

802.11g

Ch1

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)
17478	53.1	-26.9	45.2	34.7	74.0	39.3	V
17511	52.9	-26.9	45.2	34.5	74.0	39.5	V
17980	52.7	-25.5	46.7	31.5	74.0	42.5	V
17989	52.7	-25.5	46.7	31.5	74.0	42.5	V
17998	52.7	-25.5	46.7	31.5	74.0	42.5	H
2389.8	60	-20.0	28.1	52.0	74.0	22.0	H

Ch6

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)
17957	53.6	-25.5	46.7	32.4	74.0	41.6	H
17917	53.2	-25.5	46.7	32.0	74.0	42.0	H
17172.5	52.9	-26.6	43.4	36.1	74.0	37.9	H
17491.5	52.9	-26.9	45.2	34.5	74.0	39.5	V
17582	52.8	-25.7	46.0	32.6	74.0	41.4	H
17758.5	52.8	-25.5	46.7	31.6	74.0	42.4	H

Ch11

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)
17957.5	53.7	-25.5	46.7	32.5	74.0	41.5	H
17573.5	53.2	-25.7	46.0	33.0	74.0	41.0	H
17875	53.1	-25.5	46.7	31.9	74.0	42.1	V
17608	52.9	-25.7	46.0	32.7	74.0	41.3	H
17968	52.7	-25.5	46.7	31.5	74.0	42.5	H
2485.1	59.7	-20.0	28.3	51.4	74.0	22.6	H

802.11n-HT20
Ch1

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)
17997	54.1	-25.5	46.7	32.9	74.0	41.1	H
17893.5	53.3	-25.5	46.7	32.1	74.0	41.9	V
17942	53.1	-25.5	46.7	31.9	74.0	42.1	H
17502.5	53	-26.9	45.2	34.6	74.0	39.4	V
17975.5	52.9	-25.5	46.7	31.7	74.0	42.3	H
2389.9	61.4	-20.0	28.1	53.4	74.0	20.6	H

Ch6

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)
17908	53	-25.5	46.7	31.8	74.0	42.2	H
17402	52.9	-26.9	45.2	34.5	74.0	39.5	H
17535	52.8	-26.9	45.2	34.4	74.0	39.6	H
17907	52.8	-25.5	46.7	31.6	74.0	42.4	H
17761.5	52.7	-25.5	46.7	31.5	74.0	42.5	V
17964	52.7	-25.5	46.7	31.5	74.0	42.5	V

Ch11

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)
17476	53.5	-26.9	45.2	35.1	74.0	38.9	H
17905	53.2	-25.5	46.7	32.0	74.0	42.0	V
17396.5	53.1	-26.9	45.2	34.7	74.0	39.3	V
17532	53.1	-26.9	45.2	34.7	74.0	39.3	V
17641.5	53	-25.7	46.0	32.8	74.0	41.2	V
2485.1	59.8	-20.0	28.3	51.5	74.0	22.5	H

802.11n-HT40

Ch3

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)
17900.5	52.9	-25.5	46.7	31.7	74.0	42.3	V
17984	52.9	-25.5	46.7	31.7	74.0	42.3	H
17994	52.8	-25.5	46.7	31.6	74.0	42.4	H
17946.5	52.7	-25.5	46.7	31.5	74.0	42.5	H
17505.5	52.6	-26.9	45.2	34.2	74.0	39.8	V
2388.4	61.6	-20.0	28.1	53.6	74.0	20.4	H

Ch6

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)
17892	53	-25.5	46.7	31.8	74.0	42.2	V
17900.5	52.9	-25.5	46.7	31.7	74.0	42.3	V
17854.5	52.8	-25.5	46.7	31.6	74.0	42.4	H
17981.5	52.8	-25.5	46.7	31.6	74.0	42.4	H
17943.5	52.7	-25.5	46.7	31.5	74.0	42.5	H
17519	52.6	-26.9	45.2	34.2	74.0	39.8	V

Ch9

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)
17841.5	53.4	-25.5	46.7	32.2	74.0	41.8	H
17593	53.2	-25.7	46.0	33.0	74.0	41.0	H
17711	53.1	-25.7	46.0	32.9	74.0	41.1	V
17984.5	53	-25.5	46.7	31.8	74.0	42.2	H
17849	52.9	-25.5	46.7	31.7	74.0	42.3	V
2485.1	63.4	-20.0	28.3	55.1	74.0	18.9	H

Average
802.11b
Ch1

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)
17997	42.2	-25.5	46.7	21.0	54.0	33.0	V
17981.5	42	-25.5	46.7	20.8	54.0	33.2	V
17991.5	41.9	-25.5	46.7	20.7	54.0	33.3	H
17985	41.8	-25.5	46.7	20.6	54.0	33.4	V
17987	41.8	-25.5	46.7	20.6	54.0	33.4	V
2387.9	42.5	-20.0	28.1	34.5	54.0	19.5	H

Ch6

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)
17998.5	42.4	-25.5	46.7	21.2	54.0	32.8	H
17984	42	-25.5	46.7	20.8	54.0	33.2	V
17970	41.8	-25.5	46.7	20.6	54.0	33.4	V
17901	41.7	-25.5	46.7	20.5	54.0	33.5	H
17993.5	41.7	-25.5	46.7	20.5	54.0	33.5	H
17975.5	41.6	-25.5	46.7	20.4	54.0	33.6	V

Ch11

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)
17992.5	42	-25.5	46.7	20.8	54.0	33.2	H
17957	41.9	-25.5	46.7	20.7	54.0	33.3	H
17988.5	41.9	-25.5	46.7	20.7	54.0	33.3	V
17966	41.8	-25.5	46.7	20.6	54.0	33.4	V
17990.5	41.8	-25.5	46.7	20.6	54.0	33.4	H
2486.8	45.6	-20.0	28.3	37.3	54.0	16.7	H

802.11g
Ch1

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)
17982	42	-25.5	46.7	20.8	54.0	33.2	V
17997.5	42	-25.5	46.7	20.8	54.0	33.2	H
17985	41.9	-25.5	46.7	20.7	54.0	33.3	V
17970	41.8	-25.5	46.7	20.6	54.0	33.4	H
17976	41.8	-25.5	46.7	20.6	54.0	33.4	V
2389.9	47.3	-20.0	28.1	39.3	54.0	14.7	H

Ch6

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)
17966	42	-25.5	46.7	20.8	54.0	33.2	V
17925.5	41.9	-25.5	46.7	20.7	54.0	33.3	H
17979	41.8	-25.5	46.7	20.6	54.0	33.4	V
17997	41.8	-25.5	46.7	20.6	54.0	33.4	V
17984.5	41.7	-25.5	46.7	20.5	54.0	33.5	V
17991.5	41.7	-25.5	46.7	20.5	54.0	33.5	H

Ch11

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)
17893	42.1	-25.5	46.7	20.9	54.0	33.1	V
17973.5	42	-25.5	46.7	20.8	54.0	33.2	V
17975	42	-25.5	46.7	20.8	54.0	33.2	V
17986	42	-25.5	46.7	20.8	54.0	33.2	V
17990.5	42	-25.5	46.7	20.8	54.0	33.2	H
2485.1	46.3	-20.0	28.3	38.0	54.0	16.0	H

802.11n-HT20
Ch1

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)
17976.5	41.9	-25.5	46.7	20.7	54.0	33.3	H
17986.5	41.9	-25.5	46.7	20.7	54.0	33.3	H
17989	41.9	-25.5	46.7	20.7	54.0	33.3	H
17994.5	41.9	-25.5	46.7	20.7	54.0	33.3	H
17987.5	41.8	-25.5	46.7	20.6	54.0	33.4	H
2389.9	46.9	-20.0	28.1	38.9	54.0	15.1	H

Ch6

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)
17992.5	42	-25.5	46.7	20.8	54.0	33.2	V
17988	41.9	-25.5	46.7	20.7	54.0	33.3	V
17994.5	41.9	-25.5	46.7	20.7	54.0	33.3	V
17976.5	41.8	-25.5	46.7	20.6	54.0	33.4	V
17397.5	41.7	-26.9	45.2	23.3	54.0	30.7	V
17893	41.7	-25.5	46.7	20.5	54.0	33.5	H

Ch11

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)
17984	41.9	-25.5	46.7	20.7	54.0	33.3	V
17992.5	41.9	-25.5	46.7	20.7	54.0	33.3	H
17997	41.9	-25.5	46.7	20.7	54.0	33.3	H
17971	41.8	-25.5	46.7	20.6	54.0	33.4	H
17989	41.8	-25.5	46.7	20.6	54.0	33.4	H
2485	46.3	-20.0	28.3	38.0	54.0	16.0	H

802.11n-HT40

Ch3

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)
17994.5	42.2	-25.5	46.7	21.0	54.0	33.0	H
17984	42.1	-25.5	46.7	20.9	54.0	33.1	H
17993.5	41.9	-25.5	46.7	20.7	54.0	33.3	V
17994	41.8	-25.5	46.7	20.6	54.0	33.4	H
17488.5	41.7	-26.9	45.2	23.3	54.0	30.7	H
2389.9	51.1	-20.0	28.1	43.1	54.0	10.9	H

Ch6

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)
17900.5	41.9	-25.5	46.7	20.7	54.0	33.3	V
17925	41.9	-25.5	46.7	20.7	54.0	33.3	V
17966	41.9	-25.5	46.7	20.7	54.0	33.3	H
17977.5	41.9	-25.5	46.7	20.7	54.0	33.3	V
17502	41.8	-26.9	45.2	23.4	54.0	30.6	V
17875	41.8	-25.5	46.7	20.6	54.0	33.4	V

Ch9

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)
17998.5	42.1	-25.5	46.7	20.9	54.0	33.1	V
17974	41.9	-25.5	46.7	20.7	54.0	33.3	V
17984	41.9	-25.5	46.7	20.7	54.0	33.3	H
17983	41.8	-25.5	46.7	20.6	54.0	33.4	V
17985.5	41.8	-25.5	46.7	20.6	54.0	33.4	H
2485	51.2	-20.0	28.3	42.9	54.0	11.1	H

Test graphs as below:

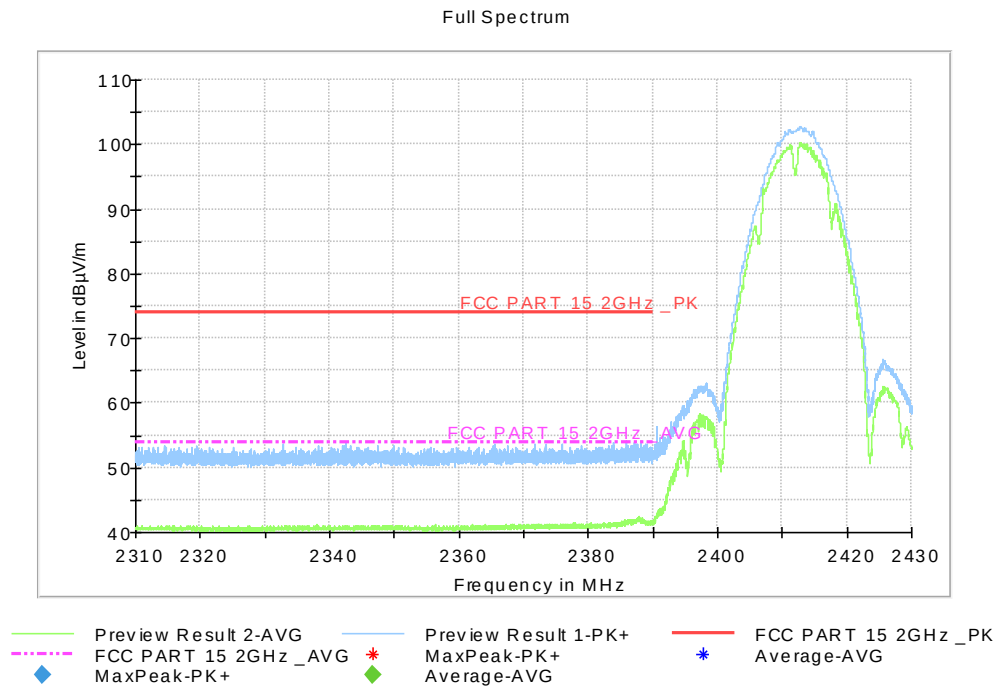


Fig.B.6.2.1 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch1, 2.31 GHz – 2.45GHz

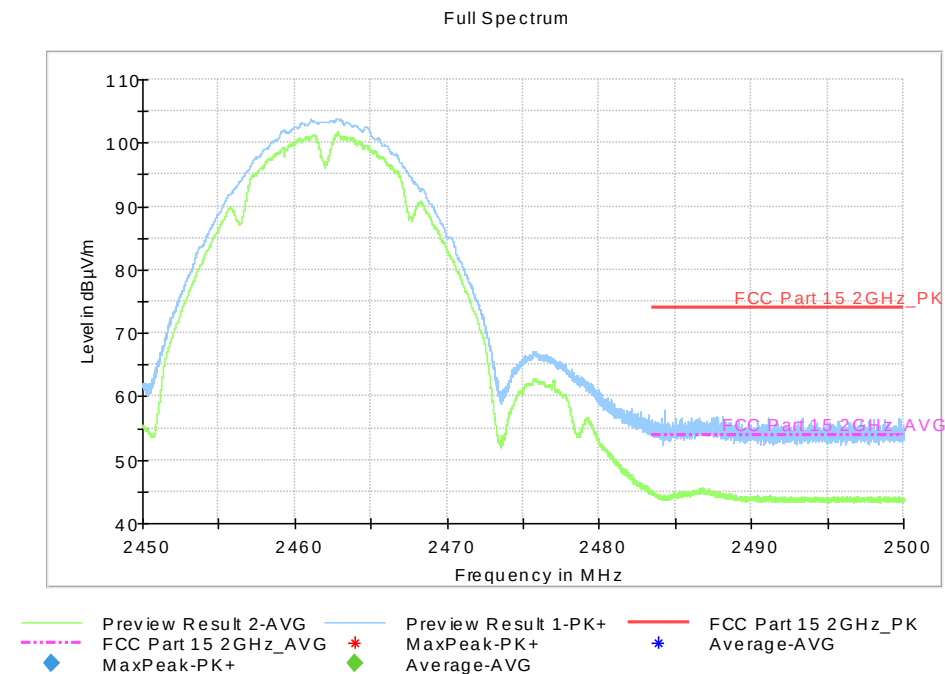


Fig.B.6.2.2 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch11, 2.45 GHz - 2.50GHz

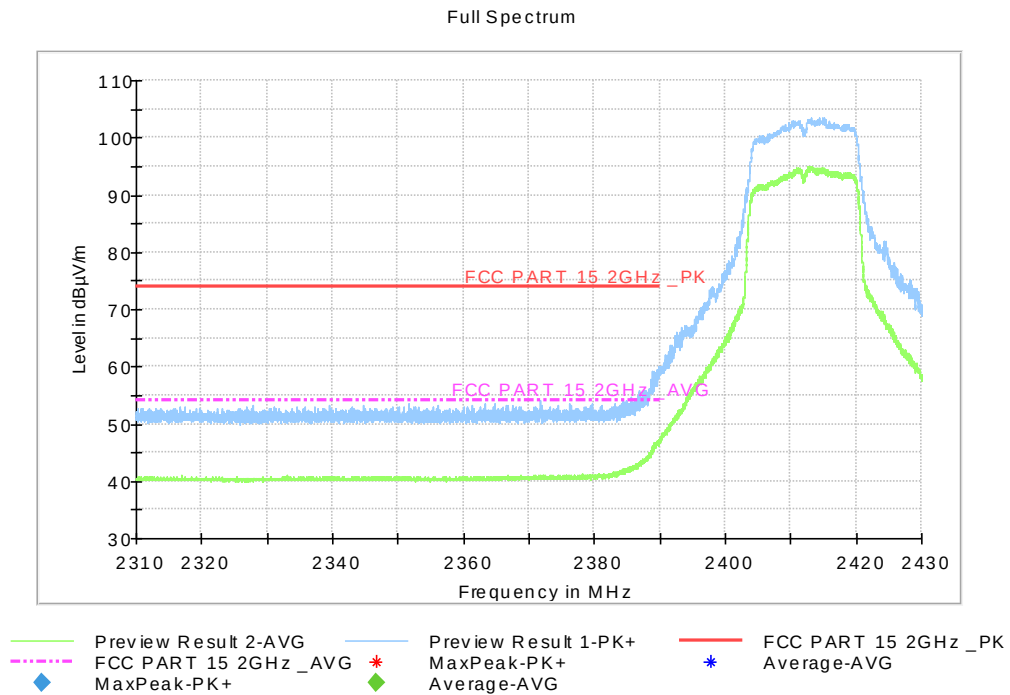


Fig.B.6.2.3 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch1, 2.31 GHz - 2.45GHz

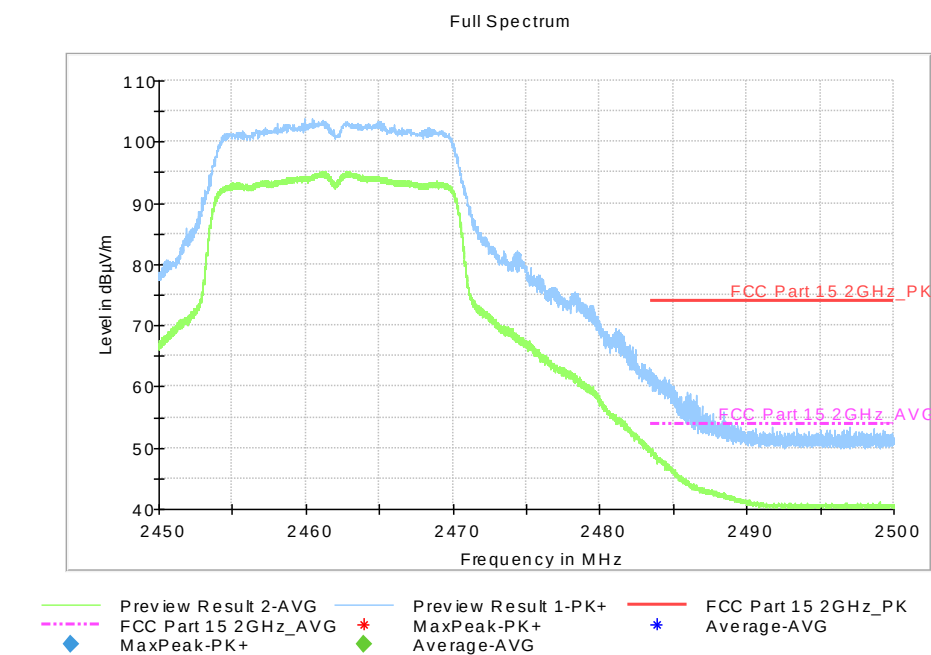


Fig.B.6.2.4 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch11, 2.45 GHz - 2.50GHz

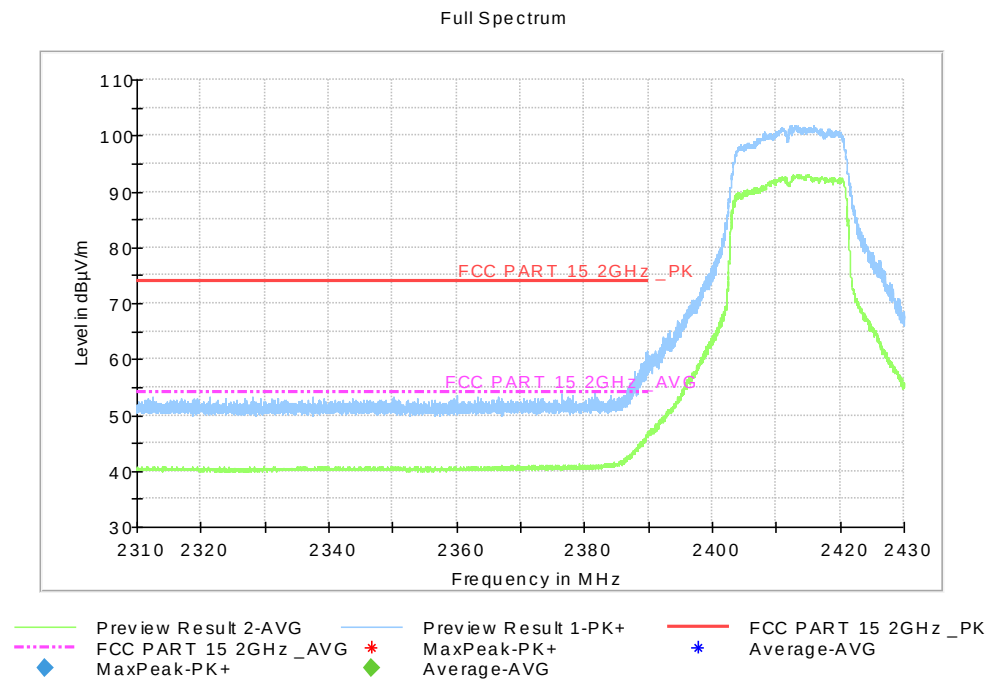


Fig.B.6.2.5 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch1, 2.31 GHz - 2.45GHz

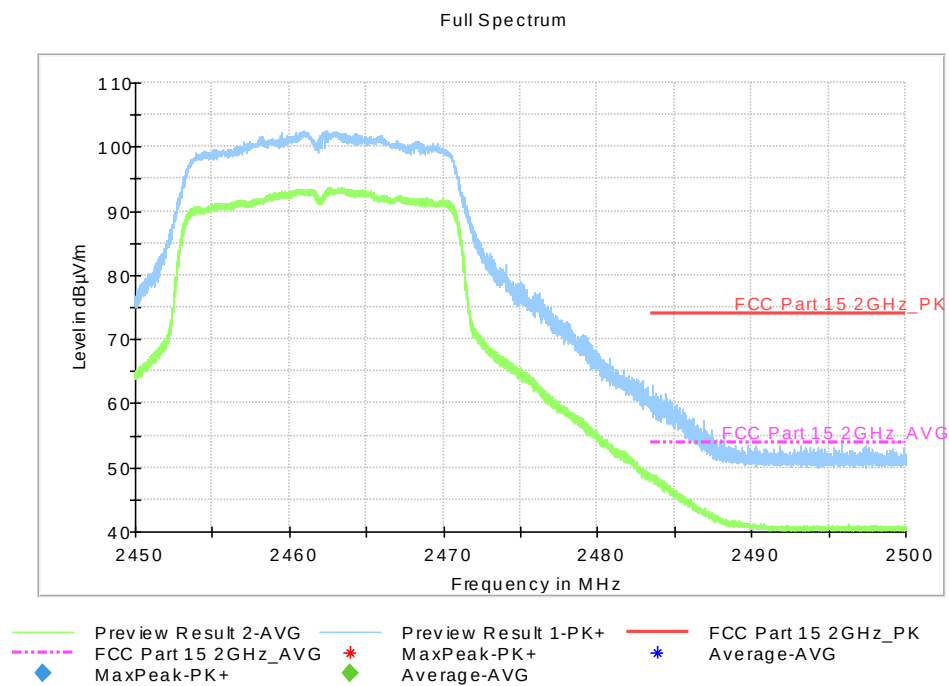


Fig.B.6.2.6 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch11, 2.45 GHz - 2.50GHz

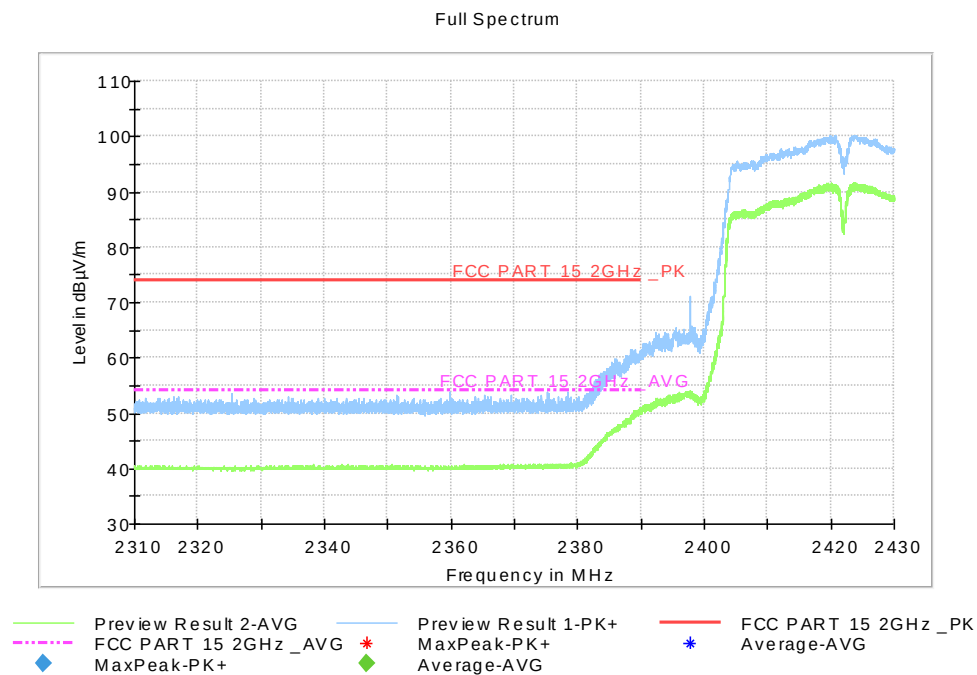


Fig.B.6.2.7 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT40, ch3, 2.31 GHz - 2.45GHz

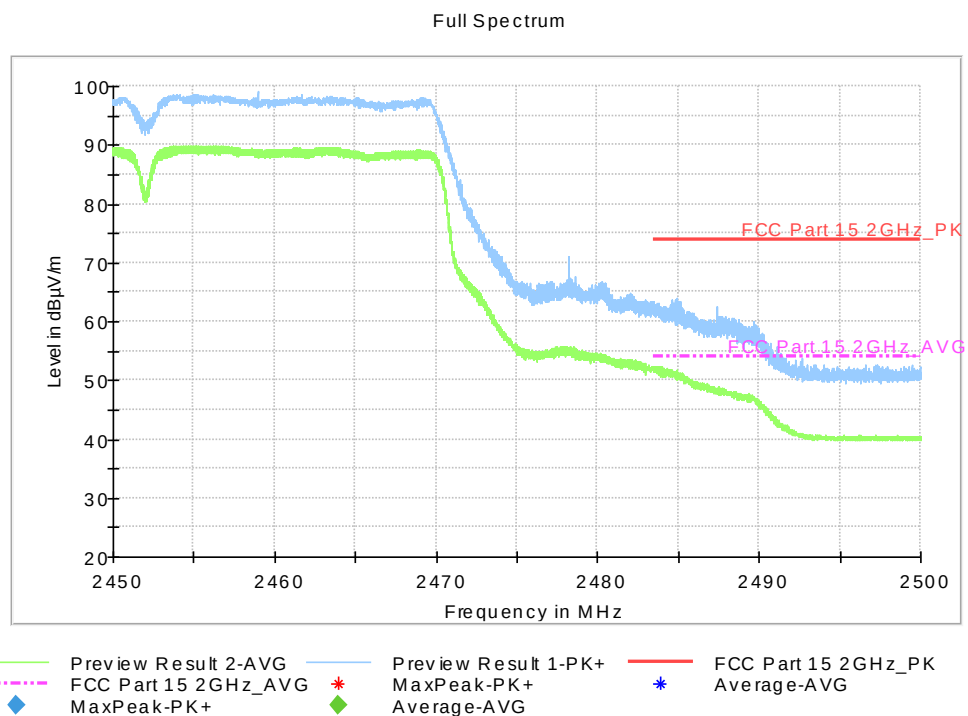


Fig.B.6.2.8 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT40, ch9, 2.45 GHz - 2.50GHz

B.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.³⁶ 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 (dBμV)	Result (dBμV)		Conclusion
		With charger AE5		
		802.11b	Idle	
0.15 to 0.5	66 to 56	Fig.B.7.1	Fig.B.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 (dBμV)	Result (dBμV)		Conclusion
		With charger AE5		
		802.11b	Idle	
0.15 to 0.5	56 to 46	Fig.B.7.1	Fig.B.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:

Measurement results for Set.1:

Result for Traffic:

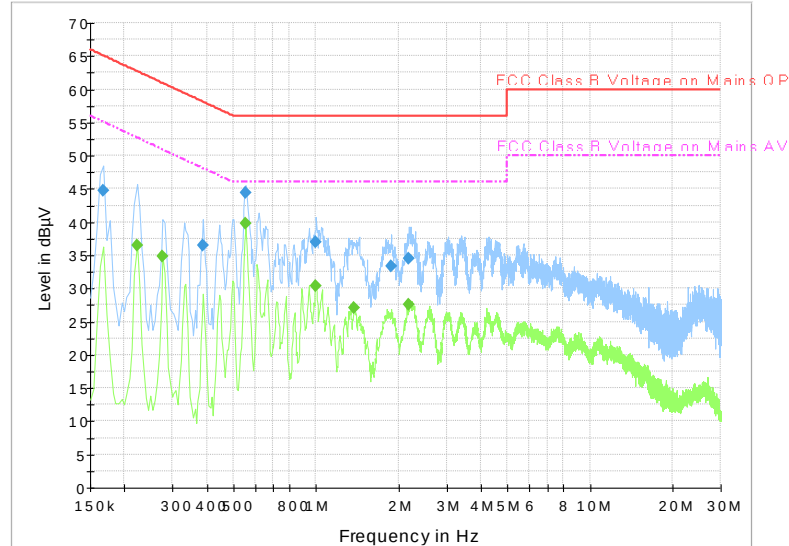


Fig.B.7.1 AC Powerline Conducted Emission-802.11b

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)	Comment
0.168000	44.7	1000.0	9.000	On	N	19.5	20.4	65.1	
0.388500	36.5	1000.0	9.000	On	L1	19.6	21.6	58.1	
0.555000	44.4	1000.0	9.000	On	L1	19.6	11.6	56.0	
1.000500	36.9	1000.0	9.000	On	L1	19.6	19.1	56.0	
1.882500	33.4	1000.0	9.000	On	L1	19.5	22.6	56.0	
2.188500	34.5	1000.0	9.000	On	L1	19.6	21.5	56.0	

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.222000	36.5	1000.0	9.000	On	L1	19.6	16.2	52.7	
0.276000	34.8	1000.0	9.000	On	L1	19.6	16.1	50.9	
0.555000	39.8	1000.0	9.000	On	L1	19.6	6.2	46.0	
1.000500	30.4	1000.0	9.000	On	L1	19.6	15.6	46.0	
1.383000	27.1	1000.0	9.000	On	L1	19.6	18.9	46.0	
2.188500	27.5	1000.0	9.000	On	L1	19.6	18.5	46.0	

Measurement results for Set.1:

Result for Idle:

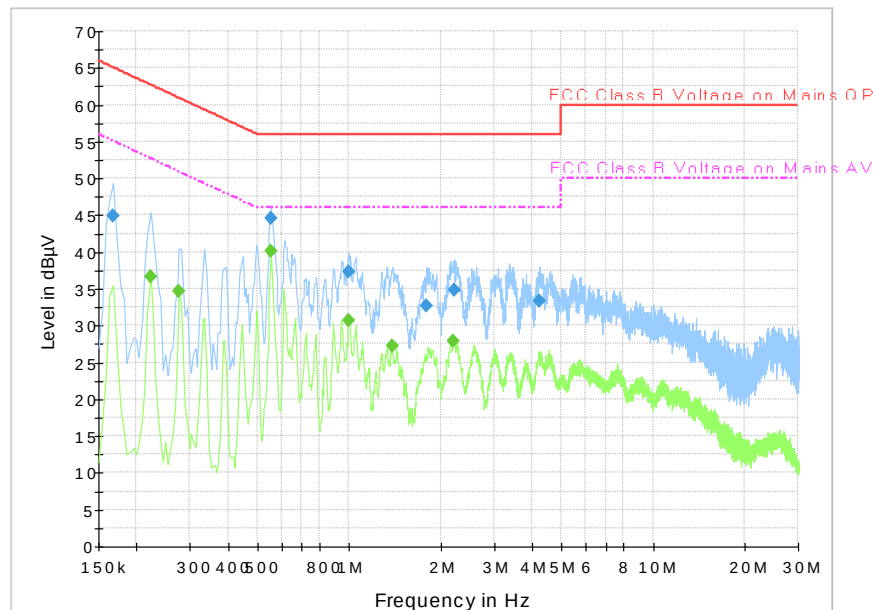


Fig.B.7.2 AC Powerline Conducted Emission-Idle

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

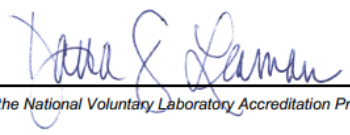
Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.168000	44.9	1000.0	9.000	On	N	19.5	20.2	65.1	
0.555000	44.6	1000.0	9.000	On	L1	19.6	11.4	56.0	
1.000500	37.3	1000.0	9.000	On	L1	19.6	18.7	56.0	
1.792500	32.6	1000.0	9.000	On	L1	19.5	23.4	56.0	
2.215500	34.9	1000.0	9.000	On	L1	19.6	21.1	56.0	
4.240500	33.4	1000.0	9.000	On	L1	19.8	22.6	56.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.222000	36.6	1000.0	9.000	On	L1	19.6	16.2	52.7	
0.276000	34.7	1000.0	9.000	On	L1	19.6	16.2	50.9	
0.555000	40.1	1000.0	9.000	On	L1	19.6	5.9	46.0	
1.000500	30.8	1000.0	9.000	On	L1	19.6	15.2	46.0	
1.387500	27.2	1000.0	9.000	On	L1	19.6	18.8	46.0	
.197500	27.8	1000.0	9.000	On	L1	19.6	18.2	46.0	

ANNEX C: Accreditation Certificate

United States Department of Commerce National Institute of Standards and Technology NVLAP[®]  ilac-MRA	
Certificate of Accreditation to ISO/IEC 17025:2017	
NVLAP LAB CODE: 600118-0	
Telecommunication Technology Labs, CAICT Beijing China	
<i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i>	
Electromagnetic Compatibility & Telecommunications	
<i>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).</i>	
2020-09-29 through 2021-09-30 <i>Effective Dates</i>	 DEPARTMENT OF COMMERCE UNITED STATES OF AMERICA  For the National Voluntary Laboratory Accreditation Program

END OF REPORT