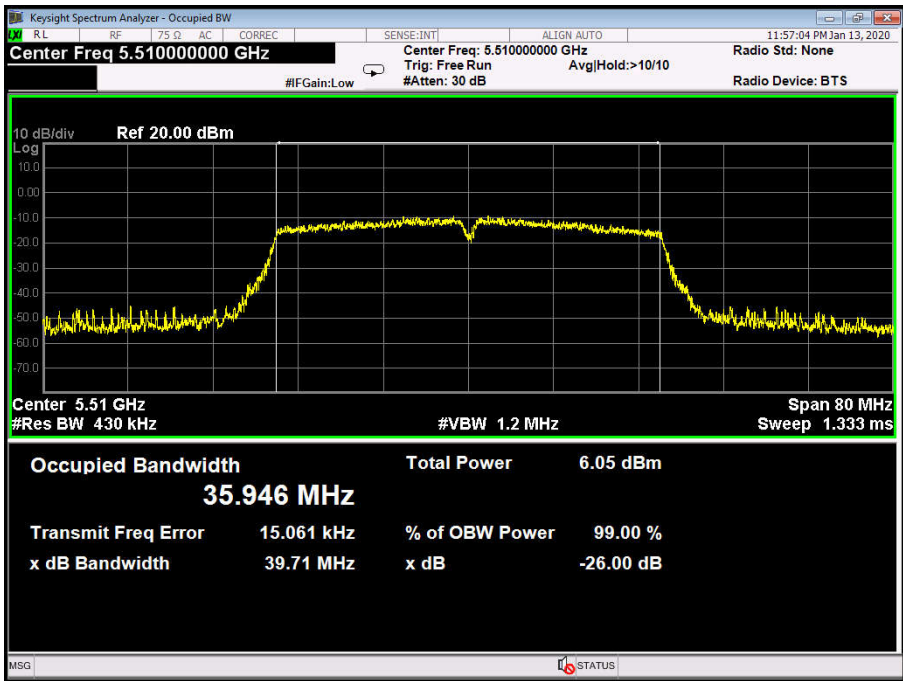
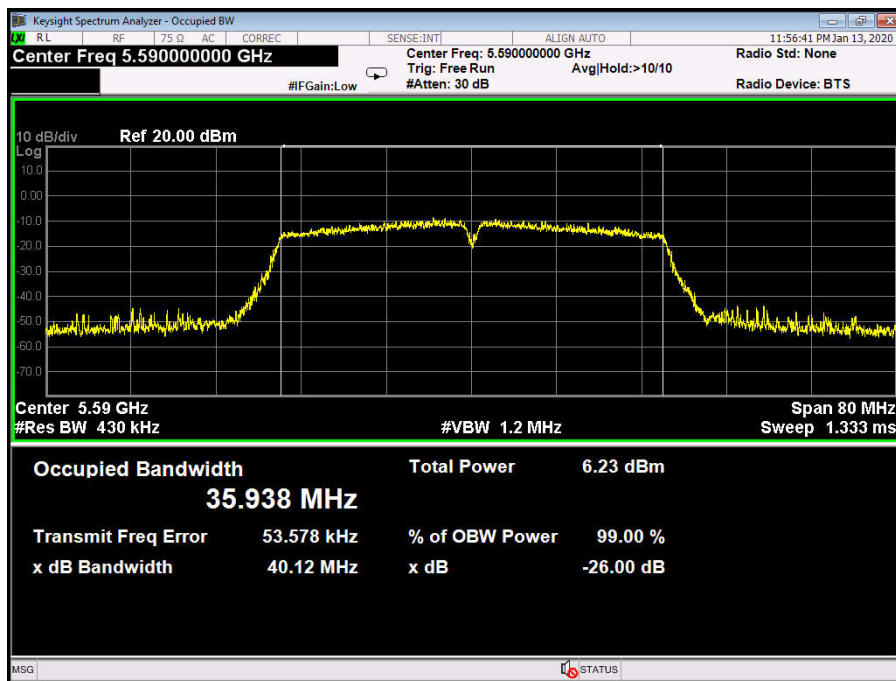


Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.8V		
Test Mode:	TX 802.11N(HT40) Mode (U-NII-2C)		
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
102	5510	39.71	36.946
118	5590	40.12	35.938
142	5670	40.23	35.918
802.11N(HT40) Mode			
5510 MHz			
 Keysight Spectrum Analyzer - Occupied BW Center Freq 5.510000000 GHz Center Freq: 5.510000000 GHz Trig: Free Run #Atten: 30 dB Radio Device: BTS 10 dB/div Ref 20.00 dBm Center 5.51 GHz #Res BW 430 kHz #VBW 1.2 MHz Span 80 MHz Sweep 1.333 ms Occupied Bandwidth 35.946 MHz Total Power 6.05 dBm Transmit Freq Error 15.061 kHz % of OBW Power 99.00 % x dB Bandwidth 39.71 MHz x dB -26.00 dB			

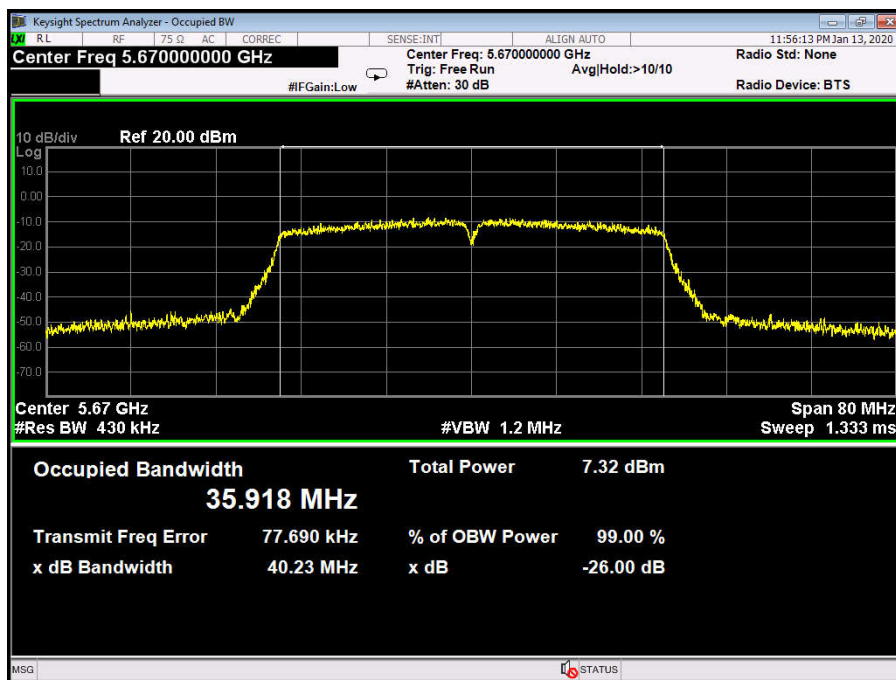
802.11N(HT40) Mode

5590 MHz



802.11N(HT40) Mode

5670 MHz



Temperature:	25 °C	Relative Humidity:		55%
Test Voltage:	DC 3.8V			
Test Mode:	TX 802.11n(HT40) Mode (U-NII-2C)			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
142	5710	30.59	----	28.086
		----	3.270	4.0611
802.11n(HT40) Mode				
5710 MHz Straddle 5.47-5.725GHz				

Keysight Spectrum Analyzer - Occupied BW

RL

RF

75 Ω

AC

CORREC

SENSE:INT

ALIGN: AUTO

02:04:16 AM Jan 09, 2020

Center Freq 5.680000000 GHz

Center Freq: 5.680000000 GHz

Trig: Free Run

Avg/Hold: >10/10

Radio Std: None

#FGain: Low

#Atten: 20 dB

Radio Device: BTS

10 dB/div

Ref 20.00 dBm

Log

10.0

0.00

-10.0

-20.0

-30.0

-40.0

-50.0

-60.0

-70.0

Center 5.68 GHz

#Res BW 430 kHz

#VBW 1.2 MHz

Span 80 MHz

Sweep 1 ms

Occupied Bandwidth

28.086 MHz

Total Power

5.05 dBm

Transmit Freq Error

25.859 MHz

% of OBW Power

99.00 %

x dB Bandwidth

30.59 MHz

x dB

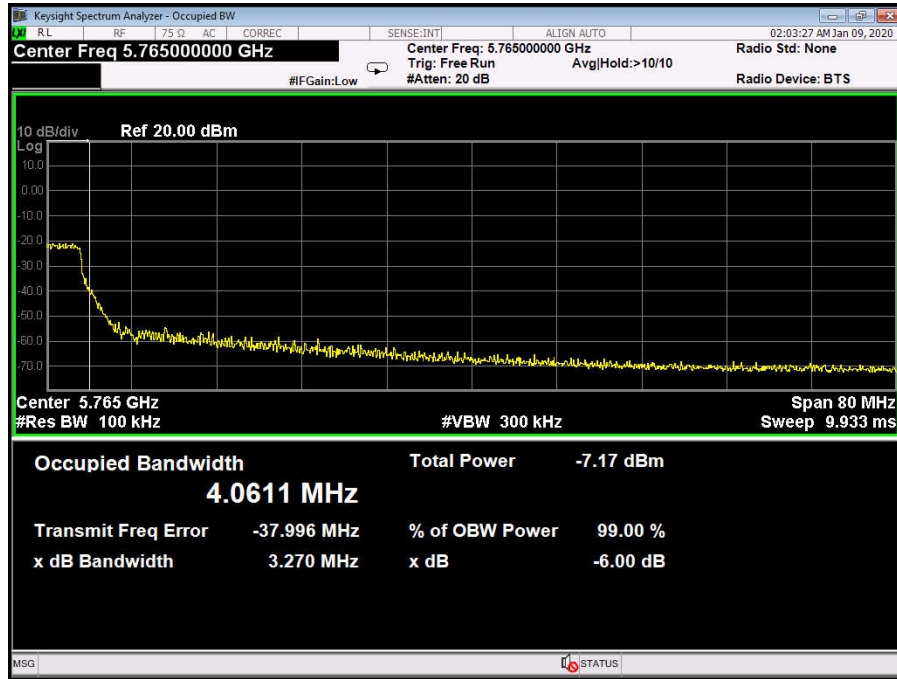
-26.00 dB

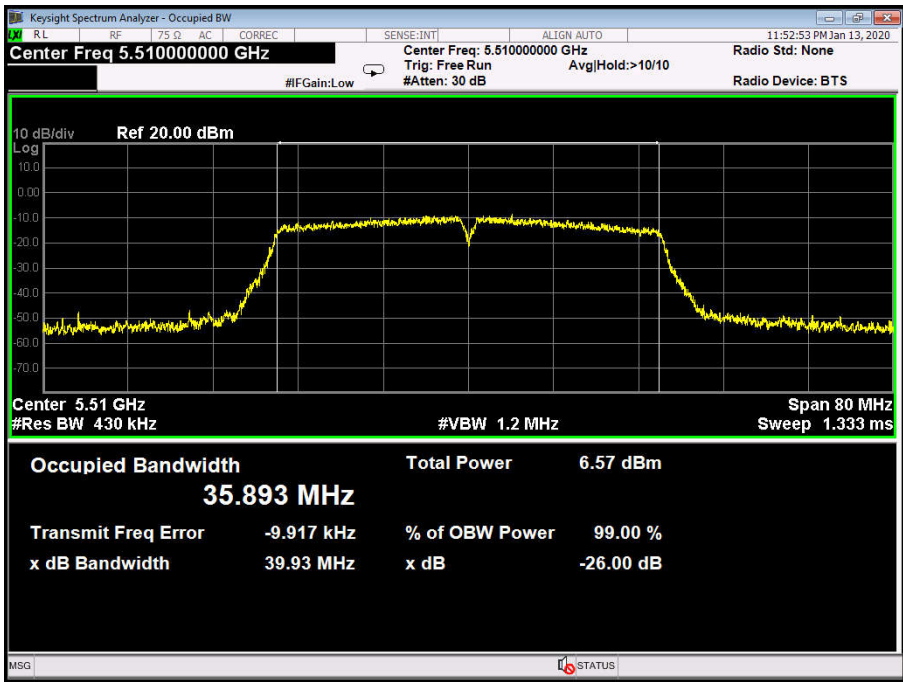
MSG

STATUS

802.11n(HT40) Mode

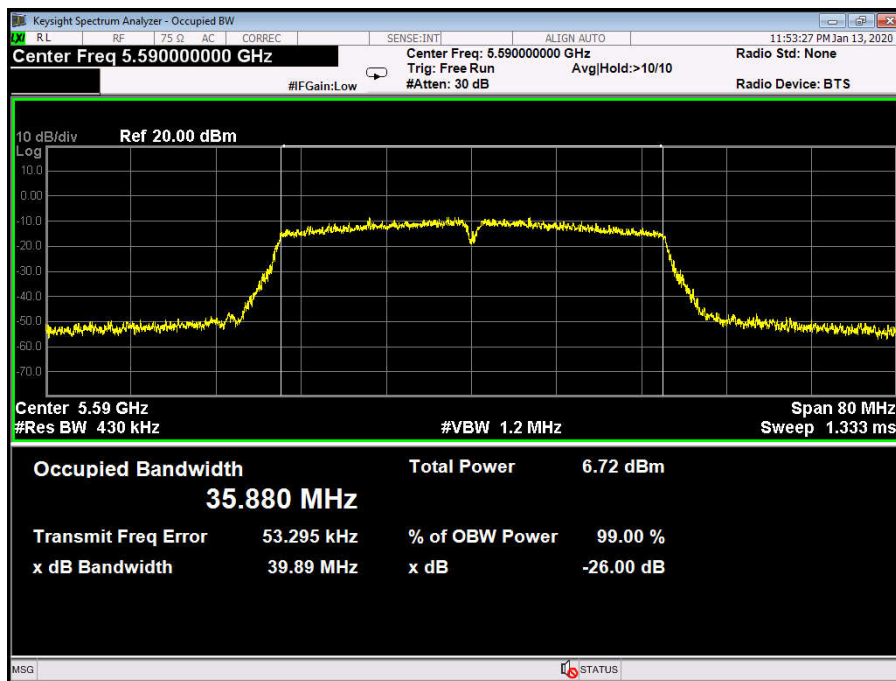
5710 MHz Straddle 5.725-5.85GHz



Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.8V		
Test Mode:	TX 802.11 ac(VHT40) Mode (U-NII-2C)		
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
102	5510	39.93	35.893
118	5590	39.89	35.880
142	5670	40.20	35.905
802.11ac(VHT40) Mode			
5510 MHz			
 Keysight Spectrum Analyzer - Occupied BW Center Freq 5.510000000 GHz Center Freq: 5.510000000 GHz Trig: Free Run #Gain: Low #Atten: 30 dB Avg/Hold: >10/10 Radio Std: None Radio Device: BTS 10 dB/div Ref 20.00 dBm Center 5.51 GHz #Res BW 430 kHz #VBW 1.2 MHz Span 80 MHz Sweep 1.333 ms Occupied Bandwidth 35.893 MHz Total Power 6.57 dBm Transmit Freq Error -9.917 kHz % of OBW Power 99.00 % x dB Bandwidth 39.93 MHz x dB -26.00 dB			

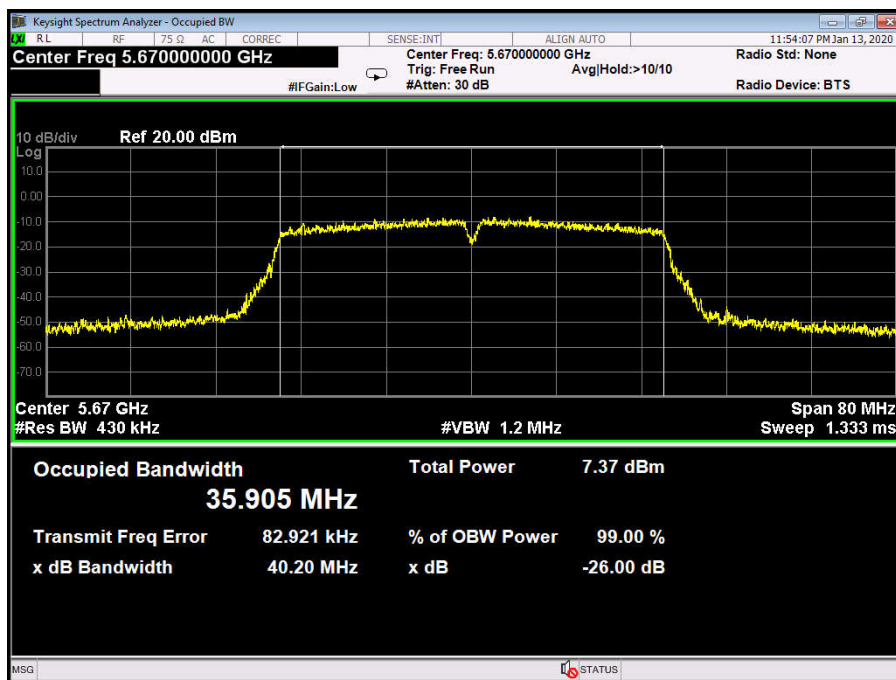
802.11ac(VHT40) Mode

5590 MHz



802.11ac(VHT40) Mode

5670 MHz



Temperature:	25 °C	Relative Humidity:	55%	
Test Voltage:	DC 3.8V			
Test Mode:	TX 802.11ac(VHT40) Mode (U-NII-2C)			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
142	5710	30.33	----	27.998
		----	3.243	3.9743
802.11ac(VHT40) Mode				
5710 MHz Straddle 5.47-5.725GHz				

Keysight Spectrum Analyzer - Occupied BW

RL

RF

75 Ω

AC

CORREC

SENSE:INT

ALIGN: AUTO

02:05:21 AM Jan 09, 2020

Center Freq 5.680000000 GHz

Trig: Free Run

Avg/Hold: >10/10

Radio Std: None

#FGain: Low

#Atten: 20 dB

Radio Device: BTS

10 dB/div

Ref 20.00 dBm

Log

10.0

0.00

-10.0

-20.0

-30.0

-40.0

-50.0

-60.0

-70.0

Center 5.68 GHz

#Res BW 430 kHz

#VBW 1.2 MHz

Span 80 MHz

Sweep 1 ms

Occupied Bandwidth

27.998 MHz

Total Power

5.99 dBm

Transmit Freq Error

25.871 MHz

% of OBW Power

99.00 %

x dB Bandwidth

30.33 MHz

x dB

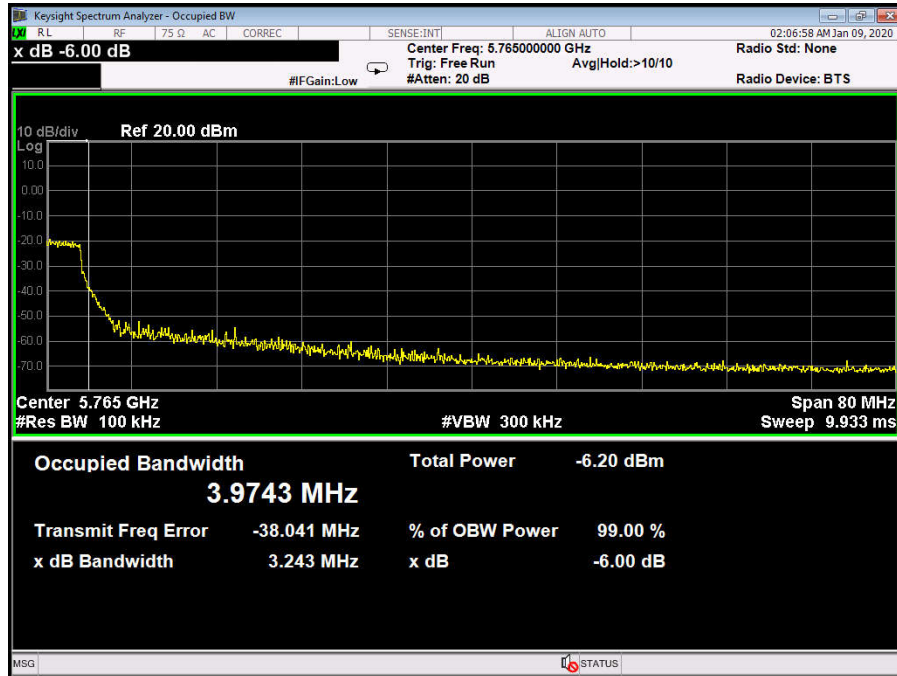
-26.00 dB

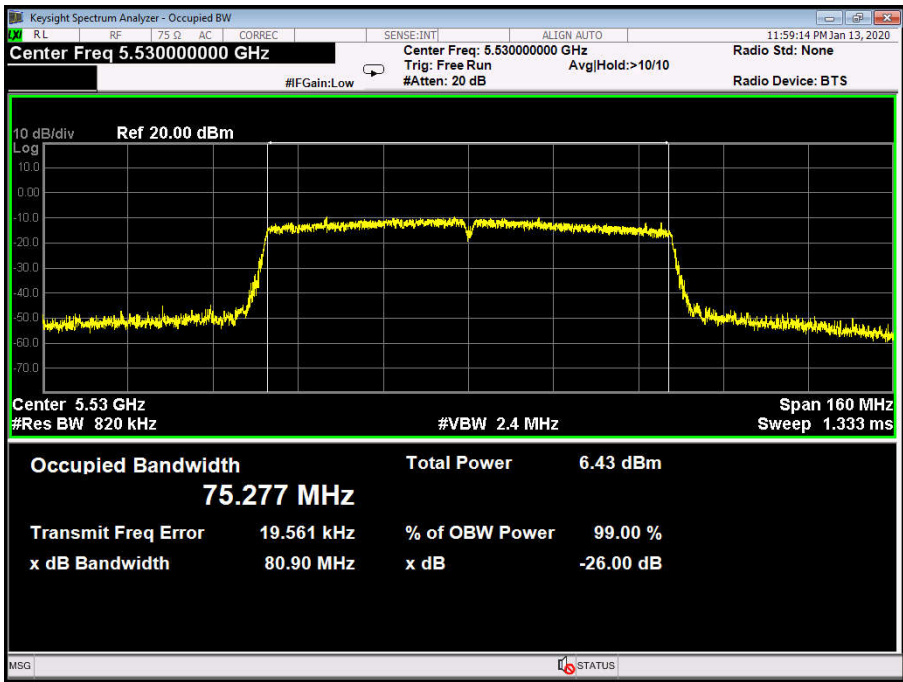
MSG

STATUS

802.11ac(VHT40) Mode

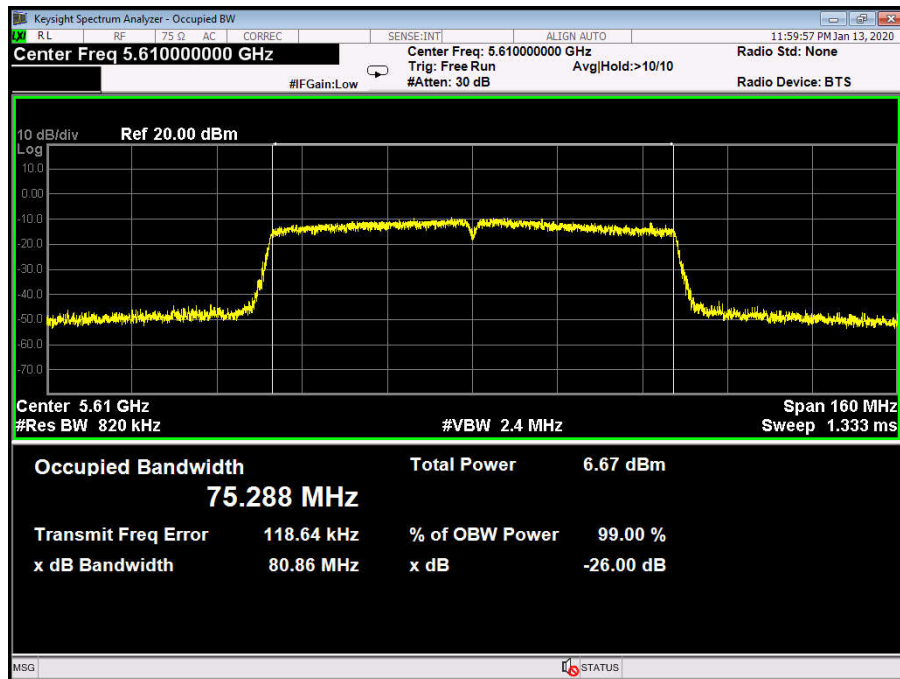
5710 MHz Straddle 5.725-5.85GHz



Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.8V		
Test Mode:	TX 802.11 ac(VHT80) Mode (U-NII-2C)		
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
106	5530	80.90	75.277
122	5610	80.86	75.288
138	5690	80.20	75.192
802.11ac(VHT80) Mode			
5530 MHz			
 Keysight Spectrum Analyzer - Occupied BW Center Freq 5.530000000 GHz Center Freq: 5.530000000 GHz Trig: Free Run #Gain: Low #Atten: 20 dB Avg/Hold: >10/10 Radio Std: None Radio Device: BTS 10 dB/div Ref 20.00 dBm Center 5.53 GHz #Res BW 820 kHz #VBW 2.4 MHz Span 160 MHz Sweep 1.333 ms Occupied Bandwidth 75.277 MHz Total Power 6.43 dBm Transmit Freq Error 19.561 kHz % of OBW Power 99.00 % x dB Bandwidth 80.90 MHz x dB -26.00 dB			

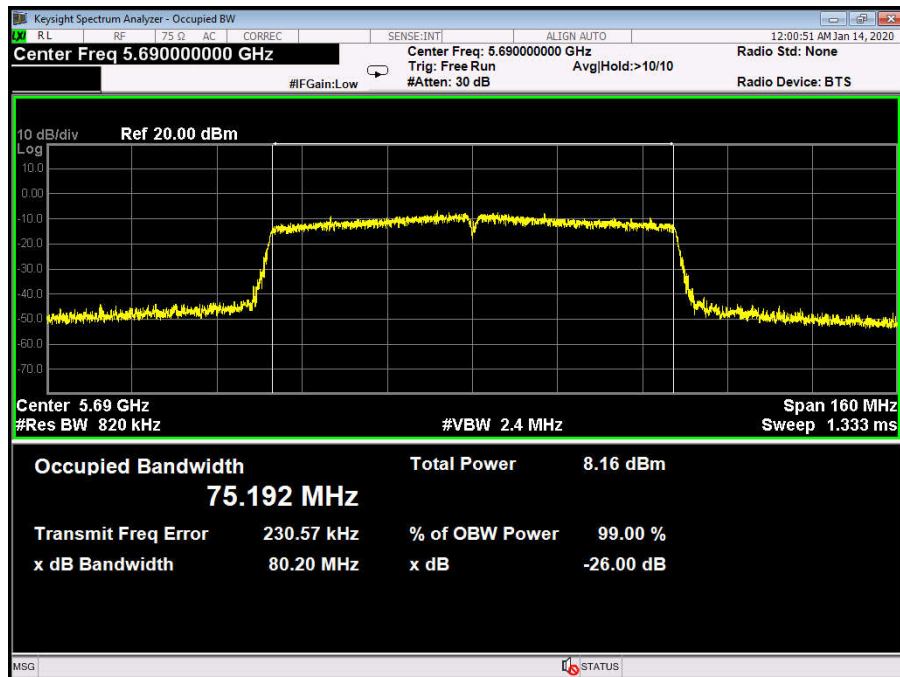
802.11ac(VHT80) Mode

5610 MHz



802.11ac(VHT80) Mode

5690 MHz



Temperature:	25 °C	Relative Humidity:	55%	
Test Voltage:	DC 3.8V			
Test Mode:	TX 802.11ac(HT80) Mode (U-NII-2C)			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
142	5710	75.53	----	72.175
		----	3.283	5.2179
802.11ac(VHT80) Mode				
5710 MHz Straddle 5.47-5.725GHz				

Keysight Spectrum Analyzer - Occupied BW

✓

RL

RF

75 Ω

AC

CORREC

SENSE:INT

ALIGN AUTO

02:10:11 AM Jan 09, 2020

Center Freq 5.645000000 GHz

Center Freq: 5.645000000 GHz

Trig: Free Run

Avg/Hold: >10/10

Radio Std: None

#FGain: Low

#Atten: 20 dB

Radio Device: BTS

10 dB/div

Ref 20.00 dBm

Log

10.0

0.00

-10.0

-20.0

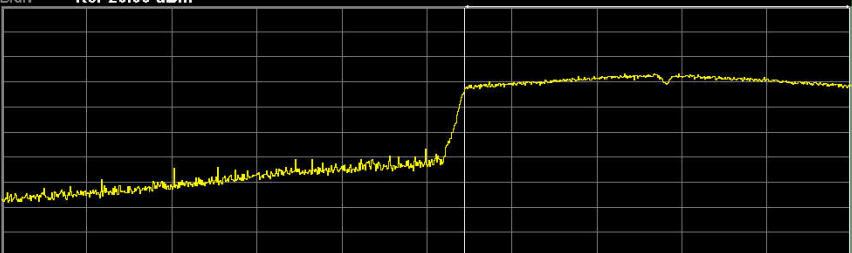
-30.0

-40.0

-50.0

-60.0

-70.0



Center 5.645 GHz

#Res BW 820 kHz

#VBW 2.4 MHz

Span 160 MHz

Sweep 1 ms

Occupied Bandwidth

72.175 MHz

Total Power

7.08 dBm

Transmit Freq Error

43.407 MHz

% of OBW Power

99.00 %

x dB Bandwidth

75.53 MHz

x dB

-26.00 dB

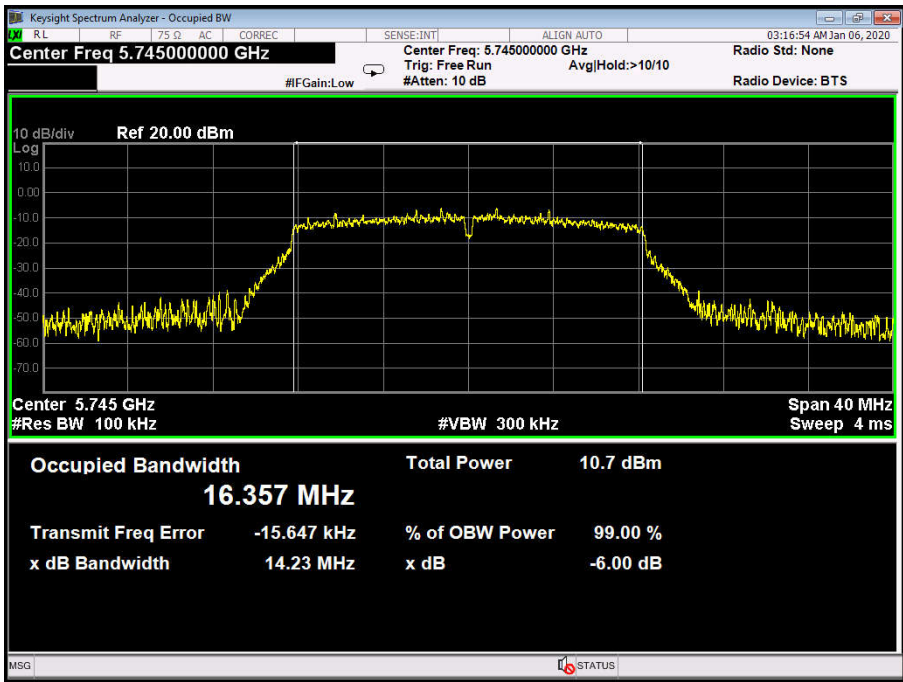
MSG

STATUS

802.11ac(VHT80) Mode

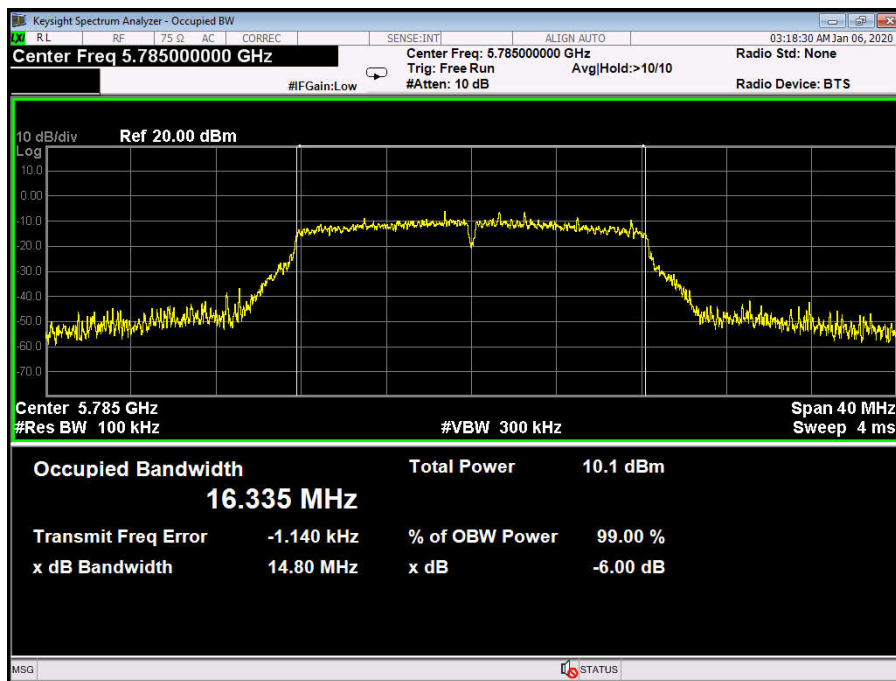
5690 MHz Straddle 5.725-5.85GHz



Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.8V		
Test Mode:	TX 802.11a Mode (U-NII-3)		
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
149	5745	14.23	16.357
157	5785	14.80	16.335
165	5825	14.84	16.340
802.11a Mode			
5745 MHz			
			

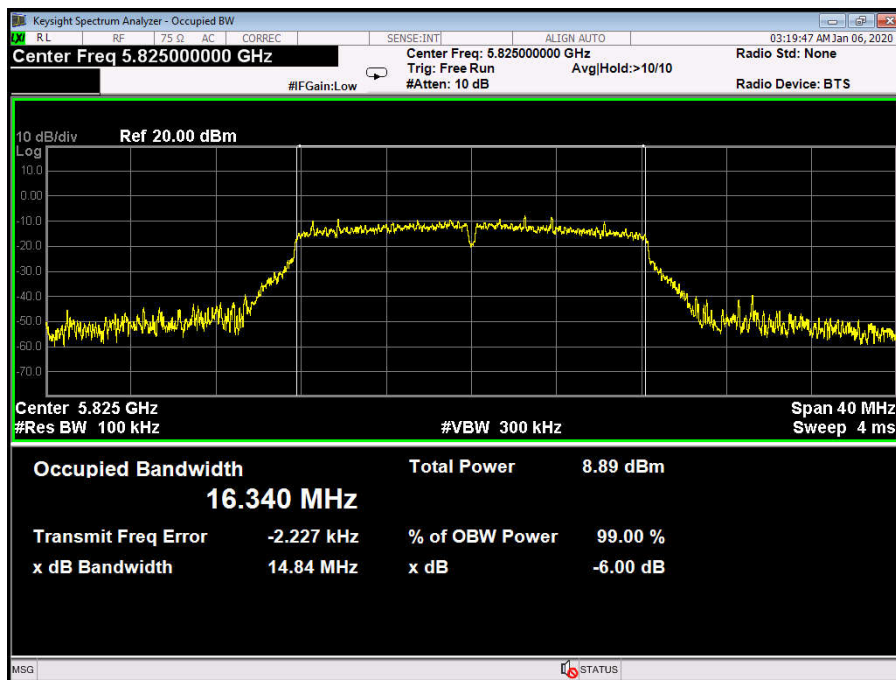
802.11a Mode

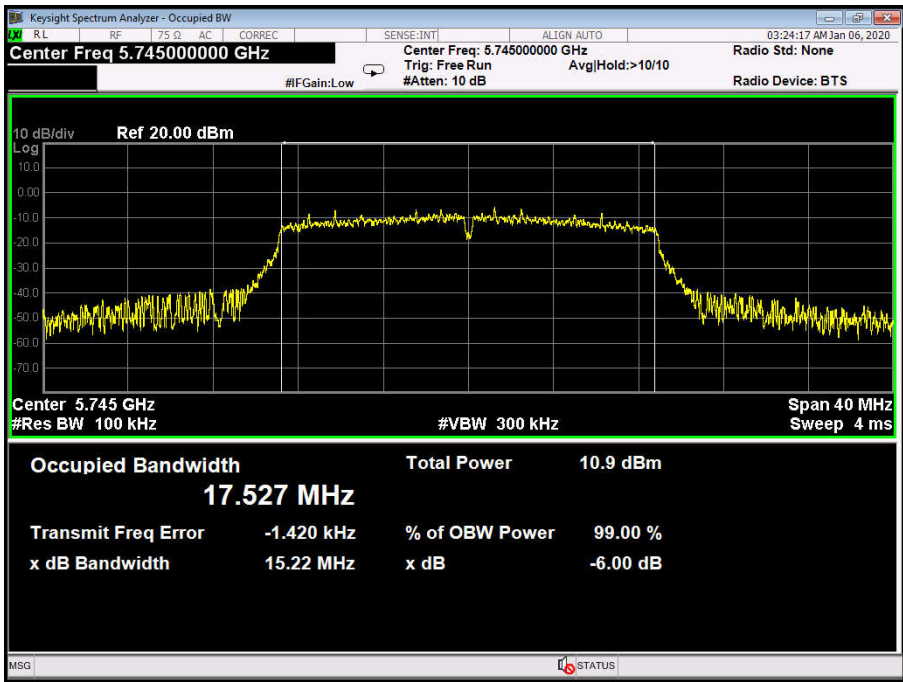
5785 MHz



802.11a Mode

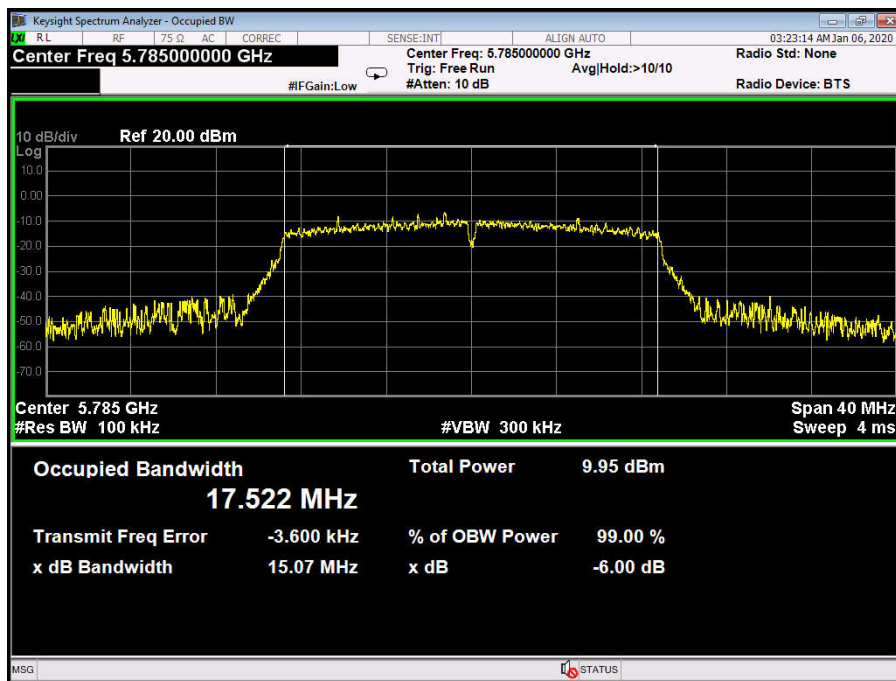
5825 MHz



Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.8V		
Test Mode:	TX 802.11n(HT20) Mode (U-NII-3)		
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
149	5745	15.22	17.527
157	5785	15.07	17.522
165	5825	14.04	17.535
802.11n(HT20) Mode			
5745 MHz			
 Keysight Spectrum Analyzer - Occupied BW Center Freq 5.745000000 GHz Center Freq: 5.745000000 GHz Trig: Free Run #Gain: Low #Atten: 10 dB Avg/Hold: >10/10 Radio Std: None Radio Device: BTS 10 dB/div Ref 20.00 dBm Center 5.745 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4 ms Occupied Bandwidth 17.527 MHz Total Power 10.9 dBm Transmit Freq Error -1.420 kHz % of OBW Power 99.00 % x dB Bandwidth 15.22 MHz x dB -6.00 dB			

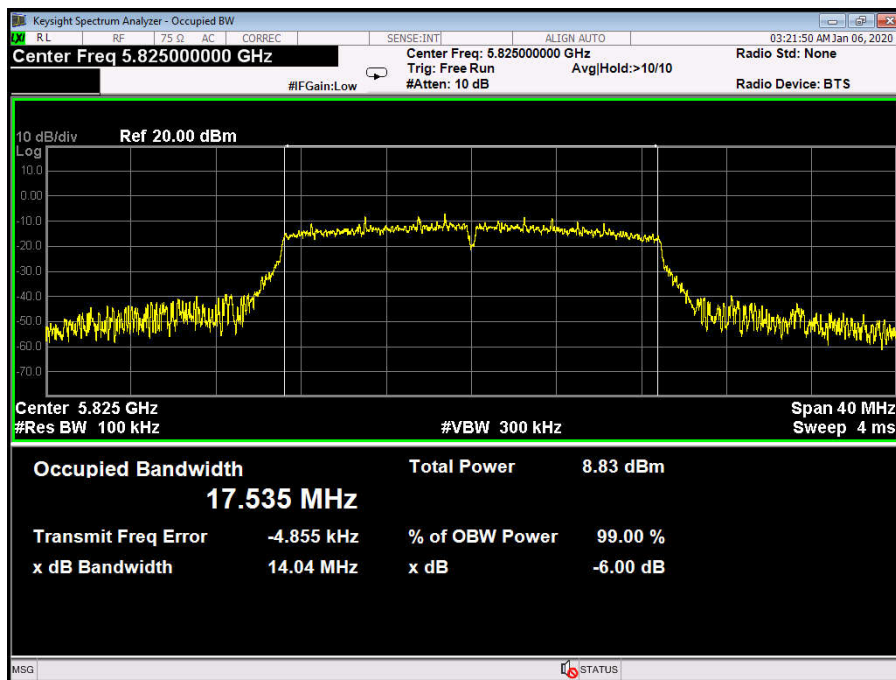
802.11n(HT20) Mode

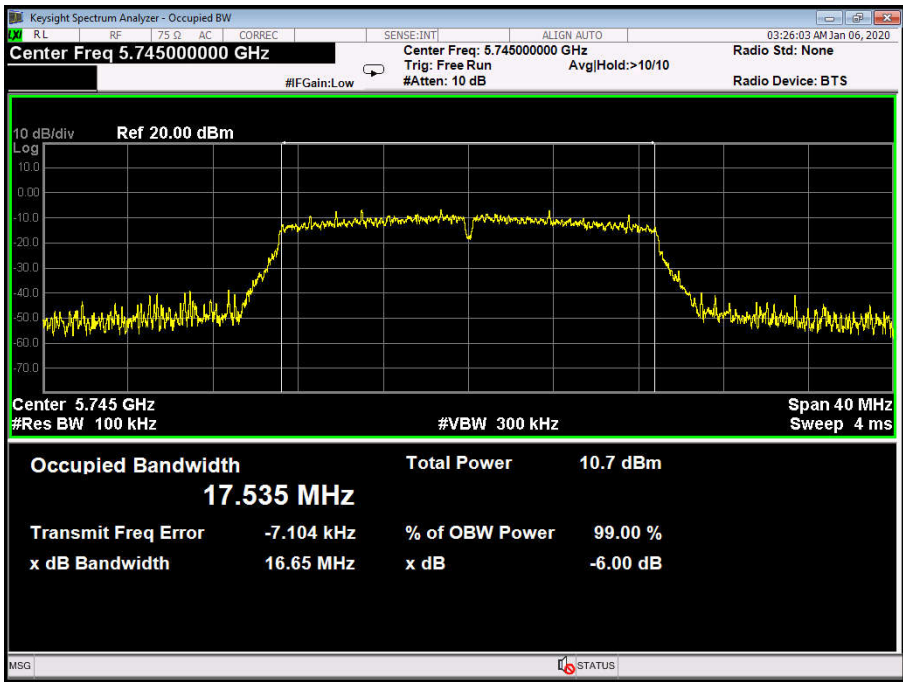
5785 MHz



802.11n(HT20) Mode

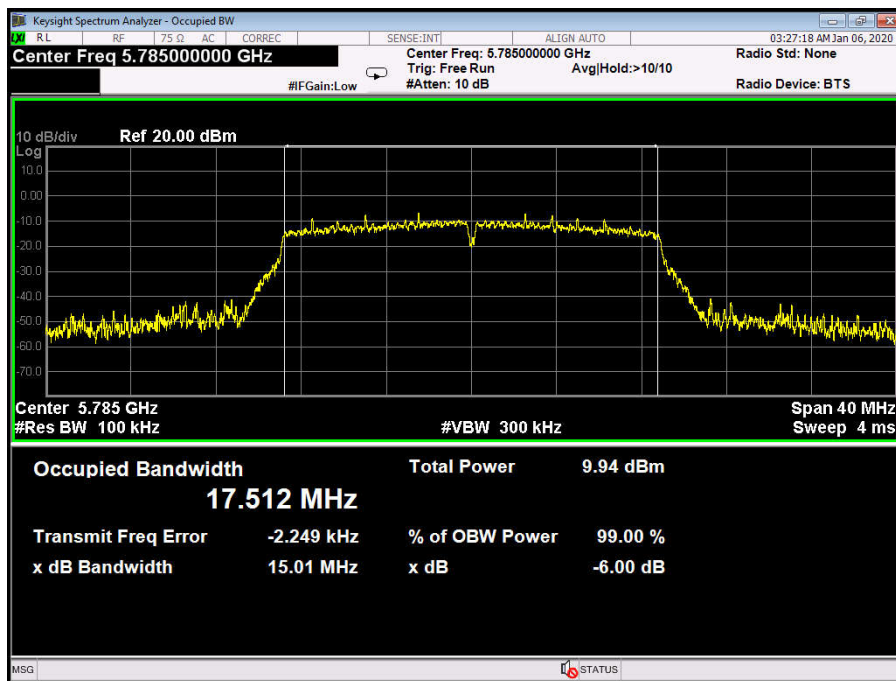
5825 MHz



Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.8V		
Test Mode:	TX 802.11ac(VHT20) Mode (U-NII-3)		
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
149	5745	16.65	17.535
157	5785	15.01	17.512
165	5825	15.37	17.537
802.11ac(VHT20) Mode			
5745 MHz			
 Keysight Spectrum Analyzer - Occupied BW Center Freq 5.745000000 GHz Center Freq: 5.745000000 GHz Trig: Free Run #Gain: Low #Atten: 10 dB Avg/Hold: >10/10 Radio Std: None Radio Device: BTS 10 dB/div Ref 20.00 dBm Center 5.745 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4 ms Occupied Bandwidth 17.535 MHz Total Power 10.7 dBm Transmit Freq Error -7.104 kHz % of OBW Power 99.00 % x dB Bandwidth 16.65 MHz x dB -6.00 dB			

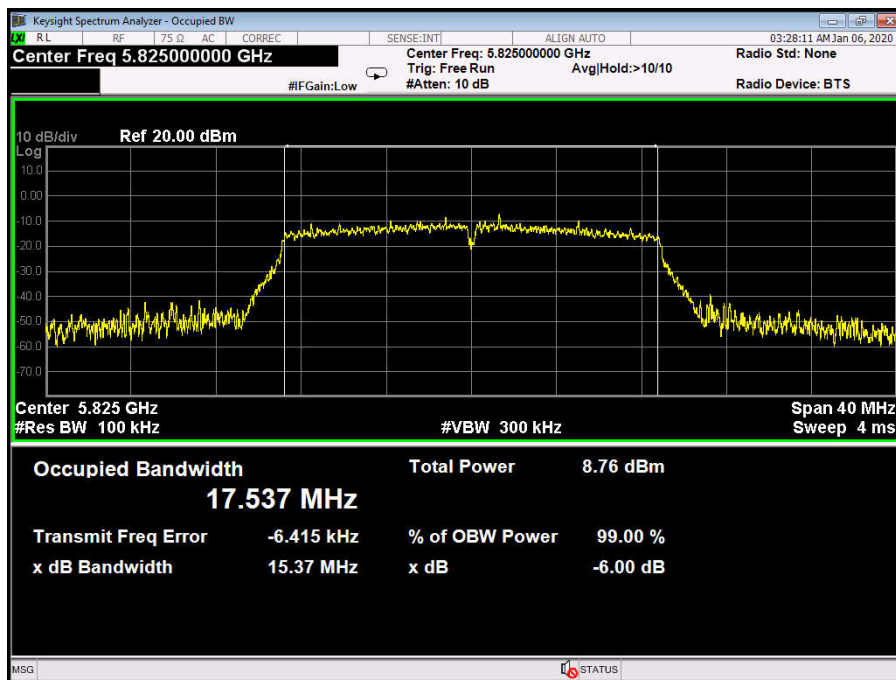
802.11ac(VHT20) Mode

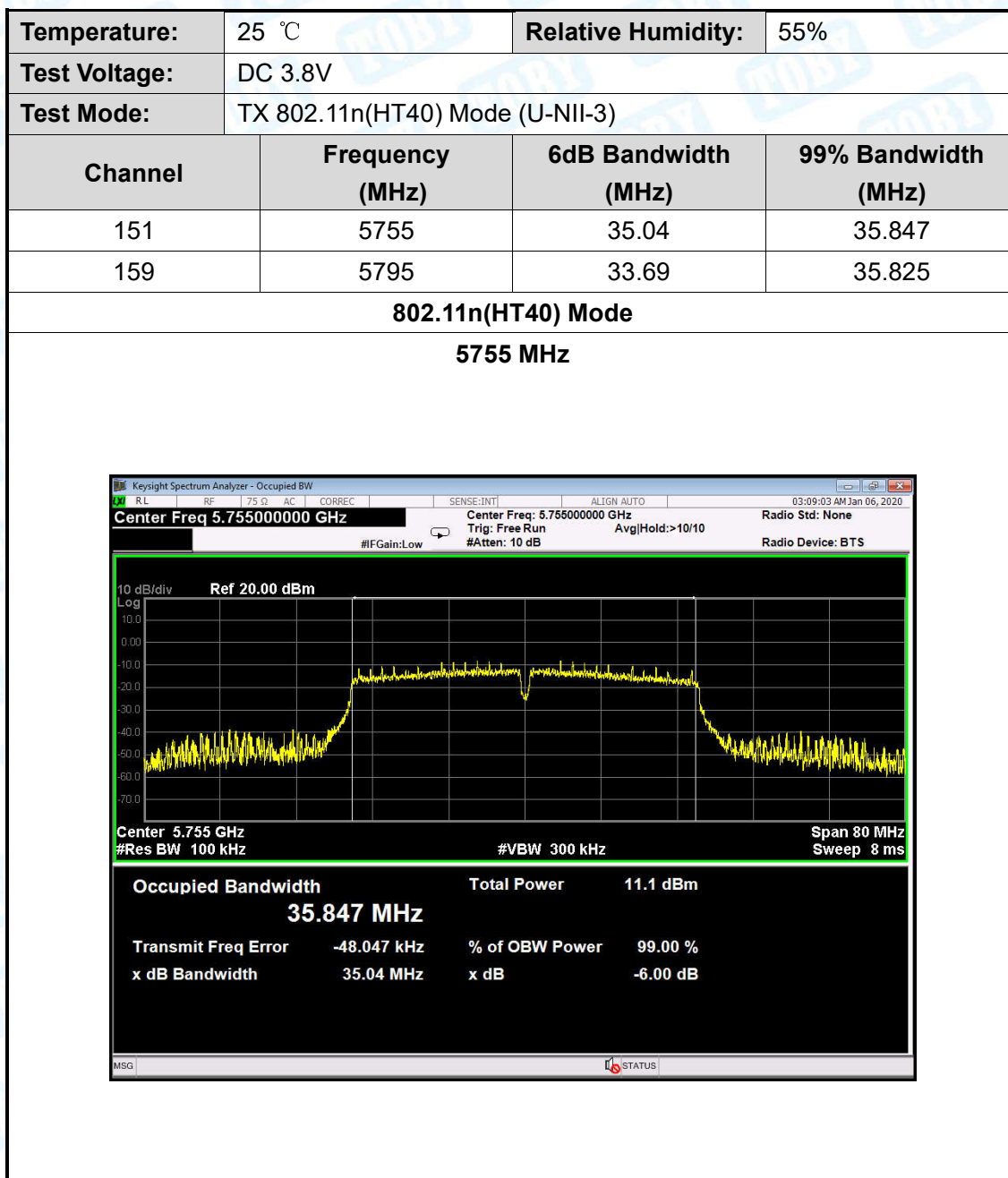
5785 MHz



802.11ac(VHT20) Mode

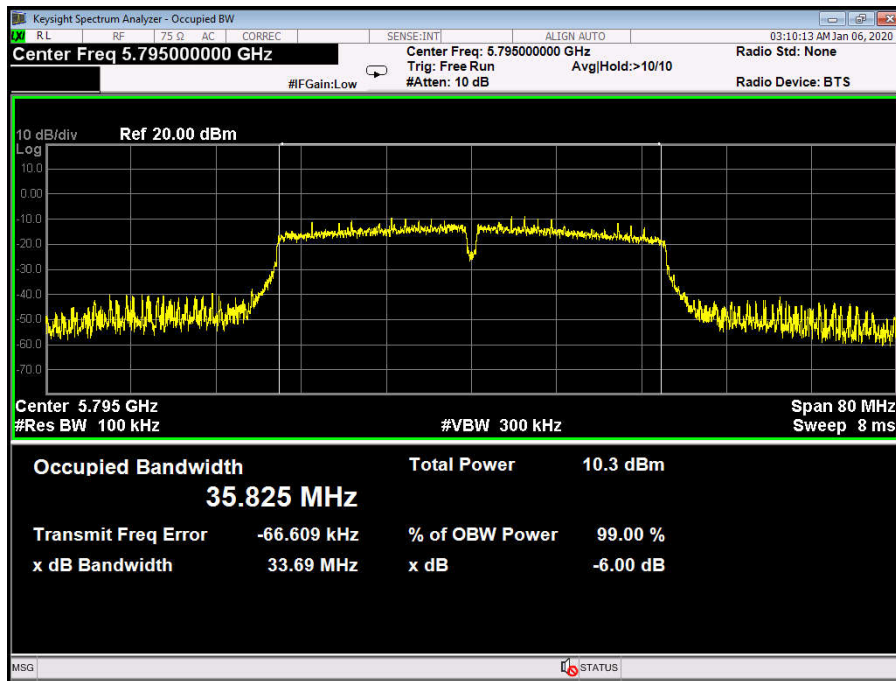
5825 MHz

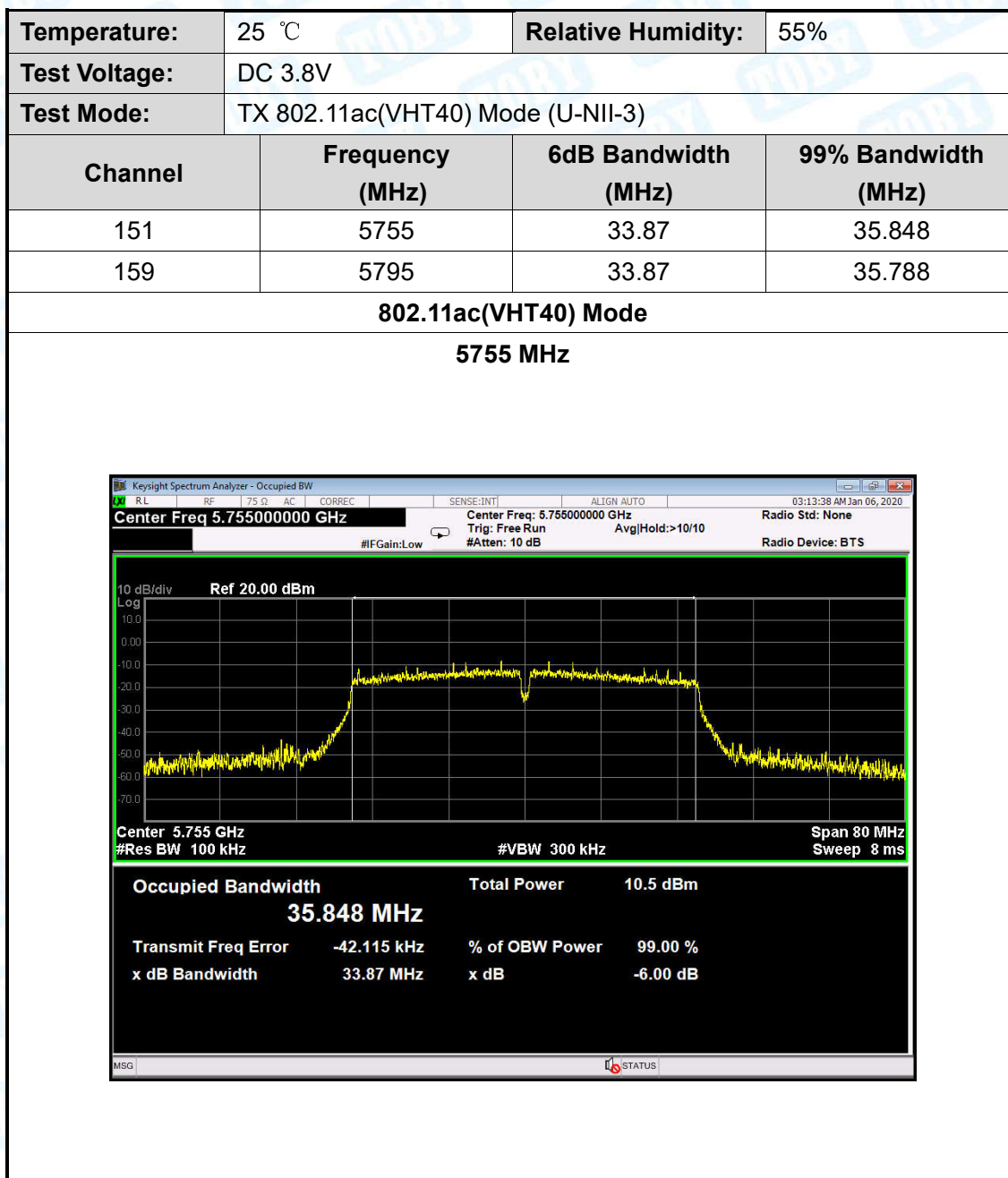




802.11n(HT40) Mode

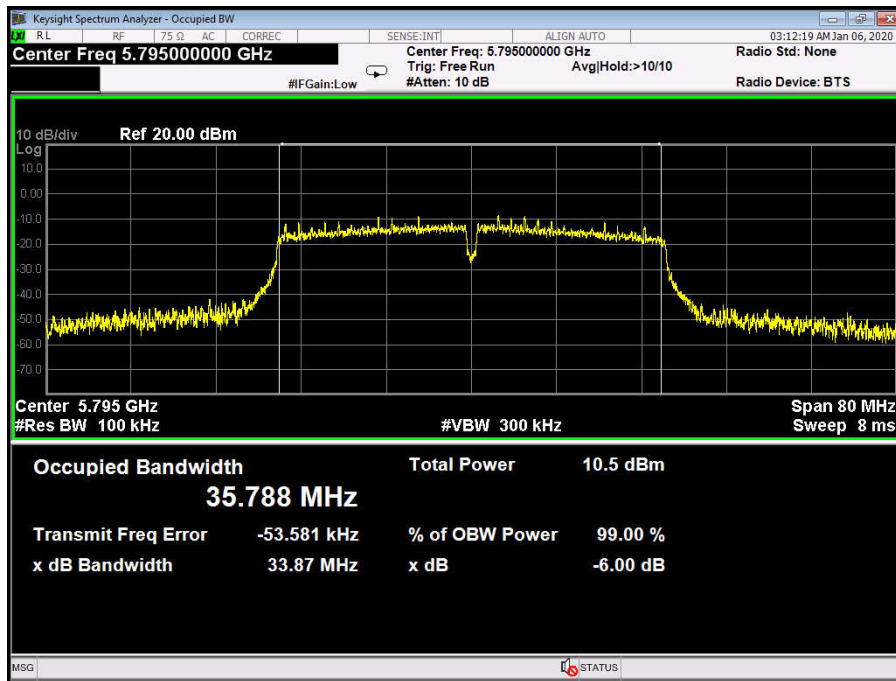
5795 MHz

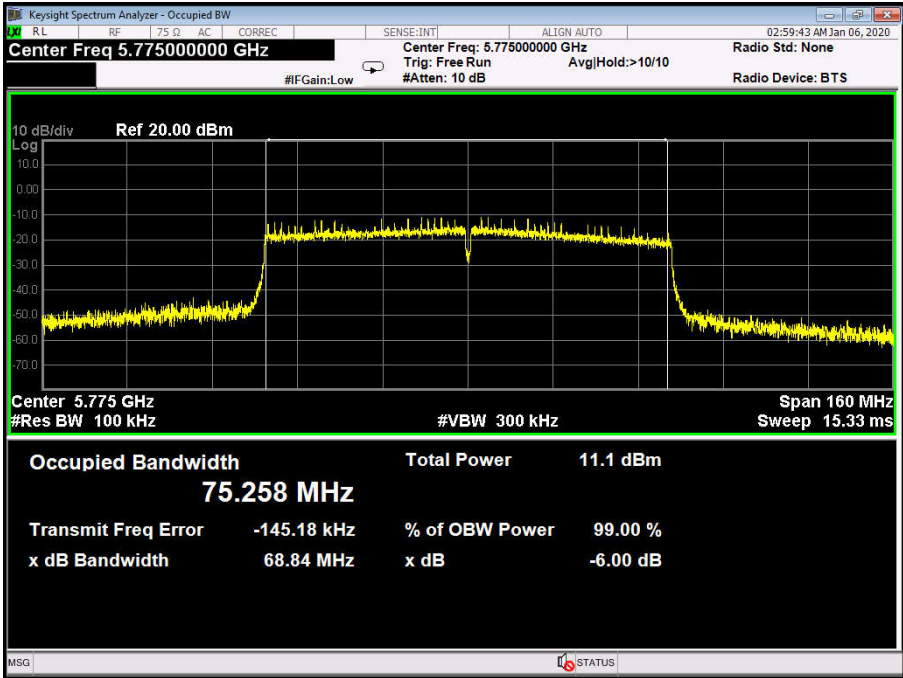




802.11ac(VHT40) Mode

5795 MHz



Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.8V		
Test Mode:	TX 802.11ac(HT80) Mode (U-NII-3)		
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
155	5775	75.258	68.84
802.11ac(VHT80) Mode			
5775 MHz			
			

Attachment E--AVG Output Power Test Data

Temperature:	25 °C	Relative Humidity:		55%	
Test Voltage:	DC 3.8V				
U-NII-1					
Test Mode	Frequency (MHz)	Test Data			Limit (dBm)
		Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	
802.11a	5180	13.57	0	13.57	24
	5200	13.37	0	13.37	
	5240	13.62	0	13.62	
802.11n (HT20)	5180	13.28	0	13.28	
	5200	13.22	0	13.22	
	5240	13.54	0	13.54	
802.11ac (VHT20)	5180	13.05	0	13.05	
	5200	13.35	0	13.35	
	5240	13.55	0	13.55	
802.11n (HT40)	5190	13.18	0	13.18	
	5230	13.56	0	13.56	
802.11 ac(VHT40)	5190	13.04	0	13.04	
	5230	13.66	0	13.66	
802.11 ac(VHT80)	5210	12.34	0	12.34	
Result: PASS					
Remark: the Directional Gain=2.92dBi<6 dBi. So P _{out} =P _{limit} =24dBm					

Temperature:		25 °C		Relative Humidity:		55%		
Test Voltage:		DC 3.8V						
U-NII-2A								
Test Mode	Frequency (MHz)	Test Data			Limit (dBm)			
		Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)				
802.11a	5260	13.30	0	13.30	24			
	5280	13.46	0	13.46				
	5320	11.37	0	11.37				
802.11n (HT20)	5260	13.17	0	13.17				
	5280	12.74	0	12.74				
	5320	12.22	0	12.22				
802.11ac (VHT20)	5260	12.89	0	12.89				
	5280	11.41	0	11.41				
	5320	12.90	0	12.90				
802.11n (HT40)	5270	12.79	0	12.79				
	5310	12.27	0	12.27				
802.11 ac(VHT40)	5270	13.12	0	13.12				
	5310	12.50	0	12.50				
802.11 ac(VHT80)	5290	12.28	0	12.28				
Result: PASS								
Remark: the Directional Gain=2.92dBi<6 dBi. So P _{out} =P _{limit} =24dBm								

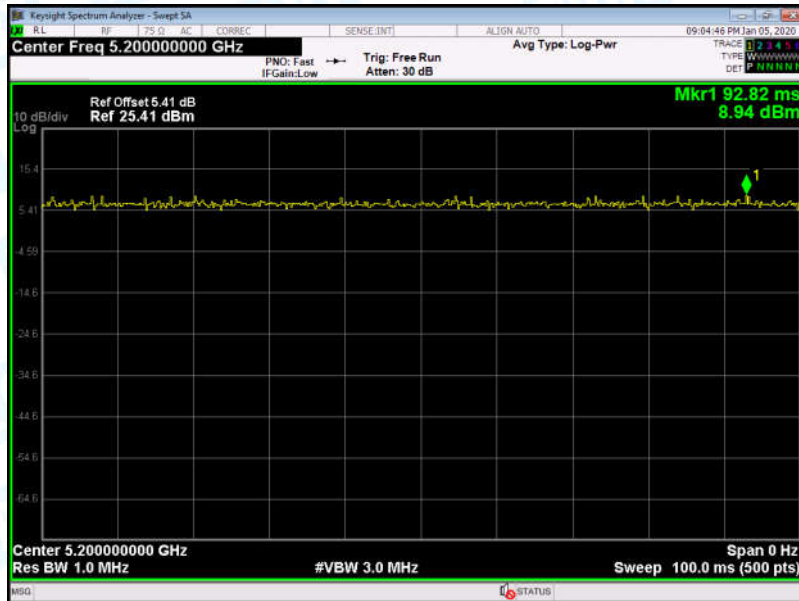
Temperature:		25 °C		Relative Humidity:		55%	
Test Voltage:		DC 3.8V					
U-NII-2C							
Test Mode	Frequency (MHz)	Test Data			Limit (dBm)		
		Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)			
802.11a	5500	13.02	0	13.02	30		
	5600	10.79	0	10.79			
	5720	12.30	0	12.30			
802.11n (HT20)	5500	12.83	0	12.83			
	5600	10.49	0	10.49			
	5720	12.10	0	12.10			
802.11ac (VHT20)	5500	12.81	0	12.81			
	5600	10.48	0	10.48			
	5720	12.10	0	12.10			
802.11n (HT40)	5510	12.77	0	12.77			
	5590	10.60	0	10.60			
	5710	12.28	0	12.28			
802.11 ac(VHT40)	5510	12.75	0	12.75			
	5590	10.55	0	10.55			
	5710	11.96	0	11.96			
802.11 ac(VHT80)	5530	11.71	0	11.71			
	5610	10.32	0	10.32			
	5690	11.21	0	11.21			
Result: PASS							
Remark: the Directional Gain=2.92dBi<6 dBi. So P _{out} =P _{limit} =30dBm							

Temperature:	25 °C	Relative Humidity:	55%		
Test Voltage:	DC 3.8V				
U-NII-2C					
Test Mode	Frequency (MHz)	Test Data			Limit (dBm)
		Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	
802.11a 5720MHz Straddle 5.47-5.725GHz		10.56	0	10.56	24
802.11a 5720MHz Straddle 5.725-5.85GHz		2.91	0	2.91	30
802.11n(HT20) 5720MHz Straddle 5.47-5.725GHz		10.58	0	10.58	24
802.11n(HT20) 5720MHz Straddle 5.725-5.85GHz		3.01	0	3.01	30
802.11ac(VHT20) 5720MHz Straddle 5.47-5.725GHz		10.20	0	10.20	24
802.11ac(VHT20) 5720MHz Straddle 5.725-5.85GHz		3.13	0	3.13	30
802.11n(HT40) 5710MHz Straddle 5.47-5.725GHz		10.96	0	10.96	24
802.11n(HT40) 5710MHz Straddle 5.725-5.85GHz		2.65	0	2.65	30
802.11ac(VHT40) 5710MHz Straddle 5.47-5.725GHz		10.32	0	10.32	24
802.11ac(VHT40) 5710MHz Straddle 5.725-5.85GHz		2.38	0	2.38	30
802.11ac(VHT80) 5690MHz Straddle 5.47-5.725GHz		9.20	0	9.20	24
802.11ac(VHT80) 5690MHz Straddle 5.725-5.85GHz		1.54	0	1.54	30
Result: PASS					
Remark: the Directional Gain=2.92dBi<6 dBi. So P _{out} =P _{limit}					

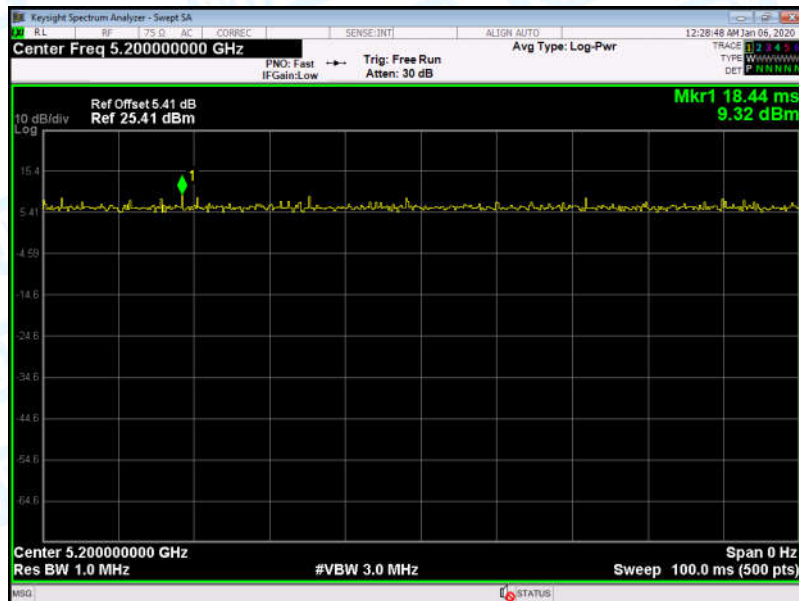
Temperature:		25 °C		Relative Humidity:		55%		
Test Voltage:		DC 3.8V						
U-NII-3								
Test Mode	Frequency (MHz)	Test Data			Limit (dBm)			
		Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)				
802.11a	5745	12.70	0	12.70	24			
	5785	12.45	0	12.45				
	5825	11.06	0	11.06				
802.11n (HT20)	5745	12.61	0	12.61				
	5785	12.32	0	12.32				
	5825	10.80	0	10.80				
802.11ac (VHT20)	5745	12.73	0	12.73				
	5785	12.05	0	12.05				
	5825	12.62	0	12.62				
802.11n (HT40)	5755	12.11	0	12.11				
	5795	10.96	0	10.96				
802.11 ac(VHT40)	5755	12.73	0	12.73				
	5795	12.09	0	12.09				
802.11 ac(VHT80)	5775	11.91	0	11.91				
Result: PASS								
Remark: the Directional Gain=2.92dBi<6 dBi. So P _{out} =P _{limit} =24dBm								

Test Mode		Duty cycle
U-NII-1	802.11 a	>98%
	802.11 n(HT20)	
	802.11 ac(VHT20)	
	802.11 n(HT40)	
	802.11 ac(VHT40)	
	802.11 ac(VHT80)	
U-NII-2A	802.11 a	
	802.11 n(HT20)	
	802.11 ac(VHT20)	
	802.11 n(HT40)	
	802.11 ac(VHT40)	
	802.11 ac(VHT80)	
U-NII-2C	802.11 a	
	802.11 n(HT20)	
	802.11 ac(VHT20)	
	802.11 n(HT40)	
	802.11 ac(VHT40)	
	802.11 ac(VHT80)	
U-NII-3	802.11 a	
	802.11 n(HT20)	
	802.11 ac(VHT20)	
	802.11 n(HT40)	
	802.11 ac(VHT40)	
	802.11 ac(VHT80)	
Please see the next plots.		

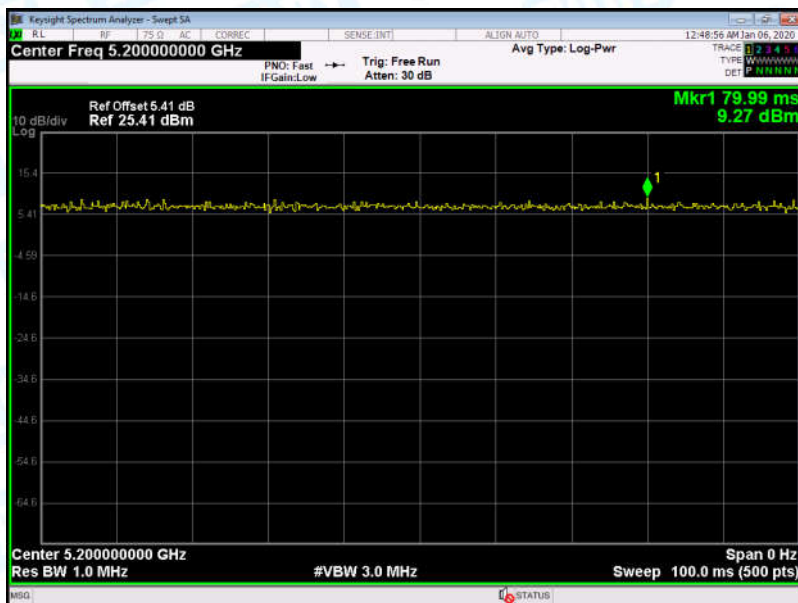
802.11 a 5200MHz U-NII-1



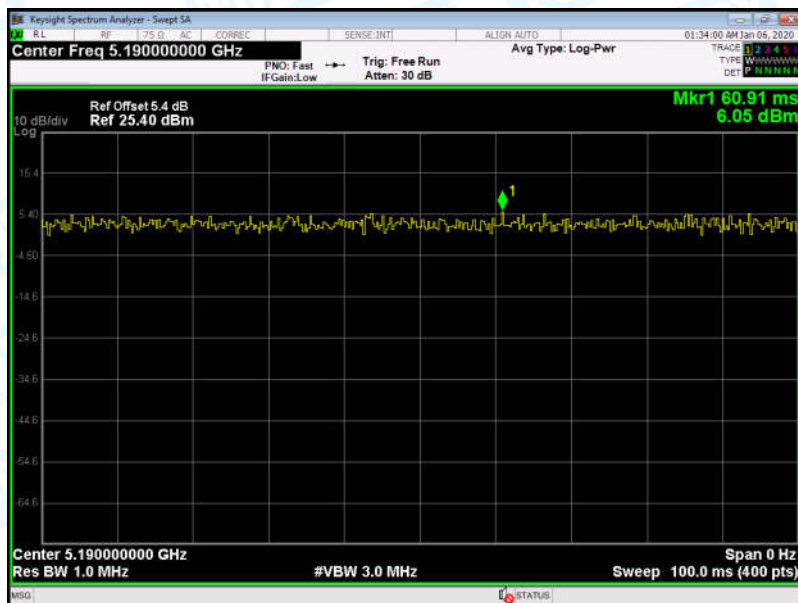
802.11 n(HT20) 5200MHz U-NII-1



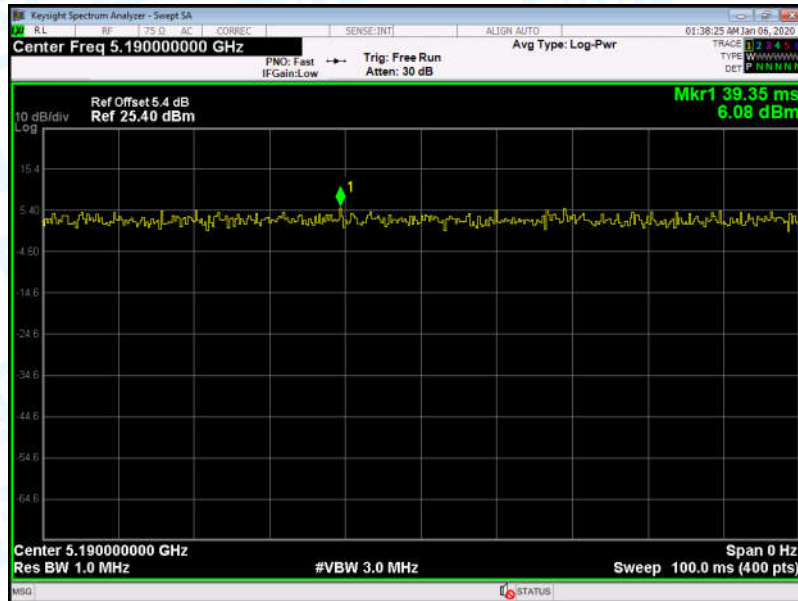
802.11 ac(HT20) 5200MHz U-NII-1



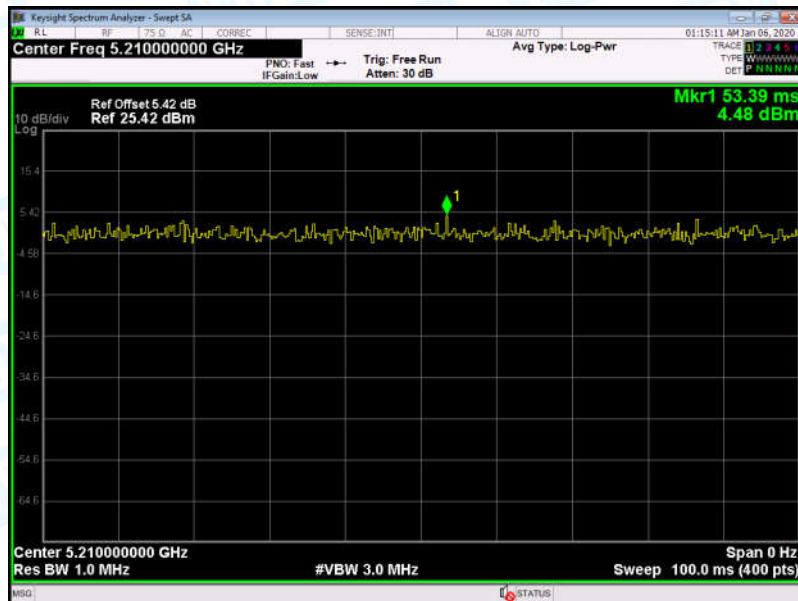
802.11 n(HT40) 5190MHz U-NII-1



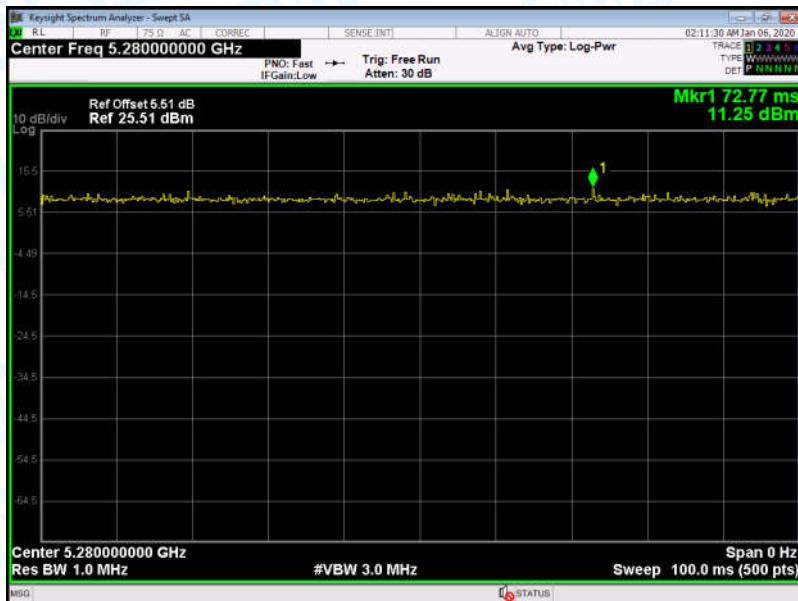
802.11 ac(VHT40) 5190MHz U-NII-1



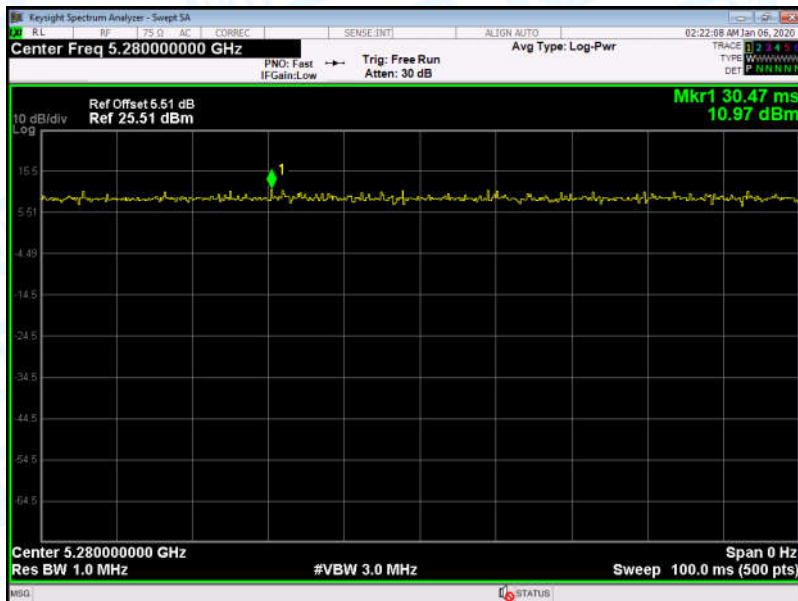
802.11 ac(HT80) 5210MHz U-NII-1



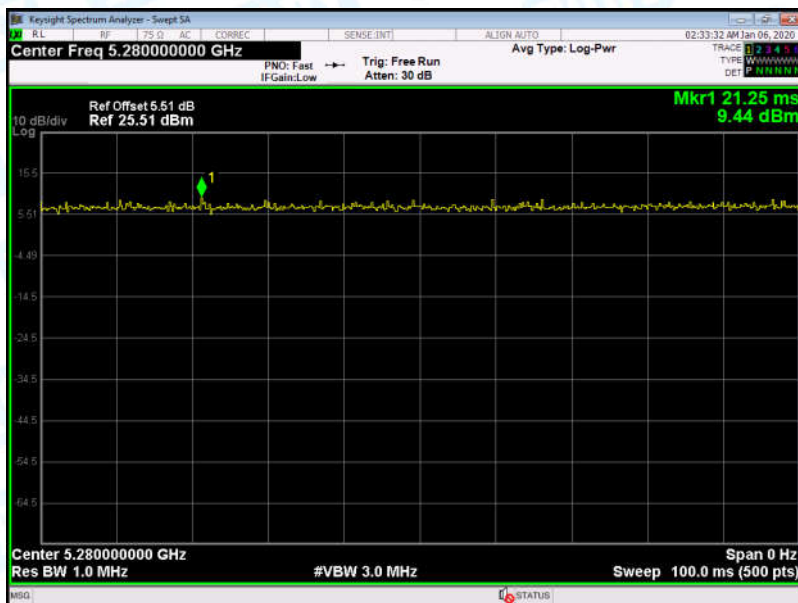
802.11 a 5280MHz U-NII-2A



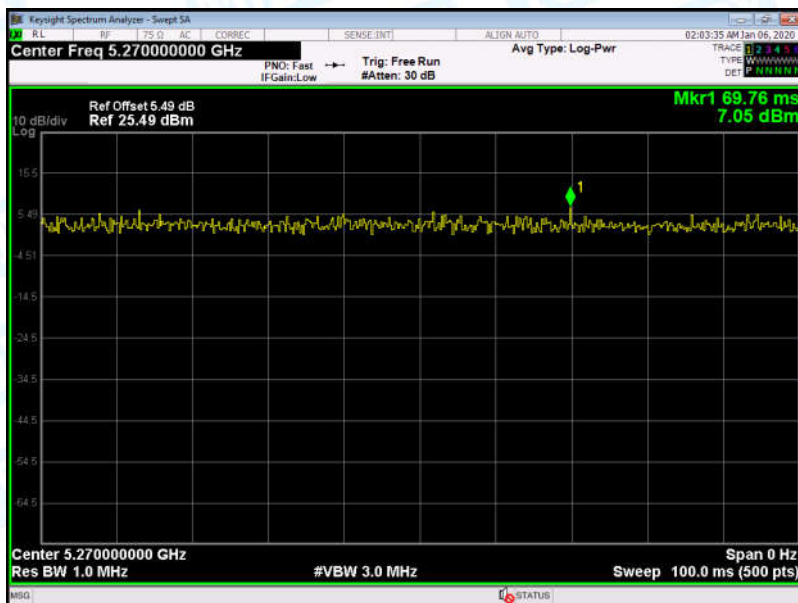
802.11 n(HT20) 5280MHz U-NII-2A



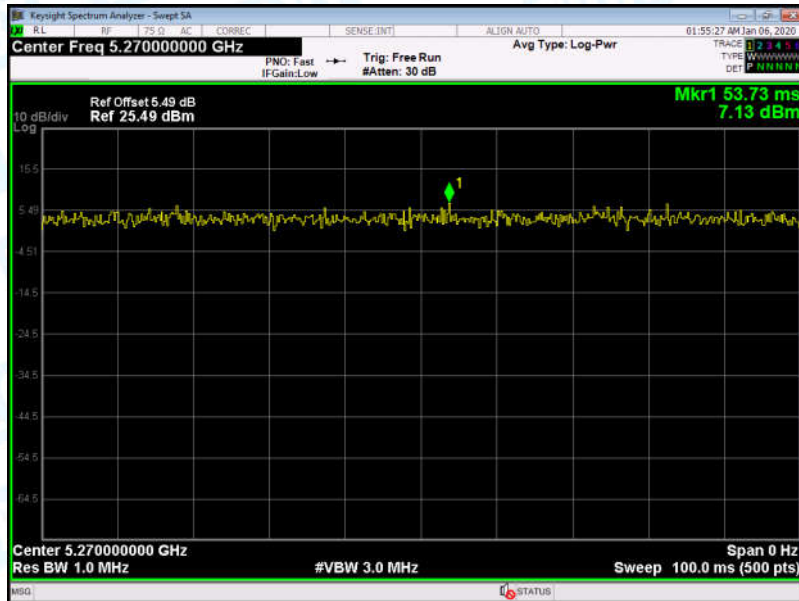
802.11 ac(VHT20) 5280MHz U-NII-2A



802.11 n(HT40) 5270MHz U-NII-2A



802.11 ac(VHT40) 5270MHz U-NII-2A



802.11 ac(VHT80) 5290MHz U-NII-2A

