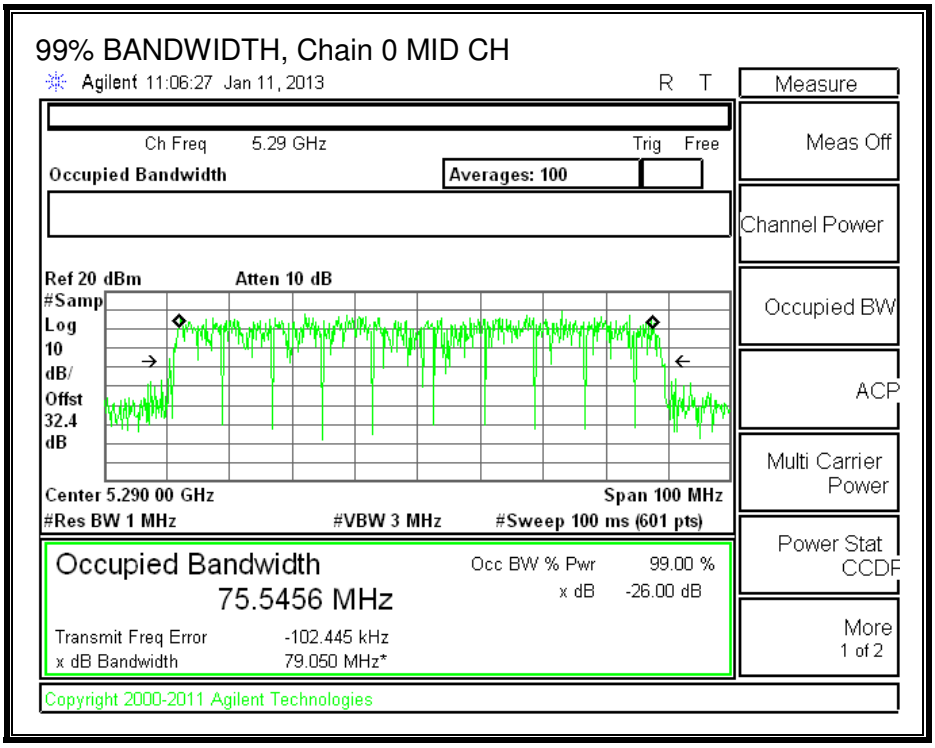
99% BANDWIDTH, Chain 0



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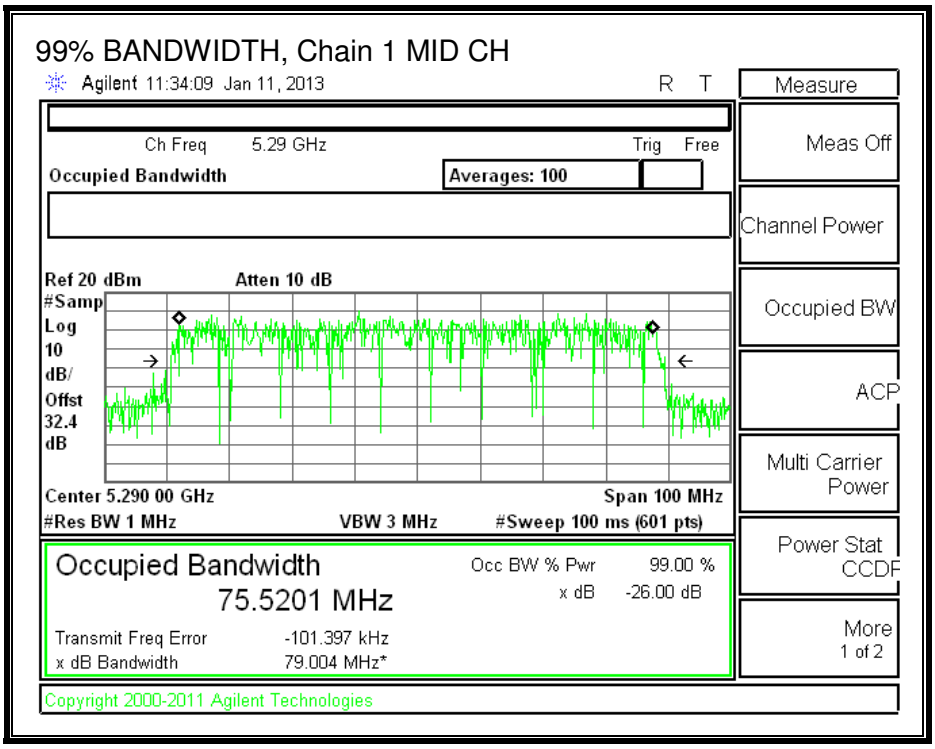
99% BANDWIDTH, Chain 1



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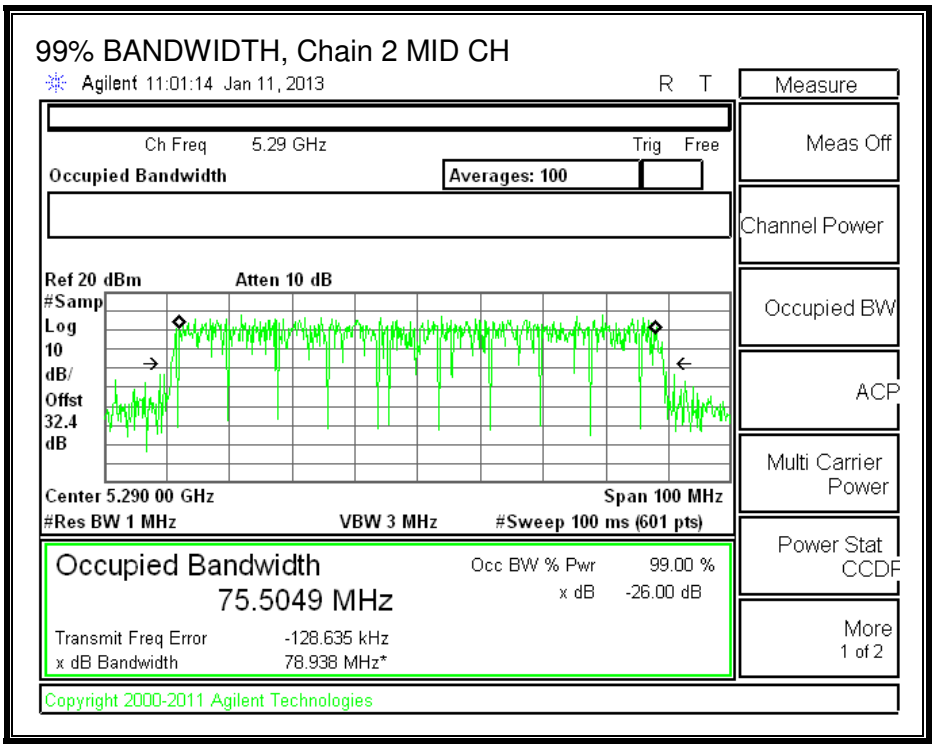
99% BANDWIDTH, Chain 2



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8.40.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.40	1.60	2.30	2.50

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.40	1.60	2.30	7.24

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)	Uncorrelated Directional Gain (dBi)
Mid	5290	82.00	75.5049	7.24	2.50

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5290	24.00	24.00	30.00	24.00	9.76	11.00	9.76

Duty Cycle CF (dB)	0.09	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	12.12	12.00	12.00	16.81	24.00	-7.19

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5290	-4.635	-4.960	-4.906	0.03	9.76	-9.73

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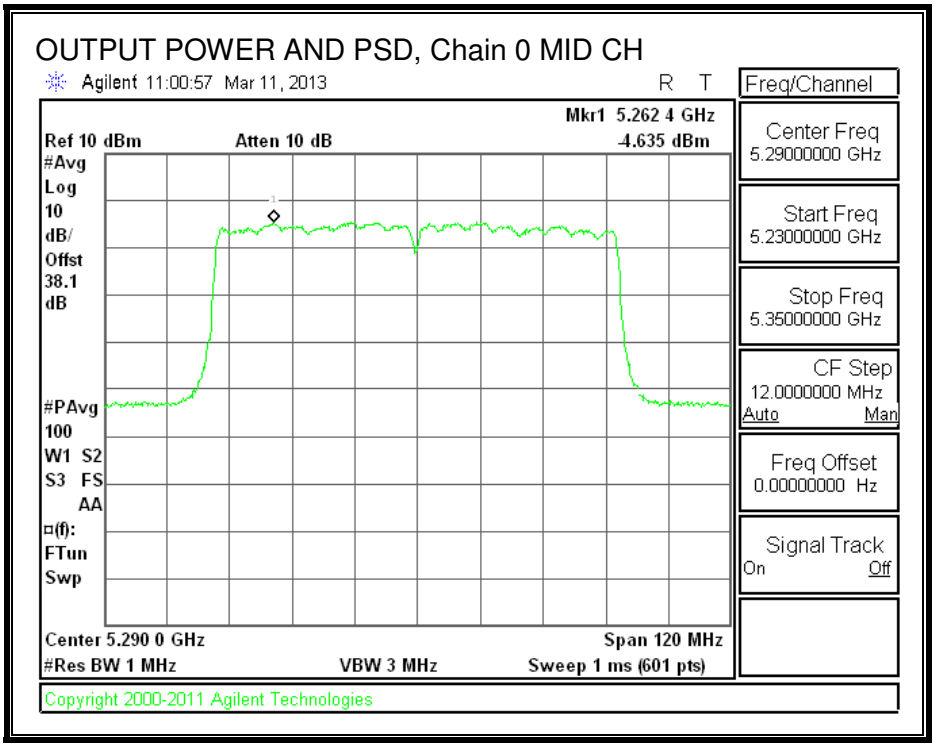
OUTPUT POWER AND PSD, Chain 0



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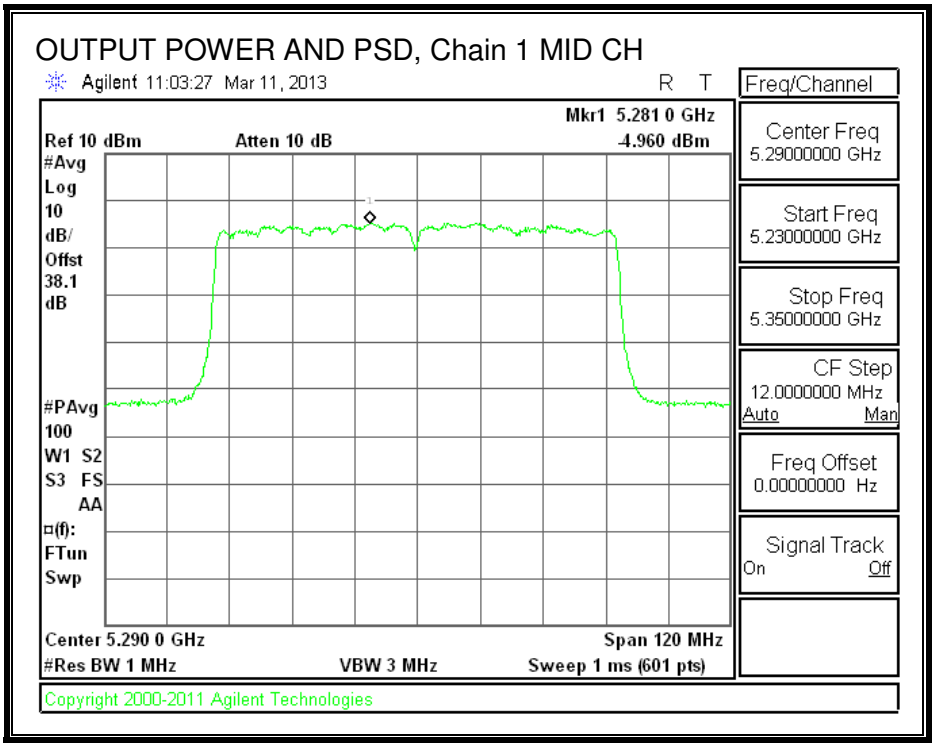
OUTPUT POWER AND PSD, Chain 1



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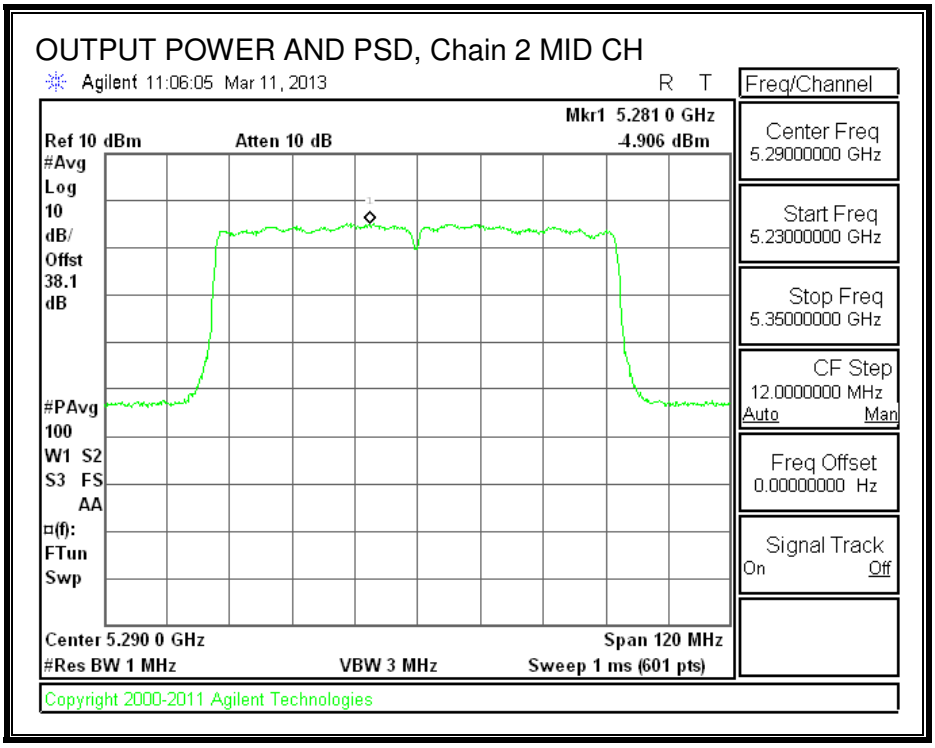
OUTPUT POWER AND PSD, Chain 2



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8.40.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.41. 802.11n HT80 BF 3TX MODE IN THE 5.3 GHz BAND

Covered by testing 11ac VHT80 CDD 3TX mode, the power per chain used for 11ac VHT80 CDD 3TX mode is the same power per chain that will be used for 11ac VHT80 BF 3TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.41.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.40	1.60	2.30	7.24

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)
Mid	5290	82.00	75.5049	7.24

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Mid	5290	22.76	24.00	30.00	22.76

Duty Cycle CF (dB)	0.09	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	12.12	12.00	12.00	16.81	22.76	-5.95

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8.42. 802.11ac VHT80 3TX STBC MODE IN THE 5.3 GHz BAND

Covered by testing 11ac VHT80 CDD 3TX mode, the power per chain used for 11ac VHT80 CDD 3TX mode is the same power per chain that will be used for 11ac VHT80 STBC 3TX mode.

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8.43. 802.11a 1TX MODE IN THE 5.6 GHz BAND

8.43.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	20.42
Mid	5580	20.42
High	5700	20.50

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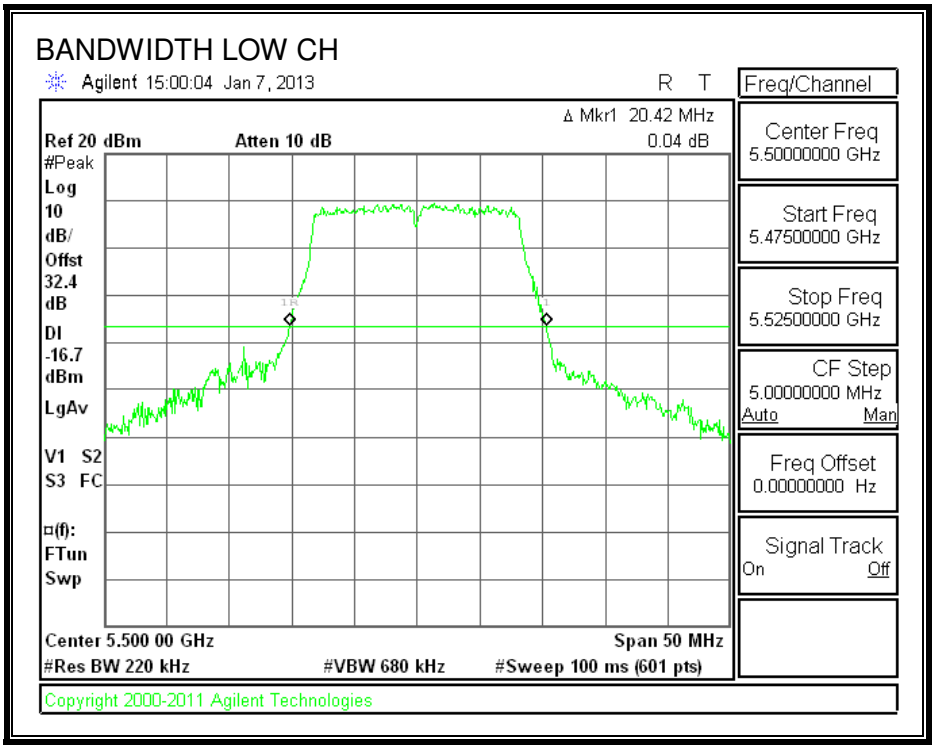
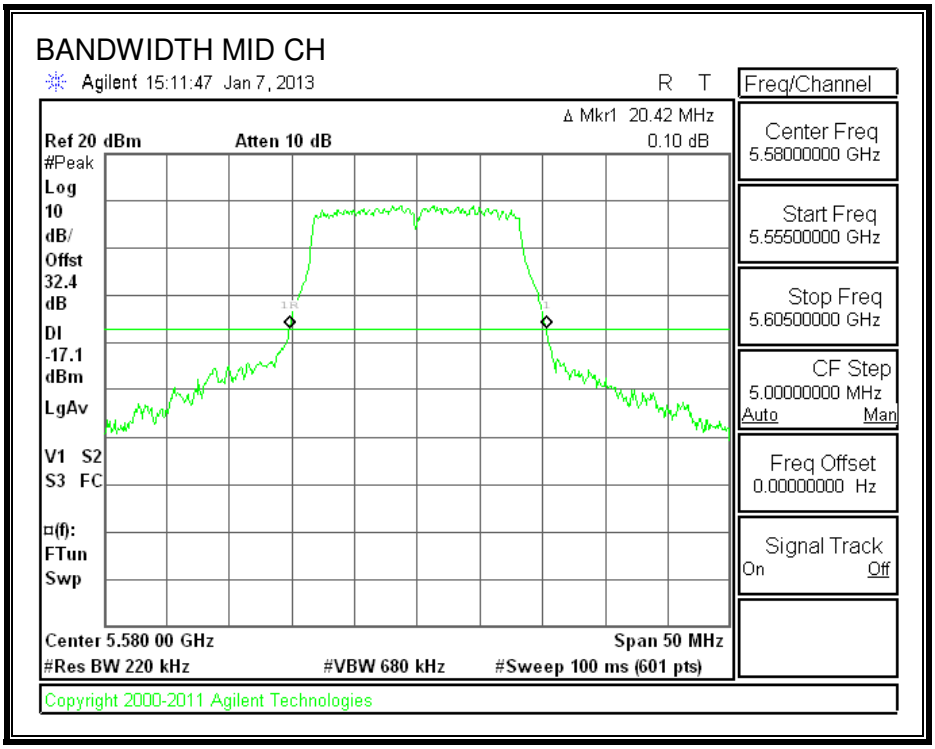
26 dB BANDWIDTH





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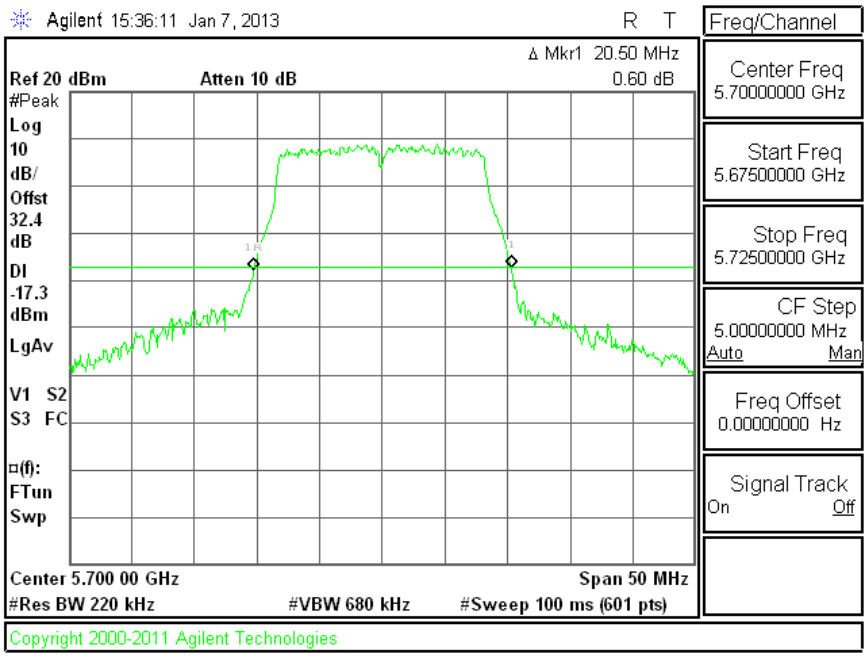
BANDWIDTH HIGH CH



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8.43.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	16.4931
Mid	5580	16.4816
High	5700	16.5001

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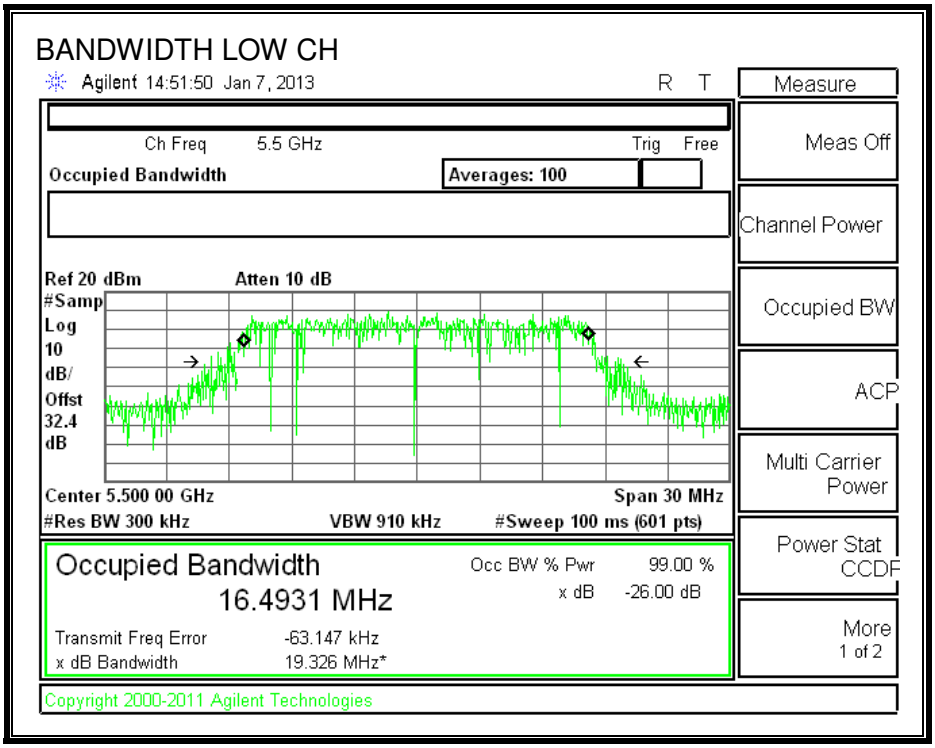
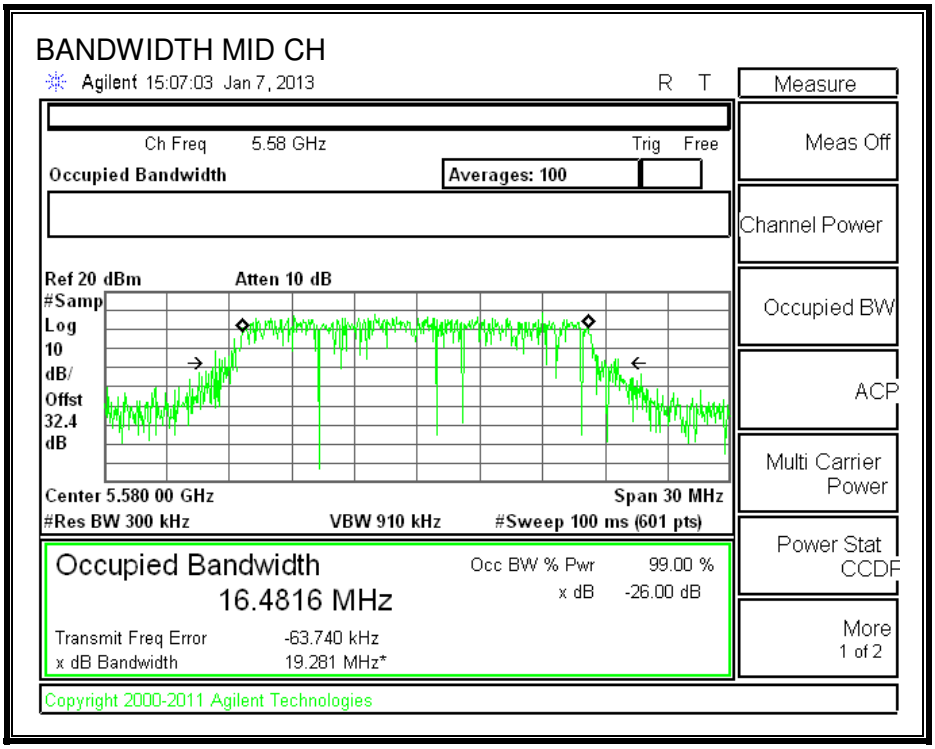
99% BANDWIDTH





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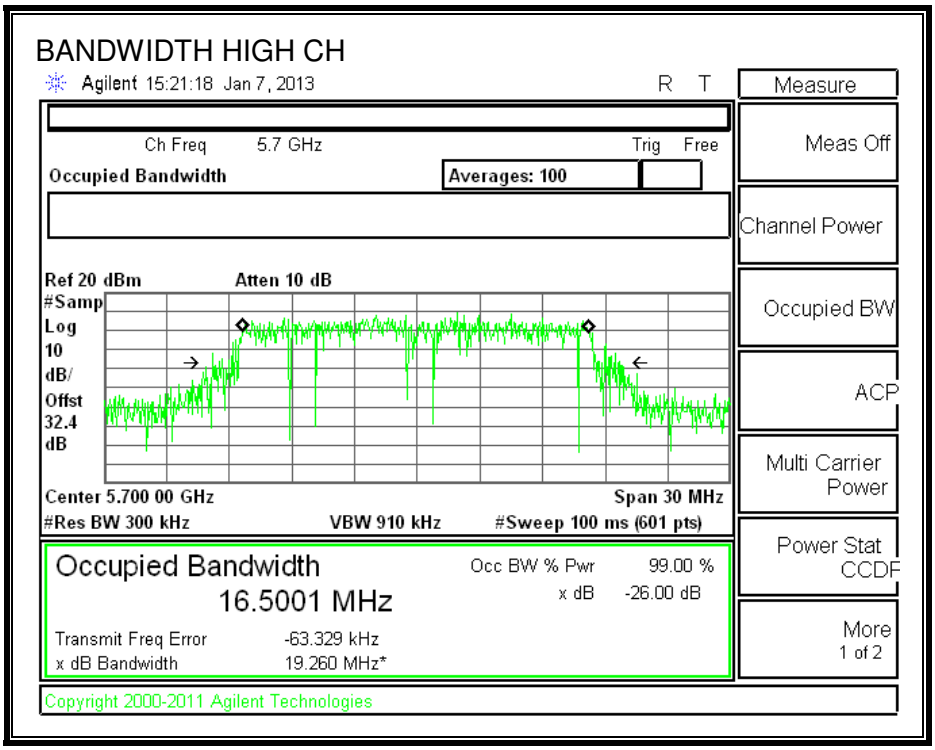

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8.43.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5500	20.42	16.4931	3.80
Mid	5580	20.42	16.4816	3.80
High	5700	20.50	16.5001	3.80

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5500	24.00	23.17	29.17	23.17	11.00	11.00	11.00
Mid	5580	24.00	23.17	29.17	23.17	11.00	11.00	11.00
High	5700	24.00	23.17	29.17	23.17	11.00	11.00	11.00

Output Power Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low 1	5500	15.00	15.00	23.17	-8.17
Low 2	5520	15.50	15.50	23.17	-7.67
Mid	5580	20.50	20.50	23.17	-2.67
High 2	5680	20.50	20.50	23.17	-2.67
High 1	5700	19.00	19.00	23.17	-4.17

PPSD Results

Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5500	10.151	10.151	11.00	-0.85
Mid	5580	9.833	9.833	11.00	-1.17
High	5700	9.977	9.977	11.00	-1.02

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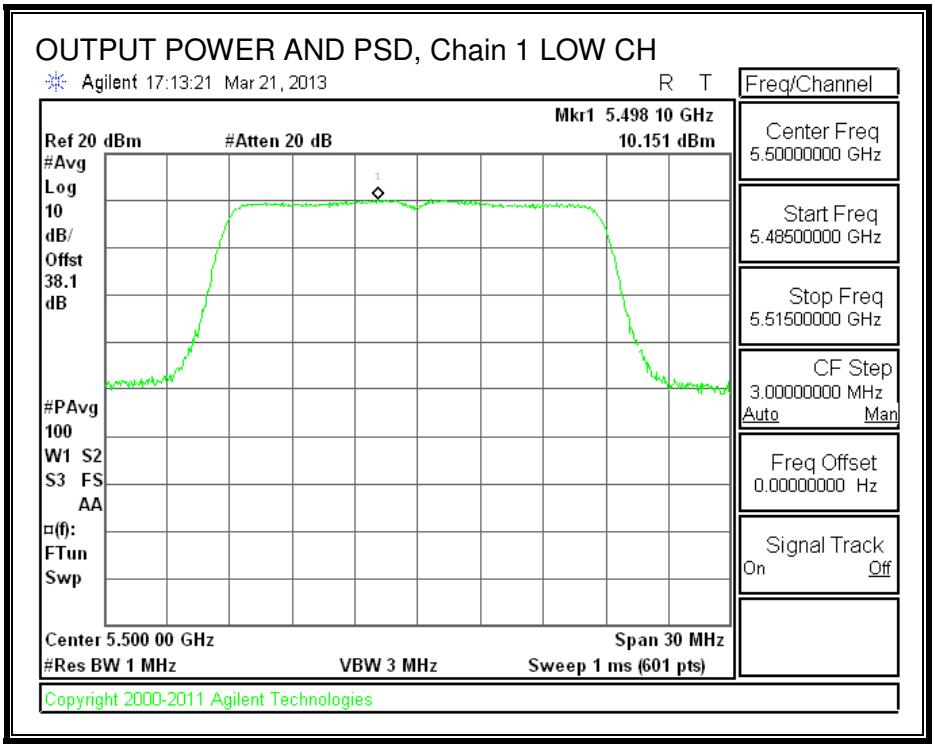
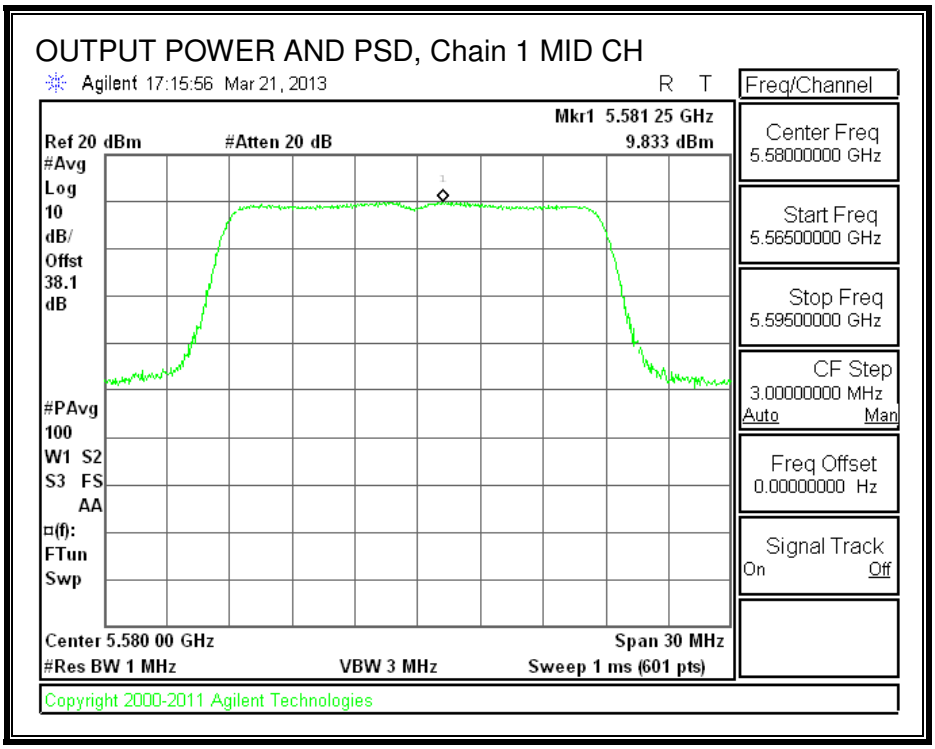
OUTPUT POWER AND PSD, Chain 1





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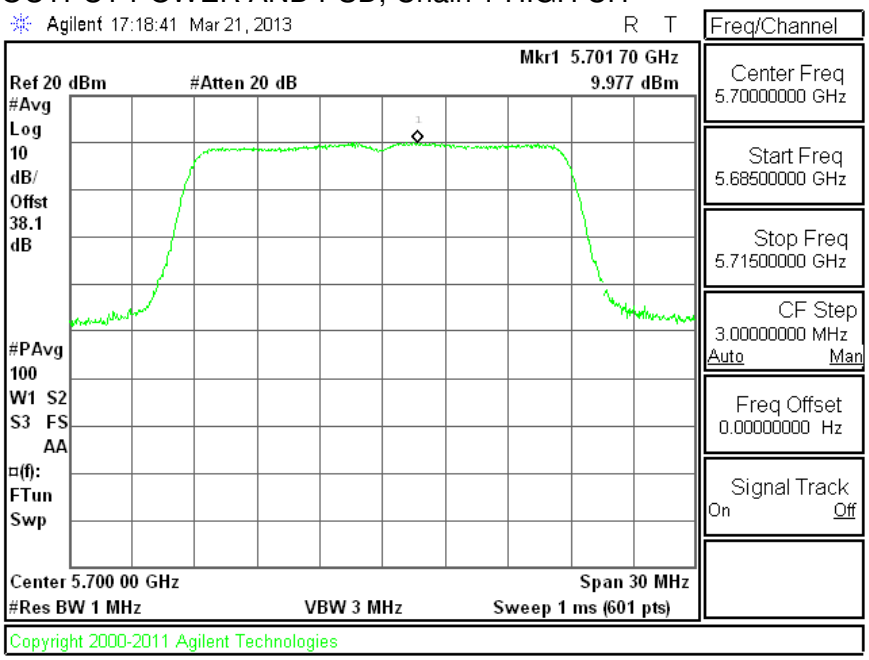
OUTPUT POWER AND PSD, Chain 1 HIGH CH



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8.43.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.44. 802.11n HT20 CDD 2TX MODE IN THE 5.6 GHz BAND

8.44.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5500	20.67	20.42
Mid	5580	20.67	20.50
High	5700	20.67	20.58

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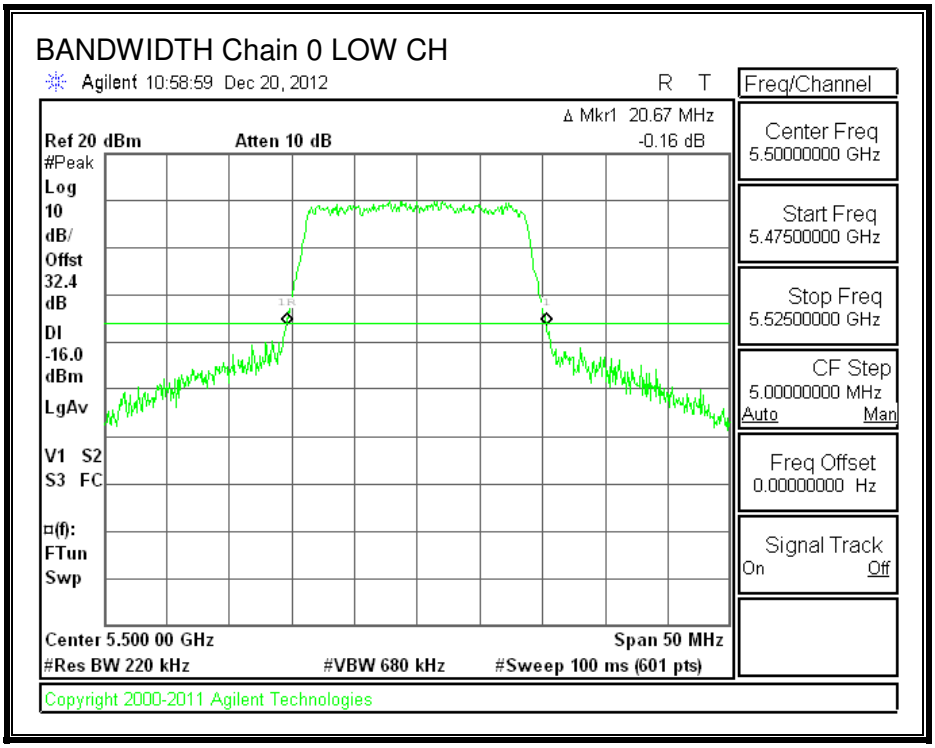
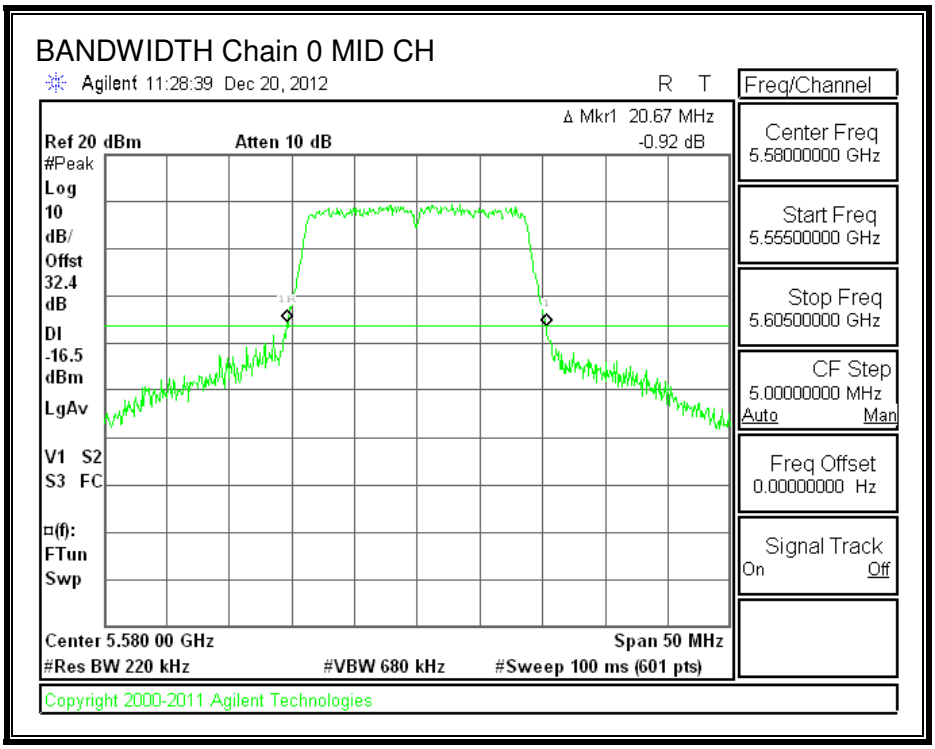
26 dB BANDWIDTH, Chain 0





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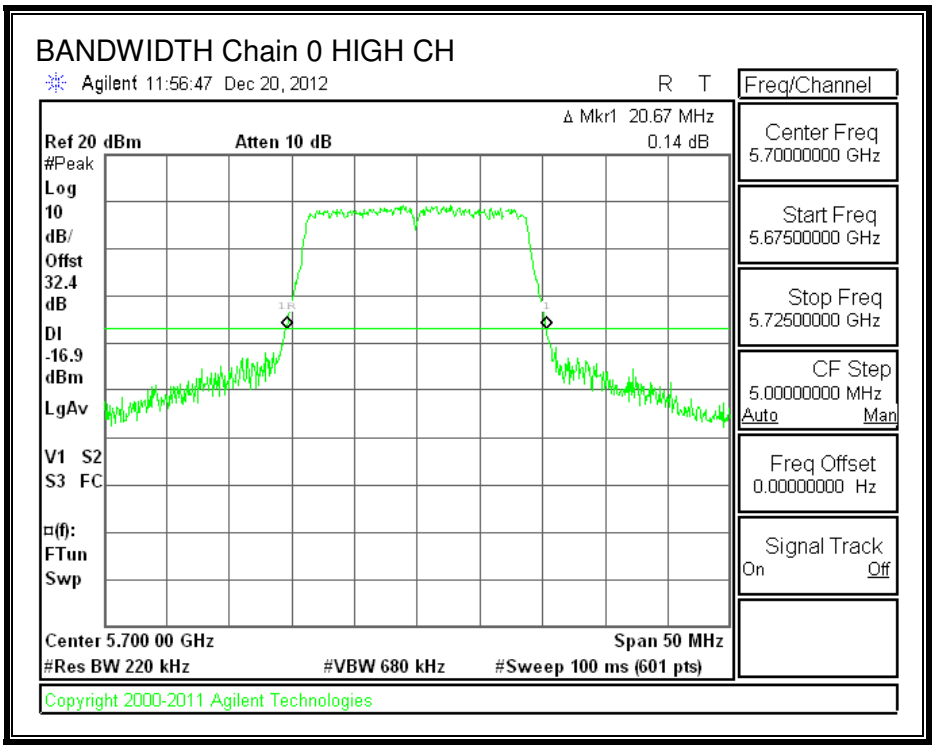
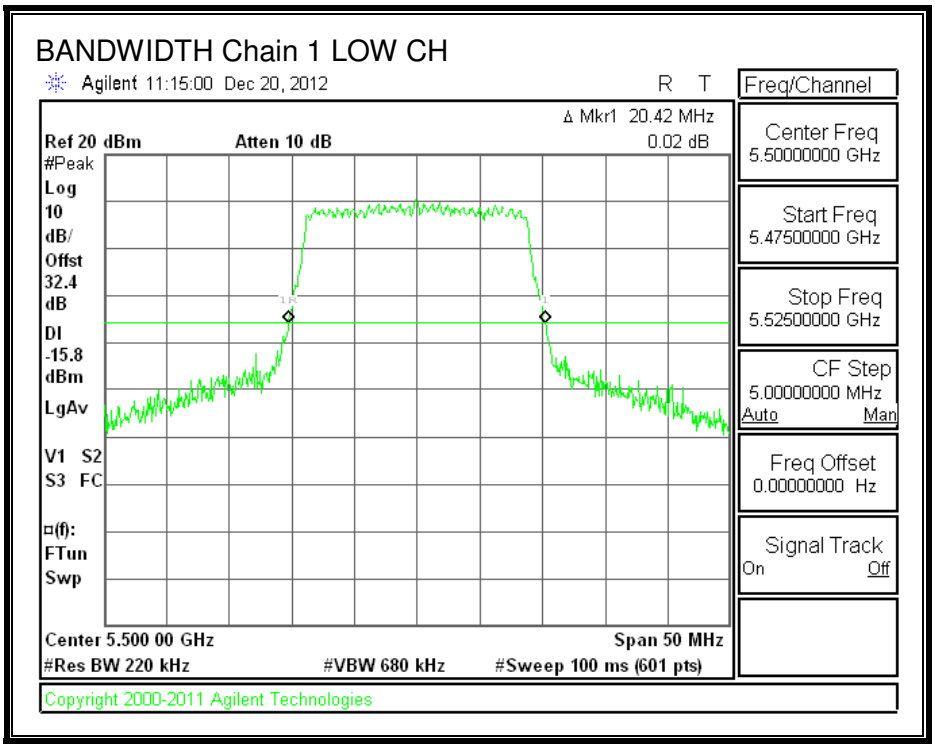


26 dB BANDWIDTH, Chain 1



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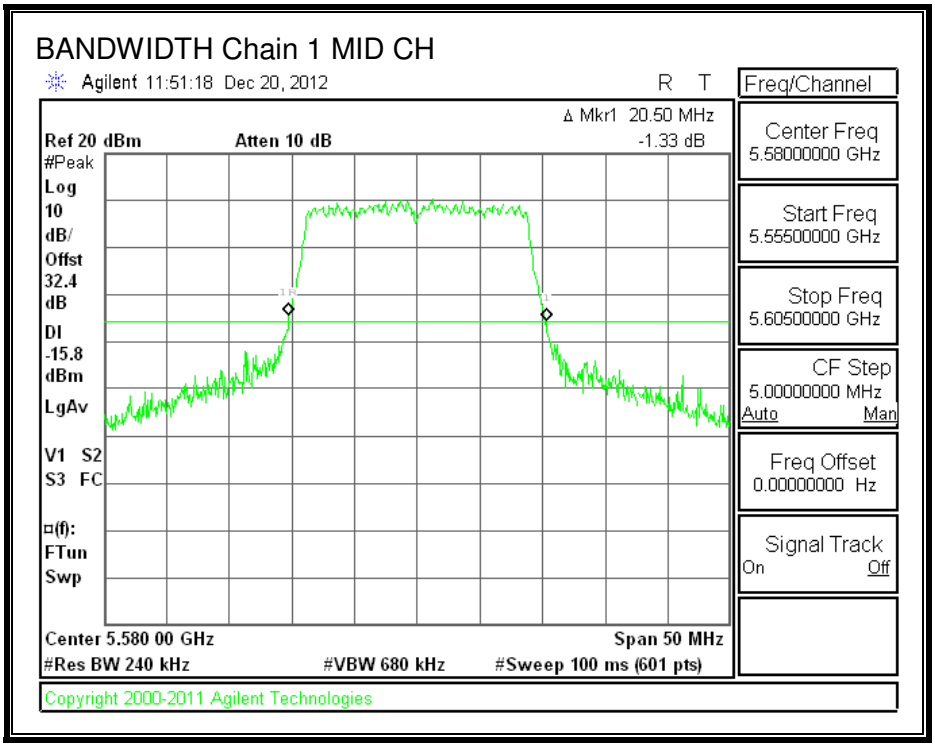

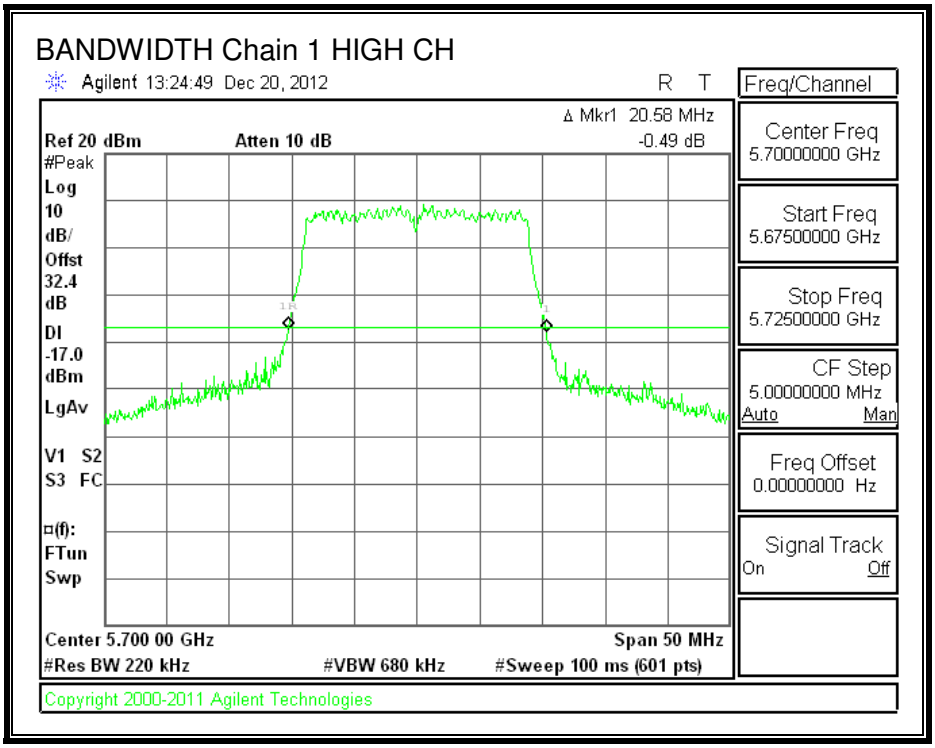

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8.44.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5500	17.6728	17.6783
Mid	5580	17.6623	17.7147
High	5700	17.6899	17.7074

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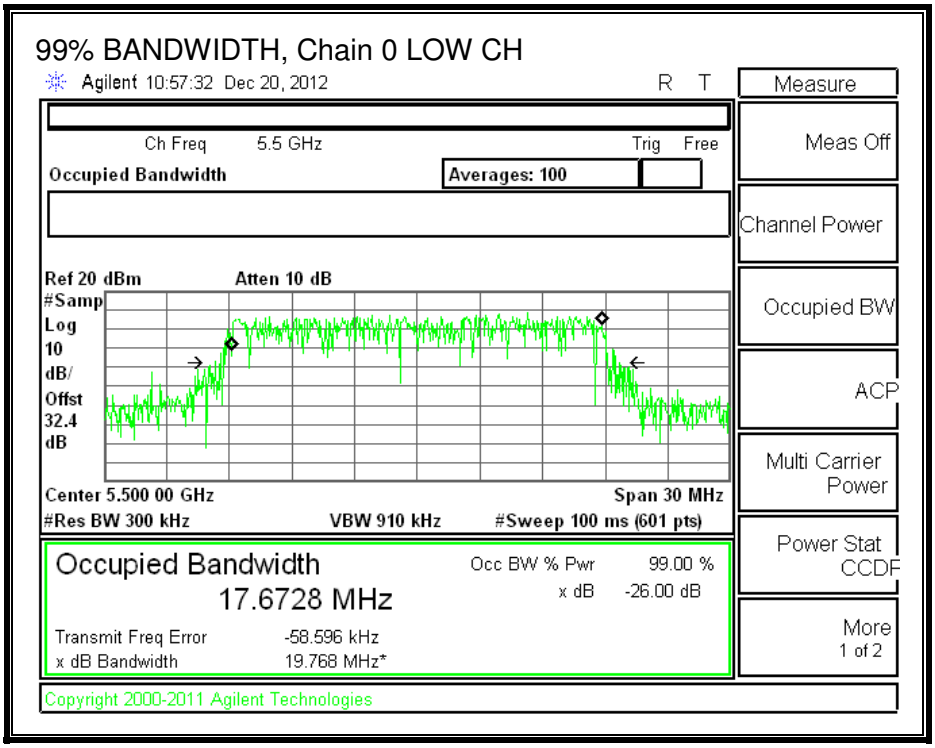
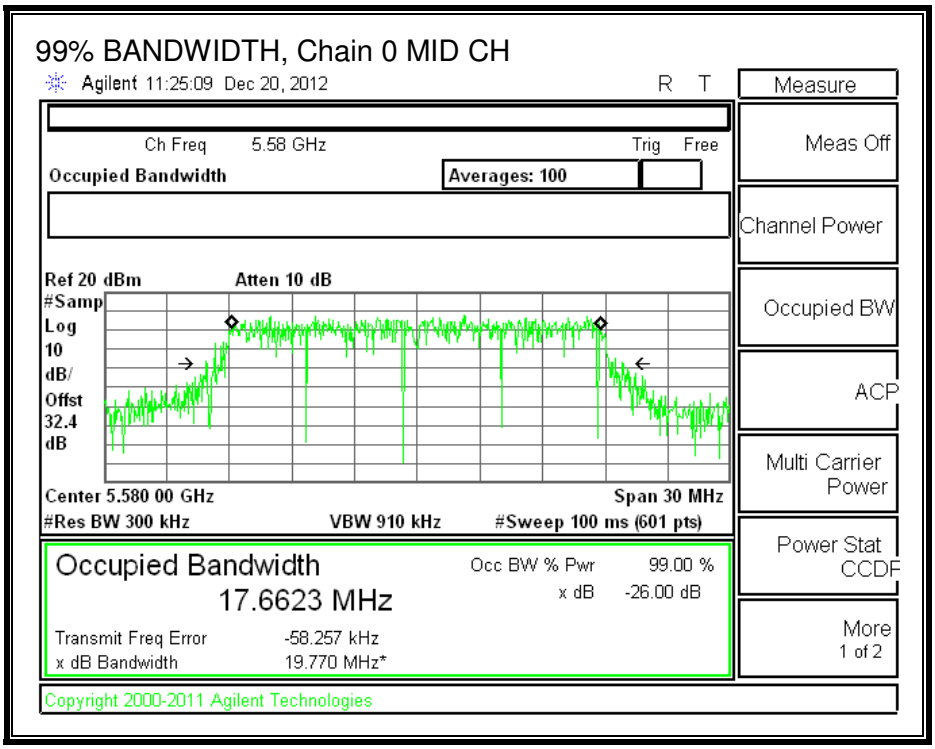
99% BANDWIDTH, Chain 0





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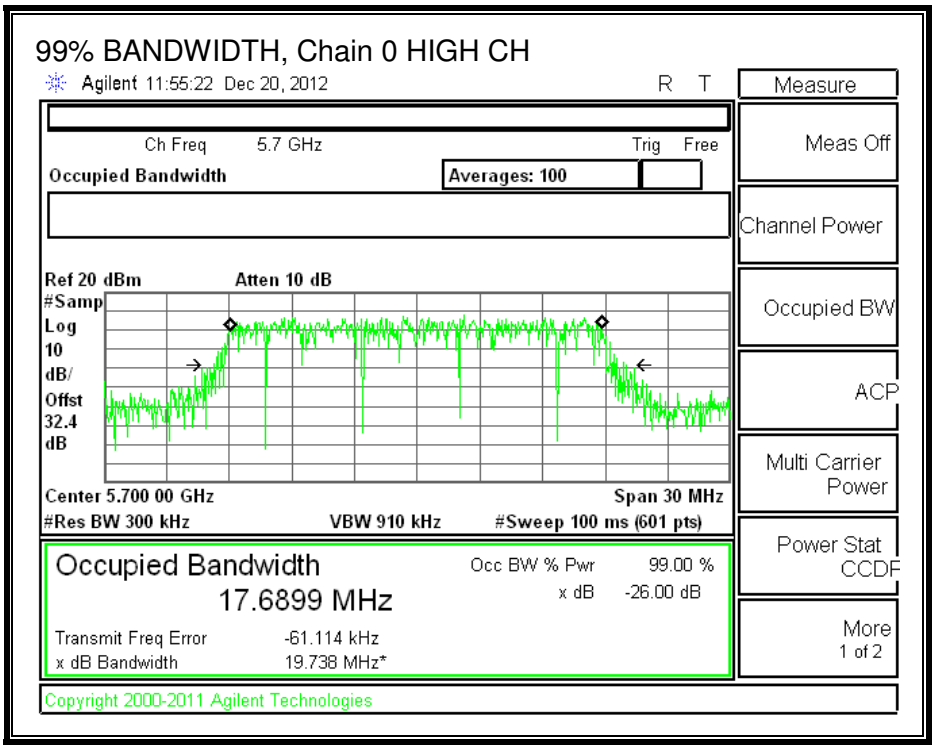
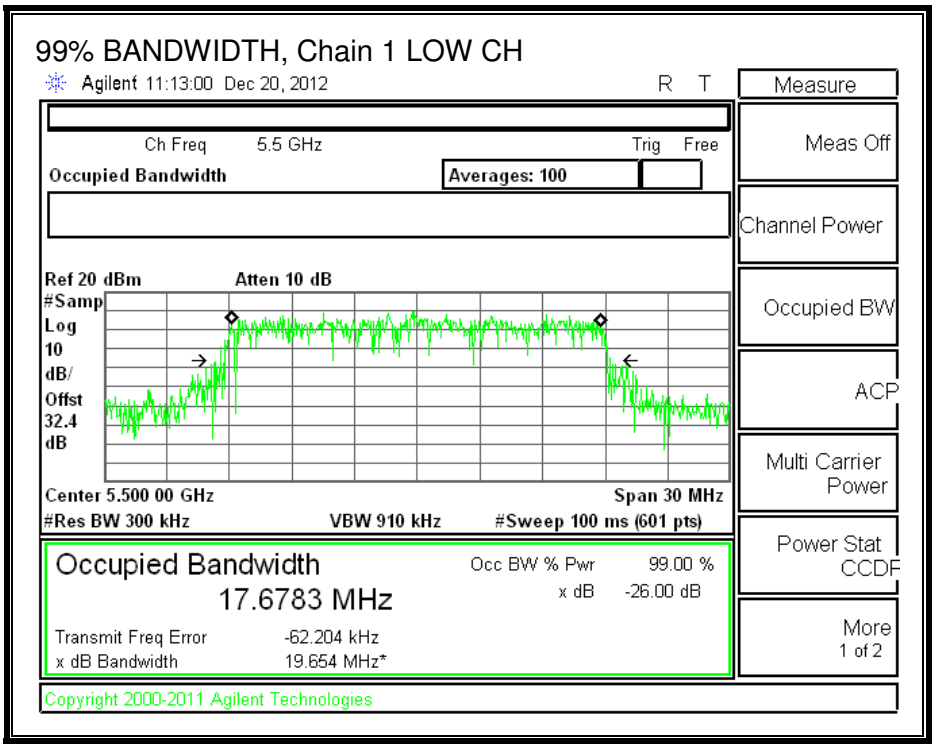


99% BANDWIDTH, Chain 1



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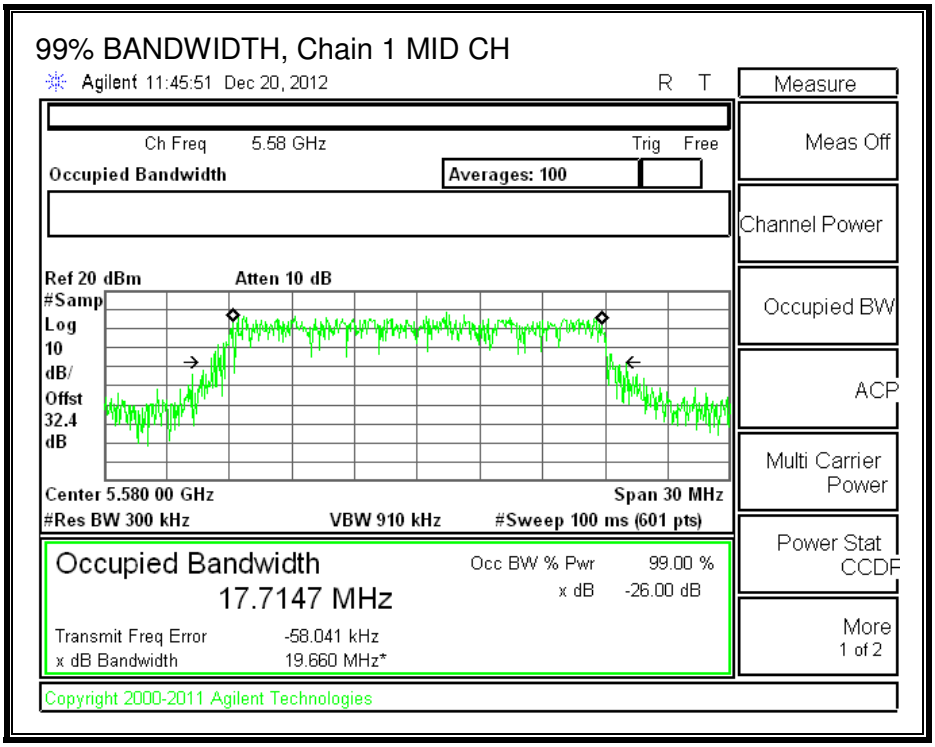

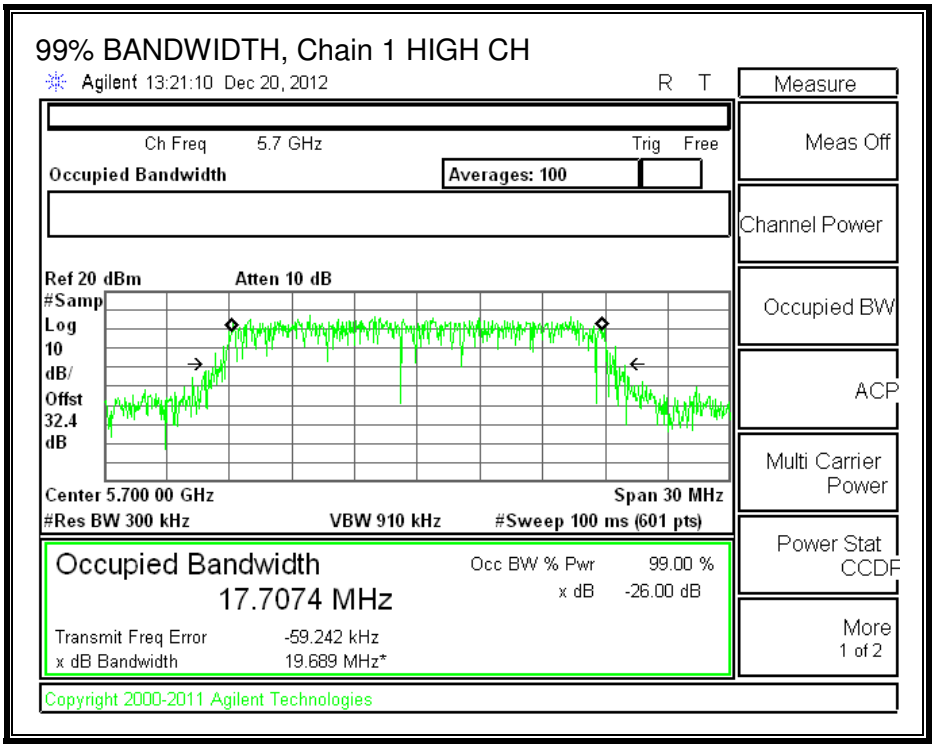

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8.44.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.00	3.80	3.42

For PSD, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	3.80	6.42

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)	Uncorrelated Directional Gain (dBi)
Low	5500	20.42	17.6728	6.42	3.42
Mid	5580	20.50	17.6623	6.42	3.42
High	5700	20.58	17.6899	6.42	3.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5500	24.00	23.47	29.47	23.47	10.58	11.00	10.58
Mid	5580	24.00	23.47	29.47	23.47	10.58	11.00	10.58
High	5700	24.00	23.48	29.48	23.48	10.58	11.00	10.58

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low 1	5500	14.00	14.20	17.11	23.47	-6.36
Low 2	5520	14.50	14.50	17.51	23.47	-5.96
Mid	5580	16.60	16.50	19.56	23.47	-3.91
High 2	5680	16.70	16.60	19.66	23.47	-3.81
High 1	5700	16.70	16.60	19.66	23.48	-3.82

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5500	7.098	6.975	10.05	10.58	-0.53
Mid	5580	6.887	6.872	9.89	10.58	-0.69
High	5700	6.988	7.634	10.33	10.58	-0.25

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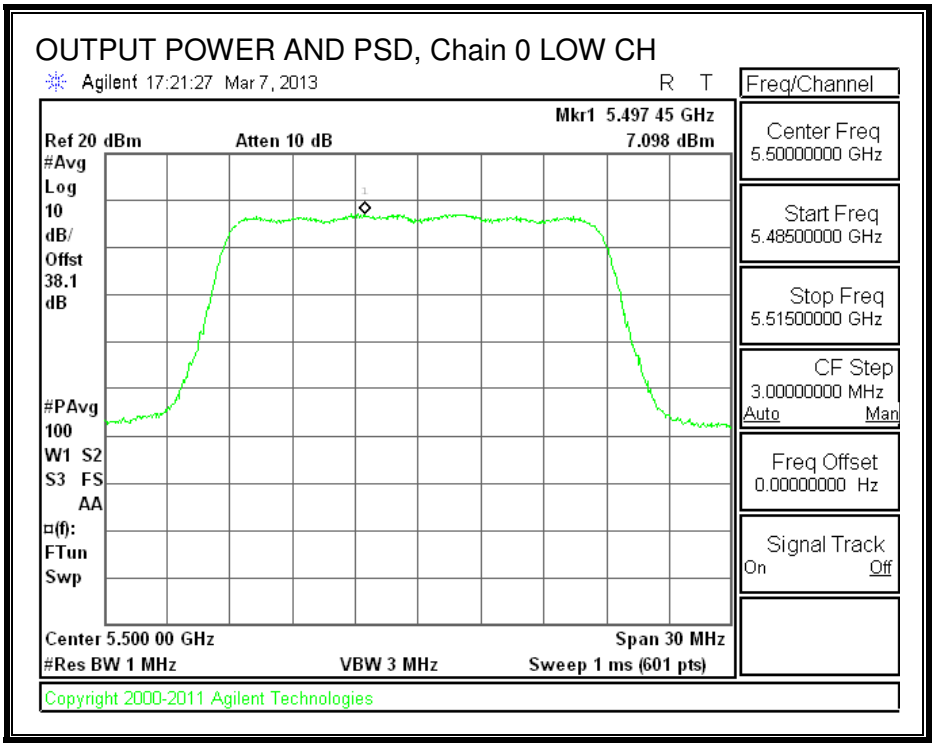
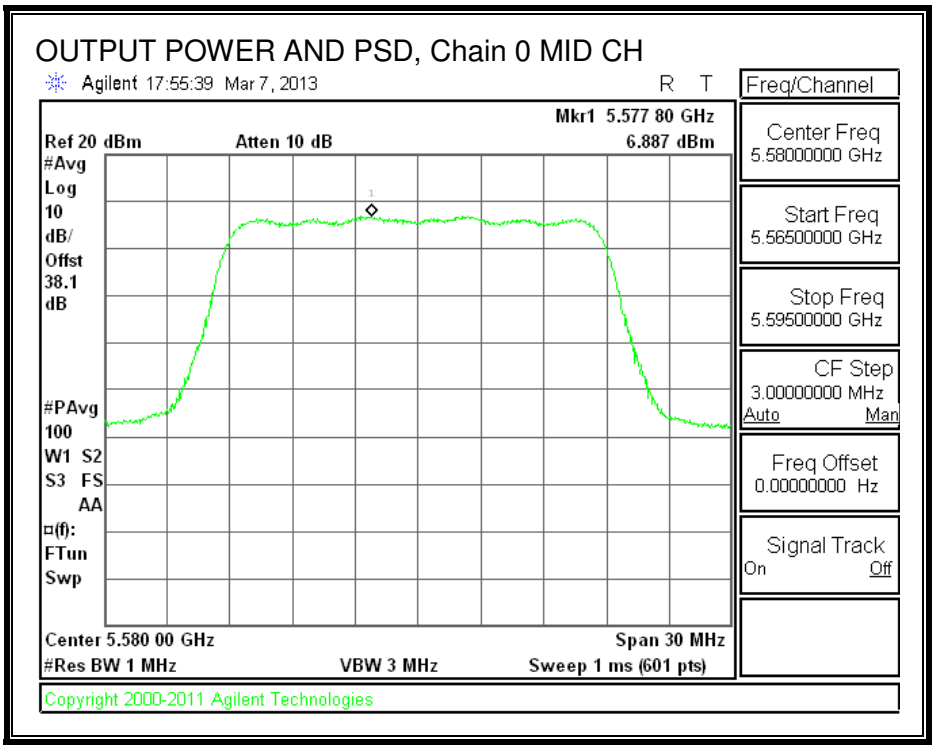
OUTPUT POWER AND PSD, Chain 0





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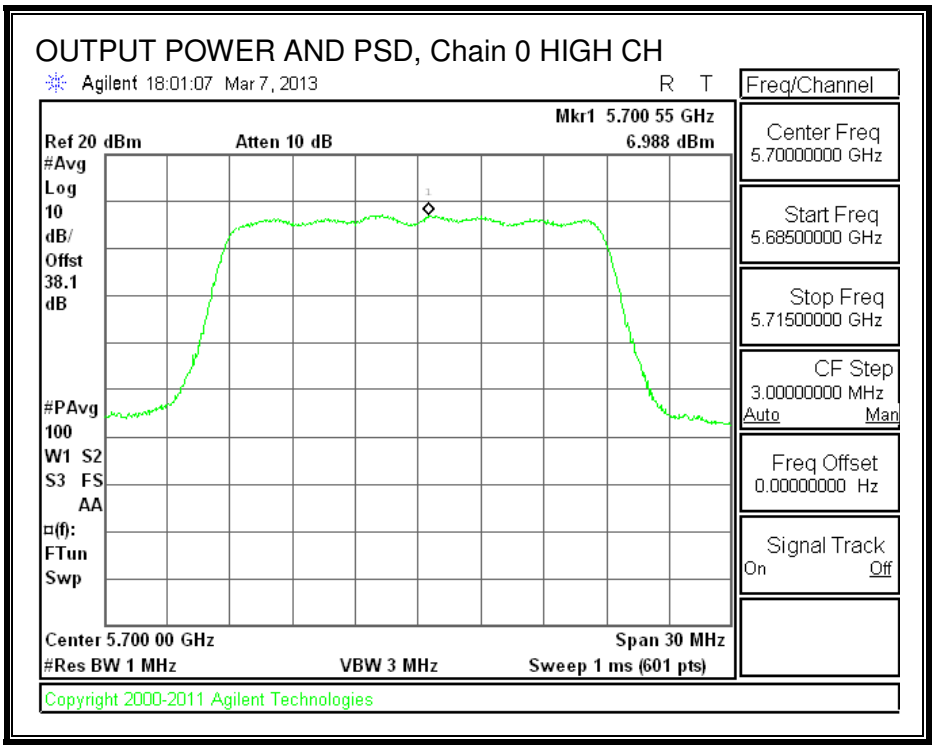
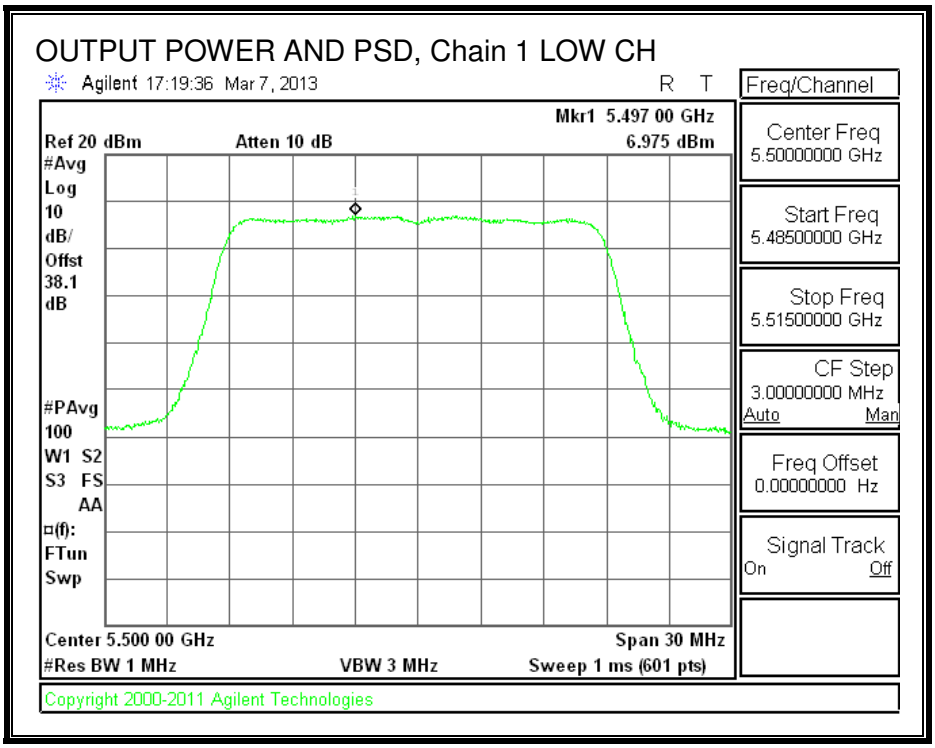


OUTPUT POWER AND PSD, Chain 1



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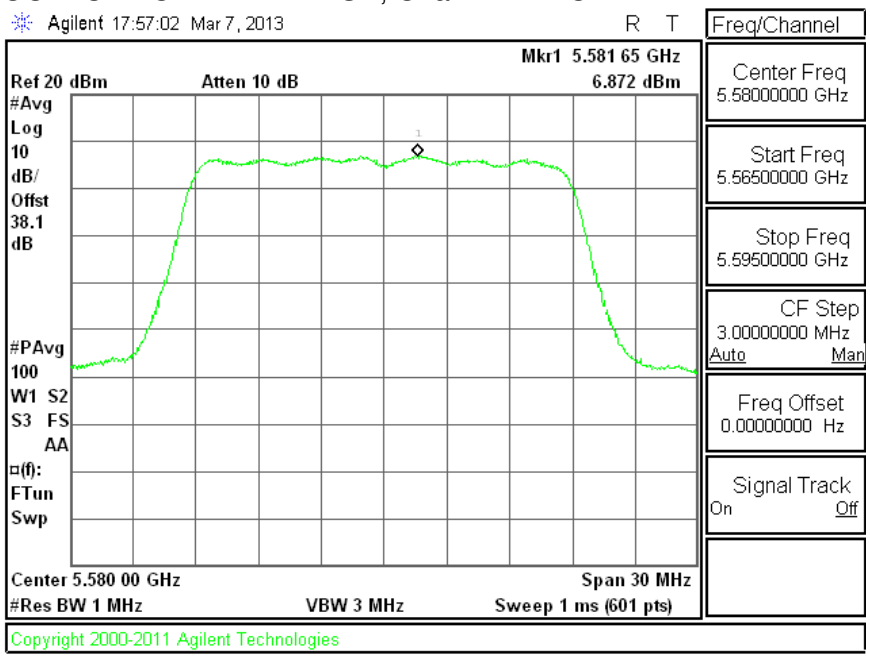
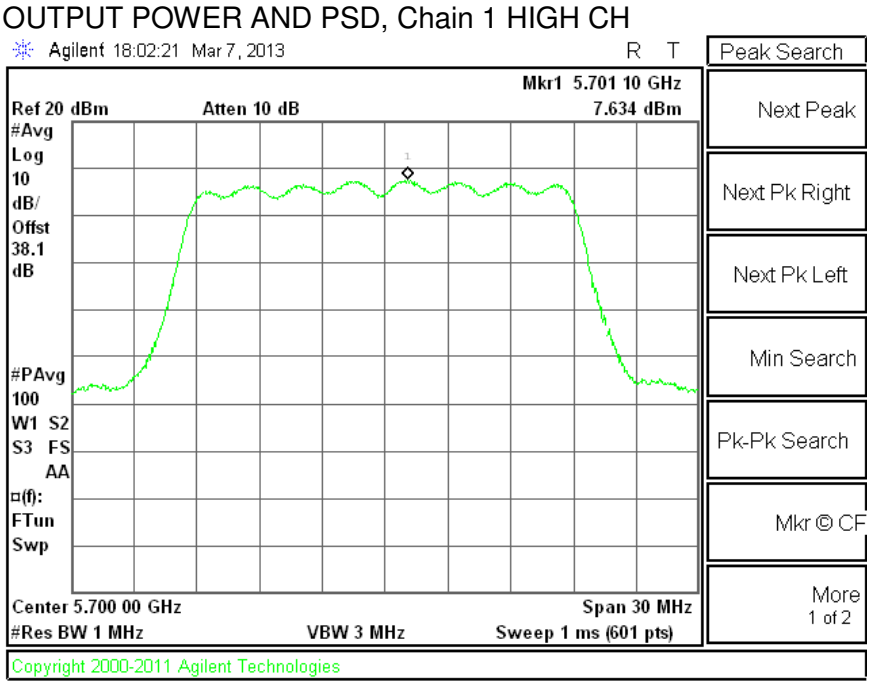
OUTPUT POWER AND PSD, Chain 1 MID CH



OUTPUT POWER AND PSD, Chain 1 HIGH CH



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8.44.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.45. 802.11n HT20 BF 2TX MODE IN THE 5.6 GHz BAND

Covered by testing HT20 CDD 2TX mode, the power per chain used for HT20 CDD 2TX mode is the same power per chain that will be used for HT20 BF 2TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.45.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	3.80	6.42

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)
Low	5500	20.42	17.6728	6.42
Mid	5580	20.50	17.6623	6.42
High	5700	20.58	17.6899	6.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Low	5500	23.58	23.47	29.47	23.05
Mid	5580	23.58	23.47	29.47	23.05
High	5700	23.58	23.48	29.48	23.06

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low 1	5500	14.00	14.20	17.11	23.05	-5.94
Low 2	5520	14.50	14.50	17.51	23.05	-5.54
Mid	5580	16.60	16.50	19.56	23.05	-3.49
High 2	5680	16.70	16.60	19.66	23.05	-3.39
High 1	5700	16.70	16.60	19.66	23.06	-3.40

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8.46. 802.11n HT20 STBC 2TX MODE IN THE 5.6 GHz BAND

8.46.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5500	20.58	20.67
Mid	5580	20.58	20.33
High	5700	20.50	20.33

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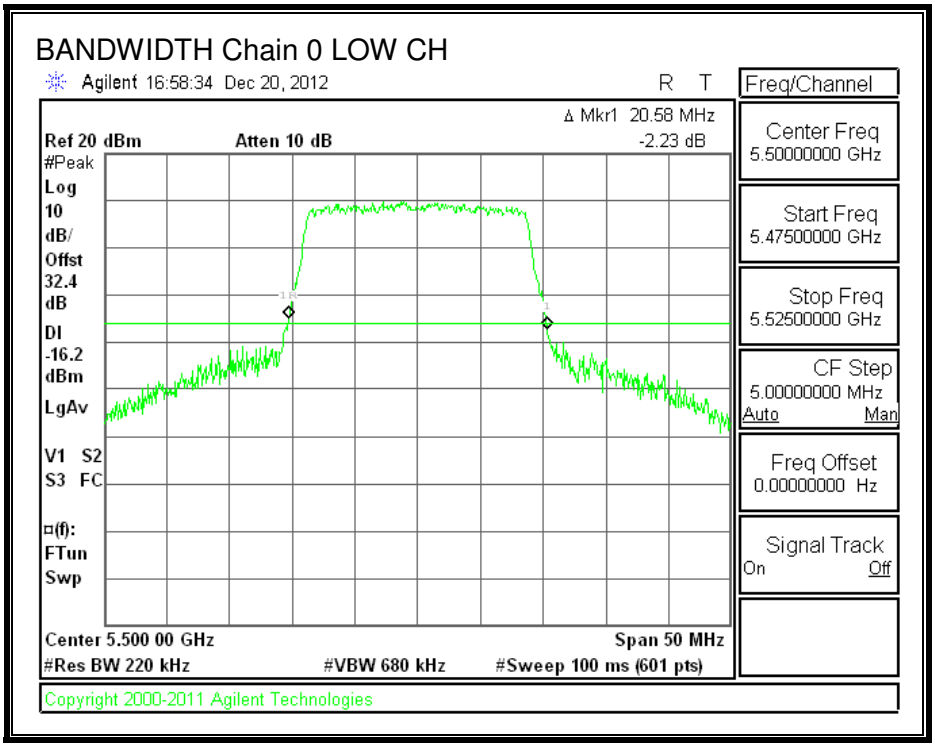
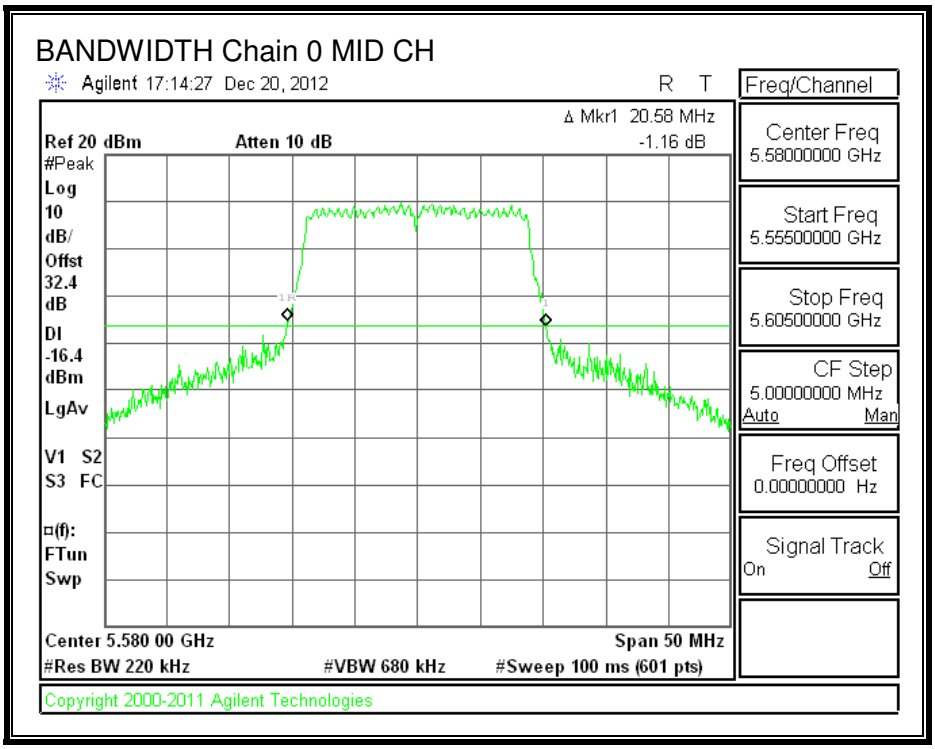
26 dB BANDWIDTH, Chain 0





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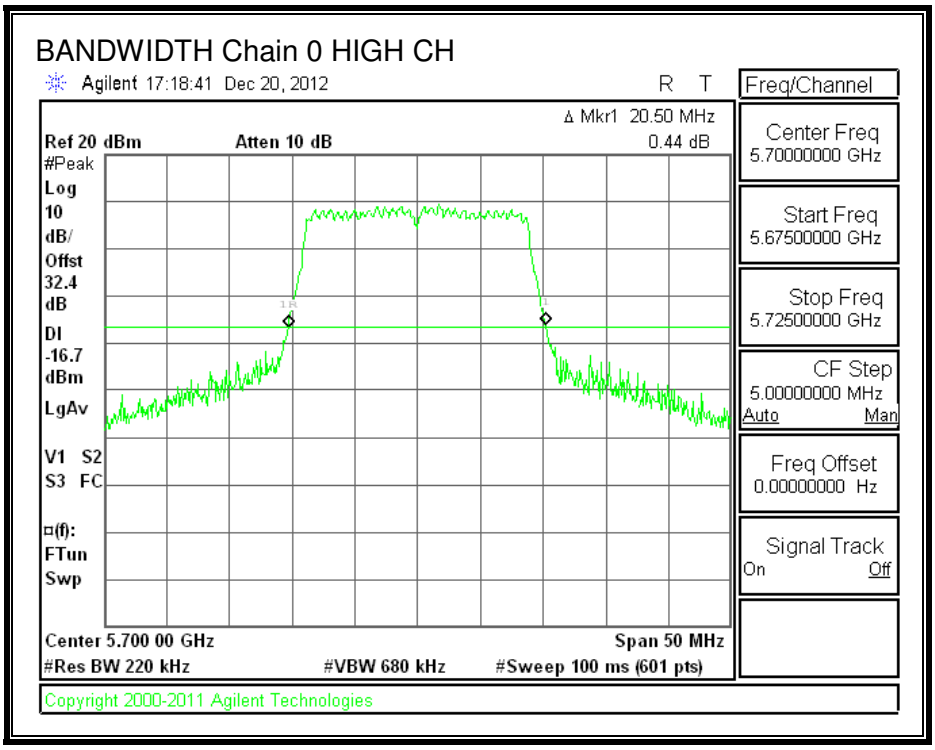
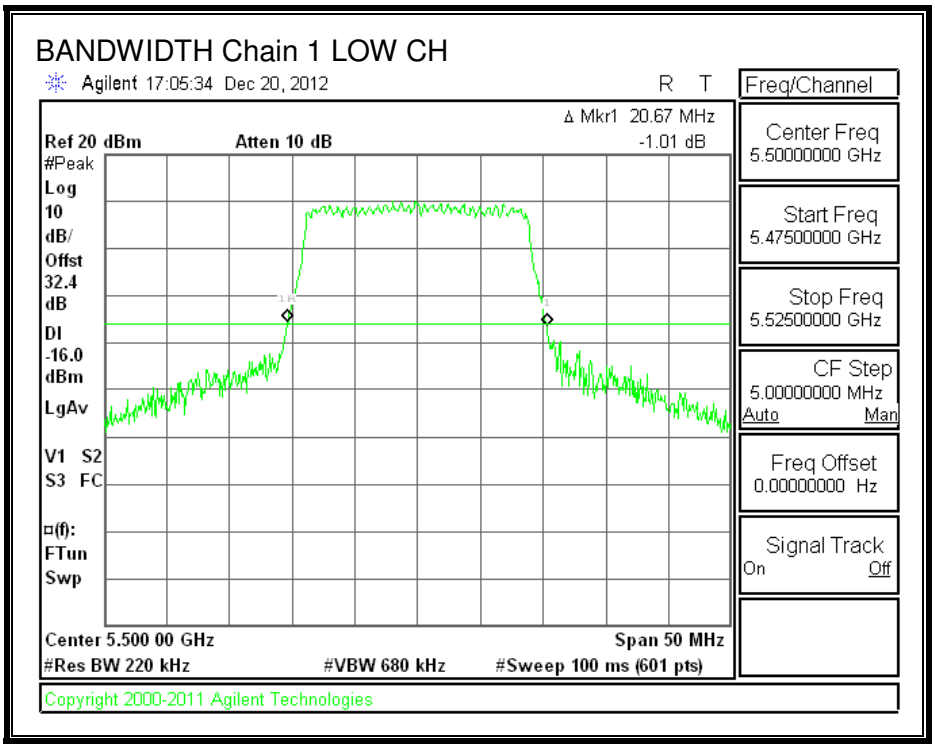


26 dB BANDWIDTH, Chain 1



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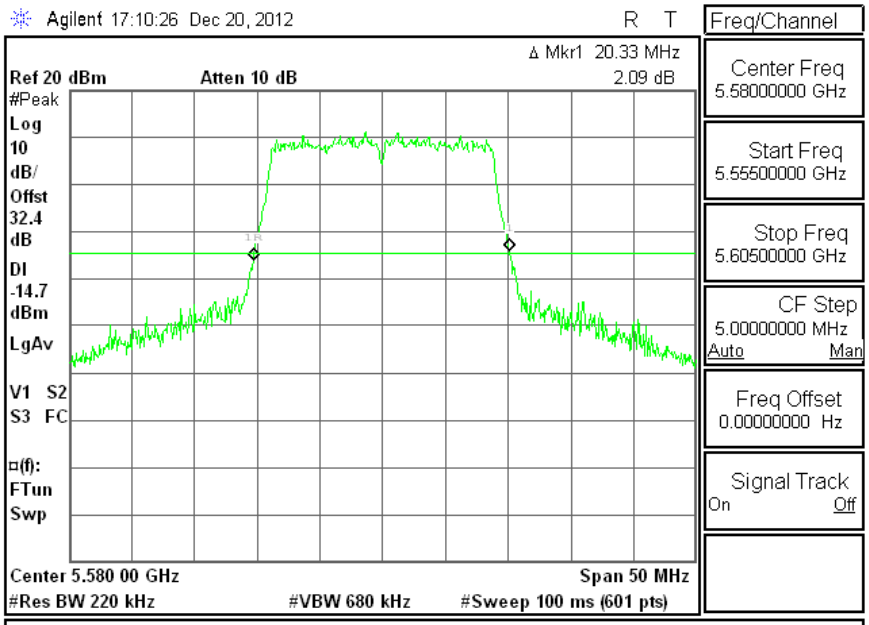
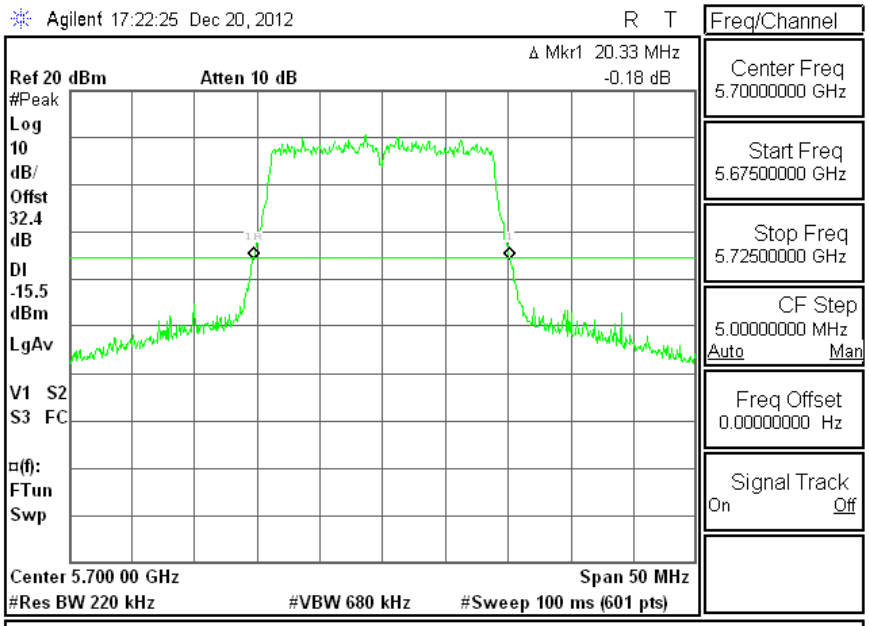
BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



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8.46.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5500	17.6676	17.6714
Mid	5580	17.6896	17.6621
High	5700	17.6905	17.6544

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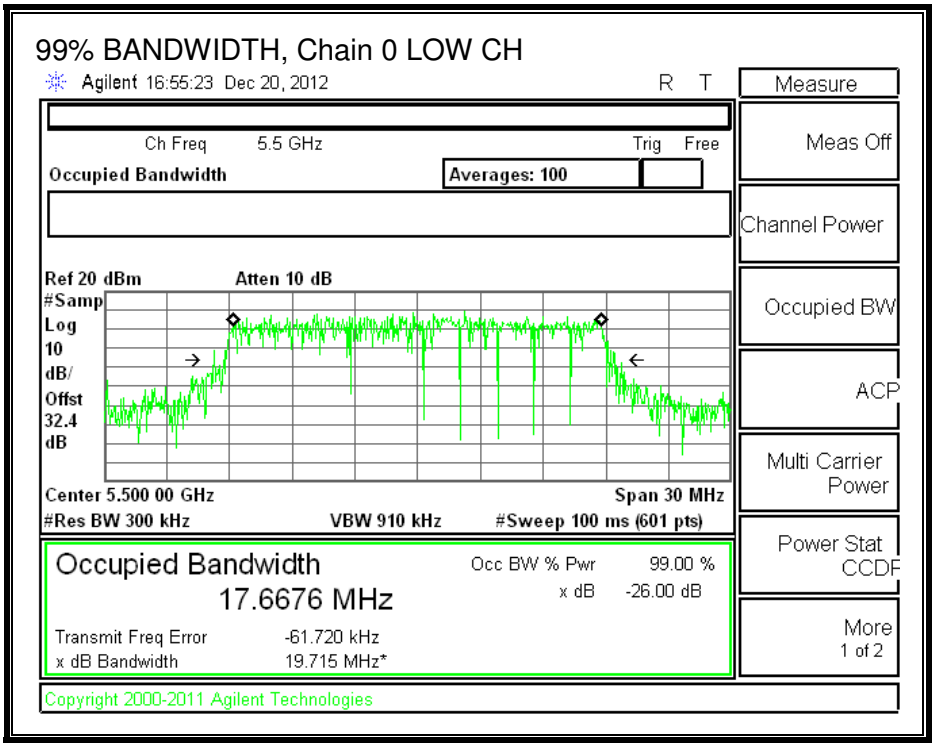
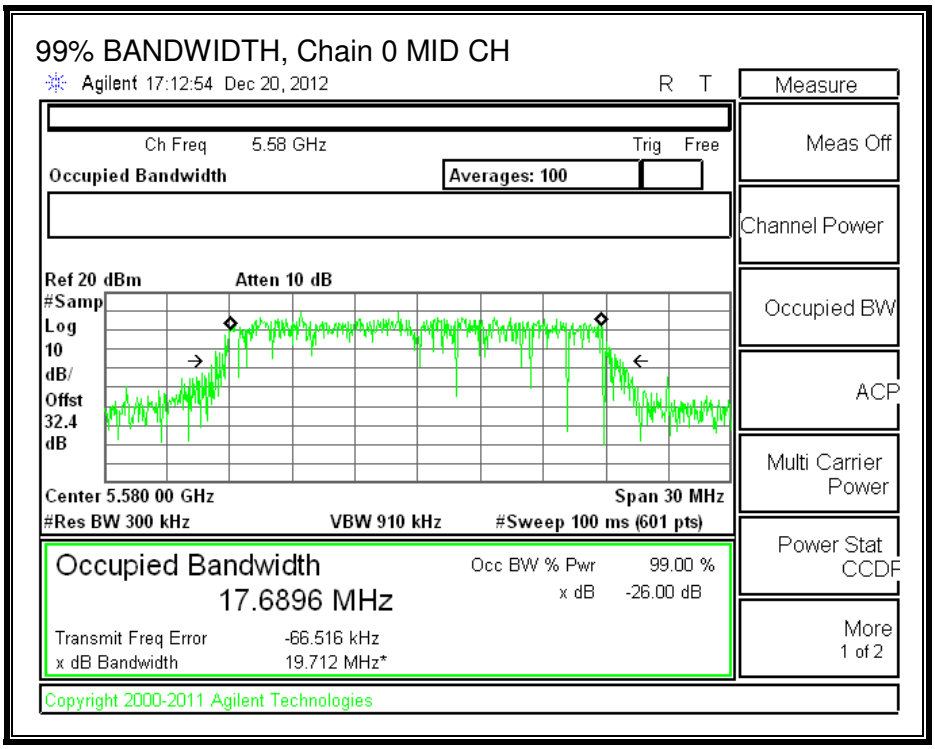
99% BANDWIDTH, Chain 0





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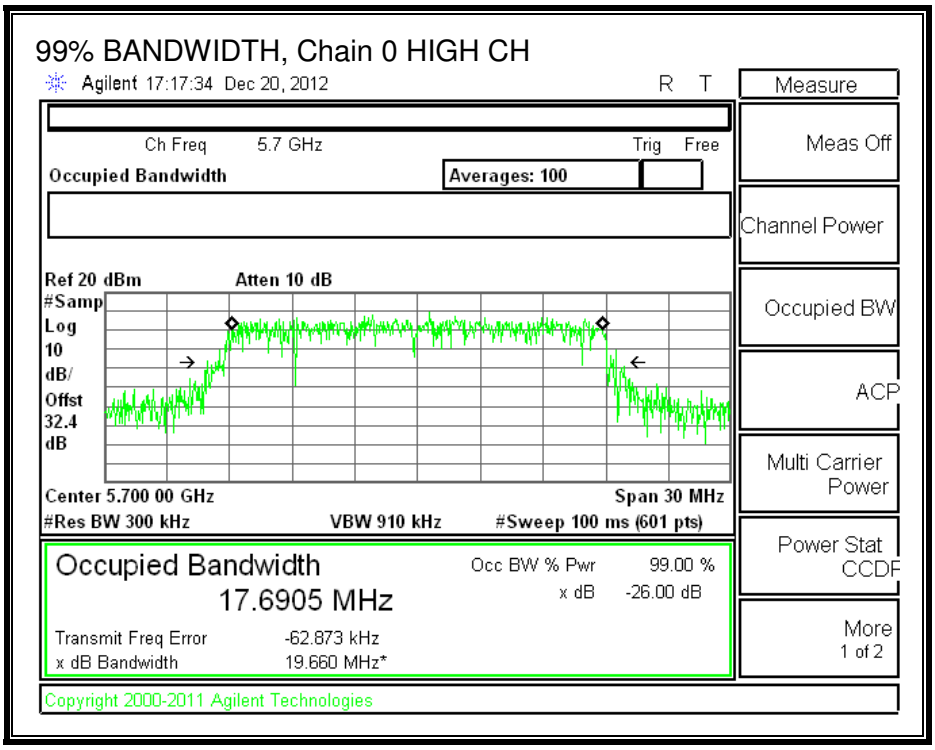
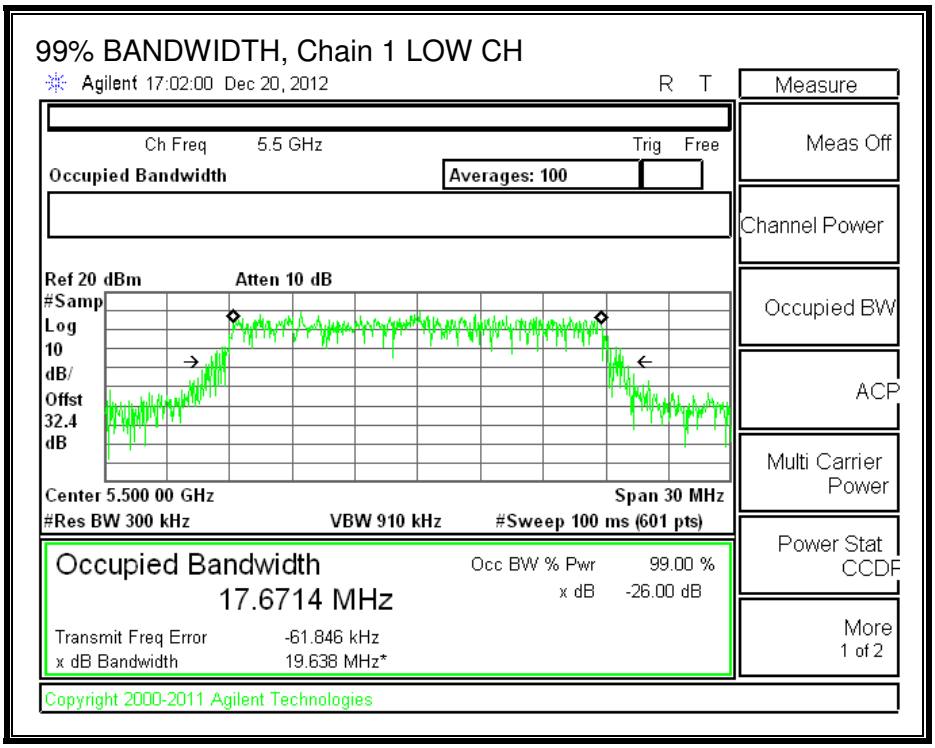


99% BANDWIDTH, Chain 1



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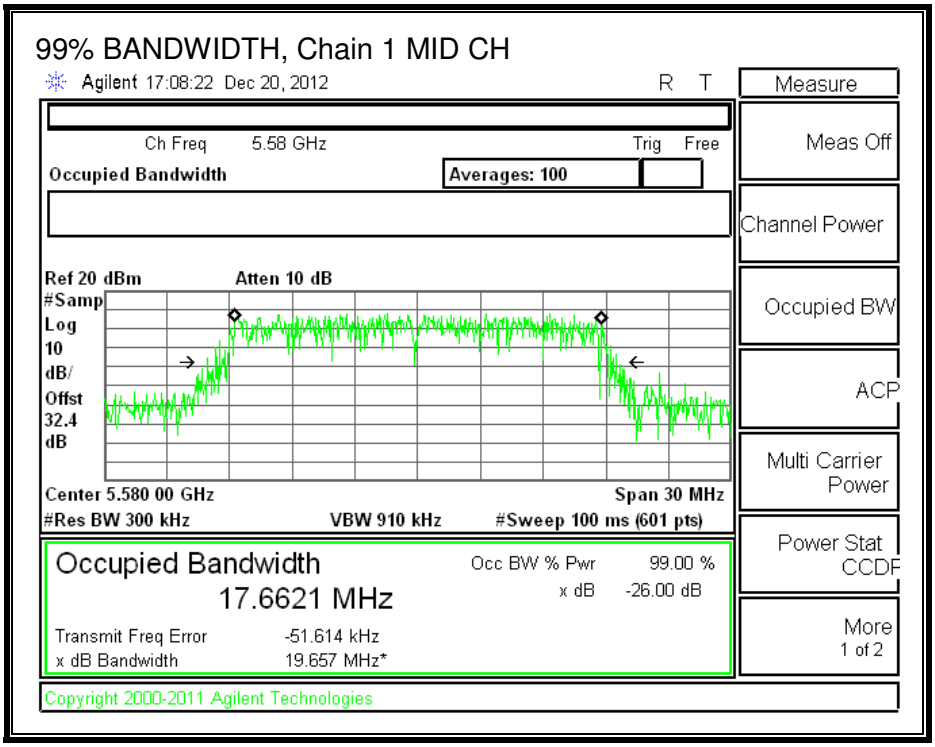

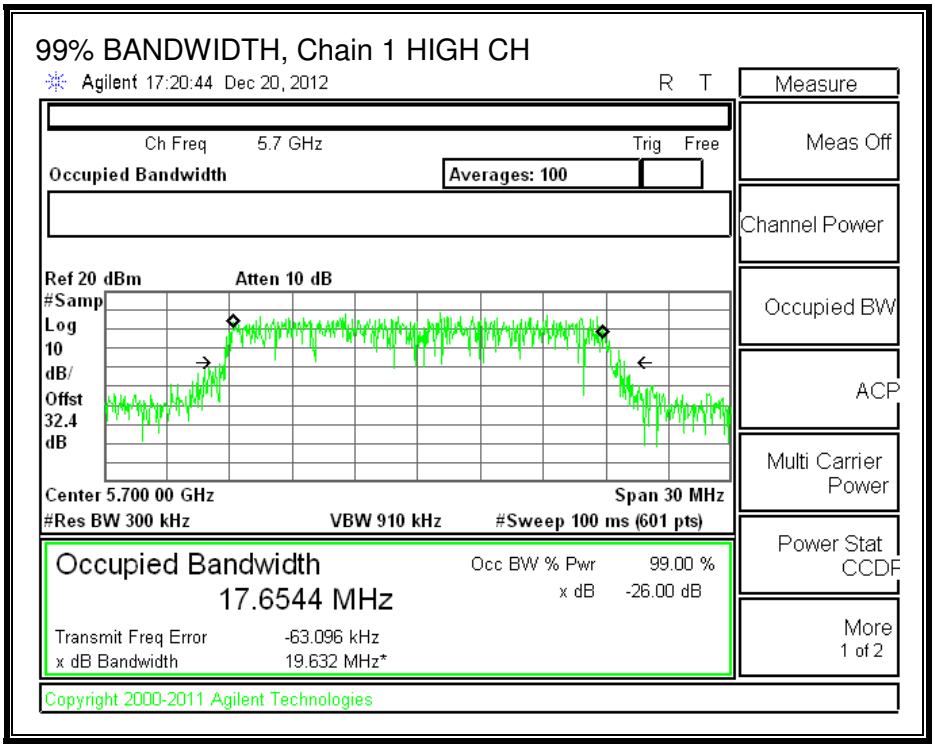

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8.46.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.00	3.80	3.42

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5500	20.58	17.6676	3.42
Mid	5580	20.33	17.6621	3.42
High	5700	20.33	17.6544	3.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5500	24.00	23.47	29.47	23.47	11.00	11.00	11.00
Mid	5580	24.00	23.47	29.47	23.47	11.00	11.00	11.00
High	5700	24.00	23.47	29.47	23.47	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low 1	5500	14.20	14.00	17.11	23.47	-6.36
Low 2	5520	14.65	14.50	17.59	23.47	-5.88
Mid	5580	18.20	18.00	21.11	23.47	-2.36
High 2	5680	18.20	18.00	21.11	23.47	-2.36
High 1	5700	18.20	18.10	21.16	23.47	-2.31

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5500	7.36	7.99	10.70	11.00	-0.30
Mid	5580	6.95	7.91	10.47	11.00	-0.53
High	5700	7.31	7.18	10.26	11.00	-0.74

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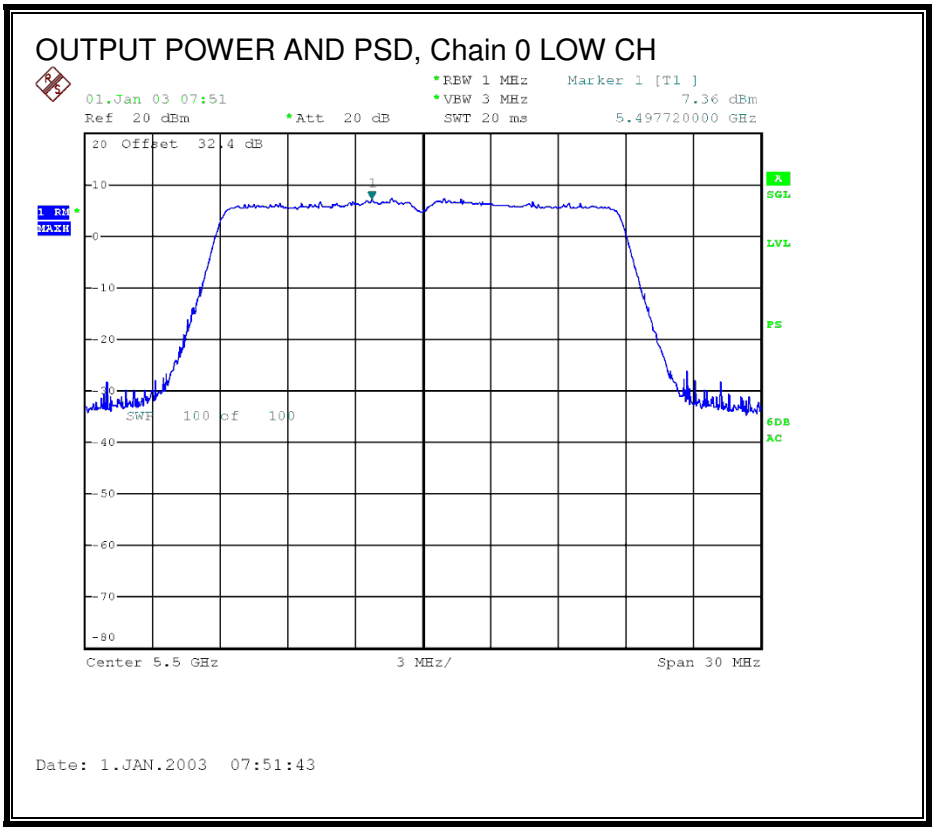
OUTPUT POWER AND PSD, Chain 0



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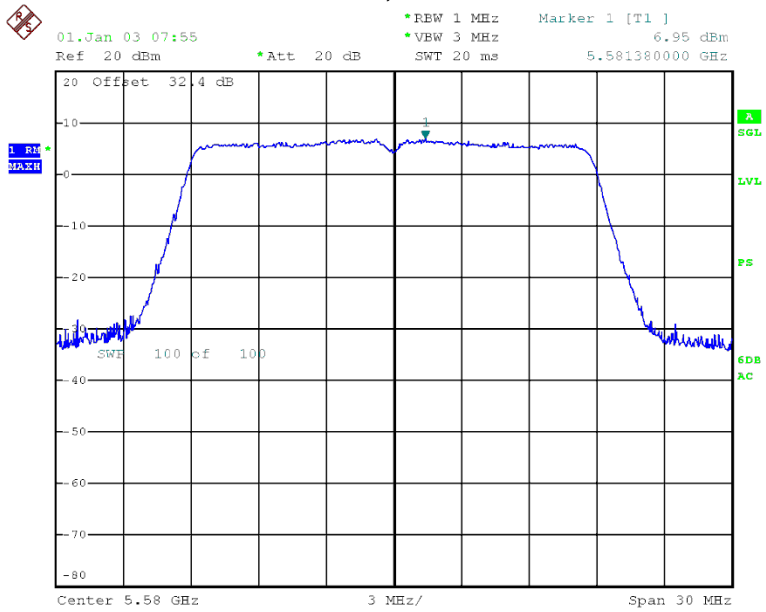
OUTPUT POWER AND PSD, Chain 0 MID CH



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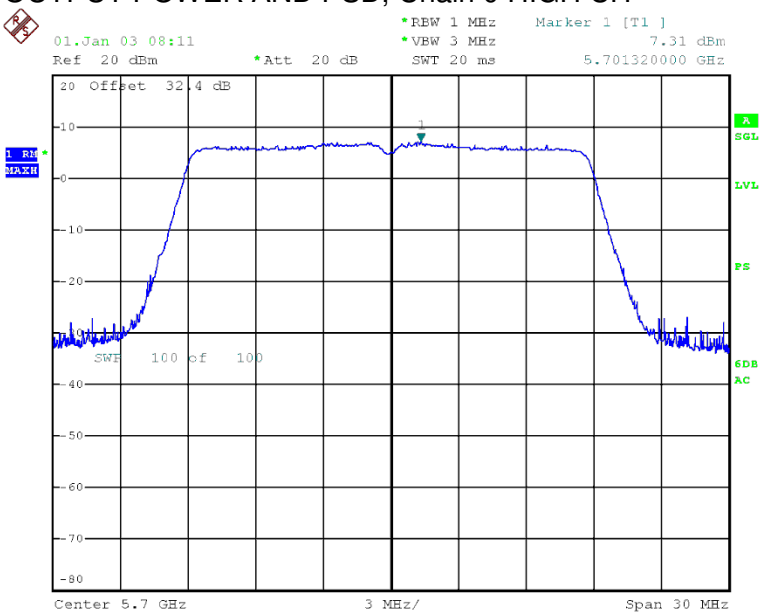
OUTPUT POWER AND PSD, Chain 0 HIGH CH



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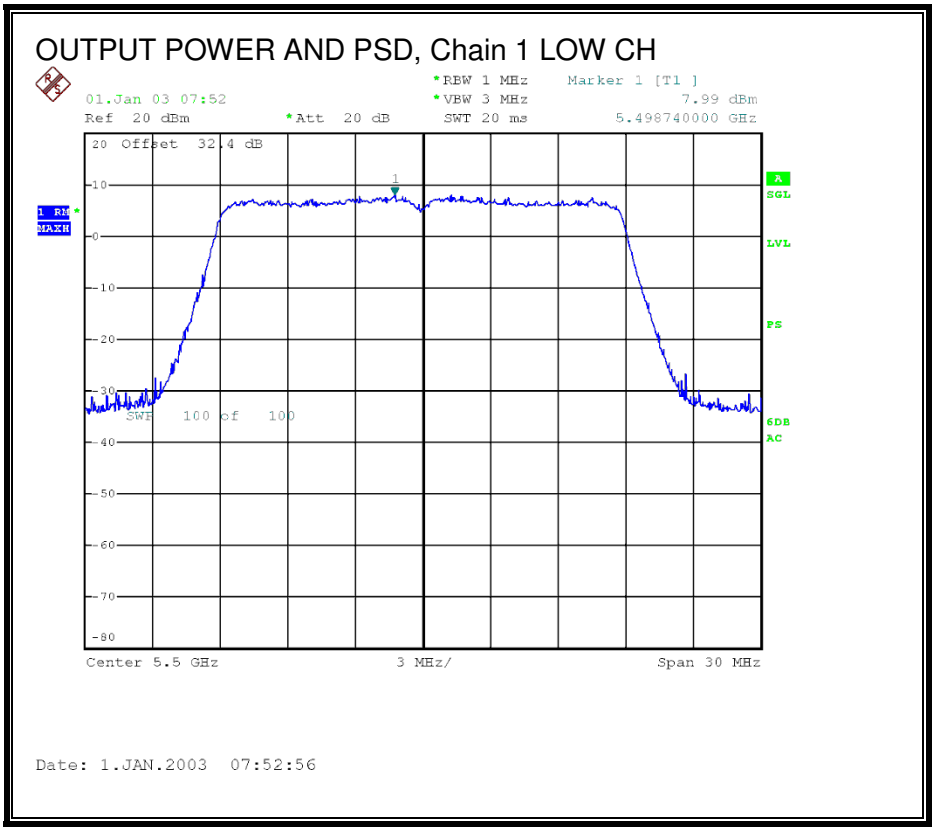
OUTPUT POWER AND PSD, Chain 1



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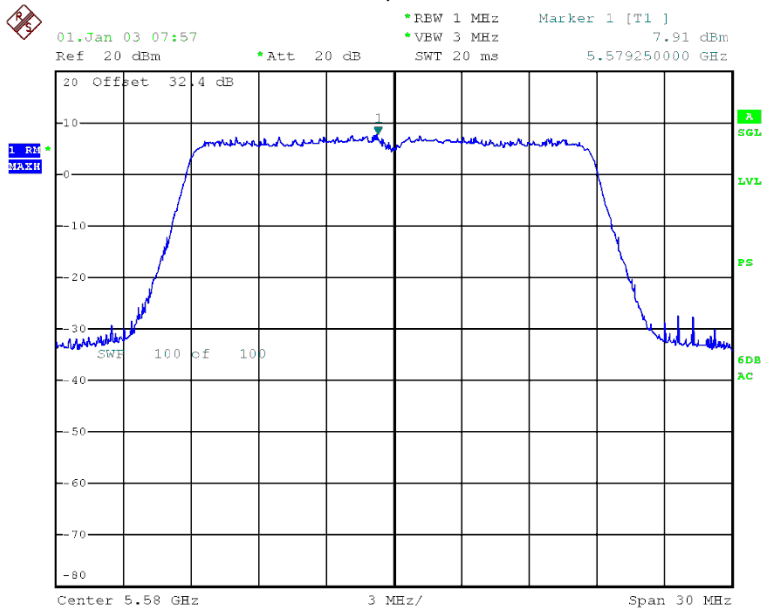
OUTPUT POWER AND PSD, Chain 1 MID CH



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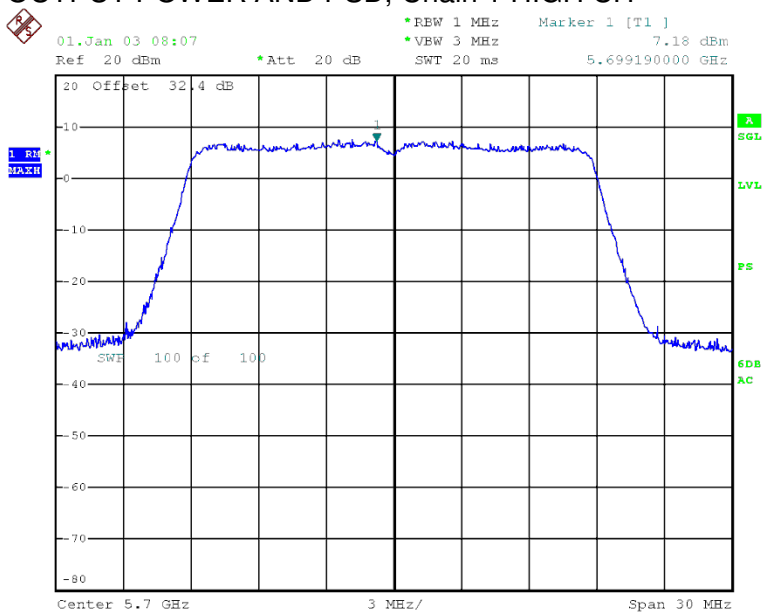
OUTPUT POWER AND PSD, Chain 1 HIGH CH



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8.46.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.48. 802.11n HT20 CDD 3TX MODE IN THE 5.6 GHz BAND

8.48.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5500	20.50	20.58	20.83
Mid	5580	20.67	20.67	20.42
High	5700	20.58	20.50	20.58

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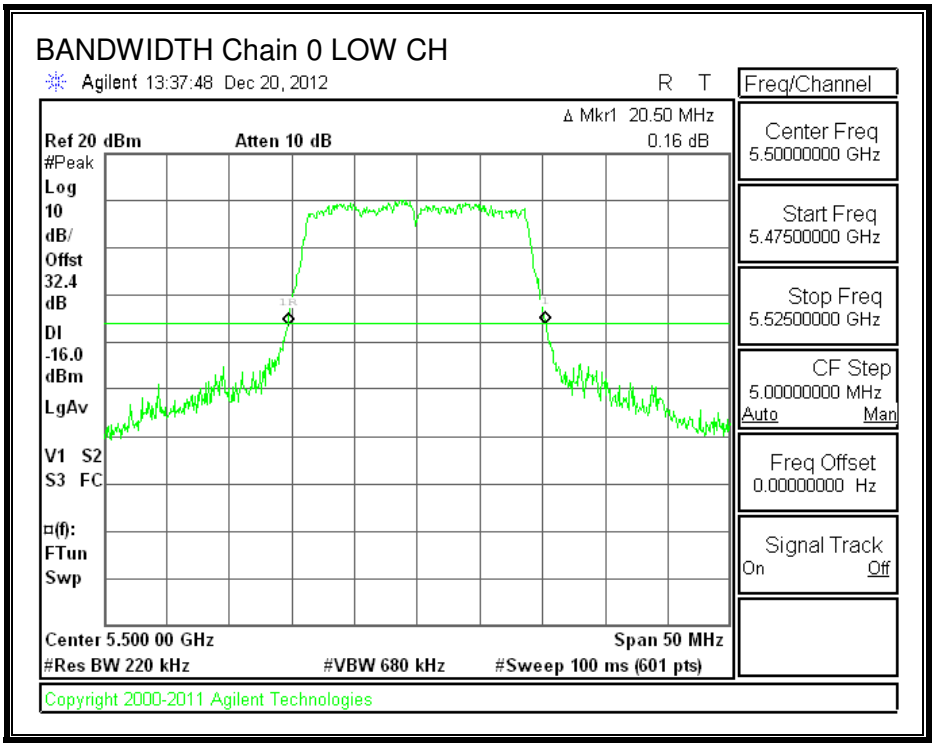
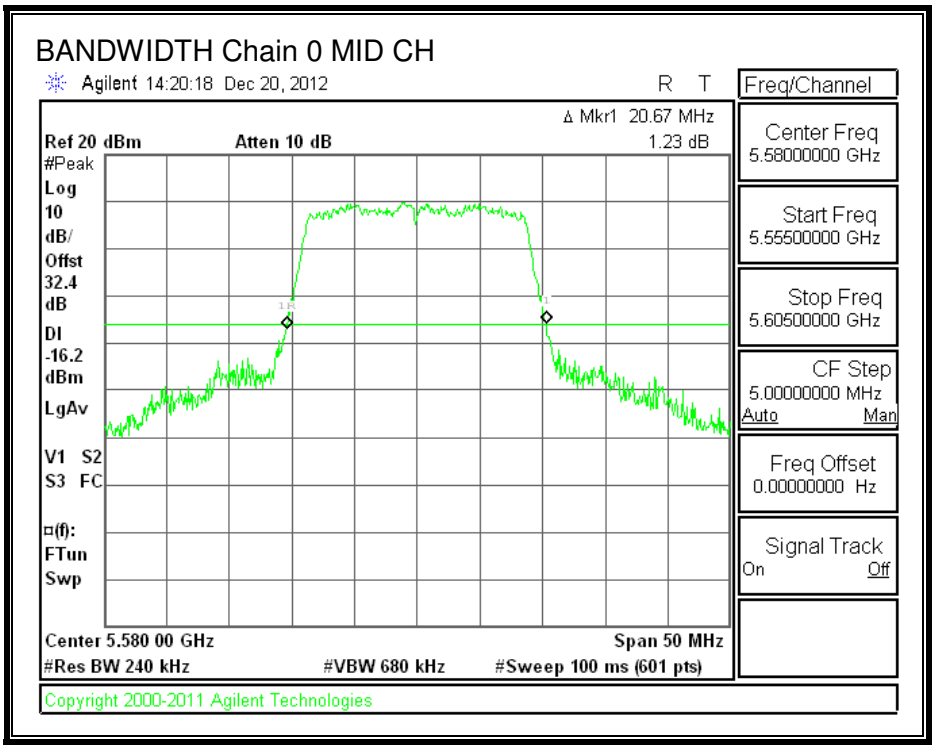
26 dB BANDWIDTH, Chain 0





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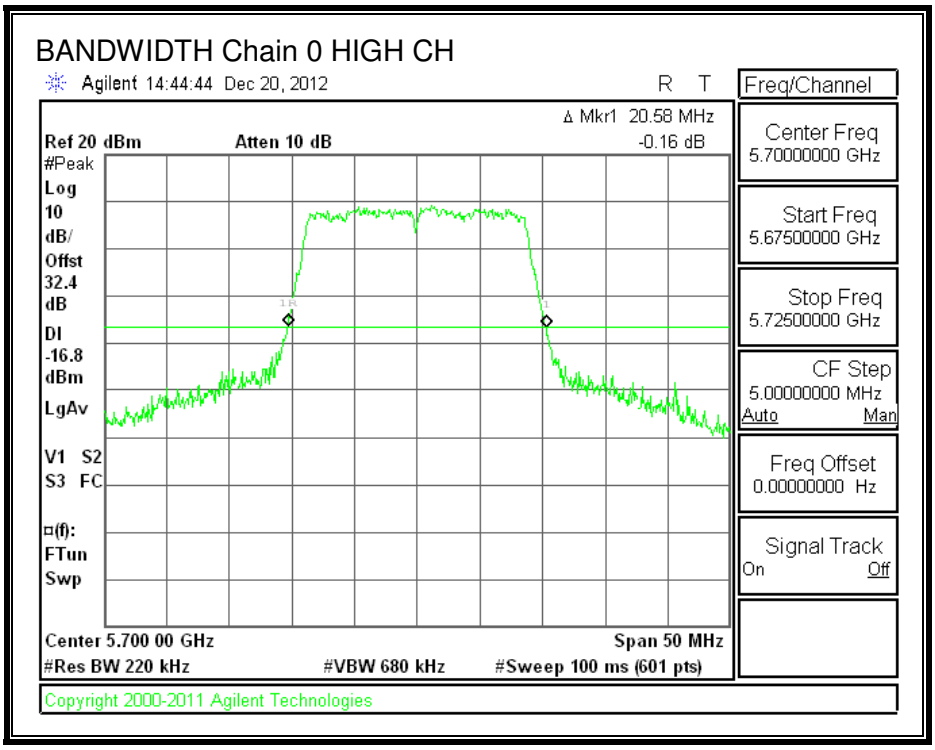
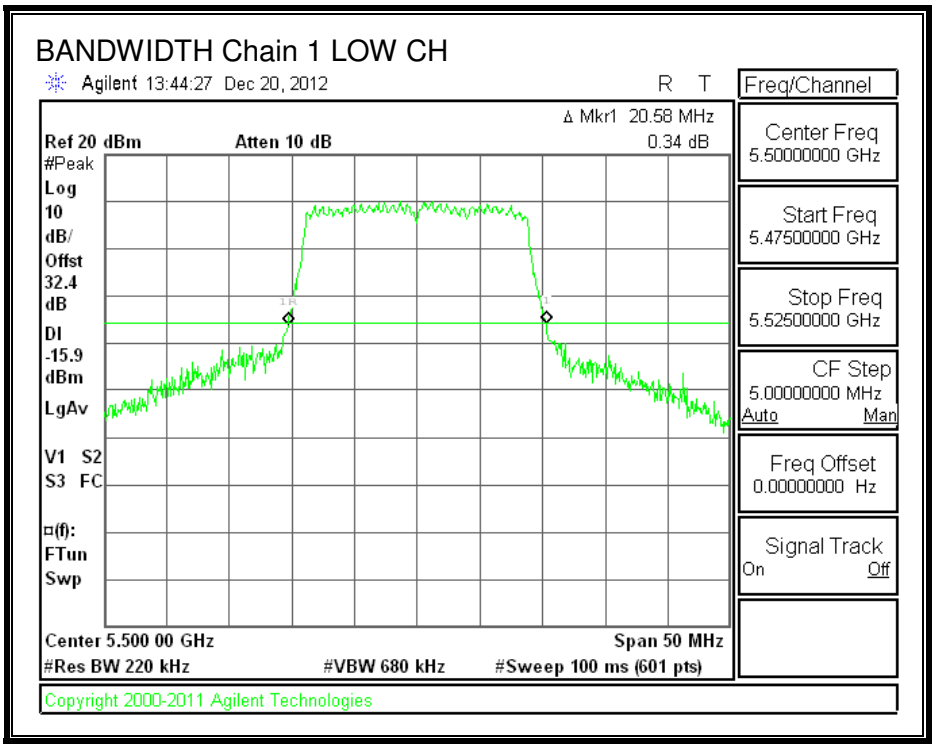


26 dB BANDWIDTH, Chain 1



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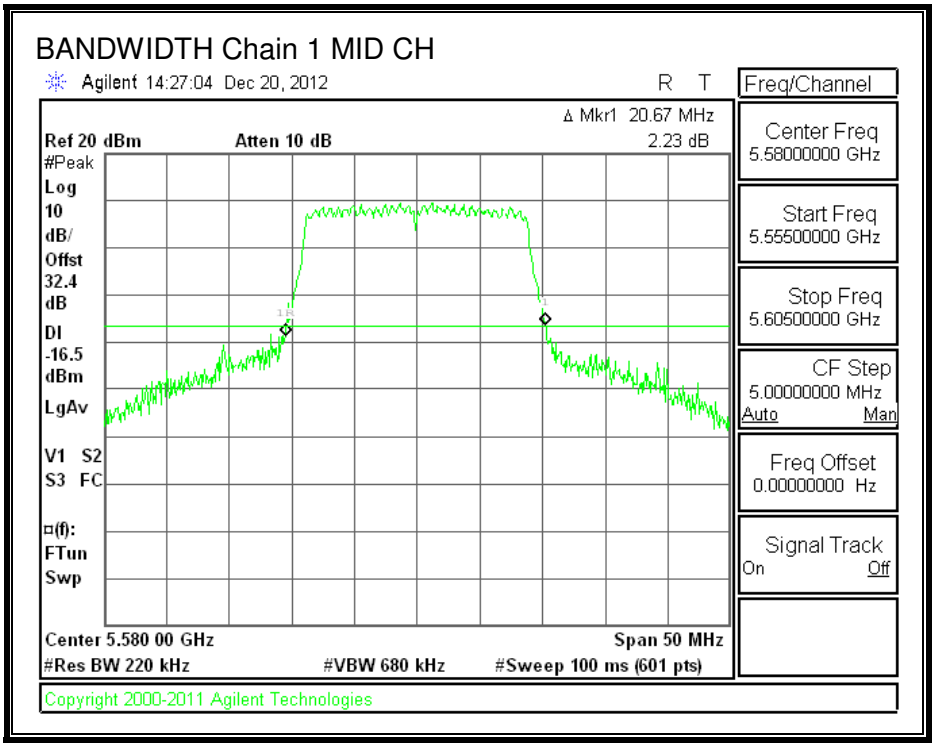

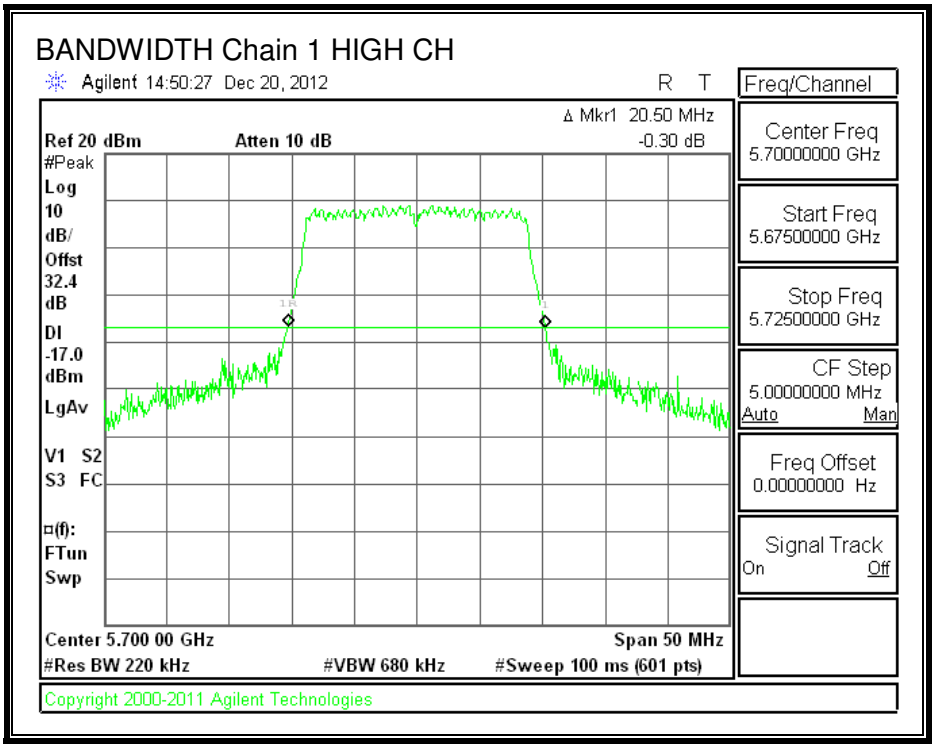

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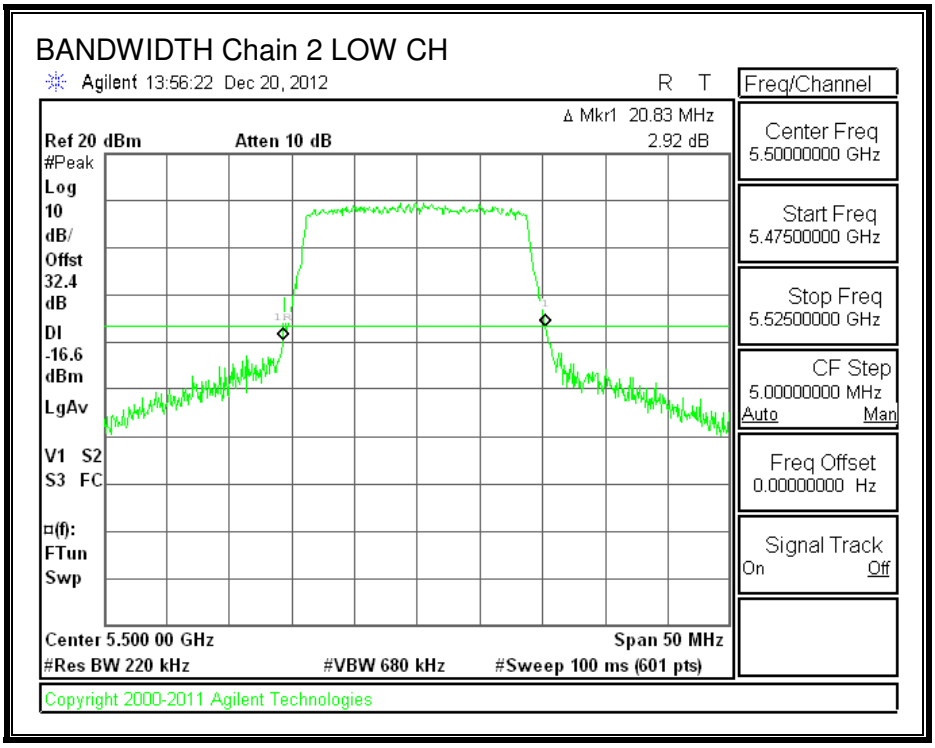
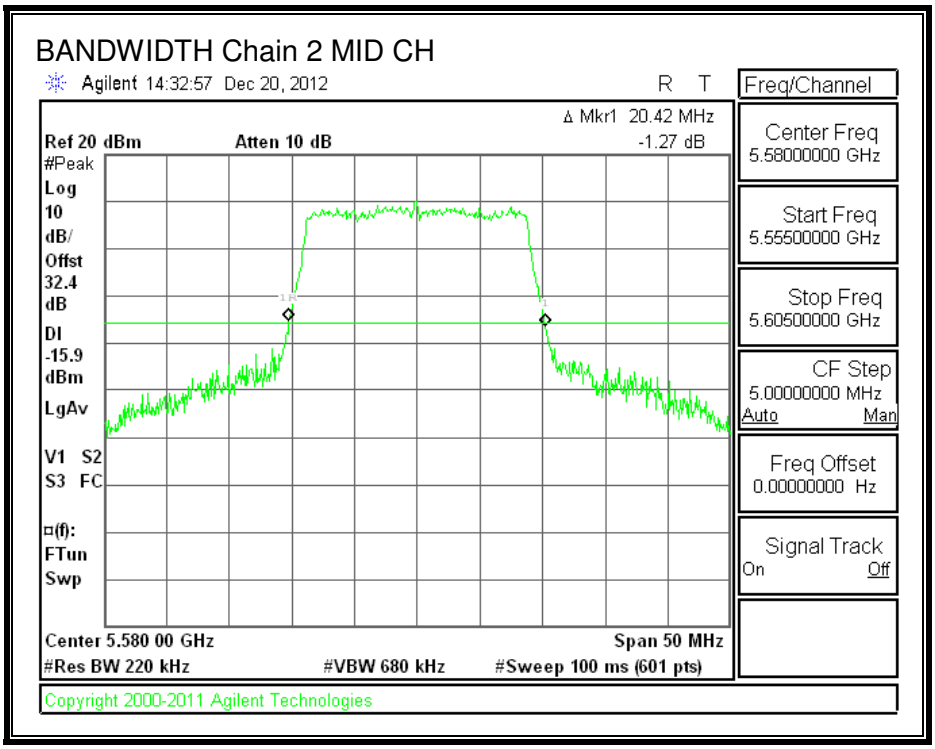
26 dB BANDWIDTH, Chain 2





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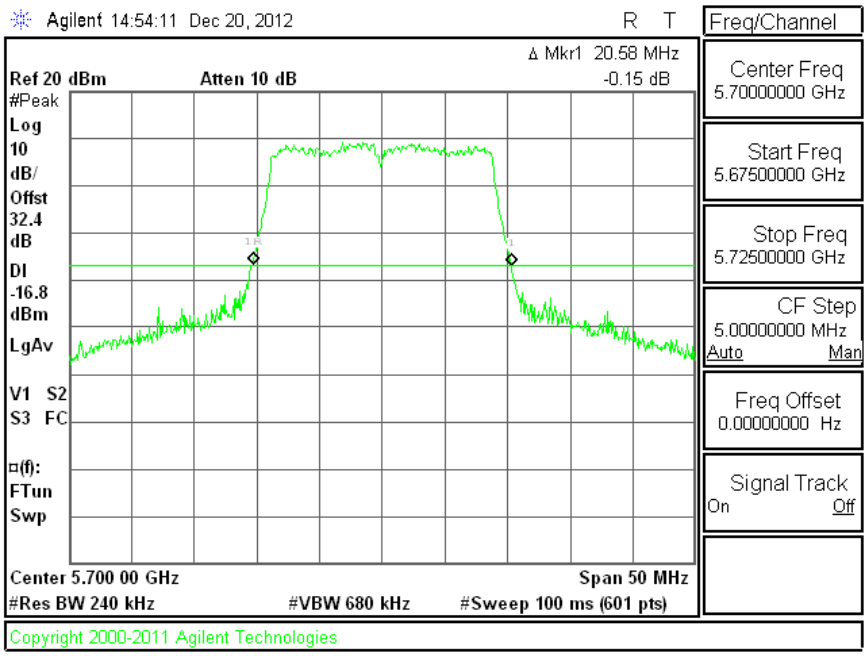
BANDWIDTH Chain 2 HIGH CH



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8.48.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5500	17.6767	17.6943	17.6943
Mid	5580	17.6787	17.6785	17.6947
High	5700	17.6759	17.6913	17.6913

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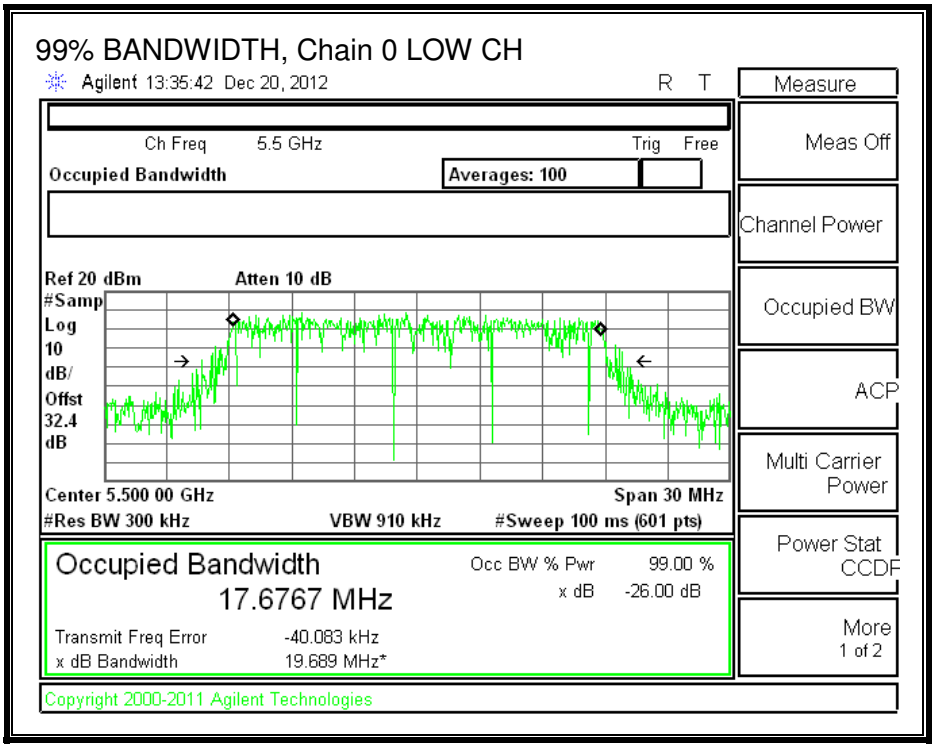
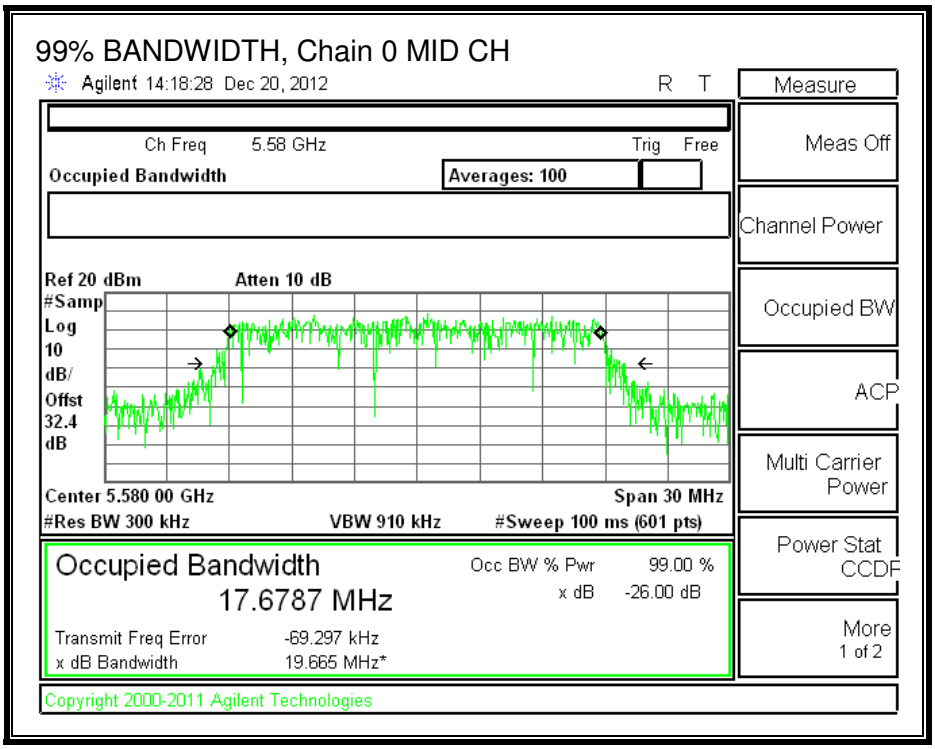
99% BANDWIDTH, Chain 0





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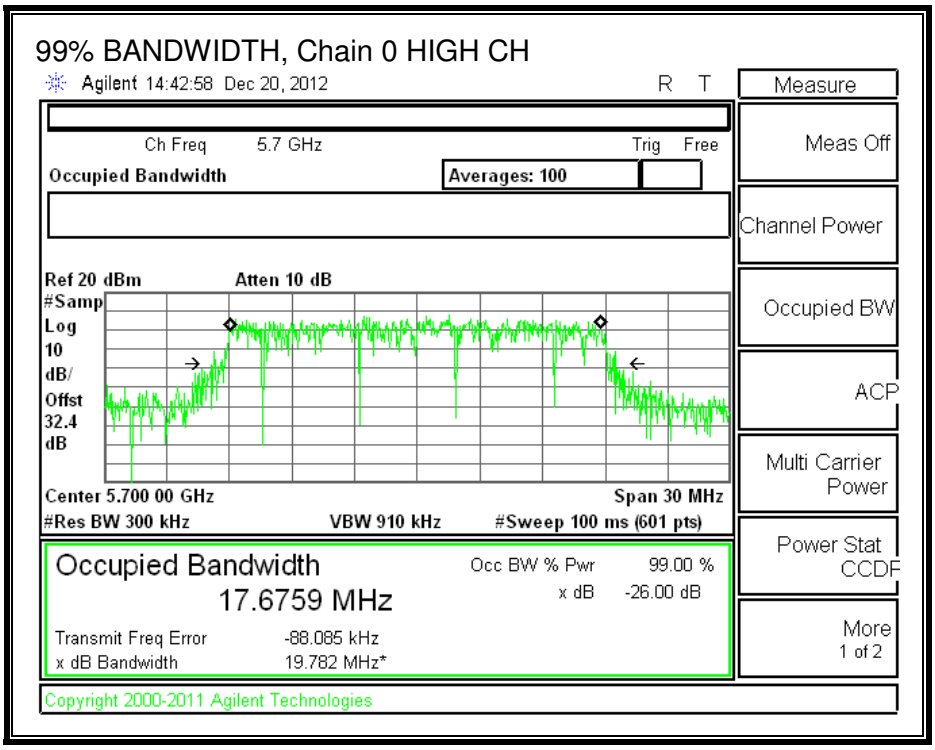
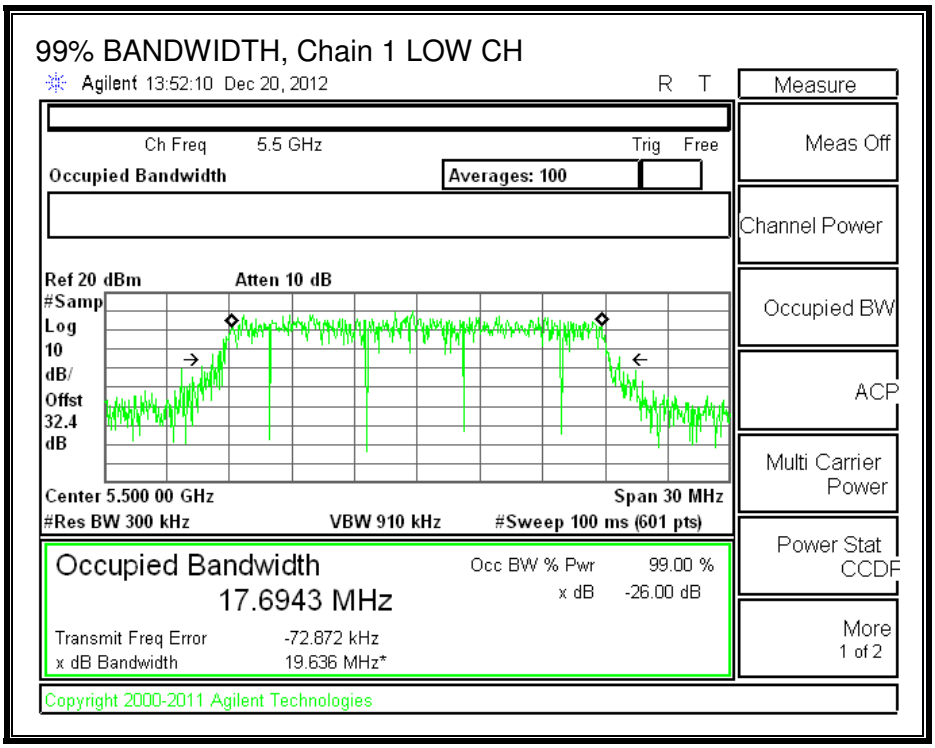


99% BANDWIDTH, Chain 1



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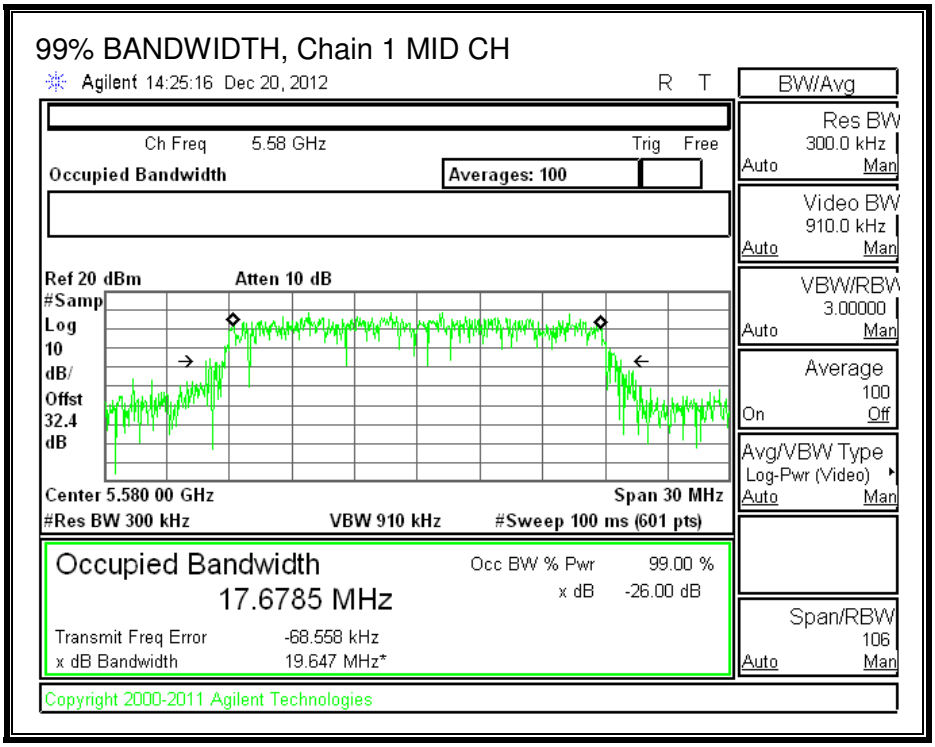

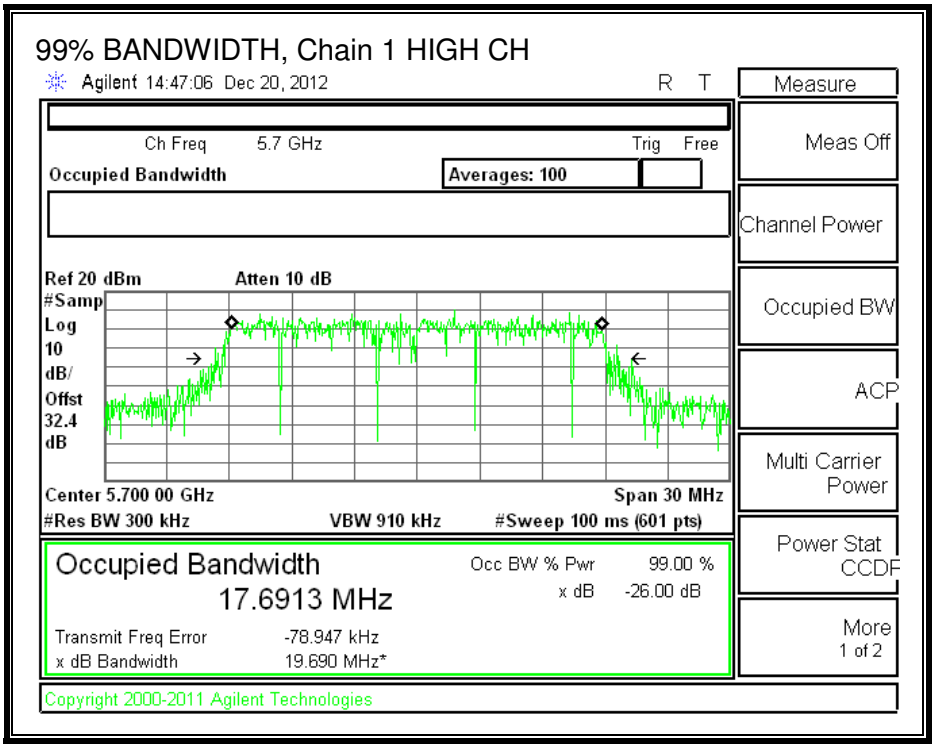

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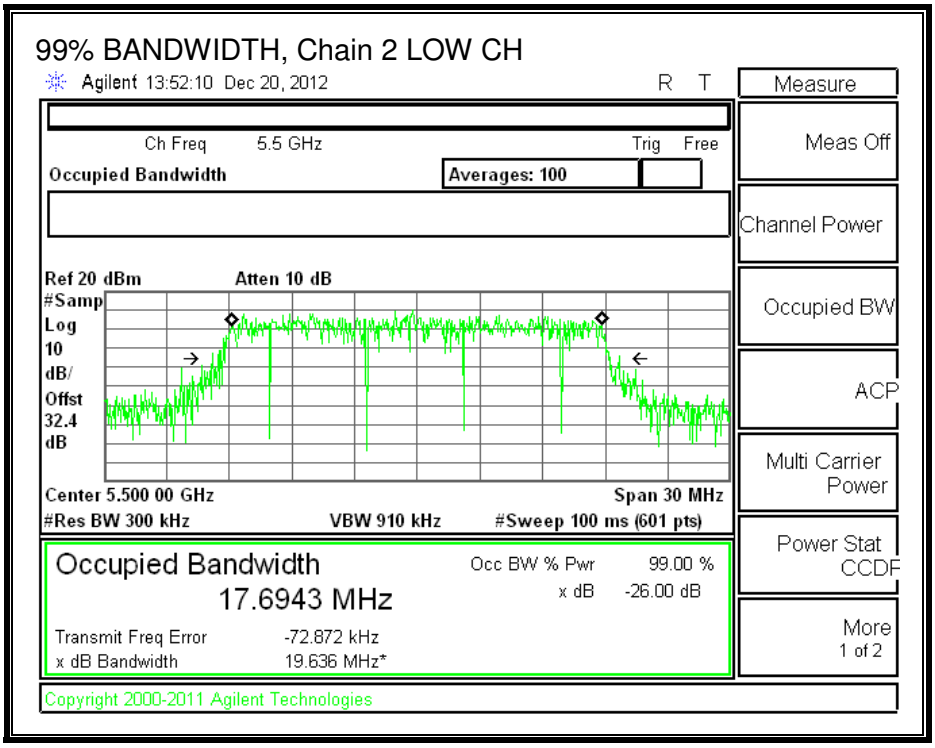
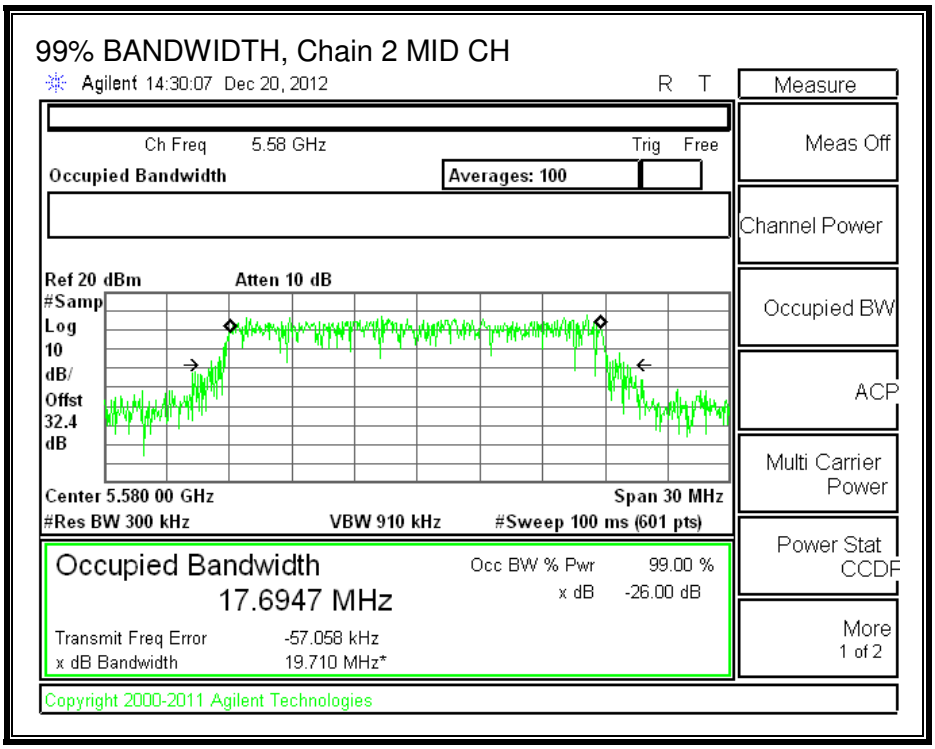
99% BANDWIDTH, Chain 2





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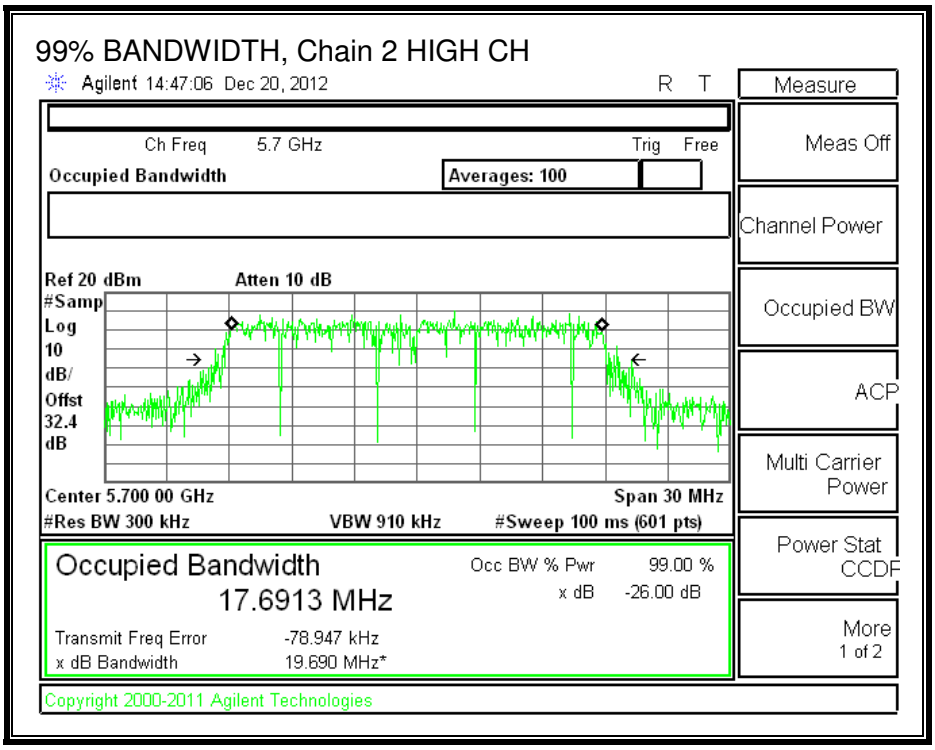

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8.48.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.00	1.70	3.80	2.92

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	1.70	3.80	7.65

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)	Uncorrelated Directional Gain (dBi)
Low	5500	20.50	17.6767	7.65	2.92
Mid	5580	20.42	17.6785	7.65	2.92
High	5700	20.50	17.6759	7.65	2.92

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5500	24.00	23.47	29.47	23.47	9.35	11.00	9.35
Mid	5580	24.00	23.47	29.47	23.47	9.35	11.00	9.35
High	5700	24.00	23.47	29.47	23.47	9.35	11.00	9.35

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low 1	5500	13.00	13.20	13.40	17.97	23.47	-5.50
Low 2	5520	13.50	13.70	13.60	18.37	23.47	-5.10
Mid	5580	13.50	13.65	13.60	18.35	23.47	-5.12
High 2	5680	13.50	13.75	13.60	18.39	23.47	-5.09
High 1	5700	13.50	13.60	13.50	18.30	23.47	-5.17

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5500	4.941	4.585	4.053	9.31	9.35	-0.04
Mid	5580	4.904	4.069	3.774	9.05	9.35	-0.30
High	5700	5.080	3.860	4.577	9.31	9.35	-0.04

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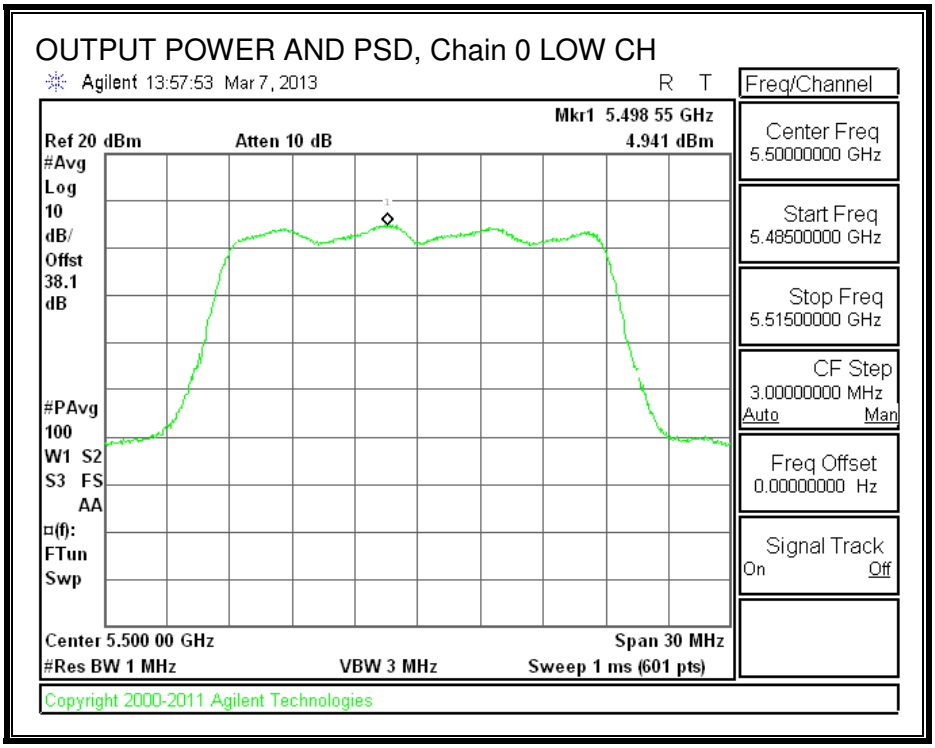
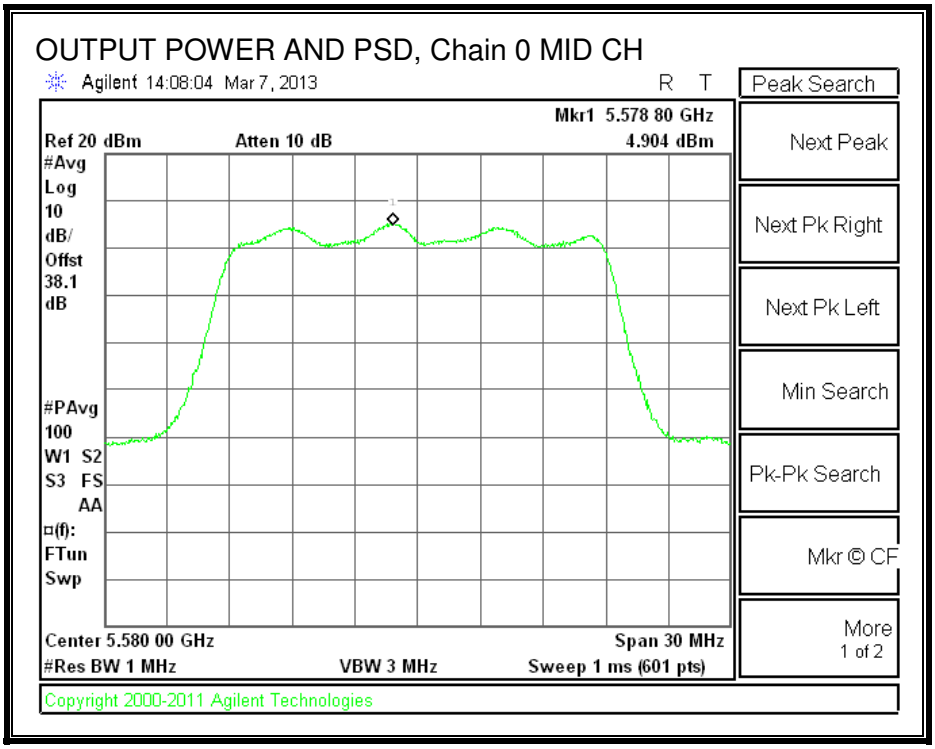
OUTPUT POWER AND PSD, Chain 0





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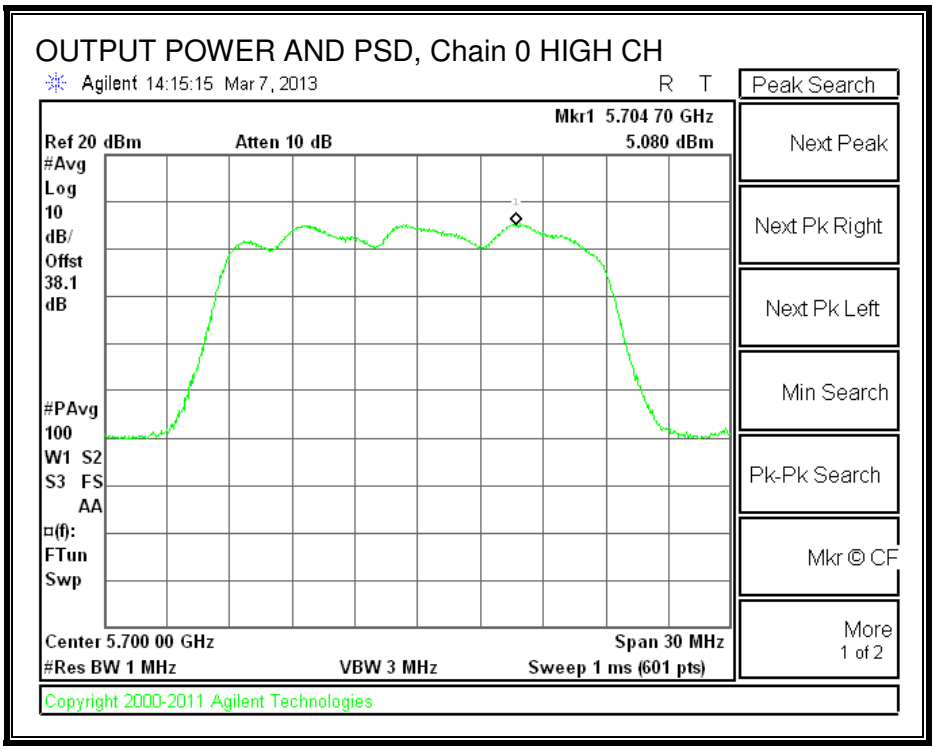
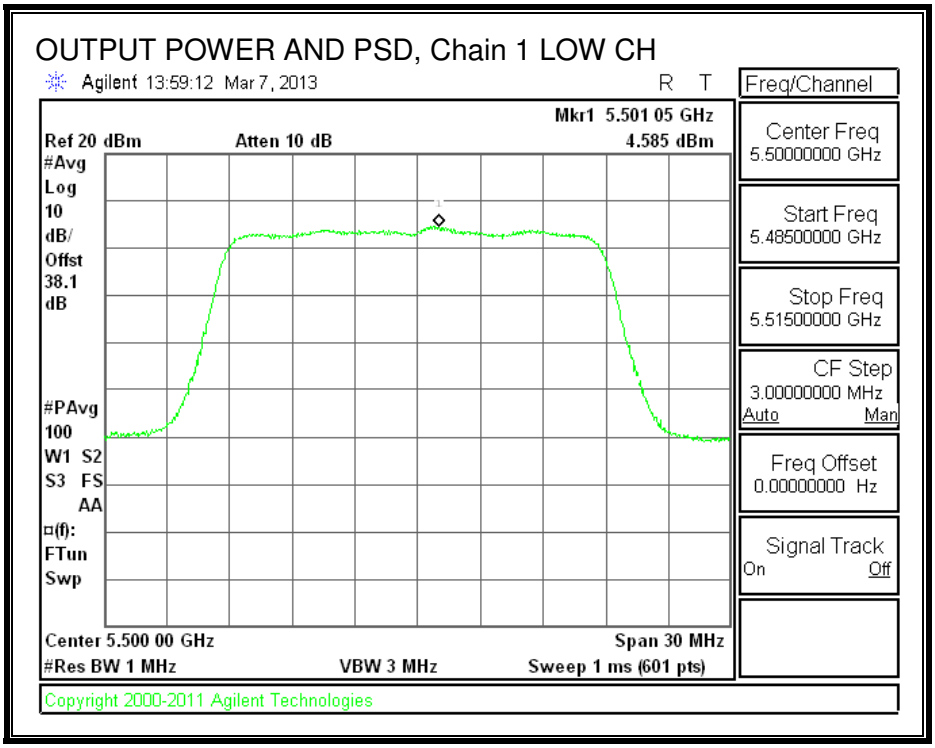


OUTPUT POWER AND PSD, Chain 1



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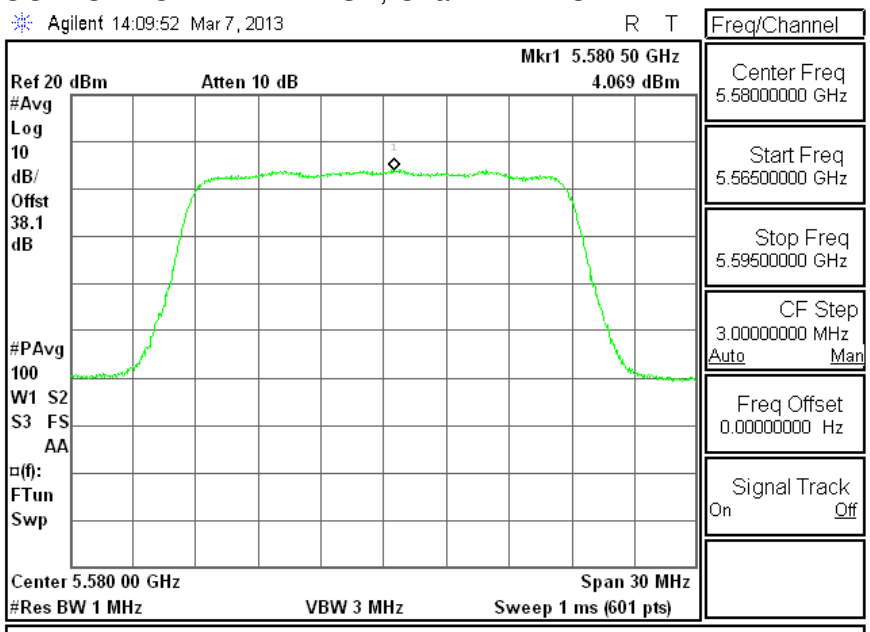
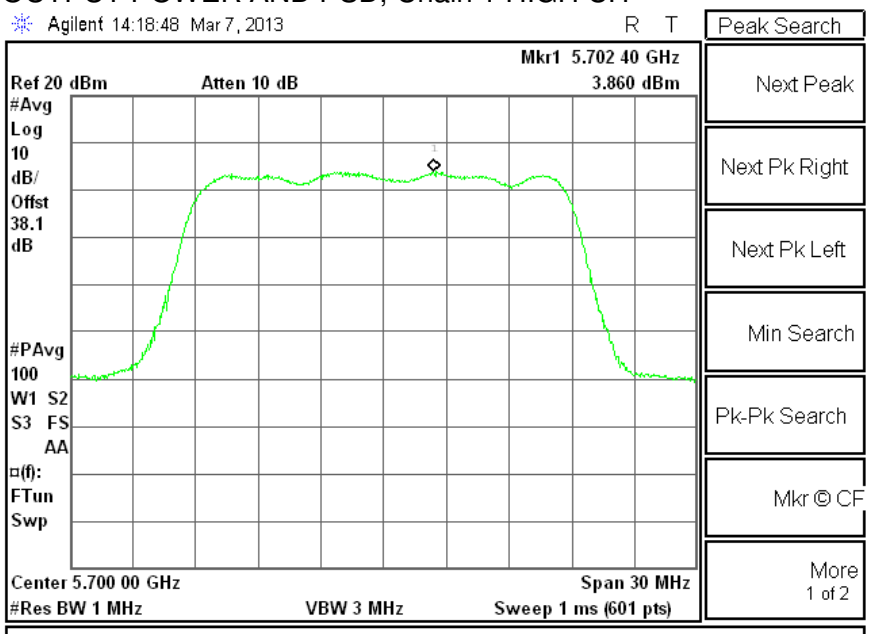
OUTPUT POWER AND PSD, Chain 1 MID CH



OUTPUT POWER AND PSD, Chain 1 HIGH CH



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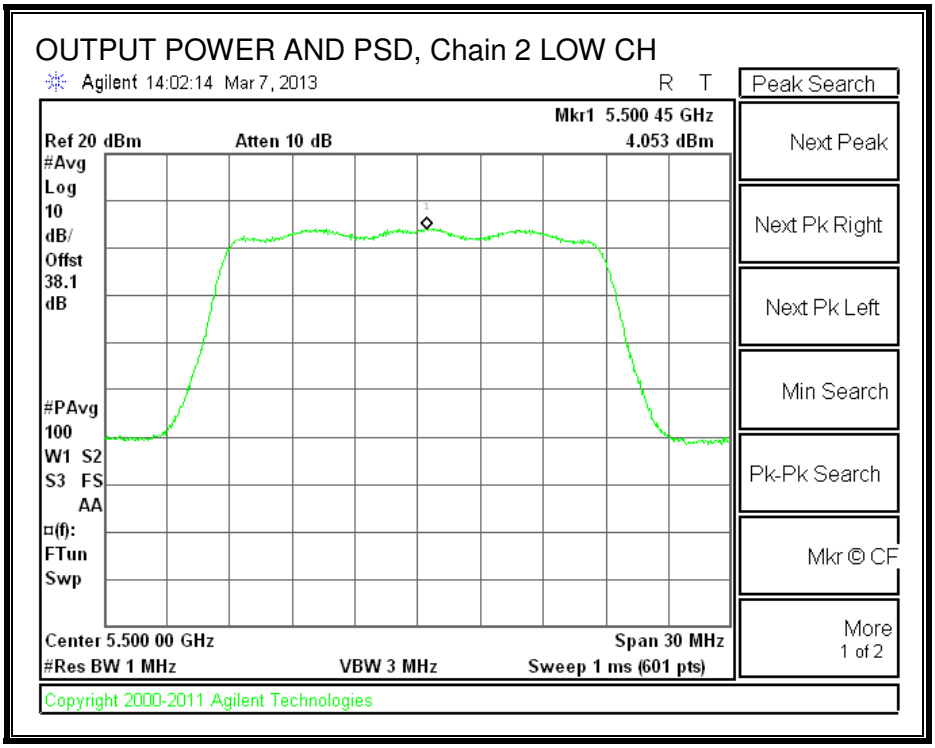
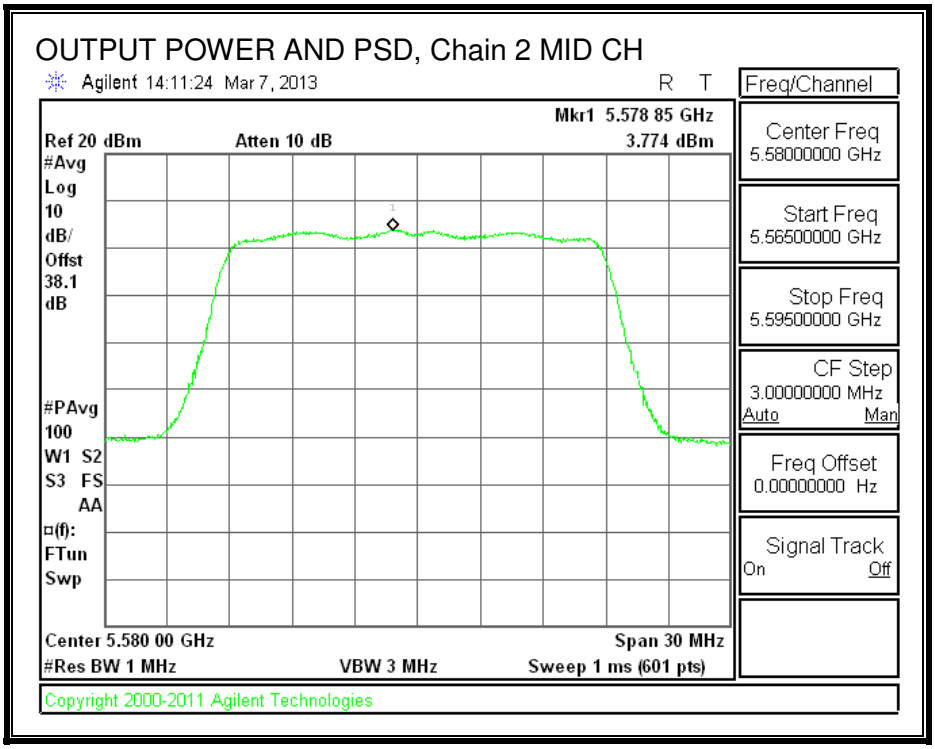
OUTPUT POWER AND PSD, Chain 2





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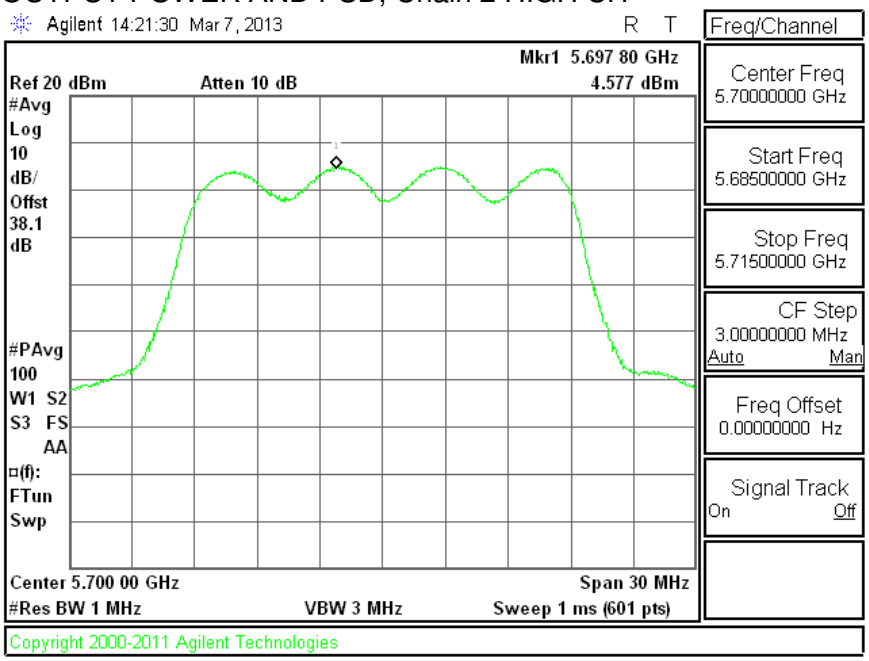
OUTPUT POWER AND PSD, Chain 2 HIGH CH



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8.48.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.49. 802.11n HT20 BF 3TX MODE IN THE 5.6 GHz BAND

Covered by testing HT20 CDD 3TX mode, the power per chain used for HT20 CDD 3TX mode is the same power per chain that will be used for HT20 BF 3TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.49.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	1.70	3.80	7.65

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)
Low	5500	20.50	17.6767	7.65
Mid	5580	20.42	17.6785	7.65
High	5700	20.50	17.6759	7.65

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Low	5500	22.35	23.47	29.47	21.82
Mid	5580	22.35	23.47	29.47	21.82
High	5700	22.35	23.47	29.47	21.82

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low 1	5500	13.00	13.20	13.40	17.97	21.82	-3.85
Low 2	5520	13.50	13.70	13.60	18.37	21.82	-3.45
Mid	5580	13.50	13.65	13.60	18.35	21.82	-3.47
High 2	5680	13.50	13.75	13.60	18.39	21.82	-3.44
High 1	5700	13.50	13.60	13.50	18.30	21.82	-3.52

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8.50. 802.11n HT20 STBC 3TX MODE IN THE 5.6 GHz BAND

8.50.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5500	20.42	20.33	21.17
Mid	5580	20.50	20.42	21.25
High	5700	20.50	20.42	20.67

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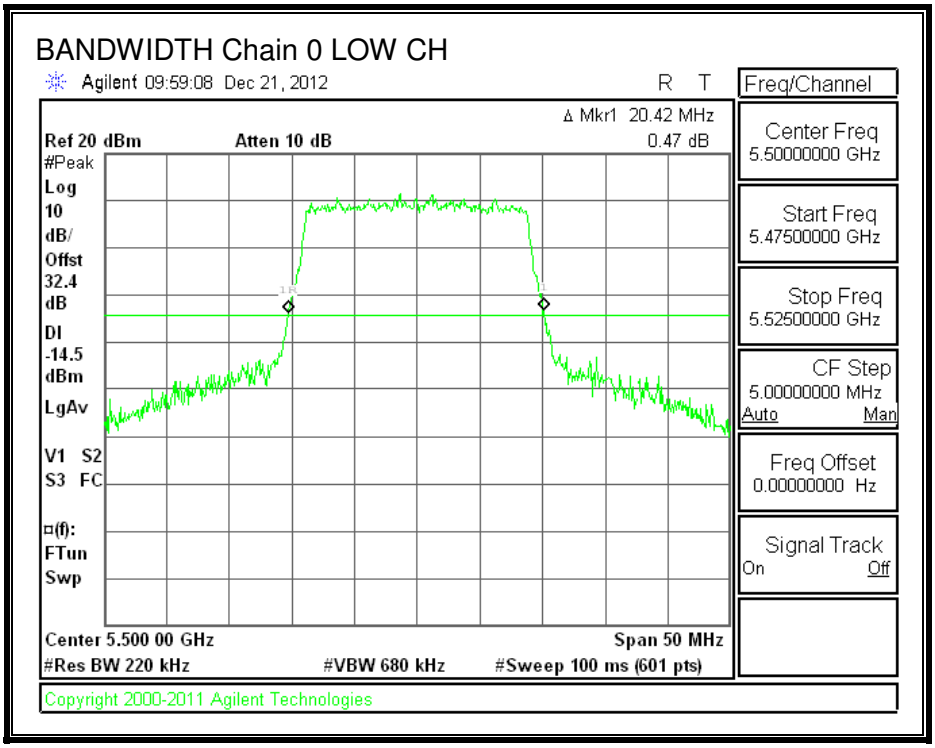
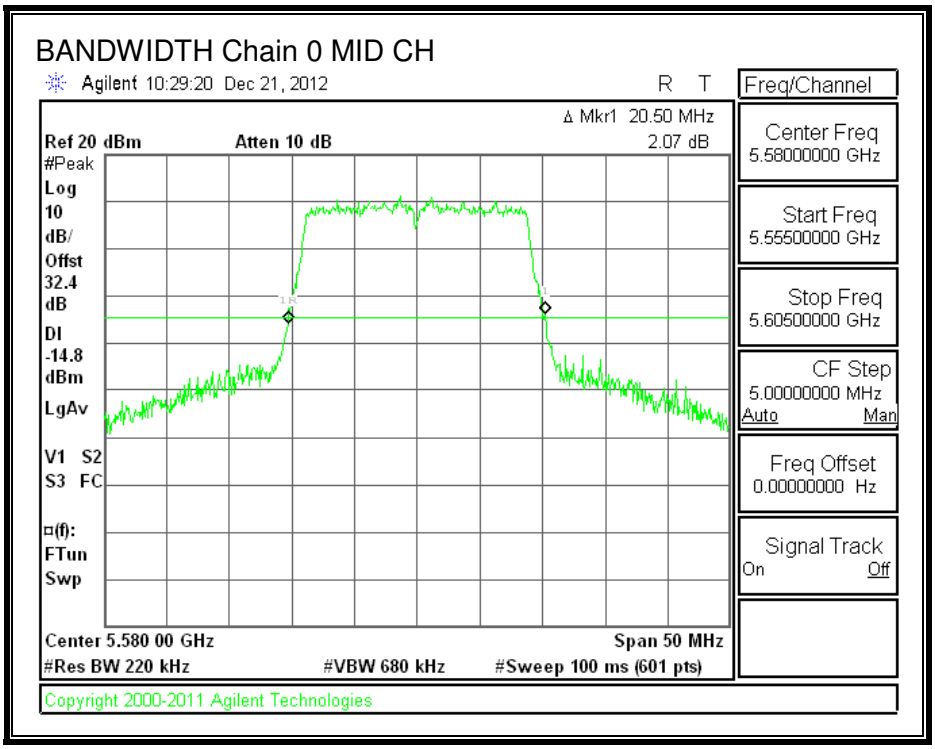
26 dB BANDWIDTH, Chain 0





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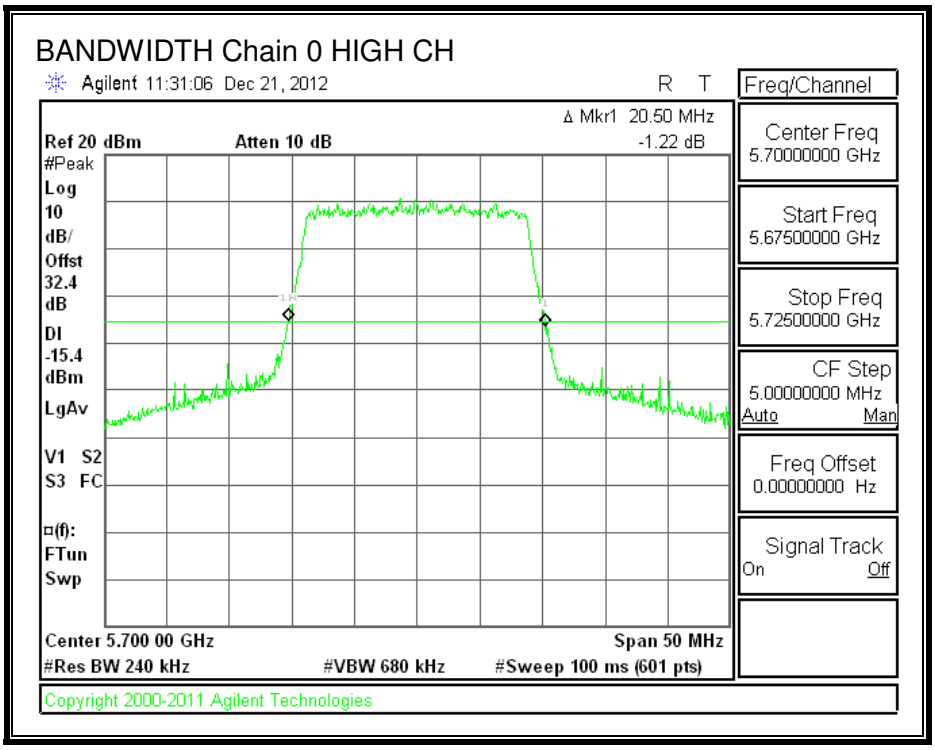
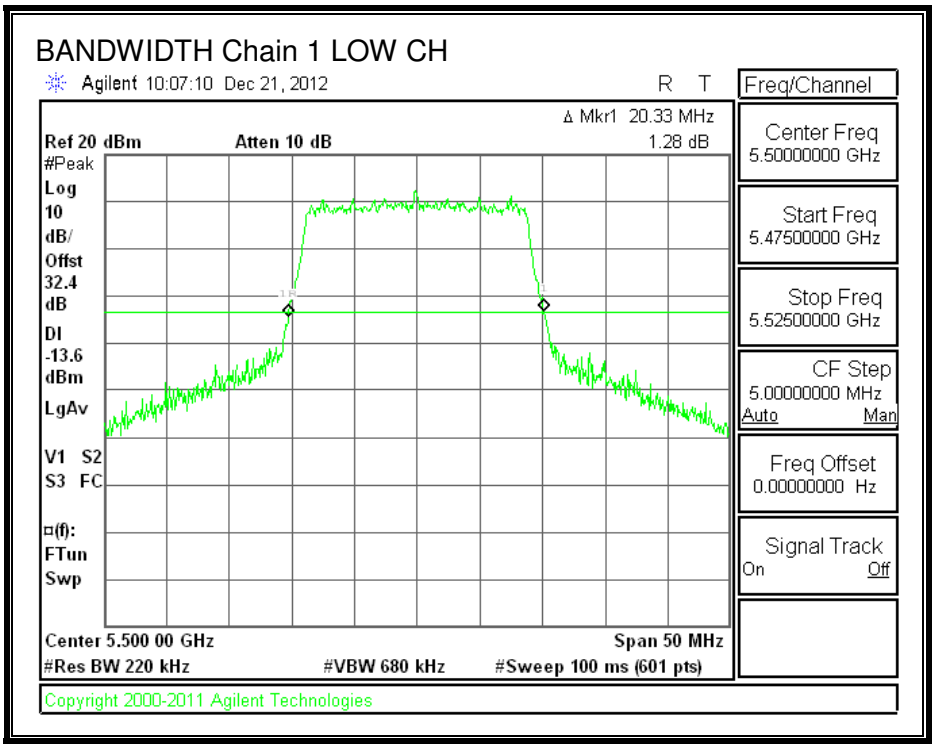


26 dB BANDWIDTH, Chain 1



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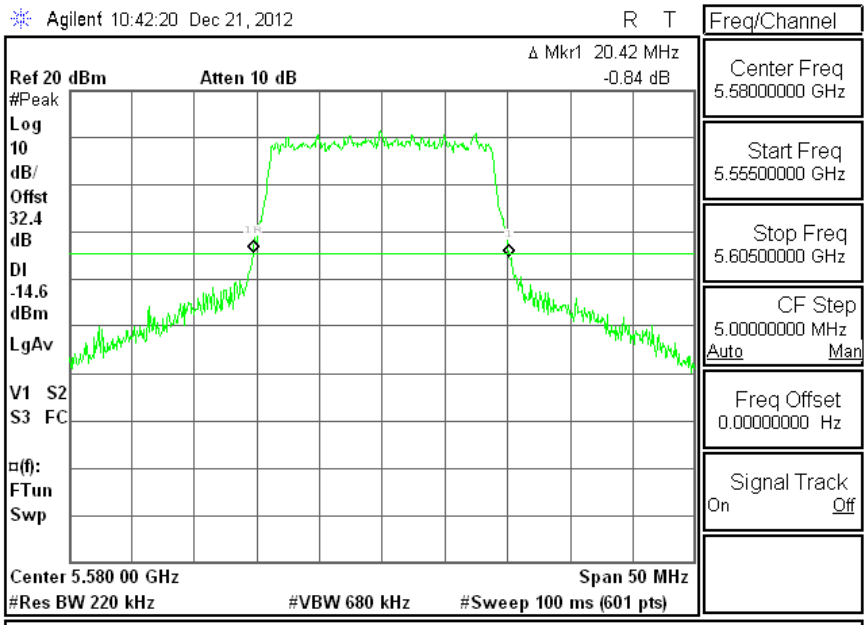
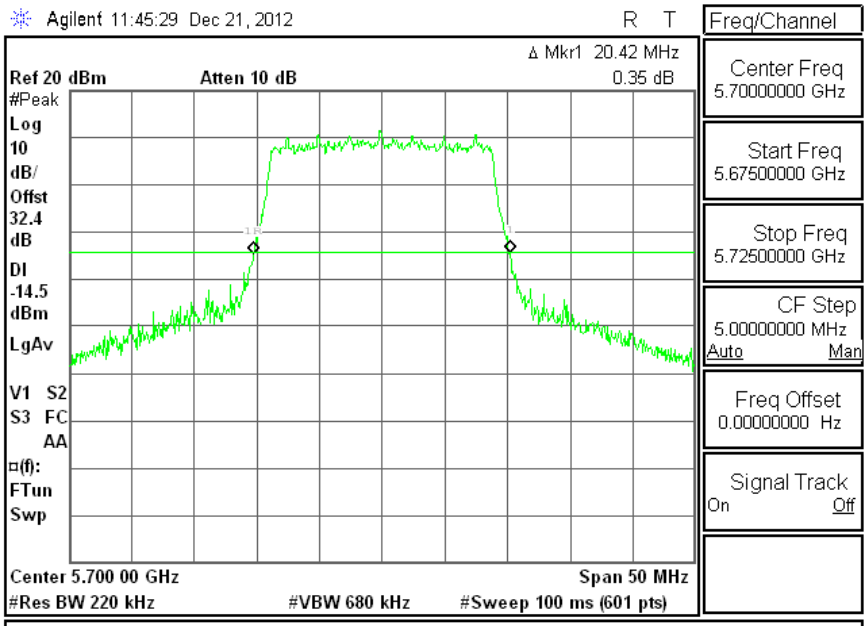
BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



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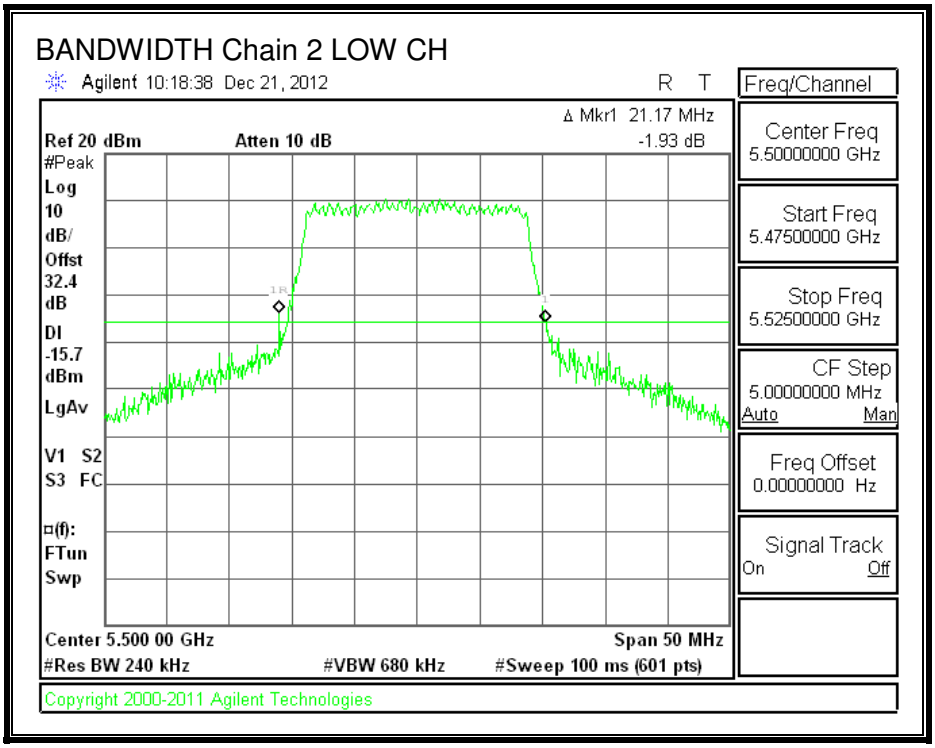
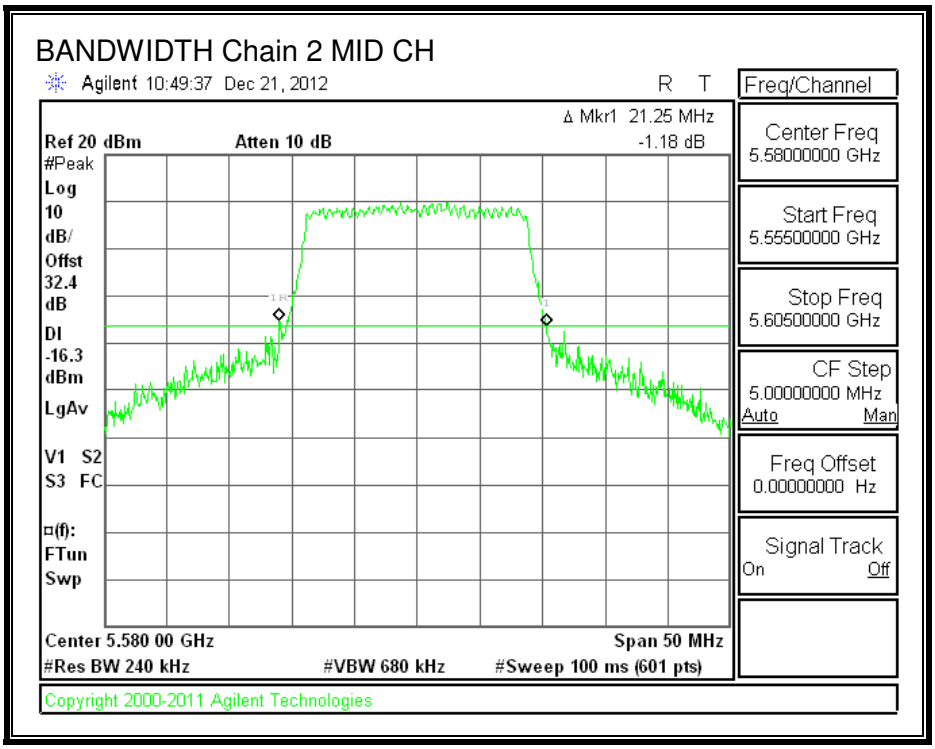
26 dB BANDWIDTH, Chain 2





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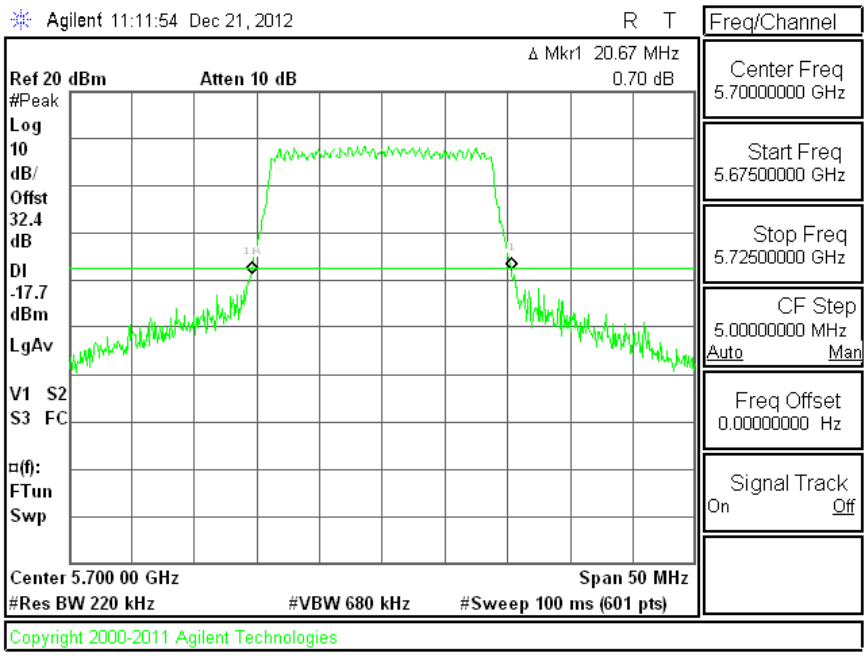
BANDWIDTH Chain 2 HIGH CH



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8.50.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5500	17.6727	17.6553	17.6848
Mid	5580	17.6730	17.6737	17.6786
High	5700	17.6677	17.6630	17.6677

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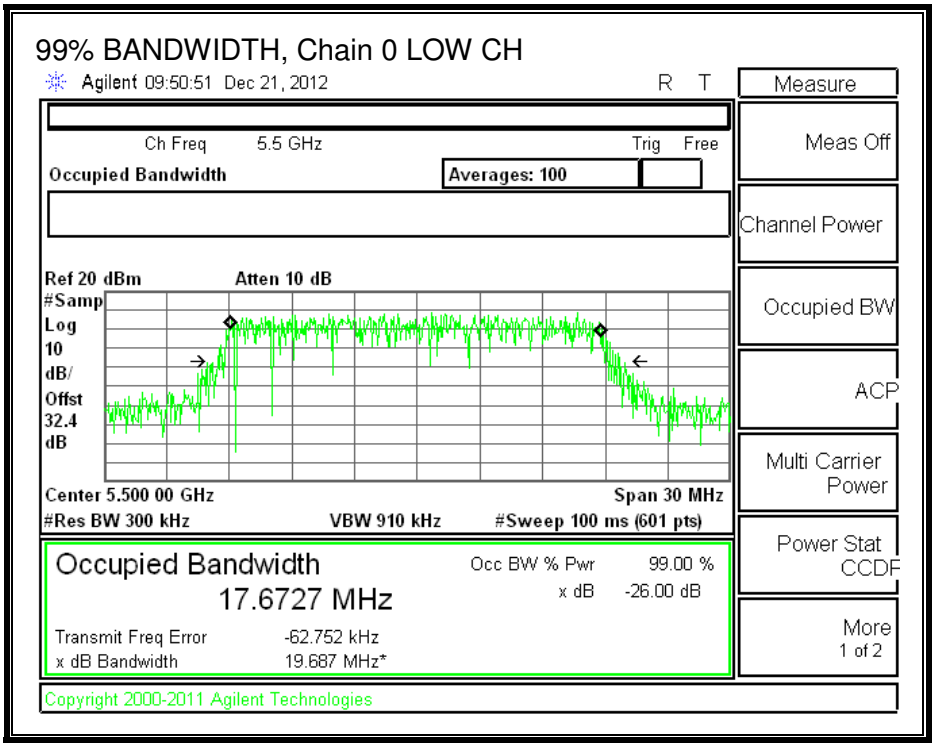
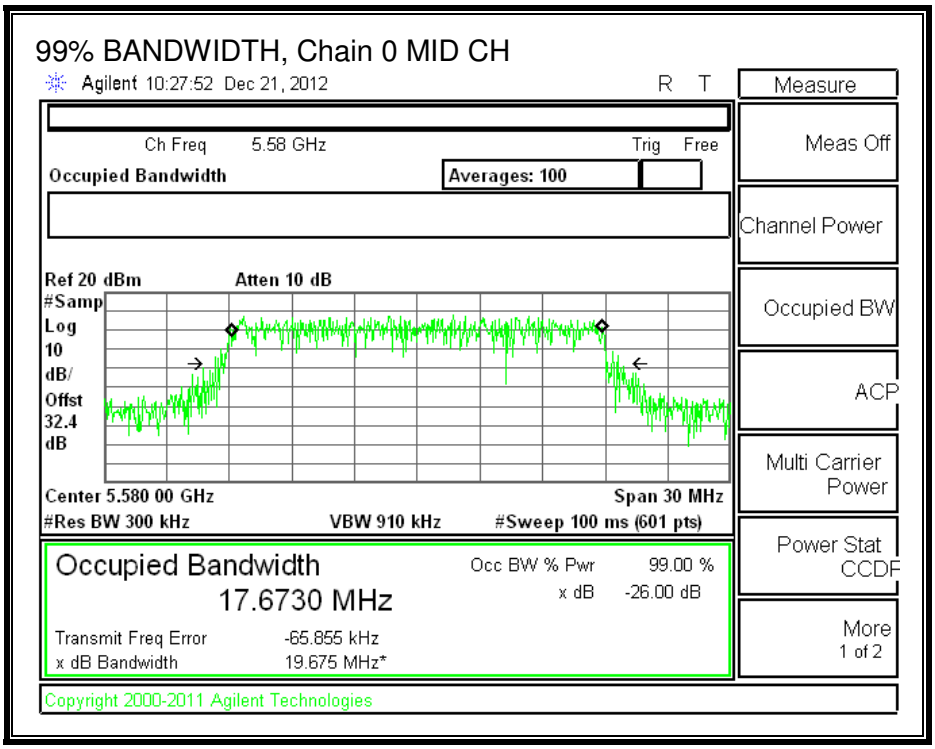
99% BANDWIDTH, Chain 0





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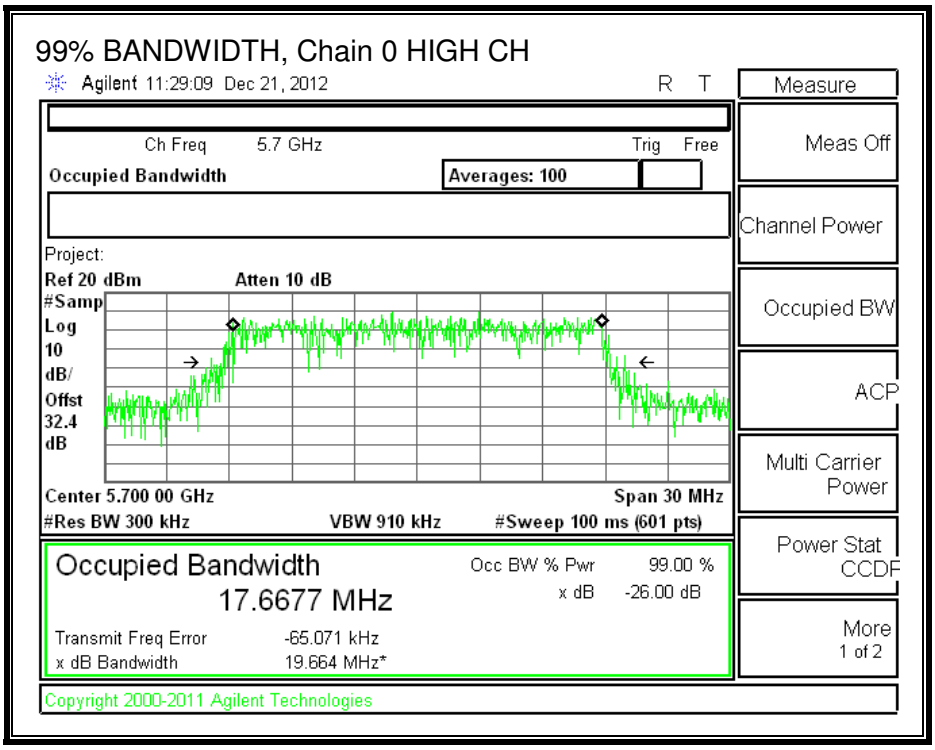
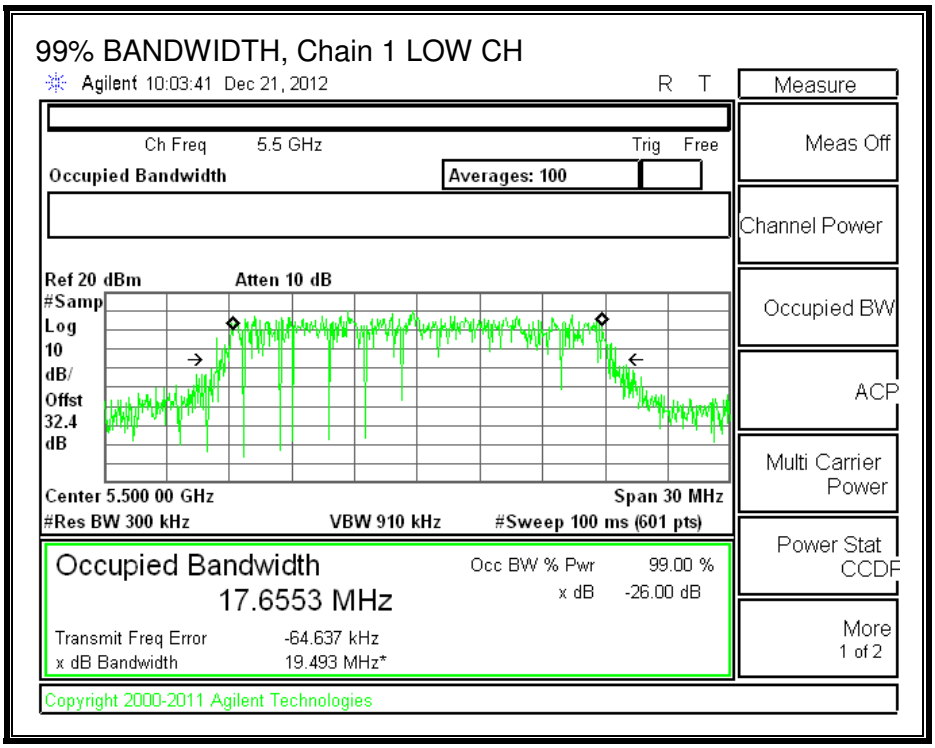


99% BANDWIDTH, Chain 1



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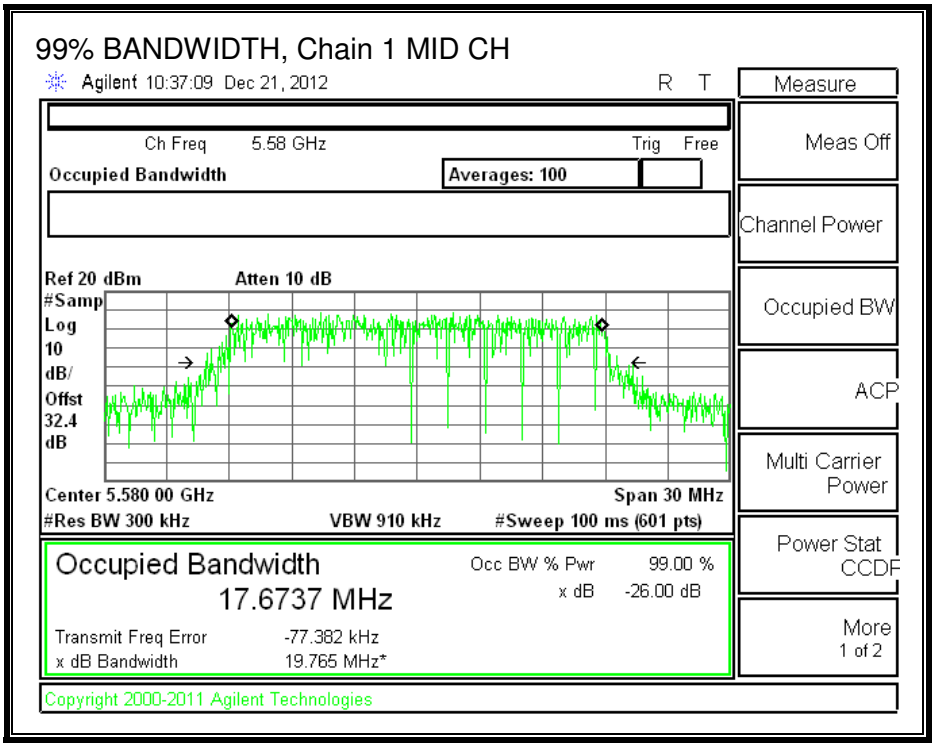

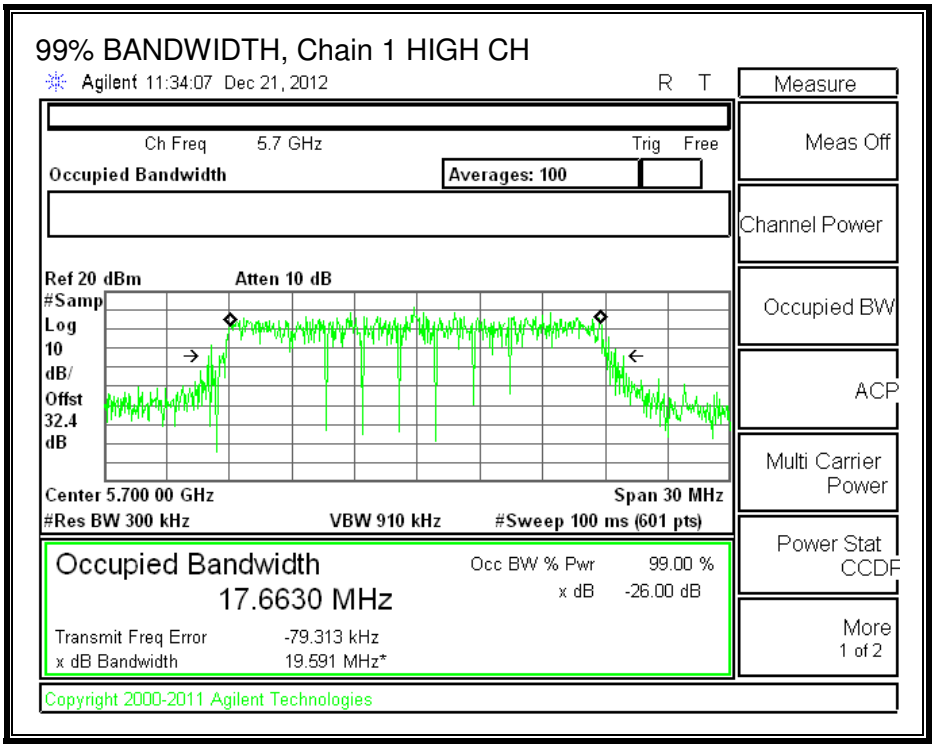

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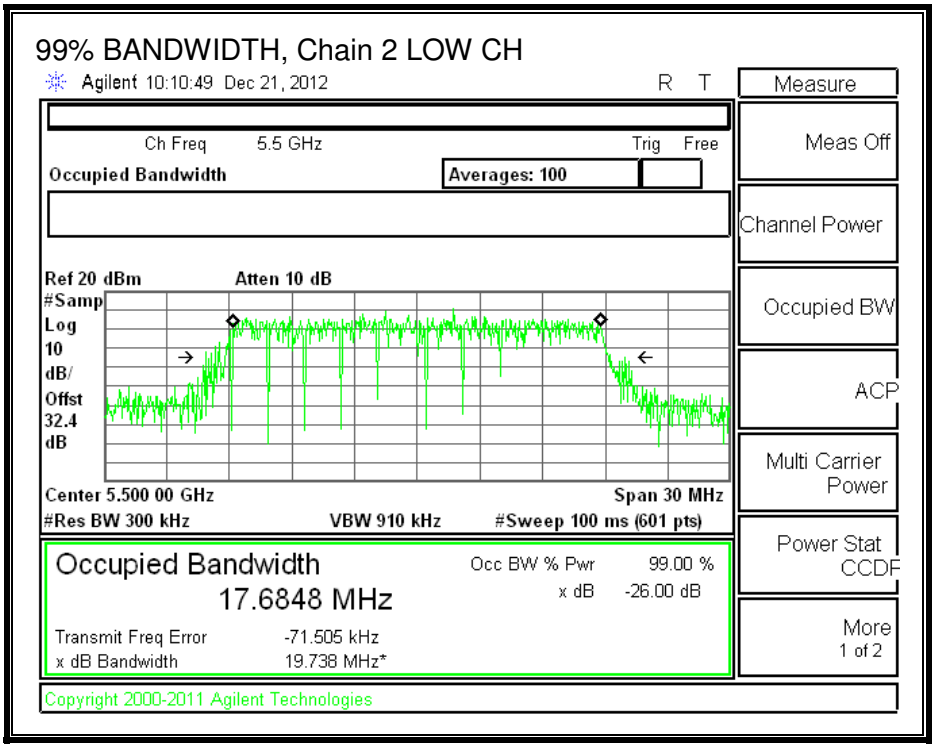
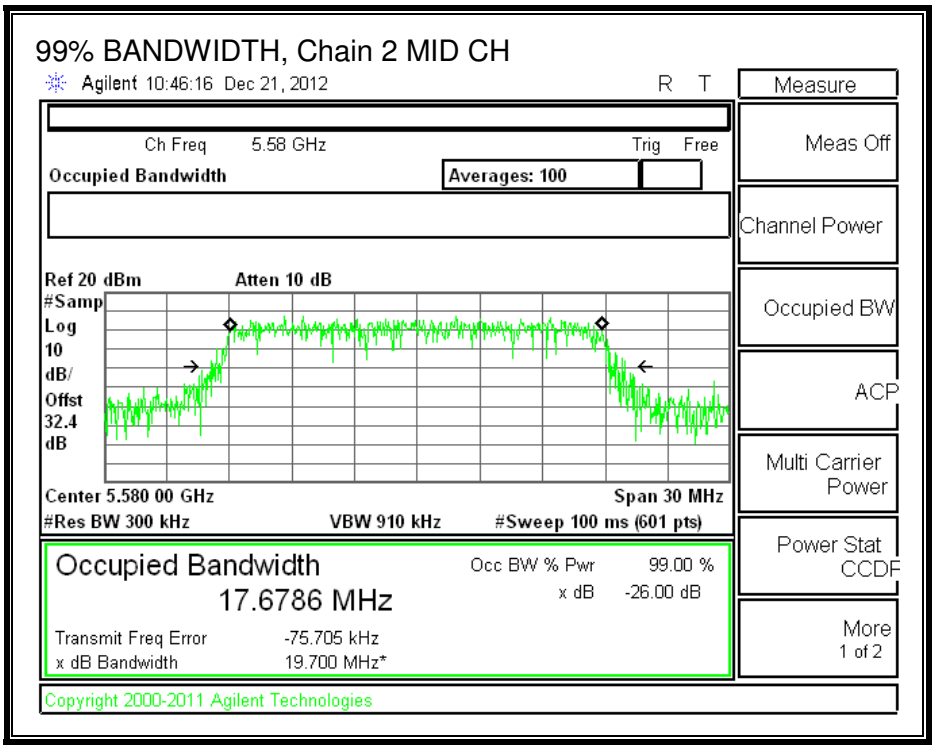
99% BANDWIDTH, Chain 2





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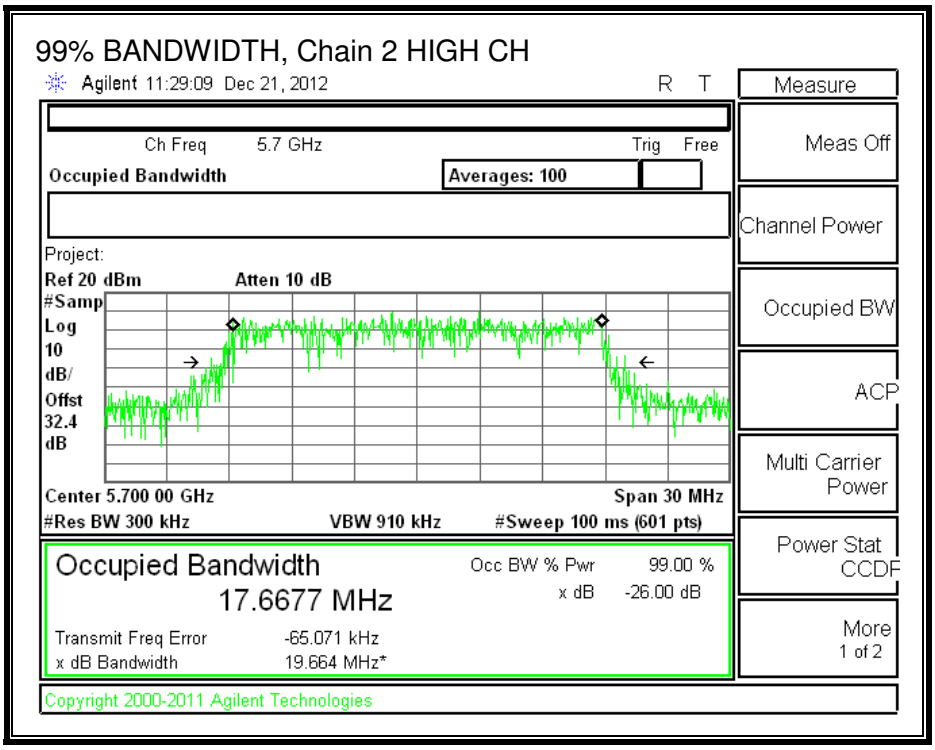

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8.50.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.00	1.70	3.80	2.92

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5500	20.33	17.6553	2.92
Mid	5580	20.42	17.6730	2.92
High	5700	20.42	17.6630	2.92

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5500	24.00	23.47	29.47	23.47	11.00	11.00	11.00
Mid	5580	24.00	23.47	29.47	23.47	11.00	11.00	11.00
High	5700	24.00	23.47	29.47	23.47	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low 1	5500	13.00	13.35	13.20	17.96	23.47	-5.51
Low 2	5520	13.50	13.65	13.60	18.35	23.47	-5.12
Mid	5580	16.00	16.20	16.10	20.87	23.47	-2.60
High 2	5680	16.00	16.30	16.20	20.94	23.47	-2.53
High 1	5700	15.90	16.20	16.00	20.81	23.47	-2.66

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5500	5.50	6.22	6.19	10.75	11.00	-0.25
Mid	5580	5.92	6.36	6.26	10.96	11.00	-0.04
High	5700	5.72	6.32	6.29	10.89	11.00	-0.11

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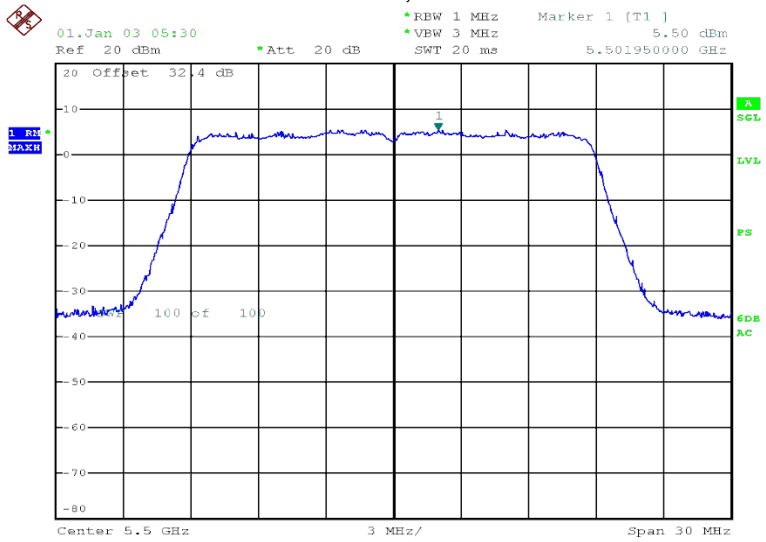
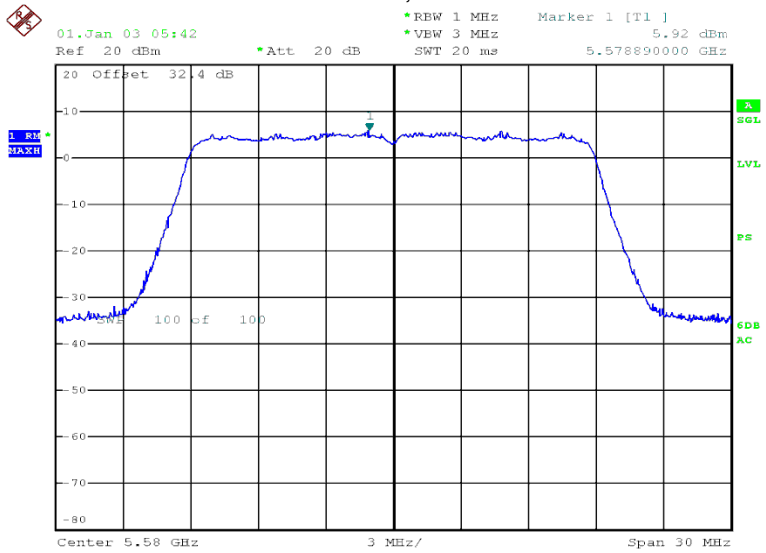
OUTPUT POWER AND PPSD, Chain 0

OUTPUT POWER AND PPSD, Chain 0 LOW CH



Date: 1.JAN.2003 05:30:57

OUTPUT POWER AND PPSD, Chain 0 MID CH



Date: 1.JAN.2003 05:42:57

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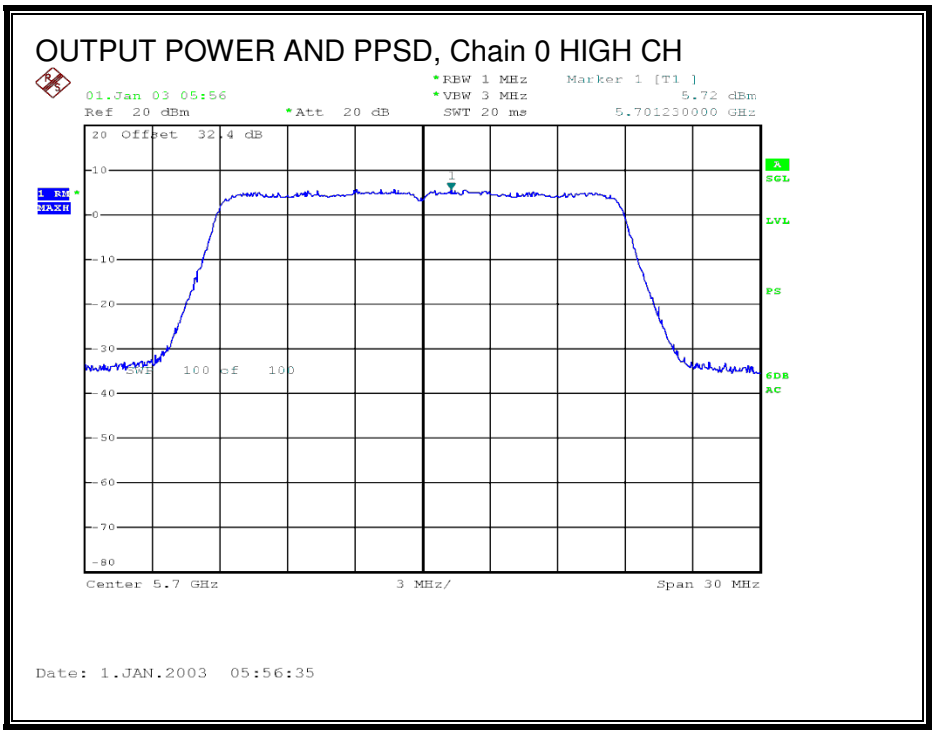
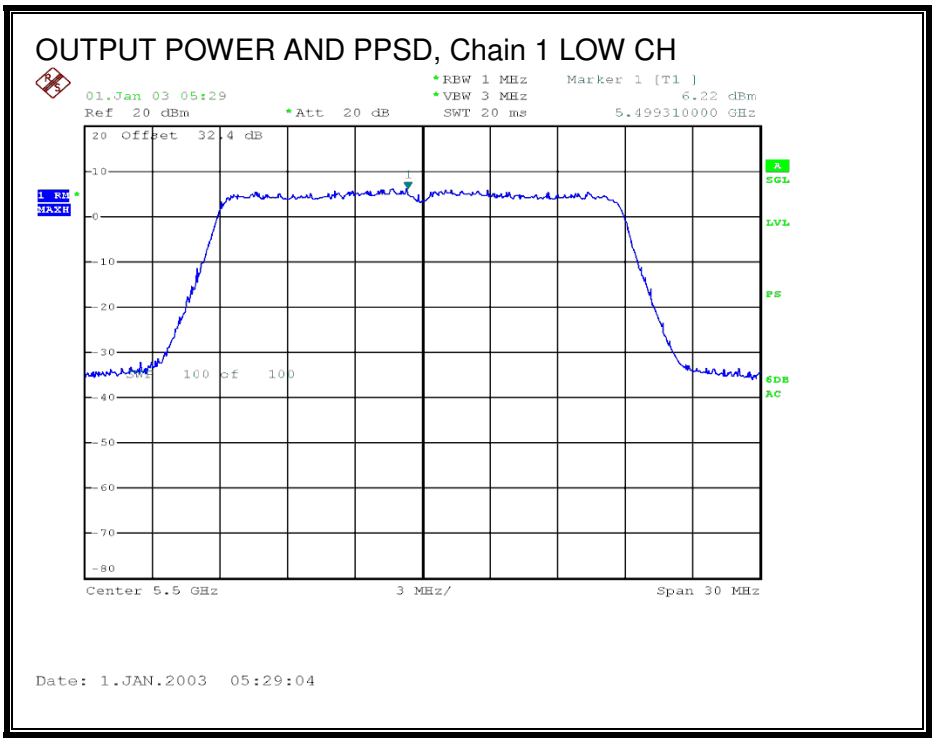


OUTPUT POWER AND PPSD, Chain 1



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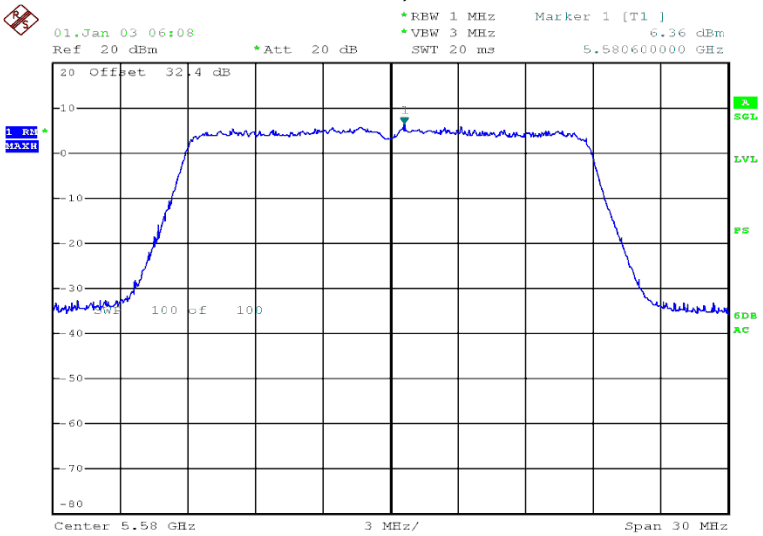
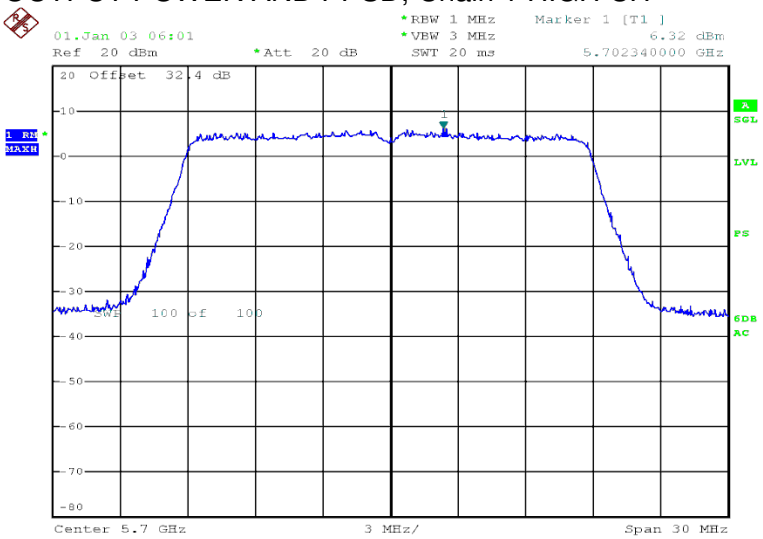
OUTPUT POWER AND PPSD, Chain 1 MID CH



Date: 1.JAN.2003 06:08:35

OUTPUT POWER AND PPSD, Chain 1 HIGH CH



Date: 1.JAN.2003 06:01:35

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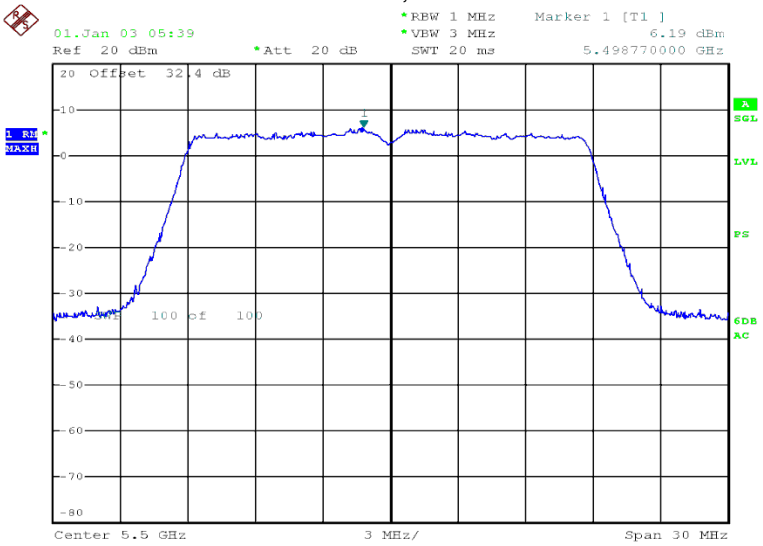
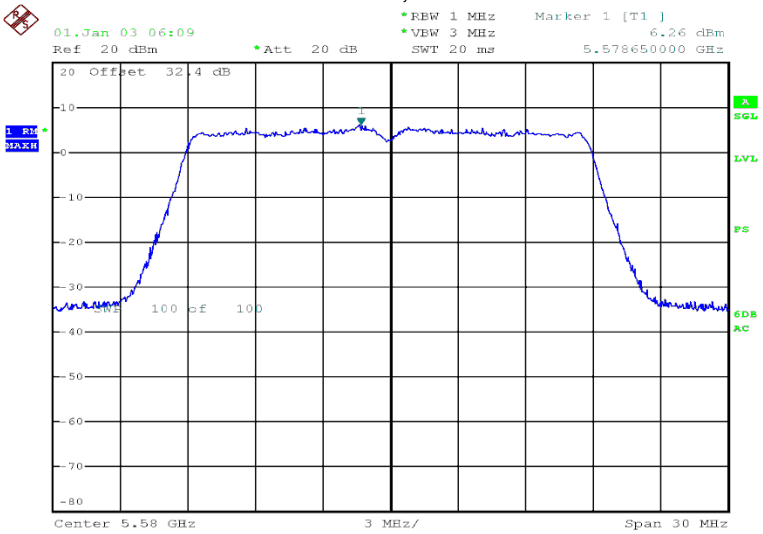
OUTPUT POWER AND PPSD, Chain 2

OUTPUT POWER AND PPSD, Chain 2 LOW CH



Date: 1.JAN.2003 05:39:22

OUTPUT POWER AND PPSD, Chain 2 MID CH



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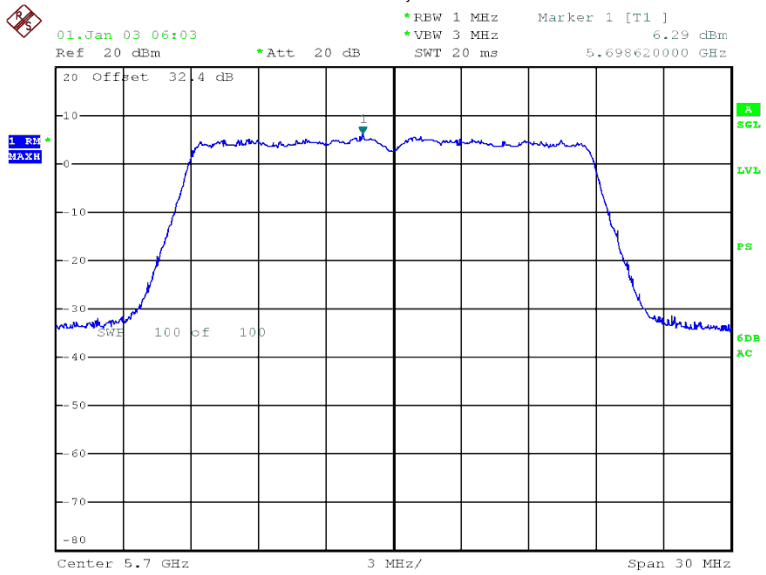
OUTPUT POWER AND PPSD, Chain 2 HIGH CH



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8.50.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.51. 802.11a 1TX MODE, CH 144 (5720 MHz), 5.6 GHz BAND

8.51.1.26 dB BANDWIDTH

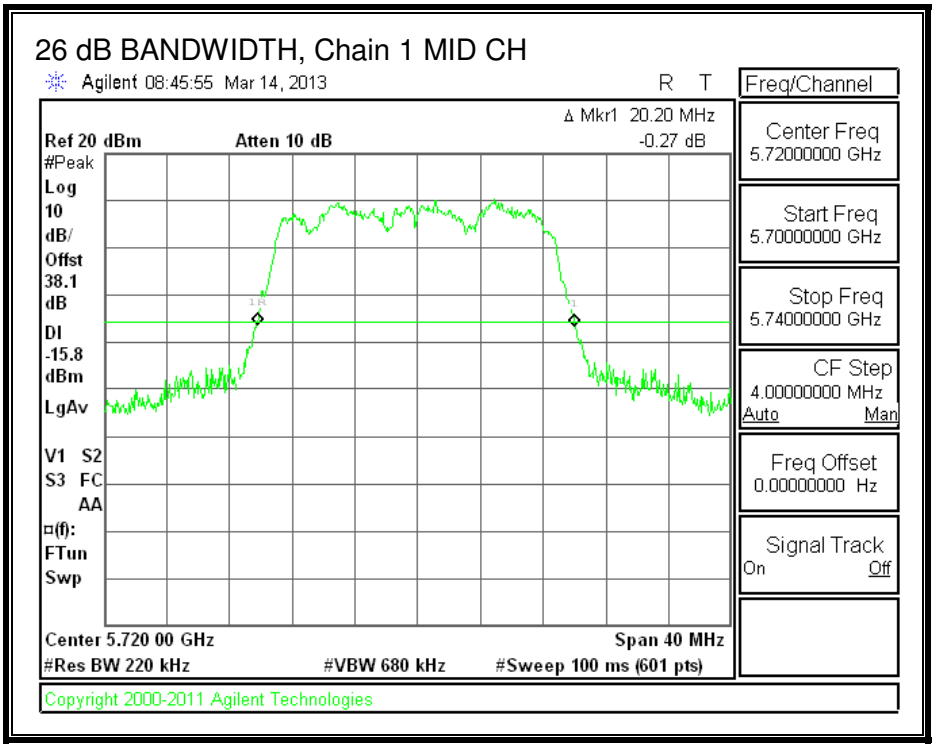
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 1 (MHz)
Mid	5720	20.20

26 dB BANDWIDTH, Chain 1



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8.51.2.99% BANDWIDTH

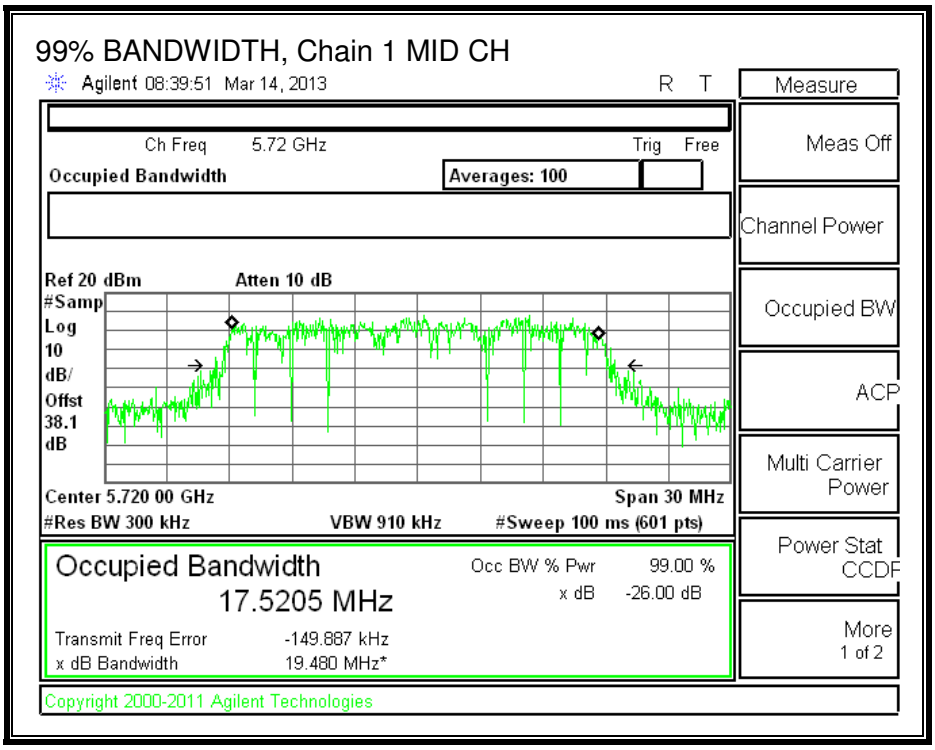
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 1 (MHz)
Mid	5720	17.5205

99% BANDWIDTH, Chain 1



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8.51.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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RESULTS

Limits (FCC), portion in UNII 2 ext band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Antenna Gain (dBi)
Mid	5720	15.1	13.7603	4.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5720	22.79	22.39	28.39	22.39	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5720	20.29	20.29	22.39	-2.10

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5720	9.706	9.706	11.00	-1.29

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Antenna Gain (dBi)
Mid	5720	5.1	3.7603	4.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5720	18.08	16.75	22.75	16.75	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5720	14.58	14.58	16.75	-2.17

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5720	9.544	9.544	11.00	-1.46

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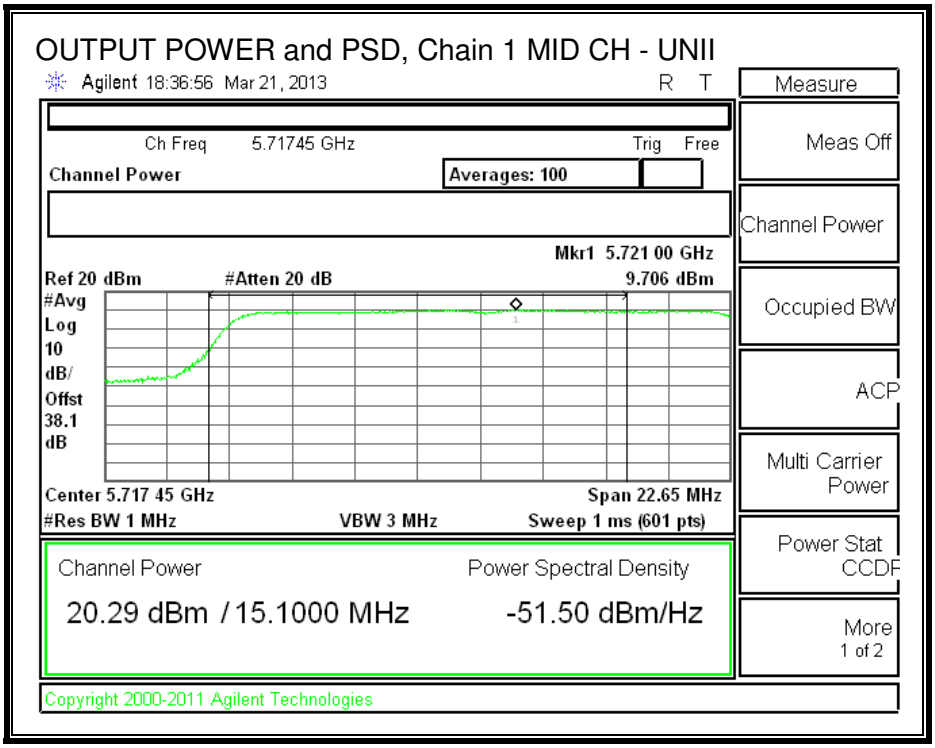
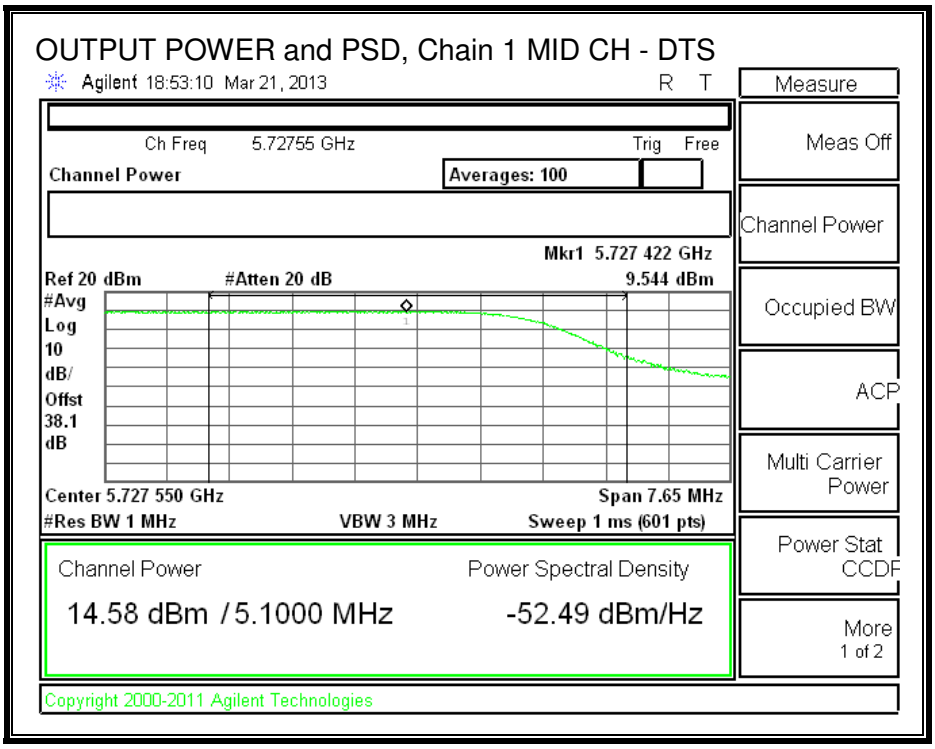
OUTPUT POWER and PSD, Chain 1





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8.51.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.52. 802.11n HT20 CDD 2TX MODE, CH 144 (5720 MHz), 5.6 GHz BAND

8.52.1.26 dB BANDWIDTH

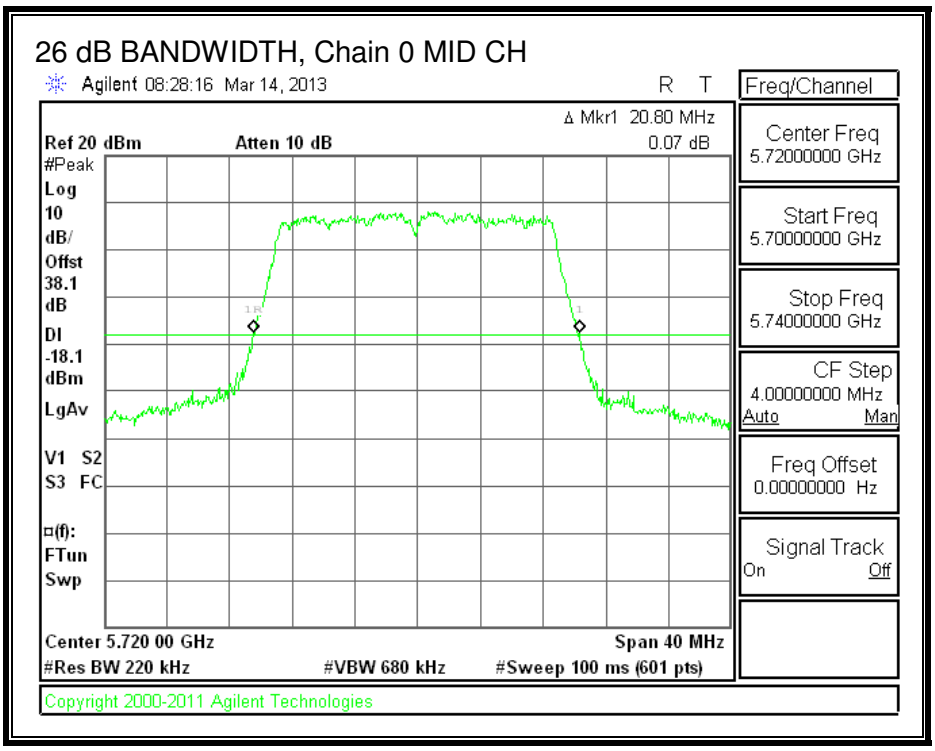
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Mid	5720	20.80	20.40

26 dB BANDWIDTH, Chain 0



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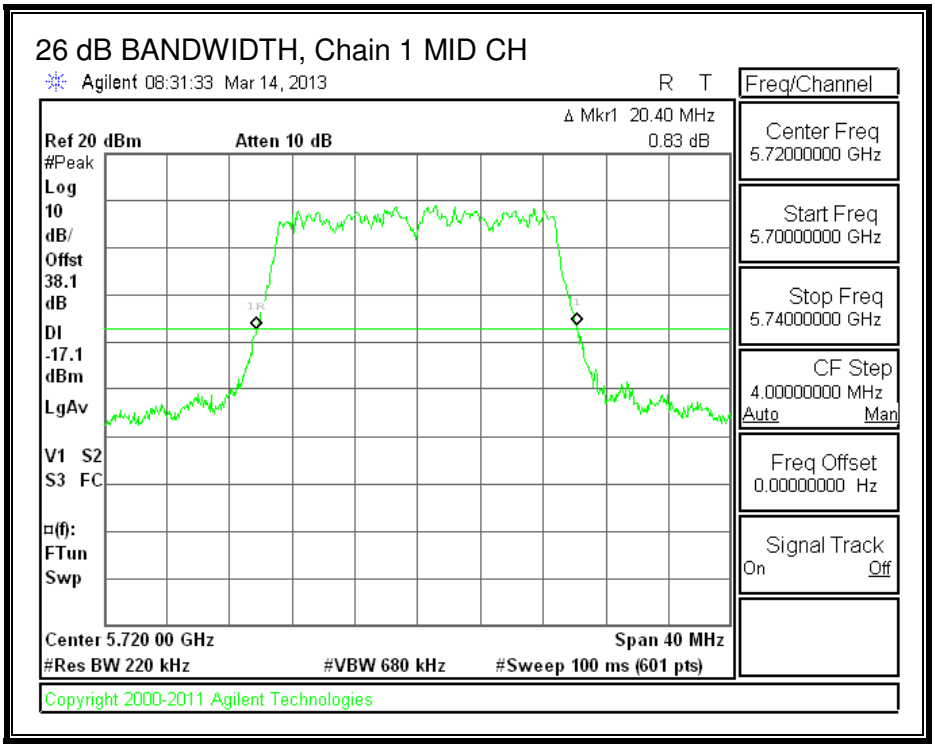
26 dB BANDWIDTH, Chain 1



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8.52.2.99% BANDWIDTH

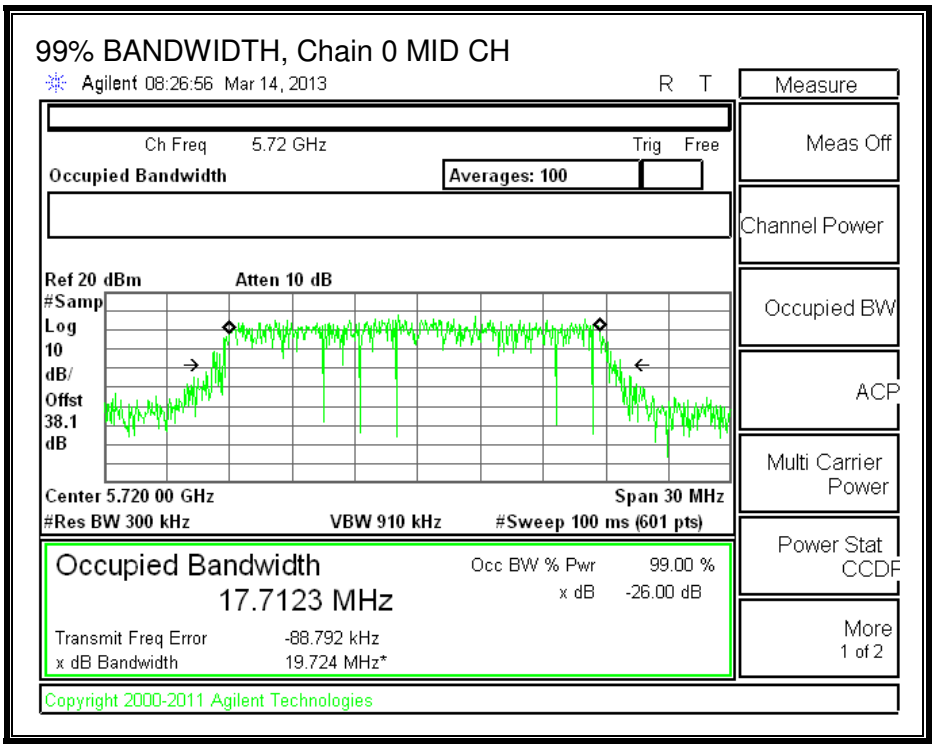
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Mid	5720	17.7123	17.7604

99% BANDWIDTH, Chain 0



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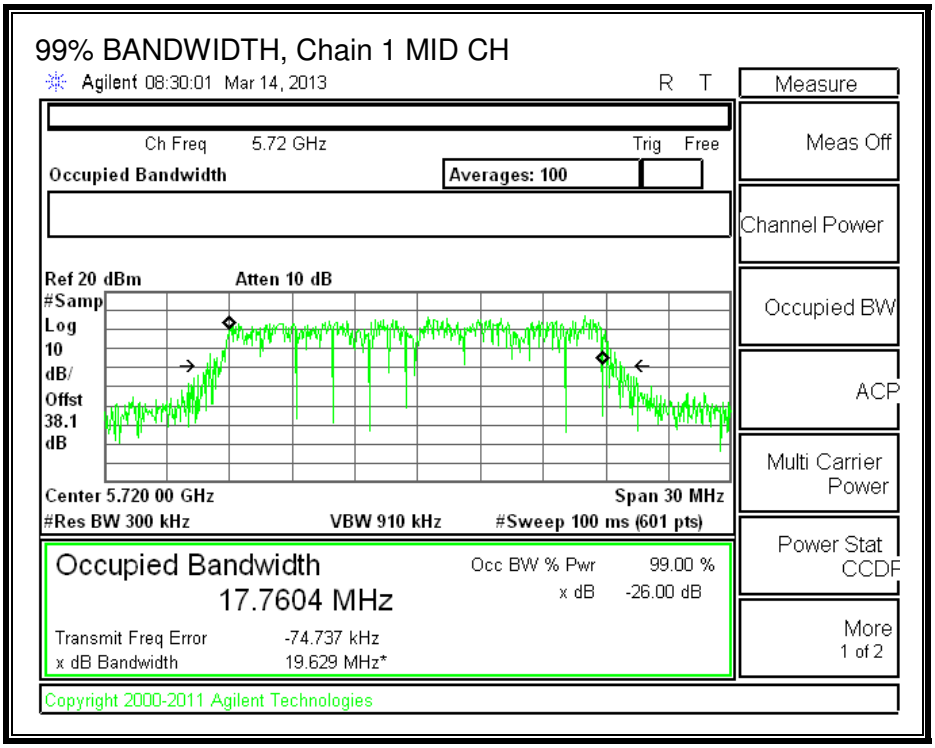
99% BANDWIDTH, Chain 1



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8.52.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.70	4.40	4.44

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.70	4.40	4.81

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RESULTS

Limits (FCC), portion in UNII 2 ext band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)	Uncorrelated Gain (dBi)
Mid	5720	15.20	13.8020	4.81	4.44

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5720	22.82	22.40	28.40	22.40	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5720	16.15	16.23	19.20	22.40	-3.20

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5720	6.126	6.332	9.24	11.00	-1.76

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)	Uncorrelated Gain (dBi)
Mid	5720	5.20	3.8020	4.81	4.44

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5720	18.16	16.80	22.80	16.80	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5720	10.26	10.30	13.29	16.80	-3.51

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5720	5.123	5.373	8.26	11.00	-2.74

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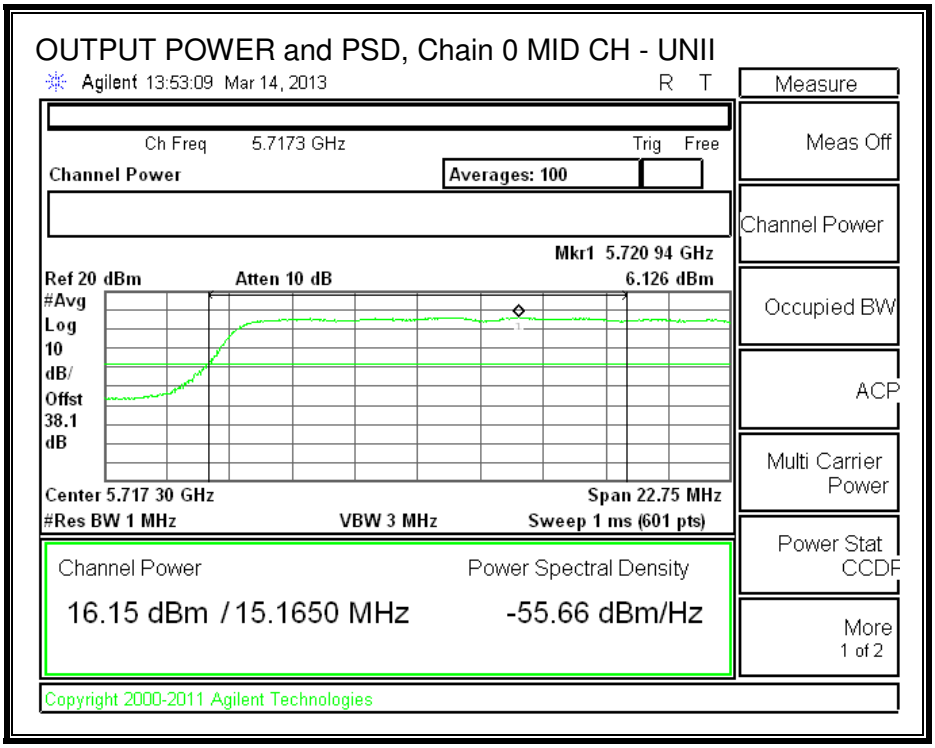
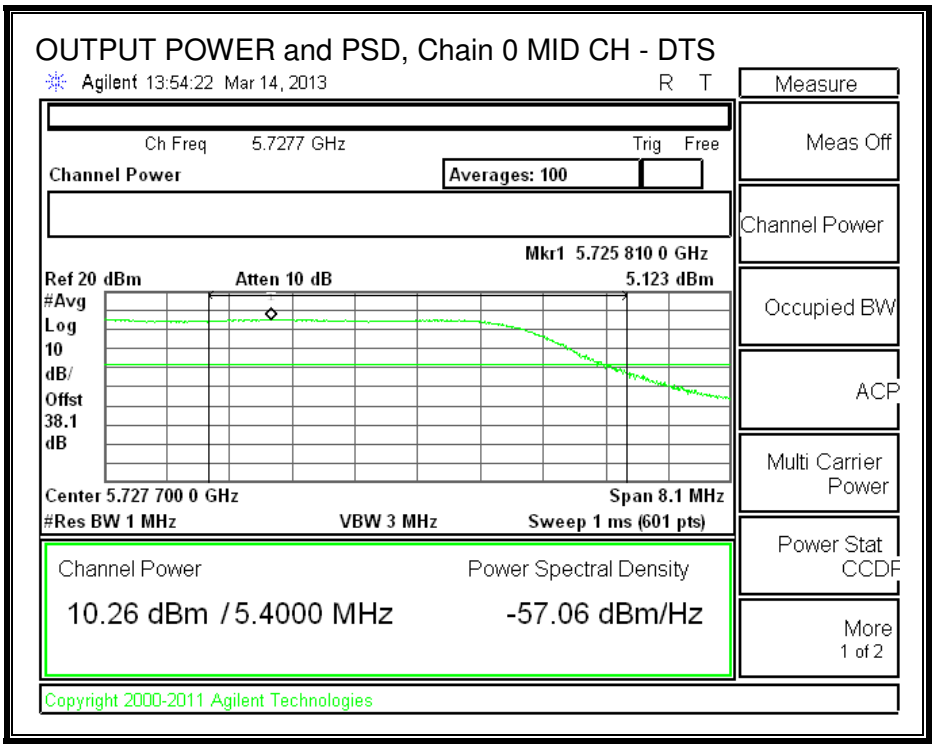
OUTPUT POWER and PSD, Chain 0





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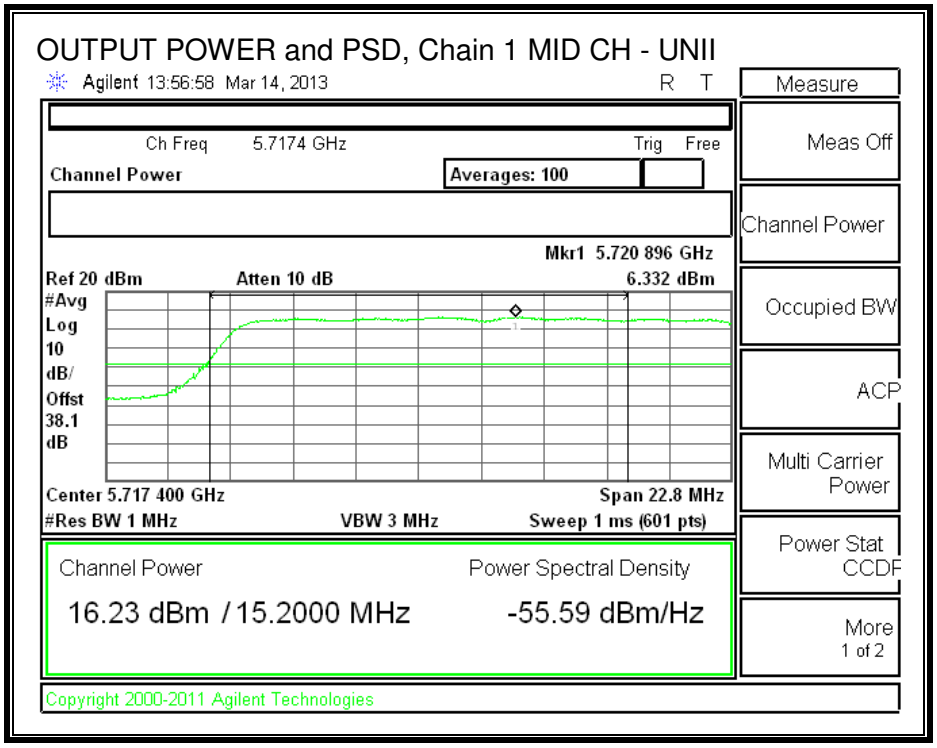
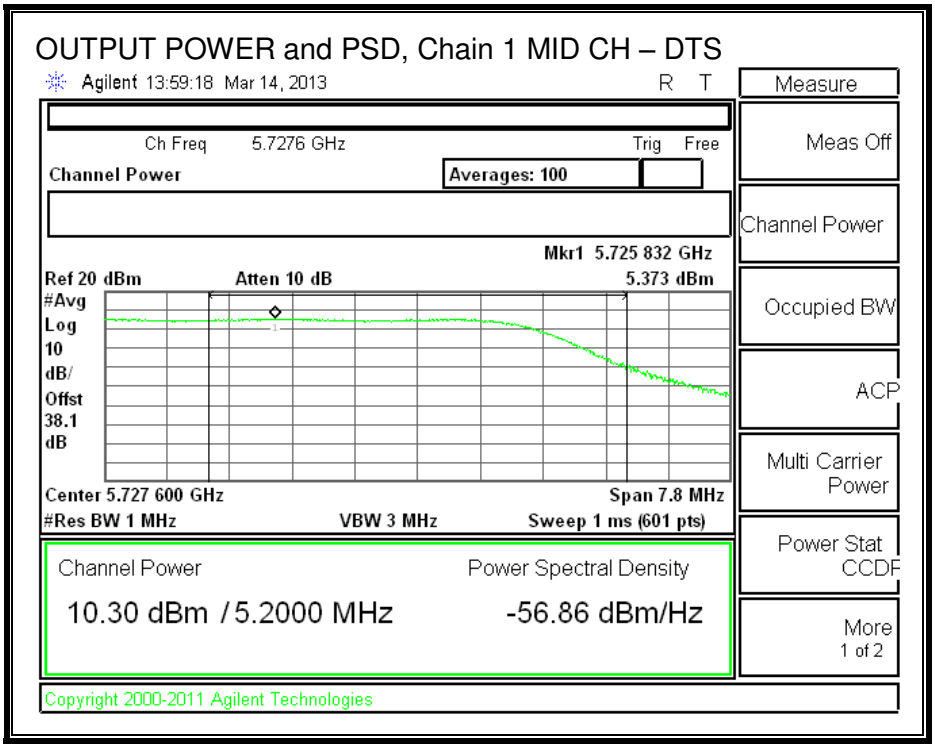
OUTPUT POWER and PSD, Chain 1





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8.52.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.53. 802.11n HT20 STBC 2TX MODE, CH 144 (5720 MHz), 5.6 GHz BAND

8.53.1.26 dB BANDWIDTH

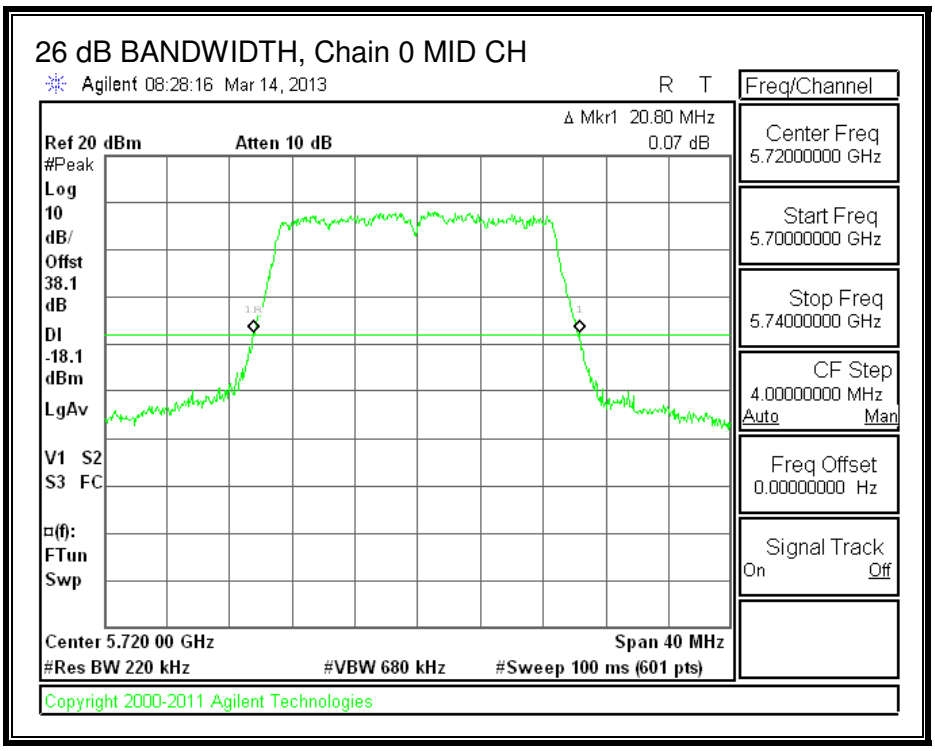
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Mid	5720	20.80	20.40

26 dB BANDWIDTH, Chain 0



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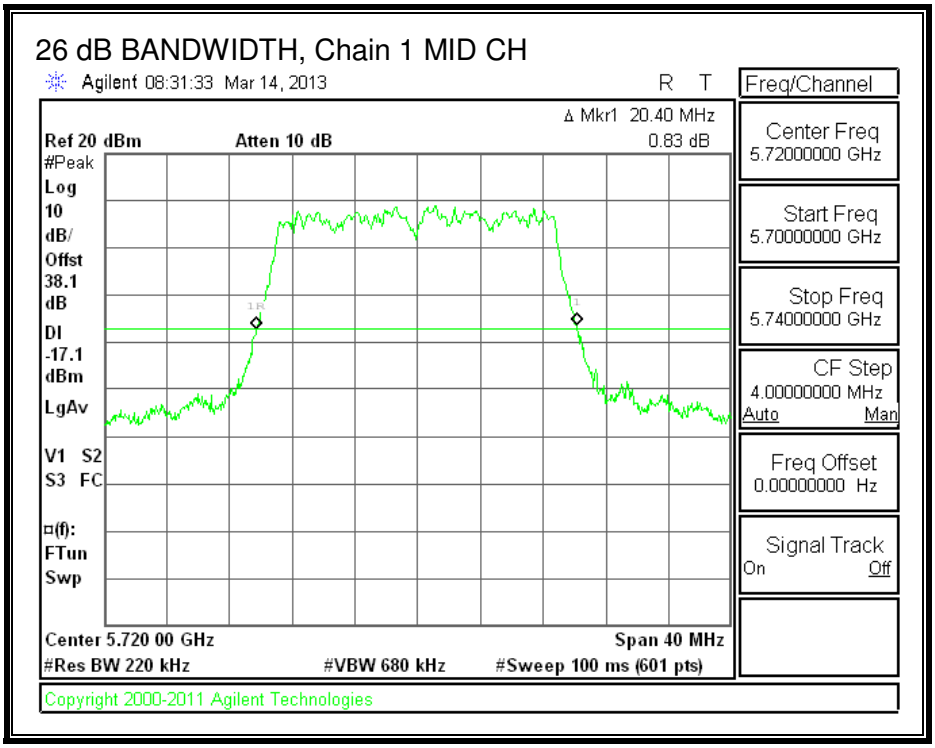
26 dB BANDWIDTH, Chain 1



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8.53.2.99% BANDWIDTH

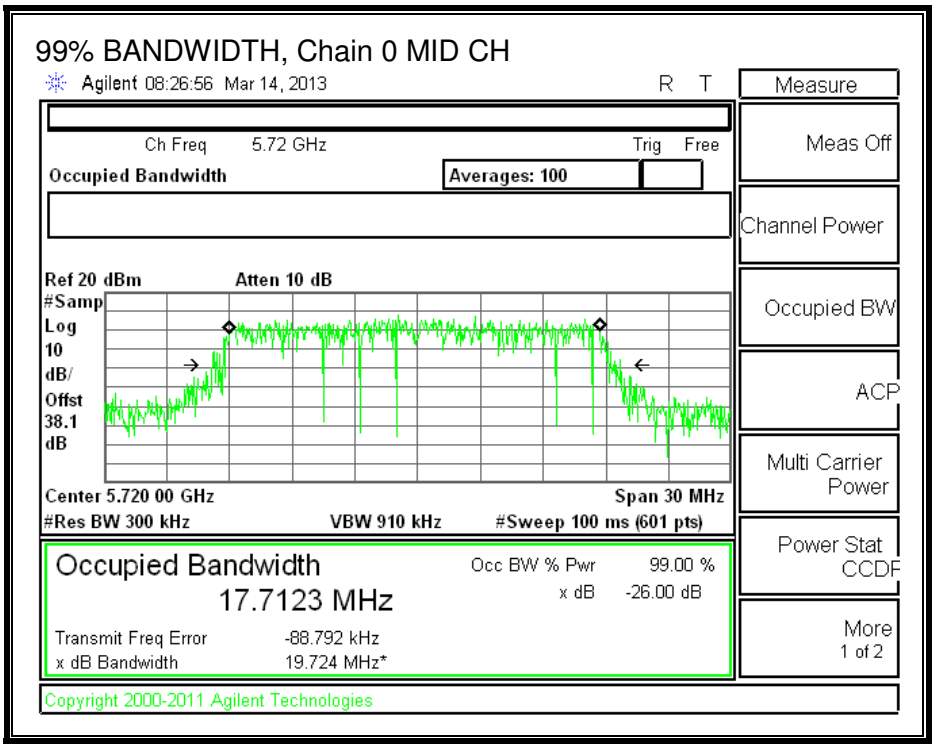
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Mid	5720	17.7123	17.7604

99% BANDWIDTH, Chain 0



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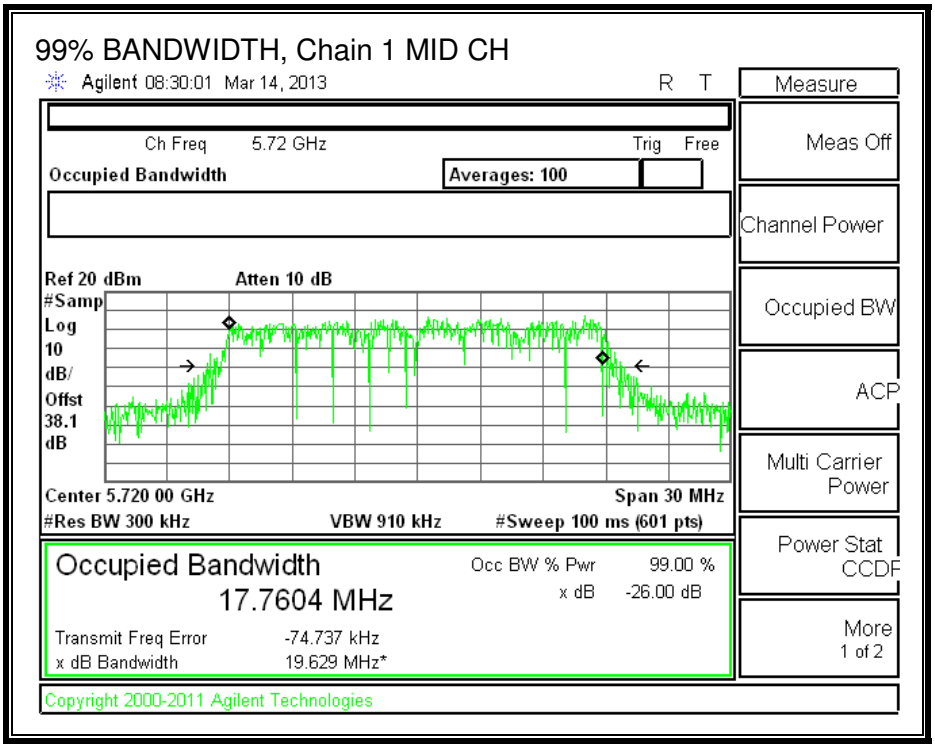
99% BANDWIDTH, Chain 1



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8.53.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.70	4.40	4.44

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RESULTS

Limits (FCC), portion in UNII 2 ext band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)		Uncorrelated Gain (dBi)
Mid	5720	15.20	13.8020		4.44

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5720	22.82	22.40	28.40	22.40	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5720	18.09	18.27	21.19	22.40	-1.21

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5720	7.641	7.418	10.54	11.00	-0.46

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Limits (FCC), portion in 5.8GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)		Uncorrelated Gain (dBi)
Mid	5720	5.20	3.8020		4.44

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5720	18.16	16.80	22.80	16.80	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5720	10.96	11.12	14.05	16.80	-2.75

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5720	5.512	5.611	8.57	11.00	-2.43

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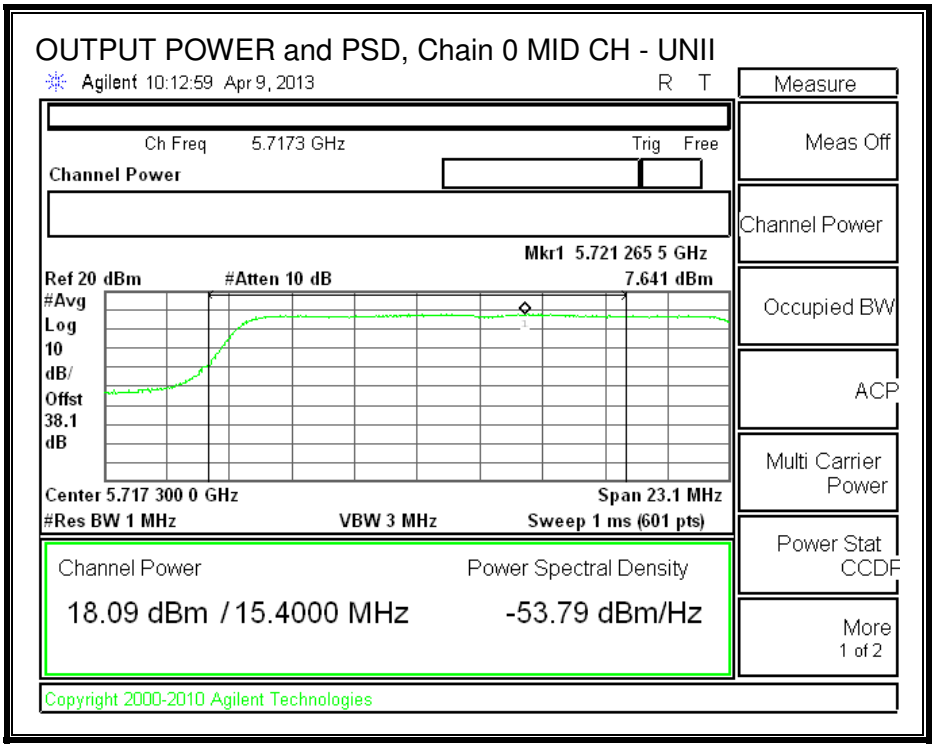
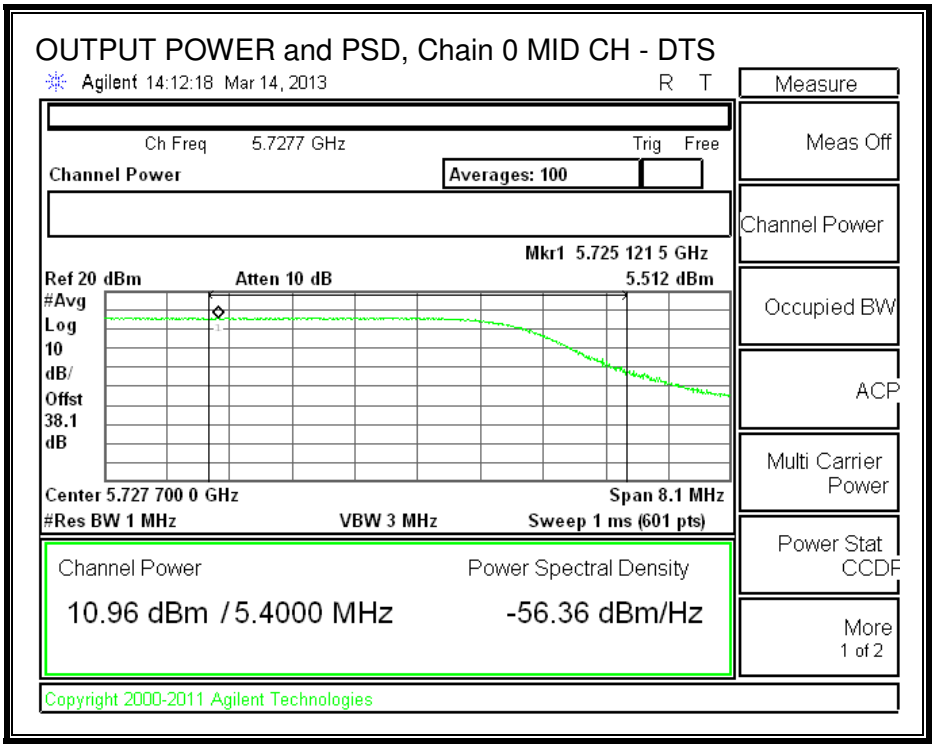
OUTPUT POWER and PSD, Chain 0





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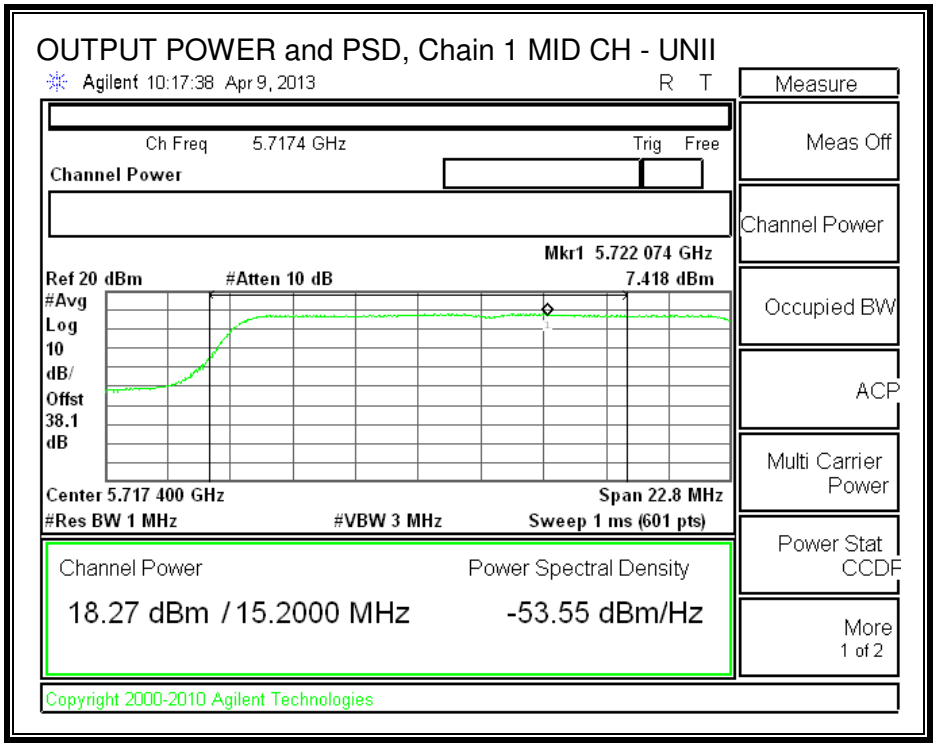
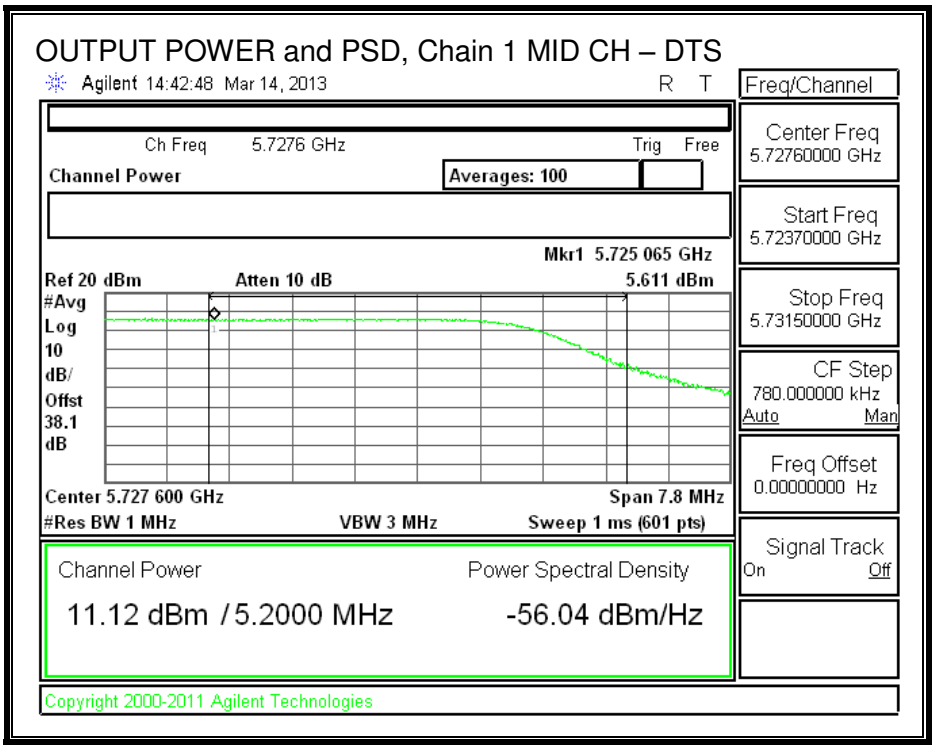
OUTPUT POWER and PSD, Chain 1





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8.53.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.54. 802.11n HT20 CDD 3TX MODE, CH 144 (5720 MHz), 5.6 GHz BAND

8.54.1.26 dB BANDWIDTH

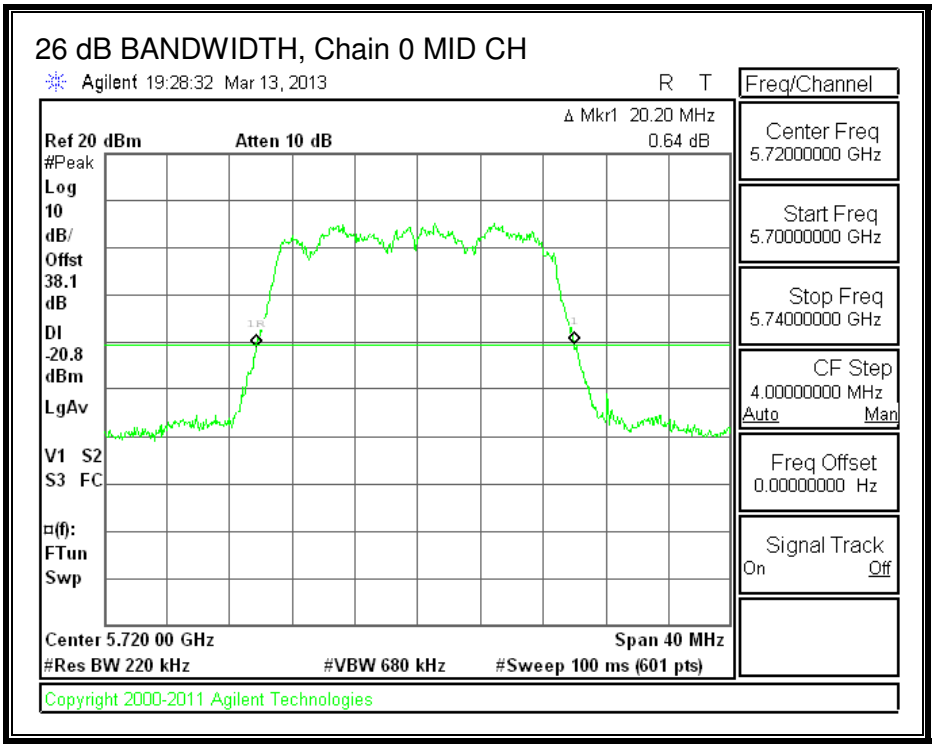
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Mid	5720	20.20	20.40	20.33

26 dB BANDWIDTH, Chain 0



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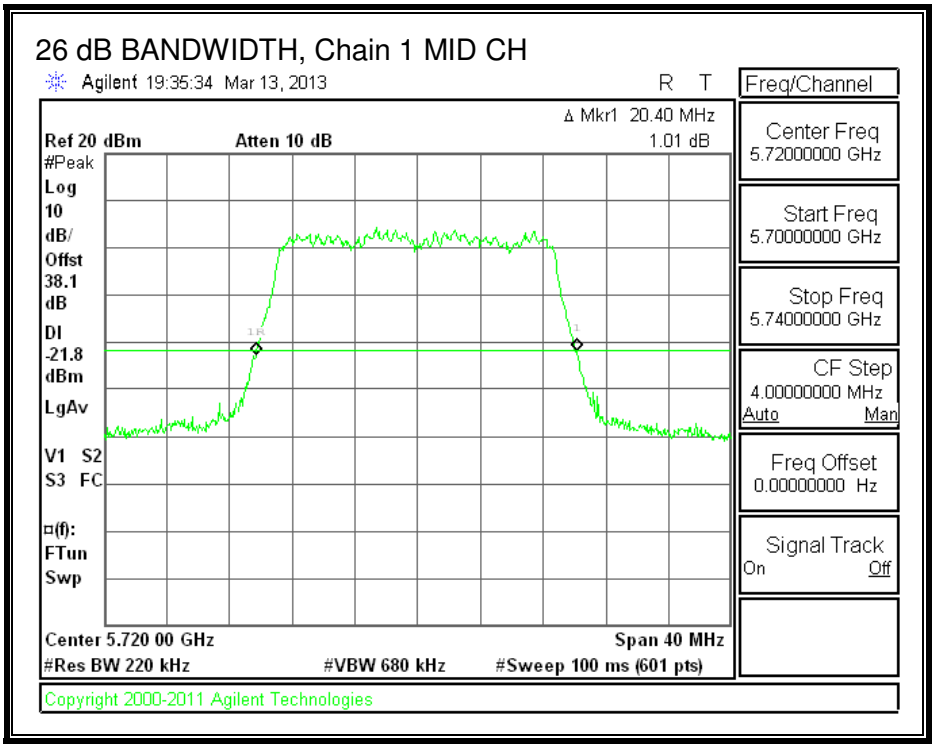
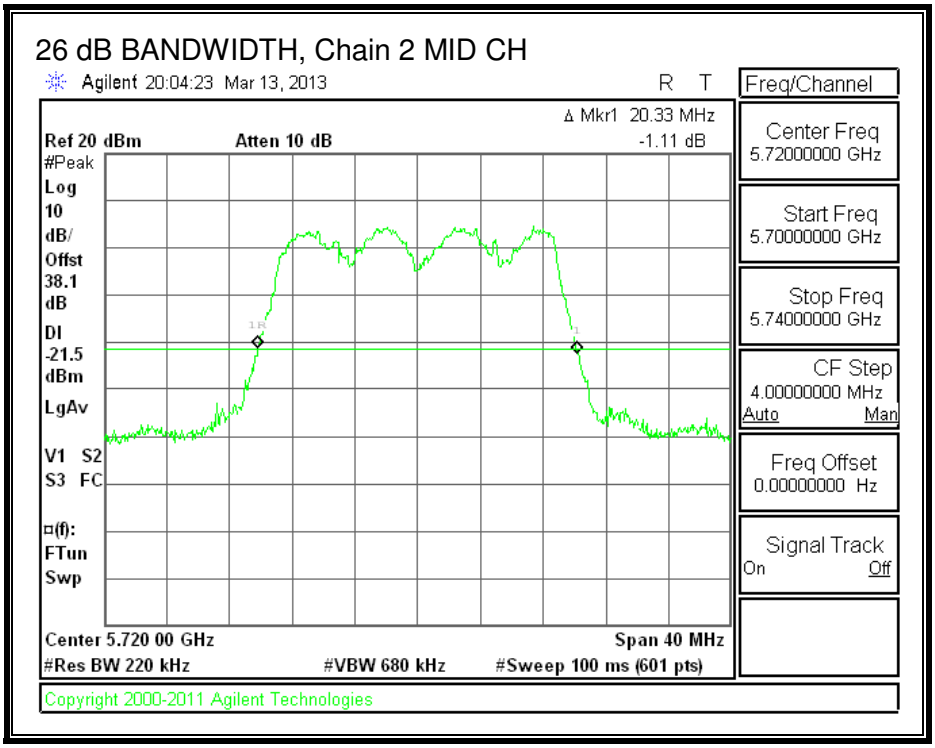
26 dB BANDWIDTH, Chain 1



26 dB BANDWIDTH, Chain 2



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8.54.2.99% BANDWIDTH

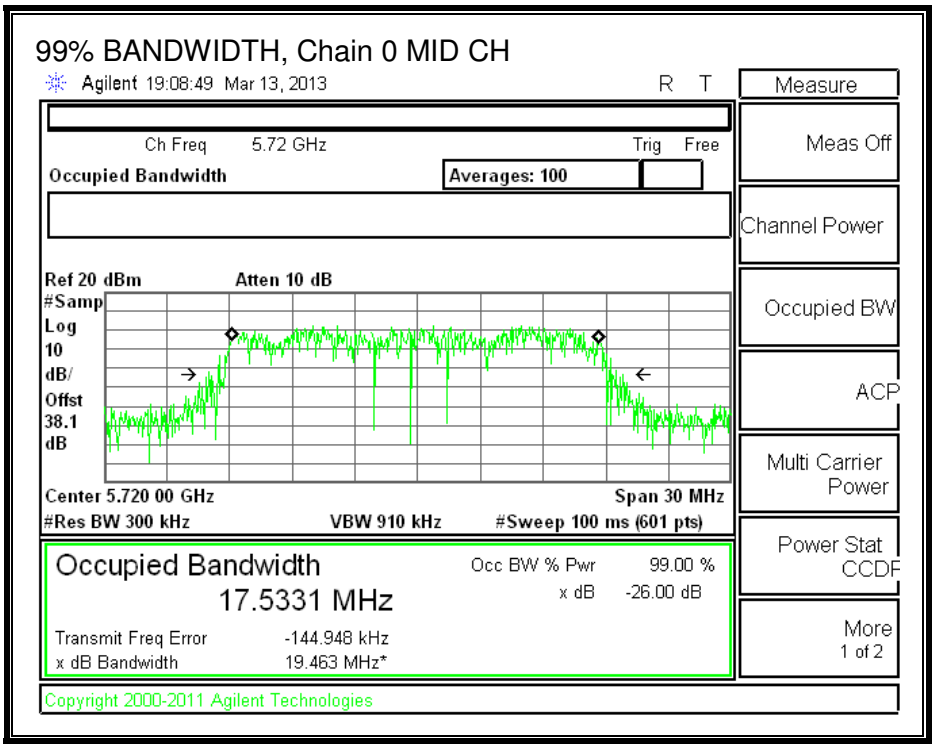
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Mid	5720	17.5331	17.6061	17.5956

99% BANDWIDTH, Chain 0



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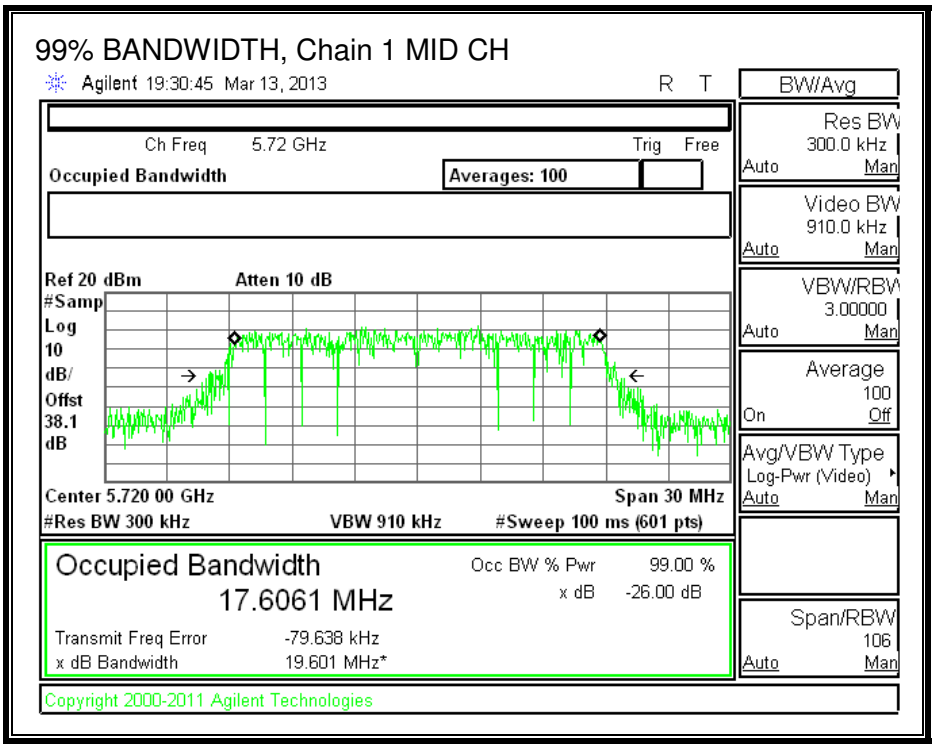
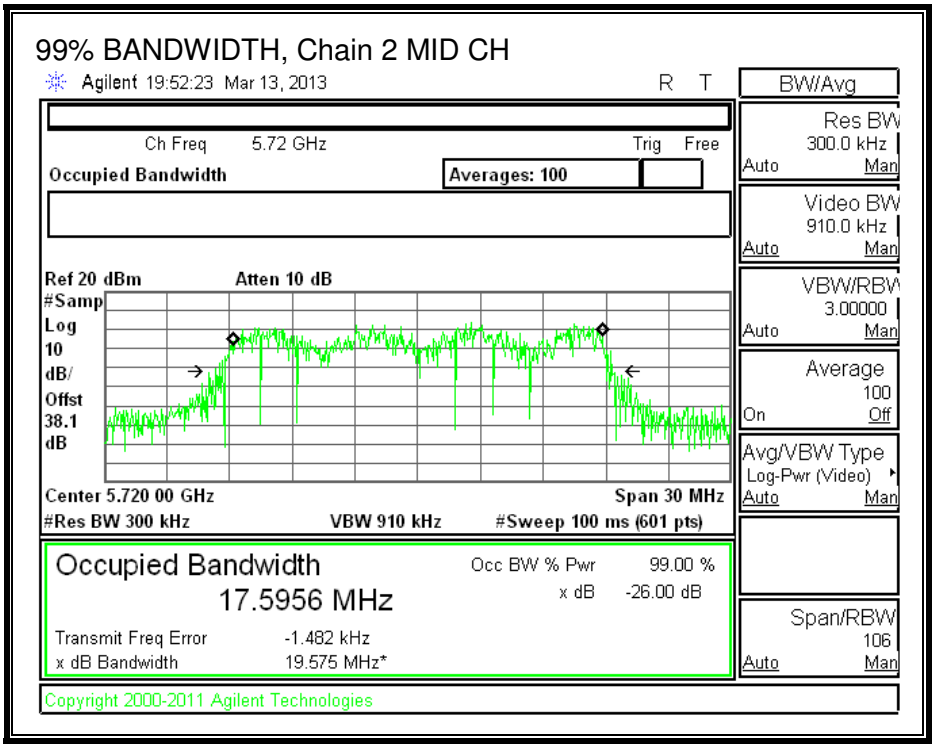
99% BANDWIDTH, Chain 1



99% BANDWIDTH, Chain 2



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8.54.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.70	1.90	4.40	3.13

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.70	1.90	4.40	7.83

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RESULTS

Limits (FCC), portion in UNII 2 ext band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)	Uncorrelated Gain (dBi)
Mid	5720	15.10	13.7666	7.83	3.13

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5720	20.96	22.39	28.39	20.96	9.17	11.00	9.17

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5720	13.86	13.74	13.54	18.49	20.96	-2.47

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5720	3.779	3.207	3.263	8.20	9.17	-0.97

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)	Uncorrelated Gain (dBi)
Mid	5720	5.10	13.7666	7.83	3.13

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5720	18.08	22.39	28.39	18.08	9.17	11.00	9.17

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5720	7.86	7.71	7.95	12.61	18.08	-5.46

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5720	3.424	2.638	1.968	7.49	9.17	-1.68

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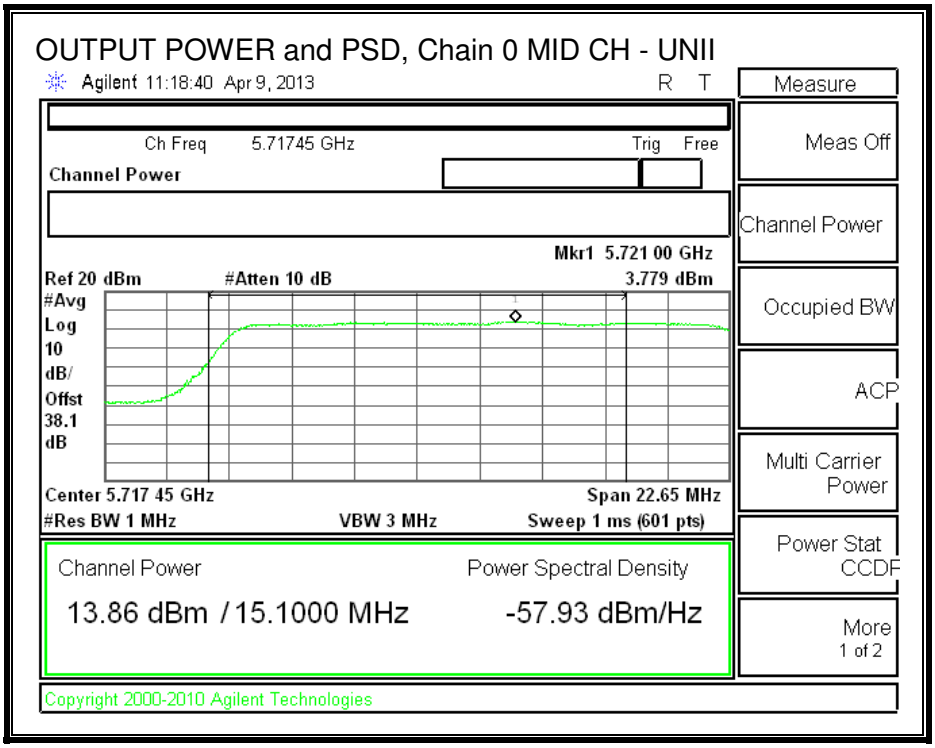
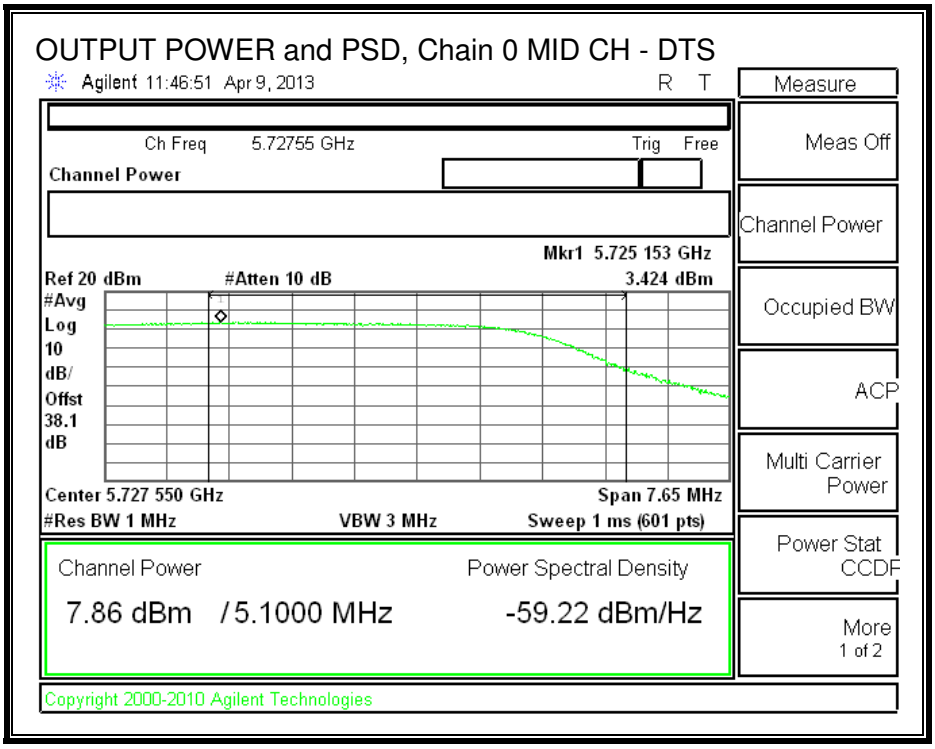
OUTPUT POWER and PSD, Chain 0





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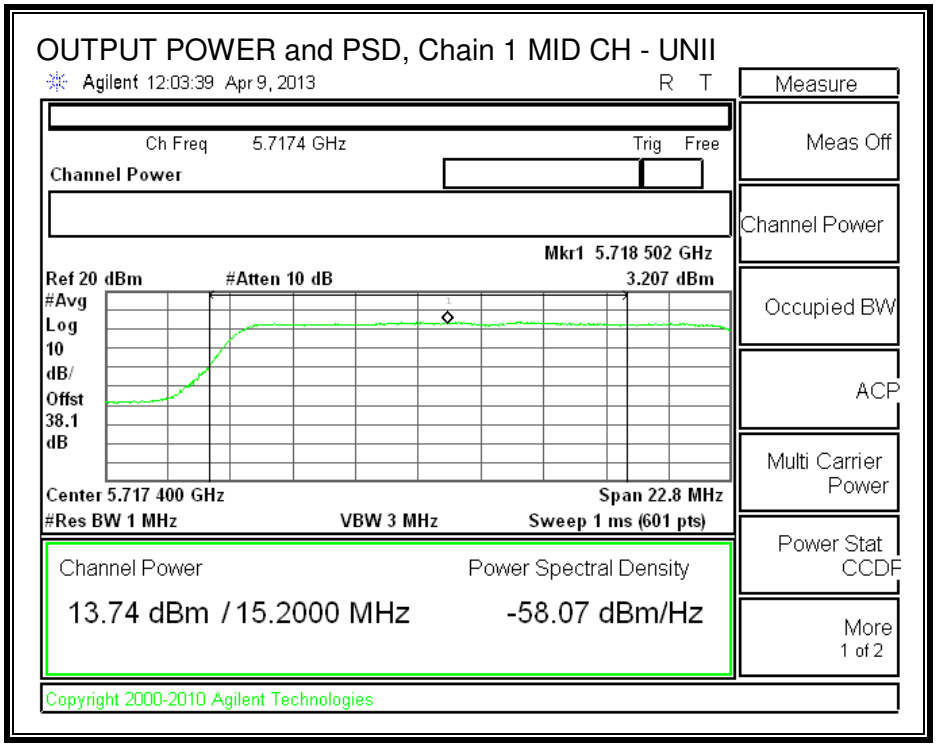
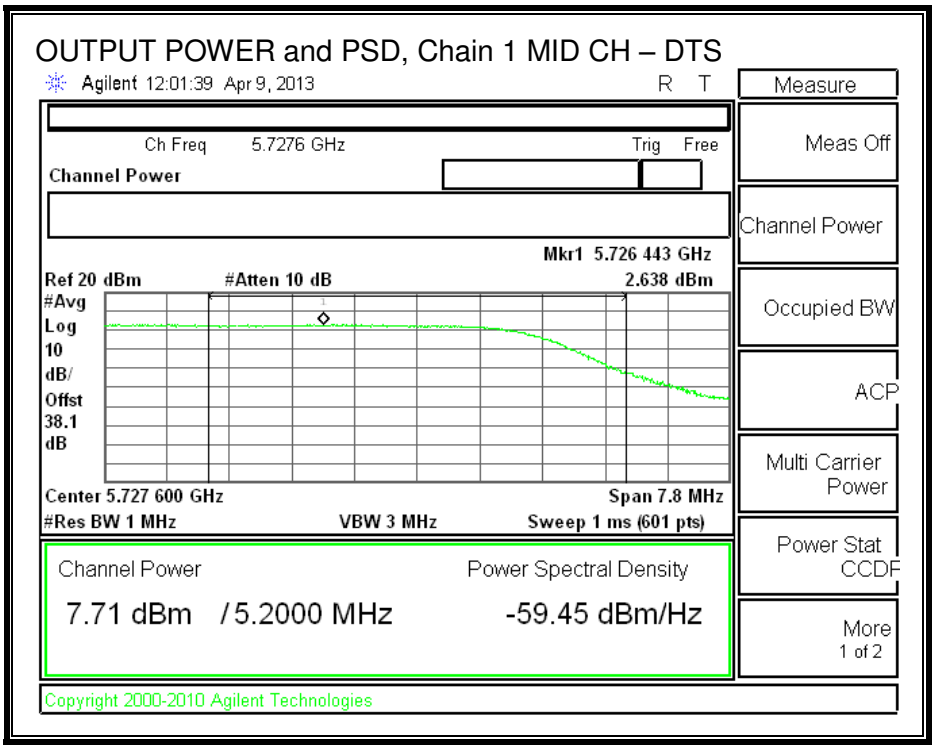
OUTPUT POWER and PSD, Chain 1





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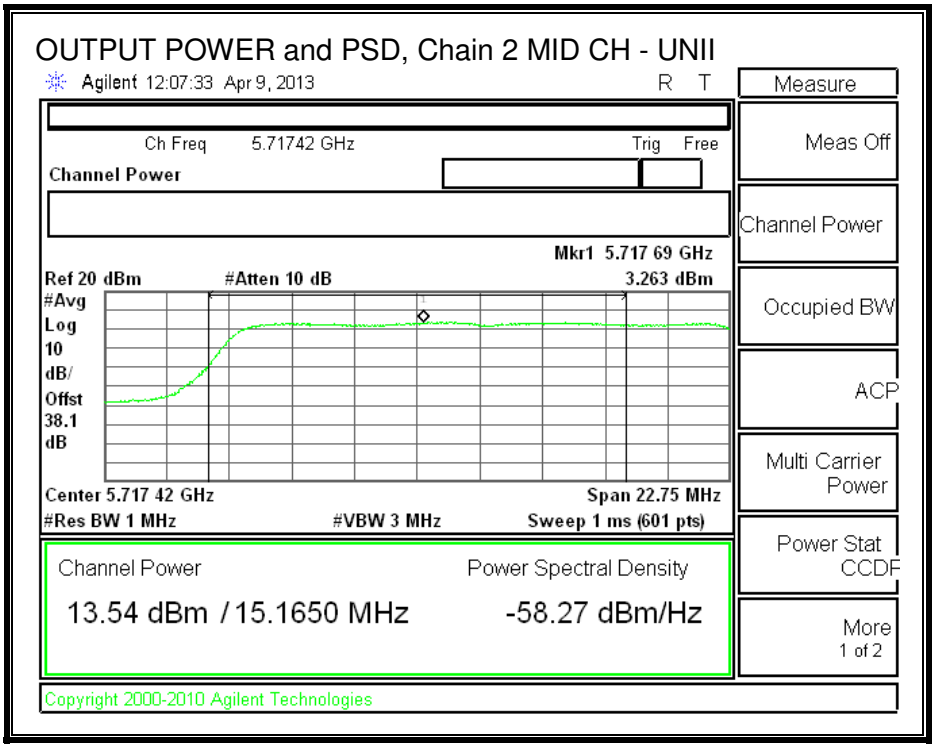
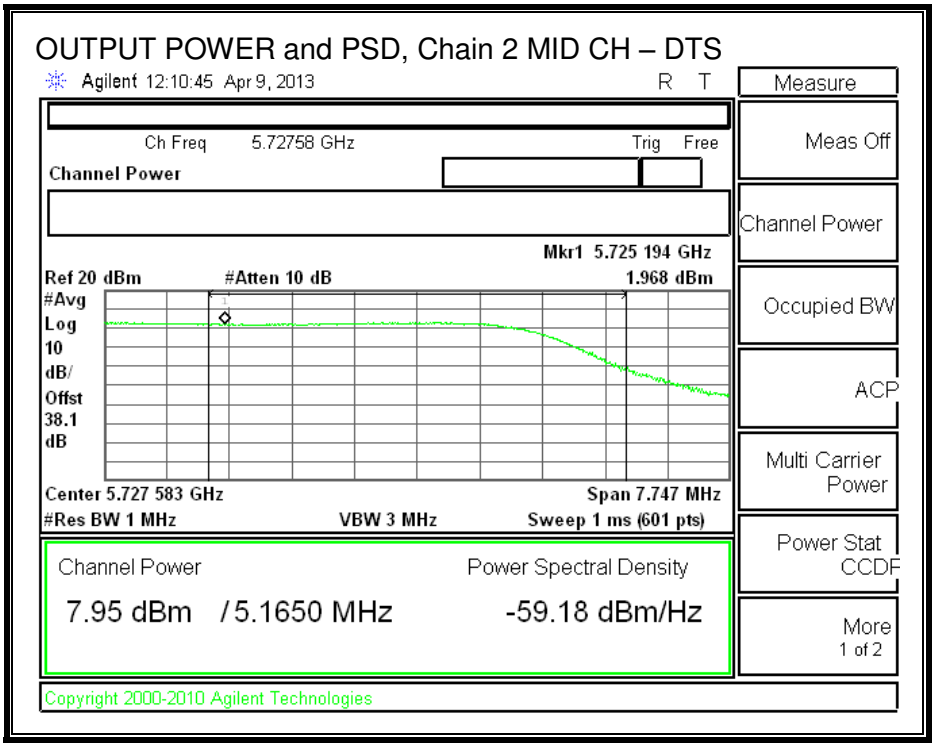
OUTPUT POWER and PSD, Chain 2





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8.54.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.55. 802.11n HT20 STBC 3TX MODE, CH 144 (5720 MHz), 5.6 GHz BAND

8.55.1.26 dB BANDWIDTH

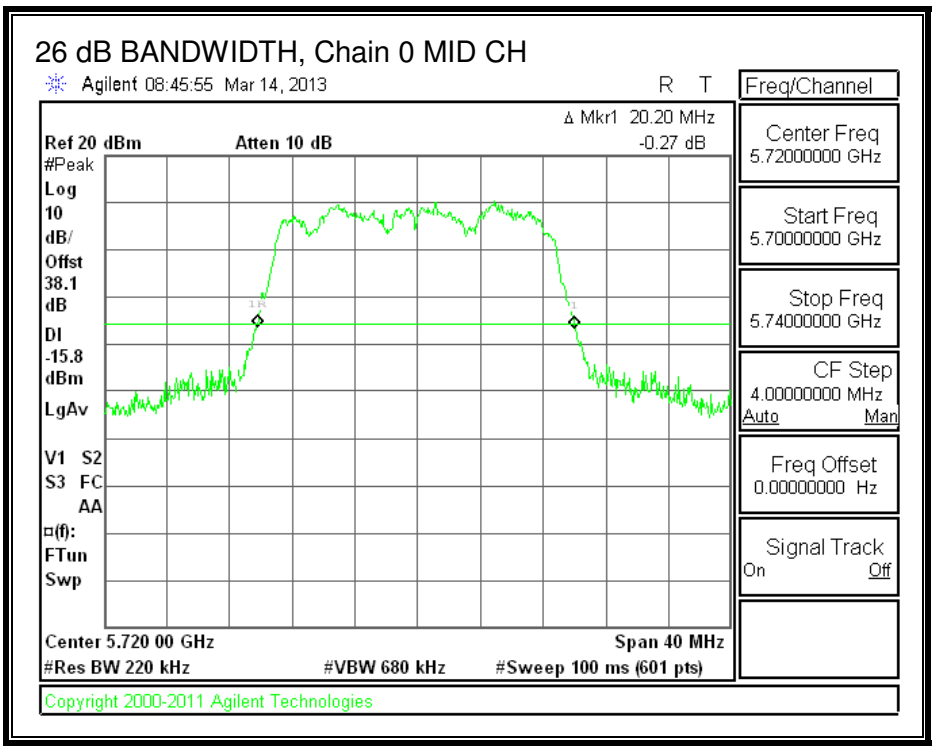
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Mid	5720	20.20	20.80	20.40

26 dB BANDWIDTH, Chain 0



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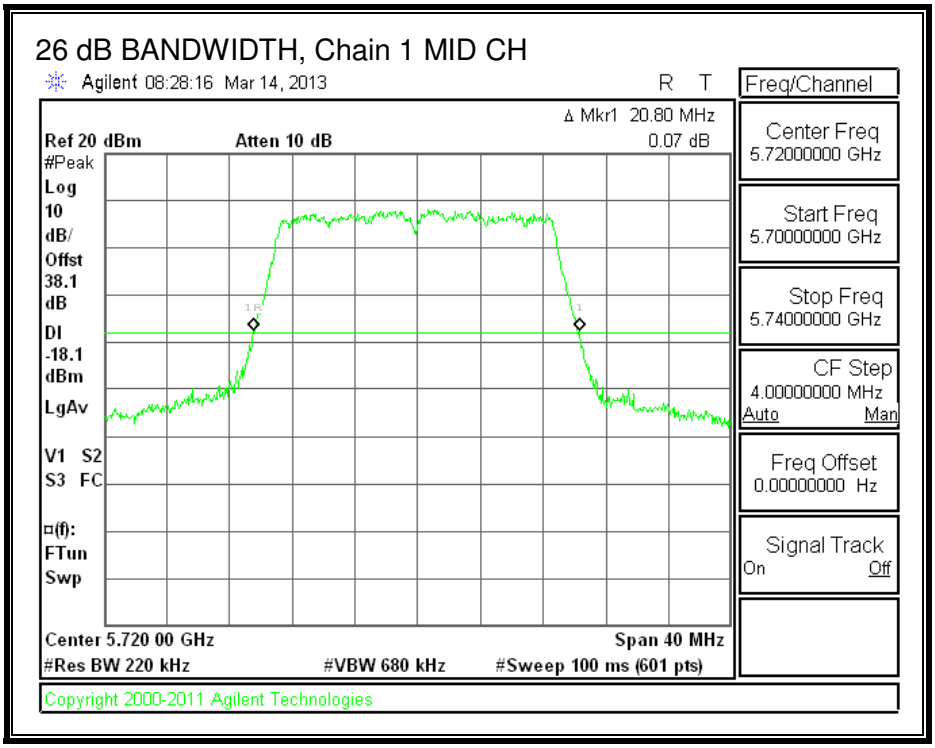
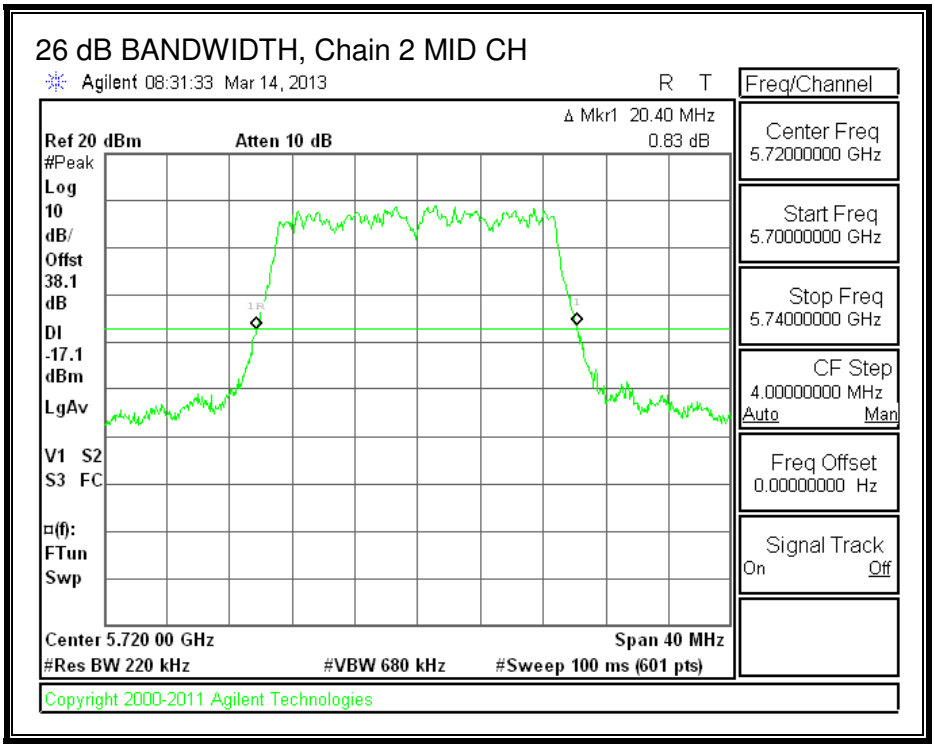
26 dB BANDWIDTH, Chain 1



26 dB BANDWIDTH, Chain 2



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8.55.2.99% BANDWIDTH

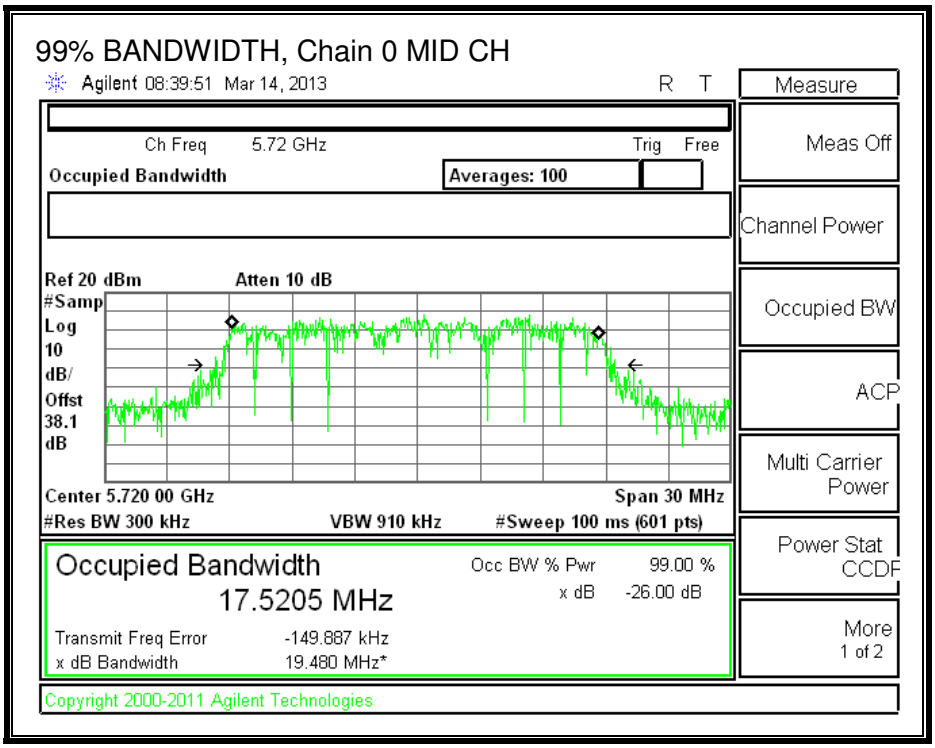
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Mid	5720	17.5205	17.7123	17.7604

99% BANDWIDTH, Chain 0



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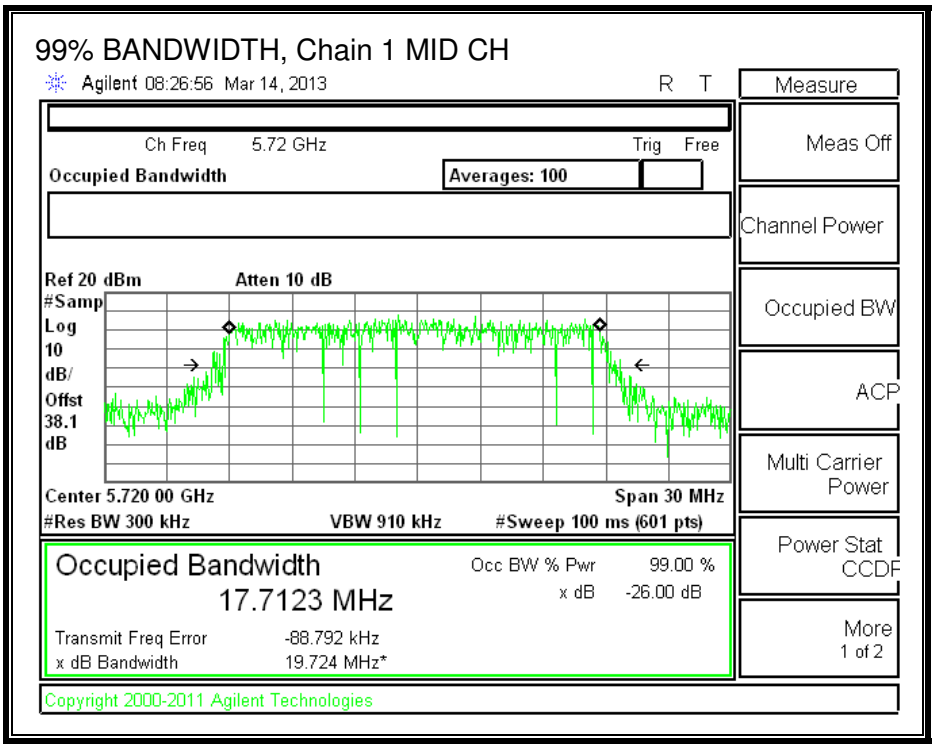
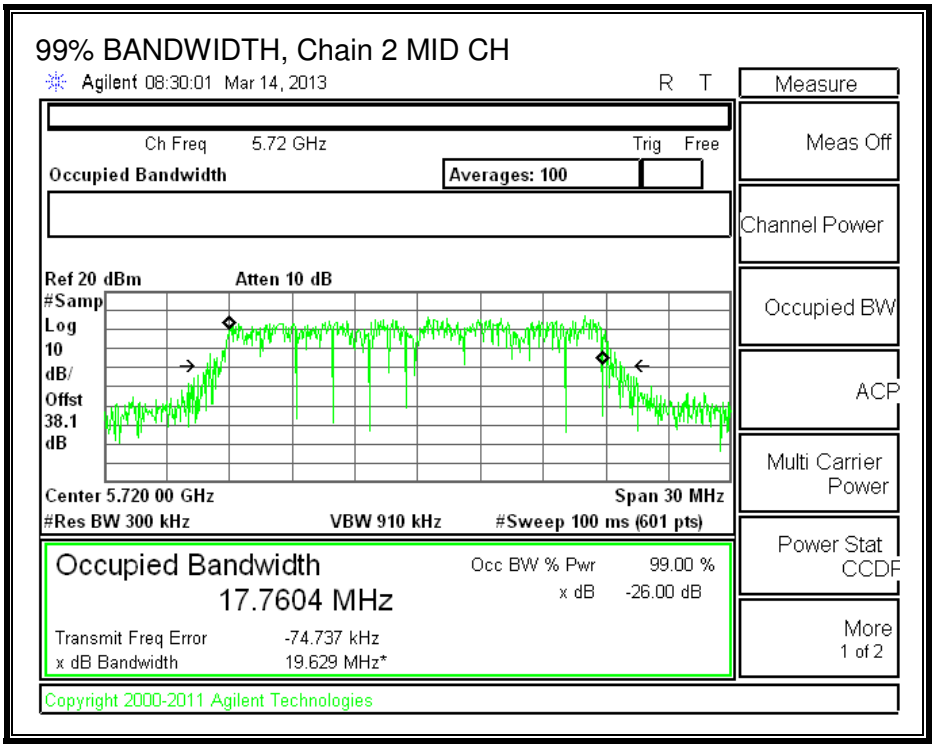
99% BANDWIDTH, Chain 1



99% BANDWIDTH, Chain 2



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8.55.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and PSD; the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.70	1.90	4.40	3.13

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RESULTS

Limits (FCC), portion in UNII 2 ext band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)		Uncorrelated Gain (dBi)
Mid	5720	15.1	13.7666		3.13

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5720	22.79	22.39	28.39	22.39	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5720	16.57	15.95	16.30	21.05	22.39	-1.34

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5720	5.809	5.004	5.596	10.25	11.00	-0.75

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)		Uncorrelated Gain (dBi)
Mid	5720	5.1	3.7666		3.13

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5720	18.08	16.76	22.76	16.76	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5720	9.45	8.85	9.14	13.92	16.76	-2.83

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5720	3.980	3.918	4.337	8.85	11.00	-2.15

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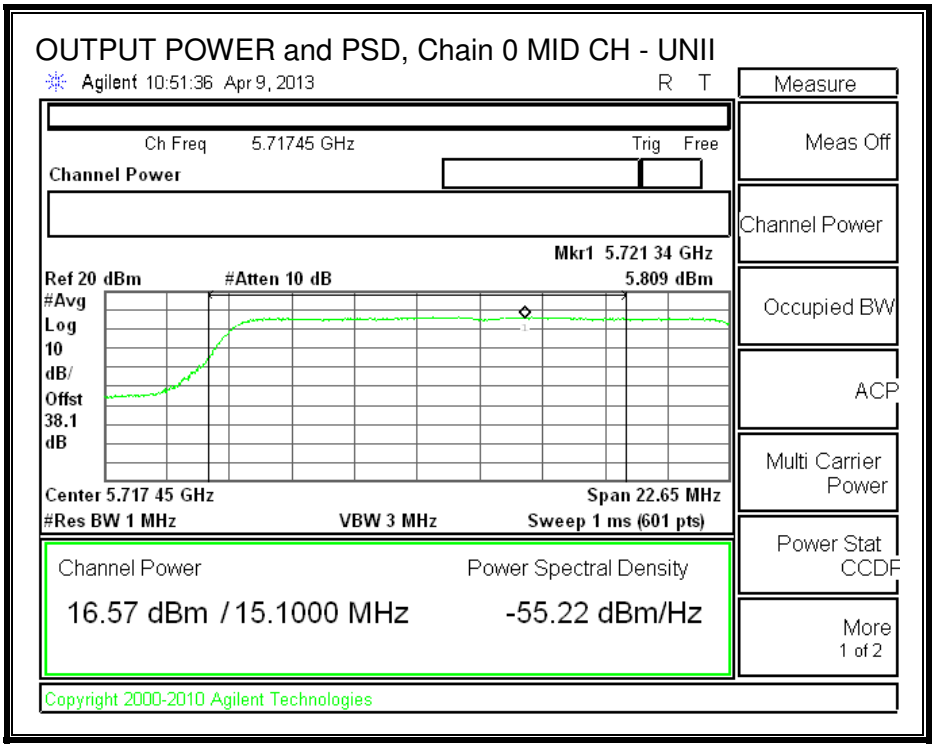
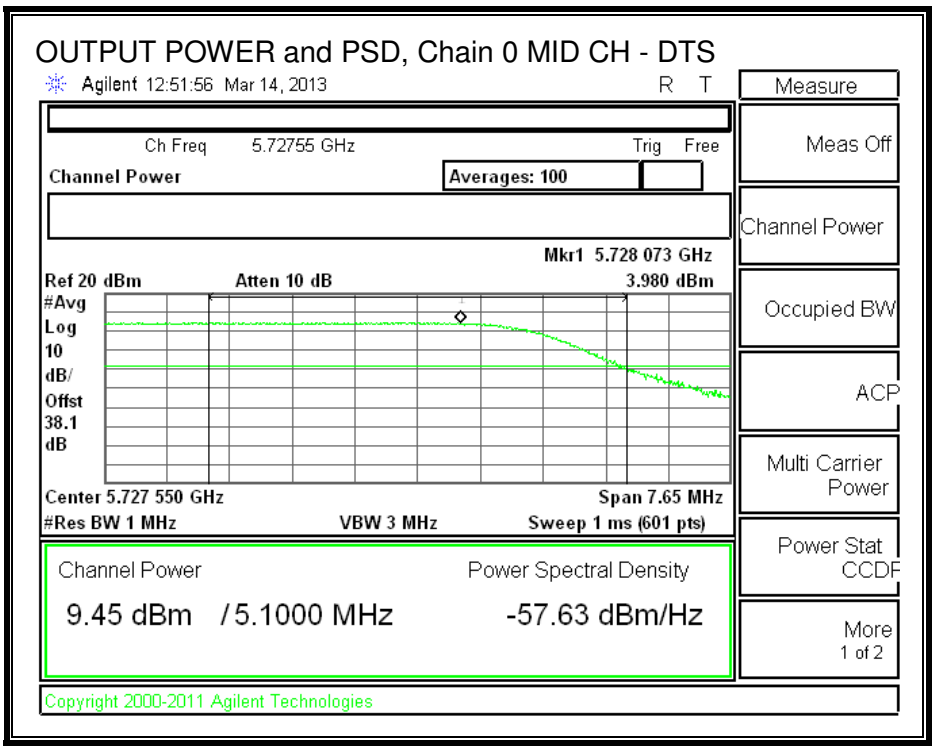
OUTPUT POWER and PSD, Chain 0





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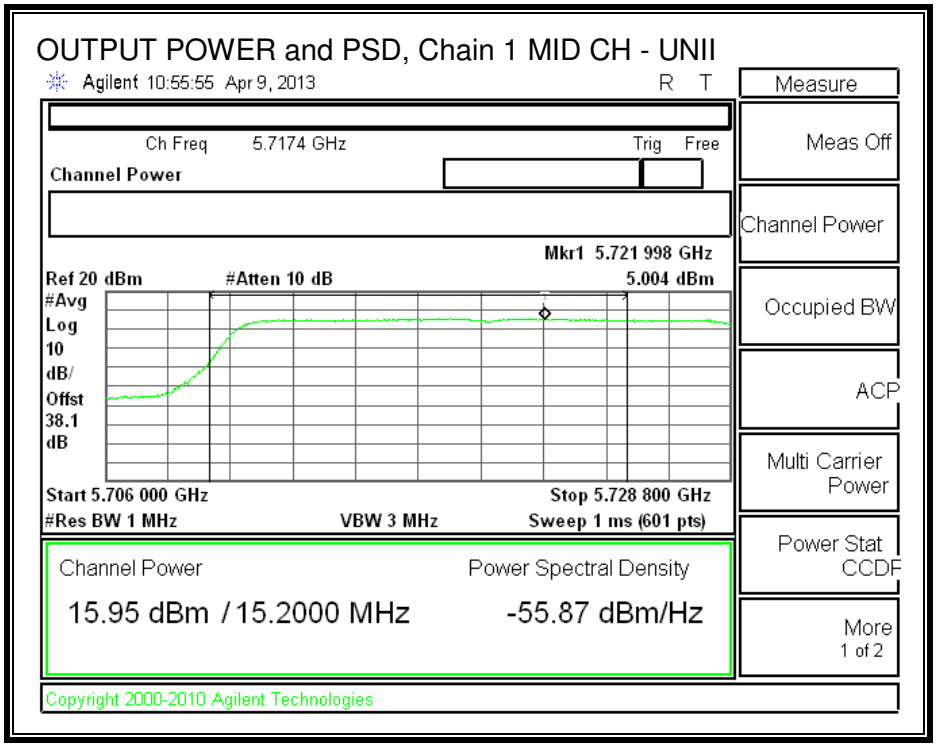
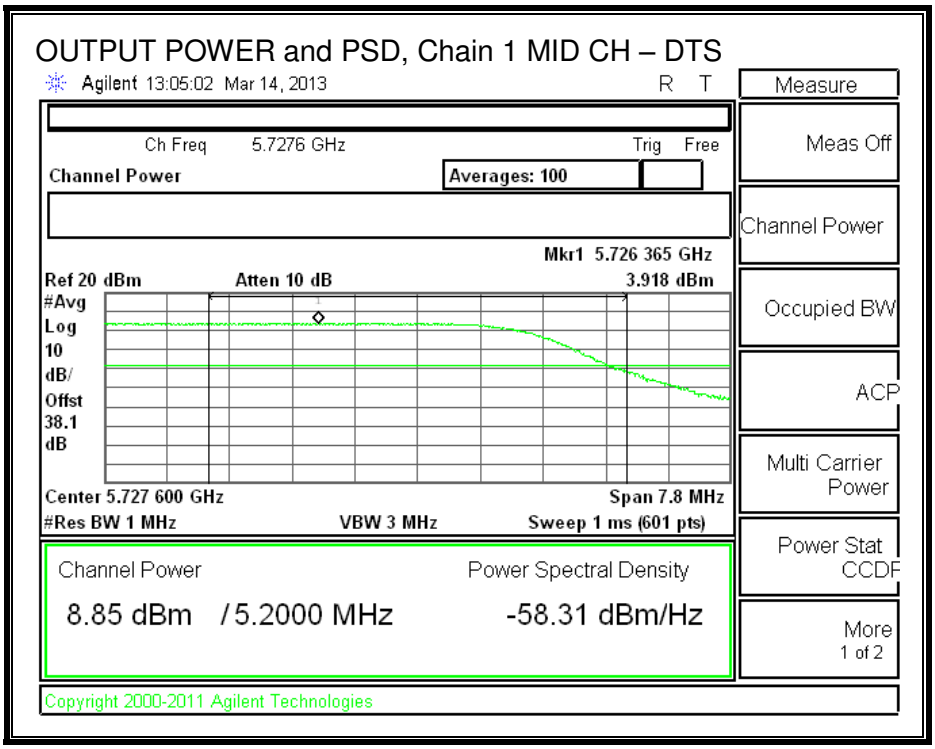
OUTPUT POWER and PSD, Chain 1





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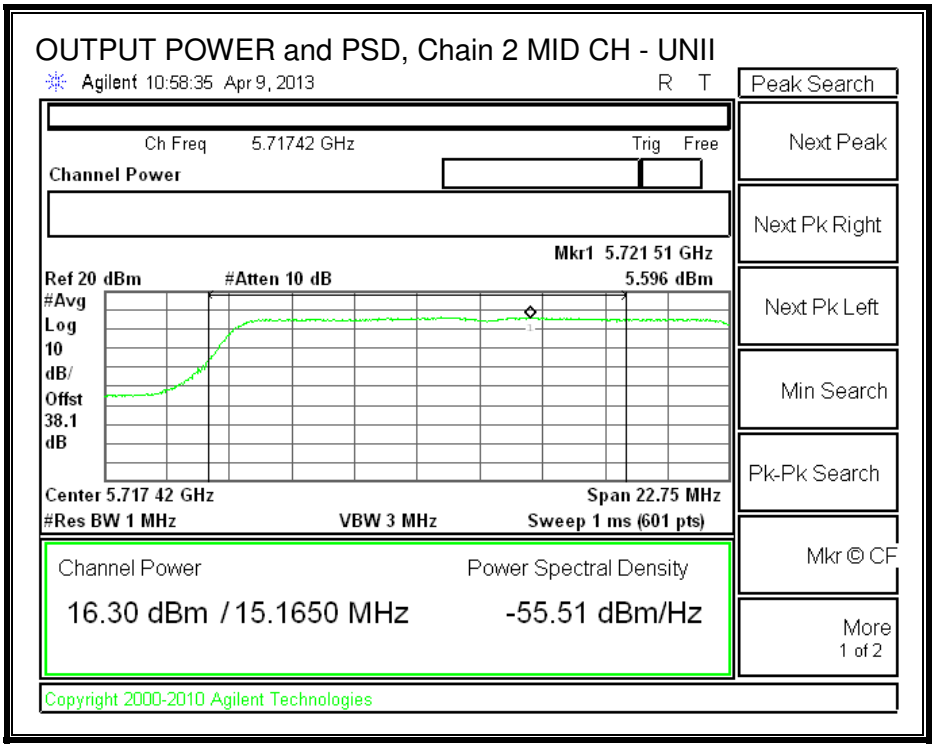
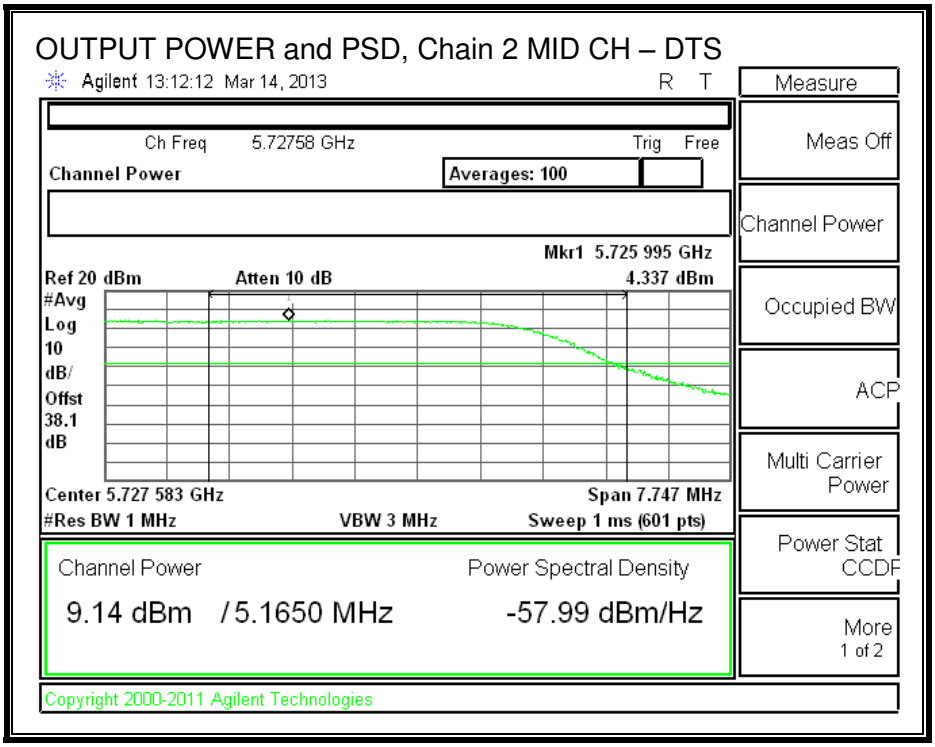
OUTPUT POWER and PSD, Chain 2





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8.55.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.56. 802.11n HT40 1TX MODE IN THE 5.6 GHz BAND

8.56.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5510	39.50
Mid	5550	39.50
High	5670	39.50

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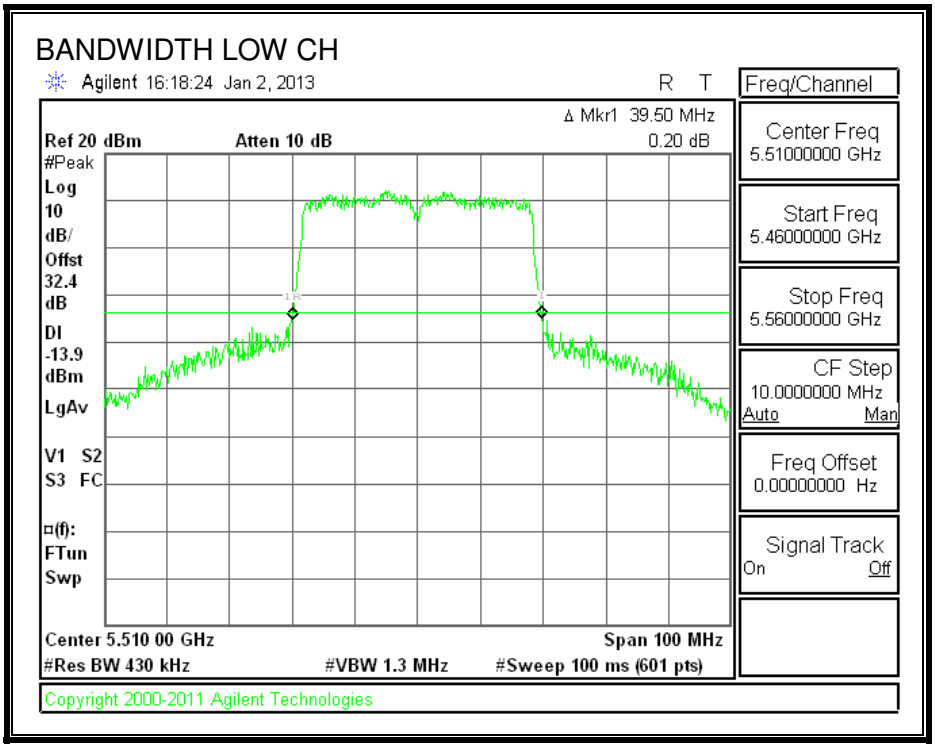
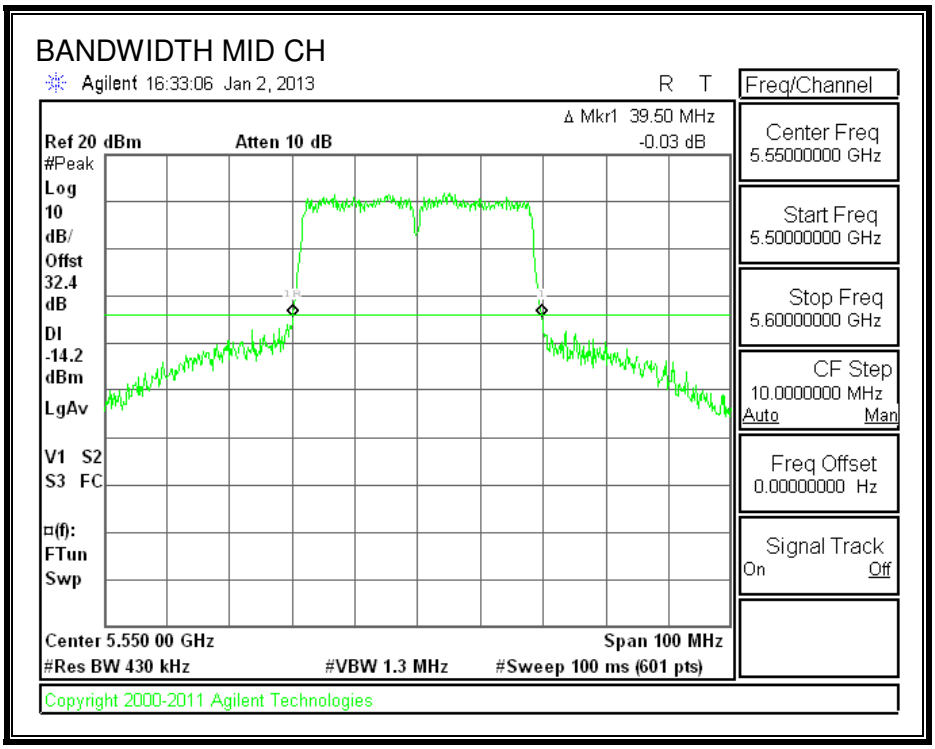
26 dB BANDWIDTH





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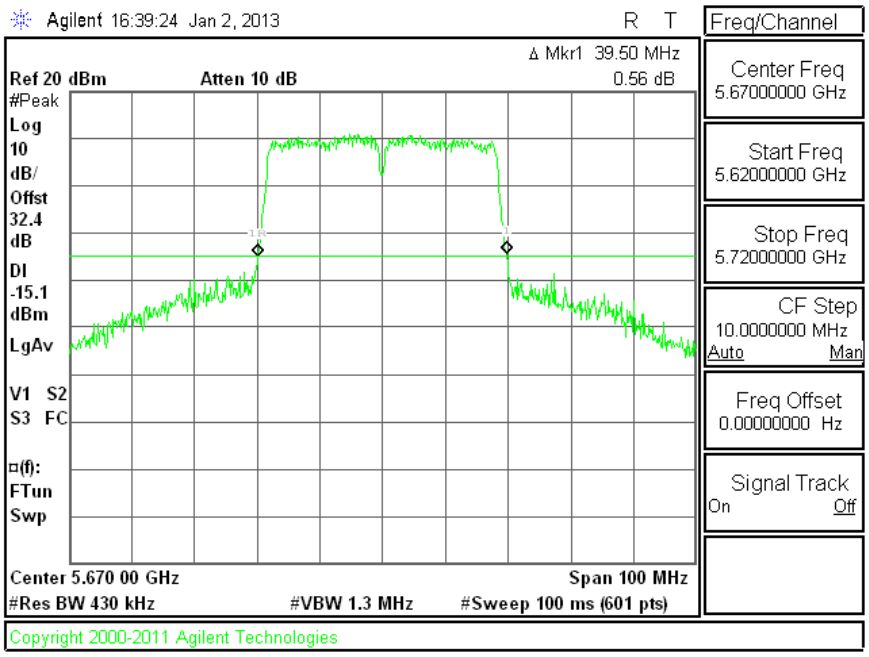
BANDWIDTH HIGH CH



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8.56.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5510	36.1569
Mid	5550	36.1609
High	5670	36.2173

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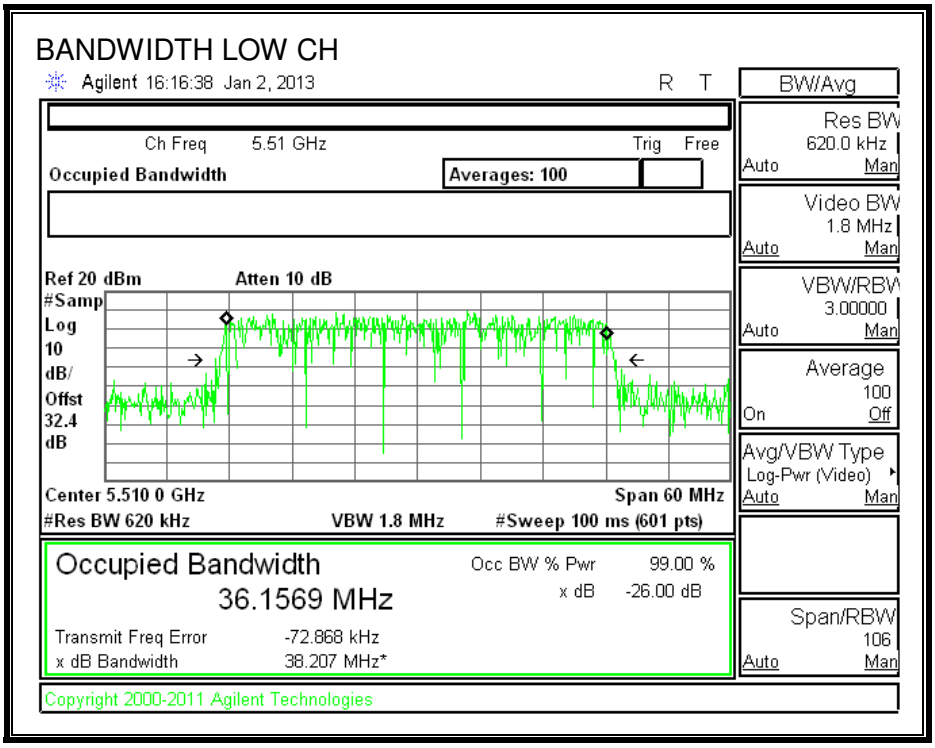
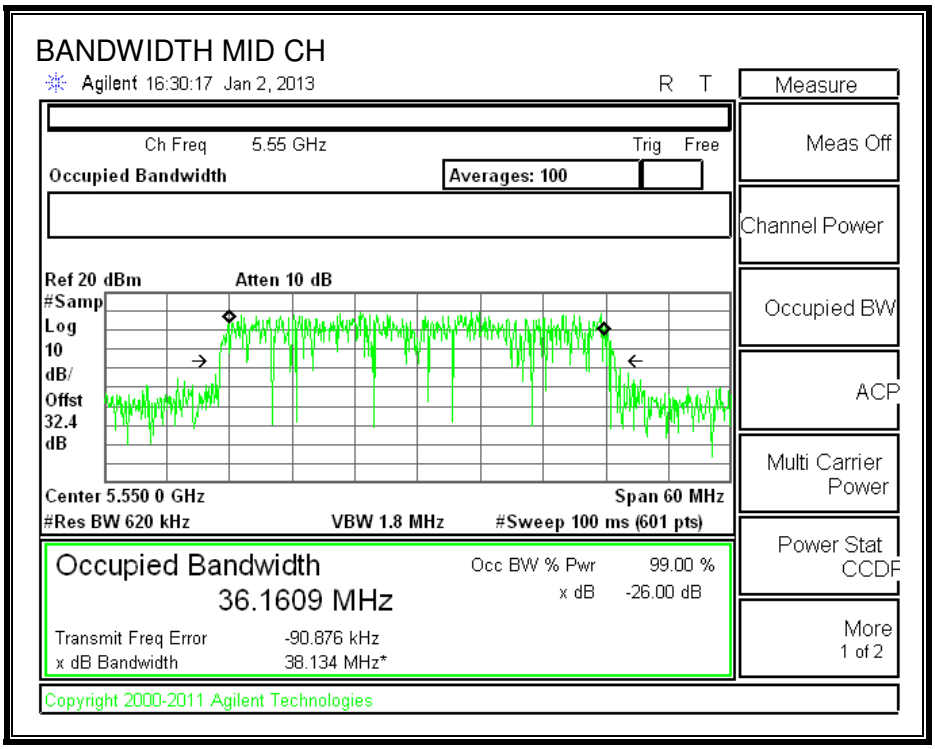
99% BANDWIDTH





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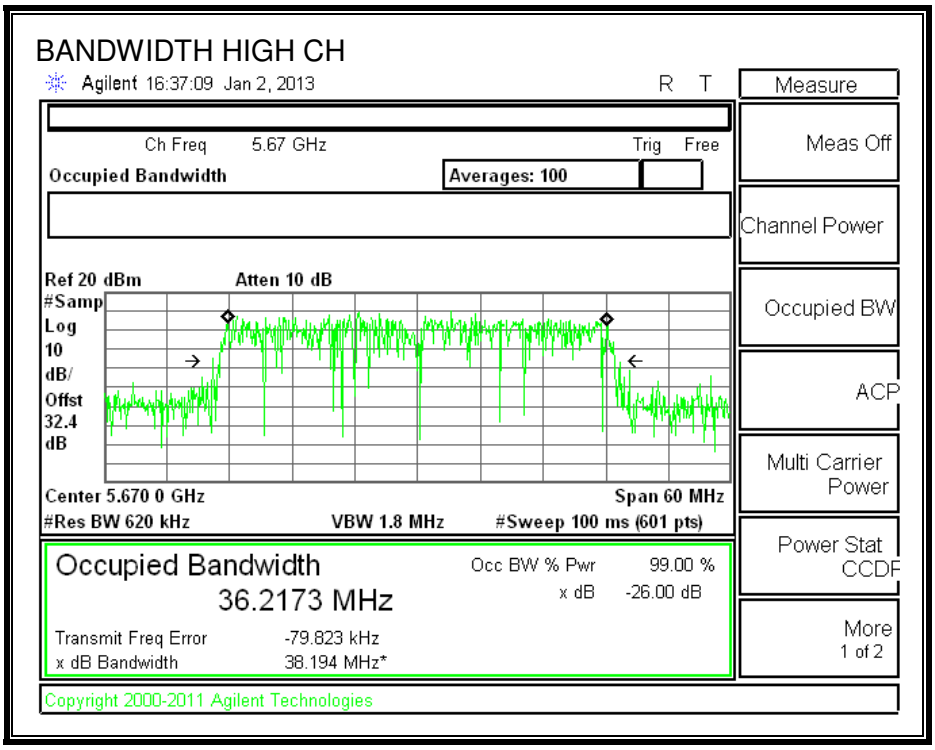

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8.56.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5510	39.50	36.1569	3.80
Mid	5550	39.50	36.1609	3.80
High	5670	39.50	36.2173	3.80

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5510	24.00	24.00	30.00	24.00	11.00	11.00	11.00
Mid	5550	24.00	24.00	30.00	24.00	11.00	11.00	11.00
High	5670	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	16.00	16.00	24.00	-8.00
Mid	5550	18.00	18.00	24.00	-6.00
High	5670	19.50	19.50	24.00	-4.50

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5510	5.36	5.36	11.00	-5.64
Mid	5550	5.63	5.63	11.00	-5.37
High	5670	5.43	5.43	11.00	-5.57

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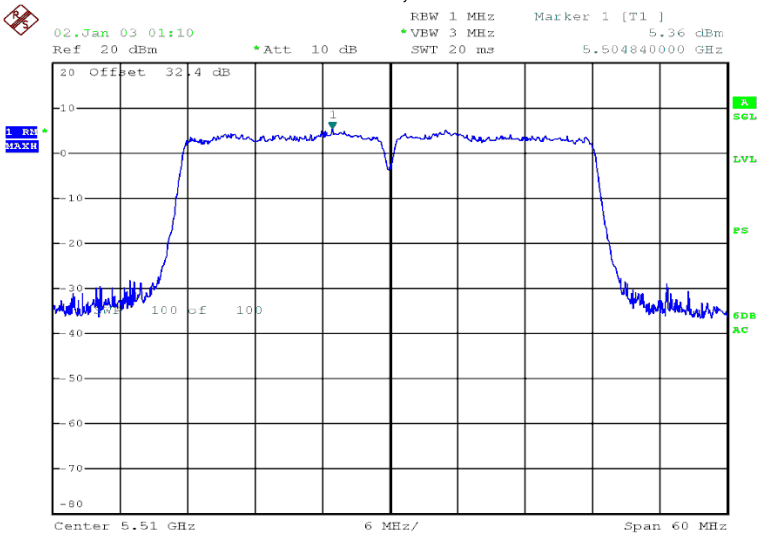
OUTPUT POWER AND PPSD, Chain 1

OUTPUT POWER AND PPSD, Chain 1 LOW CH



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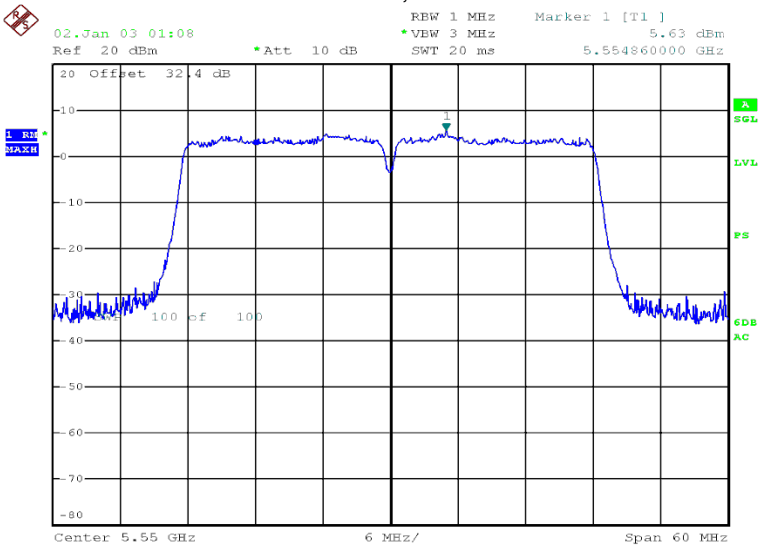
OUTPUT POWER AND PPSD, Chain 1 MID CH



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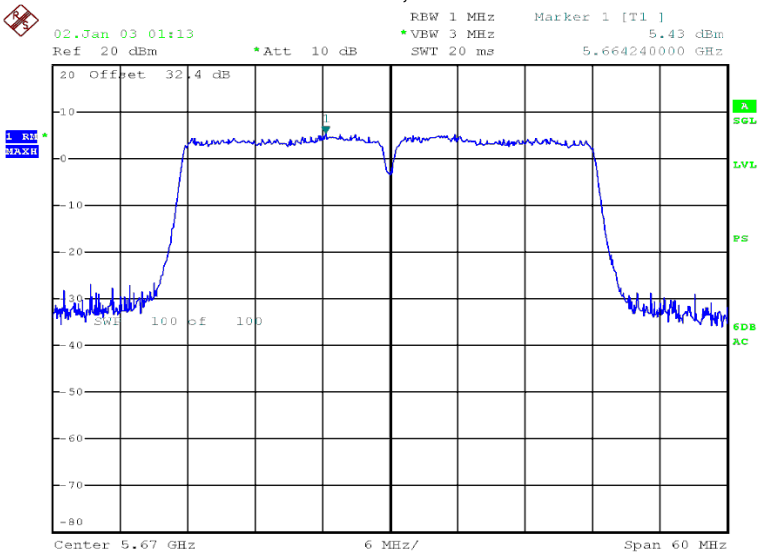
OUTPUT POWER AND PPSD, Chain 1 HIGH CH



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8.56.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.57. 802.11n HT40 CDD 2TX MODE IN THE 5.6 GHz BAND

8.57.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5510	40.17	39.50
Mid	5550	40.17	39.50
High	5670	40.17	39.50

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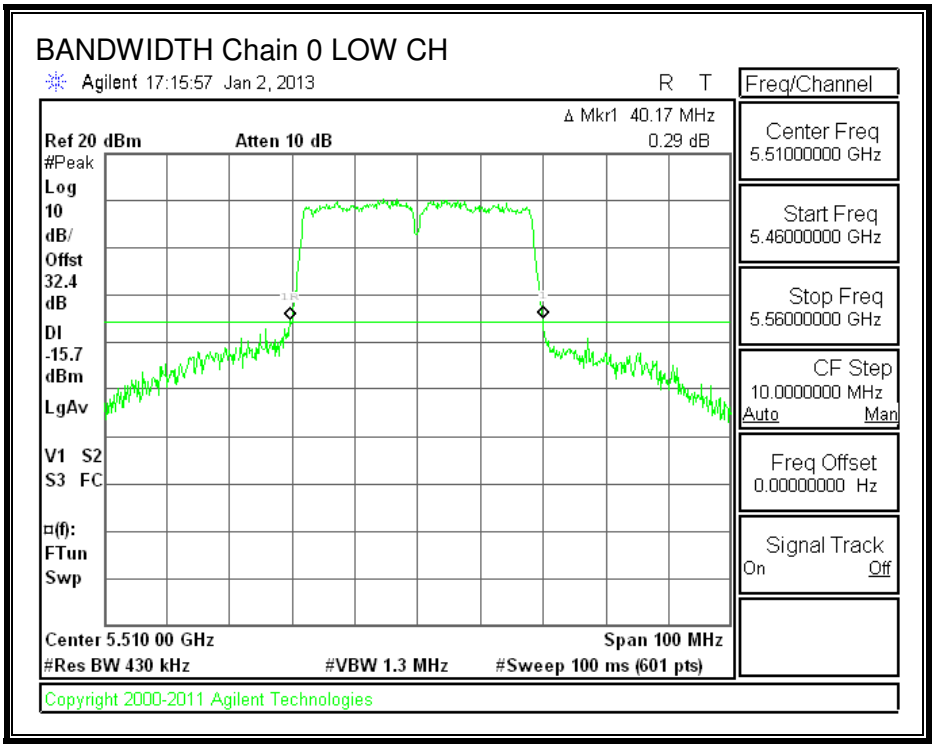
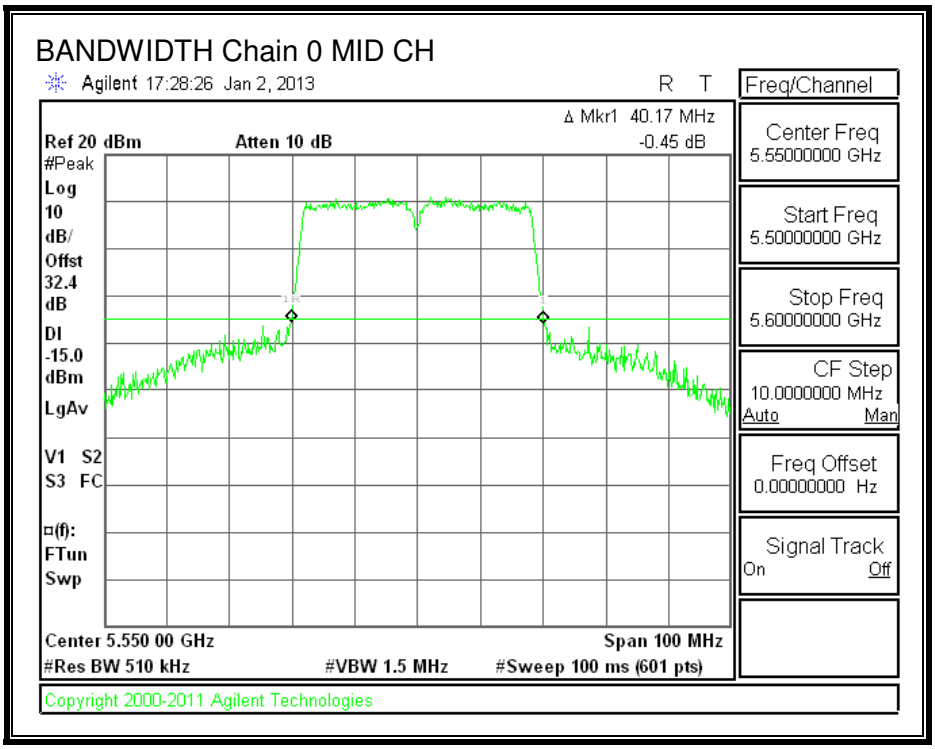
26 dB BANDWIDTH, Chain 0





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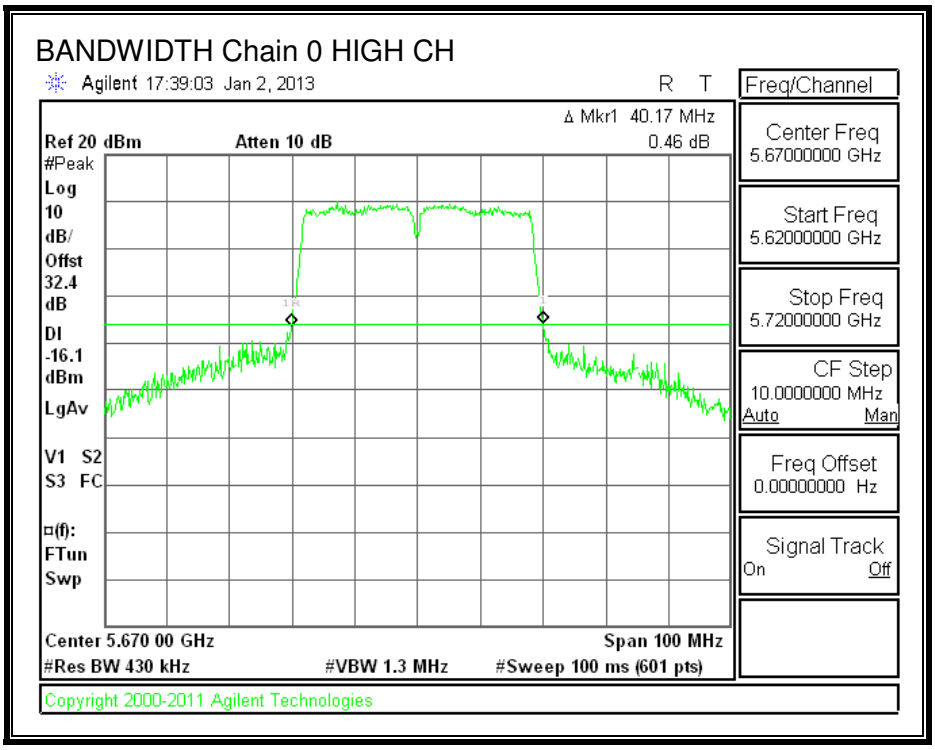
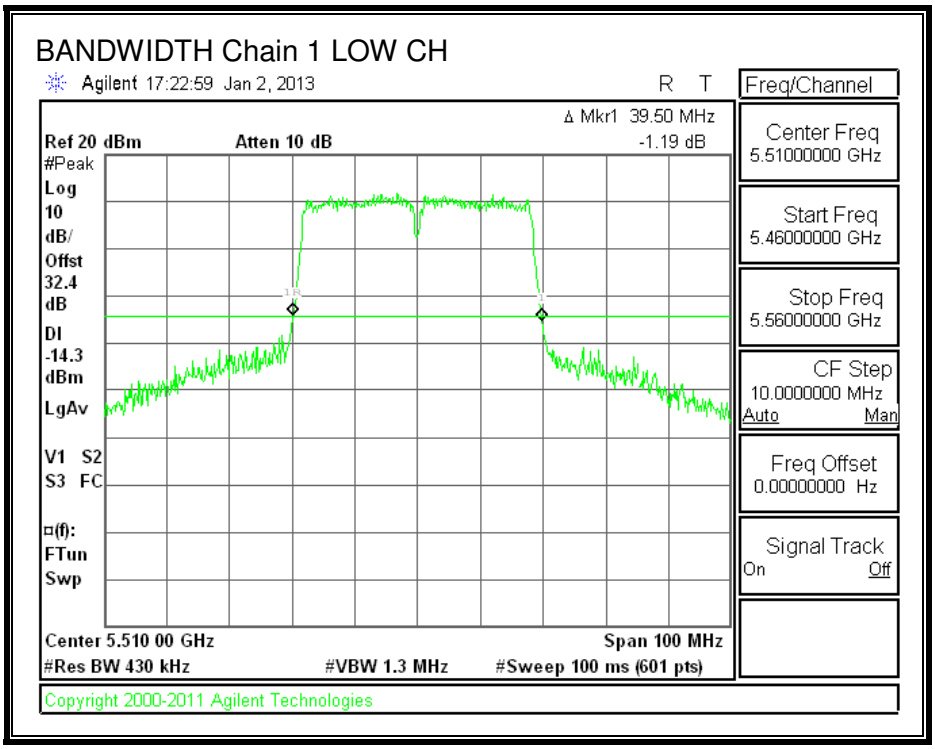


26 dB BANDWIDTH, Chain 1



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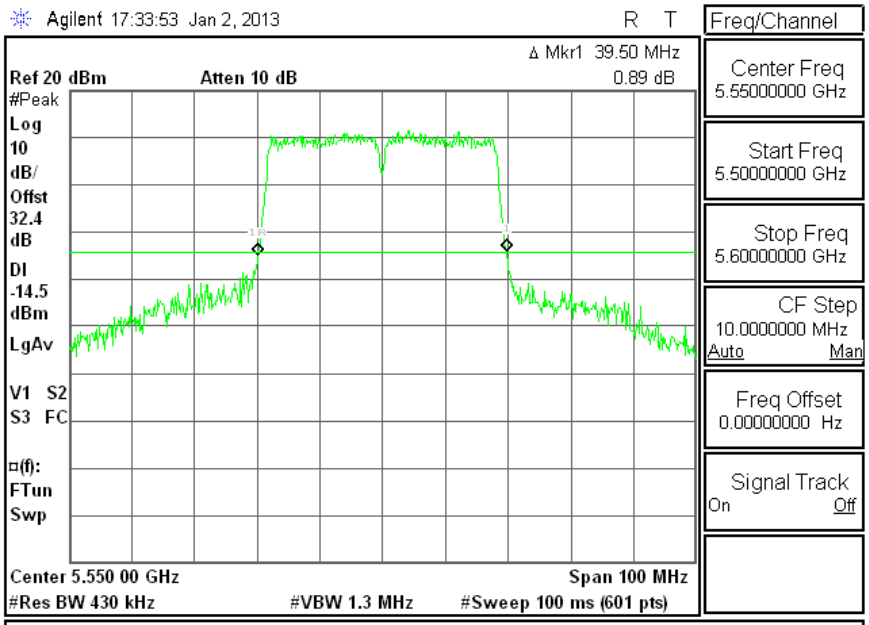
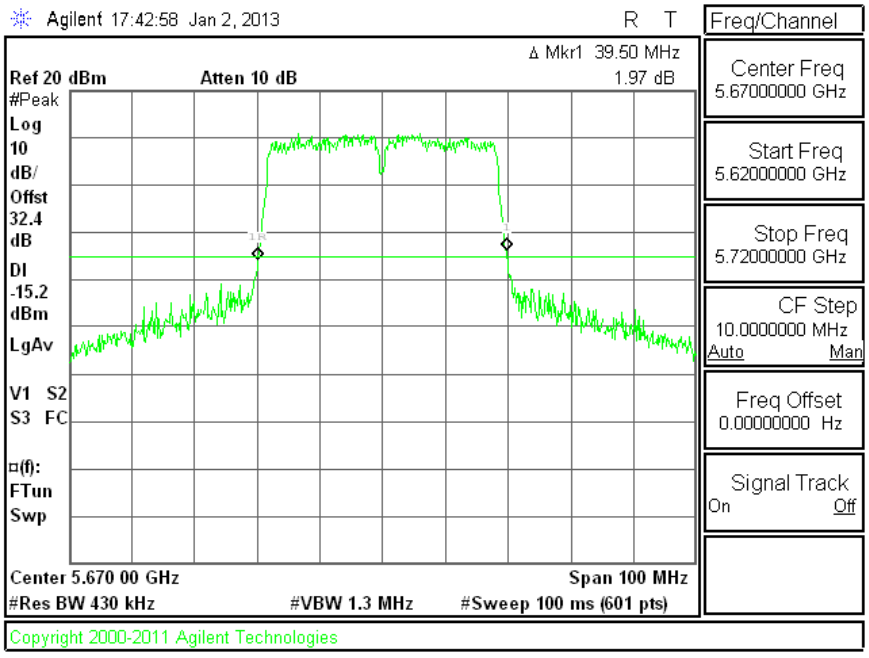
BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



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8.57.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5510	36.2260	36.2088
Mid	5550	36.2566	36.2186
High	5670	36.1958	36.1904

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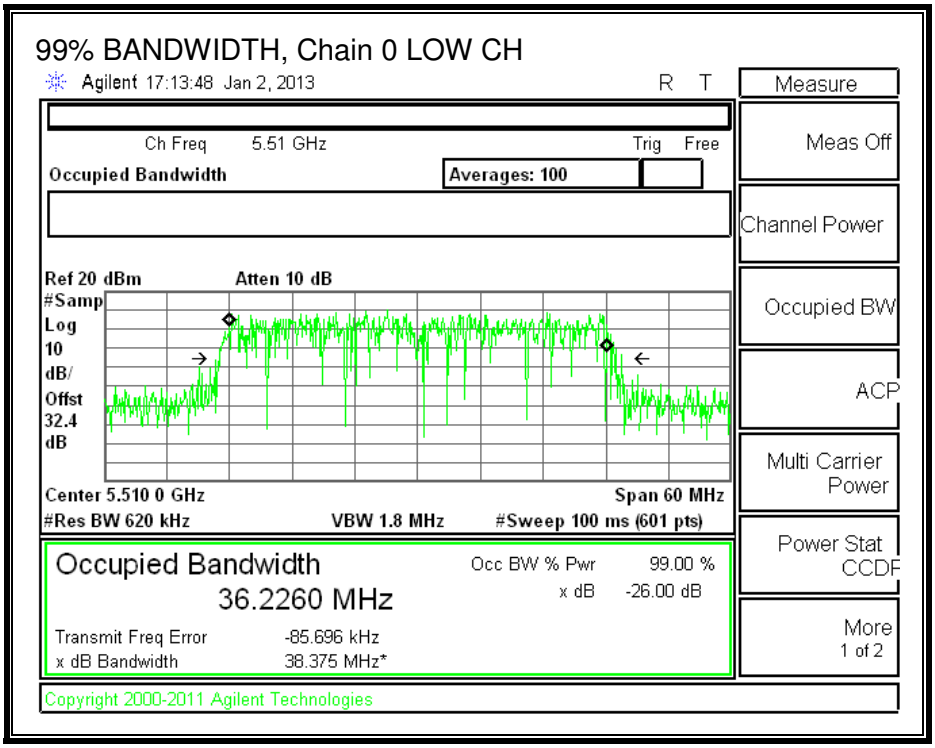
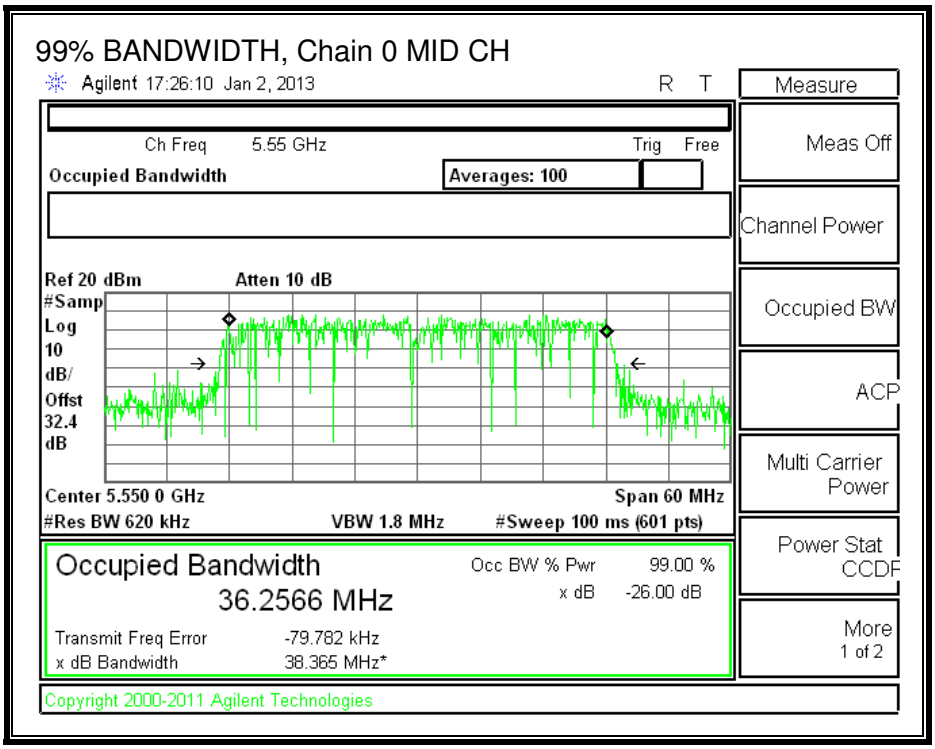
99% BANDWIDTH, Chain 0





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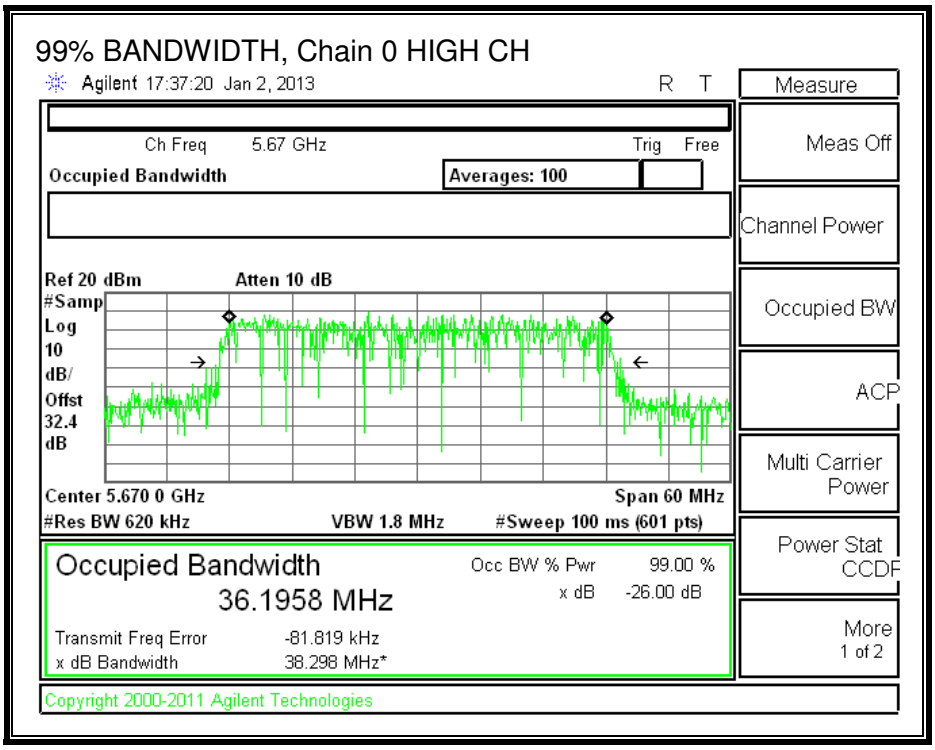
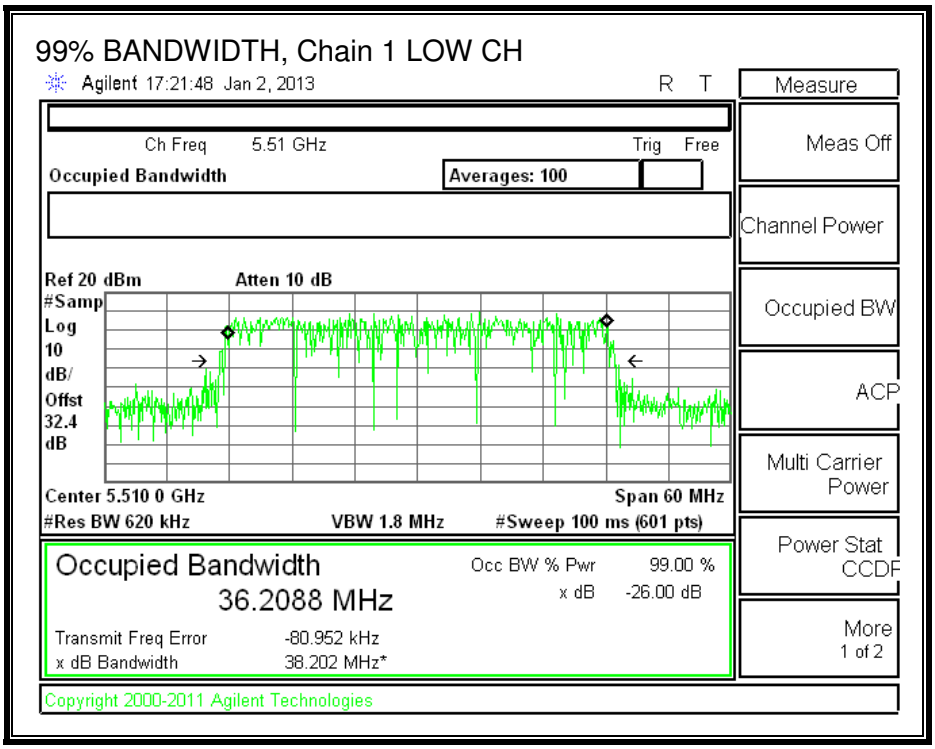


99% BANDWIDTH, Chain 1



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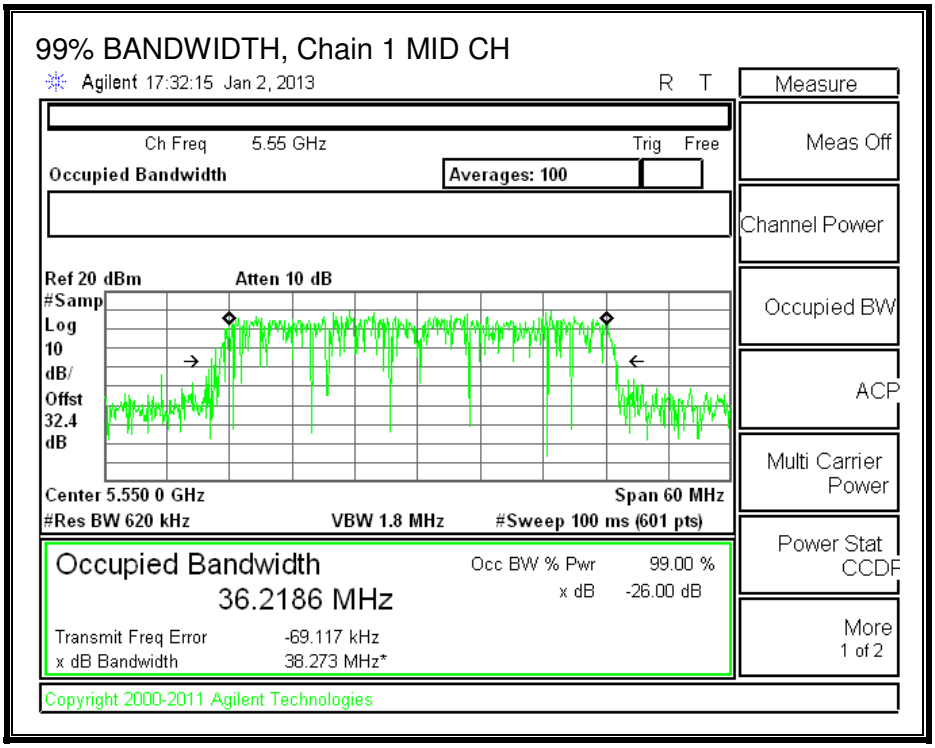

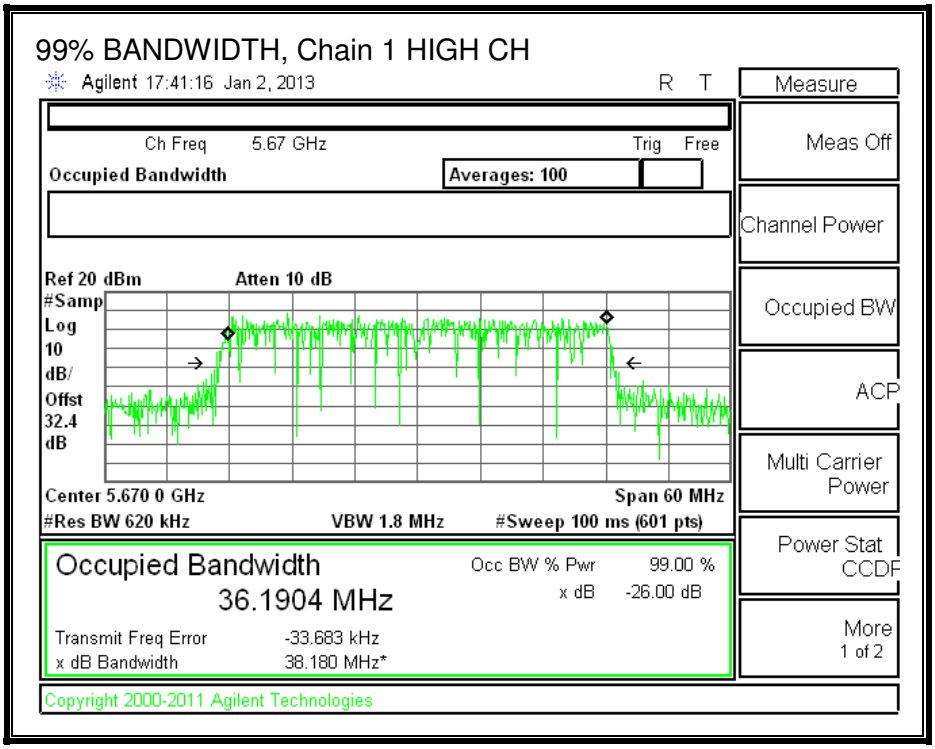

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8.57.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.00	3.80	3.42

For PSD, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	3.80	6.42

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)	Uncorrelated Directional Gain (dBi)
Low	5510	39.50	36.2088	6.42	3.42
Mid	5550	39.50	36.2186	6.42	3.42
High	5670	39.50	36.1904	6.42	3.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5510	24.00	24.00	30.00	24.00	10.58	11.00	10.58
Mid	5550	24.00	24.00	30.00	24.00	10.58	11.00	10.58
High	5670	24.00	24.00	30.00	24.00	10.58	11.00	10.58

Duty Cycle CF (dB)	0.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	15.30	15.10	18.21	24.00	-5.79
Mid	5550	16.50	16.60	19.56	24.00	-4.44
High	5670	18.20	18.10	21.16	24.00	-2.84

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5510	4.642	4.399	7.53	10.58	-3.05
Mid	5550	5.006	4.611	7.82	10.58	-2.76
High	5670	6.172	6.201	9.20	10.58	-1.38

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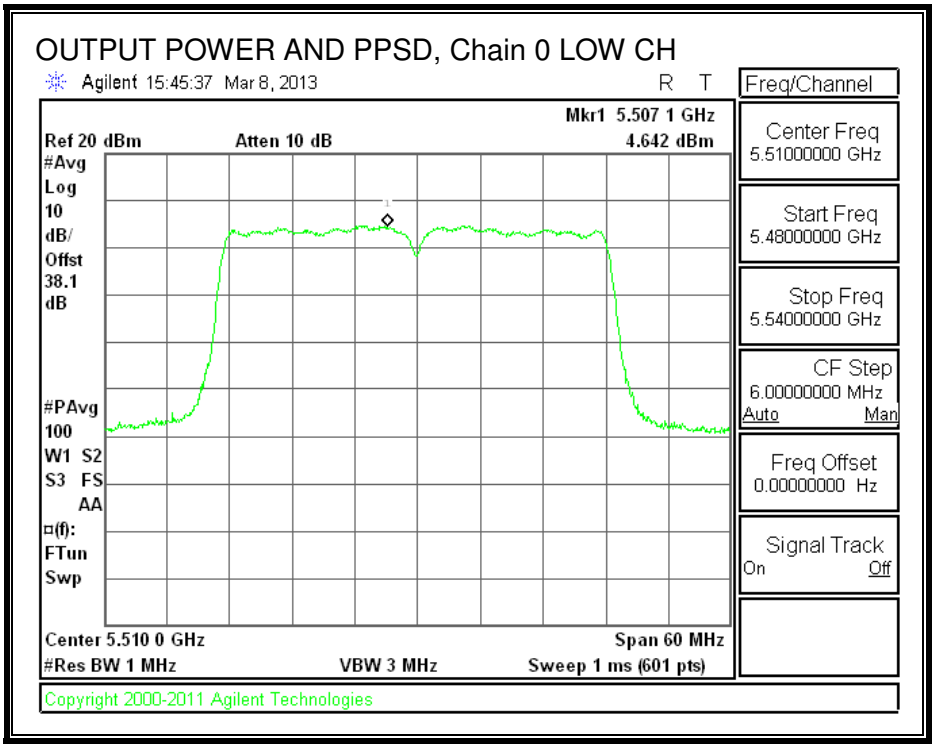
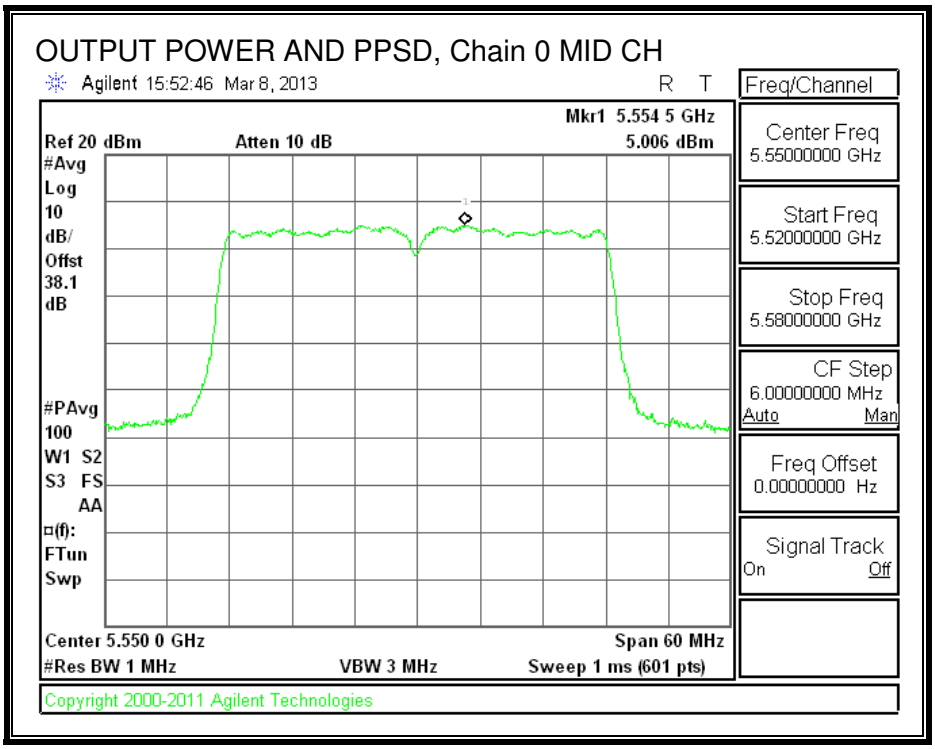
OUTPUT POWER AND PSD, Chain 0





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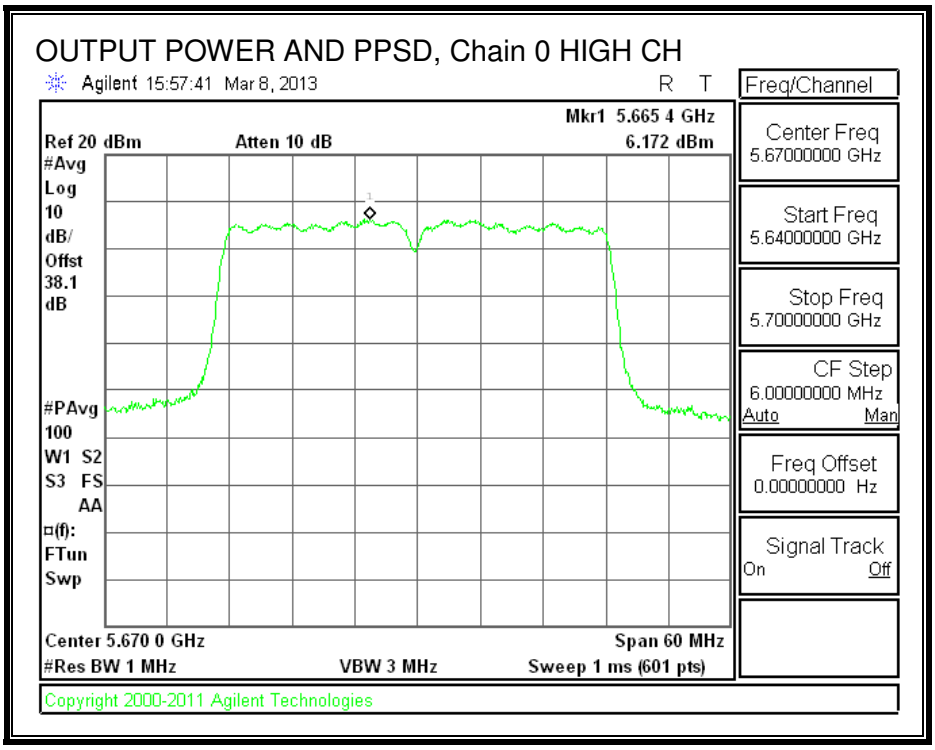
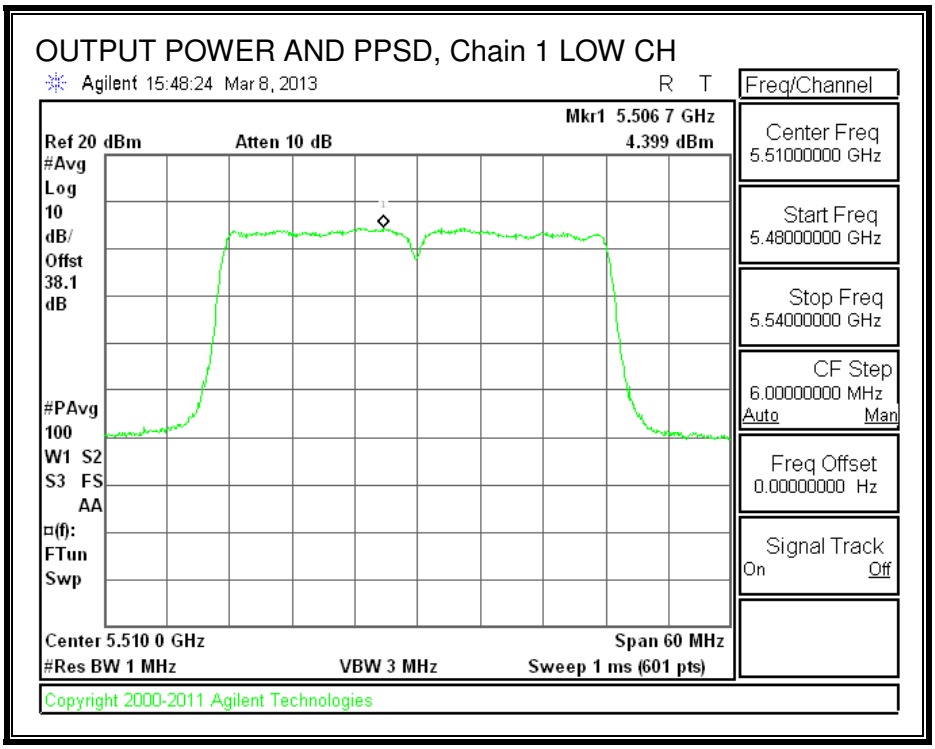


OUTPUT POWER AND PPSD, Chain 1



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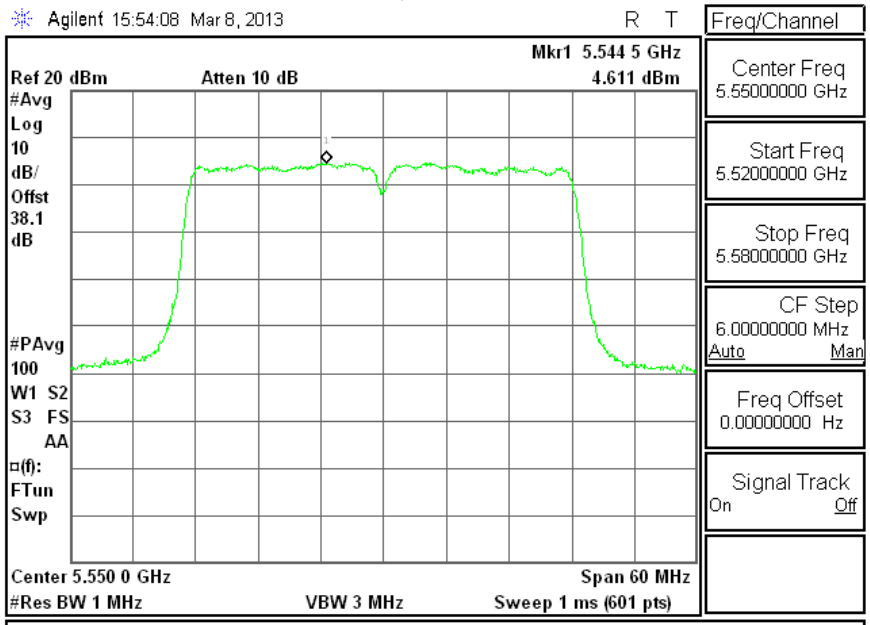
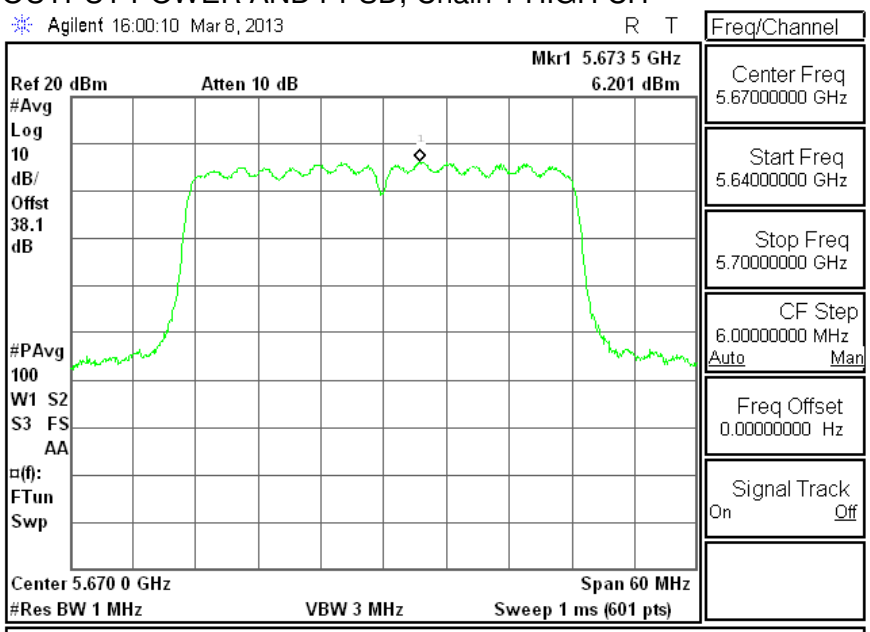
OUTPUT POWER AND PPSD, Chain 1 MID CH



OUTPUT POWER AND PPSD, Chain 1 HIGH CH



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8.57.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.58. 802.11n HT40 BF 2TX MODE IN THE 5.6 GHz BAND

Covered by testing HT40 CDD 2TX mode, the power per chain used for HT40 CDD 2TX mode is the same power per chain that will be used for HT40 BF 2TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.58.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	3.80	6.42

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)
Low	5510	39.50	36.2088	6.42
Mid	5550	39.50	36.2186	6.42
High	5670	39.50	36.1904	6.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Low	5510	23.58	24.00	30.00	23.58
Mid	5550	23.58	24.00	30.00	23.58
High	5670	23.58	24.00	30.00	23.58

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	15.30	15.10	18.21	23.58	-5.37
Mid	5550	16.50	16.60	19.56	23.58	-4.02
High	5670	18.20	18.10	21.16	23.58	-2.42

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8.59. 802.11n HT40 STBC 2TX MODE IN THE 5.6 GHz BAND

8.59.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5510	39.83	39.50
Mid	5550	39.83	39.67
High	5670	39.83	39.50

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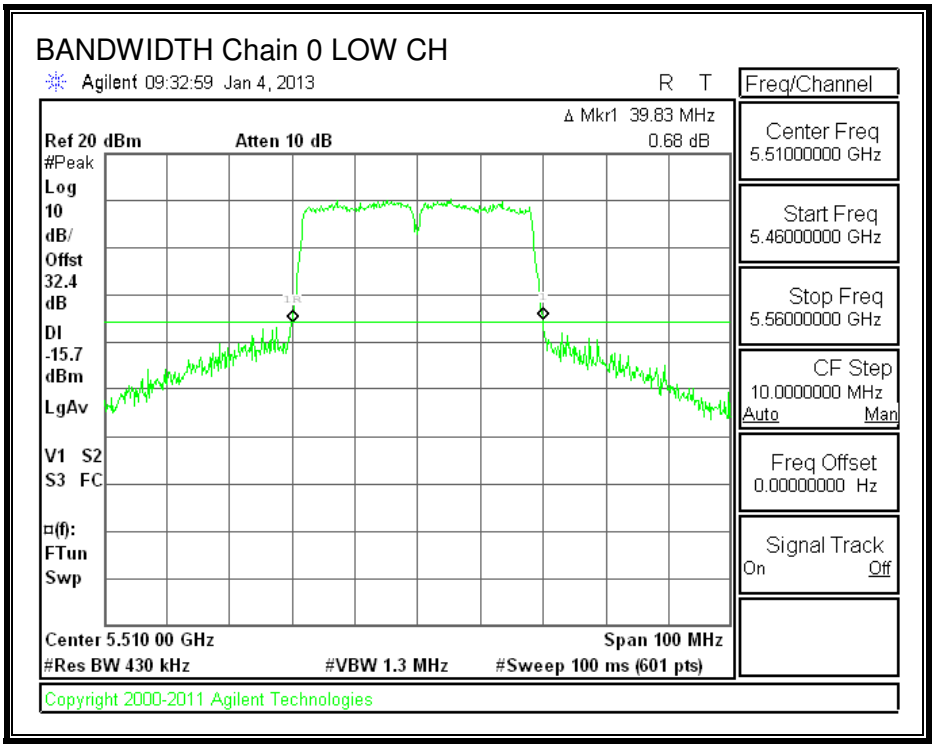
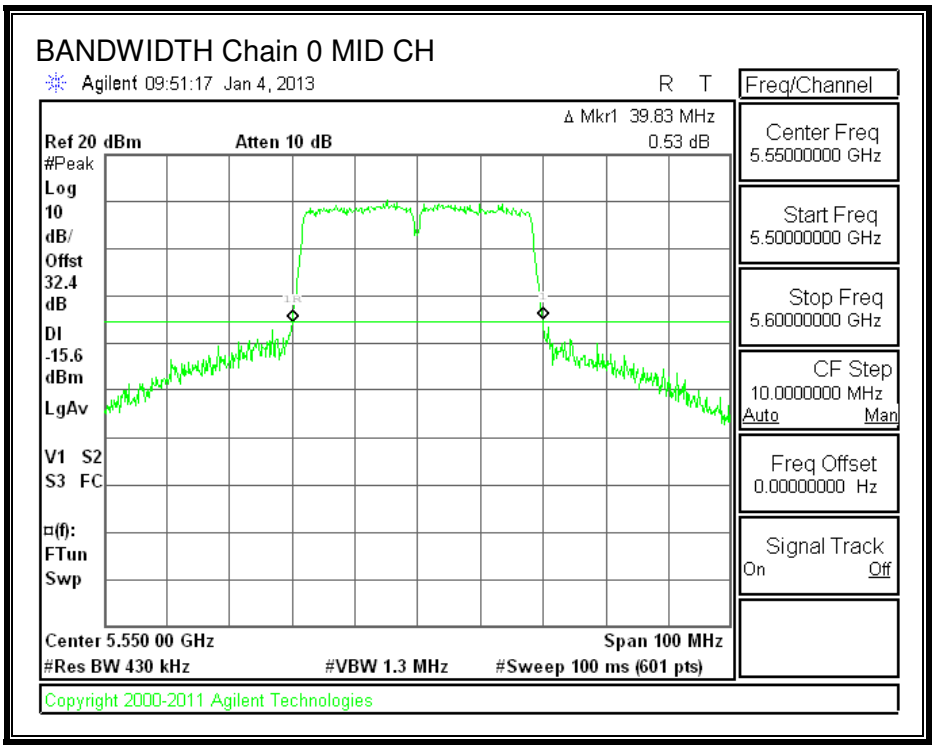
26 dB BANDWIDTH, Chain 0





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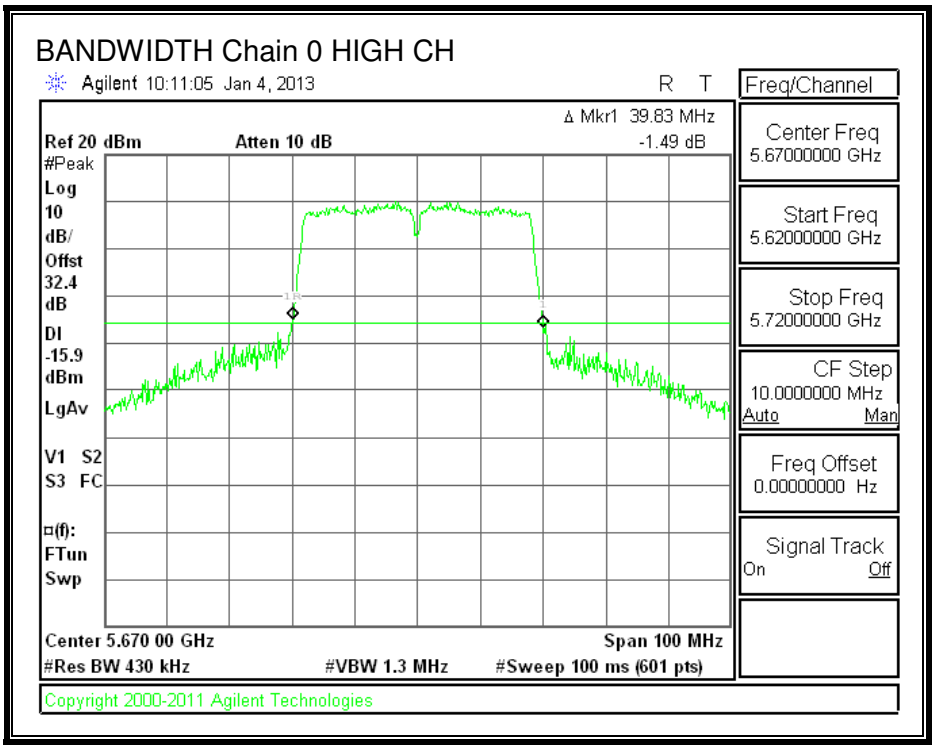
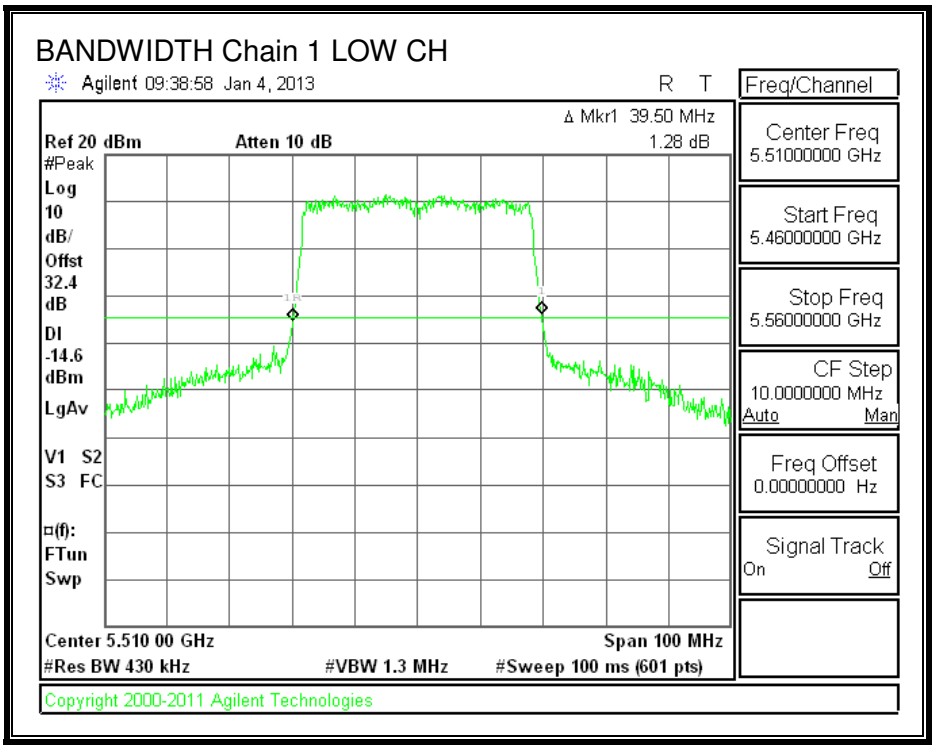


26 dB BANDWIDTH, Chain 1



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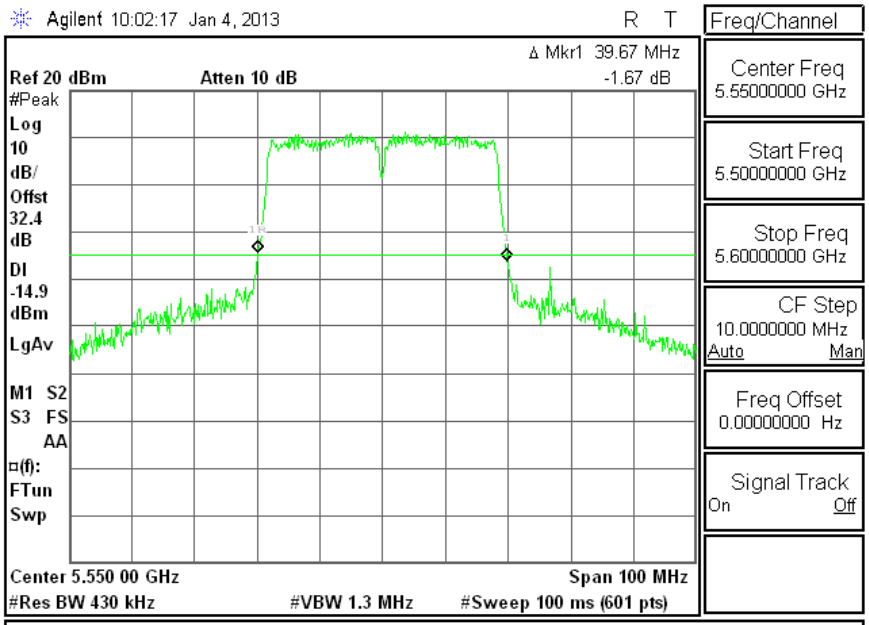
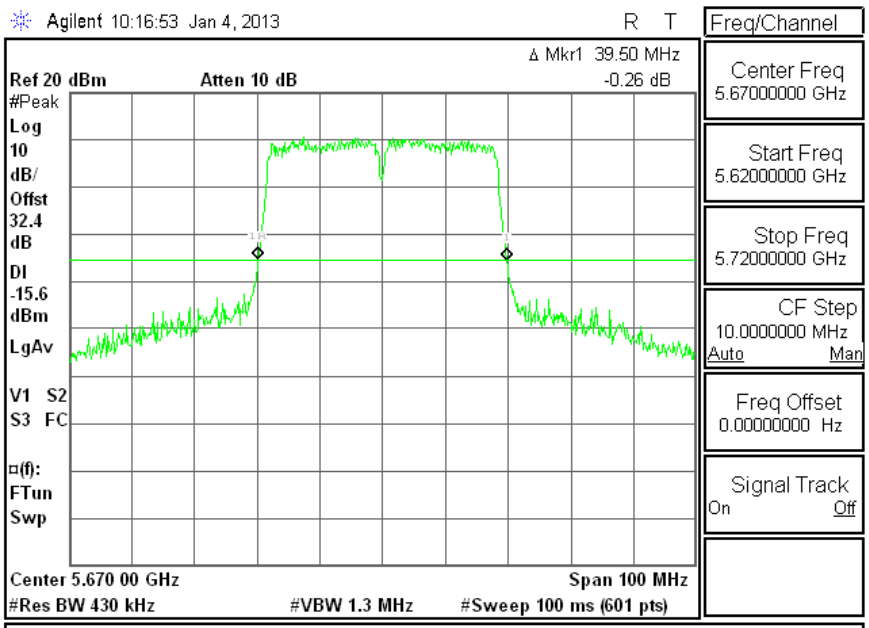
BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



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8.59.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5510	36.2012	36.2012
Mid	5550	36.2098	36.2328
High	5670	36.2188	36.1962

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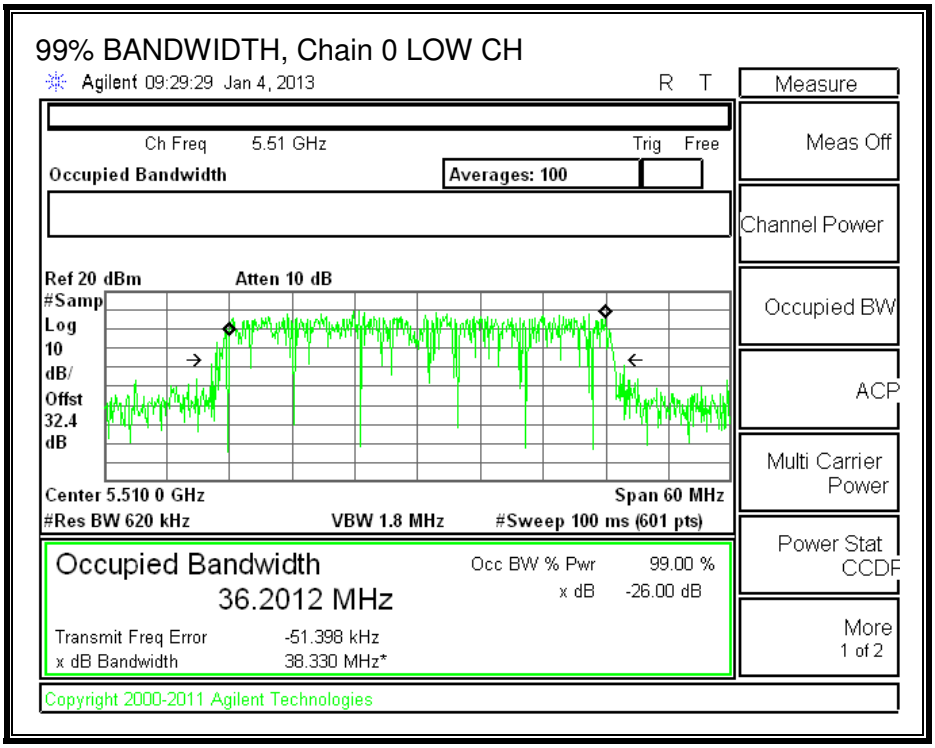
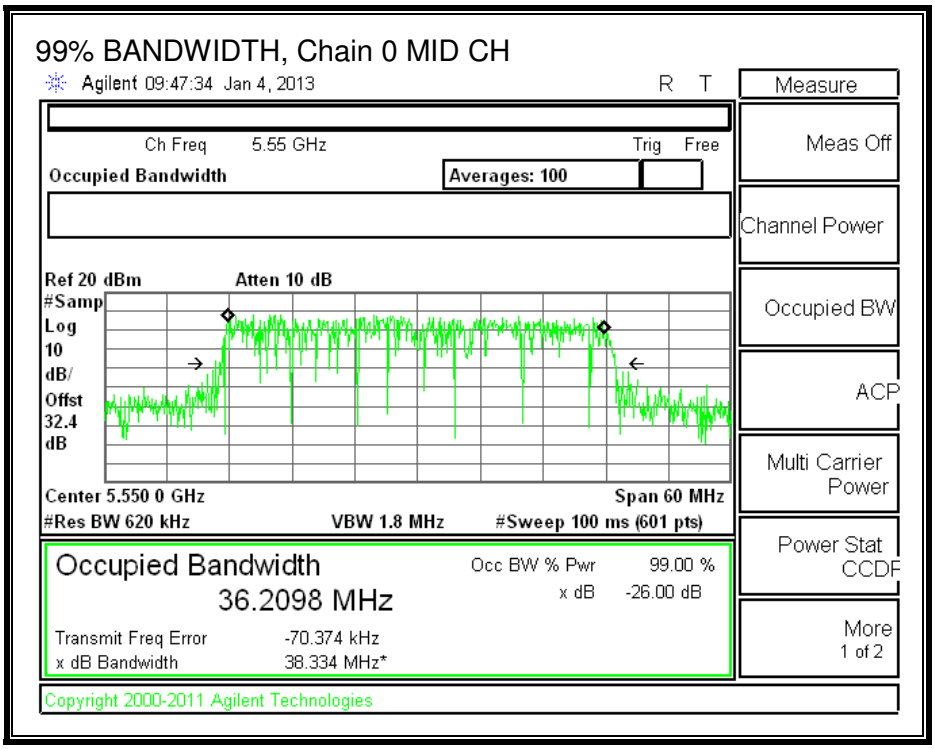
99% BANDWIDTH, Chain 0





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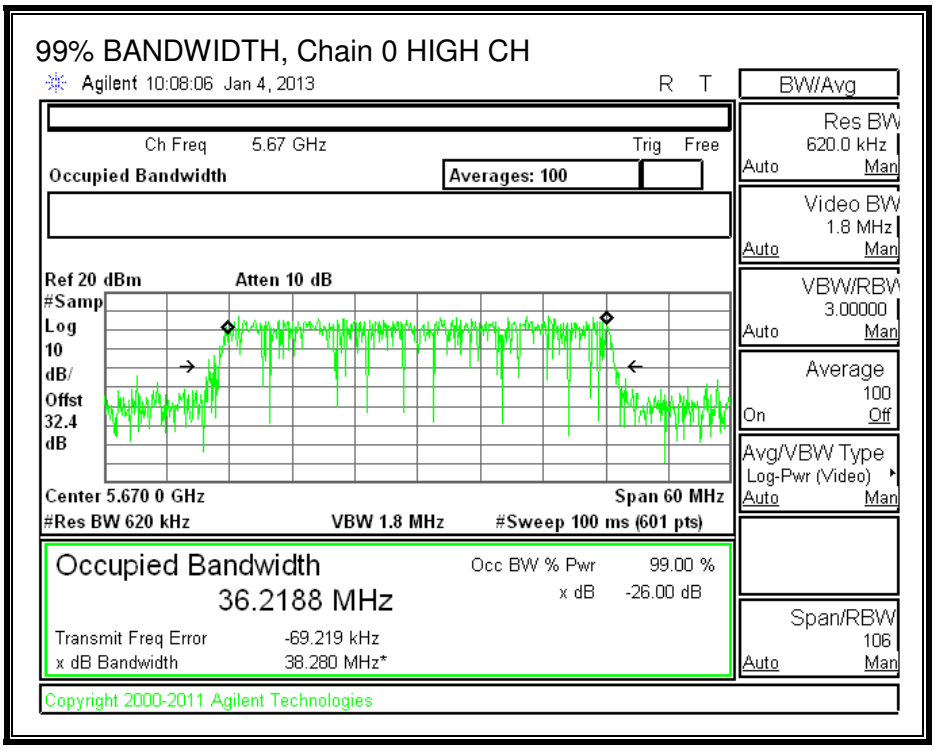
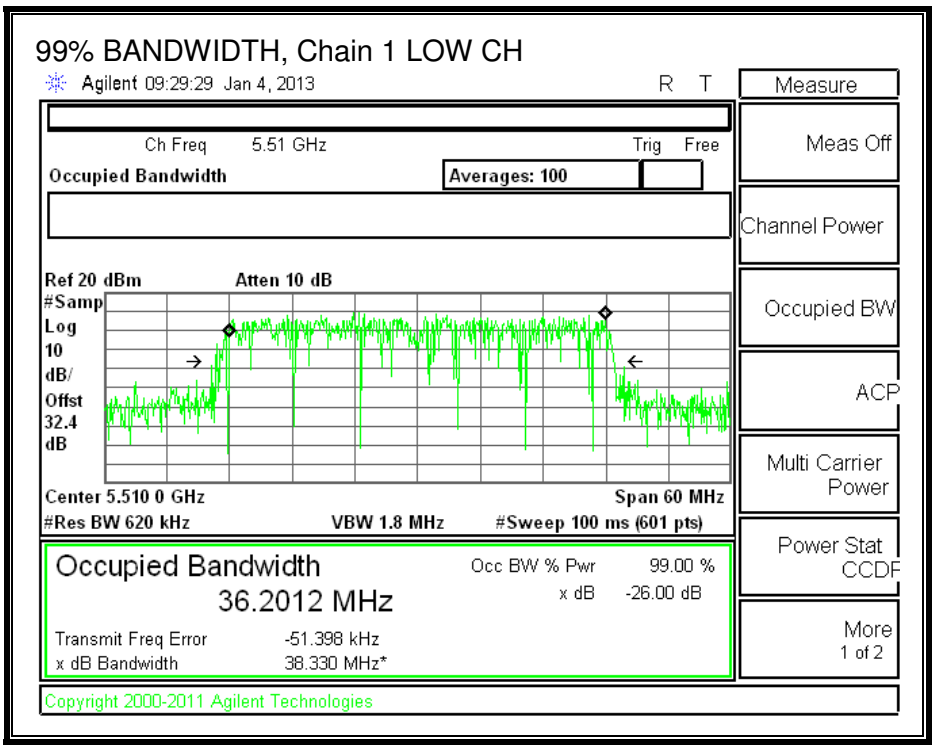


99% BANDWIDTH, Chain 1



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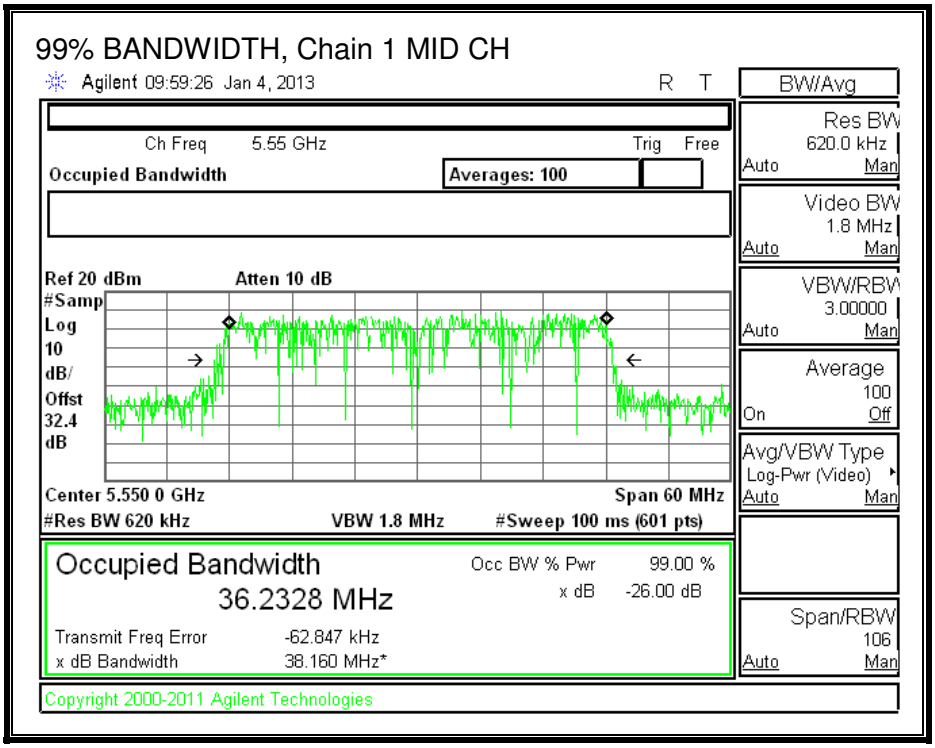

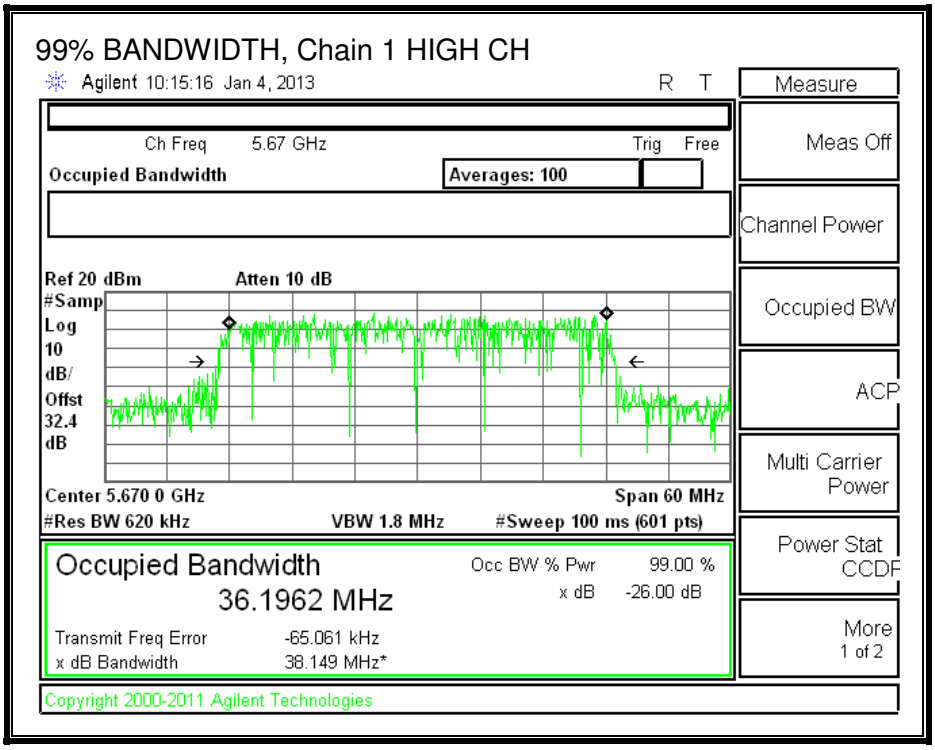

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8.59.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.00	3.80	3.42

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5510	39.50	36.2012	3.42
Mid	5550	39.67	36.2098	3.42
High	5670	39.50	36.1962	3.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5510	24.00	24.00	30.00	24.00	11.00	11.00	11.00
Mid	5550	24.00	24.00	30.00	24.00	11.00	11.00	11.00
High	5670	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	15.00	15.20	18.11	24.00	-5.89
Mid	5550	16.50	16.60	19.56	24.00	-4.44
High	5670	18.10	18.00	21.06	24.00	-2.94

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5510	4.17	4.81	7.51	11.00	-3.49
Mid	5550	4.31	4.73	7.54	11.00	-3.46
High	5670	4.72	5.06	7.90	11.00	-3.10

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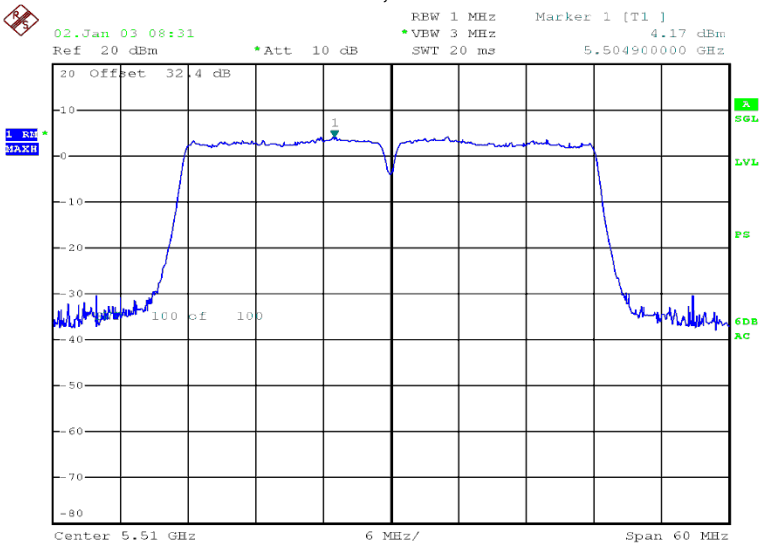
OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH



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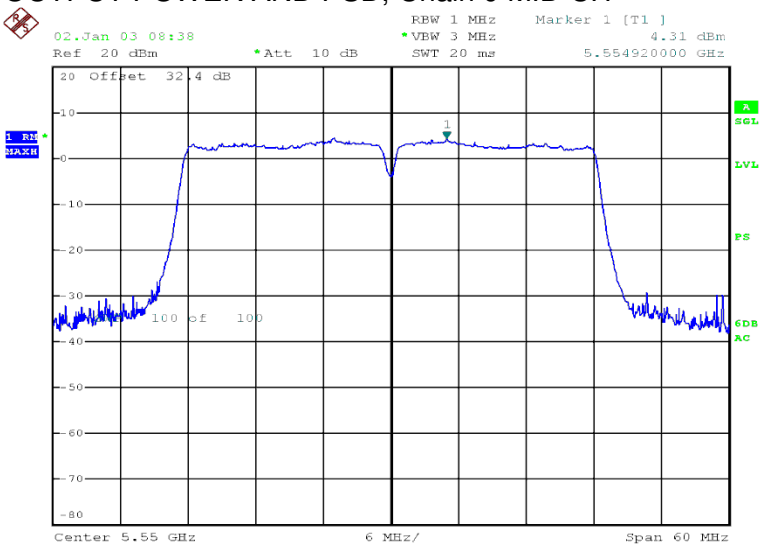
OUTPUT POWER AND PSD, Chain 0 MID CH



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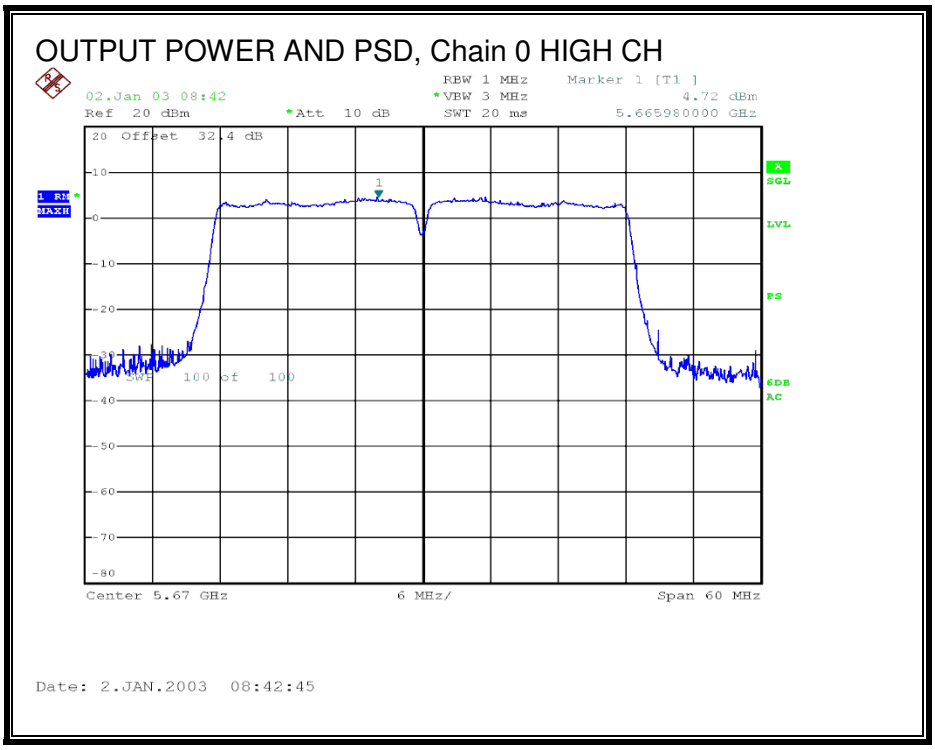
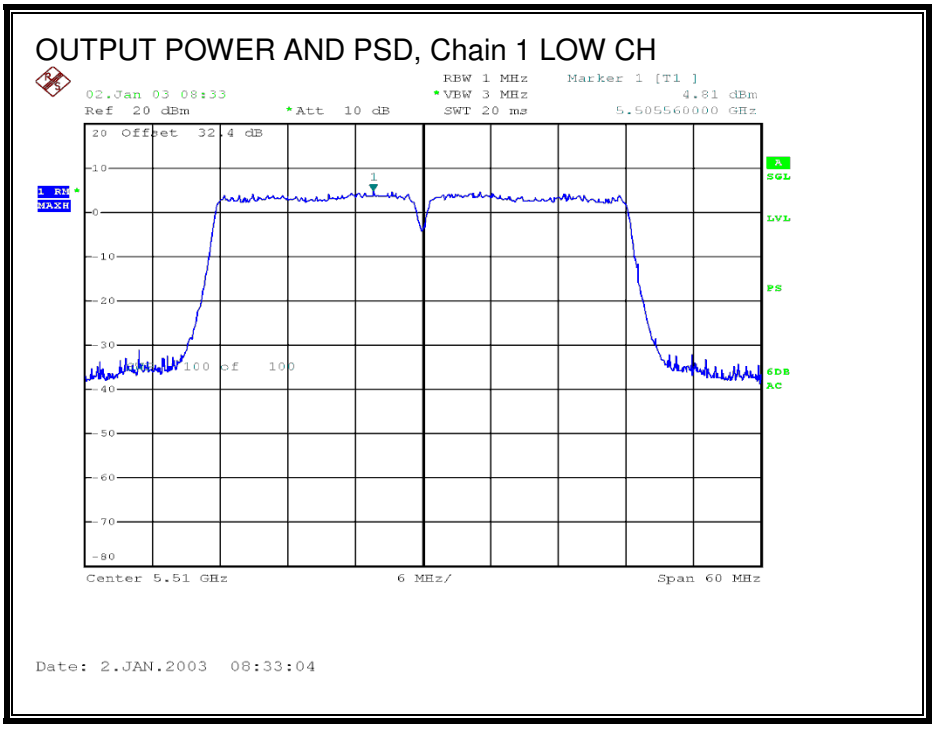


OUTPUT POWER AND PSD, Chain 1



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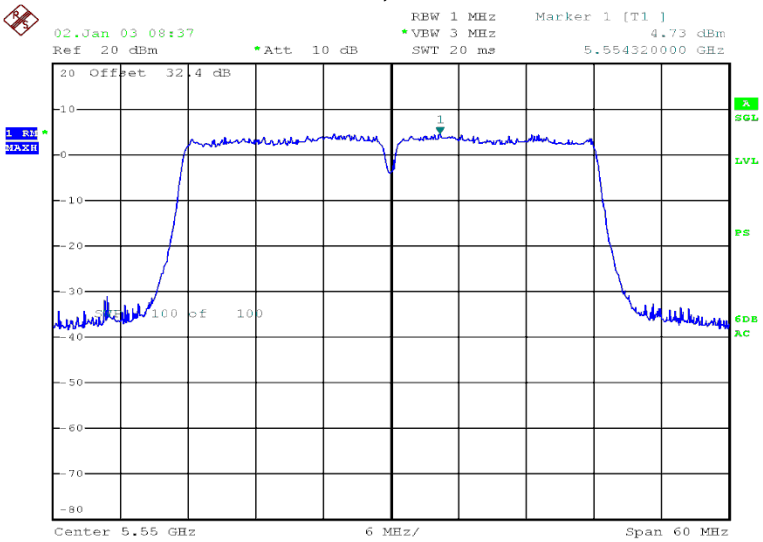
OUTPUT POWER AND PSD, Chain 1 MID CH



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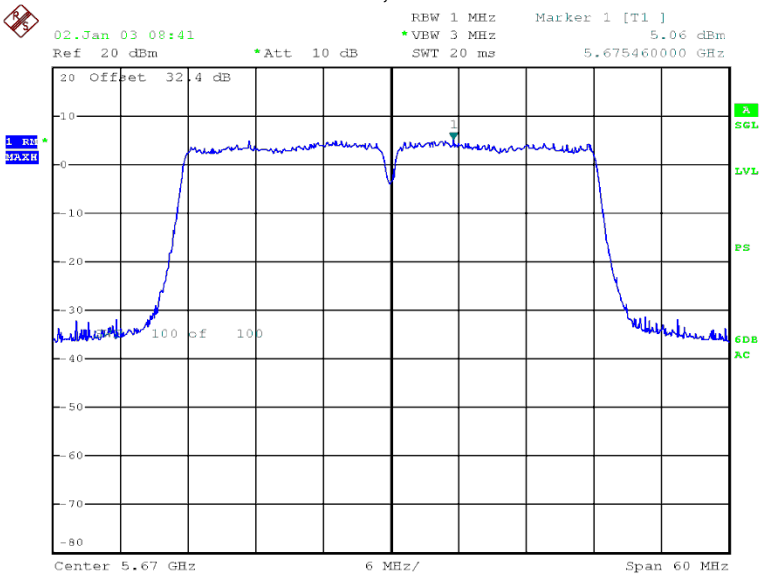
OUTPUT POWER AND PSD, Chain 1 HIGH CH



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8.59.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.60. 802.11n HT40 CDD 3TX MODE IN THE 5.6 GHz BAND

8.60.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5510	39.83	39.33	39.50
Mid	5550	39.67	39.67	39.50
High	5670	40.17	39.50	39.83

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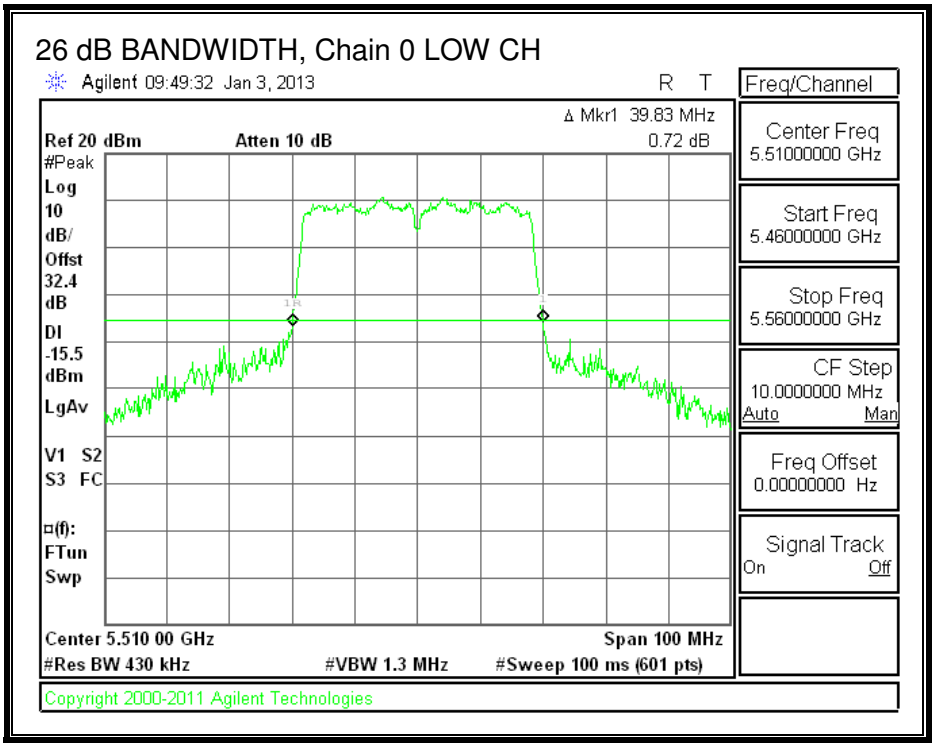
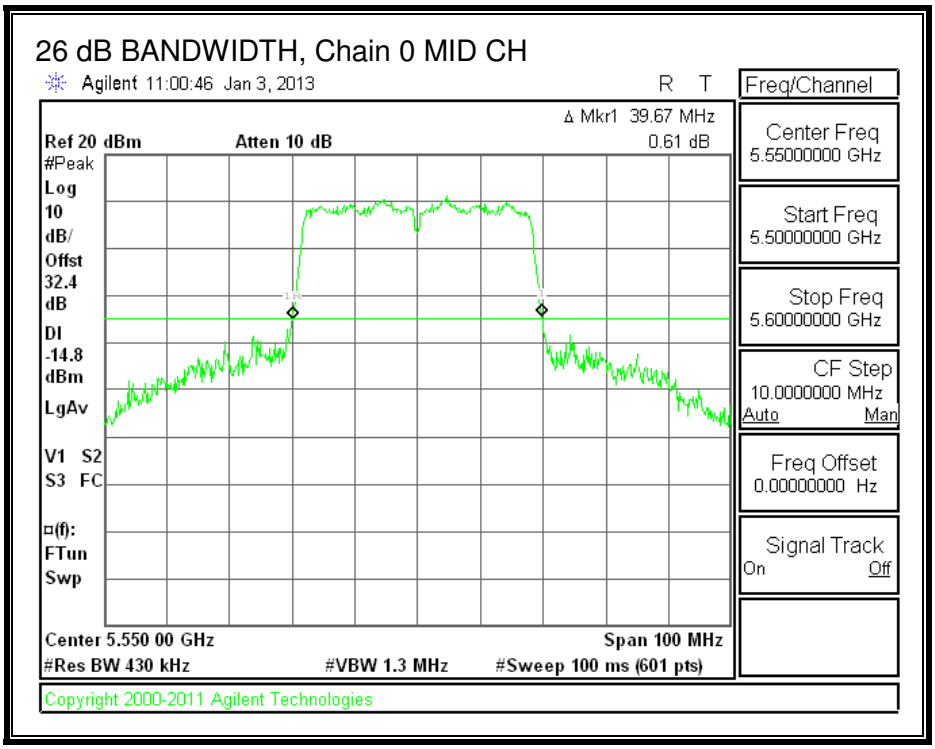
26 dB BANDWIDTH, Chain 0





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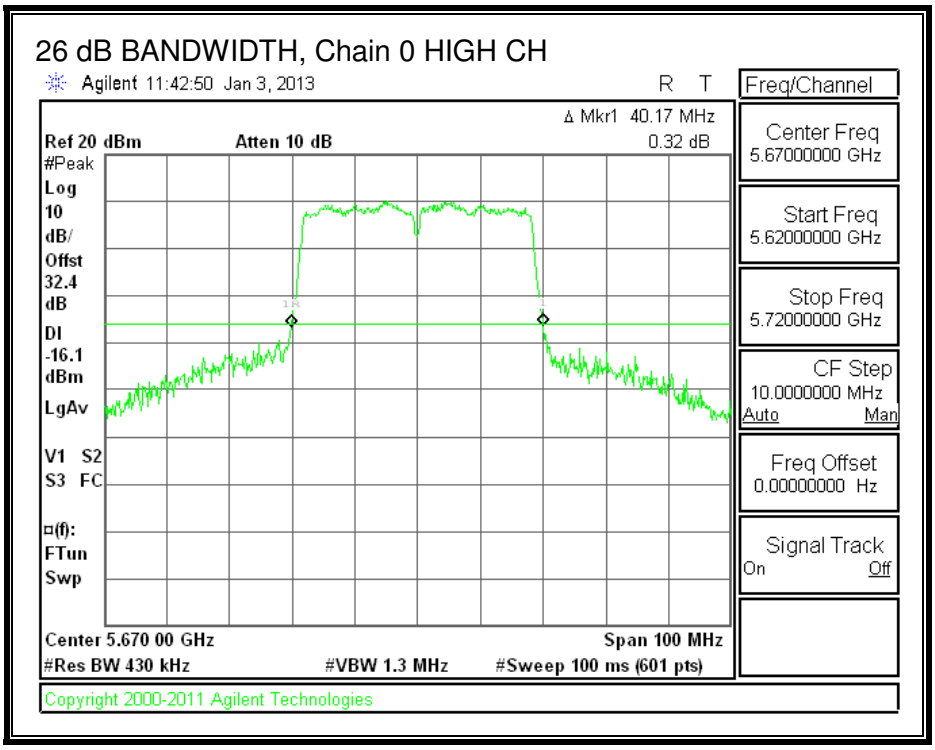
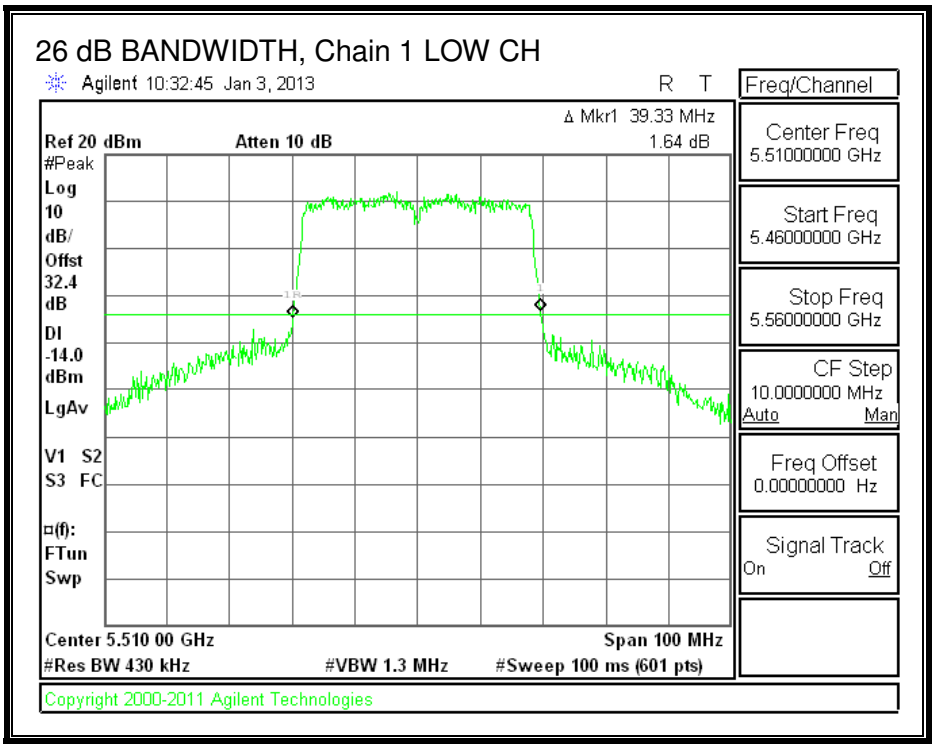


26 dB BANDWIDTH, Chain 1



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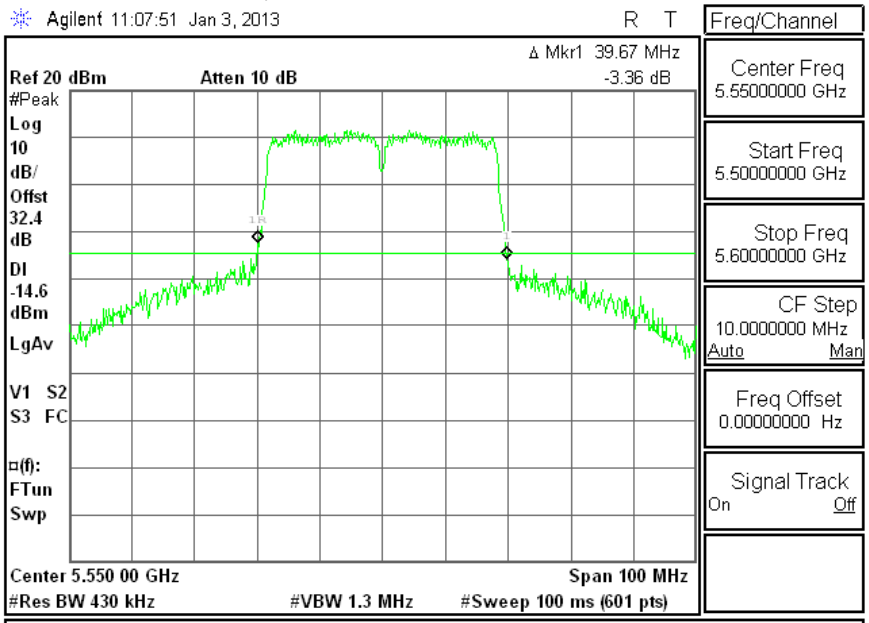
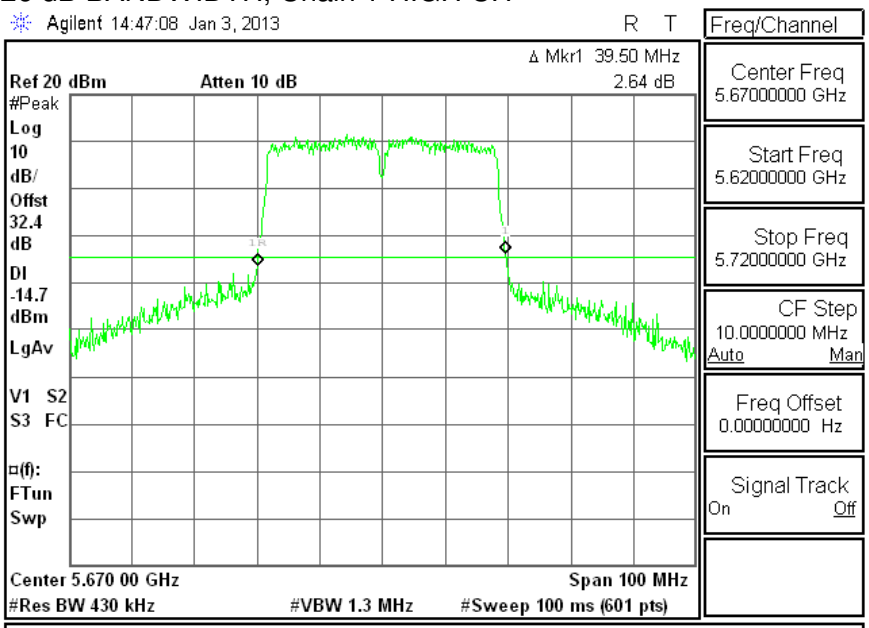
26 dB BANDWIDTH, Chain 1 MID CH



26 dB BANDWIDTH, Chain 1 HIGH CH



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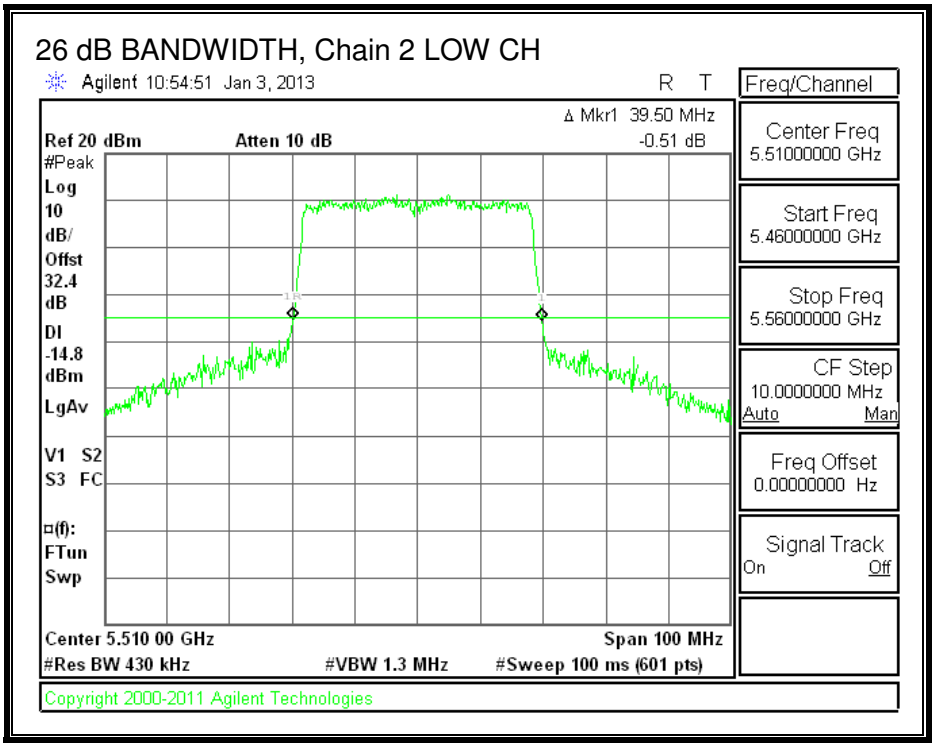
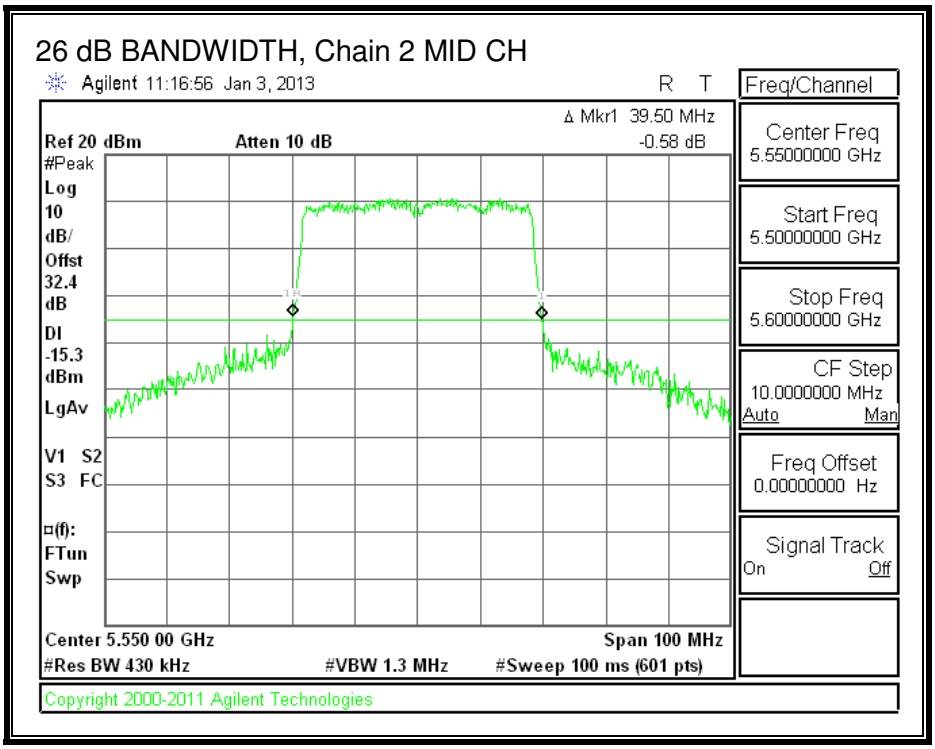
26 dB BANDWIDTH, Chain 2





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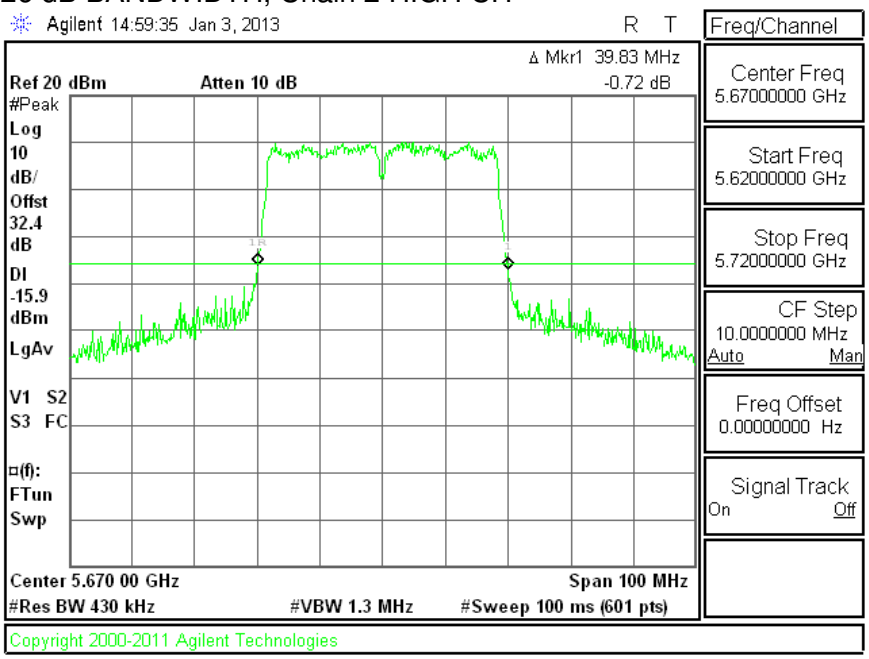
26 dB BANDWIDTH, Chain 2 HIGH CH



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8.60.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5510	36.0384	36.1502	36.1682
Mid	5550	36.1190	36.1868	36.1649
High	5670	36.1452	36.1882	36.2750

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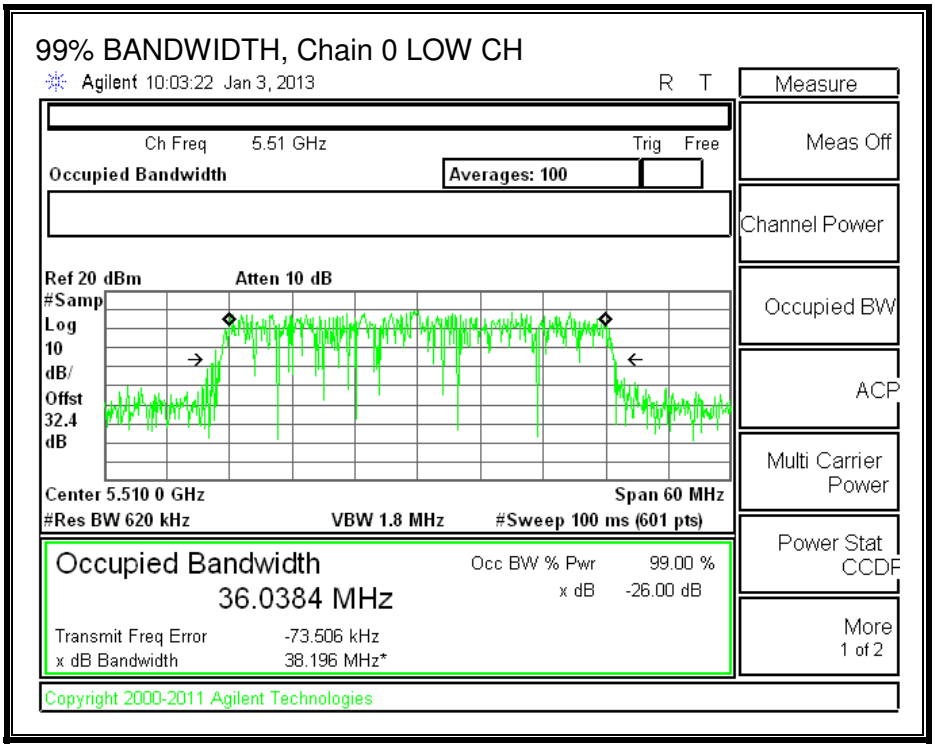
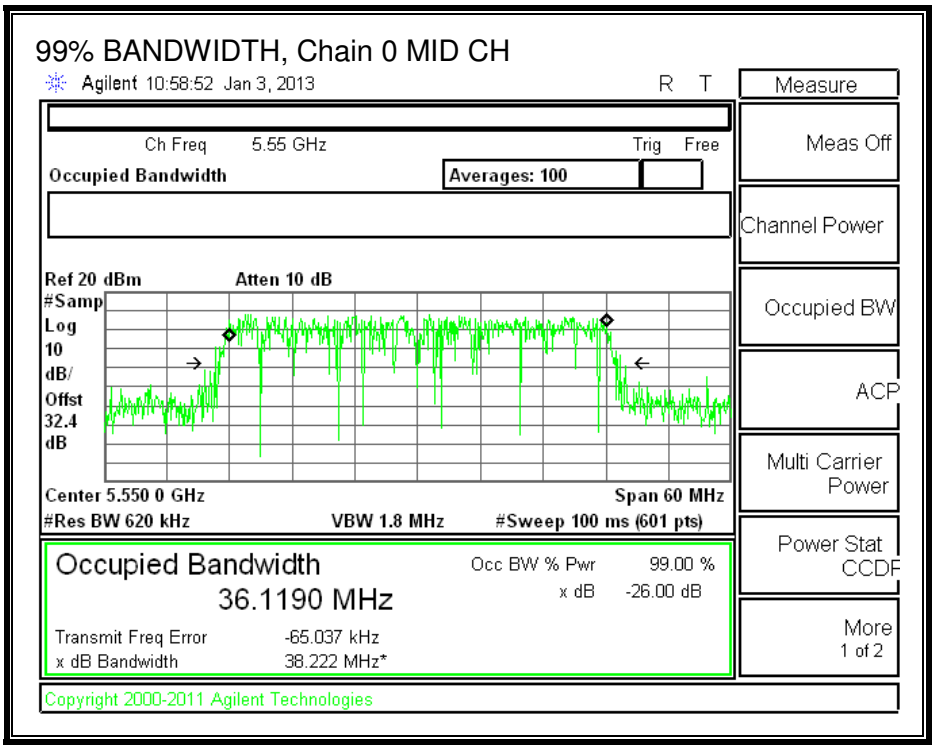
99% BANDWIDTH, Chain 0





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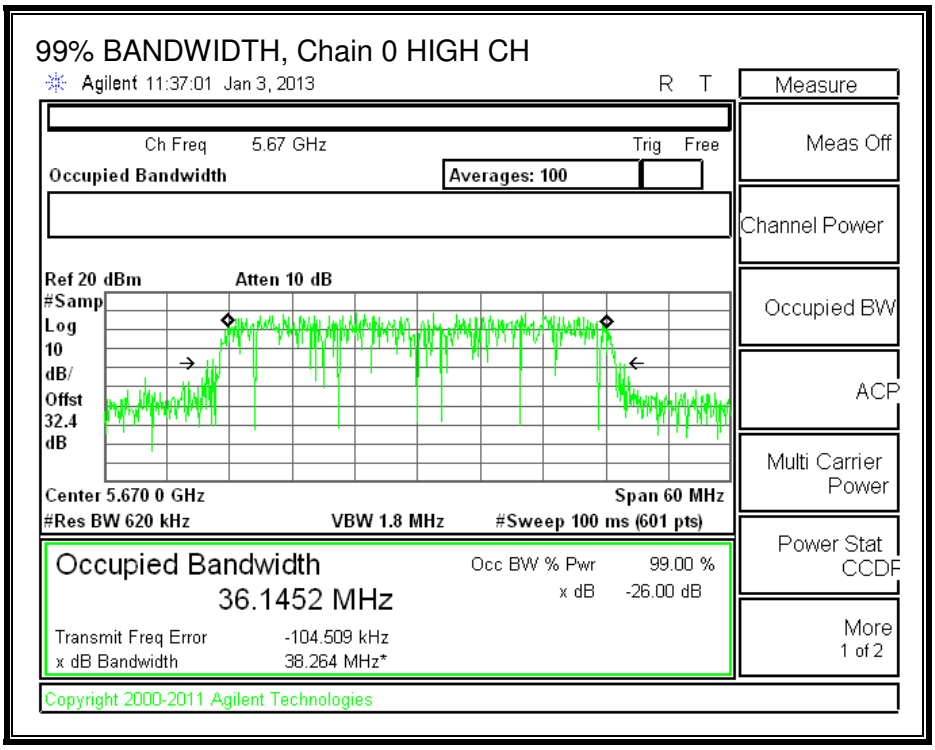
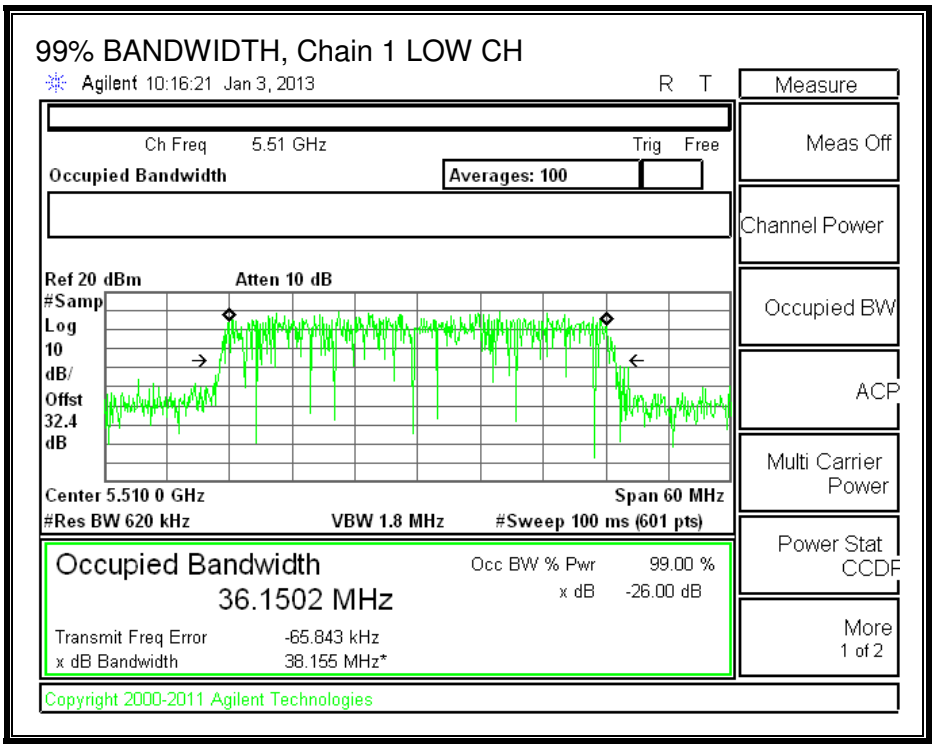


99% BANDWIDTH, Chain 1



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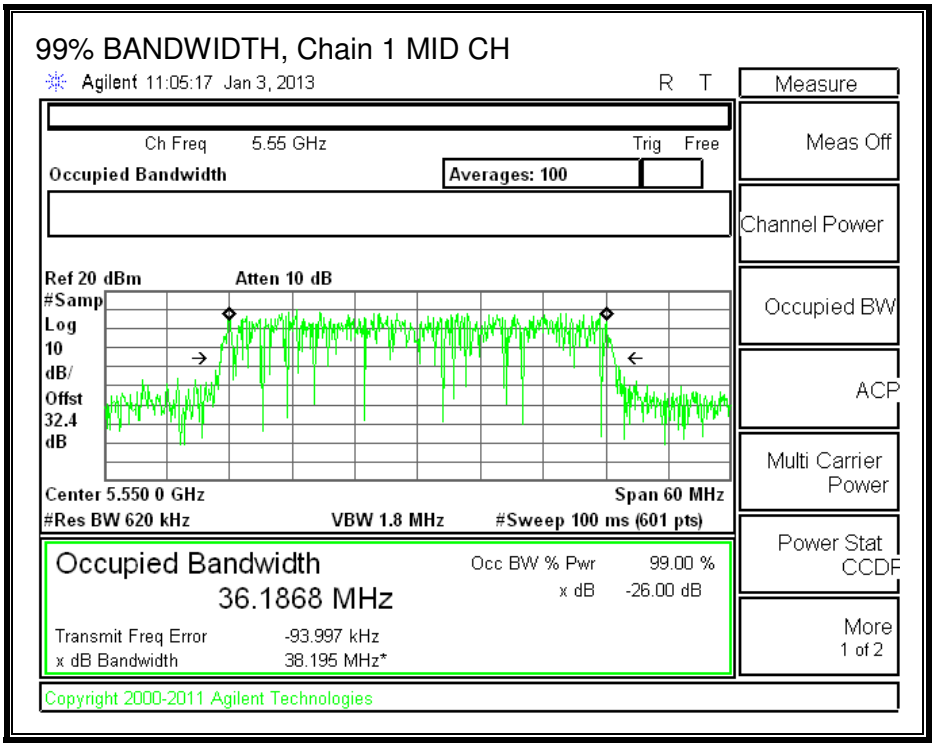

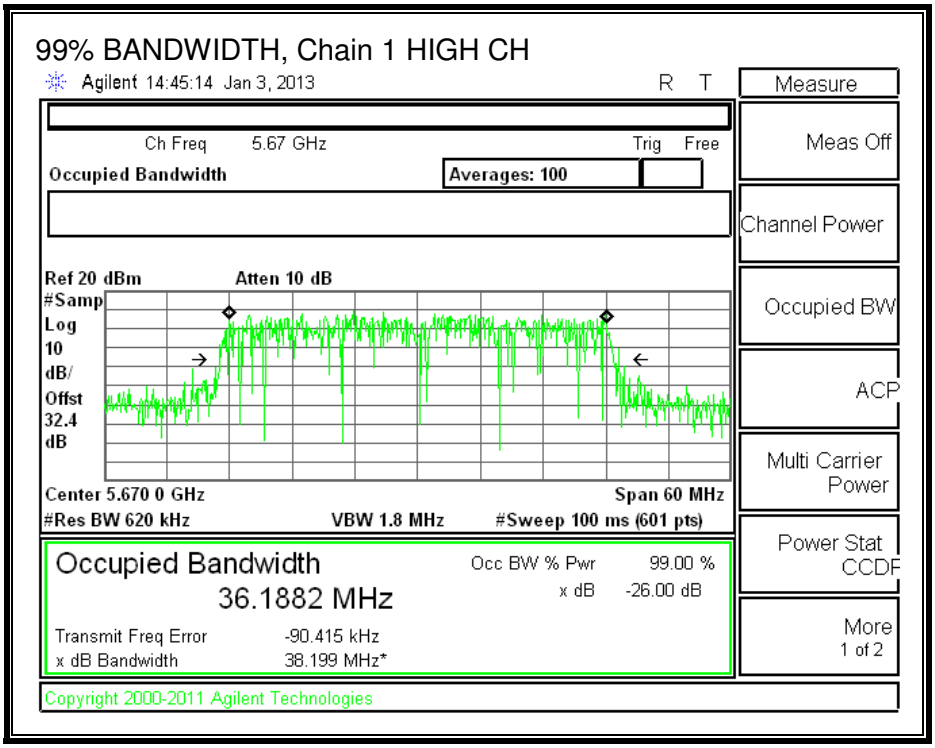

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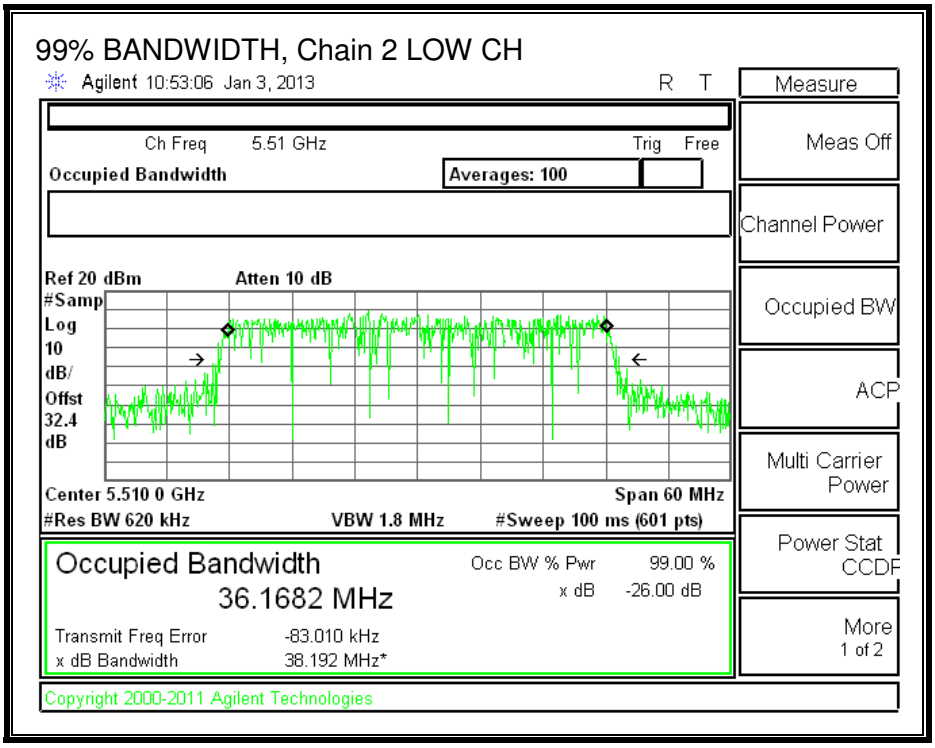
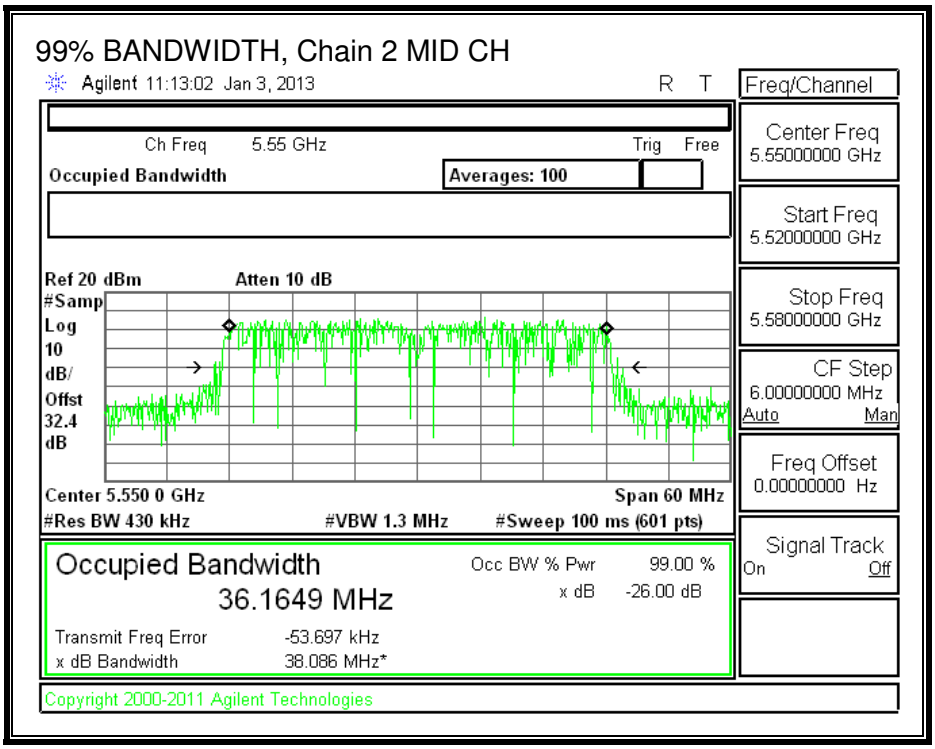
99% BANDWIDTH, Chain 2





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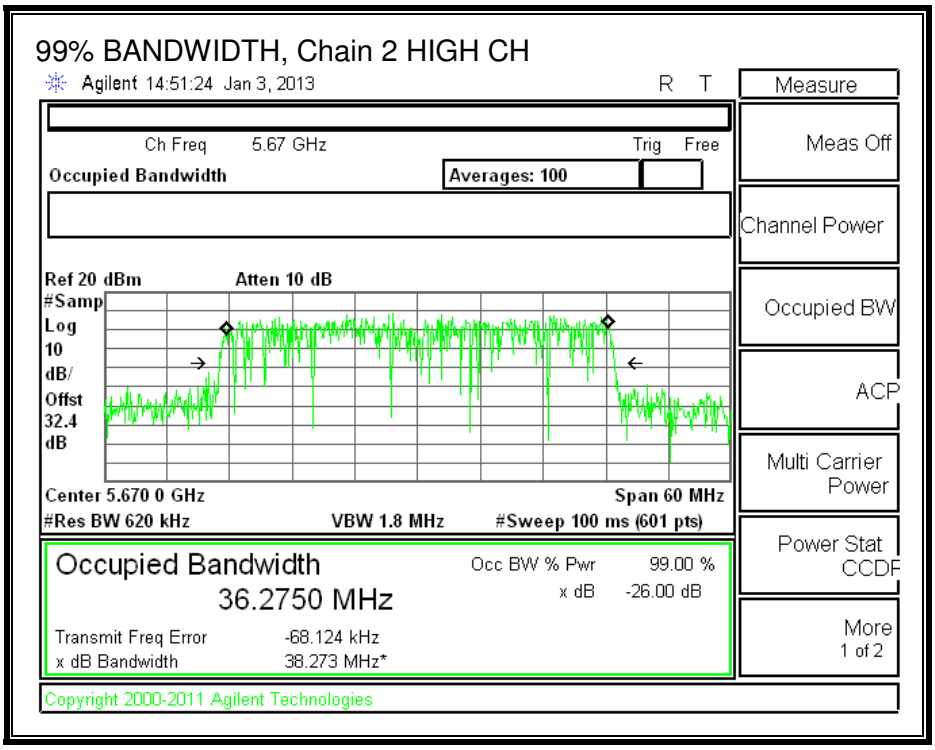

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8.60.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.00	1.70	3.80	2.92

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	1.70	3.80	7.65

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)	Uncorrelated Directional Gain (dBi)
Low	5510	39.33	36.0384	7.65	2.92
Mid	5550	39.50	36.1190	7.65	2.92
High	5670	39.50	36.1452	7.65	2.92

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5510	24.00	24.00	30.00	24.00	9.35	11.00	9.35
Mid	5550	24.00	24.00	30.00	24.00	9.35	11.00	9.35
High	5670	24.00	24.00	30.00	24.00	9.35	11.00	9.35

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	14.50	14.80	14.60	19.41	24.00	-4.59
Mid	5550	16.00	16.20	16.10	20.87	24.00	-3.13
High	5670	16.00	16.25	16.10	20.89	24.00	-3.11

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5510	3.823	3.785	3.561	8.50	9.35	-0.85
Mid	5550	3.854	3.886	3.816	8.62	9.35	-0.73
High	5670	5.356	4.108	3.638	9.20	9.35	-0.15

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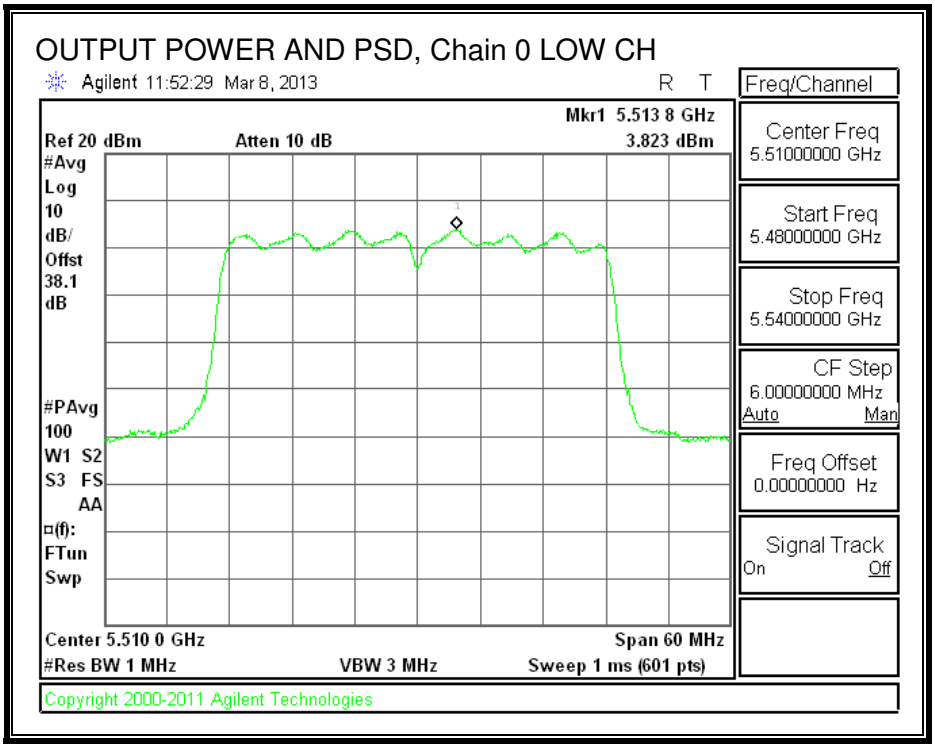
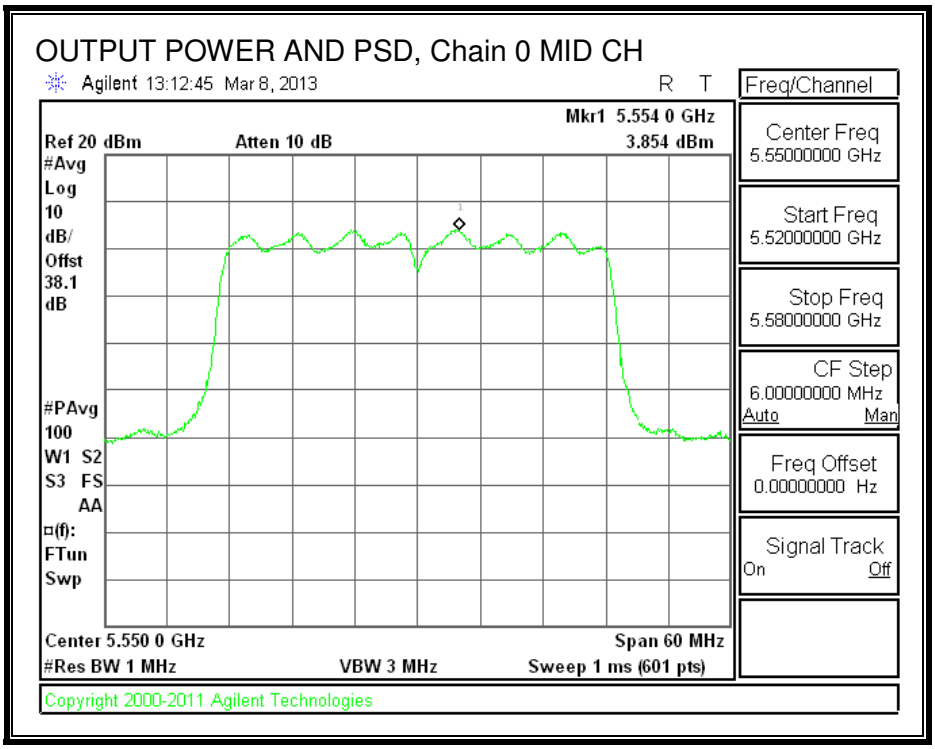
OUTPUT POWER AND PSD, Chain 0





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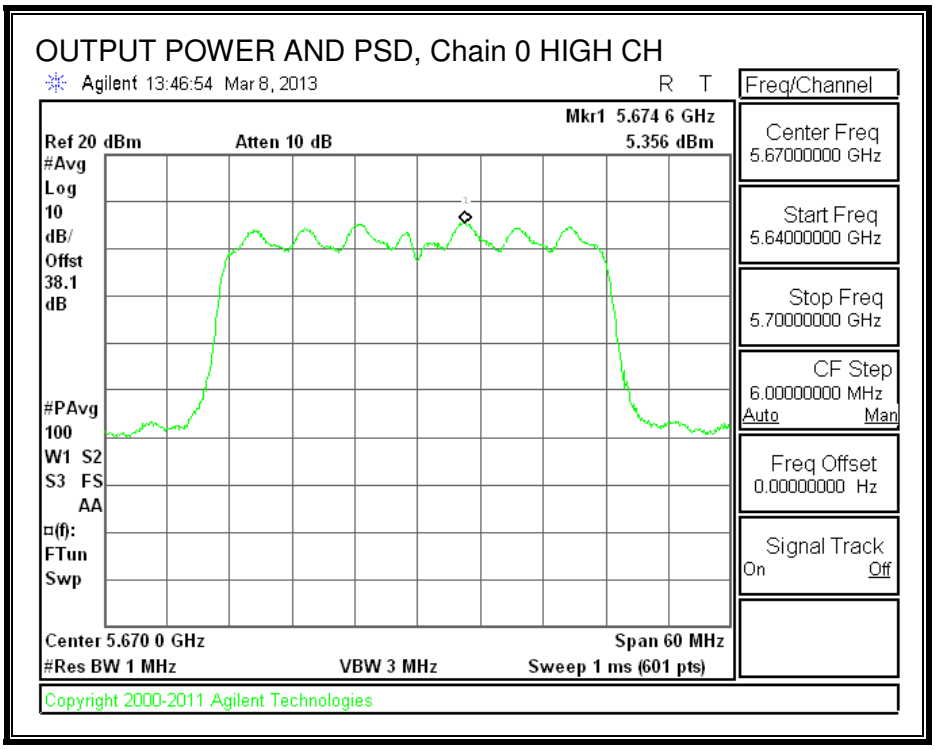
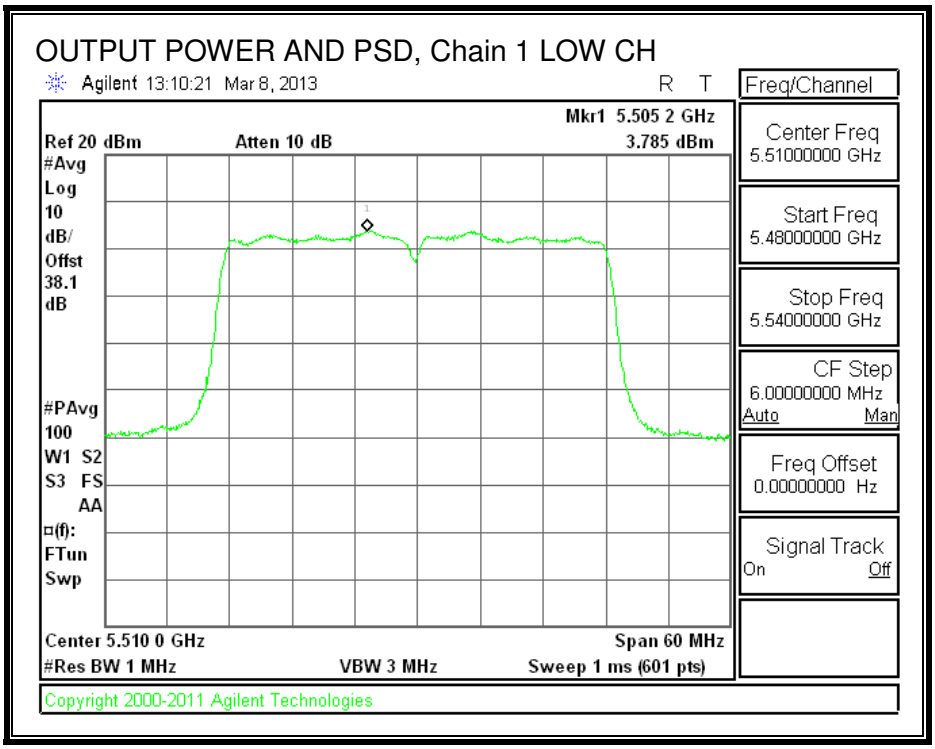


OUTPUT POWER AND PSD, Chain 1



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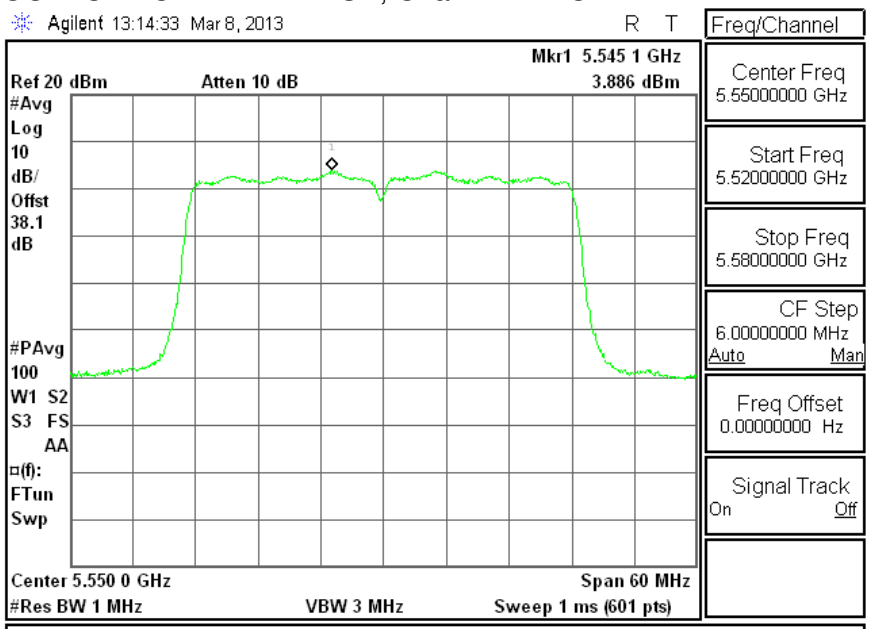
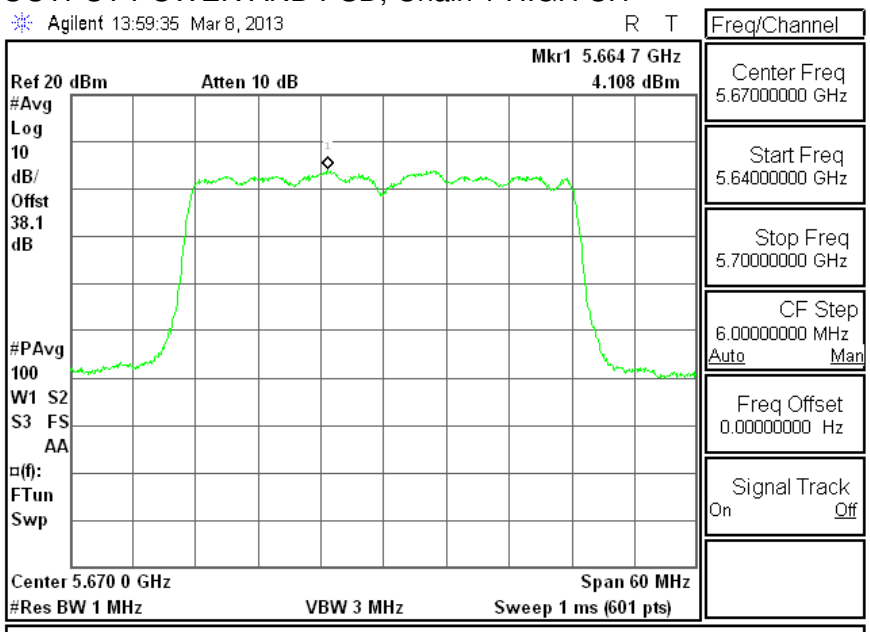
OUTPUT POWER AND PSD, Chain 1 MID CH



OUTPUT POWER AND PSD, Chain 1 HIGH CH



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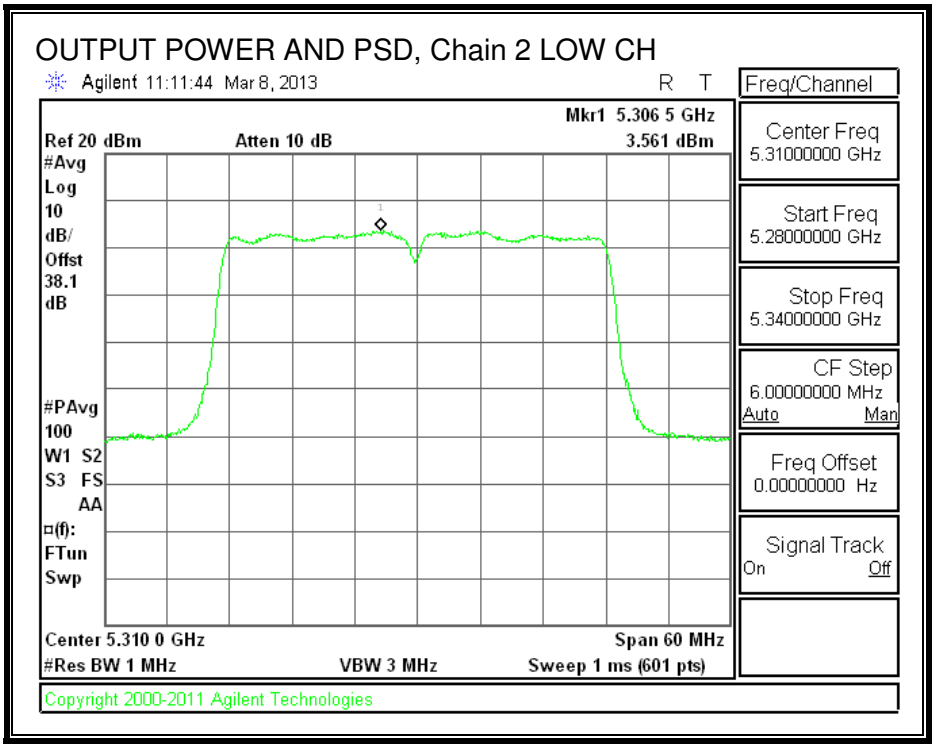
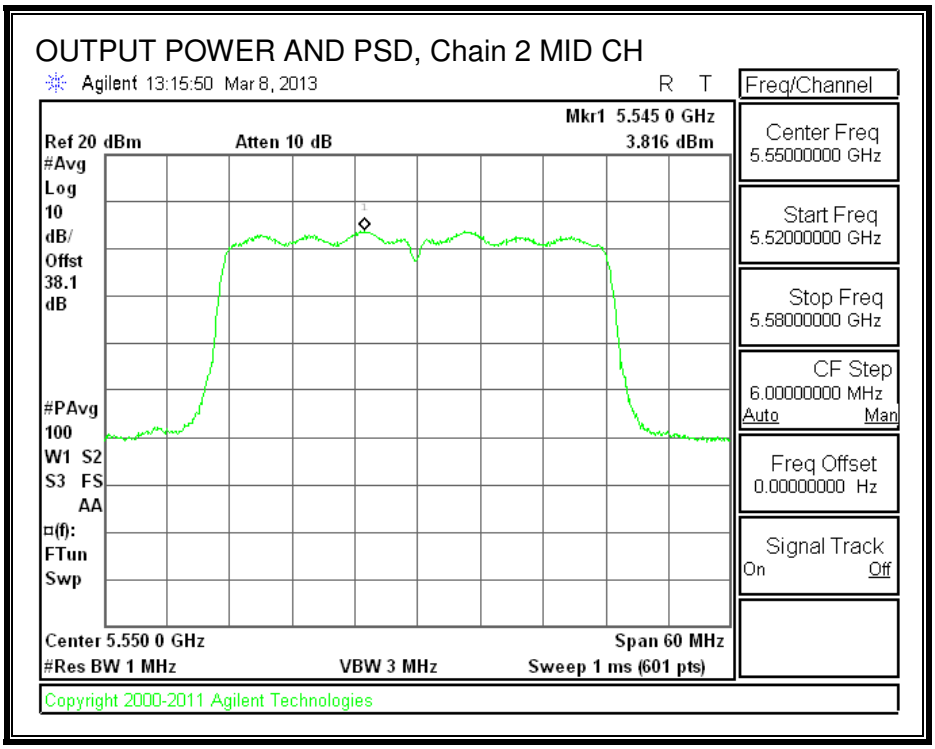
OUTPUT POWER AND PSD, Chain 2





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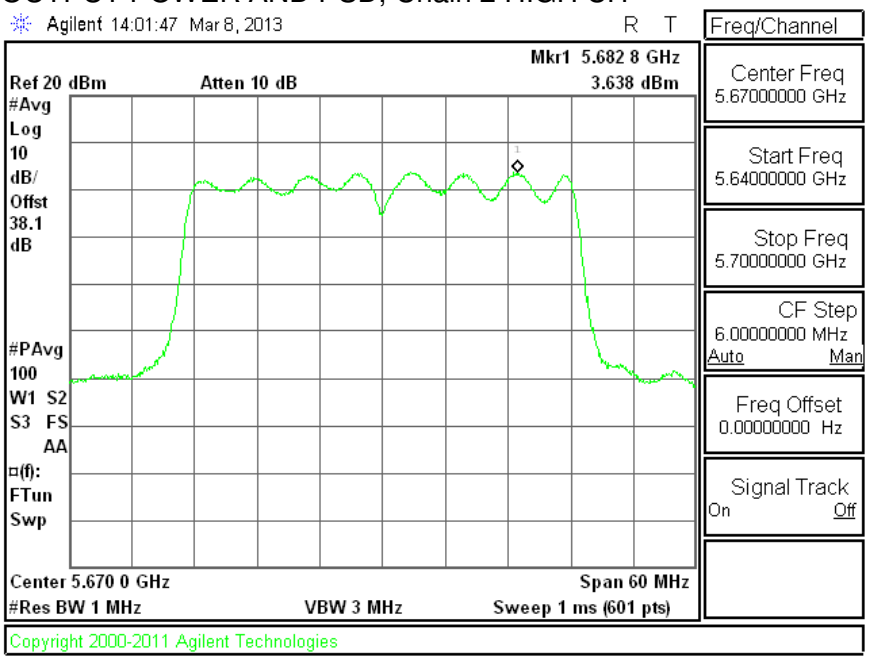
OUTPUT POWER AND PSD, Chain 2 HIGH CH



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8.60.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.61. 802.11n HT40 BF 3TX MODE IN THE 5.6 GHz BAND

Covered by testing HT40 CDD 3TX mode, the power per chain used for HT40 CDD 3TX mode is the same power per chain that will be used for HT40 BF 3TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.61.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	1.70	3.80	7.65

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)
Low	5510	39.33	36.0384	7.65
Mid	5550	39.50	36.1190	7.65
High	5670	39.50	36.1452	7.65

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Low	5510	22.35	24.00	30.00	22.35
Mid	5550	22.35	24.00	30.00	22.35
High	5670	22.35	24.00	30.00	22.35

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	14.50	14.80	14.60	19.41	22.35	-2.94
Mid	5550	16.00	16.20	16.10	20.87	22.35	-1.48
High	5670	16.00	16.25	16.10	20.89	22.35	-1.46

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8.62. 802.11n HT40 STBC 3TX MODE IN THE 5.6 GHz BAND

8.62.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5510	39.67	39.33	39.83
Mid	5550	39.67	39.67	39.67
High	5670	39.67	39.50	39.67

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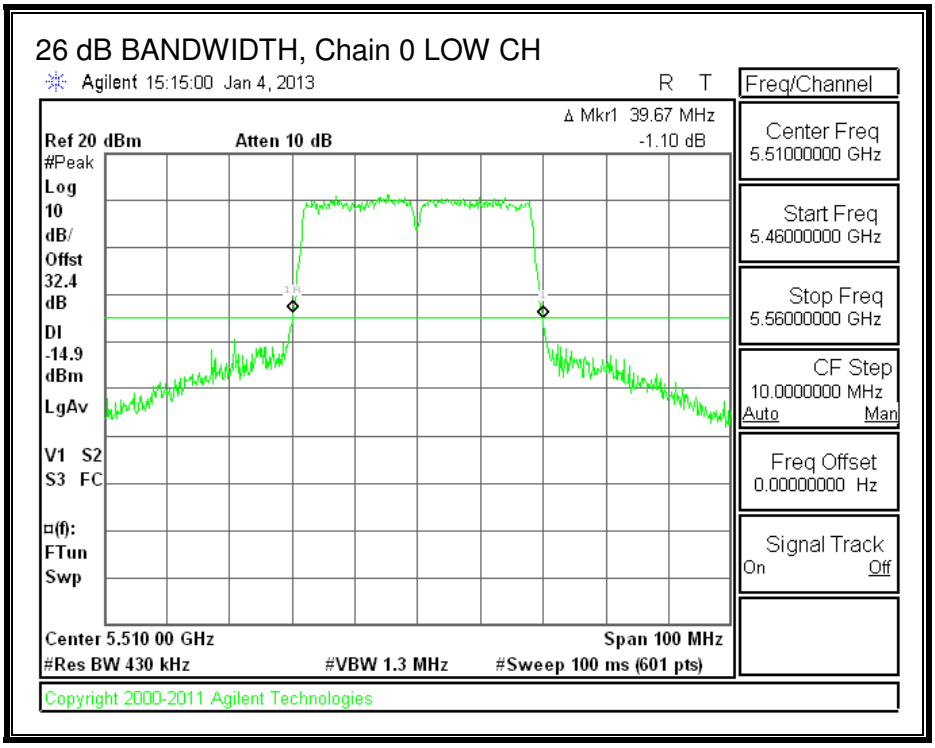
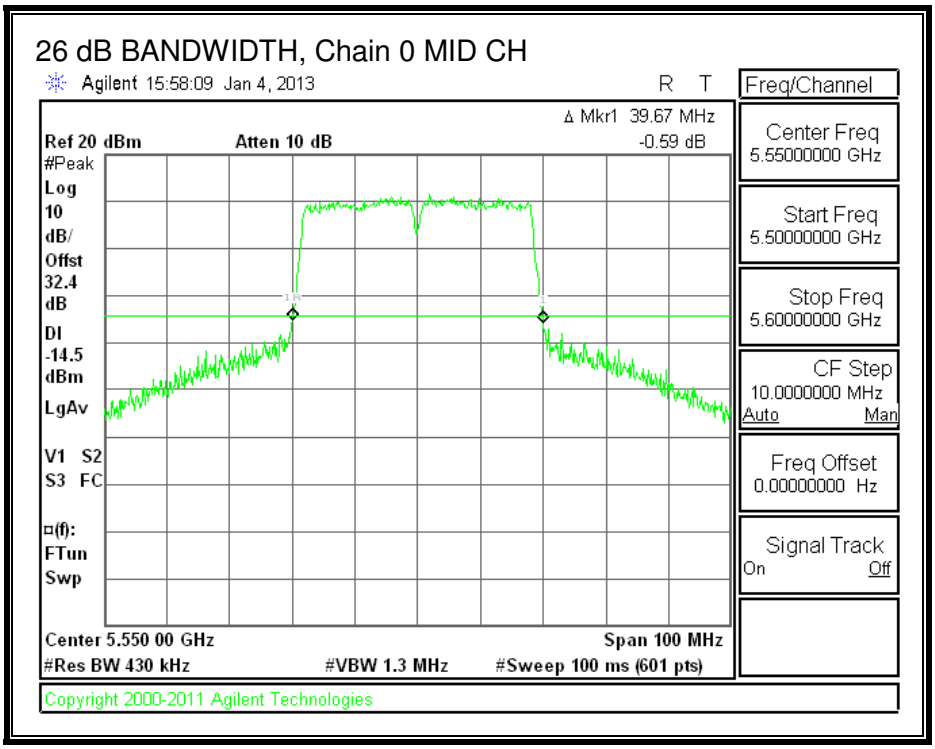
26 dB BANDWIDTH, Chain 0





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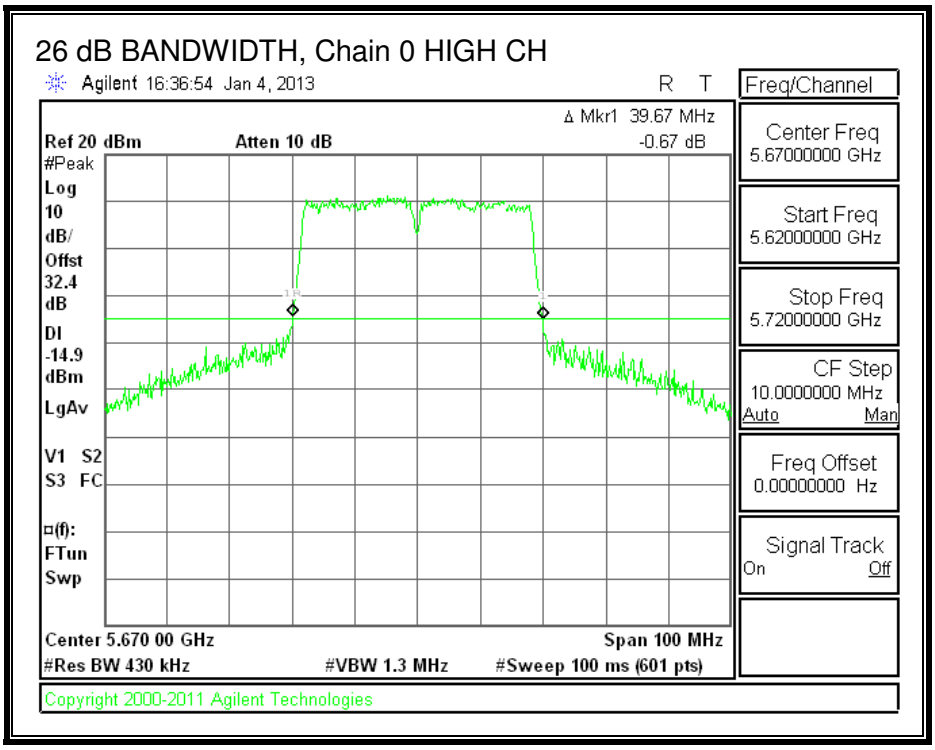
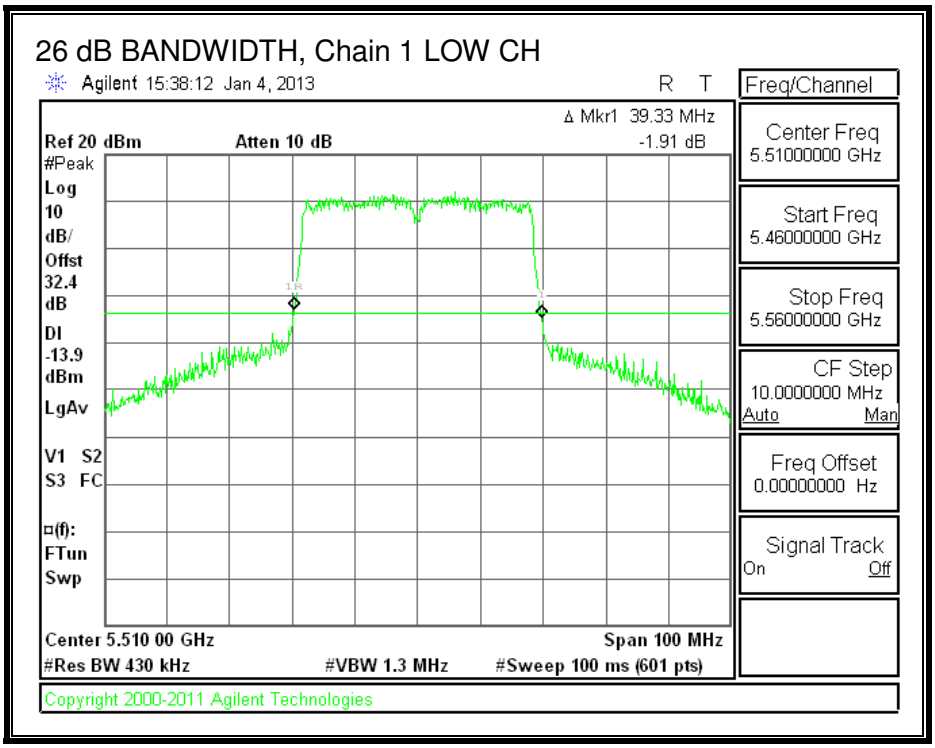


26 dB BANDWIDTH, Chain 1



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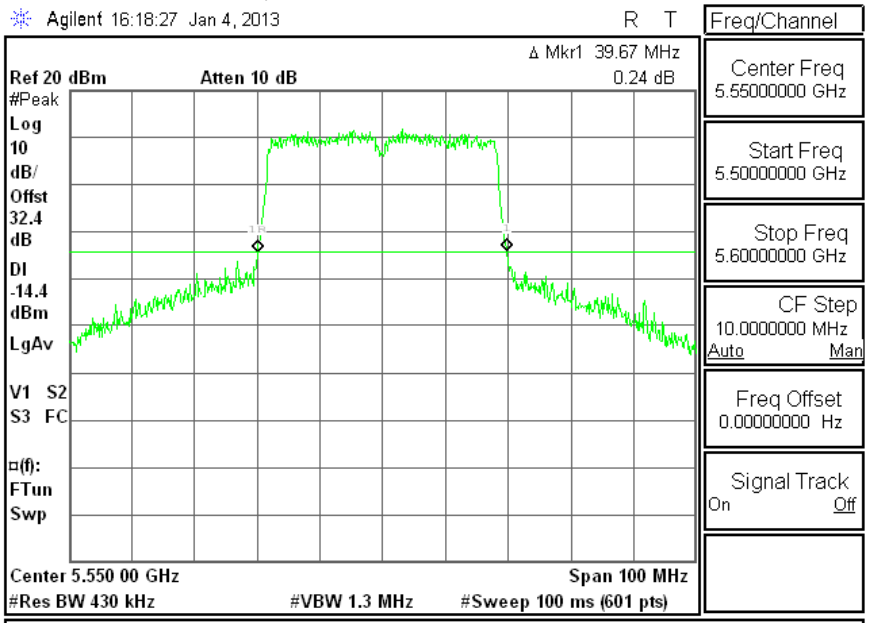
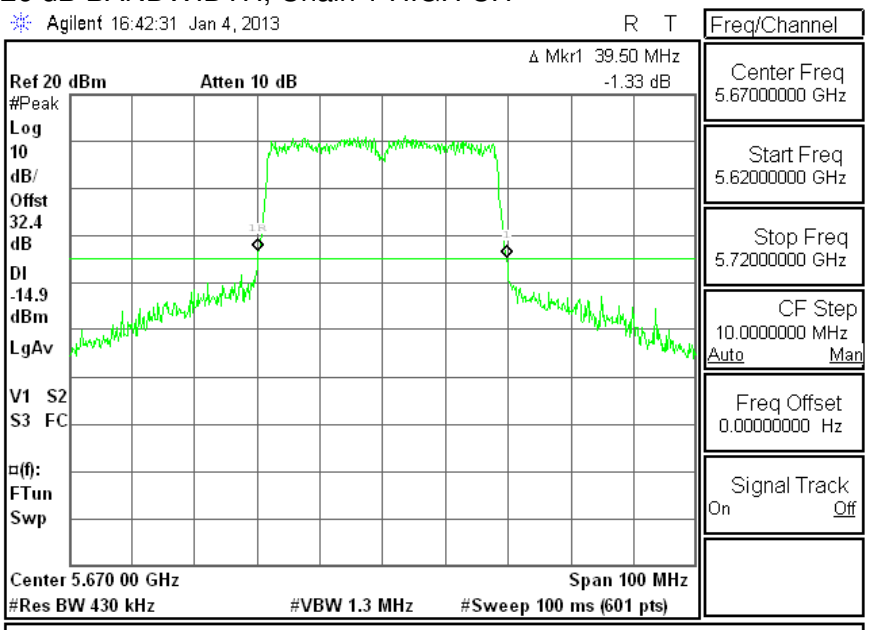
26 dB BANDWIDTH, Chain 1 MID CH



26 dB BANDWIDTH, Chain 1 HIGH CH



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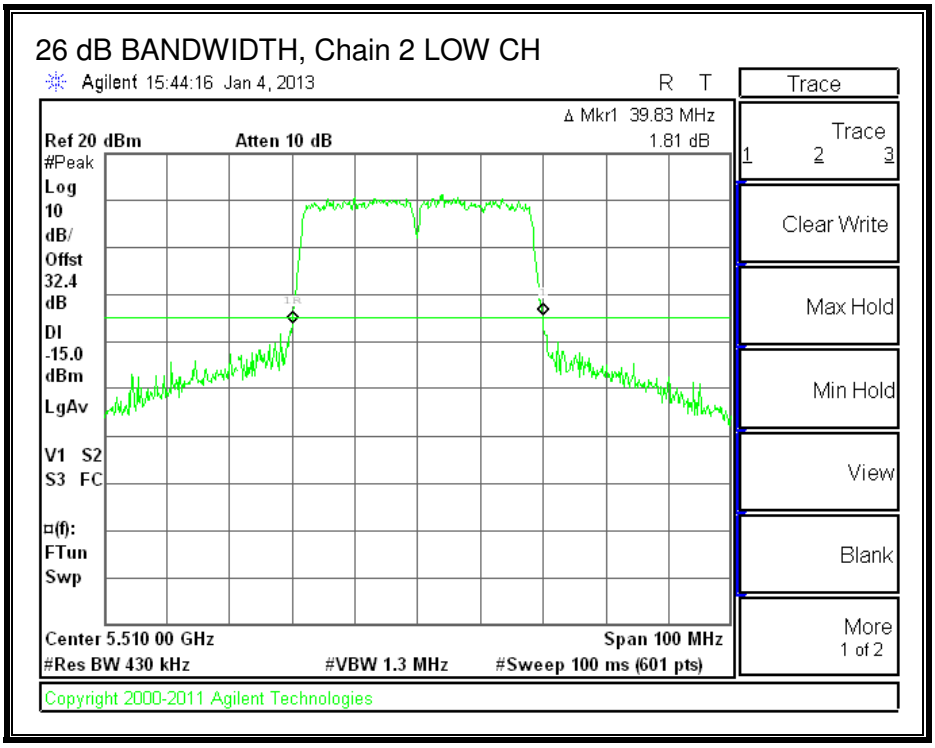
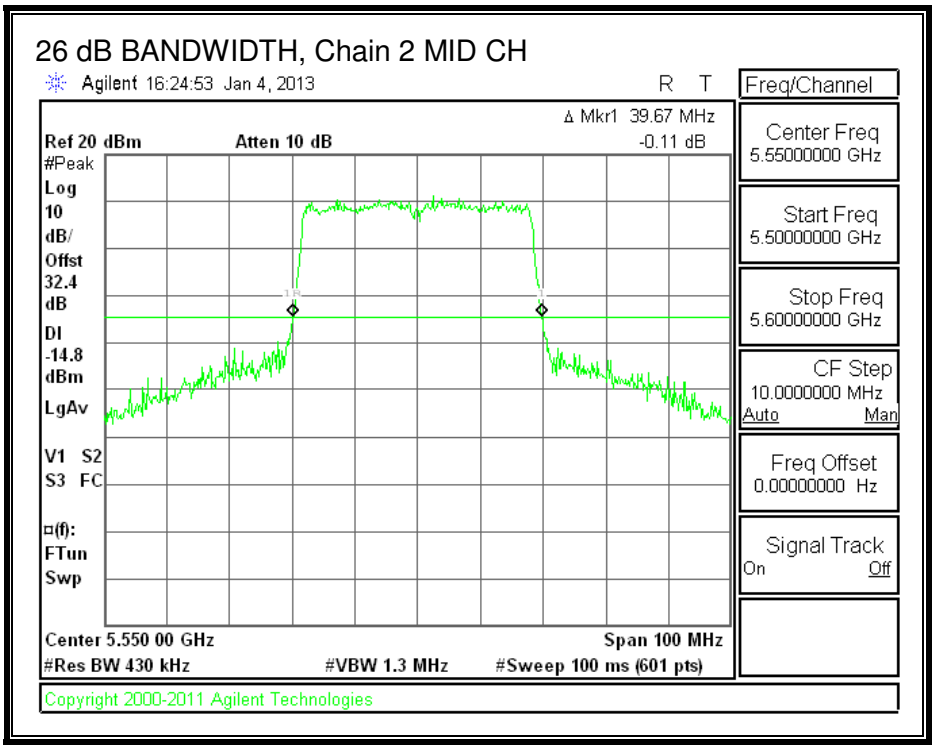
26 dB BANDWIDTH, Chain 2





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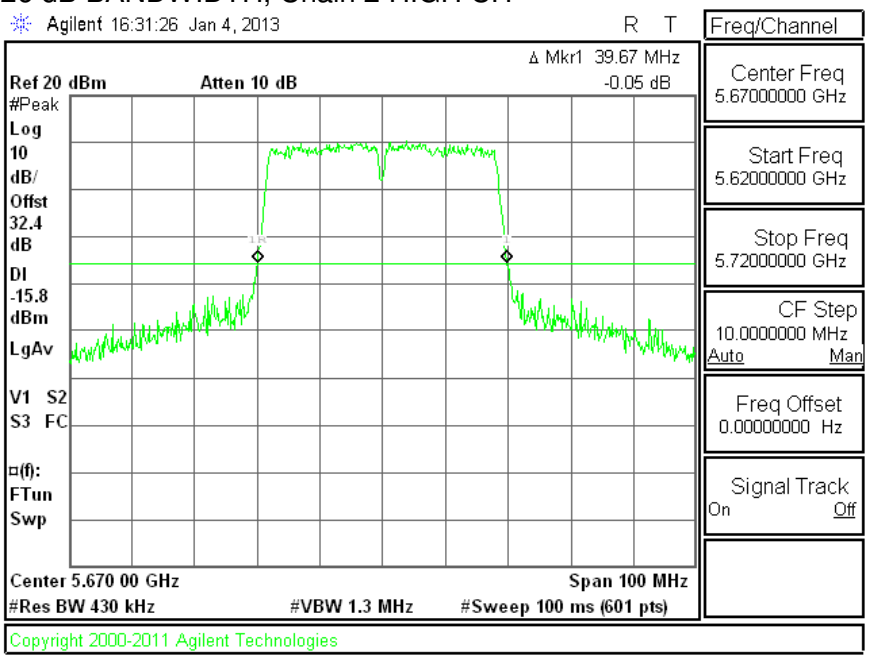
26 dB BANDWIDTH, Chain 2 HIGH CH



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8.62.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5510	36.1865	36.2085	36.2081
Mid	5550	36.1881	36.2459	36.2254
High	5670	36.1735	36.1821	36.2296

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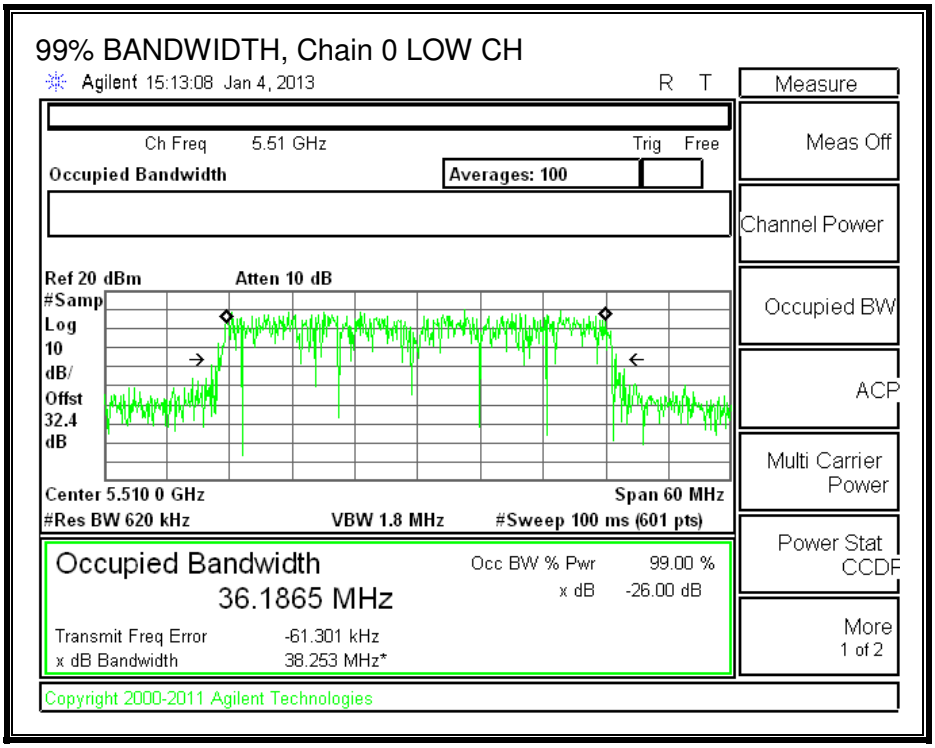
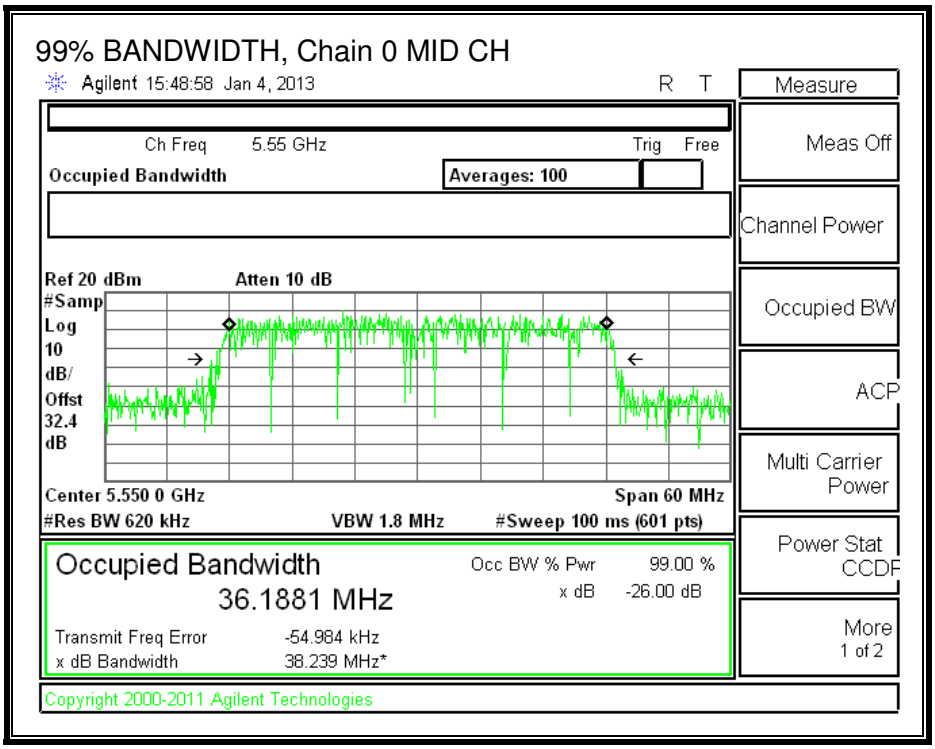
99% BANDWIDTH, Chain 0





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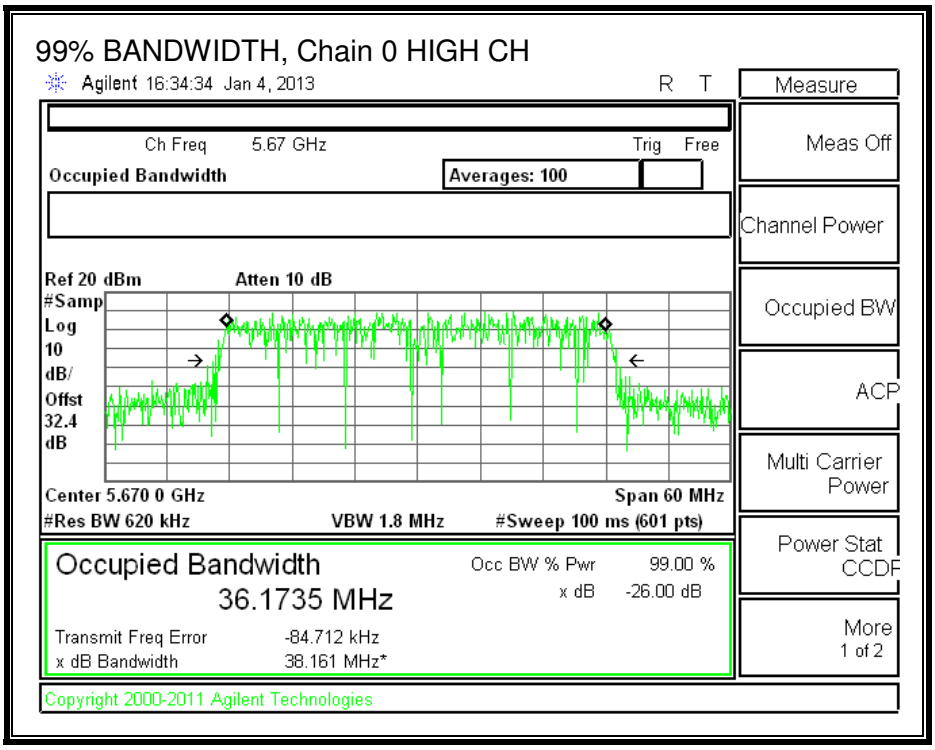
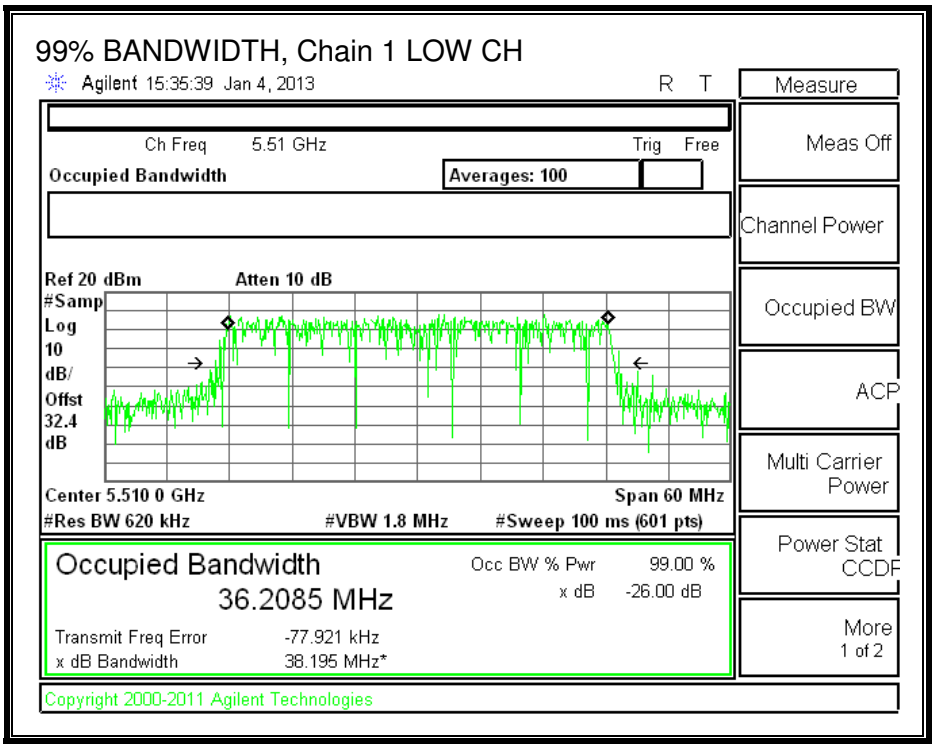


99% BANDWIDTH, Chain 1



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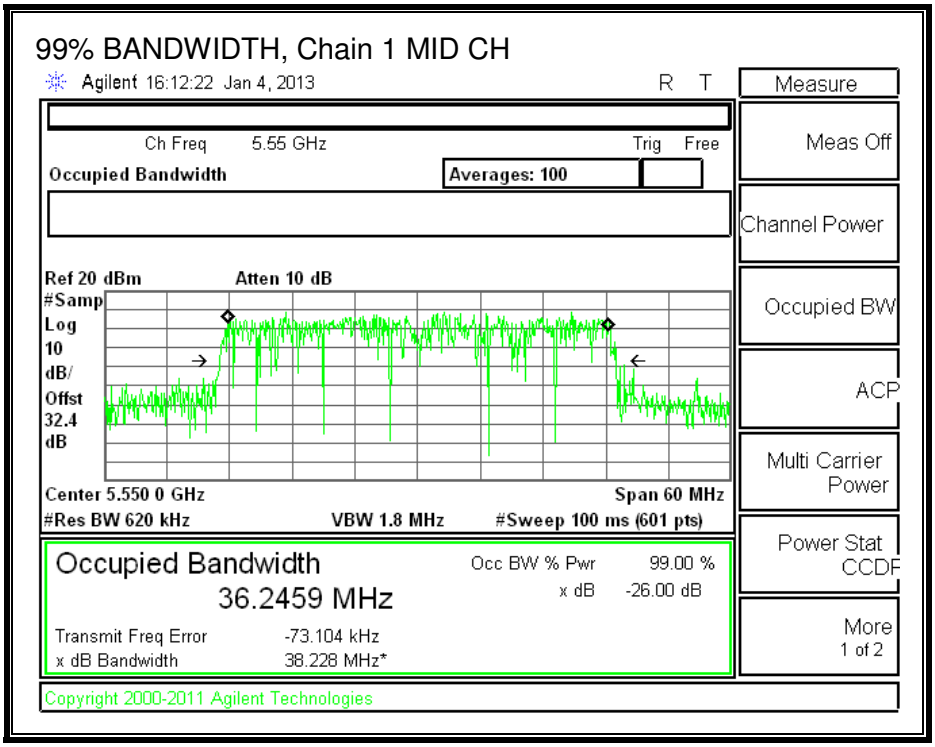

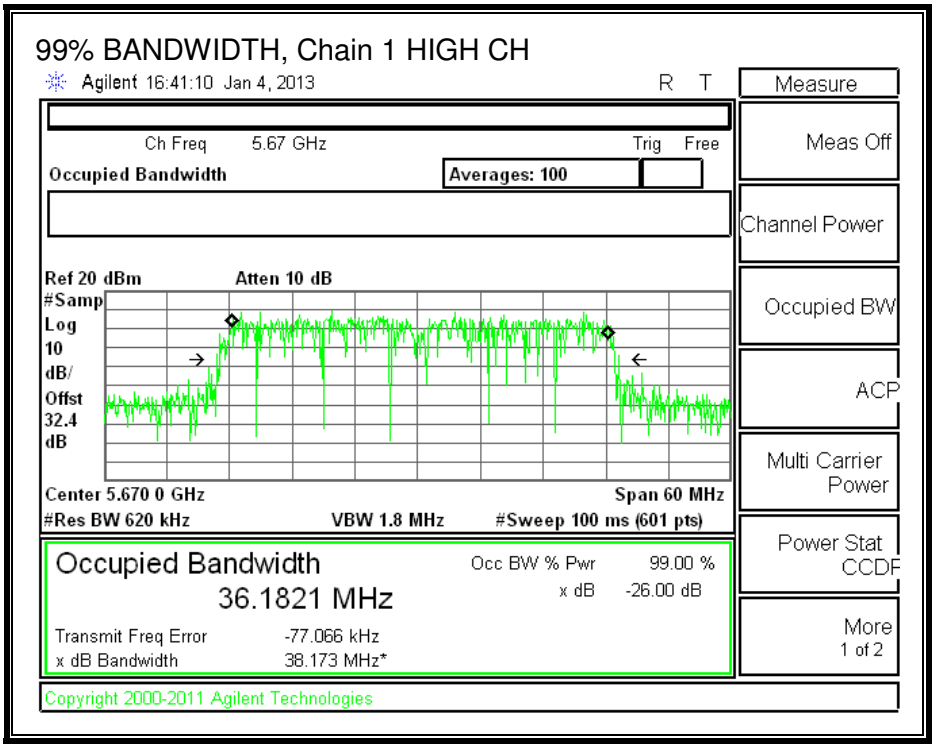

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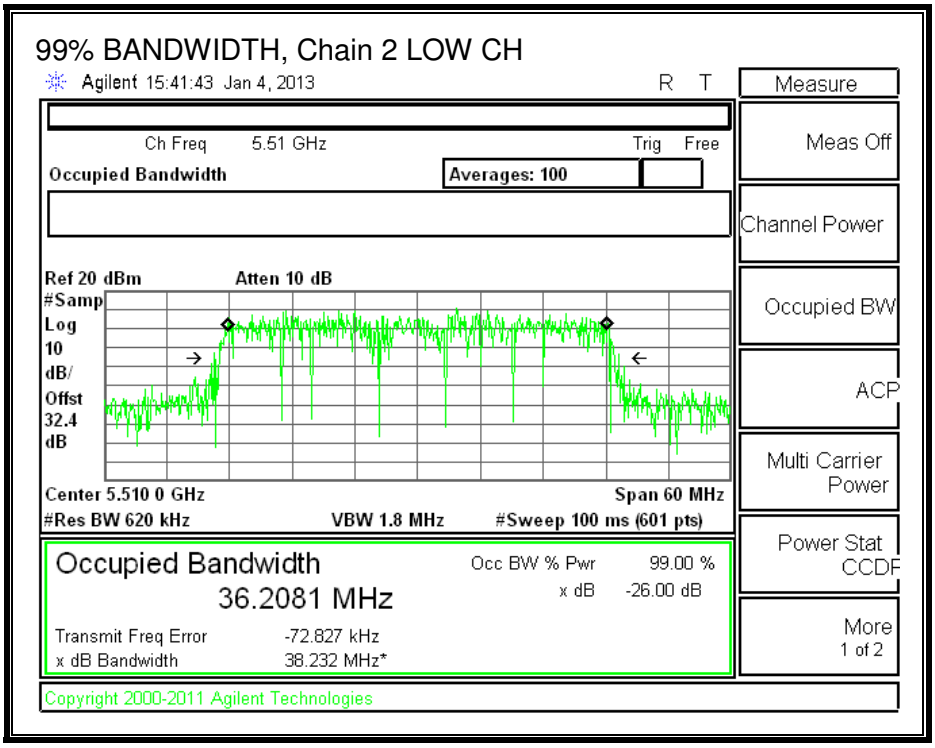
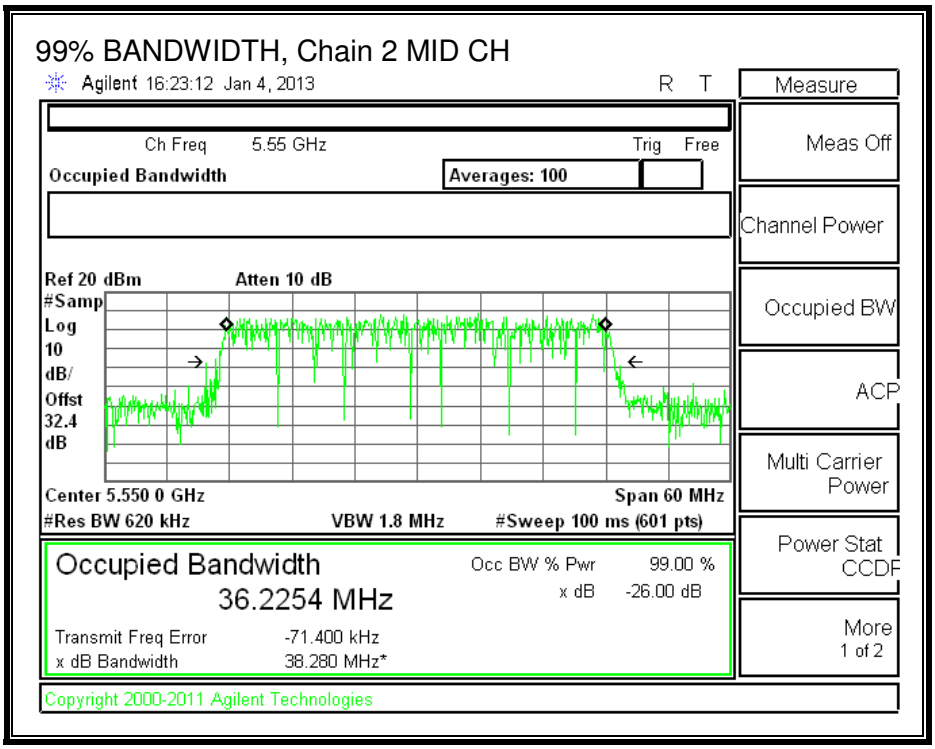
99% BANDWIDTH, Chain 2





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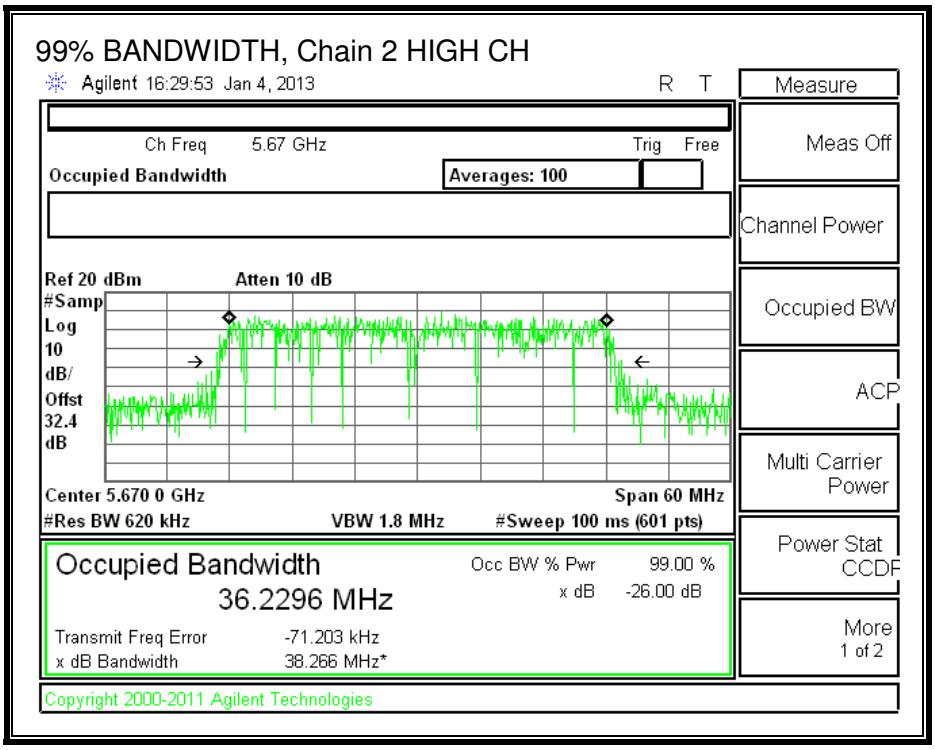

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8.62.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.00	1.70	3.80	2.92

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5510	39.33	36.1865	2.92
Mid	5550	39.67	36.1881	2.92
High	5670	39.50	36.1735	2.92

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5510	24.00	24.00	30.00	24.00	11.00	11.00	11.00
Mid	5550	24.00	24.00	30.00	24.00	11.00	11.00	11.00
High	5670	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	14.50	14.60	14.55	19.32	24.00	-4.68
Mid	5550	16.00	16.20	16.10	20.87	24.00	-3.13
High	5670	16.00	16.30	16.10	20.91	24.00	-3.09

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5510	4.21	4.72	4.05	9.11	11.00	-1.89
Mid	5550	4.61	4.65	4.15	9.25	11.00	-1.75
High	5670	4.56	4.47	4.22	9.19	11.00	-1.81

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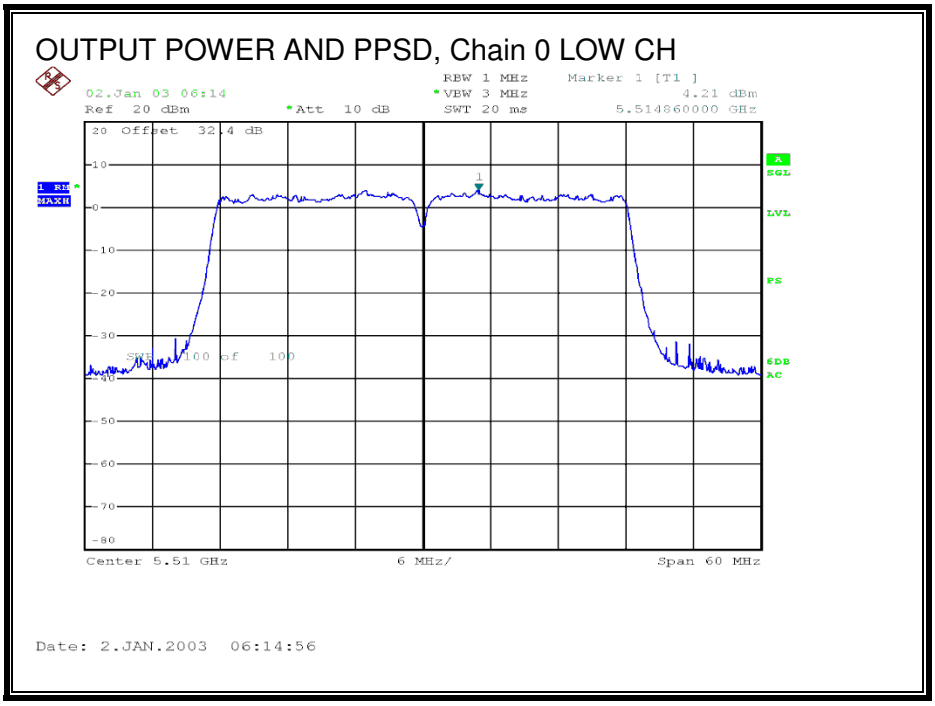
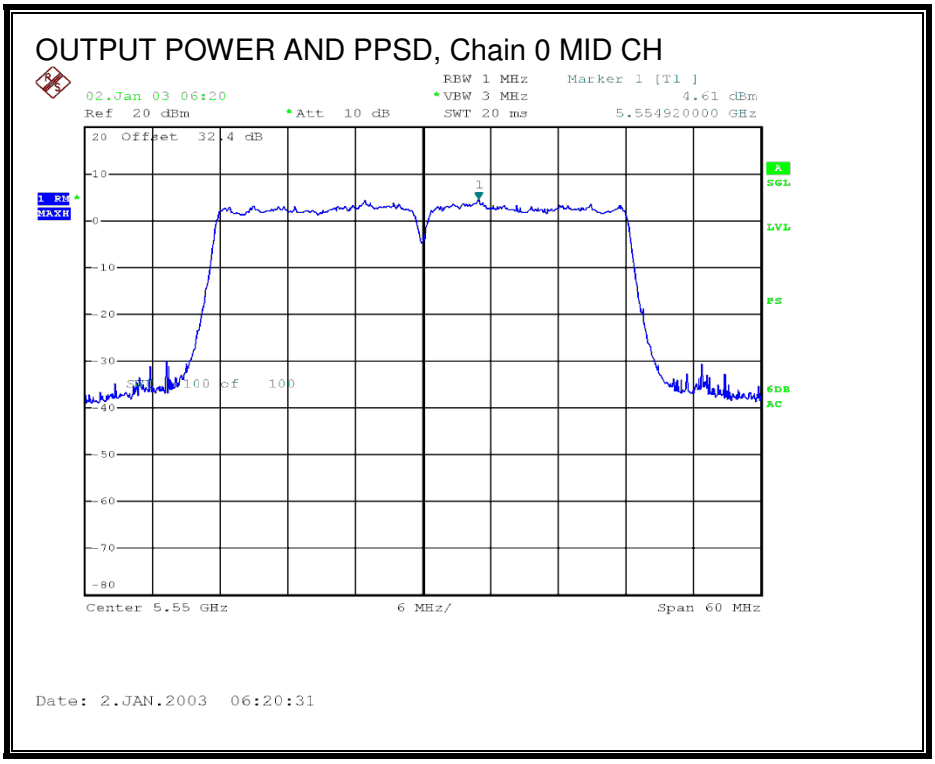
OUTPUT POWER AND PPSD, Chain 0





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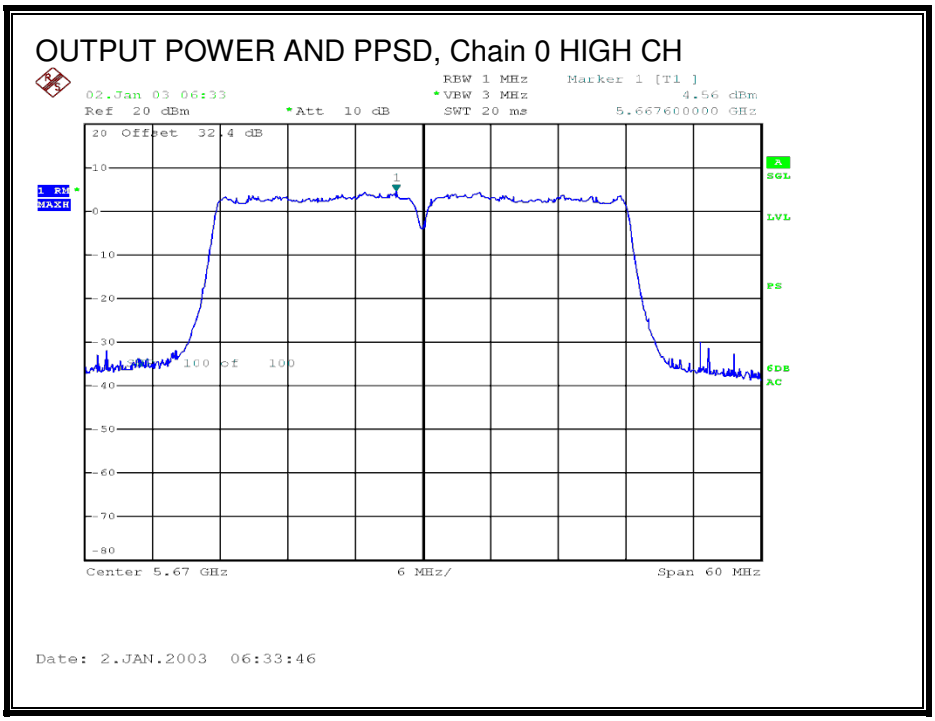
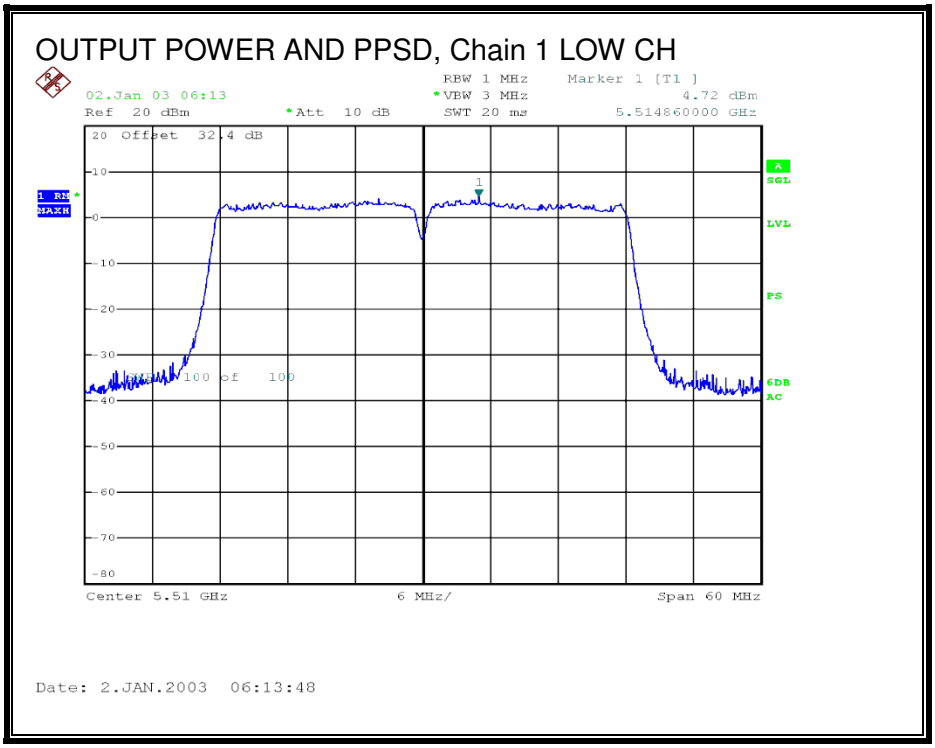


OUTPUT POWER AND PPSD, Chain 1



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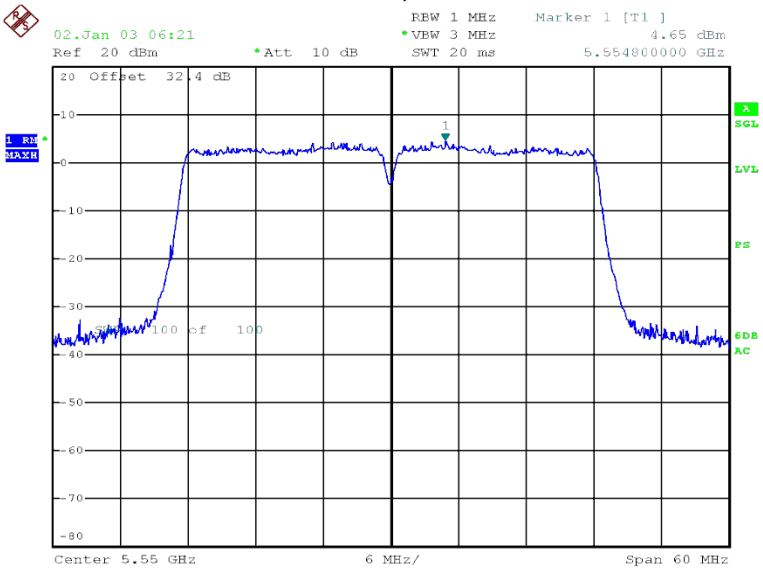
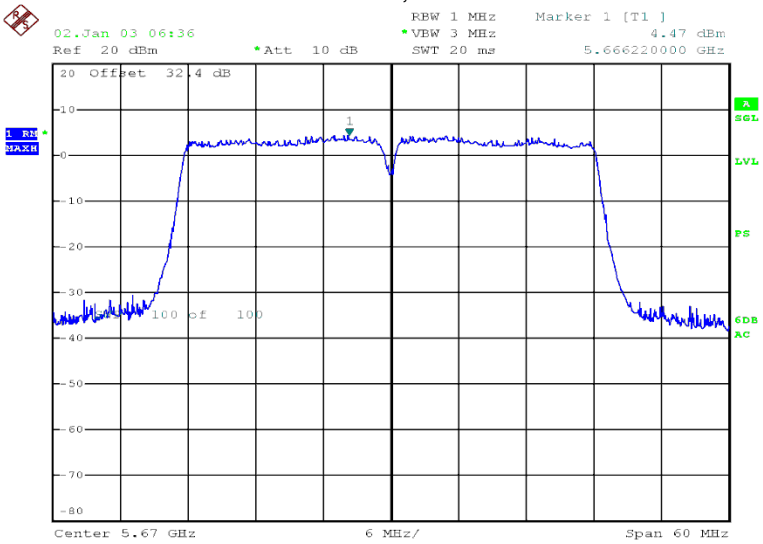
OUTPUT POWER AND PPSD, Chain 1 MID CH



Date: 2.JAN.2003 06:21:48

OUTPUT POWER AND PPSD, Chain 1 HIGH CH



Date: 2.JAN.2003 06:36:26

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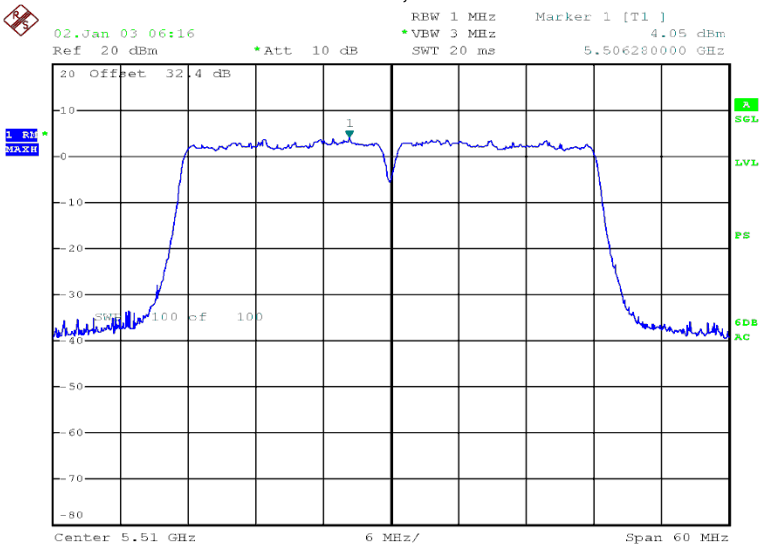
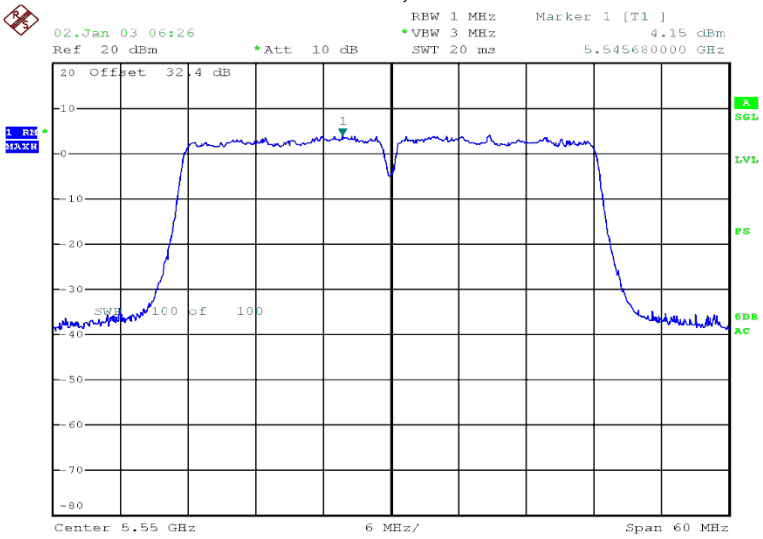
OUTPUT POWER AND PPSD, Chain 2

OUTPUT POWER AND PPSD, Chain 2 LOW CH



Date: 2.JAN.2003 06:16:53

OUTPUT POWER AND PPSD, Chain 2 MID CH



Date: 2.JAN.2003 06:26:19

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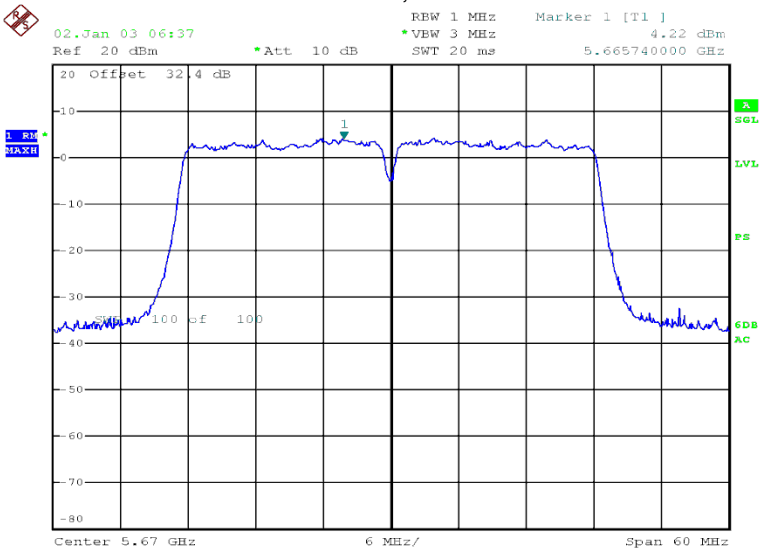
OUTPUT POWER AND PPSD, Chain 2 HIGH CH



Date: 2.JAN.2003 06:37:35

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8.62.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.63. 802.11n HT40 1TX MODE, CH 142 (5710 MHz), 5.6 GHz BAND

8.63.1. 26 dB BANDWIDTH

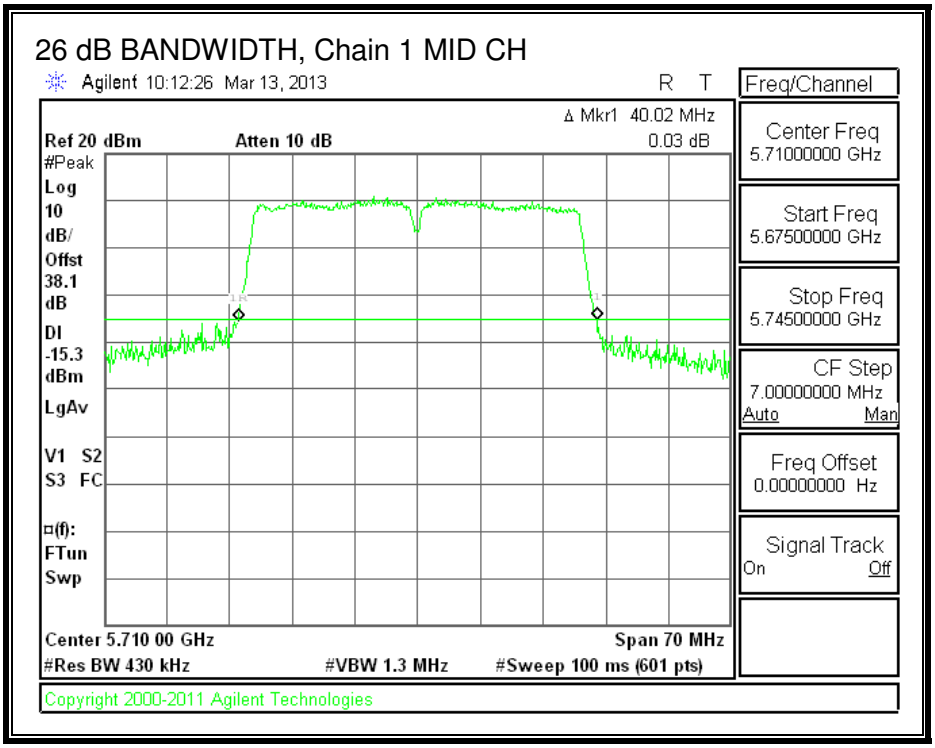
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 1 (MHz)
Mid	5710	40.02

26 dB BANDWIDTH, Chain 1



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8.63.2.99% BANDWIDTH

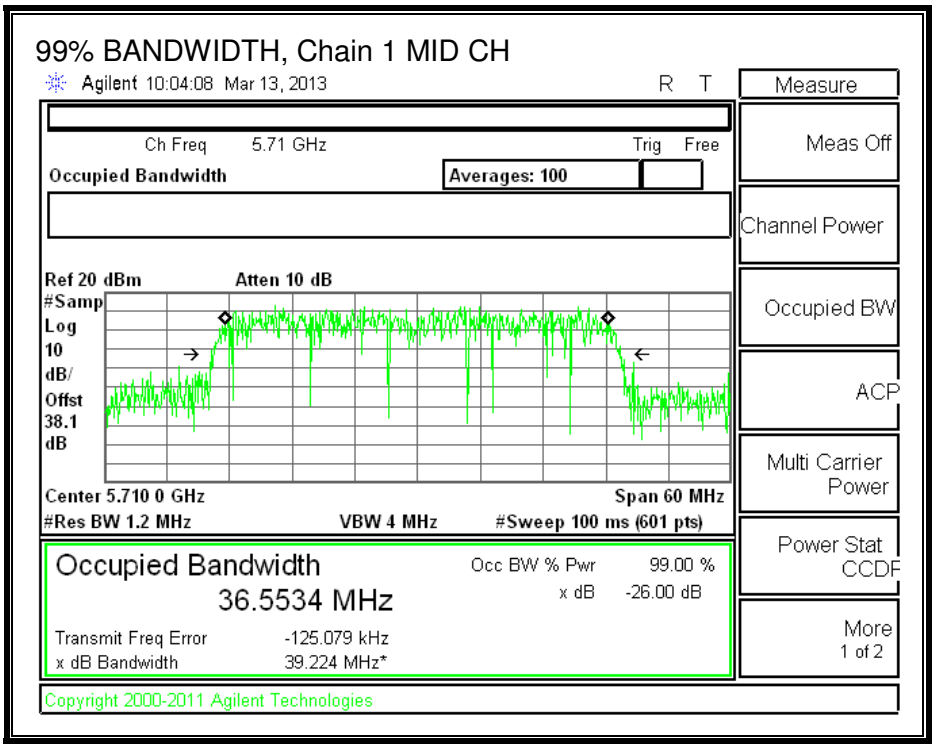
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 1 (MHz)
Mid	5710	36.5534

99% BANDWIDTH, Chain 1



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8.63.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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RESULTS

Limits (FCC), portion in UNII 2 ext band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Antenna Gain (dBi)
Mid	5710	34.7	33.1038	4.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5710	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	23.12	23.12	24.00	-0.88

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5710	9.091	9.091	11.00	-1.91

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Antenna Gain (dBi)
Mid	5710	4.7	3.1851	4.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5710	17.68	16.03	22.03	16.03	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	12.56	12.56	16.03	-3.47

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5710	7.784	7.784	11.00	-3.22

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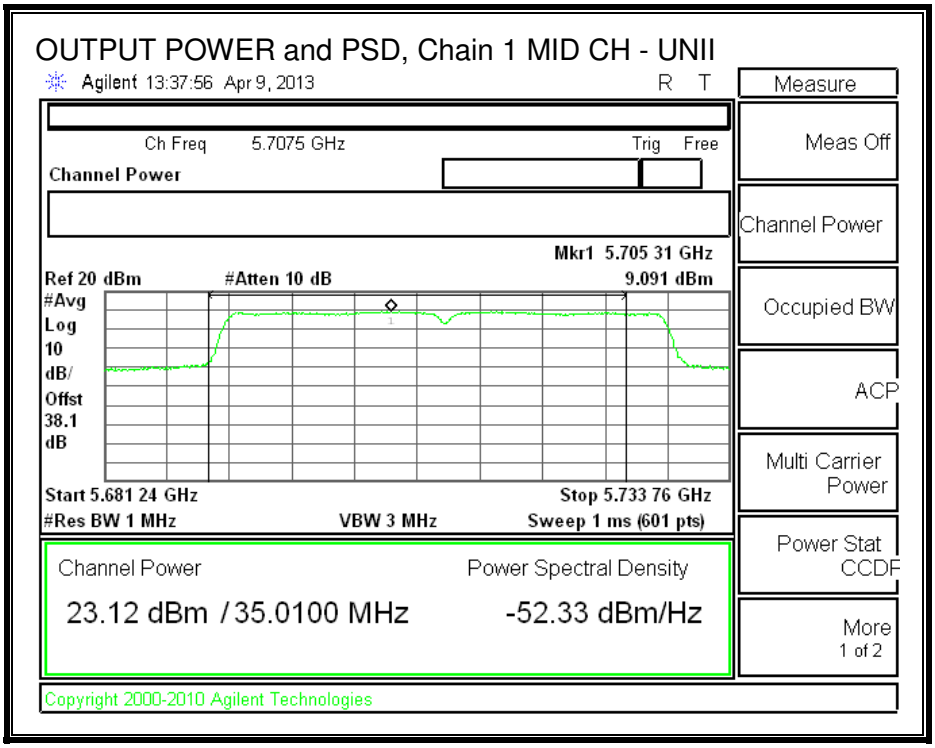
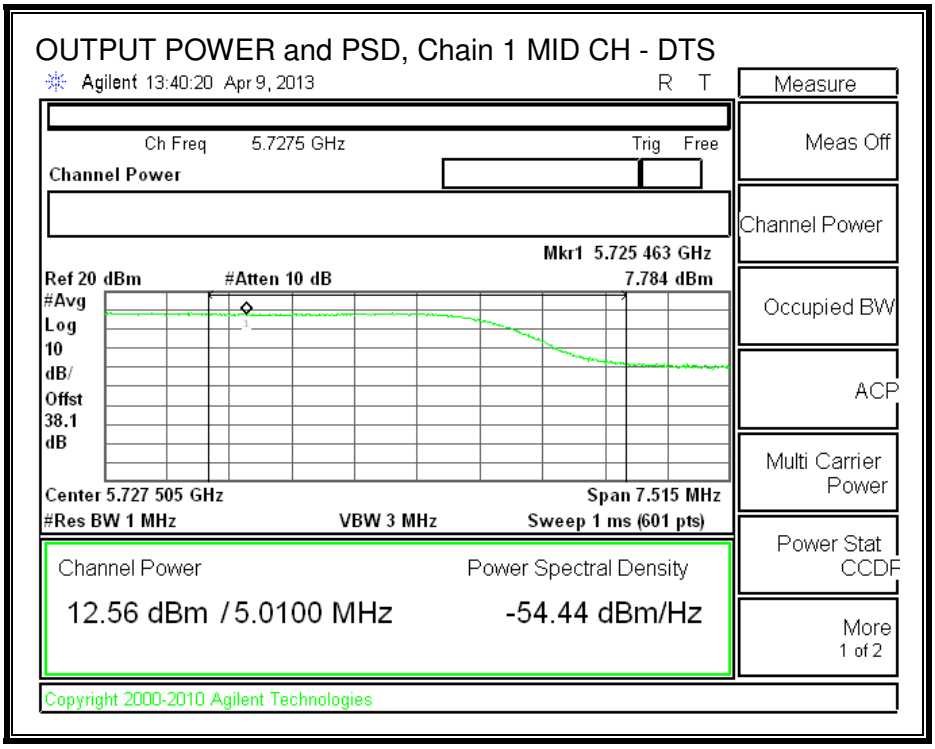
OUTPUT POWER and PSD, Chain 1





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8.63.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

EIRP is less than the threshold value of 500 mW; therefore, TPC is not required.

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8.64. 802.11n HT40 CDD 2TX MODE, CH 142 (5710 MHz), 5.6 GHz BAND

8.64.1.26 dB BANDWIDTH

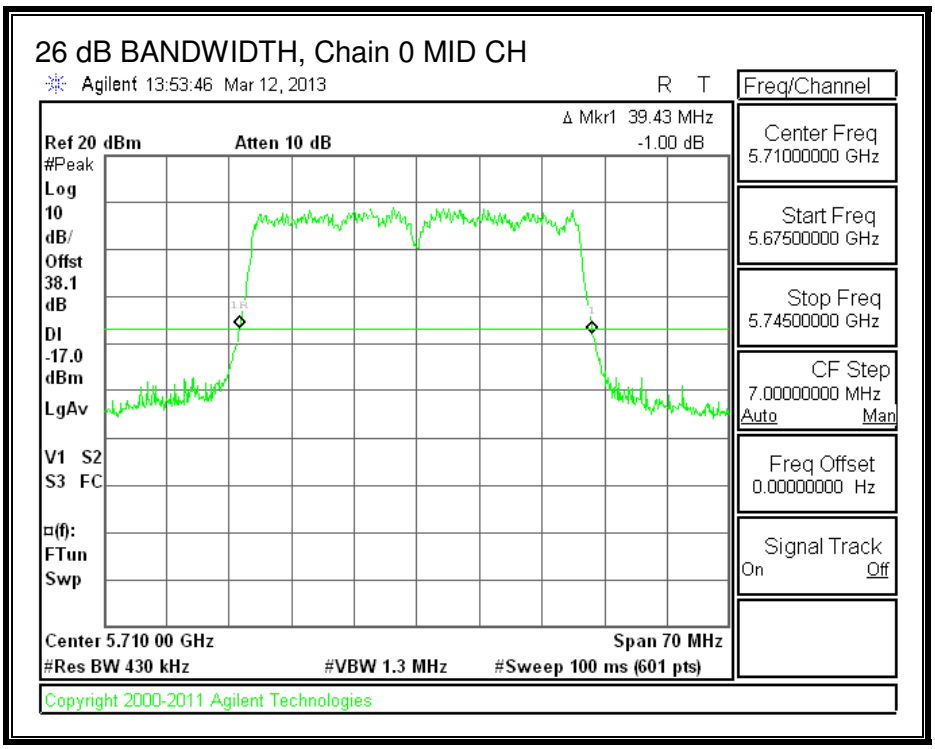
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Mid	5710	39.43	39.32

26 dB BANDWIDTH, Chain 0



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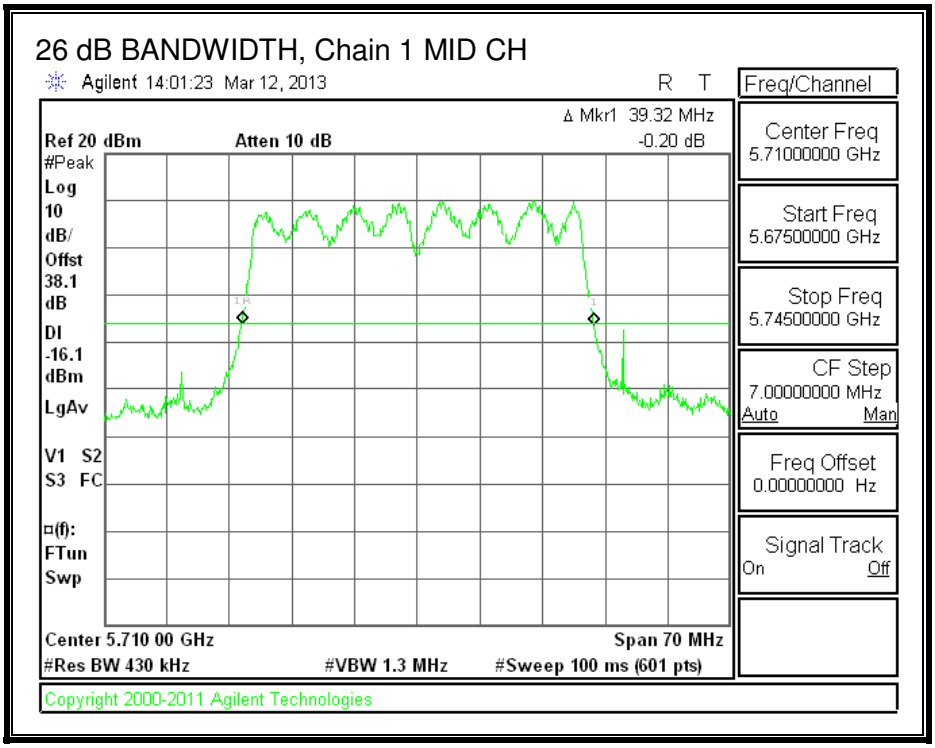
26 dB BANDWIDTH, Chain 1



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8.64.2.99% BANDWIDTH

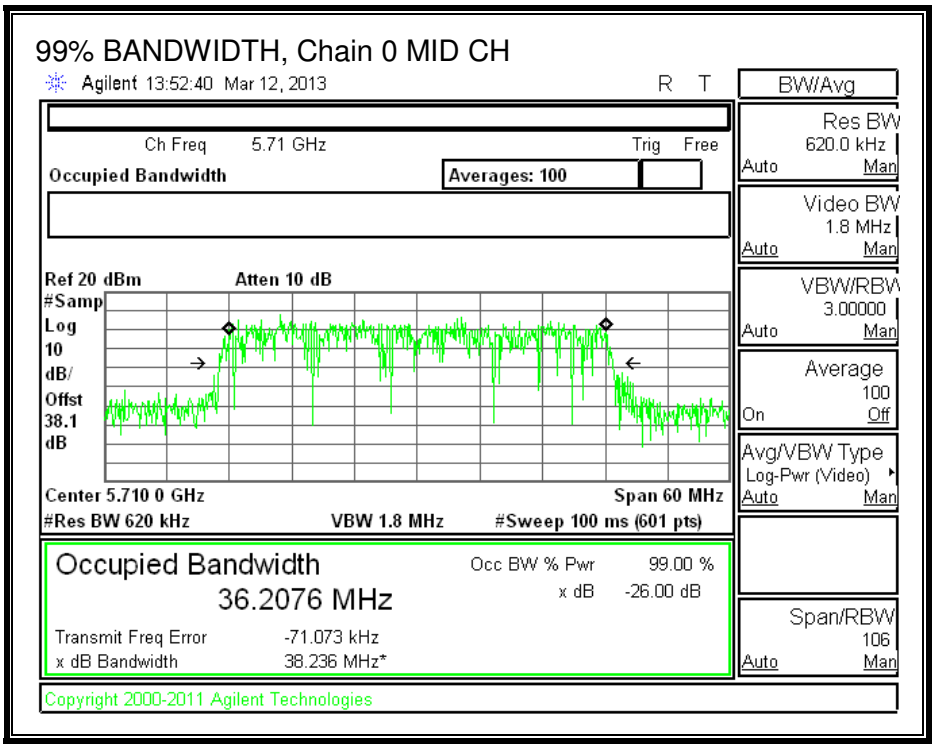
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Mid	5710	36.2076	36.3701

99% BANDWIDTH, Chain 0



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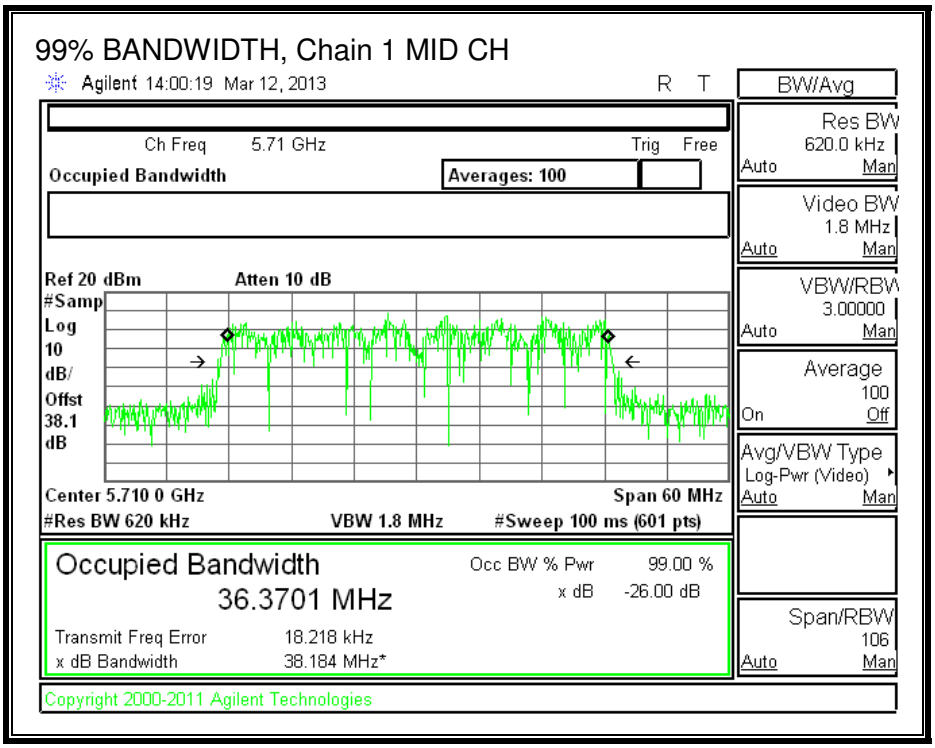
99% BANDWIDTH, Chain 1



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8.64.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.00	3.80	3.42

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	3.80	6.42

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RESULTS

Limits (FCC), portion in UNII 2 ext band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)	Uncorrelated Gain (dBi)
Mid	5710	34.7	33.1038	6.42	3.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5710	24.00	24.00	30.00	24.00	10.58	11.00	10.58

Duty Cycle CF (dB)	0.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	19.35	19.15	22.26	24.00	-1.74

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5710	5.865	6.226	9.06	10.58	-1.52

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)	Uncorrelated Gain (dBi)
Mid	5710	4.7	3.1851	6.42	3.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5710	17.68	16.03	22.03	16.03	10.58	11.00	10.58

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	8.46	9.40	11.97	16.03	-4.07

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5710	4.152	4.950	7.58	10.58	-3.00

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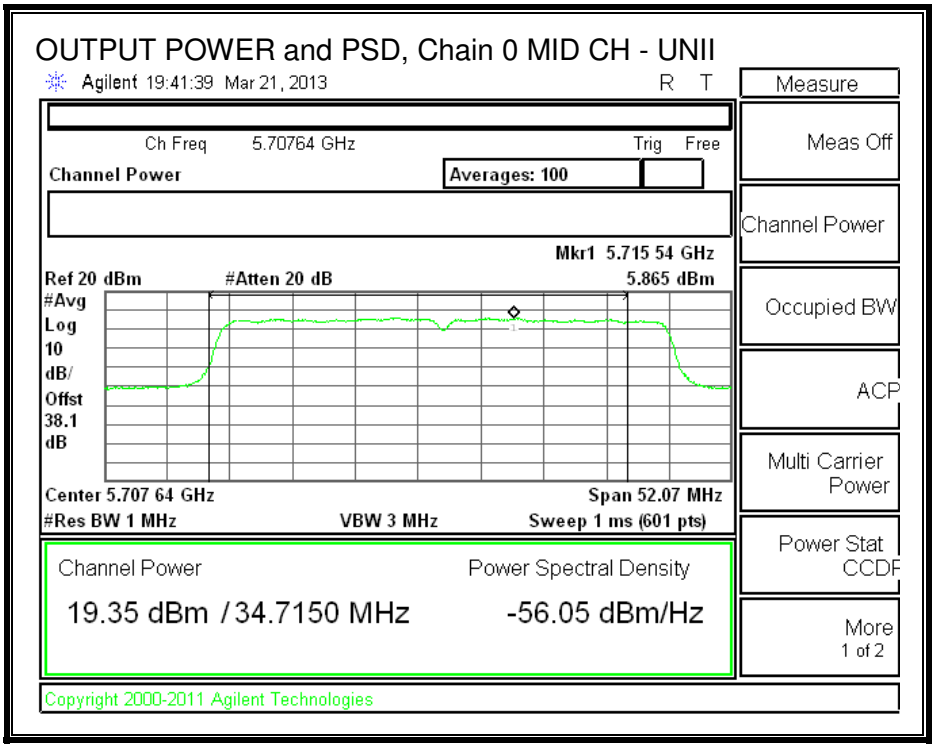
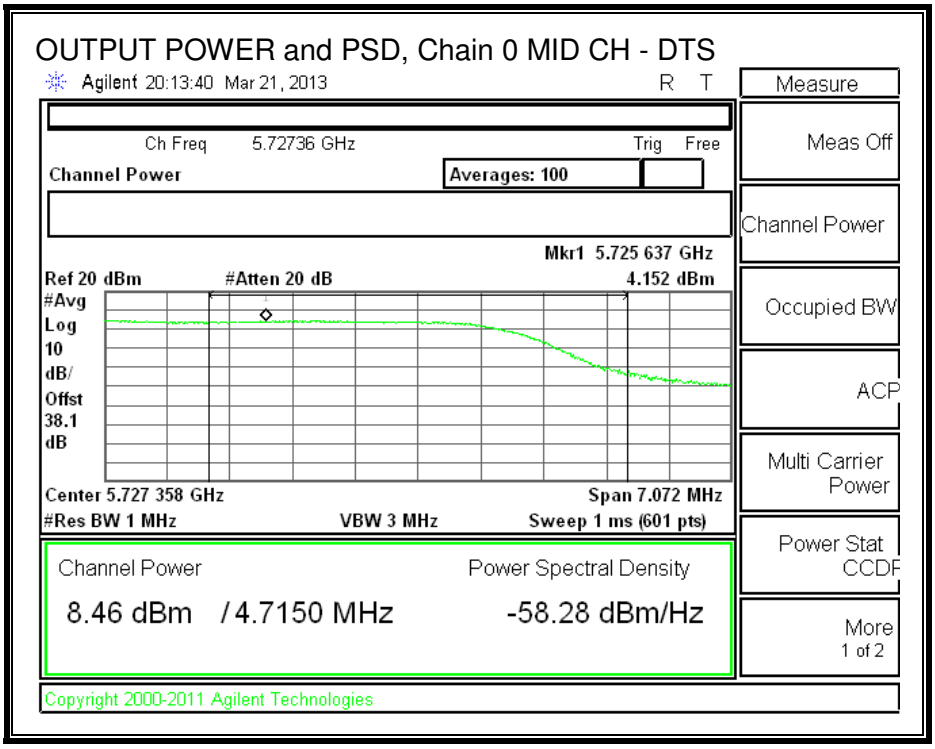
OUTPUT POWER and PSD, Chain 0





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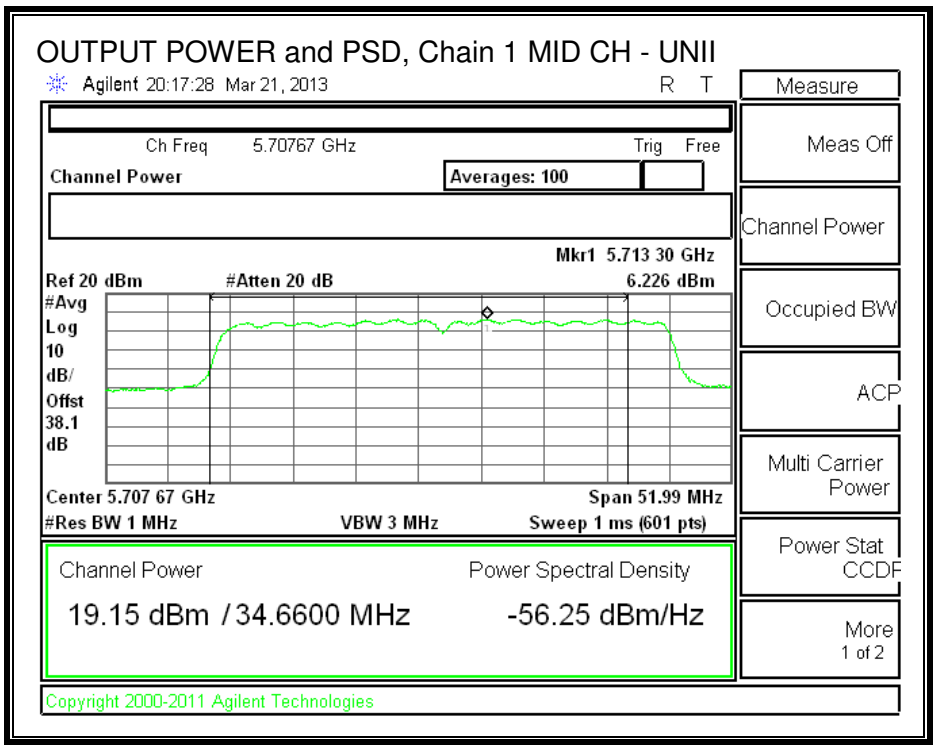
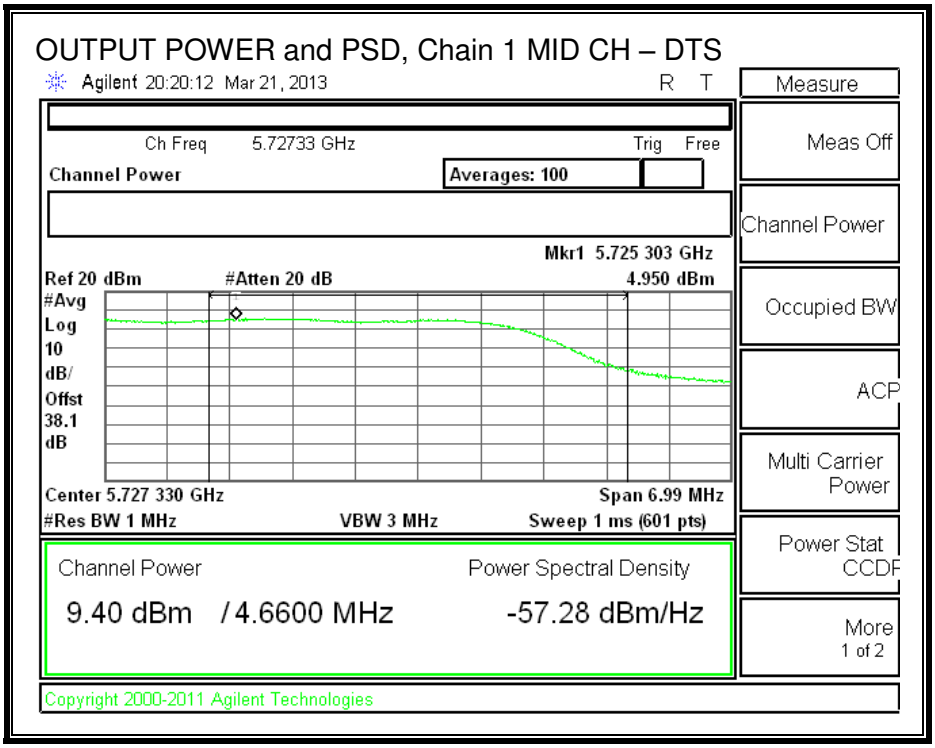
OUTPUT POWER and PSD, Chain 1





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8.64.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.65. 802.11n HT40 BF 2TX MODE, CH142 (5710 MHz), 5.6 GHz BAND

Covered by testing HT40 CDD 2TX mode, the power per chain used for HT40 CDD 2TX mode is the same power per chain that will be used for HT40 BF 2TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.65.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	3.80	6.42

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RESULTS

Limits (FCC), portion in UNII 2 ext band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)
Mid	5710	34.7	33.1038	6.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Mid	5710	23.58	24.00	30.00	23.58

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	19.36	19.15	22.27	23.58	-1.31

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)
Mid	5710	4.7	3.1851	6.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Mid	5710	17.26	16.03	22.03	15.61

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	8.46	9.40	11.97	15.61	-3.65

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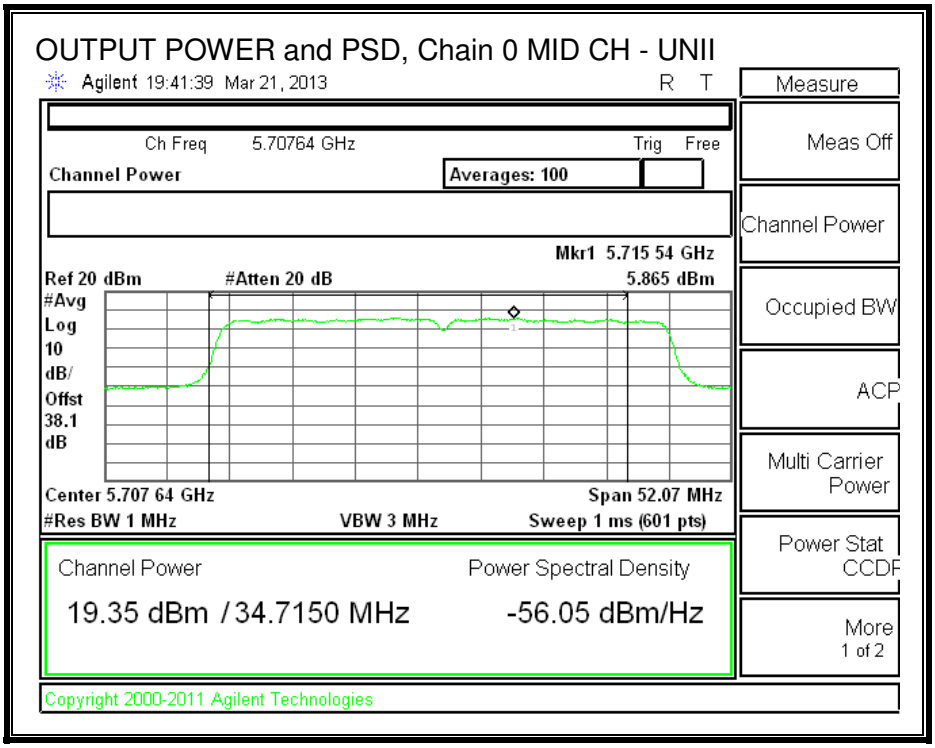
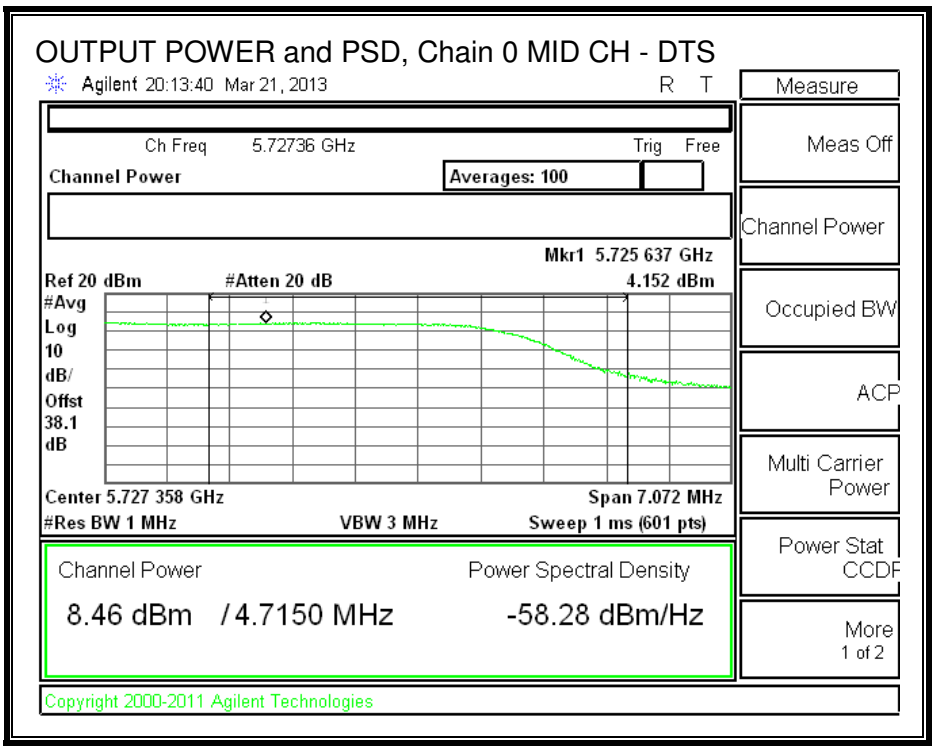
OUTPUT POWER and PSD, Chain 0





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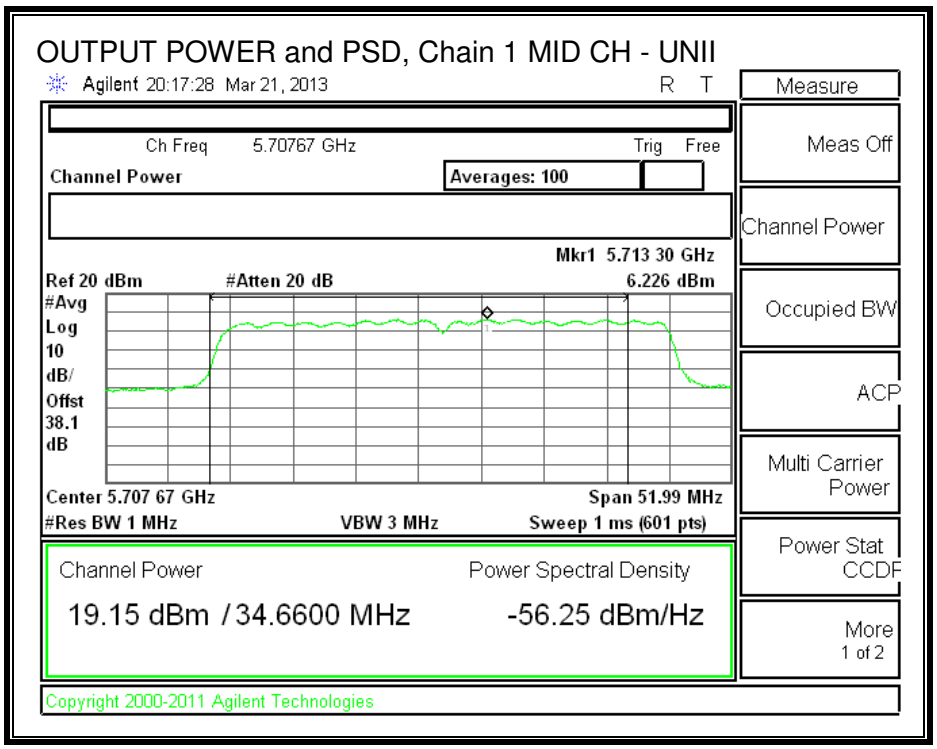
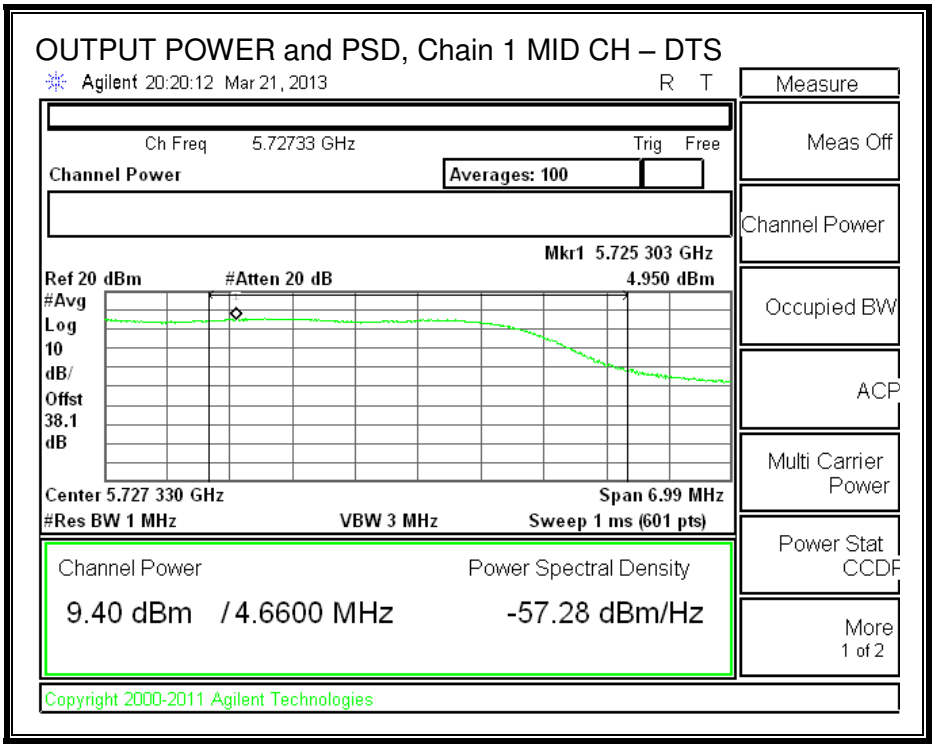
OUTPUT POWER and PSD, Chain 1





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8.66. 802.11n HT40 STBC 2TX MODE, CH142 (5710 MHz), 5.6 GHz BAND

8.66.1.26 dB BANDWIDTH

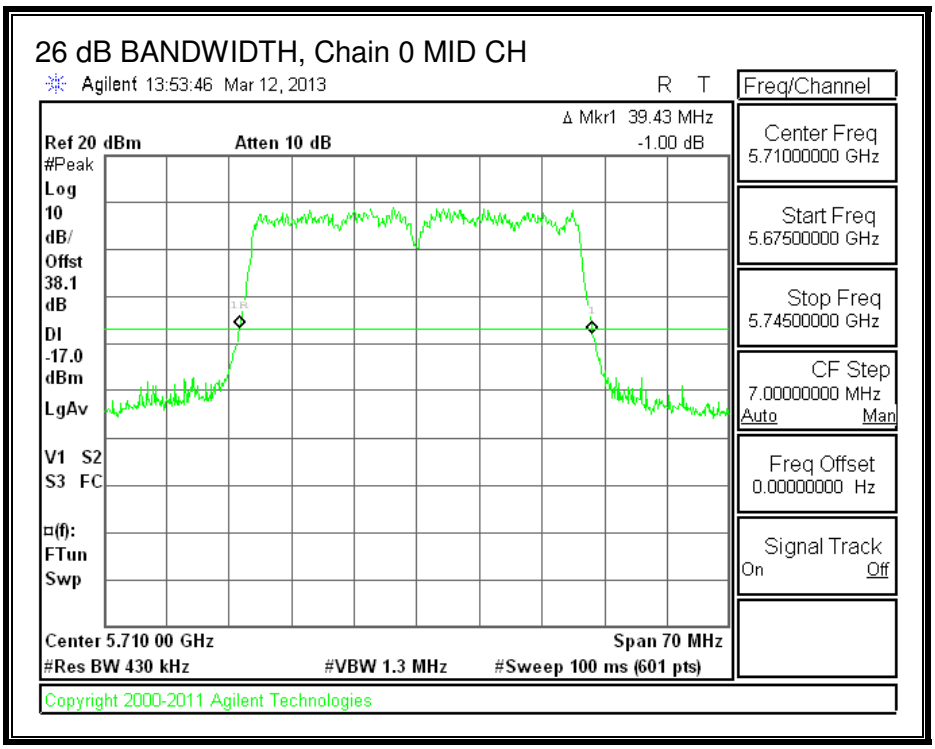
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Mid	5710	39.43	39.32

26 dB BANDWIDTH, Chain 0



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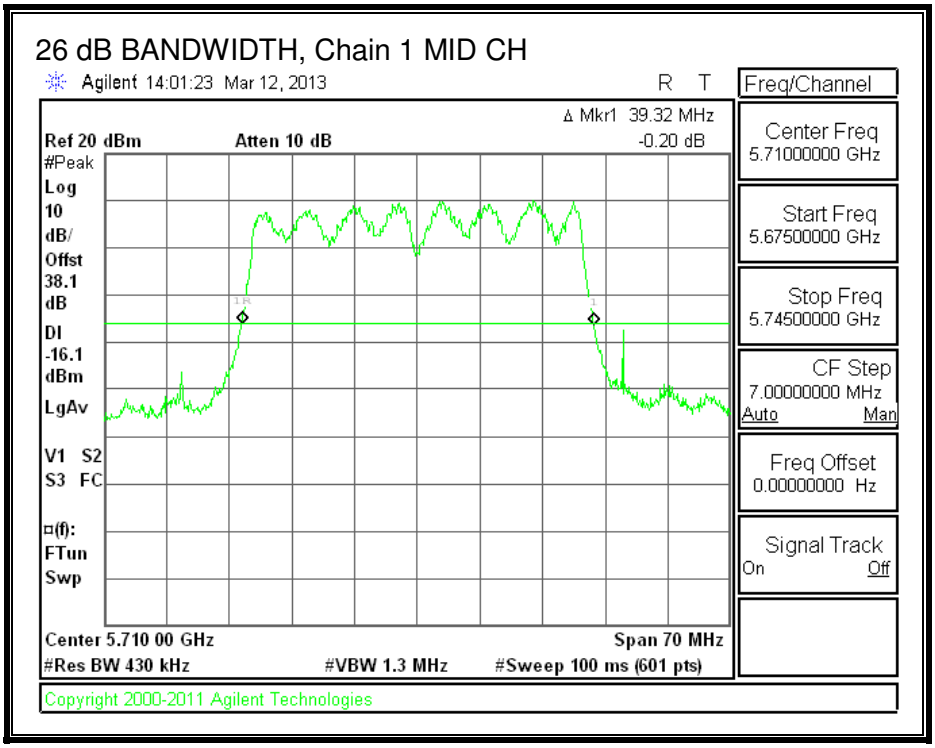
26 dB BANDWIDTH, Chain 1



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8.66.2.99% BANDWIDTH

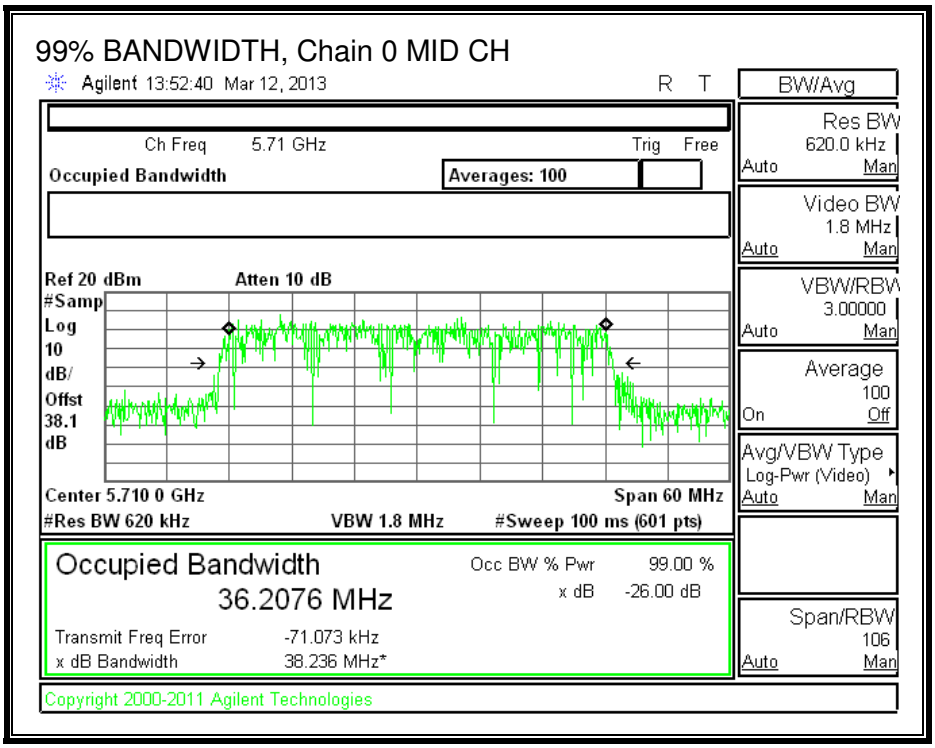
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Mid	5710	36.2076	36.3701

99% BANDWIDTH, Chain 0



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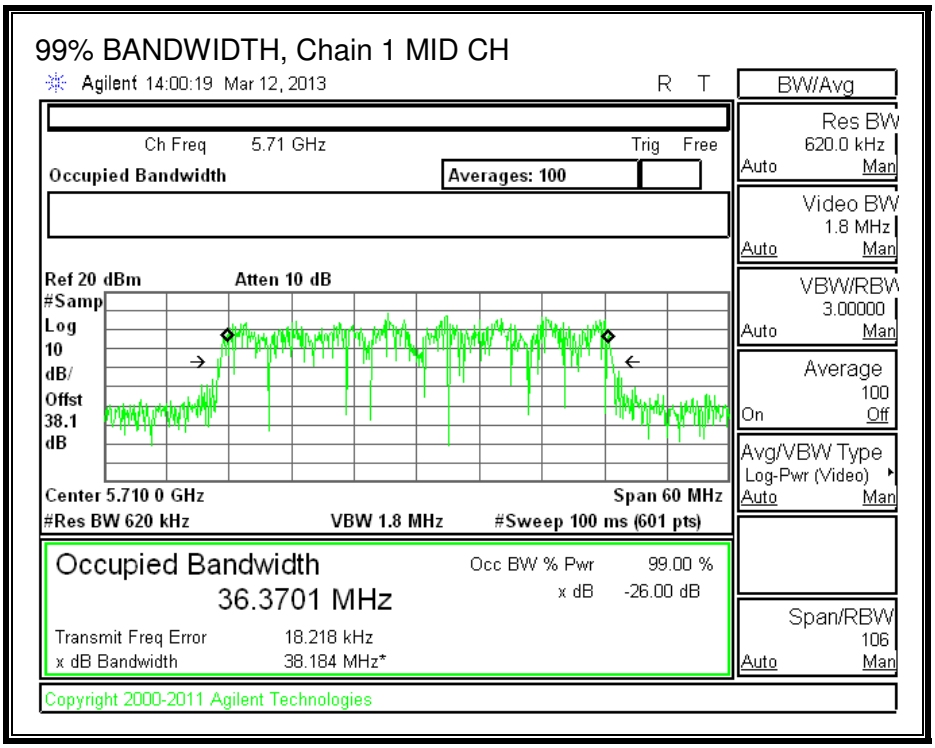
99% BANDWIDTH, Chain 1



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8.66.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.00	3.80	3.42

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RESULTS

Limits (FCC), portion in UNII 2 ext band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)		Uncorrelated Gain (dBi)
Mid	5710	34.7	33.1038		3.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5710	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	20.36	20.68	23.53	24.00	-0.47

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5710	5.024	7.424	9.40	11.00	-1.60

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)		Uncorrelated Gain (dBi)
Mid	5710	4.7	3.1851		3.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5710	17.68	16.03	22.03	16.03	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	9.64	10.41	13.05	16.03	-2.98

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5710	4.909	6.148	8.58	11.00	-2.42

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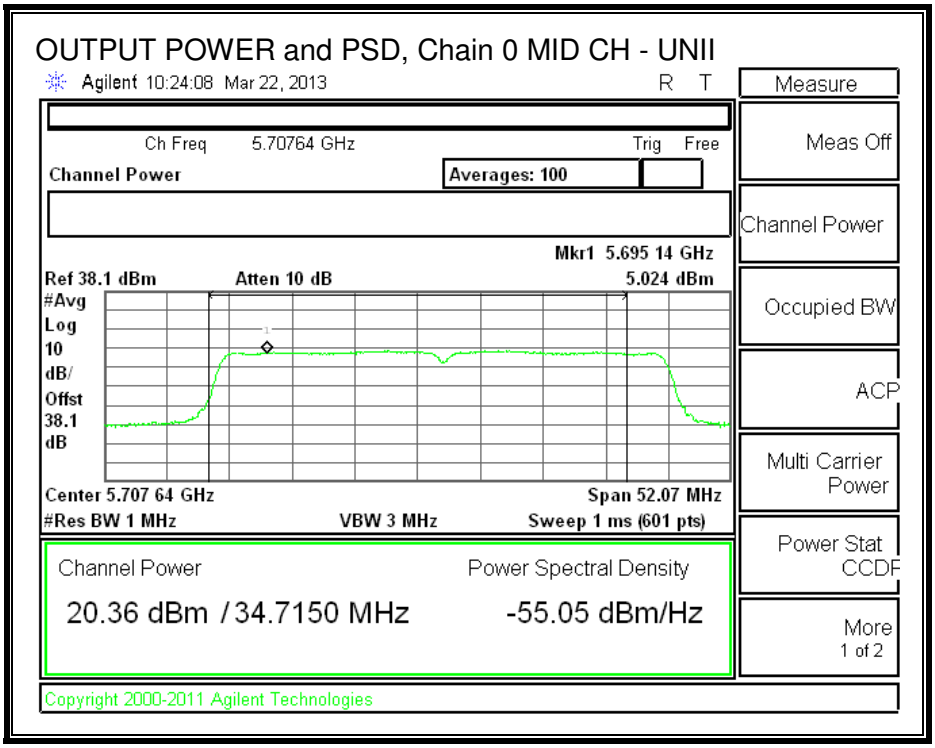
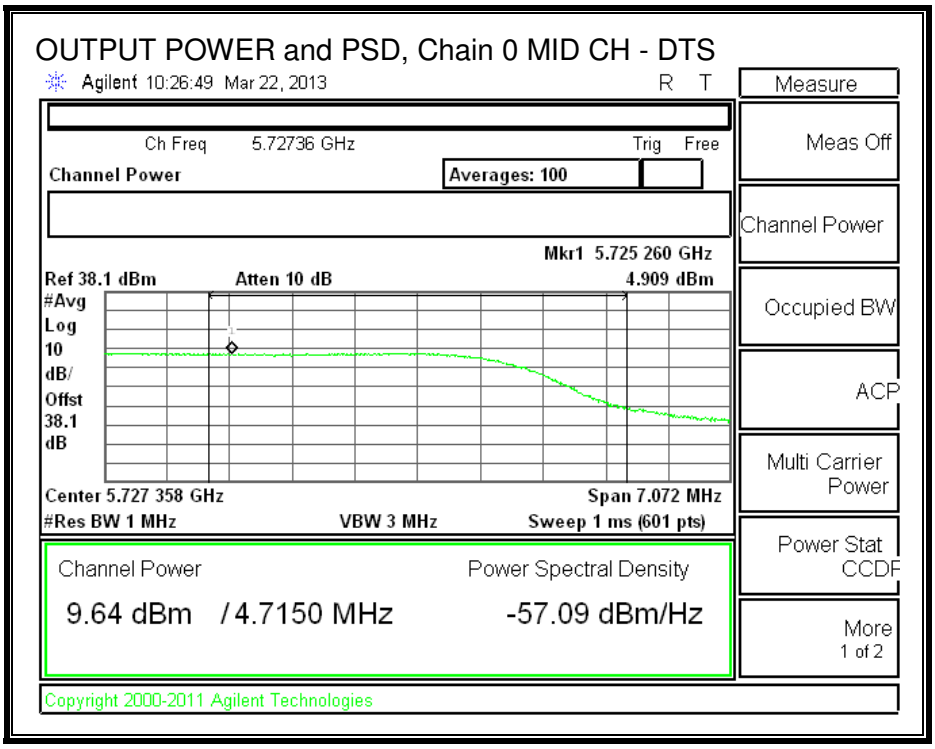
OUTPUT POWER and PSD, Chain 0





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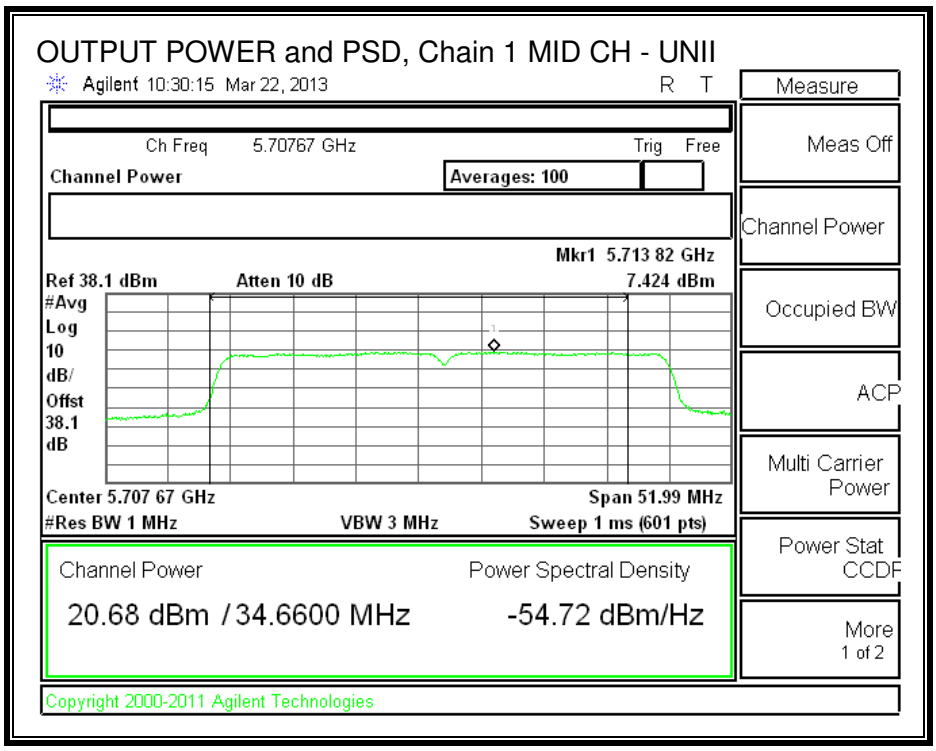
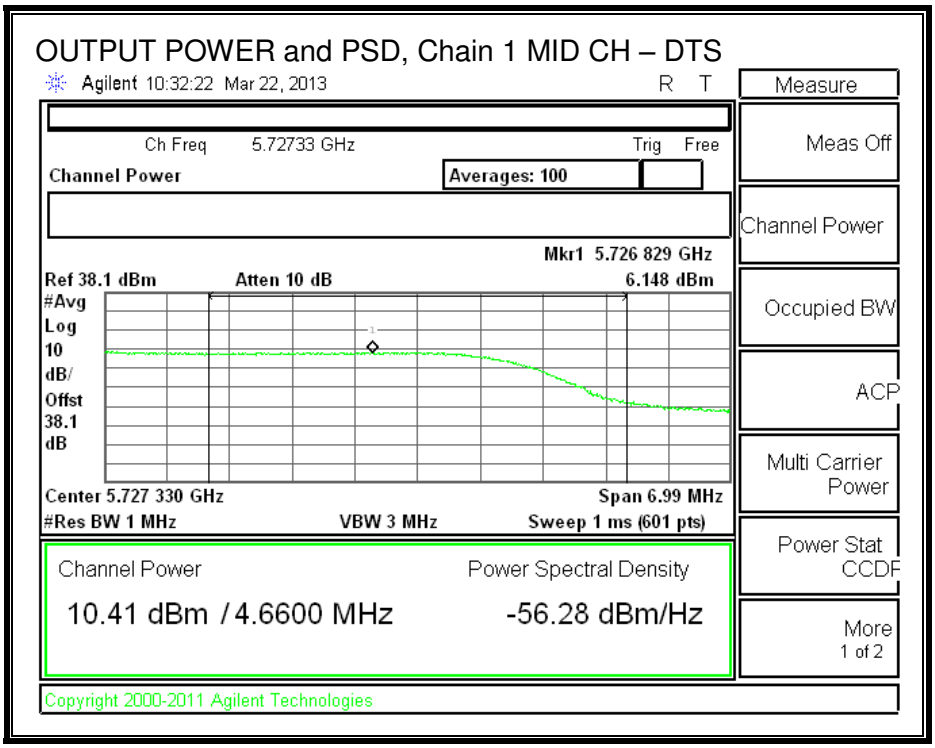
OUTPUT POWER and PSD, Chain 1





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8.66.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.67. 802.11n HT40 CDD 3TX MODE, CH142 (5710 MHz), 5.6 GHz BAND

8.67.1.26 dB BANDWIDTH

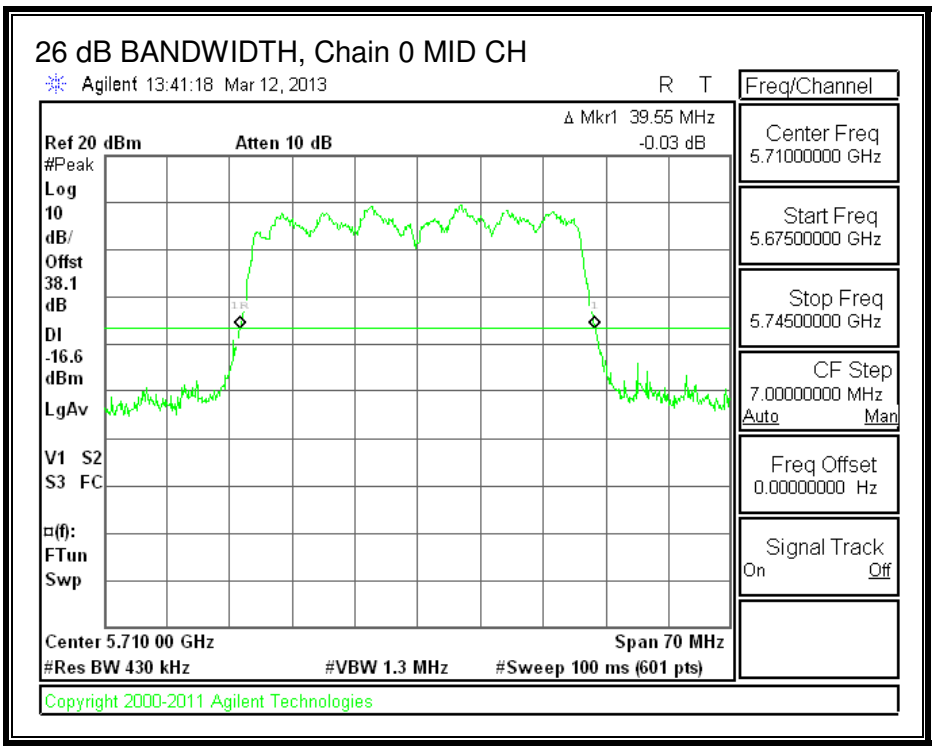
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Mid	5710	39.55	39.43	39.32

26 dB BANDWIDTH, Chain 0



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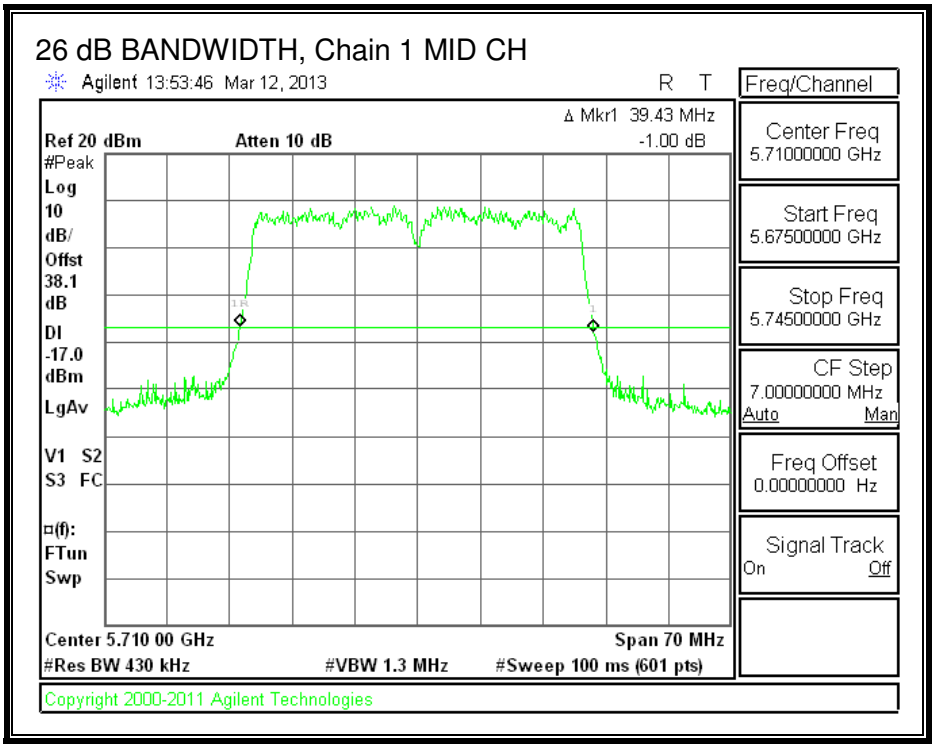
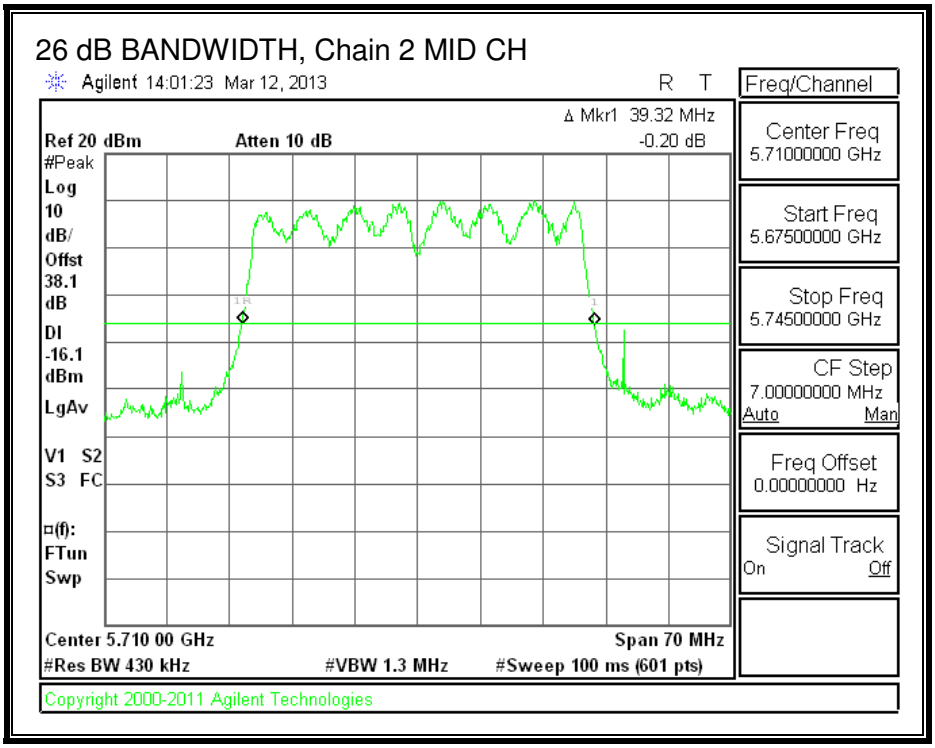
26 dB BANDWIDTH, Chain 1



26 dB BANDWIDTH, Chain 2



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8.67.2.99% BANDWIDTH

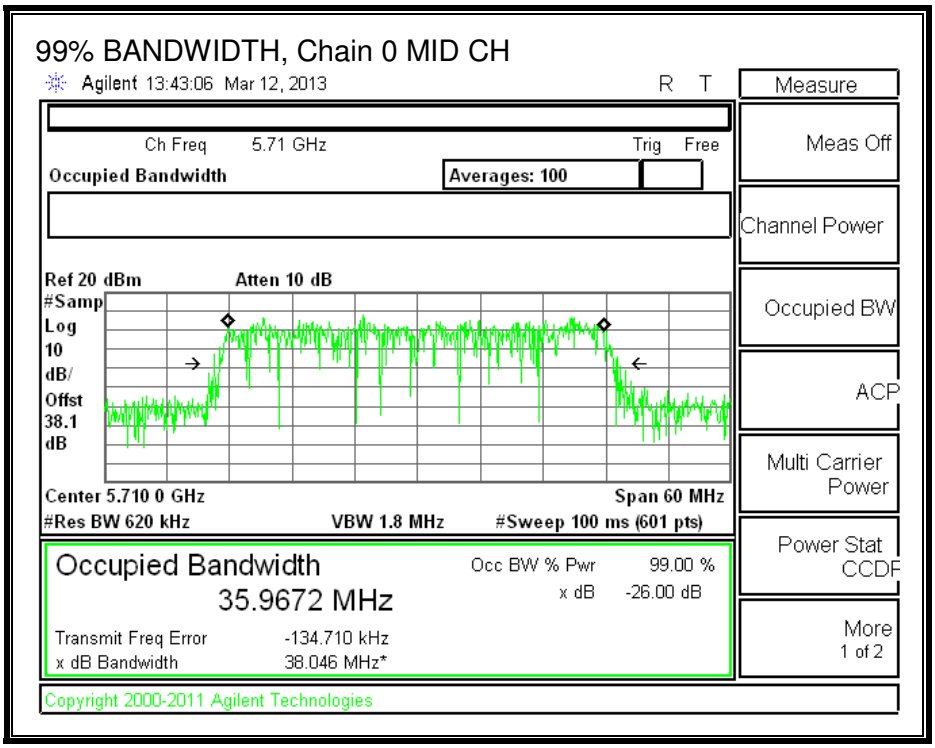
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Mid	5710	35.9672	36.2076	36.3701

99% BANDWIDTH, Chain 0



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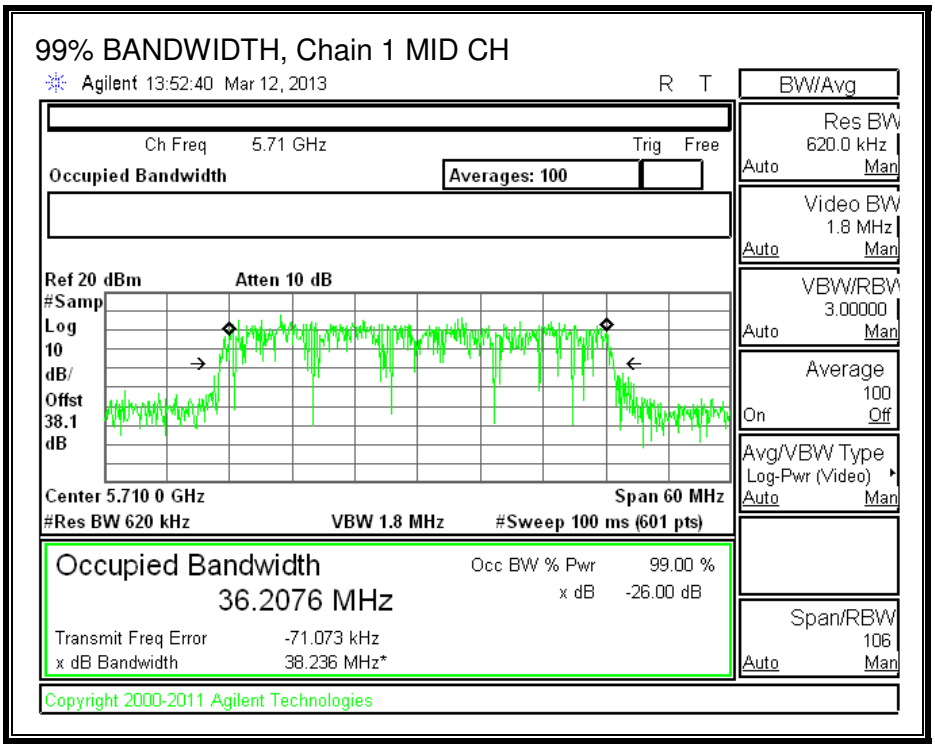
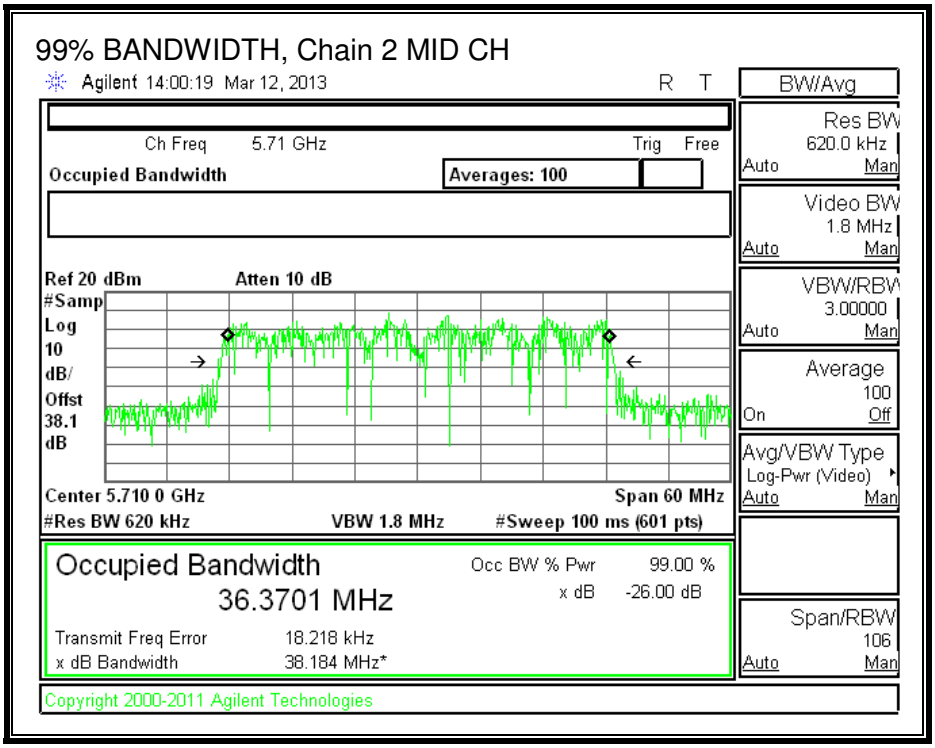
99% BANDWIDTH, Chain 1



99% BANDWIDTH, Chain 2



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8.67.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.00	1.70	3.80	2.92

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	1.70	3.80	7.65

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RESULTS

Limits (FCC), portion in UNII 2 ext band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)	Uncorrelated Gain (dBi)
Mid	5710	34.7	32.9836	7.65	2.92

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5710	24.00	24.00	30.00	24.00	9.35	11.00	9.35

Duty Cycle CF (dB)	0.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	15.82	16.63	15.92	20.91	24.00	-3.09

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5710	4.057	3.200	3.743	8.45	9.35	-0.90

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)	Uncorrelated Gain (dBi)
Mid	5710	4.7	2.9836	7.65	2.92

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5710	17.68	15.75	21.75	15.75	9.35	11.00	9.35

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	5.86	5.89	6.25	10.77	15.75	-4.97

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPD (dBm)	Chain 1 Meas PPD (dBm)	Chain 2 Meas PPD (dBm)	Total Corr'd PPD (dBm)	PPD Limit (dBm)	PPD Margin (dB)
Mid	5710	3.030	2.274	3.982	7.92	9.35	-1.43

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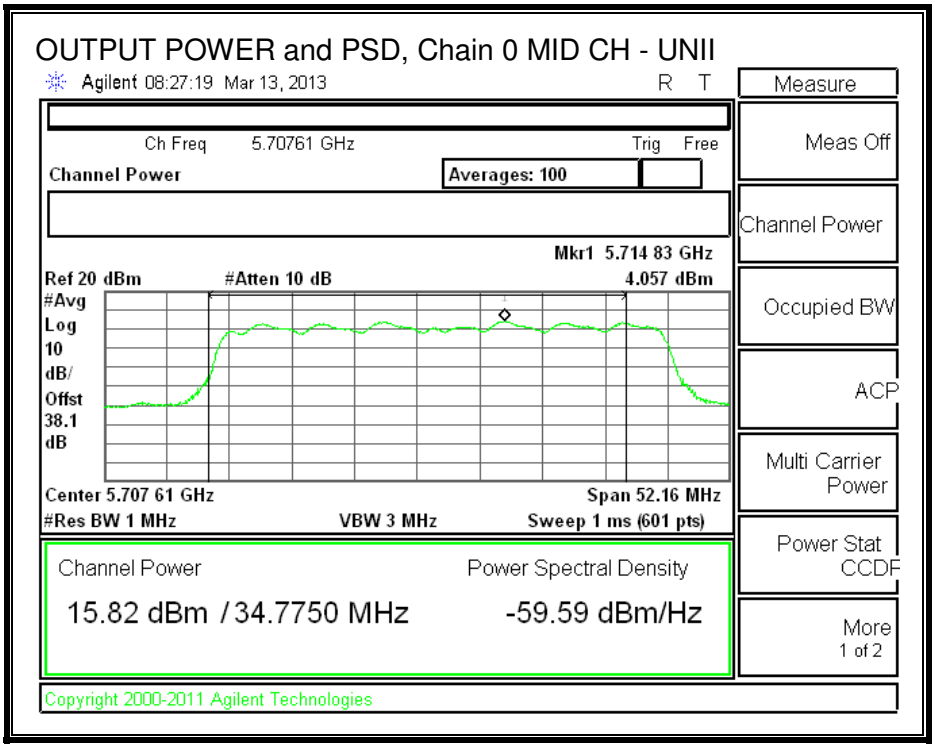
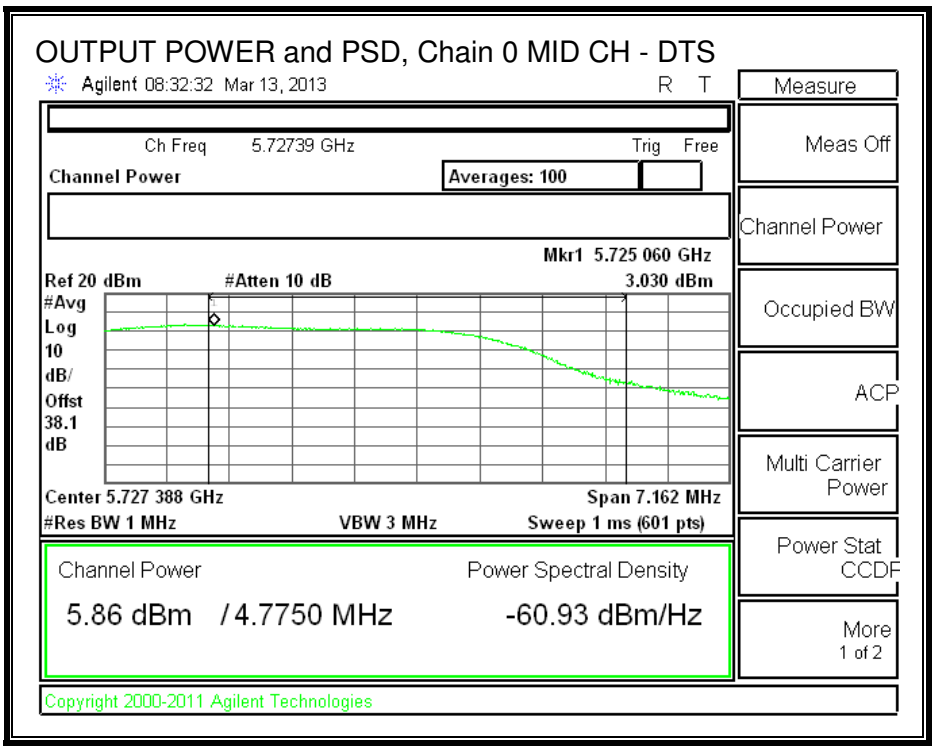
OUTPUT POWER and PSD, Chain 0





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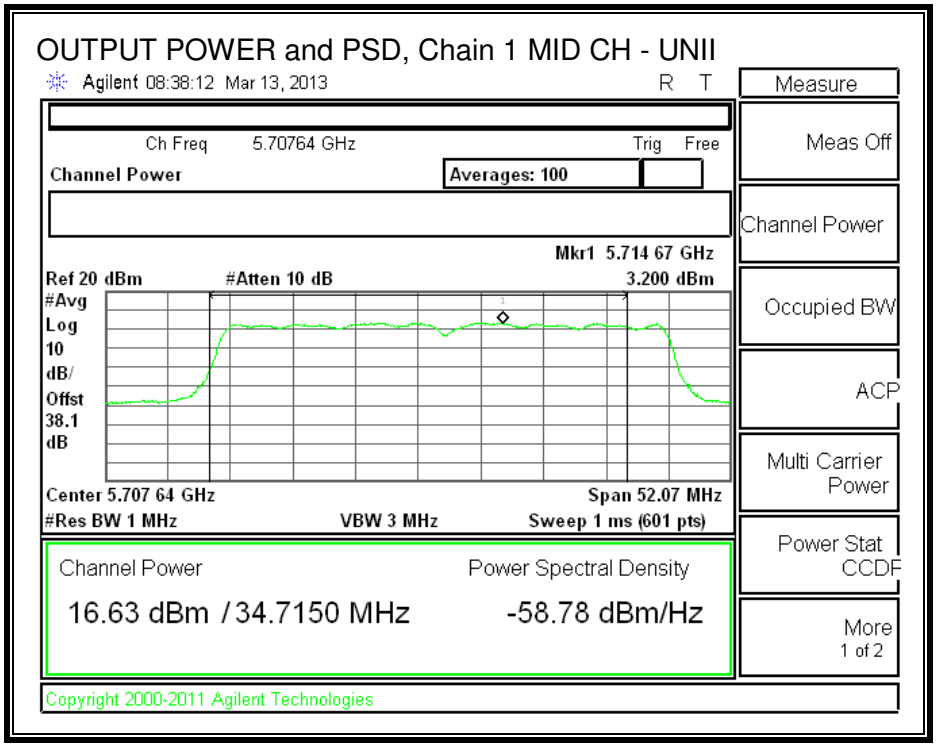
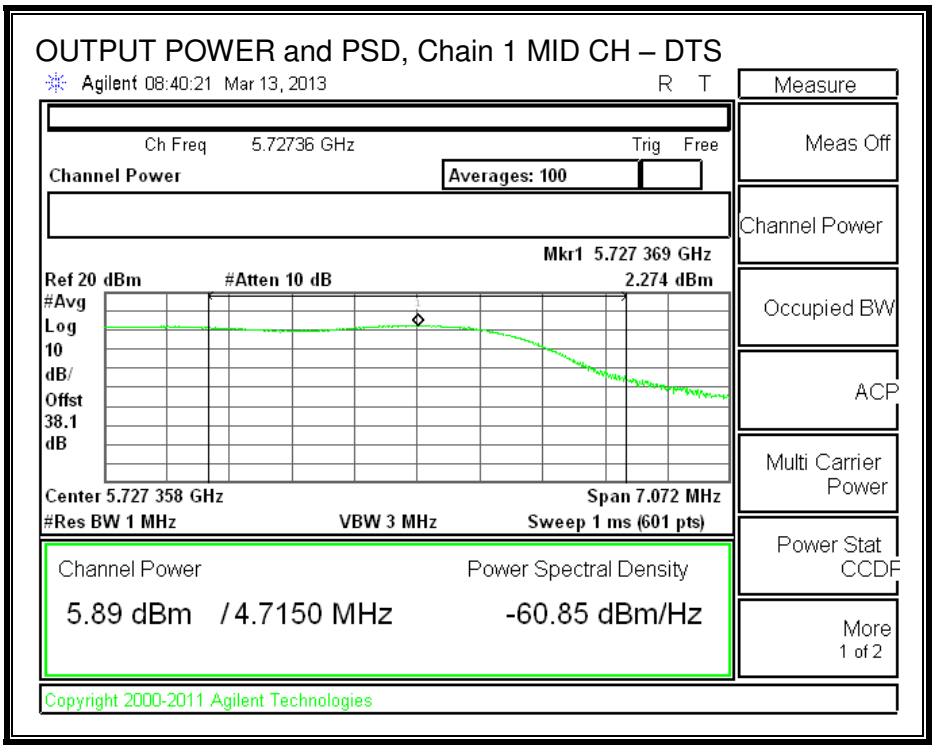
OUTPUT POWER and PSD, Chain 1





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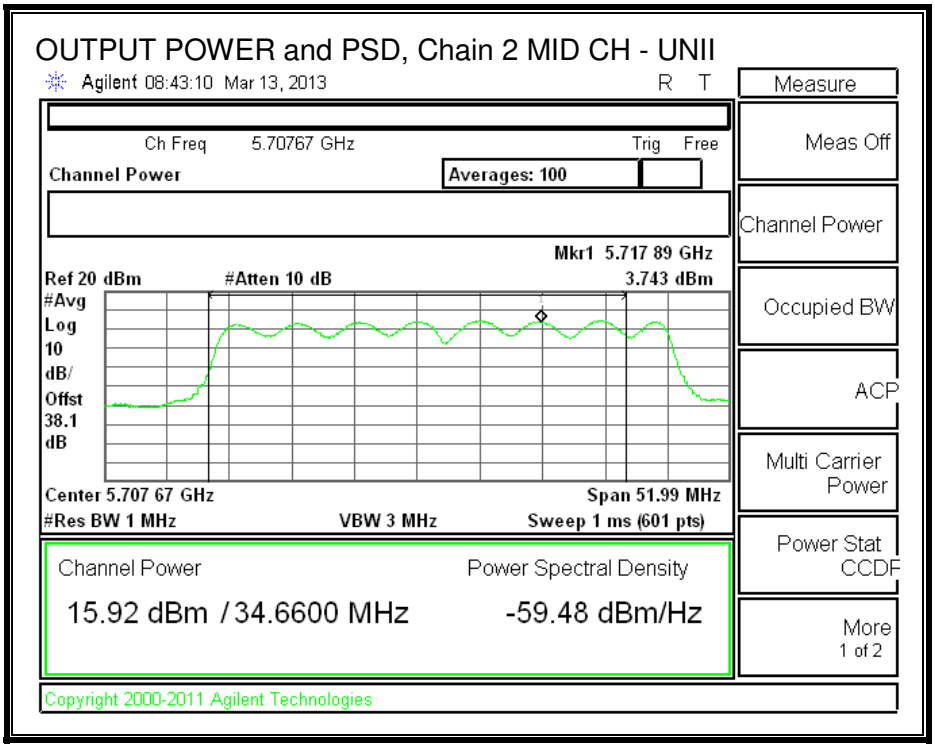
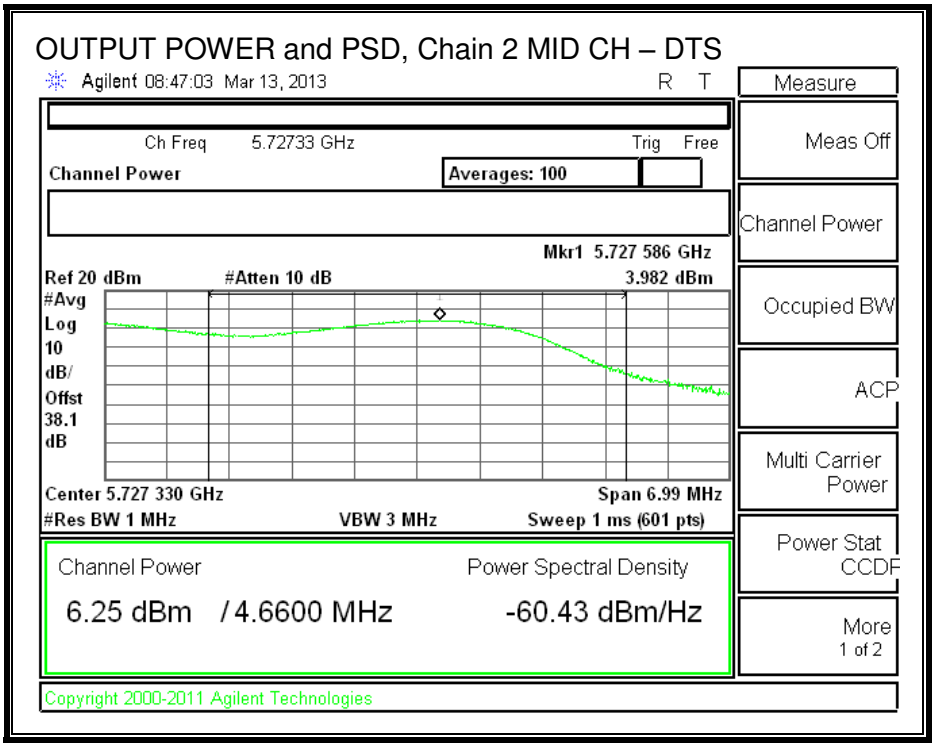
OUTPUT POWER and PSD, Chain 2





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8.67.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.68. 802.11n HT40 BF 3TX MODE, CH142 (5710 MHz), 5.6 GHz BAND

Covered by testing HT40 CDD 3TX mode, the power per chain used for HT40 CDD 3TX mode is the same power per chain that will be used for HT40 BF 3TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.68.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	1.70	3.80	7.65

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RESULTS

Limits (FCC), portion in UNII 2 ext band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)
Mid	5710	34.7	32.9836	7.65

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Mid	5710	22.35	24.00	30.00	22.35

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	15.82	16.63	15.92	20.91	22.35	-1.44

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)
Mid	5710	4.7	2.9836	7.65

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Mid	5710	16.03	15.75	21.75	14.10

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	5.86	5.89	6.25	10.77	14.10	-3.32

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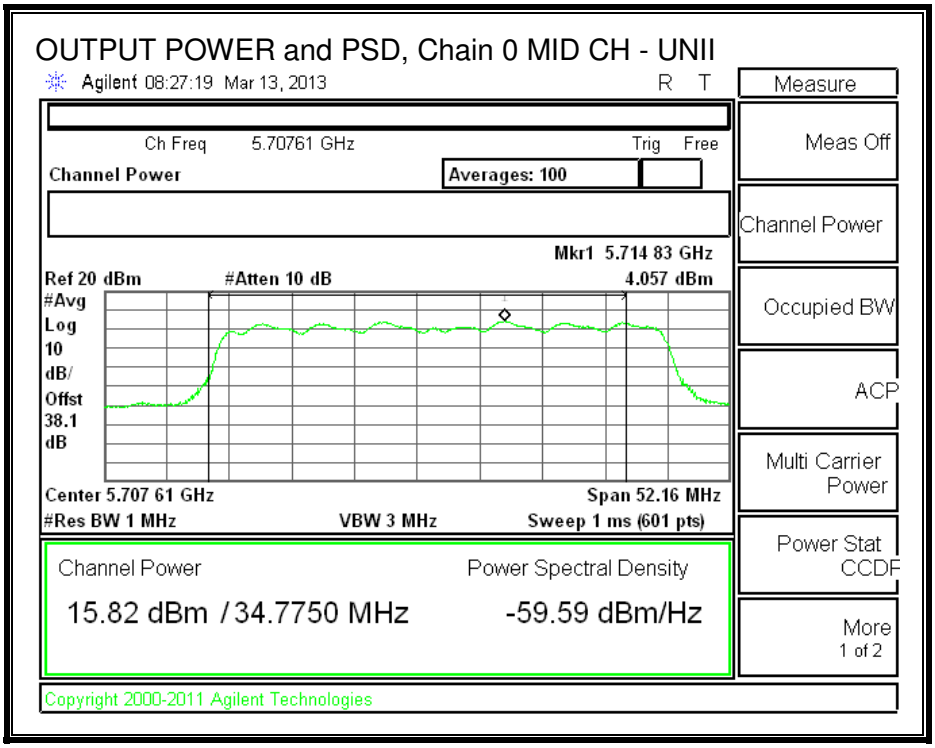
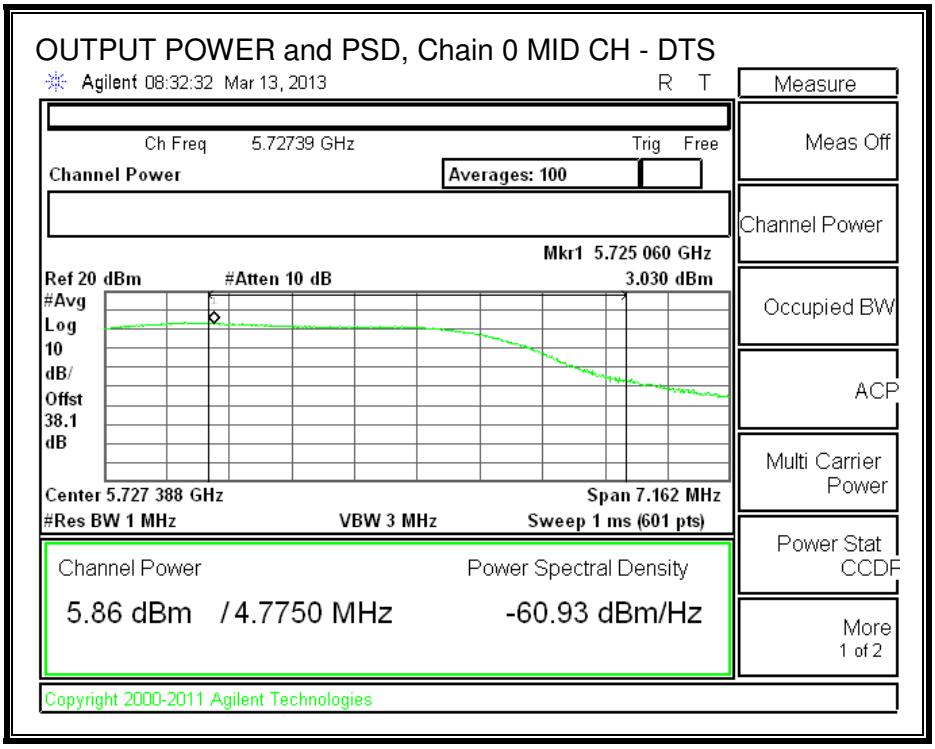
OUTPUT POWER and PSD, Chain 0





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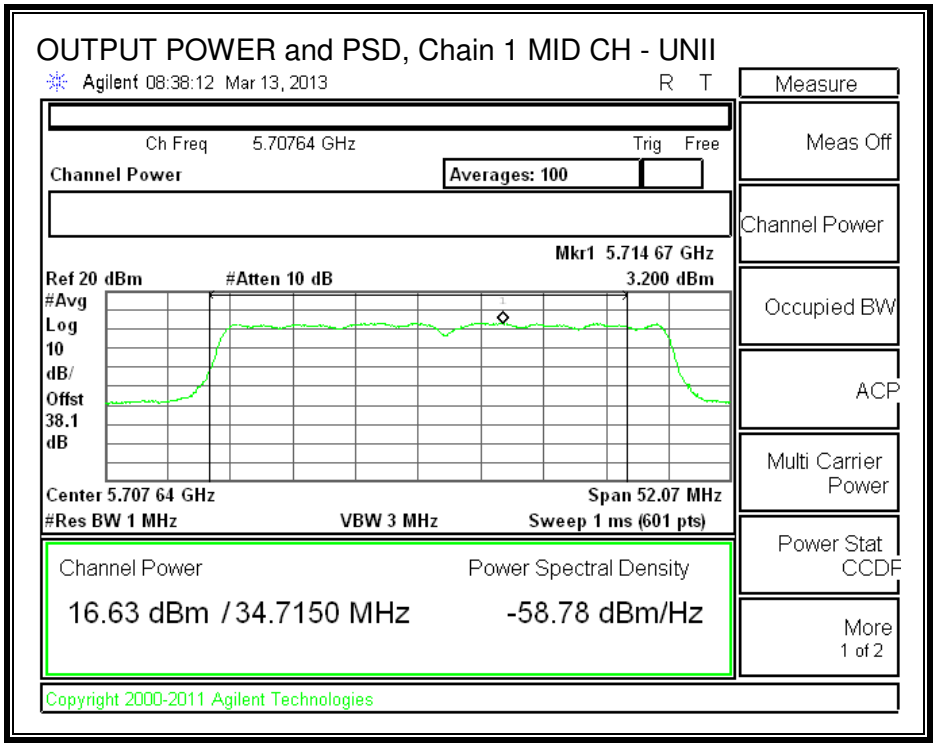
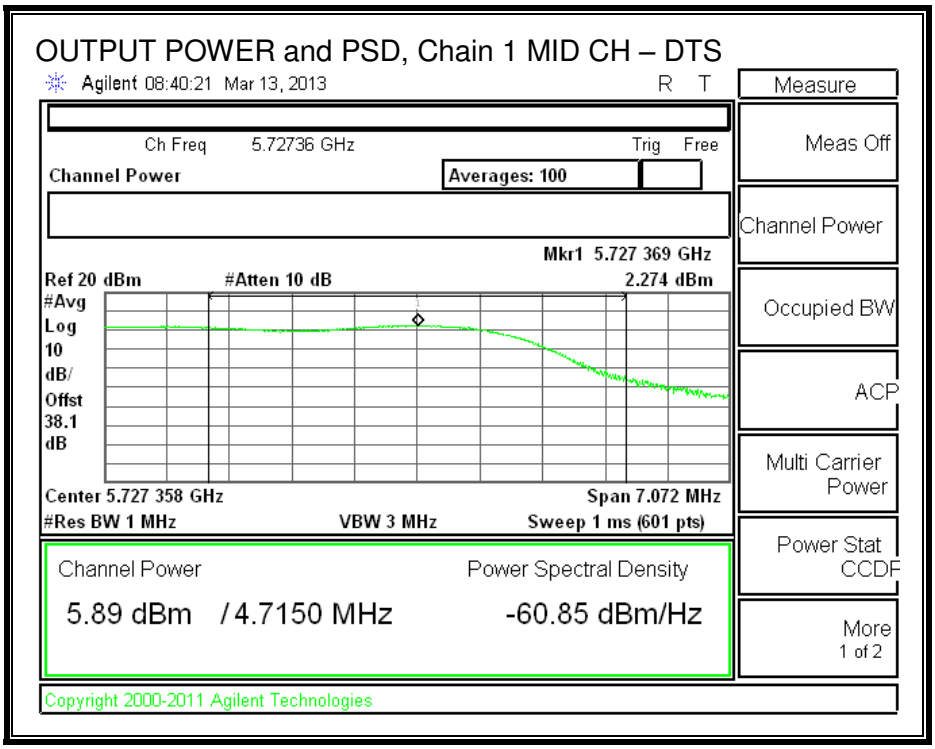
OUTPUT POWER and PSD, Chain 1





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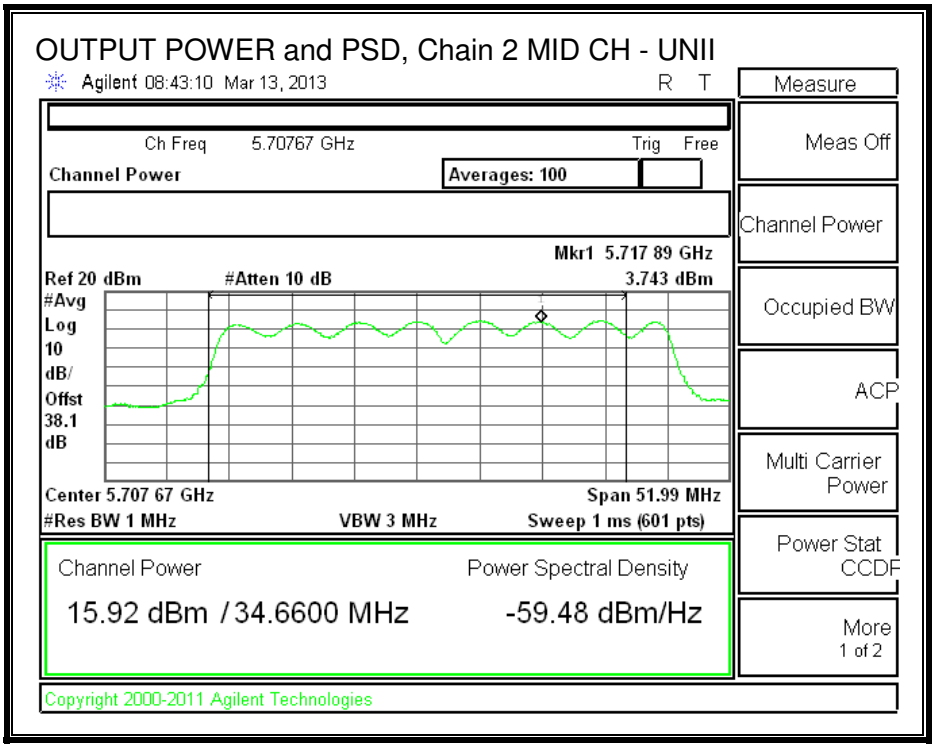
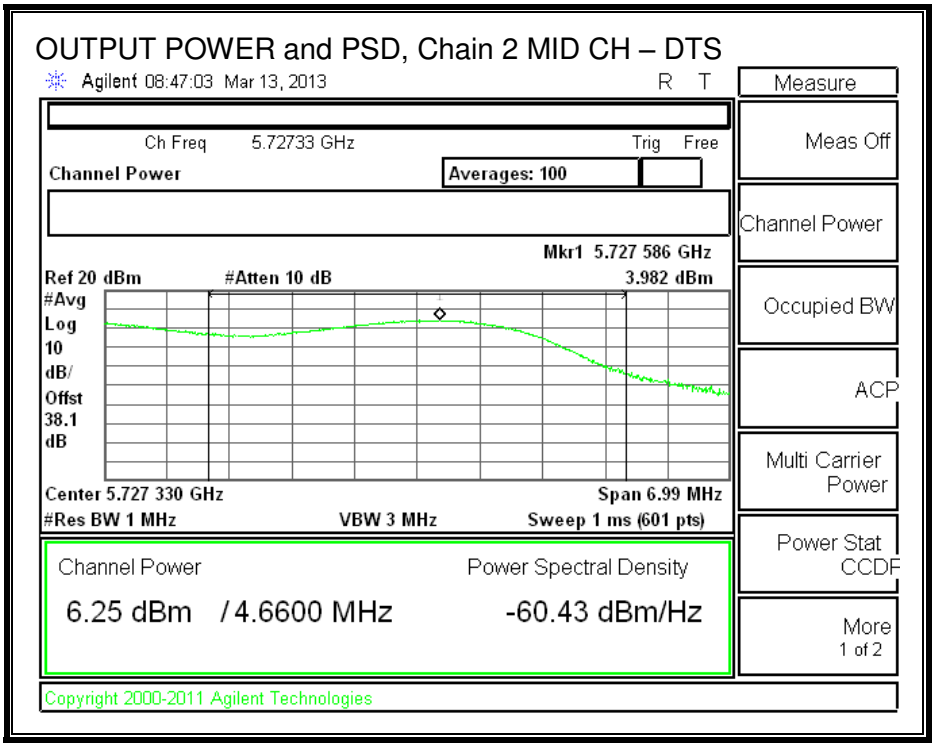
OUTPUT POWER and PSD, Chain 2





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8.69. 802.11n HT40 STBC 3TX MODE, CH142 (5710 MHz), 5.6 GHz BAND

8.69.1.26 dB BANDWIDTH

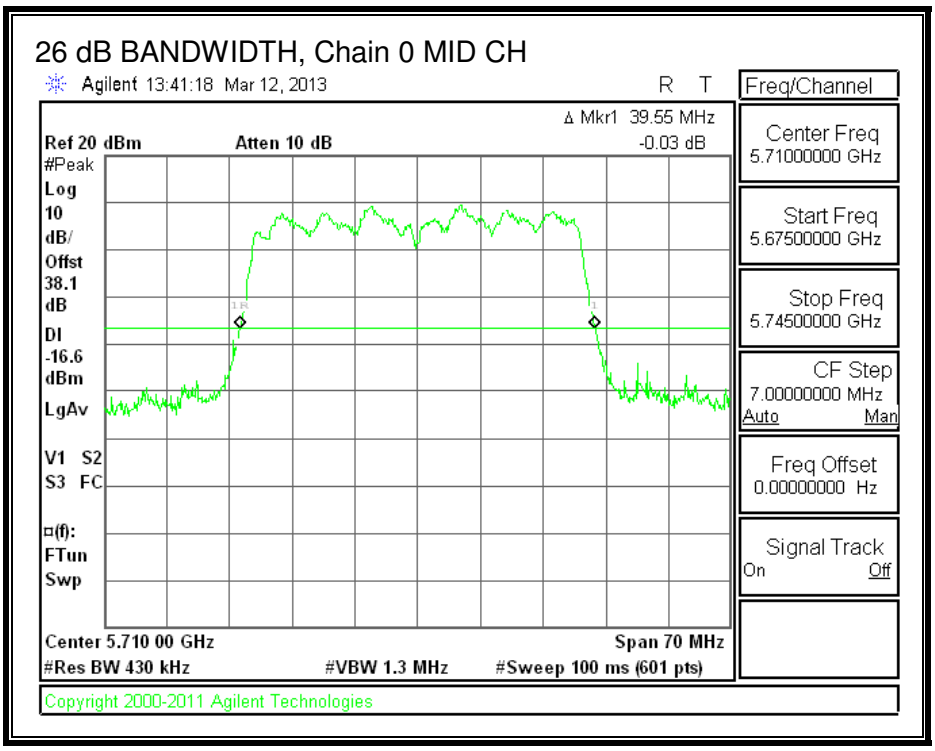
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Mid	5710	39.55	39.43	39.32

26 dB BANDWIDTH, Chain 0



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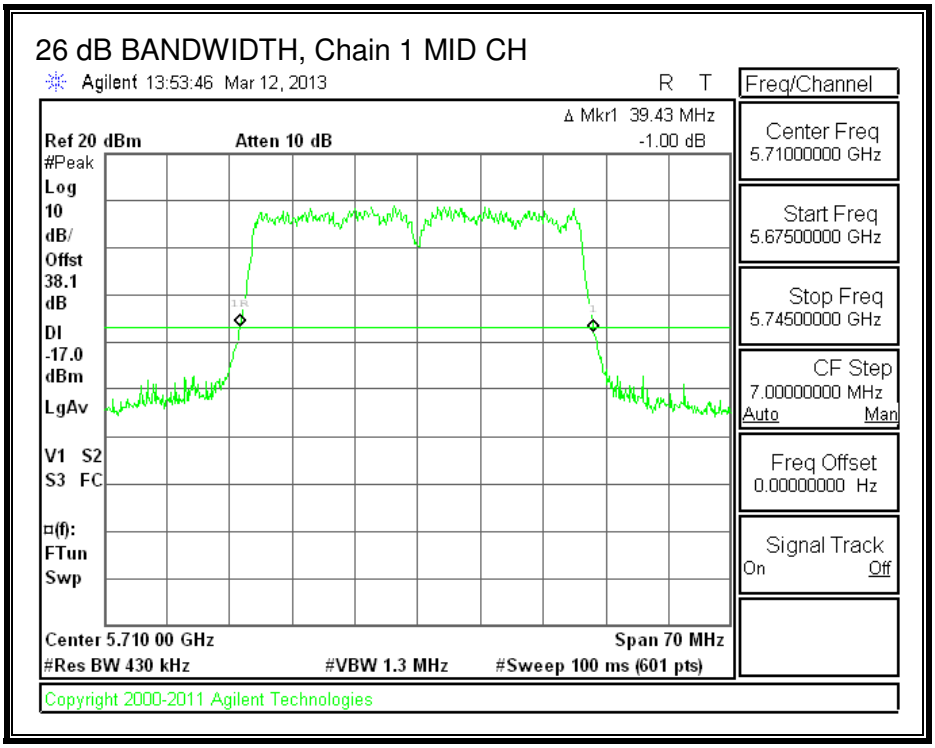
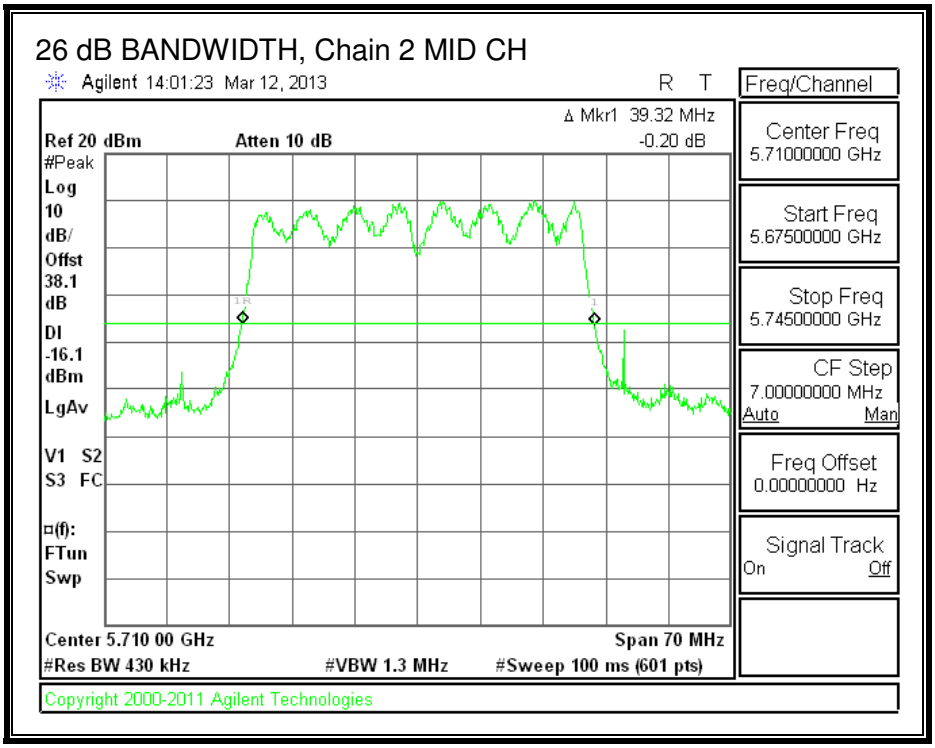
26 dB BANDWIDTH, Chain 1



26 dB BANDWIDTH, Chain 2



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8.69.2.99% BANDWIDTH

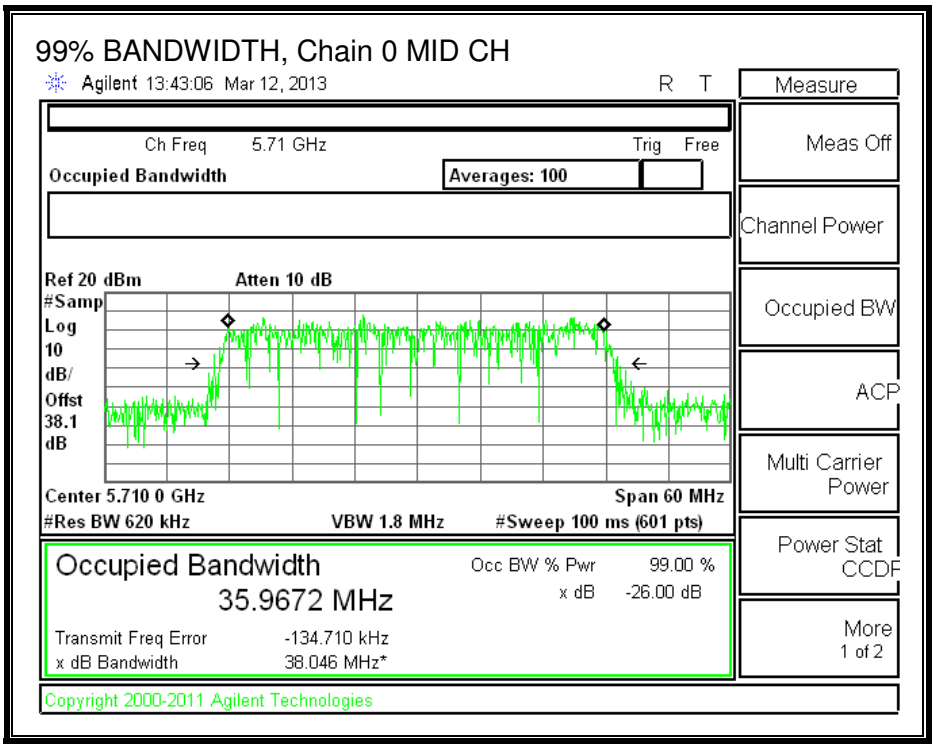
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Mid	5710	35.9672	36.2076	36.3701

99% BANDWIDTH, Chain 0



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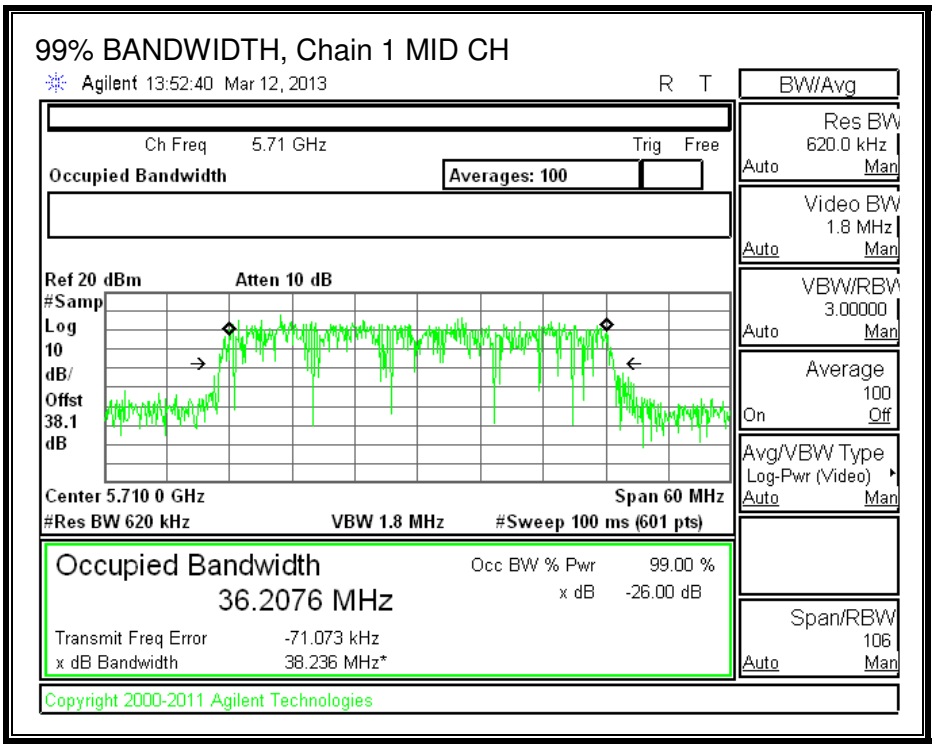
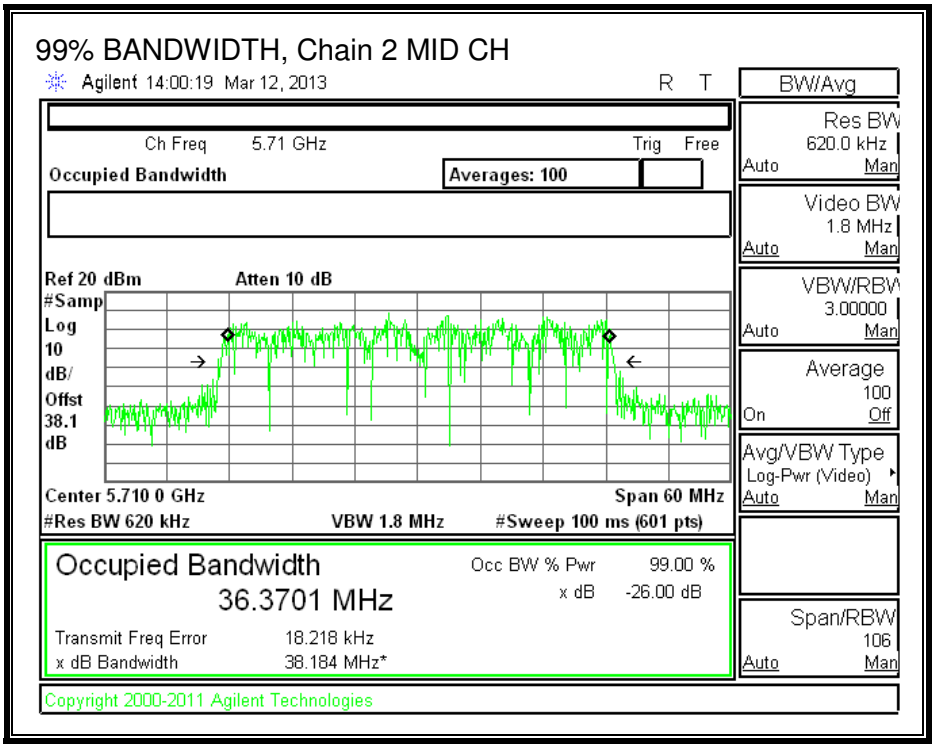
99% BANDWIDTH, Chain 1



99% BANDWIDTH, Chain 2



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8.69.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.70	1.90	4.40	3.13

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RESULTS

Limits (FCC), portion in UNII 2 ext band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Uncorrelated Gain (dBi)
Mid	5710	34.7	32.9836	3.13

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5710	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	18.66	18.66	18.56	23.40	24.00	-0.60

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5710	5.118	4.607	3.738	9.30	11.00	-1.70

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Uncorrelated Gain (dBi)
Mid	5710	4.7	2.9836	3.13

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5710	17.68	15.75	21.75	15.75	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5710	8.50	7.94	8.33	13.03	15.75	-2.71

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5710	4.515	3.252	3.704	8.63	11.00	-2.37

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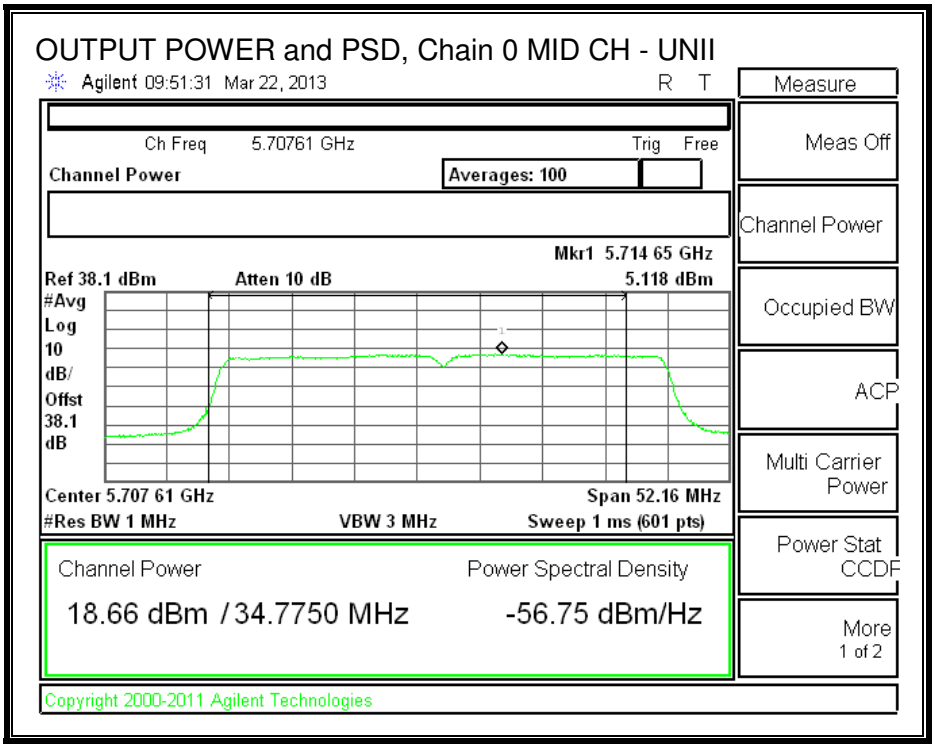
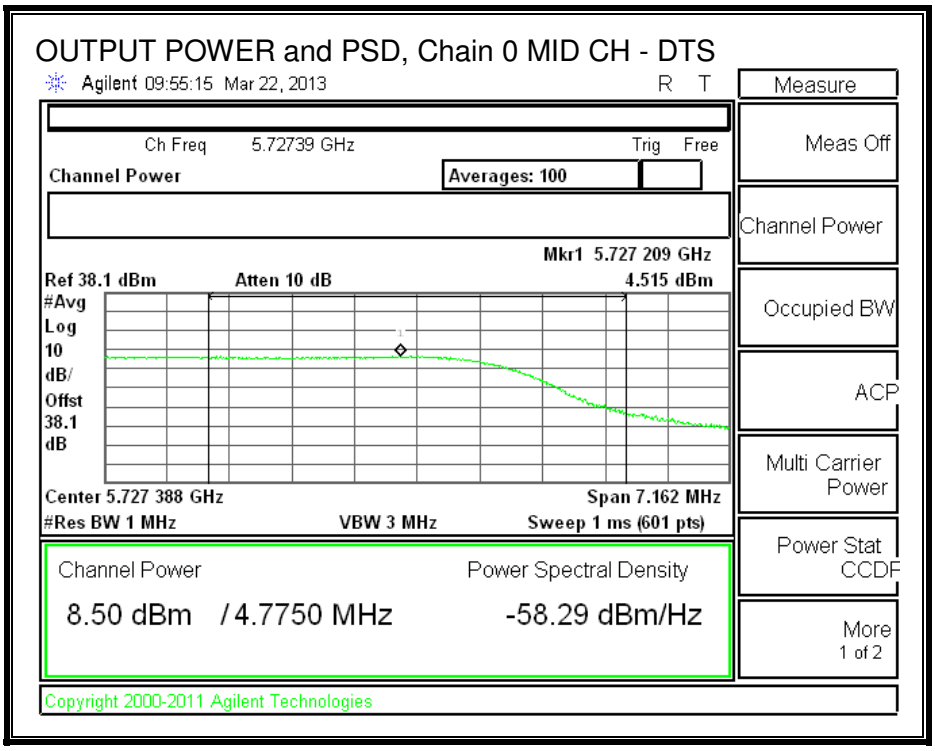
OUTPUT POWER and PSD, Chain 0





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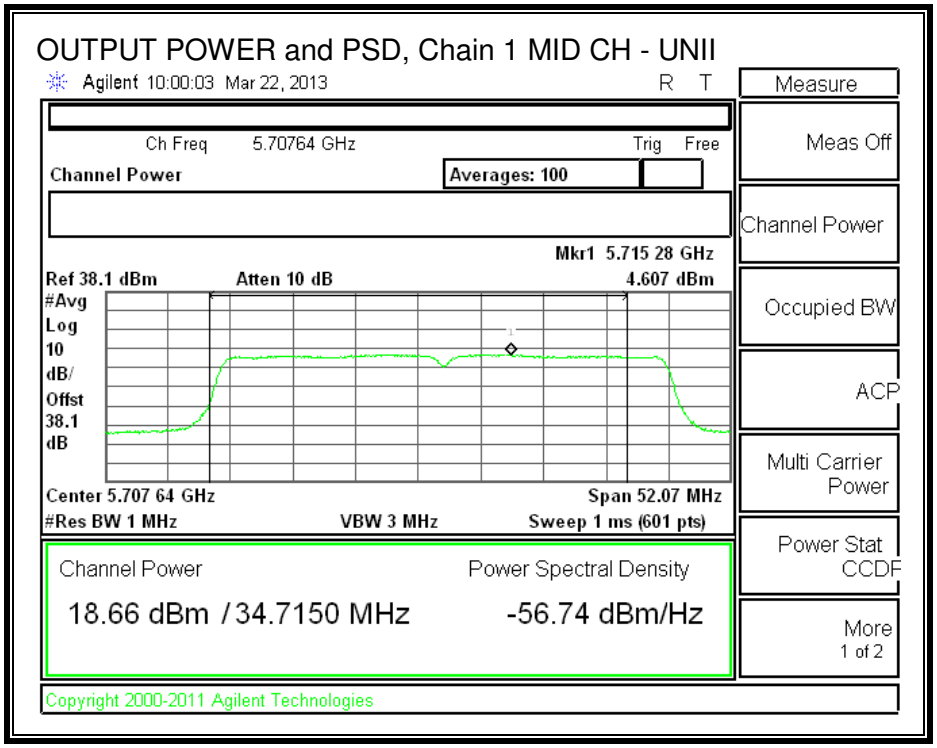
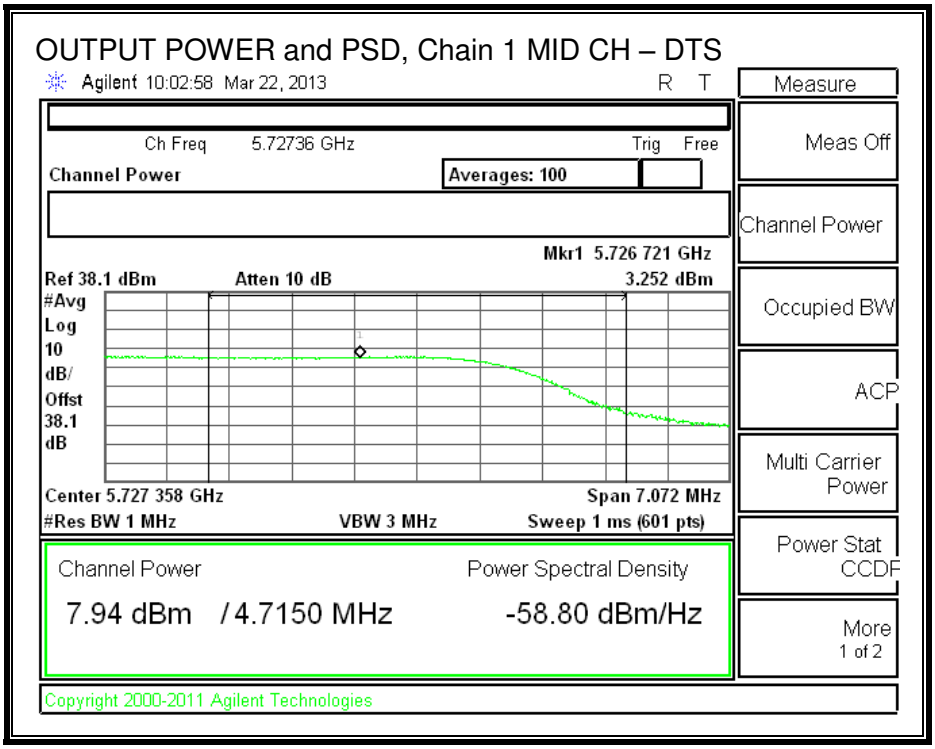
OUTPUT POWER and PSD, Chain 1





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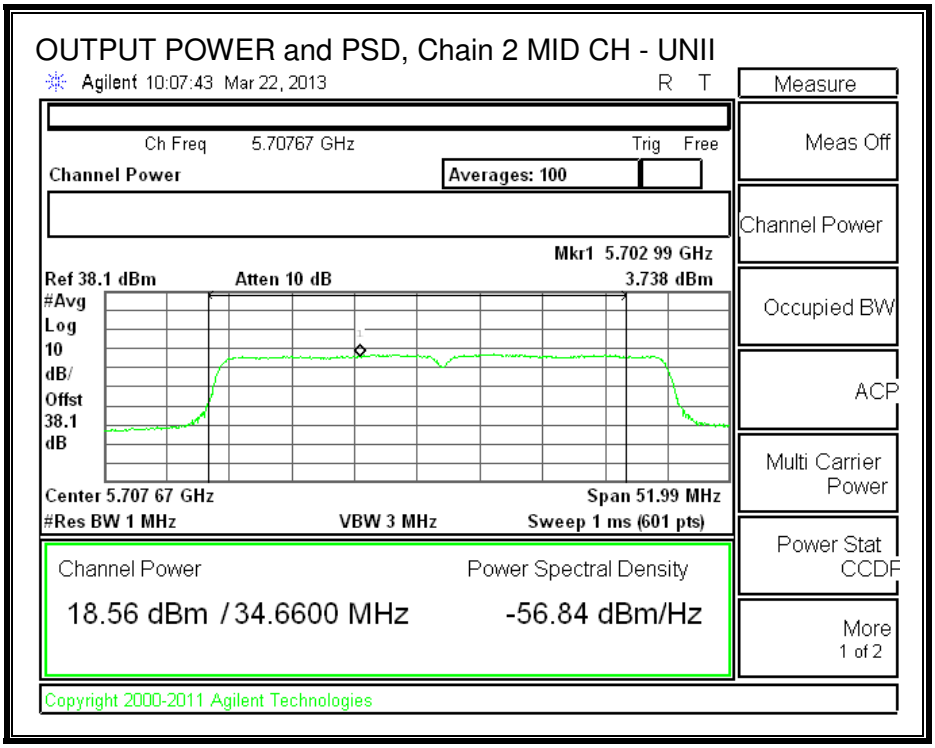
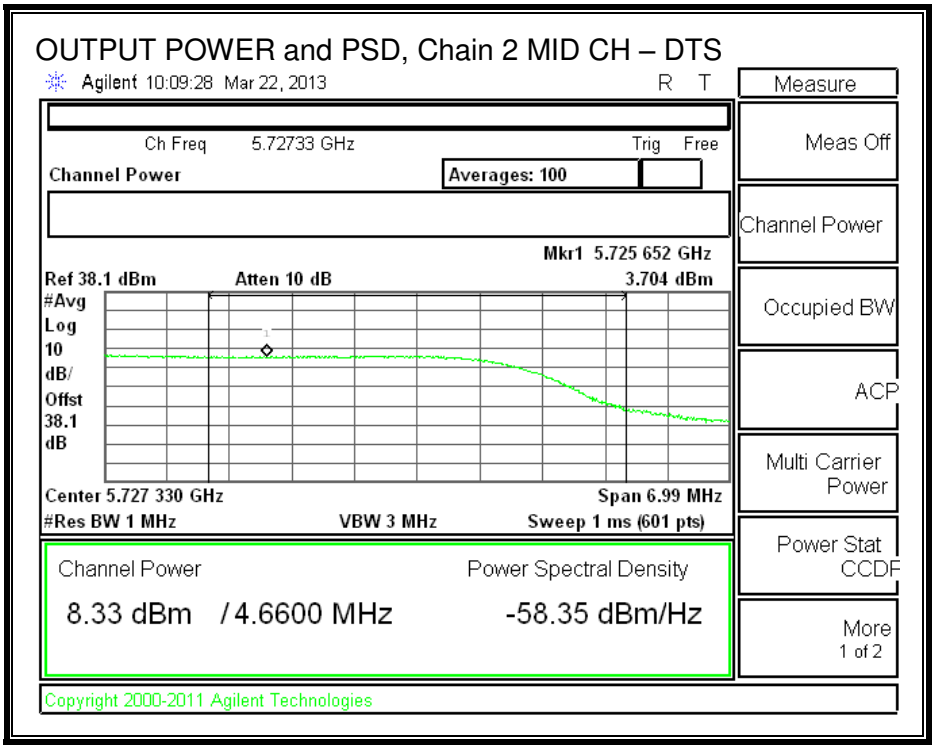
OUTPUT POWER and PSD, Chain 2





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8.69.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.70. 802.11ac VHT80 1TX MODE IN THE 5.6 GHz BAND

8.70.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5530	81.83
High	5690	82.33

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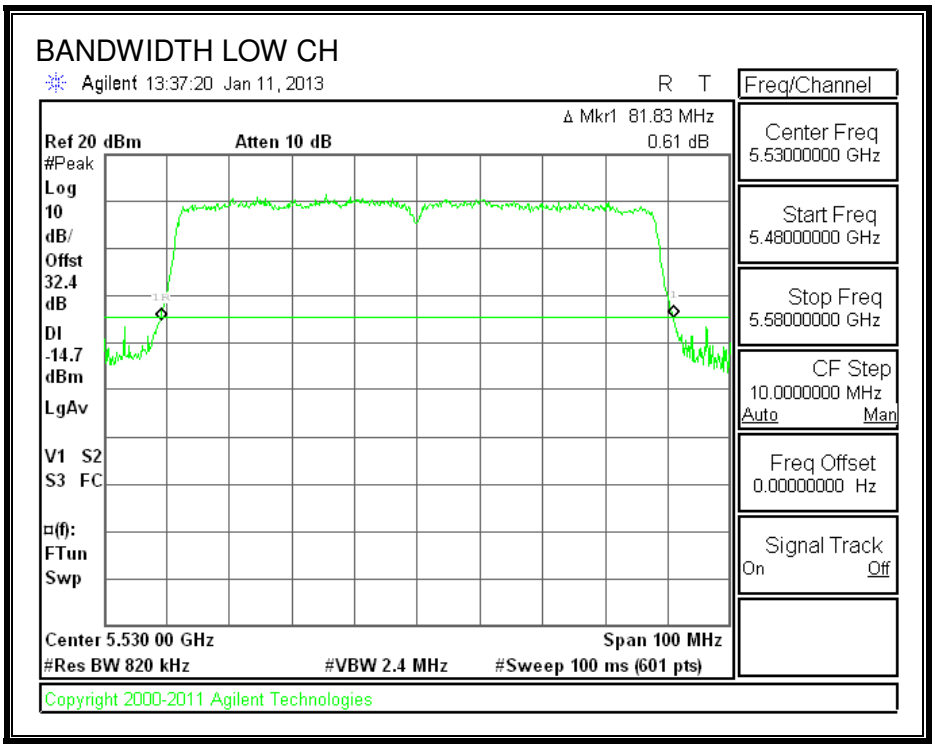
26 dB BANDWIDTH



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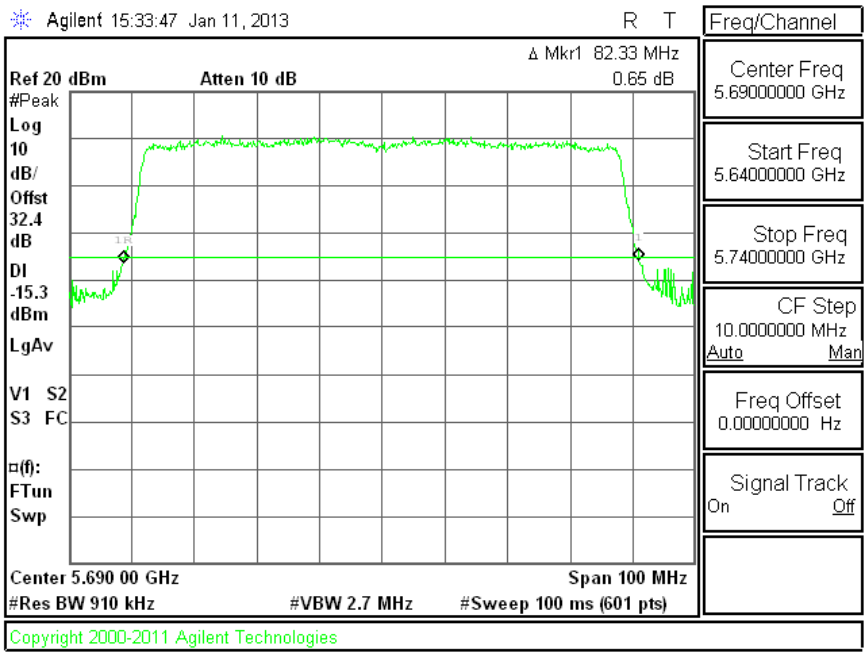
BANDWIDTH HIGH CH



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8.70.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5530	75.4598
High	5690	75.4984

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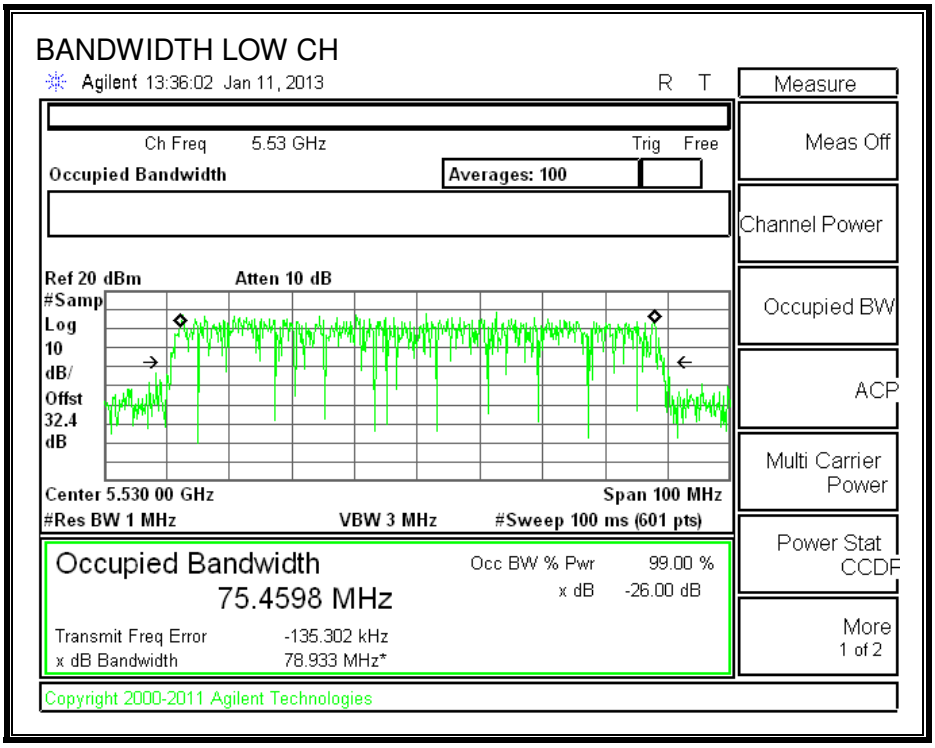
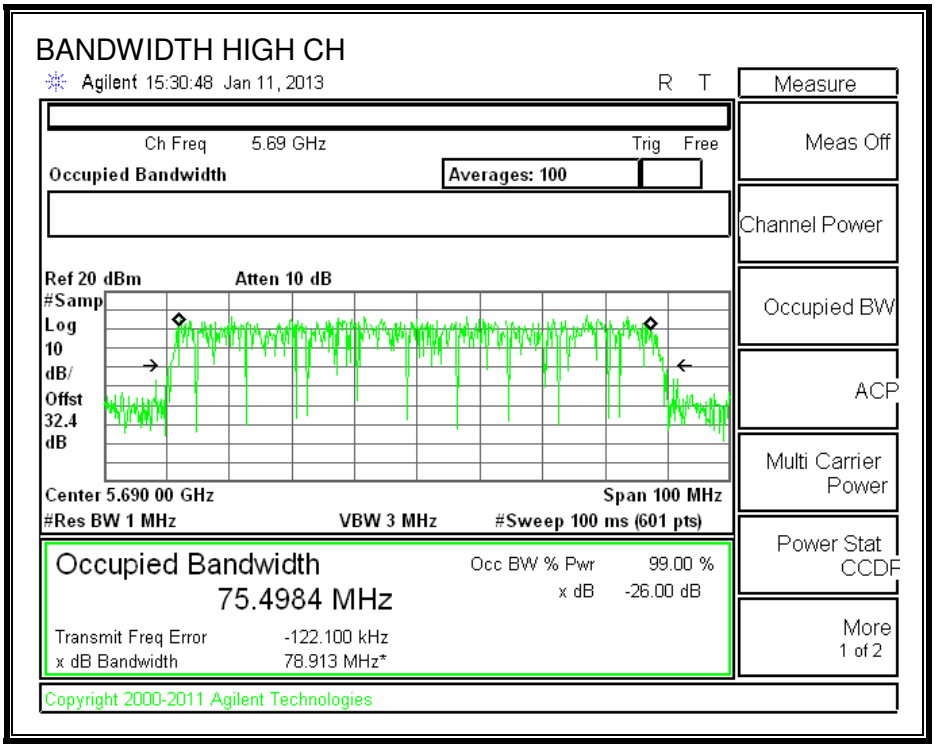
99% BANDWIDTH





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8.70.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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RESULTS

Limits (FCC), portion in UNII 2 ext band (for 5690 MHz)
Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5530	81.83	75.4598	3.80
High	5690	76.15	75.5000	3.80

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5530	24.00	24.00	30.00	24.00	11.00	11.00	11.00
High	5690	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.10	

Output Power Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5530	13.00	13.00	24.00	-11.00
High	5690	23.77	23.87	24.00	-0.13

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5530	7.605	7.705	11.00	-3.30
High	5690	6.874	6.974	11.00	-4.03

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Antenna Gain (dBi)
Mid	5690	6.165	2.7492	3.80

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5690	18.90	15.39	21.39	15.39	11.00	11.00	11.00

Duty Cycle CF (dB)	0.10	

Output Power Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5690	8.38	8.48	15.39	-6.91

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5690	3.587	3.687	11.00	-7.31

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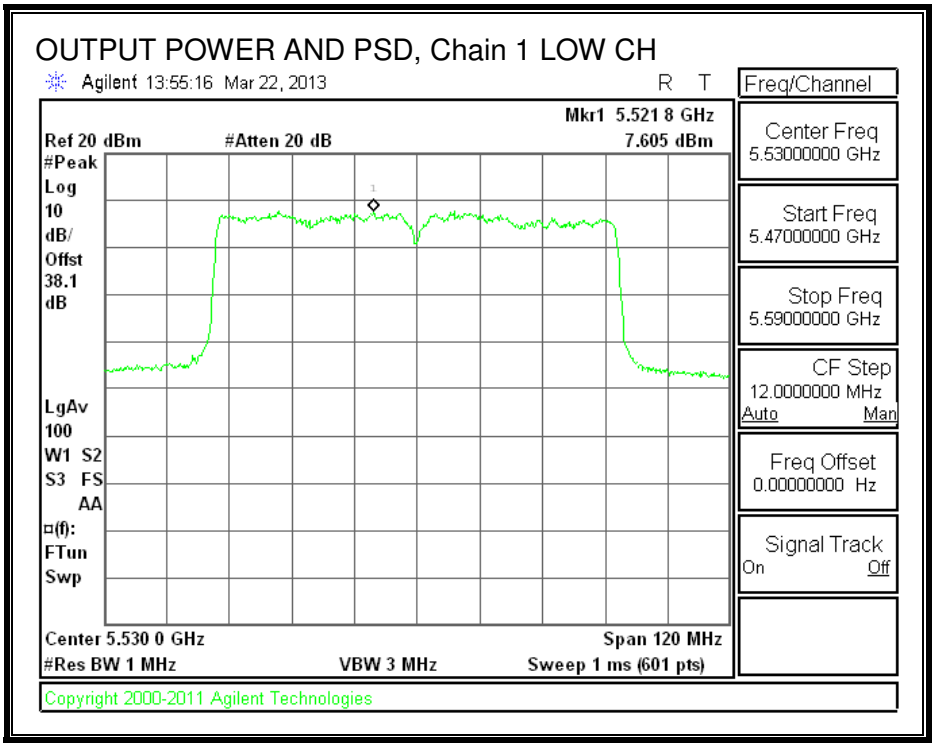
OUTPUT POWER AND PSD, Chain 1



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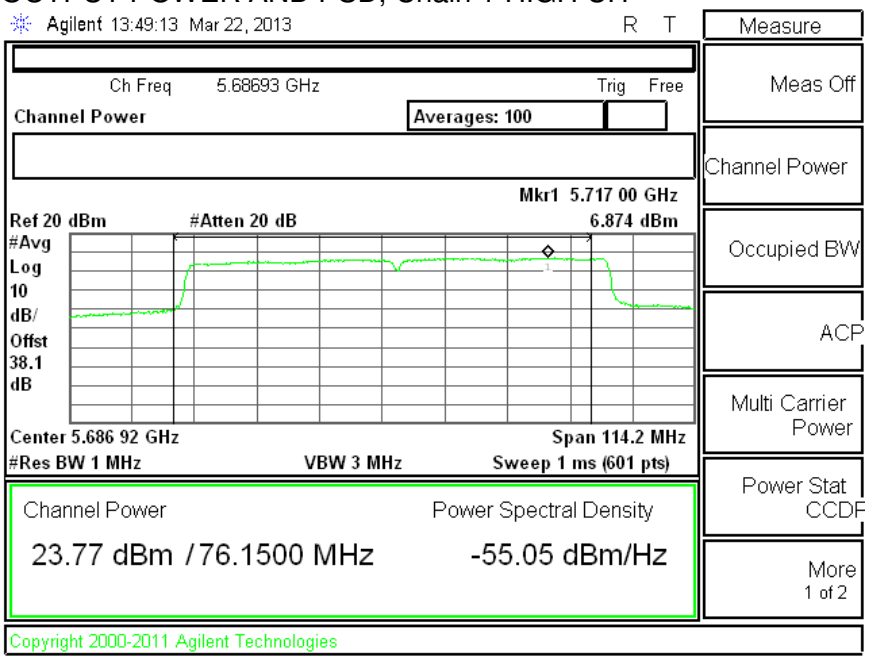
OUTPUT POWER AND PSD, Chain 1 HIGH CH



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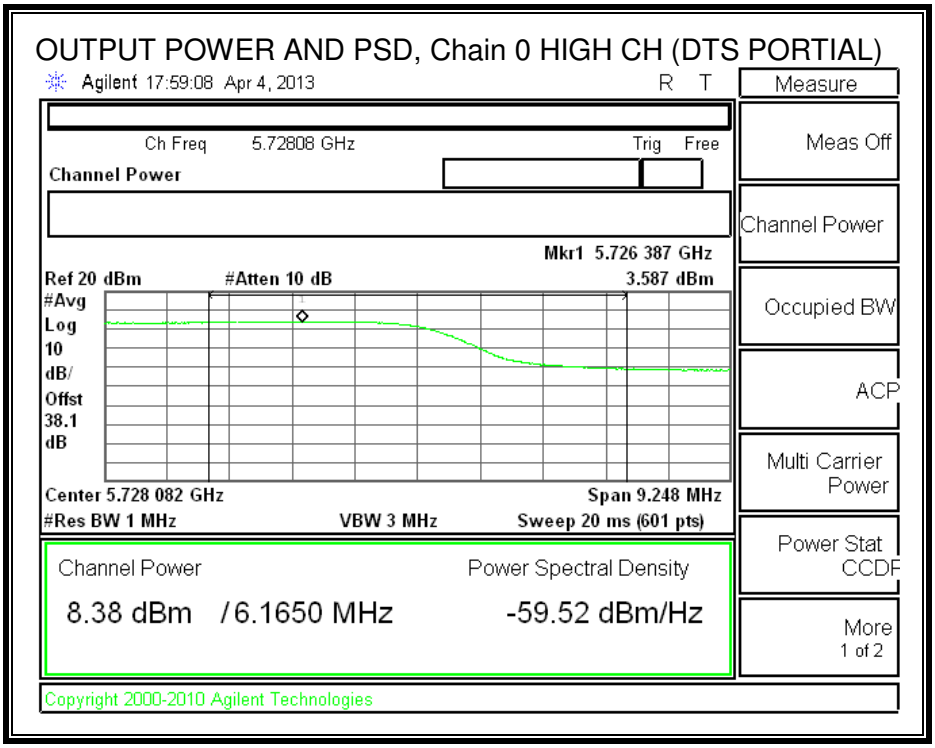
DTS PORTIAL OUTPUT POWER AND PSD,



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8.70.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.71. 802.11ac VHT80 CDD 2TX MODE IN THE 5.6 GHz BAND

8.71.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5530	82.8	82.0
High	5690	82.8	82.2

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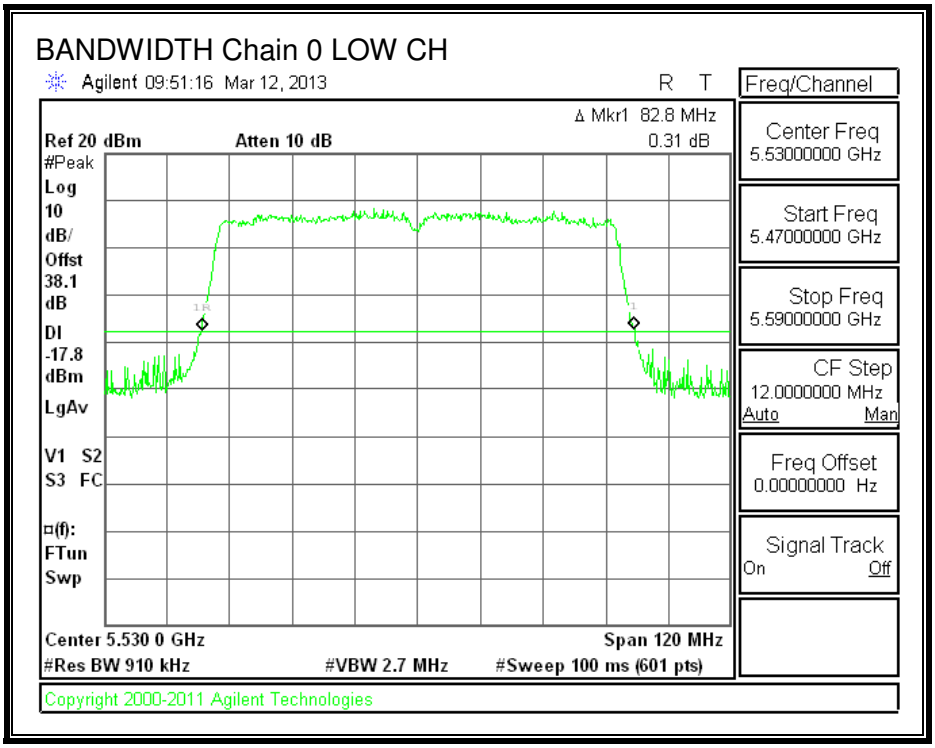
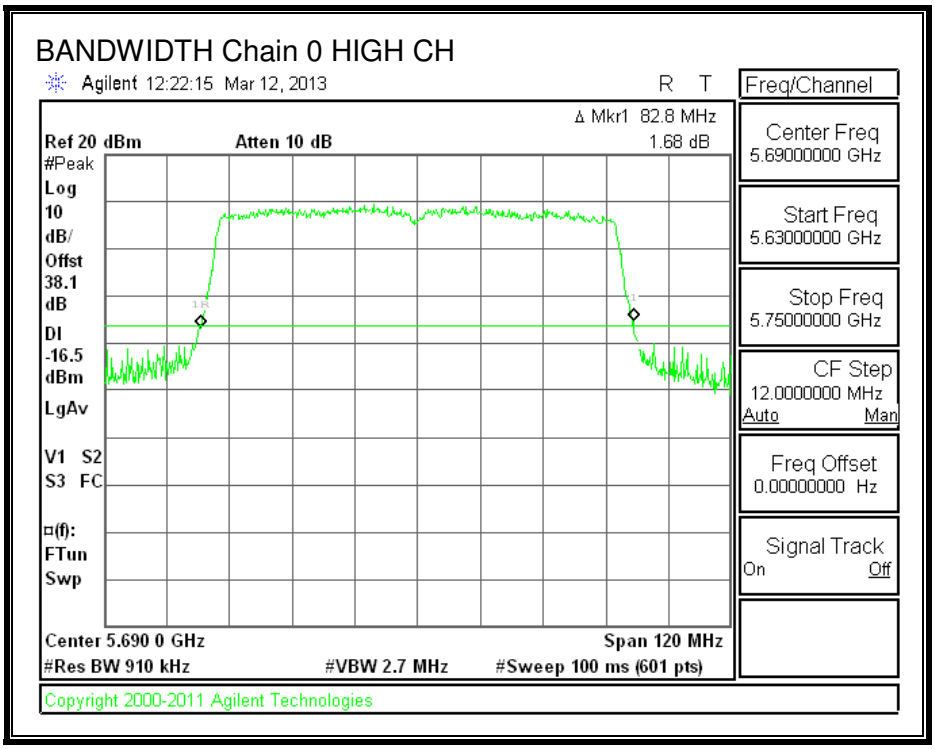
26 dB BANDWIDTH, Chain 0





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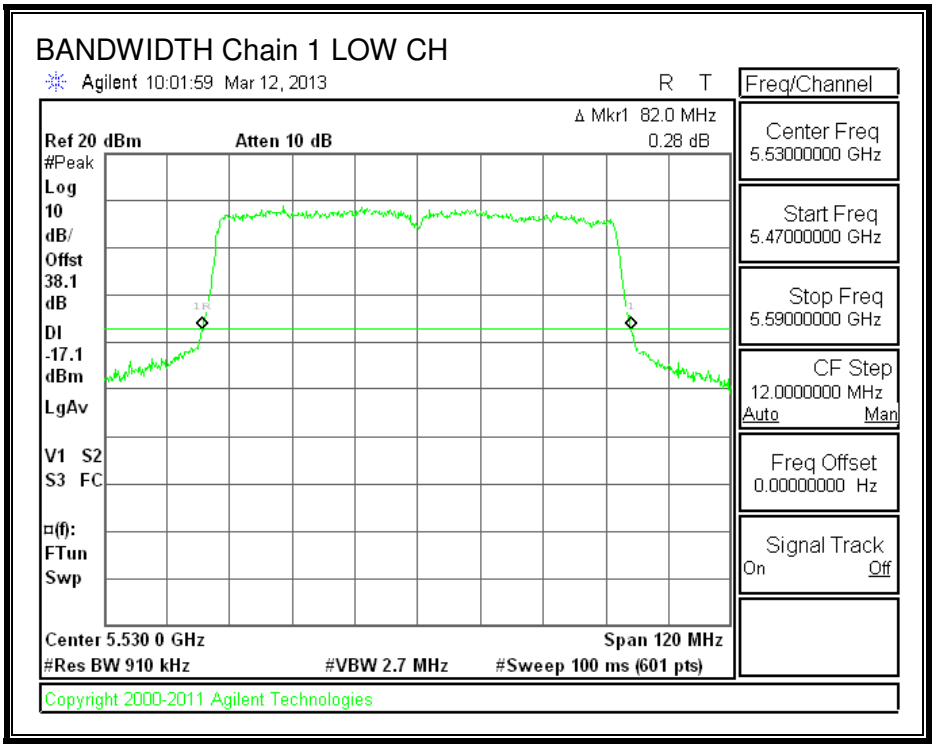
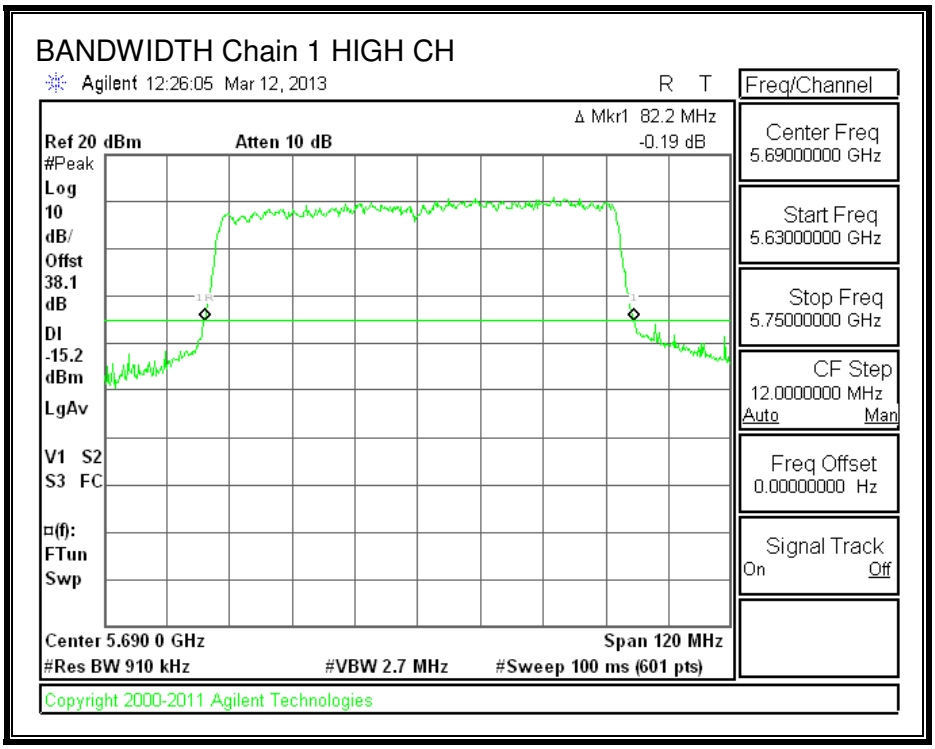
26 dB BANDWIDTH, Chain 1





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8.71.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5530	75.5784	75.4465
High	5690	75.5228	75.5348

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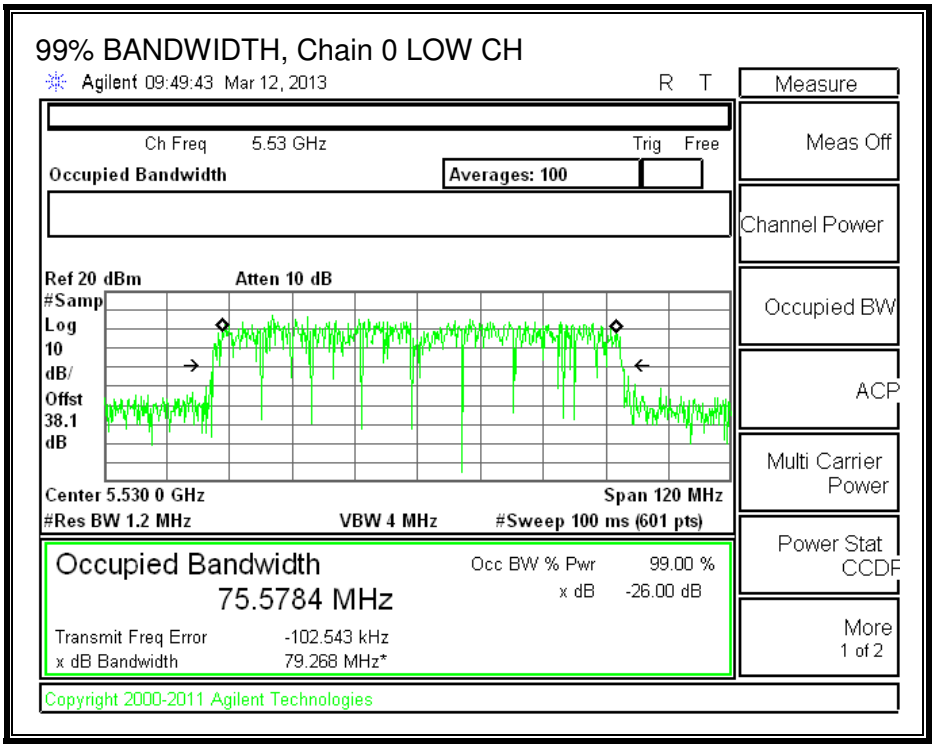
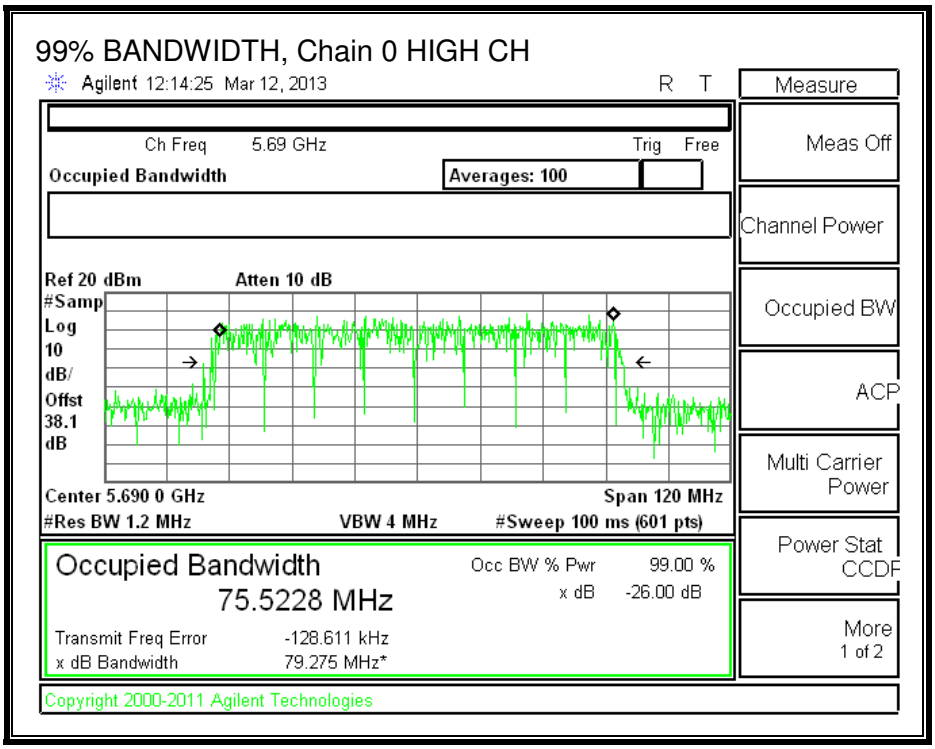
99% BANDWIDTH, Chain 0





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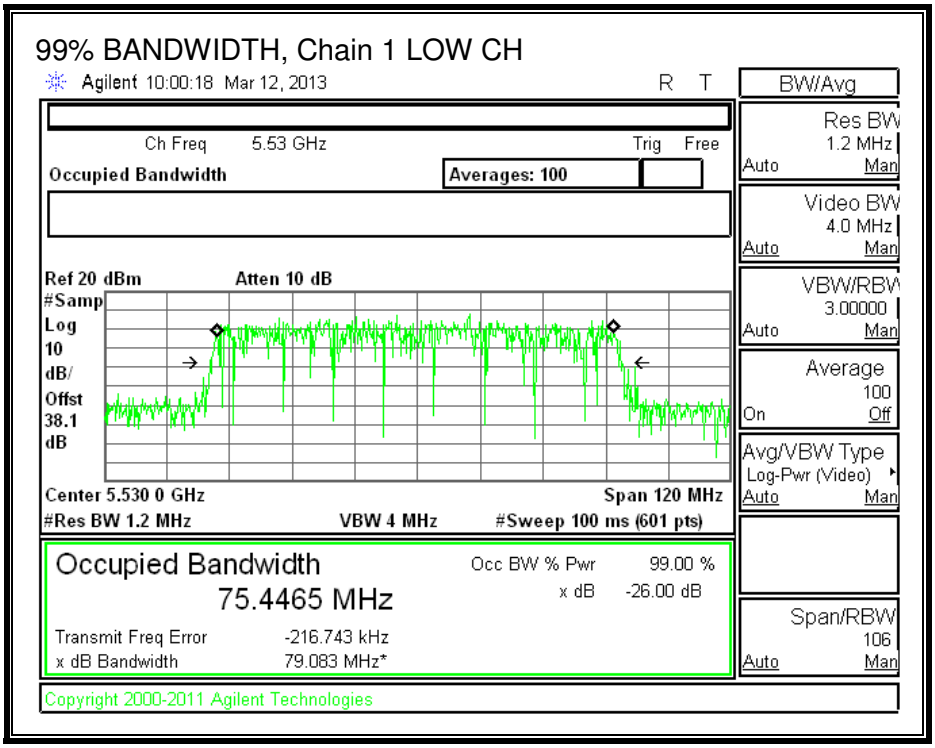
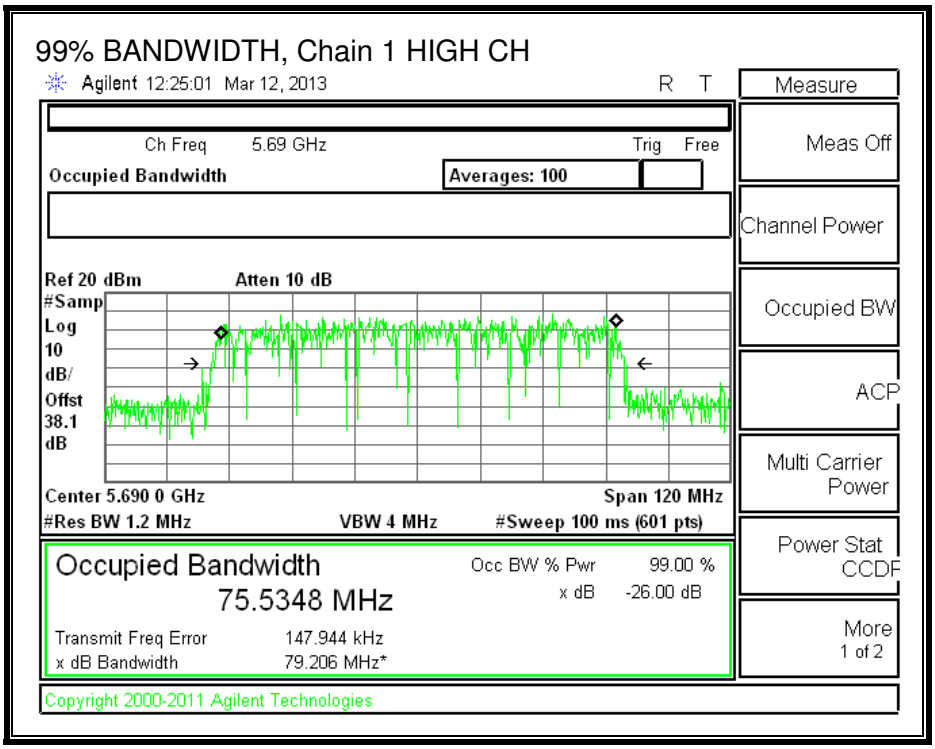
99% BANDWIDTH, Chain 1





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8.71.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.00	3.80	3.42

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	3.80	6.42

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)	Uncorrelated Gain (dBi)
Low	5530	82.00	75.4465	6.42	3.42
High	5690	76.10	72.7614	6.42	3.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5530	24.00	24.00	30.00	24.00	10.58	11.00	10.58
High	5690	24.00	24.00	30.00	24.00	10.58	11.00	10.58

Duty Cycle CF (dB)	0.09	

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5530	12.50	12.70	15.61	24.00	-8.39
High	5690	20.82	20.51	23.77	24.00	-0.23

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Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)	Uncorrelated Gain (dBi)
Low	5530	82.0	75.4	6.42	3.42
High	5690	76.1	72.8	6.42	3.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5530	24.00	24.00	30.00	24.00	10.58	11.00	10.58
High	5690	24.00	24.00	30.00	24.00	10.58	11.00	10.58

Duty Cycle CF (dB)	0.09	

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5530	2.783	2.880	5.932	10.58	-4.65
High	5690	3.178	3.514	6.450	10.58	-4.13

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)	Uncorrelated Gain (dBi)
Mid	5690	4.7	3.1851	6.42	3.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5690	17.68	16.03	22.03	16.03	10.58	11.00	10.58

Duty Cycle CF (dB)	0.09	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5690	5.70	5.93	8.92	16.03	-7.11

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5690	0.965	0.942	4.05	10.58	-6.53

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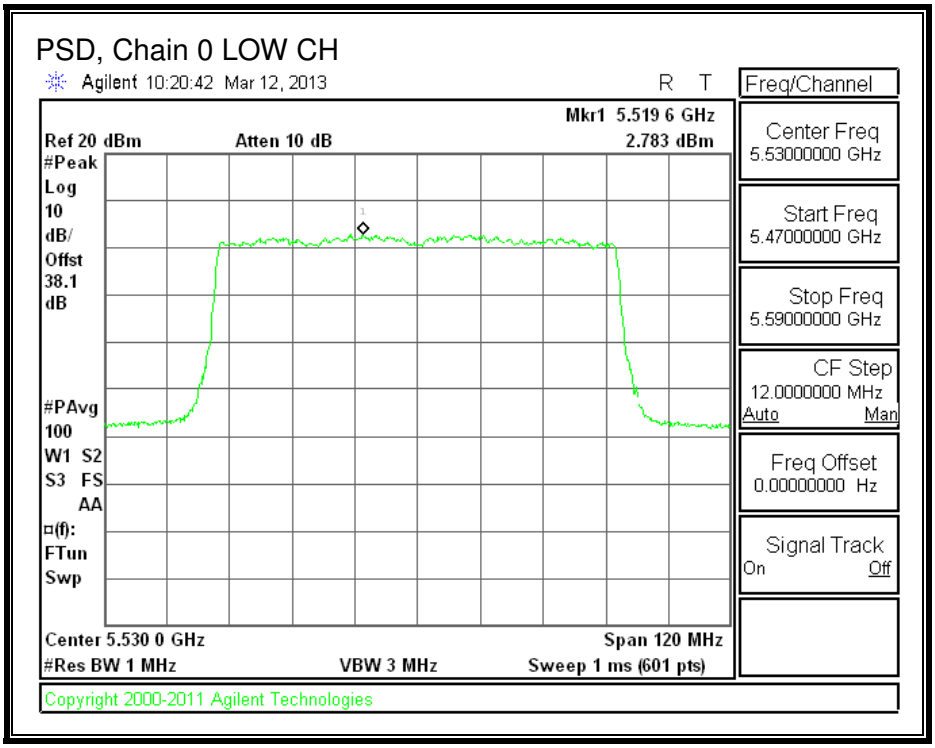
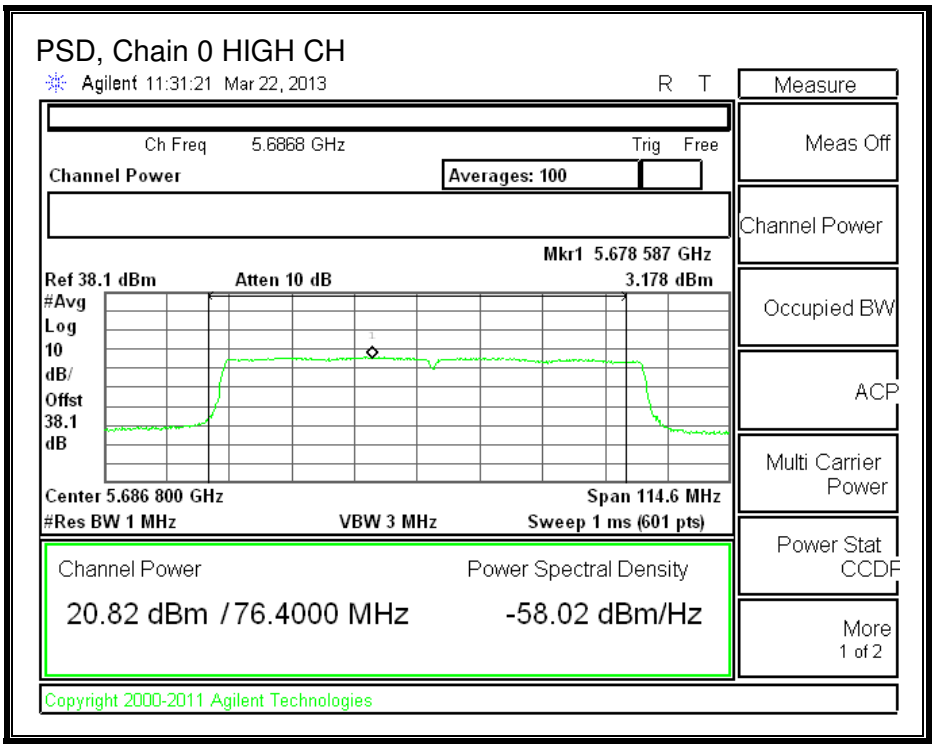
PSD, Chain 0





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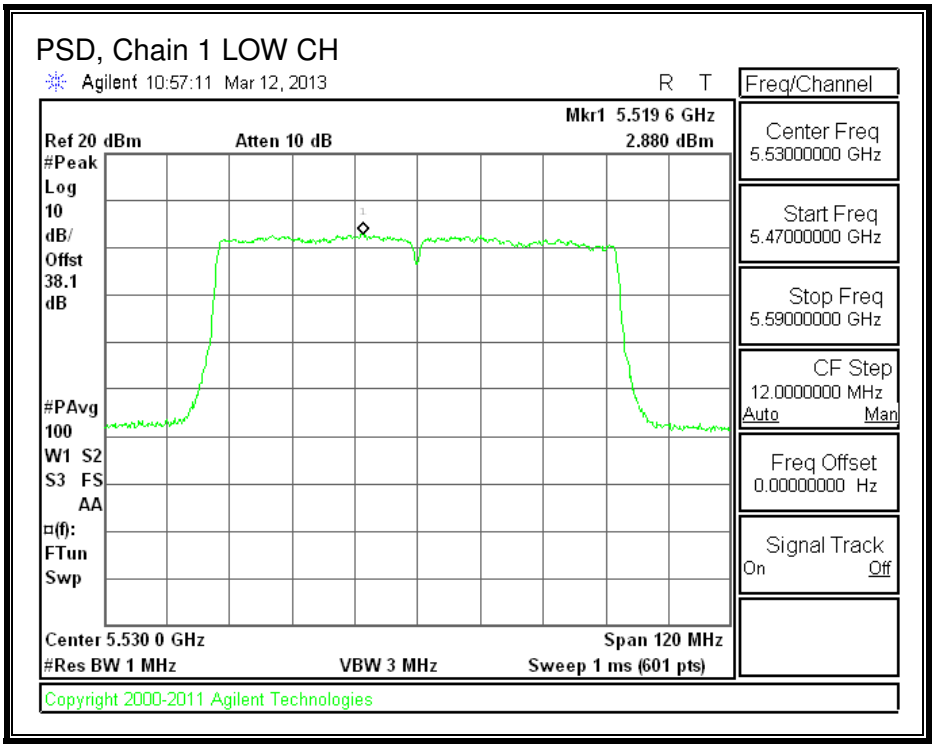
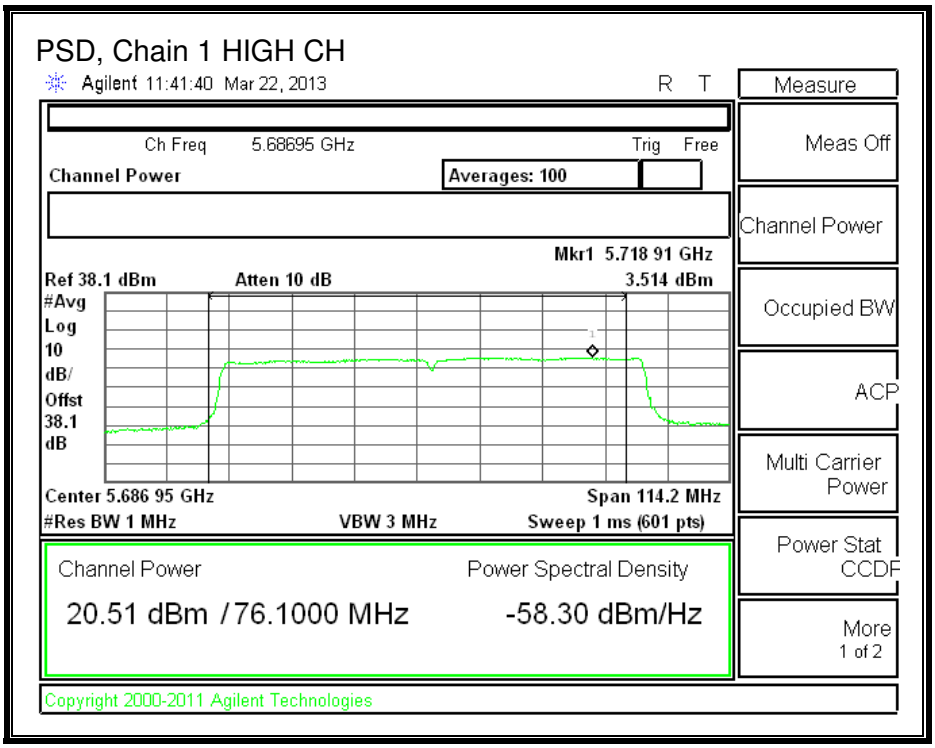
PSD, Chain 1





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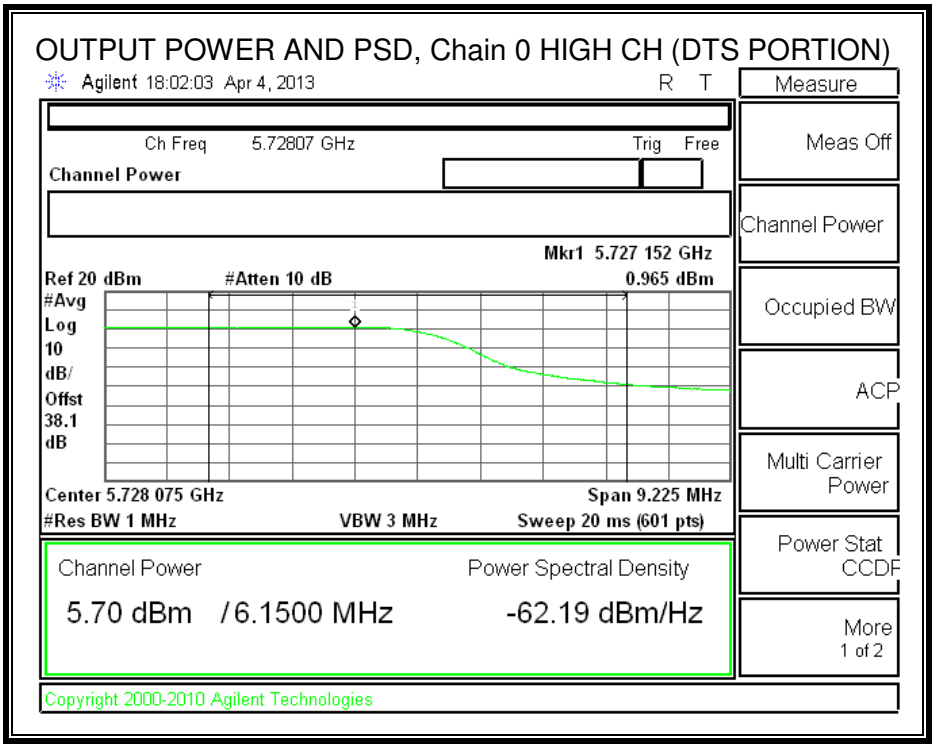
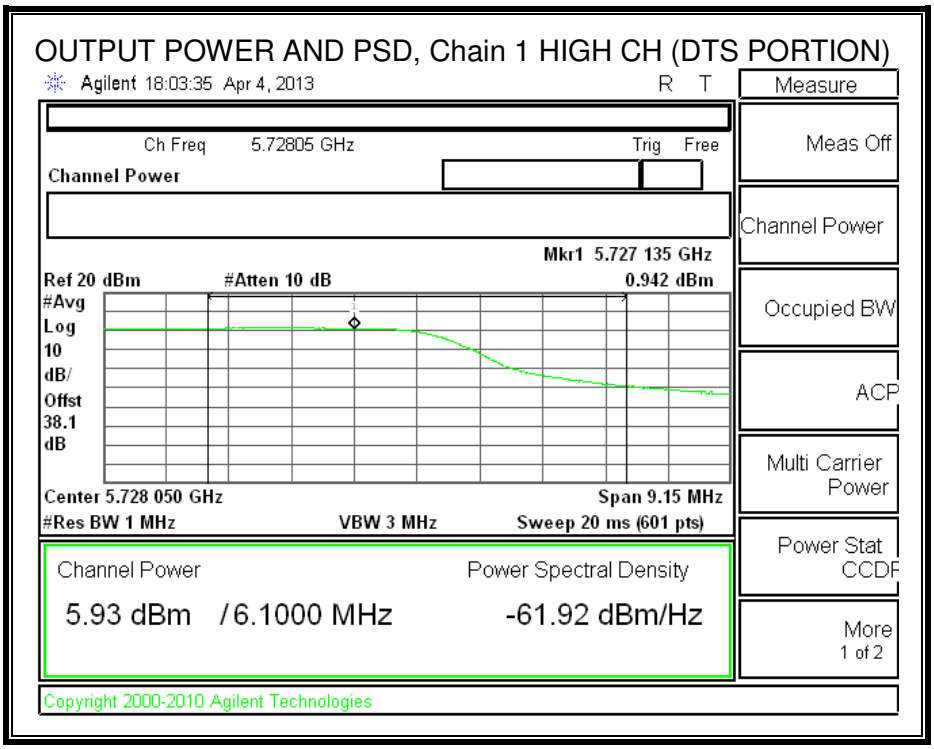
DTS PORTION OUTPUT POWER AND PSD





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8.71.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.72. 802.11ac VHT80 BF 2TX MODE IN THE 5.6 GHz BAND

Covered by testing 11ac VHT80 CDD 2TX mode, the power per chain used for 11ac VHT80 CDD 2TX mode is the same power per chain that will be used for 11ac VHT80 BF 2TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.72.1. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	3.80	6.42

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)
Low	5530	82.00	75.4465	6.42
High	5690	76.10	72.7500	6.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Low	5530	23.58	24.00	30.00	23.58
High	5690	23.58	24.00	30.00	23.58

Duty Cycle CF (dB)	0.09	

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5530	12.50	12.70	15.61	23.58	-7.97
High	5690	19.44	19.47	22.56	23.58	-1.02

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)
Mid	5690	6.10	2.7500	6.42

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Mid	5690	18.43	15.39	21.39	14.97

Duty Cycle CF (dB)	0.09	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5690	5.82	5.91	8.97	14.97	-6.01

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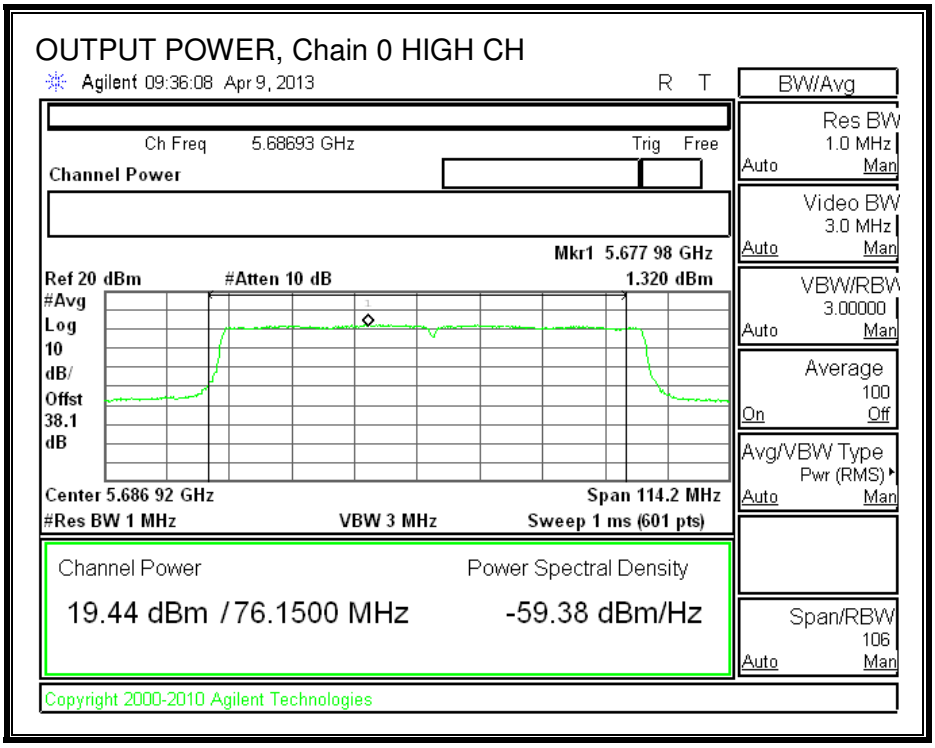
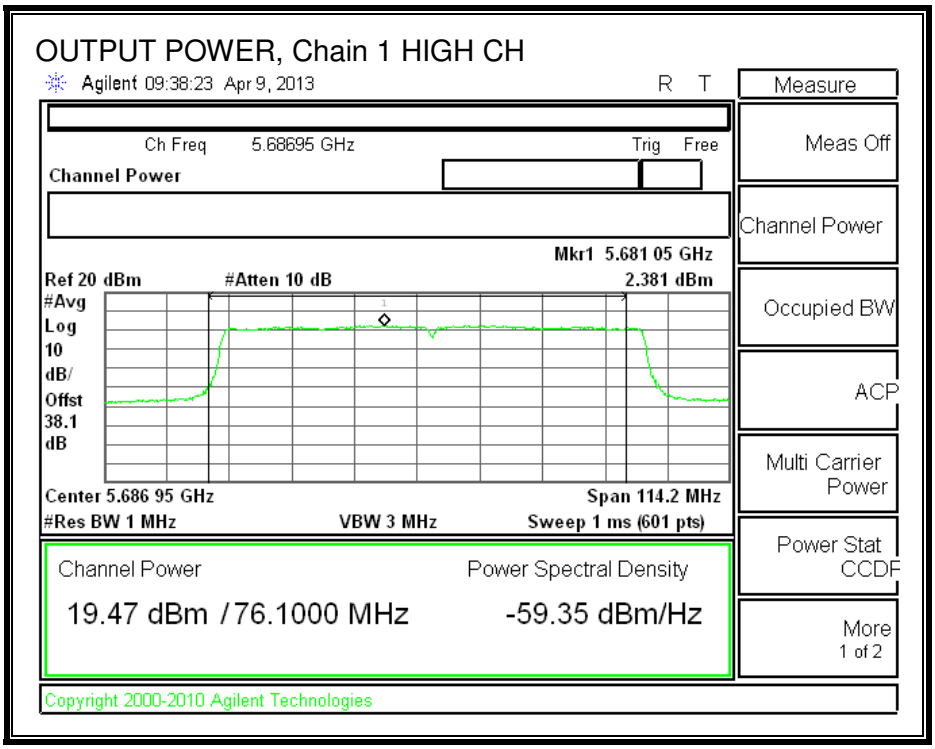
OUTPUT POWER, Chain 0



OUTPUT POWER, Chain 1



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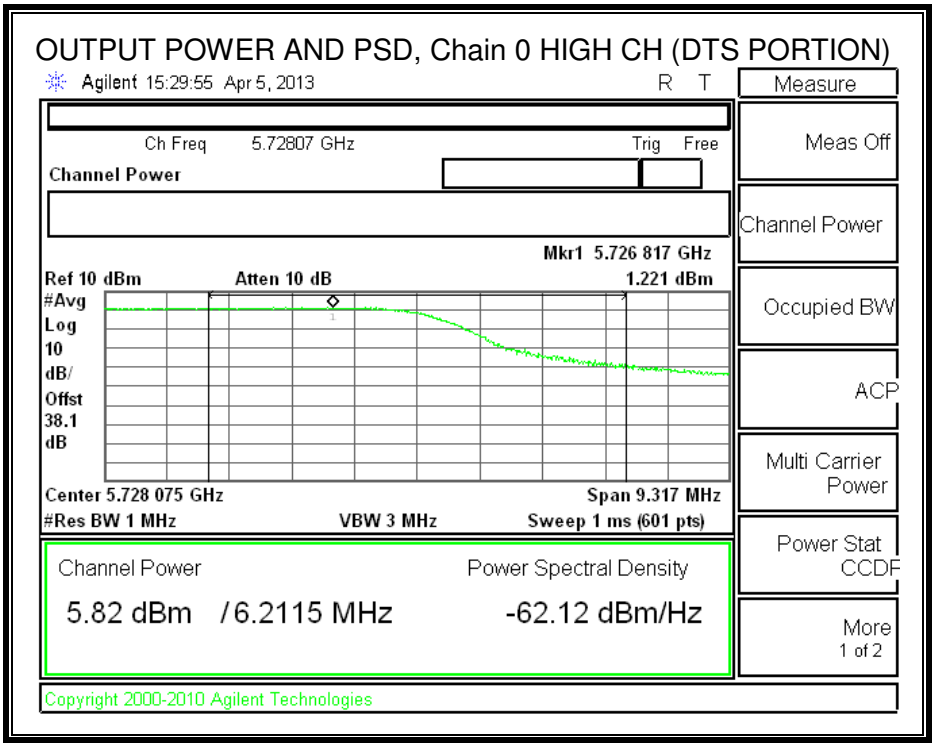
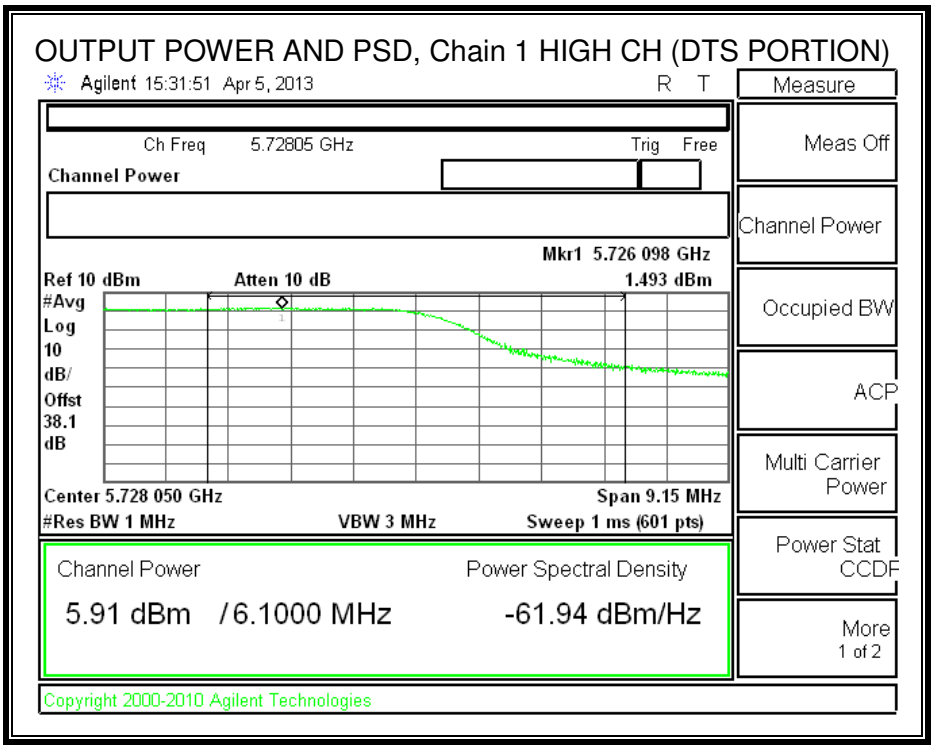
DTS PORTION OUTPUT POWER AND PSD





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8.73. 802.11ac VHT80 2TX STBC MODE IN THE 5.6 GHz BAND

Covered by testing 11ac VHT80 CDD 2TX mode, the power per chain used for 11ac VHT80 CDD 2TX mode is the same power per chain that will be used for 11ac VHT80 STBC 2TX mode.

8.74. 802.11ac VHT80 3TX STBC MODE IN THE 5.6 GHz BAND

Covered by testing 11ac VHT80 CDD 3TX mode, the power per chain used for 11ac VHT80 CDD 3TX mode is the same power per chain that will be used for 11ac VHT80 STBC 3TX mode.

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8.75. 802.11ac VHT80 CDD 3TX MODE IN THE 5.6 GHz BAND

8.75.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
5530	82.50	81.83	81.67
5690	83.00	82.33	82.00

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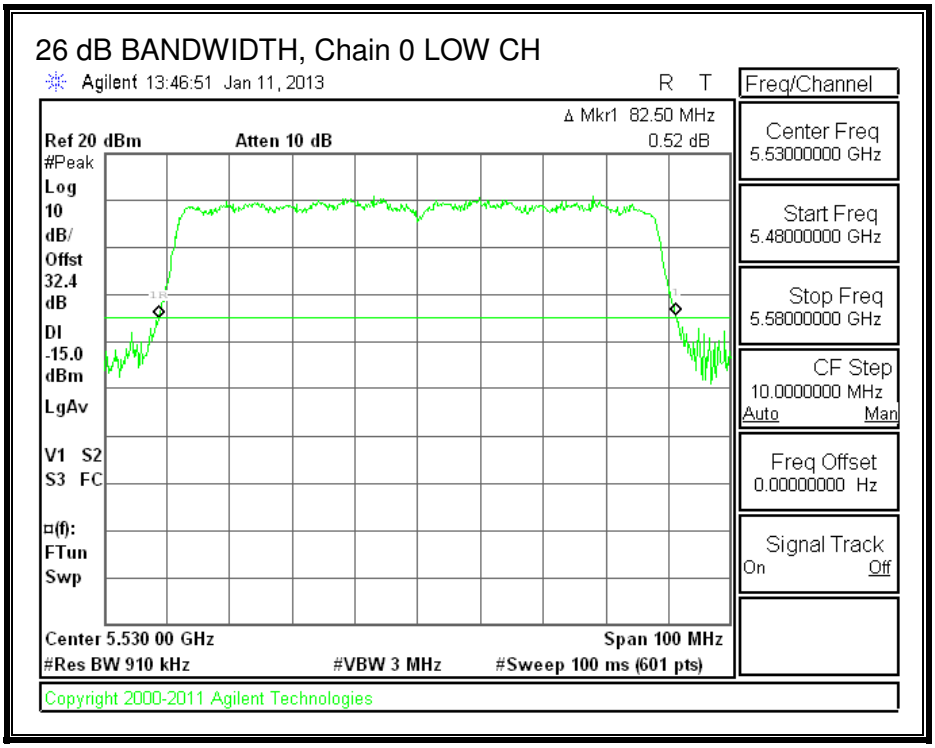
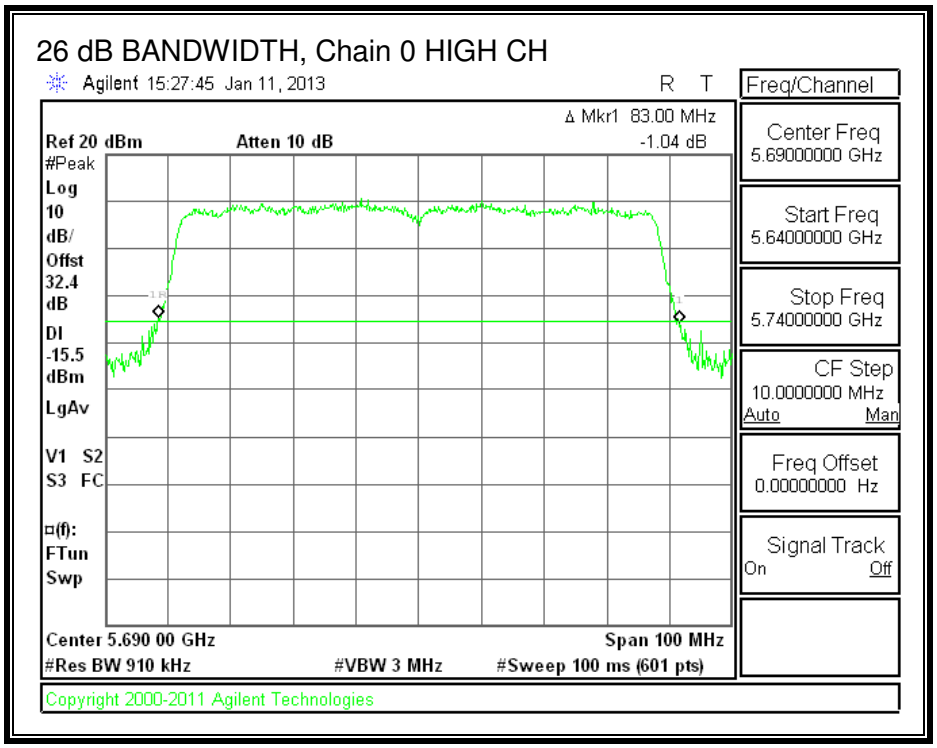
26 dB BANDWIDTH, Chain 0





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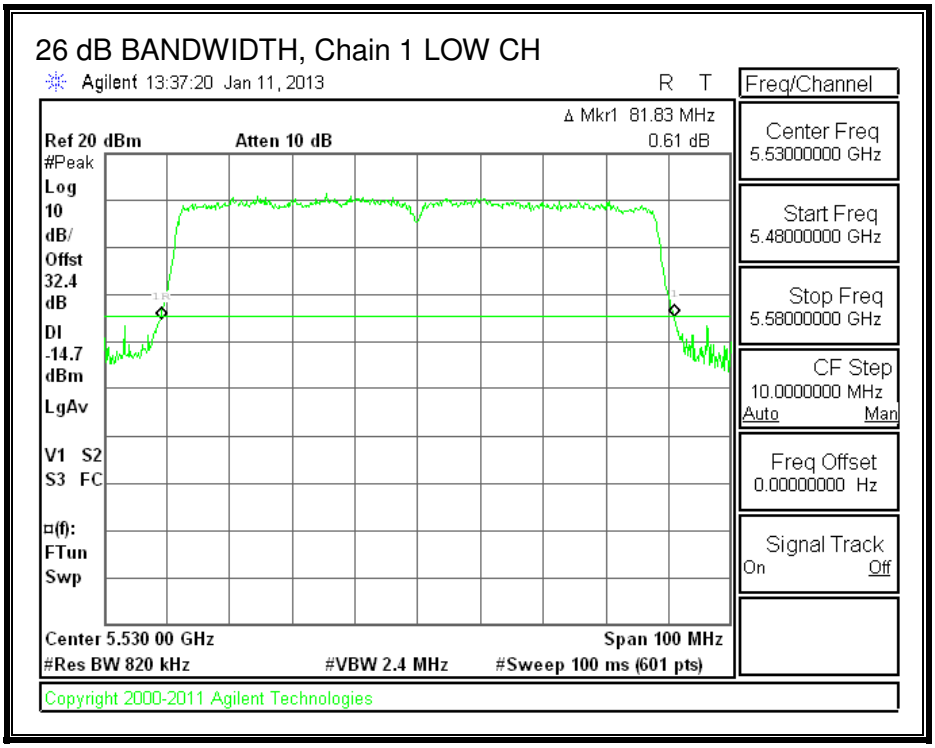
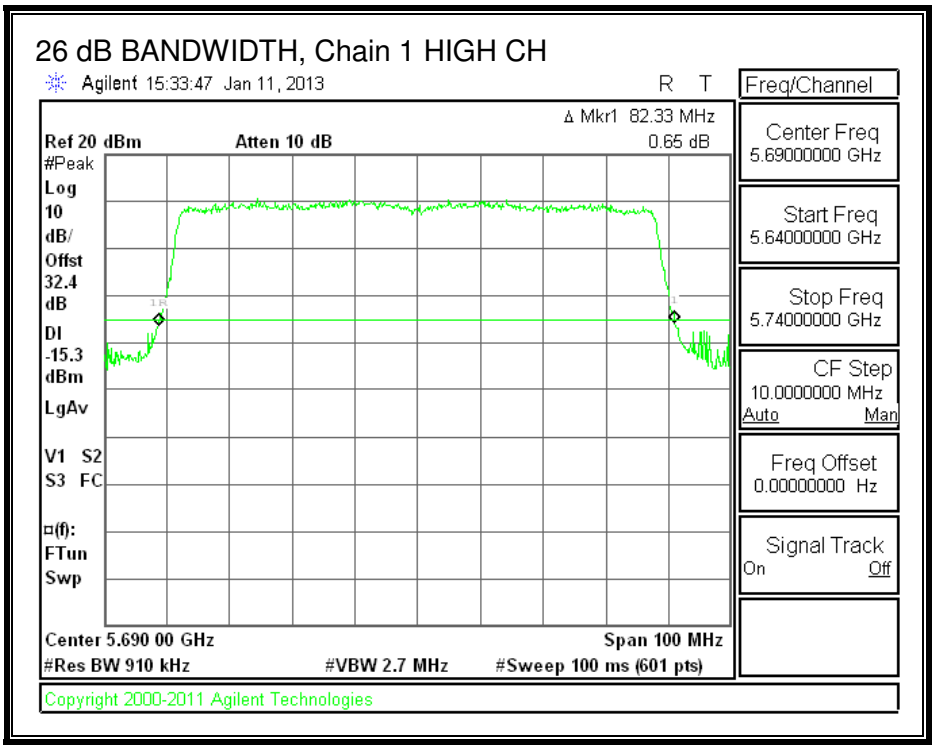
26 dB BANDWIDTH, Chain 1





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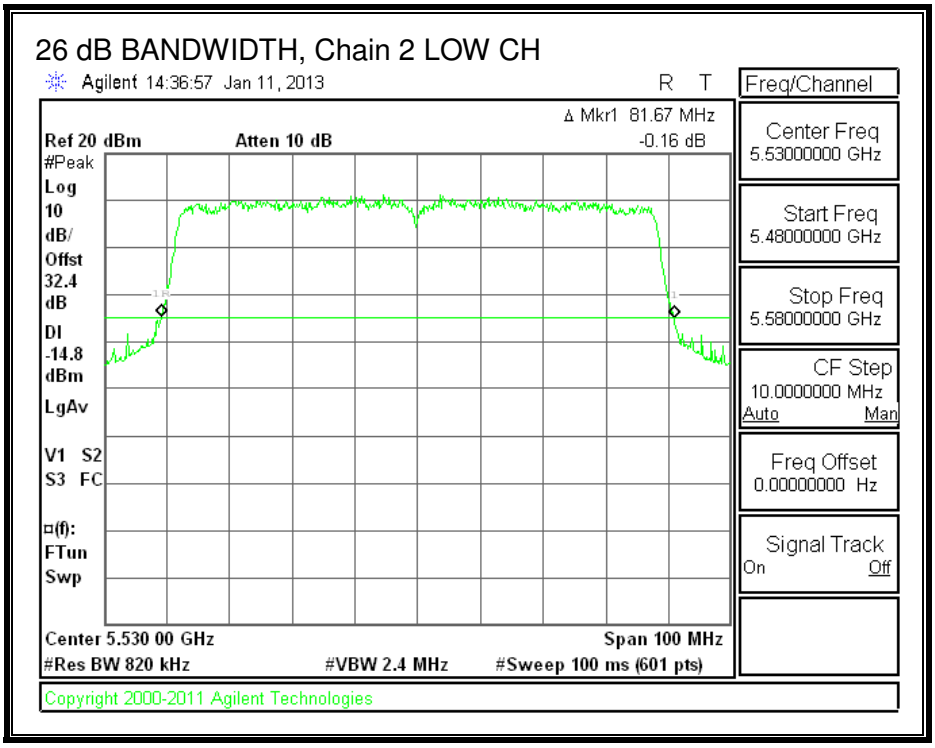
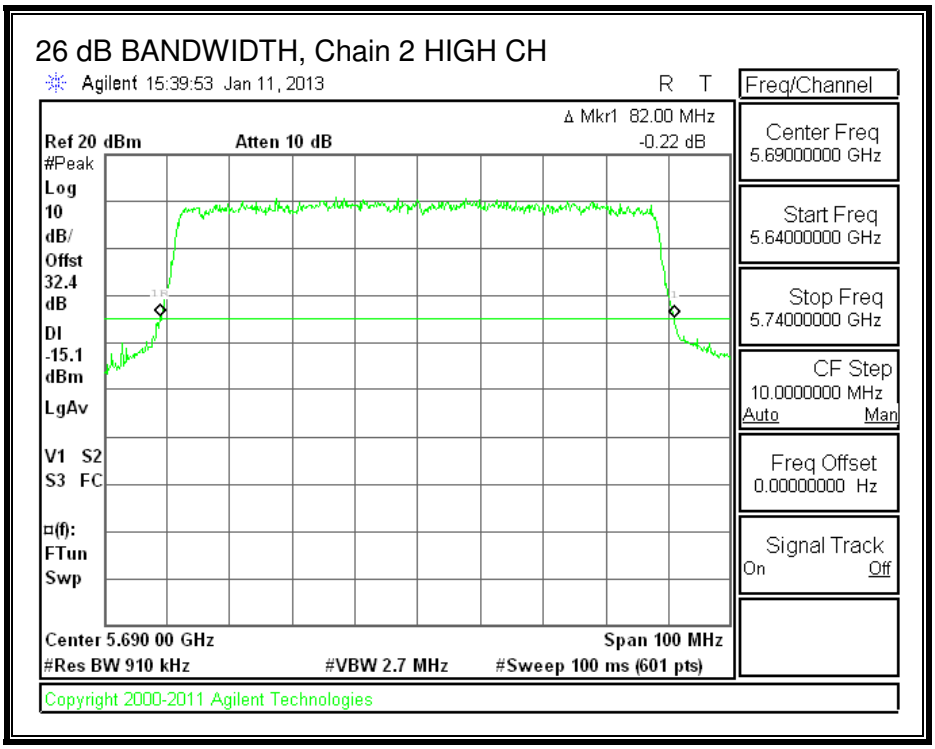
26 dB BANDWIDTH, Chain 2





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8.75.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5530	75.3594	75.4598	75.3452
High	5690	74.4393	75.4984	75.5812

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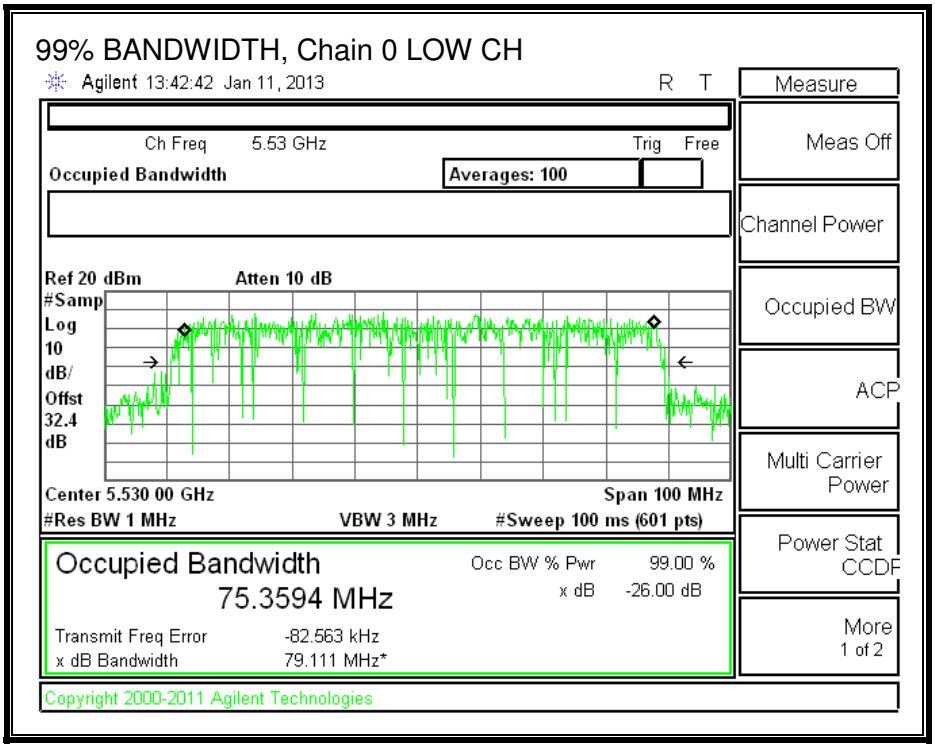
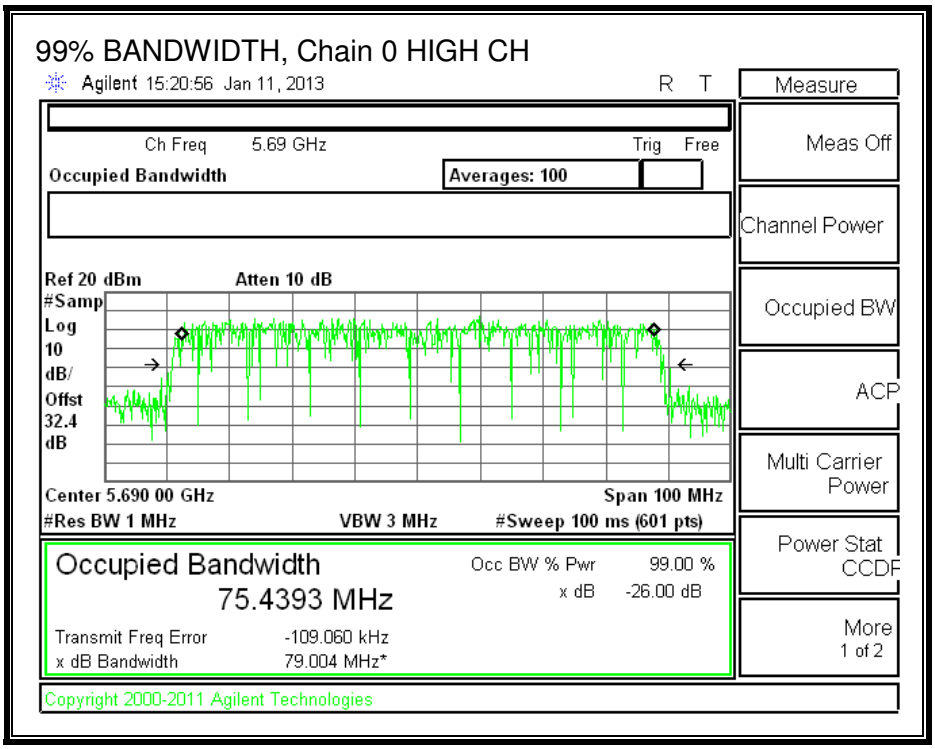
99% BANDWIDTH, Chain 0





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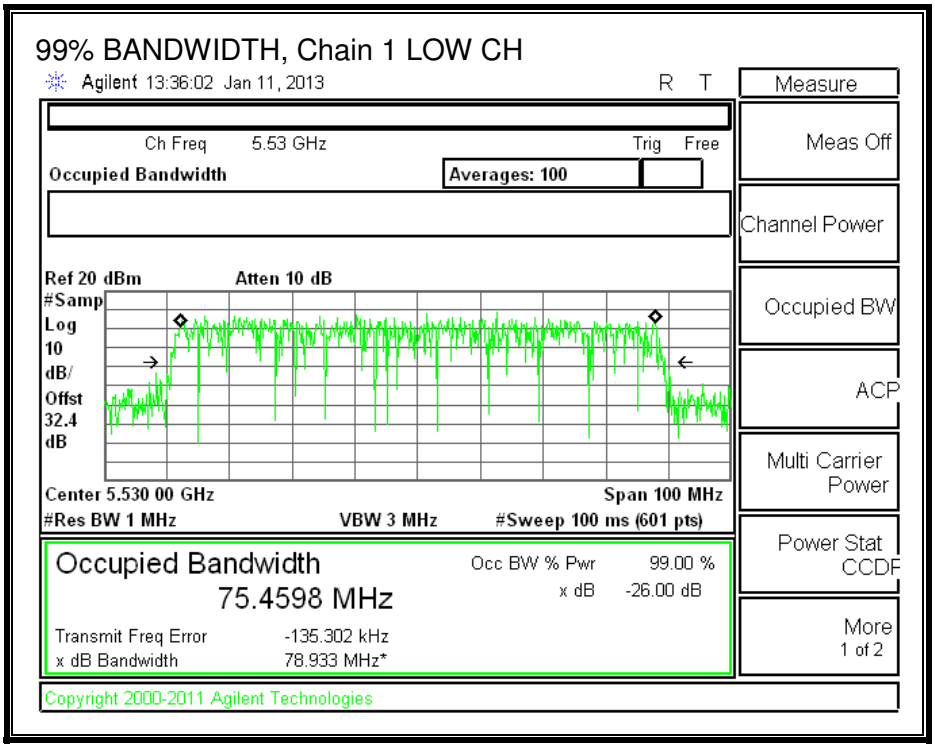
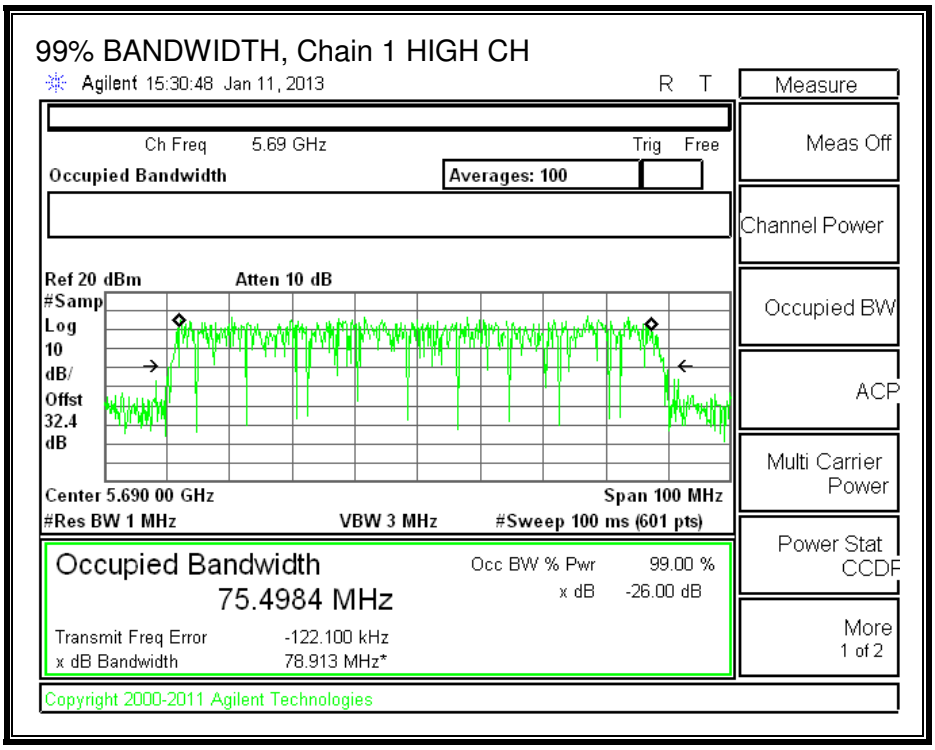
99% BANDWIDTH, Chain 1





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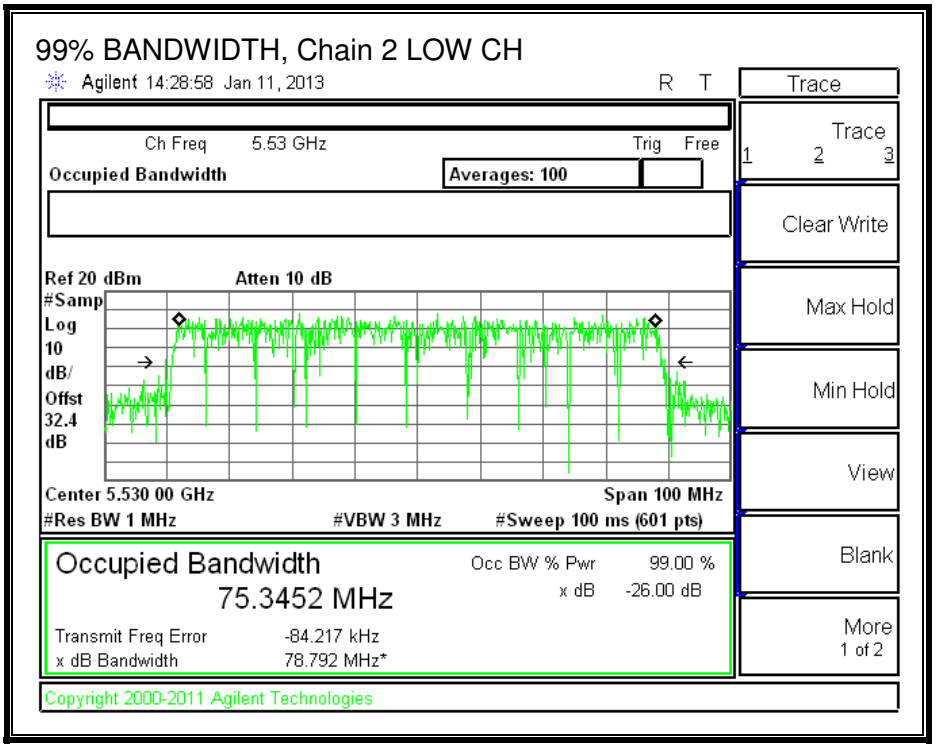
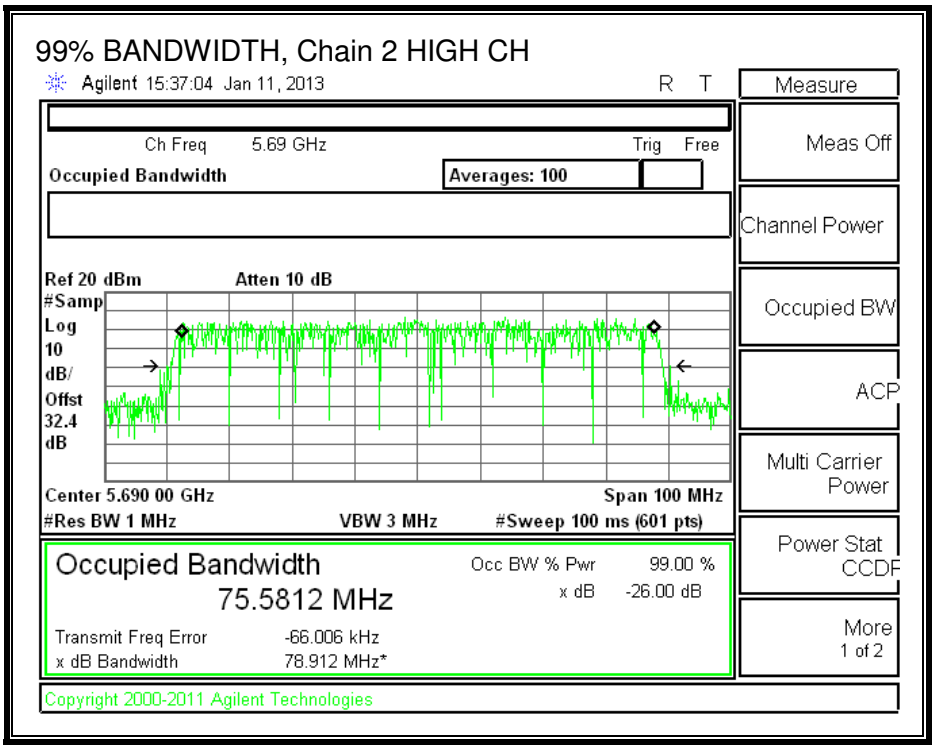
99% BANDWIDTH, Chain 2





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8.75.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.00	1.70	3.80	2.92

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	1.70	3.80	7.65

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OUTPUT POWER RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)	Uncorrelated Gain (dBi)
LOW	5530	81.67	75.3452	7.65	2.92
HIGH	5690	76.00	72.4667	7.65	2.92

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
LOW	5530	24.00	24.00	30.00	24.00
HIGH	5690	24.00	24.00	30.00	24.00

Duty Cycle CF (dB)	0.09	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
LOW	5530	12.00	12.20	12.10	16.87	24.00	-7.13
HIGH	5690	18.58	18.72	18.73	23.54	24.00	-0.46

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PSD RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5530	81.80	75.2734	7.65
High	5690	82.00	74.9333	7.65

Limits

Channel	Frequency (MHz)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5530	9.35	11.00	9.35
High	5690	9.35	11.00	9.35

Duty Cycle CF (dB)	0.09	Included in PPSD

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Chain 2 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5530	-1.594	-2.085	-2.007	2.97	9.35	-6.38
High	5690	1.792	0.683	1.749	6.30	9.35	-3.05

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)	Uncorrelated Gain (dBi)
Mid	5690	4.7	2.9836	7.65	2.92

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5690	17.68	15.75	21.75	15.75	9.35	11.00	9.35

Duty Cycle CF (dB)	0.09	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5690	4.76	3.95	4.22	9.18	15.75	-6.56

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPD (dBm)	Chain 1 Meas PPD (dBm)	Chain 2 Meas PPD (dBm)	Total Corr'd PPD (dBm)	PPD Limit (dBm)	PPD Margin (dB)
Mid	5690	0.485	-0.556	-0.419	4.72	9.35	-4.63

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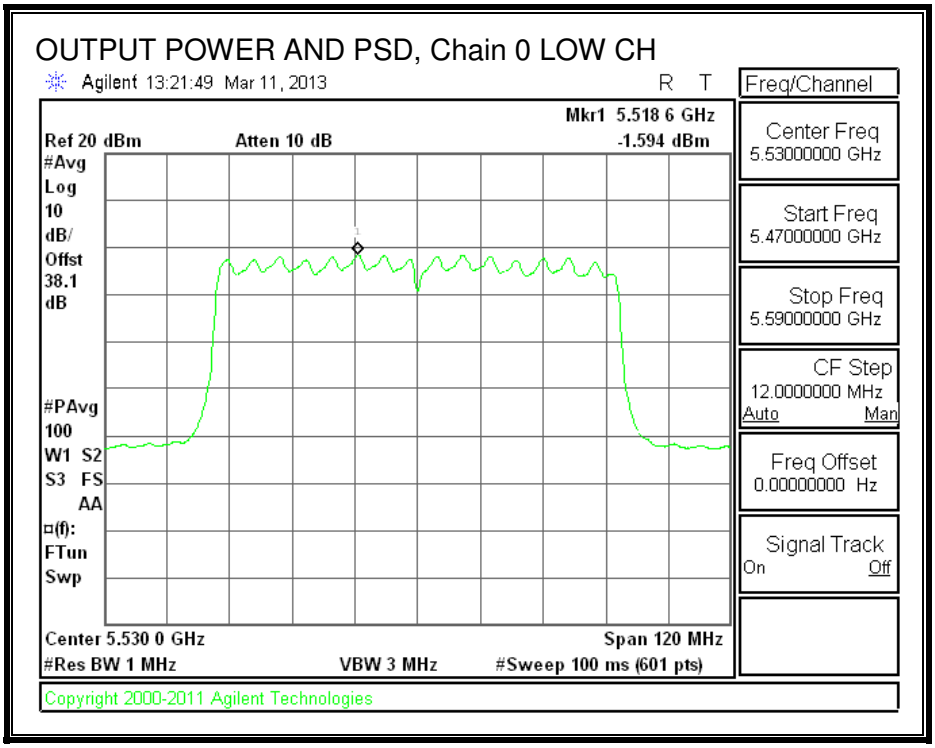
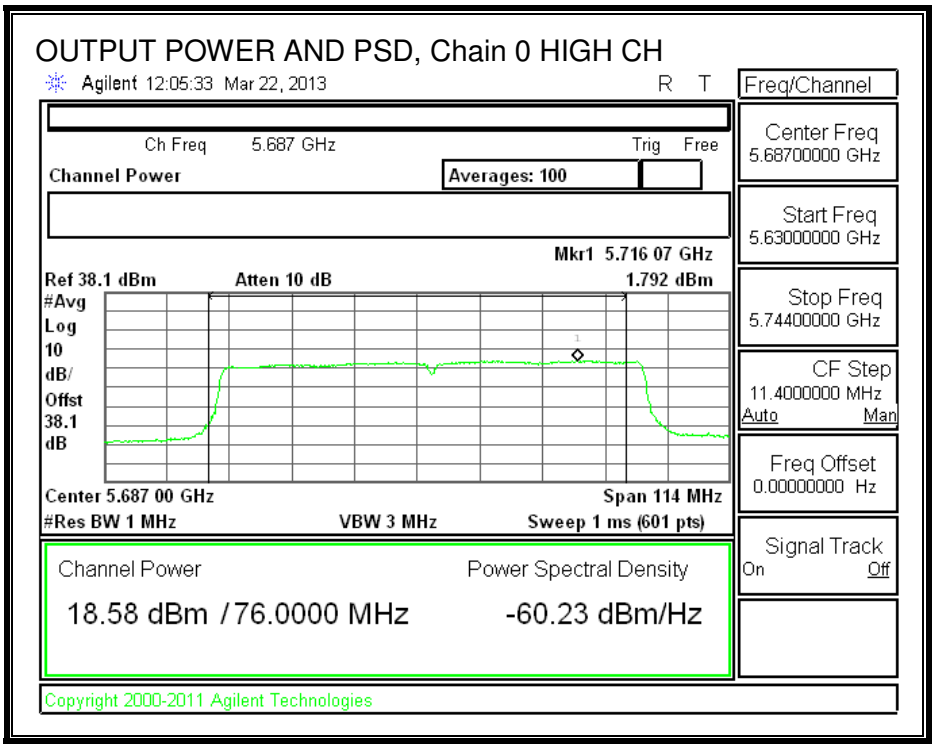
OUTPUT POWER AND PSD, Chain 0





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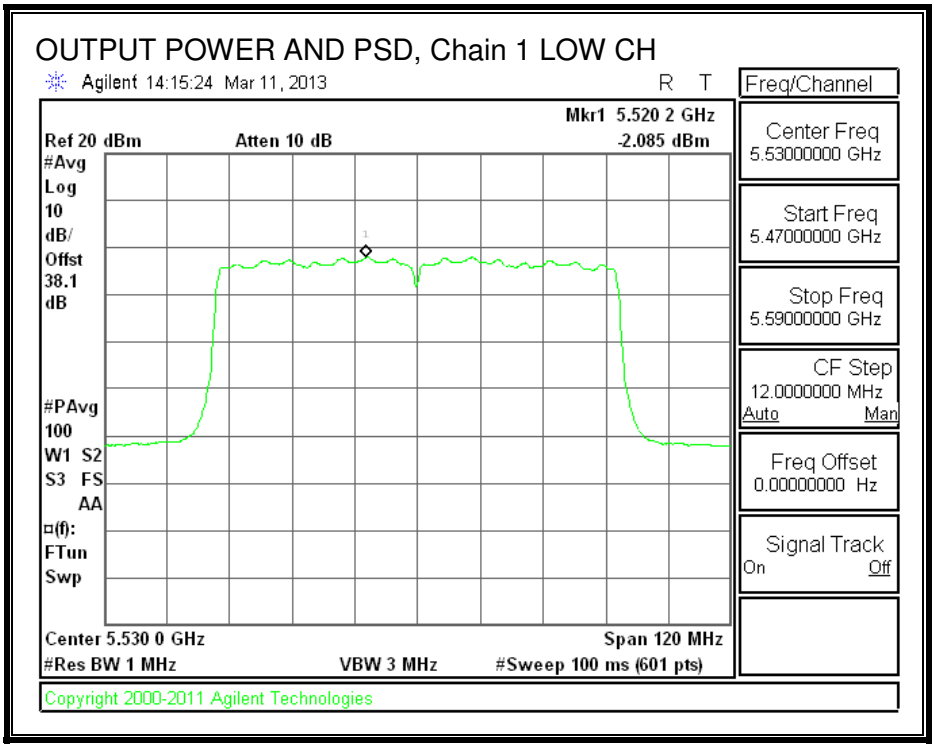
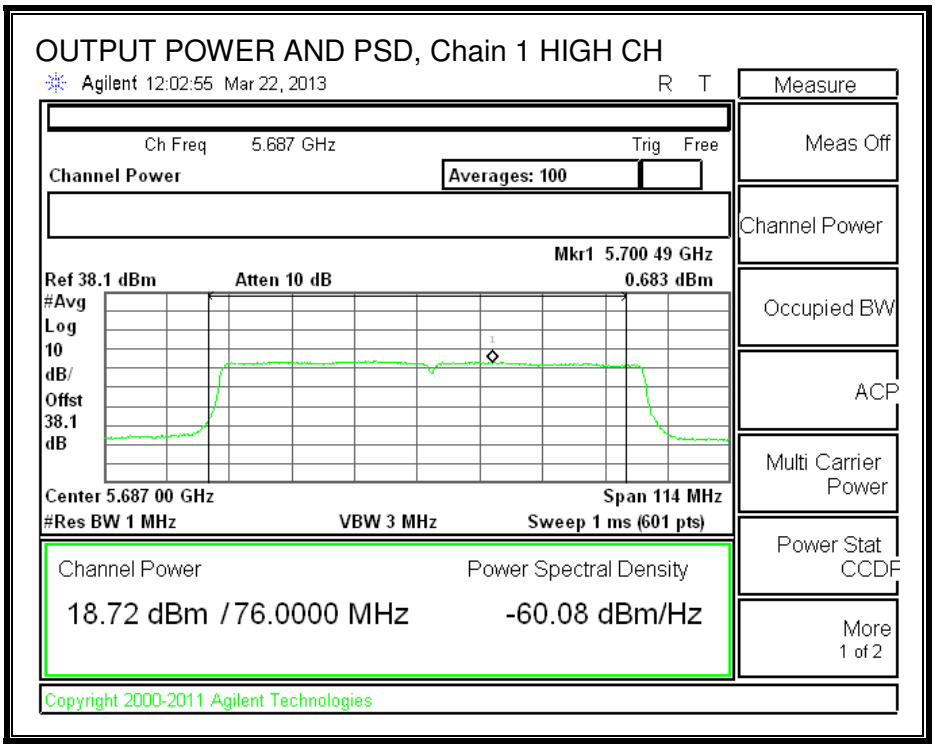
OUTPUT POWER AND PSD, Chain 1





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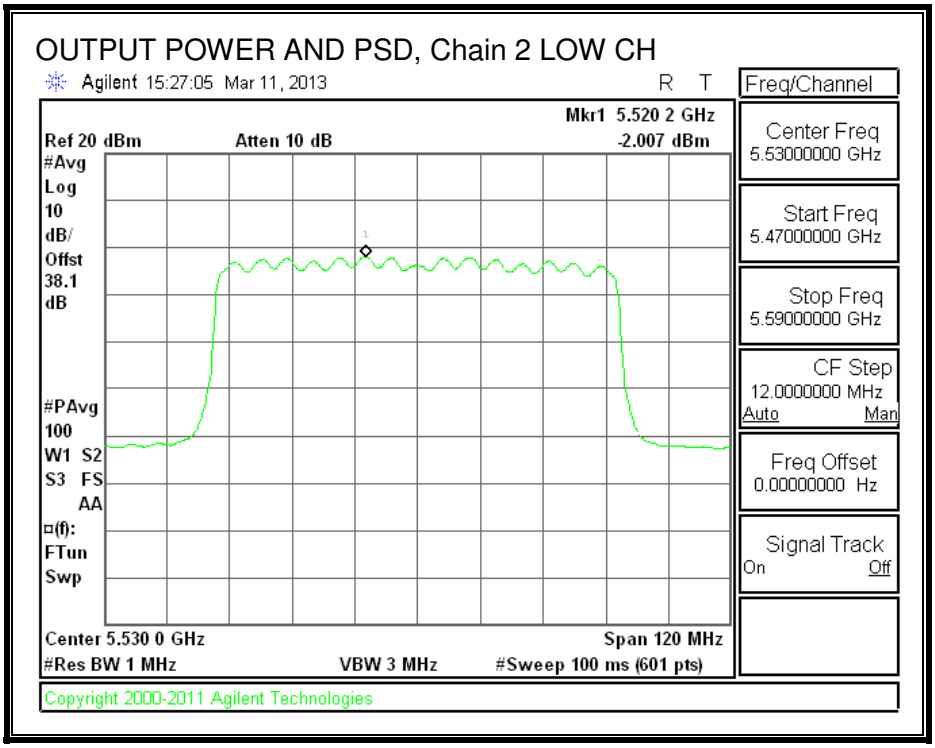
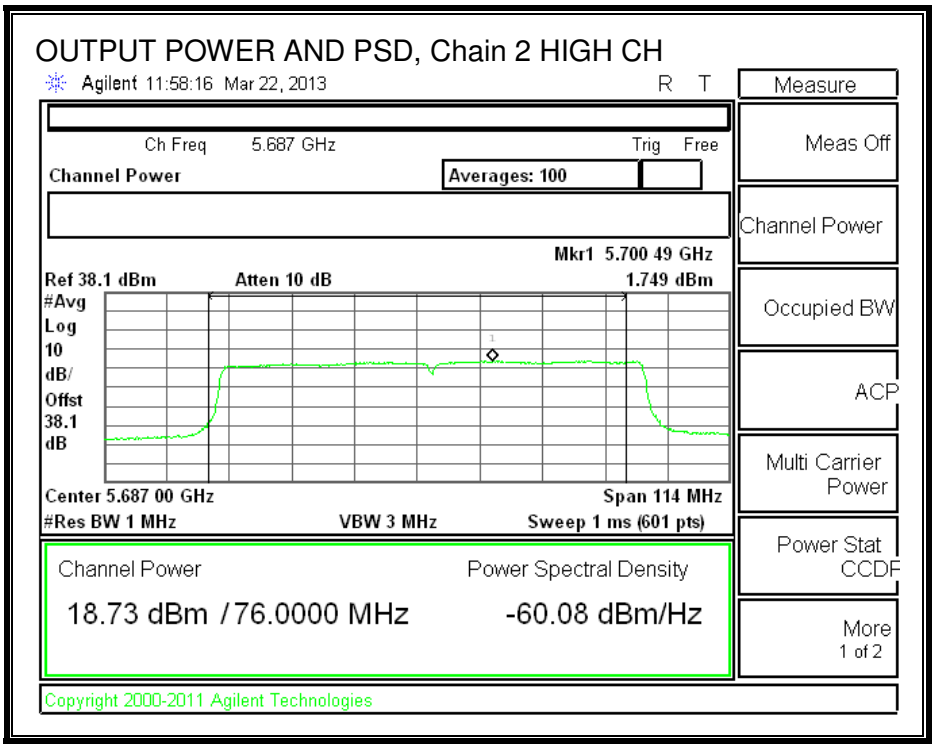
OUTPUT POWER AND PSD, Chain 2





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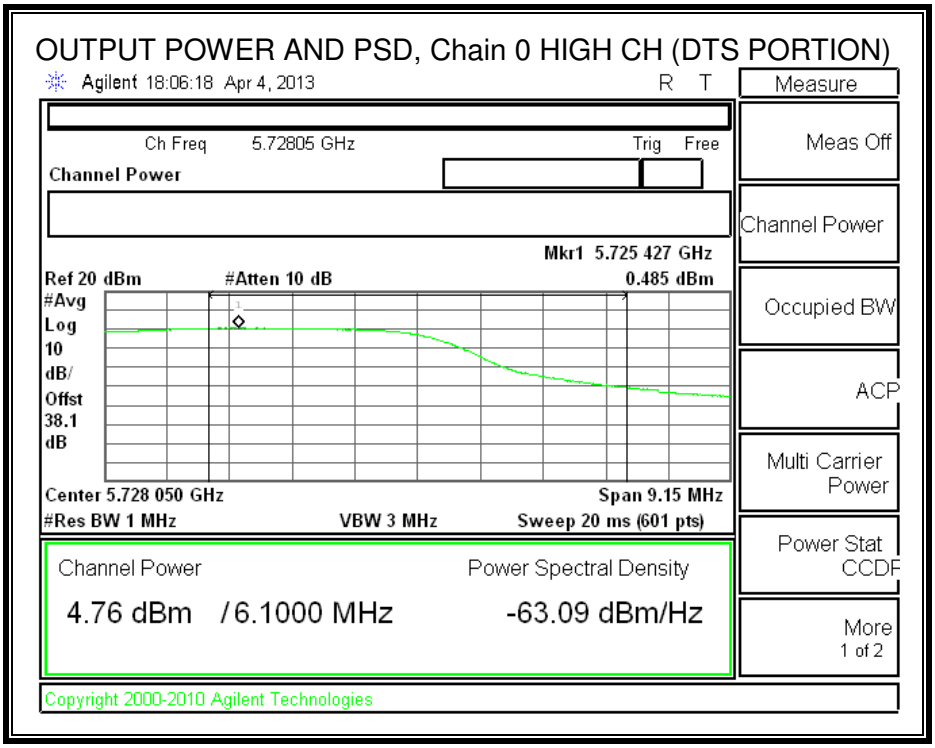
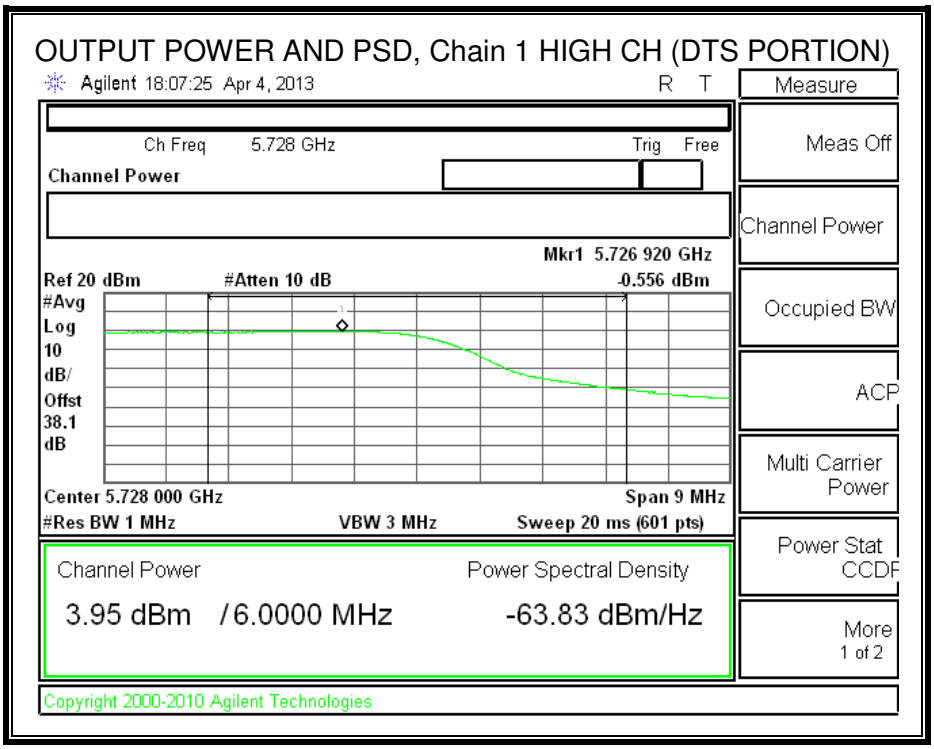
DTS PORTION OUTPUT POWER AND PSD





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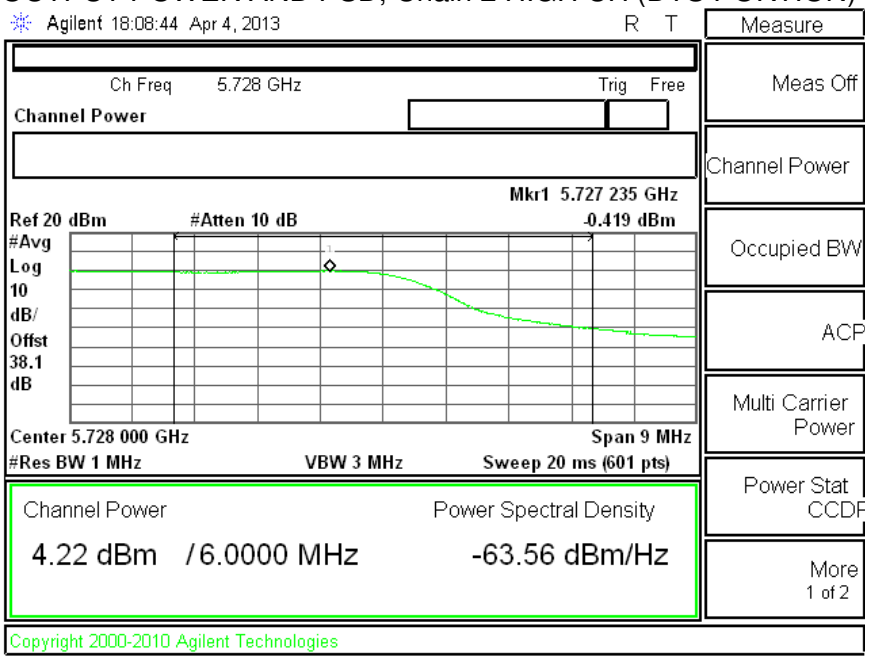
OUTPUT POWER AND PSD, Chain 2 HIGH CH (DTS PORTION)



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8.75.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

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8.76. 802.11ac VHT80 BF 3TX MODE IN THE 5.6 GHz BAND

Covered by testing 11ac VHT80 CDD 3TX mode, the power per chain used for 11ac VHT80 CDD 3TX mode is the same power per chain that will be used for 11ac VHT80 BF 3TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.76.1. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.00	1.70	3.80	7.65

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OUTPUT POWER RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)
LOW	5530	81.67	75.3452	7.65
HIGH	5690	76.00	72.4667	7.65

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
LOW	5530	22.35	24.00	30.00	22.35
HIGH	5690	22.35	24.00	30.00	22.35

Duty Cycle CF (dB)	0.09	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
LOW	5530	12.00	12.20	12.10	16.87	22.35	-5.48
HIGH	5690	16.38	16.21	16.13	21.10	22.35	-1.25

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Limits (FCC), portion in 5.8 GHz UNII band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Gain (dBi)
Mid	5690	4.7	2.9836	7.65

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Mid	5690	16.03	15.75	21.75	14.10

Duty Cycle CF (dB)	0.09	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5690	4.76	3.95	4.22	9.18	14.10	-4.91

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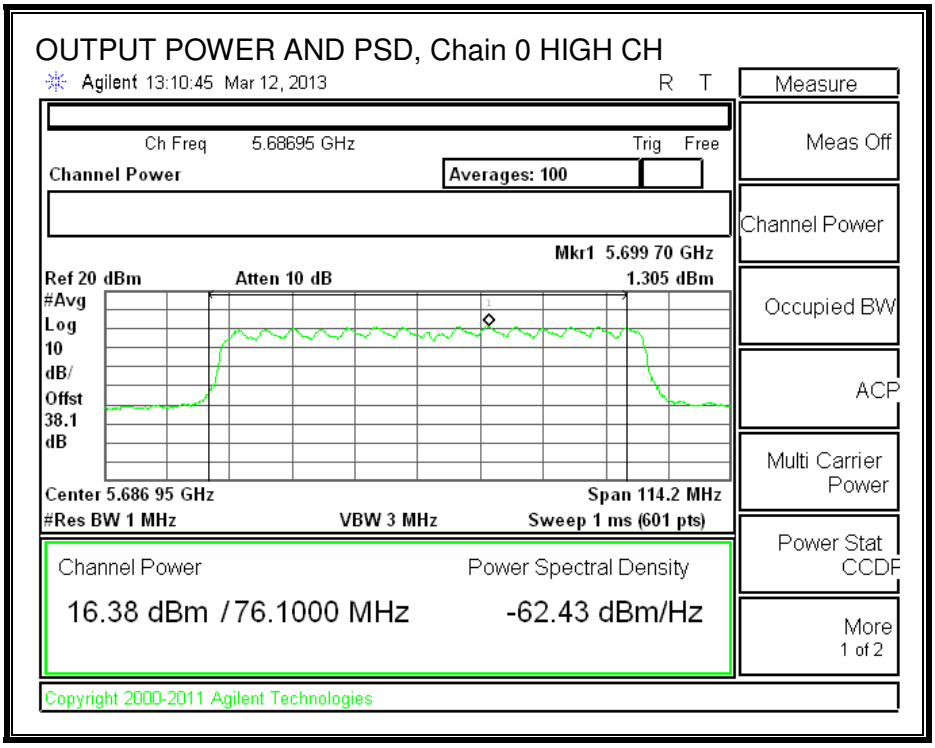
OUTPUT POWER AND PSD, Chain 0



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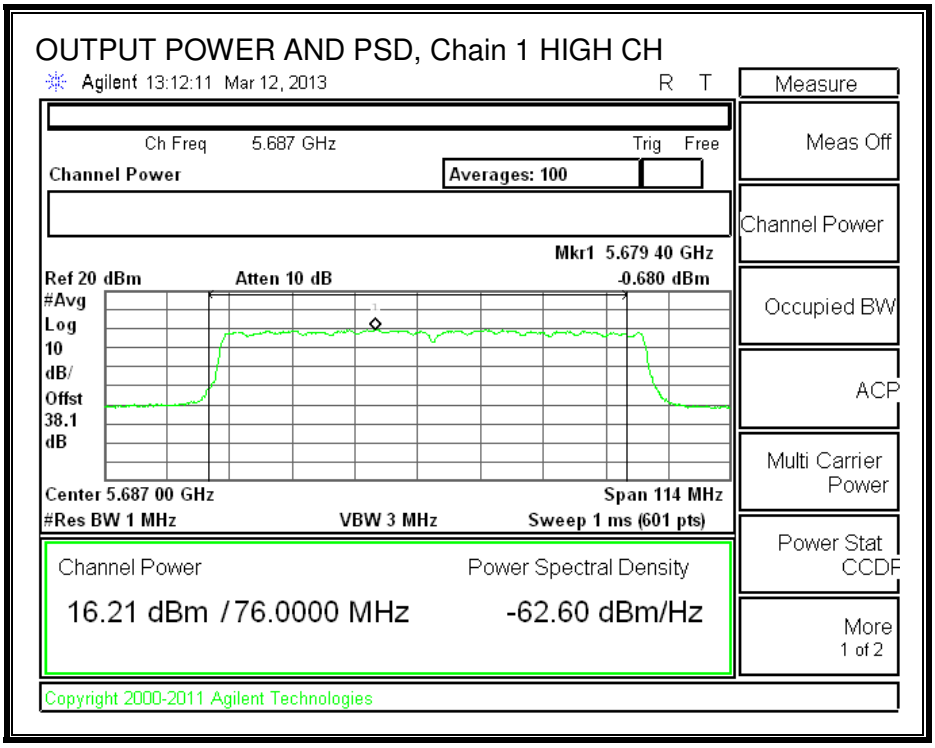
OUTPUT POWER AND PSD, Chain 1



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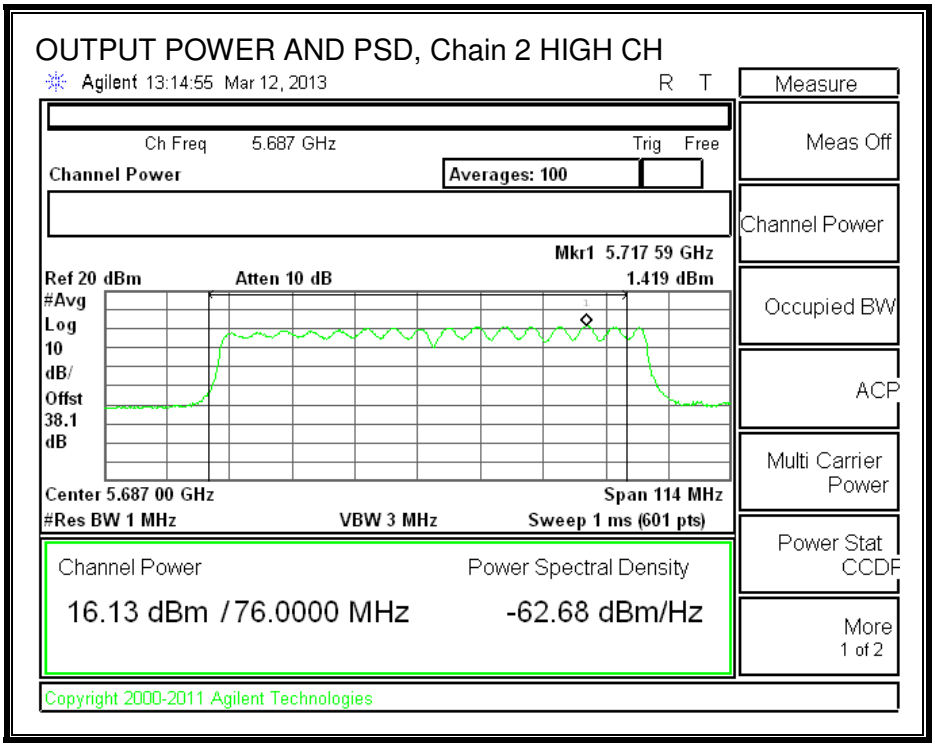
OUTPUT POWER AND PSD, Chain 2



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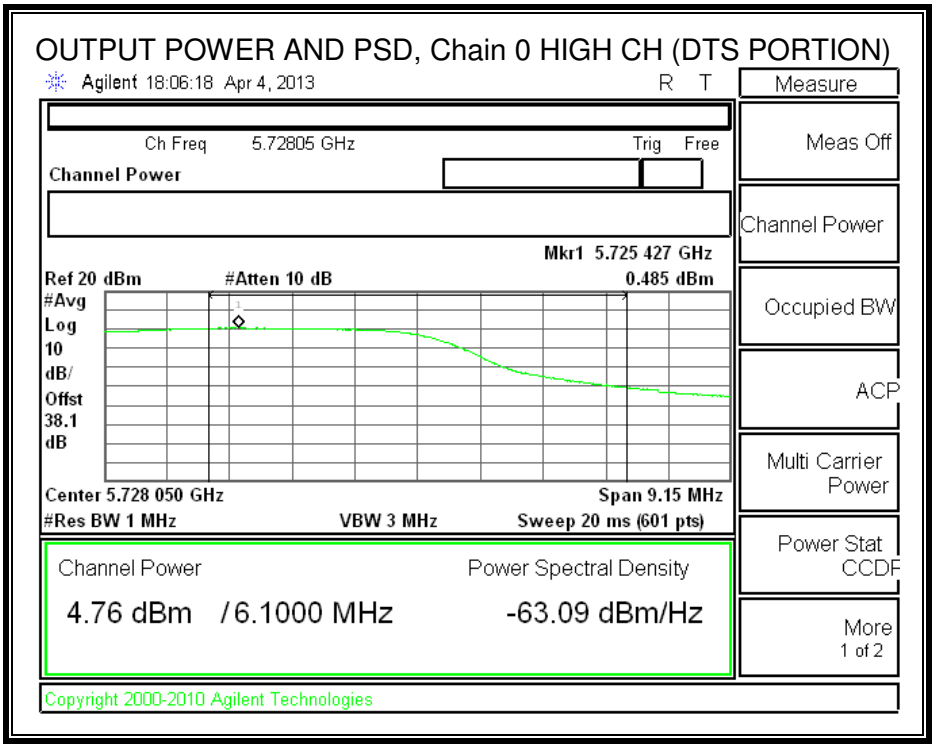
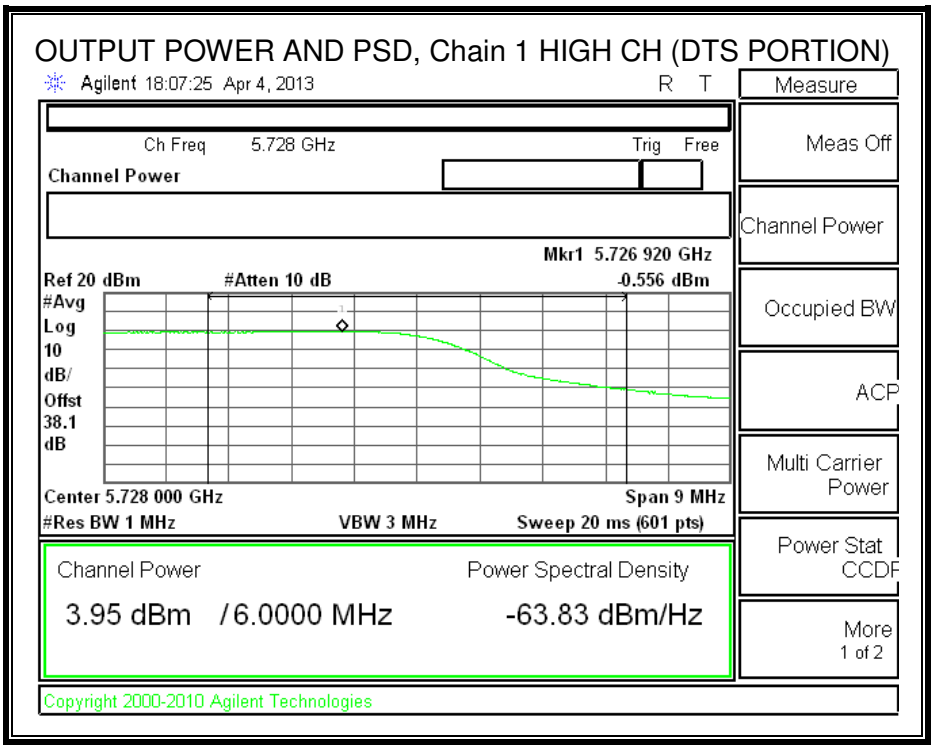
DTS PORTION OUTPUT POWER AND PSD





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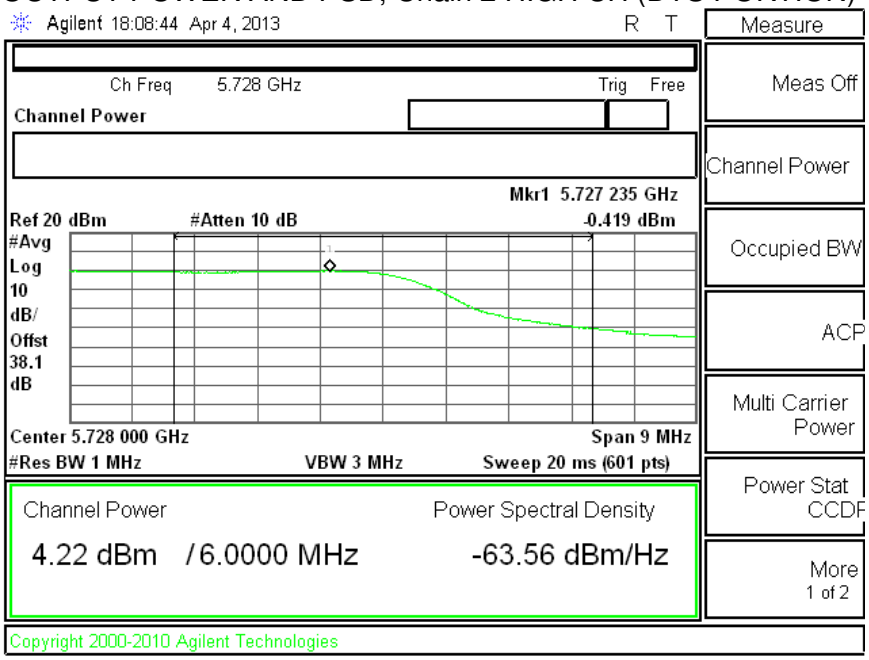
OUTPUT POWER AND PSD, Chain 2 HIGH CH (DTS PORTION)



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9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 1 MHz for peak measurements and as applicable for average measurements.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

TEST RESULT

No other spurious emissions were found above 18G.

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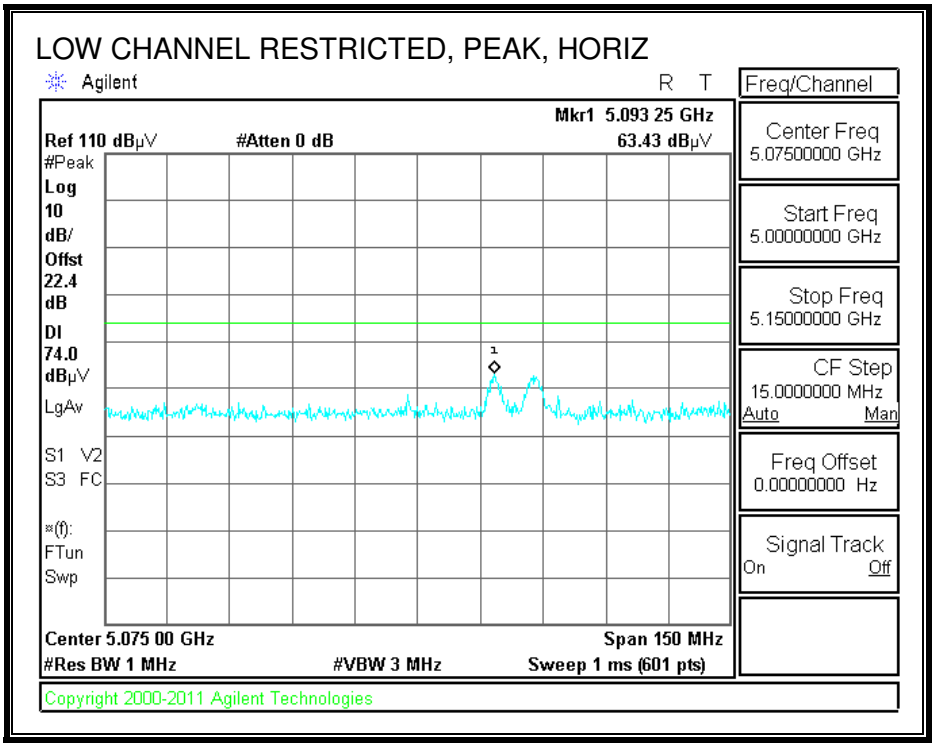
9.2. TRANSMITTER ABOVE 1 GHz

9.2.1. TX ABOVE 1 GHz, 802.11a 1TX MODE, 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



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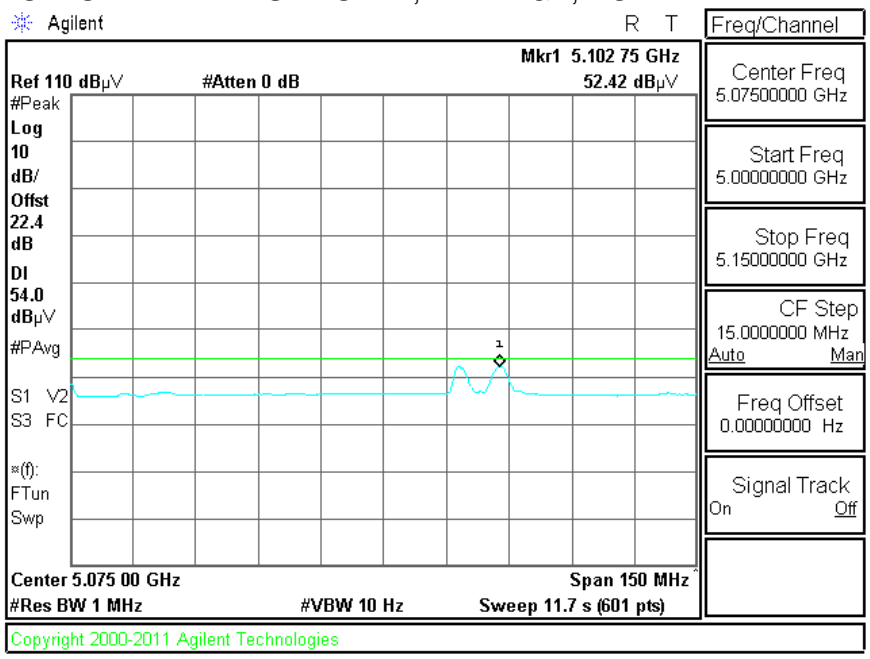
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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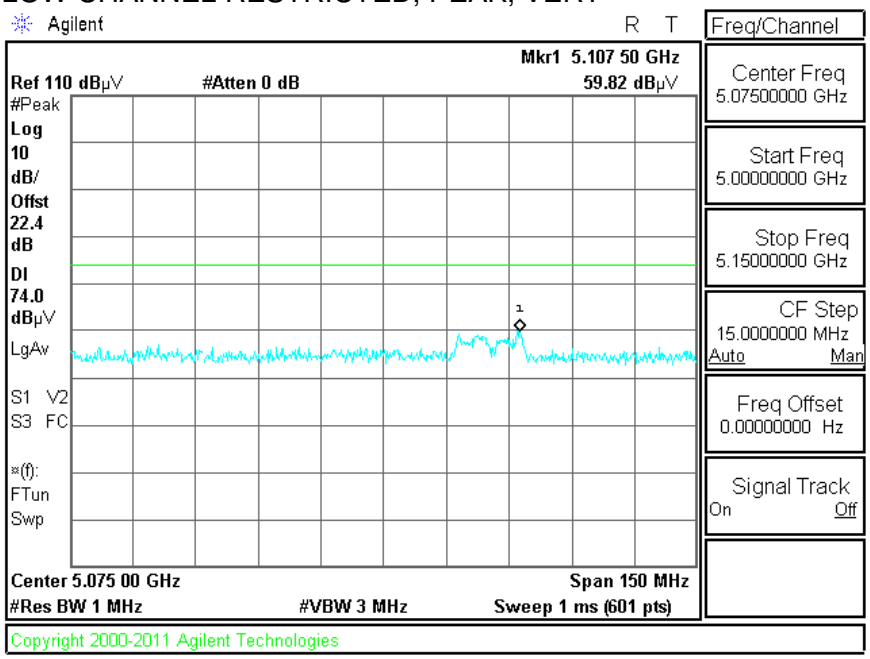
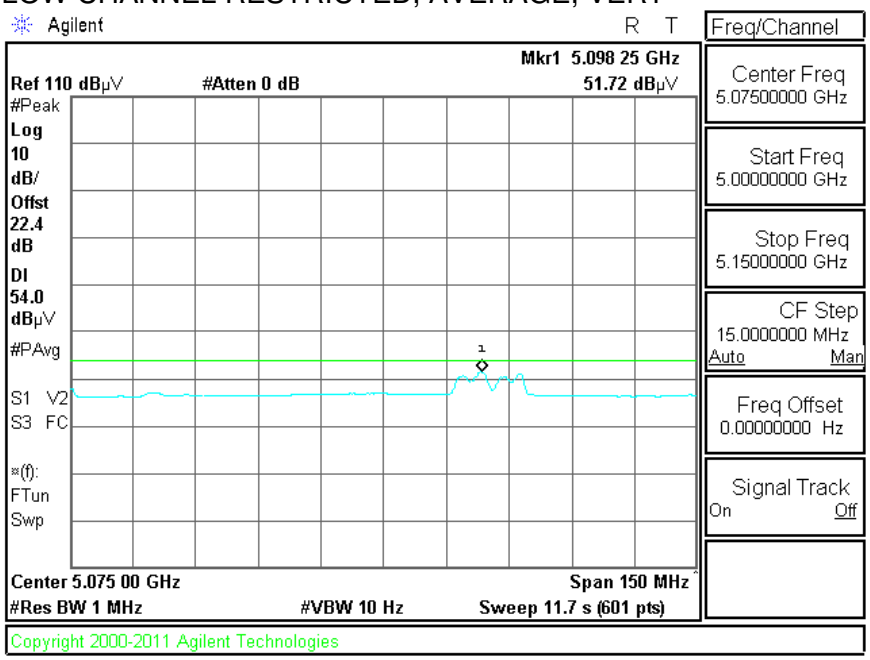
LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 02/20/13
Project #: 12U14745
Company: Apple Inc.
Test Target: FCC Class B
Mode Oper: HT20 3TX CDD

f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter	

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5180 MHz 3TX CDD													
15.540	3.0	32.9	39.1	13.0	-31.9	0.0	0.7	53.8	74.0	-20.2	H	P	
15.540	3.0	22.7	39.1	13.0	-31.9	0.0	0.7	43.5	54.0	-10.5	H	A	
15.540	3.0	34.0	39.1	13.0	-31.9	0.0	0.7	54.8	74.0	-19.2	V	P	
15.540	3.0	22.8	39.1	13.0	-31.9	0.0	0.7	43.6	54.0	-10.4	V	A	
5200 MHz 3TX CDD													
15.600	3.0	33.6	38.8	13.0	-31.9	0.0	0.7	54.3	74.0	-19.7	V	P	
15.600	3.0	22.2	38.8	13.0	-31.9	0.0	0.7	42.9	54.0	-11.1	V	A	
15.600	3.0	32.9	38.8	13.0	-31.9	0.0	0.7	53.6	74.0	-20.4	H	P	
15.600	3.0	26.4	38.8	13.0	-31.9	0.0	0.7	47.1	54.0	-6.9	H	A	
5240 MHz 3TX CDD													
15.720	3.0	33.6	38.4	13.1	-31.9	0.0	0.7	54.0	74.0	-20.0	H	P	
15.720	3.0	22.9	38.4	13.1	-31.9	0.0	0.7	43.2	54.0	-10.8	H	A	
15.720	3.0	33.7	38.4	13.1	-31.9	0.0	0.7	54.0	74.0	-20.0	V	P	
15.720	3.0	23.1	38.4	13.1	-31.9	0.0	0.7	43.4	54.0	-10.6	V	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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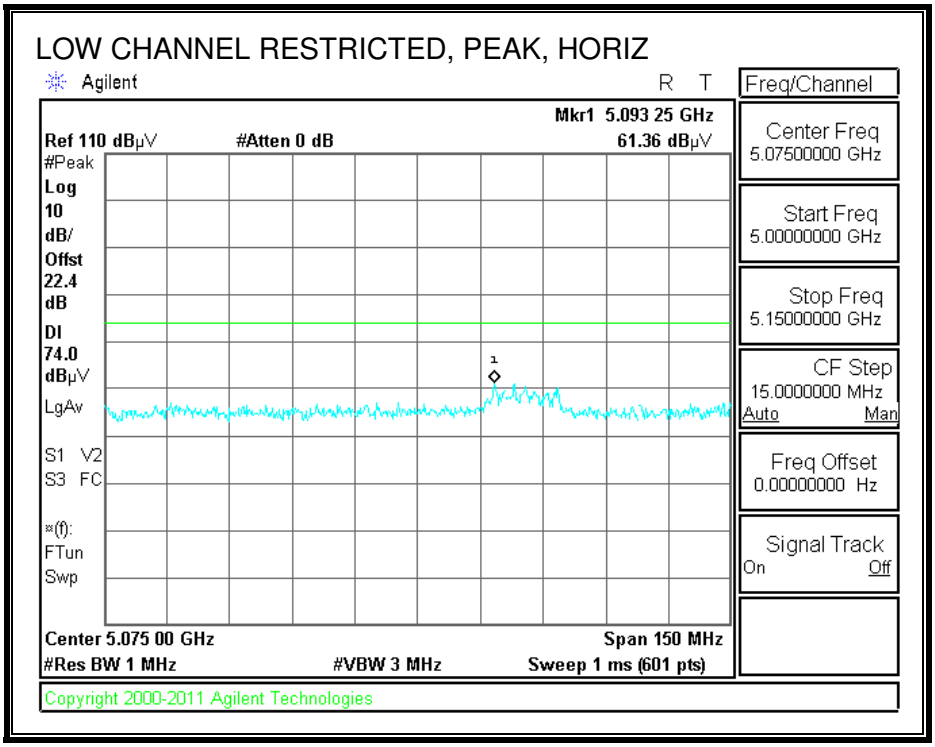
9.2.2. TX ABOVE 1 GHz, 802.11n HT20 CDD 2TX MODE, 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



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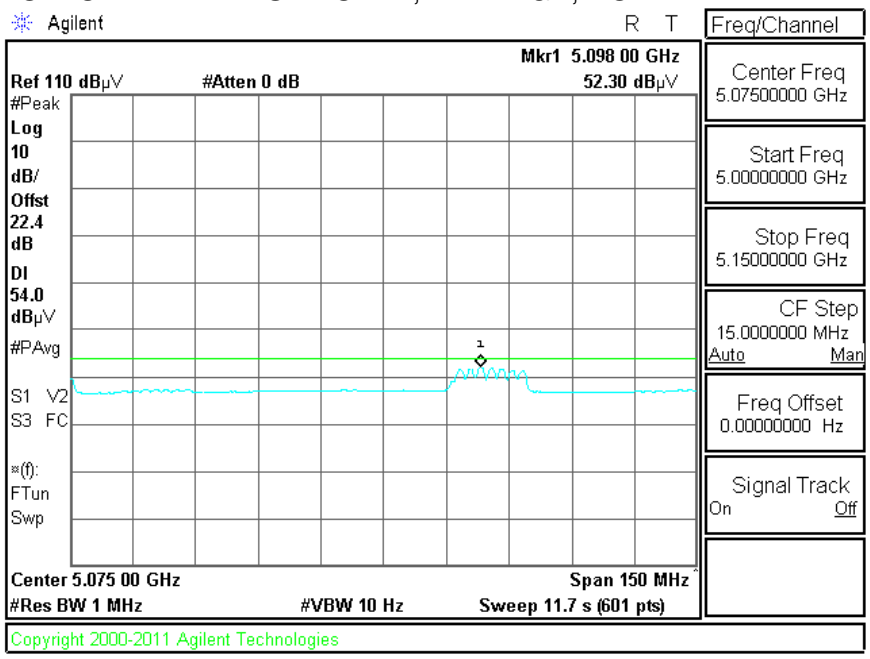
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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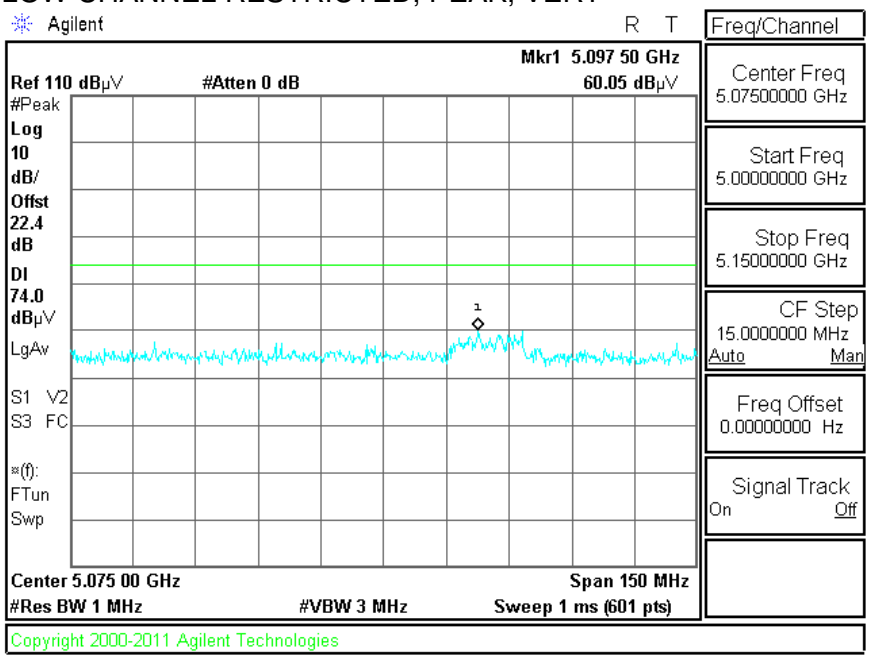
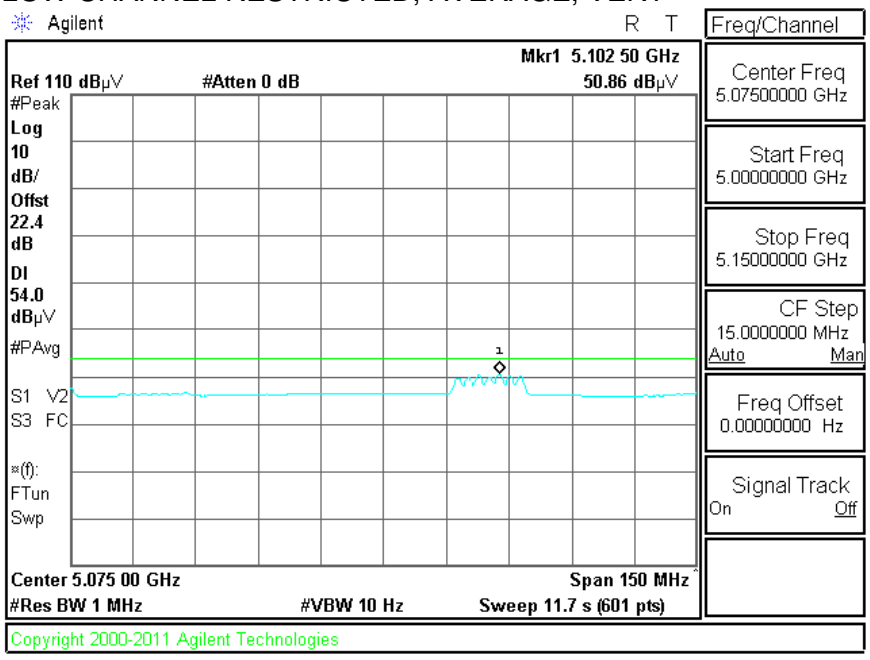
LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 02/20/13
Project #: 12U14745
Company: Apple Inc.
Test Target: FCC Class B
Mode Oper: HT20 3TX CDD

f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter	

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5180 MHz 3TX CDD													
15.540	3.0	32.9	39.1	13.0	-31.9	0.0	0.7	53.8	74.0	-20.2	H	P	
15.540	3.0	22.7	39.1	13.0	-31.9	0.0	0.7	43.5	54.0	-10.5	H	A	
15.540	3.0	34.0	39.1	13.0	-31.9	0.0	0.7	54.8	74.0	-19.2	V	P	
15.540	3.0	22.8	39.1	13.0	-31.9	0.0	0.7	43.6	54.0	-10.4	V	A	
5200 MHz 3TX CDD													
15.600	3.0	33.6	38.8	13.0	-31.9	0.0	0.7	54.3	74.0	-19.7	V	P	
15.600	3.0	22.2	38.8	13.0	-31.9	0.0	0.7	42.9	54.0	-11.1	V	A	
15.600	3.0	32.9	38.8	13.0	-31.9	0.0	0.7	53.6	74.0	-20.4	H	P	
15.600	3.0	26.4	38.8	13.0	-31.9	0.0	0.7	47.1	54.0	-6.9	H	A	
5240 MHz 3TX CDD													
15.720	3.0	33.6	38.4	13.1	-31.9	0.0	0.7	54.0	74.0	-20.0	H	P	
15.720	3.0	22.9	38.4	13.1	-31.9	0.0	0.7	43.2	54.0	-10.8	H	A	
15.720	3.0	33.7	38.4	13.1	-31.9	0.0	0.7	54.0	74.0	-20.0	V	P	
15.720	3.0	23.1	38.4	13.1	-31.9	0.0	0.7	43.4	54.0	-10.6	V	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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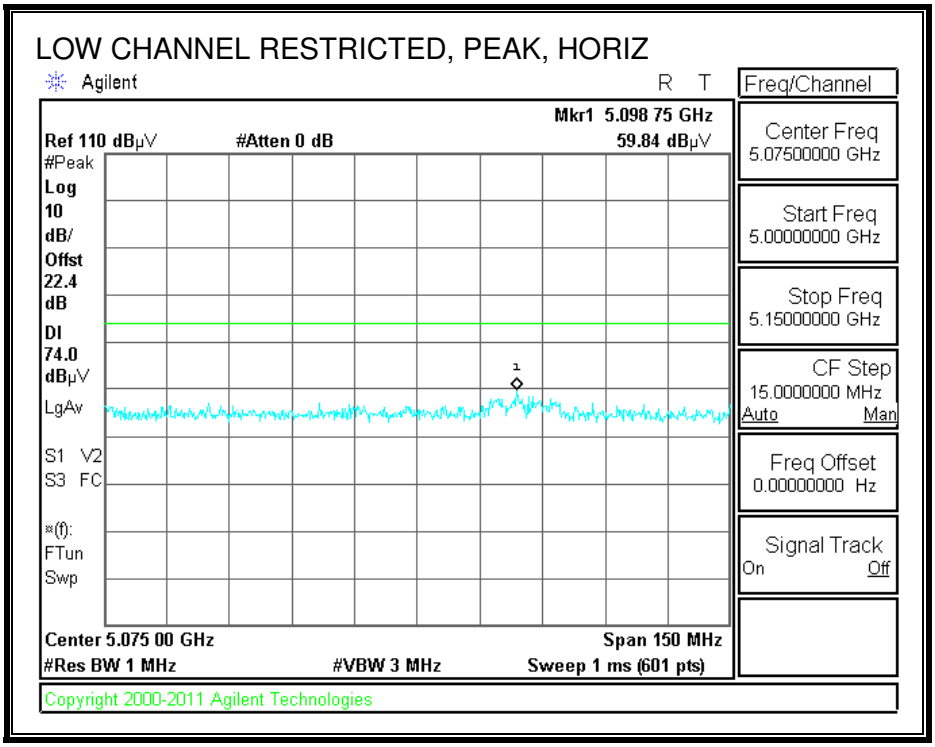
9.2.3. TX ABOVE 1 GHz 802.11n HT20 CDD 3TX MODE, 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



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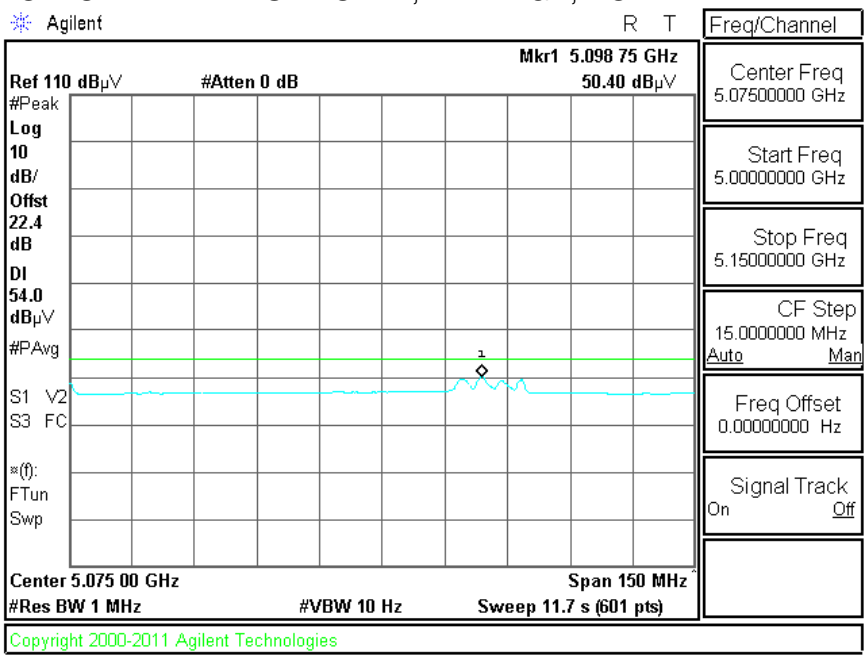
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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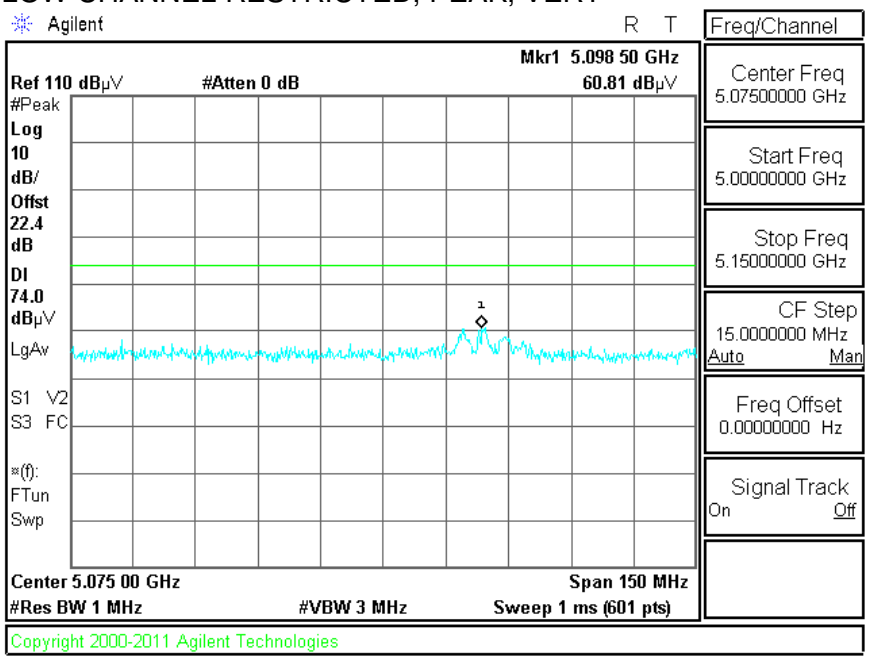
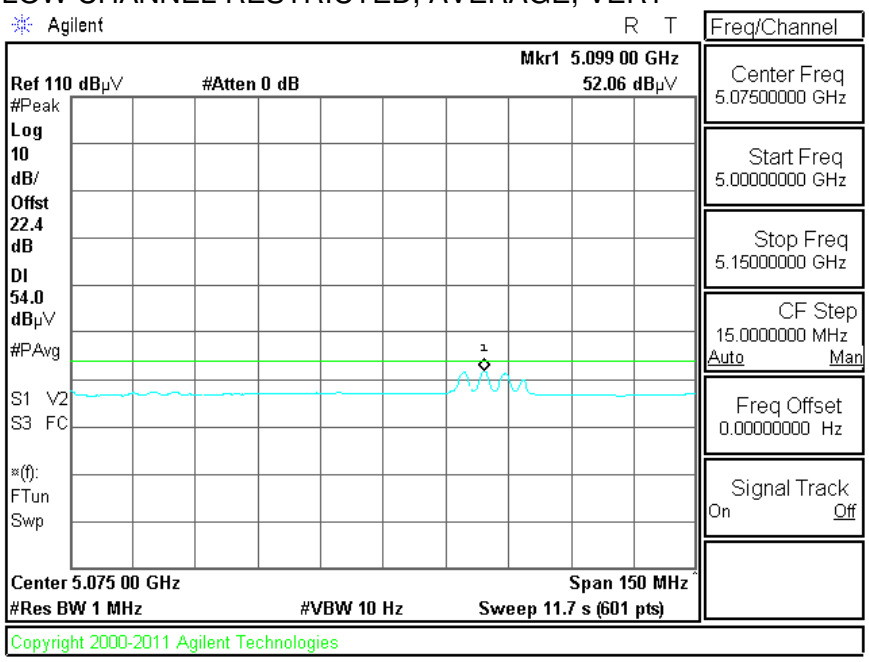
LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 02/20/13
Project #: 12U14745
Company: Apple Inc.
Test Target: FCC Class B
Mode Oper: HT20 3TX CDD

f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter	

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5180 MHz 3TX CDD													
15.540	3.0	32.9	39.1	13.0	-31.9	0.0	0.7	53.8	74.0	-20.2	H	P	
15.540	3.0	22.7	39.1	13.0	-31.9	0.0	0.7	43.5	54.0	-10.5	H	A	
15.540	3.0	34.0	39.1	13.0	-31.9	0.0	0.7	54.8	74.0	-19.2	V	P	
15.540	3.0	22.8	39.1	13.0	-31.9	0.0	0.7	43.6	54.0	-10.4	V	A	
5200 MHz 3TX CDD													
15.600	3.0	33.6	38.8	13.0	-31.9	0.0	0.7	54.3	74.0	-19.7	V	P	
15.600	3.0	22.2	38.8	13.0	-31.9	0.0	0.7	42.9	54.0	-11.1	V	A	
15.600	3.0	32.9	38.8	13.0	-31.9	0.0	0.7	53.6	74.0	-20.4	H	P	
15.600	3.0	26.4	38.8	13.0	-31.9	0.0	0.7	47.1	54.0	-6.9	H	A	
5240 MHz 3TX CDD													
15.720	3.0	33.6	38.4	13.1	-31.9	0.0	0.7	54.0	74.0	-20.0	H	P	
15.720	3.0	22.9	38.4	13.1	-31.9	0.0	0.7	43.2	54.0	-10.8	H	A	
15.720	3.0	33.7	38.4	13.1	-31.9	0.0	0.7	54.0	74.0	-20.0	V	P	
15.720	3.0	23.1	38.4	13.1	-31.9	0.0	0.7	43.4	54.0	-10.6	V	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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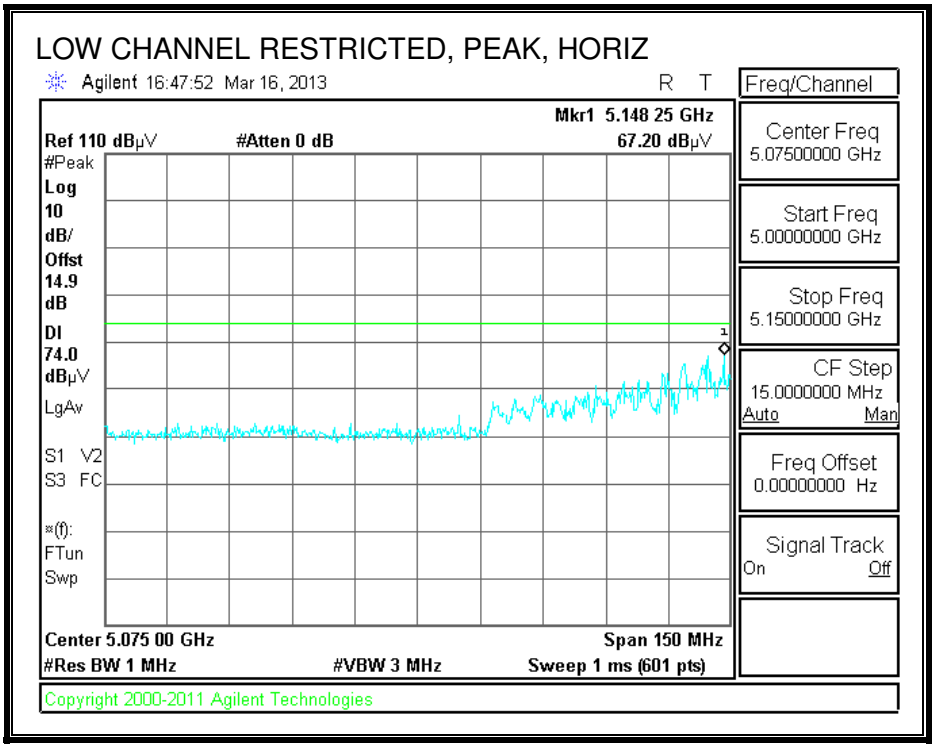
9.2.4. TX ABOVE 1 GHz, 802.11n HT40 1TX MODE, 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



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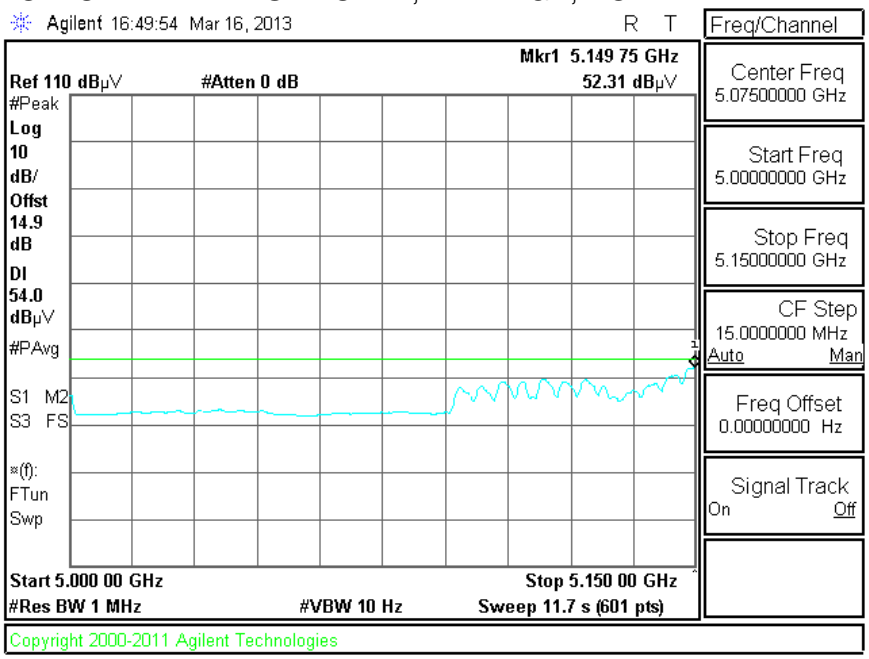
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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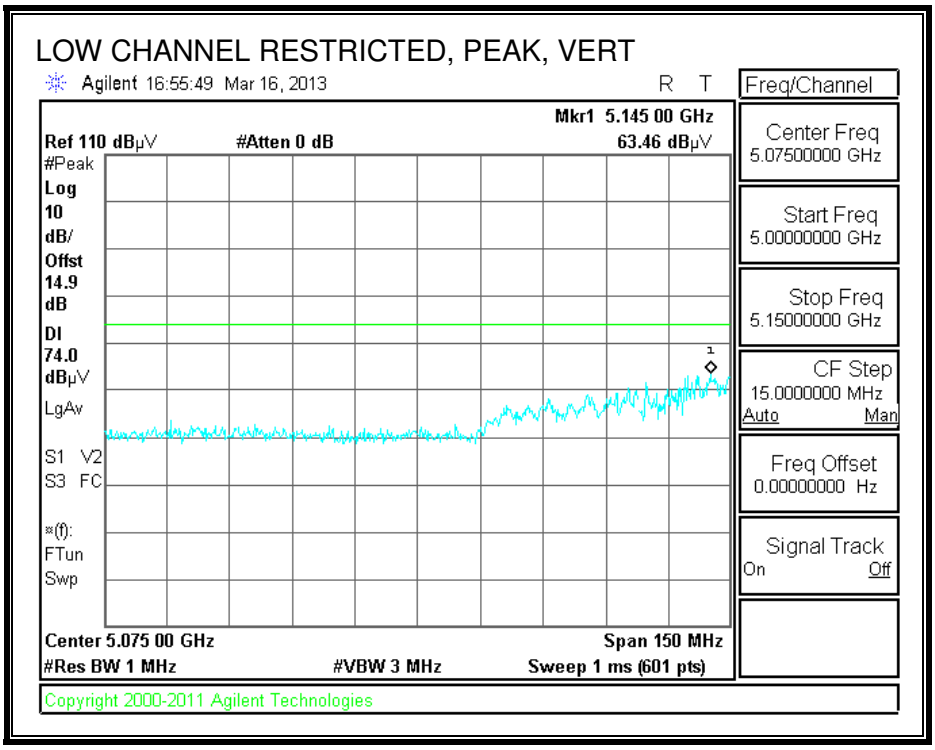

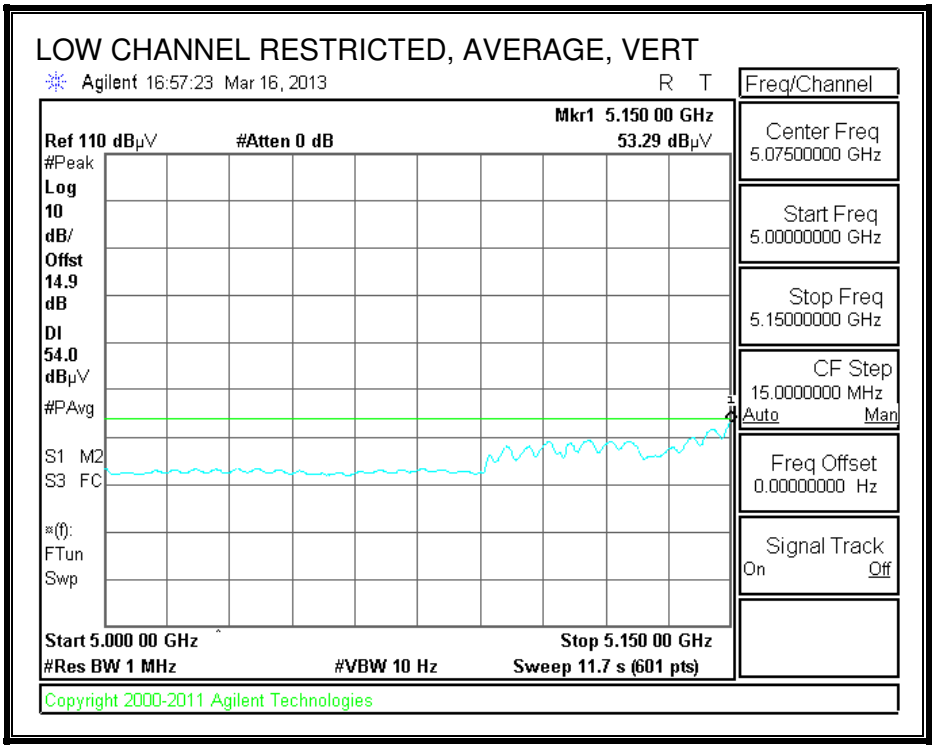

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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 02/20/13
Project #: 12U14745
Company: Apple Inc.
Test Target: FCC Class B
Mode Oper: HT40 3TX CDD

f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter	

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5190 MHz 3TX CDD													
15.570	3.0	33.5	38.9	13.0	-31.9	0.0	0.7	54.2	74.0	-19.8	V	P	
15.570	3.0	23.4	38.9	13.0	-31.9	0.0	0.7	44.2	54.0	-9.8	V	A	
15.570	3.0	32.9	38.9	13.0	-31.9	0.0	0.7	53.6	74.0	-20.4	H	P	
15.570	3.0	23.1	38.9	13.0	-31.9	0.0	0.7	43.9	54.0	-10.1	H	A	
5230 MHz 3TX CDD													
15.690	3.0	34.1	38.5	13.0	-31.9	0.0	0.7	54.5	74.0	-19.5	H	P	
15.690	3.0	23.8	38.5	13.0	-31.9	0.0	0.7	44.2	54.0	-9.8	H	A	
15.690	3.0	33.6	38.5	13.0	-31.9	0.0	0.7	54.0	74.0	-20.0	V	P	
15.690	3.0	23.7	38.5	13.0	-31.9	0.0	0.7	44.1	54.0	-9.9	V	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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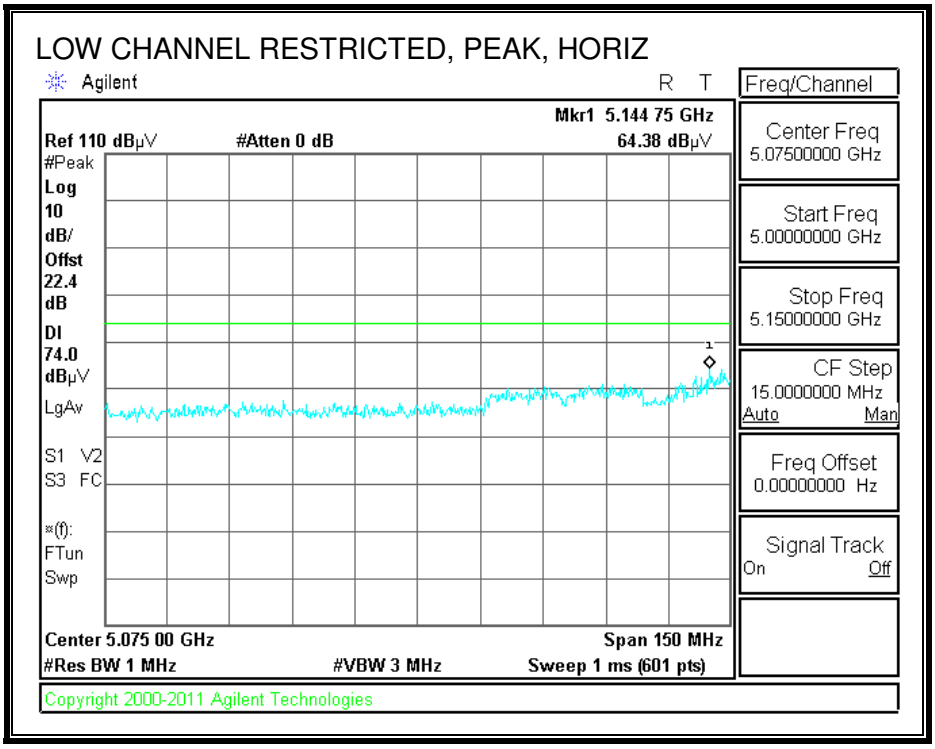
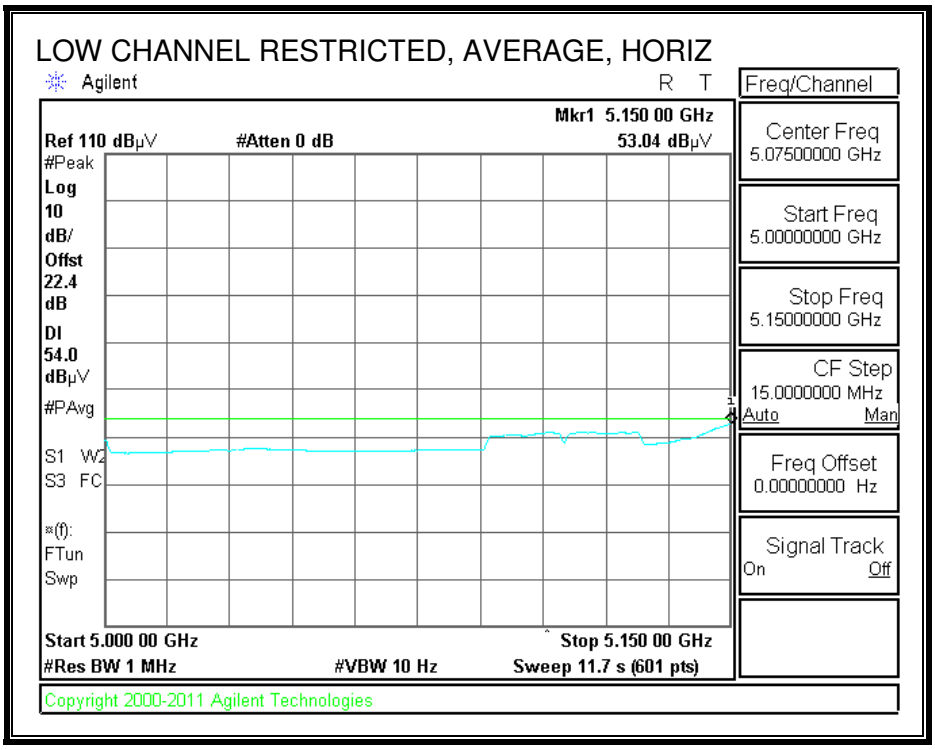
9.2.5. TX ABOVE 1 GHz, 802.11n HT40 CDD 2TX MODE, 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)





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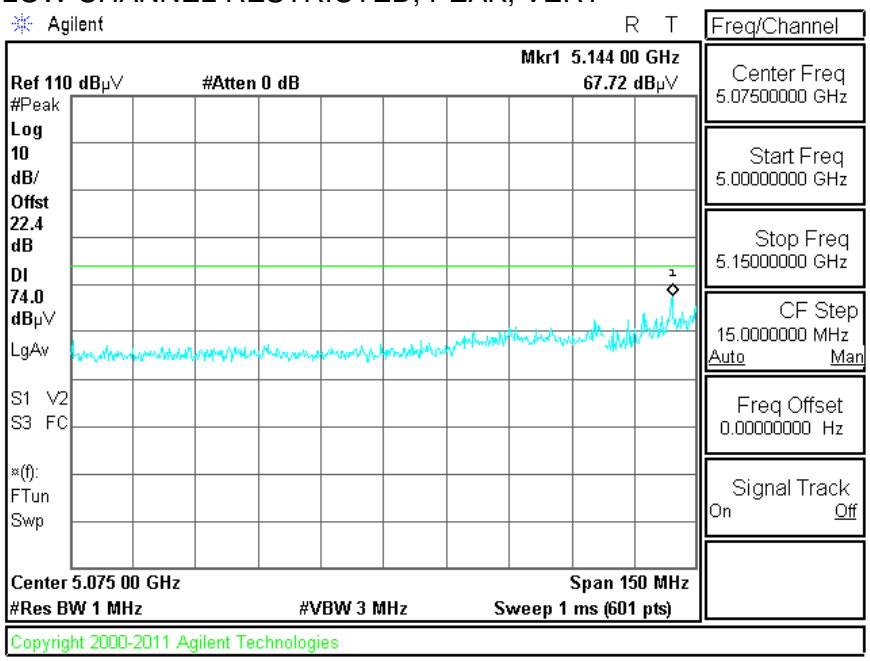
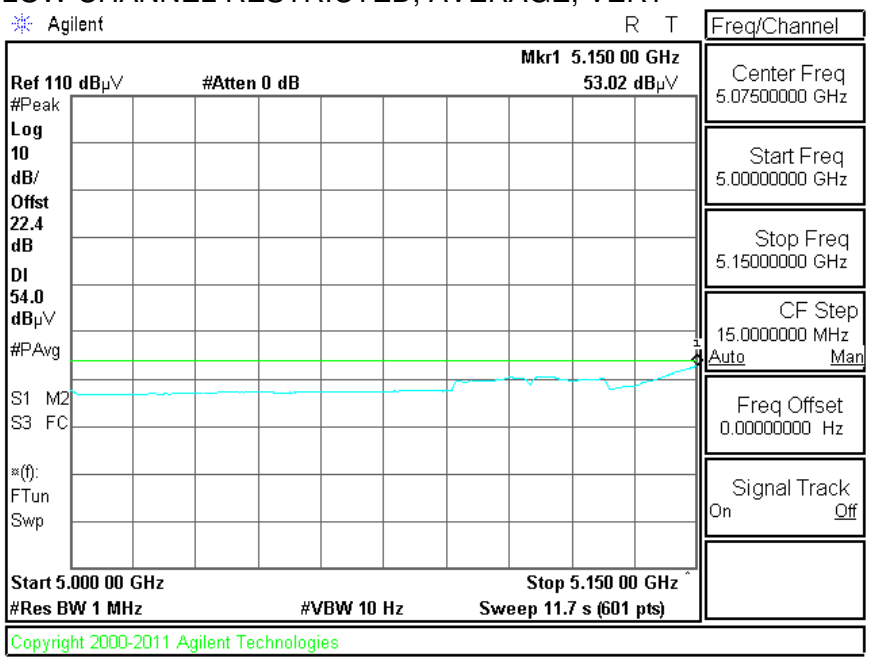
LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 02/20/13
Project #: 12U14745
Company: Apple Inc.
Test Target: FCC Class B
Mode Oper: HT40 3TX CDD

f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter	

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5190 MHz 3TX CDD													
15.570	3.0	33.5	38.9	13.0	-31.9	0.0	0.7	54.2	74.0	-19.8	V	P	
15.570	3.0	23.4	38.9	13.0	-31.9	0.0	0.7	44.2	54.0	-9.8	V	A	
15.570	3.0	32.9	38.9	13.0	-31.9	0.0	0.7	53.6	74.0	-20.4	H	P	
15.570	3.0	23.1	38.9	13.0	-31.9	0.0	0.7	43.9	54.0	-10.1	H	A	
5230 MHz 3TX CDD													
15.690	3.0	34.1	38.5	13.0	-31.9	0.0	0.7	54.5	74.0	-19.5	H	P	
15.690	3.0	23.8	38.5	13.0	-31.9	0.0	0.7	44.2	54.0	-9.8	H	A	
15.690	3.0	33.6	38.5	13.0	-31.9	0.0	0.7	54.0	74.0	-20.0	V	P	
15.690	3.0	23.7	38.5	13.0	-31.9	0.0	0.7	44.1	54.0	-9.9	V	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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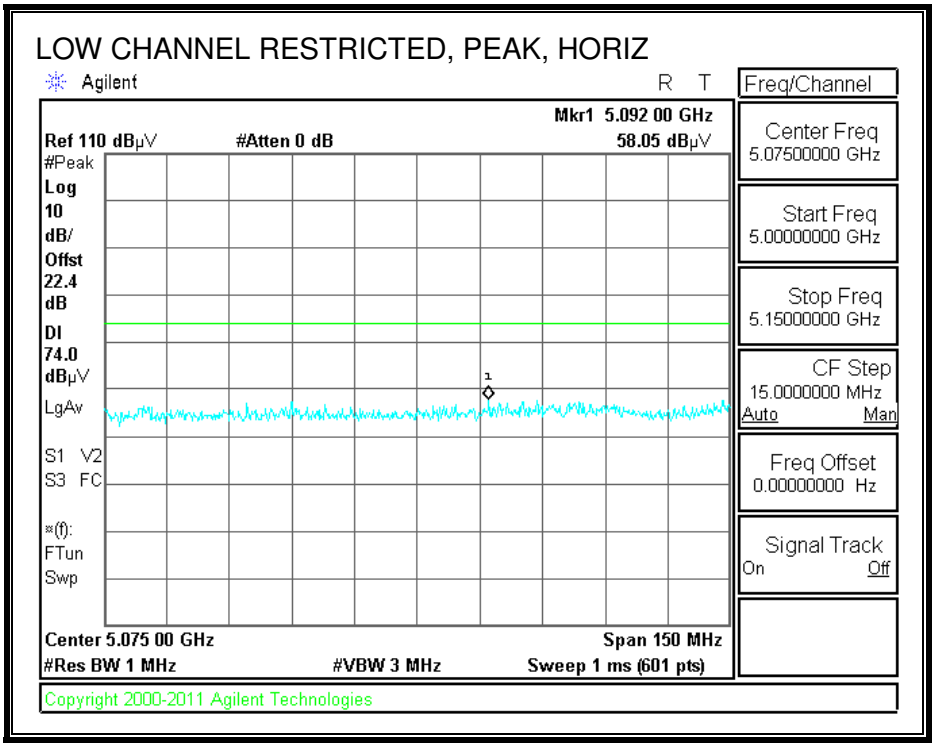
9.2.6. TX ABOVE 1 GHz, 802.11n HT40 CDD 3TX MODE, 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



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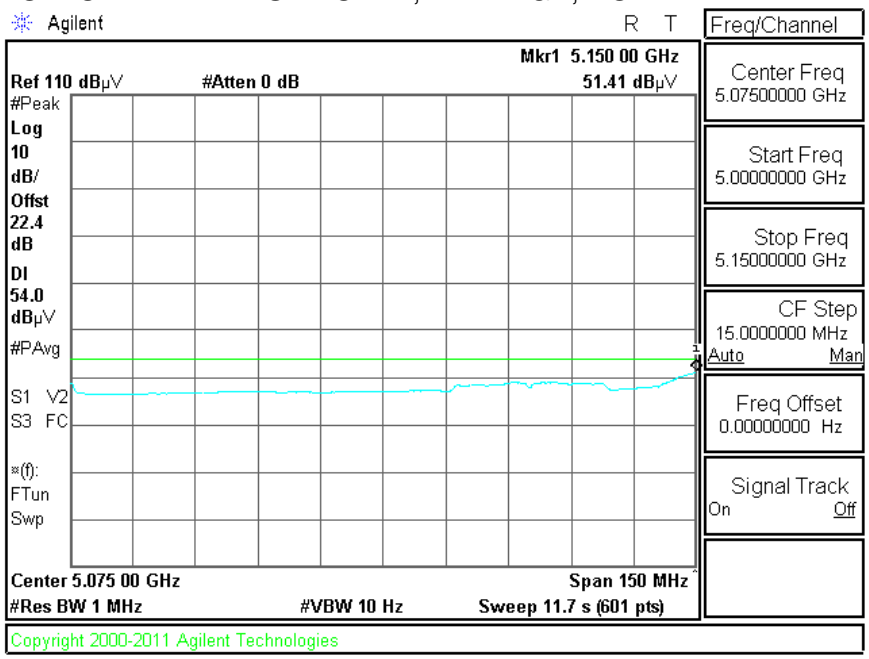
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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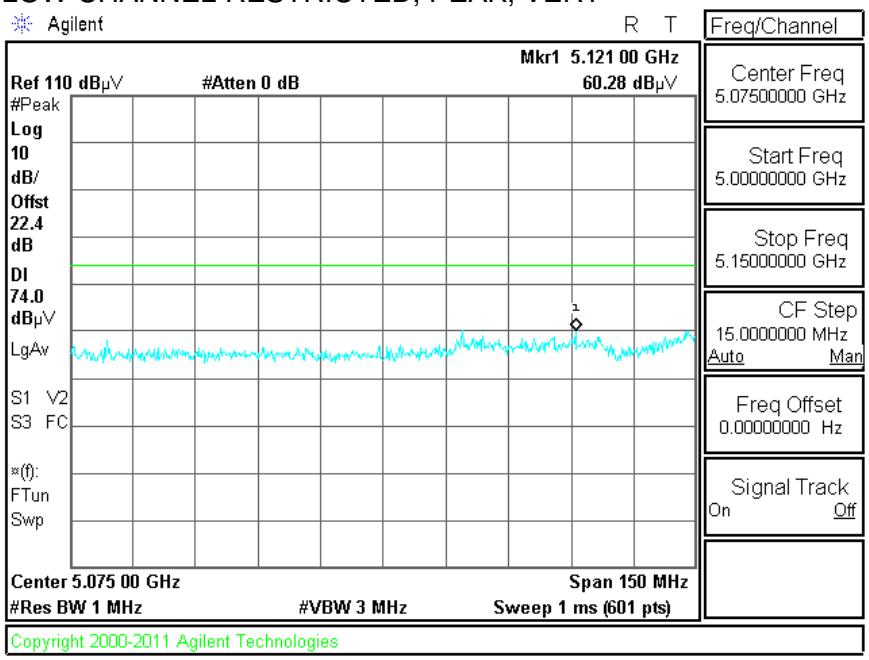
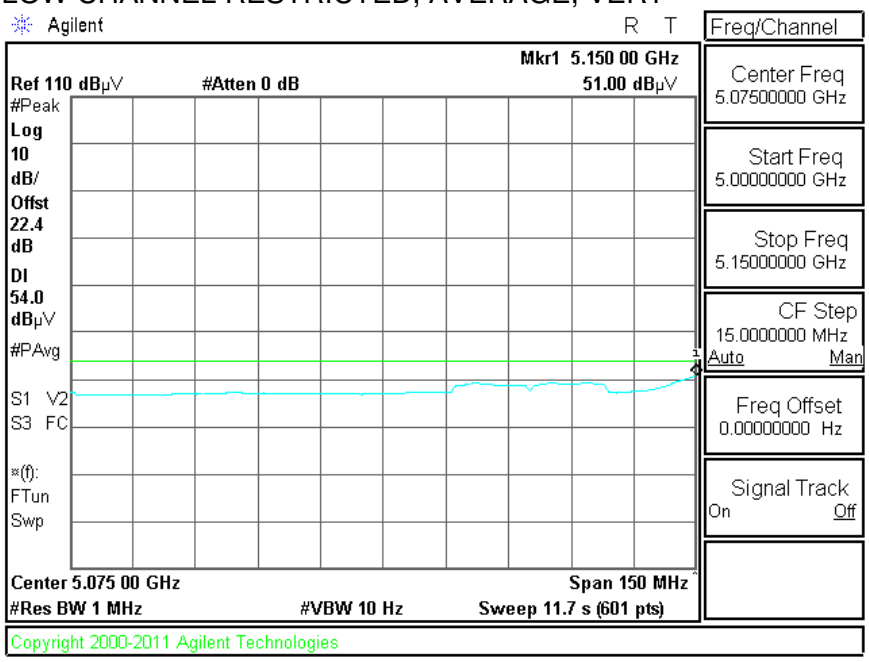
LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 02/20/13
Project #: 12U14745
Company: Apple Inc.
Test Target: FCC Class B
Mode Oper: HT40 3TX CDD

f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter	

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5190 MHz 3TX CDD													
15.570	3.0	33.5	38.9	13.0	-31.9	0.0	0.7	54.2	74.0	-19.8	V	P	
15.570	3.0	23.4	38.9	13.0	-31.9	0.0	0.7	44.2	54.0	-9.8	V	A	
15.570	3.0	32.9	38.9	13.0	-31.9	0.0	0.7	53.6	74.0	-20.4	H	P	
15.570	3.0	23.1	38.9	13.0	-31.9	0.0	0.7	43.9	54.0	-10.1	H	A	
5230 MHz 3TX CDD													
15.690	3.0	34.1	38.5	13.0	-31.9	0.0	0.7	54.5	74.0	-19.5	H	P	
15.690	3.0	23.8	38.5	13.0	-31.9	0.0	0.7	44.2	54.0	-9.8	H	A	
15.690	3.0	33.6	38.5	13.0	-31.9	0.0	0.7	54.0	74.0	-20.0	V	P	
15.690	3.0	23.7	38.5	13.0	-31.9	0.0	0.7	44.1	54.0	-9.9	V	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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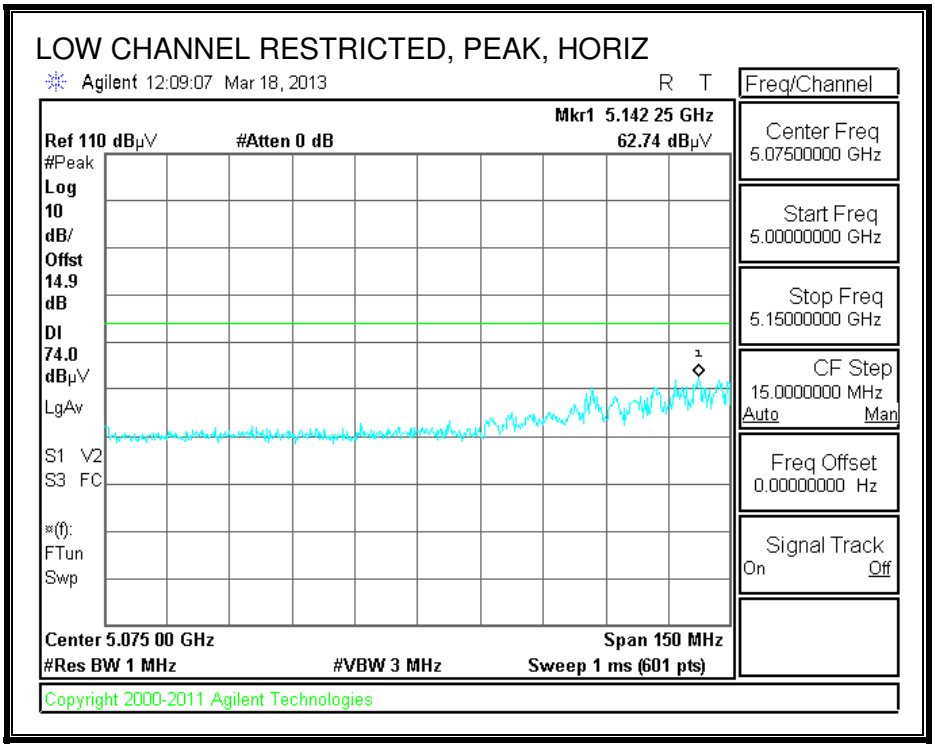
9.2.7. TX ABOVE 1 GHz, 802.11ac VHT80 1TX MODE, 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



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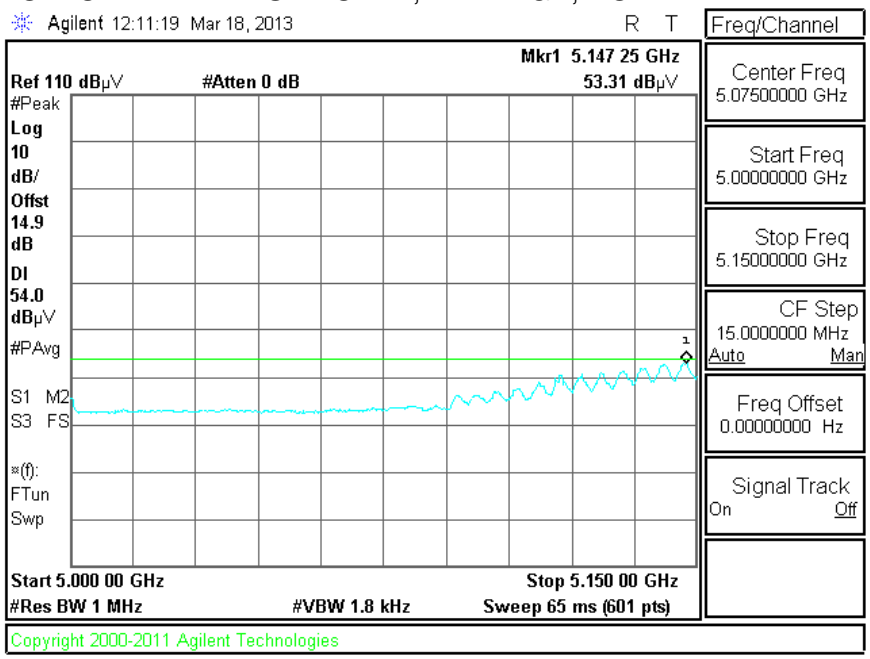
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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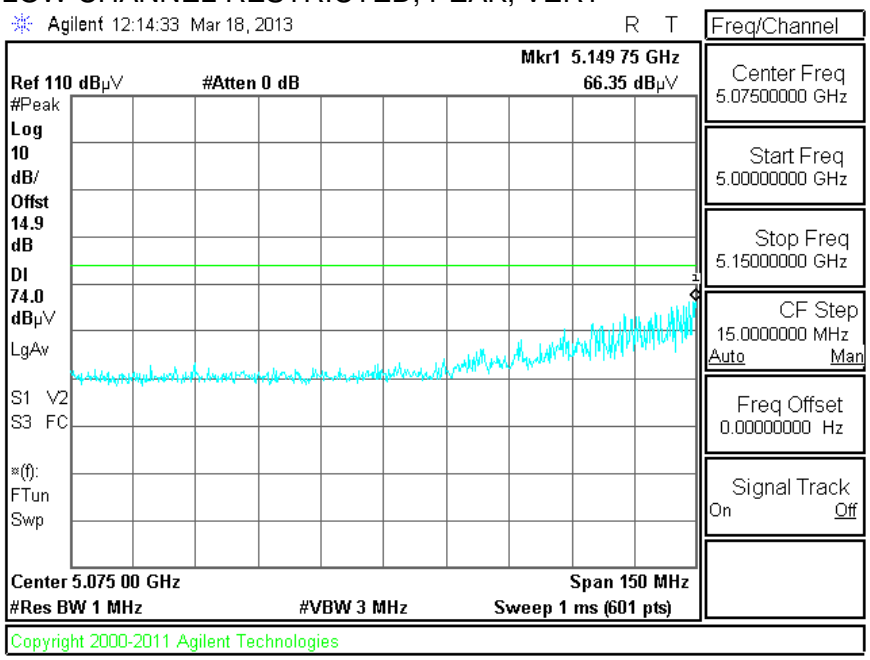
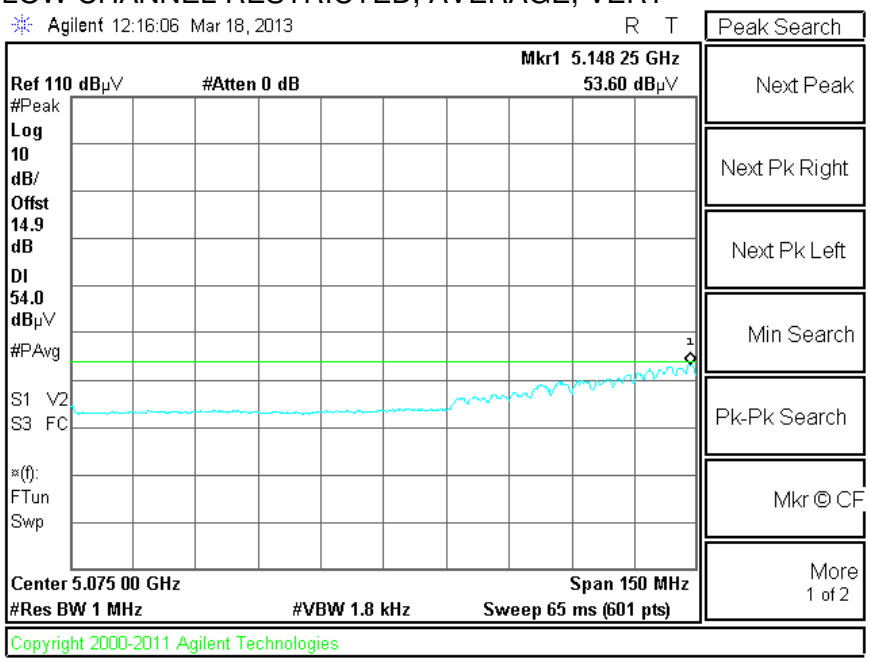
LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 02/20/13
Project #: 12U14745
Company: Apple Inc.
Test Target: FCC Class B
Mode Oper: HT80 3TX CDD CH42, CH58, CH106, CH138

f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter	

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5210 MHz 3TX CDD													
15.630	3.0	34.1	38.7	13.0	-31.9	0.0	0.7	54.6	74.0	-19.4	V	P	
15.630	3.0	23.7	38.7	13.0	-31.9	0.0	0.7	44.3	54.0	-9.7	V	A	
15.630	3.0	33.5	38.7	13.0	-31.9	0.0	0.7	54.1	74.0	-19.9	H	P	
15.630	3.0	23.7	38.7	13.0	-31.9	0.0	0.7	44.3	54.0	-9.7	H	A	
5290 MHz 3TX CDD													
15.630	3.0	32.9	38.7	13.0	-31.9	0.0	0.7	53.5	74.0	-20.5	H	P	
15.630	3.0	23.7	38.7	13.0	-31.9	0.0	0.7	44.3	54.0	-9.7	H	A	
15.630	3.0	33.3	38.7	13.0	-31.9	0.0	0.7	53.8	74.0	-20.2	V	P	
15.630	3.0	24.0	38.7	13.0	-31.9	0.0	0.7	44.6	54.0	-9.4	V	A	
5530 MHz 3TX CDD													
11.060	3.0	34.0	38.4	10.6	-33.5	0.0	0.7	50.2	74.0	-23.8	V	P	
11.060	3.0	27.3	38.4	10.6	-33.5	0.0	0.7	43.5	54.0	-10.5	V	A	
11.060	3.0	33.5	38.4	10.6	-33.5	0.0	0.7	49.7	74.0	-24.3	H	P	
11.060	3.0	24.2	38.4	10.6	-33.5	0.0	0.7	40.4	54.0	-13.6	H	A	
5690 MHz 3TX CDD													
11.380	3.0	33.3	38.8	11.0	-33.2	0.0	0.7	50.6	74.0	-23.4	H	P	
11.380	3.0	23.7	38.8	11.0	-33.2	0.0	0.7	41.0	54.0	-13.0	H	A	
11.380	3.0	33.3	38.8	11.0	-33.2	0.0	0.7	50.6	74.0	-23.4	V	P	
11.380	3.0	23.3	38.8	11.0	-33.2	0.0	0.7	40.6	54.0	-13.4	V	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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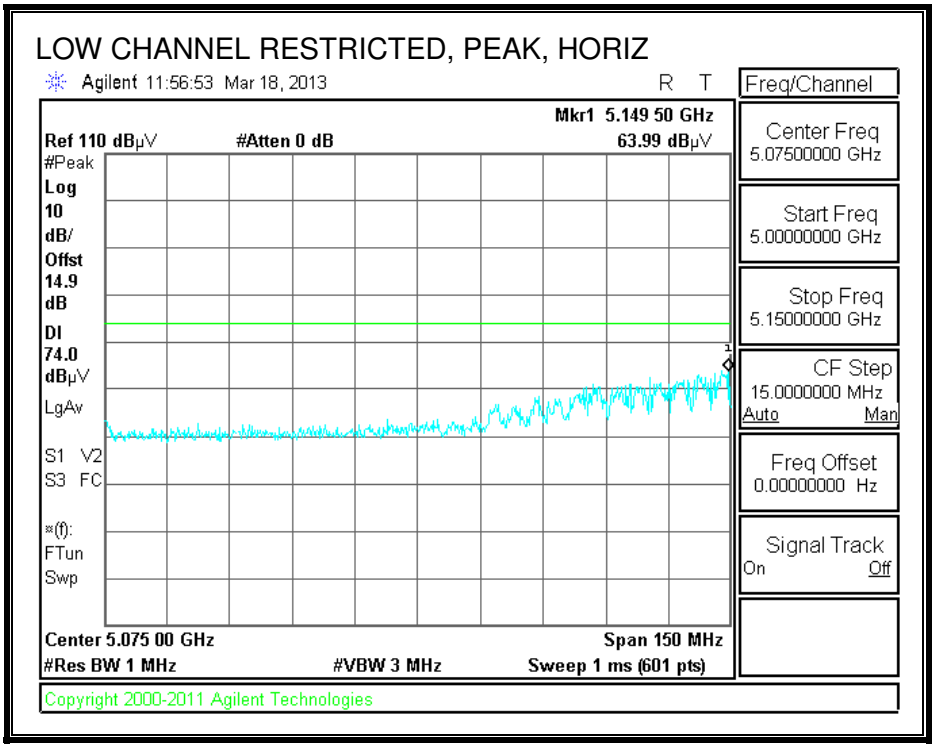
9.2.8. TX ABOVE 1 GHz, 802.11ac VHT80 2TX MODE, 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



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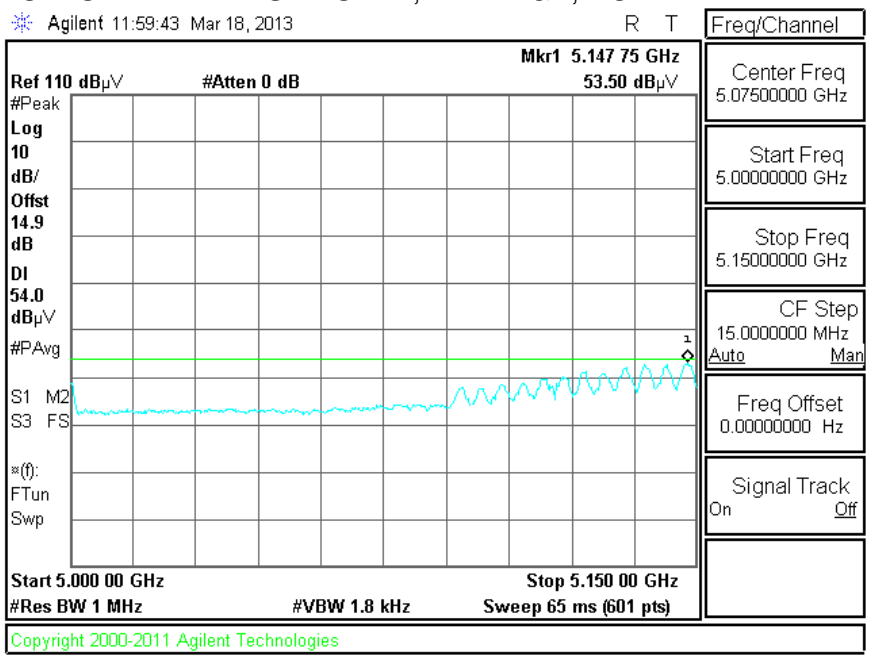
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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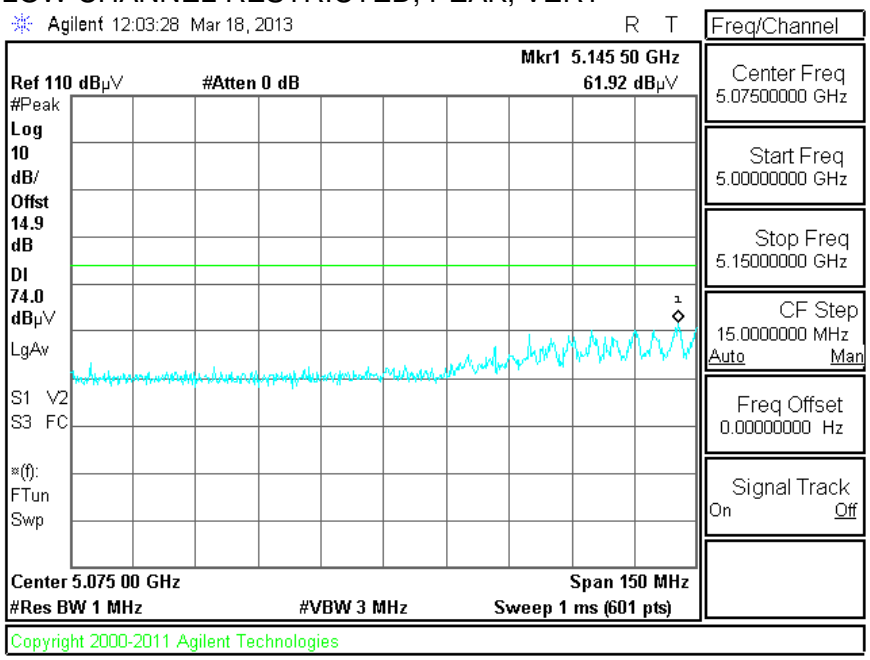
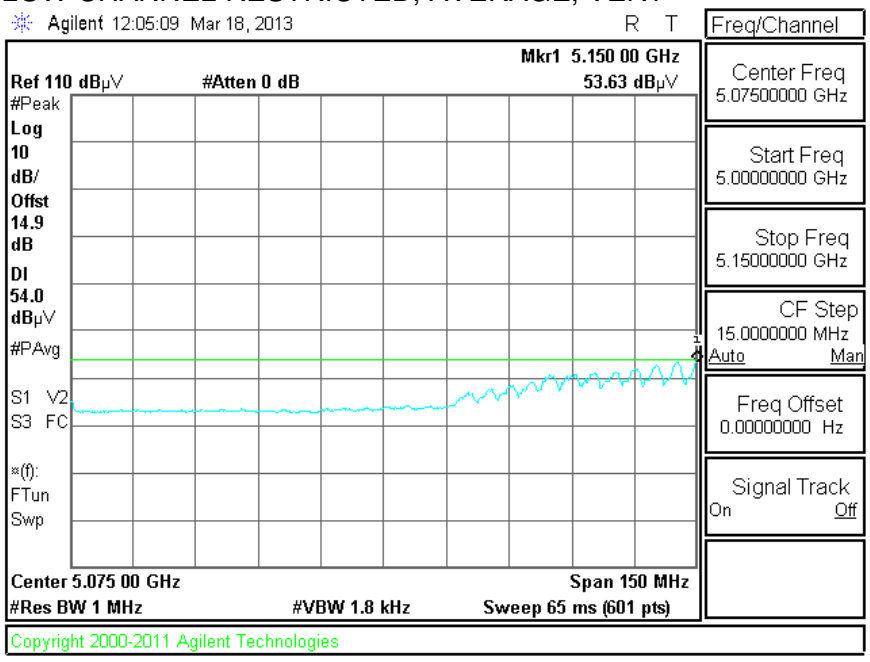
LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 02/20/13
Project #: 12U14745
Company: Apple Inc.
Test Target: FCC Class B
Mode Oper: HT80 3TX CDD CH42, CH58, CH106, CH138

f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter	

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5210 MHz 3TX CDD													
15.630	3.0	34.1	38.7	13.0	-31.9	0.0	0.7	54.6	74.0	-19.4	V	P	
15.630	3.0	23.7	38.7	13.0	-31.9	0.0	0.7	44.3	54.0	-9.7	V	A	
15.630	3.0	33.5	38.7	13.0	-31.9	0.0	0.7	54.1	74.0	-19.9	H	P	
15.630	3.0	23.7	38.7	13.0	-31.9	0.0	0.7	44.3	54.0	-9.7	H	A	
5290 MHz 3TX CDD													
15.630	3.0	32.9	38.7	13.0	-31.9	0.0	0.7	53.5	74.0	-20.5	H	P	
15.630	3.0	23.7	38.7	13.0	-31.9	0.0	0.7	44.3	54.0	-9.7	H	A	
15.630	3.0	33.3	38.7	13.0	-31.9	0.0	0.7	53.8	74.0	-20.2	V	P	
15.630	3.0	24.0	38.7	13.0	-31.9	0.0	0.7	44.6	54.0	-9.4	V	A	
5530 MHz 3TX CDD													
11.060	3.0	34.0	38.4	10.6	-33.5	0.0	0.7	50.2	74.0	-23.8	V	P	
11.060	3.0	27.3	38.4	10.6	-33.5	0.0	0.7	43.5	54.0	-10.5	V	A	
11.060	3.0	33.5	38.4	10.6	-33.5	0.0	0.7	49.7	74.0	-24.3	H	P	
11.060	3.0	24.2	38.4	10.6	-33.5	0.0	0.7	40.4	54.0	-13.6	H	A	
5690 MHz 3TX CDD													
11.380	3.0	33.3	38.8	11.0	-33.2	0.0	0.7	50.6	74.0	-23.4	H	P	
11.380	3.0	23.7	38.8	11.0	-33.2	0.0	0.7	41.0	54.0	-13.0	H	A	
11.380	3.0	33.3	38.8	11.0	-33.2	0.0	0.7	50.6	74.0	-23.4	V	P	
11.380	3.0	23.3	38.8	11.0	-33.2	0.0	0.7	40.6	54.0	-13.4	V	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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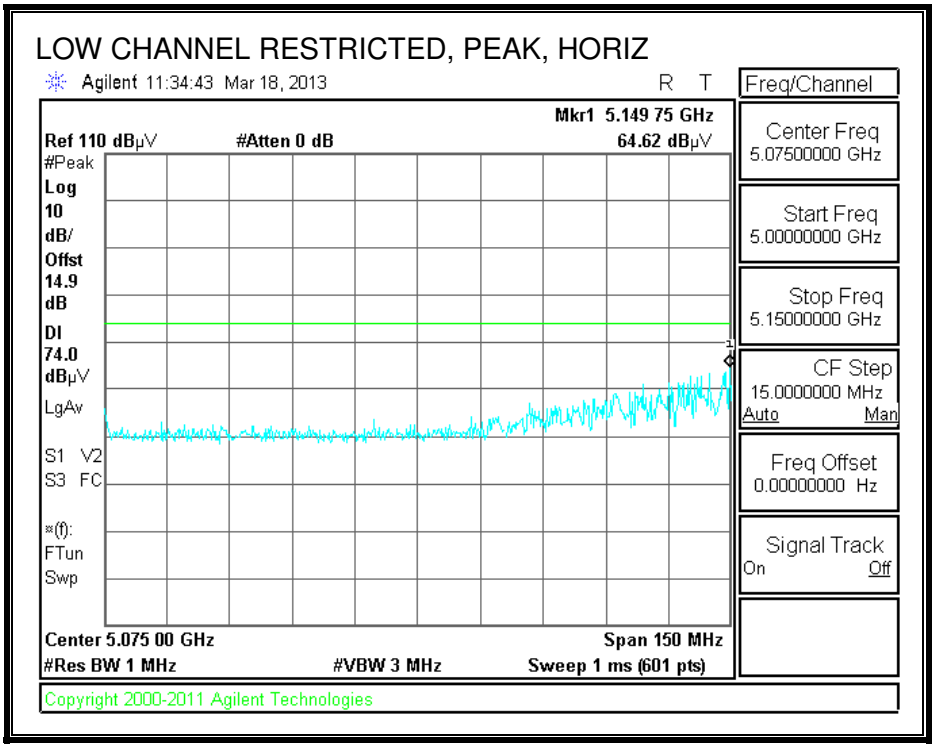
9.2.9. TX ABOVE 1 GHz, 802.11ac VHT80 3TX, 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



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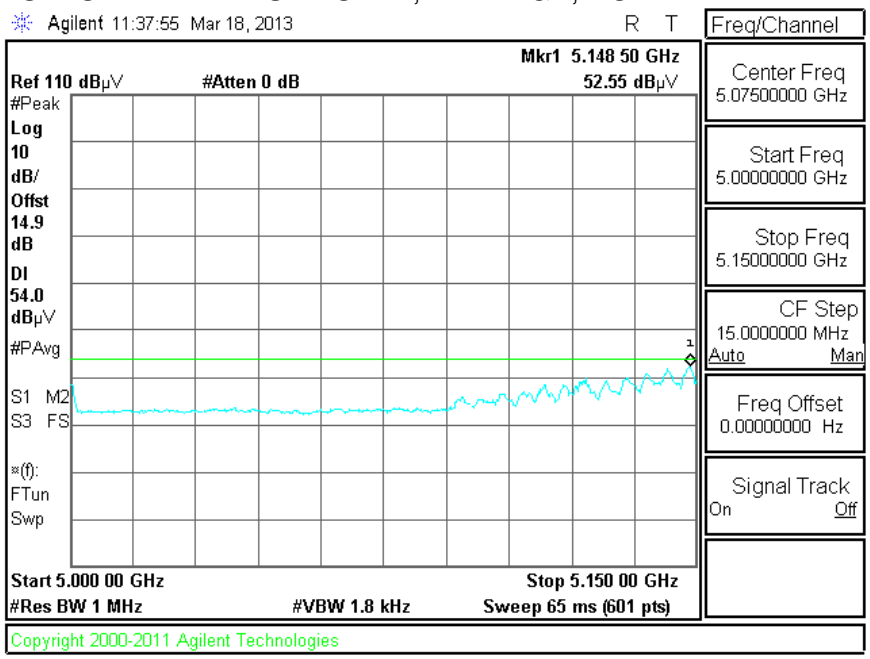
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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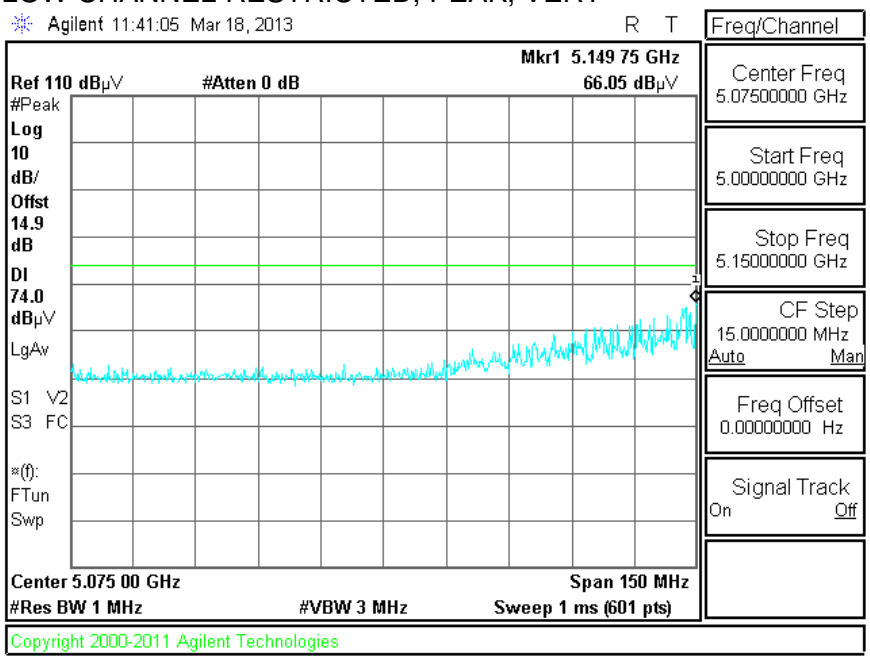
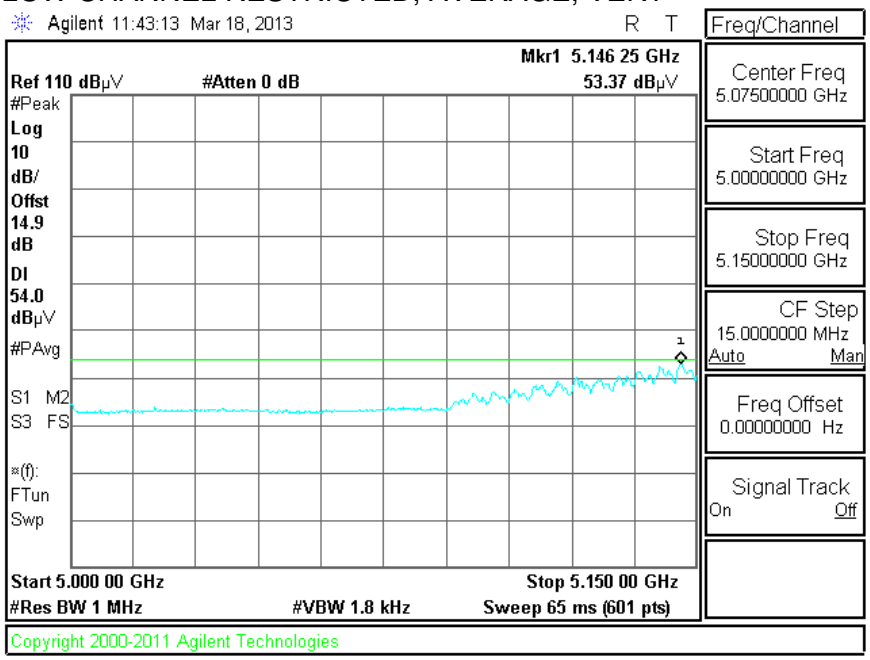
LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 02/20/13
Project #: 12U14745
Company: Apple Inc.
Test Target: FCC Class B
Mode Oper: HT80 3TX CDD CH42, CH58, CH106, CH138

f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter	

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5210 MHz 3TX CDD													
15.630	3.0	34.1	38.7	13.0	-31.9	0.0	0.7	54.6	74.0	-19.4	V	P	
15.630	3.0	23.7	38.7	13.0	-31.9	0.0	0.7	44.3	54.0	-9.7	V	A	
15.630	3.0	33.5	38.7	13.0	-31.9	0.0	0.7	54.1	74.0	-19.9	H	P	
15.630	3.0	23.7	38.7	13.0	-31.9	0.0	0.7	44.3	54.0	-9.7	H	A	
5290 MHz 3TX CDD													
15.630	3.0	32.9	38.7	13.0	-31.9	0.0	0.7	53.5	74.0	-20.5	H	P	
15.630	3.0	23.7	38.7	13.0	-31.9	0.0	0.7	44.3	54.0	-9.7	H	A	
15.630	3.0	33.3	38.7	13.0	-31.9	0.0	0.7	53.8	74.0	-20.2	V	P	
15.630	3.0	24.0	38.7	13.0	-31.9	0.0	0.7	44.6	54.0	-9.4	V	A	
5530 MHz 3TX CDD													
11.060	3.0	34.0	38.4	10.6	-33.5	0.0	0.7	50.2	74.0	-23.8	V	P	
11.060	3.0	27.3	38.4	10.6	-33.5	0.0	0.7	43.5	54.0	-10.5	V	A	
11.060	3.0	33.5	38.4	10.6	-33.5	0.0	0.7	49.7	74.0	-24.3	H	P	
11.060	3.0	24.2	38.4	10.6	-33.5	0.0	0.7	40.4	54.0	-13.6	H	A	
5690 MHz 3TX CDD													
11.380	3.0	33.3	38.8	11.0	-33.2	0.0	0.7	50.6	74.0	-23.4	H	P	
11.380	3.0	23.7	38.8	11.0	-33.2	0.0	0.7	41.0	54.0	-13.0	H	A	
11.380	3.0	33.3	38.8	11.0	-33.2	0.0	0.7	50.6	74.0	-23.4	V	P	
11.380	3.0	23.3	38.8	11.0	-33.2	0.0	0.7	40.6	54.0	-13.4	V	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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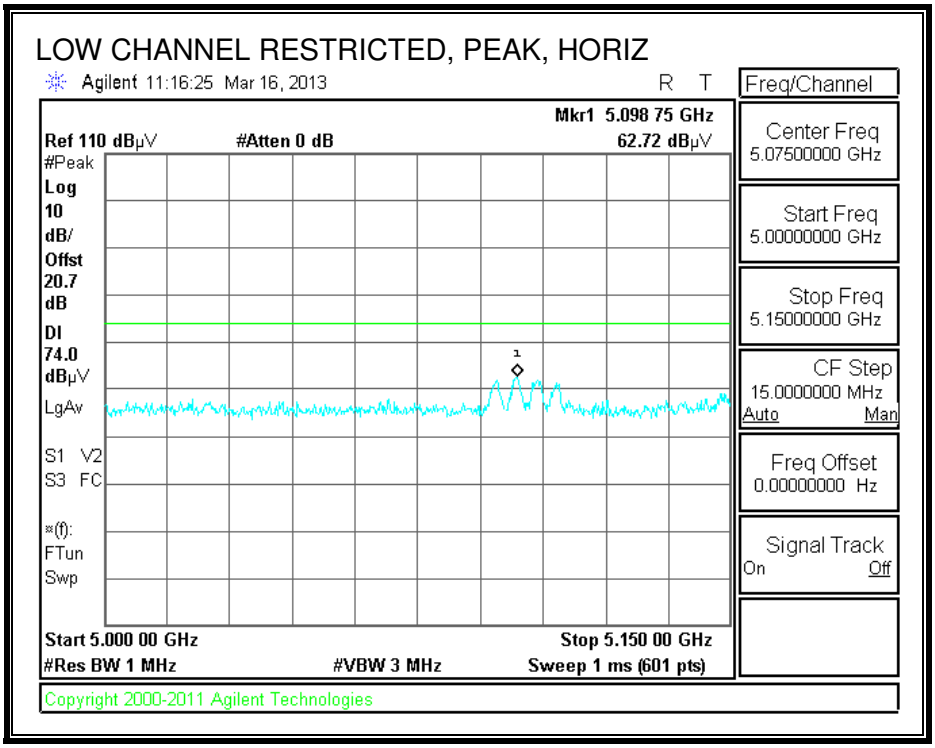
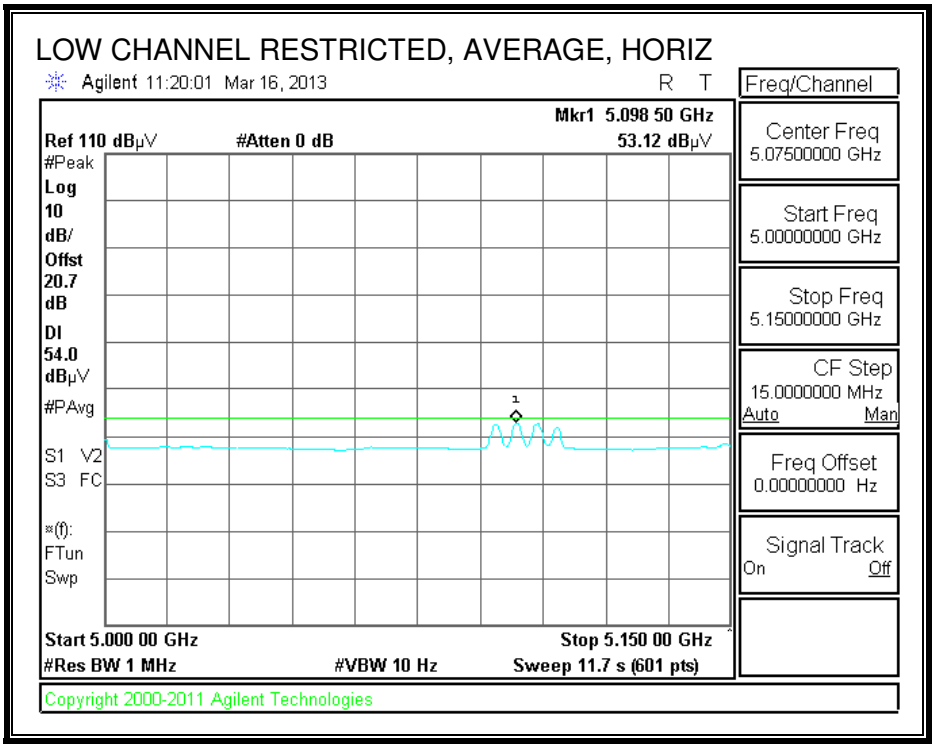
9.2.10. TX ABOVE 1 GHz, 802.11n HT20 BF 3TX MODE, 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)





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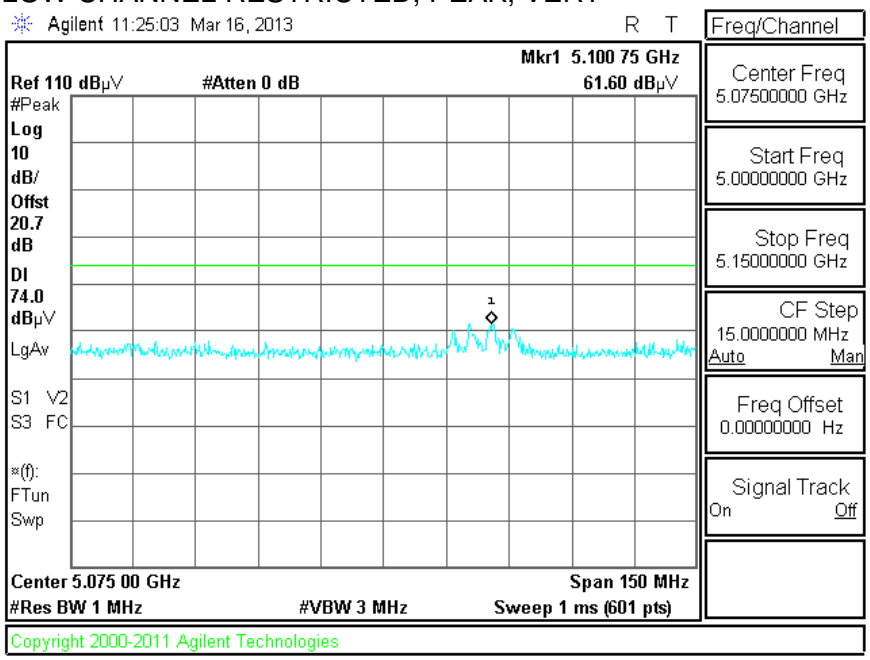
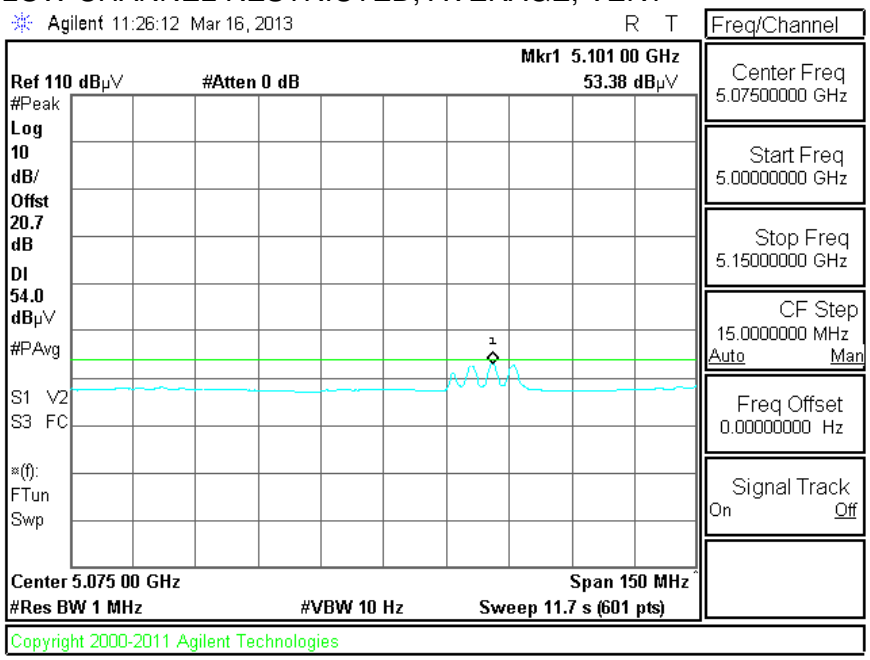
LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber-A

Company: MENGISTU MEKURIA
Project #: 03/17/13
Date: 12U14745
Test Engineer: Apple Inc.
Configuration: FCC Class B
Mode: HT20 3TX BF CDD

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T136; M/N: 3117 @3m	T145 Agilent 3008A0056	T88 Miteq 26-40GHz	T39; ARA 18-26GHz; S/N:1013	FCC 15.205

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_7.6GHz	

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel (5180 MHz)															
15.540	3.0	35.2	24.4	40.1	13.2	-32.3	0.0	0.7	57.0	46.2	74	54	-17.0	-7.8	H
15.540	3.0	35.1	24.5	40.1	13.2	-32.3	0.0	0.7	56.8	46.2	74	54	-17.2	-7.8	V
Mid Channel (5200 MHz)															
15.600	3.0	35.1	24.6	40.1	13.3	-32.3	0.0	0.7	56.9	46.4	74	54	-17.1	-7.6	H
15.600	3.0	35.1	24.6	40.1	13.3	-32.3	0.0	0.7	56.9	46.4	74	54	-17.1	-7.6	V
Hi Channel (5240 MHz)															
15.720	3.0	36.1	24.8	40.1	13.3	-32.2	0.0	0.7	58.1	46.7	74	54	-15.9	-7.3	H
15.720	3.0	35.8	24.8	40.1	13.3	-32.2	0.0	0.7	57.7	46.7	74	54	-16.3	-7.3	V

Rev. 01.30.13

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

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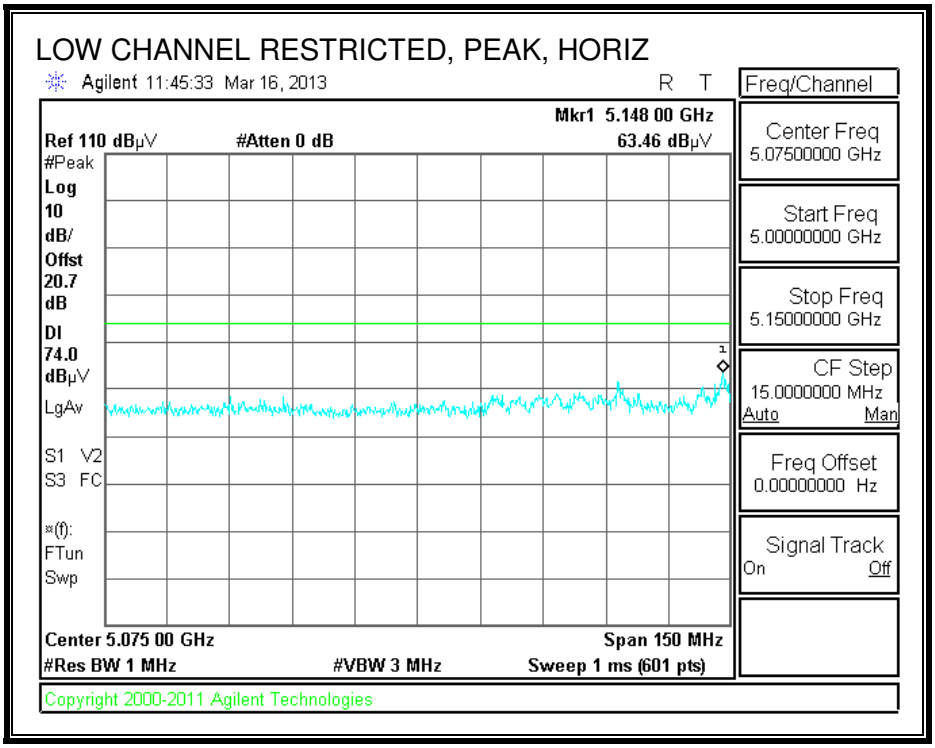
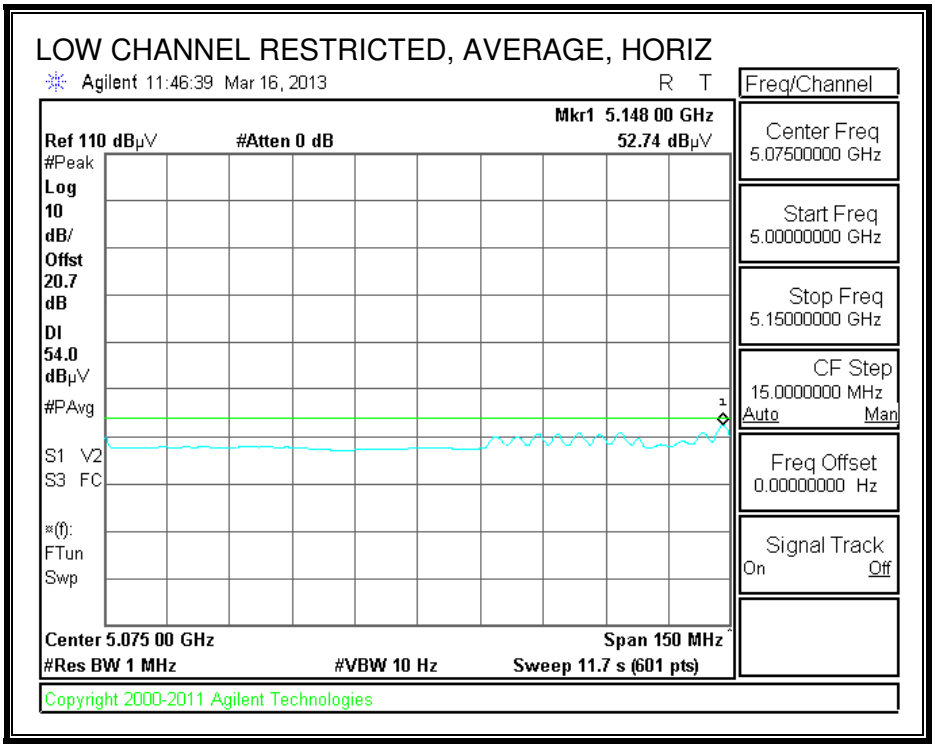
9.2.11. TX ABOVE 1 GHz, 802.11n HT40 BF 3TX MODE, 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)





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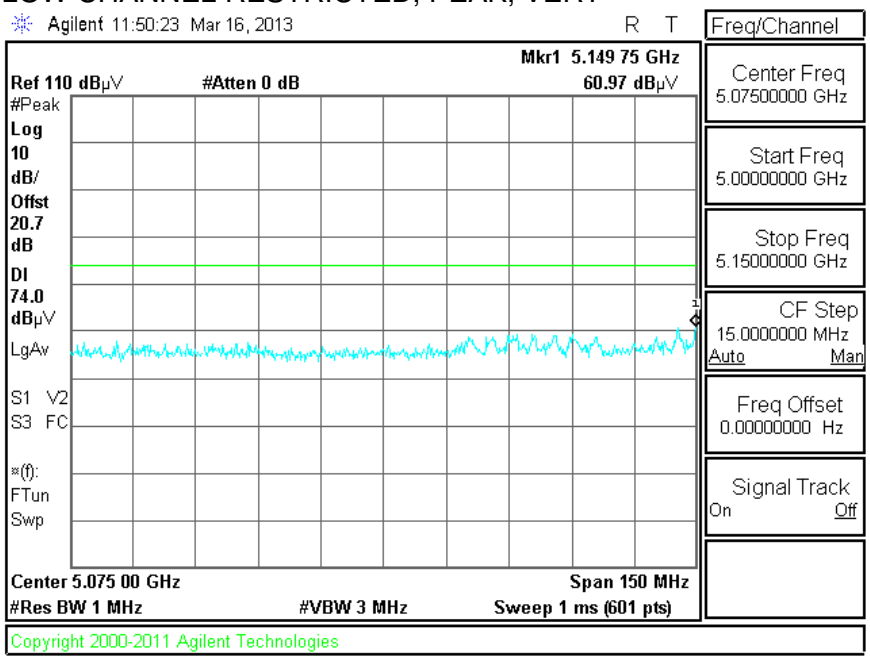
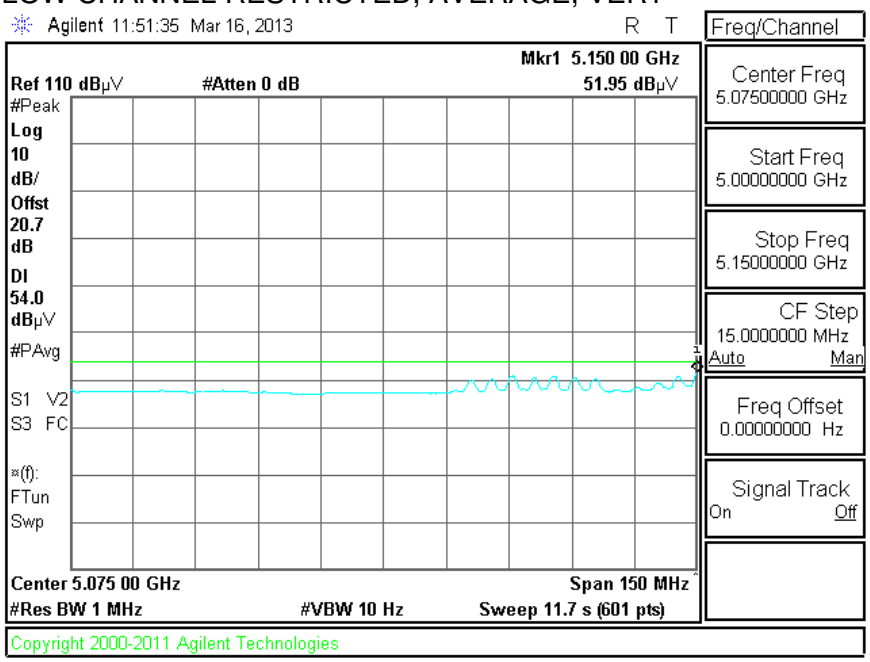
LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber-A

Company: MENGISTU MEKURIA
Project #: 03/17/13
Date: 12U14745
Test Engineer: Apple Inc.
Configuration: FCC Class B
Mode: HT40 3TX BF CDD

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T136; M/N: 3117 @3m	T145 Agilent 3008A0056	T88 Miteq 26-40GHz	T39; ARA 18-26GHz; S/N:1013	FCC 15.205

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_7.6GHz	

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel (5190 MHz)															
15.570	3.0	35.1	24.5	40.1	13.2	-32.3	0.0	0.7	56.9	46.3	74	54	-17.1	-7.7	H
15.570	3.0	35.2	24.5	40.1	13.2	-32.3	0.0	0.7	57.0	46.3	74	54	-17.0	-7.7	V
Hi Channel (5230 MHz)															
15.690	3.0	35.9	24.8	40.1	13.3	-32.3	0.0	0.7	57.8	46.7	74	54	-16.2	-7.3	H
15.690	3.0	35.0	24.8	40.1	13.3	-32.3	0.0	0.7	56.9	46.7	74	54	-17.1	-7.3	V

Rev. 01.30.13

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

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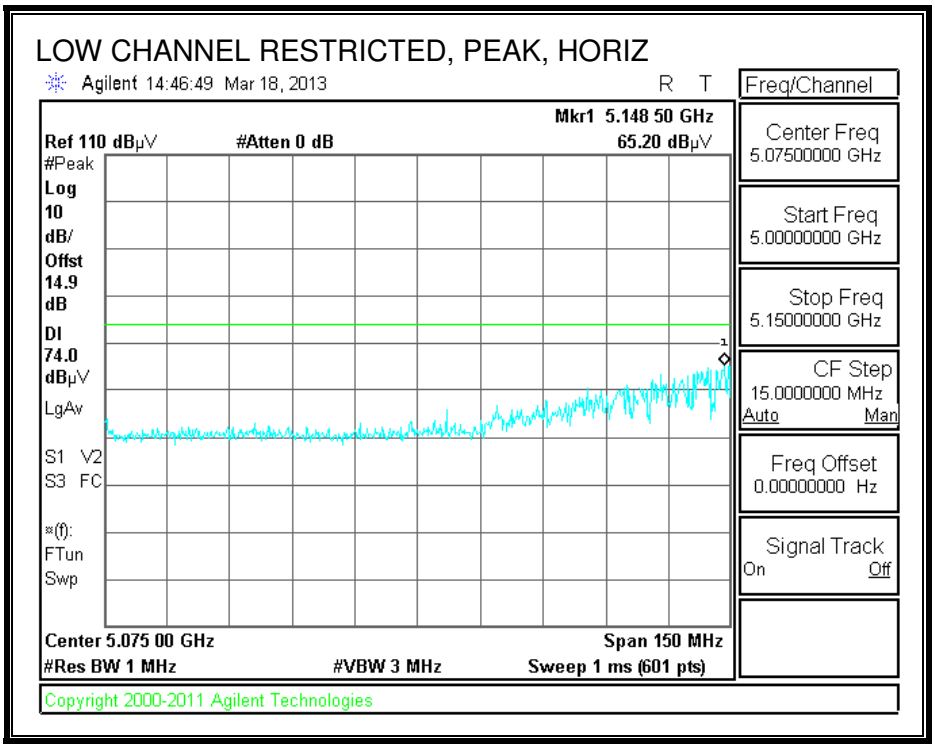
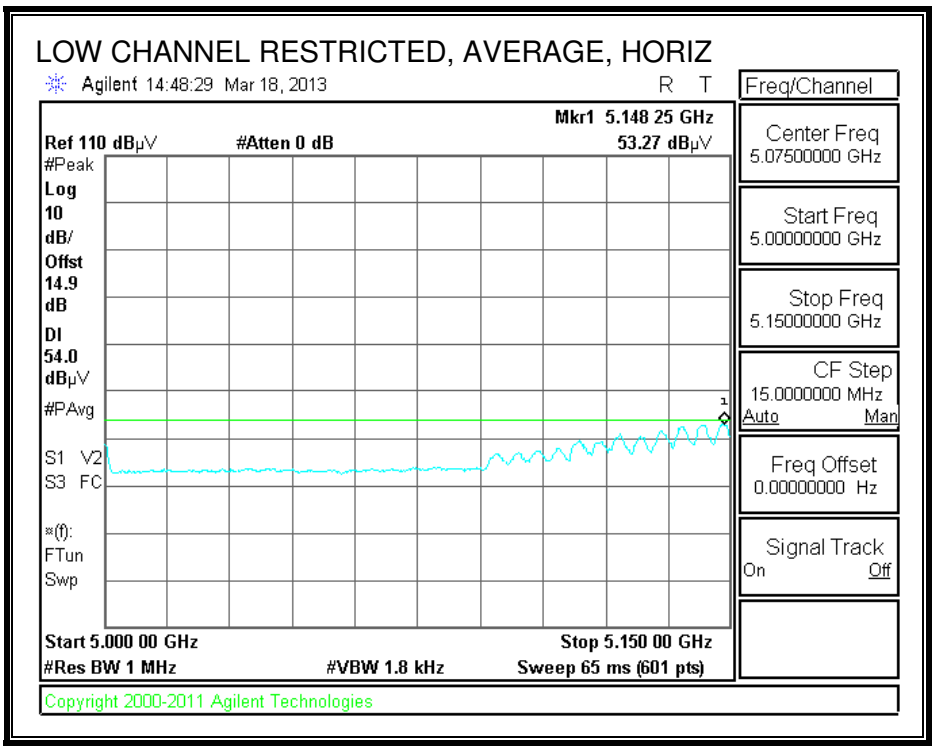
9.2.12. TX ABOVE 1 GHz, 802.11ac VHT80 BF 2TX MODE, 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)





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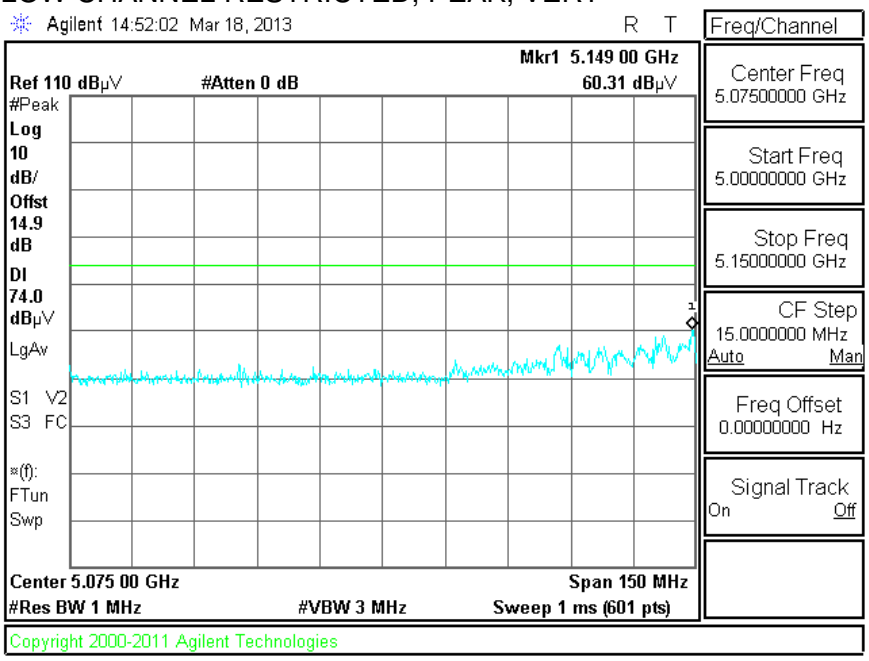
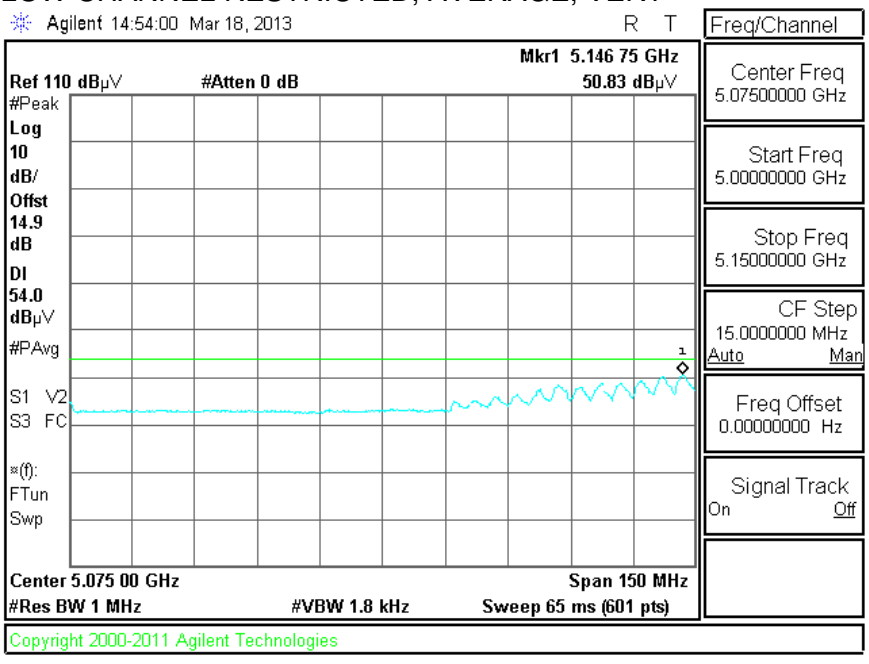
LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber-A

Company: MENGISTU MEKURIA
Project #: 03/17/13
Date: 12U14745
Test Engineer: Apple Inc.
Configuration: FCC Class B
Mode: HT40 3TX BF CDD

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T136; M/N: 3117 @3m	T145 Agilent 3008A0056	T88 Miteq 26-40GHz	T39; ARA 18-26GHz; S/N:1013	FCC 15.209

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_7.6GHz	

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel (5210 MHz)															
10.420	3.0	36.2	25.5	37.2	10.6	-34.1	0.0	0.8	50.6	39.9	74	54	-23.4	-14.1	H
10.420	3.0	35.6	25.4	37.2	10.6	-34.1	0.0	0.8	50.0	39.8	74	54	-24.0	-14.2	V
Mid Channel (5290 MHz)															
10.580	3.0	35.3	25.0	37.3	10.7	-33.9	0.0	0.8	50.0	39.8	74	54	-24.0	-14.2	H
10.580	3.0	35.5	24.9	37.3	10.7	-33.9	0.0	0.8	50.2	39.6	74	54	-23.8	-14.4	V
Low Channel (5530 MHz)															
11.060	3.0	35.1	24.7	37.6	10.9	-33.4	0.0	0.7	51.0	40.5	74	54	-23.0	-13.5	H
11.060	3.0	35.5	24.5	37.6	10.9	-33.4	0.0	0.7	51.4	40.4	74	54	-22.6	-13.6	V
Hi Channel (5690 MHz)															
11.380	3.0	36.1	25.3	37.9	11.1	-33.0	0.0	0.7	52.8	42.0	74	54	-21.2	-12.0	H
11.380	3.0	35.4	25.1	37.9	11.1	-33.0	0.0	0.7	52.1	41.9	74	54	-21.9	-12.1	V

Rev. 01.30.13

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

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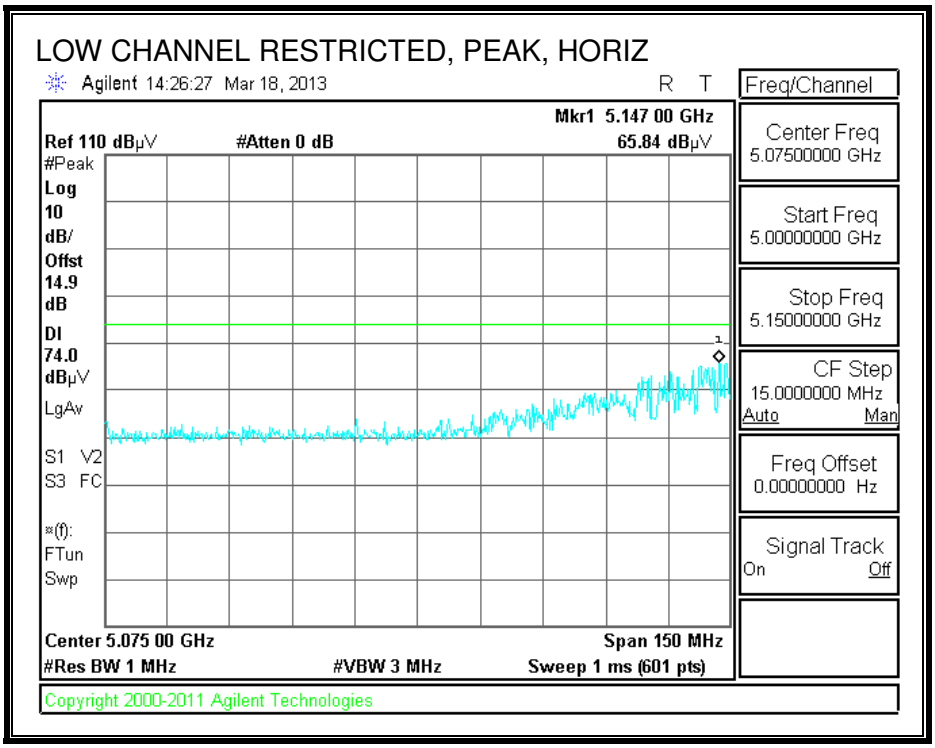
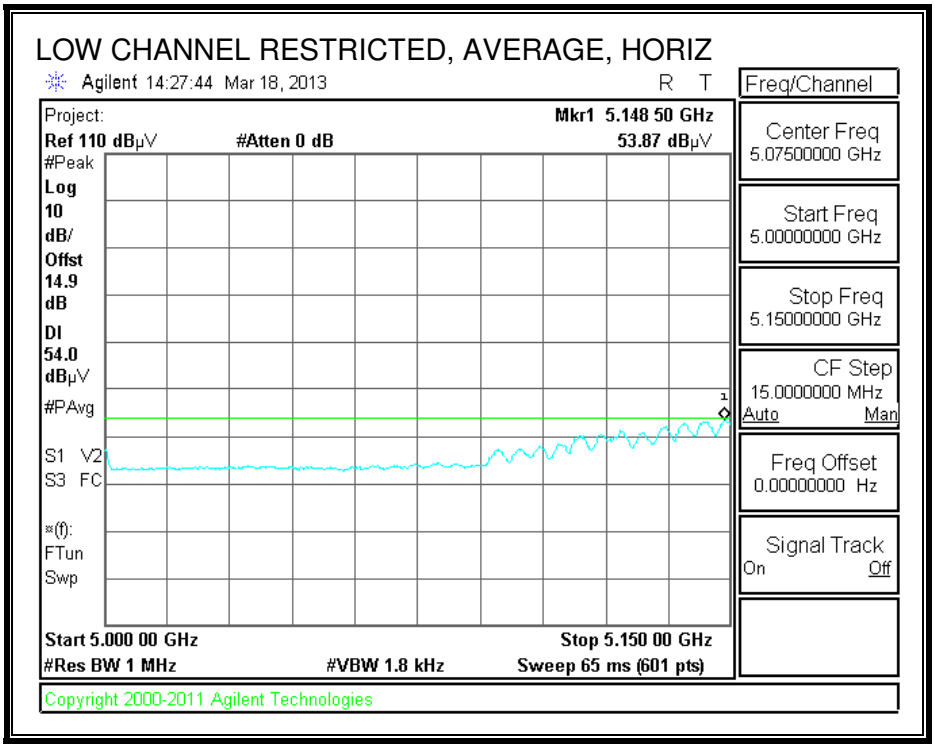
9.2.13. TX ABOVE 1 GHz, 802.11ac VHT80 BF 3TX MODE, 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)





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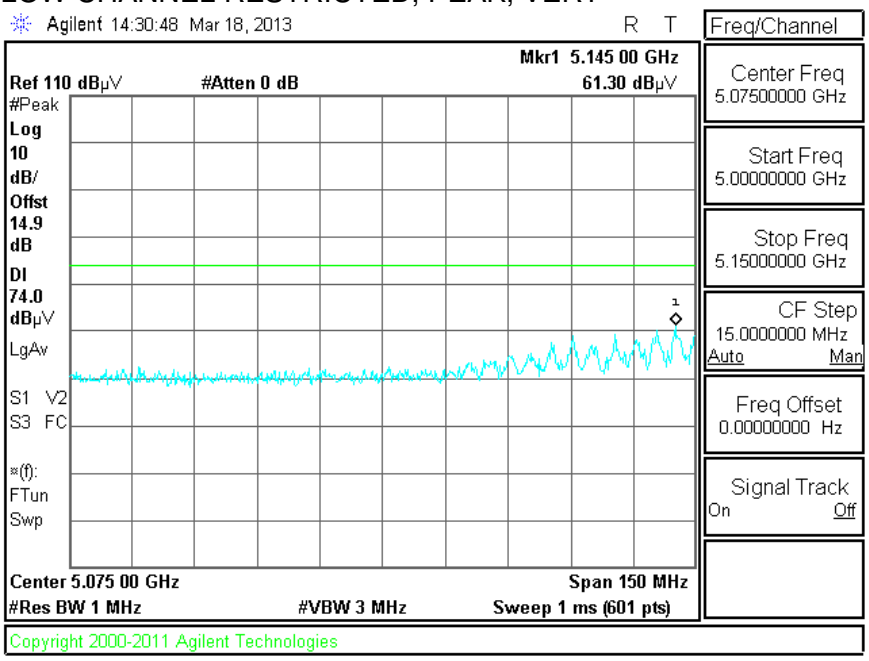
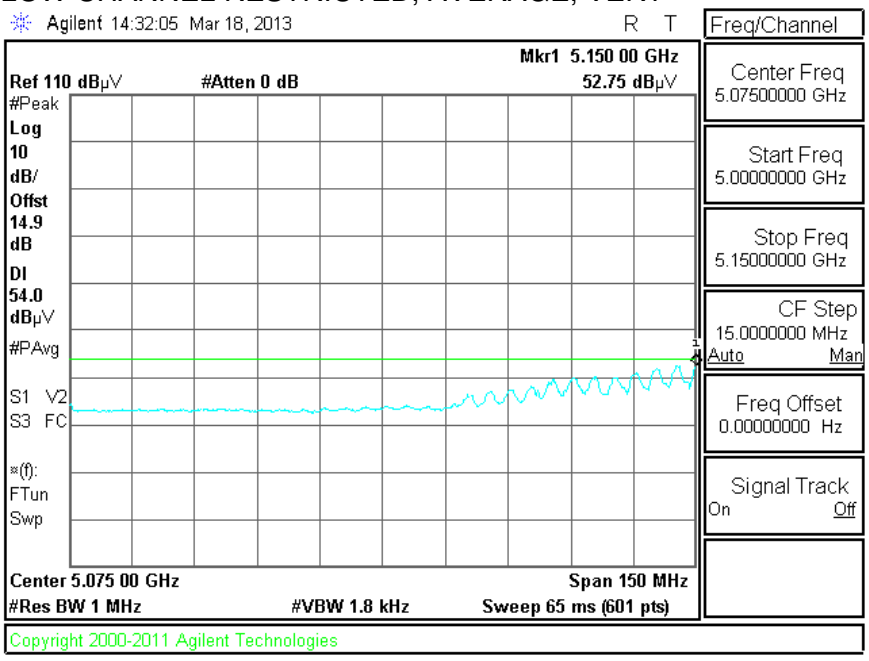
LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber-A

Company: MENGISTU MEKURIA
Project #: 03/17/13
Date: 12U14745
Test Engineer: Apple Inc.
Configuration: FCC Class B
Mode: HT40 3TX BF CDD

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T136; M/N: 3117 @3m	T145 Agilent 3008A0056	T88 Miteq 26-40GHz	T39; ARA 18-26GHz; S/N:1013	FCC 15.209

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_7.6GHz	

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel (5210 MHz)															
10.420	3.0	36.2	25.5	37.2	10.6	-34.1	0.0	0.8	50.6	39.9	74	54	-23.4	-14.1	H
10.420	3.0	35.6	25.4	37.2	10.6	-34.1	0.0	0.8	50.0	39.8	74	54	-24.0	-14.2	V
Mid Channel (5290 MHz)															
10.580	3.0	35.3	25.0	37.3	10.7	-33.9	0.0	0.8	50.0	39.8	74	54	-24.0	-14.2	H
10.580	3.0	35.5	24.9	37.3	10.7	-33.9	0.0	0.8	50.2	39.6	74	54	-23.8	-14.4	V
Low Channel (5530 MHz)															
11.060	3.0	35.1	24.7	37.6	10.9	-33.4	0.0	0.7	51.0	40.5	74	54	-23.0	-13.5	H
11.060	3.0	35.5	24.5	37.6	10.9	-33.4	0.0	0.7	51.4	40.4	74	54	-22.6	-13.6	V
Hi Channel (5690 MHz)															
11.380	3.0	36.1	25.3	37.9	11.1	-33.0	0.0	0.7	52.8	42.0	74	54	-21.2	-12.0	H
11.380	3.0	35.4	25.1	37.9	11.1	-33.0	0.0	0.7	52.1	41.9	74	54	-21.9	-12.1	V

Rev. 01.30.13

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

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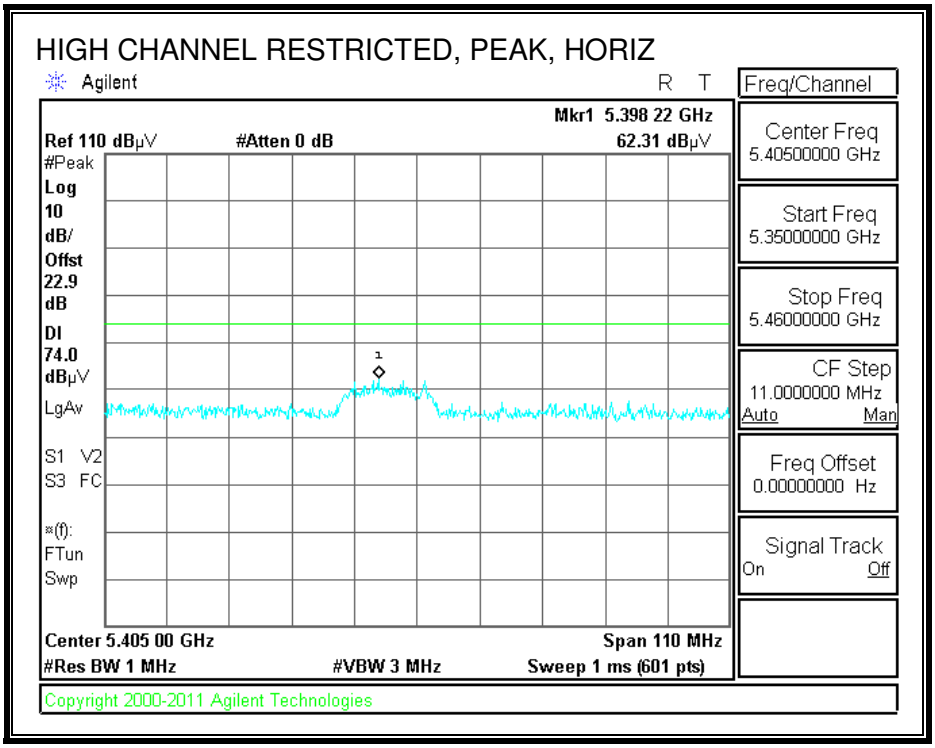
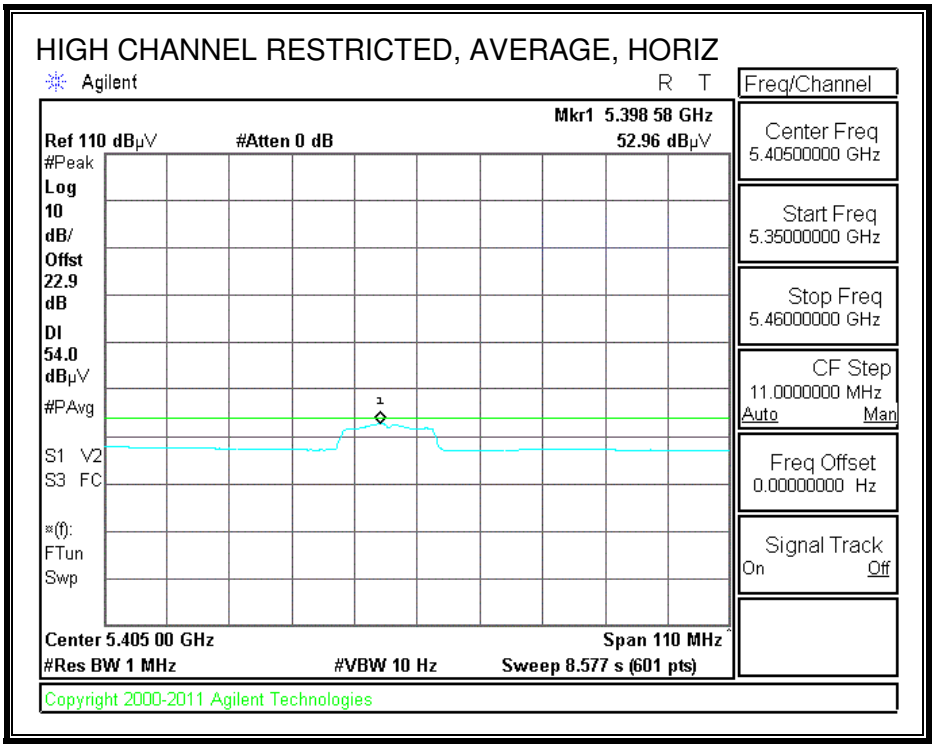
9.2.14. TX ABOVE 1 GHz, 802.11a 1TX MODE, 5.3 GHz BAND

RESTRICTED BANDEDGE (HIGH CHANNEL)





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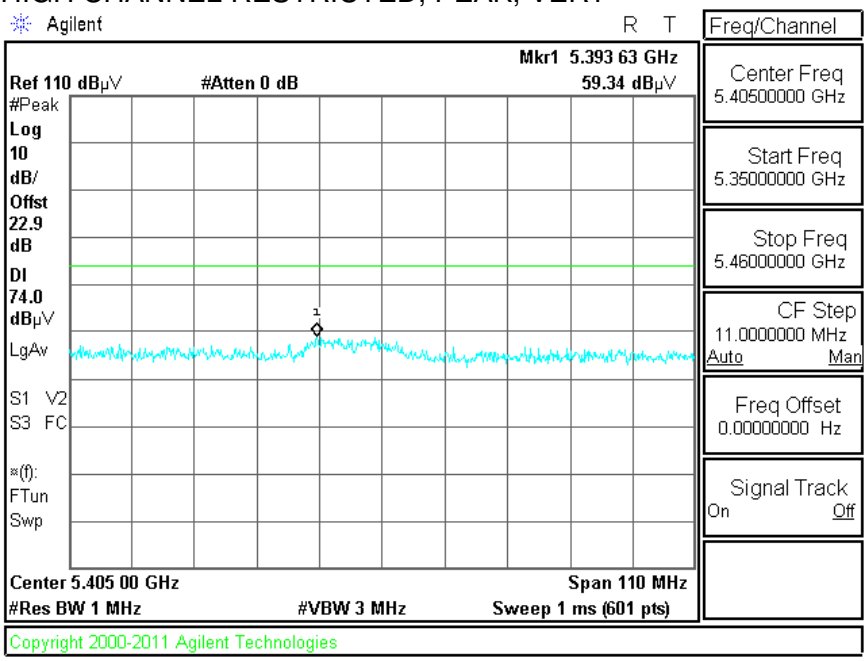
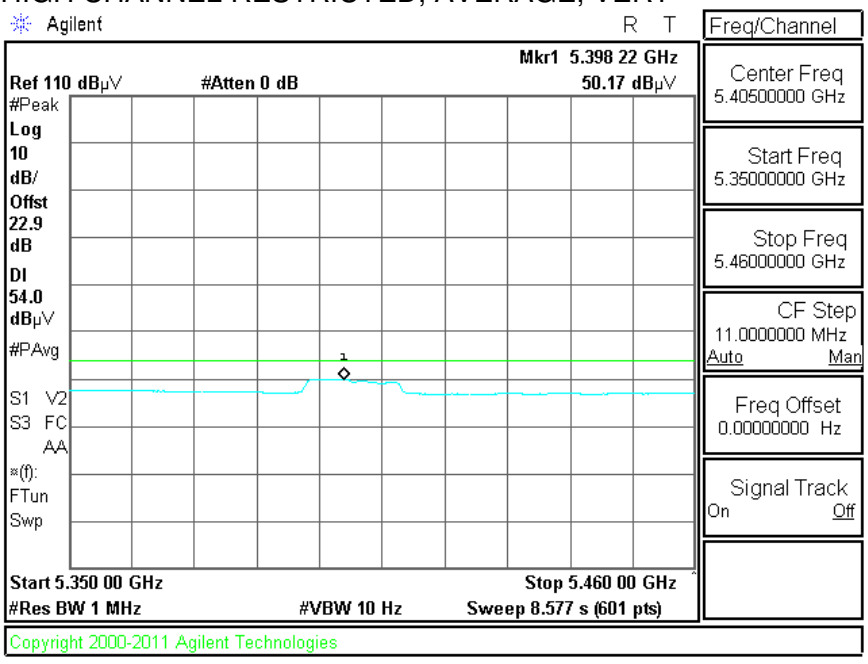
HIGH CHANNEL RESTRICTED, PEAK, VERT



HIGH CHANNEL RESTRICTED, AVERAGE, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 02/20/13
Project #: 12U14745
Company: Apple Inc.
Test Target: FCC Class B
Mode Oper: HT20 3TX CDD

f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter	

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5260 MHz 3TX CDD													
15.780	3.0	33.8	38.2	13.1	-31.9	0.0	0.7	53.9	74.0	-20.1	V	P	
15.780	3.0	23.3	38.2	13.1	-31.9	0.0	0.7	43.5	54.0	-10.5	V	A	
15.780	3.0	33.2	38.2	13.1	-31.9	0.0	0.7	53.4	74.0	-20.6	H	P	
15.780	3.0	23.7	38.2	13.1	-31.9	0.0	0.7	43.9	54.0	-10.1	H	A	
5300 MHz 3TX CDD													
15.900	3.0	33.2	37.8	13.2	-31.8	0.0	0.7	53.0	74.0	-21.0	H	P	
15.900	3.0	23.5	37.8	13.2	-31.8	0.0	0.7	43.3	54.0	-10.7	H	A	
15.900	3.0	33.7	37.8	13.2	-31.8	0.0	0.7	53.5	74.0	-20.5	V	P	
15.900	3.0	26.0	37.8	13.2	-31.8	0.0	0.7	45.8	54.0	-8.2	V	A	
5320 MHz 3TX CDD													
15.960	3.0	33.0	37.6	13.2	-31.8	0.0	0.7	52.7	74.0	-21.3	V	P	
15.960	3.0	23.1	37.6	13.2	-31.8	0.0	0.7	42.8	54.0	-11.2	V	A	
15.960	3.0	33.5	37.6	13.2	-31.8	0.0	0.7	53.1	74.0	-20.9	H	P	
15.960	3.0	22.8	37.6	13.2	-31.8	0.0	0.7	42.5	54.0	-11.5	H	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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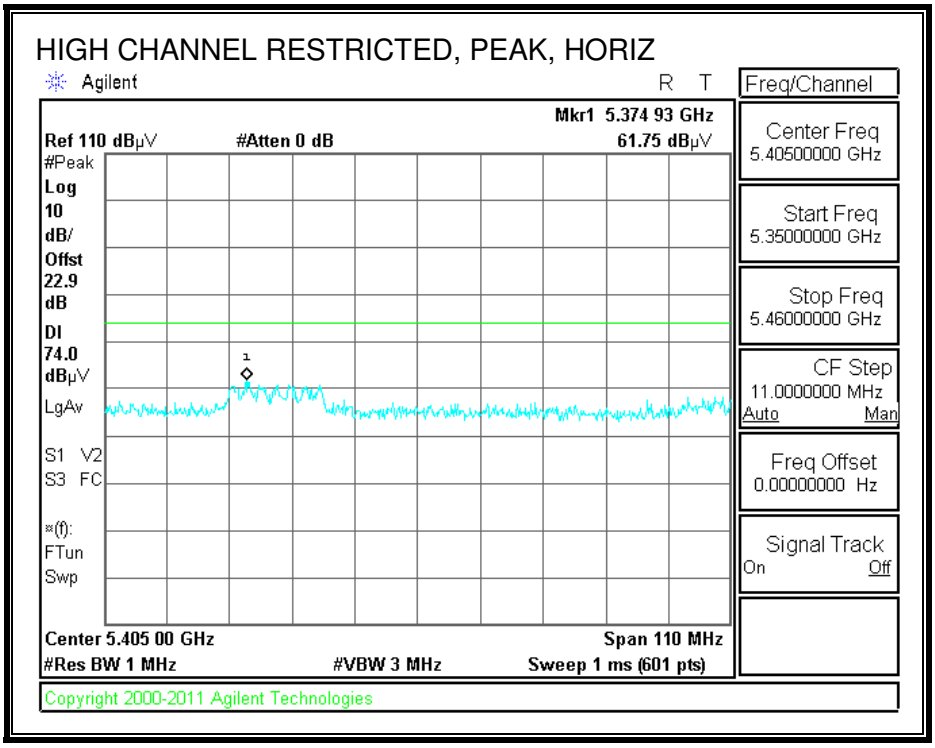
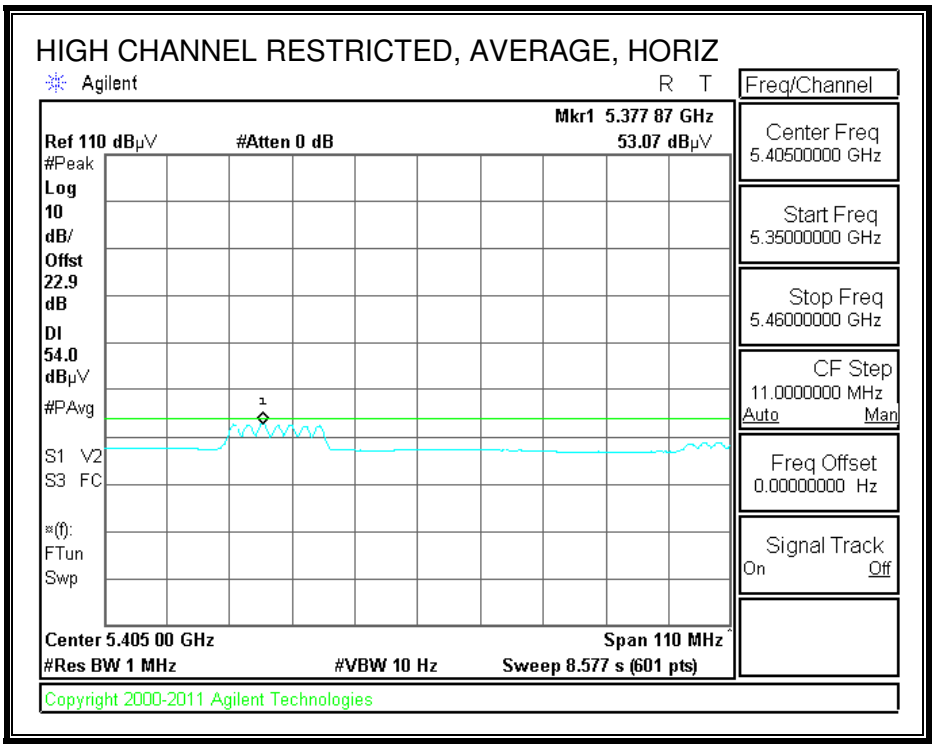
9.2.15. TX ABOVE 1 GHz, 802.11n HT20 CDD 2TX MODE, 5.3 GHz BAND

RESTRICTED BANDEDGE (HIGH CHANNEL)





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