8.9.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

ID:	30554	Date:	12/15/16

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Mid	5210	1.27	1.27	24.00	11.00

Duty Cycle CF (dB)	0.21	Included in Calculations of Corr'd PSD

Output Power Results

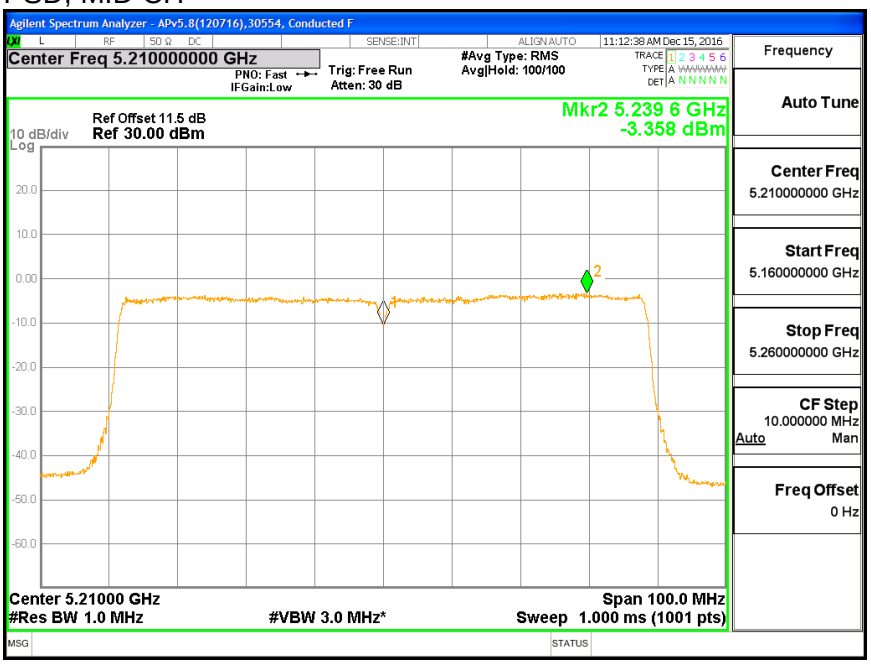
Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	13.94	13.94	24.00	-10.06

PSD Results

Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5210	-3.358	-3.15	11.00	-14.15

PSD

PSD, MID CH



8.10. 802.11ac VHT80 ANTENNA B MODE IN THE 5.2 GHz BAND

8.10.1. 26 dB BANDWIDTH

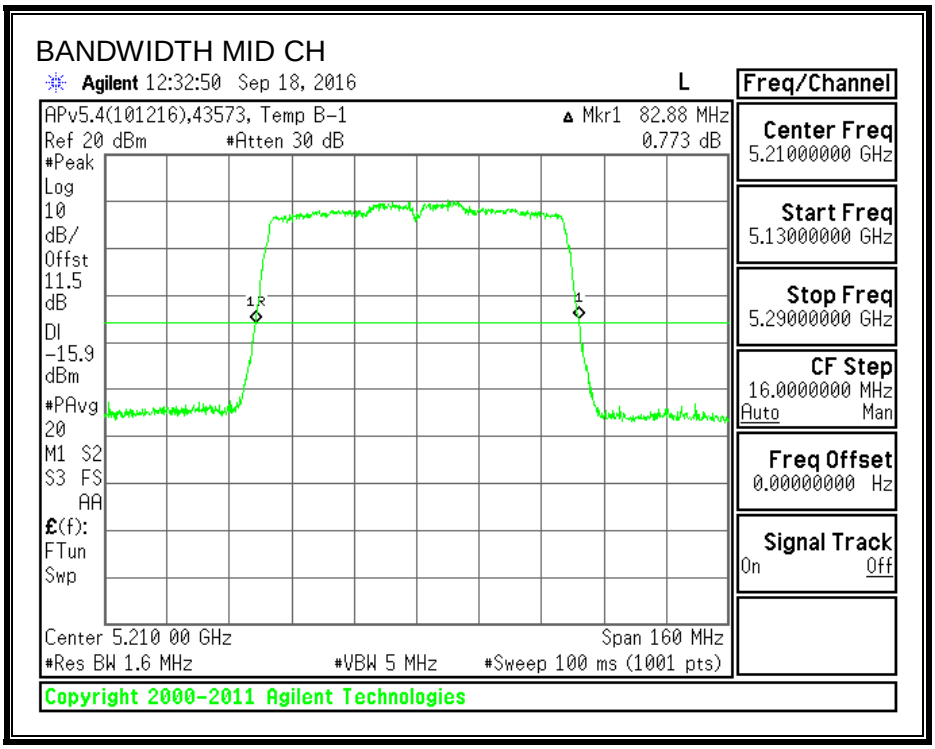
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5210	82.880

26 dB BANDWIDTH



8.10.2. 99% BANDWIDTH

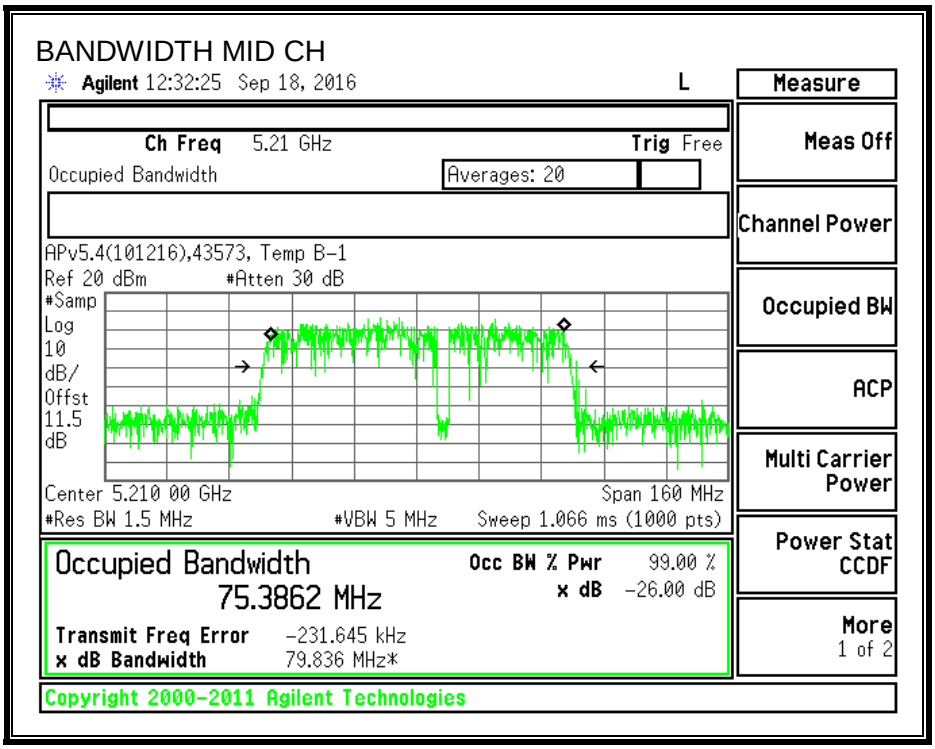
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5210	75.386

99% BANDWIDTH



8.10.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

ID:	30554	Date:	12/15/16

Channel	Frequency (MHz)	Power (dBm)
Mid	5210	13.96

8.10.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

ID:	30554	Date:	12/15/16

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Mid	5210	2.64	2.64	24.00	11.00

Duty Cycle CF (dB)	0.21	Included in Calculations of Corr'd PSD

Output Power Results

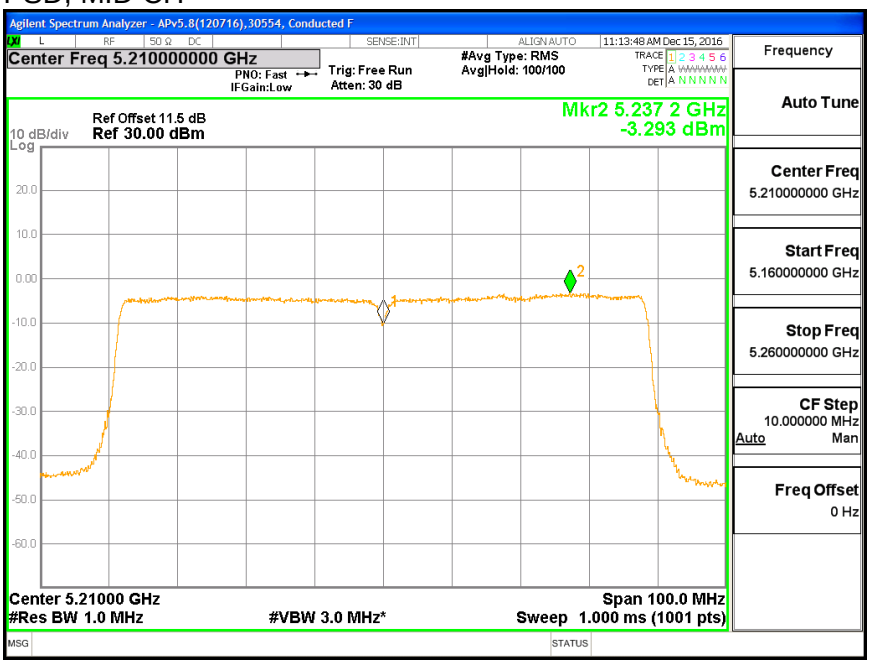
Channel	Frequency (MHz)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	13.96	13.96	24.00	-10.04

PSD Results

Channel	Frequency (MHz)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5210	-3.293	-3.08	11.00	-14.08

PSD

PSD, MID CH



8.11. 802.11ac VHT80 2Tx (ANTENNA A + ANTENNA B) CDD MODE IN THE 5.2 GHz BAND

8.11.1. 26 dB BANDWIDTH

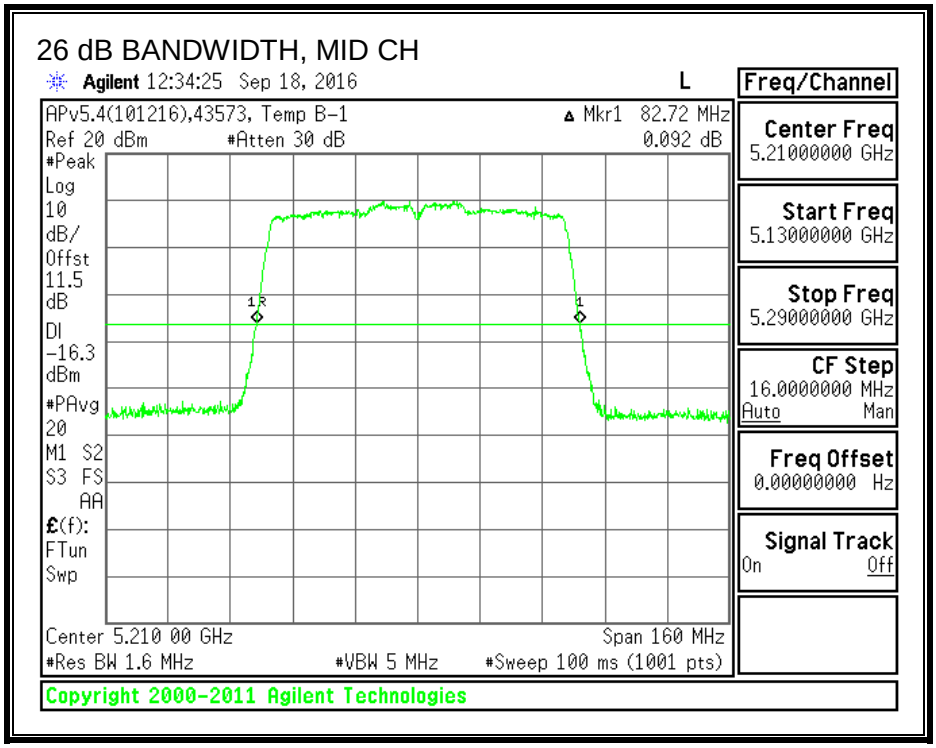
LIMITS

None; for reporting purposes only.

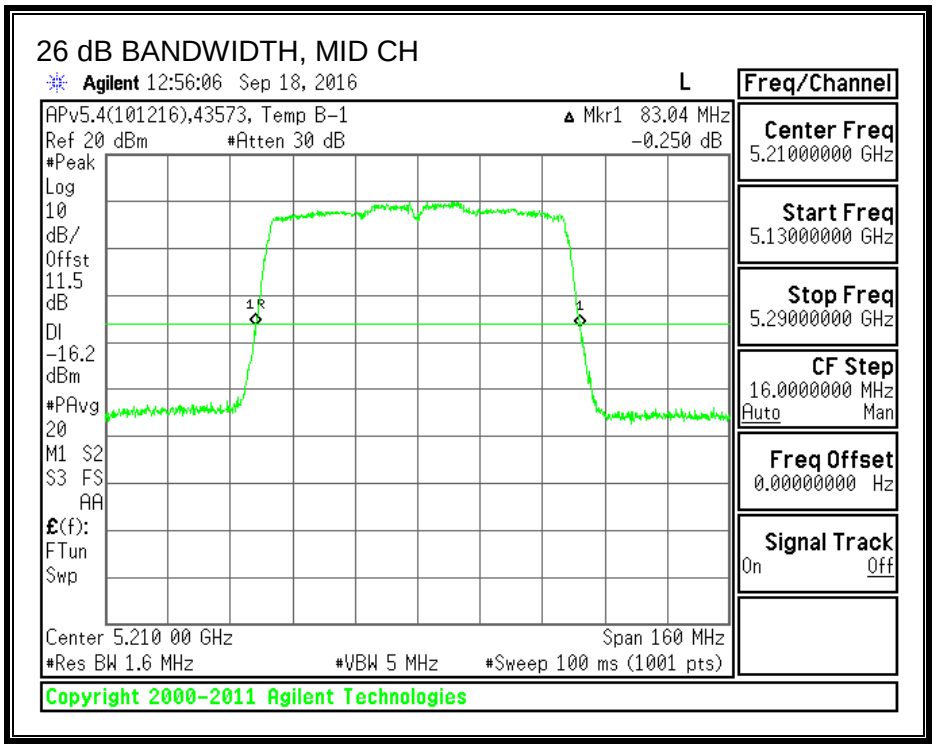
RESULTS

Channel	Frequency (MHz)	26 dB BW Ant A (MHz)	26 dB BW Ant B (MHz)
Mid	5210	82.720	83.040

26 DB BANDWIDTH, ANTENNA A



26 DB BANDWIDTH, ANTENNA B



8.11.2. 99% BANDWIDTH

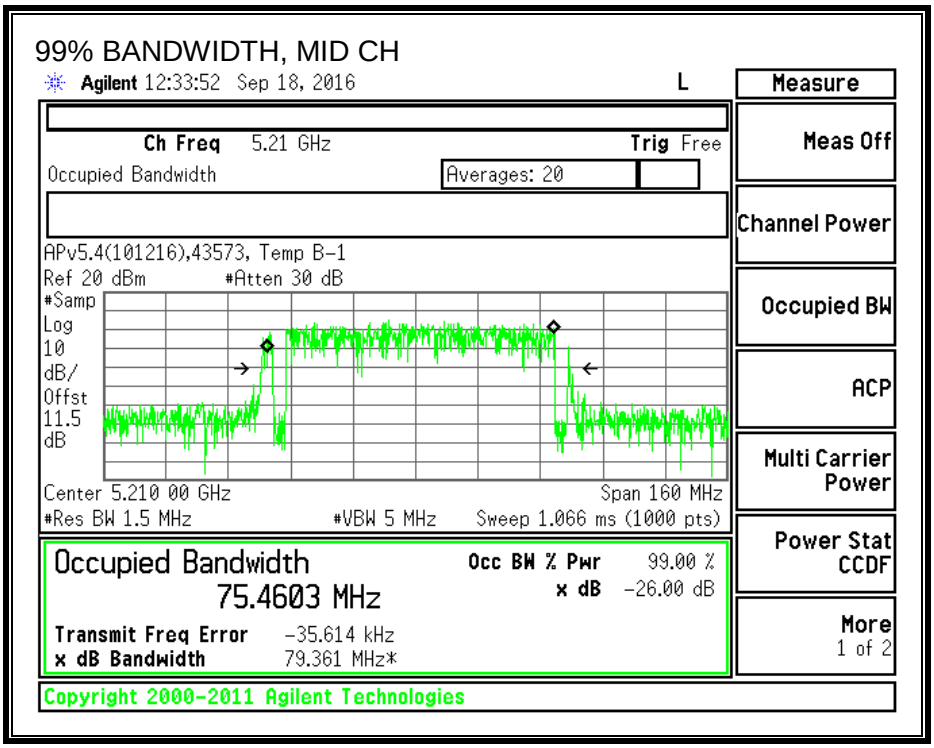
LIMITS

None; for reporting purposes only.

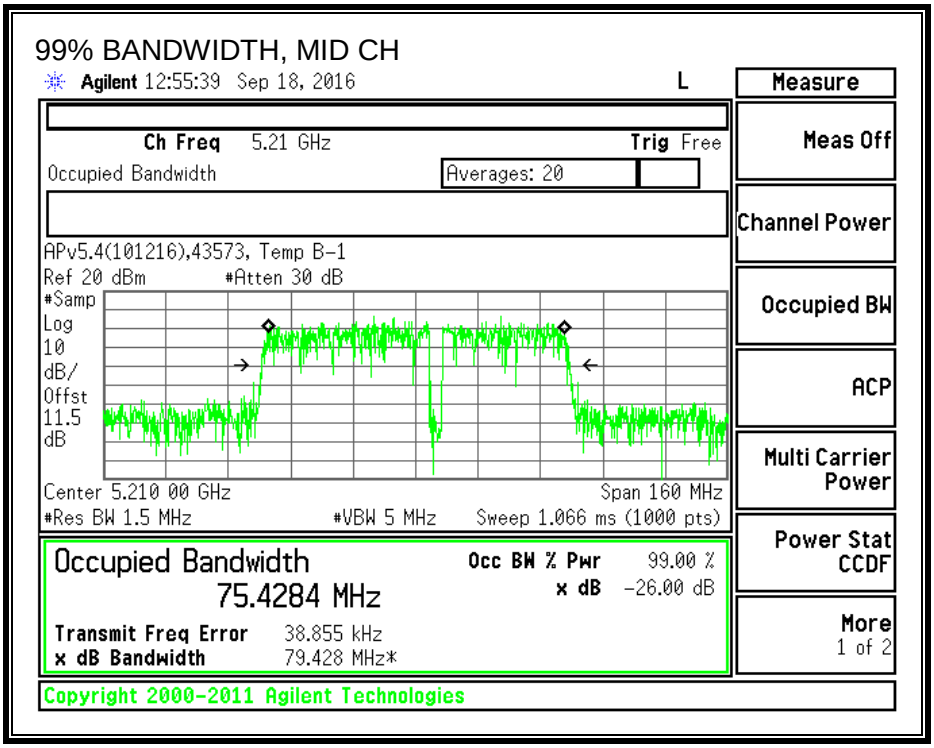
RESULTS

Channel	Frequency (MHz)	99% BW Ant A (MHz)	99% BW Ant B (MHz)
Mid	5210	75.4603	75.4284

99% BANDWIDTH, ANTENNA A



99% BANDWIDTH, ANTENNA B



8.11.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

ID:	39316	Date:	12/15/16

Channel	Frequency (MHz)	Ant A Power (dBm)	Ant B Power (dBm)	Total Power (dBm)
Mid	5210	12.91	12.97	15.95

8.11.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

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

Ant A Antenna Gain (dBi)	Ant B Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
1.27	2.64	2.01

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

Ant A Antenna Gain (dBi)	Ant B Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
1.27	2.64	4.99

RESULTS

ID:	39316	Date:	12/15/16

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Mid	5210	0.01	4.99	24.00	11.00

Duty Cycle CF (dB)	0.20	Included in Calculations of Corr'd PSD

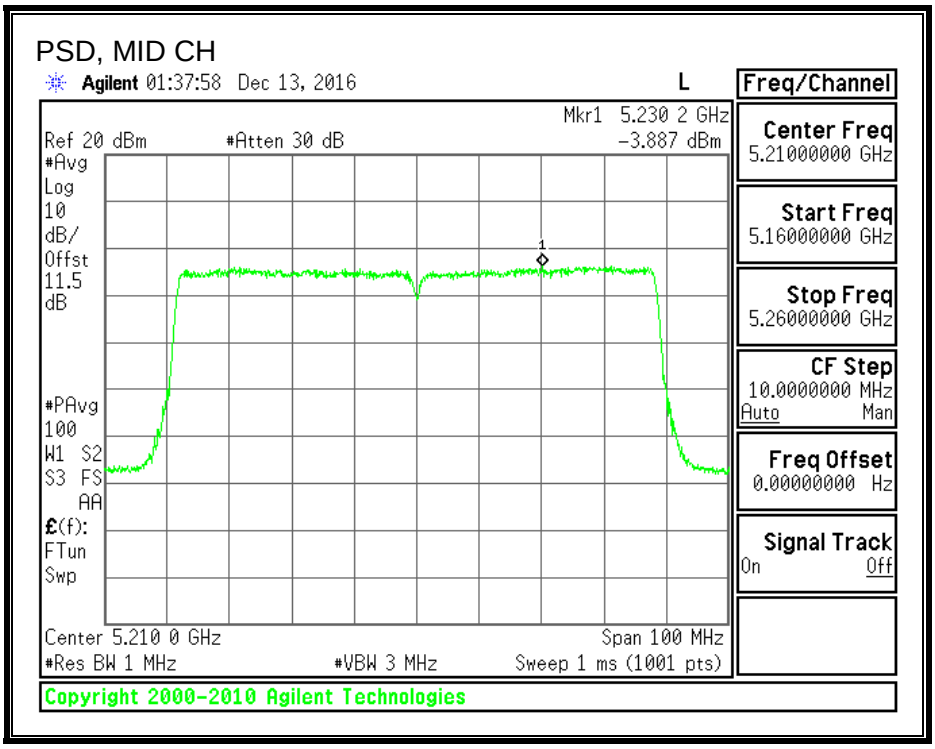
Output Power Results

Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	12.91	12.97	15.95	24.00	-8.05

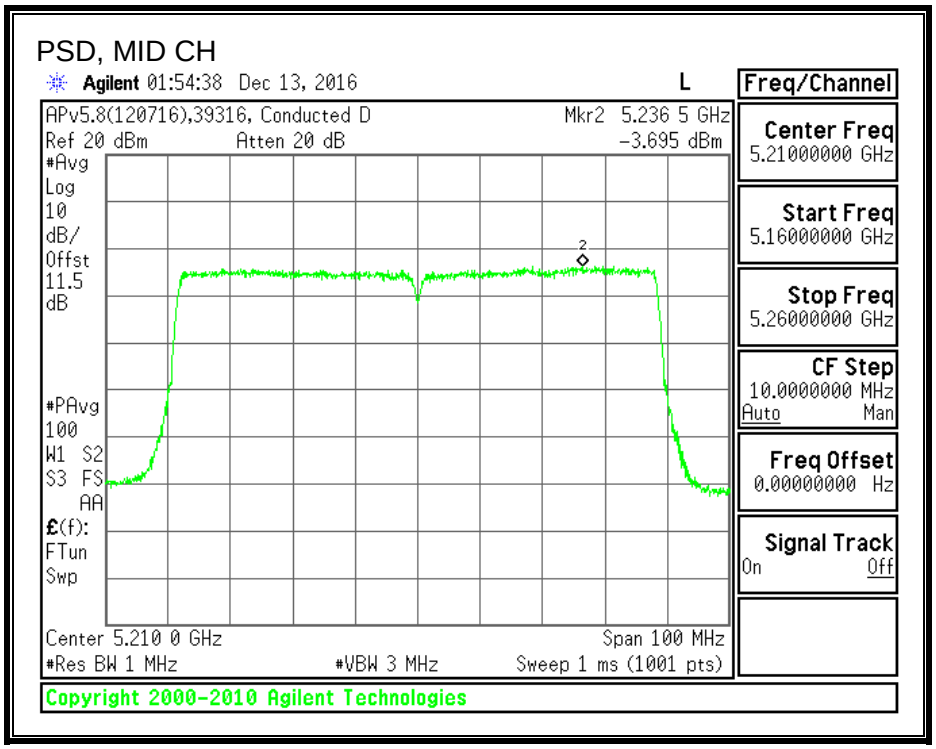
PSD Results

Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5210	-3.89	-3.70	-0.58	11.00	-11.58

PSD, ANTENNA A



PSD, ANTENNA B



8.12. 802.11ac VHT80 2Tx (ANTENNA A + ANTENNA B) STBC MODE IN THE 5.2 GHz BAND

Noted: Covered by 802.11ac VT80 2Tx (ANTENNA A + ANTENNA B) CDD MODE IN THE 5.2 GHz BAND

8.13. 802.11n HT20 ANTENNA A MODE IN THE 5.3 GHz BAND

8.13.1. 26 dB BANDWIDTH

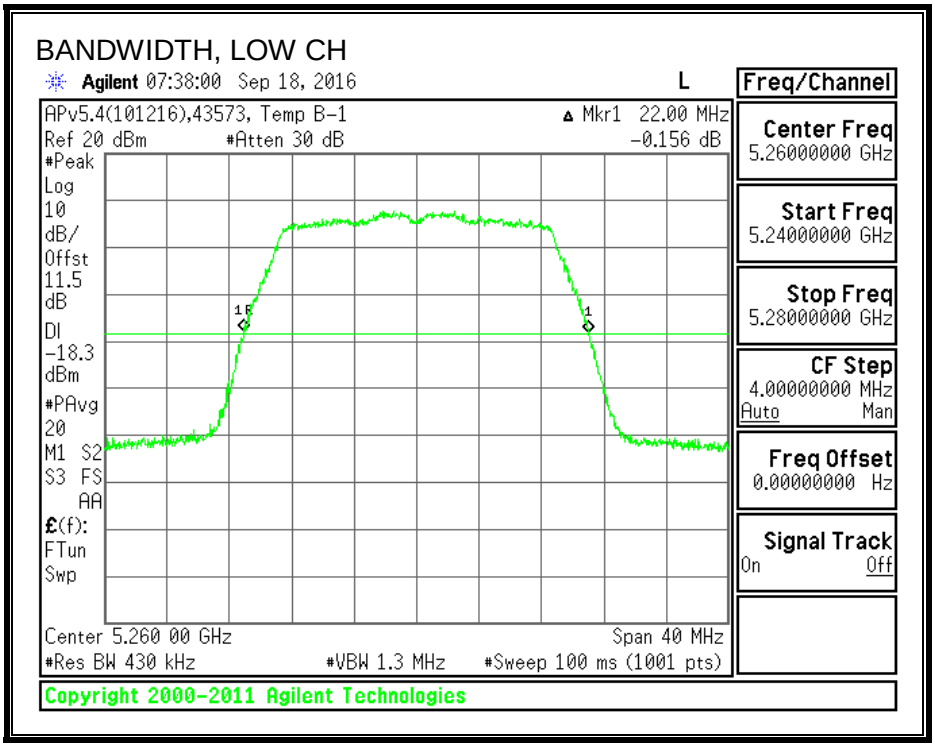
LIMITS

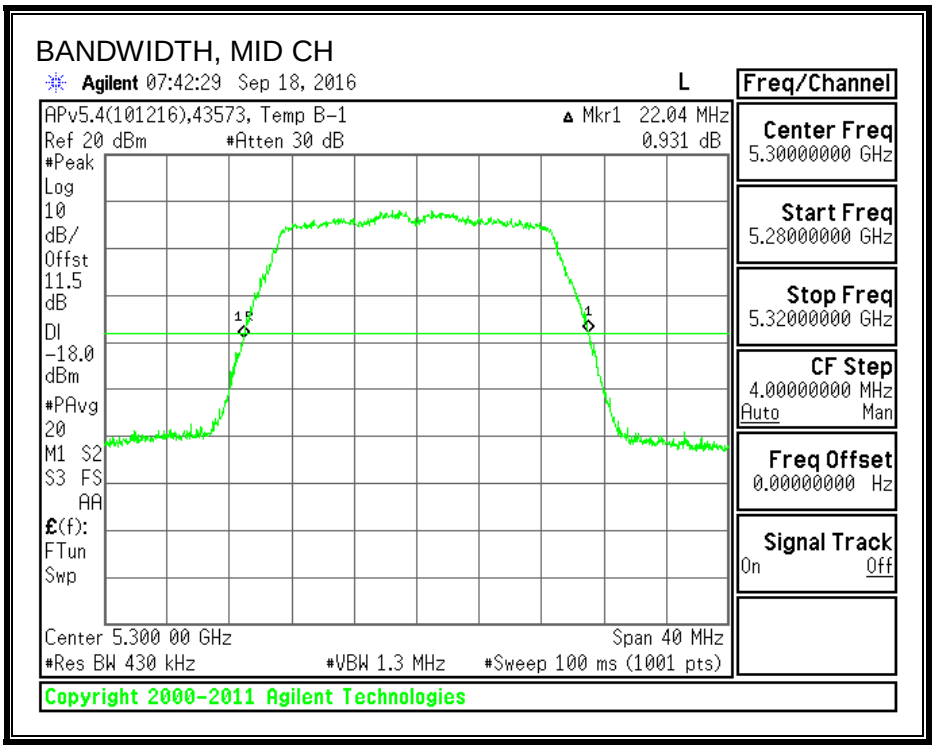
None; for reporting purposes only.

RESULTS

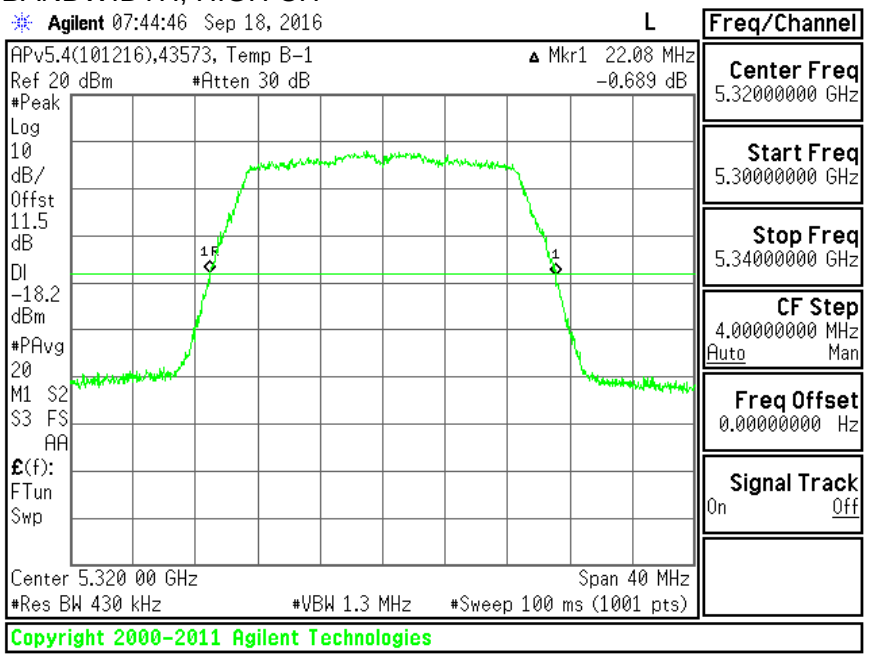
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	22.00
Mid	5300	22.04
High	5320	22.08

26 dB BANDWIDTH





BANDWIDTH, HIGH CH



8.13.2. 99% BANDWIDTH

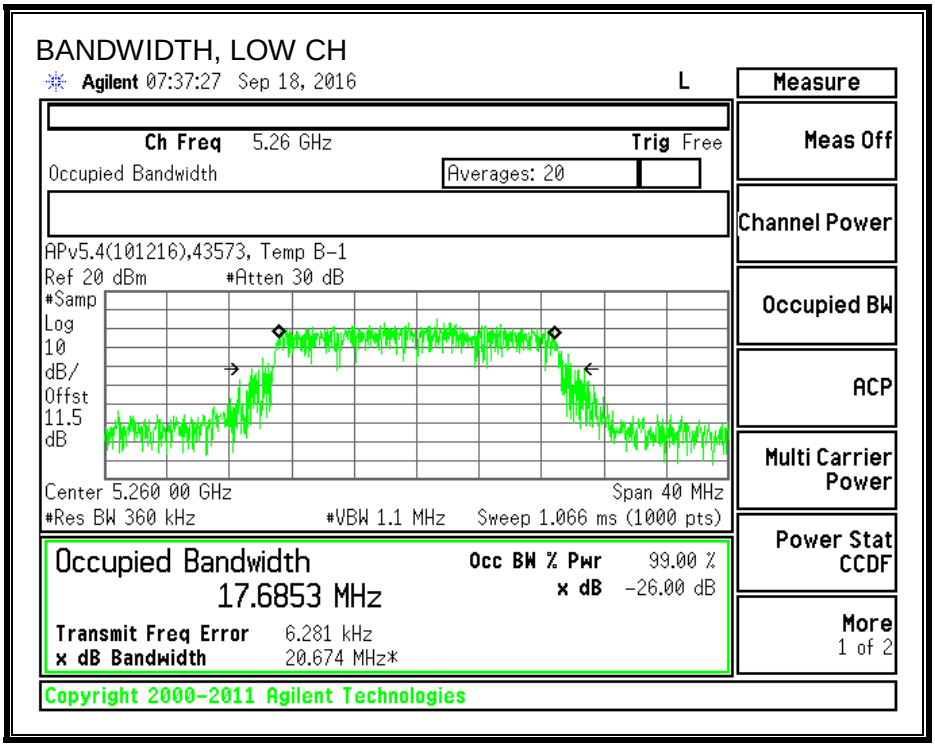
LIMITS

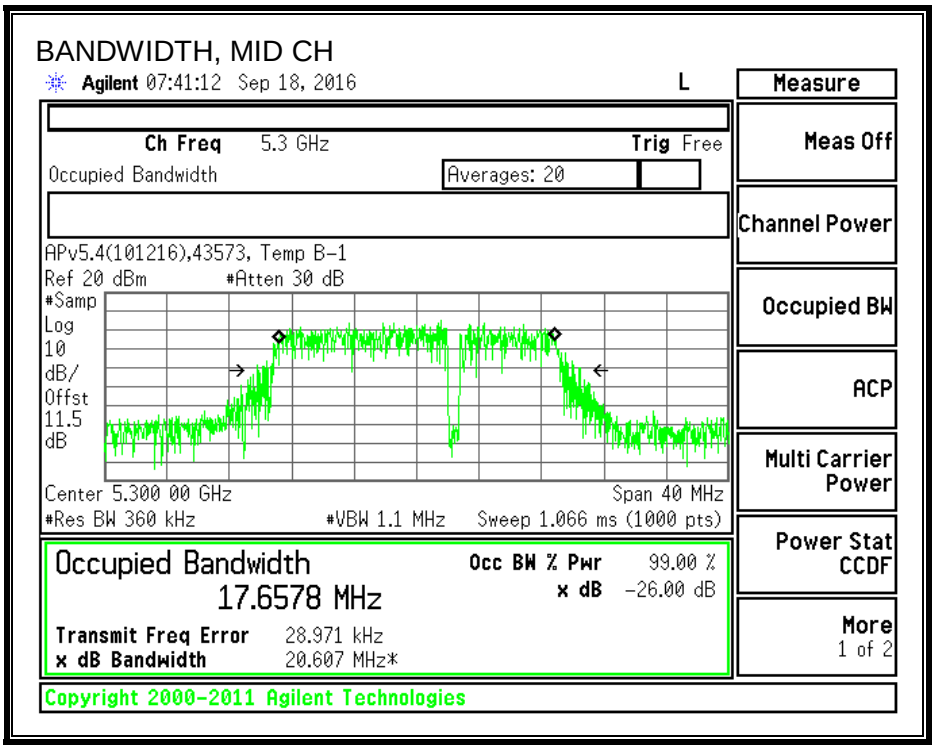
None; for reporting purposes only.

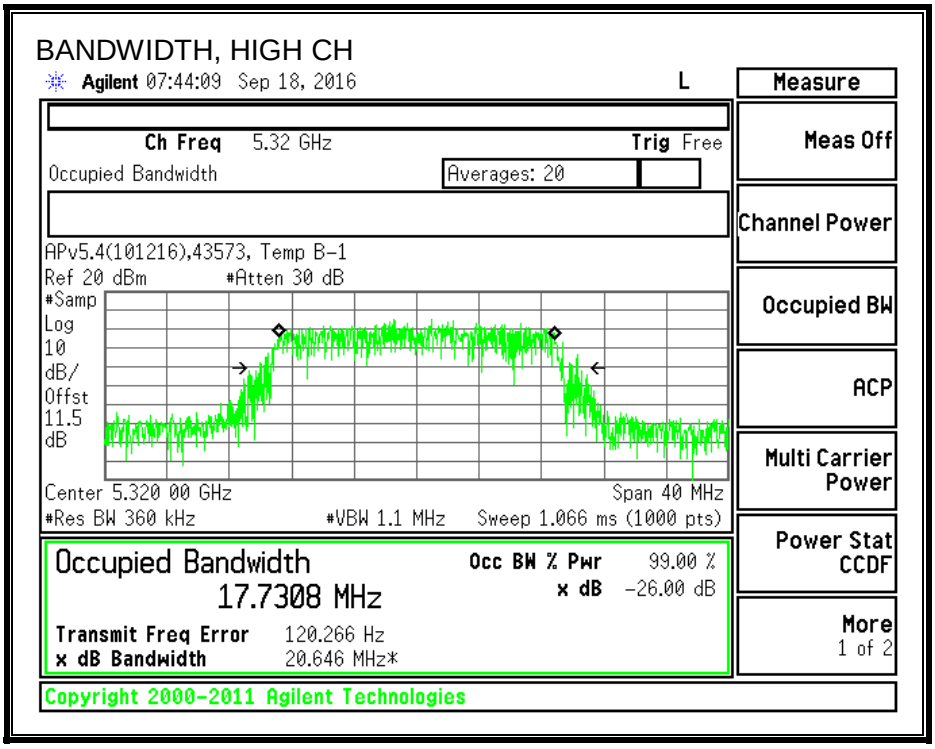
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	17.685
Mid	5300	17.658
High	5320	17.731

99% BANDWIDTH







8.13.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

ID:	30554	Date:	12/15/16

Channel	Frequency (MHz)	Power (dBm)
Low	5260	16.97
Mid	5300	16.92
High	5320	15.88

8.13.4. OUTPUT 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.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

ID:	30554	Date:	12/15/16

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5260	22.000	17.685	2.24	23.48	11.00
Mid	5300	22.040	17.658	2.24	23.47	11.00
High	5320	22.080	17.731	2.24	23.49	11.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

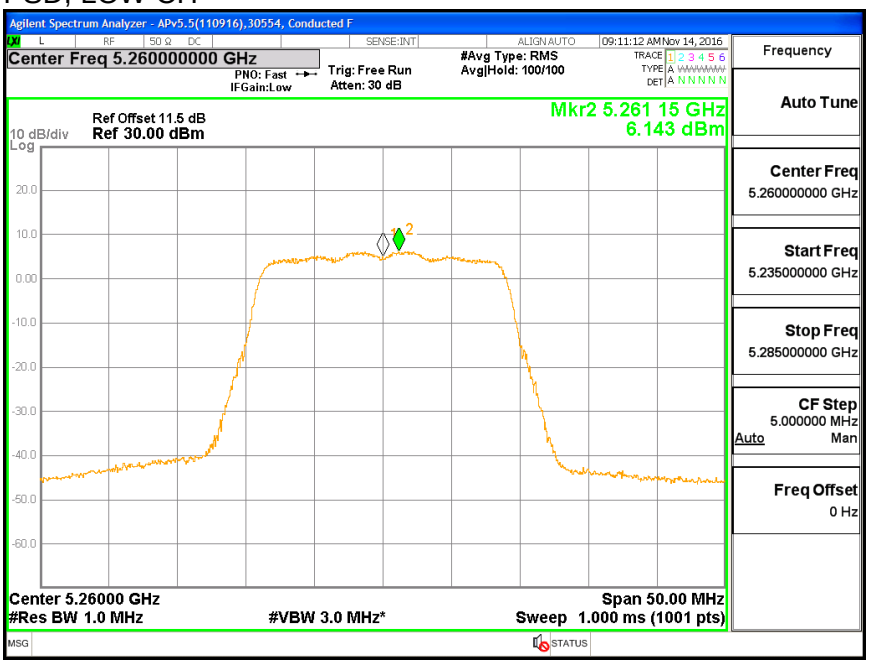
Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	16.97	16.97	23.48	-6.51
Mid	5300	16.92	16.92	23.47	-6.55
High	5320	15.88	15.88	23.49	-7.61

PSD Results

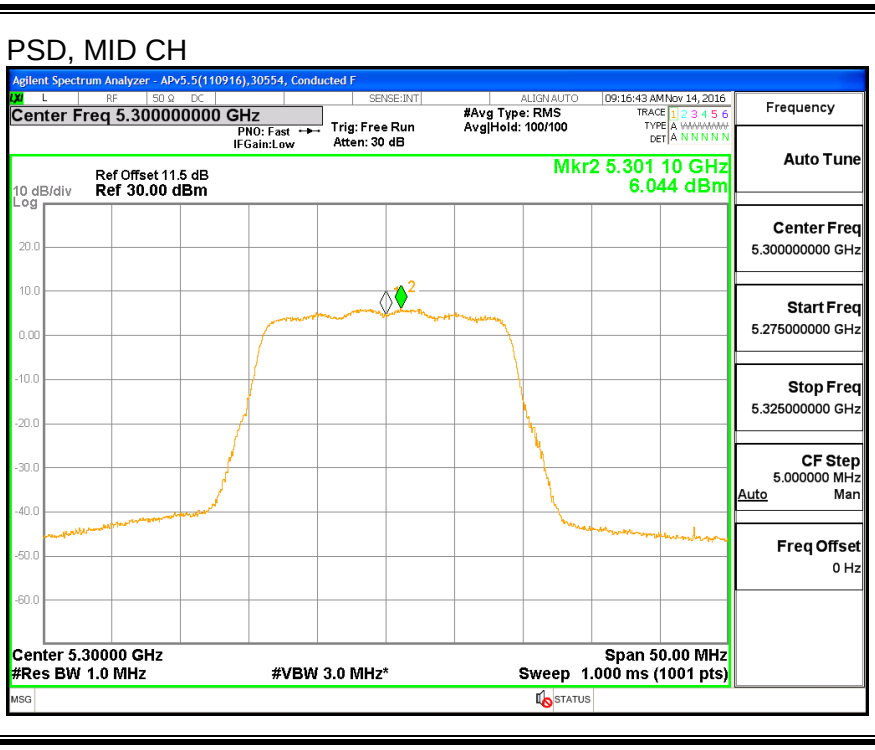
Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	6.143	6.14	11.00	-4.86
Mid	5300	6.044	6.04	11.00	-4.96
High	5320	4.015	4.02	11.00	-6.99

PSD

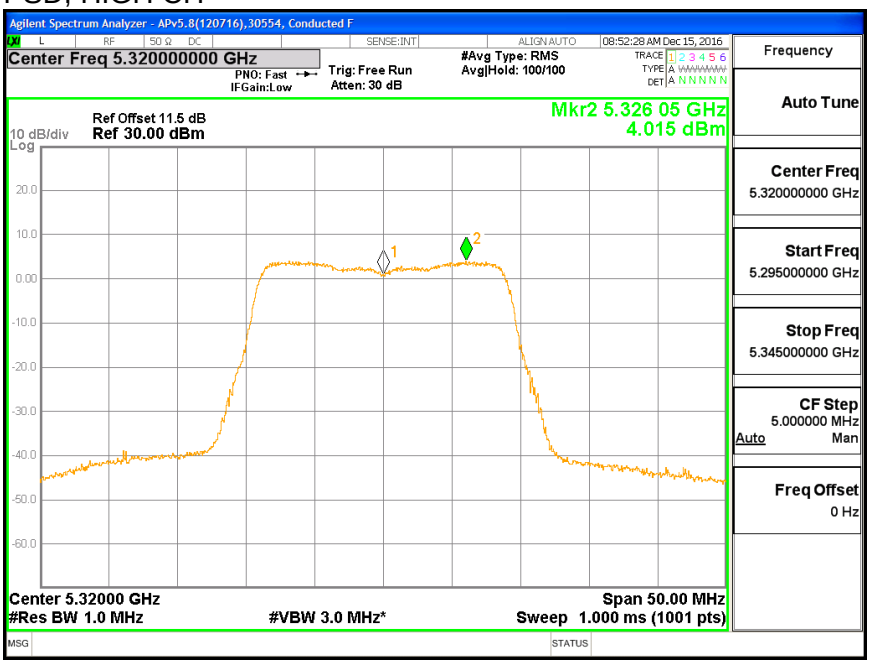
PSD, LOW CH



PSD, MID CH



PSD, HIGH CH



8.14. 802.11n HT20 ANTENNA B MODE IN THE 5.3 GHz BAND

8.14.1. 26 dB BANDWIDTH

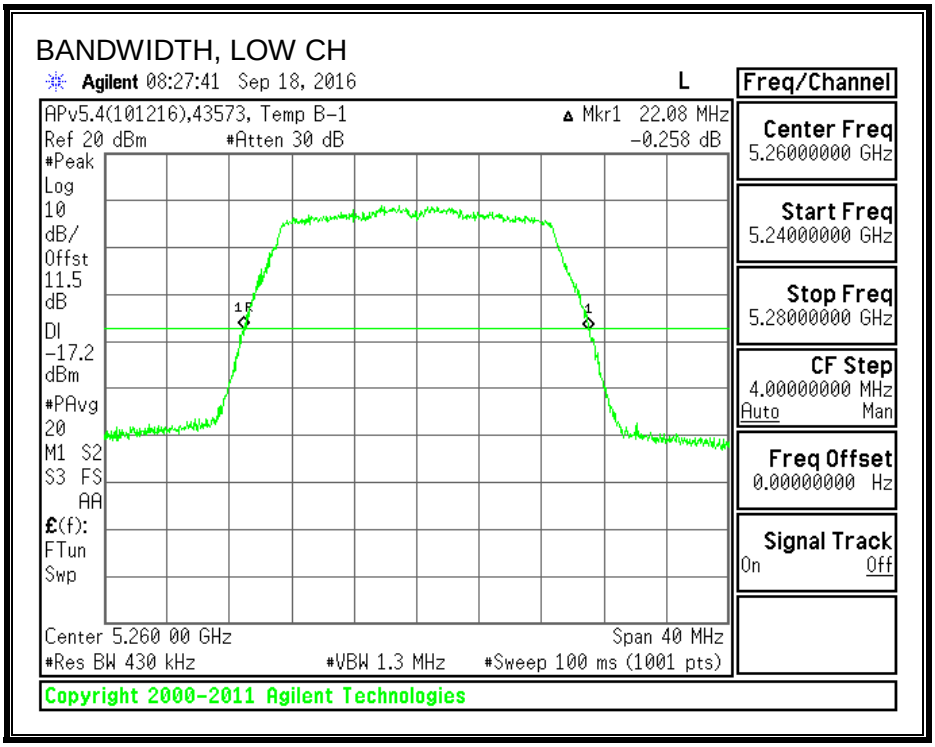
LIMITS

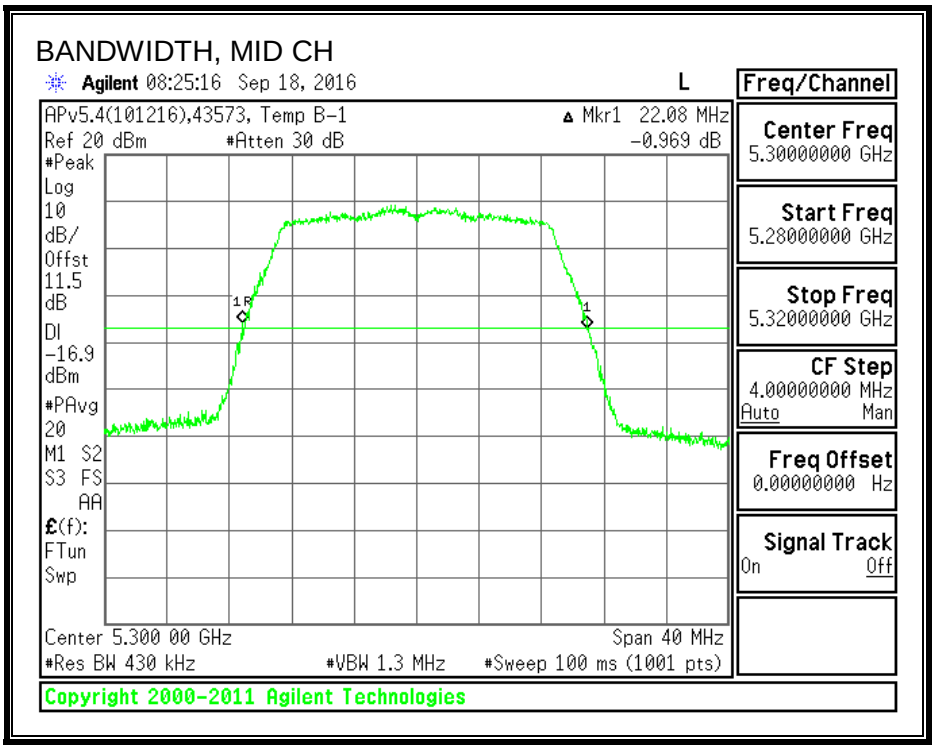
None; for reporting purposes only.

RESULTS

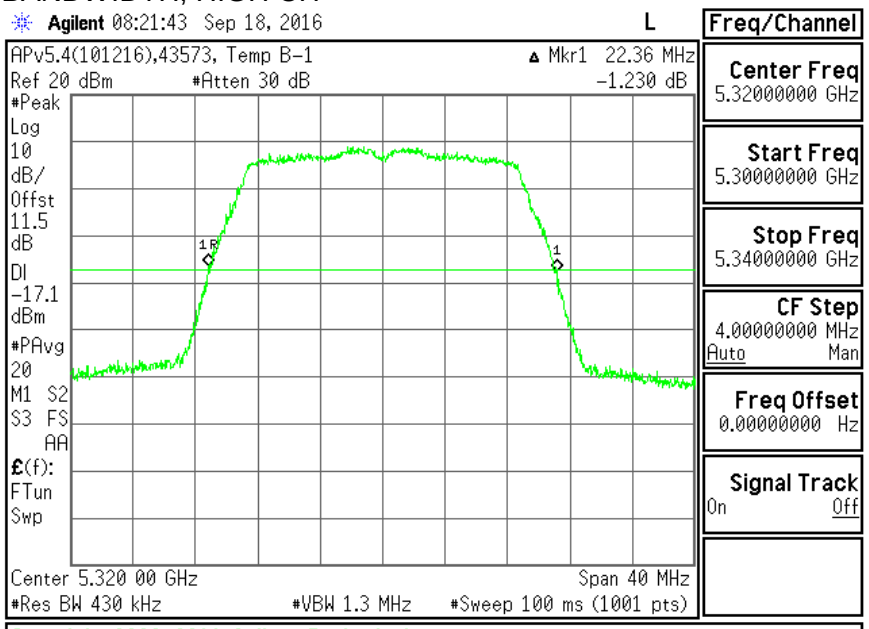
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	22.080
Mid	5300	22.080
High	5320	22.360

26 dB BANDWIDTH





BANDWIDTH, HIGH CH



8.14.2. 99% BANDWIDTH

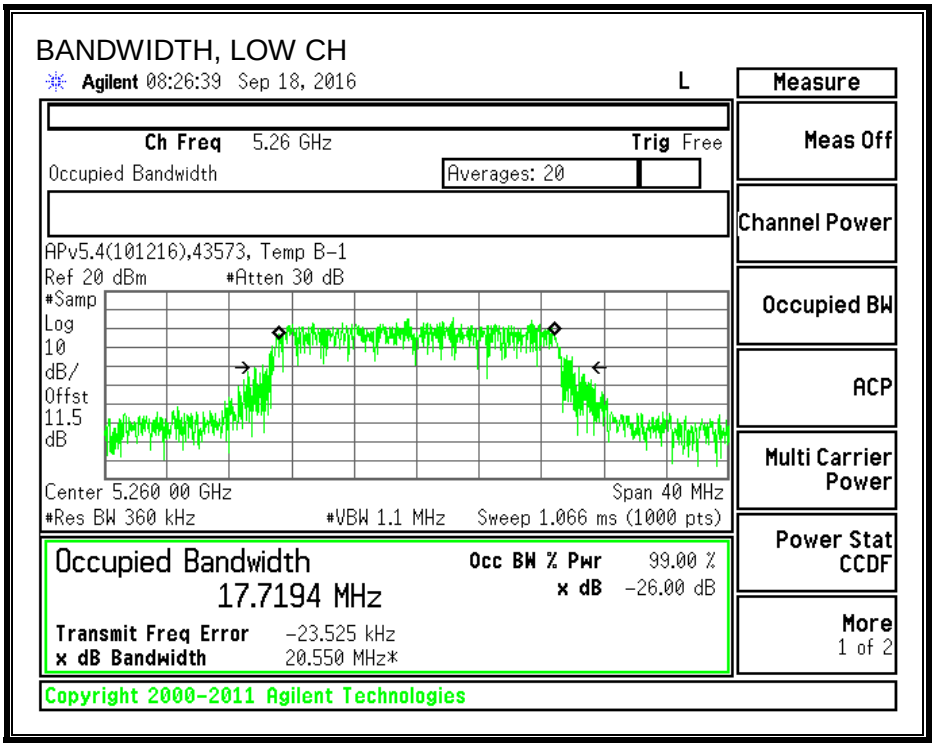
LIMITS

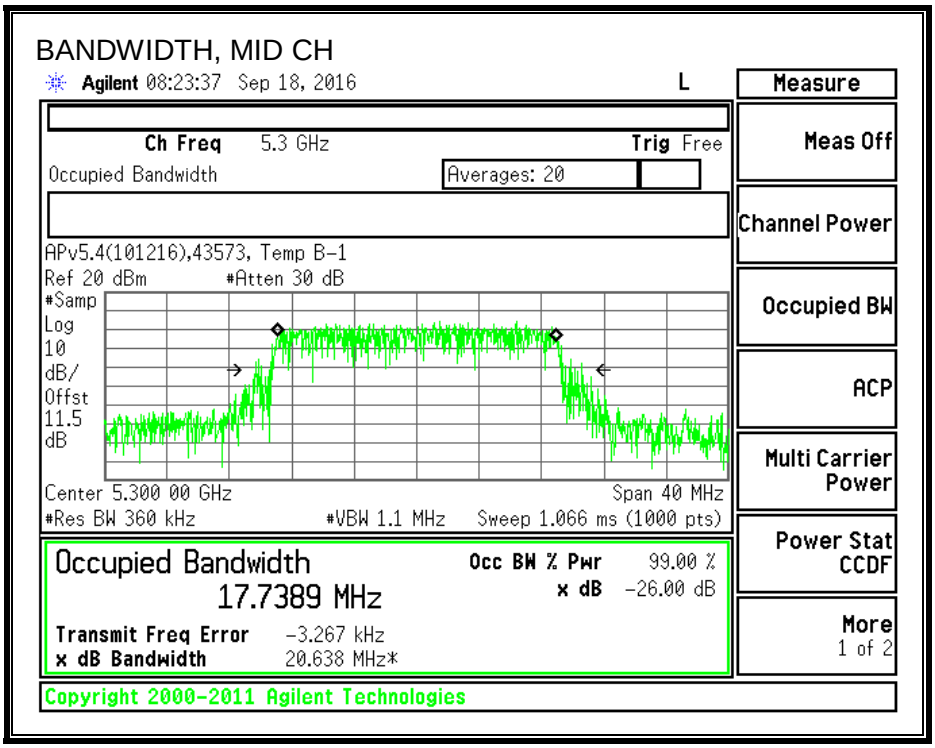
None; for reporting purposes only.

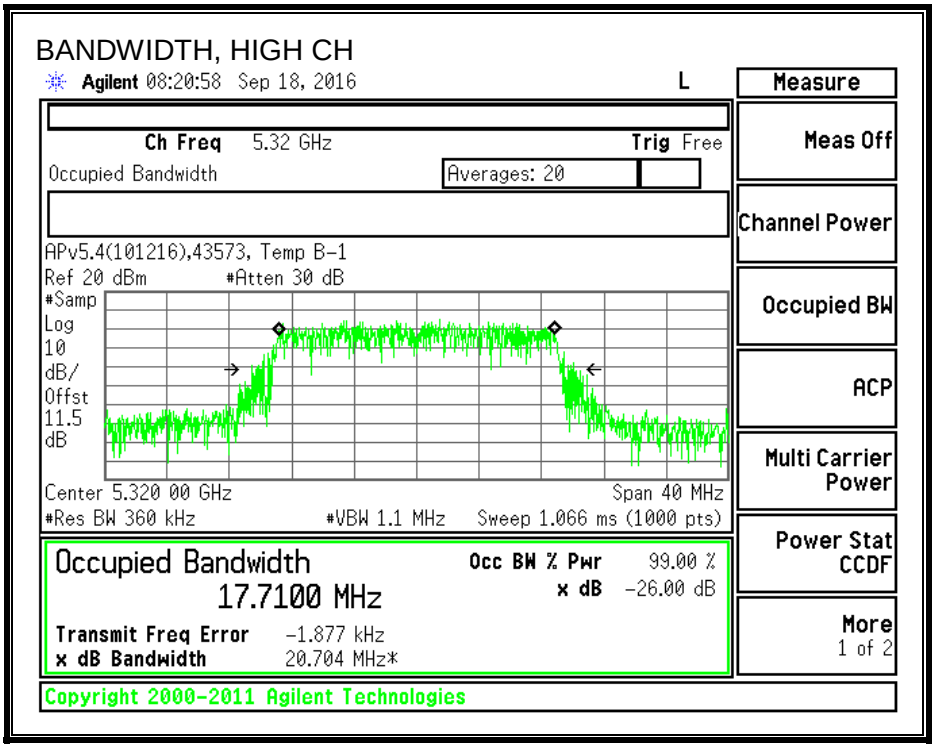
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	17.719
Mid	5300	17.739
High	5320	17.710

99% BANDWIDTH







8.14.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

ID:	60554	Date:	12/15/16

Channel	Frequency (MHz)	Power (dBm)
Low	5260	16.92
Mid	5300	16.90
High	5320	15.87

8.14.4. OUTPUT 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.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

ID:	30554	Date:	12/15/16

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5260	22.080	17.719	2.77	23.48	11.00
Mid	5300	22.080	17.739	2.77	23.49	11.00
High	5320	22.360	17.710	2.77	23.48	11.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

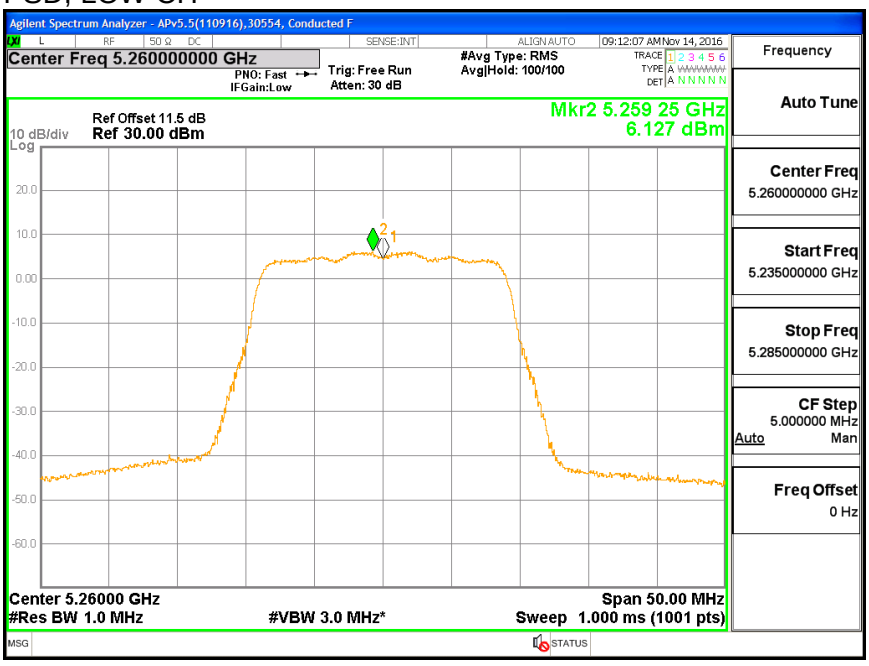
Channel	Frequency (MHz)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	16.92	16.92	23.48	-6.56
Mid	5300	16.90	16.90	23.49	-6.59
High	5320	15.87	15.87	23.48	-7.61

PSD Results

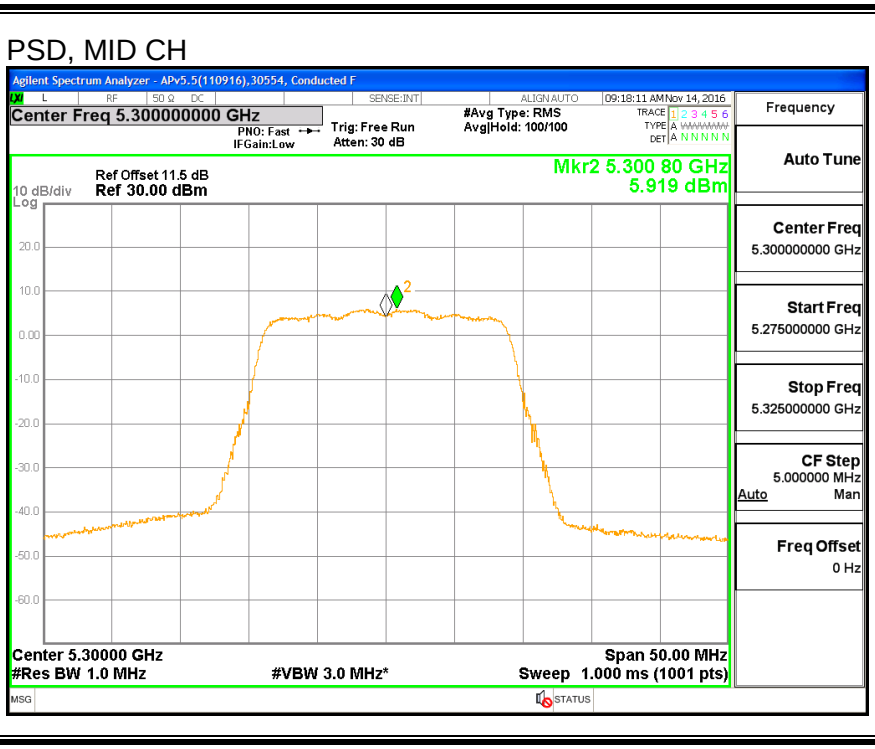
Channel	Frequency (MHz)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	6.127	6.13	11.00	-4.87
Mid	5300	5.919	5.92	11.00	-5.08
High	5320	4.044	4.04	11.00	-6.96

PSD

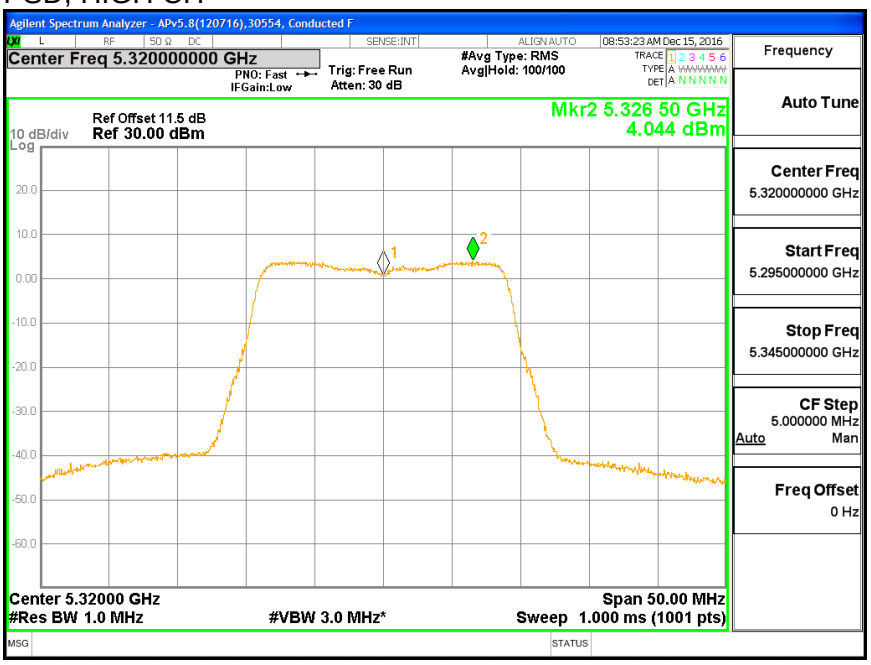
PSD, LOW CH



PSD, MID CH



PSD, HIGH CH



8.15. 802.11n HT20 2Tx (ANTENNA A + ANTENNA B) CDD MODE IN THE 5.3 GHz BAND

8.15.1. 26 dB BANDWIDTH

LIMITS

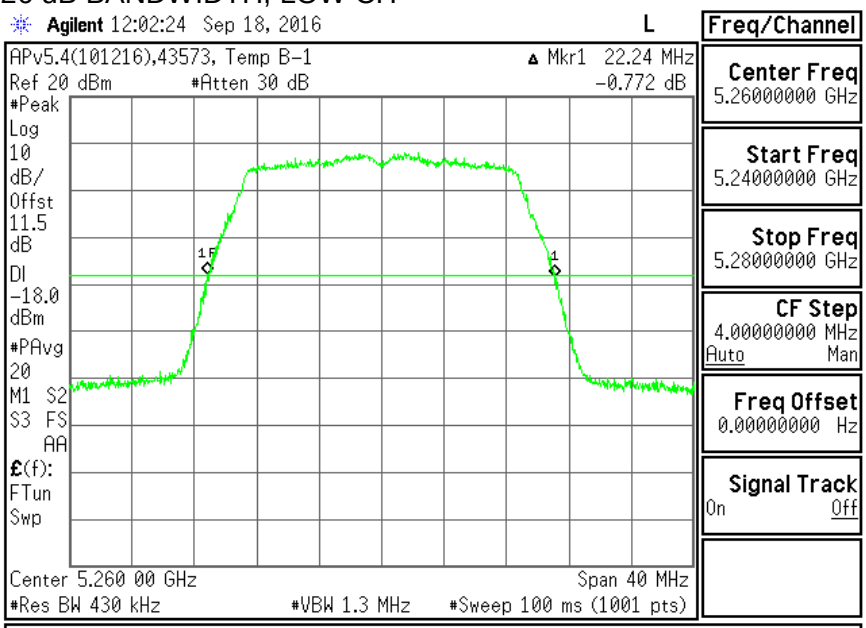
None; for reporting purposes only.

RESULTS

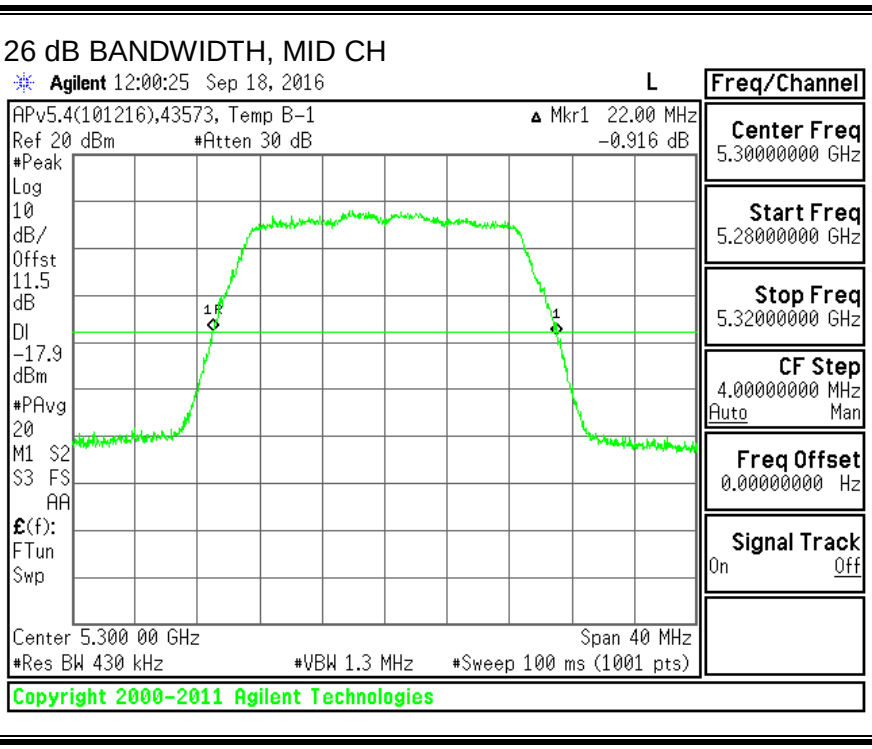
Channel	Frequency (MHz)	26 dB BW Ant A (MHz)	26 dB BW Ant B (MHz)
Low	5260	22.24	21.60
Mid	5300	22.00	21.72
High	5320	21.92	21.76

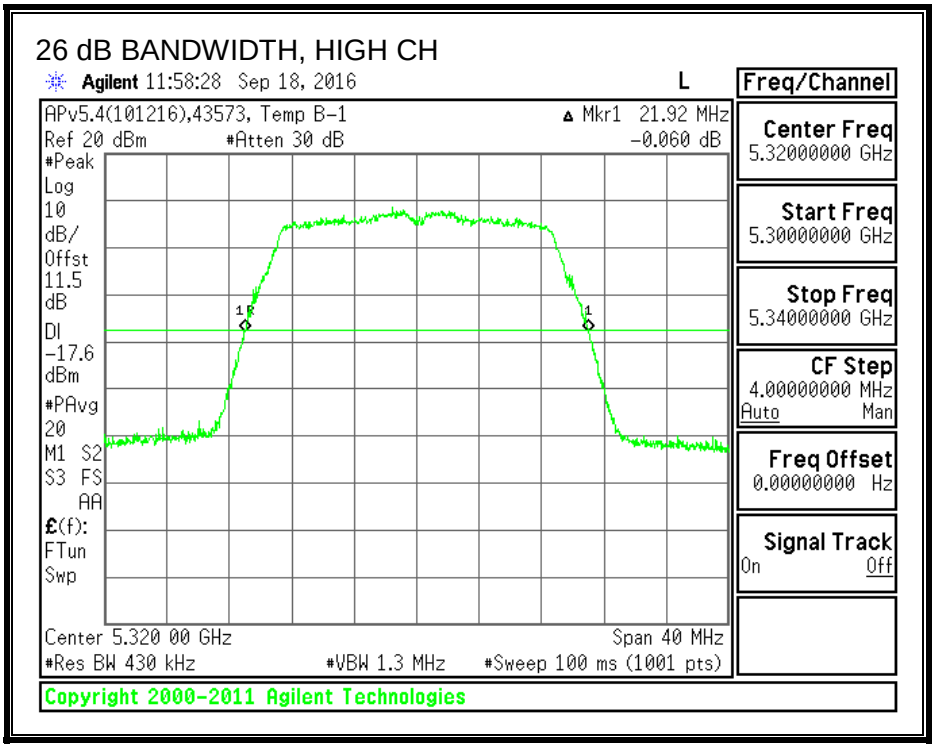
26 DB BANDWIDTH, ANTENNA A

26 dB BANDWIDTH, LOW CH

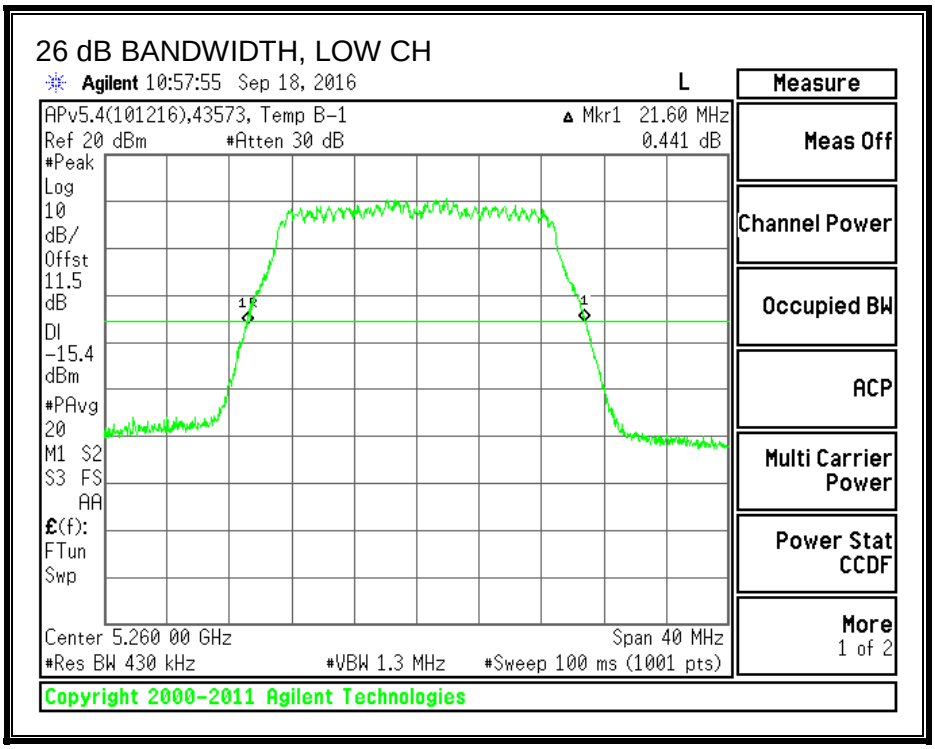


26 dB BANDWIDTH, MID CH

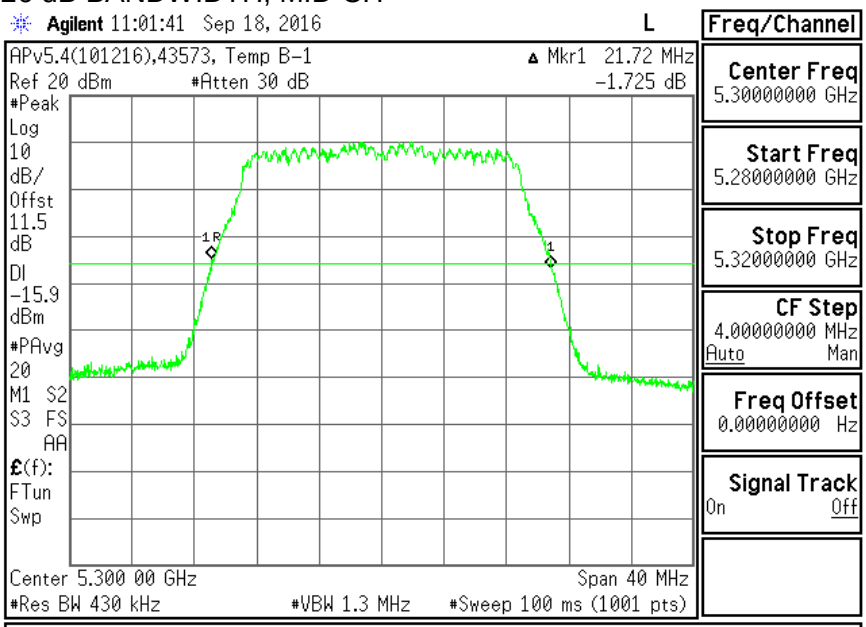




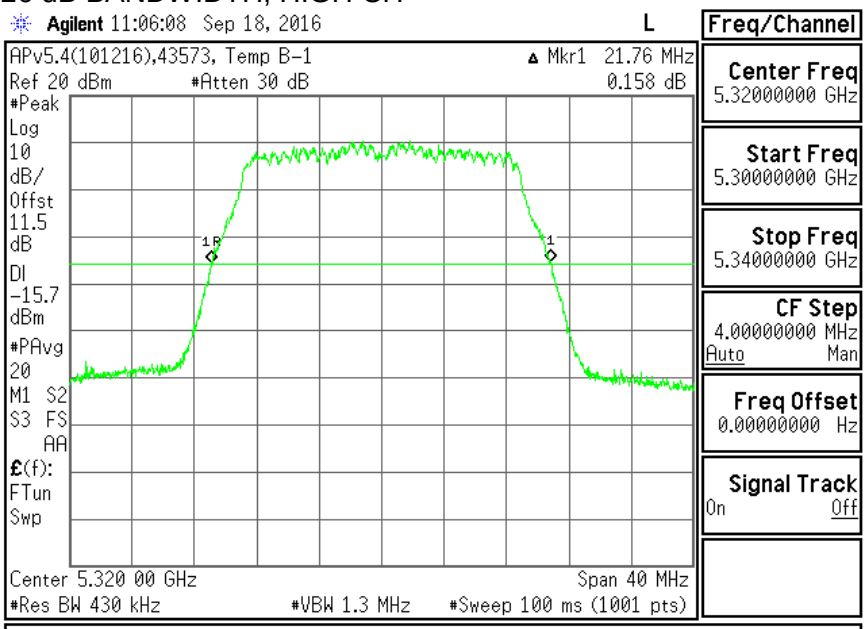
26 DB BANDWIDTH, ANTENNA B



26 dB BANDWIDTH, MID CH



26 dB BANDWIDTH, HIGH CH



8.15.2. 99% BANDWIDTH

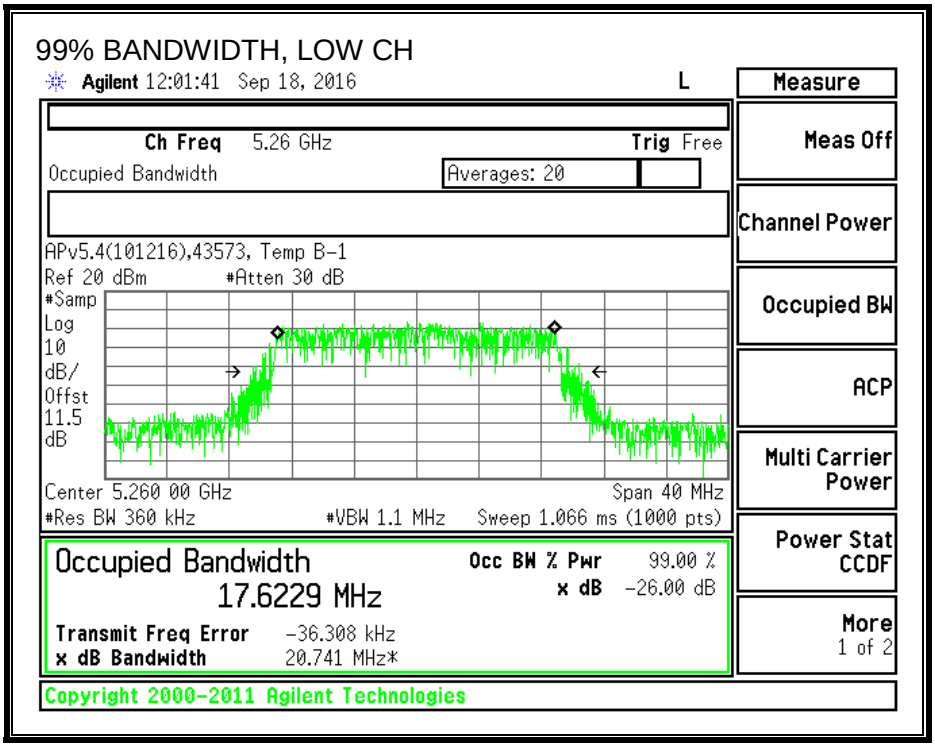
LIMITS

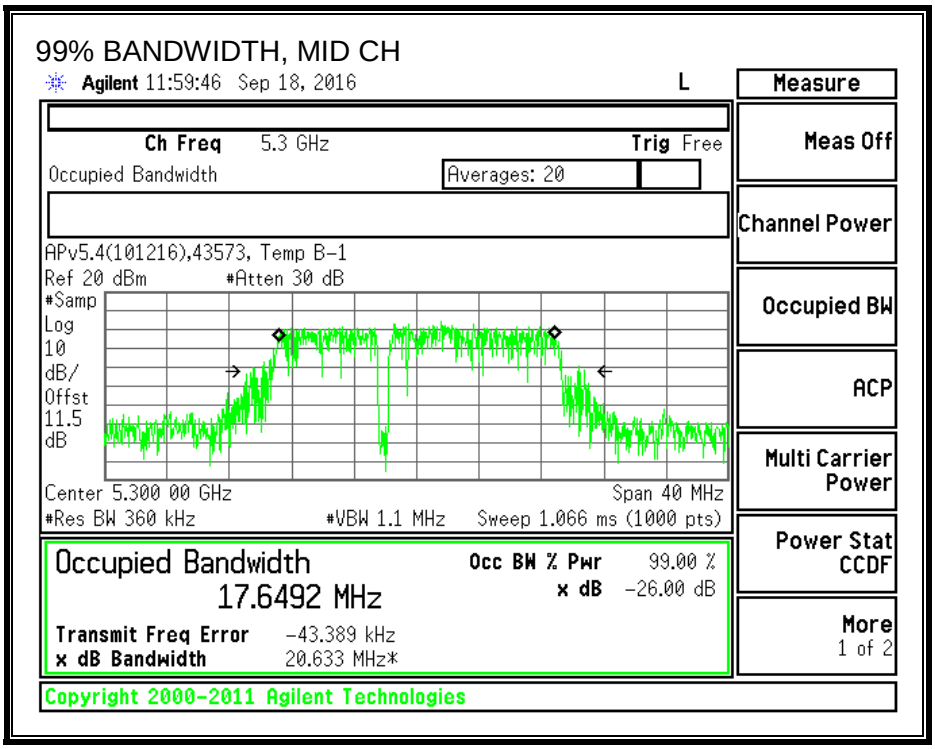
None; for reporting purposes only.

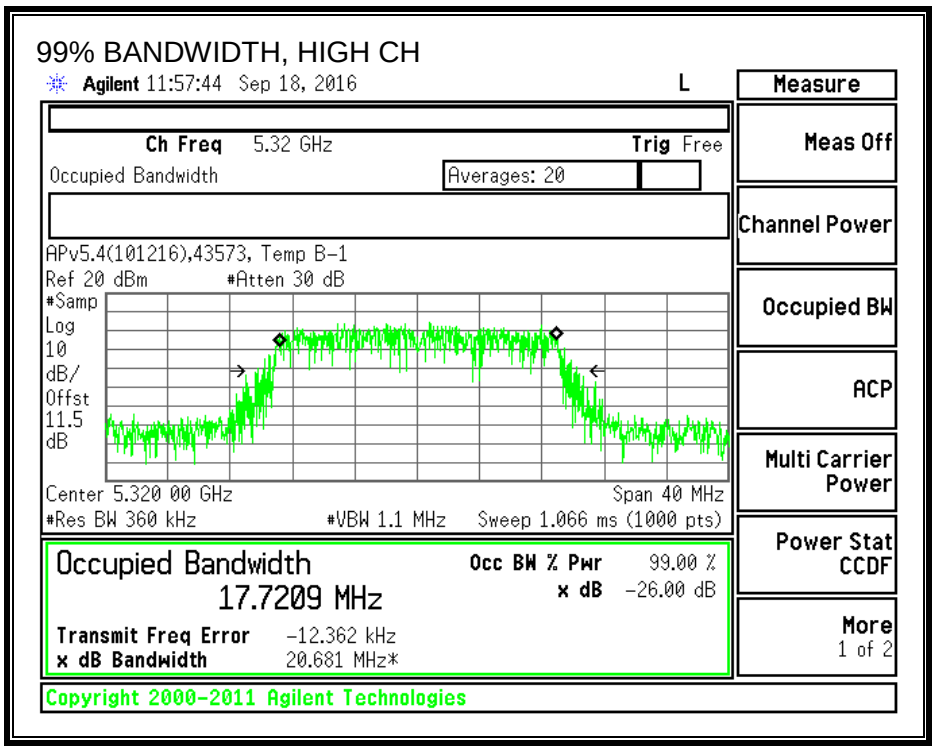
RESULTS

Channel	Frequency (MHz)	99% BW Ant A (MHz)	99% BW Ant B (MHz)
Low	5260	17.623	17.630
Mid	5300	17.649	17.729
High	5320	17.721	17.703

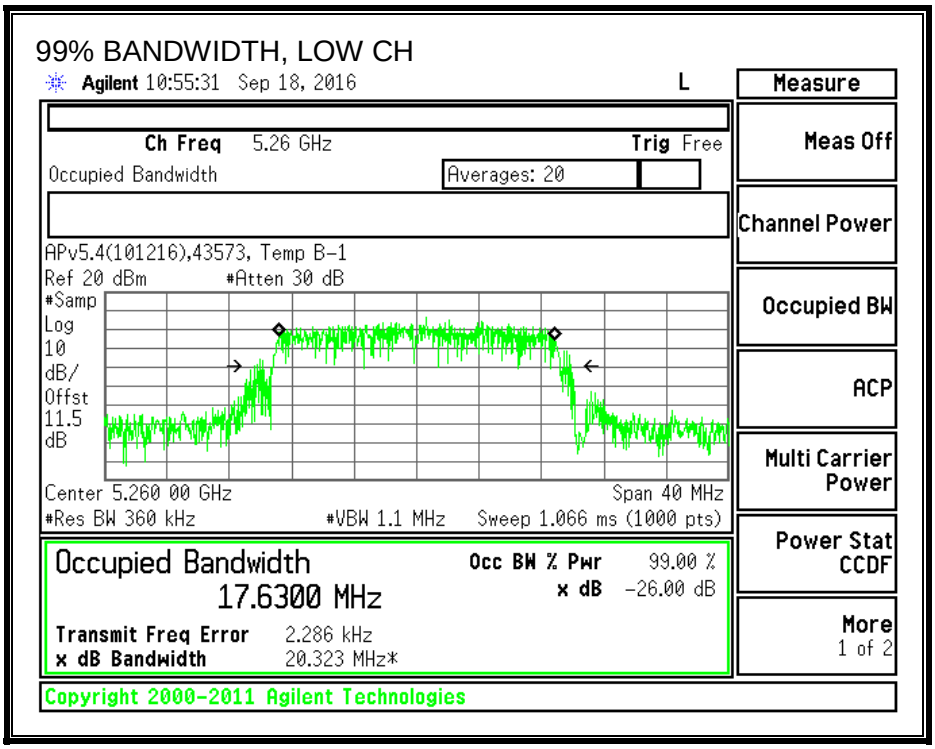
99% BANDWIDTH, ANTENNA A

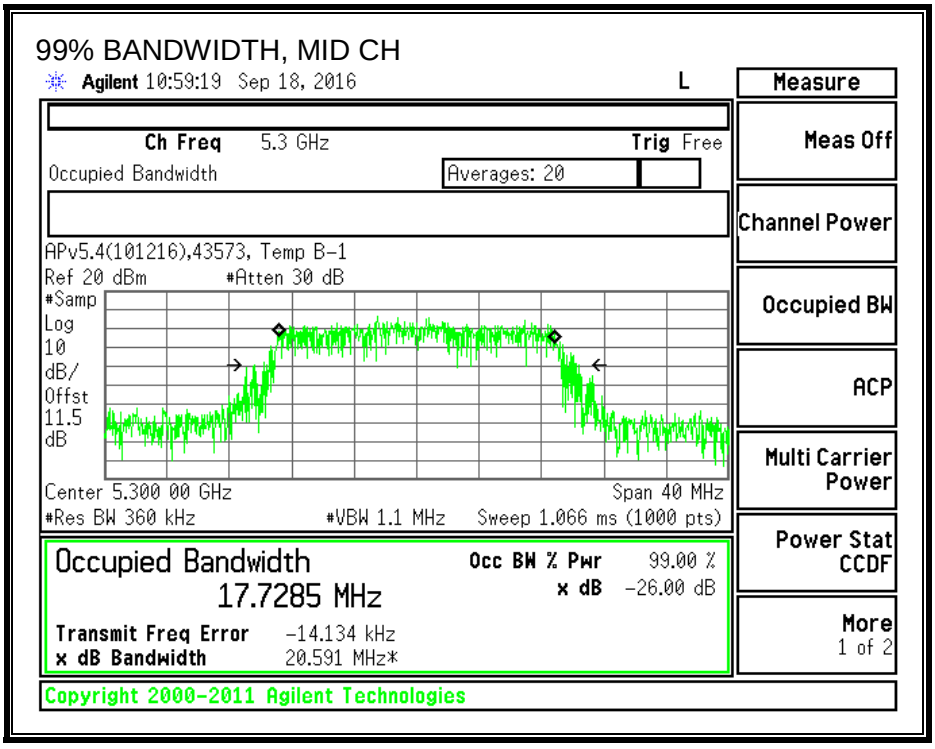


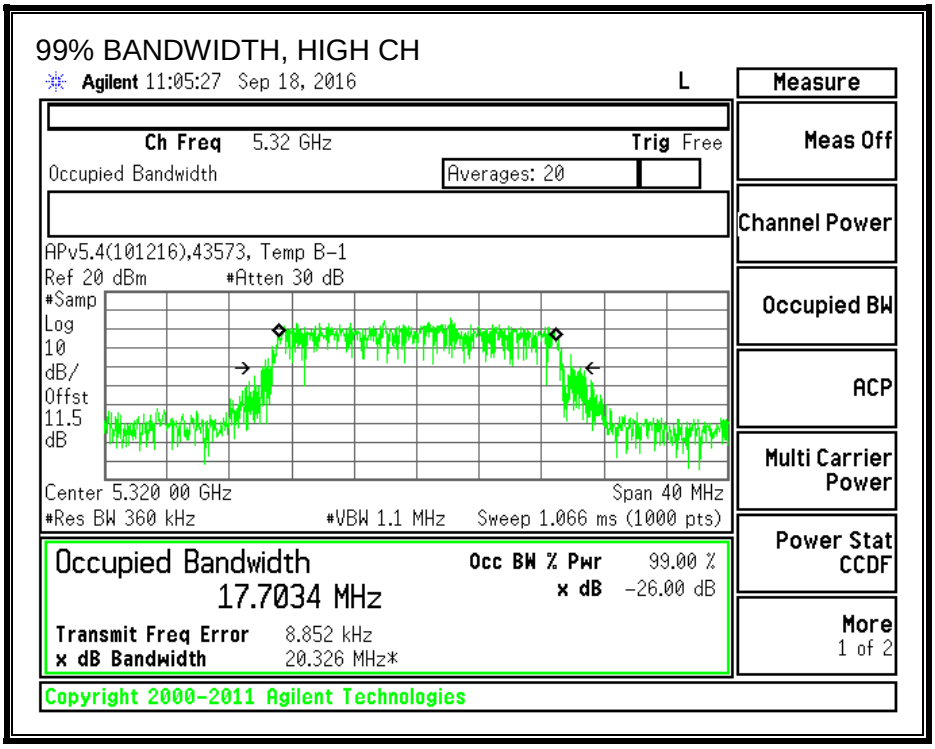




99% BANDWIDTH, ANTENNA B







8.15.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

ID:	39316	Date:	12/15/16

Average Power Results

Channel	Frequency (MHz)	Ant A Power (dBm)	Ant B Power (dBm)	Total Power (dBm)
Low	5260	16.48	16.37	19.44
Mid	5300	16.45	16.49	19.48
High	5320	14.36	14.48	17.43

8.15.4. OUTPUT 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.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

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

Ant A Antenna Gain (dBi)	Ant B Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.24	2.77	2.51

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

Ant A Antenna Gain (dBi)	Ant B Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.24	2.77	5.52

RESULTS

ID:	39316	Date:	12/15/16

Bandwidth, Antenna Gain and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5260	21.60	17.623	2.51	5.52	23.46	11.00
Mid	5300	21.72	17.649	2.51	5.52	23.47	11.00
High	5320	21.76	17.703	2.51	5.52	23.48	11.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

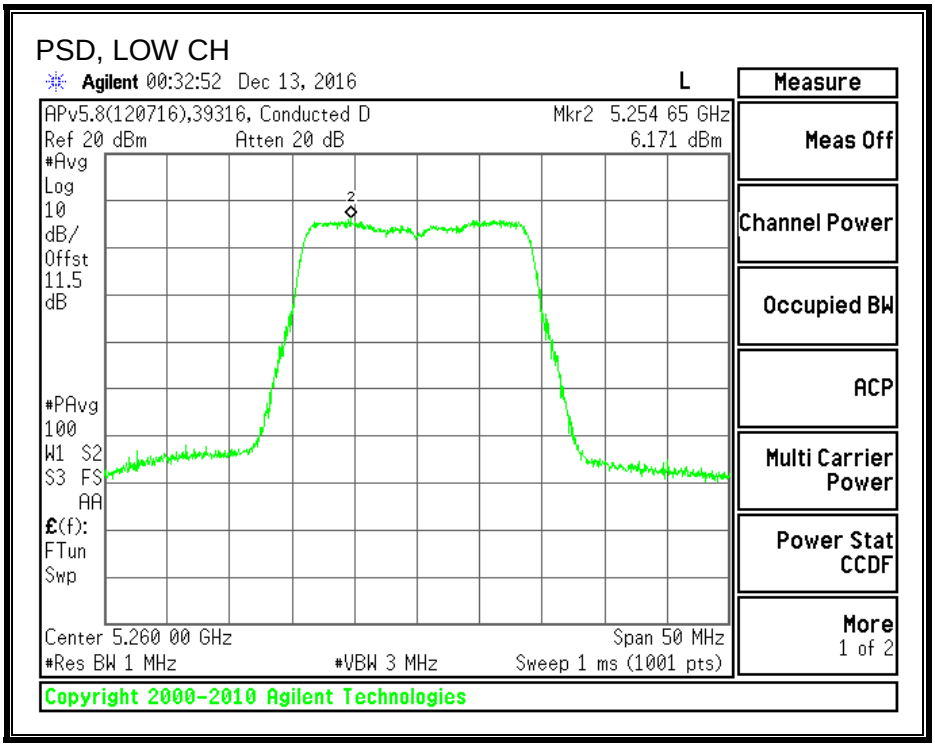
Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	16.48	16.37	19.44	23.46	-4.03
Mid	5300	16.45	16.49	19.48	23.47	-3.99
High	5320	14.36	14.48	17.43	23.48	-6.05

PSD Results

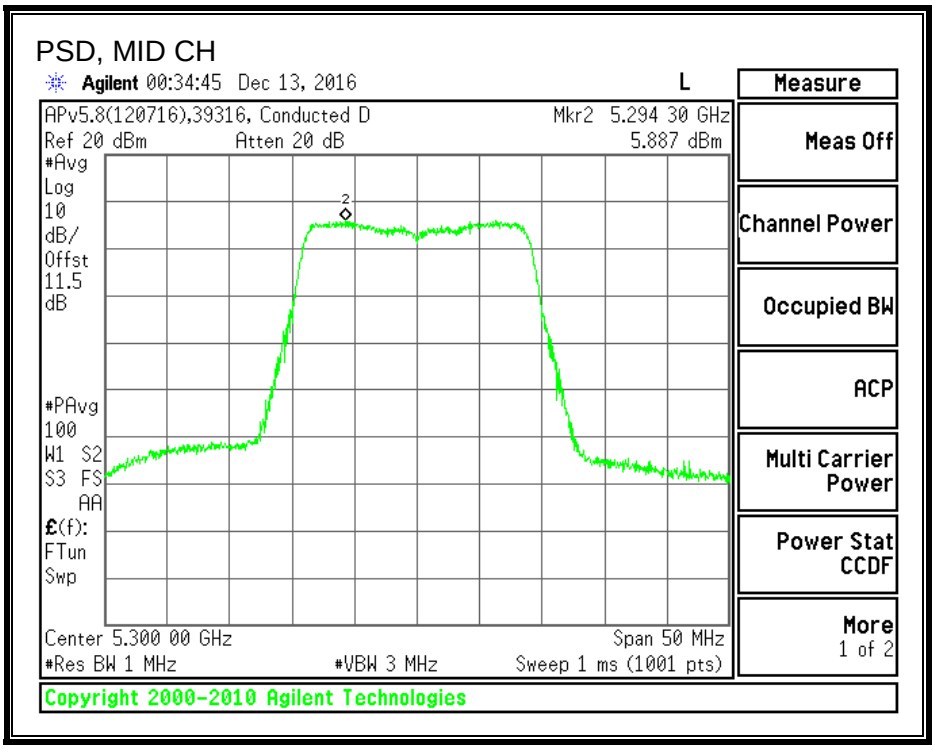
Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	6.17	5.53	8.87	11.00	-2.13
Mid	5300	5.89	5.91	8.91	11.00	-2.09
High	5320	4.00	3.95	6.99	11.00	-4.01

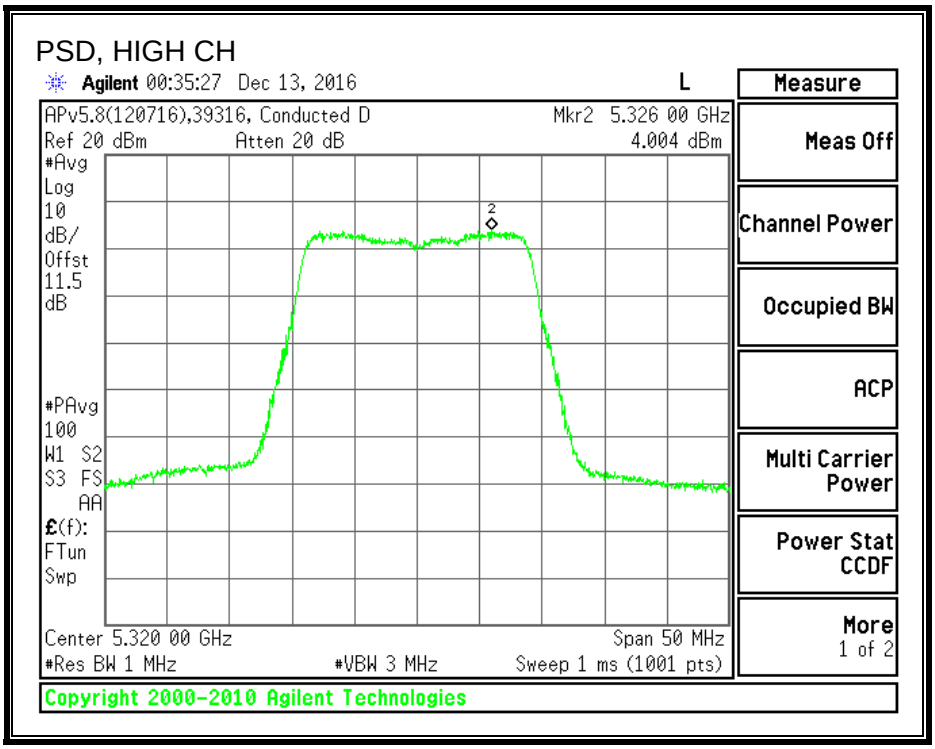
PSD, ANTENNA A

PSD, LOW CH

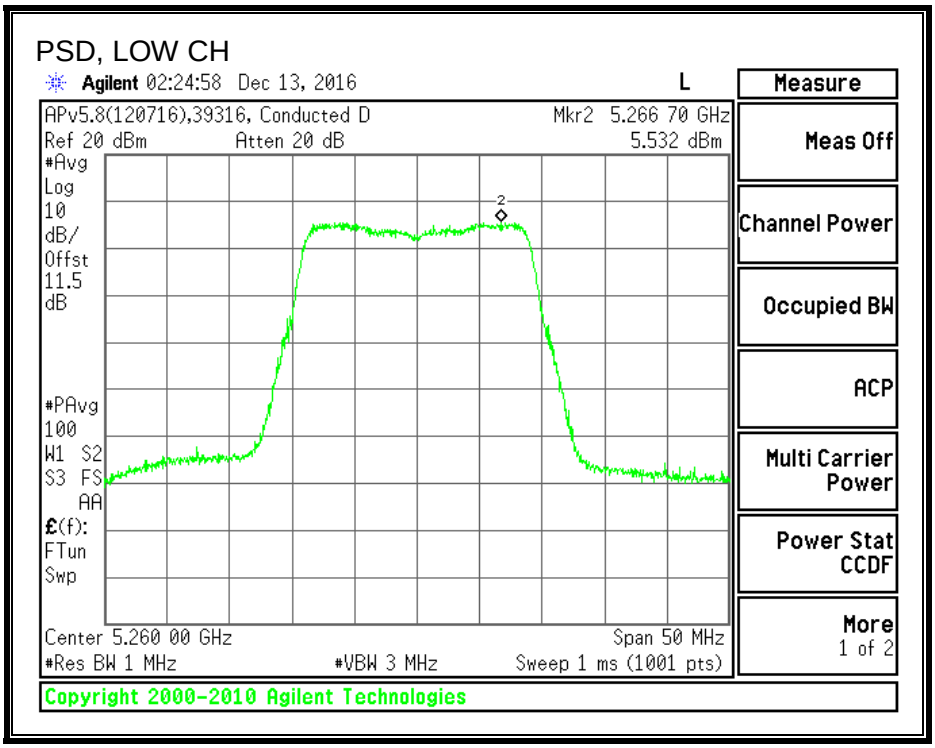


PSD, MID CH

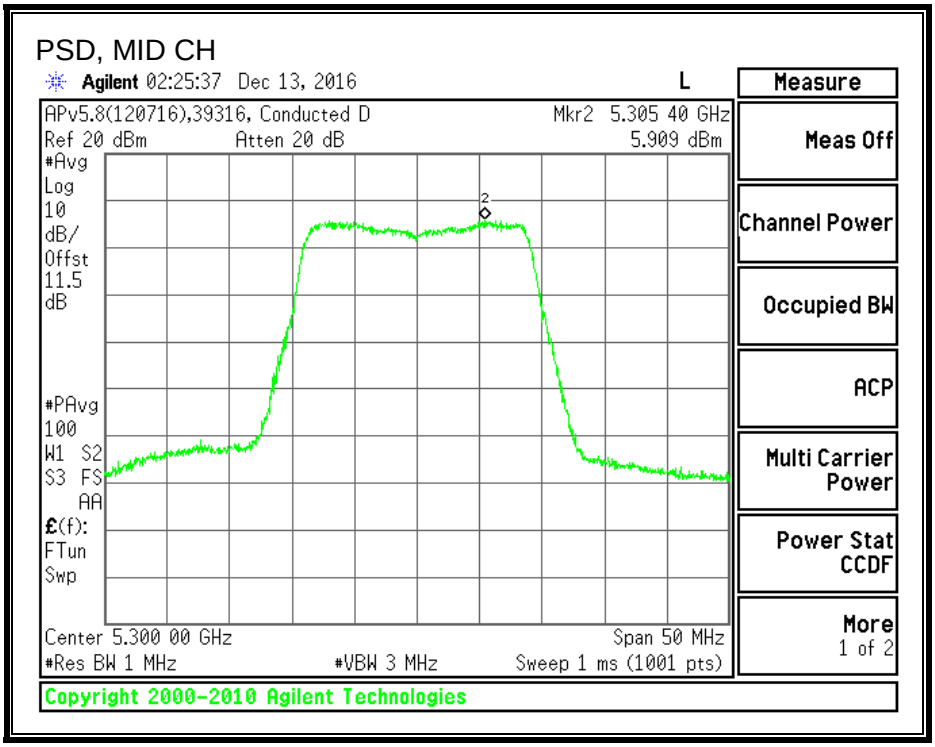




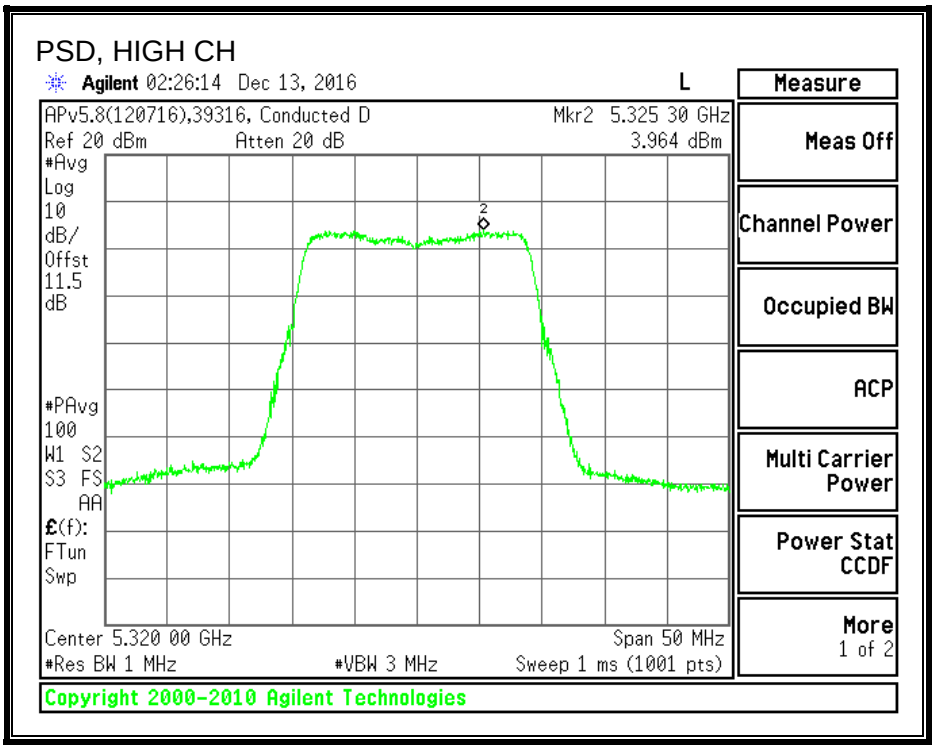
PSD, ANTENNA B



PSD, MID CH



PSD, HIGH CH



8.16. 802.11n HT20 2Tx (ANTENNA A + ANTENNA B) STBC MODE IN THE 5.3 GHz BAND

8.16.1. 26 dB BANDWIDTH

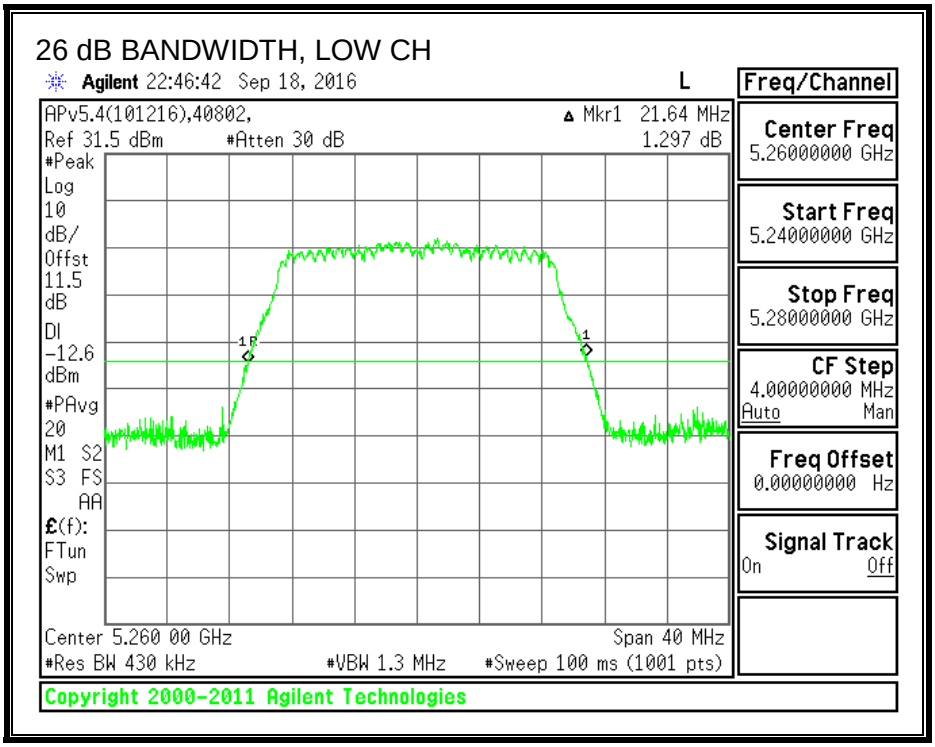
LIMITS

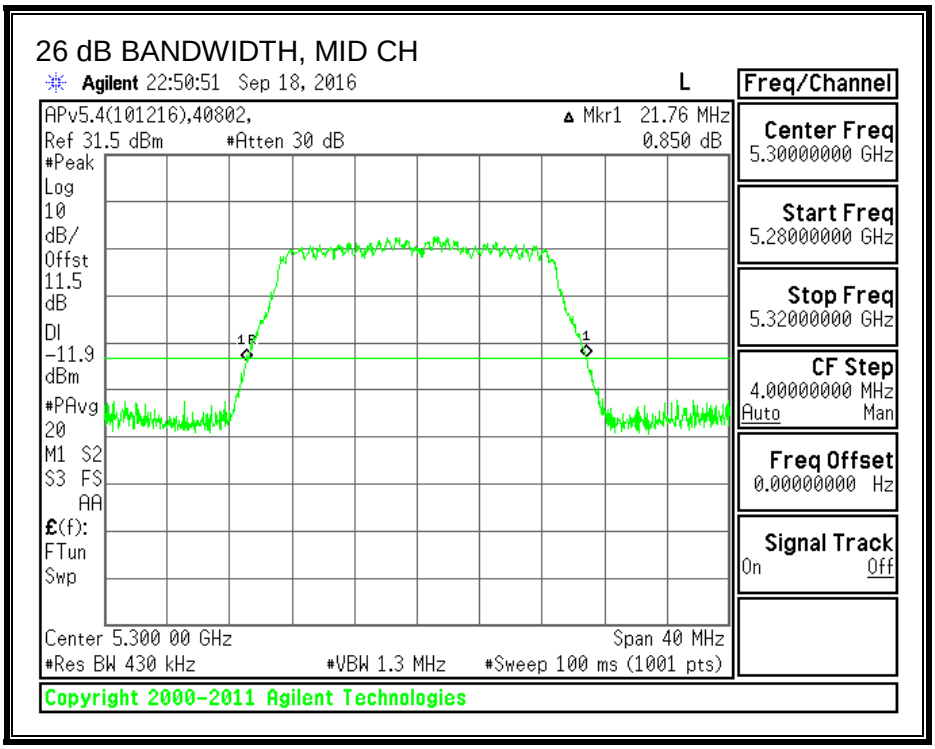
None; for reporting purposes only.

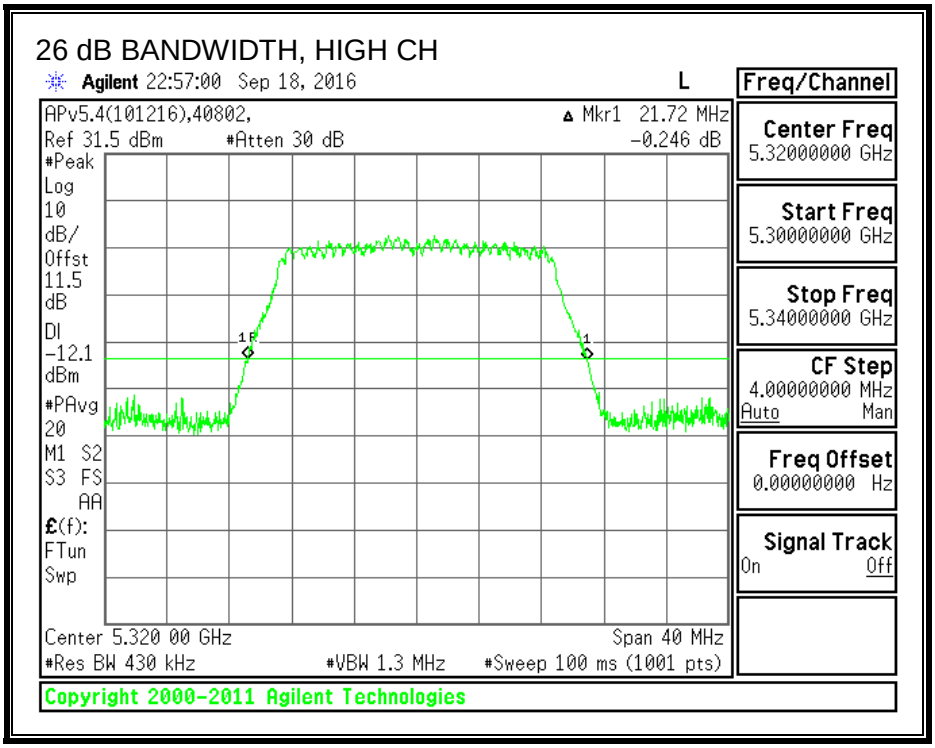
RESULTS

Channel	Frequency (MHz)	26 dB BW Ant A (MHz)	26 dB BW Ant B (MHz)
Low	5260	21.64	22.20
Mid	5300	21.76	22.08
High	5320	21.72	22.08

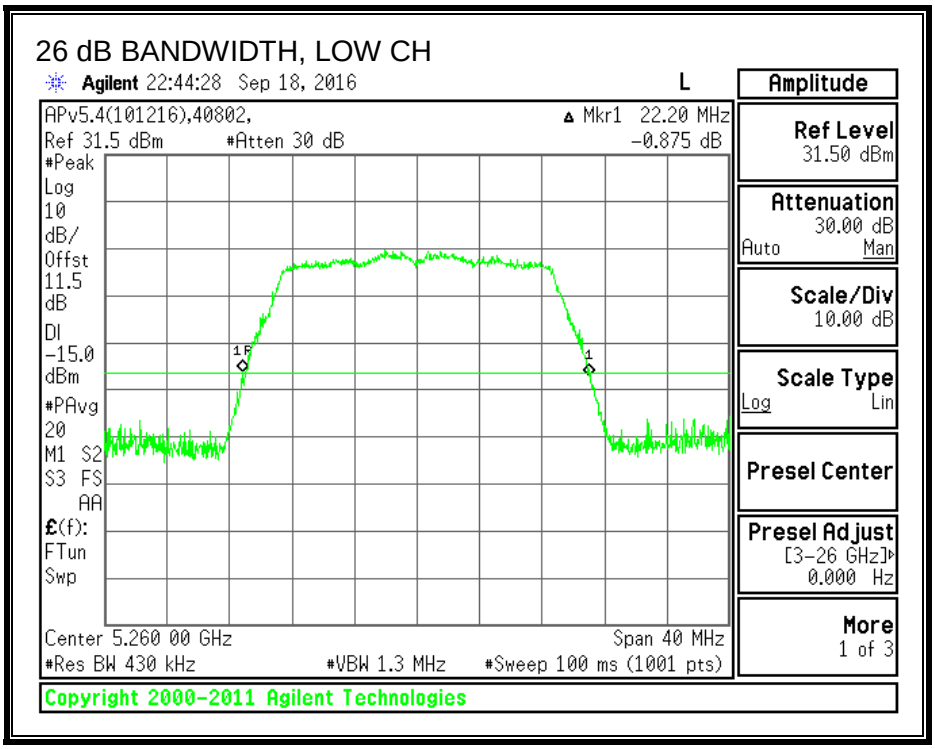
26 DB BANDWIDTH, ANTENNA A

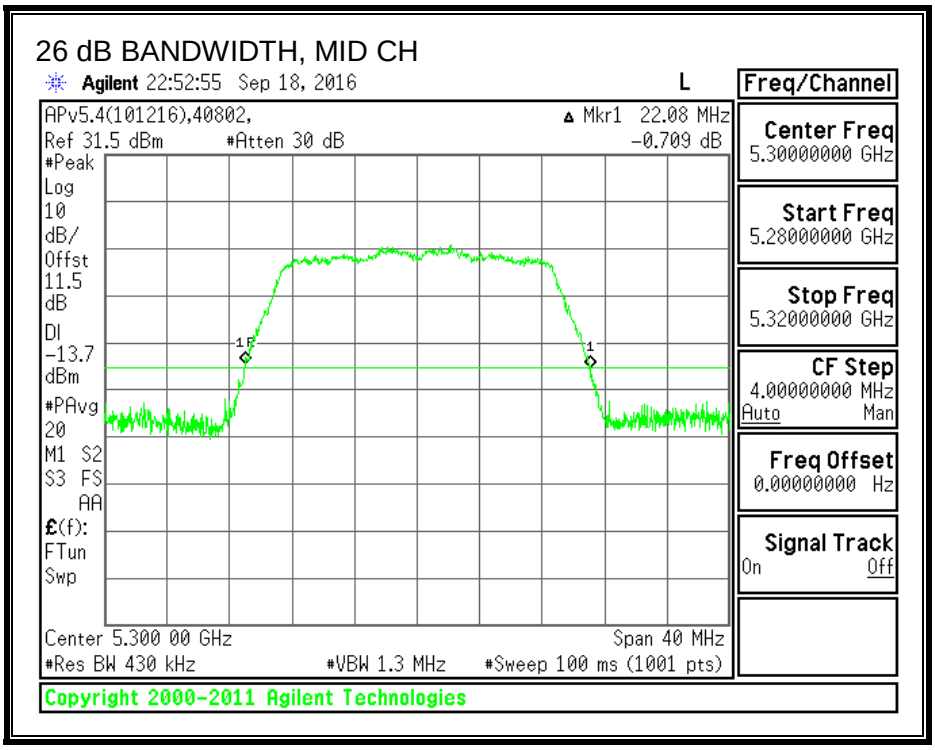


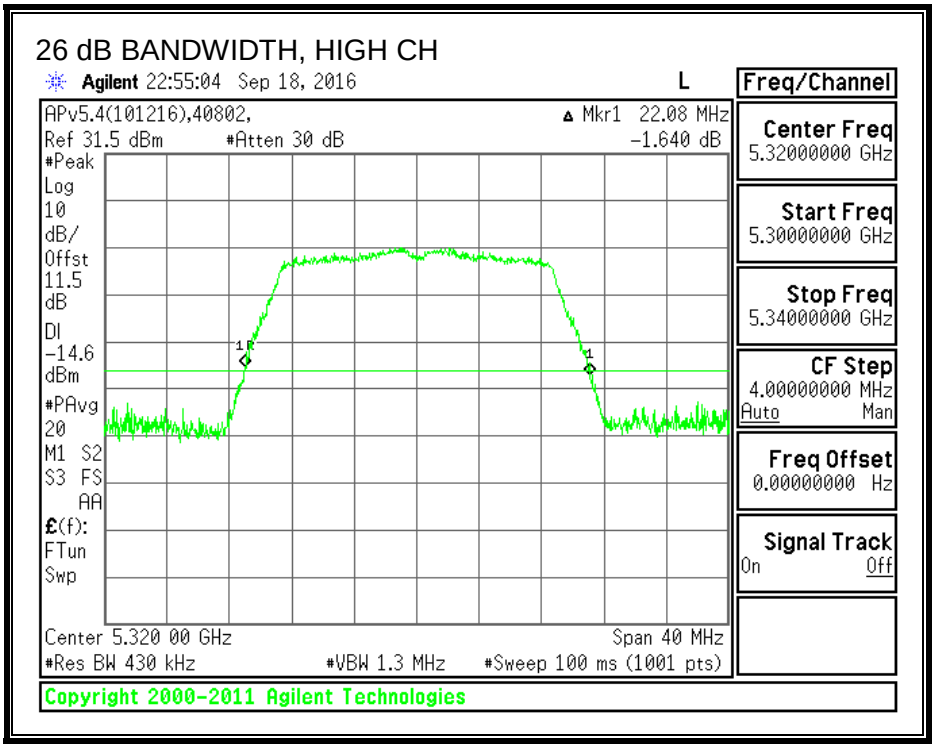




26 DB BANDWIDTH, ANTENNA B







8.16.2. 99% BANDWIDTH

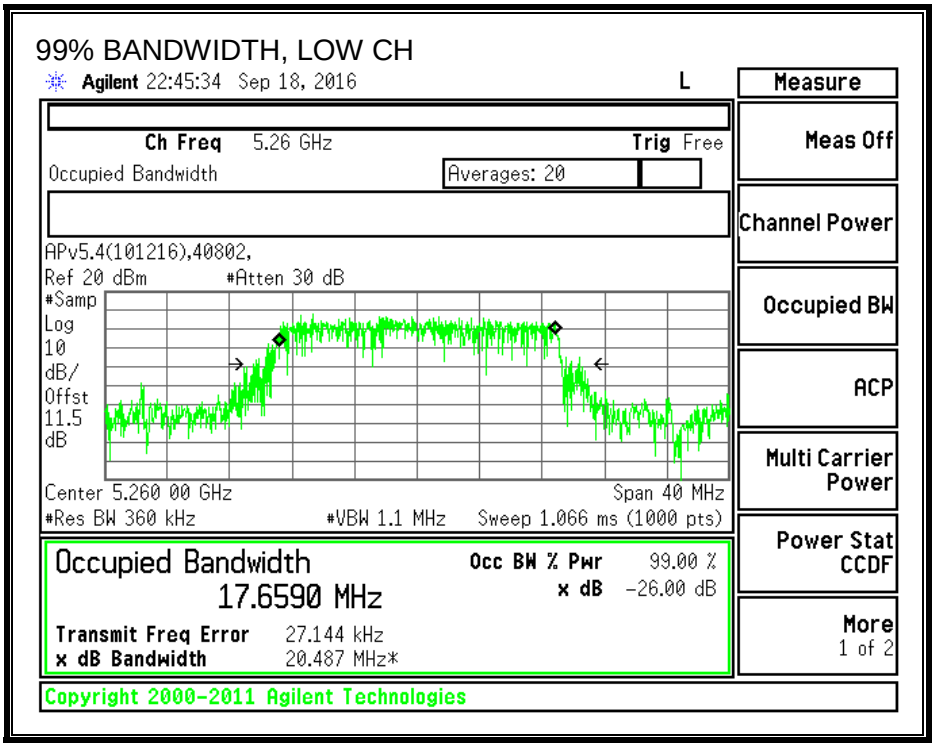
LIMITS

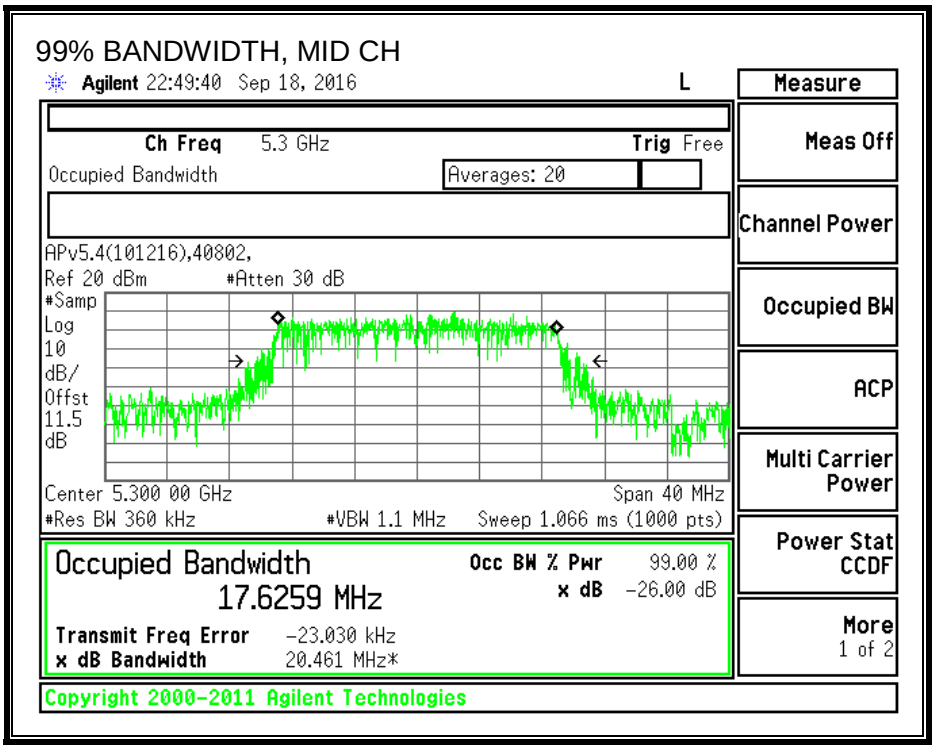
None; for reporting purposes only.

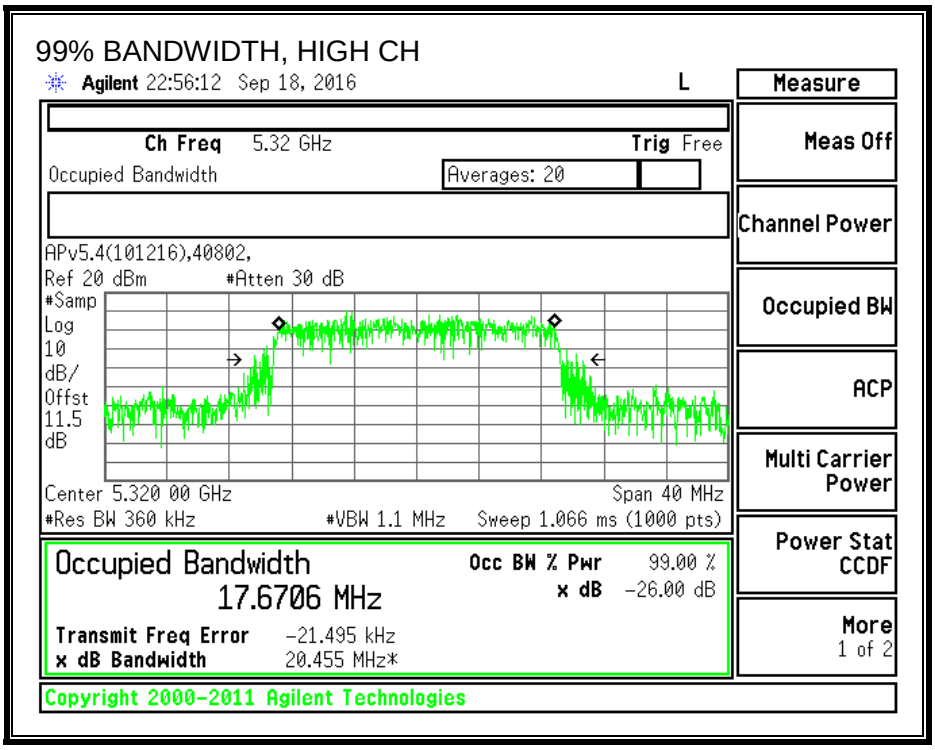
RESULTS

Channel	Frequency (MHz)	99% BW Ant A (MHz)	99% BW Ant B (MHz)
Low	5260	17.659	17.752
Mid	5300	17.626	17.708
High	5320	17.671	17.690

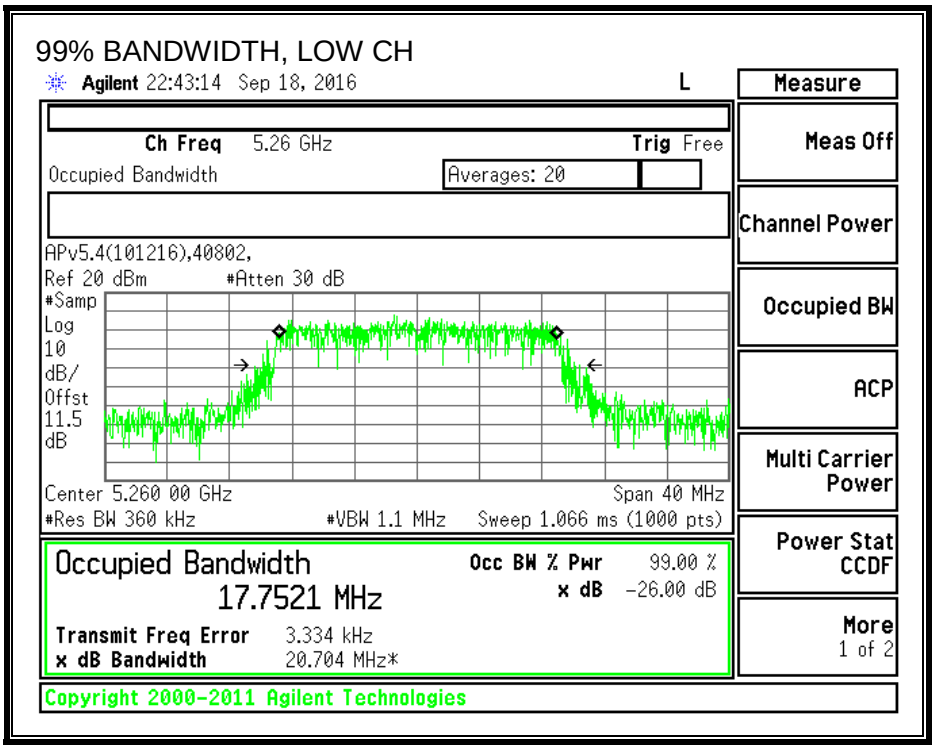
99% BANDWIDTH, ANTENNA A

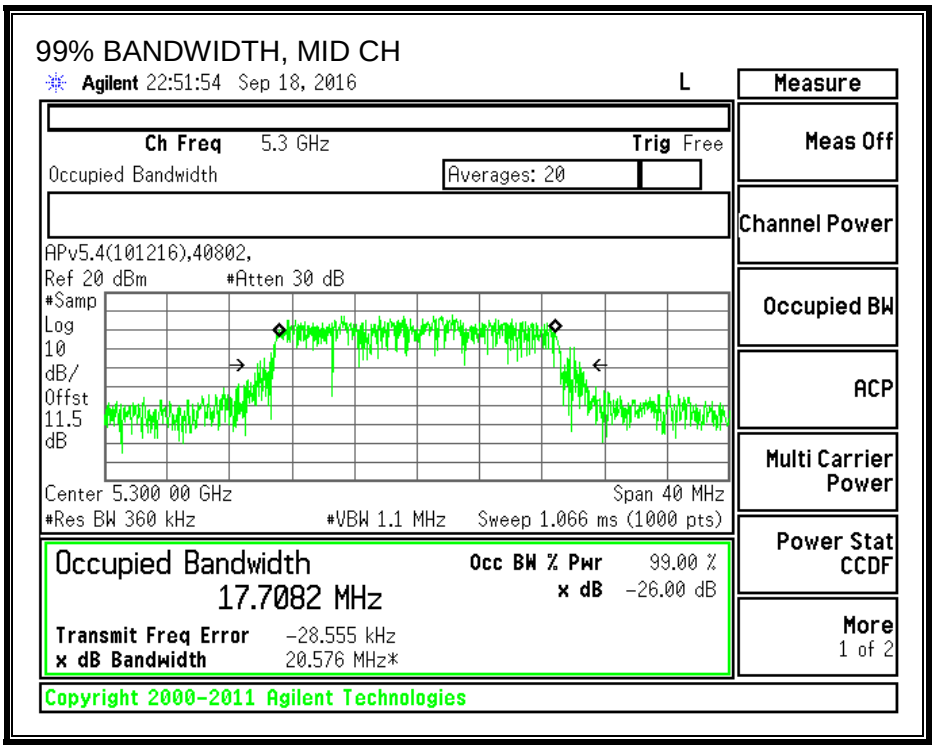


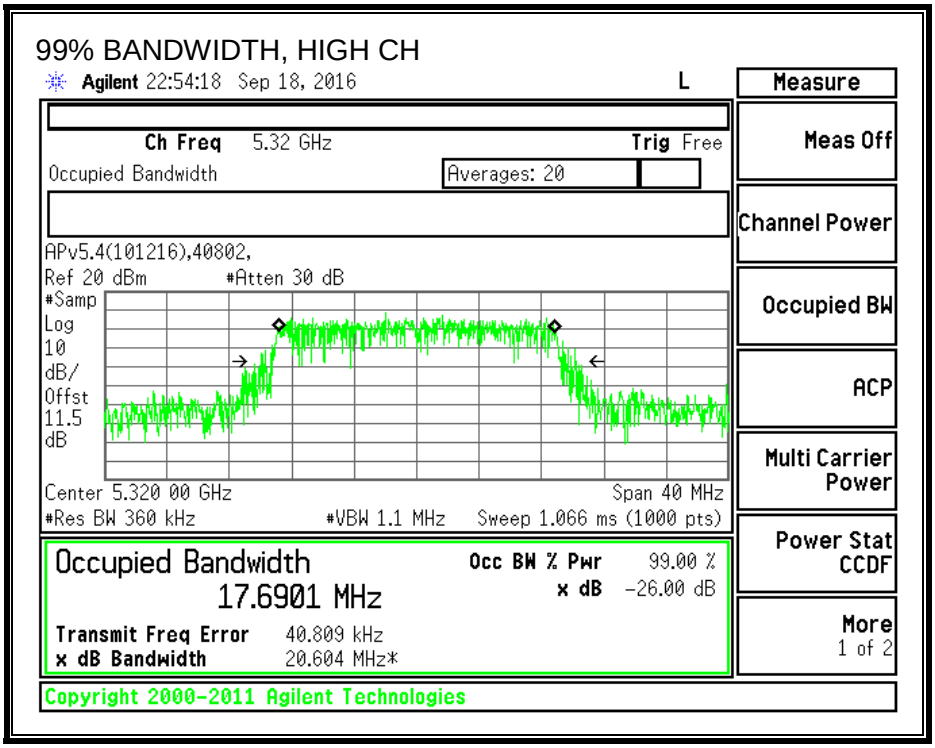




99% BANDWIDTH, ANTENNA B







8.16.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

ID:	39472	Date:	12/30/16

Average Power Results

Channel	Frequency (MHz)	Ant A Power (dBm)	Ant B Power (dBm)	Total Power (dBm)
Low	5260	16.88	17.00	19.95
Mid	5300	16.79	16.97	19.89
High	5320	14.41	14.45	17.44

8.16.4. OUTPUT 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.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

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

Ant A Antenna Gain (dBi)	Ant B Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.24	2.77	2.51

RESULTS

ID:	30606	Date:	11/23/16

Bandwidth, Antenna Gain and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5260	21.64	17.659	2.51	2.51	23.47	11.00
Mid	5300	21.76	17.626	2.51	2.51	23.46	11.00
High	5320	21.72	17.671	2.51	2.51	23.47	11.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

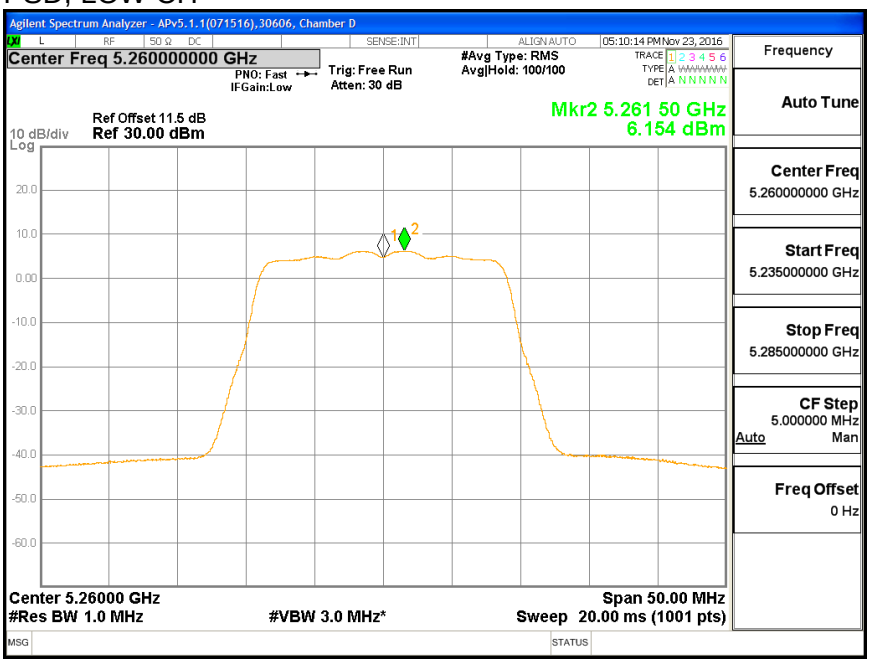
Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	16.88	17.00	19.95	23.47	-3.52
Mid	5300	16.79	16.97	19.89	23.46	-3.57
High	5320	14.41	14.45	17.44	23.47	-6.03

PSD Results

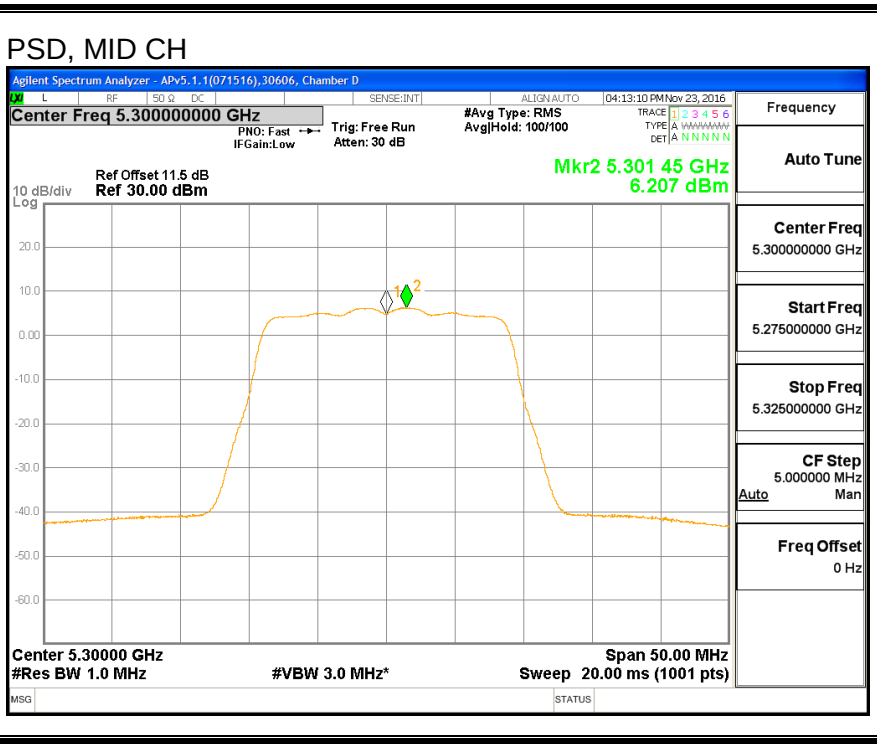
Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	6.15	6.02	9.10	11.00	-1.90
Mid	5300	6.21	6.13	9.18	11.00	-1.82
High	5320	6.11	6.22	9.17	11.00	-1.83

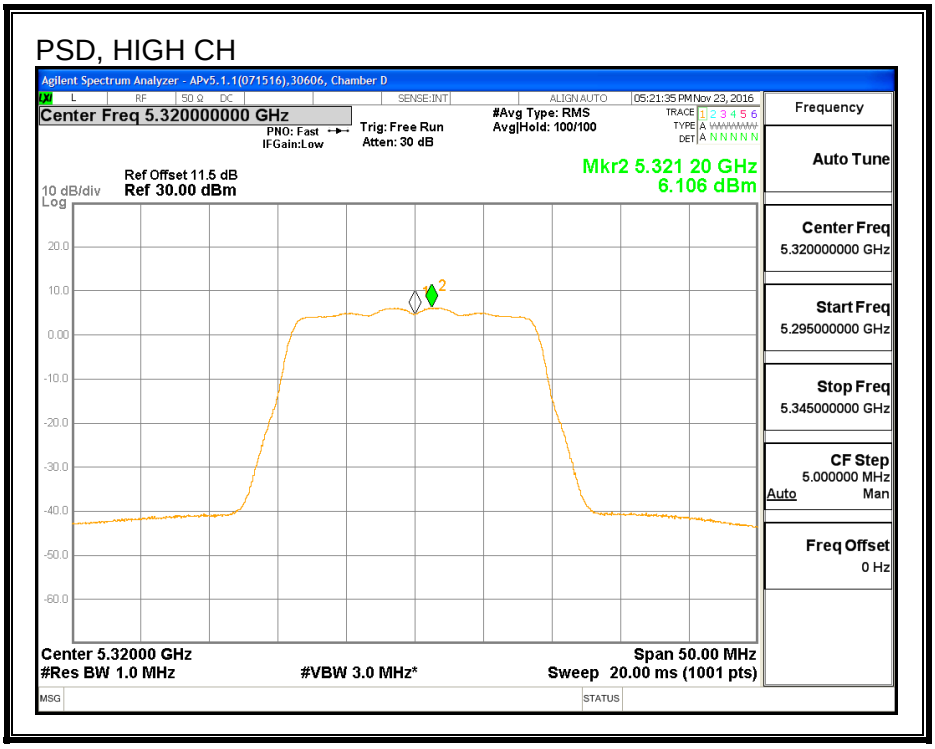
PSD, ANTENNA A

PSD, LOW CH

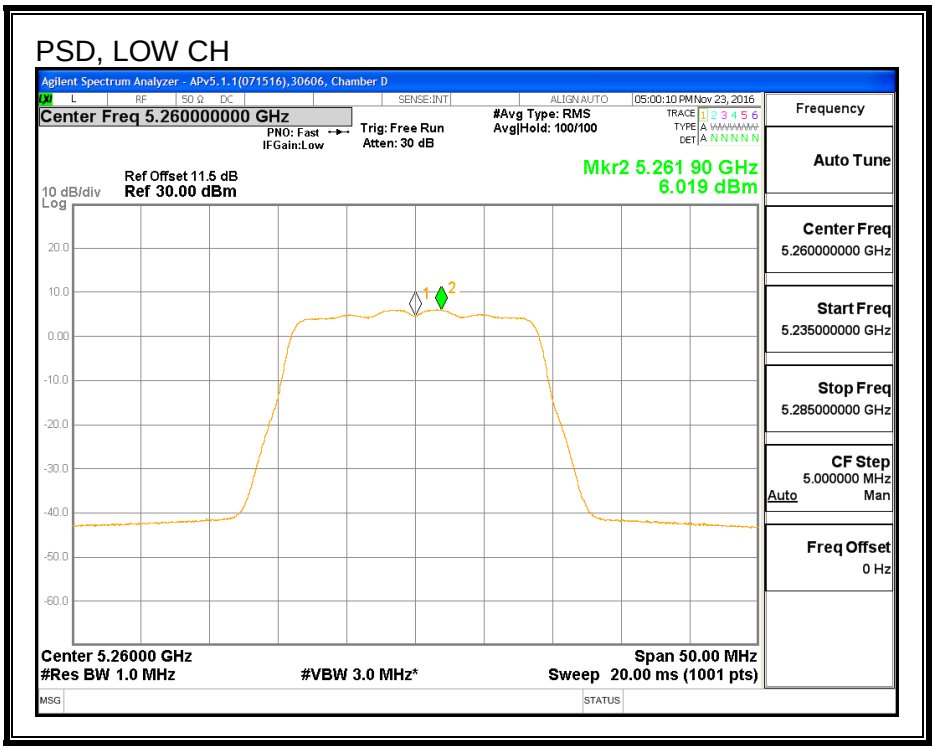


PSD, MID CH

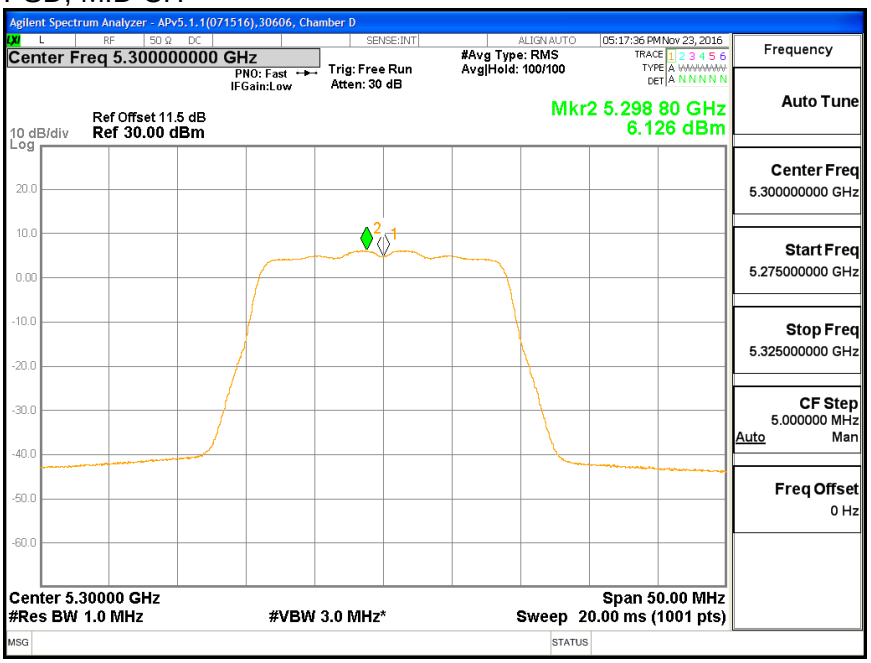




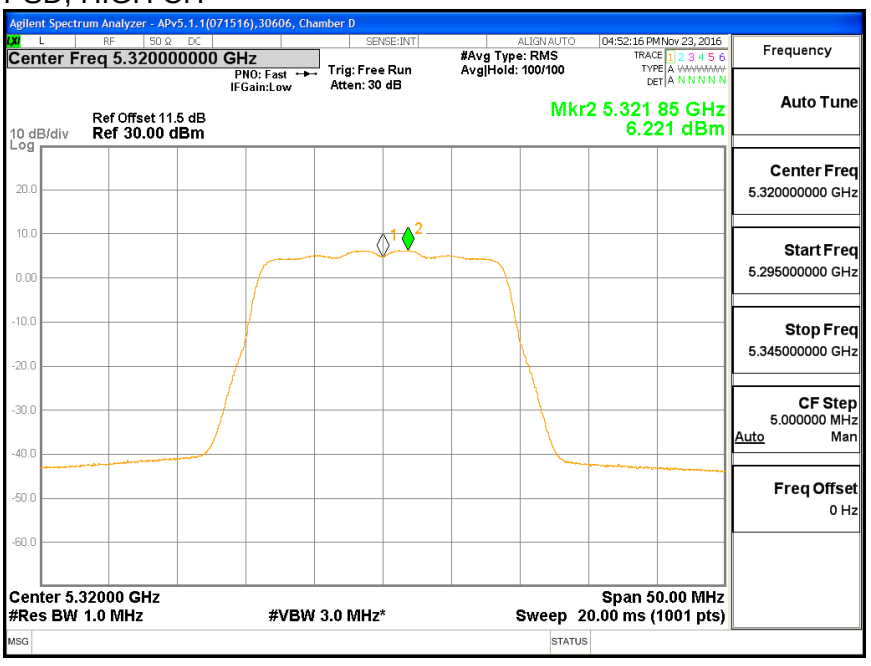
PSD, ANTENNA B



PSD, MID CH



PSD, HIGH CH



8.17. 802.11n HT40 ANTENNA A MODE IN THE 5.3 GHz BAND

8.17.1. 26 dB BANDWIDTH

LIMITS

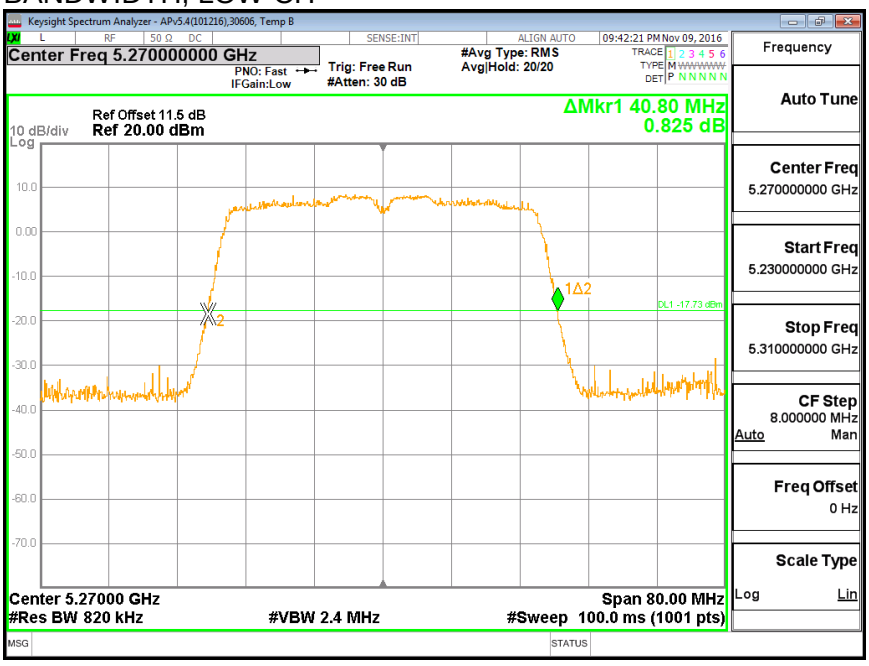
None; for reporting purposes only.

RESULTS

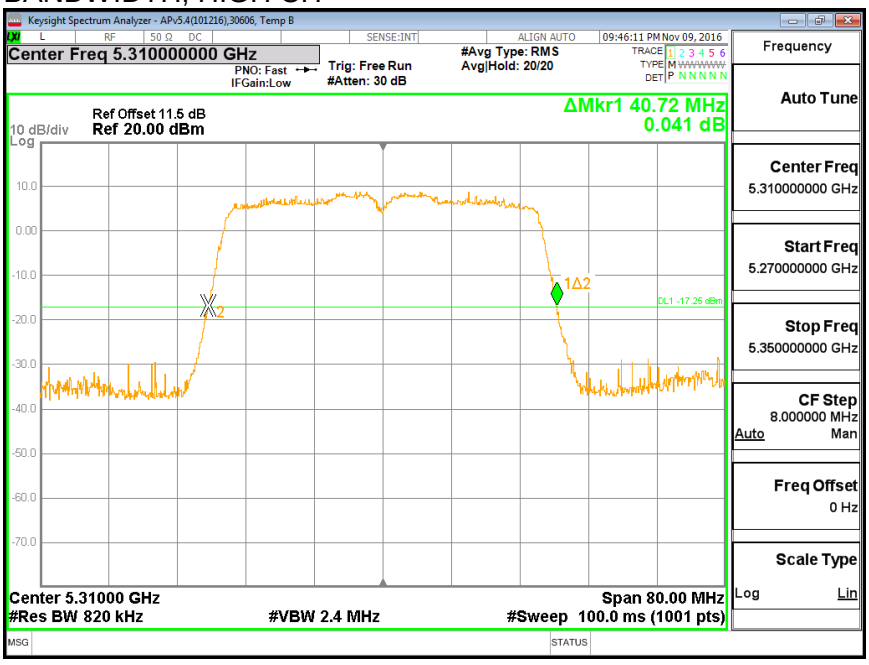
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5270	40.80
High	5310	40.72

26 dB BANDWIDTH

BANDWIDTH, LOW CH



BANDWIDTH, HIGH CH



8.17.2. 99% BANDWIDTH

LIMITS

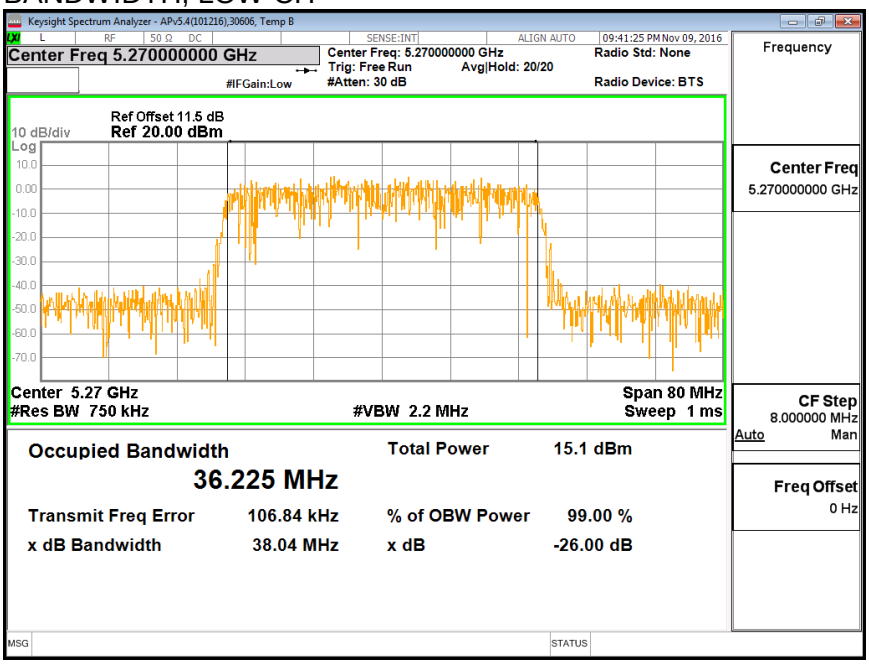
None; for reporting purposes only.

RESULTS

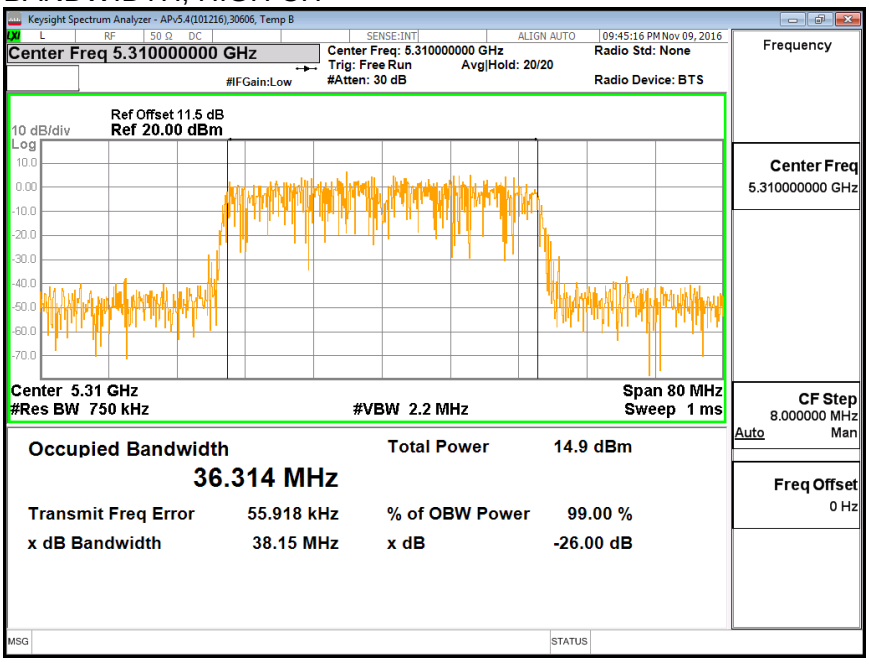
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5270	36.225
High	5310	36.314

99% BANDWIDTH

BANDWIDTH, LOW CH



BANDWIDTH, HIGH CH



8.17.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

ID:	30554	Date:	12/15/16

Channel	Frequency (MHz)	Power (dBm)
Low	5270	16.91
High	5310	14.40

8.17.4. OUTPUT 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.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

ID:	60554	Date:	12/15/16

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5270	40.80	36.23	2.24	24.00	11.00
High	5310	40.72	36.31	2.24	24.00	11.00

Duty Cycle CF (dB)	0.10	Included in Calculations of Corr'd PSD

Output Power Results

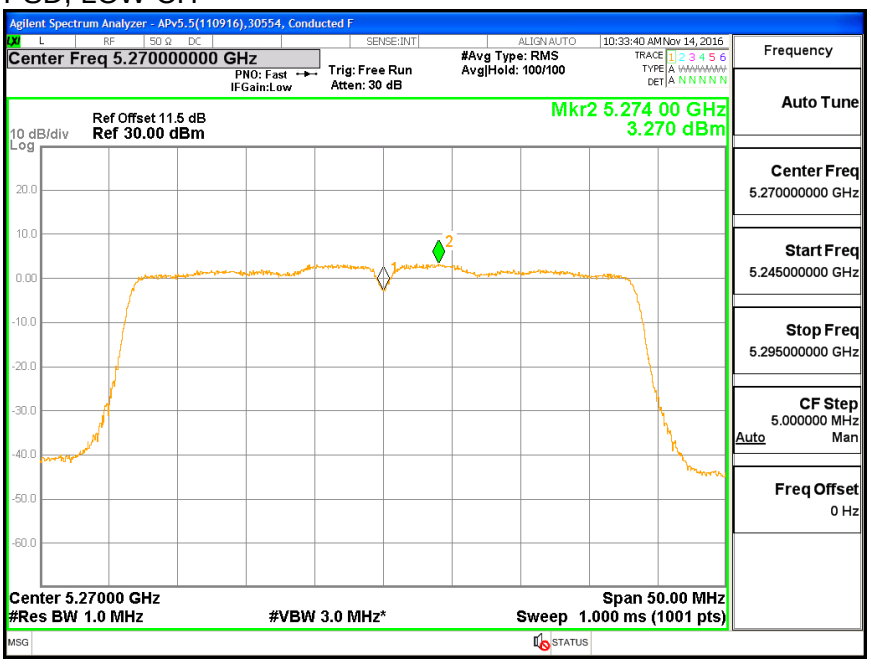
Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	16.91	16.91	24.00	-7.09
High	5310	14.40	14.40	24.00	-9.60

PSD Results

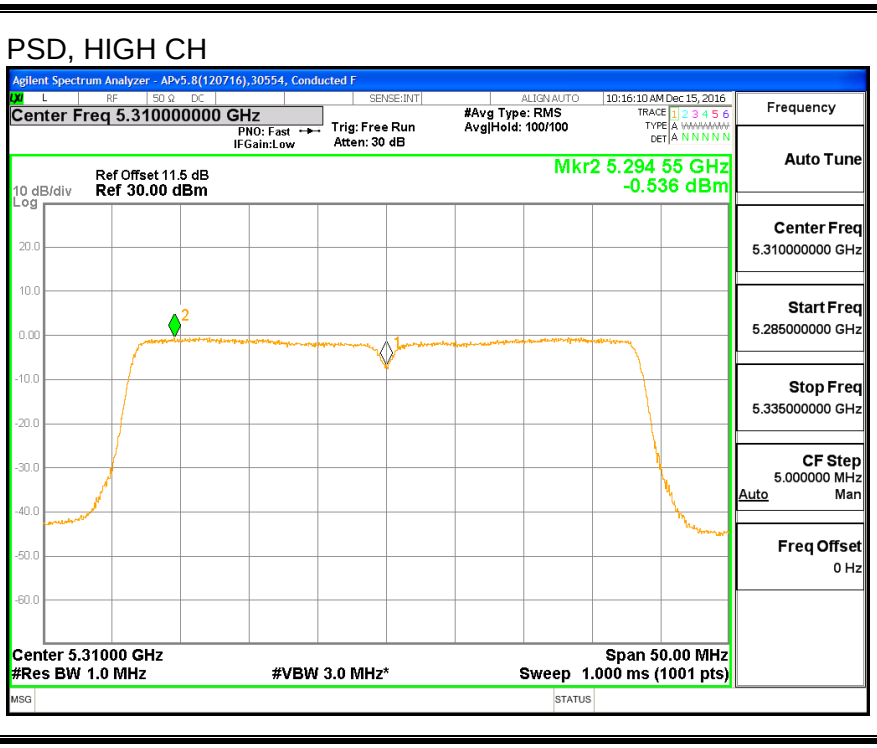
Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	3.270	3.370	11.00	-7.63
High	5310	-0.536	-0.436	11.00	-11.44

PSD

PSD, LOW CH



PSD, HIGH CH



8.18. 802.11n HT40 ANTENNA B MODE IN THE 5.3 GHz BAND

8.18.1. 26 dB BANDWIDTH

LIMITS

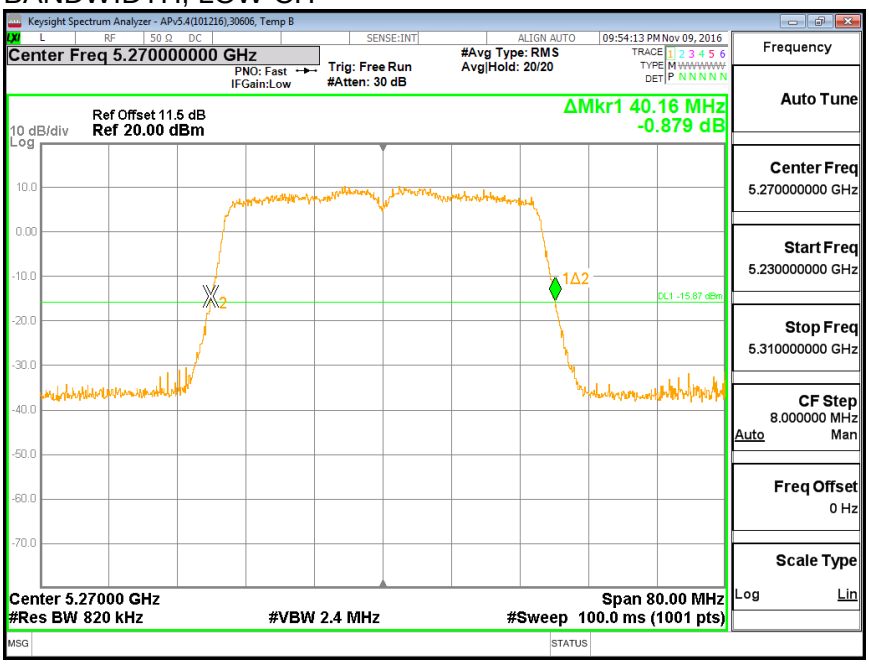
None; for reporting purposes only.

RESULTS

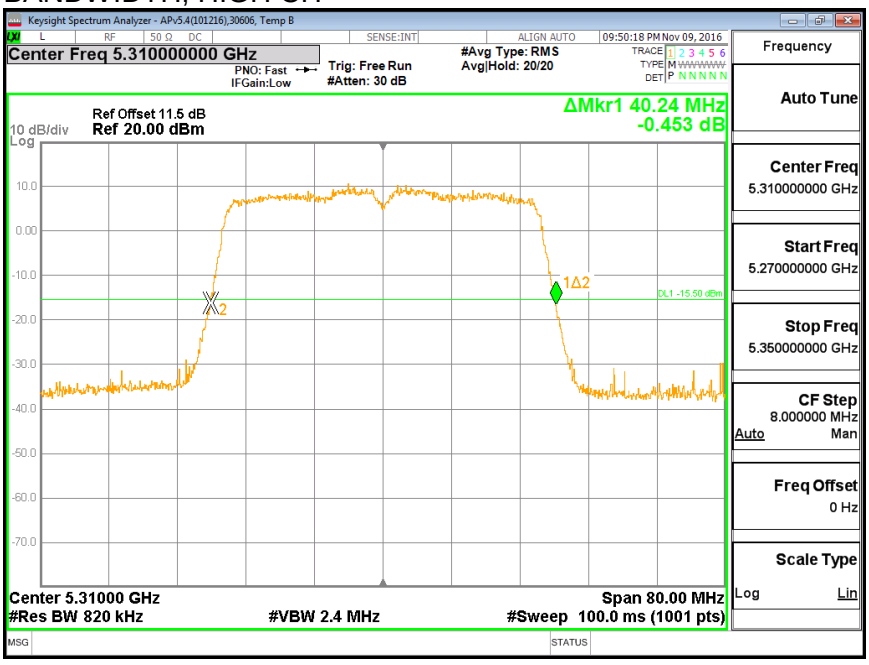
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5270	40.160
High	5310	40.240

26 dB BANDWIDTH

BANDWIDTH, LOW CH



BANDWIDTH, HIGH CH



8.18.2. 99% BANDWIDTH

LIMITS

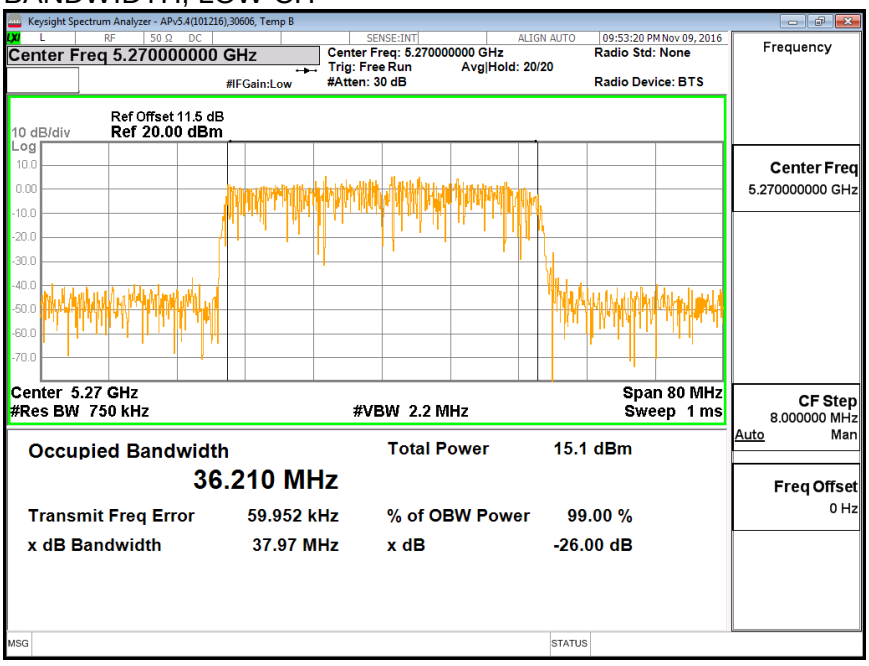
None; for reporting purposes only.

RESULTS

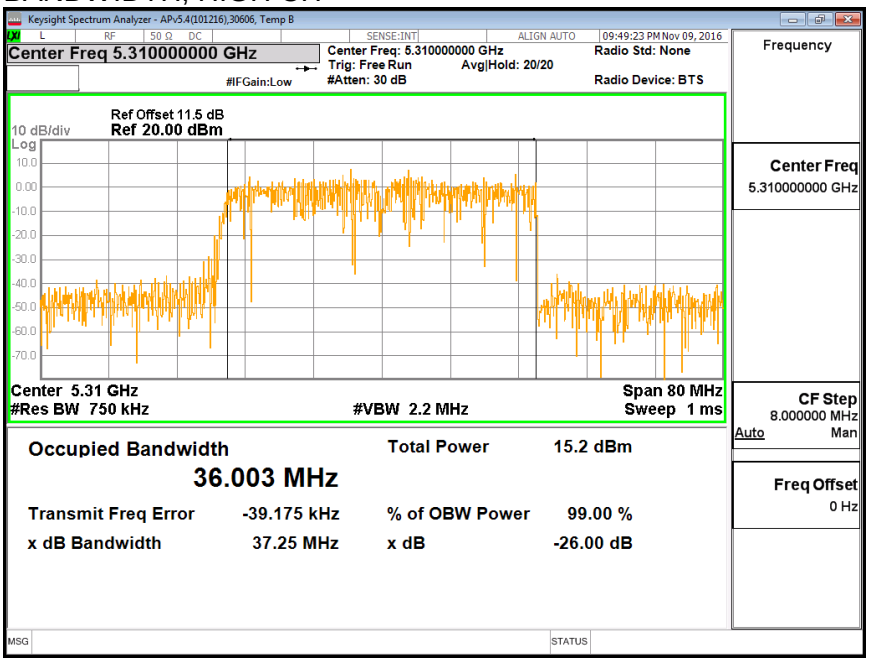
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5270	36.210
High	5310	36.003

99% BANDWIDTH

BANDWIDTH, LOW CH



BANDWIDTH, HIGH CH



8.18.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

ID:	30554	Date:	12/15/16

Channel	Frequency (MHz)	Power (dBm)
Low	5270	16.86
High	5310	14.32

8.18.4. OUTPUT 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.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

ID:	30554	Date:	12/15/16

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5270	40.160	36.210	2.77	24.00	11.00
High	5310	40.240	36.003	2.77	24.00	11.00

Duty Cycle CF (dB)	0.10	Included in Calculations of Corr'd PSD

Output Power Results

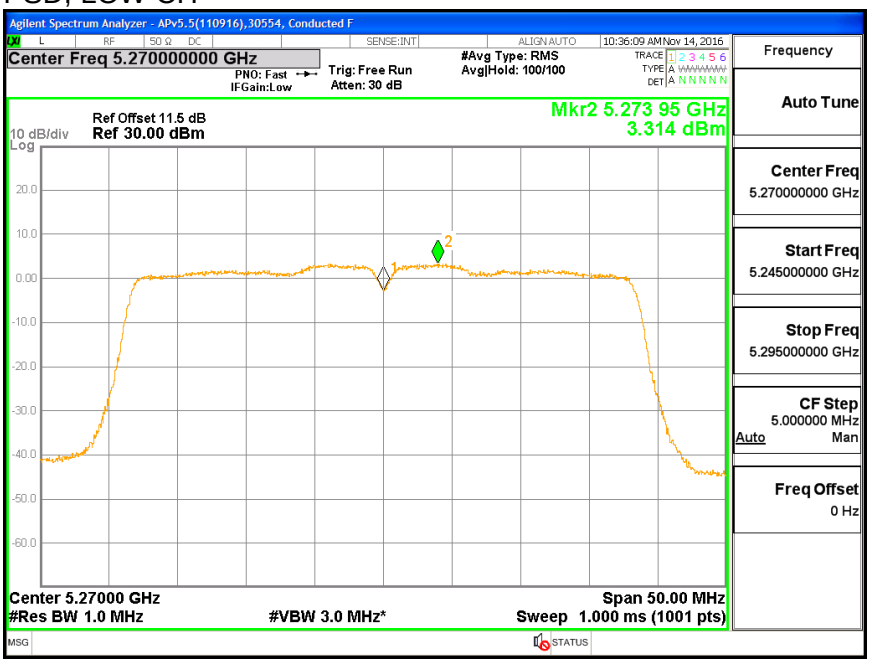
Channel	Frequency (MHz)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	16.86	16.86	24.00	-7.14
High	5310	14.32	14.32	24.00	-9.68

PSD Results

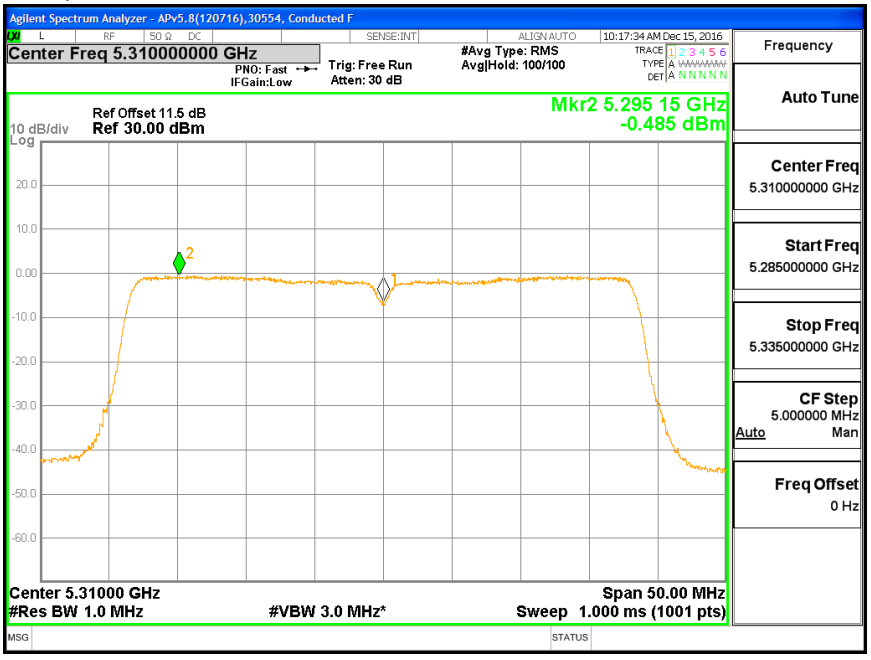
Channel	Frequency (MHz)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	3.314	3.414	11.00	-7.59
High	5310	-0.485	-0.385	11.00	-11.39

PSD

PSD, LOW CH



PSD, HIGH CH



8.19. 802.11n HT40 2Tx (ANTENNA A + ANTENNA B) CDD MODE IN THE 5.3 GHz BAND

8.19.1. 26 dB BANDWIDTH

LIMITS

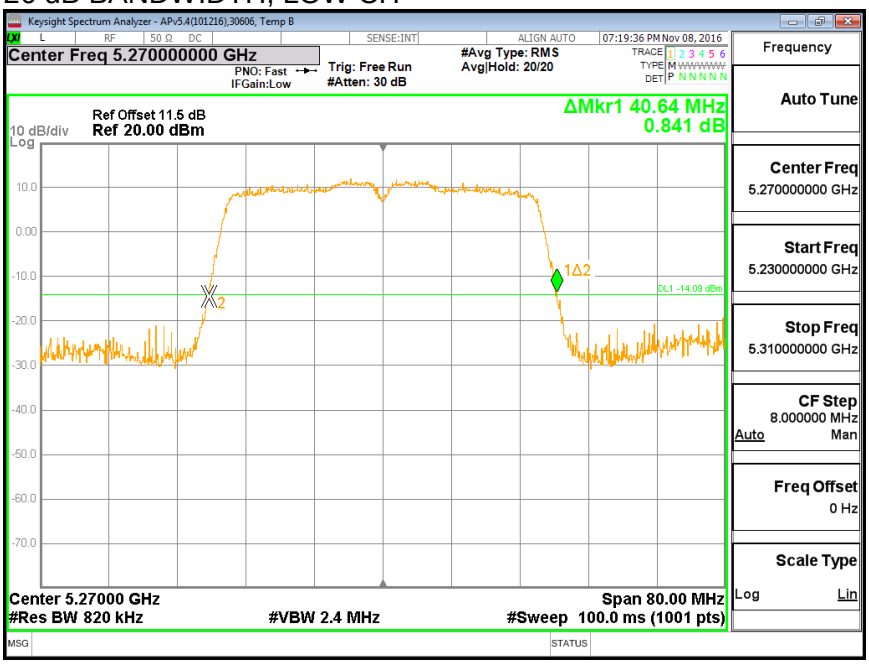
None; for reporting purposes only.

RESULTS

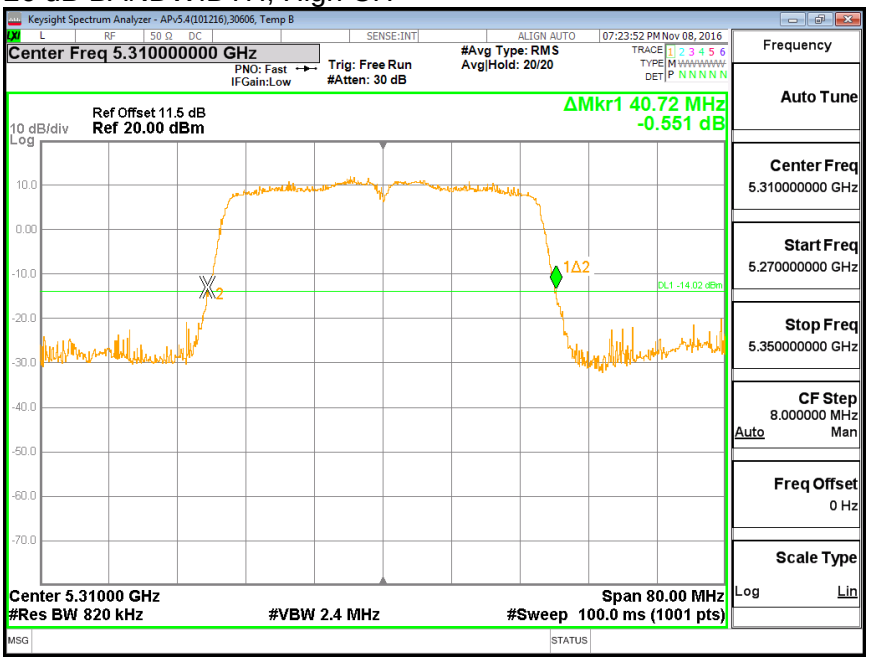
Channel	Frequency (MHz)	26 dB BW Ant A (MHz)	26 dB BW Ant B (MHz)
Low	5270	40.640	40.160
High	5310	40.720	40.320

26 DB BANDWIDTH, ANTENNA A

26 dB BANDWIDTH, LOW CH

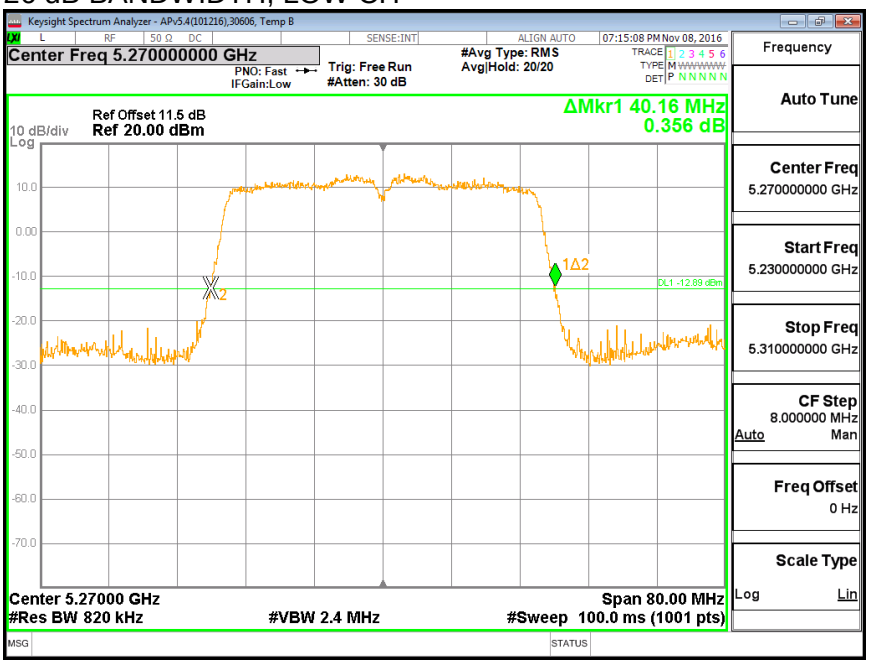


26 dB BANDWIDTH, High CH

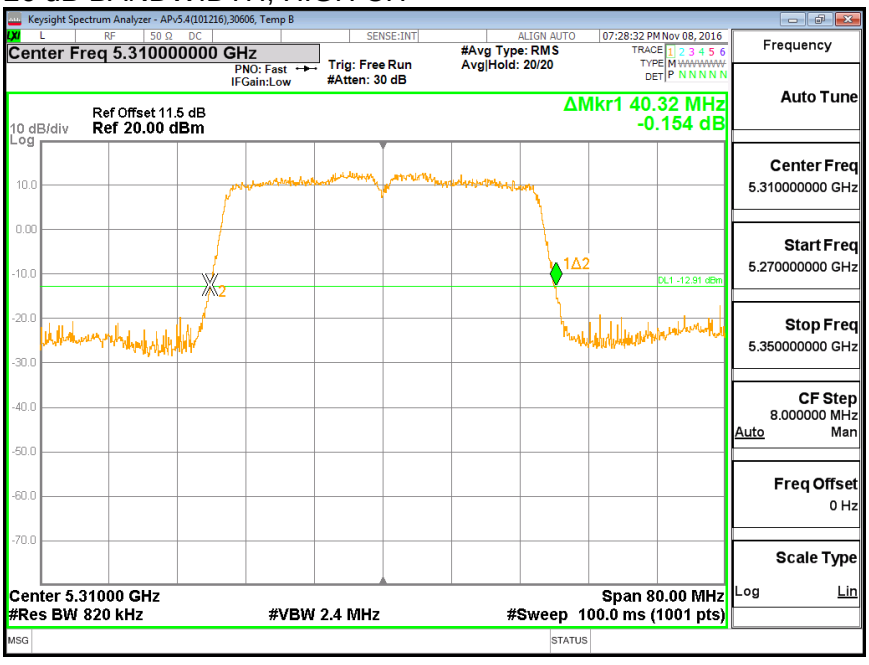


26 DB BANDWIDTH, ANTENNA B

26 dB BANDWIDTH, LOW CH



26 dB BANDWIDTH, HIGH CH



8.19.2. 99% BANDWIDTH

LIMITS

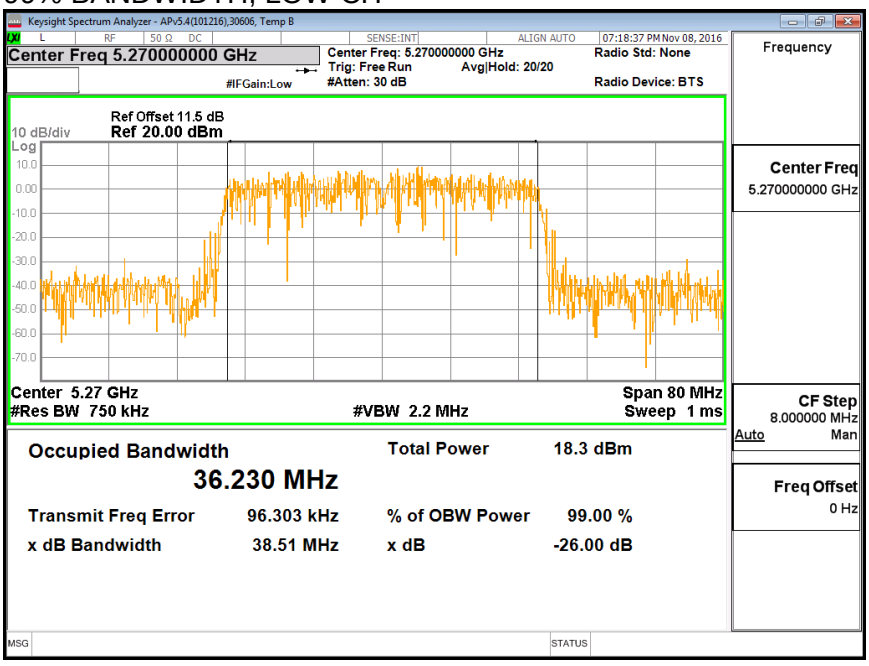
None; for reporting purposes only.

RESULTS

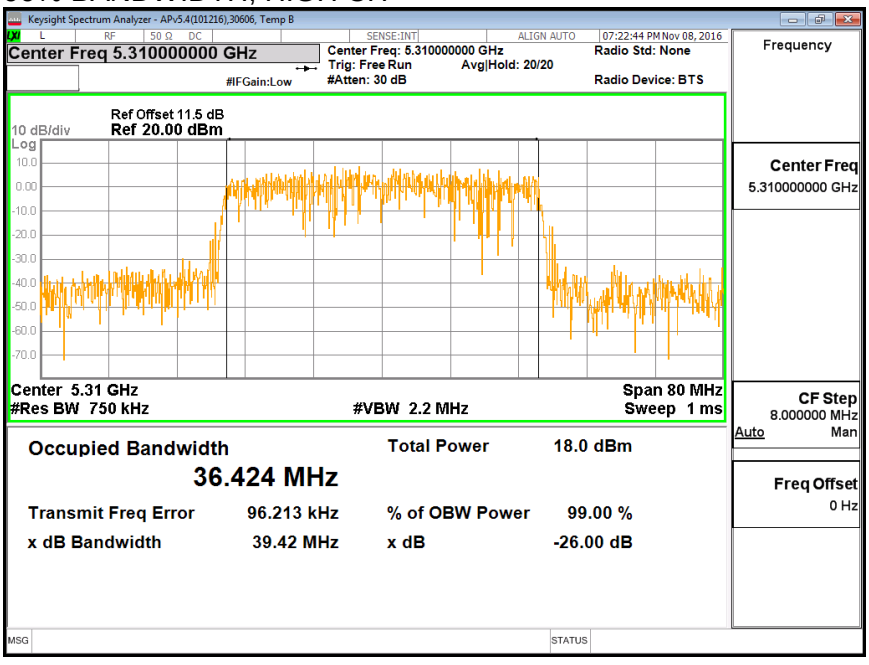
Channel	Frequency (MHz)	99% BW Ant A (MHz)	99% BW Ant B (MHz)
Low	5270	36.230	36.238
High	5310	36.424	36.415

99% BANDWIDTH, ANTENNA A

99% BANDWIDTH, LOW CH

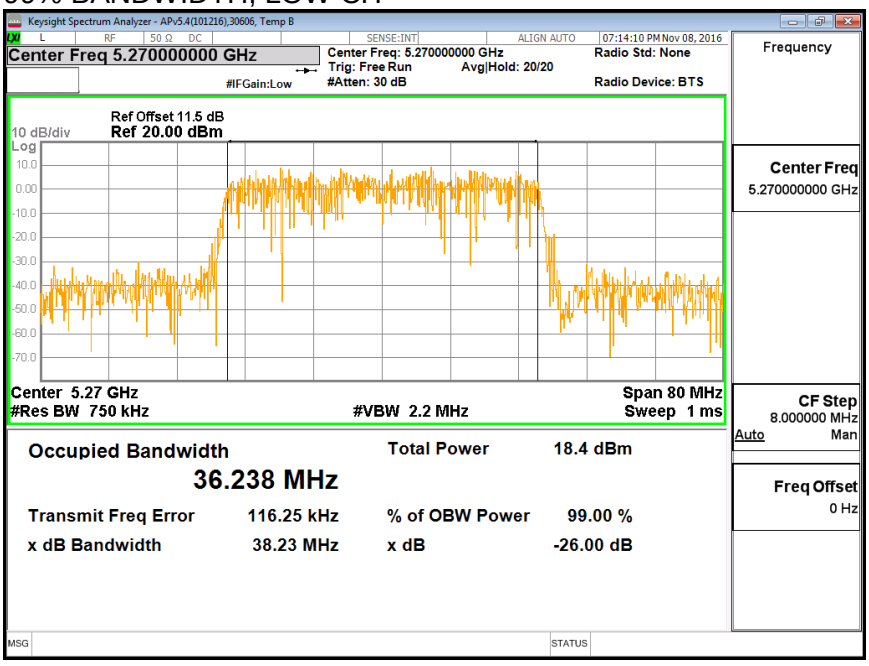


99% BANDWIDTH, HIGH CH

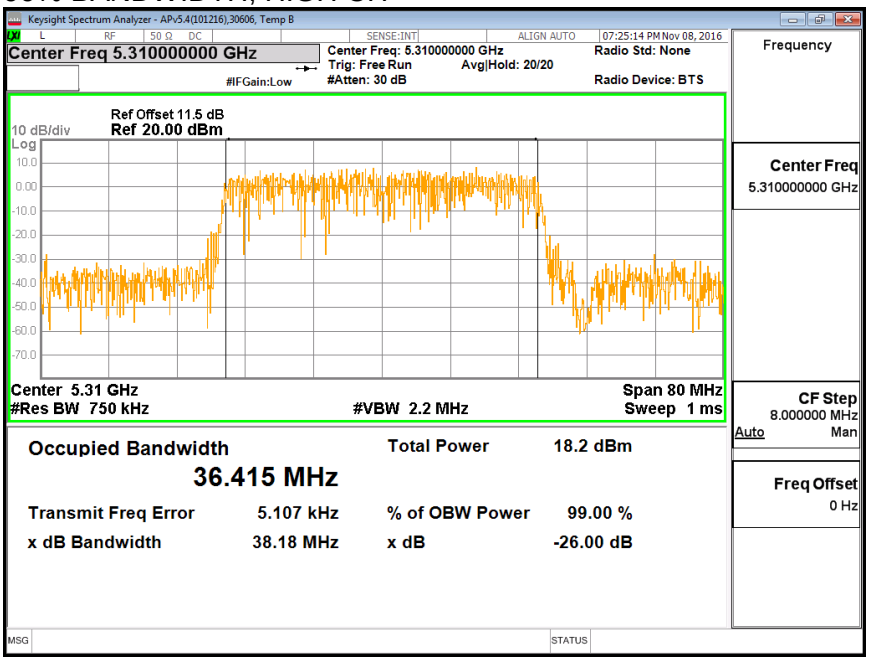


99% BANDWIDTH, ANTENNA B

99% BANDWIDTH, LOW CH



99% BANDWIDTH, HIGH CH



8.19.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

ID:	39316	Date:	12/15/16

Average Power Results

Channel	Frequency (MHz)	Ant A Power (dBm)	Ant B Power (dBm)	Total Power (dBm)
Low	5270	16.99	17.00	20.01
High	5310	13.47	13.48	16.49

8.19.4. OUTPUT 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.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

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

Ant A Antenna Gain (dBi)	Ant B Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.24	2.77	2.51

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

Ant A Antenna Gain (dBi)	Ant B Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.24	2.77	5.52

RESULTS

ID:	39316	Date:	12/15/16

Bandwidth, Antenna Gain and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5270	40.160	36.230	2.51	5.52	24.00	11.00
High	5310	40.320	36.415	2.51	5.52	24.00	11.00

Duty Cycle CF (dB)	0.10	Included in Calculations of Corr'd PSD

Output Power Results

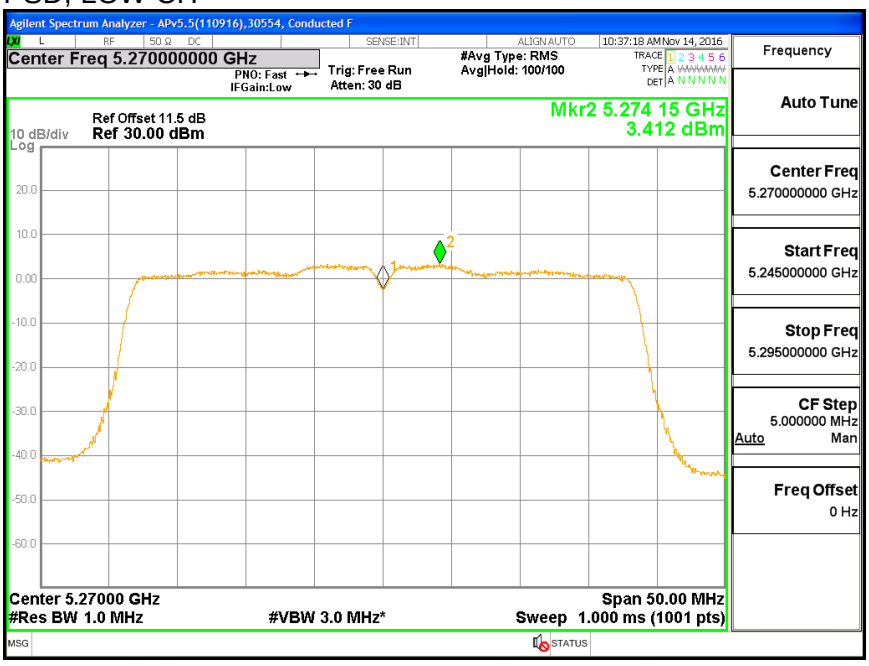
Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	16.99	17.00	20.01	24.00	-3.99
High	5310	13.47	13.48	16.49	24.00	-7.51

PSD Results

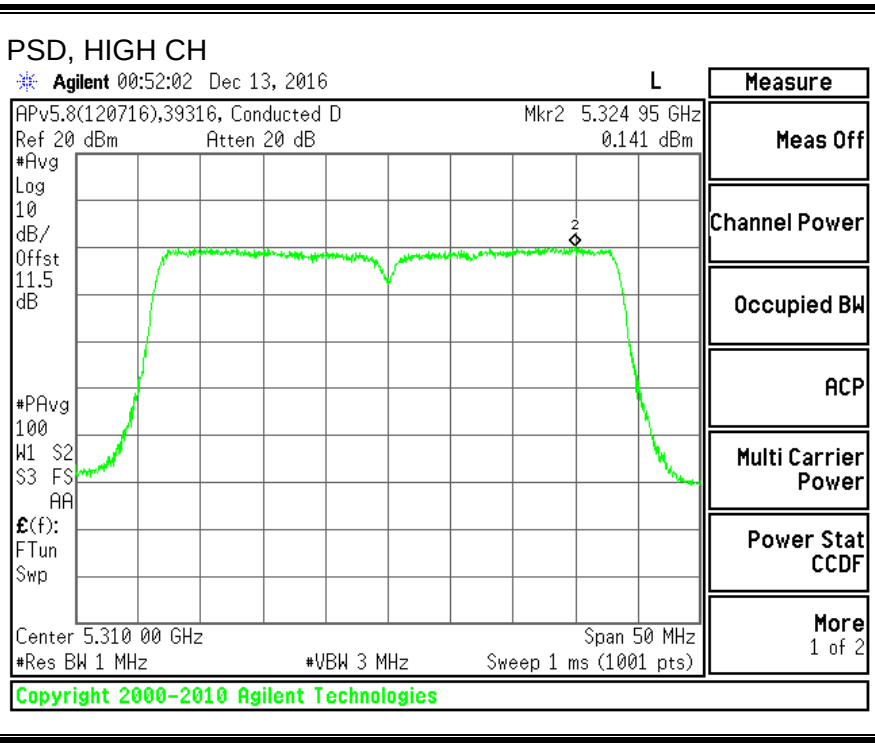
Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	3.412	3.219	6.43	11.00	-4.57
High	5310	0.141	-0.221	3.07	11.00	-7.93

PSD, ANTENNA A

PSD, LOW CH

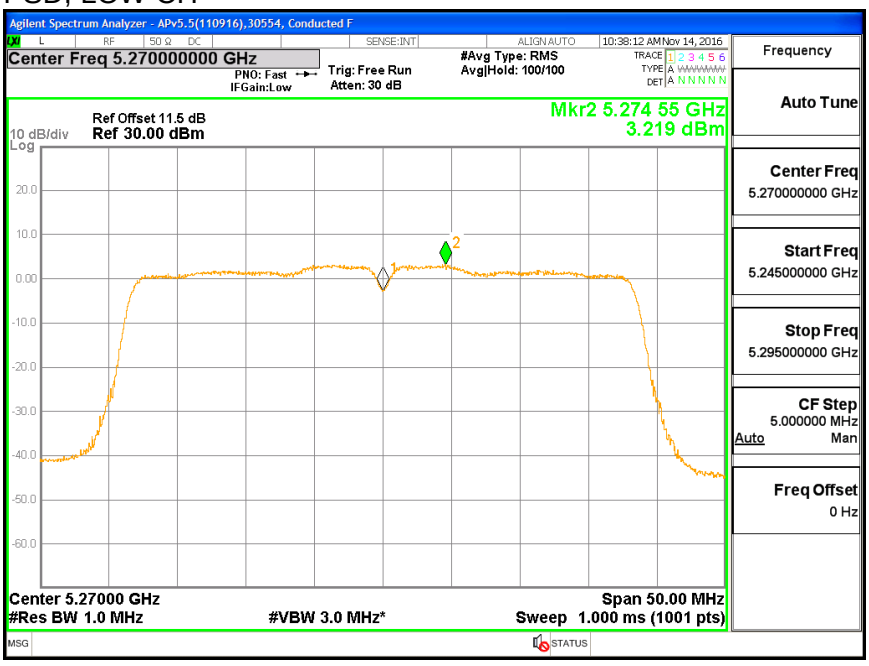


PSD, HIGH CH

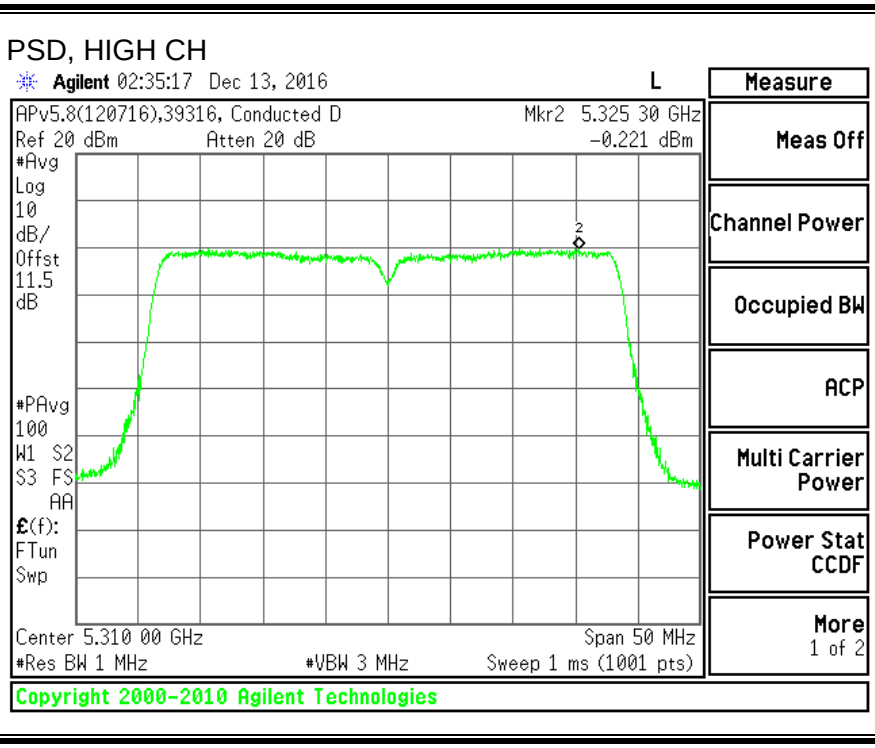


PSD, ANTENNA B

PSD, LOW CH



PSD, HIGH CH



8.20. 802.11n HT40 2Tx (ANTENNA A + ANTENNA B) STBC MODE IN THE 5.3 GHz BAND

Noted: Covered by 802.11n HT40 2Tx (ANTENNA A + ANTENNA B) CDD MODE IN THE 5.3 GHz BAND

8.21. 802.11ac VHT80 ANTENNA A MODE IN THE 5.3 GHz BAND

8.21.1. 26 dB BANDWIDTH

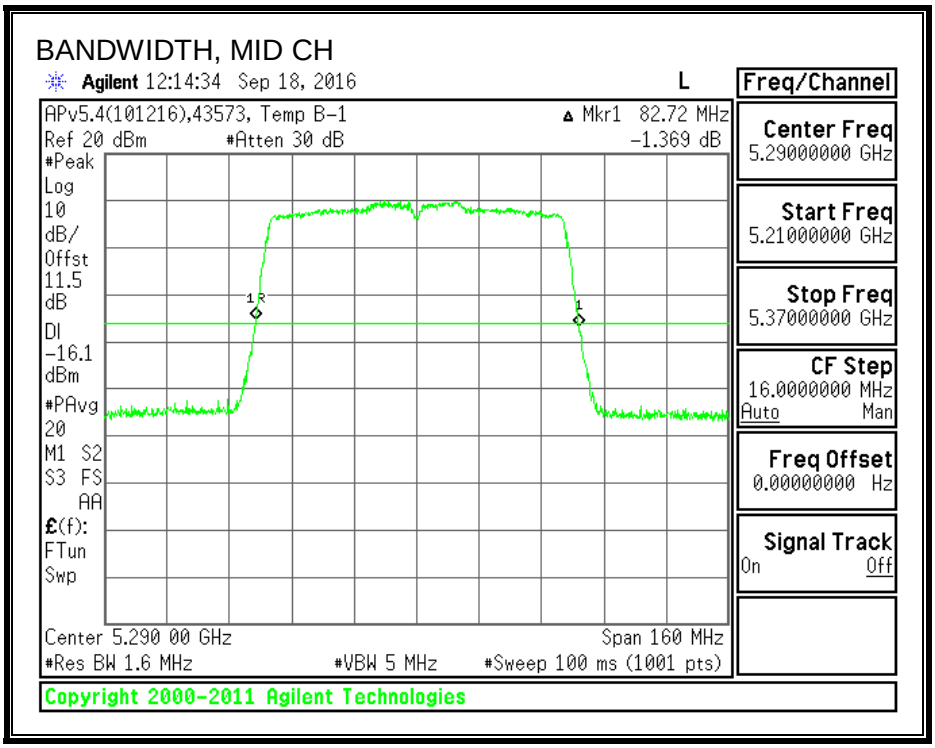
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5290	82.720

26 dB BANDWIDTH



8.21.2. 99% BANDWIDTH

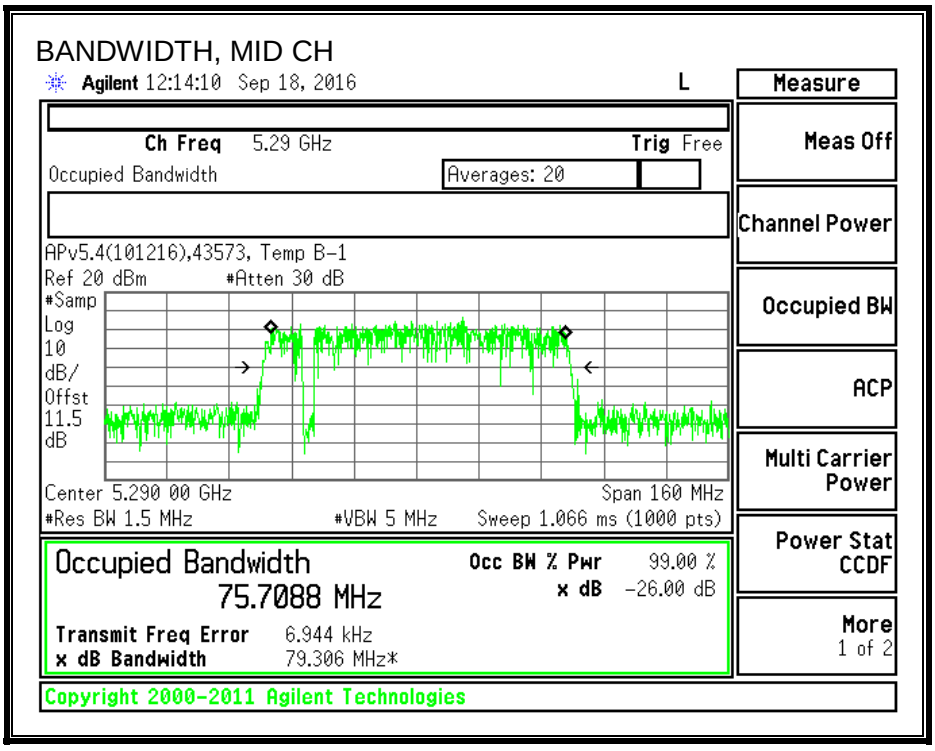
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5290	75.709

99% BANDWIDTH



8.21.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

ID:	30554	Date:	12/15/16

Channel	Frequency (MHz)	Power (dBm)
Mid	5290	12.88