

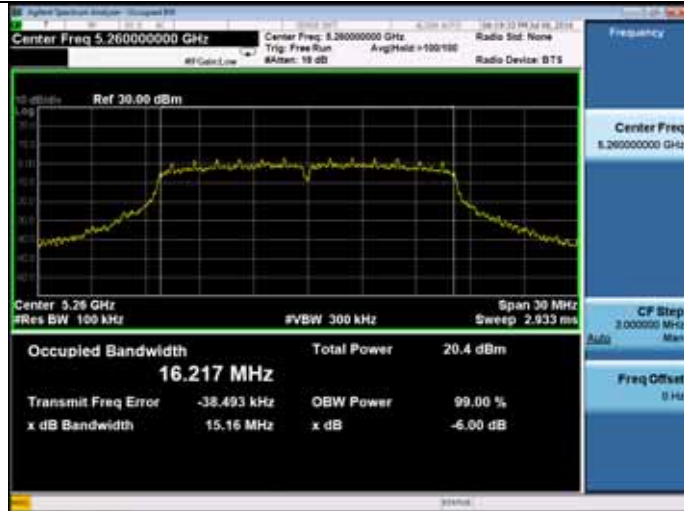
5260-5320MHz Band:

6dB & 99% bandwidth

ANT 0

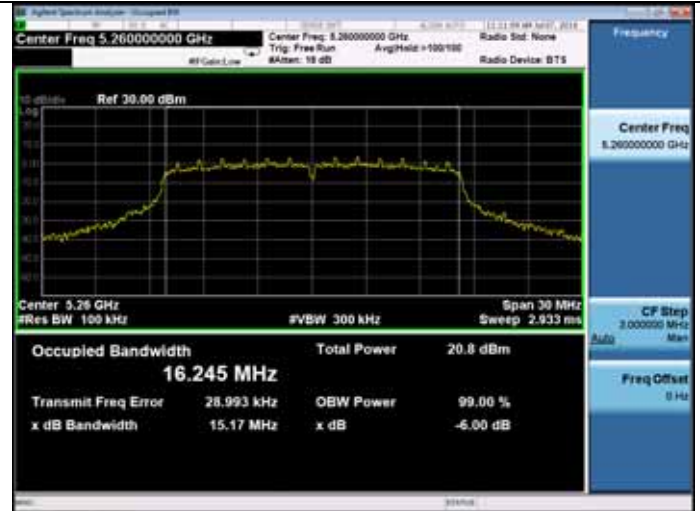
11a

5260MHz



11n HT20

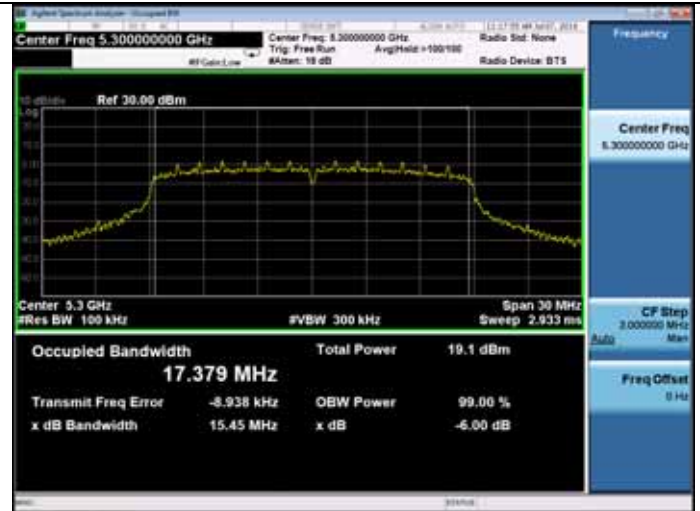
5260MHz



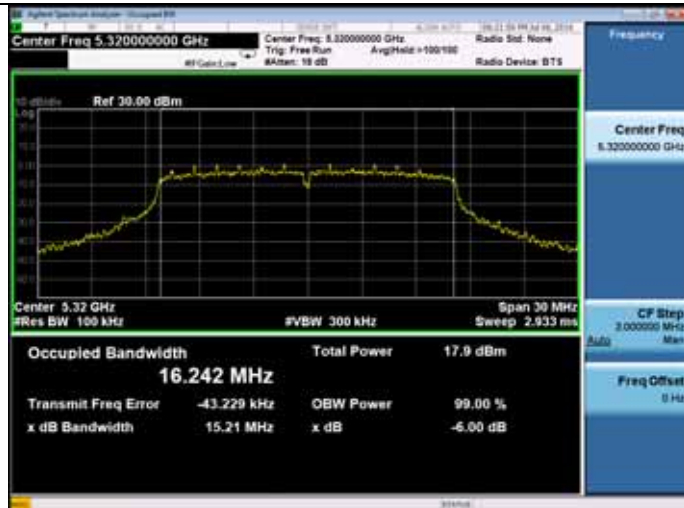
5300MHz



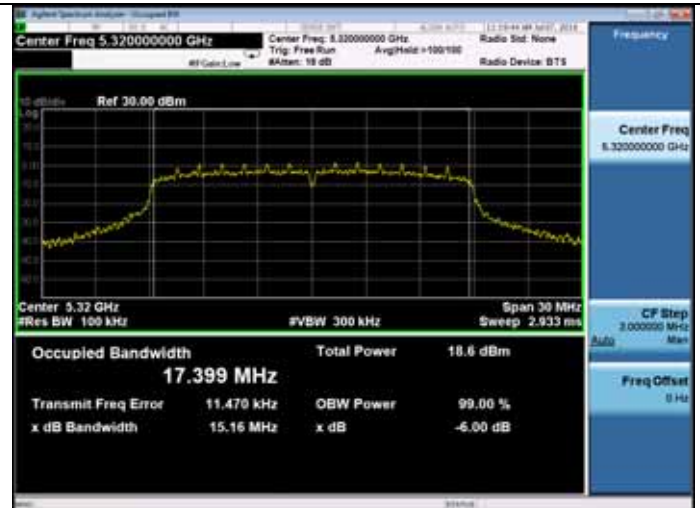
5300MHz



5320MHz

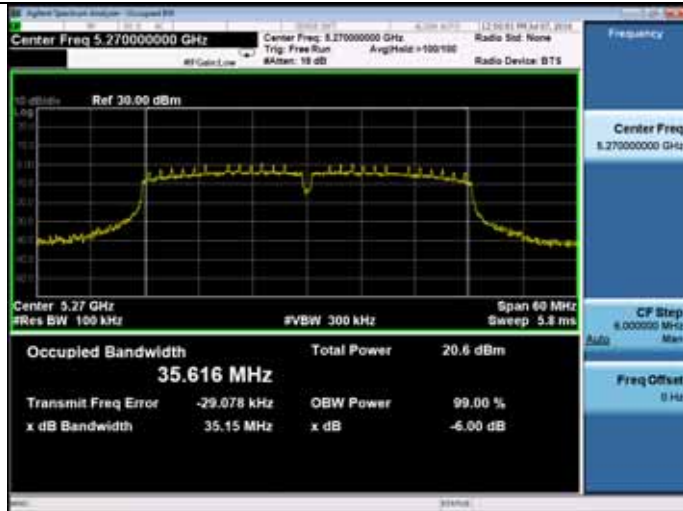


5320MHz

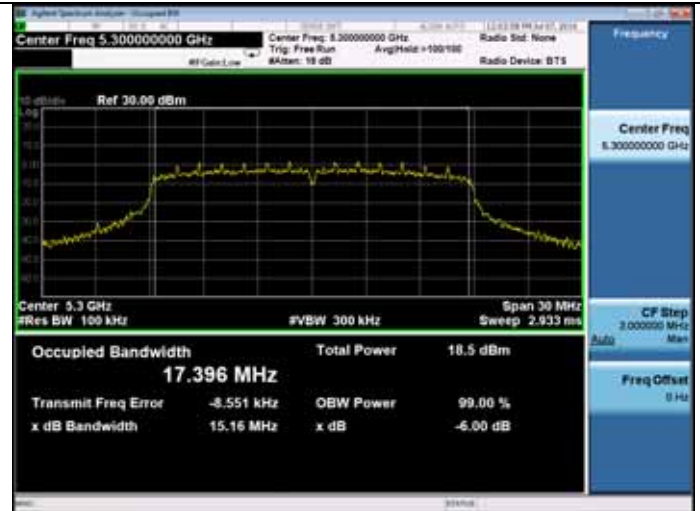


11n HT40

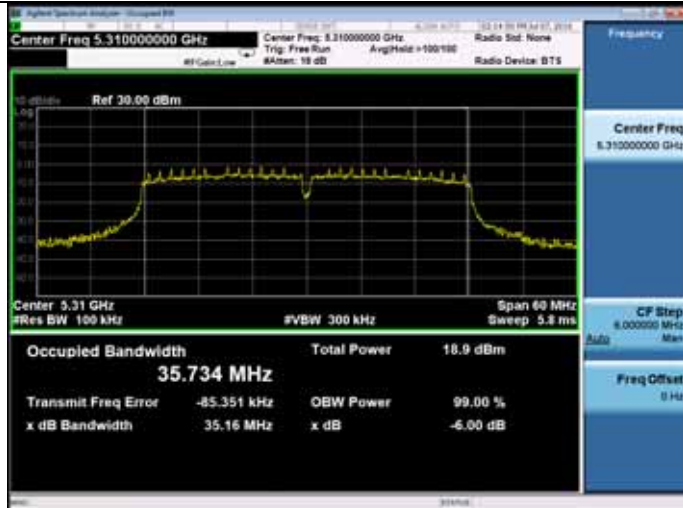
5270MHz



5300MHz



5310MHz

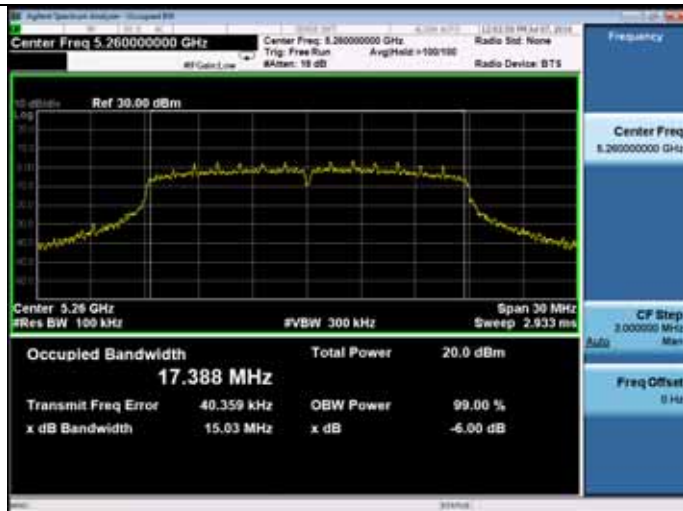


5320MHz



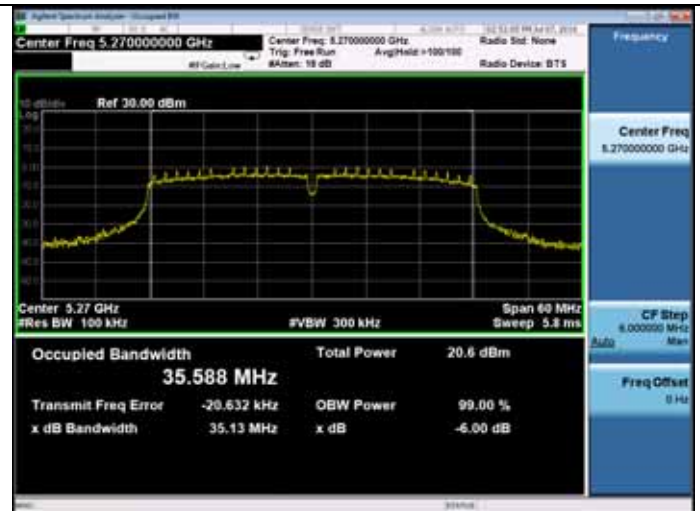
11ac VHT20

5260MHz

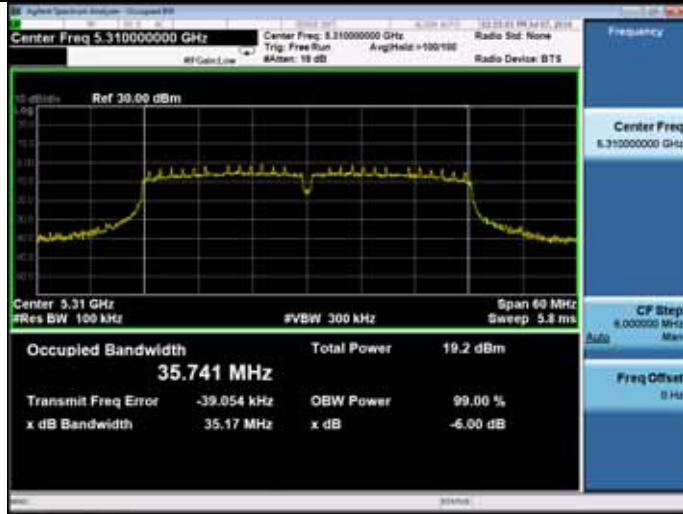


11ac VHT40

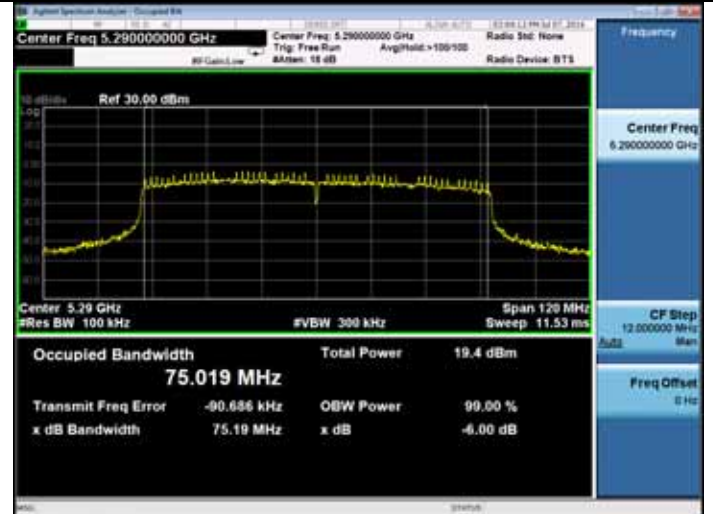
5270MHz



5310MHz



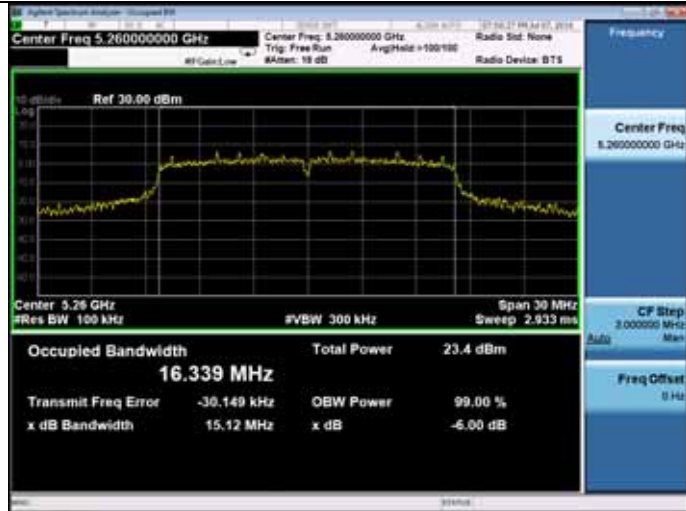
11ac VHT80
5290MHz



5260-5320MHz Band:
6dB & 99% bandwidth
ANT 1

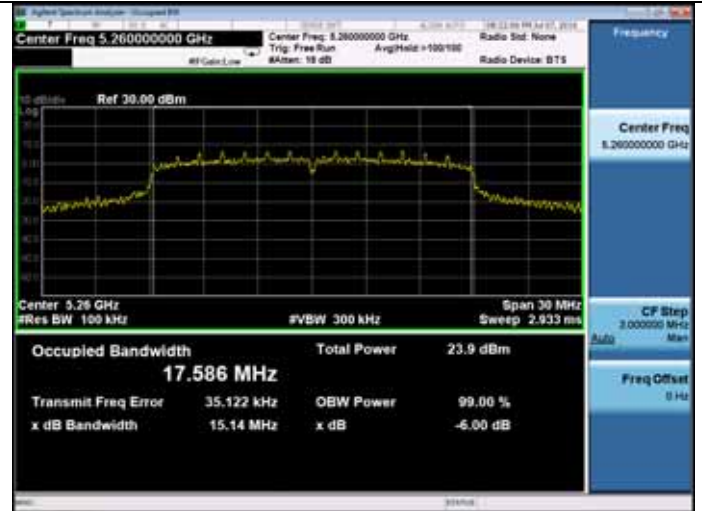
11a

5260MHz

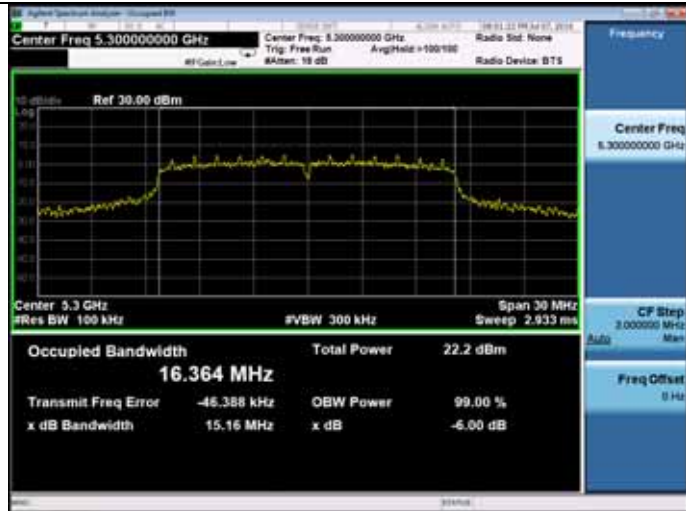


11n HT20

5260MHz



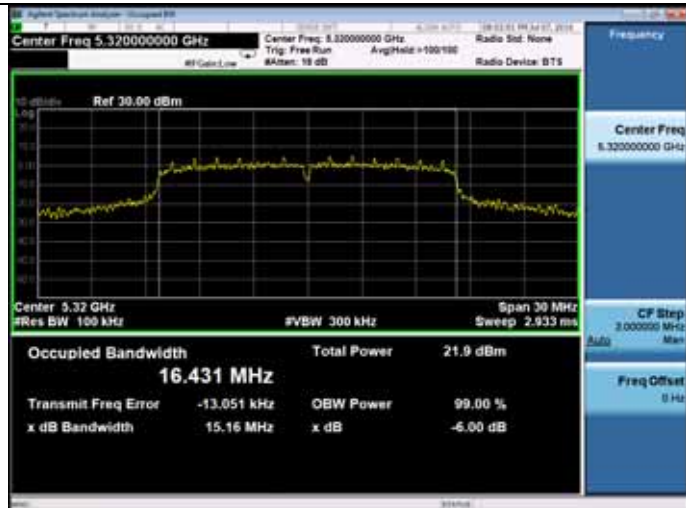
5300MHz



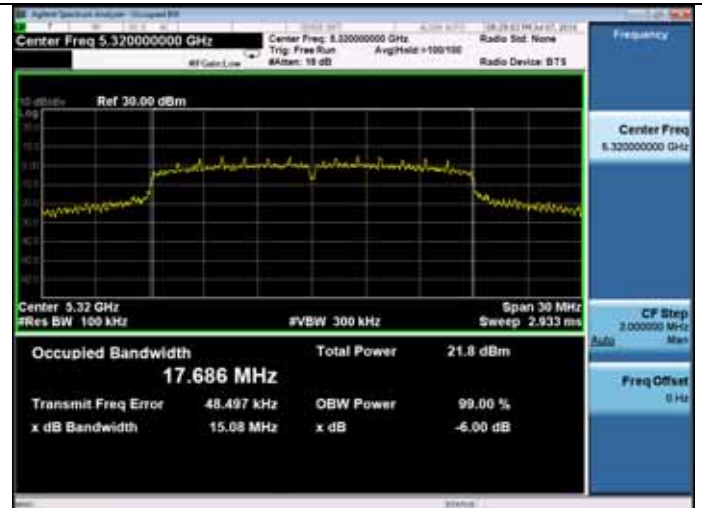
5300MHz



5320MHz

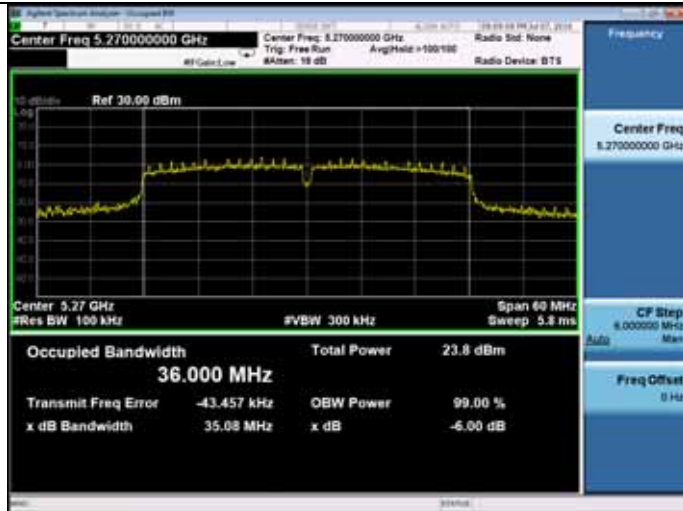


5320MHz

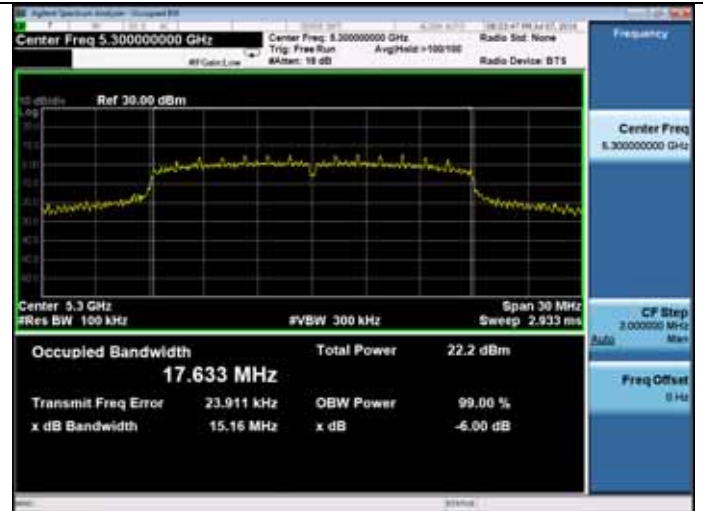


11n HT40

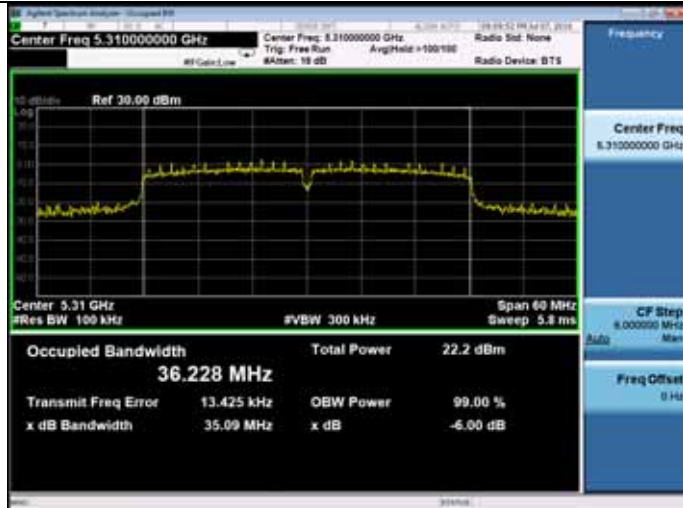
5270MHz



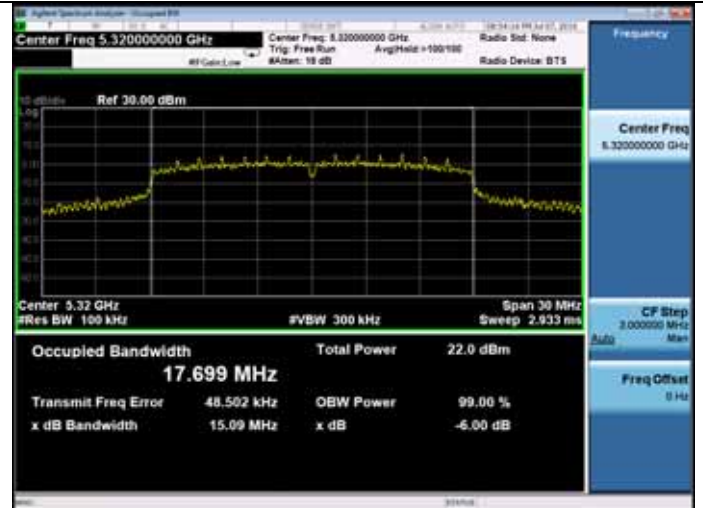
5300MHz



5310MHz



5320MHz



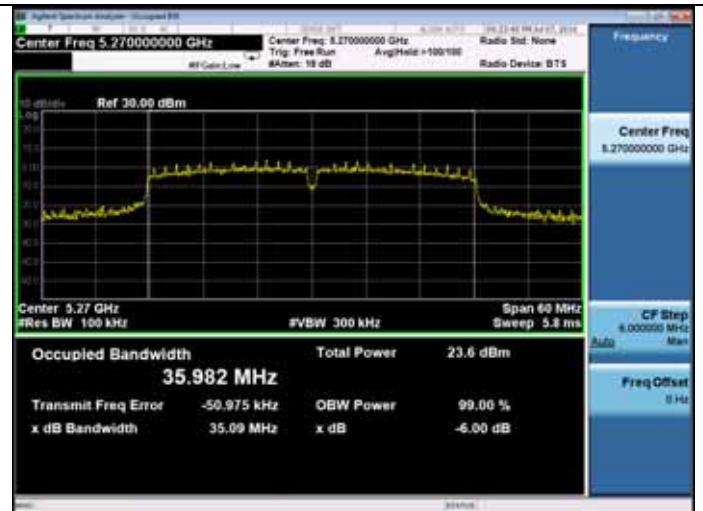
11ac VHT20

5260MHz



11ac VHT40

5270MHz

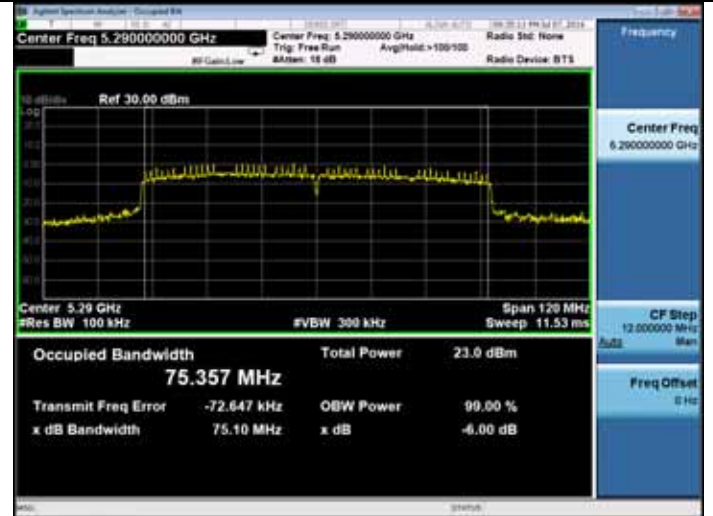


5310MHz



11ac VHT80

5290MHz



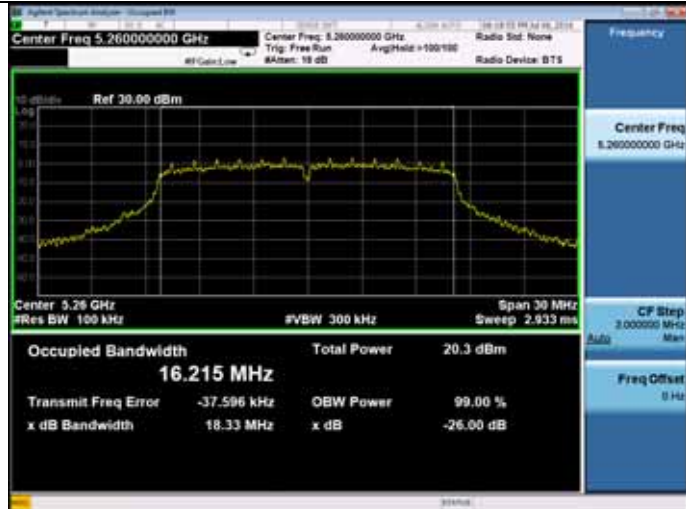
5260-5320MHz Band:

26dB bandwidth

ANT 0

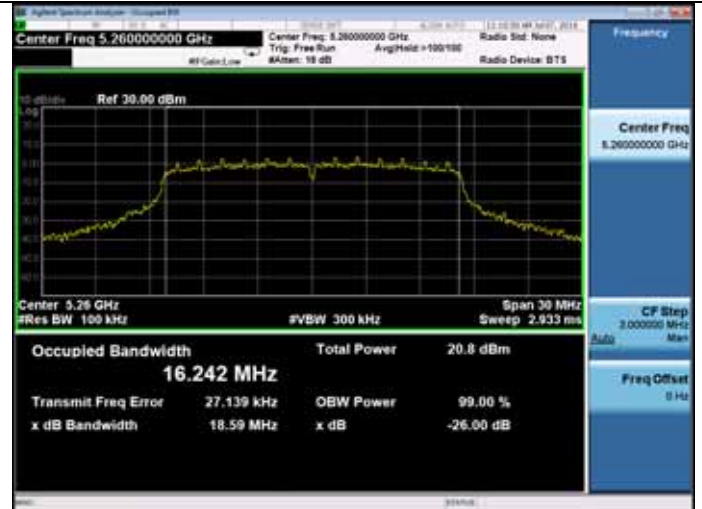
11a

5260MHz

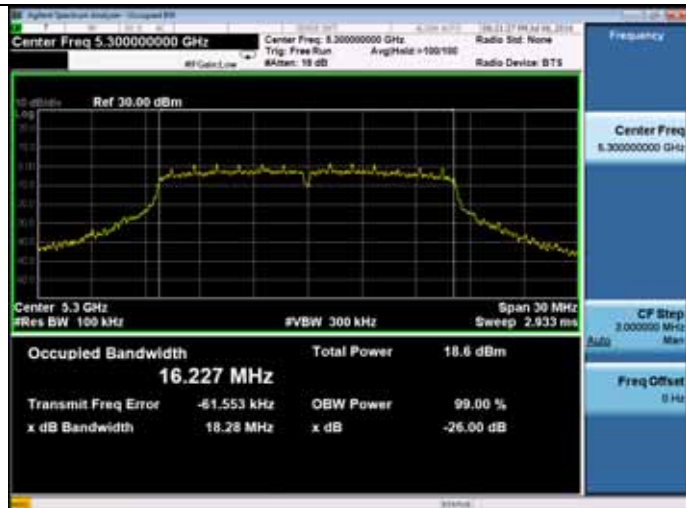


11n HT20

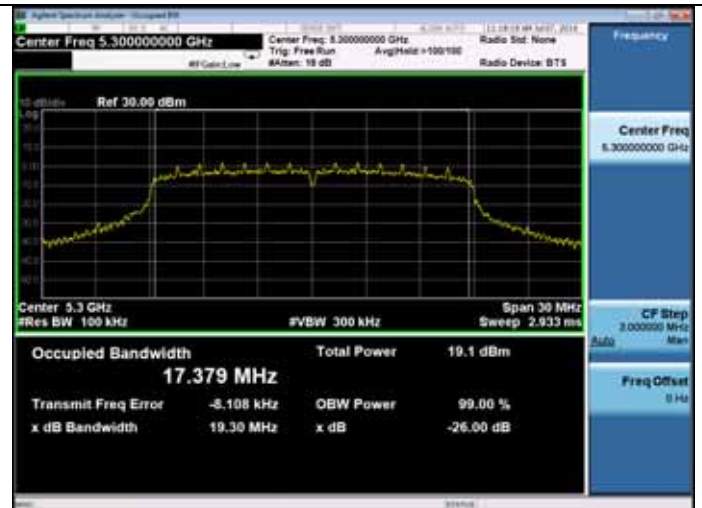
5260MHz



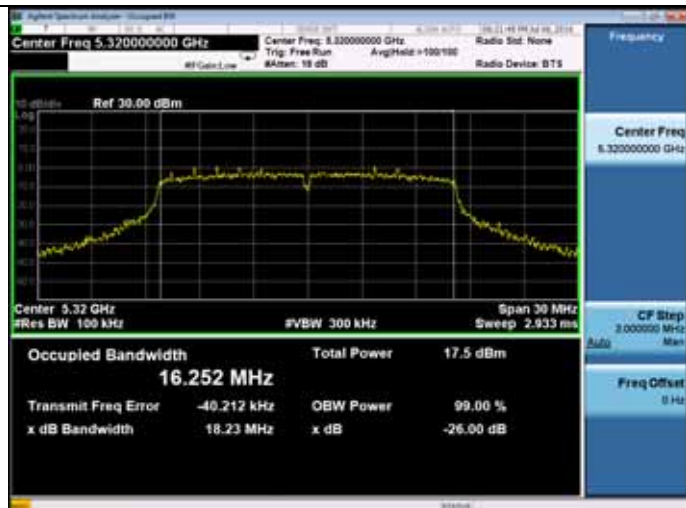
5300MHz



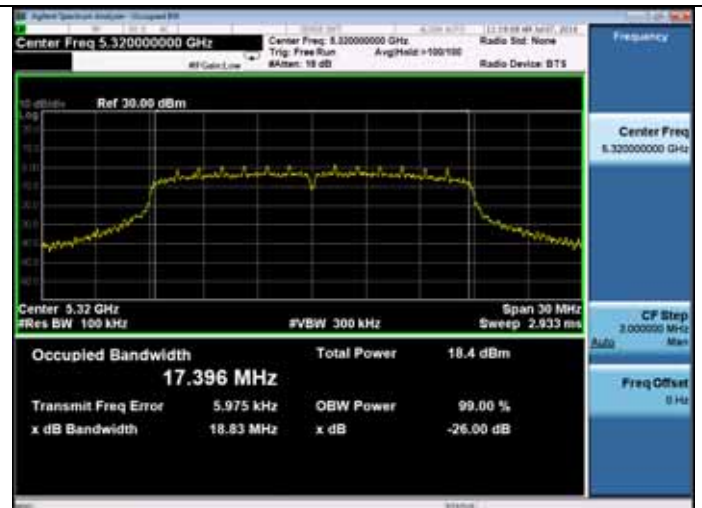
5300MHz



5320MHz

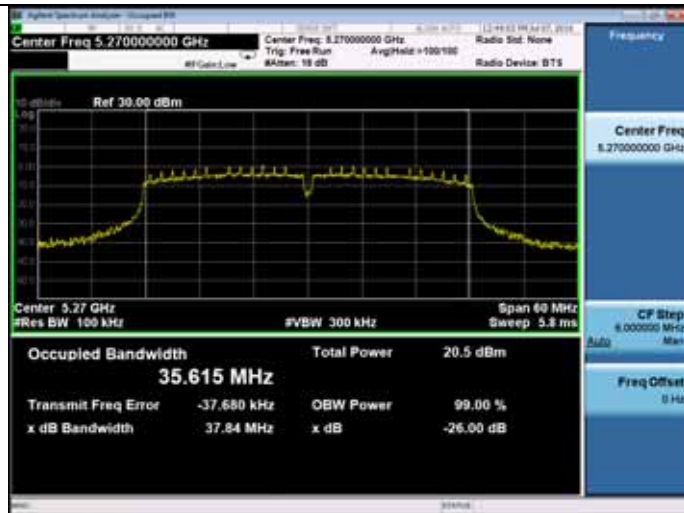


5320MHz

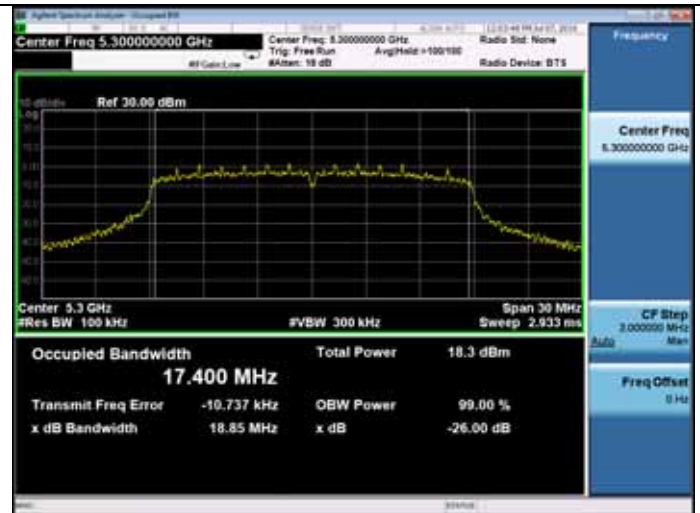


11n HT40

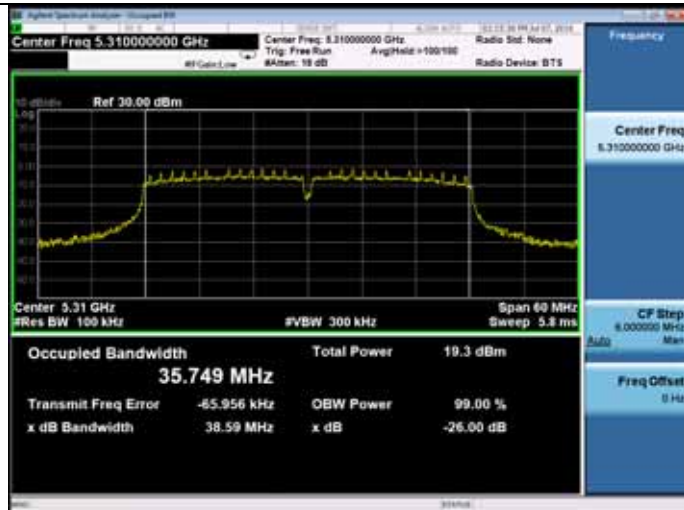
5270MHz



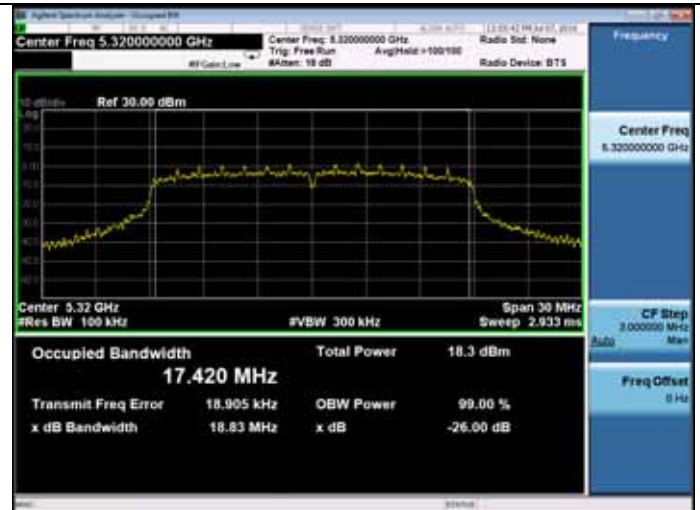
5300MHz



5310MHz

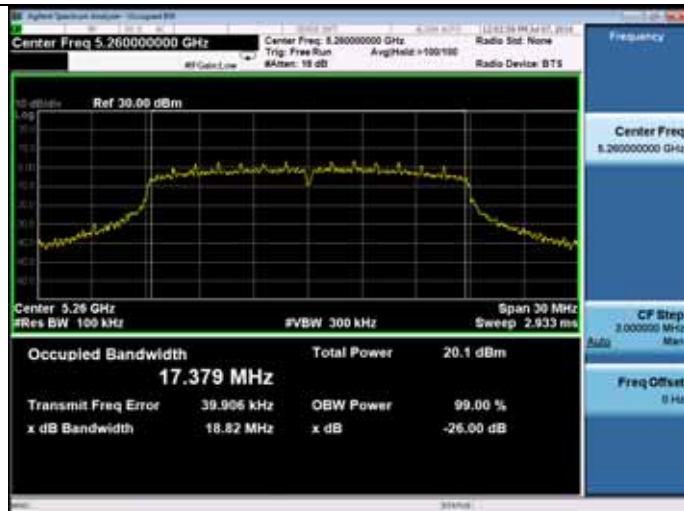


5320MHz



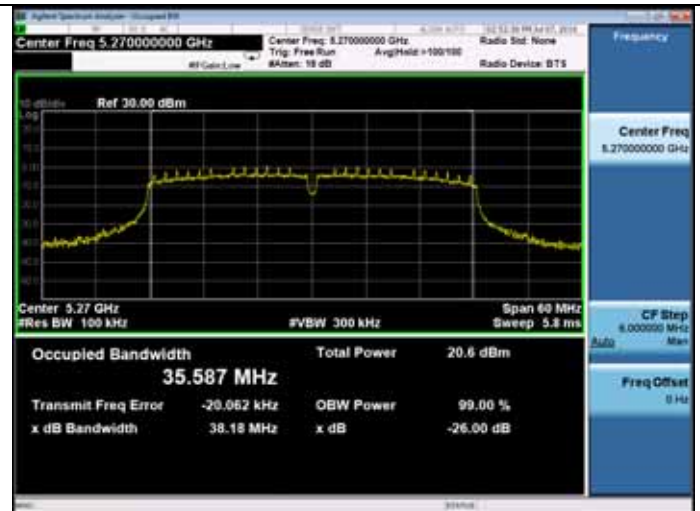
11ac VHT20

5260MHz

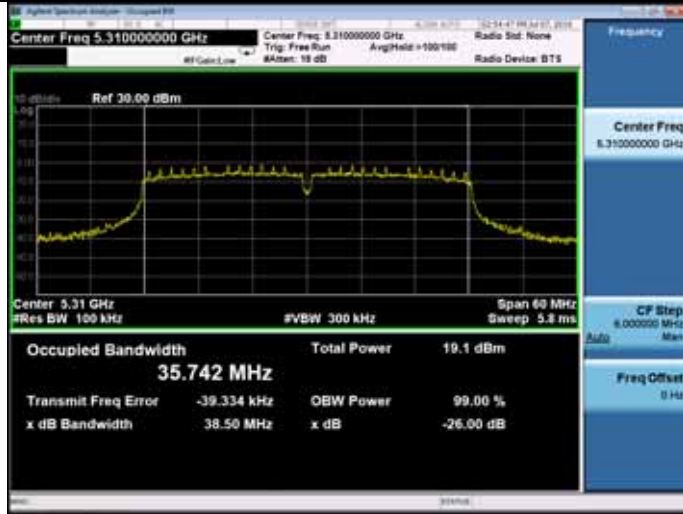


11ac VHT40

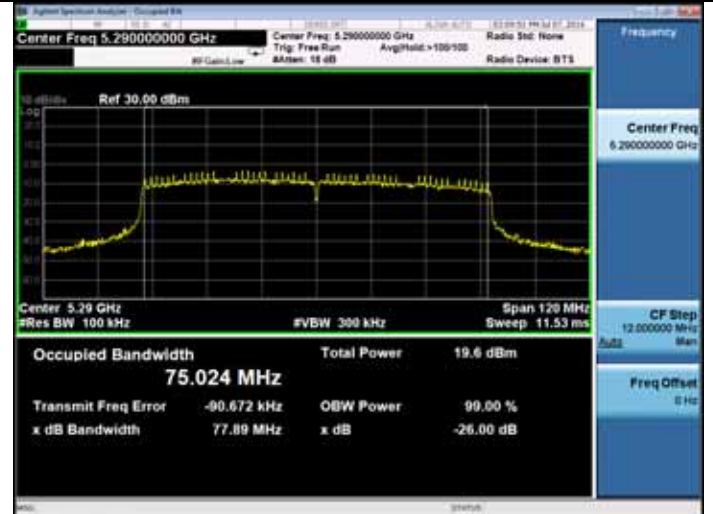
5270MHz



5310MHz



11ac VHT80
5290MHz



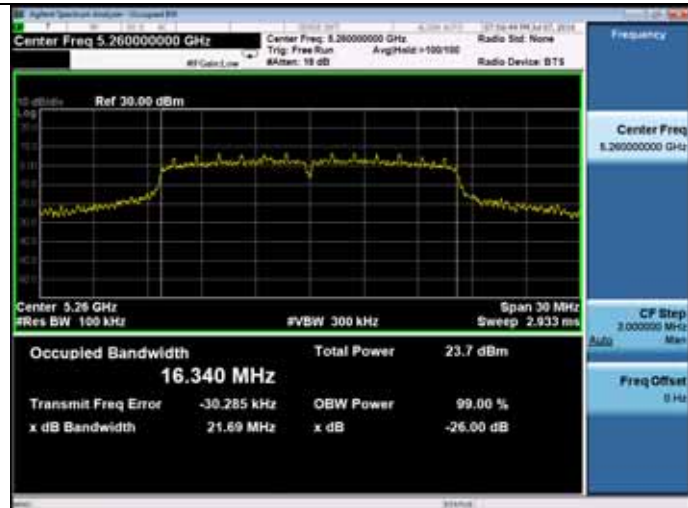
5260-5320MHz Band:

26dB bandwidth

ANT 1

11a

5260MHz

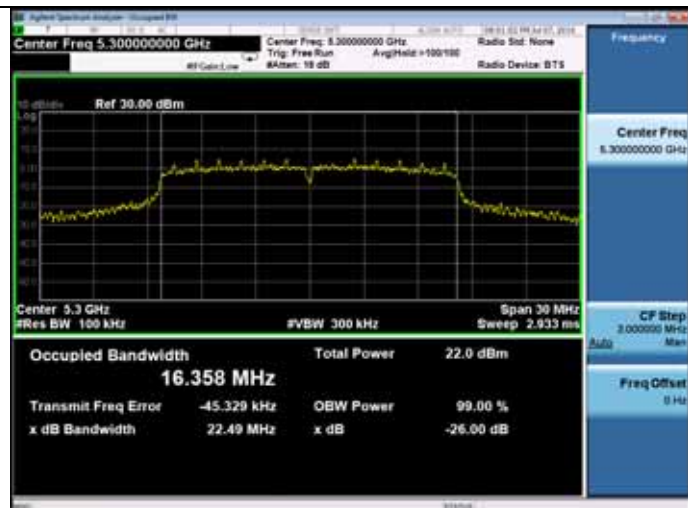


11n HT20

5260MHz



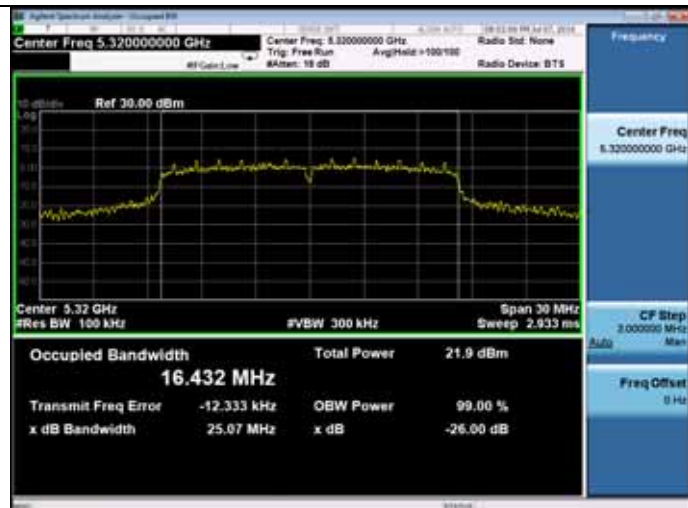
5300MHz



5300MHz



5320MHz



5320MHz



11n HT40

5270MHz



5300MHz



5310MHz



5320MHz



11ac VHT20

5260MHz



11ac VHT40

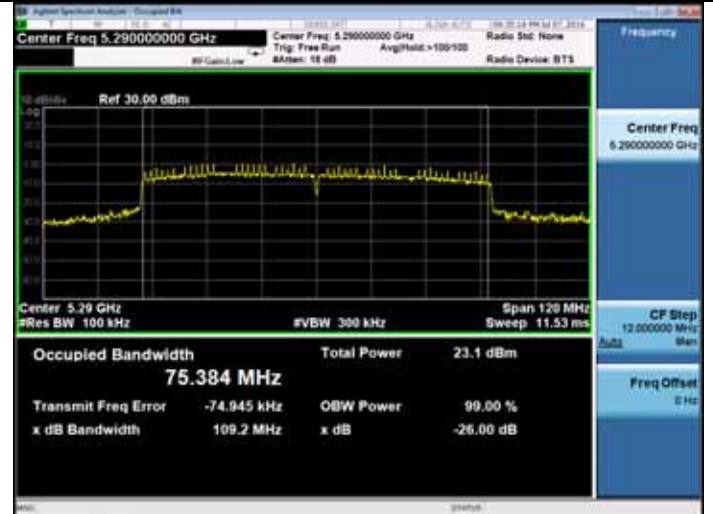
5270MHz



5310MHz



11ac VHT80
5290MHz



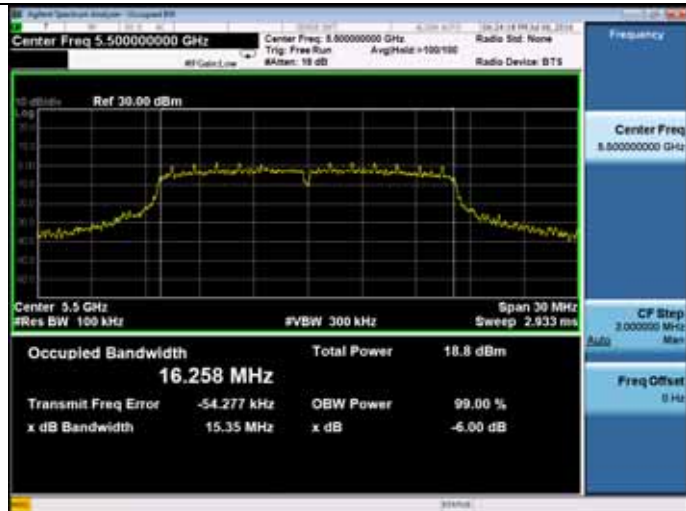
5500-5700MHz Band:

6dB & 99% bandwidth

ANT 0

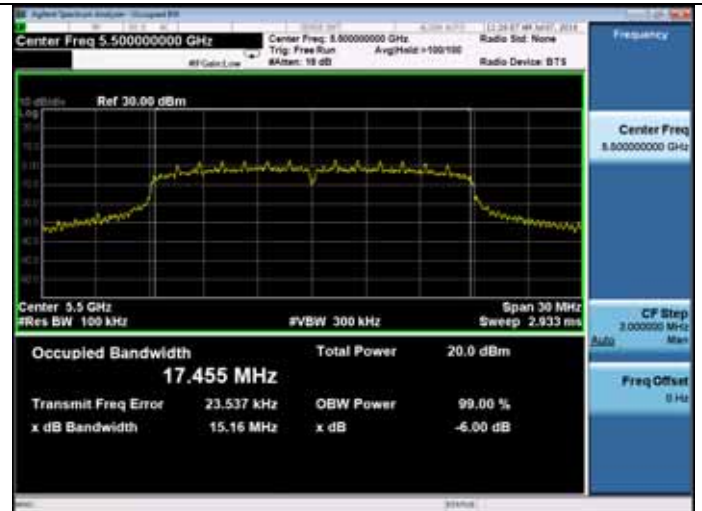
11a

5500MHz

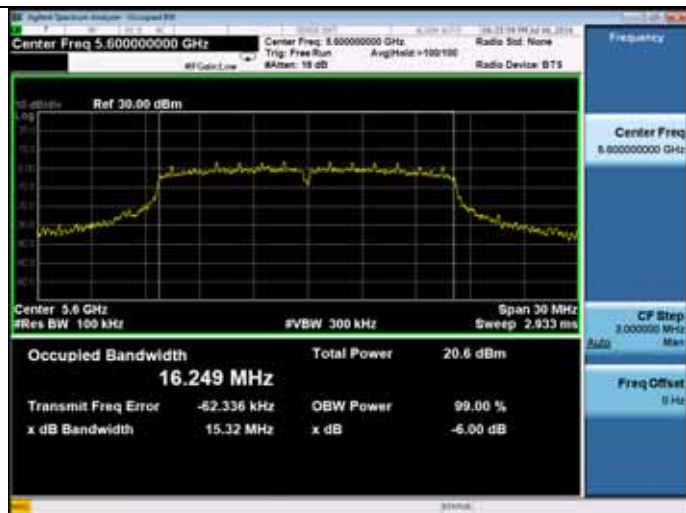


11n HT20

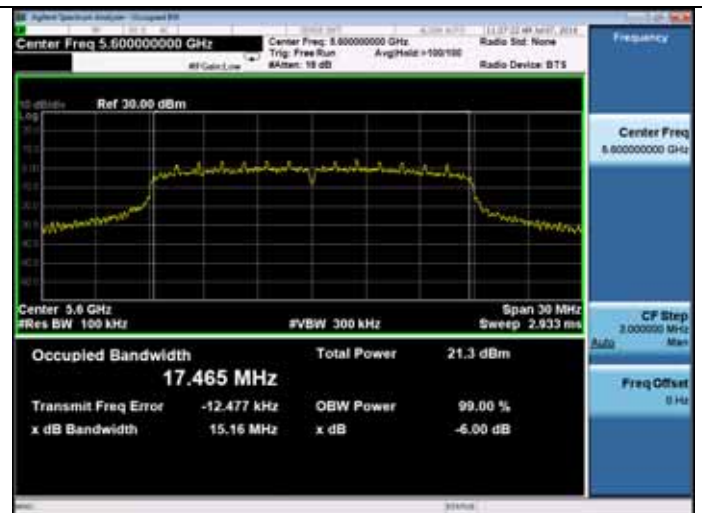
5500MHz



5600MHz



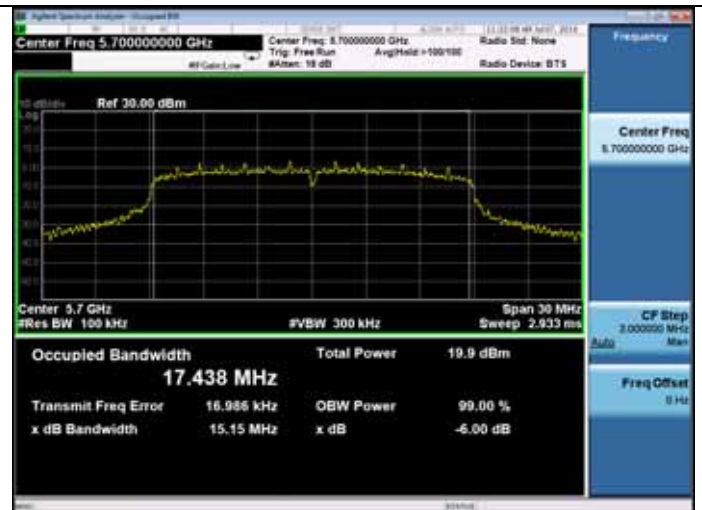
5600MHz



5700MHz

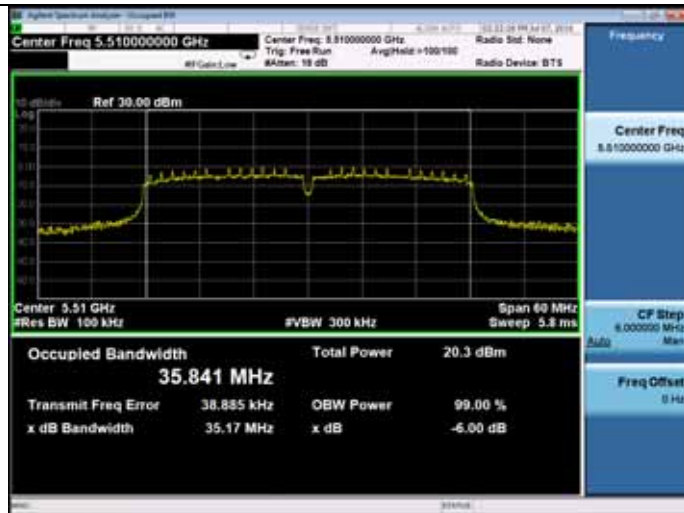


5700MHz



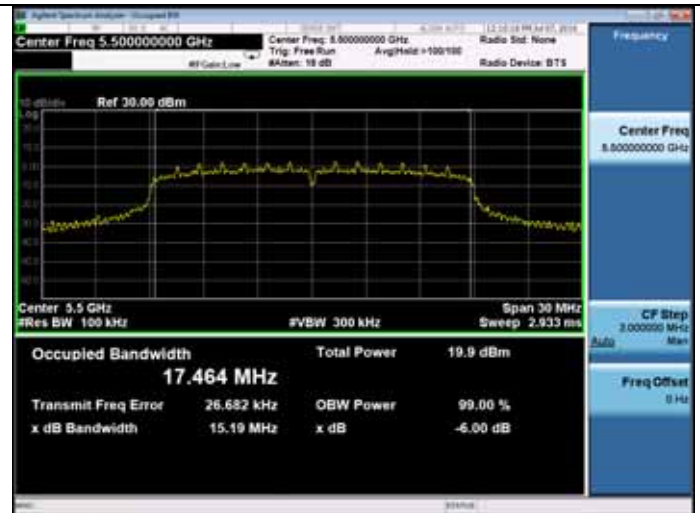
11n HT40

5510MHz

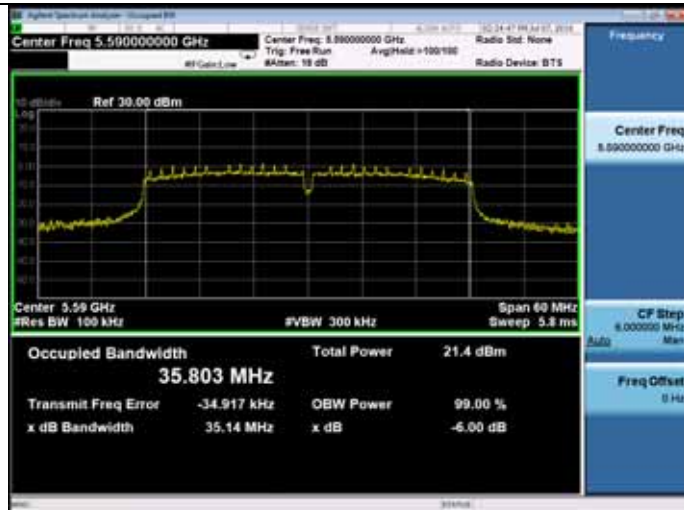


11ac VHT20

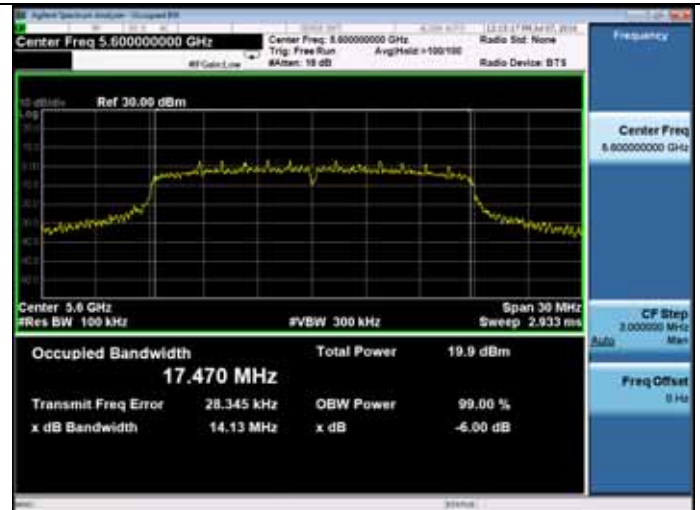
5500MHz



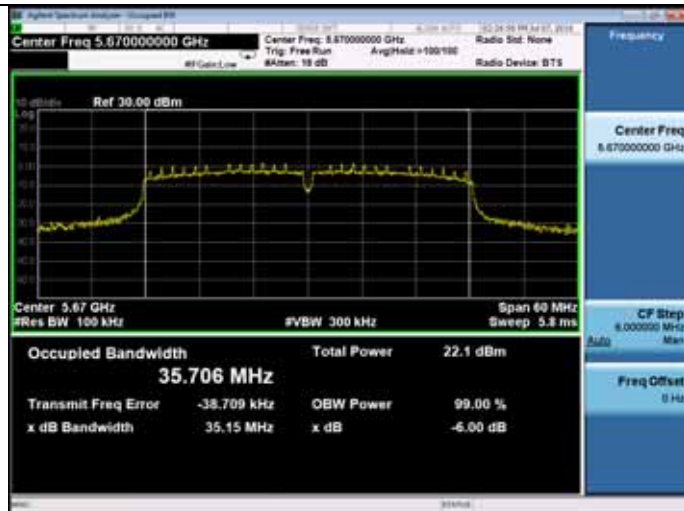
5590MHz



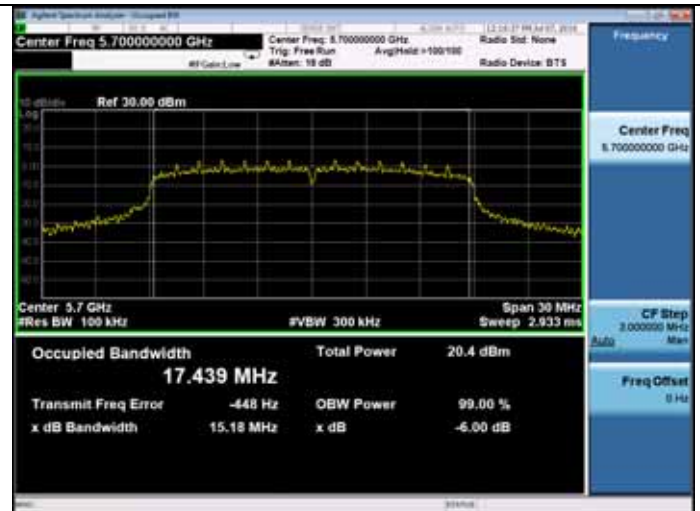
5600MHz



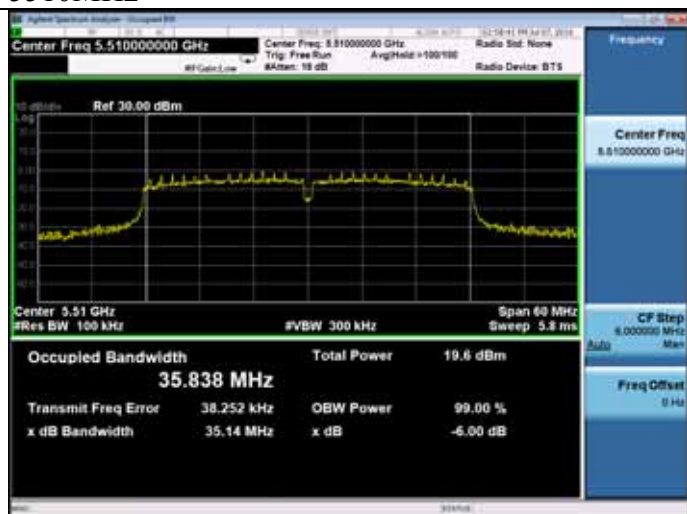
5670MHz



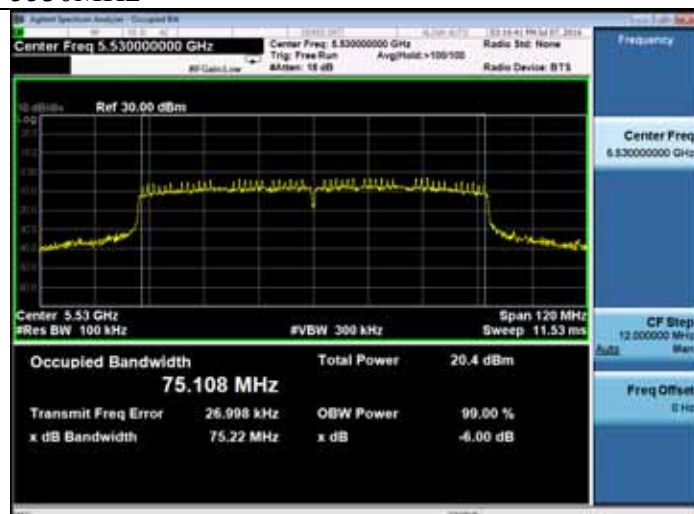
5700MHz



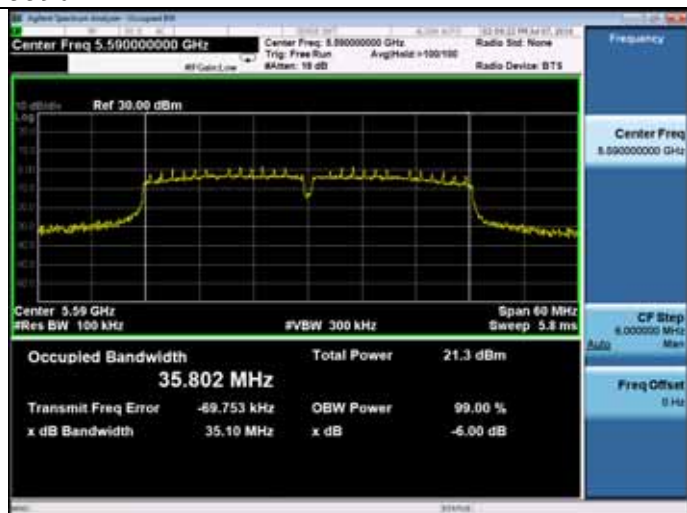
11ac VHT40
5510MHz



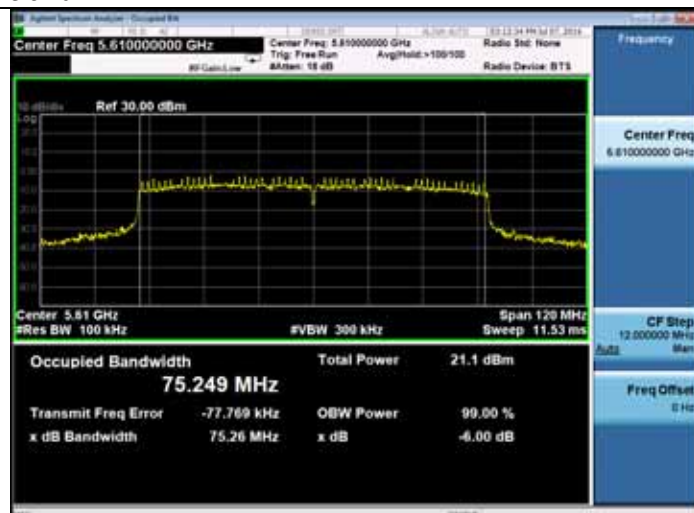
11ac VHT80
5530MHz



5590MHz



5610MHz



5670MHz



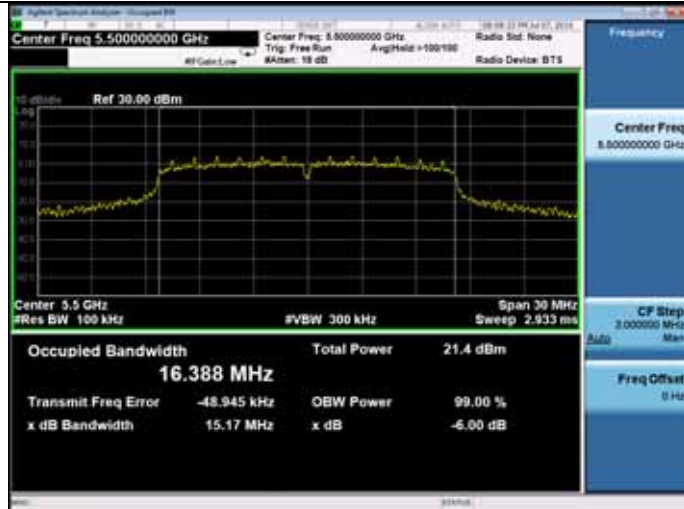
5500-5700MHz Band:

6dB & 99% bandwidth

ANT 1

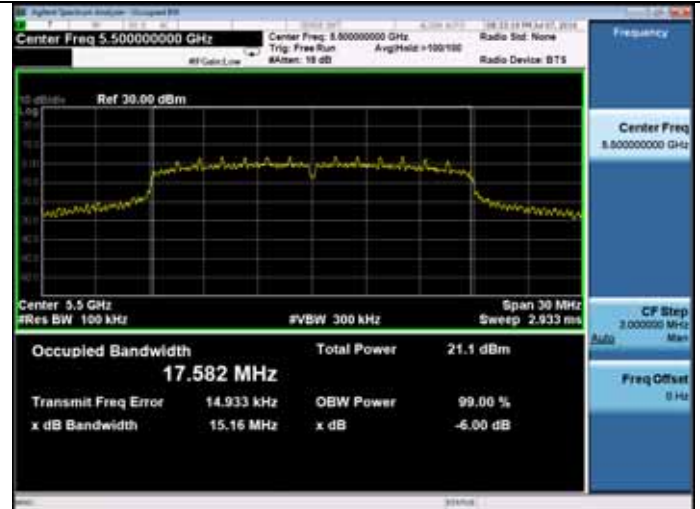
11a

5500MHz

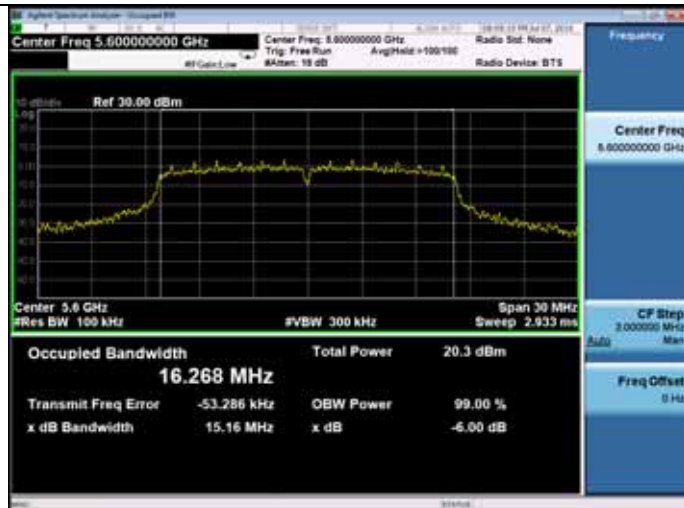


11n HT20

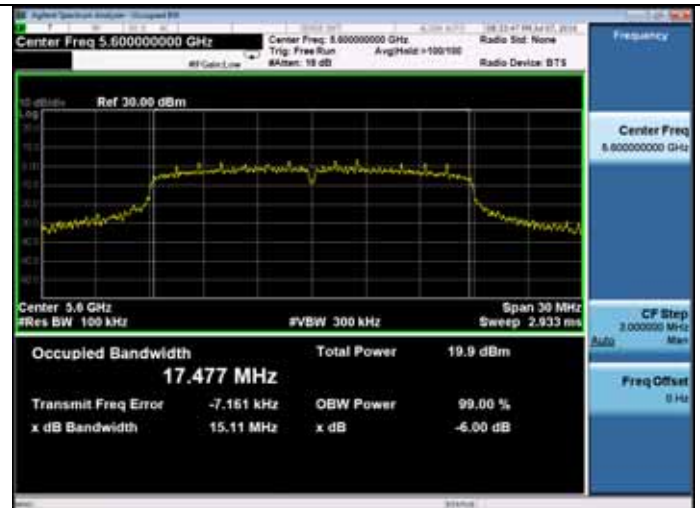
5500MHz



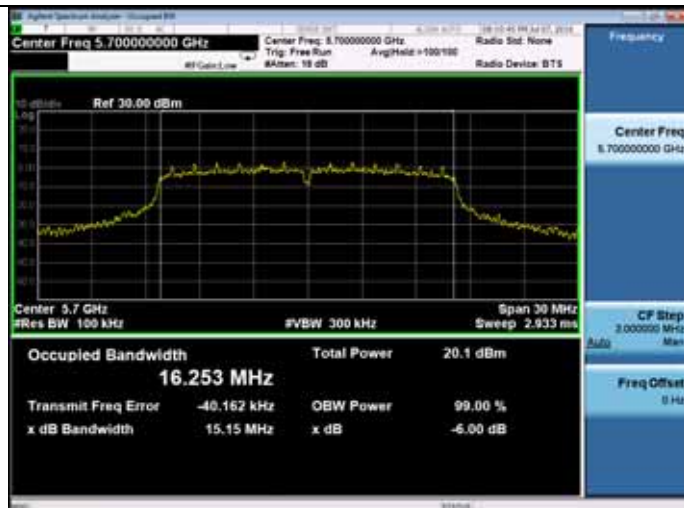
5600MHz



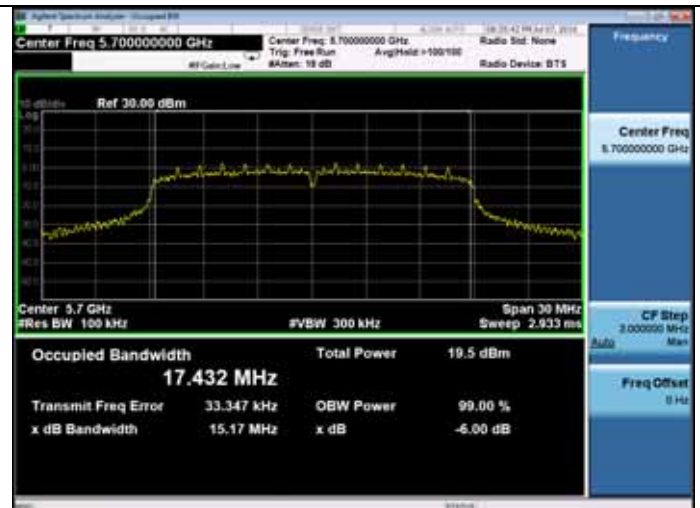
5600MHz



5700MHz

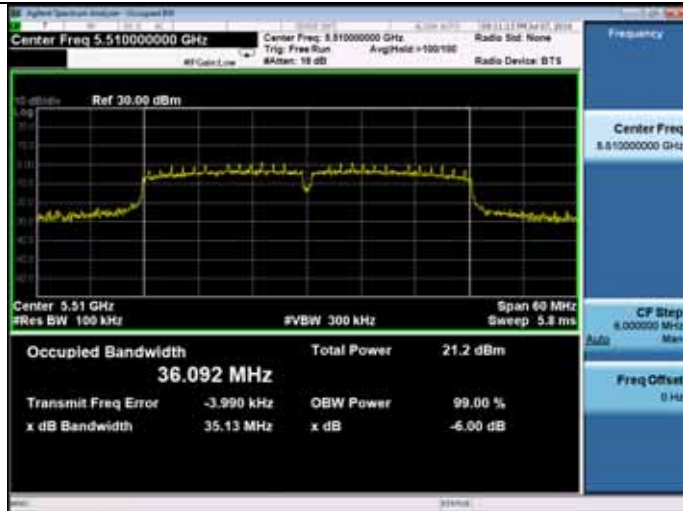


5700MHz



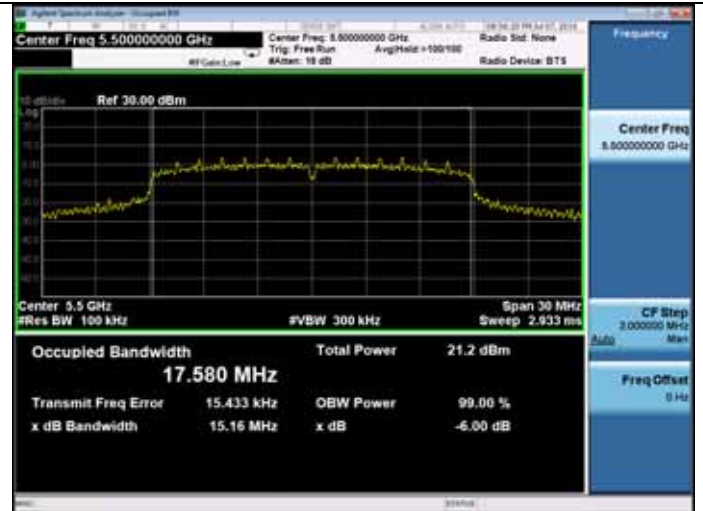
11n HT40

5510MHz

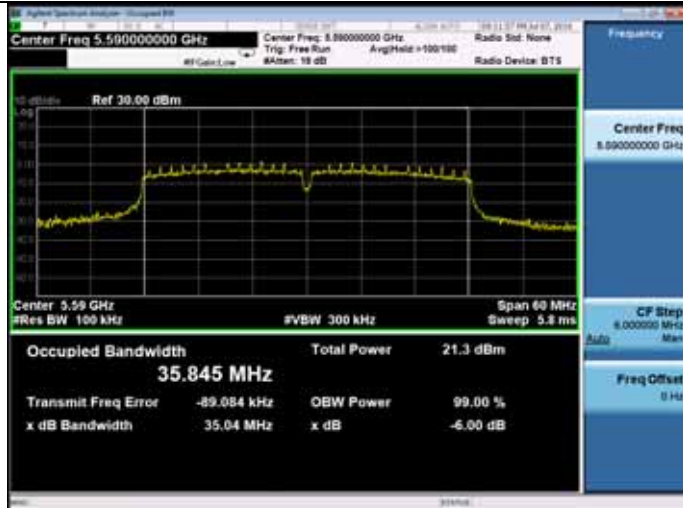


11ac VHT20

5500MHz



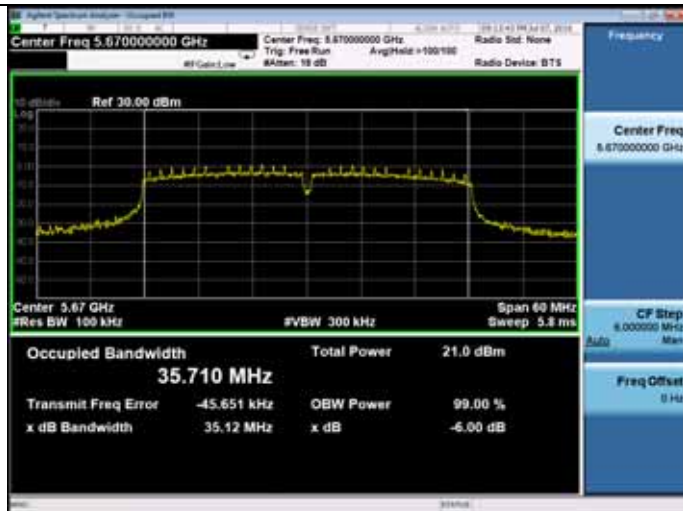
5590MHz



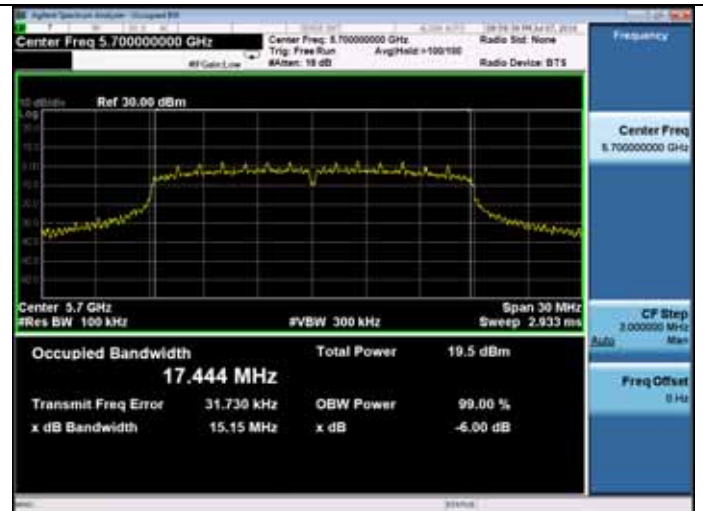
5600MHz



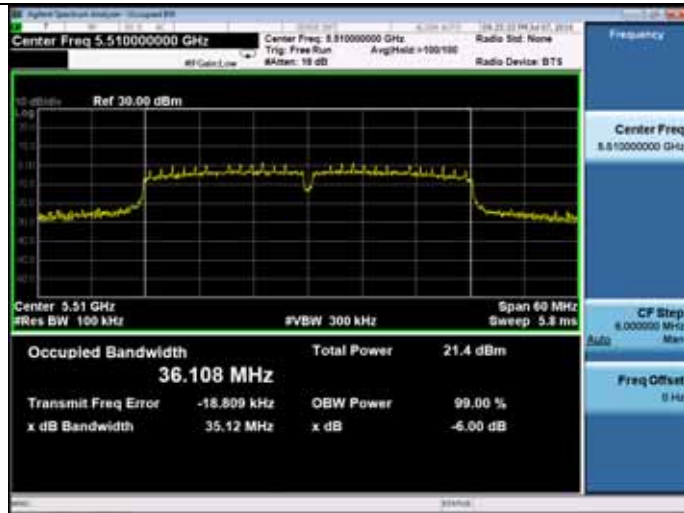
5670MHz



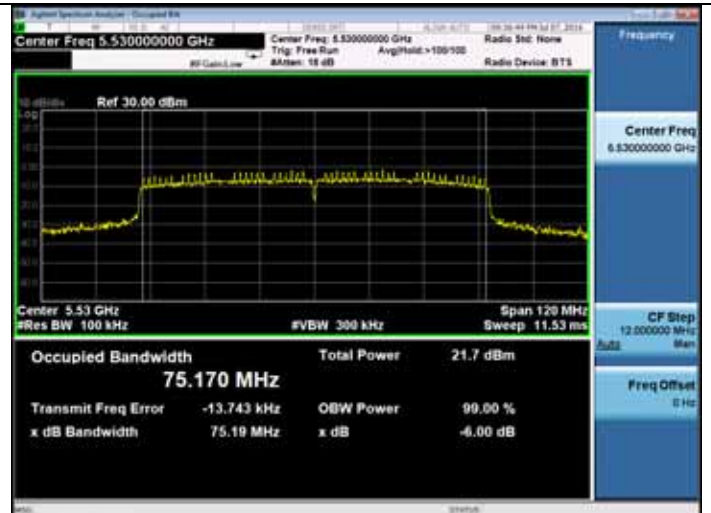
5700MHz



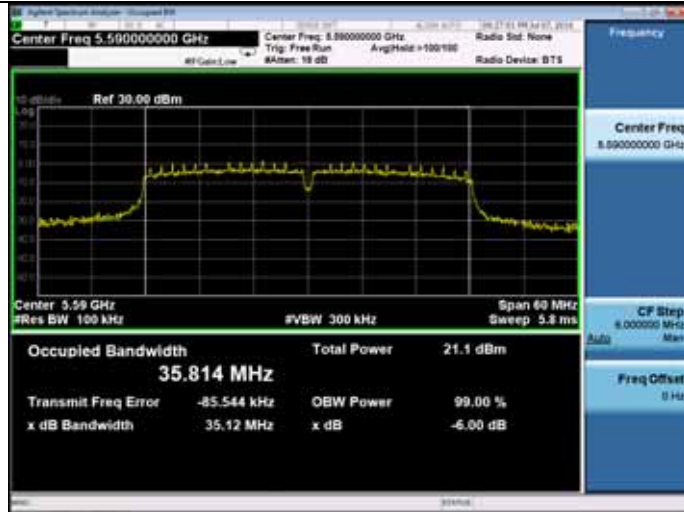
11ac VHT40 5510MHz



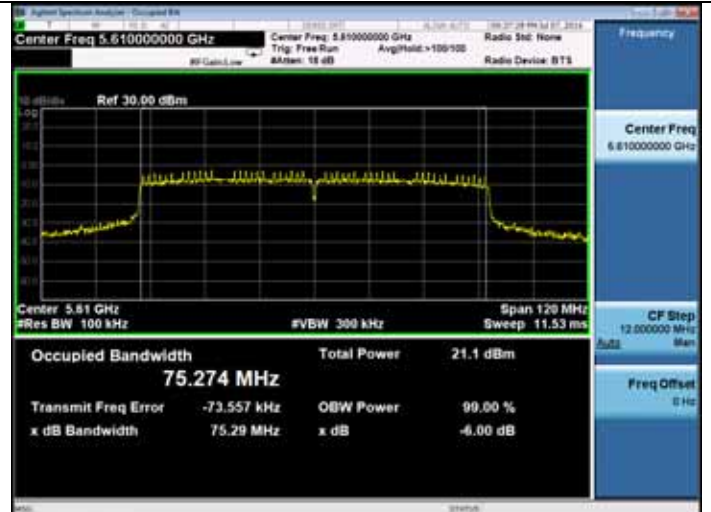
11ac VHT80 5530MHz



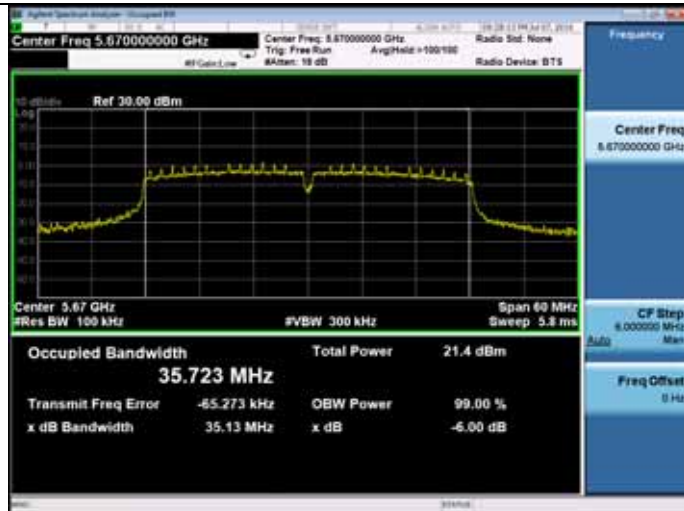
5590MHz



5610MHz



5670MHz



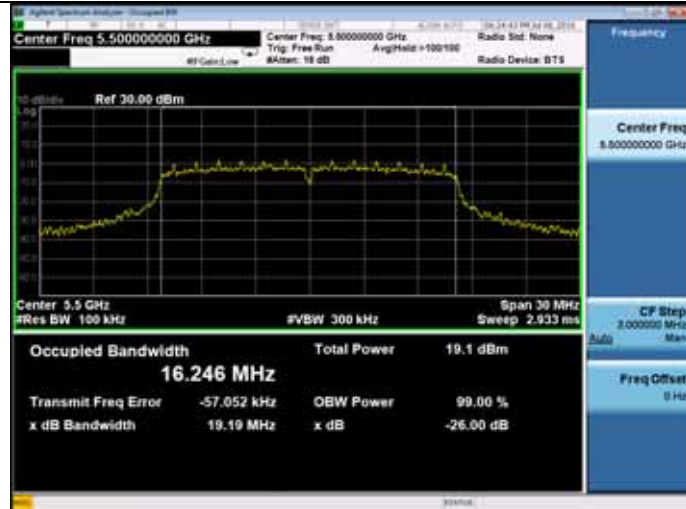
5500-5700MHz Band:

26dB bandwidth

ANT 0

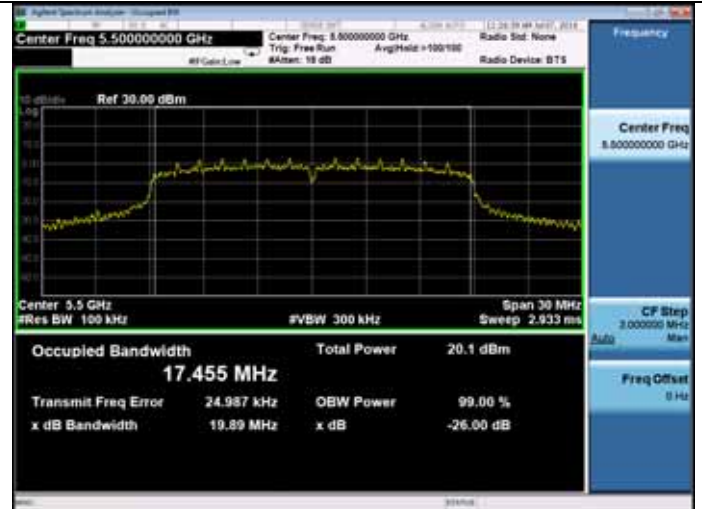
11a

5500MHz

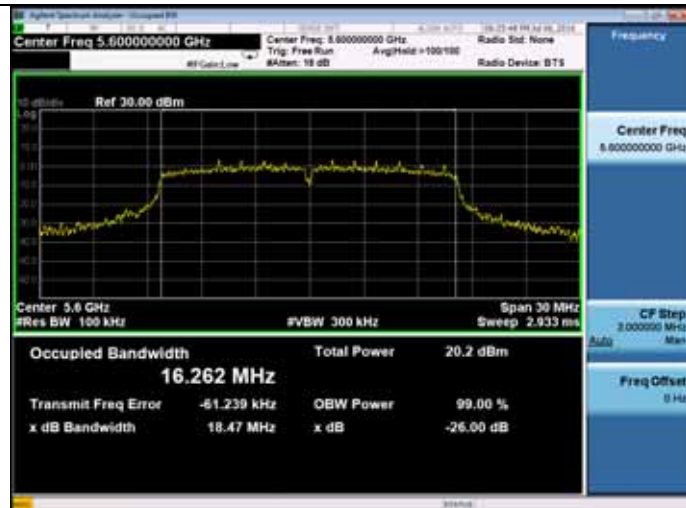


11n HT20

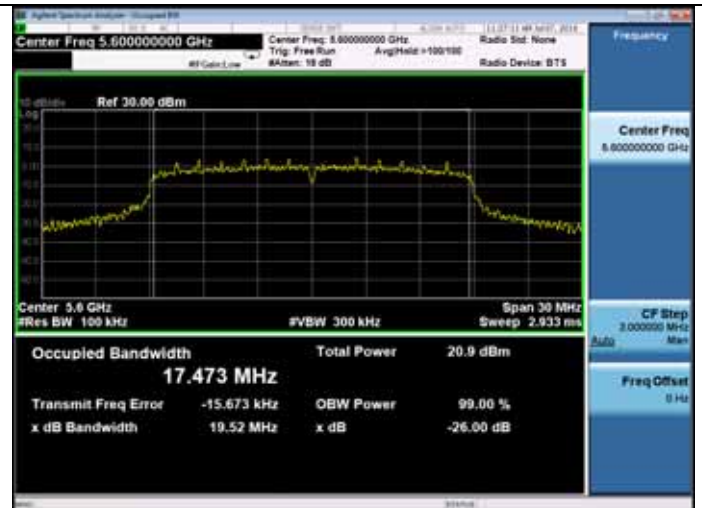
5500MHz



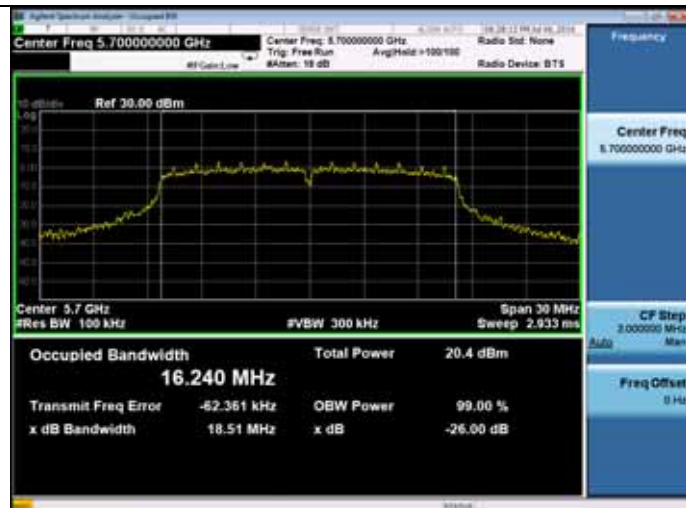
5600MHz



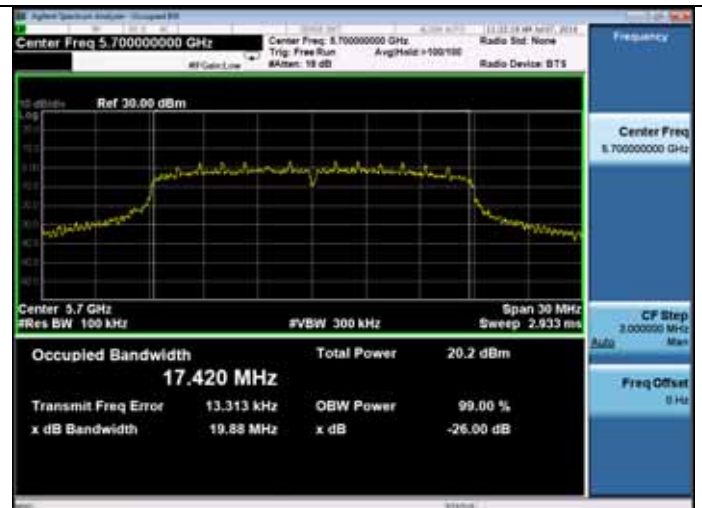
5600MHz



5700MHz

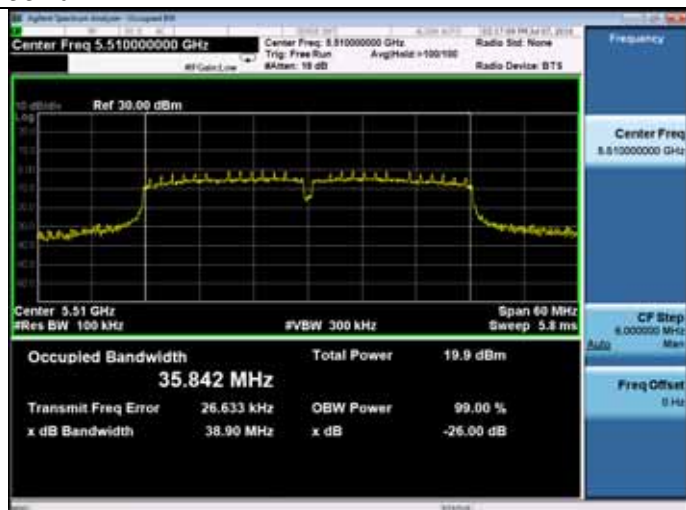


5700MHz



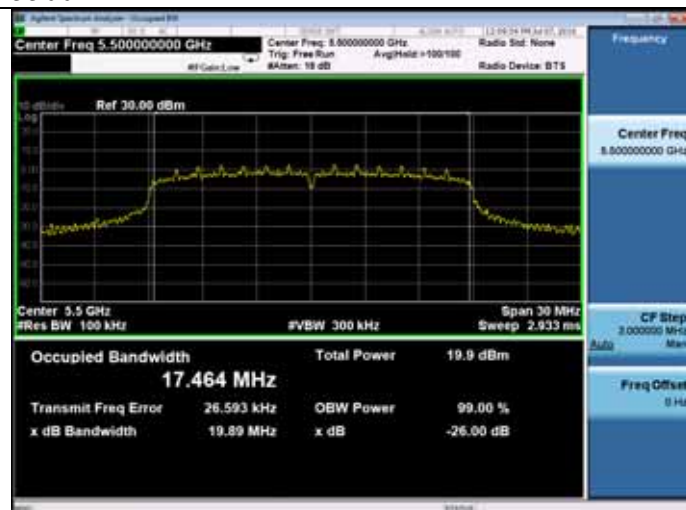
11n HT40

5510MHz

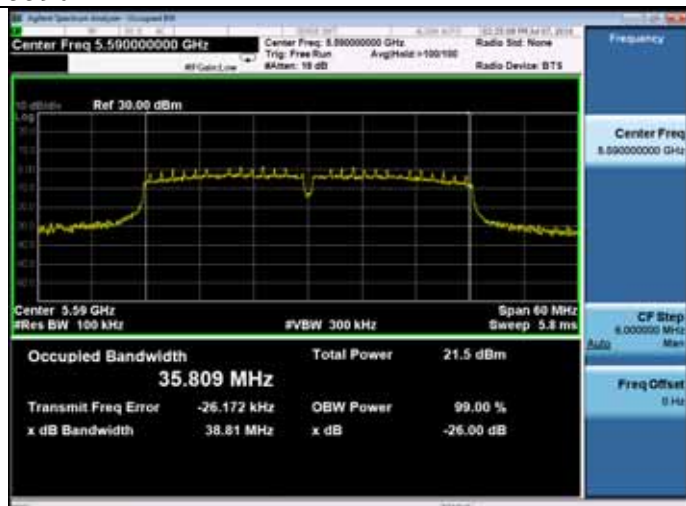


11ac VHT20

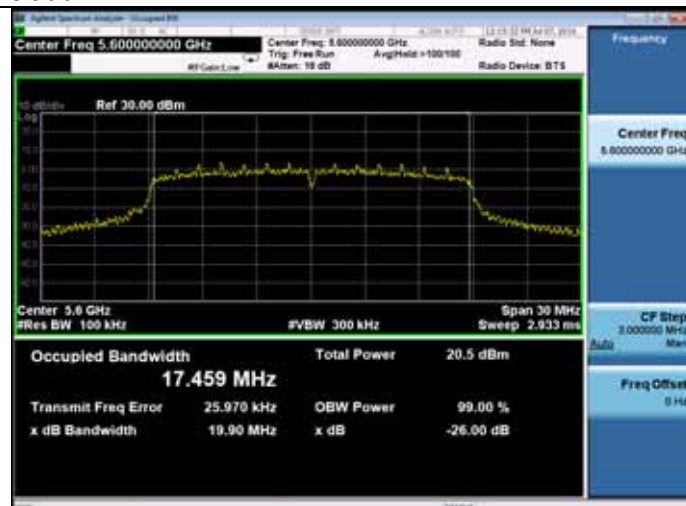
5500MHz



5590MHz



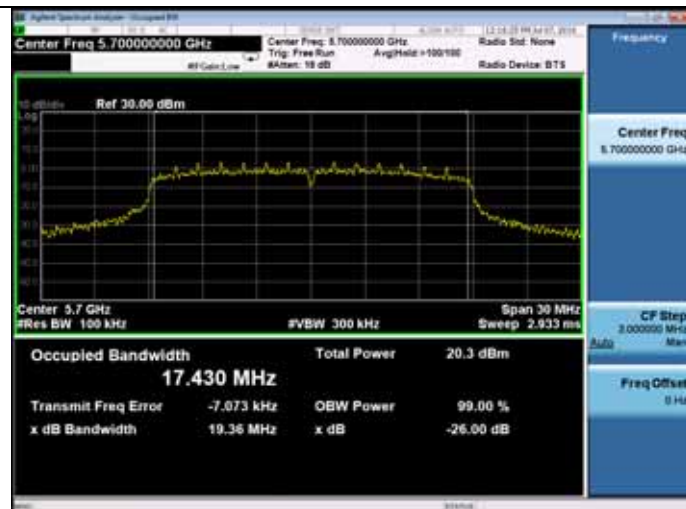
5600MHz



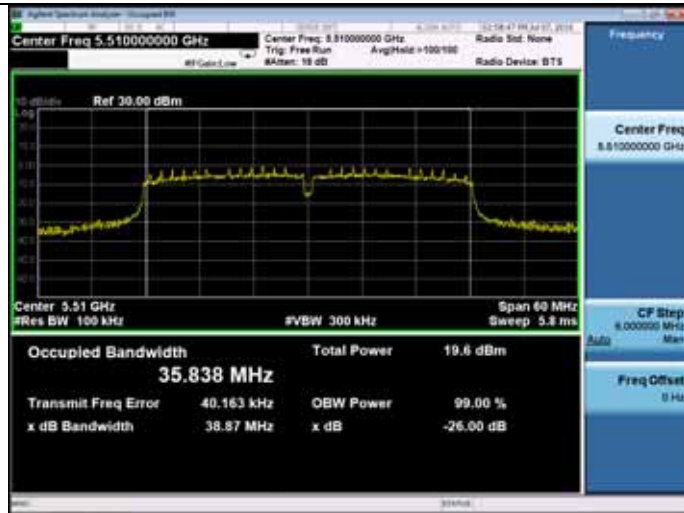
5670MHz



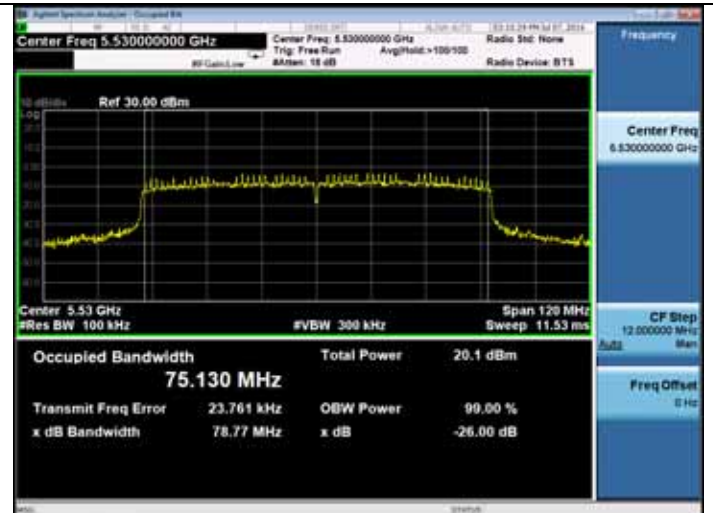
5700MHz



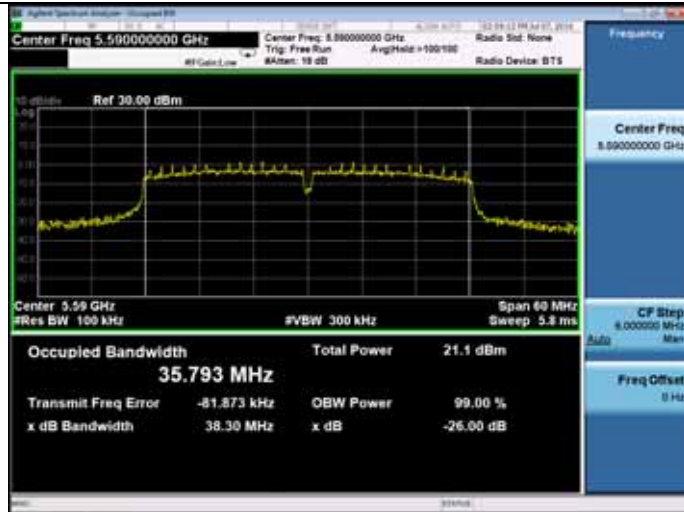
11ac VHT40
5510MHz



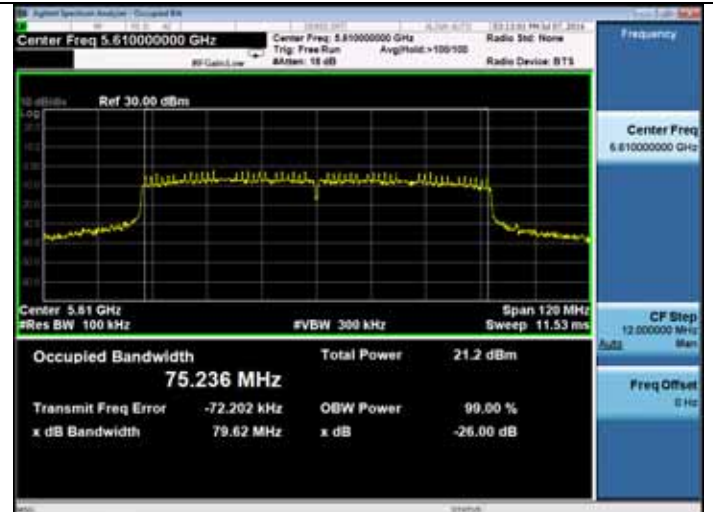
11ac VHT80
5530MHz



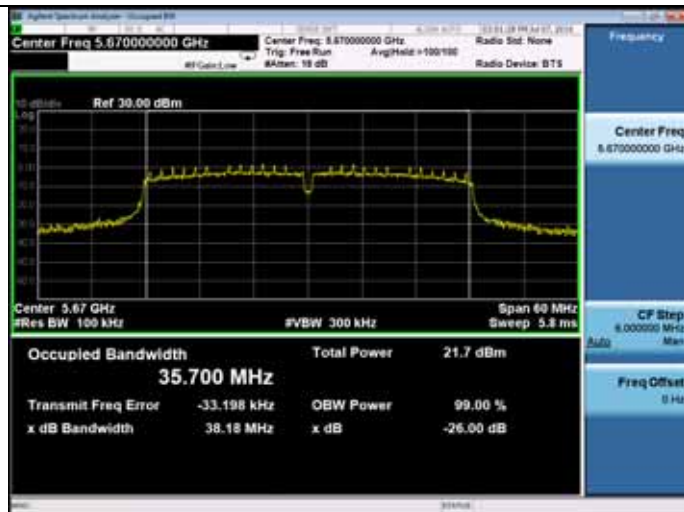
5590MHz



5610MHz



5670MHz



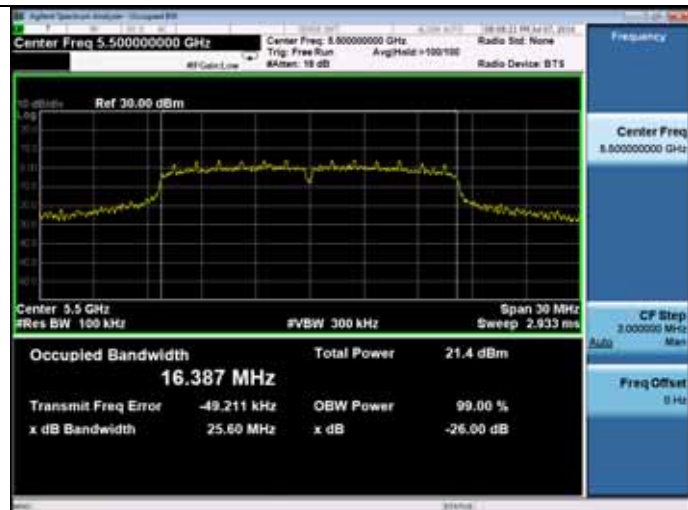
5500-5700MHz Band:

26dB bandwidth

ANT 1

11a

5500MHz

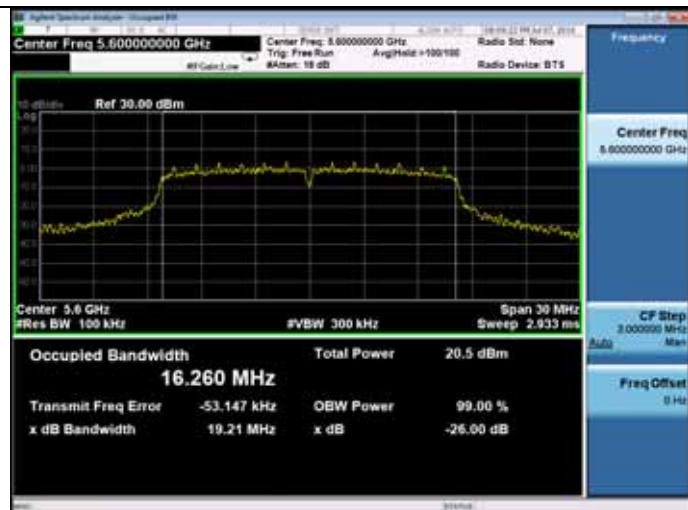


11n HT20

5500MHz



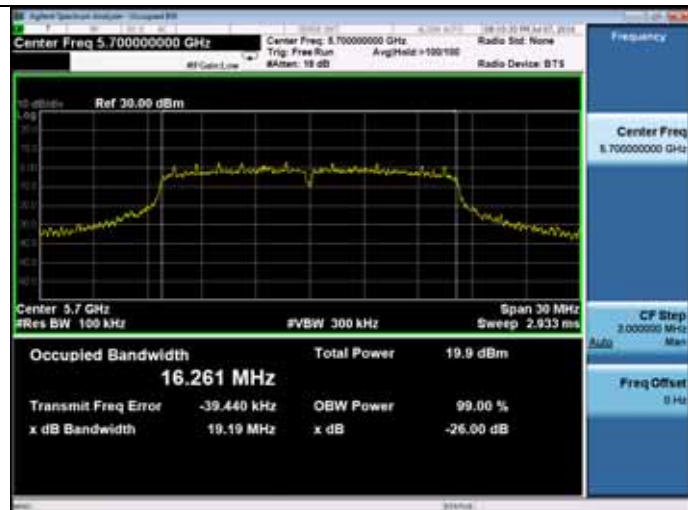
5600MHz



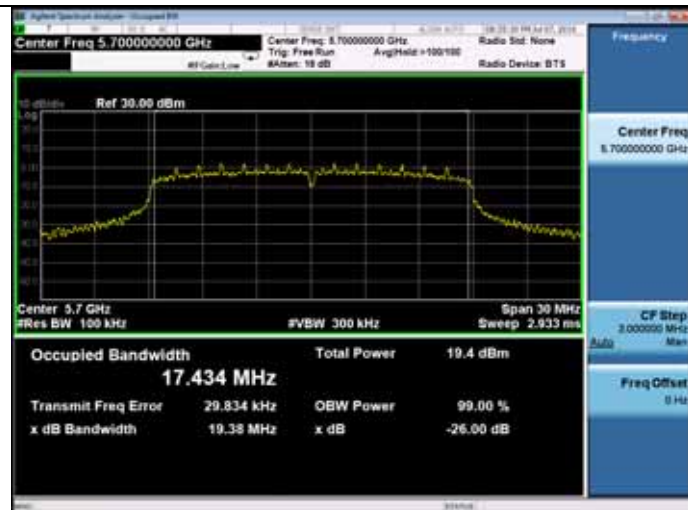
5600MHz



5700MHz

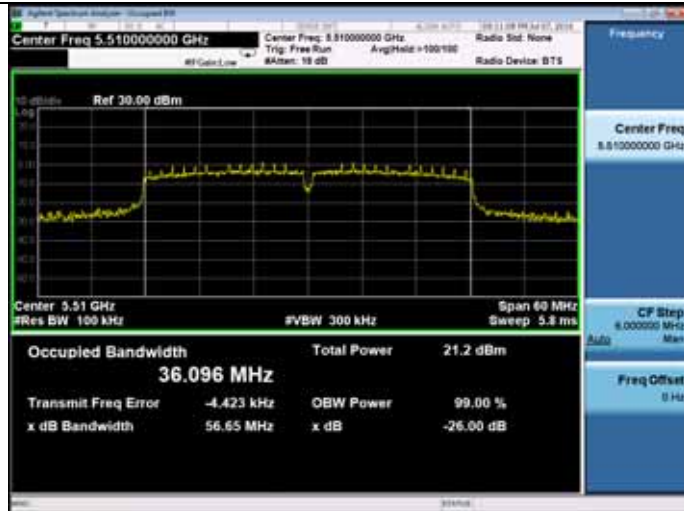


5700MHz



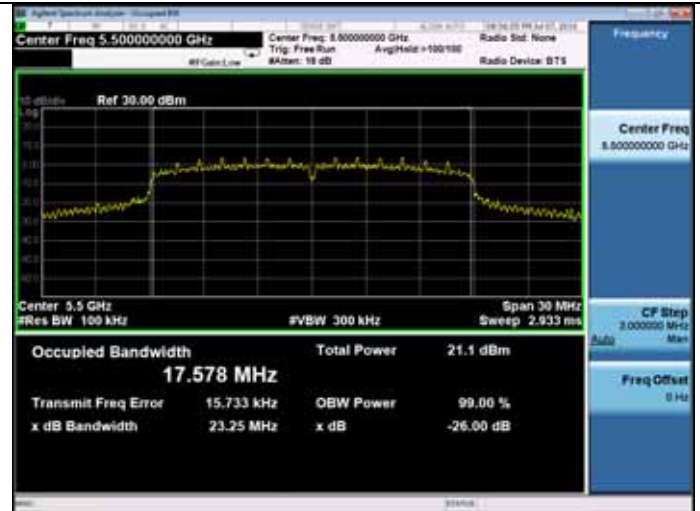
11n HT40

5510MHz

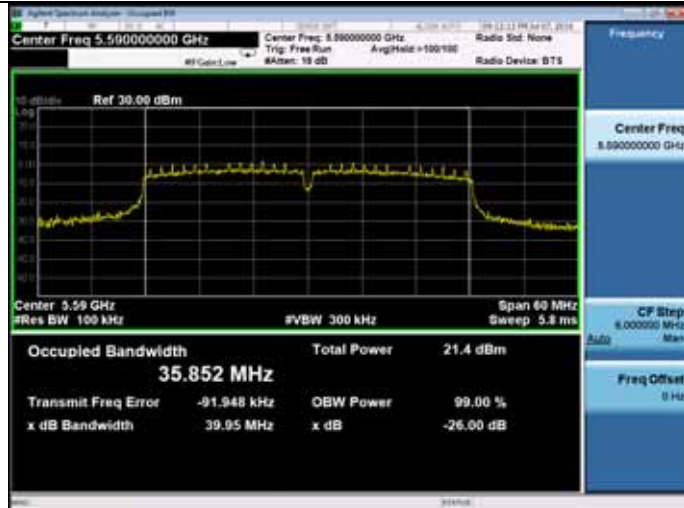


11ac VHT20

5500MHz



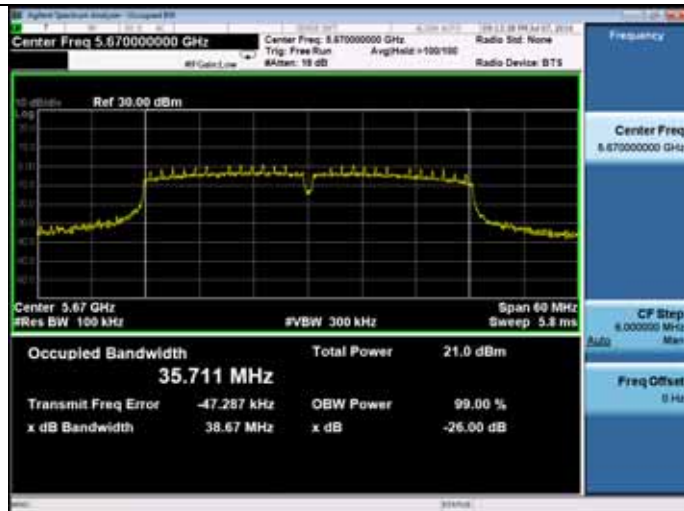
5590MHz



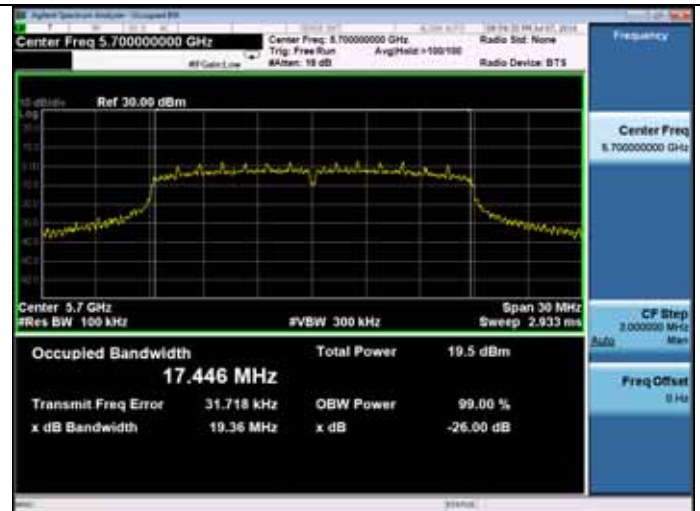
5600MHz



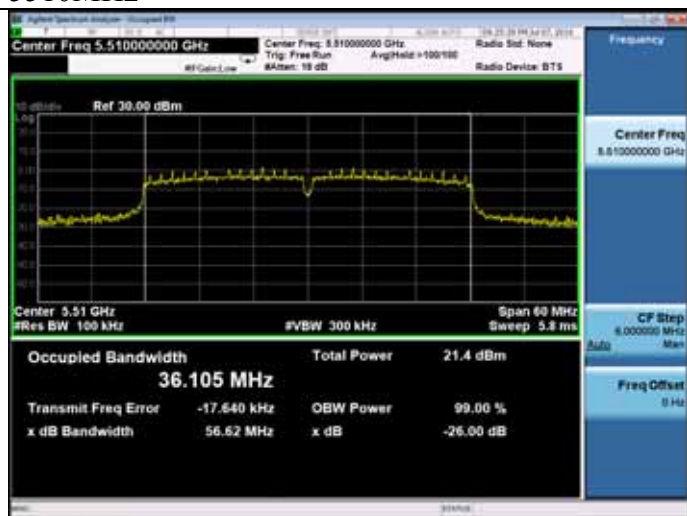
5670MHz



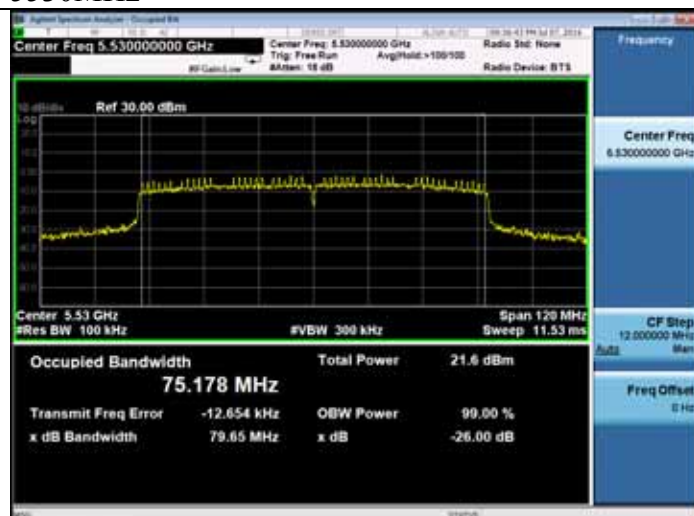
5700MHz



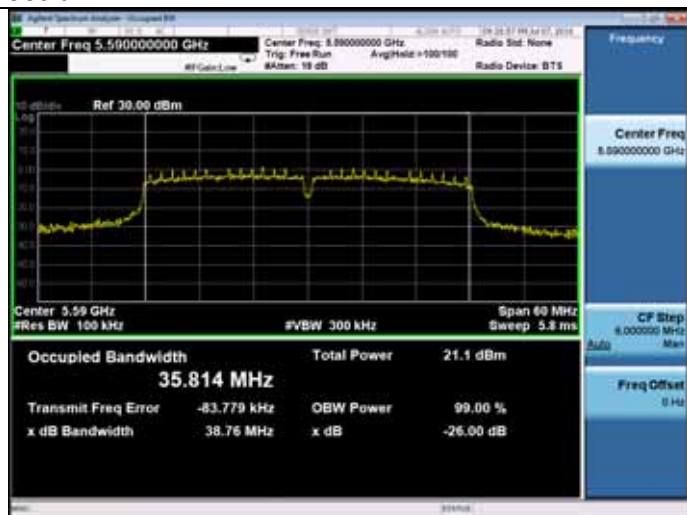
11ac VHT40
5510MHz



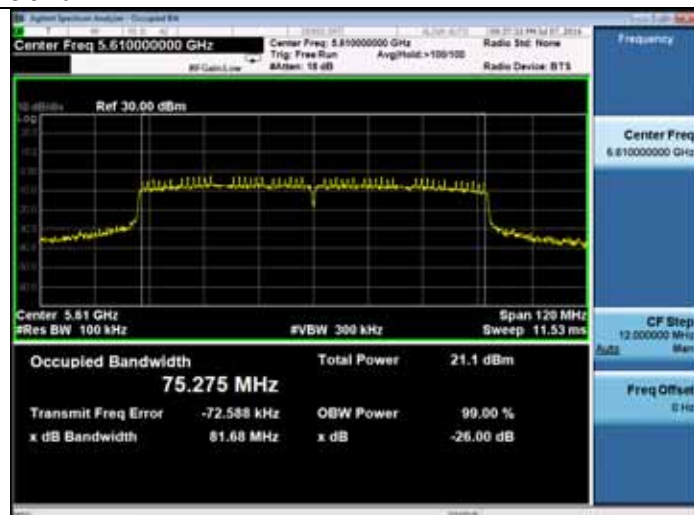
11ac VHT80
5530MHz



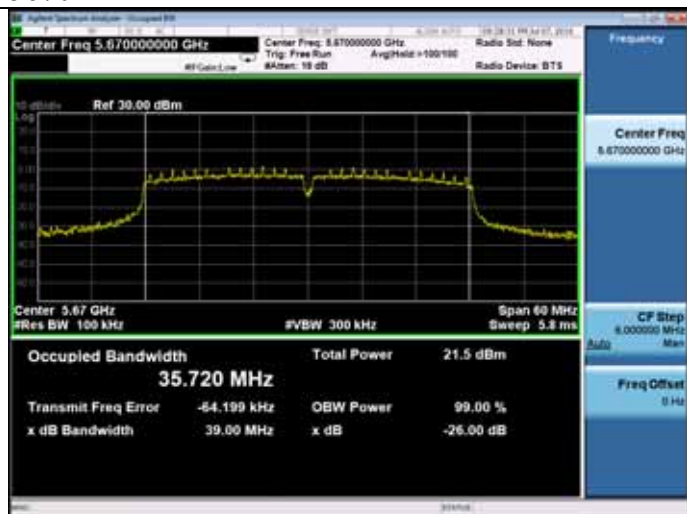
5590MHz



5610MHz



5670MHz



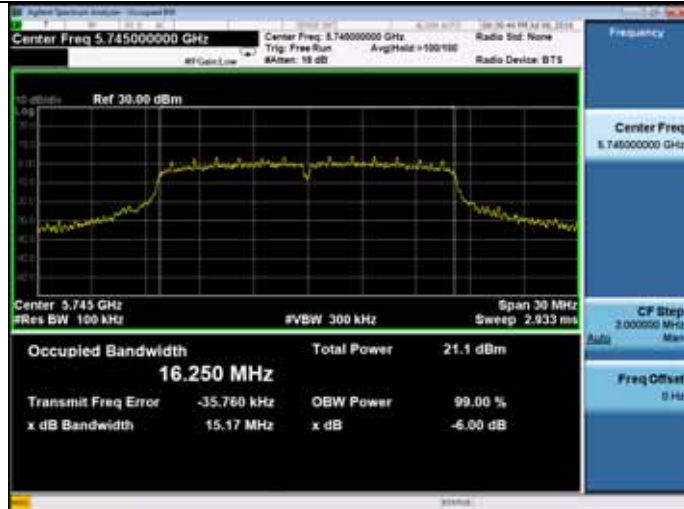
5745-5825MHz Band:

6dB & 99% bandwidth

ANT 0

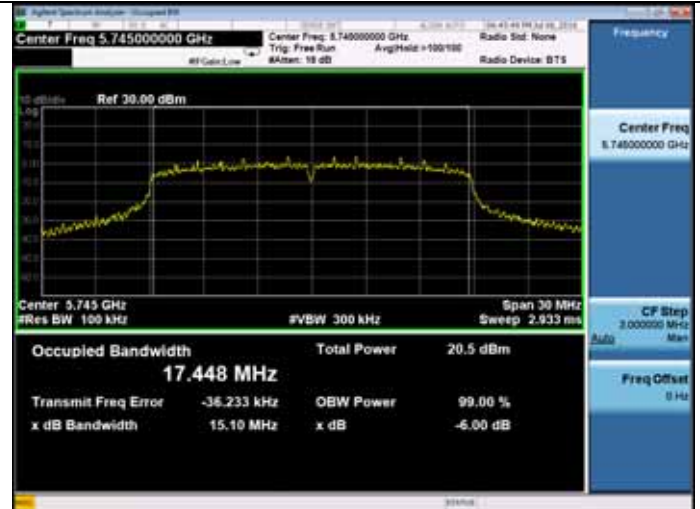
11a

5745MHz

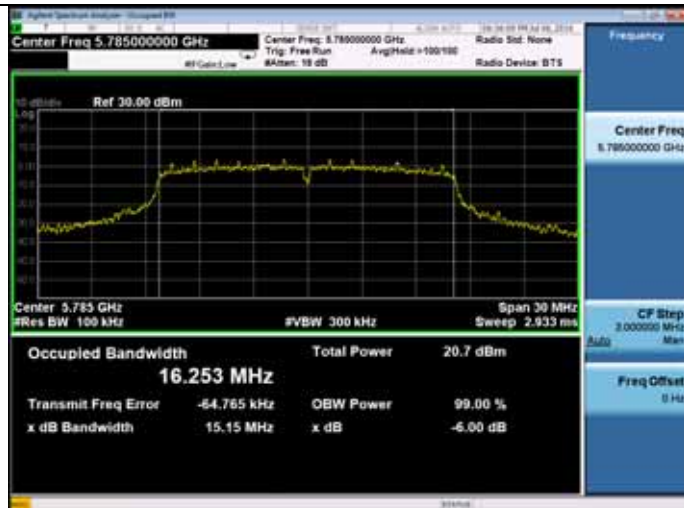


11n HT20

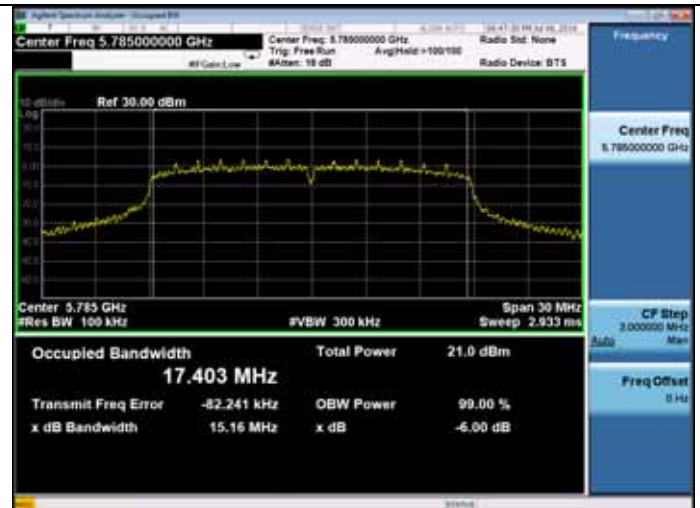
5745MHz



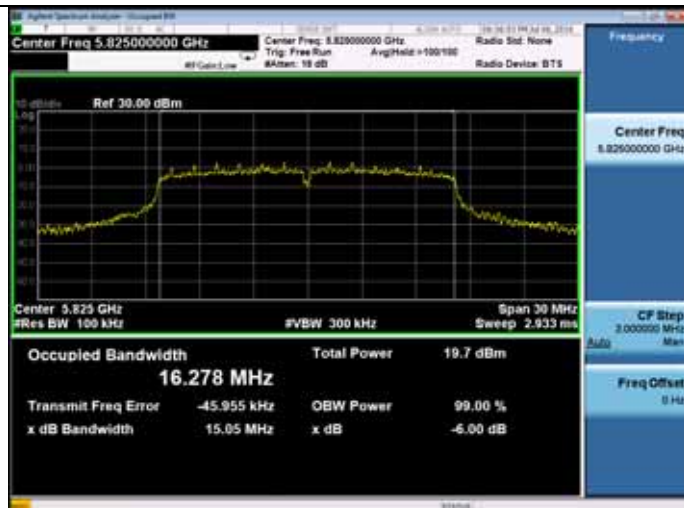
5785MHz



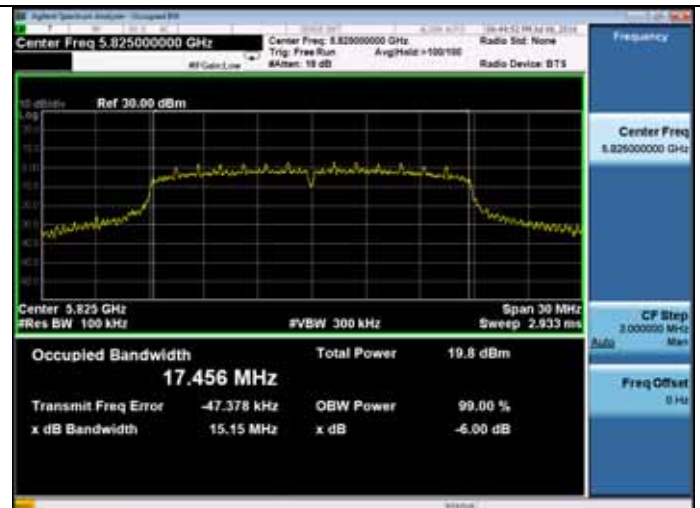
5785MHz



5825MHz

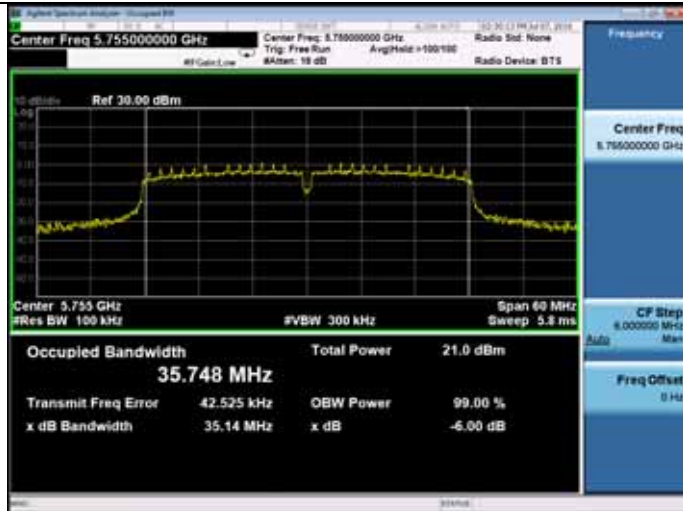


5825MHz



11n HT40

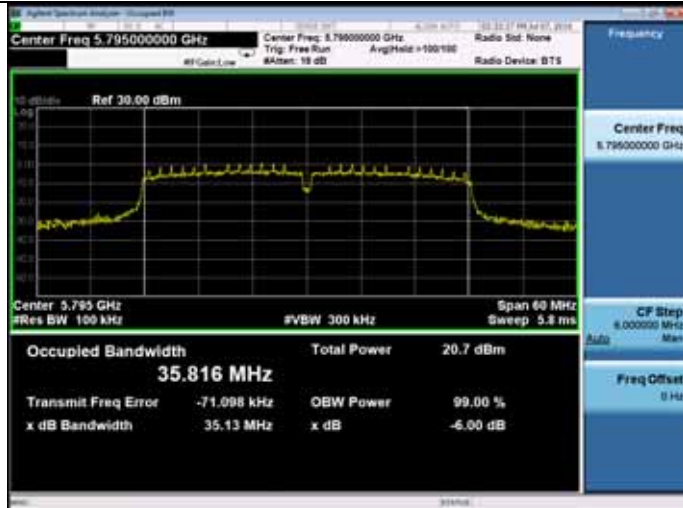
5755MHz



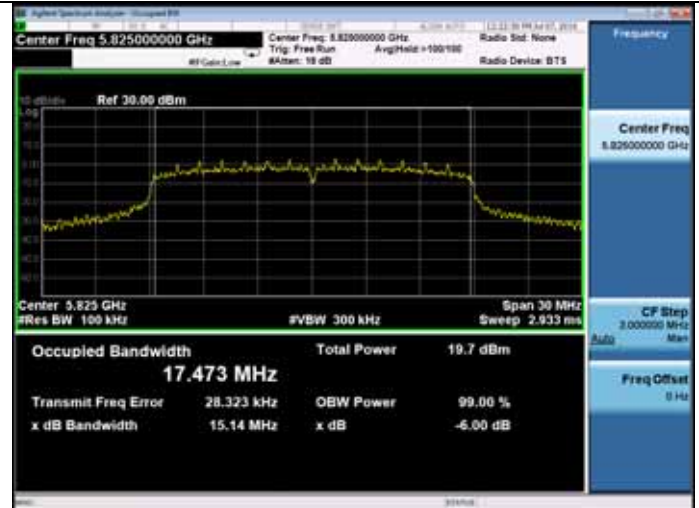
5785MHz



5795MHz

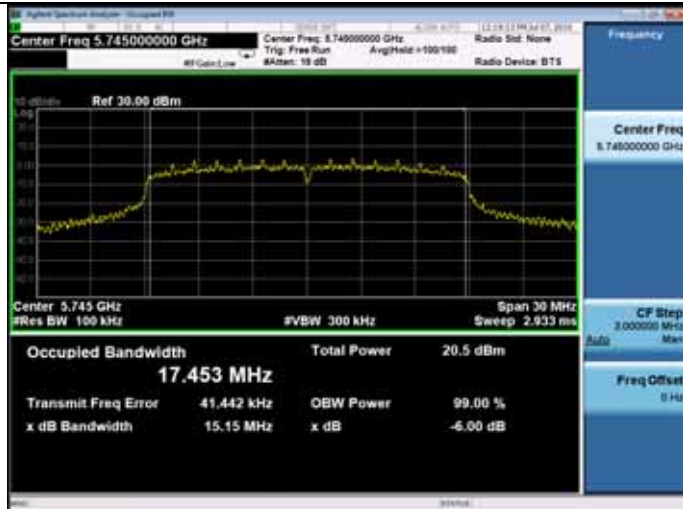


5825MHz



11ac VHT20

5745MHz



11ac VHT40

5755MHz

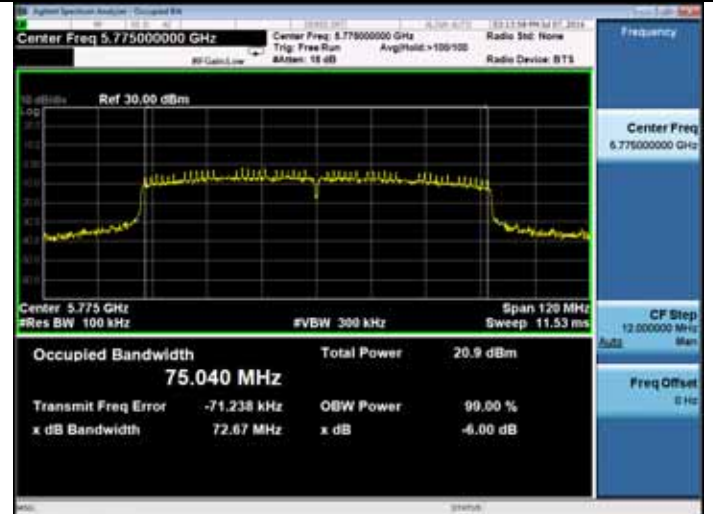


5795MHz



11ac VHT80

5775MHz



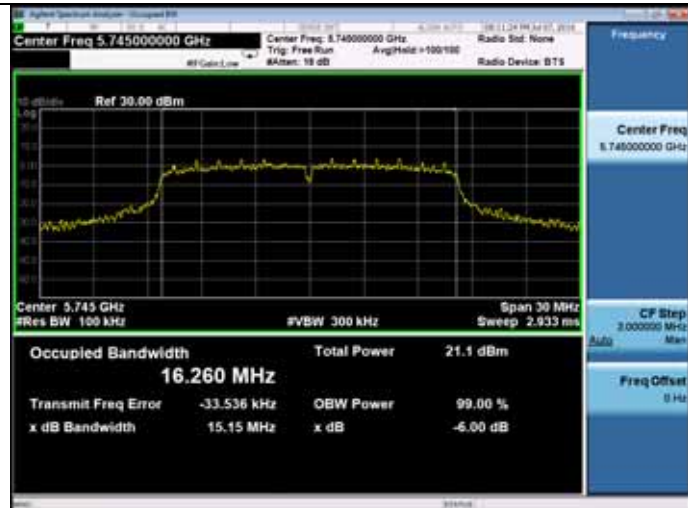
5745-5825MHz Band:

6dB & 99% bandwidth

ANT 1

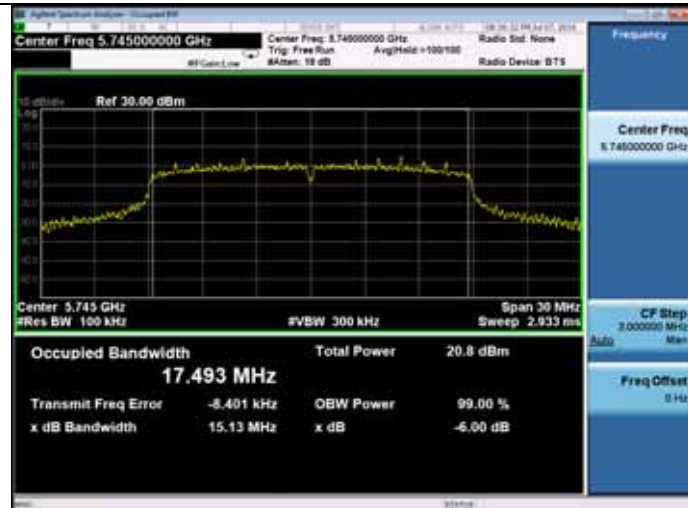
11a

5745MHz

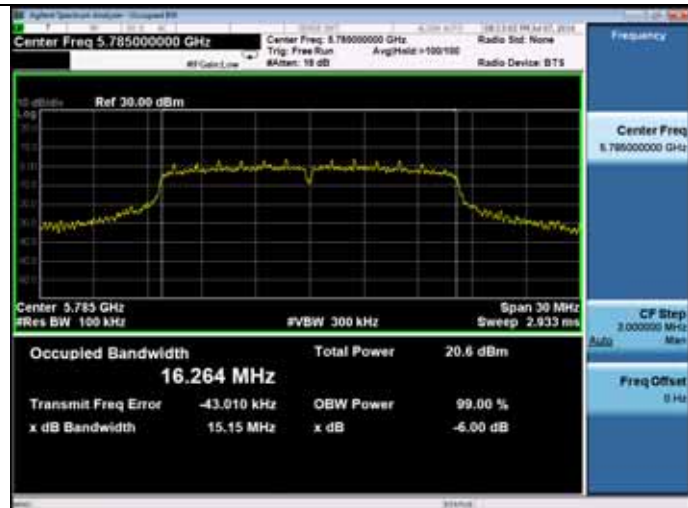


11n HT20

5745MHz



5785MHz



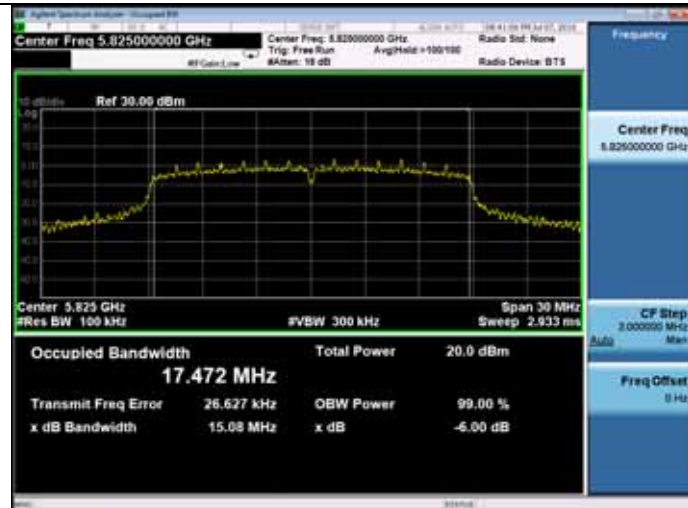
5785MHz



5825MHz

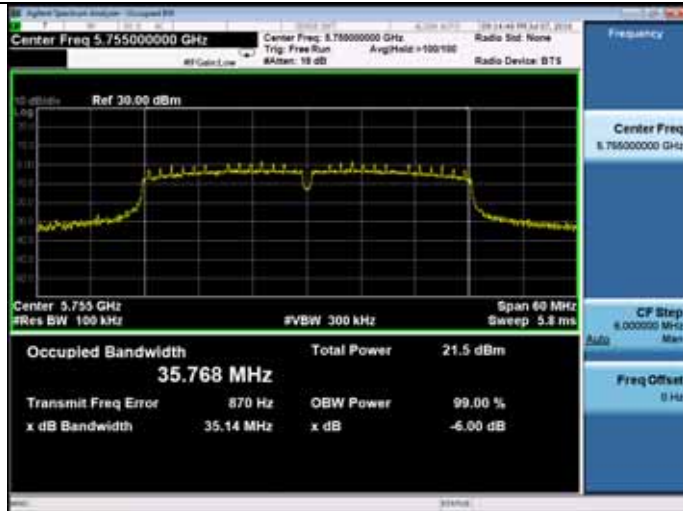


5825MHz



11n HT40

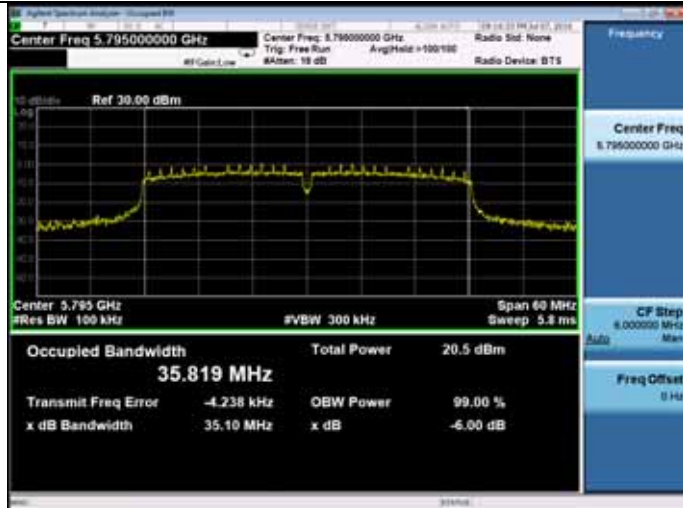
5755MHz



5785MHz



5795MHz



5825MHz



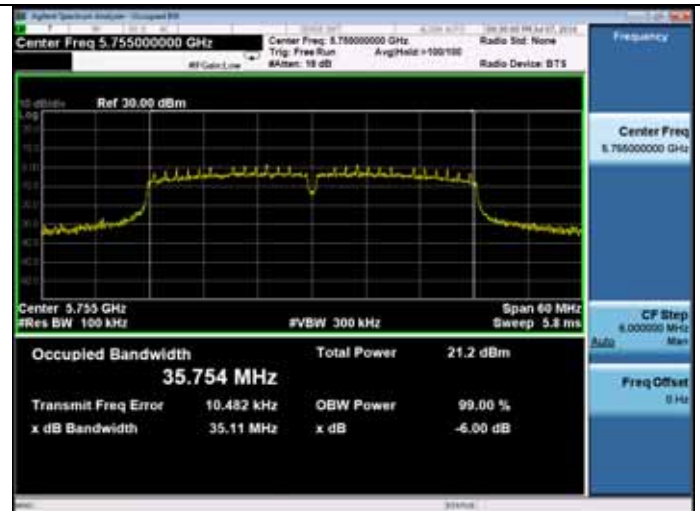
11ac VHT20

5745MHz

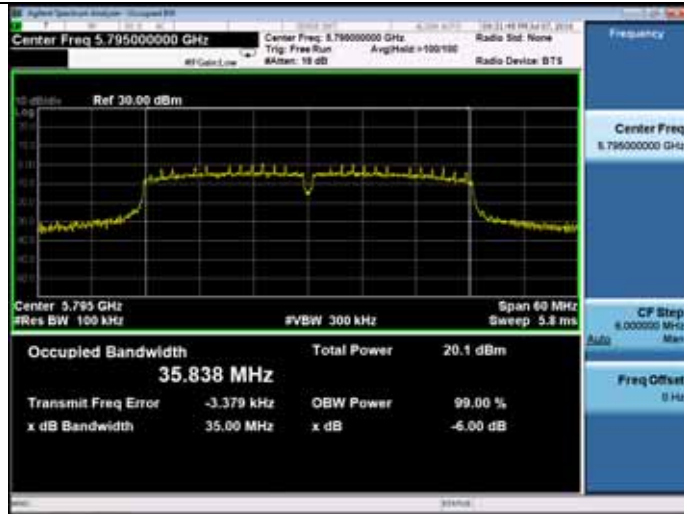


11ac VHT40

5755MHz

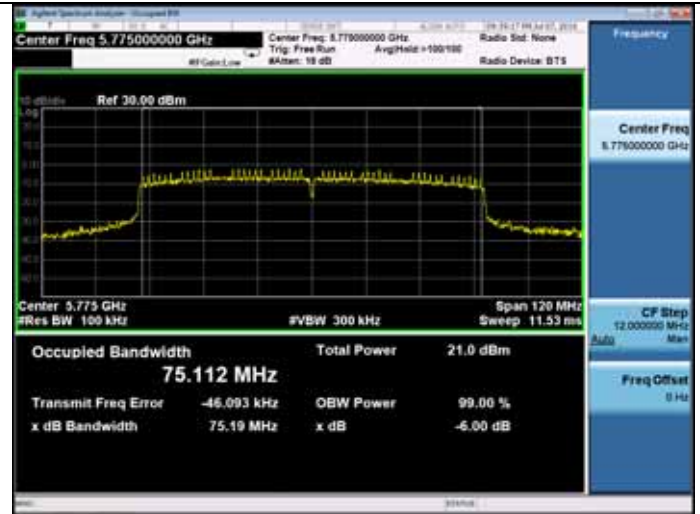


5795MHz



11ac VHT80

5775MHz



5745-5825MHz Band:

26dB bandwidth

ANT 0

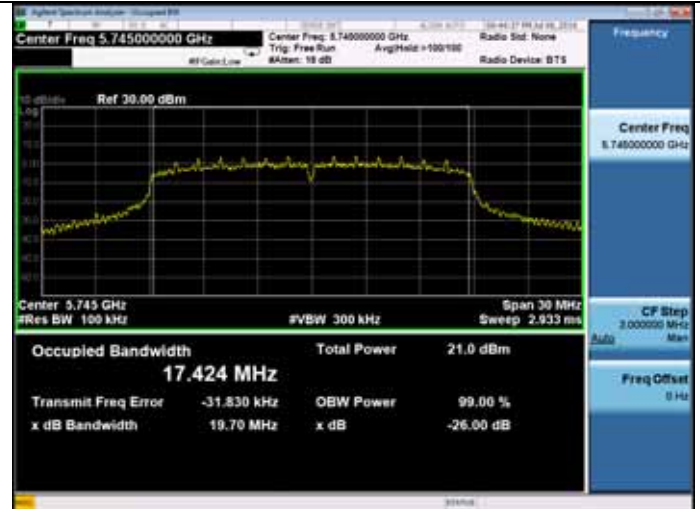
11a

5745MHz

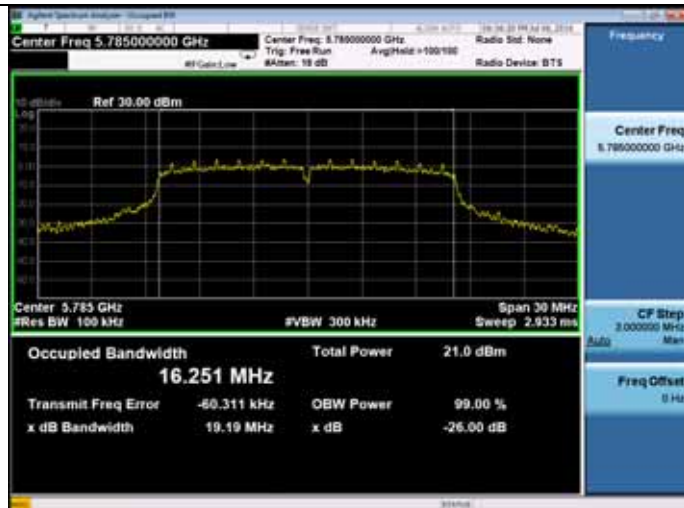


11n HT20

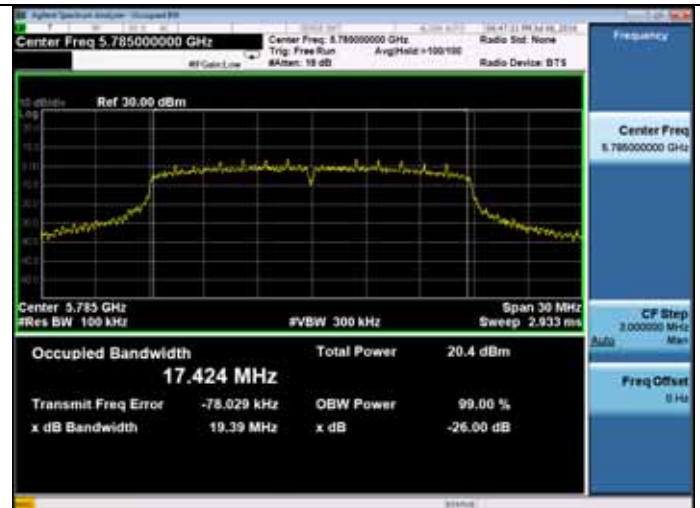
5745MHz



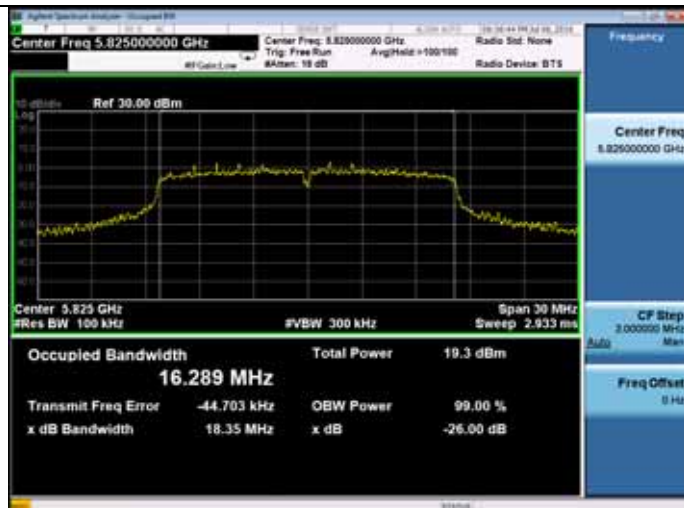
5785MHz



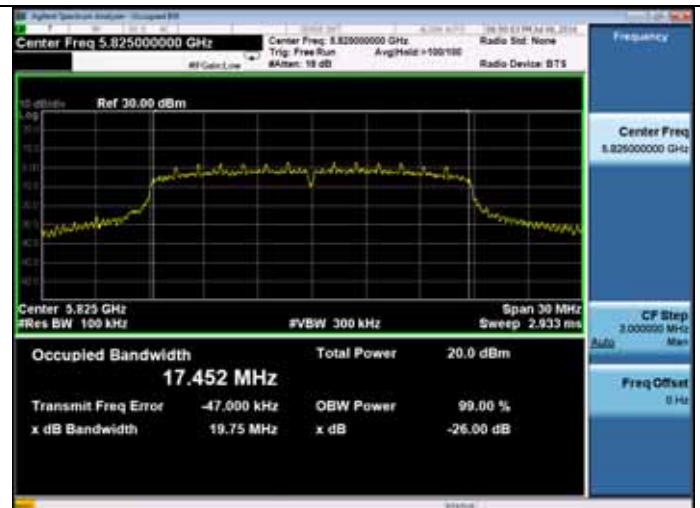
5785MHz



5825MHz

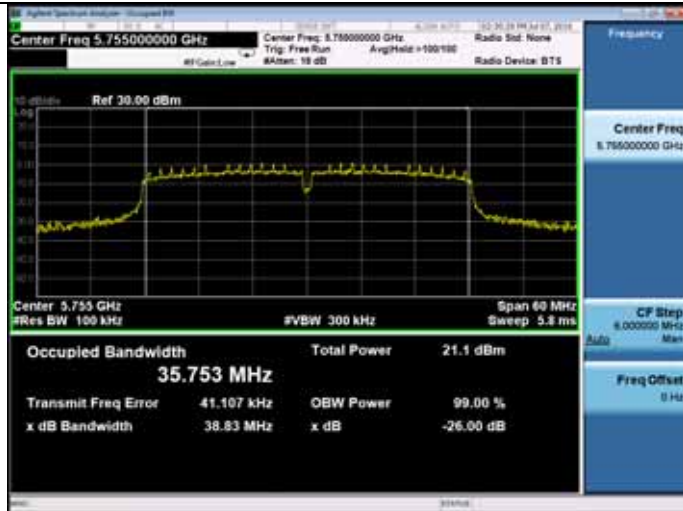


5825MHz



11n HT40

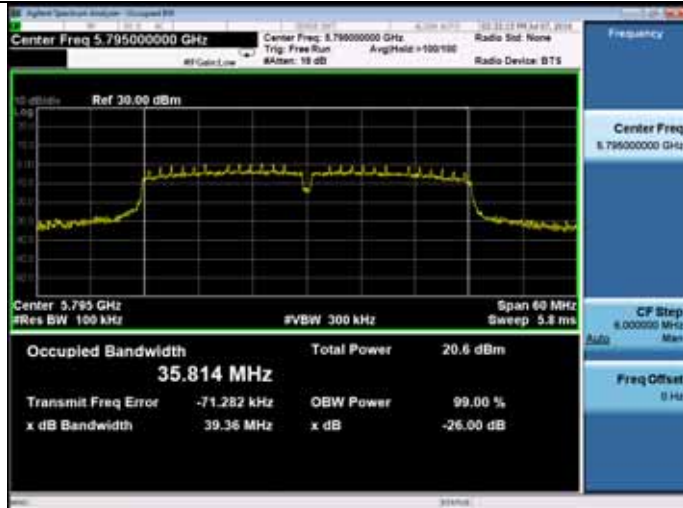
5755MHz



5785MHz



5795MHz

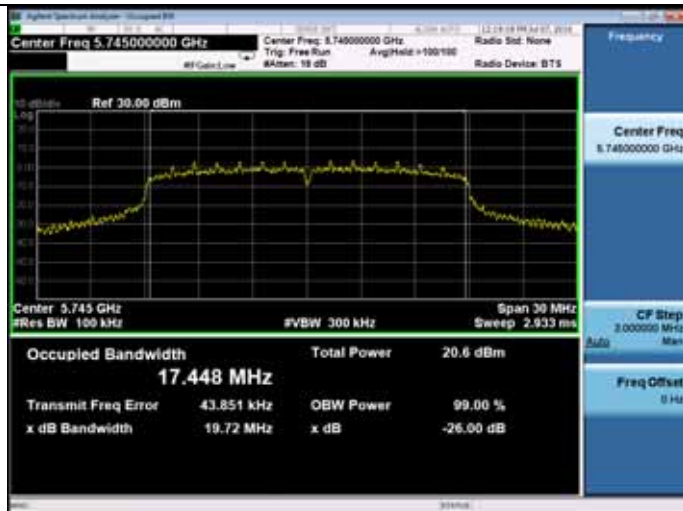


5825MHz



11ac VHT20

5745MHz



11ac VHT40

5755MHz

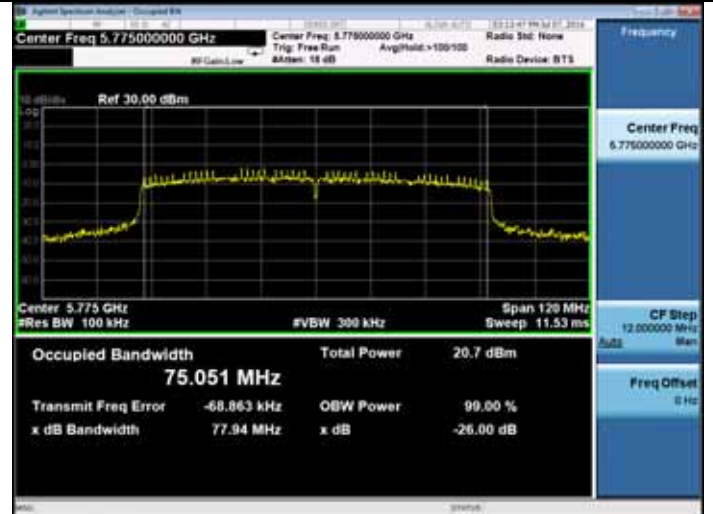


5795MHz



11ac VHT80

5775MHz



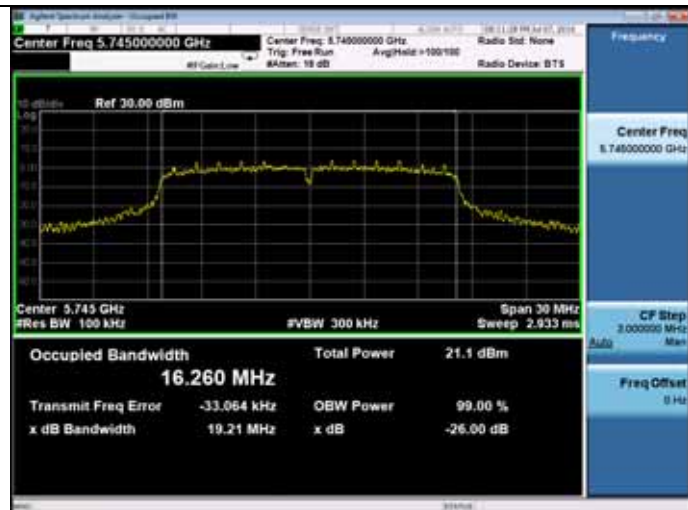
5745-5825MHz Band:

26dB bandwidth

ANT 1

11a

5745MHz

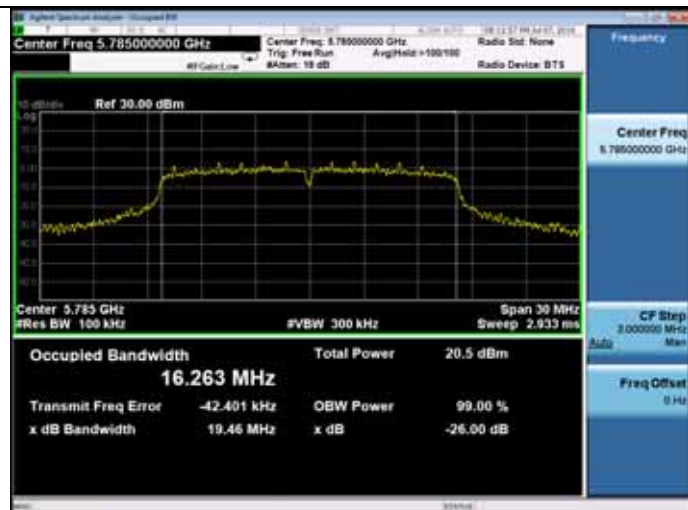


11n HT20

5745MHz



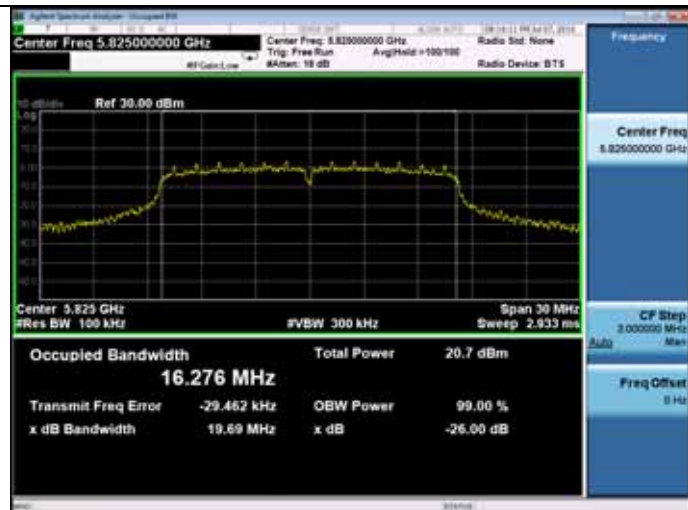
5785MHz



5785MHz



5825MHz

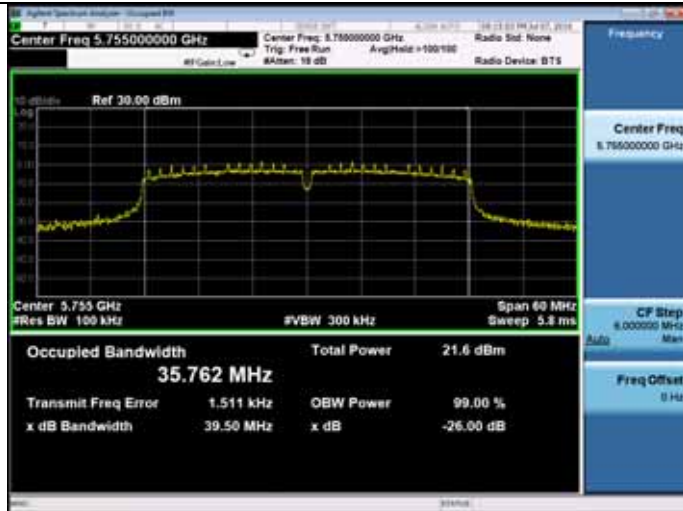


5825MHz



11n HT40

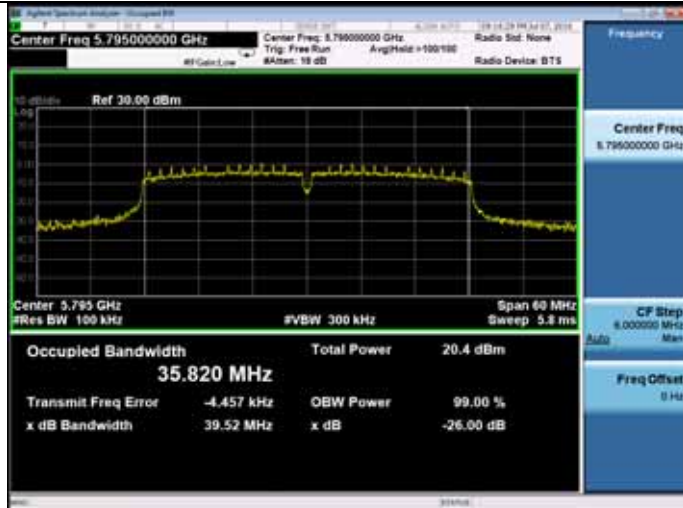
5755MHz



5785MHz



5795MHz

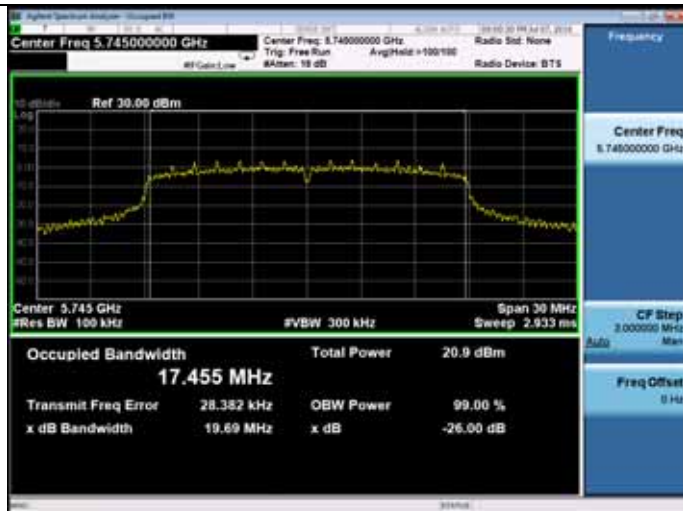


5825MHz



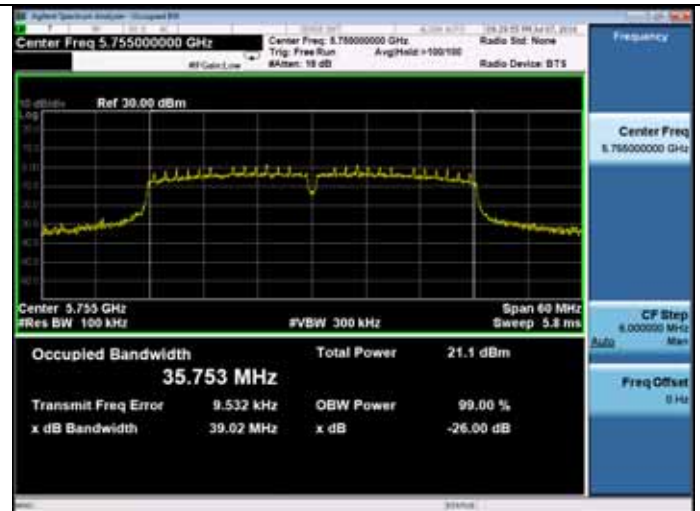
11ac VHT20

5745MHz

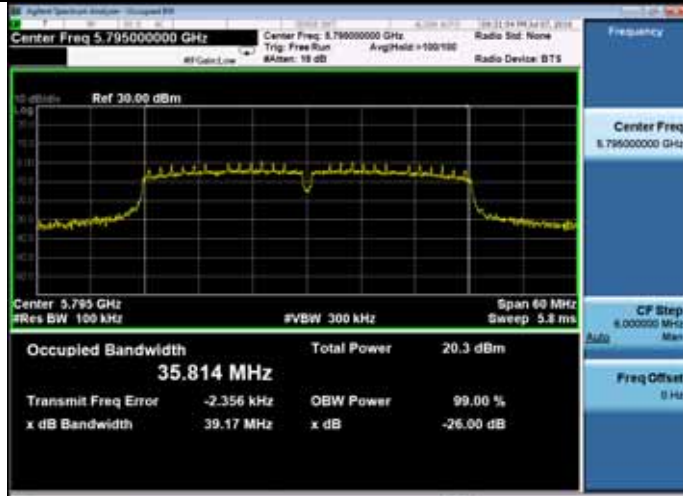


11ac VHT40

5755MHz

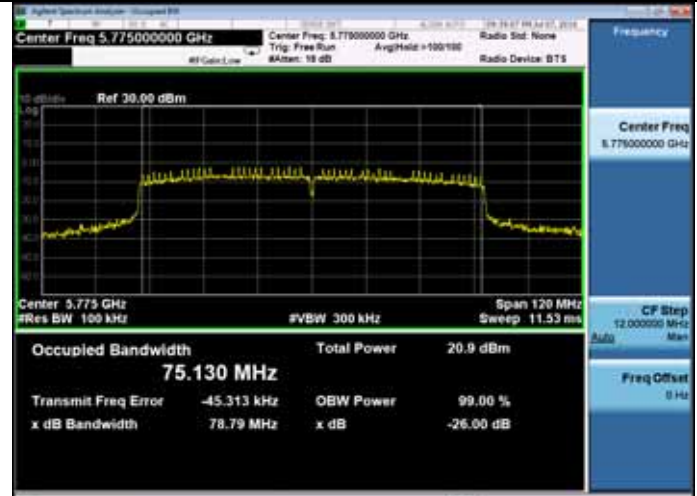


5795MHz



11ac VHT80

5775MHz



7. OUTPUT POWER TEST

7.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	US44300459	Apr.24,16	1 Year
2.	Spectrum	Agilent	N9030A	MY51380221	Oct.18,15	1 Year
3.	Power meter	Anritsu	ML2487A	6K00002472	Apr.23,16	1 Year
4.	Power sensor	Anritsu	MA2491A	0033005	Apr.23,16	1 Year
5.	Attenuator (20dB)	Agilent	8491B	MY39262165	Apr.23,16	1 Year
6.	RF Cable	Marvelous Microwave Inc	SFL402105FLEX	NO.1	Oct.17,15	1 Year

7.2. Limit

For the band 5.15–5.25 GHz.

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.

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, 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.

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

7.3. Test Procedure

1. Connected the EUT's antenna port to measure device by 26dB attenuator.
2. For IEEE 802.11a and IEEE802.11n HT20 and 802.11ac VHT20 mode, use a PK power meter which's bandwidth is 20MHz and above 26dB bandwidth of signal to measure out each test modes' PK output power.
3. For IEEE802.11n HT40 mode, because the signal's bandwidth is about 40MHz and above 20MHz bandwidth of power sensor ML2491A. So use the test method described in KBD789033 clause E Method SA-1
 - 1) Connect the antenna port to the spectrum analyzer and Set span of the spectrum to encompass the entire emission bandwidth (EBW) of the signal.
 - 2) Set the RBW=1MHz and VBW =3MHz
 - 3) Number of points in sweep $\geq 2 \text{ Span} / \text{RBW}$
 - 4) Detector = RMS
 - 5) Sweep time = auto couple
 - 6) Allow the sweep to "free run" and set the Trace average at least 100 traces in power averaging (i.e., RMS) mode.
 - 7) Compute power by integrating the spectrum across the 26 dB EBW of the signal using the instrument's band power measurement function with band limits set equal to the EBW band edges.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

7.4. Test Results

5180-5240MHz Band:

EUT: Notebook					
M/N: RZ09-0196					
Test date: 2016-07-07		Pressure: 102.5±1.0 kpa		Humidity:52.8±3.0%	
Tested by: Alice_Yang		Test site: RF site		Temperature:23.4±0.6	
Test Mode	Frequency (MHz)	Maximum Conducted output power (dBm)			Limit (dBm)
		ANT0	ANT1	Total	
11a	5180	15.04	16.60	N/A	23
	5200	14.54	15.77	N/A	23
	5240	13.00	16.06	N/A	23
11n HT20	5180	14.60	16.25	18.51	23
	5200	13.93	15.32	17.69	23
	5240	12.48	15.68	17.38	23
11n HT40	5190	12.50	14.30	16.50	23
	5230	12.90	15.40	17.34	23
11ac VHT20	5180	14.63	16.35	18.59	23
	5200	14.07	15.49	17.85	23
	5240	12.57	15.80	17.49	23
11ac VHT40	5190	12.36	14.18	16.38	23
	5230	12.86	15.42	17.34	23
11ac VHT80	5210	11.43	13.39	15.53	23
Conclusion: PASS					

Note: 1. 11n/ac Mode

$$\text{Directional Gain} = 10 \log[(10^{3.9/20} + 10^{3.91/20})^2 / 2] \text{dBi} \\ = 6.9 \text{dBi} > 6 \text{dBi}.$$

2. The transmit signals are correlated.

5260-5320MHz Band:

EUT: Notebook					
M/N: RZ09-0196					
Test date: 2016-07-07		Pressure: 102.6±1.0 kpa		Humidity:52.9±3.0%	
Tested by: Alice_Yang		Test site: RF site		Temperature:23.7±0.6	
Test Mode	Frequency (MHz)	Maximum Conducted output power (dBm)			Limit (dBm)
		ANT0	ANT1	Total	
11a	5260	13.08	16.52	N/A	23
	5300	11.70	14.94	N/A	23
	5320	11.10	14.78	N/A	23
11n HT20	5260	12.86	16.26	17.89	23
	5300	11.51	14.70	16.40	23
	5320	10.95	14.66	16.2	23
11n HT40	5270	12.62	16.16	17.75	23
	5310	9.52	10.99	13.33	23
11ac VHT20	5260	12.83	16.48	18.04	23
	5300	11.02	14.99	16.45	23
	5320	10.92	14.67	16.20	23
11ac VHT40	5270	12.61	16.16	17.75	23
	5310	9.46	11.02	13.32	23
11ac VHT80	5290	8.87	10.38	12.70	23
Conclusion: PASS					

Note: The Antenna Gain for
 ANT0: 2.82dBi
 ANT1; 0.72dBi
 The Total Gain < 6dBi

5500-5700MHz Band:

EUT: Notebook					
M/N: RZ09-0196					
Test date: 2016-07-07		Pressure: 102.5±1.0 kpa		Humidity:53.9±3.0%	
Tested by: Alice_Yang		Test site: RF site		Temperature:23.7±0.6	
Test Mode	Frequency (MHz)	Maximum Conducted output power (dBm)			Limit (dBm)
		ANT0	ANT1	Total	
11a	5500	12.01	13.91	N/A	23
	5600	13.60	13.44	N/A	23
	5700	13.42	13.01	N/A	23
11n HT20	5500	12.13	13.57	15.92	22.1
	5600	13.47	12.75	16.14	22.1
	5700	12.86	12.30	15.60	22.1
11n HT40	5510	10.21	10.91	13.58	22.1
	5590	13.57	13.49	16.54	22.1
	5670	10.60	12.02	14.38	22.1
11ac VHT20	5500	11.78	13.68	15.84	22.1
	5600	13.27	12.67	15.99	22.1
	5700	12.44	12.50	15.48	22.1
11ac VHT40	5510	11.90	13.71	15.91	22.1
	5590	13.50	13.74	16.63	22.1
	5670	14.01	13.22	16.64	22.1
11ac VHT80	5530	11.49	13.21	15.45	22.1
	5610	12.85	12.46	15.67	22.1
Conclusion: PASS					

Note: 1. 11n/ac Mode

$$\begin{aligned} \text{Directional Gain} &= 10 \log[(10^{3.9/20} + 10^{3.91/20})^2 / 2] \text{dBi} \\ &= 6.9 \text{dBi} > 6 \text{dBi}. \end{aligned}$$

2. The transmit signals are correlated.

5745-5825MHz Band:

EUT: Notebook					
M/N: RZ09-0196					
Test date: 2016-07-07		Pressure: 102.5±1.0 kpa		Humidity:53.7±3.0%	
Tested by: Alice_Yang		Test site: RF site		Temperature:23.4±0.6	
Test Mode	Frequency (MHz)	Maximum Conducted output power (dBm)			Limit (dBm)
		ANT0	ANT1	Total	
11a	5745	13.85	14.09	N/A	23
	5785	13.89	13.65	N/A	23
	5825	12.82	13.32	N/A	23
11n HT20	5745	13.66	13.34	16.51	23
	5785	13.70	12.82	16.29	23
	5825	12.56	12.71	15.65	23
11n HT40	5755	13.56	13.44	16.51	23
	5795	12.86	13.07	15.98	23
11ac VHT20	5745	13.32	13.49	16.42	23
	5785	12.99	13.30	16.16	23
	5825	12.38	12.94	15.68	23
11ac VHT40	5755	13.56	13.72	16.65	23
	5795	13.17	12.80	16.00	23
11ac VHT80	5775	12.83	12.65	15.75	23
Conclusion: PASS					

Note: ANT0: 3.82dBi
ANT1; 1.76dBi
The Total Gain < 6dBi

5180-5240MHz Band:

ANT 0

11n HT40

5190MHz



5230MHz



5230MHz



5210MHz



11acVHT40

5190MHz



5180-5240MHz Band:

ANT 1

11n HT40

5190MHz

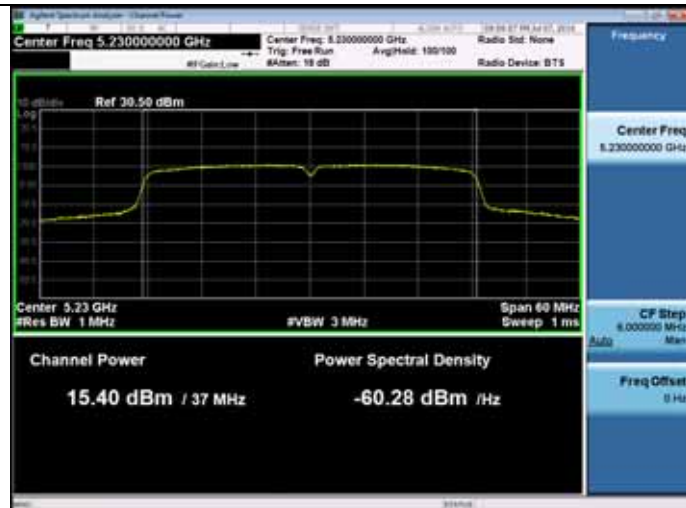


5230MHz



11ac VHT80

5230MHz



5210MHz



11acVHT40

5190MHz

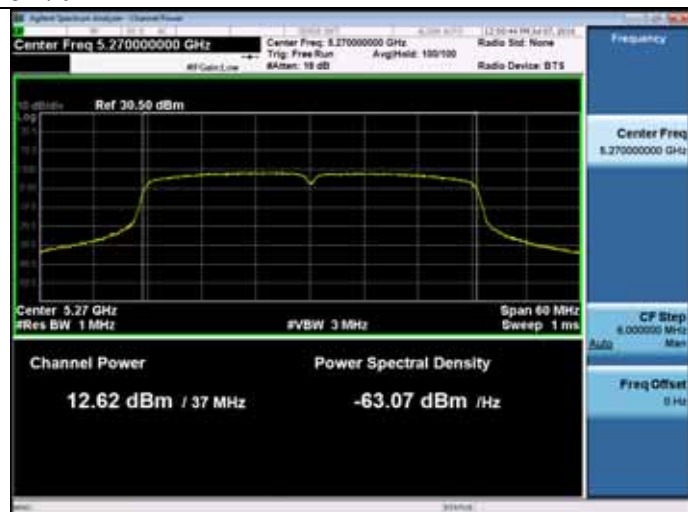


5260-5320MHz Band:

ANT 0

11n HT40

5270MHz



5310MHz



5310MHz



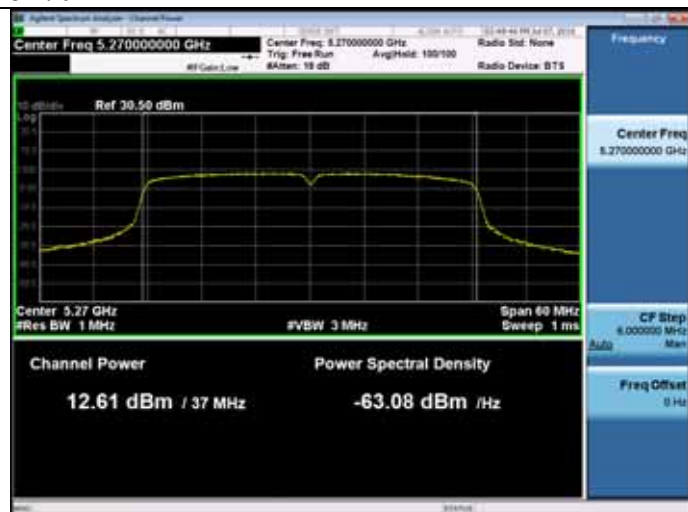
11ac VHT80

5290MHz



11acVHT40

5270MHz

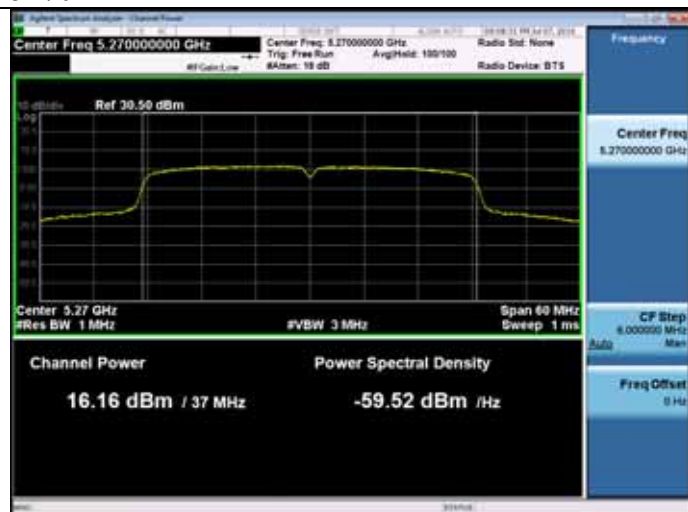


5260-5320MHz Band:

ANT 1

11n HT40

5270MHz



5310MHz

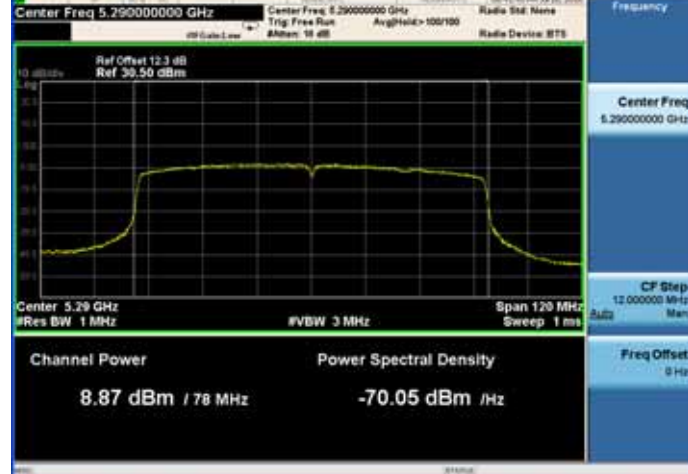


5310MHz



11ac VHT80

5290MHz



11acVHT40

5270MHz



5500-5700MHz Band:

ANT 0

11n HT40

5510MHz

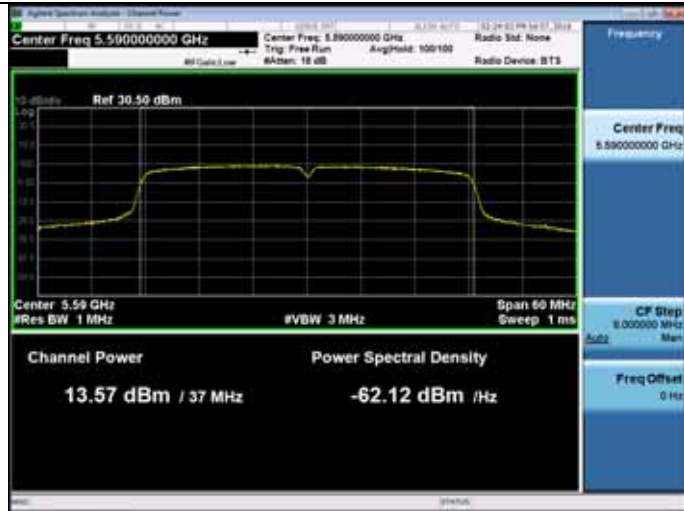


11acVHT40

5510MHz



5590MHz



5590MHz



5670MHz

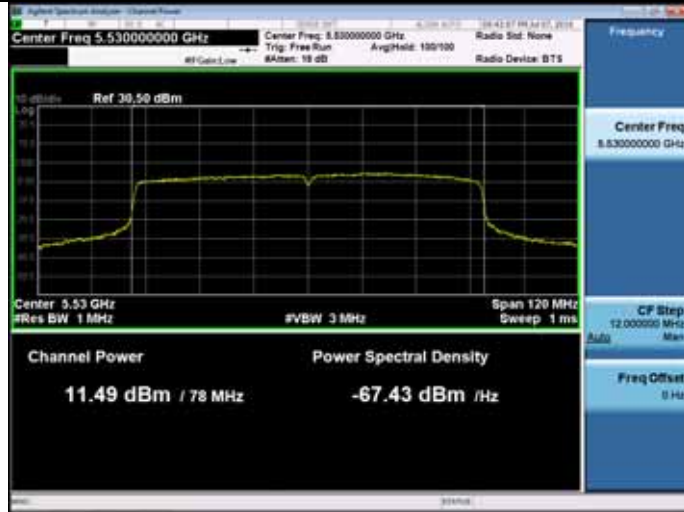


5670MHz



11ac VHT80

5530MHz



5610MHz



5500-5700MHz Band:

ANT 1

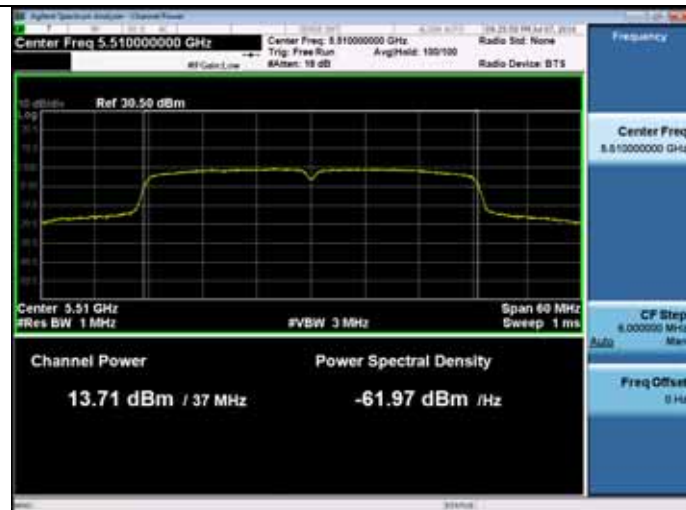
11n HT40

5510MHz

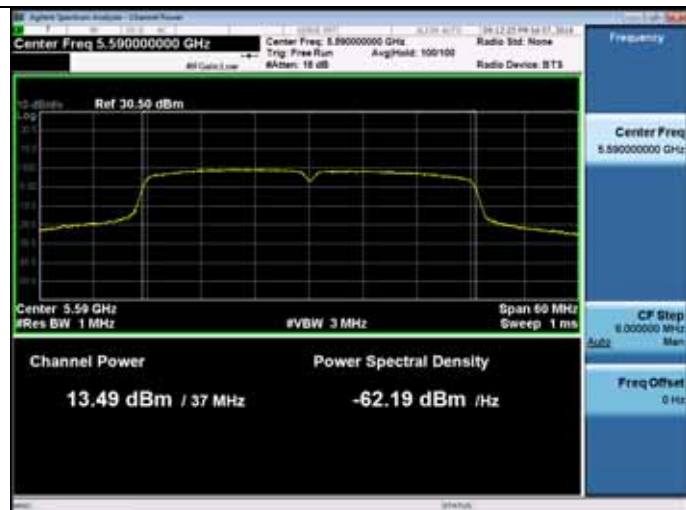


11acVHT40

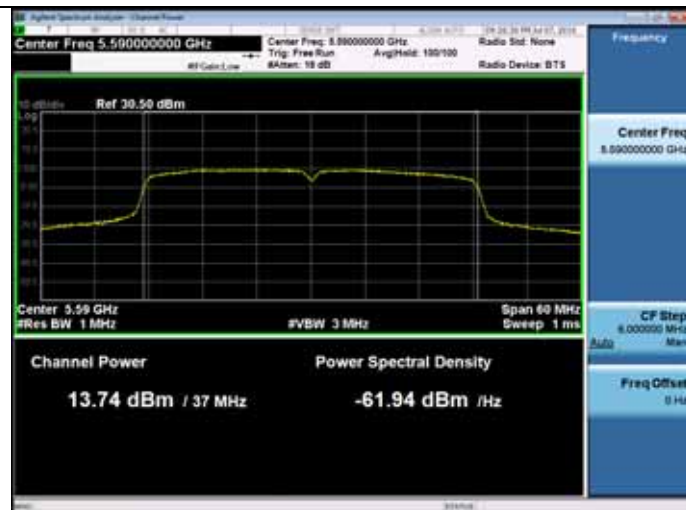
5510MHz



5590MHz



5590MHz



5670MHz

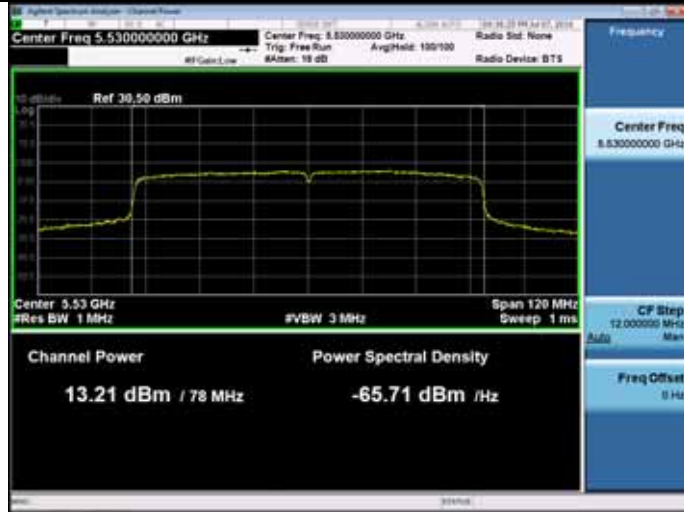


5670MHz



11ac VHT80

5530MHz



5610MHz

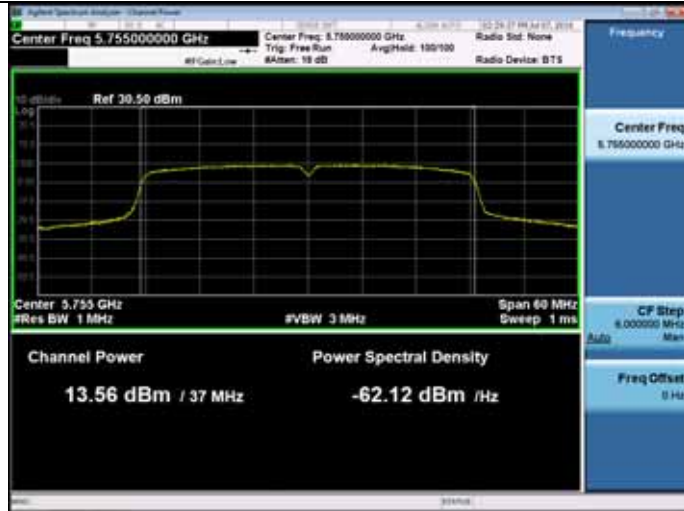


5745-5825MHz Band:

ANT 0

11n HT40

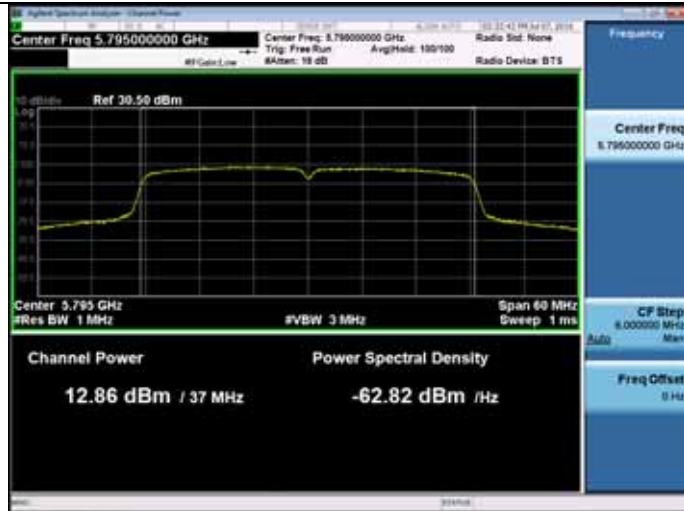
5755MHz



5795MHz



5795MHz

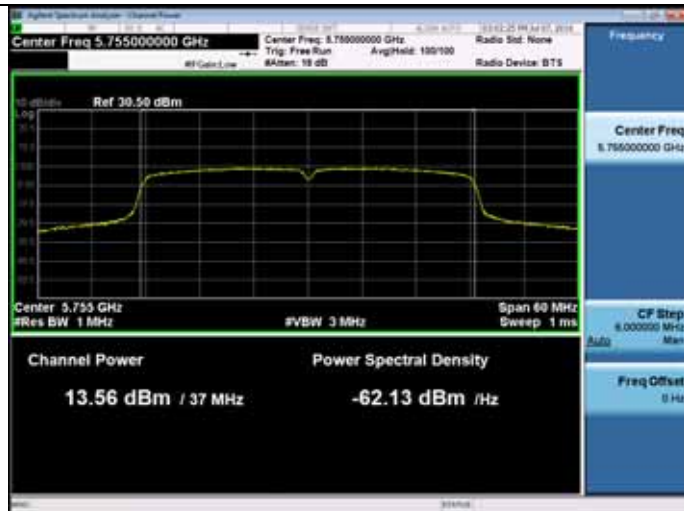


5775MHz



11acVHT40

5755MHz

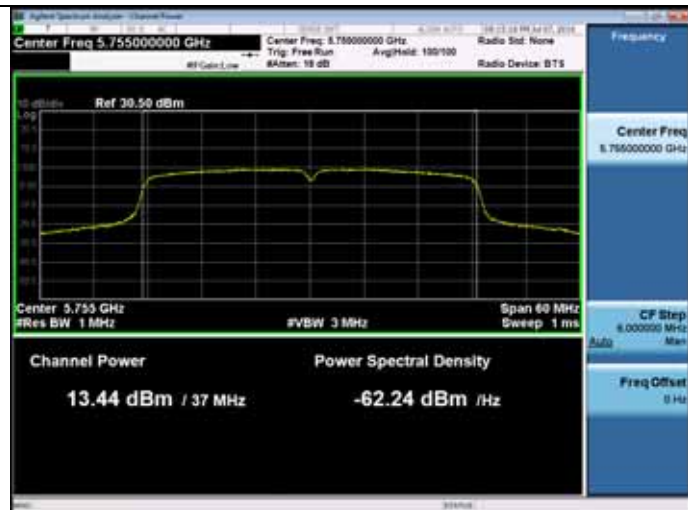


5745-5825MHz Band:

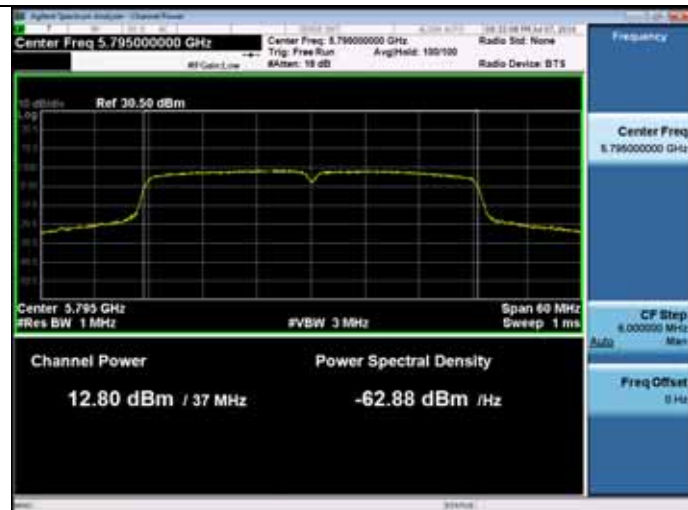
ANT 1

11n HT40

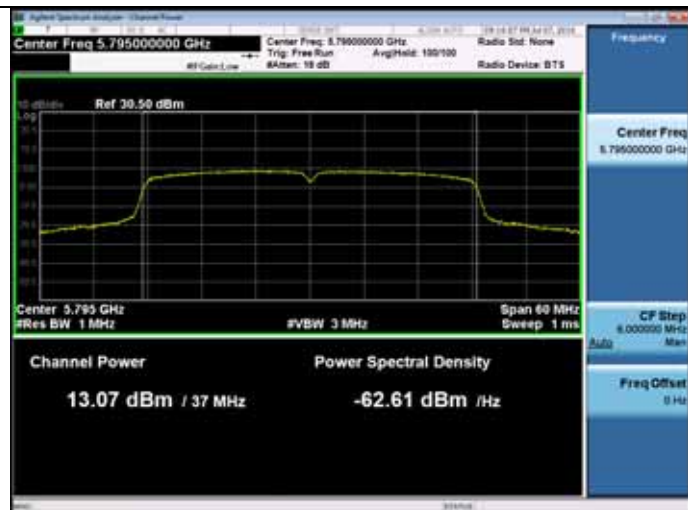
5755MHz



5795MHz



5795MHz



5775MHz



11acVHT40

5755MHz



8. SPECTRAL DENSITY TEST

8.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	N9030A	MY51380221	Oct.18,15	1 Year
2.	Attenuator (20dB)	Agilent	8491B	MY39262165	Apr.23,16	1 Year
3.	RF Cable	Marvelous Microwave Inc	SFL402105FLEX	NO.1	Oct.17,15	1 Year

8.2. Limit

Band 5150-5250 MHz:

The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

Band 5250-5350 MHz:

The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

Band 5470-5725 MHz:

The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

Band 5725-5850 MHz:

The power spectral density shall not exceed 30 dBm in any 500 KHz band.

8.3. Test Procedure

For the Band 5.15-5.35GHz; 5.47-5.725 GHz:

The transmitter output was connected to a spectrum analyzer. Power density was measured by spectrum analyzer with 1MHz RBW and 3MHz VBW; Detector: RMS mode.

For the band 5.725-5.85 GHz:

The transmitter output was connected to a spectrum analyzer. Power density was measured by spectrum analyzer with 1MHz RBW and 3MHz VBW, RMS Detector.

So use the test method described in KDB789033 clause E

- 1) Set the RBW=100kHz and VBW=3MHz
- 2) Number of points in sweep $\geq 2 \text{ Span} / \text{RBW}$. (This ensures that bin-to-bin spacing is $\leq \text{RBW}/2$, so that narrowband signals are not lost between frequency bins.)
- 3) Sweep time = auto
- 4) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- 5) Use the "peak search" function of spectrum analyzer find the max value, then add $10\log(500\text{kHz}/\text{RBW})$ to the measured result.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

8.4. Test Results

5180-5240MHz Band:

EUT: Notebook		
M/N: RZ09-0196		
Test date: 2016-07-07	Pressure: 102.5±1.0 kpa	Humidity:53.6±3.0%
Tested by: Alice_Yang	Test site: RF site	Temperature:23.5±0.6

Test Mode	Frequency (MHz)	Power density (dBm/MHz)			Limit (dBm/MHz)
		ANT0	ANT1	Total	
11a	5180	4.194	6.132	N/A	17
	5200	4.014	5.404	N/A	17
	5240	2.501	5.386	N/A	17
11n HT20	5180	3.929	4.312	7.14	17
	5200	3.169	4.751	7.04	17
	5240	1.912	5.023	6.75	17
11n HT40	5190	-1.093	0.574	2.83	17
	5230	-1.162	1.567	3.42	17
11ac VHT20	5180	3.966	4.357	7.18	17
	5200	3.322	4.768	7.12	17
	5240	2.068	5.148	6.89	17
11ac VHT40	5190	-1.113	0.132	2.56	17
	5230	-0.938	1.927	3.74	17
11ac VHT80	5210	-5.117	-3.375	-1.15	17
Conclusion: PASS					

Note: 1. 11n/ac Mode

$$\begin{aligned} \text{Directional Gain} &= 10 \log[(10^{3.9/20} + 10^{3.91/20})^2 / 2] \text{dBi} \\ &= 6.9 \text{dBi} > 6 \text{dBi}. \end{aligned}$$

2. The transmit signals are correlated.

5260-5320MHz Band:

EUT: Notebook		
M/N: RZ09-0196		
Test date: 2016-07-07	Pressure: 102.3±1.0 kpa	Humidity:52.8±3.0%
Tested by: Alice_Yang	Test site: RF site	Temperature:23.4±0.6

Test Mode	Frequency (MHz)	Power density (dBm/MHz)			Limit (dBm/MHz)
		ANT0	ANT1	Total	
11a	5260	2.538	5.951	N/A	11
	5300	1.087	4.374	N/A	11
	5320	0.572	4.235	N/A	11
11n HT20	5260	2.410	5.794	7.43	11
	5300	1.133	4.225	5.96	11
	5320	0.511	3.987	5.60	11
11n HT40	5270	-0.975	2.579	4.17	11
	5310	-3.888	-2.921	-0.37	11
11ac VHT20	5260	2.222	6.024	7.54	11
	5300	0.509	4.604	6.03	11
	5320	0.177	3.972	5.49	11
11ac VHT40	5270	-0.685	2.438	4.16	11
	5310	-4.780	-2.663	-0.58	11
11ac VHT80	5290	-7.774	-6.126	-3.86	11
Conclusion: PASS					

Note: The Antenna Gain for
 ANT0: 2.82dBi
 ANT1; 0.72dBi
 The Total Gain < 6dBi

5500-5700MHz Band:

EUT: Notebook		
M/N: RZ09-0196		
Test date: 2016-07-07	Pressure: 102.6±1.0 kpa	Humidity:52.7 ±3.0%
Tested by: Alice_Yang	Test site: RF site	Temperature:23.7±0.6

Test Mode	Frequency (MHz)	Power density (dBm/MHz)			Limit (dBm/MHz)
		ANT0	ANT1	Total	
11a	5500	1.519	3.416	N/A	17
	5600	3.287	2.919	N/A	17
	5700	2.781	2.488	N/A	17
11n HT20	5500	1.141	2.974	5.16	16.1
	5600	2.827	2.224	5.55	16.1
	5700	2.838	2.028	5.46	16.1
11n HT40	5510	-3.592	-2.727	-0.13	16.1
	5590	-0.139	-0.345	2.77	16.1
	5670	-3.235	-1.954	0.46	16.1
11ac VHT20	5500	1.192	3.172	5.30	16.1
	5600	2.940	2.171	5.58	16.1
	5700	1.650	2.120	4.90	16.1
11ac VHT40	5510	-2.175	-0.189	1.94	16.1
	5590	-0.337	-0.165	2.76	16.1
	5670	-0.283	-0.387	2.68	16.1
11ac VHT80	5530	-5.246	-3.893	-1.51	16.1
	5610	-4.516	-4.380	-1.44	16.1

Conclusion: PASS

Note: 1. 11n/ac Mode

$$\text{Directional Gain} = 10 \log[(10^{3.9/20} + 10^{3.91/20})^2 / 2] \text{dBi} \\ = 6.9 \text{dBi} > 6 \text{dBi}.$$

2. The transmit signals are correlated.

5745-5825MHz Band:

EUT: Notebook		
M/N: RZ09-0196		
Test date: 2016-07-07	Pressure: 102.2±1.0 kpa	Humidity:53.4±3.0%
Tested by: Alice_Yang	Test site: RF site	Temperature:23.6±0.6

Test Mode	Frequency (MHz)	Power density (dBm/MHz)			Limit (dBm/MHz)
		ANT0	ANT1	Total	
11a	5745	-5.690	-5.212	N/A	17
	5785	-5.403	-5.907	N/A	17
	5825	-6.629	-6.210	N/A	17
11n HT20	5745	-5.681	-6.290	-2.96	17
	5785	-5.772	-6.563	-3.14	17
	5825	-7.078	-6.897	-3.98	17
11n HT40	5755	-9.550	-9.409	-6.47	17
	5795	-9.873	-9.744	-6.80	17
11ac VHT20	5745	-5.717	-6.357	-3.01	17
	5785	-6.517	-6.280	-3.39	17
	5825	-7.034	-6.856	-3.93	17
11ac VHT40	5755	-9.346	-8.415	-5.85	17
	5795	-9.293	-9.443	-6.36	17
11ac VHT80	5775	-13.570	-13.077	-10.31	17
Conclusion: PASS					

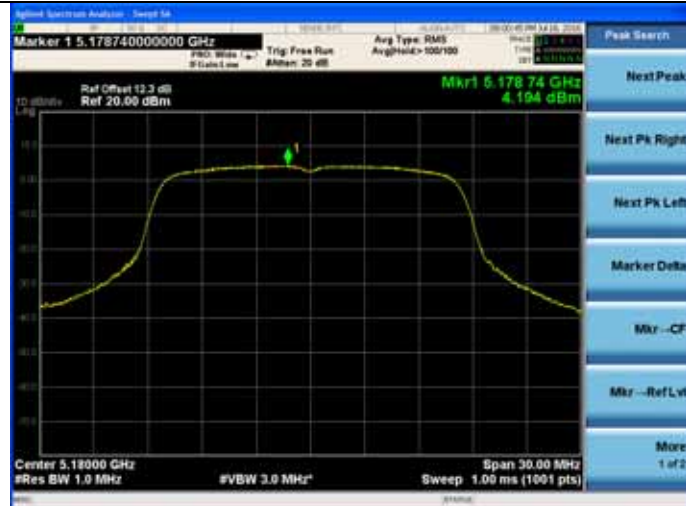
Note: ANT0: 3.82dBi
ANT1; 1.76dBi
The Total Gain < 6dBi

5180-5240MHz Band:

ANT 0

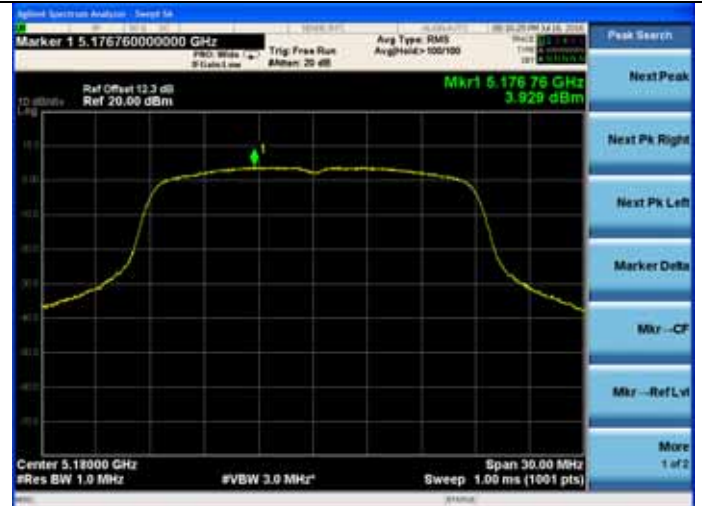
11a

5180MHz

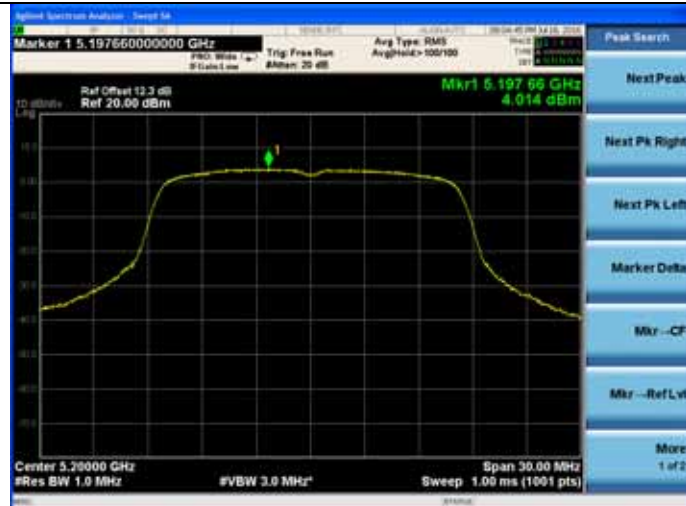


11n HT20

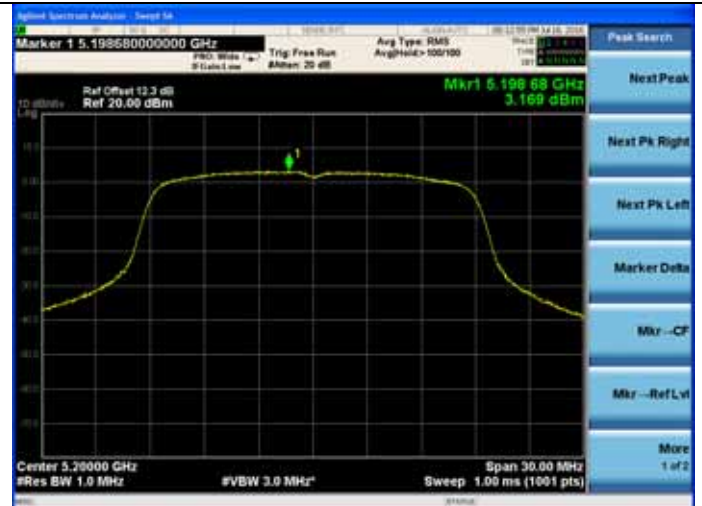
5180MHz



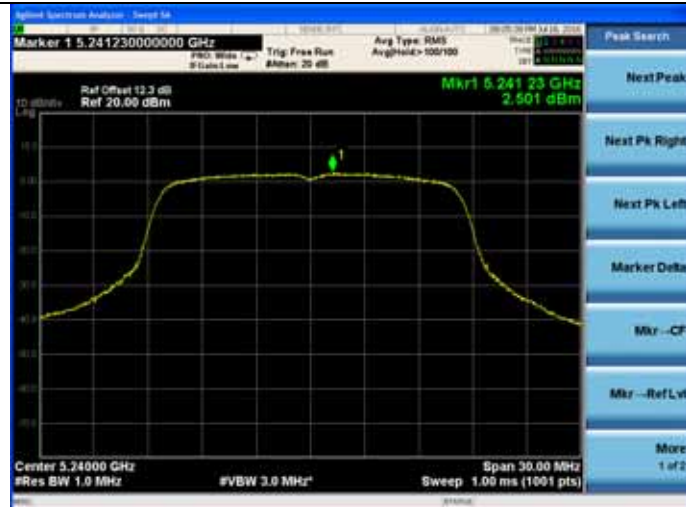
5200MHz



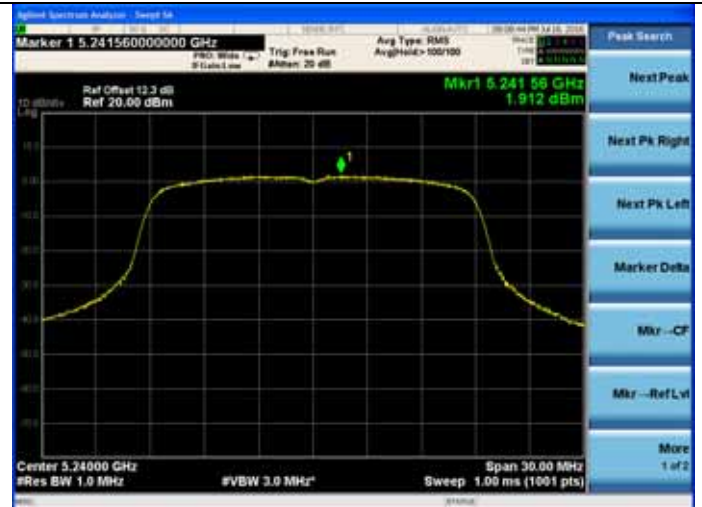
5200MHz



5240MHz

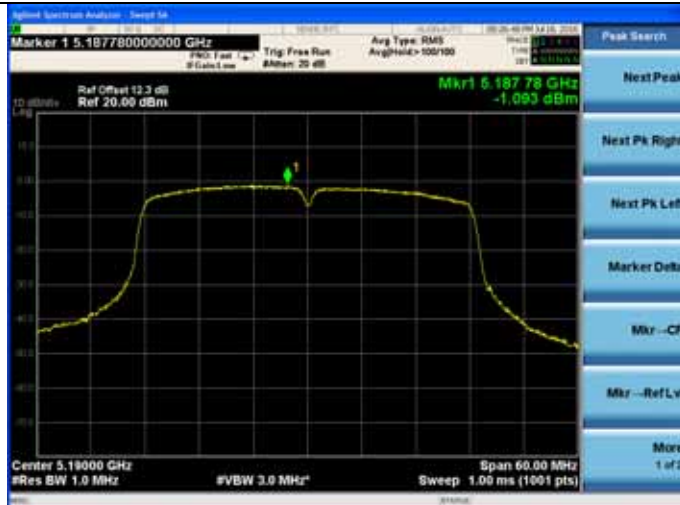


5240MHz

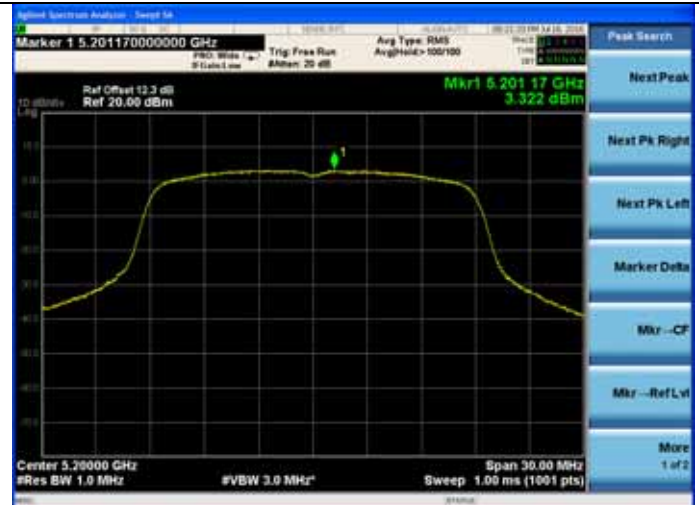


11n HT40

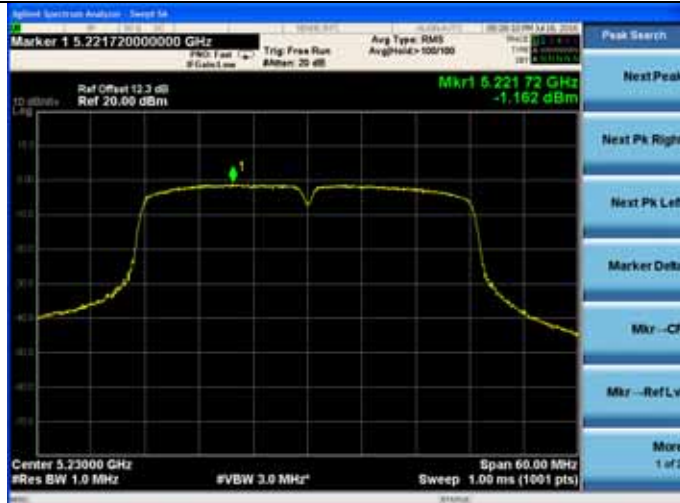
5190MHz



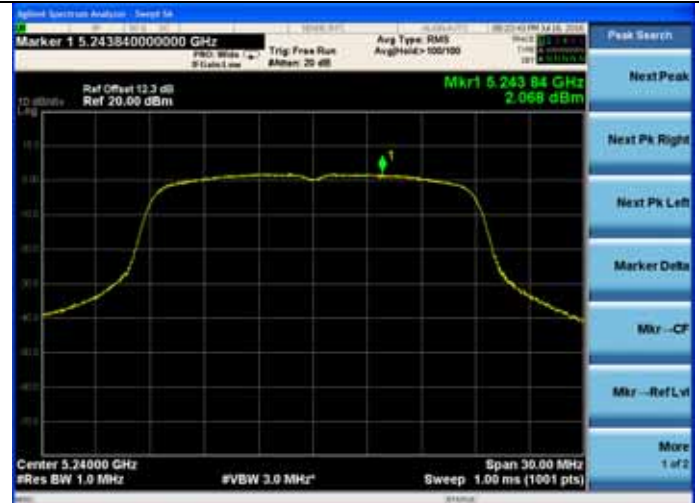
5200MHz



5230MHz

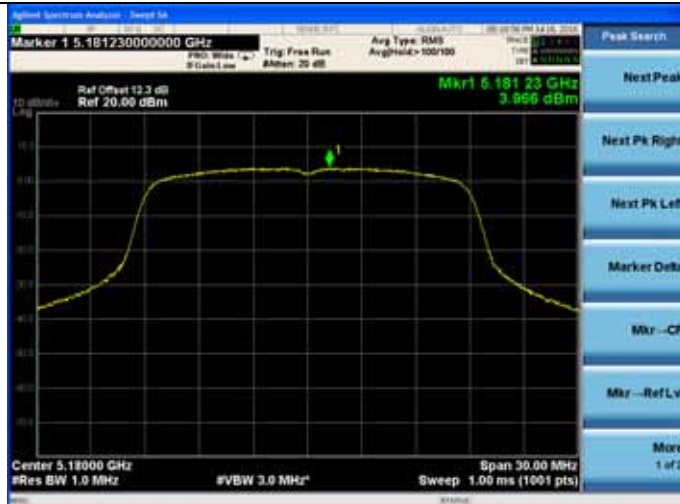


5240MHz



11ac VHT20

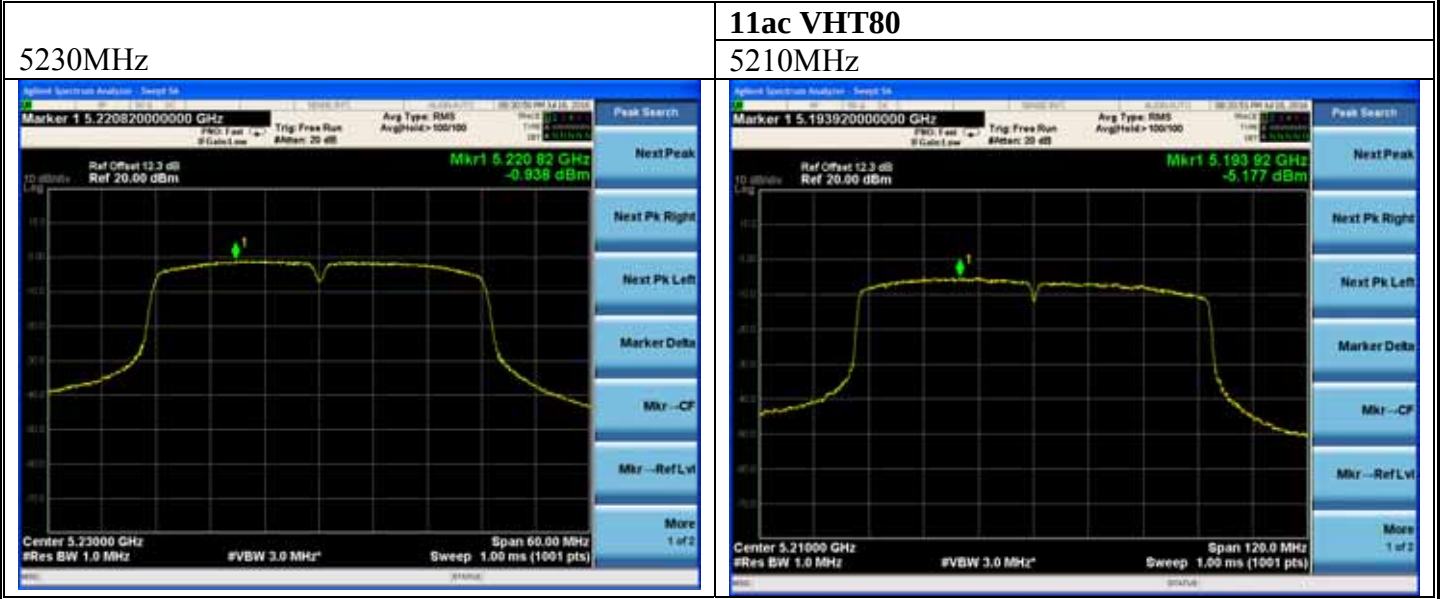
5180MHz



11ac VHT40

5190MHz



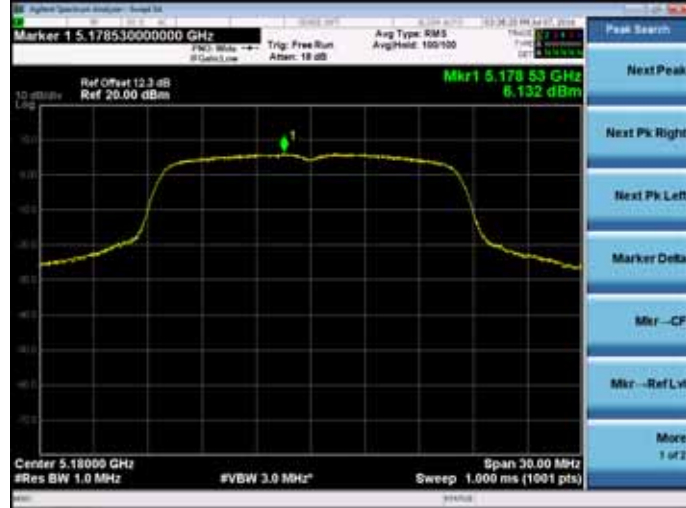


5180-5240MHz Band:

ANT 1

11a

5180MHz

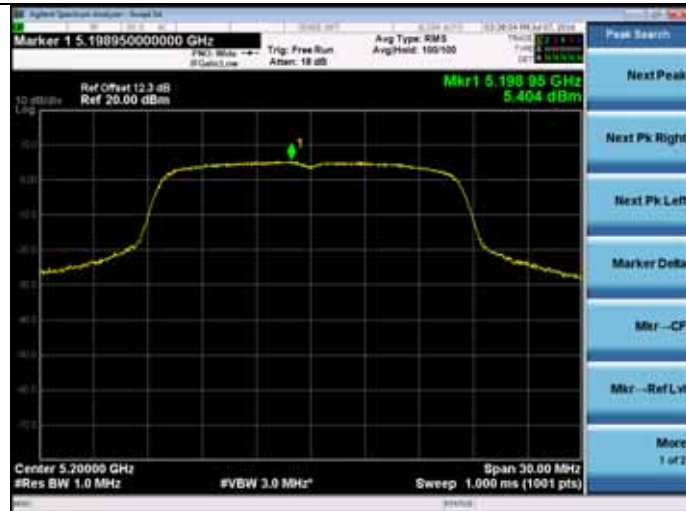


11n HT20

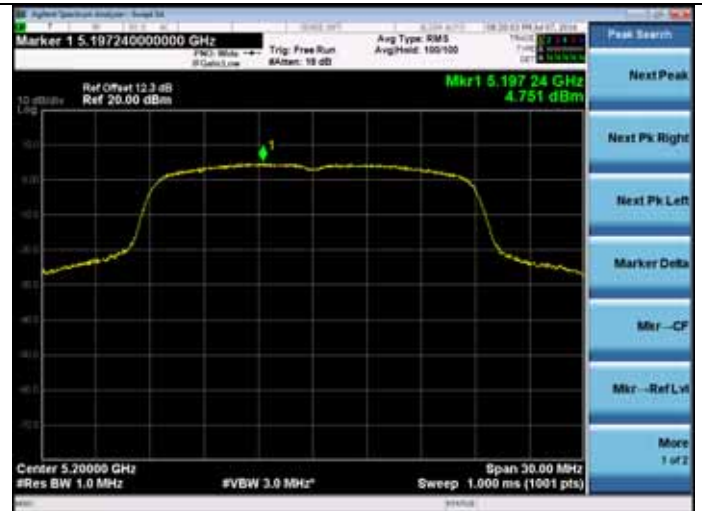
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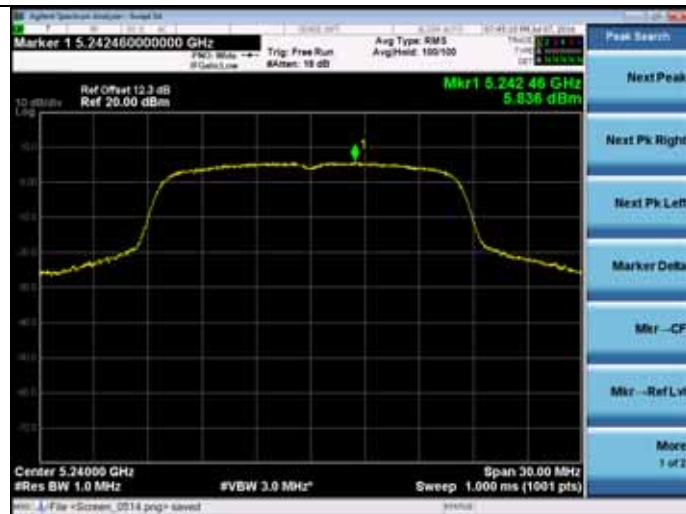
5200MHz



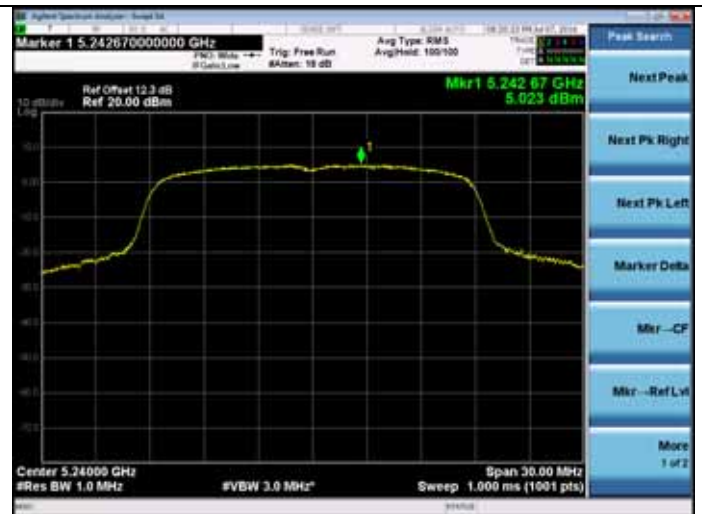
5200MHz



5240MHz



5240MHz

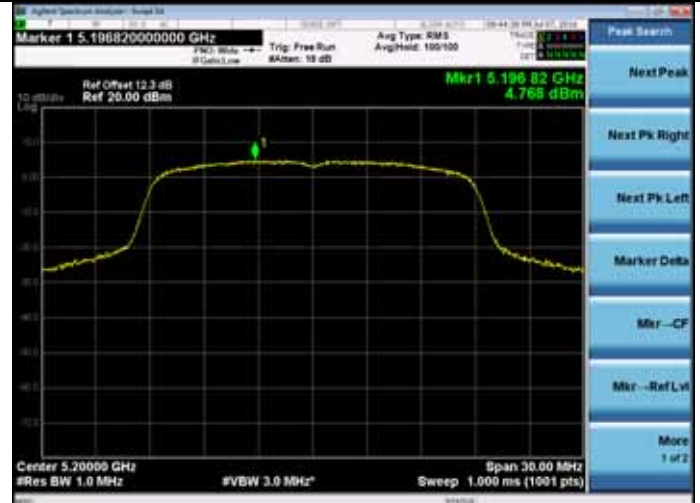


11n HT40

5190MHz



5200MHz



5230MHz

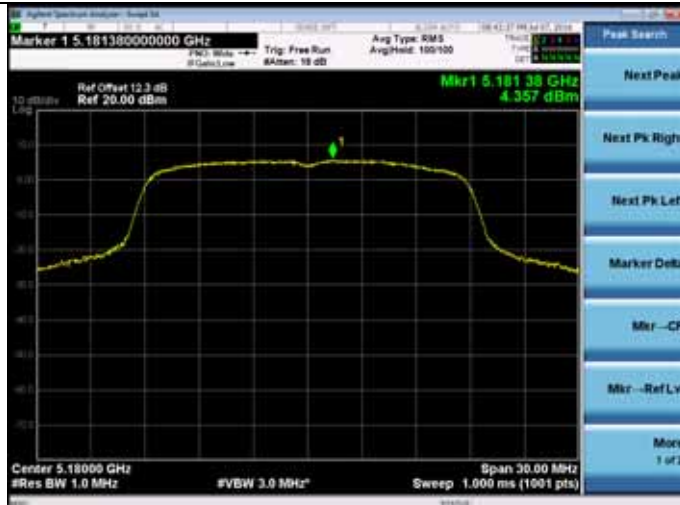


5240MHz



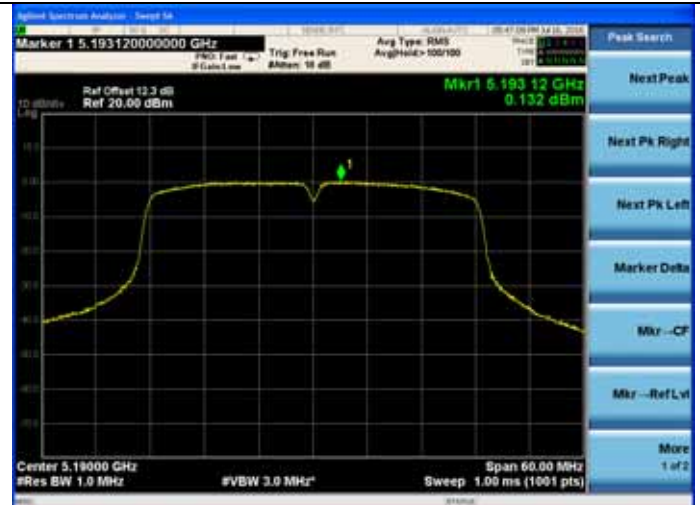
11ac VHT20

5180MHz



11ac VHT40

5190MHz



5230MHz



11ac VHT80

5210MHz

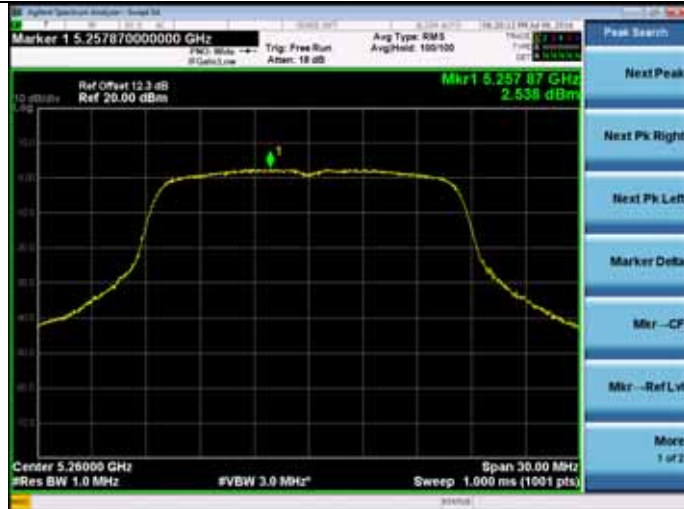


5260-5320MHz Band:

ANT 0

11a

5260MHz

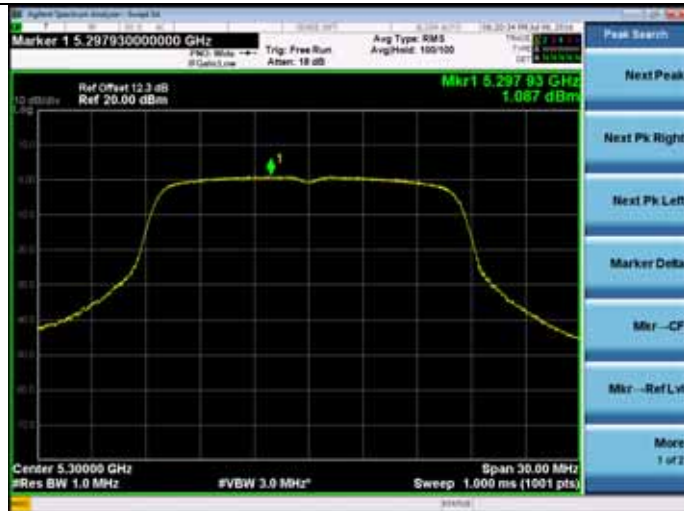


11n HT20

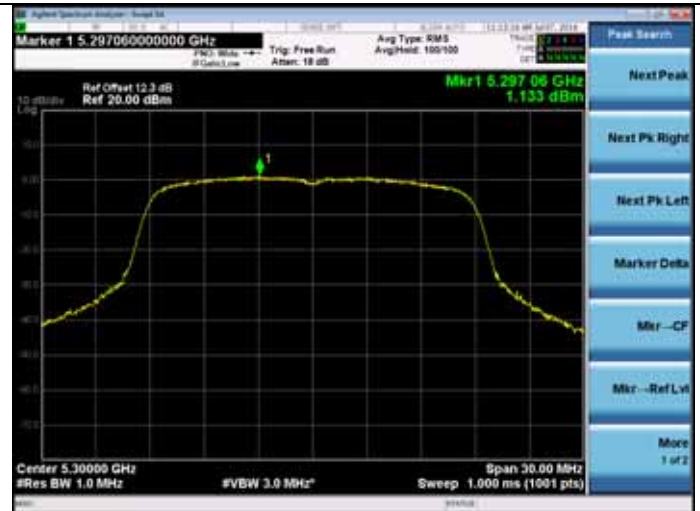
5260MHz



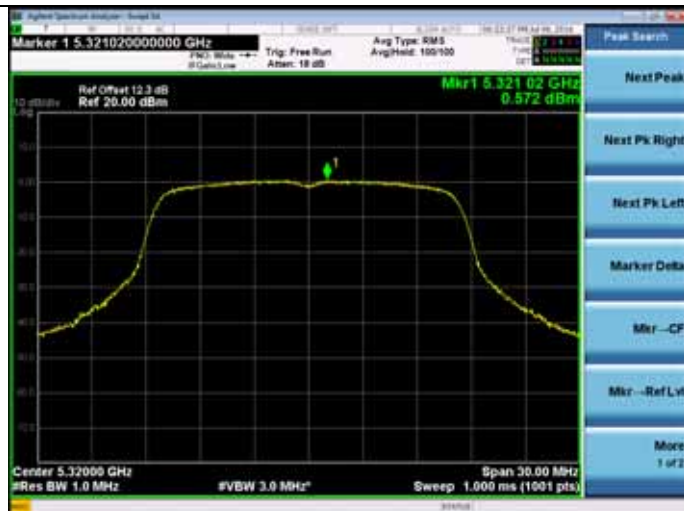
5300MHz



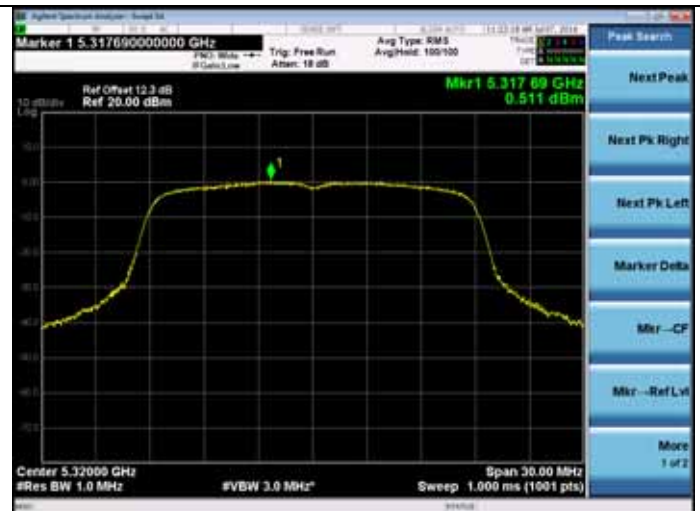
5300MHz



5320MHz



5320MHz

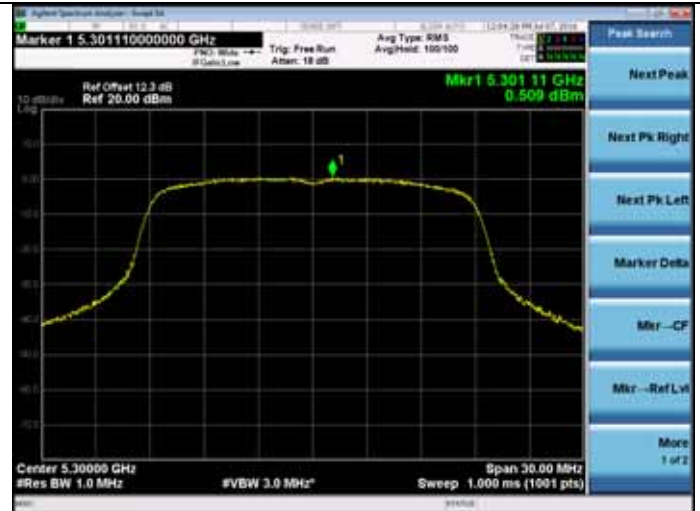


11n HT40

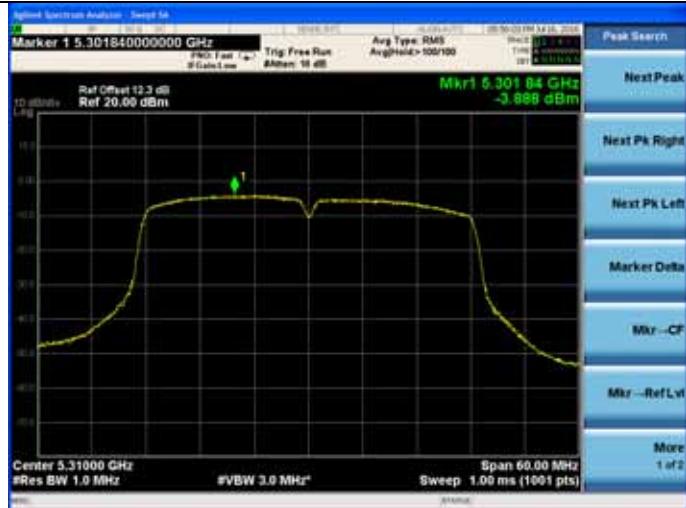
5270MHz



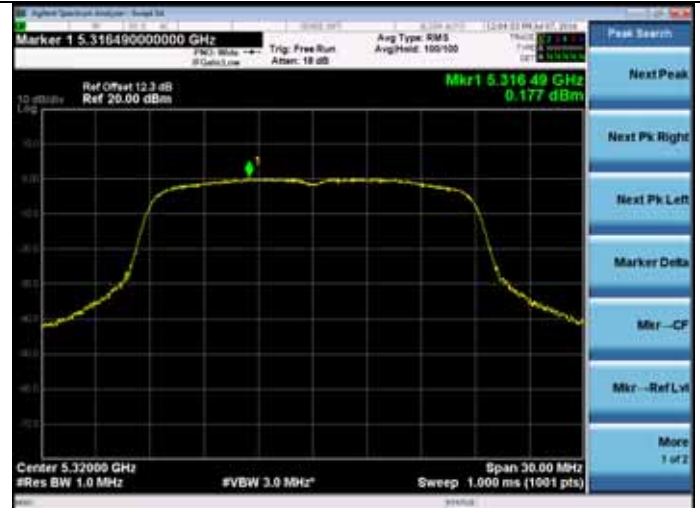
5300MHz



5310MHz

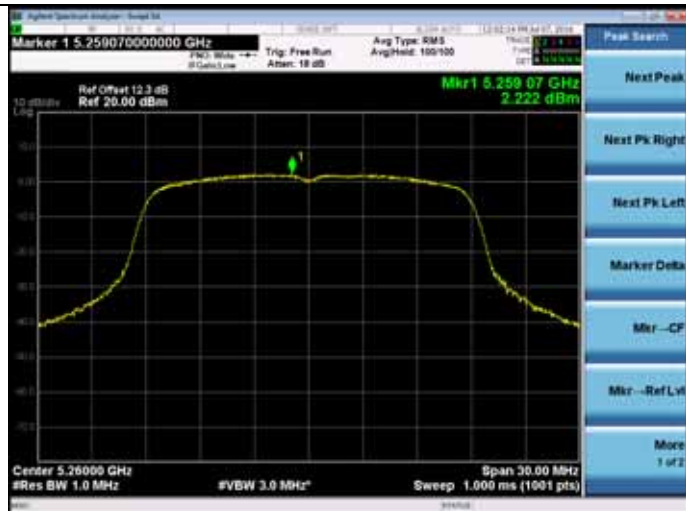


5320MHz



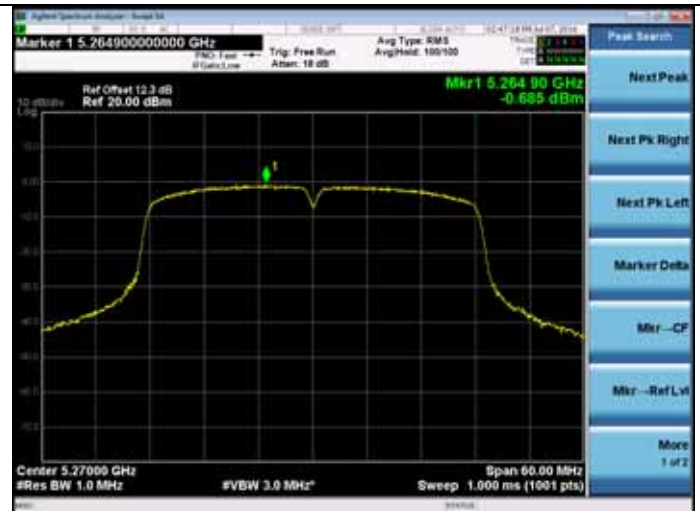
11ac VHT20

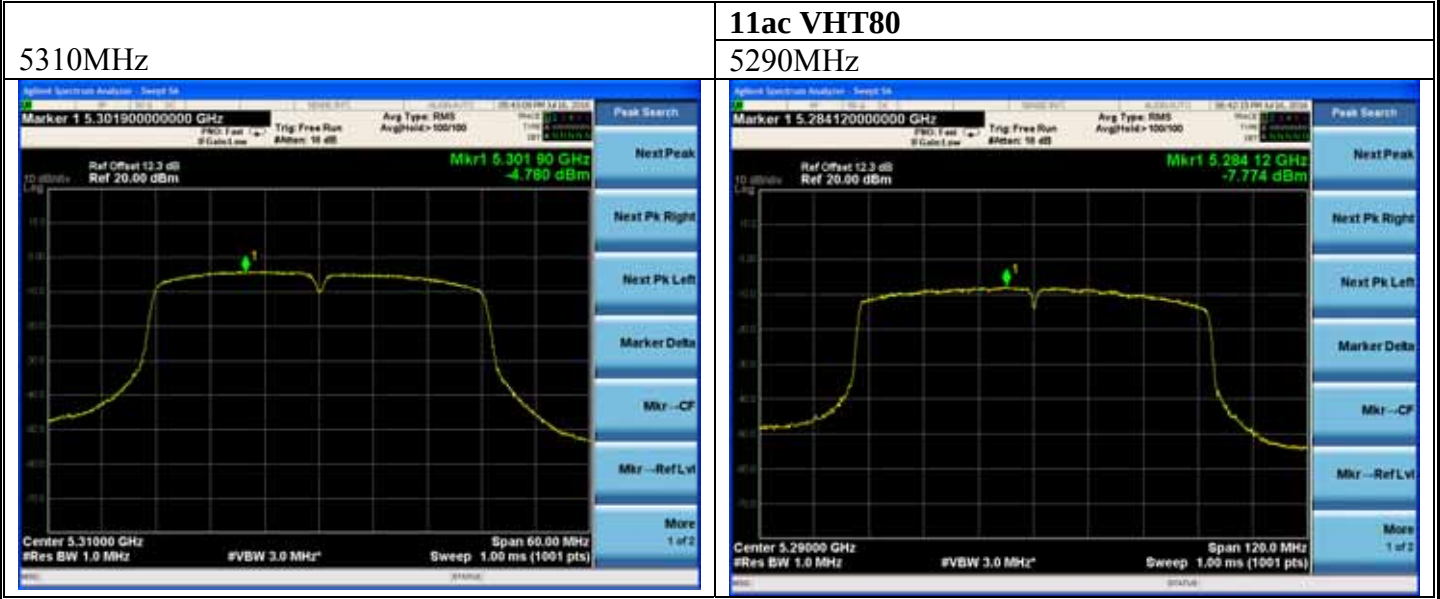
5260MHz



11ac VHT40

5270MHz





5260-5320MHz Band:

ANT 1

11a

5260MHz

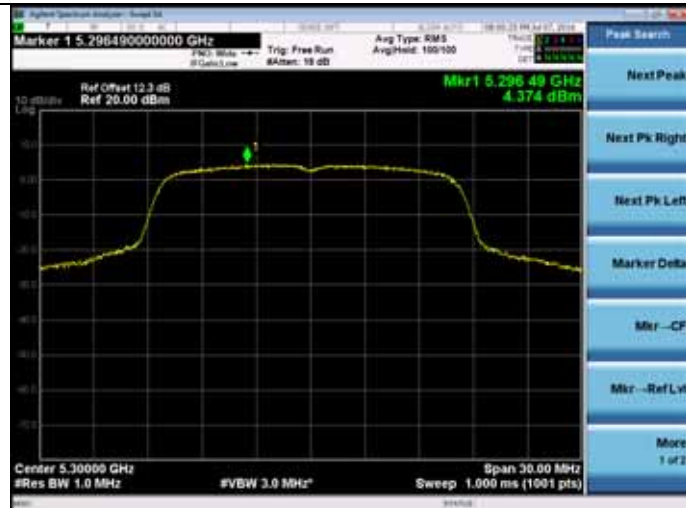


11n HT20

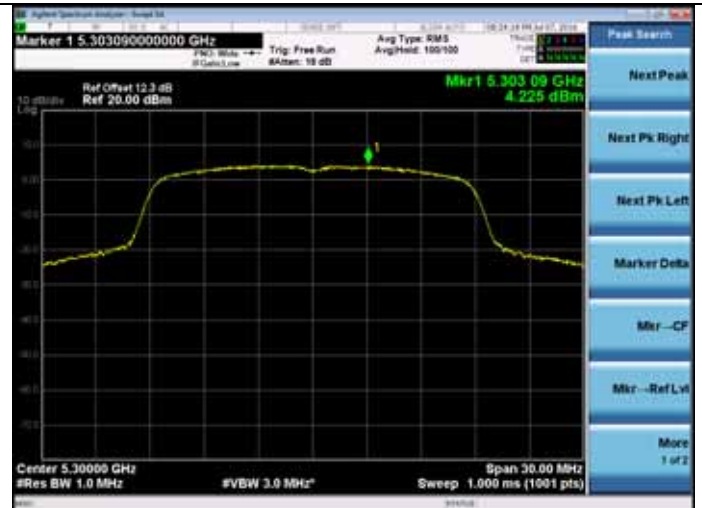
5260MHz



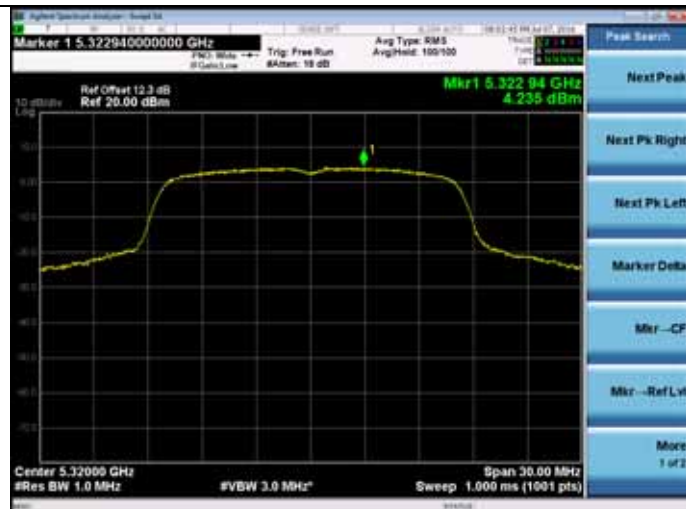
5300MHz



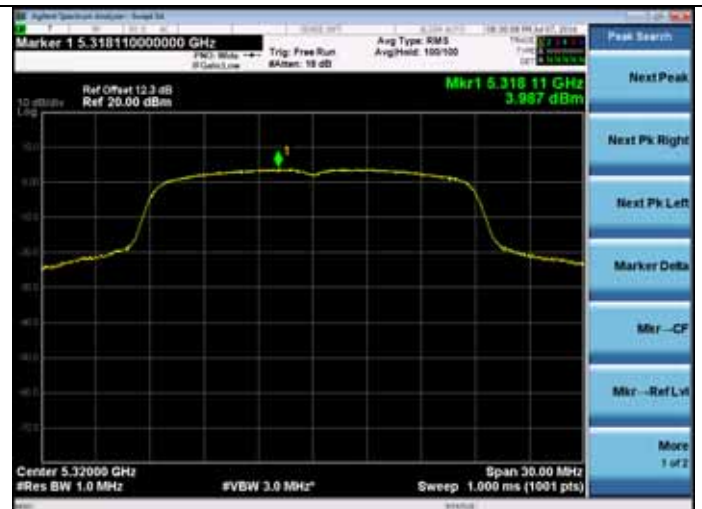
5300MHz



5320MHz

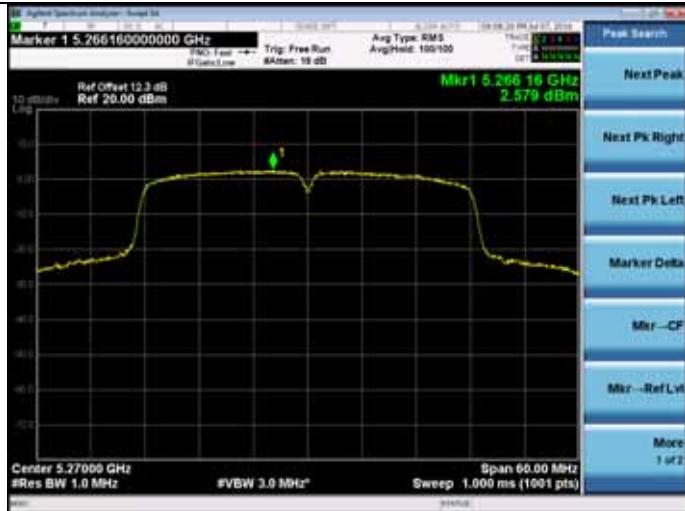


5320MHz

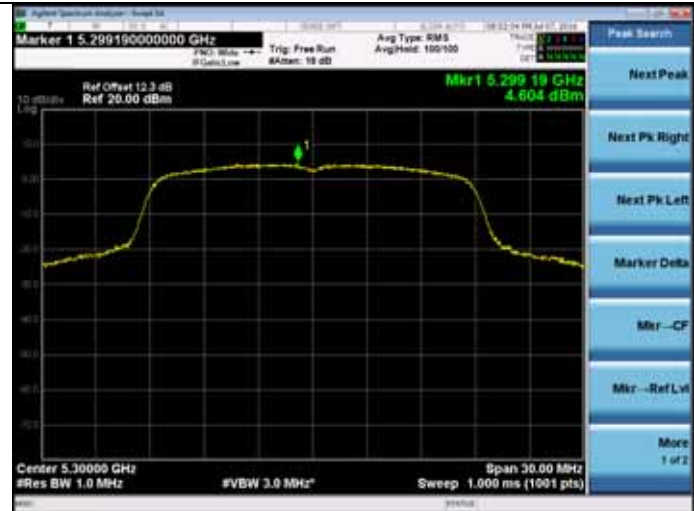


11n HT40

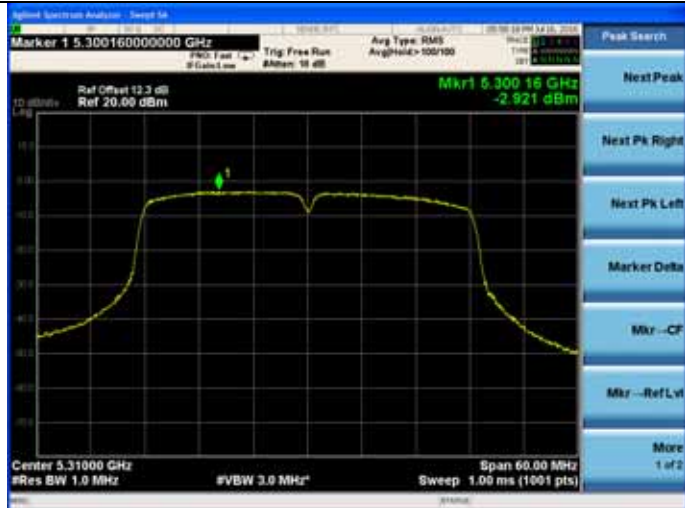
5270MHz



5300MHz



5310MHz

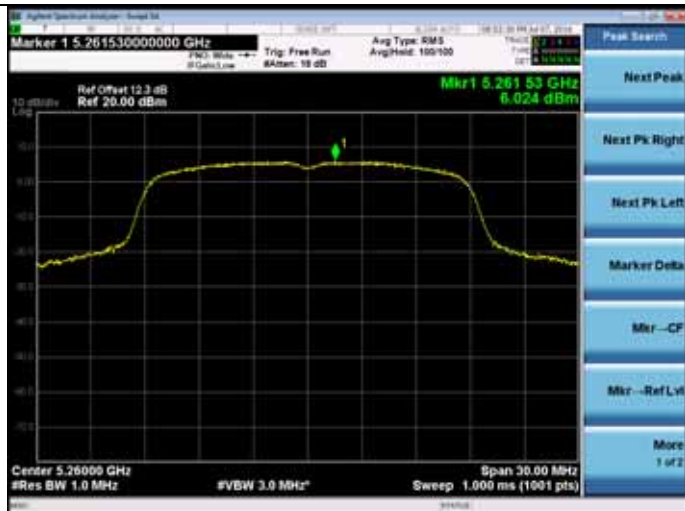


5320MHz



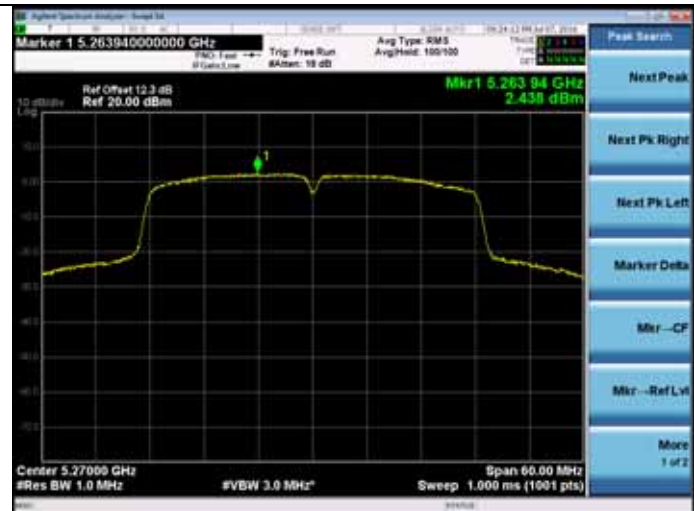
11ac VHT20

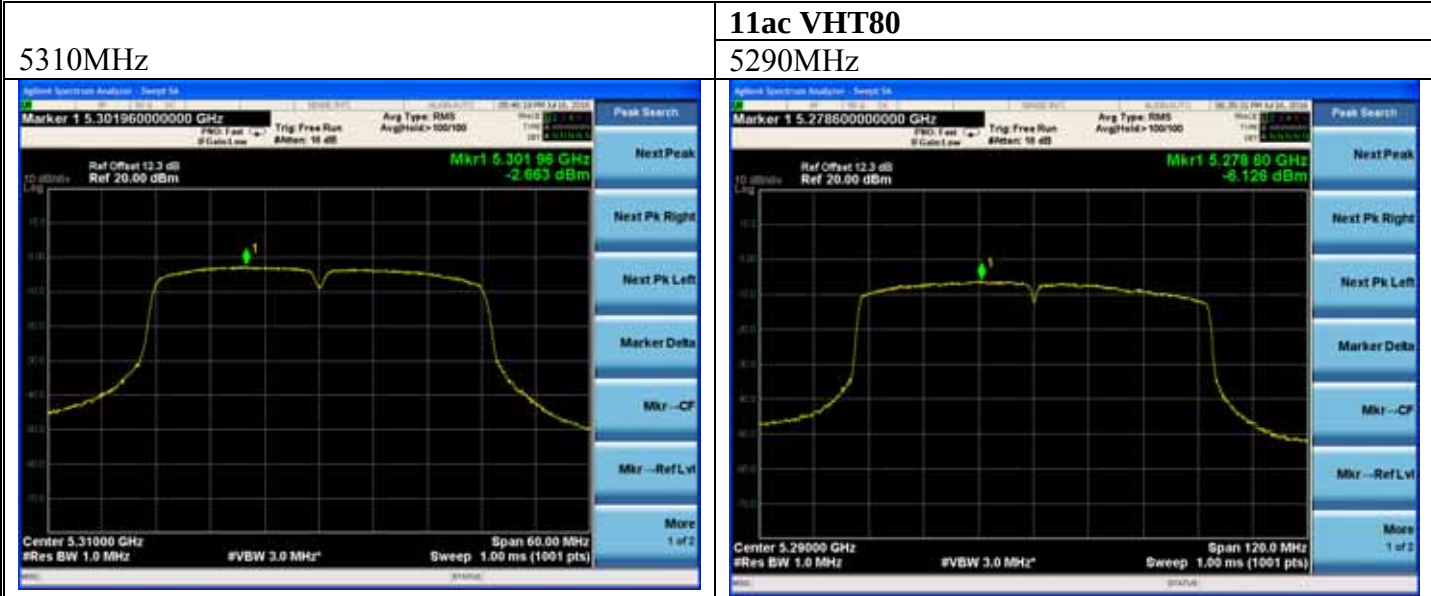
5260MHz



11ac VHT40

5270MHz





5500-5700MHz Band:

ANT 0

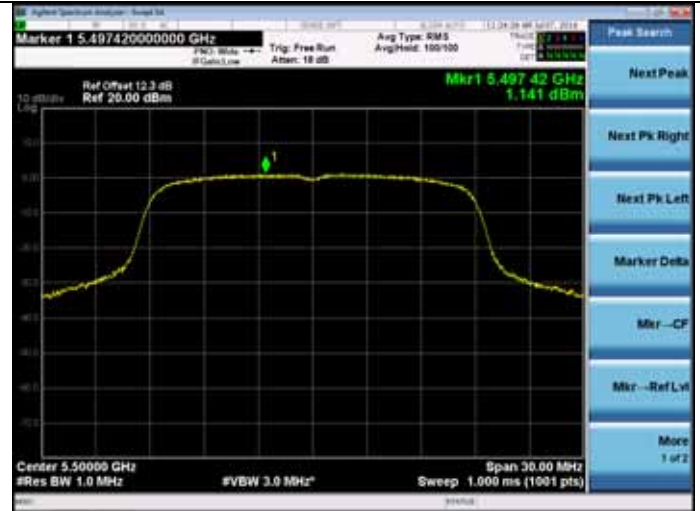
11a

5500MHz

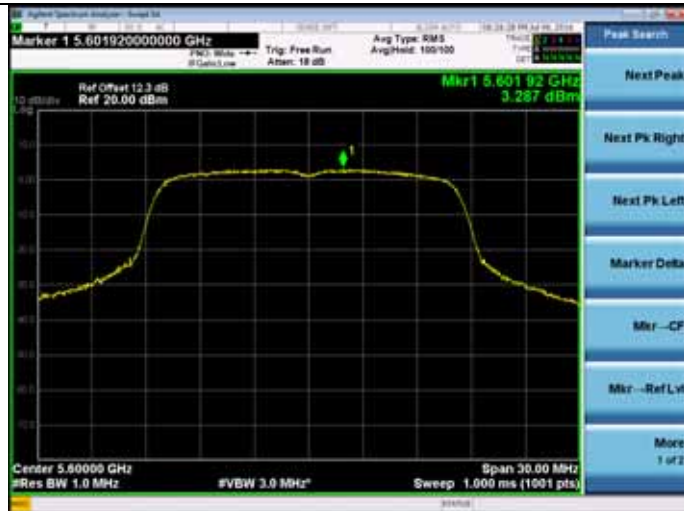


11n HT20

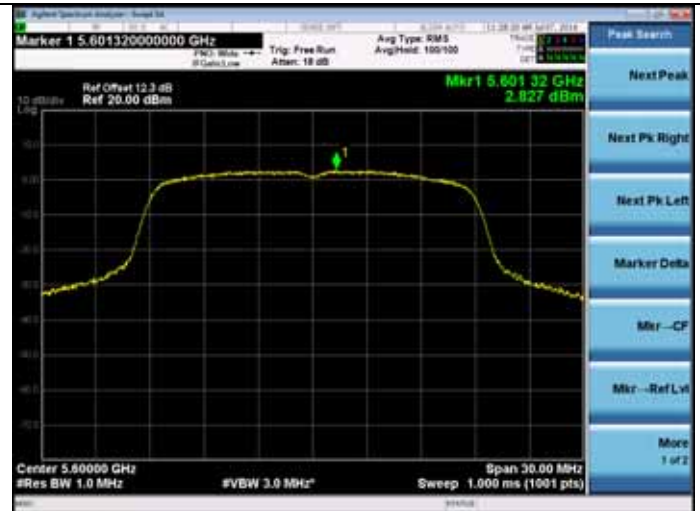
5500MHz



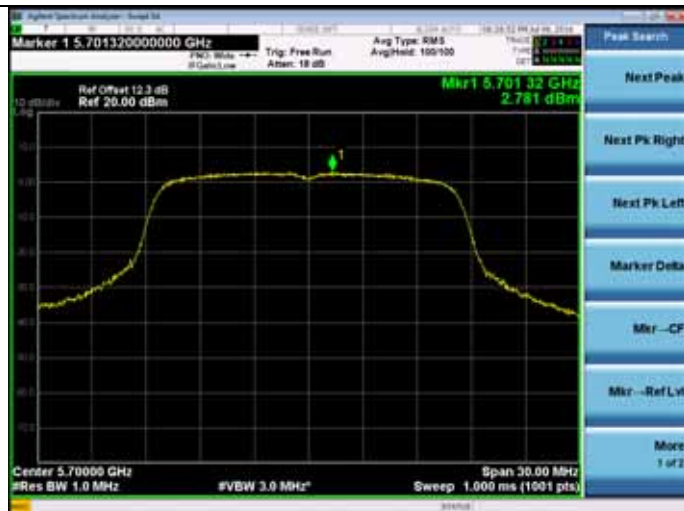
5600MHz



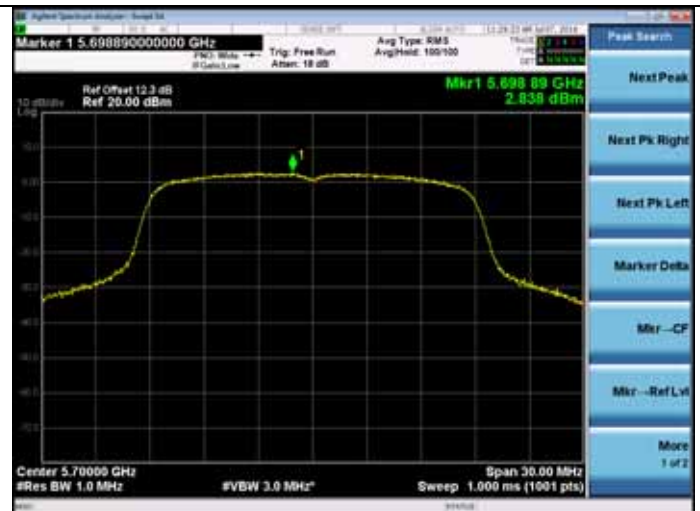
5600MHz



5700MHz

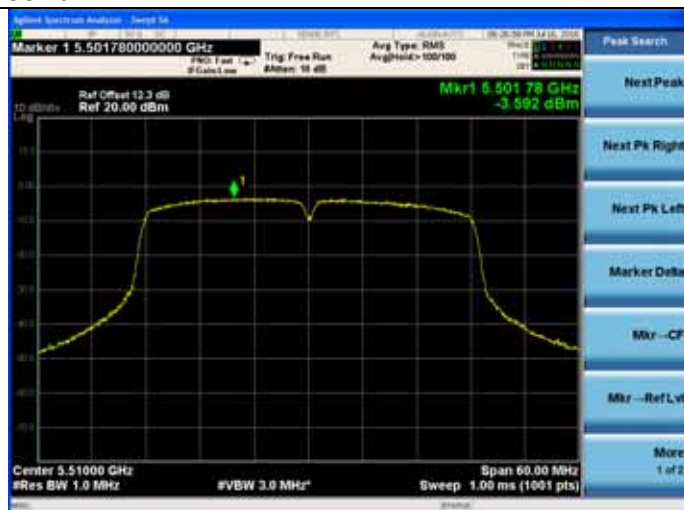


5700MHz



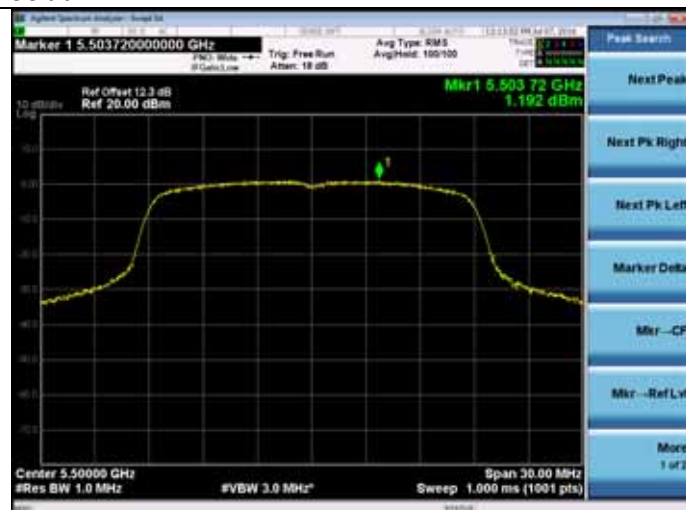
11n HT40

5510MHz

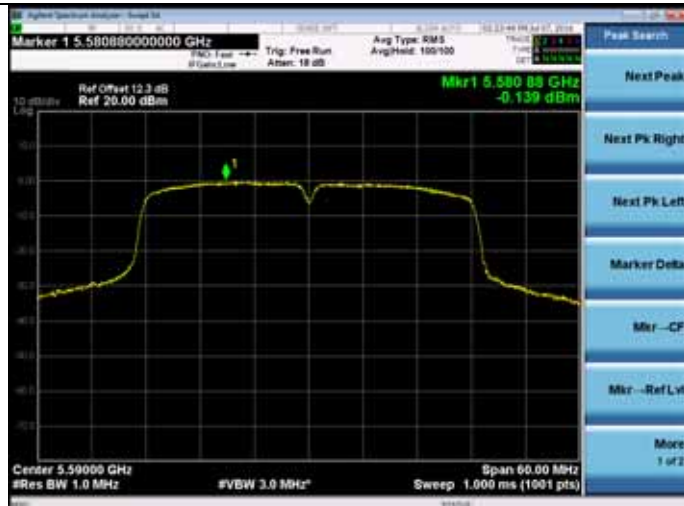


11ac VHT20

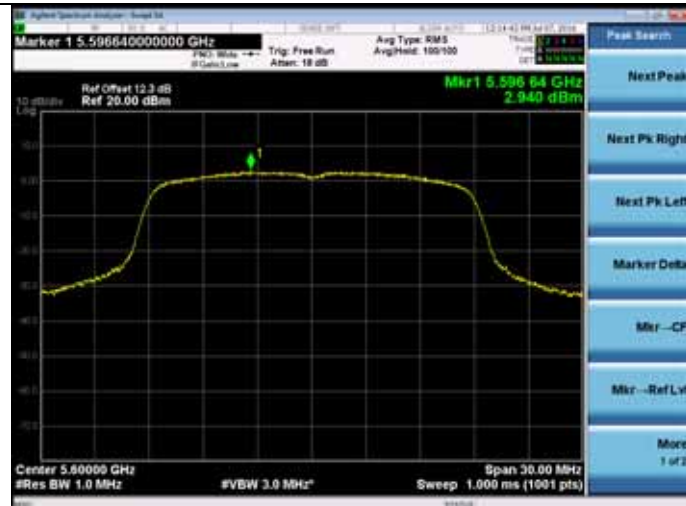
5500MHz



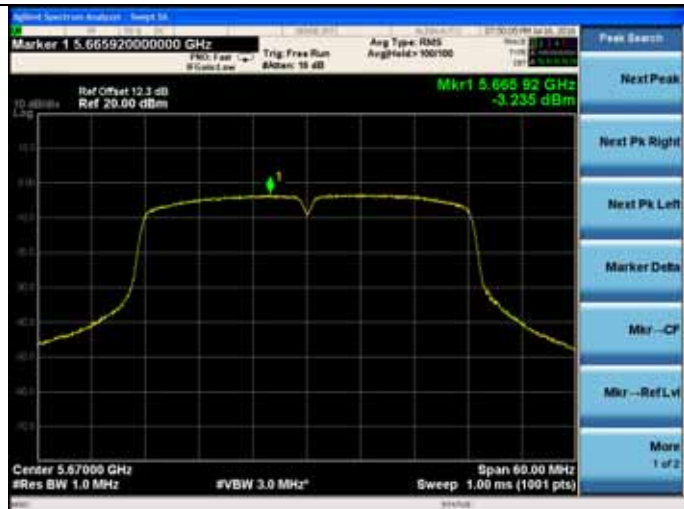
5590MHz



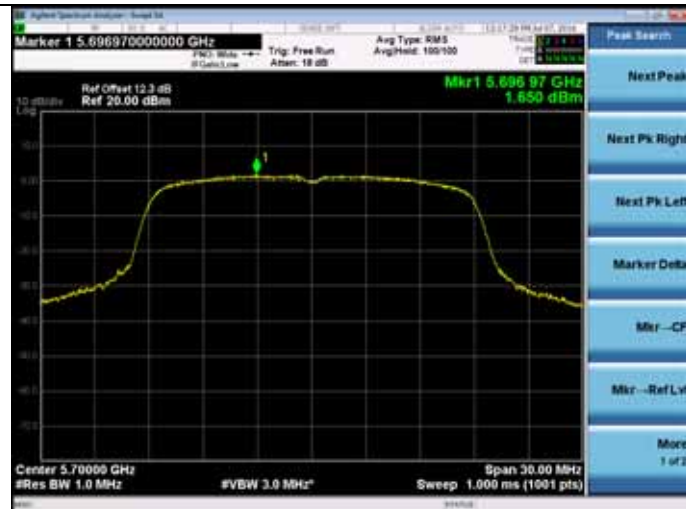
5600MHz



5670MHz



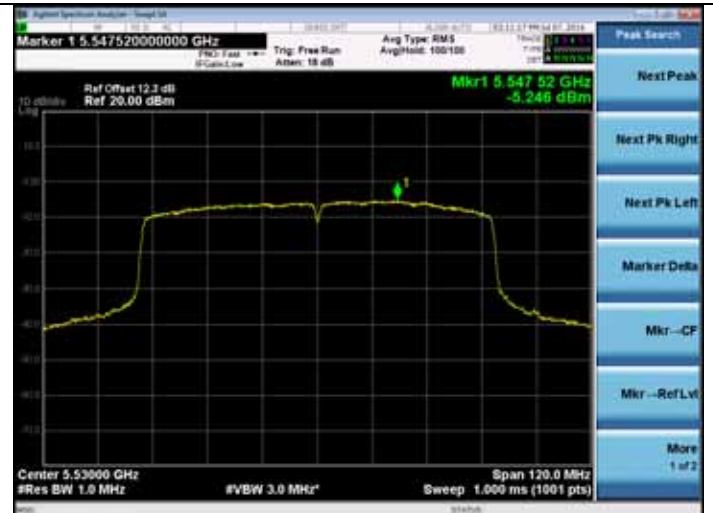
5700MHz



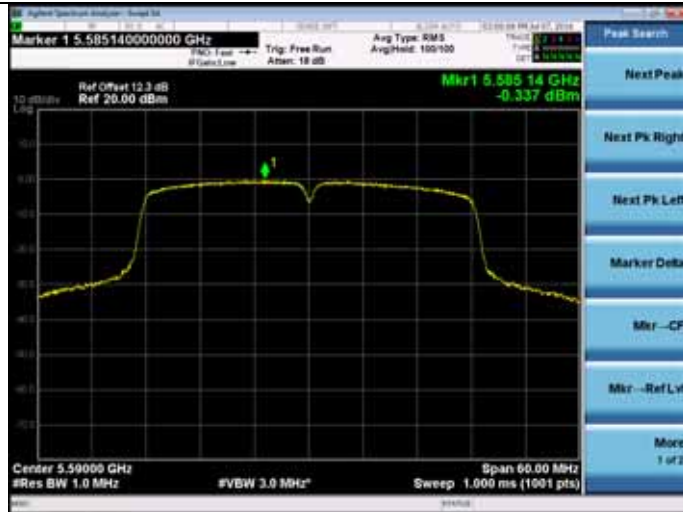
11ac VHT40
5510MHz



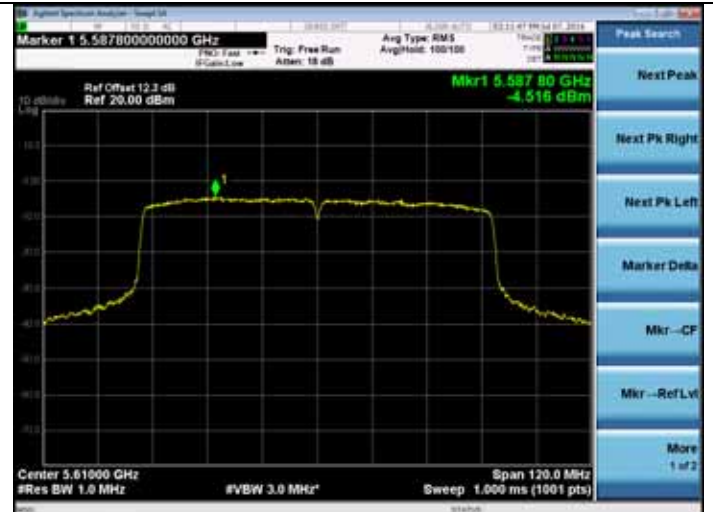
11ac VHT80
5530MHz



5590MHz



5610MHz



5670MHz



5500-5700MHz Band:

ANT 1

11a

5500MHz

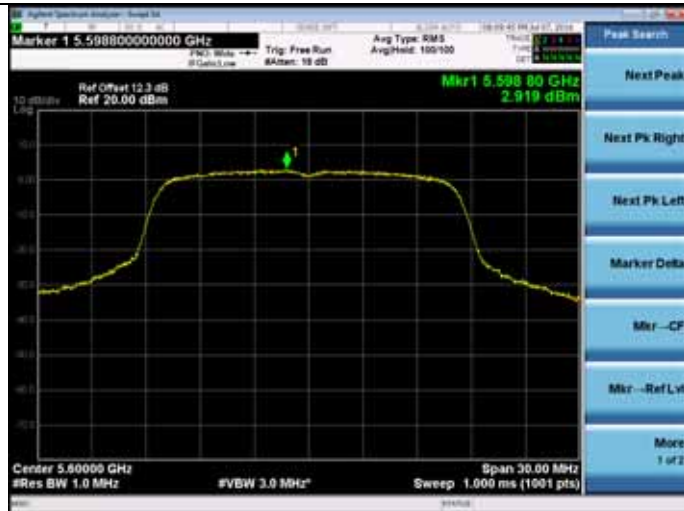


11n HT20

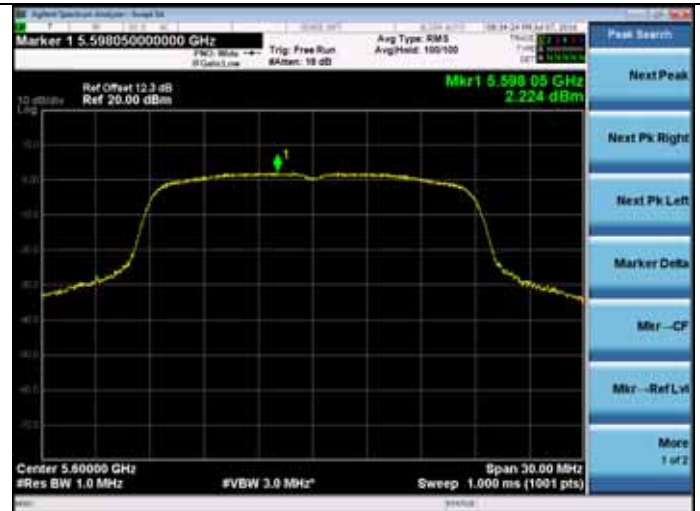
5500MHz



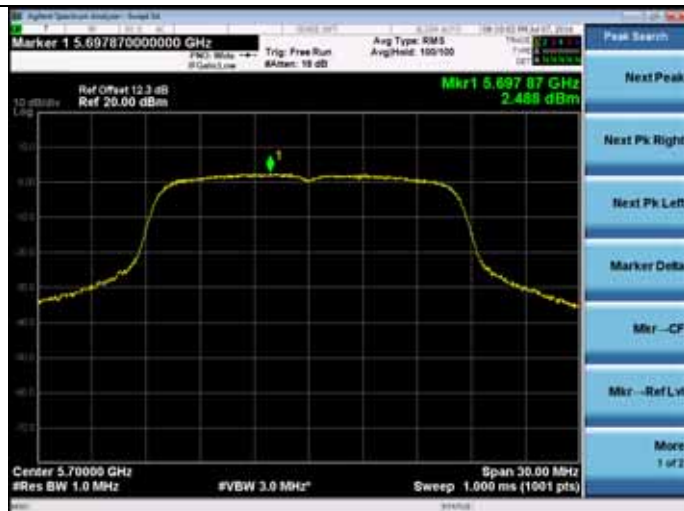
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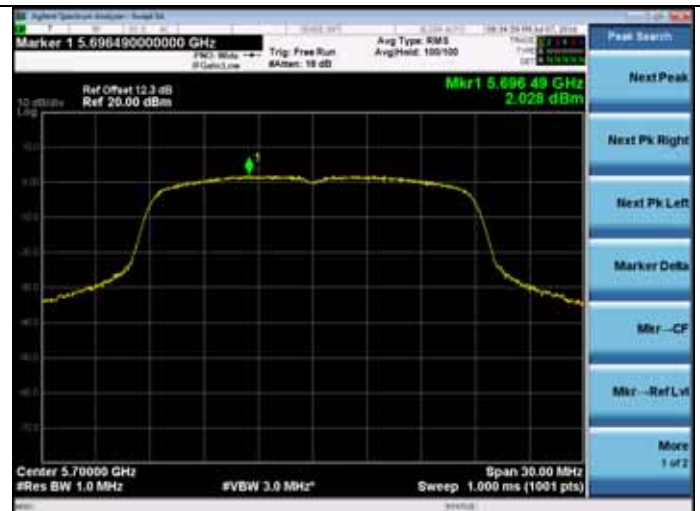
5600MHz



5700MHz

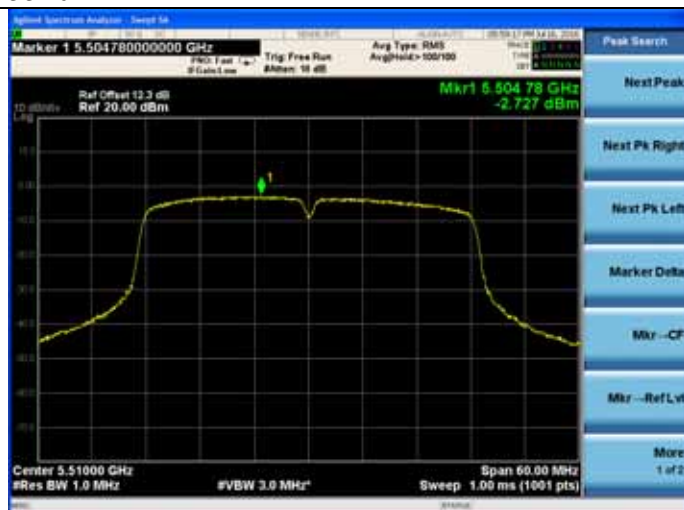


5700MHz



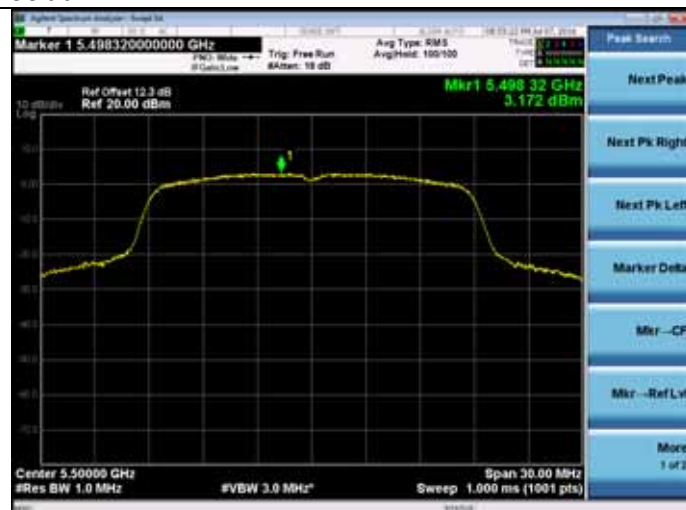
11n HT40

5510MHz

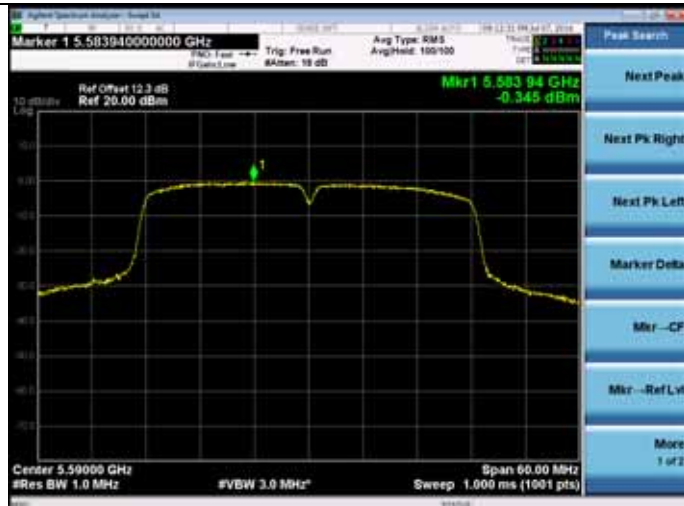


11ac VHT20

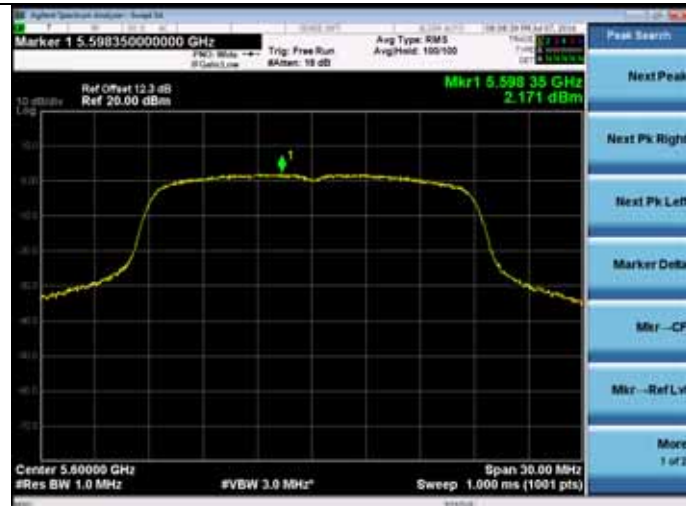
5500MHz



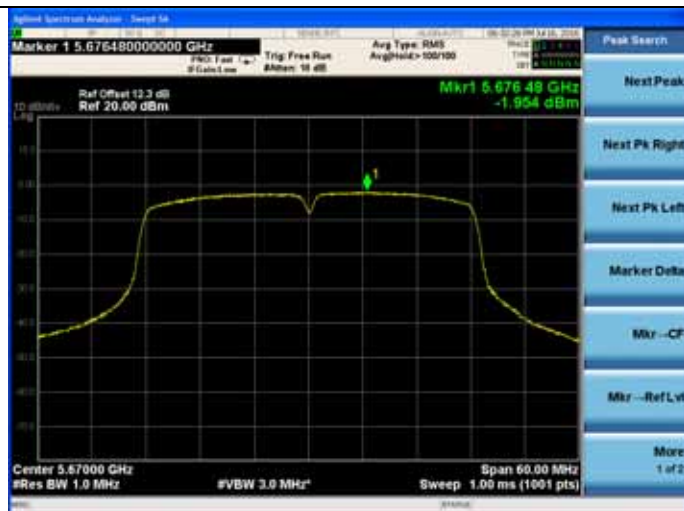
5590MHz



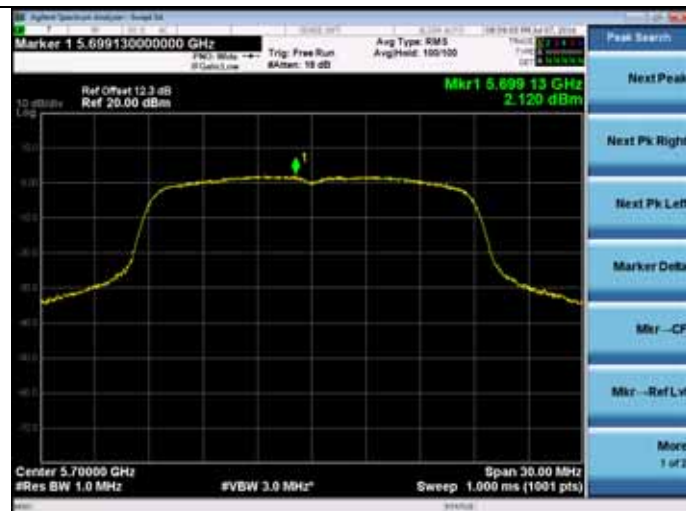
5600MHz



5670MHz



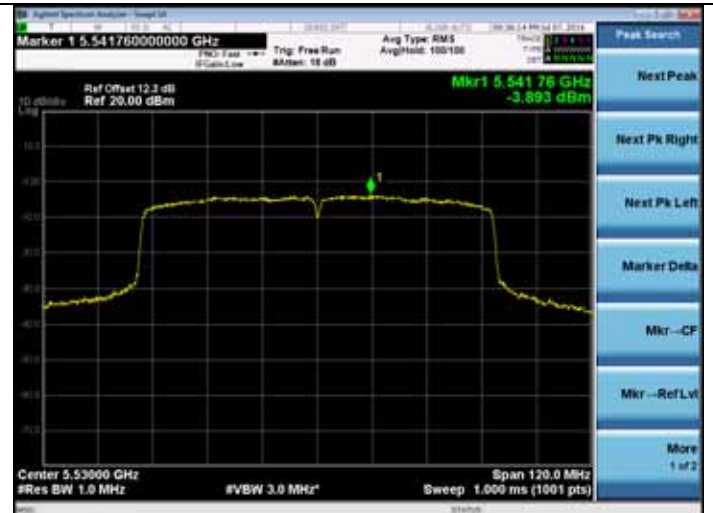
5700MHz



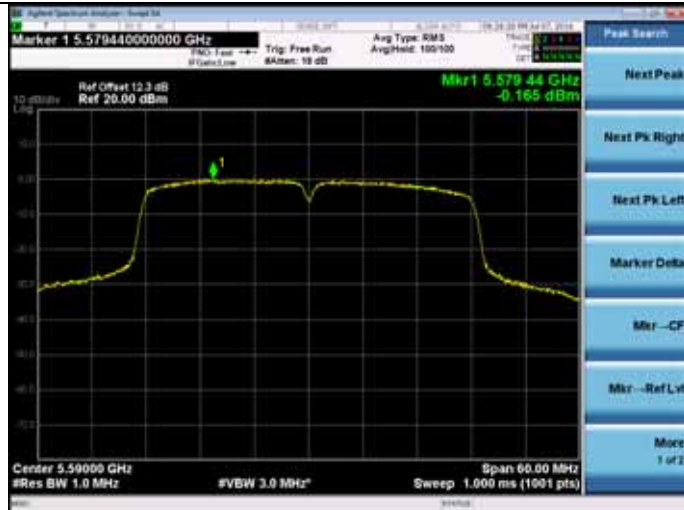
11ac VHT40
5510MHz



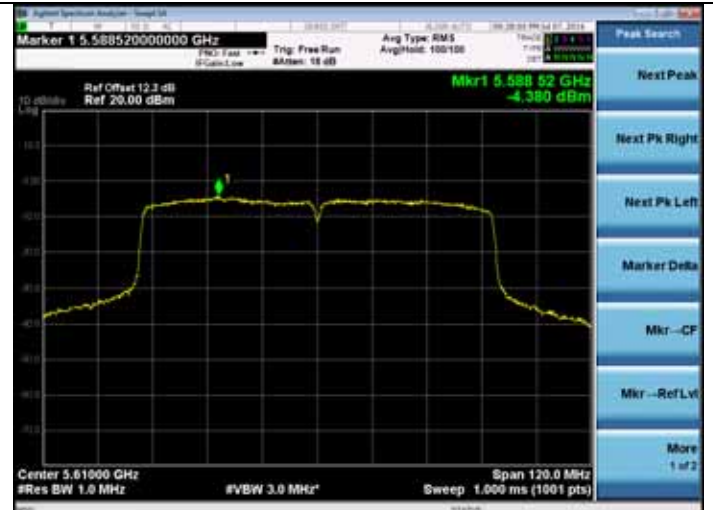
11ac VHT80
5530MHz



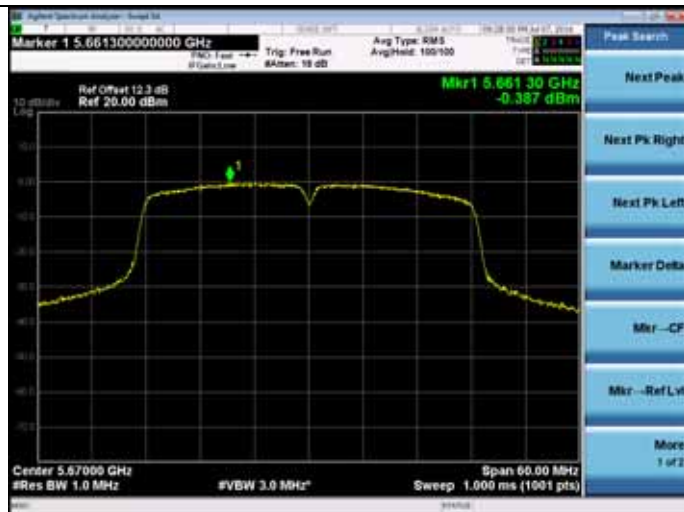
5590MHz



5610MHz



5670MHz

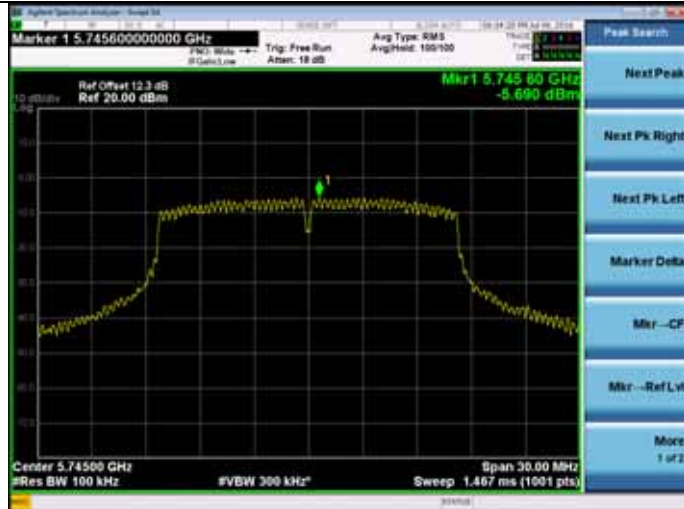


5745-5825MHz Band:

ANT 0

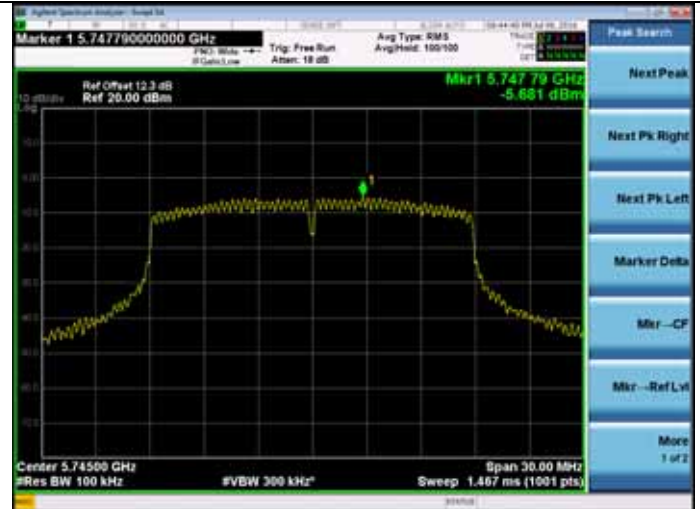
11a

5745MHz

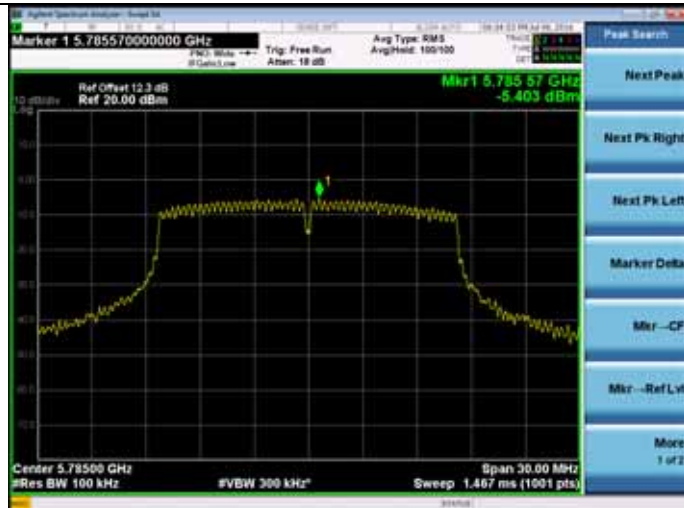


11n HT20

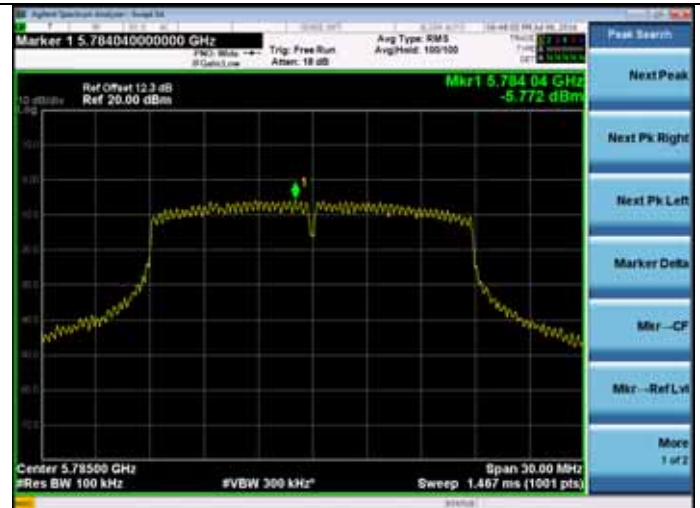
5745MHz



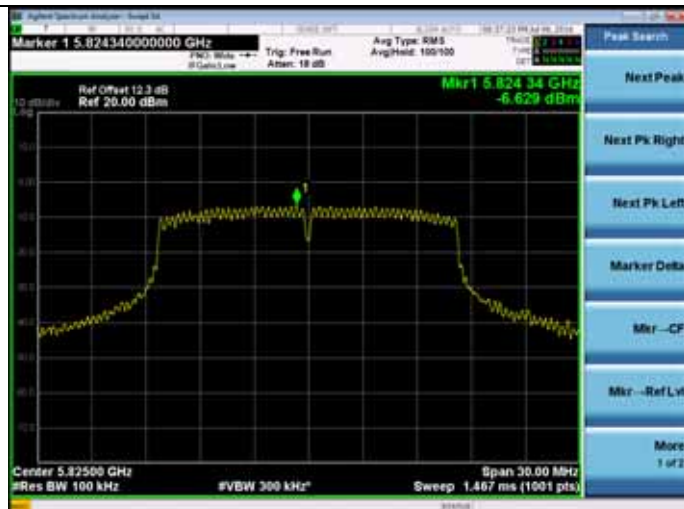
5785MHz



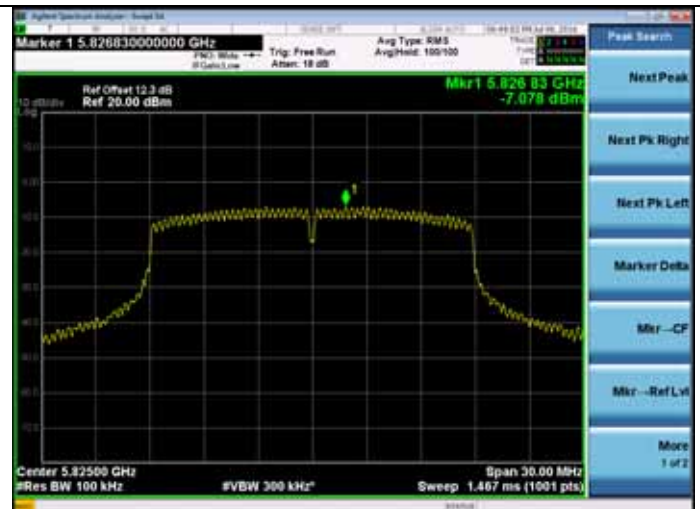
5785MHz



5825MHz

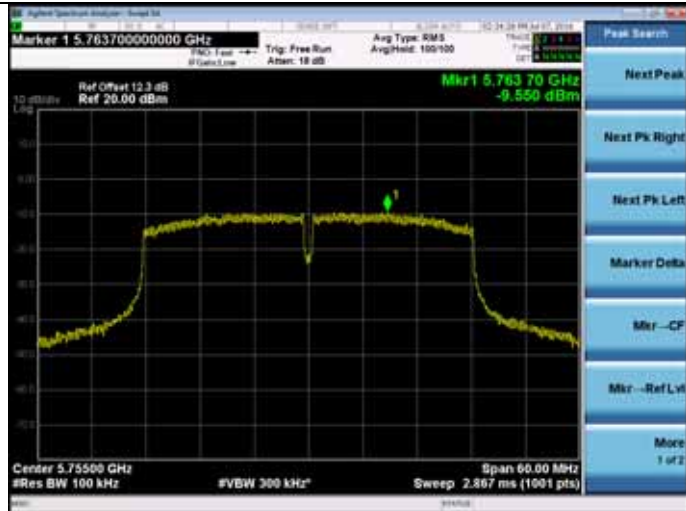


5825MHz



11n HT40

5755MHz



5785MHz



5795MHz

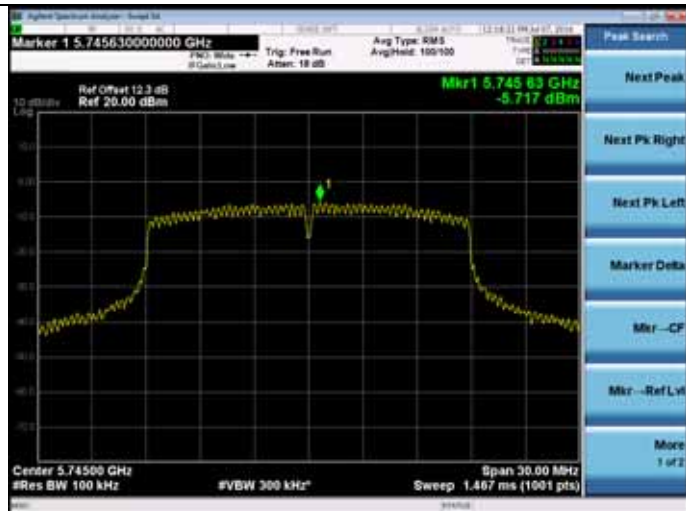


5825MHz



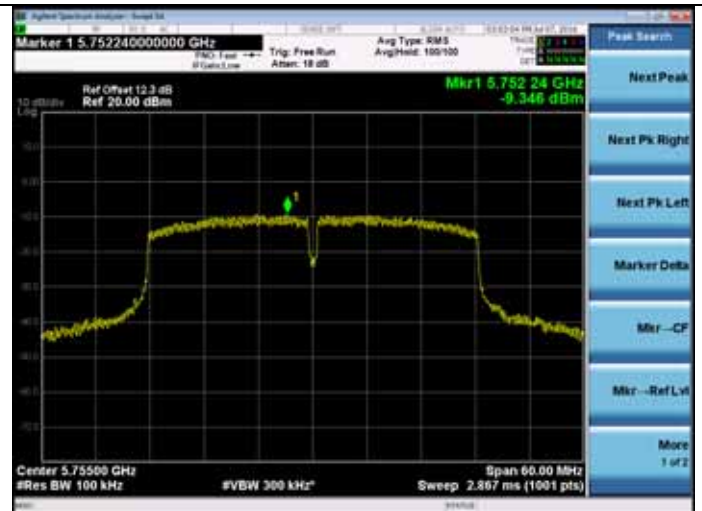
11ac VHT20

5745MHz



11ac VHT40

5755MHz

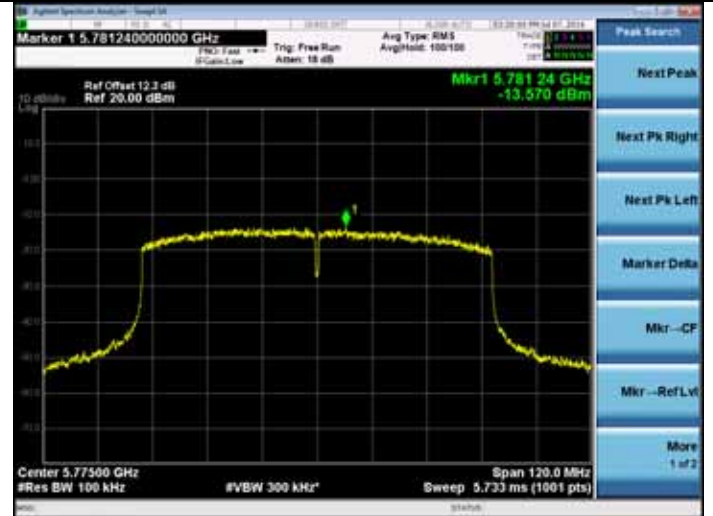


5795MHz



11ac VHT80

5775MHz

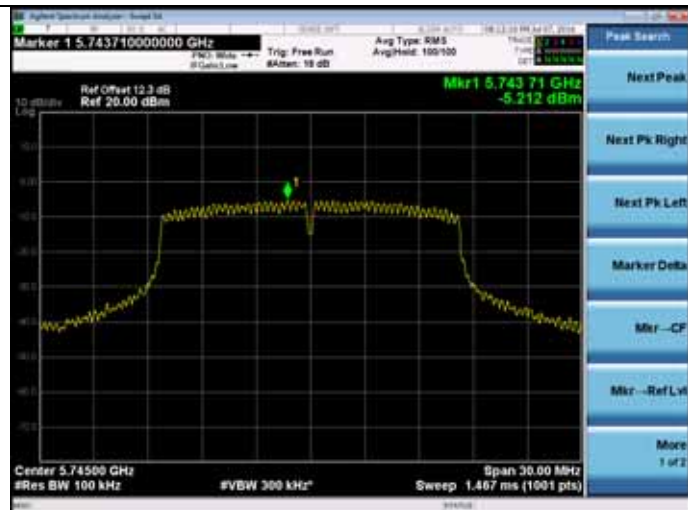


5745-5825MHz Band:

ANT 1

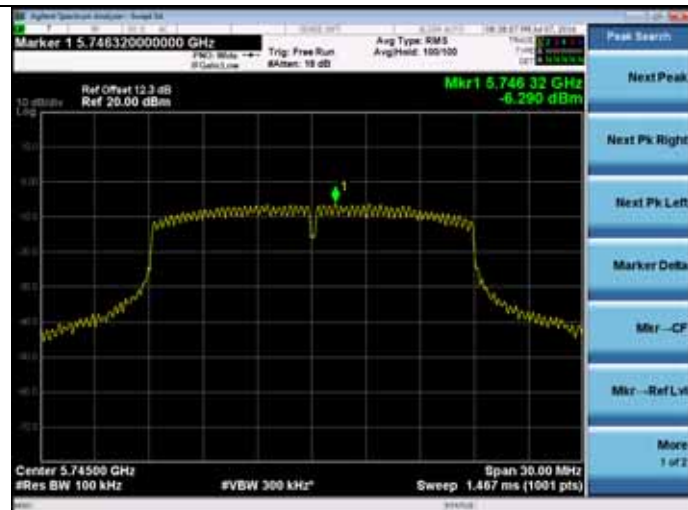
11a

5745MHz

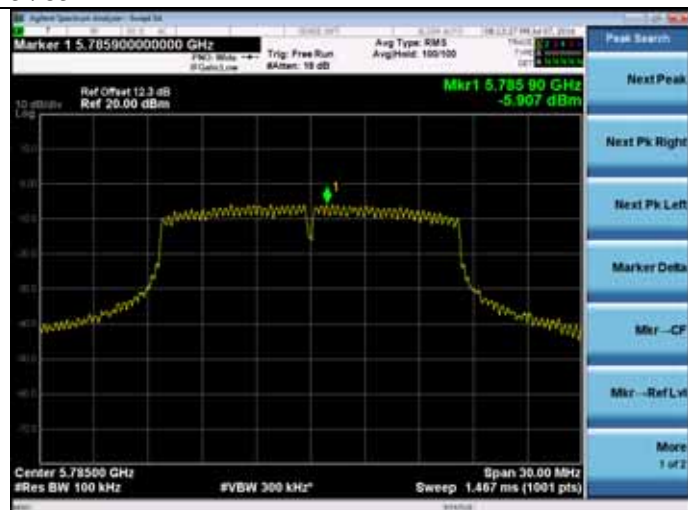


11n HT20

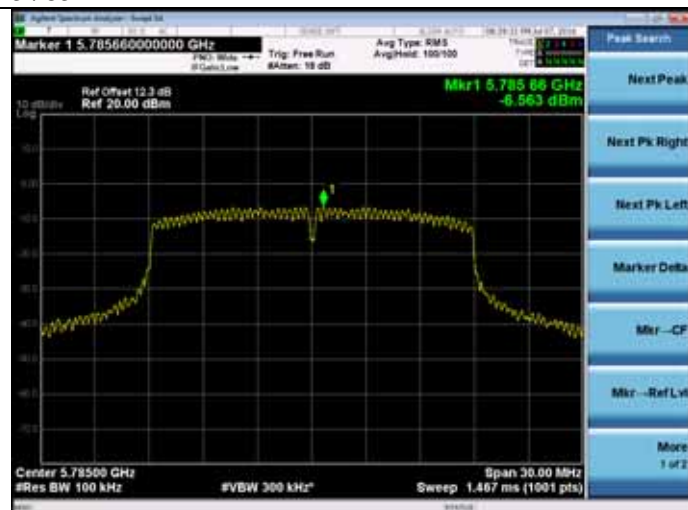
5745MHz



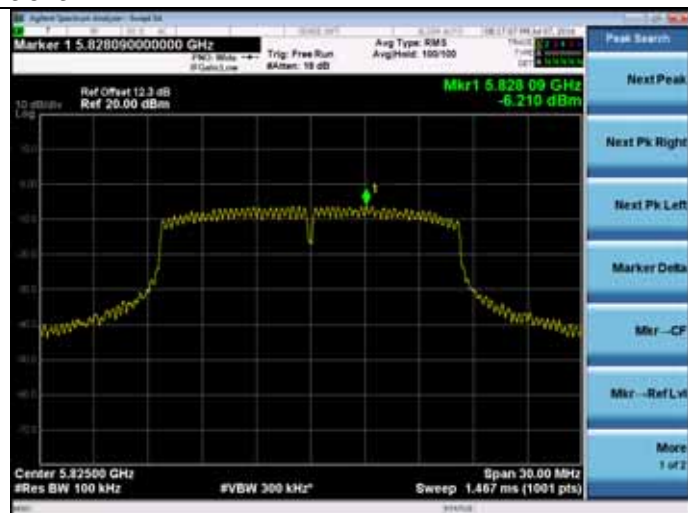
5785MHz



5785MHz



5825MHz

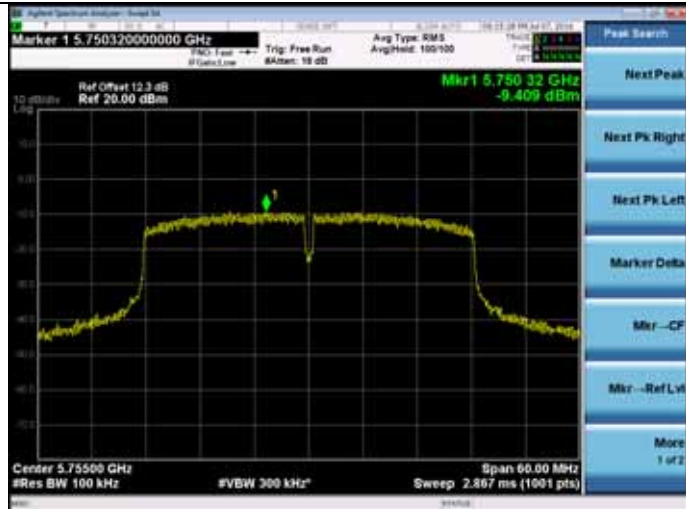


5825MHz

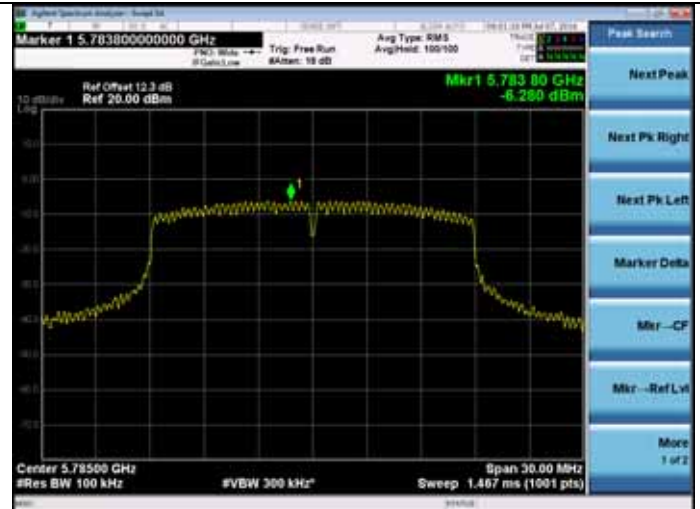


11n HT40

5755MHz



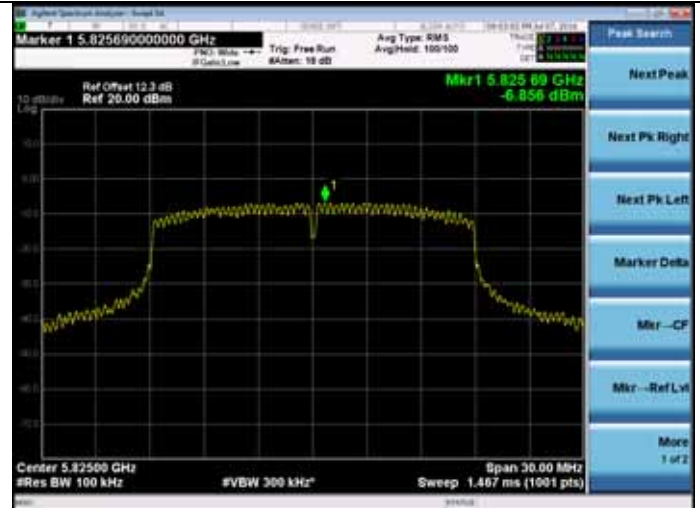
5785MHz



5795MHz

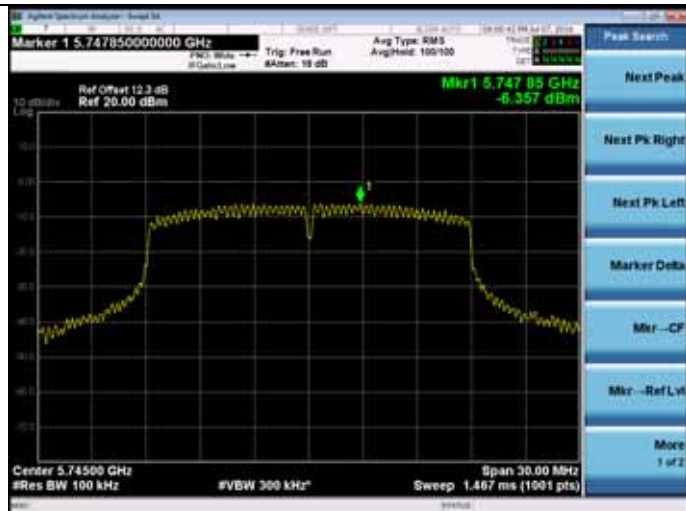


5825MHz



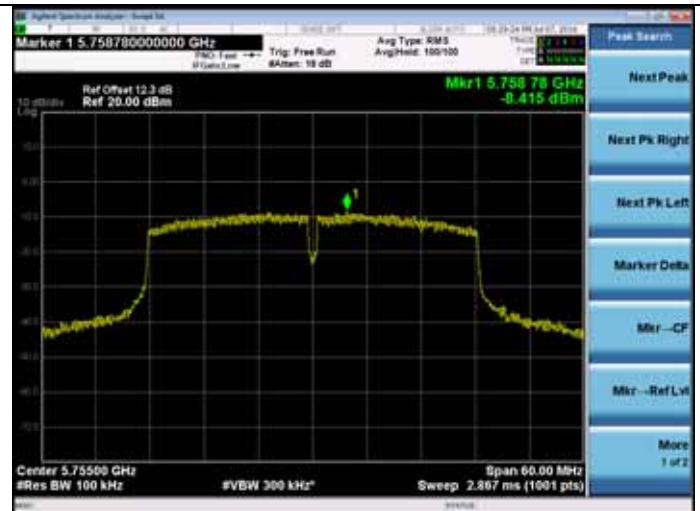
11ac VHT20

5745MHz

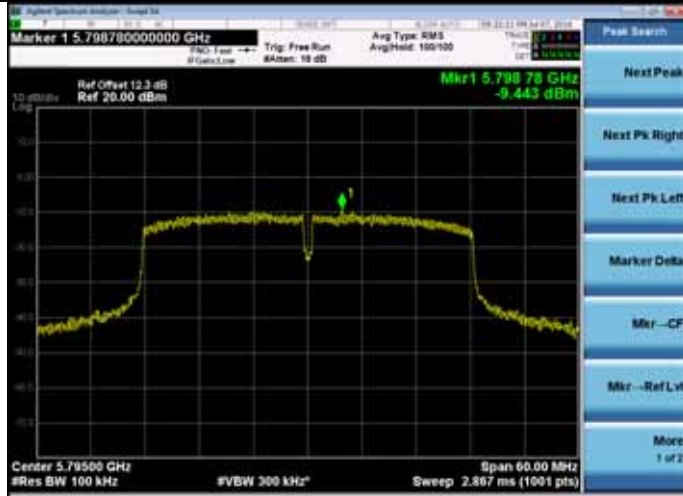


11ac VHT40

5755MHz

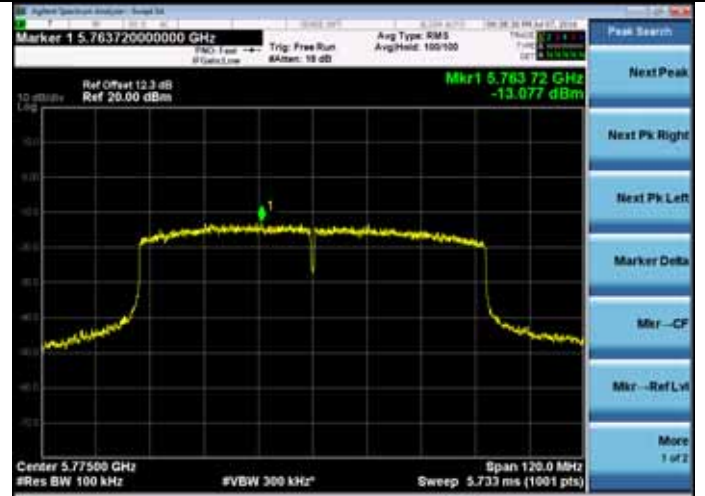


5795MHz



11ac VHT80

5775MHz



9. FREQUENCY STABILITY MEASUREMENT

9.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	PXA Signal Analyzer	Agilent	N9030A	MY51380221	Oct.18,15	1 Year
2.	Amplifier	Agilent	8449B	3008A02495	Apr.24,16	1 Year
3.	Horn Antenna	ETS	3115	9510-4877	Oct.15,15	1 Year
4.	HF Cable	Hubersuhner	Sucoflex104	274094/4	Apr.24,16	1 Year

9.2. Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emissions is maintained within the band of operation under all conditions of normal operation as specified in the user's manual or $\pm 20\text{ppm}$

9.3. Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer. EUT have transmitted absence of modulation signal and fixed channelise. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f)/f_c \times 10^6 \text{ ppm}$ and the limit is less than $\pm 20\text{ppm}$ The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
2. Extreme temperature rule is $-30^\circ\text{C} \sim 50^\circ\text{C}$.

9.4. Test Result

EUT: Notebook		
M/N: RZ09-0196		
Test Site: RF Site	Date: 2016-07-18	Test Engineer: Alice yang
Temperature: 25 ± 0.6	Humidity: $53.7 \pm 3.0 \%$	Pressure: $101.1 \pm 1.0 \text{kpa}$

Frequency Stability vs.Voltage:

Test Voltage (V)	Temp ()	CH	Max. Reading (MHz)	Target Frequency (MHz)	Result (ppm)	Limit (ppm)
AC108V	25	CH36	5180.025	5180	4.82	±20
		CH38	5190.048	5190	9.25	±20
		CH40	5200.025	5200	4.81	±20
		CH42	5210.00	5210	0	±20
		CH46	5230.020	5230	3.82	±20
		CH48	5240.025	5240	4.77	±20
		CH52	5260.025	5260	4.75	±20
		CH54	5270.00	5270	0	±20
		CH58	5290.025	5290	4.73	±20
		CH60	5300.042	5300	7.92	±20
		CH62	5310.025	5310	4.71	±20
		CH64	5320.00	5320	0	±20
		CH100	5500.025	5500	4.55	±20
		CH102	5510.030	5510	5.44	±20
		CH106	5530.025	5530	4.52	±20
		CH120	5600.00	5600	0	±20
		CH134	5670.025	5670	4.41	±20
		CH140	5700.045	5700	7.89	±20
		CH149	5745.00	5745	0	±20
		CH151	5755.025	5755	4.34	±20
		CH155	5775.00	5775	0	±20
		CH157	5785.030	5785	5.19	±20
		CH159	5795.030	5795	5.18	±20
		CH165	5825.025	5825	4.29	±20

Conclusion: PASS

Test Voltage (V)	Temp ()	CH	Max. Reading (MHz)	Target Frequency (MHz)	Result (ppm)	Limit (ppm)
AC120V	25	CH36	5180.035	5180	6.76	±20
		CH38	5190.052	5190	10.02	±20
		CH40	5200.048	5200	9.23	±20
		CH42	5210.050	5210	9.60	±20
		CH46	5230.025	5230	4.78	±20
		CH48	5240.030	5240	5.73	±20
		CH52	5260.045	5260	8.56	±20
		CH54	5270.045	5270	8.54	±20
		CH58	5290.030	5290	5.67	±20
		CH60	5300.045	5300	8.49	±20
		CH62	5310.030	5310	5.65	±20
		CH64	5320.025	5320	4.70	±20
		CH100	5500.030	5500	5.45	±20
		CH102	5510.045	5510	8.17	±20
		CH106	5530.030	5530	5.42	±20
		CH120	5600.025	5600	4.46	±20
		CH134	5670.045	5670	7.94	±20
		CH140	5700.050	5700	8.77	±20
		CH149	5745.040	5745	6.96	±20
		CH151	5755.035	5755	6.08	±20
		CH155	5775.035	5775	6.06	±20
		CH157	5785.045	5785	7.78	±20
		CH159	5795.035	5795	6.04	±20
		CH165	5825.040	5825	6.87	±20

Conclusion: PASS

Test Voltage (V)	Temp ()	CH	Max. Reading (MHz)	Target Frequency (MHz)	Result (ppm)	Limit (ppm)
AC132V	25	CH36	5180.040	5180	7.72	±20
		CH38	5190.045	5190	8.67	±20
		CH40	5200.050	5200	9.62	±20
		CH42	5210.065	5210	12.48	±20
		CH46	5230.075	5230	14.34	±20
		CH48	5240.030	5240	5.73	±20
		CH52	5260.045	5260	8.56	±20
		CH54	5270.080	5270	15.18	±20
		CH58	5290.075	5290	14.17	±20
		CH60	5300.060	5300	11.32	±20
		CH62	5310.040	5310	7.53	±20
		CH64	5320.048	5320	9.02	±20
		CH100	5500.045	5500	8.18	±20
		CH102	5510.050	5510	9.07	±20
		CH106	5530.060	5530	10.85	±20
		CH120	5600.030	5600	5.35	±20
		CH134	5670.050	5670	8.82	±20
		CH140	5700.060	5700	10.53	±20
		CH149	5745.050	5745	8.70	±20
		CH151	5755.050	5755	8.69	±20
		CH155	5775.065	5775	11.25	±20
		CH157	5785.050	5785	8.64	±20
		CH159	5795.040	5795	6.90	±20
		CH165	5825.050	5825	8.58	±20

Conclusion: PASS

Frequency Stability vs.Temperature:

Frequency Stability vs. Temperature:						
Test Voltage (V)	Temp ()	CH	Max. Reading (MHz)	Target Frequency (MHz)	Result (ppm)	Limit (ppm)
AC120V	-10	CH36	5180.050	5180	9.65	±20
		CH38	5190.075	5190	14.45	±20
		CH40	5200.030	5200	5.77	±20
		CH42	5210.012	5210	2.30	±20
		CH46	5230.030	5230	5.74	±20
		CH48	5240.030	5240	5.73	±20
		CH52	5260.025	5260	4.75	±20
		CH54	5270.020	5270	3.80	±20
		CH58	5290.025	5290	4.73	±20
		CH60	5300.042	5300	7.92	±20
		CH62	5310.025	5310	4.71	±20
		CH64	5320.050	5320	9.40	±20
		CH100	5500.015	5500	2.73	±20
		CH102	5510.030	5510	5.44	±20
		CH106	5530.025	5530	4.52	±20
		CH120	5600.012	5600	2.14	±20
		CH134	5670.025	5670	4.41	±20
		CH140	5700.030	5700	5.26	±20
		CH149	5745.00	5745	0	±20
		CH151	5755.025	5755	4.34	±20
		CH155	5775.025	5775	4.33	±20
		CH157	5785.025	5785	4.32	±20
		CH159	5795.048	5795	8.28	±20
		CH165	5825.030	5825	5.15	±20
Conclusion: PASS						

Test Voltage (V)	Temp ()	CH	Max. Reading (MHz)	Target Frequency (MHz)	Result (ppm)	Limit (ppm)
AC120V	0	CH36	5180.040	5180	7.72	±20
		CH38	5190.035	5190	6.74	±20
		CH40	5200.025	5200	4.81	±20
		CH42	5210.045	5210	8.64	±20
		CH46	5230.025	5230	4.78	±20
		CH48	5240.030	5240	5.73	±20
		CH52	5260.045	5260	8.56	±20
		CH54	5270.030	5270	5.69	±20
		CH58	5290.030	5290	5.67	±20
		CH60	5300.015	5300	2.83	±20
		CH62	5310.025	5310	4.71	±20
		CH64	5320.025	5320	4.70	±20
		CH100	5500.030	5500	5.45	±20
		CH102	5510.028	5510	5.08	±20
		CH106	5530.030	5530	5.42	±20
		CH120	5600.025	5600	4.46	±20
		CH134	5670.045	5670	7.94	±20
		CH140	5700.050	5700	8.77	±20
		CH149	5745.040	5745	6.96	±20
		CH151	5755.025	5755	4.34	±20
		CH155	5775.035	5775	6.06	±20
		CH157	5785.025	5785	4.32	±20
		CH159	5795.035	5795	6.04	±20
		CH165	5825.030	5825	5.15	±20

Conclusion: PASS

Test Voltage (V)	Temp ()	CH	Max. Reading (MHz)	Target Frequency (MHz)	Result (ppm)	Limit (ppm)
AC120V	10	CH36	5180.025	5180	4.83	±20
		CH38	5190.032	5190	6.17	±20
		CH40	5200.042	5200	8.08	±20
		CH42	5210.042	5210	8.06	±20
		CH46	5230.050	5230	9.56	±20
		CH48	5240.030	5240	5.73	±20
		CH52	5260.045	5260	8.56	±20
		CH54	5270.059	5270	11.19	±20
		CH58	5290.049	5290	9.26	±20
		CH60	5300.050	5300	9.43	±20
		CH62	5310.040	5310	7.53	±20
		CH64	5320.048	5320	9.02	±20
		CH100	5500.045	5500	8.18	±20
		CH102	5510.050	5510	9.07	±20
		CH106	5530.060	5530	10.85	±20
		CH120	5600.030	5600	5.36	±20
		CH134	5670.055	5670	9.70	±20
		CH140	5700.060	5700	10.53	±20
		CH149	5745.047	5745	8.18	±20
		CH151	5755.046	5755	7.99	±20
		CH155	5775.058	5775	10.04	±20
		CH157	5785.052	5785	8.99	±20
		CH159	5795.046	5795	7.94	±20
		CH165	5825.055	5825	9.44	±20
Conclusion: PASS						

Test Voltage (V)	Temp ()	CH	Max. Reading (MHz)	Target Frequency (MHz)	Result (ppm)	Limit (ppm)
AC120V	20	CH36	5180.045	5180	8.69	±20
		CH38	5190.042	5190	8.09	±20
		CH40	5200.025	5200	4.81	±20
		CH42	5210.040	5210	7.68	±20
		CH46	5230.054	5230	10.33	±20
		CH48	5240.038	5240	7.25	±20
		CH52	5260.045	5260	8.56	±20
		CH54	5270.030	5270	5.69	±20
		CH58	5290.030	5290	5.67	±20
		CH60	5300.015	5300	2.83	±20
		CH62	5310.025	5310	4.71	±20
		CH64	5320.029	5320	5.45	±20
		CH100	5500.030	5500	5.45	±20
		CH102	5510.023	5510	4.17	±20
		CH106	5530.038	5530	6.87	±20
		CH120	5600.026	5600	4.64	±20
		CH134	5670.048	5670	8.47	±20
		CH140	5700.045	5700	7.89	±20
		CH149	5745.048	5745	8.36	±20
		CH151	5755.026	5755	4.52	±20
		CH155	5775.052	5775	9.00	±20
		CH157	5785.035	5785	6.05	±20
		CH159	5795.039	5795	6.73	±20
		CH165	5825.036	5825	6.18	±20

Conclusion: PASS

Test Voltage (V)	Temp ()	CH	Max. Reading (MHz)	Target Frequency (MHz)	Result (ppm)	Limit (ppm)
AC120V	30	CH36	5180.048	5180	9.27	±20
		CH38	5190.040	5190	7.71	±20
		CH40	5200.026	5200	5.00	±20
		CH42	5210.035	5210	6.72	±20
		CH46	5230.055	5230	10.52	±20
		CH48	5240.030	5240	5.73	±20
		CH52	5260.045	5260	8.56	±20
		CH54	5270.030	5270	5.69	±20
		CH58	5290.032	5290	6.05	±20
		CH60	5300.018	5300	3.40	±20
		CH62	5310.025	5310	4.71	±20
		CH64	5320.030	5320	5.64	±20
		CH100	5500.035	5500	6.36	±20
		CH102	5510.023	5510	4.17	±20
		CH106	5530.035	5530	6.33	±20
		CH120	5600.028	5600	5.00	±20
		CH134	5670.048	5670	8.47	±20
		CH140	5700.042	5700	7.37	±20
		CH149	5745.050	5745	8.70	±20
		CH151	5755.026	5755	4.52	±20
		CH155	5775.045	5775	7.79	±20
		CH157	5785.035	5785	6.05	±20
		CH159	5795.045	5795	7.77	±20
		CH165	5825.030	5825	5.15	±20

Conclusion: PASS

Test Voltage (V)	Temp ()	CH	Max. Reading (MHz)	Target Frequency (MHz)	Result (ppm)	Limit (ppm)
AC120V	40	CH36	5180.052	5180	9.27	±20
		CH38	5190.040	5190	7.71	±20
		CH40	5200.035	5200	5.00	±20
		CH42	5210.040	5210	6.72	±20
		CH46	5230.056	5230	10.52	±20
		CH48	5240.030	5240	5.73	±20
		CH52	5260.045	5260	8.56	±20
		CH54	5270.036	5270	5.69	±20
		CH58	5290.032	5290	6.05	±20
		CH60	5300.020	5300	3.40	±20
		CH62	5310.025	5310	4.71	±20
		CH64	5320.030	5320	5.64	±20
		CH100	5500.036	5500	6.36	±20
		CH102	5510.023	5510	4.17	±20
		CH106	5530.038	5530	6.33	±20
		CH120	5600.028	5600	5.00	±20
		CH134	5670.042	5670	8.47	±20
		CH140	5700.042	5700	7.37	±20
		CH149	5745.056	5745	8.70	±20
		CH151	5755.028	5755	4.52	±20
		CH155	5775.047	5775	7.79	±20
		CH157	5785.036	5785	6.05	±20
		CH159	5795.050	5795	7.77	±20
		CH165	5825.035	5825	5.15	±20
Conclusion: PASS						

Test Voltage (V)	Temp ()	CH	Max. Reading (MHz)	Target Frequency (MHz)	Result (ppm)	Limit (ppm)
AC120V	50	CH36	5180.056	5180	10.81	±20
		CH38	5190.045	5190	8.67	±20
		CH40	5200.036	5200	6.92	±20
		CH42	5210.042	5210	8.06	±20
		CH46	5230.050	5230	9.56	±20
		CH48	5240.035	5240	6.68	±20
		CH52	5260.045	5260	8.56	±20
		CH54	5270.036	5270	6.83	±20
		CH58	5290.035	5290	6.62	±20
		CH60	5300.020	5300	3.77	±20
		CH62	5310.028	5310	5.27	±20
		CH64	5320.030	5320	5.64	±20
		CH100	5500.035	5500	6.36	±20
		CH102	5510.023	5510	4.17	±20
		CH106	5530.040	5530	7.23	±20
		CH120	5600.022	5600	3.93	±20
		CH134	5670.040	5670	7.05	±20
		CH140	5700.042	5700	7.37	±20
		CH149	5745.060	5745	10.44	±20
		CH151	5755.036	5755	6.26	±20
		CH155	5775.045	5775	7.79	±20
		CH157	5785.042	5785	7.26	±20
		CH159	5795.030	5795	5.18	±20
		CH165	5825.030	5825	5.15	±20
Conclusion: PASS						

10. ANTENNA REQUIREMENT

10.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.407 (a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

10.2. Antenna Connected Construction

The antennas used for this product are PIFA antenna that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 3.91dBi.

11. DEVIATION TO TEST SPECIFICATIONS

[NONE]