

Ch159

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5922.750	53.8	-32.5	35.1	51.16	69.9	16.1	H	155	132
5923.275	52.9	-32.5	35.1	50.24	69.5	16.6	H	155	154
11590.000	49.7	-30.8	38.3	42.17	68.3	18.6	H	155	88
17385.000	56.2	-26.5	41.3	41.36	68.3	12.1	V	155	110
16287.300	57.0	-26.6	41.0	42.51	68.3	11.3	V	155	44
17898.800	57.2	-26.2	41.3	42.10	68.3	11.1	H	155	0

802.11ac-HT20

Ch149

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5650.495	46.2	-33.0	34.7	44.49	68.6	22.4	H	155	0
5651.104	46.0	-33.0	34.7	44.29	69.0	23.0	H	155	22
11490.000	49.6	-30.8	38.2	42.21	68.3	18.7	V	155	308
17235.000	55.2	-26.6	41.5	40.37	68.3	13.1	H	155	44
17050.800	56.5	-26.4	41.6	41.22	68.3	11.8	V	155	66
17750.500	57.1	-26.5	41.3	42.36	68.3	11.2	H	155	88

Ch157

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5464.250	47.9	-33.3	34.5	46.76	68.3	20.4	H	155	264
5839.600	49.7	-33.6	35.0	48.33	68.3	18.6	H	155	132
11570.000	49.5	-30.8	38.3	42.01	68.3	18.8	H	155	110
17355.000	55.5	-26.6	41.3	40.77	68.3	12.8	H	155	44
16883.750	56.6	-27.0	41.6	41.95	68.3	11.7	H	155	22
17758.500	57.2	-26.5	41.3	42.51	68.3	11.1	V	155	0

Ch165

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5923.217	47.2	-32.5	35.1	44.58	69.5	22.3	H	155	0
5924.575	47.1	-32.5	35.1	44.54	68.5	21.4	H	155	22
11650.000	48.6	-30.6	38.4	40.84	68.3	19.7	V	155	352
17475.000	55.7	-26.3	41.2	40.76	68.3	12.6	V	155	352
17055.500	56.8	-26.4	41.6	41.55	68.3	11.5	V	155	176
17852.690	57.1	-26.4	41.3	42.19	68.3	11.2	V	155	176

802.11ac-HT40

Ch151

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5652.277	53.8	-33.0	34.7	52.09	69.9	16.1	H	155	0
5651.771	53.7	-33.0	34.7	52.01	69.5	15.8	H	155	44
11510.000	49.9	-30.8	38.2	42.50	68.3	18.4	V	155	22
17265.000	56.4	-26.8	41.4	41.76	68.3	11.9	H	155	110
16475.500	56.6	-27.1	41.3	42.47	68.3	11.7	H	155	88
17891.500	57.5	-26.2	41.3	42.44	68.3	10.8	H	155	44

Ch159

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5922.990	53.5	-32.5	35.1	50.85	69.7	16.2	H	155	22
5922.562	53.2	-32.5	35.1	50.55	70.0	16.8	H	155	44
11590.000	49.9	-30.8	38.3	42.37	68.3	18.4	H	155	132
17385.000	56.5	-26.5	41.3	41.66	68.3	11.9	V	155	110
16285.500	57.2	-26.6	41.0	42.72	68.3	11.1	H	155	88
17887.500	57.2	-26.2	41.3	42.17	68.3	11.1	H	155	44

802.11ac-HT80

Ch155_L

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
48.4	-33.0	34.7	46.70	68.4	20.1	H	155	0	48.4
48.6	-33.0	34.7	46.91	69.4	20.8	H	155	22	48.6
50.6	-30.8	38.3	43.14	68.3	17.7	V	155	308	50.6
57.3	-26.7	41.4	42.60	68.3	11.1	H	155	44	57.3
57.4	-26.2	41.6	41.98	68.3	10.9	V	155	66	57.4
57.5	-26.1	41.6	41.99	68.3	10.8	H	155	88	57.5

Ch155_R

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5923.562	48.0	-32.5	35.1	45.35	69.3	21.3	H	155	22
5922.010	47.9	-32.5	35.1	45.27	70.4	22.5	H	155	44
11550.000	50.6	-30.8	38.3	43.14	68.3	17.7	V	155	308
17325.000	57.3	-26.7	41.4	42.60	68.3	11.1	H	155	44
17086.500	57.4	-26.2	41.6	41.98	68.3	10.9	V	155	66
17094.650	57.5	-26.1	41.6	41.99	68.3	10.8	H	155	88

Conclusion: PASS

A.6. Band Edges Compliance

A6.1 Band Edges - conducted

Measurement Limit:

Standard	Limit (dBm/MHz)
FCC 47 CFR Part 15.407(b)(4)	All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

The measurement is made according to KDB 789033 D02

Measurement Uncertainty:

Measurement Uncertainty	0.75dB
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Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz	Fig.71	P
	5825 MHz	Fig.72	P
802.11n HT20	5745 MHz	Fig.73	P
	5825 MHz	Fig.74	P
802.11ac HT20	5745 MHz	Fig.75	P
	5825 MHz	Fig.76	P
802.11n HT40	5755 MHz	Fig.77	P
	5795 MHz	Fig.78	P
802.11ac HT40	5755 MHz	Fig.79	P
	5795 MHz	Fig.80	P
802.11ac HT80	5775 MHz	Fig.81	P
	5775 MHz	Fig.82	P

Conclusion: PASS

Test graphs as below:

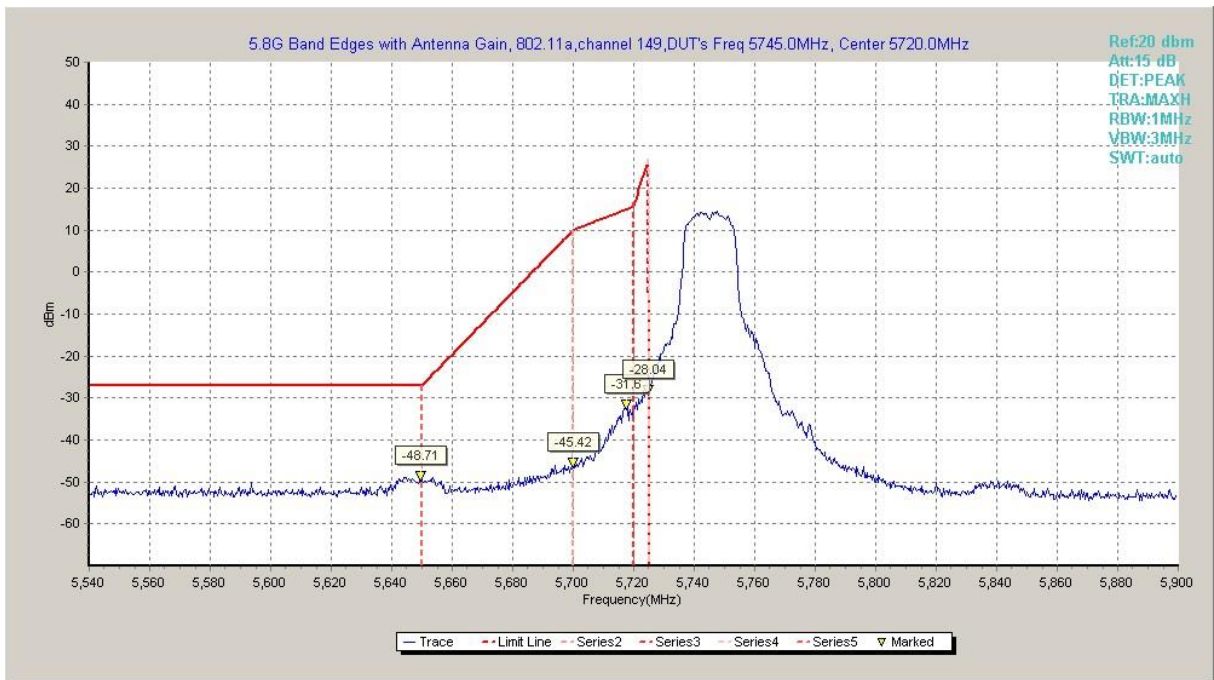


Fig. 71 Band Edges (802.11a, 5745MHz)

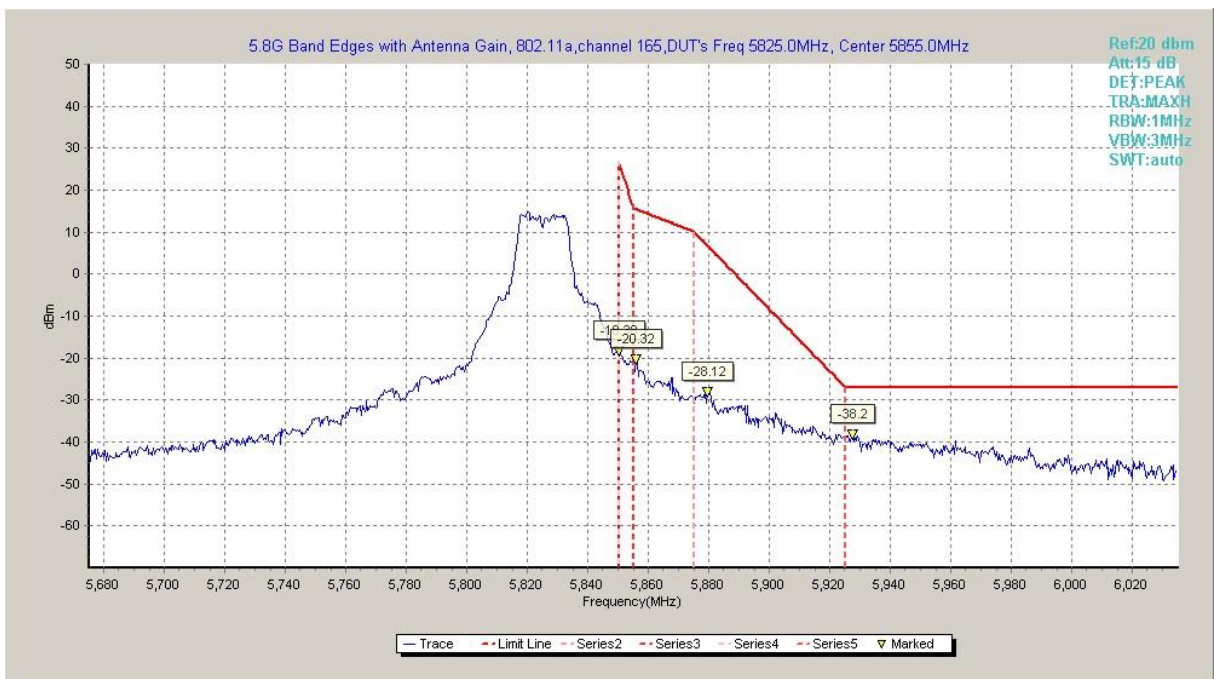


Fig. 72 Band Edges (802.11a, 5825MHz)

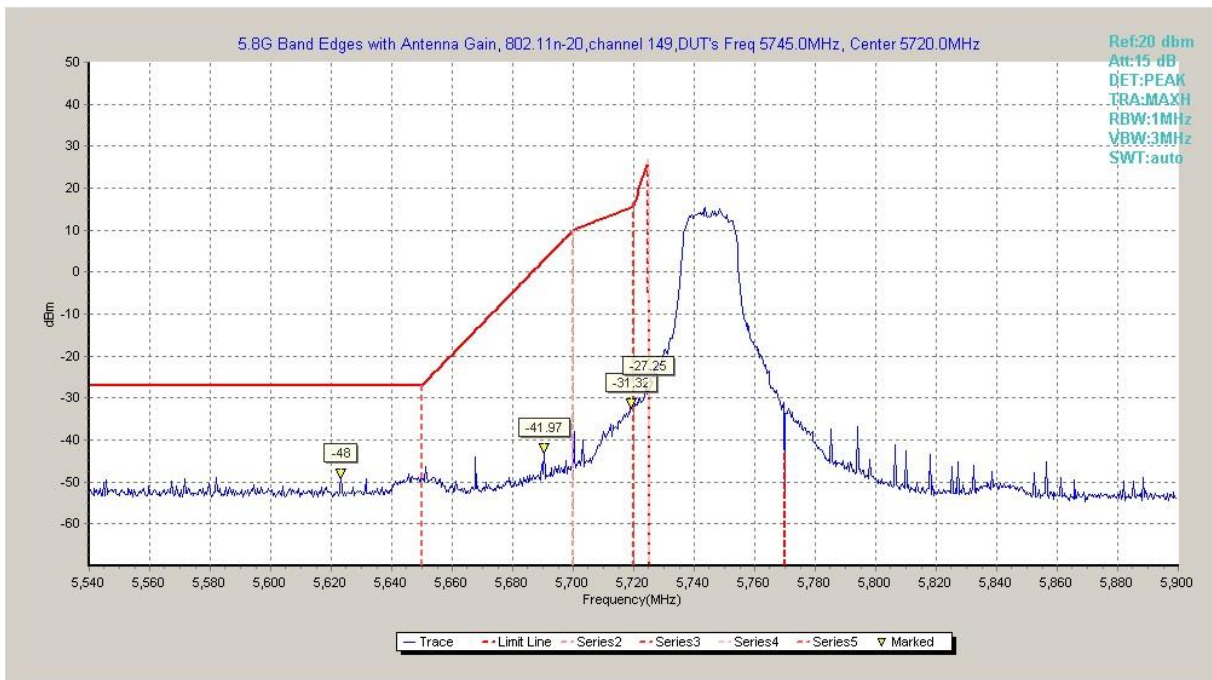


Fig. 73 Band Edges (802.11n-HT20, 5745MHz)

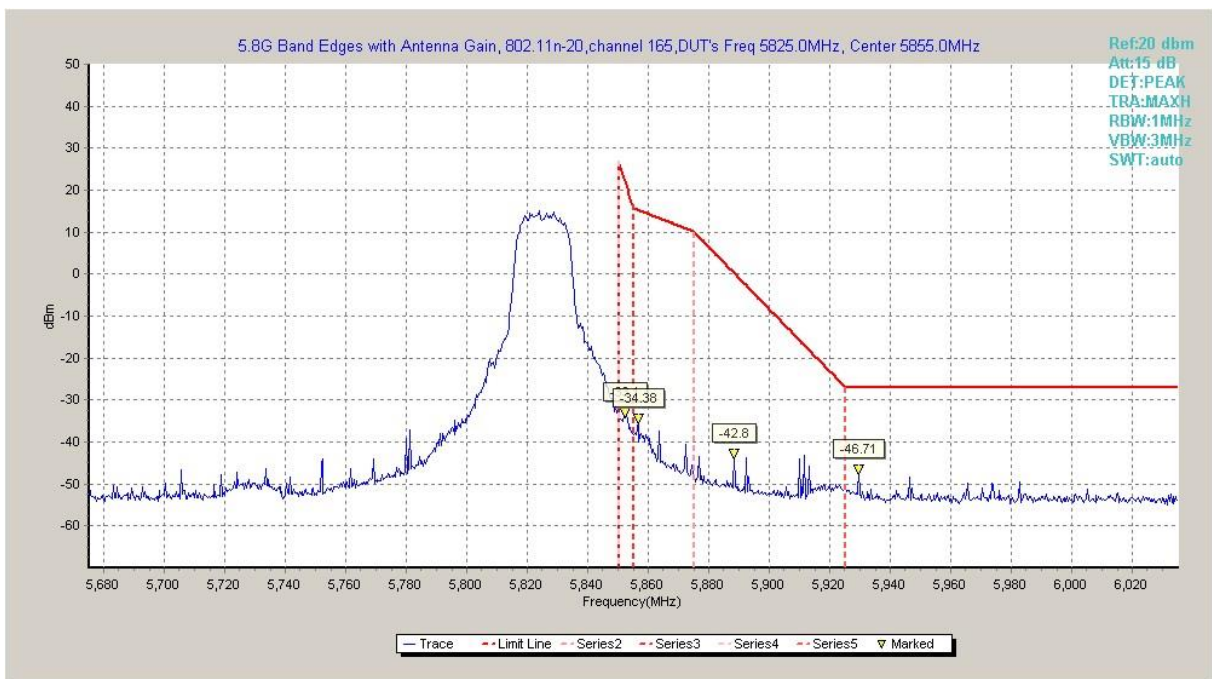


Fig. 74 Band Edges (802.11n-HT20, 5825MHz)

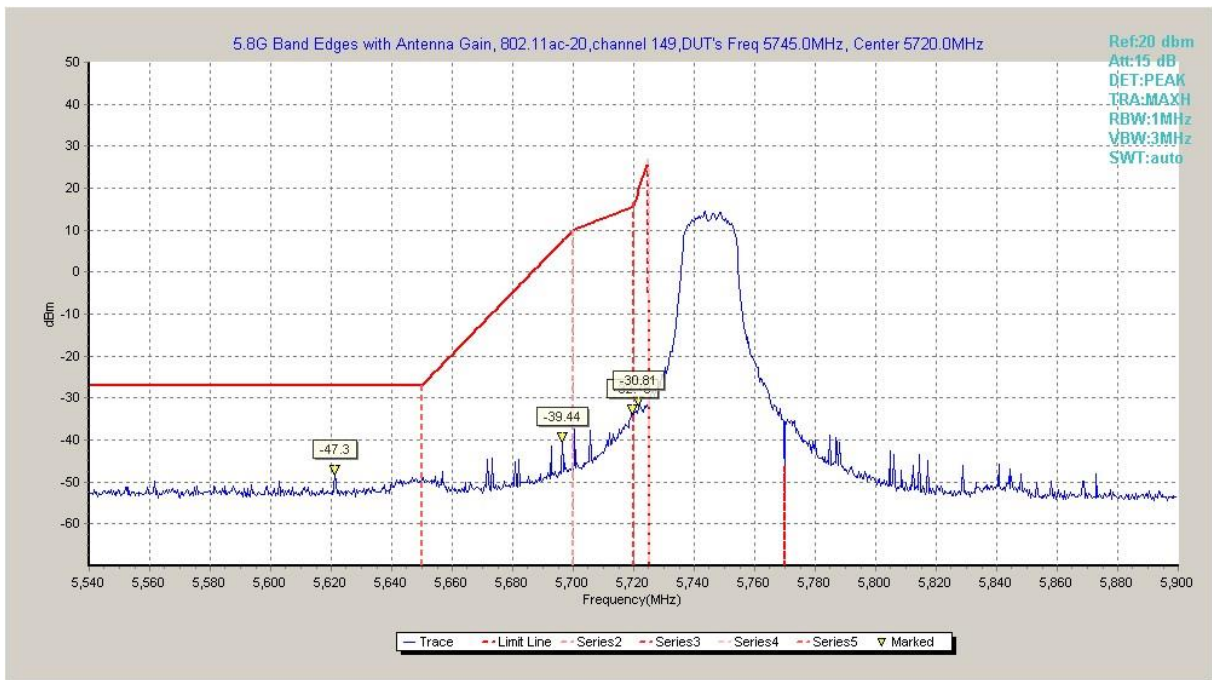


Fig. 75 Band Edges (802.11ac-HT20, 5745MHz)

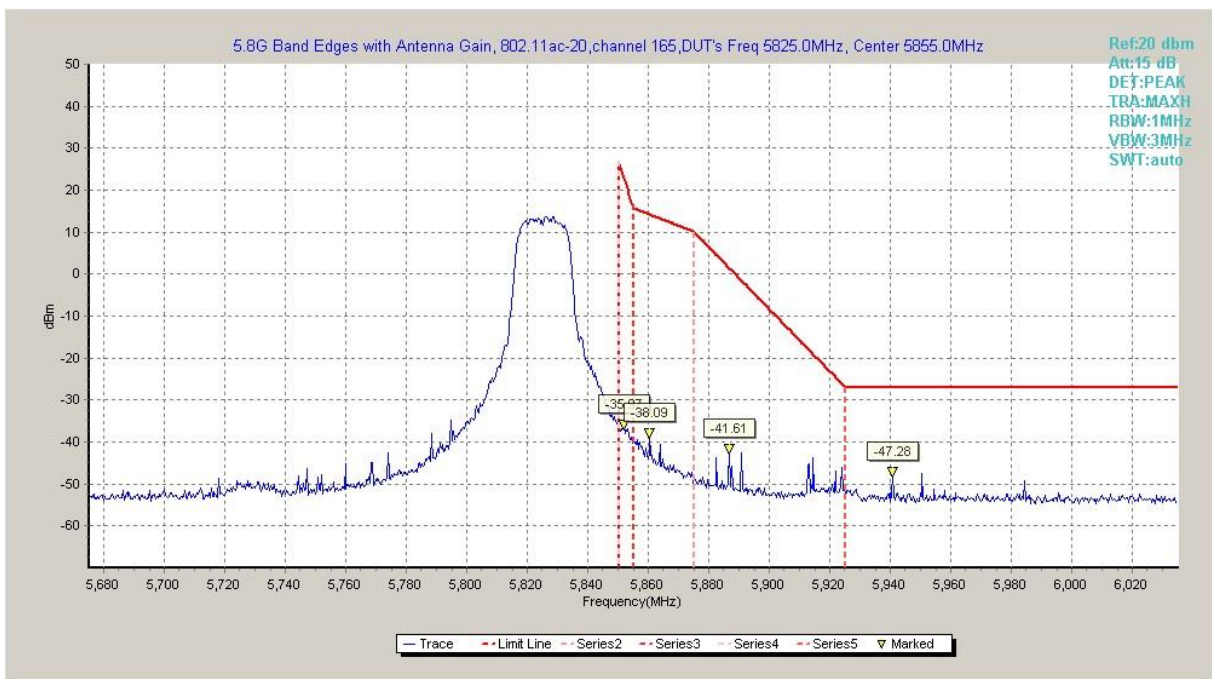


Fig. 76 Band Edges (802.11ac-HT20, 5825MHz)

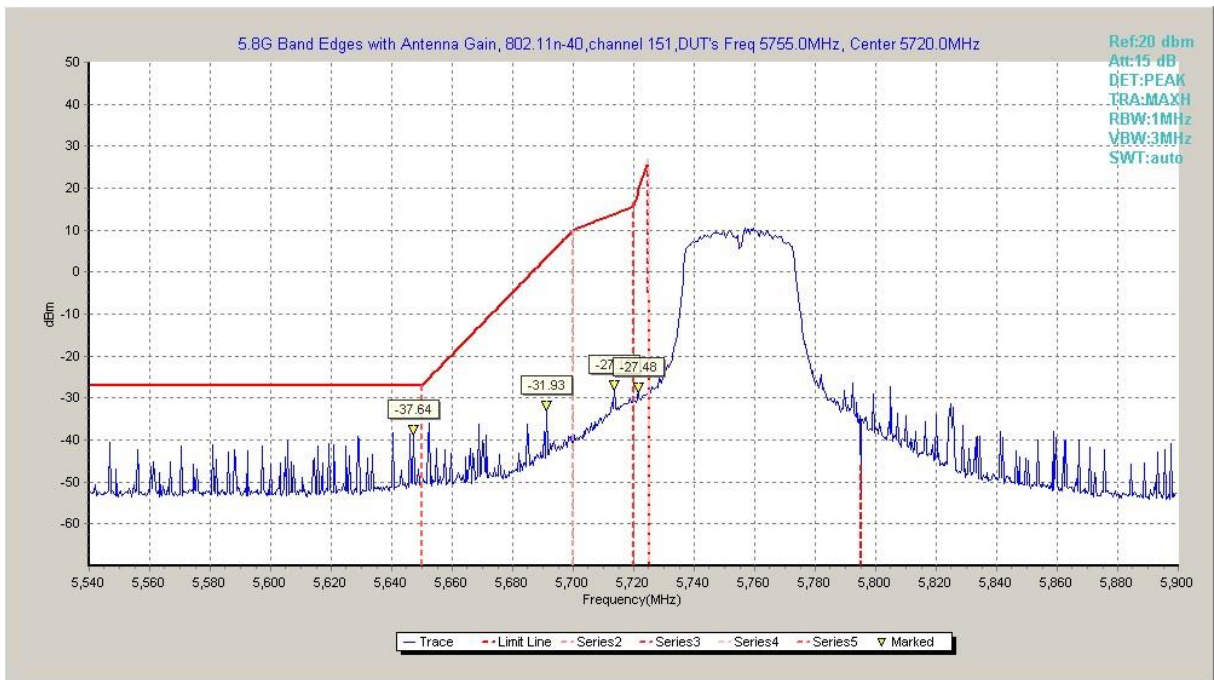


Fig. 77 Band Edges (802.11n-HT40, 5755MHz)

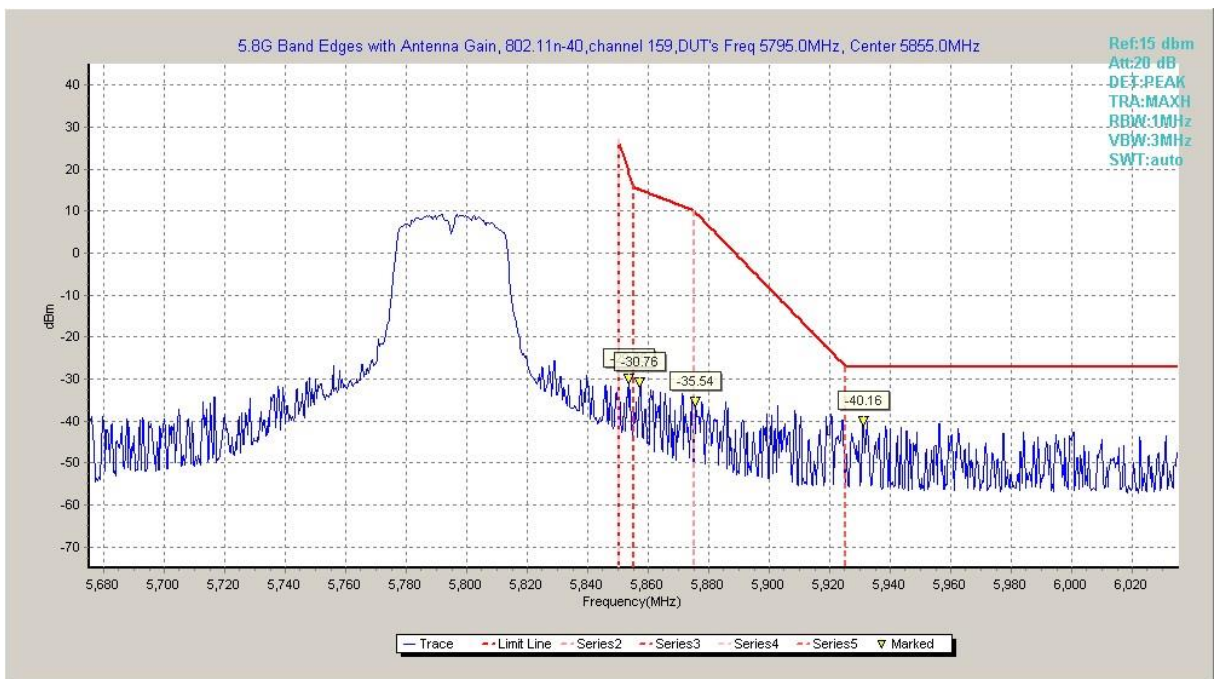


Fig. 78 Band Edges (802.11n-HT40, 5795MHz)

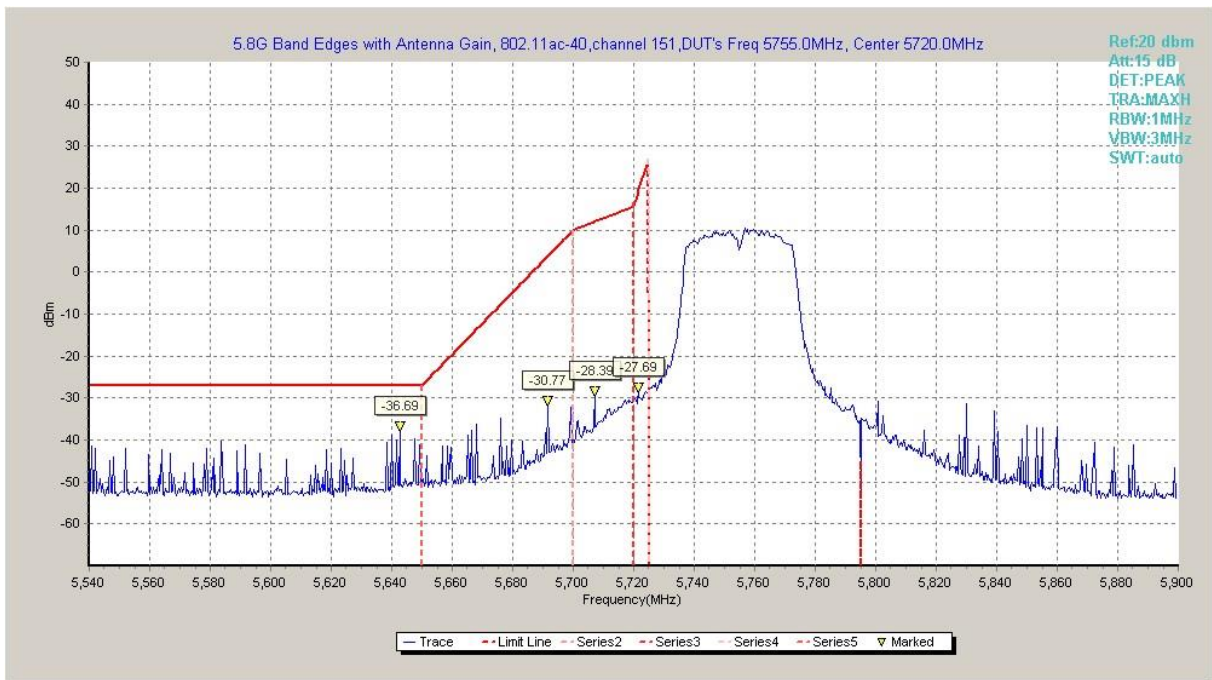


Fig. 79 Band Edges (802.11ac-HT40, 5755MHz)

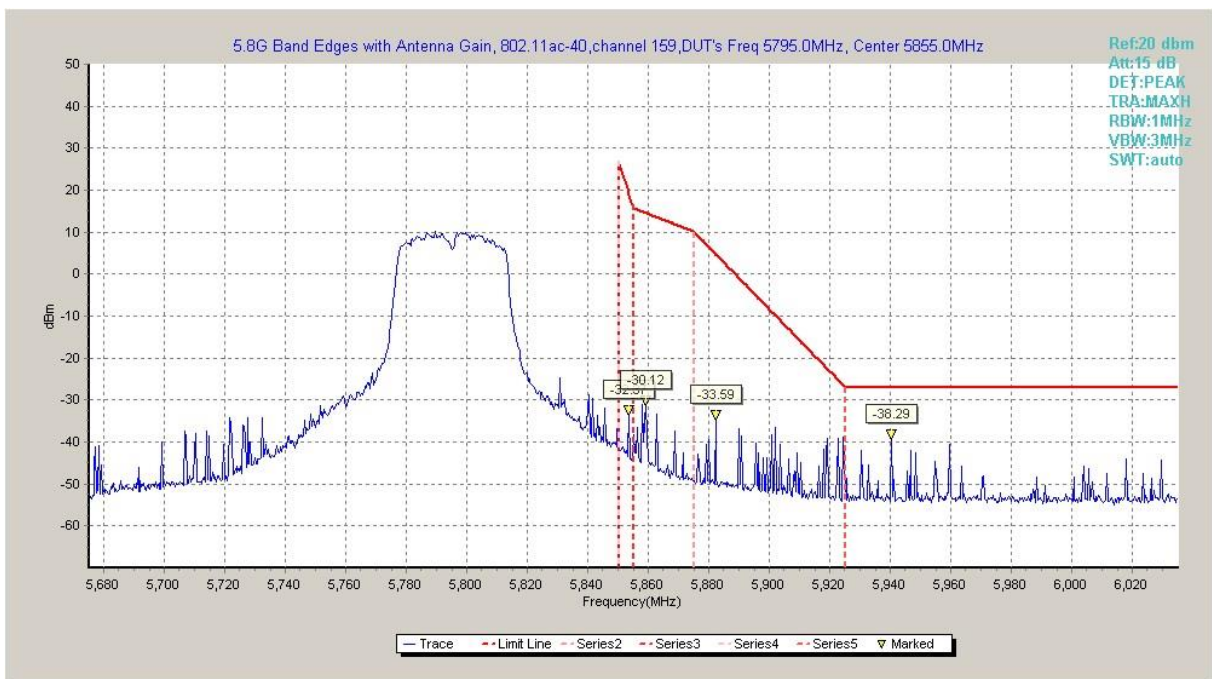


Fig. 80 Band Edges (802.11ac-HT40, 5795MHz)

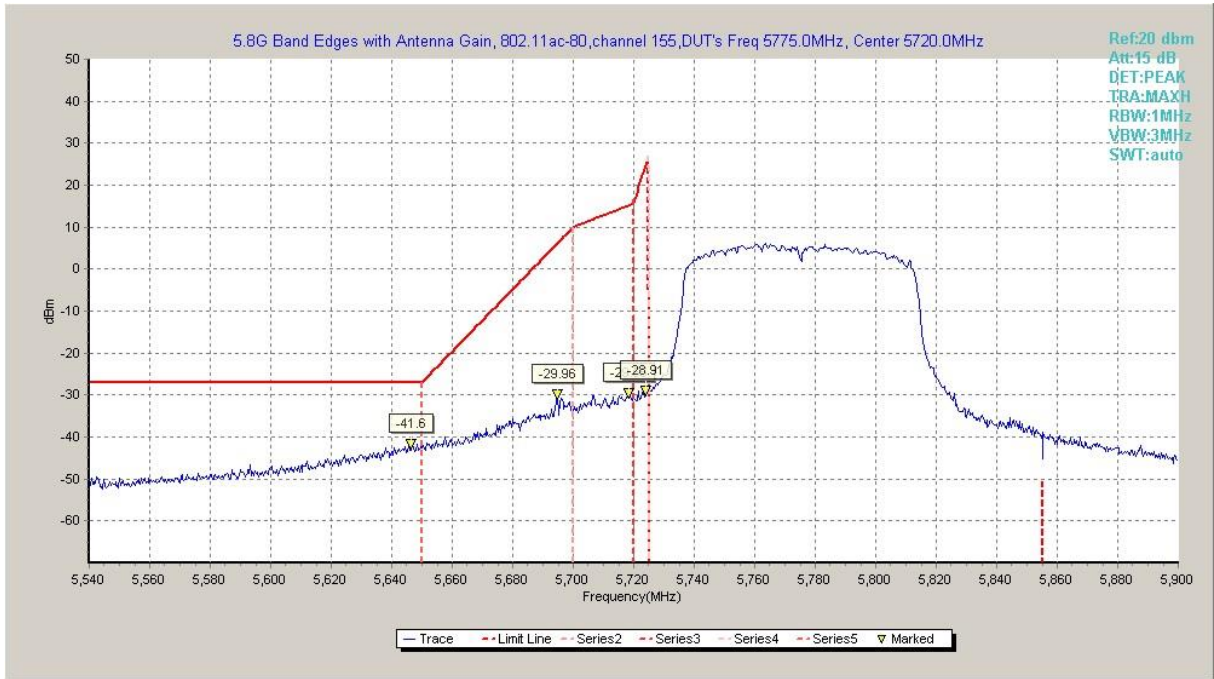


Fig. 81 Band Edges (802.11ac-HT80, 5775MHz)



Fig. 82 Band Edges (802.11ac-HT80, 5775MHz)

A6.2 Band Edges - Radiated

Measurement Limit:

Standard	Limit (dBm/MHz)	
FCC 47 CFR Part 15.407	at the band edge	27
	at 5 MHz above or below the band edge	15.6
	at 25 MHz above or below the band edge	10
	at 75 MHz or more above or below the band edge	-27
	Note: increasing linearly from point to point.	

The measurement is made according to KDB 789033 D02

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz	Fig.83	P
	5825 MHz	Fig.84	P
802.11n HT20	5745 MHz	Fig.85	P
	5825 MHz	Fig.86	P
802.11ac HT20	5745 MHz	Fig.87	P
	5825 MHz	Fig.88	P
802.11n HT40	5755 MHz	Fig.89	P
	5795 MHz	Fig.90	P
802.11ac HT40	5755 MHz	Fig.91	P
	5795 MHz	Fig.92	P
802.11ac HT80	5775 MHz	Fig.93	P
	5775 MHz	Fig.94	P

Conclusion: PASS

Test graphs as below:

RE - Power-5.650GHz-5.765GHz

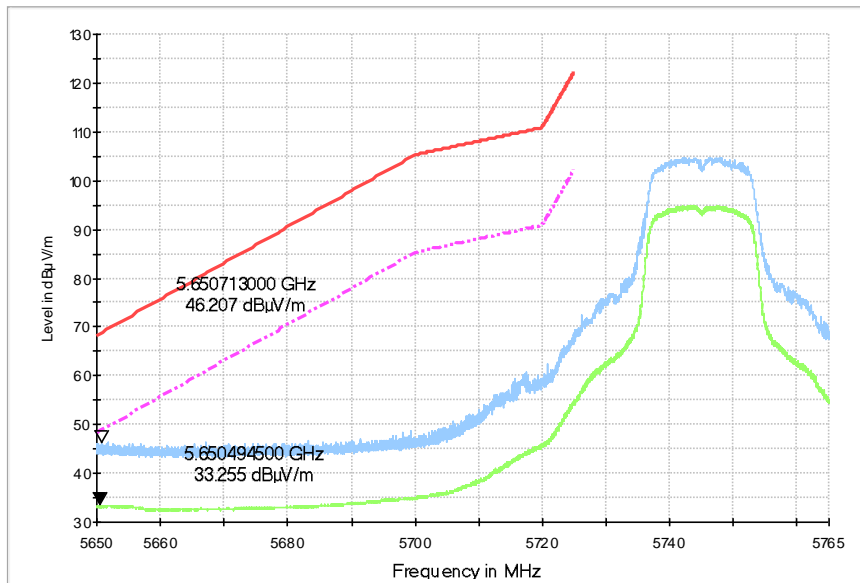


Fig. 83 Band Edges (802.11a, 5745MHz)

RE - Power-5.810GHz-5.925GHz

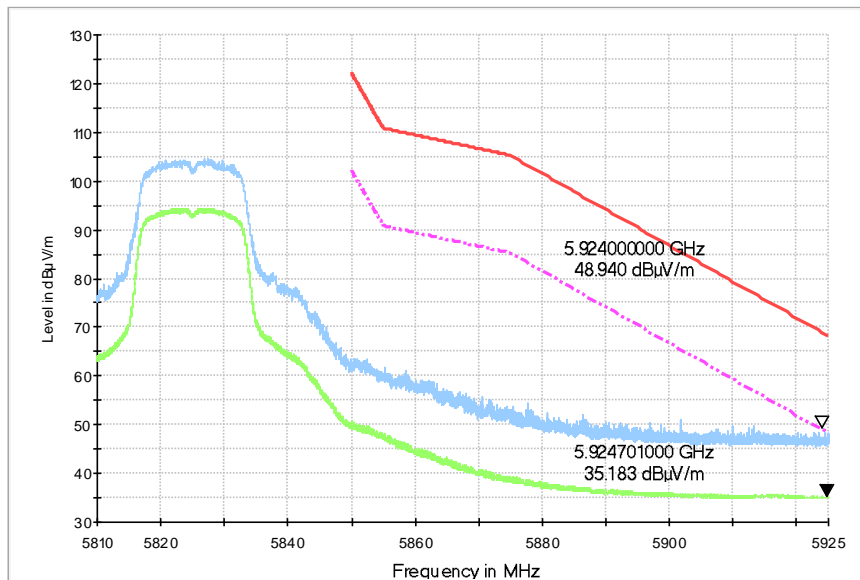


Fig. 84 Band Edges (802.11a, 5825MHz)

RE - Power-5.650GHz-5.765GHz

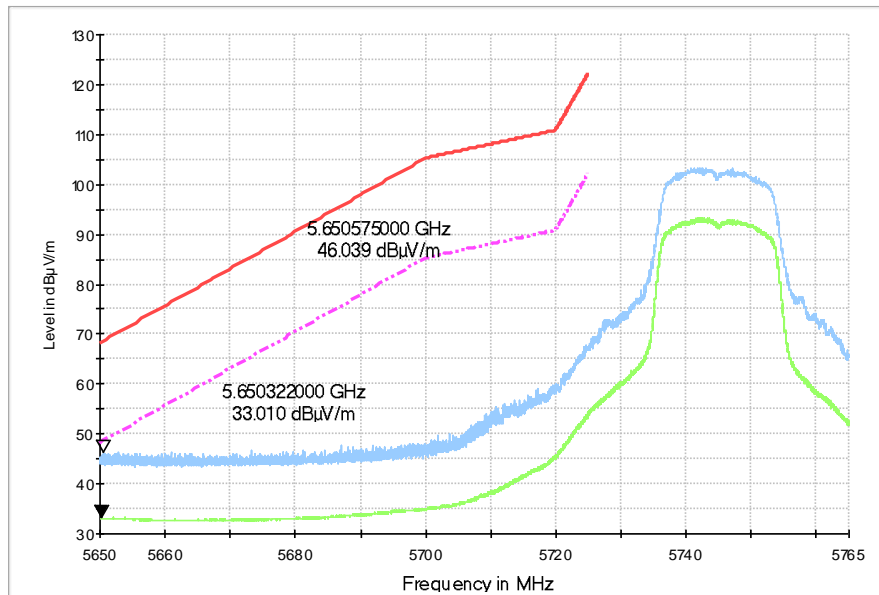


Fig. 85 Band Edges (802.11n-HT20, 5745MHz)

RE - Power-5.810GHz-5.925GHz

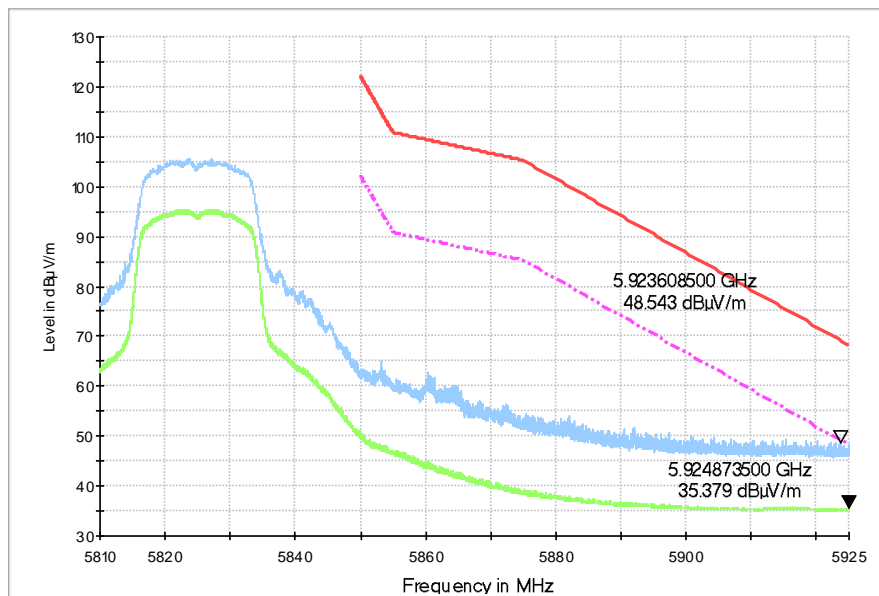


Fig. 86 Band Edges (802.11n-HT20, 5825MHz)

RE - Power-5.650GHz-5.765GHz

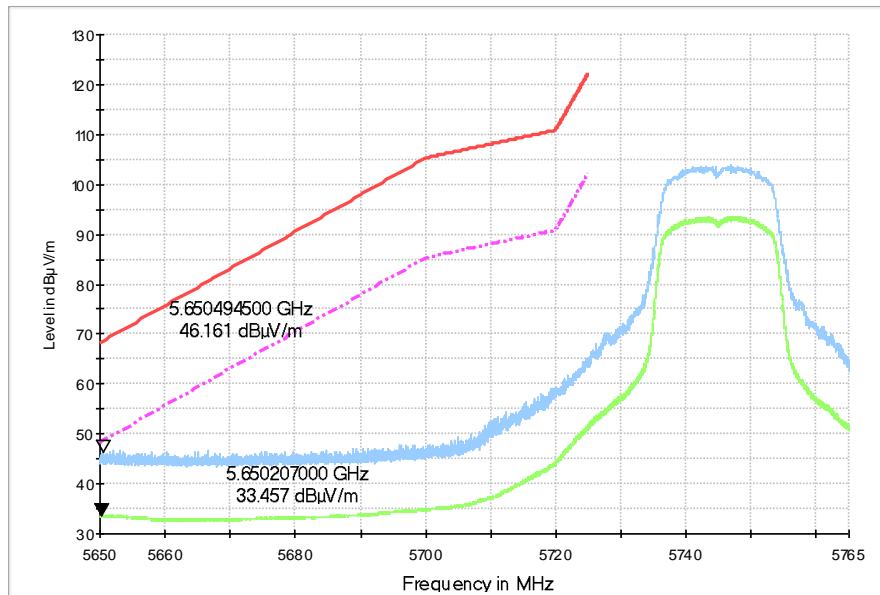


Fig. 87 Band Edges (802.11ac-HT20, 5745MHz)

RE - Power-5.810GHz-5.925GHz

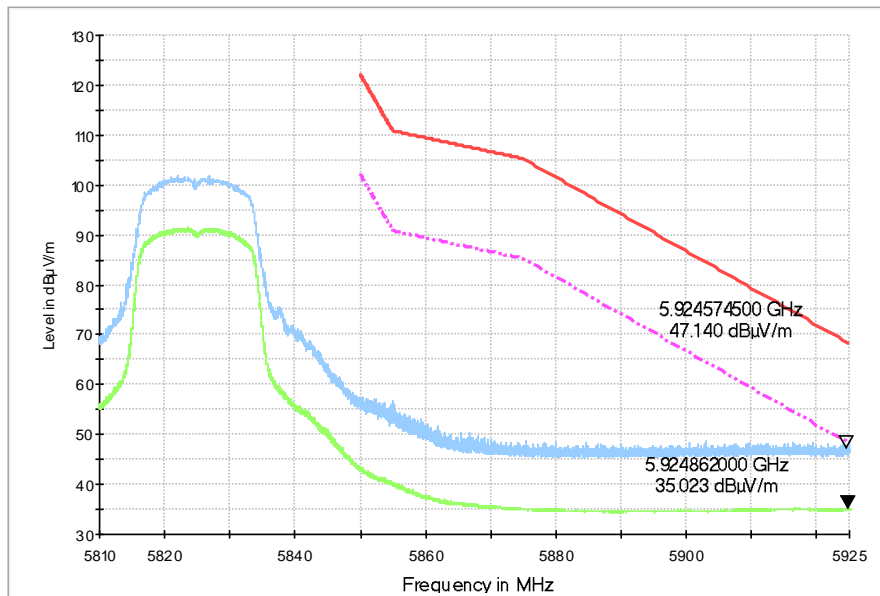


Fig. 88 Band Edges (802.11ac-HT20, 5825MHz)

RE - Power-5.650GHz-5.765GHz

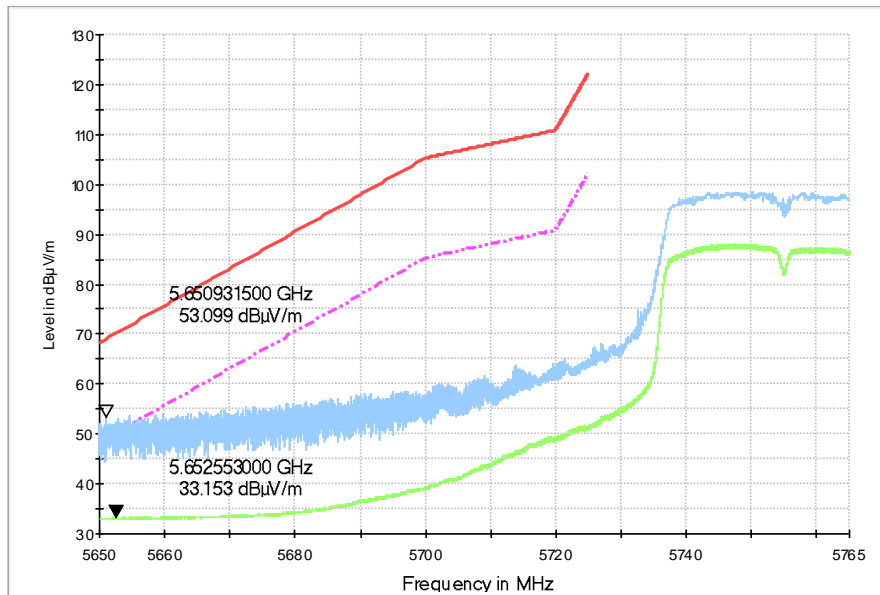


Fig. 89 Band Edges (802.11n-HT40, 5755MHz)

RE - Power-5.810GHz-5.925GHz

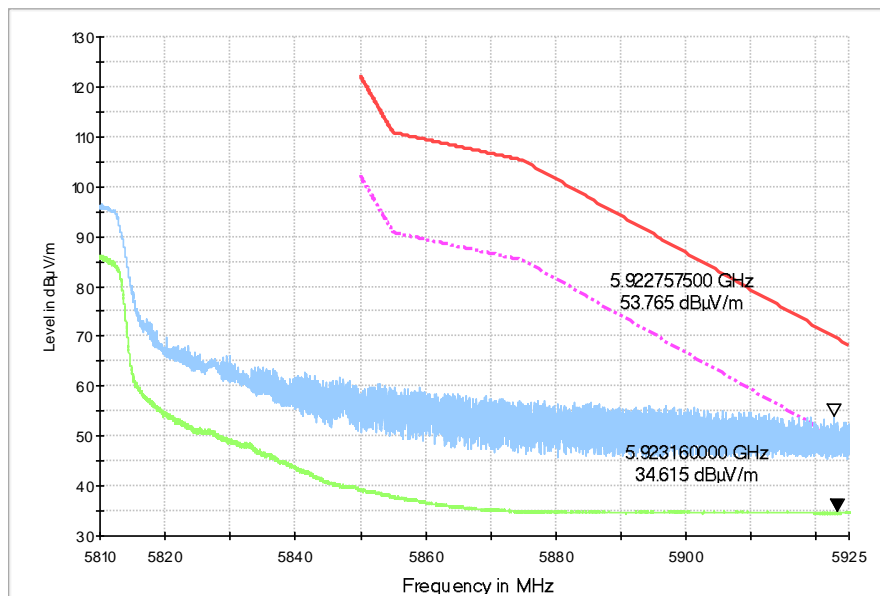


Fig. 90 Band Edges (802.11n-HT40, 5795MHz)

RE - Power-5.650GHz-5.765GHz

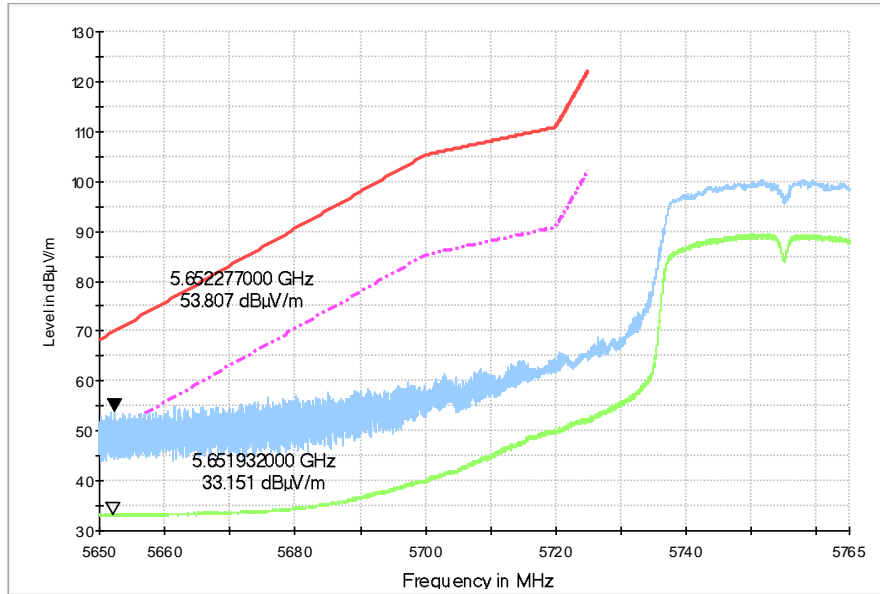


Fig. 91 Band Edges (802.11ac-HT40, 5755MHz)

RE - Power-5.810GHz-5.925GHz

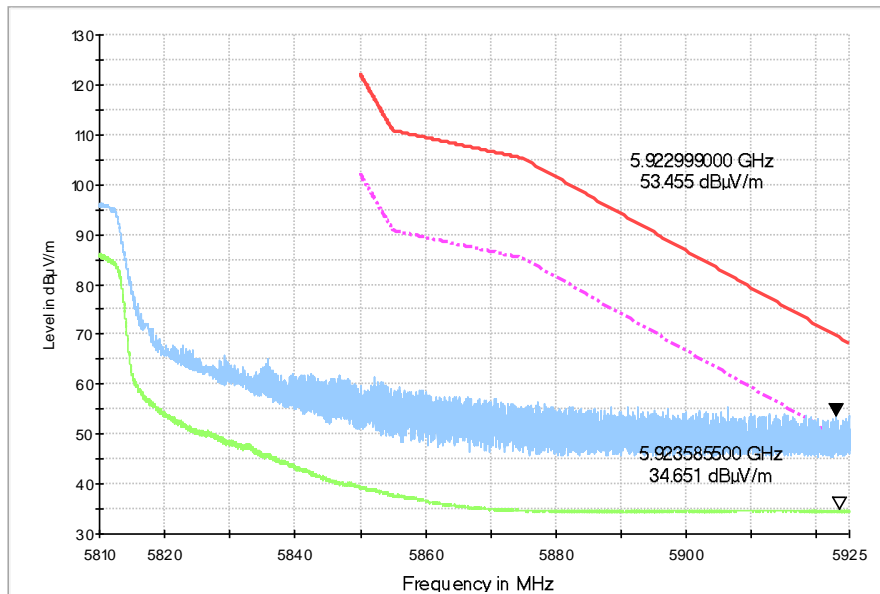


Fig. 92 Band Edges (802.11ac-HT40, 5795MHz)

RE - Power-5.650GHz-5.765GHz

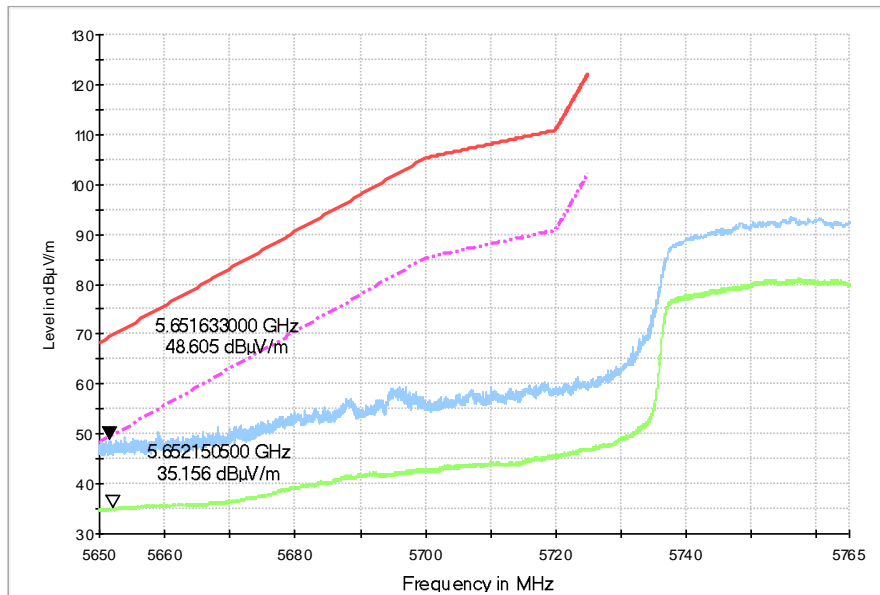


Fig. 93 Band Edges (802.11ac-HT80, 5775MHz)

RE - Power-5.810GHz-5.925GHz

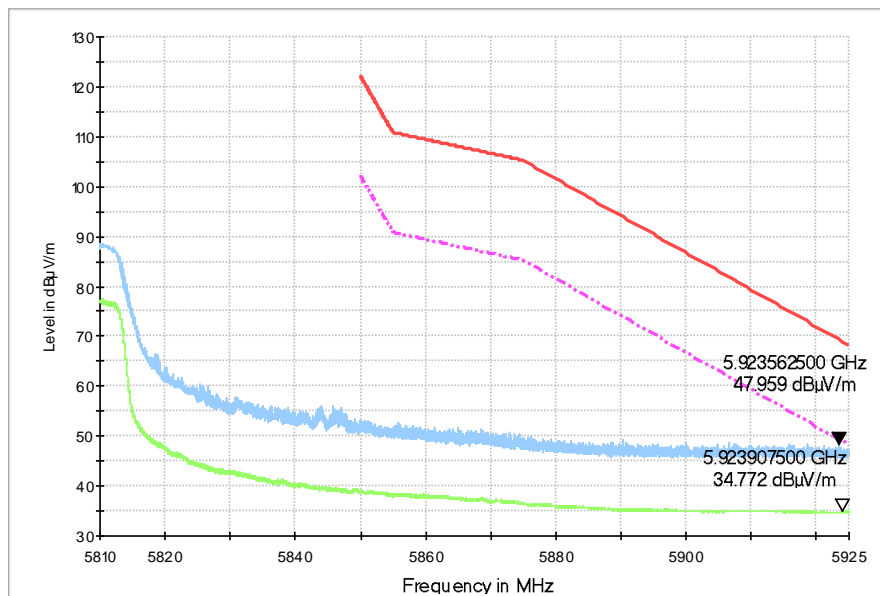


Fig. 94 Band Edges (802.11ac-HT80, 5775MHz)

A.7. AC Powerline Conducted Emission

Test Condition:

Voltage (V)	Frequency (Hz)
110	60

Measurement uncertainty:

Expanded measurement uncertainty for this test item is $U = 3.2\text{dB}$, $k=2$.

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	66 to 56	Fig. 95	Fig. 96	P
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dB μ V)	Result (dB μ V)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	56 to 46	Fig.95	Fig.96	P
0.5 to 5	46			
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

The measurement is made according to ANSI C63.10 .

Conclusion: PASS

Test graphs as below:

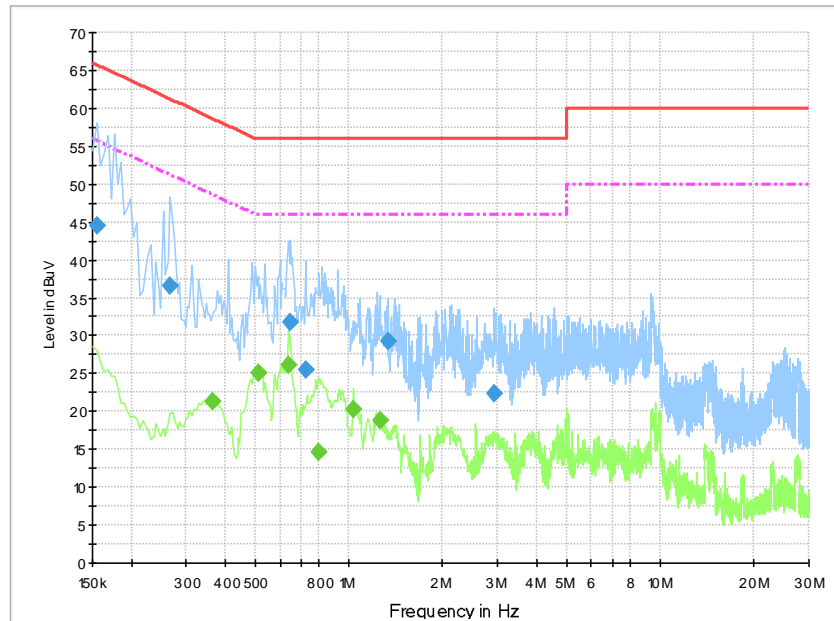


Fig. 95 AC Powerline Conducted Emission-802.11a

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.154500	44.4	10000.	9.000	On	N	28.0	21.3	65.8	
0.267000	36.5	10000.	9.000	On	L1	19.9	24.7	61.2	
0.649500	31.8	10000.	9.000	On	L1	19.9	24.2	56.0	
0.726000	25.5	10000.	9.000	On	N	20.0	30.5	56.0	
1.329000	29.3	10000.	9.000	On	L1	19.8	26.7	56.0	
2.935500	22.3	10000.	9.000	On	N	19.8	33.7	56.0	

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.366000	21.3	10000.	9.000	On	L1	20.0	27.3	48.6	
0.514500	25.1	10000.	9.000	On	L1	20.0	20.9	46.0	
0.636000	26.1	10000.	9.000	On	L1	20.0	19.9	46.0	
0.802500	14.7	10000.	9.000	On	L1	19.9	31.3	46.0	
1.032000	20.2	10000.	9.000	On	L1	19.9	25.8	46.0	
1.261500	18.8	10000.	9.000	On	L1	19.8	27.2	46.0	

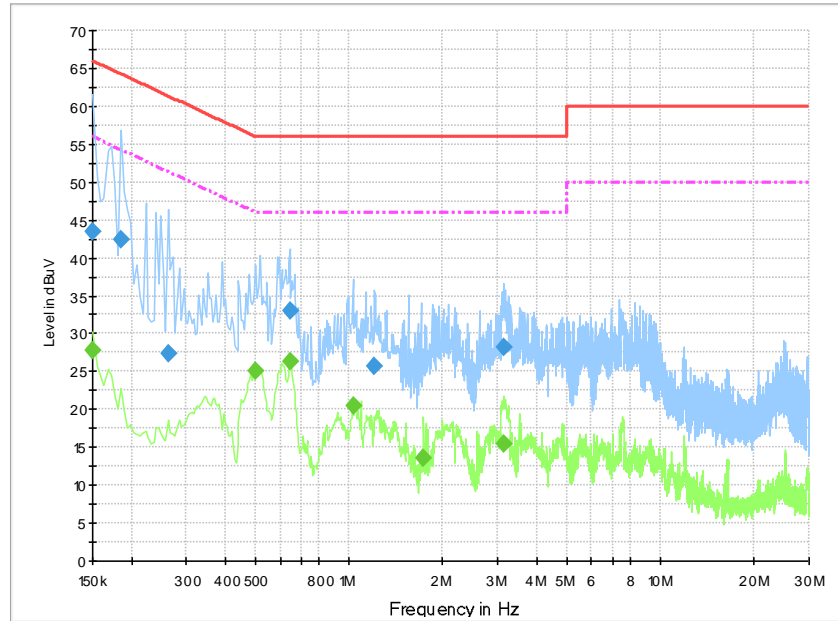


Fig. 96 AC Powerline Conducted Emission-Idle

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	43.5	10000.	9.000	On	L1	28.9	22.5	66.0	
0.186000	42.4	10000.	9.000	On	L1	22.2	21.8	64.2	
0.262500	27.5	10000.	9.000	On	L1	19.9	33.9	61.4	
0.645000	33.0	10000.	9.000	On	L1	19.9	23.0	56.0	
1.207500	25.8	10000.	9.000	On	L1	19.8	30.2	56.0	
3.147000	28.1	10000.	9.000	On	L1	19.8	27.9	56.0	

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	27.7	10000.	9.000	On	L1	28.9	28.3	56.0	
0.501000	25.2	10000.	9.000	On	L1	20.0	20.8	46.0	
0.645000	26.4	10000.	9.000	On	L1	19.9	19.6	46.0	
1.036500	20.4	10000.	9.000	On	L1	19.9	25.6	46.0	
1.738500	13.7	10000.	9.000	On	L1	19.8	32.3	46.0	
3.138000	15.6	10000.	9.000	On	L1	19.8	30.4	46.0	

ANNEX B: Accreditation Certificate

<p>United States Department of Commerce National Institute of Standards and Technology</p> 	
<hr/> <p>Certificate of Accreditation to ISO/IEC 17025:2005</p> <hr/>	
<p>NVLAP LAB CODE: 600118-0</p>	
<p>Telecommunication Technology Labs, CAICT Beijing China</p>	
<p><i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i></p>	
<p>Electromagnetic Compatibility & Telecommunications</p>	
<p><i>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).</i></p>	
<hr/> <p>2019-09-26 through 2020-09-30 <i>Effective Dates</i></p>	 <hr/> <p><i>[Signature]</i> For the National Voluntary Laboratory Accreditation Program</p>

*** END OF REPORT BODY ***