

Fig. 39 Conducted Spurious Emission (802.11n-HT40, Ch159, 12 GHz-25 GHz)

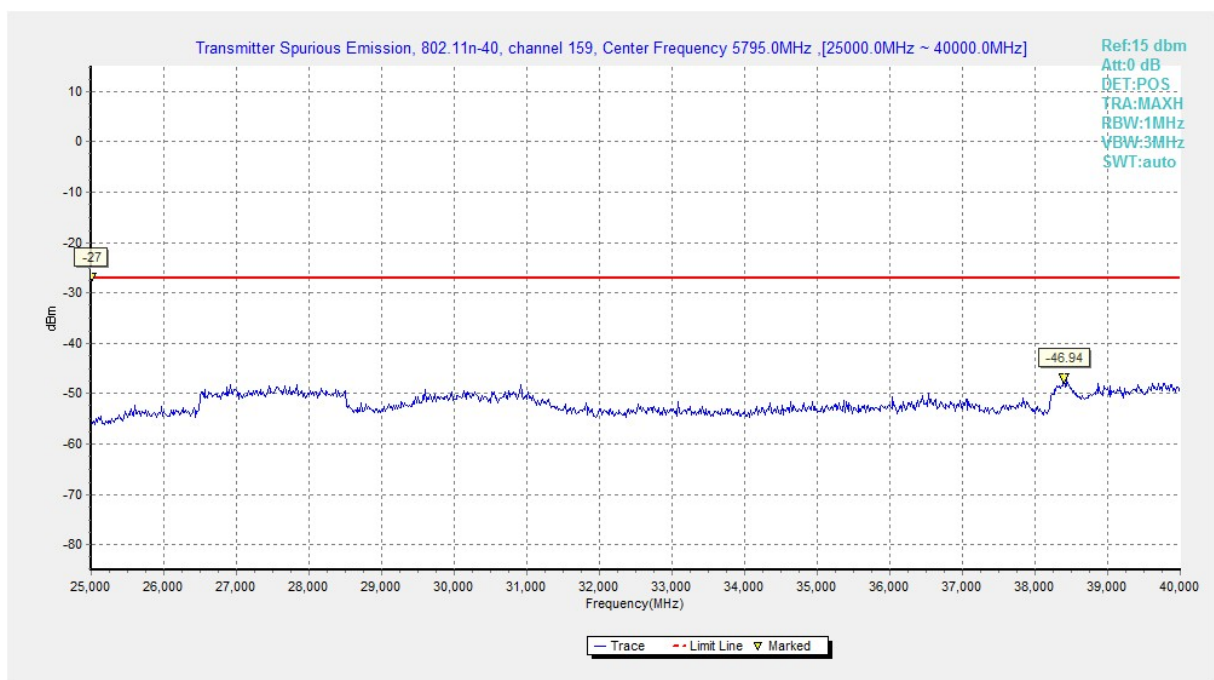


Fig. 40 Conducted Spurious Emission (802.11n-HT40, Ch159, 25 GHz-40 GHz)

A.5.2 Transmitter Spurious Emission - Radiated

Measurement Uncertainty:

Frequency Range	Uncertainty(dB)
$f \leq 1\text{GHz}$	3.9
$f > 1\text{GHz}$	4.3

Measurement Results:

802.11a mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	149	1 GHz ~ 6 GHz	Fig.41	P
		6 GHz ~ 18 GHz	Fig.42	P
	157	30 MHz ~1 GHz	Fig.43	P
		1 GHz ~ 6 GHz	Fig.44	P
		6 GHz ~ 18 GHz	Fig.45	P
		18 GHz ~ 26.5 GHz	Fig.46	P
		26.5 GHz~ 40 GHz	Fig.47	P
	165	1 GHz ~ 6 GHz	Fig.48	P
		6 GHz ~ 18 GHz	Fig.49	P

802.11n-HT20 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	149	1 GHz ~ 6 GHz	Fig.50	P
		6 GHz ~ 18 GHz	Fig.51	P
	157	30 MHz ~1 GHz	Fig.52	P
		1 GHz ~ 6 GHz	Fig.53	P
		6 GHz ~ 18 GHz	Fig.54	P
		18 GHz ~ 26.5 GHz	Fig.55	P
		26.5 GHz~ 40 GHz	Fig.56	P
	165	1 GHz ~ 6 GHz	Fig.57	P
		6 GHz ~ 18 GHz	Fig.58	P

802.11n-HT40 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT40)	151	30 MHz ~1 GHz	Fig.59	P
		1 GHz ~ 6 GHz	Fig.60	P
		6 GHz ~ 18 GHz	Fig.61	P
		18 GHz ~ 26.5 GHz	Fig.62	P
		26.5 GHz~ 40 GHz	Fig.63	P
	159	1 GHz ~ 6 GHz	Fig.64	P
		6 GHz ~ 18 GHz	Fig.65	P

Conclusion: PASS

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

P_{Mea} is the field strength recorded from the instrument.

802.11a
Ch149

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
5723.880	63.7	-33.8	35.1	62.4	V
17912.400	63.5	-18.5	45.6	36.4	V
17921.200	63.0	-17.7	45.6	35.1	V
11495.200	62.9	-22.7	39.0	46.6	V
17914.400	62.9	-17.7	45.6	35.0	H
17981.600	62.8	-17.7	45.6	34.9	V

Ch157

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
11568.800	63.7	-22.7	39.6	46.8	H
17995.200	63.6	-17.7	45.6	35.7	V
17972.800	62.9	-17.7	45.6	35.0	V
17911.200	62.8	-18.5	45.6	35.7	V
17964.000	62.7	-17.7	45.6	34.8	H
17984.800	62.7	-17.7	45.6	34.8	H

Ch165

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
5850.192	69.7	-33.8	35.1	68.4	V
17979.200	63.7	-17.7	45.6	35.8	V
17909.200	63.1	-18.5	45.6	36.0	H
17986.000	62.8	-17.7	45.6	34.9	V
17782.000	62.8	-18.5	45.6	35.7	H
17933.200	62.7	-17.7	45.6	34.8	V

802.11n-HT20

Ch149

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
5725.024	71.4	-33.8	35.1	70.1	V
17896.000	63.8	-18.5	45.6	36.7	V
17962.400	63.5	-17.7	45.6	35.6	H
17927.200	63.4	-17.7	45.6	35.5	V
17975.200	63.1	-17.7	45.6	35.2	V
11492.800	63.0	-22.7	39.0	46.7	H

Ch157

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
11570.000	63.9	-22.7	39.6	47.0	H
17948.400	63.3	-17.7	45.6	35.4	V
17882.000	63.2	-18.5	45.6	36.1	H
17912.400	63.1	-18.5	45.6	36.0	V
17921.200	63.0	-17.7	45.6	35.1	V
17819.200	62.9	-18.5	45.6	35.8	V

Ch165

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
5850.408	61.2	-33.8	35.1	59.9	H
17979.200	63.7	-17.7	45.6	35.8	V
17909.200	63.1	-18.5	45.6	36.0	H
17986.000	62.8	-17.7	45.6	34.9	V
17782.000	62.8	-18.5	45.6	35.7	H
17933.200	62.7	-17.7	45.6	34.8	V

802.11n-HT40

Ch151

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
5724.216	69.8	-33.8	35.1	68.5	H
17995.200	63.0	-17.7	45.6	35.1	V
17898.000	62.7	-18.5	45.6	35.6	V
17698.400	62.7	-18.9	45.6	36.0	H
11571.200	62.6	-22.7	39.6	45.7	V
17702.800	62.6	-18.9	45.6	35.9	V

Ch159

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
5857.616	59.6	-33.8	35.1	58.3	H
17966.800	63.9	-17.7	45.6	36.0	V
11566.400	63.8	-22.7	39.6	46.9	V
17974.000	63.5	-17.7	45.6	35.6	V
17988.800	63.3	-17.7	45.6	35.4	H
17964.000	63.2	-17.7	45.6	35.3	H

Test graphs as below:

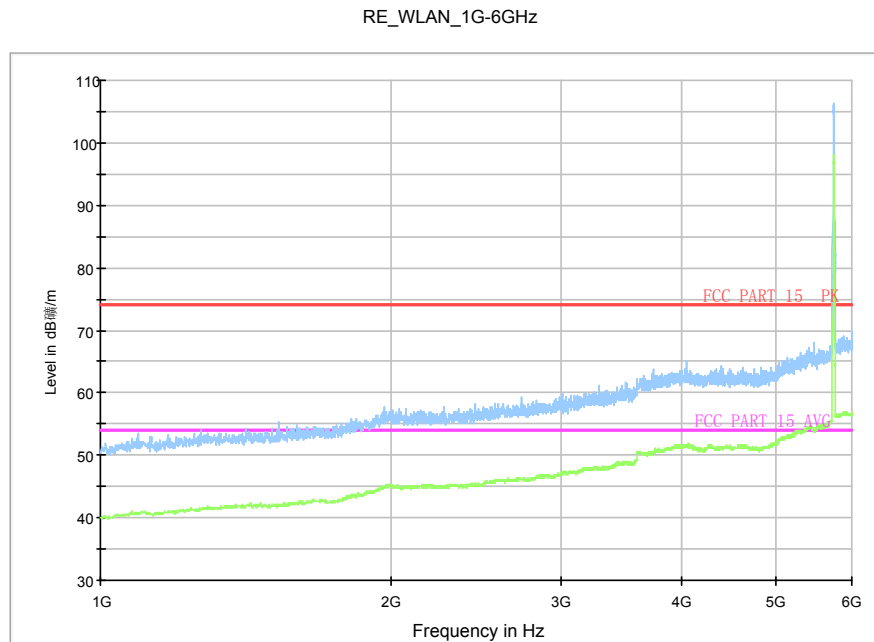


Fig. 41 Radiated Spurious Emission (802.11a, Ch149, 1 GHz-6 GHz)

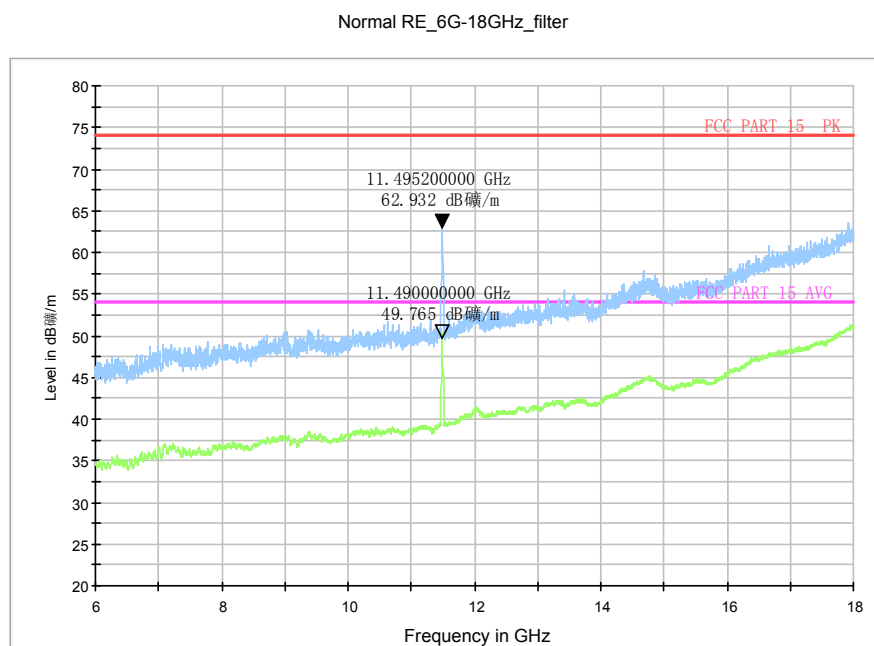


Fig. 42 Radiated Spurious Emission (802.11a, Ch149, 6 GHz-18 GHz)

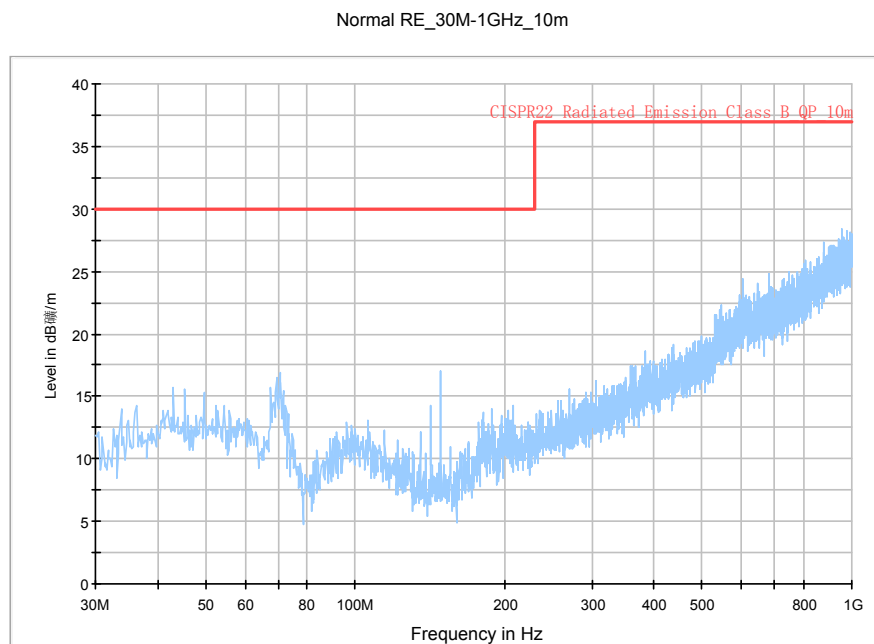


Fig. 43 Radiated Spurious Emission (802.11a, Ch157, 30 MHz-1 GHz)

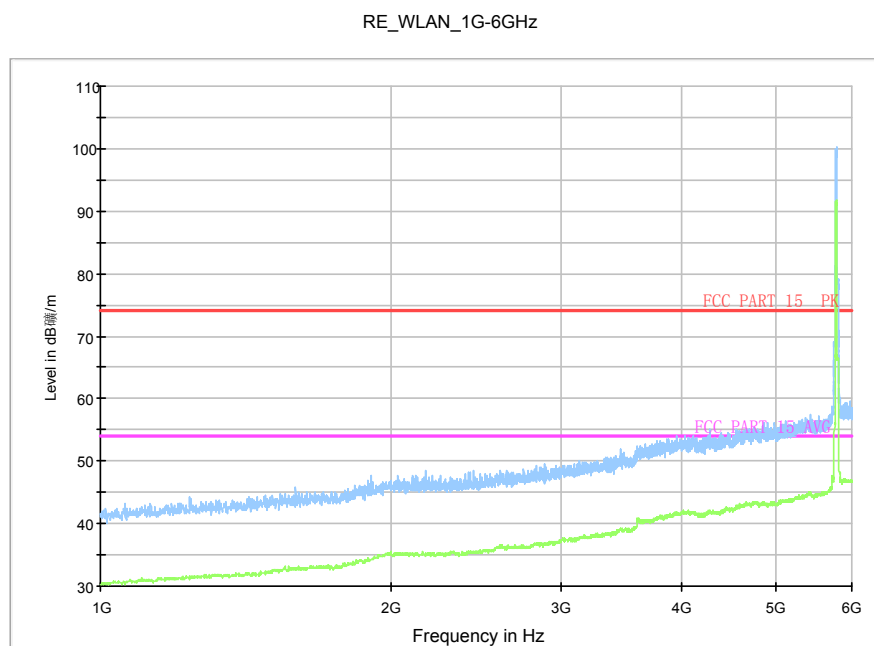


Fig. 44 Radiated Spurious Emission (802.11a, Ch157, 1 GHz-6 GHz)

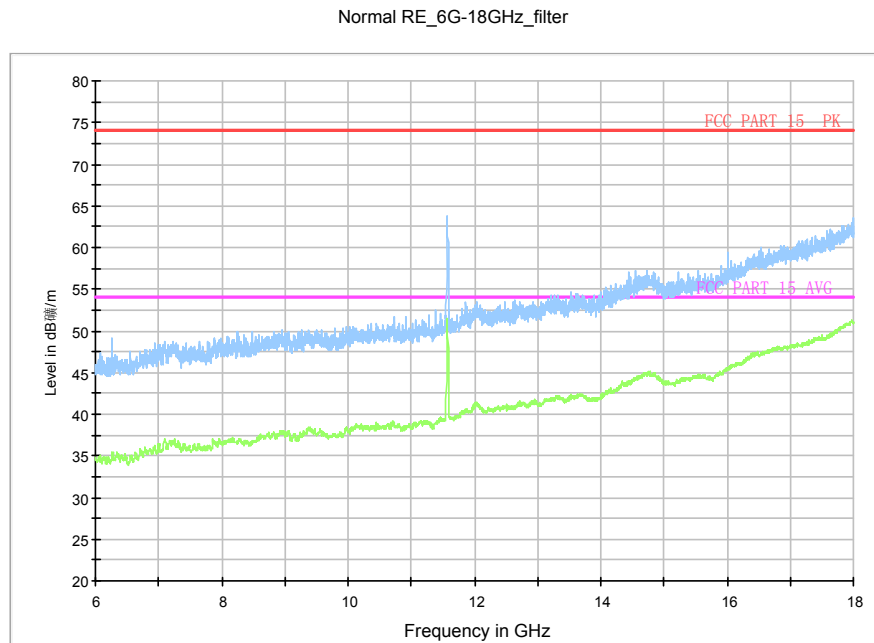


Fig. 45 Radiated Spurious Emission (802.11a, Ch157, 6 GHz-18 GHz)

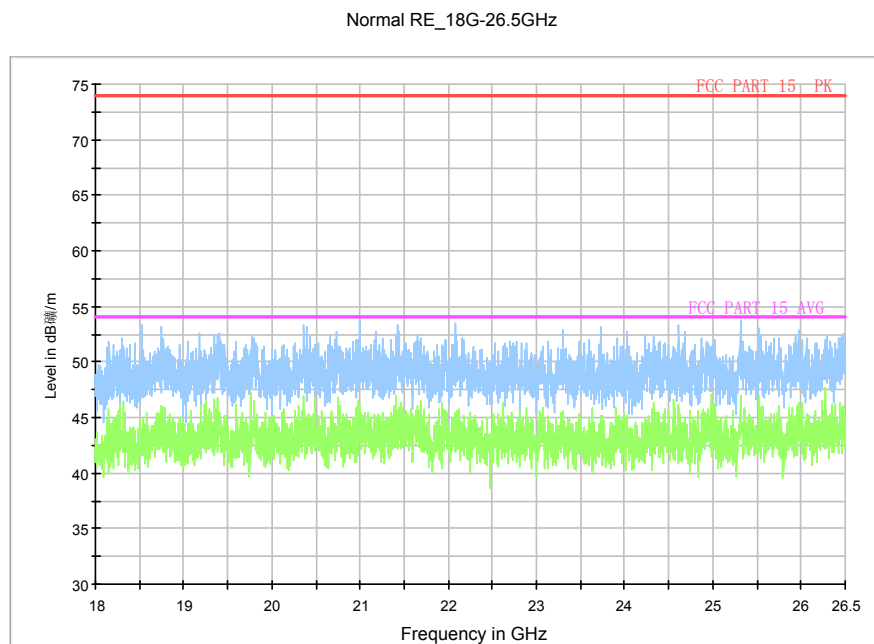


Fig. 46 Radiated Spurious Emission (802.11a, Ch157, 18 GHz-26.5 GHz)

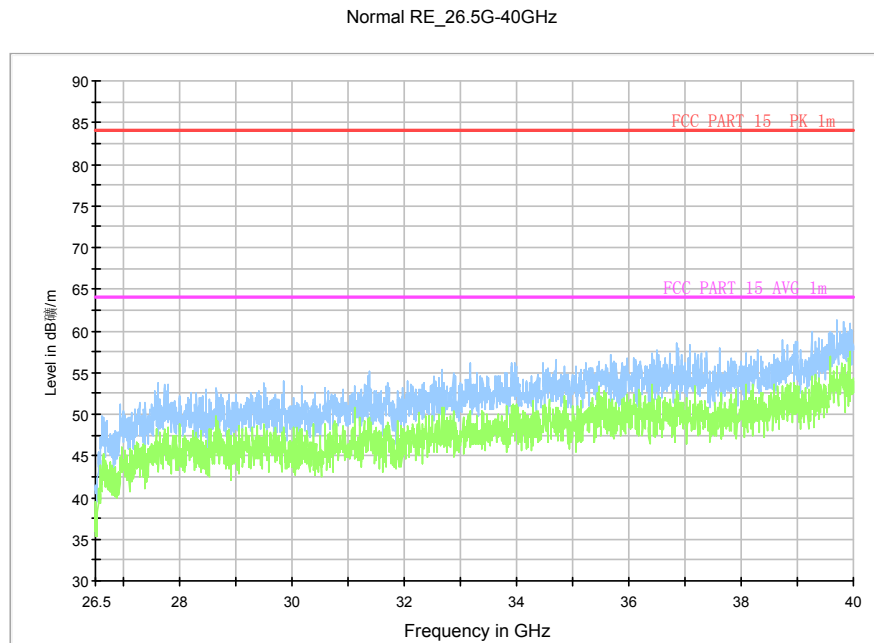


Fig. 47 Radiated emission: 802.11n, (802.11a, Ch157, 26.5 GHz - 40 GHz)

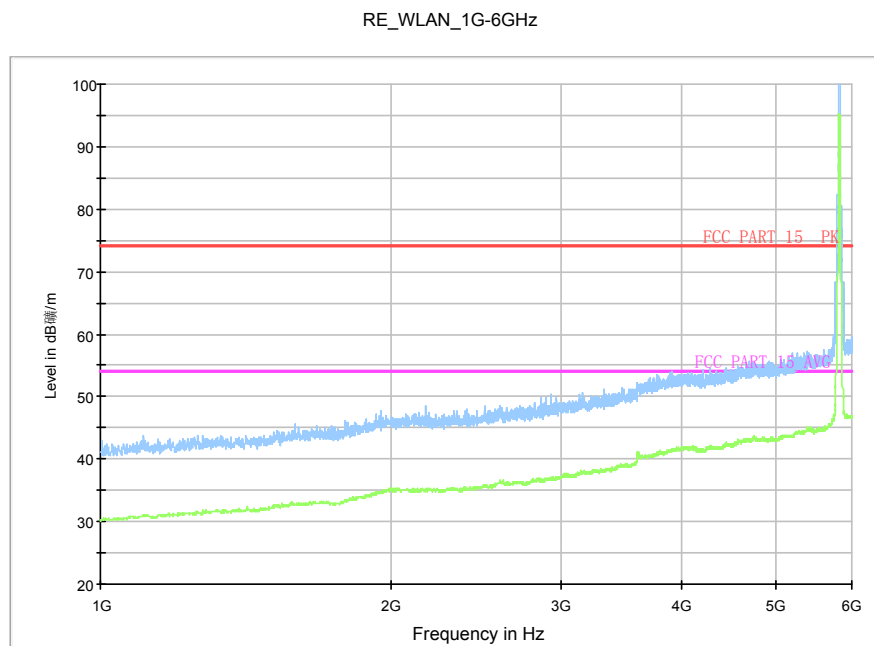


Fig. 48 Radiated Spurious Emission (802.11a, Ch165, 1 GHz-6 GHz)

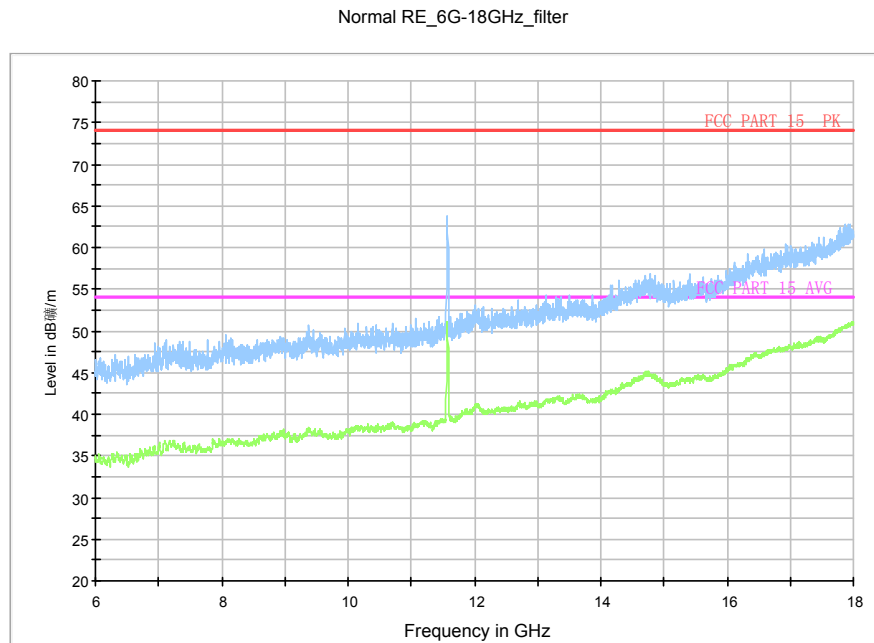


Fig. 49 Radiated Spurious Emission (802.11a, Ch165, 6 GHz-18 GHz)

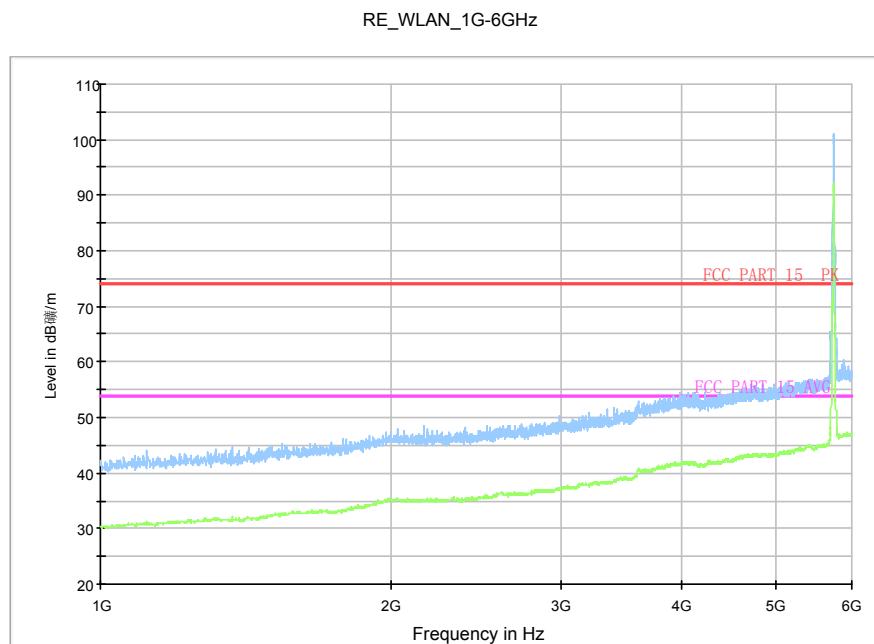


Fig. 50 Radiated Spurious Emission (802.11n-HT20, Ch149, 1 GHz-6 GHz)

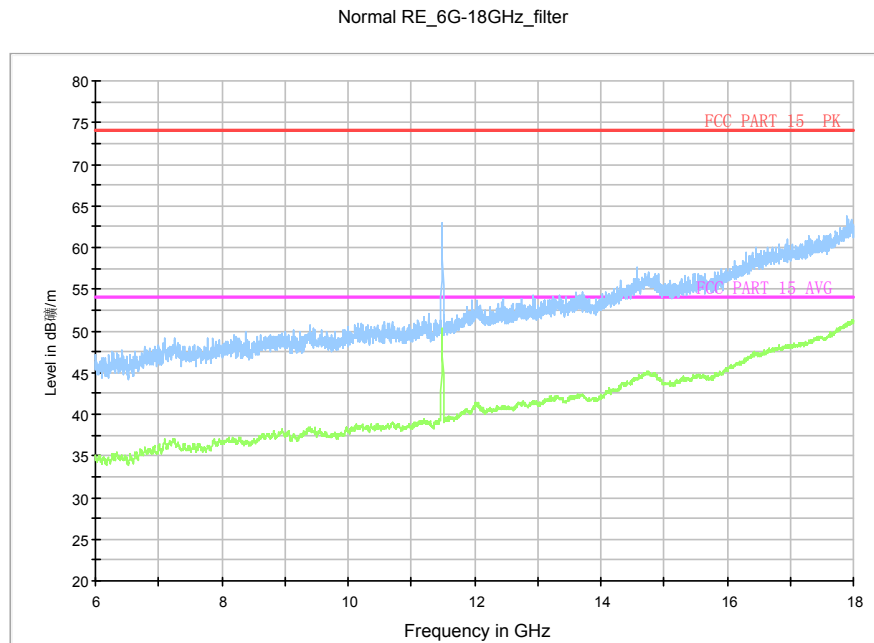


Fig. 51 Radiated Spurious Emission (802.11n-HT20, Ch149, 6 GHz-18 GHz)

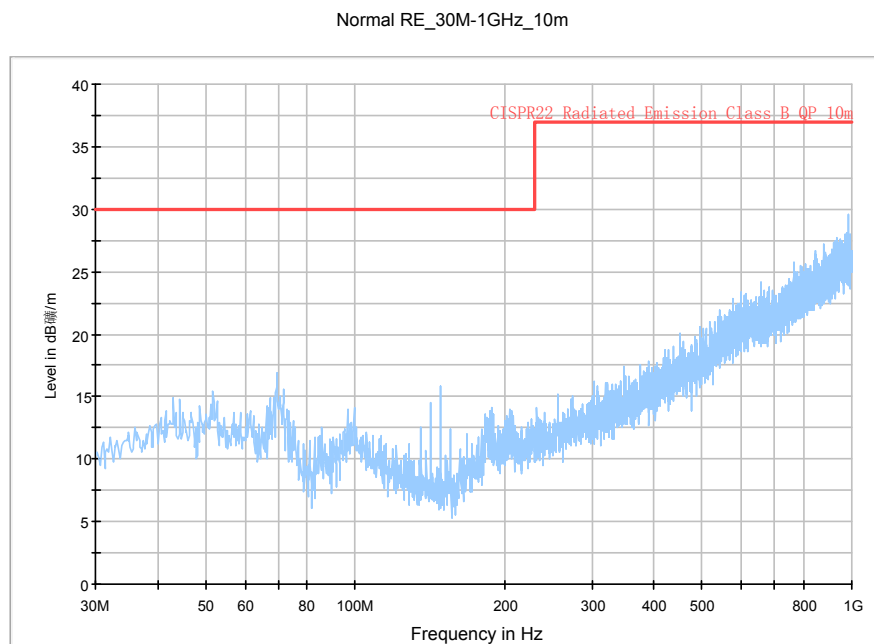


Fig. 52 Radiated Spurious Emission (802.11n-HT20, Ch157, 30 MHz-1 GHz)

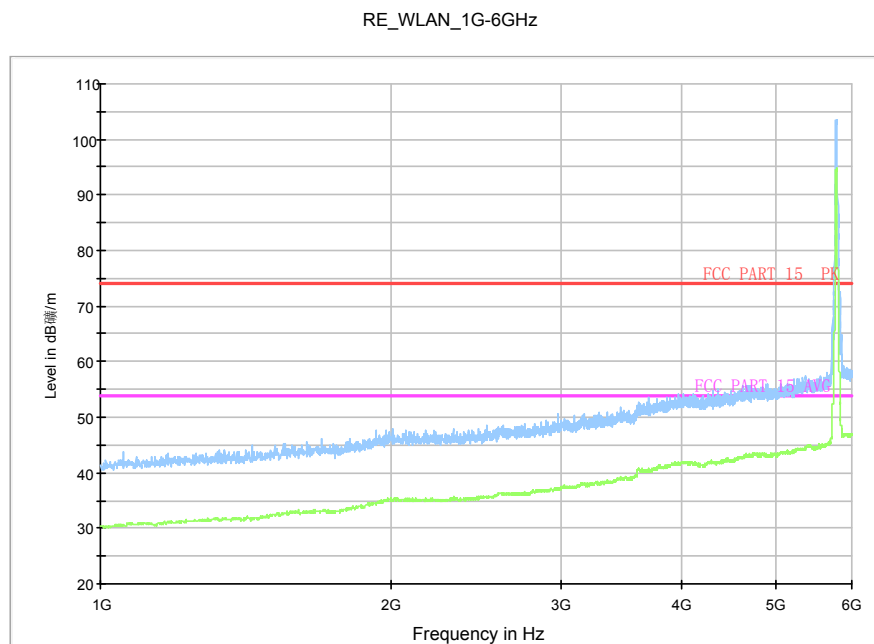


Fig. 53 Radiated Spurious Emission (802.11n-HT20, Ch157, 1 GHz-6 GHz)

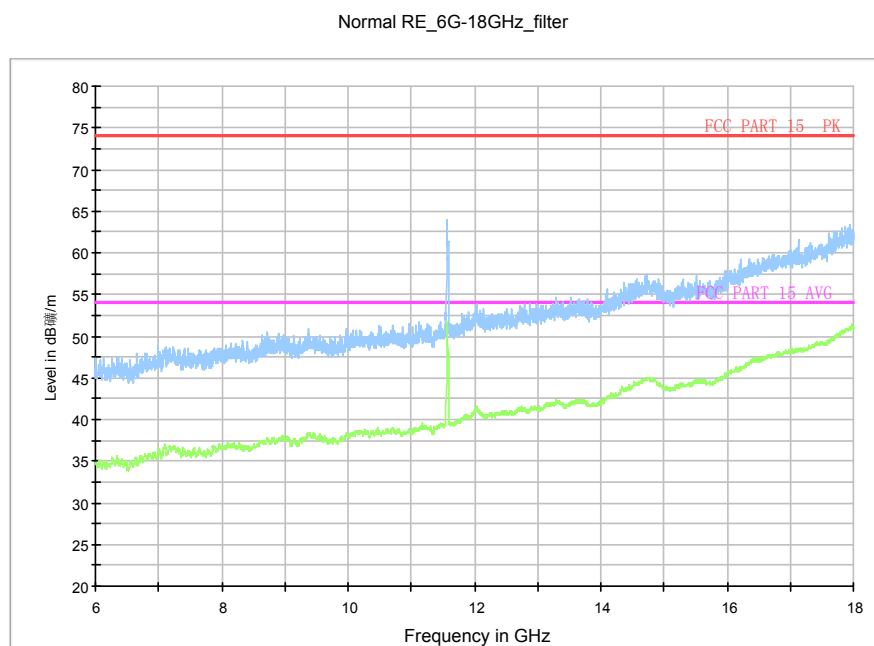


Fig. 54 Radiated Spurious Emission (802.11n-HT20, Ch157, 6 GHz-18 GHz)

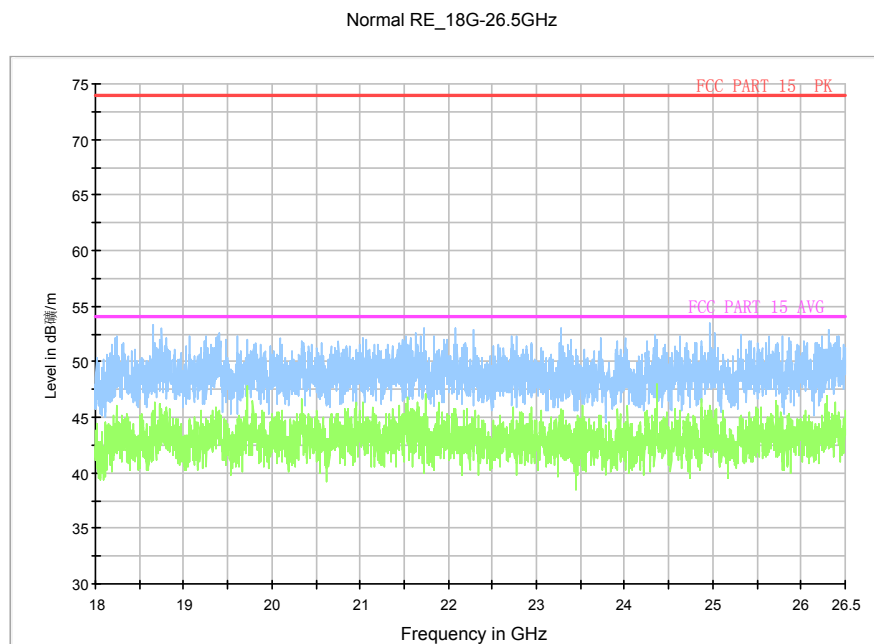


Fig. 55 Radiated Spurious Emission (802.11n-HT20, Ch157, 18 GHz-26.5 GHz)

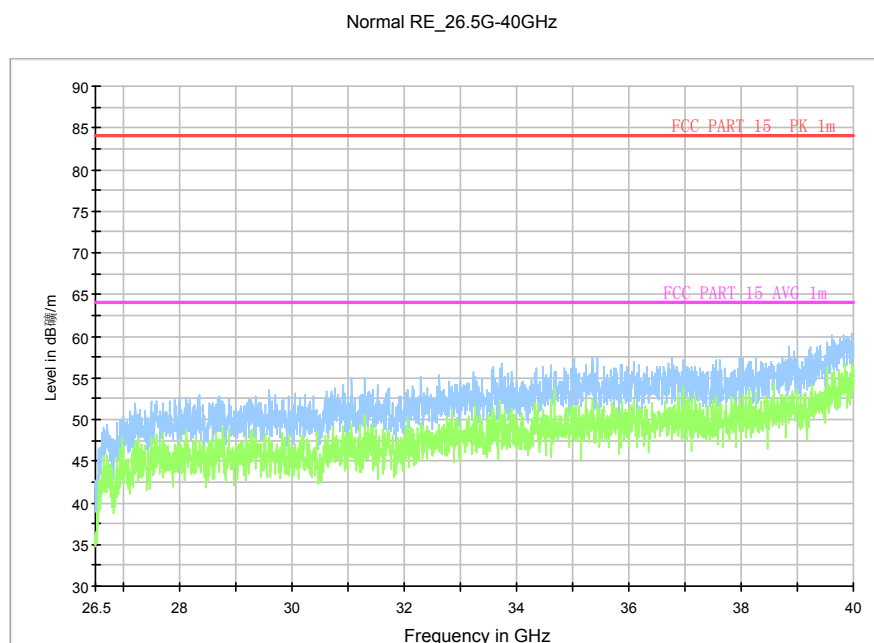


Fig. 56 Radiated emission: 802.11n, (802.11n-HT20, Ch157, 26.5 GHz - 40 GHz)

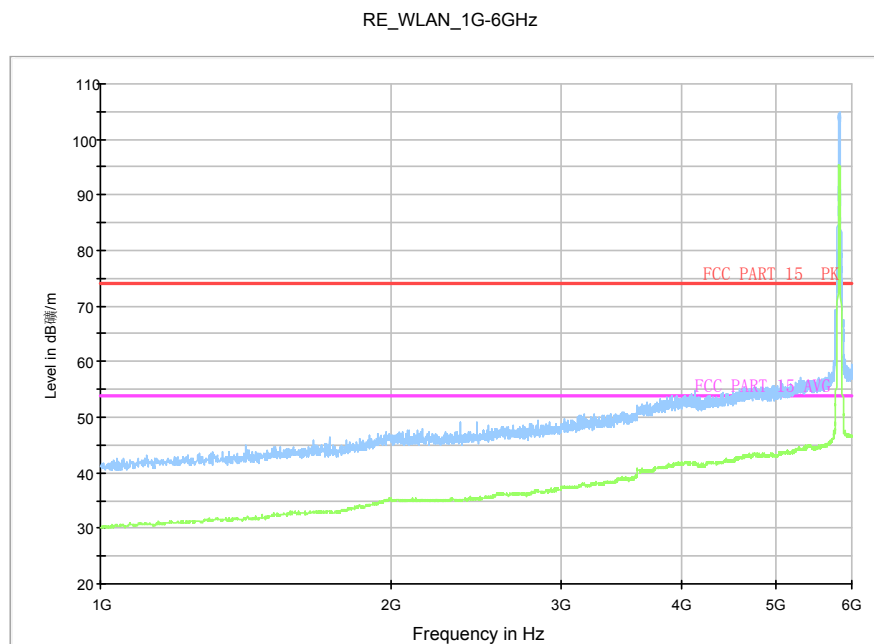


Fig. 57 Radiated Spurious Emission (802.11n-HT20, Ch165, 1 GHz-6 GHz)

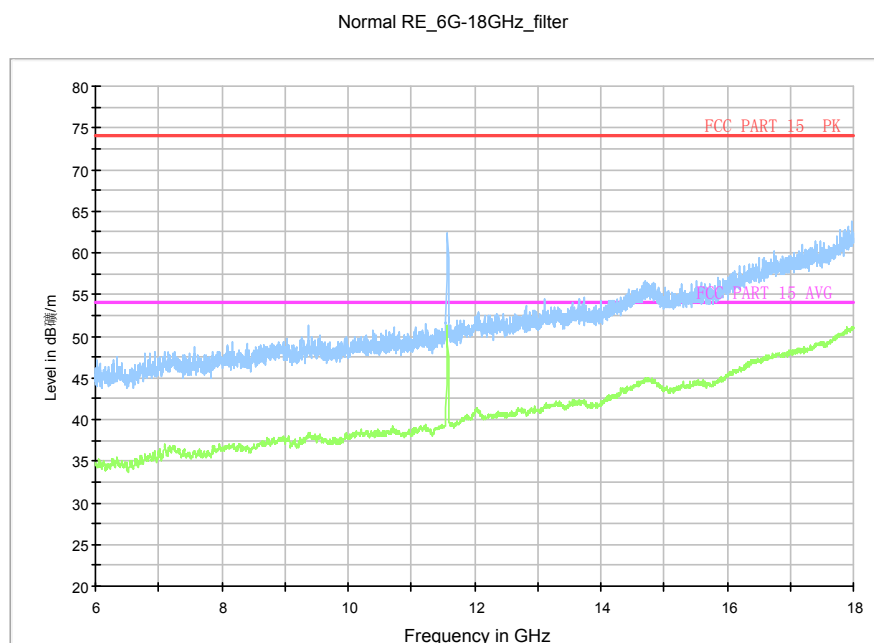


Fig. 58 Radiated Spurious Emission (802.11n-HT20, Ch165, 6 GHz-18 GHz)

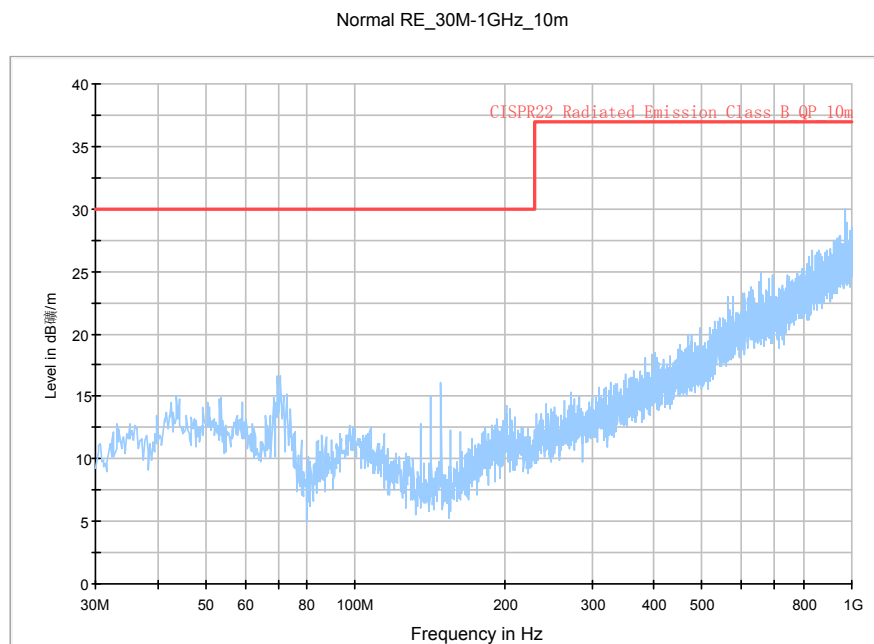


Fig. 59 Radiated Spurious Emission (802.11n-HT40, Ch151, 30 MHz-1 GHz)

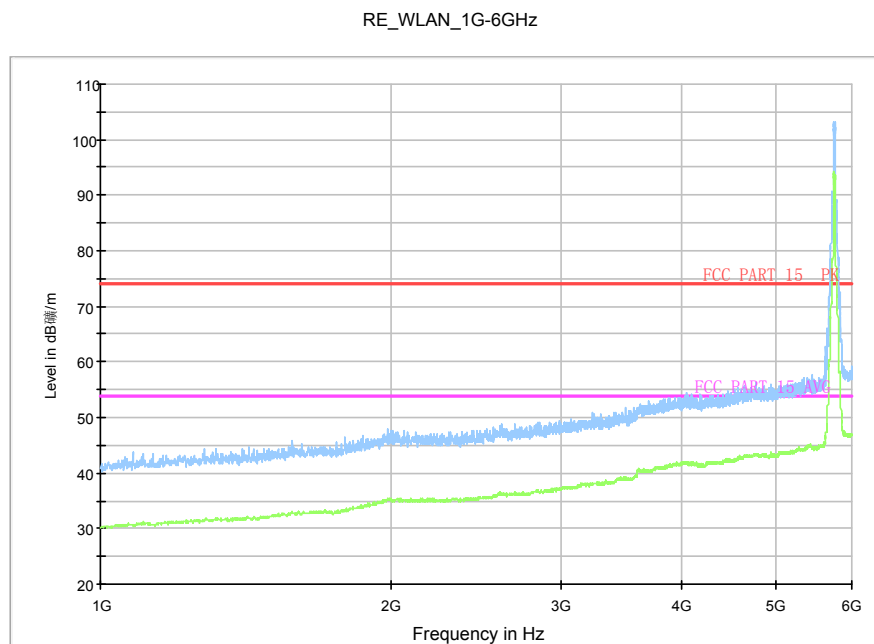


Fig. 60 Radiated Spurious Emission (802.11n-HT40, Ch151, 1 GHz-6 GHz)

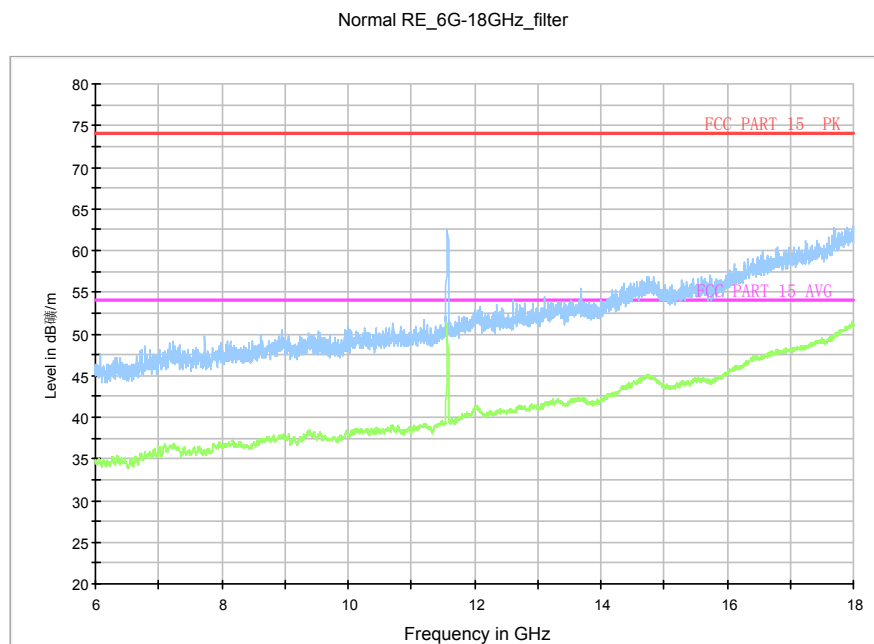


Fig. 61 Radiated Spurious Emission (802.11n-HT40, Ch151, 6 GHz-18 GHz)

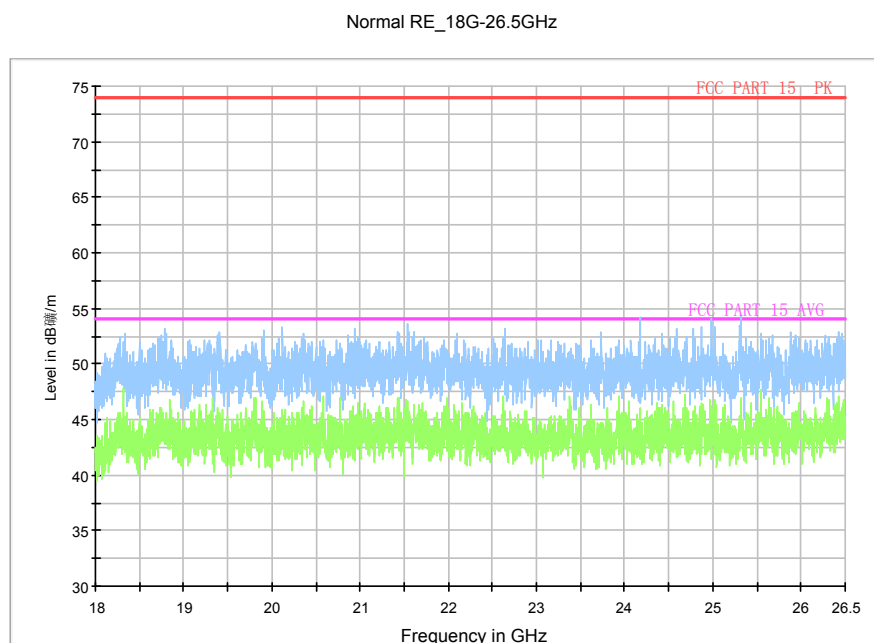


Fig. 62 Radiated Spurious Emission (802.11n-HT40, Ch151, 18 GHz-26.5 GHz)

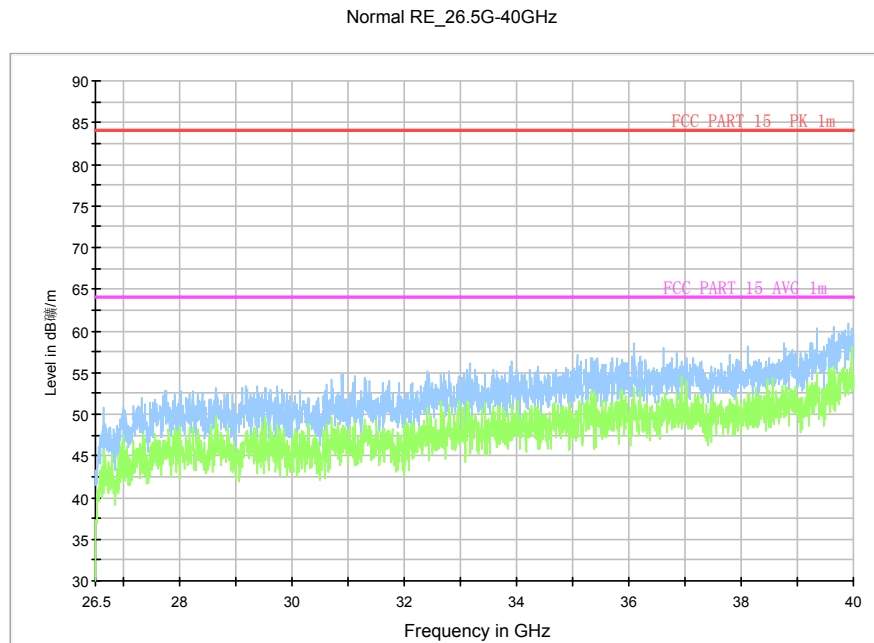


Fig. 63 Radiated emission: 802.11n, (802.11n-HT40, Ch151, 26.5 GHz - 40 GHz)

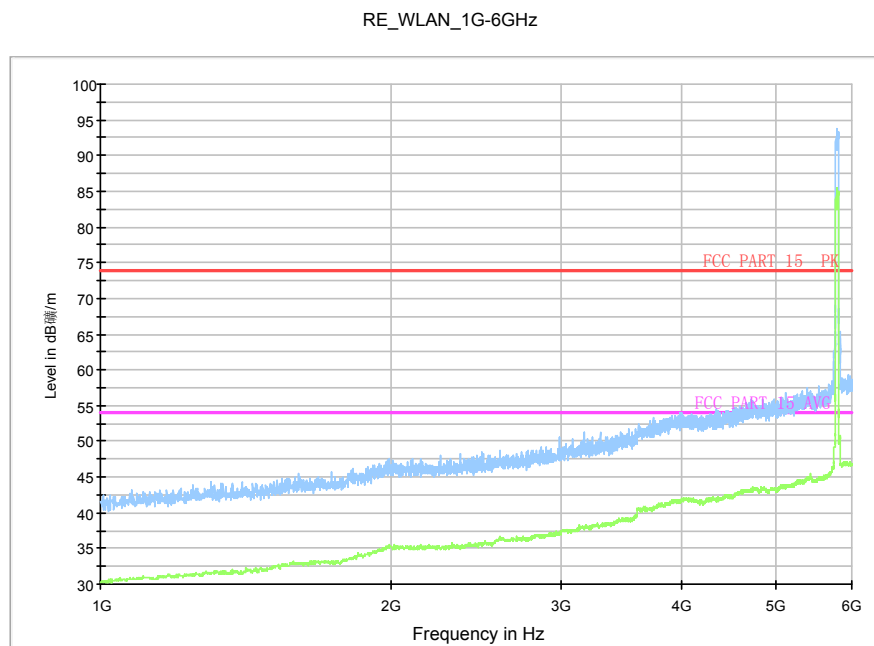


Fig. 64 Radiated Spurious Emission (802.11n-HT40, Ch159 1 GHz-6 GHz)

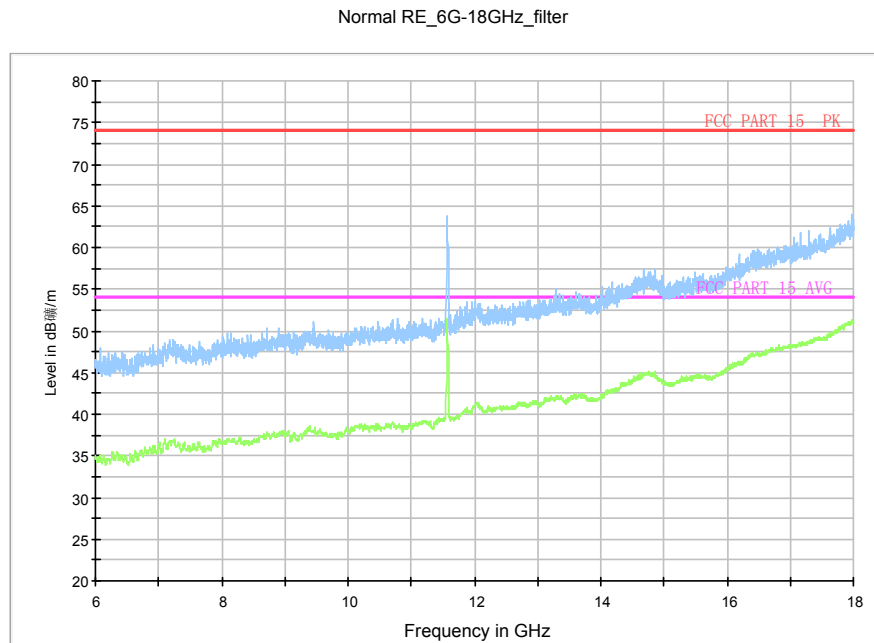


Fig. 65 Radiated Spurious Emission (802.11n-HT40, Ch159, 6 GHz-18 GHz)

A.6. Band Edges Compliance

A6.1 Band Edges - conducted

Measurement Limit:

Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC 47 CFR Part 15.407(b)	5715MHz~5860MHz	< -17
	Below 5715MHz, Above5860MHz	< -27

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.66	P
	5825 MHz	Fig.67	P
802.11n HT20	5745 MHz	Fig.68	P
	5825 MHz	Fig.69	P
802.11n HT40	5755 MHz	Fig.70	P
	5795 MHz	Fig.71	P

Conclusion: PASS

Test graphs as below:

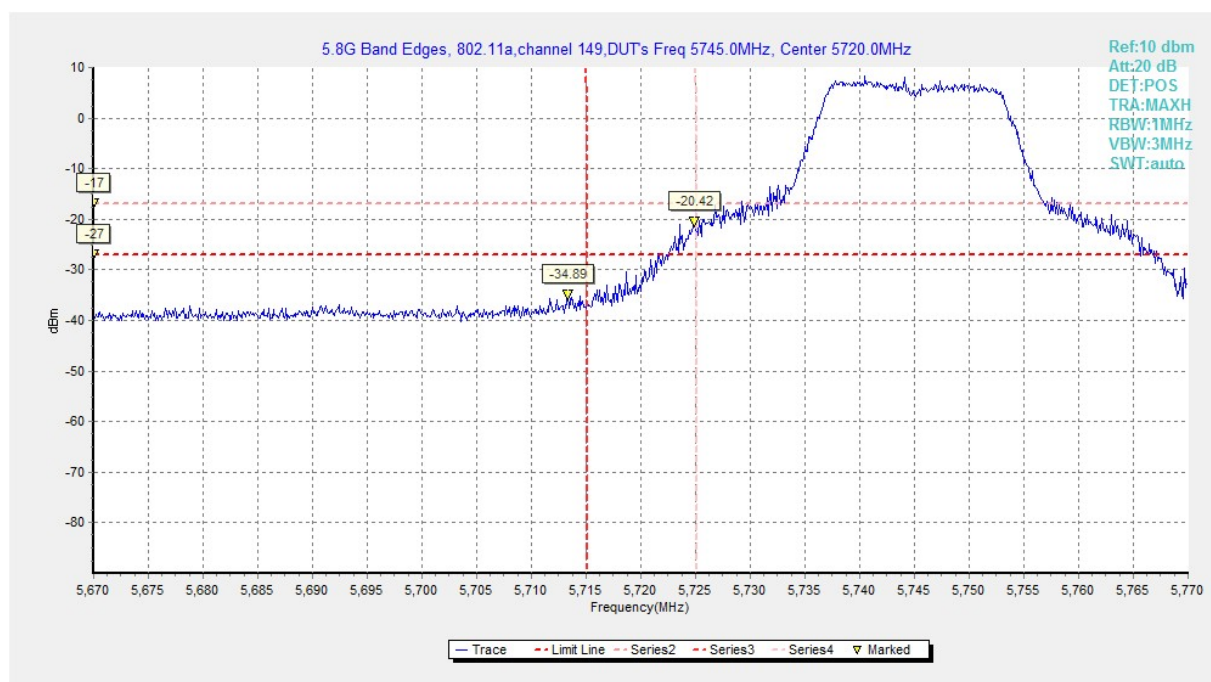


Fig. 66 Band Edges (802.11a, 5745MHz)

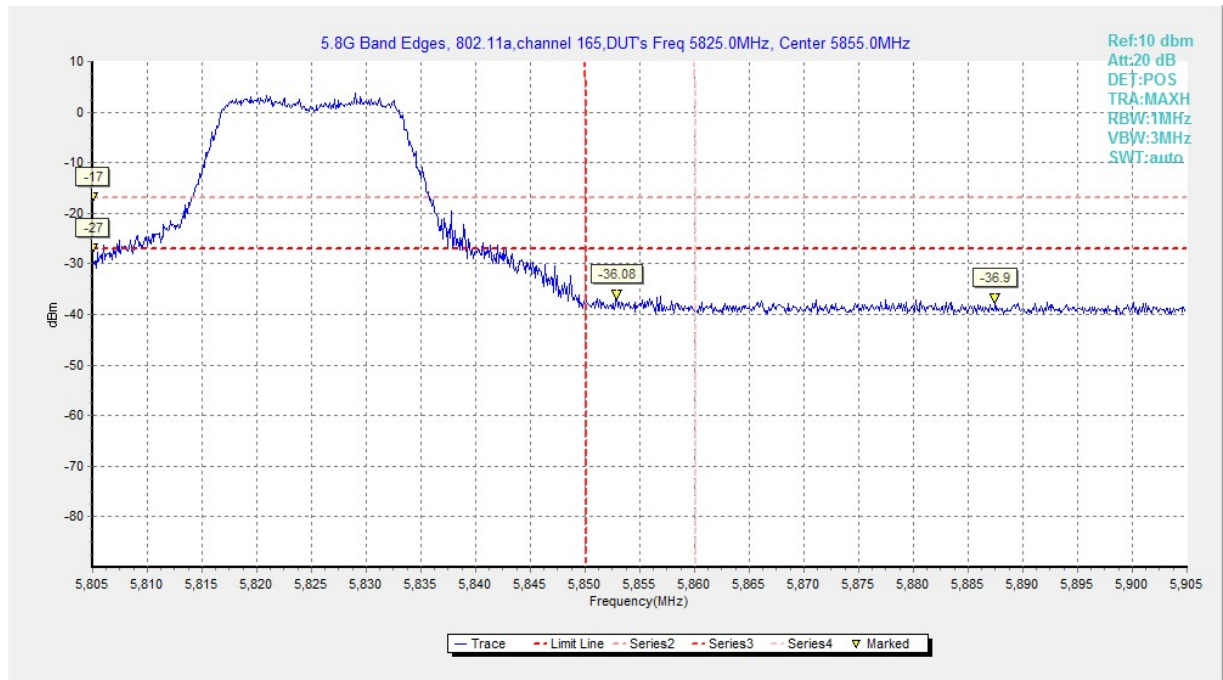


Fig. 67 Band Edges (802.11a, 5825MHz)

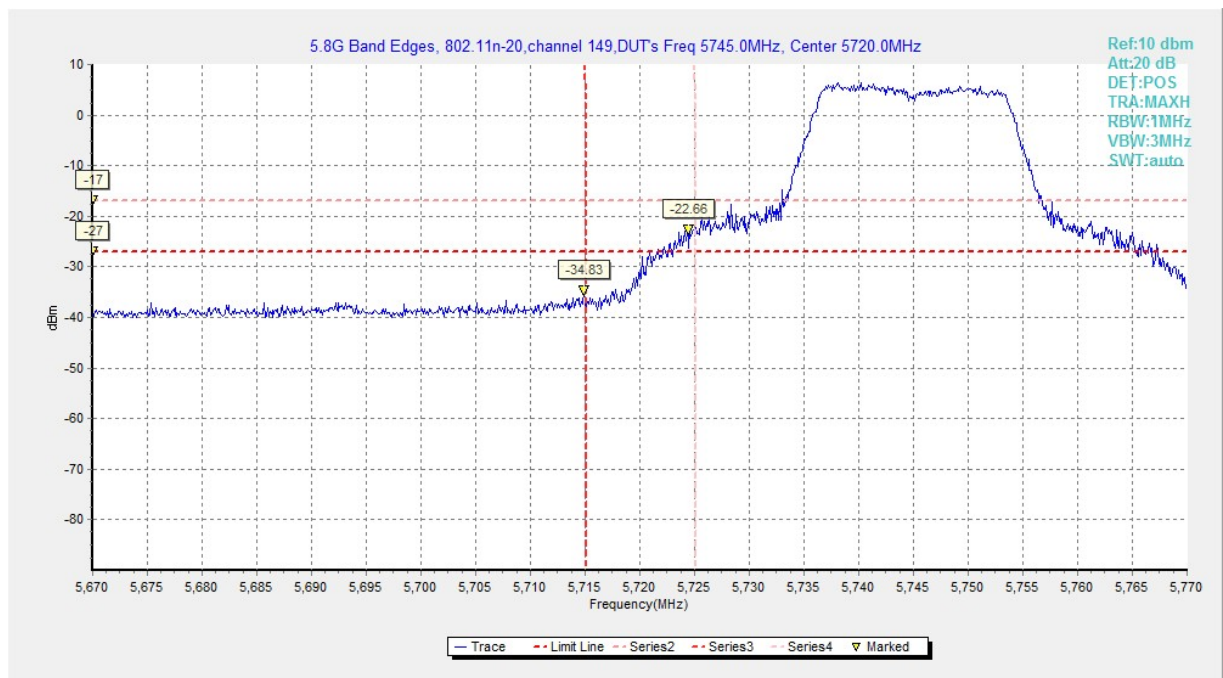


Fig. 68 Band Edges (802.11n-HT20, 5745MHz)

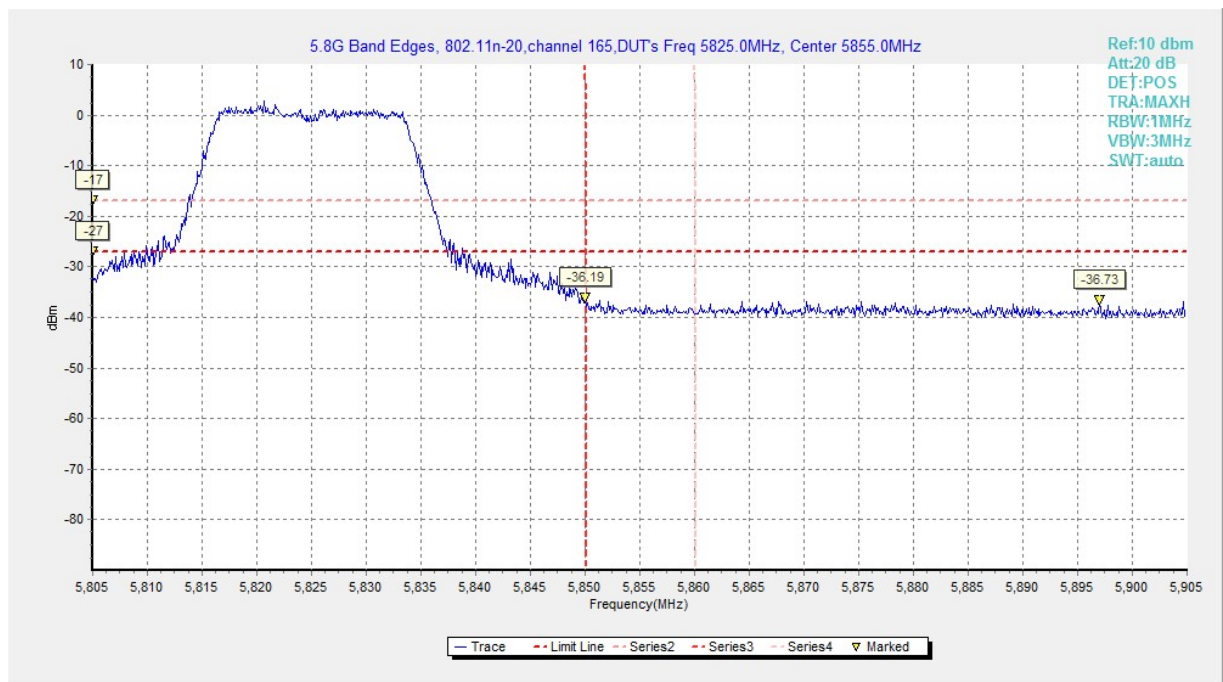


Fig. 69 Band Edges (802.11n-HT20, 5825MHz)

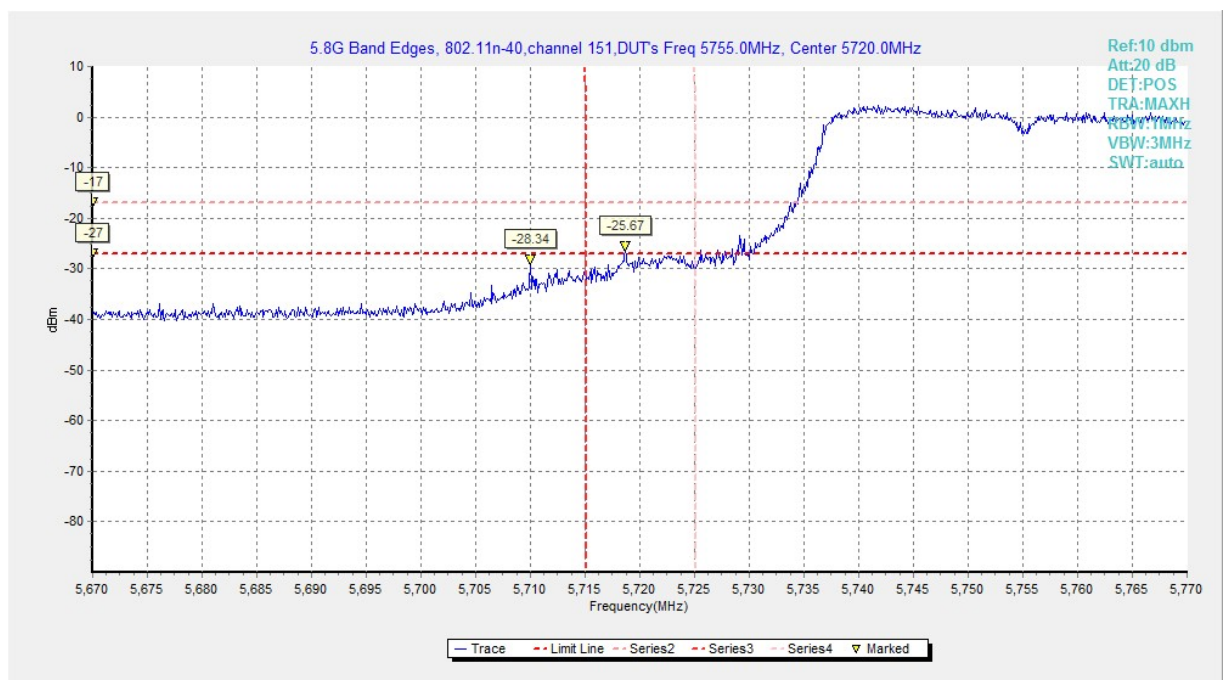


Fig. 70 Band Edges (802.11n-HT40, 5755MHz)

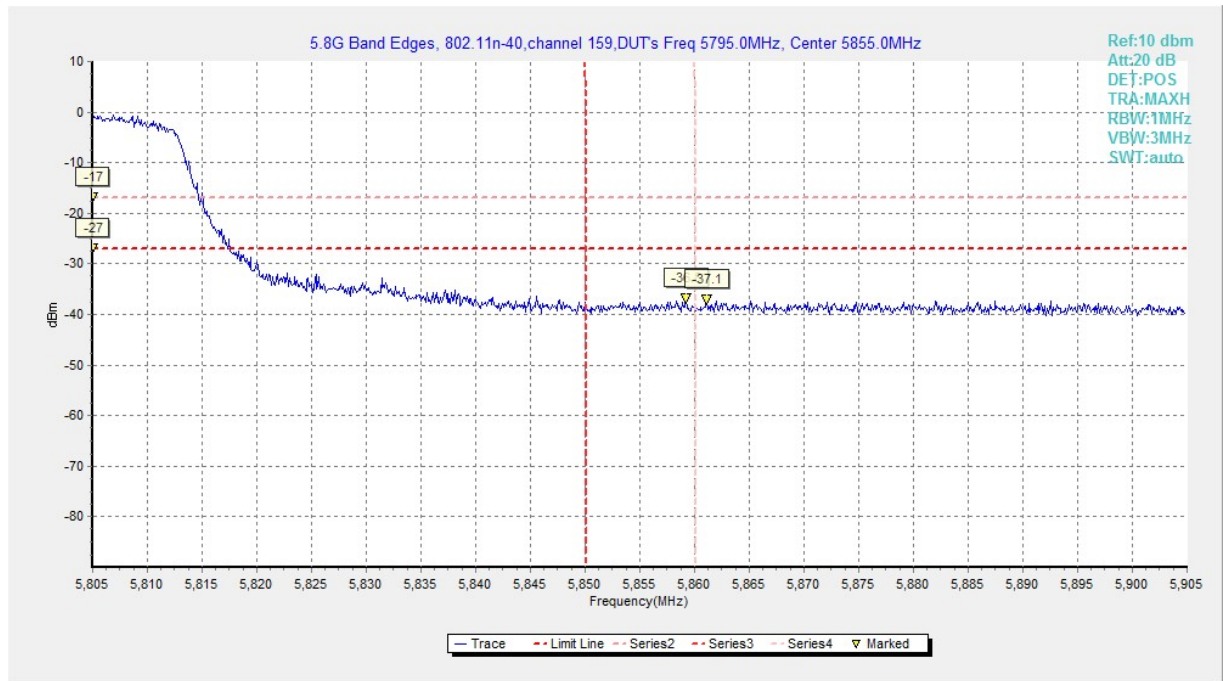


Fig. 71 Band Edges (802.11n-HT40, 5795MHz)

A6.2 Band Edges - Radiated

Measurement Limit:

Standard	Limit (dB μ V/m)	
FCC 47 CFR Part 15.407(b)	Peak	74
	Average	54

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.72	P
	5825 MHz	Fig.73	P
802.11n HT20	5745 MHz	Fig.74	P
	5825 MHz	Fig.75	P
802.11n HT40	5755 MHz	Fig.76	P
	5795 MHz	Fig.77	P

Conclusion: PASS

Test graphs as below:

RE-Power_5.685G-5.765GHz

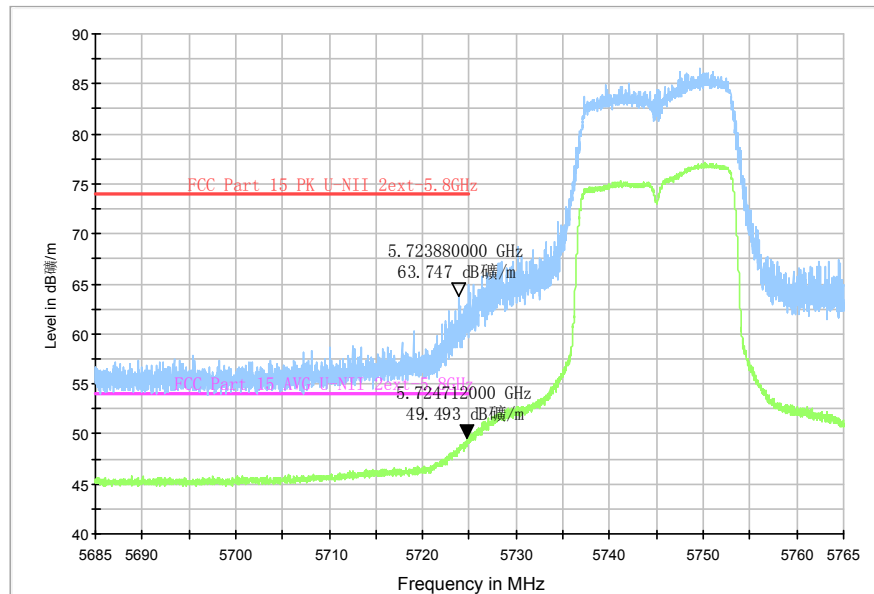


Fig. 72 Band Edges (802.11a, 5745MHz)

RE-Power_5.810G-5.890GHz

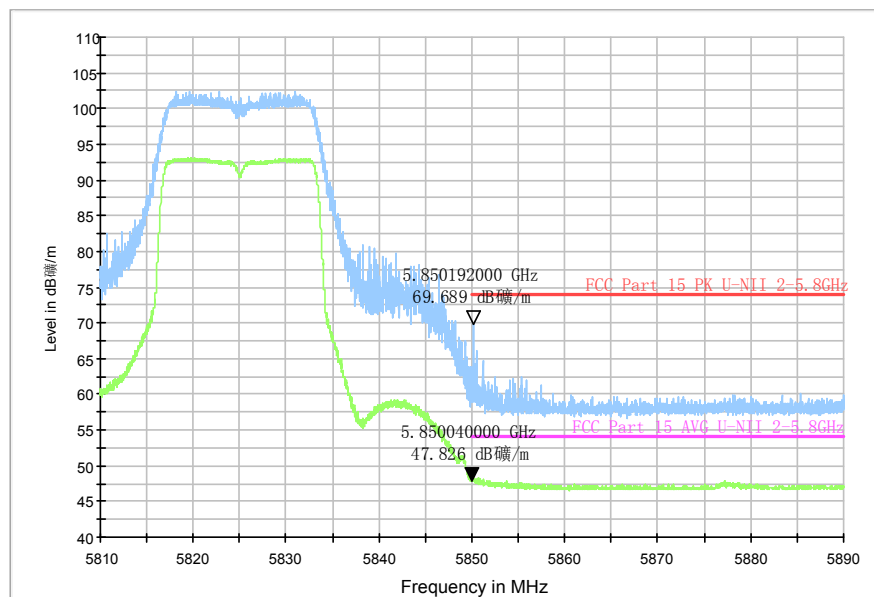


Fig. 73 Band Edges (802.11a, 5825MHz)

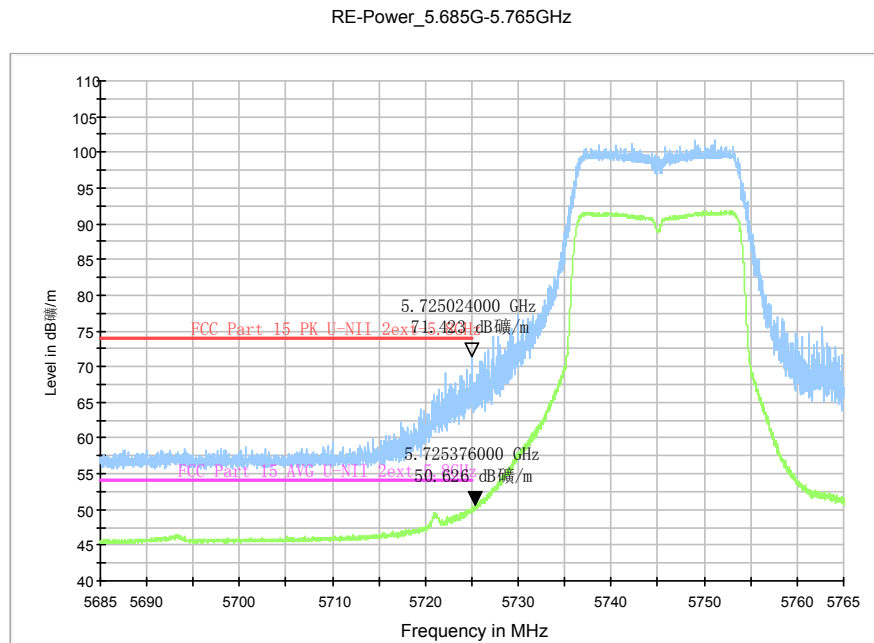


Fig. 74 Band Edges (802.11n-HT20, 5745MHz)

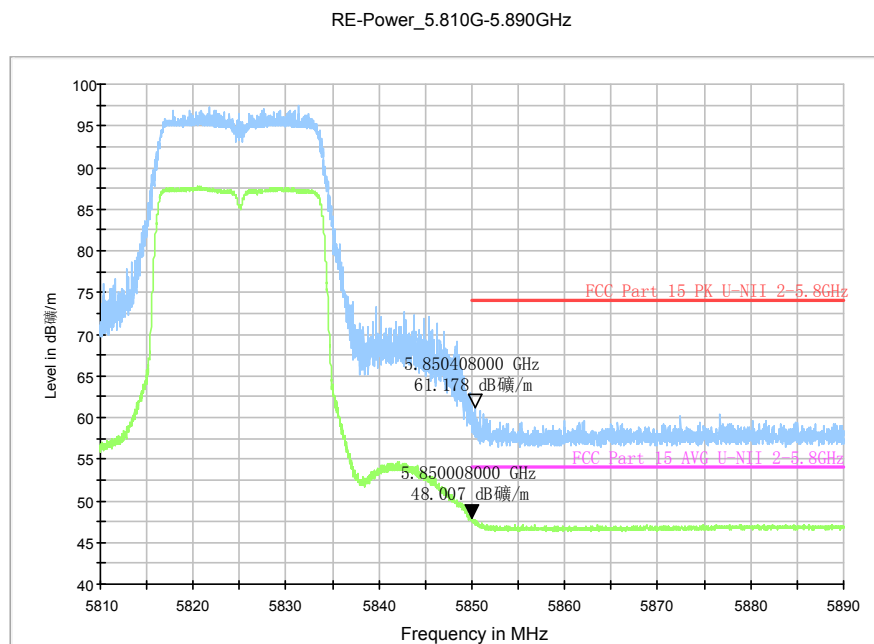


Fig. 75 Band Edges (802.11n-HT20, 5825MHz)

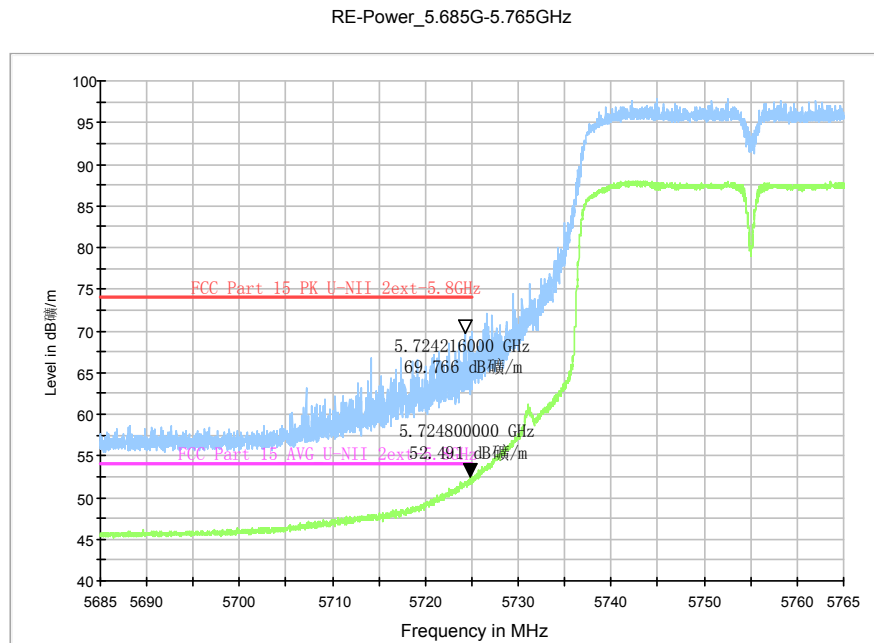


Fig. 76 Band Edges (802.11n-HT40, 5755MHz)

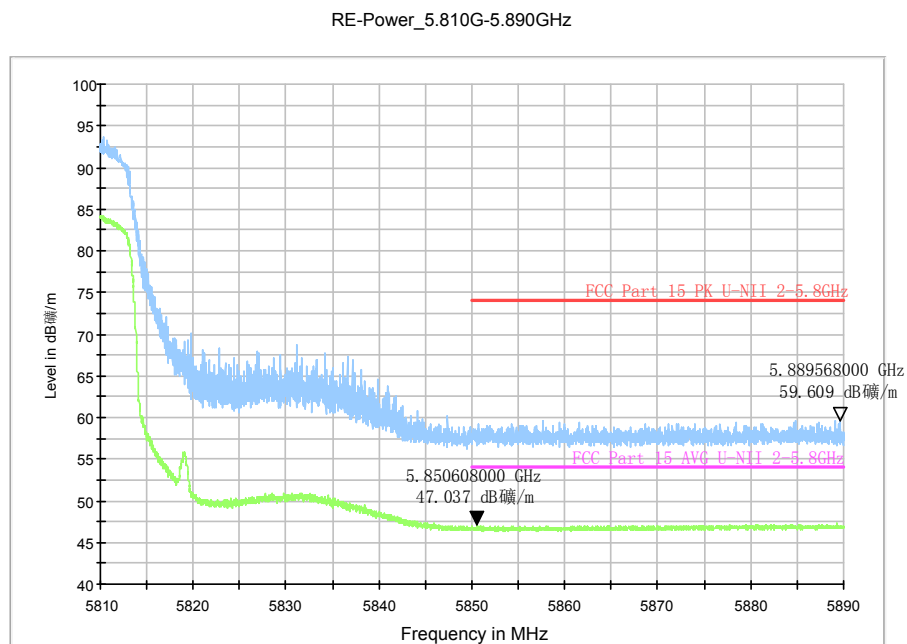


Fig. 77 Band Edges (802.11n-HT40, 5795MHz)

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 =3.2dB, k=2.

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	66 to 56	Fig.78	Fig.79	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 (dBμV)	Result (dBμV)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	56 to 46	Fig.78	Fig.79	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:

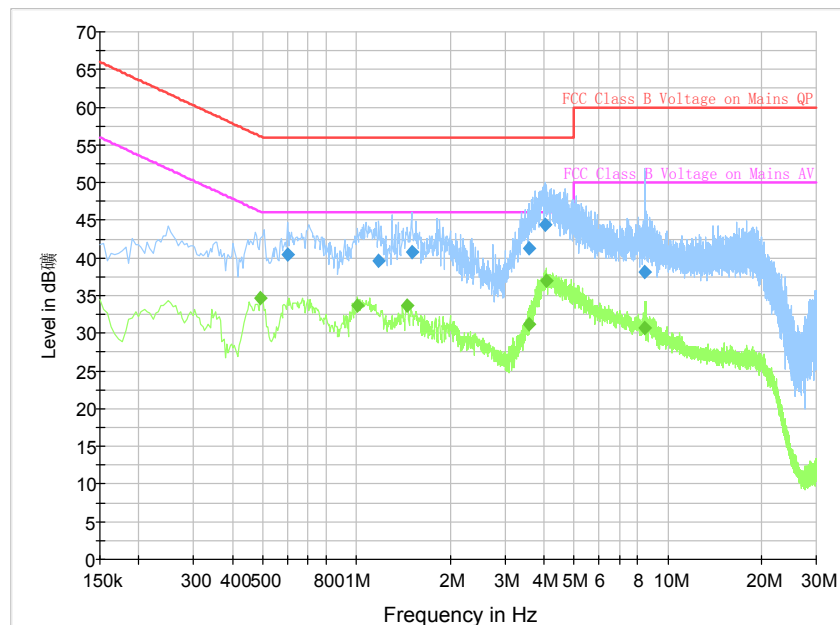


Fig. 78 AC Powerline Conducted Emission-802.11a

Measurement Result 1:

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.600000	40.4	2000.0	9.000	On	L1	19.8	15.6	56.0
1.180500	39.6	2000.0	9.000	On	L1	19.7	16.5	56.0
1.504500	40.9	2000.0	9.000	On	L1	19.7	15.1	56.0
3.583500	41.3	2000.0	9.000	On	L1	19.5	14.7	56.0
4.033500	44.3	2000.0	9.000	On	L1	19.5	11.7	56.0
8.398500	38.2	2000.0	9.000	On	L1	19.6	21.8	60.0

Measurement Result 2:

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.492000	34.7	2000.0	9.000	On	L1	19.9	11.4	46.1
1.009500	33.8	2000.0	9.000	On	L1	19.7	12.2	46.0
1.455000	33.7	2000.0	9.000	On	L1	19.7	12.3	46.0
3.570000	31.3	2000.0	9.000	On	L1	19.5	14.7	46.0
4.074000	37.0	2000.0	9.000	On	L1	19.6	9.0	46.0
8.452500	30.8	2000.0	9.000	On	L1	19.6	19.2	50.0

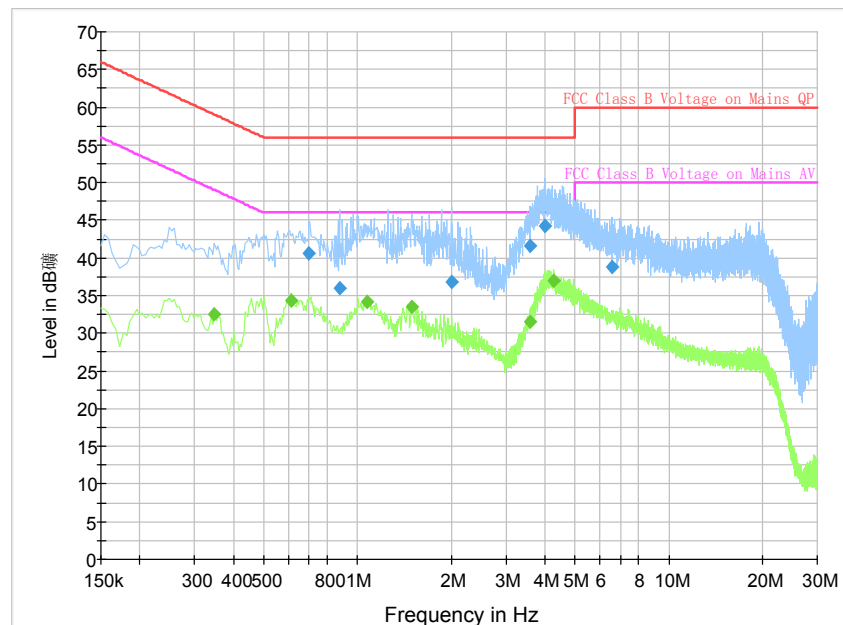


Fig. 79 AC Powerline Conducted Emission-Idle

Measurement Result 1:

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.699000	40.7	2000.0	9.000	On	L1	19.8	15.3	56.0
0.874500	36.0	2000.0	9.000	On	N	19.8	20.0	56.0
1.999500	36.9	2000.0	9.000	On	N	19.7	19.1	56.0
3.597000	41.7	2000.0	9.000	On	L1	19.5	14.3	56.0
4.011000	44.3	2000.0	9.000	On	L1	19.5	11.7	56.0
6.594000	38.7	2000.0	9.000	On	L1	19.6	21.3	60.0

Measurement Result 2:

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.348000	32.5	2000.0	9.000	On	L1	19.9	16.5	49.0
0.613500	34.3	2000.0	9.000	On	L1	19.8	11.7	46.0
1.072500	34.1	2000.0	9.000	On	L1	19.7	11.9	46.0
1.500000	33.6	2000.0	9.000	On	L1	19.7	12.4	46.0
3.588000	31.6	2000.0	9.000	On	L1	19.5	14.4	46.0
4.272000	37.0	2000.0	9.000	On	L1	19.6	9.0	46.0

A.8. Spurious Emissions Radiated < 30MHz

Measurement Limit:

Frequency (MHz)	Field strength(dBμV/m)	Measurement distance
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30

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 Results:

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	157(5785MHz)	9 kHz ~30 MHz	Fig.80	P

Conclusion: PASS

Test graphs as below:

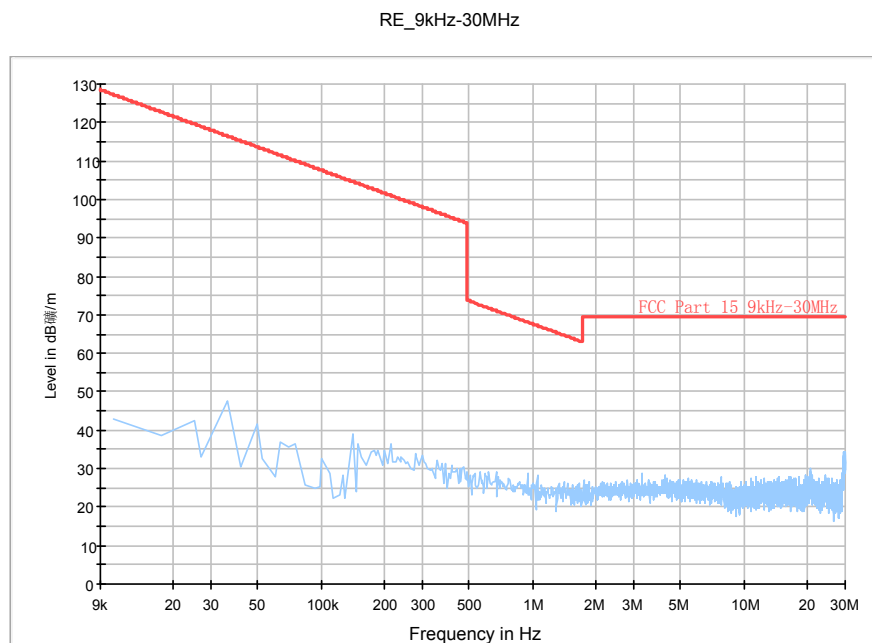


Fig. 80 Radiated Spurious Emission (802.11a, ch157, 9 kHz ~30 MHz)

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