



TESTING LABORATORY
CERTIFICATE#4323.01



FCC PART 15.247

TEST REPORT

For

ZHEJIANG EBOY TECHNOLOGY CO., LTD.

No.568 Huabao Street, Deqing County, Huzhou City, China, 313200

FCC ID: 2AJ3WEBEBAW419

Report Type: CIIPC Report	Product Type: LED LAMP
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Report Number:	RS HB210611001-00B
Report Date:	2021-08-30
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	ZHEJIANG EBOY TECHNOLOGY CO., LTD.
Tested Model:	EBE-BAW419-B
Series Model:	EBE-BAW419-C, EBE-BAW422-B, EBE-BAW422-C
Model Difference:	See product similarity declaration letter
Product Type:	LED LAMP
Power Supply:	AC 120V
RF Function:	2.4G Wi-Fi
Operating Band/Frequency:	2412-2462 MHz (802.11b/g/n20), 2422~2452 MHz (802.11n40)
Channel Number:	11(802.11b/g/n20), 7(802.11n40)
Channel Separation:	5 MHz
Modulation Type:	DSSS, OFDM
Antenna Type:	PCB antenna
*Maximum Antenna Gain:	0.0dBi

Note: The maximum antenna gain was provided by the applicant.

** All measurement and test data in this report was gathered from production sample serial number: RSHB210611001-1 (Assigned by the BACL. The EUT supplied by the applicant was received on 2021-06-11)*

Objective

This report is prepared on behalf of *ZHEJIANG EBOY TECHNOLOGY 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 RSHB201014002-00B with FCC ID: 2AJ3WEBEBAW419 which was granted on 2020-12-22, the differences between the original device and the current one are as follows:

1. PCB change: Double panel changed to single panel.
2. LED change: Number of RGB beads changed from 15 to 14.
3. PID change
4. Updated tested model to "EBE-BAW419-B".
5. Updated series model to "EBE-BAW419-C, EBE-BAW422-B, EBE-BAW422-C".

The above differences will affect part of tests, "AC Line Conducted Emissions" and "Radiated Emissions" 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 emissions	30MHz~1GHz	6.11dB
	1GHz~6GHz	4.45dB
	6GHz~18GHz	5.23dB
	18GHz~40GHz	5.65dB
Occupied Bandwidth		0.5kHz
Temperature		1.0°C
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 ISSED 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	/	/

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

RF test tool: wifi test tool v1.4.1

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	11
		Middle	8
		High	7
802.11g	6 Mbps	Low	11
		Middle	8
		High	6
802.11n-HT20	MCS0	Low	11
		Middle	8
		High	8
802.11n-HT40	MCS0	Low	9
		Middle	7
		High	6

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

Support Equipment List and Details

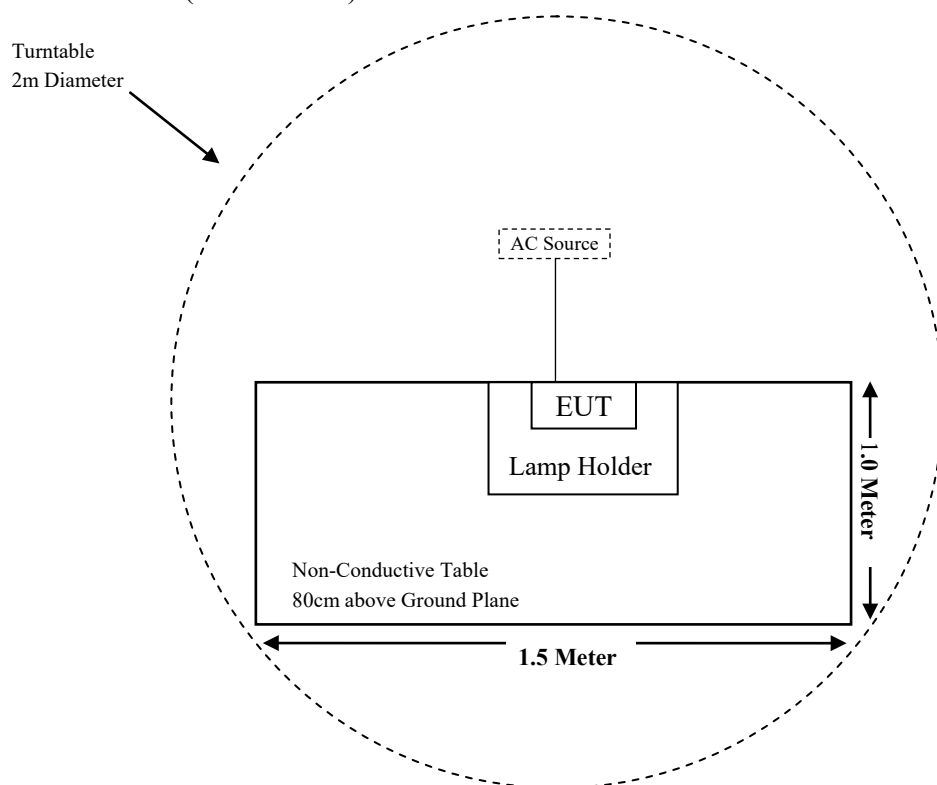
Manufacturer	Description	Model	Serial Number
/	Lamp Holder	/	/

External I/O Cable

Cable Description	Length(m)	From Port	To
Power Cable	1.8	Lamp Holder	LISN/AC Source

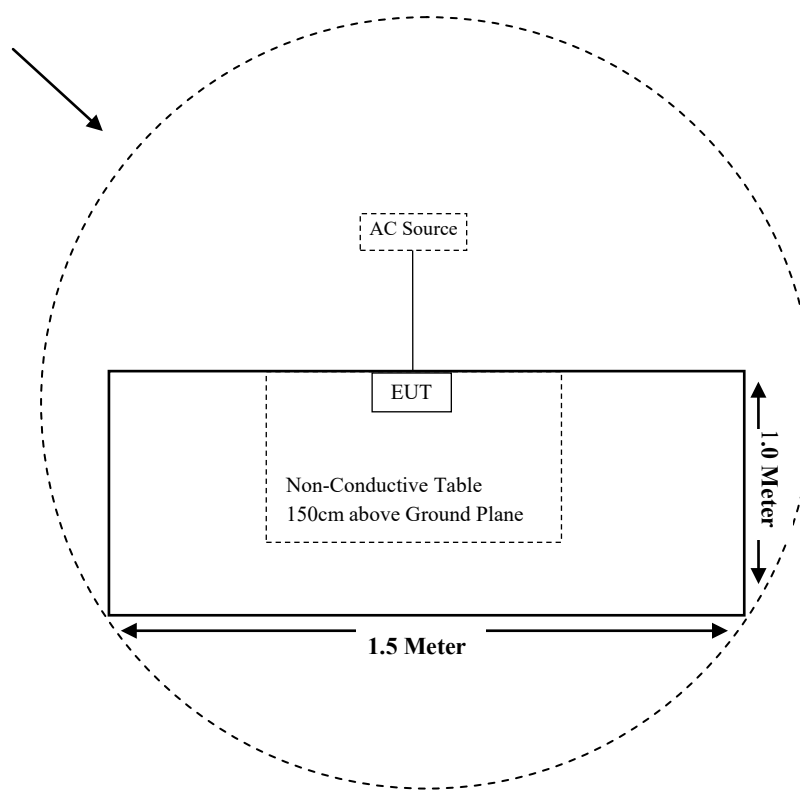
Block Diagram of Test Setup

For Radiated Emissions(Below 1GHz):



For Radiated Emissions(Above 1GHz):

Turntable
2m Diameter



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (I), §1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliant
§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
§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 RSHB201014002-00B.

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 Instrument	Pre-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
Radiated Emission Test (Chamber 2#)					
Rohde & Schwarz	EMI Test Receiver	ESU40	100207/040	2021-04-01	2022-03-31
ETS-LINDGREN	Horn Antenna	3115	9311-4159	2020-07-15	2023-07-14
ETS-LINDGREN	Horn Antenna	3116	2516	2020-01-07	2023-01-06
A.H.Systems, inc	Amplifier	PAM-0118P	512	2020-08-14	2021-08-13
SELECTOR	Amplifier	EM18G40G	060726	2021-03-22	2022-03-21
MICRO-TRONICS	Band Reject Filter	BRM50702	G024	2020-08-05	2021-08-04
Narda	Attenuator	10dB	010	2020-08-15	2021-08-14
Rohde & Schwarz	Auto Test Software	EMC32	100361	N/A	N/A
MICRO-COAX	Coaxial Cable	Cable-6	006	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-11	011	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-12	012	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-13	013	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	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2021-07-28	2022-07-27
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
Rohde & Schwarz	Pulse limiter	ESH3-Z2	100552	2021-08-10	2022-08-09
MICRO-COAX	Coaxial Cable	Cable-15	015	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-15	015	2021-08-15	2022-08-14

* **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 §1.1310 & §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §2.1091 and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Mode	Frequency Range (MHz)	Antenna Gain		Tune-up EIRP		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
802.11b	2412~2462	0.0	1.00	17.50	56.23	20	0.0112	1.0
802.11g		0.0	1.00	18.00	63.10	20	0.0126	1.0
802.11 n-HT20		0.0	1.00	17.50	56.23	20	0.0112	1.0
802.11 n-HT40	2422~2452	0.0	1.00	17.50	56.23	20	0.0112	1.0

Note: The tune-up output power was declared by the manufacturer.

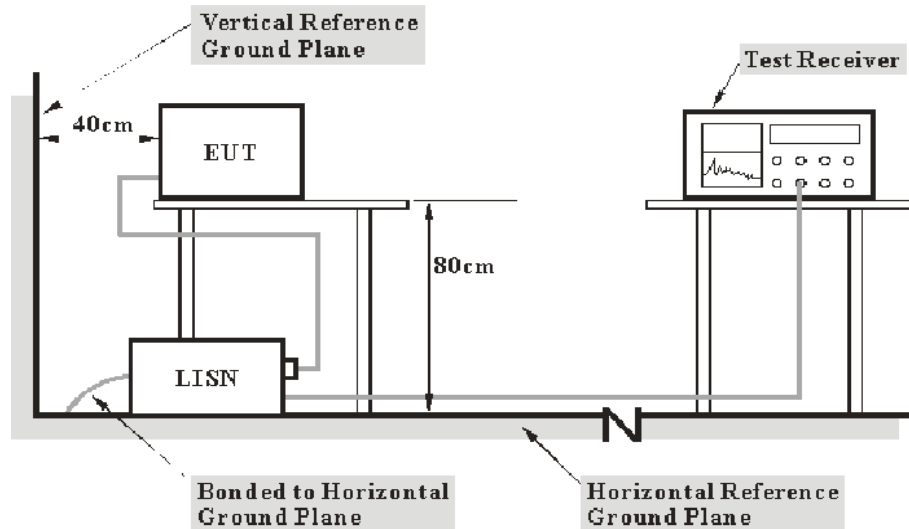
Conclusion: The device meets MPE at distance 20cm.

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:

$$\text{Factor (dB)} = \text{LISN VDF (dB)} + \text{Cable Loss (dB)} + \text{Transient Limiter Attenuation (dB)}$$

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:

$$\text{Over Limit (dB)} = \text{Read level (dB}\mu\text{V)} + \text{Factor (dB)} - \text{Limit (dB}\mu\text{V)}$$

Test Results Summary

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

Test Data

Environmental Conditions

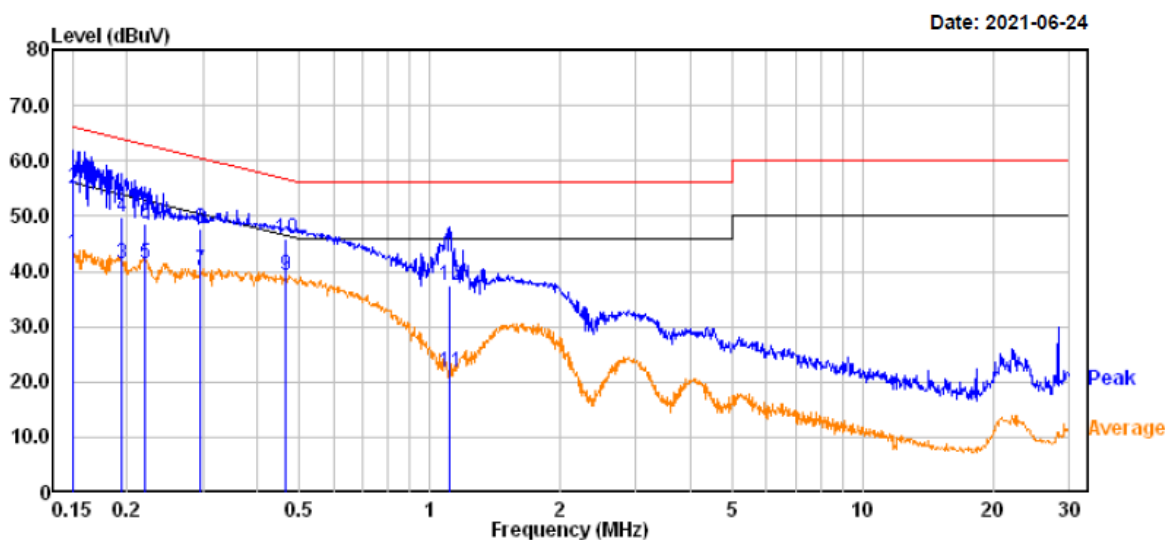
Temperature:	24.9 °C
Relative Humidity:	50 %
ATM Pressure:	101.1 kPa

The testing was performed by Miller Xie from 2021-06-24 to 2021-08-30.

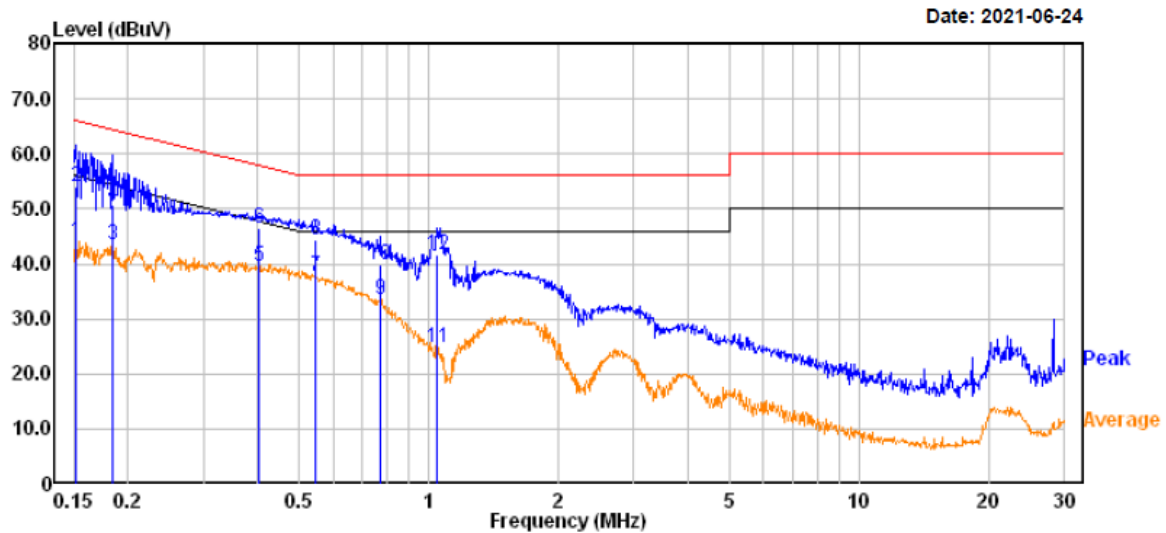
EUT operation mode: Transmitting in 802.11g mode high channel (worst case)

Model: EBE-BAW419-B/ EBE-BAW419-C

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.151	23.40	19.82	43.22	55.96	-12.74	Average
2	0.151	35.20	19.82	55.02	65.96	-10.94	QP
3	0.194	21.50	19.82	41.32	53.85	-12.53	Average
4	0.194	30.00	19.82	49.82	63.85	-14.03	QP
5	0.220	21.50	19.82	41.32	52.81	-11.49	Average
6	0.220	28.80	19.82	48.62	62.81	-14.19	QP
7	0.295	20.20	19.83	40.03	50.37	-10.34	Average
8	0.295	28.00	19.83	47.83	60.37	-12.54	QP
9	0.465	19.60	19.75	39.35	46.60	-7.25	Average
10	0.465	26.10	19.75	45.85	56.60	-10.75	QP
11	1.112	1.91	19.81	21.72	46.00	-24.28	Average
12	1.112	17.61	19.81	37.42	56.00	-18.58	QP

AC 120V/60 Hz, Neutral

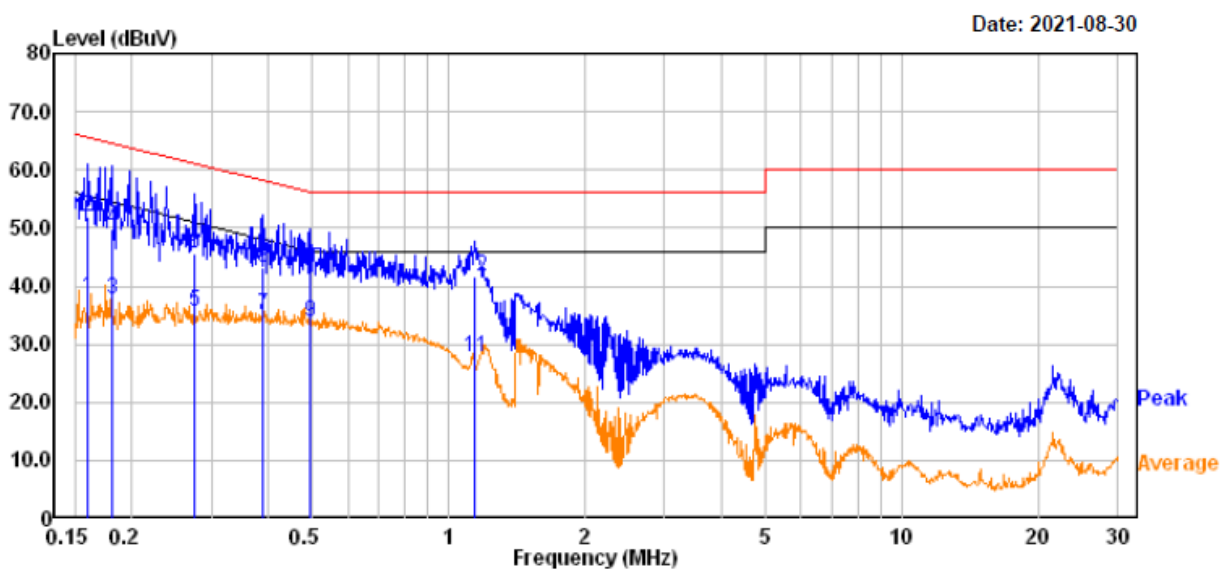
		Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.152	24.20	19.82	44.02	55.92	-11.90	Average
2	0.152	34.20	19.82	54.02	65.92	-11.90	QP
3	0.184	23.60	19.83	43.43	54.30	-10.87	Average
4	0.184	30.80	19.83	50.63	64.30	-13.67	QP
5	0.402	19.90	19.74	39.64	47.80	-8.16	Average
6	0.402	26.90	19.74	46.64	57.80	-11.16	QP
7	0.548	18.10	19.75	37.85	46.00	-8.15	Average
8	0.548	24.70	19.75	44.45	56.00	-11.55	QP
9	0.769	13.81	19.71	33.52	46.00	-12.48	Average
10	0.769	20.21	19.71	39.92	56.00	-16.08	QP
11	1.048	4.80	19.82	24.62	46.00	-21.38	Average
12	1.048	21.80	19.82	41.62	56.00	-14.38	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)

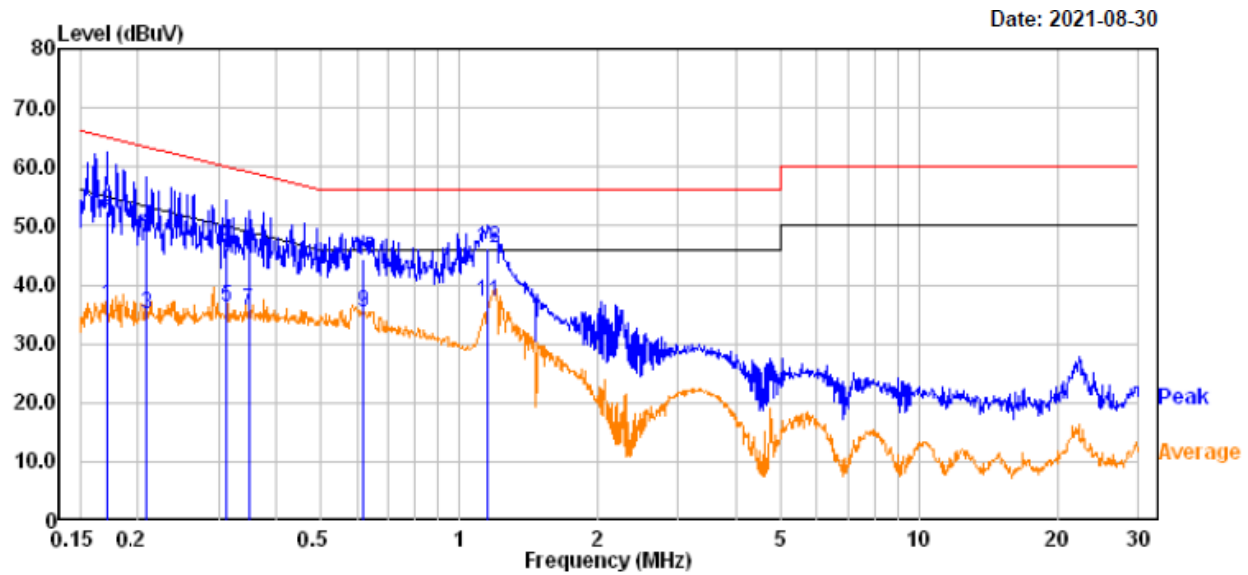
Model: EBE-BAW422-B/ EBE-BAW422-C

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.160	18.23	19.83	38.06	55.46	-17.40	Average
2	0.160	32.20	19.83	52.03	65.46	-13.43	QP
3	0.180	17.93	19.83	37.76	54.47	-16.71	Average
4	0.180	30.00	19.83	49.83	64.47	-14.64	QP
5	0.274	15.88	19.82	35.70	50.99	-15.29	Average
6	0.274	25.90	19.82	45.72	60.99	-15.27	QP
7	0.389	15.36	19.76	35.12	48.09	-12.97	Average
8	0.389	23.39	19.76	43.15	58.09	-14.94	QP
9	0.494	13.95	19.76	33.71	46.11	-12.40	Average
10	0.494	23.00	19.76	42.76	56.11	-13.35	QP
11	1.141	7.90	19.81	27.71	46.00	-18.29	Average
12	1.141	21.90	19.81	41.71	56.00	-14.29	QP

AC 120V/60 Hz, Neutral



		Read		Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB	dBuV	dBuV	dB
1	0.172	16.62	19.83	36.45	54.88	-18.43 Average
2	0.172	32.70	19.83	52.53	64.88	-12.35 QP
3	0.209	15.34	19.82	35.16	53.23	-18.07 Average
4	0.209	29.40	19.82	49.22	63.23	-14.01 QP
5	0.312	16.47	19.82	36.29	49.91	-13.62 Average
6	0.312	26.50	19.82	46.32	59.91	-13.59 QP
7	0.348	15.77	19.81	35.58	49.00	-13.42 Average
8	0.348	25.80	19.81	45.61	59.00	-13.39 QP
9	0.621	15.45	19.75	35.20	46.00	-10.80 Average
10	0.621	24.60	19.75	44.35	56.00	-11.65 QP
11	1.152	17.27	19.81	37.08	46.00	-8.92 Average
12	1.152	26.30	19.81	46.11	56.00	-9.89 QP

Note:

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

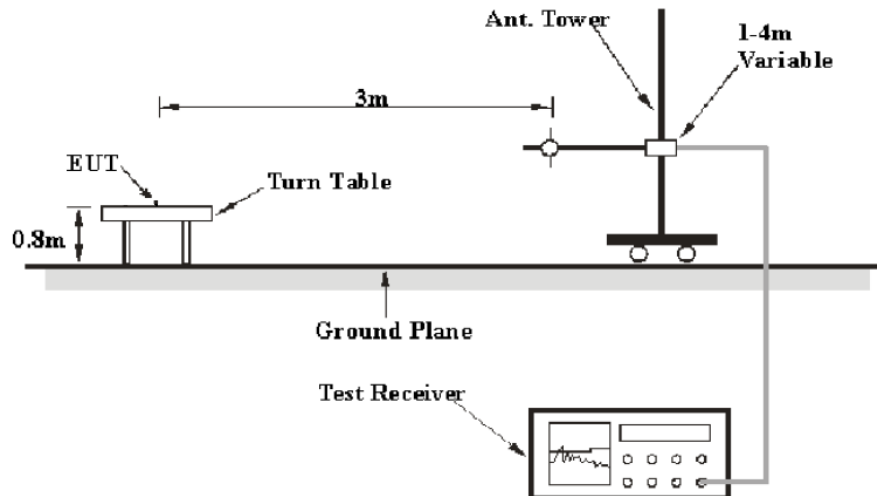
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

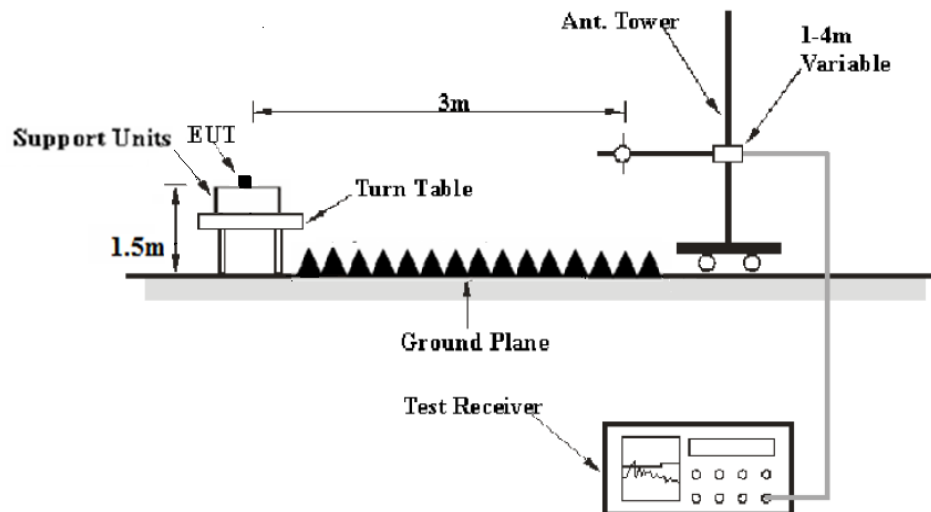
FCC §15.247 (d); §15.209; §15.205;

EUT Setup

Below 1 GHz:



Above 1GHz:



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 25 GHz.

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

Frequency Range	RBW	Video B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	QP
Above 1GHz	1MHz	3 MHz	PK
	1MHz	3 MHz	Average

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.

Data was recorded in Quasi-peak detection mode for frequency range of 30MHz - 1GHz, peak and Average detection mode for frequencies above 1 GHz.

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:	24.0-24.3°C
Relative Humidity:	50-52 %
ATM Pressure:	101.1-101.4 kPa

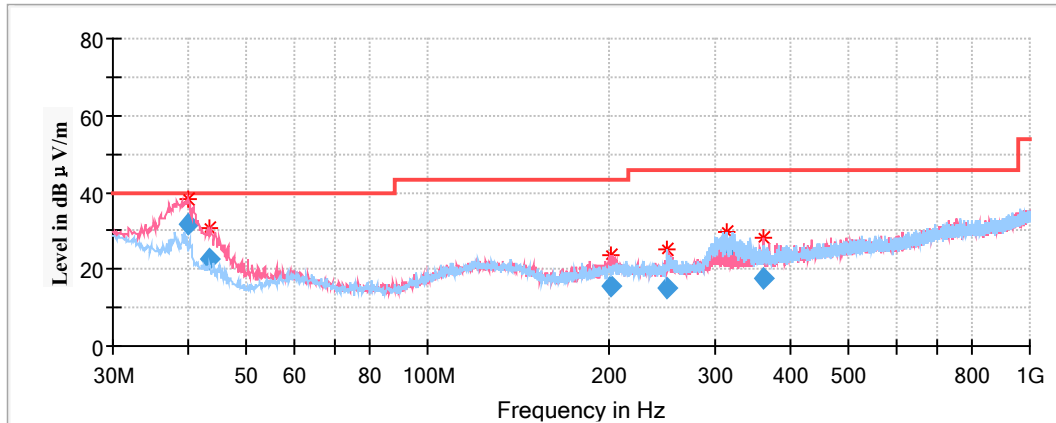
The testing was performed by Miller Xie from 2021-06-17 to 2021-06-18.

EUT operation mode: Transmitting

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 **high channel of 802.11g mode in Y-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)				
40.065000	31.64	100.0	V	179.0	-10.4	40.00	8.36
43.339900	22.50	100.0	V	222.0	-13.0	40.00	17.50
201.815850	15.69	200.0	V	237.0	-12.0	43.50	27.81
249.941800	14.93	100.0	H	308.0	-11.9	46.00	31.07
313.483000	25.02	100.0	H	346.0	-10.4	46.00	20.98
360.408250	17.71	200.0	V	141.0	-9.1	46.00	28.29

1GHz-18GHz:**802.11b Mode:**

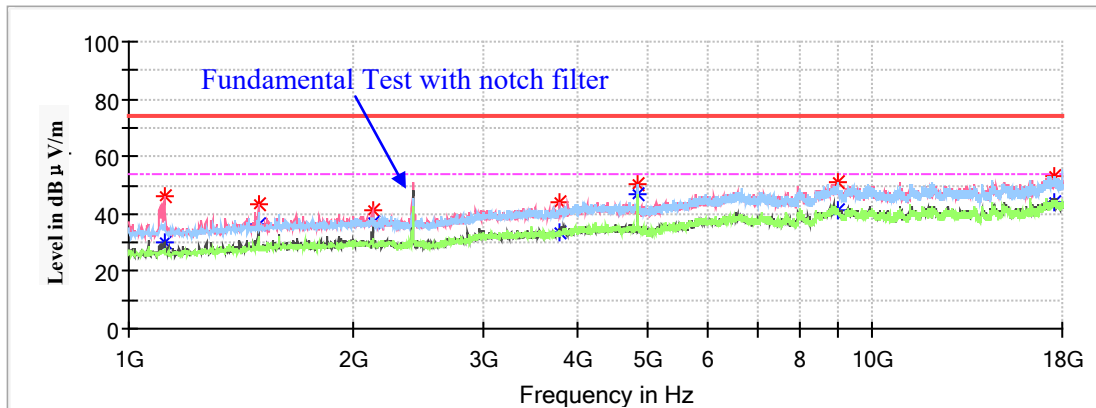
(Pre-scan in the X,Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded)

Note:

1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
 Corrected Amplitude (dB μ V/m) = Corrected Factor (dB/m) + Reading (dB μ V)
 Margin (dB) = Limit (dB μ V/m) – Corrected Amplitude (dB μ V/m)

Low Channel: 2412 MHz

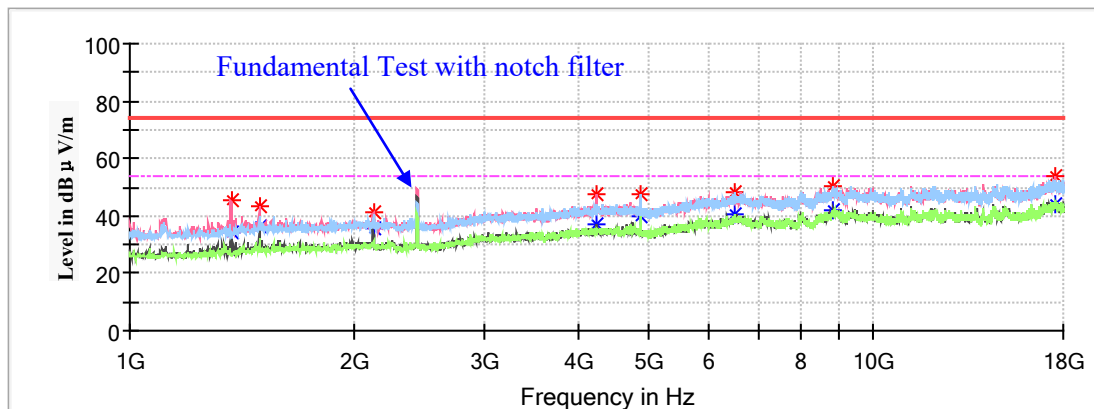
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1117.300000	---	30.37	150.0	V	345.0	-8.5	54.00	23.63
1117.300000	46.24	---	150.0	V	345.0	-8.4	74.00	27.76
1493.000000	43.43	---	200.0	V	15.0	-6.5	74.00	30.57
1493.000000	---	36.54	200.0	V	15.0	-6.5	54.00	17.46
2125.400000	41.14	---	150.0	V	279.0	-4.7	74.00	32.86
2125.400000	---	37.16	150.0	V	279.0	-4.7	54.00	16.84
3803.300000	---	33.56	150.0	V	60.0	-0.4	54.00	20.44
3803.300000	43.78	---	150.0	V	60.0	-0.4	74.00	30.22
4824.000000	---	46.59	150.0	H	359.0	0.6	54.00	7.41
4824.000000	50.38	---	150.0	H	359.0	0.6	74.00	23.62
8974.700000	---	41.43	200.0	H	179.0	9.4	54.00	12.57
8974.700000	50.80	---	200.0	H	179.0	9.4	74.00	23.20
17510.400000	---	43.83	150.0	V	0.0	14.4	54.00	10.17
17510.400000	53.36	---	150.0	V	0.0	14.4	74.00	20.64

Middle Channel: 2437 MHz

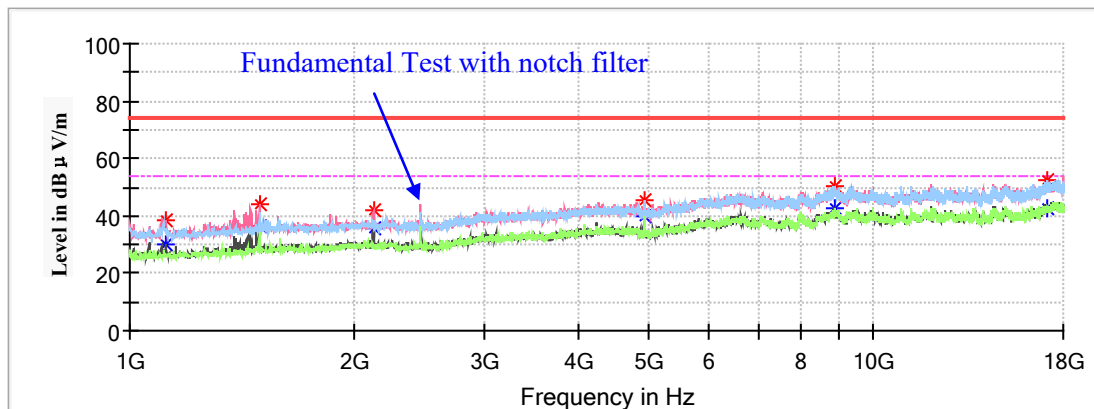
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1368.900000	45.43	---	150.0	V	266.0	-7.2	74.00	28.57
1368.900000	---	33.95	150.0	V	266.0	-7.2	54.00	20.05
1493.000000	---	36.62	150.0	V	73.0	-6.5	54.00	17.38
1493.000000	43.16	---	150.0	V	73.0	-6.5	74.00	30.84
2125.400000	---	35.87	200.0	V	308.0	-4.7	54.00	18.13
2125.400000	41.34	---	200.0	V	308.0	-4.7	74.00	32.66
4247.000000	---	36.82	200.0	V	168.0	0.9	54.00	17.18
4247.000000	47.54	---	200.0	V	168.0	0.9	74.00	26.46
4874.000000	---	40.07	150.0	H	350.0	0.5	54.00	13.93
4874.000000	47.66	---	150.0	H	350.0	0.5	74.00	26.34
6525.000000	---	40.29	150.0	H	18.0	5.4	54.00	13.71
6525.000000	48.00	---	150.0	H	18.0	5.4	74.00	26.00
8813.200000	---	41.71	200.0	H	46.0	8.7	54.00	12.29
8813.200000	50.41	---	200.0	H	46.0	8.7	74.00	23.59

High Channel: 2462 MHz

Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
1119.000000	38.72	---	200.0	V	357.0	-8.4	74.00	35.28
1119.000000	---	29.89	200.0	V	357.0	-8.4	54.00	24.11
1493.000000	---	36.15	150.0	V	89.0	-6.5	54.00	17.85
1493.000000	44.29	---	150.0	V	89.0	-6.5	74.00	29.71
2125.400000	42.25	---	150.0	V	269.0	-4.7	74.00	31.75
2125.400000	---	35.60	150.0	V	269.0	-4.7	54.00	18.40
4924.000000	---	39.76	150.0	H	181.0	0.4	54.00	14.24
4924.000000	45.55	---	150.0	H	181.0	0.4	74.00	28.45
8857.400000	---	42.69	150.0	H	168.0	8.9	54.00	11.31
8857.400000	50.35	---	150.0	H	168.0	8.9	74.00	23.65
17104.100000	---	42.59	200.0	H	306.0	13.3	54.00	11.41
17104.100000	52.78	---	200.0	H	306.0	13.3	74.00	21.22

802.11g Mode:

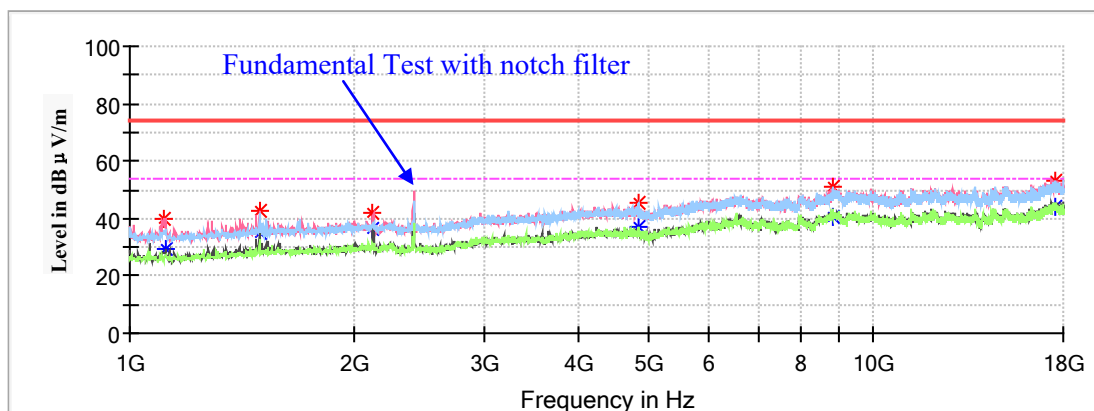
(Pre-scan in the X,Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded)

Note:

1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
 Corrected Amplitude (dBμV/m) = Corrected Factor (dB/m) + Reading (dBμV)
 Margin (dB) = Limit (dBμV/m) – Corrected Amplitude (dBμV/m)

Low Channel: 2412 MHz

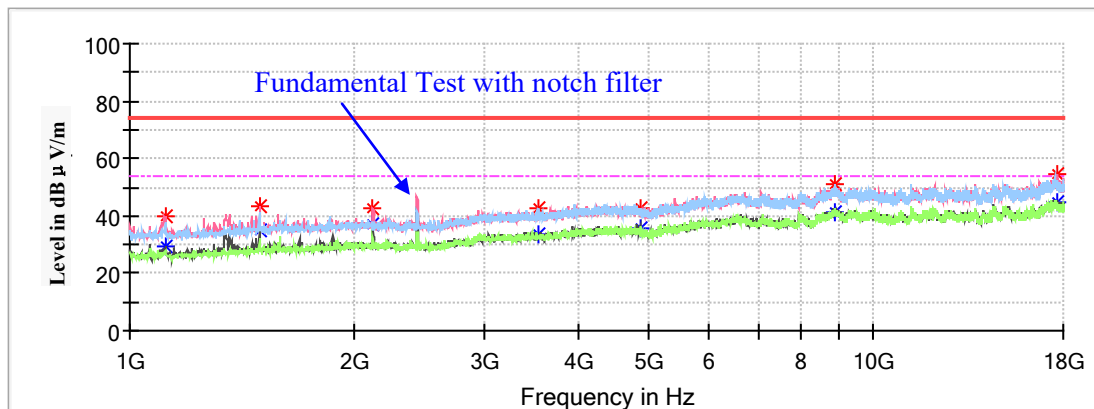
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
1119.000000	39.89	---	200.0	V	16.0	-8.5	74.00	34.11
1119.000000	---	29.24	200.0	V	16.0	-8.5	54.00	24.76
1493.000000	---	35.02	150.0	V	82.0	-6.5	54.00	18.98
1493.000000	42.71	---	150.0	V	82.0	-6.5	74.00	31.29
2123.700000	41.66	---	200.0	V	92.0	-4.7	74.00	32.34
2123.700000	---	36.61	200.0	V	92.0	-4.7	54.00	17.39
4824.000000	---	36.94	200.0	V	79.0	0.6	54.00	17.06
4824.000000	45.55	---	200.0	V	79.0	0.6	74.00	28.45
8833.600000	---	40.60	200.0	H	64.0	8.8	54.00	13.40
8833.600000	50.82	---	200.0	H	64.0	8.8	74.00	23.18
17602.200000	---	43.72	200.0	V	2.0	14.2	54.00	10.28
17602.200000	53.16	---	200.0	V	2.0	14.2	74.00	20.84

Middle Channel: 2437 MHz

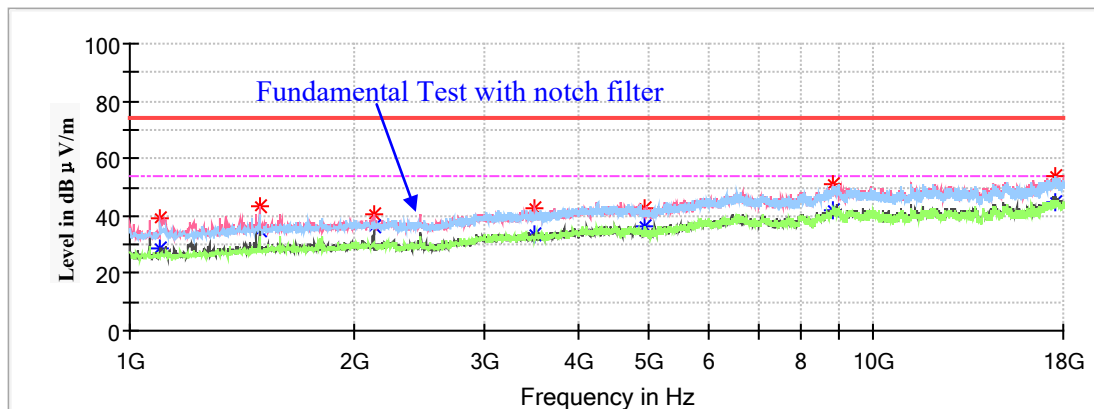
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
1117.300000	---	29.48	150.0	V	0.0	-8.4	54.00	24.52
1117.300000	39.64	---	150.0	V	0.0	-8.4	74.00	34.36
1493.000000	---	34.77	150.0	V	290.0	-6.5	54.00	19.23
1494.700000	43.36	---	150.0	V	290.0	-6.5	74.00	30.64
2123.700000	---	37.36	150.0	V	277.0	-4.7	54.00	16.64
2123.700000	42.84	---	150.0	V	277.0	-4.7	74.00	31.16
3551.700000	---	33.81	200.0	V	283.0	-1.5	54.00	20.19
3551.700000	42.98	---	200.0	V	283.0	-1.5	74.00	31.02
4874.000000	42.64	---	150.0	V	0.0	0.5	74.00	31.36
4874.000000	---	35.97	150.0	V	0.0	0.5	54.00	18.03
8901.600000	---	41.45	200.0	H	339.0	9.1	54.00	12.55
8901.600000	50.89	---	200.0	H	339.0	9.1	74.00	23.11

High Channel: 2462 MHz

Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1100.300000	39.07	---	200.0	V	10.0	-8.5	74.00	34.93
1100.300000	---	28.96	200.0	V	10.0	-8.5	54.00	25.04
1494.700000	43.25	---	200.0	V	21.0	-6.5	74.00	30.75
1494.700000	---	35.03	200.0	V	21.0	-6.5	54.00	18.97
2127.100000	---	36.43	150.0	V	271.0	-4.7	54.00	17.57
2127.100000	40.73	---	150.0	V	271.0	-4.7	74.00	33.27
3510.900000	---	33.56	200.0	V	0.0	-1.7	54.00	20.44
3510.900000	42.83	---	200.0	V	0.0	-1.7	74.00	31.17
4924.000000	---	36.43	200.0	H	121.0	0.4	54.00	17.57
4924.000000	42.69	---	200.0	H	121.0	0.4	74.00	31.31
8845.500000	---	41.85	150.0	V	208.0	8.9	54.00	12.15
8845.500000	51.28	---	150.0	V	208.0	8.9	74.00	22.72

802.11n-HT20 Mode:

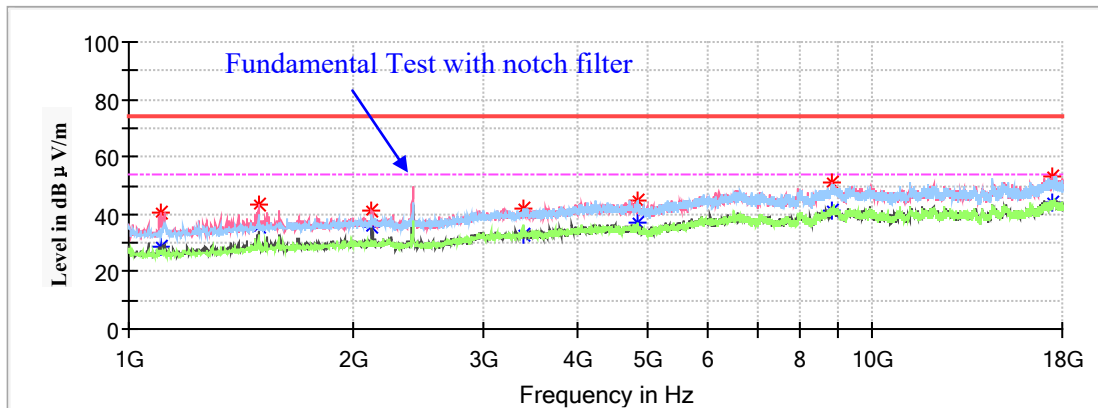
(Pre-scan in the X,Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded)

Note:

1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
 Corrected Amplitude (dB μ V/m) = Corrected Factor (dB/m) + Reading (dB μ V)
 Margin (dB) = Limit (dB μ V/m) – Corrected Amplitude (dB μ V/m)

Low Channel: 2412 MHz

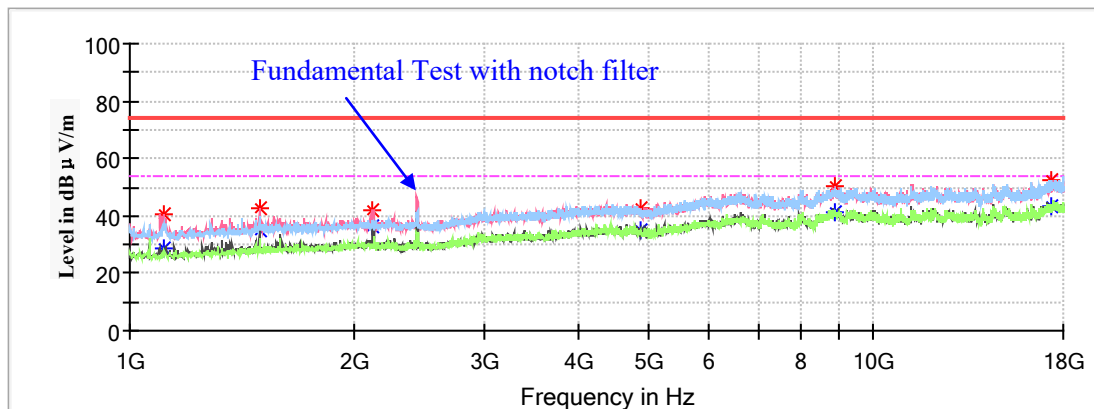
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1103.700000	---	28.54	200.0	V	0.0	-8.5	54.00	25.46
1103.700000	40.53	---	200.0	V	0.0	-8.5	74.00	33.47
1494.700000	---	35.84	200.0	V	34.0	-6.5	54.00	18.16
1494.700000	43.10	---	200.0	V	34.0	-6.5	74.00	30.90
2123.700000	---	35.45	200.0	V	85.0	-4.7	54.00	18.55
2123.700000	40.93	---	200.0	V	85.0	-4.7	74.00	33.07
3385.100000	42.01	---	150.0	H	217.0	-1.8	74.00	31.99
3385.100000	---	33.19	150.0	H	217.0	-1.8	54.00	20.81
4824.000000	---	37.17	150.0	H	11.0	0.6	54.00	16.83
4824.000000	44.98	---	150.0	H	11.0	0.6	74.00	29.02
8796.200000	---	41.30	150.0	V	76.0	8.7	54.00	12.70
8796.200000	50.91	---	150.0	V	76.0	8.7	74.00	23.09
17495.100000	---	43.90	200.0	V	0.0	14.4	54.00	10.10
17495.100000	53.15	---	200.0	V	0.0	14.4	74.00	20.85

Middle Channel: 2437 MHz

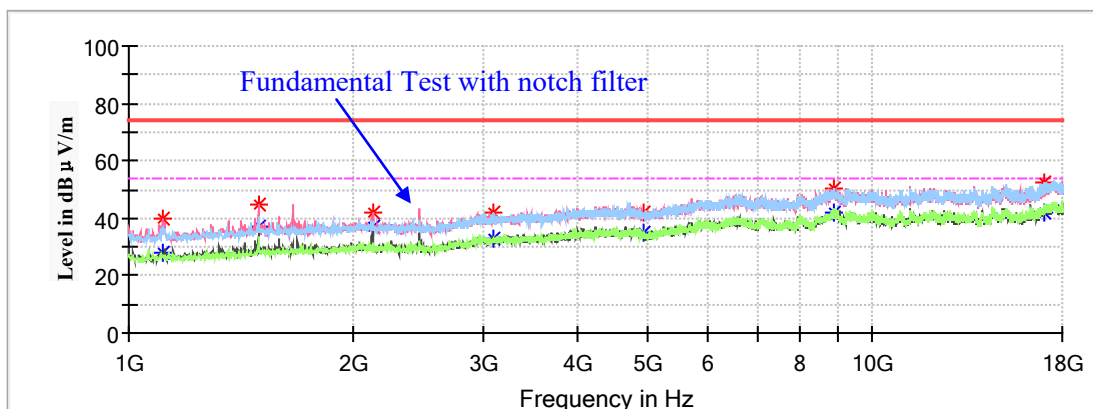
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
1112.200000	---	28.43	200.0	V	217.0	-8.5	54.00	25.57
1112.200000	40.30	---	200.0	V	217.0	-8.5	74.00	33.70
1494.700000	---	35.11	200.0	V	204.0	-6.5	54.00	18.89
1494.700000	42.79	---	200.0	V	204.0	-6.5	74.00	31.21
2123.700000	42.14	---	150.0	V	68.0	-4.7	74.00	31.86
2123.700000	---	36.03	150.0	V	68.0	-4.7	54.00	17.97
4874.000000	---	35.10	200.0	H	0.0	0.5	54.00	18.90
4874.000000	42.41	---	200.0	H	0.0	0.5	74.00	31.59
8877.800000	---	41.06	150.0	H	88.0	9.0	54.00	12.94
8877.800000	50.30	---	150.0	H	88.0	9.0	74.00	23.70
17352.300000	---	43.05	200.0	V	1.0	14.0	54.00	10.95
17352.300000	52.53	---	200.0	V	1.0	14.0	74.00	21.47
1112.200000	---	28.43	200.0	V	217.0	-8.5	54.00	25.57
1112.200000	40.30	---	200.0	V	217.0	-8.5	74.00	33.70

High Channel: 2462 MHz

Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1110.500000	39.97	---	200.0	V	12.0	-8.5	74.00	34.03
1110.500000	---	28.31	200.0	V	12.0	-8.5	54.00	25.69
1494.700000	---	36.74	200.0	V	23.0	-6.5	54.00	17.26
1494.700000	44.61	---	200.0	V	23.0	-6.5	74.00	29.39
2127.100000	---	36.77	200.0	V	269.0	-4.7	54.00	17.23
2127.100000	41.72	---	200.0	V	269.0	-4.7	74.00	32.28
3099.500000	---	32.58	150.0	V	49.0	-2.0	54.00	21.42
3099.500000	41.95	---	150.0	V	49.0	-2.0	74.00	32.05
4923.600000	---	35.19	150.0	H	0.0	0.4	54.00	18.81
4923.600000	41.93	---	150.0	H	0.0	0.4	74.00	32.07
8893.100000	50.69	---	150.0	H	0.0	9.1	74.00	23.31
8893.100000	---	41.75	150.0	H	0.0	9.1	54.00	12.25

802.11n-HT40 Mode:

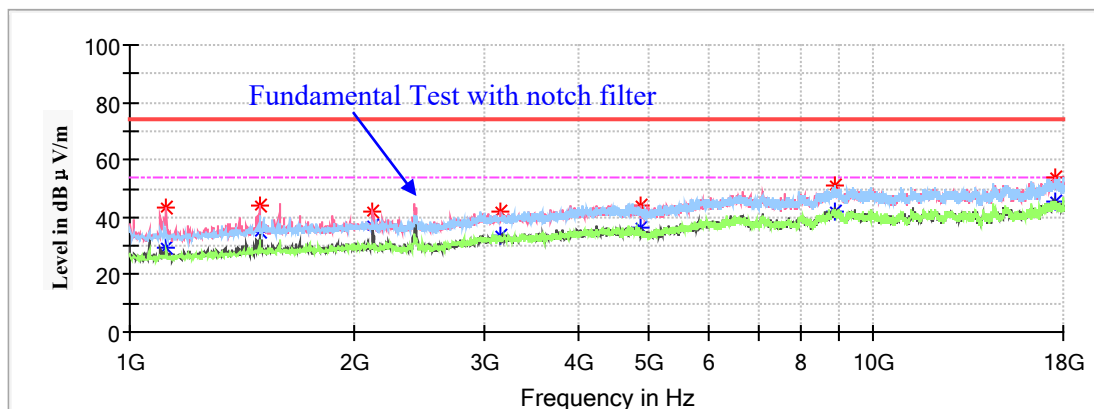
(Pre-scan in the X,Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded)

Note:

1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
 Corrected Amplitude (dBμV/m) = Corrected Factor (dB/m) + Reading (dBμV)
 Margin (dB) = Limit (dBμV/m) – Corrected Amplitude (dBμV/m)

Low Channel: 2422 MHz

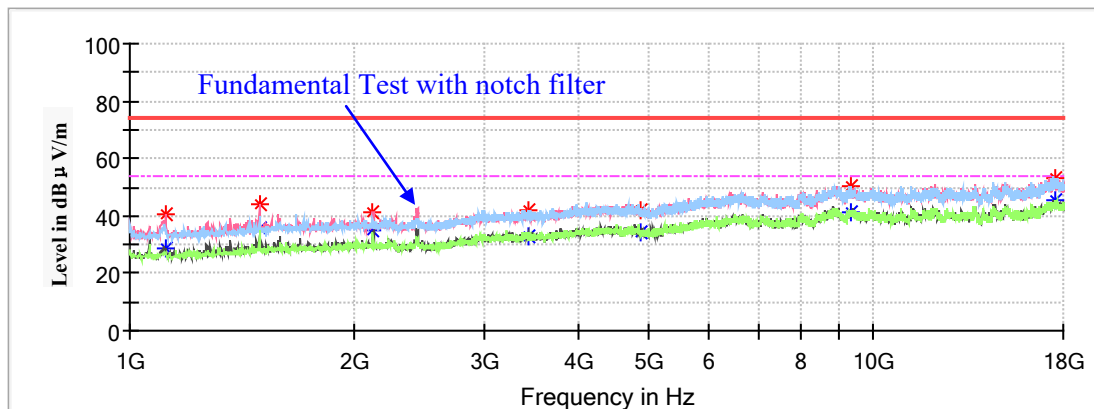
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
1120.700000	43.03	---	150.0	V	338.0	-8.4	74.00	30.97
1120.700000	---	29.20	150.0	V	338.0	-8.4	54.00	24.80
1494.700000	44.15	---	150.0	V	77.0	-6.5	74.00	29.85
1494.700000	---	35.08	150.0	V	77.0	-6.5	54.00	18.92
2123.700000	42.25	---	150.0	V	262.0	-4.7	74.00	31.75
2123.700000	---	36.90	150.0	V	262.0	-4.7	54.00	17.10
3147.100000	41.62	---	200.0	V	47.0	-1.9	74.00	32.38
3147.100000	---	33.35	200.0	V	47.0	-1.9	54.00	20.65
4844.000000	44.27	---	150.0	V	326.0	0.5	74.00	29.73
4844.000000	---	36.62	150.0	V	326.0	0.5	54.00	17.38
8891.400000	50.85	---	200.0	H	320.0	9.1	74.00	23.15
8891.400000	---	41.91	200.0	H	320.0	9.1	54.00	12.09
17588.600000	---	45.35	200.0	H	307.0	14.2	54.00	8.65
17588.600000	53.50	---	200.0	H	307.0	14.2	74.00	20.50

Middle Channel: 2437 MHz

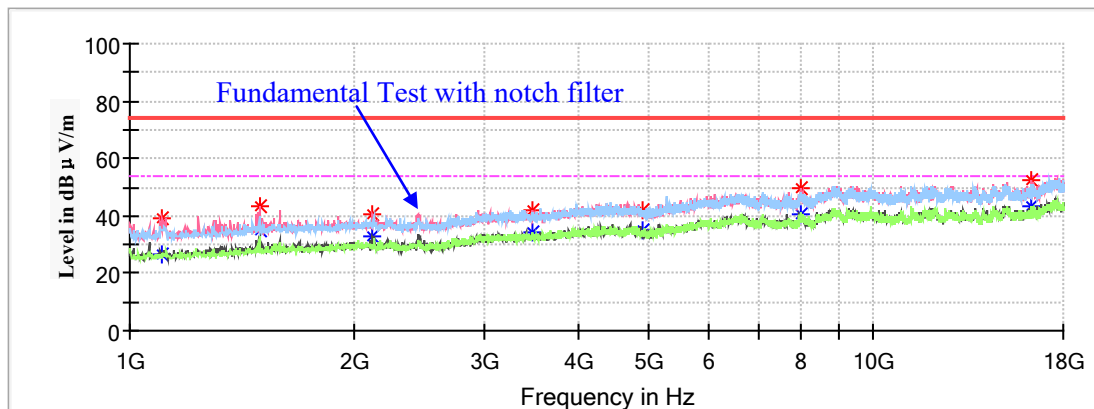
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
1117.300000	40.36	---	150.0	V	356.0	-8.4	74.00	33.64
1117.300000	---	28.84	150.0	V	356.0	-8.4	54.00	25.16
1494.700000	---	35.75	200.0	V	21.0	-6.5	54.00	18.25
1494.700000	43.74	---	200.0	V	21.0	-6.5	74.00	30.26
2123.700000	---	35.20	150.0	V	262.0	-4.7	54.00	18.80
2123.700000	41.42	---	150.0	V	262.0	-4.7	74.00	32.58
3439.500000	42.09	---	200.0	H	320.0	-1.8	74.00	31.91
3439.500000	---	32.66	200.0	H	320.0	-1.8	54.00	21.34
4874.000000	---	34.52	200.0	H	354.0	0.5	54.00	19.48
4874.000000	42.21	---	200.0	H	354.0	0.5	74.00	31.79
9350.400000	---	41.39	200.0	H	2.0	9.3	54.00	12.61
9350.400000	50.19	---	200.0	H	2.0	9.3	74.00	23.81
17563.100000	---	45.51	150.0	H	149.0	14.3	54.00	8.49
17563.100000	53.48	---	150.0	H	149.0	14.3	74.00	20.52

High Channel: 2452 MHz

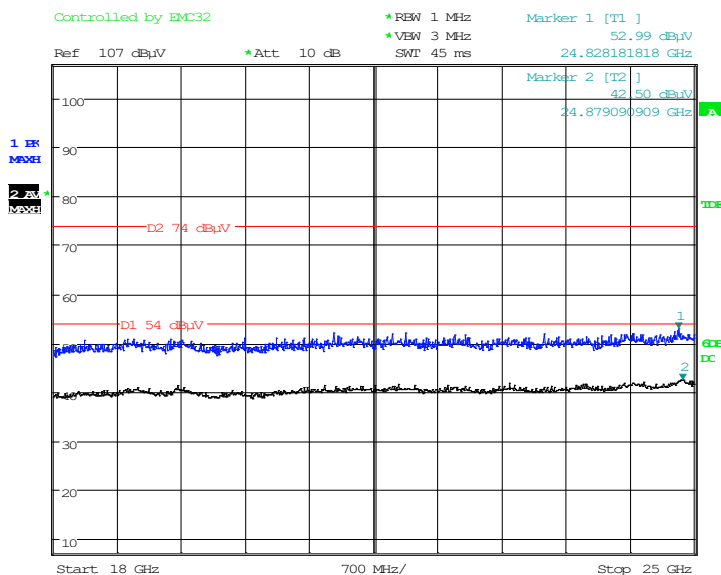
Full Spectrum



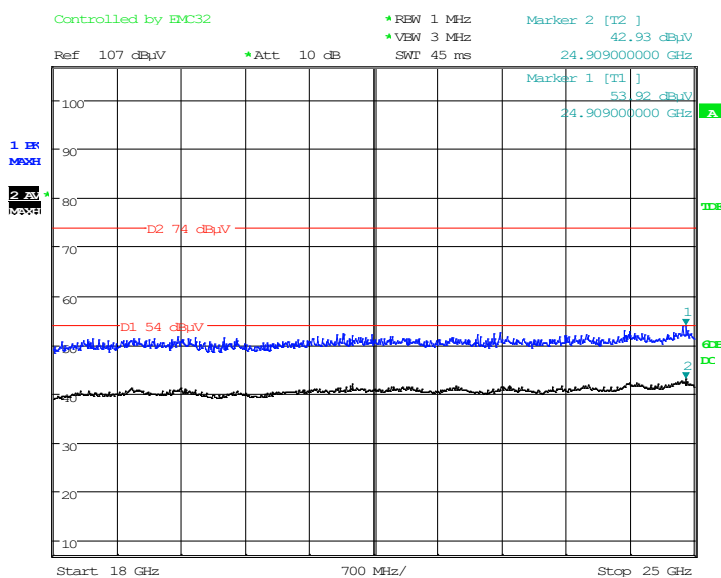
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
1107.100000	---	26.84	150.0	V	313.0	-8.5	54.00	27.16
1107.100000	39.35	---	150.0	V	313.0	-8.5	74.00	34.65
1494.700000	---	35.24	150.0	V	25.0	-6.5	54.00	18.76
1494.700000	43.23	---	150.0	V	25.0	-6.5	74.00	30.77
2123.700000	---	33.19	150.0	V	267.0	-4.7	54.00	20.81
2123.700000	40.62	---	150.0	V	267.0	-4.7	74.00	33.38
3476.900000	---	34.57	200.0	V	154.0	-1.7	54.00	19.43
3476.900000	41.88	---	200.0	V	154.0	-1.7	74.00	32.12
4904.000000	42.16	---	200.0	H	354.0	0.4	74.00	31.84
4904.000000	---	34.63	200.0	H	354.0	0.4	54.00	19.37
8000.600000	49.60	---	150.0	V	66.0	6.1	74.00	24.40
8000.600000	---	40.69	150.0	V	66.0	6.1	54.00	13.31
16311.900000	---	43.06	200.0	H	346.0	11.3	54.00	10.94
16311.900000	52.41	---	200.0	H	346.0	11.3	74.00	21.59

18GHz-25GHz:

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 **high channel of 802.11g mode in Y-axis of orientation** was recorded

Vertical

Date: 18.JUN.2021 17:53:58

Horizontal

Date: 18.JUN.2021 17:56:33

Restricted Bands Emissions Test:

Note:

1. This test was performed with the 10dB attenuator.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
 Corrected Amplitude (dBμV/m) = Corrected Factor (dB/m) + Reading (dBμV)
 Margin (dB) = Limit (dBμV/m) – Corrected Amplitude (dBμV/m)

802.11b Mode: (Pre-scan in the X, Y and Z axes of orientation, the worst case Y-axis of orientation in vertical polarization was recorded)

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 2412 MHz								
2390.00	52.15	---	150.0	H	0.0	3.8	74.00	21.85
2390.00	---	46.68	150.0	H	0.0	3.8	54.00	7.32
High Channel: 2462 MHz								
2483.50	50.32	---	150.0	V	353.0	4.1	74.00	23.68
2483.50	---	47.23	150.0	V	353.0	4.1	54.00	6.77

802.11g Mode: (Pre-scan in the X, Y and Z axes of orientation, the worst case Y-axis of orientation in vertical polarization was recorded)

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 2412 MHz								
2390.00	50.85	---	150.0	H	287.0	3.8	74.00	23.15
2390.00	---	46.82	150.0	H	287.0	3.8	54.00	7.18
High Channel: 2462 MHz								
2483.50	49.91	---	200.0	V	0.0	4.1	74.00	24.09
2483.50	---	46.59	200.0	V	0.0	4.1	54.00	7.41

802.11n-HT20 Mode: (Pre-scan in the X,Y and Z axes of orientation, the worst case Y-axis of orientation in vertical polarization was recorded)

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 2412 MHz								
2390.00	---	47.56	200.0	V	272.0	3.8	54.00	6.44
2390.00	50.98	---	200.0	V	272.0	3.8	74.00	23.02
High Channel: 2462 MHz								
2483.50	---	47.49	150.0	H	98.0	4.1	54.00	6.51
2483.50	51.02	---	150.0	H	98.0	4.1	74.00	22.98

802.11n-HT40 Mode: (Pre-scan in the X,Y and Z axes of orientation, the worst case Y-axis of orientation in vertical polarization was recorded)

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 2422 MHz								
2390.00	52.84	---	200.0	V	270.0	3.8	74.00	21.16
2390.00	---	48.89	200.0	V	270.0	3.8	54.00	5.11
High Channel: 2452 MHz								
2483.50	---	47.48	150.0	V	204.0	4.1	54.00	6.52
2483.50	50.73	---	150.0	V	204.0	4.1	74.00	23.27

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