

802.11ac-HT20

Ch149

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
5650.552	45.2	-33.0	34.7	43.56	68.6	23.4	V
5651.093	45.8	-33.0	34.7	44.12	69.0	23.2	H
11490.200	50.1	-30.8	38.2	42.75	68.3	18.2	V
17234.950	54.0	-26.6	41.5	39.13	68.3	14.3	H
17748.650	55.2	-26.5	41.3	40.48	68.3	13.1	H
17974.150	56.6	-25.9	41.3	41.18	68.3	11.7	V

Ch157

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
3565.600	47.8	-35.1	33.2	49.81	68.3	20.5	H
3615.200	45.5	-35.5	33.2	47.84	68.3	22.8	V
11569.950	50.3	-30.8	38.3	42.84	68.3	18.0	H
17354.850	53.2	-26.6	41.3	38.51	68.3	15.1	V
17684.850	55.3	-26.5	41.2	40.54	68.3	13.0	V
17893.300	56.3	-26.2	41.3	41.20	68.3	12.0	V

Ch165

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
5924.494	46.3	-32.5	35.1	43.71	68.6	22.3	H
5924.897	46.2	-32.5	35.1	43.60	68.3	22.1	V
11650.250	50.9	-30.6	38.4	43.09	68.3	17.4	V
17474.750	53.8	-26.3	41.2	38.91	68.3	14.5	V
17586.400	56.0	-26.4	41.2	41.24	68.3	12.3	V
17870.750	55.9	-26.3	41.3	40.96	68.3	12.4	V

802.11ac-HT40

Ch151

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
5650.058	46.3	-33.1	34.7	44.66	68.2	21.9	H
5651.311	45.6	-33.0	34.7	43.95	69.2	23.5	H
11510.000	50.4	-30.8	38.2	43.07	68.3	17.9	V
17265.200	54.1	-26.8	41.4	39.41	68.3	14.2	H
17498.950	55.8	-26.3	41.2	40.88	68.3	12.5	V
17842.150	55.3	-26.4	41.3	40.49	68.3	13.0	H

Ch159

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
5923.862	46.8	-32.5	35.1	44.20	69.0	22.2	H
5924.253	46.5	-32.5	35.1	43.86	68.8	22.3	H
11590.850	49.5	-30.8	38.3	42.00	68.3	18.8	H
17385.100	54.2	-26.5	41.3	39.39	68.3	14.1	V
17652.950	55.4	-26.5	41.2	40.67	68.3	12.9	V
17874.600	55.0	-26.3	41.3	40.00	68.3	13.3	V

802.11ac-HT80

Ch155

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
5651.104	50.7	-33.0	34.7	49.00	69.0	18.3	H
5651.863	50.9	-33.0	34.7	49.17	69.6	18.7	H
11550.150	50.3	-30.8	38.3	42.91	68.3	18.0	V
17325.150	53.3	-26.7	41.4	38.66	68.3	15.0	V
17623.250	55.9	-26.5	41.2	41.10	68.3	12.4	H
17902.650	55.3	-26.2	41.3	40.21	68.3	13.0	V

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:

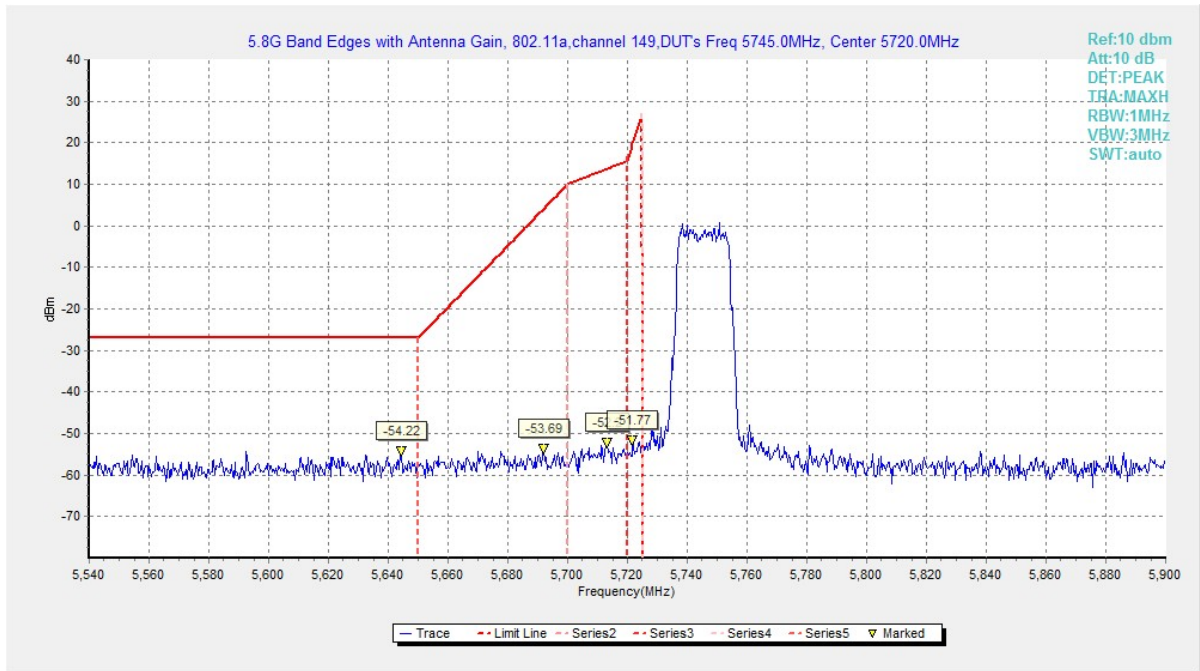


Fig. 71 Band Edges (802.11a, 5745MHz)

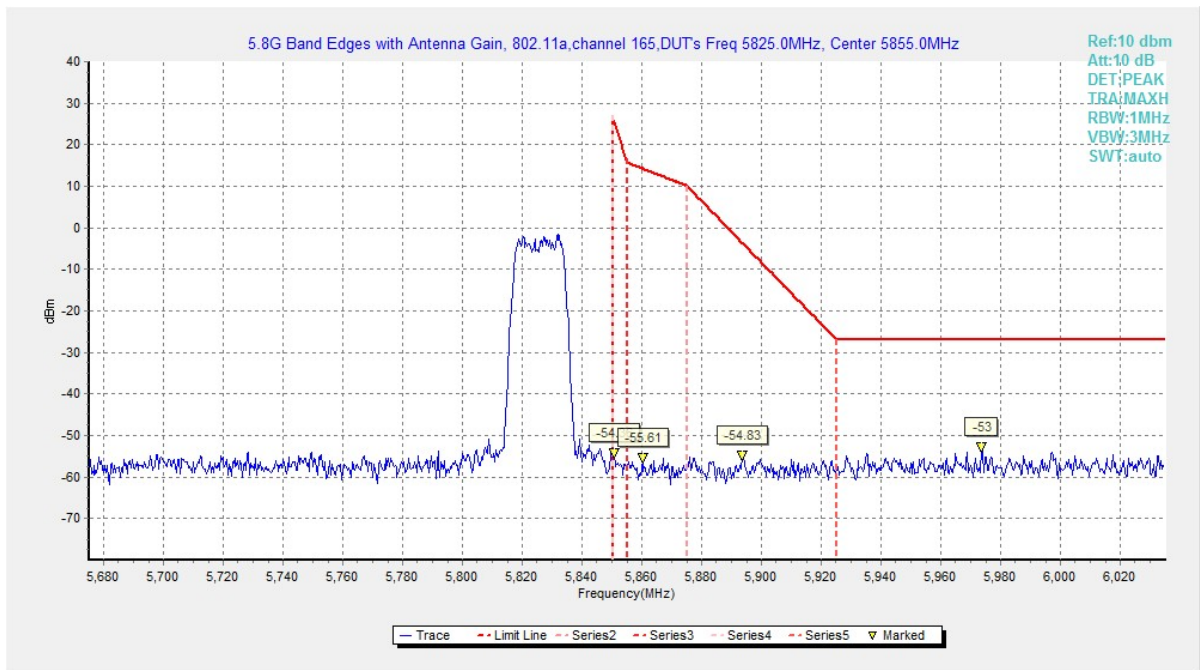


Fig. 72 Band Edges (802.11a, 5825MHz)

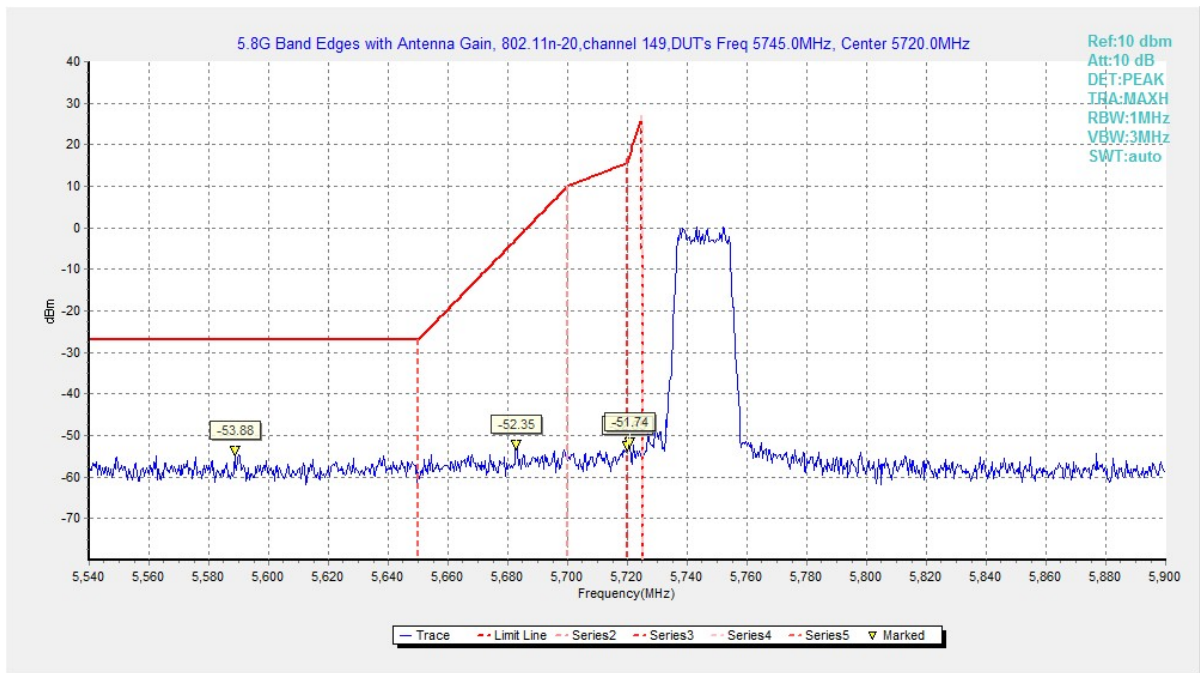


Fig. 73 Band Edges (802.11n20, 5745MHz)

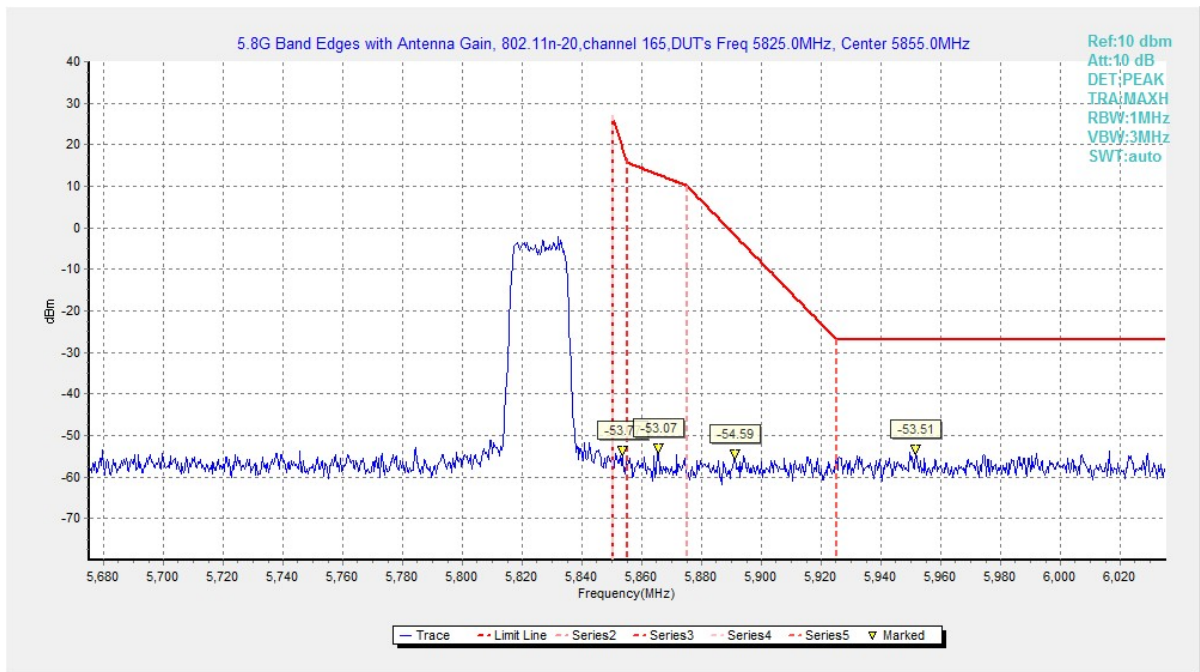


Fig. 74 Band Edges (802.11n20, 5825MHz)

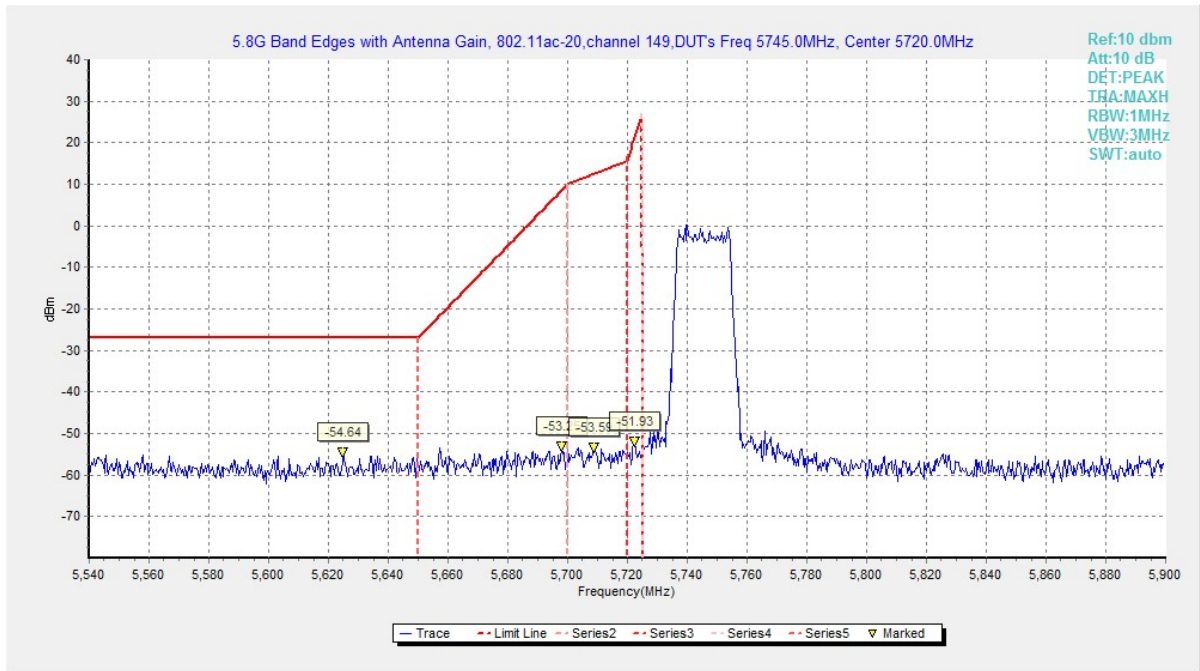


Fig. 75 Band Edges (802.11ac20, 5745MHz)

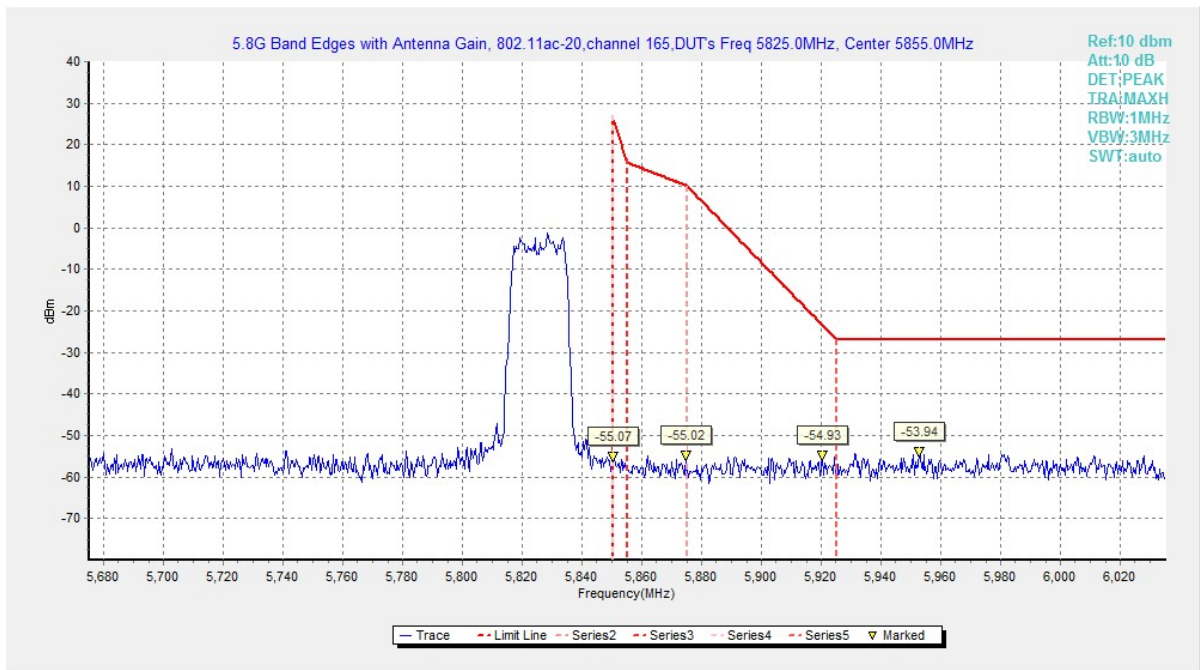


Fig. 76 Band Edges (802.11ac20, 5825MHz)

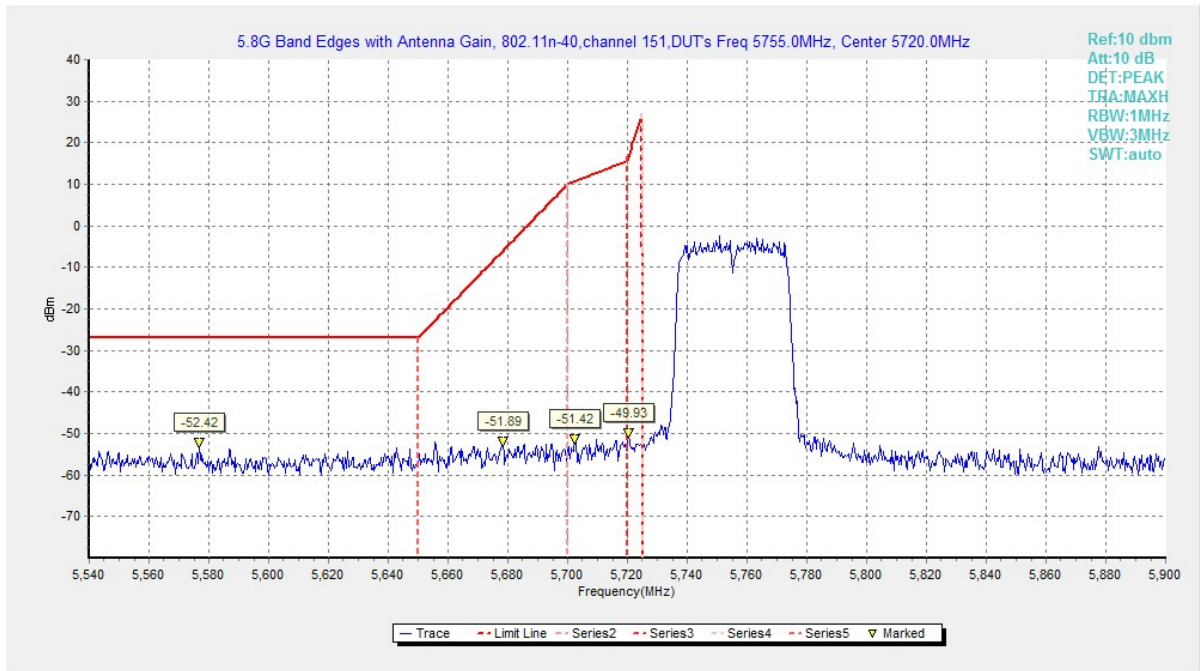


Fig. 77 Band Edges (802.11n40, 5755MHz)

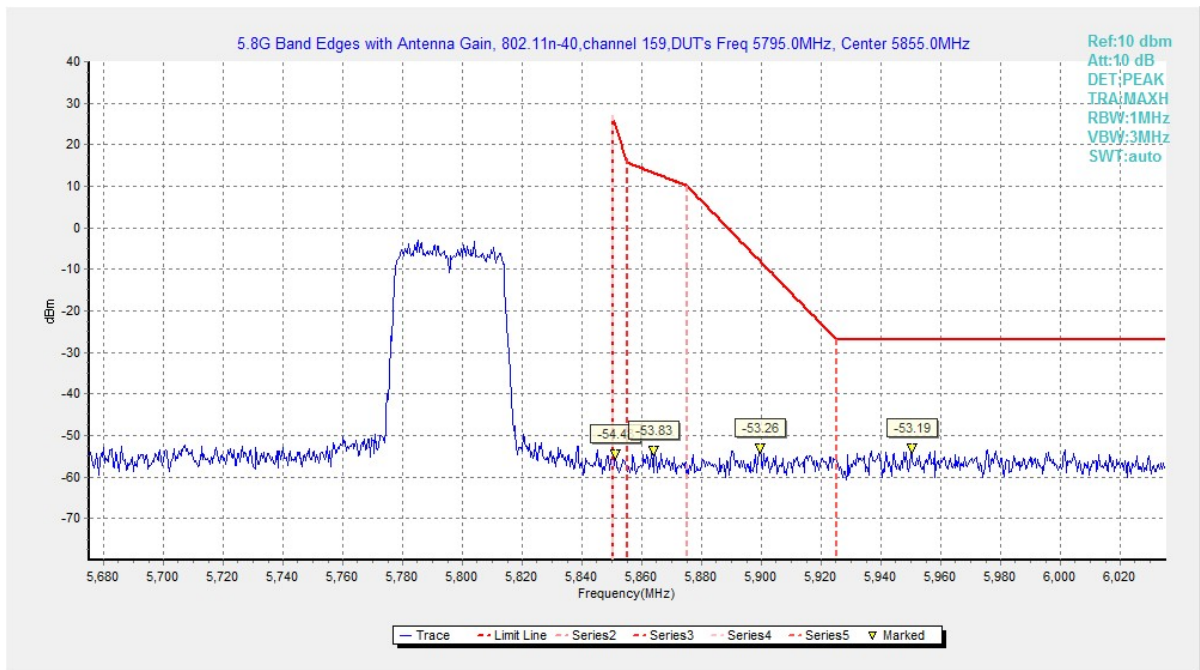


Fig. 78 Band Edges (802.11n40, 5795MHz)

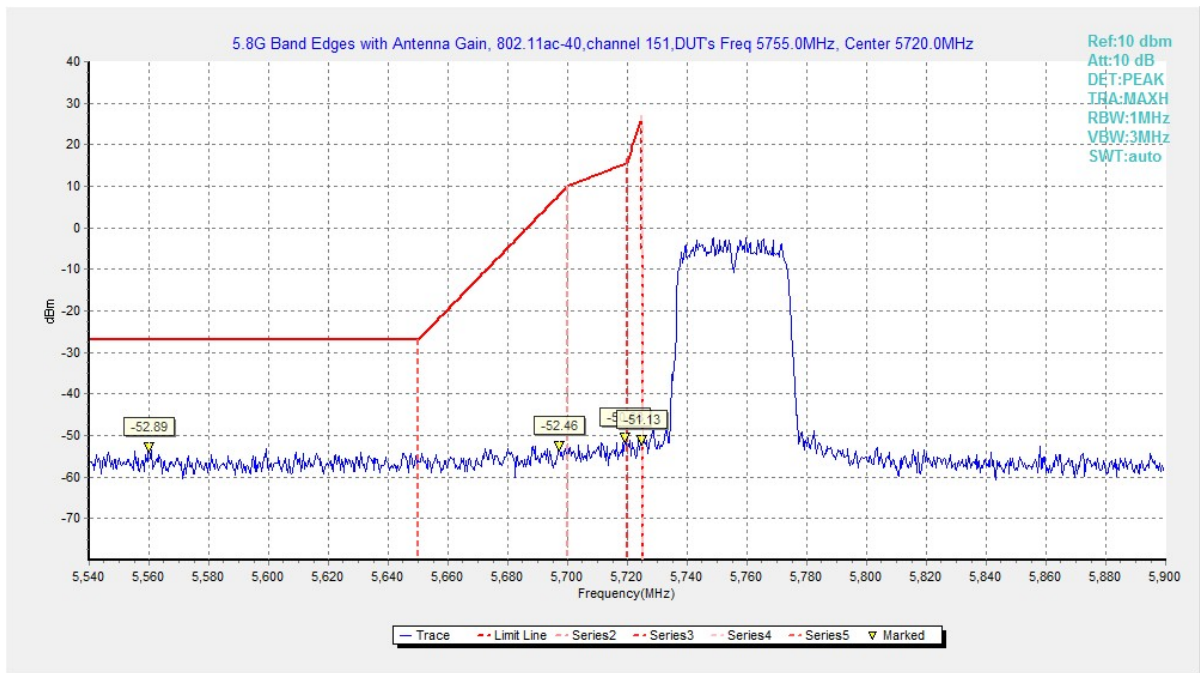


Fig. 79 Band Edges (802.11ac40, 5755MHz)

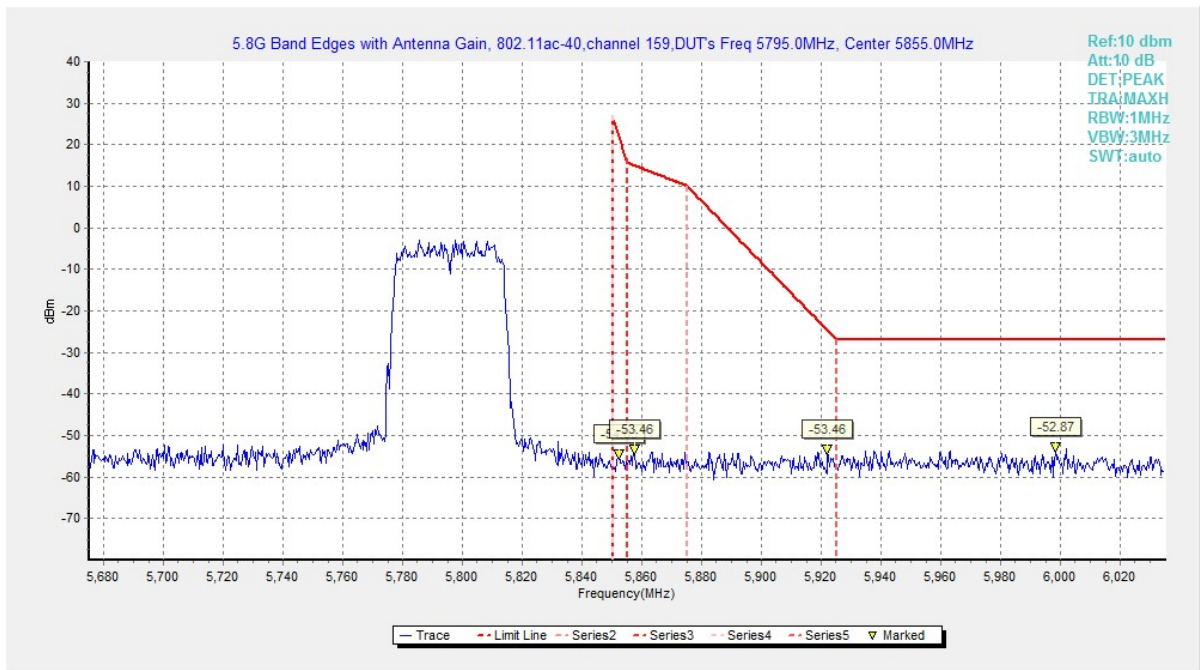


Fig. 80 Band Edges (802.11ac40, 5795MHz)

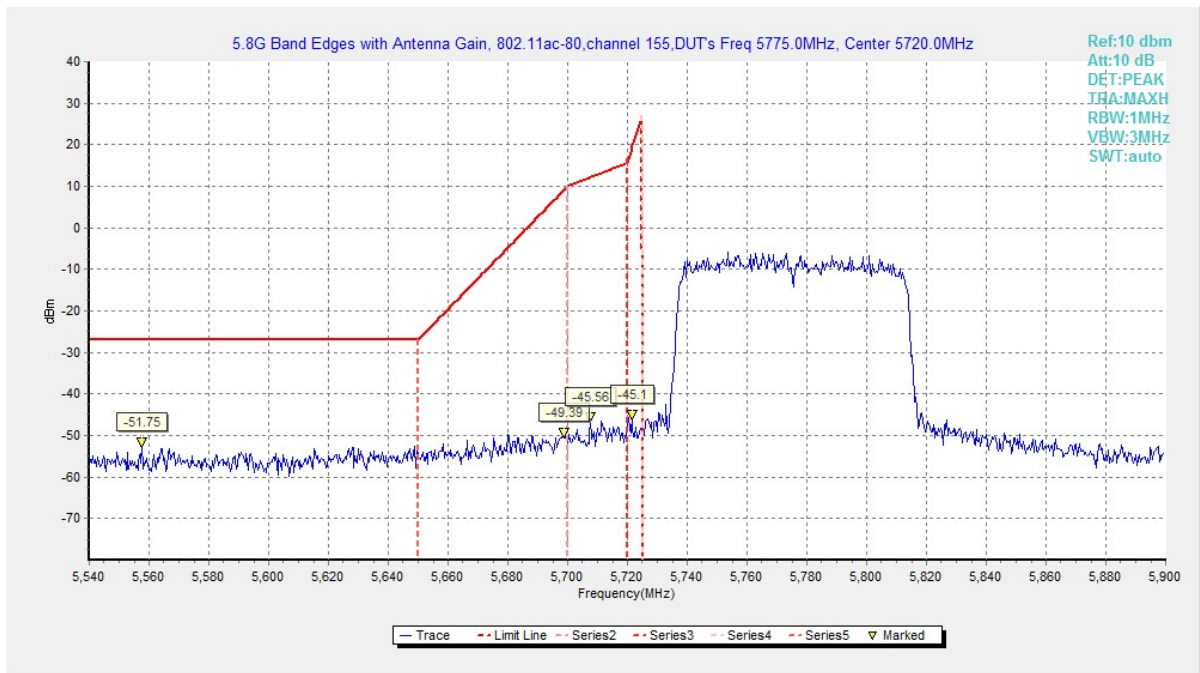


Fig. 81 Band Edges (802.11ac80, 5775MHz)

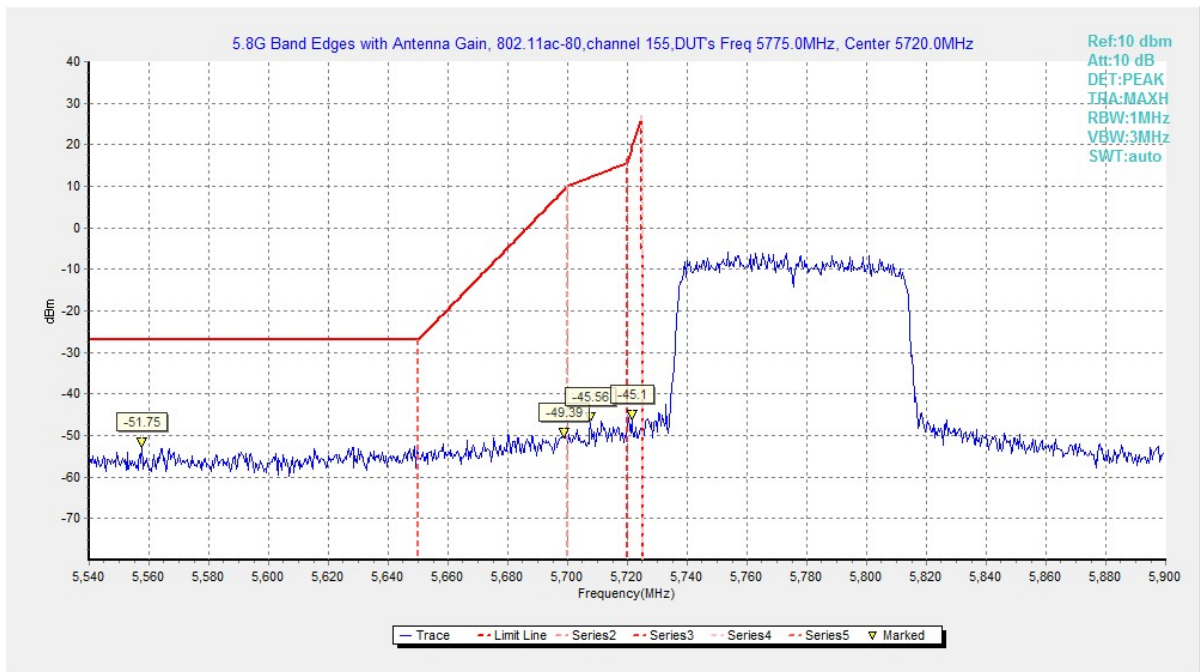


Fig. 82 Band Edges (802.11ac80, 5775MHz)

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
802.11ac-HT20	5745 MHz	Fig.86	P
	5825 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

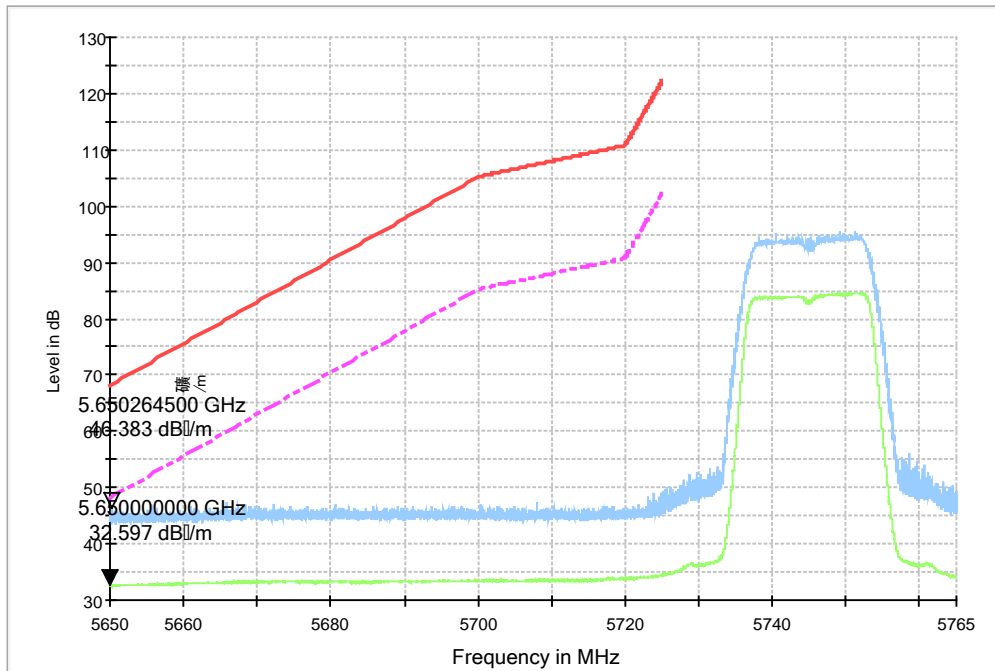


Fig. 83 Band Edges (802.11a, 5745MHz)

RE - Power-5.810GHz-5.925GHz

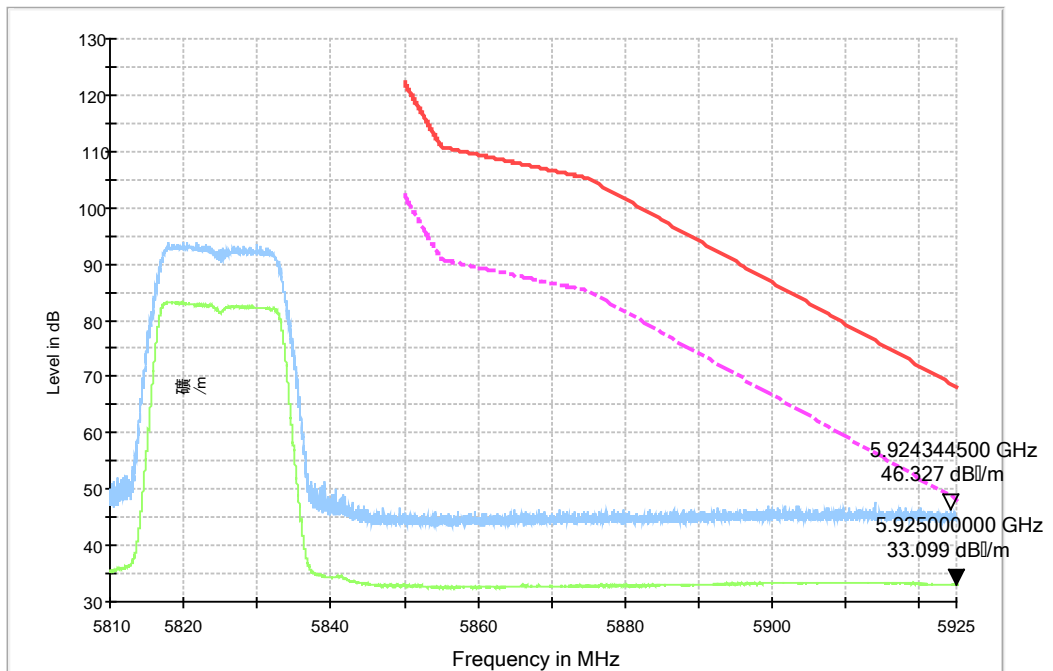


Fig. 84 Band Edges (802.11a, 5825MHz)

RE - Power-5.650GHz-5.765GHz

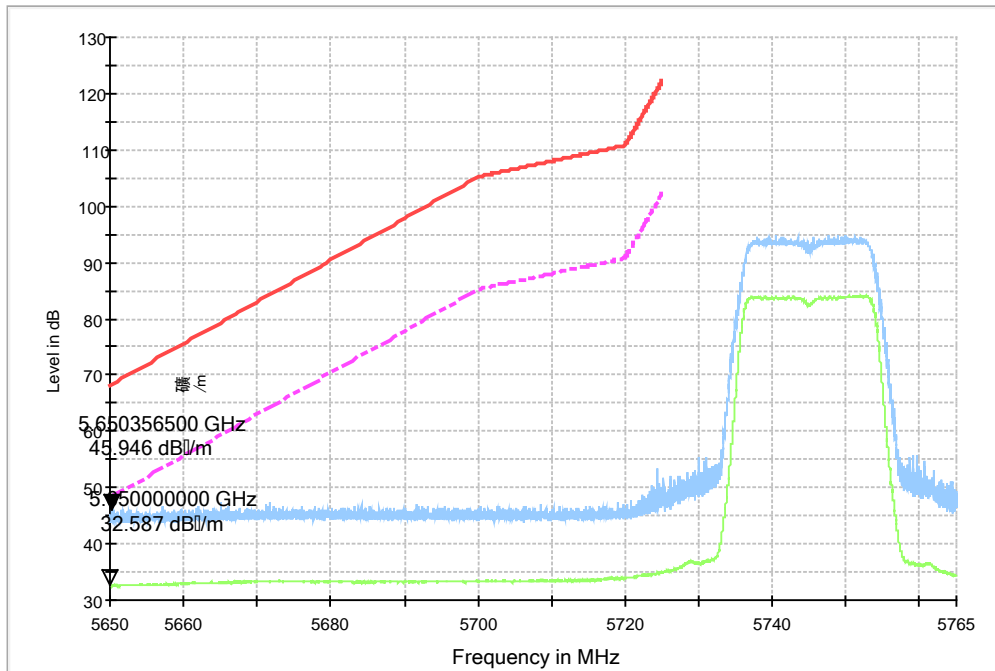


Fig. 85 Band Edges (802.11n-HT20, 5745MHz)

RE - Power-5.810GHz-5.925GHz

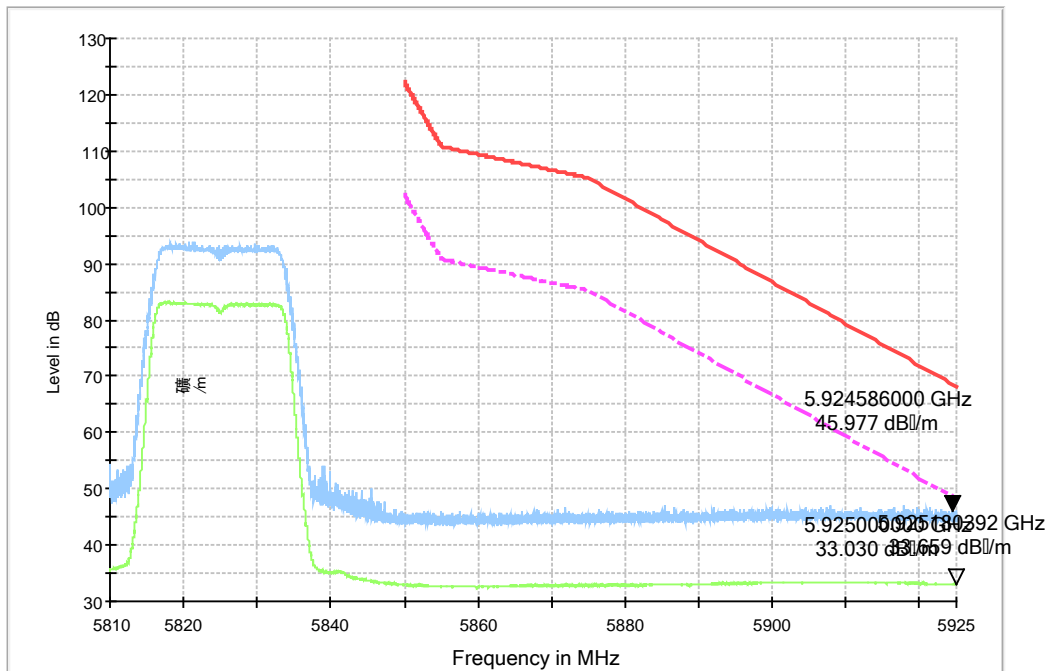


Fig. 86 Band Edges (802.11n-HT20, 5825MHz)

RE - Power-5.650GHz-5.765GHz

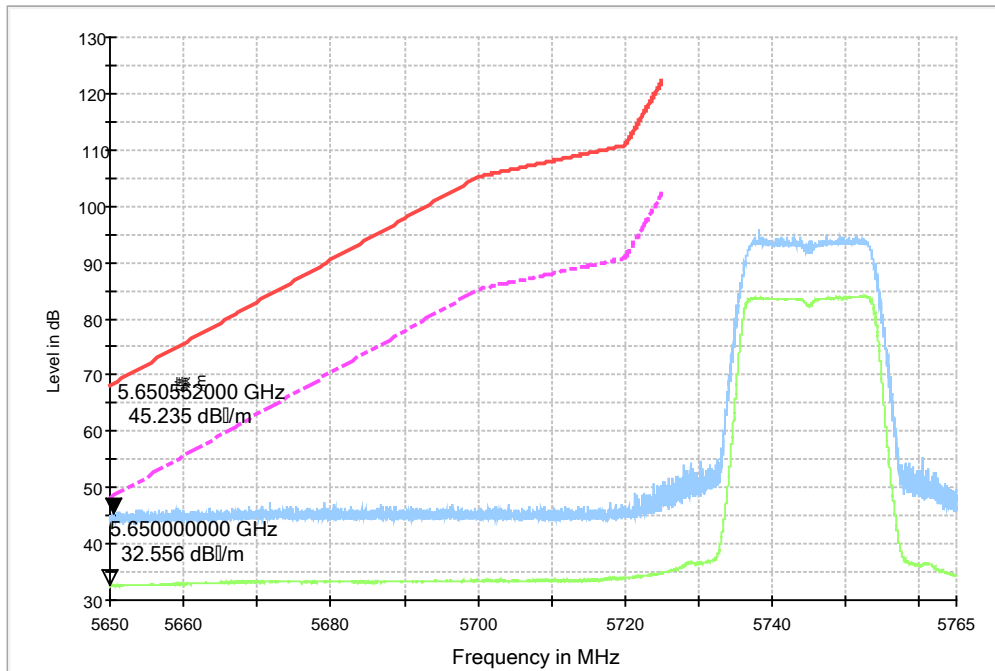


Fig. 87 Band Edges (802.11ac-HT20, 5745MHz)

RE - Power-5.810GHz-5.925GHz

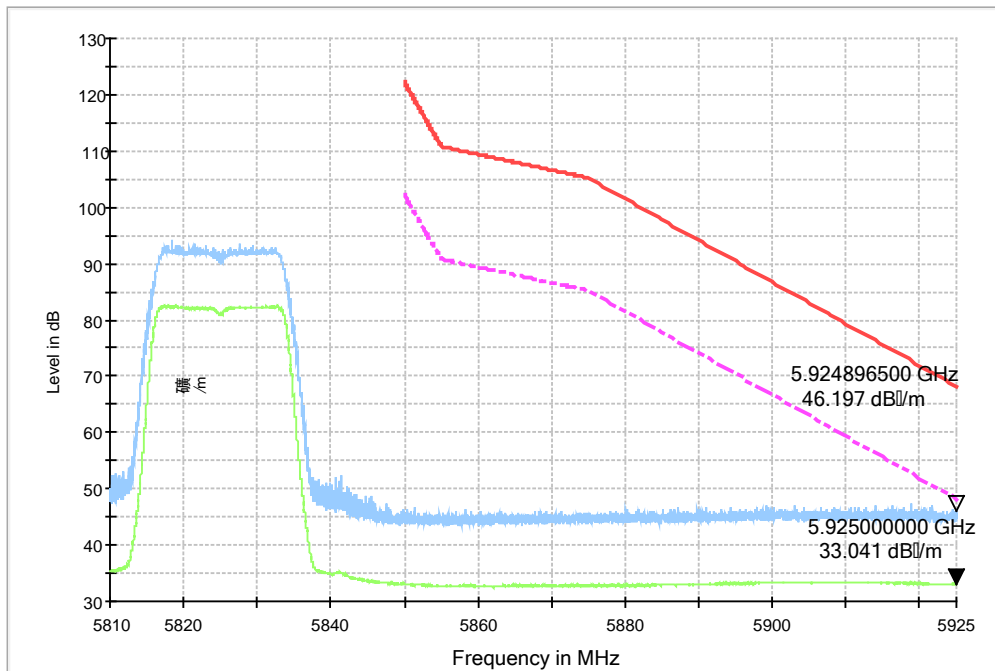


Fig. 88 Band Edges (802.11ac-HT20, 5825MHz)

RE - Power-5.650GHz-5.765GHz

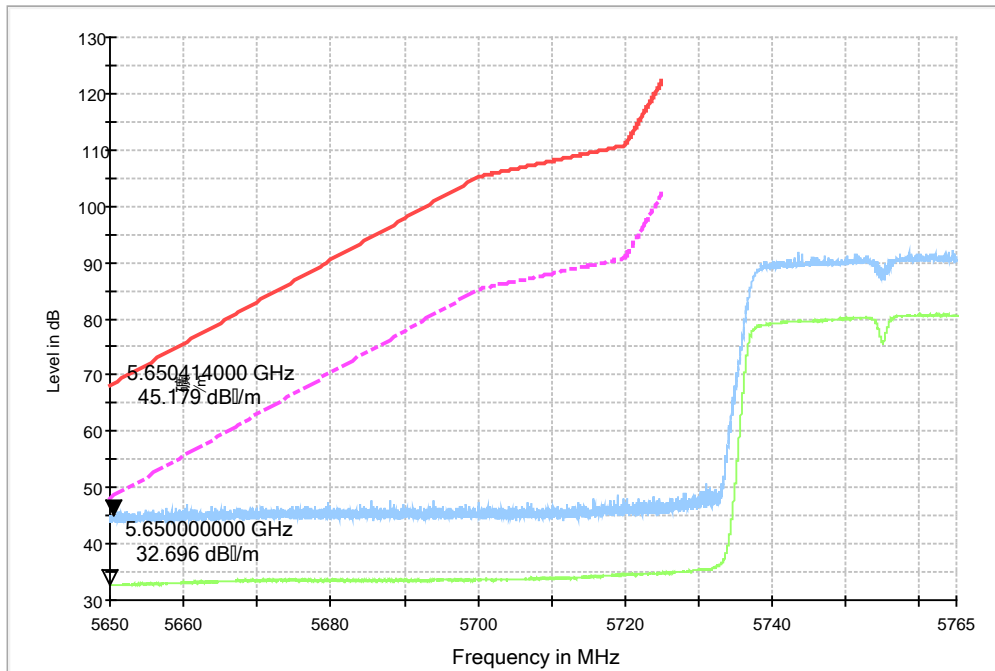


Fig. 89 Band Edges (802.11n-HT40, 5755MHz)

RE - Power-5.810GHz-5.925GHz

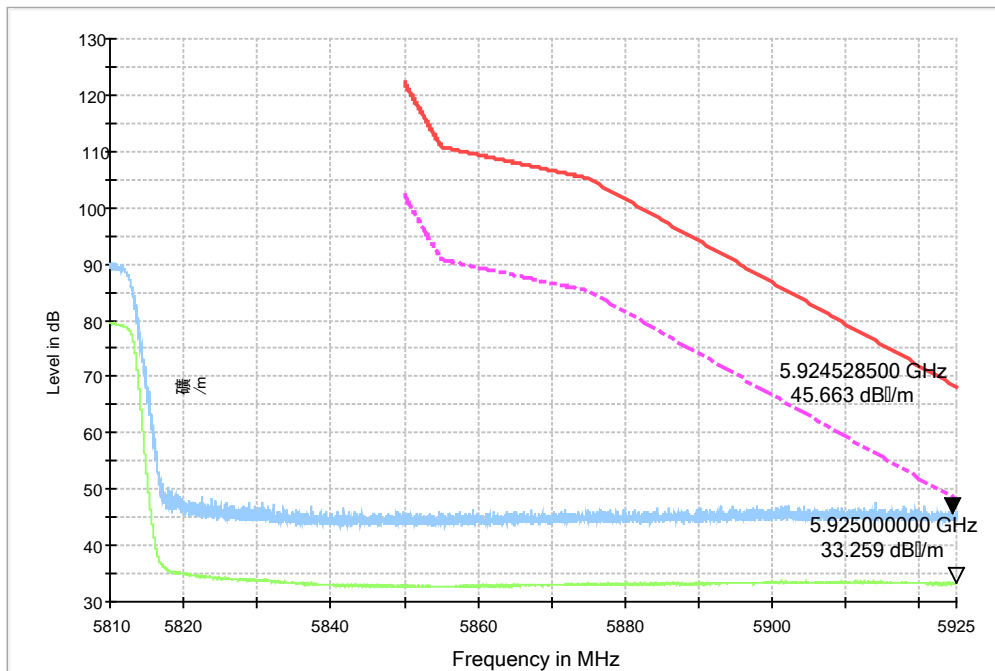


Fig. 90 Band Edges (802.11n-HT40, 5795MHz)

RE - Power-5.650GHz-5.765GHz

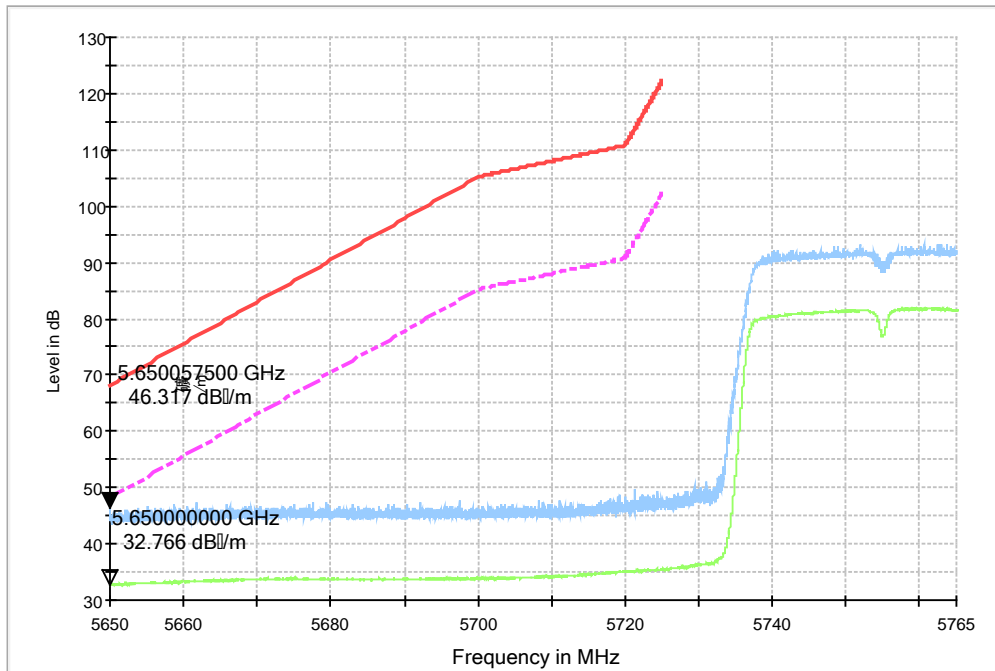


Fig. 91 Band Edges (802.11ac-HT40, 5755MHz)

RE - Power-5.810GHz-5.925GHz

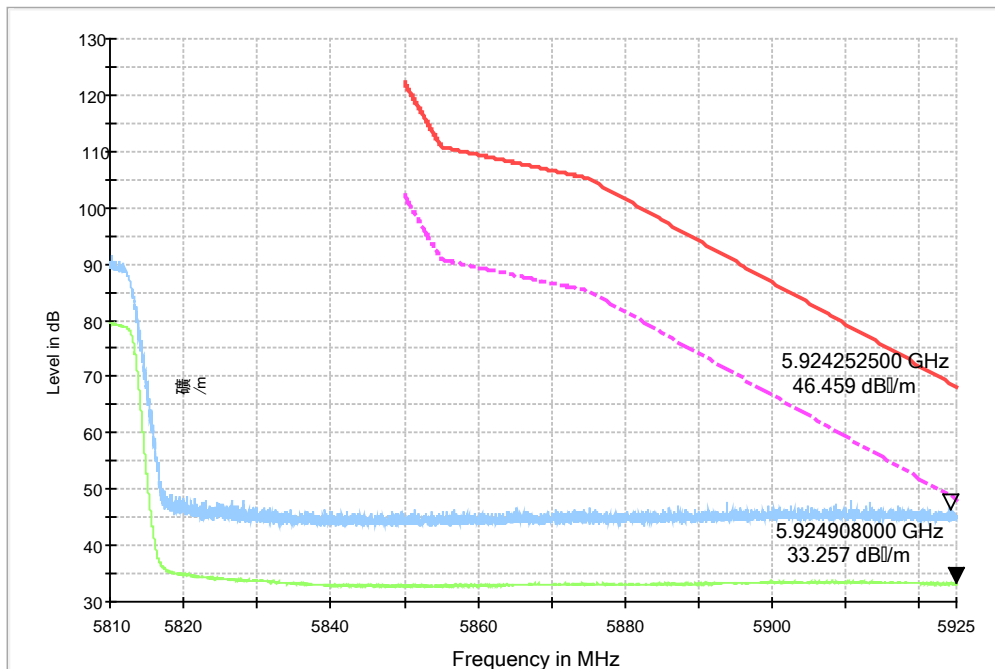


Fig. 92 Band Edges (802.11ac-HT40, 5795MHz)

RE - Power-5.650GHz-5.765GHz

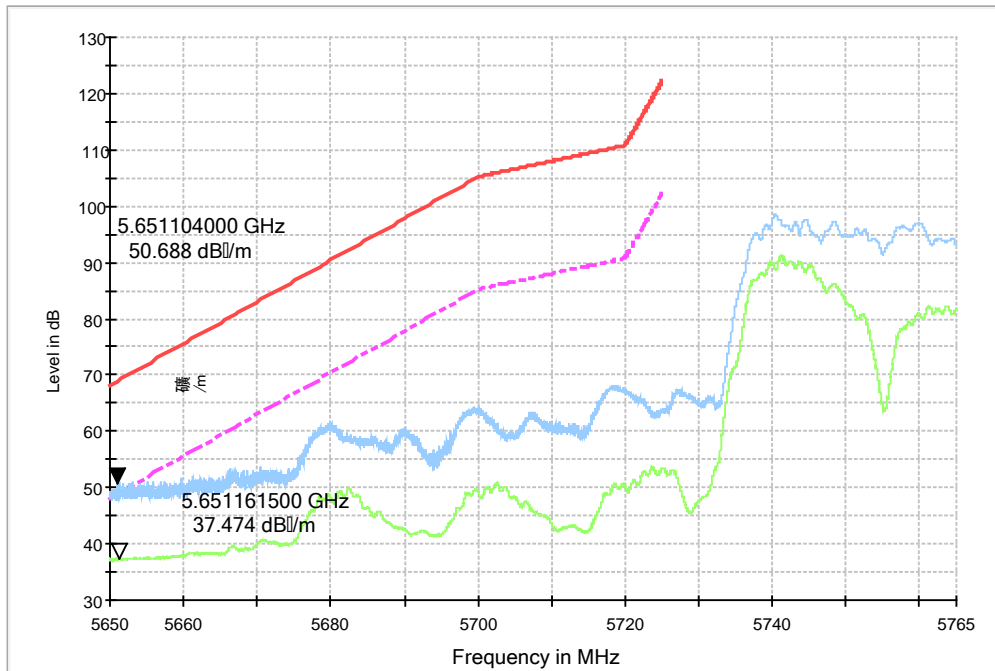


Fig. 93 Band Edges (802.11ac-HT80, 5775MHz)

RE - Power-5.810GHz-5.925GHz

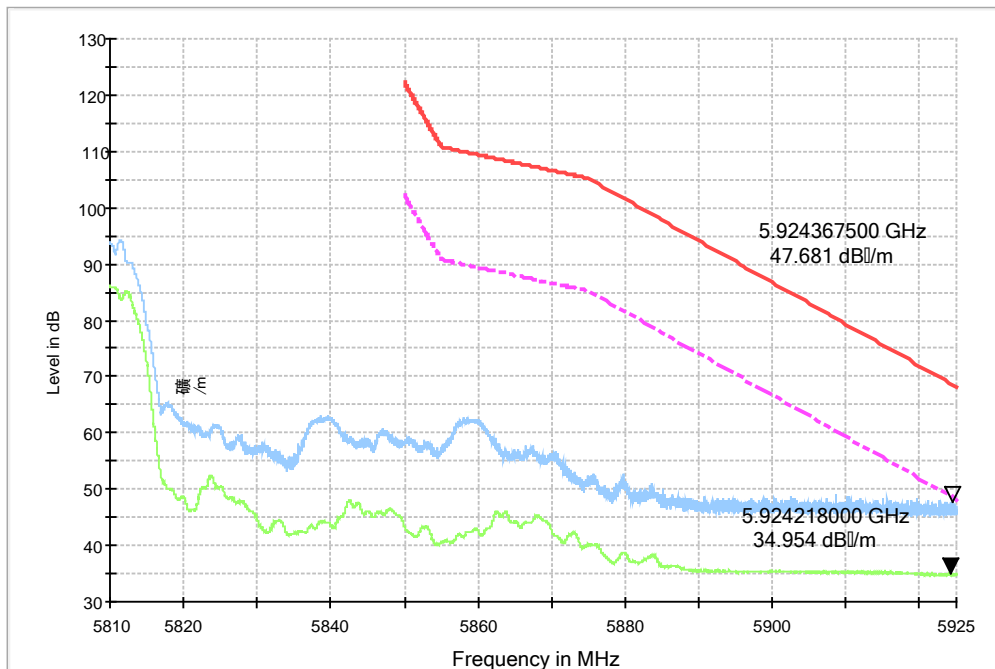


Fig. 94 Band Edges (802.11ac-HT80, 5775MHz)

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:

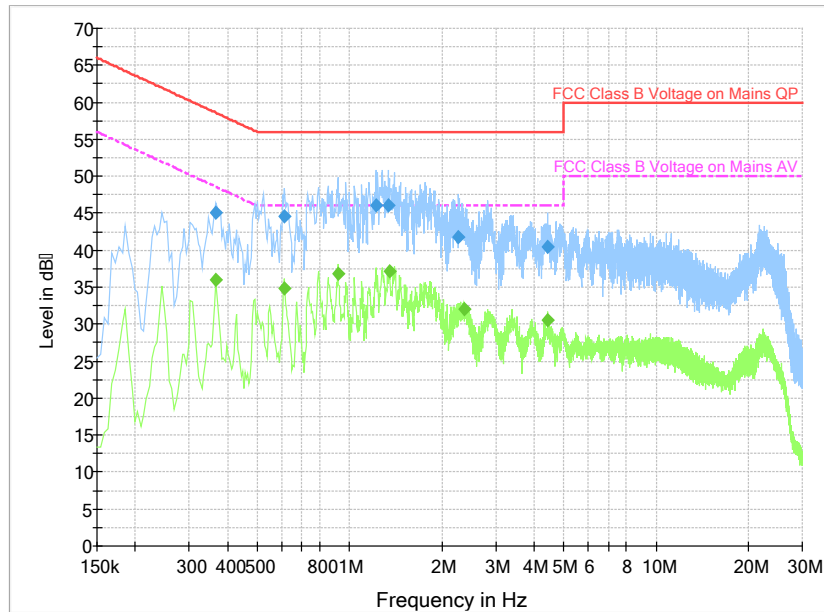


Fig. 95 AC Powerline Conducted Emission-802.11a

Measurement Result 1:

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.366000	45.1	2000.0	9.000	On	L1	19.8	13.5	58.6
0.613500	44.7	2000.0	9.000	On	L1	19.8	11.3	56.0
1.216500	46.1	2000.0	9.000	On	L1	19.6	9.9	56.0
1.338000	46.1	2000.0	9.000	On	L1	19.6	9.9	56.0
2.269500	41.7	2000.0	9.000	On	L1	19.7	14.3	56.0
4.420500	40.4	2000.0	9.000	On	L1	19.6	15.6	56.0

Measurement Result 2:

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.366000	36.0	2000.0	9.000	On	L1	19.8	12.6	48.6
0.613500	34.9	2000.0	9.000	On	L1	19.8	11.1	46.0
0.915000	36.8	2000.0	9.000	On	L1	19.7	9.2	46.0
1.347000	37.2	2000.0	9.000	On	L1	19.6	8.8	46.0
2.364000	32.0	2000.0	9.000	On	L1	19.7	14.0	46.0
4.420500	30.6	2000.0	9.000	On	L1	19.6	15.4	46.0

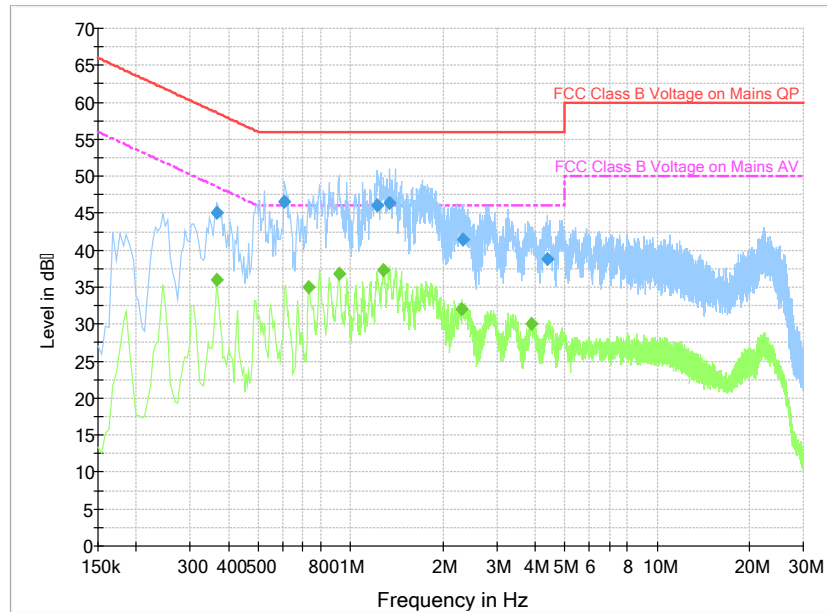


Fig. 96 AC Powerline Conducted Emission-Idle

Measurement Result 1:

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.366000	45.1	2000.0	9.000	On	L1	19.8	13.5	58.6
0.609000	46.5	2000.0	9.000	On	L1	19.8	9.5	56.0
1.216500	46.1	2000.0	9.000	On	L1	19.6	9.9	56.0
1.342500	46.4	2000.0	9.000	On	L1	19.6	9.6	56.0
2.328000	41.5	2000.0	9.000	On	L1	19.7	14.5	56.0
4.398000	38.9	2000.0	9.000	On	L1	19.6	17.1	56.0

Measurement Result 2:

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.366000	35.9	2000.0	9.000	On	L1	19.8	12.6	48.6
0.730500	35.0	2000.0	9.000	On	L1	19.8	11.0	46.0
0.915000	36.9	2000.0	9.000	On	L1	19.7	9.1	46.0
1.284000	37.4	2000.0	9.000	On	L1	19.6	8.6	46.0
2.305500	32.1	2000.0	9.000	On	L1	19.7	13.9	46.0
3.880500	30.1	2000.0	9.000	On	L1	19.6	15.9	46.0

ANNEX B: Accreditation Certificate

United States Department of Commerce
National Institute of Standards and Technology

NVLAP[®]

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 600118-0


Telecommunication Technology Labs, CAICT
Beijing
China


*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

Electromagnetic Compatibility & Telecommunications

*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).*

2018-09-28 through 2019-09-30
Effective Dates




For the National Voluntary Laboratory Accreditation Program

*** END OF REPORT BODY ***