

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)
17691.5	52.8	-25.7	46	32.6	74.0	41.4	H
17924	52.8	-25.5	46.7	31.6	74.0	42.4	V
17909	52.5	-25.5	46.7	31.3	74.0	42.7	V
17707	52.3	-25.7	46	32.1	74.0	41.9	V
17803	52.2	-25.5	46.7	31	74.0	43.0	H
2389.9	68.1	-20	28.1	60.1	74.0	13.9	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)
17918.5	53.2	-25.5	46.7	32	74.0	42.0	V
17951.5	52.9	-25.5	46.7	31.7	74.0	42.3	H
17875	52.7	-25.5	46.7	31.5	74.0	42.5	V
17932.5	52.7	-25.5	46.7	31.5	74.0	42.5	H
17976.5	52.7	-25.5	46.7	31.5	74.0	42.5	V
17528	52.5	-26.9	45.2	34.1	74.0	39.9	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)
17957	53	-25.5	46.7	31.8	74.0	42.2	V
17764	52.6	-25.5	46.7	31.4	74.0	42.6	V
17928	52.5	-25.5	46.7	31.3	74.0	42.7	V
17961	52.5	-25.5	46.7	31.3	74.0	42.7	H
17897.5	52.4	-25.5	46.7	31.2	74.0	42.8	V
2485.3	59.5	-20	28.3	51.2	74.0	22.8	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)
17561	53.1	-26.9	45.2	34.7	74.0	39.3	V
17911	52.6	-25.5	46.7	31.4	74.0	42.6	V
17974	52.6	-25.5	46.7	31.4	74.0	42.6	H
17981.5	52.6	-25.5	46.7	31.4	74.0	42.6	V
17960	52.5	-25.5	46.7	31.3	74.0	42.7	H
2389.6	68.9	-20	28.1	60.9	74.0	13.1	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)
17918.5	54.3	-25.5	46.7	33.1	74.0	40.9	H
17623	53.2	-25.7	46	33	74.0	41.0	V
17494	52.7	-26.9	45.2	34.3	74.0	39.7	H
17958.5	52.7	-25.5	46.7	31.5	74.0	42.5	H
17596	52.4	-25.7	46	32.2	74.0	41.8	H
17500	52.3	-26.9	45.2	33.9	74.0	40.1	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)
17874.5	53.2	-25.5	46.7	32	74.0	42.0	V
17451	52.9	-26.9	45.2	34.5	74.0	39.5	H
17671.5	52.9	-25.7	46	32.7	74.0	41.3	H
17812.5	52.6	-25.5	46.7	31.4	74.0	42.6	V
17889.5	52.5	-25.5	46.7	31.3	74.0	42.7	V
2485.4	65.9	-20	28.3	57.6	74.0	16.4	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)
17991	41.7	-25.5	46.7	20.5	54.0	33.5	H
17990	41.5	-25.5	46.7	20.3	54.0	33.7	V
17981.5	41.4	-25.5	46.7	20.2	54.0	33.8	H
17984.5	41.4	-25.5	46.7	20.2	54.0	33.8	V
17986	41.4	-25.5	46.7	20.2	54.0	33.8	H
2387.5	41.3	-20	28.1	33.3	54.0	20.7	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)
17982.5	41.5	-25.5	46.7	20.3	54.0	33.7	V
17993.5	41.5	-25.5	46.7	20.3	54.0	33.7	V
17913	41.4	-25.5	46.7	20.2	54.0	33.8	H
17988.5	41.4	-25.5	46.7	20.2	54.0	33.8	H
17990	41.4	-25.5	46.7	20.2	54.0	33.8	V
17821	41.3	-25.5	46.7	20.1	54.0	33.9	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)
17989	41.7	-25.5	46.7	20.5	54.0	33.5	V
17993.5	41.6	-25.5	46.7	20.4	54.0	33.6	V
17998	41.6	-25.5	46.7	20.4	54.0	33.6	H
17976.5	41.5	-25.5	46.7	20.3	54.0	33.7	H
17986	41.5	-25.5	46.7	20.3	54.0	33.7	V
2487.9	41.6	-20	28.3	33.3	54.0	20.7	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)
17993	41.7	-25.5	46.7	20.5	54.0	33.5	V
17982	41.5	-25.5	46.7	20.3	54.0	33.7	V
17897	41.4	-25.5	46.7	20.2	54.0	33.8	H
17976.5	41.4	-25.5	46.7	20.2	54.0	33.8	H
17977	41.4	-25.5	46.7	20.2	54.0	33.8	V
2390	51.6	-20	28.1	43.6	54.0	10.4	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)
17887	41.8	-25.5	46.7	20.6	54.0	33.4	V
17980.5	41.6	-25.5	46.7	20.4	54.0	33.6	H
17590.5	41.5	-25.7	46	21.3	54.0	32.7	H
17932	41.5	-25.5	46.7	20.3	54.0	33.7	V
17984	41.5	-25.5	46.7	20.3	54.0	33.7	H
17989	41.5	-25.5	46.7	20.3	54.0	33.7	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)
17970	41.8	-25.5	46.7	20.6	54.0	33.4	V
17974.5	41.7	-25.5	46.7	20.5	54.0	33.5	V
17967	41.4	-25.5	46.7	20.2	54.0	33.8	H
17984	41.4	-25.5	46.7	20.2	54.0	33.8	V
17998.5	41.4	-25.5	46.7	20.2	54.0	33.8	H
2485	42.9	-20	28.3	34.6	54.0	19.4	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)
17903	41.5	-25.5	46.7	20.3	54.0	33.7	V
17946.5	41.5	-25.5	46.7	20.3	54.0	33.7	V
17905	41.4	-25.5	46.7	20.2	54.0	33.8	V
17945.5	41.4	-25.5	46.7	20.2	54.0	33.8	V
17951.5	41.4	-25.5	46.7	20.2	54.0	33.8	H
2389.9	52	-20	28.1	44	54.0	10.0	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)
17994	41.5	-25.5	46.7	20.3	54.0	33.7	H
17996.5	41.5	-25.5	46.7	20.3	54.0	33.7	V
17884.5	41.4	-25.5	46.7	20.2	54.0	33.8	V
17992	41.4	-25.5	46.7	20.2	54.0	33.8	H
17997.5	41.4	-25.5	46.7	20.2	54.0	33.8	H
17941.5	41.3	-25.5	46.7	20.1	54.0	33.9	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)
17986	41.6	-25.5	46.7	20.4	54.0	33.6	V
17975.5	41.5	-25.5	46.7	20.3	54.0	33.7	V
17983	41.5	-25.5	46.7	20.3	54.0	33.7	V
17898	41.4	-25.5	46.7	20.2	54.0	33.8	V
17968	41.4	-25.5	46.7	20.2	54.0	33.8	H
2485	45.3	-20	28.3	37	54.0	17.0	H

Test graphs as below:

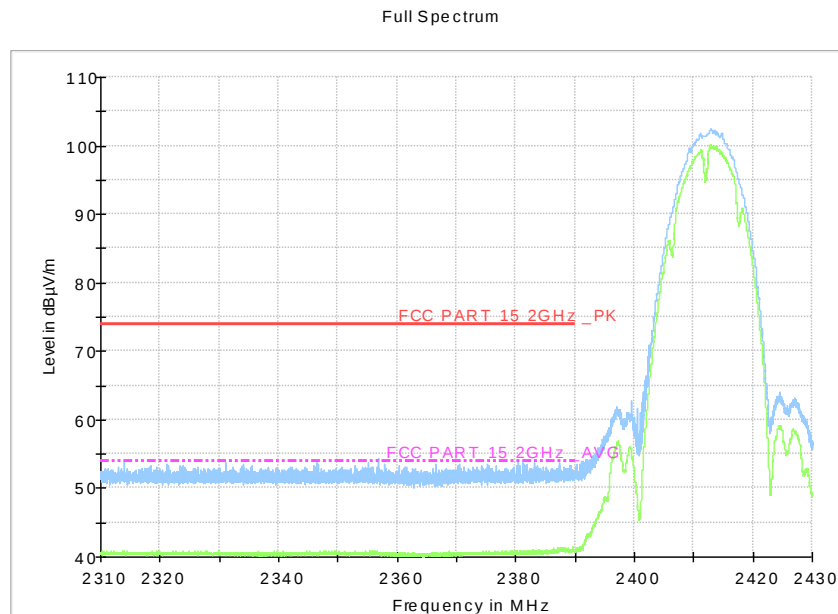


Fig.B.6.2.1 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch1, 2.31 GHz – 2.45GHz

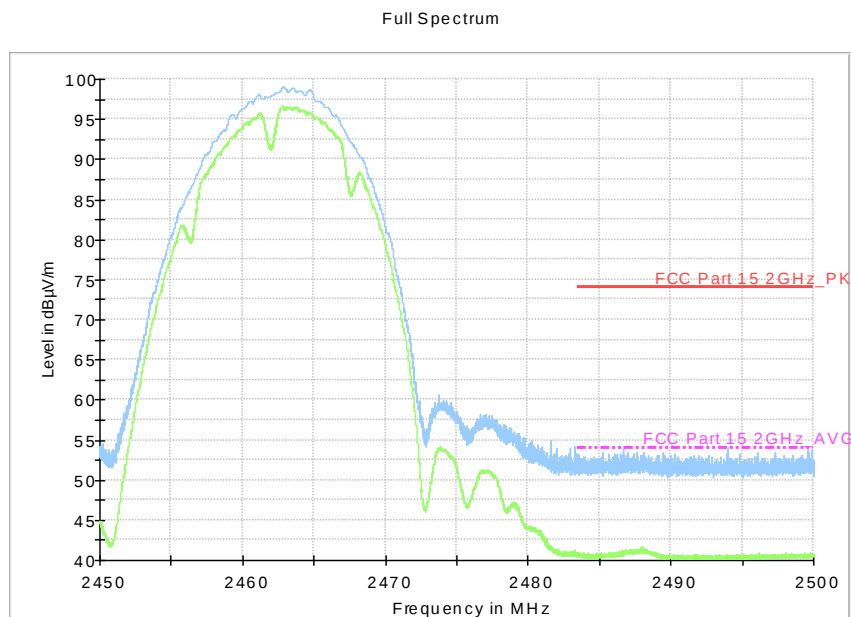


Fig.B.6.2.2 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch11, 2.45 GHz - 2.50GHz

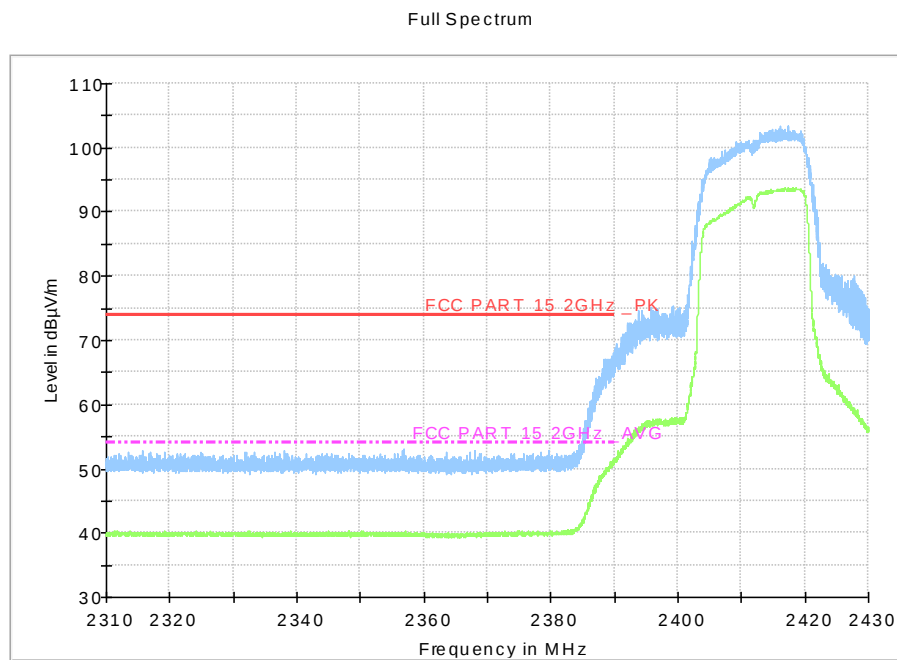


Fig.B.6.2.3 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch1, 2.31 GHz - 2.45GHz

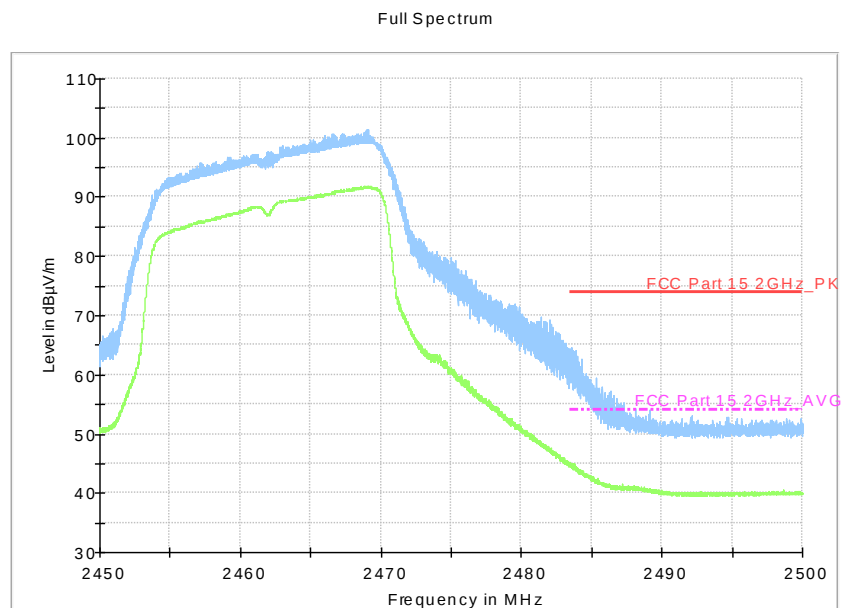


Fig.B.6.2.4 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch11, 2.45 GHz - 2.50GHz

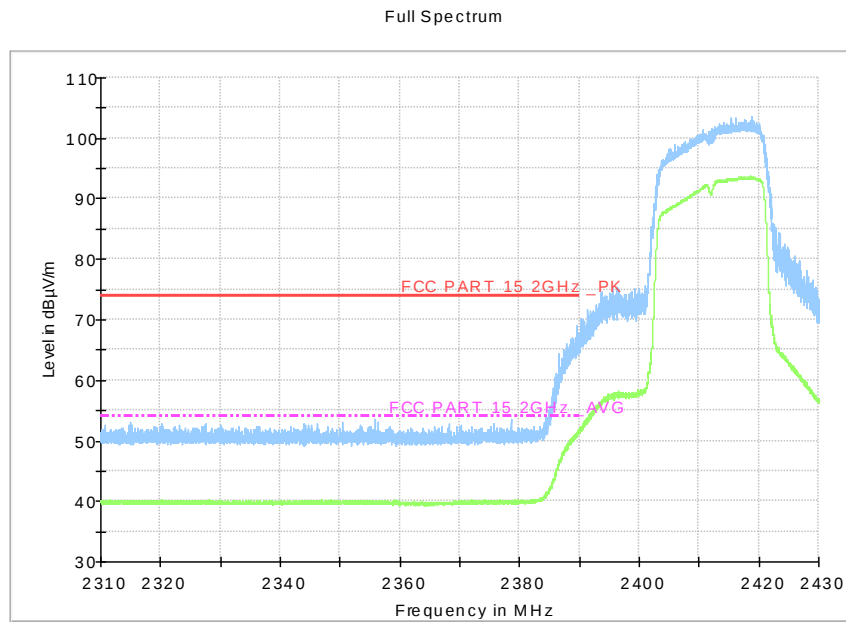


Fig.B.6.2.5 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch1, 2.31 GHz - 2.45GHz

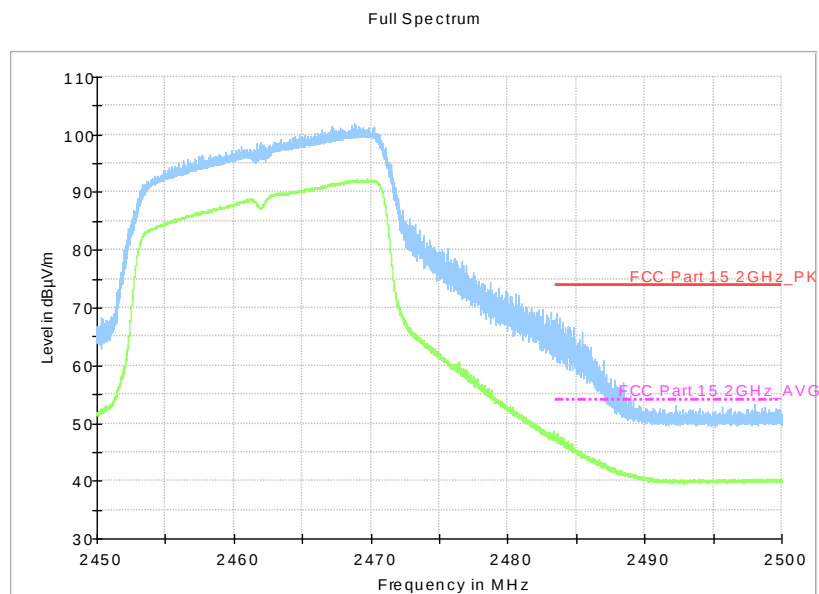


Fig.B.6.2.6 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch11, 2.45 GHz - 2.50GHz

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.

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger AE6		
		802.11b	Idle	
0.15 to 0.5	67 to 56	Fig.B.7.3	Fig.B.7.4	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 AE6		
		802.11b	Idle	
0.15 to 0.5	56 to 46	Fig.B.7.3	Fig.B.7.4	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:

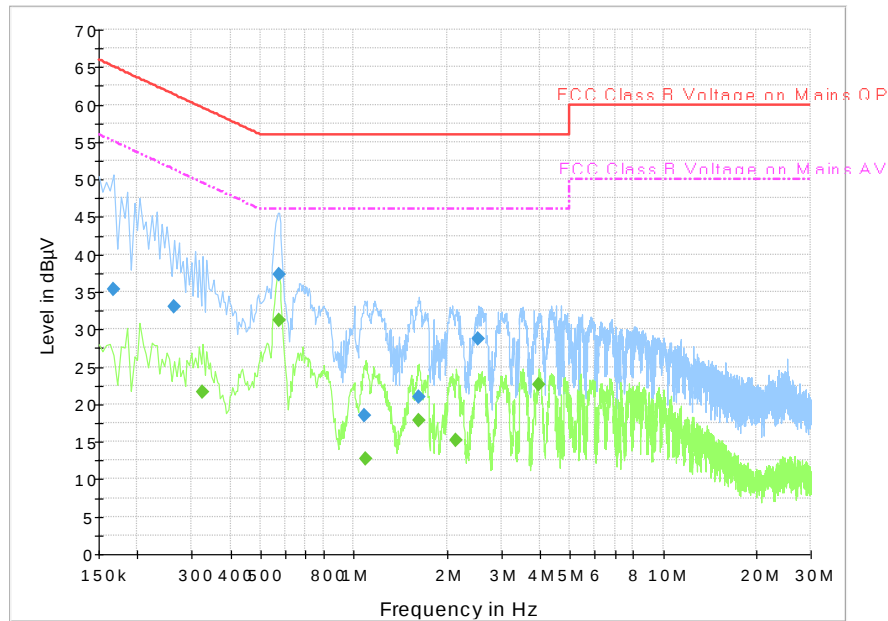


Fig.B.7.1 AC Powerline Conducted Emission-802.11b

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

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.168000	35.3	1000.0	9.000	On	L1	19.7	29.7	65.1	
0.262500	33.1	1000.0	9.000	On	L1	19.6	28.3	61.4	
0.573000	37.4	1000.0	9.000	On	L1	19.6	18.6	56.0	
1.086000	18.4	1000.0	9.000	On	L1	19.6	37.6	56.0	
1.626000	20.9	1000.0	9.000	On	L1	19.6	35.1	56.0	
2.535000	28.7	1000.0	9.000	On	L1	19.6	27.3	56.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.325500	21.6	1000.0	9.000	On	L1	19.6	28.0	49.6	
0.573000	31.1	1000.0	9.000	On	L1	19.6	14.9	46.0	
1.090500	12.7	1000.0	9.000	On	L1	19.6	33.3	46.0	
1.621500	17.8	1000.0	9.000	On	L1	19.6	28.2	46.0	
2.148000	15.1	1000.0	9.000	On	L1	19.6	30.9	46.0	
3.957000	22.6	1000.0	9.000	On	L1	19.7	23.4	46.0	

Measurement results for Set.1:

Result for Idle:

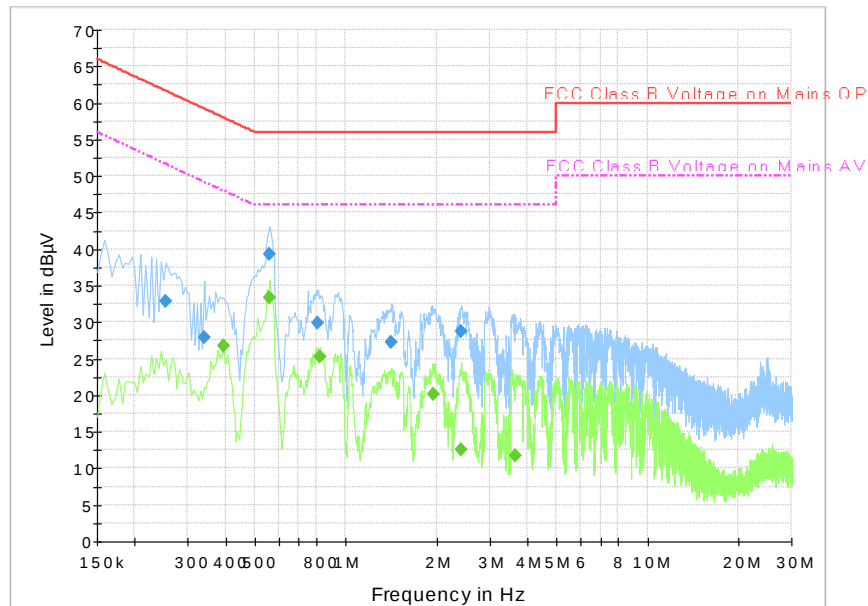


Fig.B.7.2 AC Powerline Conducted Emission-Idle

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
0.253500	32.9	1000.0	9.000	On	L1	19.6	28.8	61.6	
0.339000	27.9	1000.0	9.000	On	N	19.6	31.4	59.2	
0.559500	39.4	1000.0	9.000	On	L1	19.6	16.6	56.0	
0.807000	29.9	1000.0	9.000	On	L1	19.6	26.1	56.0	
1.419000	27.3	1000.0	9.000	On	L1	19.6	28.7	56.0	
2.422500	28.7	1000.0	9.000	On	L1	19.6	27.3	56.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.393000	26.7	1000.0	9.000	On	L1	19.6	21.3	48.0	
0.559500	33.4	1000.0	9.000	On	L1	19.6	12.6	46.0	
0.825000	25.3	1000.0	9.000	On	L1	19.6	20.7	46.0	
1.950000	20.1	1000.0	9.000	On	L1	19.5	25.9	46.0	
2.409000	12.5	1000.0	9.000	On	L1	19.6	33.5	46.0	
3.642000	11.7	1000.0	9.000	On	L1	19.7	34.3	46.0	

Measurement results for Set.2:

Result for Traffic:

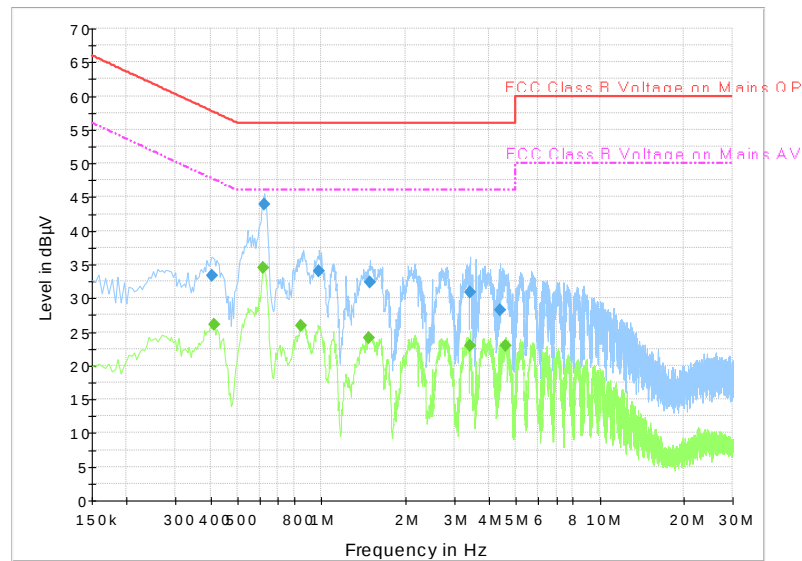


Fig.B.7.3 AC Powerline Conducted Emission-802.11b

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
0.406500	33.4	1000.0	9.000	On	L1	19.6	24.3	57.7	
0.622500	43.8	1000.0	9.000	On	L1	19.6	12.2	56.0	
0.982500	33.9	1000.0	9.000	On	L1	19.6	22.1	56.0	
1.495500	32.4	1000.0	9.000	On	L1	19.6	23.6	56.0	
3.412500	30.9	1000.0	9.000	On	L1	19.7	25.1	56.0	
4.398000	28.2	1000.0	9.000	On	L1	19.8	27.8	56.0	

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.411000	26.1	1000.0	9.000	On	L1	19.6	21.6	47.6	
0.618000	34.5	1000.0	9.000	On	L1	19.6	11.5	46.0	
0.847500	25.9	1000.0	9.000	On	L1	19.6	20.1	46.0	
1.482000	24.1	1000.0	9.000	On	L1	19.6	21.9	46.0	
3.421500	23.0	1000.0	9.000	On	L1	19.7	23.0	46.0	
4.573500	23.0	1000.0	9.000	On	L1	19.8	23.0	46.0	

Measurement results for Set.2:

Result for Idle:

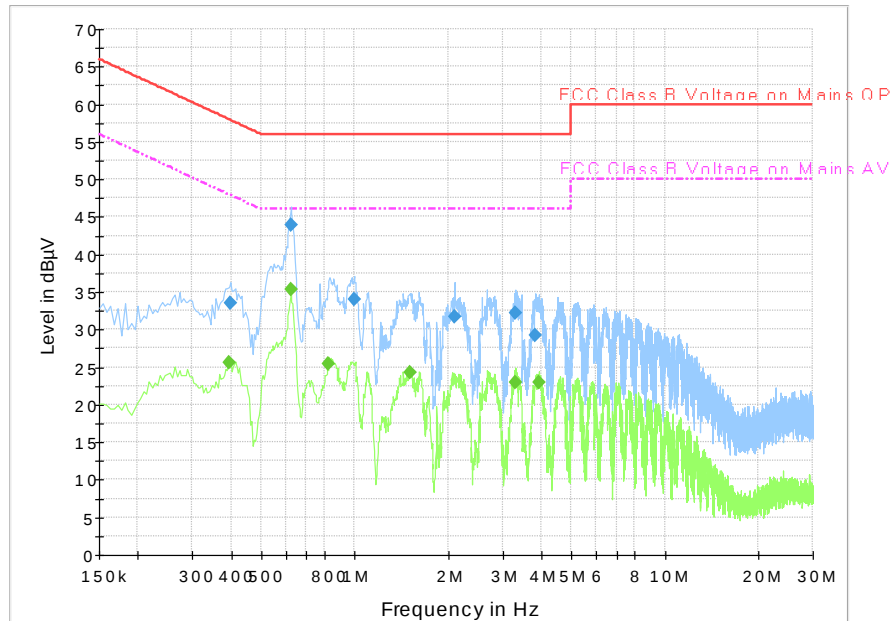


Fig.B.7.4 AC Powerline Conducted Emission-Idle

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

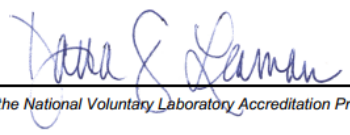
Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.397500	33.5	1000.0	9.000	On	L1	19.6	24.4	57.9	
0.622500	43.8	1000.0	9.000	On	L1	19.6	12.2	56.0	
0.996000	34.0	1000.0	9.000	On	L1	19.6	22.0	56.0	
2.103000	31.7	1000.0	9.000	On	L1	19.5	24.3	56.0	
3.286500	32.1	1000.0	9.000	On	L1	19.7	23.9	56.0	
3.835500	29.2	1000.0	9.000	On	L1	19.7	26.8	56.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.393000	25.6	1000.0	9.000	On	L1	19.6	22.4	48.0	
0.622500	35.3	1000.0	9.000	On	L1	19.6	10.8	46.0	
0.825000	25.5	1000.0	9.000	On	L1	19.6	20.5	46.0	
1.504500	24.3	1000.0	9.000	On	L1	19.6	21.7	46.0	
3.304500	22.9	1000.0	9.000	On	L1	19.7	23.1	46.0	
3.916500	22.9	1000.0	9.000	On	L1	19.7	23.1	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