

4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Client device	250mW (24 dBm)
U-NII-2A	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

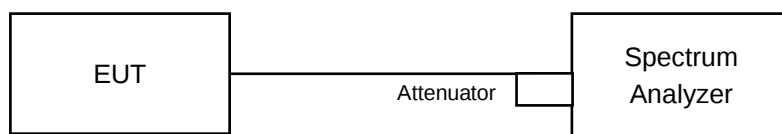
Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

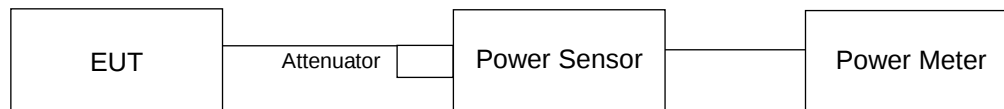
4.3.2 Test Setup

FOR POWER OUTPUT MEASUREMENT

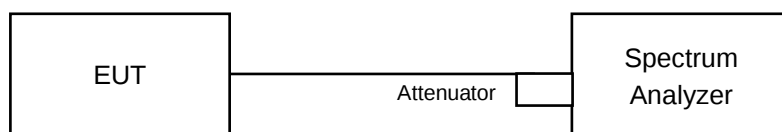
For channel straddling 5725MHz:



For other channels:



FOR 26dB OCCUPIED BANDWIDTH



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

FOR POWER OUTPUT MEASUREMENT

For channel straddling 5725MHz:

Follow FCC KDB 789033 UNII test procedure:

For 802.11a, 20MHz Preamble, 40MHz Preamble

Method SA-2

1. Set span to encompass the emission bandwidth (EBW) of the signal.
2. Set RBW = 1MHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Number of points in sweep $\geq 2 \text{ Span} / \text{RBW}$.
5. Sweep time = auto.
6. Detector = RMS.
7. Trace average at least 100 traces in power averaging mode
8. Compute power by integrating the spectrum across the 26 dB EBW of the signal.
9. Duty factor need added to measured value (duty cycle < 98 percent).

For other modulation:

Method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1MHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Number of points in sweep $\geq 2 \text{ Span} / \text{RBW}$.
5. Sweep time = auto.
6. Set trigger to free run (duty cycle ≥ 98 percent)
7. Detector = RMS.
8. Trace average at least 100 traces in power averaging mode
9. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

For other channels:

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

FOR 26dB OCCUPIED BANDWIDTH

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW $>$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Results

802.11a

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	19.28	19.81	180.442	22.56	23.91	Pass
40	5200	19.91	20.17	201.941	23.05	23.91	Pass
48	5240	19.94	20.41	208.529	23.19	23.91	Pass
52	5260	19.89	20.12	200.301	23.02	23.91	Pass
60	5300	19.95	20.04	199.78	23.01	23.91	Pass
64	5320	18.54	18.71	145.752	21.64	23.91	Pass
100	5500	17.79	17.65	118.327	20.73	22.23	Pass
116	5580	19.39	18.52	158.017	21.99	22.23	Pass
140	5700	18.36	17.72	127.705	21.06	22.23	Pass
*144 (U-NII-2C Band)	5720	15.32	16.04	74.22	18.71	21.45	Pass
*144 (U-NII-3 Band)	5720	9.34	9.94	18.453	12.66	28.23	Pass
149	5745	20.13	19.70	196.364	22.93	28.23	Pass
157	5785	19.92	19.71	191.716	22.83	28.23	Pass
165	5825	19.95	19.61	190.266	22.79	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
144	5720	92.673	19.67

Note: The total power was calculated through formula and record the value for reference only.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	19.31	18.54	156.76	21.95

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	26.35	29.70
60	5300	28.23	25.69
64	5320	23.31	23.29
100	5500	23.48	23.06
116	5580	26.15	26.49
140	5700	23.29	23.35
144 (U-NII-2C Band)	5720	16.69	17.51

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	26.35	25.2 > 24
60	5300	25.69	25.09 > 24
64	5320	23.29	24.67 > 24
100	5500	23.06	24.62 > 24
116	5580	26.15	25.17 > 24
140	5700	23.29	24.67 > 24
144 (U-NII-2C Band)	5720	16.69	23.22 < 24

802.11ac (VHT20)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.56	18.23	123.543	20.92	23.91	Pass
40	5200	19.59	20.17	194.983	22.90	23.91	Pass
48	5240	19.54	20.27	196.364	22.93	23.91	Pass
52	5260	19.89	20.51	209.959	23.22	23.91	Pass
60	5300	19.92	20.42	208.329	23.19	23.91	Pass
64	5320	17.31	17.98	116.633	20.67	23.91	Pass
100	5500	15.22	15.49	68.666	18.37	22.23	Pass
116	5580	19.06	18.71	154.84	21.90	22.23	Pass
140	5700	16.07	15.94	79.722	19.02	22.23	Pass
*144 (U-NII-2C Band)	5720	13.98	12.72	43.71	16.41	21.69	Pass
*144 (U-NII-3 Band)	5720	7.02	6.26	9.262	9.67	28.23	Pass
149	5745	19.40	19.14	169.131	22.28	28.23	Pass
157	5785	19.41	19.21	170.665	22.32	28.23	Pass
165	5825	19.36	19.13	168.144	22.26	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
144	5720	52.972	17.24

Note: The total power was calculated through formula and record the value for reference only.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	19.16	18.76	157.576	21.97

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	40.03	39.29
60	5300	40.58	38.71
64	5320	23.76	24.05
100	5500	23.44	23.20
116	5580	37.25	38.33
140	5700	23.75	23.91
144 (U-NII-2C Band)	5720	17.62	18.21

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	39.29	26.94 > 24
60	5300	38.71	26.87 > 24
64	5320	23.76	24.75 > 24
100	5500	23.20	24.65 > 24
116	5580	37.25	26.71 > 24
140	5700	23.75	24.75 > 24
144 (U-NII-2C Band)	5720	17.62	23.46 < 24

802.11ac (VHT40)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	15.31	15.89	72.778	18.62	23.91	Pass
46	5230	19.89	20.57	211.524	23.25	23.91	Pass
54	5270	19.71	20.72	211.573	23.25	23.91	Pass
62	5310	15.27	15.98	73.279	18.65	23.91	Pass
102	5510	13.61	13.94	47.735	16.79	22.23	Pass
110	5550	19.06	19.07	161.262	22.08	22.23	Pass
134	5670	17.29	16.98	103.468	20.15	22.23	Pass
*142 (U-NII-2C Band)	5710	14.63	14.37	56.393	17.51	22.23	Pass
*142 (U-NII-3 Band)	5710	4.37	3.29	4.868	6.87	28.23	Pass
151	5755	20.26	19.97	205.482	23.13	28.23	Pass
159	5795	19.99	19.91	197.719	22.96	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
142	5710	61.261	17.87

Note: The total power was calculated through formula and record the value for reference only.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	19.26	19.02	164.132	22.15

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	81.62	91.99
62	5310	47.54	48.05
102	5510	47.32	47.15
110	5550	61.86	58.79
134	5670	48.06	48.36
142 (U-NII-2C Band)	5710	50.24	42.61

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	81.62	30.11 > 24
62	5310	47.54	27.77 > 24
102	5510	47.15	27.73 > 24
110	5550	58.79	28.69 > 24
134	5670	48.06	27.81 > 24
142 (U-NII-2C Band)	5710	42.61	27.29 > 24

802.11ac (VHT80)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	15.63	16.37	79.91	19.03	23.91	Pass
58	5290	15.53	16.34	78.78	18.96	23.91	Pass
106	5530	14.91	15.03	62.816	17.98	22.23	Pass
122	5610	18.99	18.71	153.552	21.86	22.23	Pass
*138 (U-NII-2C Band)	5690	14.38	13.28	48.697	16.88	22.23	Pass
*138 (U-NII-3 Band)	5690	0.82	1.27	2.548	4.06	28.23	Pass
155	5775	19.36	19.14	168.333	22.26	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
138	5690	51.245	17.1

Note: The total power was calculated through formula and record the value for reference only.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
138	5690	19.11	18.88	158.738	22.01

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	89.94	89.34
106	5530	89.65	88.85
122	5610	145.53	94.70
138 (U-NII-2C Band)	5690	85.70	82.23

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	89.34	30.51 > 24
106	5530	88.85	30.48 > 24
122	5610	94.70	30.76 > 24
138 (U-NII-2C Band)	5690	82.23	30.15 > 24

802.11ax (HE20)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.43	18.38	124.2	20.94	23.91	Pass
40	5200	19.66	20.13	195.509	22.91	23.91	Pass
48	5240	19.61	20.25	197.336	22.95	23.91	Pass
52	5260	19.90	20.52	210.444	23.23	23.91	Pass
60	5300	19.98	20.41	209.442	23.21	23.91	Pass
64	5320	17.38	17.94	116.932	20.68	23.91	Pass
100	5500	16.41	16.62	89.672	19.53	22.23	Pass
116	5580	19.15	18.70	156.355	21.94	22.23	Pass
140	5700	16.06	16.02	80.359	19.05	22.23	Pass
*144 (U-NII-2C Band)	5720	14.72	14.31	56.625	17.53	21.55	Pass
*144 (U-NII-3 Band)	5720	9.93	9.62	19.002	12.79	28.23	Pass
149	5745	19.42	19.14	169.533	22.29	28.23	Pass
157	5785	19.41	19.22	170.857	22.33	28.23	Pass
165	5825	19.38	19.16	169.11	22.28	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
144	5720	75.627	18.79

Note: The total power was calculated through formula and record the value for reference only.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	19.20	18.72	157.649	21.98

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	41.72	42.18
60	5300	39.86	42.00
64	5320	23.33	22.76
100	5500	23.11	22.66
116	5580	35.09	31.29
140	5700	22.63	22.14
144 (U-NII-2C Band)	5720	19.63	17.09

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	41.72	27.2 > 24
60	5300	39.86	27 > 24
64	5320	22.76	24.57 > 24
100	5500	22.66	24.55 > 24
116	5580	31.29	25.95 > 24
140	5700	22.14	24.45 > 24
144 (U-NII-2C Band)	5720	17.09	23.32 < 24

802.11ax (HE40)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	15.31	16.11	74.795	18.74	23.91	Pass
46	5230	19.98	20.51	212.001	23.26	23.91	Pass
54	5270	19.87	20.61	212.131	23.27	23.91	Pass
62	5310	15.46	15.89	73.971	18.69	23.91	Pass
102	5510	13.67	14.01	48.458	16.85	22.23	Pass
110	5550	19.17	19.00	162.037	22.10	22.23	Pass
134	5670	17.31	17.02	104.177	20.18	22.23	Pass
*142 (U-NII-2C Band)	5710	16.23	15.37	76.411	18.83	22.23	Pass
*142 (U-NII-3 Band)	5710	5.91	6.35	8.214	9.15	28.23	Pass
151	5755	20.31	19.96	206.482	23.15	28.23	Pass
159	5795	19.97	19.95	198.167	22.97	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
142	5710	84.625	19.27

Note: The total power was calculated through formula and record the value for reference only.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	19.43	18.96	166.405	22.21

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	90.12	94.90
62	5310	47.64	47.41
102	5510	47.30	46.36
110	5550	86.19	85.87
134	5670	61.02	47.83
142 (U-NII-2C Band)	5710	46.99	44.33

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	90.12	30.54 > 24
62	5310	47.41	27.75 > 24
102	5510	46.36	27.66 > 24
110	5550	85.87	30.33 > 24
134	5670	47.83	27.79 > 24
142 (U-NII-2C Band)	5710	44.33	27.46 > 24

802.11ax (HE80)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	15.92	16.80	86.947	19.39	23.91	Pass
58	5290	15.61	16.71	83.273	19.21	23.91	Pass
106	5530	14.97	15.03	63.247	18.01	22.23	Pass
122	5610	18.97	18.76	154.048	21.88	22.23	Pass
*138 (U-NII-2C Band)	5690	15.57	14.92	67.104	18.27	22.23	Pass
*138 (U-NII-3 Band)	5690	3.46	2.99	4.209	6.24	28.23	Pass
155	5775	19.37	19.14	168.532	22.27	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
138	5690	71.313	18.53

Note: The total power was calculated through formula and record the value for reference only.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
138	5690	19.17	18.91	160.408	22.05

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	89.22	88.97
106	5530	88.47	88.14
122	5610	182.80	161.04
138 (U-NII-2C Band)	5690	81.59	85.82

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	88.97	30.49 > 24
106	5530	88.14	30.45 > 24
122	5610	161.04	33.06 > 24
138 (U-NII-2C Band)	5690	81.59	30.11 > 24

20MHz Preamble
RU26

POWER OUTPUT

RU Configuration	Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
			Chain 0	Chain 1				
26/0	36	5180	12.93	13.38	41.411	16.17	23.91	Pass
26/0	40	5200	12.91	13.45	41.674	16.20	23.91	Pass
26/8	48	5240	12.81	13.17	39.848	16.00	23.91	Pass
26/0	52	5260	13.03	13.39	41.918	16.22	23.91	Pass
26/8	60	5300	13.12	13.52	43.003	16.33	23.91	Pass
26/8	64	5320	13.21	13.58	43.744	16.41	23.89	Pass
26/0	100	5500	12.41	11.63	31.973	15.05	22.23	Pass
26/0	116	5580	12.48	11.50	31.826	15.03	22.23	Pass
26/8	140	5700	12.02	11.75	30.884	14.90	22.23	Pass
26/0	*144 (U-NII-2C Band)	5720	9.40	8.50	16.149	12.08	21.24	Pass
26/8	*144 (U-NII-3 Band)	5720	10.14	9.32	19.31	12.86	28.23	Pass
26/0	149	5745	16.68	16.01	86.461	19.37	28.23	Pass
26/8	157	5785	16.41	16.07	84.21	19.25	28.23	Pass
26/8	165	5825	16.48	15.95	83.818	19.23	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
144	5720	35.459	15.5

Note: The total power was calculated through formula and record the value for reference only.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	12.54	11.53	32.17	15.07

26dB OCCUPIED BANDWIDTH

RU Configuration	Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
			Chain 0	Chain 1
26/0	52	5260	20.46	20.61
26/8	60	5300	20.77	20.00
26/8	64	5320	20.66	19.89
26/0	100	5500	20.56	20.18
26/0	116	5580	20.60	20.28
26/8	140	5700	20.73	20.02
26/0	144 (U-NII-2C Band)	5720	15.89	15.89

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.46	24.1 > 24
60	5300	20.00	24.01 > 24
64	5320	19.89	23.98 < 24
100	5500	20.18	24.04 > 24
116	5580	20.28	24.07 > 24
140	5700	20.02	24.01 > 24
144 (U-NII-2C Band)	5720	15.89	23.01 < 24

RU52

POWER OUTPUT

RU Configuration	Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
			Chain 0	Chain 1				
52/37	36	5180	15.16	15.64	69.454	18.42	23.91	Pass
52/37	40	5200	15.15	15.54	68.544	18.36	23.91	Pass
52/40	48	5240	14.95	15.53	66.988	18.26	23.91	Pass
52/37	52	5260	14.93	15.83	69.399	18.41	23.91	Pass
52/40	60	5300	15.10	15.64	69.003	18.39	23.91	Pass
52/40	64	5320	15.29	15.33	67.925	18.32	23.91	Pass
52/37	100	5500	14.32	14.04	52.391	17.19	22.23	Pass
52/37	116	5580	14.36	14.09	52.935	17.24	22.23	Pass
52/40	140	5700	14.24	13.79	50.479	17.03	22.23	Pass
52/37	*144 (U-NII-2C Band)	5720	12.30	10.48	29.032	14.63	21.25	Pass
52/40	*144 (U-NII-3 Band)	5720	12.73	11.43	33.672	15.27	28.23	Pass
52/37	149	5745	16.94	16.20	91.118	19.60	28.23	Pass
52/40	157	5785	16.61	16.06	86.179	19.35	28.23	Pass
52/40	165	5825	16.59	16.10	86.342	19.36	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
144	5720	62.704	17.97

Note: The total power was calculated through formula and record the value for reference only.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	14.36	14.08	52.876	17.23

26dB OCCUPIED BANDWIDTH

RU Configuration	Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
			Chain 0	Chain 1
52/37	52	5260	22.23	21.30
52/40	60	5300	21.85	22.46
52/40	64	5320	21.97	22.31
52/37	100	5500	21.04	21.10
52/37	116	5580	21.01	20.98
52/40	140	5700	21.52	21.95
52/37	144 (U-NII-2C Band)	5720	15.99	15.95

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	21.30	24.28 > 24
60	5300	21.85	24.39 > 24
64	5320	21.97	24.41 > 24
100	5500	21.04	24.23 > 24
116	5580	20.98	24.21 > 24
140	5700	21.52	24.32 > 24
144 (U-NII-2C Band)	5720	15.95	23.02 < 24

RU106

POWER OUTPUT

RU Configuration	Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
			Chain 0	Chain 1				
106/53	36	5180	17.91	19.52	151.338	21.80	23.91	Pass
106/53	40	5200	18.04	18.47	133.987	21.27	23.91	Pass
106/54	48	5240	17.95	18.54	133.823	21.27	23.91	Pass
106/53	52	5260	18.39	18.62	141.802	21.52	23.91	Pass
106/54	60	5300	18.03	18.77	138.869	21.43	23.91	Pass
106/54	64	5320	18.21	18.81	142.255	21.53	23.91	Pass
106/53	100	5500	14.63	14.89	59.872	17.77	22.23	Pass
106/53	116	5580	17.18	17.03	102.706	20.12	22.23	Pass
106/54	140	5700	16.23	15.53	77.703	18.90	22.23	Pass
106/53	*144 (U-NII-2C Band)	5720	9.85	10.70	22.182	13.46	21.68	Pass
106/54	*144 (U-NII-3 Band)	5720	9.58	12.09	26.17	14.18	28.23	Pass
106/53	149	5745	16.98	16.36	93.139	19.69	28.23	Pass
106/54	157	5785	16.78	16.53	92.621	19.67	28.23	Pass
106/54	165	5825	16.77	16.44	91.589	19.62	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
144	5720	48.352	16.84

Note: The total power was calculated through formula and record the value for reference only.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	17.55	16.89	105.75	20.24

26dB OCCUPIED BANDWIDTH

RU Configuration	Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
			Chain 0	Chain 1
106/53	52	5260	24.84	26.17
106/54	60	5300	26.20	26.17
106/54	64	5320	26.55	26.04
106/53	100	5500	24.58	24.53
106/53	116	5580	25.22	25.38
106/54	140	5700	25.70	25.39
106/53	144 (U-NII-2C Band)	5720	17.68	17.58

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	24.84	24.95 > 24
60	5300	26.17	25.17 > 24
64	5320	26.04	25.15 > 24
100	5500	24.53	24.89 > 24
116	5580	25.22	25.01 > 24
140	5700	25.39	25.04 > 24
144 (U-NII-2C Band)	5720	17.58	23.45 < 24

RU242

POWER OUTPUT

RU Configuration	Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
			Chain 0	Chain 1				
242/61	36	5180	17.55	18.22	123.259	20.91	23.91	Pass
	40	5200	19.44	19.69	181.013	22.58	23.91	Pass
	48	5240	19.28	19.81	180.442	22.56	23.91	Pass
	52	5260	19.27	19.67	177.211	22.48	23.91	Pass
	60	5300	19.46	19.59	179.299	22.54	23.91	Pass
	64	5320	17.51	17.76	116.068	20.65	23.91	Pass
	100	5500	14.81	14.82	60.608	17.83	22.23	Pass
	116	5580	19.02	18.36	148.348	21.71	22.23	Pass
	140	5700	16.18	15.63	78.054	18.92	22.23	Pass
	*144 (U-NII-2C Band)	5720	16.03	14.25	95.261	19.79	21.79	Pass
	*144 (U-NII-3 Band)	5720	10.81	9.26	29.256	14.66	28.23	Pass
	149	5745	19.66	19.38	179.166	22.53	28.23	Pass
	157	5785	19.96	19.43	186.783	22.71	28.23	Pass
	165	5825	20.01	19.38	186.927	22.72	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
144	5720	124.517	20.95

Note: The total power was calculated through formula and record the value for reference only.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	19.11	18.56	153.249	21.85

26dB OCCUPIED BANDWIDTH

RU Configuration	Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
			Chain 0	Chain 1
242/61	52	5260	28.21	29.21
	60	5300	28.18	35.81
	64	5320	28.62	27.91
	100	5500	27.46	26.73
	116	5580	28.50	27.96
	140	5700	28.31	26.97
	144 (U-NII-2C Band)	5720	18.04	19.21

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	28.21	25.5 > 24
60	5300	28.18	25.49 > 24
64	5320	27.91	25.45 > 24
100	5500	26.73	25.26 > 24
116	5580	27.96	25.46 > 24
140	5700	26.97	25.3 > 24
144 (U-NII-2C Band)	5720	28.21	25.5 > 24

40MHz Preamble
RU26

POWER OUTPUT

RU Configuration	Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
			Chain 0	Chain 1				
26/9	38	5190	12.51	13.01	37.823	15.78	23.91	Pass
26/27	46	5230	13.00	13.81	43.997	16.43	23.91	Pass
26/9	54	5270	13.11	14.11	46.227	16.65	23.91	Pass
26/27	62	5310	11.96	12.89	35.158	15.46	23.91	Pass
26/9	102	5510	9.39	9.34	17.28	12.38	22.23	Pass
26/27	110	5550	12.02	11.73	30.816	14.89	22.23	Pass
26/9	134	5670	12.24	11.72	31.608	15.00	22.23	Pass
26/27	*142 (U-NII-2C Band)	5710	9.31	8.91	16.665	12.22	22.23	Pass
26/9	151	5755	15.83	15.16	71.092	18.52	28.23	Pass
26/27	159	5795	15.53	15.25	69.224	18.40	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	11.73	11.88	30.311	14.82

26dB OCCUPIED BANDWIDTH

RU Configuration	Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
			Chain 0	Chain 1
26/9	54	5270	39.58	39.31
26/27	62	5310	40.07	39.82
26/9	102	5510	39.14	39.00
26/27	110	5550	40.18	39.63
26/9	134	5670	39.28	39.20
26/27	142 (U-NII-2C Band)	5710	35.44	34.64

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	39.31	26.94 > 24
62	5310	39.82	27 > 24
102	5510	39.00	26.91 > 24
110	5550	39.63	26.98 > 24
134	5670	39.20	26.93 > 24
142 (U-NII-2C Band)	5710	34.64	26.39 > 24

RU52

POWER OUTPUT

RU Configuration	Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
			Chain 0	Chain 1				
52/41	38	5190	12.72	13.36	40.384	16.06	29.91	Pass
52/48	46	5230	15.44	16.12	75.921	18.80	29.91	Pass
52/41	54	5270	15.60	16.55	81.494	19.11	23.91	Pass
52/48	62	5310	12.13	13.05	36.515	15.62	23.91	Pass
52/41	102	5510	9.62	9.48	18.034	12.56	22.23	Pass
52/48	110	5550	14.46	13.65	51.099	17.08	22.23	Pass
52/41	134	5670	14.51	13.74	51.908	17.15	22.23	Pass
52/48	*142 (U-NII-2C Band)	5710	9.78	10.16	20.791	13.18	22.23	Pass
52/41	151	5755	16.01	15.33	74.021	18.69	28.23	Pass
52/48	159	5795	15.82	15.41	72.948	18.63	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	14.42	13.77	51.492	17.12

26dB OCCUPIED BANDWIDTH

RU Configuration	Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
			Chain 0	Chain 1
52/41	54	5270	41.50	42.61
52/48	62	5310	41.54	40.32
52/41	102	5510	41.77	40.15
52/48	110	5550	41.10	40.49
52/41	134	5670	41.16	40.74
52/48	142 (U-NII-2C Band)	5710	36.12	34.74

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	41.50	27.18 > 24
62	5310	40.32	27.05 > 24
102	5510	40.15	27.03 > 24
110	5550	40.49	27.07 > 24
134	5670	40.74	27.1 > 24
142 (U-NII-2C Band)	5710	34.74	26.4 > 24

RU106

POWER OUTPUT

RU Configuration	Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
			Chain 0	Chain 1				
106/55	38	5190	12.60	13.50	40.584	16.08	23.91	Pass
106/58	46	5230	17.23	18.15	118.158	20.72	23.91	Pass
106/55	54	5270	18.51	19.48	159.674	22.03	23.91	Pass
106/58	62	5310	12.12	13.17	37.042	15.69	23.91	Pass
106/55	102	5510	9.53	9.81	18.546	12.68	22.23	Pass
106/58	110	5550	17.16	17.47	107.847	20.33	22.23	Pass
106/55	134	5670	15.91	15.67	75.892	18.80	22.23	Pass
106/58	*142 (U-NII-2C Band)	5710	15.23	14.92	66.439	18.22	22.23	Pass
106/55	151	5755	16.03	15.46	75.243	18.76	28.23	Pass
106/58	159	5795	15.71	15.47	72.476	18.60	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	17.31	17.18	106.067	20.26

26dB OCCUPIED BANDWIDTH

RU Configuration	Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
			Chain 0	Chain 1
106/55	54	5270	45.19	44.47
106/58	62	5310	44.03	43.22
106/55	102	5510	44.55	41.15
106/58	110	5550	45.25	44.23
106/55	134	5670	44.41	44.10
106/58	142 (U-NII-2C Band)	5710	38.10	37.83

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	44.47	27.48 > 24
62	5310	43.22	27.35 > 24
102	5510	41.15	27.14 > 24
110	5550	44.23	27.45 > 24
134	5670	44.10	27.44 > 24
142 (U-NII-2C Band)	5710	37.83	26.77 > 24

RU242

POWER OUTPUT

RU Configuration	Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
			Chain 0	Chain 1				
242/62	38	5190	12.51	13.40	39.702	15.99	23.91	Pass
242/63	46	5230	17.27	18.21	119.555	20.78	23.91	Pass
242/62	54	5270	19.10	19.82	177.223	22.49	23.91	Pass
242/63	62	5310	12.02	12.76	34.802	15.42	23.91	Pass
242/62	102	5510	9.37	9.33	17.22	12.36	22.23	Pass
242/63	110	5550	19.14	18.87	159.125	22.02	22.23	Pass
242/62	134	5670	15.78	15.35	72.121	18.58	22.23	Pass
242/63	*142 (U-NII-2C Band)	5710	15.97	15.45	118.915	20.75	22.23	Pass
242/62	151	5755	19.77	19.17	177.446	22.49	28.23	Pass
242/63	159	5795	19.63	19.32	177.34	22.49	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	19.13	18.54	153.296	21.86

26dB OCCUPIED BANDWIDTH

RU Configuration	Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
			Chain 0	Chain 1
242/62	54	5270	69.79	69.53
242/63	62	5310	47.42	47.67
242/62	102	5510	48.33	47.95
242/63	110	5550	70.99	70.98
242/62	134	5670	72.18	69.13
242/63	142 (U-NII-2C Band)	5710	51.32	50.31

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	69.53	29.42 > 24
62	5310	47.42	27.75 > 24
102	5510	47.95	27.8 > 24
110	5550	70.98	29.51 > 24
134	5670	69.13	29.39 > 24
142 (U-NII-2C Band)	5710	50.31	28.01 > 24

RU484

POWER OUTPUT

RU Configuration	Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
			Chain 0	Chain 1				
484/65	38	5190	11.31	12.10	29.739	14.73	23.91	Pass
	46	5230	17.18	18.02	115.627	20.63	23.91	Pass
	54	5270	18.99	19.93	177.651	22.50	23.91	Pass
	62	5310	11.17	11.91	28.616	14.57	23.91	Pass
	102	5510	9.50	9.65	18.139	12.59	22.23	Pass
	110	5550	19.11	18.88	158.738	22.01	22.23	Pass
	134	5670	15.56	15.54	71.785	18.56	22.23	Pass
	*142 (U-NII-2C Band)	5710	13.22	12.25	116.894	20.68	22.23	Pass
	*142 (U-NII-3 Band)	5710	11.32	11.35	84.159	19.25	28.23	Pass
	151	5755	19.81	19.12	177.377	22.49	28.23	Pass
	159	5795	19.66	19.25	176.61	22.47	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
142	5710	201.053	23.03

Note: The total power was calculated through formula and record the value for reference only.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	19.17	18.72	157.077	21.96

26dB OCCUPIED BANDWIDTH

RU Configuration	Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
			Chain 0	Chain 1
484/65	54	5270	75.90	72.63
	62	5310	50.45	49.28
	102	5510	51.12	48.39
	110	5550	76.13	73.97
	134	5670	76.95	76.75
	142 (U-NII-2C Band)	5710	53.15	52.88

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	72.63	29.61 > 24
62	5310	49.28	27.92 > 24
102	5510	48.39	27.84 > 24
110	5550	73.97	29.69 > 24
134	5670	76.75	29.85 > 24
142 (U-NII-2C Band)	5710	52.88	28.23 > 24

80MHz Preamble RU996

POWER OUTPUT

RU Configuration	Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
			Chain 0	Chain 1				
996/67	42	5210	16.29	16.27	84.924	19.29	23.91	Pass
	58	5290	15.96	16.30	82.104	19.14	23.91	Pass
	106	5530	11.82	10.95	27.65	14.42	22.23	Pass
	122	5610	19.11	18.33	149.547	21.75	22.23	Pass
	*138 (U-NII-2C Band)	5690	10.34	9.72	118.264	20.73	22.23	Pass
	*138 (U-NII-3 Band)	5690	11.34	7.32	111.347	20.47	28.23	Pass
	155	5775	19.54	18.94	168.293	22.26	28.23	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $24 - (6.09 - 6) = 23.91\text{dBm}$.
2. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (6.09-6)".
3. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to "Determined Conducted Limit- (7.77-6)".
4. For U-NII-3: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.77 - 6) = 28.23\text{dBm}$.

The Total Power for the straddle channel:

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
138	5690	229.611	23.61

Note: The total power was calculated through formula and record the value for reference only.

For Reference only – Power meter value

The power value was measured by power meter with average sensor.

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
138	5690	19.02	18.36	148.348	21.71

26dB OCCUPIED BANDWIDTH

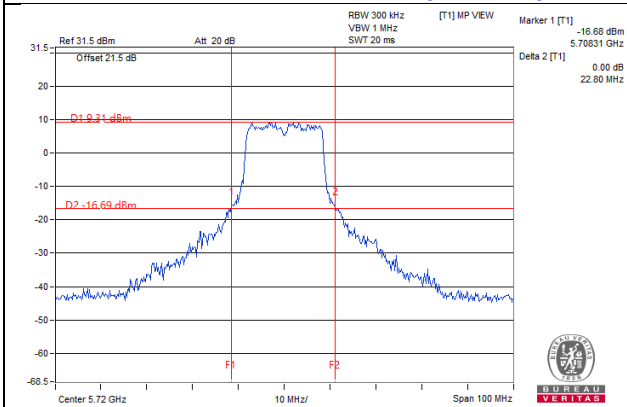
RU Configuration	Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
			Chain 0	Chain 1
996/67	58	5290	156.74	158.50
	106	5530	99.72	151.05
	122	5610	169.91	163.68
	138 (U-NII-2C Band)	5690	129.74	128.33

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

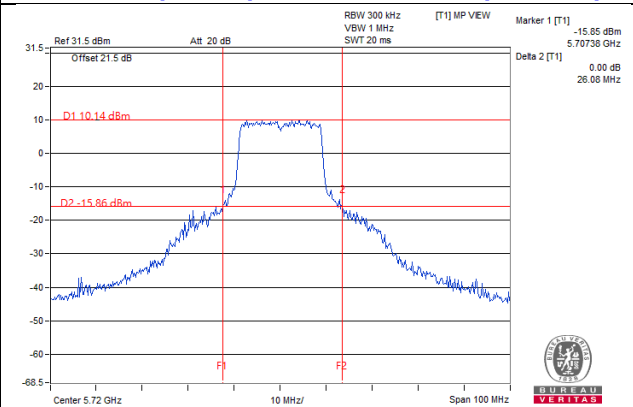
Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	156.74	32.95 > 24
106	5530	99.72	30.98 > 24
122	5610	163.68	33.13 > 24
138 (U-NII-2C Band)	5690	128.33	32.08 > 24

Spectrum Plot of Worst Value

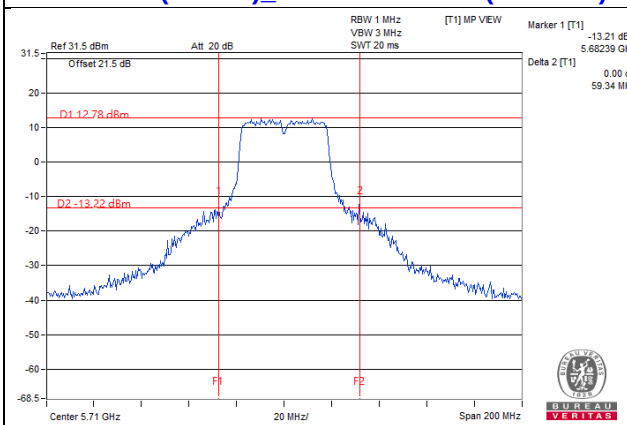
802.11a_Chain 0 / CH144 (U-NII-2C)



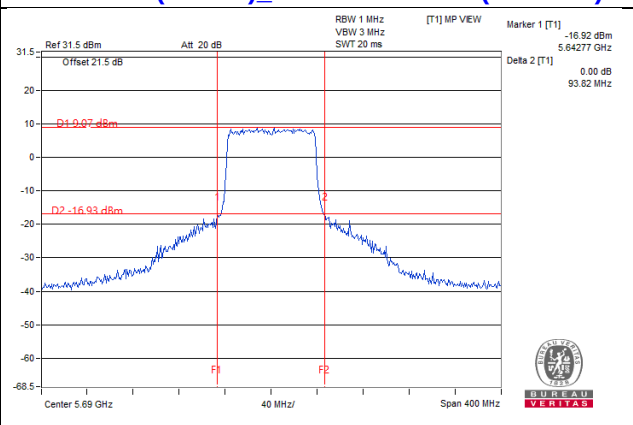
802.11a (VHT20)_Chain 0 / CH144 (U-NII-2C)



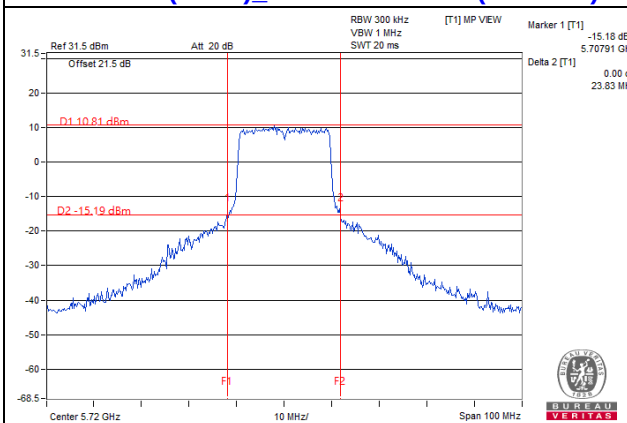
802.11ac (VHT40)_Chain 1 / CH142 (U-NII-2C)



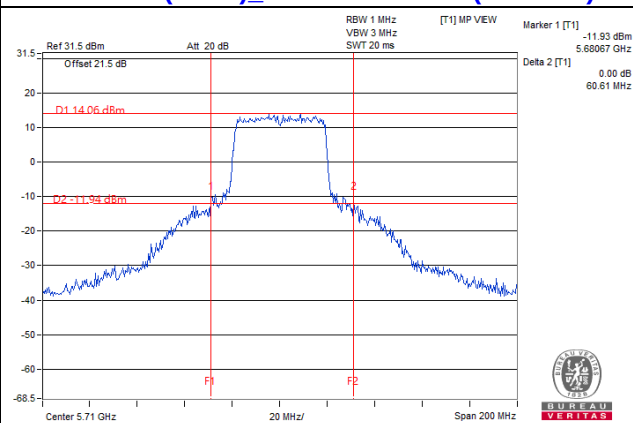
802.11ac (VHT80)_Chain 1 / CH138 (U-NII-2C)



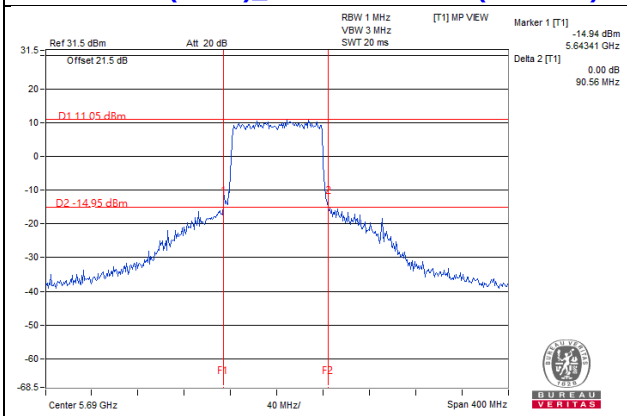
802.11ax (HE20)_Chain 1 / CH144 (U-NII-2C)



802.11ax (HE40)_Chain 1 / CH142 (U-NII-2C)

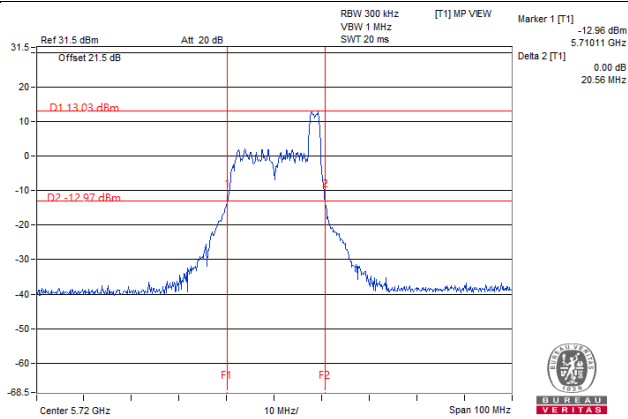


802.11ax (HE80)_Chain 0 / CH138 (U-NII-2C)

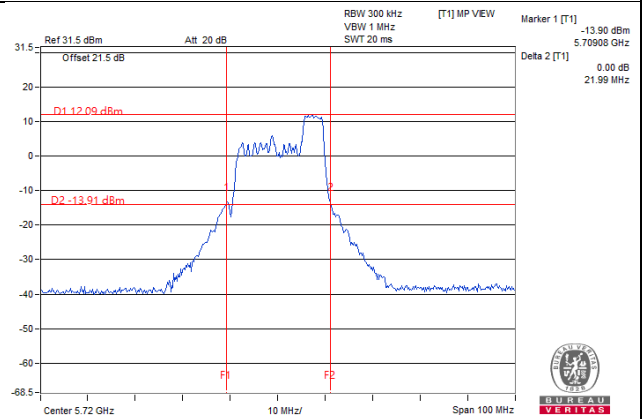


Spectrum Plot of Worst Value

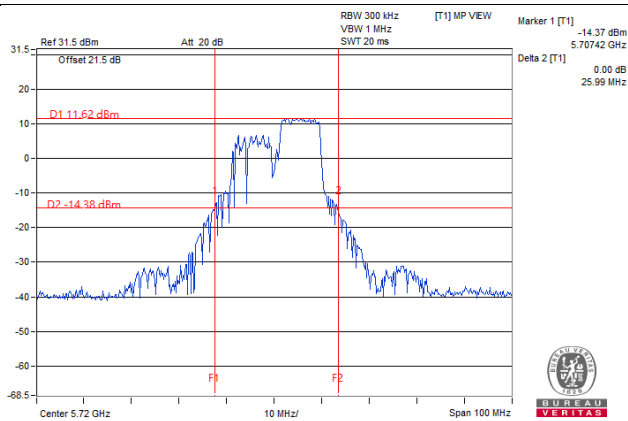
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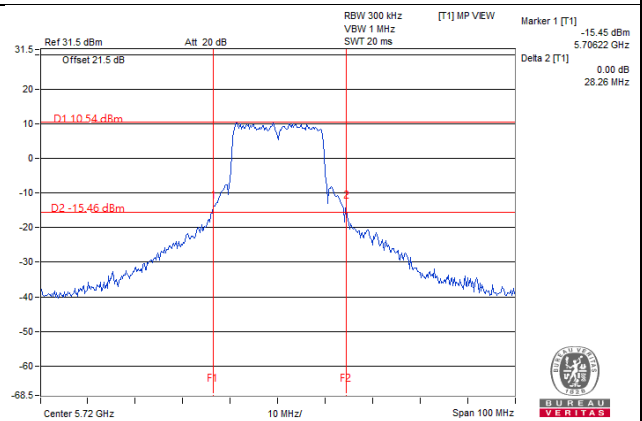
20MHz Preamble_RU52_Chain 1 / CH144 (U-NII-2C)



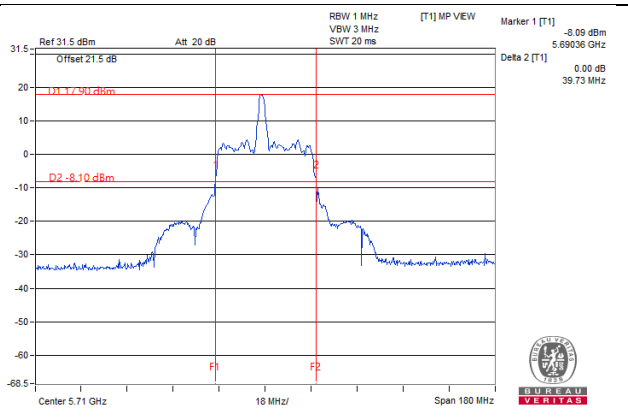
20MHz Preamble_RU106_Chain 1 / CH144 (U-NII-2C)



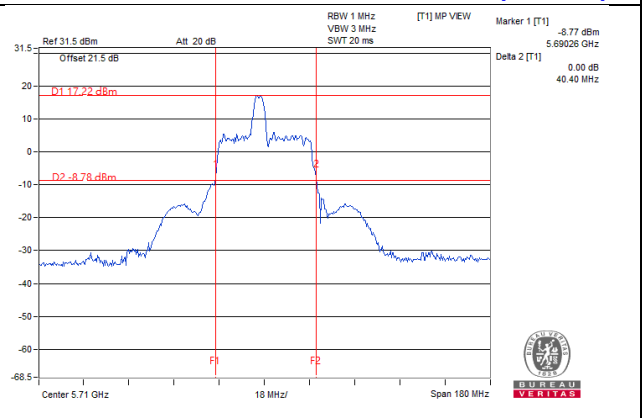
20MHz Preamble_RU242_Chain 0 / CH144 (U-NII-2C)



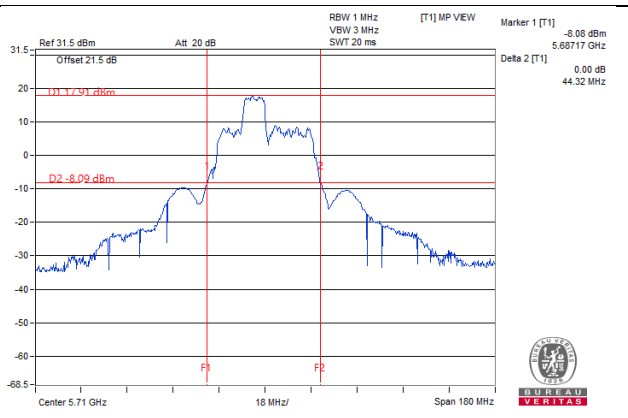
40MHz Preamble_RU26_Chain 1 / CH142 (U-NII-2C)



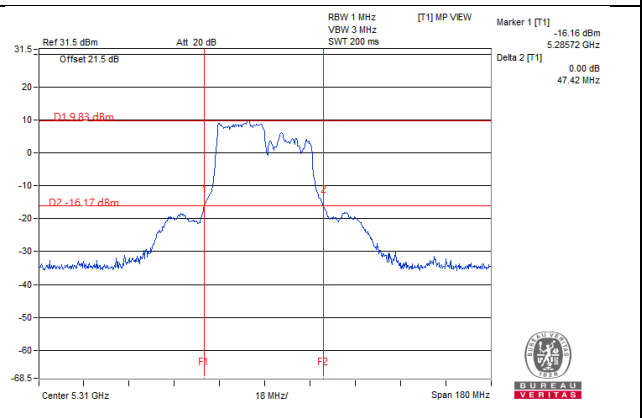
40MHz Preamble_RU52_Chain 1 / CH142 (U-NII-2C)



40MHz Preamble_RU106_Chain 1 / CH142 (U-NII-2C)

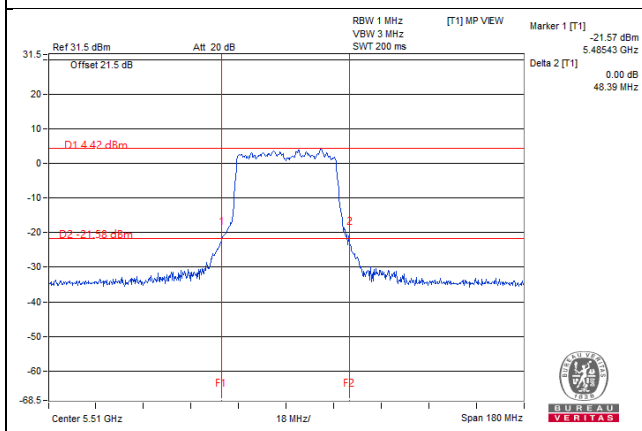


40MHz Preamble_RU242_Chain 0 / CH62

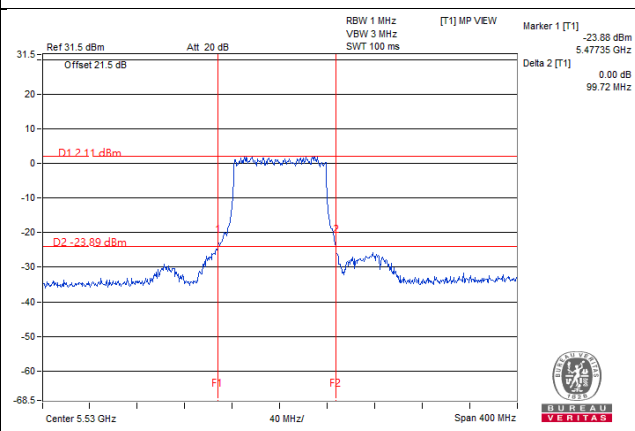


Spectrum Plot of Worst Value

40MHz Preamble_RU484_Chain 1 / CH102



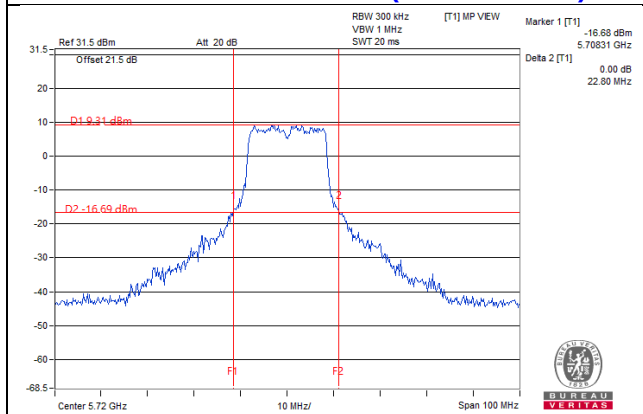
80MHz Preamble_RU996_Chain 0 / CH106



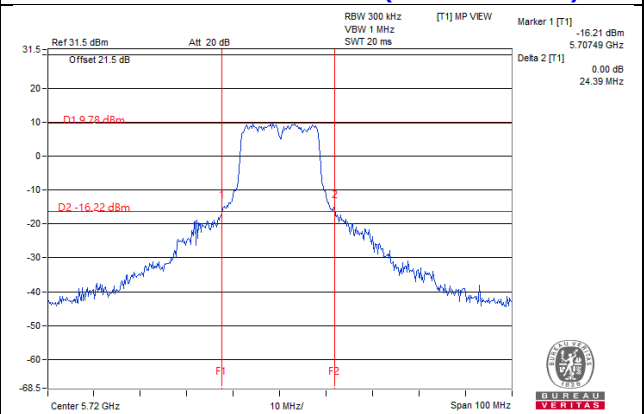
For channel straddling 5725MHz

Spectrum Plot Value of channel straddling 5725MHz

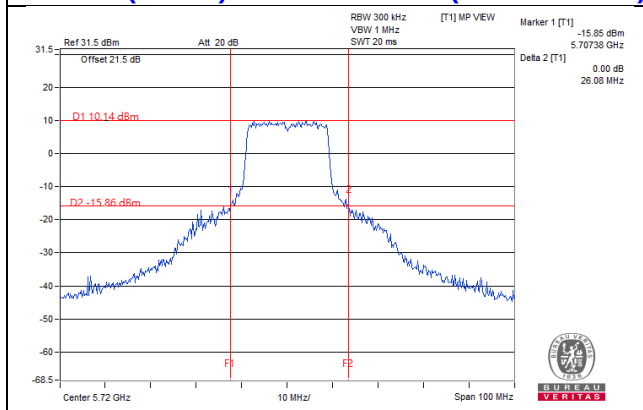
802.11a / Chain0 : CH144 (U-NII-2C Band)



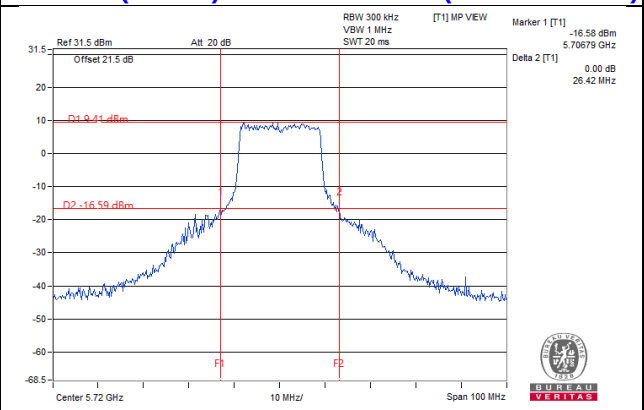
802.11a / Chain1 : CH144 (U-NII-2C Band)



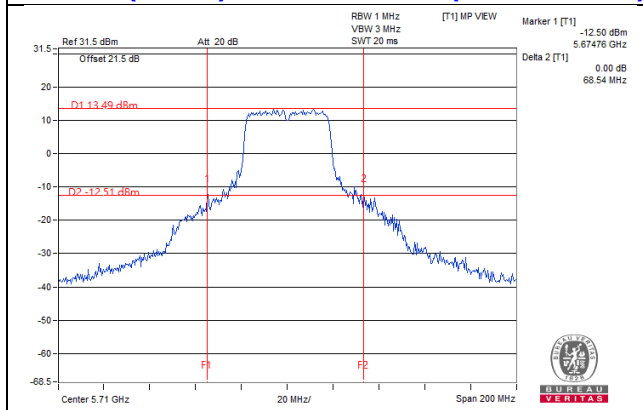
802.11ac (VHT20) / Chain0 : CH144 (U-NII-2C Band)



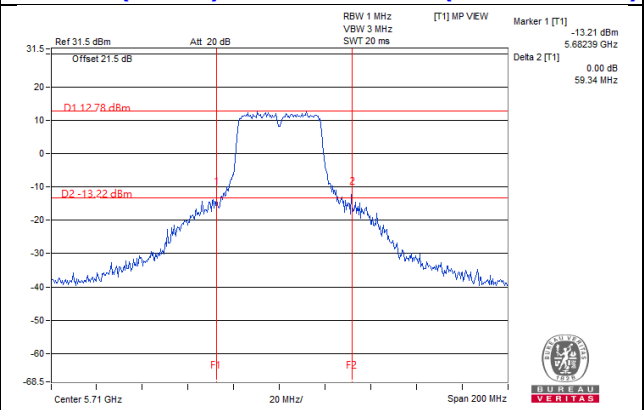
802.11ac (VHT20) / Chain1 : CH144 (U-NII-2C Band)



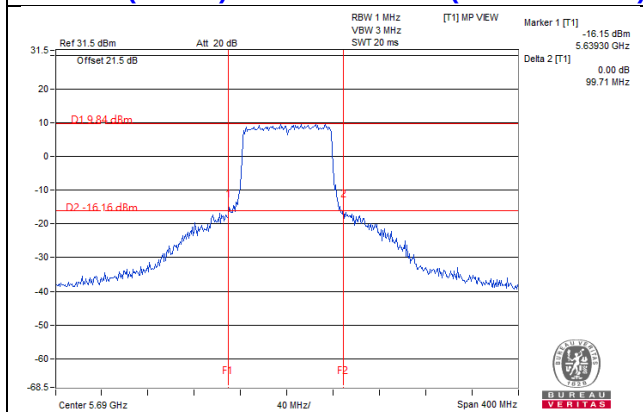
802.11ac (VHT40) / Chain0 : CH142 (U-NII-2C Band)



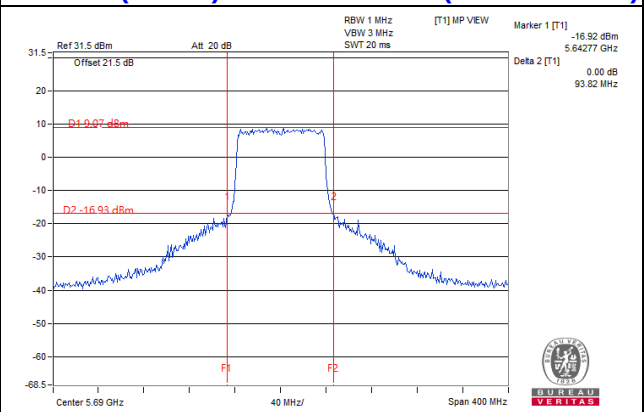
802.11ac (VHT40) / Chain1 : CH142 (U-NII-2C Band)



802.11ac (VHT80) / Chain0 : CH138 (U-NII-2C Band)

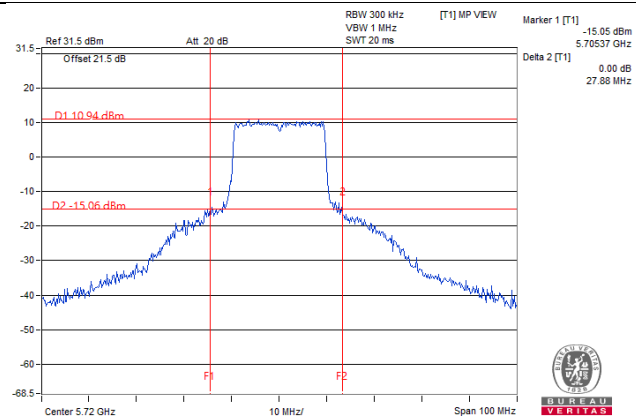


802.11ac (VHT80) / Chain1 : CH138 (U-NII-2C Band)

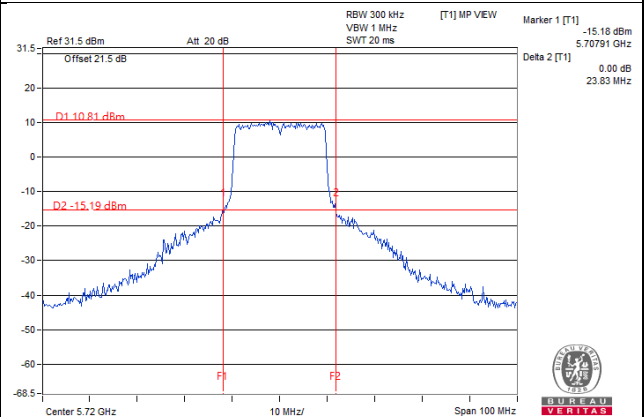


Spectrum Plot Value of channel straddling 5725MHz

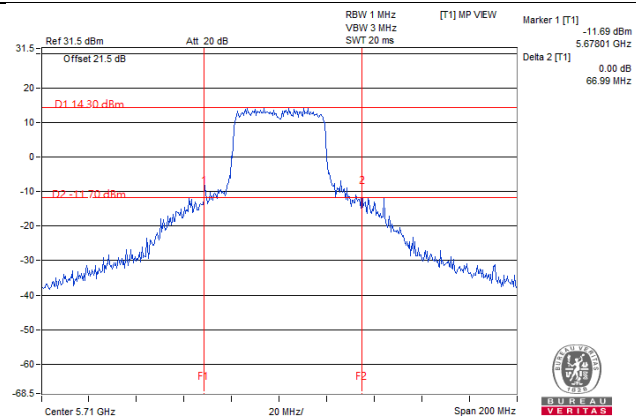
802.11ax (HE20) / Chain0 : CH144 (U-NII-2C Band)



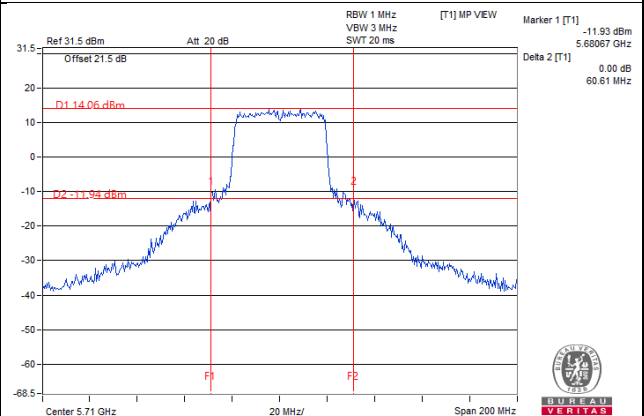
802.11ax (HE20) / Chain1 : CH144 (U-NII-2C Band)



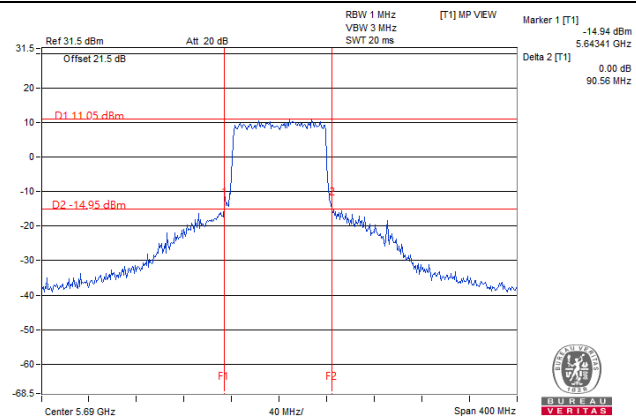
802.11ax (HE40) / Chain0 : CH142 (U-NII-2C Band)



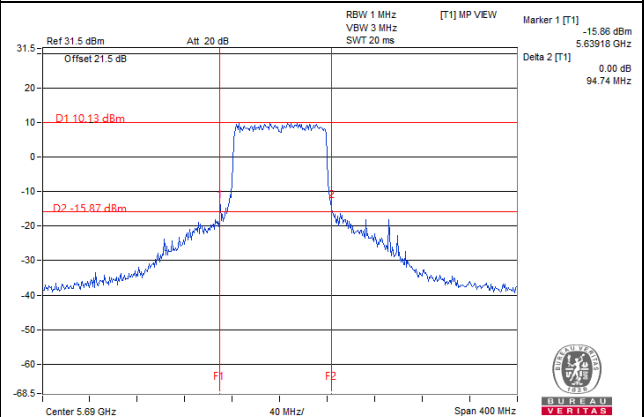
802.11ax (HE40) / Chain1 : CH142 (U-NII-2C Band)



802.11ax (HE80) / Chain0 : CH138 (U-NII-2C Band)



802.11ax (HE80) / Chain1 : CH138 (U-NII-2C Band)

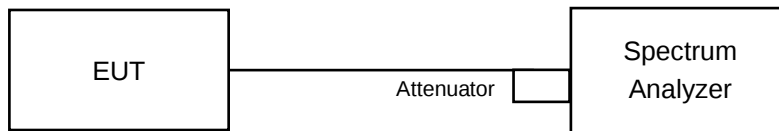


Note:

- For CH144 (U-NII-2C) = 5725MHz - Temp 1
- For CH142 (U-NII-2C) = 5725MHz - Temp 1
- For CH138 (U-NII-2C) = 5725MHz - Temp 1

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to SAMPLE. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean power of a given emission.

4.4.4 Test Results

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.68	16.68
40	5200	16.92	16.68
48	5240	16.68	16.68
52	5260	16.80	16.80
60	5300	16.68	16.56
64	5320	16.68	16.68
100	5500	16.68	16.68
116	5580	16.80	16.68
140	5700	16.68	16.44
144 (U-NII-2C Band)	5720	13.28	13.40
144 (U-NII-3 Band)	5720	3.16	3.28
149	5745	16.68	16.92
157	5785	16.68	16.68
165	5825	16.56	16.68

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.88	17.88
40	5200	17.88	18.00
48	5240	17.88	18.12
52	5260	17.88	18.12
60	5300	18.00	17.88
64	5320	17.88	17.88
100	5500	17.88	18.00
116	5580	17.88	18.00
140	5700	17.88	17.88
144 (U-NII-2C Band)	5720	14.00	14.00
144 (U-NII-3 Band)	5720	3.88	3.88
149	5745	17.88	17.88
157	5785	17.88	17.88
165	5825	18.00	17.88

802.11ac (VHT40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.72	36.72
46	5230	37.20	37.44
54	5270	37.20	37.68
62	5310	36.72	36.72
102	5510	36.96	36.72
110	5550	36.96	36.72
134	5670	36.72	36.72
142 (U-NII-2C Band)	5710	33.48	33.48
142 (U-NII-3 Band)	5710	3.48	3.48
151	5755	37.44	36.72
159	5795	37.20	37.20

802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	76.32	75.84
58	5290	76.32	75.84
106	5530	76.32	76.32
122	5610	76.32	76.32
138 (U-NII-2C Band)	5690	73.40	73.40
138 (U-NII-3 Band)	5690	3.40	2.92
155	5775	76.80	76.32

802.11ax (HE20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	19.08	17.88
40	5200	19.08	18.00
48	5240	19.08	18.12
52	5260	19.08	18.12
60	5300	19.08	19.20
64	5320	19.08	19.08
100	5500	19.08	19.08
116	5580	19.08	19.08
140	5700	19.08	19.08
144 (U-NII-2C Band)	5720	14.60	14.60
144 (U-NII-3 Band)	5720	4.48	4.48
149	5745	19.08	19.08
157	5785	19.20	19.08
165	5825	19.08	19.08

802.11ax (HE40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	38.16	38.40
46	5230	38.88	38.64
54	5270	38.64	38.88
62	5310	38.16	38.64
102	5510	38.40	38.16
110	5550	38.64	38.40
134	5670	38.40	38.16
142 (U-NII-2C Band)	5710	34.20	34.20
142 (U-NII-3 Band)	5710	4.20	4.20
151	5755	38.88	38.64
159	5795	39.12	38.64

802.11ax (HE80)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	77.28	77.76
58	5290	77.76	77.28
106	5530	78.24	77.76
122	5610	78.24	78.24
138 (U-NII-2C Band)	5690	73.88	73.88
138 (U-NII-3 Band)	5690	3.88	3.88
155	5775	78.24	78.24

20MHz Preamble

RU26

RU Configuration	Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
			Chain 0	Chain 1
26/0	36	5180	18.60	18.60
26/0	40	5200	18.60	18.60
26/8	48	5240	18.60	18.36
26/0	52	5260	18.60	18.60
26/8	60	5300	18.72	18.36
26/8	64	5320	18.60	18.36
26/0	100	5500	18.72	18.60
26/0	116	5580	18.60	18.60
26/8	140	5700	18.72	18.48
26/0	144 (U-NII-2C Band)	5720	14.96	14.96
26/8	144 (U-NII-3 Band)	5720	4.72	4.72
26/0	149	5745	18.69	18.70
26/8	157	5785	18.72	18.60
26/8	165	5825	18.72	18.48

RU52

RU Configuration	Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
			Chain 0	Chain 1
52/37	36	5180	18.36	18.36
52/37	40	5200	18.36	18.36
52/40	48	5240	18.60	18.36
52/37	52	5260	18.36	18.36
52/40	60	5300	18.72	18.36
52/40	64	5320	18.72	18.36
52/37	100	5500	18.36	18.36
52/37	116	5580	18.48	18.36
52/40	140	5700	18.36	18.36
52/37	144 (U-NII-2C Band)	5720	14.72	14.72
52/40	144 (U-NII-3 Band)	5720	4.60	4.72
52/37	149	5745	18.52	18.35
52/40	157	5785	18.60	18.48
52/40	165	5825	18.72	18.36

RU106

RU Configuration	Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
			Chain 0	Chain 1
106/53	36	5180	18.48	18.48
106/53	40	5200	18.48	18.48
106/54	48	5240	18.72	18.48
106/53	52	5260	18.60	18.48
106/54	60	5300	18.84	18.48
106/54	64	5320	18.84	18.48
106/53	100	5500	18.48	18.36
106/53	116	5580	18.60	18.48
106/54	140	5700	18.72	18.48
106/53	144 (U-NII-2C Band)	5720	14.00	13.76
106/54	144 (U-NII-3 Band)	5720	4.72	4.72
106/53	149	5745	18.61	18.44
106/54	157	5785	18.78	18.52
106/54	165	5825	18.72	18.52

RU242

RU Configuration	Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
			Chain 0	Chain 1
242/61	36	5180	19.22	19.30
	40	5200	19.20	19.32
	48	5240	19.20	19.32
	52	5260	19.20	19.32
	60	5300	19.32	19.32
	64	5320	19.20	19.32
	100	5500	19.08	19.08
	116	5580	19.20	19.32
	140	5700	19.08	19.08
	144 (U-NII-2C Band)	5720	14.72	14.72
	144 (U-NII-3 Band)	5720	4.60	4.60
	149	5745	19.08	19.20
	157	5785	19.20	19.20
	165	5825	19.20	19.20

40MHz Preamble

RU26

RU Configuration	Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
			Chain 0	Chain 1
26/9	38	5190	37.68	37.68
26/27	46	5230	40.56	41.22
26/9	54	5270	38.40	37.68
26/27	62	5310	37.20	36.96
26/9	102	5510	36.48	36.72
26/27	110	5550	37.20	37.68
26/9	134	5670	37.68	36.72
26/27	142 (U-NII-2C Band)	5710	33.72	33.48
26/9	151	5755	37.57	37.39
26/27	159	5795	37.39	37.20

RU52

RU Configuration	Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
			Chain 0	Chain 1
52/41	38	5190	38.26	37.68
52/48	46	5230	40.17	41.22
52/41	54	5270	37.44	37.20
52/48	62	5310	37.20	36.96
52/41	102	5510	36.72	36.48
52/48	110	5550	36.96	36.96
52/41	134	5670	37.20	36.96
52/48	142 (U-NII-2C Band)	5710	33.72	33.48
52/41	151	5755	37.44	37.20
52/48	159	5795	37.44	37.44

RU106

RU Configuration	Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
			Chain 0	Chain 1
106/55	38	5190	37.20	37.68
106/58	46	5230	39.12	40.80
106/55	54	5270	37.68	37.68
106/58	62	5310	37.20	36.96
106/55	102	5510	37.20	36.72
106/58	110	5550	37.68	39.84
106/55	134	5670	37.20	37.20
106/58	142 (U-NII-2C Band)	5710	33.48	33.96
106/55	151	5755	37.57	37.56
106/58	159	5795	37.92	37.39

RU242

RU Configuration	Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
			Chain 0	Chain 1
242/62	38	5190	39.48	39.13
242/63	46	5230	39.13	39.31
242/62	54	5270	39.30	39.13
242/63	62	5310	37.91	38.26
242/62	102	5510	38.08	37.91
242/63	110	5550	38.61	38.79
242/62	134	5670	38.78	38.61
242/63	142 (U-NII-2C Band)	5710	34.56	34.56
242/62	151	5755	40.56	39.60
242/63	159	5795	39.60	39.12

RU484

RU Configuration	Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
			Chain 0	Chain 1
484/65	38	5190	39.82	39.48
	46	5230	39.31	39.48
	54	5270	40.17	40.52
	62	5310	38.78	38.26
	102	5510	38.43	38.26
	110	5550	39.65	40.17
	134	5670	40.08	39.36
	142 (U-NII-2C Band)	5710	34.68	34.92
	142 (U-NII-3 Band)	5710	4.32	4.44
	151	5755	41.28	41.04
	159	5795	41.52	41.04

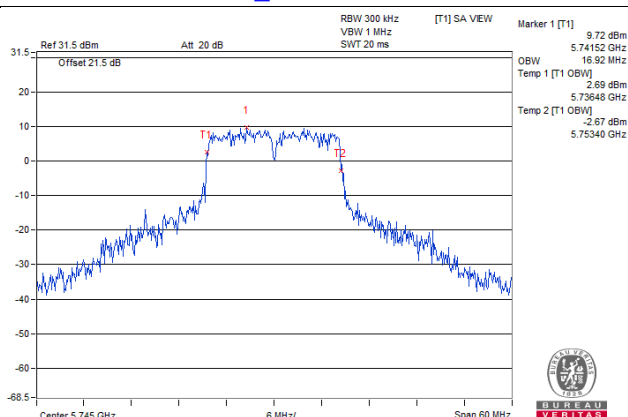
80MHz Preamble

RU996

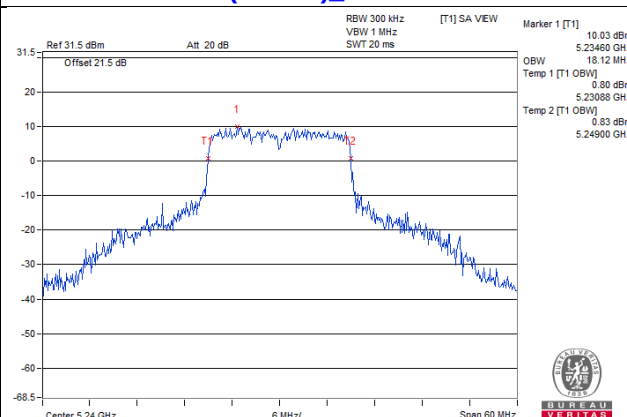
RU Configuration	Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
			Chain 0	Chain 1
996/67	42	5210	79.65	79.30
	58	5290	78.61	78.61
	106	5530	77.92	78.26
	122	5610	78.72	78.24
	138 (U-NII-2C Band)	5690	58.52	58.52
	138 (U-NII-3 Band)	5690	20.20	19.96
	155	5775	80.16	79.68

Spectrum Plot of Max. Value

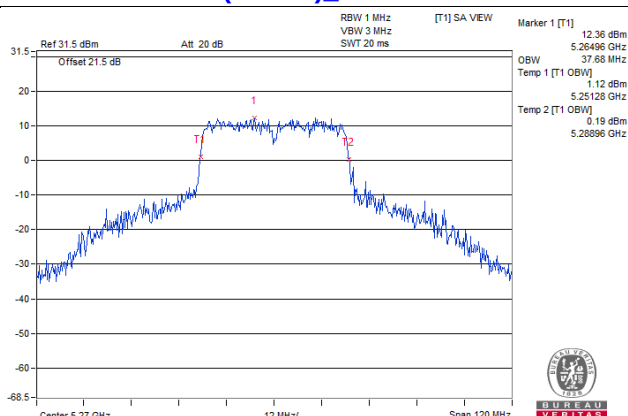
802.11a_Chain 1 / CH149



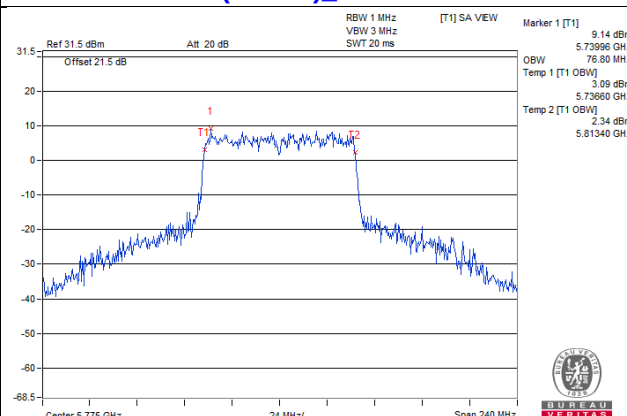
802.11ac (VHT20)_Chain 1 / CH48



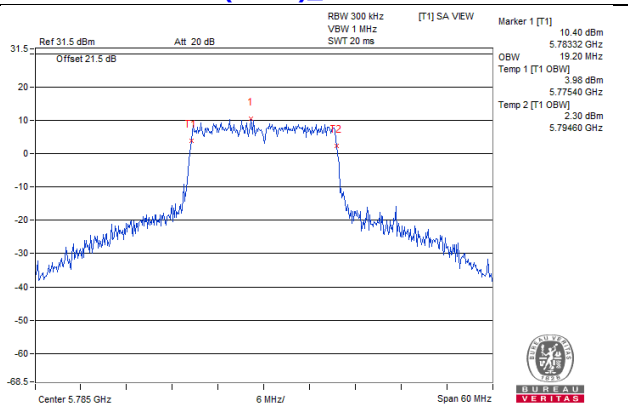
802.11ac (VHT40)_Chain 1 / CH54



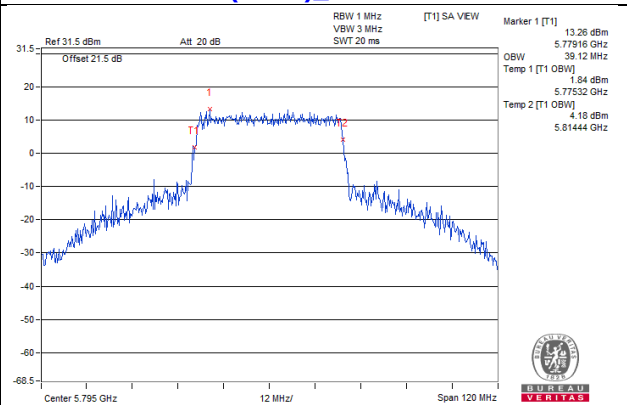
802.11ac (VHT80)_Chain 0 / CH155



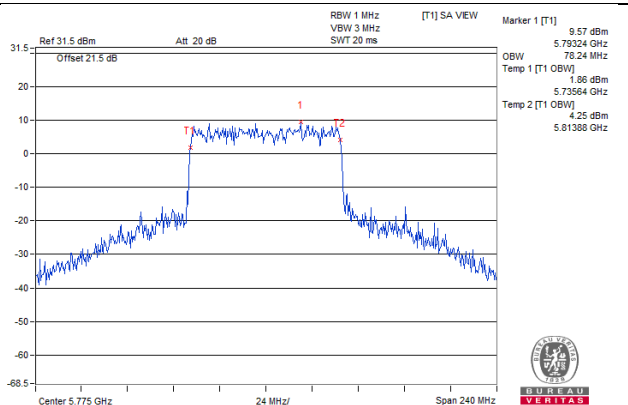
802.11ax (HE20)_Chain 0 / CH157



802.11ax (HE40)_Chain 0 / CH159

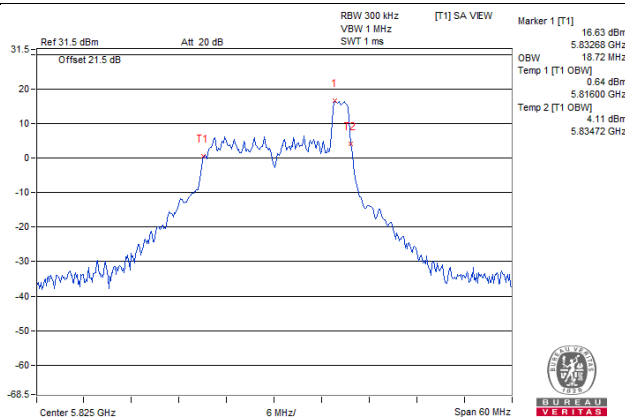


802.11ax (HE80)_Chain 0 / CH155

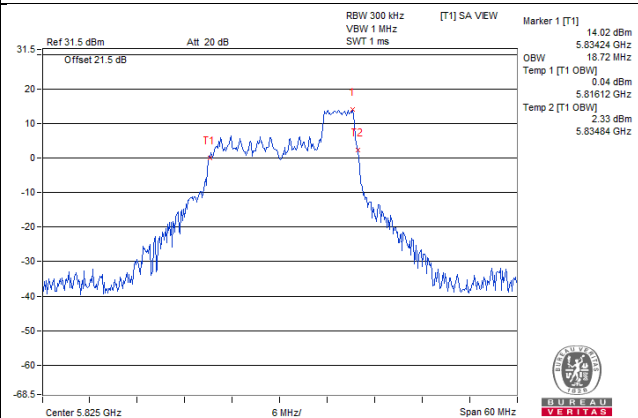


Spectrum Plot of Max. Value

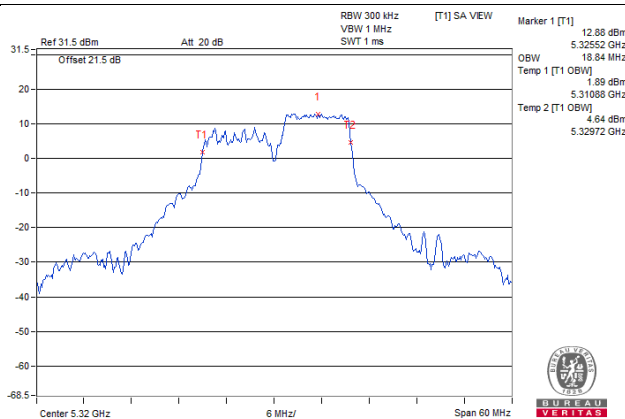
20MHz Preamble_RU26_Chain 0 / CH165



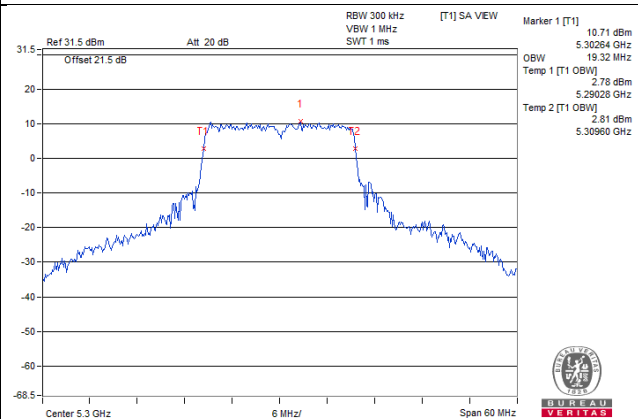
20MHz Preamble_RU52_Chain 0 / CH165



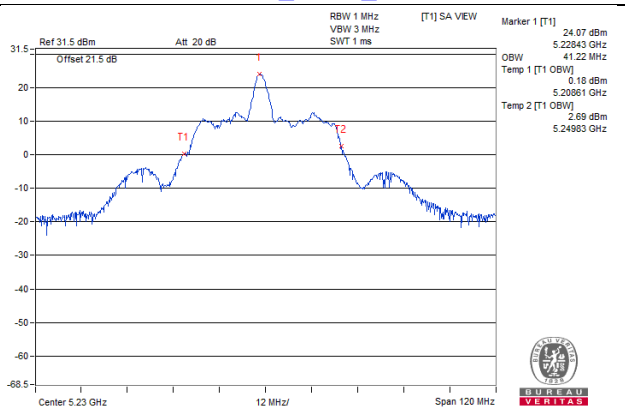
20MHz Preamble_RU106_Chain 0 / CH64



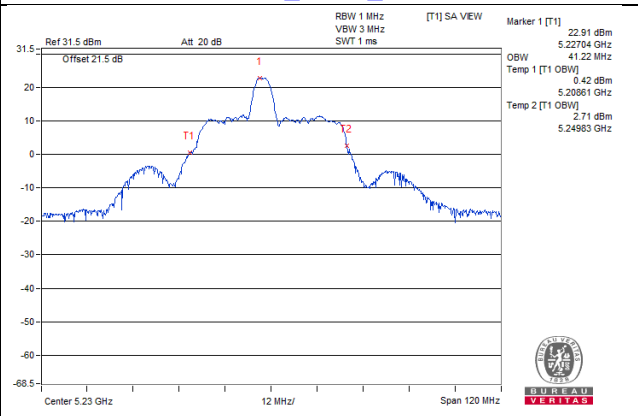
20MHz Preamble_RU242_Chain 0 / CH60



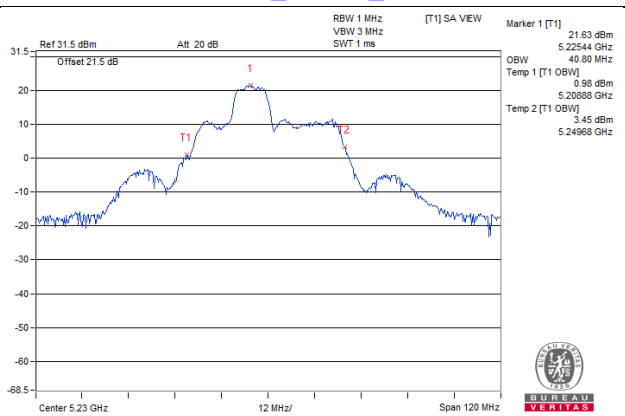
40MHz Preamble_RU26_Chain 1 / CH46



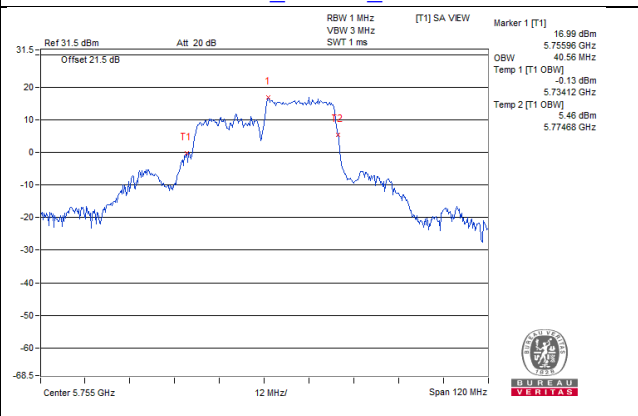
40MHz Preamble_RU52_Chain 1 / CH46



40MHz Preamble_RU106_Chain 1 / CH46

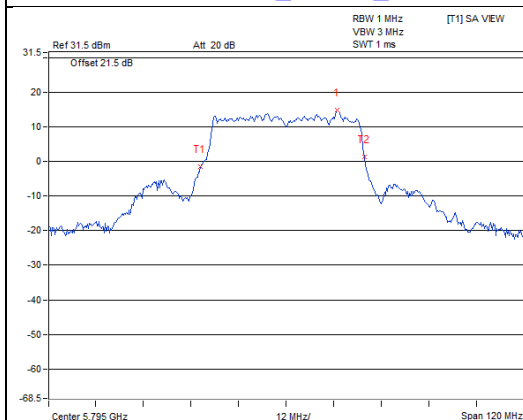


40MHz Preamble_RU242_Chain 0 / CH151

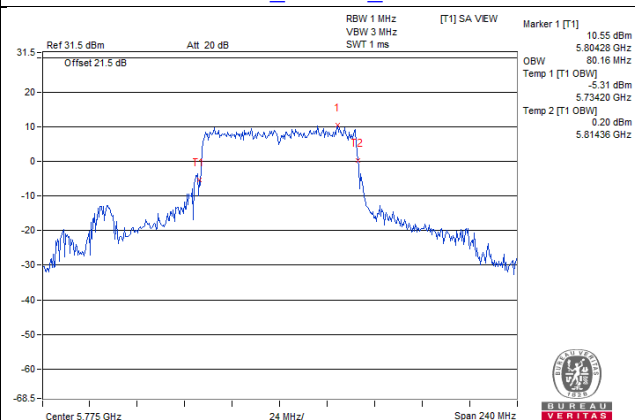


Spectrum Plot of Max. Value

40MHz Preamble_RU484_Chain 0 / CH159

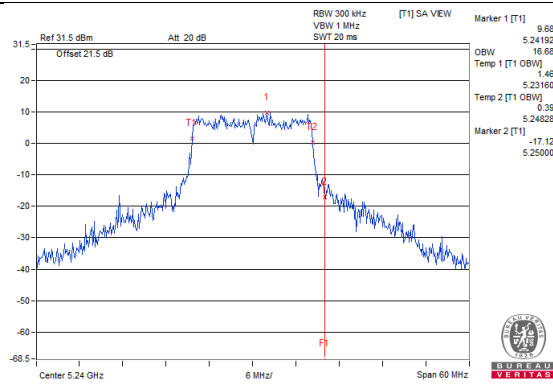


80MHz Preamble_RU996_Chain 0 / CH155

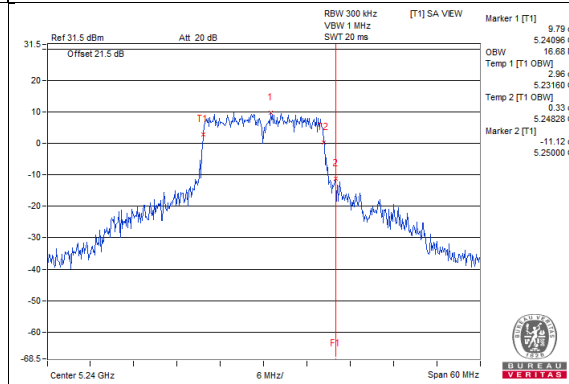


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)

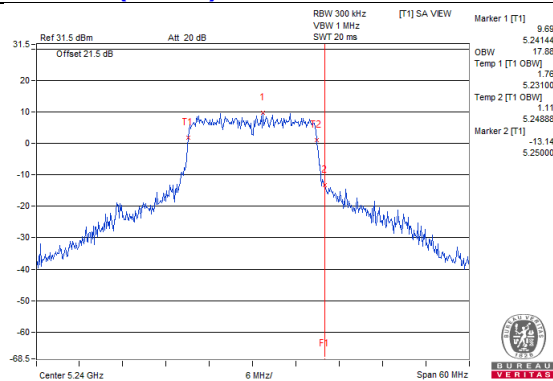
802.11a_Chain 0 / CH48



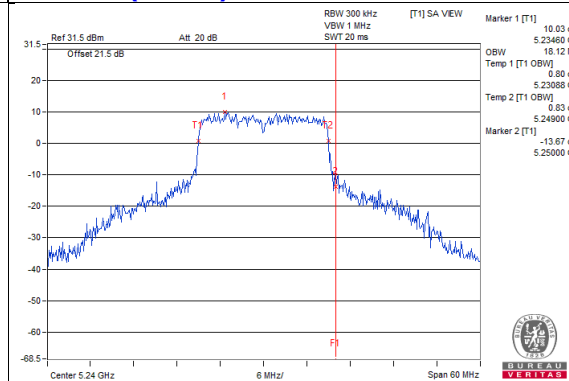
802.11a_Chain 1 / CH48



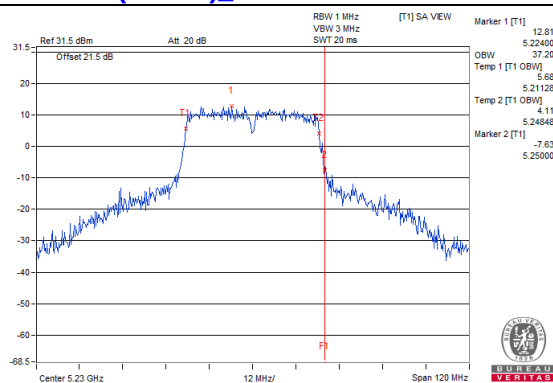
802.11ac (VHT20)_Chain 0 / CH48



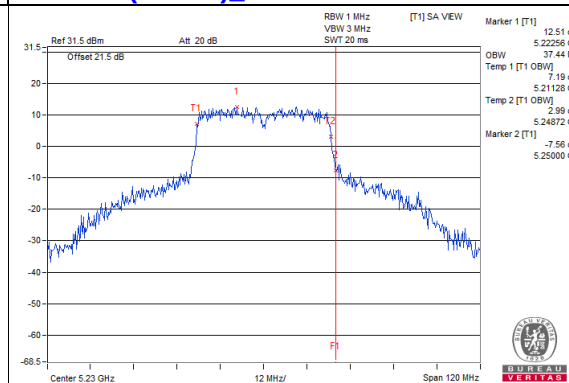
802.11ac (VHT20)_Chain 1 / CH48



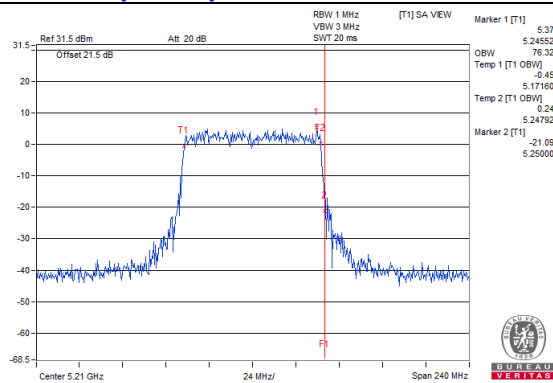
802.11ac (VHT40)_Chain 0 / CH46



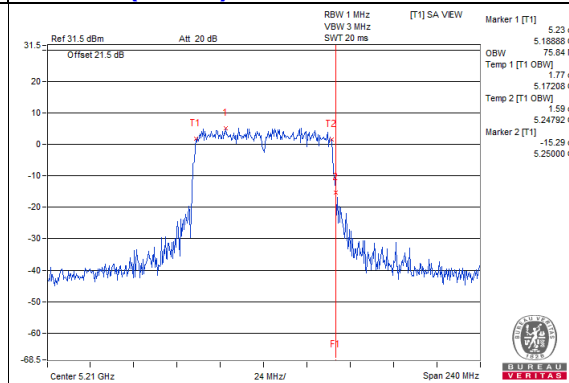
802.11ac (VHT40)_Chain 1 / CH46



802.11ac (VHT80)_Chain 0 / CH42

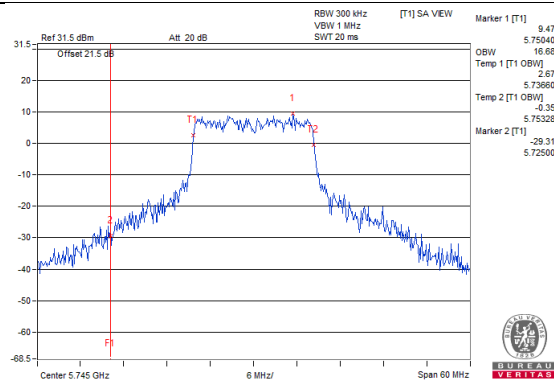


802.11ac (VHT80)_Chain 1 / CH42

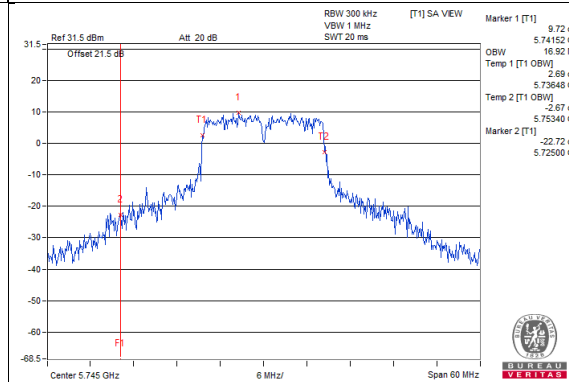


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

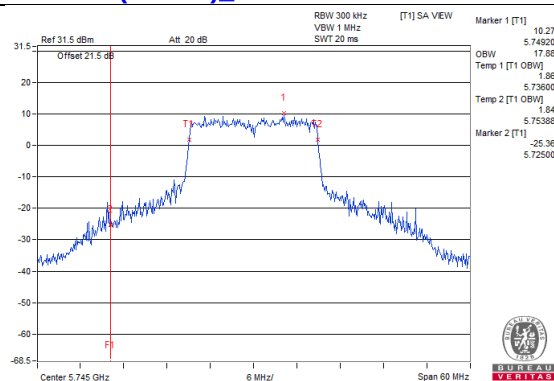
802.11a_Chain 0 / CH149



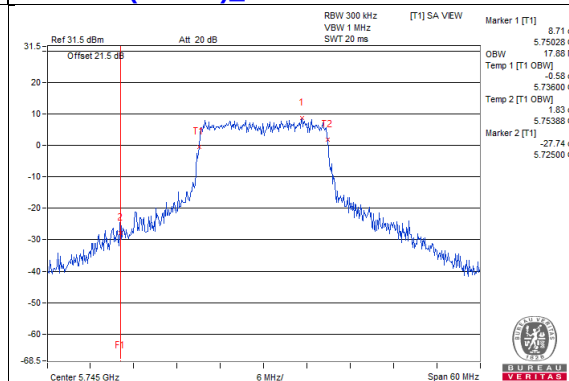
802.11a_Chain 1 / CH149



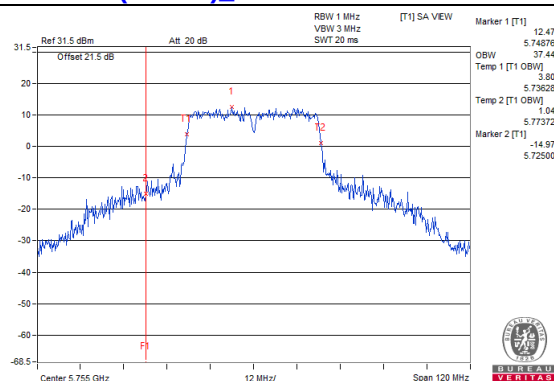
802.11ac (VHT20)_Chain 0 / CH149



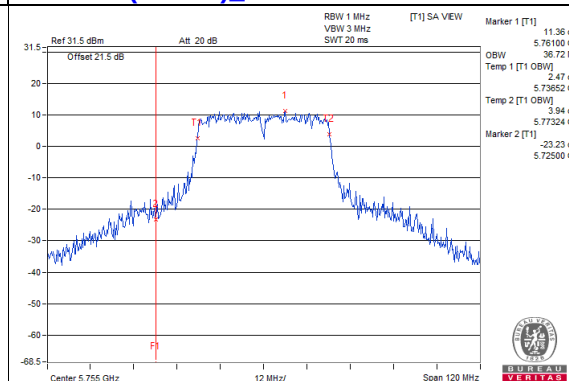
802.11ac (VHT20)_Chain 1 / CH149



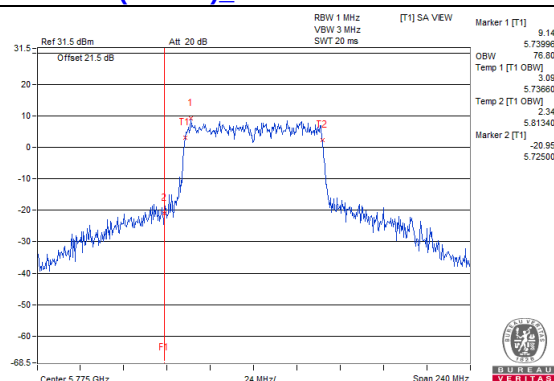
802.11ac (VHT40)_Chain 0 / CH151



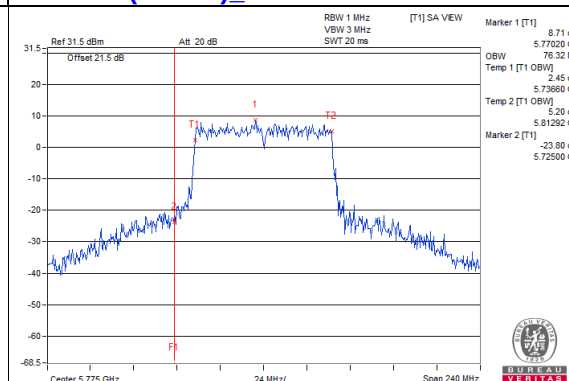
802.11ac (VHT40)_Chain 1 / CH151



802.11ac (VHT80)_Chain 0 / CH155

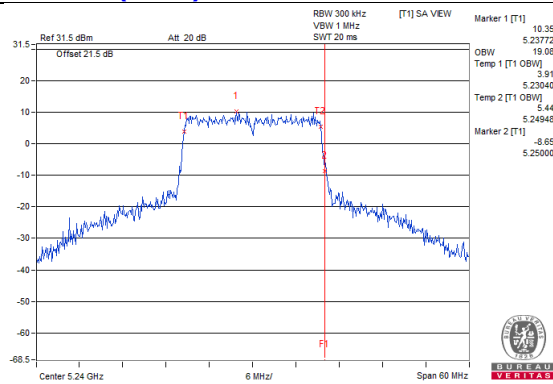


802.11ac (VHT80)_Chain 1 / CH155

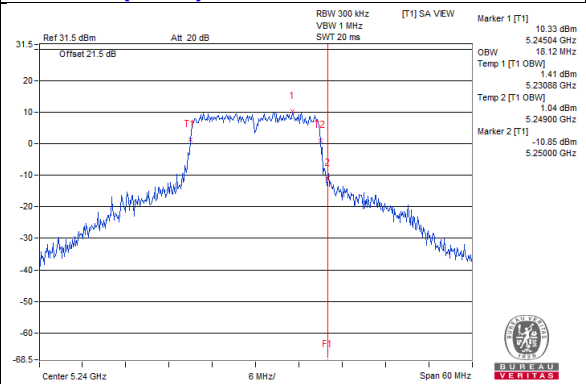


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)

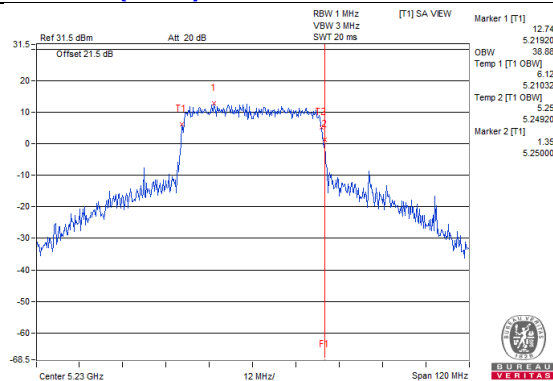
802.11ax (HE20)_Chain 0 / CH48



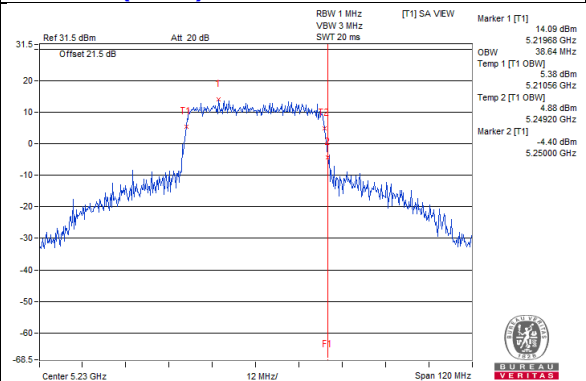
802.11ax (HE20)_Chain 1 / CH48



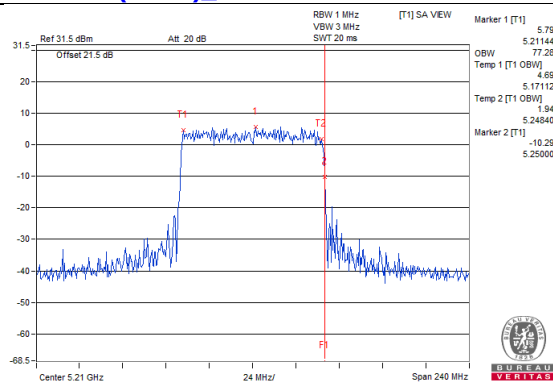
802.11ax (HE40)_Chain 0 / CH46



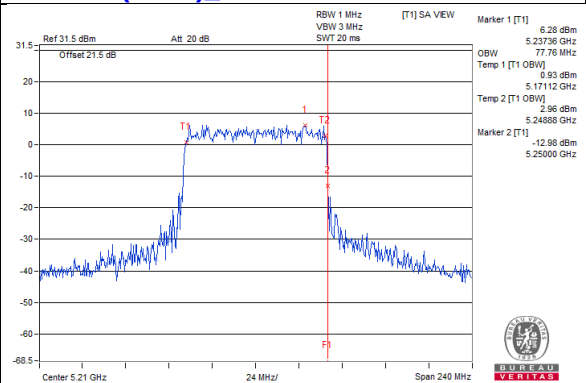
802.11ax (HE40)_Chain 1 / CH46



802.11ax (HE80)_Chain 0 / CH42

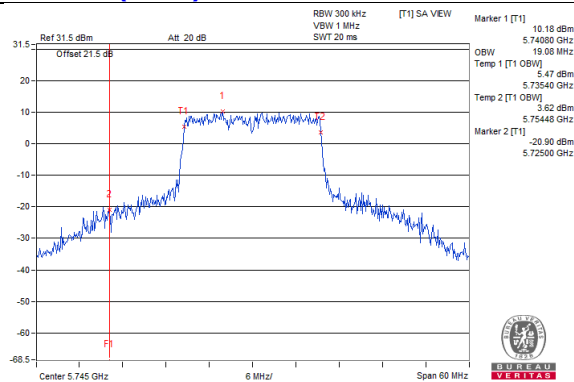


802.11ax (HE80)_Chain 1 / CH42

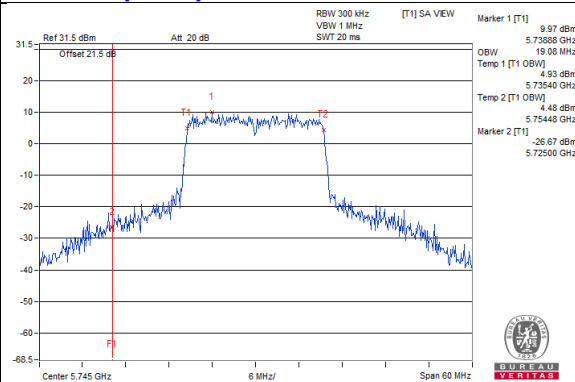


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

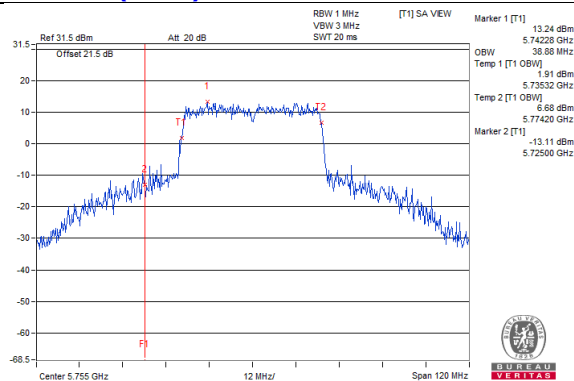
802.11ax (HE20)_Chain 0 / CH149



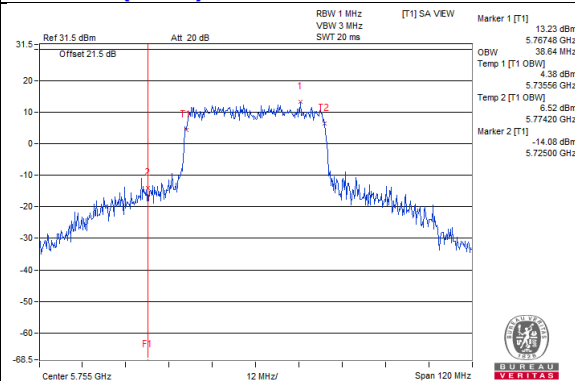
802.11ax (HE20)_Chain 1 / CH149



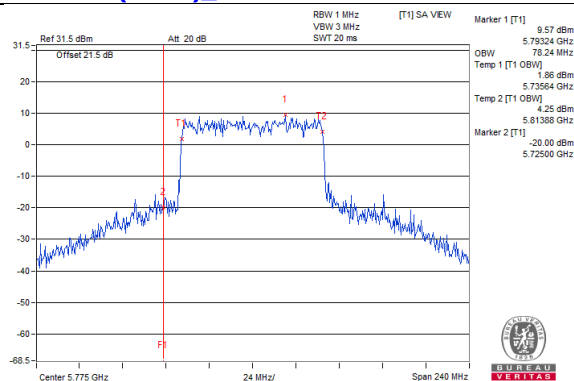
802.11ax (HE40)_Chain 0 / CH151



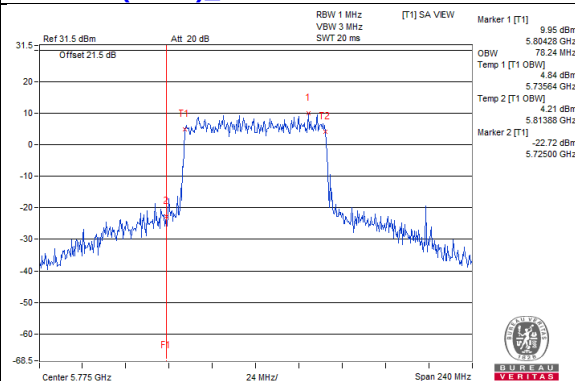
802.11ax (HE40)_Chain 1 / CH151



802.11ax (HE80)_Chain 0 / CH155



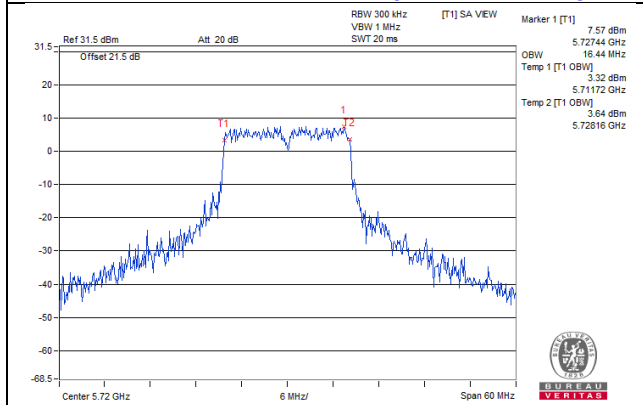
802.11ax (HE80)_Chain 1 / CH155



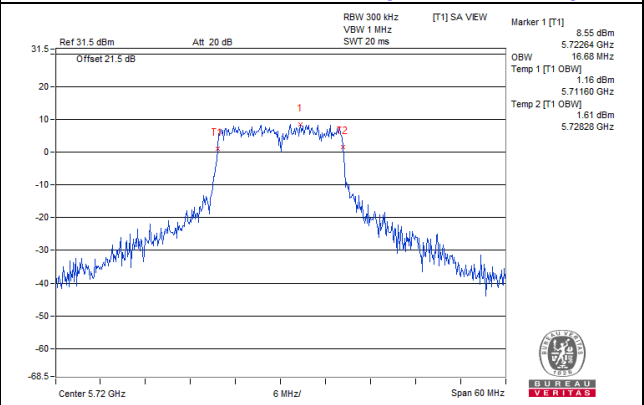
For channel straddling 5725MHz

Spectrum Plot Value of channel straddling 5725MHz

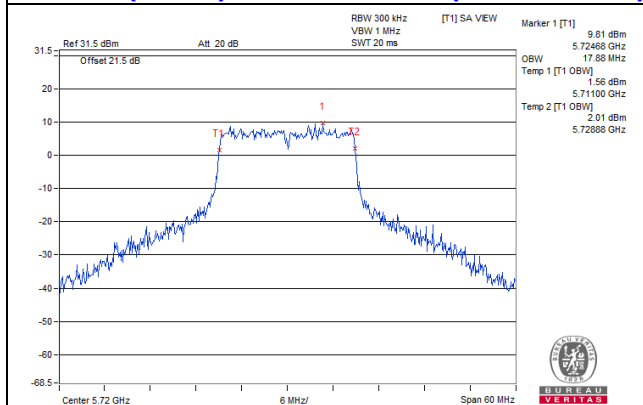
802.11a / Chain0 : CH144 (U-NII-2C Band)



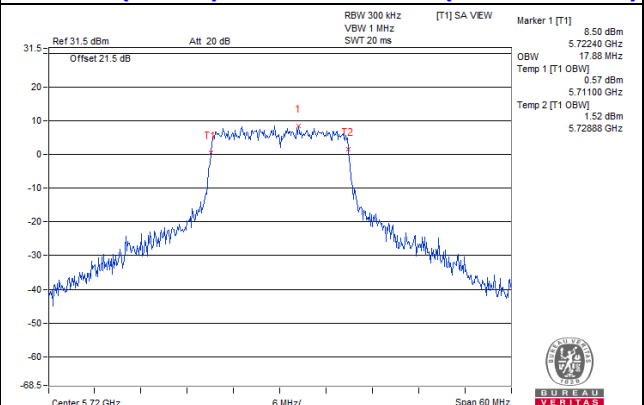
802.11a / Chain1 : CH144 (U-NII-2C Band)



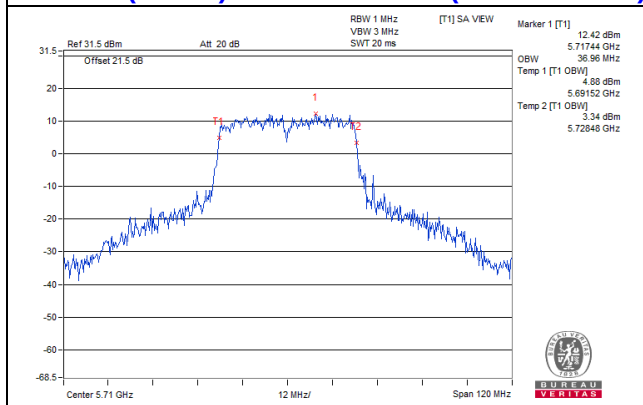
802.11ac (VHT20) / Chain0 : CH144 (U-NII-2C Band)



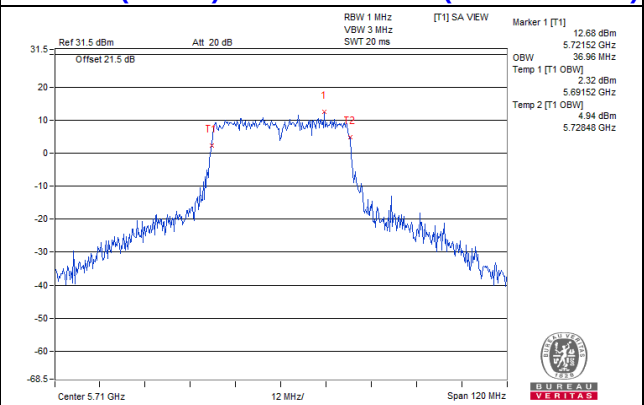
802.11ac (VHT20) / Chain1 : CH144 (U-NII-2C Band)



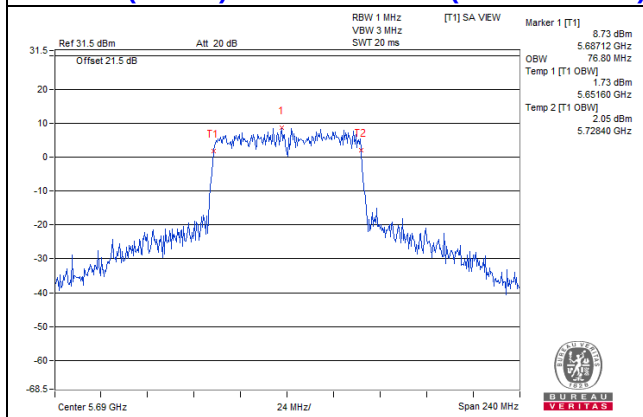
802.11ac (VHT40) / Chain0 : CH142 (U-NII-2C Band)



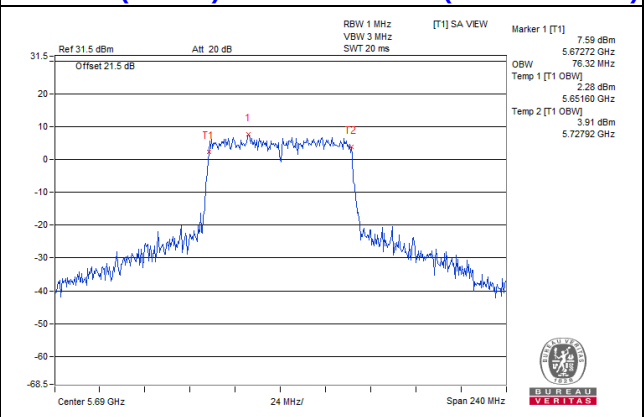
802.11ac (VHT40) / Chain1 : CH142 (U-NII-2C Band)



802.11ac (VHT80) / Chain0 : CH138 (U-NII-2C Band)

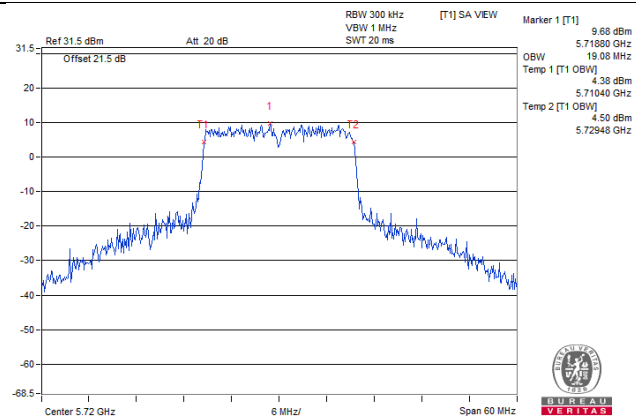


802.11ac (VHT80) / Chain1 : CH138 (U-NII-2C Band)

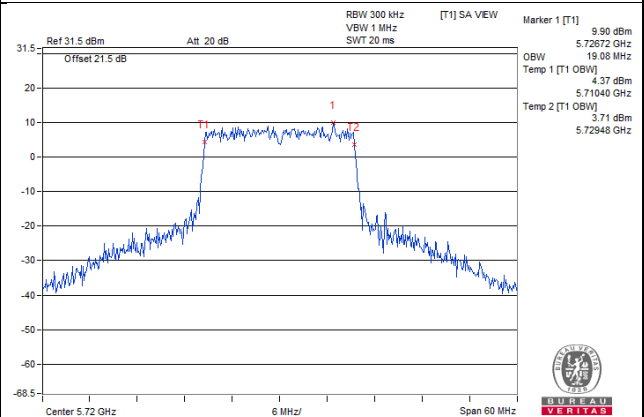


Spectrum Plot Value of channel straddling 5725MHz

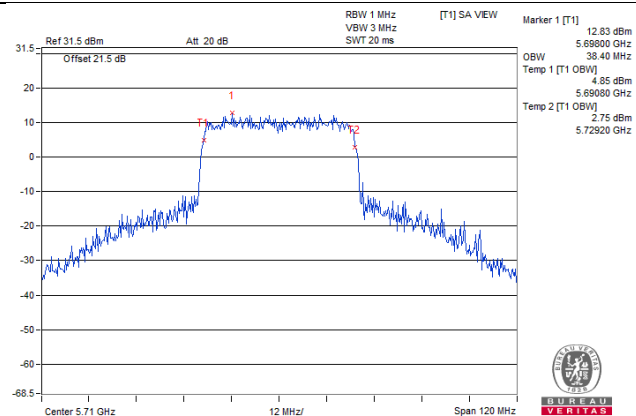
802.11ax (HE20) / Chain0 : CH144 (U-NII-2C Band)



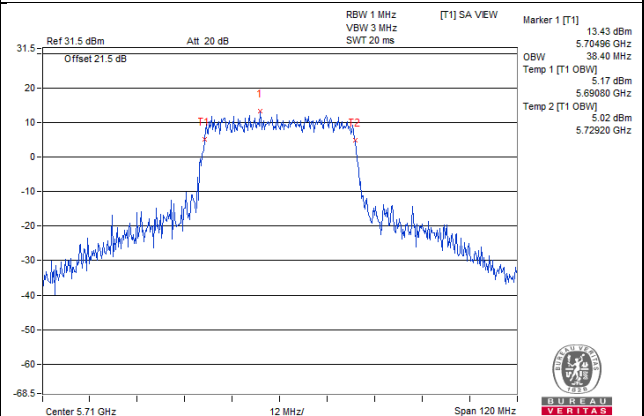
802.11ax (HE20) / Chain1 : CH144 (U-NII-2C Band)



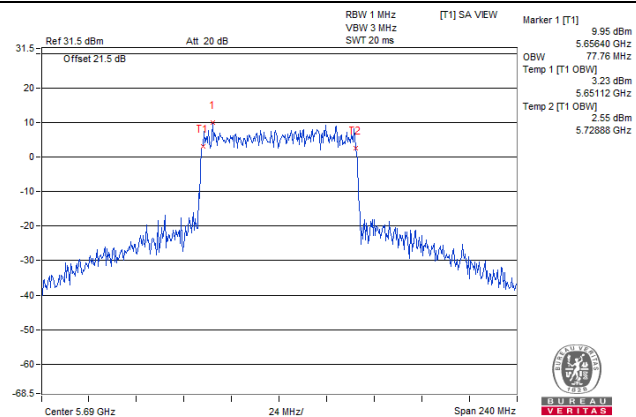
802.11ax (HE40) / Chain0 : CH142 (U-NII-2C Band)



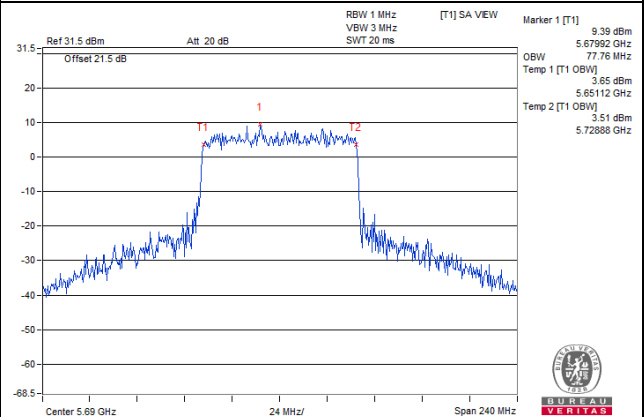
802.11ax (HE40) / Chain1 : CH142 (U-NII-2C Band)



802.11ax (HE80) / Chain0 : CH138 (U-NII-2C Band)



802.11ax (HE80) / Chain1 : CH138 (U-NII-2C Band)



Note:

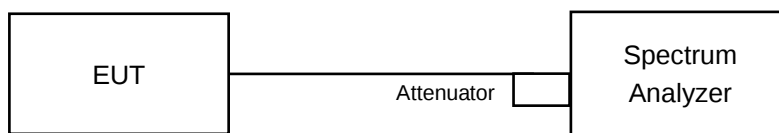
- For CH144 (U-NII-2C) = 5725MHz - Temp 1
- For CH142 (U-NII-2C) = 5725MHz - Temp 1
- For CH138 (U-NII-2C) = 5725MHz - Temp 1
- For CH144 (U-NII-3) = Temp 2 - 5725MHz
- For CH142 (U-NII-3) = Temp 2 - 5725MHz
- For CH138 (U-NII-3) = Temp 2 - 5725MHz

4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	√	Client device	11dBm/ MHz
U-NII-2A	√		11dBm/ MHz
U-NII-2C	√		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

For 802.11a, 20MHz Preamble, 40MHz Preamble:

For U-NII-1, U-NII-2A, U-NII-2C band:

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to “free run”.
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500\text{ kHz}/300\text{ kHz})$
5. Sweep time = auto, trigger set to “free run”.
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value and add 10 log (1/duty cycle)

For other modulation:

For U-NII-1, U-NII-2A, U-NII-2C band:

Using method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW $\geq$ 3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to "free run".
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value

For U-NII-3:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW $\geq$ 1 MHz, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500 \text{ kHz}/300\text{kHz})$
5. Sweep time = auto, trigger set to "free run".
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6.

4.5.7 Test Results

For U-NII-1, U-NII-2A, U-NII-2C:

802.11a

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	2.34	1.46	4.02	8.95	10.91	Pass
40	5200	2.82	1.04	4.02	9.05	10.91	Pass
48	5240	1.17	2.81	4.02	9.10	10.91	Pass
52	5260	2.94	1.37	4.02	9.26	10.91	Pass
60	5300	1.94	2.15	4.02	9.08	10.91	Pass
64	5320	1.13	0.28	4.02	7.76	10.91	Pass
100	5500	0.34	-1.12	4.02	6.70	9.23	Pass
116	5580	0.42	0.95	4.02	7.72	9.23	Pass
140	5700	1.23	0.84	4.02	8.07	9.23	Pass
144 (U-NII-2C Band)	5720	1.10	0.23	4.02	7.72	9.23	Pass

- Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. For U-NII-1: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $11-(6.09-6)=10.91\text{dBm}$.
3. For U-NII-2A: The directional gain = $3.08\text{dBi} + 10\log(2) = 6.09\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $11-(6.09-6)=10.91\text{dBm}$.
4. For U-NII-2C: The directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $11-(7.77-6)=9.23\text{dBm}$.
5. Refer to section 3.4 for duty cycle spectrum plot.