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

We chose the Worst-modes are shown as following table:

Test Mode	Chain	Note
802.11a	Chain0/Chain1	---
802.11n HT20	Chain0/Chain1	Cover 802.11ac VHT20
802.11n HT40	Chain0/Chain1	Cover 802.11ac VHT40
802.11ac VHT80	Chain0/Chain1	---

Directional gain

Band	Chain0 Ant Gain (dBi)	Chain1 Ant Gain (dBi)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit
5.2&5.3&5.6GHz	0.3	0.3	3.3	24.0	11.0(dBm/MHz)
5.8GHz	0.3	0.3	3.3	30.0	30.0(dBm/500kHz)

Duty cycle

Test Mode	Duty Cycle (%)	Correction Factor(dB)
802.11a	73.11	1.36
802.11n HT20	71.81	1.44
802.11n HT40	65.92	1.81
802.11ac VHT20	71.23	1.47
802.11ac VHT40	64.32	1.92
802.11ac VHT80	53.74	2.70

Output Power
UNII-1

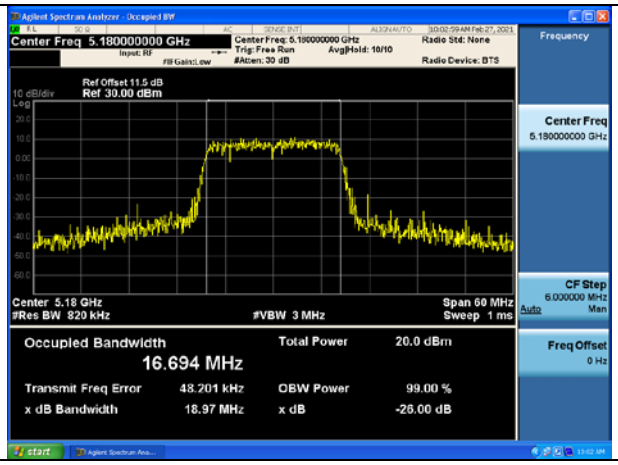
Mode	Freq (MHz)	Chain	Conducted average power output(dBm)
802.11a	5180	Chain0	15.10
		Chain1	14.70
	5220	Chain0	15.20
		Chain1	14.90
	5240	Chain0	15.20
		Chain1	14.80
802.11n20M	5180	Chain0	13.90
		Chain1	13.60
		Chain0+Chain1	16.76
	5240	Chain0	14.20
		Chain1	14.00
		Chain0+Chain1	17.11
802.11n40M	5190	Chain0	14.00
		Chain1	13.40
		Chain0+Chain1	16.72
	5230	Chain0	14.10
		Chain1	13.50
		Chain0+Chain1	16.82
802.11ac20M	5180	Chain0	14.20
		Chain1	13.50
		Chain0+Chain1	16.87
	5220	Chain0	14.20
		Chain1	13.80
		Chain0+Chain1	17.01
	5240	Chain0	14.10
		Chain1	14.00
		Chain0+Chain1	17.06
802.11ac40M	5190	Chain0	13.70
		Chain1	13.60
		Chain0+Chain1	16.66
	5230	Chain0	14.00
		Chain1	13.70
		Chain0+Chain1	16.86
802.11ac80M	5210	Chain0	13.70
		Chain1	13.50
		Chain0+Chain1	16.61

Emission Bandwidth

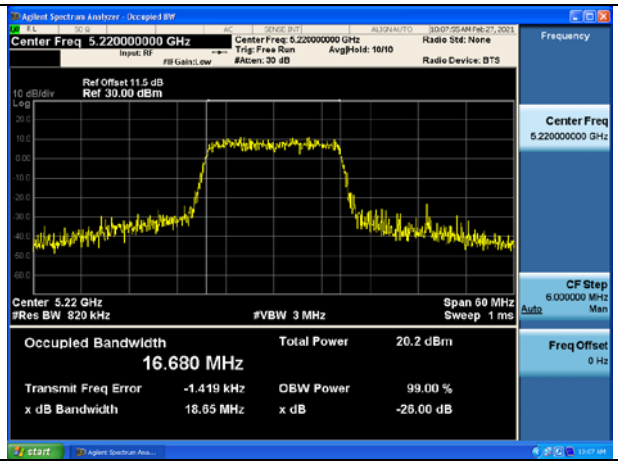
Offset 11.5dB =Attenuator 10dB+ Temporary antenna connector loss 0.5dB+ Cable loss 1dB
Test Mode:802.11a

Carrier frequency (MHz)	Chain	26dB Bandwidth (MHz)
5180	Chain0	18.97
	Chain1	18.85
5220	Chain0	18.65
	Chain1	18.77
5240	Chain0	18.96
	Chain1	18.81

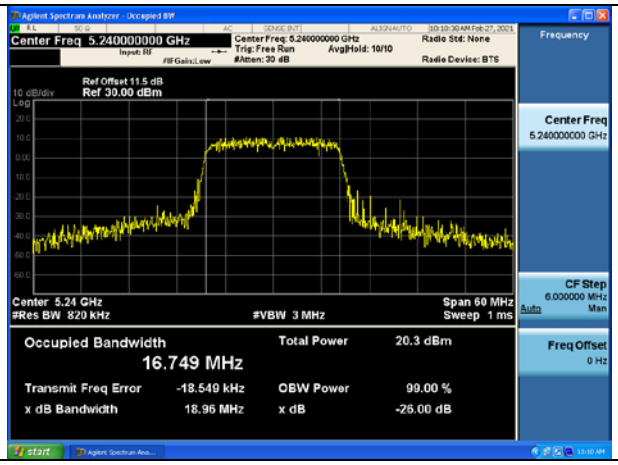
Test Mode:802.11a Chain0



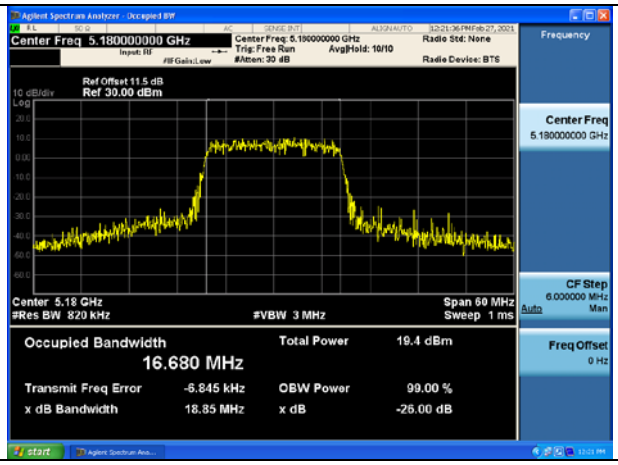
Test Mode:802.11a Chain0



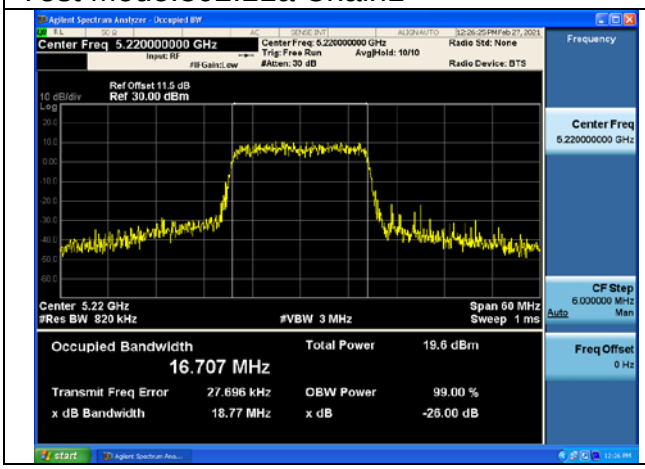
Test Mode:802.11a Chain0



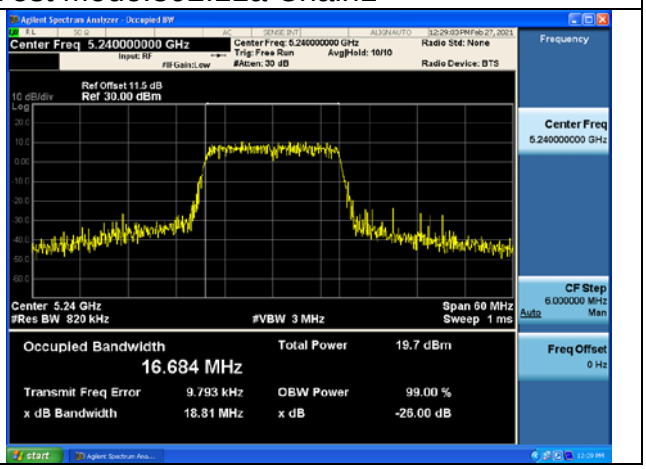
Test Mode:802.11a Chain1



Test Mode:802.11a Chain1



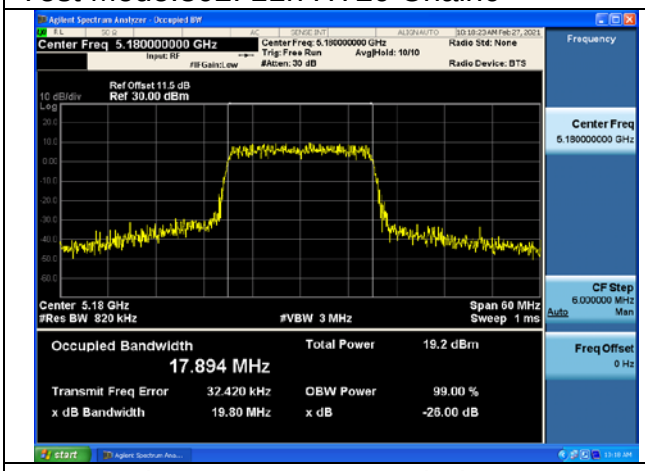
Test Mode:802.11a Chain1



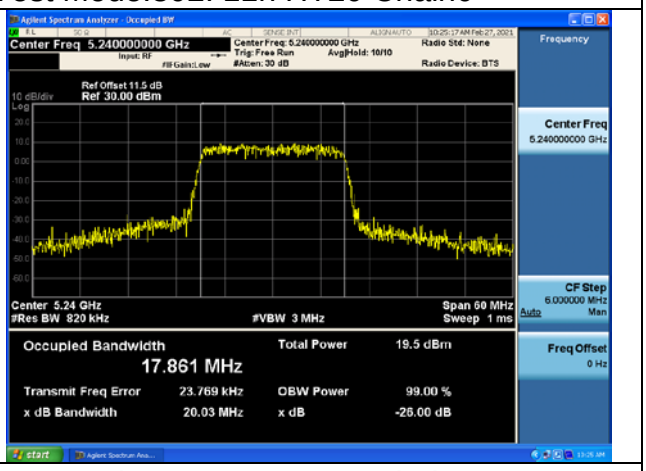
Test Mode:802. 11n HT20

Carrier frequency (MHz)	Chain	26dB Bandwidth (MHz)
5180	Chain0	19.80
	Chain1	19.97
5240	Chain0	20.03
	Chain1	19.82

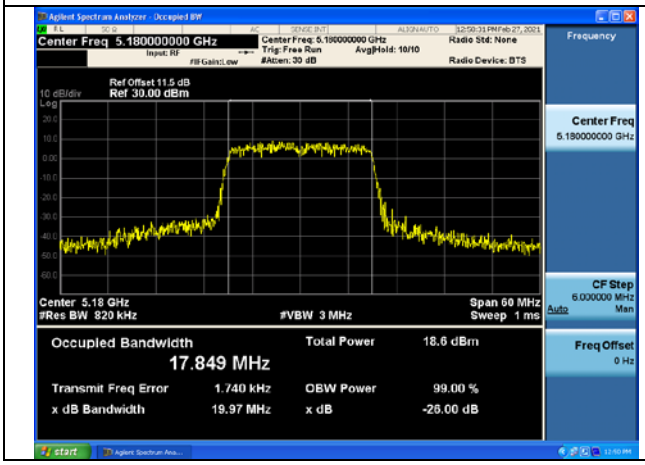
Test Mode:802. 11n HT20 Chain0



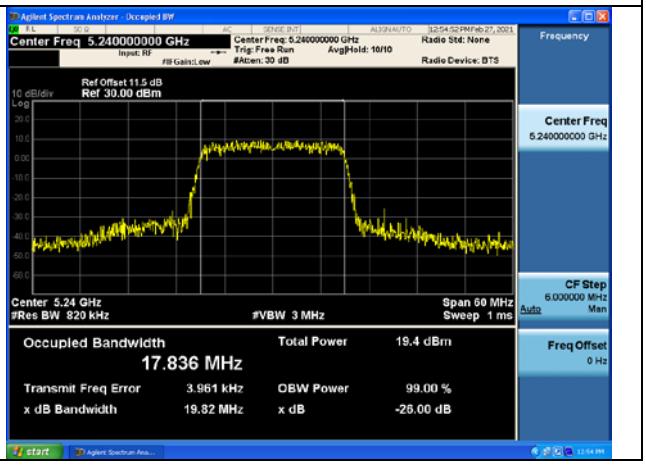
Test Mode:802. 11n HT20 Chain0



Test Mode:802. 11n HT20 Chain1



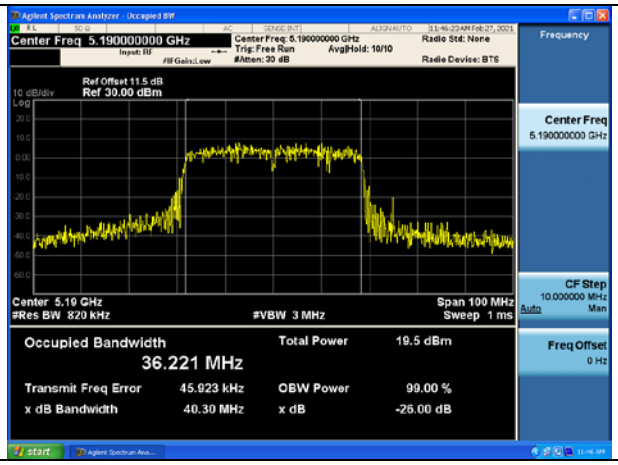
Test Mode:802. 11n HT20 Chain1



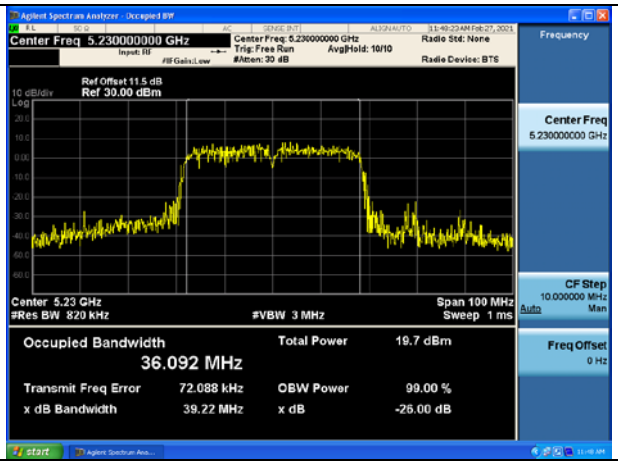
Test Mode:802. 11n HT40

Carrier frequency (MHz)	Chain	26dB Bandwidth (MHz)
5190	Chain0	40.30
	Chain1	41.09
5230	Chain0	39.22
	Chain1	40.03

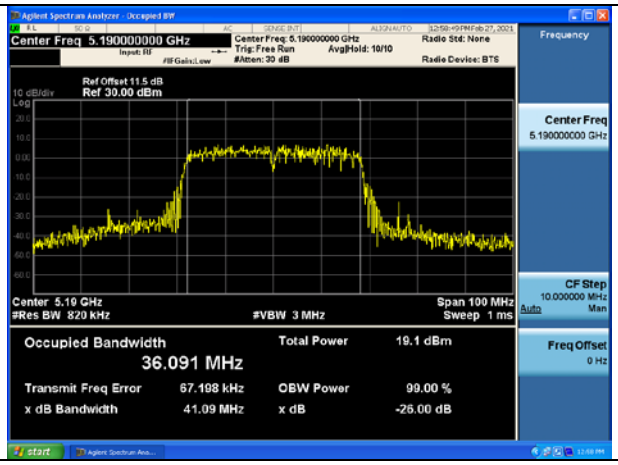
Test Mode:802. 11n HT40 Chain0



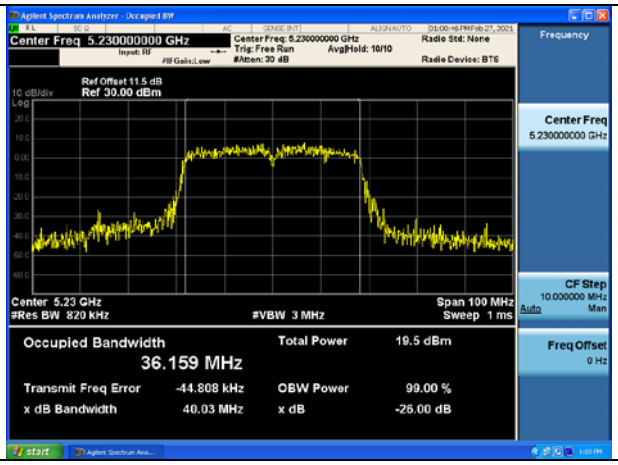
Test Mode:802. 11n HT40 Chain0



Test Mode:802. 11n HT40 Chain1

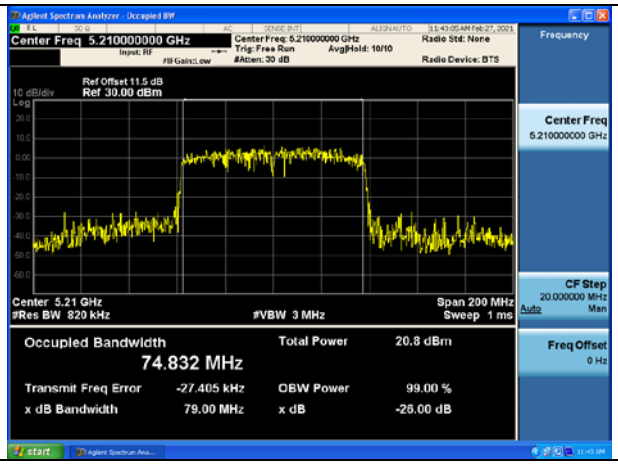
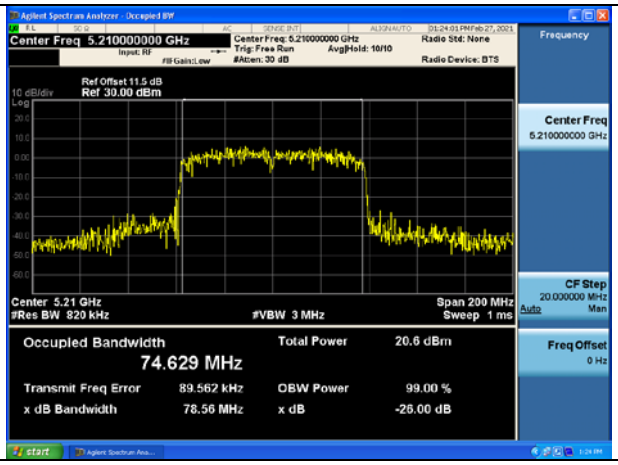


Test Mode:802. 11n HT40 Chain1



Test Mode:802. 11ac VHT80

Carrier frequency (MHz)	Chain	26dB Bandwidth (MHz)
5210	Chain0	79.00
	Chain1	78.56

Test Mode:802. 11ac VHT80 Chain0	Test Mode:802. 11ac VHT80 Chain1
	

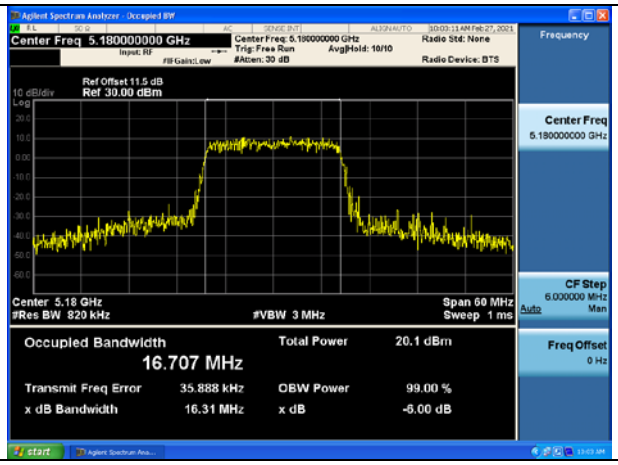
Occupied Bandwidth

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

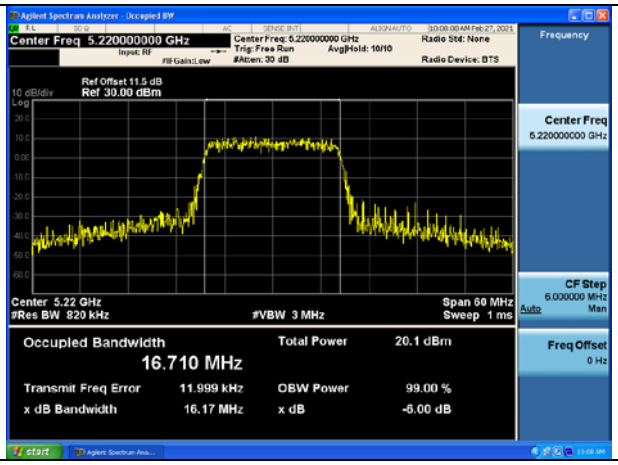
Test Mode:802.11a

Carrier frequency (MHz)	Chain	Occupied Bandwidth (MHz)
5180	Chain0	16.707
	Chain1	16.722
5220	Chain0	16.710
	Chain1	16.665
5240	Chain0	16.675
	Chain1	16.650

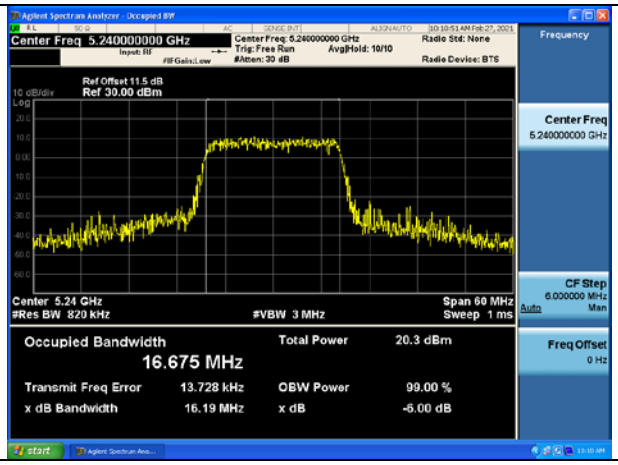
Test Mode:802.11a Chain0



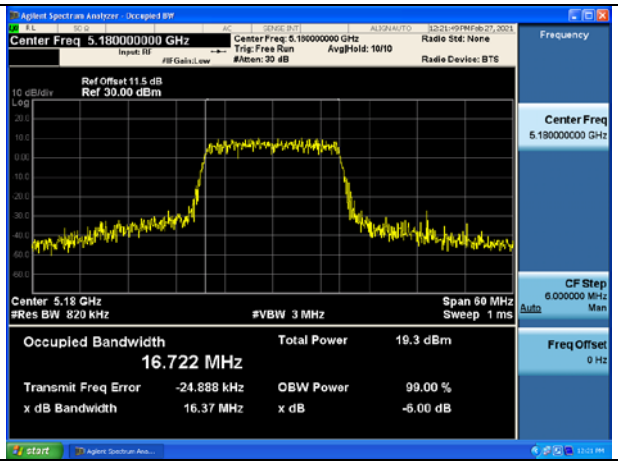
Test Mode:802.11a Chain0



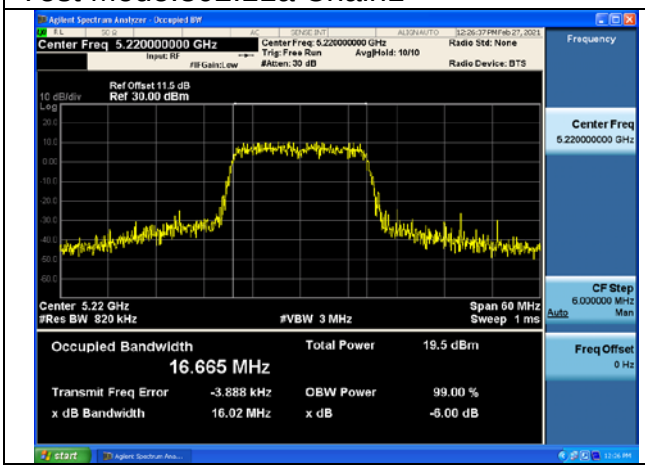
Test Mode:802.11a Chain0



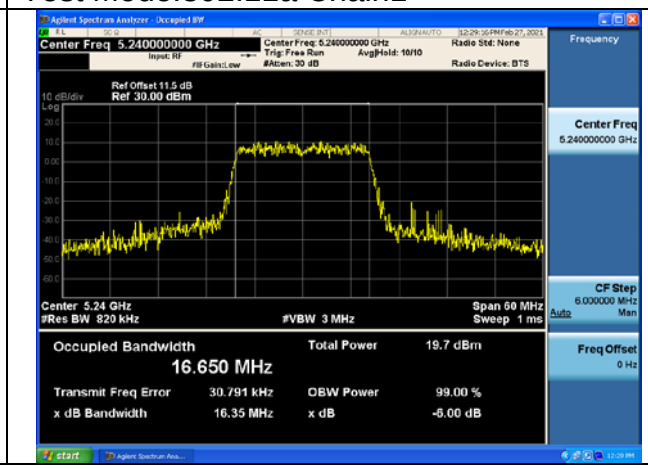
Test Mode:802.11a Chain1



Test Mode:802.11a Chain1



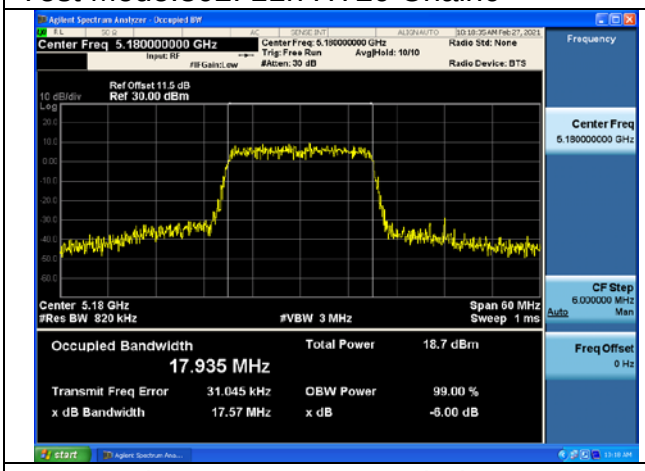
Test Mode:802.11a Chain1



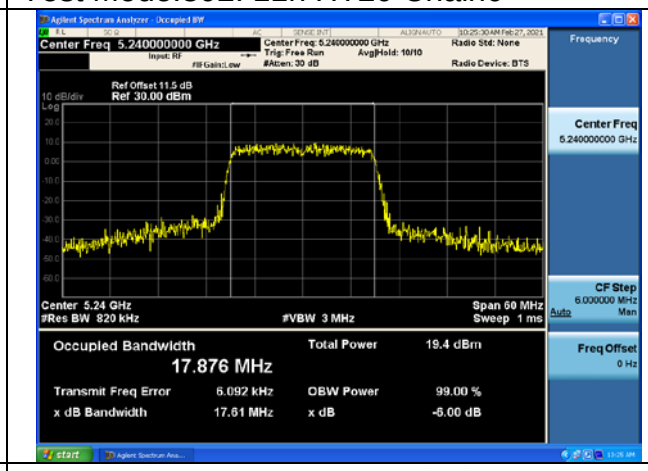
Test Mode:802. 11n HT20

Carrier frequency (MHz)	Chain	Occupied Bandwidth (MHz)
5180	Chain0	17.935
	Chain1	17.901
5240	Chain0	17.876
	Chain1	17.799

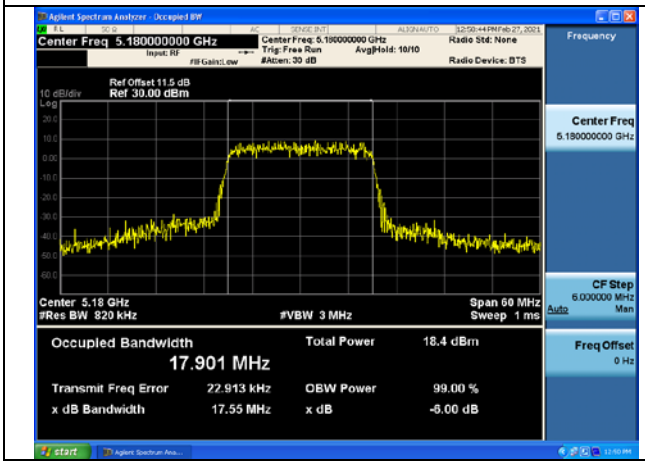
Test Mode:802. 11n HT20 Chain0



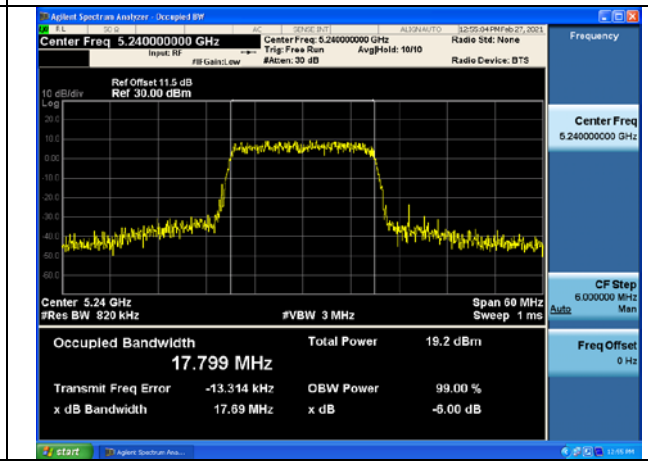
Test Mode:802. 11n HT20 Chain0



Test Mode:802. 11n HT20 Chain1



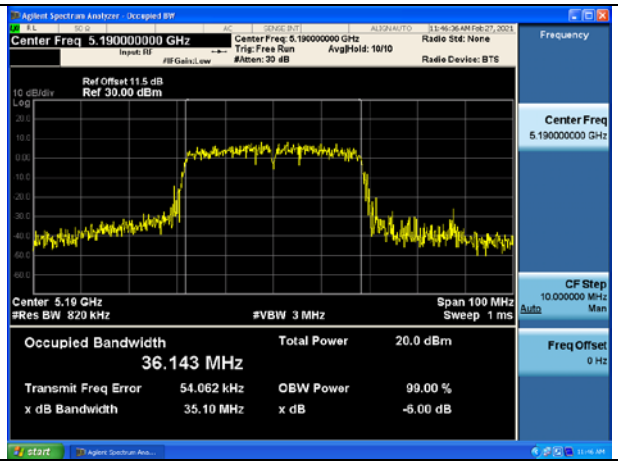
Test Mode:802. 11n HT20 Chain1



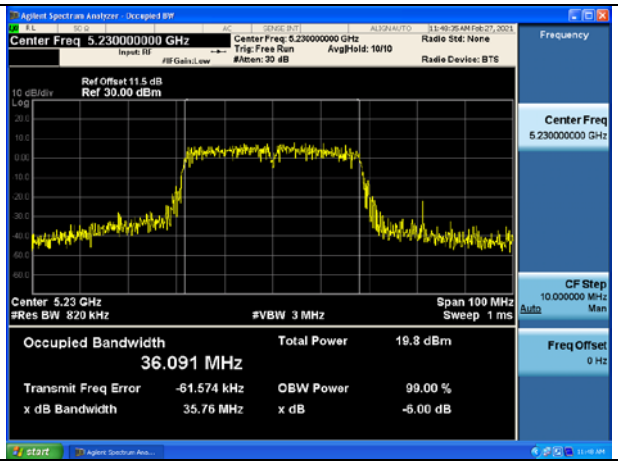
Test Mode:802. 11n HT40

Carrier frequency (MHz)	Chain	Occupied Bandwidth (MHz)
5190	Chain0	36.143
	Chain1	35.912
5230	Chain0	36.091
	Chain1	36.037

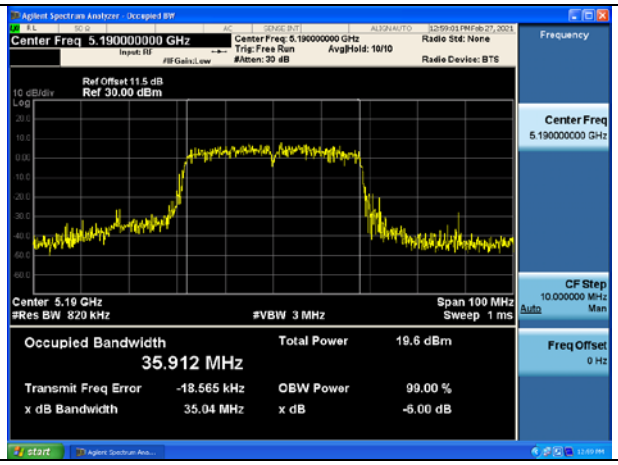
Test Mode:802. 11n HT40 Chain0



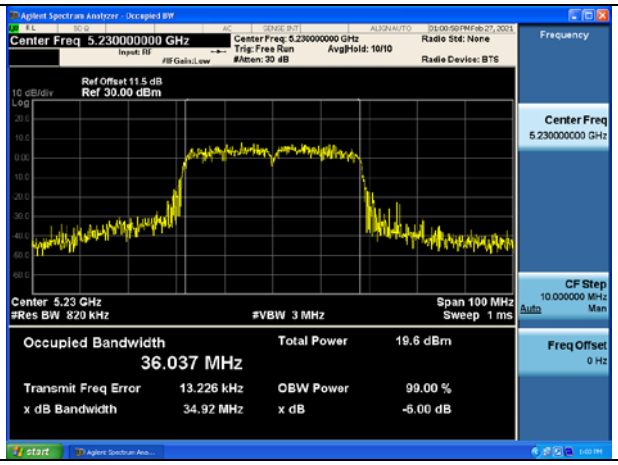
Test Mode:802. 11n HT40 Chain0



Test Mode:802. 11n HT40 Chain1

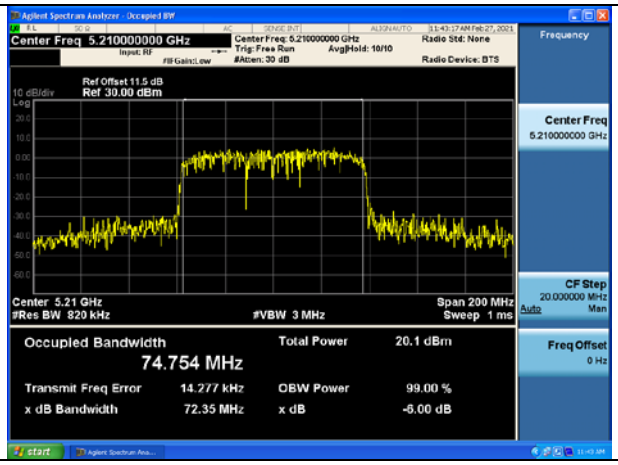
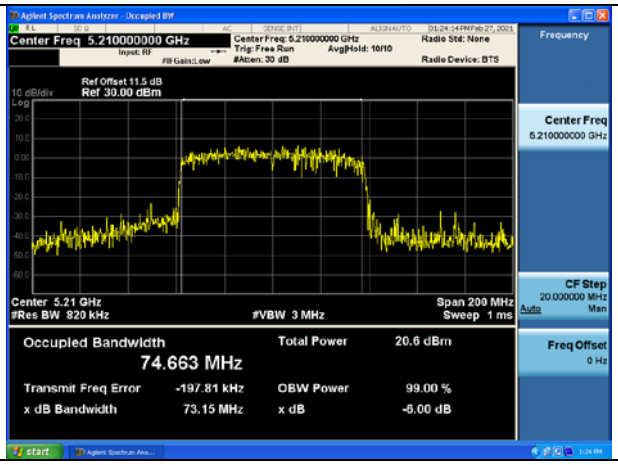


Test Mode:802. 11n HT40 Chain1



Test Mode:802. 11ac VHT80

Carrier frequency (MHz)	Chain	Occupied Bandwidth (MHz)
5210	Chain0	74.754
	Chain1	74.663

Test Mode:802. 11ac VHT80 Chain0	Test Mode:802. 11ac VHT80 Chain1
	

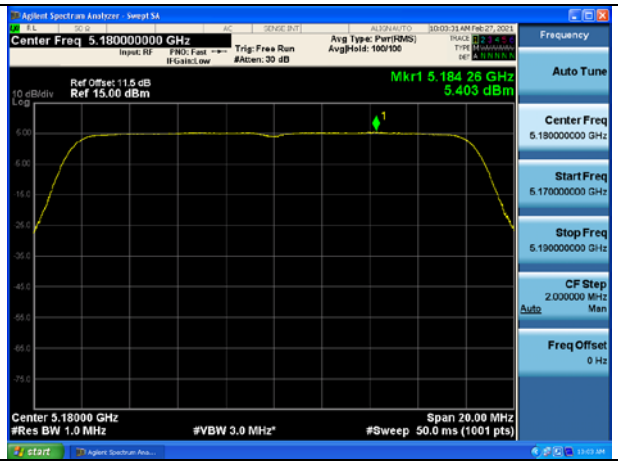
Transmitter Power Spectral Density

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

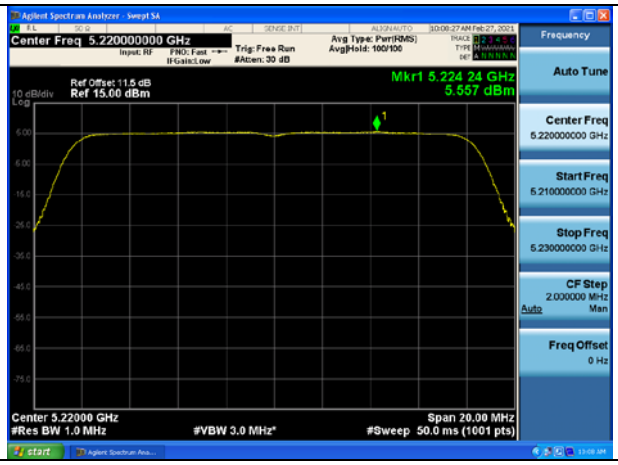
Test Mode:802.11a

Carrier frequency (MHz)	Correction Factor(dB)	Chain	Power Density (dBm)
5180	1.36	Chain0	6.763
		Chain1	6.619
5240		Chain0	6.917
		Chain1	6.496

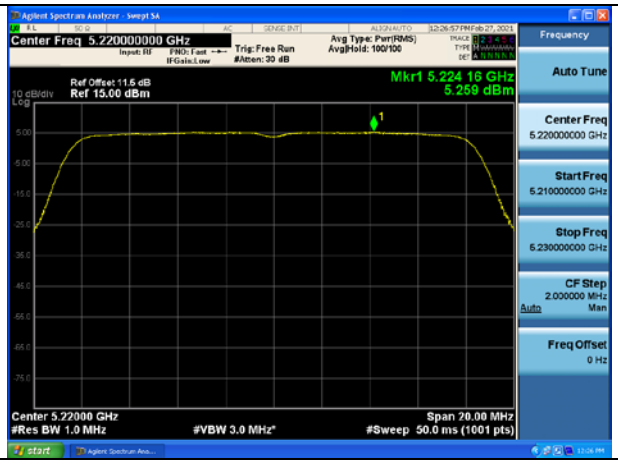
Test Mode:802.11a Chain0



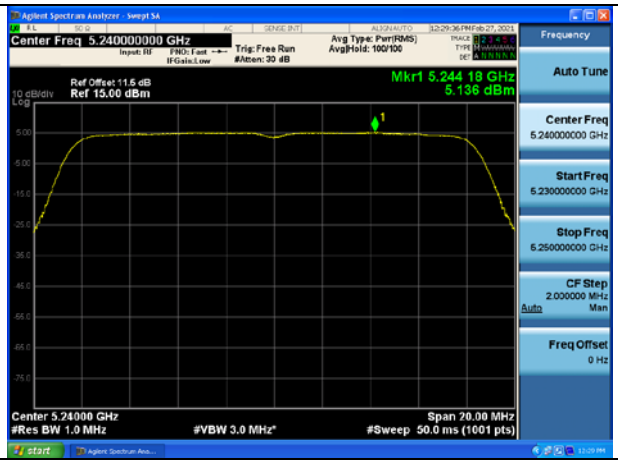
Test Mode:802.11a Chain0



Test Mode:802.11a Chain1



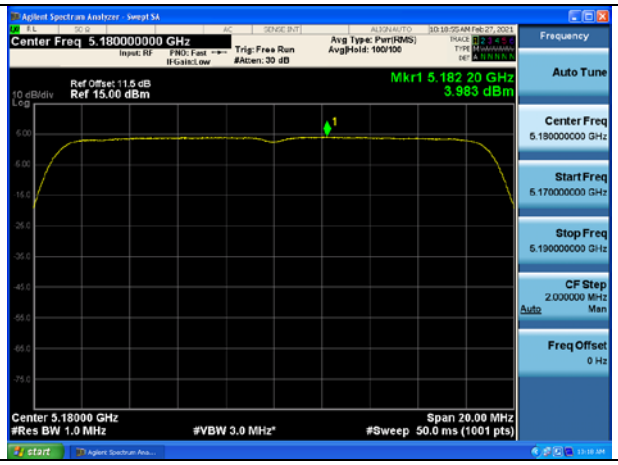
Test Mode:802.11a Chain1



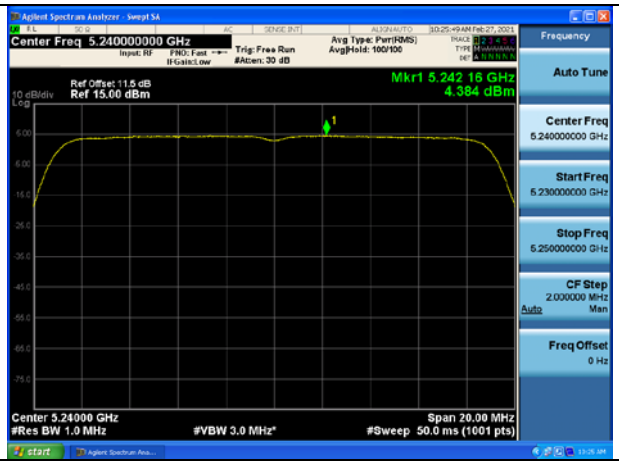
Test Mode:802. 11n HT20

Carrier frequency (MHz)	Correction Factor(dB)	Chain	Power Density (dBm)
5180	1.44	Chain0	5.423
		Chain1	5.176
		Chain0+Chain1	8.312
5240		Chain0	5.824
		Chain1	5.464
		Chain0+Chain1	8.658

Test Mode:802. 11n HT20 Chain0

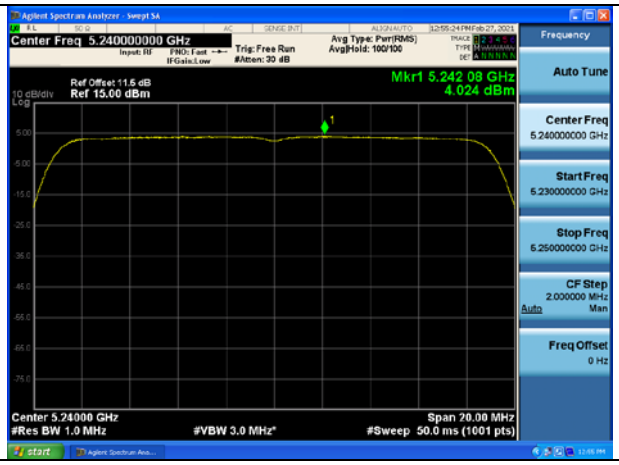


Test Mode:802. 11n HT20 Chain0



Test Mode:802. 11n HT20 Chain1

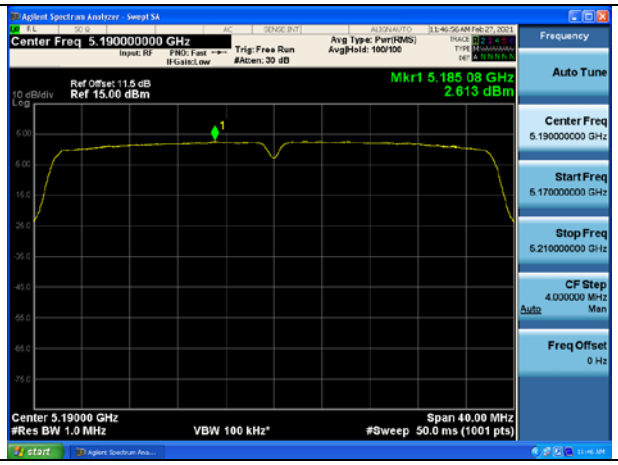
Test Mode:802. 11n HT20 Chain1



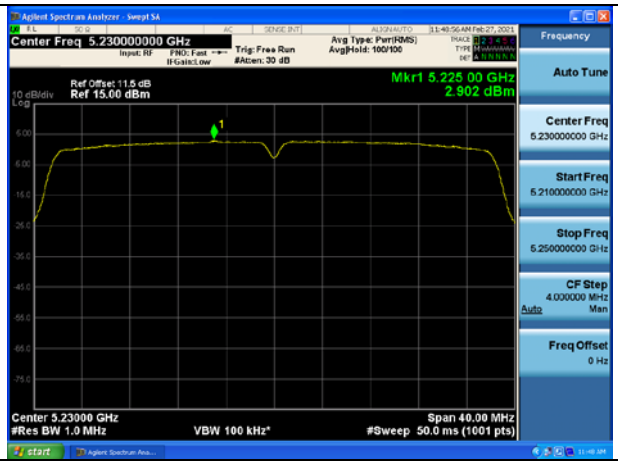
Test Mode:802. 11n HT40

Carrier frequency (MHz)	Correction Factor(dB)	Chain	Power Density (dBm)
5190	1.81	Chain0	4.423
		Chain1	3.951
		Chain0+Chain1	7.204
5230		Chain0	4.712
		Chain1	4.190
		Chain0+Chain1	7.469

Test Mode:802. 11n HT40 Chain0



Test Mode:802. 11n HT40 Chain0



Test Mode:802. 11n HT40 Chain1

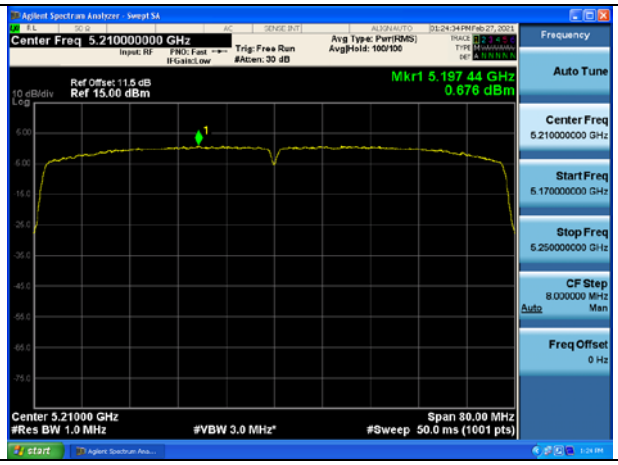
Test Mode:802. 11n HT40 Chain1

Test Mode:802. 11ac VHT80

Carrier frequency (MHz)	Correction Factor(dB)	Chain	Power Density (dBm)
5210	2.70	Chain0	3.742
		Chain1	3.376
		Chain0+Chain1	6.573

Test Mode:802. 11ac VHT80 Chain0

Test Mode:802. 11ac VHT80 Chain1



Frequency Stability

Mode	Data Rate	Ant	Center Frequency (MHz)	Measured Frequency (MHz)	Frequency Stability (ppm)	Voltage (V)	Temperature (°C)
802.11a	6Mbps	Chain0	5180	5180.020254	3.91	NV	-10
			5180	5179.990831	-1.77	NV	0
			5180	5179.984097	-3.07	NV	+10
			5180	5179.990054	-1.92	NV	+20
			5180	5179.98907	-2.11	HV	+20
			5180	5180.019477	3.76	LV	+20
			5180	5179.975032	-4.82	NV	+30
			5180	5179.983372	-3.21	NV	+40
			5180	5180.022947	4.43	NV	+50
			5180	5179.998446	-0.30	NV	+60
			5180	5179.997476	-0.49	NV	+70
802.11a	6Mbps	Chain1	5180	5180.010101	1.95	NV	-10
			5180	5179.994147	-1.13	NV	0
			5180	5179.990935	-1.75	NV	+10
			5180	5179.977208	-4.40	HV	+20
			5180	5180.022378	4.32	LV	+20
			5180	5179.981456	-3.58	NV	+20
			5180	5180.024035	4.64	NV	+30
			5180	5180.016628	3.21	NV	+40
			5180	5180.010153	1.96	NV	+50
			5180	5180.023673	4.57	NV	+60
			5180	5180.032684	6.31	NV	+70