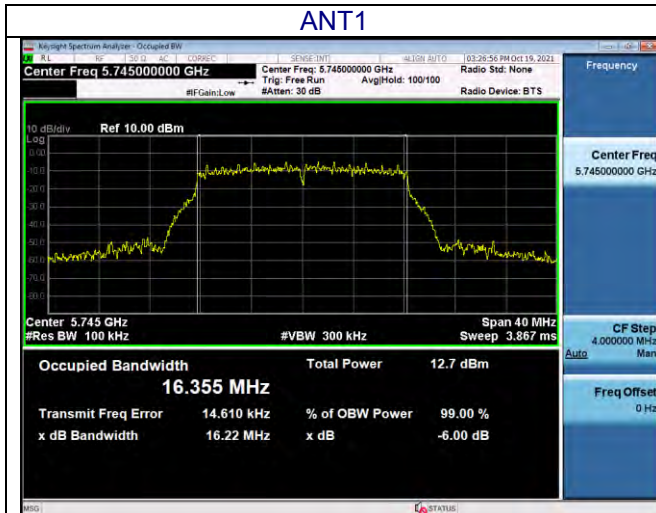
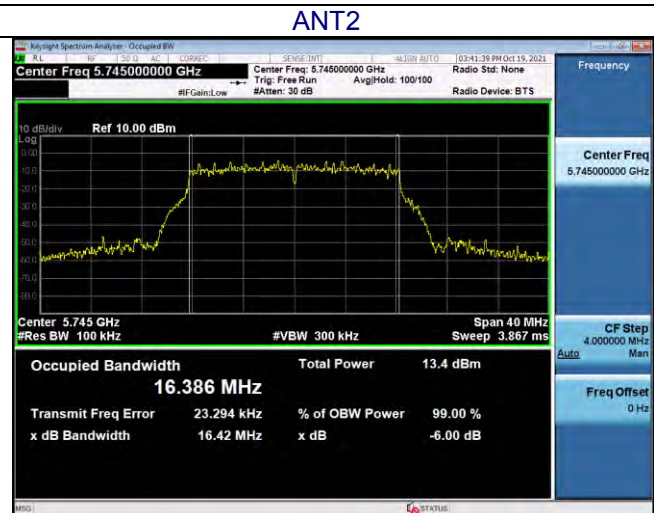


Band 4 -802.11a

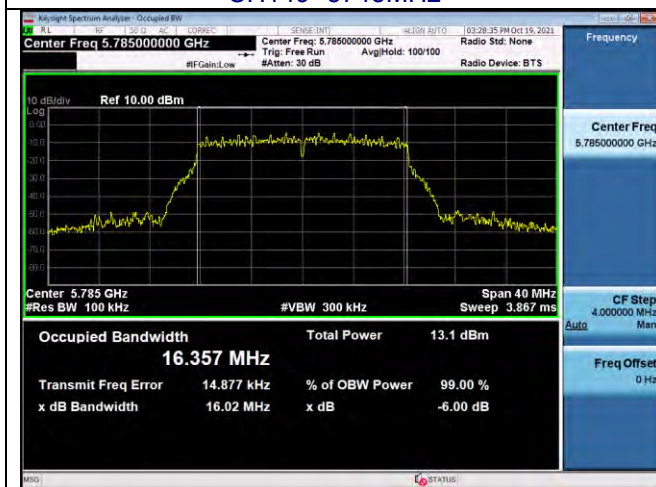
ANT1



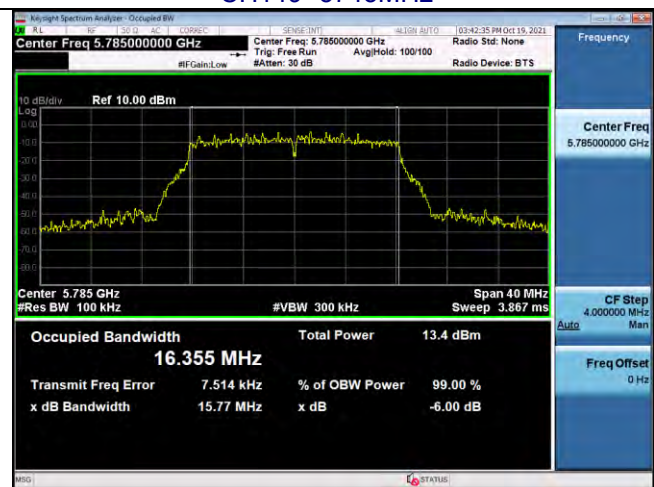
ANT2



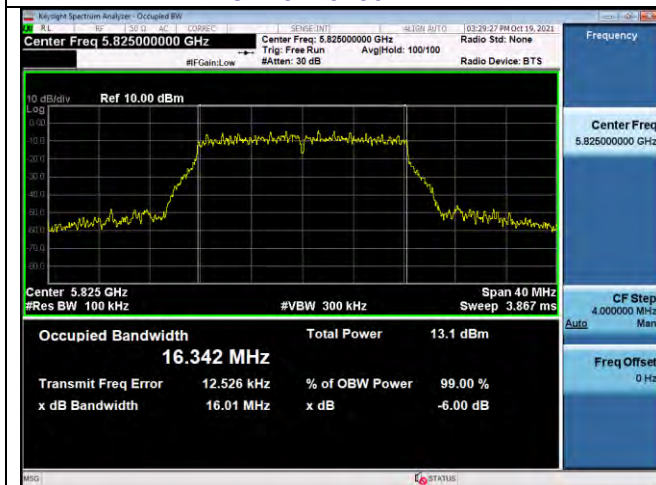
CH149 -5745MHz



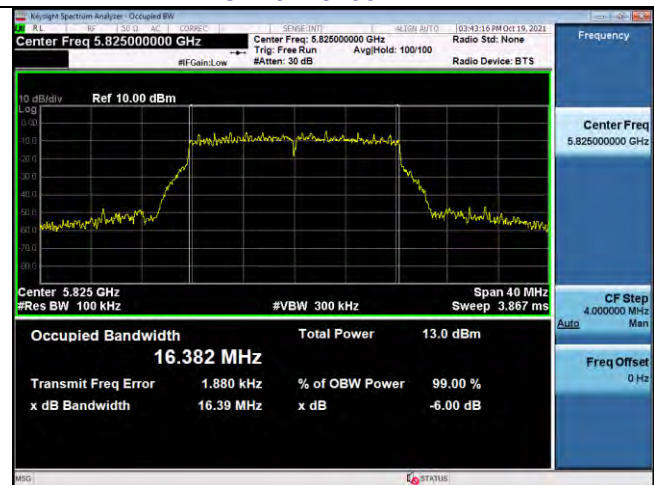
CH149 -5745MHz



CH157 -5785MHz



CH157 -5785MHz



CH165 -5825MHz

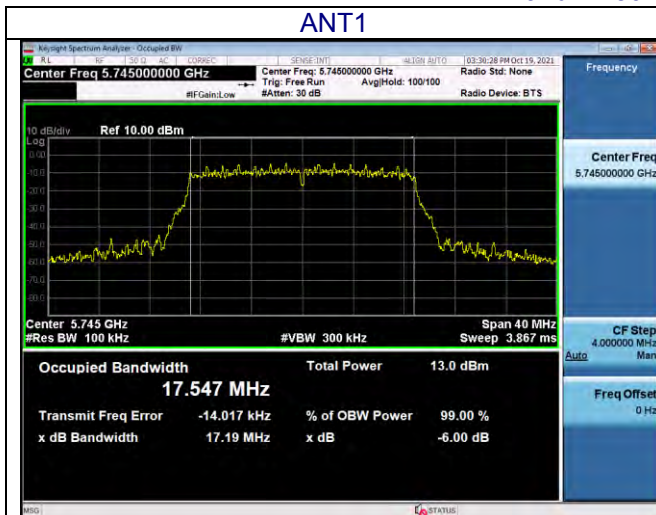


CH165 -5825MHz

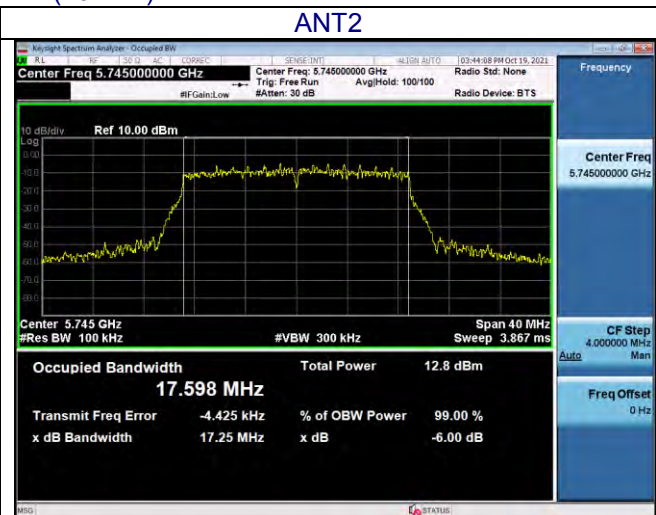


Band 4 -802.11n (20MHz)

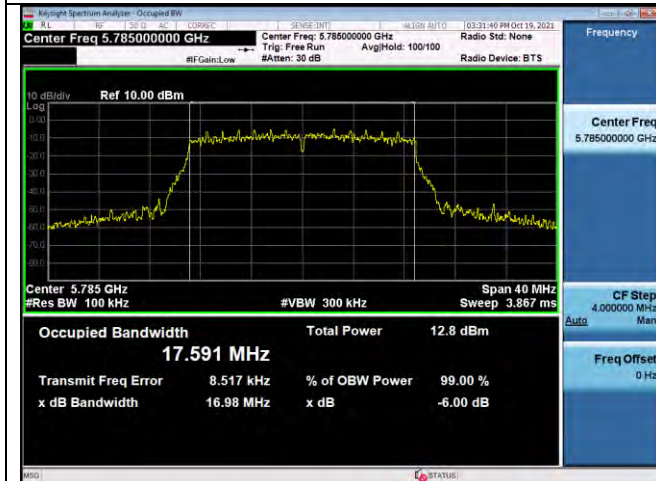
ANT1



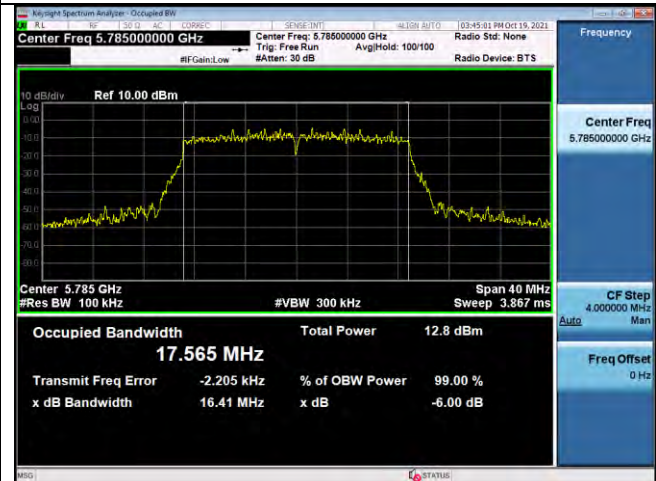
ANT2



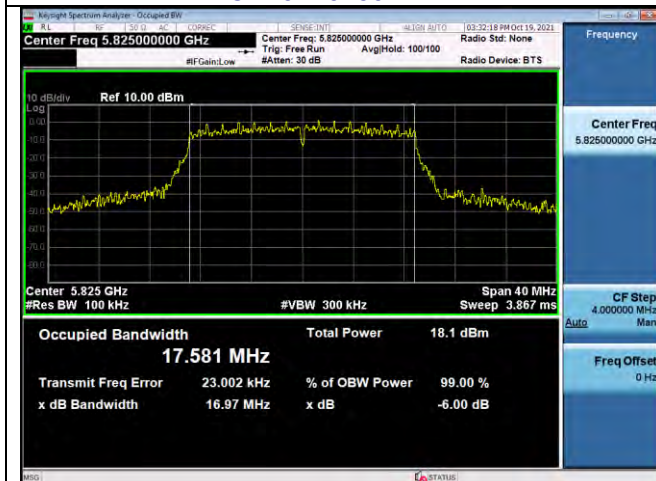
CH149 -5745MHz



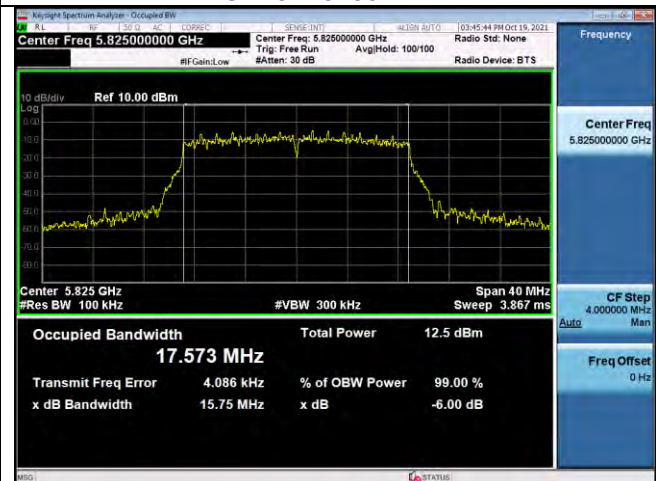
CH149 -5745MHz



CH157 -5785MHz



CH157 -5785MHz



CH165 -5825MHz

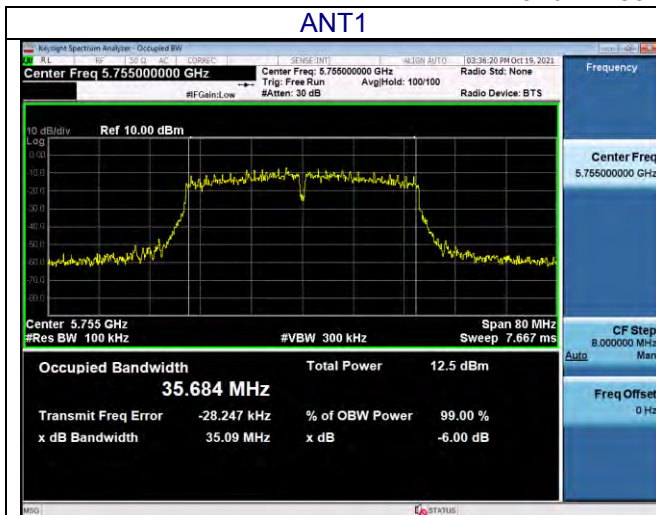


CH165 -5825MHz

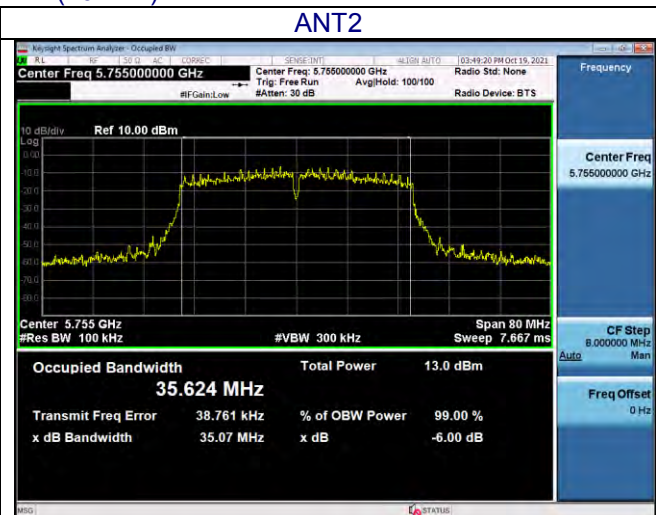


Band 4 – 802.11n (40MHz)

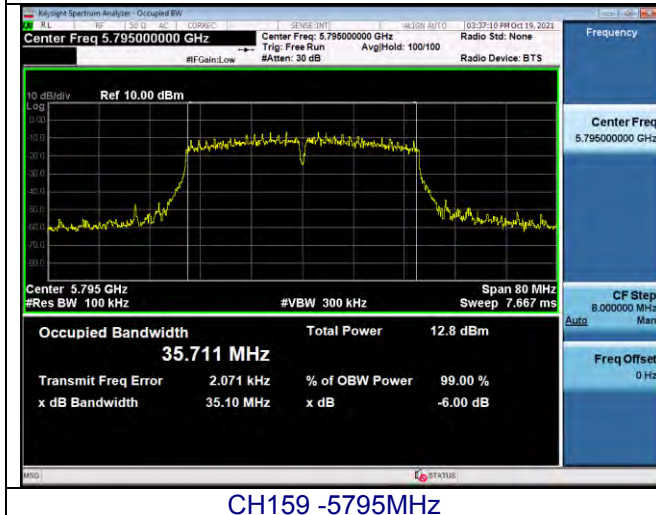
ANT1



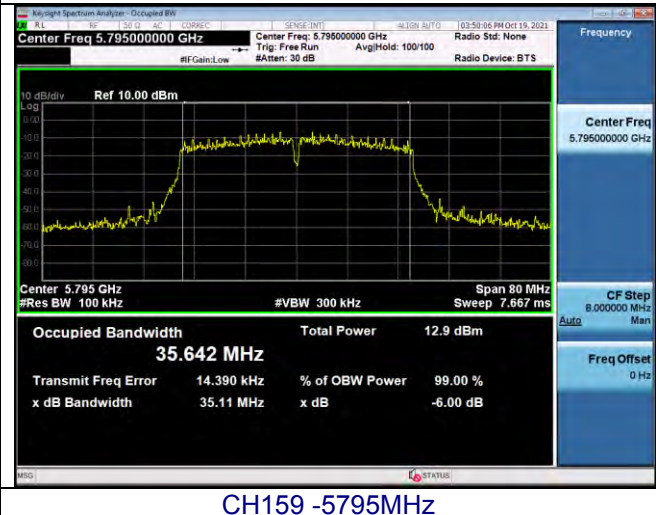
ANT2



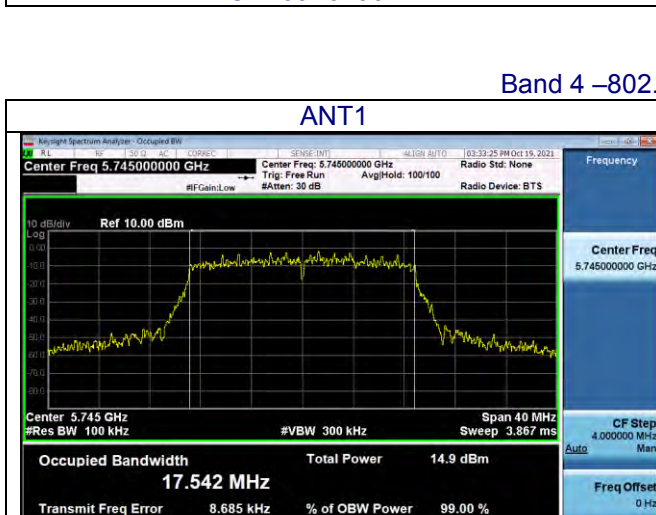
CH151 -5755MHz



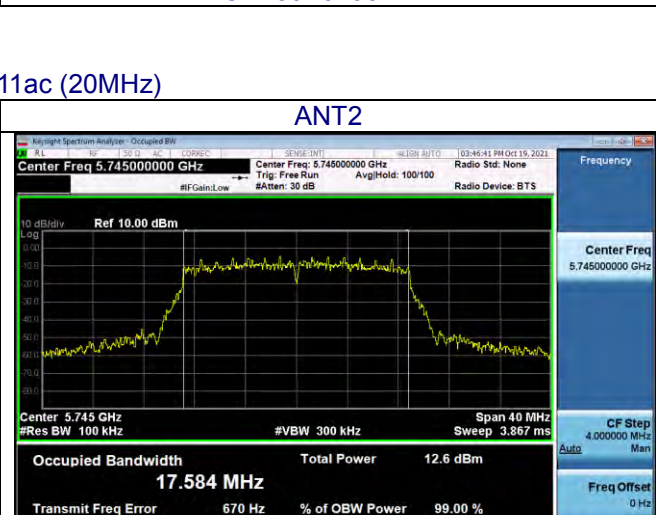
CH151 -5755MHz



CH159 -5795MHz



CH159 -5795MHz



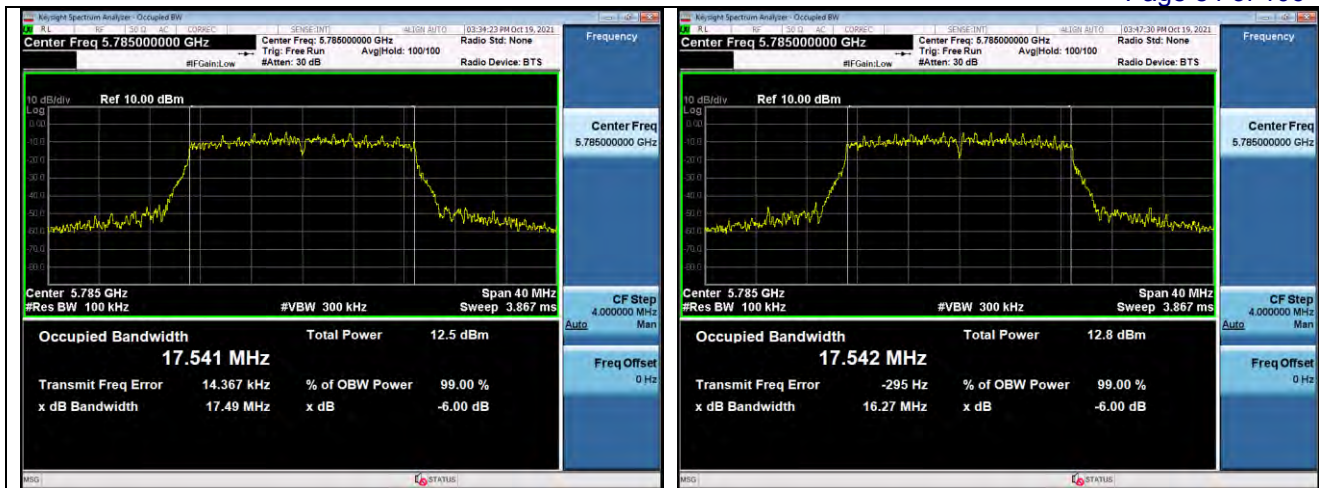
CH149 -5745MHz



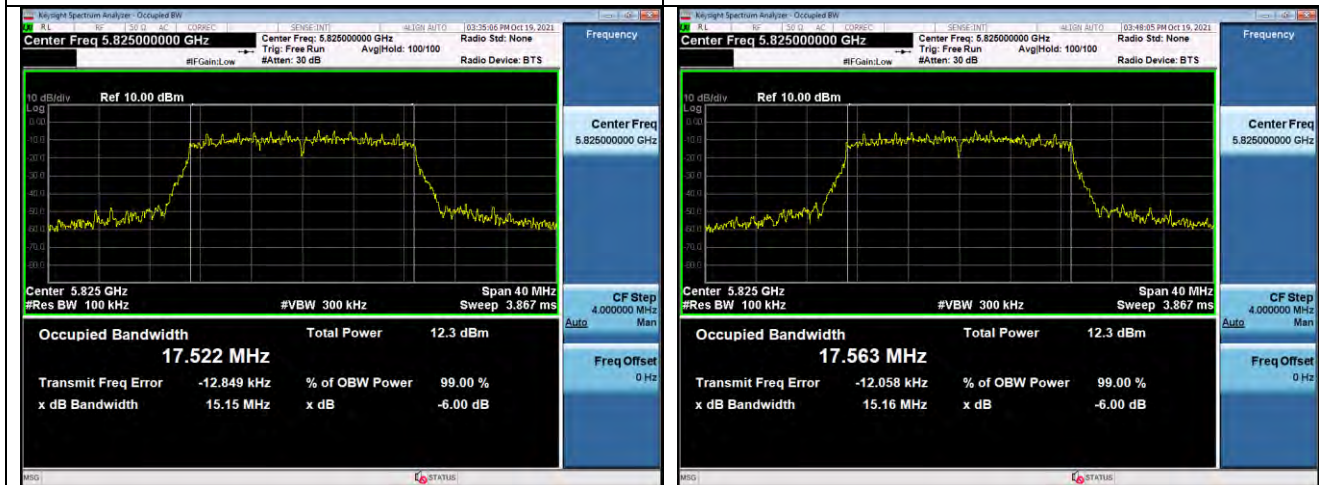
CH149 -5745MHz



Band 4 – 802.11ac (20MHz)



CH157 -5785MHz

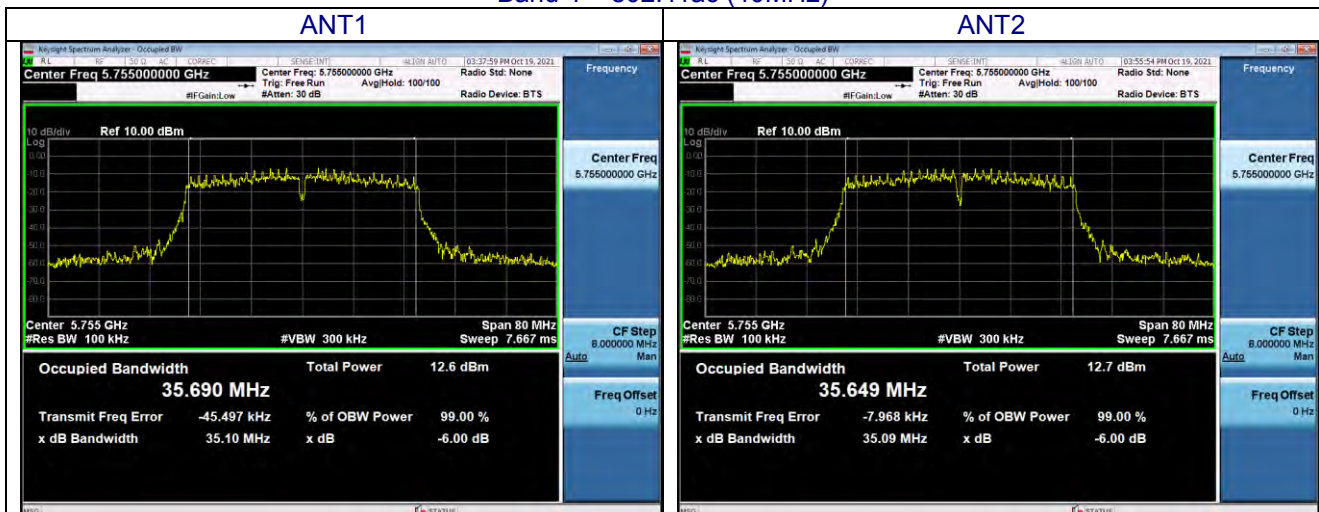


CH157 -5785MHz

CH165 -5825MHz

CH165 -5825MHz

Band 4 – 802.11ac (40MHz)

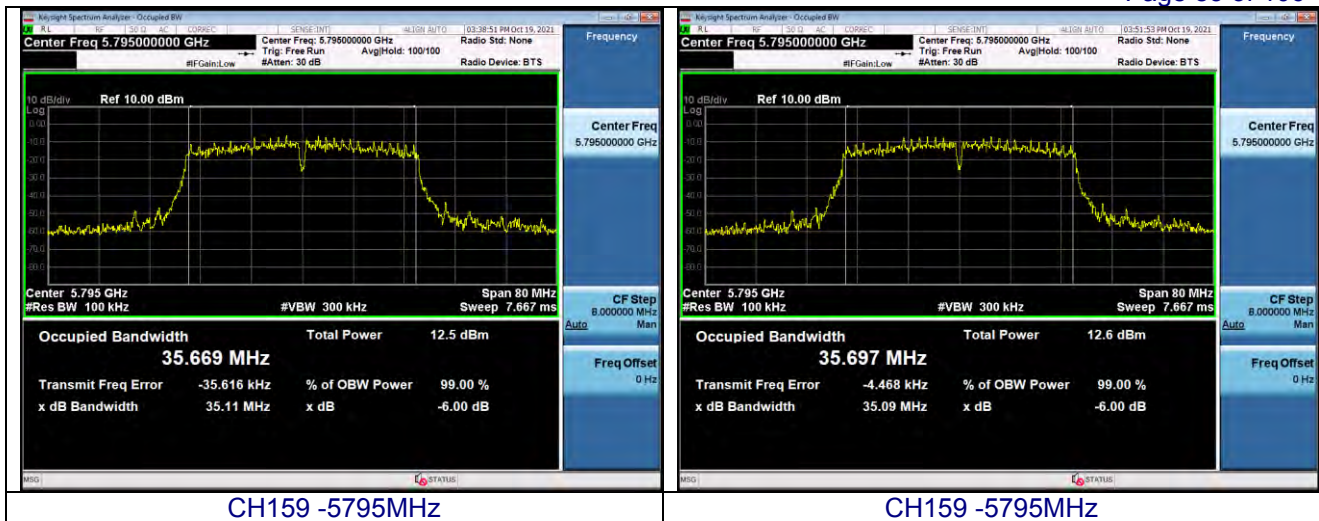


ANT1

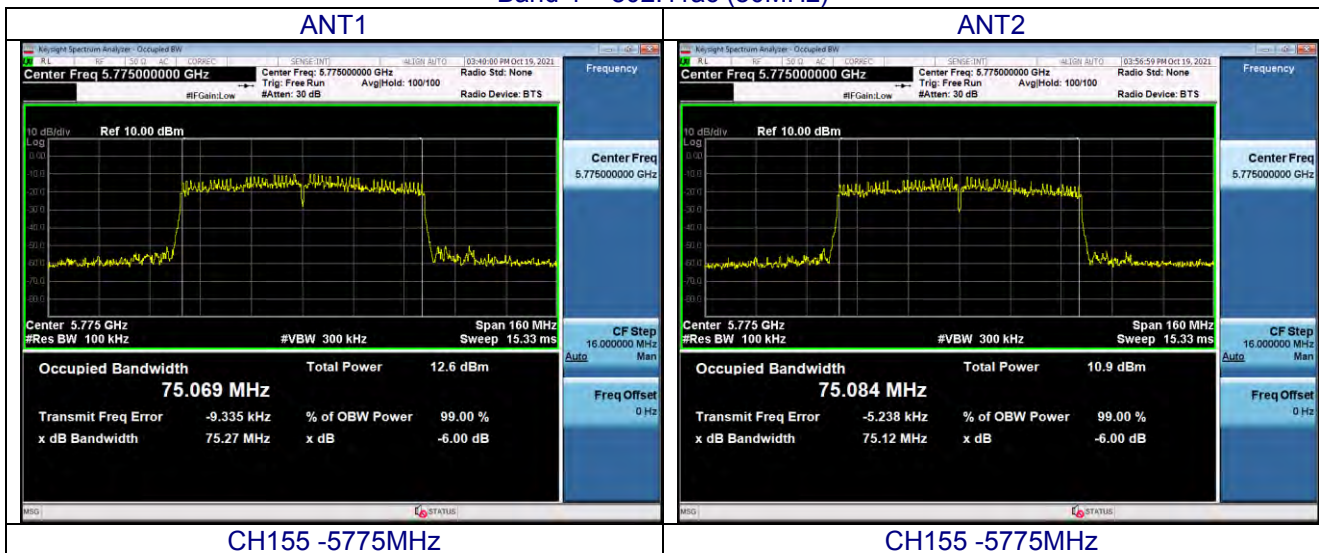
ANT2

CH151 -5755MHz

CH151 -5755MHz



Band 4 – 802.11ac (80MHz)



7. OUTPUT POWER TEST

Test Requirement:	15.407 (a)(1)(2)(3)
Test Method:	KDB 789033 D02 v02r01

7.1 APPLIED PROCEDURES/LIMIT

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi

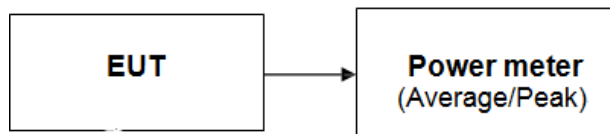
For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

Test Item	Test band	Limit	Result
Max conducted output power	U-NII-1	250 mW / 23.98dbm	Pass
Max conducted output power	U-NII-3	1 W / 30dbm	Pass

7.2 DEVIATION FROM STANDARD

No deviation.

7.3 TEST SETUP



7.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.5 TEST RESULT

Temperature :	26℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V

BAND 1

802.11 Mode	Channel No.	Frequency [MHz]	Conducted Power [dBm]		Limit [dBm]
			ANT1	ANT2	
a	36	5180	4.82	3.89	23.98
	40	5200	4.59	3.24	23.98
	48	5240	2.97	2.81	23.98
n(20MHz)	36	5180	4.12	3.07	23.98
	40	5200	3.29	3.34	23.98
	48	5240	1.51	2.43	23.98
n(40MHz)	38	5190	0.43	0.84	23.98
	46	5230	-0.28	-0.16	23.98
ac(20MHz)	36	5180	2.71	1.69	23.98
	40	5200	2.46	2.28	23.98
	48	5240	1.07	0.56	23.98
ac(40MHz)	38	5190	1.24	-0.01	23.98
	46	5230	-0.48	-0.93	23.98
ac(80MHz)	42	5210	-2.39	-1.67	23.98

MIMO/CDD Maximum Conducted Output Power Measurements

802.11 Mode	Channel No.	Freq. [MHz]	Conducted Power [dBm]		MIMO [dBm]	Limit [dBm]
			ANT1	ANT2		
a	36	5180	4.82	3.89	/	/
	40	5200	4.59	3.24	/	/
	48	5240	2.97	2.81	/	/
n(20MHz)	36	5180	4.12	3.07	6.64	21.97
	40	5200	3.29	3.34	6.33	21.97
	48	5240	1.51	2.43	5.00	21.97
n(40MHz)	38	5190	0.43	0.84	3.65	21.97
	46	5230	-0.28	-0.16	2.79	21.97
ac(20MHz)	36	5180	2.71	1.69	5.24	21.97
	40	5200	2.46	2.28	5.38	21.97
	48	5240	1.07	0.56	3.83	21.97
ac(40MHz)	38	5190	1.24	-0.01	3.67	21.97
	46	5230	-0.48	-0.93	2.31	21.97
ac(80MHz)	42	5210	-2.39	-1.67	1.00	21.97

NOTE: power limit (MIMO)= power limit – (8.01-6)=23.98-2.01=21.97

BAND 4

802.11 Mode	Channel No.	Frequency [MHz]	Conducted Power [dBm]		Limit [dBm]
			ANT1	ANT2	
a	149	5745	1.63	2.32	30.00
	157	5785	1.45	2.81	30.00
	165	5825	1.93	1.76	30.00
n (20MHz)	149	5745	1.48	1.92	30.00
	157	5785	1.50	1.67	30.00
	165	5825	1.21	0.73	30.00

n (40MHz)	151	5755	-0.56	-0.12	30.00
	159	5795	-0.30	-0.15	30.00
ac (20MHz)	149	5745	2.78	1.24	30.00
	157	5785	0.32	0.46	30.00
	165	5825	-0.29	-0.03	30.00
ac(40MHz)	151	5755	-0.96	-1.48	30.00
	159	5795	-1.51	-1.38	30.00
ac(80MHz)	155	5775	-2.31	-3.94	30.00

MIMO/CDD Maximum Conducted Output Power Measurements

802.11 Mode	Channel No.	Freq. [MHz]	Conducted Power [dBm]		MIMO [dBm]	Limit [dBm]
			ANT1	ANT2		
a	149	5745	1.63	2.32	/	/
	157	5785	1.45	2.81	/	/
	165	5825	1.93	1.76	/	/
n(20MHz)	149	5745	1.48	1.92	4.72	27.99
	157	5785	1.50	1.67	4.60	27.99
	165	5825	1.21	0.73	3.99	27.99
n(40MHz)	151	5755	-0.56	-0.12	2.68	27.99
	159	5795	-0.30	-0.15	2.79	27.99
ac(20MHz)	149	5745	2.78	1.24	5.09	27.99
	157	5785	0.32	0.46	3.40	27.99
	165	5825	-0.29	-0.03	2.85	27.99
ac(40MHz)	151	5755	-0.96	-1.48	1.80	27.99
	159	5795	-1.51	-1.38	1.57	27.99
ac(80MHz)	155	5775	-2.31	-3.94	-0.04	27.99

NOTE: power limit (MIMO)= power limit – (8.01-6)=30-2.01=27.99

8. OUT OF BAND EDGE EMISSION

Test Requirement:	15.407 (b)
Test Method:	KDB 789033 D02 v02r01

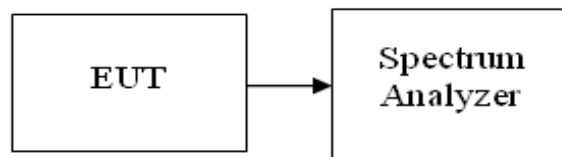
8.1 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

8.2 DEVIATION FROM STANDARD

No deviation.

8.3 TEST SETUP



8.4 EUT OPERATION CONDITIONS

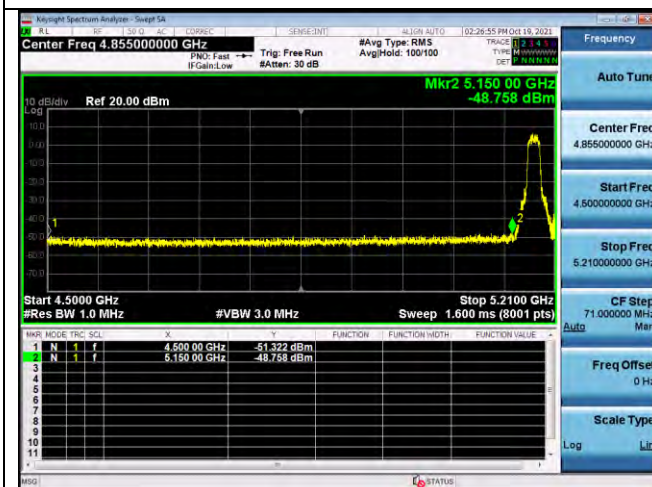
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

8.5 TEST RESULTS

Test plot as follows:

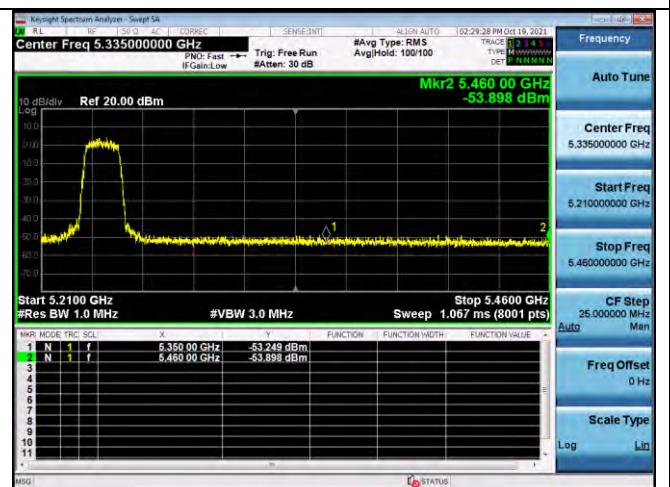
ANT1-band1

Test mode:



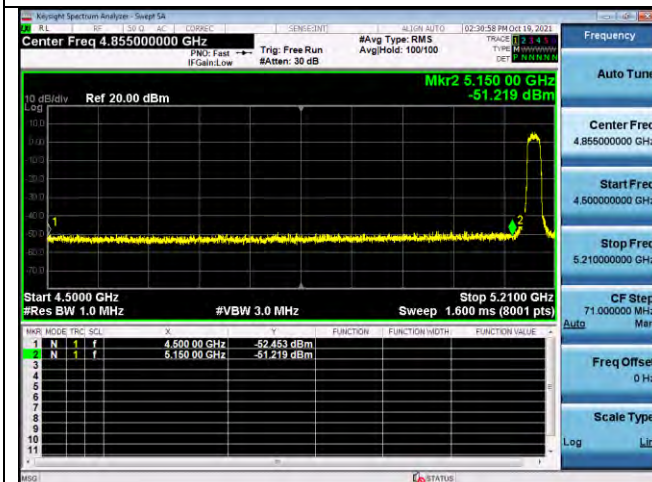
Lowest channel

802.11a



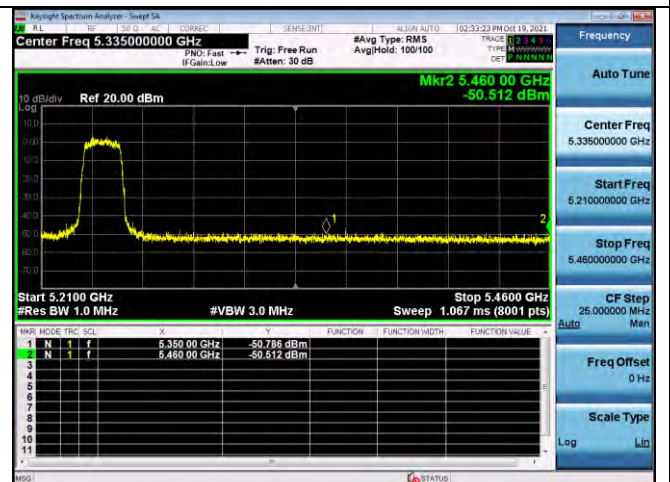
Highest channel

Test mode:



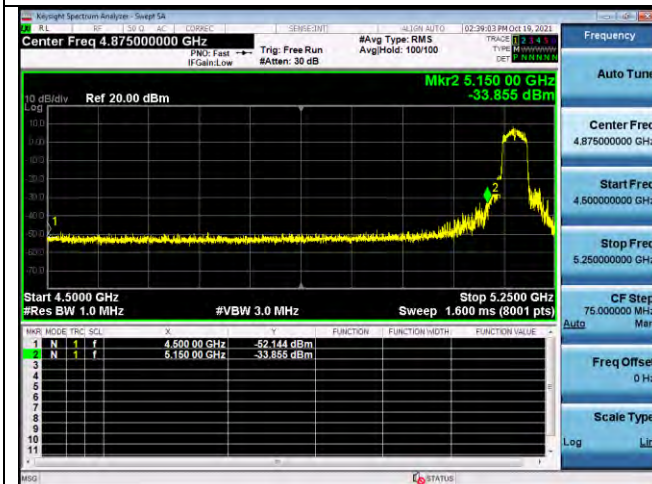
Lowest channel

802.11n20



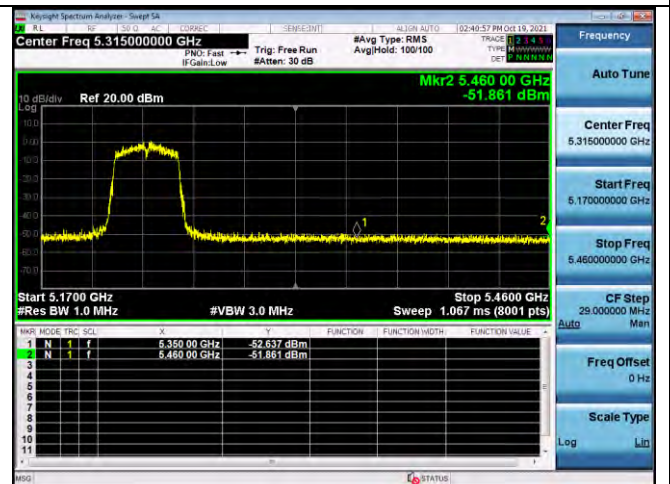
Highest channel

Test mode:



Lowest channel

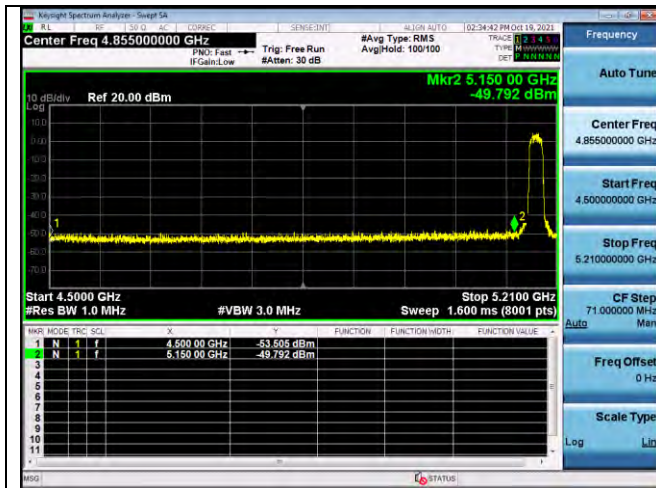
802.11n40



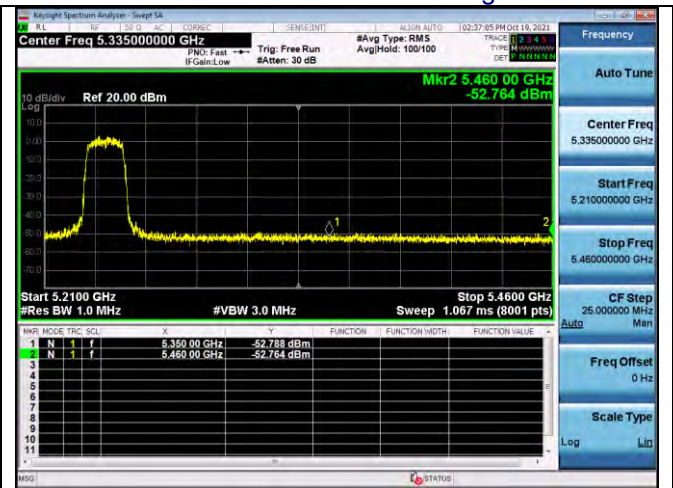
Highest channel

Test mode:

802.11ac20

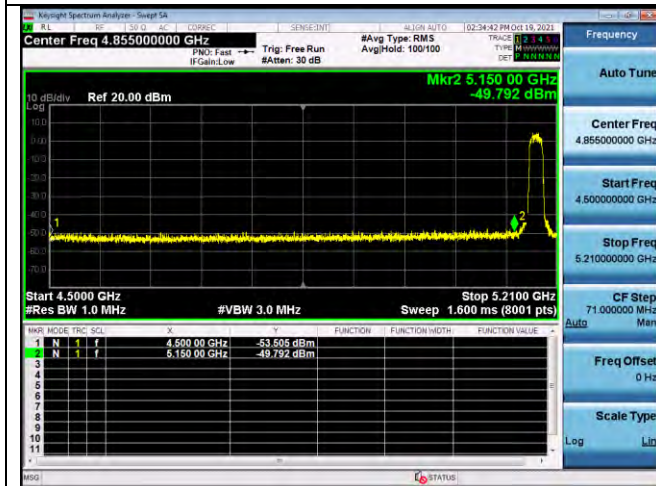


Lowest channel



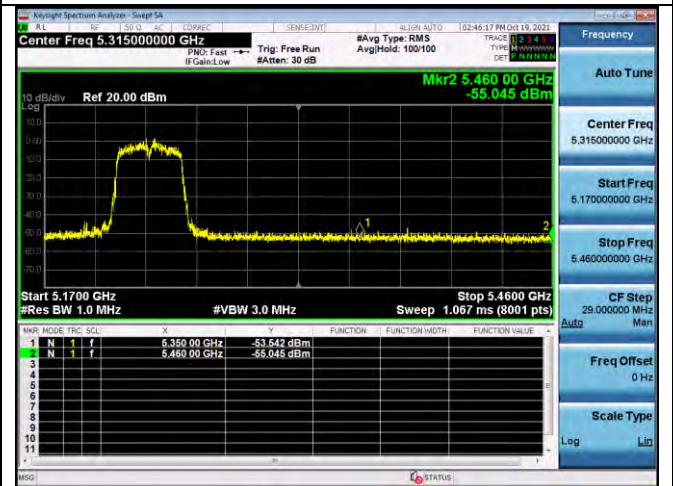
Highest channel

Test mode:



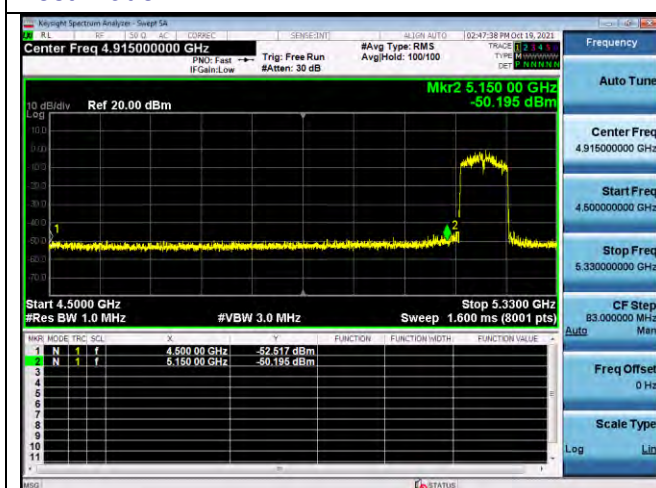
Lowest channel

802.11ac40



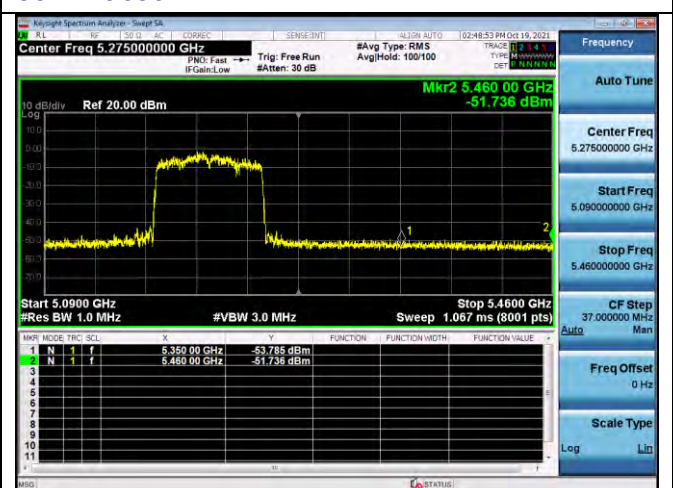
Highest channel

Test mode:



Lowest channel

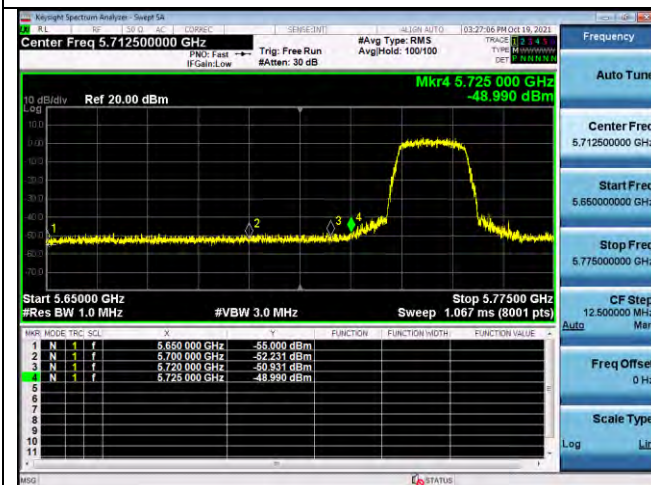
802.11ac80



Highest channel

ANT1-band 4

Test mode:



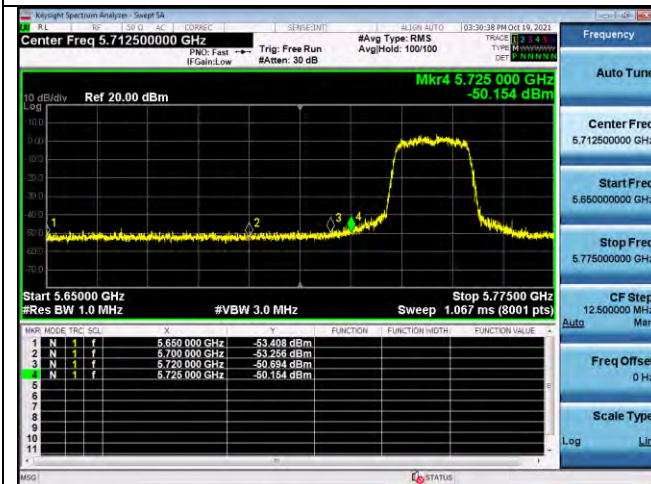
Lowest channel

802.11a



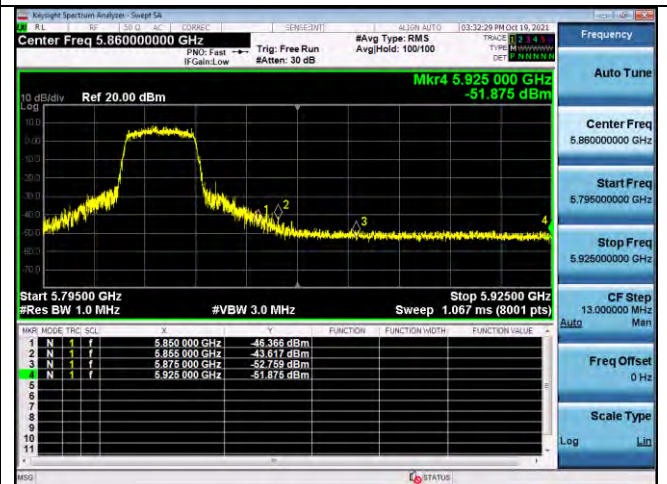
Highest channel

Test mode:



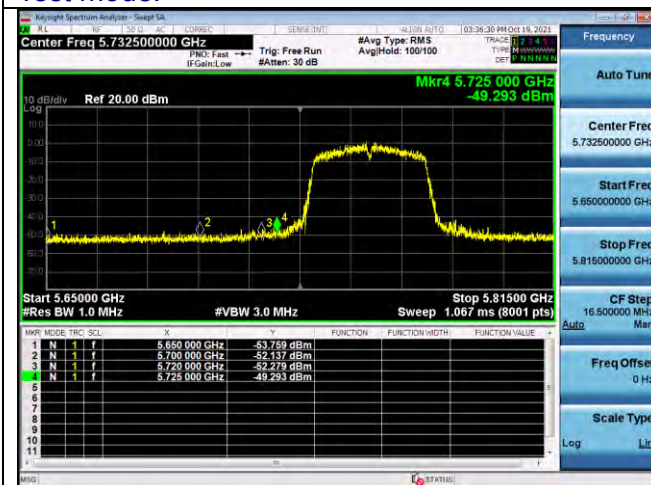
Lowest channel

802.11n20



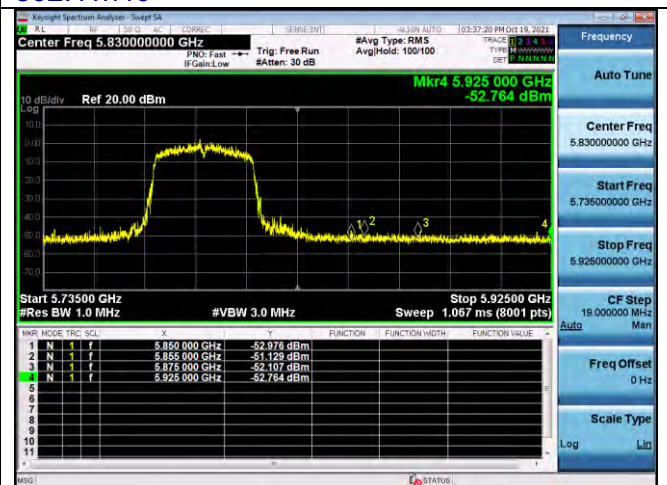
Highest channel

Test mode:



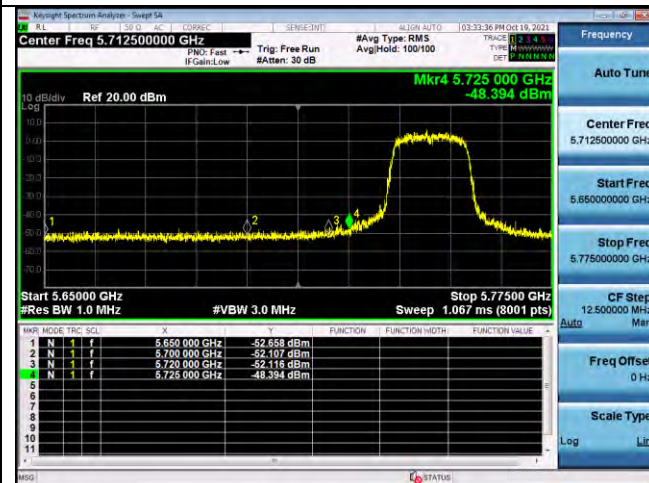
Lowest channel

802.11n40



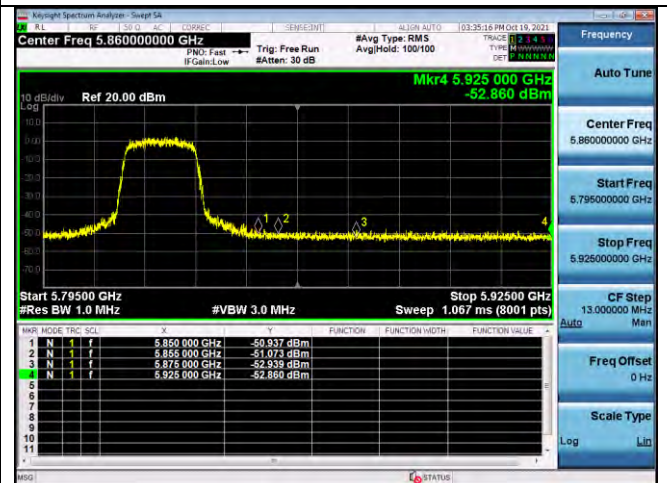
Highest channel

Test mode:



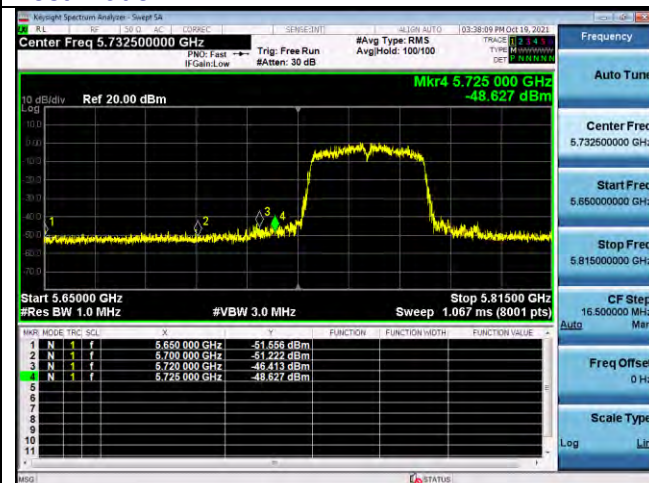
Lowest channel

802.11ac20



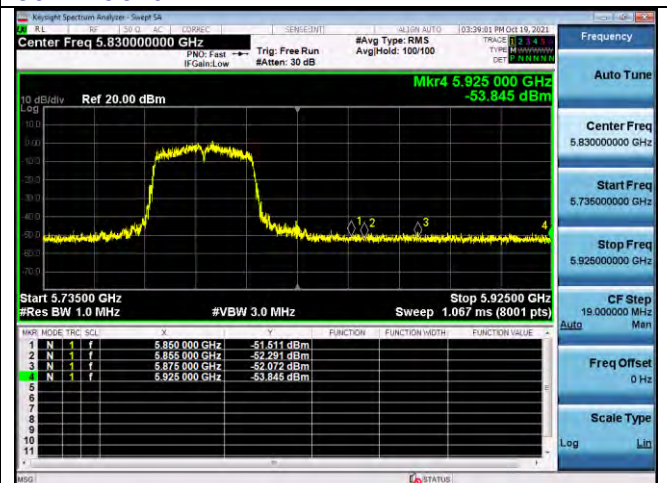
Highest channel

Test mode:



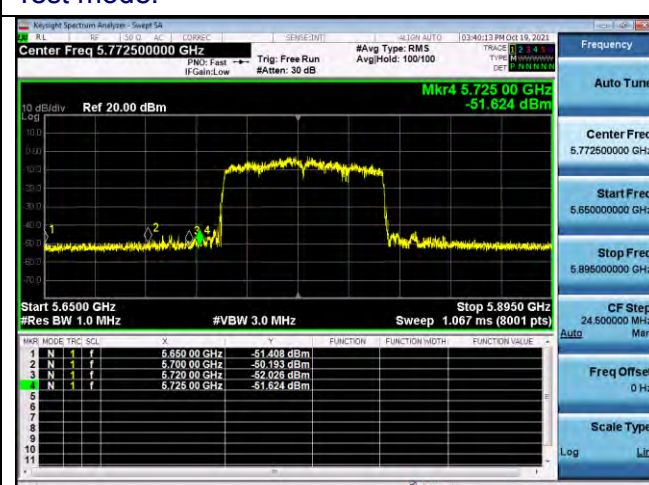
Lowest channel

802.11ac40



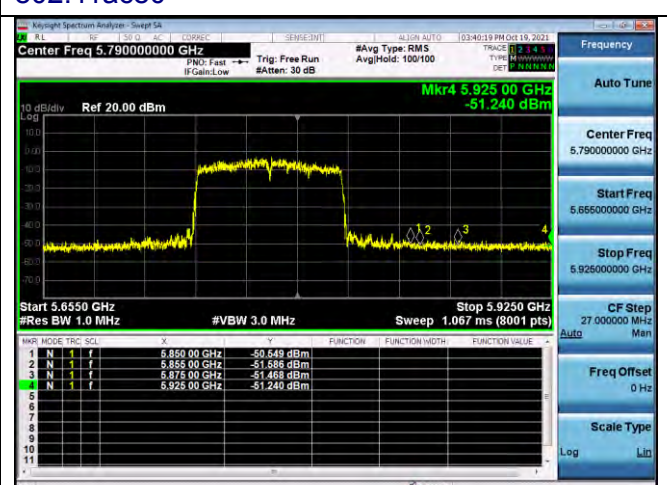
Highest channel

Test mode:



Lowest channel

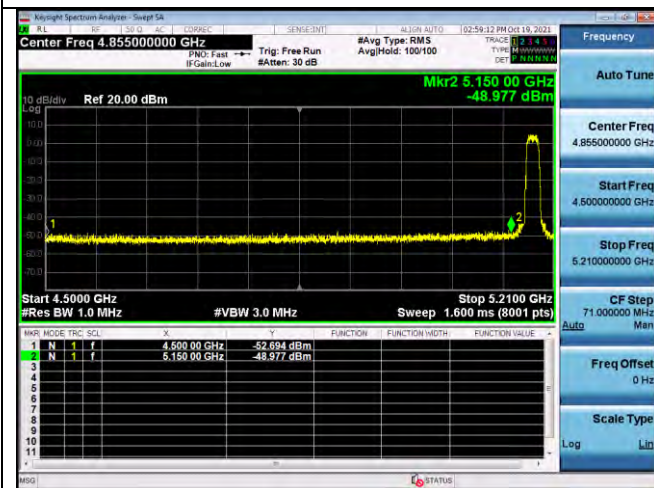
802.11ac80



Highest channel

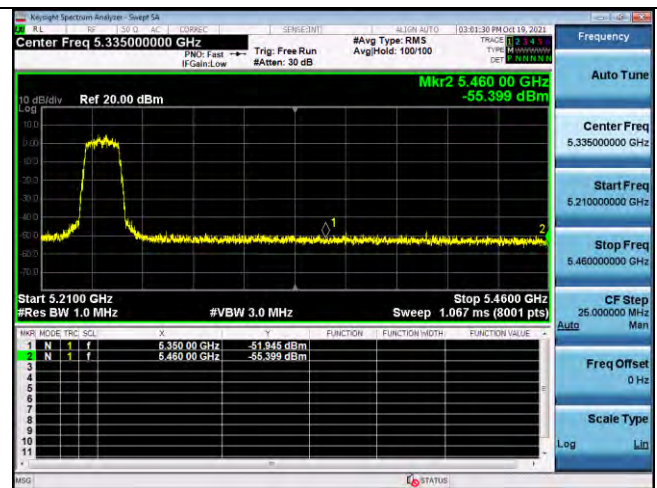
ANT2-band1

Test mode:



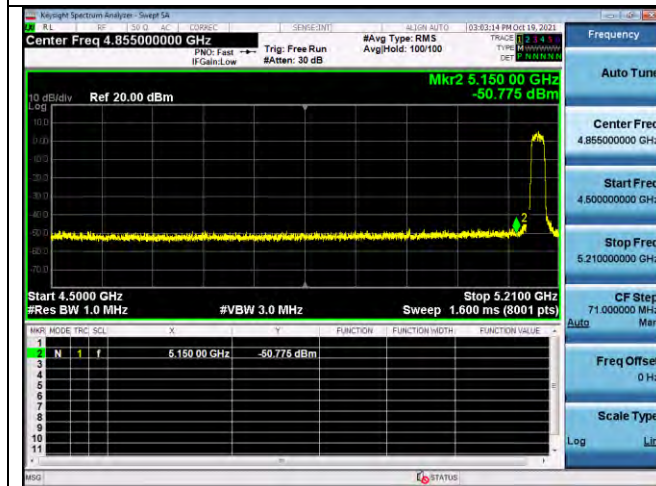
Lowest channel

802.11a



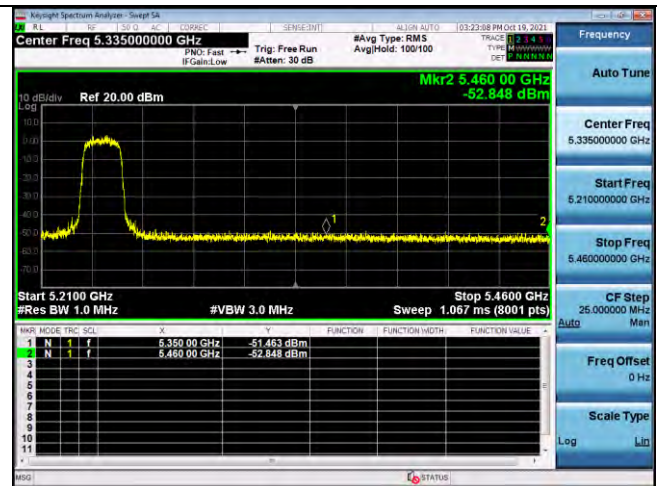
Highest channel

Test mode:



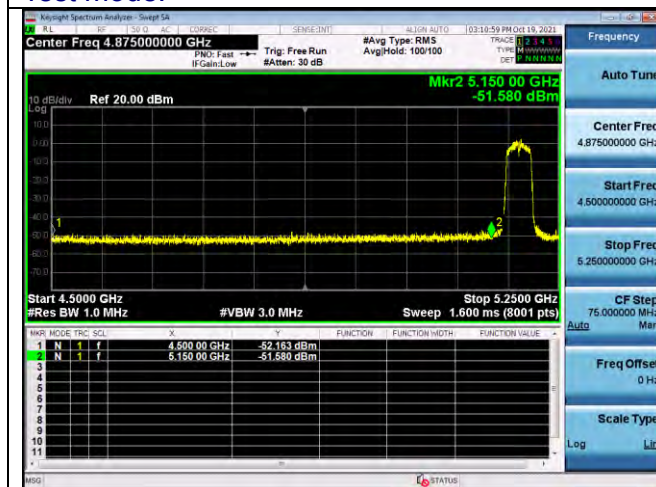
Lowest channel

802.11n20



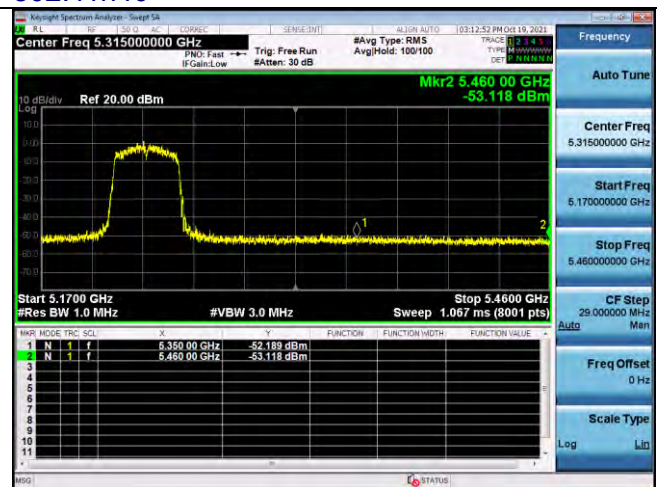
Highest channel

Test mode:



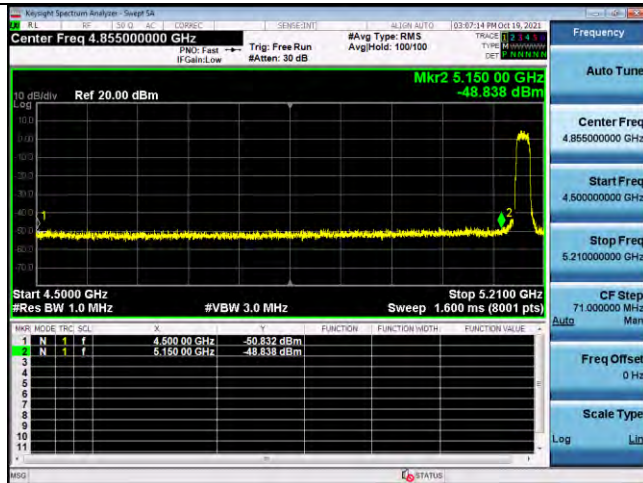
Lowest channel

802.11n40



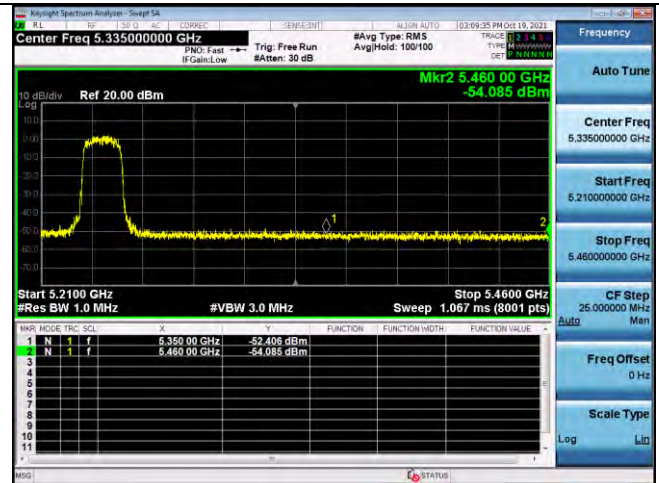
Highest channel

Test mode:



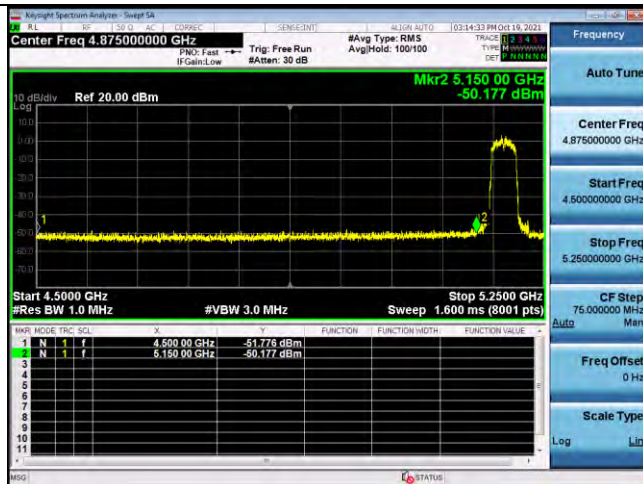
Lowest channel

802.11ac20



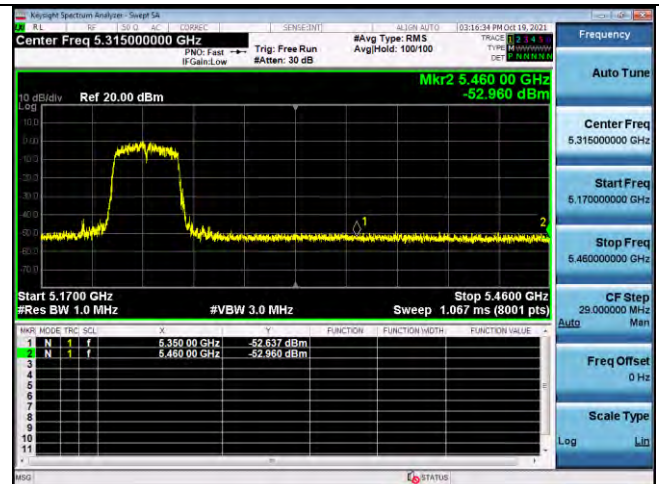
Highest channel

Test mode:



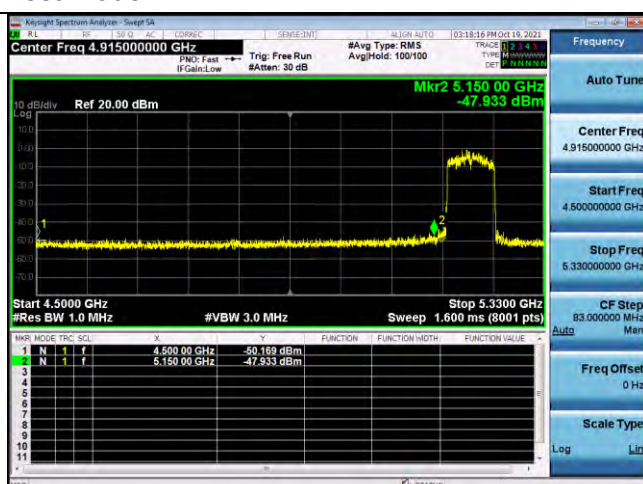
Lowest channel

802.11ac40



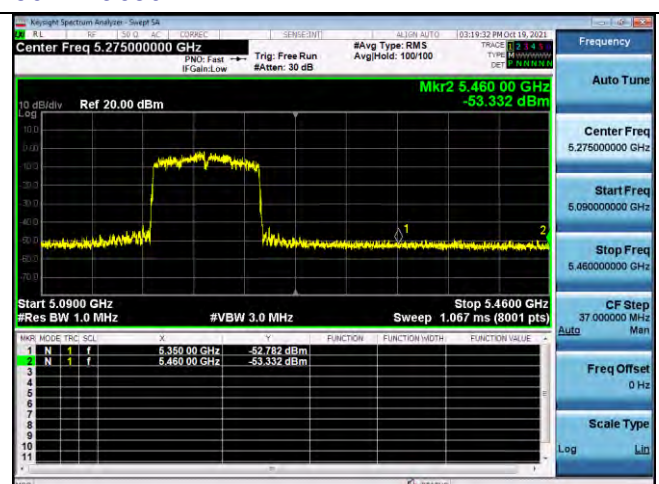
Highest channel

Test mode:



Lowest channel

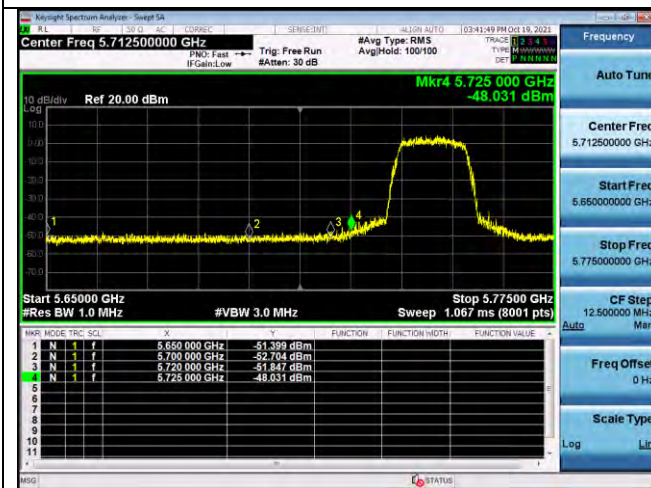
802.11ac80



Highest channel

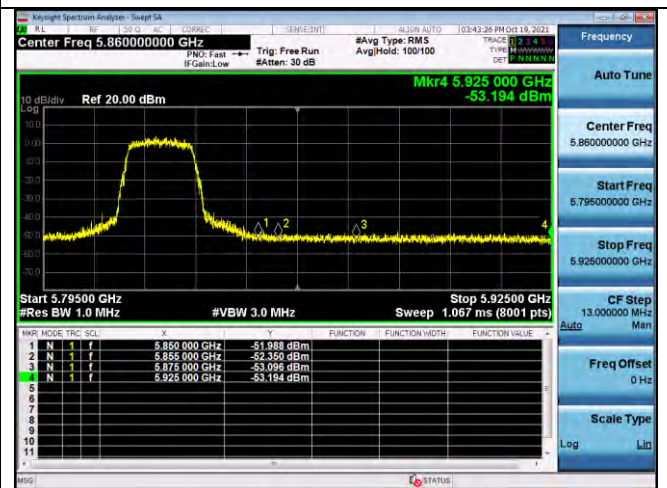
ANT2-band 4

Test mode:



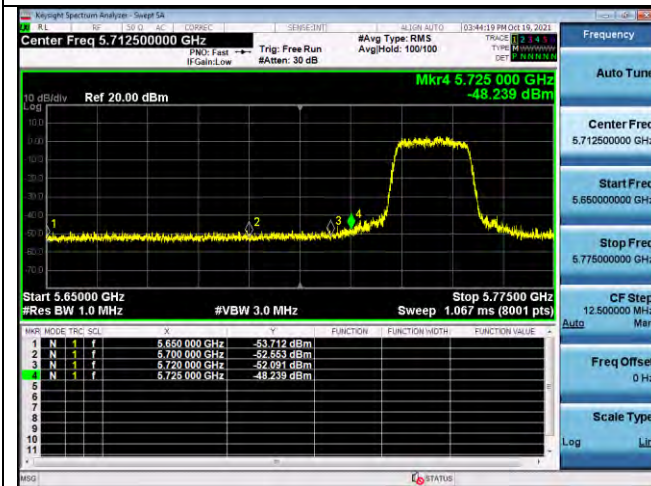
Lowest channel

802.11a



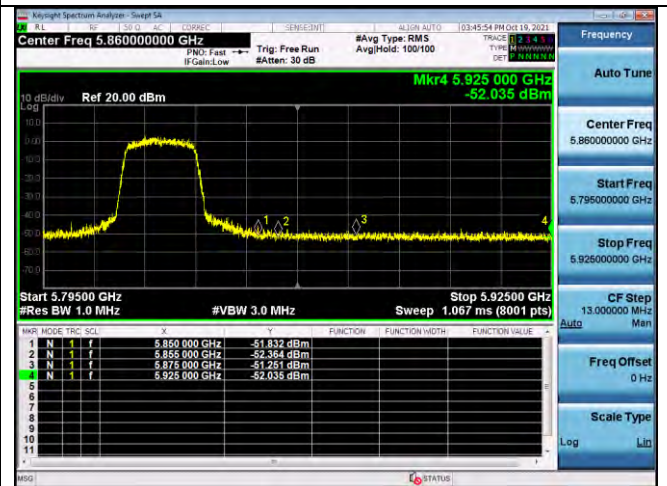
Highest channel

Test mode:



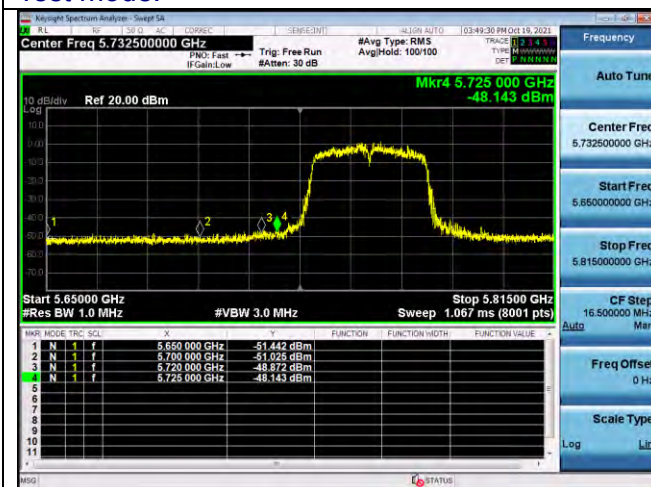
Lowest channel

802.11n20



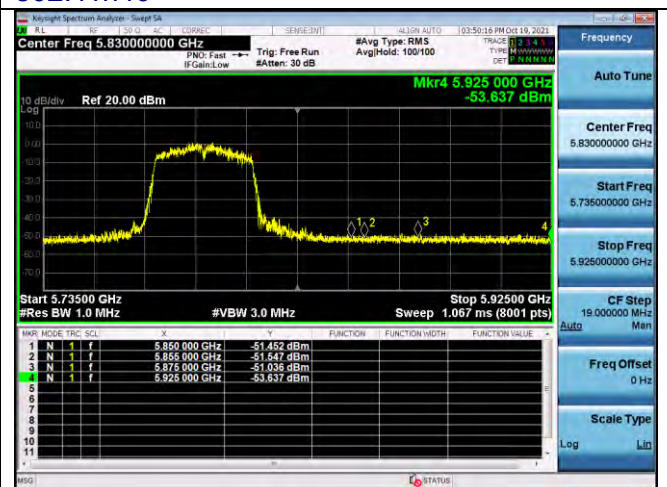
Highest channel

Test mode:



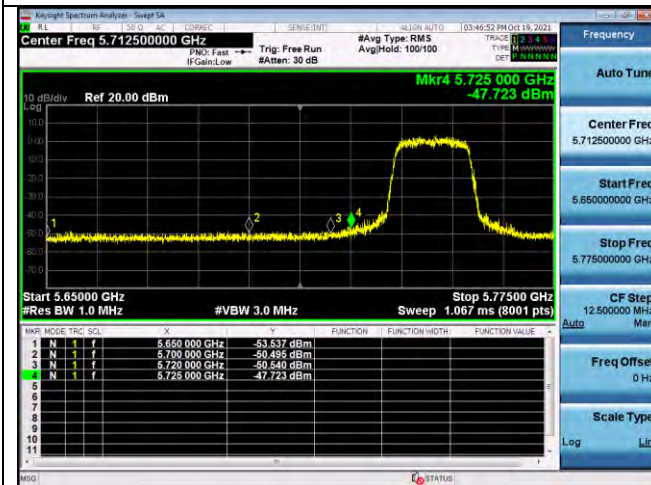
Lowest channel

802.11n40



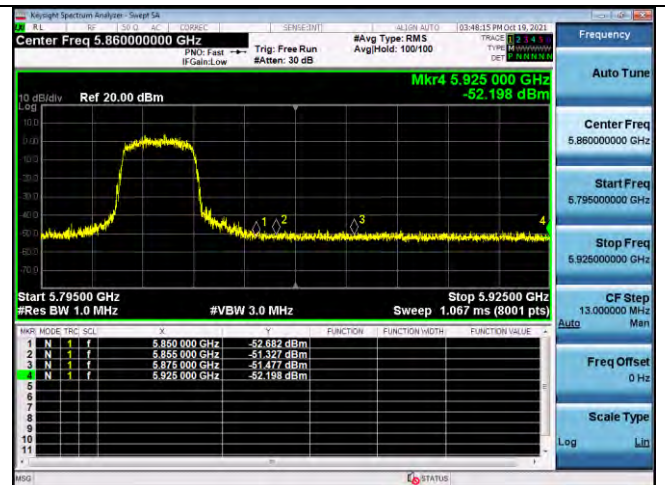
Highest channel

Test mode:



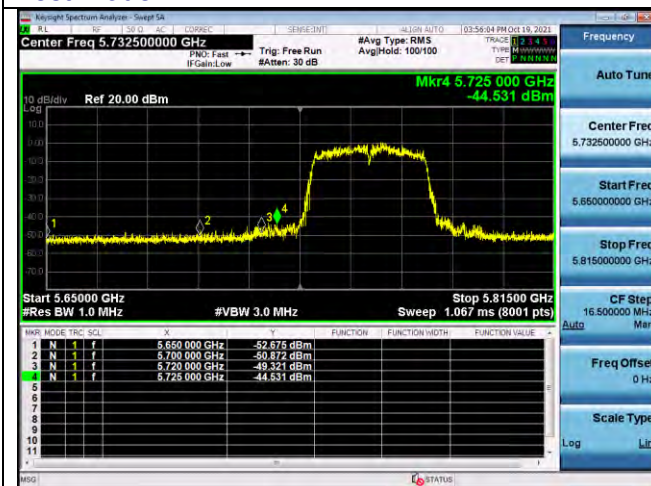
Lowest channel

802.11ac20



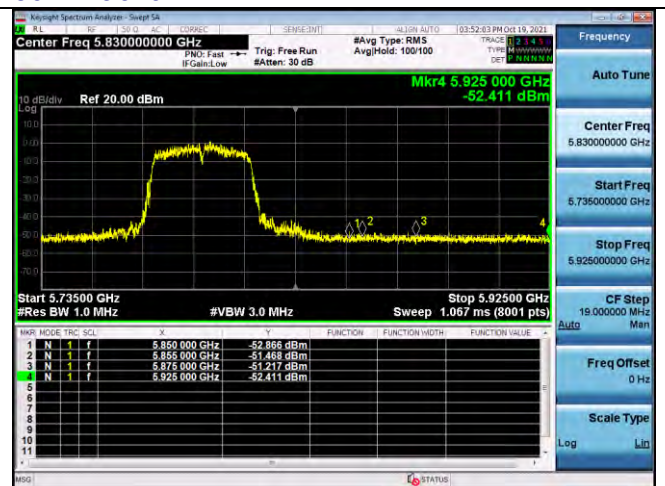
Highest channel

Test mode:



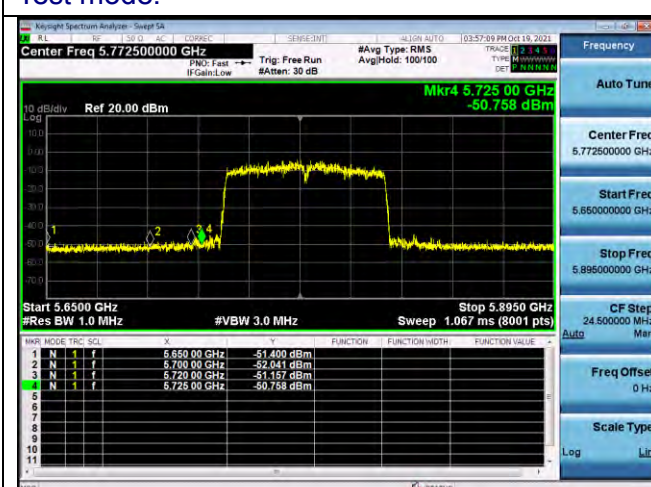
Lowest channel

802.11ac40



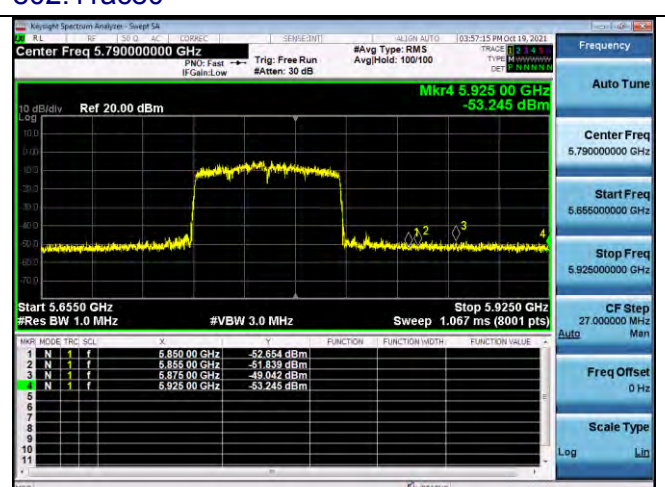
Highest channel

Test mode:



Lowest channel

802.11ac80



Highest channel

9. FREQUENCY STABILITY MEASUREMENT

9.1 LIMIT

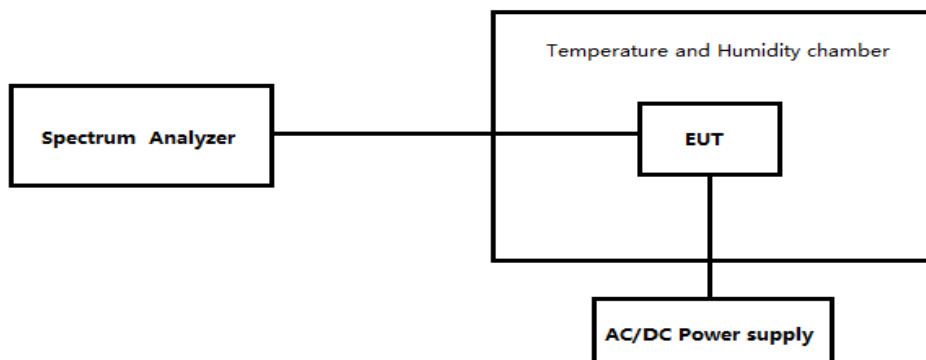
According to §15.407(g), Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of

normal operation as specified in the user's manual.

9.2 TEST PROCEDURE

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

9.3 TEST CONFIGURATION



9.4 TEST RESULT

Temperature :	26°C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC120V

Note: Only the test results of the worst channel are displayed

ANT1-802.11a- CH36

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	81	0.0156
40	110	76	0.0147
30	110	83	0.0160
20	110	77	0.0149

10	110	90	0.0174
0	110	63	0.0122
-10	110	67	0.0129
-20	110	73	0.0141
-30	110	76	0.0147

ANT1-802.11a- CH48

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	70	0.0135
40	110	72	0.0139
30	110	88	0.0170
20	110	91	0.0175
10	110	88	0.0171
0	110	91	0.0176
-10	110	90	0.0175
-20	110	64	0.0124
-30	110	88	0.0170

ANT1-802.11a- CH149

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	66	0.0116
40	110	81	0.0140
30	110	84	0.0147
20	110	70	0.0122
10	110	78	0.0136
0	110	67	0.0117
-10	110	86	0.0150
-20	110	67	0.0116
-30	110	96	0.0167

ANT1-802.11a- CH165

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	95	0.0164
40	110	76	0.0131
30	110	64	0.0109
20	110	66	0.0113
10	110	72	0.0124
0	110	70	0.0120
-10	110	77	0.0132
-20	110	69	0.0118
-30	110	82	0.0141

ANT1-802.11n20- CH36

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)

50	110	74	0.0143
40	110	89	0.0172
30	110	88	0.0170
20	110	77	0.0148
10	110	91	0.0176
0	110	75	0.0144
-10	110	86	0.0166
-20	110	84	0.0162
-30	110	61	0.0118

ANT1-802.11n20- CH48

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	61	0.0116
40	110	69	0.0132
30	110	83	0.0159
20	110	66	0.0126
10	110	95	0.0182
0	110	76	0.0145
-10	110	75	0.0143
-20	110	90	0.0172
-30	110	75	0.0144

ANT1-802.11n20- CH149

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	75	0.0131
40	110	94	0.0164
30	110	92	0.0160
20	110	60	0.0105
10	110	71	0.0123
0	110	60	0.0105
-10	110	62	0.0109
-20	110	76	0.0133
-30	110	93	0.0162

ANT1-802.11n20- CH165

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	66	0.0114
40	110	95	0.0164
30	110	91	0.0156
20	110	68	0.0116
10	110	85	0.0146
0	110	76	0.0130
-10	110	69	0.0119
-20	110	88	0.0151
-30	110	68	0.0118

ANT1-802.11n40- CH38

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	91	0.0174
40	110	76	0.0146
30	110	84	0.0162
20	110	82	0.0157
10	110	77	0.0148
0	110	74	0.0142
-10	110	90	0.0174
-20	110	86	0.0166
-30	110	87	0.0167

ANT1-802.11n40- CH46

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	68	0.0129
40	110	86	0.0165
30	110	92	0.0175
20	110	83	0.0159
10	110	91	0.0174
0	110	93	0.0178
-10	110	89	0.0171
-20	110	66	0.0127
-30	110	73	0.0139

ANT1-802.11n40- CH151

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	82	0.0143
40	110	61	0.0106
30	110	62	0.0108
20	110	74	0.0129
10	110	89	0.0155
0	110	65	0.0113
-10	110	91	0.0158
-20	110	81	0.0141
-30	110	92	0.0161

ANT1-802.11n40- CH159

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	69	0.0119
40	110	61	0.0106
30	110	63	0.0108
20	110	92	0.0160
10	110	83	0.0143
0	110	79	0.0136
-10	110	84	0.0145
-20	110	64	0.0111

-30	110	68	0.0117
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ANT1-802.11ac20- CH36

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	80	0.0155
40	110	77	0.0149
30	110	61	0.0118
20	110	85	0.0165
10	110	92	0.0177
0	110	67	0.0129
-10	110	94	0.0181
-20	110	62	0.0119
-30	110	81	0.0156

ANT1-802.11ac20- CH48

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	67	0.0127
40	110	96	0.0182
30	110	71	0.0136
20	110	90	0.0171
10	110	65	0.0125
0	110	63	0.0120
-10	110	69	0.0131
-20	110	89	0.0169
-30	110	80	0.0153

ANT1-802.11ac20- CH149

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	84	0.0146
40	110	91	0.0158
30	110	76	0.0132
20	110	85	0.0148
10	110	66	0.0115
0	110	82	0.0142
-10	110	79	0.0138
-20	110	63	0.0110
-30	110	86	0.0150

ANT1-802.11ac20- CH165

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	64	0.0110
40	110	85	0.0145
30	110	88	0.0151
20	110	95	0.0163

10	110	74	0.0126
0	110	71	0.0121
-10	110	74	0.0127
-20	110	94	0.0162
-30	110	89	0.0153

ANT1-802.11ac40- CH38

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	66	0.0127
40	110	66	0.0127
30	110	86	0.0166
20	110	94	0.0182
10	110	80	0.0153
0	110	82	0.0157
-10	110	87	0.0168
-20	110	62	0.0119
-30	110	72	0.0138

ANT1-802.11ac40- CH46

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	68	0.0130
40	110	89	0.0170
30	110	61	0.0116
20	110	95	0.0181
10	110	61	0.0117
0	110	86	0.0164
-10	110	62	0.0118
-20	110	85	0.0162
-30	110	95	0.0182

ANT1-802.11ac40- CH151

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	67	0.0117
40	110	87	0.0151
30	110	69	0.0120
20	110	79	0.0138
10	110	63	0.0109
0	110	62	0.0108
-10	110	90	0.0156
-20	110	93	0.0162
-30	110	64	0.0112

ANT1-802.11ac40- CH159

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	75	0.0130
40	110	89	0.0154
30	110	84	0.0144
20	110	81	0.0140
10	110	71	0.0123
0	110	72	0.0123
-10	110	71	0.0122
-20	110	91	0.0158
-30	110	65	0.0112

ANT1-802.11ac80- CH42

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	93	0.0179
40	110	62	0.0118
30	110	67	0.0128
20	110	71	0.0136
10	110	82	0.0157
0	110	80	0.0154
-10	110	82	0.0158
-20	110	63	0.0121
-30	110	68	0.0130

ANT1-802.11ac80- CH155

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	110	91	0.0157
40	110	89	0.0155
30	110	84	0.0145
20	110	95	0.0165
10	110	71	0.0123
0	110	77	0.0134
-10	110	94	0.0163
-20	110	95	0.0165
-30	110	80	0.0138

10.ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247, if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. Refer to statement below for compliance. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed. Antenna Connected Construction The antenna used in this product is a Glue stick antenna, and the best case gain of the antenna is antenna port 1:5dBi and Antenna port 2:5dBi. EUT Antenna: ANT for Module A (5g WIFI) 	

10. TEST SETUP PHOTO

Reference to the test setup file for details.

11. EUT CONSTRUCTIONAL DETAILS

Reference to the external photos file and internal photos file for details.

******* END OF REPORT *******