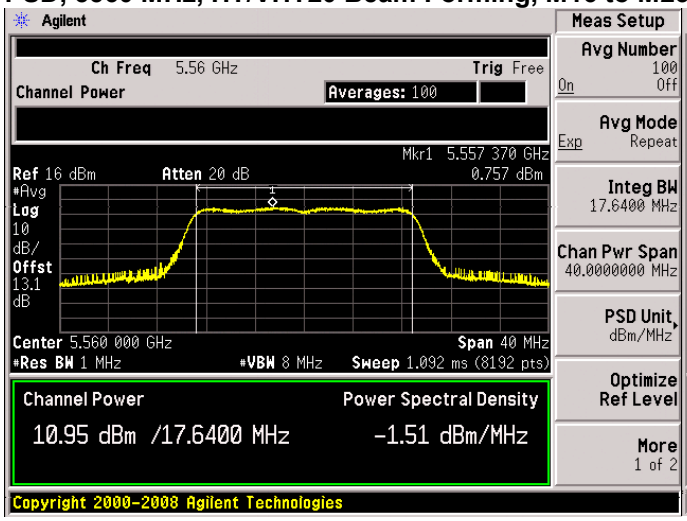
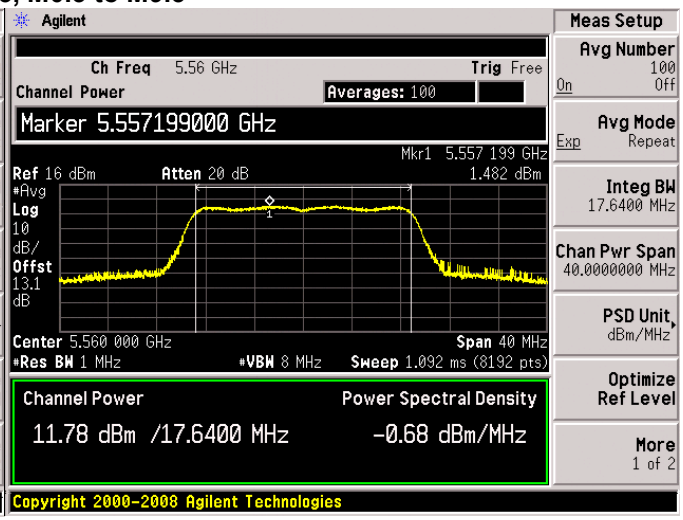
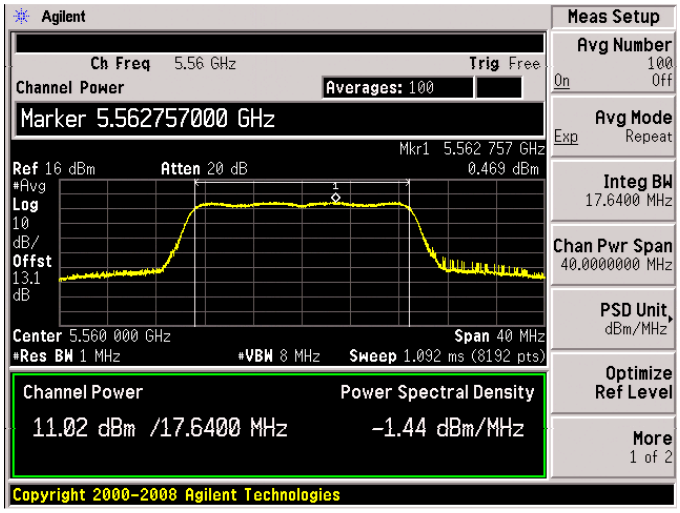
PSD, 5560 MHz, HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3



Antenna A



Antenna B



Antenna C

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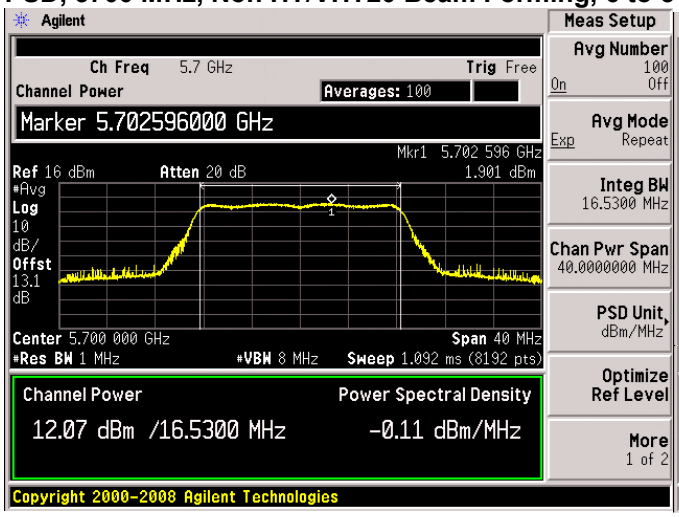
PSD, 5700 MHz, Non HT/VHT20 Beam Forming, 6 to 54 Mbps



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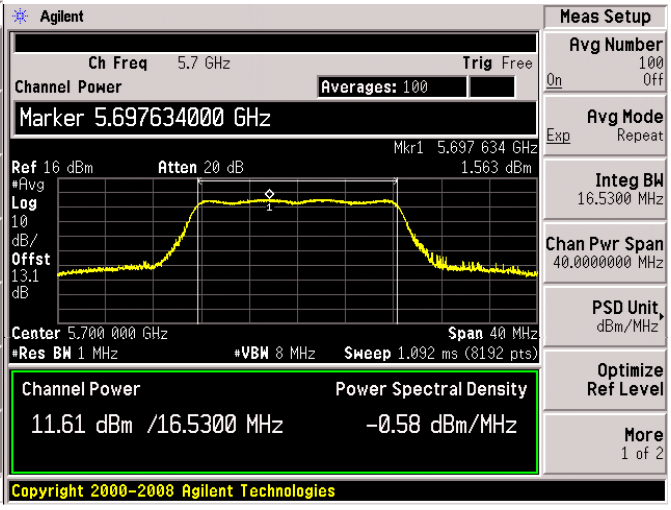

Antenna B

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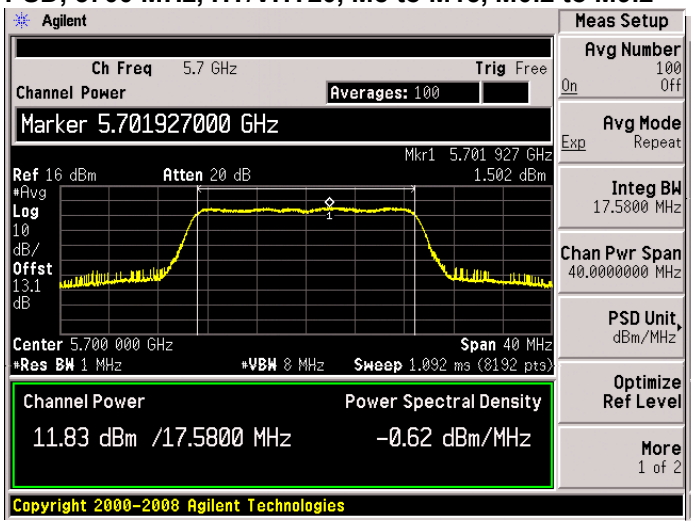
PSD, 5700 MHz, HT/VHT20, M8 to M15, M0.2 to M9.2



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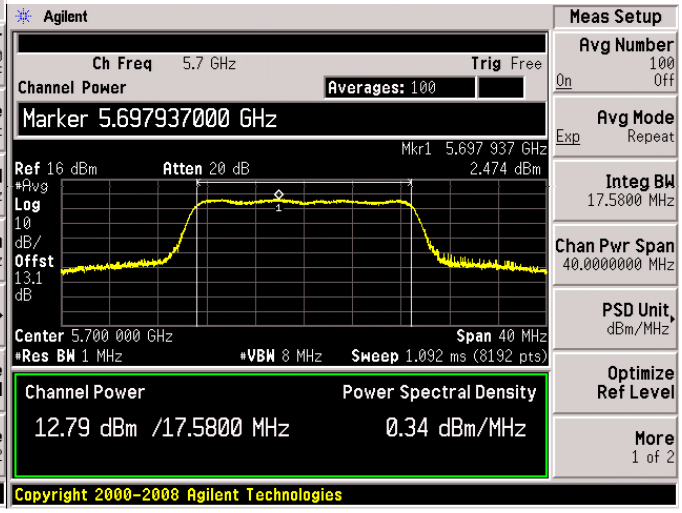
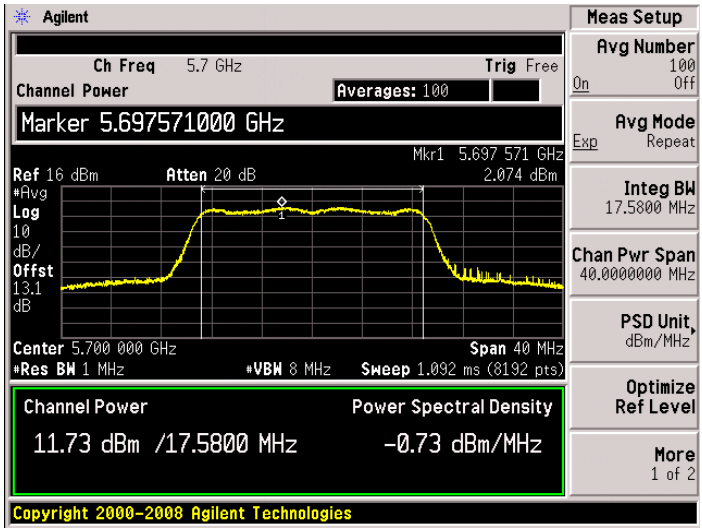


Antenna B



Antenna C

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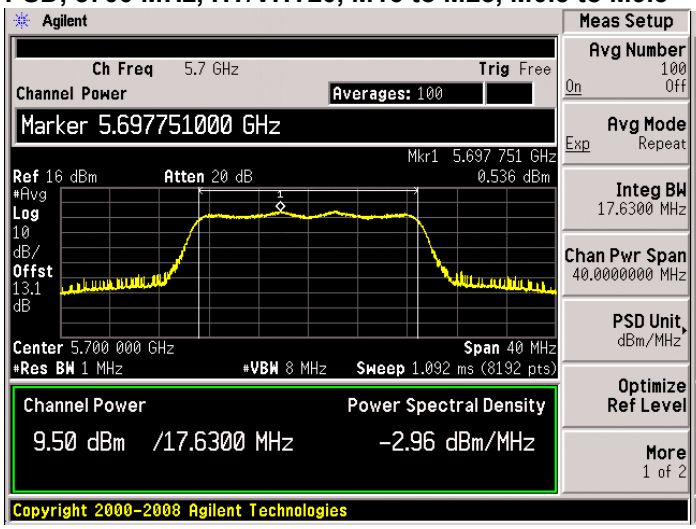
PSD, 5700 MHz, HT/VHT20, M16 to M23, M0.3 to M9.3



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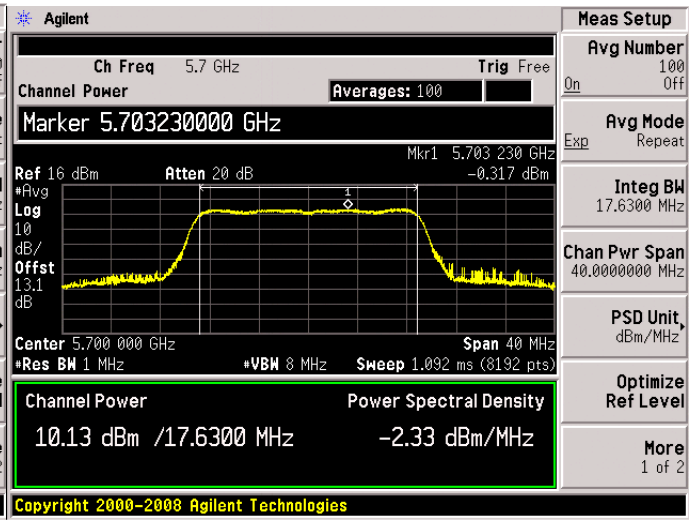

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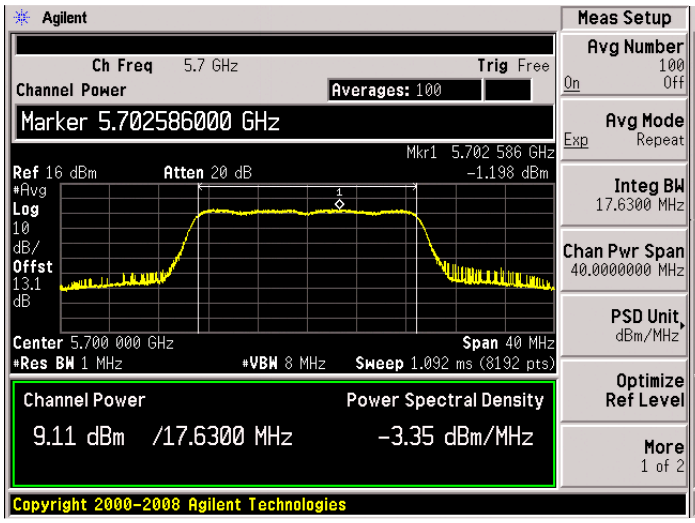
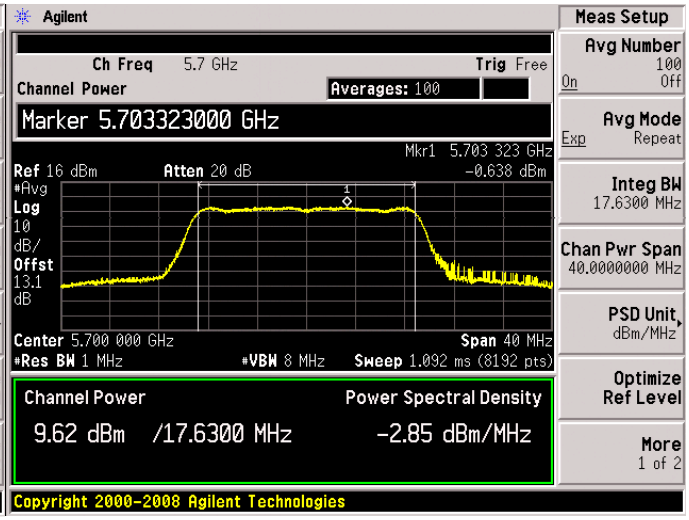


Antenna C



Antenna D

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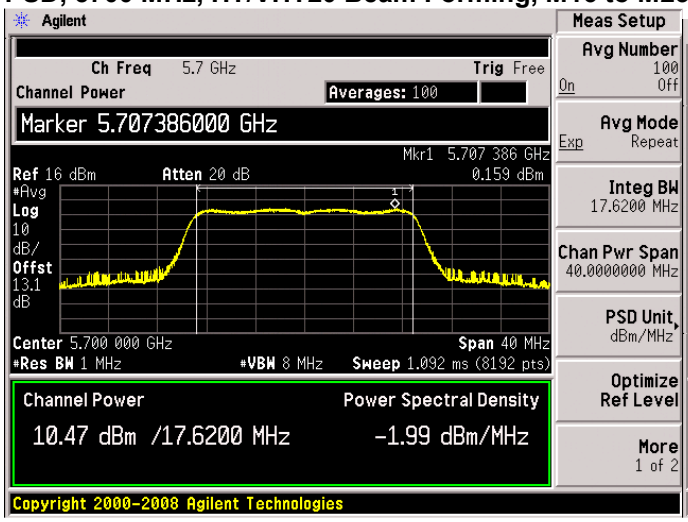
PSD, 5700 MHz, HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3



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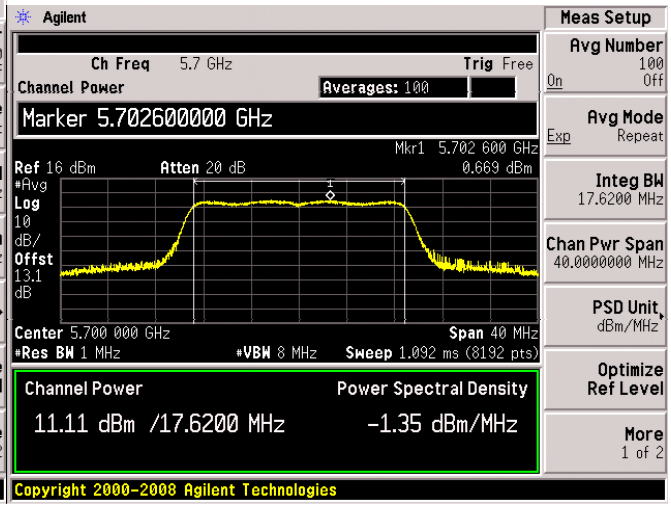

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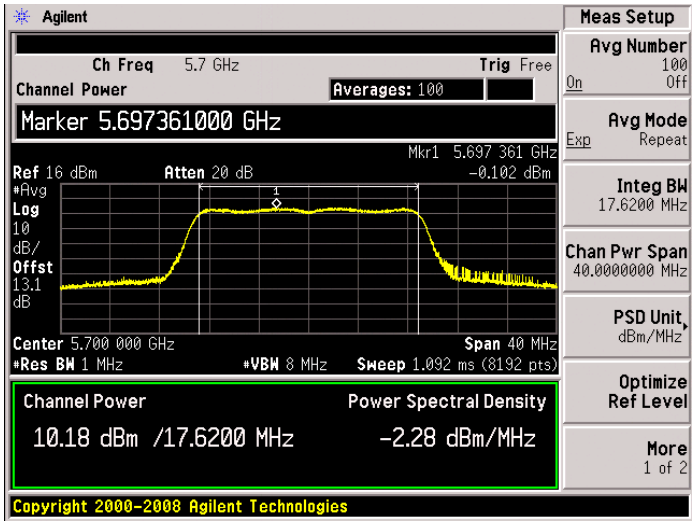

Antenna C

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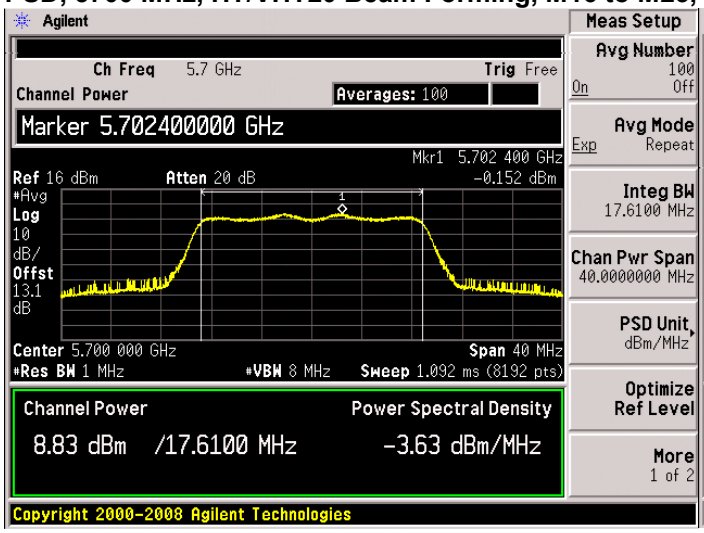
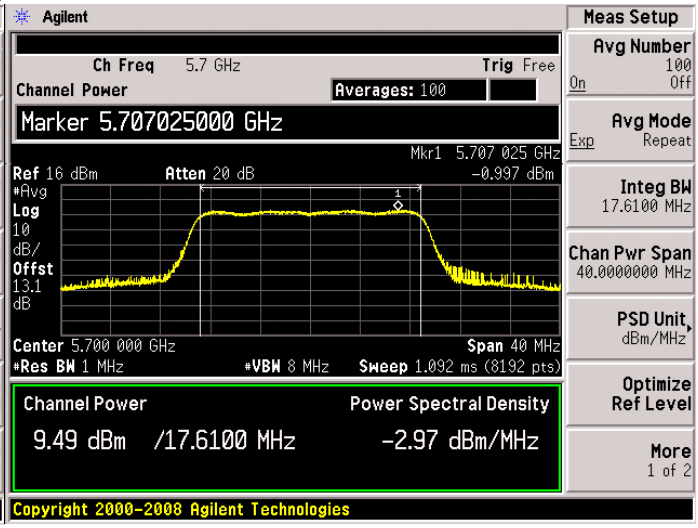
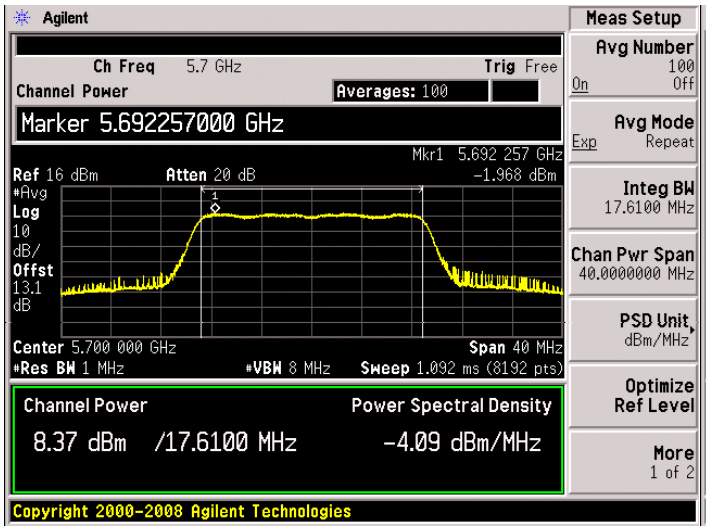
PSD, 5700 MHz, HT/VHT20 Beam Forming, M16 to M23, M0.3 to M9.3



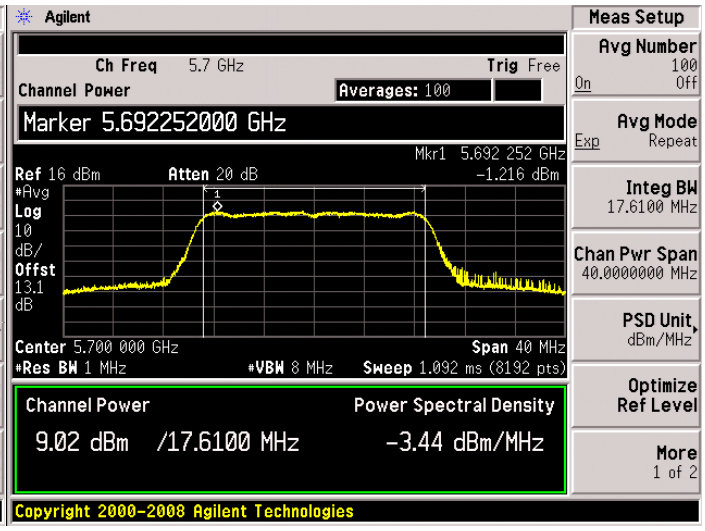
Antenna A



Antenna B



Antenna C



Antenna D

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Conducted Spurious Emissions

15.407: For transmitters operating in the 5.25-5.35 and 5.47-5.725 GHz band: all emissions outside of the 5.25-5.35 and 5.47-5.725 GHz bands shall not exceed an EIRP of -27dBm/MHz.

Connect the antenna port(s) to the spectrum analyzer input. Place the radio in continuous transmit mode. Configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer).

Span:	30 MHz-40 GHz
Reference Level:	20 dBm
Attenuation:	10 dB
Sweep Time:	10 s
Resolution Bandwidth:	1 MHz
Video Bandwidth:	3 MHz
Detector:	Peak
Trace:	Single
Marker:	Peak

Record the marker waveform peak to spur difference

Please note that scans were performed to verify that duty cycle did not have a significant impact on the test results. Also, scans with reduced RBW and VBW settings were performed to verify that no significant emissions were present under the noise floor.

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Frequency (MHz)	Mode	Antenna Gain	Limit (dBm/MHz)	Adjusted Limit (dBm/MHz)	Margin (dBm)
5500	Non HT/VHT20, 6 to 54 Mbps	7	-27	-34	>6dBm
	HT/VHT20, M0 to M23, M0.1 to M9.3	7	-27	-34	>6dBm
5500/5520	Non HT/VHT40, 6 to 54 Mbps	7	-27	-34	>6dBm
	HT/VHT40, M0 to M23, M0.1 to M9.3	7	-27	-34	>6dBm
5500/5520 5540/5560	Non HT/VHT80, 6 to 54 Mbps	7	-27	-34	>6dBm
	HT/VHT80, M0 to M23, M0.1 to M9.3	7	-27	-34	>6dBm
5540/5560	Non HT/VHT40, 6 to 54 Mbps	7	-27	-34	>6dBm
	HT/VHT40, M0 to M23, M0.1 to M9.3	7	-27	-34	>6dBm
5560	Non HT/VHT20, 6 to 54 Mbps	7	-27	-34	>6dBm
	HT/VHT20, M0 to M23, M0.1 to M9.3	7	-27	-34	>6dBm
5700	Non HT/VHT20, 6 to 54 Mbps	7	-27	-34	>6dBm
	HT/VHT20, M0 to M23, M0.1 to M9.3	7	-27	-34	>6dBm

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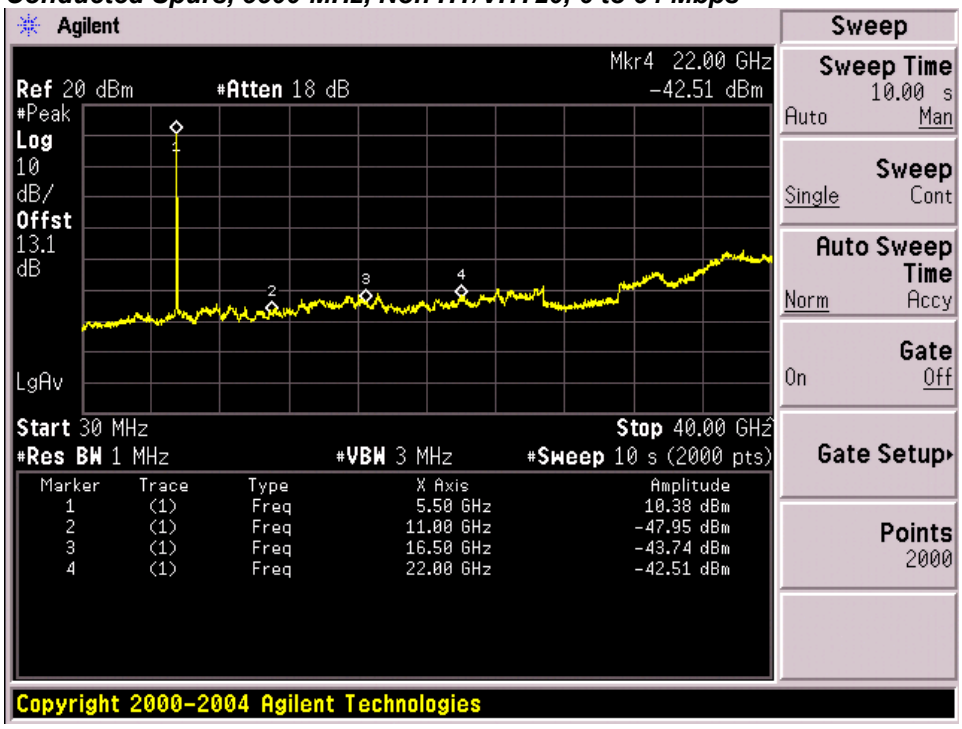
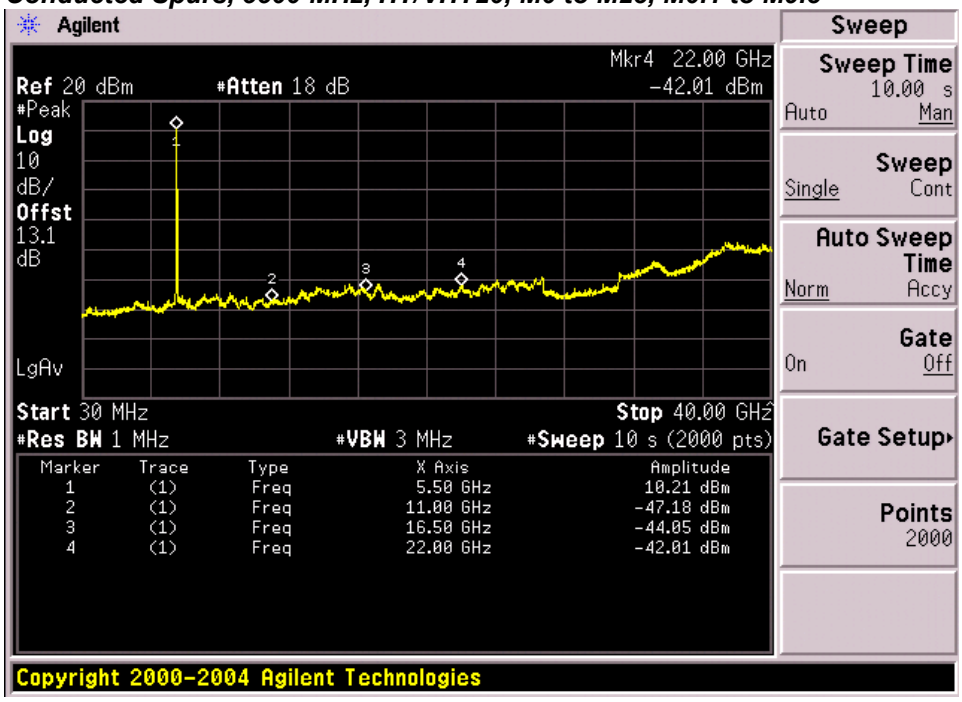
Conducted Spurs, 5500 MHz, Non HT/VHT20, 6 to 54 Mbps



Conducted Spurs, 5500 MHz, HT/VHT20, M0 to M23, M0.1 to M9.3



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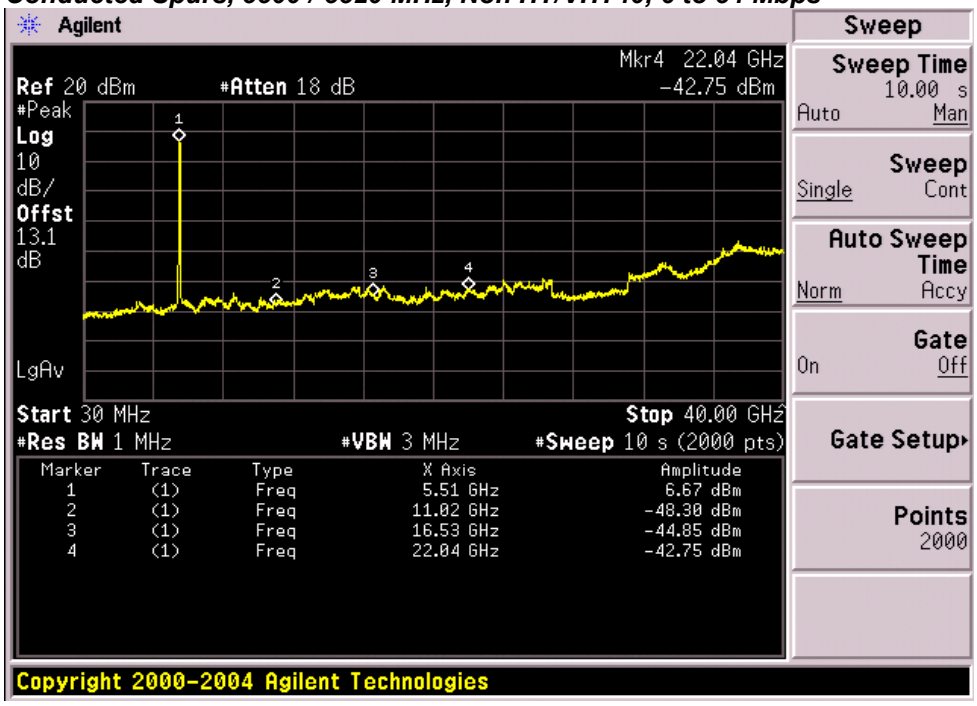
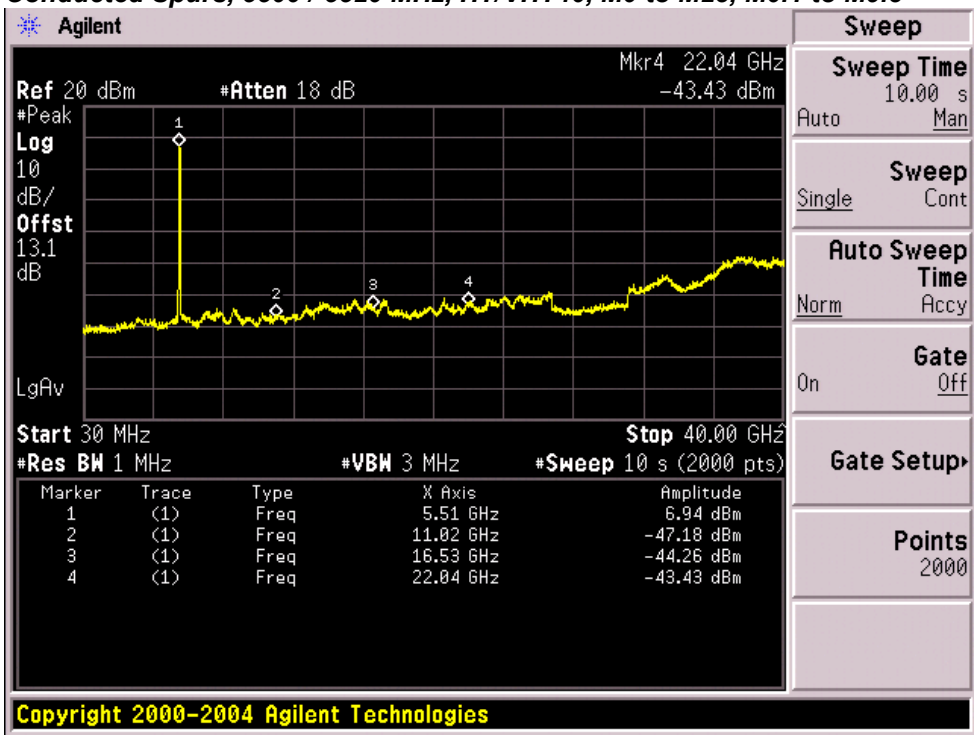
Conducted Spurs, 5500 / 5520 MHz, Non HT/VHT40, 6 to 54 Mbps



Conducted Spurs, 5500 / 5520 MHz, HT/VHT40, M0 to M23, M0.1 to M9.3



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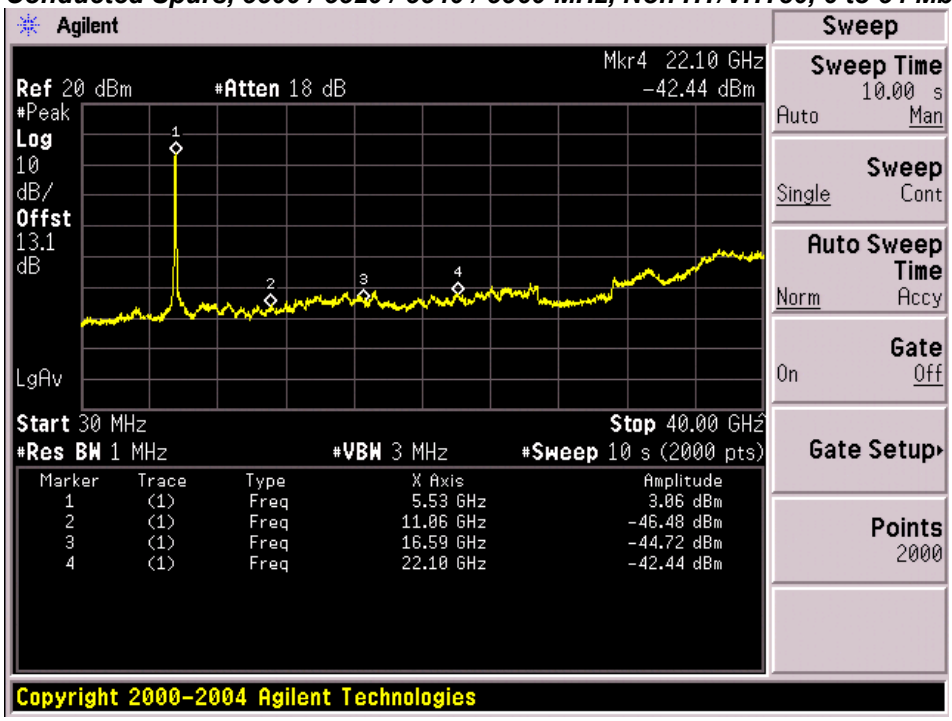
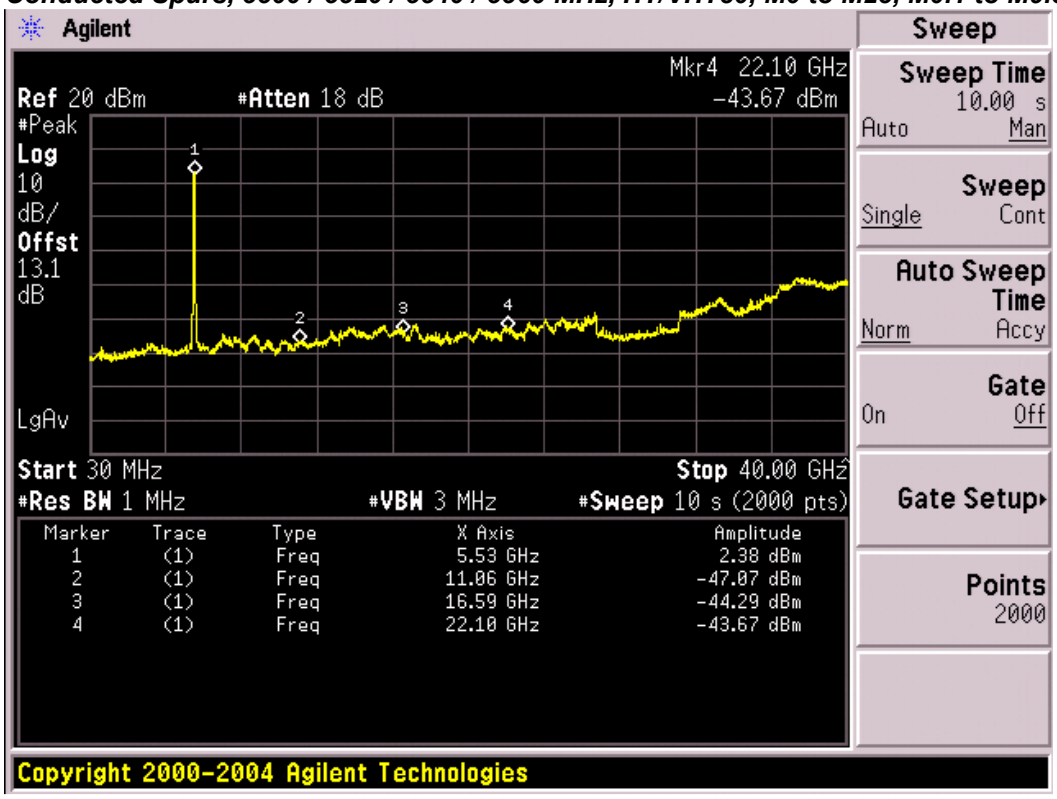
Conducted Spurs, 5500 / 5520 / 5540 / 5560 MHz, Non HT/VHT80, 6 to 54 Mbps



Conducted Spurs, 5500 / 5520 / 5540 / 5560 MHz, HT/VHT80, M0 to M23, M0.1 to M9.3



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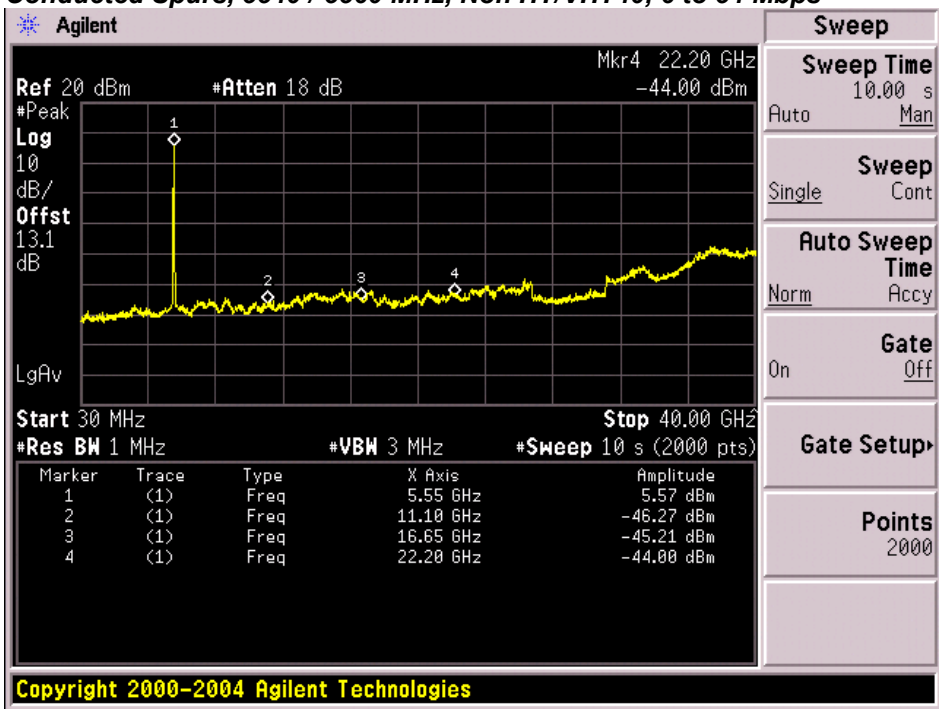
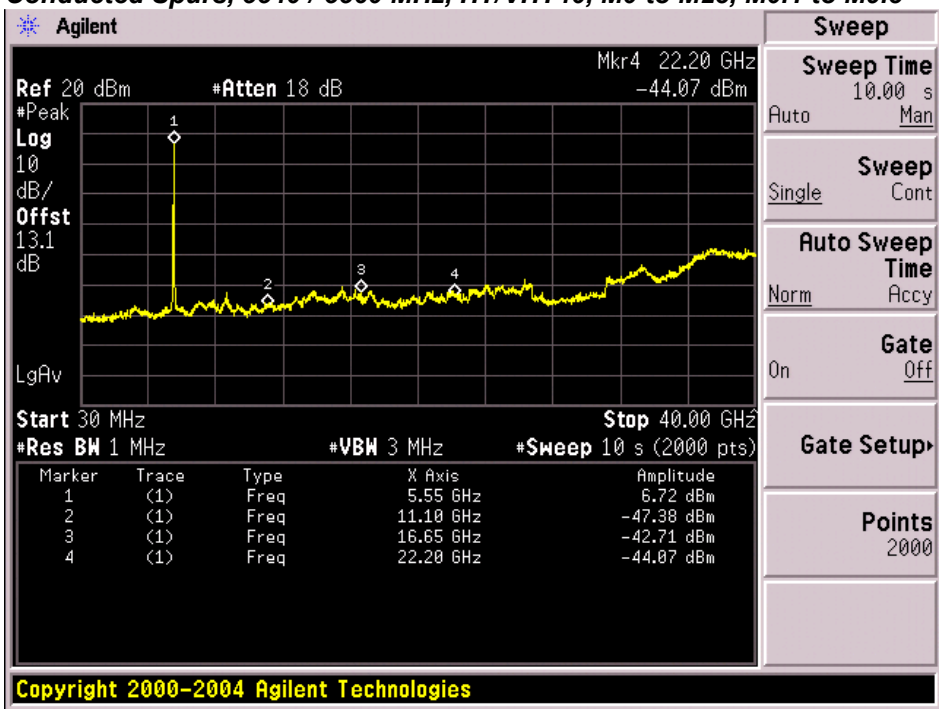
Conducted Spurs, 5540 / 5560 MHz, Non HT/VHT40, 6 to 54 Mbps



Conducted Spurs, 5540 / 5560 MHz, HT/VHT40, M0 to M23, M0.1 to M9.3



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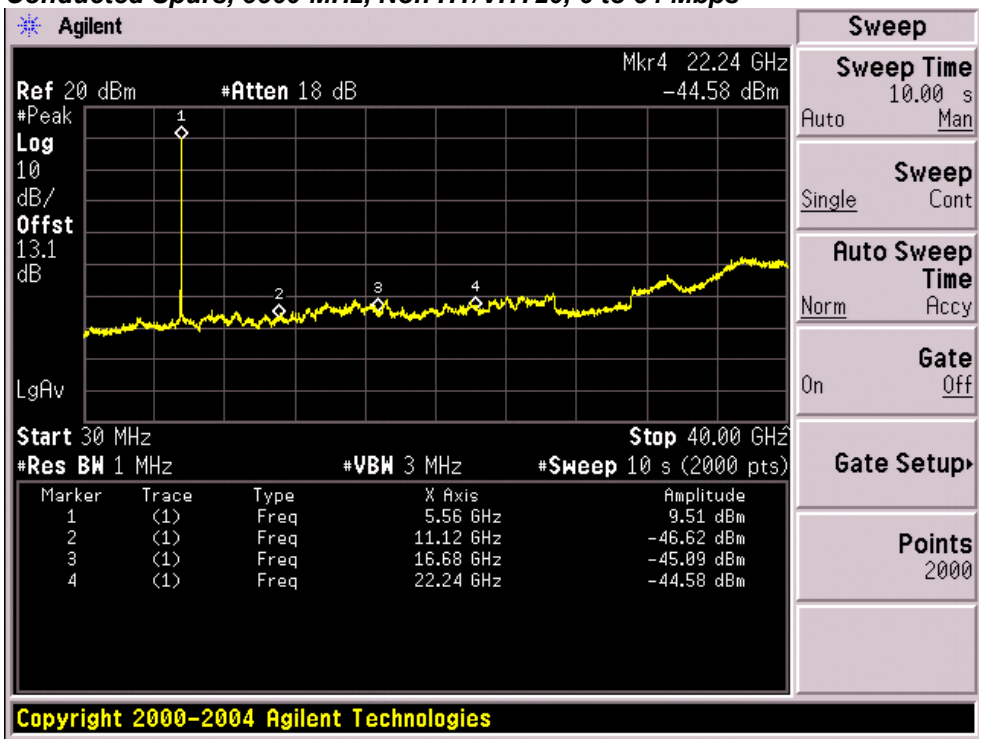
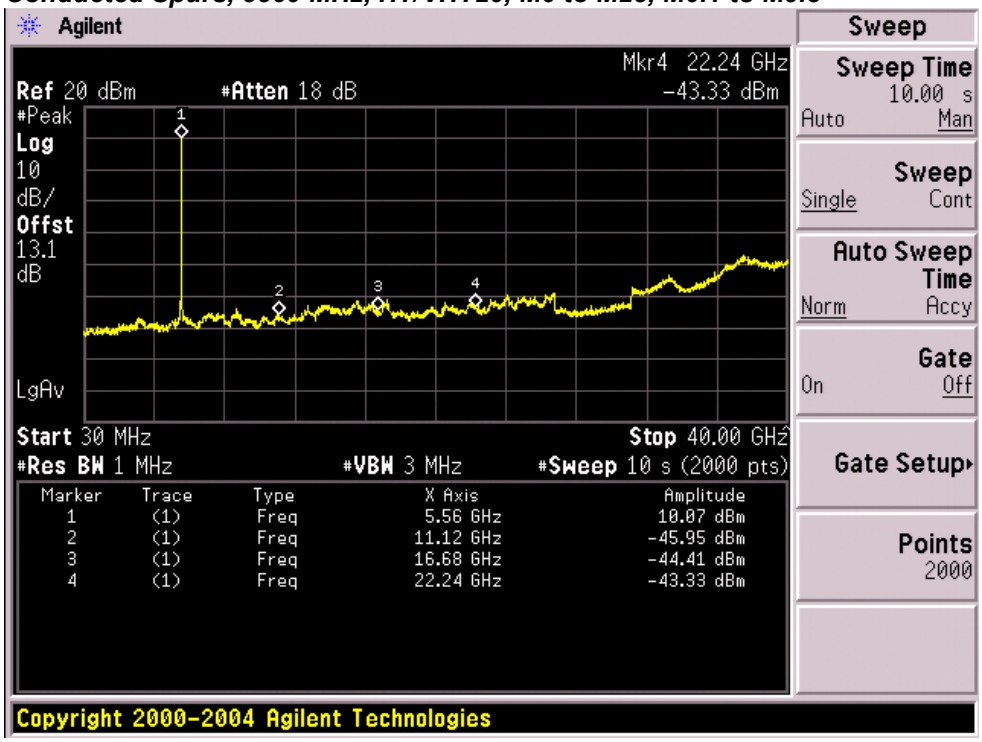
Conducted Spurs, 5560 MHz, Non HT/VHT20, 6 to 54 Mbps



Conducted Spurs, 5560 MHz, HT/VHT20, M0 to M23, M0.1 to M9.3



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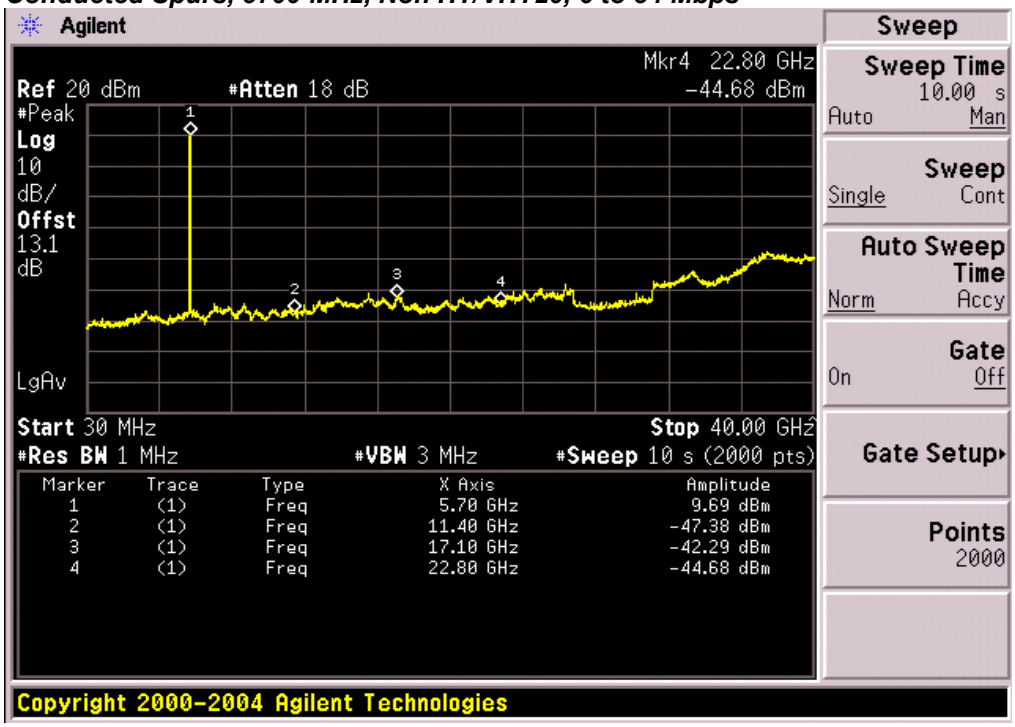
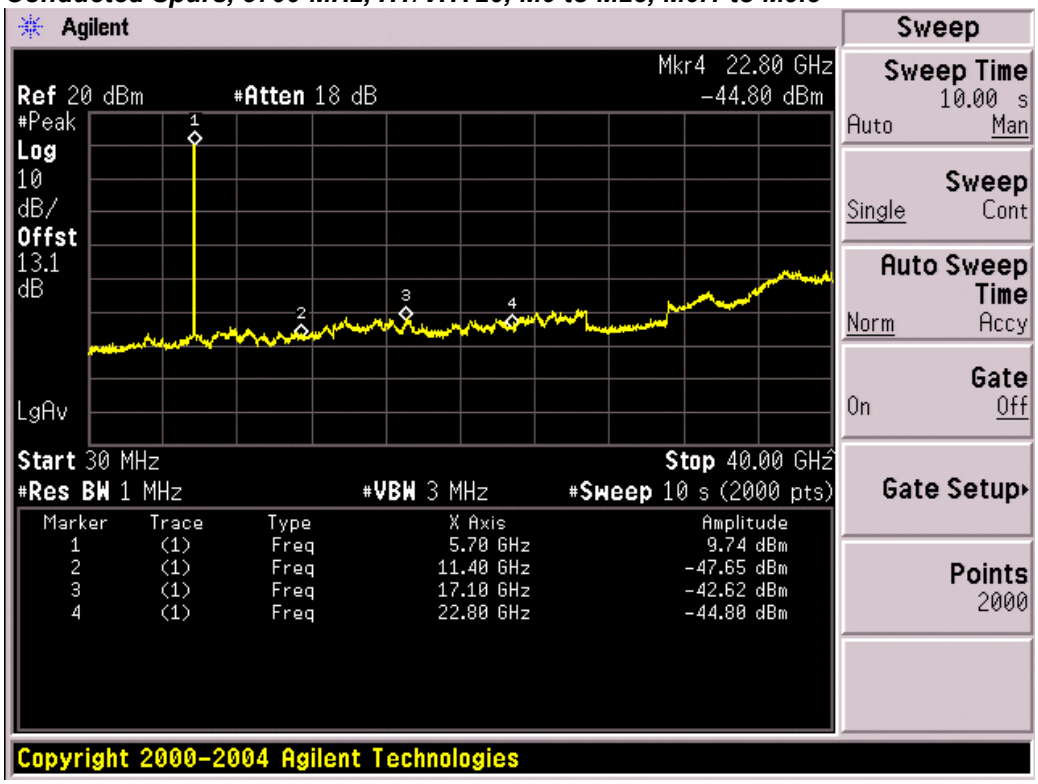
Conducted Spurs, 5700 MHz, Non HT/VHT20, 6 to 54 Mbps



Conducted Spurs, 5700 MHz, HT/VHT20, M0 to M23, M0.1 to M9.3



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Conducted Bandedge

15.407: For transmitters operating in the 5.25-5.35 and 5.47-5.725 GHz band: all emissions outside of the 5.25-5.35 and 5.47-5.725 GHz bands shall not exceed an EIRP of -27dBm/MHz.

Connect the antenna port(s) to the spectrum analyzer input. Place the radio in continuous transmit mode. Configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer).

Span:	30 MHz-40 GHz
Reference Level:	20 dBm
Attenuation:	10 dB
Sweep Time:	10 s
Resolution Bandwidth:	1 MHz
Video Bandwidth:	3 MHz
Detector:	Peak
Trace:	Single
Marker:	Peak

Record the marker waveform peak to spur difference

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Frequency (MHz)	Mode	Number of TX paths	Target Power Setting (dBm)	Correlated Antenna Gain (dBi)	Conducted Bandedge Level (dBm/MHz)	Total Bandedge Level (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
5500	Non HT/VHT20, 6 to 54 Mbps	1	16	7	-42.15	-35.15	-27	8.15
	HT/VHT20, M0 to M23, M0.1 to M9.3	1	16	7	-38.7	-31.7	-27	4.7
5500/ 5520	Non HT/VHT40, 6 to 54 Mbps	1	14	7	-35.27	-28.27	-27	1.27
	HT/VHT40, M0 to M23, M0.1 to M9.3	1	16	7	-35.87	-28.87	-27	1.87
5500/ 5520 5540/ 5560	Non HT/VHT80, 6 to 54 Mbps	1	14	7	-34.41	-27.4	-27	0.41
	HT/VHT80, M0 to M23, M0.1 to M9.3	1	16	7	-38.29	-31.29	-27	4.29
5700	Non HT/VHT20, 6 to 54 Mbps	1	13	7	-42.46	-35.46	-27	8.46
	HT/VHT20, M0 to M23, M0.1 to M9.3	1	13	7	-40.24	-33.24	-27	6.24

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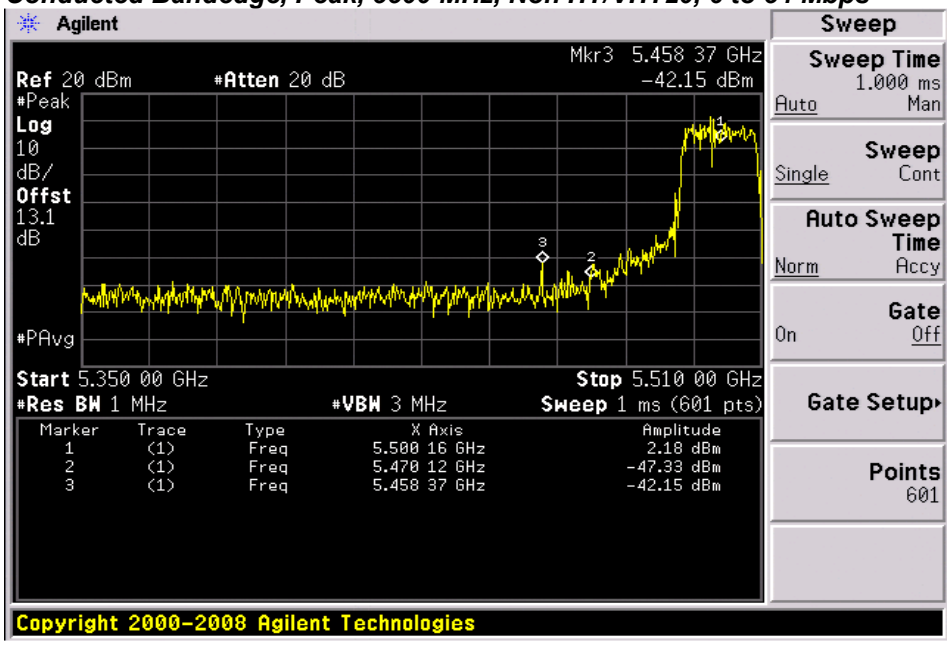
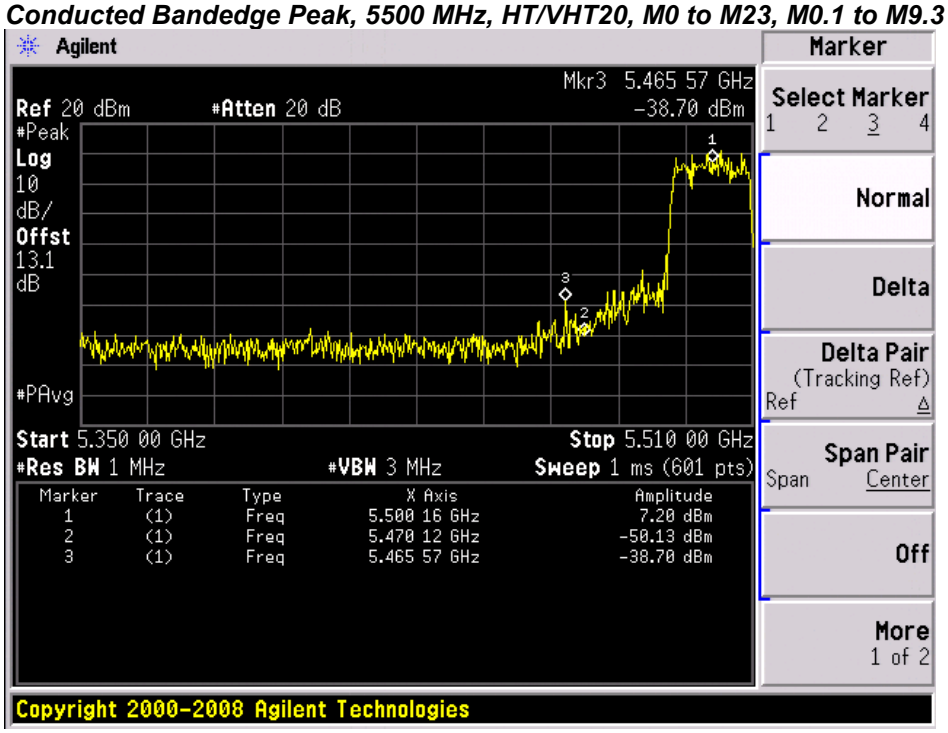
Conducted Bandedge, Peak, 5500 MHz, Non HT/VHT20, 6 to 54 Mbps



Conducted Bandedge Peak, 5500 MHz, HT/VHT20, M0 to M23, M0.1 to M9.3



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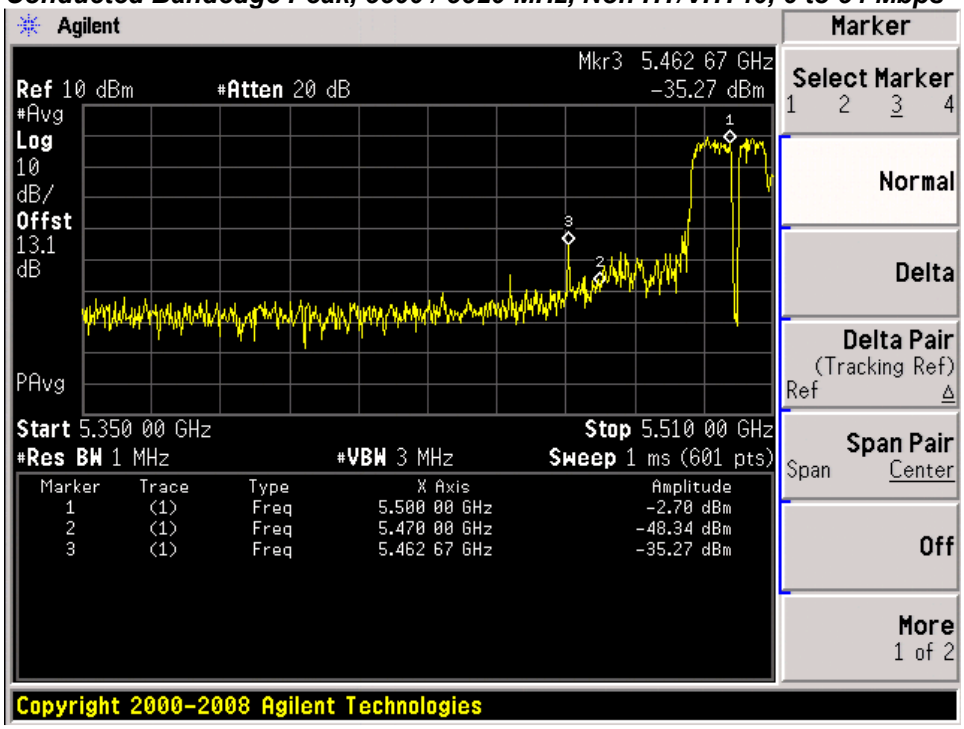
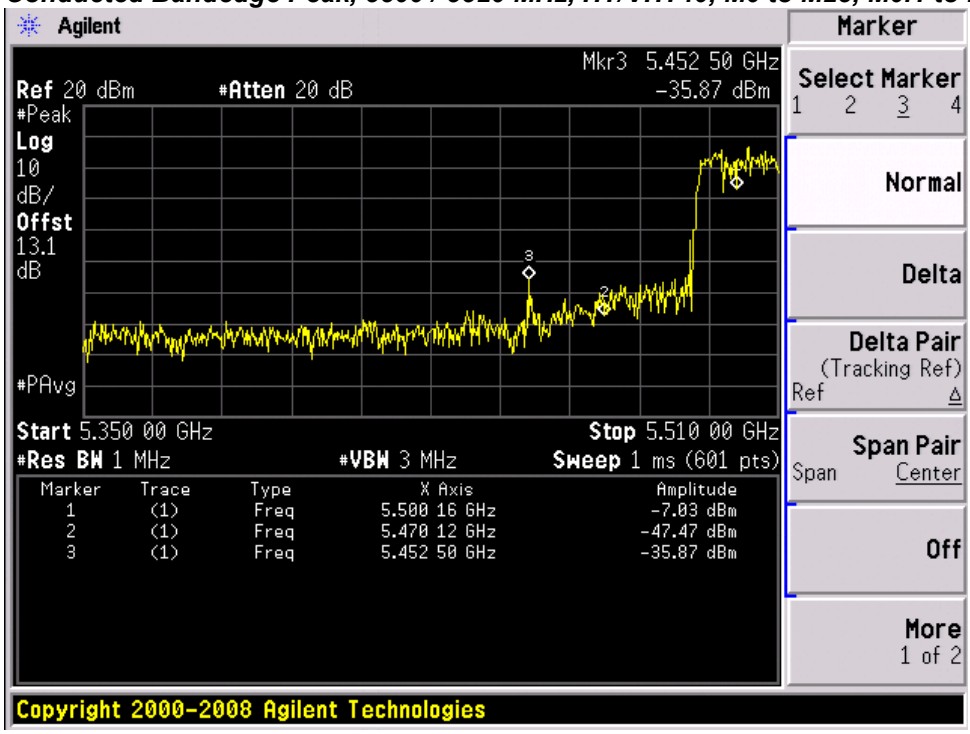
Conducted Bandedge Peak, 5500 / 5520 MHz, Non HT/VHT40, 6 to 54 Mbps



Conducted Bandedge Peak, 5500 / 5520 MHz, HT/VHT40, M0 to M23, M0.1 to M9.3



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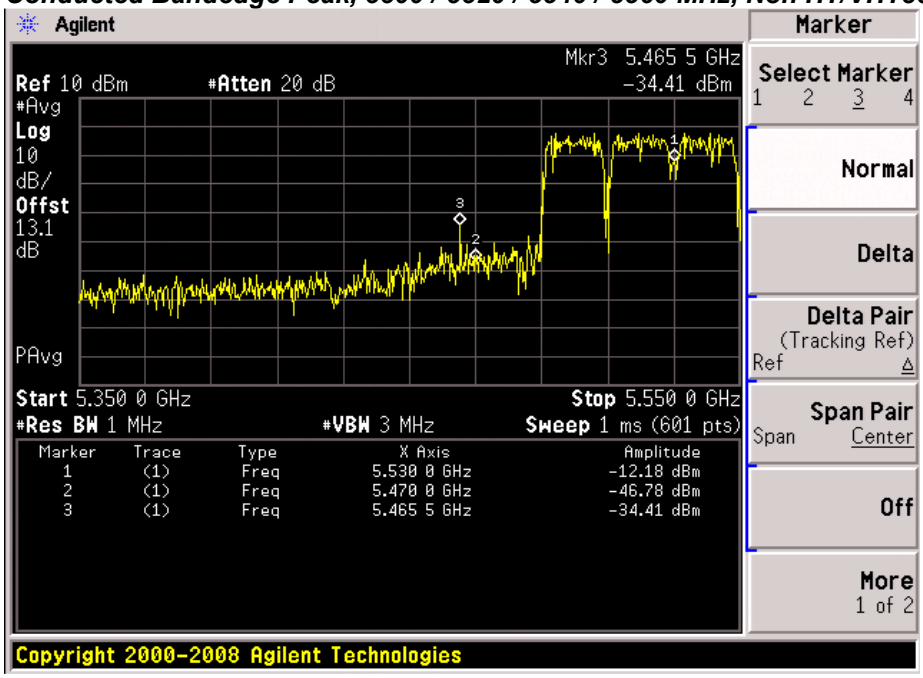
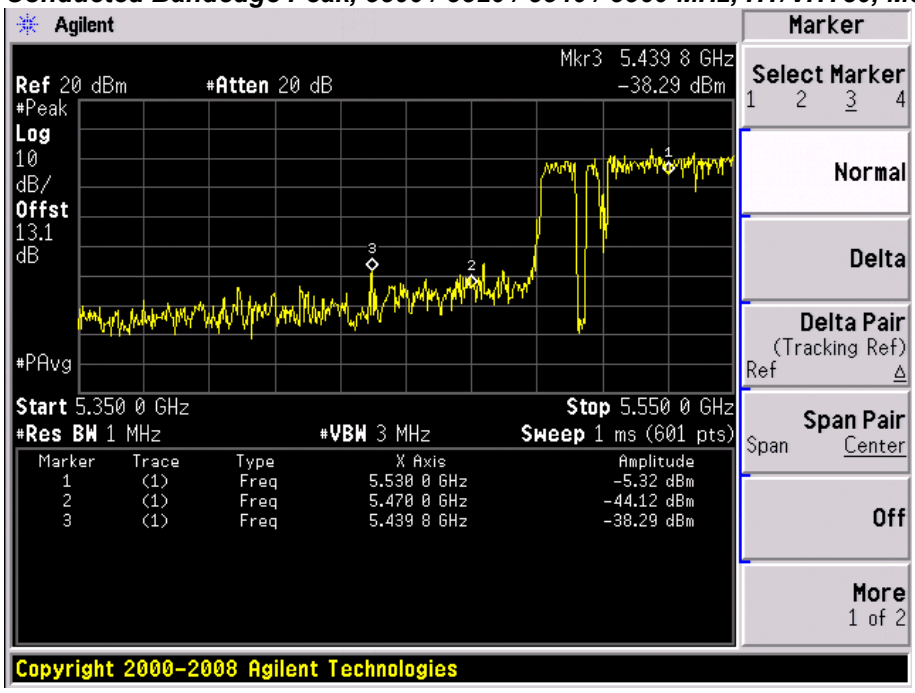
Conducted Bandedge Peak, 5500 / 5520 / 5540 / 5560 MHz, Non HT/VHT80, 6 to 54 Mbps



Conducted Bandedge Peak, 5500 / 5520 / 5540 / 5560 MHz, HT/VHT80, M0 to M23, M0.1 to M9.3



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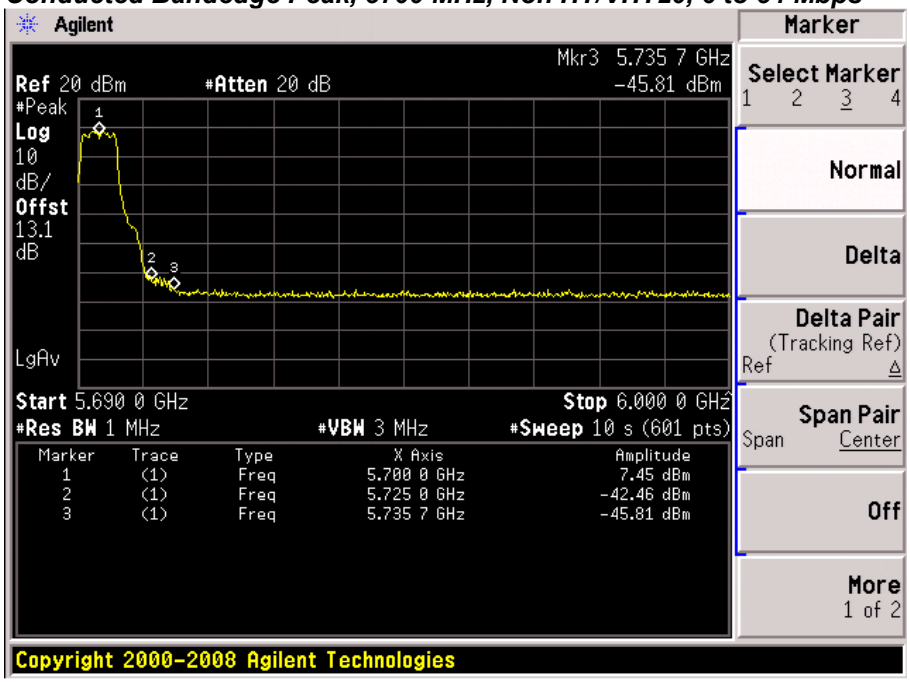
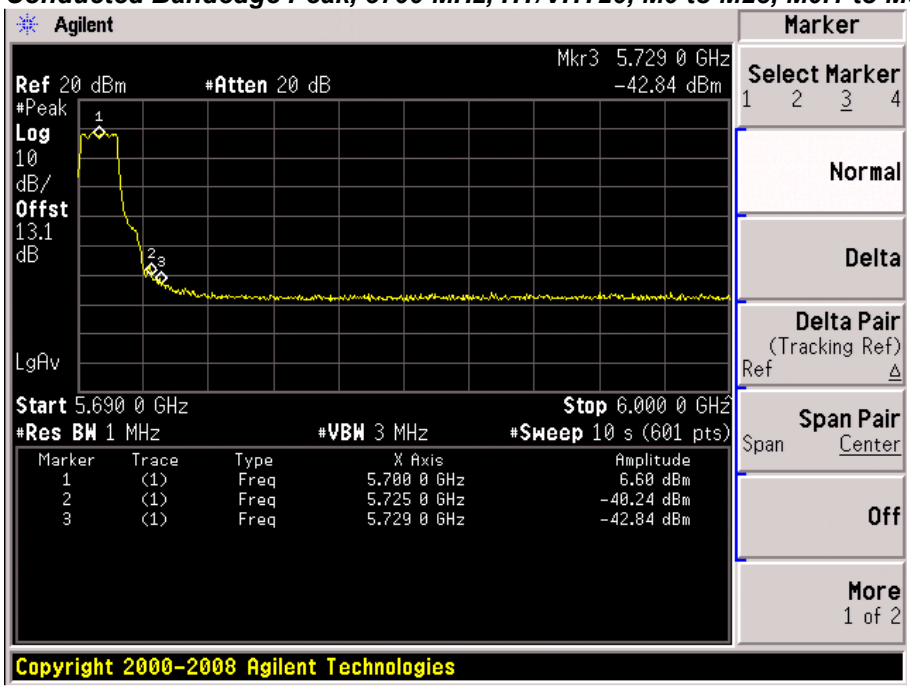
Conducted Bandedge Peak, 5700 MHz, Non HT/VHT20, 6 to 54 Mbps



Conducted Bandedge Peak, 5700 MHz, HT/VHT20, M0 to M23, M0.1 to M9.3



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Radiated Spurious Emissions

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Using Vasona, configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer). Place the radio in continuous transmit mode.

Span:	1GHz – 15 GHz
Reference Level:	80 dBuV
Attenuation:	10 dB
Sweep Time:	Coupled
Resolution Bandwidth:	1MHz
Video Bandwidth:	1 MHz for peak, 10 Hz for average
Detector:	Peak

Maximize Turntable (find worst case table angle), Maximize Antenna (find worst case height)

Save 2 plots: 1) Average Plot (Vertical and Horizontal), Limit= 54dBuV @3m
2) Peak plot (Vertical and Horizontal), Limit = 74dBuV @3m

Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands.

This report represents the worst case data for all supported operating modes.

Please note that for the 1-18GHz test results, the noise floor is close to the limit for the Average plots. Scans were performed with reduced RBW and VBW in order to verify that no significant emissions were hidden by the noise floor.

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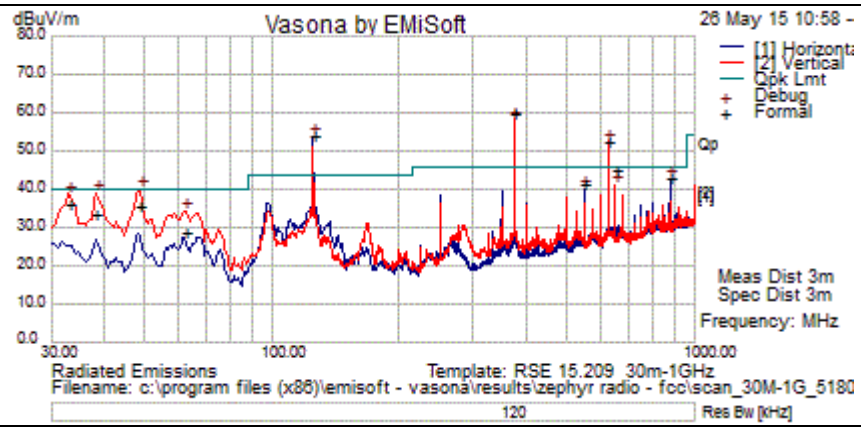
Graphical Test Results: 30MHz – 1000MHz (Transmitter on)
Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements

Please note that the high emissions at 375MHz, 125MHz, and 625MHz are digital emissions. These will be covered in the EMC test report. A comparison measurement was made with the radio transmitter turned off. The emissions were still observed when the radio was off, so it can be concluded that the emissions are not caused by the radio.



Title: 30MHz - 1000MHz Test Results

Test Results Table

Formal Data

No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	375.007	43.0	1.8	15.1	60.0	Quasi Max	V	141	195	46.0	14.0	Fail	
2	125.006	39.3	1.1	14.0	54.4	Quasi Max	H	199	192	43.5	10.9	Fail	
3	625.010	30.9	2.4	19.4	52.7	Quasi Max	V	104	294	46.0	6.7	Fail	
4	48.369	26.4	.6	8.6	35.6	Quasi Max	V	138	78	40.0	-4.4	Pass	wideband
5	38.187	18.2	.5	15.0	33.8	Quasi Max	V	114	334	40.0	-6.2	Pass	wideband
6	33.179	17.1	.5	18.7	36.3	Quasi Max	V	127	86	40.0	-3.7	Pass	wideband
7	875.024	18.3	2.8	22.1	43.2	Quasi Max	H	107	315	46.0	-2.8	Pass	
8	650.007	22.9	2.4	19.9	45.2	Quasi Max	H	140	313	46.0	-.8	Pass	
9	62.131	20.6	.7	7.7	29.0	Quasi Max	V	120	71	40.0	-11.0	Pass	wide band
10	550.006	21.2	2.2	18.3	41.7	Quasi Max	H	177	125	46.0	-4.3	Pass	

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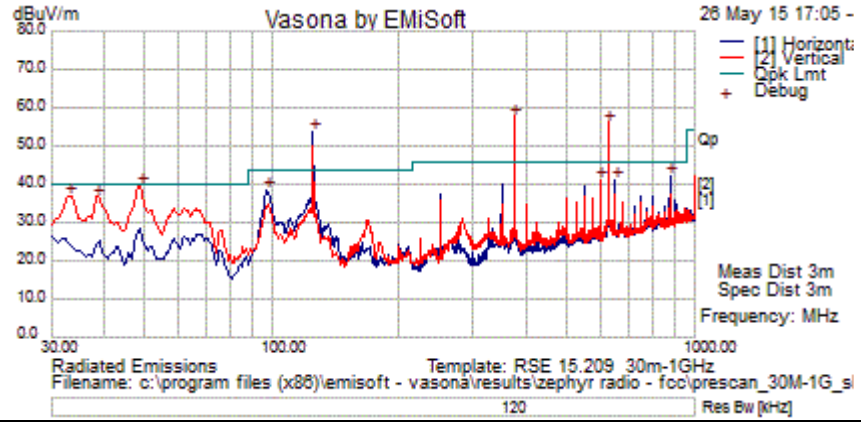
Graphical Test Results: 30MHz – 1000MHz (Transmitter Off – EMC emission for comparison)
Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements

Please note that the high emissions at 375MHz, 125MHz, and 625MHz are digital emissions. These will be covered in the EMC test report. A comparison measurement was made with the radio transmitter turned off. The emissions were still observed when the radio was off, so it can be concluded that the emissions are not caused by the radio.



Title: 30MHz - 1000MHz Test Results

Test Results Table

Formal Data

No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	374.956	40.8	1.8	15.1	57.7	Peak [Scan]	V	100	0	46.0	11.7	Fail	
2	125.181	38.6	1.1	14.0	53.6	Peak [Scan]	H	200	0	43.5	10.1	Fail	
3	624.731	34.4	2.4	19.4	56.1	Peak [Scan]	V	100	0	46.0	10.1	Fail	
4	48.794	30.9	.6	8.4	39.8	Peak [Scan]	V	100	0	40.0	-.2	Pass	
5	33.031	17.4	.5	18.9	36.8	Peak [Scan]	V	100	0	40.0	-3.2	Pass	
6	38.488	21.2	.5	14.8	36.5	Peak [Scan]	V	100	0	40.0	-3.5	Pass	
7	875.113	17.1	2.8	22.1	42.0	Peak [Scan]	H	200	0	46.0	-4.0	Pass	
8	650.194	18.9	2.4	19.9	41.2	Peak [Scan]	H	300	0	46.0	-4.8	Pass	
9	599.875	20.4	2.3	18.4	41.2	Peak [Scan]	V	100	0	46.0	-4.8	Pass	
10	97.294	28.0	.9	9.6	38.5	Peak [Scan]	H	200	0	43.5	-5.0	Pass	

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Graphical Test Results 802.11a: 1 – 18GHz (5500MHz – Average)

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements

Title: 1 - 18GHz Test Results at 5500MHz (Average)

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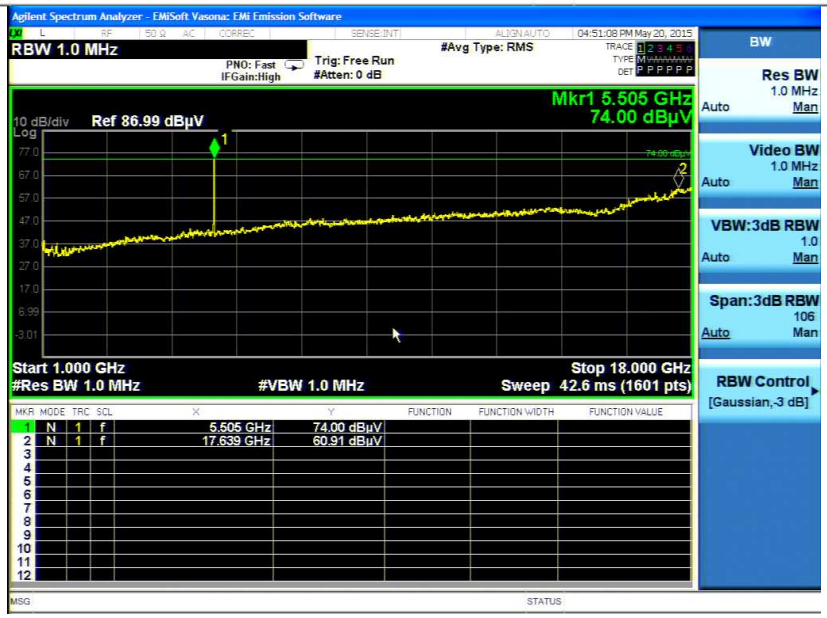
Graphical Test Results 802.11a: 1 – 18GHz (5500MHz – Peak)

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Title: 1 - 18GHz Test Results at 5500MHz (Peak)

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