



Appendix for Test report



Appendix A: DTS (6 dB) Bandwidth

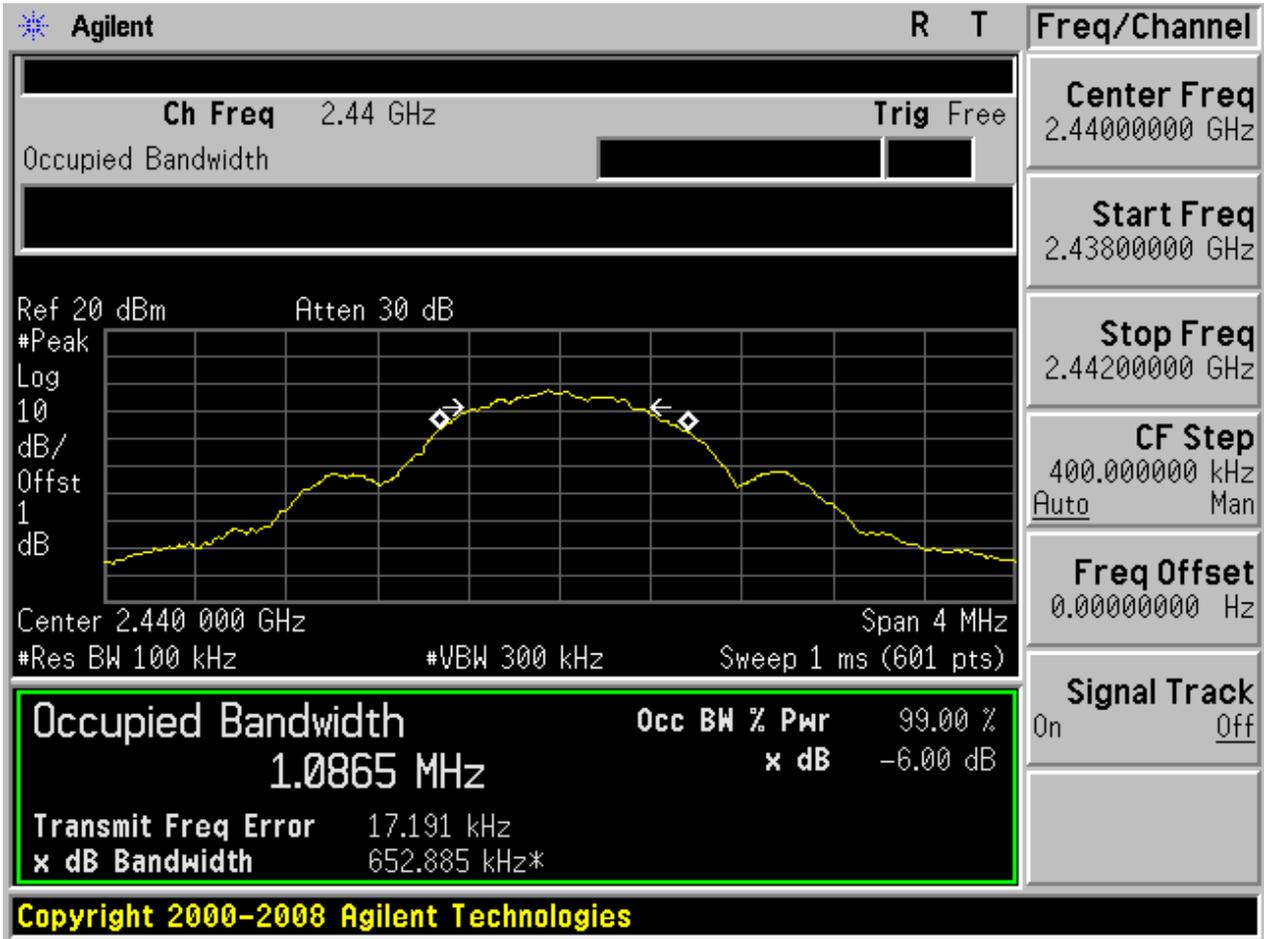
In this document, the "DTS6dBBW" refers to the measured "DTS (6 dB) Bandwidth" value. In this Appendix, the "fc(DTS6dBBW)" refers to the centre of the measured "DTS6dBBW". The introduction of the "fc(DTS6dBBW)" is due to that other measurements use it as the spectrum analyzer setting.

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

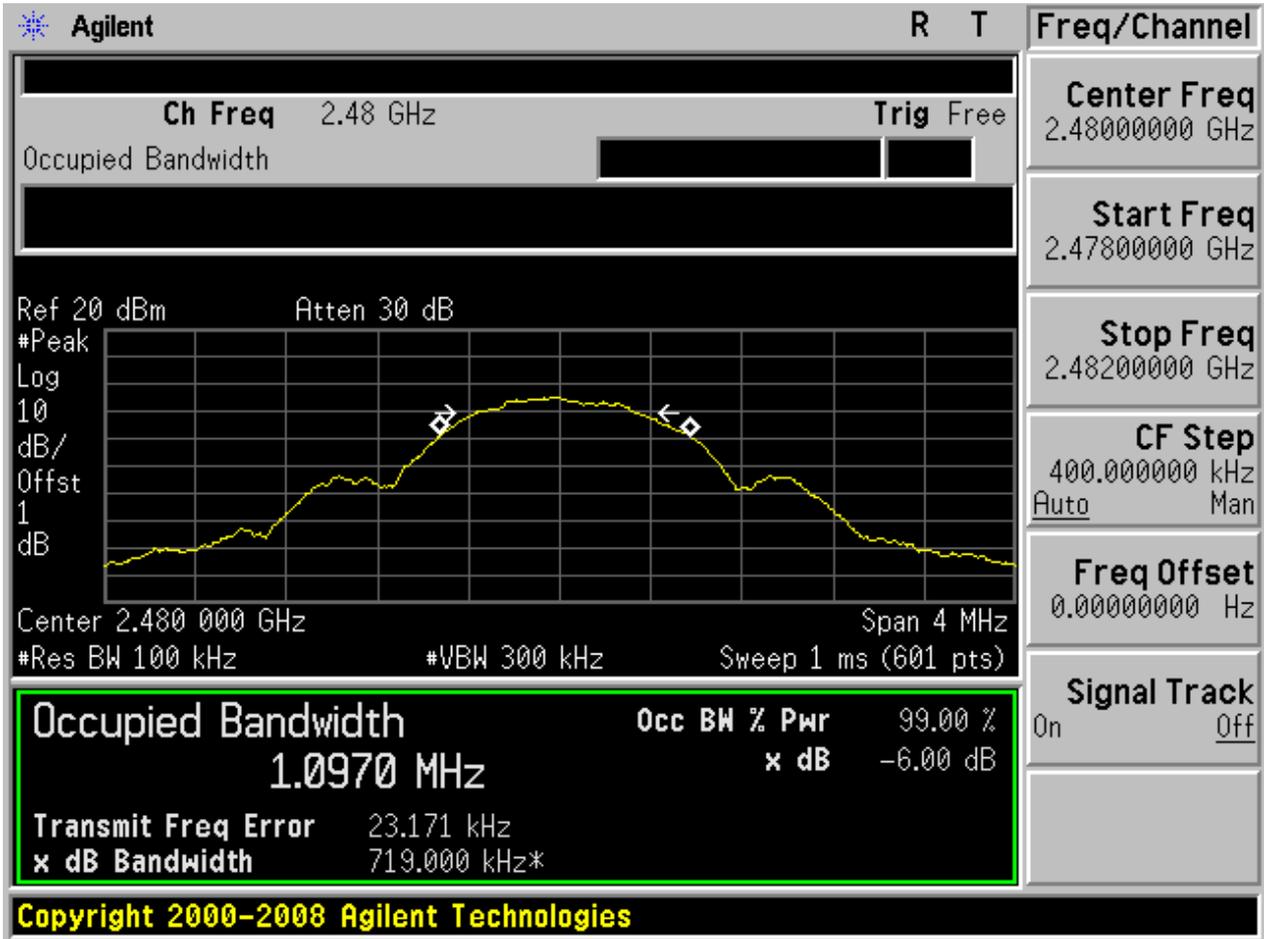
Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
BLE	L	2402	Ant 1	0.62	pass
BLE	M	2440	Ant 1	0.65	pass
BLE	H	2480	Ant 1	0.72	pass

2.3 BLE_M@Ant 1





2.5 BLE_H@Ant 1





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.

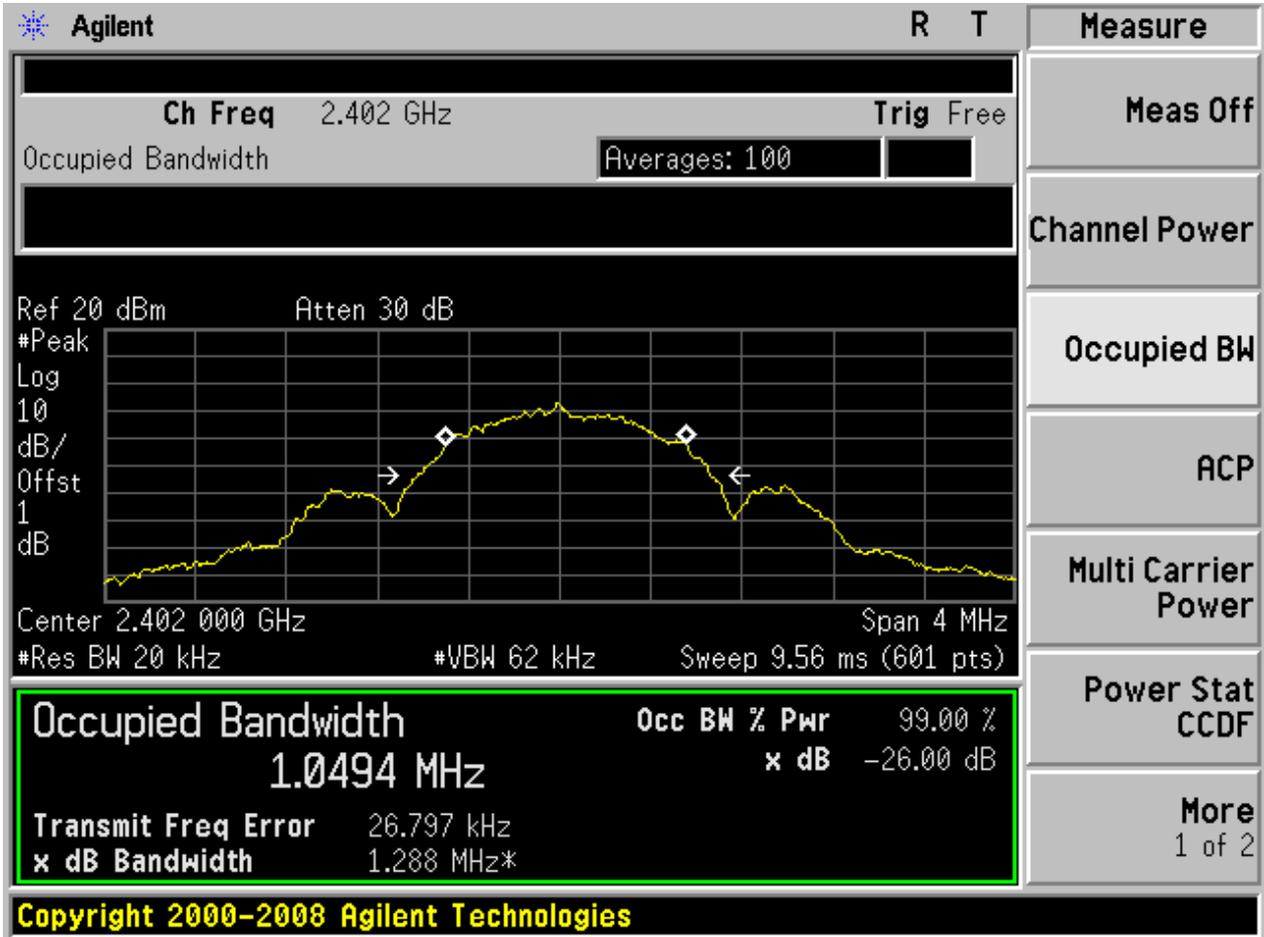
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
BLE	L	2402	Ant 1	1.05	pass
BLE	M	2440	Ant 1	1.06	pass
BLE	H	2480	Ant 1	1.06	pass



Part II - Test Plots

2.1 BLE_L@Ant 1



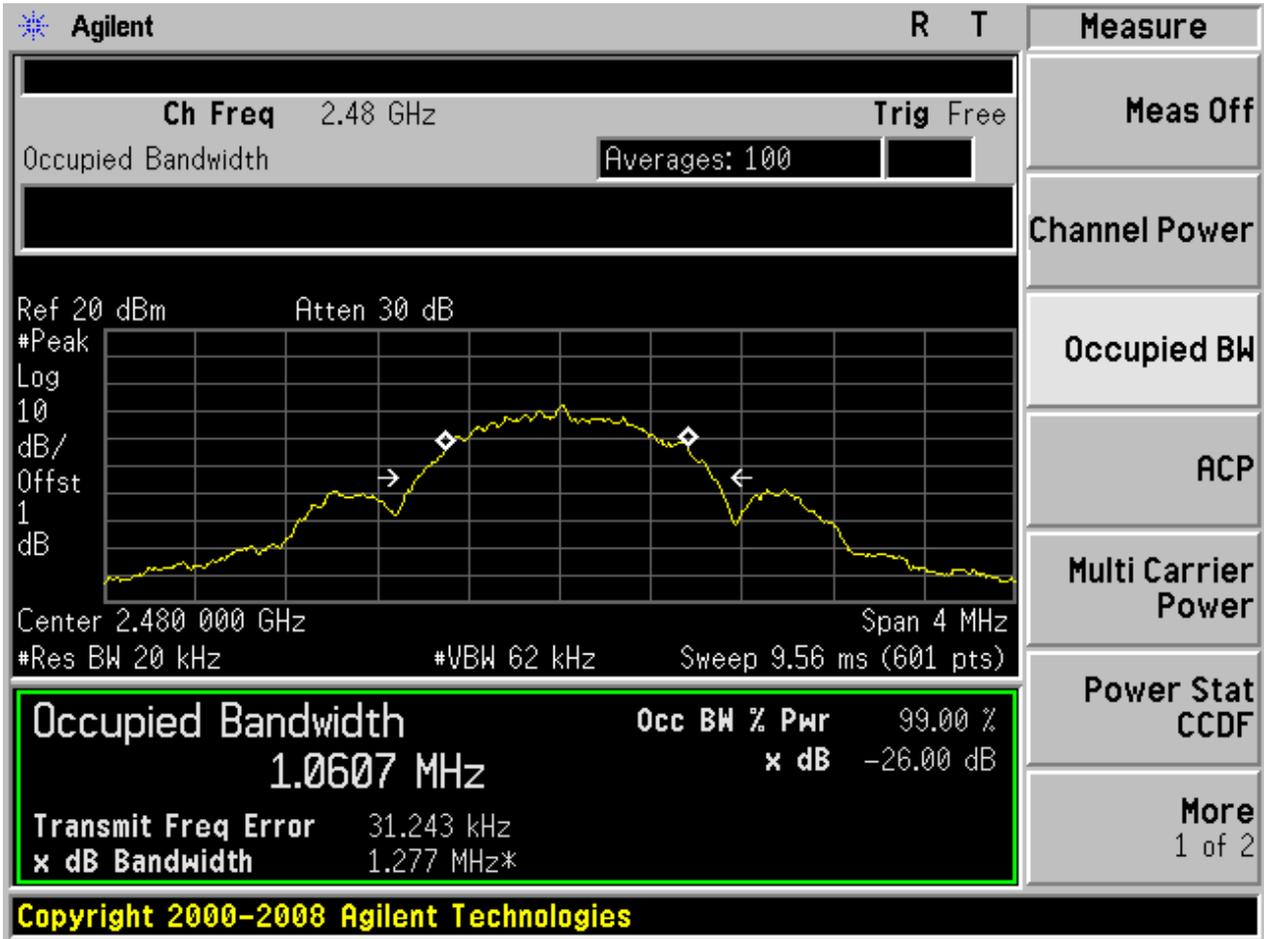


2.1 BLE_M@Ant 1





2.1 BLE_H@Ant 1





Appendix C: Duty cycle

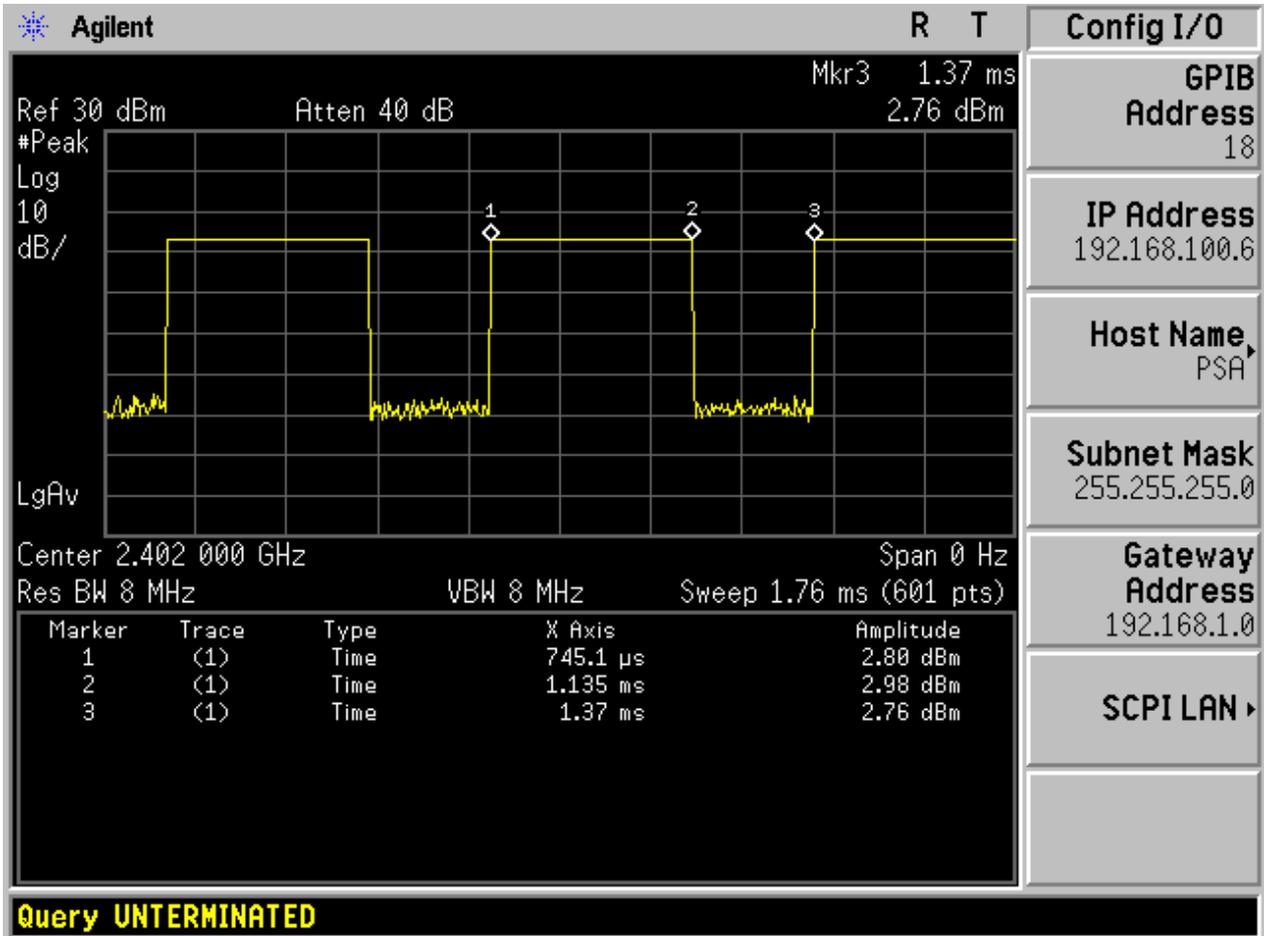
Part I - Test Results

Test Mode	TX Freq. [MHz]	Ant	Duty cycle [%]
BT4.1	CH1,CH6,CH11	Ant 1	62.4



Part II - Test Plots

2.1 BT4.1_M@Ant 1





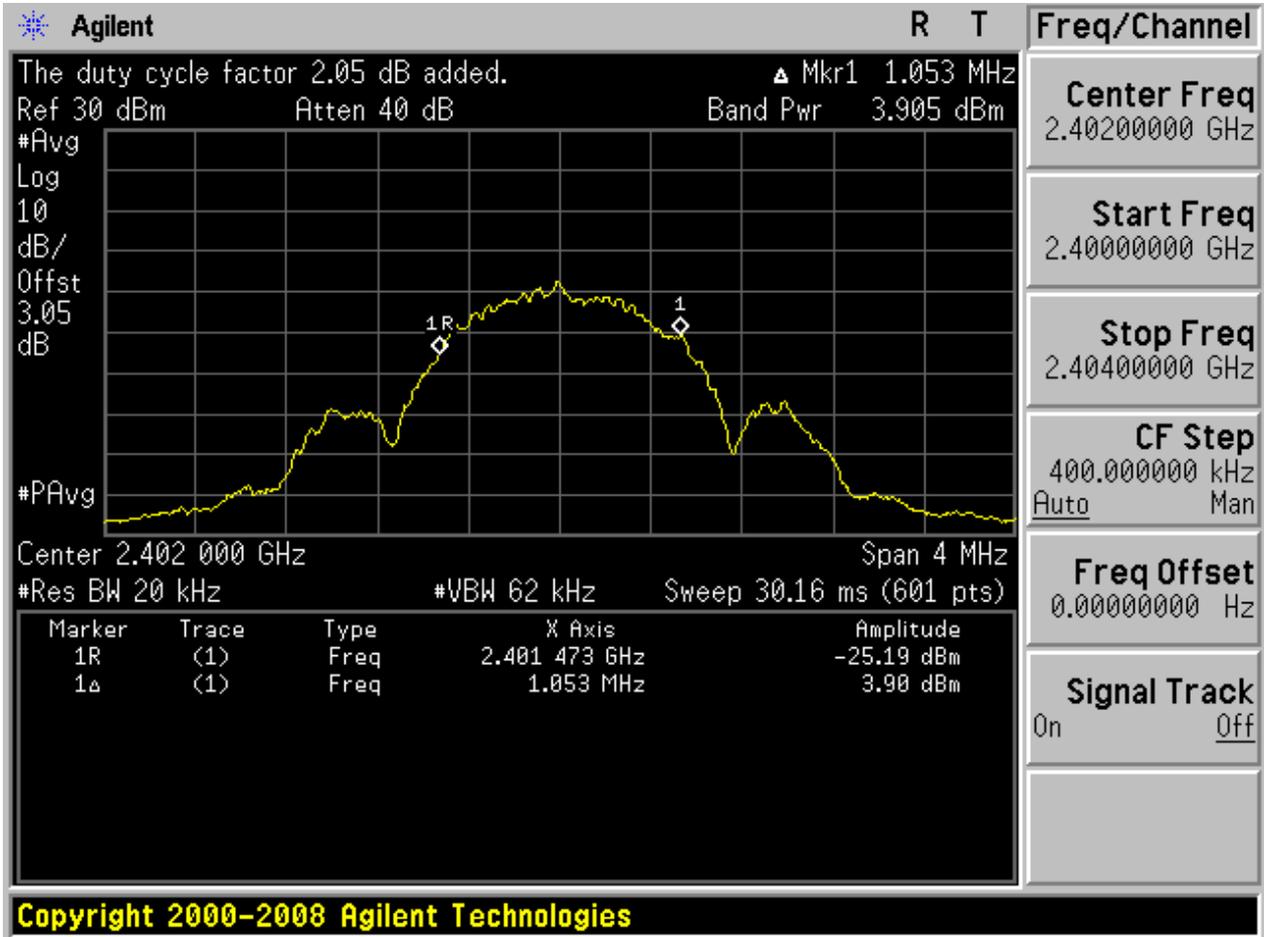
Appendix D: Maximum Conducted Average Output Power

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Power[dBm]	Verdict
BLE	L	2402	Ant 1	3.91	pass
BLE	M	2440	Ant 1	4.66	pass
BLE	H	2480	Ant 1	3.00	pass

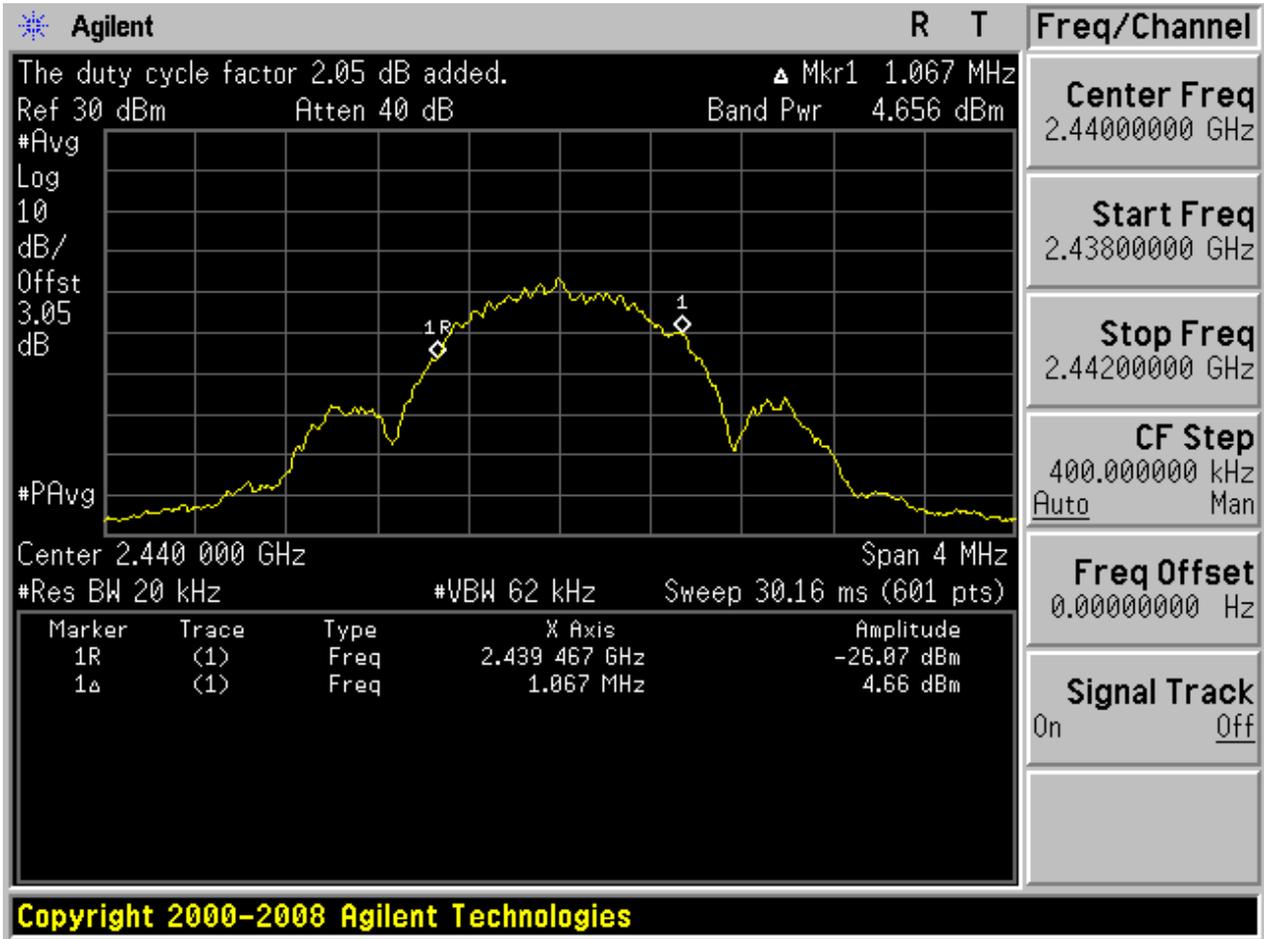
Part II - Test Plots

2.1 BLE_L@Ant 1



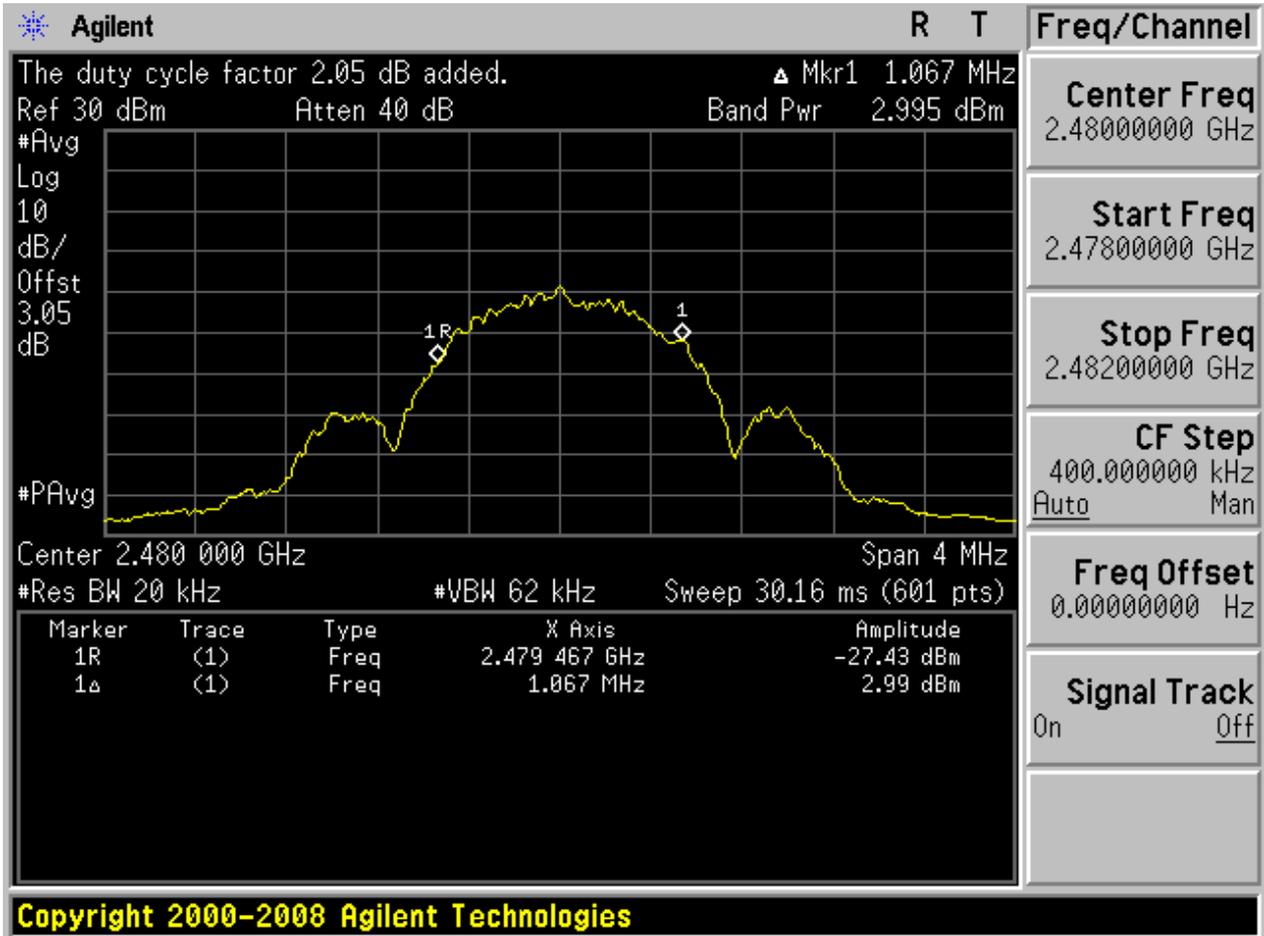


2.3 BLE_M@Ant 1





2.5 BLE_H@Ant 1





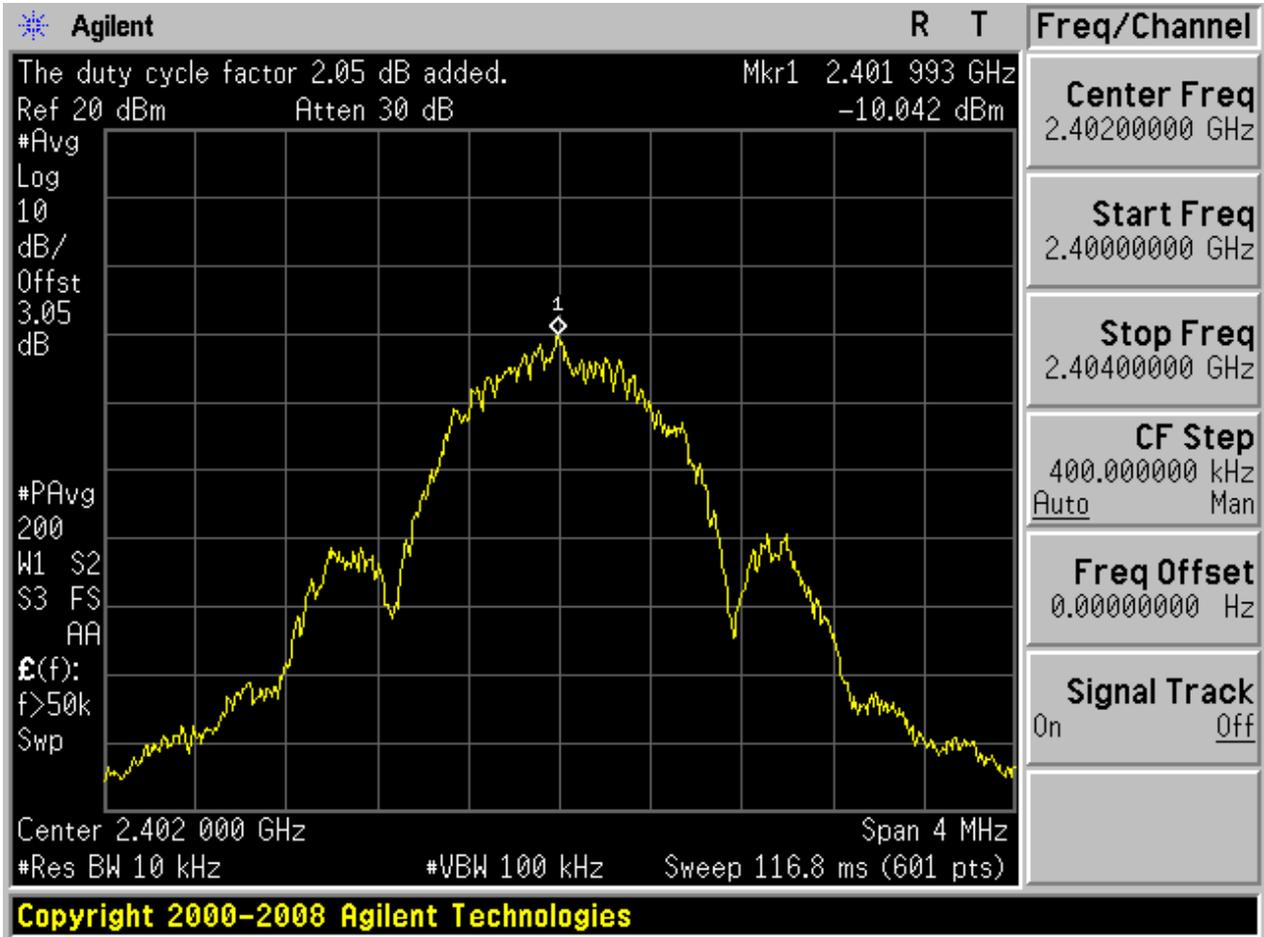
Appendix E: Maximum Power Spectral Density Level

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	PD[MHz]	Verdict
BLE	L	2402	Ant 1	-10.04	pass
BLE	M	2440	Ant 1	-9.17	pass
BLE	H	2480	Ant 1	-10.57	pass

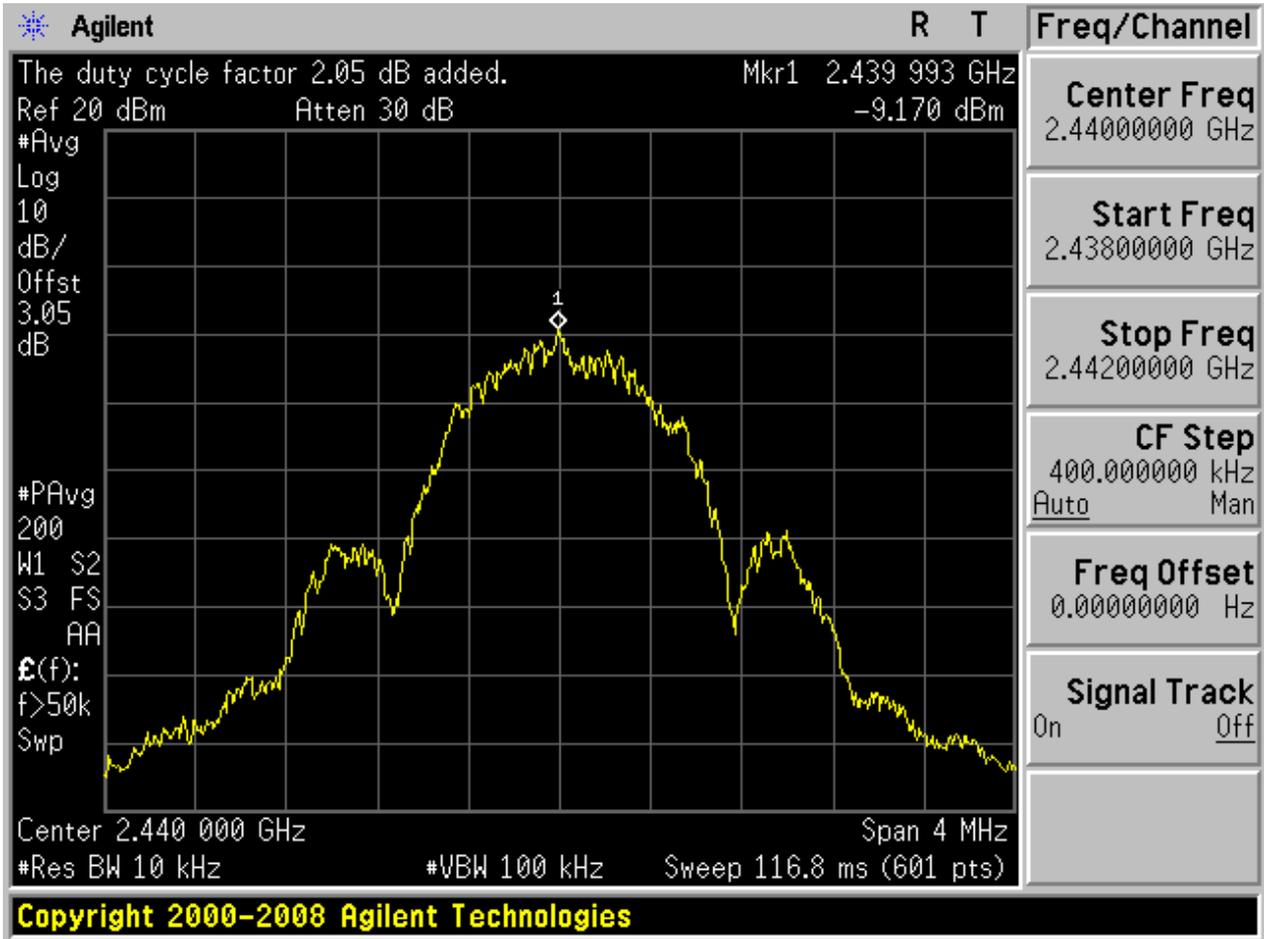
Part II - Test Plots

2.1 BLE_L@Ant 1



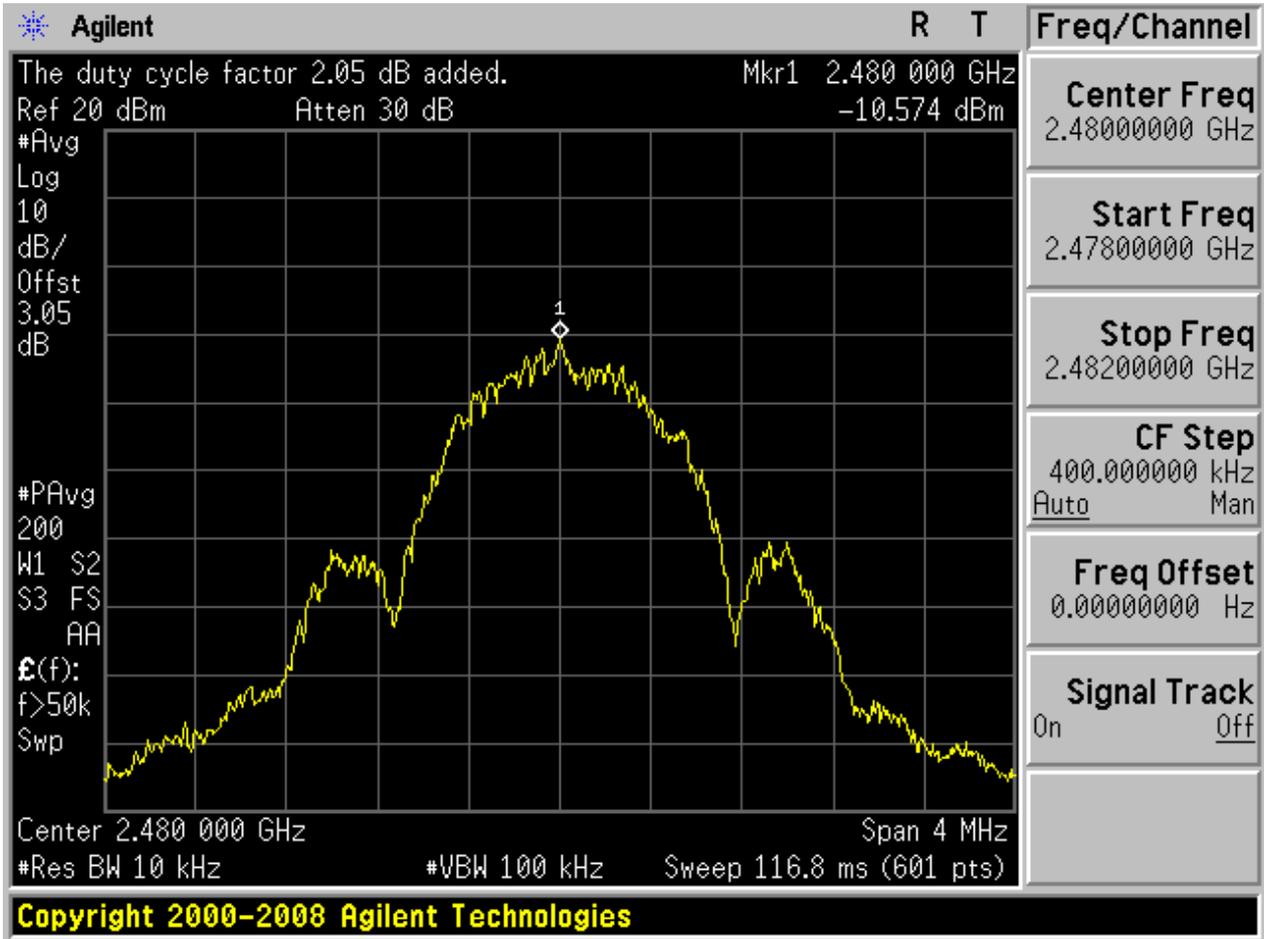


2.3 BLE_M@Ant 1





2.5 BLE_H@Ant 1





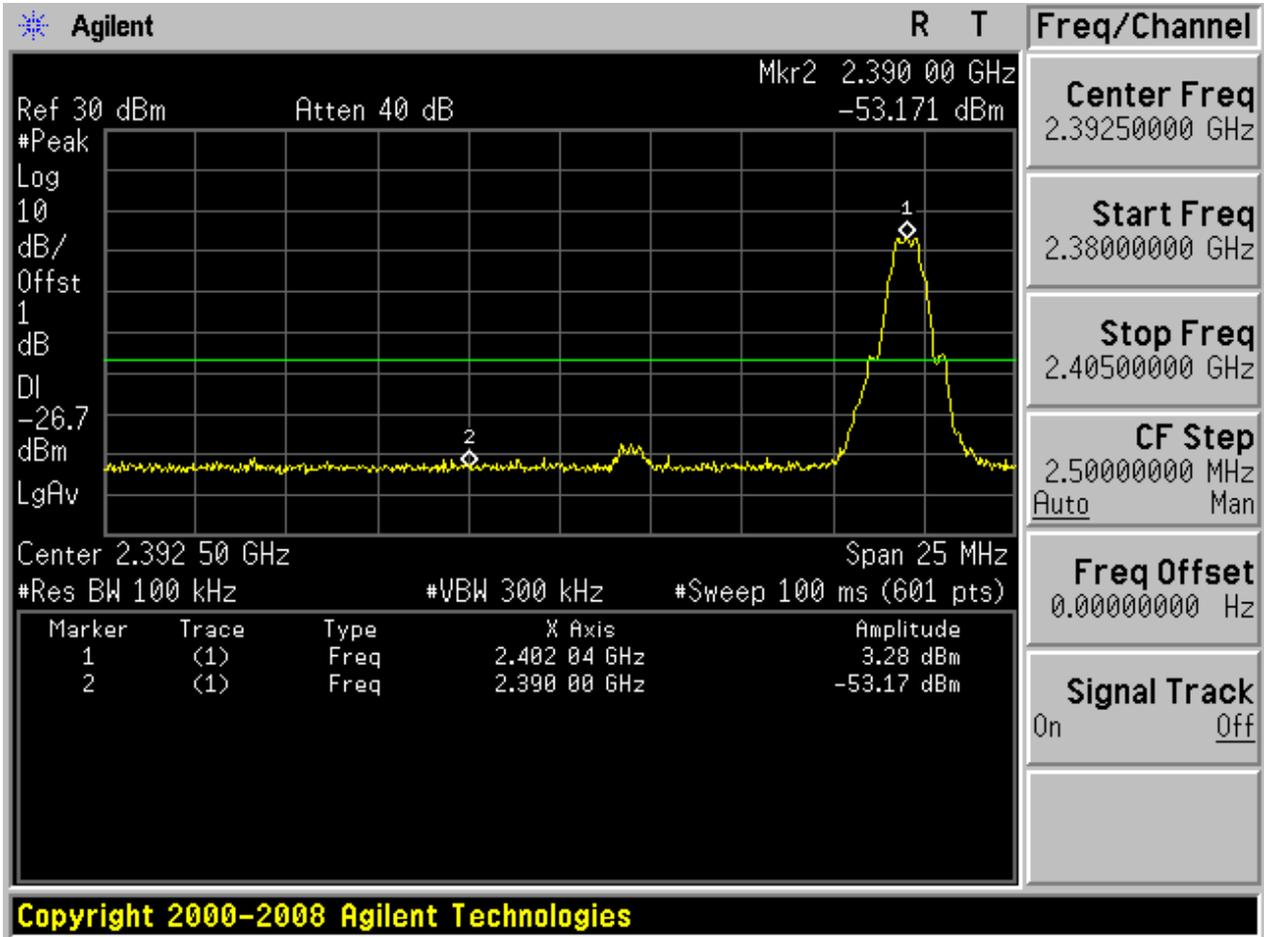
Appendix F: Band Edges Compliance

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Carrier Power[dBm]	Max.Spurious Level[dBm]	Verdict
BLE	L	2402	Ant 1	3.28	-53.17	pass
BLE	H	2480	Ant 1	2.45	-52.75	pass

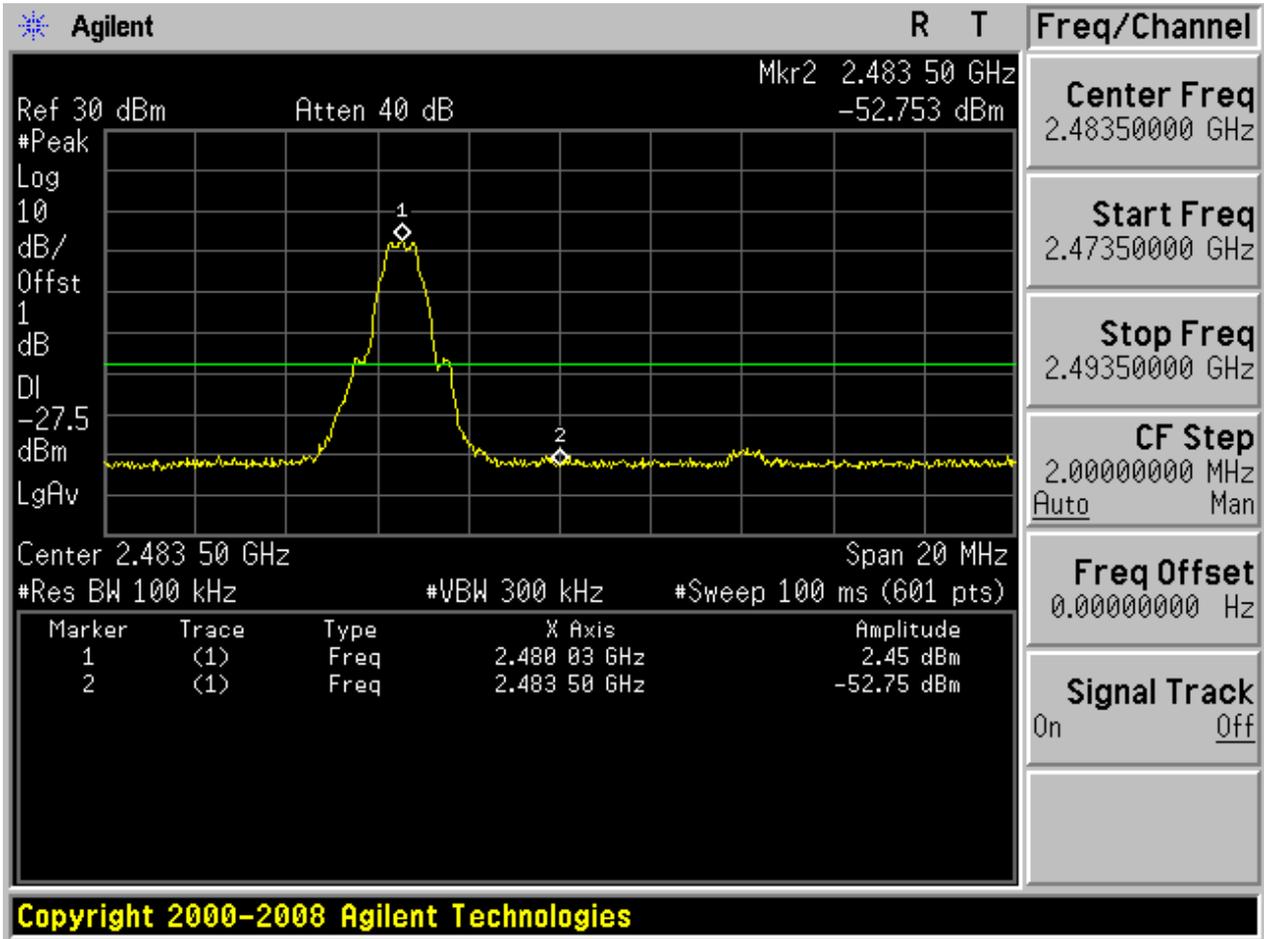
Part II - Test Plots

2.1 BLE_L@Ant 1





2.3 BLE_H@Ant 1



Appendix G: 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

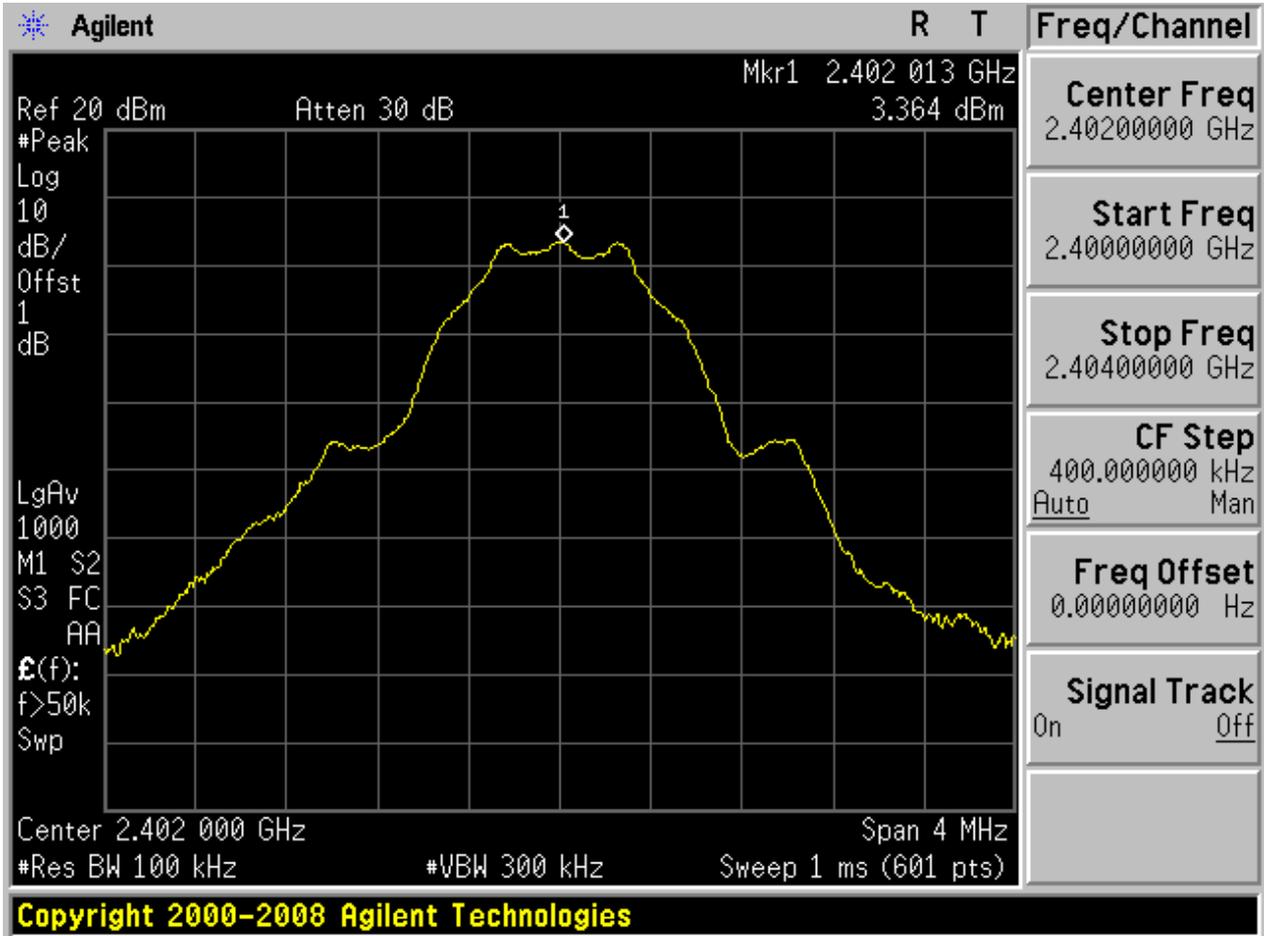
Test Mode	Test Channel	Frequency[MHz]	Ant	Pref[dBm]	Puw[dBm]	Verdict
BLE	L	2402	Ant 1	3.36	<limit	pass
BLE	M	2440	Ant 1	4.05	<limit	pass
BLE	H	2480	Ant 1	2.50	<limit	pass



Part II - Test Plots

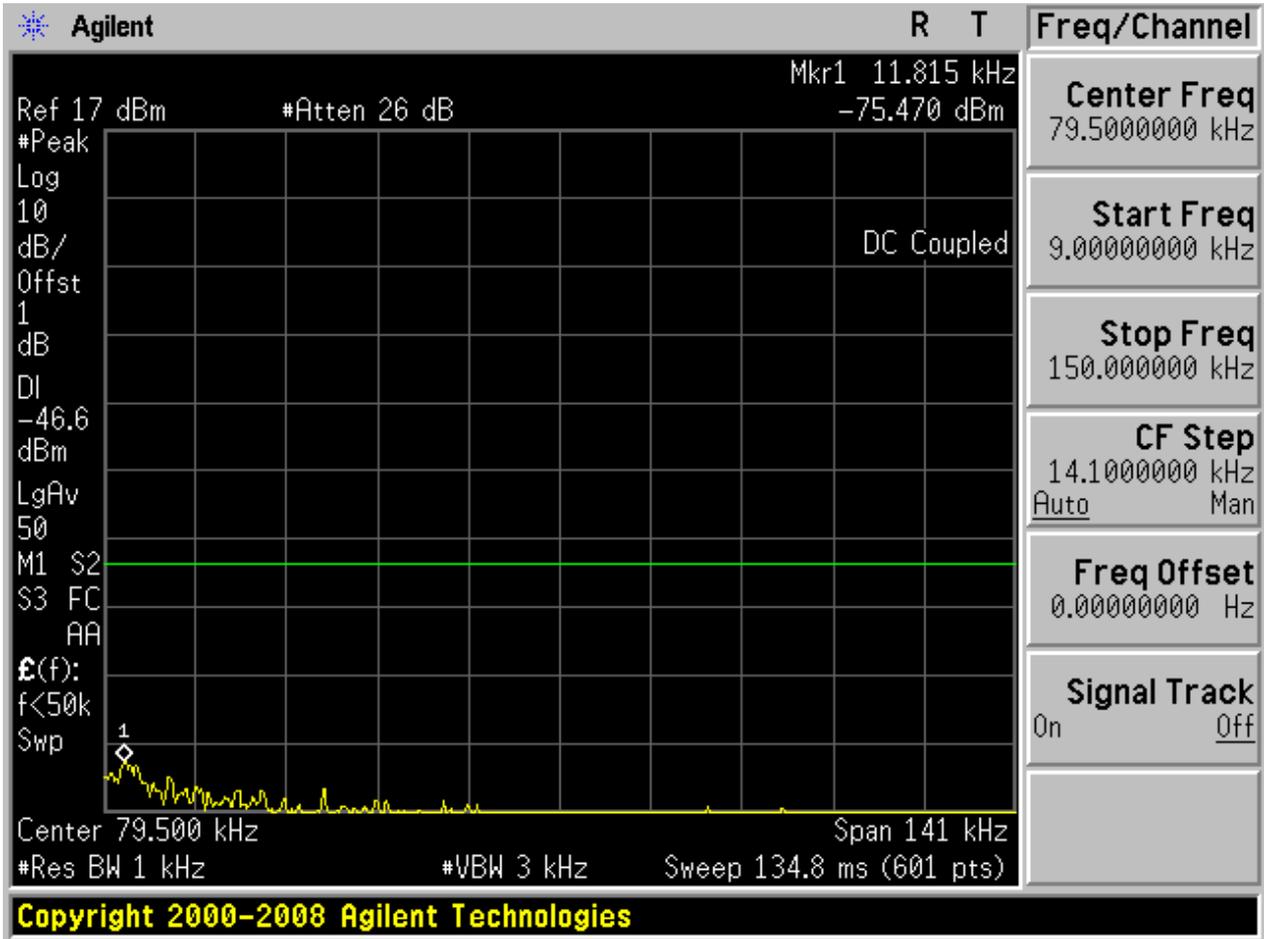
2.1 BLE_L@Ant 1

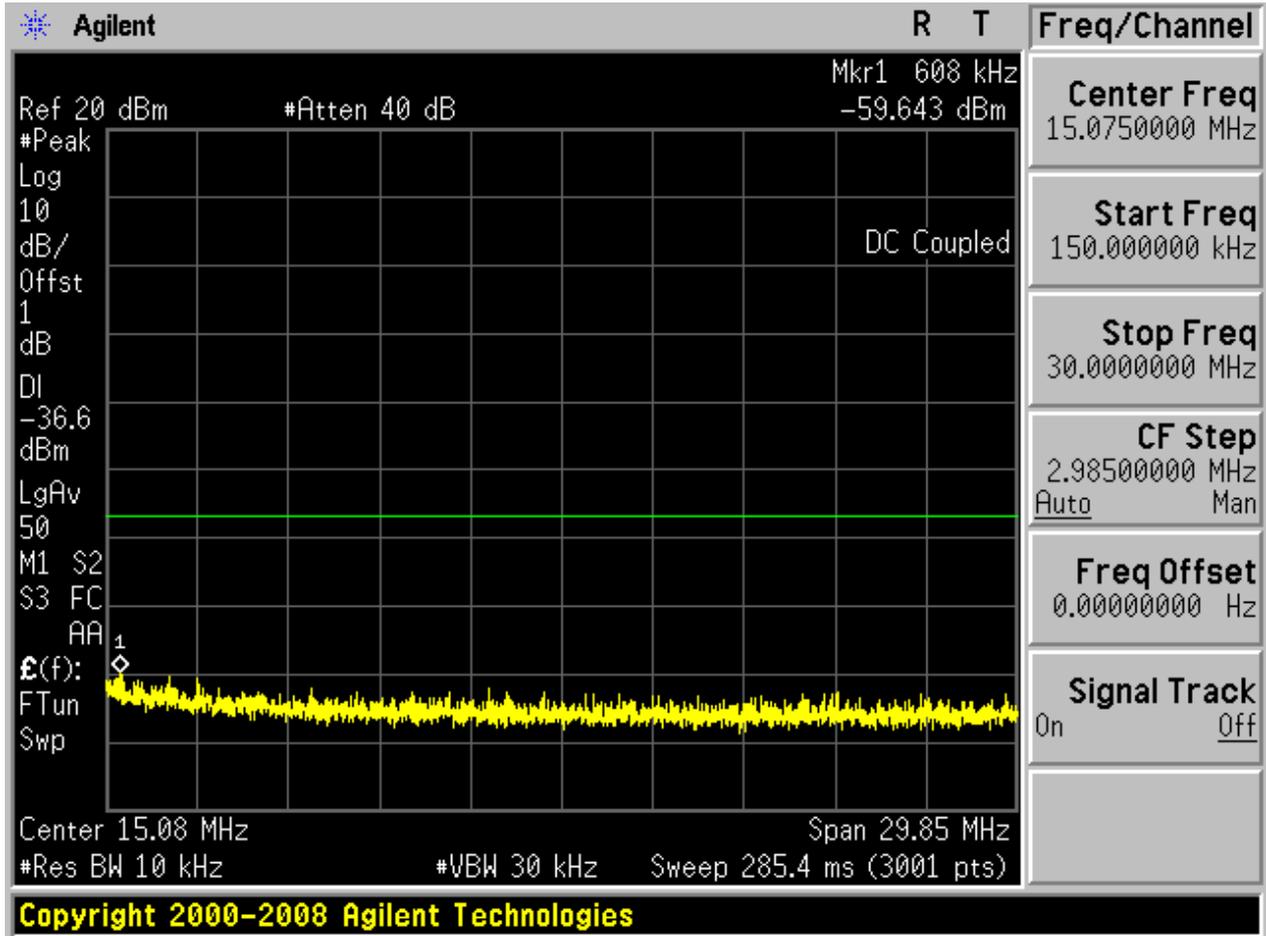
Pref:

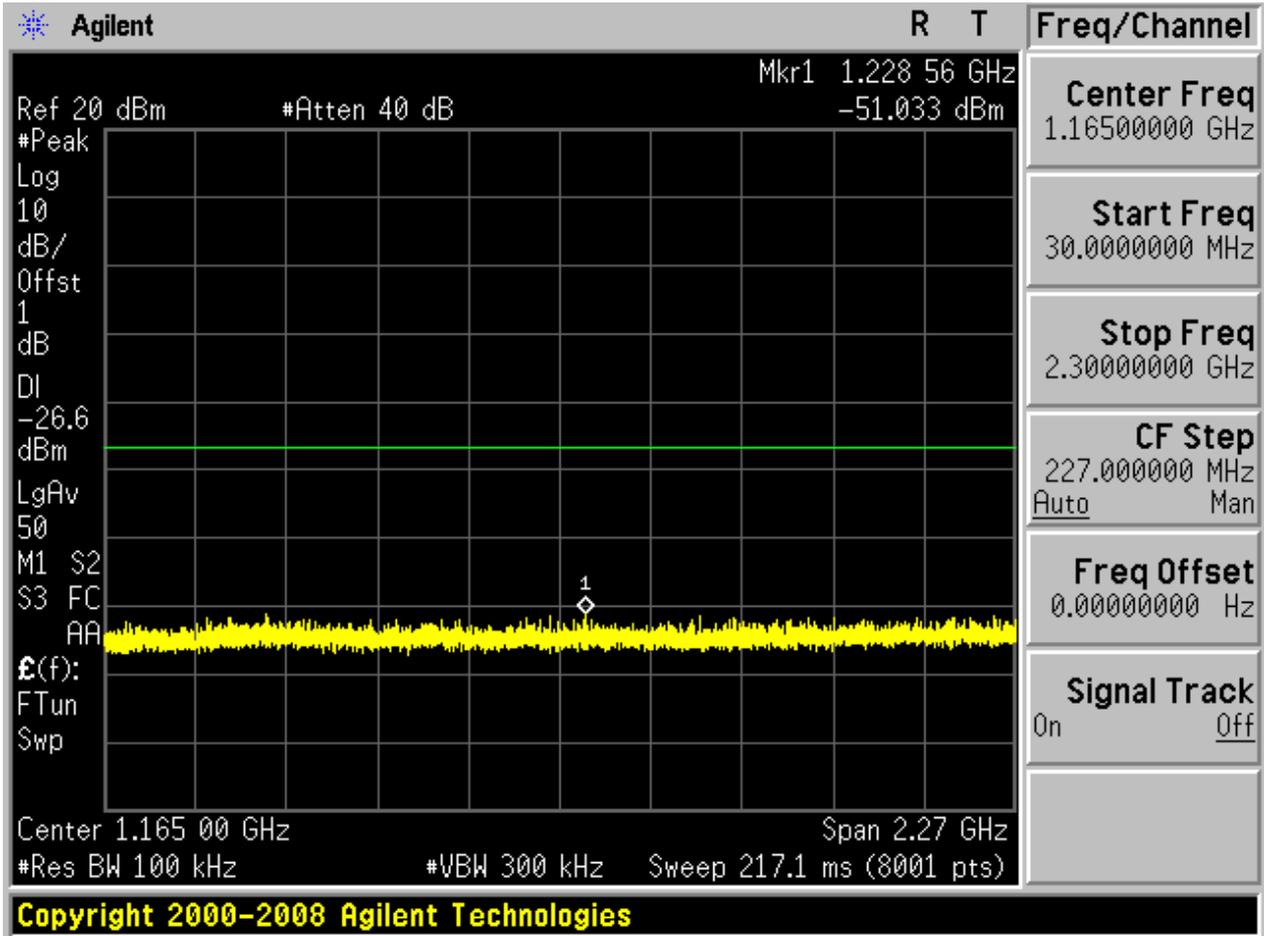


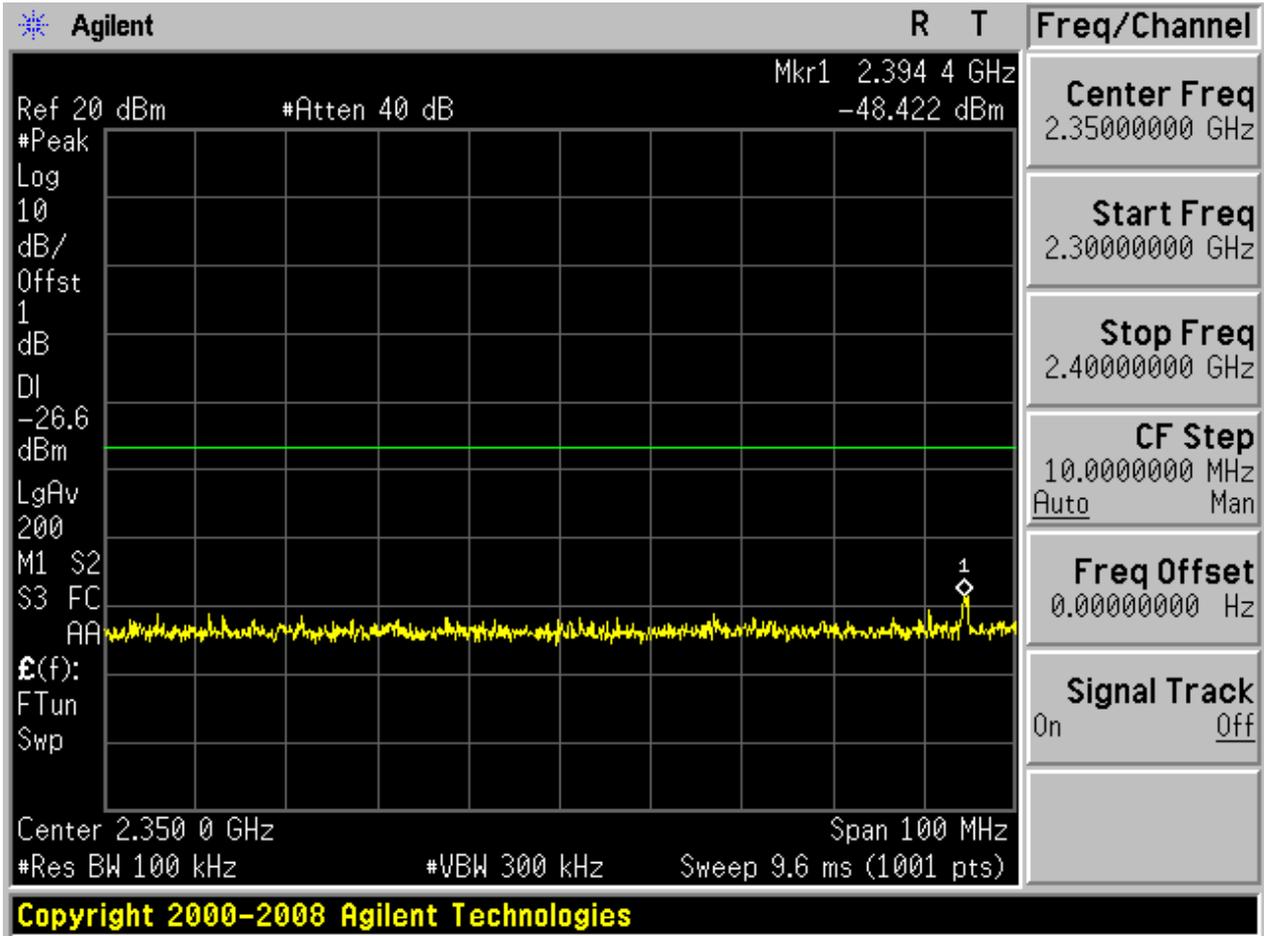


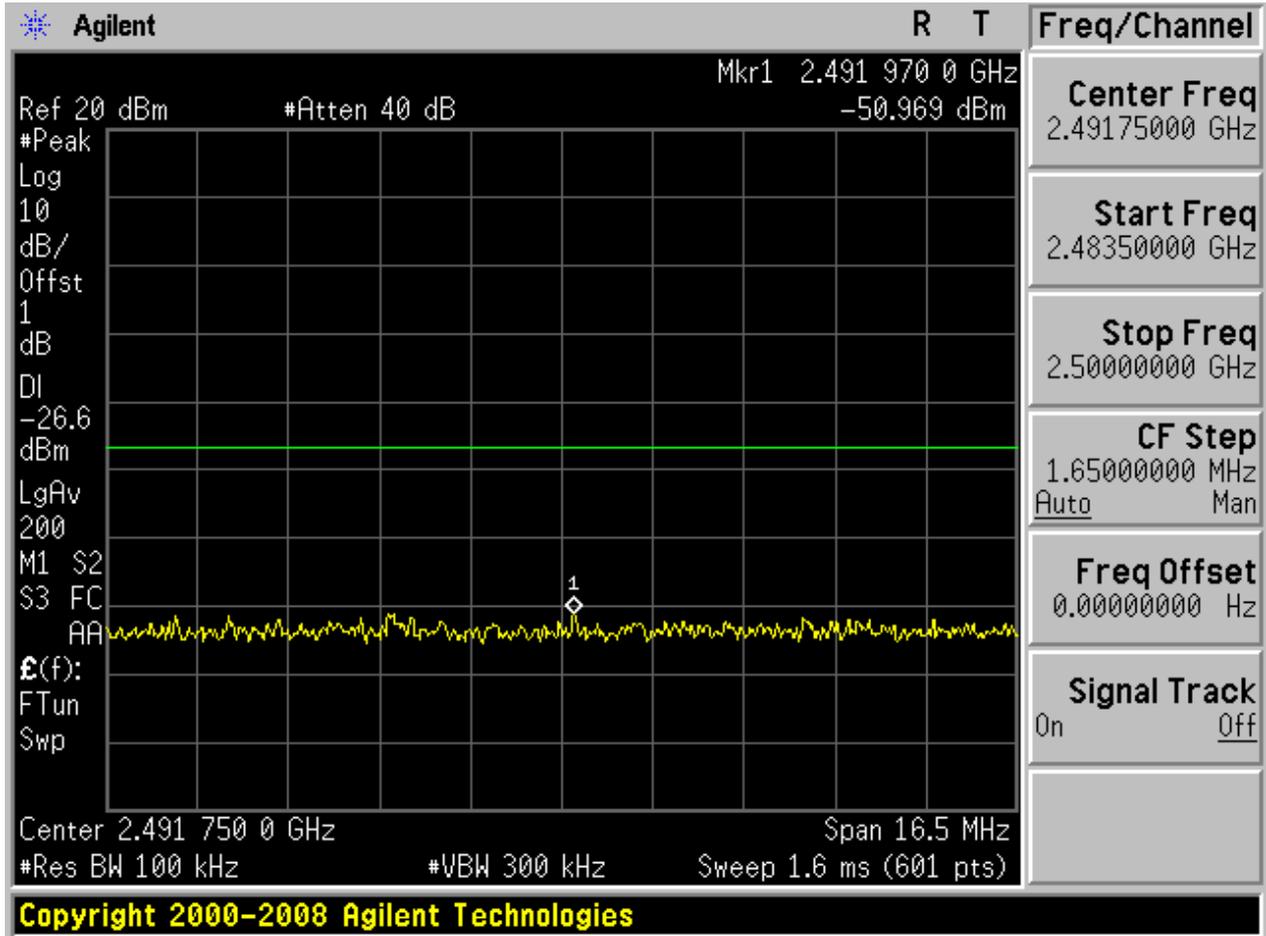
Puw:

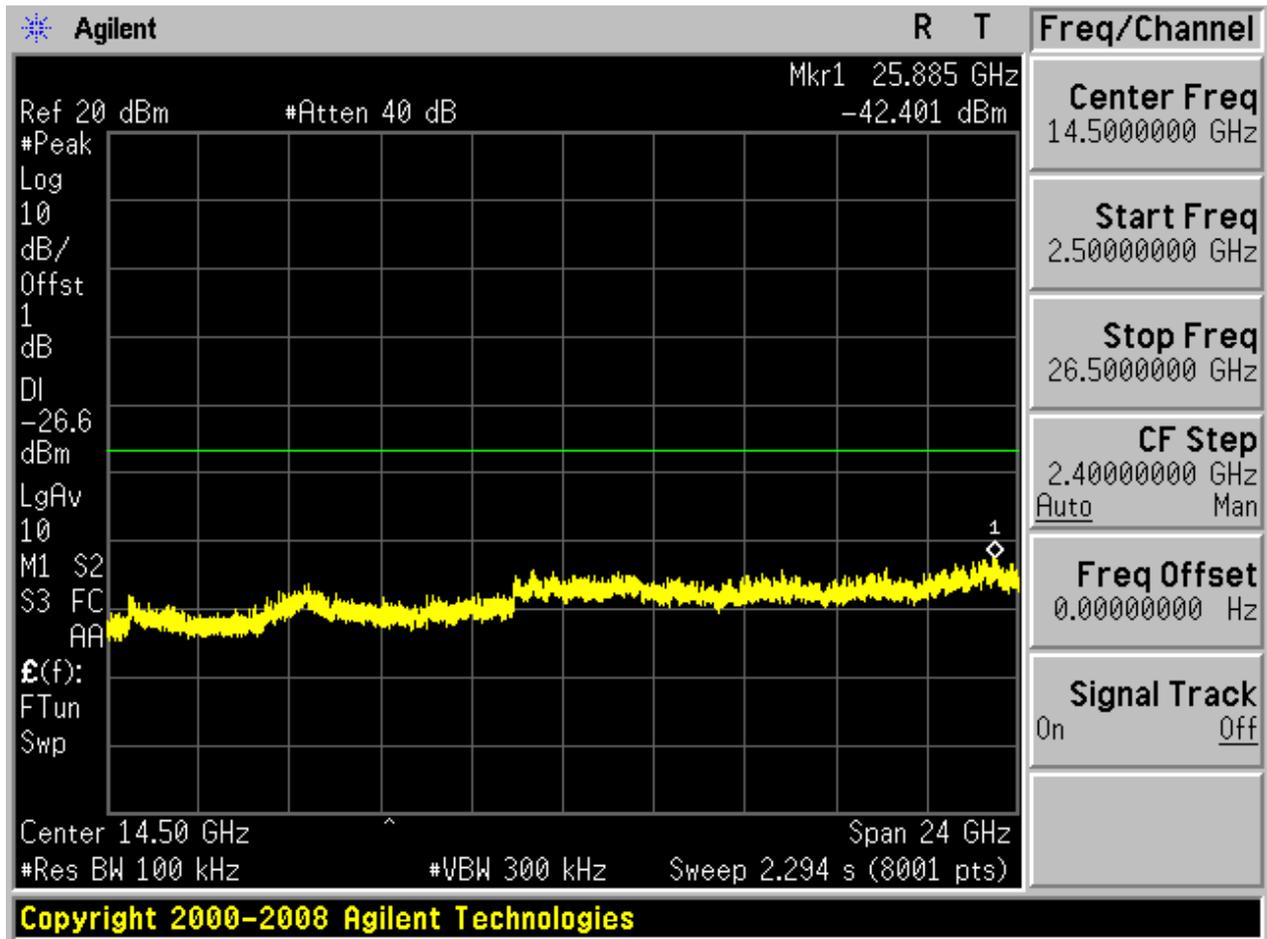








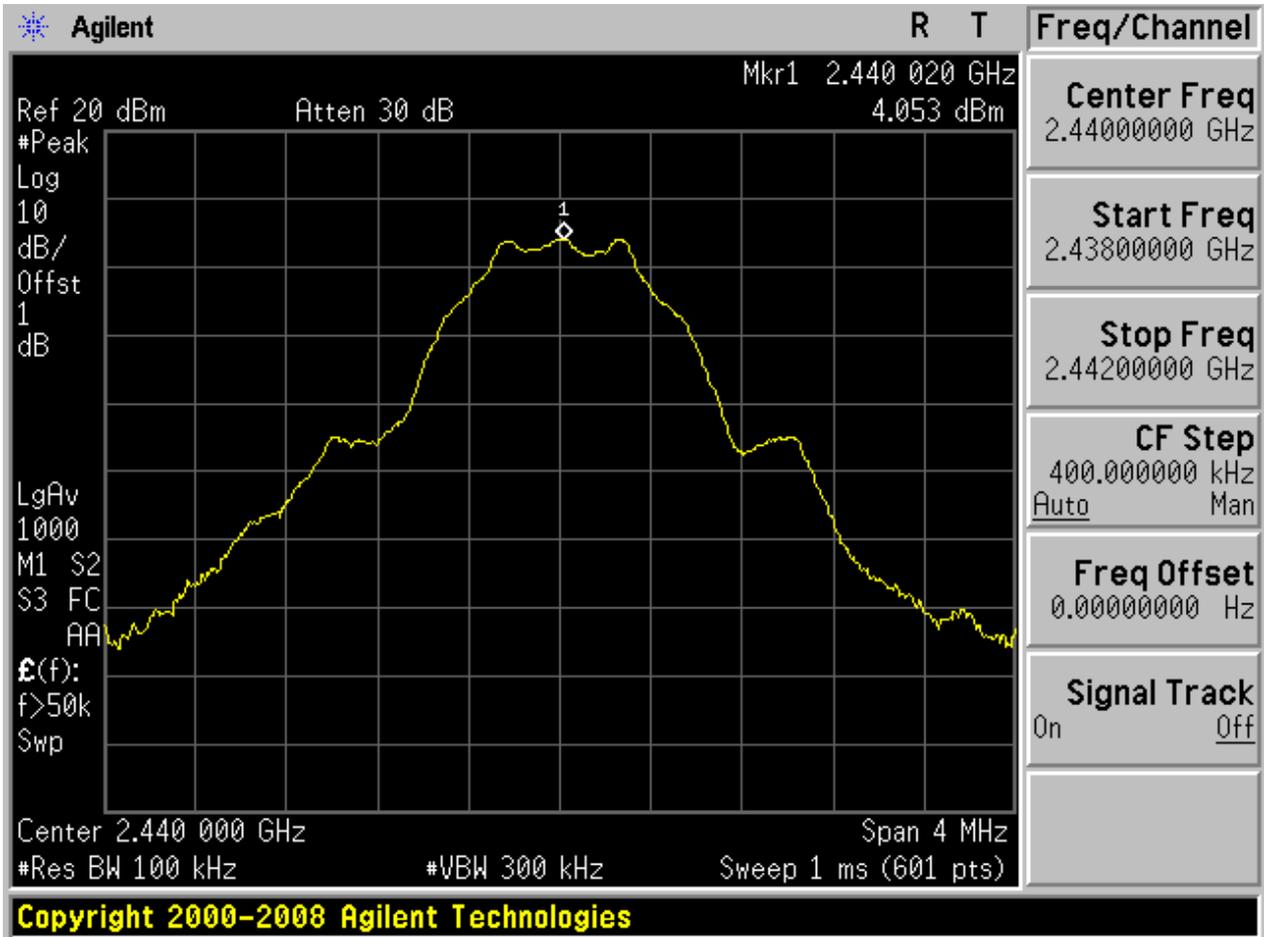






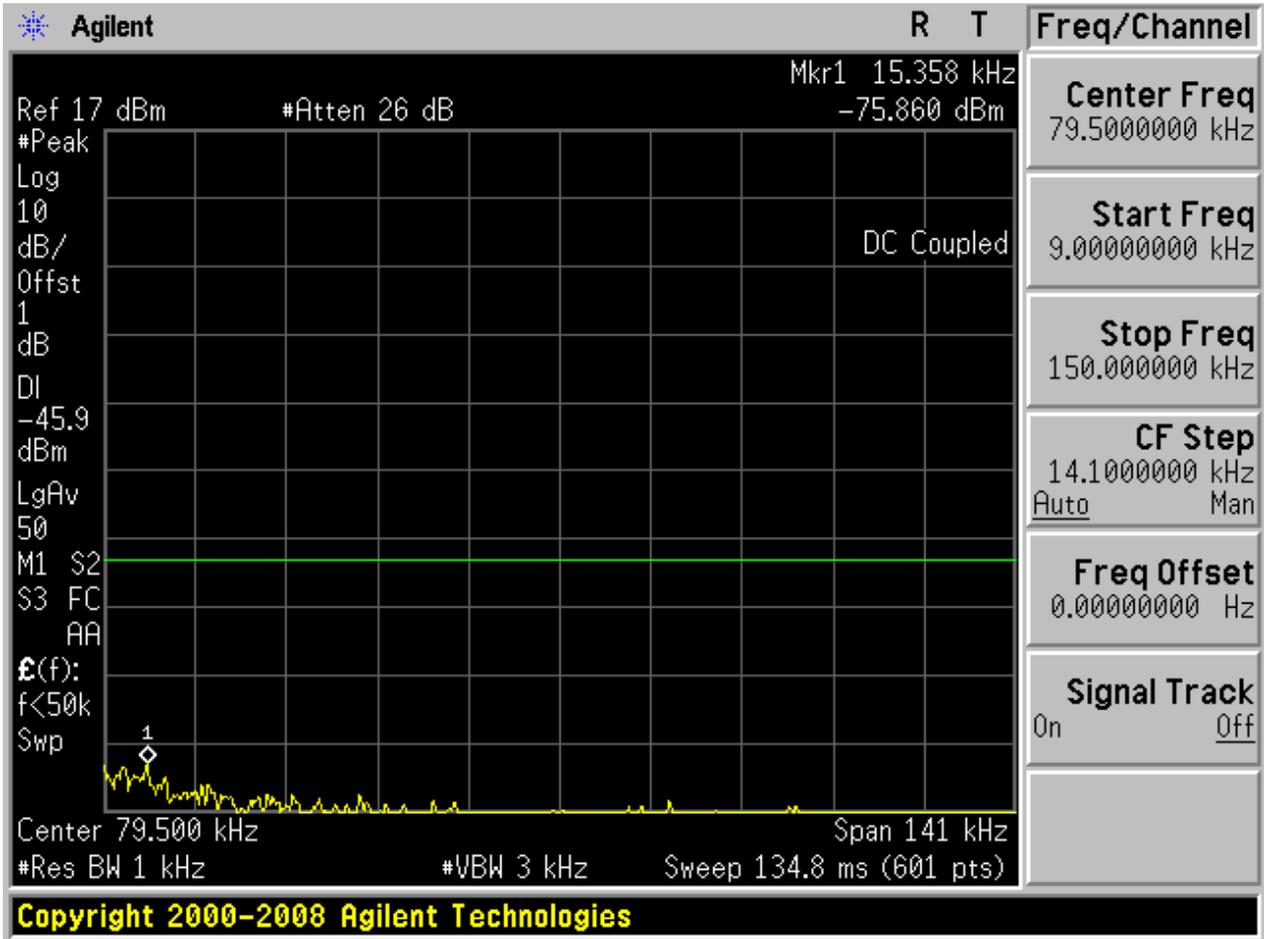
2.3 BLE_M@Ant 1

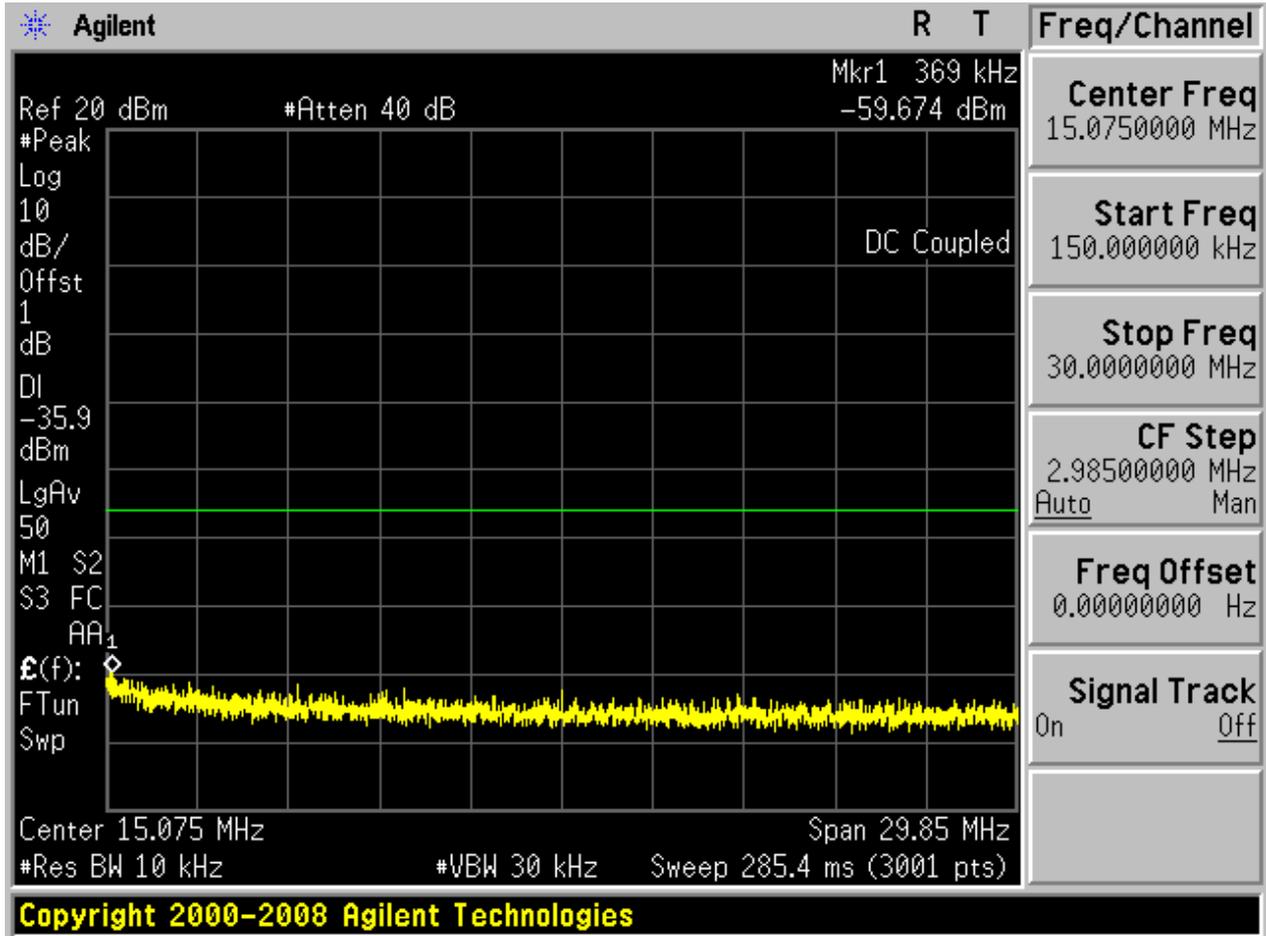
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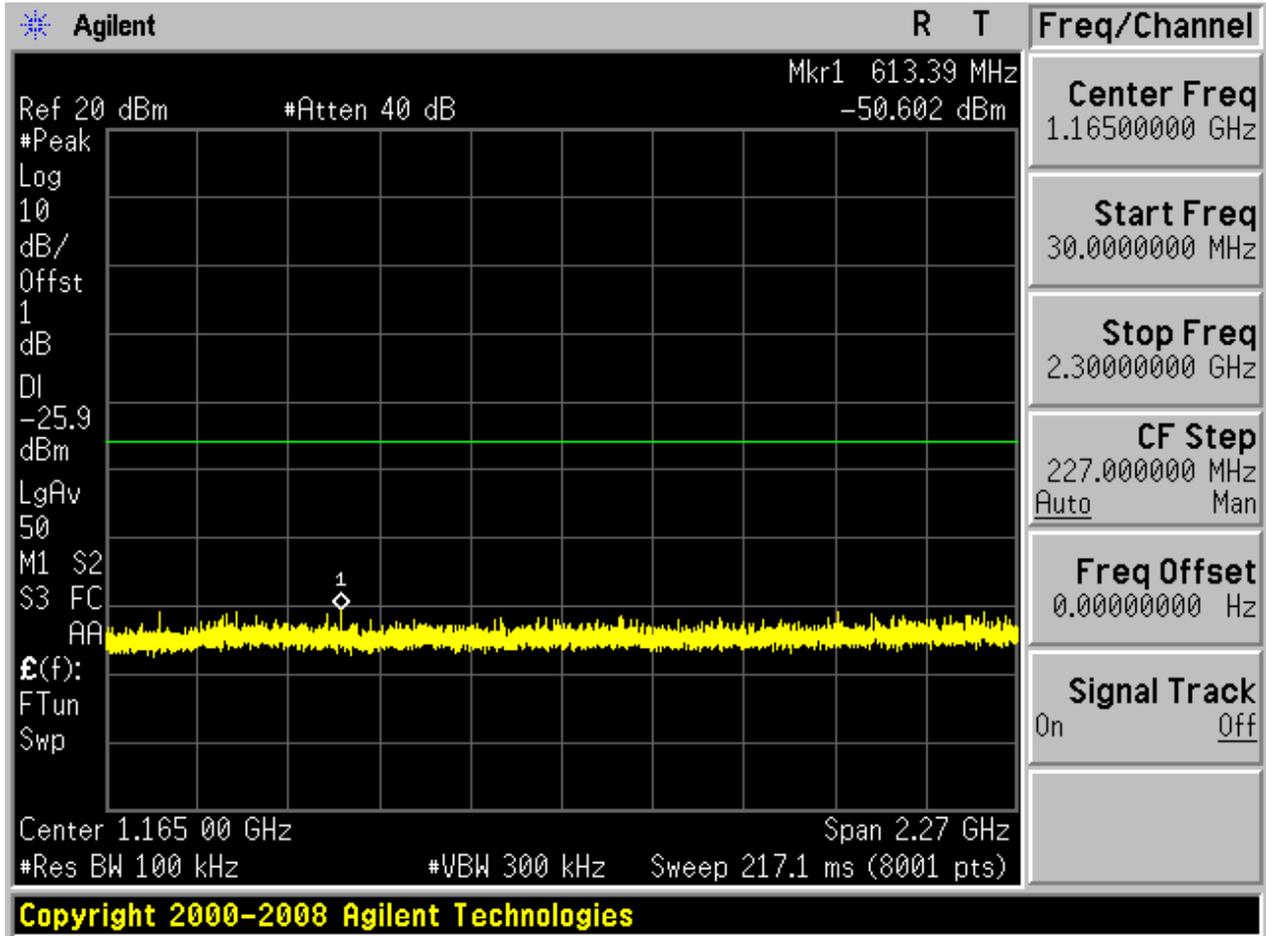


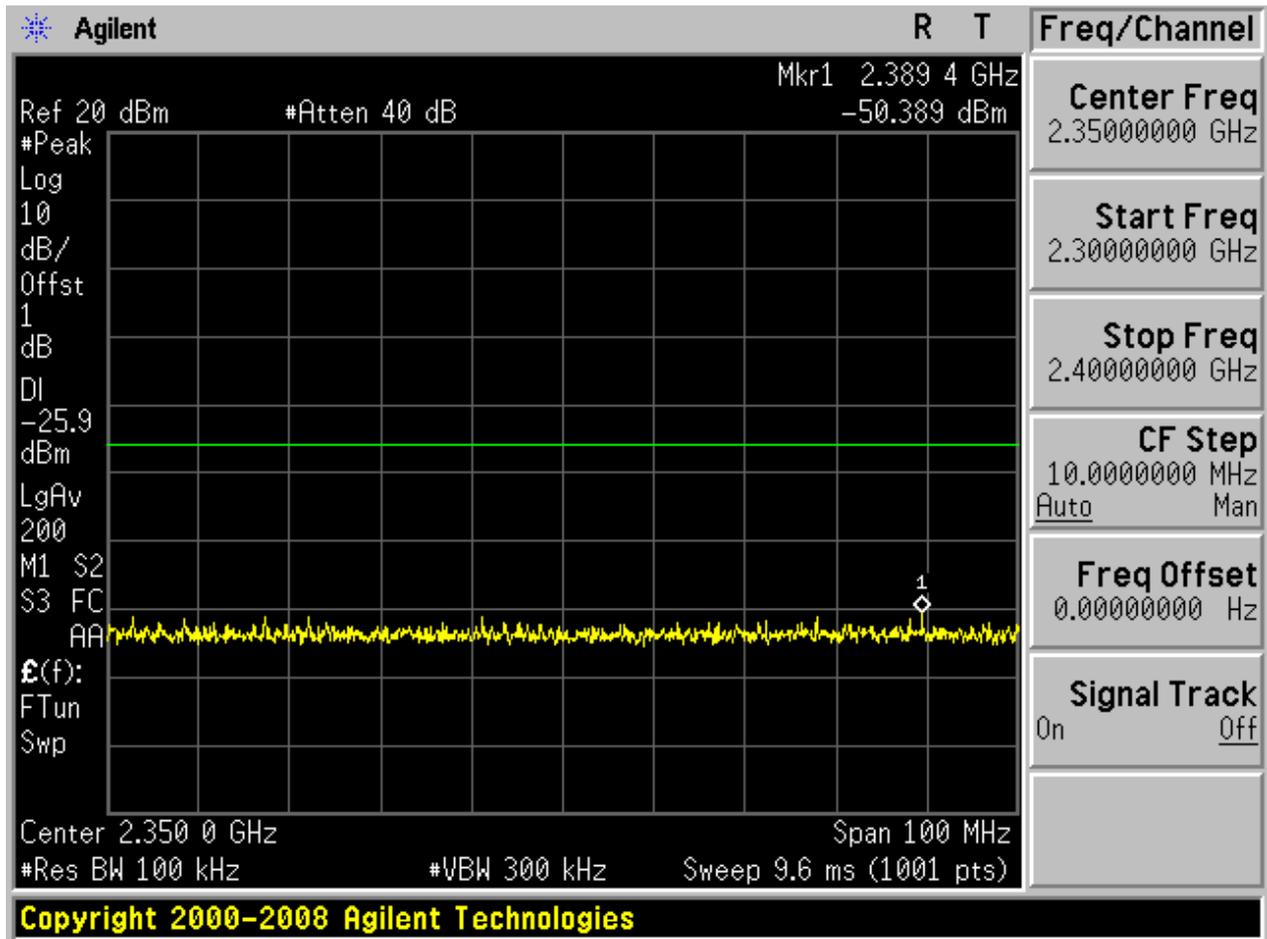


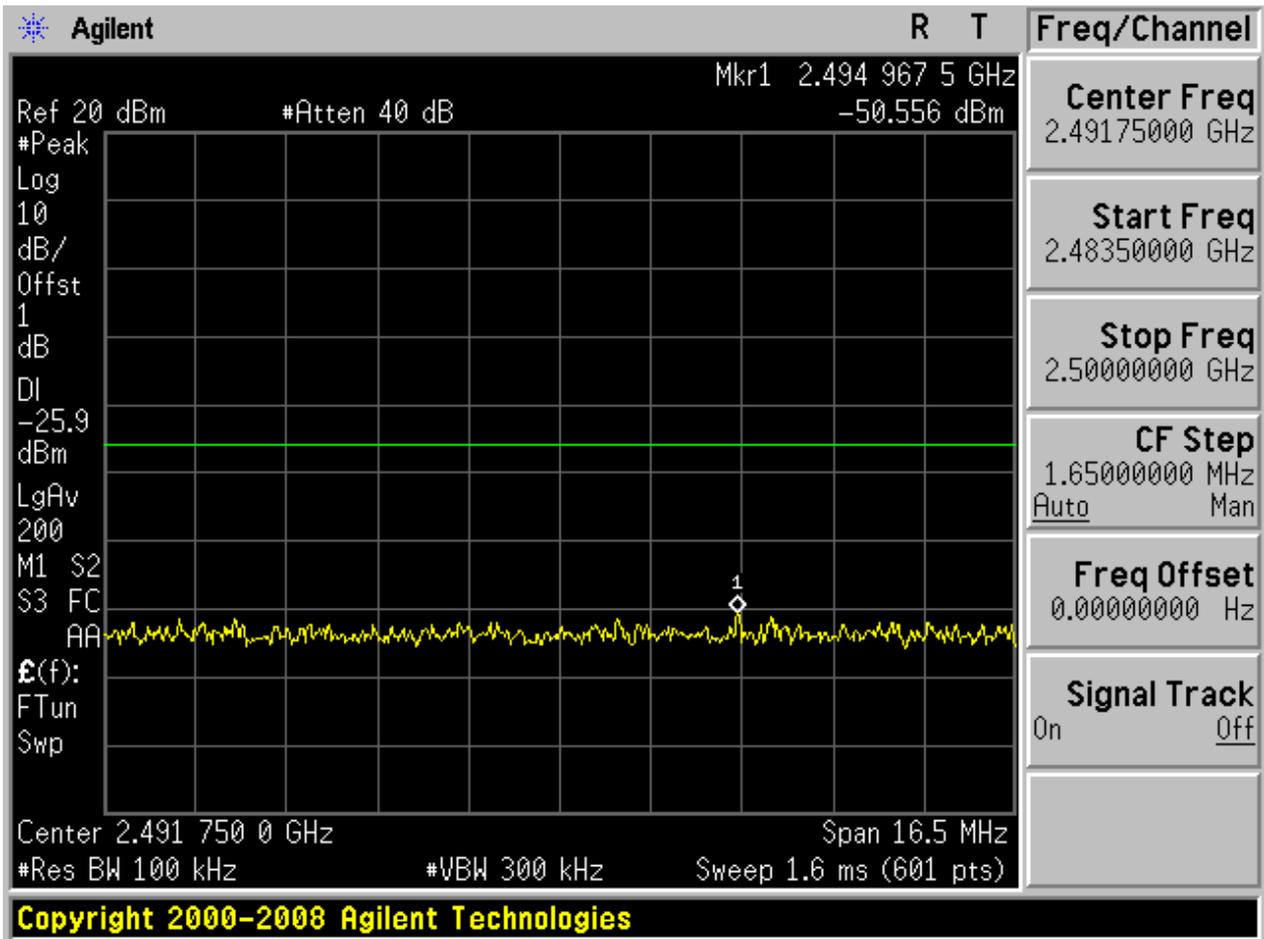
Puw:

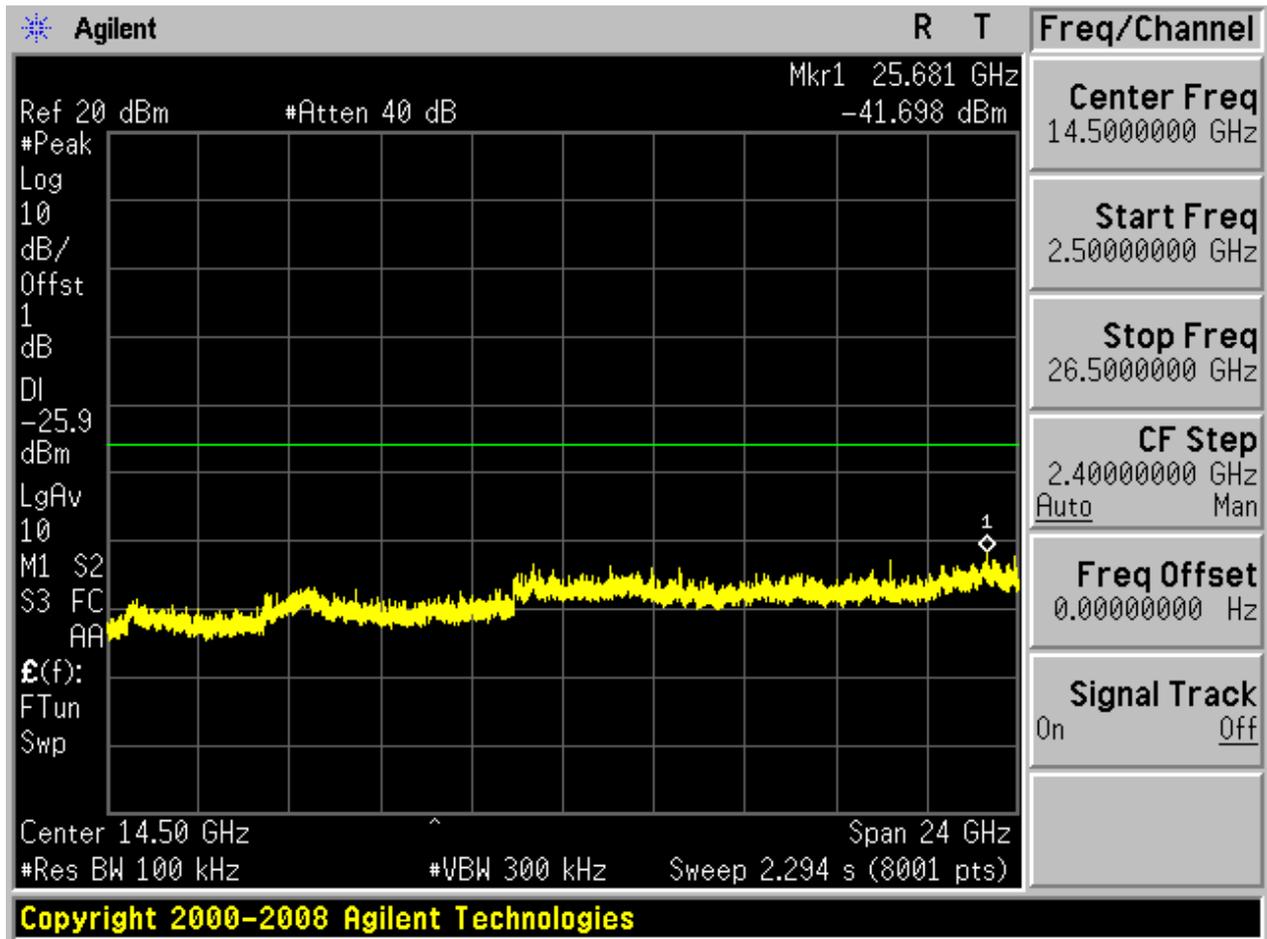






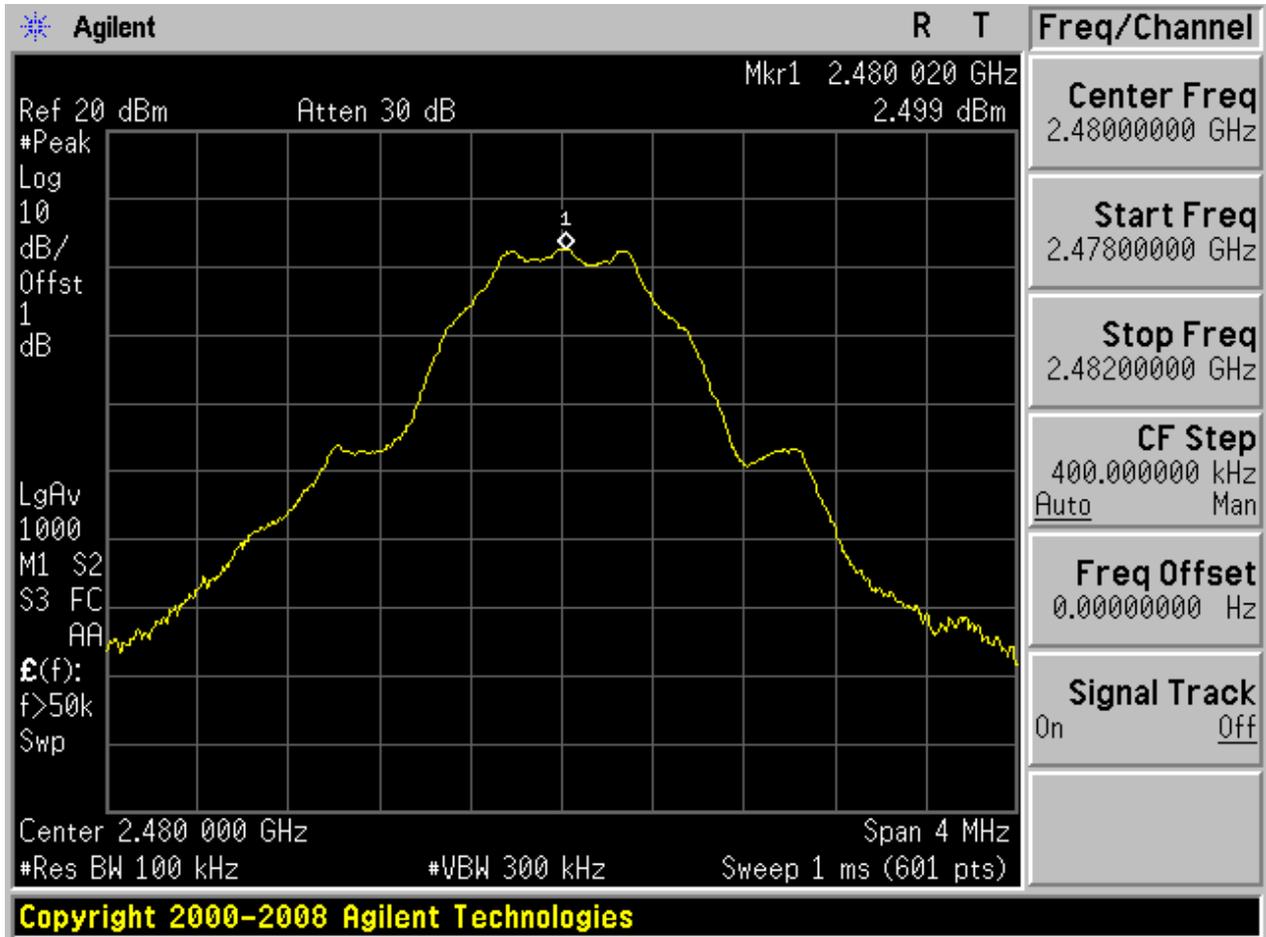






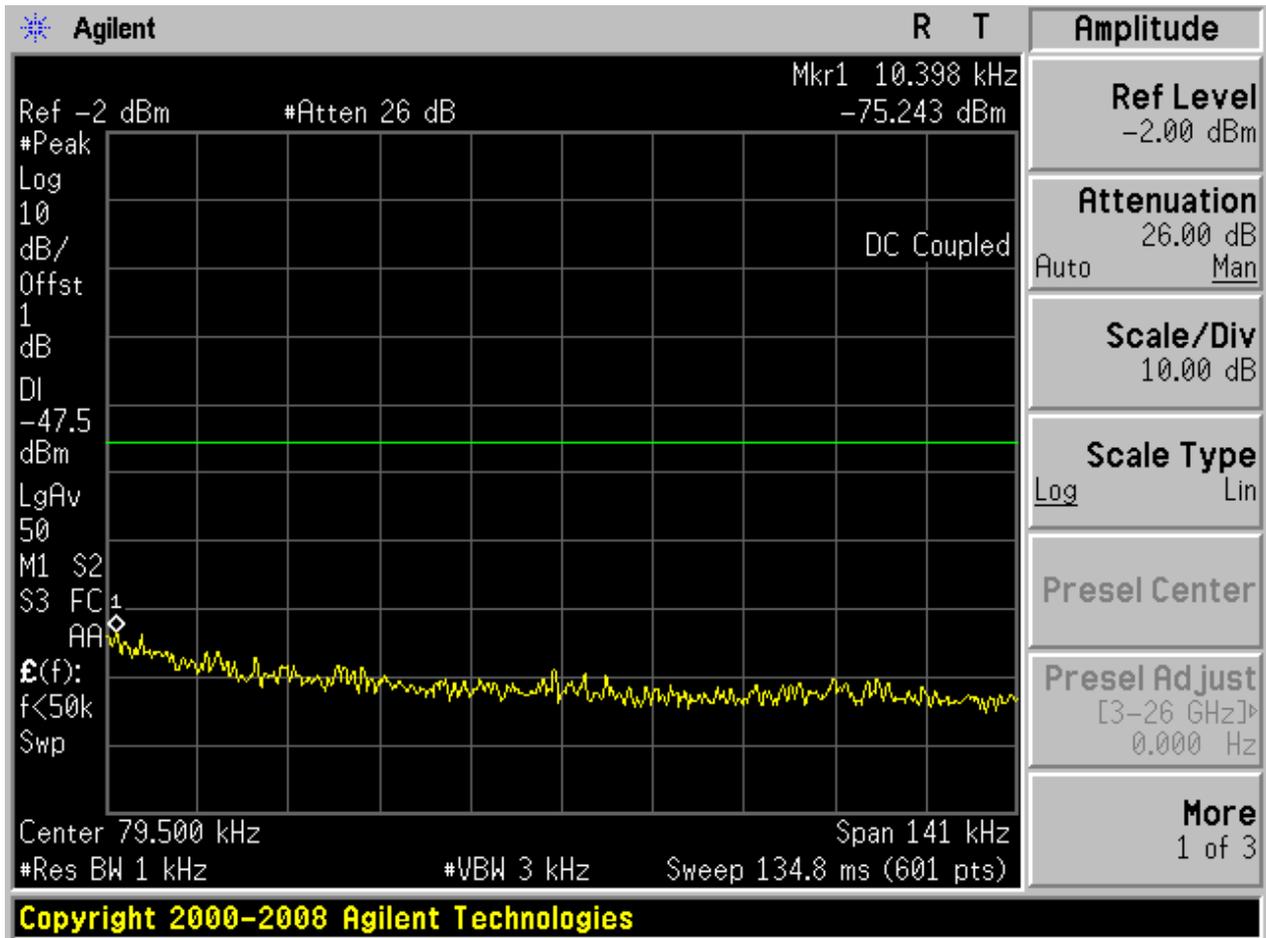
2.5 BLE_H@Ant 1

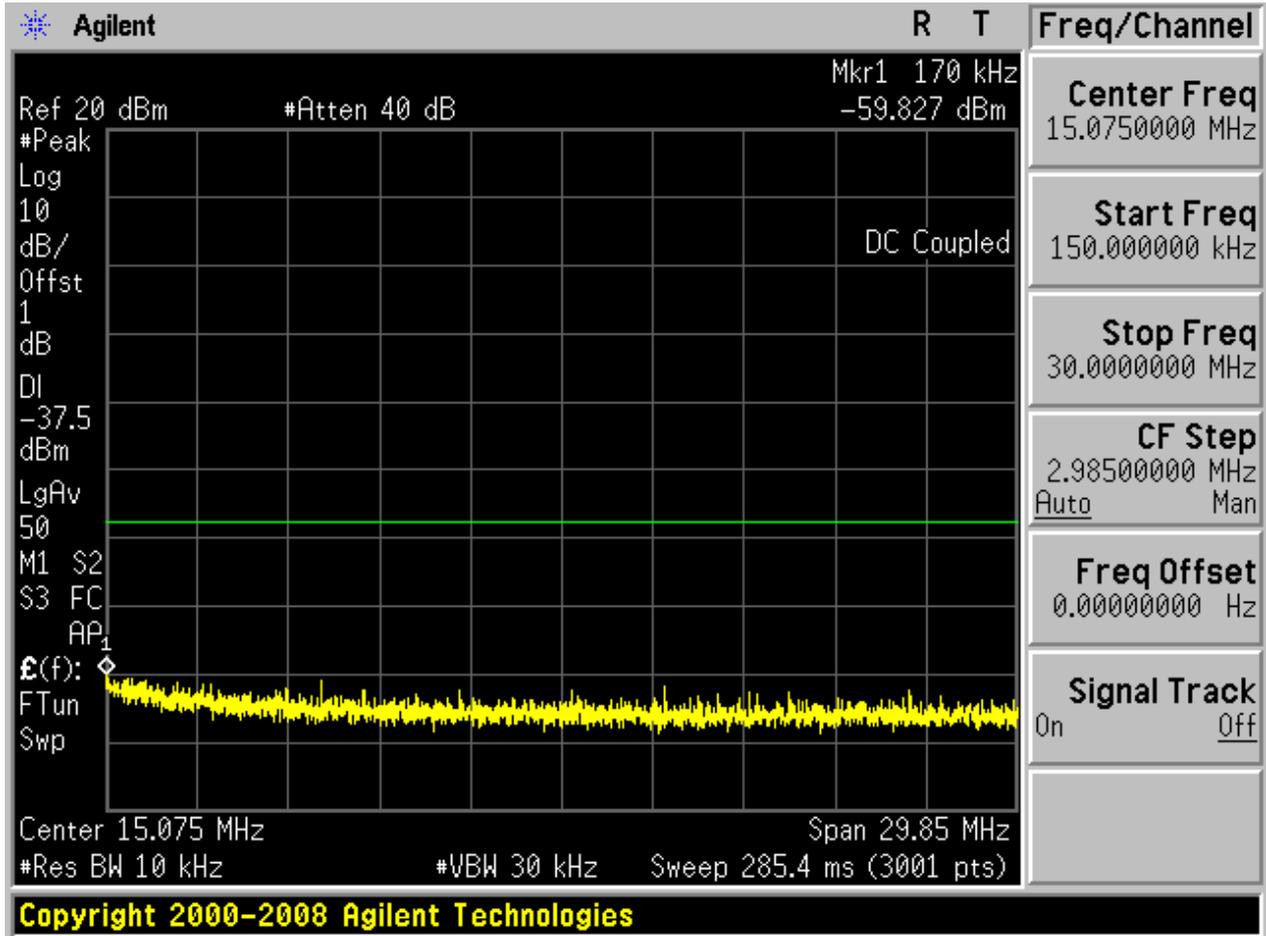
Pref:

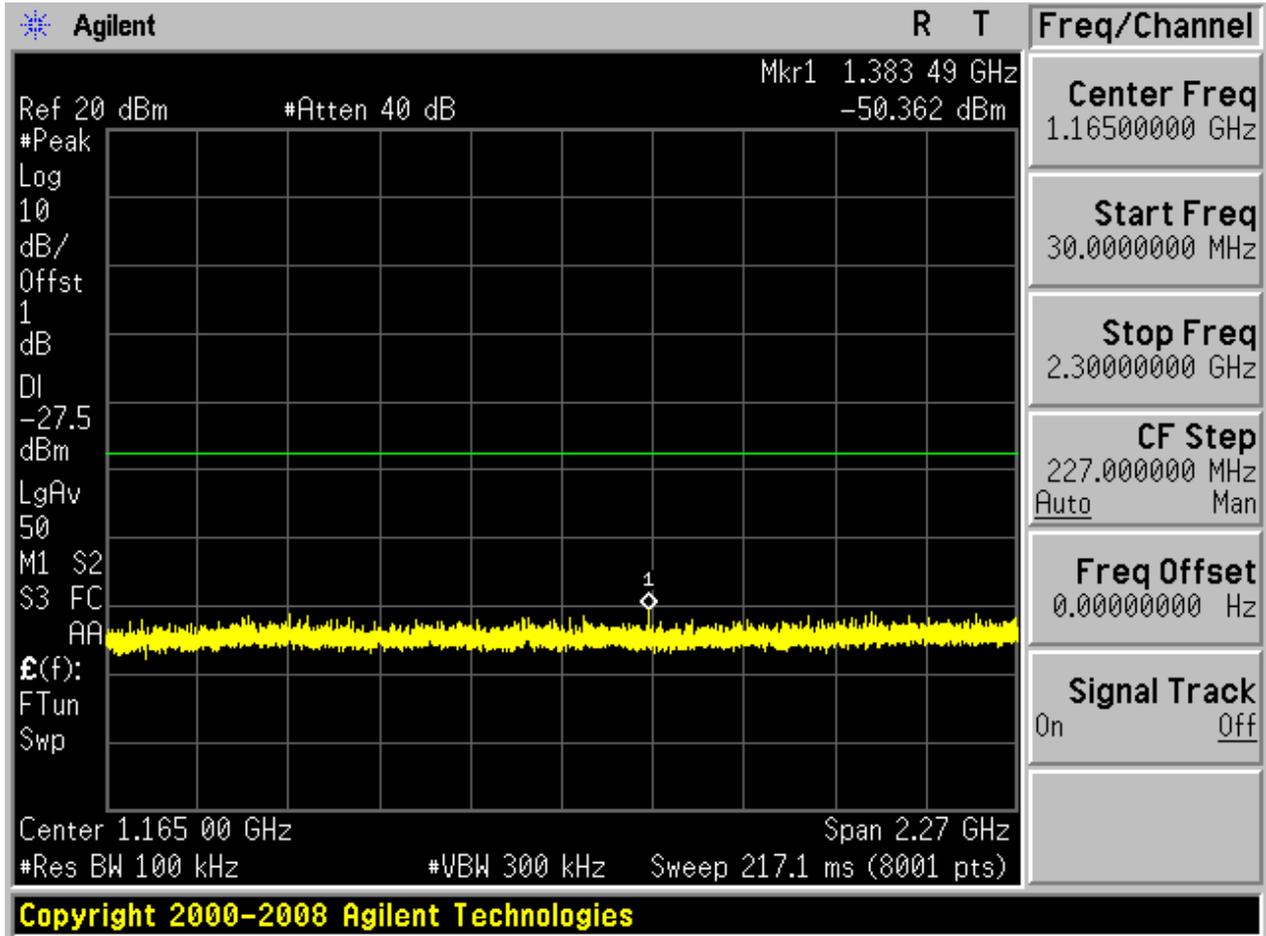


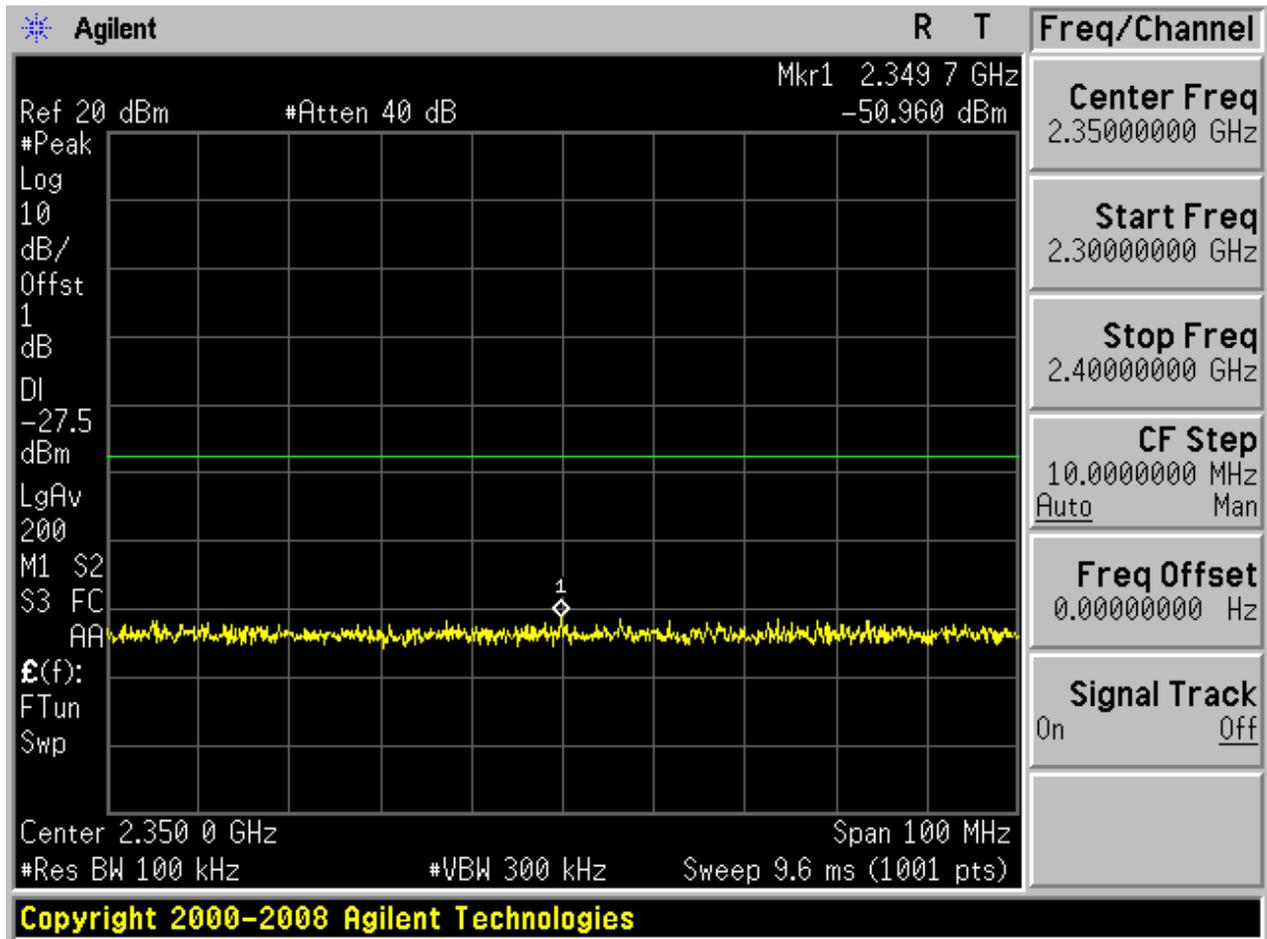


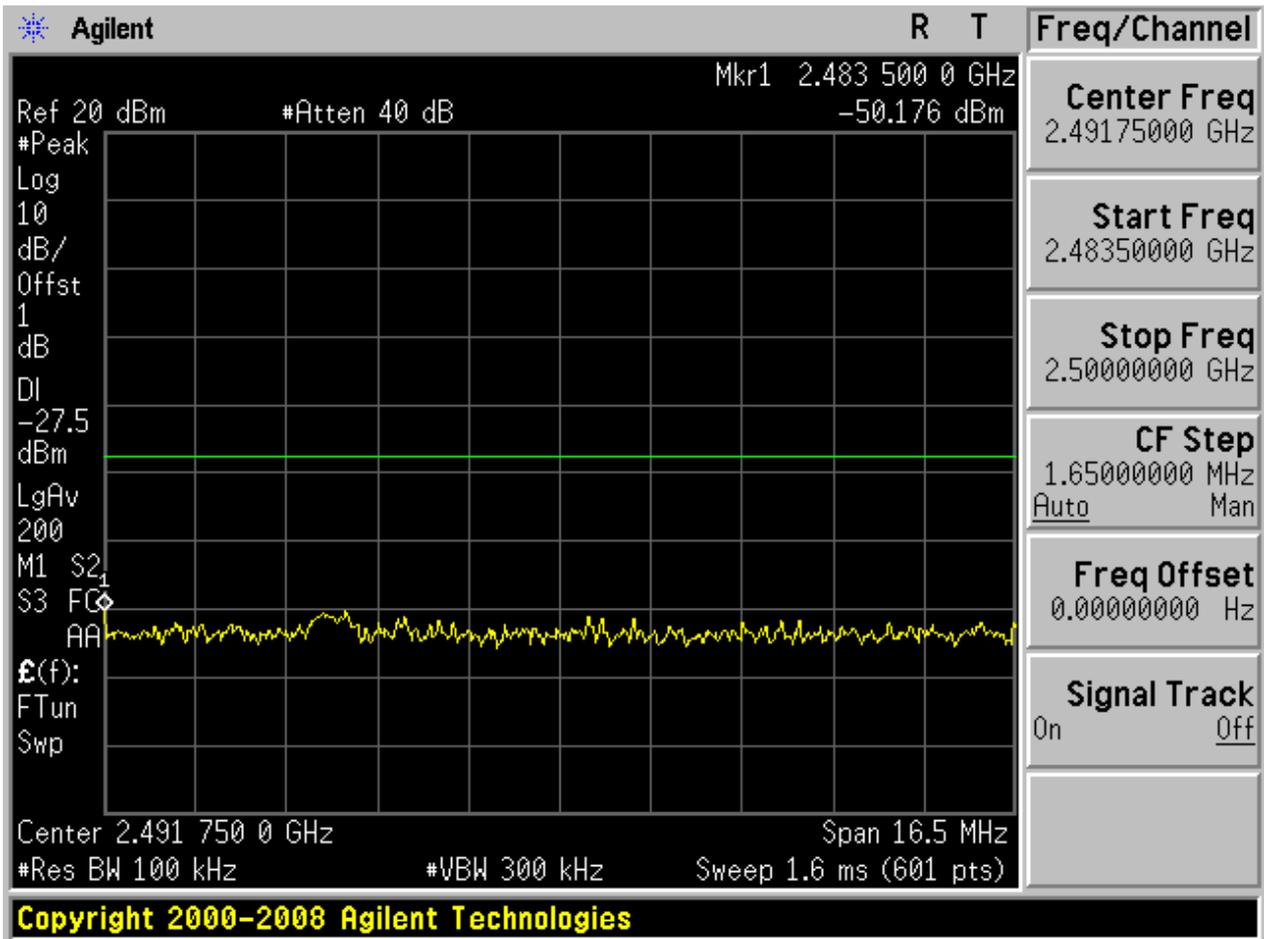
Puw:

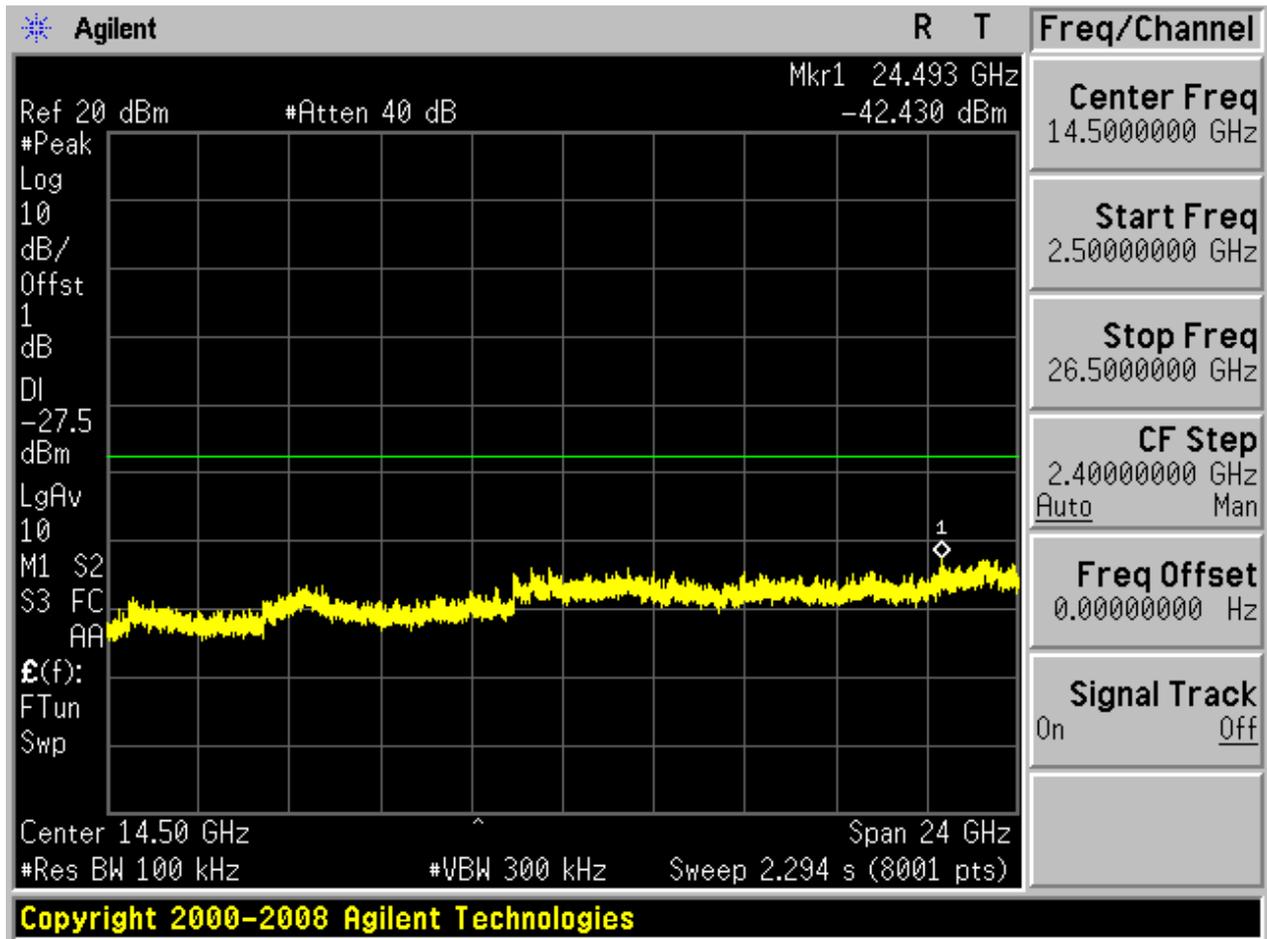














Appendix H: Radiated Spurious Emission & Spurious in Restricted Band

Note: We tested all modes, but the data presented below is the worst case. Below 1GHz, RBW = 100 kHz, VBW = 300 kHz.

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

The simultaneous transmission has been considered

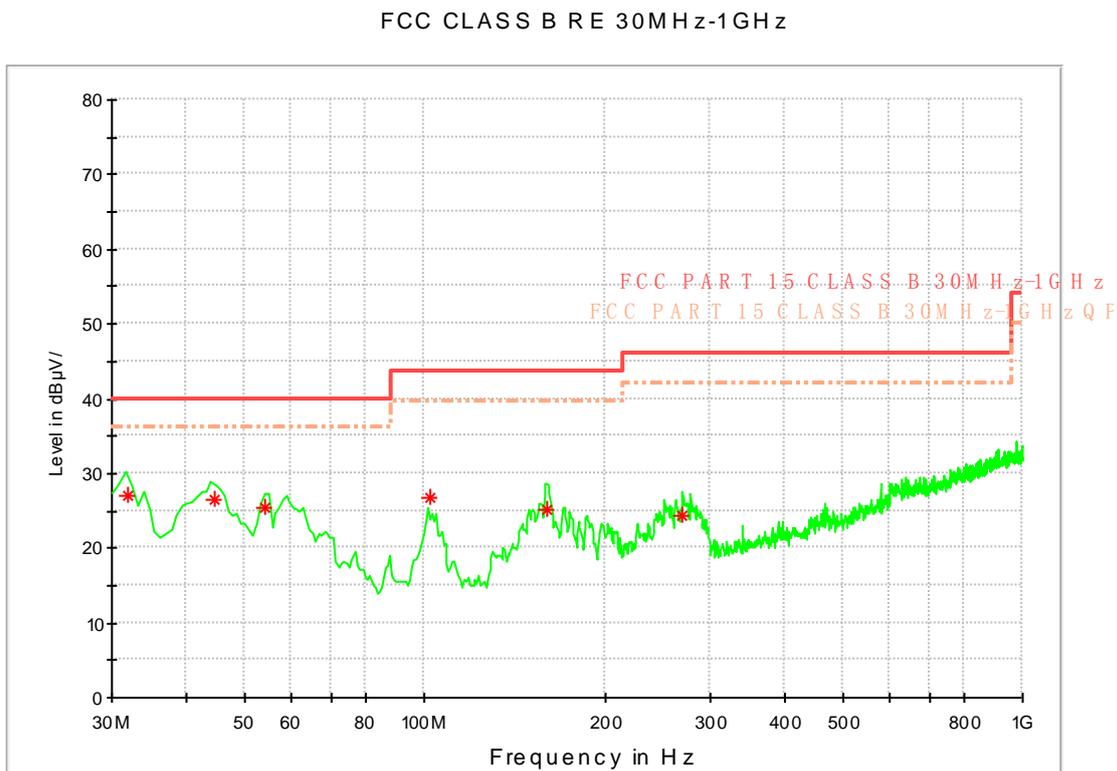
7.1Part 1: Testing Range of “9 kHz to 30MHz”

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

7.2Part 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).





Final Result 1

Frequency (MHz)	QuasiPeak	Bandwidth	Height	Polarization	Azimuth	Corr.	Margin	Limit (dB μ)
31.805440	27.1	120.000	100.0	V	110.0	13.9	12.9	40.0
44.709120	26.6	120.000	100.0	V	184.0	14.9	13.4	40.0
54.253760	25.5	120.000	100.0	V	289.0	14.7	14.5	40.0
101.90144	26.8	120.000	155.0	V	224.0	13.6	16.7	43.5
160.84416	25.1	120.000	100.0	V	273.0	10.8	18.4	43.5
269.88992	24.5	120.000	122.0	H	279.0	14.8	21.5	46.0

7.3Part 3: Testing Range of “18 GHz to 26.5 GHz”

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

7.4Part 4: Testing Range of “2.3GHz to 2.5GHz”

Note 1: The testing range of “2.3 GHz to 2.5 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).

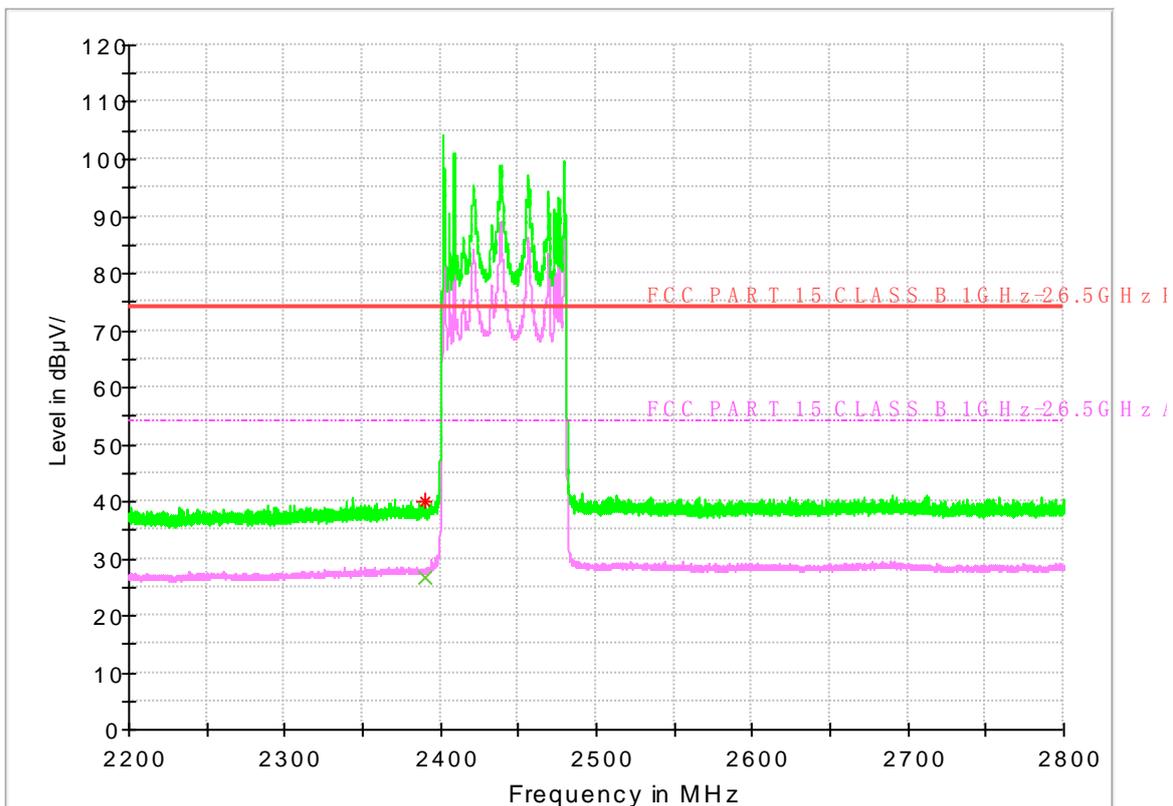
Note 3: The peak spike exceeds the limit line is EUT’s operating frequency.

Test Mode:

7.4.1Test Mode: BLE

7.4.1.1Channel 0

Full Spectrum



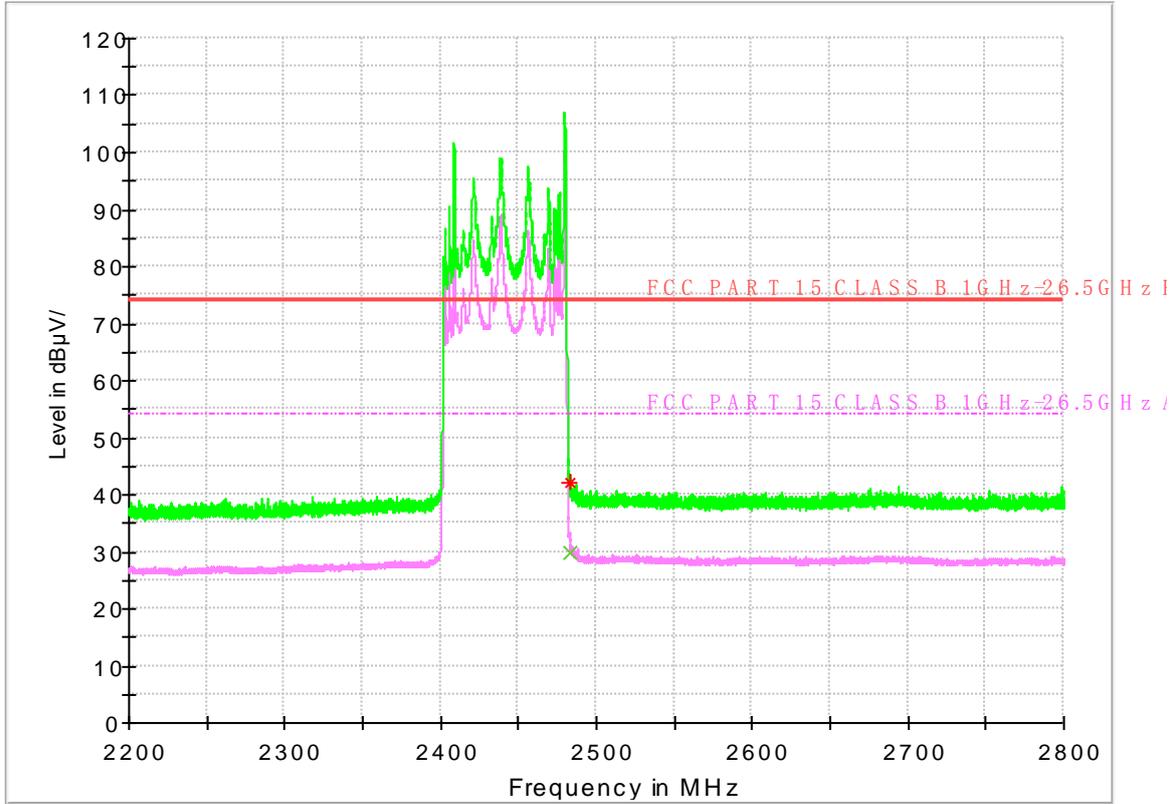


Note: The peak exceeds the limit line is carrier frequency.

Frequency (MHz)	MaxPeak	Average (dBμV/)	Limit (dBμV/)	Margin	Meas. Time	Bandwidth	Height	Pol	Azimuth	Corr. (dB)
2389.9808	39.85	---	74.00	34.15	15000.0	1000.000	128.0	V	285.0	-7.6
2389.988000	---	26.55	54.00	27.45	15000.0	1000.000	109.0	V	274.0	-7.6

7.4.1.2 Channel 78

Full Spectrum

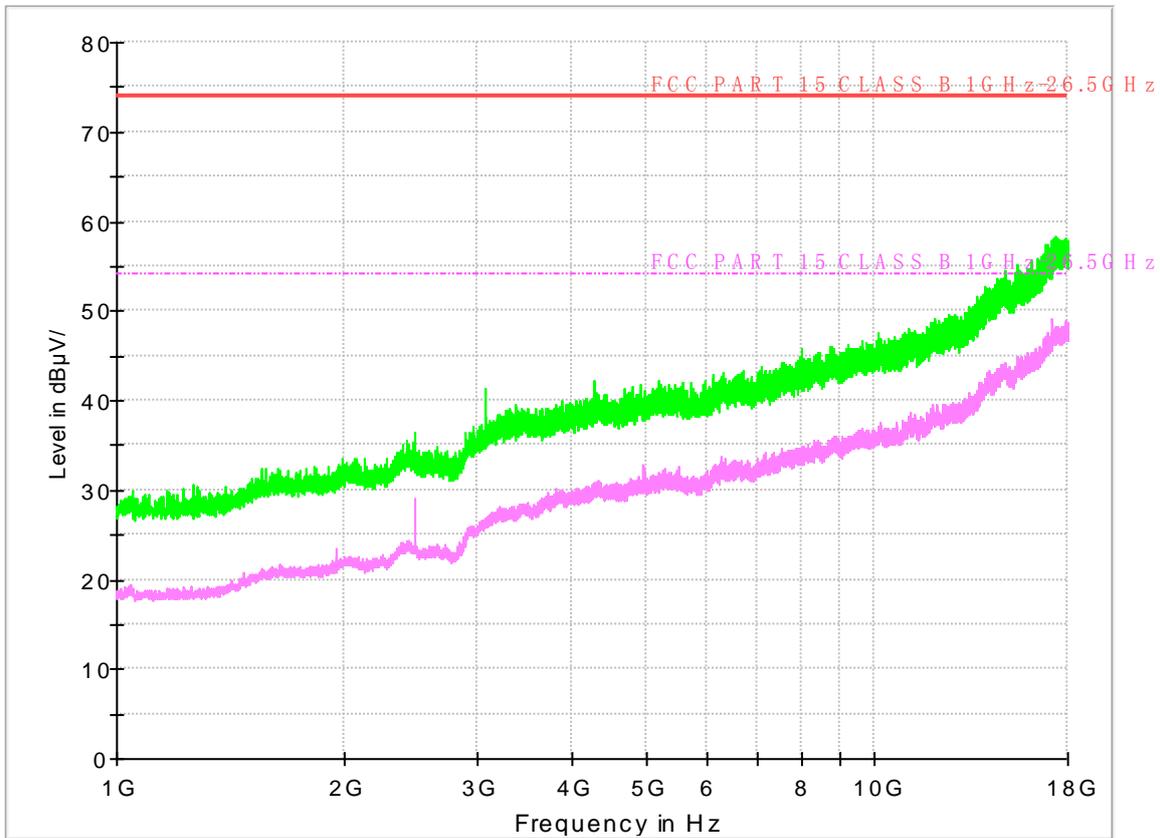


Note: The peak exceeds the limit line is carrier frequency.

Frequency (MHz)	MaxPeak	Average (dBµV)	Limit (dBµV)	Margin	Meas. Time	Bandwidth	Height	Pol	Azimuth	Corr. (dB)
2483.6088	---	29.79	54.00	24.21	15000.0	1000.000	100.0	H	342.0	-5.5
2483.562000	42.20	---	74.00	31.80	15000.0	1000.000	150.0	V	18.0	-6.1

7.5Part 5: Testing Range of “1 GHz to 18 GHz”

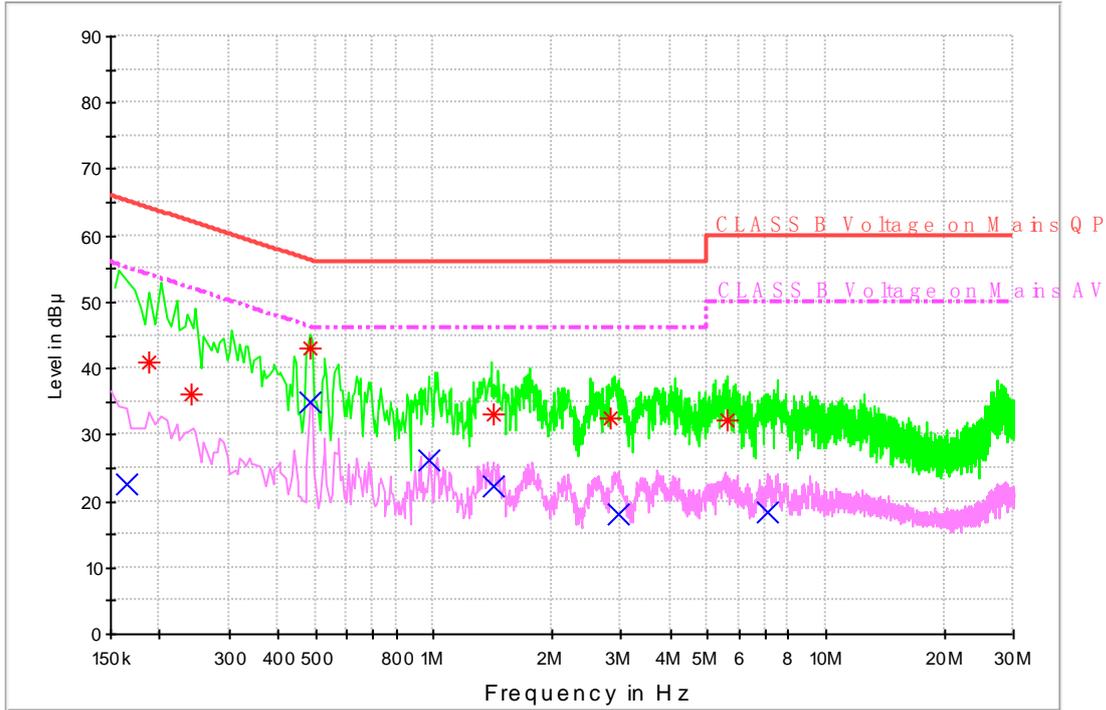
- Note 1: The test results and plot for testing range of “1 GHz to 18 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.
- Note 2: The testing range of “1 GHz to 18 GHz” is for checking radiated emissions located 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

CLASS B Voltage with ENV216



Final Result 1

Frequency	QuasiPeak	Line	Corr.	Margin	Limit
0.187516	40.9	N	9.8	23.2	64.1
0.239330	36.2	L1	9.8	25.9	62.1
0.482733	43.1	N	9.7	13.2	56.3
1.412362	33.1	N	9.8	22.9	56.0
2.828592	32.4	N	9.8	23.6	56.0
5.598149	32.1	N	10.0	27.9	60.0



Final Result 2

Frequency	QuasiPeak	Line	Corr.	Margin	Limit
0.165260	22.6	L1	9.8	32.6	55.2
0.483847	34.9	N	9.7	11.4	46.3
0.968420	26.3	N	9.8	19.7	46.0
1.423346	22.3	N	9.8	23.7	46.0
2.969924	18.1	L1	9.8	27.9	46.0
7.110572	18.2	N	10.0	31.8	50.0

Note: Level= Reading level+ Transd (cable loss + correction factor).The reading level is used to calculate by software which is not shown in the sheet.

END