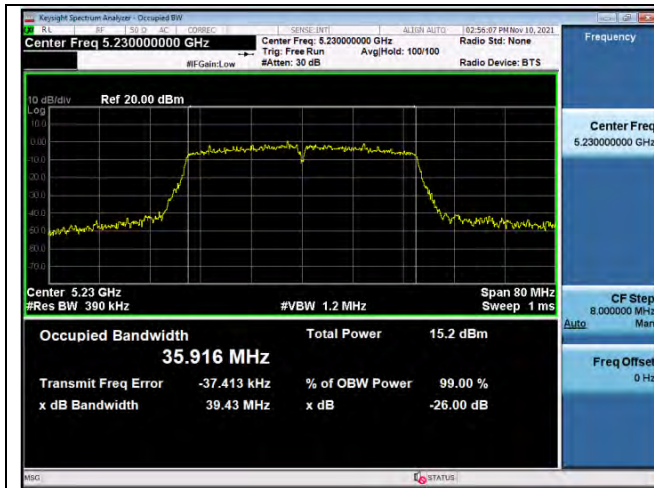
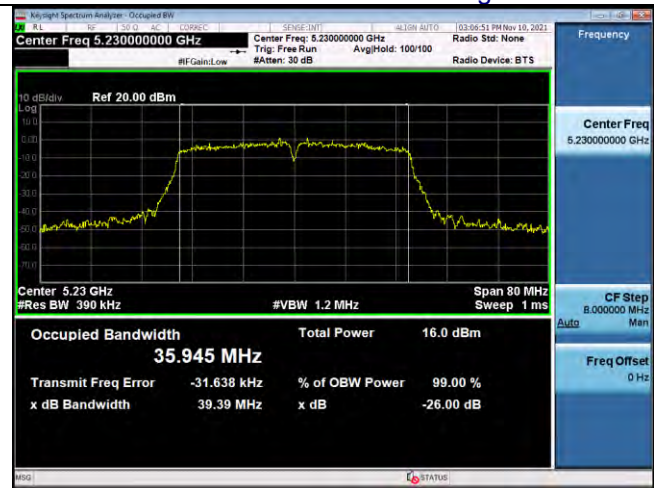


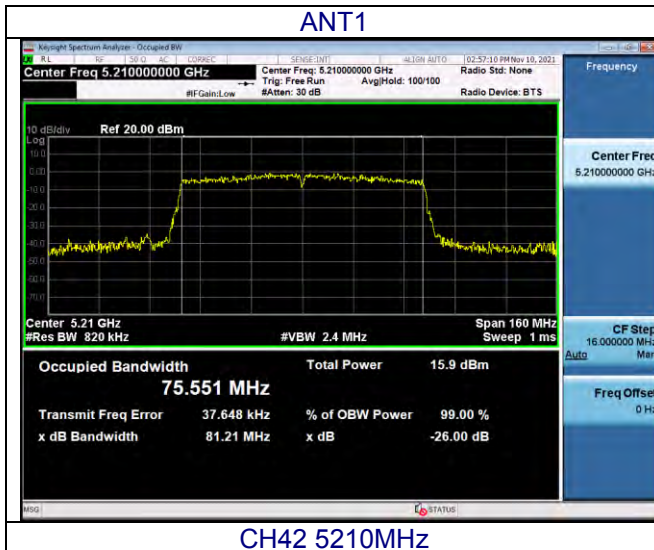


CH46-5230MHz

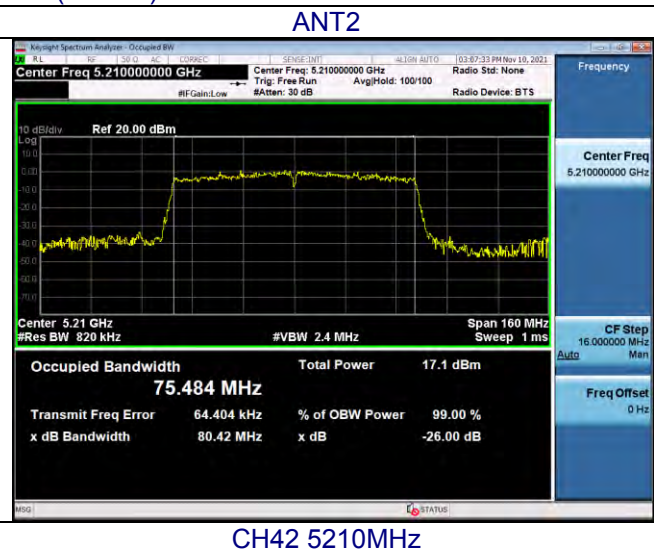


CH46-5230MHz

band 1 -802.11ac (80MHz)

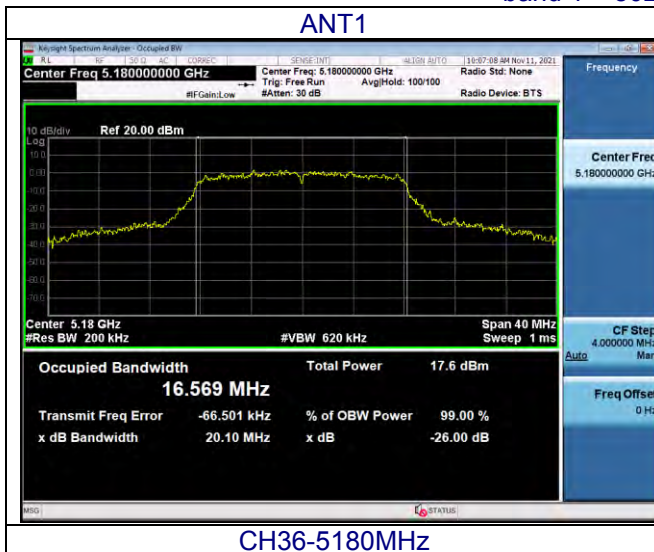


CH42 5210MHz

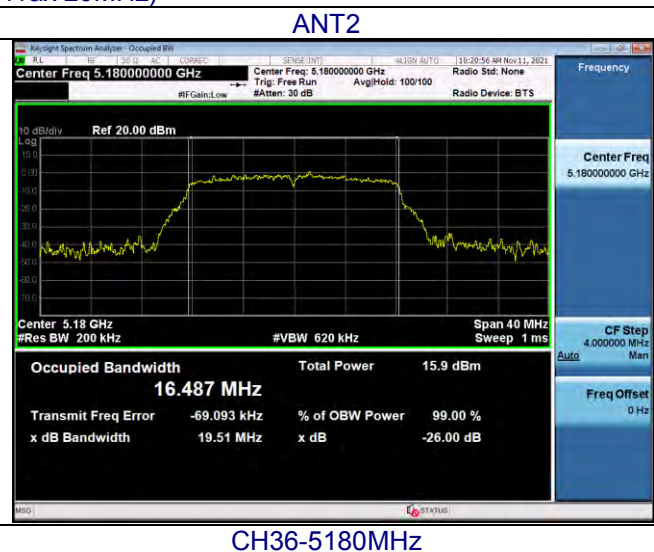


CH42 5210MHz

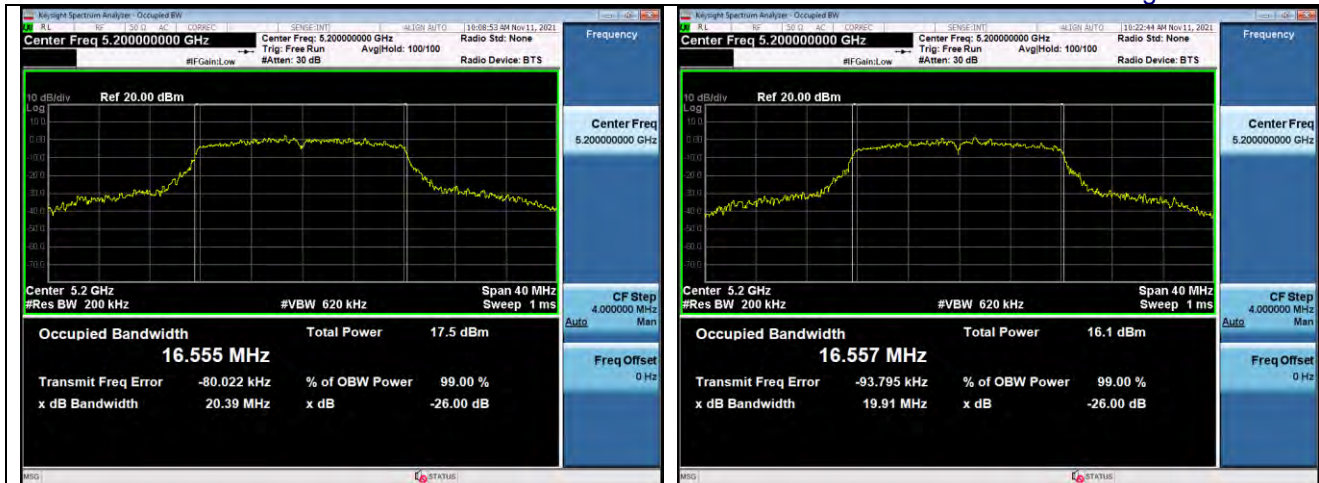
band 1 - 802.11ax 20MHz)



CH36-5180MHz

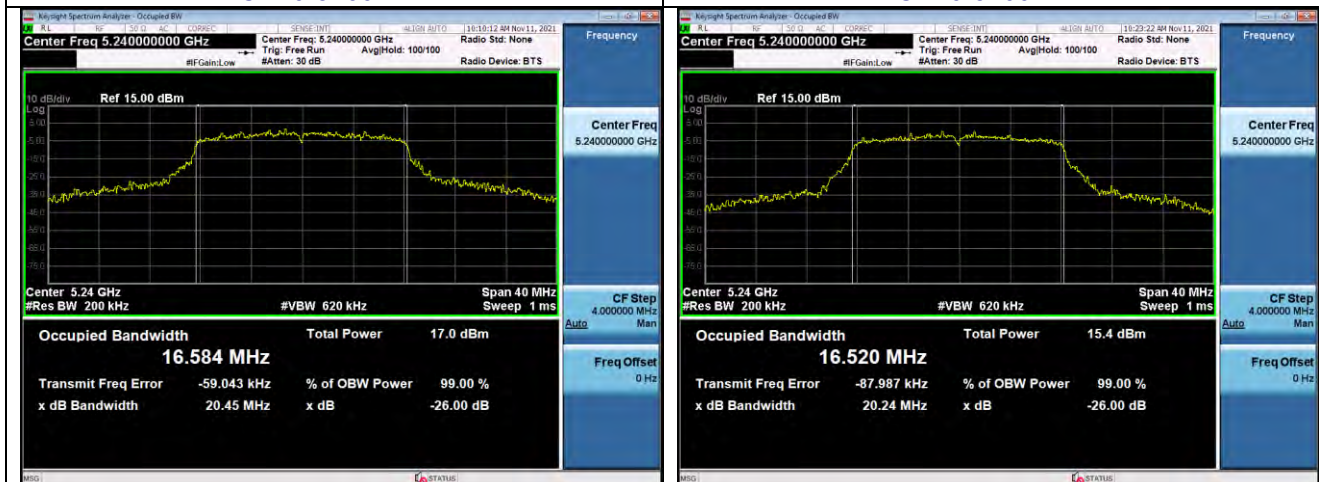


CH36-5180MHz



CH40-5200MHz

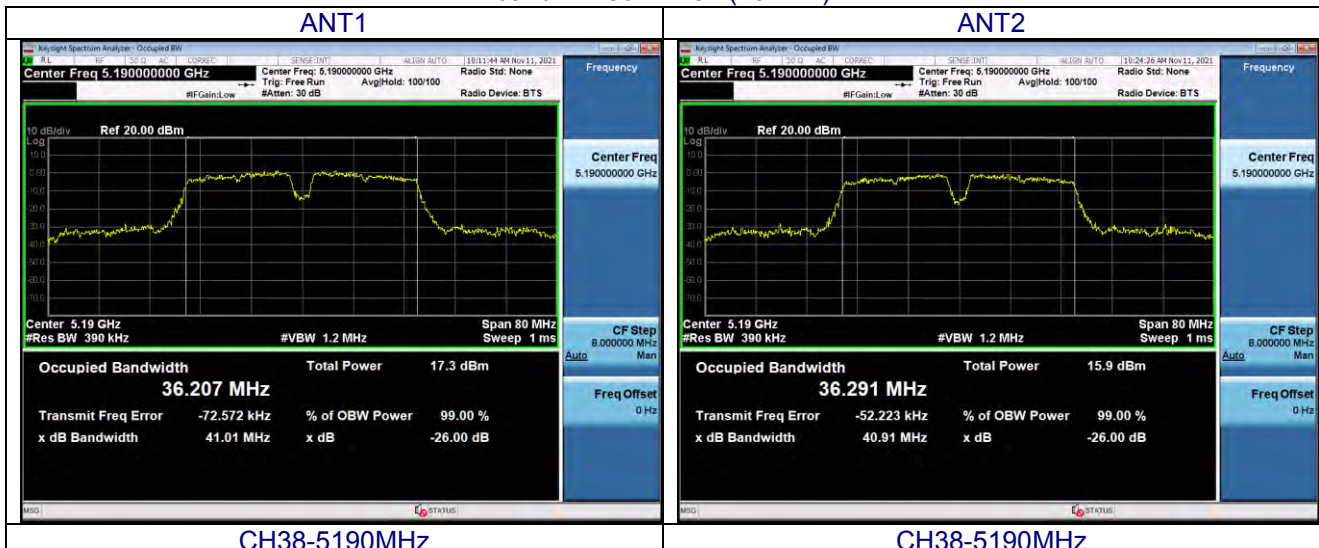
CH40-5200MHz



CH48-5240MHz

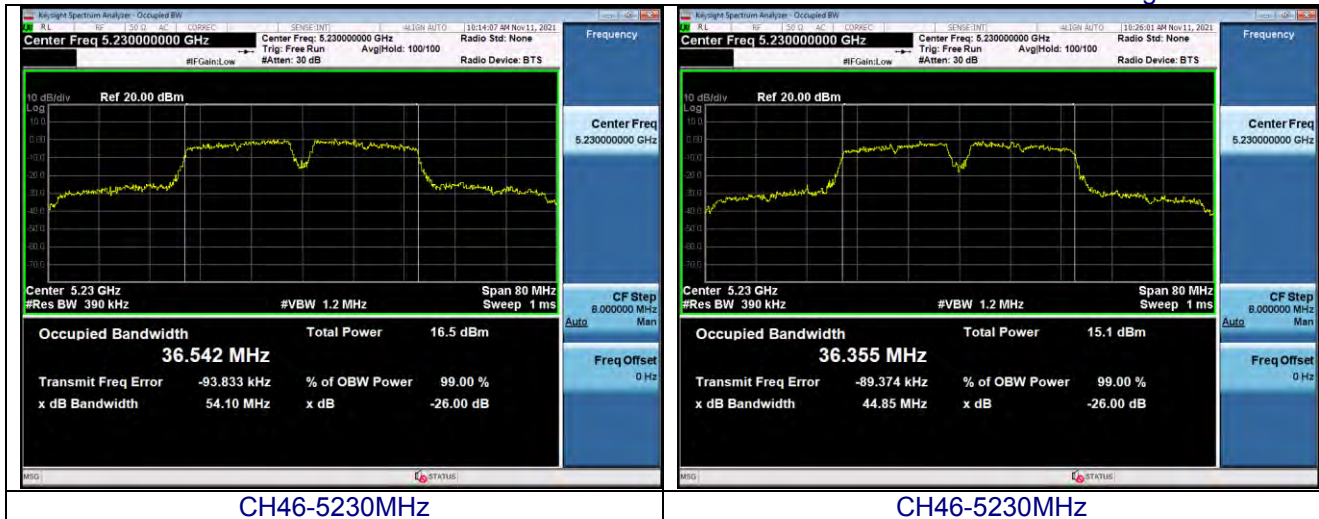
CH48-5240MHz

band 1 – 802.11 ax (40MHz)

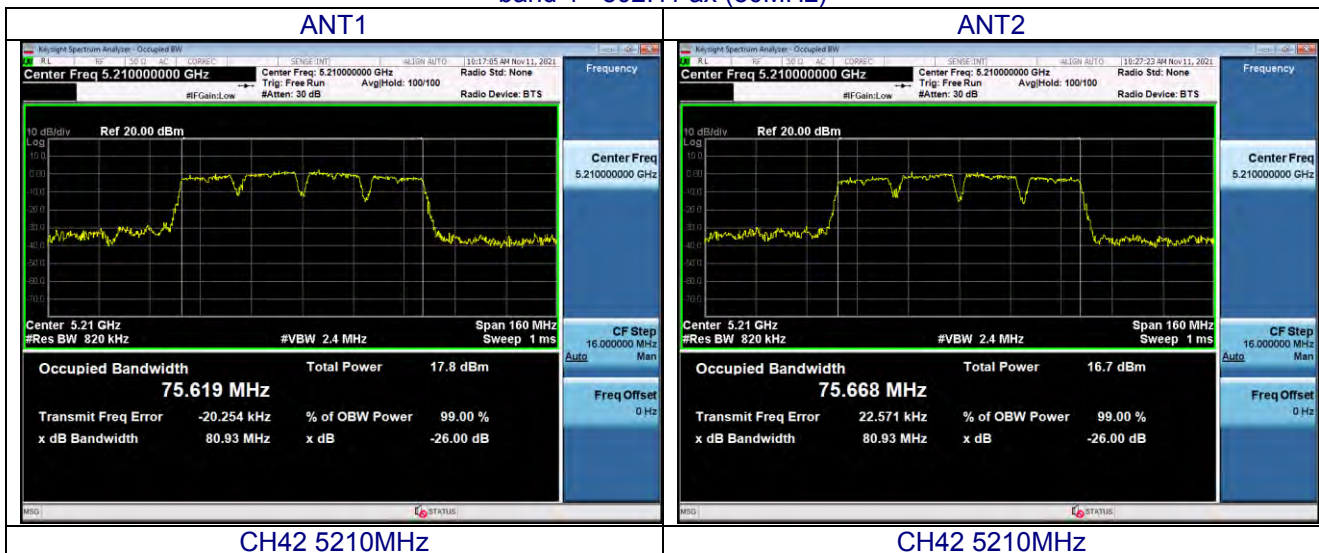


CH38-5190MHz

CH38-5190MHz

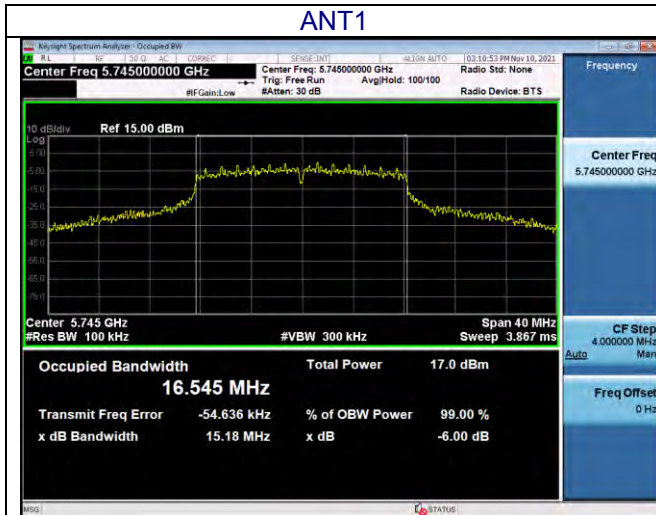


band 1 -802.11 ax (80MHz)

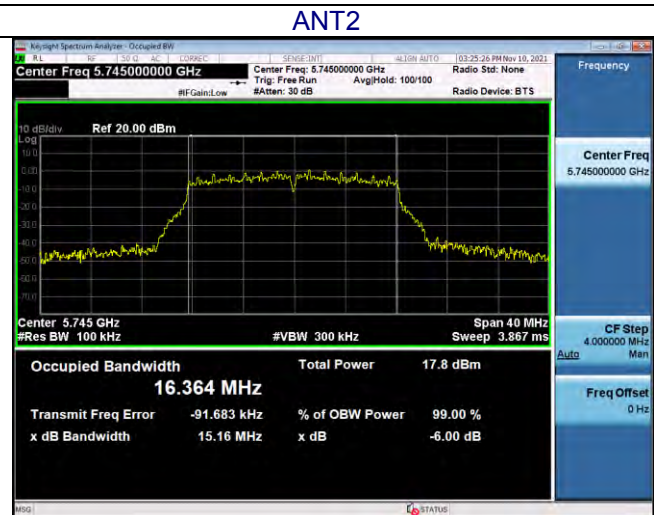


Band 4 -802.11a

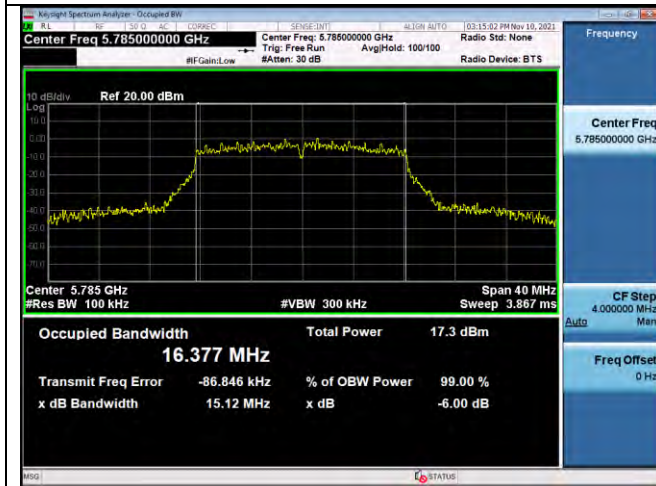
ANT1



ANT2



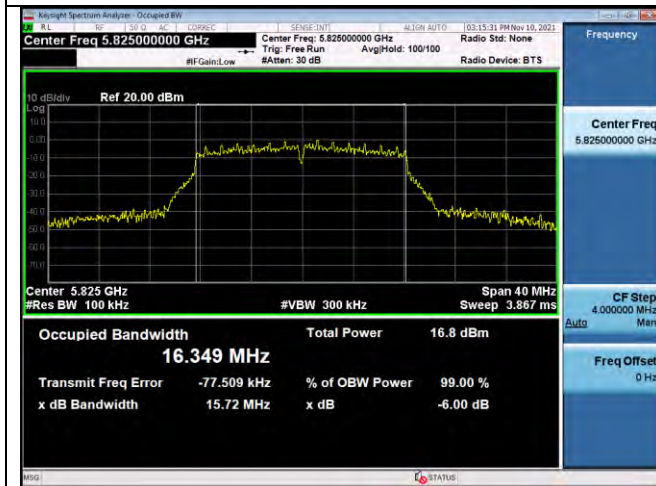
CH149 -5745MHz



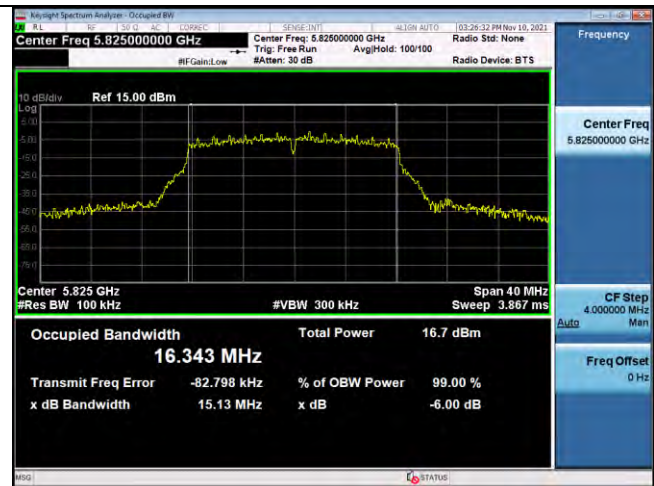
CH149 -5745MHz



CH157 -5785MHz



CH157 -5785MHz



CH165 -5825MHz

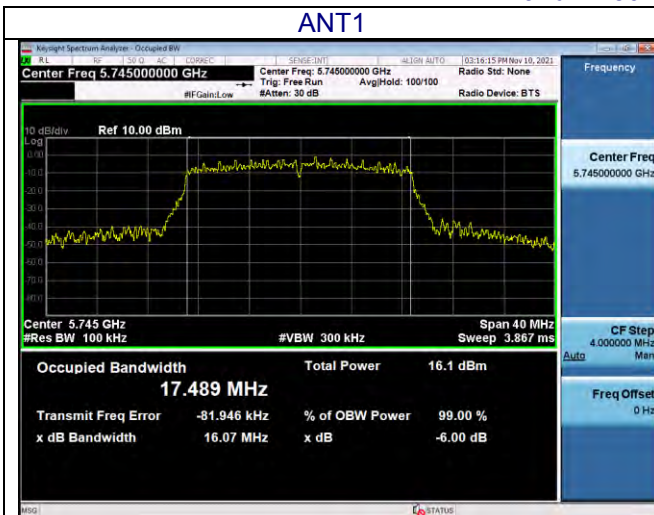


CH165 -5825MHz

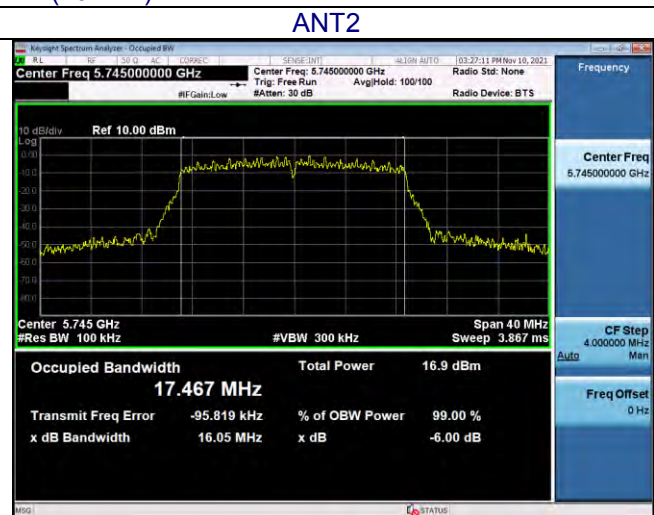


Band 4 -802.11n (20MHz)

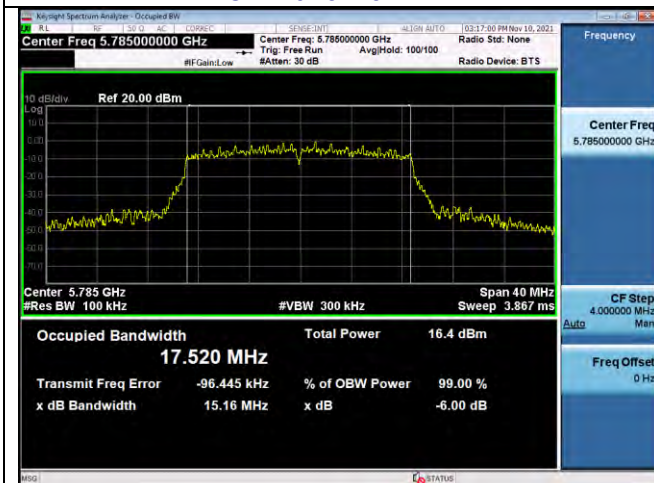
ANT1



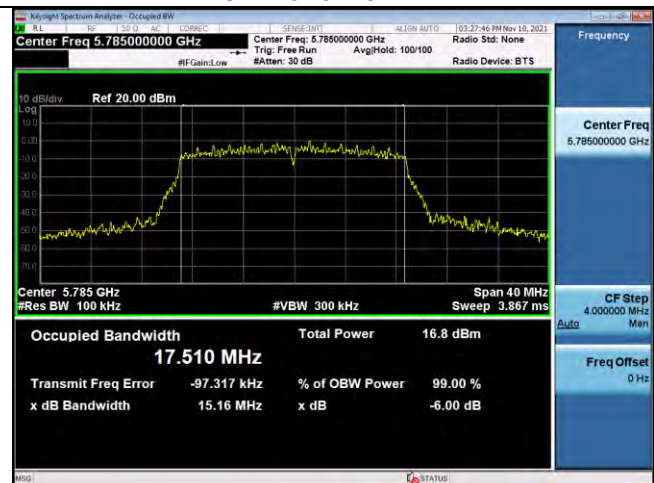
ANT2



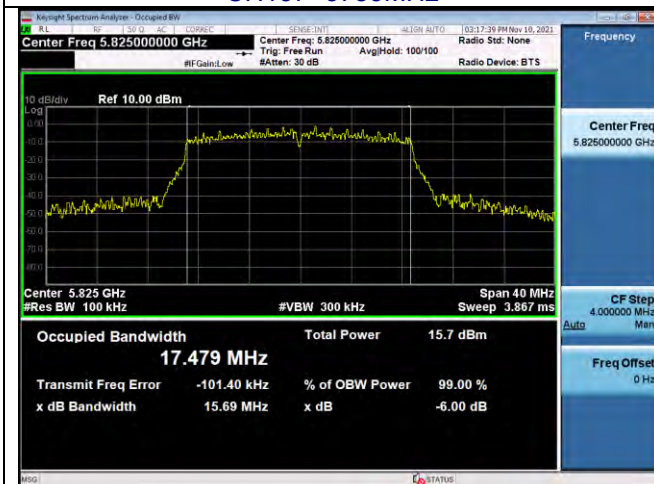
CH149 -5745MHz



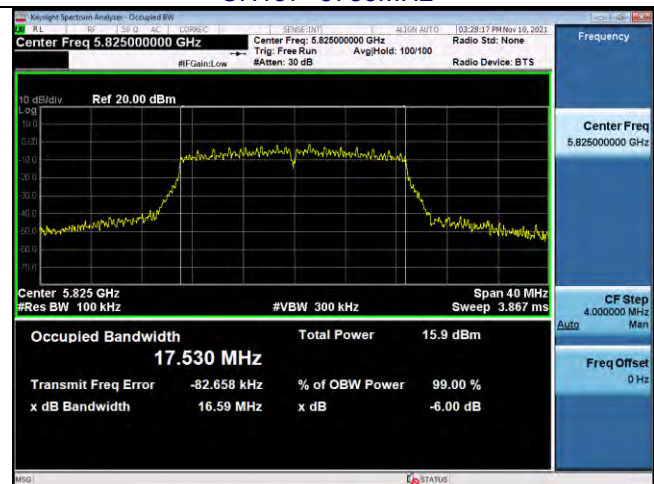
CH149 -5745MHz



CH157 -5785MHz



CH157 -5785MHz



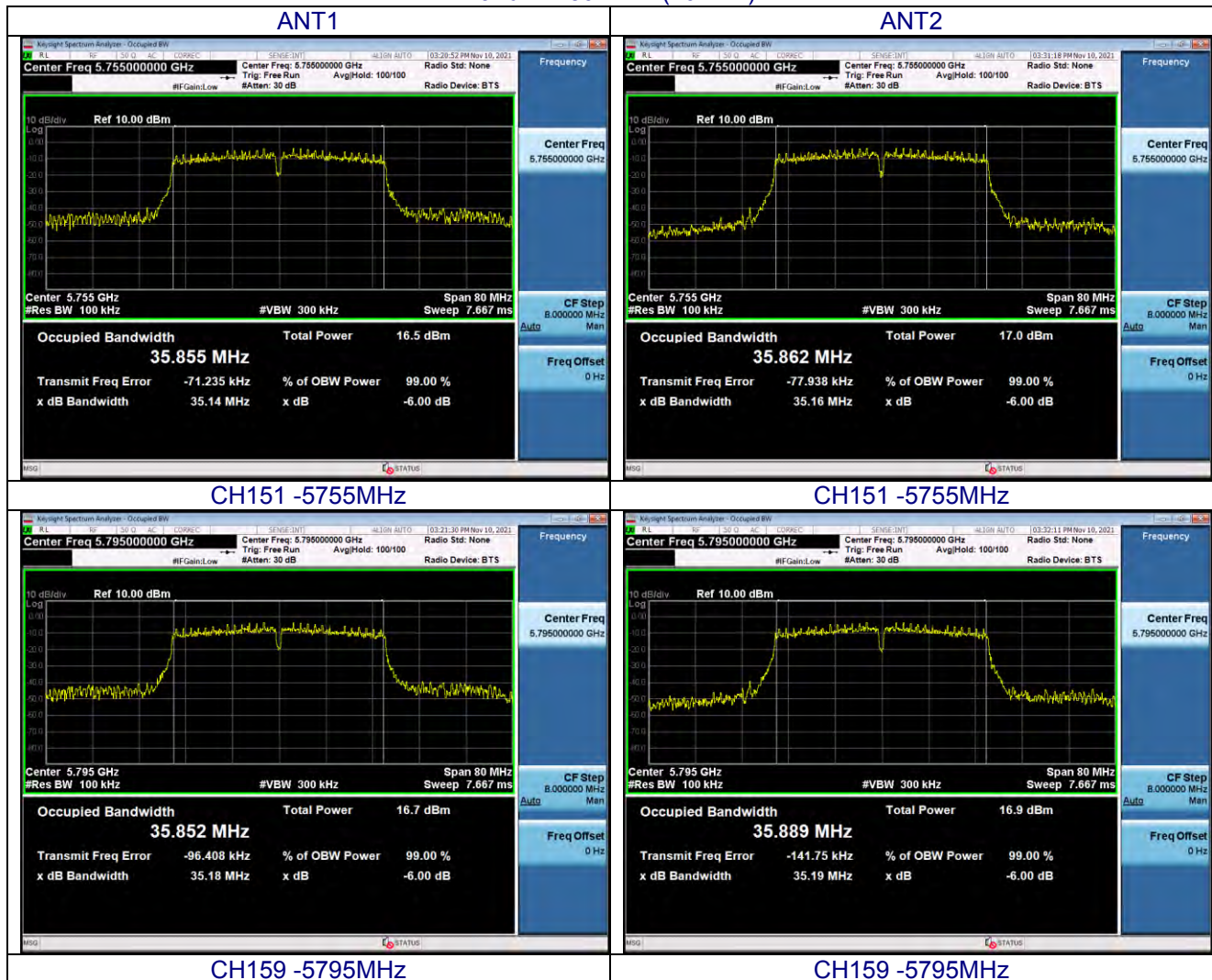
CH165 -5825MHz



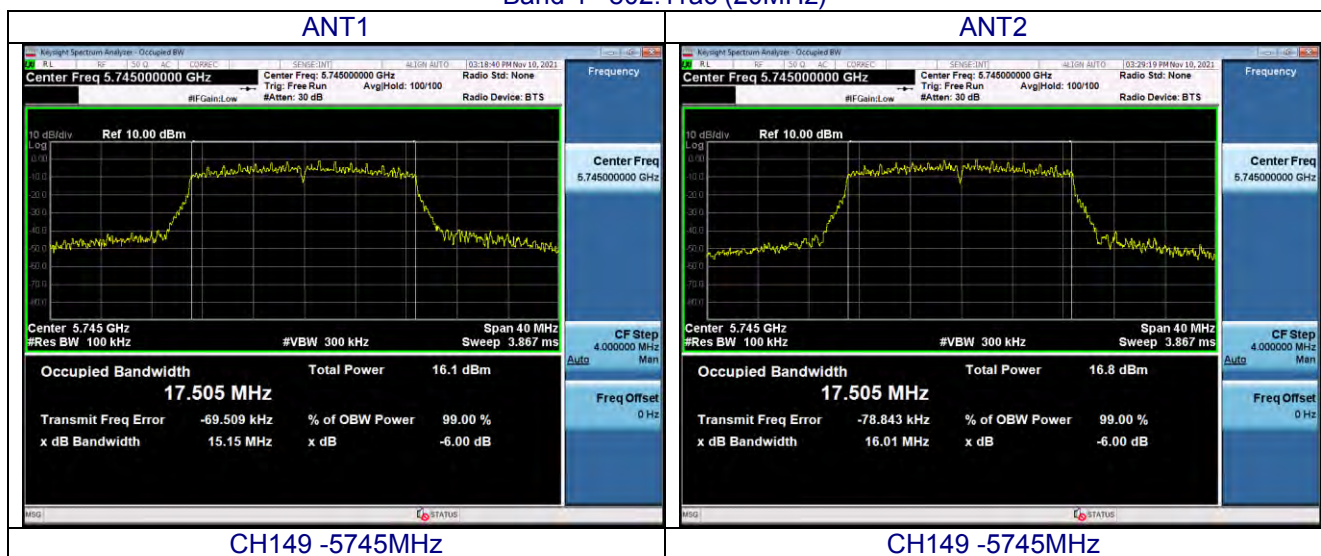
CH165 -5825MHz

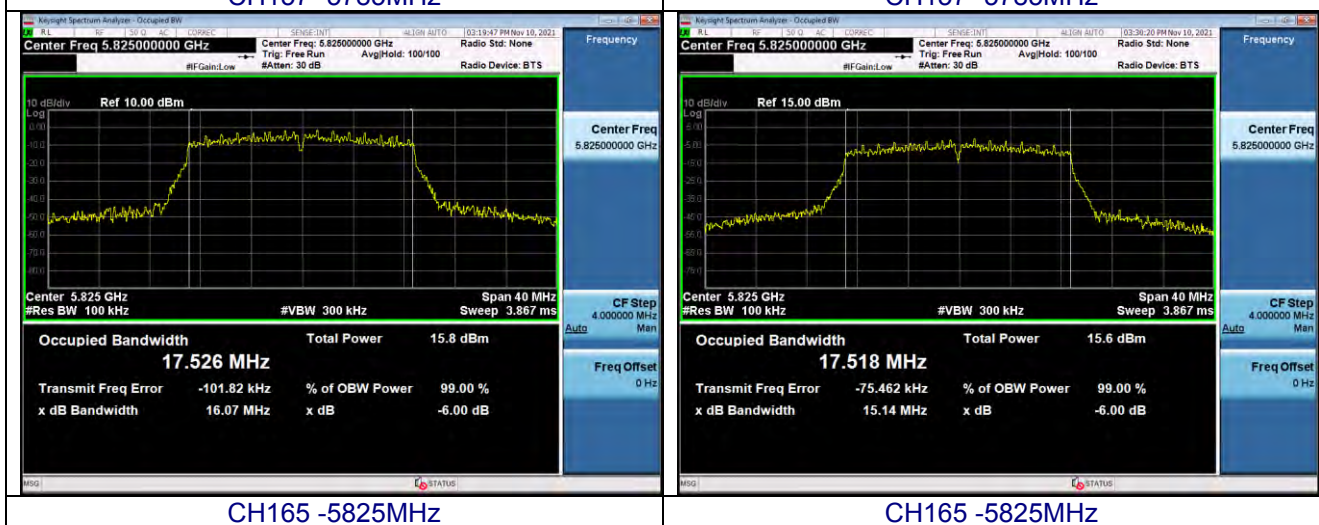
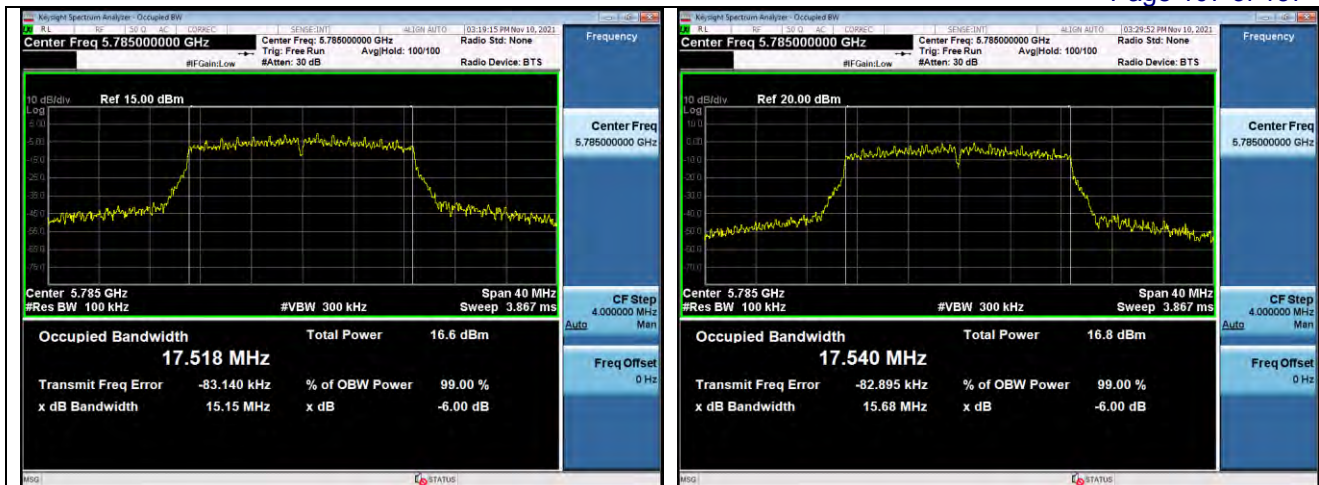


Band 4 – 802.11n (40MHz)

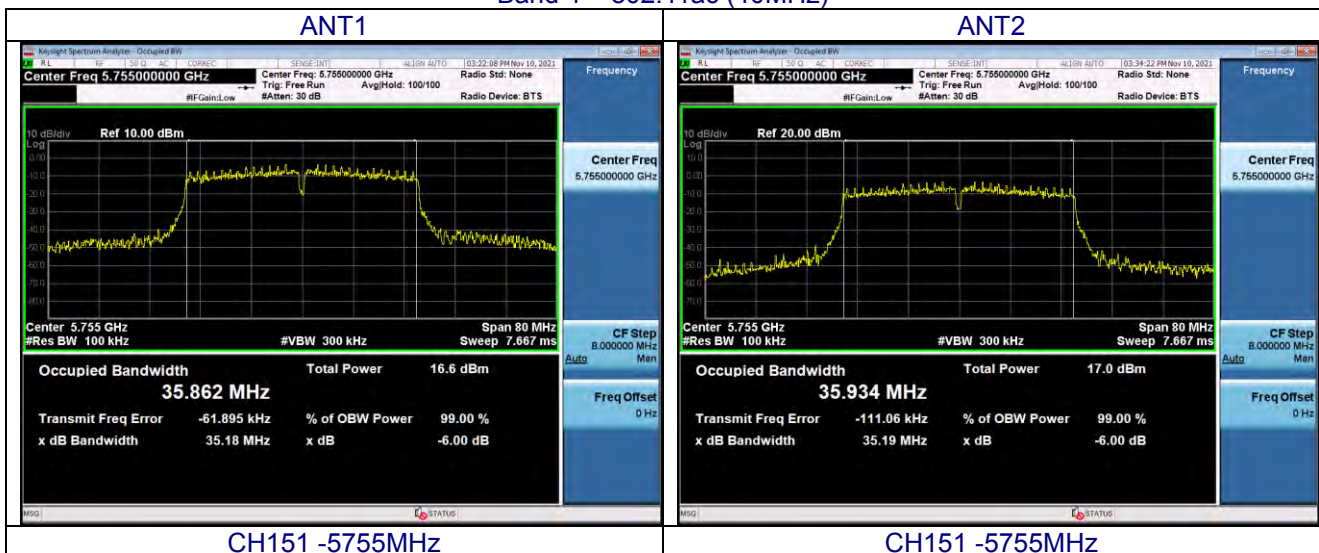


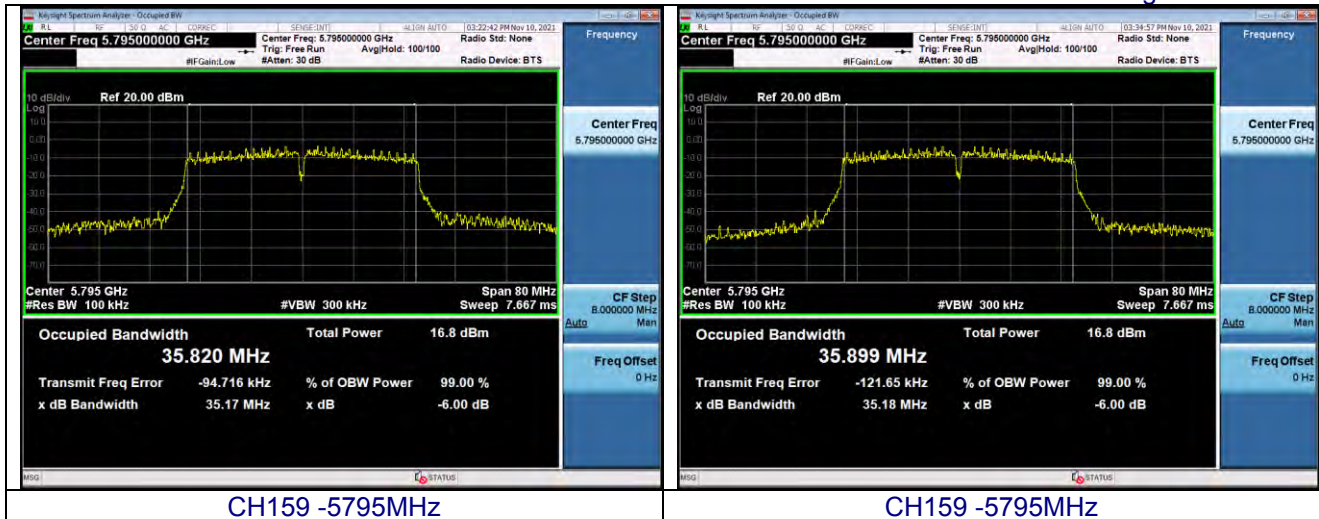
Band 4 –802.11ac (20MHz)



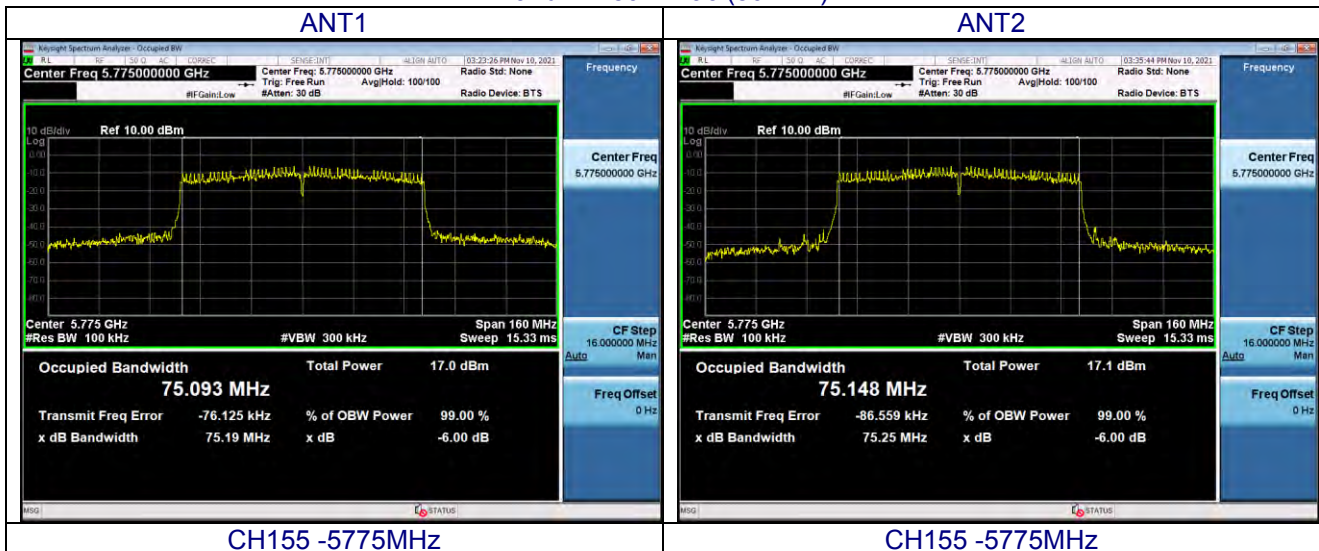


Band 4 – 802.11ac (40MHz)

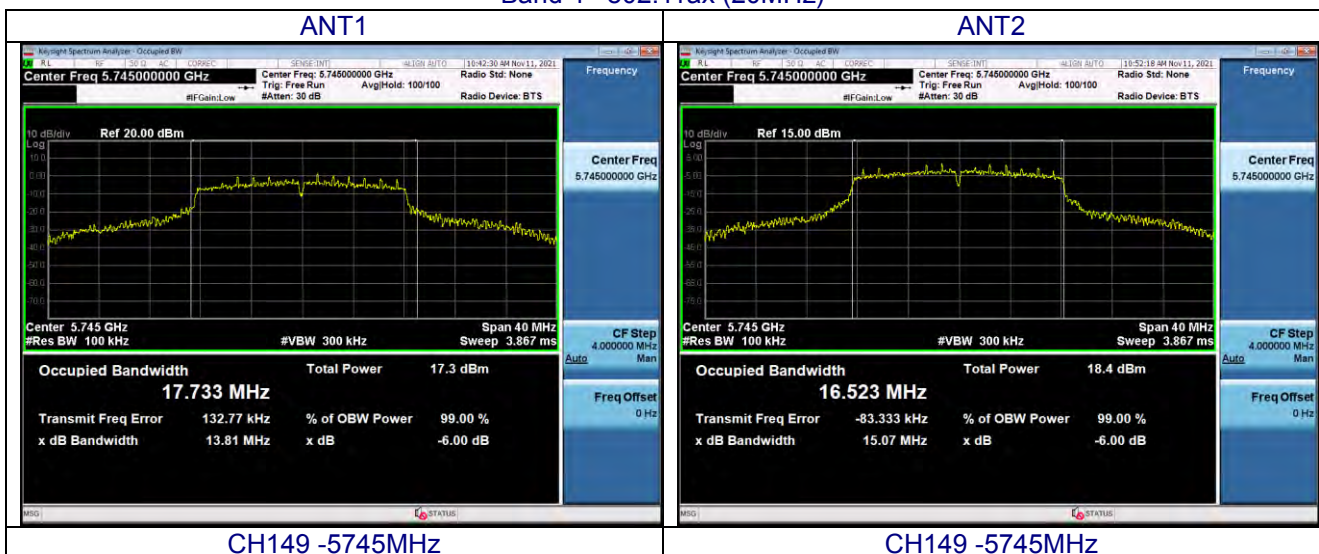


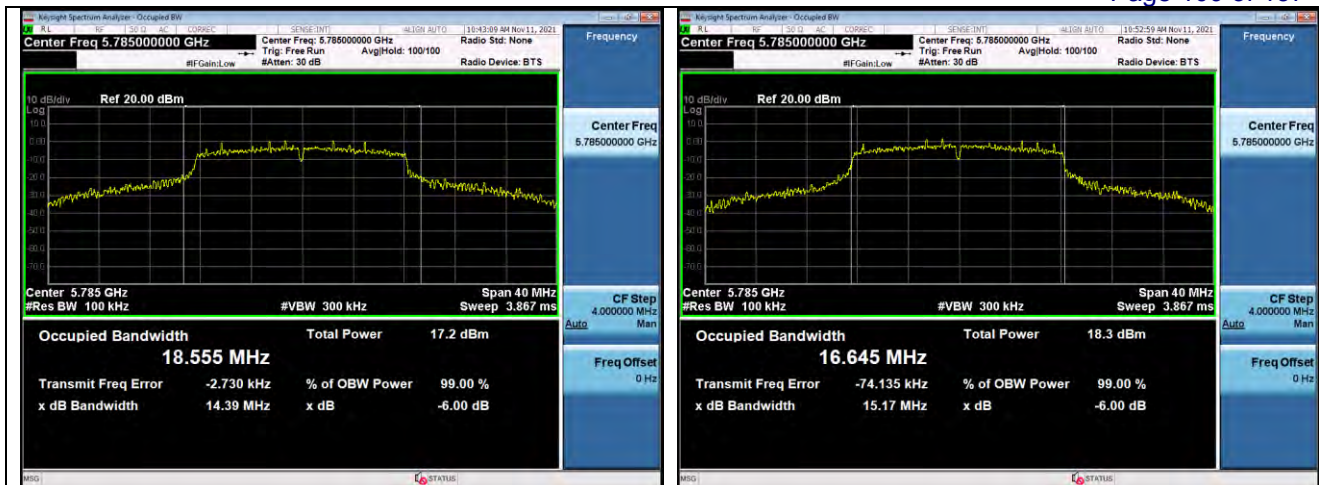


Band 4 – 802.11ac (80MHz)



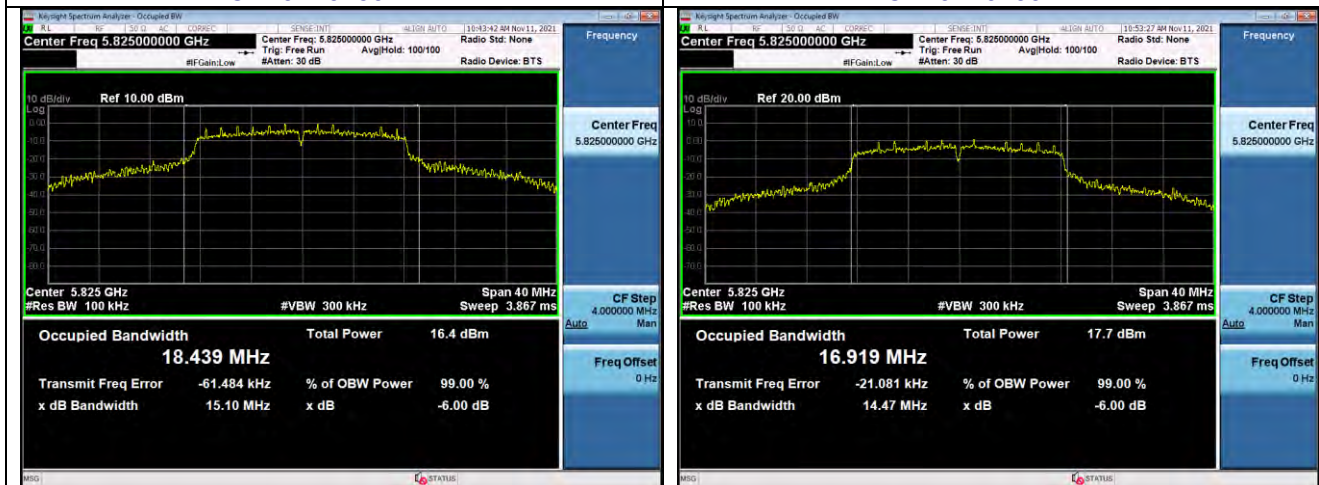
Band 4 – 802.11ax (20MHz)





CH157 -5785MHz

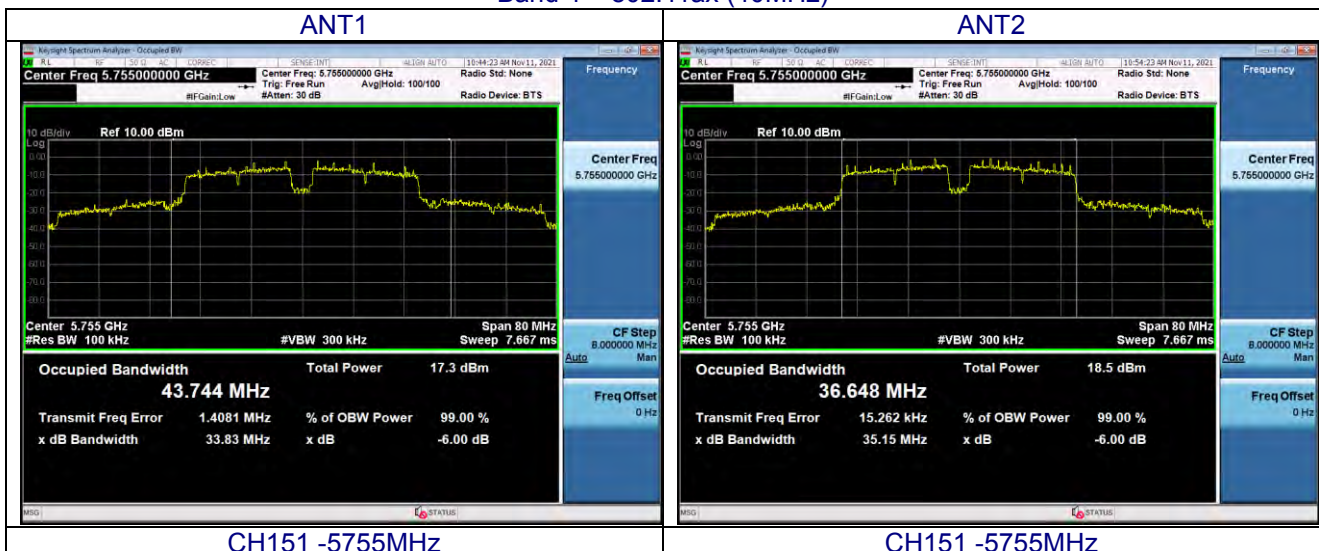
CH157 -5785MHz



CH165 -5825MHz

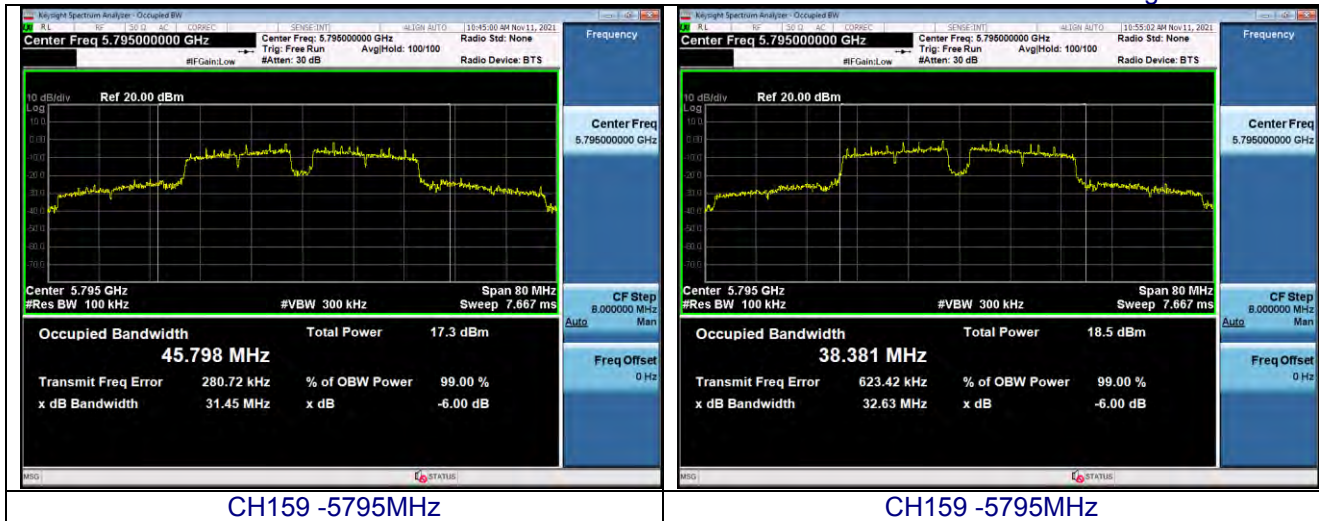
CH165 -5825MHz

Band 4 – 802.11ax (40MHz)

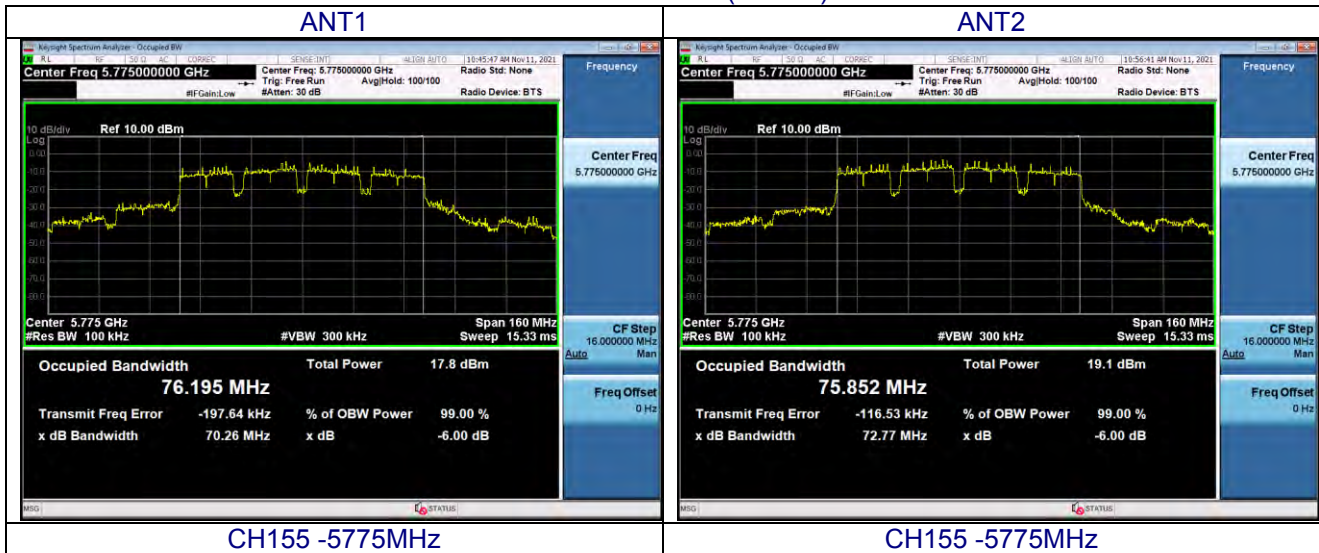


CH151 -5755MHz

CH151 -5755MHz



Band 4 – 802.11ax (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 an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

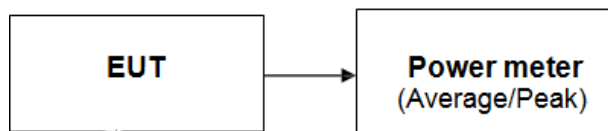
For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Item	Test band	Limit	Result
Max conducted output power	U-NII-1	1W / 30dbm	Pass
Max conducted output power	U-NII-2	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	9.166	10.429	30
	40	5200	9.101	10.438	30
	48	5240	8.603	9.47	30
n(20MHz)	36	5180	8.107	9.312	30
	40	5200	7.982	9.318	30
	48	5240	7.489	8.446	30
n(40MHz)	38	5190	6.913	8.305	30
	46	5230	6.47	7.236	30
ac(20MHz)	36	5180	8.12	9.44	30
	40	5200	8.037	9.252	30
	48	5240	7.612	8.342	30
ac(40MHz)	38	5190	7.013	8.306	30
	46	5230	6.586	7.356	30
ac(80MHz)	42	5210	5.909	6.965	30
ax(20MHz)	36	5180	9.344	9.871	30
	40	5200	9.261	9.789	30
	48	5240	8.755	9.261	30
ax(40MHz)	38	5190	8.913	8.476	30
	46	5230	8.224	8.759	30
ax(80MHz)	42	5210	7.313	7.231	30

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	9.166	10.429	/	/
	40	5200	9.101	10.438	/	/
	48	5240	8.603	9.47	/	/
n(20MHz)	36	5180	8.107	9.312	11.76	27.99
	40	5200	7.982	9.318	11.71	27.99
	48	5240	7.489	8.446	11.00	27.99
n(40MHz)	38	5190	6.913	8.305	10.67	27.99
	46	5230	6.47	7.236	9.88	27.99
ac(20MHz)	36	5180	8.12	9.44	11.84	27.99
	40	5200	8.037	9.252	11.70	27.99
	48	5240	7.612	8.342	11.00	27.99
ac(40MHz)	38	5190	7.013	8.306	10.72	27.99
	46	5230	6.586	7.356	10.00	27.99
ac(80MHz)	42	5210	5.909	6.965	9.48	27.99
ax(20MHz)	36	5180	9.344	9.871	12.63	27.99
	40	5200	9.261	9.789	12.54	27.99
	48	5240	8.755	9.261	12.03	27.99
ax(40MHz)	38	5190	8.913	8.476	11.71	27.99
	46	5230	8.224	8.759	11.51	27.99

ax(80MHz)	42	5210	8.313	8.231	11.28	27.99
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NOTE: power limit (MIMO)= power limit – (8.01-6)=30-2.01=27.99

BAND 4

802.11 Mode	Channel No.	Frequency [MHz]	Conducted Power [dBm]		Limit [dBm]
			ANT1	ANT2	
a	149	5745	8.496	9.228	30.00
	157	5785	8.852	9.147	30.00
	165	5825	8.198	8.296	30.00
n(20MHz)	149	5745	7.578	8.09	30.00
	157	5785	7.763	8.006	30.00
	165	5825	7.154	7.014	30.00
n (40MHz)	151	5755	6.674	7.109	30.00
	159	5795	6.823	6.961	30.00
ac (20MHz)	149	5745	7.606	8.075	30.00
	157	5785	7.782	7.922	30.00
	165	5825	7.168	7.044	30.00
ac(40MHz)	151	5755	6.712	7.152	30.00
	159	5795	6.915	7.092	30.00
ac(80MHz)	155	5775	6.245	6.625	30.00
ax (20MHz)	149	5745	9.511	9.200	30.00
	157	5785	9.640	8.821	30.00
	165	5825	9.601	8.929	30.00
ax(40MHz)	151	5755	8.277	8.631	30.00
	159	5795	8.016	8.282	30.00
ax(80MHz)	155	5775	8.483	7.709	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	8.496	9.228	/	/
	157	5785	8.852	9.147	/	/
	165	5825	8.198	8.296	/	/
n(20MHz)	149	5745	7.578	8.09	10.85	27.99
	157	5785	7.763	8.006	10.90	27.99
	165	5825	7.154	7.014	10.09	27.99
n(40MHz)	151	5755	6.674	7.109	9.91	27.99
	159	5795	6.823	6.961	9.90	27.99
ac(20MHz)	149	5745	7.606	8.075	10.86	27.99
	157	5785	7.782	7.922	10.86	27.99
	165	5825	7.168	7.044	10.12	27.99
ac(40MHz)	151	5755	6.712	7.152	9.95	27.99
	159	5795	6.915	7.092	10.01	27.99
ac(80MHz)	155	5775	6.245	6.625	9.45	27.99
ax (20MHz)	149	5745	9.511	9.200	12.37	27.99
	157	5785	9.640	8.821	12.26	27.99
	165	5825	9.601	8.929	12.29	27.99
ax(40MHz)	151	5755	8.277	8.631	11.47	27.99
	159	5795	8.016	8.282	11.16	27.99
ax(80MHz)	155	5775	8.483	7.709	11.12	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

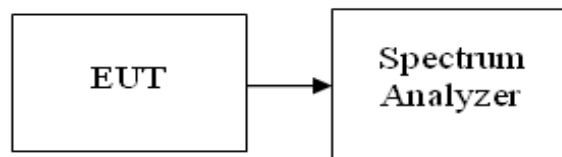
8.1 TEST PROCEDURE

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

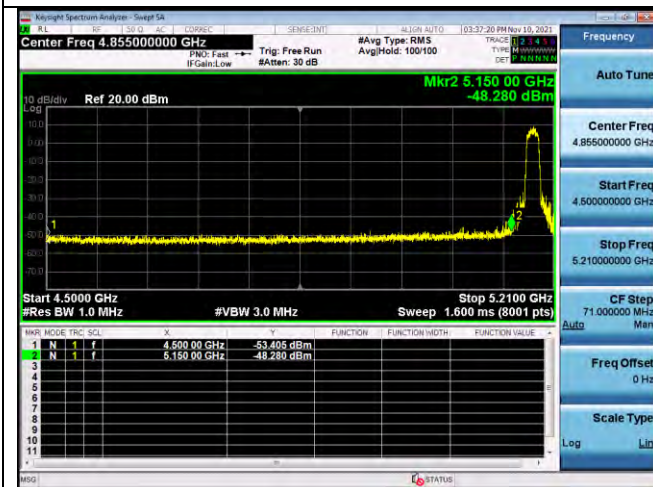
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

8.5 TEST RESULTS

Test plot as follows:

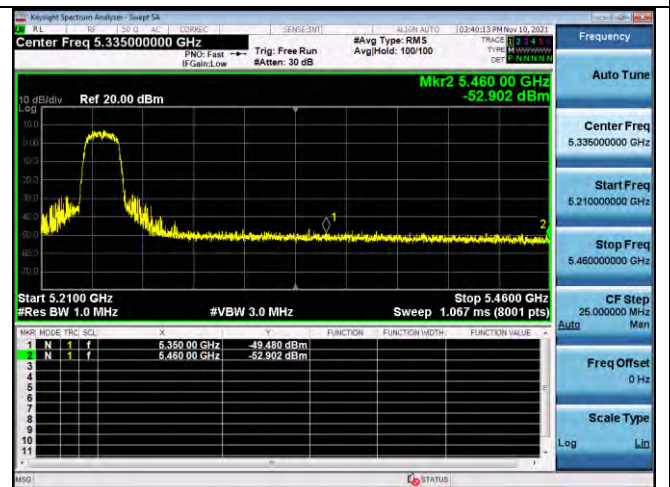
ANT1-band1

Test mode:



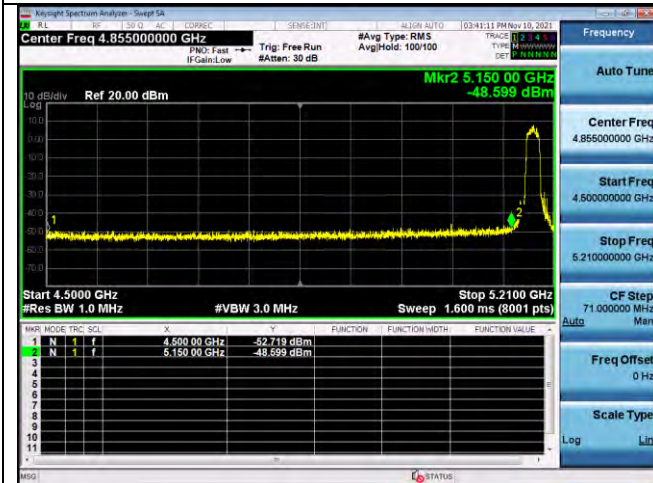
Lowest channel

802.11a



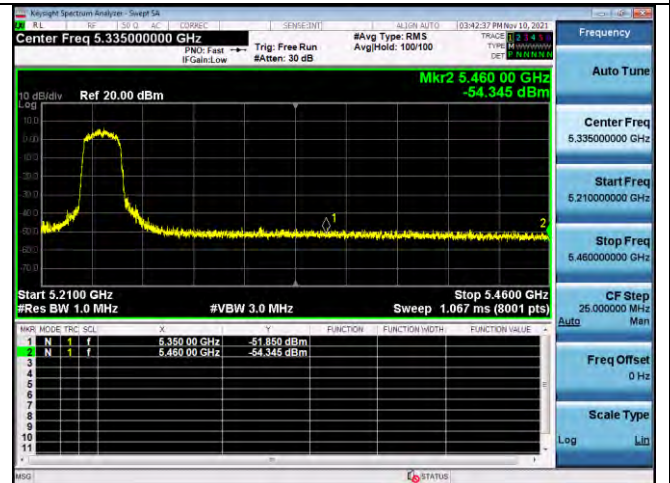
Highest channel

Test mode:



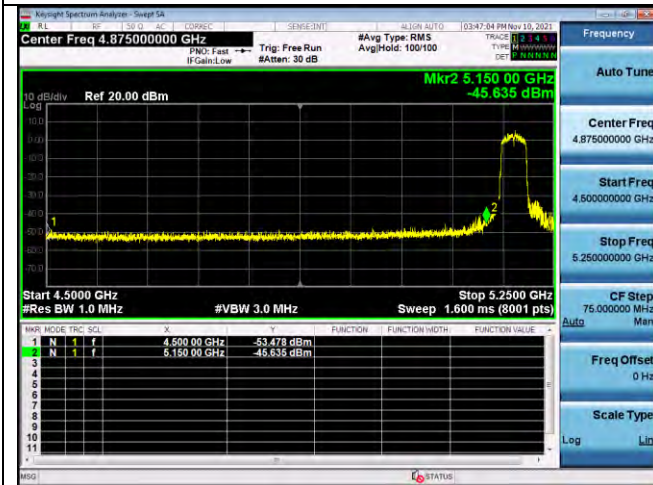
Lowest channel

802.11n20



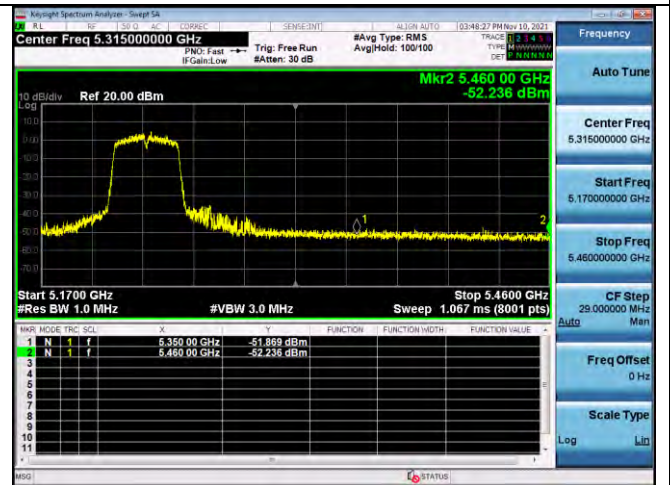
Highest channel

Test mode:



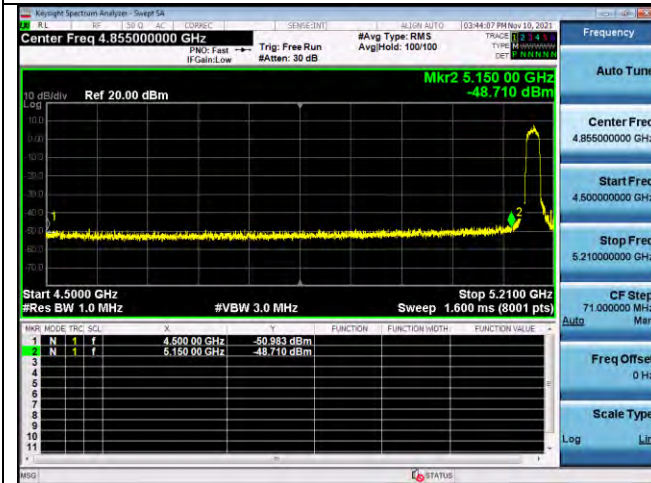
Lowest channel

802.11n40



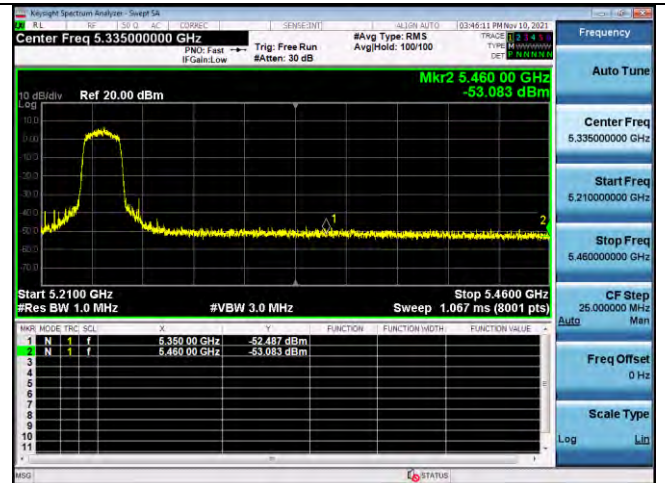
Highest channel

Test mode:



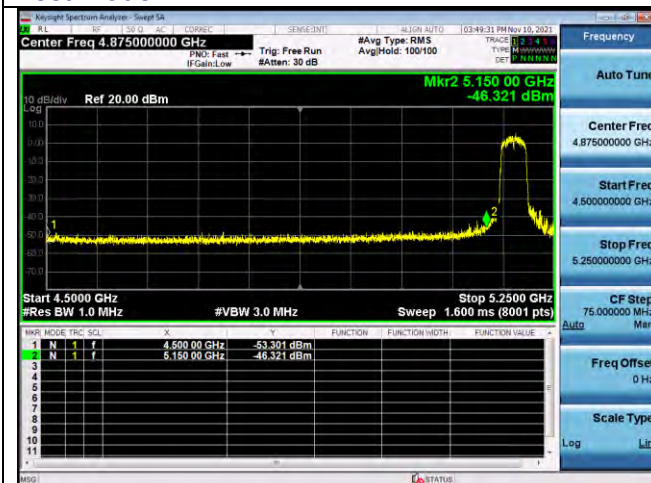
Lowest channel

802.11ac20



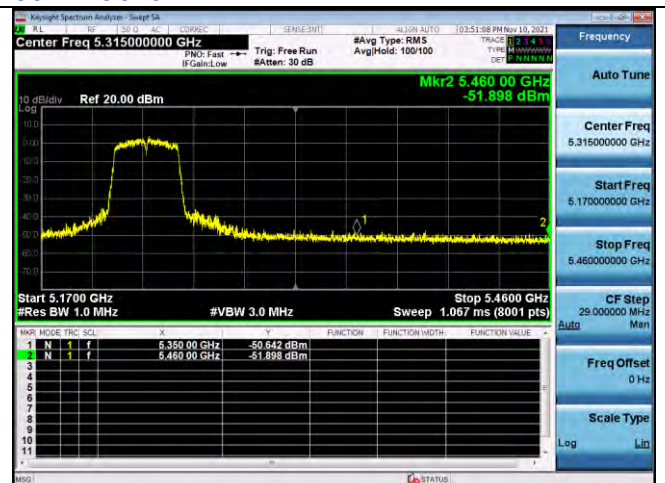
Highest channel

Test mode:



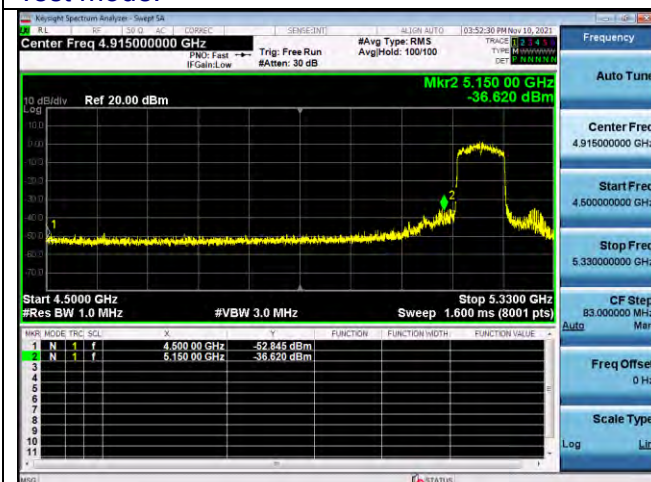
Lowest channel

802.11ac40



Highest channel

Test mode:



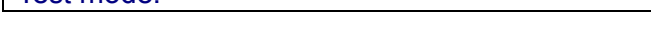
Lowest channel

802.11ac80



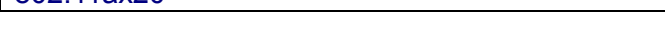
Highest channel

Test mode:

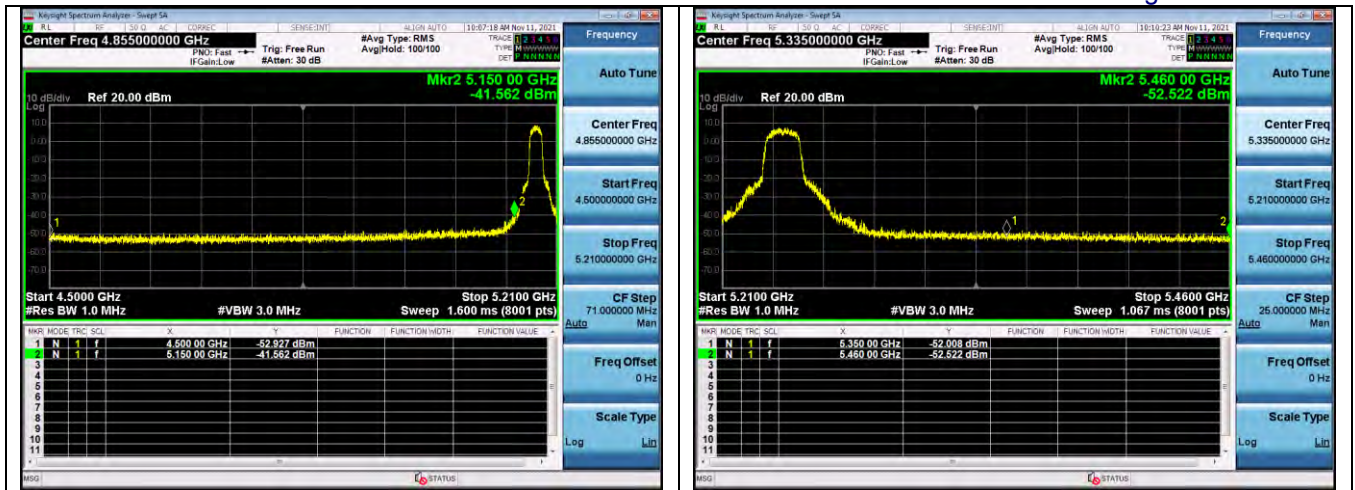


Lowest channel

802.11ax20



Highest channel

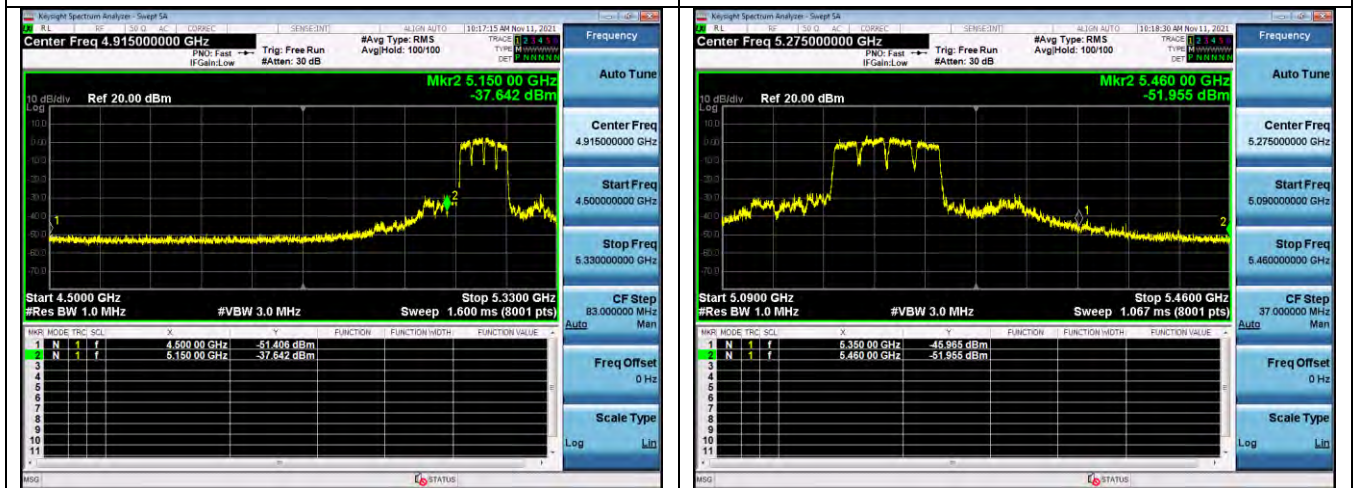


Test mode:



802.11ax40

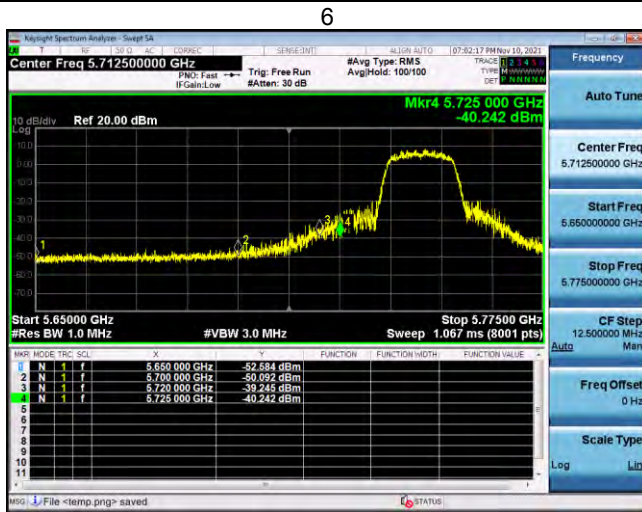
Test mode:



802.11ax80

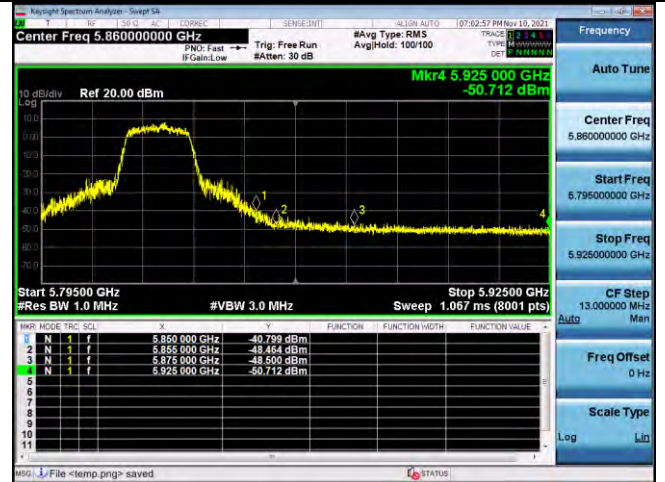
ANT1-band 4

Test mode:



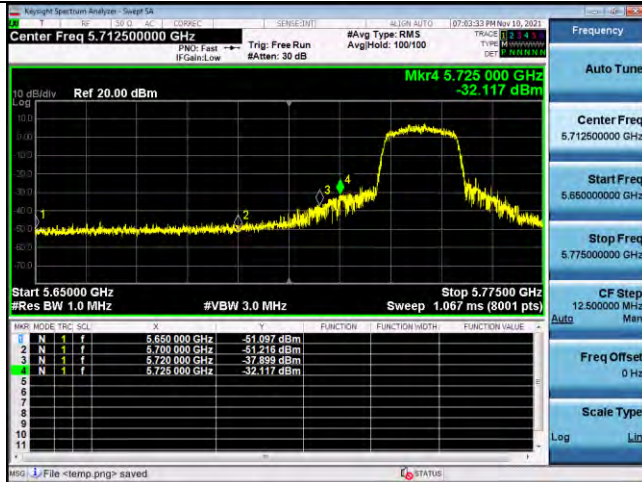
Lowest channel

802.11a



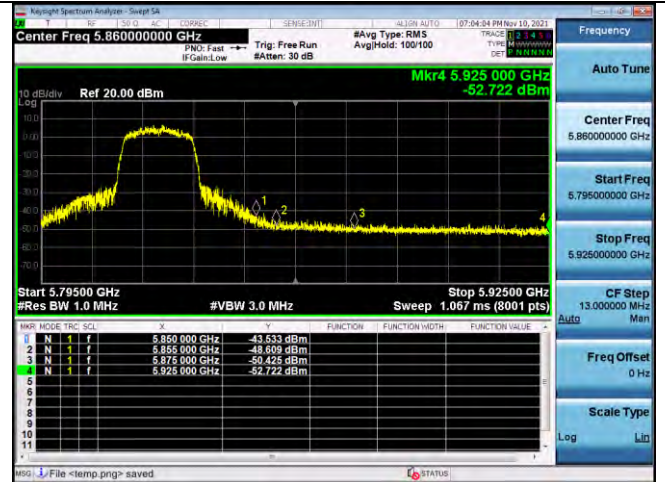
Highest channel

Test mode:



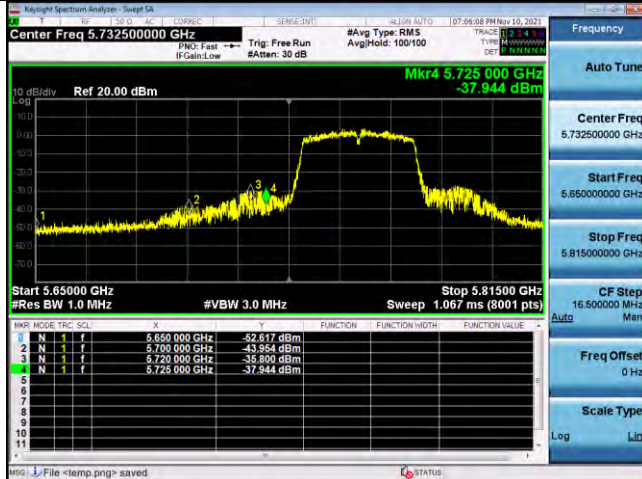
Lowest channel

802.11n20



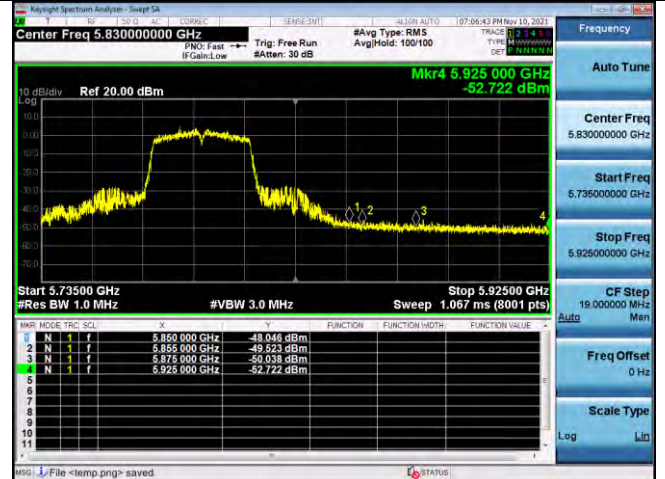
Highest channel

Test mode:

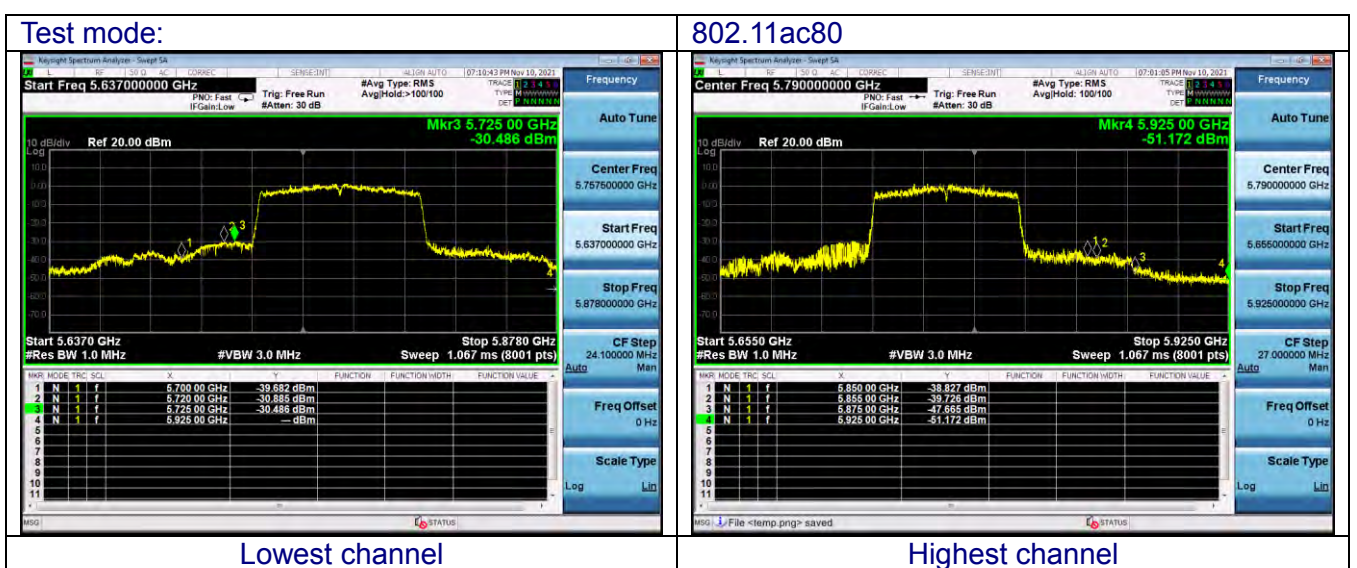
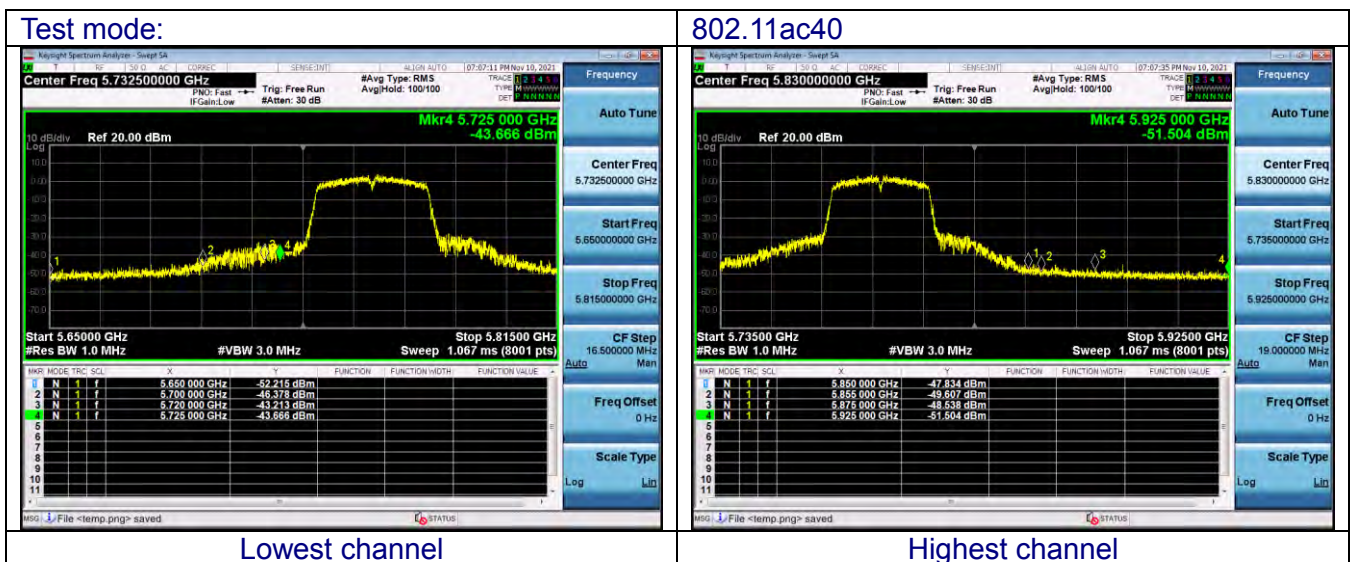
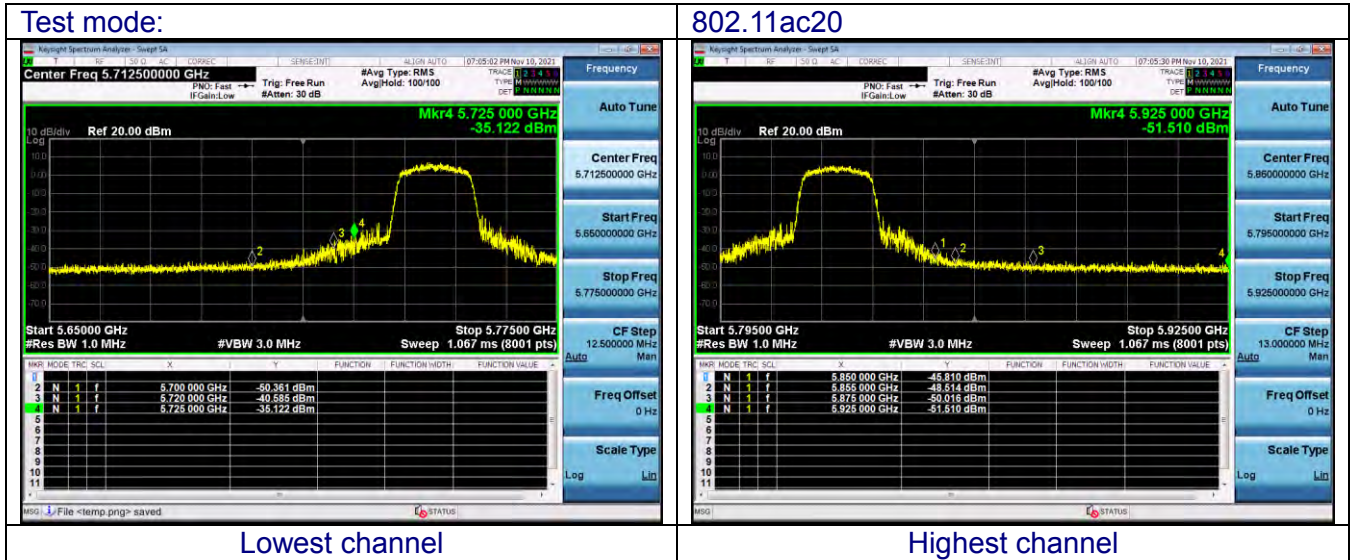


Lowest channel

802.11n40



Highest channel



Test mode:

802.11ax20



Test mode:



802.11ax40



Test mode:

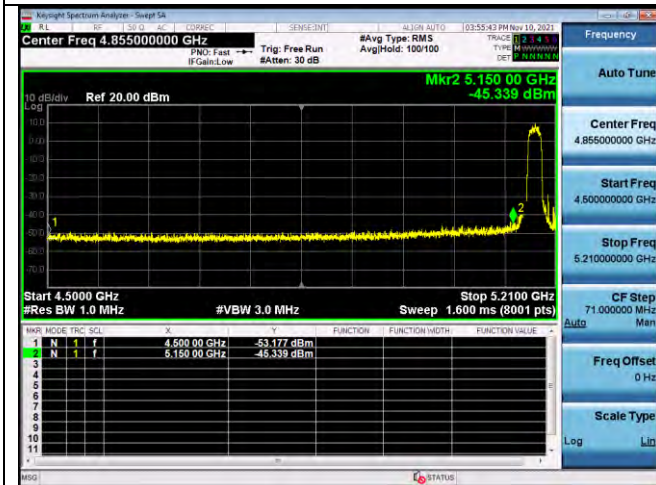


802.11ax80



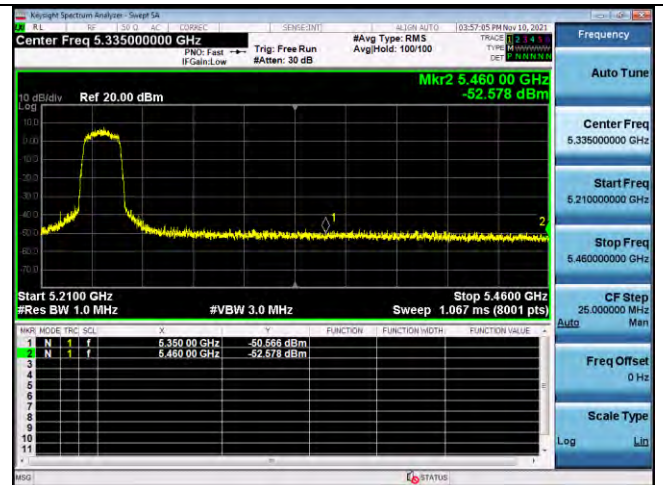
ANT2-band1

Test mode:



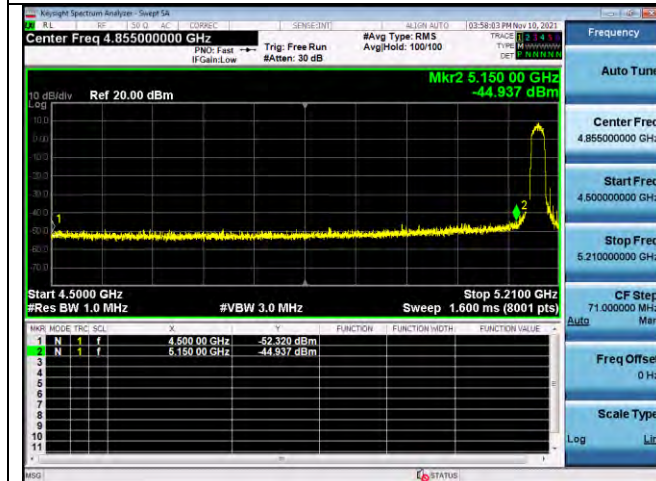
Lowest channel

802.11a



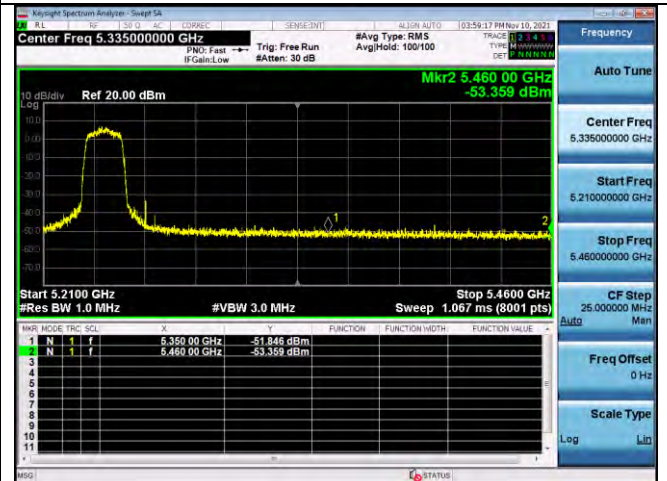
Highest channel

Test mode:



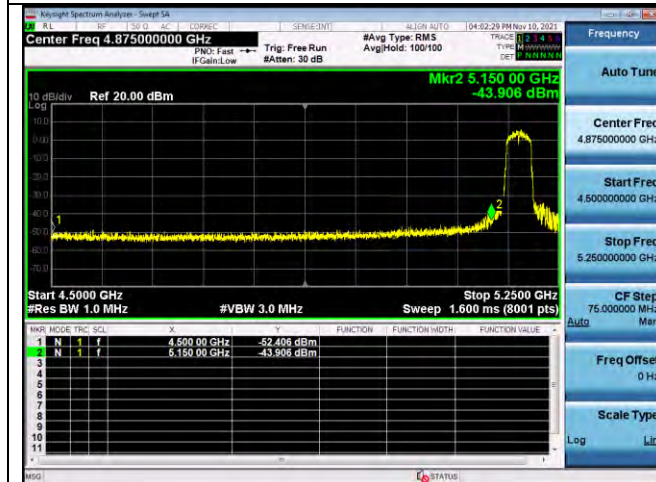
Lowest channel

802.11n20



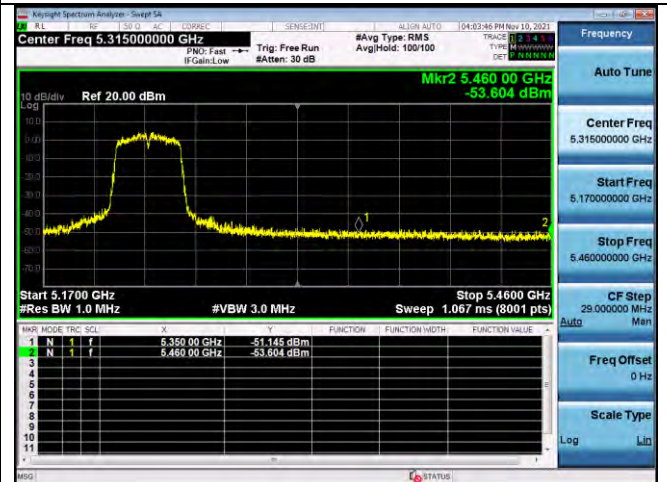
Highest channel

Test mode:



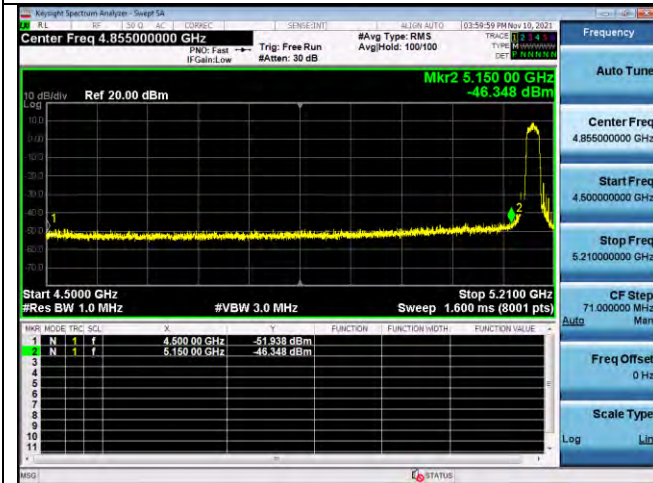
Lowest channel

802.11n40



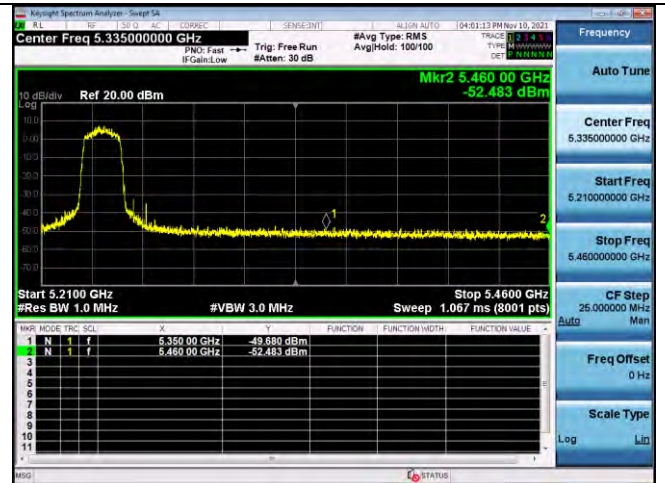
Highest channel

Test mode:



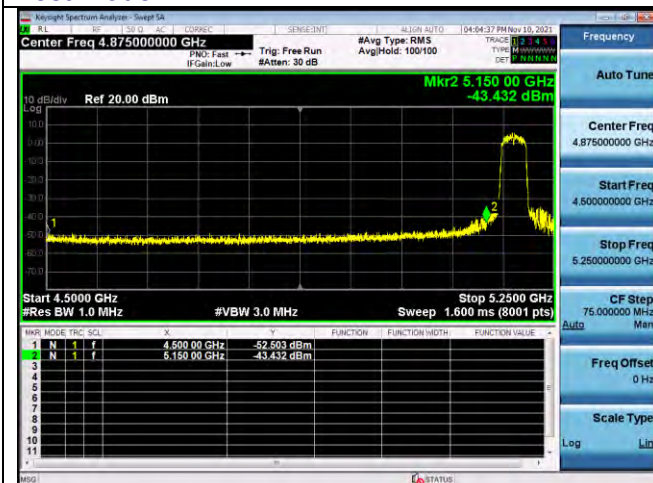
Lowest channel

802.11ac20



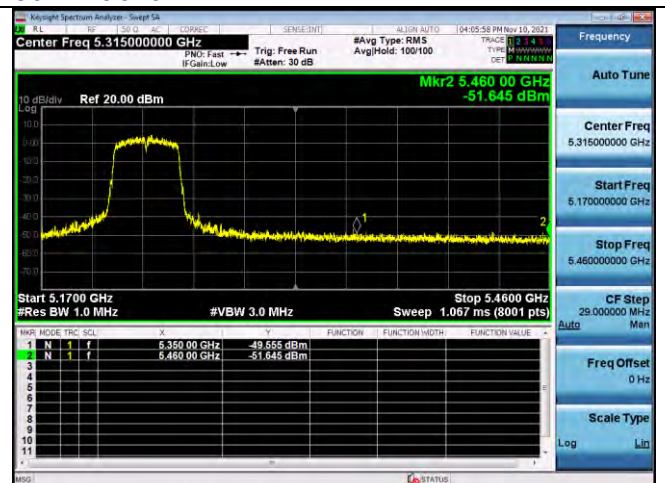
Highest channel

Test mode:



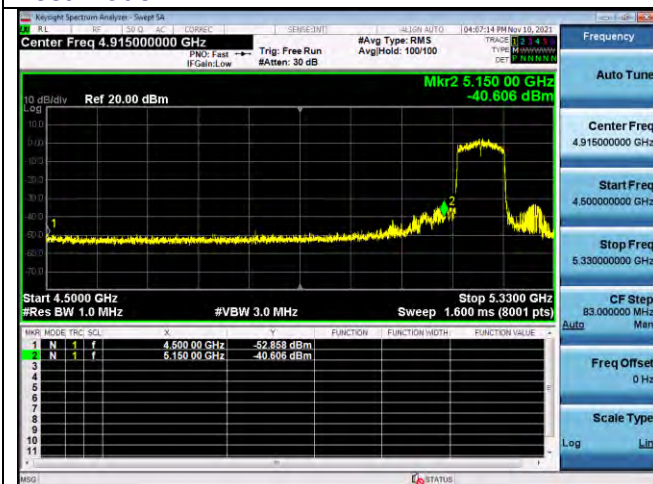
Lowest channel

802.11ac40



Highest channel

Test mode:



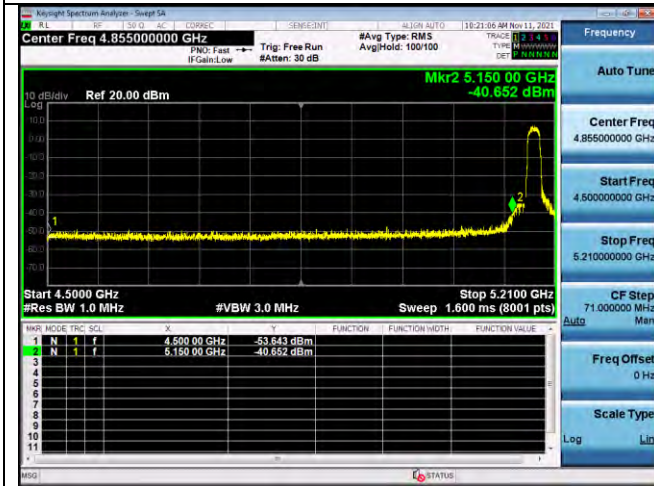
Lowest channel

802.11ac80

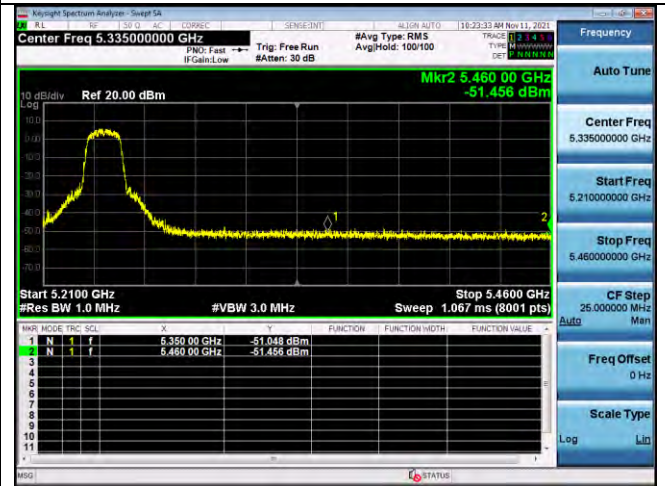


Highest channel

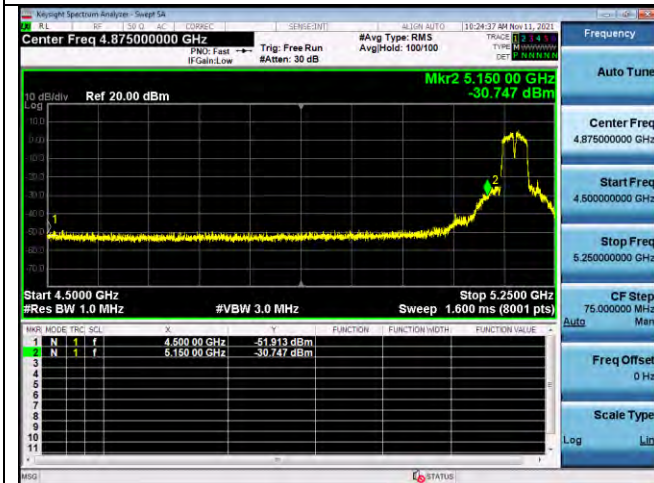
Test mode:



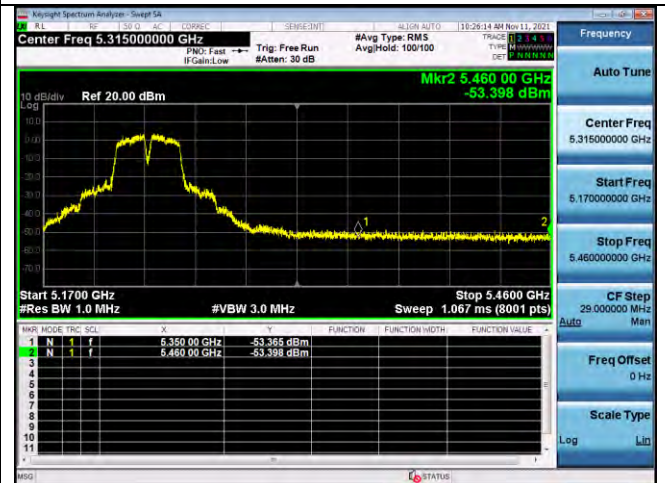
802.11ax20



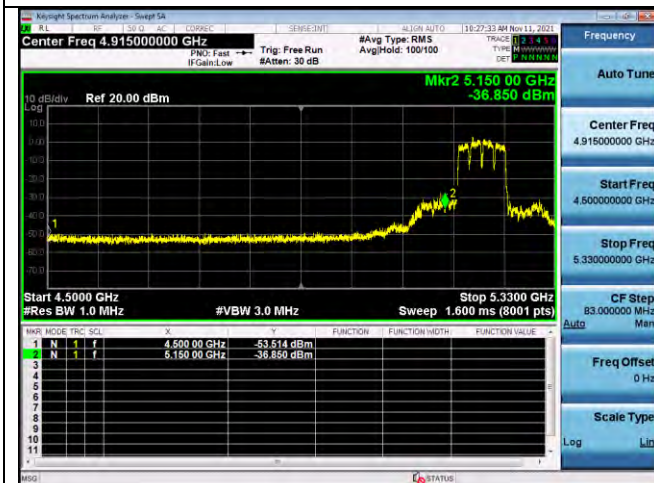
Test mode:



802.11ax40



Test mode:

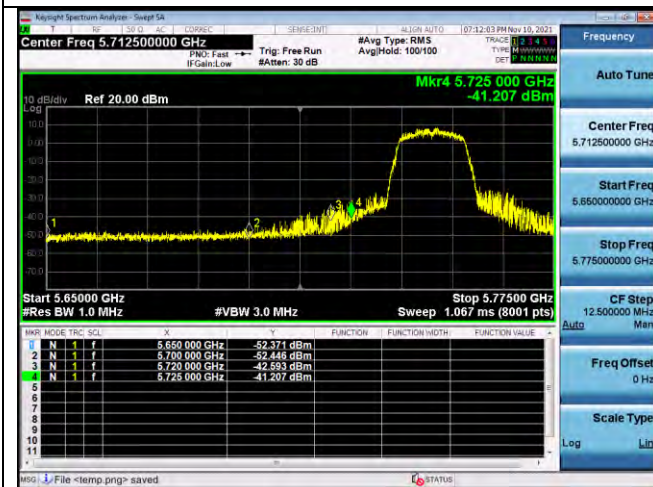


802.11ax80



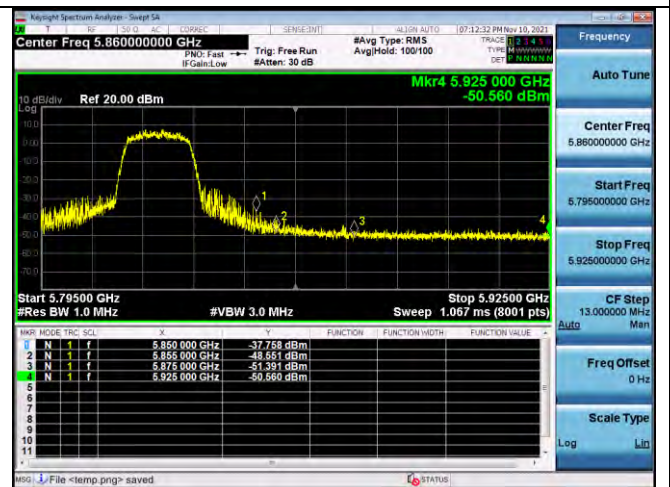
ANT2-band 4

Test mode:



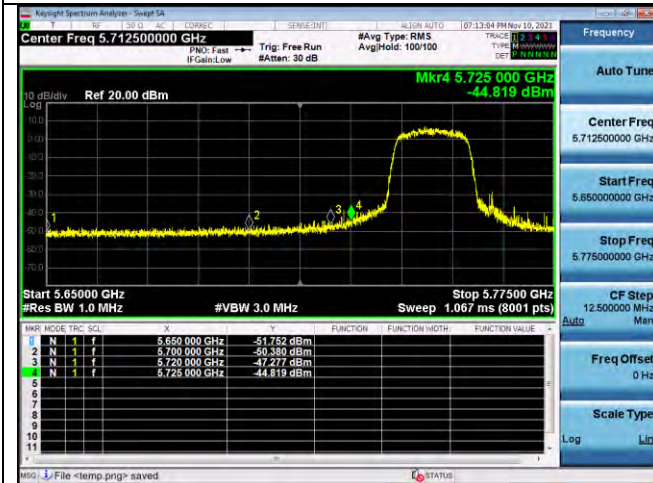
Lowest channel

802.11a



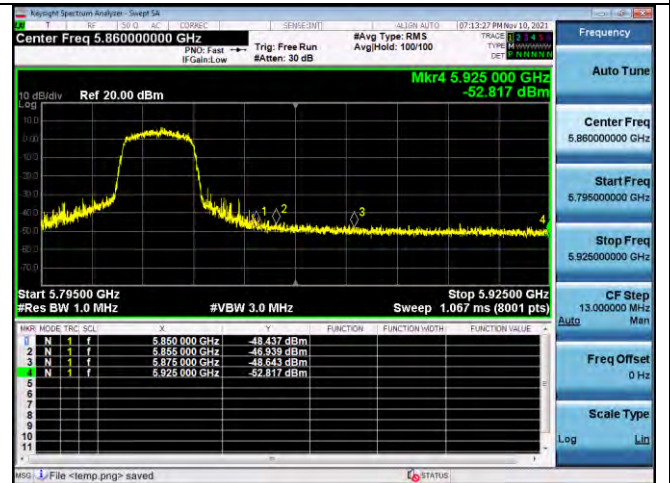
Highest channel

Test mode:



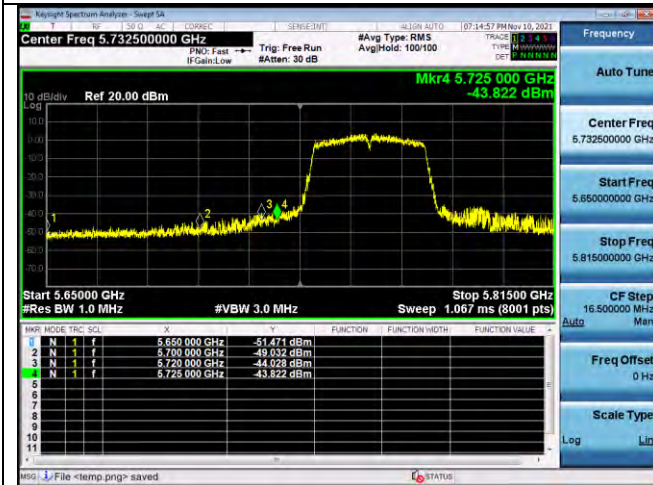
Lowest channel

802.11n20



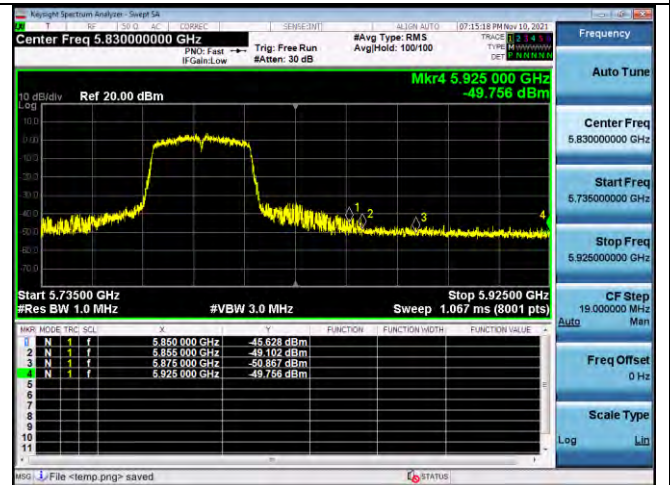
Highest channel

Test mode:

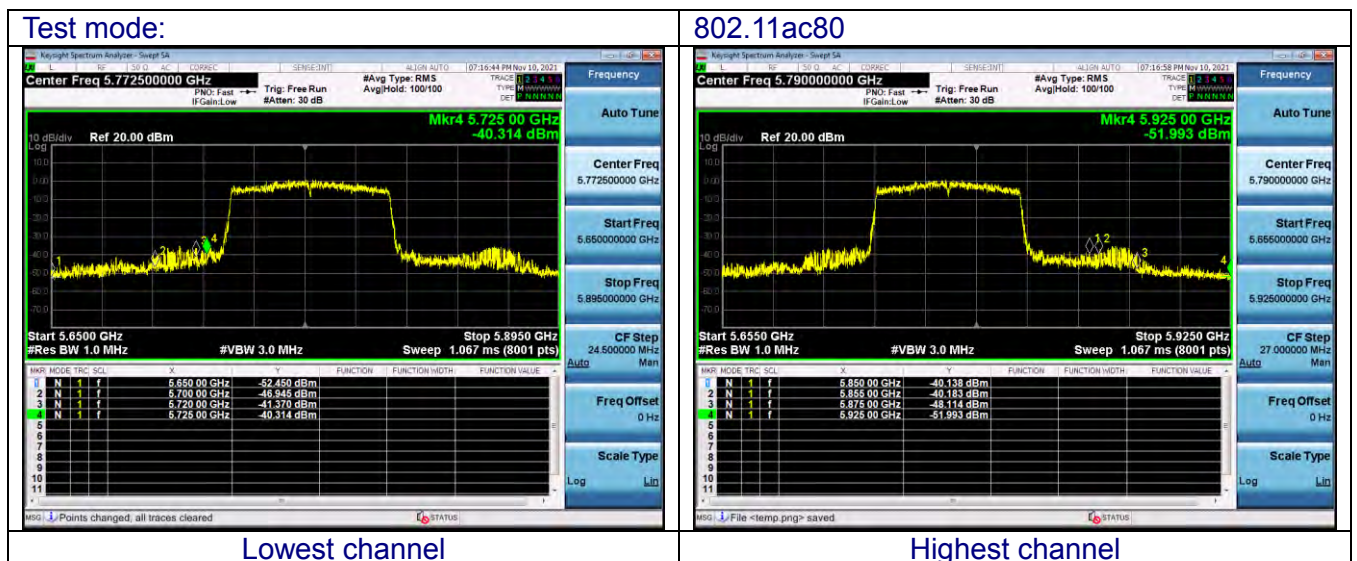
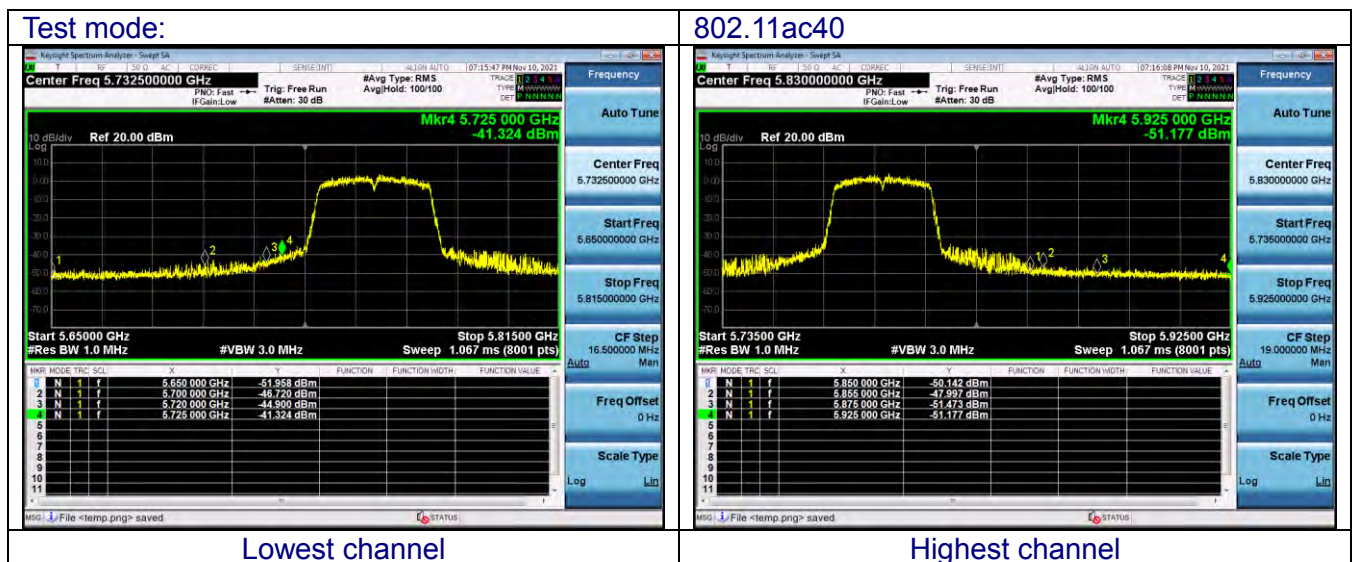
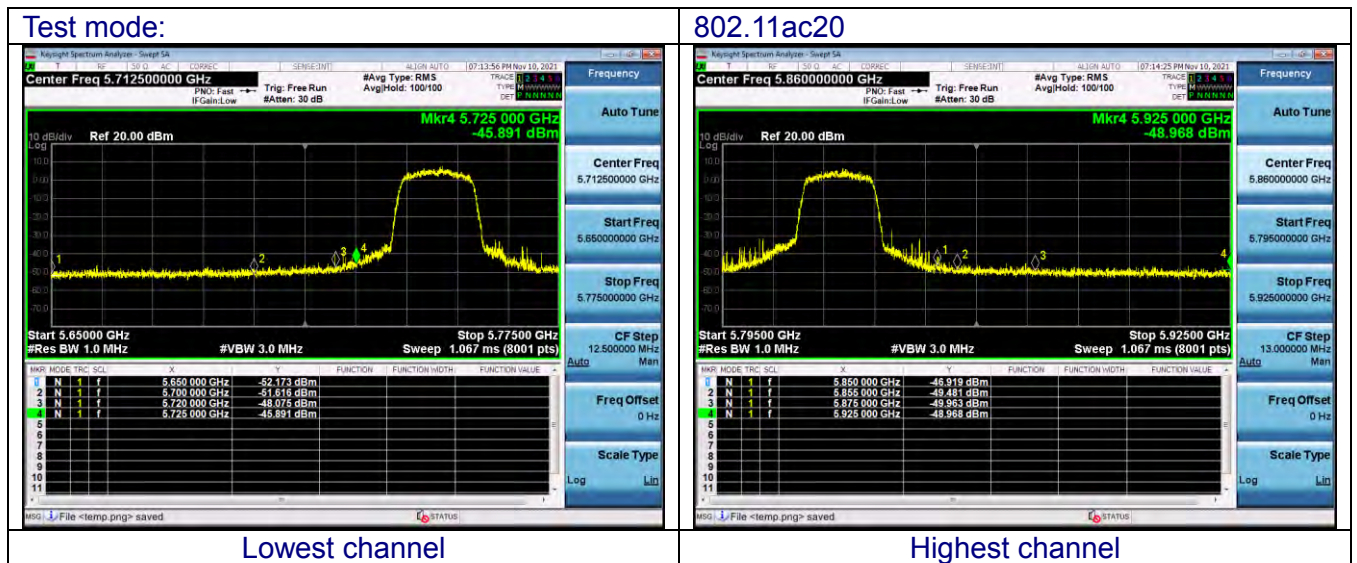


Lowest channel

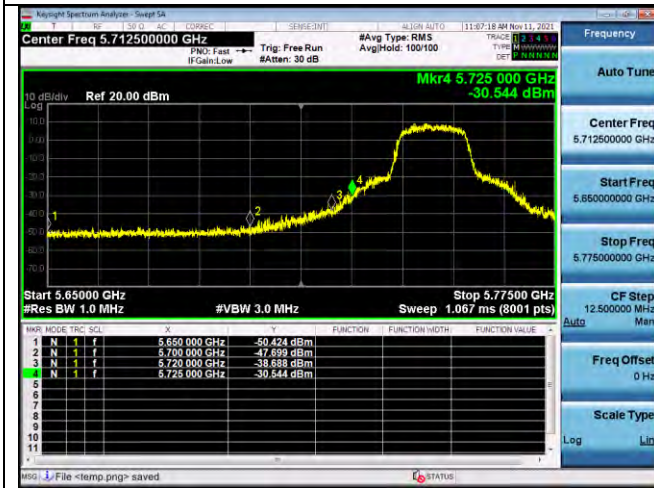
802.11n40



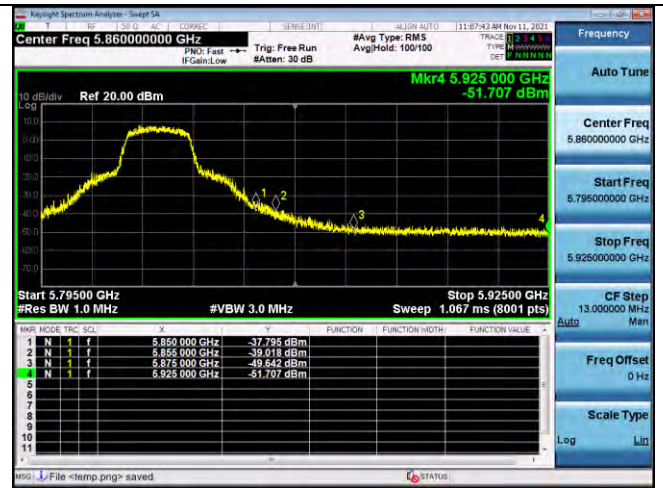
Highest channel



Test mode:



802.11ax20



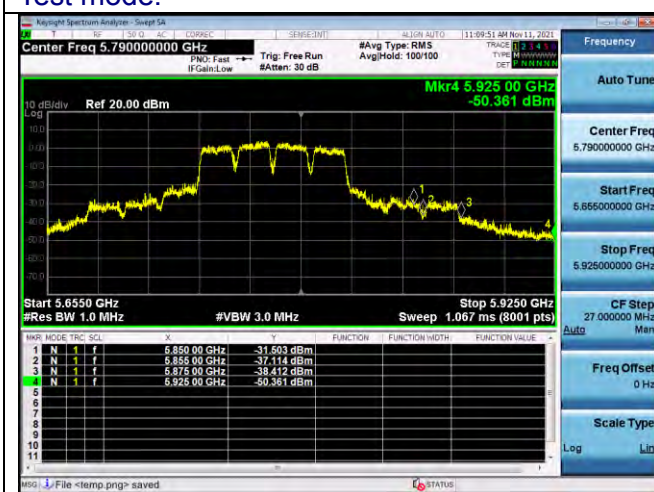
Test mode:



802.11ax40



Test mode:



802.11ax80



9. FREQUENCY STABILITY MEASUREMENT

9.1 LIMIT

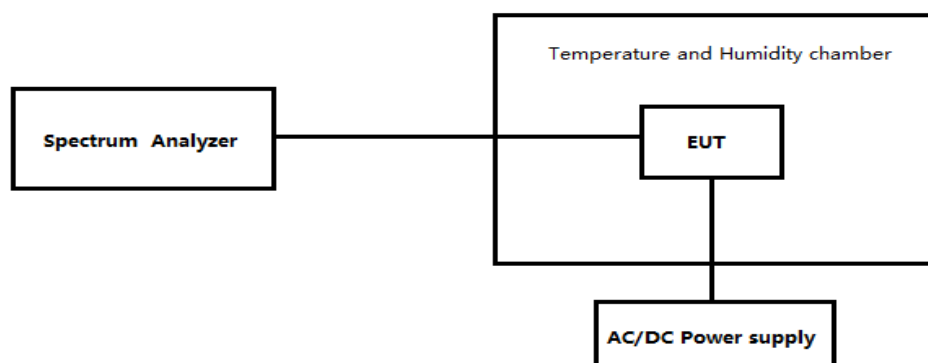
According to §15.407(g), Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of

normal operation as specified in the user's manual.

9.2 TESTPROCEDURE

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 TESTCONFIGURATION



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	120	80	0.0155
40	120	93	0.0179
30	120	92	0.0177
20	120	89	0.0172

10	120	92	0.0177
0	120	72	0.0138
-10	120	90	0.0173
-20	120	80	0.0154
-30	120	94	0.0182

ANT1-802.11a- CH48

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	70	0.0134
40	120	78	0.0148
30	120	71	0.0136
20	120	63	0.0120
10	120	73	0.0139
0	120	63	0.0120
-10	120	94	0.0179
-20	120	85	0.0163
-30	120	71	0.0135

ANT1-802.11a- CH149

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	76	0.0132
40	120	71	0.0124
30	120	71	0.0123
20	120	86	0.0149
10	120	78	0.0136
0	120	72	0.0125
-10	120	88	0.0152
-20	120	87	0.0151
-30	120	84	0.0145

ANT1-802.11a- CH165

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	86	0.0148
40	120	72	0.0123
30	120	69	0.0118
20	120	87	0.0149
10	120	83	0.0143
0	120	81	0.0140
-10	120	79	0.0135
-20	120	79	0.0136
-30	120	90	0.0154

ANT1-802.11n20- CH36

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	71	0.0137

40	120	95	0.0183
30	120	73	0.0141
20	120	91	0.0176
10	120	75	0.0145
0	120	81	0.0156
-10	120	94	0.0182
-20	120	71	0.0136
-30	120	81	0.0156

ANT1-802.11n20- CH48

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	77	0.0147
40	120	61	0.0116
30	120	95	0.0182
20	120	78	0.0149
10	120	73	0.0140
0	120	85	0.0162
-10	120	64	0.0121
-20	120	66	0.0126
-30	120	79	0.0150

ANT1-802.11n20- CH149

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	95	0.0166
40	120	84	0.0147
30	120	80	0.0140
20	120	81	0.0141
10	120	74	0.0129
0	120	70	0.0121
-10	120	65	0.0113
-20	120	89	0.0154
-30	120	78	0.0136

ANT1-802.11n20- CH165

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	83	0.0143
40	120	79	0.0135
30	120	67	0.0115
20	120	67	0.0115
10	120	63	0.0107
0	120	75	0.0129
-10	120	84	0.0145
-20	120	95	0.0162
-30	120	84	0.0144

ANT1-802.11n40- CH38

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	90	0.0173
40	120	78	0.0150
30	120	92	0.0178
20	120	83	0.0160
10	120	79	0.0152
0	120	75	0.0144
-10	120	63	0.0121
-20	120	79	0.0153
-30	120	69	0.0134

ANT1-802.11n40- CH46

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	76	0.0145
40	120	78	0.0148
30	120	70	0.0134
20	120	64	0.0122
10	120	93	0.0178
0	120	94	0.0180
-10	120	80	0.0152
-20	120	64	0.0123
-30	120	60	0.0116

ANT1-802.11n40- CH151

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	83	0.0144
40	120	68	0.0119
30	120	75	0.0131
20	120	83	0.0144
10	120	60	0.0105
0	120	79	0.0137
-10	120	83	0.0144
-20	120	72	0.0125
-30	120	82	0.0143

ANT1-802.11n40- CH159

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	76	0.0130
40	120	81	0.0141
30	120	69	0.0119
20	120	79	0.0137
10	120	92	0.0158
0	120	94	0.0162
-10	120	93	0.0160
-20	120	67	0.0116

-30	120	65	0.0112
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ANT1-802.11ac20- CH36

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	94	0.0181
40	120	88	0.0169
30	120	78	0.0151
20	120	61	0.0118
10	120	76	0.0147
0	120	89	0.0171
-10	120	66	0.0127
-20	120	81	0.0156
-30	120	60	0.0116

ANT1-802.11ac20- CH48

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	86	0.0164
40	120	90	0.0173
30	120	65	0.0124
20	120	83	0.0158
10	120	73	0.0139
0	120	64	0.0122
-10	120	83	0.0158
-20	120	93	0.0177
-30	120	83	0.0159

ANT1-802.11ac20- CH149

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	78	0.0135
40	120	68	0.0118
30	120	64	0.0111
20	120	91	0.0159
10	120	93	0.0162
0	120	70	0.0123
-10	120	68	0.0118
-20	120	92	0.0160
-30	120	79	0.0137

ANT1-802.11ac20- CH165

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	83	0.0143
40	120	82	0.0141
30	120	91	0.0157
20	120	71	0.0123

10	120	66	0.0114
0	120	62	0.0106
-10	120	61	0.0104
-20	120	87	0.0149
-30	120	78	0.0135

ANT1-802.11ac40- CH38

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	77	0.0149
40	120	81	0.0155
30	120	61	0.0118
20	120	92	0.0178
10	120	76	0.0147
0	120	95	0.0183
-10	120	74	0.0143
-20	120	90	0.0173
-30	120	71	0.0137

ANT1-802.11ac40- CH46

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	72	0.0138
40	120	92	0.0177
30	120	84	0.0161
20	120	91	0.0173
10	120	60	0.0115
0	120	61	0.0117
-10	120	62	0.0118
-20	120	82	0.0157
-30	120	84	0.0161

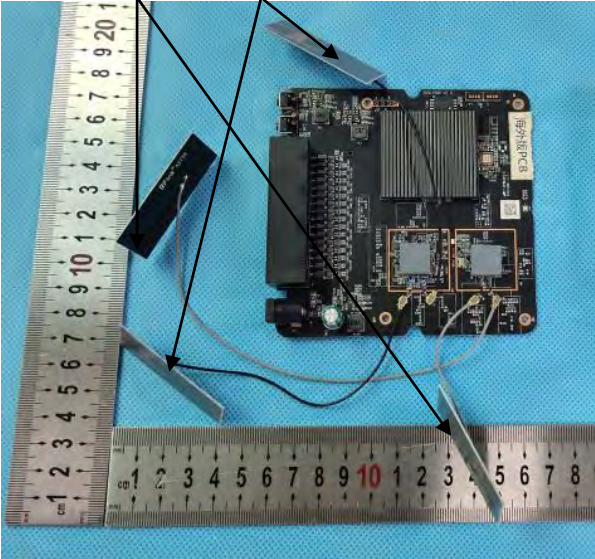
ANT1-802.11ac40- CH151

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	75	0.0130
40	120	94	0.0164
30	120	83	0.0145
20	120	64	0.0111
10	120	61	0.0106
0	120	90	0.0156
-10	120	81	0.0141
-20	120	64	0.0111
-30	120	61	0.0106

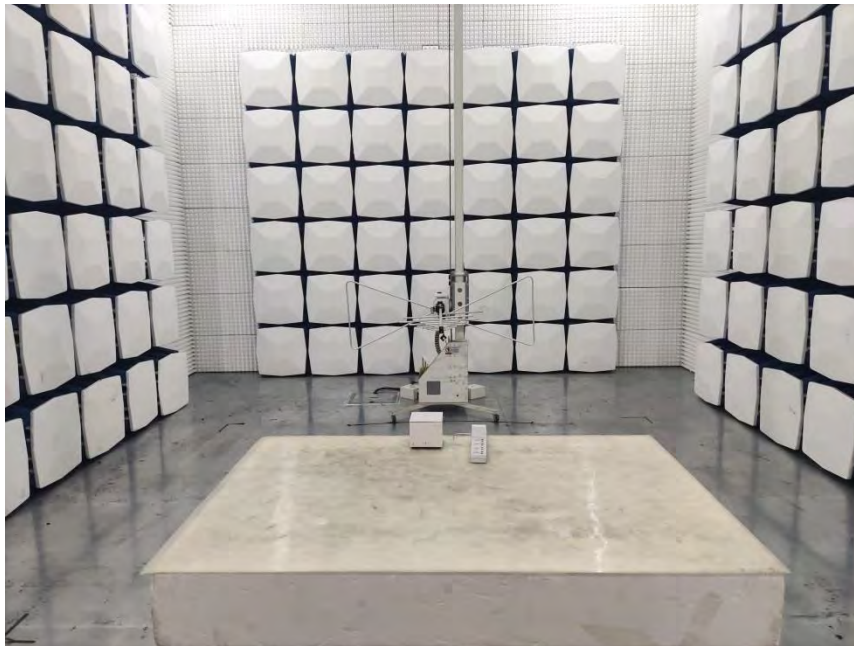
ANT1-802.11ac40- CH159

Temperature (°C)	Voltage (AC:V)	Frequency Measure with time Elapsed	
		MCF	(ppm)
50	120	92	0.0160
40	120	78	0.0134
30	120	81	0.0140
20	120	87	0.0151
10	120	91	0.0157
0	120	89	0.0154
-10	120	84	0.0145
-20	120	68	0.0117
-30	120	68	0.0116

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, and MIMO gain is 8.01 dBi EUT Antenna: 2.4Gwifi ant 5Gwifi ant 	

10. TEST SETUP PHOTO





11. EUT CONSTRUCTIONAL DETAILS

Please refer to external photos file and internal photos file

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