

**802.11n-HT20-Average**

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)	Antenna Height (cm)	Turntable angle (deg)
2387.700	46.42	2.9	32.0	11.56	54.0	7.6	H	155	4
2390.000	46.40	2.9	32.0	11.55	54.0	7.6	H	155	2
4824.000	32.95	-32.8	34.5	31.20	54.0	21.1	H	155	25
7236.000	37.15	-31.7	36.1	32.79	54.0	16.8	H	155	350
9648.000	40.46	-30.4	37.0	33.78	54.0	13.5	H	155	92
12060.000	41.69	-29.6	39.3	32.02	54.0	12.3	H	155	85

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)	Antenna Height (cm)	Turntable angle (deg)
2380.750	46.39	-26.0	32.1	40.32	54.0	7.6	H	155	40
2499.778	46.45	-26.2	32.3	40.37	54.0	7.6	H	155	65
4873.500	32.89	-32.7	34.5	31.10	54.0	21.1	H	155	222
7311.000	38.03	-31.9	36.1	33.87	54.0	16.0	H	155	190
9748.500	39.32	-30.7	37.2	32.79	54.0	14.7	H	155	240
12184.500	43.68	-29.4	39.2	33.89	54.0	10.3	H	155	270

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)	Antenna Height (cm)	Turntable angle (deg)
2483.500	46.34	2.9	32.8	10.65	54.0	7.7	H	155	180
2491.500	46.48	2.9	32.5	11.01	54.0	7.5	H	155	202
4924.500	33.47	-33.1	34.5	32.06	54.0	20.5	H	155	312
7386.000	38.53	-31.8	36.0	34.33	54.0	15.5	H	155	46
9847.500	40.07	-30.1	37.3	32.82	54.0	13.9	H	155	70
12310.500	41.51	-29.7	39.2	32.04	54.0	12.5	H	155	92

**802.11n-HT20-Peak**

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)	Antenna Height (cm)	Turntable angle (deg)
2388.610	63.18	2.9	32.0	28.32	74.0	10.8	H	155	0
2389.926	63.34	2.9	32.0	28.49	74.0	10.7	H	155	0
4824.000	41.12	-32.8	34.5	39.37	74.0	32.9	V	155	22
7236.000	43.56	-31.7	36.1	39.20	74.0	30.4	V	155	352
9648.000	46.49	-30.4	37.0	39.81	74.0	27.5	V	155	88
12060.000	47.66	-29.6	39.3	37.99	74.0	26.3	V	155	88

Ch6

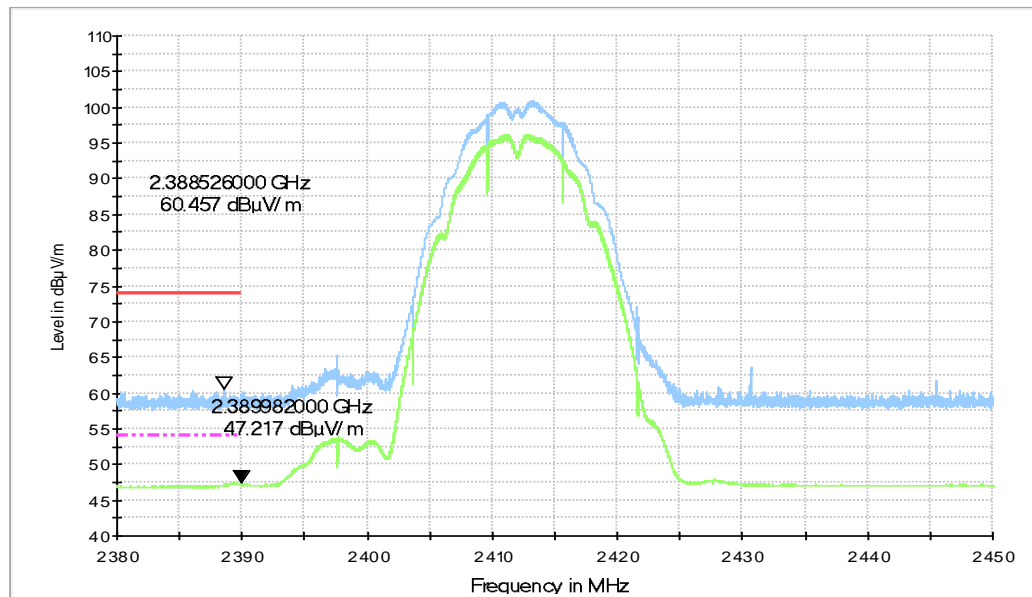
Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2378.400	49.34	-26.4	32.1	43.69	74.0	24.7	V	155	44
2508.600	48.45	-26.5	32.4	42.47	74.0	25.6	H	155	66
4874.250	41.93	-32.7	34.5	40.14	74.0	32.1	V	155	220
7311.000	44.90	-31.9	36.1	40.74	74.0	29.1	V	155	198
9747.750	45.80	-30.7	37.2	39.27	74.0	28.2	H	155	242
12185.250	47.80	-29.4	39.2	38.00	74.0	26.2	V	155	264

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)	Antenna Height (cm)	Turntable angle (deg)
2493.650	61.05	2.9	32.5	25.64	74.0	12.9	H	155	176
2496.910	60.48	2.9	32.4	25.15	74.0	13.5	H	155	198
4923.750	41.58	-33.1	34.5	40.16	74.0	32.4	V	155	308
7386.000	44.49	-31.8	36.0	40.29	74.0	29.5	H	155	44
9848.250	45.71	-30.1	37.3	38.46	74.0	28.3	H	155	66
12309.750	45.67	-29.7	39.2	36.20	74.0	28.3	V	155	88

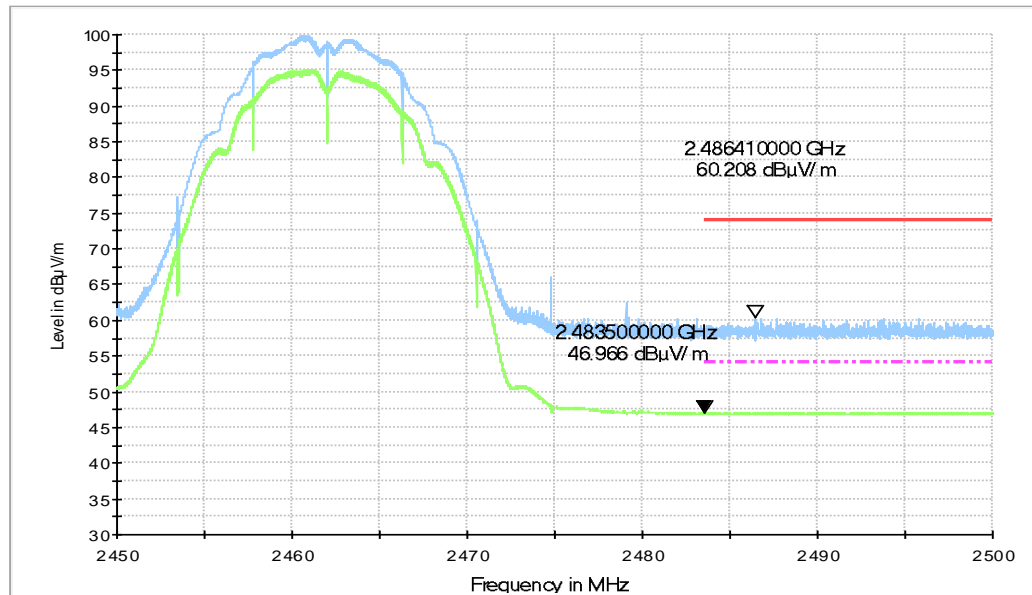
Test graphs as below:

RE - Power-2.38GHz-2.45GHz



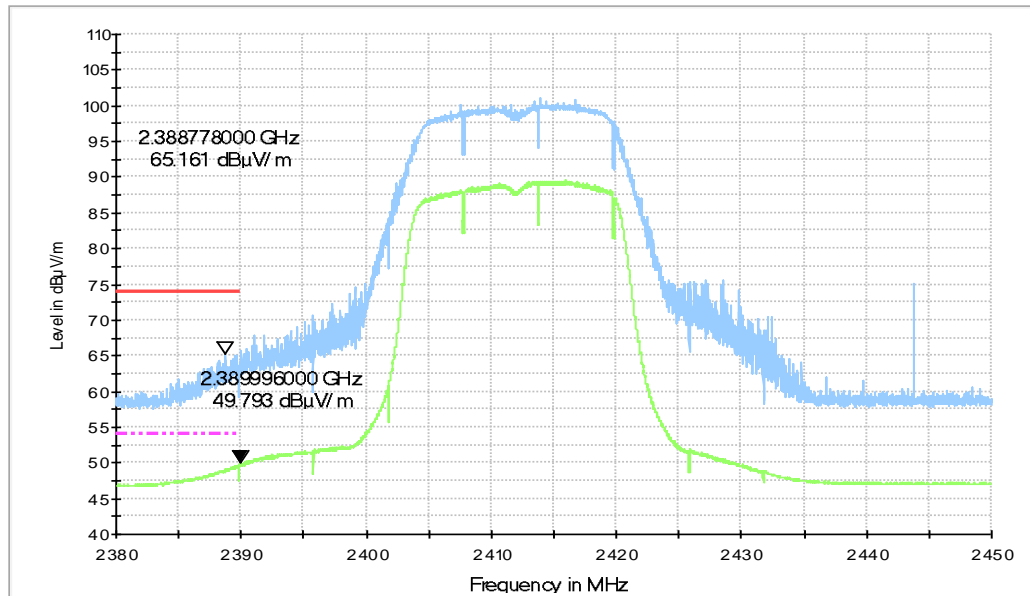
**Fig.A.6.2.1 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch1, 2.38 GHz – 2.43GHz**

RE - Power-2.45GHz-2.5GHz



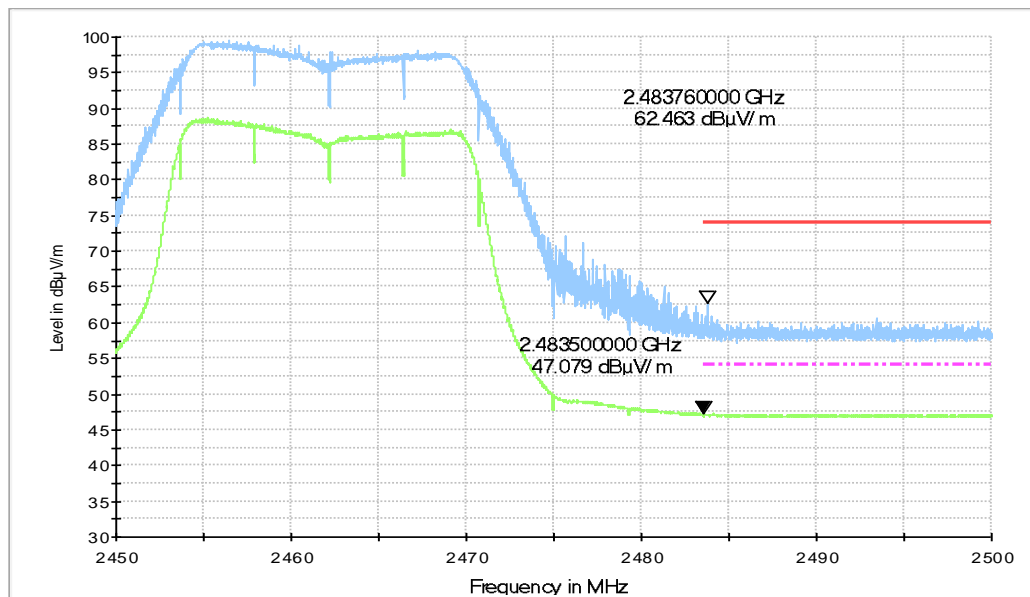
**Fig.A.6.2.2 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch11, 2.45 GHz - 2.50GHz**

RE - Power-2.38GHz-2.45GHz

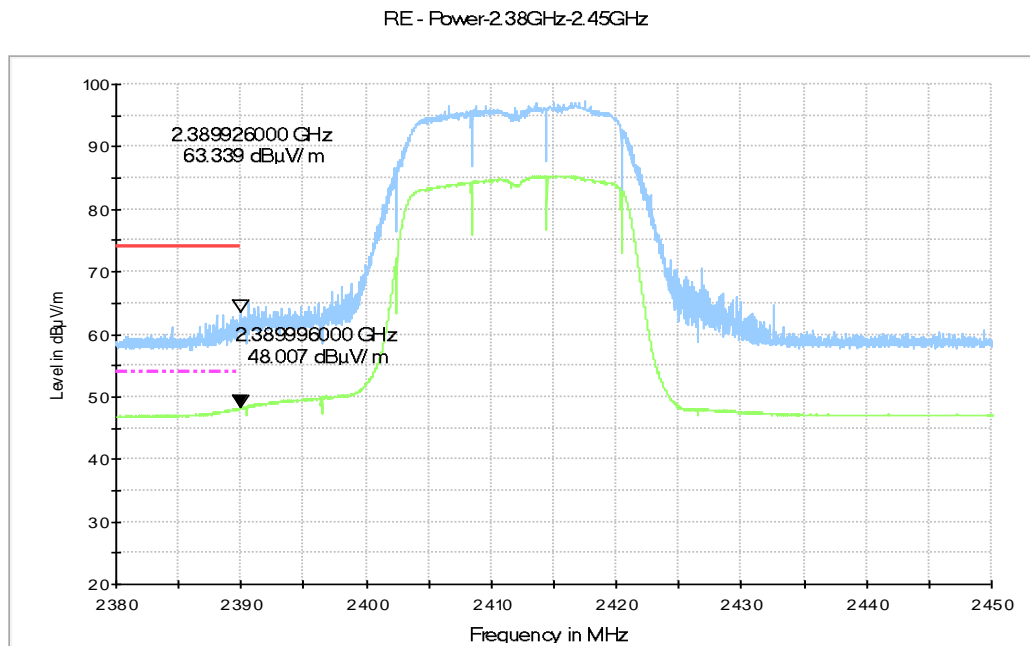


**Fig.A.6.2.3 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch1, 2.38 GHz - 2.43GHz**

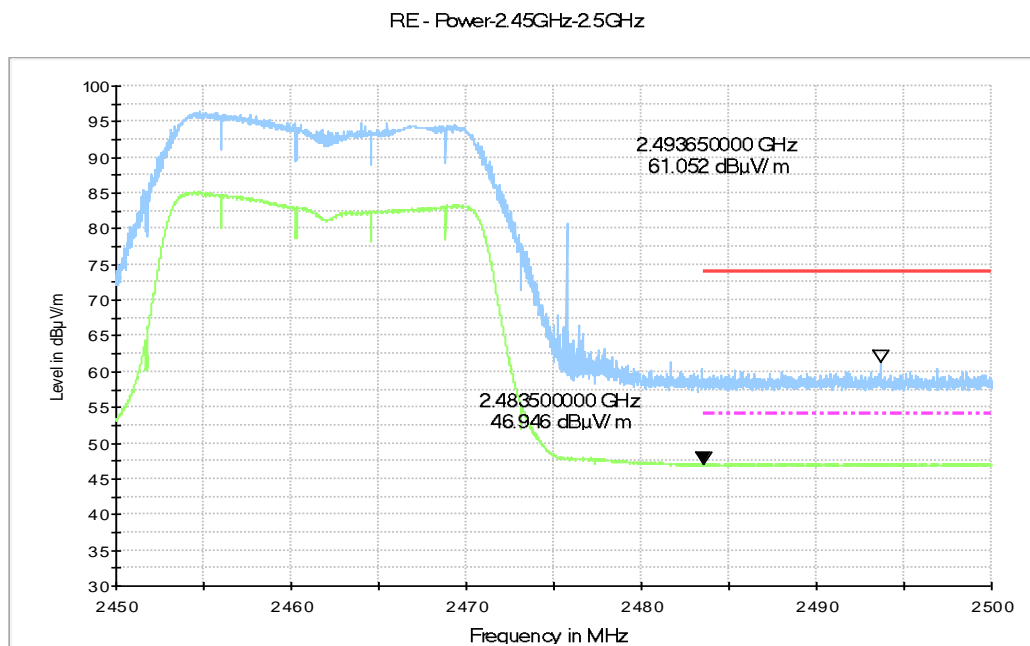
RE - Power-2.45GHz-2.5GHz



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



**Fig.A.6.2.5 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch1, 2.38 GHz - 2.45GHz**



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

## **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.<sup>36</sup> 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:**

<b>Voltage (V)</b>	<b>Frequency (Hz)</b>
120	60

**Measurement Result and limit:**

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		802.11b	Idle	
0.15 to 0.5	66 to 56	Fig.A.7.1 Fig.A.7.3 Fig.A.7.4	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.				

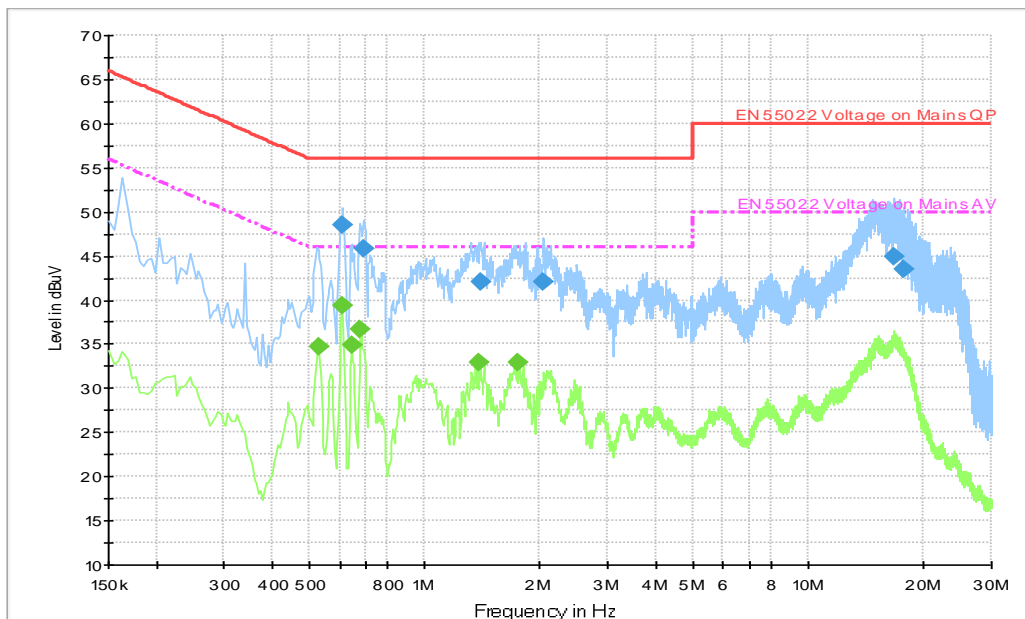
WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		802.11b	Idle	
0.15 to 0.5	56 to 46	Fig.A.7.1 Fig.A.7.3 Fig.A.7.4	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:**

### Traffic: Set.11



**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

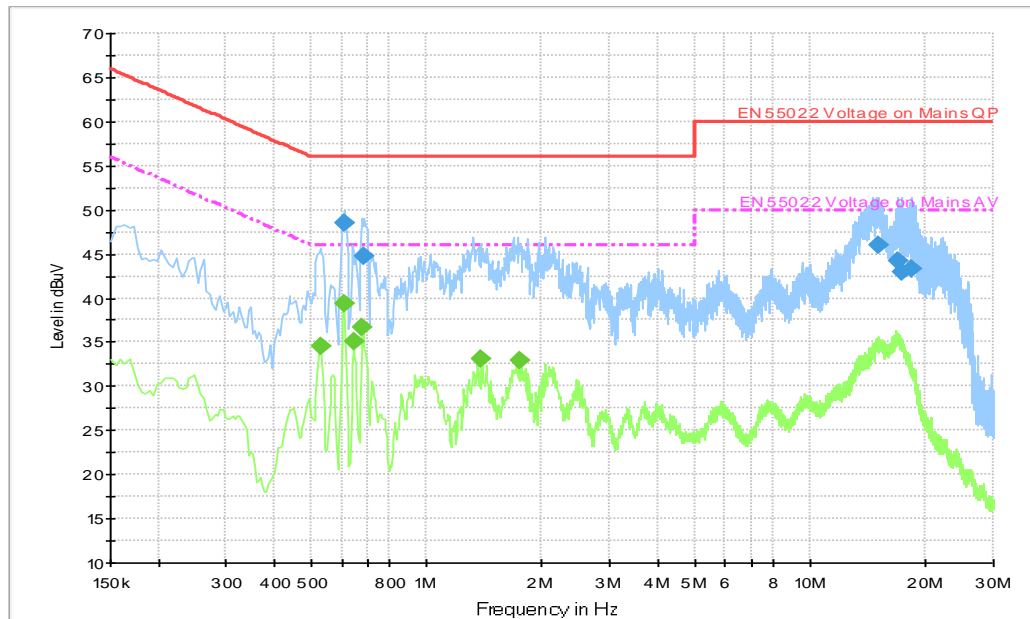
Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.613500	48.4	10000	9.000	GND	L1	10.4	7.6	56.0
0.694500	45.9	10000	9.000	GND	L1	10.3	10.1	56.0
1.396500	42.0	10000	9.000	GND	L1	10.4	14.0	56.0
2.044500	42.1	10000	9.000	GND	L1	10.4	13.9	56.0
16.782000	44.9	10000	9.000	GND	L1	11.2	15.1	60.0
17.718000	43.5	10000	9.000	GND	L1	11.3	16.5	60.0

### Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.528000	34.6	10000.	9.000	GND	L1	10.3	11.4	46.0
0.609000	39.4	10000.	9.000	GND	L1	10.4	6.6	46.0
0.645000	34.9	10000.	9.000	GND	N	10.3	11.1	46.0
0.681000	36.7	10000.	9.000	GND	L1	10.3	9.3	46.0
1.392000	32.9	10000.	9.000	GND	L1	10.4	13.1	46.0
1.756500	32.9	10000.	9.000	GND	L1	10.4	13.1	46.0



Idle: Set.11



**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.

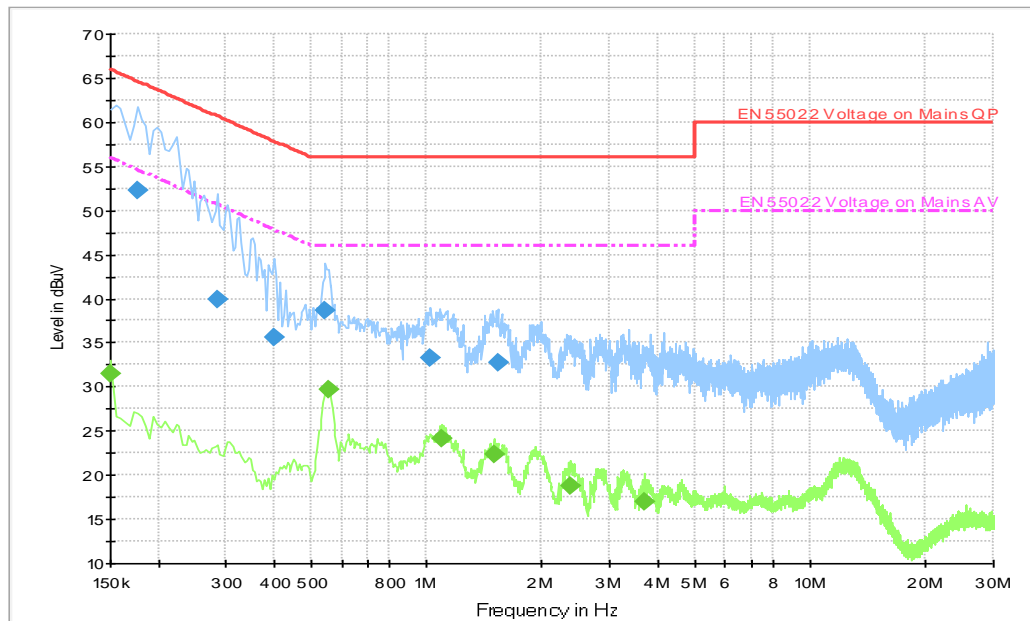
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.613500	48.5	10000	9.000	GND	L1	10.4	7.5	56.0
0.690000	44.8	10000	9.000	GND	L1	10.3	11.2	56.0
15.004500	46.0	10000	9.000	GND	L1	11.1	14.0	60.0
16.885500	44.2	10000	9.000	GND	L1	11.2	15.8	60.0
17.290500	42.9	10000	9.000	GND	L1	11.2	17.1	60.0
18.321000	43.4	10000	9.000	GND	L1	11.3	16.6	60.0

**Final Result 2**

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.528000	34.6	10000.	9.000	GND	L1	10.3	11.4	46.0
0.609000	39.4	10000.	9.000	GND	L1	10.4	6.6	46.0
0.645000	35.0	10000.	9.000	GND	N	10.3	11.0	46.0
0.681000	36.8	10000.	9.000	GND	L1	10.3	9.2	46.0
1.392000	33.1	10000.	9.000	GND	L1	10.4	13.0	46.0
1.756500	33.0	10000.	9.000	GND	L1	10.4	13.0	46.0

**Traffic: Set.12**



**Fig.A.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.

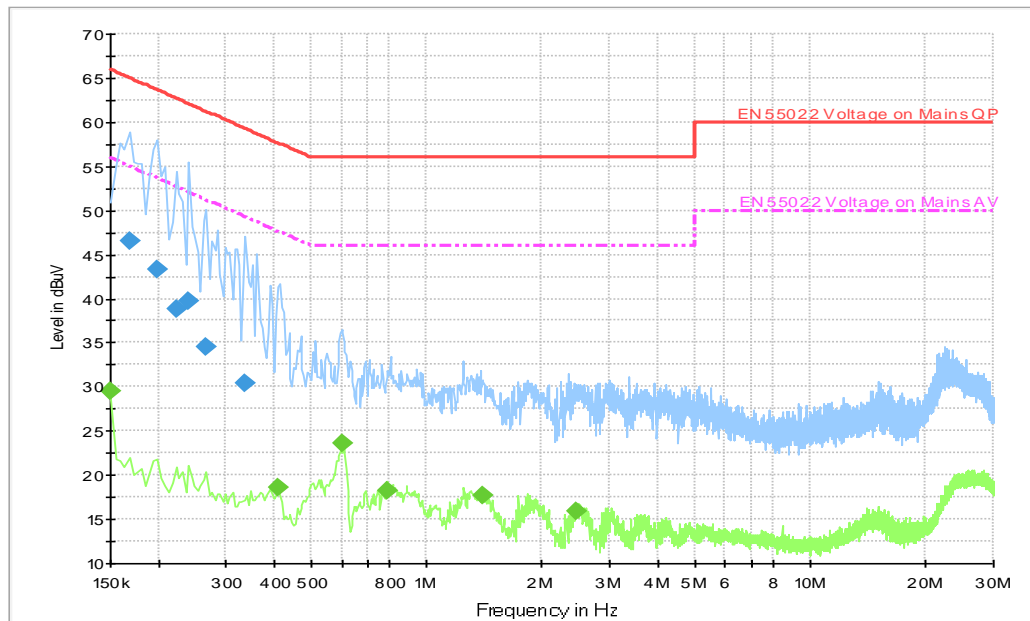
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.177000	52.2	10000	9.000	GND	N	10.3	12.4	64.6
0.285000	39.9	10000	9.000	GND	N	10.3	20.8	60.7
0.402000	35.6	10000	9.000	GND	N	10.3	22.2	57.8
0.546000	38.7	10000	9.000	GND	L1	10.3	17.3	56.0
1.023000	33.3	10000	9.000	GND	L1	10.3	22.7	56.0
1.531500	32.8	10000	9.000	GND	L1	10.4	23.2	56.0

**Final Result 2**

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	31.4	10000.	9.000	GND	L1	10.2	24.6	56.0
0.555000	29.8	10000.	9.000	GND	N	10.4	16.2	46.0
1.099500	24.1	10000.	9.000	GND	L1	10.4	21.9	46.0
1.495500	22.3	10000.	9.000	GND	L1	10.4	23.7	46.0
2.368500	18.8	10000.	9.000	GND	L1	10.4	27.2	46.0
3.709500	16.9	10000.	9.000	GND	L1	10.5	29.1	46.0

**Traffic: Set.13**



**Fig.A.7.4 AC Powerline Conducted Emission-802.11b**

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


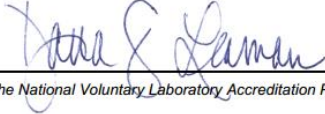

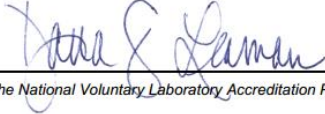

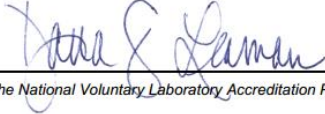
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.168000	46.6	10000	9.000	GND	L1	10.3	18.4	65.1
0.199500	43.3	10000	9.000	GND	N	10.3	20.4	63.6
0.222000	38.8	10000	9.000	GND	N	10.3	23.9	62.7
0.240000	39.8	10000	9.000	GND	L1	10.3	22.3	62.1
0.267000	34.5	10000	9.000	GND	N	10.3	26.7	61.2
0.334500	30.4	10000	9.000	GND	N	10.3	29.0	59.3

**Final Result 2**

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	29.6	10000.	9.000	GND	L1	10.2	26.4	56.0
0.411000	18.5	10000.	9.000	GND	L1	10.3	29.1	47.6
0.604500	23.6	10000.	9.000	GND	N	10.4	22.4	46.0
0.789000	18.3	10000.	9.000	GND	L1	10.4	27.7	46.0
1.396500	17.7	10000.	9.000	GND	L1	10.4	28.3	46.0
2.463000	15.9	10000.	9.000	GND	L1	10.4	30.1	46.0

## ANNEX B: Accreditation Certificate

<p>United States Department of Commerce National Institute of Standards and Technology</p> <p><b>NVLAP<sup>®</sup></b></p> <hr/> <p><b>Certificate of Accreditation to ISO/IEC 17025:2005</b></p> <hr/> <p><b>NVLAP LAB CODE: 600118-0</b></p> <p><b>Telecommunication Technology Labs, CAICT</b> Beijing China</p> <p><i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i></p> <p><b>Electromagnetic Compatibility &amp; Telecommunications</b></p> <p><i>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 Communiqué dated January 2009).</i></p> <table><tr><td><p>2018-09-28 through 2019-09-30</p><p><i>Effective Dates</i></p></td><td></td><td><p></p><p><i>For the National Voluntary Laboratory Accreditation Program</i></p></td></tr></table>		<p>2018-09-28 through 2019-09-30</p> <p><i>Effective Dates</i></p>		<p></p> <p><i>For the National Voluntary Laboratory Accreditation Program</i></p>
<p>2018-09-28 through 2019-09-30</p> <p><i>Effective Dates</i></p>		<p></p> <p><i>For the National Voluntary Laboratory Accreditation Program</i></p>		

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