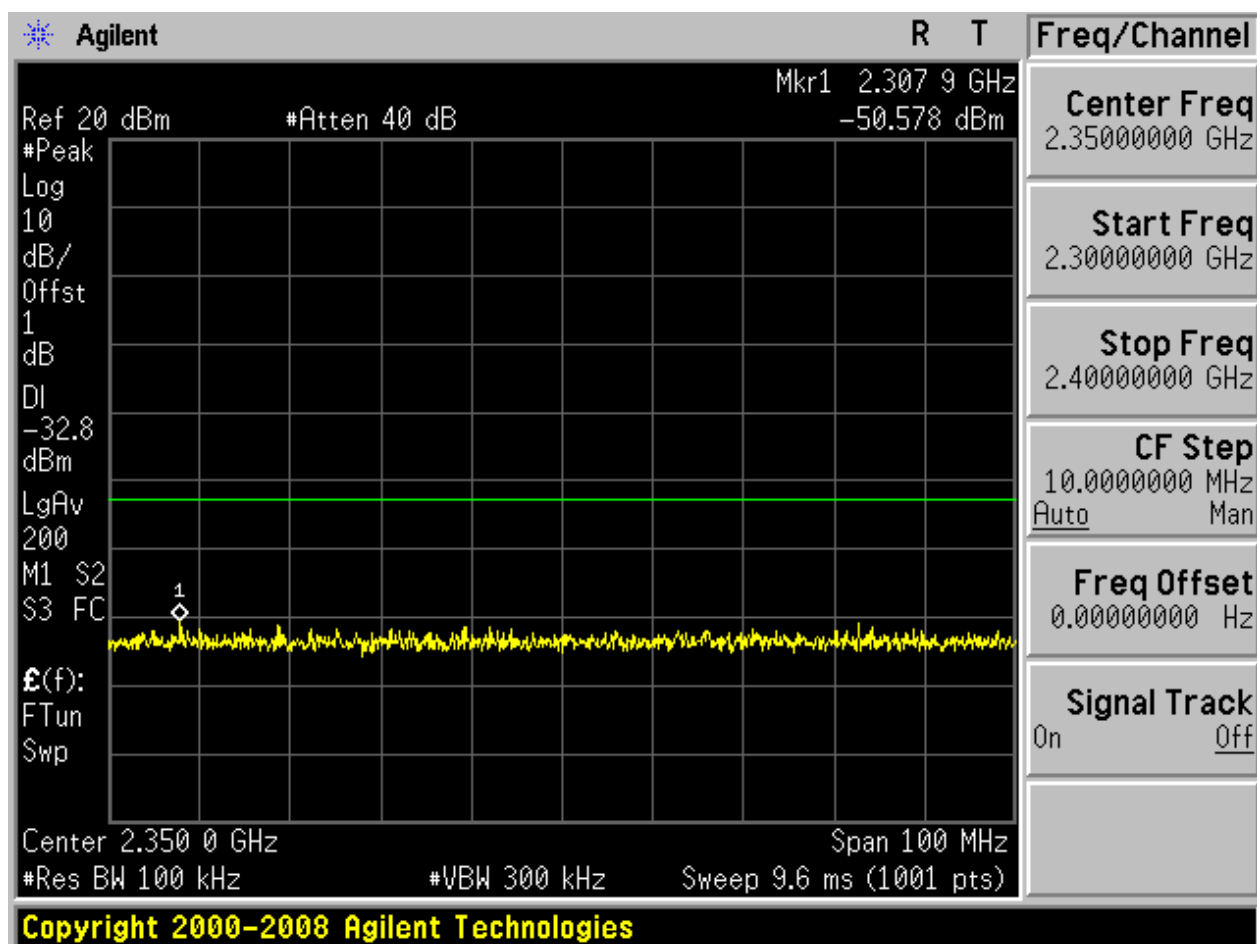


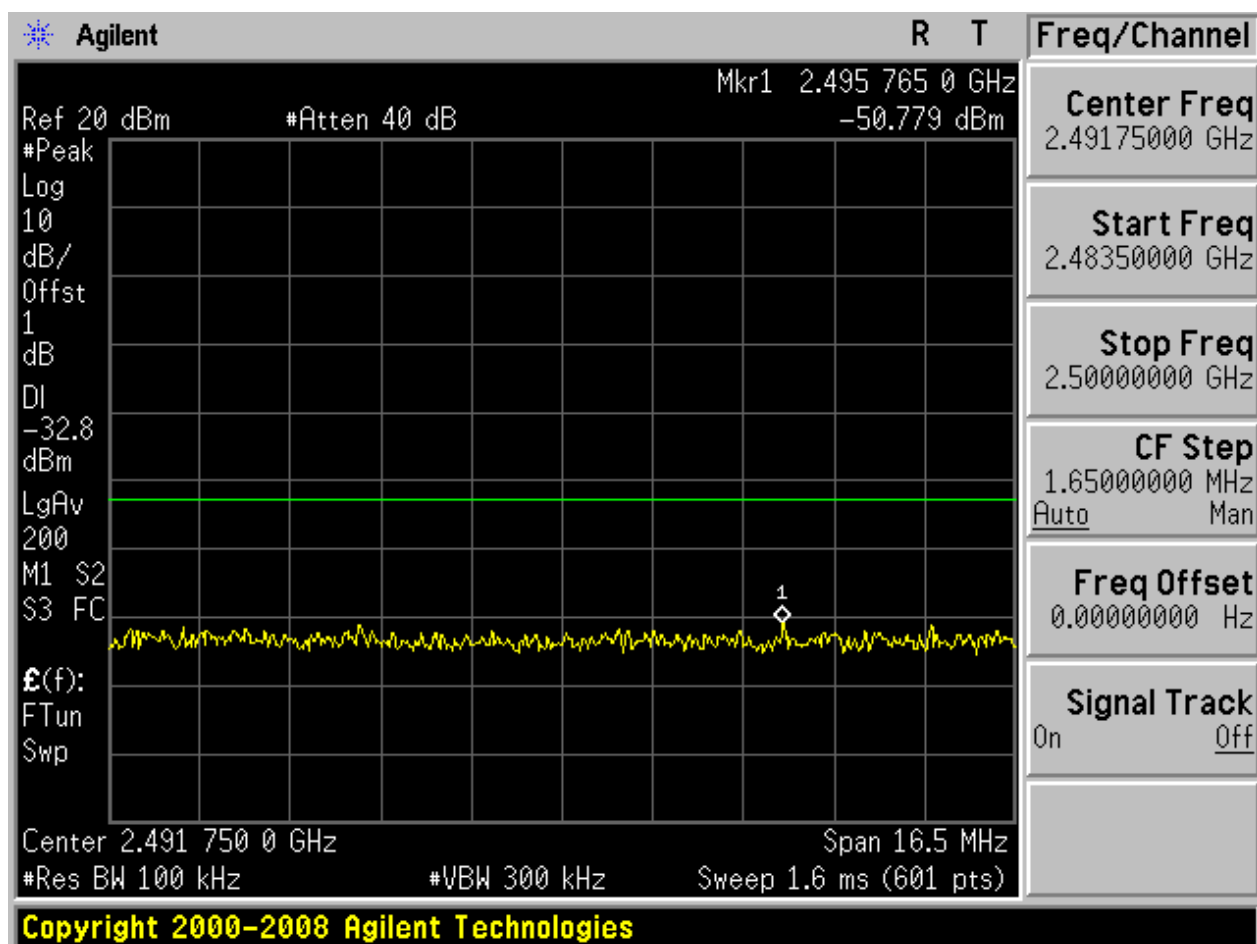
Puw:

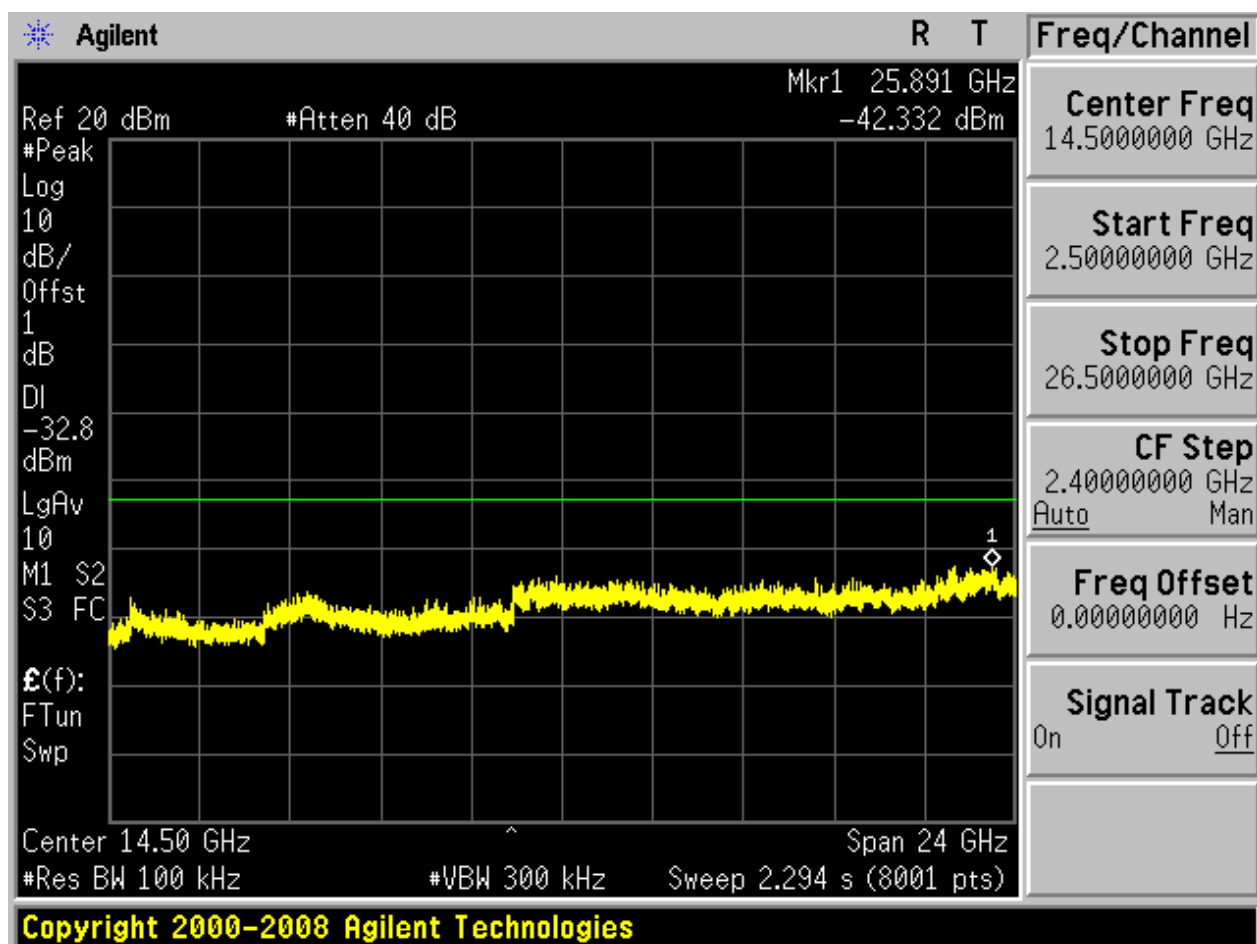














Appendix H: Radiated Spurious Emission & Spurious in Restricted Band

Note: Below 1GHz, RBW = 100 kHz, VBW = 300 kHz.

Above 1GHz, RBW = 1 MHz, VBW = 3 MHz.

The simultaneous transmission has been considered

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

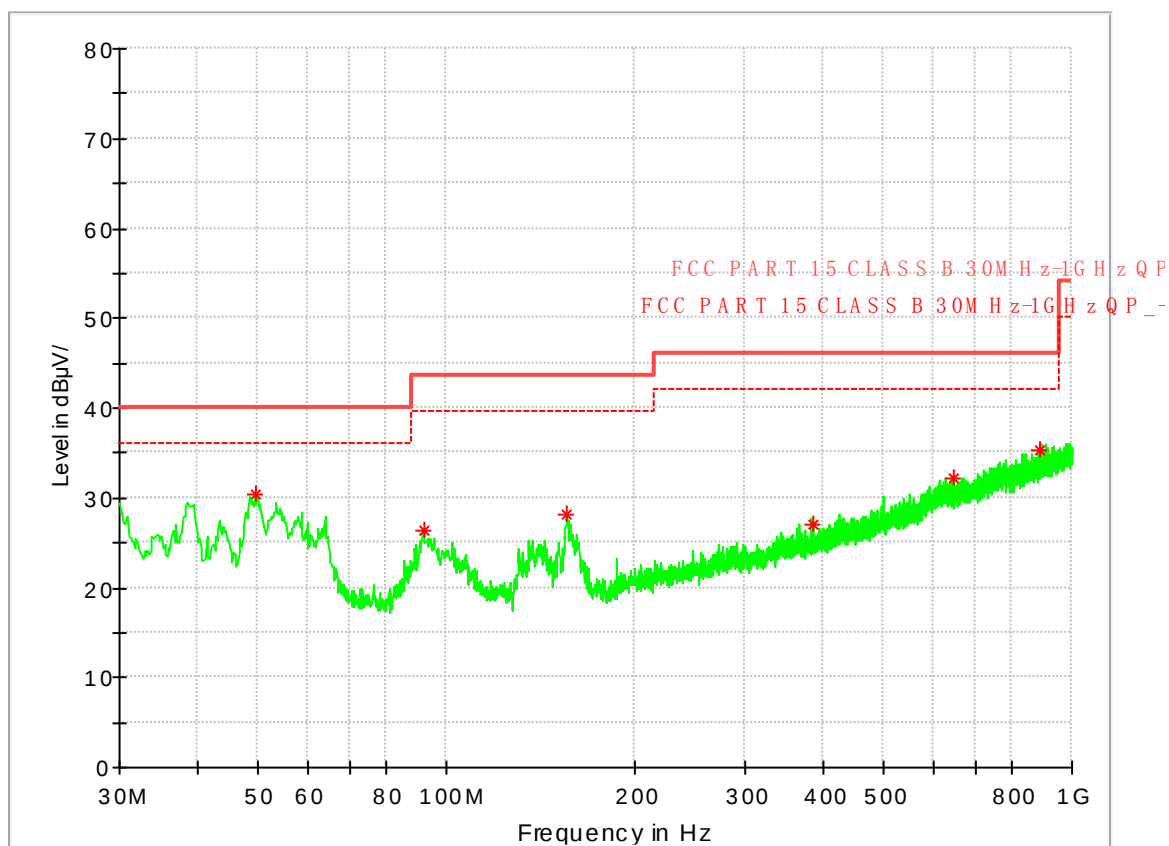
Part 1: Testing Range of “9 kHz to 30MHz”

NOTE1: No peak found in the Test Range of “9 kHz to 30MHz”

Part 2: Testing Range of “30 MHz to 1 GHz”

Note 1: The test results and plot for testing range of “30 MHz to 1 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.

Note 2: The emissions in this range are mainly from the Platform Device (Notepad PC and its ancillary components).



Frequency	QuasiPeak	Limit	Margin	Height	Pol	Azimuth	Corr.
49.400000	30.42	40.00	9.58	100.0	V	358.0	15.1
91.886000	26.43	43.50	17.07	100.0	V	255.0	12.5
156.100000	28.08	43.50	15.42	100.0	V	249.0	10.3
385.602000	27.01	46.00	18.99	100.0	V	0.0	17.5
649.054000	32.27	46.00	13.73	100.0	H	340.0	22.4
886.704000	35.38	46.00	10.62	100.0	V	0.0	25.5



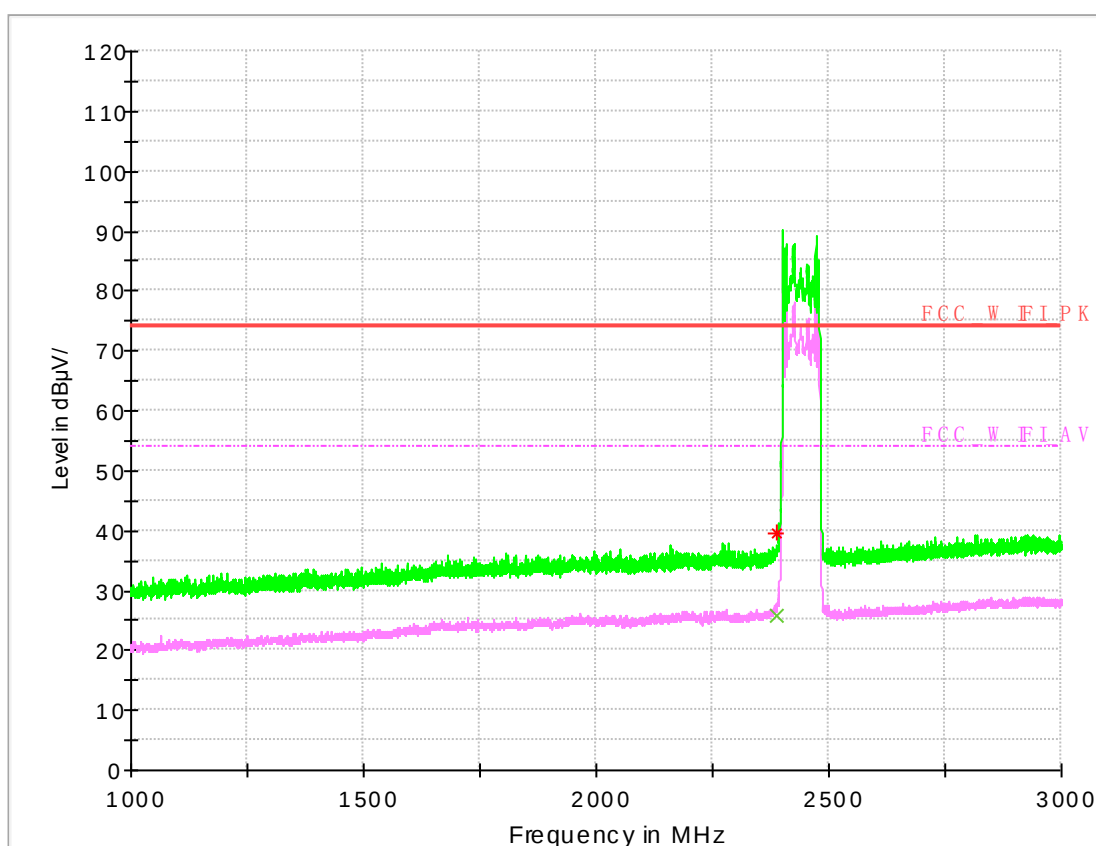
Part 3: Testing Range of “18 GHz to 26.5 GHz”

NOTE1: No peak found in the Test Range of “18 GHz to 26.5GHz”

Part 4: Testing Range of “1GHz to 3GHz”

- Note 1: The testing range of “1 GHz to 3 GHz” is for checking radiated emissions located in restricted bands near the EUT operating bands.
- Note 2: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).
- Note 3: The peak spike exceeds the limit line is EUT’s operating frequency.

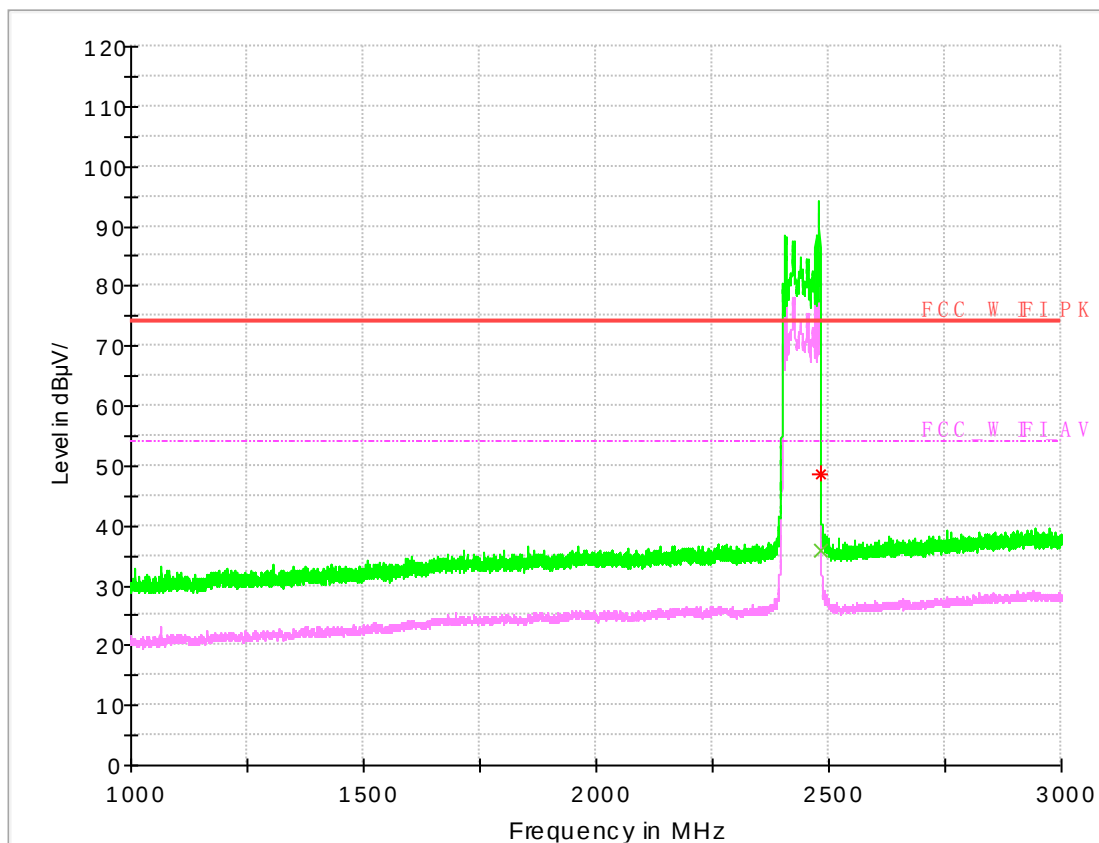
Channel 0



Note: The peak exceeds the limit line is carrier frequency.

Frequency	MaxPeak	Average	Limit	Margin	Height	Pol	Azimuth	Corr.
2390.000000	39.64	---	74.00	34.36	200.0	V	187.0	-8.0
2390.000000	---	25.75	54.00	28.25	156.0	H	-10.0	-7.8

Channel 39

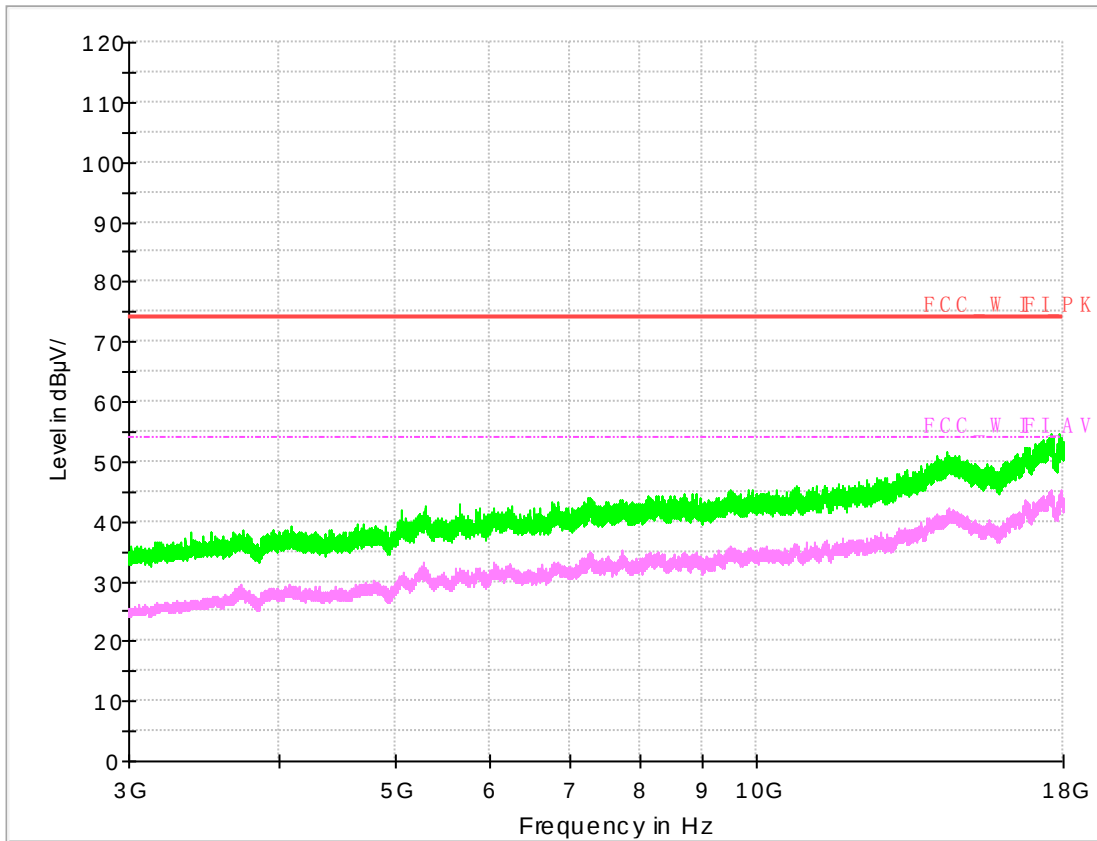


Note: The peak exceeds the limit line is carrier frequency.

Frequency	MaxPeak	Average	Limit	Margin	Height	Pol	Azimuth	Corr.
2483.500000	---	36.03	54.00	17.97	100.0	H	207.0	2.2
2483.500000	48.60	---	74.00	25.40	117.0	H	358.0	1.0

Part 5: Testing Range of “3 GHz to 18 GHz”

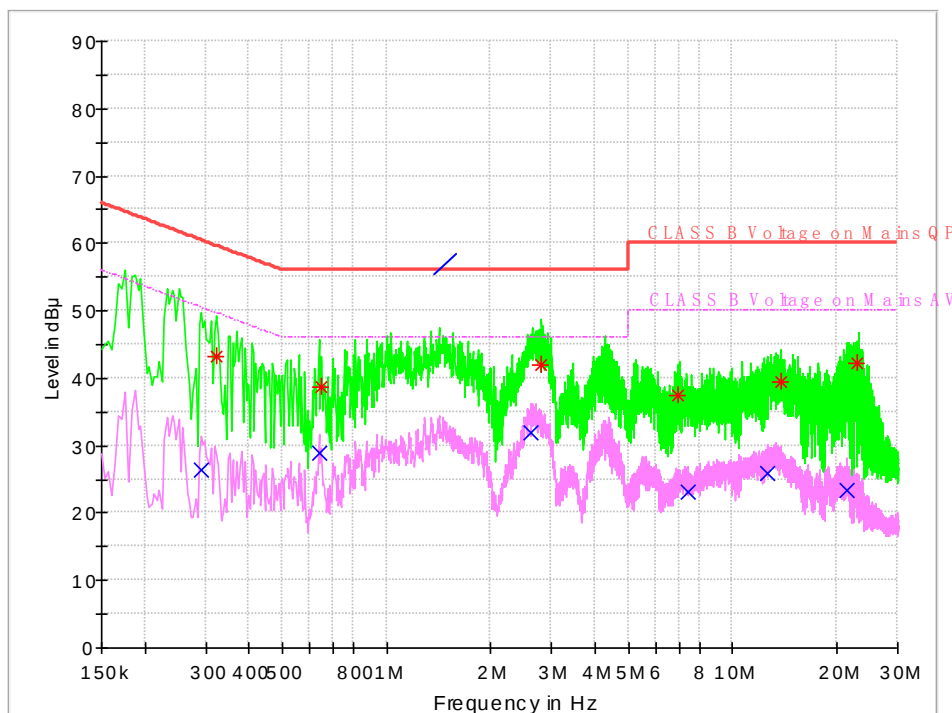
- Note 1: The test results and plot for testing range of “3 GHz to 18 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.
- Note 2: The testing range of “3 GHz to 18 GHz” is for checking radiated emissions located in restricted bands faraway from the EUT operating bands.
- Note 3: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).



Appendix I: Conducted Emission at Power Port

Note: RBW =9 kHz, VBW = 30 kHz

Channel 39



Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Corr. (dB)	Line	Filter
6.974655	37.52	---	60.00	9.9	22.48	L1	ON
13.742884	39.52	---	60.00	10.1	20.48	L1	ON
22.862540	42.14	---	60.00	10.2	17.86	L1	ON
0.321220	43.29	---	59.68	9.7	16.38	N	ON
0.644322	38.73	---	56.00	9.7	17.27	N	ON
2.805941	42.00	---	56.00	9.8	14.00	N	ON
0.291284	---	26.33	50.49	9.7	24.16	L1	ON
2.611767	---	31.83	46.00	9.8	14.17	L1	ON
7.446874	---	23.19	50.00	10.0	26.81	L1	ON
12.683865	---	25.97	50.00	10.1	24.03	L1	ON
21.405359	---	23.50	50.00	10.2	26.50	L1	ON
0.639773	---	29.01	46.00	9.7	16.99	N	ON

END