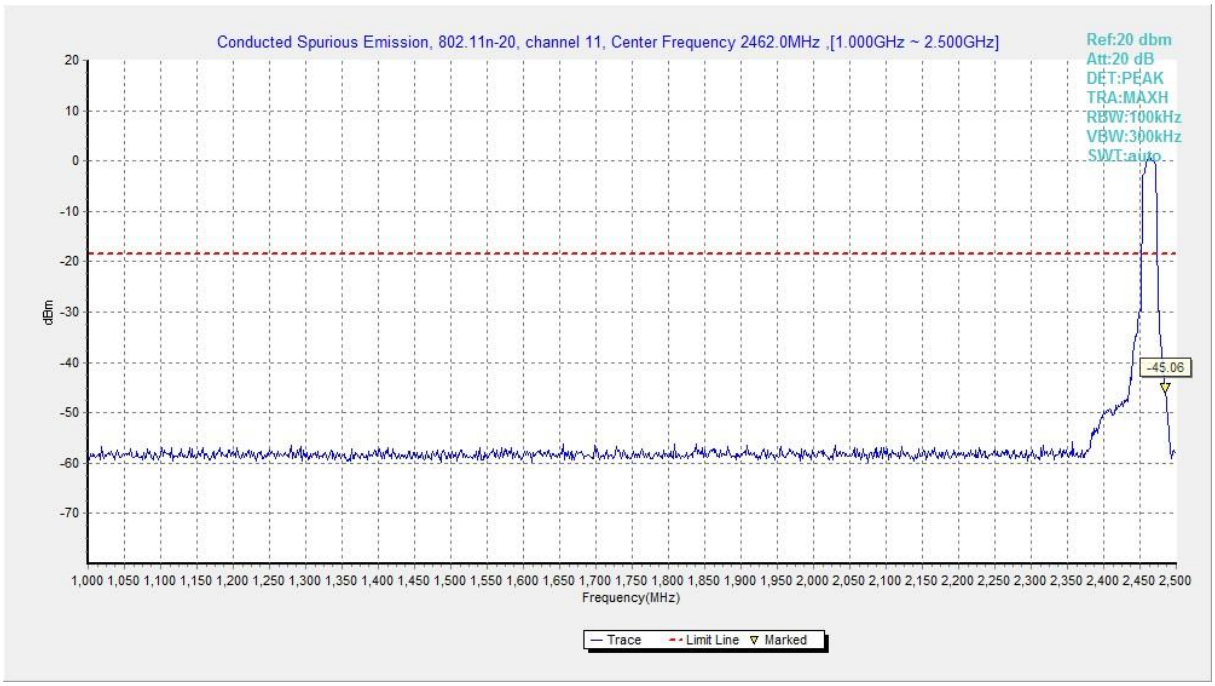

Fig.A.6.1.67 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 1 GHz-2.5 GHz)

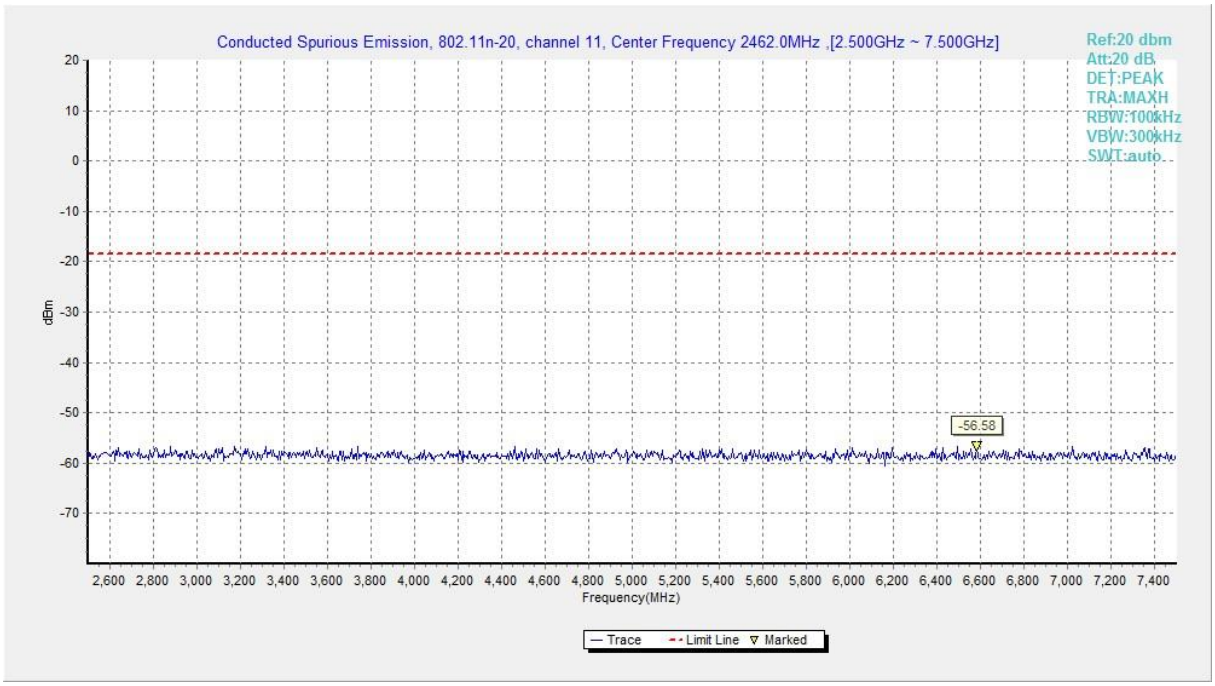

Fig.A.6.1.68 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 2.5 GHz-7.5 GHz)

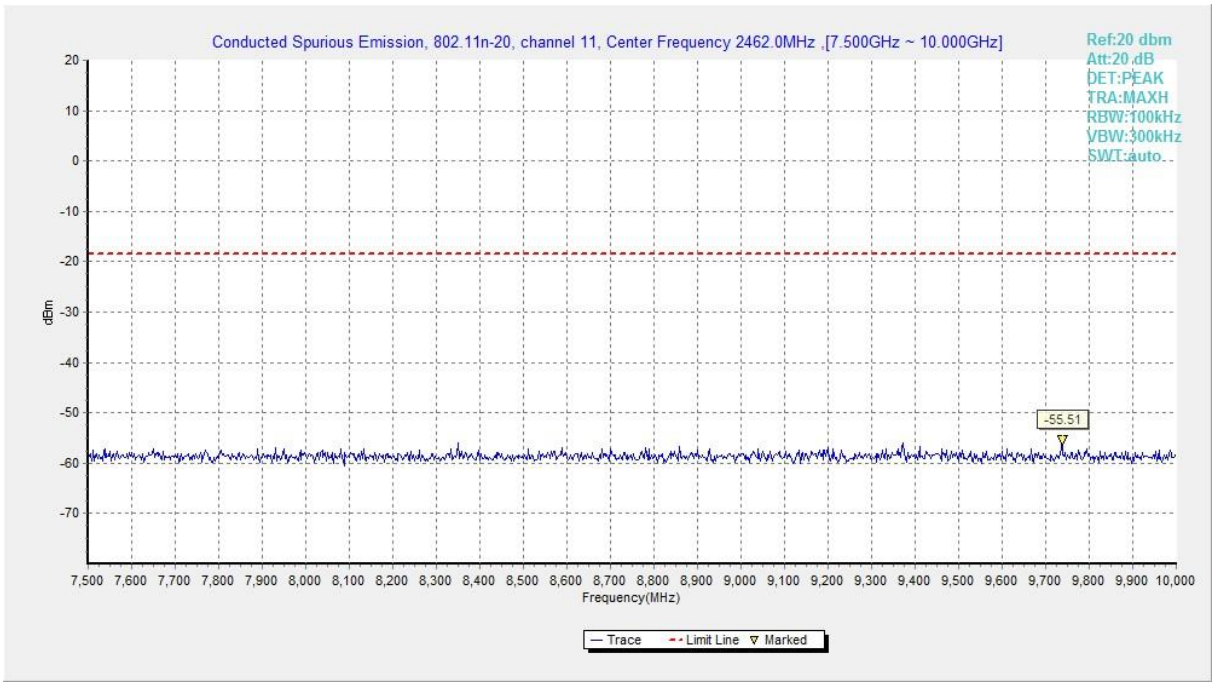

Fig.A.6.1.69 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 7.5 GHz-10 GHz)

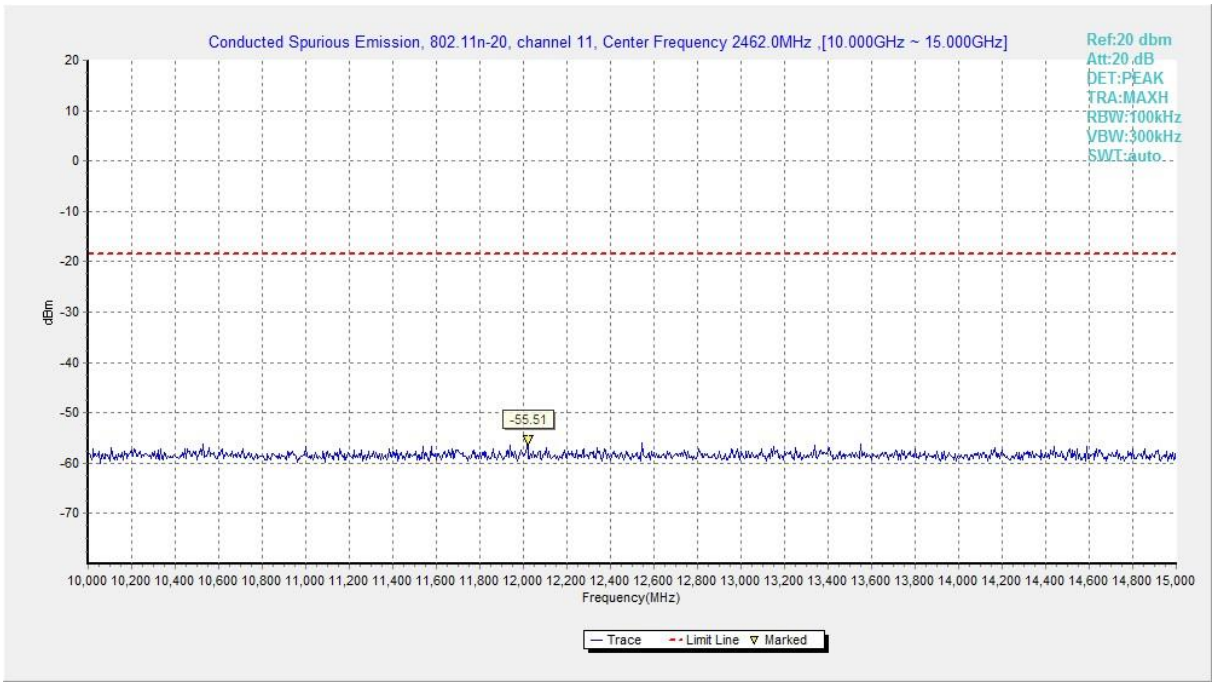

Fig.A.6.1.70 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 10 GHz-15 GHz)

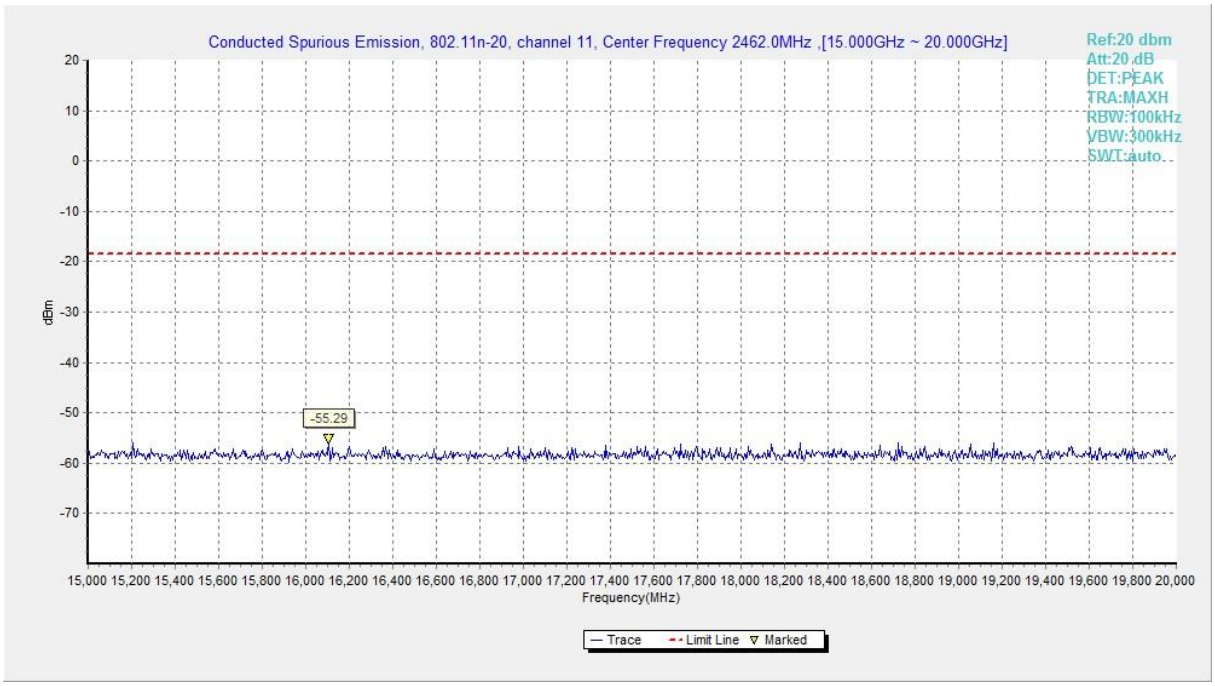

Fig.A.6.1.71 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 15 GHz-20 GHz)

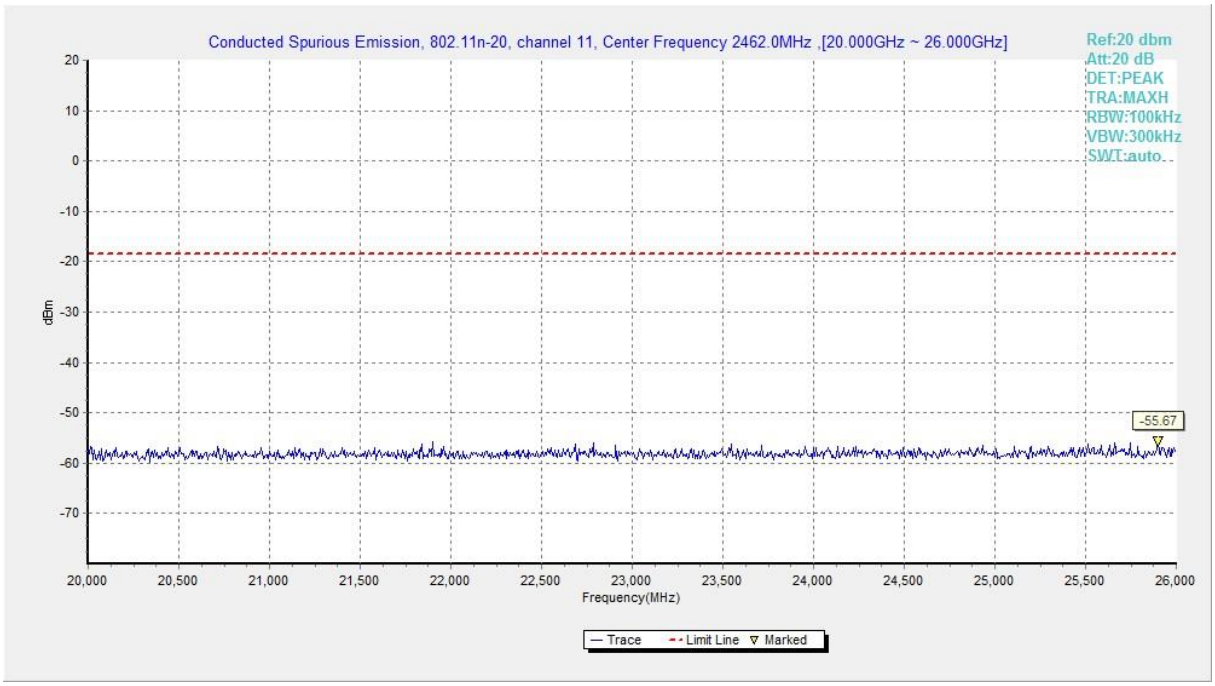

Fig.A.6.1.72 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 20 GHz-26 GHz)

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	Frequency Range	Test Results	Conclusion
802.11b	Power	2.38GHz ~2.45GHz	Fig.A.6.2.1	**P**
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.2	**P**

802.11g mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11g	Power	2.38GHz ~2.43GHz	Fig.A.6.2.3	**P**
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.4	**P**

802.11n-HT20 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	Power	2.38GHz ~2.45GHz	Fig.A.6.2.5	**P**
	Power	2.45GHz ~2.5GHz	Fig.A.6.2.6	**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:

Result=P_{Mea}+$A_{Rpl=}$ P_{Mea}+Cable Loss+Antenna Factor

Average

802.11b

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2385.760	40.8	-38.8	27.7	51.900	H
17835.500	38.3	-18.5	45.6	11.200	H
17829.500	38.2	-18.5	45.6	11.100	V
17873.500	38.1	-18.5	45.6	11.000	H
17852.000	38.1	-18.5	45.6	11.000	H
17439.000	38.1	-19.2	41.5	15.800	H

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17830.000	38.3	-18.5	45.6	11.200	H
17891.000	38.3	-18.5	45.6	11.200	H
17860.500	38.3	-18.5	45.6	11.200	V
17881.000	38.2	-18.5	45.6	11.100	H
17854.500	38.2	-18.5	45.6	11.100	H
17746.500	38.2	-18.5	45.6	11.100	H

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2492.690	40.5	-38.9	27.7	51.700	H
17884.500	38.4	-18.5	45.6	11.300	H
17945.500	38.4	-17.7	45.6	10.500	V
17858.500	38.3	-18.5	45.6	11.200	H
17860.000	38.3	-18.5	45.6	11.200	H
17827.000	38.2	-18.5	45.6	11.100	H

802.11g

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2387.765	40.8	-38.8	27.7	51.900	H
17891.000	38.4	-18.5	45.6	11.300	H
17771.500	38.3	-18.5	45.6	11.200	V
17870.500	38.3	-18.5	45.6	11.200	H
17862.000	38.2	-18.5	45.6	11.100	H
17477.500	38.2	-19.2	41.5	15.900	H

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17836.500	38.5	-18.5	45.6	11.400	H
17439.500	38.4	-19.2	41.5	16.100	H
17827.000	38.3	-18.5	45.6	11.200	V
17848.500	38.3	-18.5	45.6	11.200	H
17839.000	38.3	-18.5	45.6	11.200	H
17874.500	38.3	-18.5	45.6	11.200	H

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2483.825	40.9	-38.9	27.7	52.100	H
17859.500	38.5	-18.5	45.6	11.400	H
17826.000	38.5	-18.5	45.6	11.400	V
17875.000	38.5	-18.5	45.6	11.400	H
17832.500	38.4	-18.5	45.6	11.300	H
17831.500	38.4	-18.5	45.6	11.300	H

802.11n-HT20

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2383.250	40.8	-38.8	27.7	51.900	H
17759.500	38.4	-18.5	45.6	11.300	H
17835.000	38.4	-18.5	45.6	11.300	V
17847.500	38.3	-18.5	45.6	11.200	H
17768.000	38.3	-18.5	45.6	11.200	H
17862.500	38.3	-18.5	45.6	11.200	H

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17862.000	38.4	-18.5	45.6	11.300	H
17830.500	38.3	-18.5	45.6	11.200	H
17860.000	38.3	-18.5	45.6	11.200	V
17834.500	38.3	-18.5	45.6	11.200	H
17859.500	38.2	-18.5	45.6	11.100	H
17844.500	38.2	-18.5	45.6	11.100	H

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2484.105	40.6	-38.9	27.7	51.800	H
17757.000	38.6	-18.5	45.6	11.500	H
17847.500	38.4	-18.5	45.6	11.300	V
17928.000	38.4	-17.7	45.6	10.500	H
17844.000	38.4	-18.5	45.6	11.300	H
17881.000	38.4	-18.5	45.6	11.300	H

Peak

802.11b

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2385.576	53.8	-38.8	27.7	64.900	H
17920.000	50.1	-17.7	45.6	22.200	H
17755.500	49.9	-18.5	45.6	22.800	V
17436.500	49.7	-19.2	41.5	27.400	H
17359.500	49.5	-19.5	41.5	27.500	H
17829.500	49.4	-18.5	45.6	22.300	H

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17935.500	50.1	-17.7	45.6	22.200	H
17860.500	50.1	-18.5	45.6	23.000	H
17741.000	49.5	-18.5	45.6	22.400	V
17748.000	49.5	-18.5	45.6	22.400	H
17445.500	49.4	-19.2	41.5	27.100	H
17514.000	49.4	-19.2	45.6	23.000	H

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2492.685	54.5	-38.9	27.7	65.700	H
17861.000	50.7	-18.5	45.6	23.600	H
17769.500	50.3	-18.5	45.6	23.200	V
17268.500	49.9	-19.5	41.5	27.900	H
17590.500	49.9	-18.9	45.6	23.200	H
17386.500	49.8	-19.5	41.5	27.800	H

802.11g

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2387.785	53.4	-38.8	27.7	64.500	H
17882.000	50.9	-18.5	45.6	23.800	H
17794.500	50.0	-18.5	45.6	22.900	V
17883.000	49.9	-18.5	45.6	22.800	H
17721.500	49.8	-18.9	45.6	23.100	H
17859.500	49.8	-18.5	45.6	22.700	H

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17110.5	50.5	-19.8	41.5	28.8	H
17871	50.2	-18.5	45.6	23.1	H
17849.5	49.5	-18.5	45.6	22.4	V
17339	49.4	-19.5	41.5	27.4	H
17894.5	49.4	-18.5	45.6	22.3	H
17511.5	49.3	-19.2	45.6	22.9	H

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2483.825	53.5	-38.9	27.7	64.700	H
17734.500	50.1	-18.9	45.6	23.400	H
17736.500	50.1	-18.9	45.6	23.400	V
17911.500	49.9	-18.5	45.6	22.800	H
17786.000	49.7	-18.5	45.6	22.600	H
17863.500	49.7	-18.5	45.6	22.600	H

802.11n-HT20

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2383.295	53.9	-38.8	27.7	65.000	H
17843.000	51.1	-18.5	45.6	24.000	H
17883.500	50.4	-18.5	45.6	23.300	V
17903.500	50.2	-18.5	45.6	23.100	H
17844.000	50.1	-18.5	45.6	23.000	H
17382.000	50.0	-19.5	41.5	28.000	H

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17850.500	51.0	-18.5	45.6	23.900	H
17804.000	50.5	-18.5	45.6	23.400	H
17820.500	50.1	-18.5	45.6	23.000	V
17339.500	49.8	-19.5	41.5	27.800	H
17232.000	49.7	-19.5	41.5	27.700	H
17448.000	49.7	-19.2	41.5	27.400	H

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
2484.105	53.0	-38.9	27.7	64.200	H
17874.000	50.2	-18.5	45.6	23.100	H
17412.000	49.8	-19.2	41.5	27.500	V
17707.000	49.8	-18.9	45.6	23.100	H
17423.000	49.8	-19.2	41.5	27.500	H
17438.000	49.7	-19.2	41.5	27.400	H

est graphs as below:

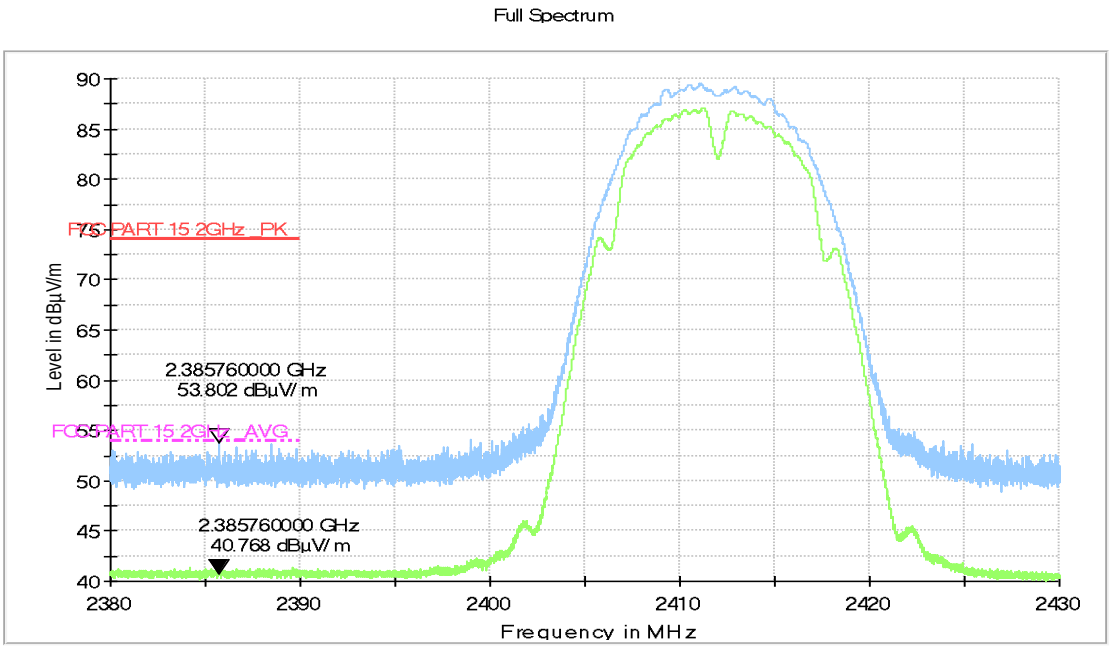

Fig.A.6.2.1 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch1, 2.38 GHz – 2.45GHz

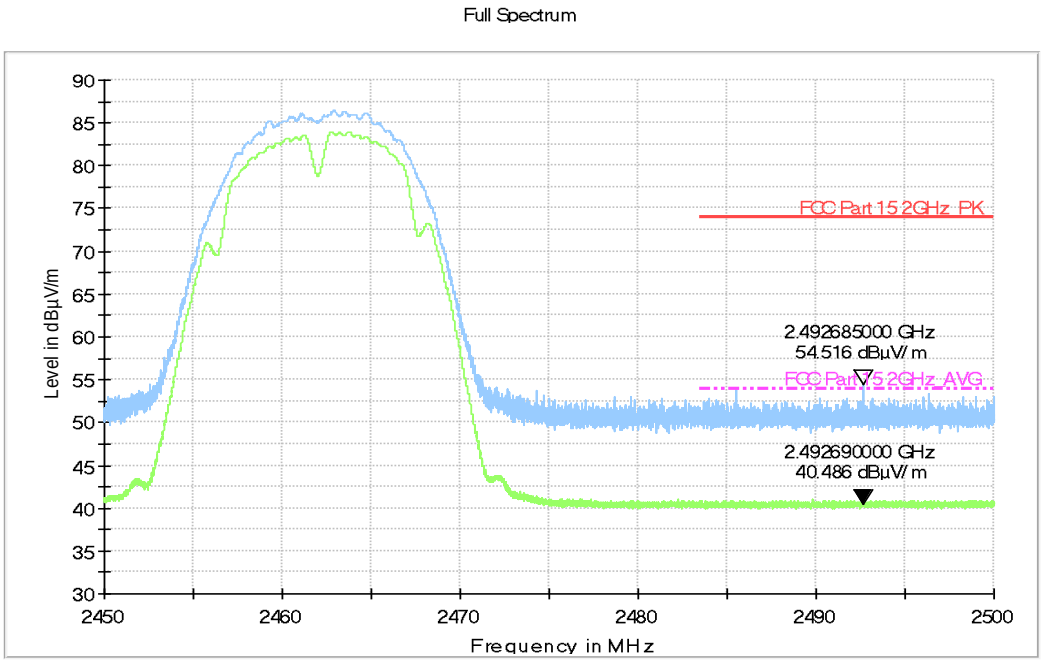

Fig.A.6.2.2 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch11, 2.45 GHz - 2.50GHz

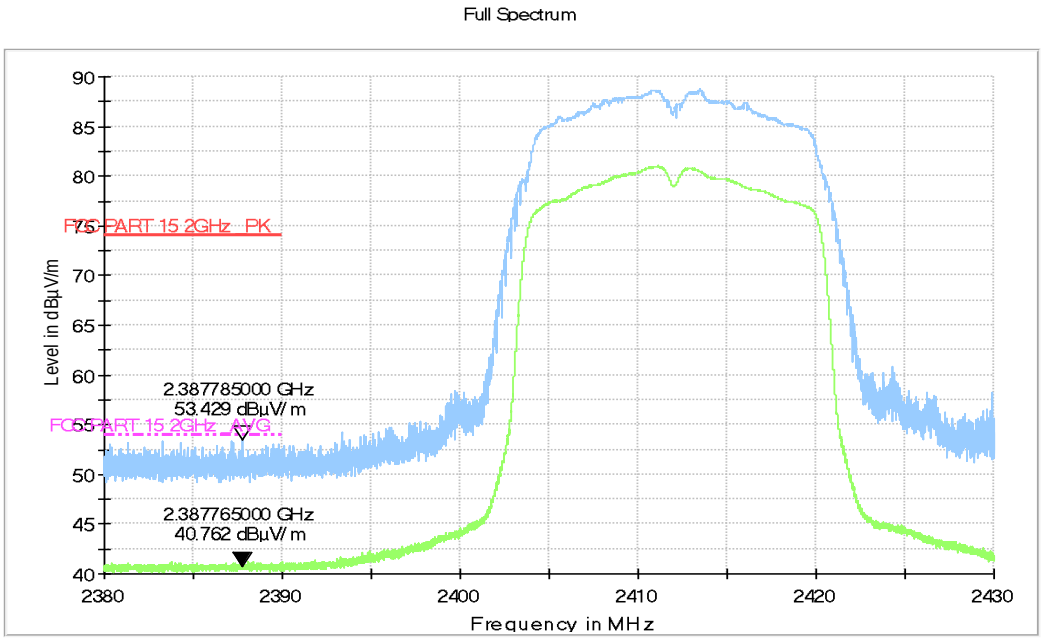

Fig.A.6.2.3 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch1, 2.38 GHz - 2.45GHz

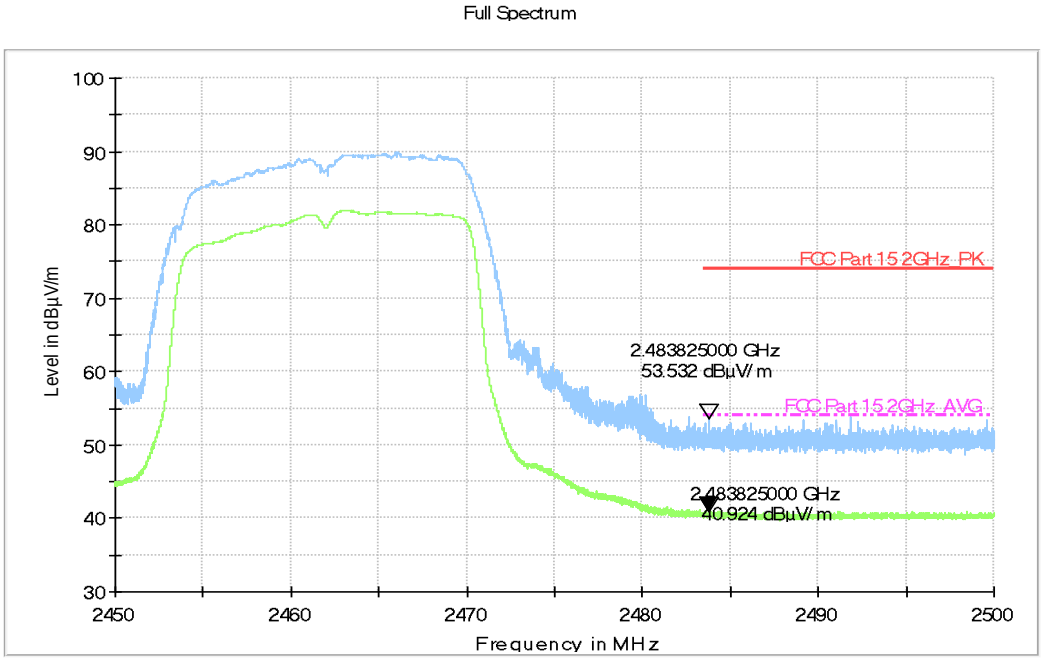

Fig.A.6.2.4 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch11, 2.45 GHz - 2.50GHz

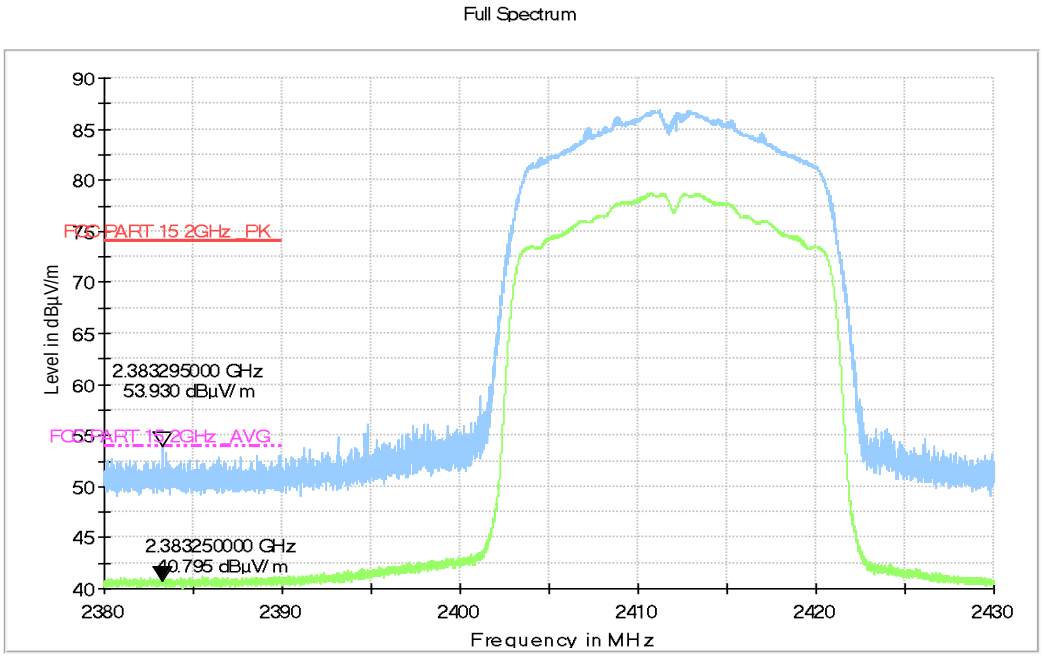

Fig.A.6.2.5 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch1, 2.38 GHz - 2.45GHz

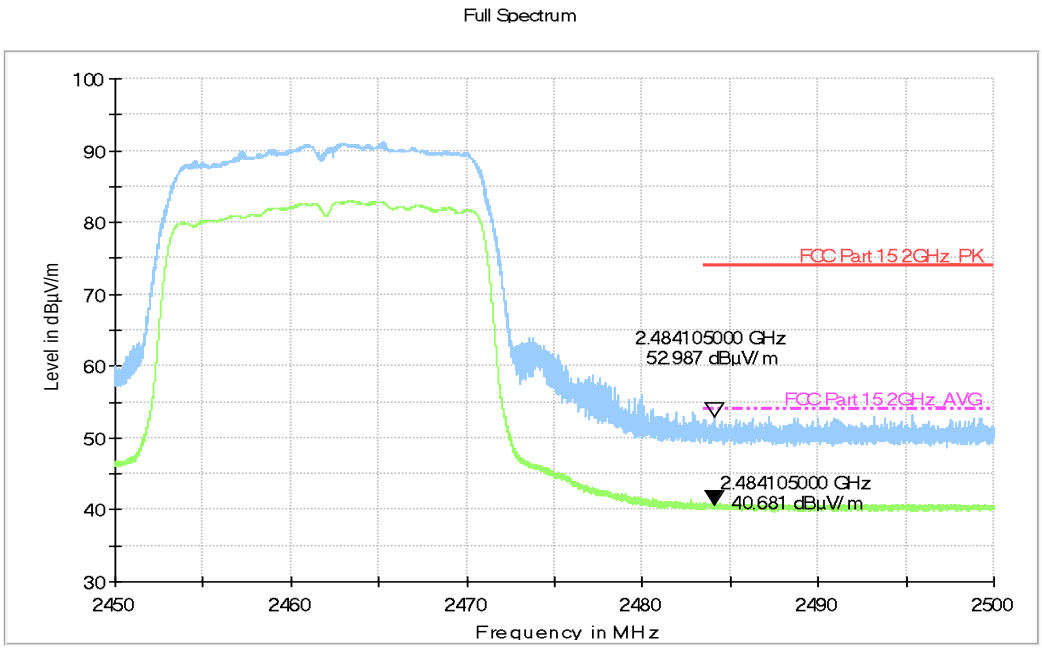

Fig.A.6.2.6 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch11, 2.45 GHz - 2.50GHz

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.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		
		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 (dBμV)	Result (dBμV)		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:

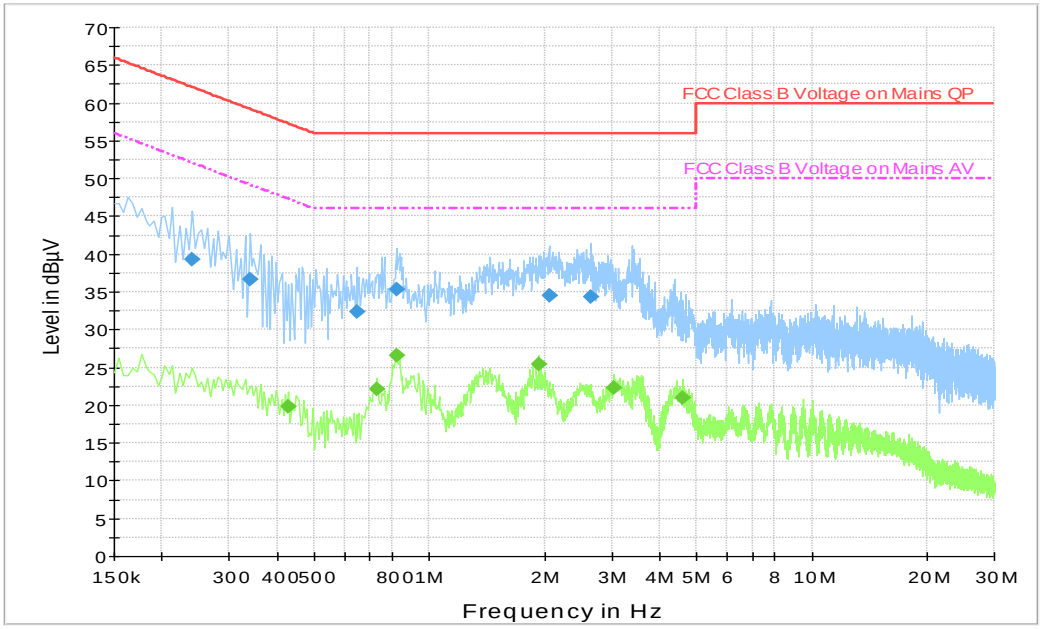

Fig.A.7.1 AC Powerline Conducted Emission-802.11b

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)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.240000	39.3	GND	N	19.8	22.8	62.1
0.339000	36.7	GND	N	19.9	22.6	59.2
0.645000	32.4	GND	N	19.9	23.6	56.0
0.820500	35.3	GND	N	19.8	20.7	56.0
2.058000	34.5	GND	L1	19.7	21.5	56.0
2.643000	34.3	GND	N	19.6	21.7	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.429000	19.9	GND	L1	19.9	27.4	47.3
0.730500	22.2	GND	N	19.9	23.8	46.0
0.820500	26.5	GND	L1	19.7	19.5	46.0
1.932000	25.4	GND	L1	19.7	20.6	46.0
3.039000	22.2	GND	L1	19.7	23.8	46.0
4.609500	21.0	GND	L1	19.6	25.0	46.0

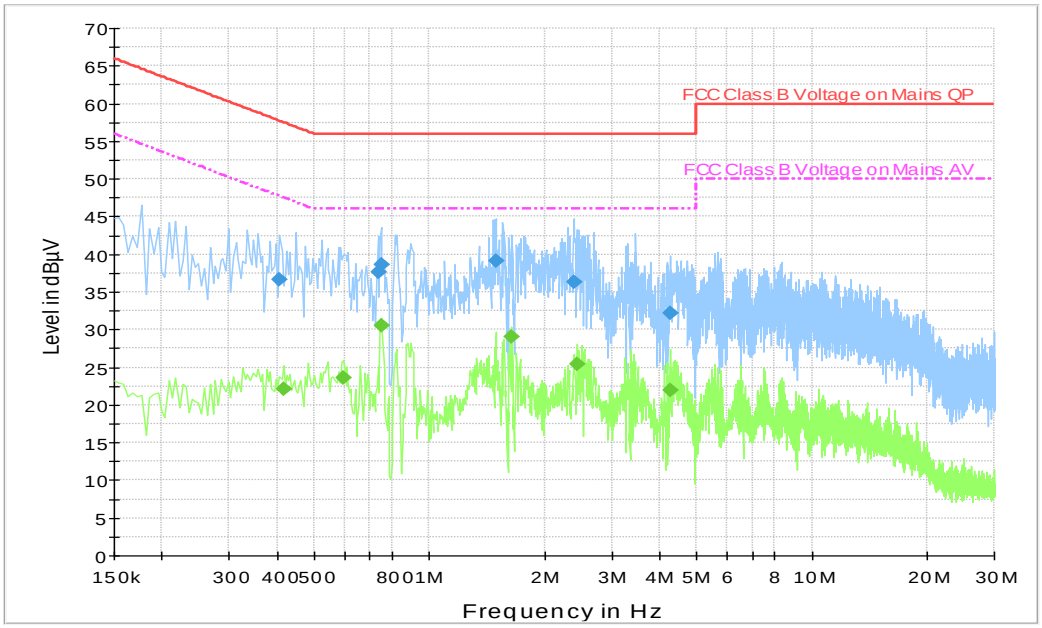

Fig.A.7.2 AC Powerline Conducted Emission-Idle

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)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.406500	36.6	GND	N	19.9	21.1	57.7
0.735000	37.6	GND	L1	19.8	18.4	56.0
0.748500	38.7	GND	N	19.8	17.3	56.0
1.491000	39.1	GND	L1	19.6	16.9	56.0
2.382000	36.4	GND	N	19.6	19.6	56.0
4.276500	32.2	GND	N	19.7	23.8	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.415500	22.1	GND	L1	19.9	25.5	47.5
0.595500	23.7	GND	N	19.9	22.3	46.0
0.748500	30.5	GND	L1	19.8	15.5	46.0
1.644000	29.1	GND	L1	19.7	16.9	46.0
2.436000	25.4	GND	N	19.6	20.6	46.0
4.267500	21.9	GND	L1	19.6	24.1	46.0

ANNEX B: Accreditation Certificate

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 600118-0

Telecommunication Technology Labs, CAICT
Beijing
China

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Electromagnetic Compatibility & Telecommunications

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 Communique dated January 2009).

2016-09-29 through 2017-09-30
Effective Dates

For the National Voluntary Laboratory Accreditation Program

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