TESTING LABORATORY
CERTIFICATE#4323.01

FCC PART 15.247

TEST REPORT

For

Wyze Labs, Inc.

3933 Lake Washington Blvd NE Suite 350, Kirkland, Washington, 98033 United States

FCC ID: 2AUIU-WLPA19C

Report Type:	**Product Type:**
CIIPC Report	WYZE BULB COLOR

Project Engineer:	Chao Gao
Report Number:	RXM210107052-00B
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

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	Wyze Labs, Inc.
Product Type:	WYZE BULB COLOR
Tested Model:	WLPA19C
Power Supply:	AC 120V
RF Function:	2.4G Wi-Fi, BLE(1Mbps)
Operating Band/Frequency:	2.4G Wi-Fi: 2412-2462 MHz BLE(1Mbps): 2402-2480 MHz
Channel Number:	2.4G Wi-Fi: 11, BLE(1Mbps): 40
Channel Separation:	2.4G Wi-Fi: 5 MHz, BLE(1Mbps): 2 MHz
Modulation Type:	2.4G Wi-Fi: OFDM,DSSS; BLE(1Mbps): GFSK
Antenna Type:	Wi-Fi/ BLE(1Mbps): Monopole Antenna
*Maximum Antenna Gain:	Wi-Fi/BLE(1Mbps): -1.20 dBi

Note: The antenna gain was provided by the applicant.

**All measurement and test data in this report was gathered from production sample serial number: RXM210107052-1. (Assigned by the BACL. The EUT supplied by the applicant was received on 2021-01-07)*

Objective

This report is prepared on behalf of *Wyze Labs, Inc.* in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission's rules.

The tests were performed in order to determine Compliance 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 RXM201019050-00A with FCC ID: 2AUIU-WLPA19C which was granted on 2021-01-08, the differences between the original device and the current one are as follows:

Remove some components on the drive power board.

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)

Test Methodology

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

All emissions measurement was performed at Bay Area Compliance 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), 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;

For 802.11n-HT40 mode, EUT was tested with Channel 3, 6 and 9.

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	/	/

For BLE mode, EUT was tested with channel 0, 19 and 39.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	…	…
…	…	…	…
…	…	…	…
18	2438	38	2478
19	2440	39	2480

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

RF test software: ESP_RF_test_tool_v1.1.0

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	0
		Middle	0
		High	0
802.11g	6 Mbps	Low	4
		Middle	4
		High	8
802.11n-HT20	MCS0	Low	4
		Middle	4
		High	8
802.11n-HT40	MCS0	Low	10
		Middle	10
		High	14
BLE	1Mbps	Low	8
		Middle	8
		High	8

Note: The power level setting was declared by the applicant.

Support Equipment List and Details

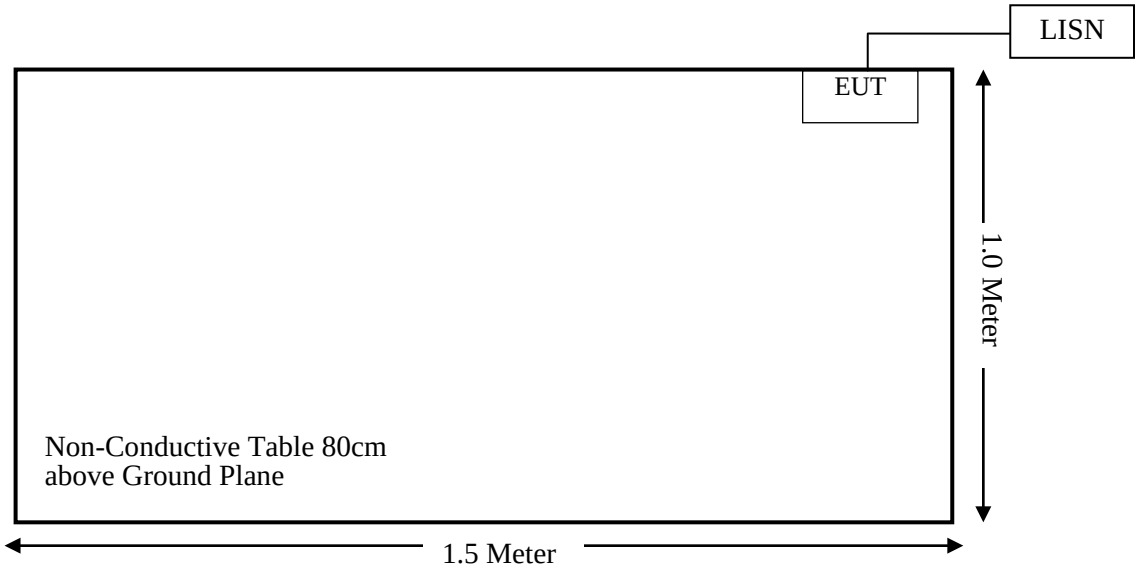
Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

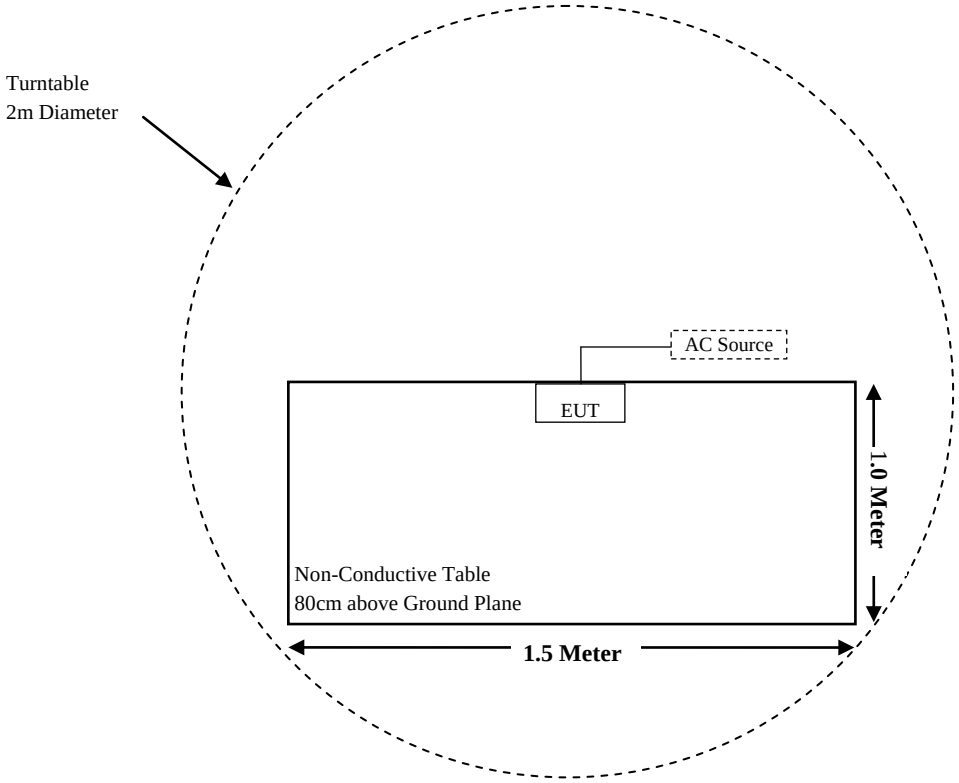
Cable Description	Shielding Type	Length (m)	From Port	To
Power Cable	Un-shielding	2.0	EUT	LISN/AC Source

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)	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 RXM201019050-00A, 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	A090314-1	2020-08-05	2023-08-04
Sonoma Instrunent	Pre-amplifier	310N	171205	2020-08-14	2021-08-13
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
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	/	/
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

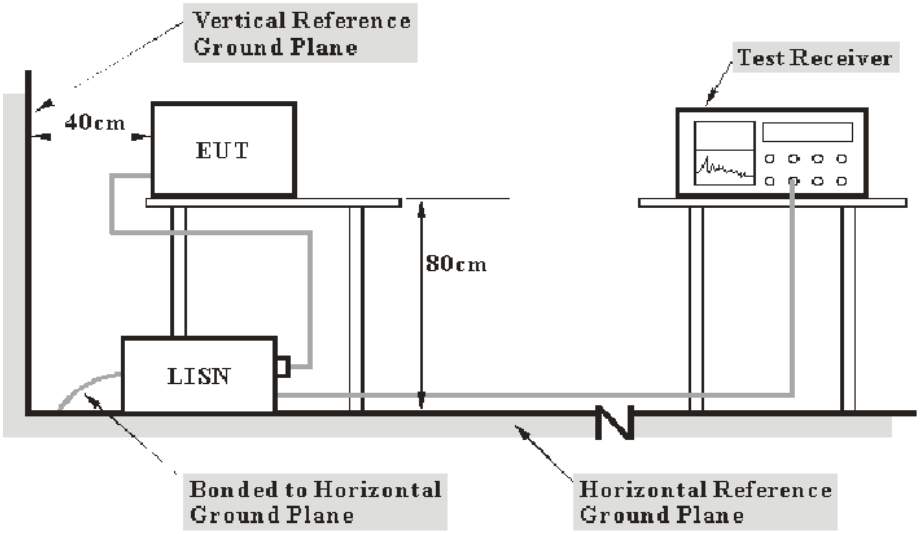
*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

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 (dB). 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:	24.5 ℃
Relative Humidity:	50 %
ATM Pressure:	101.3 kPa

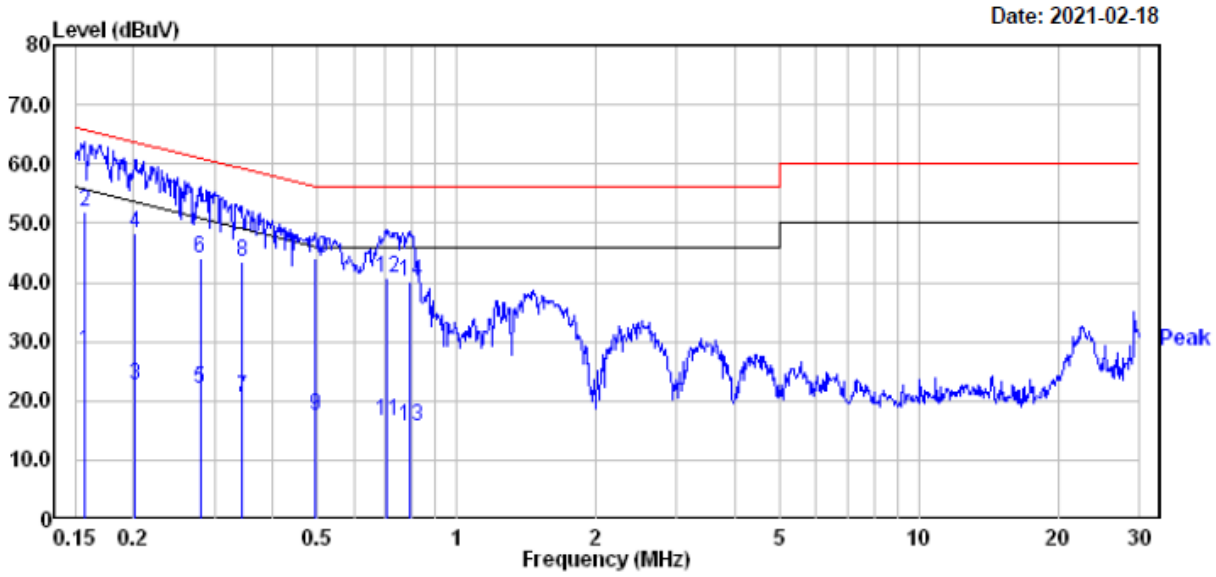
The testing was performed by Chao Gao on 2021-02-18.

Test Result: Compliant.

For Wi-Fi Mode:

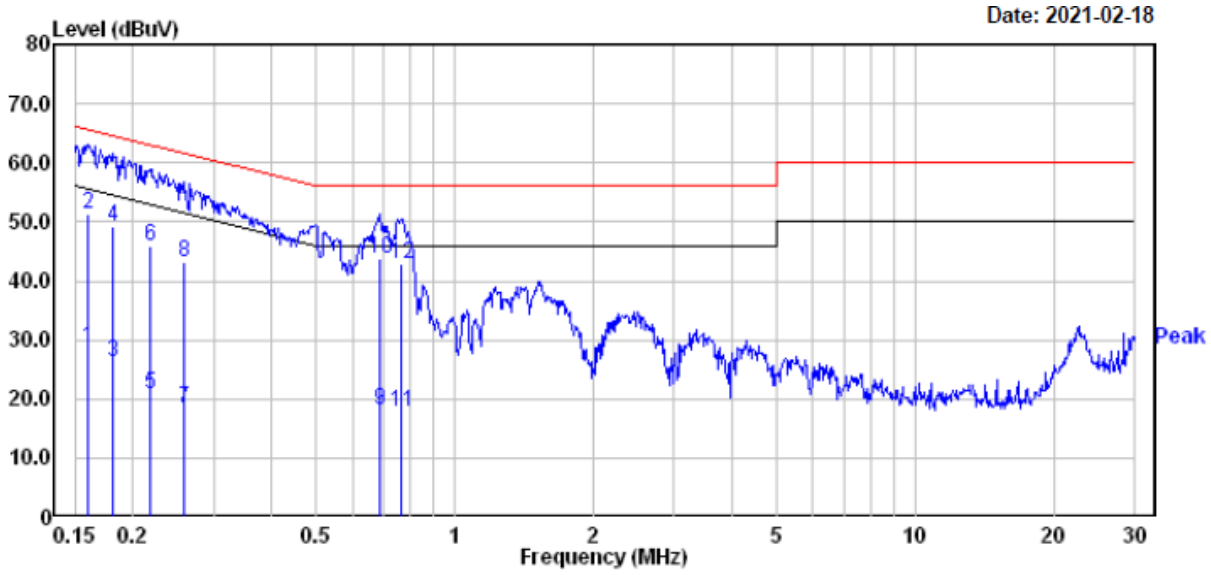
EUT operation mode: Transmitting in 802.11n-HT20 mode middle channel (worst case)

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.157	8.50	19.82	28.32	55.60	-27.28	Average
2	0.157	32.00	19.82	51.82	65.60	-13.78	QP
3	0.202	2.70	19.82	22.52	53.54	-31.02	Average
4	0.202	28.60	19.82	48.42	63.54	-15.12	QP
5	0.279	2.20	19.82	22.02	50.85	-28.83	Average
6	0.279	24.20	19.82	44.02	60.85	-16.83	QP
7	0.345	0.70	19.81	20.51	49.09	-28.58	Average
8	0.345	23.60	19.81	43.41	59.09	-15.68	QP
9	0.497	-2.10	19.76	17.66	46.05	-28.39	Average
10	0.497	24.30	19.76	44.06	56.05	-11.99	QP
11	0.708	-3.10	19.75	16.65	46.00	-29.35	Average
12	0.708	21.00	19.75	40.75	56.00	-15.25	QP
13	0.796	-3.90	19.70	15.80	46.00	-30.20	Average
14	0.796	20.50	19.70	40.20	56.00	-15.80	QP

AC 120V/60 Hz, Neutral

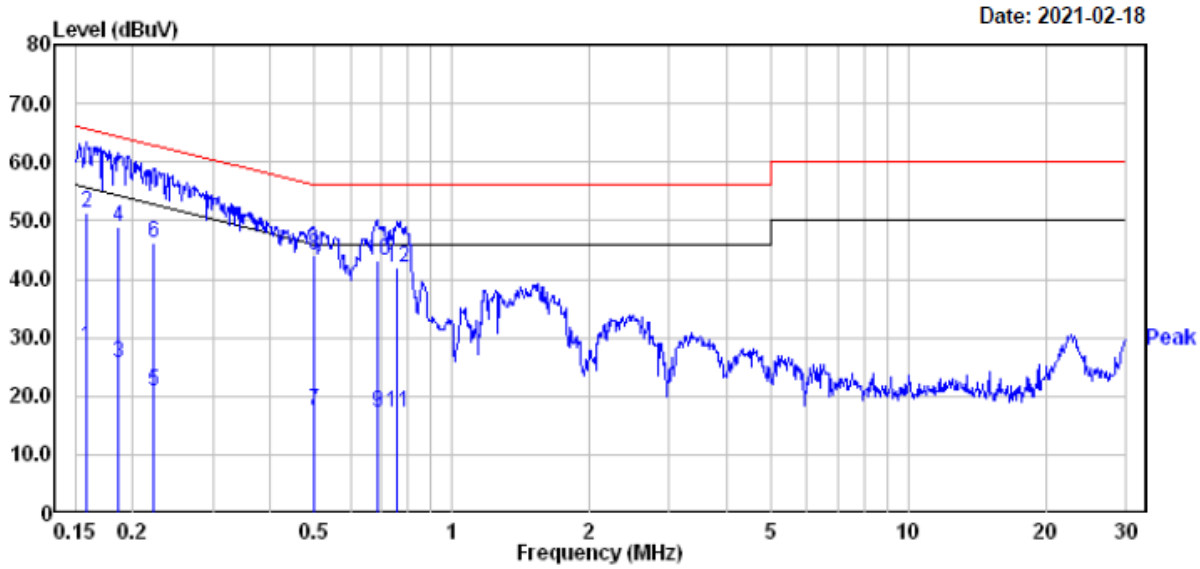


	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.160	8.80	19.83	28.63	55.47	-26.84	Average
2	0.160	31.50	19.83	51.33	65.47	-14.14	QP
3	0.181	6.40	19.83	26.23	54.46	-28.23	Average
4	0.181	29.50	19.83	49.33	64.46	-15.13	QP
5	0.219	0.90	19.82	20.72	52.88	-32.16	Average
6	0.219	26.20	19.82	46.02	62.88	-16.86	QP
7	0.258	-1.40	19.82	18.42	51.51	-33.09	Average
8	0.258	23.40	19.82	43.22	61.51	-18.29	QP
9	0.690	-1.70	19.75	18.05	46.00	-27.95	Average
10	0.690	24.10	19.75	43.85	56.00	-12.15	QP
11	0.767	-2.00	19.72	17.72	46.00	-28.28	Average
12	0.767	23.10	19.72	42.82	56.00	-13.18	QP

For BLE Mode:

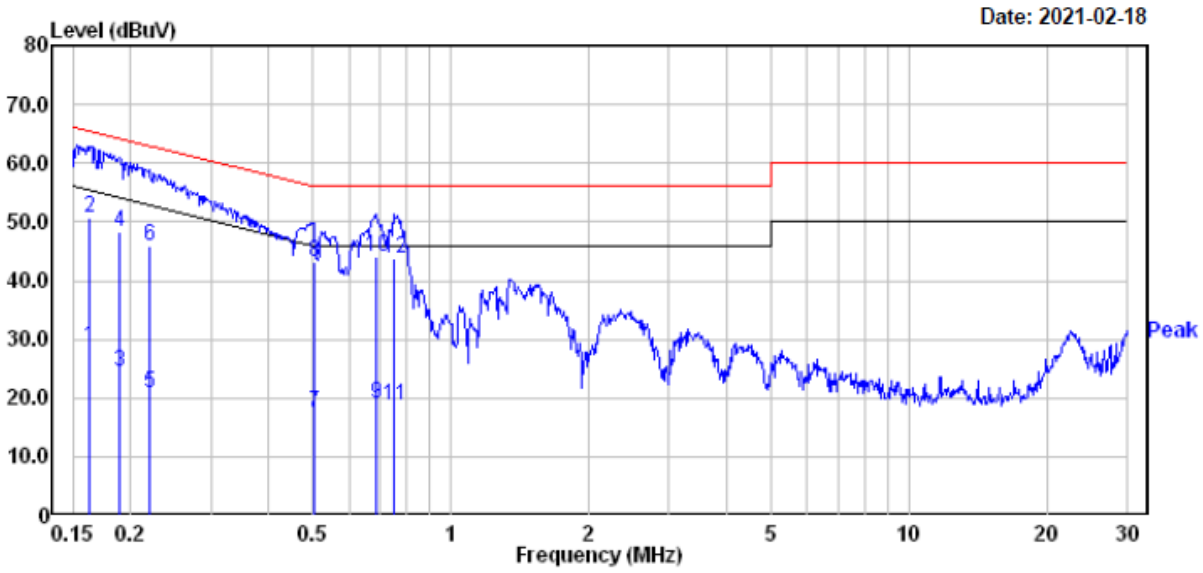
EUT operation mode: Transmitting in BLE mode middle channel (worst case)

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.159	8.50	19.82	28.32	55.52	-27.20	Average
2	0.159	31.60	19.82	51.42	65.52	-14.10	QP
3	0.185	5.81	19.82	25.63	54.24	-28.61	Average
4	0.185	29.21	19.82	49.03	64.24	-15.21	QP
5	0.222	1.00	19.82	20.82	52.74	-31.92	Average
6	0.222	26.40	19.82	46.22	62.74	-16.52	QP
7	0.499	-2.20	19.76	17.56	46.01	-28.45	Average
8	0.499	24.20	19.76	43.96	56.01	-12.05	QP
9	0.686	-2.50	19.75	17.25	46.00	-28.75	Average
10	0.686	23.30	19.75	43.05	56.00	-12.95	QP
11	0.759	-2.40	19.72	17.32	46.00	-28.68	Average
12	0.759	22.30	19.72	42.02	56.00	-13.98	QP

AC 120V/60 Hz, Neutral



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.163	8.90	19.83	28.73	55.30	-26.57	Average
2	0.163	31.00	19.83	50.83	65.30	-14.47	QP
3	0.189	4.60	19.82	24.42	54.06	-29.64	Average
4	0.189	28.60	19.82	48.42	64.06	-15.64	QP
5	0.220	1.10	19.82	20.92	52.83	-31.91	Average
6	0.220	26.10	19.82	45.92	62.83	-16.91	QP
7	0.502	-2.30	19.76	17.46	46.00	-28.54	Average
8	0.502	23.30	19.76	43.06	56.00	-12.94	QP
9	0.686	-0.70	19.75	19.05	46.00	-26.95	Average
10	0.686	24.30	19.75	44.05	56.00	-11.95	QP
11	0.755	-0.90	19.72	18.82	46.00	-27.18	Average
12	0.755	24.10	19.72	43.82	56.00	-12.18	QP

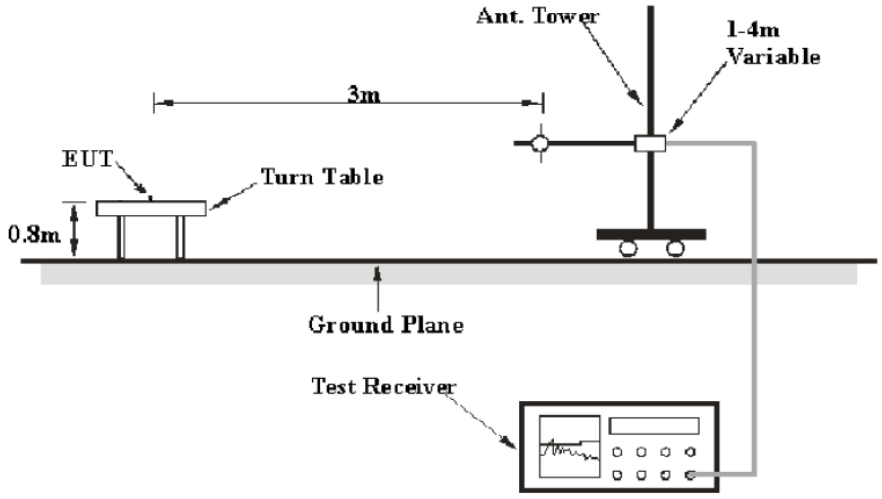
FCC §15.209 - RADIATED EMISSIONS BELOW 1GHZ

Applicable Standard

FCC §15.209

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 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.

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 15.209.

Test Data

Environmental Conditions

Temperature:	22.0 ℃
Relative Humidity:	53 %
ATM Pressure:	101.5 kPa

The testing was performed by Chao Gao on 2021-01-12.

Test Result: Compliant.

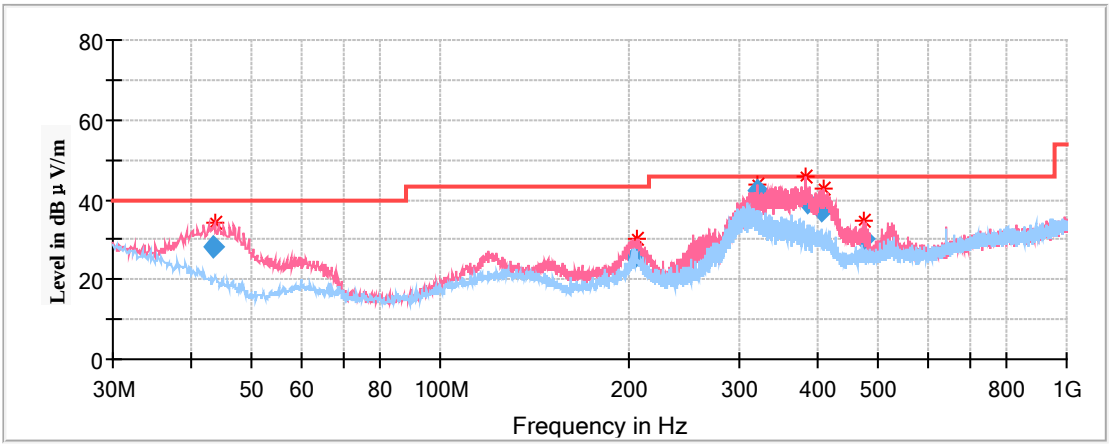
EUT operation mode: Transmitting

For Wi-Fi Mode:

Spurious Emission Test:

30MHz-1GHz:

Pre-Scan with 802.11b, 802.11g ,802.11n-HT20 and 802.11n-HT40 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*



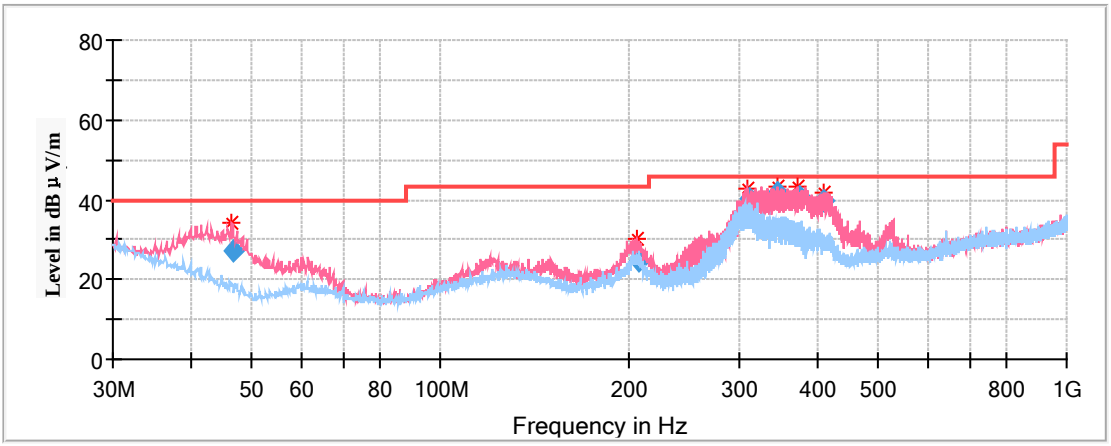
Frequency (MHz)	Corrected Amplitude	Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	Quasi-peak (dBµV/m)	Height (cm)	Polar (H/V)				
43.446800	28.16	100.0	V	175.0	-12.9	40.00	11.84
204.377750	25.49	200.0	V	25.0	-11.2	43.50	18.01
320.017100	42.46	100.0	V	297.0	-10.3	46.00	3.54
384.736250	39.49	100.0	V	125.0	-8.4	46.00	6.51
407.161350	37.12	100.0	V	260.0	-7.8	46.00	8.88
473.662500	30.41	100.0	V	199.0	-6.2	46.00	15.59

For BLE Mode:

Spurious Emission Test:

30MHz-1GHz

*(Pre-scan with low, middle and high channels of operation in the X,Y and Z axes of orientation, the worst case **middle channel of operation in the 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)				
46.567100	27.40	100.0	V	16.0	-14.9	40.00	12.60
207.204400	24.72	200.0	V	22.0	-11.5	43.50	18.78
311.494300	40.31	100.0	V	296.0	-10.5	46.00	5.69
346.350500	42.00	100.0	V	284.0	-9.5	46.00	4.00
373.802700	40.69	100.0	V	114.0	-8.7	46.00	5.31
409.463900	39.75	100.0	V	125.0	-7.8	46.00	6.25

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.

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