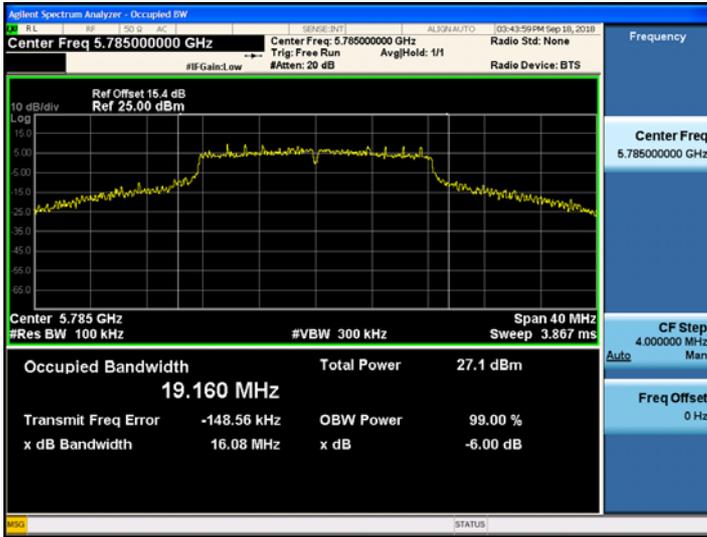


**TEST Plots for External Ant\_802.11a/n\_HT20/ac\_VHT20**

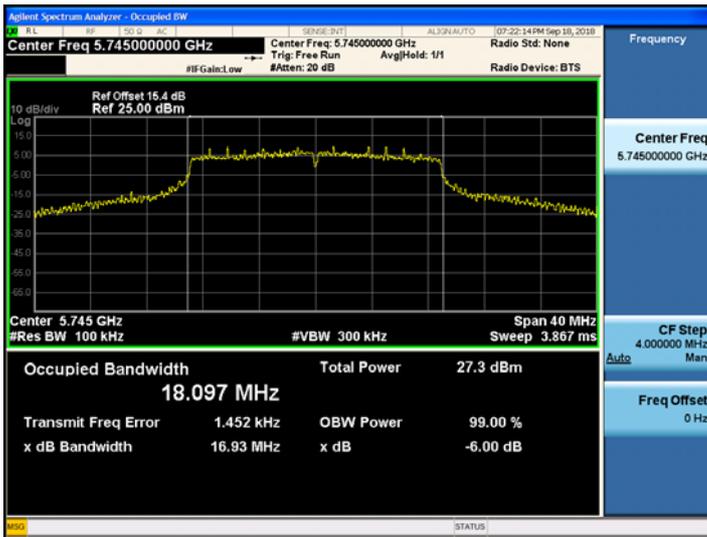
**802.11a UNII 3 BAND 6dB Bandwidth (CH.157)**



**802.11n\_HT20 UNII 3 BAND 6dB Bandwidth(CH.165)**



**802.11ac\_VHT20 UNII 3 BAND 6dB Bandwidth(CH.149)**



**Note : In order to simplify the report, attached plots were only the most narrow channel.**

■ TEST RESULTS for Internal Ant\_802.11n\_HT40/ac\_VHT40

Conducted 6 dB Bandwidth Measurements for 802.11n\_HT40

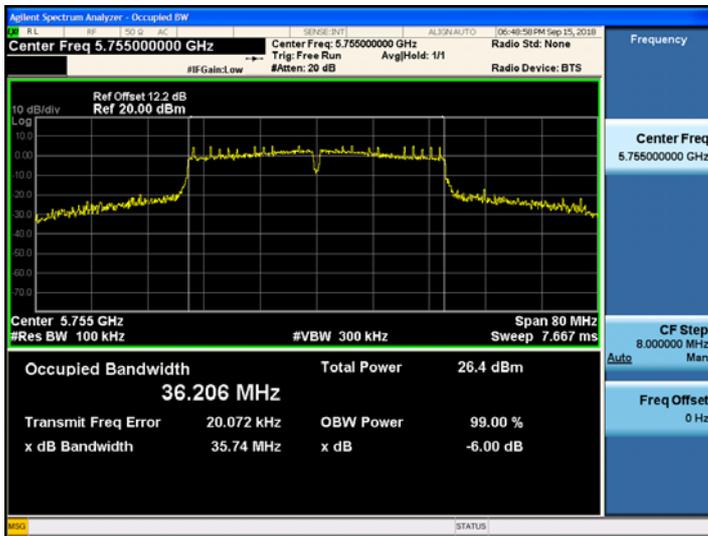
802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.74	0.5	Pass
5795	159	36.12	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac\_VHT40

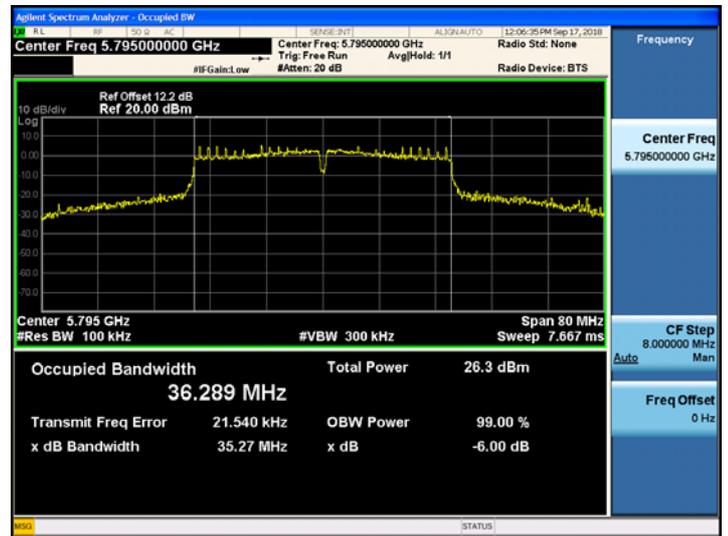
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.59	0.5	Pass
5795	159	35.27	0.5	Pass

■ TEST Plots for Internal Ant\_802.11n\_HT40/ac\_VHT40

802.11n\_40 MHz UNII 3 BAND 6dB Bandwidth (CH.151)



802.11ac\_VHT40 UNII 3 BAND 6dB Bandwidth(CH.159)



■ **TEST RESULTS** for External Ant\_802.11n\_HT40/ac\_VHT40

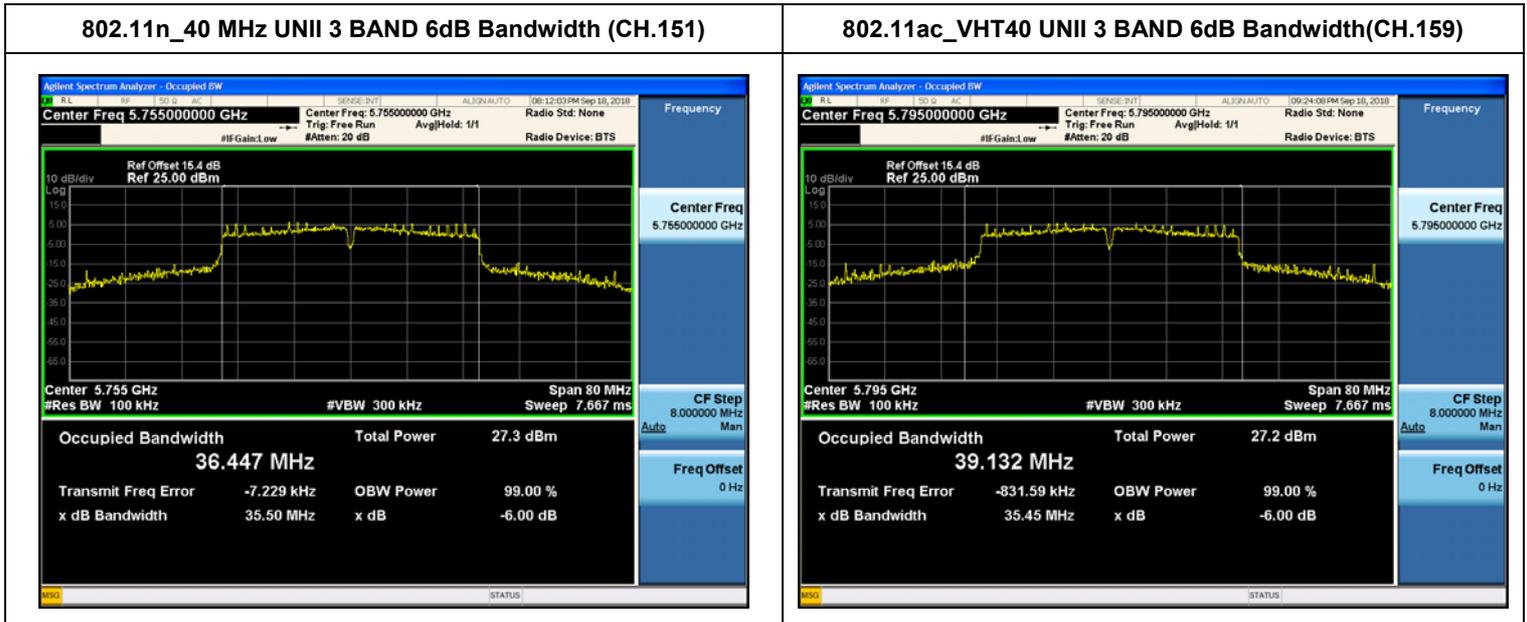
Conducted 6 dB Bandwidth Measurements for 802.11n\_HT40

802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.50	0.5	Pass
5795	159	35.70	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac\_VHT40

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.75	0.5	Pass
5795	159	35.45	0.5	Pass

■ **TEST Plots** for External Ant\_802.11n\_HT40/ac\_VHT40

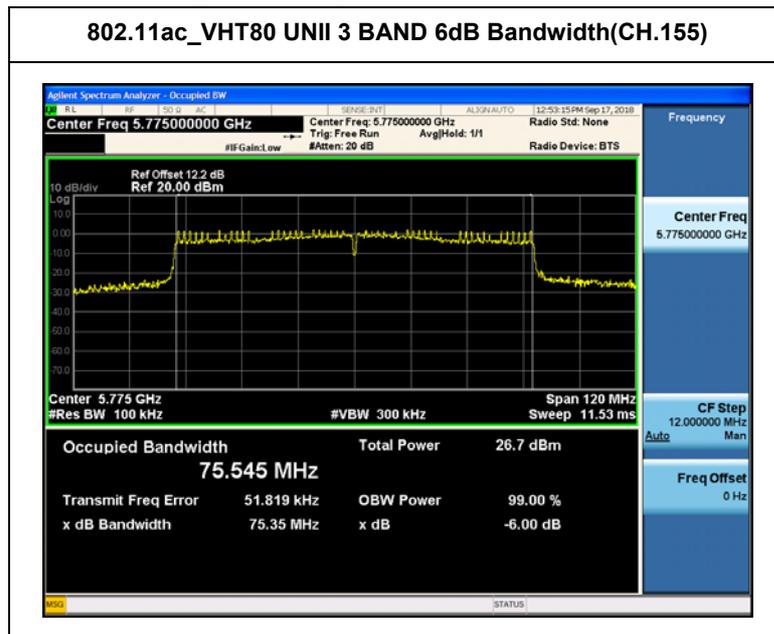


■ **TEST RESULTS Internal Ant\_for 802.11ac\_VHT80**

Conducted 6 dB Bandwidth Measurements for 802.11ac\_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	75.35	0.5	Pass

■ **TEST Plots for Internal Ant\_802.11ac\_VHT80**



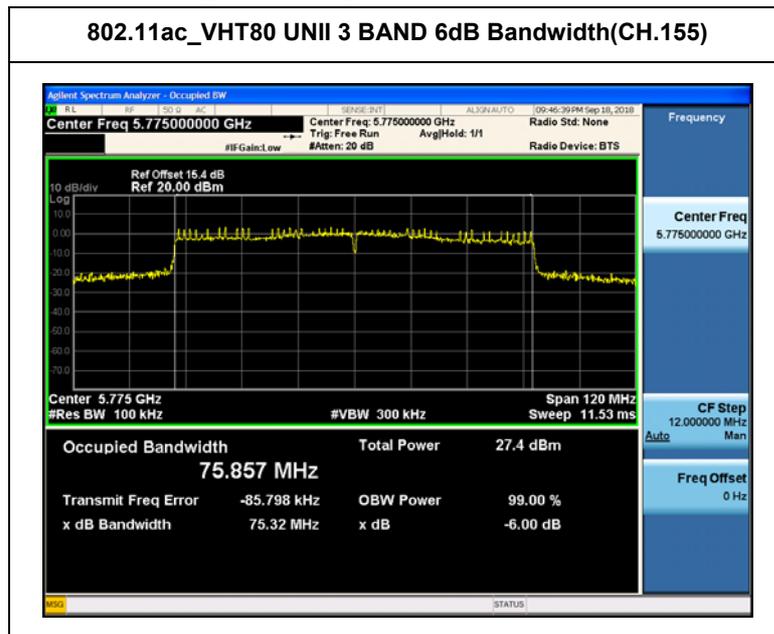
Note : In order to simplify the report, attached plots were only the most narrow channel.

■ **TEST RESULTS External Ant\_for 802.11ac\_VHT80**

Conducted 6 dB Bandwidth Measurements for 802.11ac\_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	75.32	0.5	Pass

■ **TEST Plots for External Ant\_802.11ac\_VHT80**



Note : In order to simplify the report, attached plots were only the most narrow channel.

■ **Straddle channels TEST RESULTS\_ Internal Ant**

**Conducted Bandwidth Measurements for 802.11a/n\_HT20/ac\_VHT20 (UNII 2C Band)**

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11a	5720	144	16.46	N/A	Pass
802.11n			17.60	N/A	Pass
802.11ac			16.04	N/A	Pass

**Conducted Bandwidth Measurements for 802.11a/n\_HT20/ac\_VHT20 (UNII 3 Band)**

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11a	5720	144	6.80	N/A	Pass
802.11n			9.16	N/A	Pass
802.11ac			7.12	N/A	Pass

▣ Straddle channels TEST Plot for 802.11a/n\_HT20/ac\_VHT20\_Internal Ant

802.11a CH.144 Bandwidth



802.11n\_HT20 CH.144 Bandwidth



802.11ac\_VHT20 CH.144 Bandwidth



■ **Straddle channels TEST RESULTS\_External Ant**

**Conducted Bandwidth Measurements for 802.11a/n\_HT20/ac\_VHT20 (UNII 2C Band)**

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11a	5720	144	15.72	N/A	Pass
802.11n			15.84	N/A	Pass
802.11ac			16.12	N/A	Pass

**Conducted Bandwidth Measurements for 802.11a/n\_HT20/ac\_VHT20 (UNII 3 Band)**

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11a	5720	144	5.52	N/A	Pass
802.11n			5.88	N/A	Pass
802.11ac			6.28	N/A	Pass

▣ Straddle channels TEST Plot for 802.11a/n\_HT20/ac\_VHT20\_External Ant

802.11a CH.144 Bandwidth



802.11n\_HT20 CH.144 Bandwidth



802.11ac\_VHT20 CH.144 Bandwidth



■ Straddle channels TEST RESULTS\_ Internal Ant

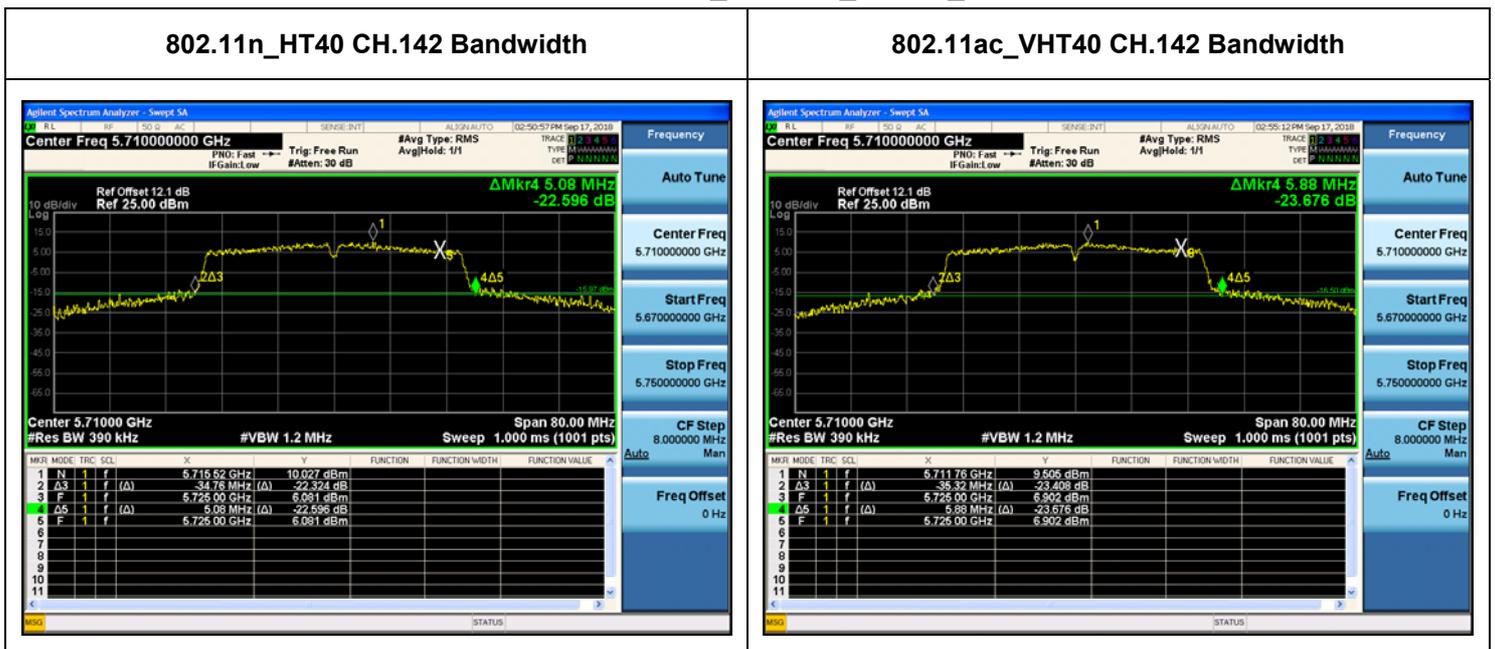
Conducted Bandwidth Measurements for 802.11n\_HT40/ac\_VHT40 (UNII 2C Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11n	5710	142	34.76	N/A	Pass
802.11ac			35.32	N/A	Pass

Conducted Bandwidth Measurements for 802.11n\_HT40/ac\_VHT40 (UNII 3 Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11n	5710	142	5.08	N/A	Pass
802.11ac			5.88	N/A	Pass

■ Straddle channels TEST Plot for 802.11n\_HT40/ac\_VHT40\_ Internal Ant



■ **Straddle channels TEST RESULTS\_External Ant**

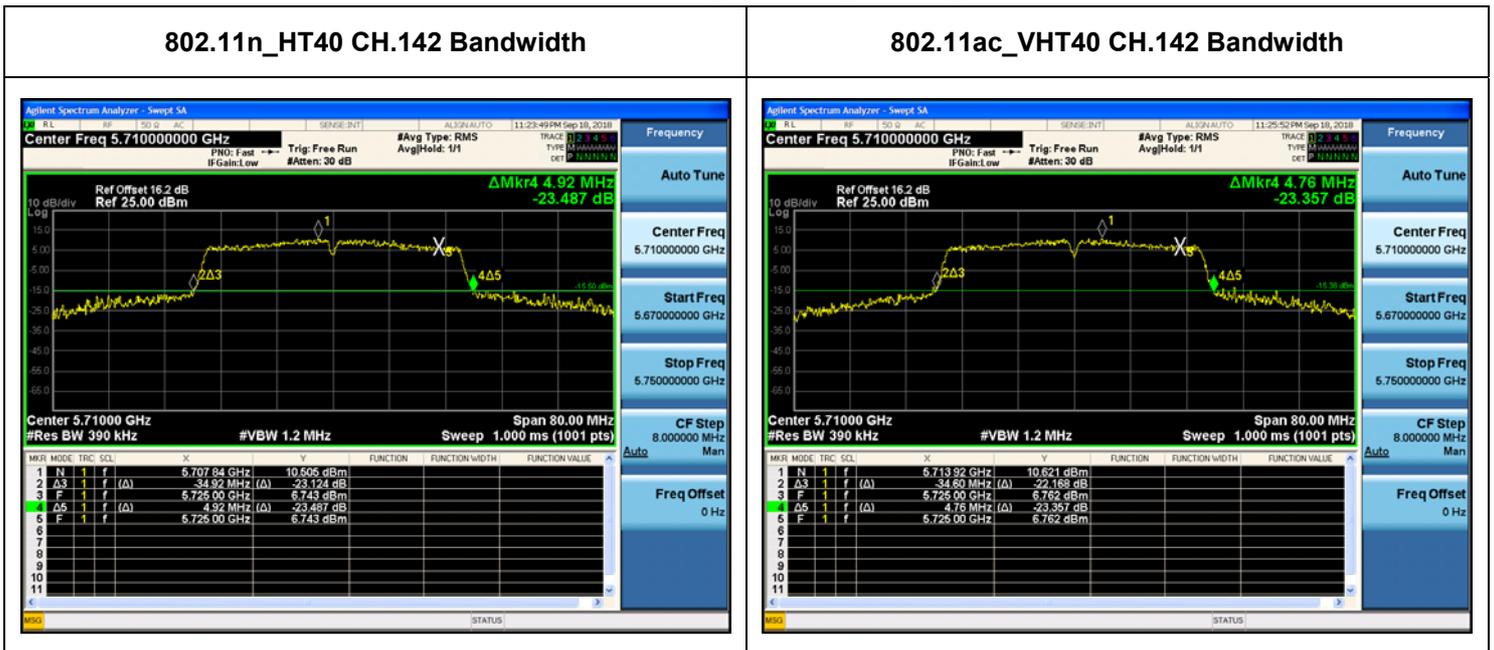
**Conducted Bandwidth Measurements for 802.11n\_HT40/ac\_VHT40 (UNII 2C Band)**

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11n	5710	142	34.92	N/A	Pass
802.11ac			34.60	N/A	Pass

**Conducted Bandwidth Measurements for 802.11n\_HT40/ac\_VHT40 (UNII 3 Band)**

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11n	5710	142	4.92	N/A	Pass
802.11ac			4.76	N/A	Pass

■ **Straddle channels TEST Plot for 802.11n\_HT40/ac\_VHT40\_External Ant**



■ **Straddle channels TEST RESULTS\_ Internal Ant**

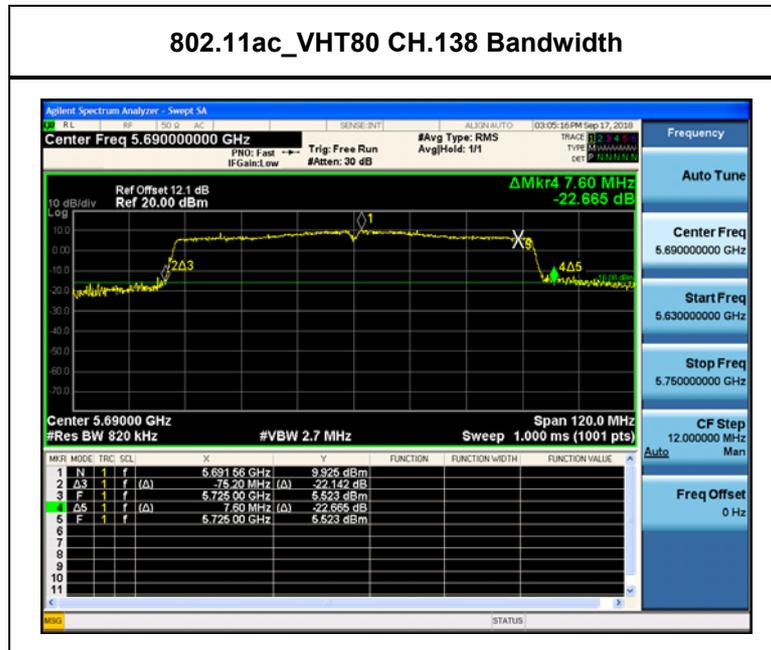
Conducted Bandwidth Measurements for 802.11ac\_VHT80 (UNII 2C Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11ac	5690	138	75.20	N/A	Pass

Conducted Bandwidth Measurements for 802.11ac\_VHT80 (UNII 3 Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11ac	5690	138	7.60	N/A	Pass

■ **Straddle channels TEST Plot for 802.11ac\_VHT80\_ Internal Ant**



■ **Straddle channels TEST RESULTS\_External Ant**

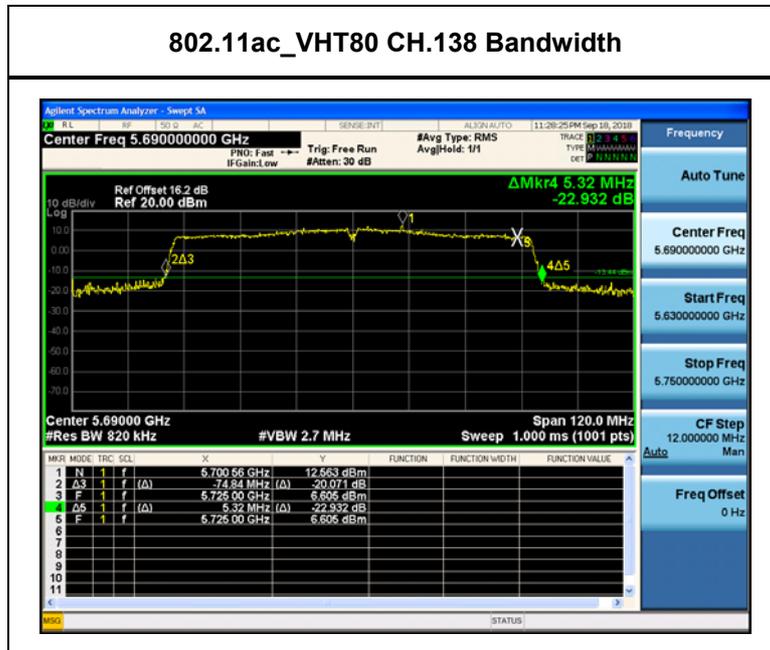
Conducted Bandwidth Measurements for 802.11ac\_VHT80 (UNII 2C Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11ac	5690	138	74.84	N/A	Pass

Conducted Bandwidth Measurements for 802.11ac\_VHT80 (UNII 3 Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11ac	5690	138	5.32	N/A	Pass

■ **Straddle channels TEST Plot for 802.11ac\_VHT80\_External Ant**

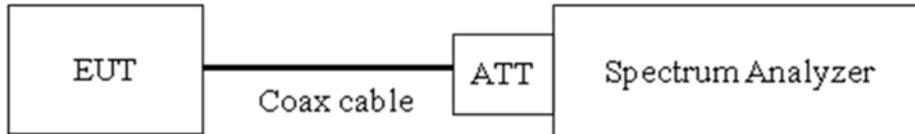


### 10.3 99% BANDWIDTH MEASUREMENT

None; for IC reporting purposes only

The 99 % bandwidth is used to determine the conducted power limits. (For IC).

#### ■ TEST CONFIGURATION



#### ■ TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to as close to 1% of the selected span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RBW = 1% of the total span

VBW  $\geq$  3 x RBW

Detector = Peak

Trace mode = max hold

Sweep = auto couple

Allow the trace to stabilize

■ **TEST RESULTS for Internal Ant\_802.11a**

**99% Bandwidth Measurements for 802.11a**

802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	17.070
5200	40	17.120
5240	48	17.140

**99% Bandwidth Measurements for 802.11a**

802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	17.107
5300	60	17.098
5320	64	17.123

**99% Bandwidth Measurements for 802.11a**

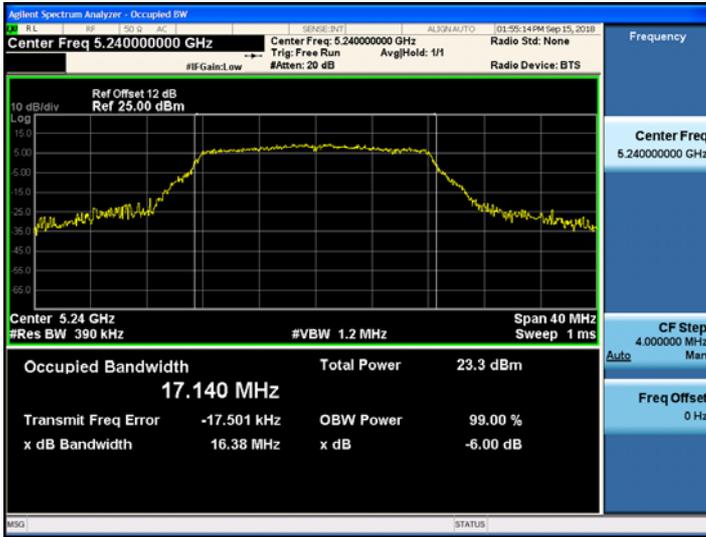
802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	17.171
5580	116	17.365
5720	144	18.050

**99% Bandwidth Measurements for 802.11a**

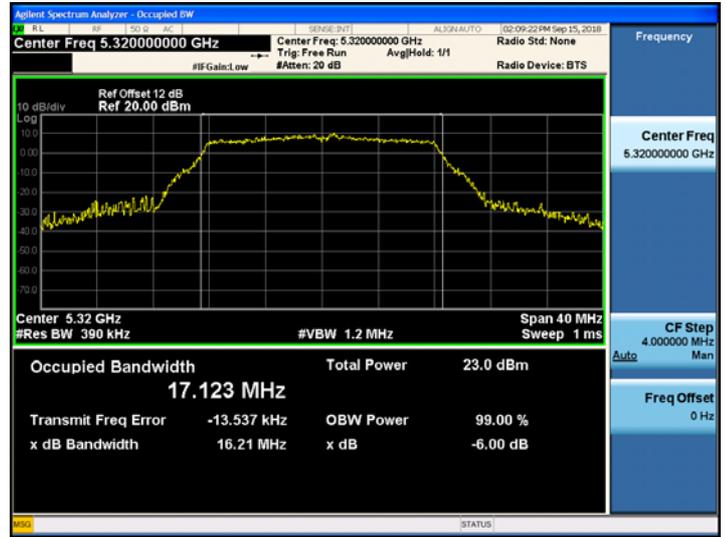
802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	17.946
5785	157	18.417
5825	165	19.026

TEST Plot for Internal Ant\_802.11a

802.11a UNII 1 BAND 99% Bandwidth (CH 48)



802.11a UNII 2A BAND 99% Bandwidth (CH 64)



802.11a UNII 2C BAND 99% Bandwidth (CH 144)



802.11a UNII 3 BAND 99% Bandwidth (CH 165)



Note : In order to simplify the report, attached plots were only the most wide channel.

**■ TEST RESULTS for External Ant\_802.11a****99% Bandwidth Measurements for 802.11a**

802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	17.463
5200	40	17.354
5240	48	17.369

**99% Bandwidth Measurements for 802.11a**

802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	17.382
5300	60	17.399
5320	64	17.422

**99% Bandwidth Measurements for 802.11a**

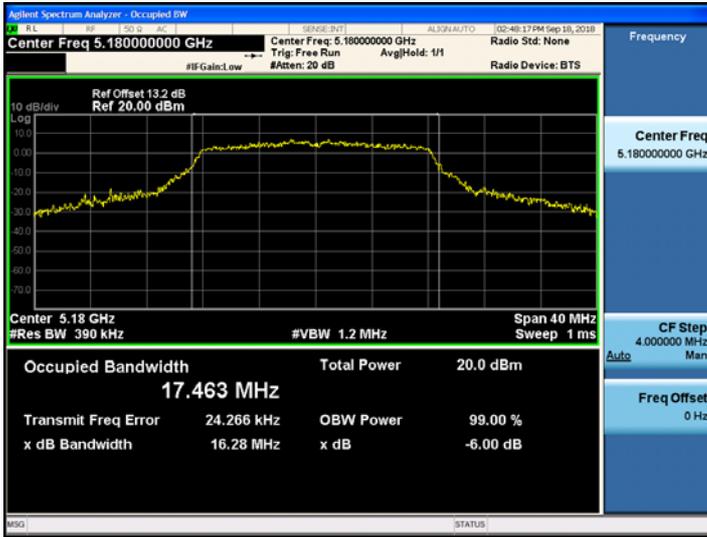
802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	17.400
5580	116	17.280
5720	144	17.304

**99% Bandwidth Measurements for 802.11a**

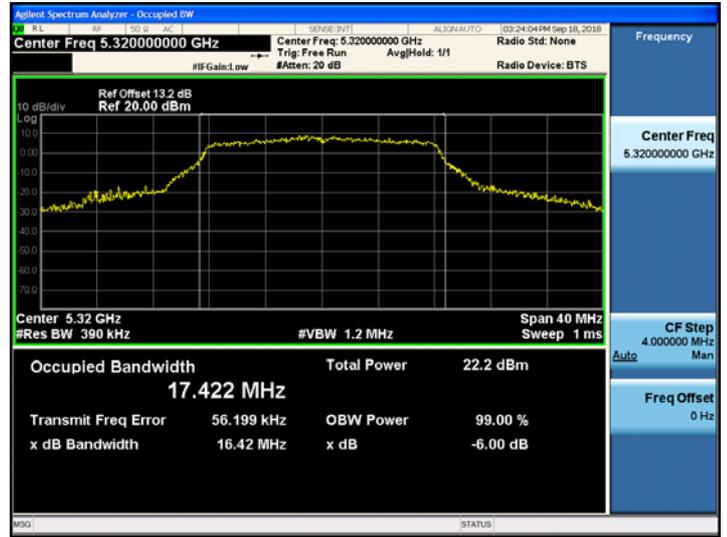
802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	18.355
5785	157	20.461
5825	165	21.968

**TEST Plot for External Ant\_802.11a**

**802.11a UNII 1 BAND 99% Bandwidth (CH 36)**



**802.11a UNII 2A BAND 99% Bandwidth (CH 64)**



**802.11a UNII 2C BAND 99% Bandwidth (CH 100)**



**802.11a UNII 3 BAND 99% Bandwidth (CH 165)**



Note : In order to simplify the report, attached plots were only the most wide channel.

■ **TEST RESULTS** for Internal Ant\_802.11n\_HT20

99% Bandwidth Measurements for 802.11n\_HT20

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	18.173
5200	40	18.237
5240	48	18.206

99% Bandwidth Measurements for 802.11n\_HT20

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	18.171
5300	60	18.232
5320	64	18.157

99% Bandwidth Measurements for 802.11n\_HT20

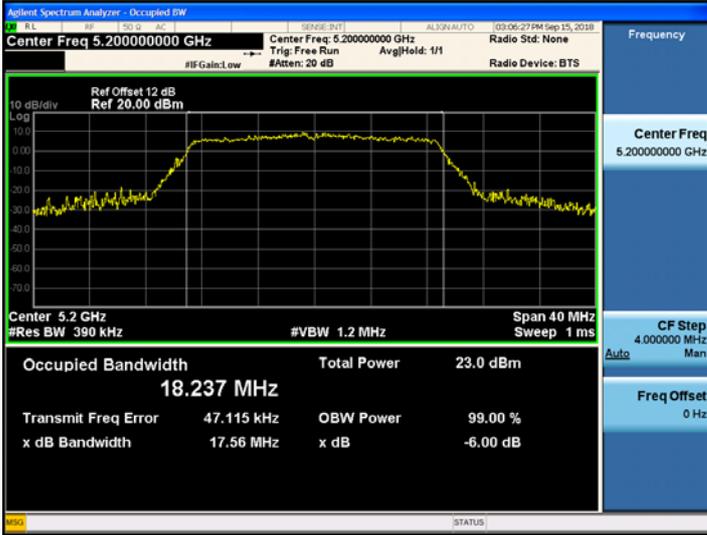
802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	18.217
5580	116	18.390
5720	144	18.791

99% Bandwidth Measurements for 802.11n\_HT20

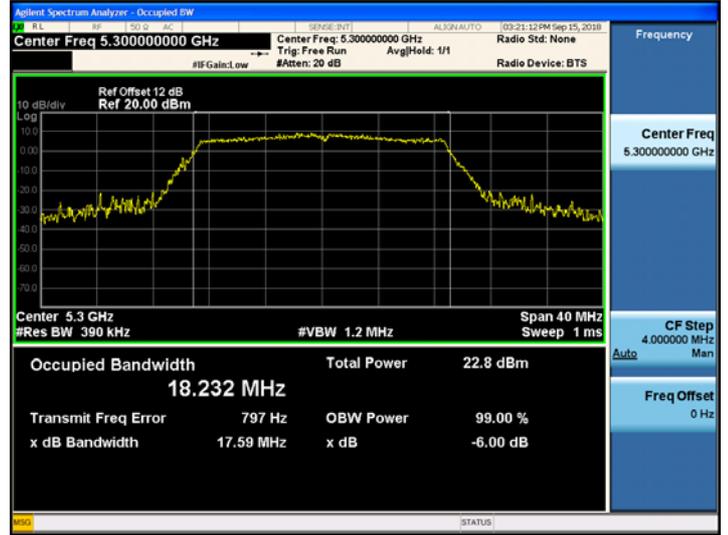
802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	18.807
5785	157	19.142
5825	165	19.609

**TEST Plot for Internal Ant\_802.11n\_HT20**

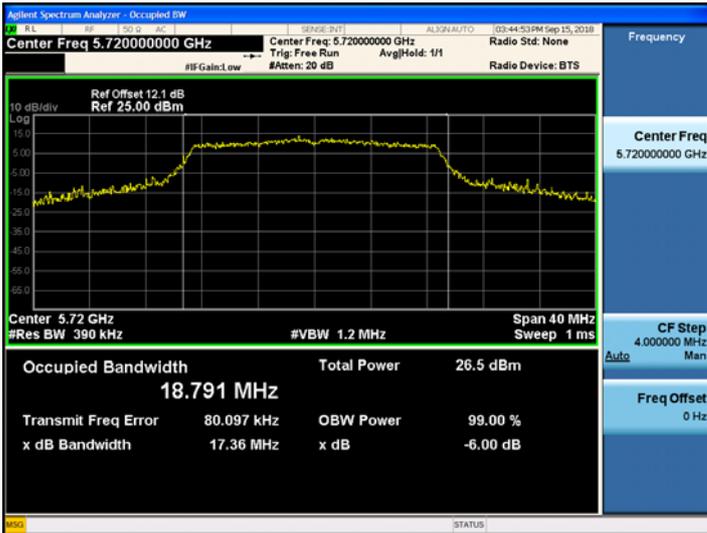
**802.11n\_HT20 UNII 1 BAND 99% Bandwidth(CH 40)**



**802.11n\_HT20 UNII 2A BAND 99% Bandwidth(CH 60)**



**802.11n\_HT20 UNII 2C BAND 99% Bandwidth(CH 144)**



**802.11n\_HT20 UNII 3 BAND 99% Bandwidth(CH 165)**



Note : In order to simplify the report, attached plots were only the most wide channel.

■ **TEST RESULTS for External Ant\_802.11n\_HT20**

**99% Bandwidth Measurements for 802.11n\_HT20**

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	18.379
5200	40	18.406
5240	48	18.281

**99% Bandwidth Measurements for 802.11n\_HT20**

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	18.481
5300	60	18.440
5320	64	18.425

**99% Bandwidth Measurements for 802.11n\_HT20**

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	18.406
5580	116	18.323
5720	144	18.355

**99% Bandwidth Measurements for 802.11n\_HT20**

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	19.018
5785	157	20.216
5825	165	21.654

**TEST Plot for External Ant\_802.11n\_HT20**

**802.11n\_HT20 UNII 1 BAND 99% Bandwidth(CH 40)**



**802.11n\_HT20 UNII 2A BAND 99% Bandwidth(CH 52)**



**802.11n\_HT20 UNII 2C BAND 99% Bandwidth(CH 100)**



**802.11n\_HT20 UNII 3 BAND 99% Bandwidth(CH 165)**



Note : In order to simplify the report, attached plots were only the most wide channel.

■ **TEST RESULTS** for Internal Ant\_ 802.11ac\_VHT20

99% Bandwidth Measurements for 802.11ac\_VHT20

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	18.206
5200	40	18.222
5240	48	18.112

99% Bandwidth Measurements for 802.11ac\_VHT20

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	18.192
5300	60	18.155
5320	64	18.168

99% Bandwidth Measurements for 802.11ac\_VHT20

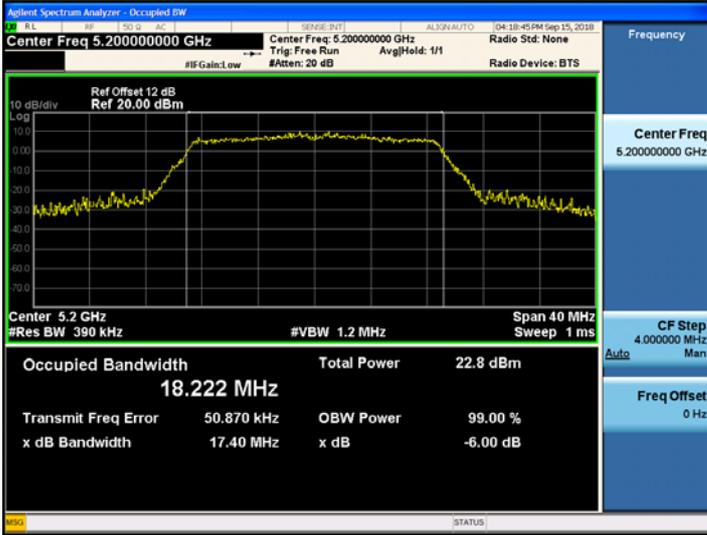
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	18.265
5580	116	18.375
5720	144	18.779

99% Bandwidth Measurements for 802.11ac\_VHT20

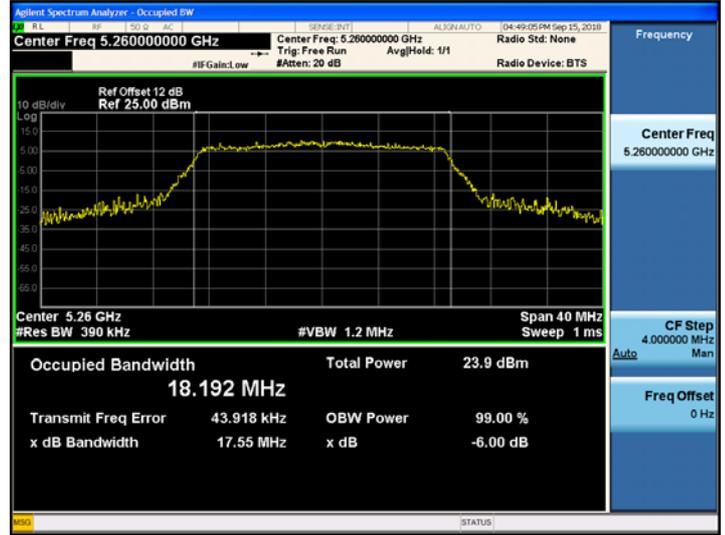
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	18.656
5785	157	19.070
5825	165	19.381

TEST Plot for Internal Ant\_ 802.11ac\_VHT20

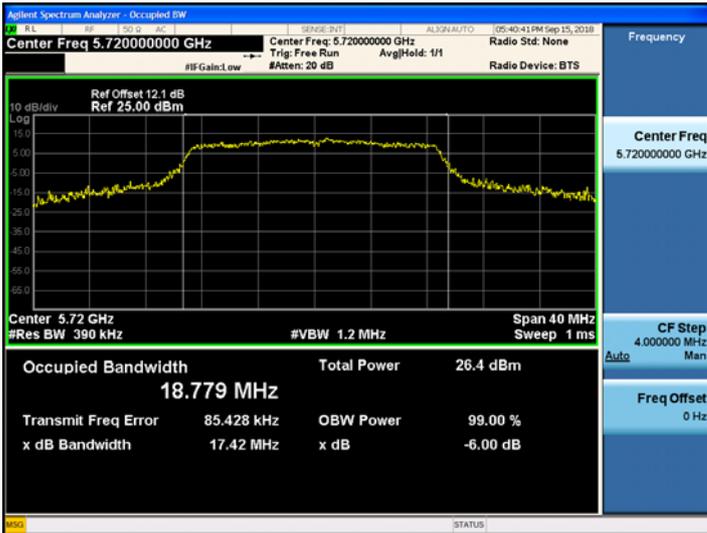
802.11ac\_VHT20 UNII 1 BAND 99% Bandwidth(CH 40)



802.11ac\_VHT20 UNII 2A BAND 99% Bandwidth(CH 52)



802.11ac\_VHT20 UNII 2C BAND 99% Bandwidth(CH 144)



802.11ac\_VHT20 UNII 3 BAND 99% Bandwidth(CH 165)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ **TEST RESULTS for External Ant\_ 802.11ac\_VHT20**

**99% Bandwidth Measurements for 802.11ac\_VHT20**

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	18.439
5200	40	18.343
5240	48	18.434

**99% Bandwidth Measurements for 802.11ac\_VHT20**

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	18.456
5300	60	18.476
5320	64	18.380

**99% Bandwidth Measurements for 802.11ac\_VHT20**

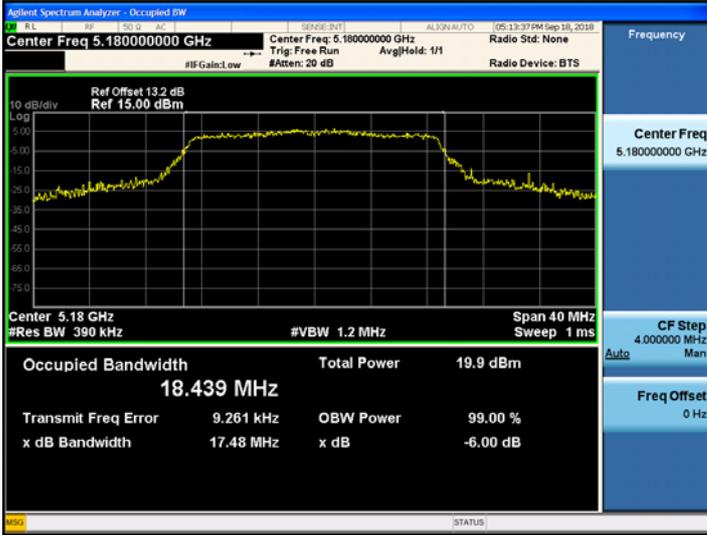
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	18.348
5580	116	18.382
5720	144	18.617

**99% Bandwidth Measurements for 802.11ac\_VHT20**

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	19.142
5785	157	20.734
5825	165	22.663

**TEST Plot for External Ant\_ 802.11ac\_VHT20**

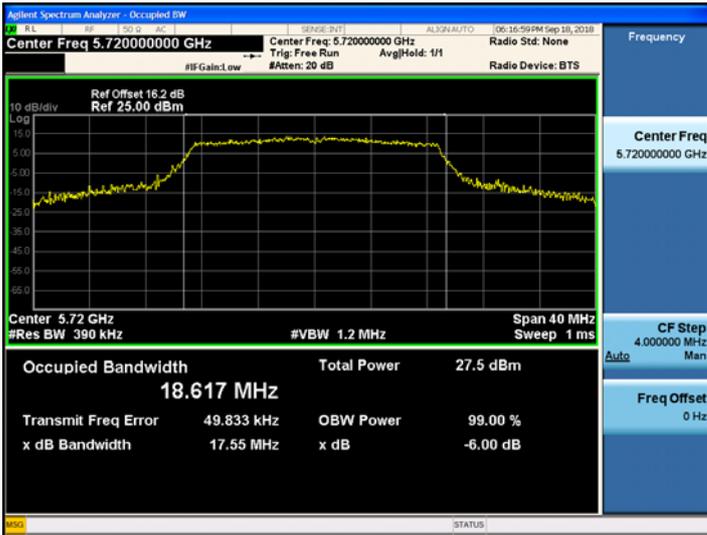
**802.11ac\_VHT20 UNII 1 BAND 99% Bandwidth(CH 36)**



**802.11ac\_VHT20 UNII 2A BAND 99% Bandwidth(CH 60)**



**802.11ac\_VHT20 UNII 2C BAND 99% Bandwidth(CH 144)**



**802.11ac\_VHT20 UNII 3 BAND 99% Bandwidth(CH 165)**



Note : In order to simplify the report, attached plots were only the most wide channel.

■ **TEST RESULTS for Internal Ant\_802.11n\_HT40**

**99% Bandwidth Measurements for 802.11n\_HT40**

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	36.386
5230	46	36.406

**99% Bandwidth Measurements for 802.11n\_HT40**

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5270	54	36.363
5310	62	36.324

**99% Bandwidth Measurements for 802.11n\_HT40**

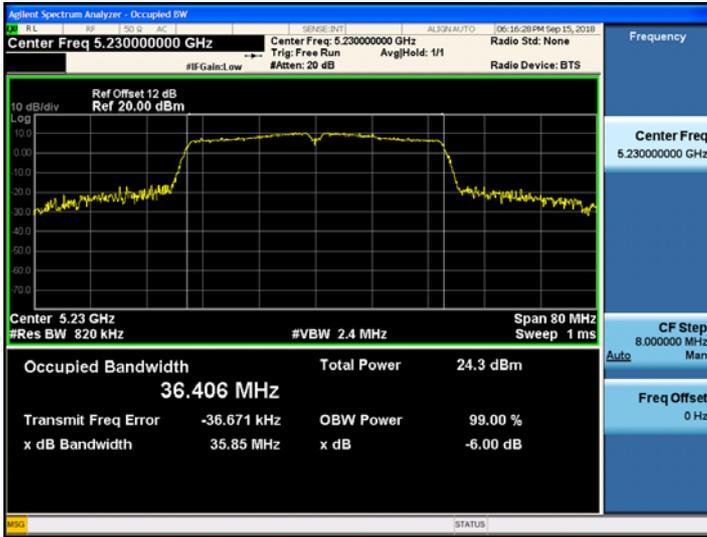
802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5510	102	36.415
5550	110	36.481
5710	142	36.857

**99% Bandwidth Measurements for 802.11n\_HT40**

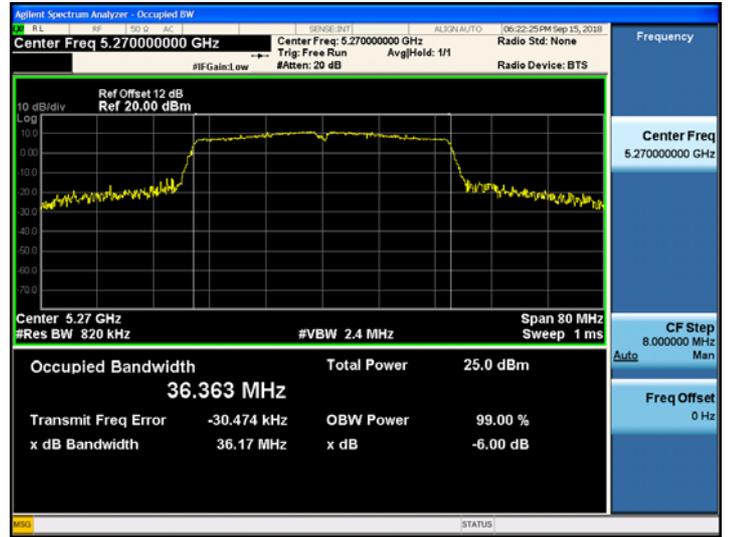
802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	36.862
5795	159	37.040

TEST Plot for Internal Ant\_802.11n\_HT40

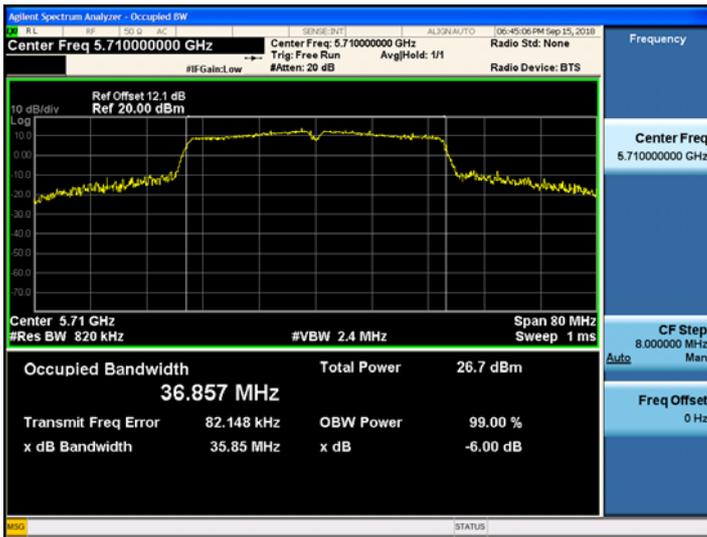
802.11n\_HT40 UNII 1 BAND 99% Bandwidth(CH 46)



802.11n\_HT40 UNII 2A BAND 99% Bandwidth (CH 54)



802.11n\_HT40 UNII 2C BAND 99% Bandwidth(CH 142)



802.11n\_HT40 UNII 3 BAND 99% Bandwidth (CH 159)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ **TEST RESULTS for External Ant\_802.11n\_HT40**

**99% Bandwidth Measurements for 802.11n\_HT40**

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	36.590
5230	46	36.539

**99% Bandwidth Measurements for 802.11n\_HT40**

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5270	54	36.614
5310	62	36.466

**99% Bandwidth Measurements for 802.11n\_HT40**

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5510	102	36.485
5550	110	36.621
5710	142	36.594

**99% Bandwidth Measurements for 802.11n\_HT40**

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	37.321
5795	159	39.304

TEST Plot for External Ant\_802.11n\_HT40

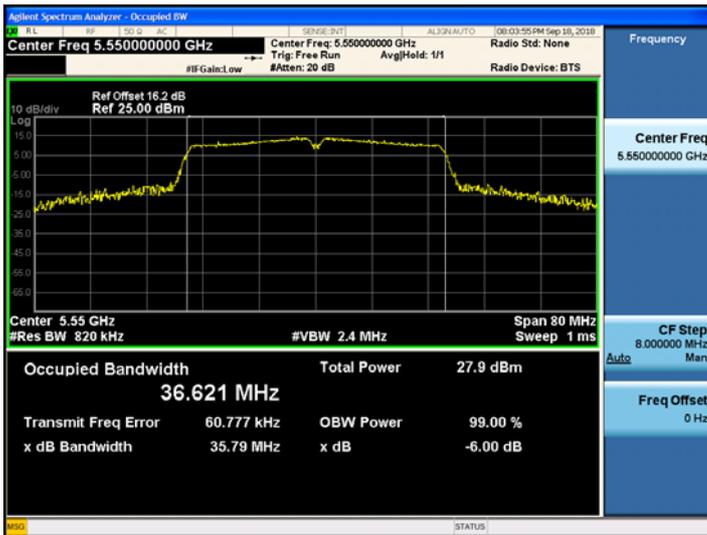
802.11n\_HT40 UNII 1 BAND 99% Bandwidth(CH 38)



802.11n\_HT40 UNII 2A BAND 99% Bandwidth (CH 54)



802.11n\_HT40 UNII 2C BAND 99% Bandwidth(CH 110)



802.11n\_HT40 UNII 3 BAND 99% Bandwidth (CH 159)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ **TEST RESULTS for Internal Ant\_802.11ac\_VHT40**

**99% Bandwidth Measurements for 802.11ac\_VHT40**

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	36.301
5230	46	36.322

**99% Bandwidth Measurements for 802.11ac\_VHT40**

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5270	54	36.389
5310	62	36.218

**99% Bandwidth Measurements for 802.11ac\_VHT40**

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5510	102	36.304
5550	110	36.417
5710	142	36.651

**99% Bandwidth Measurements for 802.11ac\_VHT40**

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	36.777
5795	159	36.876