

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

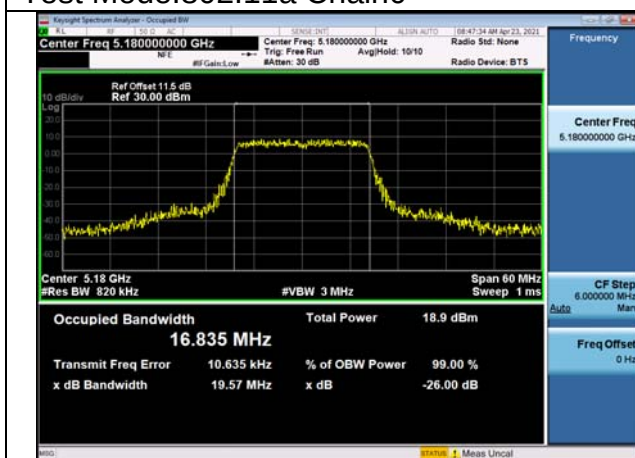
Emission Bandwidth

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

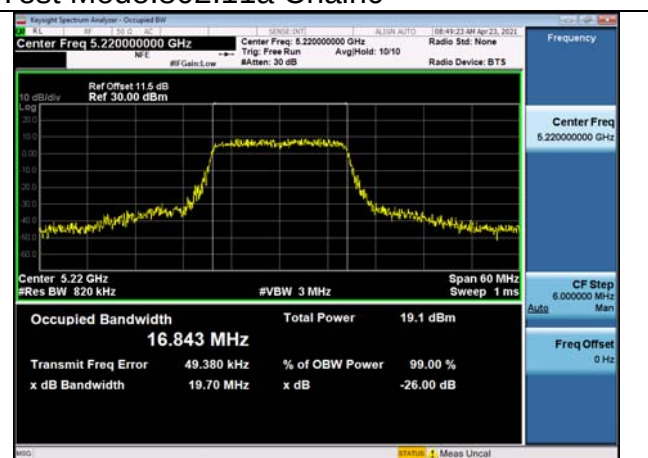
Test Mode:802.11a

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

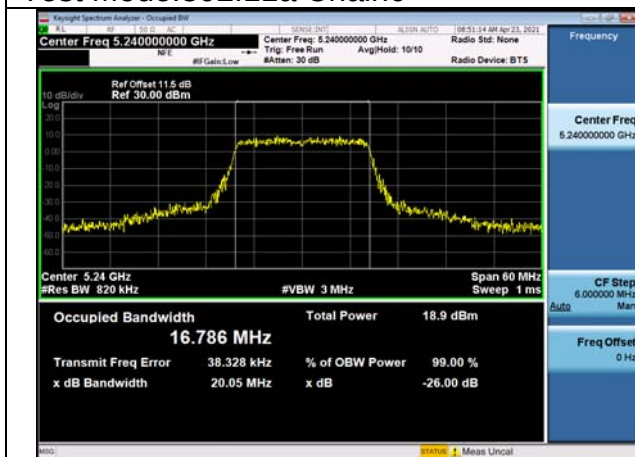
Test Mode:802.11a Chain0



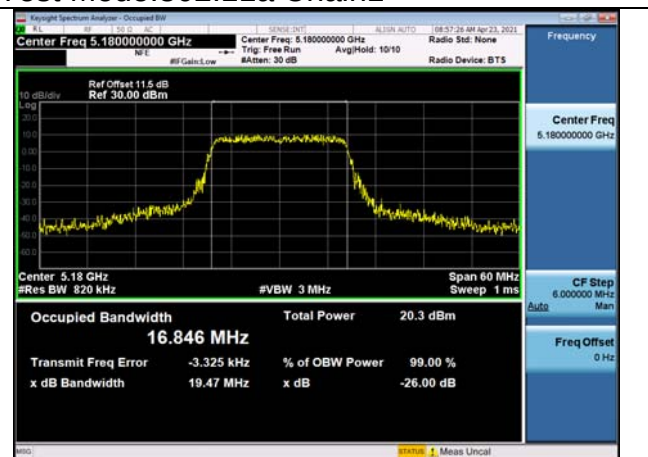
Test Mode:802.11a Chain0



Test Mode:802.11a Chain0

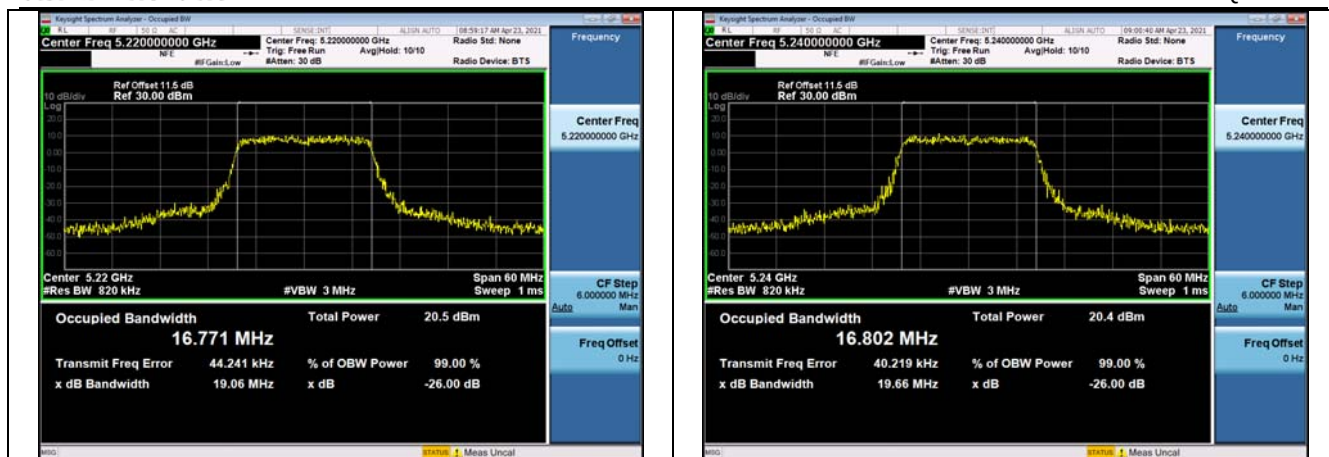


Test Mode:802.11a Chain1



Test Mode:802.11a Chain1

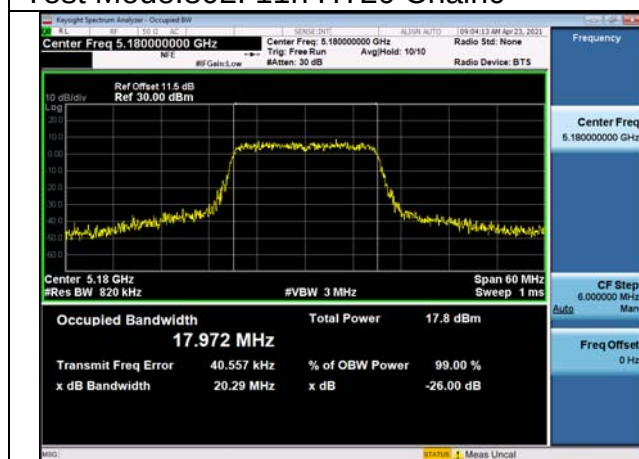
Test Mode:802.11a Chain1



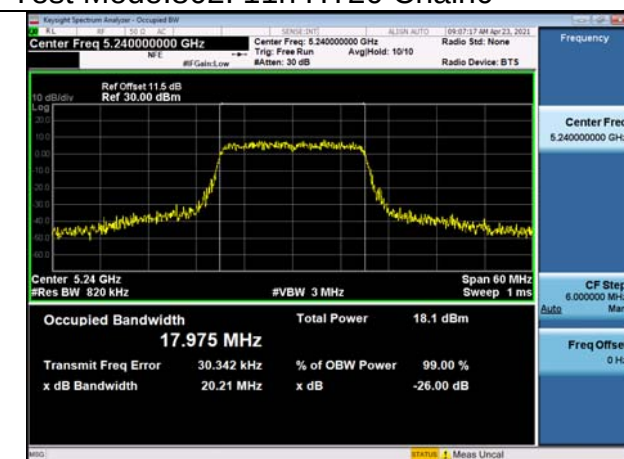
Test Mode:802. 11n HT20

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

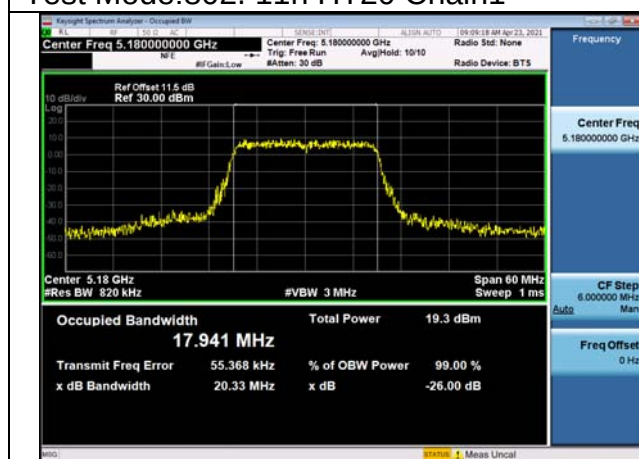
Test Mode:802. 11n HT20 Chain0



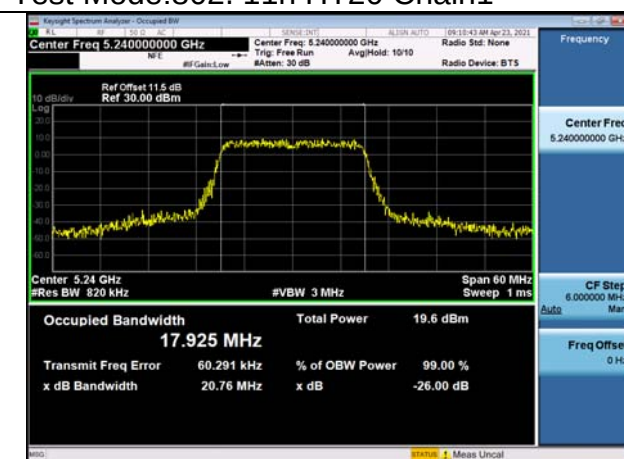
Test Mode:802. 11n HT20 Chain0



Test Mode:802. 11n HT20 Chain1



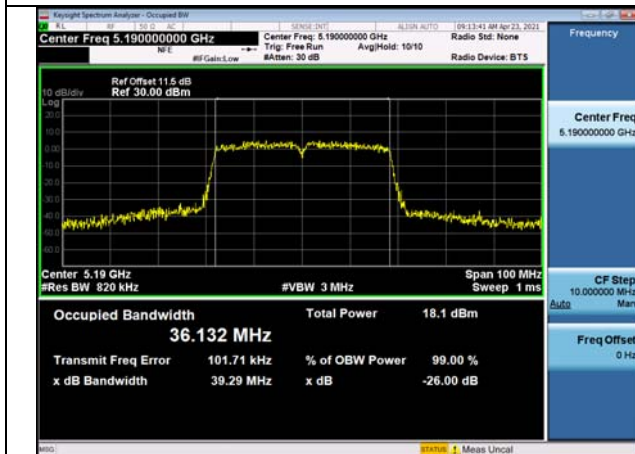
Test Mode:802. 11n HT20 Chain1



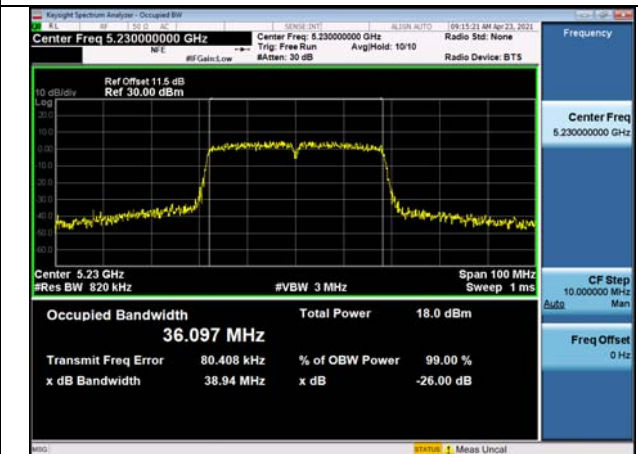
Test Mode:802. 11n HT40

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

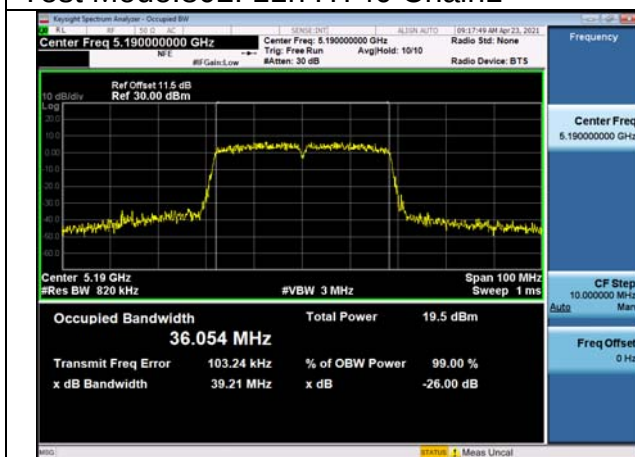
Test Mode:802. 11n HT40 Chain0



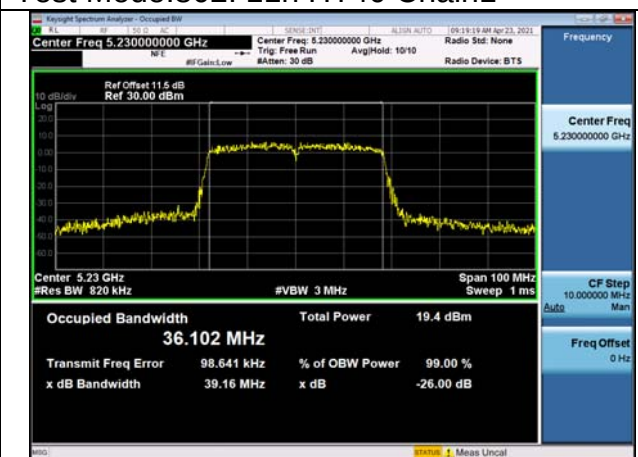
Test Mode:802. 11n HT40 Chain0



Test Mode:802. 11n HT40 Chain1



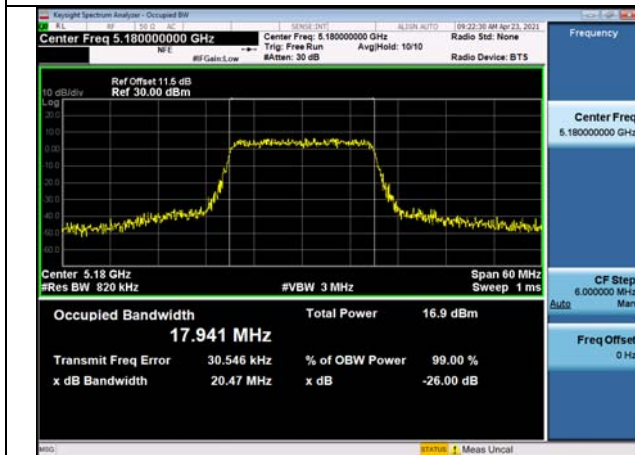
Test Mode:802. 11n HT40 Chain1



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

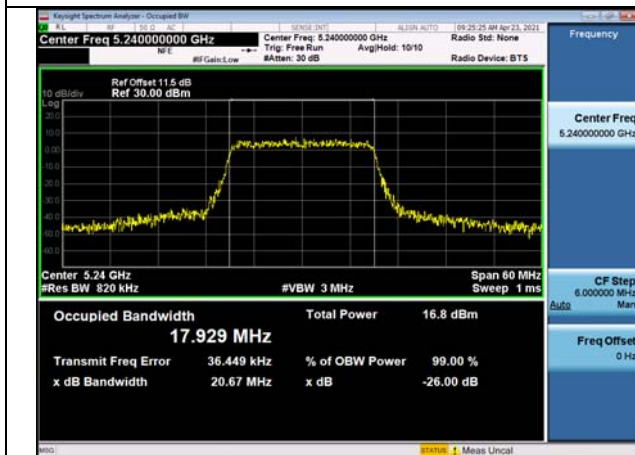
Test Mode:802. 11ac VHT20 Chain0



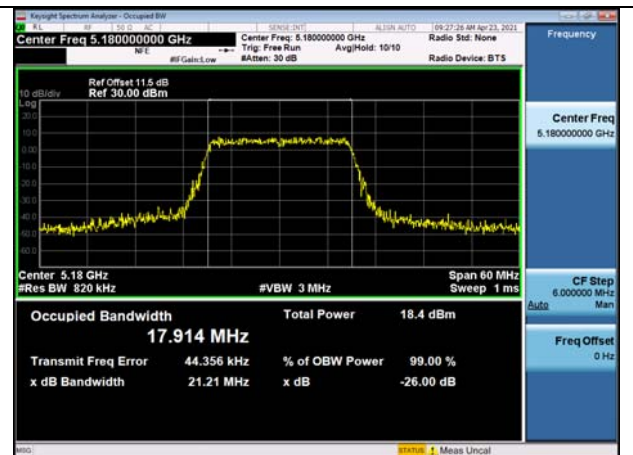
Test Mode:802. 11ac VHT20 Chain0



Test Mode:802. 11ac VHT20 Chain0

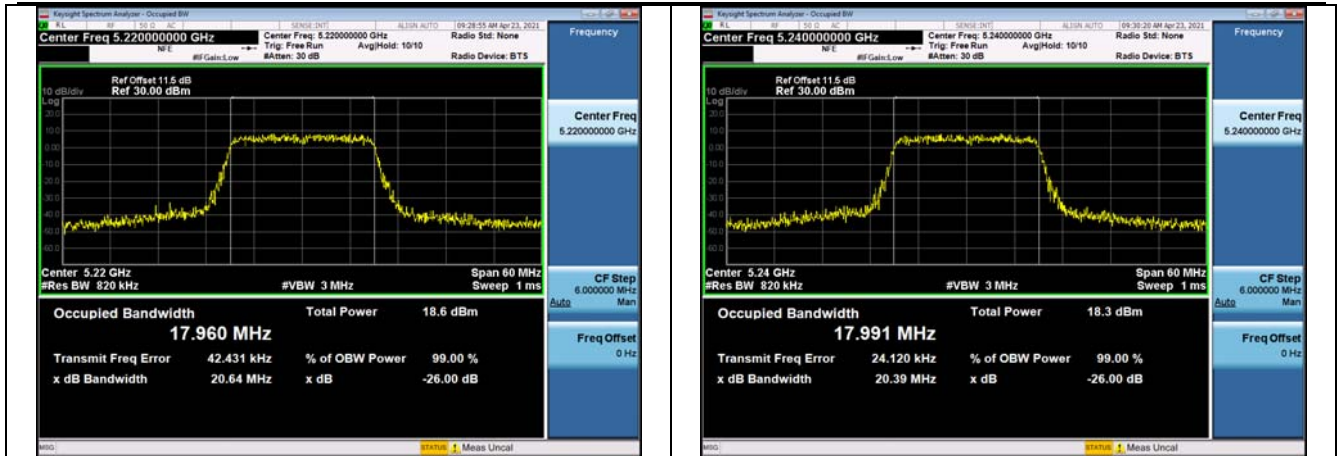


Test Mode:802. 11ac VHT20 Chain1



Test Mode:802. 11ac VHT20 Chain1

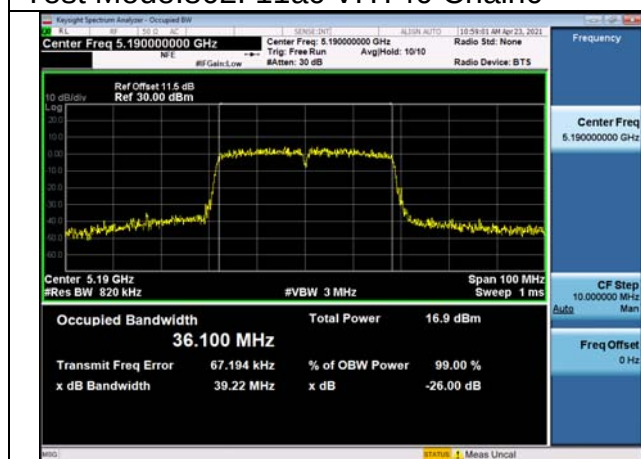
Test Mode:802. 11ac VHT20 Chain1



Test Mode:802. 11ac VHT40

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

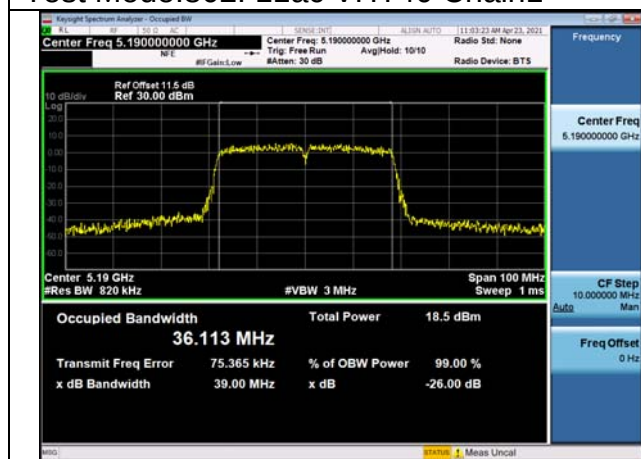
Test Mode:802. 11ac VHT40 Chain0



Test Mode:802. 11ac VHT40 Chain0



Test Mode:802. 11ac VHT40 Chain1



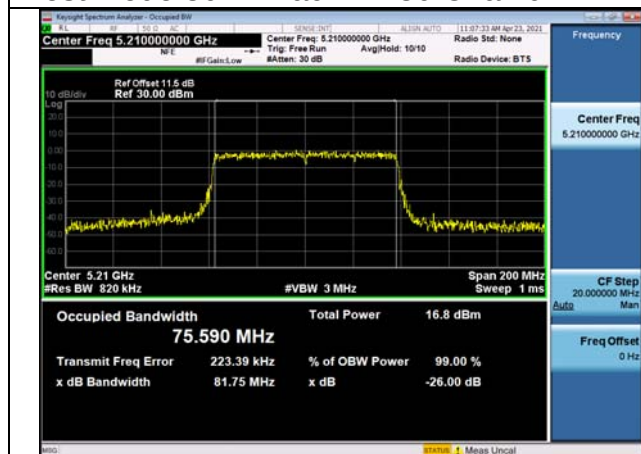
Test Mode:802. 11ac VHT40 Chain1



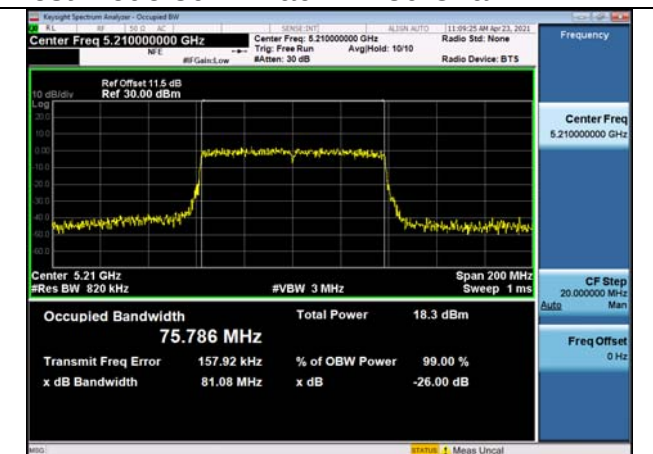
Test Mode:802. 11ac VHT80

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



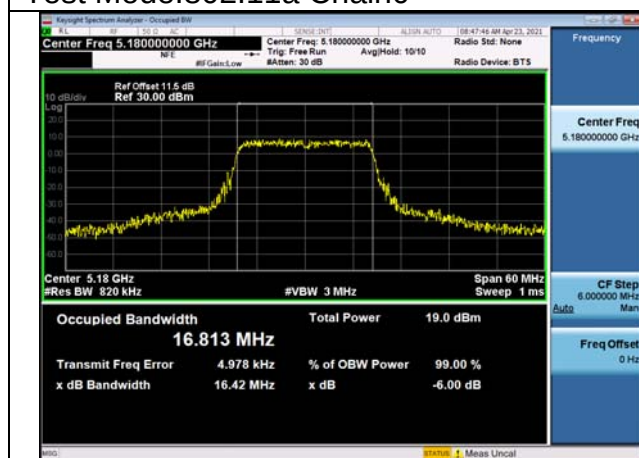
Occupied Bandwidth

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

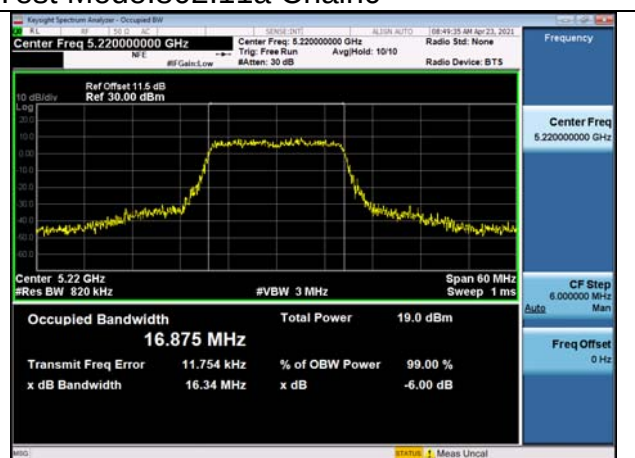
Test Mode:802.11a

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

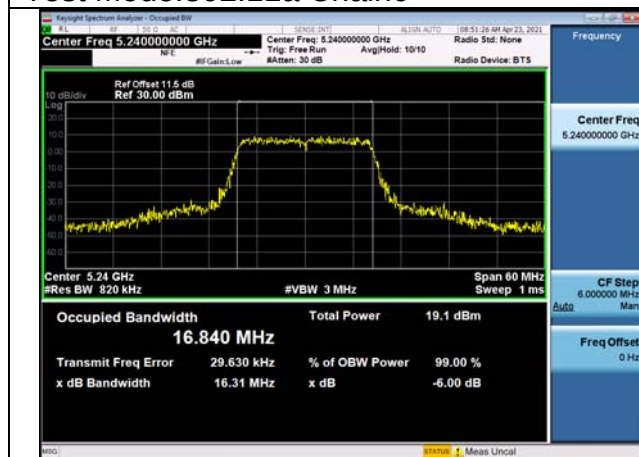
Test Mode:802.11a Chain0



Test Mode:802.11a Chain0



Test Mode:802.11a Chain0

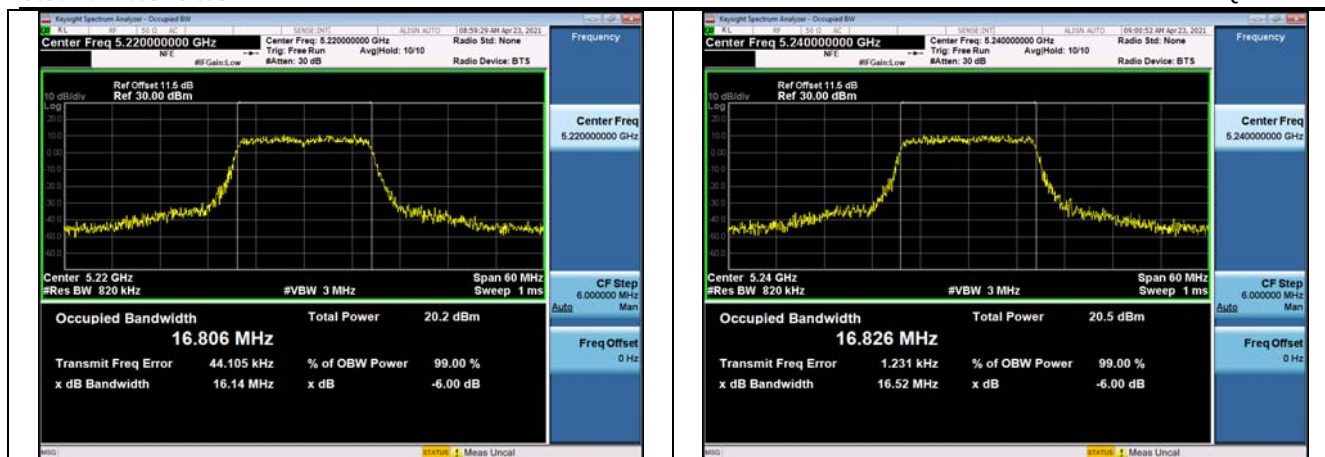


Test Mode:802.11a Chain1



Test Mode:802.11a Chain1

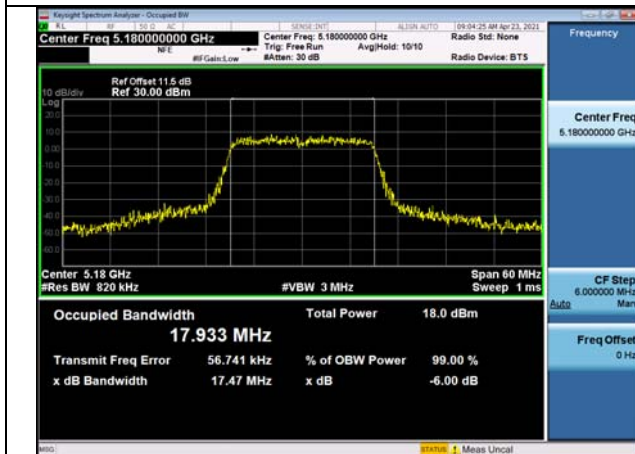
Test Mode:802.11a Chain1



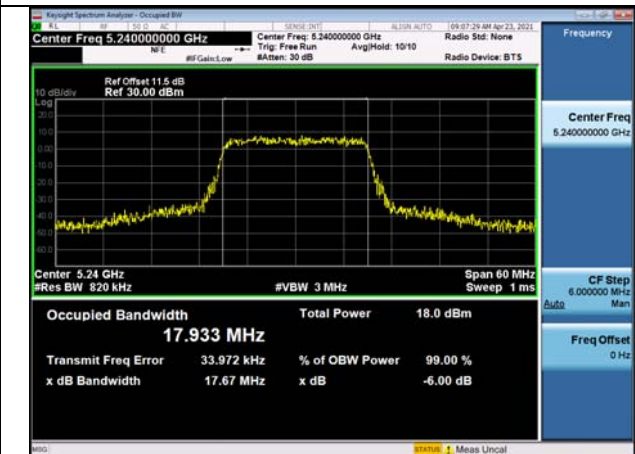
Test Mode:802. 11n HT20

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

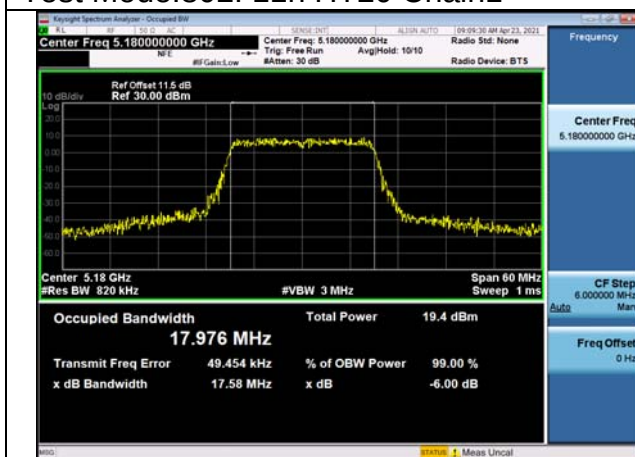
Test Mode:802. 11n HT20 Chain0



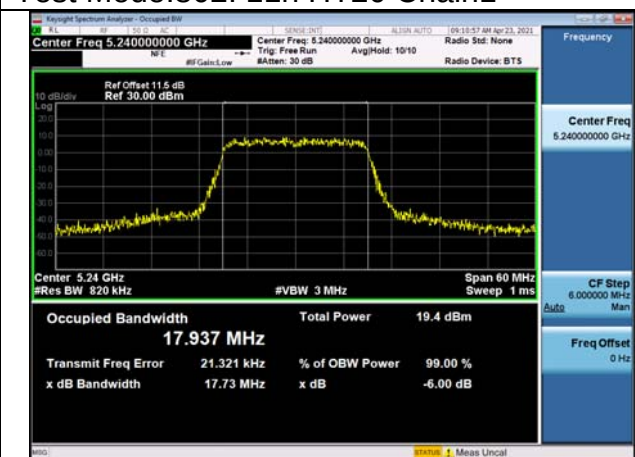
Test Mode:802. 11n HT20 Chain0



Test Mode:802. 11n HT20 Chain1



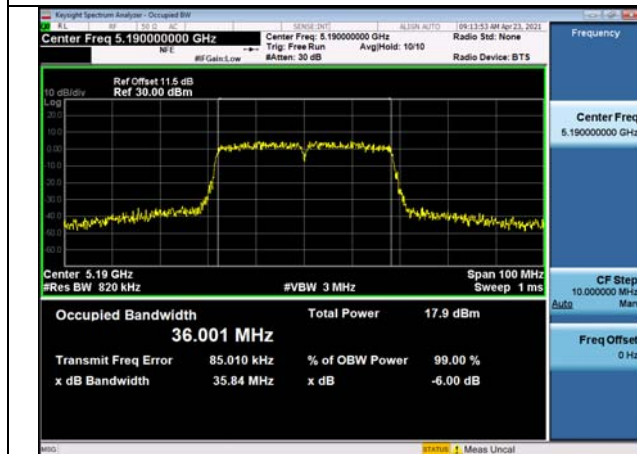
Test Mode:802. 11n HT20 Chain1



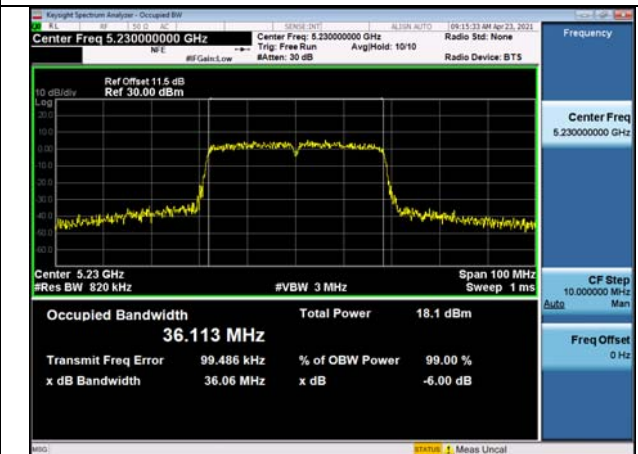
Test Mode:802. 11n HT40

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

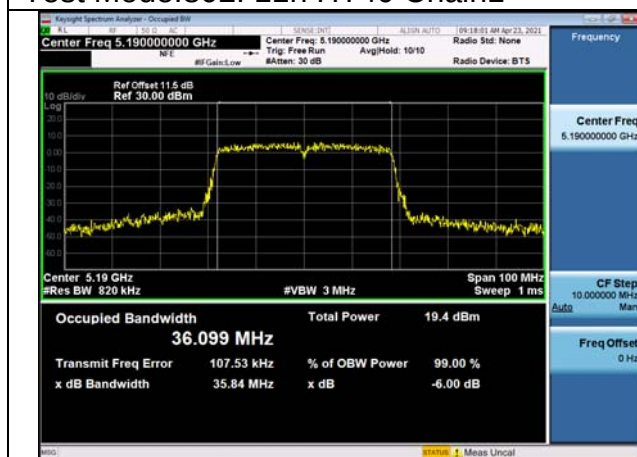
Test Mode:802. 11n HT40 Chain0



Test Mode:802. 11n HT40 Chain0



Test Mode:802. 11n HT40 Chain1



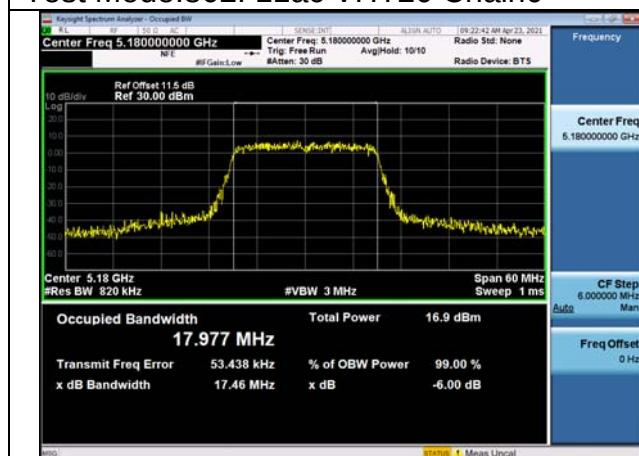
Test Mode:802. 11n HT40 Chain1



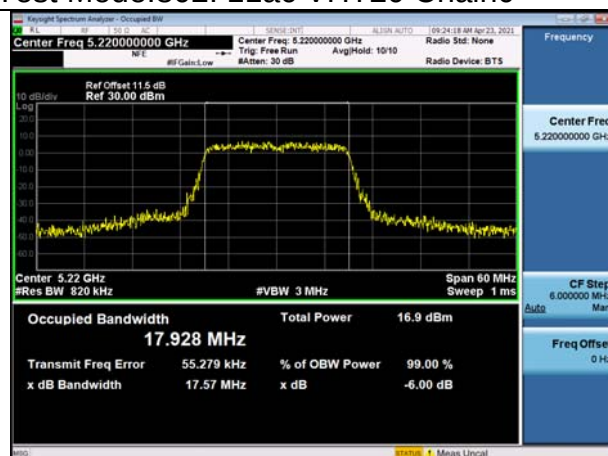
Test Mode:802. 11ac VHT20

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

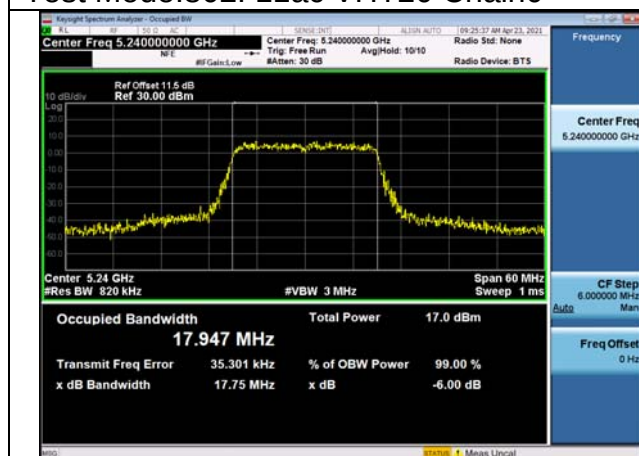
Test Mode:802. 11ac VHT20 Chain0



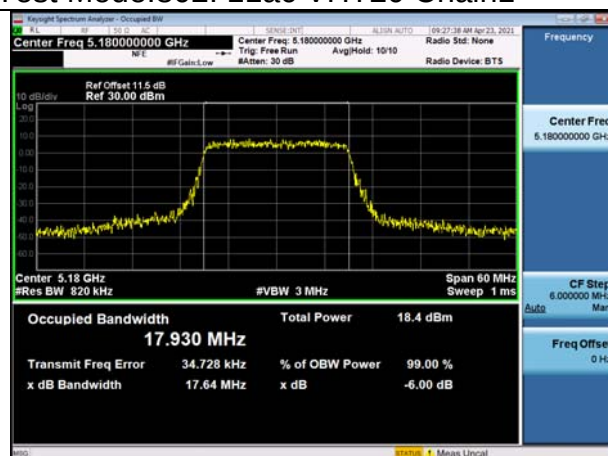
Test Mode:802. 11ac VHT20 Chain0



Test Mode:802. 11ac VHT20 Chain0

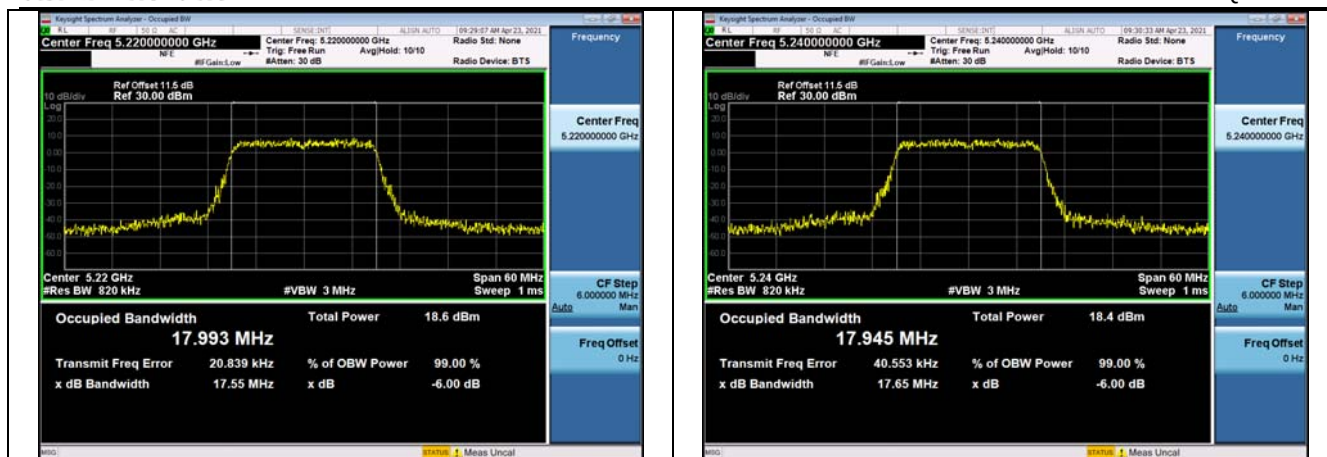


Test Mode:802. 11ac VHT20 Chain1



Test Mode:802. 11ac VHT20 Chain1

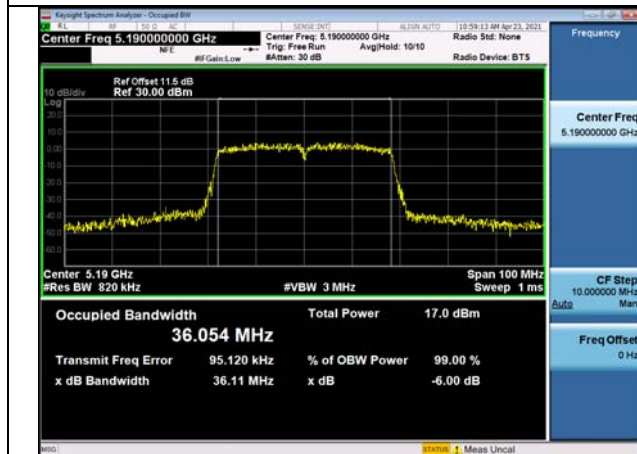
Test Mode:802. 11ac VHT20 Chain1



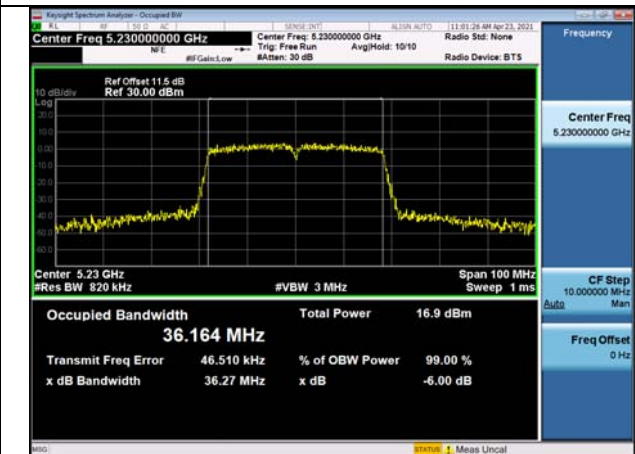
Test Mode:802. 11ac VHT40

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

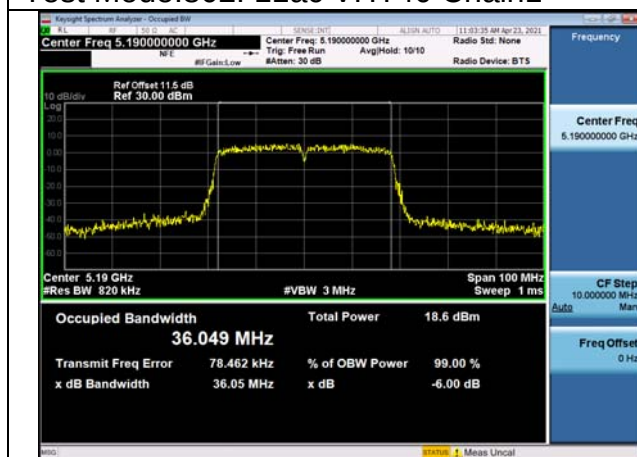
Test Mode:802. 11ac VHT40 Chain0



Test Mode:802. 11ac VHT40 Chain0



Test Mode:802. 11ac VHT40 Chain1



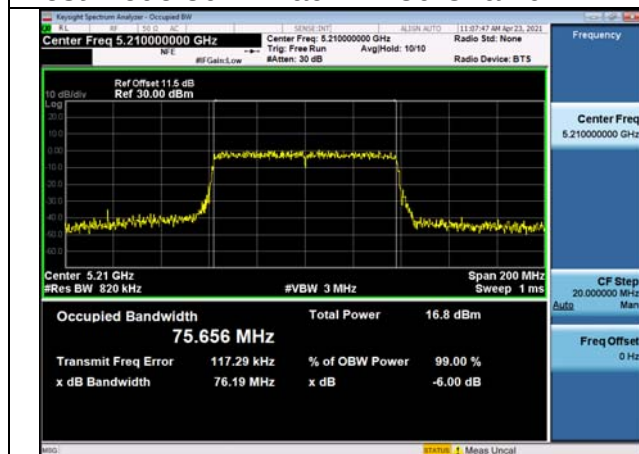
Test Mode:802. 11ac VHT40 Chain1



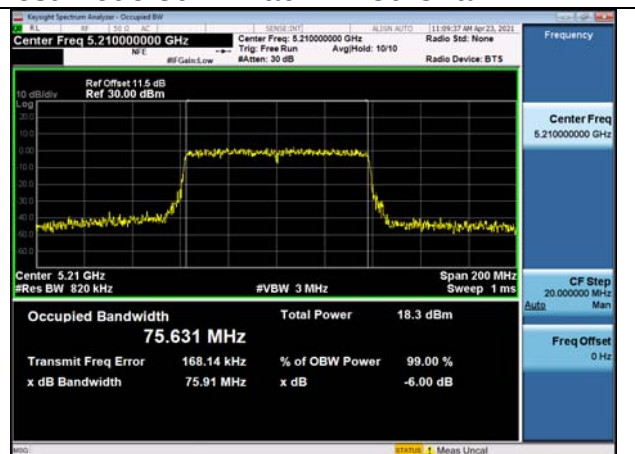
Test Mode:802. 11ac VHT80

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



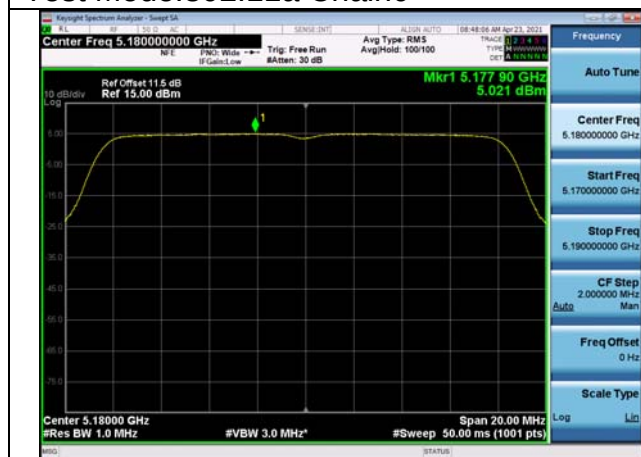
Transmitter Power Spectral Density

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

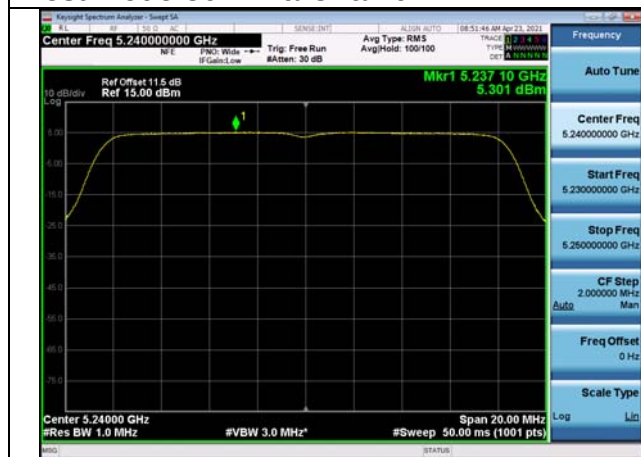
Test Mode:802.11a Chain0



Test Mode:802.11a Chain0



Test Mode:802.11a Chain0

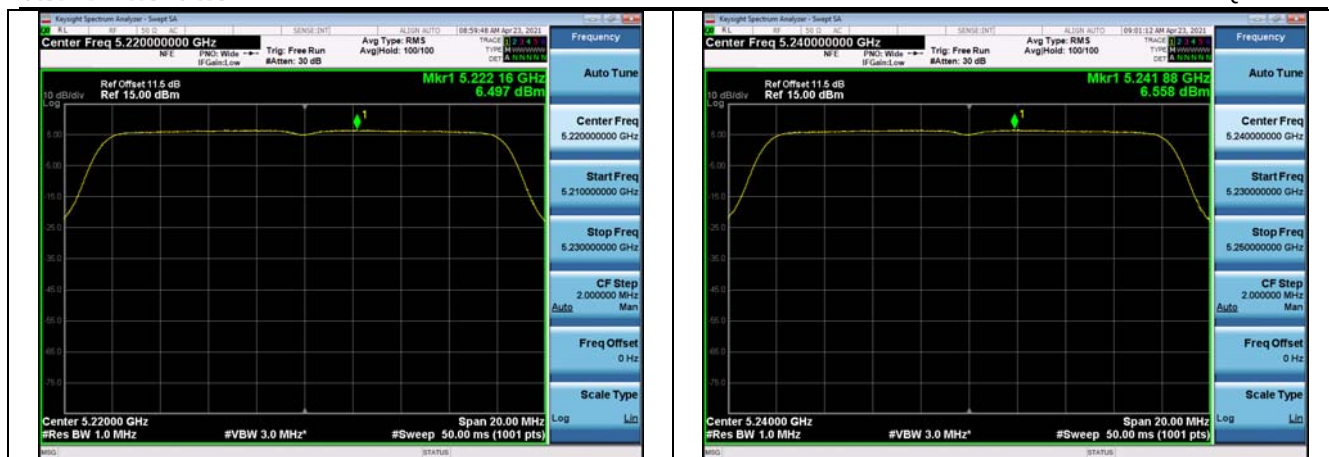


Test Mode:802.11a Chain1



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

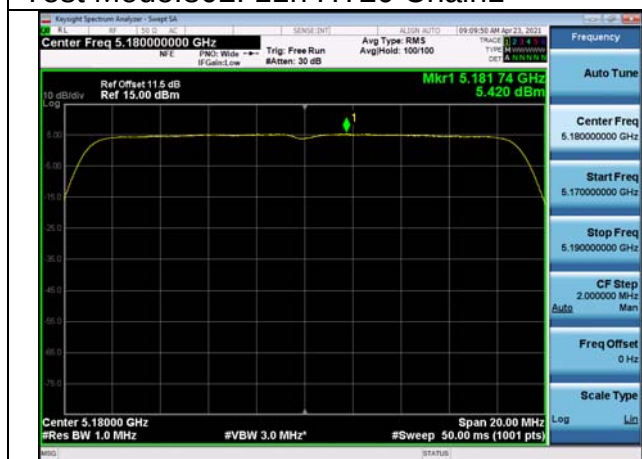
Test Mode:802. 11n HT20 Chain0



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

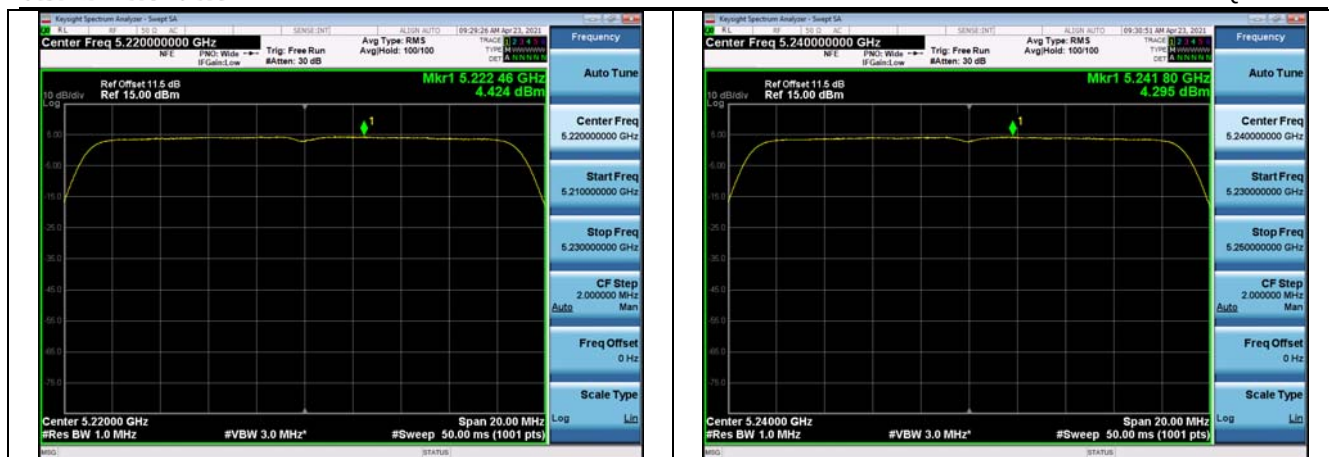


Test Mode:802. 11ac VHT20 Chain1



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



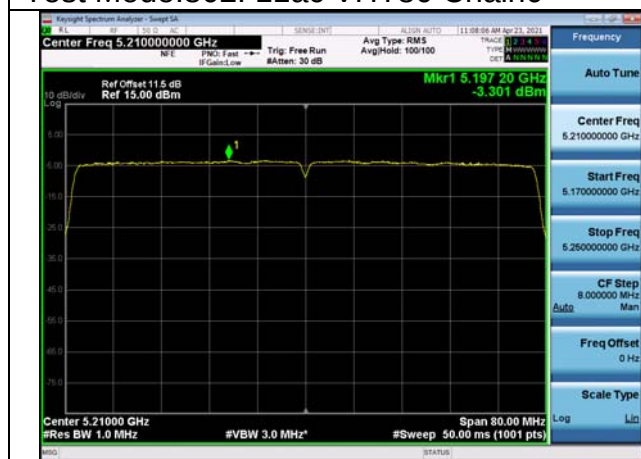
Test Mode:802. 11ac VHT40 Chain1



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