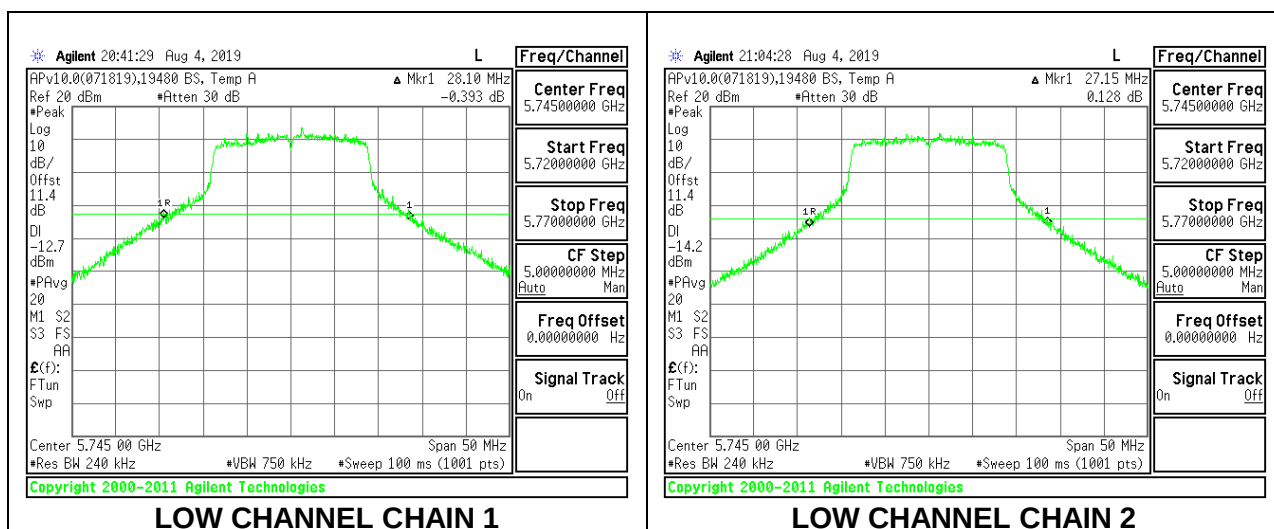


8.2.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

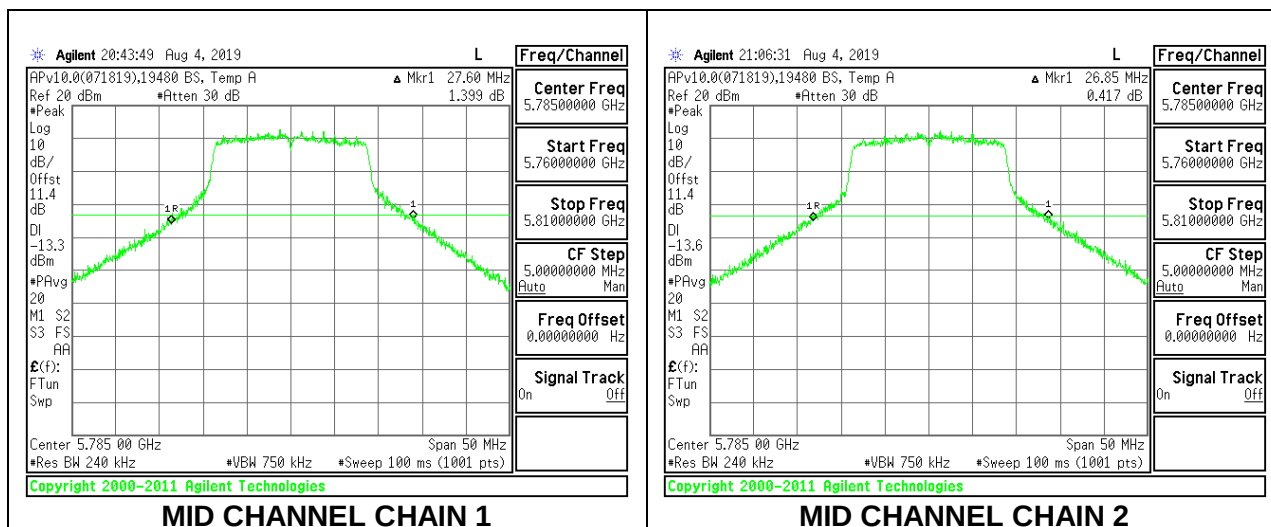
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 1 (MHz)	26 dB Bandwidth Chain 2 (MHz)
Low	5745	28.10	27.15
Mid	5785	27.60	26.85
High	5825	27.40	27.55

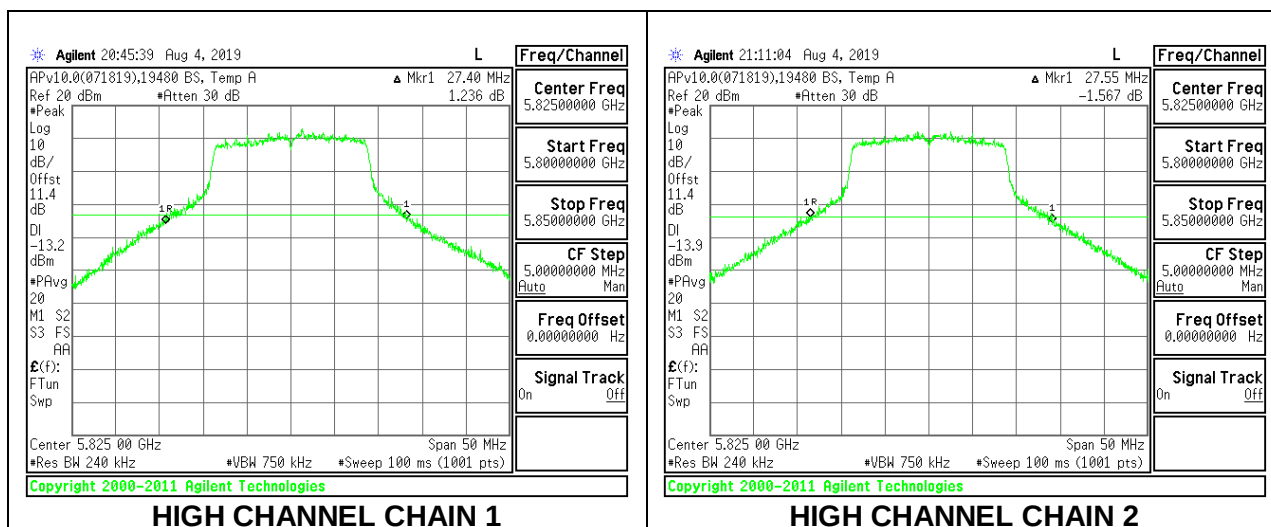
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

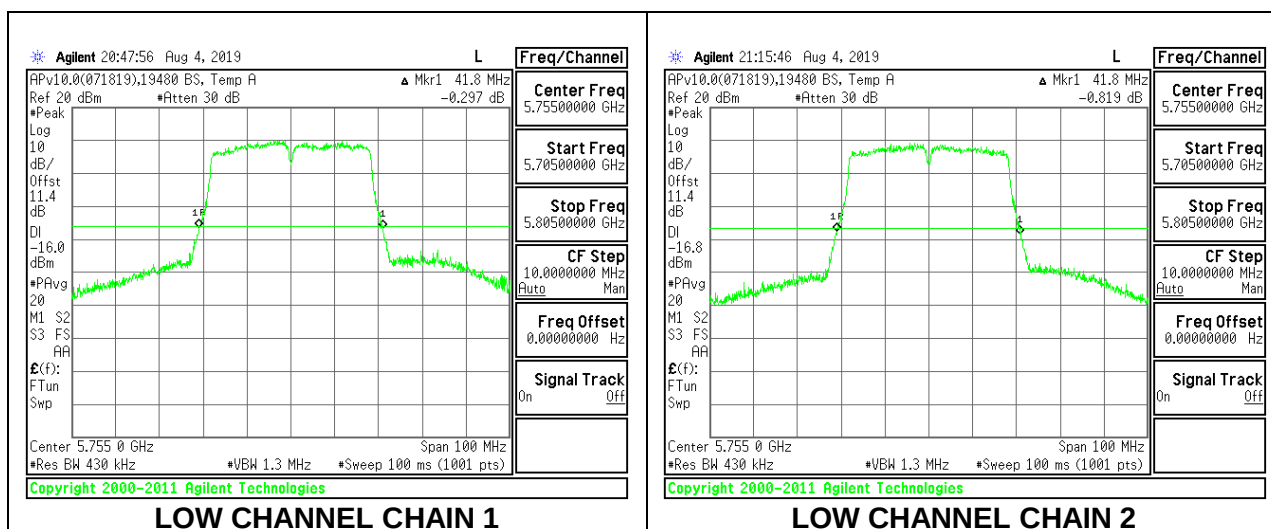


8.2.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND

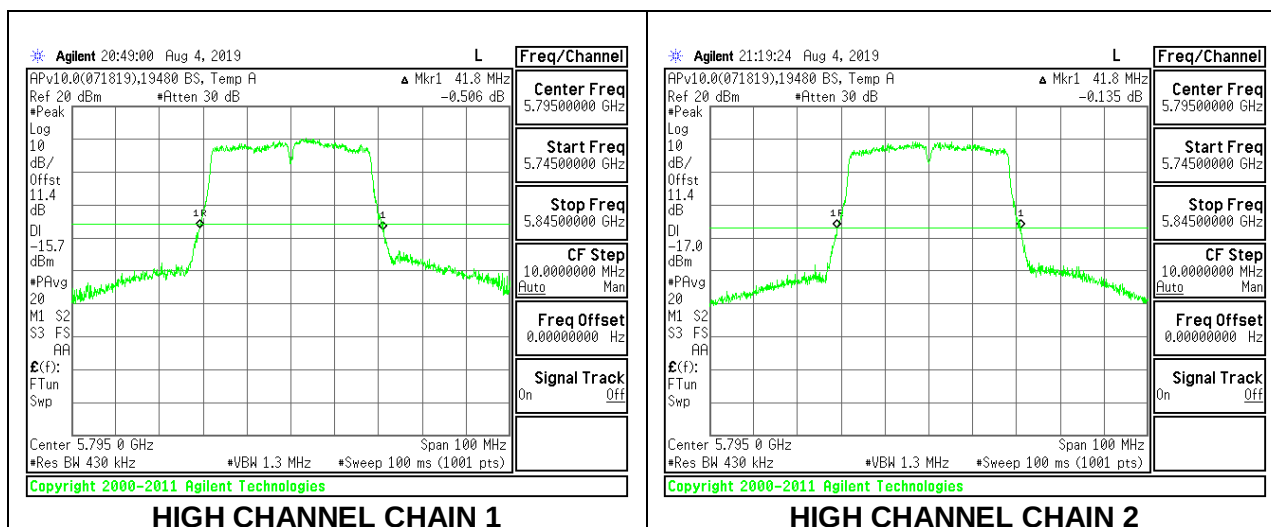
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 1 (MHz)	26 dB Bandwidth Chain 2 (MHz)
Low	5755	41.80	41.80
High	5795	41.80	41.80

LOW CHANNEL



HIGH CHANNEL

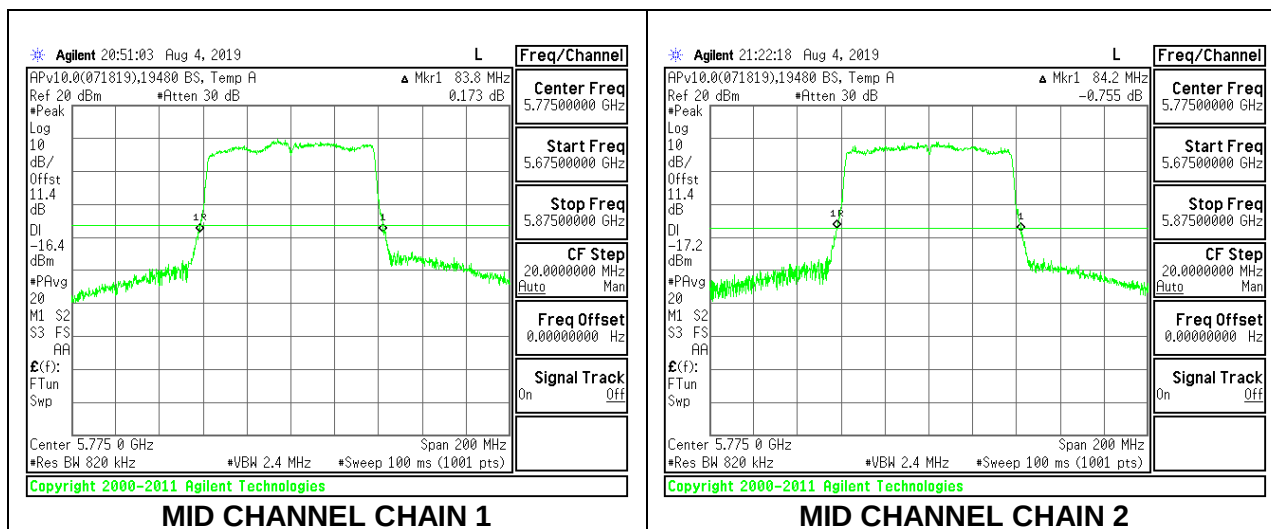


8.2.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 1 (MHz)	26 dB Bandwidth Chain 2 (MHz)
Mid	5775	83.80	84.20

MID CHANNEL



8.3. 99% BANDWIDTH

LIMITS

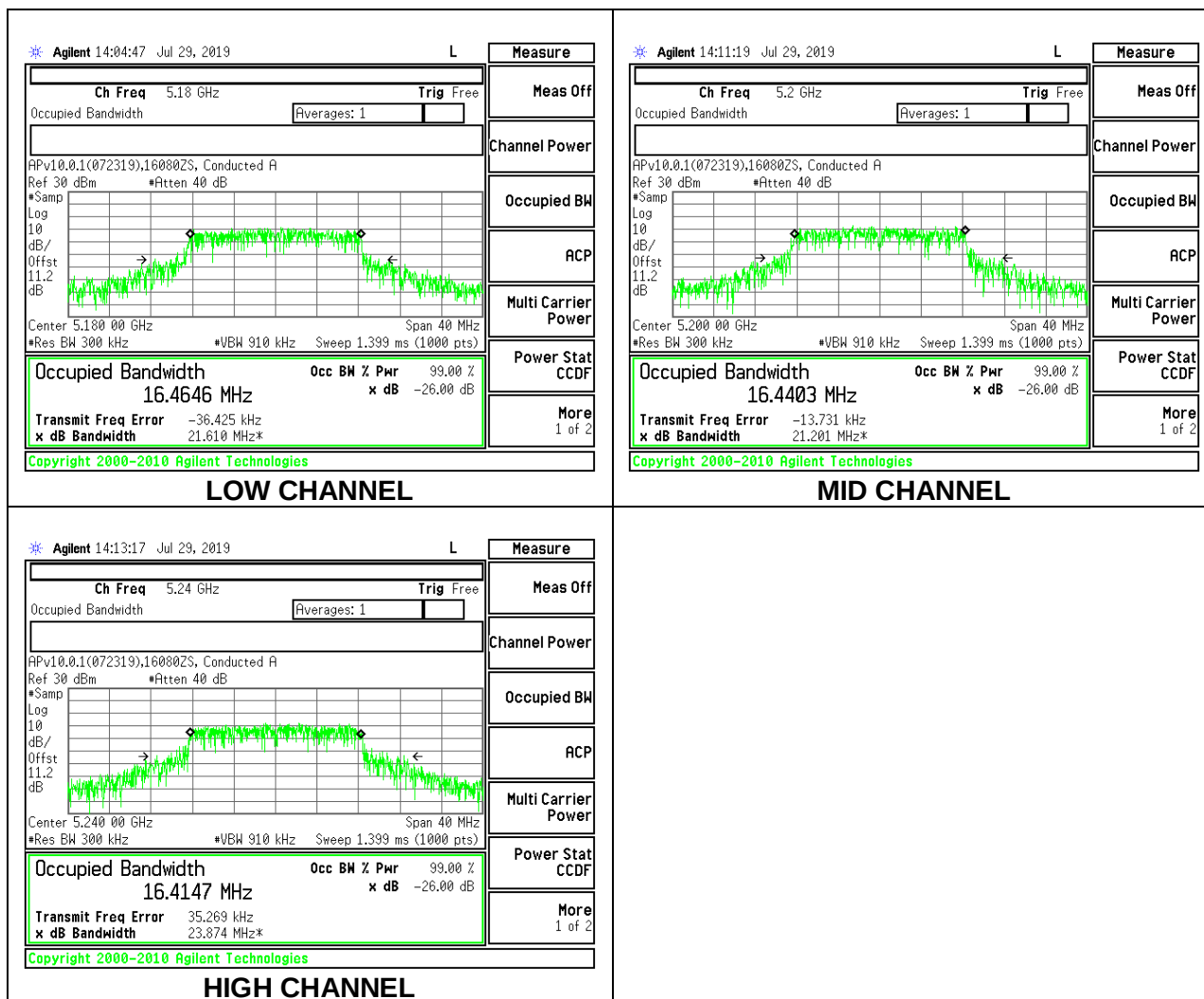
None; for reporting purposes only.

RESULTS

8.3.1. 802.11a MODE IN THE 5.2 GHz BAND

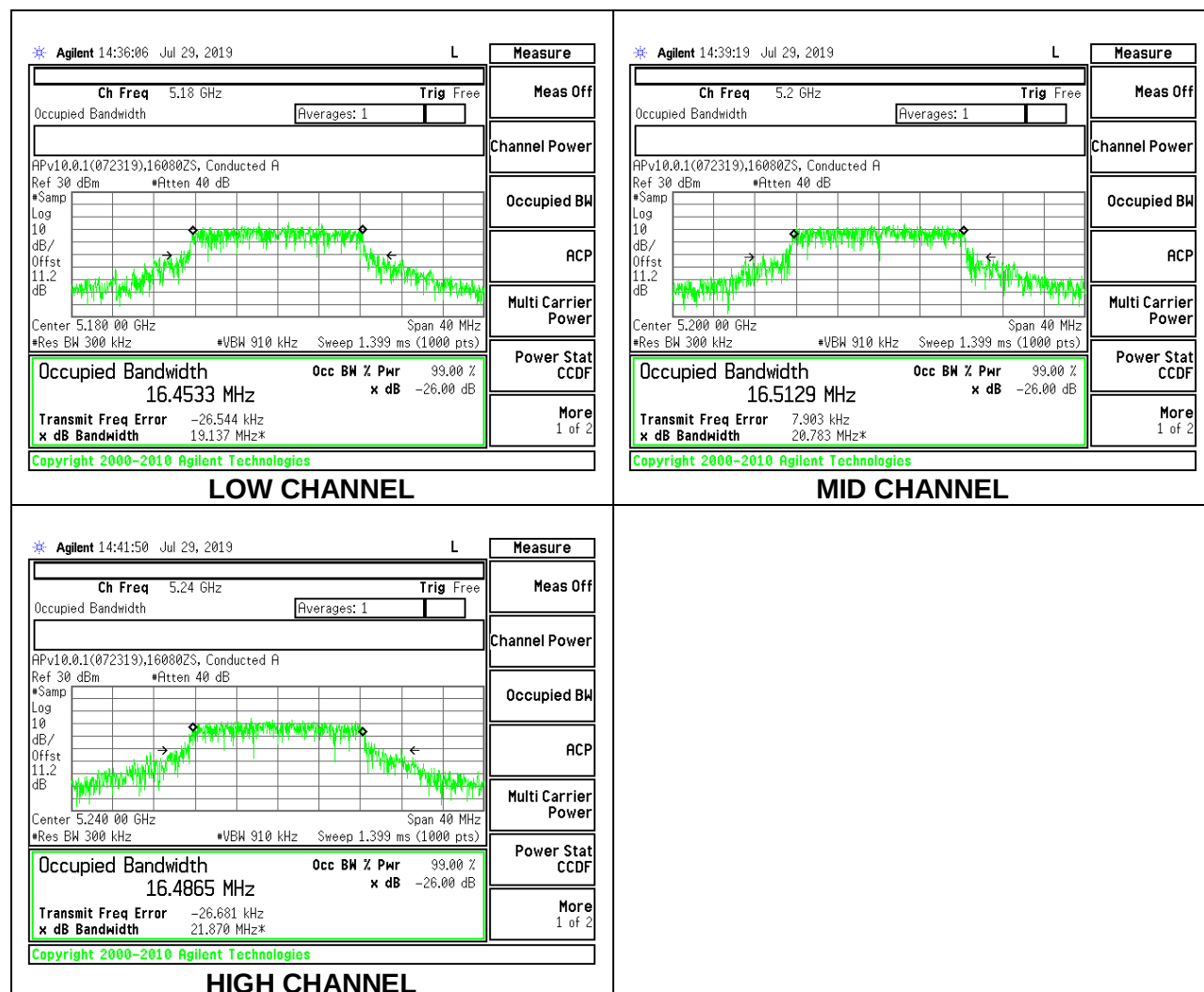
1TX Chain 1 MODE

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5180	16.4646
Mid	5200	16.4403
High	5240	16.4147



1TX Chain 2 MODE

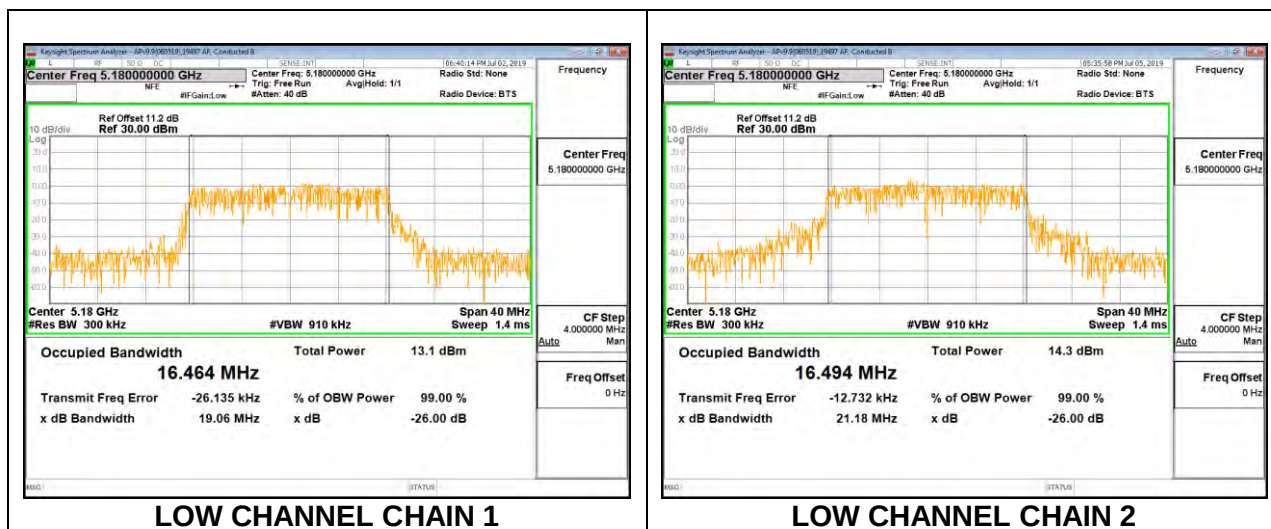
Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5180	16.4533
Mid	5200	16.5129
High	5240	16.4865



2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Low	5180	16.464	16.494
Mid	5200	16.559	16.594
High	5240	16.468	16.494

LOW CHANNEL



The figure displays two side-by-side screenshots of a Keysight Spectrum Analyzer, showing the frequency response of two different mid-channel chains. Both plots show a flat response with a slight dip around 5.2 GHz. The left plot (Chain 1) has a peak power of 12.6 dBm and an occupied bandwidth of 16.559 MHz. The right plot (Chain 2) has a peak power of 13.9 dBm and an occupied bandwidth of 16.594 MHz. Both plots show a transmit frequency error of -12.949 kHz and a 20.03 MHz bandwidth.

Parameter	Mid Channel Chain 1	Mid Channel Chain 2
Center Freq	5.200000000 GHz	5.200000000 GHz
Ref Offset	11.2 dB	11.2 dB
Ref	30.00 dBm	30.00 dBm
Center Freq	5.200000000 GHz	5.200000000 GHz
Occupied Bandwidth	16.559 MHz	16.594 MHz
Total Power	12.6 dBm	13.9 dBm
Transmit Freq Error	-12.949 kHz	-12.949 kHz
% of OBW Power	99.00 %	99.00 %
x dB Bandwidth	20.03 MHz	20.03 MHz
x dB	-26.00 dB	-26.00 dB
Freq Offset	0 Hz	0 Hz

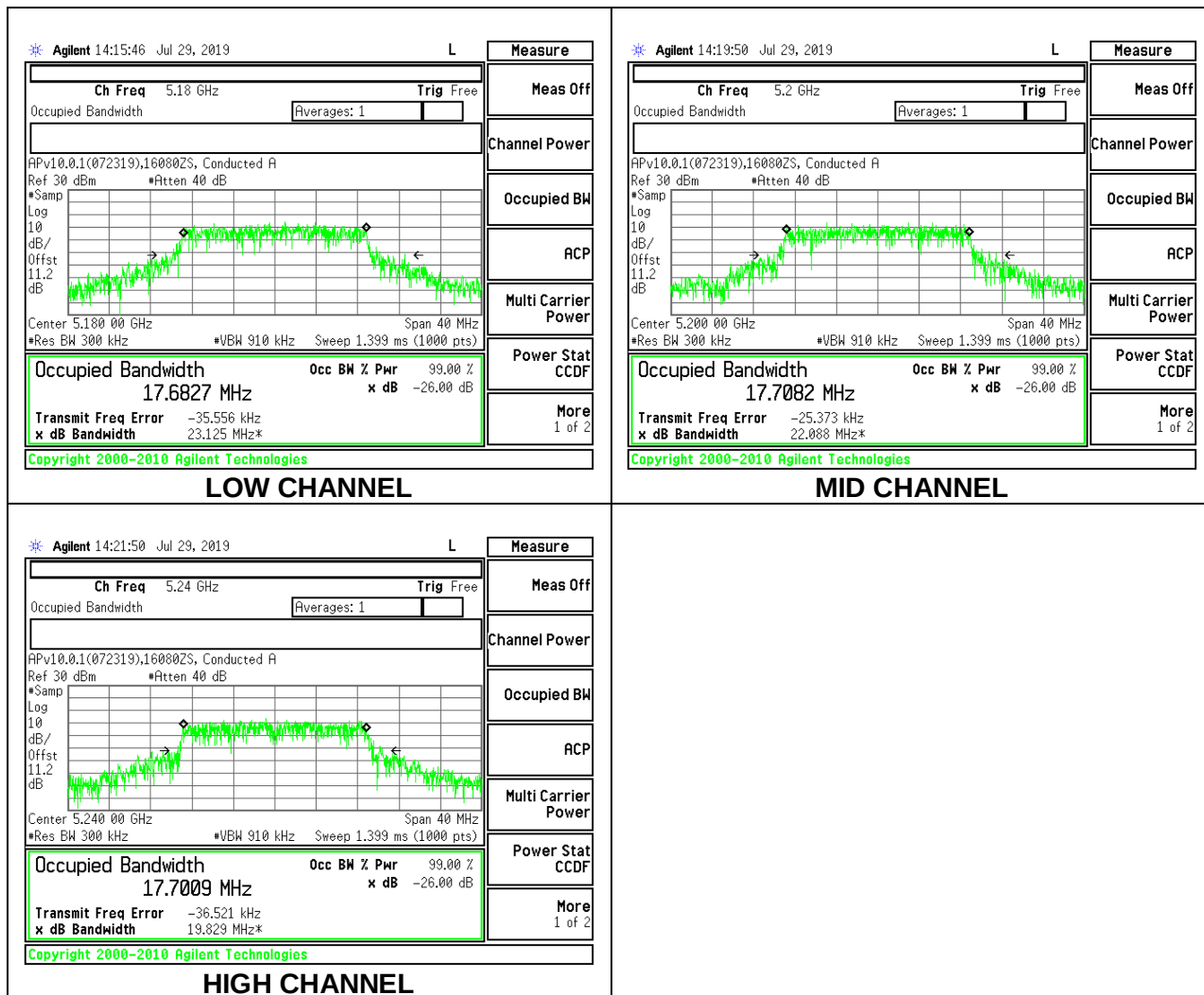
The figure displays two side-by-side screenshots of the Keysight Spectrum Analyzer software interface, showing the channel occupancy for two different high channel chains. Both screenshots show a signal centered at 5.24 GHz with a bandwidth of 16.4 MHz. The left screenshot is for High Channel Chain 1, and the right screenshot is for High Channel Chain 2. Both show a transmit frequency error of -80.544 kHz and a 19.39 MHz x dB bandwidth. The total power for Chain 1 is 12.6 dBm, and for Chain 2, it is 13.7 dBm. The x dB bandwidth for both is -26.00 dB.

Parameter	High Channel Chain 1	High Channel Chain 2
Center Freq	5.24000000 GHz	5.24000000 GHz
Center Freq Error	-80.544 kHz	-80.544 kHz
Occupied Bandwidth	16.468 MHz	16.494 MHz
Total Power	12.6 dBm	13.7 dBm
% of OBW Power	99.00 %	99.00 %
x dB Bandwidth	19.39 MHz	22.71 MHz
x dB	-26.00 dB	-26.00 dB

8.3.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

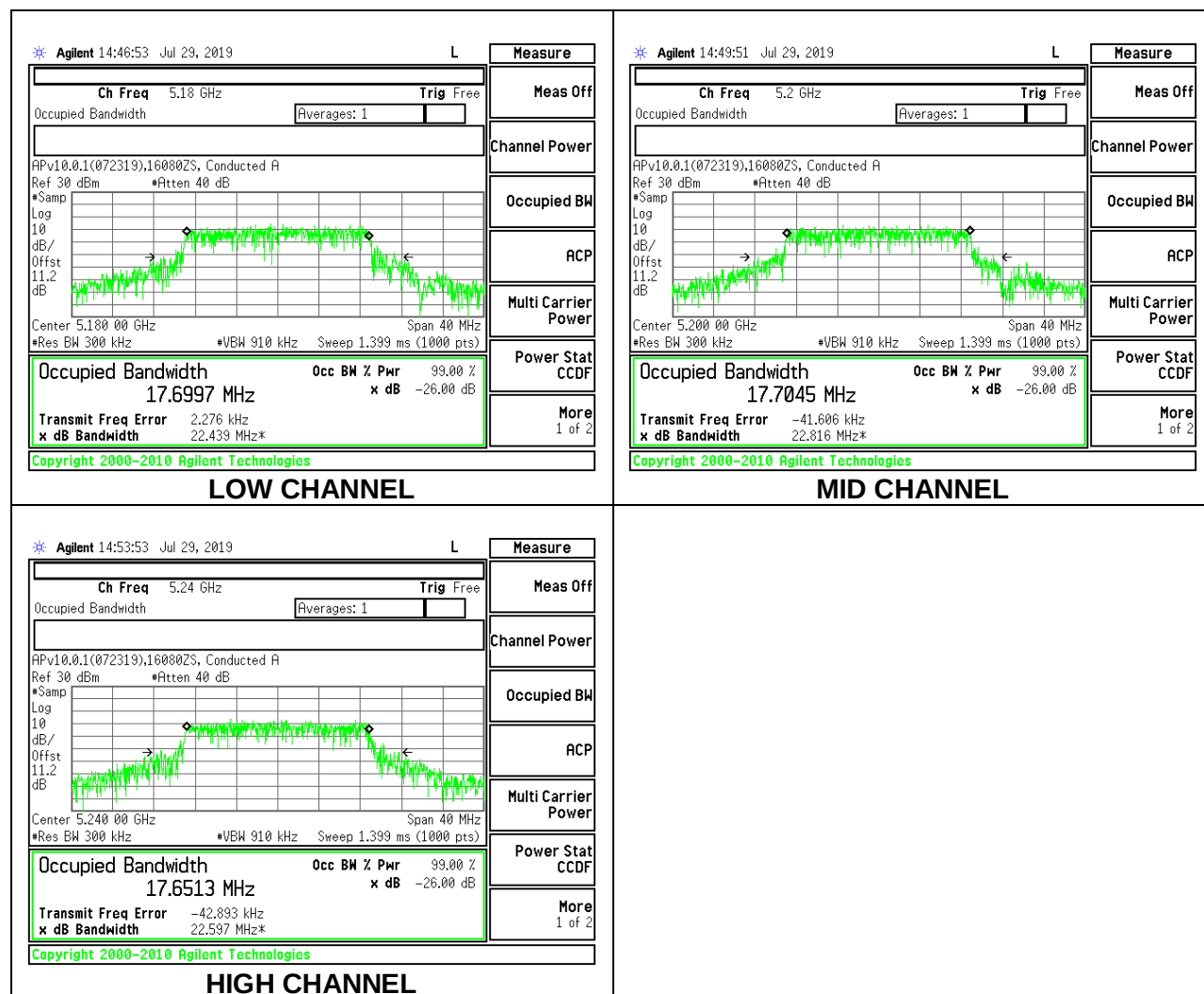
1TX Chain 1 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	17.6827
Mid	5200	17.7082
High	5240	17.7009



1TX Chain 2 MODE

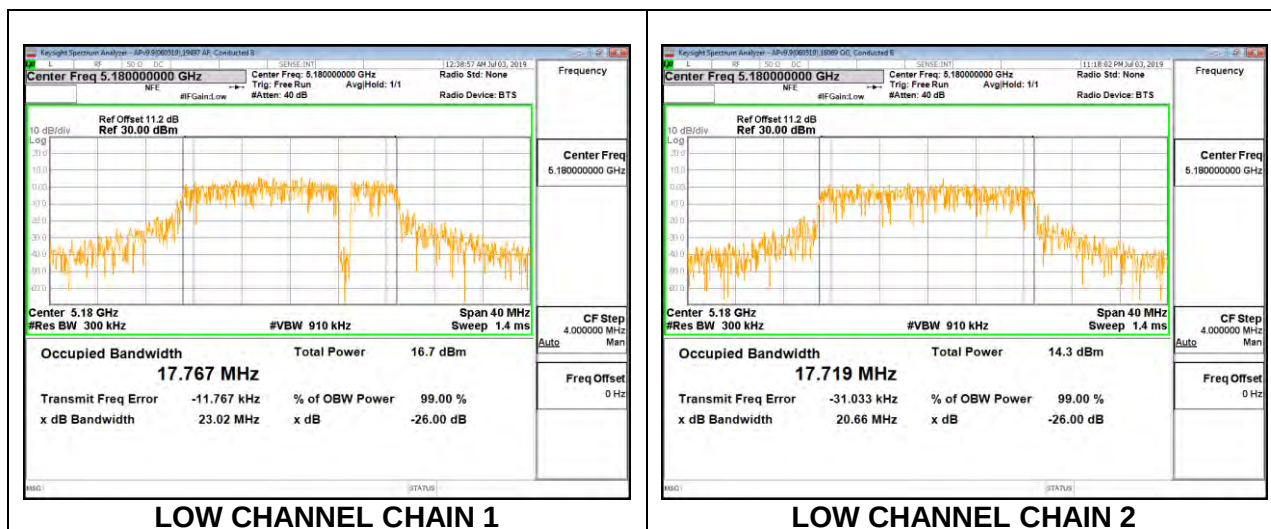
Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5180	17.6997
Mid	5200	17.7045
High	5240	17.6513



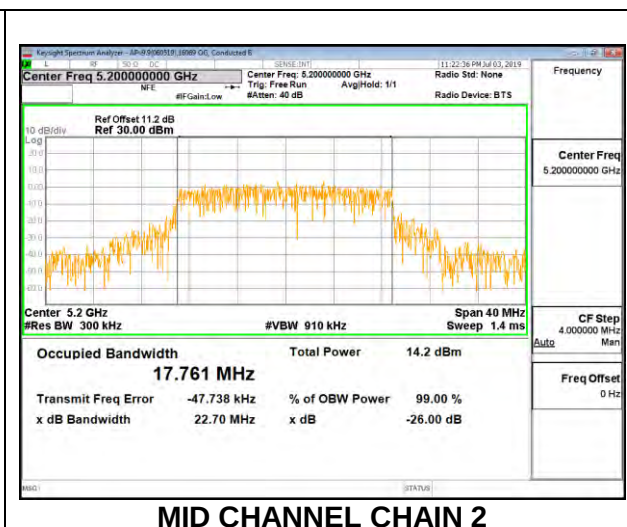
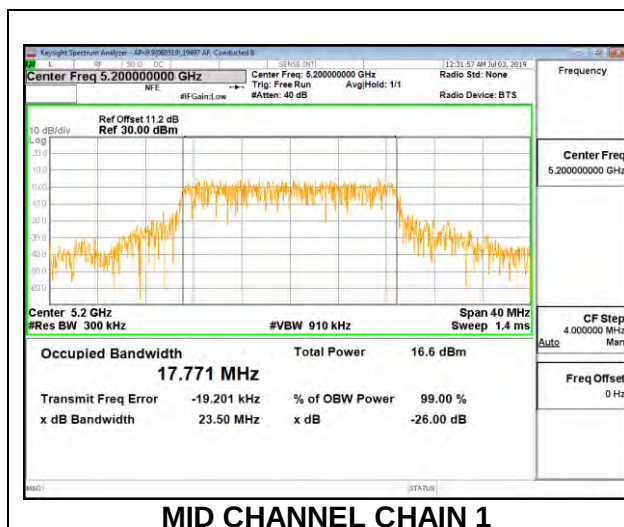
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Low	5180	17.767	17.719
Mid	5200	17.771	17.761
High	5240	17.709	17.677

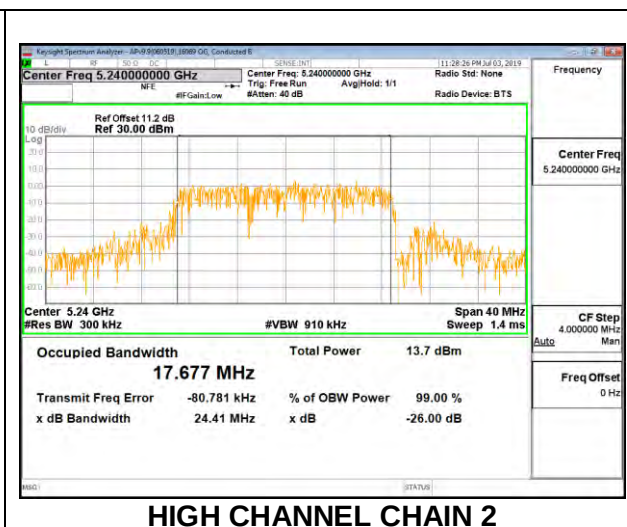
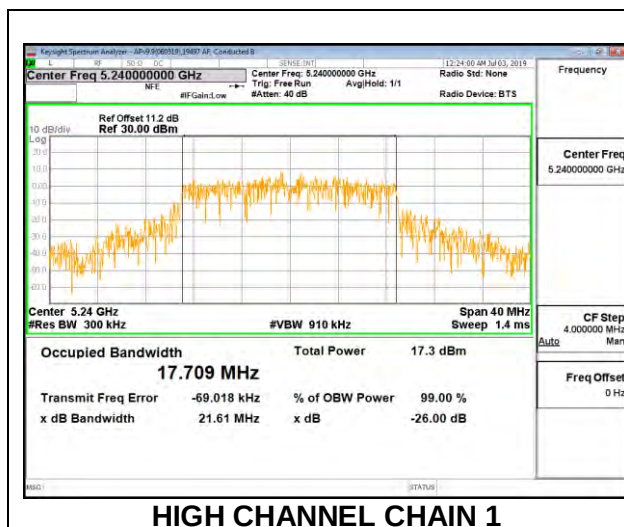
LOW CHANNEL



MID CHANNEL



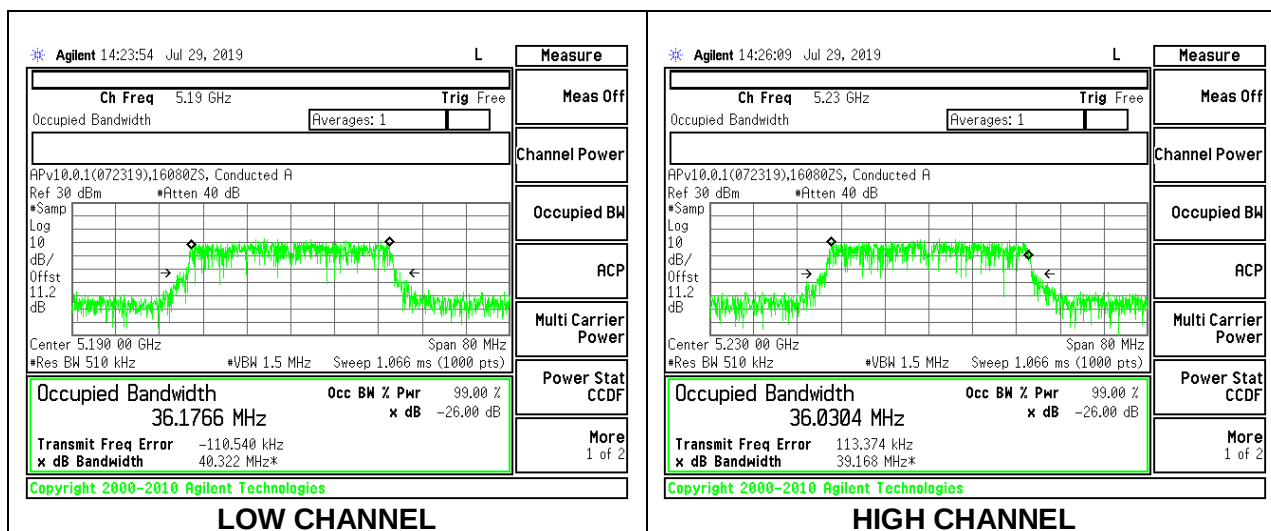
HIGH CHANNEL



8.3.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

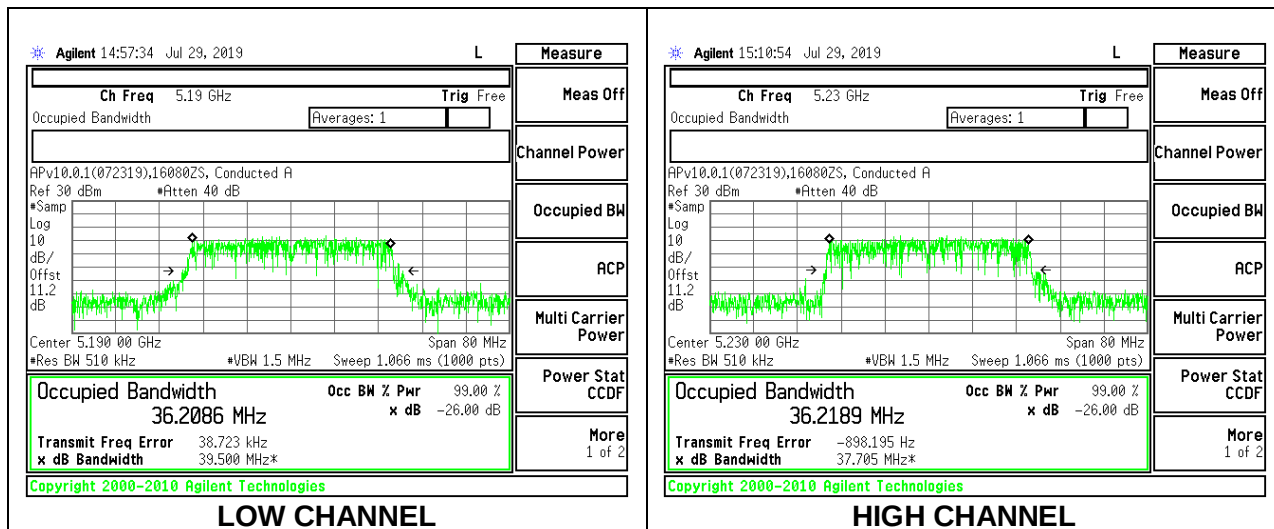
1TX Chain 1 MODE

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5190	36.1766
High	5230	36.0304



1TX Chain 2 MODE

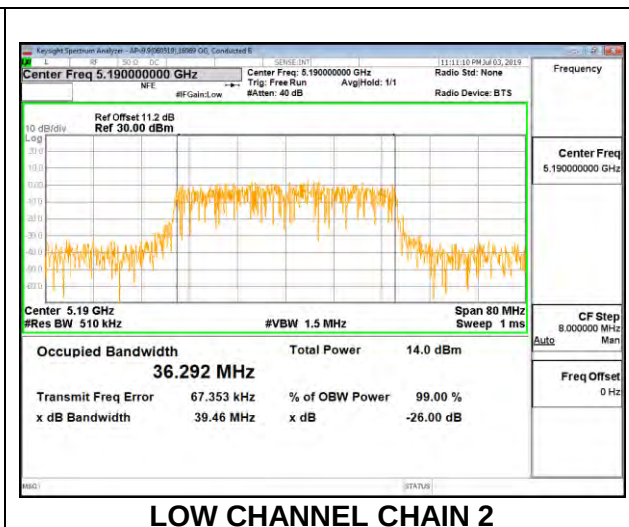
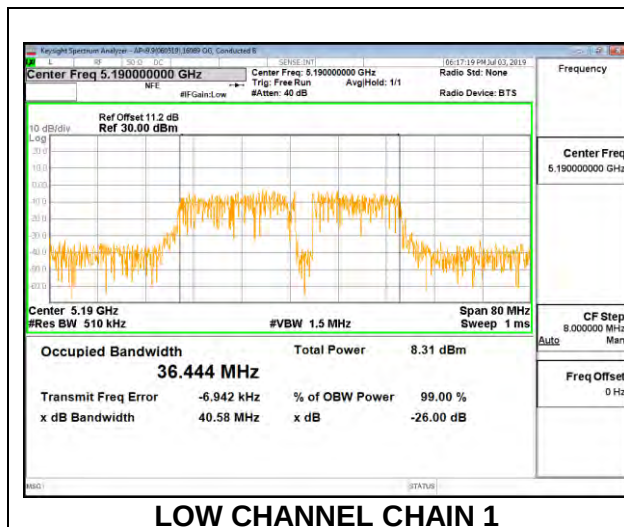
Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5190	36.2086
High	5230	36.2189



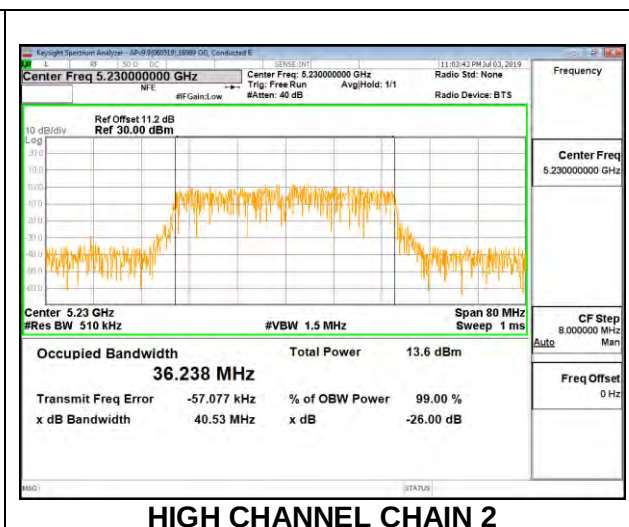
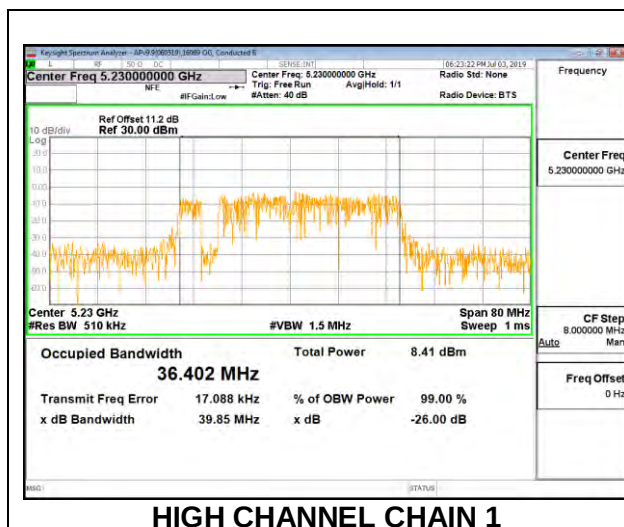
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Low	5190	36.444	36.292
High	5230	36.402	36.238

LOW CHANNEL



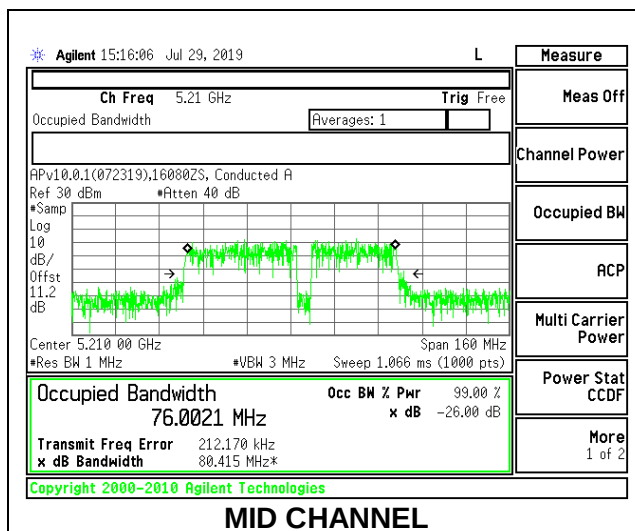
HIGH CHANNEL



8.3.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

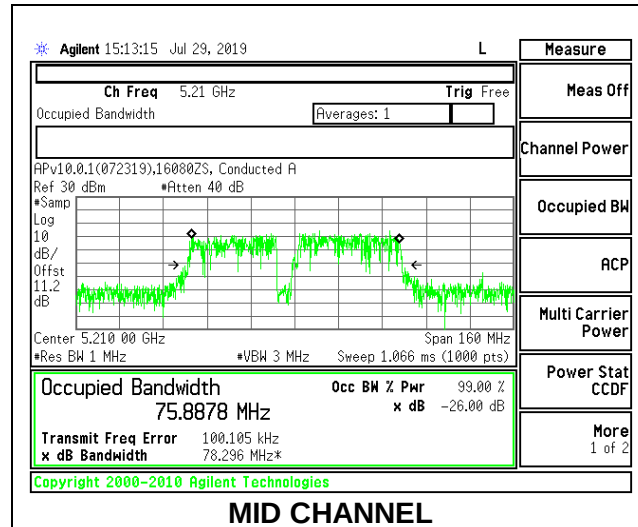
1TX Chain 1 MODE

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Mid	5210	76.0021



1TX Chain 2 MODE

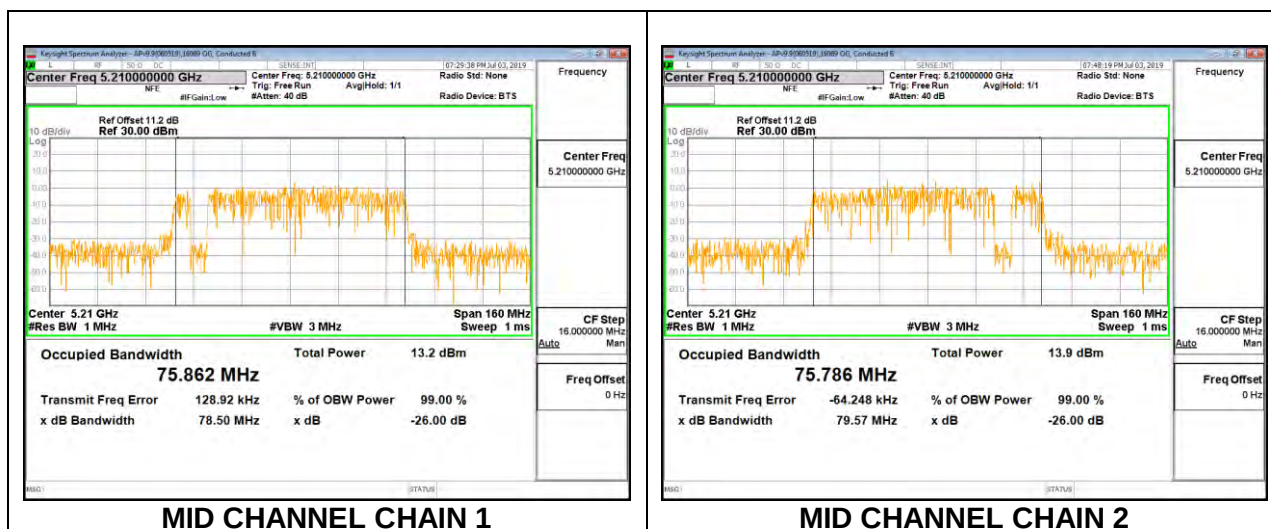
Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Mid	5210	75.8878



2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Mid	5210	75.862	75.786

MID CHANNEL

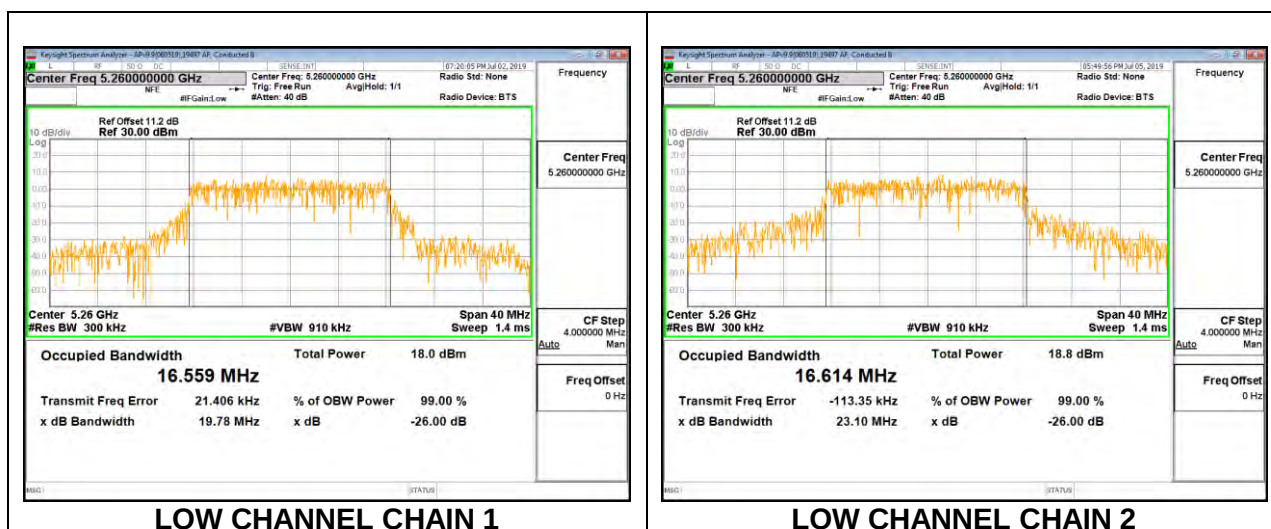


8.3.5. 802.11a MODE IN THE 5.3 GHz BAND

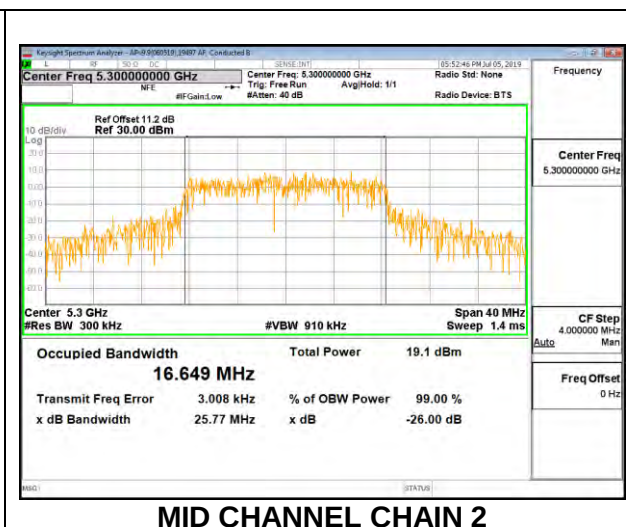
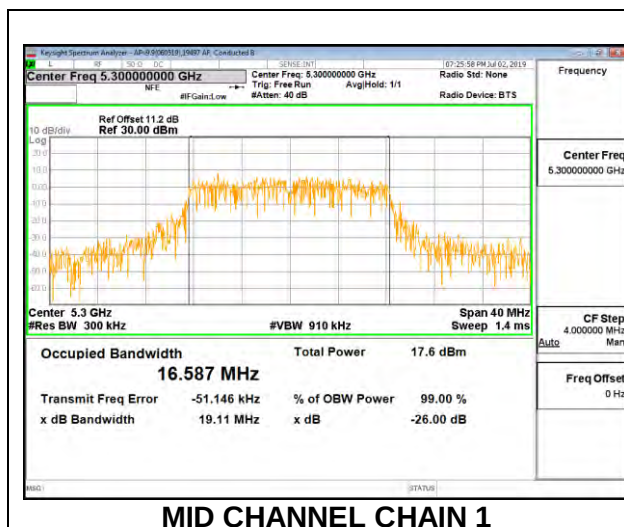
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Low	5260	16.559	16.614
Mid	5300	16.587	16.649
High	5320	16.463	16.613

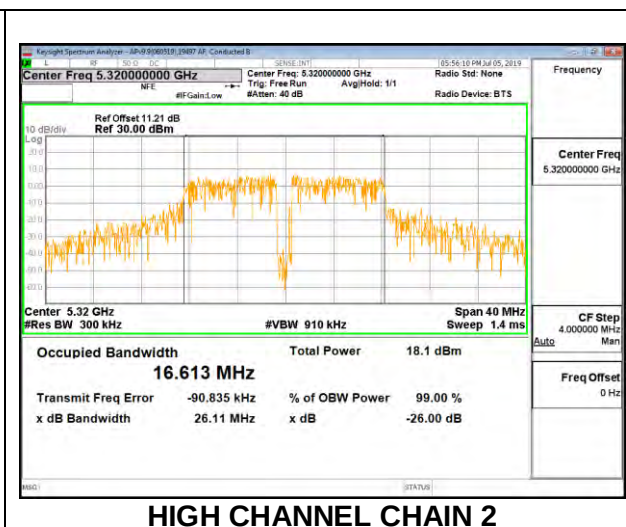
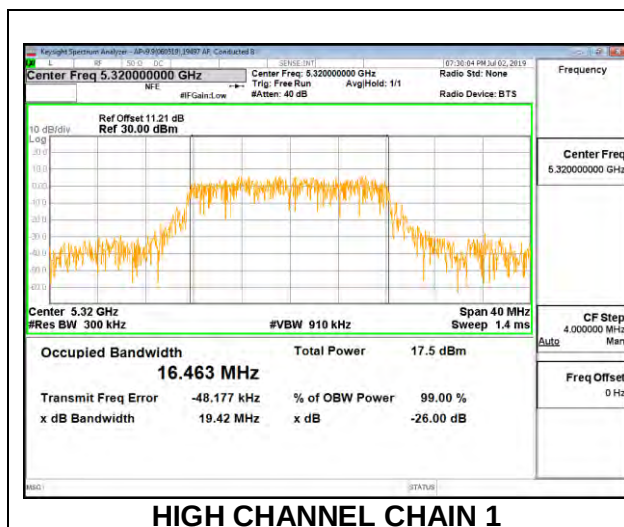
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

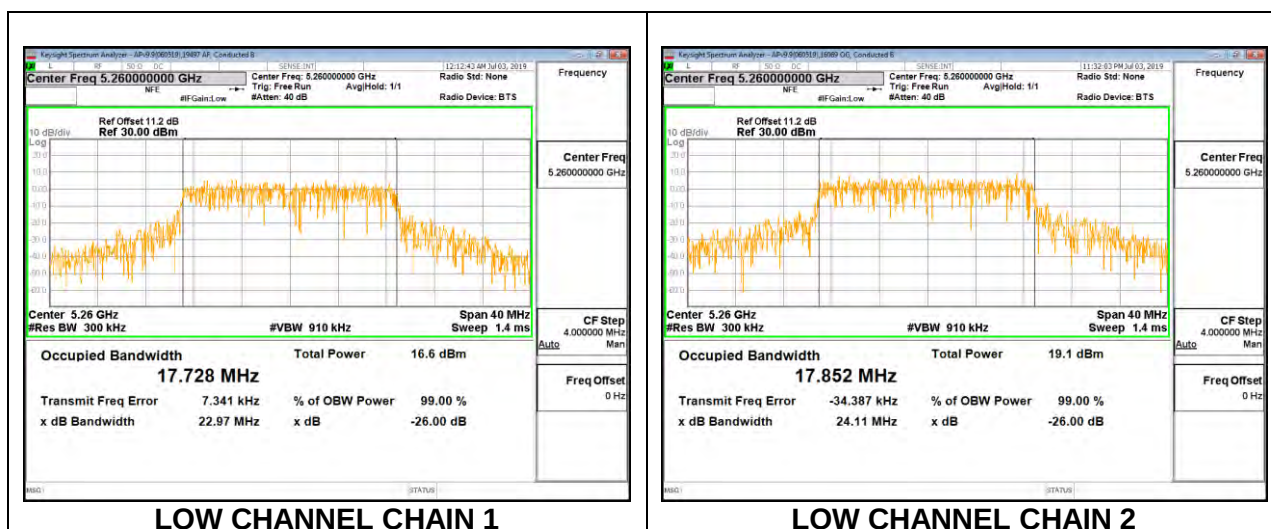


8.3.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Low	5260	17.728	17.852
Mid	5300	17.7261	17.883
High	5320	17.714	17.732

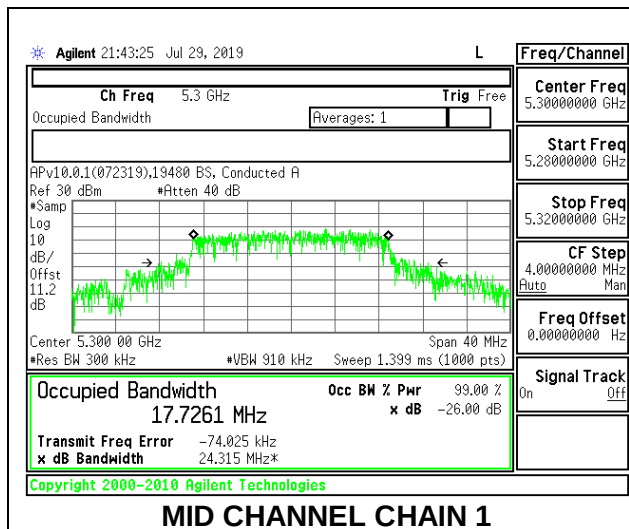
LOW CHANNEL



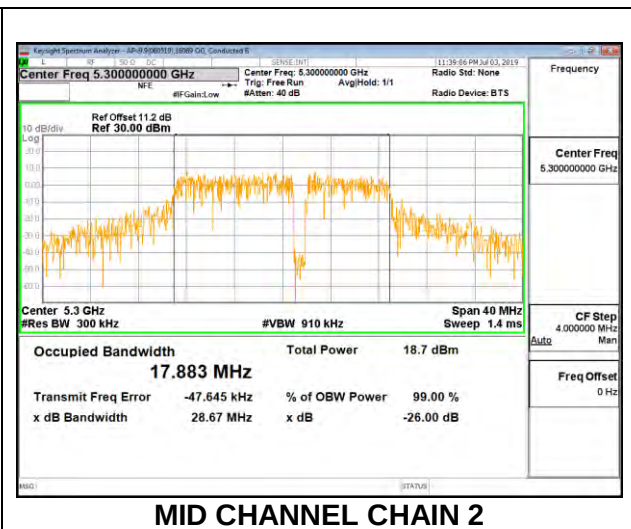
LOW CHANNEL CHAIN 1

LOW CHANNEL CHAIN 2

MID CHANNEL

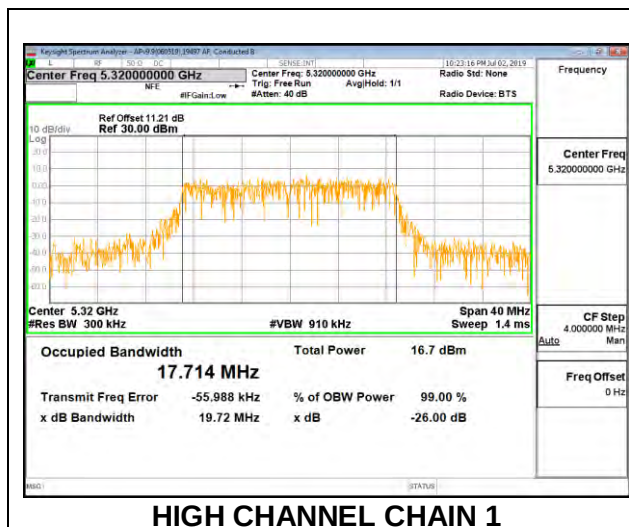


MID CHANNEL CHAIN 1

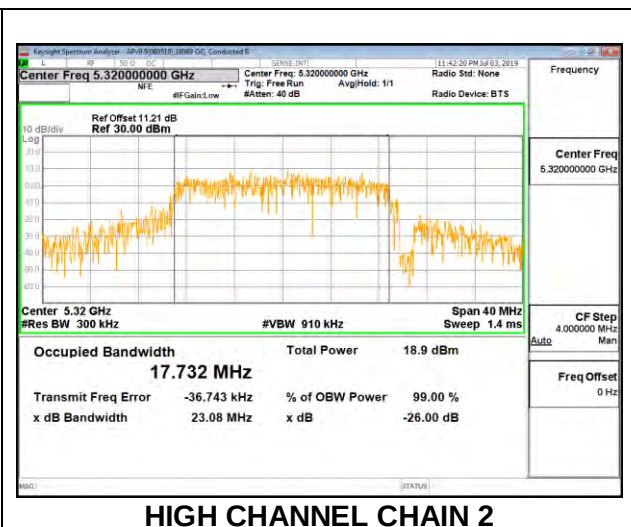


MID CHANNEL CHAIN 2

HIGH CHANNEL



HIGH CHANNEL CHAIN 1



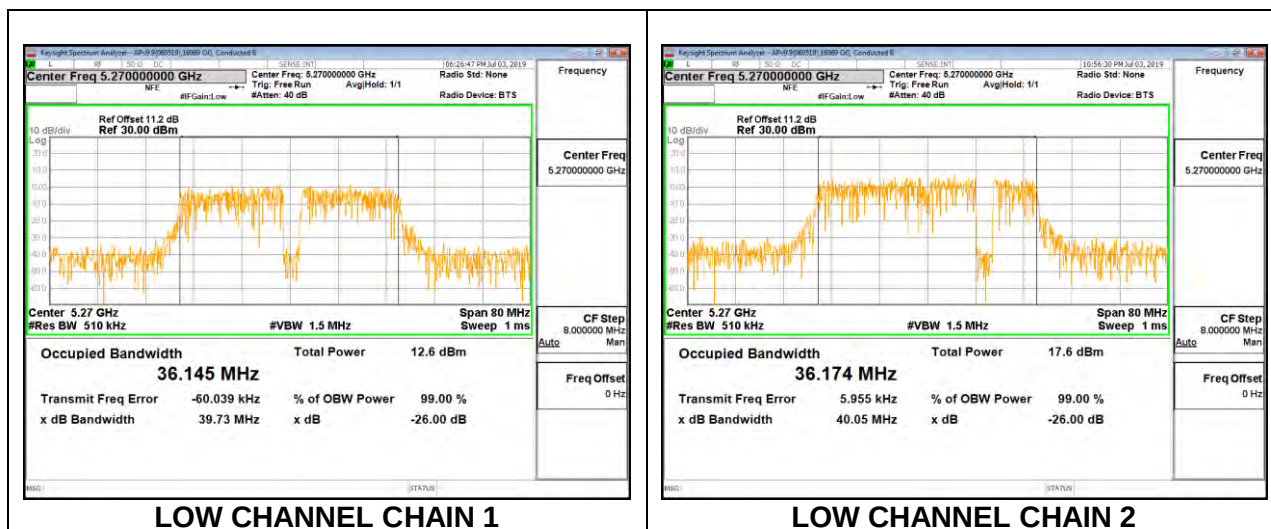
HIGH CHANNEL CHAIN 2

8.3.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

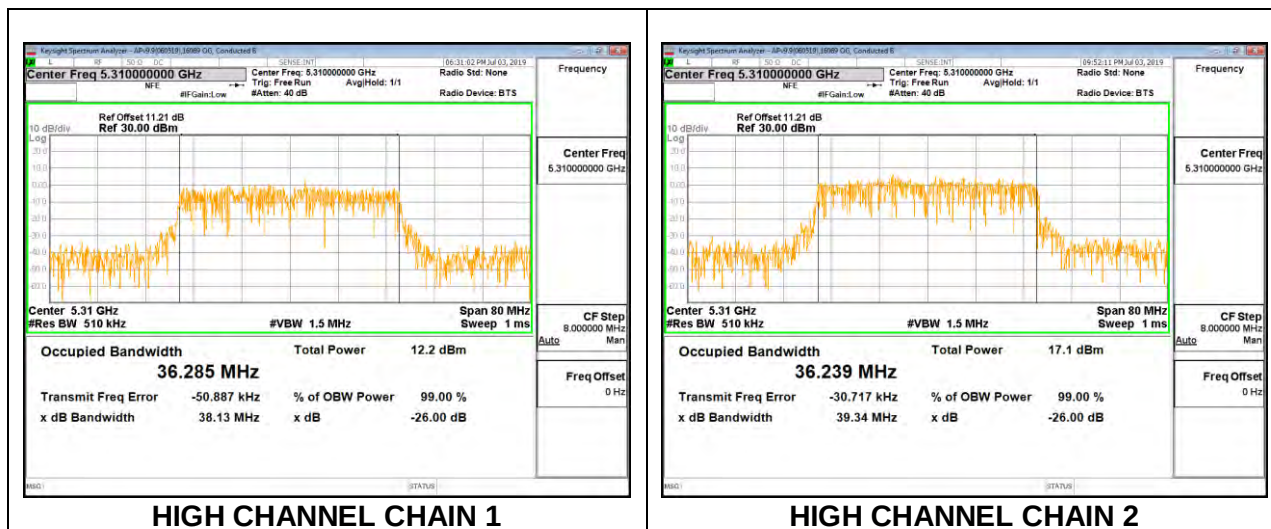
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Low	5270	36.145	36.174
High	5310	36.285	36.239

LOW CHANNEL



HIGH CHANNEL



8.3.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Mid	5290	75.692	75.631

MID CHANNEL

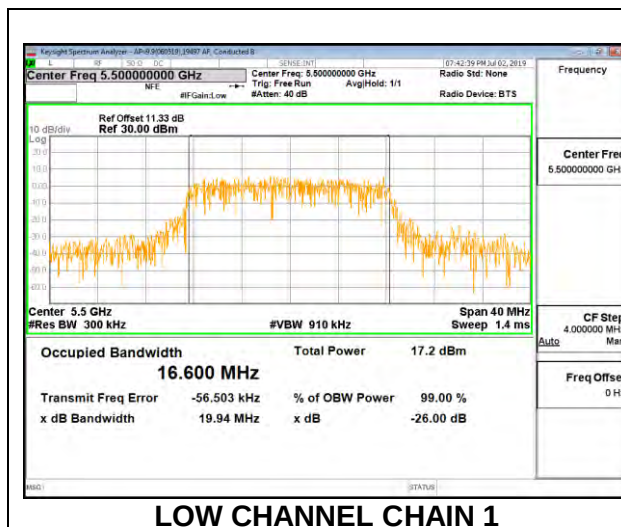


8.3.9. 802.11a MODE IN THE 5.6 GHz BAND

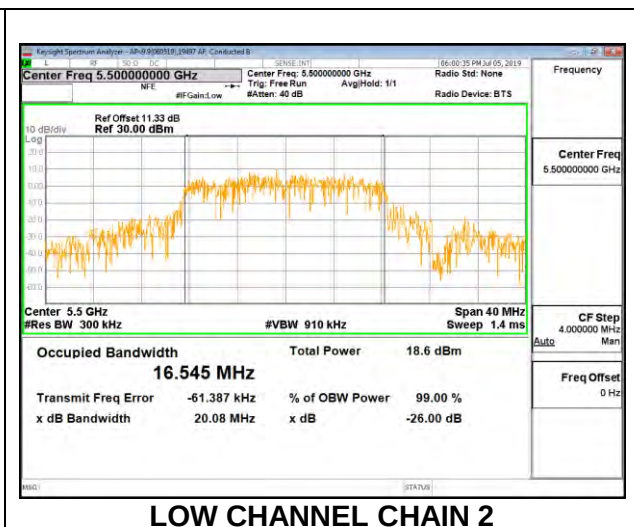
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Low	5500	16.600	16.545
Mid	5580	16.571	16.551
High	5700	16.624	16.569
144	5720	16.382	16.509

LOW CHANNEL

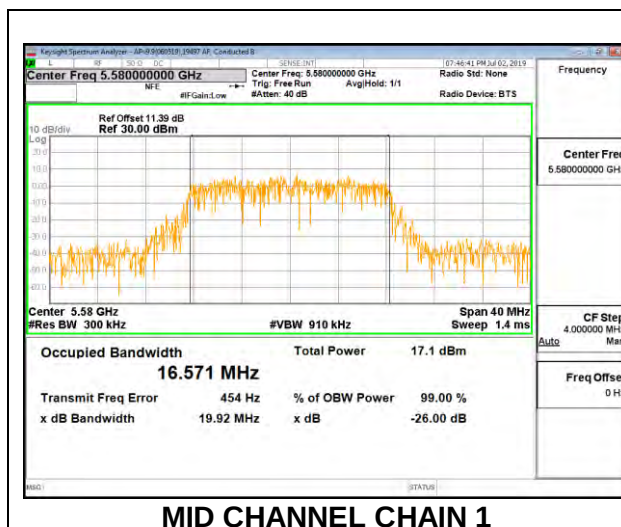


LOW CHANNEL CHAIN 1

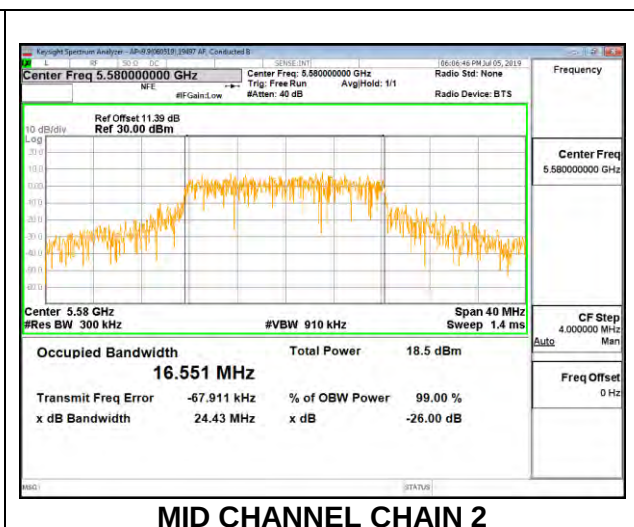


LOW CHANNEL CHAIN 2

MID CHANNEL

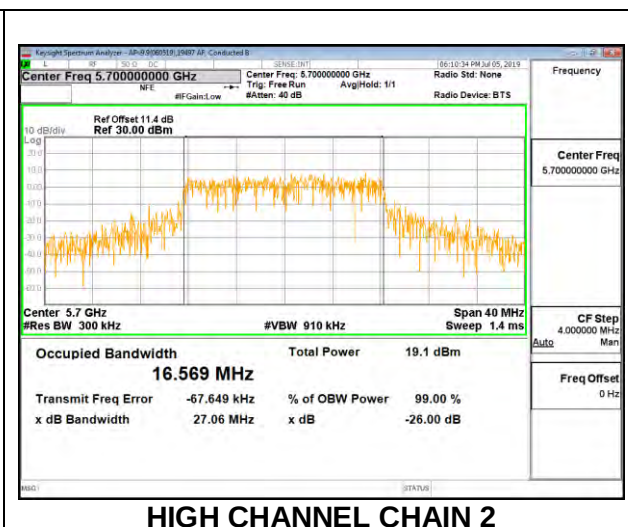
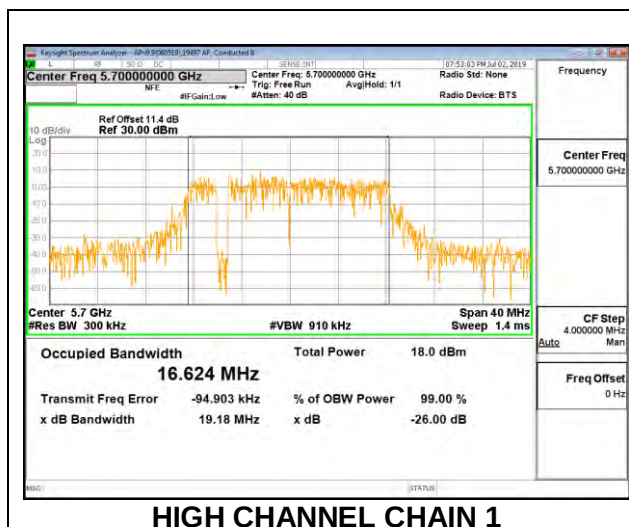


MID CHANNEL CHAIN 1

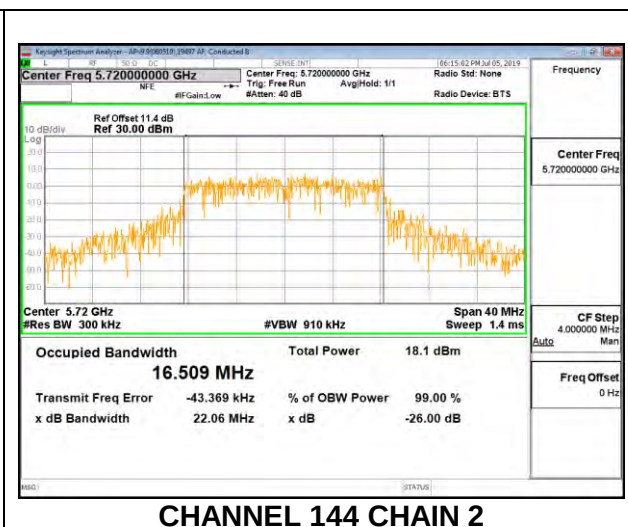
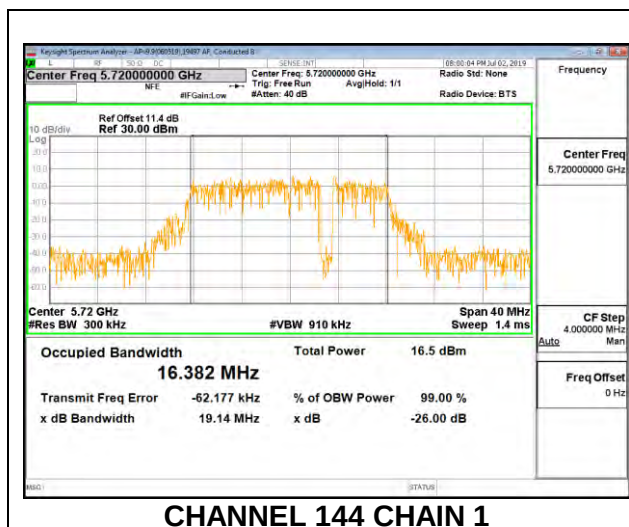


MID CHANNEL CHAIN 2

HIGH CHANNEL



CHANNEL 144

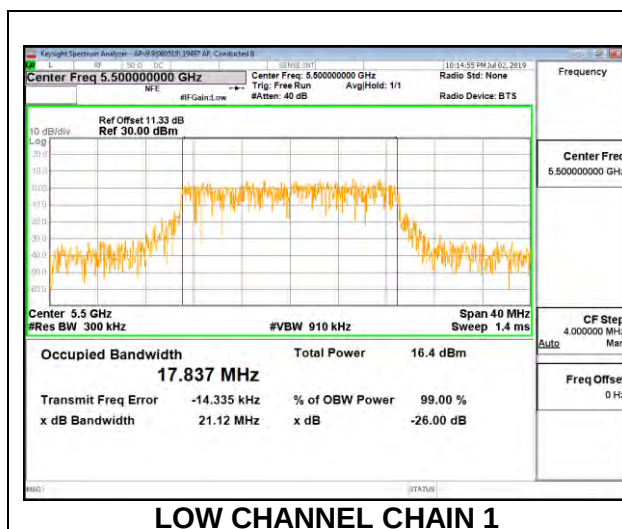


8.3.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

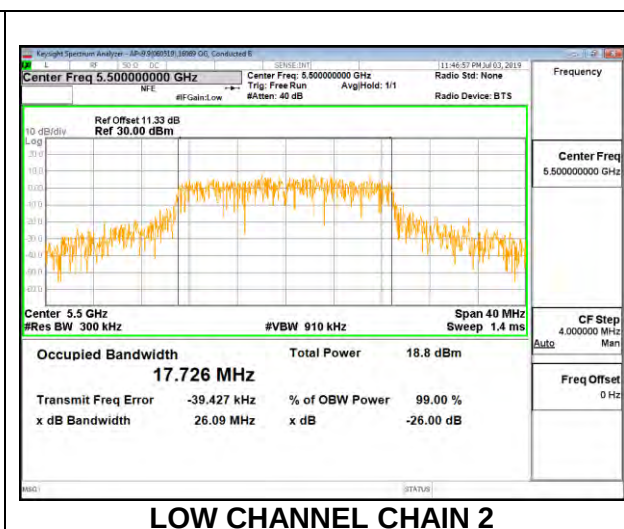
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Low	5500	17.837	17.726
Mid	5580	17.773	17.732
High	5700	17.687	17.791
144	5720	17.806	17.672

LOW CHANNEL

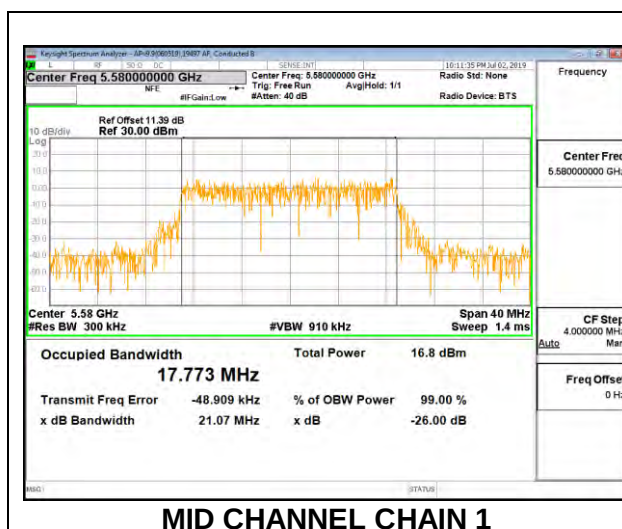


LOW CHANNEL CHAIN 1

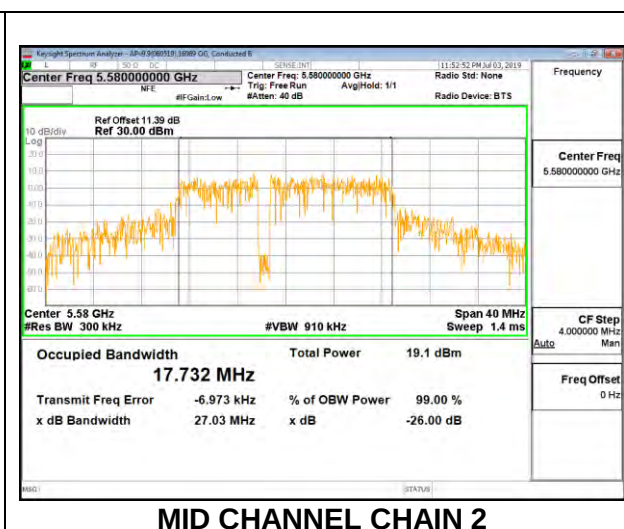


LOW CHANNEL CHAIN 2

MID CHANNEL

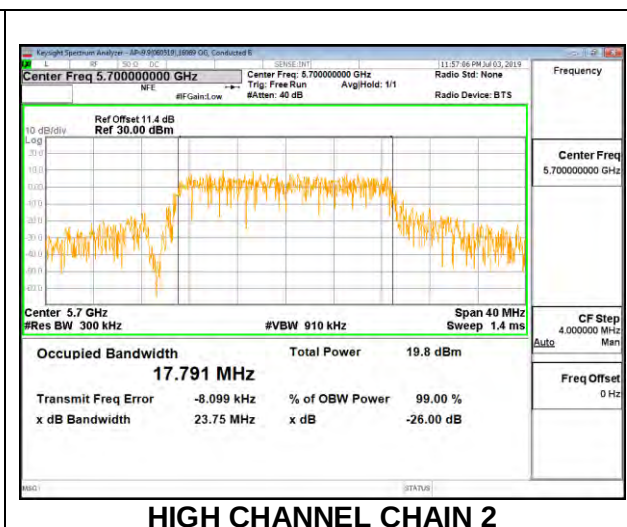
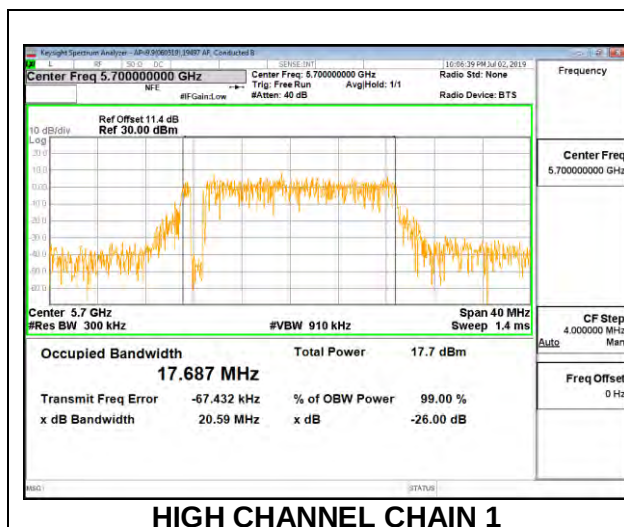


MID CHANNEL CHAIN 1

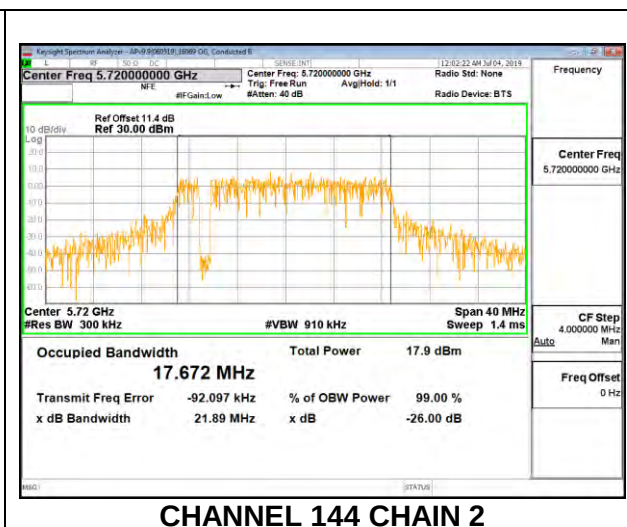
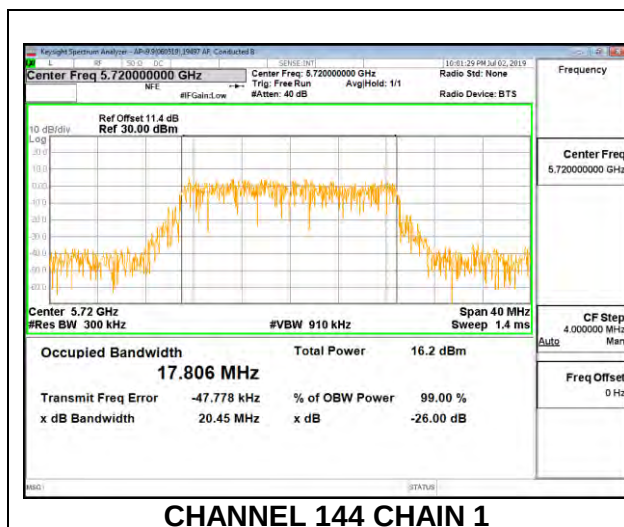


MID CHANNEL CHAIN 2

HIGH CHANNEL



CHANNEL 144

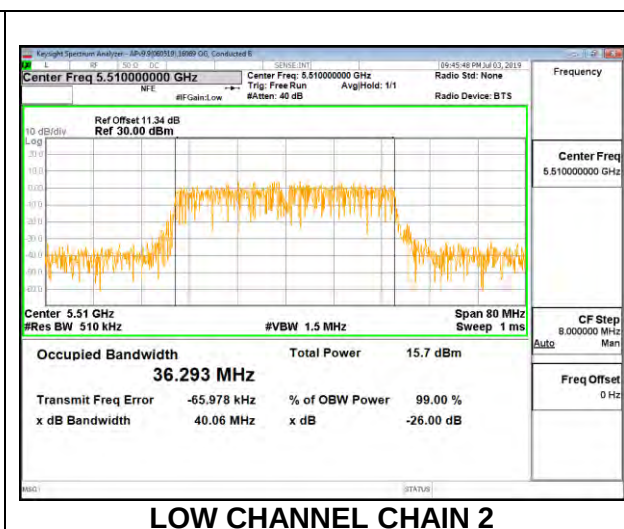
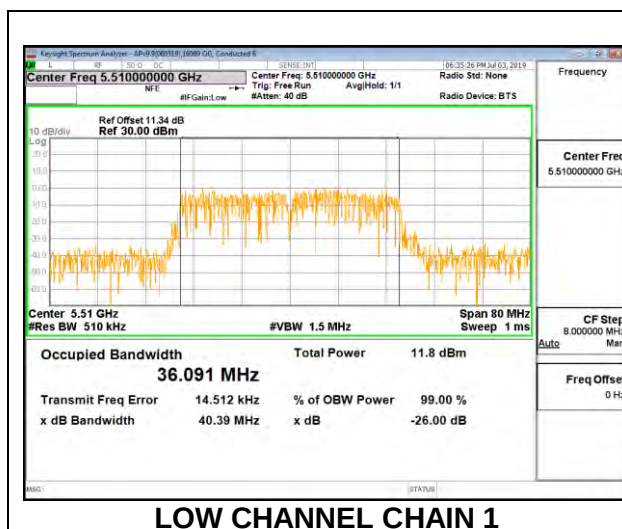


8.3.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

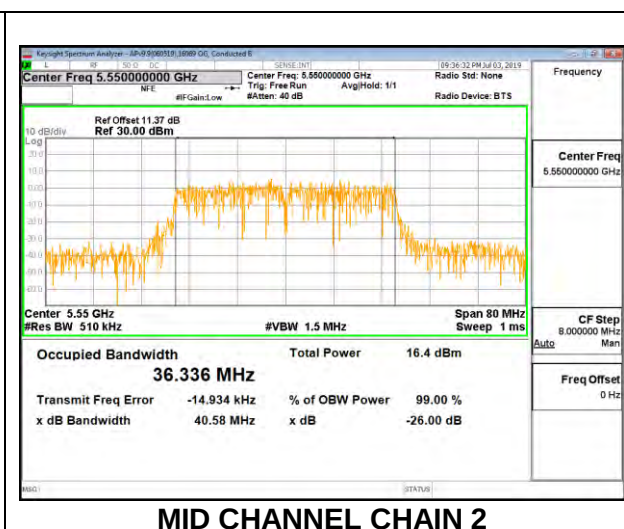
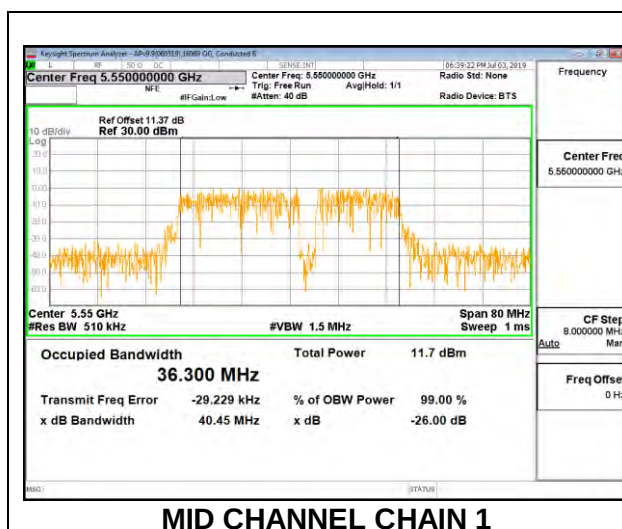
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Low	5510	36.091	36.293
Mid	5550	36.300	36.336
High	5670	36.167	36.224
142	5710	36.400	36.253

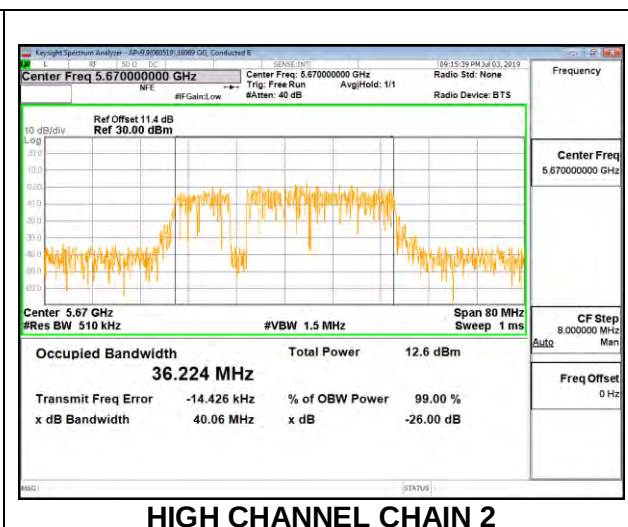
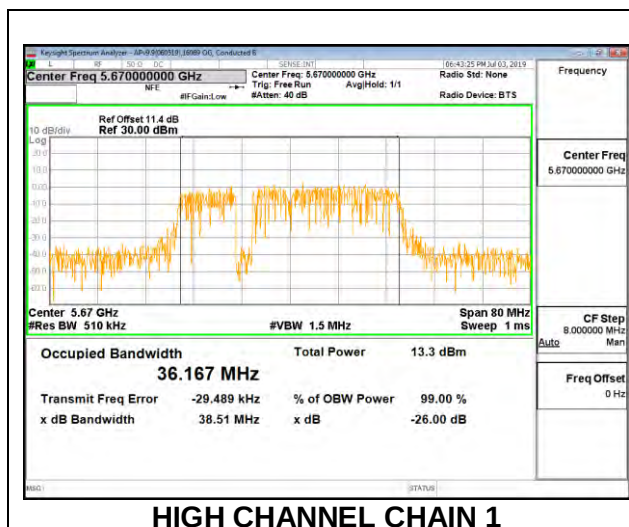
LOW CHANNEL



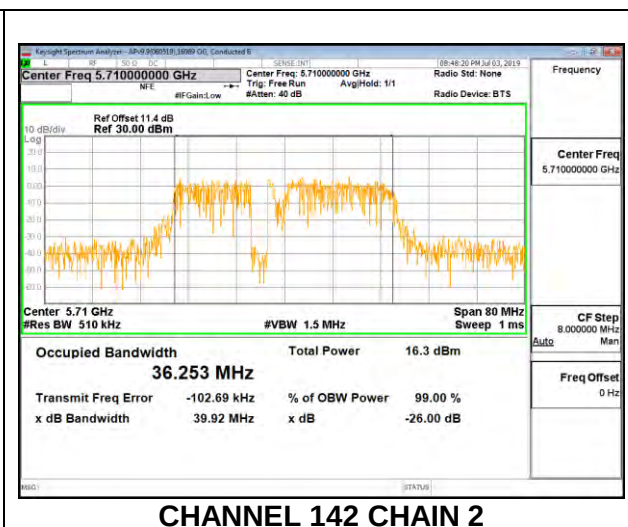
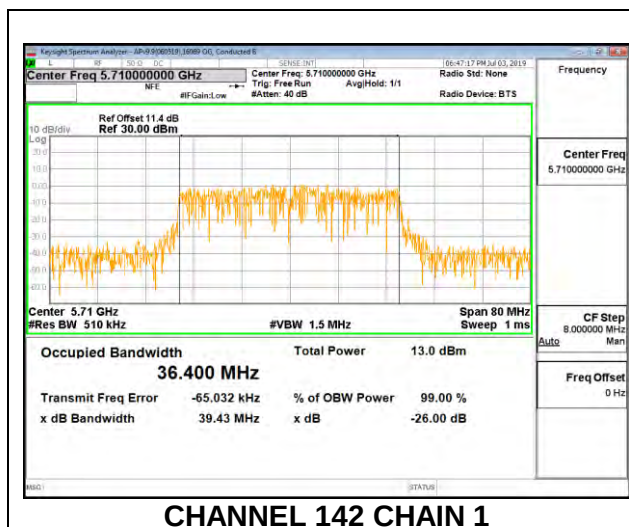
MID CHANNEL



HIGH CHANNEL



CHANNEL 142

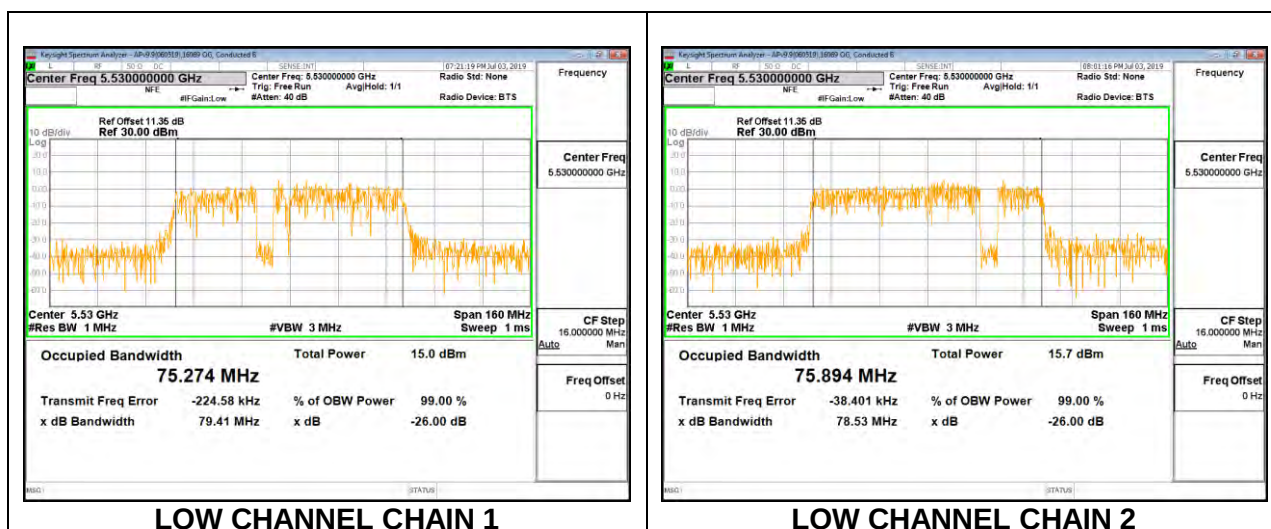


8.3.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

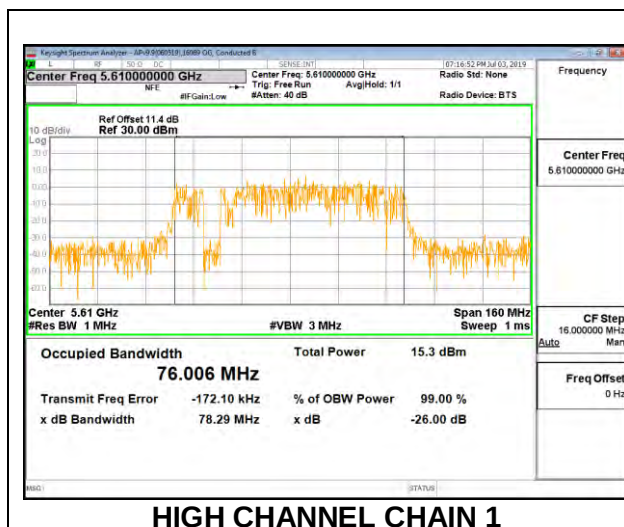
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Low	5530	75.274	75.894
High	5610	76.006	76.006
138	5690	75.720	76.068

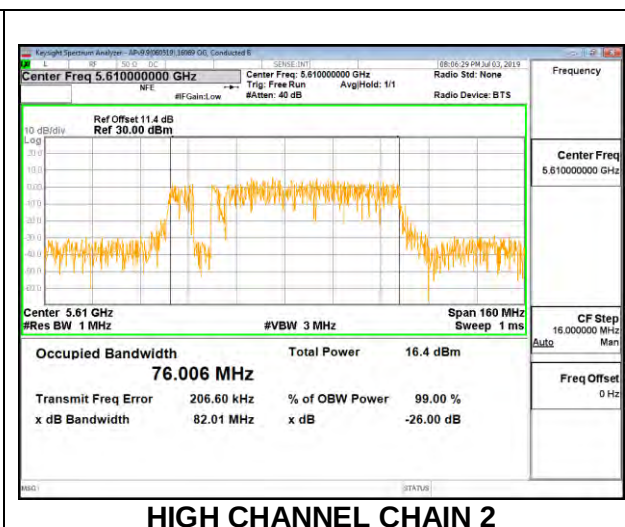
LOW CHANNEL



HIGH CHANNEL

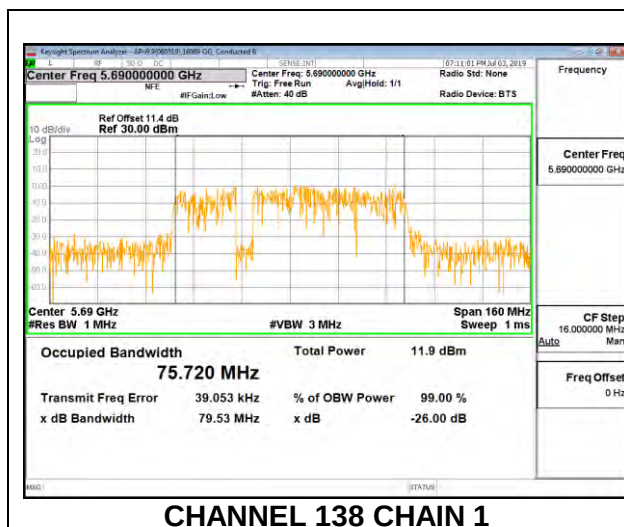


HIGH CHANNEL CHAIN 1

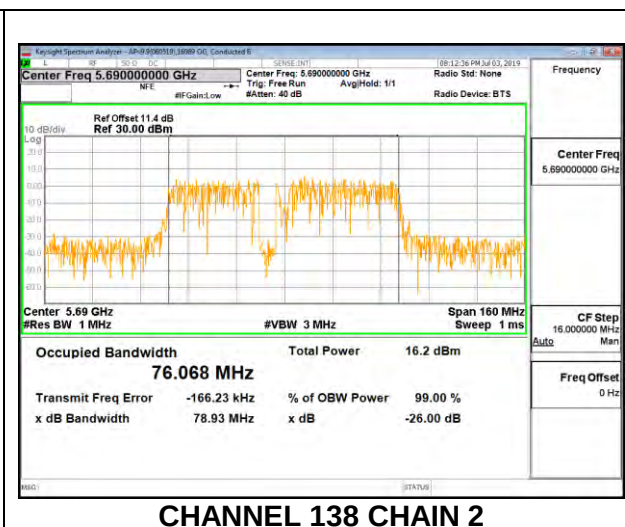


HIGH CHANNEL CHAIN 2

CHANNEL 138



CHANNEL 138 CHAIN 1



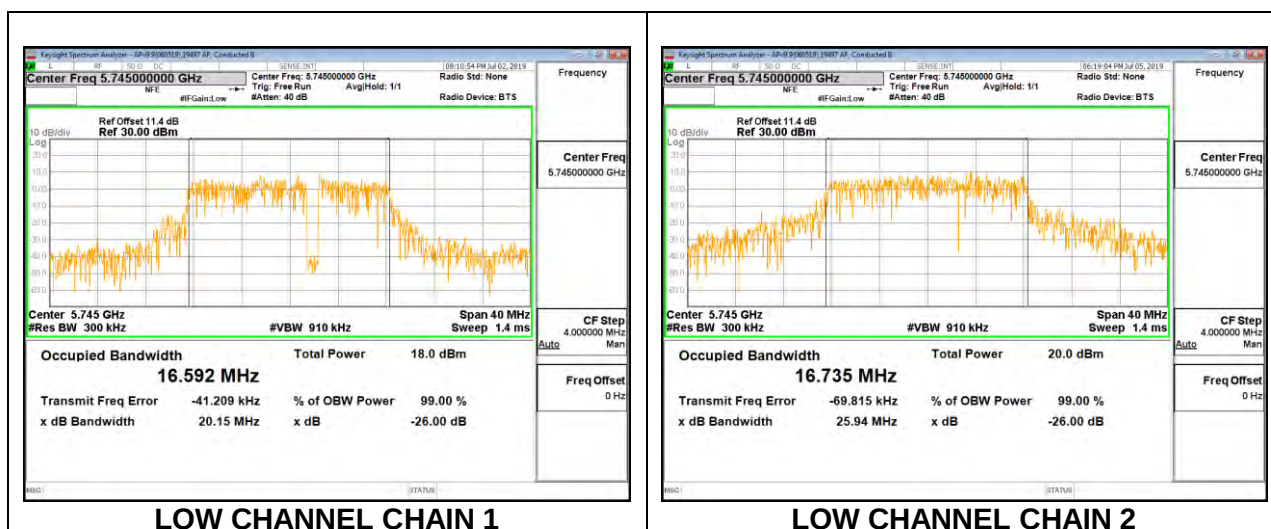
CHANNEL 138 CHAIN 2

8.3.13. 802.11a MODE IN THE 5.8 GHz BAND

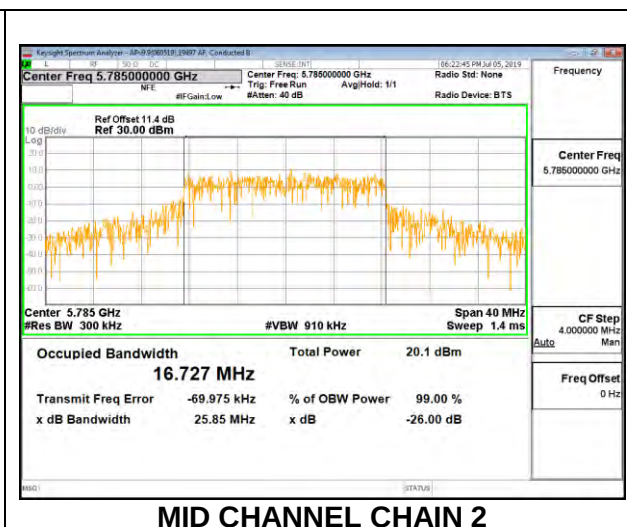
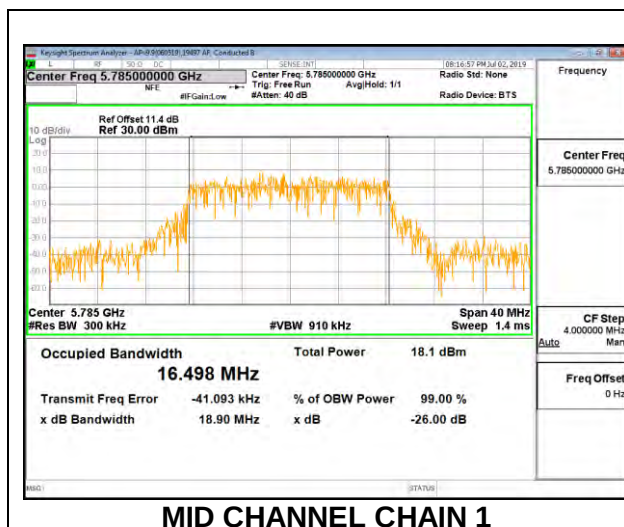
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Low	5745	16.592	16.735
Mid	5785	16.498	16.727
High	5825	16.568	16.696

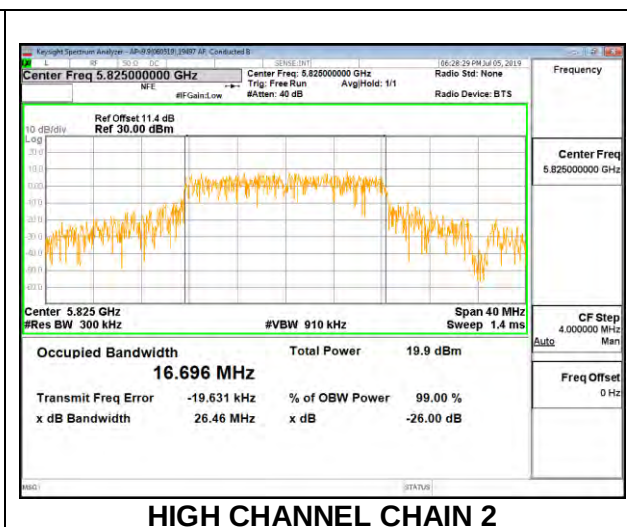
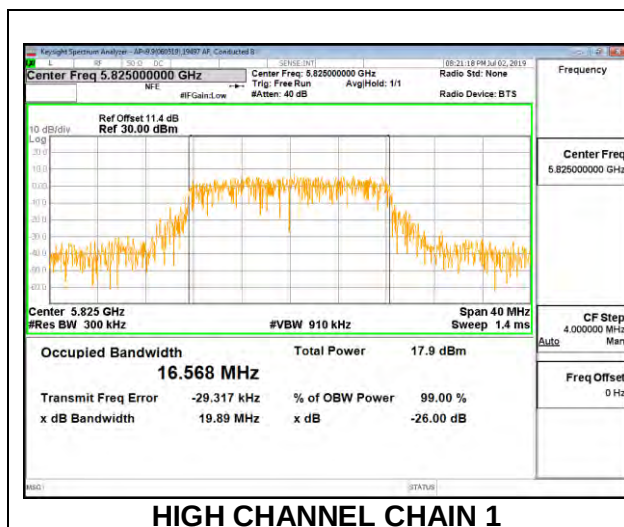
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

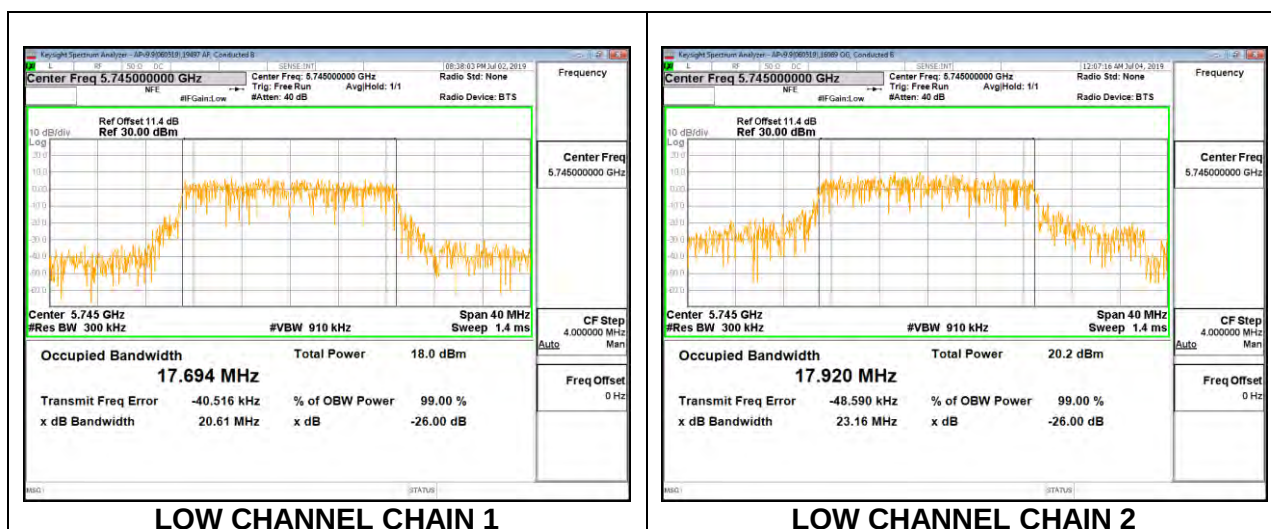


8.3.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Low	5745	17.694	17.920
Mid	5785	17.780	17.833
High	5825	17.727	17.831

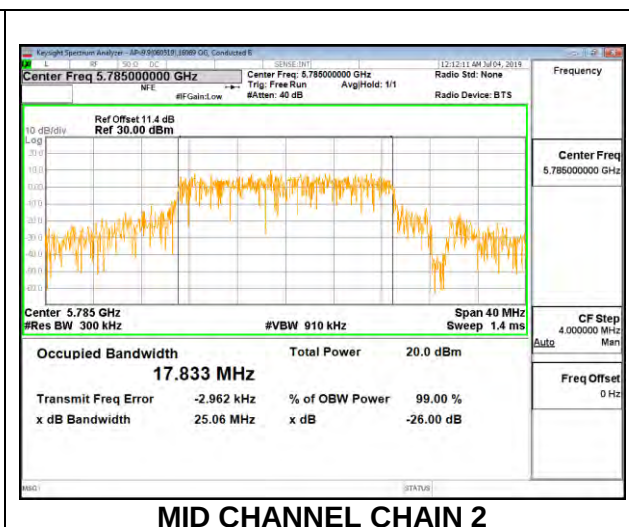
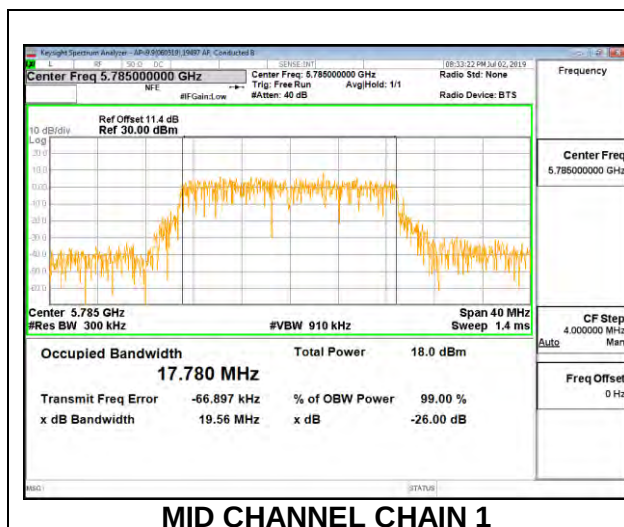
LOW CHANNEL



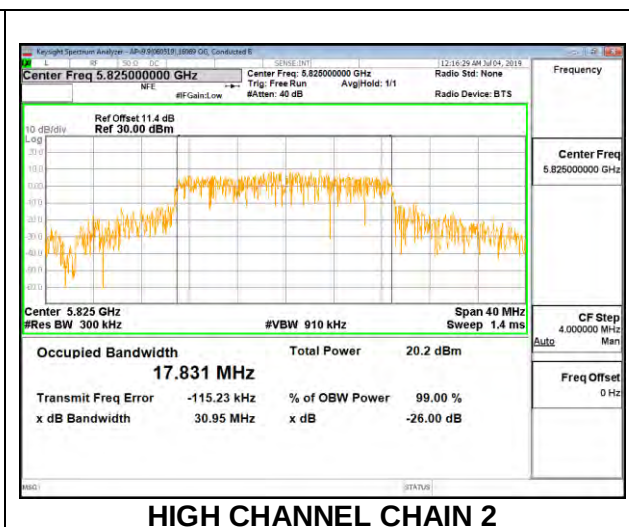
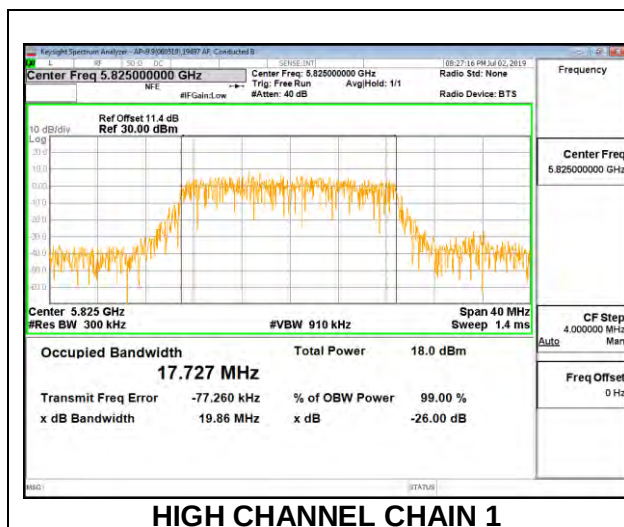
LOW CHANNEL CHAIN 1

LOW CHANNEL CHAIN 2

MID CHANNEL



HIGH CHANNEL

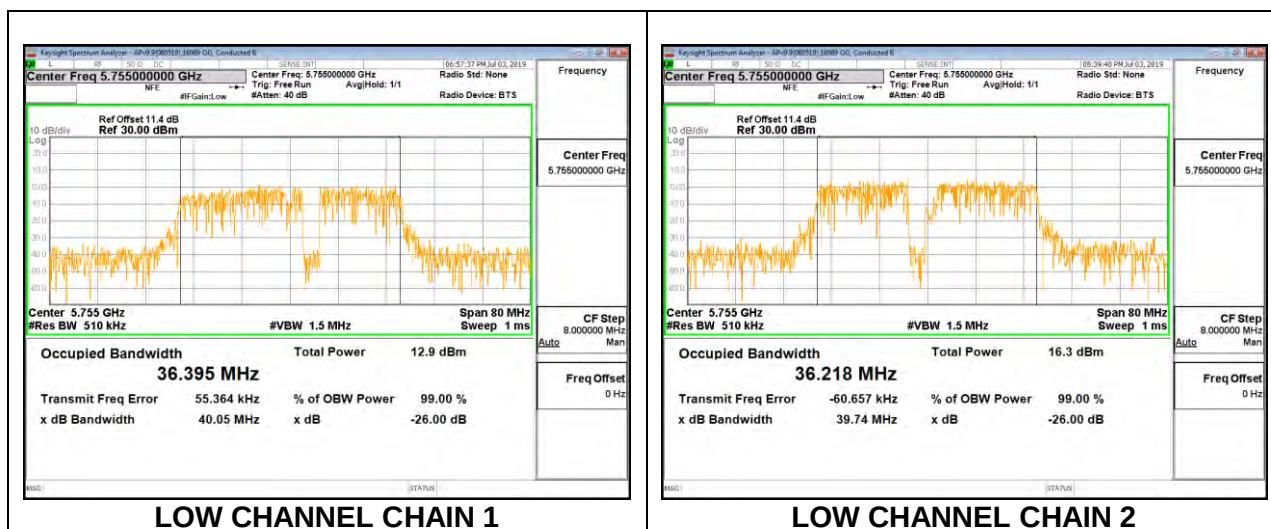


8.3.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND

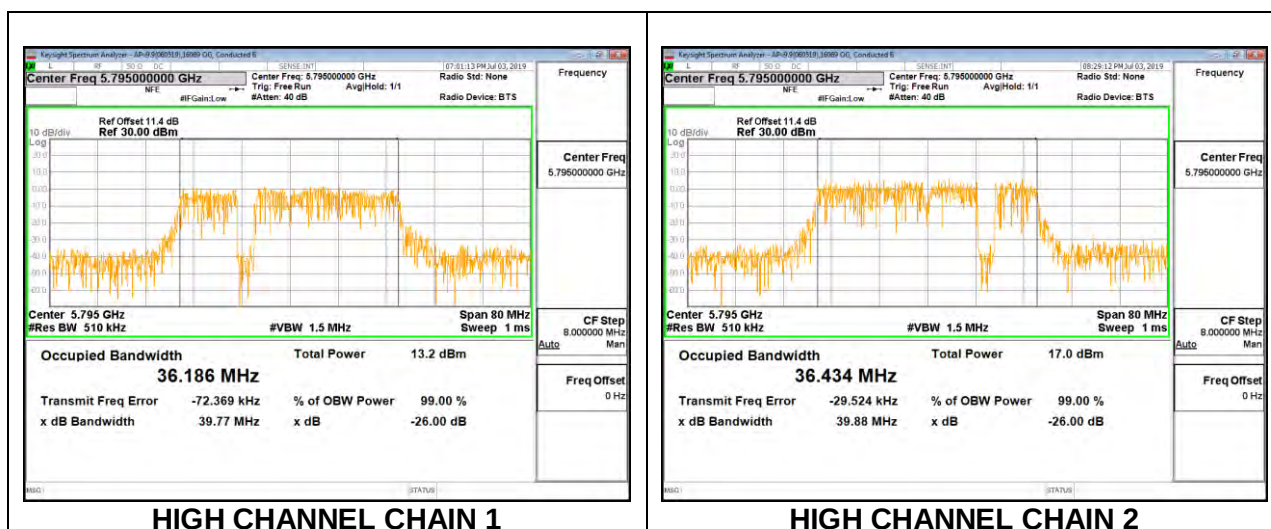
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Low	5755	36.395	36.218
High	5795	36.186	36.434

LOW CHANNEL



HIGH CHANNEL

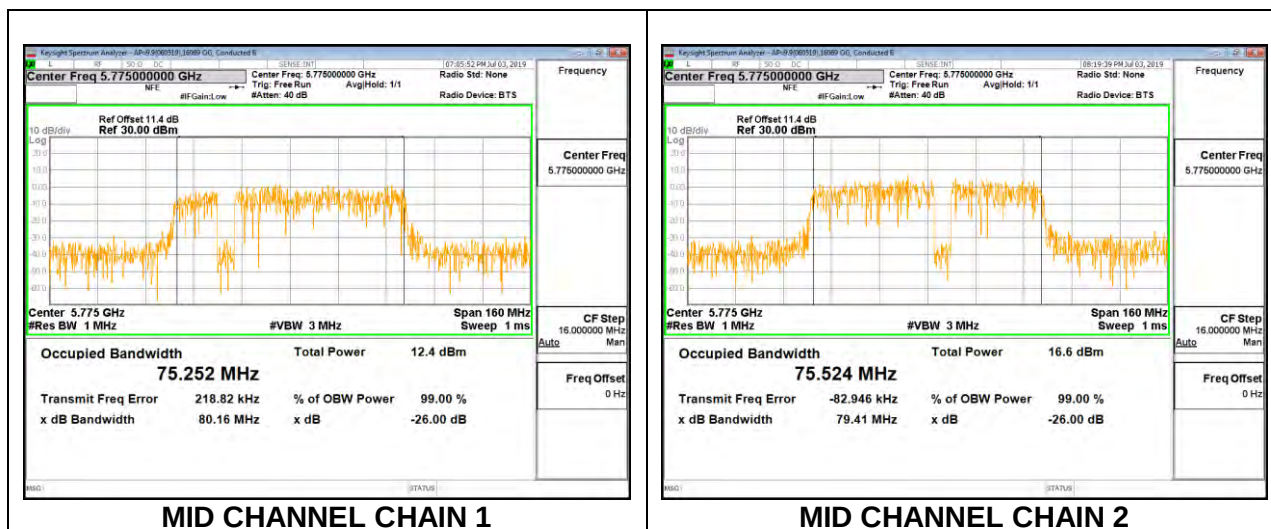


8.3.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)
Mid	5775	75.252	75.524

MID CHANNEL



8.4. 6 dB BANDWIDTH

LIMITS

FCC §15.407 (e)

RSS-247 6.2.4.1

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

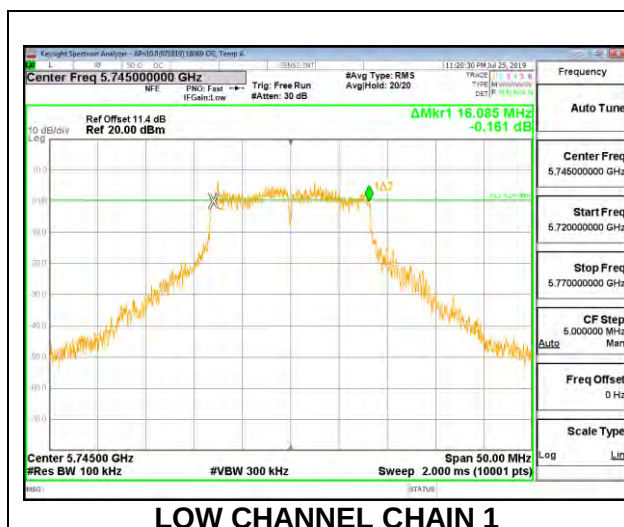
RESULTS

8.4.1. 802.11a MODE IN THE 5.8 GHz BAND

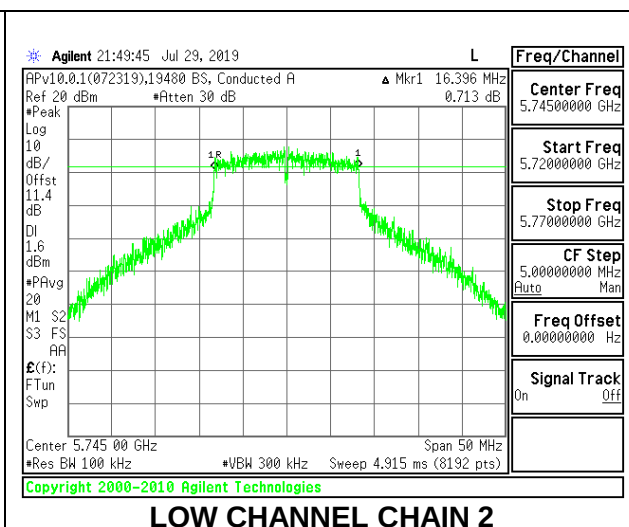
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW Chain 1 (MHz)	6 dB BW Chain 2 (MHz)	Minimum Limit (MHz)
Low	5745	16.085	16.396	0.5
Mid	5785	16.315	16.410	0.5
High	5825	16.345	16.470	0.5
144	5720	3.105	3.185	0.5

LOW CHANNEL

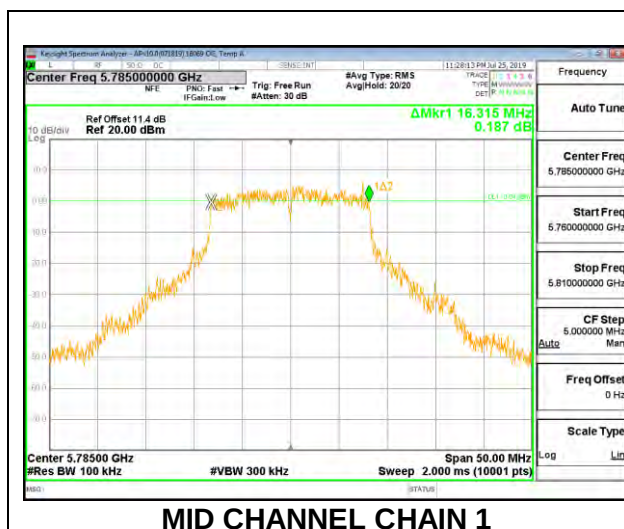


LOW CHANNEL CHAIN 1

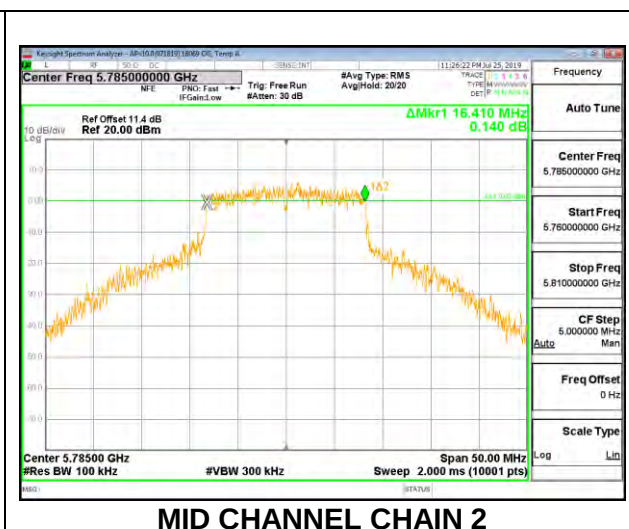


LOW CHANNEL CHAIN 2

MID CHANNEL

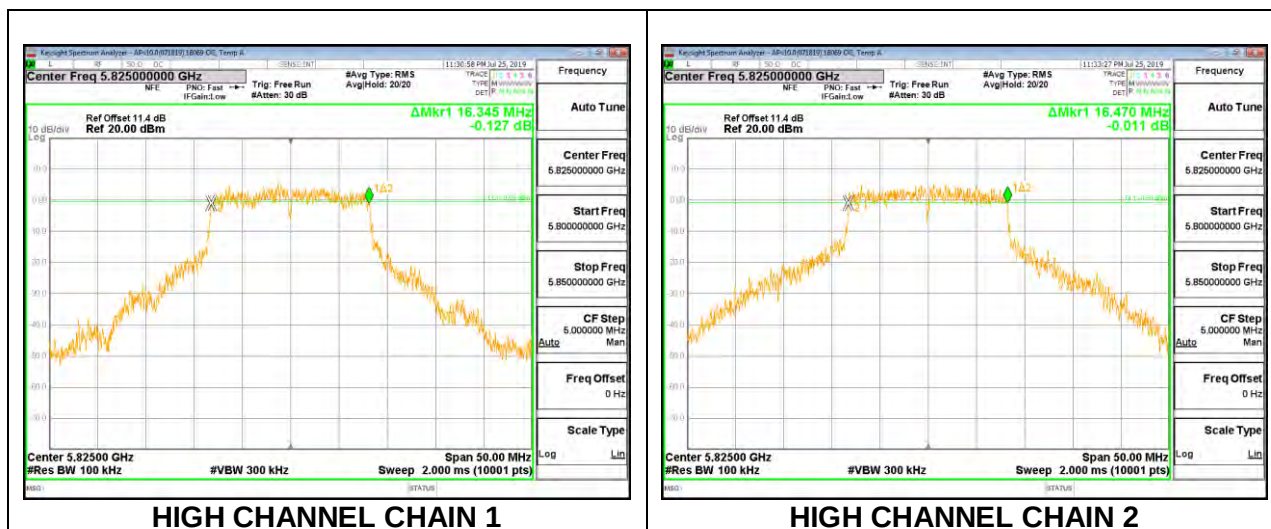


MID CHANNEL CHAIN 1

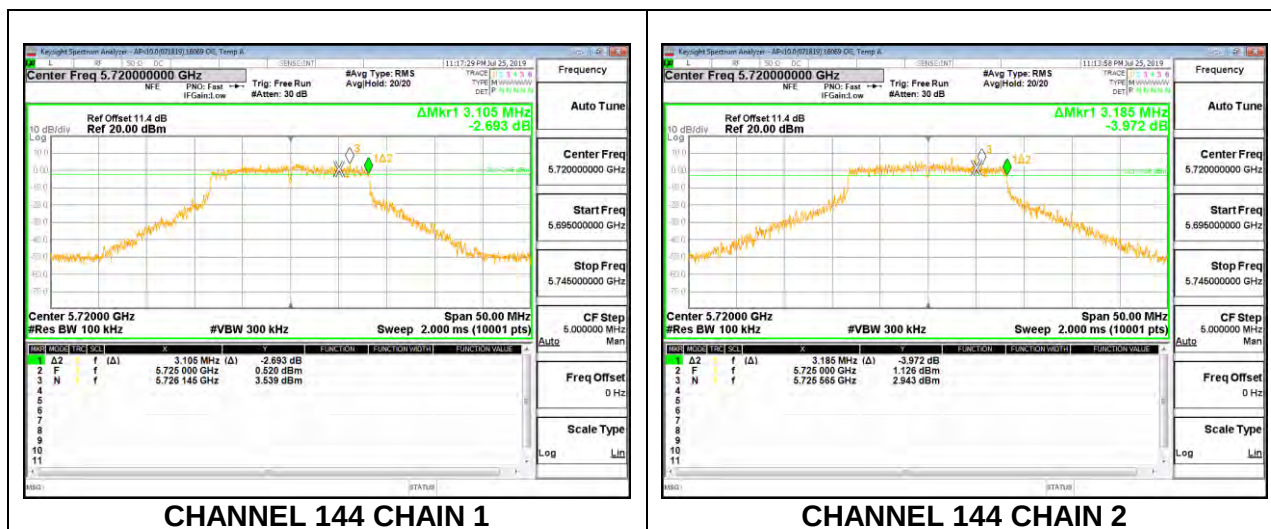


MID CHANNEL CHAIN 2

HIGH CHANNEL



CHANNEL 144

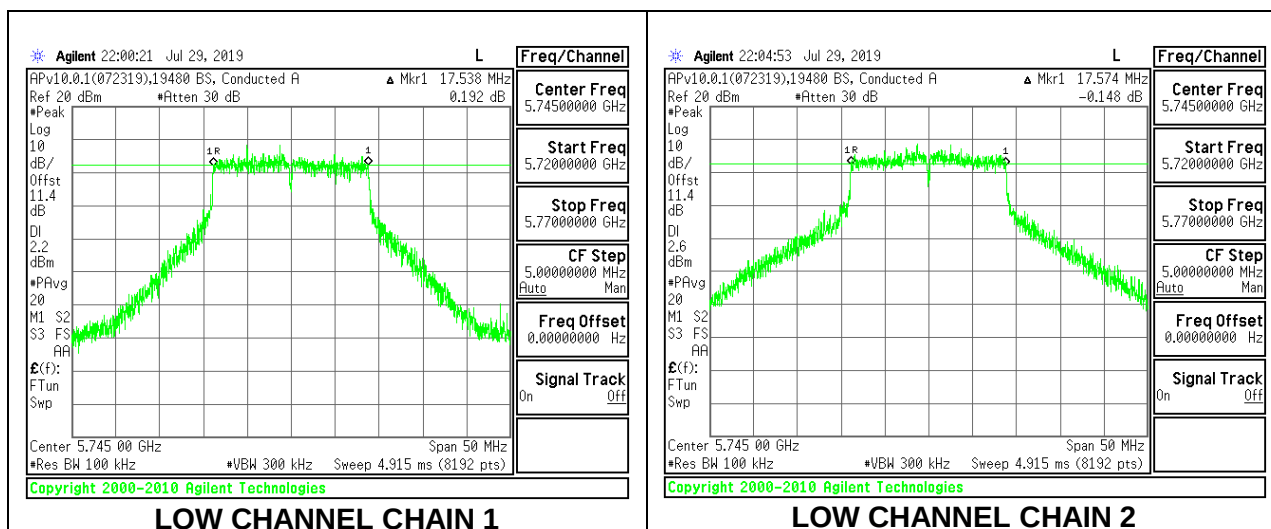


8.4.2. 802.11n HT20 MODE IN THE 5.8 GHz BAND

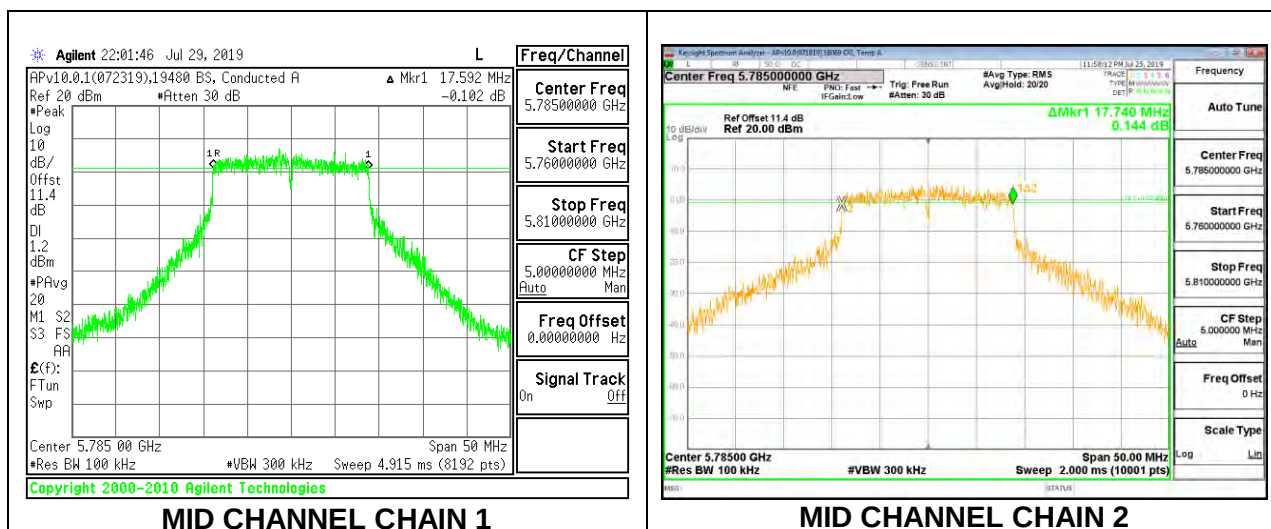
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW Chain 1 (MHz)	6 dB BW Chain 2 (MHz)	Minimum Limit (MHz)
Low	5745	17.538	17.574	0.5
Mid	5785	17.592	17.740	0.5
High	5825	17.585	17.666	0.5
144	5720	3.860	3.720	0.5

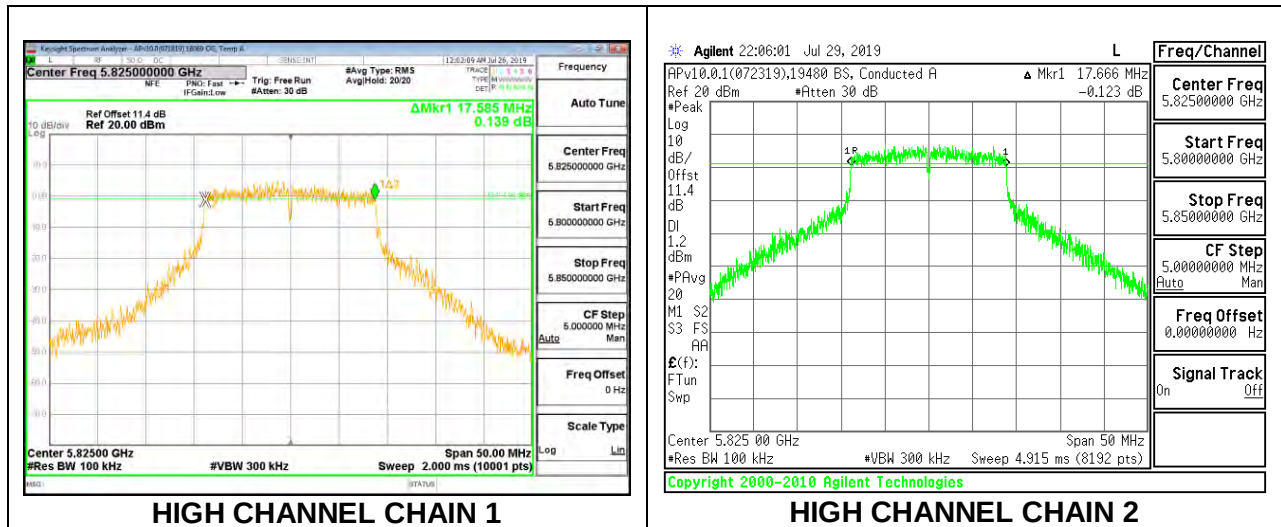
LOW CHANNEL



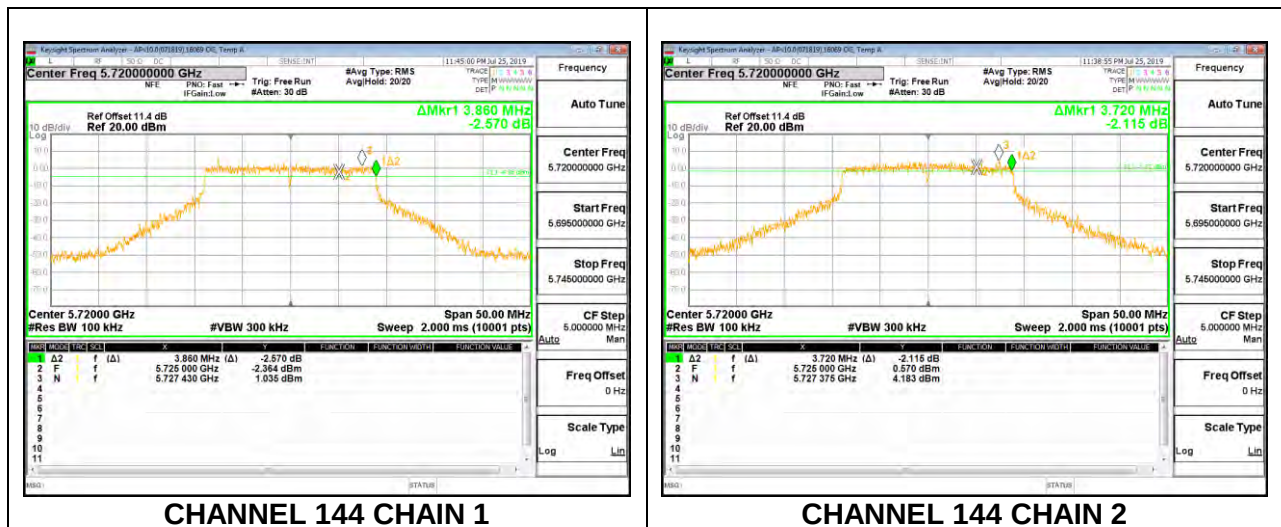
MID CHANNEL



HIGH CHANNEL



CHANNEL 144

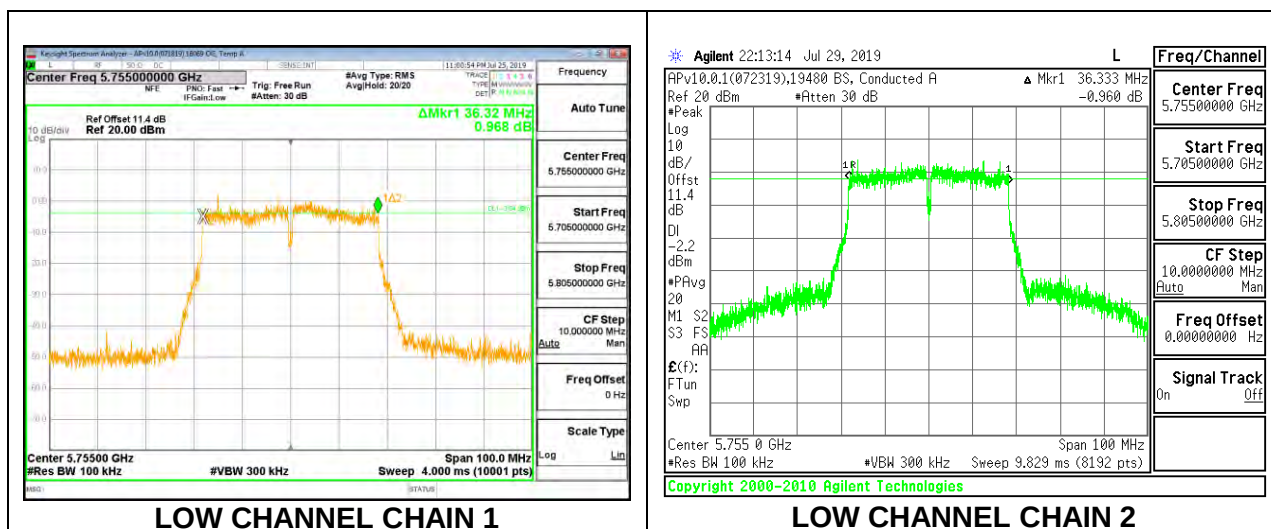


8.4.3. 802.11n HT40 MODE IN THE 5.8 GHz BAND

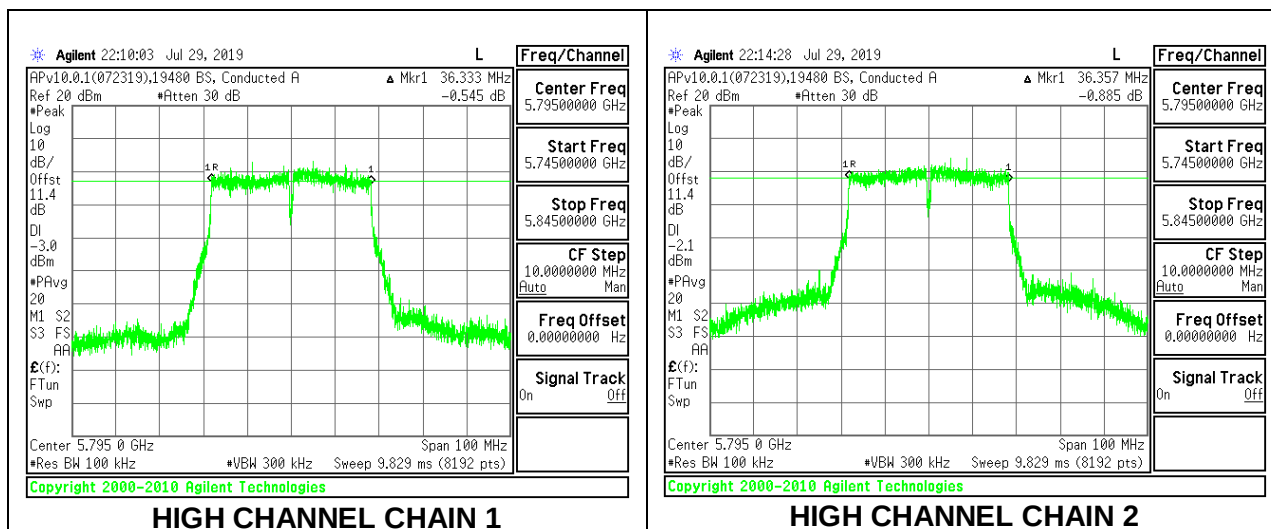
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW Chain 1 (MHz)	6 dB BW Chain 2 (MHz)	Minimum Limit (MHz)
Low	5755	36.320	36.333	0.5
High	5795	36.333	36.357	0.5
142	5710	3.200	3.090	0.5

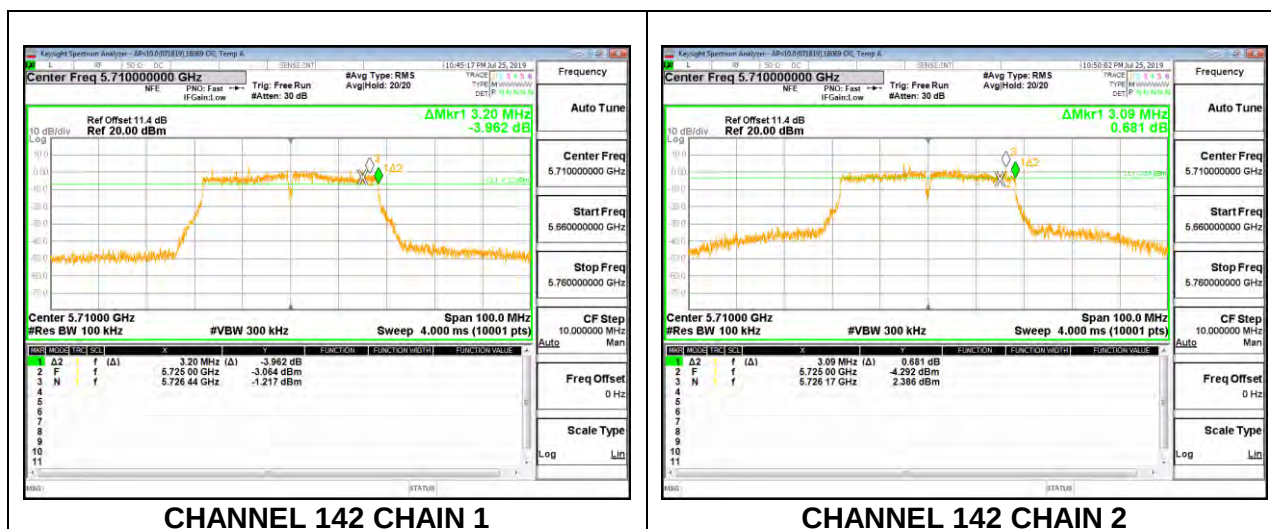
LOW CHANNEL



HIGH CHANNEL



CHANNEL 142

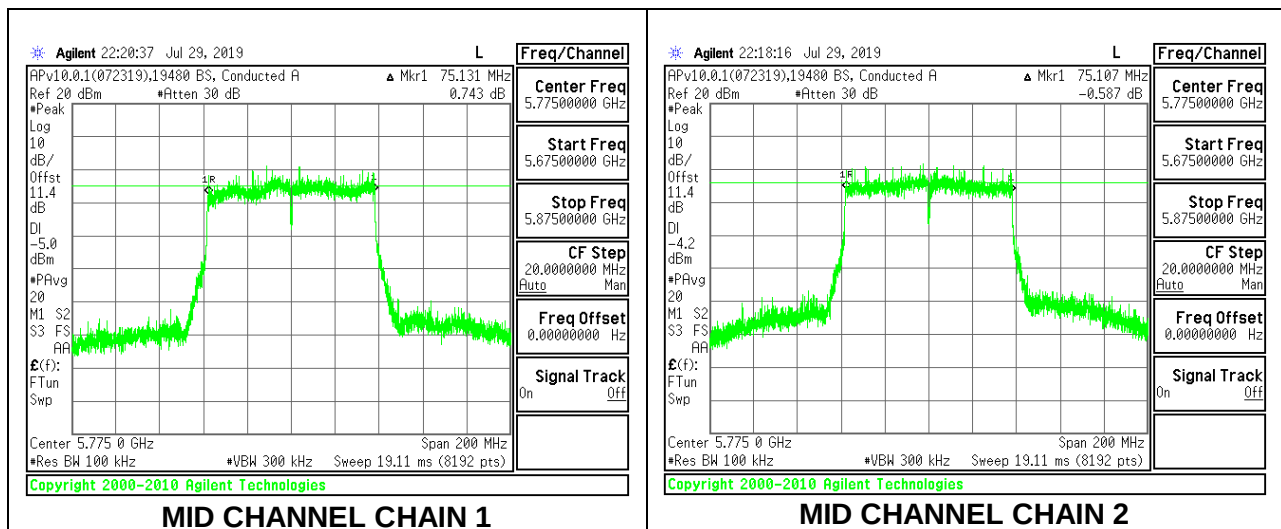


8.4.4. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

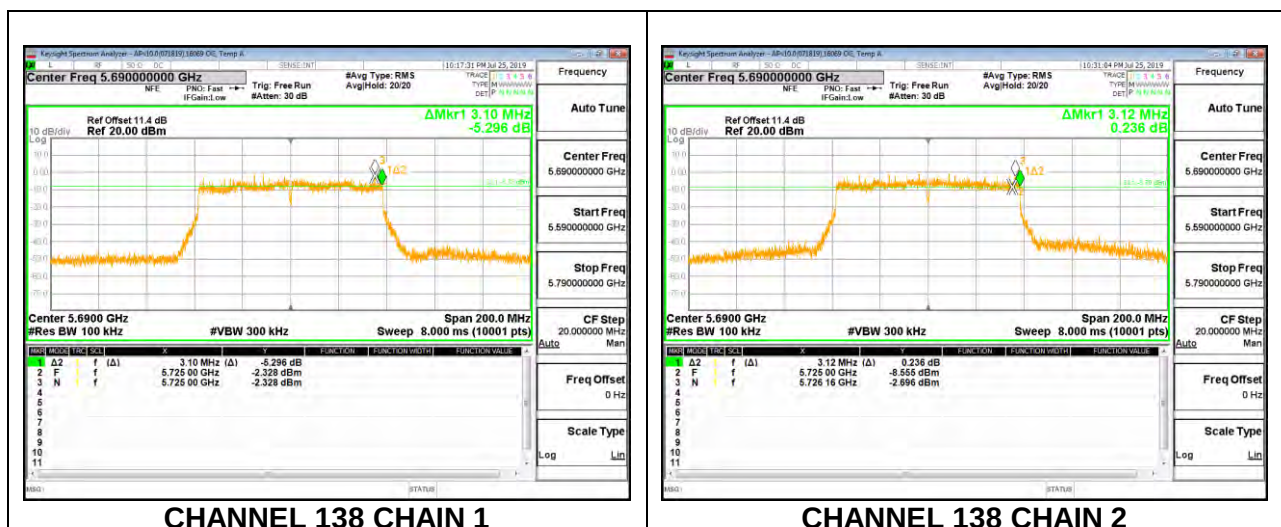
2TX Chain 1 + Chain 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW Chain 1 (MHz)	6 dB BW Chain 2 (MHz)	Minimum Limit (MHz)
Mid	5775	75.131	75.107	0.5
138	5690	3.100	3.120	0.5

MID CHANNEL



CHANNEL 138



8.5. OUTPUT POWER AND PSD

LIMITS

FCC §15.407

(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 $11 \text{ dBm} + 10 \log B$, 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.

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.

RSS-247

Band 5.15-5.25 GHz

The maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

Band 5.25-5.35 GHz

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

Bands 5.47-5.6 GHz and 5.65-5.725 GHz

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

Band 5.725-5.85 GHz

The maximum conducted output power shall not exceed 1 W. The 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 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 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.

For 2 TX:

Tx chains are uncorrelated for power and correlated for PSD due to the device supporting CDD in all MIMO modes. The directional gains are as follows:

Band (GHz)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
5.2	2.4	2.0	2.20	5.21
5.3	2.4	1.9	2.16	5.16
5.6	0.8	1.9	1.38	4.38
5.8	0.3	1.5	0.94	3.93