
Section 5

Test Report

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5.1 Test Equipment List

Test Equipment	Description
DUT	Motorola Residential Subscriber Unit Model No. RSU-2510-R Board No. 0082-0300-6500055
Spectrum Analyzer	Agilent E4440A S/N: MY44022791 Calibrated: 05/23/2006 Calibration due: 05/23/2007
Attenuator/Coaxial Cable (all applicable tests except harmonic frequencies)	MCE/Weinshel Attenuator 40 dB, 10W Model: 23-40-34, S/N. BT 1498 Calibrated by user
Filter/Attenuator Assembly (harmonic frequency test only)	High Pass Filter 4-18 GHz, P/N H04G18G2, S/N 89099 Microwave Circuits 20 dB, 10W Attenuator, MCE/Weinshel Model: 23-20-34, S/N BP4391 Calibrated by user
Laptop Computer (NN1303)	Dell Precision M65 S/N: CRFK 381 Calibration not required
Ethernet Switch	D-Link Model: DSS-5+ 5-port 10/100Mbps S/N: DT8615B009993 Calibration not required
Power Supply, LX (All Tests Except Frequency Stability)	OPE-17-13 13V, 1.3A S/N 5305
AC Power Source (Frequency Stability Test Only)	Instek APS-9501 S/N: EF844094 Calibrated with voltmeter listed below.
Digital Voltmeter	HP 34401A S/N: MY45001201 Calibrated: 4-9-2005 / Calibration due: 4-9-2007
Temperature Chamber	Cincinnati Sub-Zero Model: MCB-1.2-.33-.33H/AC S/N: MC0614260 Temperature verified with thermocouple listed below
Temperature Sensor	Fluke 89 IV True RMS Multimeter S/N 87180024, with K-Type Thermocouple

5.2 RF Power Output

FCC Rules: 2.1046, 27.4, 27.50(h)(2), 27.50(i)

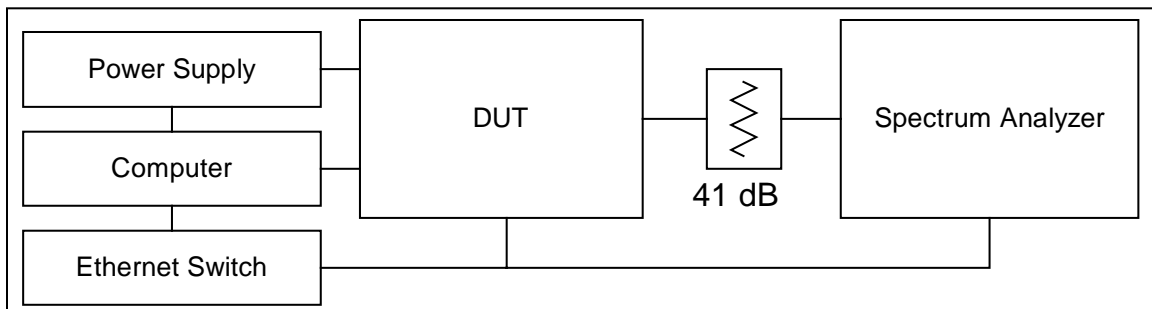
FCC Requirement: Temporary fixed broadband station. A broadband station used for the transmission of material from temporary unspecified points to a broadband station.

All user stations are limited to 2.0 watts transmitter output power.
(5.5 MHz or 6.0 MHz channel BW)

Standard: TIA-603-C
TIA Standard, Land Mobile FM or PM Communications Equipment, Measurement and Performance Standards

Test Procedure: The peak conducted RF output power is measured over an interval of continuous transmission using a spectrum analyzer that has been calibrated in terms of rms-equivalent voltage. The peak power was recorded by utilizing the power measurement function within the spectrum analyzer. The RF output of the transmitter is applied to an attenuator that is connected to the spectrum analyzer RF input port. The spectrum analyzer is time gated to only capture the RF transmission during the burst. The transmitter is enabled in test mode and set to the maximum power level with the attached computer. The RF loss of the attenuator(s) and coax has been measured and is included in the spectrum analyzer offset level and is noted on the block diagram. Measurements are performed at frequencies across the band and for each of the modulation formats available (4-, 16-, 64-, 16L-QAM) and channel bandwidths (5.5 and 6.0 MHz).

Test Conditions: Test Frequencies: 2499, 2593, 2687 MHz (6.0 MHz bandwidth);
2.504.75, 2565.25, 2626.75, 2687.5 MHz (5.5 MHz bandwidth)
Temperature = 25 °C
Supply Voltage = 120 VAC / 60 Hz nominal
to DUT power supply



Conducted RF Power Test Setup

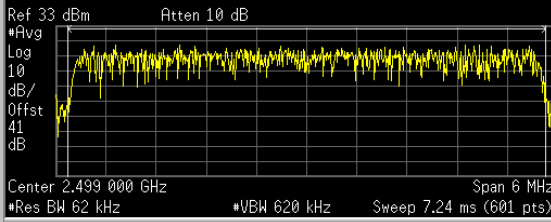
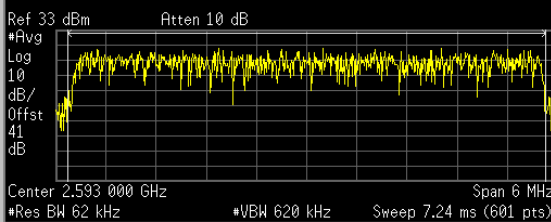
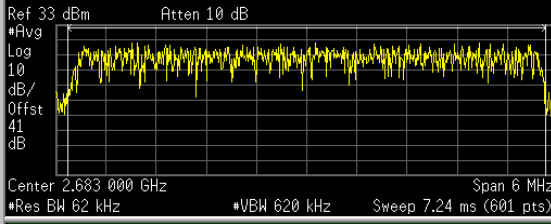
5.2.1. Conducted RF Power Output Test Results

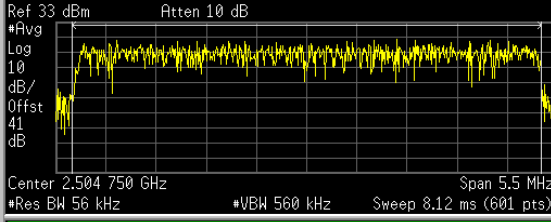
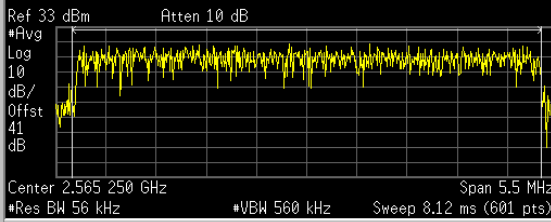
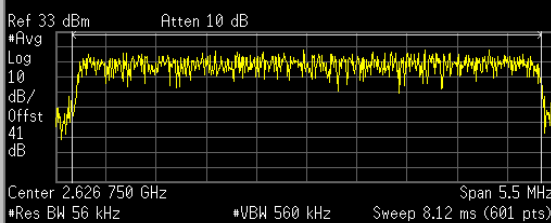
Maximum (2 W) Power setting									
Freq (MHz)	Bandwidth (MHz)	4 QAM		16 QAM		64 QAM		16 QAM Lite	
		(dBm)	(Watts)	(dBm)	(Watts)	(dBm)	(Watts)	(dBm)	(Watts)
2499	6.0	32.39	1.73	32.32	1.71	32.41	1.74	32.42	1.75
2593	6.0	32.70	1.86	32.84	1.92	32.45	1.76	32.63	1.83
2683	6.0	32.86	1.93	32.86	1.93	32.52	1.79	32.81	1.91
2504.75	5.5	32.89	1.95	32.57	1.81	32.64	1.84	32.75	1.88
2565.25	5.5	32.99	1.99	32.90	1.95	32.69	1.86	33.00	2.00
2626.75	5.5	32.48	1.77	32.42	1.75	32.34	1.71	32.43	1.75
2687.25	5.5	32.86	1.93	32.89	1.95	32.95	1.97	32.91	1.95

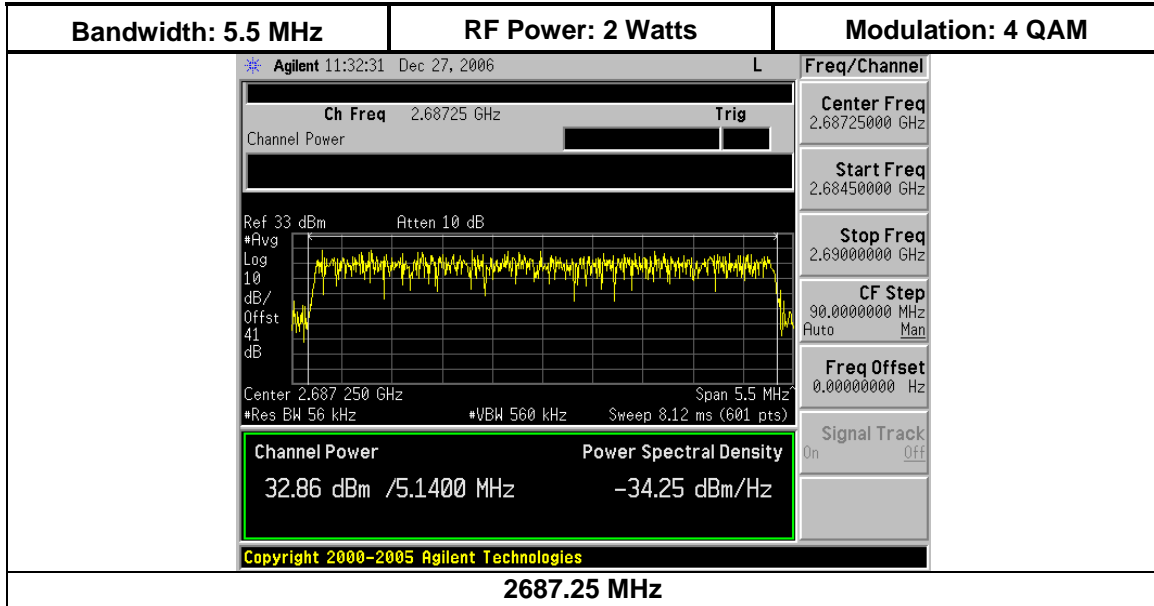
Minimum (1 mW) Power setting									
Freq (MHz)	Bandwidth (MHz)	4 QAM		16 QAM		64 QAM		16 QAM Lite	
		(dBm)	(Watts)	(dBm)	(Watts)	(dBm)	(Watts)	(dBm)	(Watts)
2499	6.0	0.01	0.0010	0.38	0.0011	0.42	0.0011	0.31	0.0011
2593	6.0	0.34	0.0011	0.41	0.0011	0.37	0.0011	0.30	0.0011
2687	6.0	0.37	0.0011	0.15	0.0010	0.22	0.0011	0.25	0.0011
2504.75	5.5	0.22	0.0011	0.48	0.0011	0.34	0.0011	0.46	0.0011
2565.25	5.5	0.64	0.0012	0.41	0.0011	0.37	0.0011	0.47	0.0011
2626.75	5.5	0.00	0.0010	0.14	0.0010	0.11	0.0010	0.16	0.0010
2687.25	5.5	0.04	0.0010	0.47	0.0011	0.15	0.0010	0.26	0.0011

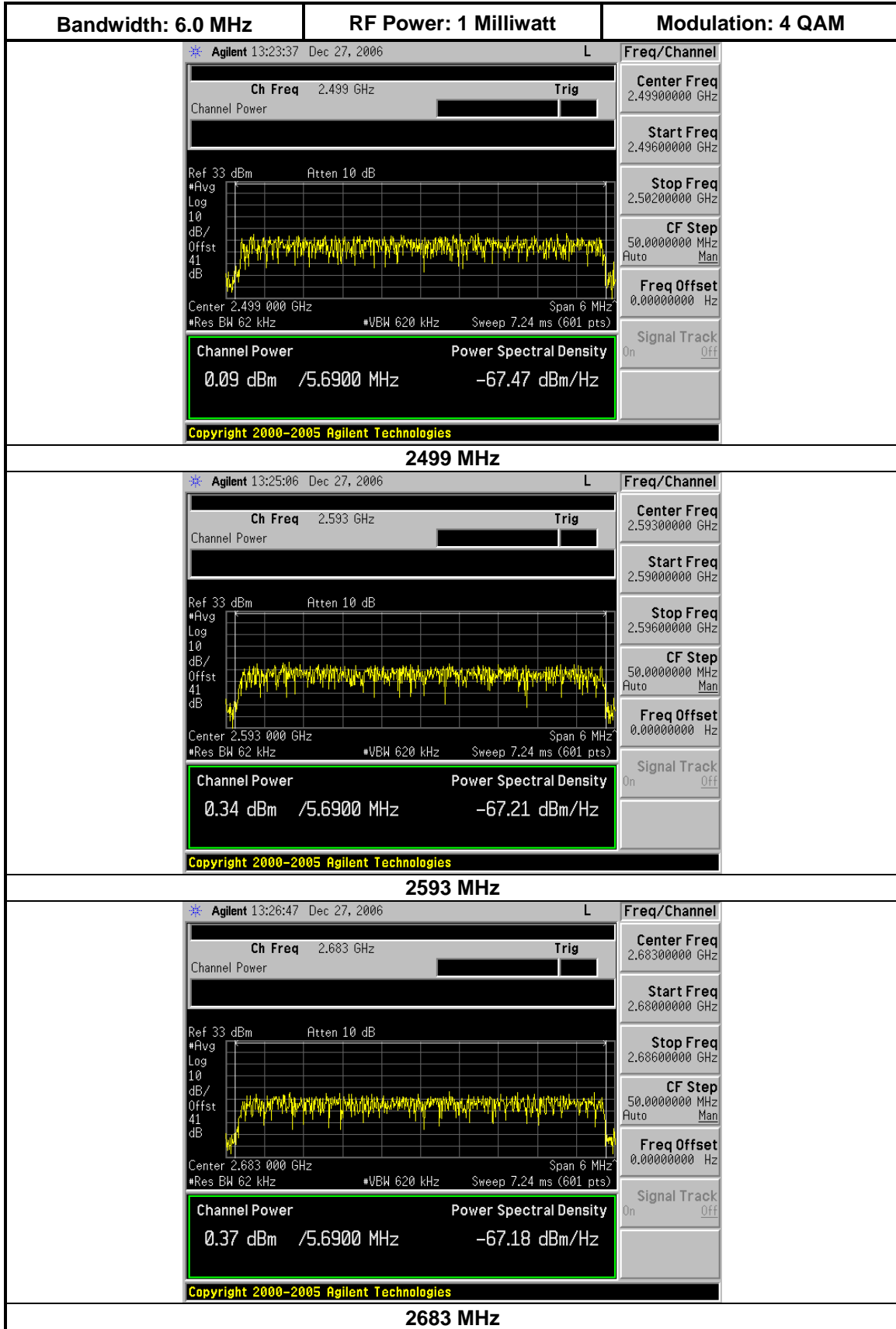
5.2.2. Conducted RF Power Output Plots

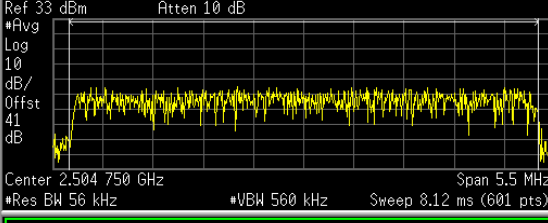
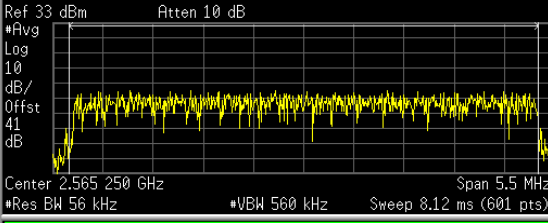
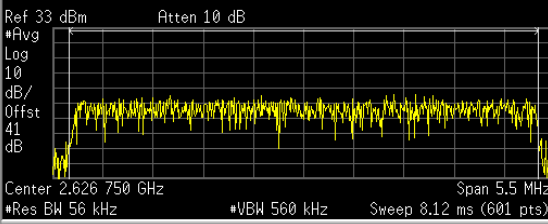
The following are spectrum analyzer plots of the 4 QAM data in the preceding tables. The plots for the 16, 64, and 16L QAM modulation levels are similar and are located in the Appendix.

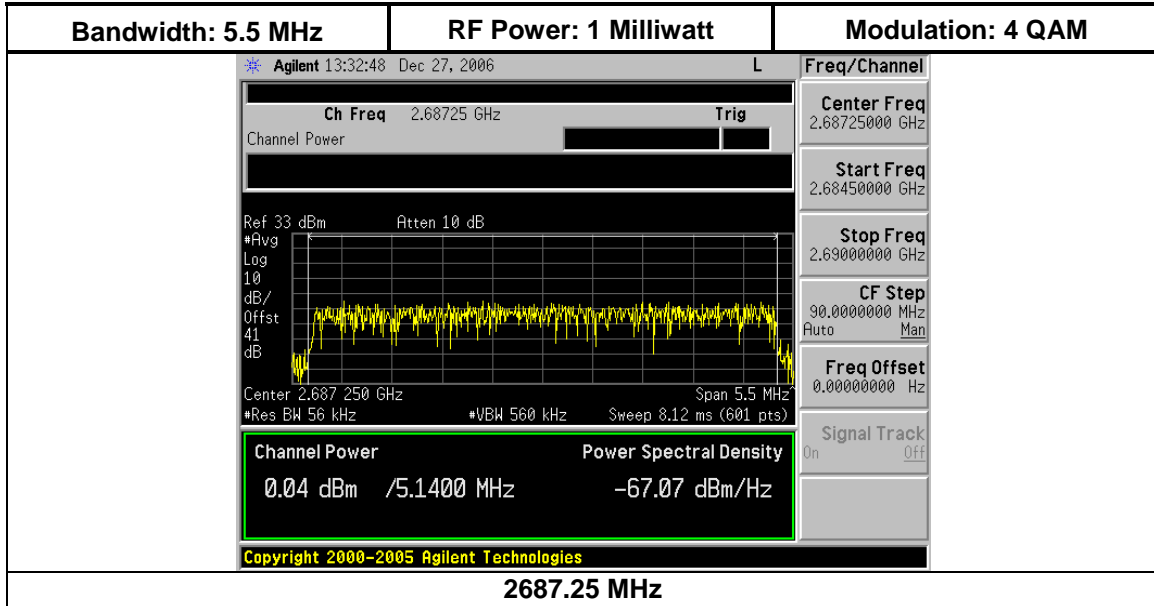
Bandwidth: 6.0 MHz	RF Power: 2 Watts	Modulation: 4 QAM
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 11:17:09 Dec 27, 2006 L</p> <p>Ch Freq 2.499 GHz Trig</p> <p>Channel Power</p>  <p>Center 2.499 000 GHz Span 6 MHz #Res BW 62 kHz #VBW 620 kHz Sweep 7.24 ms (601 pts)</p> <p>Channel Power Power Spectral Density 32.39 dBm /5.6900 MHz -35.16 dBm/Hz</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%; border-left: 1px solid black; padding-left: 5px;"> <p>Freq/Channel</p> <p>Center Freq 2.49900000 GHz</p> <p>Start Freq 2.49600000 GHz</p> <p>Stop Freq 2.50200000 GHz</p> <p>CF Step 50.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>		
2499 MHz		
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 11:18:43 Dec 27, 2006 L</p> <p>Ch Freq 2.593 GHz Trig</p> <p>Channel Power</p>  <p>Center 2.593 000 GHz Span 6 MHz #Res BW 62 kHz #VBW 620 kHz Sweep 7.24 ms (601 pts)</p> <p>Channel Power Power Spectral Density 32.70 dBm /5.6900 MHz -34.85 dBm/Hz</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%; border-left: 1px solid black; padding-left: 5px;"> <p>Freq/Channel</p> <p>Center Freq 2.59300000 GHz</p> <p>Start Freq 2.59000000 GHz</p> <p>Stop Freq 2.59600000 GHz</p> <p>CF Step 50.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>		
2593 MHz		
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 11:22:17 Dec 27, 2006 L</p> <p>Ch Freq 2.683 GHz Trig</p> <p>Channel Power</p>  <p>Center 2.683 000 GHz Span 6 MHz #Res BW 62 kHz #VBW 620 kHz Sweep 7.24 ms (601 pts)</p> <p>Channel Power Power Spectral Density 32.86 dBm /5.6900 MHz -34.69 dBm/Hz</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%; border-left: 1px solid black; padding-left: 5px;"> <p>Freq/Channel</p> <p>Center Freq 2.68300000 GHz</p> <p>Start Freq 2.68000000 GHz</p> <p>Stop Freq 2.68600000 GHz</p> <p>CF Step 50.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>		
2683 MHz		

Bandwidth: 5.5 MHz	RF Power: 2 Watts	Modulation: 4 QAM
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 11:25:09 Dec 27, 2006 L</p> <p>Ch Freq 2.50475 GHz Trig</p> <p>Channel Power</p>  <p>Center 2.504750 GHz Span 5.5 MHz Res BW 56 kHz #VBW 560 kHz Sweep 8.12 ms (601 pts)</p> <p>Channel Power Power Spectral Density 32.89 dBm /5.1400 MHz -34.22 dBm/Hz</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%; border-left: 1px solid black; padding-left: 5px;"> <p>Freq/Channel</p> <p>Center Freq 2.50475000 GHz</p> <p>Start Freq 2.50200000 GHz</p> <p>Stop Freq 2.50750000 GHz</p> <p>CF Step 90,0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>		
2504.75 MHz		
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 11:26:57 Dec 27, 2006 L</p> <p>Ch Freq 2.56525 GHz Trig</p> <p>Channel Power</p>  <p>Center 2.565250 GHz Span 5.5 MHz Res BW 56 kHz #VBW 560 kHz Sweep 8.12 ms (601 pts)</p> <p>Channel Power Power Spectral Density 32.99 dBm /5.1400 MHz -34.12 dBm/Hz</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%; border-left: 1px solid black; padding-left: 5px;"> <p>Freq/Channel</p> <p>Center Freq 2.56525000 GHz</p> <p>Start Freq 2.56250000 GHz</p> <p>Stop Freq 2.56800000 GHz</p> <p>CF Step 90,0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>		
2565.25 MHz		
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 11:31:17 Dec 27, 2006 L</p> <p>Ch Freq 2.62675 GHz Trig</p> <p>Channel Power</p>  <p>Center 2.626750 GHz Span 5.5 MHz Res BW 56 kHz #VBW 560 kHz Sweep 8.12 ms (601 pts)</p> <p>Channel Power Power Spectral Density 32.48 dBm /5.1400 MHz -34.63 dBm/Hz</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%; border-left: 1px solid black; padding-left: 5px;"> <p>Freq/Channel</p> <p>Center Freq 2.62675000 GHz</p> <p>Start Freq 2.62400000 GHz</p> <p>Stop Freq 2.62950000 GHz</p> <p>CF Step 90,0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>		
2626.75 MHz		





Bandwidth: 5.5 MHz	RF Power: 1 Milliwatt	Modulation: 4 QAM
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 13:29:11 Dec 27, 2006 L</p> <p>Ch Freq 2.50475 GHz Trig</p> <p>Channel Power</p>  <p>Center 2.50475 GHz Span 5.5 MHz Res BW 56 kHz VBW 560 kHz Sweep 8.12 ms (601 pts)</p> <p>Channel Power Power Spectral Density 0.22 dBm /5.1400 MHz -66.89 dBm/Hz</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%; border-left: 1px solid black; padding-left: 5px;"> <p>Freq/Channel</p> <p>Center Freq 2.50475000 GHz</p> <p>Start Freq 2.50200000 GHz</p> <p>Stop Freq 2.50750000 GHz</p> <p>CF Step 90.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>		
2504.75 MHz		
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 13:30:20 Dec 27, 2006 L</p> <p>Ch Freq 2.56525 GHz Trig</p> <p>Channel Power</p>  <p>Center 2.56525 GHz Span 5.5 MHz Res BW 56 kHz VBW 560 kHz Sweep 8.12 ms (601 pts)</p> <p>Channel Power Power Spectral Density 0.64 dBm /5.1400 MHz -66.47 dBm/Hz</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%; border-left: 1px solid black; padding-left: 5px;"> <p>Freq/Channel</p> <p>Center Freq 2.56525000 GHz</p> <p>Start Freq 2.56250000 GHz</p> <p>Stop Freq 2.56800000 GHz</p> <p>CF Step 90.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>		
2565.25 MHz		
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 13:31:40 Dec 27, 2006 L</p> <p>Ch Freq 2.62675 GHz Trig</p> <p>Channel Power</p>  <p>Center 2.62675 GHz Span 5.5 MHz Res BW 56 kHz VBW 560 kHz Sweep 8.12 ms (601 pts)</p> <p>Channel Power Power Spectral Density 0.00 dBm /5.1400 MHz -67.11 dBm/Hz</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%; border-left: 1px solid black; padding-left: 5px;"> <p>Freq/Channel</p> <p>Center Freq 2.62675000 GHz</p> <p>Start Freq 2.62400000 GHz</p> <p>Stop Freq 2.62950000 GHz</p> <p>CF Step 90.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>		
2626.75 MHz		



5.3 Modulation Characteristics

FCC Rules: 2.1047(d), 27.53(l)(2), 27.53(l)(6)

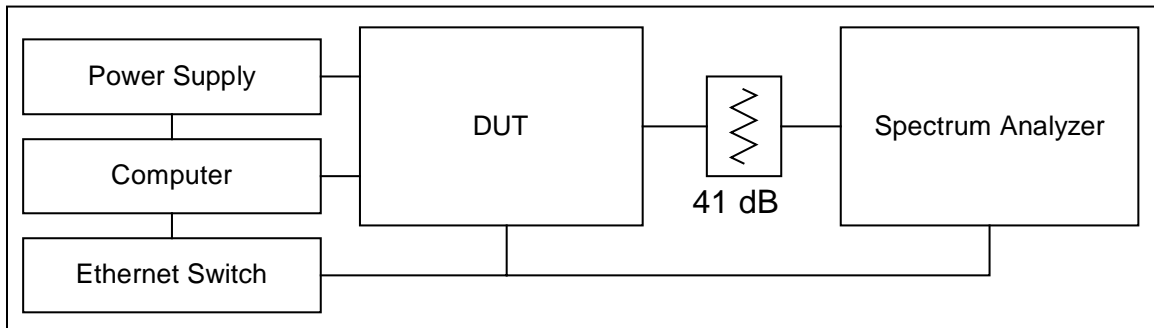
FCC requirement: Temporary Fixed
Attenuation at band edge = $43 + 10 \cdot \log(P)$, $P = 2$ watts
Attenuation at band edge = $43 + 10 \cdot \log(2) = 43 + 3$
Attenuation at band edge = 46 dB (equates to -13 dBm)

Standard: 47CFR27.53(l)(2)

Test Procedure: The Orthogonal Frequency Division Multiplexing (OFDM) modulated Time Division Duplex (TDD) RF signal from the test unit is applied to a spectrum analyzer. An RMS detector is used to measure the power of the out of band emission. As allowed per the FCC rules, a measurement bandwidth of 1% or greater of the emissions bandwidth was used for the test. The maximum out of band emission power as recorded, in a 1% or greater resolution bandwidth of the transmitted signal, in the adjacent 1 MHz bin is listed in the spread sheet below. A detailed plot of the adjacent 1 MHz emission is shown in the Appendix. The out of band emission power results measured beyond the first 1 MHz bin is measured with a resolution bandwidth of 1% or greater than the emission bandwidth of the transmitted signal and then integrated over the 1 MHz of spectrum as required by using the internal power measurement function of the spectrum analyzer. This data is collected by incrementing the spectrum analyzer in 1 MHz steps and recording the power in the 1 MHz of spectrum being measured. The resolution bandwidth used for each test is noted in the data measurement table.

The transmitter is enabled in test mode with the attached computer. The RF loss of the attenuators and coax was measured and is included in the spectrum analyzer amplitude offset and is noted in the block diagram which follows. Measurements are performed at several frequencies across the band, for each of the modulation formats available (4-, 16-, 64-, 16L- QAM) and channel bandwidths (5.5 and 6.0 MHz). The test frequencies listed below were chosen because they are at the low, mid, and high band points.

Test Conditions: **Test Frequencies:** 2499, 2593, 2683 MHz (6.0 MHz bandwidth)
2504.75, 2565.25, 2626.75, and 2687.25 (5.5 MHz bandwidth)
 Temperature: 25 °C
 Supply Voltage: 120 VAC / 60 Hz Nominal
 to DUT Power Supply



Modulation Characteristics Test Setup

5.3.1. Modulation Characteristics Test Results Summary

Passed: Modulation characteristics across frequency band and modulation formats. The data for the test channels at the 4 QAM modulation level is shown in the tables which follow. The data for the other modulation levels is similar and is shown in the Appendix. Also shown in the Appendix are the analyzer plots for the ± 1 MHz bin maximum power level.

5.3.2. Modulation Characteristics Data Tables

2499 MHz, 6.0 MHz, 2W Channel, 4-QAM

	Channel Center Freq (MHz)		2499		1/22/2007			
	Channel BW (MHz)		6		13 VDC Nom			
	Channel Bandedge - Low (MHz)		2496		4-QAM			
	Channel Bandedge - High (MHz)		2502					
Resolution Bandwidth (kHz)		1 MHz Band Center Freq (MHz)	1 MHz Band Low Freq (MHz)	1 MHz Band High Freq (MHz)	Emission Level (dBm)	Spec (dBm)	Margin (dB)	Result
20	- 10 MHz bin	2486.5	2486	2487	-35.16	-13	-22.16	Complies
	- 9 MHz bin	2487.5	2487	2488	-33.39	-13	-20.39	Complies
	- 8 MHz bin	2488.5	2488	2489	-31.44	-13	-18.44	Complies
	- 7 MHz bin	2489.5	2489	2490	-30.32	-13	-17.32	Complies
	- 6 MHz bin	2490.5	2490	2491	-28.89	-13	-15.89	Complies
	- 5 MHz bin	2491.5	2491	2492	-26.37	-13	-13.37	Complies
	- 4 MHz bin	2492.5	2492	2493	-24.42	-13	-11.42	Complies
	- 3 MHz bin	2493.5	2493	2494	-21.04	-13	-8.04	Complies
	- 2 MHz bin	2494.5	2494	2495	-19.17	-13	-6.17	Complies
	- 1 MHz bin	2495.5	2495	2496	-20.66	-13	-7.66	Complies
	+ 1 MHz bin	2502.5	2502	2503	-19.62	-13	-6.62	Complies
	+ 2 MHz bin	2503.5	2503	2504	-21.19	-13	-8.19	Complies
	+ 3 MHz bin	2504.5	2504	2505	-23.62	-13	-10.62	Complies
	+ 4 MHz bin	2505.5	2505	2506	-25.96	-13	-12.96	Complies
	+ 5 MHz bin	2506.5	2506	2507	-28.82	-13	-15.82	Complies
	+ 6 MHz bin	2507.5	2507	2508	-29.71	-13	-16.71	Complies
	+ 7 MHz bin	2508.5	2508	2509	-31.14	-13	-18.14	Complies
	+ 8 MHz bin	2509.5	2509	2510	-33.10	-13	-20.10	Complies
	+ 9 MHz bin	2510.5	2510	2511	-33.76	-13	-20.76	Complies
	+ 10 MHz bin	2511.5	2511	2512	-35.53	-13	-22.53	Complies

2593 MHz, 6.0 MHz, 2W Channel, 4-QAM

	Channel Center Freq (MHz)		2593		1/22/2007			
	Channel BW (MHz)		6		13 VDC Nom			
	Channel Bandedge - Low (MHz)		2590		4-QAM			
	Channel Bandedge - High (MHz)		2596					
Resolution Bandwidth (kHz)		1 MHz Band Center Freq (MHz)	1 MHz Band Low Freq (MHz)	1 MHz Band High Freq (MHz)	Emission Level (dBm)	Spec (dBm)	Margin (dB)	Result
20	- 10 MHz bin	2580.5	2580	2581	-34.59	-13	-21.59	Complies
	- 9 MHz bin	2581.5	2581	2582	-33.00	-13	-20.00	Complies
	- 8 MHz bin	2582.5	2582	2583	-30.90	-13	-17.90	Complies
	- 7 MHz bin	2583.5	2583	2584	-30.30	-13	-17.30	Complies
	- 6 MHz bin	2584.5	2584	2585	-28.73	-13	-15.73	Complies
	- 5 MHz bin	2585.5	2585	2586	-25.54	-13	-12.54	Complies
	- 4 MHz bin	2586.5	2586	2587	-21.87	-13	-8.87	Complies
	- 3 MHz bin	2587.5	2587	2588	-19.88	-13	-6.88	Complies
	- 2 MHz bin	2588.5	2588	2589	-18.36	-13	-5.36	Complies
	- 1 MHz bin	2589.5	2589	2590	-20.75	-13	-7.75	Complies
	+ 1 MHz bin	2596.5	2596	2597	-17.91	-13	-4.91	Complies
	+ 2 MHz bin	2597.5	2597	2598	-19.08	-13	-6.08	Complies
	+ 3 MHz bin	2598.5	2598	2599	-22.23	-13	-9.23	Complies
	+ 4 MHz bin	2599.5	2599	2600	-25.29	-13	-12.29	Complies
	+ 5 MHz bin	2600.5	2600	2601	-27.92	-13	-14.92	Complies
	+ 6 MHz bin	2601.5	2601	2602	-29.91	-13	-16.91	Complies
	+ 7 MHz bin	2602.5	2602	2603	-30.78	-13	-17.78	Complies
	+ 8 MHz bin	2603.5	2603	2604	-32.83	-13	-19.83	Complies
	+ 9 MHz bin	2604.5	2604	2605	-33.98	-13	-20.98	Complies
	+ 10 MHz bin	2605.5	2605	2606	-36.72	-13	-23.72	Complies

2683 MHz, 6.0 MHz, 2W Channel, 4-QAM

	Channel Center Freq (MHz)		2683		1/22/2007			
	Channel BW (MHz)		6		13 VDC Nom			
	Channel Bandedge - Low (MHz)		2680		4-QAM			
	Channel Bandedge - High (MHz)		2686					
Resolution Bandwidth (kHz)		1 MHz Band Center Freq (MHz)	1 MHz Band Low Freq (MHz)	1 MHz Band High Freq (MHz)	Emission Level (dBm)	Spec (dBm)	Margin (dB)	Result
62	- 10 MHz bin	2670.5	2670	2671	-34.53	-13	-21.53	Complies
	- 9 MHz bin	2671.5	2671	2672	-32.70	-13	-19.70	Complies
	- 8 MHz bin	2672.5	2672	2673	-30.63	-13	-17.63	Complies
	- 7 MHz bin	2673.5	2673	2674	-28.66	-13	-15.66	Complies
	- 6 MHz bin	2674.5	2674	2675	-27.22	-13	-14.22	Complies
	- 5 MHz bin	2675.5	2675	2676	-23.80	-13	-10.80	Complies
	- 4 MHz bin	2676.5	2676	2677	-20.36	-13	-7.36	Complies
	- 3 MHz bin	2677.5	2677	2678	-17.87	-13	-4.87	Complies
	- 2 MHz bin	2678.5	2678	2679	-15.70	-13	-2.70	Complies
	- 1 MHz bin	2679.5	2679	2680	-19.83	-13	-6.83	Complies
	+ 1 MHz bin	2686.5	2686	2687	-20.03	-13	-7.03	Complies
	+ 2 MHz bin	2687.5	2687	2688	-16.98	-13	-3.98	Complies
	+ 3 MHz bin	2688.5	2688	2689	-19.59	-13	-6.59	Complies
	+ 4 MHz bin	2689.5	2689	2690	-22.05	-13	-9.05	Complies
	+ 5 MHz bin	2690.5	2690	2691	-25.53	-13	-12.53	Complies
	+ 6 MHz bin	2691.5	2691	2692	-26.93	-13	-13.93	Complies
	+ 7 MHz bin	2692.5	2692	2693	-28.35	-13	-15.35	Complies
	+ 8 MHz bin	2693.5	2693	2694	-29.67	-13	-16.67	Complies
	+ 9 MHz bin	2694.5	2694	2695	-32.09	-13	-19.09	Complies
	+ 10 MHz bin	2695.5	2695	2696	-34.66	-13	-21.66	Complies

2504.75 MHz, 5.5 MHz, 2W Channel, 4-QAM

	Channel Center Freq (MHz)		2504.75		1/22/2007			
	Channel BW (MHz)		5.5		13 VDC Nom			
	Channel Bandedge - Low (MHz)		2504.75		4-QAM			
	Channel Bandedge - High (MHz)		2507.5					
Resolution Bandwidth (kHz)		1 MHz Band Center Freq (MHz)	1 MHz Band Low Freq (MHz)	1 MHz Band High Freq (MHz)	Emission Level (dBm)	Spec (dBm)	Margin (dB)	Result
56	- 10 MHz bin	2495.25	2494.75	2495.75	-36.04	-13	-23.04	Complies
	- 9 MHz bin	2496.25	2495.75	2496.75	-34.82	-13	-21.82	Complies
	- 8 MHz bin	2497.25	2496.75	2497.75	-32.98	-13	-19.98	Complies
	- 7 MHz bin	2498.25	2497.75	2498.75	-31.60	-13	-18.60	Complies
	- 6 MHz bin	2499.25	2498.75	2499.75	-29.29	-13	-16.29	Complies
	- 5 MHz bin	2500.25	2499.75	2500.75	-26.96	-13	-13.96	Complies
	- 4 MHz bin	2501.25	2500.75	2501.75	-23.71	-13	-10.71	Complies
	- 3 MHz bin	2502.25	2501.75	2502.75	-20.72	-13	-7.72	Complies
	- 2 MHz bin	2503.25	2502.75	2503.75	-18.77	-13	-5.77	Complies
	- 1 MHz bin	2504.25	2503.75	2504.75	-21.93	-13	-8.93	Complies
	+ 1 MHz bin	2508	2507.5	2508.5	-20.32	-13	-7.32	Complies
	+ 2 MHz bin	2509	2508.5	2509.5	-18.30	-13	-5.30	Complies
	+ 3 MHz bin	2510	2509.5	2510.5	-22.30	-13	-9.30	Complies
	+ 4 MHz bin	2511	2510.5	2511.5	-24.55	-13	-11.55	Complies
	+ 5 MHz bin	2512	2511.5	2512.5	-26.95	-13	-13.95	Complies
	+ 6 MHz bin	2513	2512.5	2513.5	-29.73	-13	-16.73	Complies
	+ 7 MHz bin	2514	2513.5	2514.5	-31.29	-13	-18.29	Complies
	+ 8 MHz bin	2515	2514.5	2515.5	-32.23	-13	-19.23	Complies
	+ 9 MHz bin	2516	2515.5	2516.5	-34.39	-13	-21.39	Complies
	+ 10 MHz bin	2517	2516.5	2517.5	-35.87	-13	-22.87	Complies

2565.25 MHz, 5.5 MHz, 2W Channel, 4-QAM

	Channel Center Freq (MHz)		2565.25		1/22/2007			
	Channel BW (MHz)		5.5		13 VDC Nom			
	Channel Bandedge - Low (MHz)		2562.5		4-QAM			
	Channel Bandedge - High (MHz)		2568					
Resolution Bandwidth (kHz)		1 MHz Band Center Freq (MHz)	1 MHz Band Low Freq (MHz)	1 MHz Band High Freq (MHz)	Emission Level (dBm)	Spec (dBm)	Margin (dB)	Result
56	- 10 MHz bin	2553	2552.5	2553.5	-35.86	-13	-22.86	Complies
	- 9 MHz bin	2554	2553.5	2554.5	-33.85	-13	-20.85	Complies
	- 8 MHz bin	2555	2554.5	2555.5	-32.70	-13	-19.70	Complies
	- 7 MHz bin	2556	2555.5	2556.5	-30.49	-13	-17.49	Complies
	- 6 MHz bin	2557	2556.5	2557.5	-28.54	-13	-15.54	Complies
	- 5 MHz bin	2558	2557.5	2558.5	-27.26	-13	-14.26	Complies
	- 4 MHz bin	2559	2558.5	2559.5	-23.27	-13	-10.27	Complies
	- 3 MHz bin	2560	2559.5	2560.5	-20.74	-13	-7.74	Complies
	- 2 MHz bin	2561	2560.5	2561.5	-18.95	-13	-5.95	Complies
	- 1 MHz bin	2562	2561.5	2562.5	-22.55	-13	-9.55	Complies
	+ 1 MHz bin	2568.5	2568	2569	-21.76	-13	-8.76	Complies
	+ 2 MHz bin	2569.5	2569	2570	-18.71	-13	-5.71	Complies
	+ 3 MHz bin	2570.5	2570	2571	-20.81	-13	-7.81	Complies
	+ 4 MHz bin	2571.5	2571	2572	-25.12	-13	-12.12	Complies
	+ 5 MHz bin	2572.5	2572	2573	-27.25	-13	-14.25	Complies
	+ 6 MHz bin	2573.5	2573	2574	-29.54	-13	-16.54	Complies
	+ 7 MHz bin	2574.5	2574	2575	-31.46	-13	-18.46	Complies
	+ 8 MHz bin	2575.5	2575	2576	-33.69	-13	-20.69	Complies
	+ 9 MHz bin	2576.5	2576	2577	-35.96	-13	-22.96	Complies
	+ 10 MHz bin	2577.5	2577	2578	-37.53	-13	-24.53	Complies

2626.75 MHz, 5.5 MHz, 2W Channel, 4-QAM

	Channel Center Freq (MHz)		2626.75		1/22/2007			
	Channel BW (MHz)		5.5		13 VDC Nom			
	Channel Bandedge - Low (MHz)		2624		4-QAM			
	Channel Bandedge - High (MHz)		2629.5					
Resolution Bandwidth (kHz)		1 MHz Band Center Freq (MHz)	1 MHz Band Low Freq (MHz)	1 MHz Band High Freq (MHz)	Emission Level (dBm)	Spec (dBm)	Margin (dB)	Result
56	- 10 MHz bin	2614.5	2614	2615	-38.59	-13	-25.59	Complies
	- 9 MHz bin	2615.5	2615	2616	-37.45	-13	-24.45	Complies
	- 8 MHz bin	2616.5	2616	2617	-36.00	-13	-23.00	Complies
	- 7 MHz bin	2617.5	2617	2618	-34.31	-13	-21.31	Complies
	- 6 MHz bin	2618.5	2618	2619	-31.81	-13	-18.81	Complies
	- 5 MHz bin	2619.5	2619	2620	-29.34	-13	-16.34	Complies
	- 4 MHz bin	2620.5	2620	2621	-25.31	-13	-12.31	Complies
	- 3 MHz bin	2621.5	2621	2622	-21.66	-13	-8.66	Complies
	- 2 MHz bin	2622.5	2622	2623	-19.31	-13	-6.31	Complies
	- 1 MHz bin	2623.5	2623	2624	-23.28	-13	-10.28	Complies
	+ 1 MHz bin	2630	2629.5	2630.5	-22.79	-13	-9.79	Complies
	+ 2 MHz bin	2631	2630.5	2631.5	-20.08	-13	-7.08	Complies
	+ 3 MHz bin	2632	2631.5	2632.5	-22.97	-13	-9.97	Complies
	+ 4 MHz bin	2633	2632.5	2633.5	-26.27	-13	-13.27	Complies
	+ 5 MHz bin	2634	2633.5	2634.5	-29.01	-13	-16.01	Complies
	+ 6 MHz bin	2635	2634.5	2635.5	-30.88	-13	-17.88	Complies
	+ 7 MHz bin	2636	2635.5	2636.5	-32.81	-13	-19.81	Complies
	+ 8 MHz bin	2637	2636.5	2637.5	-34.96	-13	-21.96	Complies
	+ 9 MHz bin	2638	2637.5	2638.5	-37.16	-13	-24.16	Complies
	+ 10 MHz bin	2639	2638.5	2639.5	-37.81	-13	-24.81	Complies

2687.25 MHz, 5.5 MHz, 2W Channel, 4-QAM

	Channel Center Freq (MHz)			2687.25		1/22/2007		
	Channel BW (MHz)			5.5		13 VDC Nom		
	Channel Bandedge - Low (MHz)			2684.5		4-QAM		
	Channel Bandedge - High (MHz)			2690				
Resolution Bandwidth (kHz)		1 MHz Band Center Freq (MHz)	1 MHz Band Low Freq (MHz)	1 MHz Band High Freq (MHz)	Emission Level (dBm)	Spec (dBm)	Margin (dB)	Result
56	- 10 MHz bin	2675	2674.5	2675.5	-36.11	-13	-23.11	Complies
	- 9 MHz bin	2676	2675.5	2676.5	-34.08	-13	-21.08	Complies
	- 8 MHz bin	2677	2676.5	2677.5	-32.69	-13	-19.69	Complies
	- 7 MHz bin	2678	2677.5	2678.5	-29.88	-13	-16.88	Complies
	- 6 MHz bin	2679	2678.5	2679.5	-27.31	-13	-14.31	Complies
	- 5 MHz bin	2680	2679.5	2680.5	-26.44	-13	-13.44	Complies
	- 4 MHz bin	2681	2680.5	2681.5	-21.44	-13	-8.44	Complies
	- 3 MHz bin	2682	2681.5	2682.5	-17.88	-13	-4.88	Complies
	- 2 MHz bin	2683	2682.5	2683.5	-15.55	-13	-2.55	Complies
	- 1 MHz bin	2684	2683.5	2684.5	-23.25	-13	-10.25	Complies
	+ 1 MHz bin	2690.5	2690	2691	-21.02	-13	-8.02	Complies
	+ 2 MHz bin	2691.5	2691	2692	-17.71	-13	-4.71	Complies
	+ 3 MHz bin	2692.5	2692	2693	-20.19	-13	-7.19	Complies
	+ 4 MHz bin	2693.5	2693	2694	-22.29	-13	-9.29	Complies
	+ 5 MHz bin	2694.5	2694	2695	-26.26	-13	-13.26	Complies
	+ 6 MHz bin	2695.5	2695	2696	-28.87	-13	-15.87	Complies
	+ 7 MHz bin	2696.5	2696	2697	-30.44	-13	-17.44	Complies
	+ 8 MHz bin	2697.5	2697	2698	-31.89	-13	-18.89	Complies
	+ 9 MHz bin	2698.5	2698	2699	-33.74	-13	-20.74	Complies
	+ 10 MHz bin	2699.5	2699	2700	-37.07	-13	-24.07	Complies

5.4 Occupied and Emission Bandwidth

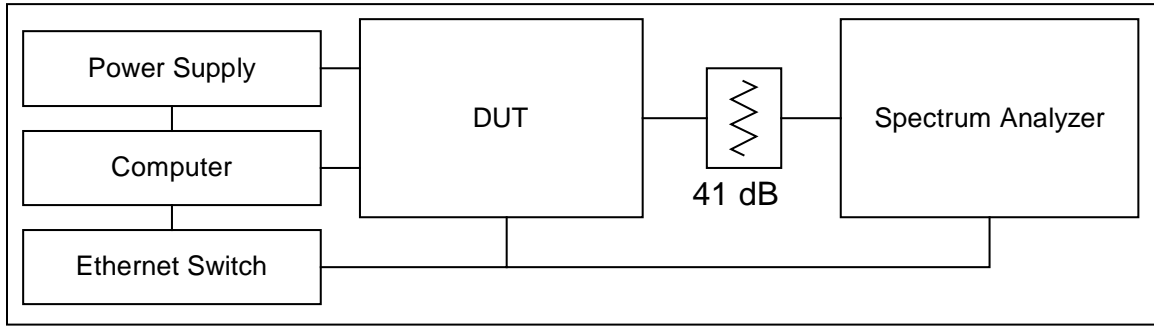
FCC Rules: 2.1049, 27.53(l)(6)

FCC Requirements: Report Results

Standard: ANSI C63.4-2003
American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

Test Procedure: The Orthogonal Frequency Division Multiplexing (OFDM) modulated Time Division Duplex (TDD) RF signal from the test unit is applied to a spectrum analyzer. The bandwidth of the signal is recorded by measuring the modulation bandwidth with the built in measurement function in the spectrum analyzer. The transmitter is enabled in test mode with the attached computer. The RF loss of the attenuators and coax has been measured and is included in the spectrum analyzer offset level. Measurements are performed at frequencies across the band, for each of the modulation formats available (4, 16, 64, and 16L QAM) and channel bandwidths (5.5 MHz and 6 MHz).

Test Conditions: **Test Frequencies:** 2499, 2593, 2683 MHz (6.0 MHz bandwidth)
2504.75, 2565.25, 2626.75, and 2687.25 (5.5 MHz bandwidth)
Temperature: 25°C
Supply Voltage: 120 VAC / 60 Hz Nominal
to DUT Power Supply



Test Setup

5.4.1. Occupied and Emission Bandwidth Test Results Summary

Occupied Bandwidth (MHz) for 99.0% (-20 dB)					
Freq (MHz)	Bandwidth (MHz)	4 QAM	16 QAM	64 QAM	16 QAM Lite
2499	6.0	5.476	5.477	5.478	5.478
2593	6.0	5.477	5.477	5.477	5.477
2683	6.0	5.476	5.474	5.476	5.476
2504.75	5.5	4.954	4.955	4.954	4.956
2565.25	5.5	4.955	4.951	4.952	4.961
2626.75	5.5	4.953	4.955	4.955	4.954
2687.25	5.5	4.956	4.956	4.961	4.952

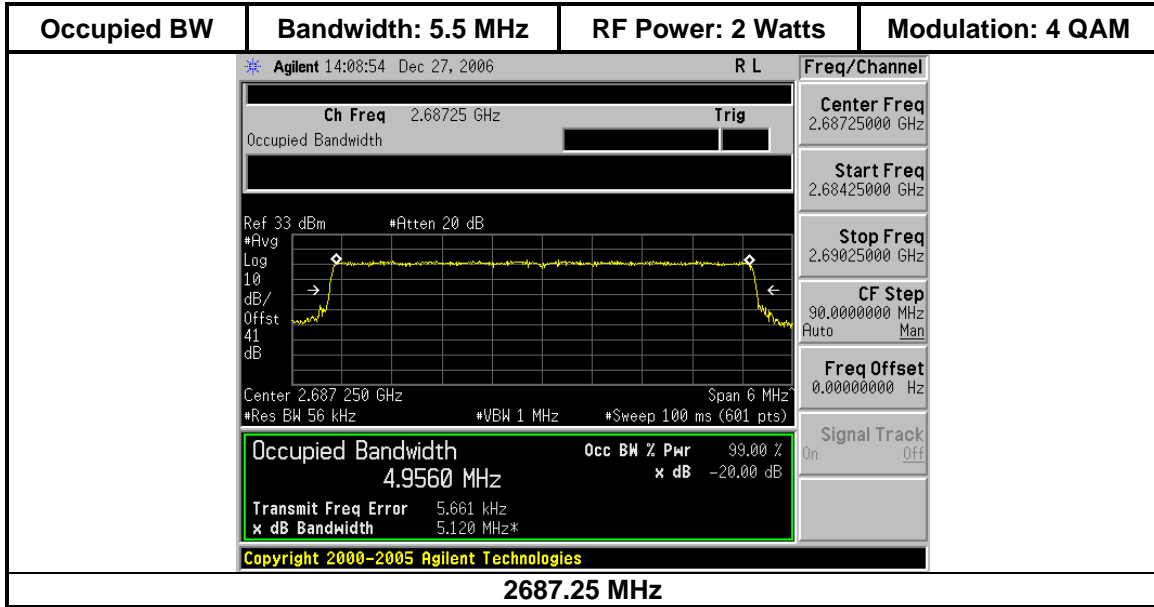
Emission Bandwidth (MHz) for 99.75% (-26 dB)					
Freq (MHz)	Bandwidth (MHz)	4 QAM	16 QAM	64 QAM	16 QAM Lite
2499	6.0	5.548	5.544	5.549	5.546
2593	6.0	5.548	5.549	5.548	5.549
2687	6.0	5.548	5.551	5.547	5.548
2504.75	5.5	5.016	5.024	5.019	5.020
2565.25	5.5	5.021	5.019	5.021	5.020
2626.75	5.5	5.022	5.021	5.020	5.021
2687.25	5.5	5.017	5.018	5.019	5.019

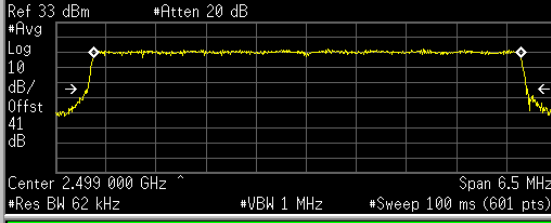
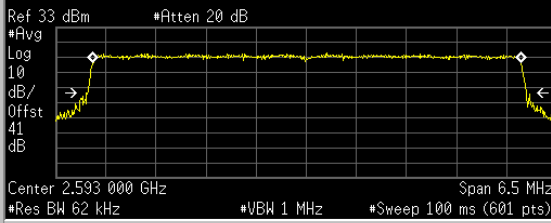
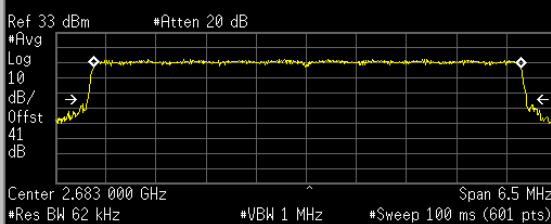
5.4.2. Occupied Bandwidth Spectrum Analyzer Plots

The following are spectrum analyzer plots of the 4 QAM data in the preceding tables. The plots for the 16 QAM, 64 QAM, and 16 QAM Lite modulation levels are similar and are shown in the Appendix.

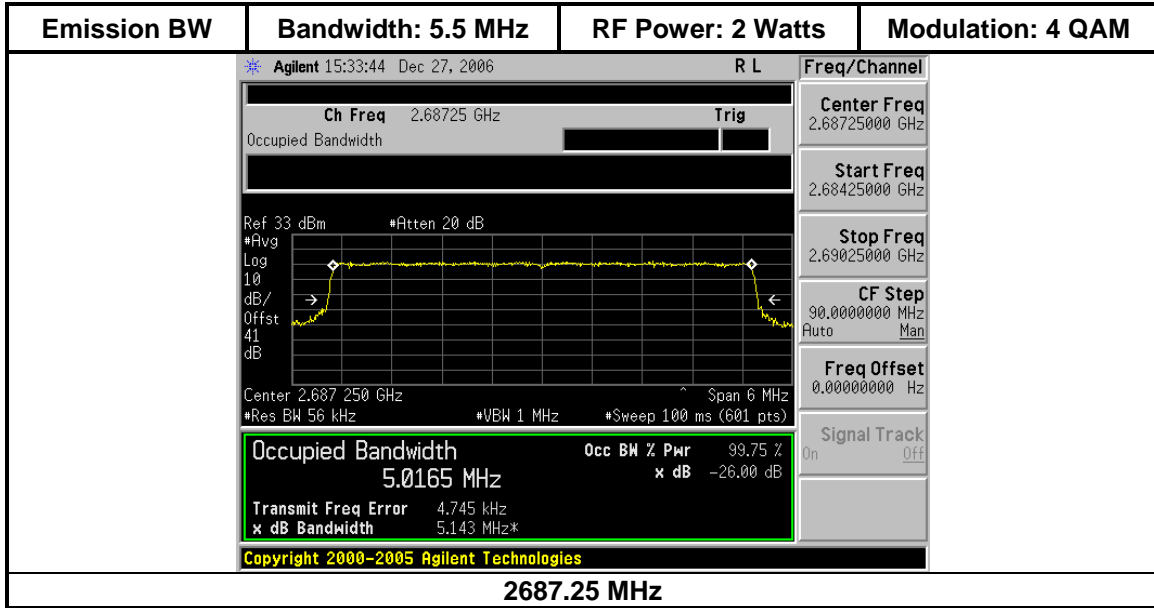
Occupied BW	Bandwidth: 6.0 MHz	RF Power: 2 Watts	Modulation: 4 QAM
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 14:02:24 Dec 27, 2006 L</p> <p>Ch Freq 2.499 GHz Trig</p> <p>Occupied Bandwidth</p> <p>Ref 33 dBm #Atten 20 dB</p> <p>#Avg Log 10 dB/Offst 41 dB</p> <p>Center 2.499 000 GHz Span 6.5 MHz</p> <p>#Res BW 62 kHz #VBW 620 kHz #Sweep 100 ms (601 pts)</p> <p>Occupied Bandwidth 5.4760 MHz</p> <p>Transmit Freq Error 7.141 kHz</p> <p>x dB Bandwidth 5.664 MHz*</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -20.00 dB</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%;"> <p>Freq/Channel</p> <p>Center Freq 2.49900000 GHz</p> <p>Start Freq 2.49575000 GHz</p> <p>Stop Freq 2.50225000 GHz</p> <p>CF Step 90.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>			
2499 MHz			
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 14:03:09 Dec 27, 2006 R L</p> <p>Ch Freq 2.593 GHz Trig</p> <p>Occupied Bandwidth</p> <p>Ref 33 dBm #Atten 20 dB</p> <p>#Avg Log 10 dB/Offst 41 dB</p> <p>Center 2.593 000 GHz Span 6.5 MHz</p> <p>#Res BW 62 kHz #VBW 620 kHz #Sweep 100 ms (601 pts)</p> <p>Occupied Bandwidth 5.4772 MHz</p> <p>Transmit Freq Error 6.000 kHz</p> <p>x dB Bandwidth 5.658 MHz*</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -20.00 dB</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%;"> <p>Freq/Channel</p> <p>Center Freq 2.59300000 GHz</p> <p>Start Freq 2.58975000 GHz</p> <p>Stop Freq 2.59625000 GHz</p> <p>CF Step 90.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>			
2593 MHz			
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 14:04:30 Dec 27, 2006 R L</p> <p>Ch Freq 2.683 GHz Trig</p> <p>Occupied Bandwidth</p> <p>Ref 33 dBm #Atten 20 dB</p> <p>#Avg Log 10 dB/Offst 41 dB</p> <p>Center 2.683 000 GHz Span 6.5 MHz</p> <p>#Res BW 62 kHz #VBW 620 kHz #Sweep 100 ms (601 pts)</p> <p>Occupied Bandwidth 5.4757 MHz</p> <p>Transmit Freq Error 7.009 kHz</p> <p>x dB Bandwidth 5.657 MHz*</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -20.00 dB</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%;"> <p>Freq/Channel</p> <p>Center Freq 2.68300000 GHz</p> <p>Start Freq 2.67975000 GHz</p> <p>Stop Freq 2.68625000 GHz</p> <p>CF Step 90.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>			
2683 MHz			

Occupied BW	Bandwidth: 5.5 MHz	RF Power: 2 Watts	Modulation: 4 QAM
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 14:06:08 Dec 27, 2006 L</p> <p>Ch Freq 2.50475 GHz Trig</p> <p>Occupied Bandwidth</p> <p>Ref 33 dBm #Atten 20 dB</p> <p>#Avg Log 10 dB/Offst 41 dB</p> <p>Center 2.504 750 GHz Span 6 MHz</p> <p>#Res BW 56 kHz #VBW 1 MHz #Sweep 100 ms (601 pts)</p> <p>Occupied Bandwidth 4.9540 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -20.00 dB</p> <p>Transmit Freq Error 5.453 kHz</p> <p>x dB Bandwidth 5.118 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%;"> <p>Freq/Channel</p> <p>Center Freq 2.50475000 GHz</p> <p>Start Freq 2.50175000 GHz</p> <p>Stop Freq 2.50775000 GHz</p> <p>CF Step 90.0000000 MHz</p> <p>Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>			
2504.75 MHz			
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 14:07:04 Dec 27, 2006 R L</p> <p>Ch Freq 2.56525 GHz Trig</p> <p>Occupied Bandwidth</p> <p>Ref 33 dBm #Atten 20 dB</p> <p>#Avg Log 10 dB/Offst 41 dB</p> <p>Center 2.565 250 GHz Span 6 MHz</p> <p>#Res BW 56 kHz #VBW 1 MHz #Sweep 100 ms (601 pts)</p> <p>Occupied Bandwidth 4.9554 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -20.00 dB</p> <p>Transmit Freq Error 4.521 kHz</p> <p>x dB Bandwidth 5.114 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%;"> <p>Freq/Channel</p> <p>Center Freq 2.56525000 GHz</p> <p>Start Freq 2.56225000 GHz</p> <p>Stop Freq 2.56825000 GHz</p> <p>CF Step 90.0000000 MHz</p> <p>Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>			
2565.25 MHz			
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 14:08:02 Dec 27, 2006 R L</p> <p>Ch Freq 2.62675 GHz Trig</p> <p>Occupied Bandwidth</p> <p>Ref 33 dBm #Atten 20 dB</p> <p>#Avg Log 10 dB/Offst 41 dB</p> <p>Center 2.626 750 GHz Span 6 MHz</p> <p>#Res BW 56 kHz #VBW 1 MHz #Sweep 100 ms (601 pts)</p> <p>Occupied Bandwidth 4.9529 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -20.00 dB</p> <p>Transmit Freq Error 6.881 kHz</p> <p>x dB Bandwidth 5.112 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%;"> <p>Freq/Channel</p> <p>Center Freq 2.62675000 GHz</p> <p>Start Freq 2.62375000 GHz</p> <p>Stop Freq 2.62975000 GHz</p> <p>CF Step 90.0000000 MHz</p> <p>Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>			
2626.75 MHz			



Emission BW	Bandwidth: 6.0 MHz	RF Power: 2 Watts	Modulation: 4 QAM
<div style="display: flex; justify-content: space-between;"> Agilent 14:10:35 Dec 27, 2006 R L </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Ch Freq 2.499 GHz Trig</p> <p>Occupied Bandwidth</p>  <p>Center 2.499 000 GHz Span 6.5 MHz Res BW 62 kHz VBW 1 MHz Sweep 100 ms (601 pts)</p> <p>Occupied Bandwidth 5.5475 MHz Occ BW % Pwr 99.75 % x dB -26.00 dB</p> <p>Transmit Freq Error 6.579 kHz x dB Bandwidth 5.705 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%; border-left: 1px solid black; padding-left: 5px;"> <p>Freq/Channel</p> <p>Center Freq 2.49900000 GHz</p> <p>Start Freq 2.49575000 GHz</p> <p>Stop Freq 2.50225000 GHz</p> <p>CF Step 90.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div> <p style="text-align: center;">2499 MHz</p>			
<div style="display: flex; justify-content: space-between;"> Agilent 14:12:05 Dec 27, 2006 R L </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Ch Freq 2.593 GHz Trig</p> <p>Occupied Bandwidth</p>  <p>Center 2.593 000 GHz Span 6.5 MHz Res BW 62 kHz VBW 1 MHz Sweep 100 ms (601 pts)</p> <p>Occupied Bandwidth 5.5478 MHz Occ BW % Pwr 99.75 % x dB -26.00 dB</p> <p>Transmit Freq Error 5.302 kHz x dB Bandwidth 5.688 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%; border-left: 1px solid black; padding-left: 5px;"> <p>Freq/Channel</p> <p>Center Freq 2.59300000 GHz</p> <p>Start Freq 2.58975000 GHz</p> <p>Stop Freq 2.59625000 GHz</p> <p>CF Step 90.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div> <p style="text-align: center;">2593 MHz</p>			
<div style="display: flex; justify-content: space-between;"> Agilent 14:13:16 Dec 27, 2006 R L </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Ch Freq 2.683 GHz Trig</p> <p>Occupied Bandwidth</p>  <p>Center 2.683 000 GHz Span 6.5 MHz Res BW 62 kHz VBW 1 MHz Sweep 100 ms (601 pts)</p> <p>Occupied Bandwidth 5.5476 MHz Occ BW % Pwr 99.75 % x dB -26.00 dB</p> <p>Transmit Freq Error 7.018 kHz x dB Bandwidth 5.692 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%; border-left: 1px solid black; padding-left: 5px;"> <p>Freq/Channel</p> <p>Center Freq 2.68300000 GHz</p> <p>Start Freq 2.67975000 GHz</p> <p>Stop Freq 2.68625000 GHz</p> <p>CF Step 90.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div> <p style="text-align: center;">2683 MHz</p>			

Emission BW	Bandwidth: 5.5 MHz	RF Power: 2 Watts	Modulation: 4 QAM
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 15:30:44 Dec 27, 2006 L</p> <p>Ch Freq 2.50475 GHz Trig</p> <p>Occupied Bandwidth</p> <p>Ref 33 dBm *Atten 20 dB</p> <p>#Avg Log 10 dB/Offst 41 dB</p> <p>Center 2.504 750 GHz ^ Span 6 MHz</p> <p>#Res BW 56 kHz #VBW 1 MHz #Sweep 100 ms (601 pts)</p> <p>Occupied Bandwidth 5.0158 MHz</p> <p>Occ BW % Pwr 99.75 % x dB -26.00 dB</p> <p>Transmit Freq Error 7.333 kHz</p> <p>x dB Bandwidth 5.145 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%;"> <p>Freq/Channel</p> <p>Center Freq 2.50475000 GHz</p> <p>Start Freq 2.50175000 GHz</p> <p>Stop Freq 2.50775000 GHz</p> <p>CF Step 90.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>			
2504.75 MHz			
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 15:31:51 Dec 27, 2006 R L</p> <p>Ch Freq 2.56525 GHz Trig</p> <p>Occupied Bandwidth</p> <p>Ref 33 dBm *Atten 20 dB</p> <p>#Avg Log 10 dB/Offst 41 dB</p> <p>Center 2.565 250 GHz ^ Span 6 MHz</p> <p>#Res BW 56 kHz #VBW 1 MHz #Sweep 100 ms (601 pts)</p> <p>Occupied Bandwidth 5.0206 MHz</p> <p>Occ BW % Pwr 99.75 % x dB -26.00 dB</p> <p>Transmit Freq Error 5.118 kHz</p> <p>x dB Bandwidth 5.144 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%;"> <p>Freq/Channel</p> <p>Center Freq 2.56525000 GHz</p> <p>Start Freq 2.56225000 GHz</p> <p>Stop Freq 2.56825000 GHz</p> <p>CF Step 90.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>			
2565.25 MHz			
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Agilent 15:32:47 Dec 27, 2006 R L</p> <p>Ch Freq 2.62675 GHz Trig</p> <p>Occupied Bandwidth</p> <p>Ref 33 dBm *Atten 20 dB</p> <p>#Avg Log 10 dB/Offst 41 dB</p> <p>Center 2.626 750 GHz ^ Span 6 MHz</p> <p>#Res BW 56 kHz #VBW 1 MHz #Sweep 100 ms (601 pts)</p> <p>Occupied Bandwidth 5.0221 MHz</p> <p>Occ BW % Pwr 99.75 % x dB -26.00 dB</p> <p>Transmit Freq Error 6.460 kHz</p> <p>x dB Bandwidth 5.153 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p> </div> <div style="width: 35%;"> <p>Freq/Channel</p> <p>Center Freq 2.62675000 GHz</p> <p>Start Freq 2.62375000 GHz</p> <p>Stop Freq 2.62975000 GHz</p> <p>CF Step 90.0000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> </div> </div>			
2626.75 MHz			



5.5 Transmitter Spurious Emissions

FCC Rules: 2.1051, 2.1049, 2.1057

Standard: TIA-603-C
TIA Standard, Land Mobile FM or PM Communications
Equipment, Measurement and Performance Standards

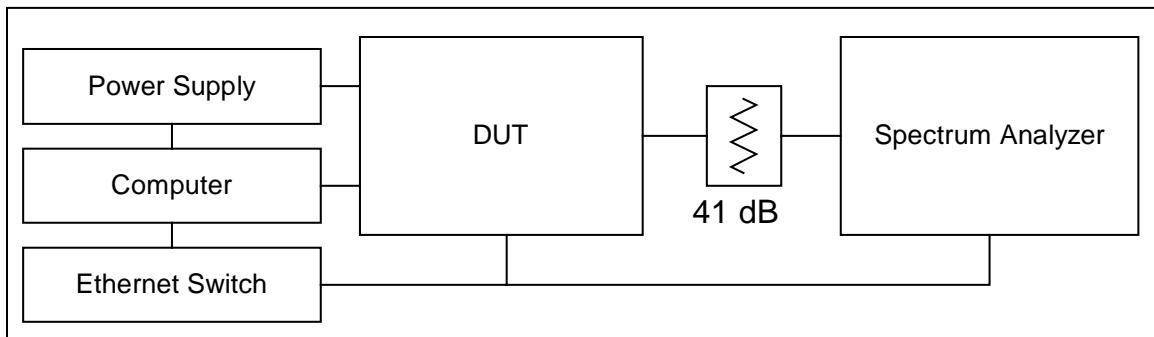
Test Procedure: The Orthogonal Frequency Division Multiplexing (OFDM) modulated Time Division Duplex (TDD) RF signal from the test unit is applied to a spectrum analyzer thru an attenuator and coax, or, for harmonic measurements, through an attenuator, high pass filter and coax that was calibrated for RF loss at each harmonic frequency being tested. The transmission is recorded from 9 kHz to 26.5 GHz in multiple plots. The transmitter is enabled in test mode with the attached computer. The RF loss of the attenuator and coax is included in the spectrum analyzer offset level. Measurements are performed at frequencies across the band and both channel bandwidths (5.5 MHz and 6 MHz). A modulation level of 4 QAM was used for all measurements.

One data plot from each channel bandwidth is included for measurements below the BRS/EBS frequency band (below 2.48 GHz). All other channels measured had similar-looking spectral plots. For tests above the BRS/EBS frequency (2.7-26.5 GHz), plots for all channels are included.

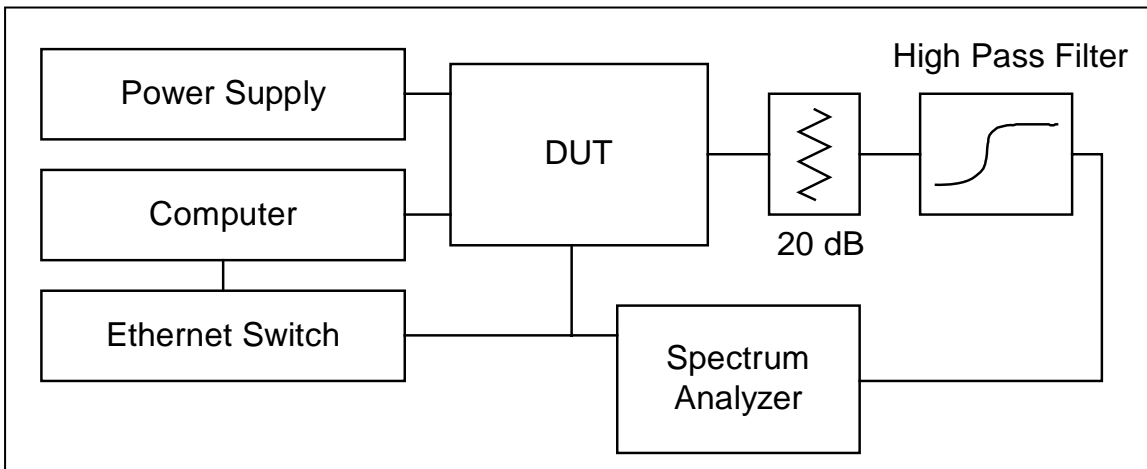
For harmonic tests, plots are shown for the second harmonic of all test channels. Then the worst channel (2504.75 MHz) was chosen to show compliance for harmonics three to ten. The other channels tested have similar or lower harmonic levels.

Test Conditions: **Channels:** 2499, 2593, and 2687 MHz (6.0 MHz bandwidth)
2.504.75, 2565.25, 2626.75, 2687.5 MHz (5.5 MHz bandwidth)
Temperature: 25°C
Supply Voltage: 120 VAC / 60 Hz Nominal to the DUT Power Supply

Test Results: Passes conducted emissions from 9 kHz to 26.86 MHz. There were no measurable harmonic emissions above the third harmonic on any test channel.



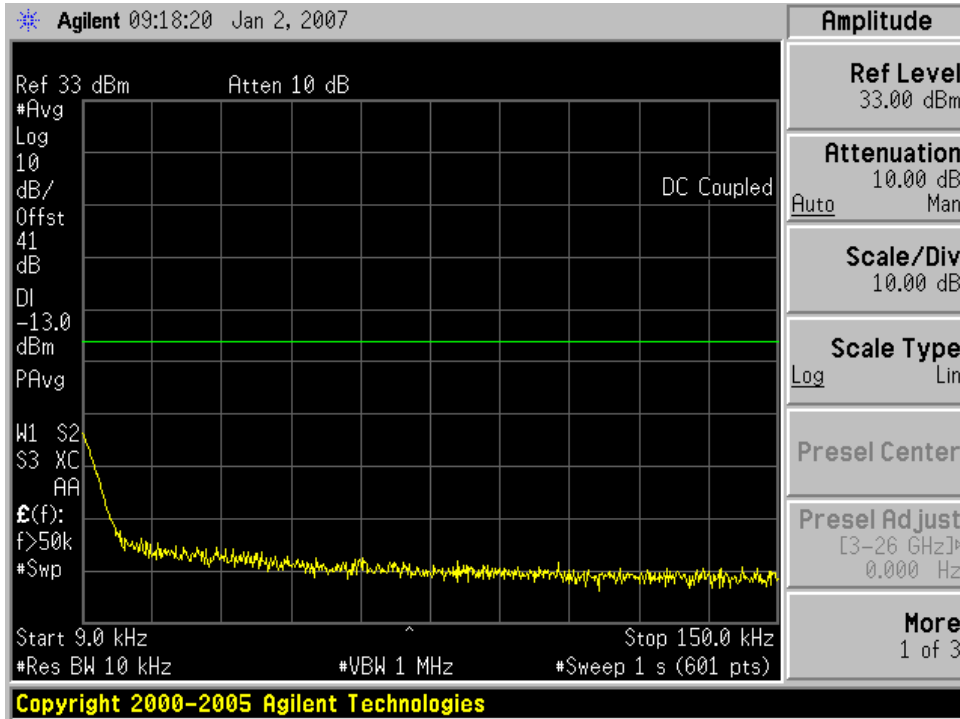
Spurious Emissions Test Setup



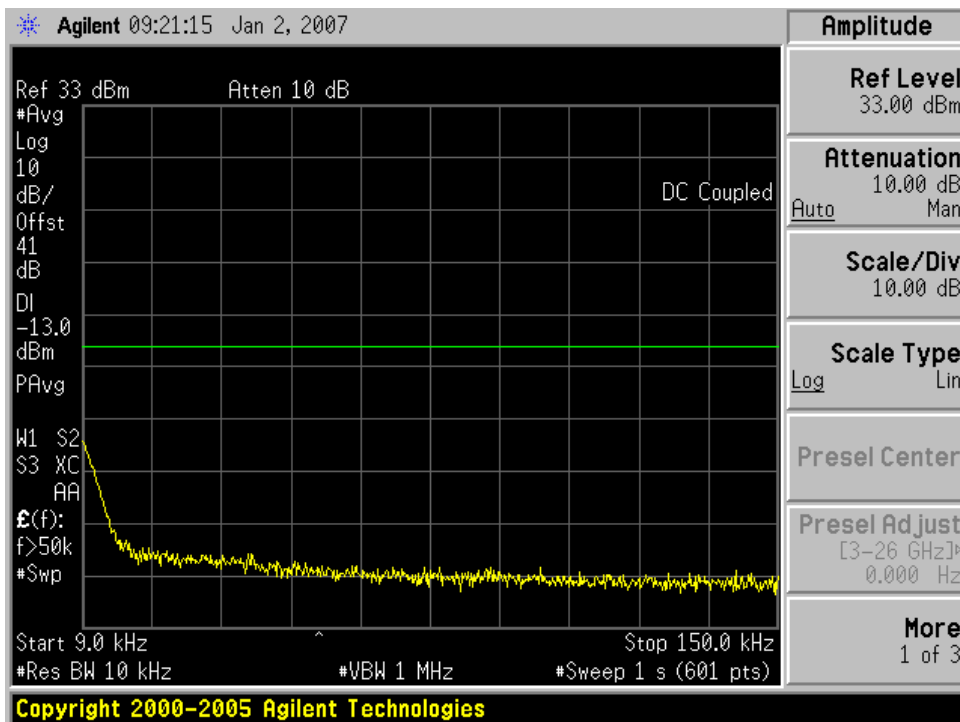
Harmonic Emissions Test Setup

5.5.1. Transmitter Spurious Emissions Plots

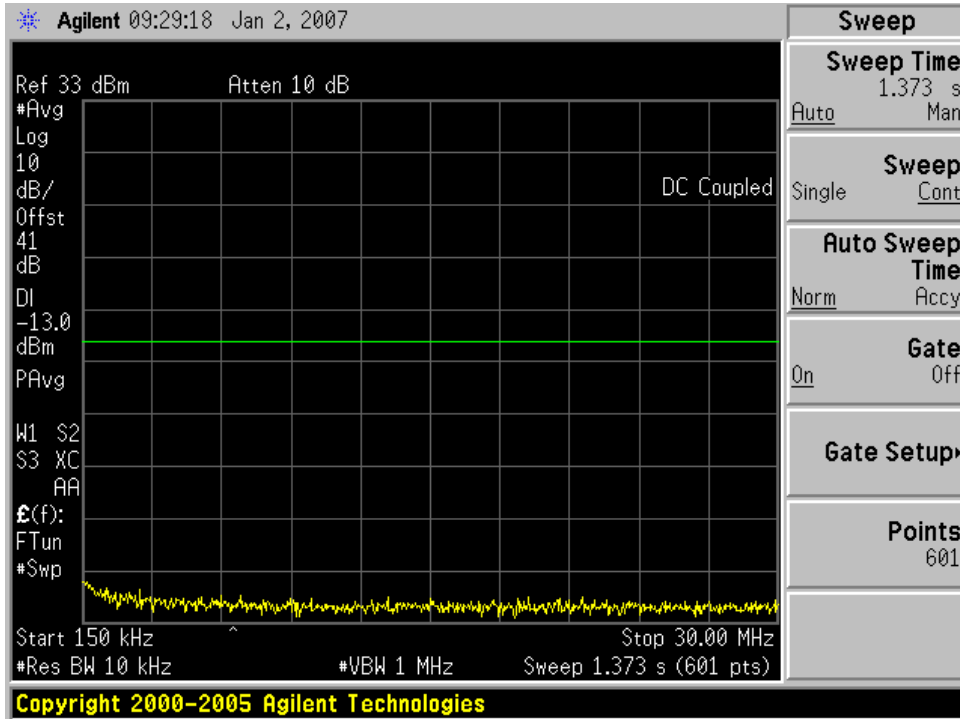
For frequencies below 2.48 GHz, plots for only the 2499 MHz (6 MHz bandwidth) and 2504.75 MHz (5.5 MHz bandwidth) channels are shown on the pages which follow. The plots for the other channels are similar and are located in the Appendix. For frequencies above 2.48 GHz, plots for all test channels are shown.



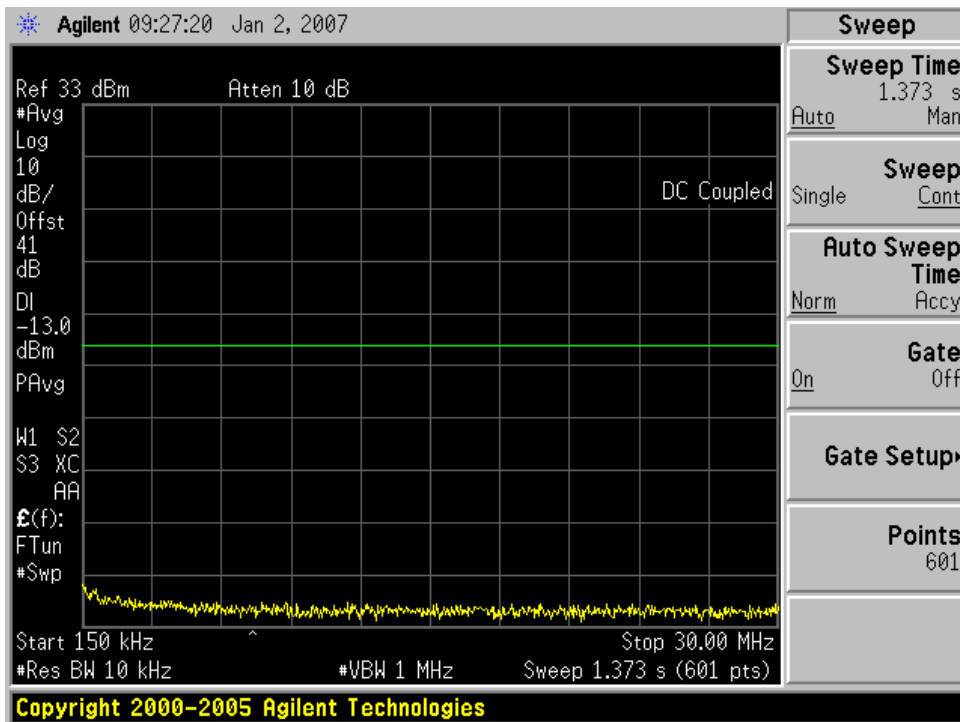
9 kHz – 150 kHz (2499 MHz, 6 MHz Channel)



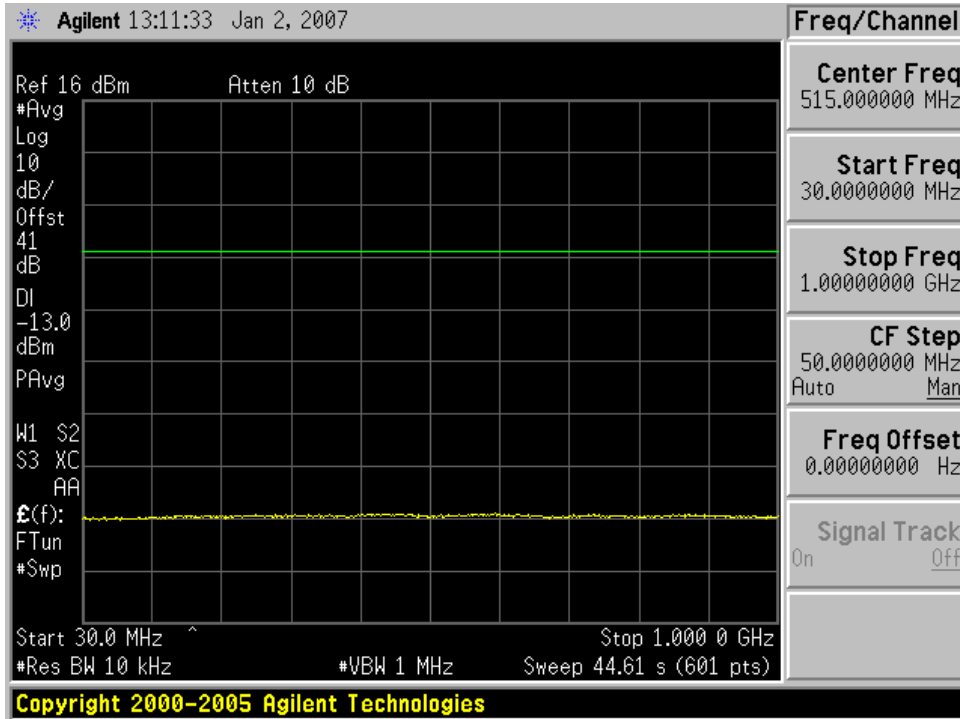
9 kHz – 150 kHz (2504.75 MHz, 5.5 MHz Channel)



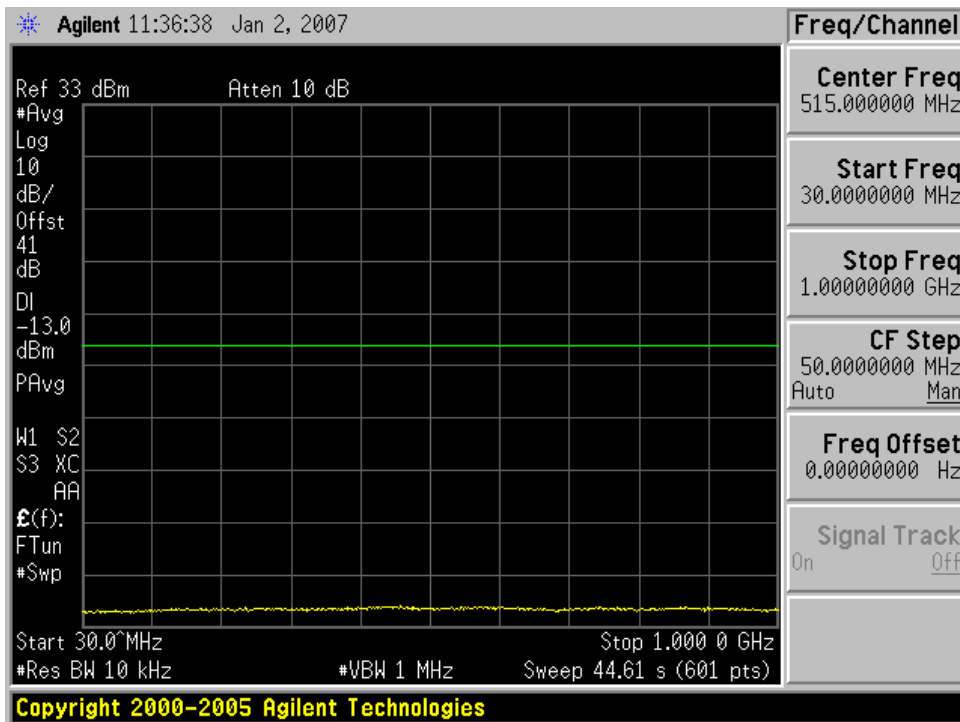
150 kHz – 30 MHz (2499 MHz, 6 MHz Channel)



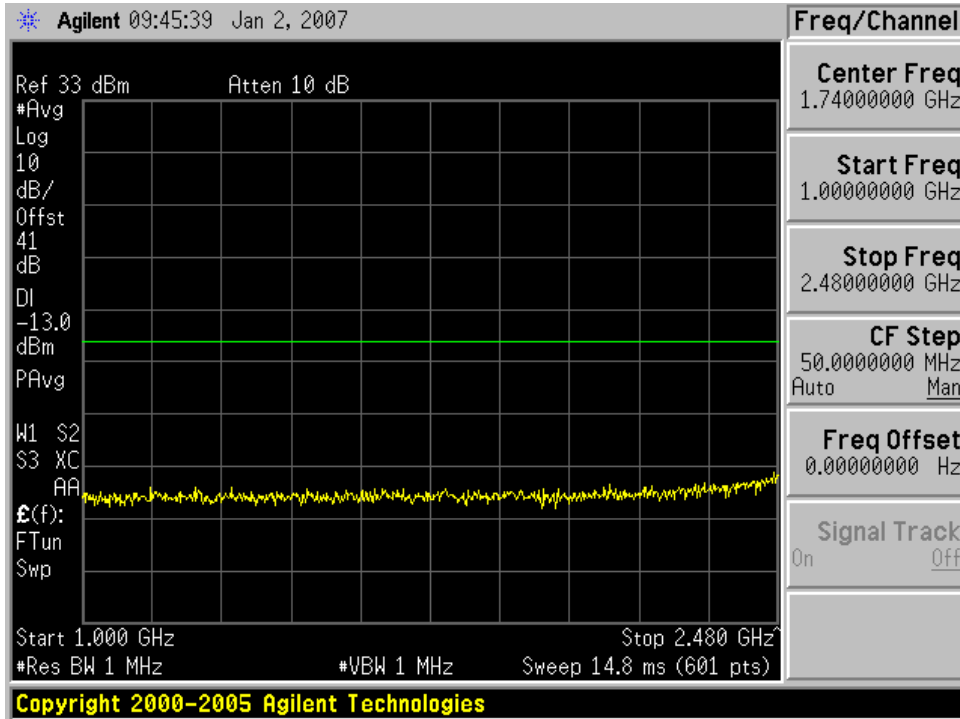
150 kHz – 30 MHz (2504.75 MHz, 5.5 MHz Channel)



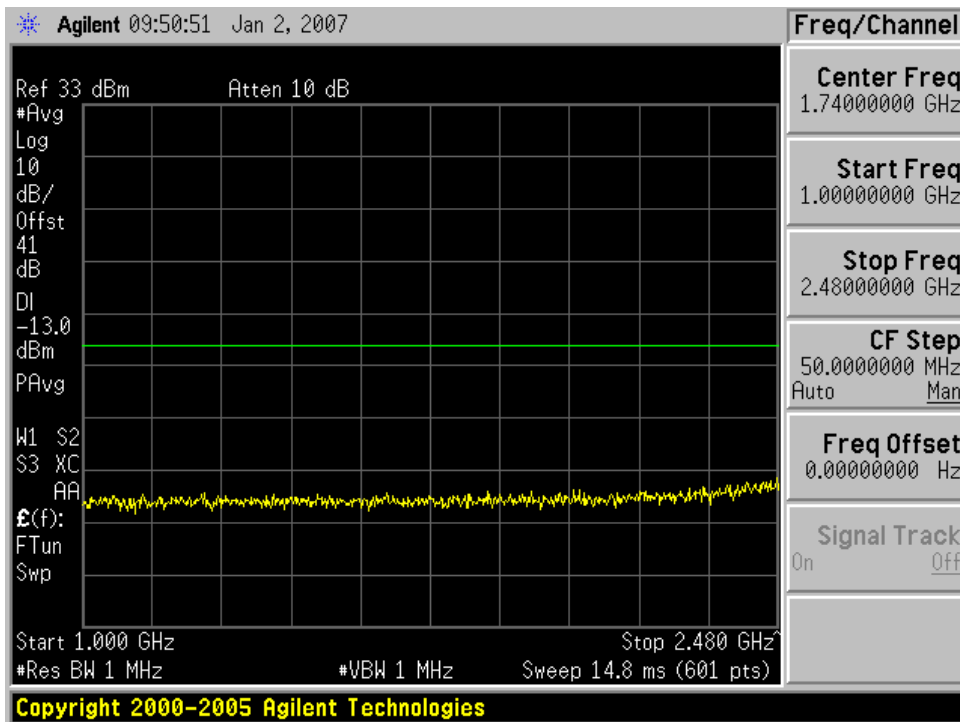
30 MHz – 1 GHz (2499 MHz, 6 MHz Channel)



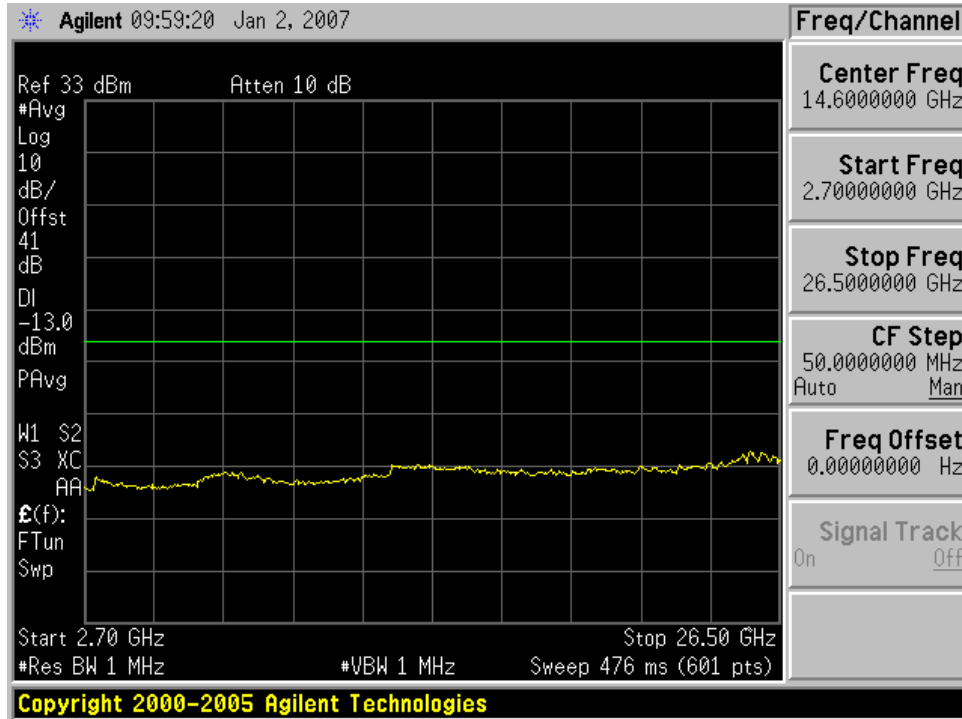
30 MHz – 1 GHz (2504.75 MHz, 5.5 MHz Channel)



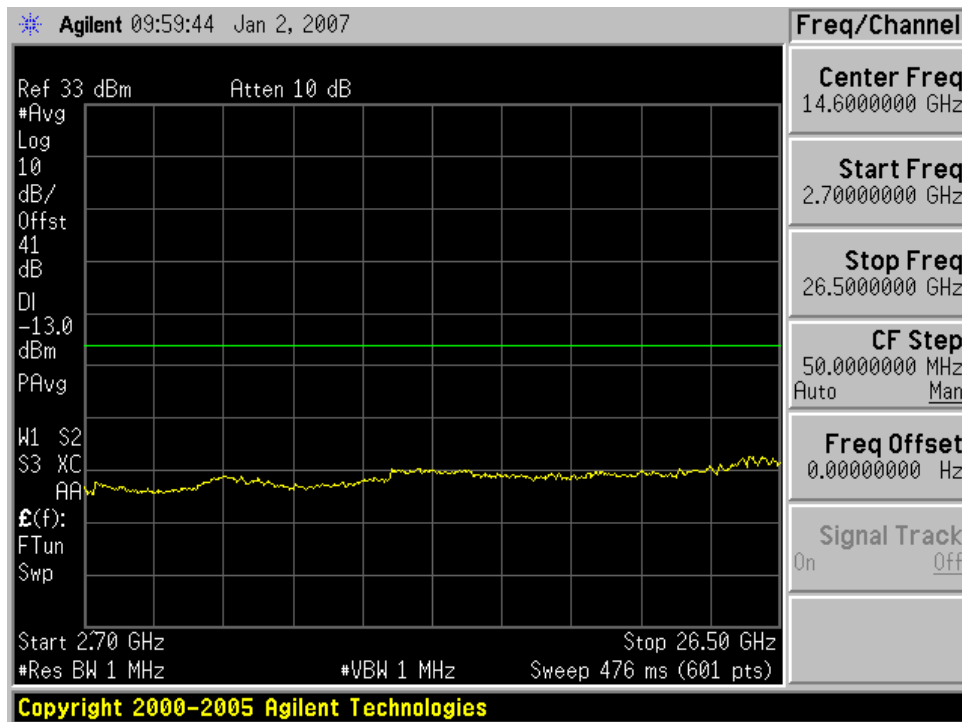
1 GHz – 2.48 GHz (2499 MHz, 6 MHz Channel)



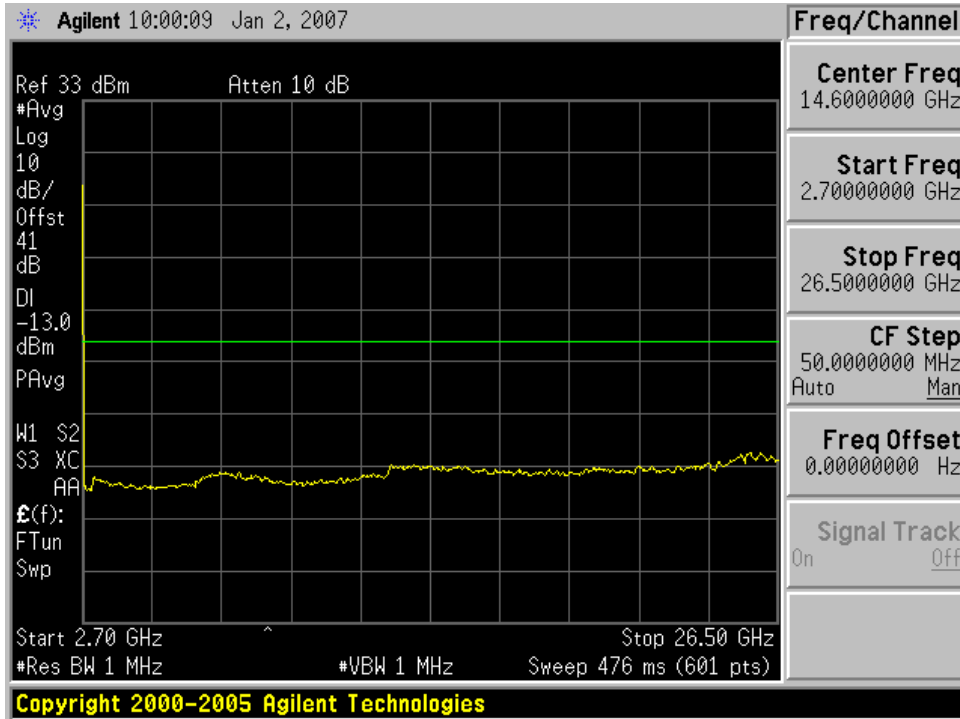
1 GHz – 2.48 GHz (2504.75 MHz, 5.5 MHz Channel)



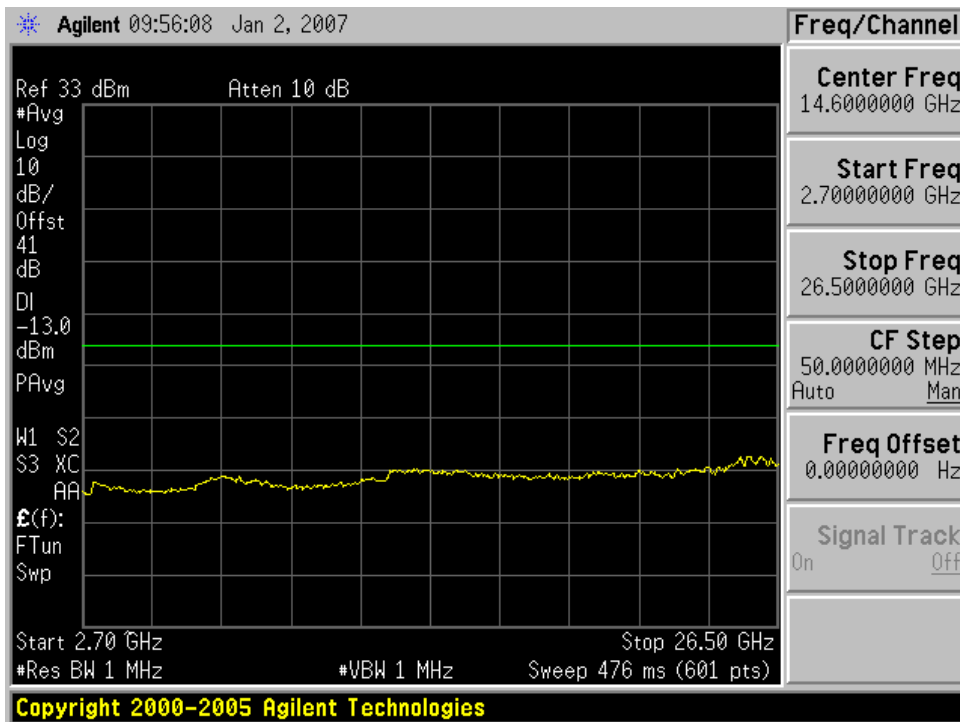
2.7 GHz – 26.5 GHz (2499 MHz, 6 MHz Channel)



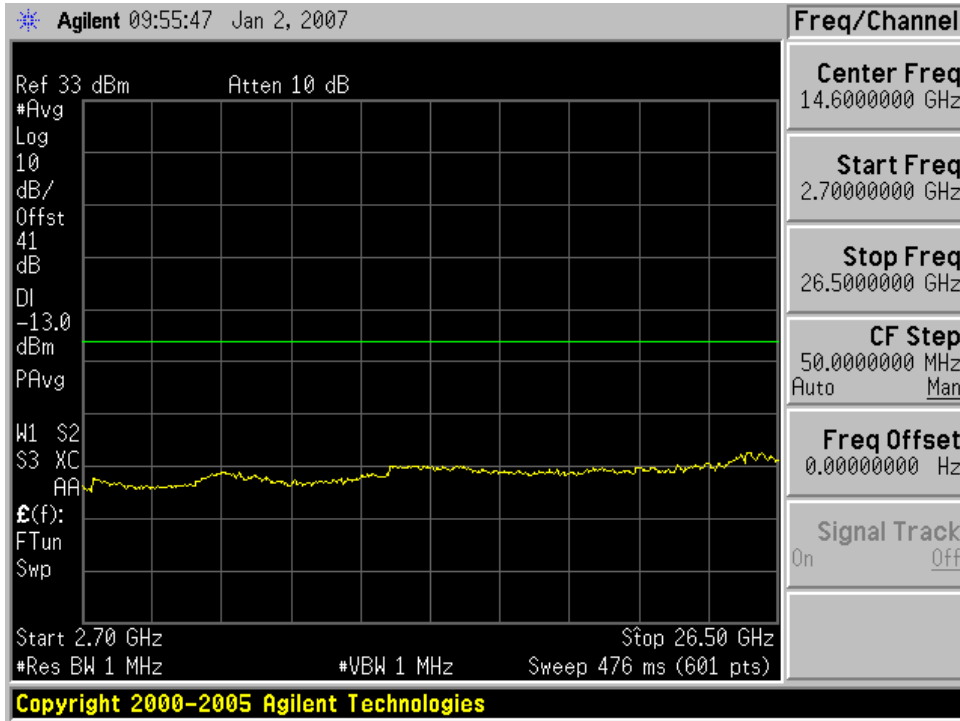
2.7 GHz – 26.5 GHz (2593 MHz, 6 MHz Channel)



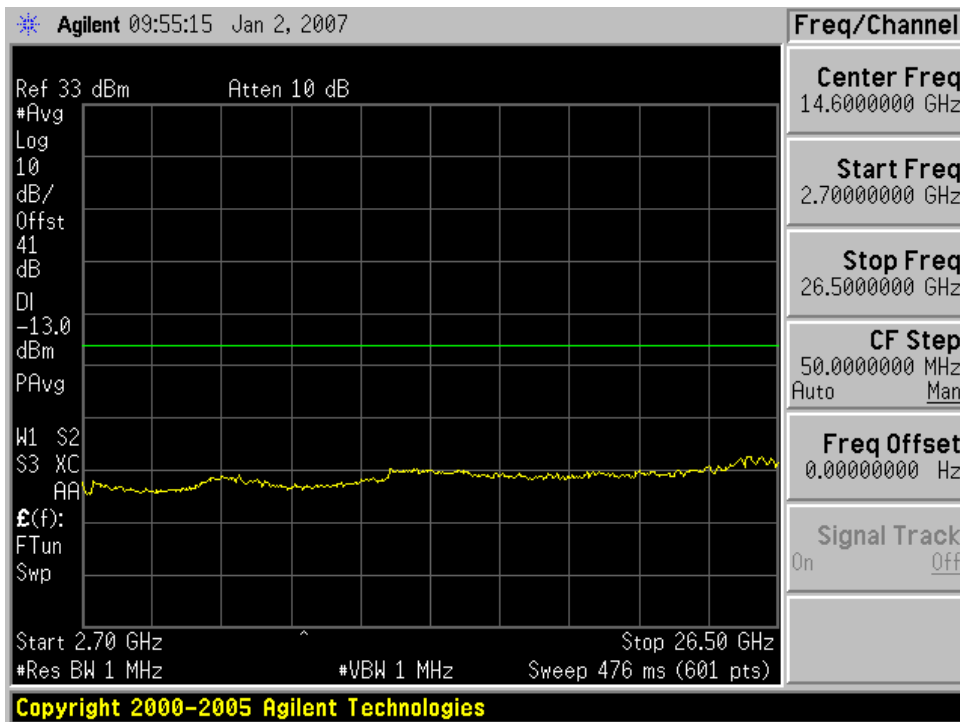
2.7 GHz – 26.5 GHz (2683 MHz, 6 MHz Channel)



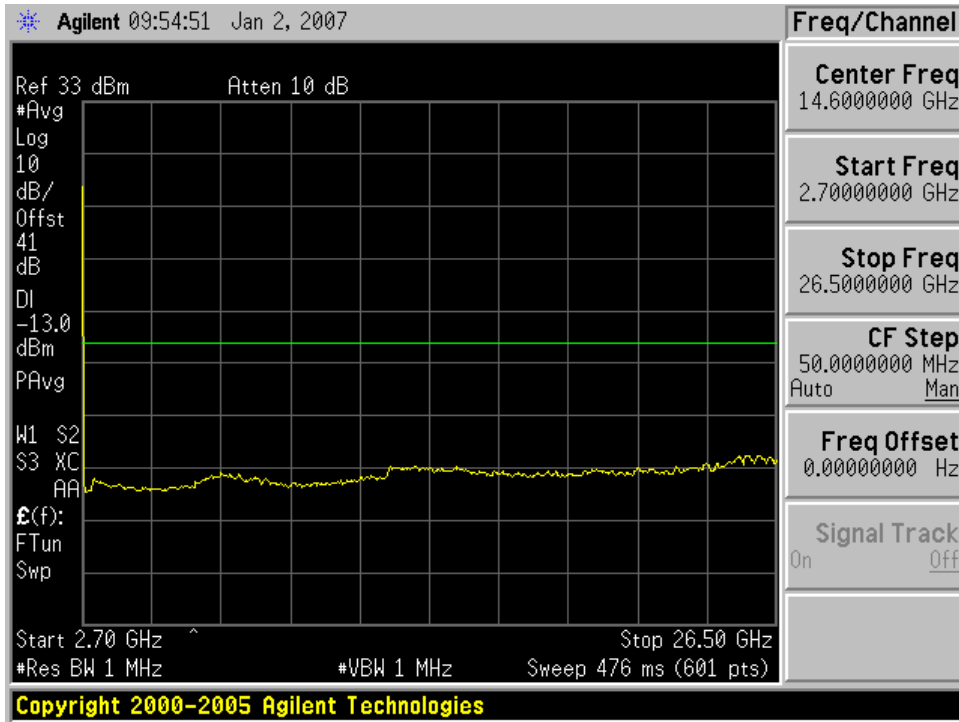
2.7 GHz – 26.5 GHz (2504.75 MHz, 5.5 MHz Channel)



2.7 GHz – 26.5 GHz (2565.25 MHz, 5.5 MHz Channel)



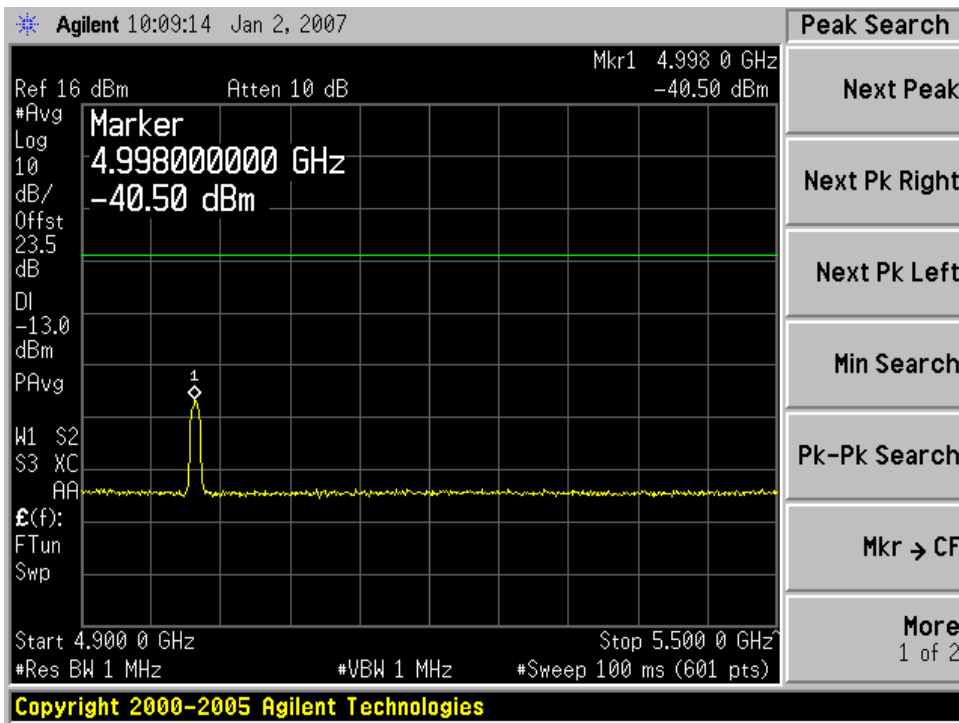
2.7 GHz – 26.5 GHz (2626.75 MHz, 5.5 MHz Channel)



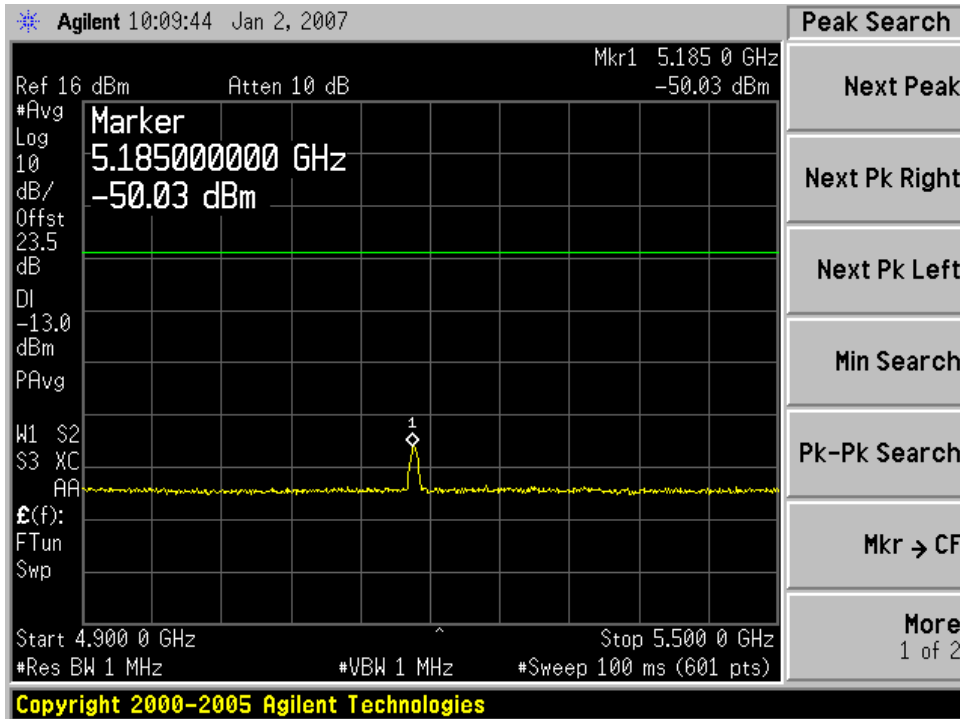
2.7 GHz – 26.5 GHz (2687.25 MHz, 5.5 MHz Channel)

5.5.2. Second Harmonic Emissions Plots

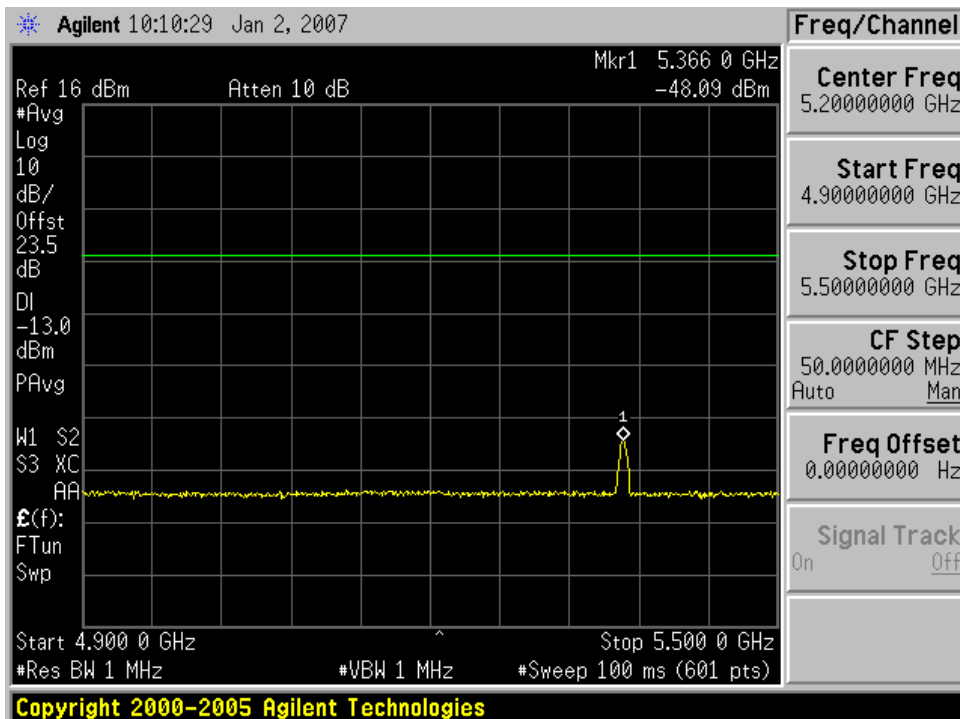
For harmonic tests, plots are shown for the second harmonic of all test channels.



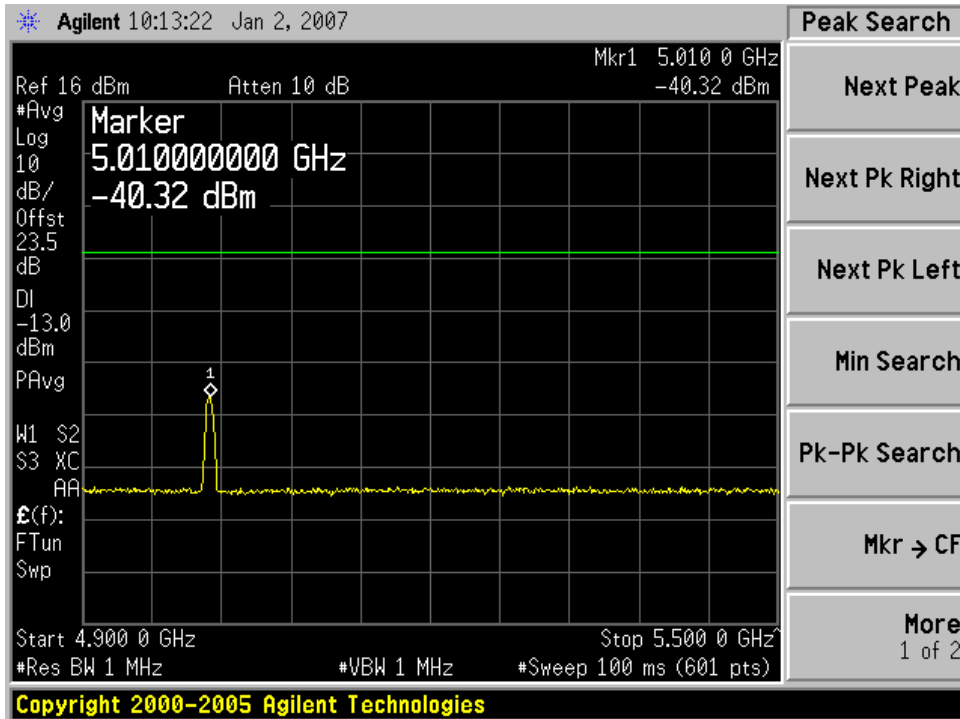
4.9 GHz – 5.5 GHz (2499 MHz, 6 MHz Channel)



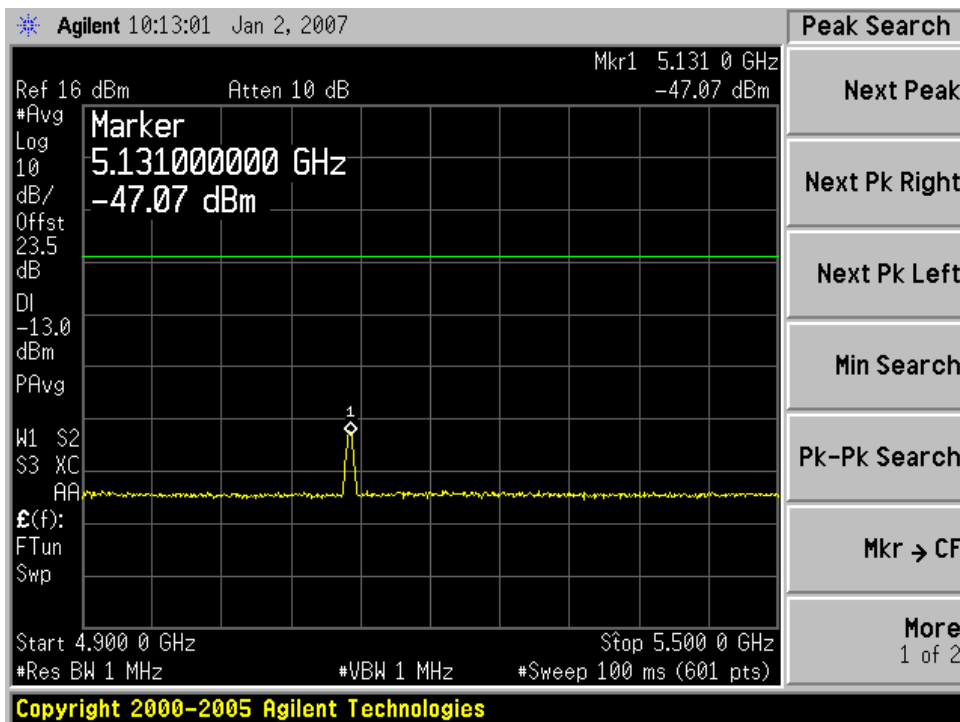
4.9 GHz – 5.5 GHz (2593 MHz, 6 MHz Channel)



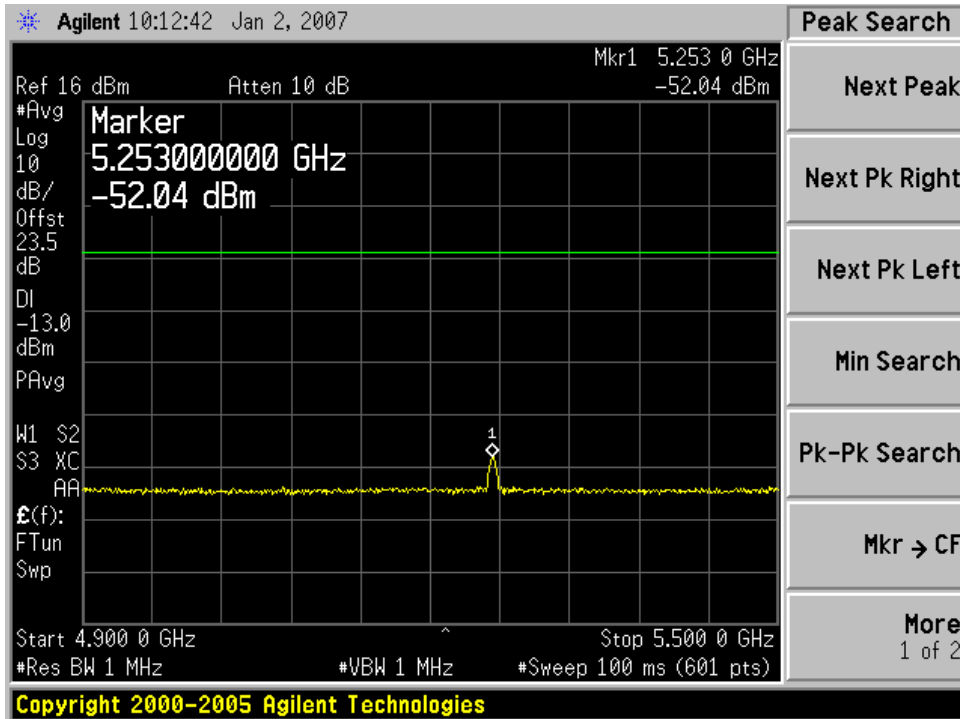
4.9 GHz – 5.5 GHz (2687 MHz, 6 MHz Channel)



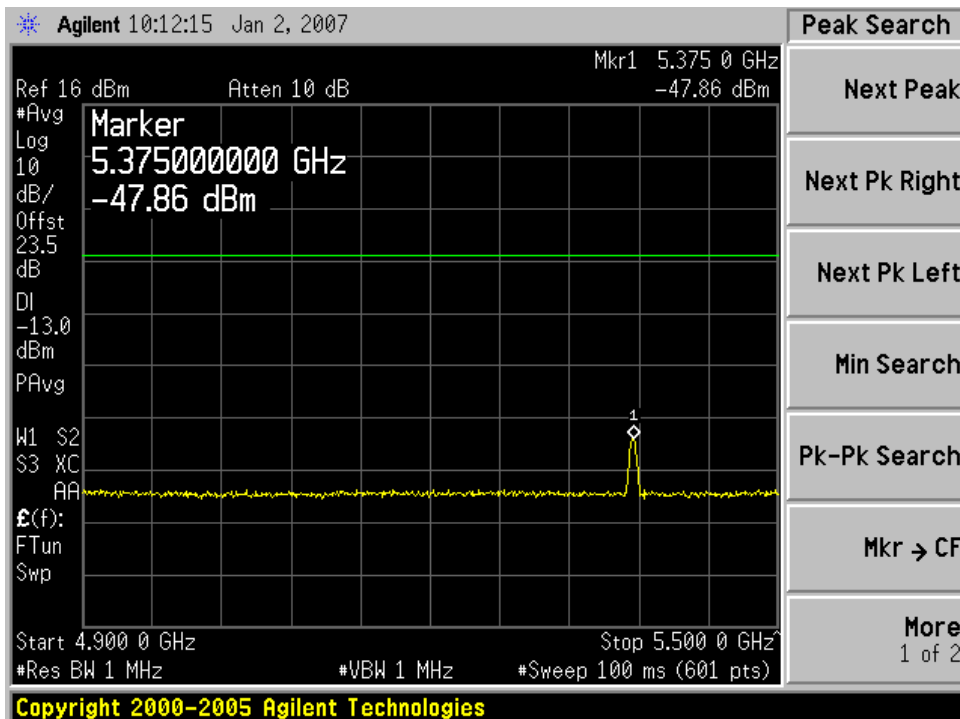
4.9 GHz – 5.5 GHz (2504.75 MHz, 5.5 MHz Channel)



4.9 GHz – 5.5 GHz (2565.25 MHz, 5.5 MHz Channel)



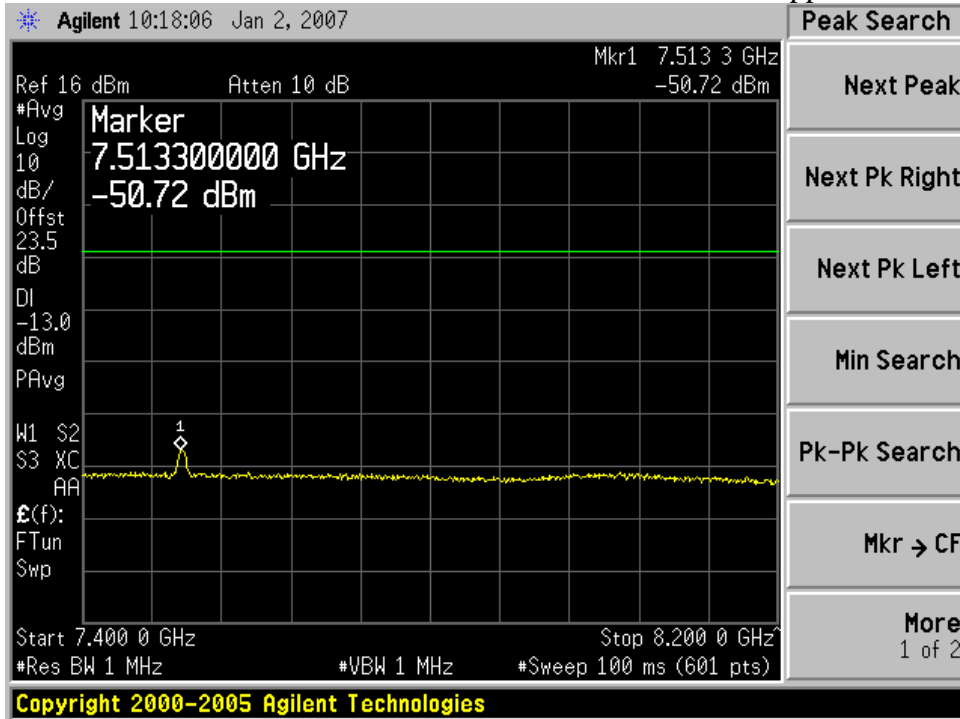
4.9 GHz – 5.5 GHz (2626.75 MHz, 5.5 MHz Channel)



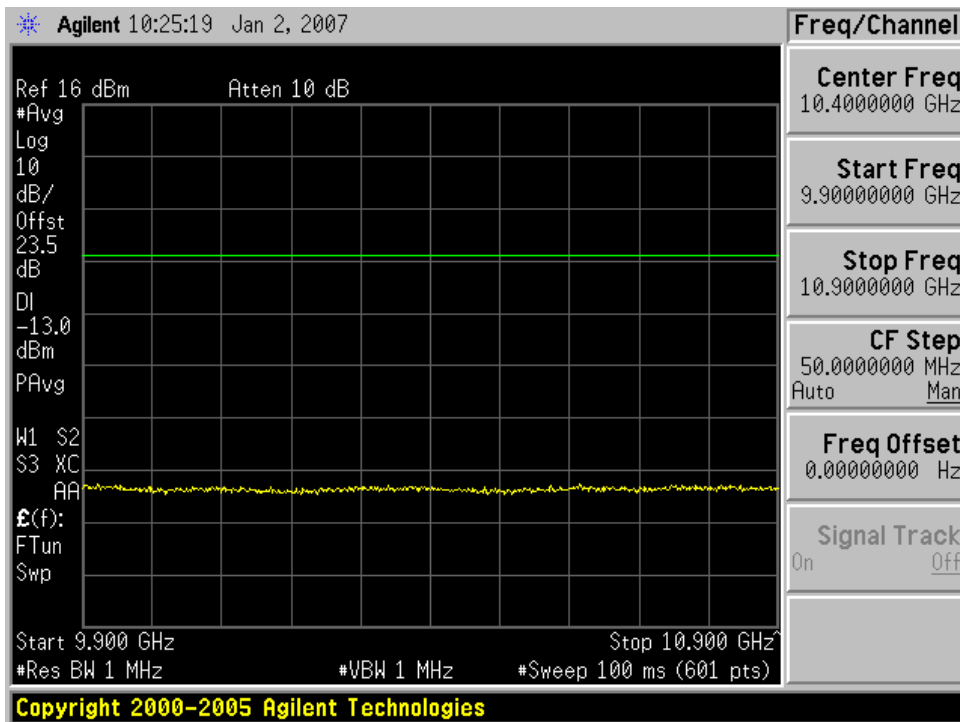
4.9 GHz – 5.5 GHz (2687.25 MHz, 5.5 MHz Channel)

5.5.3. Harmonic 3-10 Emissions Plots

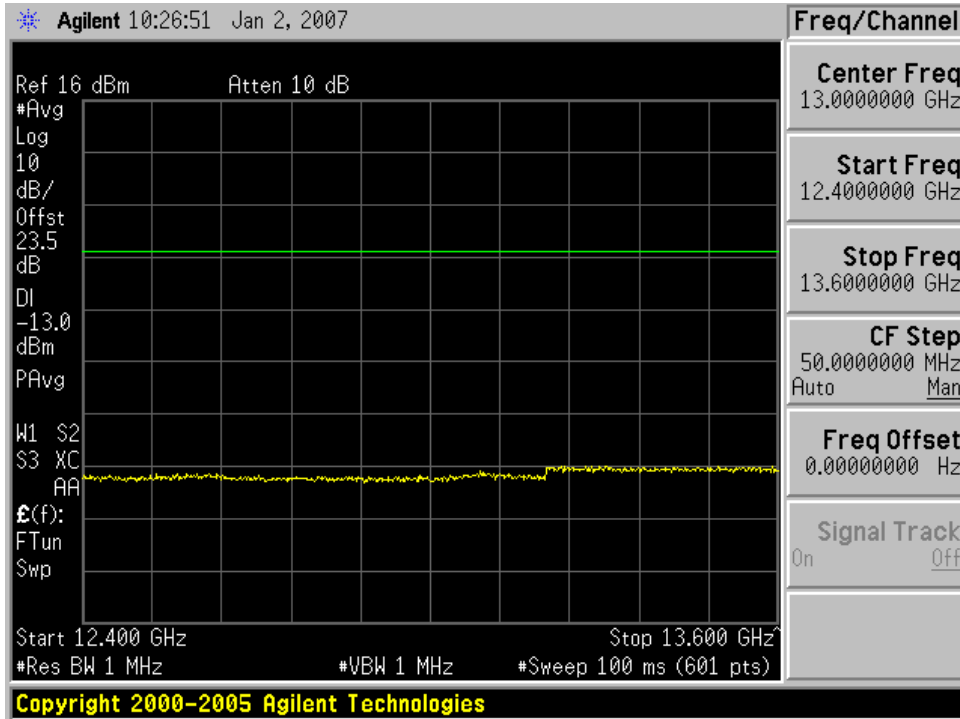
The worst case channel (2504.75 MHz/5.5 MHz BW) was chosen to show compliance for harmonics 3 to 10. The other channels tested have similar or lower harmonic levels. Plots of harmonics 3-5 for the other test channels are shown in the Appendix.



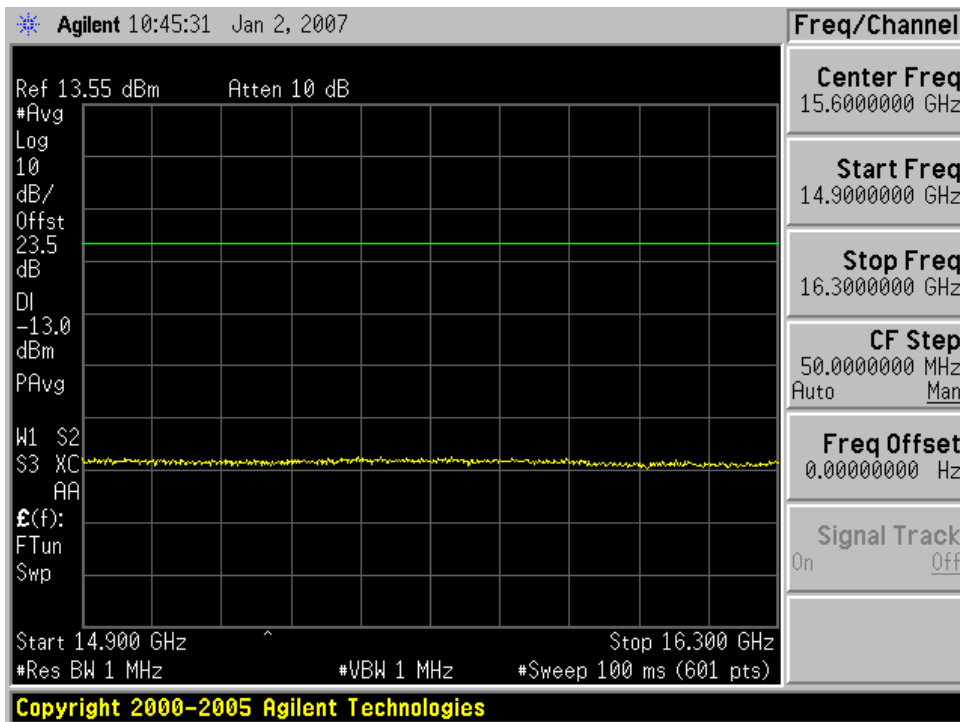
3rd Harmonic of 2504.75 MHz (5.5 MHz Channel)



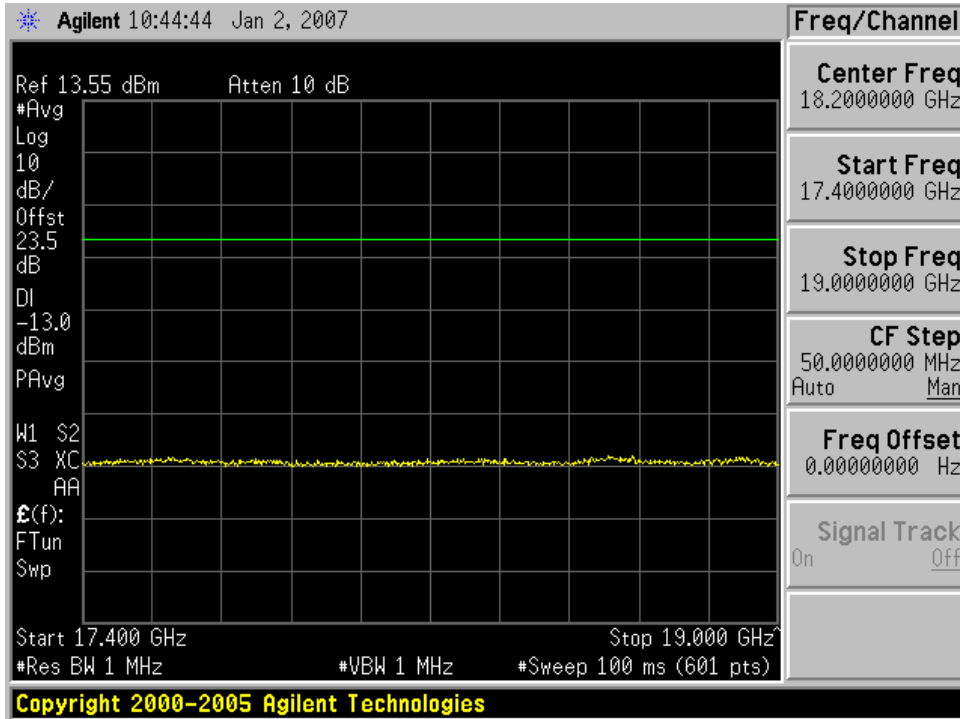
4th Harmonic of 2504.75 MHz (5.5 MHz Channel)



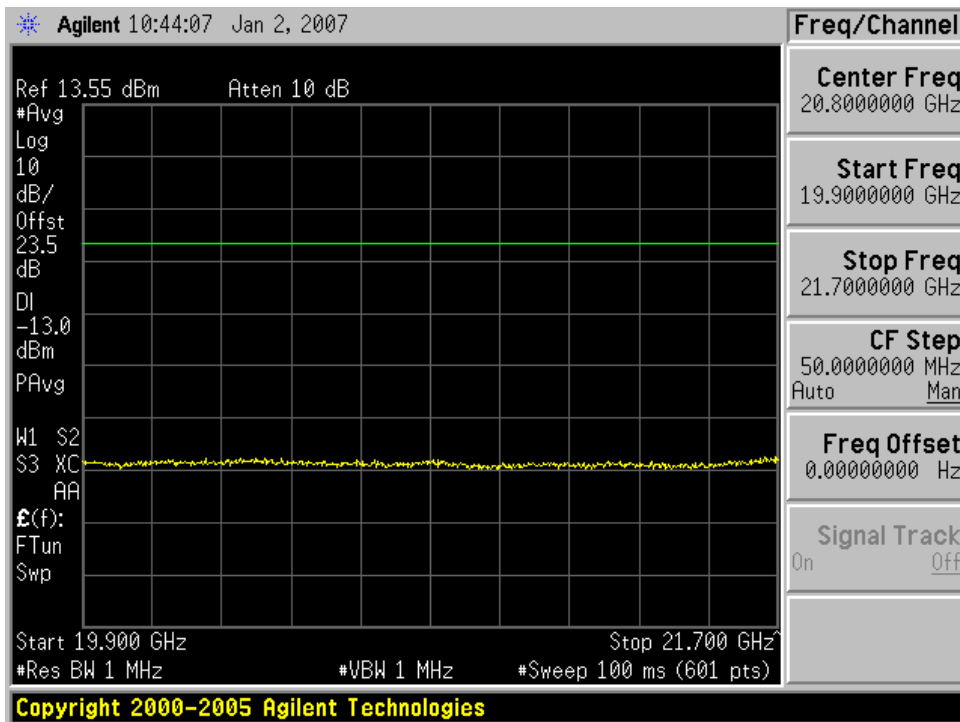
5th Harmonic of 2504.75 MHz (5.5 MHz Channel)



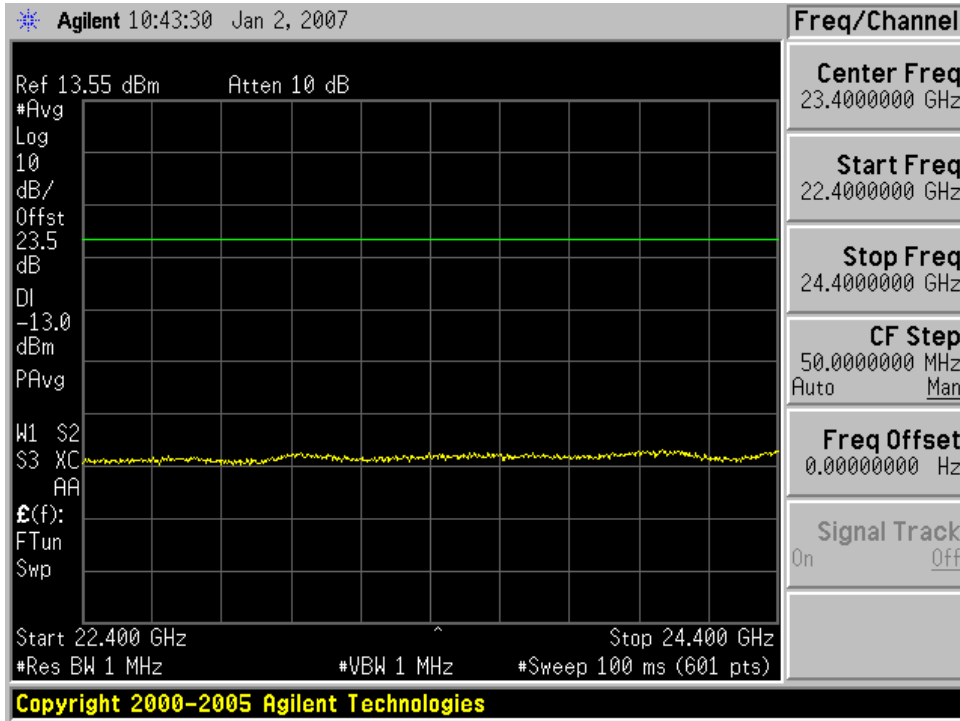
6th Harmonic of 2504.75 MHz (5.5 MHz Channel)



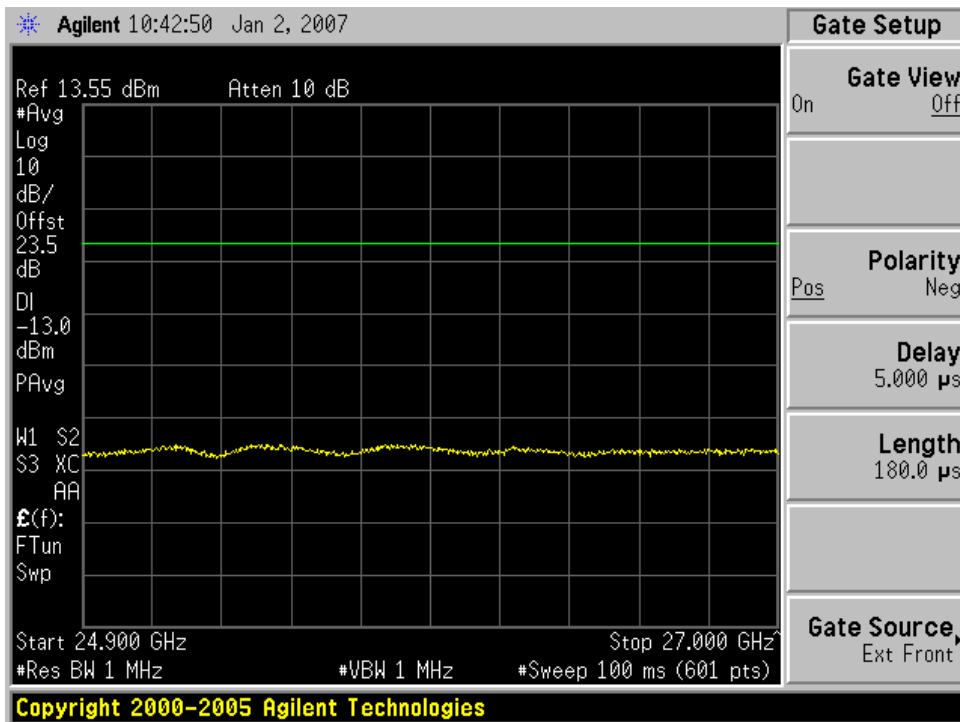
7th Harmonic of 2504.75 MHz (5.5 MHz Channel)



8th Harmonic of 2504.75 MHz (5.5 MHz Channel)



9th Harmonic of 2504.75 MHz (5.5 MHz Channel)



10th Harmonic of 2504.75 MHz (5.5 MHz Channel)

5.6 Field Strength of Spurious Radiation

FCC Rules: 2.1053, 2.1049, 2.1057

FCC Requirement: Emissions to be $43+10\log(P)$ below the channel power or an absolute level of -13 dBm

Frequency Range = 30 MHz to 26.86 GHz

Case Radiation Attenuation = $43+10\log P = -13$ dBm maximum

Standards: TIA-603-C
TIA Standard, Land Mobile FM or PM Communications
Equipment, Measurement and Performance Standards

ANSI C63.4-2001 clause 5.4 Radiated Emissions Tests.
American National Standard for Methods of Measurement of
Radio-Noise Emissions from Low-Voltage Electrical and
Electronic Equipment in the Range of 9 kHz to 40 GHz.

Test Procedure: The field strength of spurious radiation was measured at an open area test site with the applicable measurement antennas, low noise amplifiers, and spectrum analyzers. This test was performed with the transmitter/receiver port terminated with its integral antenna(s). Measurements were performed by TUV America located in Taylors Falls, Minnesota on January 3rd and 9th, 2007. Spurious signals were maximized for peak level by rotation of the test unit and elevation of the measurement antenna. Verification of compliance to the emissions limit was accomplished by antenna substitution as detailed in the TIA-603-C specification. TUV America-Product Service FCC registration number: 90983

Test Conditions: Frequency = 2499, 2593, 2683 MHz
Temperature = 25 °C
Supply Voltage = 120 VAC / 60 Hz Nominal
To DUT Power Supply

Test Results: Passes Field Strength of Spurious Radiation
Refer to attached TUV Test Report: 5B EMC Test Report.pdf

5.7 Frequency Stability Test

FCC Rules: 2.1055, 27.53(1)(2), 27.53(1)(6), 27.54

FCC Requirement: The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Standard: TIA-603-C

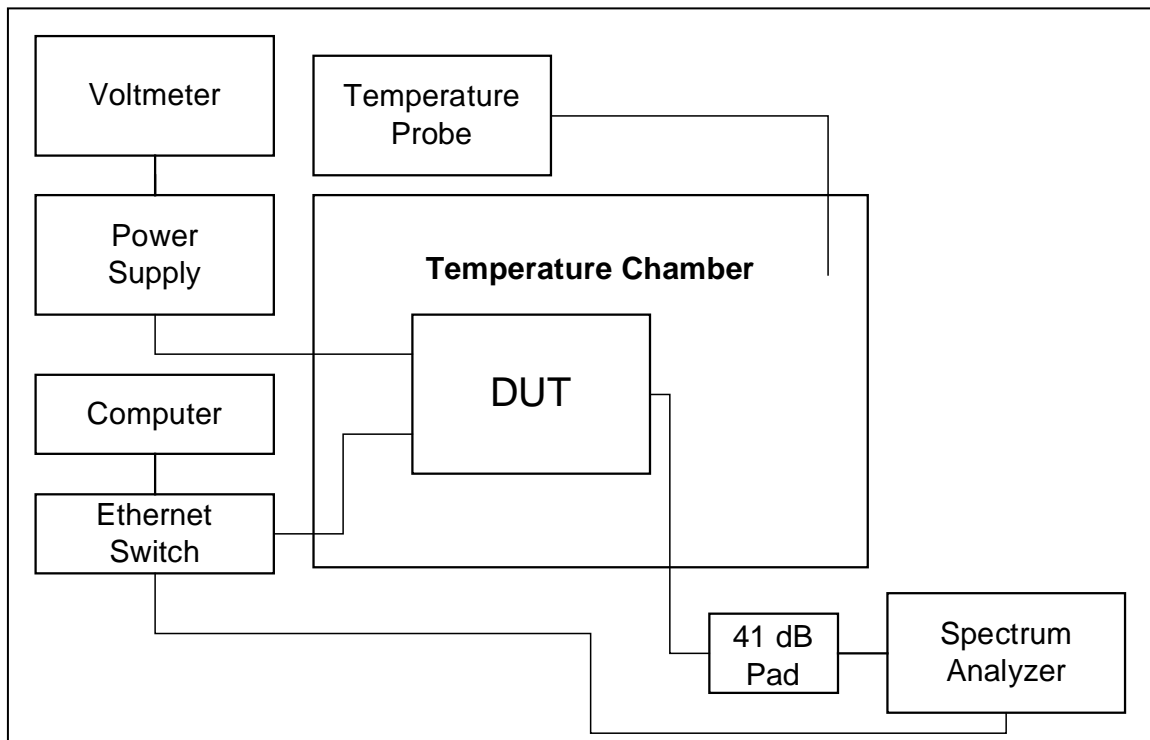
Test Procedure: The frequency stability of the Motorola, Inc. Temporary Fixed Subscriber Unit fundamental oscillator is derived from the on board 40 MHz TCXO. Since each radio channel operating frequency is synthesized and referenced to the 40 MHz TCXO, only one channel will be reported for frequency stability as all channels will have the same frequency characteristics.

The emissions contained within the 2 MHz below and above the channel bandwidth were recorded to show compliance to the emission limit of 47CFR27.53(1)(2).

The emissions have been recorded and show compliance to the -13 dBm limit within the first 1 MHz of spectrum outside of the channel. As allowed per the FCC rules, a measurement bandwidth of 1% or greater of the emissions bandwidth was used for the test. Compliance was shown on the plot by establishing a limit line at the -13 dBm level such that any emissions that would be above the limit within the first 1 MHz of spectrum outside of the channel would produce a "FAIL MARGIN1" (6 MHz channel) or "FAIL MARGIN2" (5.5 MHz channel) message on the spectrum analyzer display.

The next 1 MHz of spectrum is shown to comply with the -13 dBm limit by use of the integrated power function of the spectrum analyzer. The appropriate offset for the 1 MHz of spectrum being measured is shown on the plots. Compliance to the second 1 MHz of spectrum is shown by reviewing the lower and upper integrated power measurement information on the spectrum analyzer display. This information is listed in the test results table.

Test Set-Up:



Frequency Stability Test Setup

5.7.1. Temperature Variation Test Results

Test Conditions: **Frequency:** 2593 MHz (5.5 and 6.0 MHz channel bandwidths)
Supply Voltage: 120 VAC / 60 Hz Nominal to DUT
 Power Supply
Temperature: -30° C to +50° C in 10° C increments

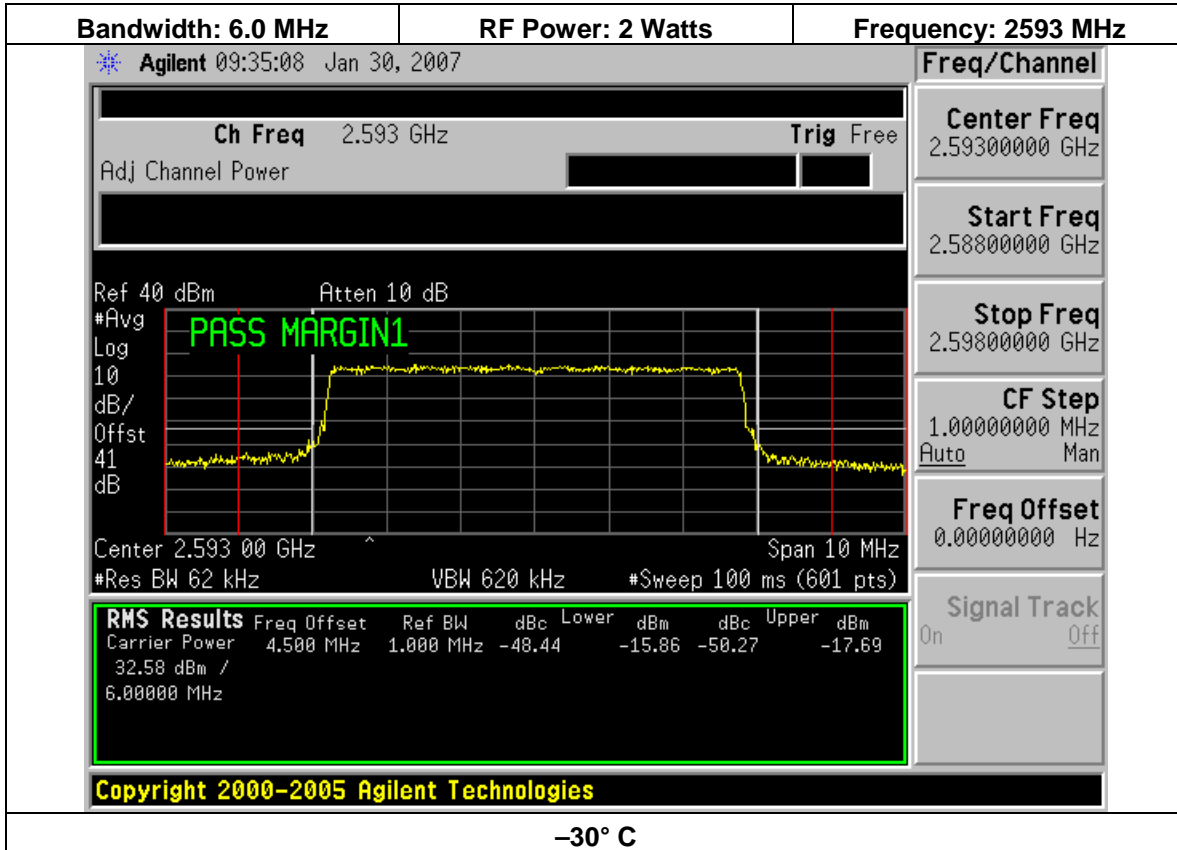
Test Results: Pass Temperature Variation
 The tables below summarize the information from the plots contained in this section and in the Appendix.

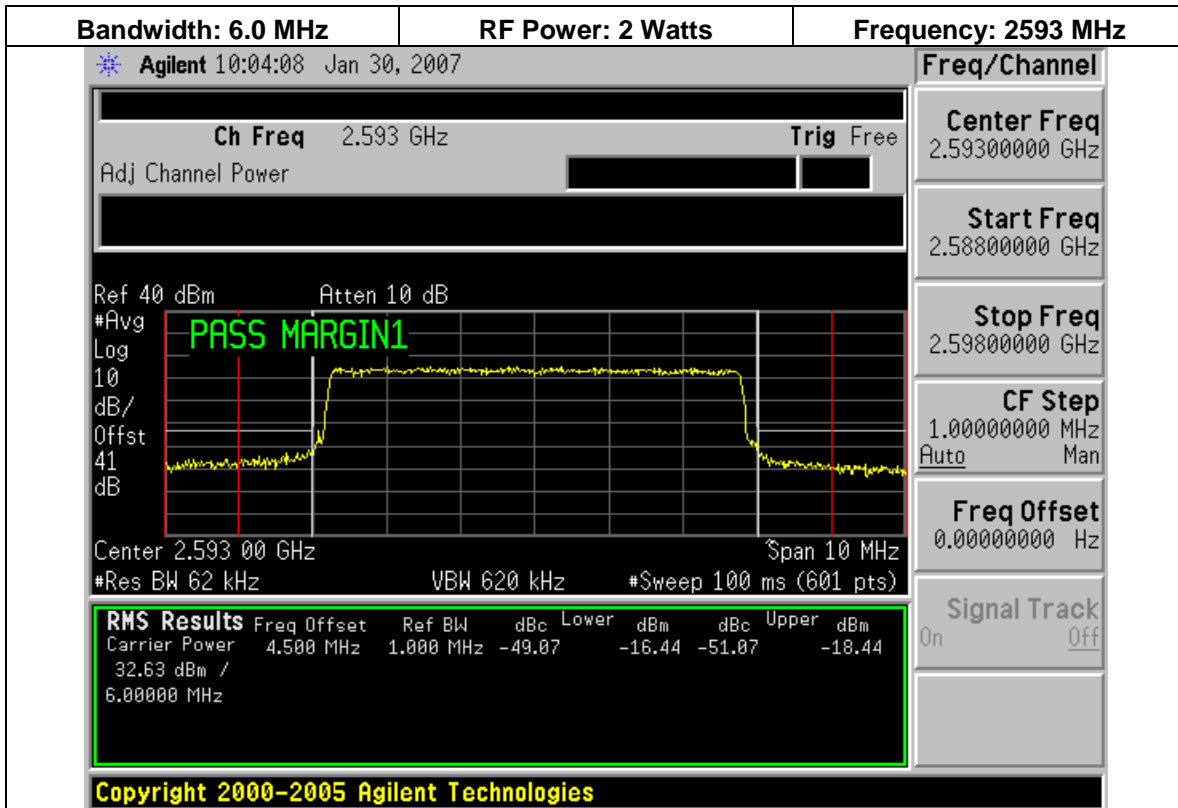
Adjacent and Alternate 1 MHz Emissions 2.593 GHz 6.0 MHz Bandwidth									
Temp ° C	Lower Alternate 1 MHz Bin Power (dBm)	Upper Alternate 1 MHz Bin Power (dBm)	Spec (dBm/MHz)	Lower Margin (dB)	Upper Margin (dB)	Result: Lower Alternate 1 MHz Bin	Result: Upper Alternate 1 MHz Bin	Result: Lower Adjacent 1 MHz Bin	Result: Upper Adjacent 1 MHz Bin
-30	-15.86	-17.69	-13	-2.86	-4.69	Complies	Complies	Complies	Complies
-20	-16.44	-18.44	-13	-3.44	-5.44	Complies	Complies	Complies	Complies
-10	-16.88	-19.02	-13	-3.88	-6.02	Complies	Complies	Complies	Complies
0	-17.55	-19.48	-13	-4.55	-6.48	Complies	Complies	Complies	Complies
10	-16.92	-18.90	-13	-3.92	-5.90	Complies	Complies	Complies	Complies
20	-17.58	-19.28	-13	-4.58	-6.28	Complies	Complies	Complies	Complies
30	-18.62	-20.10	-13	-5.62	-7.10	Complies	Complies	Complies	Complies
40	-18.31	-19.68	-13	-5.31	-6.68	Complies	Complies	Complies	Complies
50	-19.22	-20.40	-13	-6.22	-7.40	Complies	Complies	Complies	Complies

Adjacent and Alternate 1 MHz Emissions 2.593 GHz 5.5 MHz Bandwidth									
Temp ° C	Lower Alternate 1 MHz Bin Power (dBm)	Upper Alternate 1 MHz Bin Power (dBm)	Spec (dBm/MHz)	Lower Margin (dB)	Upper Margin (dB)	Result: Lower Alternate 1 MHz Bin	Result: Upper Alternate 1 MHz Bin	Result: Lower Adjacent 1 MHz Bin	Result: Upper Adjacent 1 MHz Bin
-30	-15.50	-17.38	-13	-2.50	-4.38	Complies	Complies	Complies	Complies
-20	-16.23	-18.09	-13	-3.23	-5.09	Complies	Complies	Complies	Complies
-10	-16.66	-18.76	-13	-3.66	-5.76	Complies	Complies	Complies	Complies
0	-17.39	-19.34	-13	-4.39	-6.34	Complies	Complies	Complies	Complies
10	-17.19	-19.08	-13	-4.19	-6.08	Complies	Complies	Complies	Complies
20	-17.68	-19.11	-13	-4.68	-6.11	Complies	Complies	Complies	Complies
30	-18.45	-20.23	-13	-5.45	-7.23	Complies	Complies	Complies	Complies
40	-17.94	-19.30	-13	-4.94	-6.30	Complies	Complies	Complies	Complies
50	-19.37	-20.31	-13	-6.37	-7.31	Complies	Complies	Complies	Complies

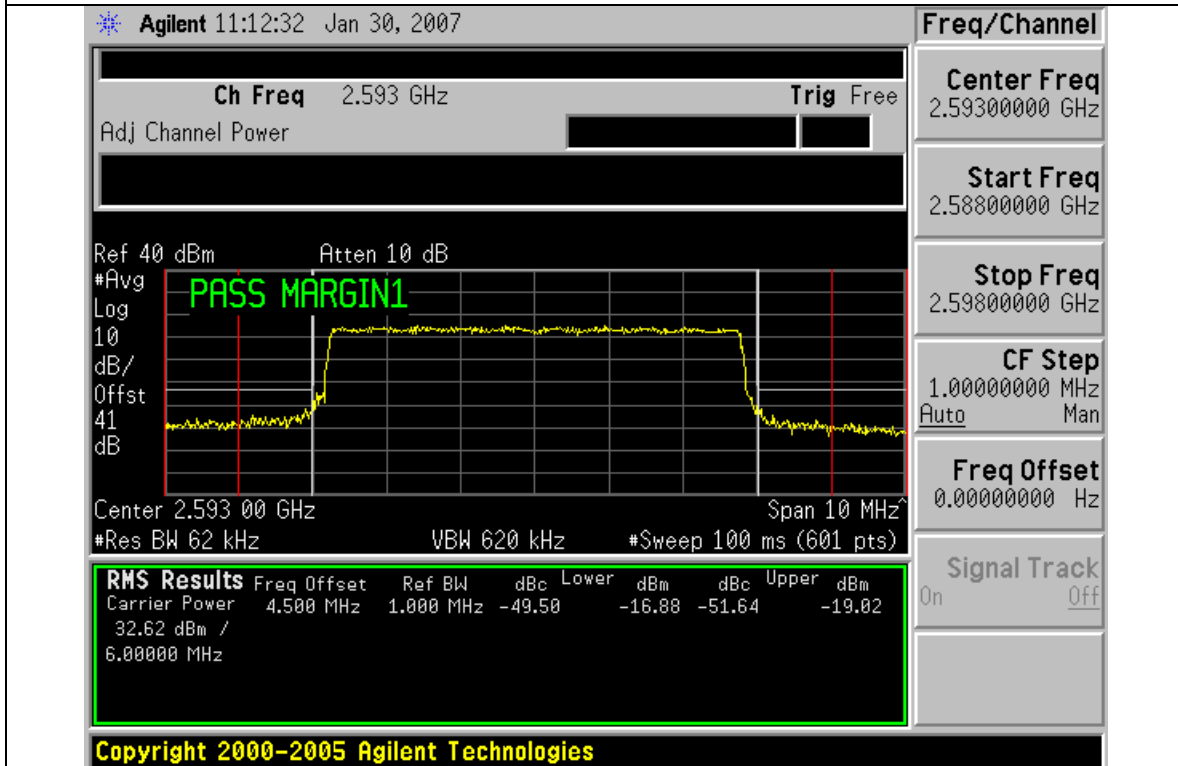
5.7.2. Temperature Variation Spectrum Analyzer Plots

Spectrum analyzer plots of the 6.0 MHz bandwidth measurements follow. The plots for the 5.5 MHz bandwidth channels are similar and are located in the Appendix.

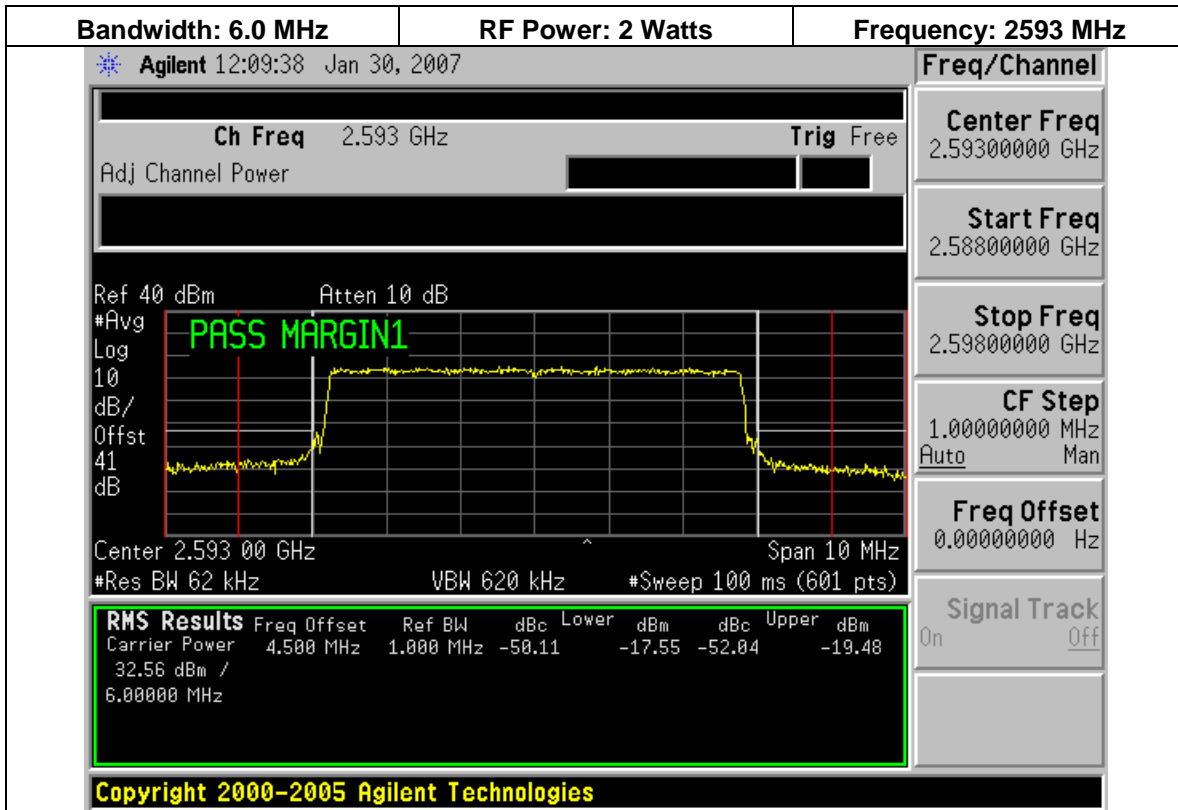




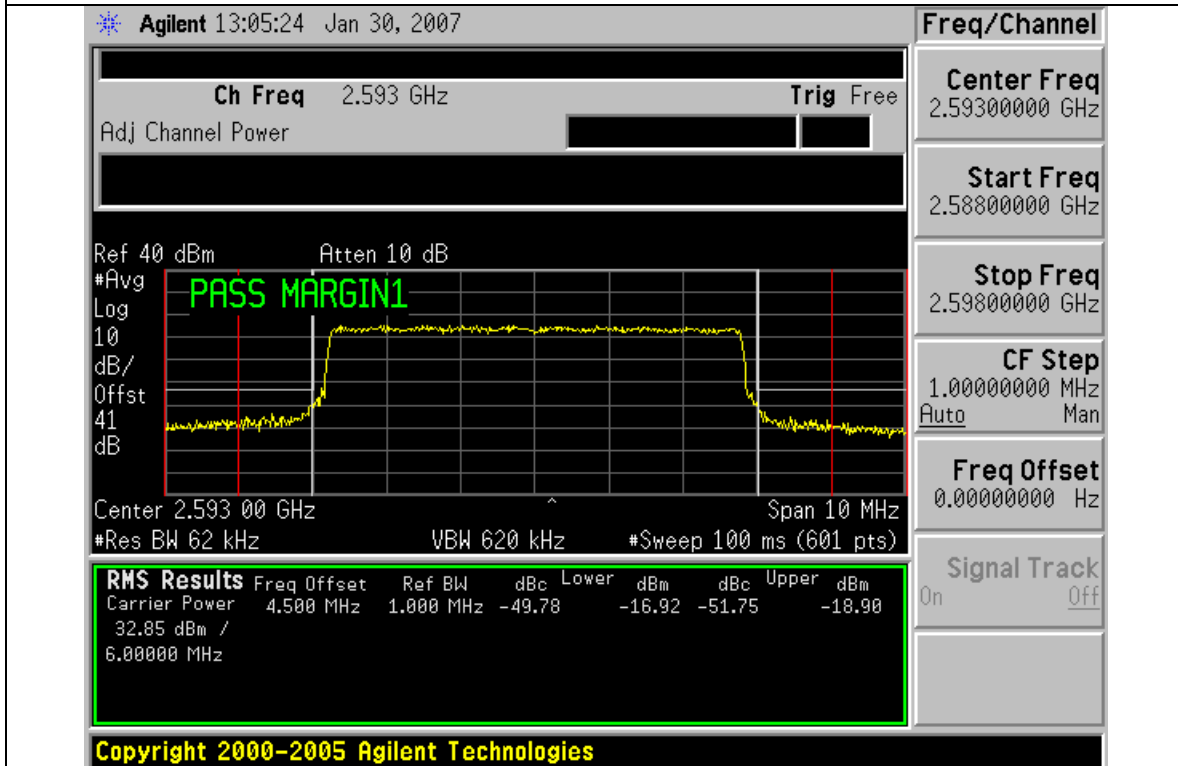
-20° C



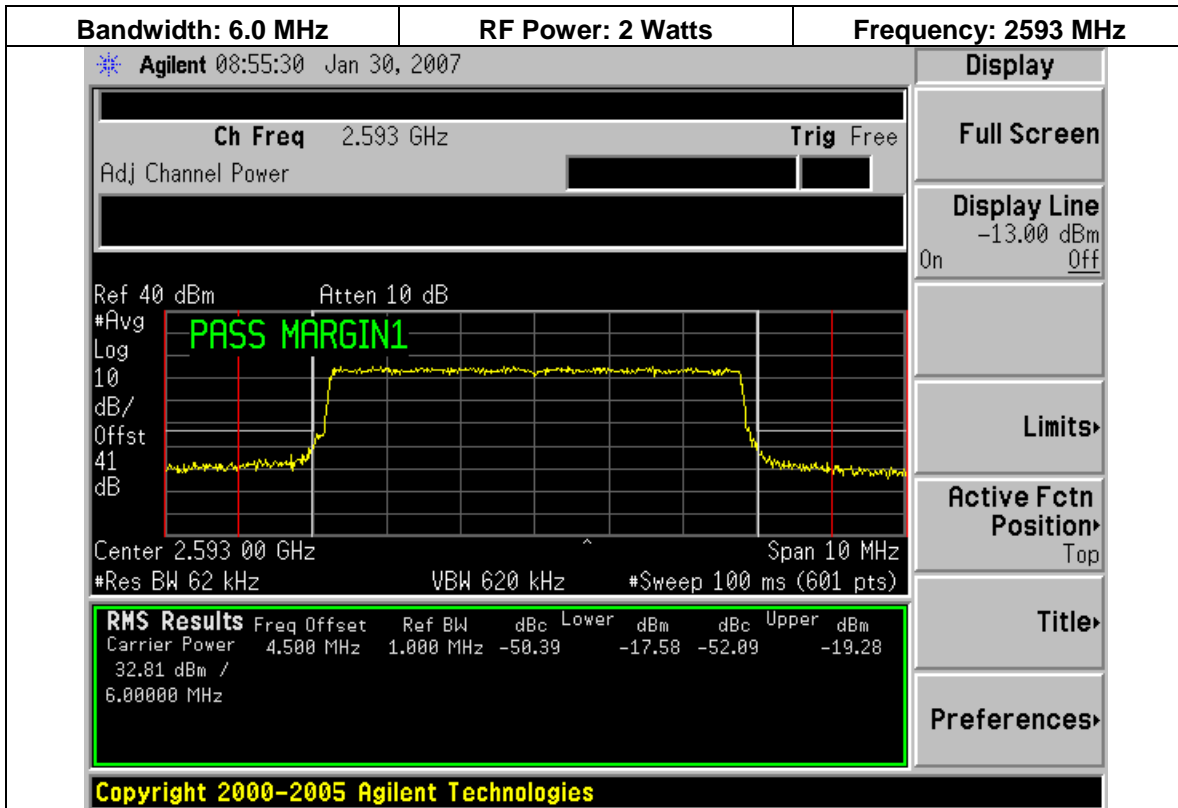
-10° C



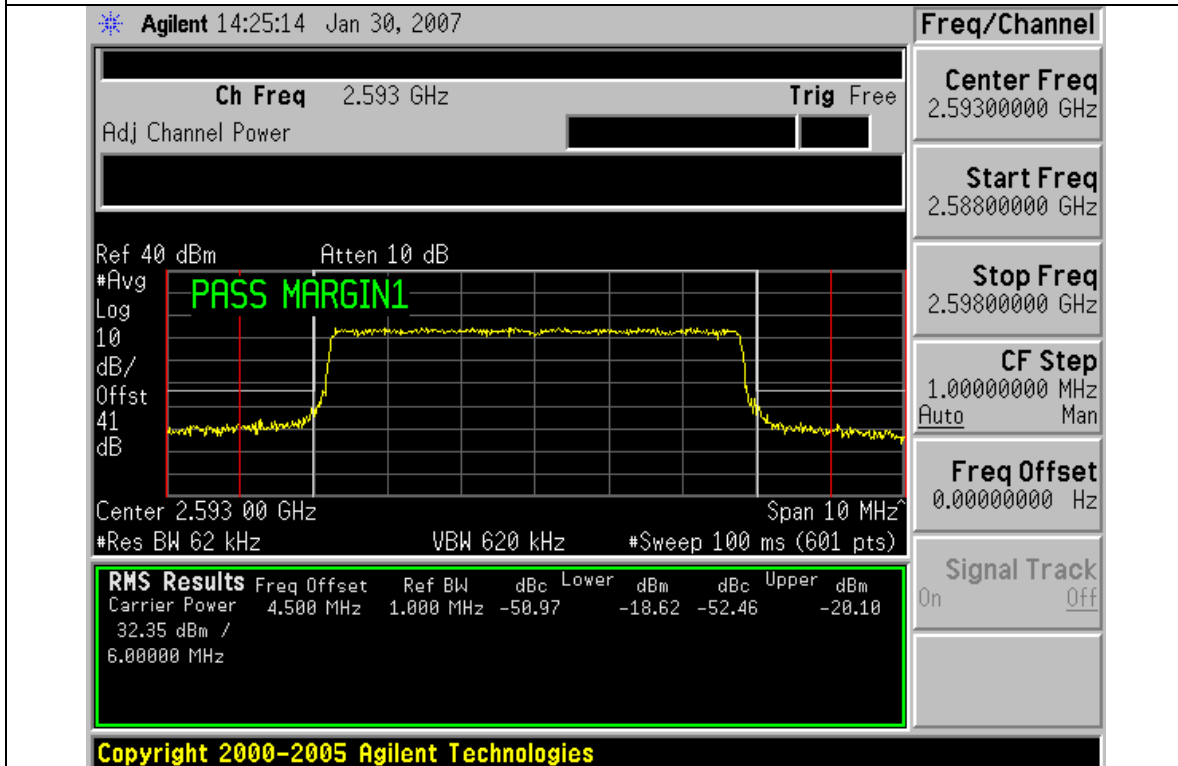
0° C



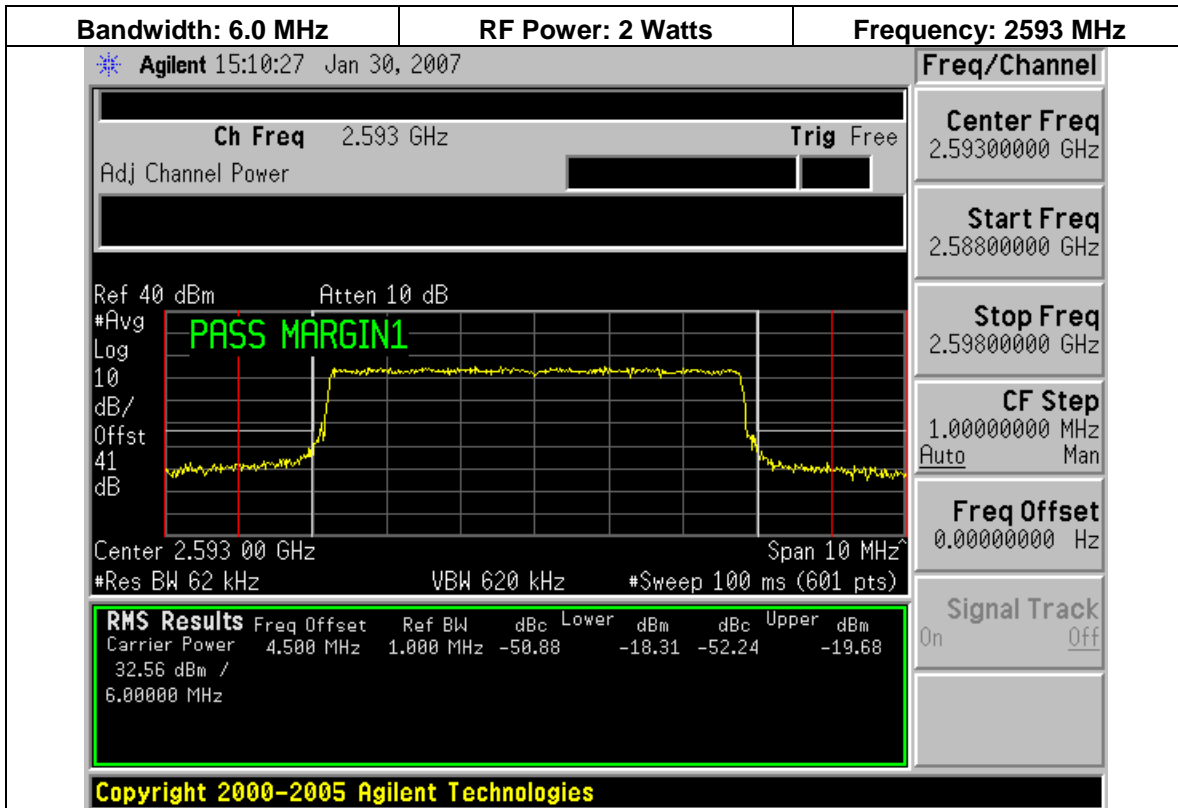
+10° C



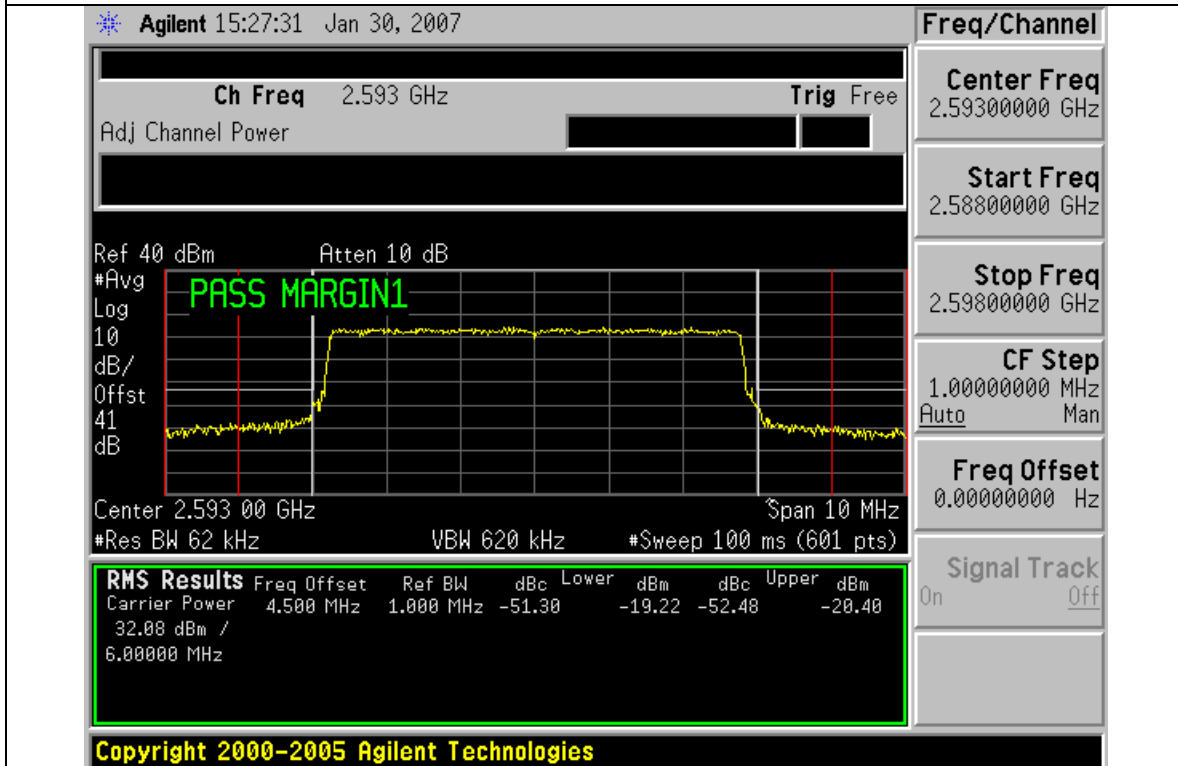
+20° C



+30° C



+40° C



+50° C

5.7.3. Supply Voltage Variation Test Results

Test Conditions: Frequency = 2593 MHz
Temperature = 20 °C

Supply Voltage Variation

Source Input Voltage Specification: 120.0 VAC / 60 Hz Nominal
Test Voltage Range = 0.85 x 120 = 102 VAC / 60 Hz lower limit
1.15 x 120 = 138 VAC / 60 Hz upper limit

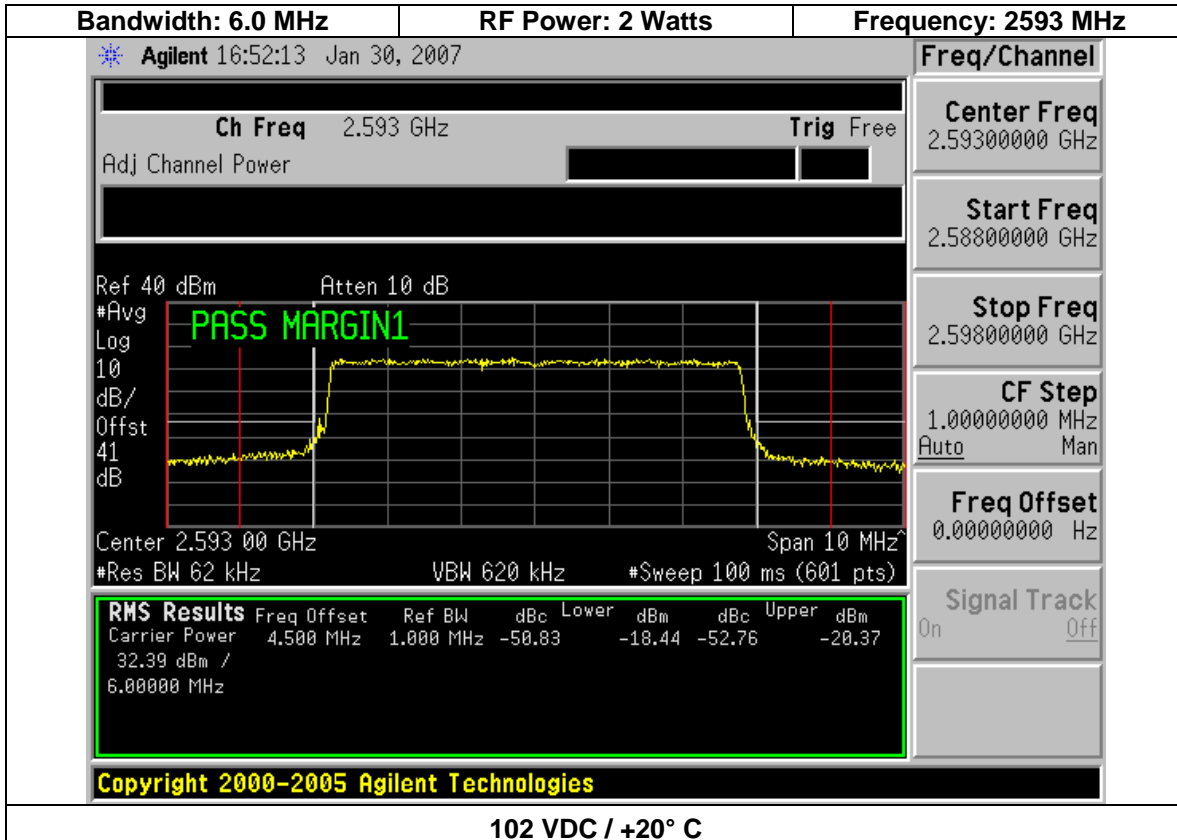
Test Results: Supply Voltage Variation
The tables below summarize the information from the plots contained in this section and in the Appendix.

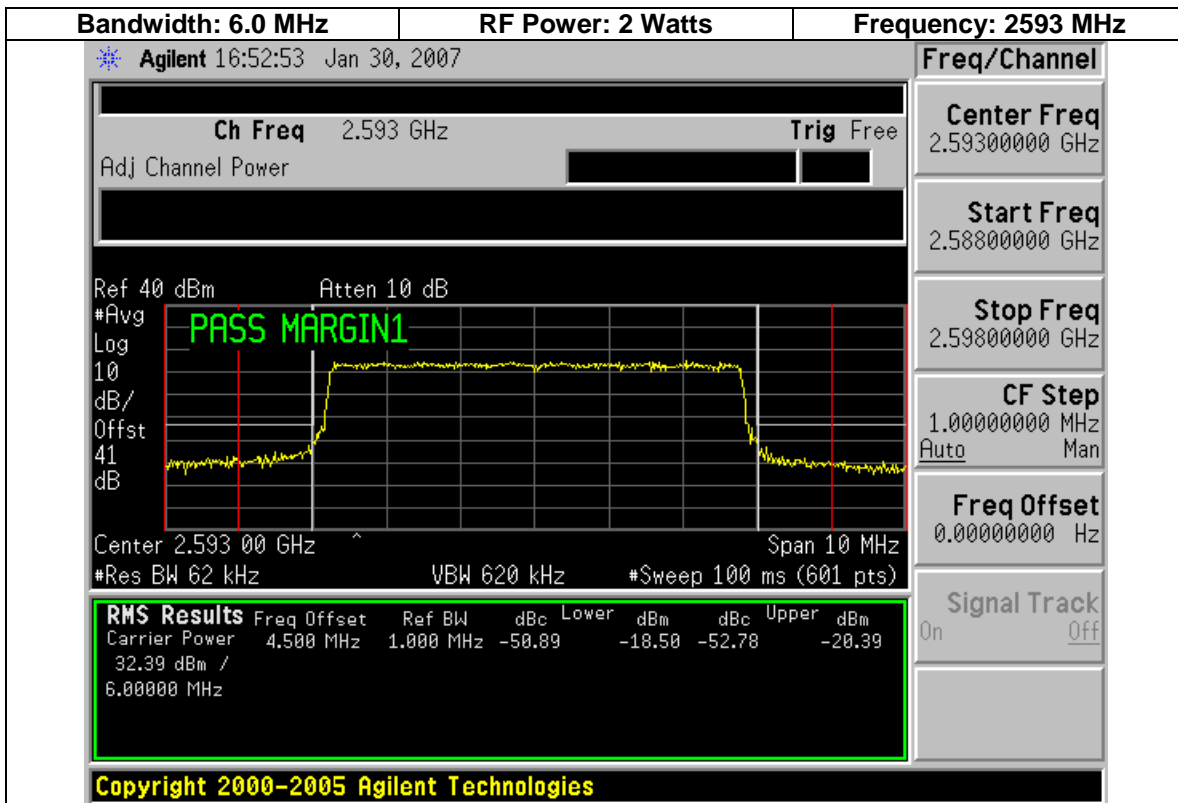
Adjacent and Alternate 1 MHz Emissions 20° C 2.593 GHz 6.0 MHz Bandwidth									
Source Voltage (Vdc)	Lower Alternate 1 MHz Bin Power (dBm)	Upper Alternate 1 MHz Bin Power (dBm)	Spec (dBm/MHz)	Lower Margin (dB)	Upper Margin (dB)	Result: Lower Alternate 1 MHz Bin	Result: Upper Alternate 1 MHz Bin	Result: Lower Adjacent 1 MHz Bin	Result: Upper Adjacent 1 MHz Bin
102	-18.44	-20.37	-13	-5.44	-7.37	Complies	Complies	Complies	Complies
120	-18.50	-20.39	-13	-5.50	-7.39	Complies	Complies	Complies	Complies
138	-18.72	-20.87	-13	-5.72	-7.87	Complies	Complies	Complies	Complies

Adjacent and Alternate 1 MHz Emissions 20° C 2.593 GHz 5.5 MHz Bandwidth									
Source Voltage (Vdc)	Lower Alternate 1 MHz Bin Power (dBm)	Upper Alternate 1 MHz Bin Power (dBm)	Spec (dBm/MHz)	Lower Margin (dB)	Upper Margin (dB)	Result: Lower Alternate 1 MHz Bin	Result: Upper Alternate 1 MHz Bin	Result: Lower Adjacent 1 MHz Bin	Result: Upper Adjacent 1 MHz Bin
102	-18.83	-20.13	-13	-5.83	-7.13	Complies	Complies	Complies	Complies
120	-18.28	-20.11	-13	-5.28	-7.11	Complies	Complies	Complies	Complies
138	-18.28	-20.11	-13	-5.28	-7.11	Complies	Complies	Complies	Complies

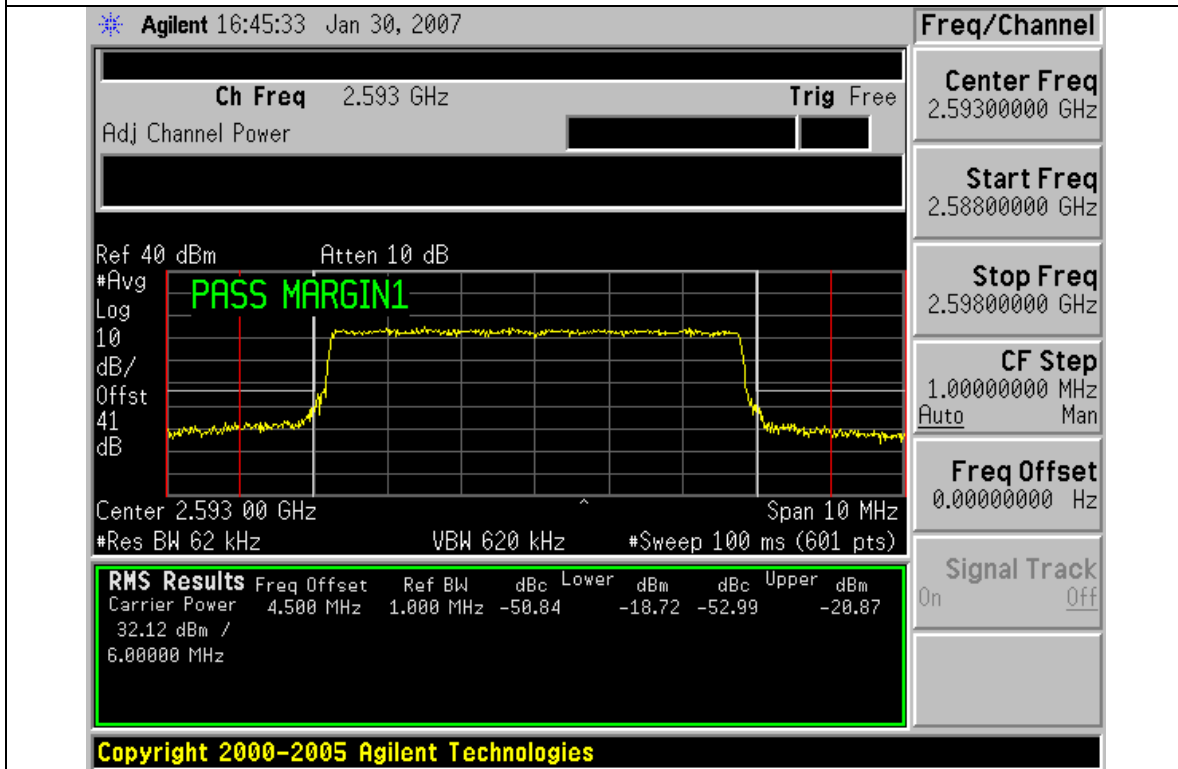
5.7.4. Supply Voltage Variation Spectrum Analyzer Plots

Spectrum analyzer plots of the 6.0 MHz bandwidth measurements follow. The plots for the 5.5 MHz bandwidth channels are similar and are located in the Appendix.





120 VDC / +20° C



138 VDC / +20° C