

## **APPENDIX A – TEST DATA OF CONDUCTED EMISSION**

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Data rate below means worst-case rate of each test item.

Worst-case data rates are shown as following table.

Test Mode	Data Rate
802.11a	6Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0

### **Directional gain**

Band	Chain0 Ant Gain (dBi)	Chain1 Ant Gain (dBi)	Power Limit (dBm)	PSD Limit
5.2GHz	3.0	2.9	30.0	17.0(dBm/MHz)
5.8GHz	3.0	2.9	30.0	30.0(dBm/500kHz)

### **Duty Cycle**

Test Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor(dB)
802.11a	5180	98.22%	0.08
802. 11n HT20	5180	99.22%	0.03
802. 11n HT40	5190	98.68%	0.06
802. 11ac VHT20	5180	99.32%	0.03
802. 11ac VHT40	5190	98.65%	0.06
802. 11ac VHT80	5210	97.40%	0.11

## Output Power UNII-1

Mode	Freq	Chain	Conducted average
802.11a	5180	Chain0	15.86
		Chain1	17.20
	5220	Chain0	15.99
		Chain1	17.28
	5240	Chain0	16.00
		Chain1	17.27
802.11n20M	5180	Chain0	14.82
		Chain1	16.29
		Chain0+Chain1	18.63
	5240	Chain0	14.93
		Chain1	16.30
		Chain0+Chain1	18.68
802.11n40M	5190	Chain0	14.98
		Chain1	16.45
		Chain0+Chain1	18.79
	5230	Chain0	15.05
		Chain1	16.49
		Chain0+Chain1	18.84
802.11ac20M	5180	Chain0	13.76
		Chain1	15.37
		Chain0+Chain1	17.65
	5220	Chain0	13.84
		Chain1	15.42
		Chain0+Chain1	17.71
	5240	Chain0	13.81
		Chain1	15.30
		Chain0+Chain1	17.63
802.11ac40M	5190	Chain0	13.90
		Chain1	15.50
		Chain0+Chain1	17.78
	5230	Chain0	13.95
		Chain1	15.56
		Chain0+Chain1	17.84
802.11ac80M	5210	Chain0	13.57
		Chain1	15.09
		Chain0+Chain1	17.41

**Emission Bandwidth**

Offset 11.5dB = Attenuator 10dB+ Temporary antenna connector loss 0.5dB+ Cable loss 1dB

Test Mode:802.11a

Carrier frequency (MHz)	Chain	26dB Bandwidth (MHz)
5180	Chain0	19.57
	Chain1	19.47
5220	Chain0	19.70
	Chain1	19.06
5240	Chain0	20.05
	Chain1	19.66

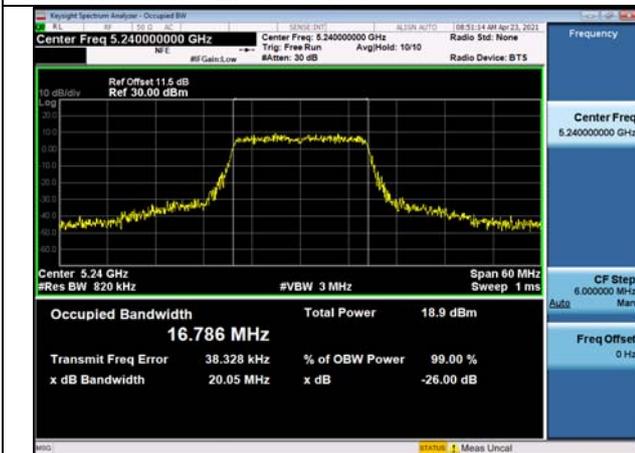
Test Mode:802.11a Chain0



Test Mode:802.11a Chain0



Test Mode:802.11a Chain0

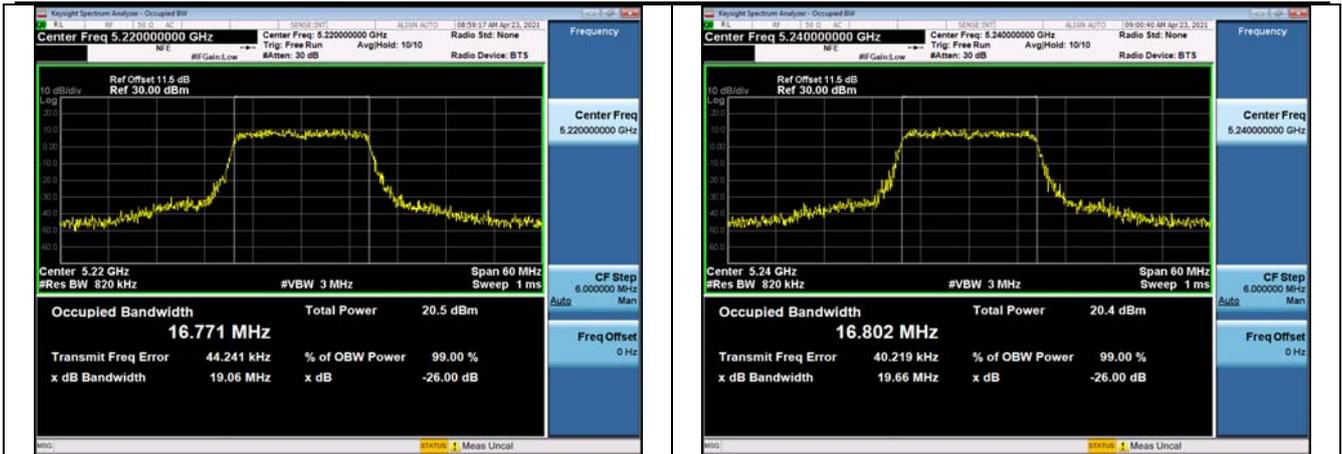


Test Mode:802.11a Chain1



Test Mode:802.11a Chain1

Test Mode:802.11a Chain1



Test Mode:802. 11n HT20

Carrier frequency (MHz)	Chain	26dB Bandwidth (MHz)
5180	Chain0	20.29
	Chain1	20.33
5240	Chain0	20.21
	Chain1	20.76

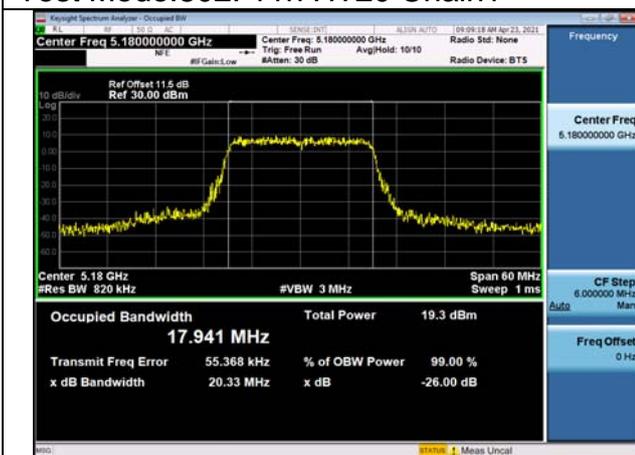
Test Mode:802. 11n HT20 Chain0



Test Mode:802. 11n HT20 Chain0



Test Mode:802. 11n HT20 Chain1



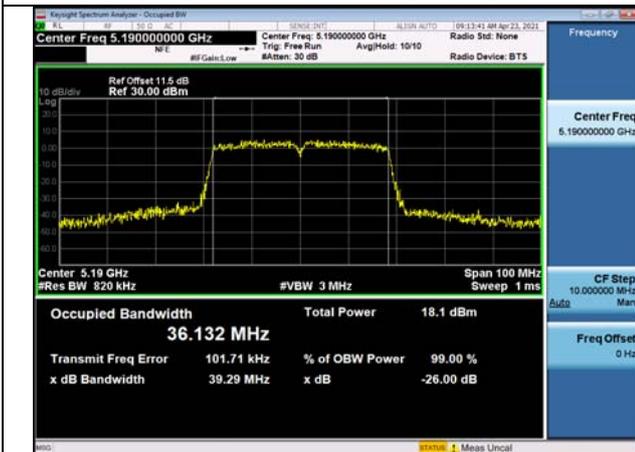
Test Mode:802. 11n HT20 Chain1



Test Mode:802. 11n HT40

Carrier frequency (MHz)	Chain	26dB Bandwidth (MHz)
5190	Chain0	39.29
	Chain1	39.21
5230	Chain0	38.94
	Chain1	39.16

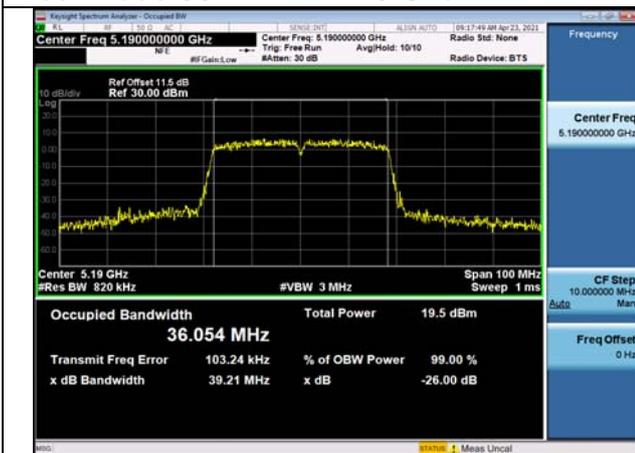
Test Mode:802. 11n HT40 Chain0



Test Mode:802. 11n HT40 Chain0



Test Mode:802. 11n HT40 Chain1



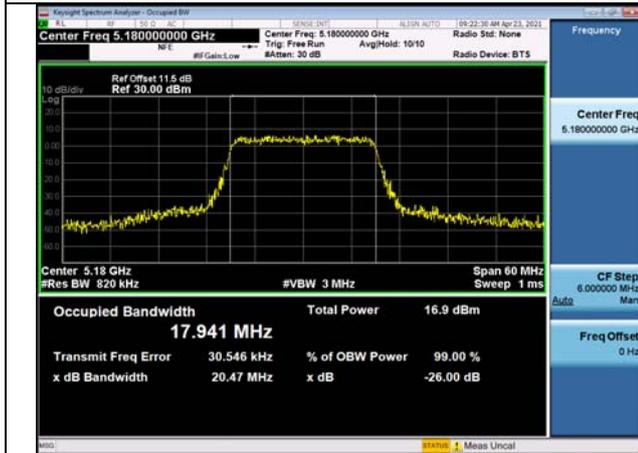
Test Mode:802. 11n HT40 Chain1



Test Mode:802. 11ac VHT20

Carrier frequency (MHz)	Chain	26dB Bandwidth (MHz)
5180	Chain0	20.47
	Chain1	21.21
5220	Chain0	20.91
	Chain1	20.64
5240	Chain0	20.67
	Chain1	20.39

Test Mode:802. 11ac VHT20 Chain0



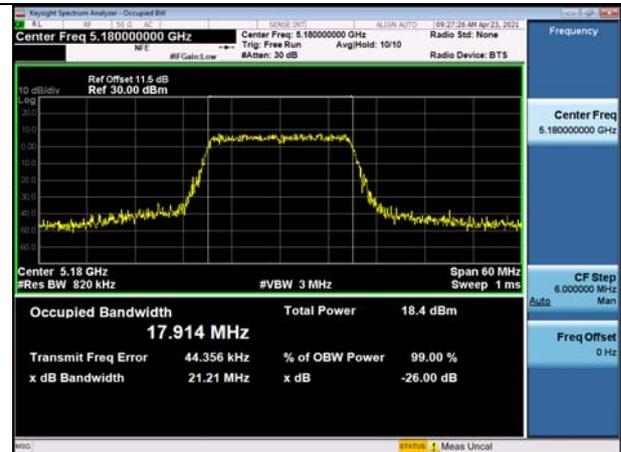
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Test Mode:802. 11ac VHT20 Chain0

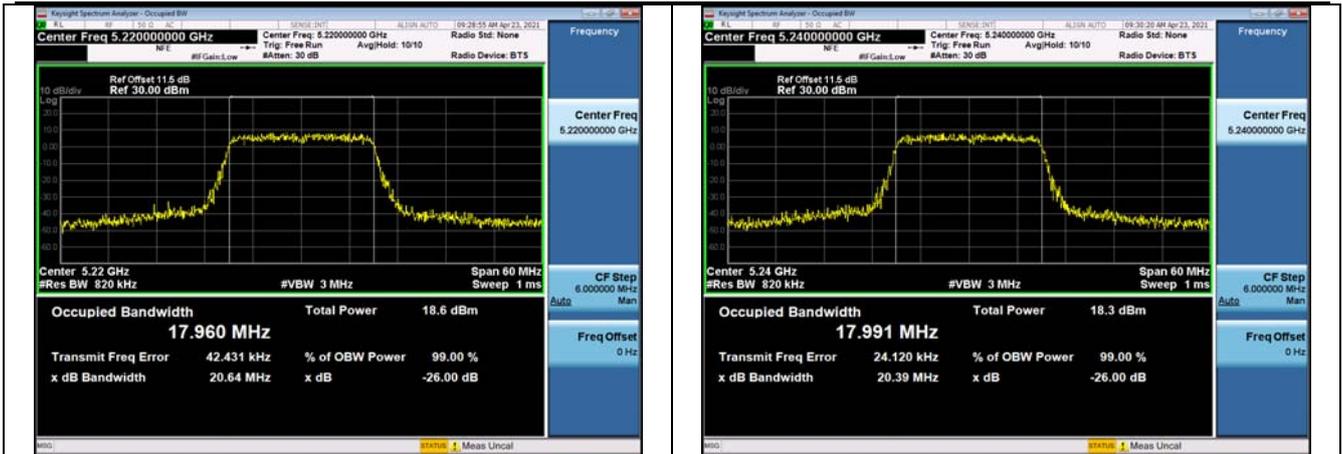


Test Mode:802. 11ac VHT20 Chain1



Test Mode:802. 11ac VHT20 Chain1

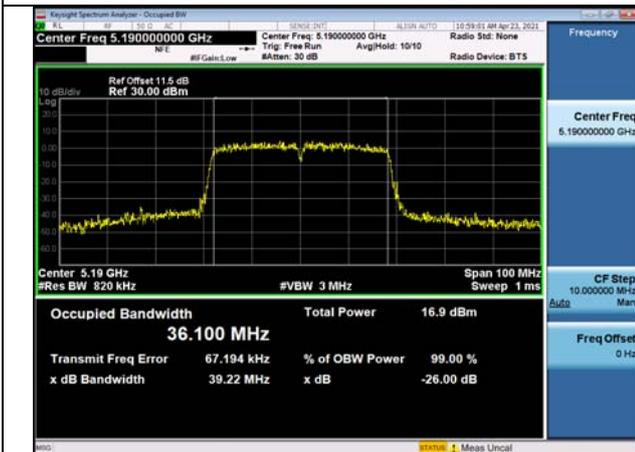
Test Mode:802. 11ac VHT20 Chain1



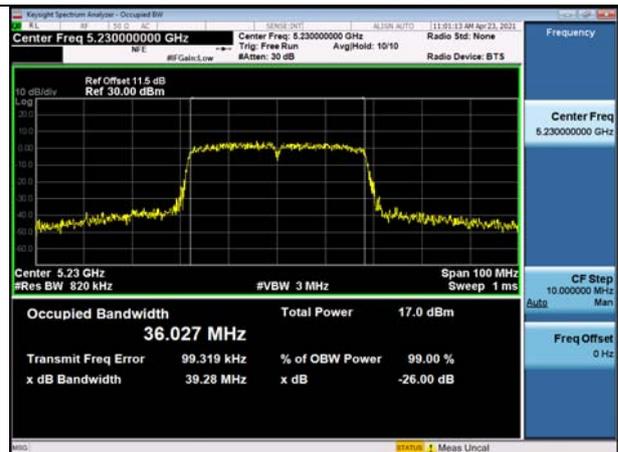
Test Mode:802. 11ac VHT40

Carrier frequency (MHz)	Chain	26dB Bandwidth (MHz)
5190	Chain0	39.22
	Chain1	39.00
5230	Chain0	39.28
	Chain1	38.88

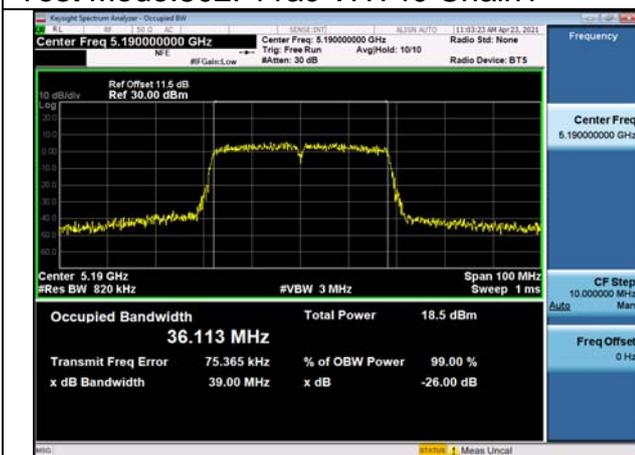
Test Mode:802. 11ac VHT40 Chain0



Test Mode:802. 11ac VHT40 Chain0



Test Mode:802. 11ac VHT40 Chain1



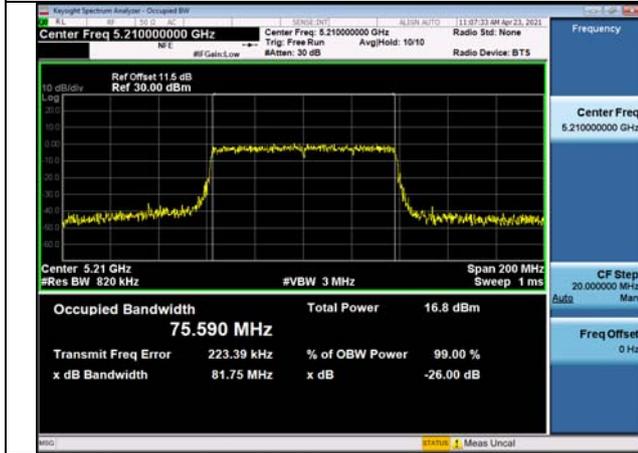
Test Mode:802. 11ac VHT40 Chain1



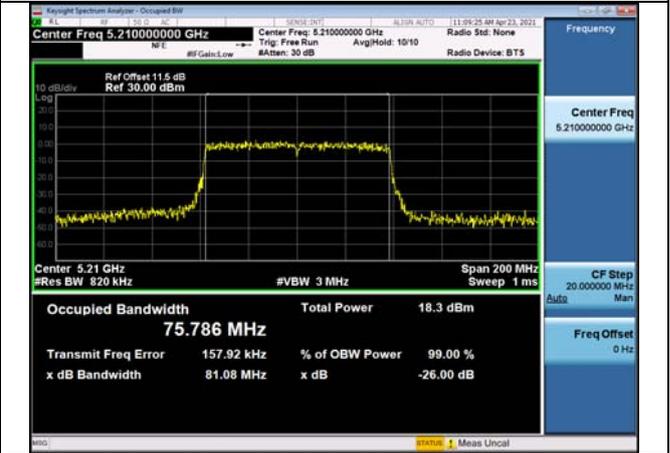
Test Mode:802. 11ac VHT80

Carrier frequency (MHz)	Chain	26dB Bandwidth (MHz)
5210	Chain0	81.75
	Chain1	81.08

Test Mode:802. 11ac VHT80 Chain0



Test Mode:802. 11ac VHT80 Chain1



### Occupied Bandwidth

Offset 11.5dB = Attenuator 10dB+ Temporary antenna connector loss 0.5dB+ Cable loss 1dB

Test Mode:802.11a

Carrier frequency (MHz)	Chain	Occupied Bandwidth (MHz)
5180	Chain0	16.813
	Chain1	16.874
5220	Chain0	16.875
	Chain1	16.806
5240	Chain0	16.840
	Chain1	16.826

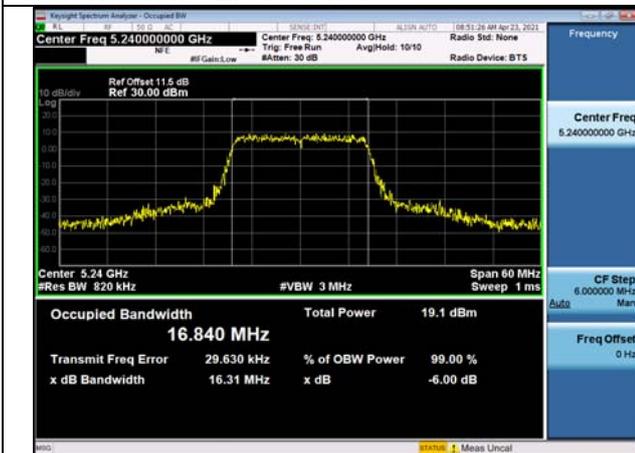
Test Mode:802.11a Chain0



Test Mode:802.11a Chain0



Test Mode:802.11a Chain0

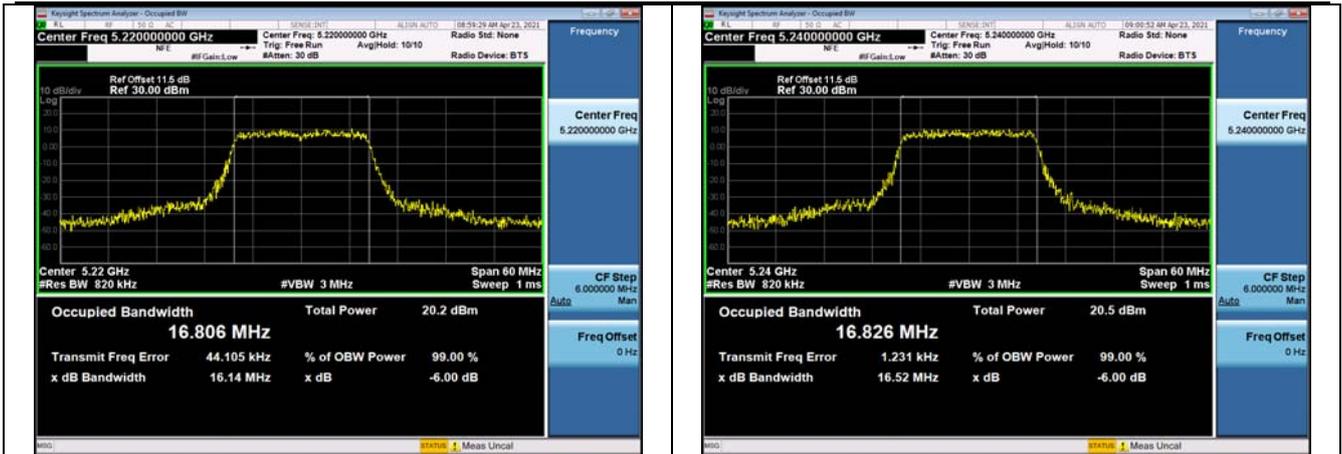


Test Mode:802.11a Chain1



Test Mode:802.11a Chain1

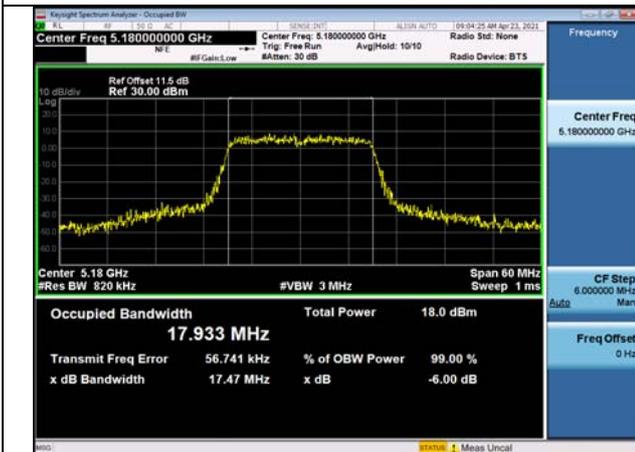
Test Mode:802.11a Chain1



Test Mode:802. 11n HT20

Carrier frequency (MHz)	Chain	Occupied Bandwidth (MHz)
5180	Chain0	17.933
	Chain1	17.976
5240	Chain0	17.933
	Chain1	17.937

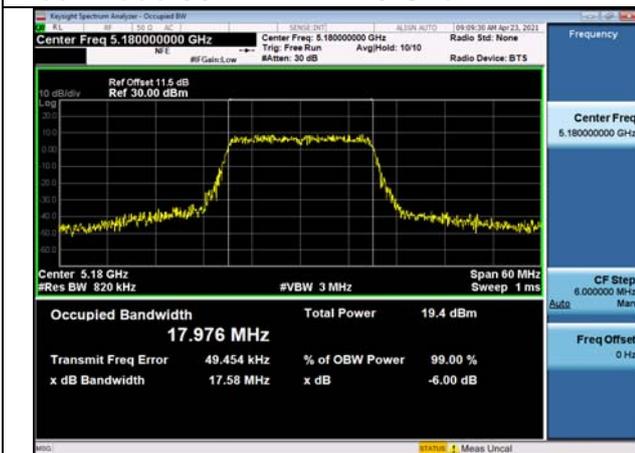
Test Mode:802. 11n HT20 Chain0



Test Mode:802. 11n HT20 Chain0



Test Mode:802. 11n HT20 Chain1



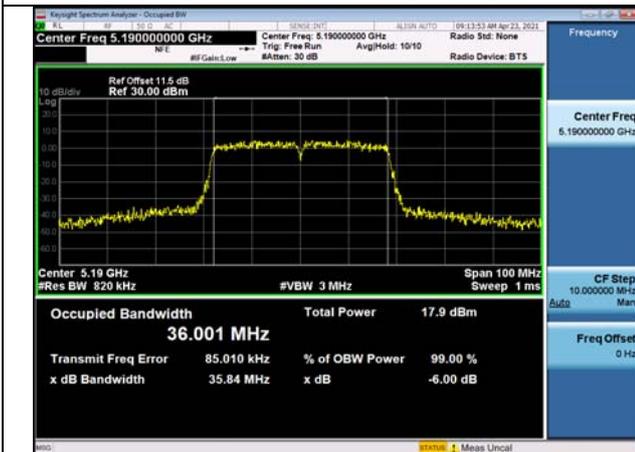
Test Mode:802. 11n HT20 Chain1



Test Mode:802. 11n HT40

Carrier frequency (MHz)	Chain	Occupied Bandwidth (MHz)
5190	Chain0	36.001
	Chain1	36.099
5230	Chain0	36.113
	Chain1	36.082

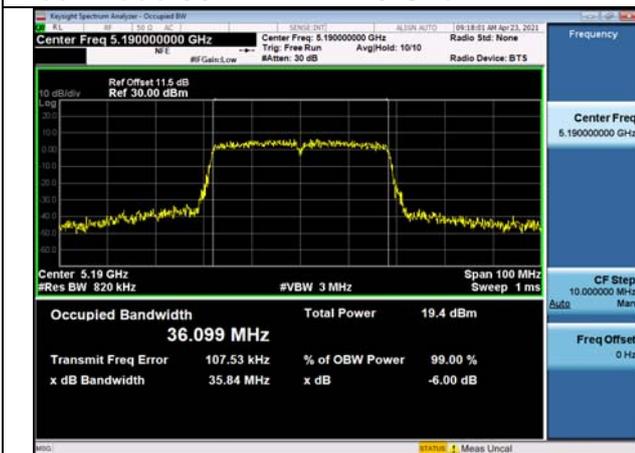
Test Mode:802. 11n HT40 Chain0



Test Mode:802. 11n HT40 Chain0



Test Mode:802. 11n HT40 Chain1



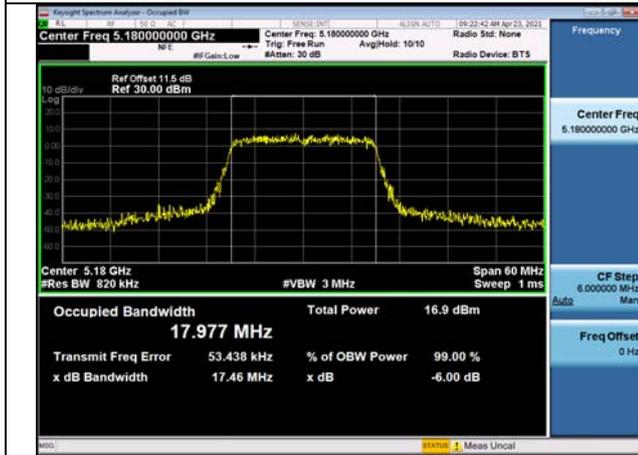
Test Mode:802. 11n HT40 Chain1



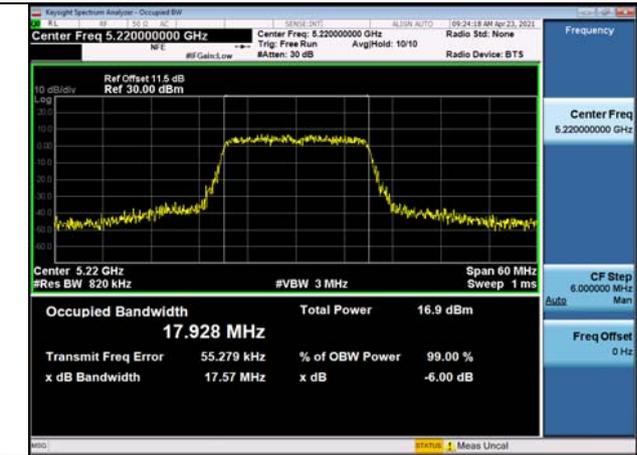
Test Mode:802. 11ac VHT20

Carrier frequency (MHz)	Chain	Occupied Bandwidth (MHz)
5180	Chain0	17.977
	Chain1	17.930
5220	Chain0	17.928
	Chain1	17.993
5240	Chain0	17.947
	Chain1	17.945

Test Mode:802. 11ac VHT20 Chain0



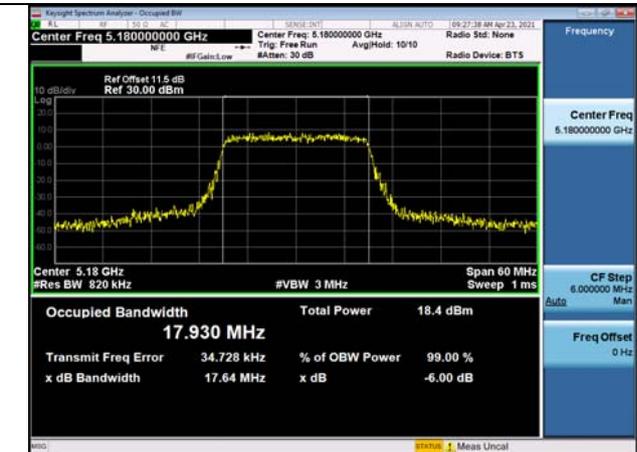
Test Mode:802. 11ac VHT20 Chain0



Test Mode:802. 11ac VHT20 Chain0

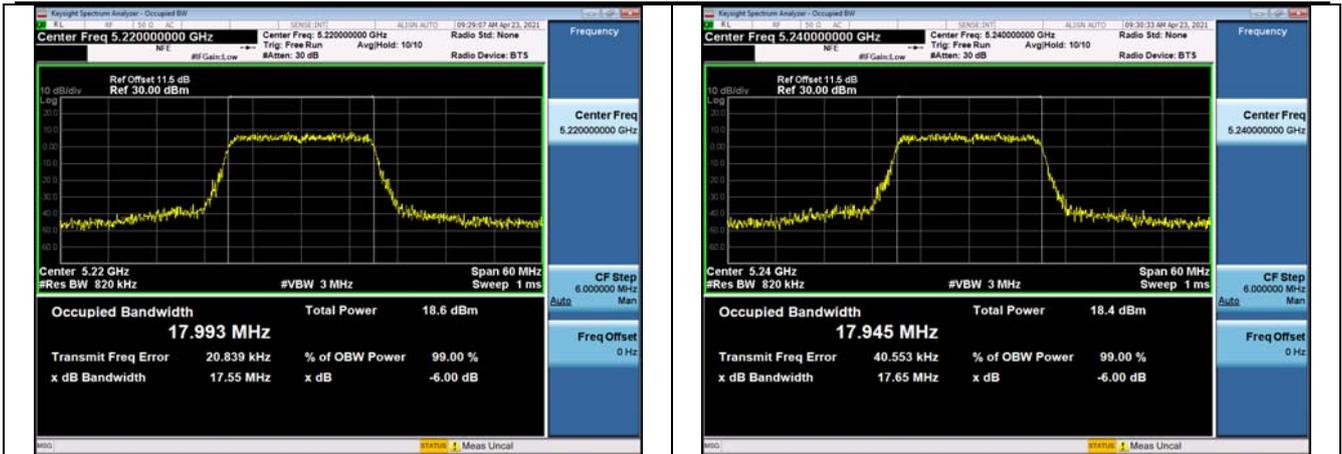


Test Mode:802. 11ac VHT20 Chain1



Test Mode:802. 11ac VHT20 Chain1

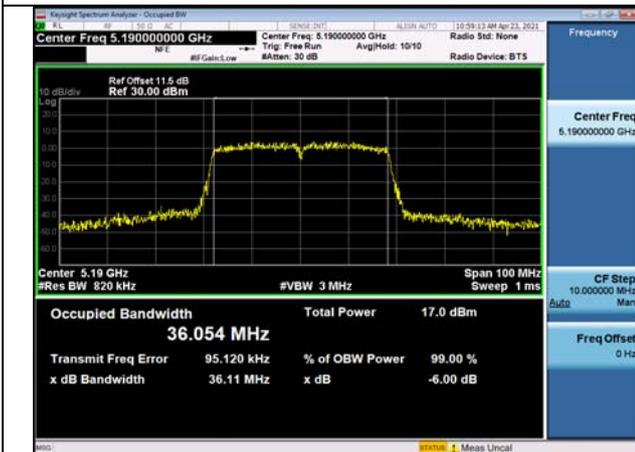
Test Mode:802. 11ac VHT20 Chain1



Test Mode:802. 11ac VHT40

Carrier frequency (MHz)	Chain	Occupied Bandwidth (MHz)
5190	Chain0	36.054
	Chain1	36.049
5230	Chain0	36.164
	Chain1	36.083

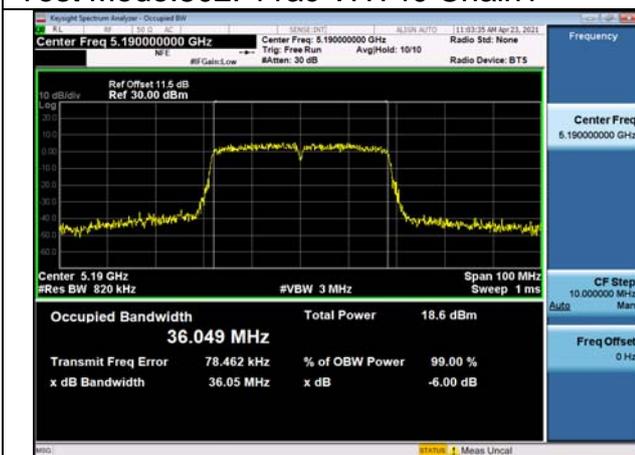
Test Mode:802. 11ac VHT40 Chain0



Test Mode:802. 11ac VHT40 Chain0



Test Mode:802. 11ac VHT40 Chain1



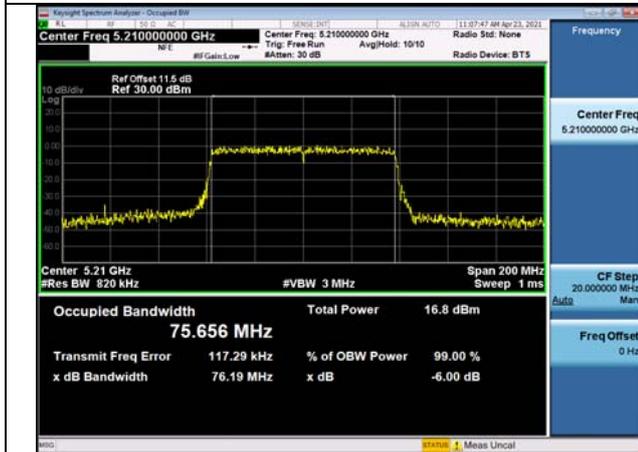
Test Mode:802. 11ac VHT40 Chain1



Test Mode:802. 11ac VHT80

Carrier frequency (MHz)	Chain	Occupied Bandwidth (MHz)
5210	Chain0	75.656
	Chain1	75.631

Test Mode:802. 11ac VHT80 Chain0



Test Mode:802. 11ac VHT80 Chain1



### Transmitter Power Spectral Density

Offset 11.5dB = Attenuator 10dB+ Temporary antenna connector loss 0.5dB+ Cable loss 1dB

Test Mode:802.11a

Carrier frequency (MHz)	Correction Factor(dB)	Chain	Power Density (dBm)
5180	0.08	Chain0	5.101
		Chain1	6.451
		Chain0+Chain1	8.839
5220		Chain0	5.206
		Chain1	6.577
		Chain0+Chain1	8.956
5240		Chain0	5.381
		Chain1	6.638
		Chain0+Chain1	9.065

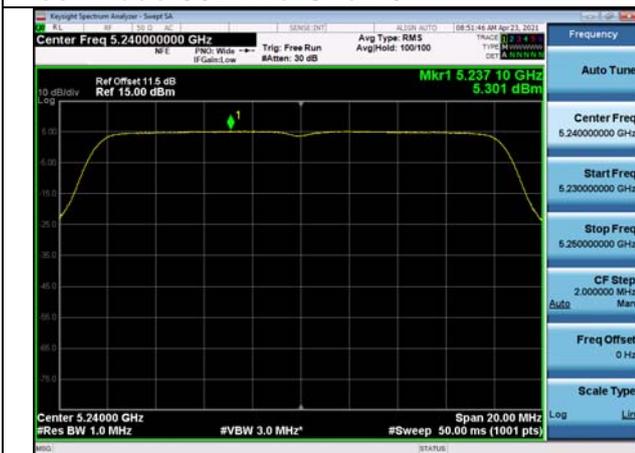
Test Mode:802.11a Chain0



Test Mode:802.11a Chain0



Test Mode:802.11a Chain0

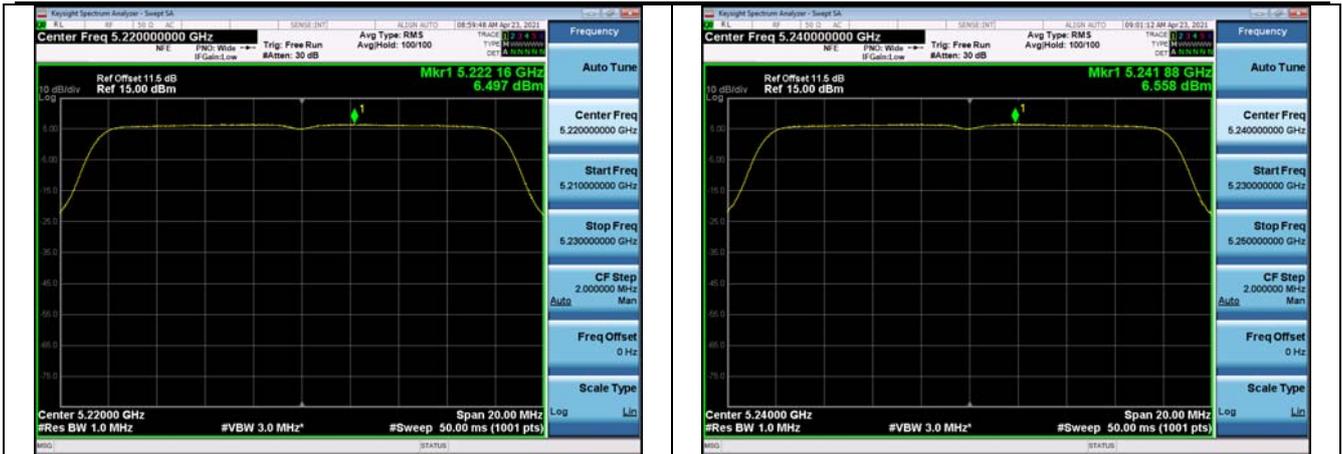


Test Mode:802.11a Chain1



Test Mode:802.11a Chain1

Test Mode:802.11a Chain1



Test Mode:802. 11n HT20

Carrier frequency (MHz)	Correction Factor(dB)	Chain	Power Density (dBm)
5180	0.03	Chain0	3.902
		Chain1	5.45
		Chain0+Chain1	7.755
5240		Chain0	4.039
		Chain1	5.29
		Chain0+Chain1	7.720

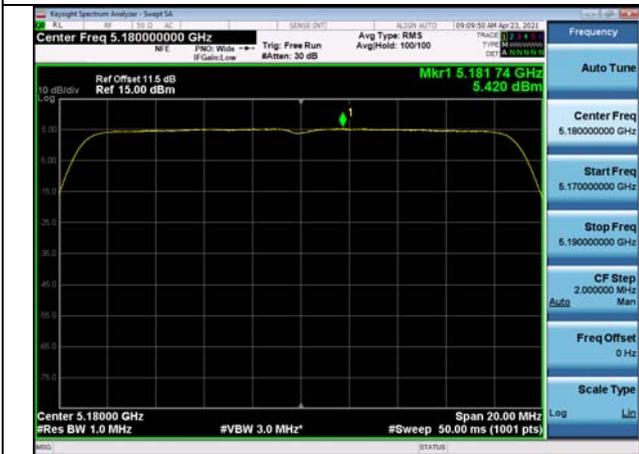
Test Mode:802. 11n HT20 Chain0



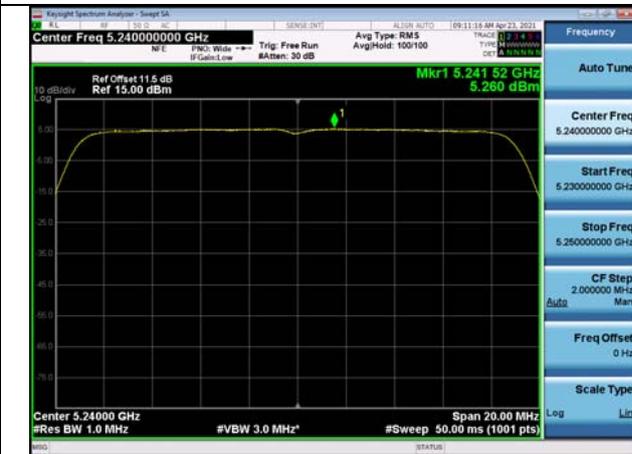
Test Mode:802. 11n HT20 Chain0



Test Mode:802. 11n HT20 Chain1



Test Mode:802. 11n HT20 Chain1



Test Mode:802. 11n HT40

Carrier frequency (MHz)	Correction Factor(dB)	Chain	Power Density (dBm)
5190	0.06	Chain0	1.165
		Chain1	2.717
		Chain0+Chain1	5.020
5230		Chain0	1.22
		Chain1	2.88
		Chain0+Chain1	5.139

Test Mode:802. 11n HT40 Chain0



Test Mode:802. 11n HT40 Chain0



Test Mode:802. 11n HT40 Chain1



Test Mode:802. 11n HT40 Chain1



Test Mode:802. 11ac VHT20

Carrier frequency (MHz)	Correction Factor(dB)	Chain	Power Density (dBm)
5180	0.03	Chain0	2.889
		Chain1	4.42
		Chain0+Chain1	6.732
5220		Chain0	2.924
		Chain1	4.454
		Chain0+Chain1	6.766
5240		Chain0	2.999
		Chain1	4.325
		Chain0+Chain1	6.723

Test Mode:802. 11ac VHT20 Chain0



Test Mode:802. 11ac VHT20 Chain0



Test Mode:802. 11ac VHT20 Chain0

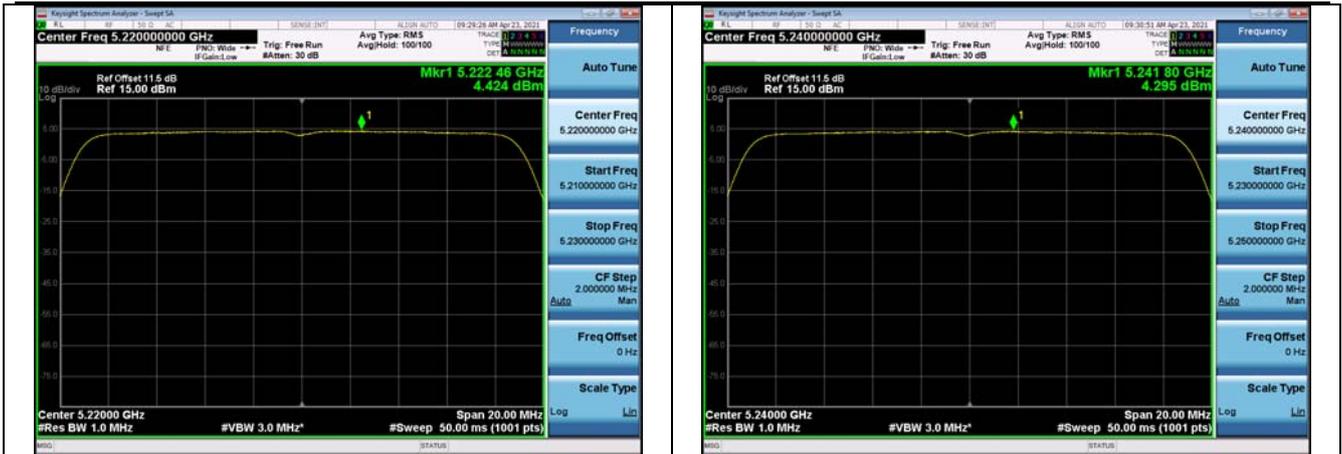


Test Mode:802. 11ac VHT20 Chain1



Test Mode:802. 11ac VHT20 Chain1

Test Mode:802. 11ac VHT20 Chain1



Test Mode:802.11ac VHT40

Carrier frequency (MHz)	Correction Factor(dB)	Chain	Power Density (dBm)
5190	0.06	Chain0	0.12
		Chain1	1.738
		Chain0+Chain1	4.014
5230		Chain0	0.149
		Chain1	1.871
		Chain0+Chain1	4.105

Test Mode:802.11ac VHT40 Chain0



Test Mode:802.11ac VHT40 Chain0



Test Mode:802.11ac VHT40 Chain1



Test Mode:802.11ac VHT40 Chain1



Test Mode:802. 11ac VHT80

Carrier frequency (MHz)	Correction Factor(dB)	Chain	Power Density (dBm)
5210	0.11	Chain0	-3.191
		Chain1	-1.623
		Chain0+Chain1	0.674

Test Mode:802. 11ac VHT80 Chain0



Test Mode:802. 11ac VHT80 Chain1



Frequency Stability  
UNII-1

Mode	Data Rate	Chain	Center Frequency (MHz)	Measured Frequency (MHz)	Frequency Stability (ppm)	Voltage (V)	Temperature (°C)
802.11a	6Mbps	Chain0	5180	5179.97219	5.37	HV	+20
			5180	5179.97223	5.36	LV	+20
			5180	5179.97216	5.37	NV	+30
			5180	5179.97208	5.39	NV	+50
			5180	5179.97212	5.38	NV	+40
			5180	5179.97249	5.31	NV	-10
			5180	5179.97258	5.29	NV	-20
			5180	5179.97269	5.27	NV	+55
			5180	5179.97227	5.35	NV	+20
			5180	5179.97235	5.34	NV	+10
		5180	5179.97241	5.33	NV	0	
		Chain1	5180	5179.97121	5.56	HV	+20
			5180	5179.97123	5.55	LV	+20
			5180	5179.97127	5.55	NV	+20
			5180	5179.97114	5.57	NV	+50
			5180	5179.97115	5.57	NV	+40
			5180	5179.97118	5.56	NV	+30
			5180	5179.97143	5.52	NV	-20
			5180	5179.97142	5.52	NV	+55
			5180	5179.97140	5.52	NV	-10
5180	5179.97132		5.54	NV	+10		
5180	5179.97137	5.53	NV	0			