

Fig.A.6.1.141 Transmitter Spurious Emission - Conducted (802.11n-HT40,Chain1, Ch9, 7.5 GHz-10 GHz)

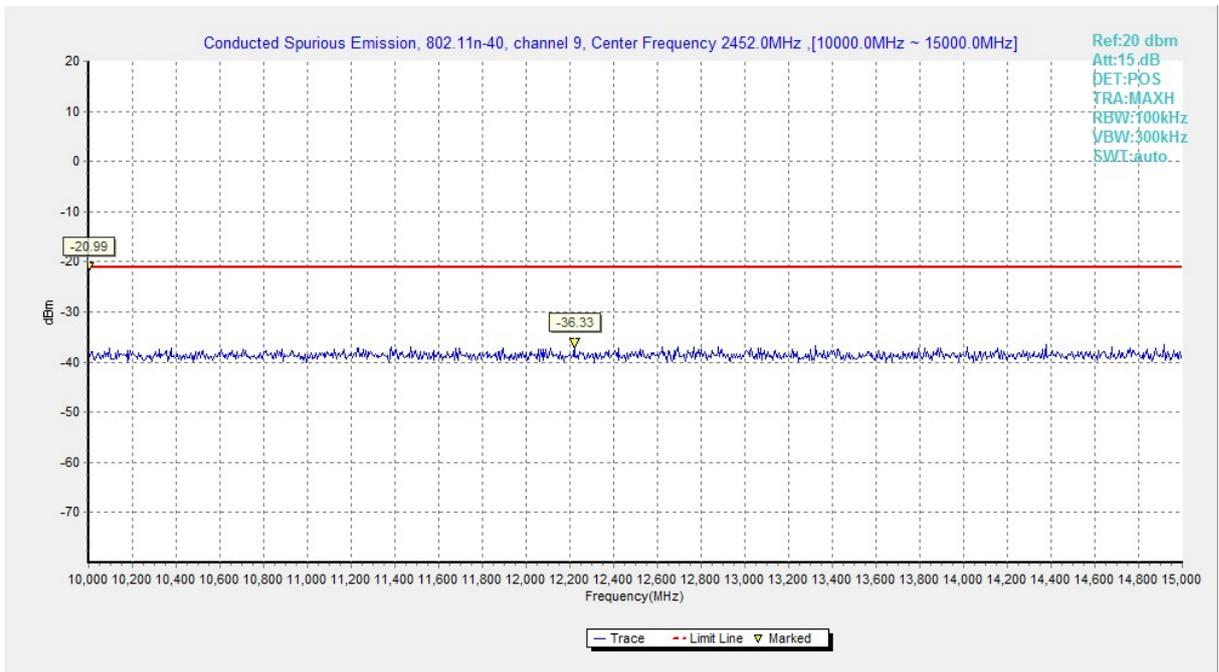


Fig.A.6.1.142 Transmitter Spurious Emission - Conducted (802.11n-HT40,Chain1, Ch9, 10 GHz-15 GHz)

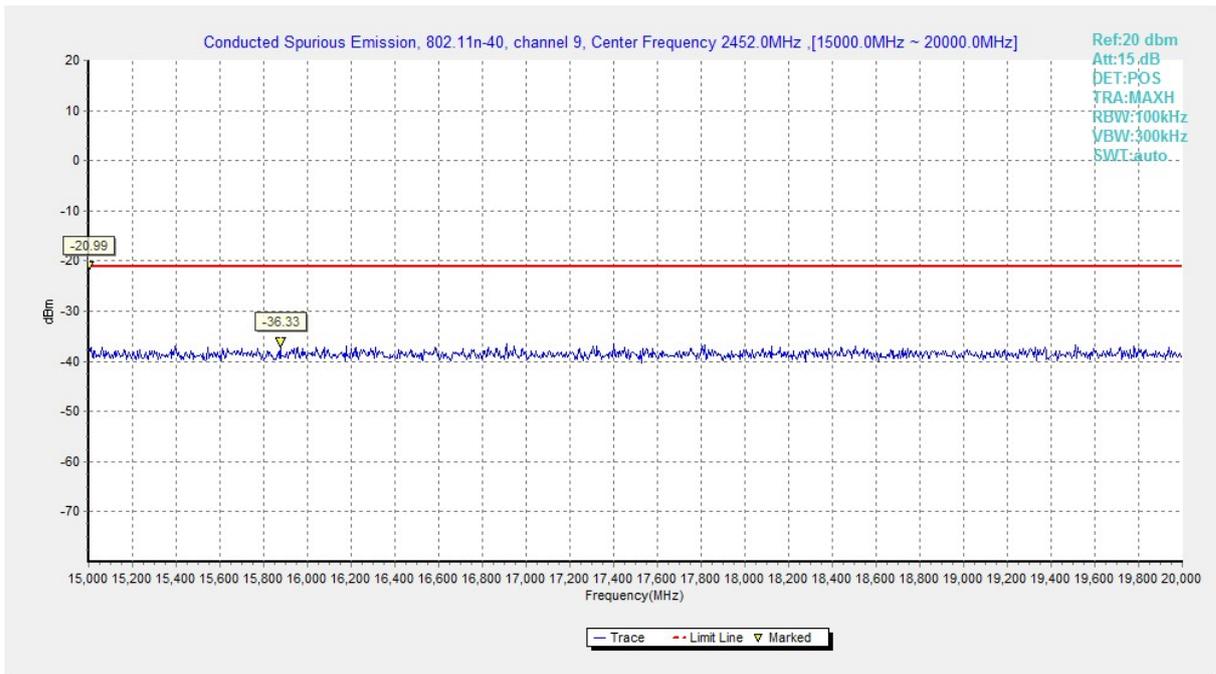


Fig.A.6.1.143 Transmitter Spurious Emission - Conducted (802.11n-HT40,Chain1, Ch9, 15 GHz-20 GHz)

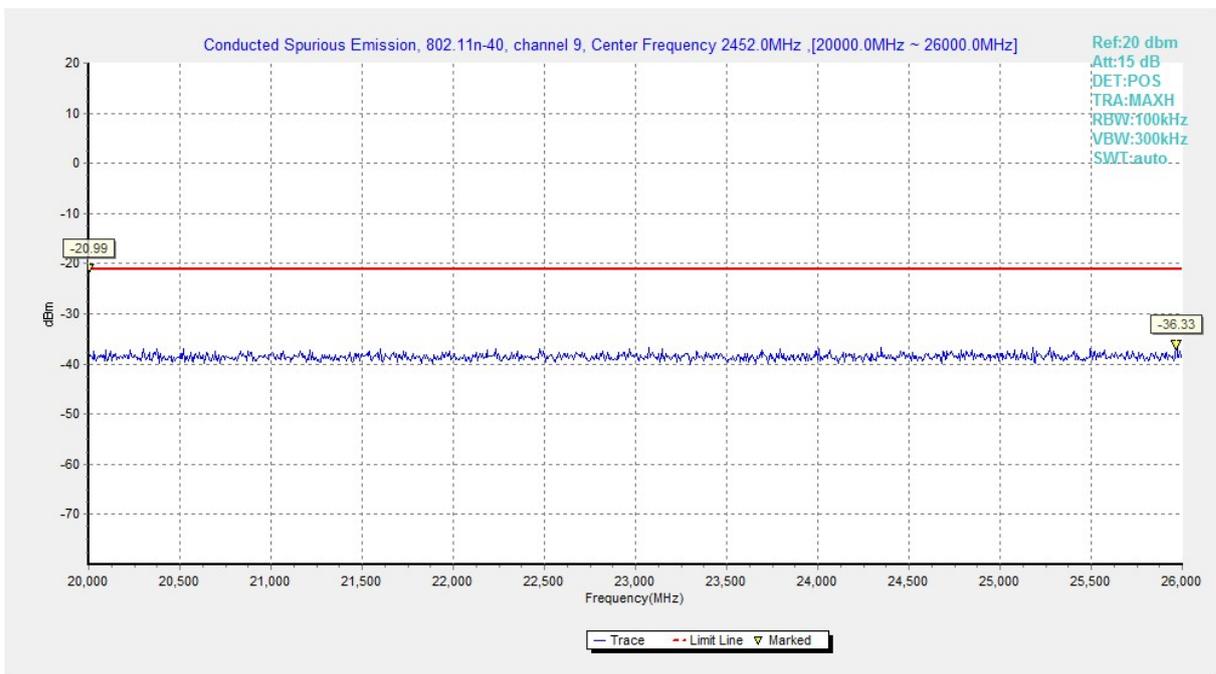


Fig.A.6.1.144 Transmitter Spurious Emission - Conducted (802.11n-HT40,Chain1, Ch9, 20 GHz-26 GHz)

A.6.2 Transmitter Spurious Emission - Radiated

Method of Measurement: See ANSI C63.10-2013-clause 6.4 &6.5 & 6.6

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209	20dB below peak output power

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)).

Limit in restricted band:

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

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

Test Condition

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	100KHz/300KHz	5
1000-4000	1MHz/1MHz	15
4000-18000	1MHz/1MHz	40
18000-26500	1MHz/1MHz	20

EUT ID:EUT1

Measurement Results:

802.11b mode

Mode	Channel	FrequencyRange	Test Results	Conclusion	
802.11b	Power	2.38GHz ~2.45GHz	Fig.A.6.2.1	P	
	1	1 GHz ~ 3 GHz	Fig.A.6.2.2	P	
		3 GHz ~ 18 GHz	Fig.A.6.2.3	P	
	6	9 kHz ~30 MHz	Fig.A.6.2.4	P	
		30 MHz ~1 GHz	Fig.A.6.2.5	P	
		1 GHz ~ 3 GHz	Fig.A.6.2.6	P	
		3 GHz ~ 18 GHz	Fig.A.6.2.7	P	
	6	18 GHz~ 26.5 GHz	Fig.A.6.2.8	P	
		Power	2.45GHz ~2.5GHz	Fig.A.6.2.9	P
		11	1 GHz ~ 3 GHz	Fig.A.6.2.10	P
	3 GHz ~ 18 GHz		Fig.A.6.2.11	P	

802.11g mode

Mode	Channel	FrequencyRange	Test Results	Conclusion
802.11g	Power	2.38GHz ~2.43GHz	Fig.A.6.2.12	P
	1	1 GHz ~ 3 GHz	Fig.A.6.2.13	P
		3 GHz ~ 18 GHz	Fig.A.6.2.14	P
	6	30 MHz ~1 GHz	Fig.A.6.2.15	P
		1 GHz ~ 3 GHz	Fig.A.6.2.16	P
		3 GHz ~ 18 GHz	Fig.A.6.2.17	P
		18 GHz~ 26.5 GHz	Fig.A.6.2.18	P
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.19	P
	11	1 GHz ~ 3 GHz	Fig.A.6.2.20	P
		3 GHz ~ 18 GHz	Fig.A.6.2.21	P

802.11n-HT20 mode

Mode	Channel	FrequencyRange	Test Results	Conclusion
802.11n (HT20)	Power	2.38GHz ~2.45GHz	Fig.A.6.2.22	P
	1	1 GHz ~ 3 GHz	Fig.A.6.2.23	P
		3 GHz ~ 18 GHz	Fig.A.6.2.24	P
	6	30 MHz ~1 GHz	Fig.A.6.2.25	P
		1 GHz ~ 3 GHz	Fig.A.6.2.26	P
		3 GHz ~ 18 GHz	Fig.A.6.2.27	P
		18 GHz~ 26.5 GHz	Fig.A.6.2.28	P
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.29	P
	11	1 GHz ~ 3 GHz	Fig.A.6.2.30	P
		3 GHz ~ 18 GHz	Fig.A.6.2.31	P

802.11n-HT40 mode

Mode	Channel	FrequencyRange	Test Results	Conclusion
802.11n (HT40)	Power	2.38GHz ~2.45GHz	Fig.A.6.2.32	P
	3	1 GHz ~ 3 GHz	Fig.A.6.2.33	P
		3 GHz ~ 18 GHz	Fig.A.6.2.34	P
	6	30 MHz ~1 GHz	Fig.A.6.2.35	P
		1 GHz ~ 3 GHz	Fig.A.6.2.36	P
		3 GHz ~ 18 GHz	Fig.A.6.2.37	P
		18 GHz~ 26.5 GHz	Fig.A.6.2.38	P
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.39	P
	9	1 GHz ~ 3 GHz	Fig.A.6.2.40	P
		3 GHz ~ 18 GHz	Fig.A.6.2.41	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.

The measurement results are obtained as described below:

$$\text{Result} = P_{Mea} + A_{Rpl} = P_{Mea} + \text{CableLoss} + \text{Antenna Factor}$$

802.11b

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2385.630	62.8	-38.8	27.7	73.900	H
17971.500	59.1	-17.7	45.6	31.200	H
17991.750	58.0	-17.7	45.6	30.100	V
17965.500	58.0	-17.7	45.6	30.100	H
17978.250	58.0	-17.7	45.6	30.100	H
17936.250	57.9	-17.7	45.6	30.000	H

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2483.685	57.1	-38.9	27.7	68.300	H
17918.250	57.9	-17.7	45.6	30.000	H
17844.750	57.7	-18.5	45.6	30.600	V
17849.250	57.6	-18.5	45.6	30.500	H
17987.250	57.4	-17.7	45.6	29.500	H
17829.000	57.3	-18.5	45.6	30.200	H

802.11g

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
2389.620	62.3	-38.8	27.7	73.400	H
17958.750	59.2	-17.7	45.6	31.300	H
17976.750	58.5	-17.7	45.6	30.600	V
18000.000	58.3	-45.6	44.5	59.366	H
17916.000	58.2	-17.7	45.6	30.300	H
17873.250	57.9	-18.5	45.6	30.800	H

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
2484.705	55.4	-38.9	27.7	66.600	H
17970.750	58.0	-17.7	45.6	30.100	H
17982.000	57.9	-17.7	45.6	30.000	V
17913.000	57.9	-18.5	45.6	30.800	H
17971.500	57.7	-17.7	45.6	29.800	H
17912.250	57.5	-18.5	45.6	30.400	H

802.11n-HT20

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
2389.880	63.3	-38.8	27.7	74.400	H
17871.000	57.6	-18.5	45.6	30.500	H
17955.000	57.4	-17.7	45.6	29.500	V
17790.000	57.4	-18.5	45.6	30.300	H
17985.000	57.4	-17.7	45.6	29.500	H
17964.000	57.2	-17.7	45.6	29.300	H

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
2485.965	55.7	-38.9	27.7	66.900	H
17938.500	57.7	-17.7	45.6	29.800	H
17999.250	57.4	-17.7	45.6	29.500	V
17958.000	57.4	-17.7	45.6	29.500	H
17886.750	57.4	-18.5	45.6	30.300	H
17989.500	57.3	-17.7	45.6	29.400	H

802.11n-HT40

Ch3

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
2385.445	66.6	-38.8	27.7	77.700	H
17995.500	58.2	-17.7	45.6	30.300	H
17889.750	57.8	-18.5	45.6	30.700	V
17977.500	57.8	-17.7	45.6	29.900	H
17874.000	57.5	-18.5	45.6	30.400	H
17994.000	57.5	-17.7	45.6	29.600	H

Ch9

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
2487.860	58.6	-38.9	27.7	69.800	H
17865.000	58.5	-18.5	45.6	31.400	H
17877.750	58.0	-18.5	45.6	30.900	V
17983.500	57.5	-17.7	45.6	29.600	H
17880.000	57.3	-18.5	45.6	30.200	H
17988.750	57.3	-17.7	45.6	29.400	H

Test graphs as below:

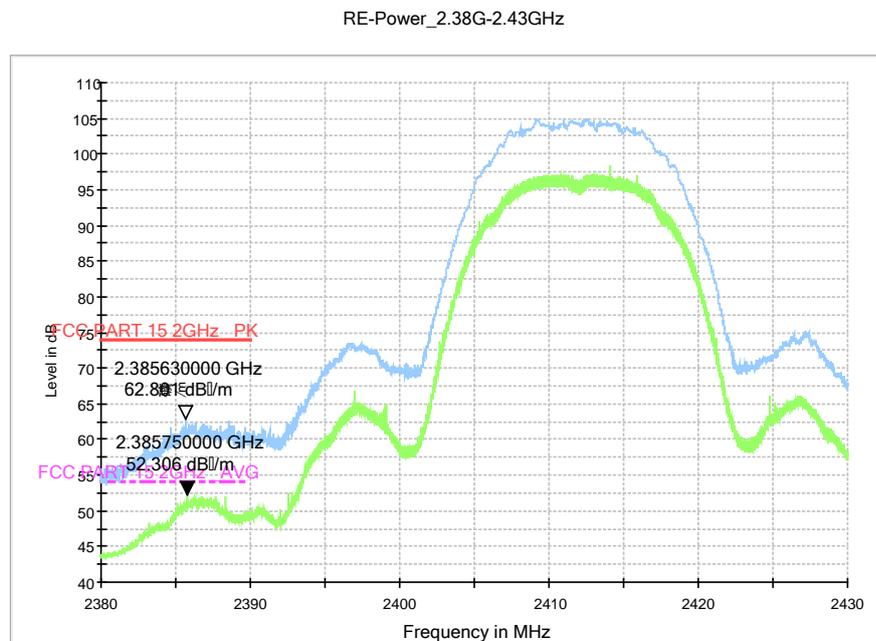


Fig.A.6.2.1 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch1, 2.38 GHz – 2.45GHz

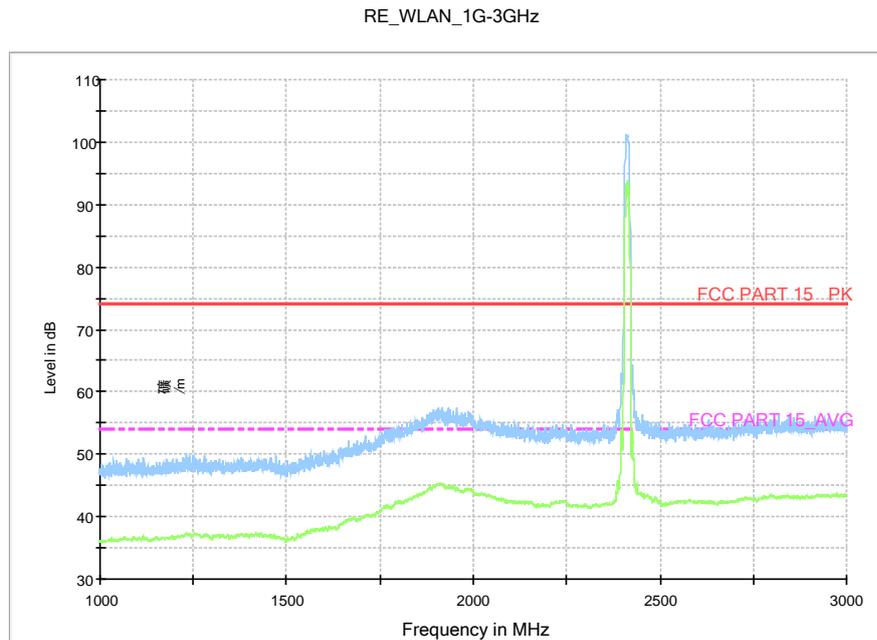


Fig.A.6.2.2 Transmitter Spurious Emission - Radiated (802.11b, Ch1, 1 GHz-3 GHz)

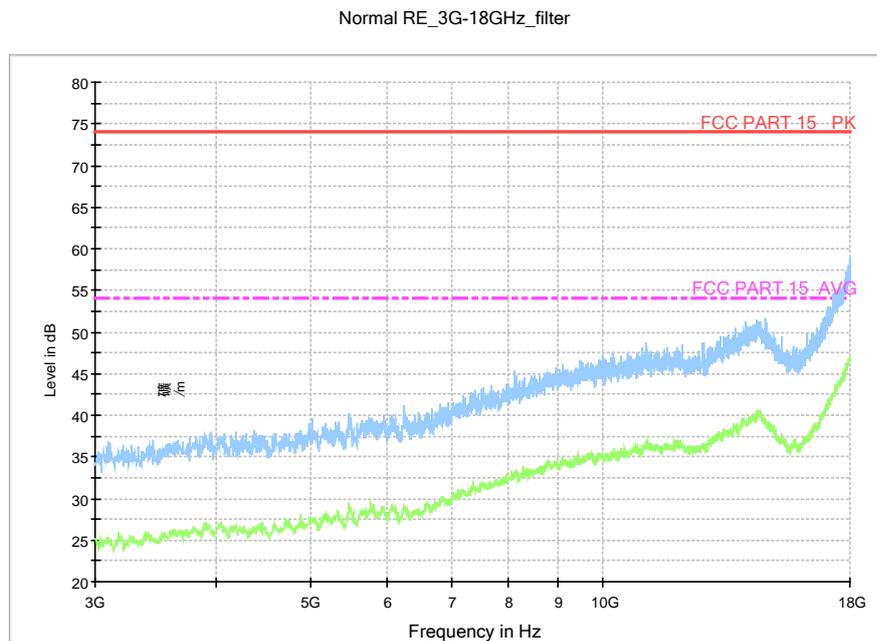


Fig.A.6.2.3 Transmitter Spurious Emission - Radiated (802.11b, Ch1, 3 GHz-18 GHz)

RE_9kHz-30MHz

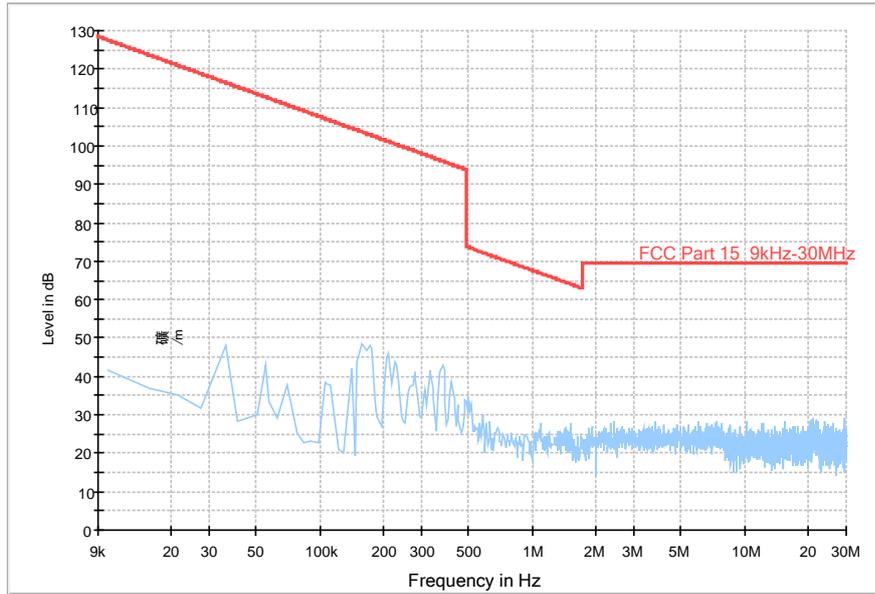


Fig.A.6.2.4 Transmitter Spurious Emission - Radiated (802.11b, Ch6, 9kHz-30 MHz)

RE - TX - WLAN BT +QP+PK_30MHz-1GHz

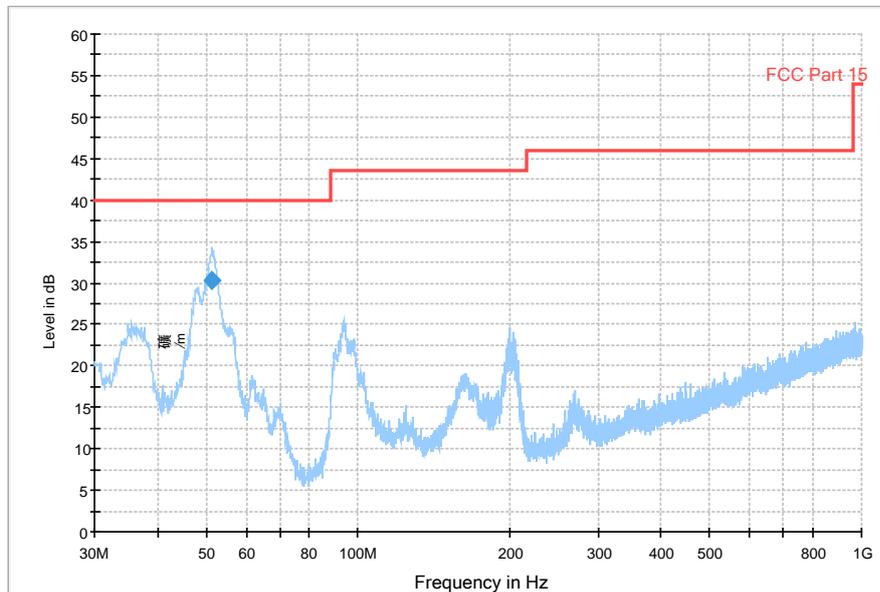


Fig.A.6.2.5 Transmitter Spurious Emission - Radiated (802.11b, Ch6, 30 MHz-1 GHz)

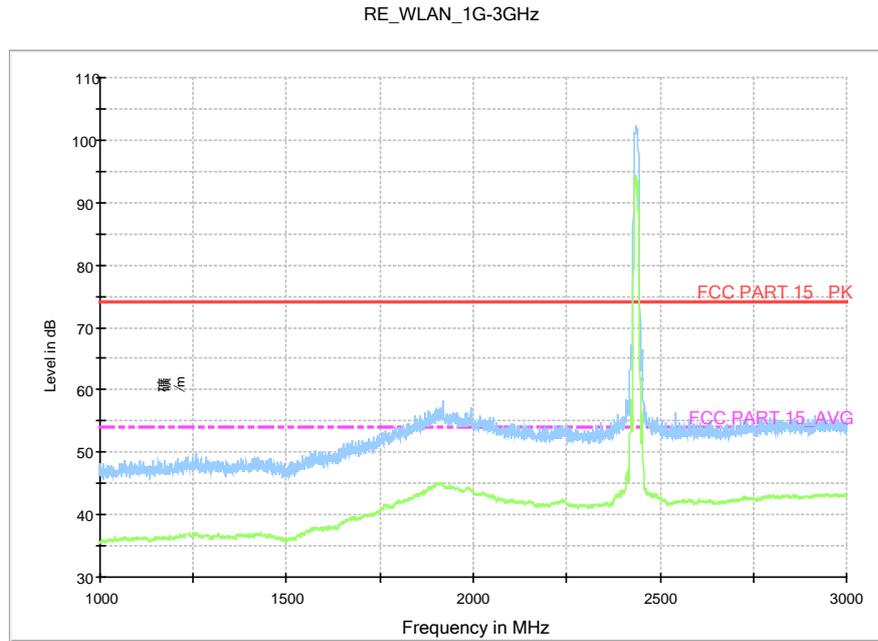


Fig.A.6.2.6 Transmitter Spurious Emission - Radiated (802.11b, Ch6, 1 GHz-3 GHz)

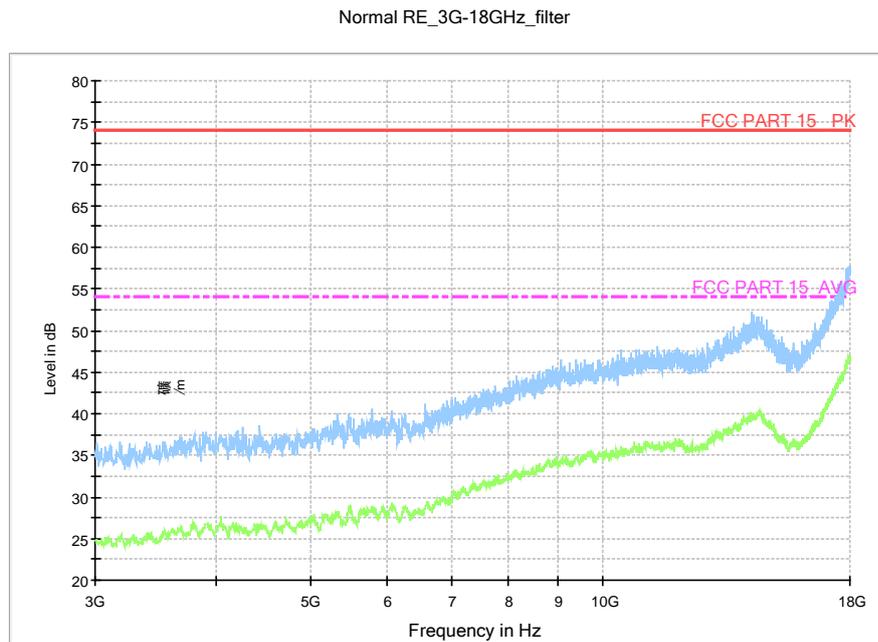


Fig.A.6.2.7 Transmitter Spurious Emission - Radiated (802.11b, Ch6, 3 GHz-18 GHz)

Normal RE_18G-26.5GHz

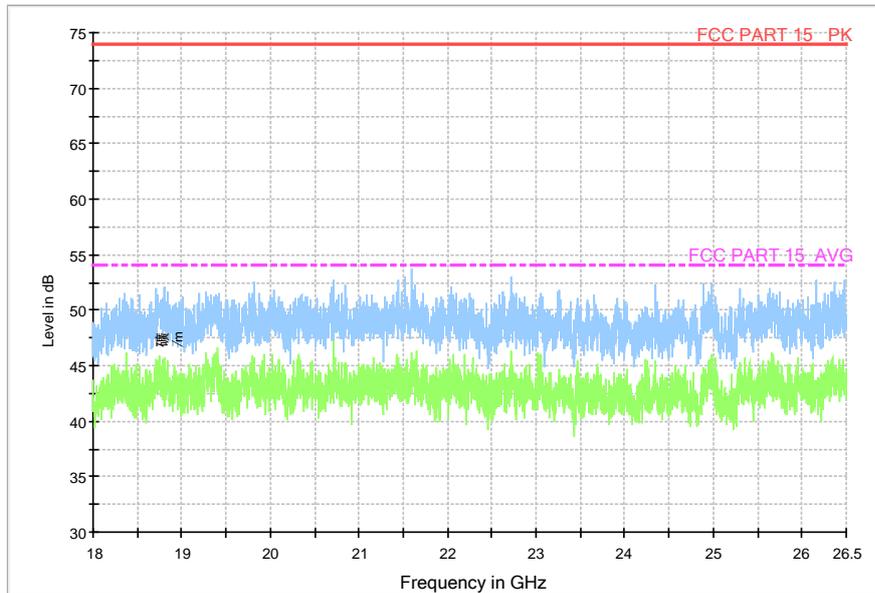


Fig.A.6.2.8 Transmitter Spurious Emission - Radiated (802.11b, Ch6, 18GHz – 26.5GHz)

RE-Power_2.45G-2.5GHz

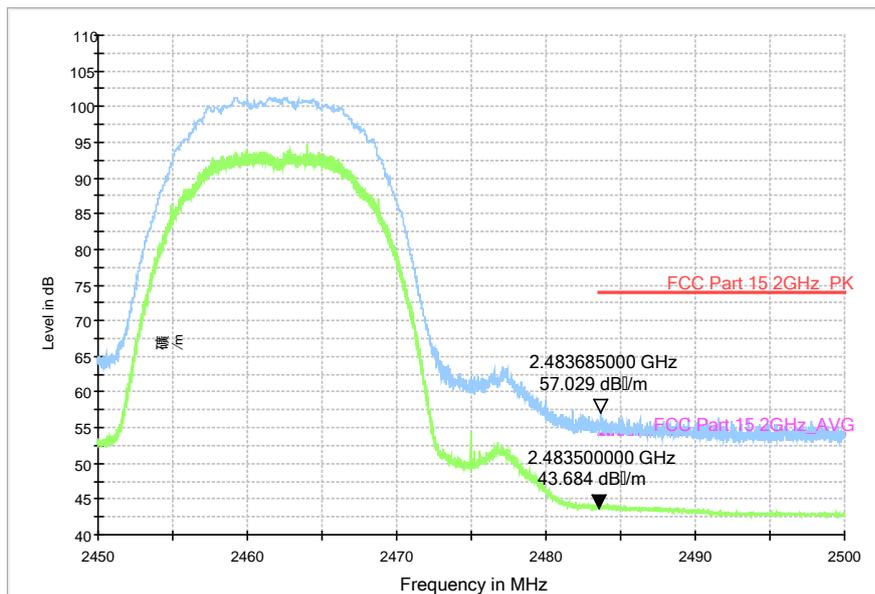


Fig.A.6.2.9 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch11, 2.45 GHz - 2.50GHz

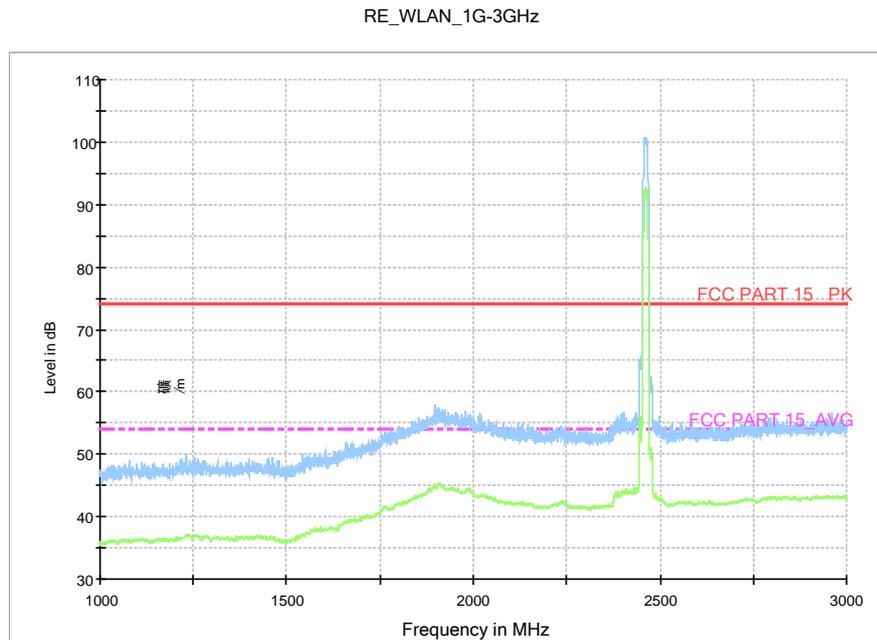


Fig.A.6.2.10 Transmitter Spurious Emission - Radiated (802.11b, Ch11, 1 GHz-3 GHz)

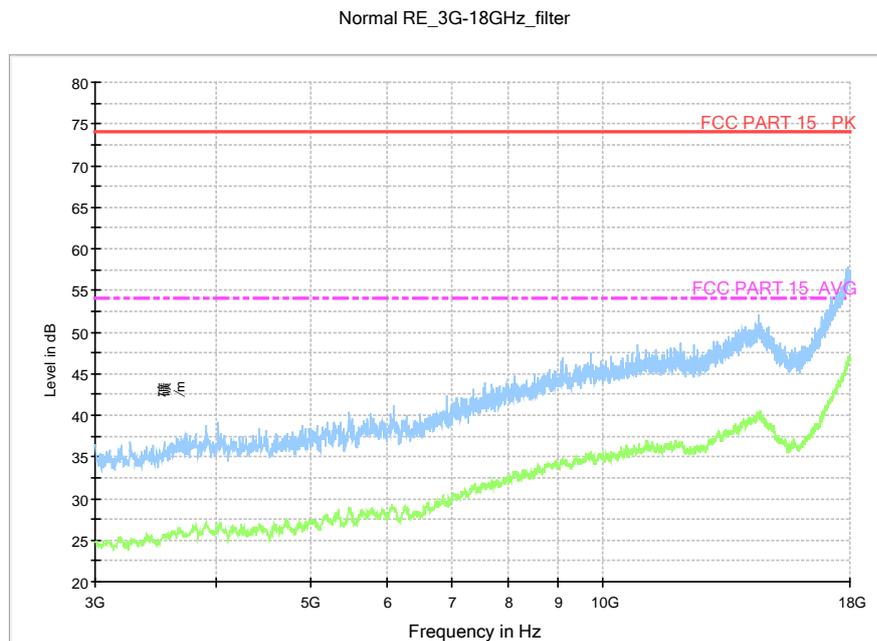


Fig.A.6.2.11 Transmitter Spurious Emission - Radiated (802.11b, Ch11, 3 GHz-18 GHz)

RE-Power_2.38G-2.43GHz

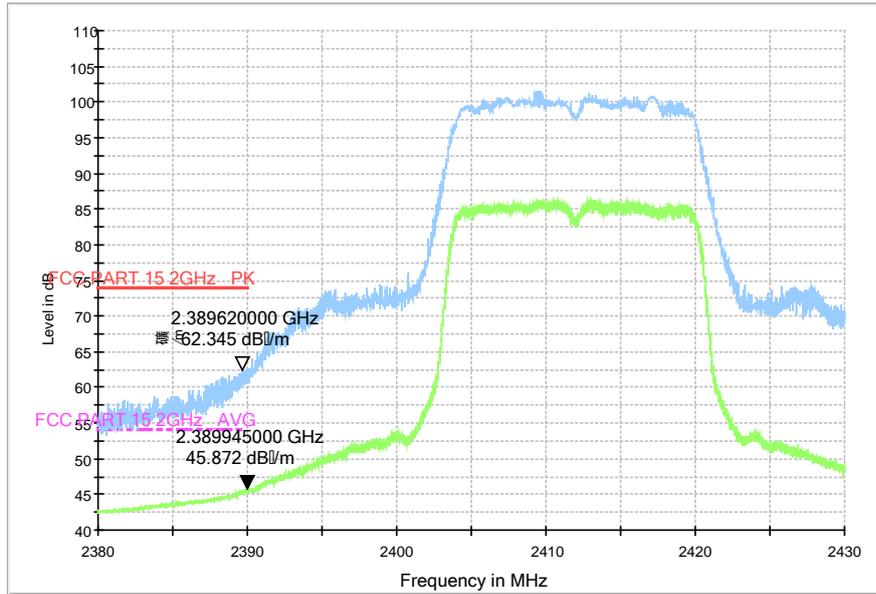


Fig.A.6.2.12 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch1, 2.38 GHz - 2.45GHz

RE_WLAN_1G-3GHz

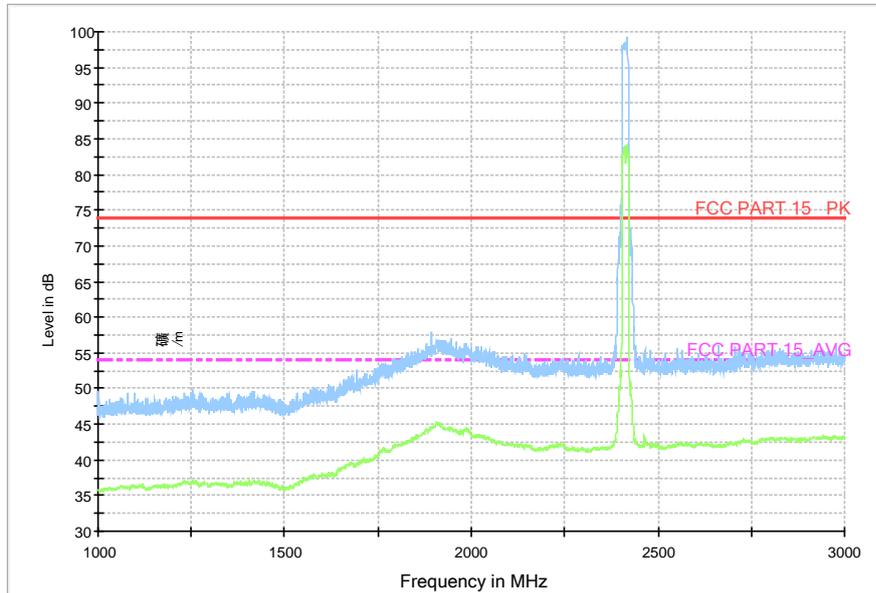


Fig.A.6.2.13 Transmitter Spurious Emission - Radiated (802.11g, Ch1, 1 GHz-3 GHz)

Normal RE_3G-18GHz_filter

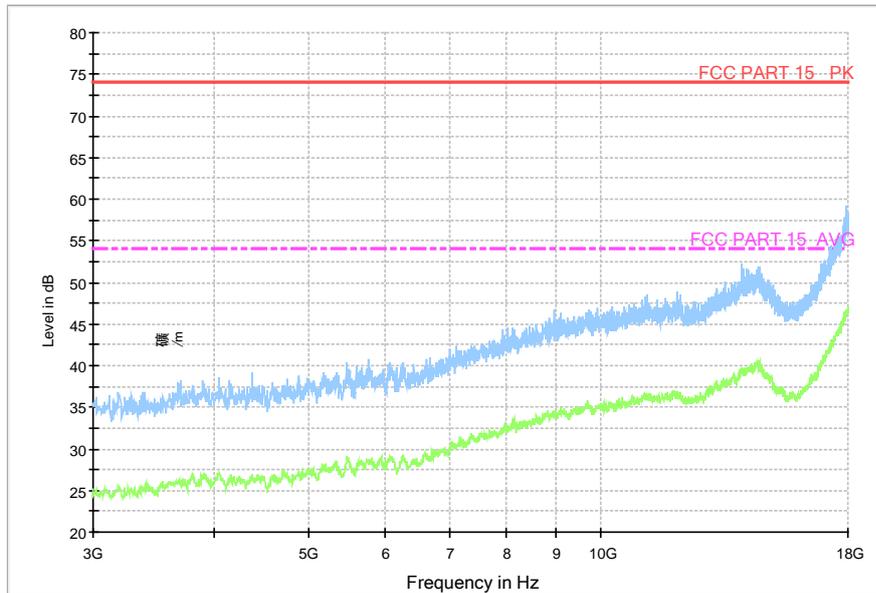


Fig.A.6.2.14 Transmitter Spurious Emission - Radiated (802.11g, Ch1, 3 GHz-18 GHz)

RE - TX - WLAN BT +QP+PK_30MHz-1GHz

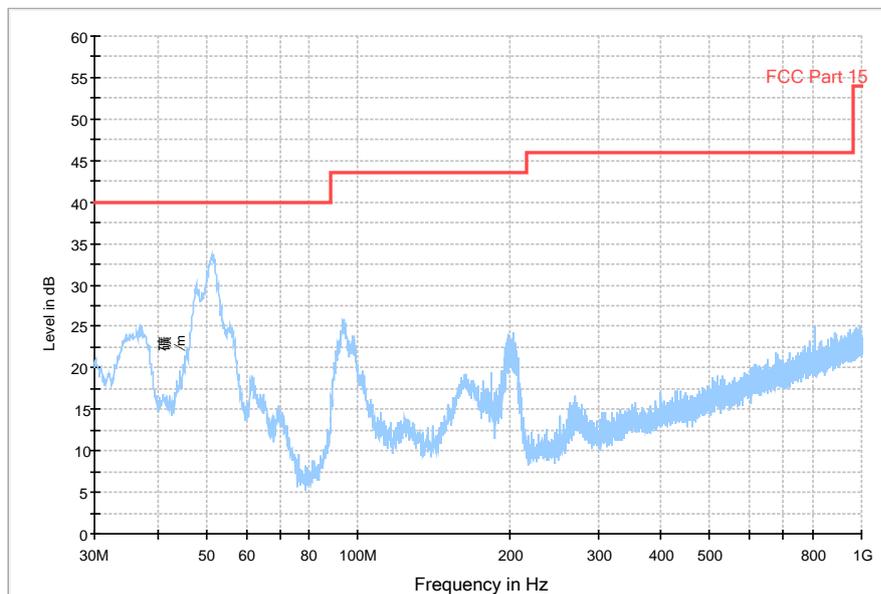


Fig.A.6.2.15 Transmitter Spurious Emission - Radiated (802.11g, Ch6, 30 MHz-1 GHz)

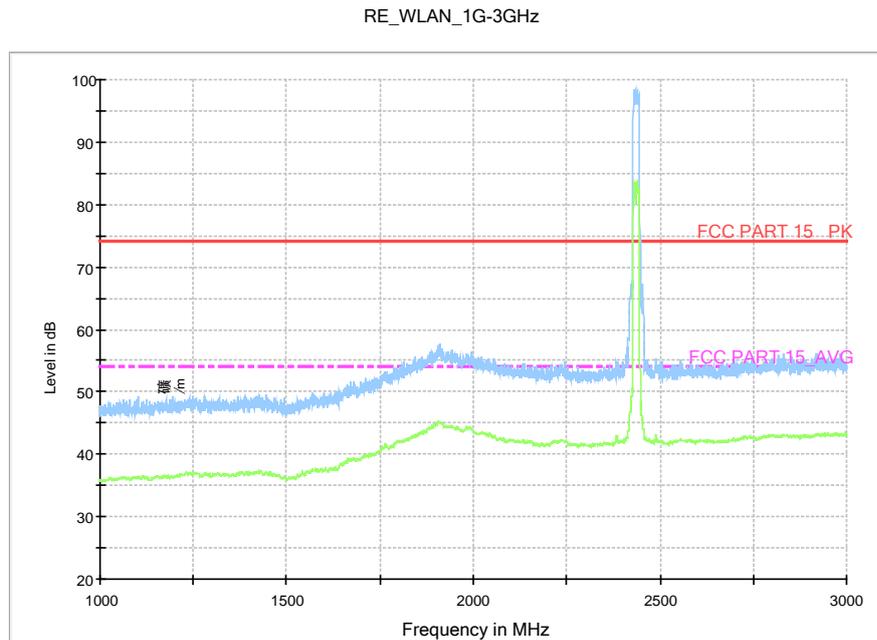


Fig.A.6.2.16 Transmitter Spurious Emission - Radiated (802.11g, Ch6, 1 GHz-3 GHz)

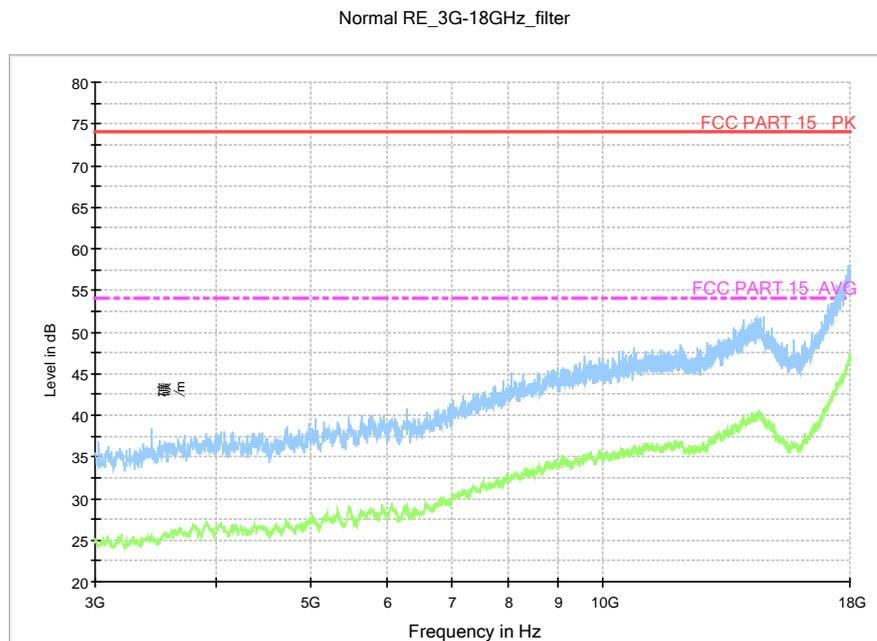


Fig.A.6.2.17 Transmitter Spurious Emission - Radiated (802.11g, Ch6, 3 GHz-18 GHz)

Normal RE_18G-26.5GHz

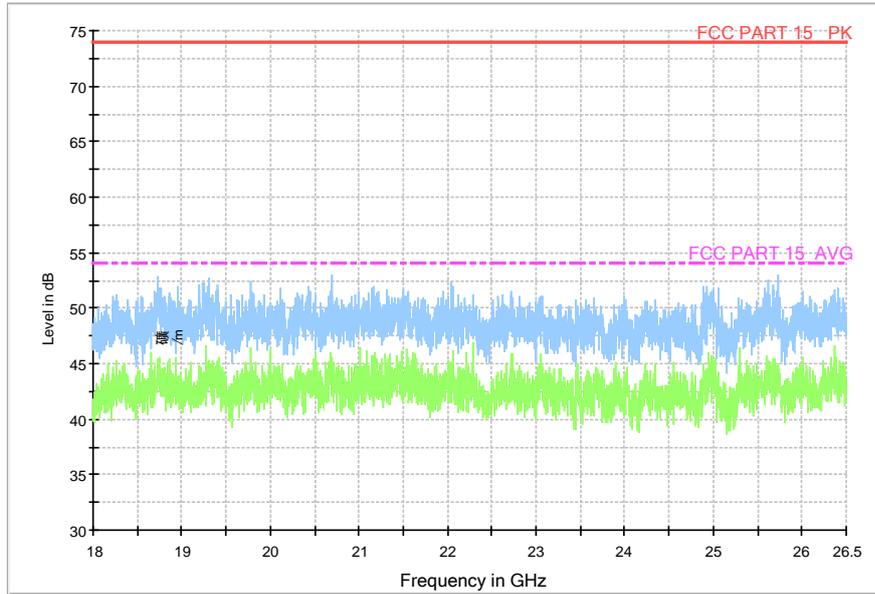


Fig.A.6.2.18 Transmitter Spurious Emission - Radiated (802.11g, Ch6, 18GHz – 26.5GHz)

RE-Power_2.45G-2.5GHz

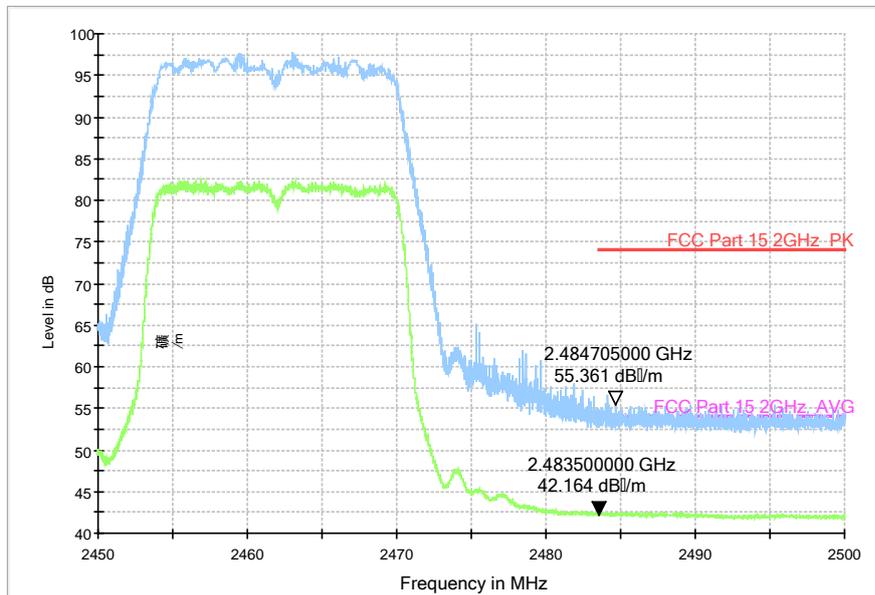


Fig.A.6.2.19 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch11, 2.45 GHz - 2.50GHz

RE_WLAN_1G-3GHz

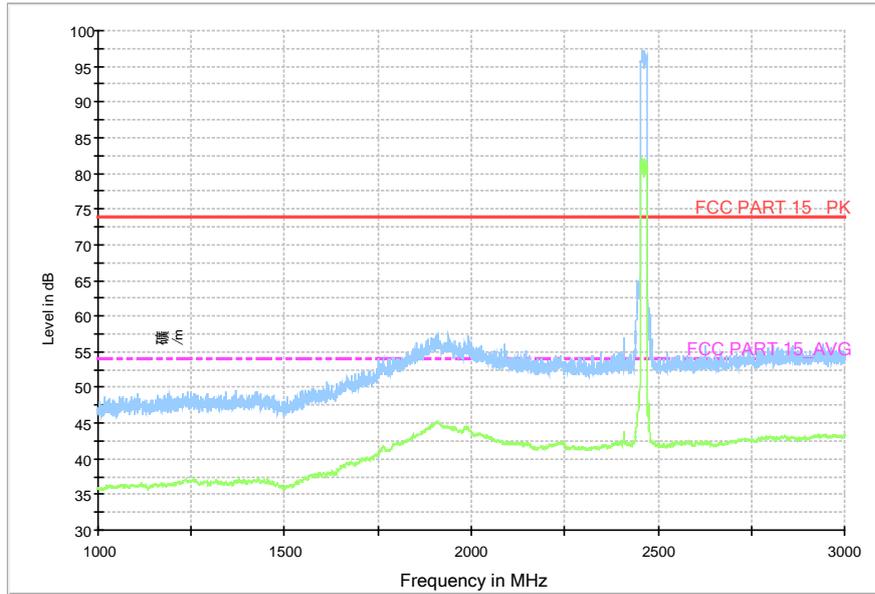


Fig.A.6.2.20 Transmitter Spurious Emission - Radiated (802.11g, Ch11, 1 GHz-3 GHz)

Normal RE_3G-18GHz_filter

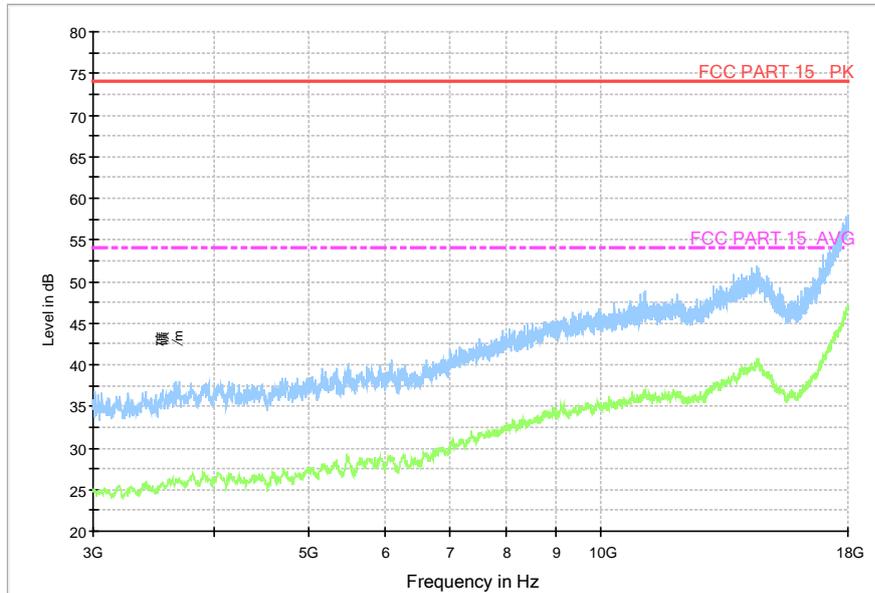


Fig.A.6.2.21 Transmitter Spurious Emission - Radiated (802.11g, Ch11, 3 GHz-18 GHz)

RE-Power_2.38G-2.43GHz

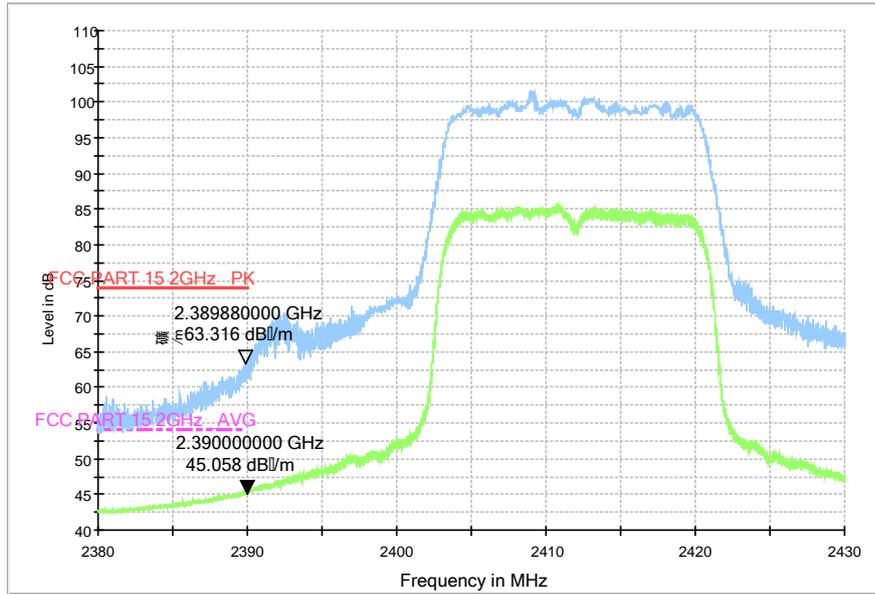


Fig.A.6.2.22 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch1, 2.38 GHz - 2.45GHz

RE_WLAN_1G-3GHz

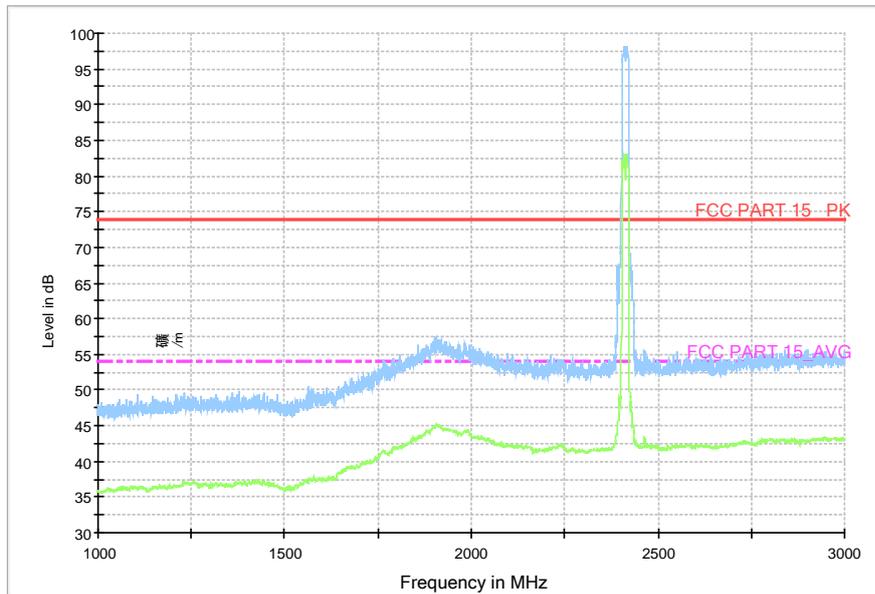


Fig.A.6.2.23 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch1, 1 GHz-3 GHz)

Normal RE_3G-18GHz_filter

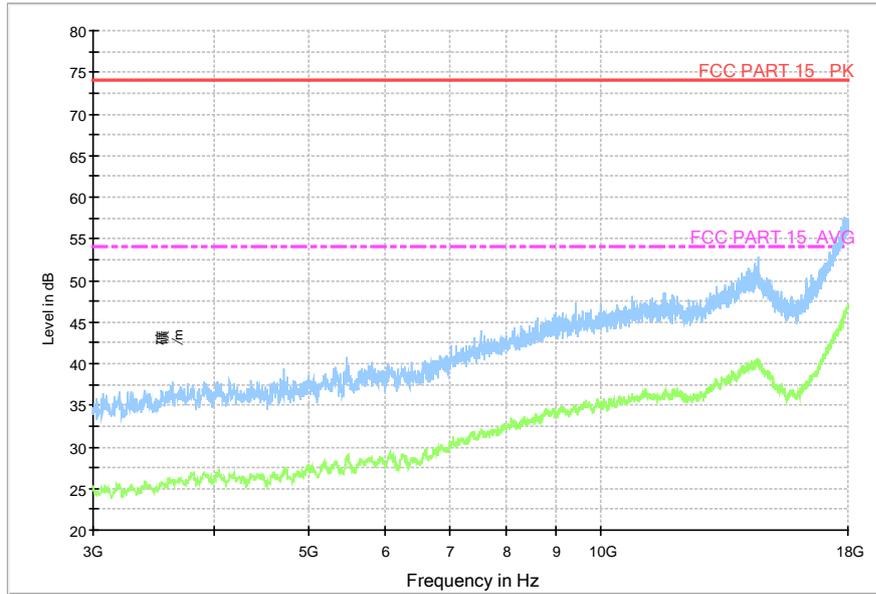


Fig.A.6.2.24 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch1, 3 GHz-18 GHz)

RE - TX - WLAN BT +QP+PK_30MHz-1GHz

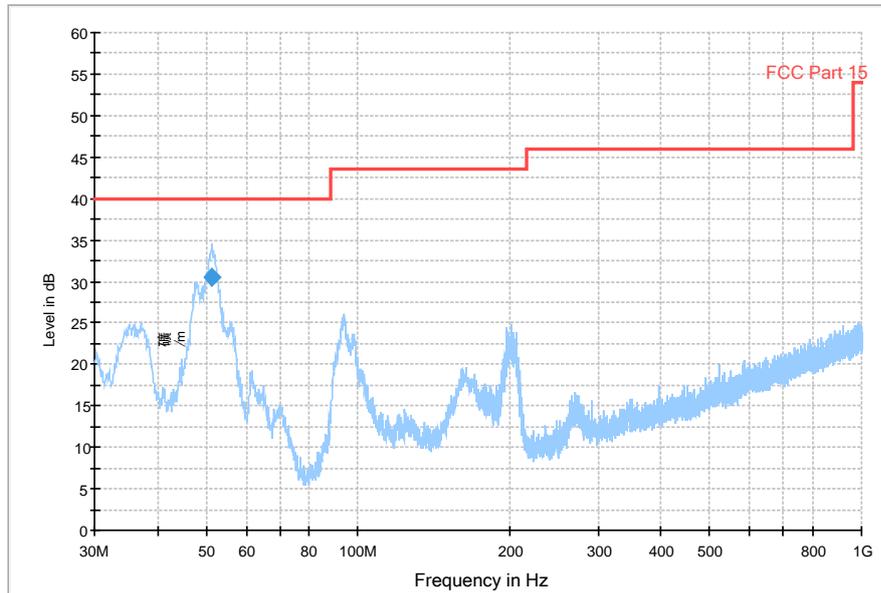


Fig.A.6.2.25 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch6, 30 MHz-1 GHz)

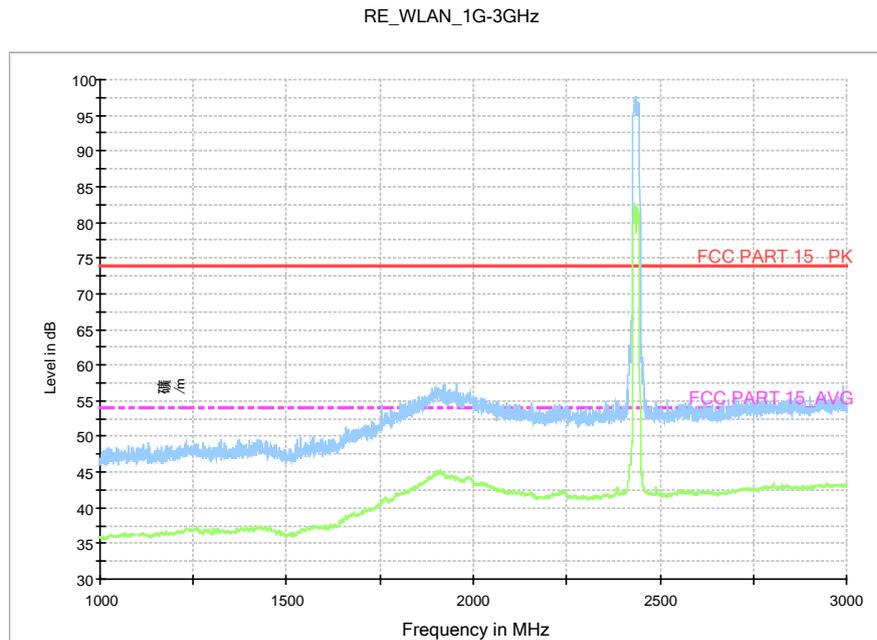


Fig.A.6.2.26 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch6, 1 GHz-3 GHz)

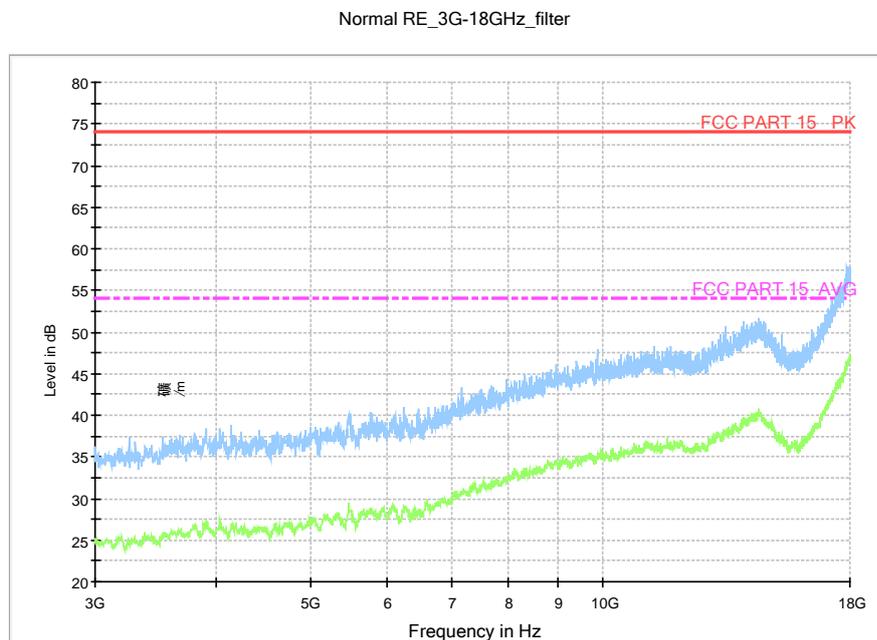


Fig.A.6.2.27 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch6, 3 GHz-18 GHz)

Normal RE_18G-26.5GHz

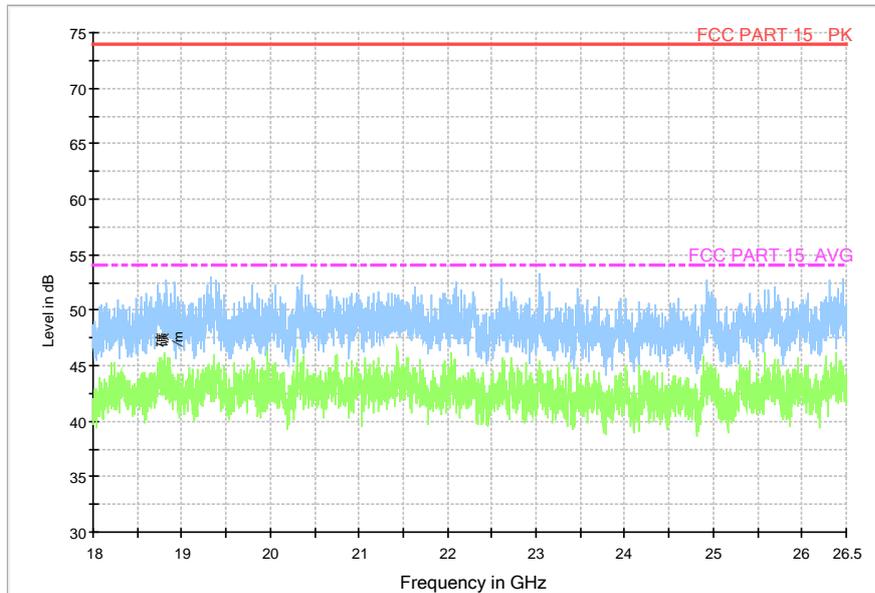


Fig.A.6.2.28 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch6, 18GHz – 26.5GHz)

RE-Power_2.45G-2.5GHz

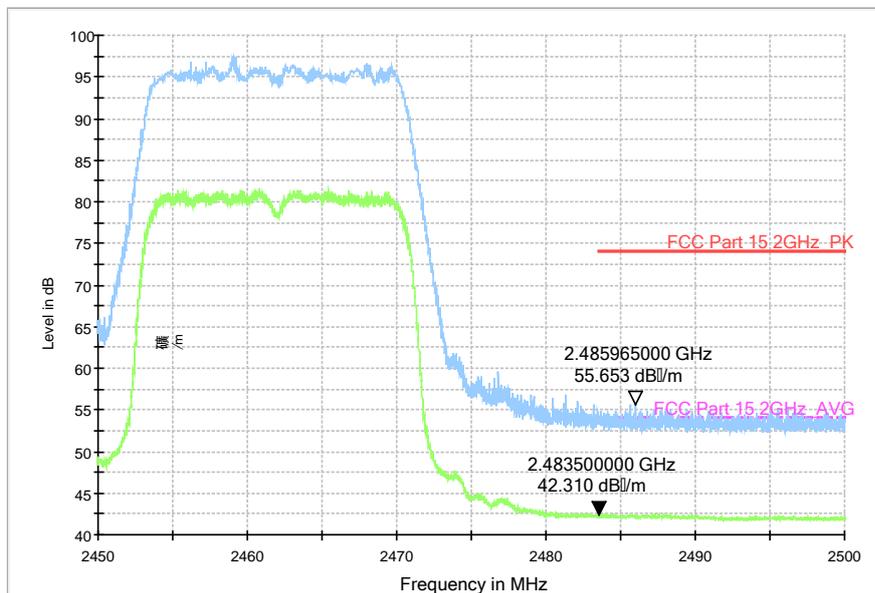


Fig.A.6.2.29 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch11, 2.45 GHz - 2.50GHz

RE_WLAN_1G-3GHz

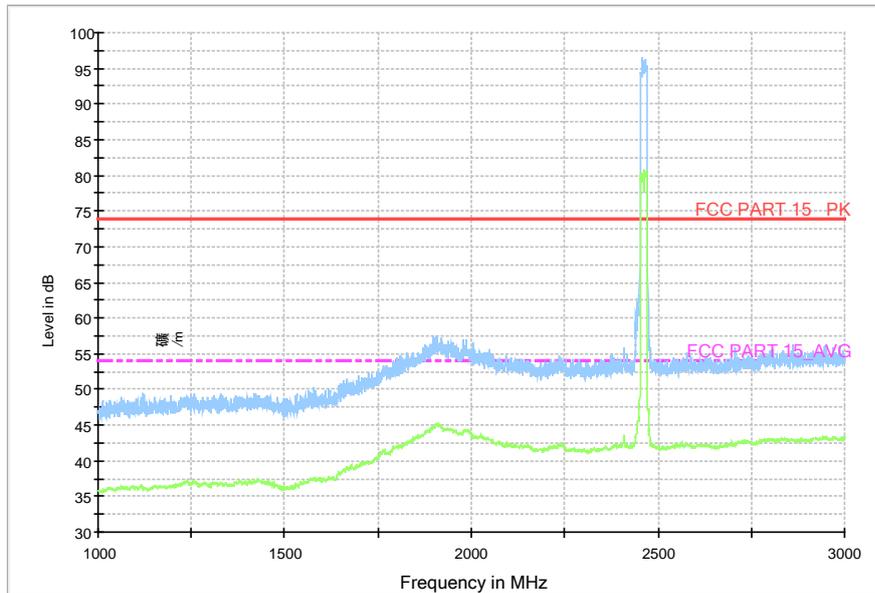


Fig.A.6.2.30 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch11, 1 GHz-3 GHz)

Normal RE_3G-18GHz_filter

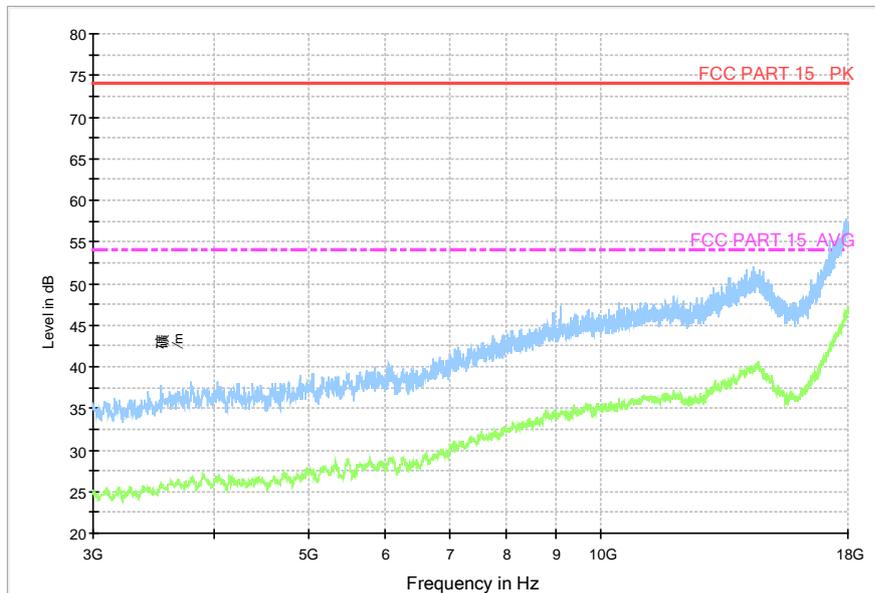


Fig.A.6.2.31 Transmitter Spurious Emission - Radiated (802.11n-HT20, Ch11, 3 GHz-18 GHz)

RE-Power_2.38G-2.43GHz

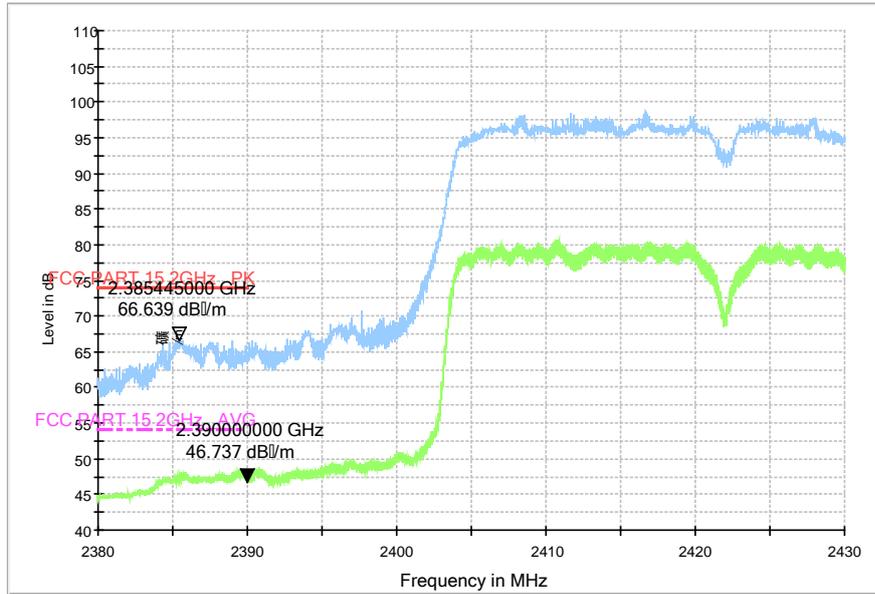


Fig.A.6.232 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT40, ch3, 2.38 GHz - 2.45GHz

RE_WLAN_1G-3GHz

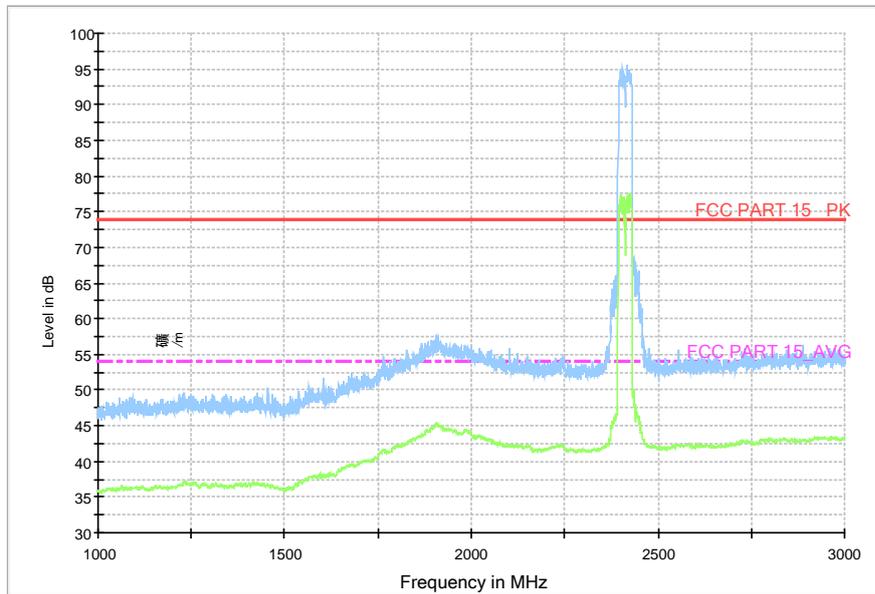


Fig.A.6.233 Transmitter Spurious Emission - Radiated (802.11n-HT40, Ch3, 1 GHz-3 GHz)

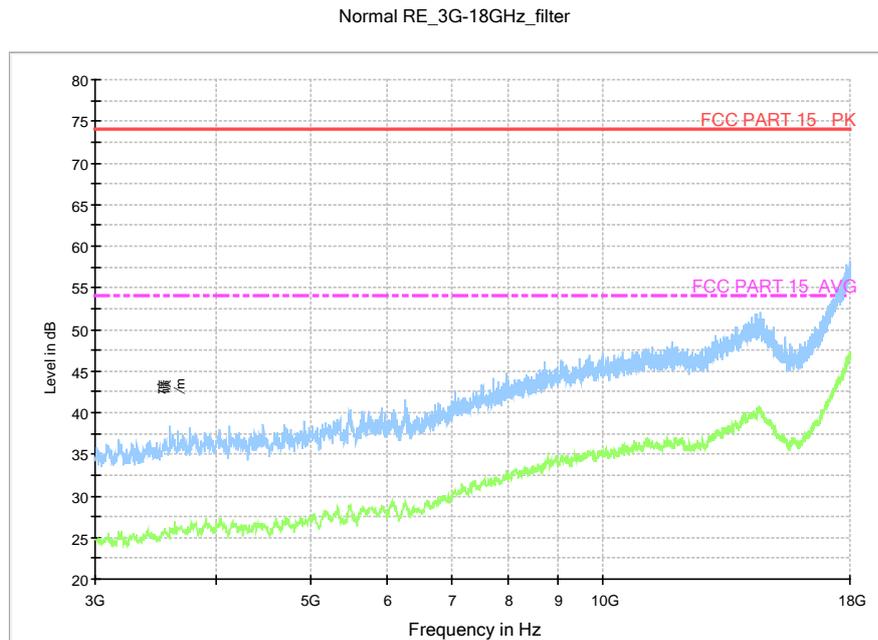


Fig.A.6.2.34 Transmitter Spurious Emission - Radiated (802.11n-HT40, Ch3, 3 GHz-18 GHz)

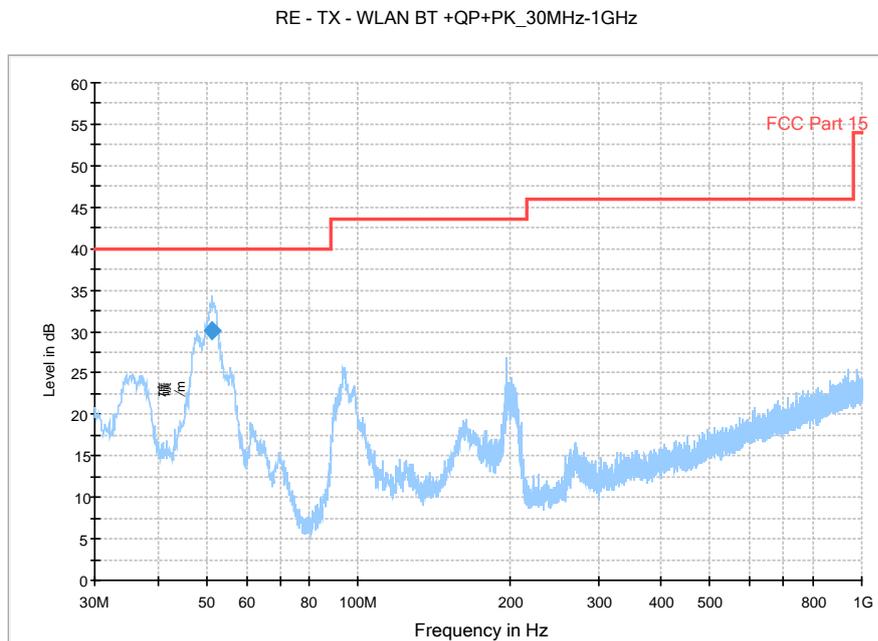


Fig.A.6.2.35 Transmitter Spurious Emission - Radiated (802.11n-HT40, Ch6, 30 MHz-1 GHz)

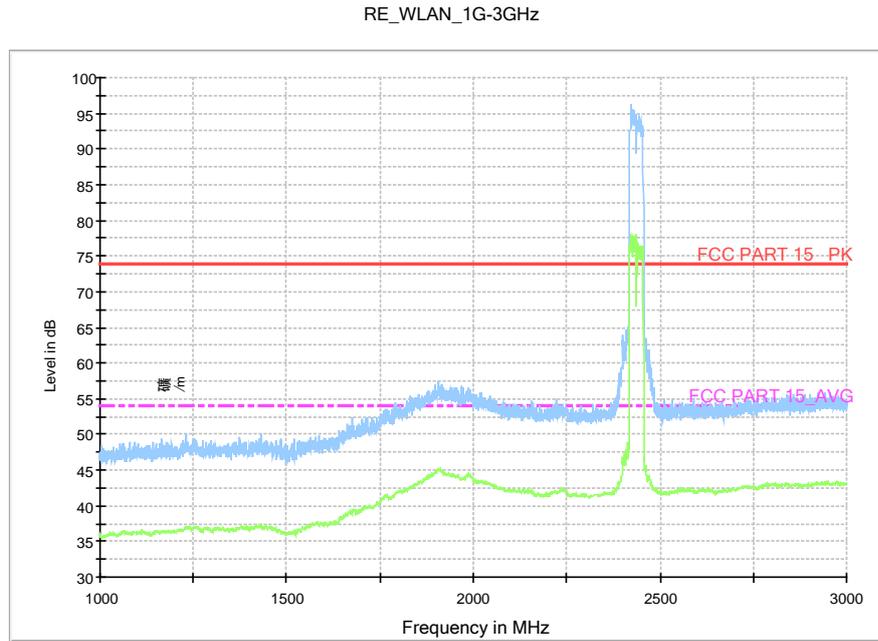


Fig.A.6.2.36 Transmitter Spurious Emission - Radiated (802.11n-HT40, Ch6, 1 GHz-3 GHz)

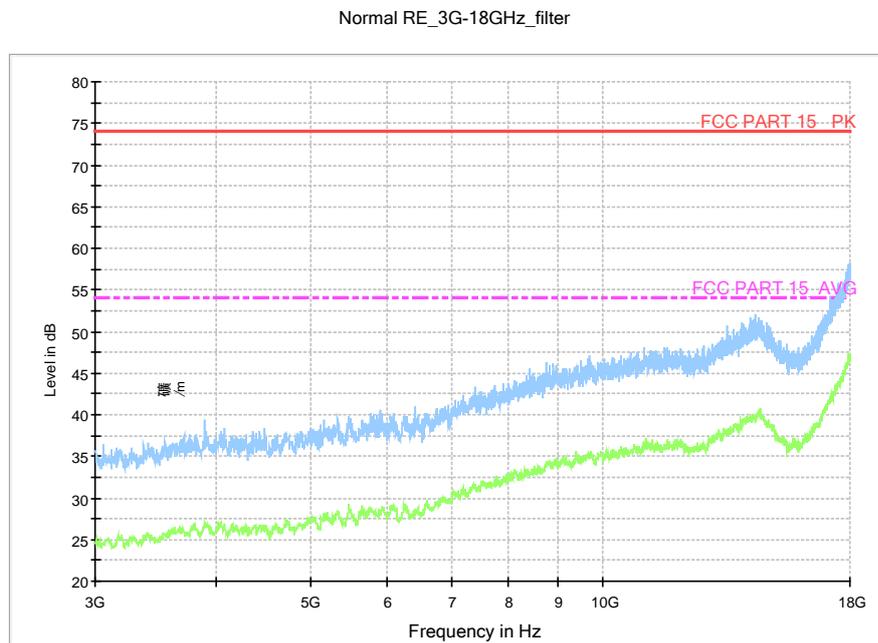


Fig.A.6.2.37 Transmitter Spurious Emission - Radiated (802.11n-HT40, Ch6, 3 GHz-18 GHz)

Normal RE_18G-26.5GHz

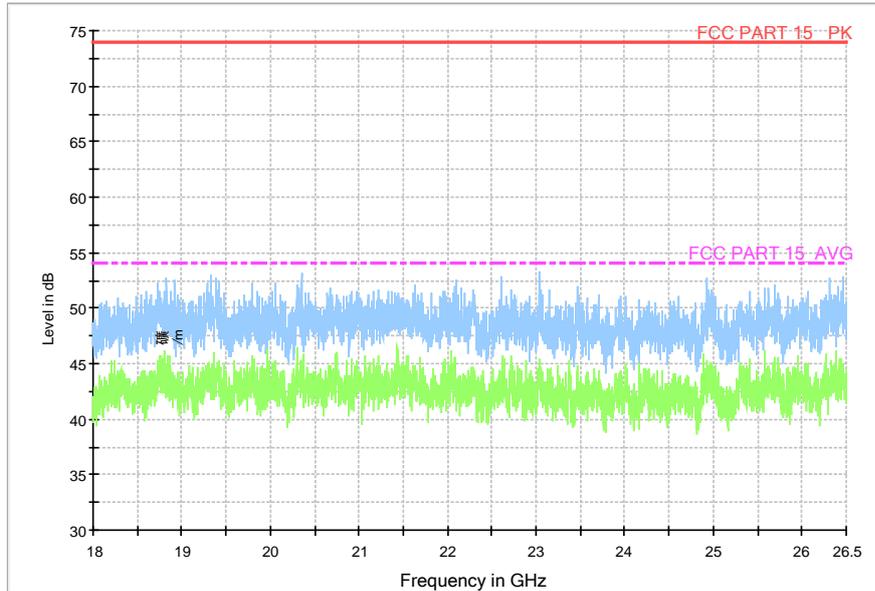


Fig.A.6.2.38 Transmitter Spurious Emission - Radiated (802.11n-HT40, Ch6, 18GHz – 26.5GHz)

RE-Power_2.45G-2.5GHz

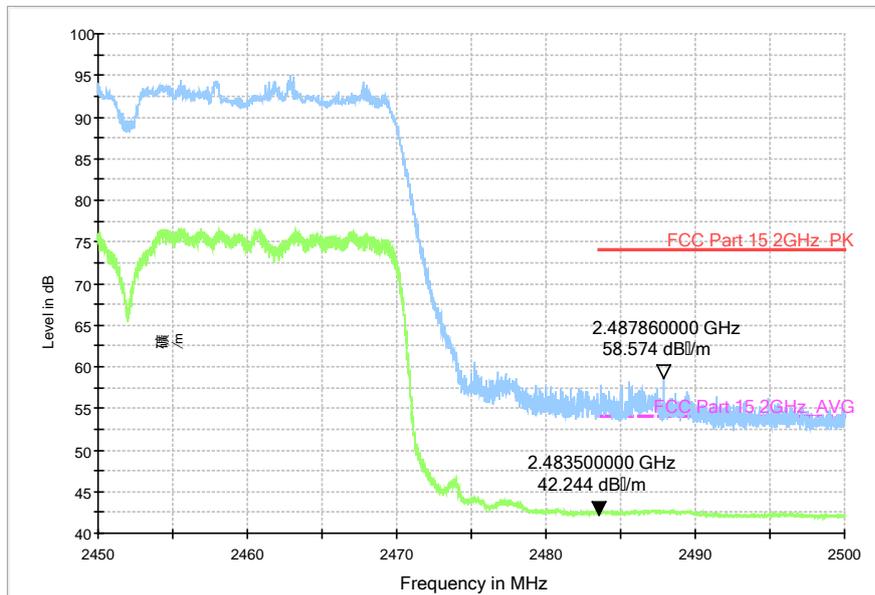


Fig.A.6.2.39 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT40, ch9, 2.45 GHz - 2.50GHz

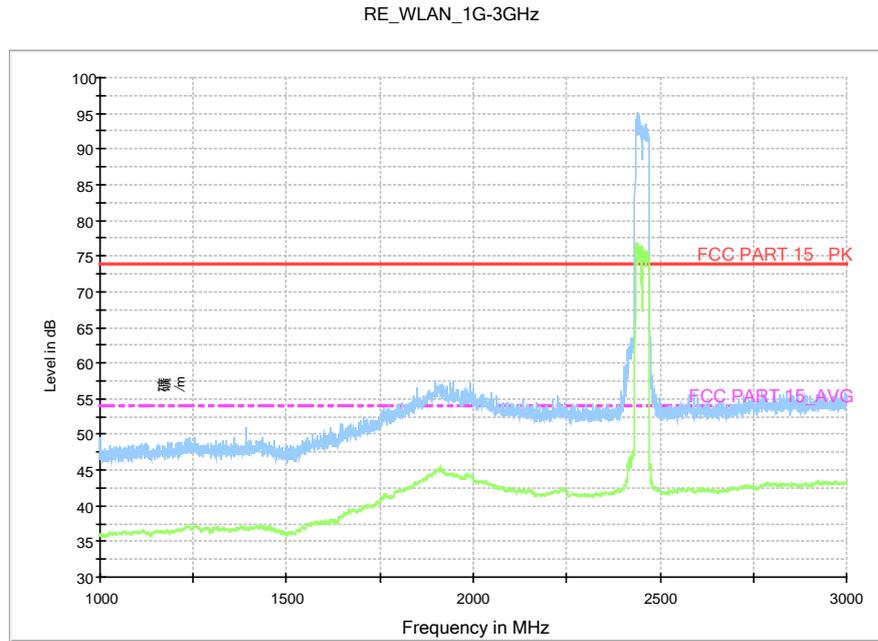


Fig.A.6.2.40 Transmitter Spurious Emission - Radiated (802.11n-HT40, Ch9, 1 GHz-3 GHz)

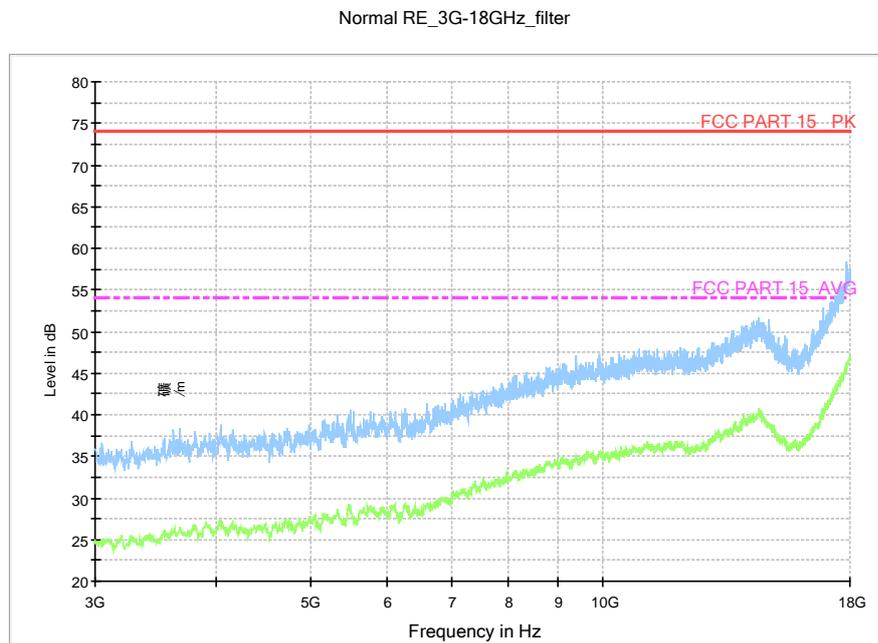


Fig.A.6.2.41 Transmitter Spurious Emission - Radiated (802.11n-HT40, Ch9, 3 GHz-18 GHz)



A.7. AC Power-line Conducted Emission

Method of Measurement: See ANSI C63.10-2013-clause 6.2

- 1 The one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT.
- 2 If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed.
- 3 The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation.
- 4 If the EUT is comprised of equipment units that have their own separate ac power connections, e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network, each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be separately measured. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.
- 5 If the EUT uses a detachable antenna, these measurements shall be made with a suitable dummy load connected to the antenna output terminals; otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended. When measuring the ac conducted emissions from a device that operates between 150 kHz and 30 MHz a non-detachable antenna may be replaced with a dummy load for the measurements within the fundamental emission band of the transmitter, but only for those measurements. Record the six highest EUT emissions relative to the limit of each of the current-carrying conductors of the power cords of the equipment that comprises the EUT over the frequency range specified by the procuring or regulatory agency. Diagram or photograph the test setup that was used. See Clause 8 for full reporting requirements.

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		With charger		
		802.11b	Idle	
0.15 to 0.5	66 to 56	Fig.A.7.1	Fig.A.7.2	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		
		802.11b	Idle	
0.15 to 0.5	56 to 46	Fig.A.7.1	Fig.A.7.2	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.

Conclusion: Pass

Test graphs as below:

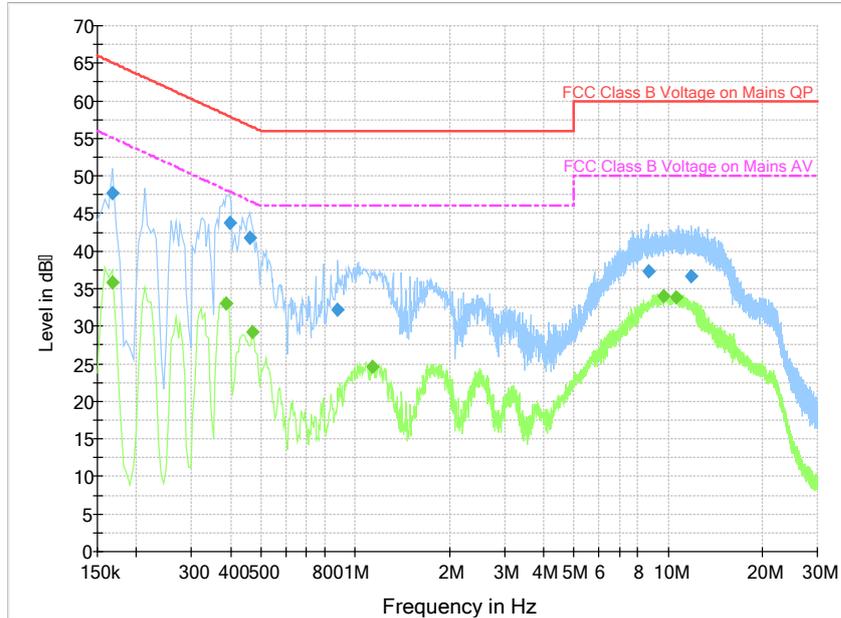


Fig.A.7.1 AC Powerline Conducted Emission-802.11b

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.168000	47.8	2000.	9.000	On	N	19.7	17.3	65.1
0.397500	43.7	2000.	9.000	On	L1	19.8	14.2	57.9
0.460500	41.8	2000.	9.000	On	L1	19.8	14.9	56.7
0.879000	32.2	2000.	9.000	On	L1	19.7	23.8	56.0
8.700000	37.3	2000.	9.000	On	N	19.8	22.7	60.0
11.899500	36.6	2000.	9.000	On	L1	19.8	23.4	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.168000	35.8	2000.0	9.000	On	N	19.7	19.2	55.1
0.388500	33.0	2000.0	9.000	On	L1	19.8	15.1	48.1
0.469500	29.3	2000.0	9.000	On	L1	19.8	17.2	46.5
1.140000	24.5	2000.0	9.000	On	L1	19.6	21.5	46.0
9.690000	34.1	2000.0	9.000	On	N	19.8	15.9	50.0
10.630500	33.9	2000.0	9.000	On	N	19.9	16.1	50.0

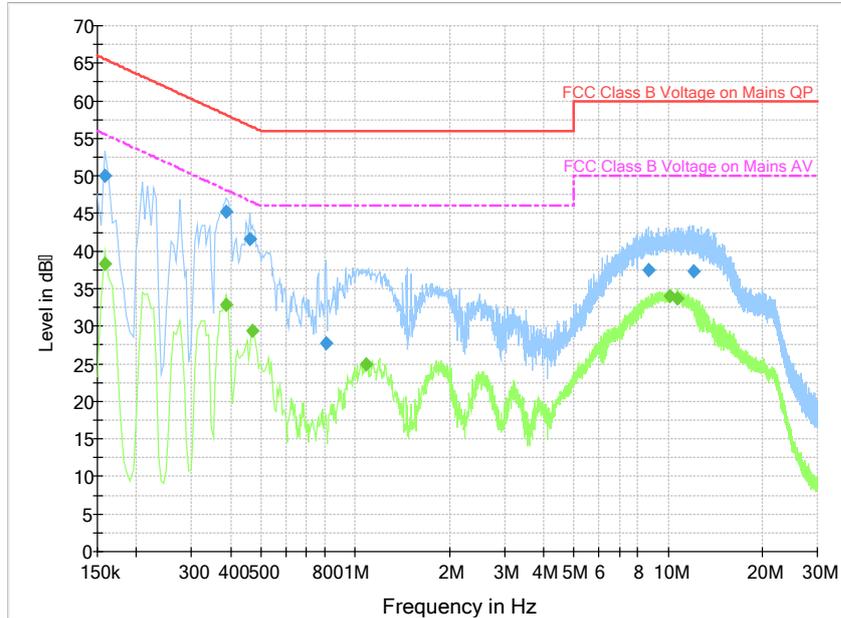


Fig.A.7.2 AC Powerline Conducted Emission-Idle

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.159000	50.1	2000.0	9.000	On	N	19.7	15.5	65.5
0.388500	45.2	2000.0	9.000	On	L1	19.8	12.9	58.1
0.460500	41.6	2000.0	9.000	On	L1	19.8	15.1	56.7
0.807000	27.8	2000.0	9.000	On	L1	19.7	28.2	56.0
8.686500	37.5	2000.0	9.000	On	L1	19.8	22.5	60.0
12.057000	37.3	2000.0	9.000	On	L1	19.8	22.7	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.159000	38.2	2000.0	9.000	On	N	19.7	17.3	55.5
0.388500	32.9	2000.0	9.000	On	L1	19.8	15.2	48.1
0.469500	29.5	2000.0	9.000	On	L1	19.8	17.1	46.5
1.081500	25.0	2000.0	9.000	On	L1	19.7	21.0	46.0
10.113000	34.0	2000.0	9.000	On	N	19.8	16.0	50.0
10.756500	33.7	2000.0	9.000	On	N	19.9	16.3	50.0

ANNEX B: Accreditation Certificate



China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(No. CNAS L0570)

Telecommunication Technology Labs,

Academy of Telecommunication Research, MIIT

No.52, Huayuan North Road, Haidian District, Beijing, China

No.51, Xueyuan Road, Haidian District, Beijing, China

to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing and calibration.

The scope of accreditation is detailed in the attached schedule bearing the same accreditation number as above. The schedule forms an integral part of this certificate.

Date of Issue: 2014-10-29

Date of Expiry: 2017-06-19

Date of Initial Accreditation: 1998-07-03



Signed on behalf of China National Accreditation Service
for Conformity Assessment

China National Accreditation Service for Conformity Assessment (CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation schemes for conformity assessment. CNAS is the signatory to International Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (ILAC MRA) and Asia Pacific Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (APLAC MRA).

No.CNAS AL 2

0011149

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