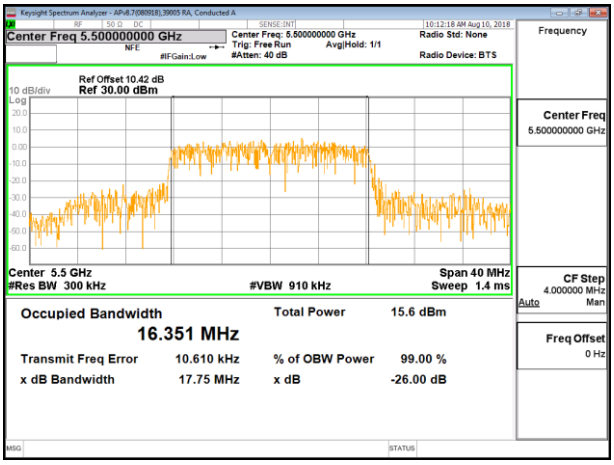
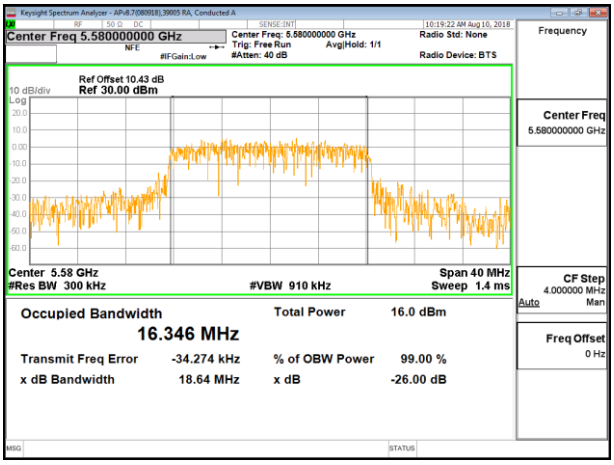
9.3.9. 802.11a MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

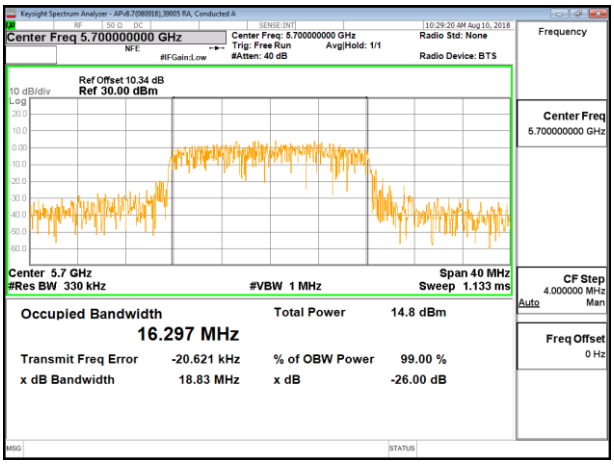
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	16.3510
Mid	5580	16.3460
High	5700	16.2970
144	5720	16.2830



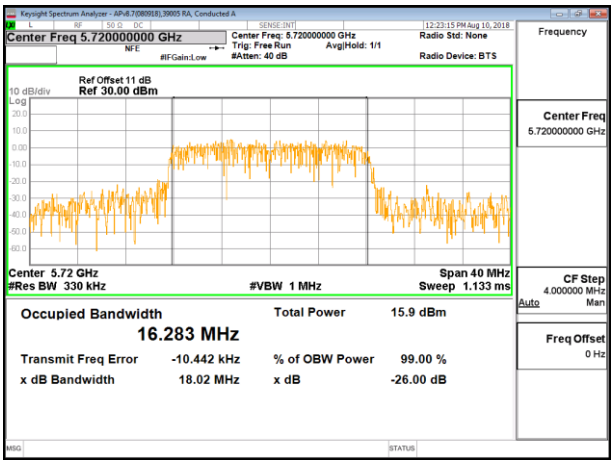
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

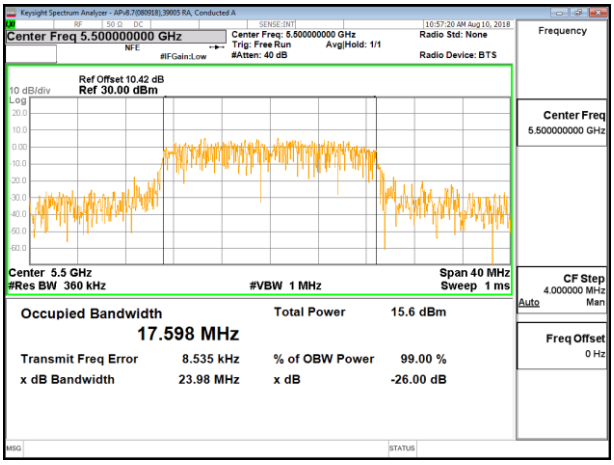


CHANNEL 144

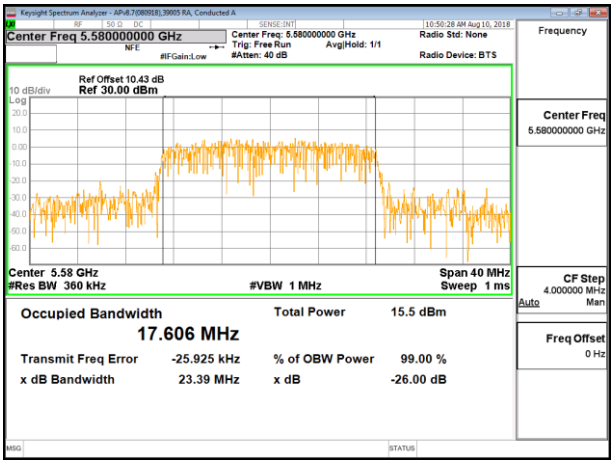
9.3.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

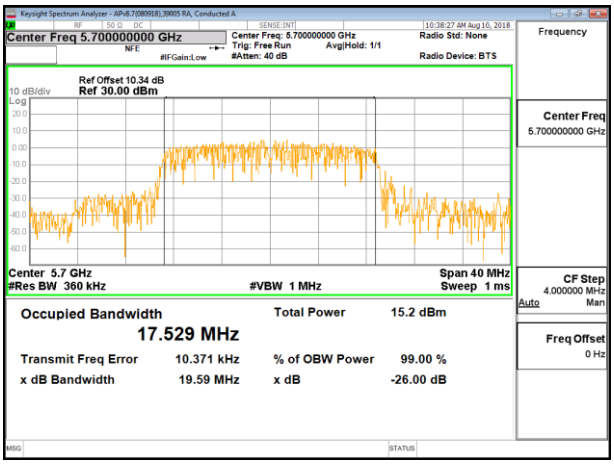
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	17.5980
Mid	5580	17.6060
High	5700	17.5290
144	5720	17.5170



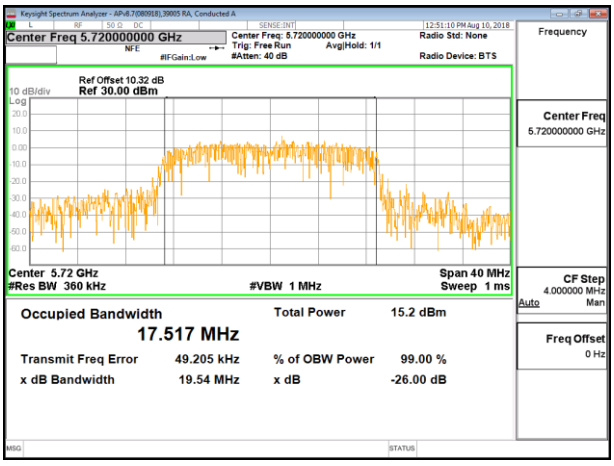
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

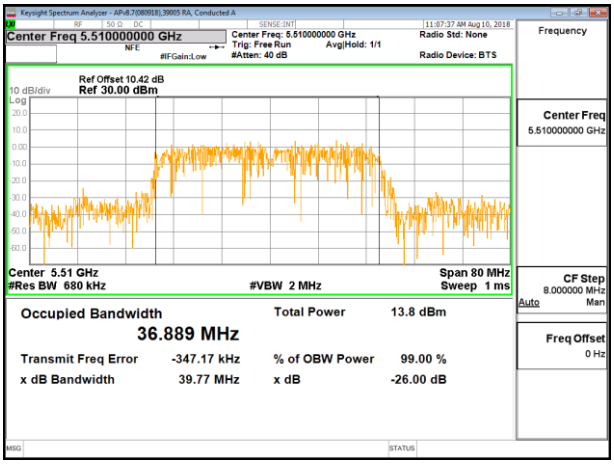


CHANNEL 144

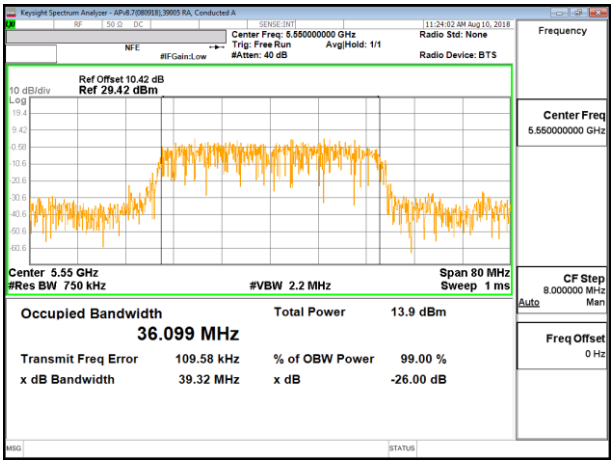
9.3.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

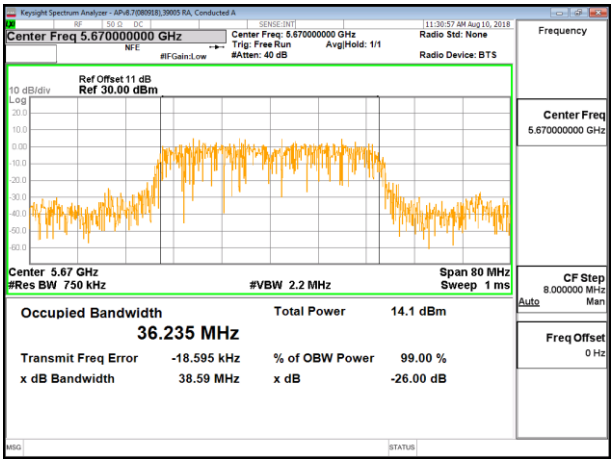
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5510	36.8890
Mid	5550	36.0990
High	5670	36.2350
142	5710	36.0100



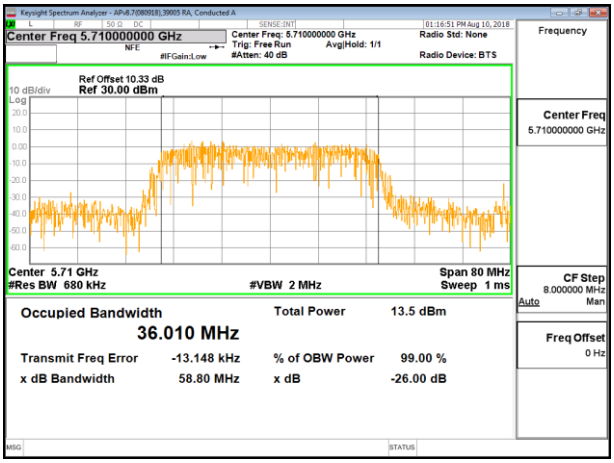
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

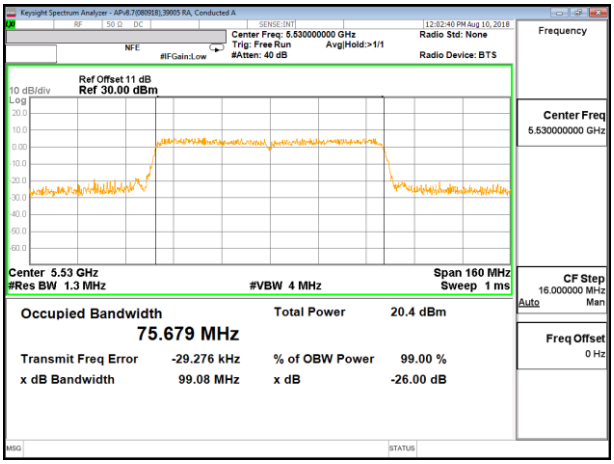


CHANNEL 142

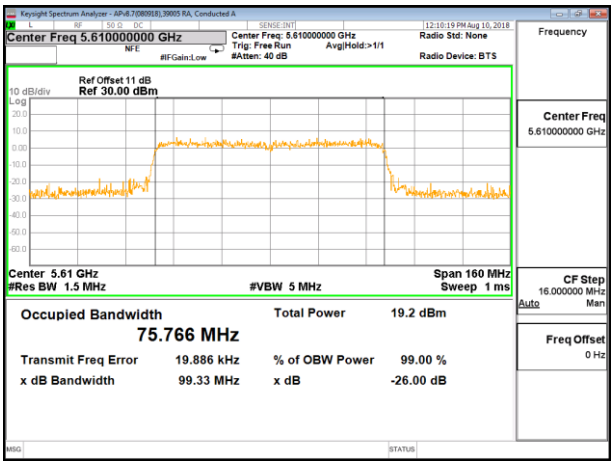
9.3.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

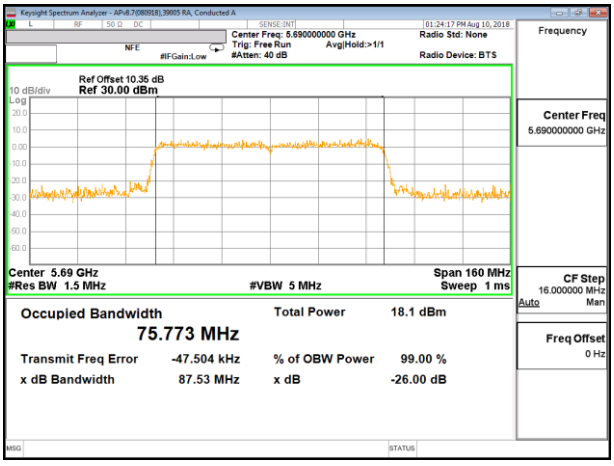
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5530	75.6790
High	5610	75.7660
138	5690	75.7730



LOW CHANNEL



HIGH CHANNEL

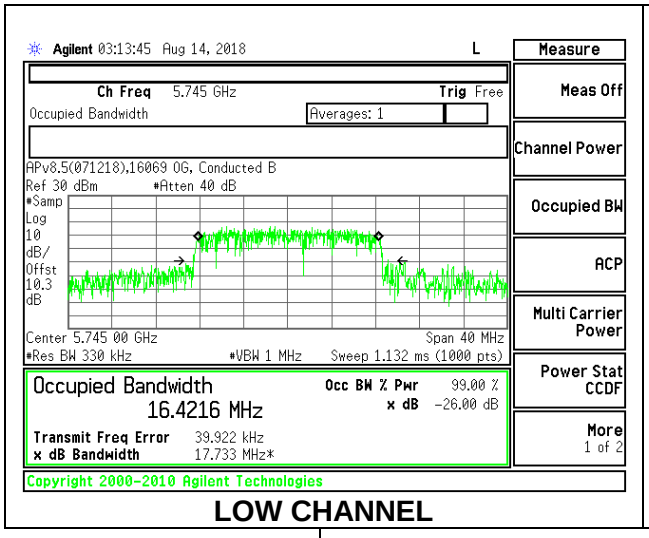


CHANNEL 138

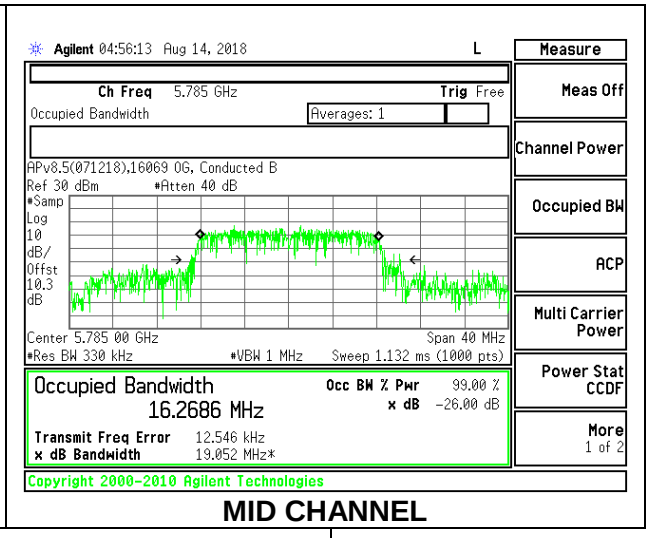
9.3.13. 802.11a MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

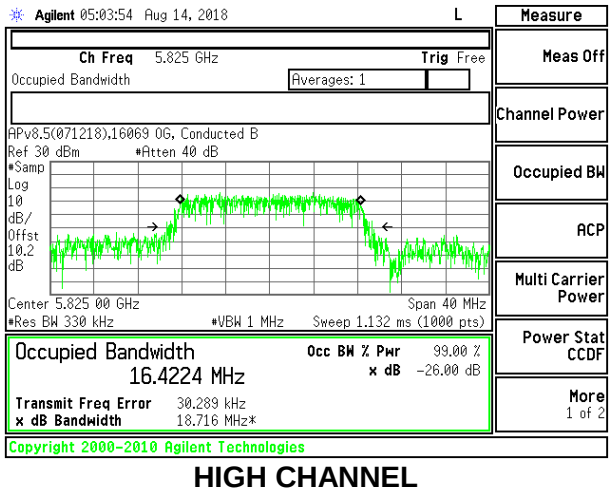
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	16.4216
Mid	5785	16.2686
High	5825	16.4220



LOW CHANNEL



MID CHANNEL

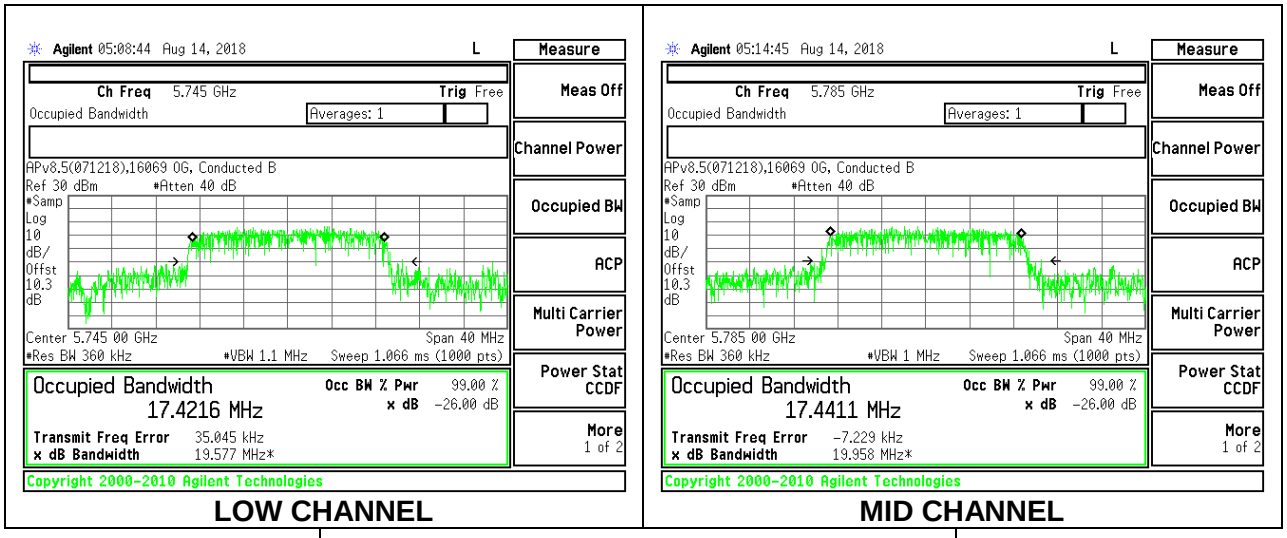


HIGH CHANNEL

9.3.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

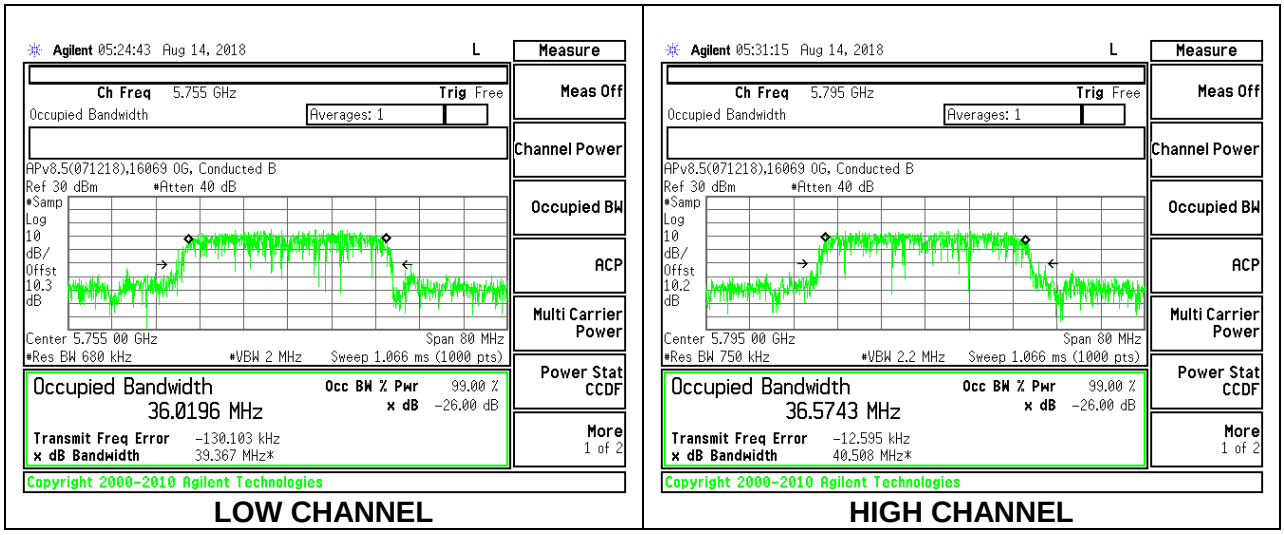
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	17.4216
Mid	5785	17.4411
High	5825	17.4700



9.3.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

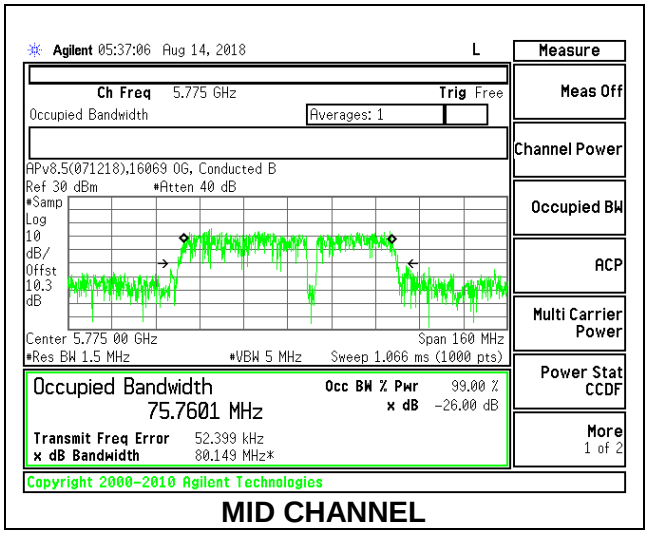
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5755	36.0196
High	5795	36.5743



9.3.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5775	75.7601



MID CHANNEL

9.4. 6 dB BANDWIDTH

LIMITS

FCC §15.407 (e)

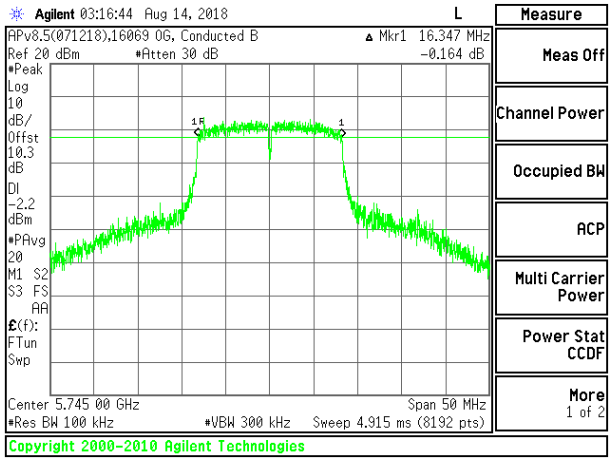
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

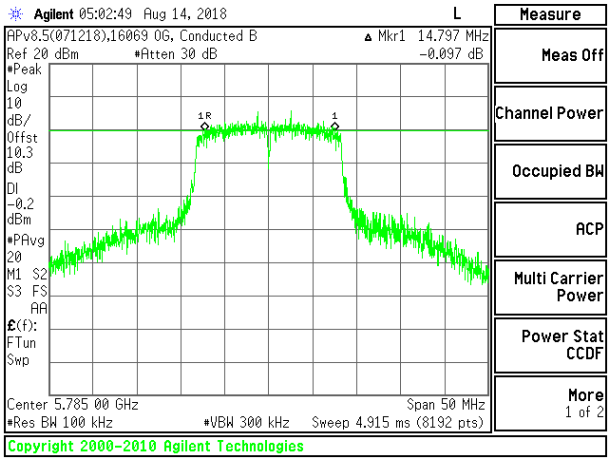
9.4.1. 802.11a MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

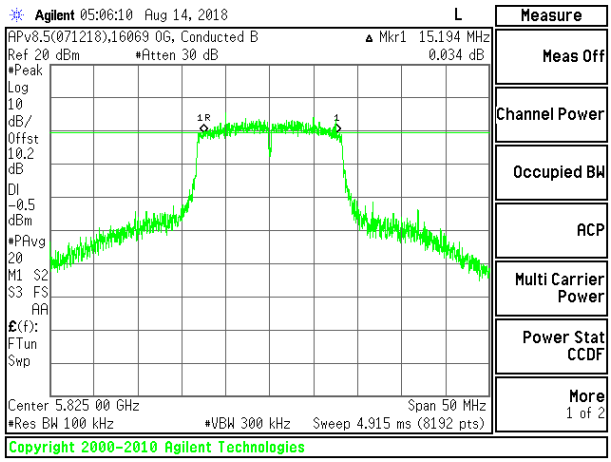
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	16.3470	0.5
Mid	5785	14.7970	0.5
High	5825	15.1940	0.5
144	5720	3.1700	0.5



LOW CHANNEL



MID CHANNEL



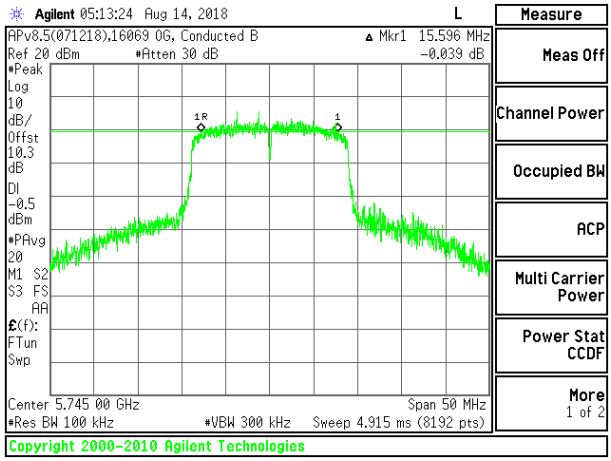
HIGH CHANNEL

CHANNEL 144

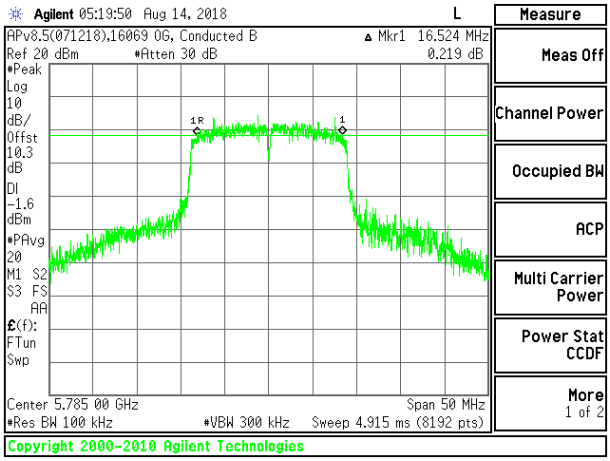
9.4.2. 802.11n HT20 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

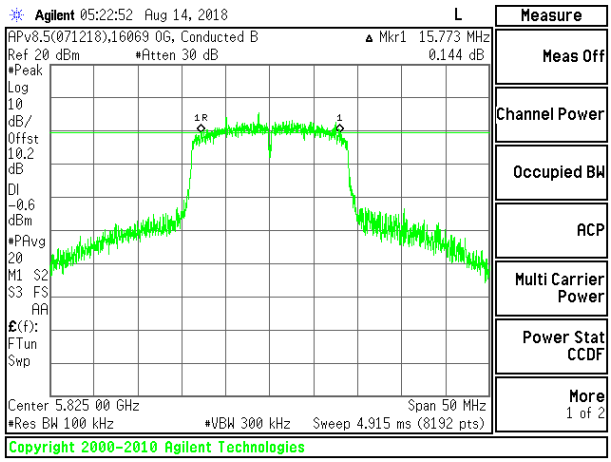
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	15.5960	0.5
Mid	5785	16.5240	0.5
High	5825	15.7730	0.5
144	5720	3.5250	0.5



LOW CHANNEL



MID CHANNEL



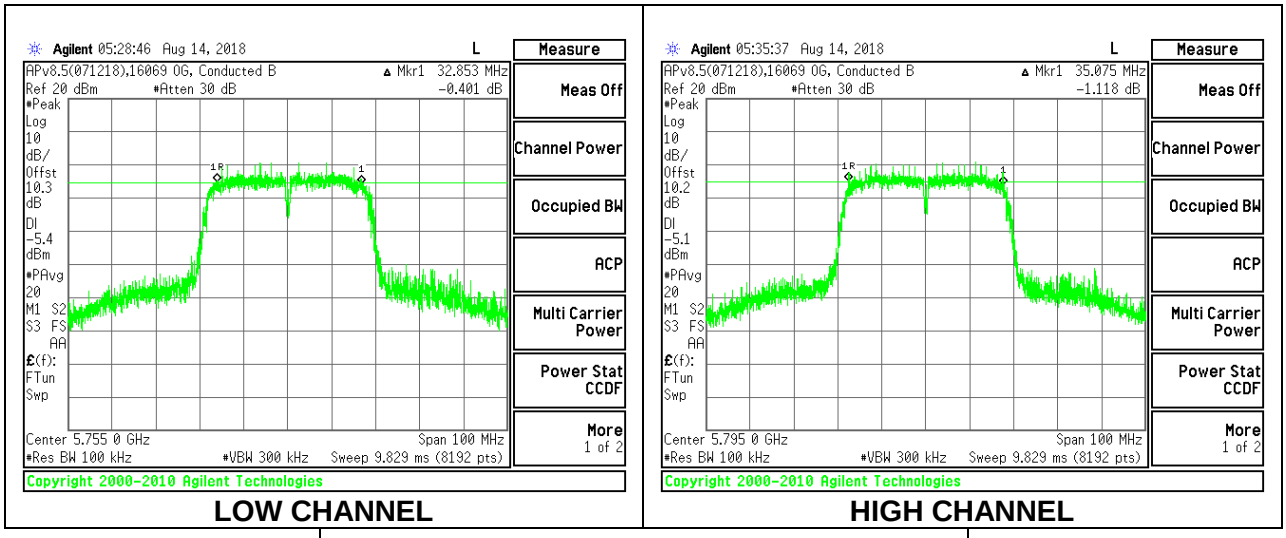
HIGH CHANNEL

CHANNEL 144

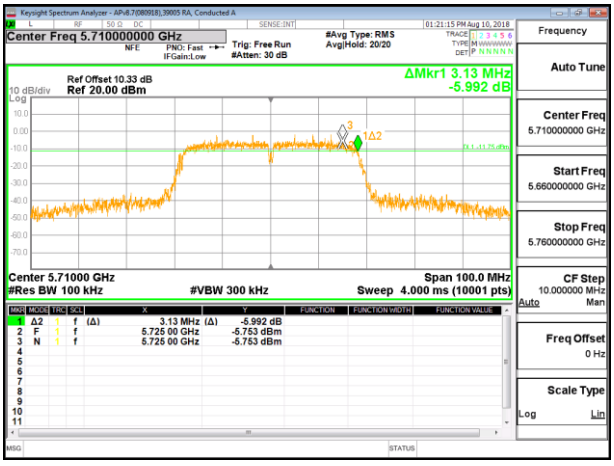
9.4.3. 802.11n HT40 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5755	32.8530	0.5
High	5795	35.0750	0.5
142	5710	3.1300	0.5



LOW CHANNEL **HIGH CHANNEL**

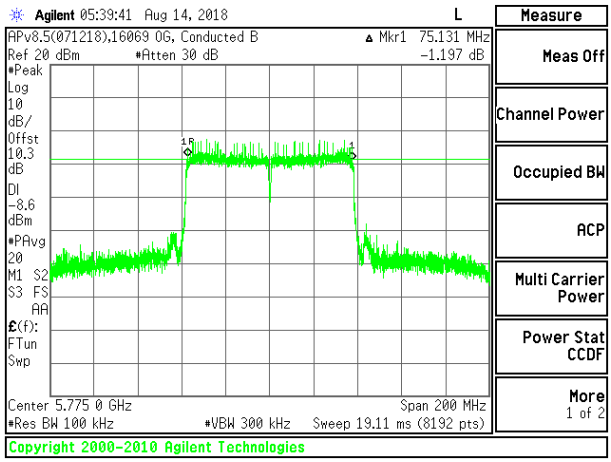


CHANNEL 142

9.4.4. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Mid	5775	75.1310	0.5
138	5690	3.2200	0.5



MID CHANNEL

CHANNEL 138

9.5. OUTPUT POWER AND PSD

LIMITS

FCC §15.407

Band 5.15–5.25 GHz

(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. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. 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.

(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.

Bands 5.25-5.35 GHz and 5.47-5.725 GHz

The maximum conducted output power over the frequency bands 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 megahertz. 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.

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Band 5.725-5.85 GHz

The maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information.

TEST PROCEDURE

The measurement method used for output power is KDB 789033 D02 v02r01, Section E.3.b (Method PM-G) and for straddles channels KDB 789033 D02 v02r01, Section E.2.b (Method SA-1) was used.

The measurement method used for power spectral density is KDB 789033 D02 v02r01, Section F

DIRECTIONAL ANTENNA GAIN

For 1 TX:
There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

9.5.1. 802.11a MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5180	-6.90	24.00	11.00
Mid	5200	-6.90	24.00	11.00
High	5240	-6.90	24.00	11.00

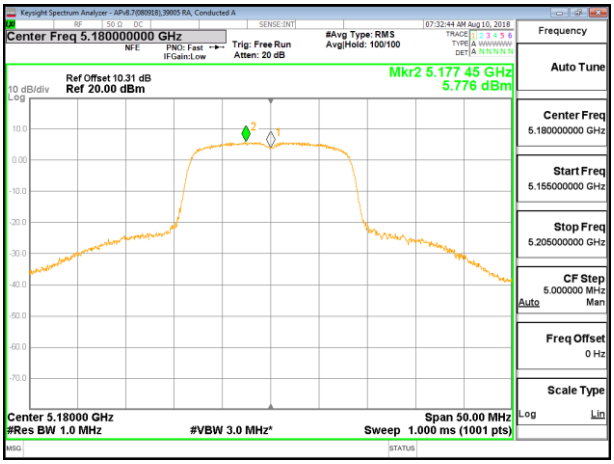
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

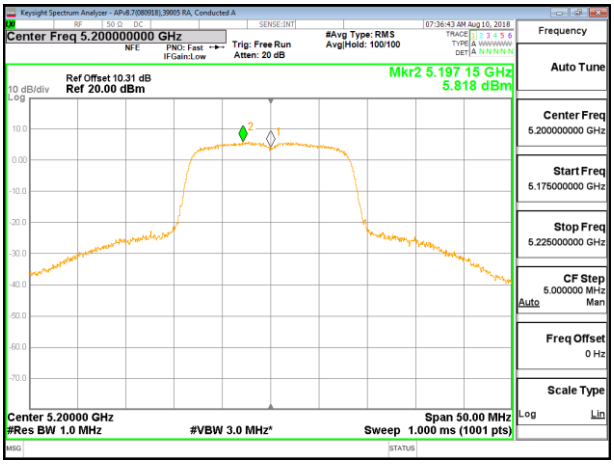
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	15.40	15.40	24.00	-8.60
Mid	5200	15.28	15.28	24.00	-8.72
High	5240	15.62	15.62	24.00	-8.38

PSD Results

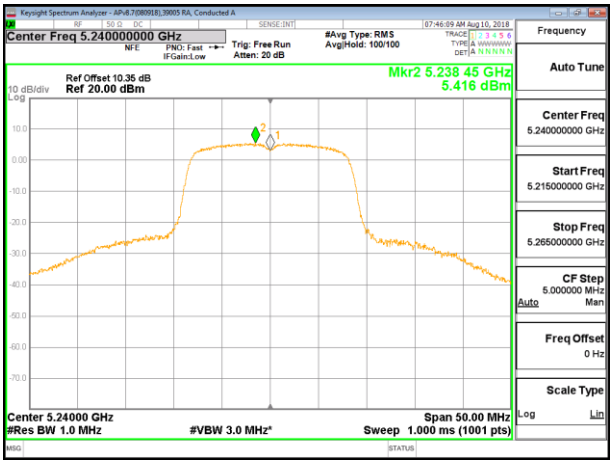
Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	5.776	5.78	11.00	-5.22
Mid	5200	5.818	5.82	11.00	-5.18
High	5240	5.416	5.42	11.00	-5.58



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.5.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5180	-6.90	24.00	11.00
Mid	5200	-6.90	24.00	11.00
High	5240	-6.90	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	15.33	15.33	24.00	-8.67
Mid	5200	15.31	15.31	24.00	-8.69
High	5240	15.68	15.68	24.00	-8.32

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	5.289	5.29	11.00	-5.71
Mid	5200	5.145	5.15	11.00	-5.86
High	5240	5.410	5.41	11.00	-5.59

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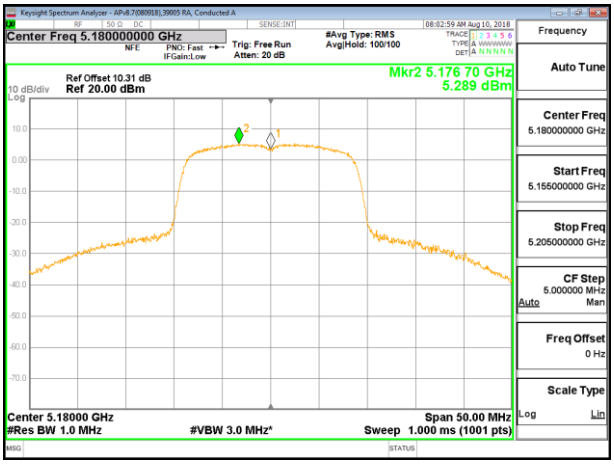
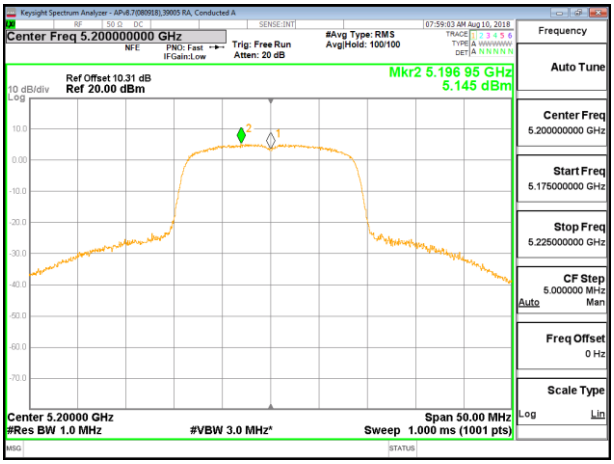
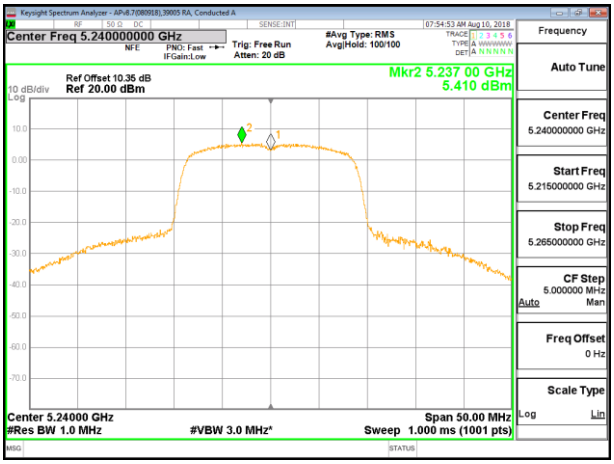


LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.5.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5190	-6.90	24.00	11.00
High	5230	-6.90	24.00	11.00

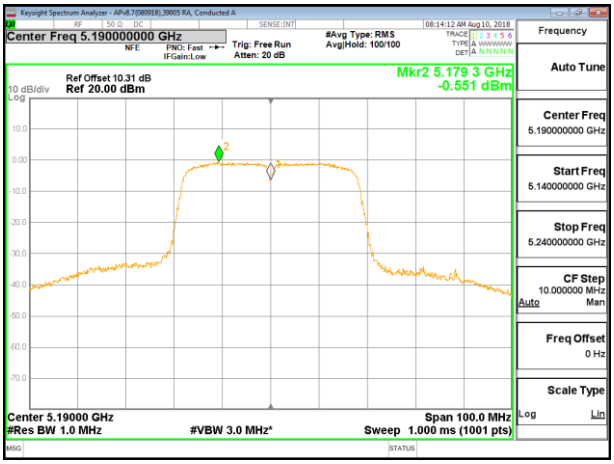
Duty Cycle CF (dB)	0.17	Included in Calculations of Corr'd Power & PSD

Output Power Results

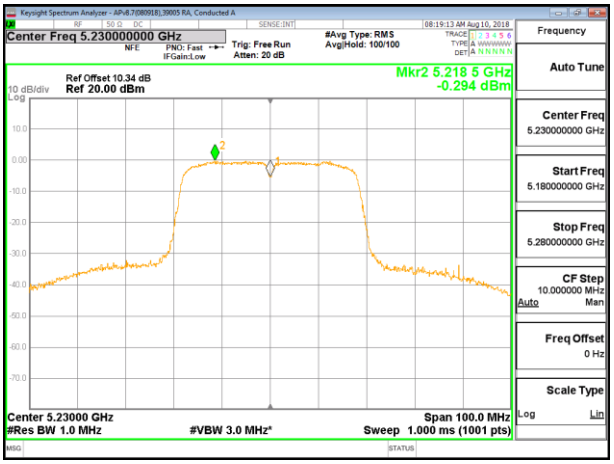
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	13.61	13.61	24.00	-10.39
High	5230	13.54	13.54	24.00	-10.46

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5190	-0.551	-0.38	11.00	-11.38
High	5230	-0.294	-0.12	11.00	-11.12



LOW CHANNEL



HIGH CHANNEL

9.5.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Mid	5210	-6.90	24.00	11.00

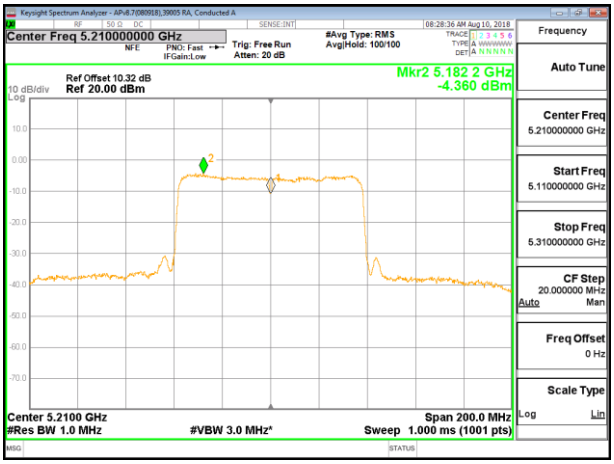
Duty Cycle CF (dB)	0.33	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	9.47	9.47	24.00	-14.53

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Mid	5210	-4.360	-4.03	11.00	-15.03



MID CHANNEL

9.5.5. 802.11a MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5260	29.55	-6.90	24.00	11.00
Mid	5300	26.00	-6.90	24.00	11.00
High	5320	27.25	-6.90	24.00	11.00

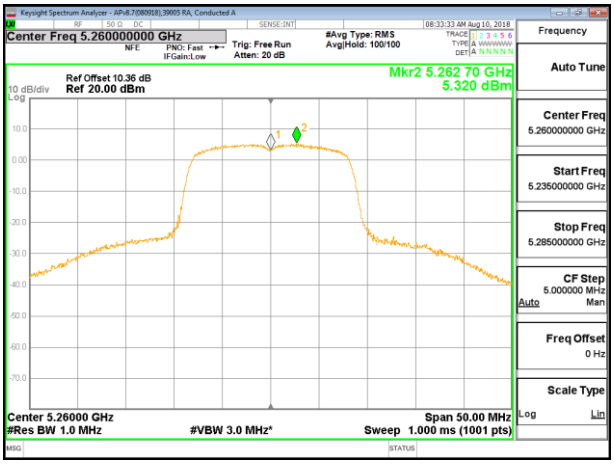
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

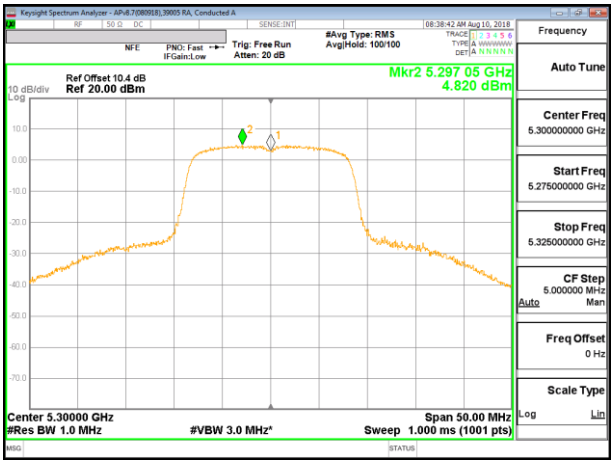
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	14.88	14.88	24.00	-9.12
Mid	5300	14.95	14.95	24.00	-9.05
High	5320	14.87	14.87	24.00	-9.13

PSD Results

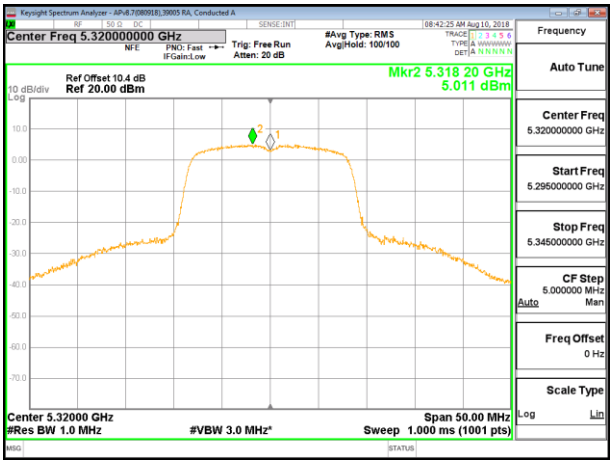
Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5260	5.320	5.32	11.00	-5.68
Mid	5300	4.820	4.82	11.00	-6.18
High	5320	5.011	5.01	11.00	-5.99



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.5.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5260	33.85	-6.90	24.00	11.00
Mid	5300	32.65	-6.90	24.00	11.00
High	5320	31.65	-6.90	24.00	11.00

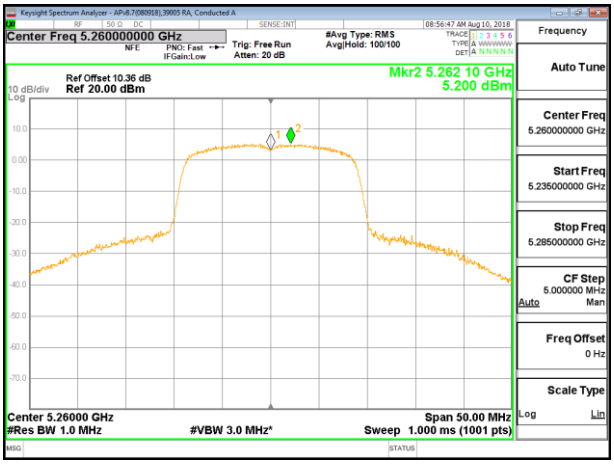
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

Output Power Results

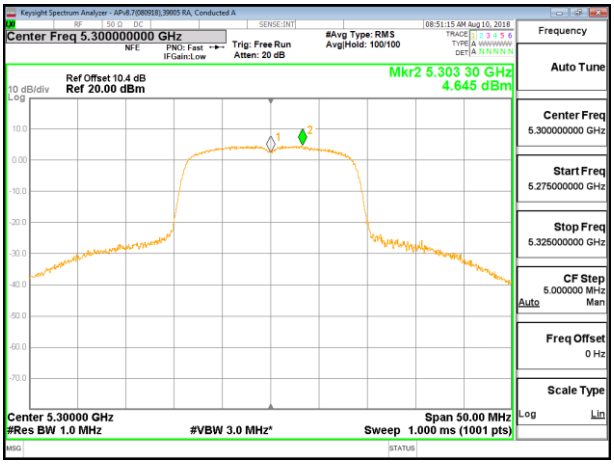
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	14.76	14.76	24.00	-9.24
Mid	5300	14.79	14.79	24.00	-9.21
High	5320	14.69	14.69	24.00	-9.31

PSD Results

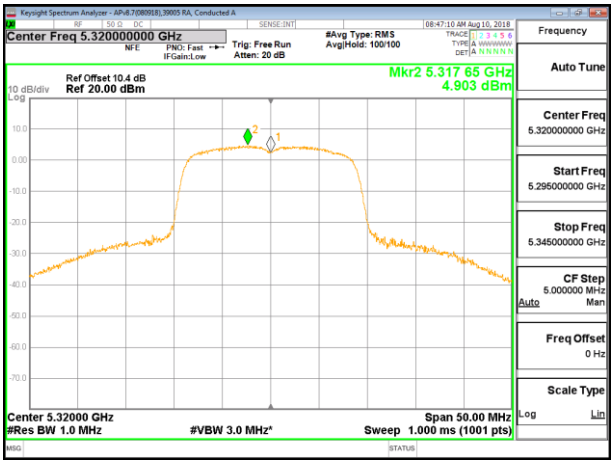
Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5260	5.200	5.20	11.00	-5.80
Mid	5300	4.645	4.65	11.00	-6.36
High	5320	4.903	4.90	11.00	-6.10



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.5.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5270	61.30	-6.90	24.00	11.00
High	5310	73.90	-6.90	24.00	11.00

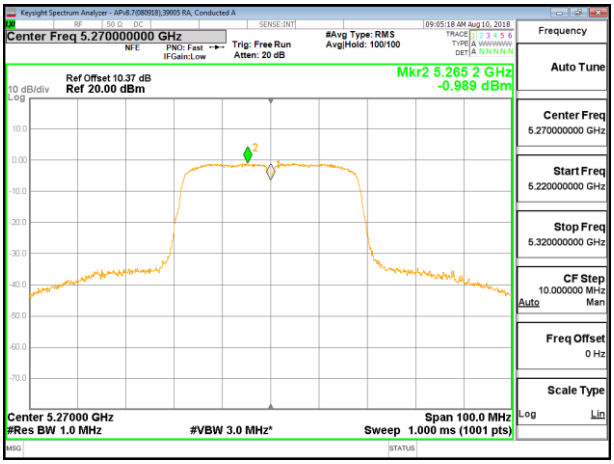
Duty Cycle CF (dB)	0.17	Included in Calculations of Corr'd PSD

Output Power Results

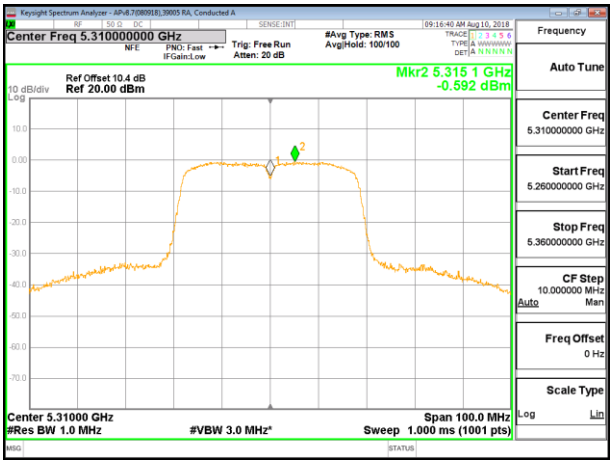
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	13.75	13.75	24.00	-10.25
High	5310	13.86	13.86	24.00	-10.14

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5270	-0.989	-0.82	11.00	-11.82
High	5310	-0.592	-0.42	11.00	-11.42



LOW CHANNEL



HIGH CHANNEL

9.5.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Mid	5290	122.40	-6.90	24.00	11.00

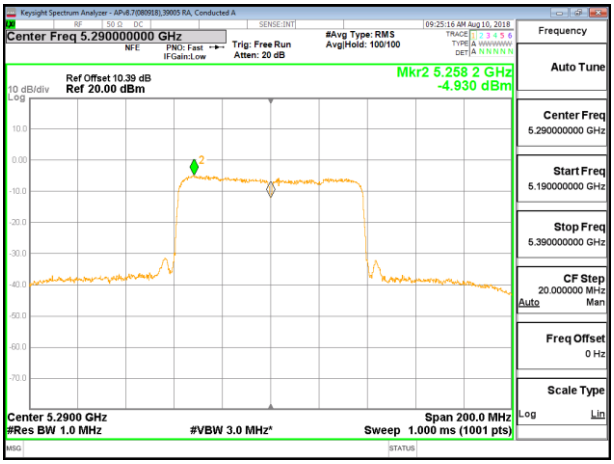
Duty Cycle CF (dB)	0.33	Included in Calculations of Corr'd PSD

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	12.62	12.62	24.00	-11.38

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Mid	5290	-4.930	-4.60	11.00	-15.60



MID CHANNEL

9.5.9. 802.11a MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5500	26.35	-4.31	24.00	11.00
Mid	5580	25.80	-4.31	24.00	11.00
High	5700	25.85	-4.31	24.00	11.00
144	5720	17.18	-4.31	23.35	11.00

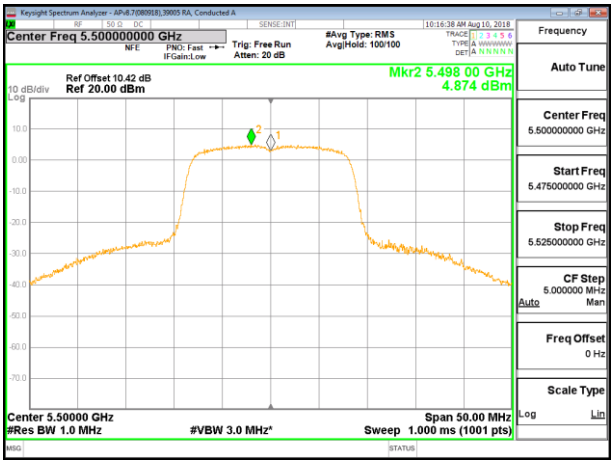
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD

Output Power Results

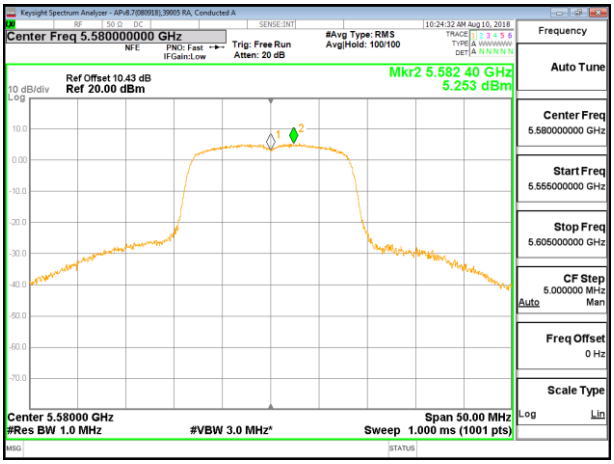
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	15.05	15.05	24.00	-8.95
Mid	5580	15.02	15.02	24.00	-8.98
High	5700	15.12	15.12	24.00	-8.88
144	5720	14.98	14.98	23.35	-8.37

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5500	4.874	4.87	11.00	-6.13
Mid	5580	5.253	5.25	11.00	-5.75
High	5700	4.962	4.96	11.00	-6.04
144	5720	3.690	3.69	11.00	-7.31



LOW CHANNEL



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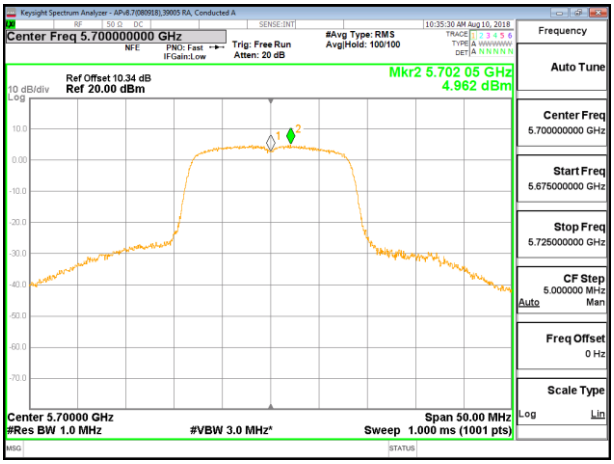
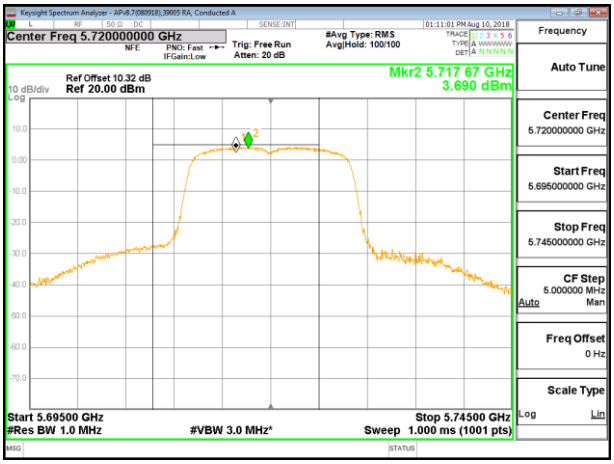


HIGH CHANNEL



CHANNEL 144

9.5.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5500	31.5	-4.31	24.00	11.00
Mid	5580	30.2	-4.31	24.00	11.00
High	5700	30.75	-4.31	24.00	11.00
144	5720	30.10	-4.31	24.00	11.00

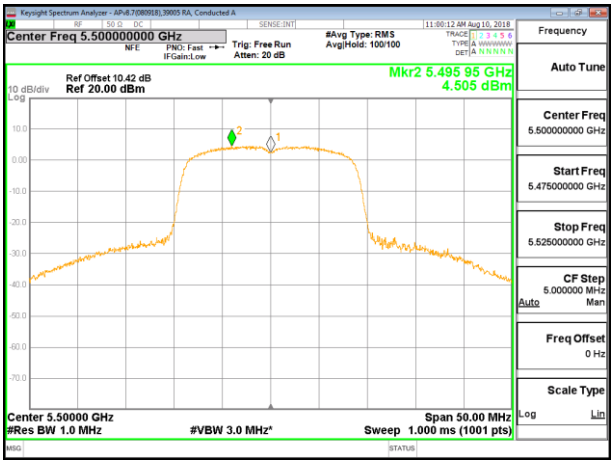
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD

Output Power Results

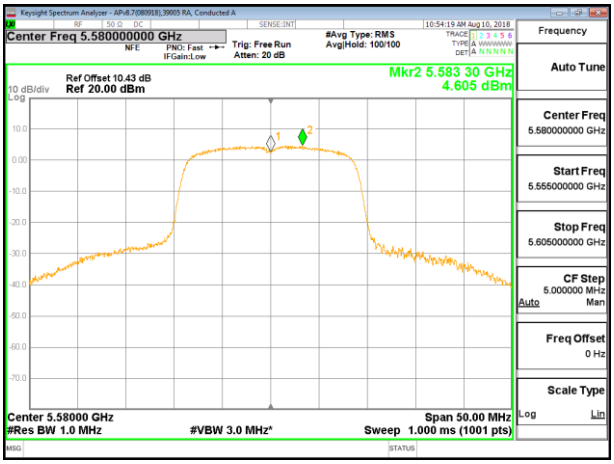
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	14.66	14.66	24.00	-9.34
Mid	5580	14.81	14.81	24.00	-9.19
High	5700	14.96	14.96	24.00	-9.04
144	5720	15.01	15.01	24.00	-8.99

PSD Results

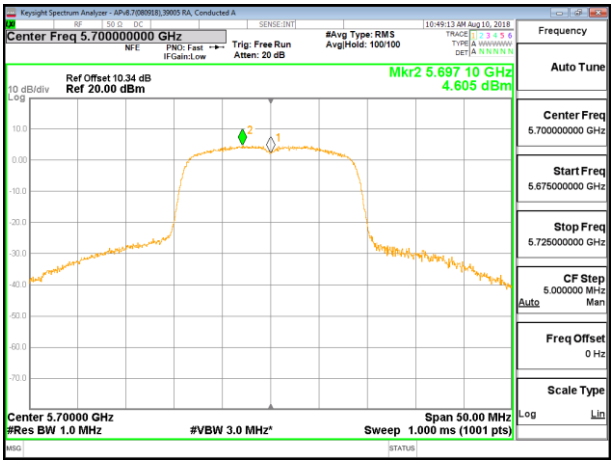
Channel	Frequency (MHz)	Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5500	4.505	4.51	11.00	-6.50
Mid	5580	4.605	4.61	11.00	-6.40
High	5700	4.605	4.61	11.00	-6.40
144	5720	3.637	3.64	11.00	-7.36



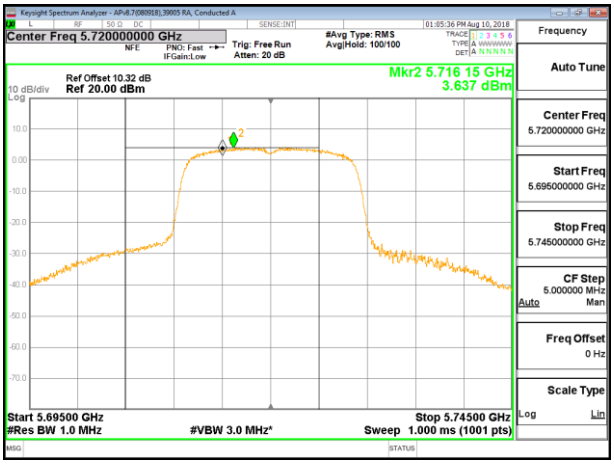
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



CHANNEL 144

9.5.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5510	61.8	-4.31	24.00	11.00
Mid	5550	61.2	-4.31	24.00	11.00
High	5670	60.8	-4.31	24.00	11.00
142	5710	44.20	-4.31	24.00	11.00

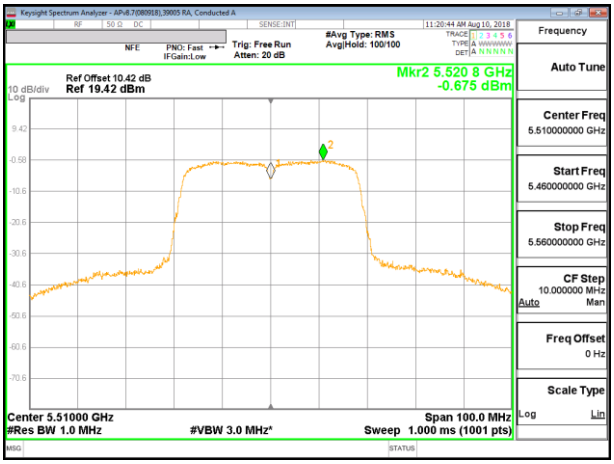
Duty Cycle CF (dB)	0.17	Included in Calculations of Corr'd Power & PSD

Output Power Results

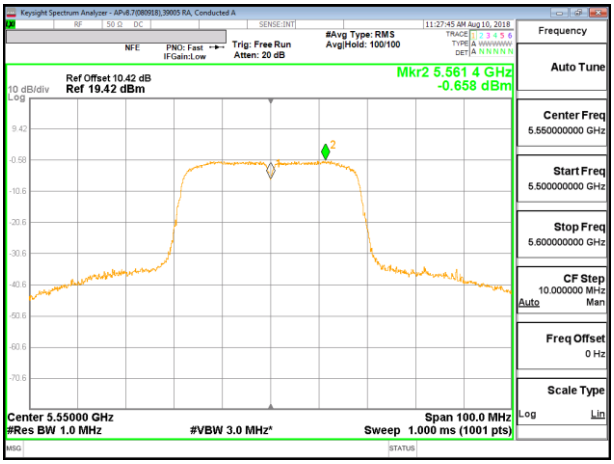
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	13.39	13.39	24.00	-10.61
Mid	5550	13.57	13.57	24.00	-10.43
High	5670	13.77	13.77	24.00	-10.23
142	5710	13.71	13.88	24.00	-10.12

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5510	-0.675	-0.51	11.00	-11.51
Mid	5550	-0.658	-0.49	11.00	-11.49
High	5670	-0.642	-0.47	11.00	-11.47
142	5710	-2.335	-2.17	11.00	-13.17



LOW CHANNEL



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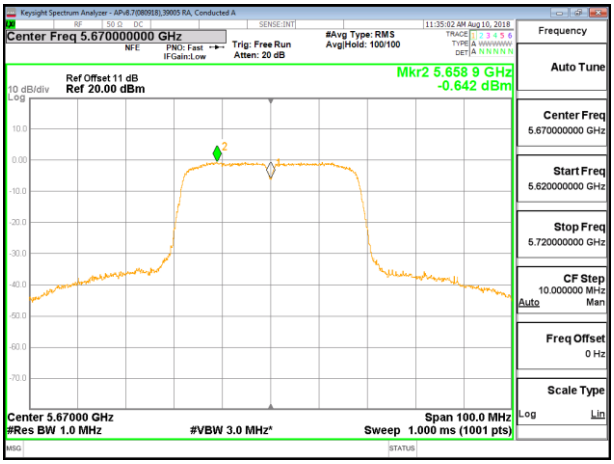
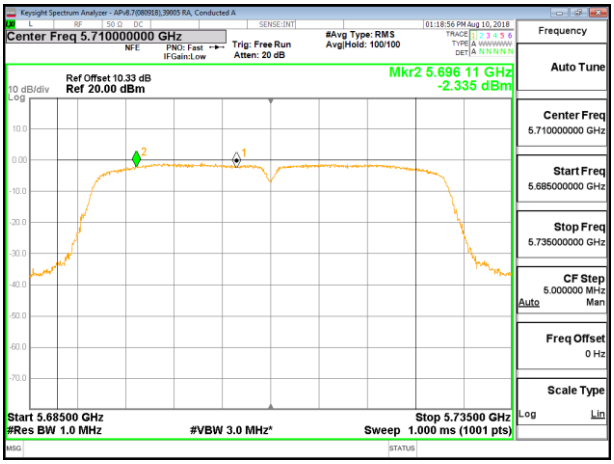


HIGH CHANNEL



CHANNEL 142

9.5.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5530	114.2	-4.31	24.00	11.00
High	5610	114.4	-4.31	24.00	11.00
138	5690	114.20	-4.31	24.00	11.00

Duty Cycle CF (dB)	0.33	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5530	12.86	12.86	24.00	-11.14
High	5610	12.91	12.91	24.00	-11.09
138	5690	12.94	13.27	24.00	-10.73

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5530	-4.484	-4.15	11.00	-15.15
High	5610	-4.816	-4.49	11.00	-15.49
138	5690	-7.018	-6.69	11.00	-17.69

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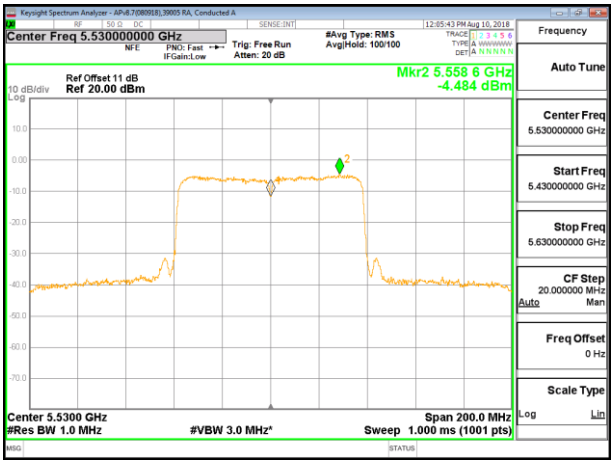
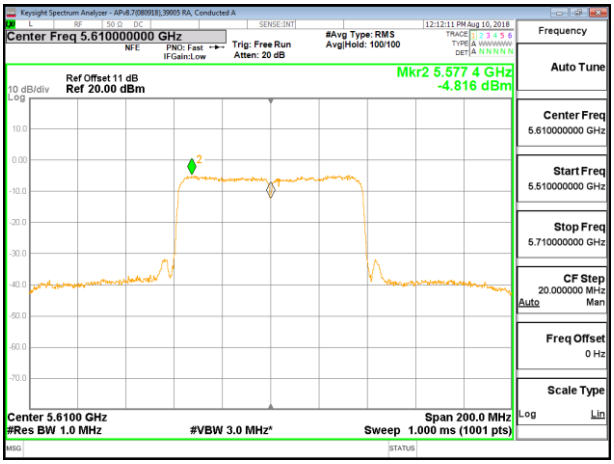


LOW CHANNEL



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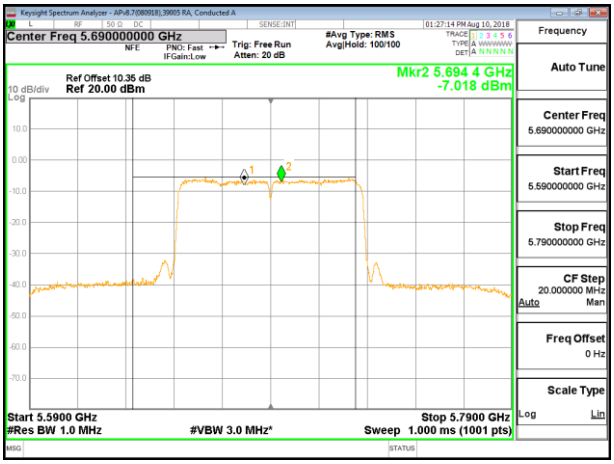

CHANNEL 138

9.5.13. 802.11a MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5745	-5.88	30.00	30.00
Mid	5785	-5.88	30.00	30.00
High	5825	-5.88	30.00	30.00

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

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	15.10	15.10	30.00	-14.90
Mid	5785	15.05	15.05	30.00	-14.95
High	5825	15.01	15.01	30.00	-14.99

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5745	3.797	3.797	30.00	-26.20
Mid	5785	3.453	3.453	30.00	-26.55
High	5825	3.820	3.820	30.00	-26.18

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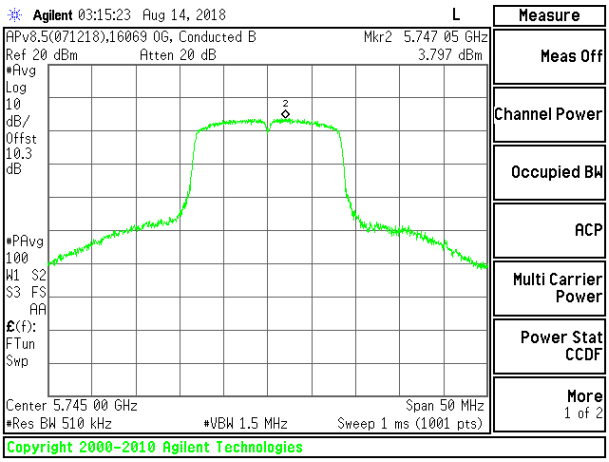
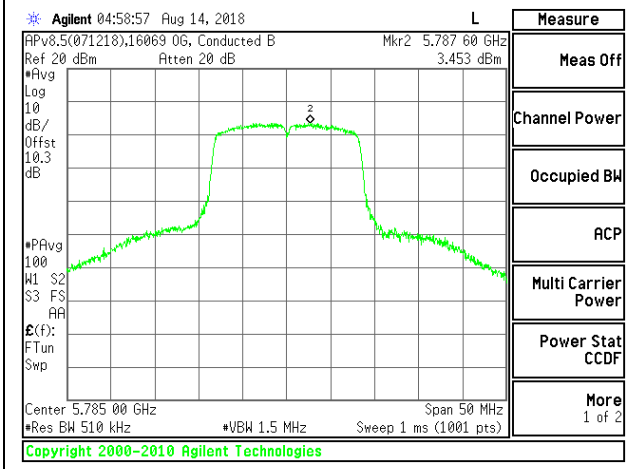
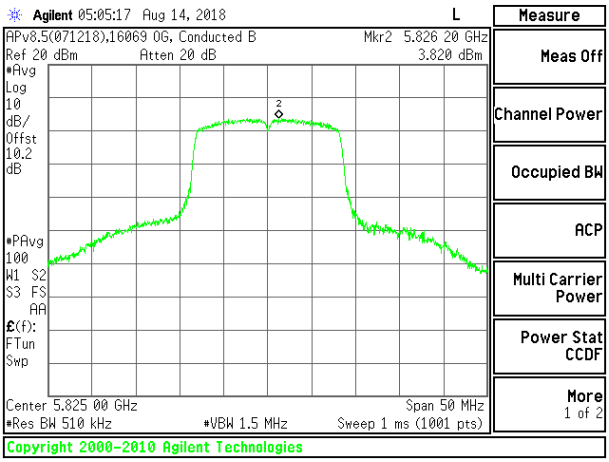


LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.5.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5745	-5.88	30.00	30.00
Mid	5785	-5.88	30.00	30.00
High	5825	-5.88	30.00	30.00

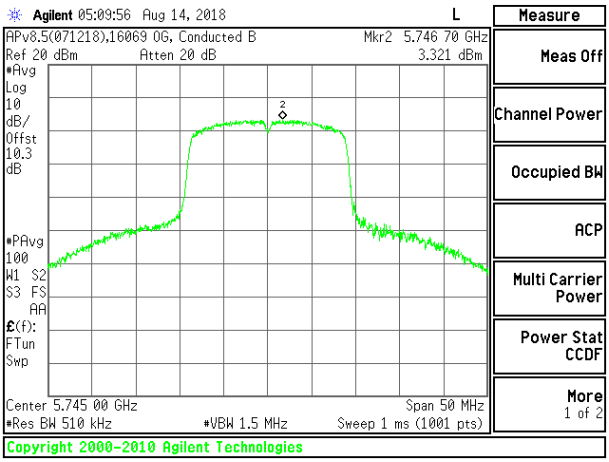
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD

Output Power Results

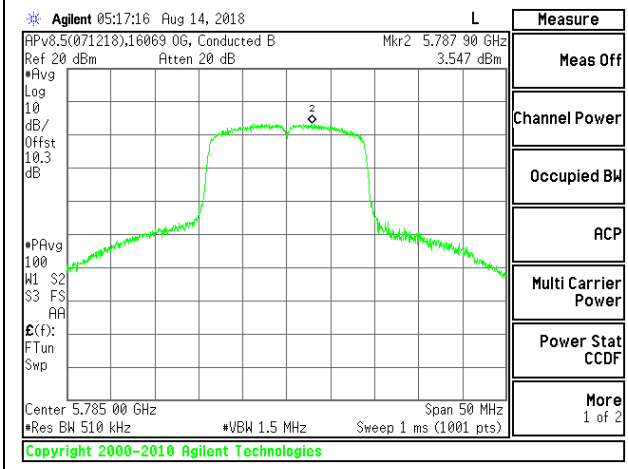
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	14.84	14.84	30.00	-15.16
Mid	5785	14.88	14.88	30.00	-15.12
High	5825	14.95	14.95	30.00	-15.05

PSD Results

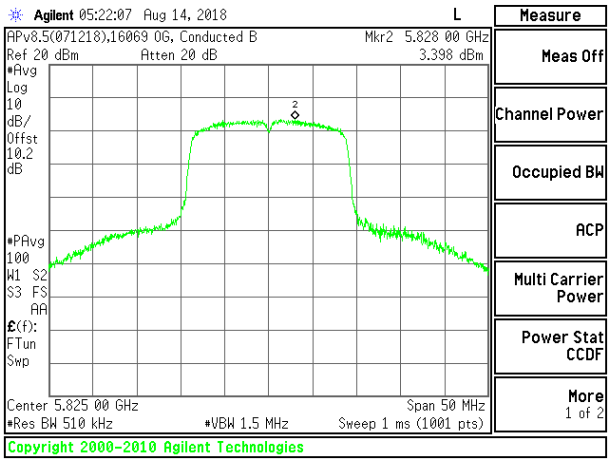
Channel	Frequency (MHz)	Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5745	3.321	3.321	30.00	-26.68
Mid	5785	3.547	3.547	30.00	-26.45
High	5825	3.398	3.398	30.00	-26.60



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.5.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5755	-5.88	30.00	30.00
High	5795	-5.88	30.00	30.00

Duty Cycle CF (dB)	0.17	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5755	13.44	13.44	30.00	-16.56
High	5795	13.57	13.57	30.00	-16.43

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5755	-1.614	-1.444	30.00	-31.44
High	5795	-1.729	-1.559	30.00	-31.56

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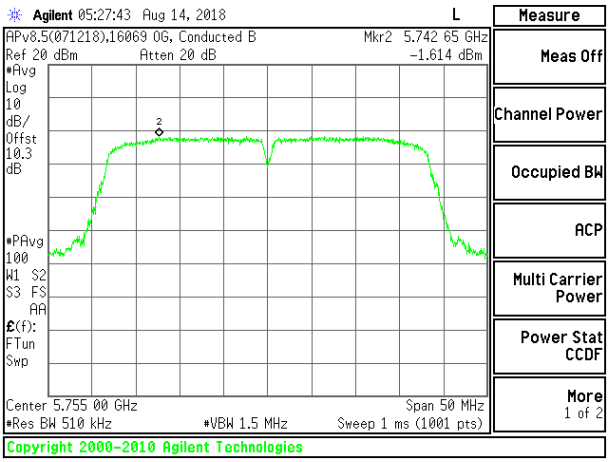
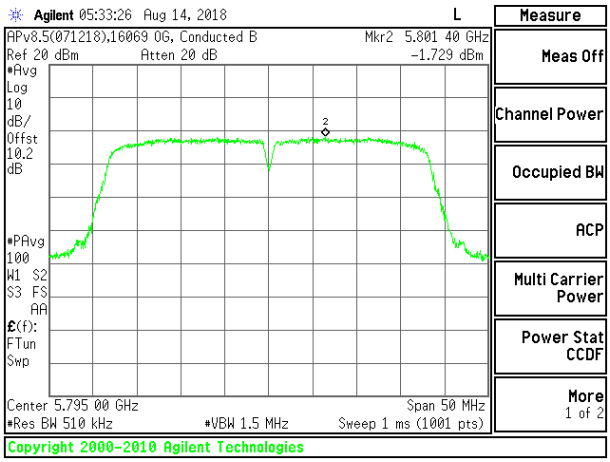


LOW CHANNEL



HIGH CHANNEL

9.5.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Mid	5775	-5.88	30.00	30.00

Duty Cycle CF (dB)	0.33	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5775	12.81	12.81	30.00	-17.19

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Mid	5775	-5.718	-5.388	30.00	-35.39

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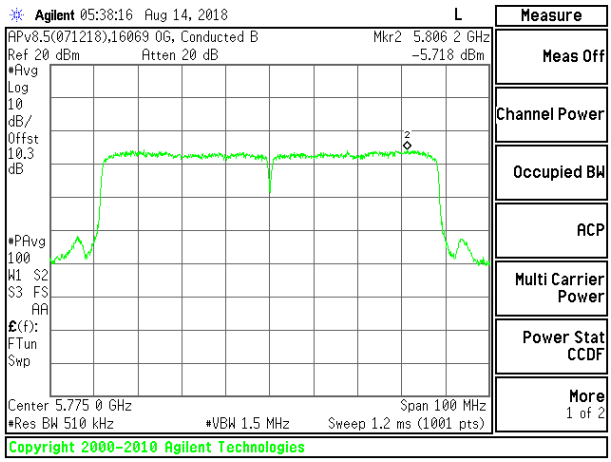

MID CHANNEL

10. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209 -Restriced bands

FCC §15.407(b)(1-3) -Un-Restriced bands

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 for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

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 pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

The spectrum from 30 MHz to 1GHz and 18GHz to 40 GHz is investigated with the transmitter set to transmit at the channel with highest output power as worst-case scenario. 1GHz to 18GHz was set to the lowest, middle, and highest channels in the 5 GHz bands.

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.

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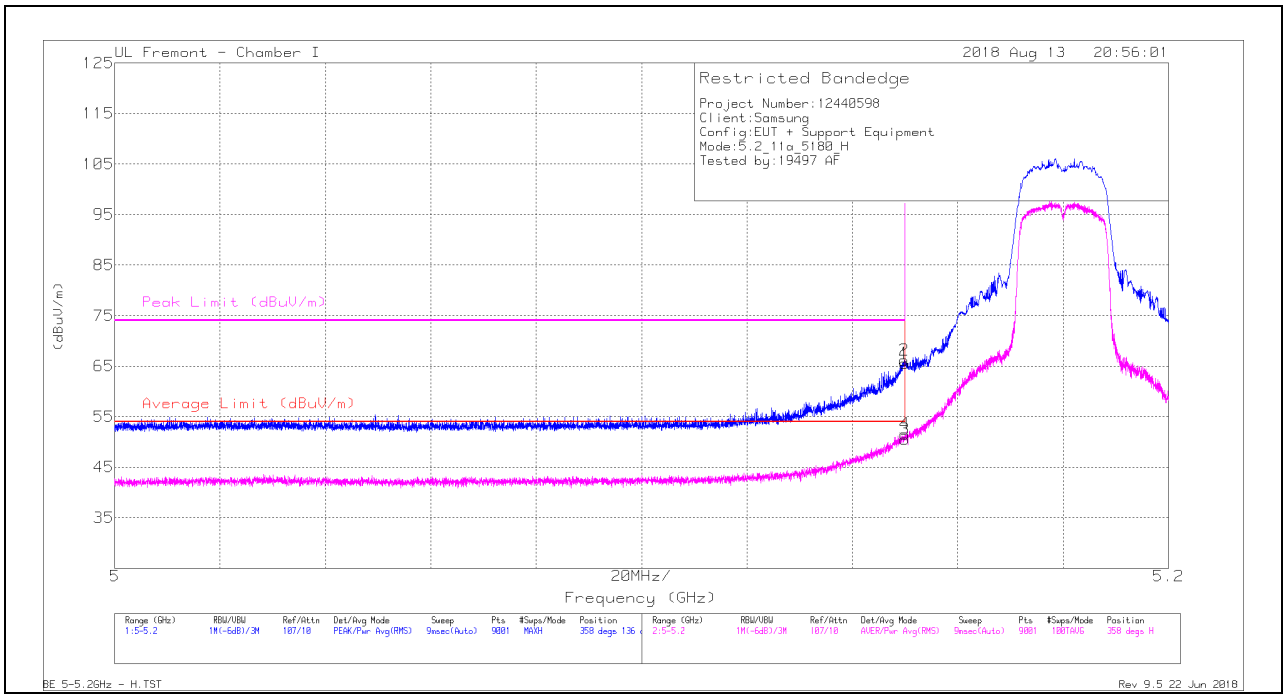
10.1. TRANSMITTER ABOVE 1 GHz

10.1.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

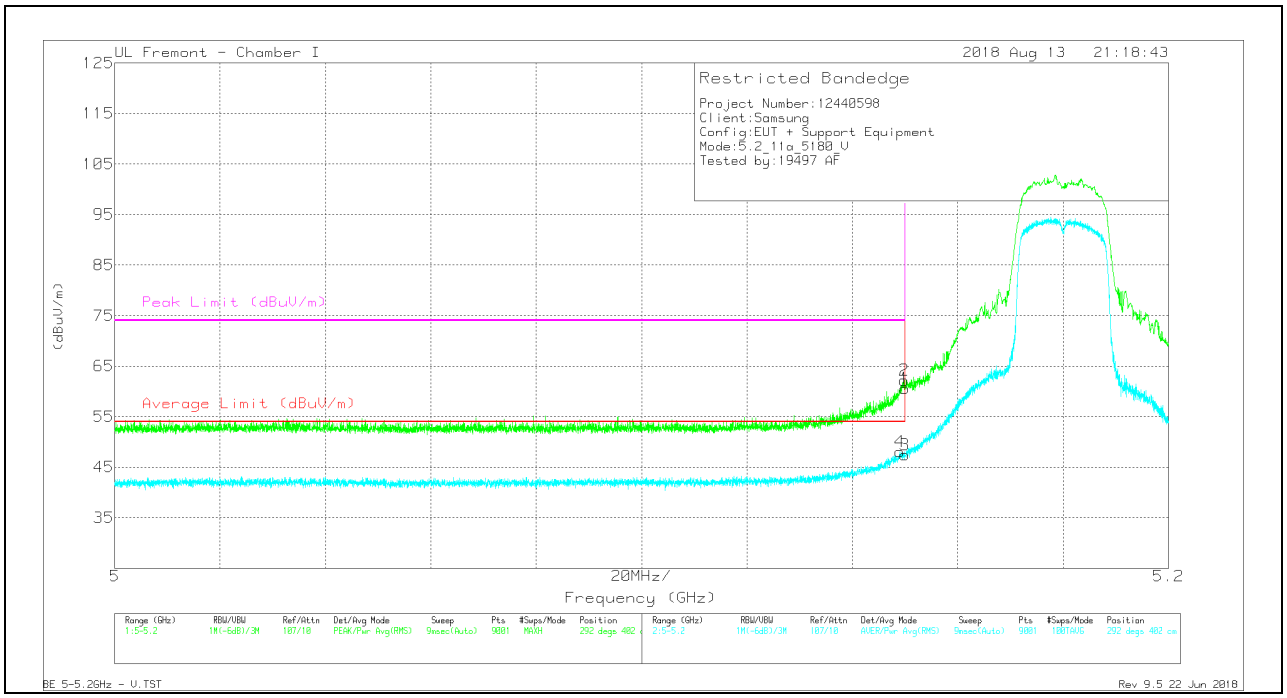


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	50.11	Pk	34.4	-19	0	65.51	-	-	74	-8.49	358	136	H
2	* 5.15	50.74	Pk	34.4	-19	0	66.14	-	-	74	-7.86	358	136	H
3	* 5.15	35.09	RMS	34.4	-19	0	50.49	54	-3.51	-	-	358	136	H
4	* 5.15	36.19	RMS	34.4	-19	0	51.59	54	-2.41	-	-	358	136	H

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	45.17	Pk	34.4	-19	60.57	-	-	74	-13.43	292	402	V
2	* 5.15	46.77	Pk	34.4	-19	62.17	-	-	74	-11.83	292	402	V
3	* 5.15	32.09	RMS	34.4	-19	47.49	54	-6.51	-	-	292	402	V
4	* 5.149	32.66	RMS	34.4	-19	48.06	54	-5.94	-	-	292	402	V

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

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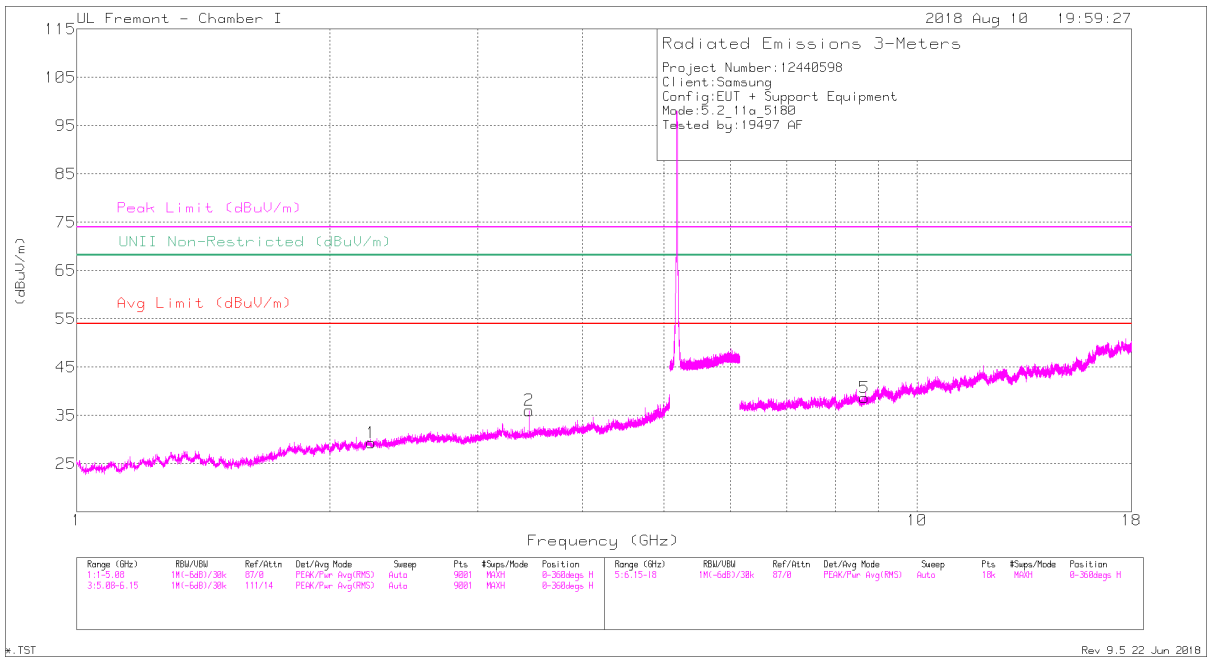
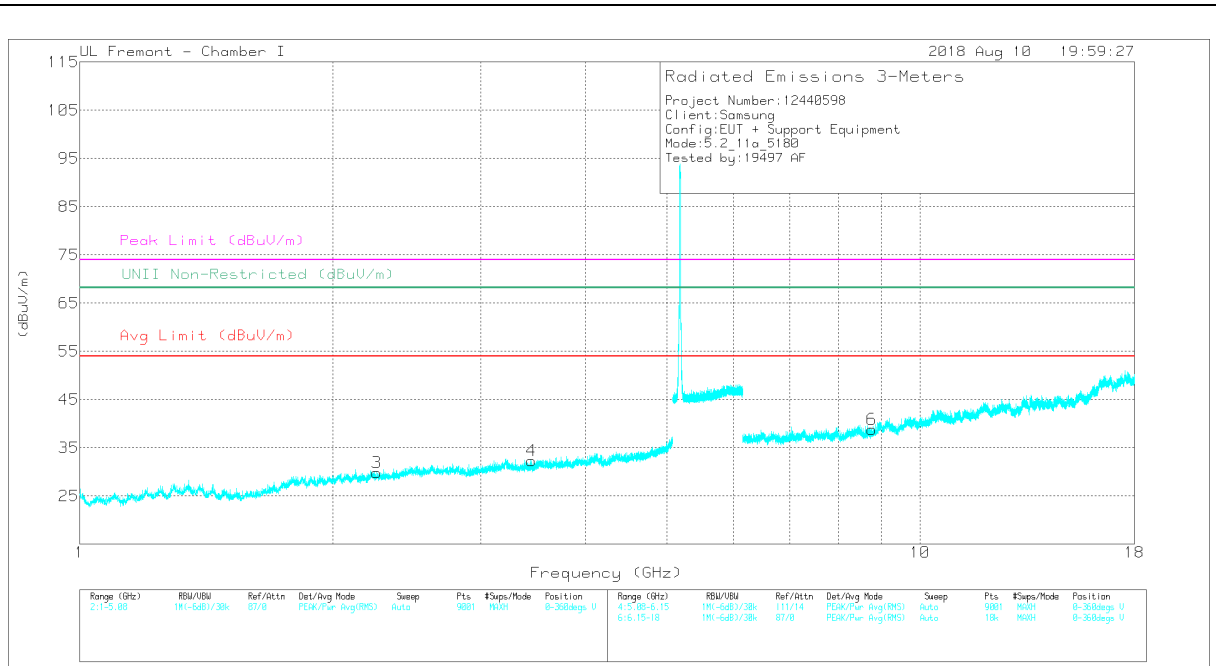
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.24	37.17	PK-U	31.5	-32	36.67	-	-	74	-37.33	-	-	353	169	H
	* 2.242	28	ADR	31.5	-32	27.5	54	-26.5	-	-	-	-	353	169	H
2	3.453	38.13	PK-U	32.7	-30.4	40.43	-	-	-	-	68.2	-27.77	4	203	H
3	* 2.259	36.96	PK-U	31.4	-31.8	36.56	-	-	74	-37.44	-	-	209	242	V
	* 2.258	27.74	ADR	31.4	-31.8	27.34	54	-26.66	-	-	-	-	209	242	V
4	3.448	36.01	PK-U	32.7	-30.3	38.41	-	-	-	-	68.2	-29.79	299	376	V
5	8.661	28.76	PK-U	35.9	-18.4	46.26	-	-	-	-	68.2	-21.94	302	350	H
6	8.766	28.54	PK-U	36	-18.9	45.64	-	-	-	-	68.2	-22.56	147	116	V

* - indicates frequency in CFR47 Pt 15 Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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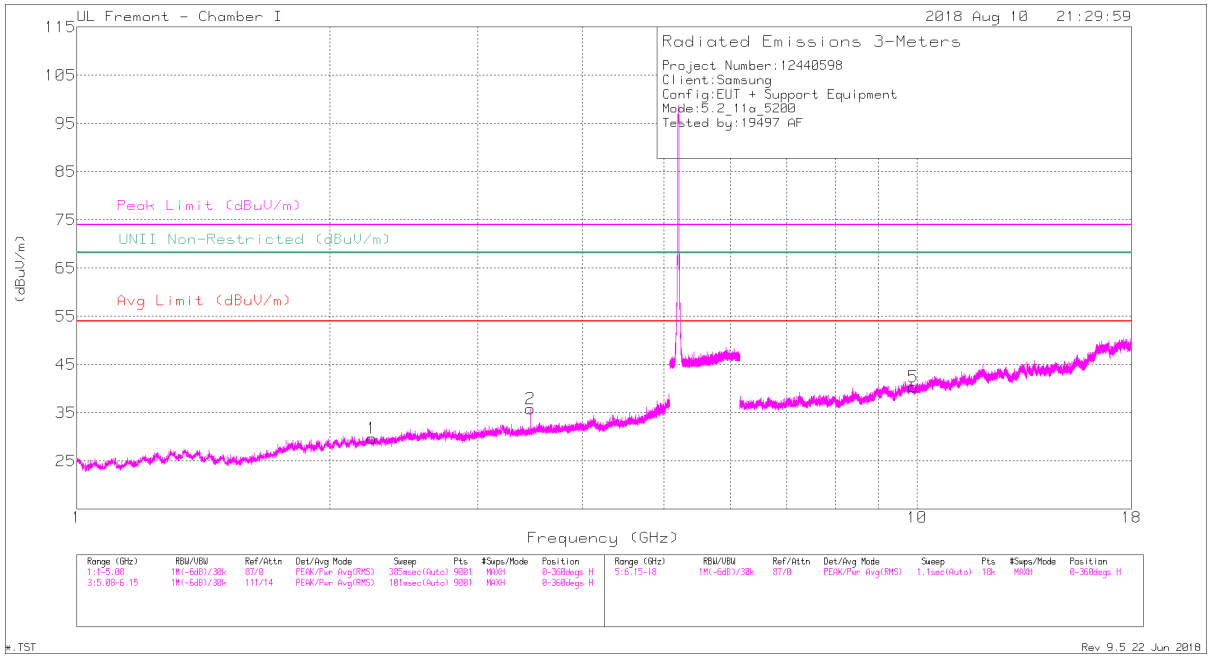
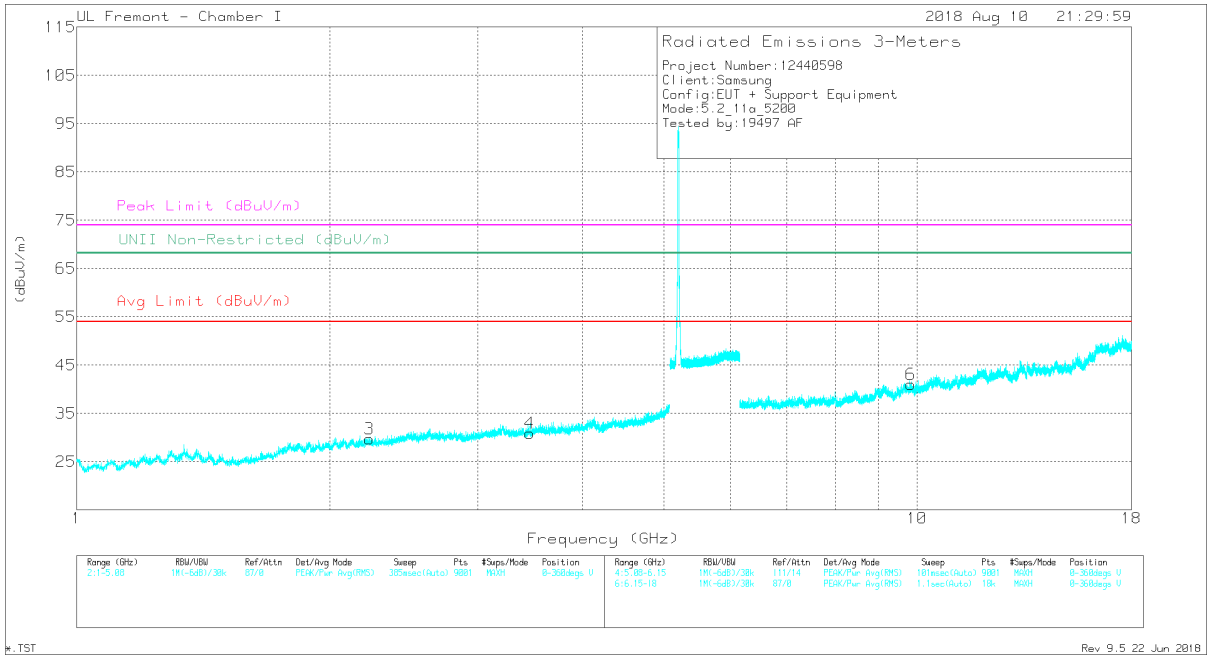
MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.245	37.32	PK-U	31.5	-32	36.82	-	-	74	-37.18	-	-	6	149	H
	* 2.245	27.41	ADR	31.5	-32	26.91	54	-27.09	-	-	-	-	6	149	H
2	3.467	38.83	PK-U	32.7	-30.6	40.93	-	-	-	-	68.2	-27.27	21	304	H
3	* 2.229	38.02	PK-U	31.5	-31.8	37.72	-	-	74	-36.28	-	-	6	258	V
	* 2.232	27.76	ADR	31.5	-31.9	27.36	54	-26.64	-	-	-	-	6	258	V
4	3.46	36.02	PK-U	32.7	-30.5	38.22	-	-	-	-	68.2	-29.98	201	336	V
5	9.899	28.02	PK-U	37	-17.6	47.42	-	-	-	-	68.2	-20.78	260	389	H
6	9.835	28.77	PK-U	37	-17	48.77	-	-	-	-	68.2	-19.43	111	343	V

* - indicates frequency in CFR47 Pt 15 Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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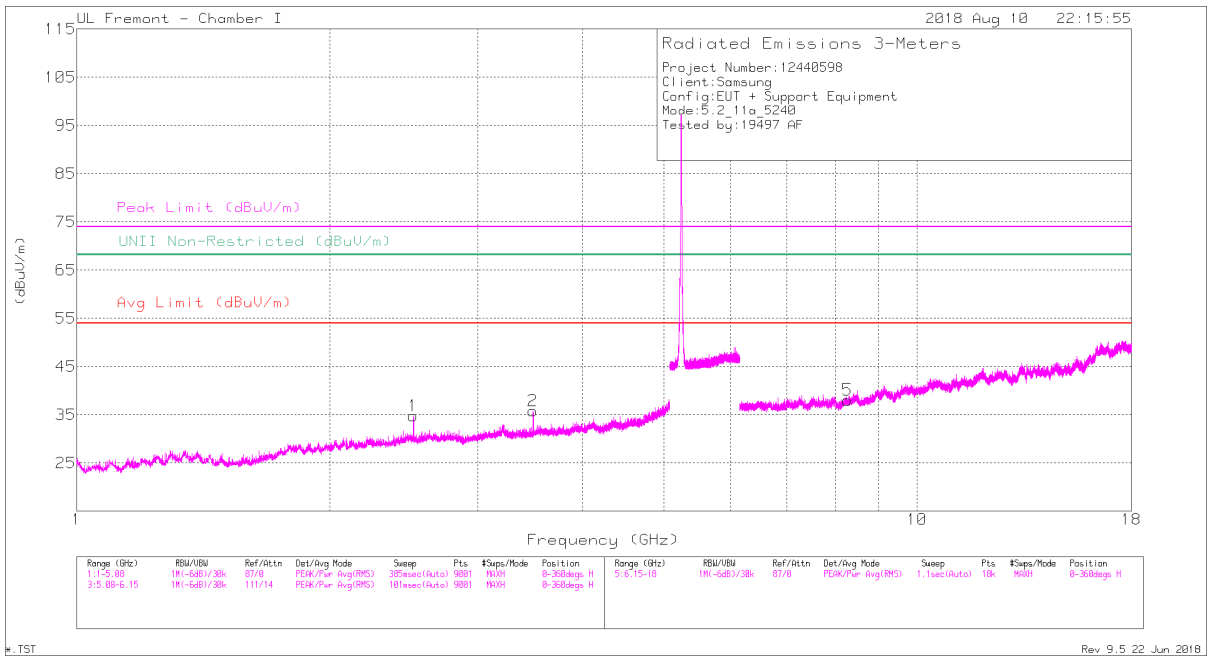
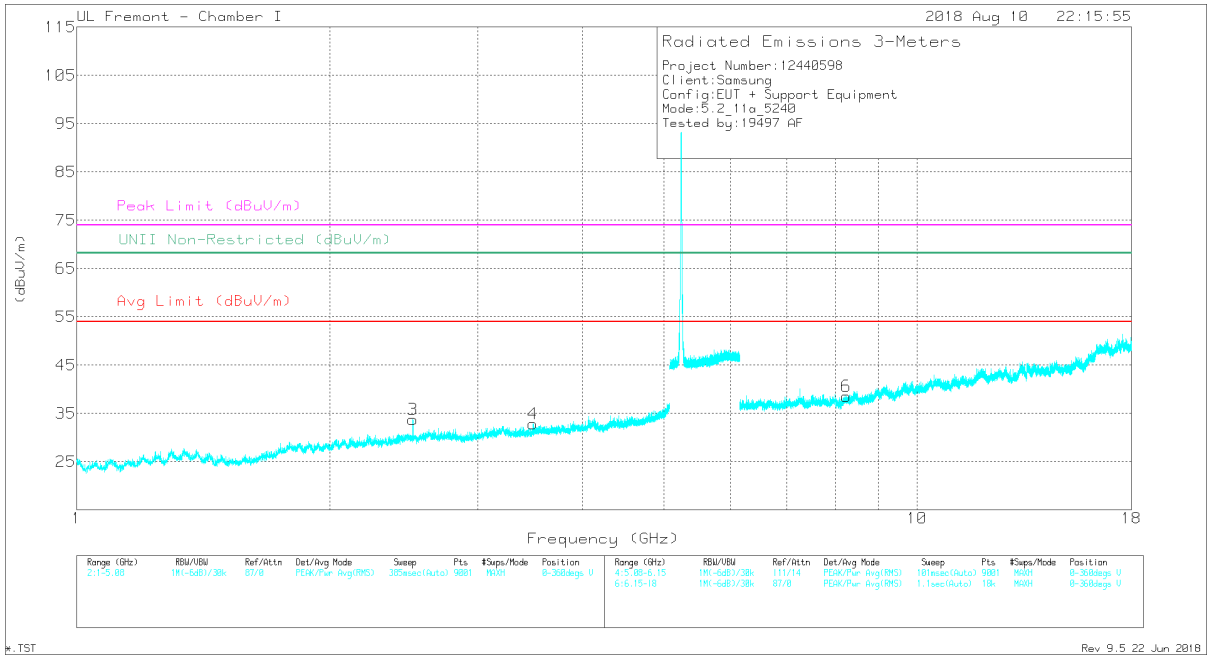
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.515	37.35	PK-U	32.4	-31.7	38.05	-	-	-	-	68.2	-30.15	299	250	H
2	3.493	39.27	PK-U	32.8	-30.3	41.77	-	-	-	-	68.2	-26.43	353	141	H
3	2.511	40.02	PK-U	32.4	-31.6	40.82	-	-	-	-	68.2	-27.38	0	297	V
4	3.493	36.19	PK-U	32.8	-30.3	38.69	-	-	-	-	68.2	-29.51	168	107	V
5	* 8.271	29.21	PK-U	35.8	-19.6	45.41	-	-	74	-28.59	-	-	87	153	H
	* 8.271	19.65	ADR	35.8	-19.6	35.85	54	-18.15	-	-	-	-	87	153	H
6	* 8.237	29.1	PK-U	35.7	-19.5	45.3	-	-	74	-28.7	-	-	189	260	V
	* 8.237	20.13	ADR	35.7	-19.5	36.33	54	-17.67	-	-	-	-	189	260	V

* - indicates frequency in CFR47 Pt 15 Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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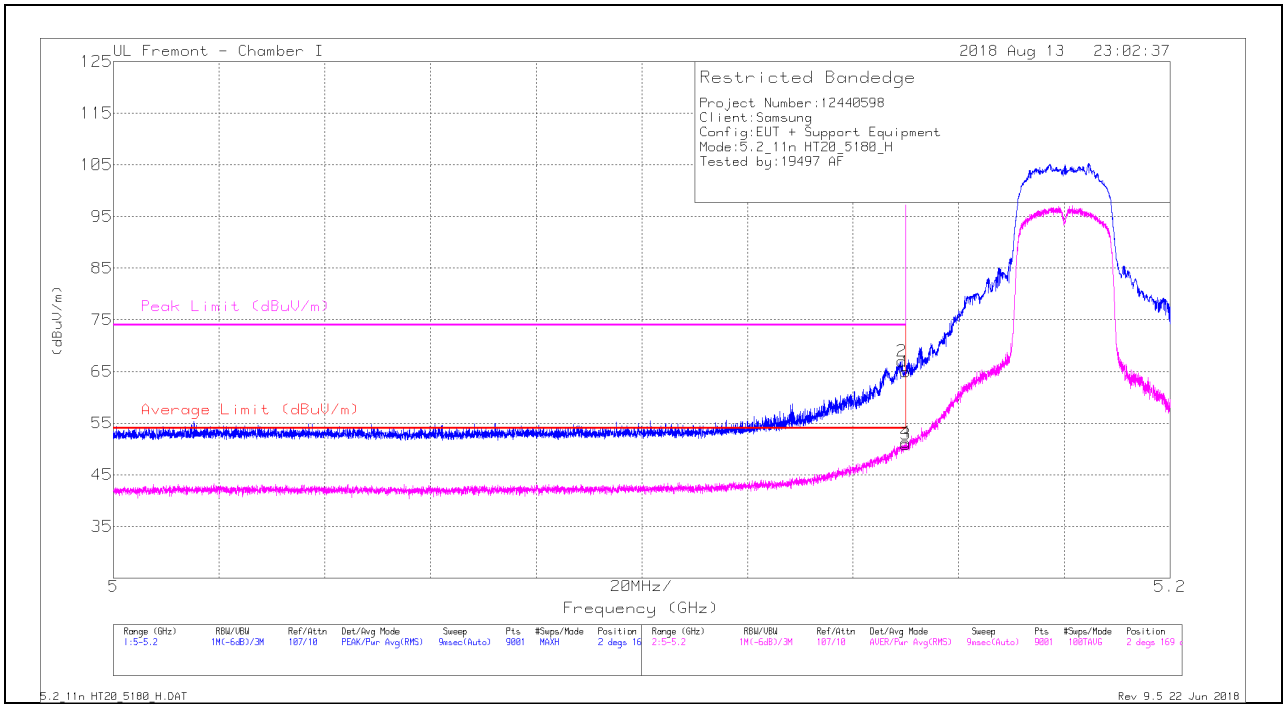
10.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	49.53	Pk	34.4	-19	0	64.93	-	-	74	-9.07	2	169	H
2	* 5.149	51.58	Pk	34.4	-19	0	66.98	-	-	74	-7.02	2	169	H
3	* 5.15	35.49	RMS	34.4	-19	0	50.89	54	-3.11	-	-	2	169	H
4	* 5.15	35.88	RMS	34.4	-19	0	51.28	54	-2.72	-	-	2	169	H

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection