TESTING LABORATORY
CERTIFICATE#4323.01

FCC PART 15.247

TEST REPORT

For

LEEDARSON LIGHTING CO., LTD.

Xingda Road, Xingtai Industrial Zone, Changtai County, Zhangzhou, Fujian, China

FCC ID: 2AB2Q8WA806STQ1G

Report Type:	**Product Type:**
CIIPC Report	LED Lamp

Project Engineer:	CK Huang
Report Number:	RXM210204051-00B
Report Date:	2021-02-19
Reviewed By:	Oscar Ye EMC Manager
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road, Kunshan, Jiangsu province, China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant	LEEDARSON LIGHTING CO., LTD.
Tested Model	8WA-A806ST-Q1G
Series Model	8Wy-A806ST-Q1G
Product Type	LED Lamp
Power Supply	AC 120V
RF Function:	2.4G Wi-Fi
Operating Band/Frequency:	2412-2462 MHz
Channel Number:	11
Channel Separation:	5 MHz
Modulation Type:	DSSS,OFDM
Antenna Type:	Built-in antenna
Maximum Antenna Gain:	0.26 dBi

Note1: The antenna gain was provided by the applicant.

Note2: The difference between tested model and series model was explained in the attached declaration letter.

**All measurement and test data in this report was gathered from production sample serial number: RXM210204051-1. (Assigned by the BACL. The EUT supplied by the applicant was received on 2021-02-04.*

Objective

This report is prepared on behalf of *LEEDARSON LIGHTING CO., LTD.* in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commissions' rules.

The tests were performed in order to determine Compliant with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

This is a CIIPC report base on the original report RXM200629050-00B with FCC ID: 2AB2Q8WA806STQ1G which was granted on 2020-08-10, the differences between the original device and the current one are as follows:

Driver layout has fine adjustment.

The above differences will affect part of tests, "AC Line Conducted Emissions" and "Radiated Emissions Below 1GHz" were presented in this report, and other data were referred to the original report.

Related Submittal(s)/Grant(s)

No Related Submittal(s)/Grant(s).

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliant Testing of Unlicensed Wireless Devices and FCC 558074 D01 15.247 Meas Guidance v05r02.

All emissions measurement was performed at Bay Area Compliant Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Item		Uncertainty
AC Power Lines Conducted Emissions		3.19dB
RF conducted test with spectrum		0.9dB
RF Output Power with Power meter		0.5dB
Radiated emission	30MHz~1GHz	6.11dB
	1GHz~6GHz	4.45dB
	6GHz~18GHz	5.23dB
	18GHz~40GHz	5.65dB
Occupied Bandwidth		0.5kHz
Temperature		1.0℃
Humidity		6%

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) Lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4323.01) and the FCC designation No. CN1185 under the FCC KDB 974614 D01 and CAB identifier CN0004 under the ISED requirement. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

Test channel list is as below:

For 802.11b, 802.11g and 802.11n-HT20 mode, EUT was tested with Channel 1, 6 and 11.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	/

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

RF test tool: UI_mptool.exe

Pre-scan with all the data rates, and the worst case was performed as below:

Mode	Data Rate	Channel	Power Level Setting
802.11b	1 Mbps	Low	Default
		Middle	Default
		High	Default
802.11g	6 Mbps	Low	Default
		Middle	Default
		High	Default
802.11n-HT20	MCS0	Low	Default
		Middle	Default
		High	Default

Support Equipment List and Details

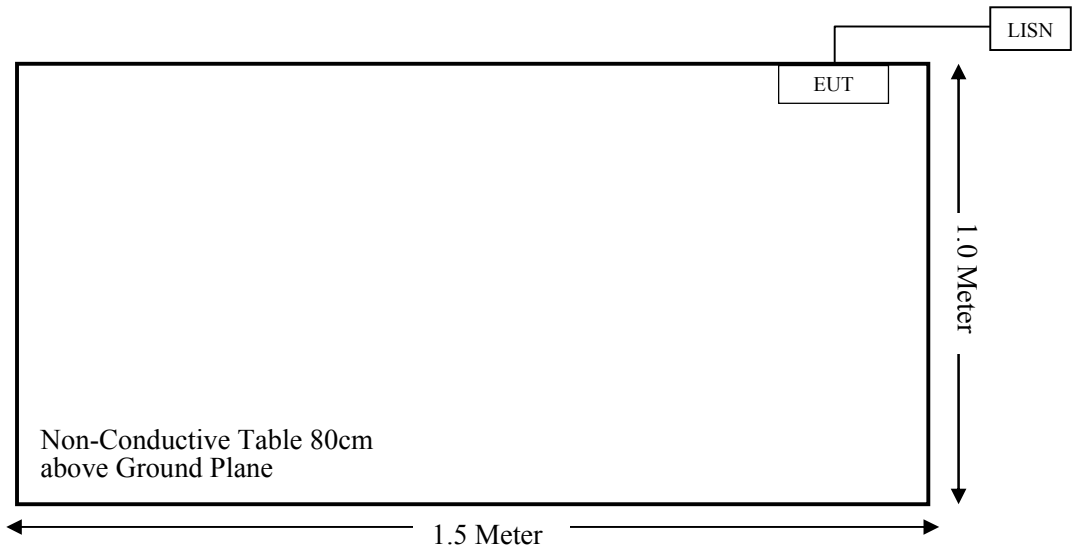
Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

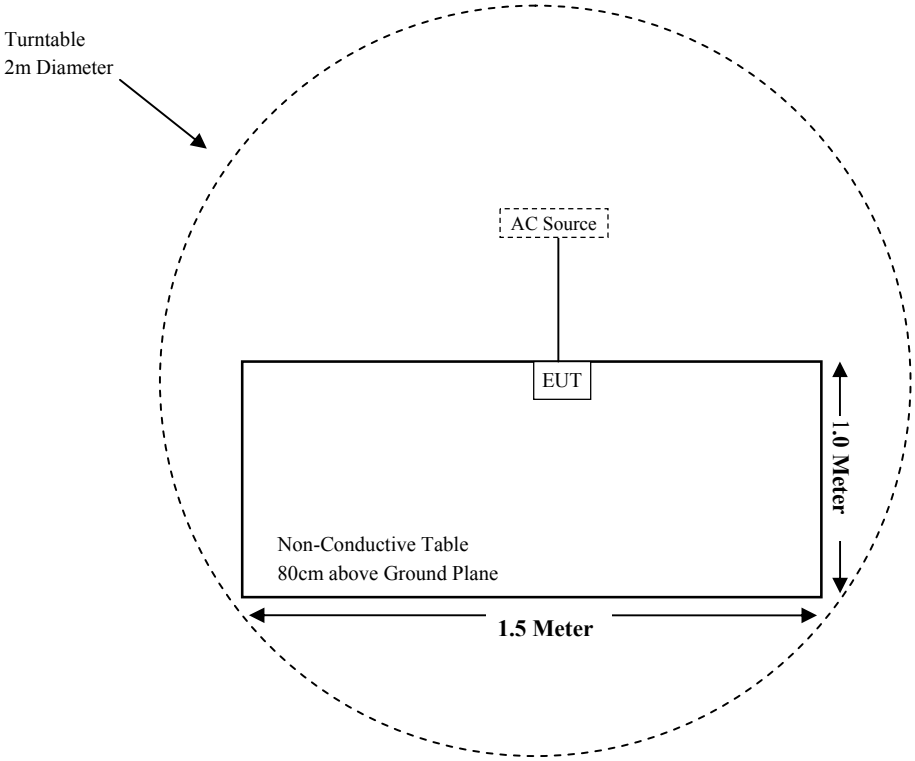
Cable Description	Length(m)	From Port	To
Power Cable	1.0	EUT	LISN/AC Source

Block Diagram of Test Setup

For Conducted Emissions:



For Radiated Emissions(Below 1GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (I), §1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliant (See Note 1)
§15.203	Antenna Requirement	Compliant (See Note 1)
§15.207 (a)	AC Line Conducted Emissions	Compliant
§15.247(d)	Spurious Emissions at Antenna Port	Compliant (See Note 1)
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant (See Note 1)
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliant (See Note 1)
§15.247(b)(3)	Maximum Conducted Output Power	Compliant (See Note 1)
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant (See Note 1)
§15.247(e)	Power Spectral Density	Compliant (See Note 1)

Note 1: For these items, all the test data please refer to the original report RXM200629050-00B, and only Radiated Emissions Below 1GHz is retested in Spurious Emissions.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test（Chamber 1#）					
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2020-11-27	2021-11-26
Sunol Sciences	Hybrid Antenna	JB3	A090314-2	2020-01-07	2023-01-06
Sonoma Instrument	Amplifier	310N	171205	2020-08-14	2021-08-13
Rohde & Schwarz	Auto Test Software	EMC32	100361	N/A	N/A
MICRO-COAX	Coaxial Cable	Cable-8	008	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-9	009	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-10	010	2020-08-15	2021-08-14
Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2020-07-28	2021-07-27
Rohde & Schwarz	LISN	ENV216	101115	2020-11-27	2021-11-26
Audix	Test Software	e3	V9	N/A	N/A
Rohde & Schwarz	Pulse limiter	ESH3-Z2	100552	2020-08-10	2021-08-09
MICRO-COAX	Coaxial Cable	Cable-15	015	2020-08-15	2021-08-14

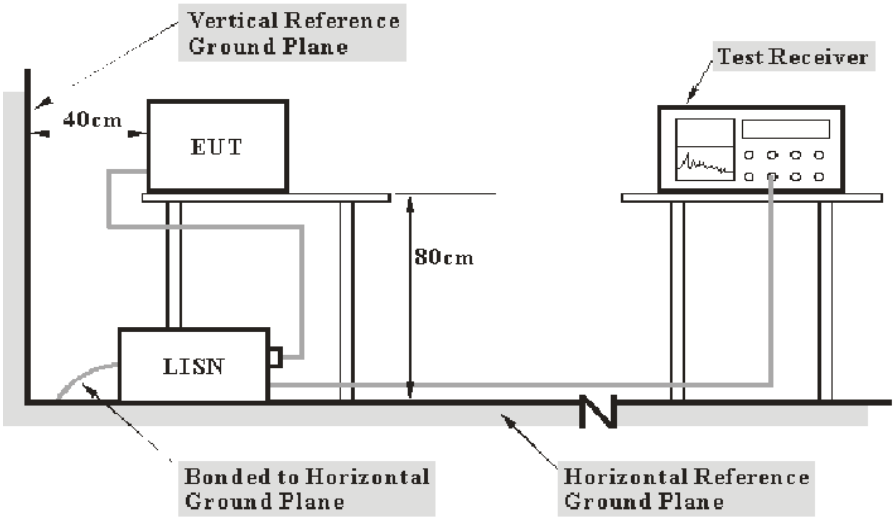
*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §15.207 (a) - AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a)

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with ANSI C63.10-2013. The related limit was specified in FCC Part 15.207.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

ANSI C63.10-2013 clause 6.2

During the conducted emission test, the EUT was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

Factor & Over Limit Calculation

The Factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)

The "**Over Limit**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit of 7 dB means the emission is 7 dB above the limit. The equation for Over Limit calculation is as follows:

Over Limit (dB) = Read level (dBµV) + Factor (dB) - Limit (dBµV)

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

Test Data

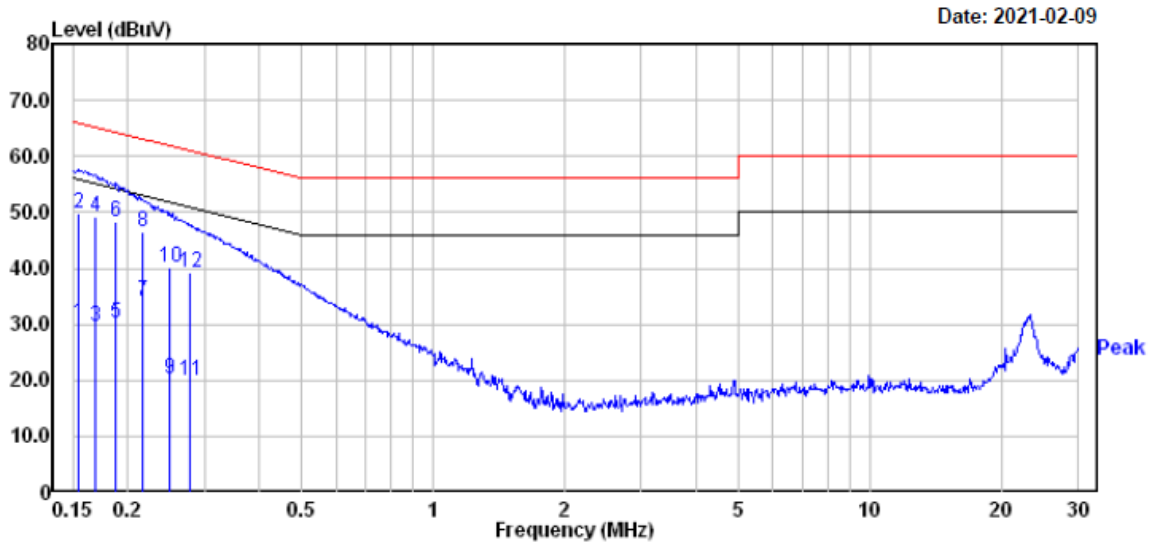
Environmental Conditions

Temperature:	25.3 ℃
Relative Humidity:	61 %
ATM Pressure:	101.3kPa

The testing was performed by CK Huang on 2021-02-09.

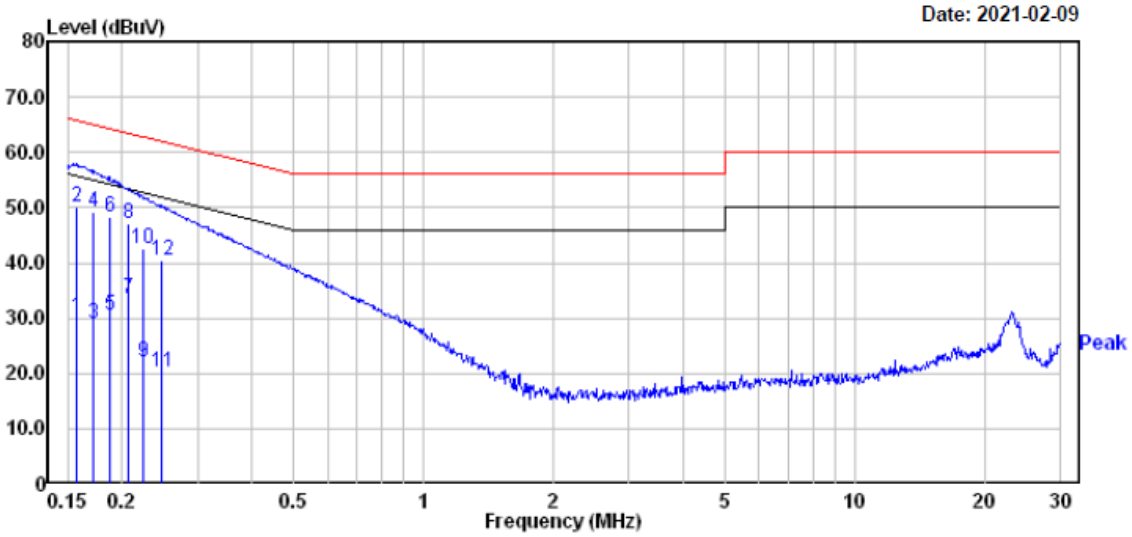
EUT operation mode: Transmitting in 802.11g mode high channel (worst case)

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.155	10.40	19.82	30.22	55.74	-25.52	Average
2	0.155	30.10	19.82	49.92	65.74	-15.82	QP
3	0.169	9.90	19.83	29.73	55.03	-25.30	Average
4	0.169	29.40	19.83	49.23	65.03	-15.80	QP
5	0.187	10.41	19.82	30.23	54.15	-23.92	Average
6	0.187	28.61	19.82	48.43	64.15	-15.72	QP
7	0.216	14.20	19.82	34.02	52.96	-18.94	Average
8	0.216	26.80	19.82	46.62	62.96	-16.34	QP
9	0.249	0.40	19.82	20.22	51.78	-31.56	Average
10	0.249	20.30	19.82	40.12	61.78	-21.66	QP
11	0.277	0.10	19.82	19.92	50.90	-30.98	Average
12	0.277	19.40	19.82	39.22	60.90	-21.68	Peak

AC 120V/60 Hz, Neutral



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.157	10.50	19.82	30.32	55.60	-25.28	Average
2	0.157	30.20	19.82	50.02	65.60	-15.58	QP
3	0.171	9.30	19.83	29.13	54.90	-25.77	Average
4	0.171	29.30	19.83	49.13	64.90	-15.77	QP
5	0.187	10.71	19.82	30.53	54.15	-23.62	Average
6	0.187	28.61	19.82	48.43	64.15	-15.72	QP
7	0.206	13.70	19.82	33.52	53.36	-19.84	Average
8	0.206	27.20	19.82	47.02	63.36	-16.34	QP
9	0.223	2.30	19.82	22.12	52.70	-30.58	Average
10	0.223	22.60	19.82	42.42	62.70	-20.28	QP
11	0.248	0.30	19.82	20.12	51.82	-31.70	Average
12	0.248	20.70	19.82	40.52	61.82	-21.30	QP

Note:

1) Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)
2) Over Limit (dB) = Read level (dBµV) + Factor (dB) - Limit (dBµV)

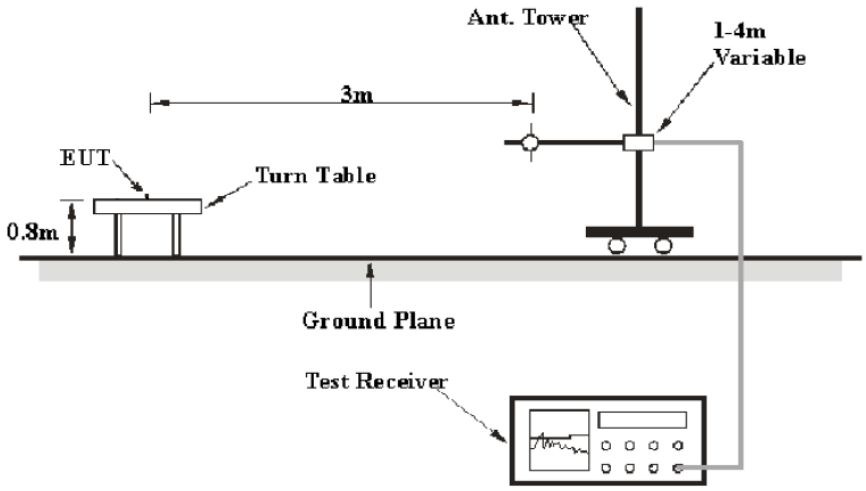
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

EUT Setup

Below 1 GHz:



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1 GHz.

During the radiated emission test, the EMI test receiver setup was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP

Test Procedure

According to ANSI C63.10-2013 clause 6.5, 6.6 and 6.7.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude (dBμV/m) = Meter Reading (dBμV) + Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB)

The "**Margin**" column of the following data tables indicates the degree of Compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin (dB) = Limit (dBμV/m) – Corrected Amplitude (dBμV/m)

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205, 15.209 and 15.247.

Test Data

Environmental Conditions

Temperature:	24.2 ℃
Relative Humidity:	53 %
ATM Pressure:	101.5 kPa

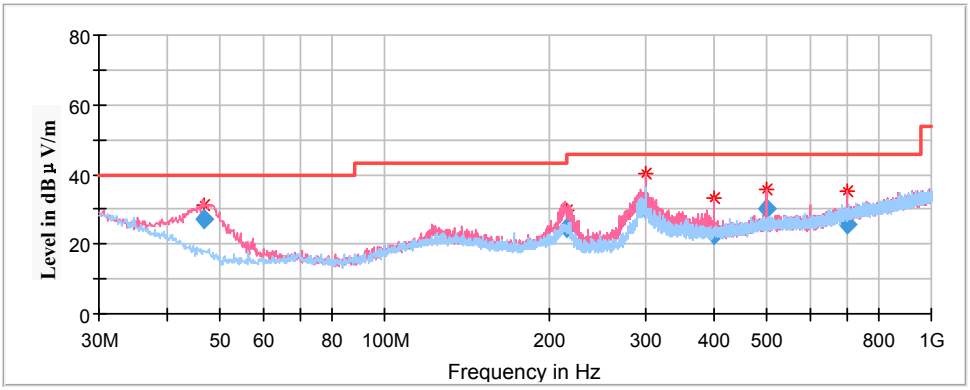
The testing was performed by CK Huang on 2021-02-08.

EUT operation mode: Transmitting

Spurious Emission Test:

30MHz-1GHz

Pre-scan with 802.11b, 802.11g, 802.11n-HT20 modes of operation in the X,Y and Z axes of orientation, the worst case ***middle channel of 802.11n-HT20 mode in Z-axis of orientation*** *was recorded.*



Frequency (MHz)	Corrected Amplitude	Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	QuasiPeak (dBµV/m)	Height (cm)	Polar (H/V)				
46.872200	27.00	100.0	V	126.0	-15.1	40.00	13.00
215.027950	24.51	100.0	V	0.0	-12.2	43.50	18.99
300.648950	30.22	100.0	V	281.0	-10.4	46.00	15.78
400.213950	22.71	100.0	V	251.0	-8.0	46.00	23.29
499.665700	29.99	100.0	V	65.0	-5.4	46.00	16.01
699.487000	25.45	200.0	V	16.0	-2.4	46.00	20.55

Declarations

1: BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk '*'. Customer model name, addresses, names, trademarks etc. are not considered data.

2: Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

3: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

4: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

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