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	Note
802.11a	---
802.11n HT20	Cover 802.11ac VHT20
802.11n HT40	Cover 802.11ac VHT40
802.11ac VHT80	---

Duty cycle

Test Mode	Duty Cycle (%)	Correction Factor(dB)
802.11a	96.87	0.14
802.11n HT20	96.62	0.15
802.11n HT40	93.61	0.27
802.11ac VHT20	96.54	0.15
802.11ac VHT40	93.35	0.30
802.11ac VHT80	87.92	0.56

Output Power
UNII-1

Mode	Freq.(MHz)	Average power output(dBm)
802.11a	5180	19.93
	5220	19.97
	5240	19.96
802.11n HT20	5180	19.78
	5220	19.76
	5240	19.79
802.11n HT40	5190	19.68
	5230	19.65
802.11ac VHT20	5180	19.07
	5220	18.81
	5240	18.82
802.11ac VHT40	5190	18.75
	5230	18.71
802.11ac VHT80	5210	18.58

UNII-3

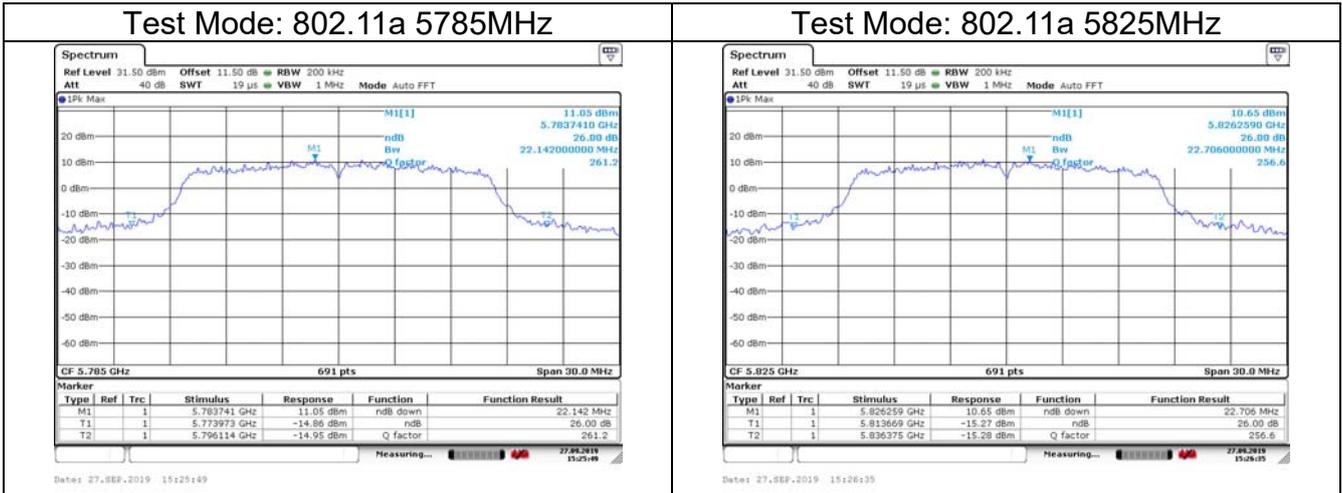| Mode	Freq.(MHz)	Average power output(dBm)
802.11a	5745	19.88
	5785	19.94
	5825	19.98
802.11n HT20	5745	19.73
	5785	19.82
	5825	19.87
802.11n HT40	5755	19.88
	5795	19.93
802.11ac VHT20	5745	19.12
	5785	19.02
	5825	19.05
802.11ac VHT40	5755	19.21
	5795	19.15
802.11ac VHT80	5775	18.86

Occupied Bandwidth

Offset 11.5dB = Attenuator 10dB+ Temporary antenna connector loss 0.2dB+ Cable loss 1.3dB
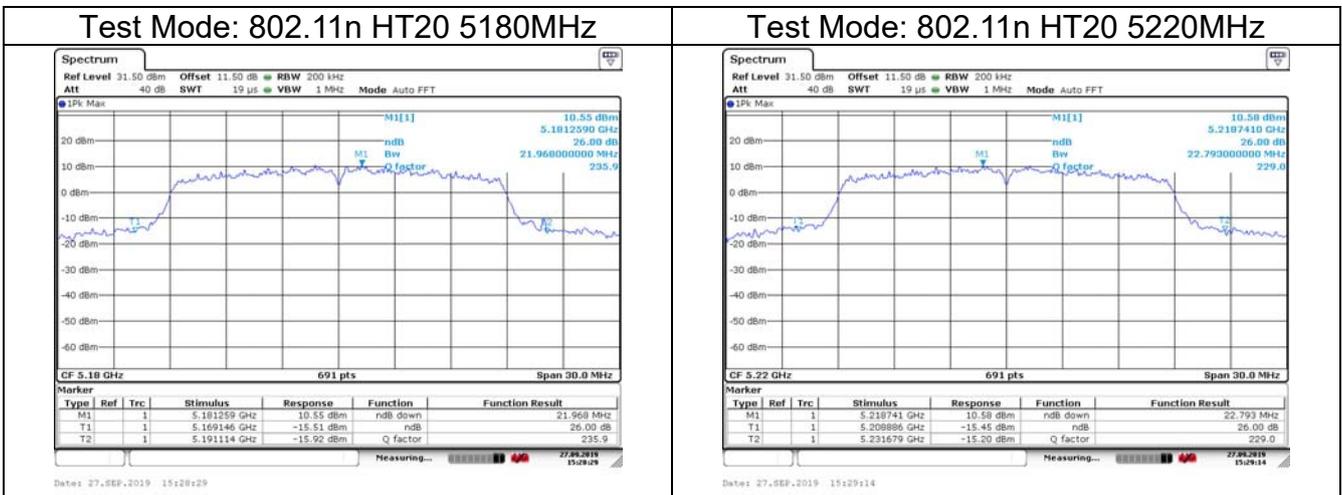
Test Mode: 802.11a

Carrier frequency (MHz)	Channel No.	26dB Bandwidth (MHz)
5180	36	22.533
5220	44	23.705
5240	48	21.968
5745	149	23.401
5785	157	22.142
5825	165	22.706

Test Mode: 802.11a 5180MHz	Test Mode: 802.11a 5220MHz
Test Mode: 802.11a 5240MHz	Test Mode: 802.11a 5745MHz

Test Mode: 802.11a 5785MHz	Test Mode: 802.11a 5825MHz
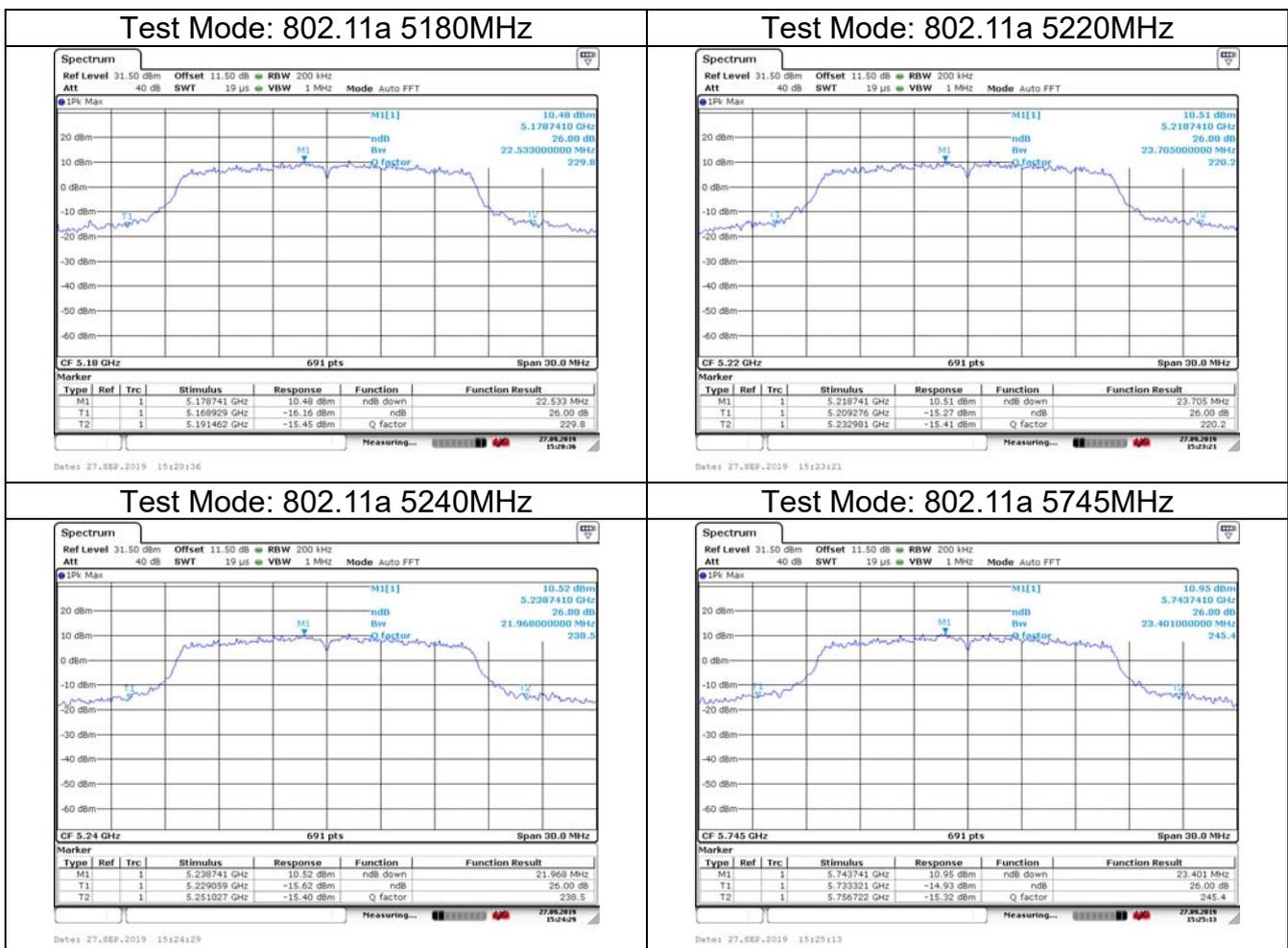
Test Mode: 802.11n HT20

Carrier frequency (MHz)	Channel No.	26dB Bandwidth (MHz)
5180	36	21.968
5220	44	22.793
5240	48	22.576
5745	149	23.835
5785	157	22.446
5825	165	23.357

Test Mode: 802.11n HT20 5180MHz	Test Mode: 802.11n HT20 5220MHz
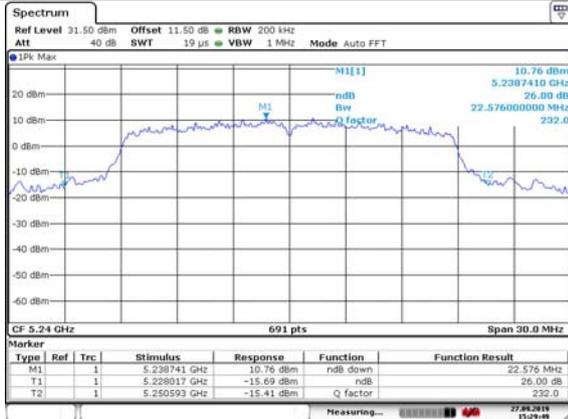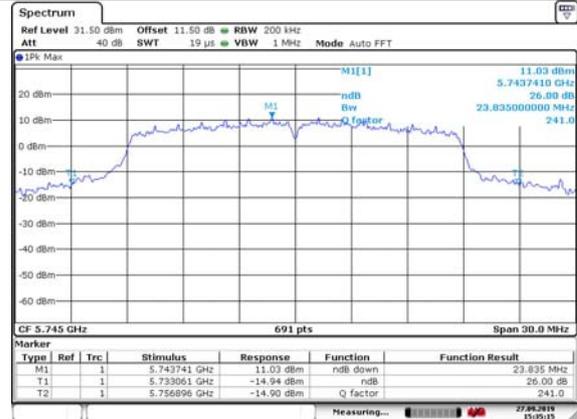
Test Mode: 802.11n HT20 5240MHz	Test Mode: 802.11n HT20 5745MHz
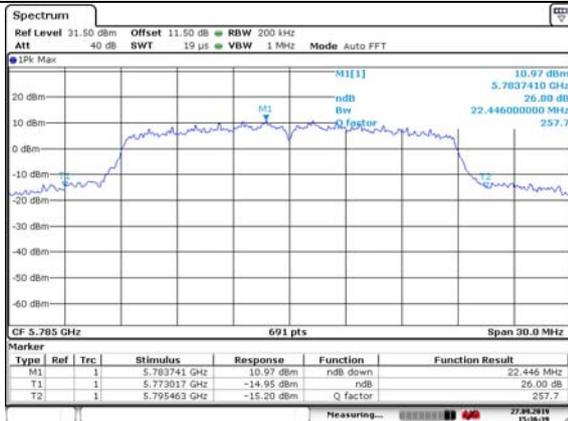
Test Mode: 802.11n HT20 5785MHz	Test Mode: 802.11n HT20 5825MHz
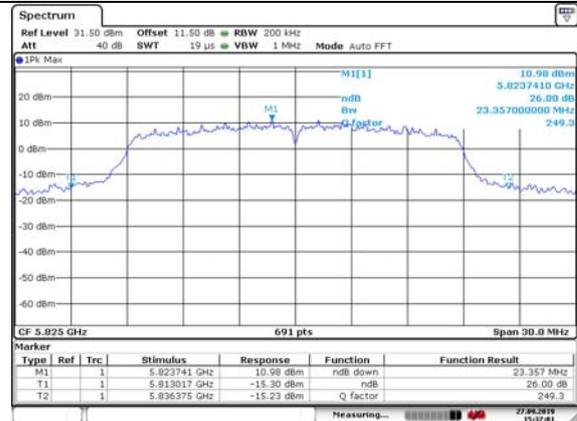
Test Mode: 802.11n HT40

Carrier frequency (MHz)	Channel No.	26dB Bandwidth (MHz)
5190	38	42.894
5230	46	41.071
5755	151	40.724
5795	159	42.721

Test Mode: 802.11n HT40 5190MHz	Test Mode: 802.11n HT40 5210MHz
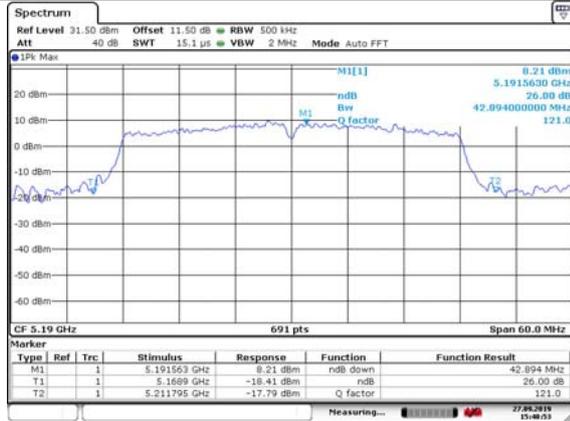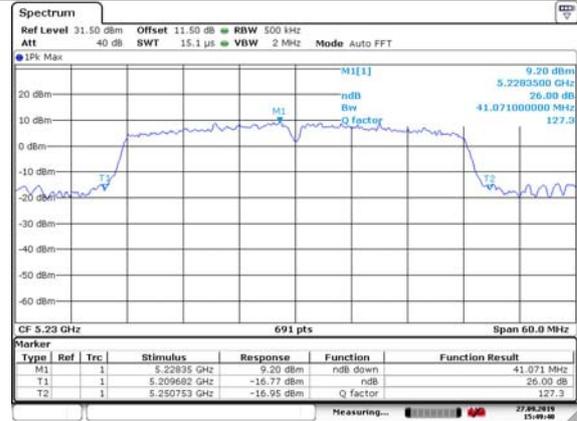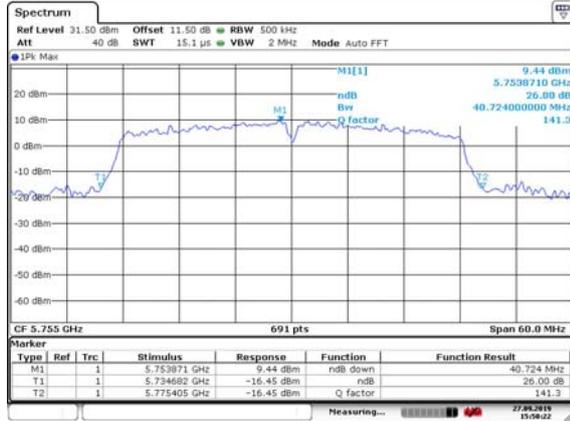
Test Mode: 802.11n HT40 5755MHz	Test Mode: 802.11n HT40 5795MHz
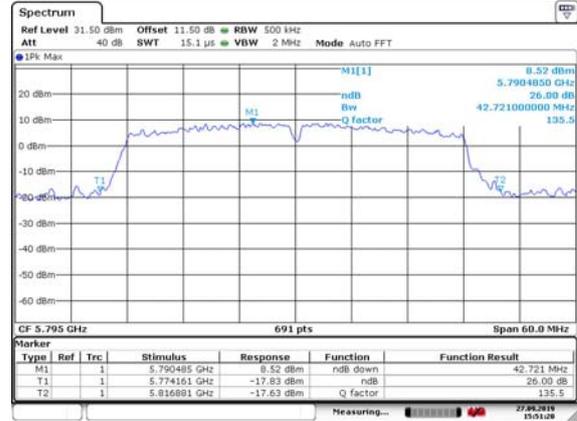
Test Mode: 802.11ac VHT80

Carrier frequency (MHz)	Channel No.	26dB Bandwidth (MHz)
5210	42	83.180
5775	155	83.880

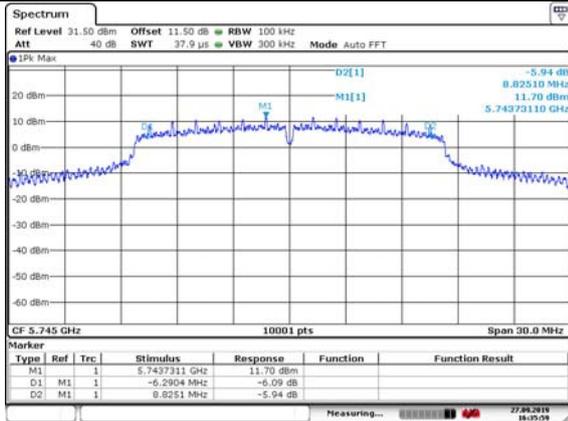| Test Mode: 802.11ac VHT80 5210MHz	Test Mode: 802.11ac VHT80 5775MHz
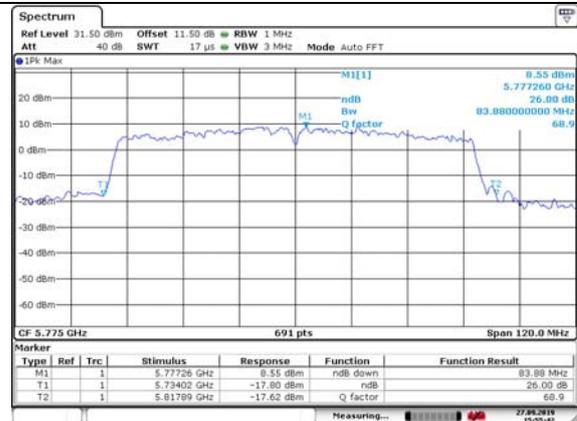
6dB Bandwidth

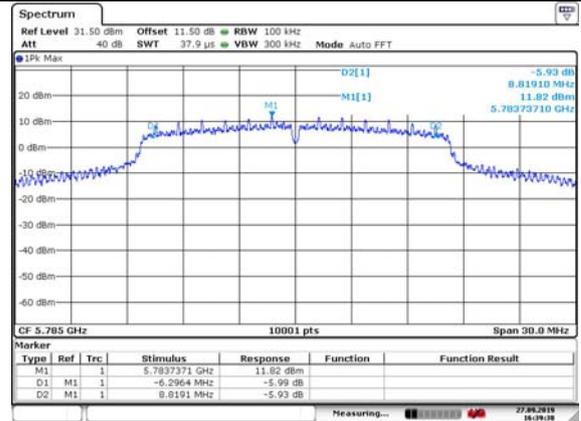Offset 11.5dB = Attenuator 10dB+ Temporary antenna connector loss 0.2dB+ Cable loss 1.3dB

Test Mode: 802.11a

Carrier frequency (MHz)	Channel No.	6dB Bandwidth (MHz)
5745	149	15.116
5785	157	15.116
5825	165	15.116

Test Mode: 802.11a 5745MHz	Test Mode: 802.11a 5785MHz

Test Mode: 802.11a 5825MHz	
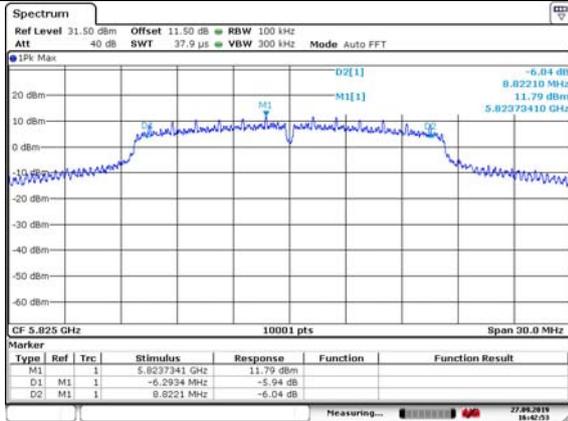
Test Mode: 802.11n HT20

Carrier frequency (MHz)	Channel No.	6dB Bandwidth (MHz)
5745	149	15.119
5785	157	15.116
5825	165	15.119

Test Mode: 802.11n HT20 5745MHz	Test Mode: 802.11n HT20 5745MHz
Test Mode: 802.11n HT20 5745MHz	
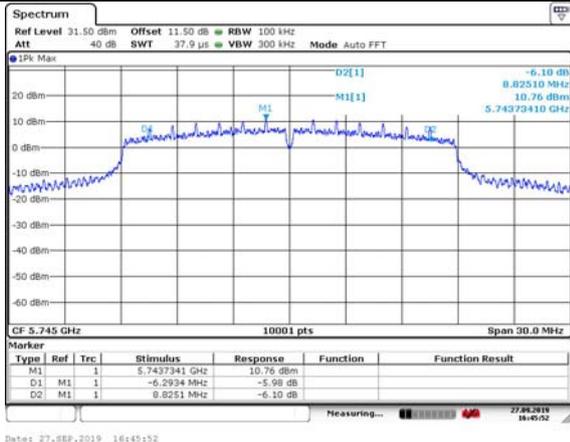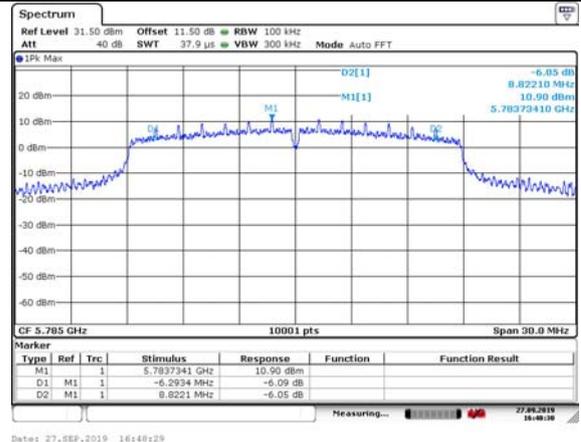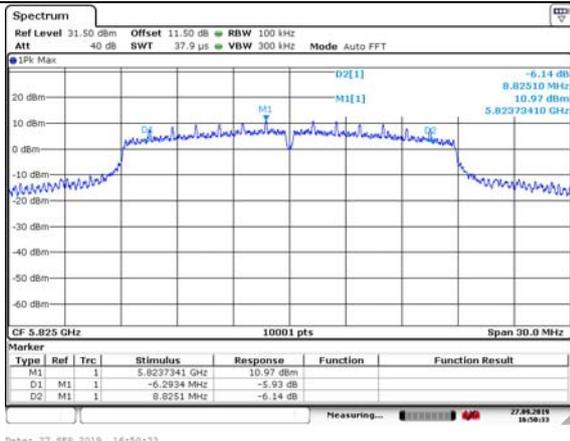
Test Mode: 802.11n HT40

Carrier frequency (MHz)	Channel No.	6dB Bandwidth (MHz)
5755	151	35.079
5795	159	35.079

Test Mode: 802.11n HT40 5755MHz	Test Mode: 802.11n HT40 5795MHz
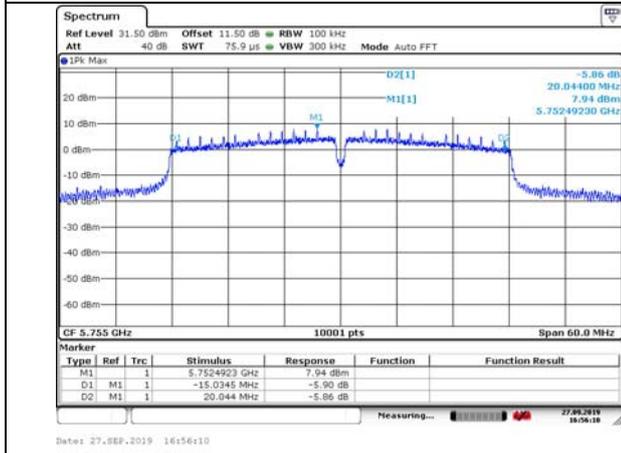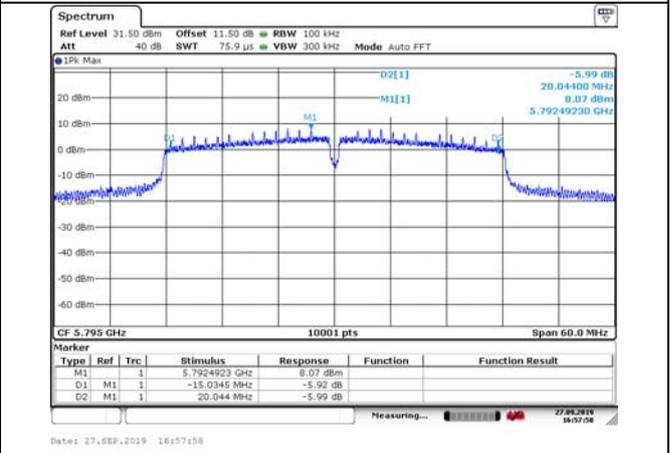
Test Mode: 802.11ac VHT80

Carrier frequency (MHz)	Channel No.	26dB Bandwidth (MHz)
5755	155	75.141

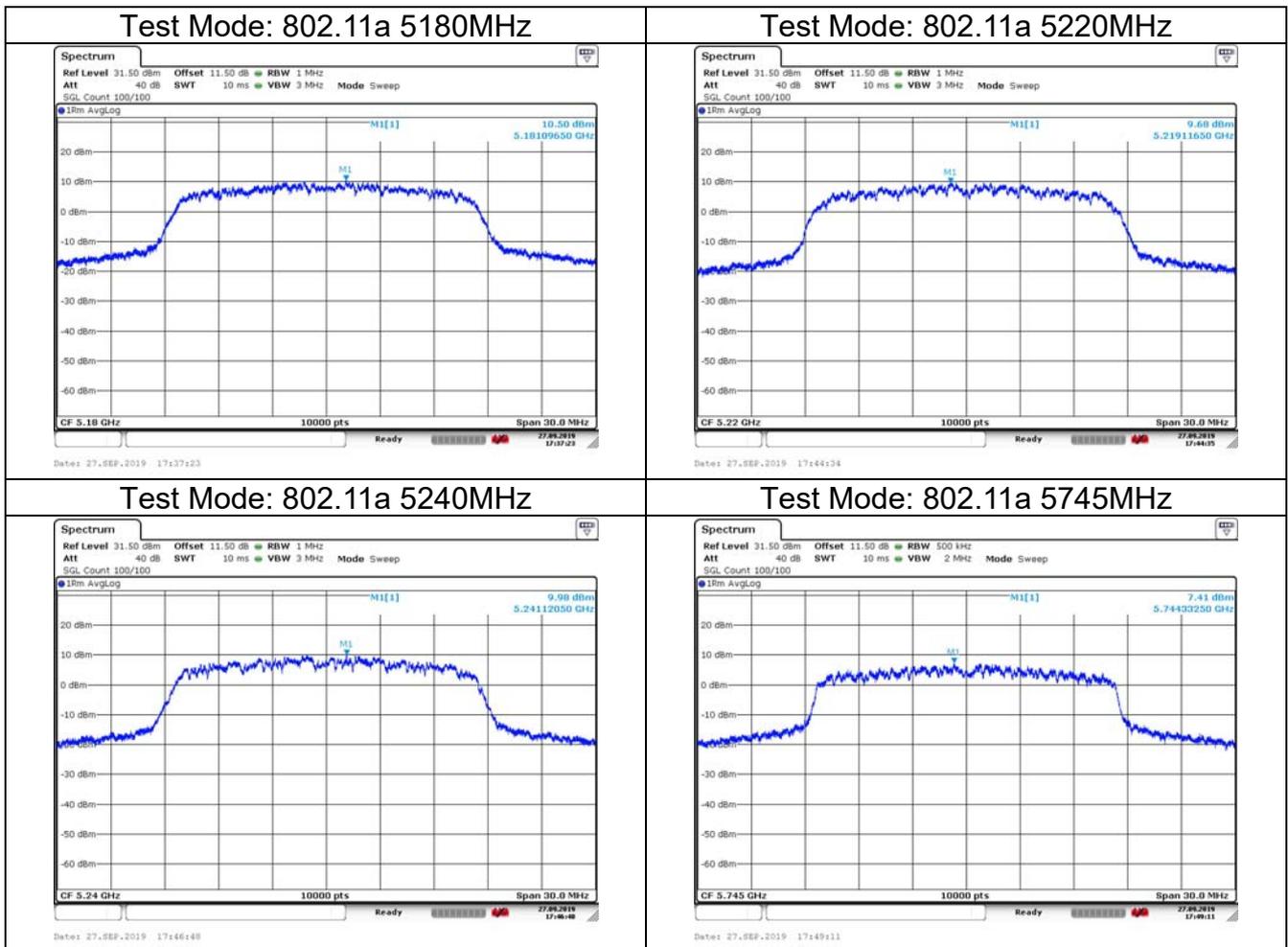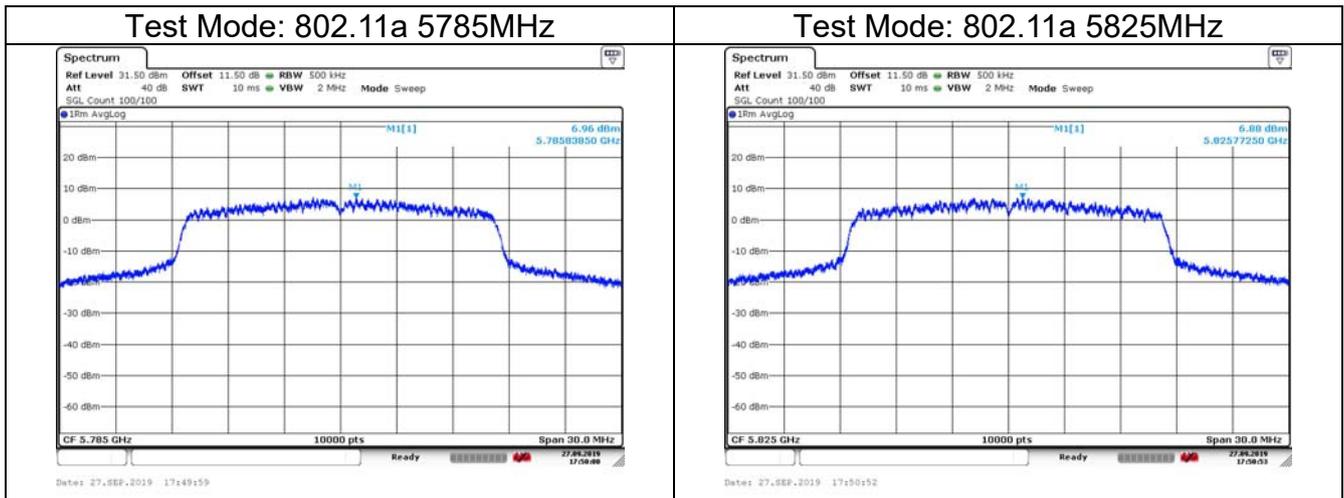| Test Mode: 802.11ac VHT80 Chain1 |
|---|
| |
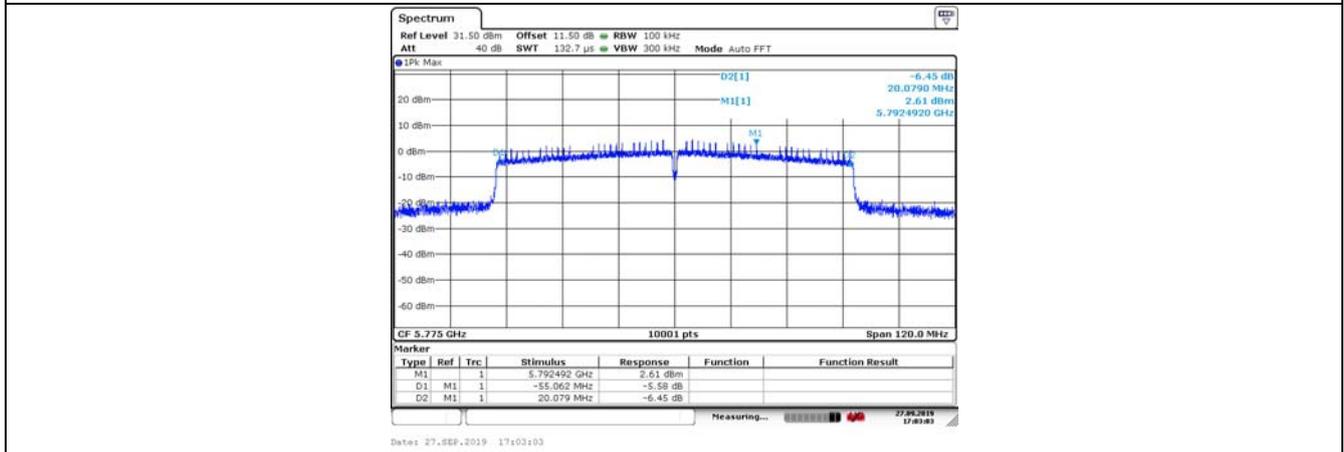
Transmitter Power Spectral Density

Offset 11.5dB = Attenuator 10dB+ Temporary antenna connector loss 0.2dB+ Cable loss 1.3dB

Test Mode: 802.11a

Carrier frequency (MHz)	Correction Factor(dB)	Power Density(dBm)
5180	0.14	10.64
5220	0.14	9.82
5240	0.14	10.12
5745	0.14	7.55
5785	0.14	7.10
5825	0.14	7.02

Test Mode: 802.11a 5180MHz	Test Mode: 802.11a 5220MHz
Test Mode: 802.11a 5240MHz	Test Mode: 802.11a 5745MHz

Test Mode: 802.11a 5785MHz	Test Mode: 802.11a 5825MHz

Test Mode: 802.11n HT20

Carrier frequency (MHz)	Correction Factor(dB)	Power Density(dBm)
5180	0.15	9.52
5220	0.15	9.32
5240	0.15	9.38
5745	0.15	6.60
5785	0.15	6.66
5825	0.15	6.26

Test Mode: 802.11n HT20 5180MHz	Test Mode: 802.11n HT20 5220MHz

Test Mode: 802.11n HT20 5240MHz	Test Mode: 802.11n HT20 5745MHz

Test Mode: 802.11n HT20 5785MHz	Test Mode: 802.11n HT20 5825MHz
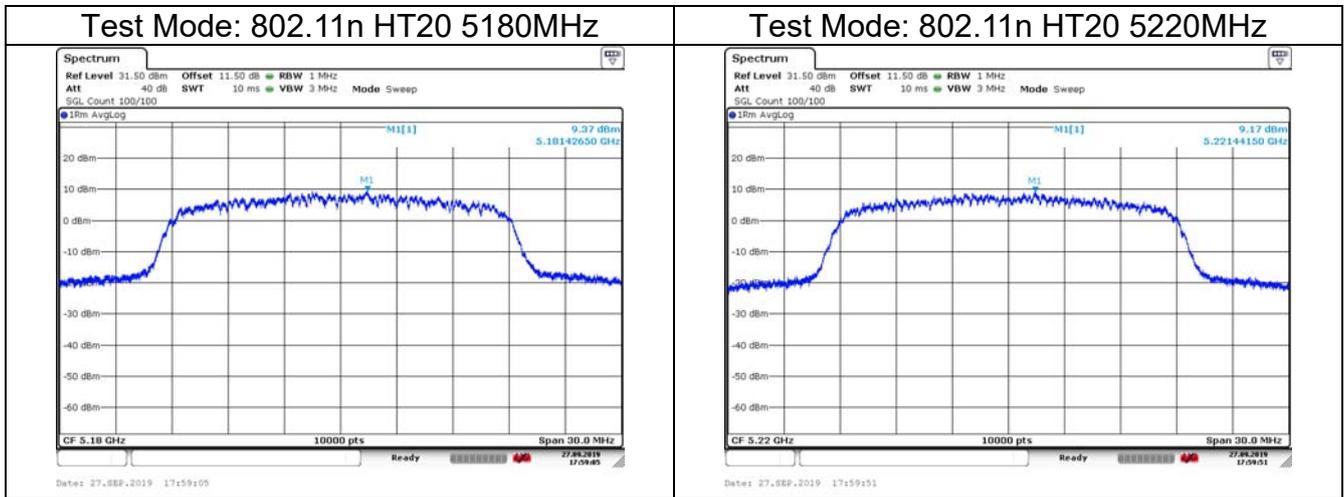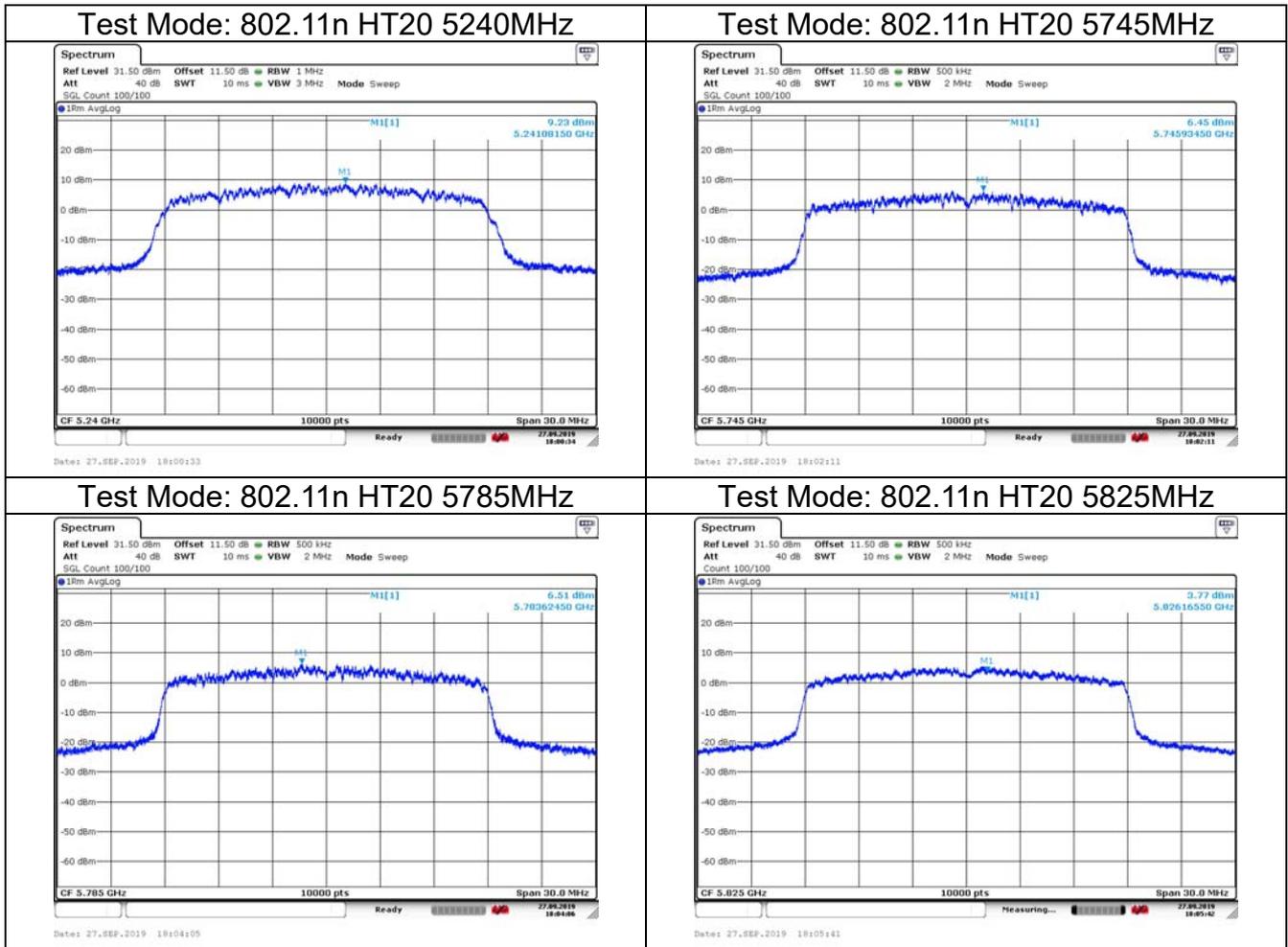
Test Mode: 802.11n HT40

Carrier frequency (MHz)	Correction Factor(dB)	Power Density(dBm)
5190	0.27	3.38
5230	0.27	4.40
5755	0.27	0.77
5795	0.27	0.43

Test Mode: 802.11n HT40 Chain0	Test Mode: 802.11n HT40 Chain0
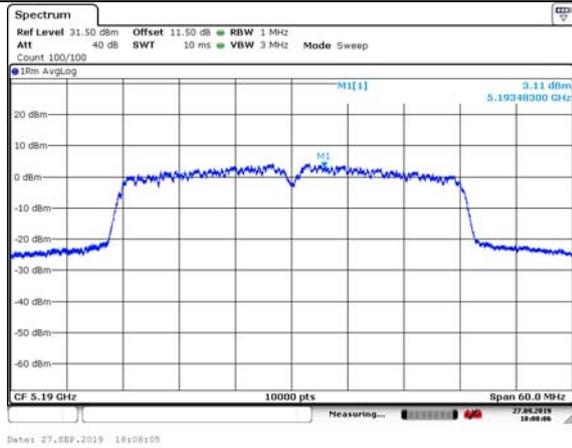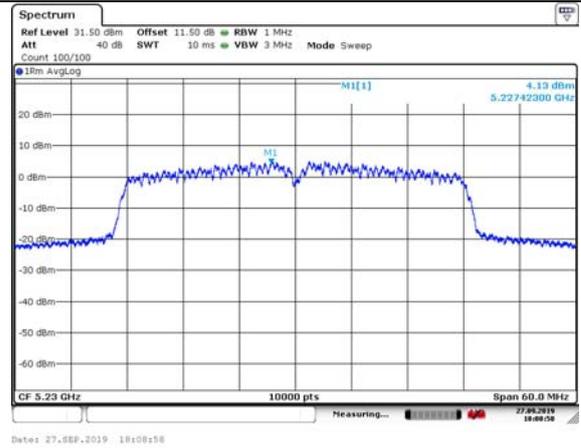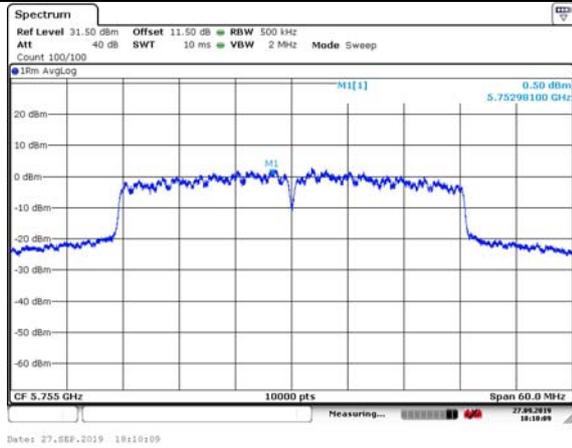
Test Mode: 802.11n HT40 Chain0	Test Mode: 802.11n HT40 Chain0
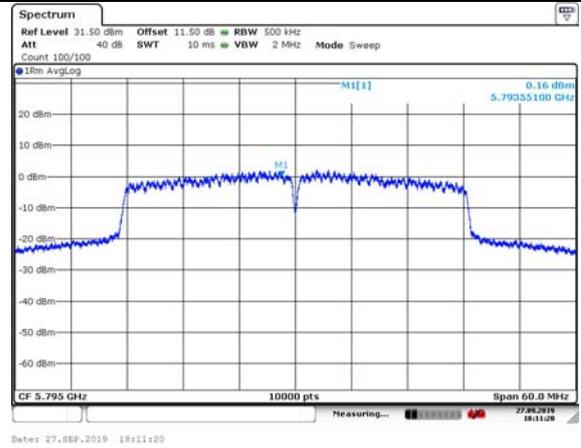
Test Mode: 802.11ac VHT80

Carrier frequency (MHz)	Correction Factor(dB)	Power Density(dBm)
5210	0.56	-1.75
5775	0.56	-2.28
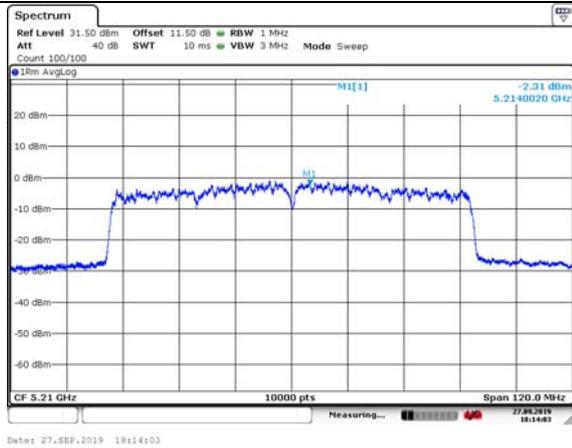
Test Mode: 802.11ac VHT80 5210MHz	Test Mode: 802.11ac VHT80 5775MHz
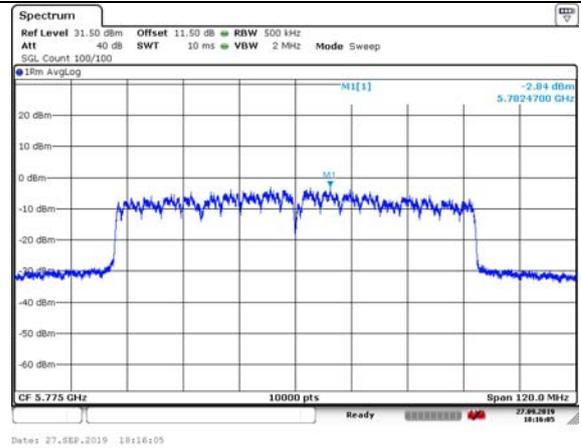
Frequency Stability

Mode	Data Rate	Center Frequency (MHz)	Measured Frequency (MHz)	Frequency Stability (ppm)	Voltage (V)	Temperature (°C)
802.11a	6Mbps	5180	5179.978849	-4.08	NV	-10
		5180	5179.979717	-3.92	NV	0
		5180	5180.013996	2.70	NV	+10
		5180	5179.987454	-2.42	NV	+20
		5180	5179.976584	-4.52	HV	+20
		5180	5180.018542	3.58	LV	+20
		5180	5180.024702	4.77	NV	+30
		5180	5179.996786	-0.62	NV	+40
		5180	5179.972498	-5.31	NV	+50
		5180	5180.002722	0.53	NV	+55