

FCC Part 15.247

TEST REPORT

For

JDF Innovations LLC

117 Wrangler Dr, Coppell TX, 75019

FCC ID: 2BMB9-CB2

Report Type: Original Report	Product Type: My Companion Band
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Report Producer : <u>Coco Lin</u>
Report Number : <u>RXZ241120047RF01</u>
Report Date : <u>2025-02-24</u>
Reviewed By: <u>Andy Shih</u> <i>Andy Shih</i>
Prepared By: Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) 70, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 221, Taiwan, R.O.C. Tel: +886 (2) 2647 6898 Fax: +886 (2) 2647 6895 www.baclcorp.com.tw

Revision History

Revision	No.	Report Number	Issue Date	Description	Author/ Revised by
0.0	RXZ241120047	RXZ241120047RF01	2025-02-24	Original Report	Coco Lin

TABLE OF CONTENTS

1	General Information.....	5
1.1	Product Description for Equipment under Test (EUT)	5
1.2	Objective	6
1.3	Test Methodology.....	6
1.4	Statement	6
1.5	Measurement Uncertainty	7
1.6	Environmental Conditions.....	7
1.7	Test Facility.....	7
2	System Test Configuration.....	8
2.1	Description of Test Configuration.....	8
2.2	EUT Exercise Software	8
2.3	Test Mode.....	9
2.4	Equipment Modifications	9
2.5	Support Equipment List and Details.....	9
2.6	External Cable List and Details.....	9
2.7	Block Diagram of Test Setup	9
2.8	Duty Cycle.....	11
3	Summary of Test Results.....	14
4	Test Equipment List and Details	15
5	FCC §15.247(i), §1.1310, §2.1093 – RF Exposure	16
5.1	Applicable Standard	16
5.2	RF Exposure Evaluation Result.....	16
6	FCC §15.203 – Antenna Requirements.....	17
6.1	Applicable Standard	17
6.2	Antenna List and Details	17
7	FCC §15.207(a) – AC Line Conducted Emissions	18
7.1	Applicable Standard	18
7.2	EUT Setup	18
7.3	EMI Test Receiver Setup	19
7.4	Test Procedure.....	19
7.5	Corrected Factor & Margin Calculation.....	19
7.6	Test Results	20
8	FCC §15.209, §15.205 , §15.247(d) – Spurious Emissions	22
8.1	Applicable Standard	22
8.2	EUT Setup	23
8.3	EMI Test Receiver & Spectrum Analyzer Setup.....	24
8.4	Test Procedure.....	25
8.5	Corrected Factor & Margin Calculation.....	25
8.6	Test Results	26
9	FCC §15.247(a)(2) – 6 dB Emission Bandwidth.....	48
9.1	Applicable Standard	48
9.2	Test Procedure.....	48
9.3	Test Results	49
10	FCC §15.247(b)(3) – Maximum Output Power.....	56
10.1	Applicable Standard	56

10.2 Test Procedure.....	56
10.3 Test Results	57
11 FCC§15.247(d) – 100 kHz Bandwidth of Frequency Band Edge	59
11.1 Applicable Standard	59
11.2 Test Procedure.....	59
11.3 Test Results	60
12 FCC §15.247(e) – Power Spectral Density	65
12.1 Applicable Standard	65
12.2 Test Procedure.....	65
12.3 Test Results	66

1 General Information

1.1 Product Description for Equipment under Test (EUT)

Applicant	JDF Innovations LLC
	117 Wrangler Dr, Coppell TX, 75019
Brand(Trade) Name	JDF
Product (Equipment)	My Companion Band
Main Model Name	CB2
Series Model Name	N/A
Frequency Range	IEEE 802.11b/g/n HT20 Mode: 2412 ~ 2462 MHz BLE(1M): 2402 ~ 2480 MHz
Maximum Conducted Peak Output Power	IEEE 802.11b Mode: 19.46 dBm IEEE 802.11g Mode: 23.22 dBm IEEE 802.11n HT20 Mode: 21.07 dBm BLE(1M) Mode : 9.47 dBm
Modulation Technique	IEEE 802.11b Mode: DSSS IEEE 802.11g/ n HT20 Mode: OFDM BLE(1M) Mode: GFSK
Power Operation (Voltage Range)	3.8Vdc from Battery, 5Vdc from External USB port
Received Date	2024/11/20

*All measurement and test data in this report was gathered from production sample serial number:

RXZ241120047-1 (Assigned by BACL, New Taipei Laboratory).

1.2 Objective

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

1.3 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

KDB 558074 D01 15.247 Meas Guidance v05r02

1.4 Statement

Decision Rule: No, (The test results do not include MU judgment)

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Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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

The determination of the test results does not require consideration of the uncertainty of the measurement, unless the assessment is required by customer agreement, regulation or standard document specification.

Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) is not responsible for the authenticity of the information provided by the applicant that affects the test results.

1.5 Measurement Uncertainty

Parameter		Uncertainty
AC Mains		+/- 3.02 dB
RF output power, conducted		+/- 0.57 dB
Power Spectral Density, conducted		+/- 0.60 dB
Occupied Bandwidth		+/- 0.09 %
Unwanted Emissions, conducted		+/- 1.09 dB
Emissions, radiated	9 kHz~30 MHz	+/- 3.20 dB
	30 MHz~1 GHz	+/- 3.30 dB
	1 GHz~18 GHz	+/- 5.14 dB
	18 GHz~40 GHz	+/- 4.75 dB
Temperature		+/- 0.76 °C
Humidity		+/- 0.41 %

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

1.6 Environmental Conditions

Test Site	Test Date	Temperature (°C)	Relative Humidity (%)	ATM Pressure (hPa)	Test Engineer
AC Line Conducted Emissions	2024/12/17	22.1	57	1020.4	Jing Chang
Radiation Spurious Emissions	2024/12/16~2024/12/26	18.2~22.4	60~69	1020.4~1023.8	Nick Hsieh
Duty Cycle	2024/12/19~2025/02/14	22.2~23.4	50~53	1023.7~1023.8	Wayne Pan
Conducted Spurious Emissions	2024/12/19~2025/02/14	22.2~23.4	50~53	1023.7~1023.8	Wayne Pan
Emission Bandwidth	2024/12/19~2025/02/14	22.2~23.4	50~53	1023.7~1023.8	Wayne Pan
Maximum Output Power	2024/12/19~2025/02/14	22.2~23.4	50~53	1023.7~1023.8	Wayne Pan
100 kHz Bandwidth of Frequency Band Edge	2024/12/19~2025/02/14	22.2~23.4	50~53	1023.7~1023.8	Wayne Pan
Power Spectral Density	2024/12/19~2025/02/14	22.2~23.4	50~53	1023.7~1023.8	Wayne Pan

1.7 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) to collect test data is located on

☒ 70, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 221, Taiwan, R.O.C.

Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3732) and the FCC designation No.TW3732 under the Mutual Recognition Agreement (MRA) in FCC Test.

2 System Test Configuration

2.1 Description of Test Configuration

For WIFI mode, there are totally 11 channels.

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 802.11 b/g/n20 Modes were tested with channel 1, 6 and 11.

For BLE mode, there are totally 40 channels.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	--	--
2	2406	--	--
3	2408	37	2476
--	--	38	2478
19	2440	39	2480

For BLE Modes were tested with channel 0, 19 and 39.

2.2 EUT Exercise Software

The test software was used “sscom5.13.1”

The system was configured for testing in engineering mode, which was provided by Applicant.

Test Frequency		Low	Middle	High
Power Level Setting	802.11b Mode	18	18	18
	802.11g Mode	18	18	18
	802.11n HT20 Mode	18	18	18
	BLE 1M	8	8	8

The worst case data rates are as follows:

802.11b: 1Mbps

802.11g: 6Mbps

802.11n HT20: MCS0

BLE 1M : 1 Mbps

2.3 Test Mode

Full System (model: CB2) for all test item.

2.4 Equipment Modifications

No modification was made to the EUT.

2.5 Support Equipment List and Details

Description	Manufacturer	Model Number
NB	DELL	E6410
Adapter	DELL	DA90PE3-00

2.6 External Cable List and Details

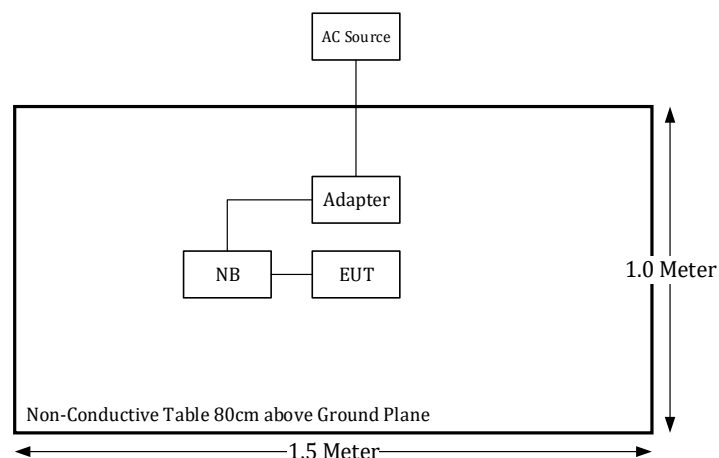
Description	Manufacturer	Cable length
USB A to C Cable	TCRD	CABLE-C

2.7 Block Diagram of Test Setup

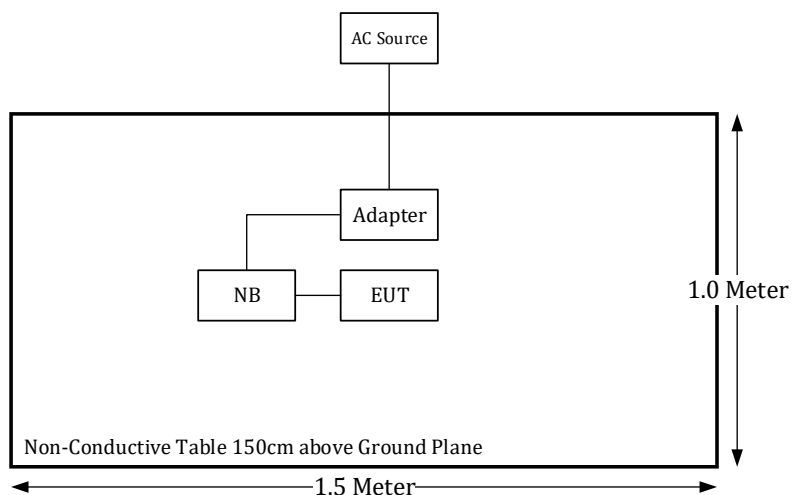
See test photographs attached in setup photos for the actual connections between EUT and support equipment.

Radiation:

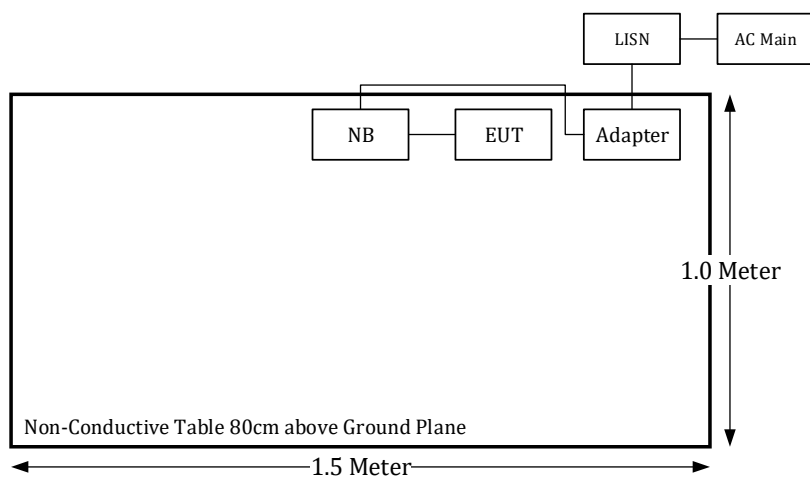
Below 1GHz:



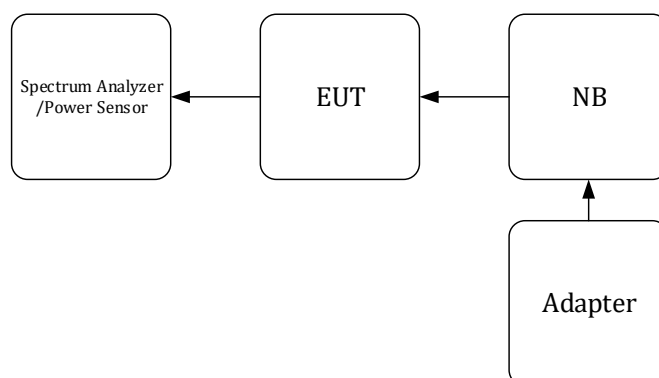
Above 1GHz:



Conduction:



Conducted:



2.8 Duty Cycle

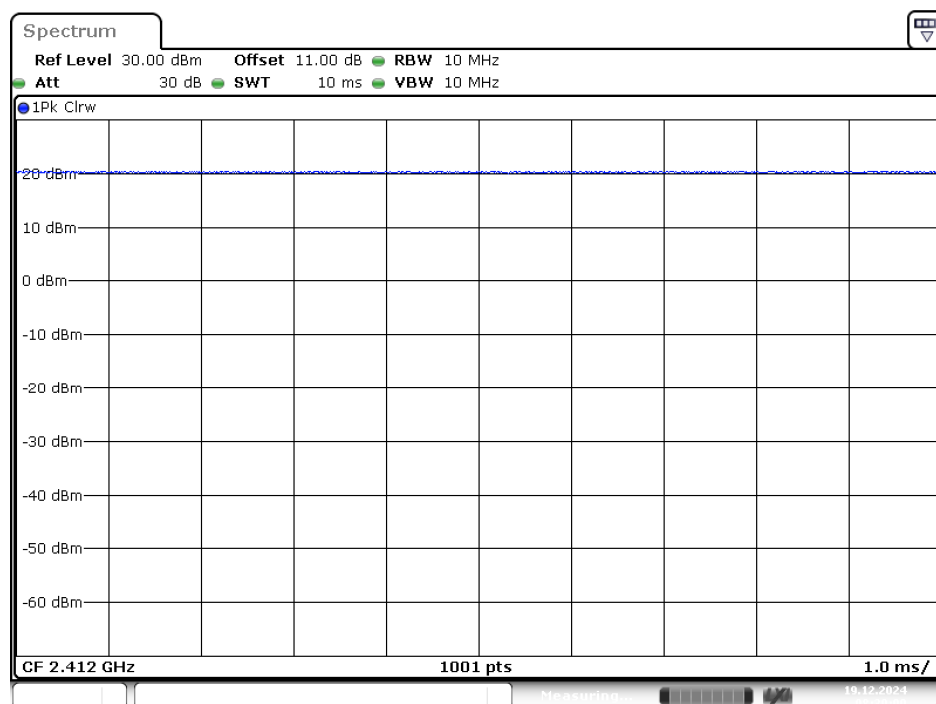
The duty cycle as below:

Radio Mode	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T (kHz)	1/T VBW setting (kHz)
802.11b	100	100	100	/	/	0.01
802.11g	100	100	100	/	/	0.01
802.11n20	100	100	100	/	/	0.01
BLE(1M)	100	100	100	/	/	0.01

Note: Duty Cycle Correction Factor = $10 \cdot \log(1/\text{duty cycle})$

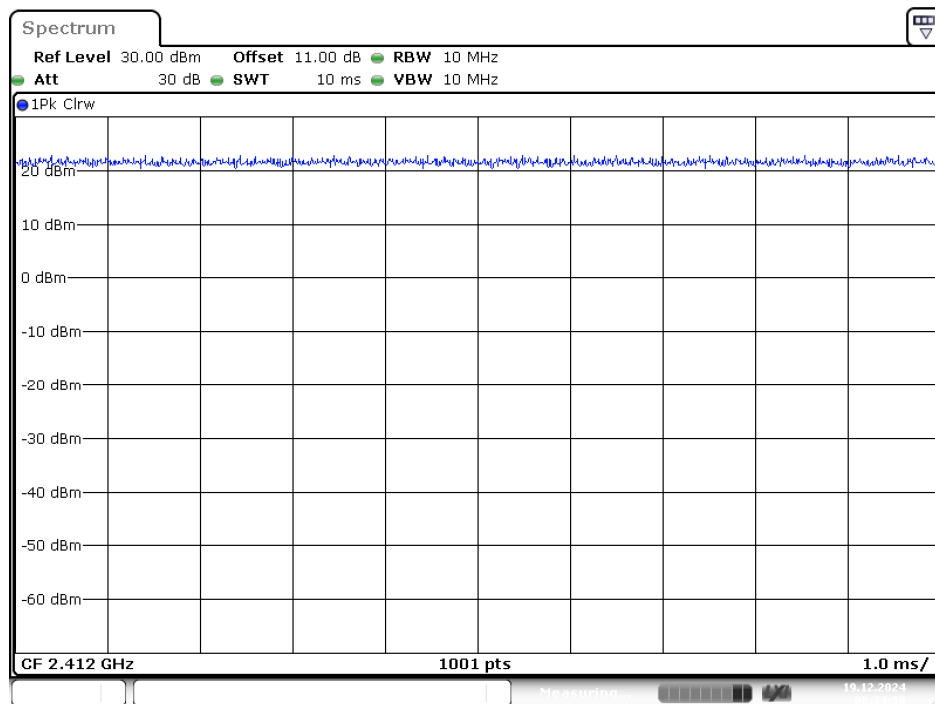
Please refer to the following plots.

B Mode



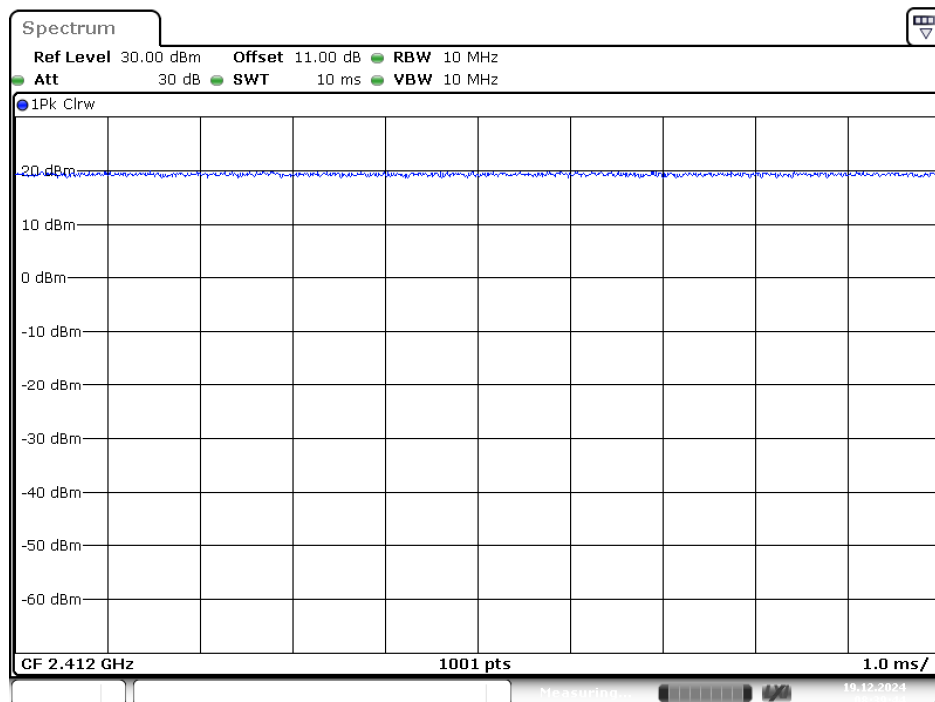
Date: 19.DEC.2024 08:30:00

G Mode



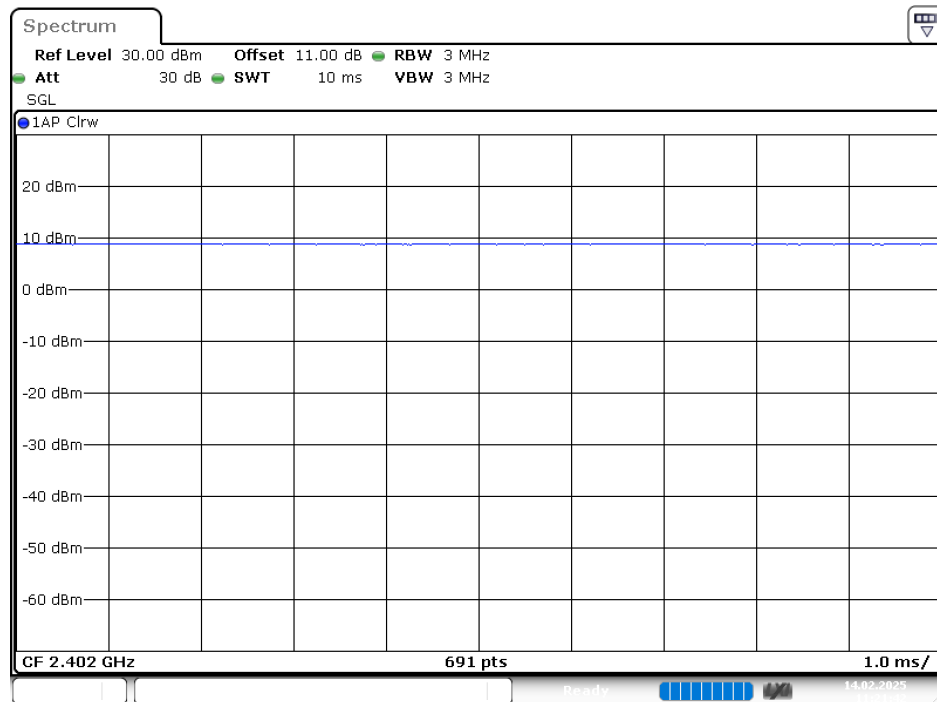
Date: 19.DEC.2024 08:34:30

N20 Mode



Date: 19.DEC.2024 08:39:44

BLE(1M) Mode



Date: 14.FEB.2025 11:21:42

3 Summary of Test Results

FCC Rules	Description of Test	Results
§15.247(i), §1.1310, §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207(a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247(a)(2)	6 dB Emission Bandwidth	Compliance
§15.247(b)(3)	Maximum Peak Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

4 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conduction Room (CON-A)					
LISN	Rohde & Schwarz	ENV216	101612	2024/2/16	2025/2/16
EMI Test Receiver	Rohde & Schwarz	ESW	100947	2024/5/24	2025/5/24
RF Cable	EMEC	EM-CB5D	1	2024/6/5	2025/6/5
Software	AUDIX	E3	V9.150826k	N.C.R	N.C.R
Radiation 3M Room (966-A)					
Active Loop Antenna	ETS-Lindgren	6502	35796	2024/3/27	2025/3/27
Bilog Antenna with 6 dB Attenuator	SUNOL SCIENCES & MINI-CIRCUITS	JB6/UNAT-6+	A050115/1554 2_01	2024/1/19	2025/1/19
Double Ridged Guide Horn Antenna	A.H. system	SAS-571	1020	2024/5/21	2025/5/21
Horn Antenna	ETS-Lindgren	3116	62638	2024/8/30	2025/8/30
Preamplifier	Sonoma	310N	130601	2024/1/29	2025/1/29
Preamplifier	Channel	ERA-100M-18G-01D1748	EC2300051	2024/3/29	2025/3/29
Microwave Preamplifier	EM Electronics Corporation	EM18G40G	60656	2024/1/8	2025/1/8
EMI Test Receiver	Rohde & Schwarz(R&S)	ESR3	102099	2024/6/24	2025/6/24
Spectrum Analyzer	Rohde & Schwarz	FSV40	101939	2024/3/27	2025/3/27
Microflex Cable	UTIFLEX	UFB197C-1-2362-70U-70U	225757-001	2024/1/23	2025/1/23
Coaxial Cable	UTIFLEX	UFB311A-Q-1440-300300	220490-006	2024/1/23	2025/1/23
Coaxial Cable	COMMATE	PEWC	8Dr	2023/12/23 2024/12/20	2024/12/23 2025/12/20
Cable	EMC	EMC105-SM-SM-10000	201003	2024/1/23	2025/1/23
Coaxial Cable	JUNFLON	J12J102248-00-B-5	AUG-07-15-044	2023/12/23 2024/12/20	2024/12/23 2025/12/20
Coaxial Cable	ROSNOL	K1K50-UP0264-K1K50-450CM	160309-1	2024/1/23	2025/1/23
Microflex Cable	ROSNOL	K1K50-UP0264-K1K50-80CM	160309-2	2024/1/23	2025/1/23
Band-stop filter	Woken	STI15-9831	STI15-9831-1	2024/10/19	2025/10/19
High-pass filter	XINGBOKEJI	XBLBQ-GTA54	200108-3-2	2024/10/19	2025/10/19
Software	AUDIX	E3	18621a	N.C.R	N.C.R
Conducted Room					
Spectrum Analyzer	Rohde & Schwarz(R&S)	FSV40	101204	2024/5/30	2025/5/30
Cable	UTIFLEX	UFA210A	9435	2024/10/1	2025/10/1
Real-Time Peak Power Sensor	Boonton	RTP5006	11037	2024/5/21	2025/5/21
Power Sensor	KEYSIGHT	U2021XA	MY54080018	2024/1/30 2025/2/5	2025/1/30 2026/2/5
Attenuator	MCL	BW-S10W5+	1419	2024/2/23	2025/2/23

***Statement of Traceability:** BACL Corp. attests that all of the calibrations on the equipment items listed above were traceable to the SI System of Units via the R.O.C. Center for Measurement Standards of the Electronics Testing Center, Taiwan (ETC) or to another internationally recognized National Metrology Institute (NMI), and were compliant with the current Taiwan Accreditation Foundation (TAF) requirements.

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5 FCC §15.247(i), §1.1310, §2.1093 – RF Exposure

5.1 Applicable Standard

According to §2.1093 and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 General RF Exposure Guidance v06

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot$

$[\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

1. $f(\text{GHz})$ is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

5.2 RF Exposure Evaluation Result

Mode	Frequency	Tune-up Power		Evaluation Distance	Calculated Value	Threshold	SAR Test Exclusion
	(MHz)	(dBm)	(mW)	(mm)		(1-g SAR)	
BLE	2402-2480	9.5	8.913	5	2.837	3	Yes

Note: The Tune-up output power was declared by the Applicant.

For Wifi 2.4GHz:

Compliance, please refer to the SAR report: 2401A54978E-SA

Result: Compliance.

6 FCC §15.203 – Antenna Requirements

6.1 Applicable Standard

According to § 15.203,

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited.

6.2 Antenna List and Details

Manufacturer	Model	Antenna Type	Antenna Gain
JDF	W2C-BT&WIFI-FPC	FPC	0.36 dBi

Unit uses a permanently attached antenna. Please refer to EUT photos.

Result: Compliance

7 FCC §15.207(a) – AC Line Conducted Emissions

7.1 Applicable Standard

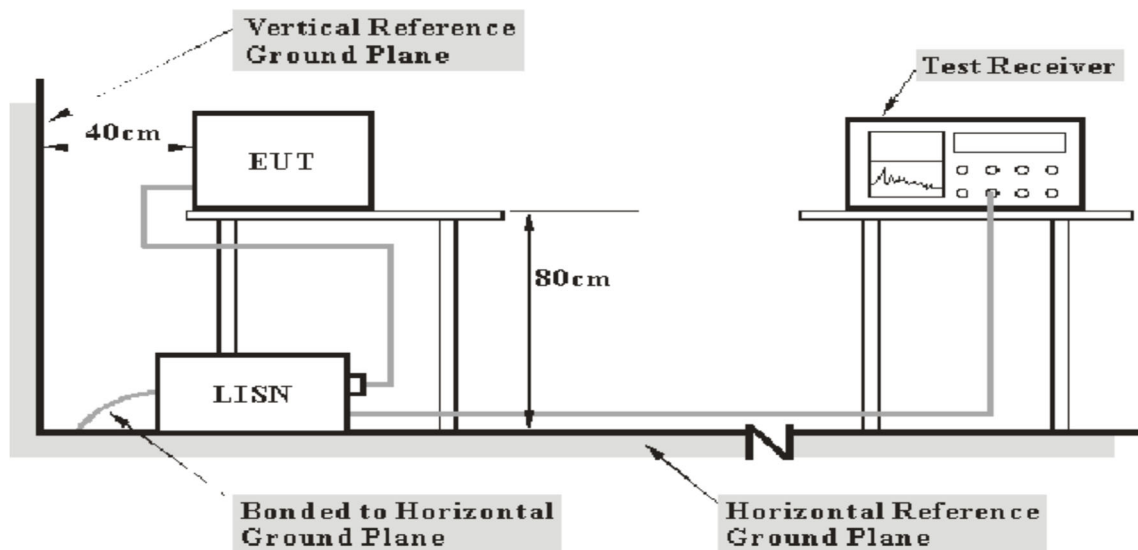
According to §15.207

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56 ^{Note 1}	56 to 46 ^{Note 1}
0.5-5	56	46
5-30	60	50

Note 1: Decreases with the logarithm of the frequency.

7.2 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 setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

7.3 EMI Test Receiver Setup

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

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

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

7.4 Test Procedure

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

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

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

7.5 Corrected Factor & Margin Calculation

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

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

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 below the limit. The equation for Over Limit calculation is as follows:

$$\text{Over Limit} = \text{Level} - \text{Limit Line}$$

7.6 Test Results

Test Mode: Transmitting

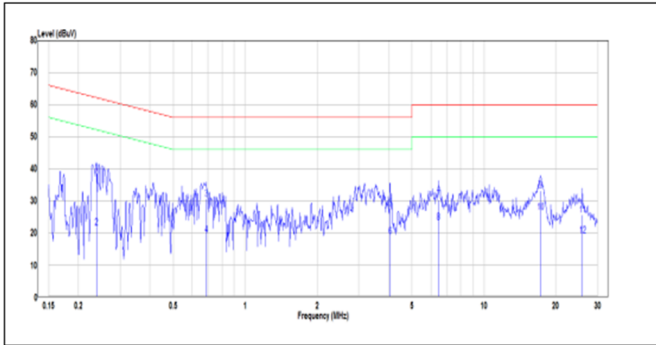
Main: AC120 V, 60 Hz

WIFI Mode (Worst case is 802.11g mode, low channel)

Line

Description:RBW: 9kHz/VBW: 30kHz

2024-12-17 15:10:00

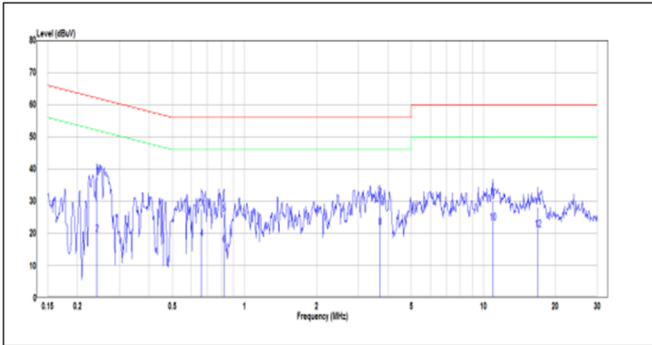


No.	Frequency	Reading	Correct Factor	Result	Limit	Over limit	Remark	Phase
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.238	28.39	10.06	38.45	62.17	-23.72	QP	Line
2	0.238	11.68	10.06	21.74	52.17	-30.44	Average	Line
3	0.686	20.25	10.29	30.54	56.00	-25.46	QP	Line
4	0.686	9.11	10.29	19.40	46.00	-26.60	Average	Line
5	4.049	17.43	10.39	27.81	56.00	-28.19	QP	Line
6	4.049	8.52	10.39	18.90	46.00	-27.10	Average	Line
7	6.454	20.05	10.42	30.47	60.00	-29.53	QP	Line
8	6.454	13.02	10.42	23.44	50.00	-26.56	Average	Line
9	17.291	22.64	10.59	33.23	60.00	-26.77	QP	Line
10	17.291	15.96	10.59	26.55	50.00	-23.45	Average	Line
11	25.864	15.09	10.55	25.64	60.00	-34.36	QP	Line
12	25.864	8.56	10.55	19.11	50.00	-30.89	Average	Line

Neutral

Description:RBW: 9kHz/VBW: 30kHz

2024-12-17 15:06:17



No.	Frequency	Reading	Correct Factor	Result	Limit	Over limit	Remark	Phase
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.242	27.37	10.07	37.44	62.04	-24.60	QP	Neutral
2	0.242	9.83	10.07	19.90	52.04	-32.14	Average	Neutral
3	0.661	17.37	10.30	27.66	56.00	-28.34	QP	Neutral
4	0.661	8.07	10.30	18.37	46.00	-27.63	Average	Neutral
5	0.822	15.72	10.32	26.04	56.00	-29.96	QP	Neutral
6	0.822	6.24	10.32	16.56	46.00	-29.44	Average	Neutral
7	3.700	20.72	10.38	31.10	56.00	-24.90	QP	Neutral
8	3.700	11.60	10.38	21.98	46.00	-24.02	Average	Neutral
9	10.963	19.60	10.50	30.09	60.00	-29.91	QP	Neutral
10	10.963	12.76	10.50	23.26	50.00	-26.74	Average	Neutral
11	16.928	17.42	10.64	28.06	60.00	-31.94	QP	Neutral
12	16.928	10.60	10.64	21.24	50.00	-28.76	Average	Neutral

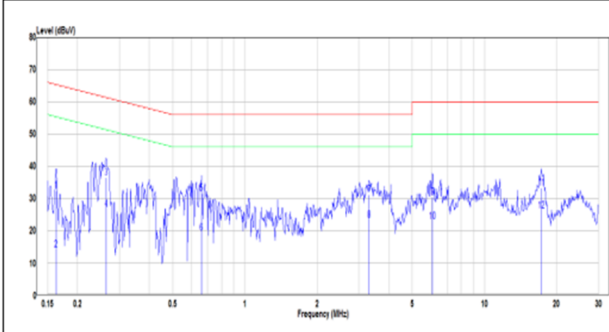
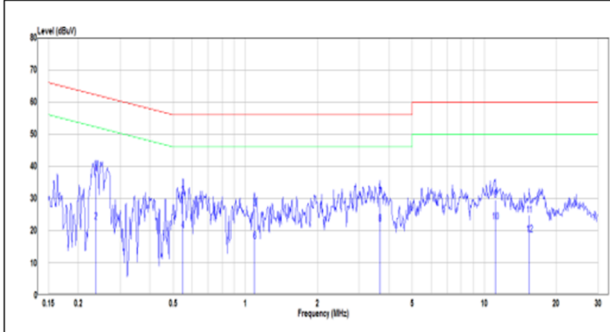
Note:

Result = Reading + Factor

Over Limit = Result – Limit Line

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss + Attenuator

BLE Mode (Worst case is middle Channel)

Line					Neutral				
Description: RBW: 9kHz/VBW: 30kHz					Description: RBW: 9kHz/VBW: 30kHz				
2024-12-17 15:14:39					2024-12-17 15:03:02				
									
No.	Frequency	Reading	Correct Factor	Result	Limit	Over limit	Remark	Phase	
	MHz	dBuV	dB	dBuV	dBuV	dB			
1	0.162	22.57	9.87	32.45	65.34	-32.89	QP	Line	
2	0.162	4.39	9.87	14.27	55.34	-41.07	Average	Line	
3	0.263	26.35	10.08	36.43	61.34	-24.91	QP	Line	
4	0.263	16.59	10.08	26.67	51.34	-24.67	Average	Line	
5	0.658	21.34	10.29	31.63	56.00	-24.37	QP	Line	
6	0.658	9.18	10.29	19.47	46.00	-26.53	Average	Line	
7	3.293	20.96	10.37	31.33	56.00	-24.67	QP	Line	
8	3.293	12.97	10.37	23.34	46.00	-22.66	Average	Line	
9	6.056	20.04	10.42	30.46	60.00	-29.54	QP	Line	
10	6.056	12.59	10.42	23.00	50.00	-27.00	Average	Line	
11	17.291	22.72	10.59	33.31	60.00	-26.69	QP	Line	
12	17.291	15.71	10.59	26.29	50.00	-23.71	Average	Line	

No.	Frequency	Reading	Correct Factor	Result	Limit	Over limit	Remark	Phase	
	MHz	dBuV	dB	dBuV	dBuV	dB			
1	0.237	27.86	10.07	37.93	62.22	-24.28	QP	Neutral	
2	0.237	12.65	10.07	22.72	52.22	-29.50	Average	Neutral	
3	0.546	20.64	10.28	30.91	56.00	-25.09	QP	Neutral	
4	0.546	9.74	10.28	20.02	46.00	-25.98	Average	Neutral	
5	1.094	16.46	10.35	26.81	56.00	-29.19	QP	Neutral	
6	1.094	6.31	10.35	16.66	46.00	-29.34	Average	Neutral	
7	3.661	19.97	10.38	30.35	56.00	-25.65	QP	Neutral	
8	3.661	11.73	10.38	22.11	46.00	-23.89	Average	Neutral	
9	11.139	19.11	10.50	29.62	60.00	-30.38	QP	Neutral	
10	11.139	12.31	10.50	22.81	50.00	-27.19	Average	Neutral	
11	15.470	14.18	10.62	24.80	60.00	-35.20	QP	Neutral	
12	15.470	8.13	10.62	18.75	50.00	-31.25	Average	Neutral	

Note:

Result = Reading + Factor

Over Limit = Result - Limit Line

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss + Attenuator

8 FCC §15.209, §15.205 , §15.247(d) – Spurious Emissions

8.1 Applicable Standard

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1MHz.

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	608 – 614	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	960 – 1240	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	1300 – 1427	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1435 – 1626.5	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1645.5 – 1646.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1660 – 1710	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1718.8 – 1722.2	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	2200 – 2300	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2310 – 2390	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2483.5 – 2500	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2690 – 2900	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	3260 – 3267	22.01 – 23.12
8.41425 – 8.41475	162.0125 – 167.17	3.332 – 3.339	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3.3458 – 3.358	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3.600 – 4.400	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4		Above 38.6
13.36 – 13.41	399.9 – 410		

As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (micro volts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

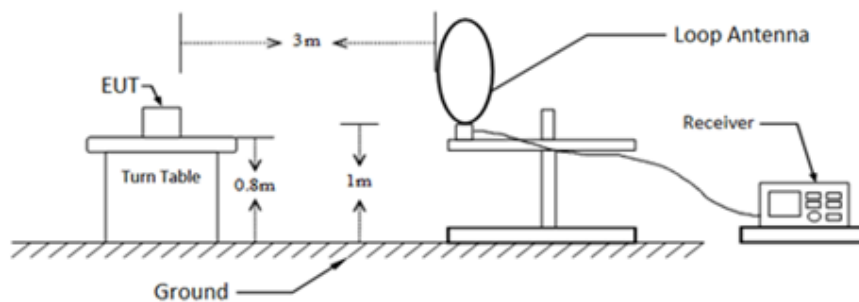
According to ANSI C63.10-2013, section 5.3.3

Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field, and the emissions to be measured can be detected by the measurement equipment (see 4.3.4). Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. Measurements from 18 GHz to 40 GHz are typically made at distances significantly less than 3 m from the EUT. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade of distance (inverse of linear distance for field-strength measurements or inverse of linear distance-squared for power-density measurements).

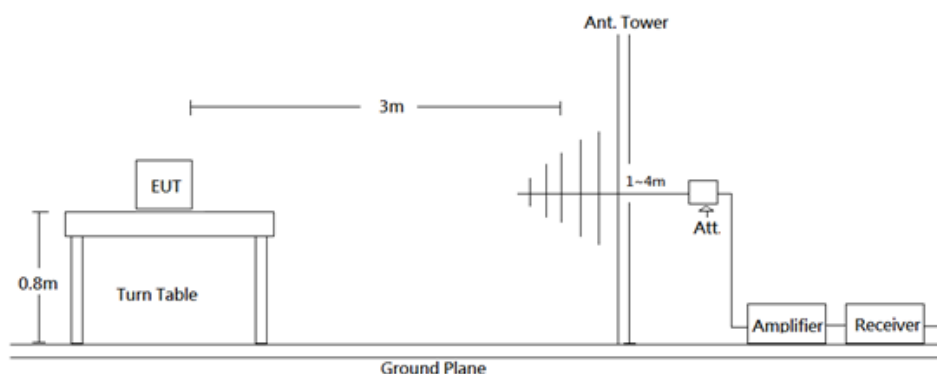
As per FCC §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. 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)).

8.2 EUT Setup

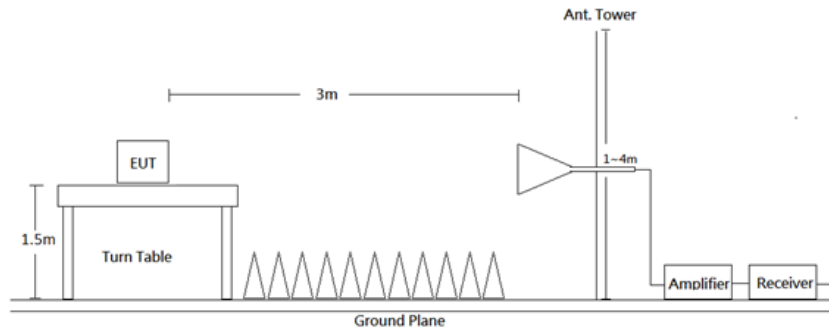
9kHz-30MHz:



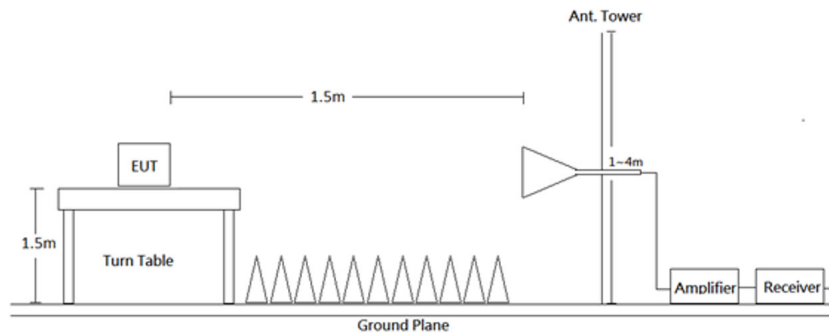
30MHz-1GHz:



1-18 GHz:



18-26.5 GHz:



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

8.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 26.5 GHz. During the radiated emission test, the EMI test receiver was set with the following configurations measurement method 6.3 in ANSI C63.10.

Frequency Range	RBW	VBW	Duty cycle	Measurement method	Detector
9 kHz - 150 kHz	300 Hz	1 kHz	/	QP/AV	QP/AV
150 kHz - 30 MHz	10 kHz	30 kHz	/	QP/AV	QP/AV
30-1000 MHz	120 kHz	300 kHz	/	QP	QP
Above 1 GHz	Pre-scan :				
	1 MHz	3 MHz	/	PK	PK
	1 MHz	3 kHz	>98%	Ave	PK
	1 MHz	$\geq 1/\text{Ton}$, not less than 3 kHz	<98%	Ave	PK
	Final measurement for emission identified during pre-scan :				
	1 MHz	3 MHz	/	PK	PK
	1 MHz	10 Hz	>98%	Ave	PK
	1 MHz	$\geq 1/\text{Ton}$	<98%	Ave	PK

Note: Ton is minimum transmission duration

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (New Taipei Laboratory)

8.4 Test Procedure

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

All data was recorded in Quasi-peak and average detector mode from 9 kHz to 30 MHz, Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

For Conducted Spurious Emissions:

According to ANSI C63.10-2013, section 11.11

- a) Set the frequency range to be measured.
- b) Set the RBW = 100 kHz.
- c) Set the VBW $\geq [3 \times \text{RBW}]$.
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

8.5 Corrected Factor & Margin Calculation

The Correct Factor 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:

$$\text{Correct Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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

$$\text{Margin} = \text{Level} - \text{Limit}$$

8.6 Test Results

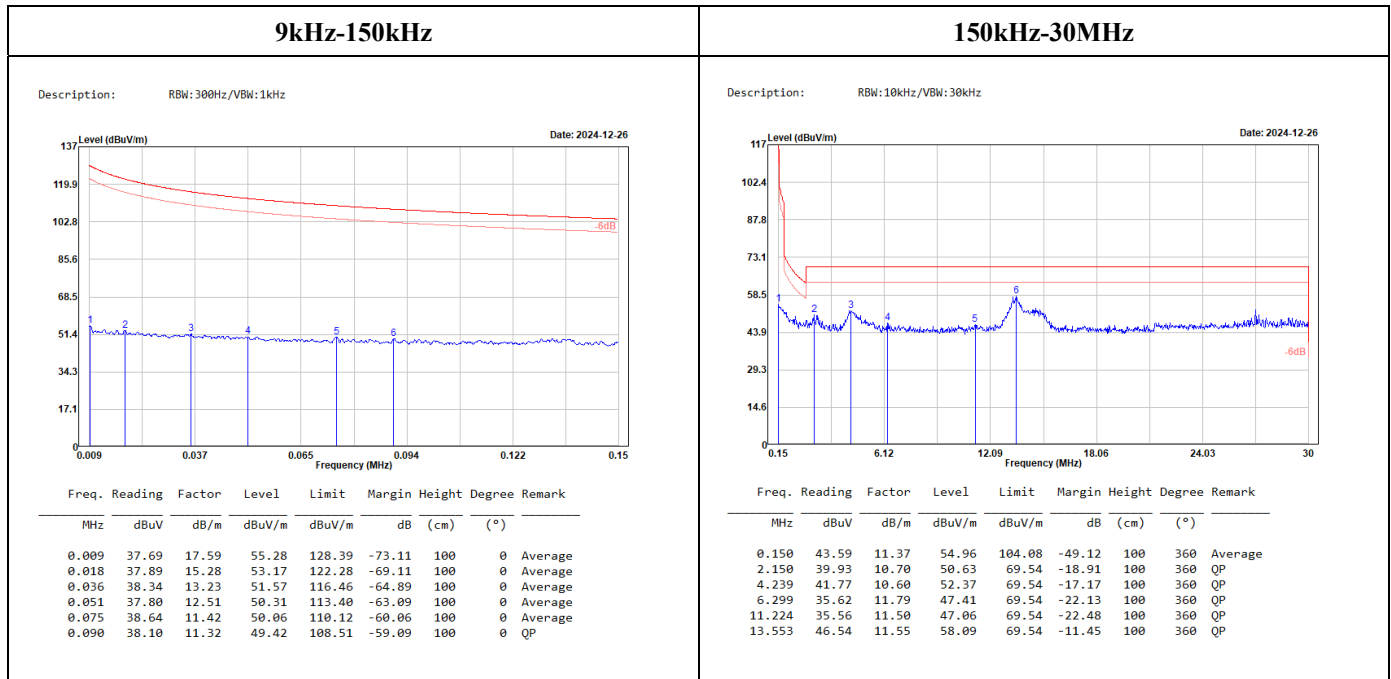
Test Mode: Transmitting

(Pre-scan with three orthogonal axis, and worse case as Z axis.)

9kHz-30MHz:

(Worst case is 802.11g mode, middle channel)

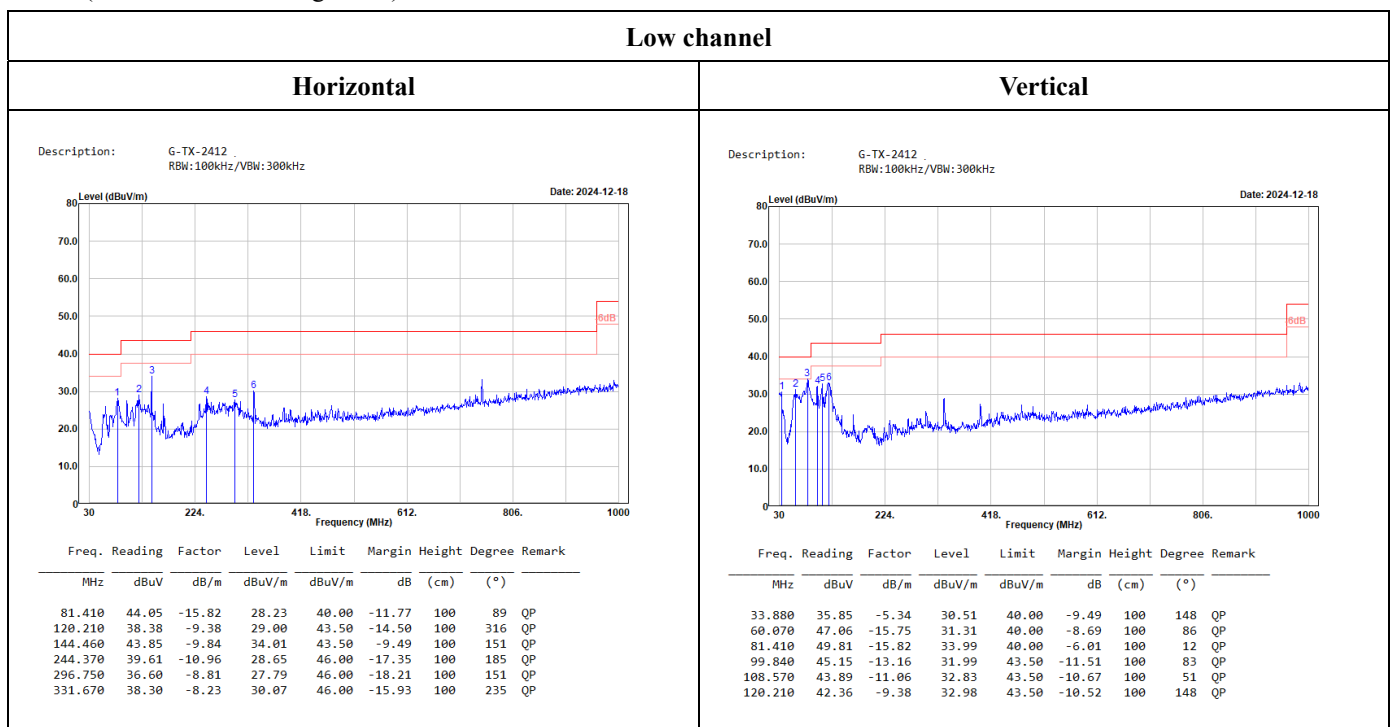
(Pre-scan using three directional polarities, worst case as parallel.)



WIFI Mode

30MHz-1GHz:

(Worst case is 802.11g mode)

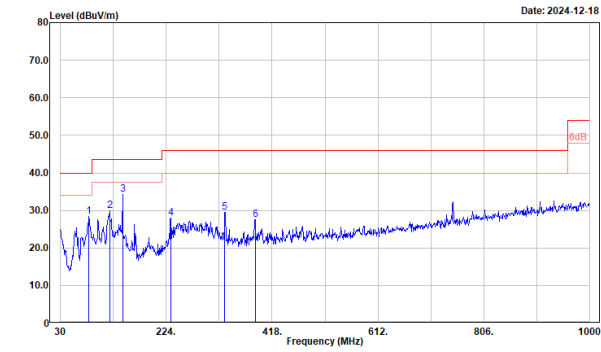


Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.
(New Taipei Laboratory)

Middle channel

Horizontal

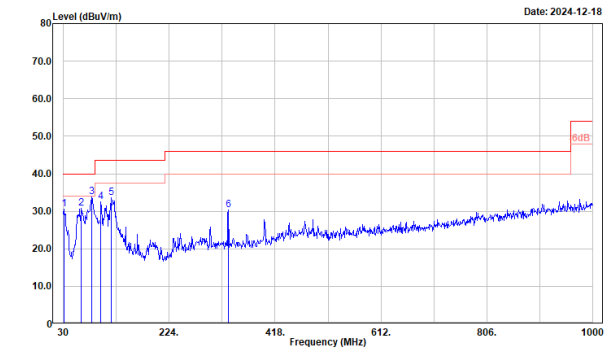
Description: G-TX-2437
RBW:100kHz/VBW:300kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
82.380	44.18	-15.79	28.39	40.00	-11.61	100	76	QP
120.210	39.21	-9.38	29.83	43.50	-13.67	100	323	QP
144.460	44.20	-9.84	34.36	43.50	-9.14	100	142	QP
232.730	39.43	-11.37	28.06	46.00	-17.94	100	46	QP
331.670	37.71	-8.23	29.48	46.00	-16.52	100	239	QP
386.960	34.68	-7.09	27.59	46.00	-18.41	100	342	QP

Vertical

Description: G-TX-2437
RBW:100kHz/VBW:300kHz

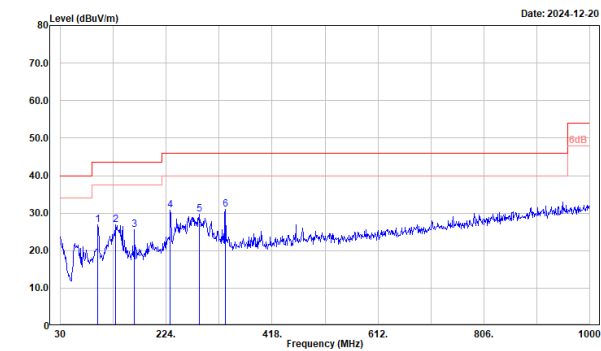


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
30.970	33.66	-3.00	30.66	40.00	-9.34	100	106	QP
62.980	46.49	-15.60	30.89	40.00	-9.11	100	83	QP
82.380	49.58	-15.79	33.79	40.00	-6.21	100	75	QP
98.870	45.90	-13.36	32.54	43.50	-10.96	100	67	QP
117.300	43.14	-9.61	33.53	43.50	-9.97	100	60	QP
332.640	38.51	-8.21	30.30	46.00	-15.70	100	21	QP

High channel

Horizontal

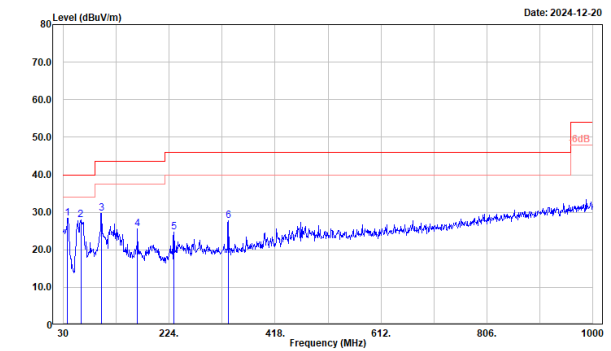
Description: G-TX-2462
RBW:100kHz/VBW:300kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
98.870	40.16	-13.36	26.80	43.50	-16.70	100	77	QP
130.880	35.91	-9.11	26.80	43.50	-16.70	100	104	QP
165.800	36.19	-10.70	25.49	43.50	-18.01	100	81	QP
231.760	42.26	-11.42	30.84	46.00	-15.16	100	198	QP
284.140	38.66	-8.97	29.69	46.00	-16.31	100	134	QP
332.640	39.18	-8.21	30.97	46.00	-15.03	100	100	QP

Vertical

Description: G-TX-2462
RBW:100kHz/VBW:300kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
37.760	36.68	-8.18	28.50	40.00	-11.50	100	9	QP
62.010	43.85	-15.81	28.04	40.00	-11.96	100	67	QP
99.840	42.92	-13.16	29.76	43.50	-13.74	100	39	QP
165.800	36.24	-10.70	25.54	43.50	-17.96	100	125	QP
232.730	36.08	-11.37	24.71	46.00	-21.29	100	144	QP
332.640	36.06	-8.21	27.85	46.00	-18.15	100	167	QP

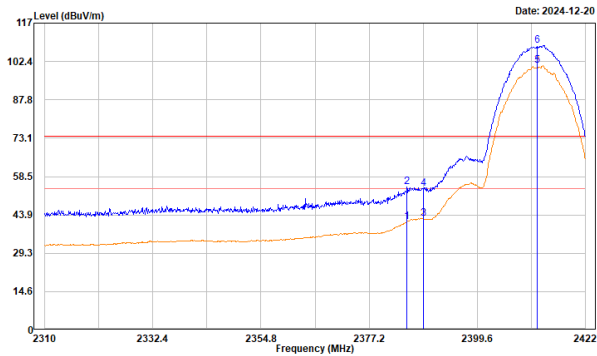
Band-Edge:

802.11b Mode

Low channel

Horizontal

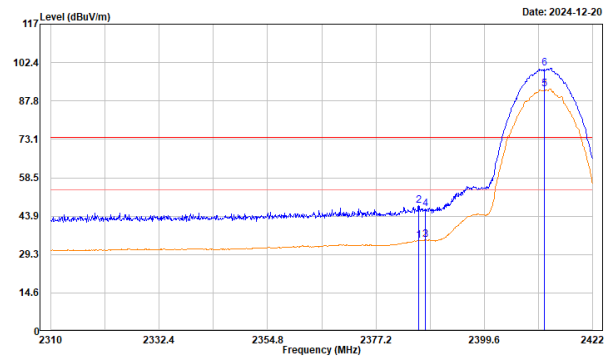
Description: B-TX-2412, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2385.040	52.48	-11.13	41.35	54.00	-12.65	160	268	Average
2385.040	65.60	-11.13	54.47	74.00	-19.53	160	268	Peak
2388.400	53.64	-11.10	42.54	54.00	-11.46	160	268	Average
2388.400	65.04	-11.10	53.94	74.00	-20.06	160	268	Peak
2412.000	111.75	-11.02	100.73	160	268	160	268	Average
2412.000	119.53	-11.02	108.51	160	268	160	268	Peak

Vertical

Description: B-TX-2412, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz

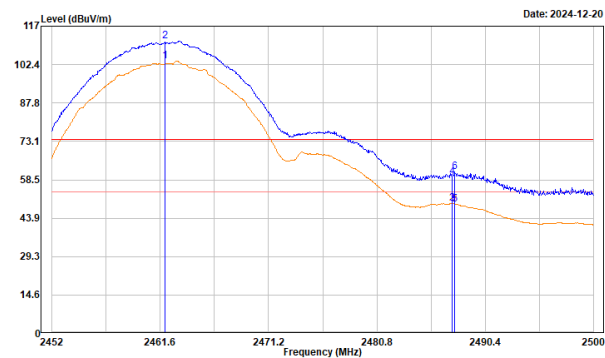


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2386.048	45.57	-11.12	34.45	54.00	-19.55	388	97	Average
2386.048	59.08	-11.12	47.96	74.00	-26.04	388	97	Peak
2387.392	45.96	-11.12	34.84	54.00	-19.16	388	97	Average
2387.392	57.89	-11.12	46.77	74.00	-27.23	388	97	Peak
2412.000	103.44	-11.02	92.42	388	97	388	97	Average
2412.000	111.18	-11.02	100.16	388	97	388	97	Peak

High channel

Horizontal

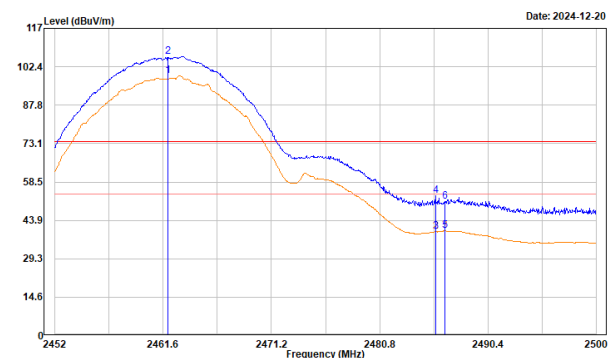
Description: B-TX-2462, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	114.51	-10.88	103.63	155	257	155	257	Average
2462.000	122.16	-10.88	111.28	155	257	155	257	Peak
2487.472	60.04	-10.57	49.47	54.00	-4.53	155	257	Average
2487.472	70.28	-10.57	59.71	74.00	-14.29	155	257	Peak
2487.712	59.82	-10.57	49.25	54.00	-4.75	155	257	Average
2487.712	72.13	-10.57	61.56	74.00	-12.44	155	257	Peak

Vertical

Description: B-TX-2462, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



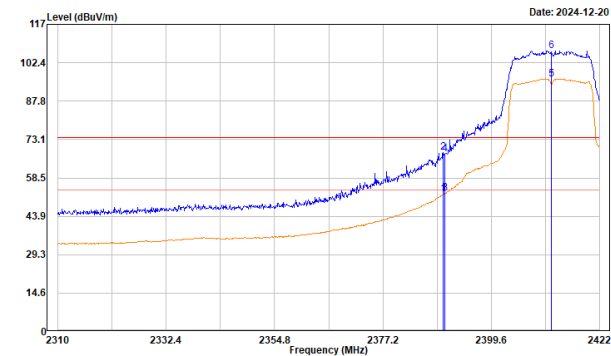
Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	109.73	-10.88	98.85	352	338	352	338	Average
2462.000	117.22	-10.88	106.34	352	338	352	338	Peak
2485.744	50.10	-10.59	39.51	54.00	-14.49	352	338	Average
2485.744	63.75	-10.59	53.16	74.00	-20.84	352	338	Peak
2486.560	50.51	-10.58	39.93	54.00	-14.07	352	338	Average
2486.560	61.62	-10.58	51.04	74.00	-22.96	352	338	Peak

802.11g Mode

Low channel

Horizontal

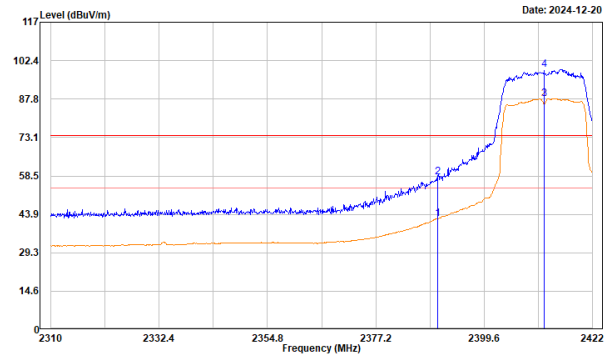
Description: G-TX-2412, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.632	63.32	-11.09	52.23	54.00	-1.77	162	270	Average
2389.632	79.12	-11.09	68.03	74.00	-5.97	162	270	Peak
2389.968	63.61	-11.09	52.52	54.00	-1.48	162	270	Average
2389.968	78.55	-11.09	67.46	74.00	-6.54	162	270	Peak
2412.000	107.24	-11.02	96.22	162	270	Average		
2412.000	117.95	-11.02	106.93	162	270	Peak		

Vertical

Description: G-TX-2412, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz

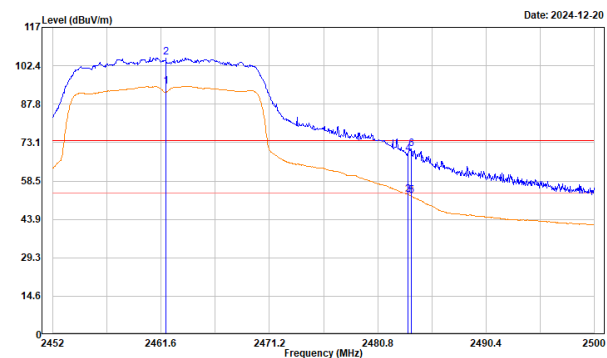


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.968	53.26	-11.09	42.17	54.00	-11.83	209	95	Average
2389.968	69.25	-11.09	58.16	74.00	-15.84	209	95	Peak
2412.000	98.92	-11.02	87.90	209	95	Average		
2412.000	110.00	-11.02	98.98	209	95	Peak		

High channel

Horizontal

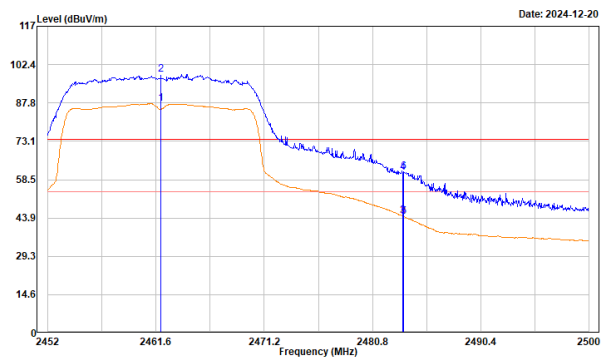
Description: G-TX-2462, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	105.36	-10.88	94.48	129	267	Average		
2462.000	116.33	-10.88	105.45	129	267	Peak		
2483.488	63.94	-10.61	53.33	54.00	-0.67	129	267	Average
2483.488	79.55	-10.61	68.94	74.00	-5.06	129	267	Peak
2483.776	63.45	-10.60	52.85	54.00	-1.15	129	267	Average
2483.776	81.26	-10.60	70.66	74.00	-3.34	129	267	Peak

Vertical

Description: G-TX-2462, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



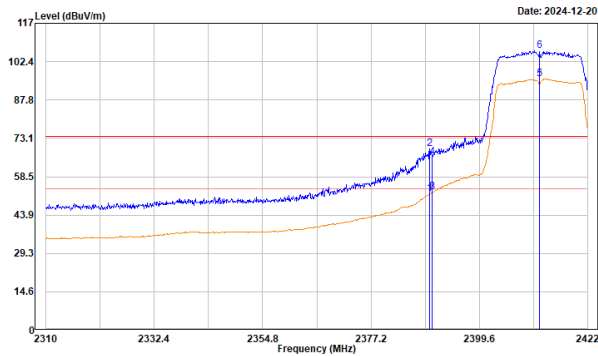
Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	98.40	-10.88	87.52	234	96	Average		
2462.000	109.56	-10.88	98.68	234	96	Peak		
2483.488	55.27	-10.61	44.66	54.00	-9.34	234	96	Average
2483.488	71.82	-10.61	61.21	74.00	-12.79	234	96	Peak
2483.536	55.11	-10.61	44.50	54.00	-9.50	234	96	Average
2483.536	71.98	-10.61	61.37	74.00	-12.63	234	96	Peak

802.11n HT20 Mode

Low channel

Horizontal

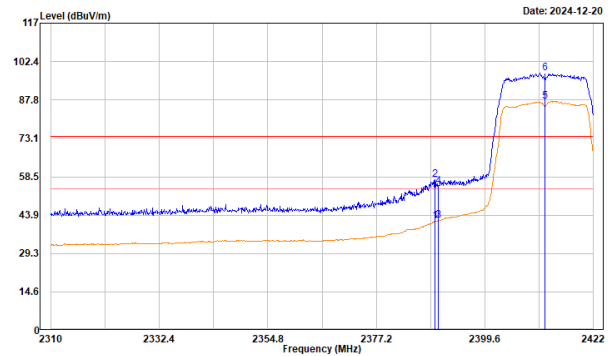
Description: N20-TX-2412, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.296	63.01	-11.09	51.92	54.00	-2.08	163	267	Average
2389.296	80.12	-11.09	69.03	74.00	-4.97	163	267	Peak
2389.856	63.63	-11.09	52.54	54.00	-1.46	163	267	Average
2389.856	76.92	-11.09	65.83	74.00	-8.17	163	267	Peak
2412.000	106.89	-11.02	95.87					Average
2412.000	117.63	-11.02	106.61			163	267	Peak

Vertical

Description: N20-TX-2412, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz

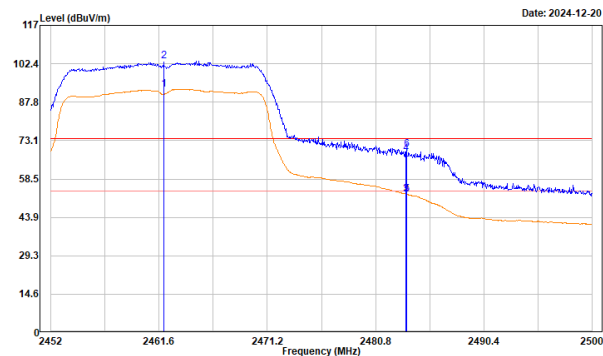


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.296	52.64	-11.09	41.55	54.00	-12.45	207	96	Average
2389.296	68.44	-11.09	57.35	74.00	-16.65	207	96	Peak
2389.856	52.79	-11.09	41.70	54.00	-12.30	207	96	Average
2389.856	66.07	-11.09	54.98	74.00	-19.02	207	96	Peak
2412.000	98.34	-11.02	87.32					Average
2412.000	108.95	-11.02	97.93			207	96	Peak

High channel

Horizontal

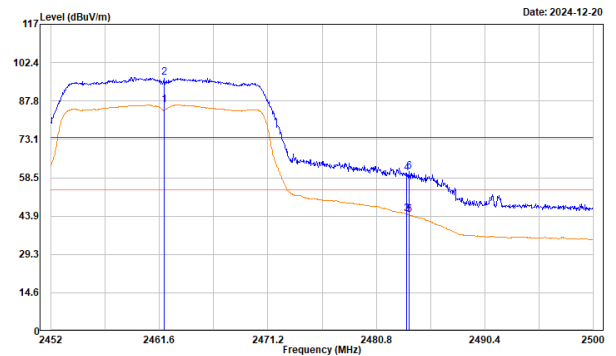
Description: N20-TX-2462, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	103.49	-10.88	92.61			156	267	Average
2462.000	114.30	-10.88	103.42			156	267	Peak
2483.488	63.34	-10.61	52.73	54.00	-1.27	156	267	Average
2483.488	78.91	-10.61	68.30	74.00	-5.70	156	267	Peak
2483.536	63.28	-10.61	52.67	54.00	-1.33	156	267	Average
2483.536	80.33	-10.61	69.72	74.00	-4.28	156	267	Peak

Vertical

Description: N20-TX-2462, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	97.15	-10.88	86.27			237	95	Average
2462.000	107.67	-10.88	96.79			237	95	Peak
2483.488	55.21	-10.61	44.60	54.00	-9.40	237	95	Average
2483.488	70.85	-10.61	60.24	74.00	-13.76	237	95	Peak
2483.600	54.90	-10.61	44.29	54.00	-9.71	237	95	Average
2483.600	71.47	-10.61	60.86	74.00	-13.14	237	95	Peak

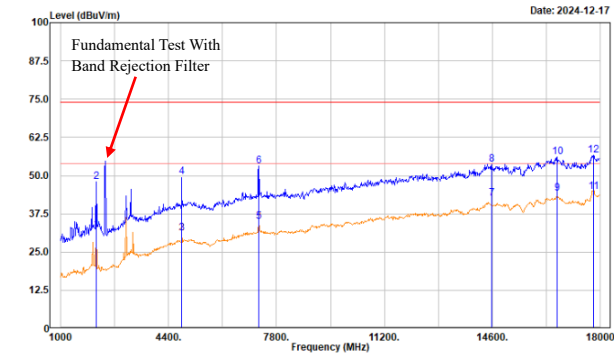
1GHz-18GHz:

(802.11b mode)

Low channel

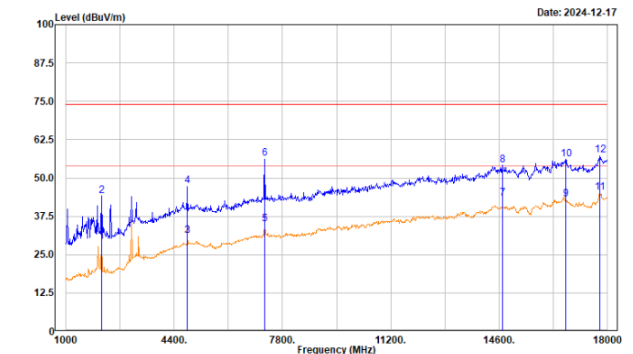
Horizontal

Description: B-TX-2412, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Vertical

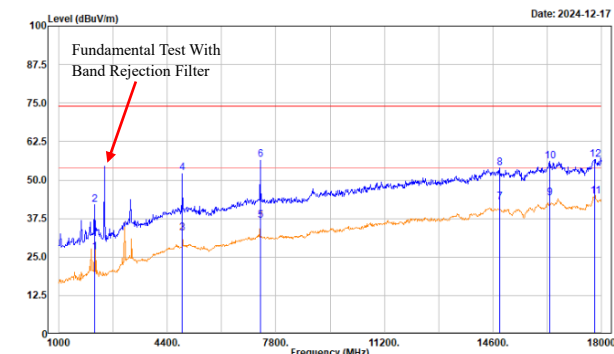
Description: B-TX-2412, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Middle channel

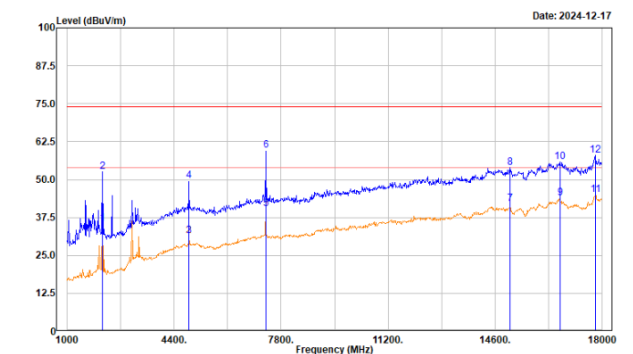
Horizontal

Description: B-TX-2437, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Vertical

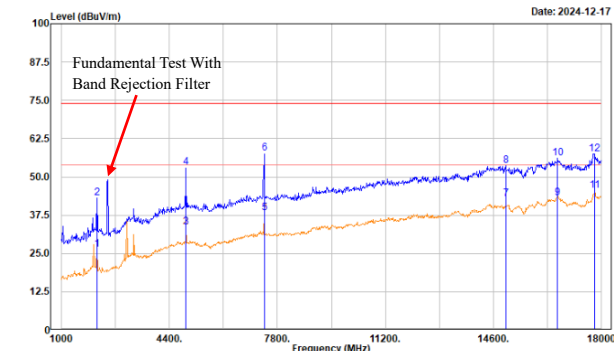
Description: B-TX-2437, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



High channel

Horizontal

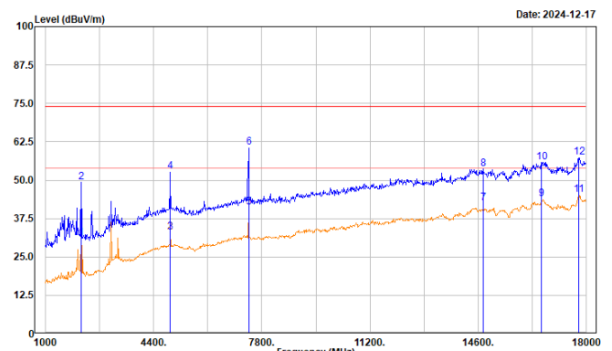
Description: B-TX-2462, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2122.000	38.58	-12.36	26.22	54.00	-27.78	150	220	Average
2122.000	55.39	-12.36	43.03	74.00	-30.97	150	220	Peak
4924.000	37.15	-3.51	33.64	54.00	-20.36	355	358	Average
4924.000	56.54	-3.51	53.03	74.00	-20.97	355	358	Peak
7386.000	38.00	0.22	38.22	54.00	-15.78	111	17	Average
7386.000	57.48	0.22	57.70	74.00	-16.30	111	17	Peak
14991.000	31.97	10.74	42.71	54.00	-11.29	150	130	Average
14991.000	42.97	10.74	53.71	74.00	-20.29	150	130	Peak
16623.000	31.06	12.07	43.13	54.00	-10.87	150	281	Average
16623.000	44.06	12.07	56.13	74.00	-17.87	150	281	Peak
17779.000	32.72	12.85	45.57	54.00	-8.43	150	189	Average
17779.000	44.72	12.85	57.57	74.00	-16.43	150	189	Peak

Vertical

Description: B-TX-2462, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



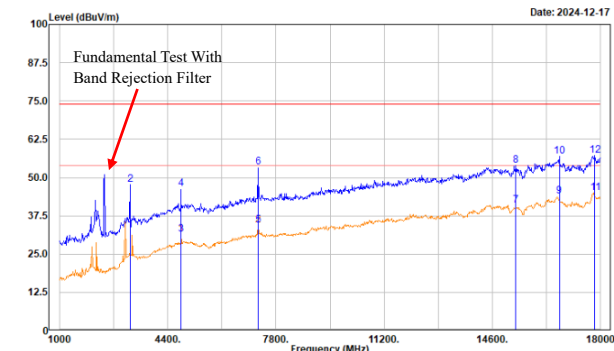
Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2122.000	43.58	-12.36	31.22	54.00	-22.78	150	56	Average
2122.000	61.78	-12.36	49.42	74.00	-24.58	150	56	Peak
4924.000	36.59	-3.51	33.08	54.00	-20.92	143	154	Average
4924.000	56.38	-3.51	52.87	74.00	-21.13	143	154	Peak
7386.000	41.02	0.22	41.24	54.00	-12.76	117	55	Average
7386.000	60.41	0.22	60.63	74.00	-13.37	117	55	Peak
14753.000	31.25	11.29	42.54	54.00	-11.46	150	261	Average
14753.000	42.25	11.29	53.54	74.00	-20.46	150	261	Peak
16589.000	31.81	12.13	43.94	54.00	-10.06	150	9	Average
16589.000	43.81	12.13	55.94	74.00	-18.06	150	9	Peak
17762.000	32.49	12.83	45.32	54.00	-8.68	150	226	Average
17762.000	44.49	12.83	57.32	74.00	-16.68	150	226	Peak

(802.11g mode)

Low channel

Horizontal

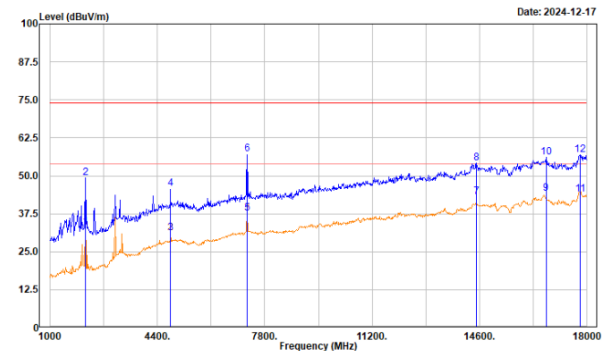
Description: G-TX-2412, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
3210.000	40.27	-7.51	32.76	54.00	-21.24	150	304	Average
3210.000	55.27	-7.51	47.76	74.00	-26.24	150	304	Peak
4824.000	35.43	-3.96	31.47	54.00	-22.53	346	352	Average
4824.000	50.36	-3.96	46.40	74.00	-27.60	346	352	Peak
7236.000	33.85	0.55	34.40	54.00	-19.60	118	16	Average
7236.000	52.95	0.55	53.50	74.00	-20.50	118	16	Peak
15348.000	31.62	9.36	40.98	54.00	-13.02	150	296	Average
15348.000	44.62	9.36	53.98	74.00	-20.02	150	296	Peak
16708.000	32.06	11.85	43.91	54.00	-10.09	150	84	Average
16708.000	45.06	11.85	56.91	74.00	-17.09	150	84	Peak
17830.000	31.99	13.06	45.05	54.00	-8.95	150	284	Average
17830.000	43.99	13.06	57.05	74.00	-16.95	150	284	Peak

Vertical

Description: G-TX-2412, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz

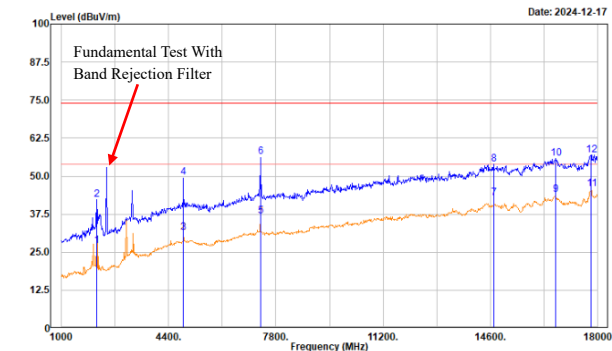


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2122.000	45.40	-12.36	33.04	54.00	-20.96	150	60	Average
2122.000	61.68	-12.36	49.32	74.00	-24.68	150	60	Peak
4824.000	35.18	-3.96	31.22	54.00	-22.78	151	92	Average
4824.000	49.69	-3.96	45.73	74.00	-28.27	151	92	Peak
7236.000	37.13	0.55	37.68	54.00	-16.32	267	52	Average
7236.000	56.60	0.55	57.15	74.00	-16.85	267	52	Peak
14498.000	31.70	11.47	43.17	54.00	-10.83	150	103	Average
14498.000	42.70	11.47	54.17	74.00	-19.83	150	103	Peak
16708.000	32.30	11.85	44.15	54.00	-9.85	150	357	Average
16708.000	44.30	11.85	56.15	74.00	-17.85	150	357	Peak
17779.000	31.11	12.85	43.96	54.00	-10.04	150	249	Average
17779.000	44.11	12.85	56.96	74.00	-17.04	150	249	Peak

Middle channel

Horizontal

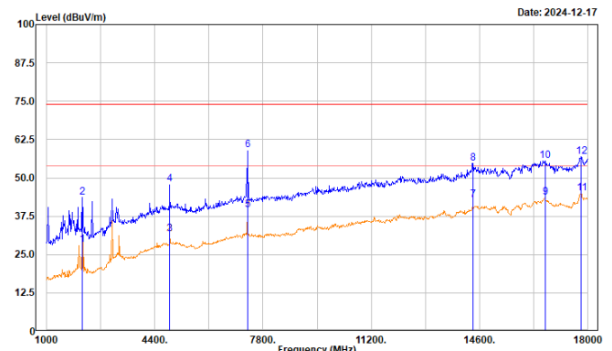
Description: G-TX-2437, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2122.000	39.48	-12.36	27.12	54.00	-26.88	150	132	Average
2122.000	54.52	-12.36	42.16	74.00	-31.84	150	132	Peak
4874.000	35.13	-3.59	31.54	54.00	-22.46	382	355	Average
4874.000	53.15	-3.59	49.56	74.00	-24.44	382	355	Peak
7311.000	36.28	0.56	36.84	54.00	-17.16	106	15	Average
7311.000	55.77	0.56	56.33	74.00	-17.67	106	15	Peak
14702.000	31.51	11.31	42.82	54.00	-11.18	150	71	Average
14702.000	42.51	11.31	53.82	74.00	-20.18	150	71	Peak
16674.000	31.97	11.95	43.92	54.00	-10.08	150	291	Average
16674.000	43.97	11.95	55.92	74.00	-18.08	150	291	Peak
17796.000	32.98	12.88	45.86	54.00	-8.14	150	241	Average
17796.000	43.98	12.88	56.86	74.00	-17.14	150	241	Peak

Vertical

Description: G-TX-2437, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz

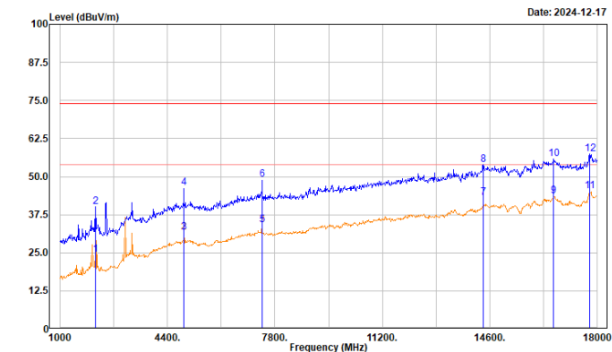


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2122.000	40.56	-12.36	28.20	54.00	-25.80	150	357	Average
2122.000	55.95	-12.36	43.59	74.00	-30.41	150	357	Peak
4874.000	35.34	-3.59	31.75	54.00	-22.25	118	126	Average
4874.000	51.43	-3.59	47.84	74.00	-26.16	118	126	Peak
7311.000	39.09	0.56	39.65	54.00	-14.35	140	52	Average
7311.000	58.47	0.56	59.03	74.00	-14.97	140	52	Peak
14396.000	31.66	11.16	42.82	54.00	-11.18	150	188	Average
14396.000	43.66	11.16	54.82	74.00	-19.18	150	188	Peak
16657.000	31.66	11.99	43.65	54.00	-10.35	150	269	Average
16657.000	43.66	11.99	55.65	74.00	-18.35	150	269	Peak
17796.000	32.10	12.88	44.98	54.00	-9.02	150	297	Average
17796.000	44.10	12.88	56.98	74.00	-17.02	150	297	Peak

High channel

Horizontal

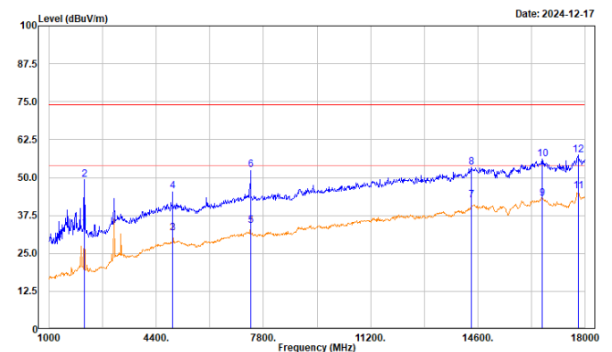
Description: G-TX-2462, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2122.000	36.81	-12.36	24.45	54.00	-29.55	150	224	Average
2122.000	52.45	-12.36	40.09	74.00	-33.91	150	224	Peak
4924.000	35.24	-3.51	31.73	54.00	-22.27	400	0	Average
4924.000	49.98	-3.51	46.47	74.00	-27.53	400	0	Peak
7386.000	33.93	0.22	34.15	54.00	-19.85	132	17	Average
7386.000	48.82	0.22	49.04	74.00	-24.96	132	17	Peak
14396.000	31.86	11.16	43.02	54.00	-10.98	150	197	Average
14396.000	42.86	11.16	54.02	74.00	-19.98	150	197	Peak
16623.000	31.65	12.07	43.72	54.00	-10.28	150	192	Average
16623.000	43.65	12.07	55.72	74.00	-18.28	150	192	Peak
17762.000	32.49	12.83	45.32	54.00	-8.68	150	64	Average
17762.000	44.49	12.83	57.32	74.00	-16.68	150	64	Peak

Vertical

Description: G-TX-2462, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



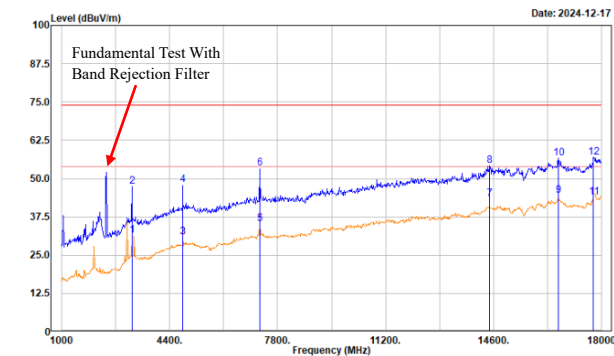
Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2122.000	45.57	-12.36	33.21	54.00	-20.79	150	224	Average
2122.000	61.56	-12.36	49.20	74.00	-24.80	150	224	Peak
4924.000	35.25	-3.51	31.74	54.00	-22.26	143	125	Average
4924.000	49.13	-3.51	45.62	74.00	-28.38	143	125	Peak
7386.000	34.06	0.22	34.28	54.00	-19.72	128	54	Average
7386.000	52.27	0.22	52.49	74.00	-21.51	128	54	Peak
14396.000	31.28	11.16	42.44	54.00	-11.56	150	176	Average
14396.000	42.28	11.16	53.44	74.00	-20.56	150	176	Peak
16640.000	31.14	12.04	43.18	54.00	-10.82	150	212	Average
16640.000	44.14	12.04	56.18	74.00	-17.82	150	212	Peak
17779.000	32.66	12.85	45.51	54.00	-8.49	150	360	Average
17779.000	44.66	12.85	57.51	74.00	-16.49	150	360	Peak

(802.11n HT20 mode)

Low channel

Horizontal

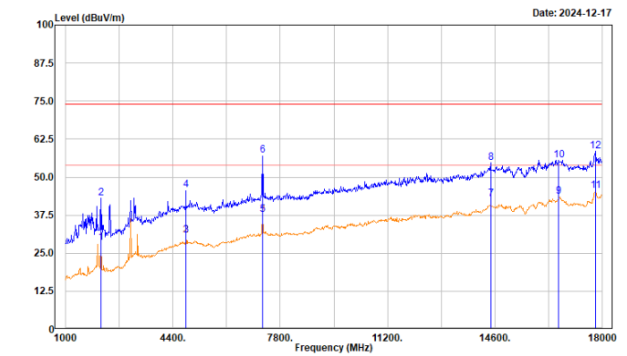
Description: N20-TX-2412, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
3210.000	38.91	-7.51	31.40	54.00	-22.60	150	298	Average
3210.000	54.83	-7.51	47.32	74.00	-26.68	150	298	Peak
4824.000	34.97	-3.96	31.01	54.00	-22.99	349	351	Average
4824.000	51.92	-3.96	47.96	74.00	-26.04	349	351	Peak
7236.000	34.57	0.55	35.12	54.00	-18.88	341	205	Average
7236.000	52.91	0.55	53.46	74.00	-20.54	341	205	Peak
14481.000	31.88	11.41	43.29	54.00	-10.71	150	318	Average
14481.000	42.88	11.41	54.29	74.00	-19.71	150	318	Peak
16640.000	32.47	12.04	44.51	54.00	-9.49	150	360	Average
16640.000	44.47	12.04	56.51	74.00	-17.49	150	360	Peak
17745.000	31.11	12.78	43.89	54.00	-10.11	150	69	Average
17745.000	44.11	12.78	56.89	74.00	-17.11	150	69	Peak

Vertical

Description: N20-TX-2412, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz

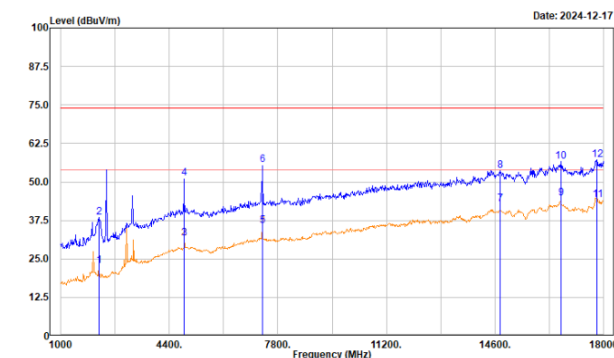


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2122.000	40.69	-12.36	28.33	54.00	-25.67	150	201	Average
2122.000	55.37	-12.36	43.01	74.00	-30.99	150	201	Peak
4824.000	34.91	-3.96	30.95	54.00	-23.05	348	112	Average
4824.000	49.71	-3.96	45.75	74.00	-28.25	348	112	Peak
7236.000	37.14	0.55	37.69	54.00	-16.31	112	61	Average
7236.000	56.74	0.55	57.29	74.00	-16.71	112	61	Peak
14464.000	31.46	11.36	42.82	54.00	-11.18	150	13	Average
14464.000	43.46	11.36	54.82	74.00	-19.18	150	13	Peak
16623.000	31.53	12.07	43.60	54.00	-10.40	150	9	Average
16623.000	43.53	12.07	55.60	74.00	-18.40	150	9	Peak
17779.000	32.66	12.85	45.51	54.00	-8.49	150	270	Average
17779.000	45.66	12.85	58.51	74.00	-15.49	150	270	Peak

Middle channel

Horizontal

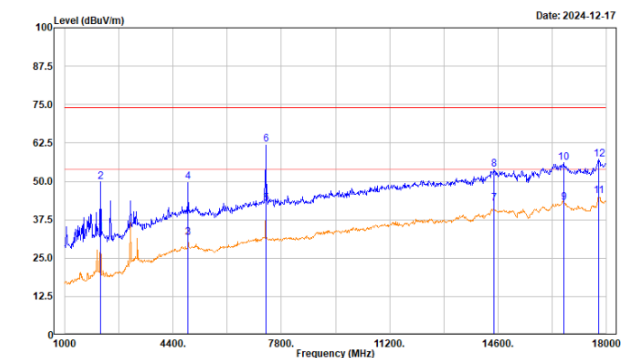
Description: N20-TX-2437, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2190.000	35.17	-12.45	22.72	54.00	-31.28	150	279	Average
2190.000	50.89	-12.45	38.44	74.00	-35.56	150	279	Peak
4874.000	35.36	-3.59	31.77	54.00	-22.23	378	3	Average
4874.000	54.87	-3.59	51.28	74.00	-22.72	378	3	Peak
7311.000	35.14	0.56	35.70	54.00	-18.30	246	212	Average
7311.000	55.05	0.56	55.61	74.00	-18.39	246	212	Peak
14753.000	31.46	11.29	42.75	54.00	-11.25	150	183	Average
14753.000	42.46	11.29	53.75	74.00	-20.25	150	183	Peak
16657.000	32.67	11.99	44.66	54.00	-9.34	150	333	Average
16657.000	44.67	11.99	56.66	74.00	-17.34	150	333	Peak
17796.000	31.38	12.88	44.26	54.00	-9.74	150	336	Average
17796.000	44.38	12.88	57.26	74.00	-16.74	150	336	Peak

Vertical

Description: N20-TX-2437, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz

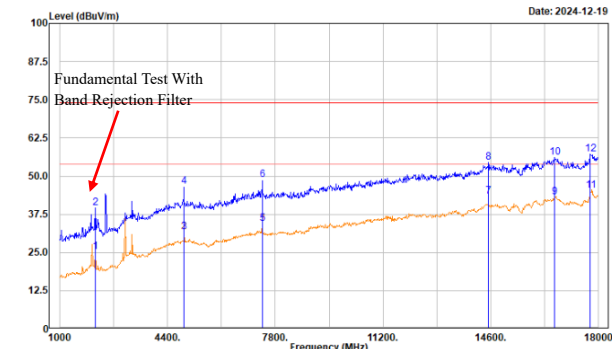


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2122.000	45.71	-12.36	33.35	54.00	-20.65	150	27	Average
2122.000	62.30	-12.36	49.94	74.00	-24.06	150	27	Peak
4874.000	35.21	-3.59	31.62	54.00	-22.38	120	123	Average
4874.000	53.40	-3.59	49.81	74.00	-24.19	120	123	Peak
7311.000	42.23	0.56	42.79	54.00	-11.21	121	59	Average
7311.000	61.42	0.56	61.98	74.00	-12.02	121	59	Peak
14481.000	31.42	11.41	42.83	54.00	-11.17	150	359	Average
14481.000	42.42	11.41	53.83	74.00	-20.17	150	359	Peak
16657.000	31.14	11.99	43.13	54.00	-10.87	150	323	Average
16657.000	44.14	11.99	56.13	74.00	-17.87	150	323	Peak
17762.000	32.43	12.83	45.26	54.00	-8.74	150	308	Average
17762.000	44.43	12.83	57.26	74.00	-16.74	150	308	Peak

High channel

Horizontal

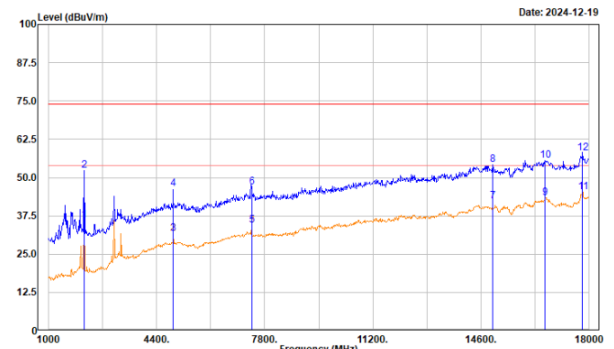
Description: N20-TX-2462, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2122.000	37.65	-12.36	25.29	54.00	-28.71	150	186	Average
2122.000	52.02	-12.36	39.66	74.00	-34.34	150	186	Peak
4924.000	35.10	-3.51	31.59	54.00	-22.41	334	5	Average
4924.000	50.02	-3.51	46.51	74.00	-27.49	334	5	Peak
7386.000	34.09	0.22	34.31	54.00	-19.69	233	22	Average
7386.000	48.50	0.22	48.72	74.00	-25.28	233	22	Peak
14532.000	31.93	11.48	43.41	54.00	-10.59	150	51	Average
14532.000	42.93	11.48	54.41	74.00	-19.59	150	51	Peak
16623.000	31.11	12.07	43.18	54.00	-10.82	150	305	Average
16623.000	44.11	12.07	56.18	74.00	-17.82	150	305	Peak
17745.000	32.38	12.78	45.16	54.00	-8.84	150	182	Average
17745.000	44.38	12.78	57.16	74.00	-16.84	150	182	Peak

Vertical

Description: N20-TX-2462, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



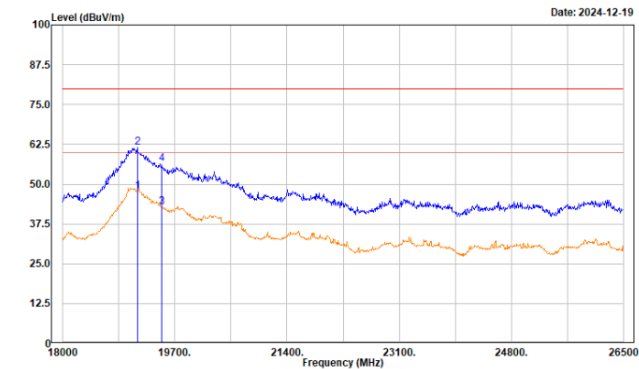
Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2122.000	48.36	-12.36	36.00	54.00	-18.00	150	49	Average
2122.000	64.79	-12.36	52.43	74.00	-21.57	150	49	Peak
4924.000	35.33	-3.51	31.82	54.00	-22.18	102	119	Average
4924.000	49.78	-3.51	46.27	74.00	-27.73	102	119	Peak
7386.000	34.08	0.22	34.30	54.00	-19.70	103	31	Average
7386.000	46.72	0.22	46.94	74.00	-27.06	103	31	Peak
14974.000	31.46	10.72	42.18	54.00	-11.82	150	217	Average
14974.000	43.46	10.72	54.18	74.00	-19.82	150	217	Peak
16623.000	31.41	12.07	43.48	54.00	-10.52	150	143	Average
16623.000	43.41	12.07	55.48	74.00	-18.52	150	143	Peak
17796.000	32.25	12.88	45.13	54.00	-8.87	150	95	Average
17796.000	45.25	12.88	58.13	74.00	-15.87	150	95	Peak

18GHz-26.5GHz:

(worst case is 802.11g Mode, middle channel)

Horizontal

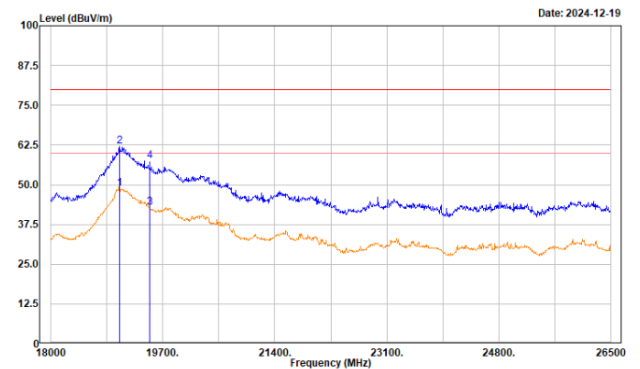
Description: G-TX-2437, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19130.500	30.25	17.37	47.62	60.00	-12.38	150	87	Average
19130.500	44.11	17.37	61.48	80.00	-18.52	150	87	Peak
19496.000	29.60	13.27	42.87	60.00	-17.13	150	44	Average
19496.000	43.06	13.27	56.33	80.00	-23.67	150	44	Peak

Vertical

Description: G-TX-2437, Peak RBW:1MHz/VBW:3MHz, Avg RBW:1MHz/VBW:1kHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19045.500	30.68	18.10	48.78	60.00	-11.22	150	261	Average
19045.500	43.87	18.10	61.97	80.00	-18.03	150	261	Peak
19496.000	29.64	13.27	42.91	60.00	-17.09	150	302	Average
19496.000	44.27	13.27	57.54	80.00	-22.46	150	302	Peak

Level = Reading + Factor.

Margin = Level - Limit.

Factor = Antenna Factor + Cable Loss - Amplifier Gain.

For 18-26.5GHz Convert the test distance limit of 3 meters to a limit of 1.5 meter:

Conversion factor = $20 \log(1.5\text{m}/3\text{m}) = 6 \text{ dB}$,Average Limit = $54+6 = 60 \text{ dBuV/m}@1\text{m}$, Peak Limit = $60+20 = 80 \text{ dBuV/m}@1.5\text{m}$

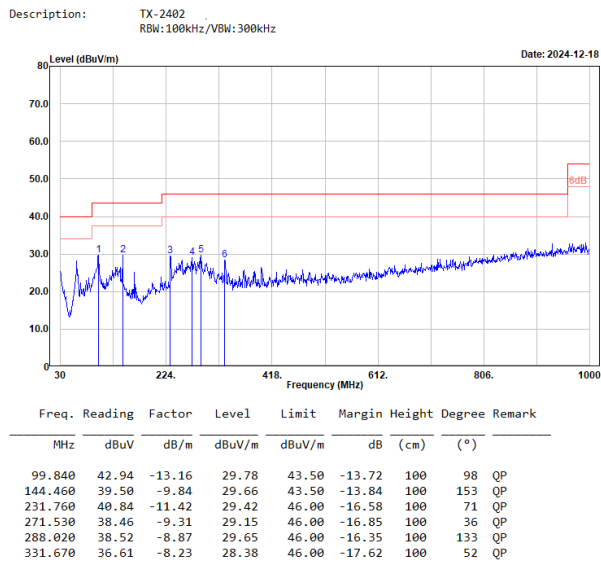
Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.
(New Taipei Laboratory)

BLE(1M) Mode

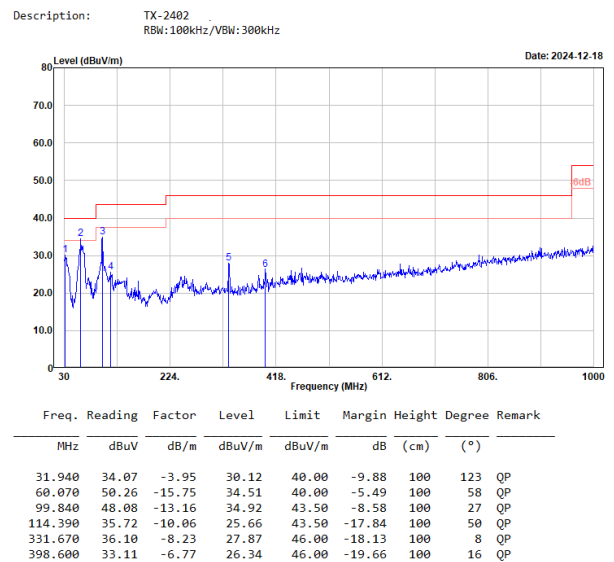
30MHz-1GHz:

Low channel

Horizontal

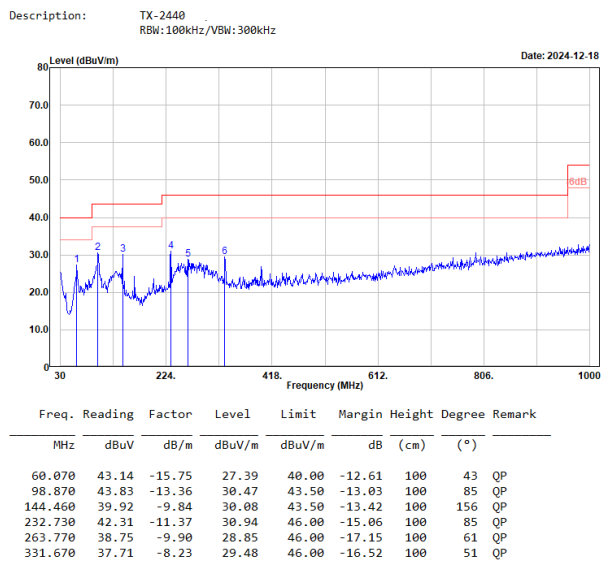


Vertical



Middle channel

Horizontal



Vertical

