



Test Report for Onset Computer Corporation
Report No. EY0826-1 Issue 5



TEST REPORT

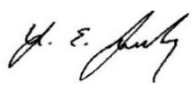
Applicant	Onset Computer Corporation
Address	470 MacArthur Blvd. Bourne, MA 02532
FCC ID	WXF-ONST8
ISED Canada IC	7936A-ONST8
Product Marketing Name (PMN)	MX1104: HOB0® MX Analog/Temp/RH/Light Data Logger MX1105: HOB0® MX 4-Channel Analog Data Logger CX460: InTemp® CX 4-Channel Analog Data Logger
Model Name or Number	MX1104, MX1105 and CX460
Hardware Version Identification Number (HVIN)	MX1104, MX1105, CX460
Firmware Version Identification Number (FVIN)	59
Model Differences	See Section 3.1 of this report for more details
Date of tests	Oct 22-28, 2024
FCC Test Firm DN Canada CABID	US1028 US0106
The tests have been carried out according to the requirements of the following standard:	
☒ FCC Part 15, Subpart C, Section 15.247 ☒ ISED Canada RSS-247 Issue 3	
CONCLUSION: The submitted sample was found to <u>COMPLY</u> with the test requirement	
Prepared by Nisha Patel Wireless Engineer I	Approved by Yunus Faziloglu EMC Manager
	
Report Issue Date: Aug 25, 2025	Issue Number: 5
This report is governed by, and incorporates by reference, CPS Conditions of Service as posted at the date of issuance of this report at https://www.cps.bureauveritas.com/terms-conditions and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.	



TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1 SUMMARY OF TEST RESULTS	5
2 MEASUREMENT UNCERTAINTY	6
3 GENERAL INFORMATION	7
3.1 GENERAL DESCRIPTION OF EUT	7
3.2 DESCRIPTION OF TEST MODES	8
3.3 MEASUREMENT PROCEDURES USED	10
3.4 DESCRIPTION OF SUPPORT EQUIPMENT	10
4 TEST RESULTS	11
4.1 RADIATED SPURIOUS EMISSIONS	11
4.1.1 LIMITS	11
4.1.2 TEST EQUIPMENT USED	12
4.1.3 TEST PROCEDURES	13
4.1.4 DEVIATIONS	14
4.1.5 TEST SETUP	14
4.1.6 EUT OPERATING CONDITIONS	15
4.1.7 TEST RESULTS	16
4.2 6dB CHANNEL BANDWIDTH & 99% OBW	33
4.2.1 LIMITS	33
4.2.2 TEST SETUP	33
4.2.3 TEST EQUIPMENT USED	33
4.2.4 TEST PROCEDURES	33
4.2.5 DEVIATIONS	34
4.2.6 EUT OPERATING CONDITIONS	34
4.2.7 TEST RESULTS	35
4.3 CONDUCTED OUTPUT POWER	38
4.3.1 LIMITS	38
4.3.2 TEST SETUP	38
4.3.3 TEST EQUIPMENT USED	38
4.3.4 TEST PROCEDURES	38
4.3.5 DEVIATIONS	38
4.3.6 EUT OPERATING CONDITIONS	38
4.3.7 TEST RESULTS	39
4.4 POWER SPECTRAL DENSITY	40
4.4.1 LIMITS	40



Test Report for Onset Computer Corporation
Report No. EY0826-1 Issue 5



4.4.2	TEST SETUP	40
4.4.3	TEST EQUIPMENT USED	40
4.4.4	TEST PROCEDURES	40
4.4.5	DEVIATIONS	40
4.4.6	EUT OPERATING CONDITIONS	40
4.4.7	TEST RESULTS	41
4.5	CONDUCTED SPURIOUS EMISSIONS AND BAND-EDGES	43
4.5.1	LIMITS	43
4.5.2	TEST SETUP	43
4.5.3	TEST EQUIPMENT USED	43
4.5.4	TEST PROCEDURES	43
4.5.5	DEVIATIONS	44
4.5.6	EUT OPERATING CONDITIONS	44
4.5.7	TEST RESULTS	45
5	PHOTOGRAPHS OF THE TEST CONFIGURATION	51
6	APPENDIX A – MODIFICATIONS	52



Test Report for Onset Computer Corporation
Report No. EY0826-1 Issue 5



RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED	PREPARED BY	APPROVED BY
1	Original release	Nov 7, 2024	YF	AA
2	To address TCB review findings: - Removed "Notch Filter Range (2.2-2.8GHz)" from the Radiated Band-edge title on Page 29. - Test setup and Test equipment used references updated to 4.2.2 & 4.2.3 respectively for the sections 4.3, 4.4 and 4.5. - Replaced the spectrum analyzer screenshots on Pg 48 with better resolution versions.	Jun 12, 2025	NP	YF
3	To address TCB review findings: - Added Pre-scan plots in section 4.1.7. - Test setup Block diagram updated in section 4.2.2.	Jun 25, 2025	NP	YF
4	To address TCB review findings: - HVIN and PMN are updated on the cover page.	Aug 19, 2025	NP	YF
5	- PMN information updated on the cover page.	Aug 25, 2025	NP	YF

1 SUMMARY OF TEST RESULTS

EUT was tested against the following requirements:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247), RSS-247				
STANDARD SECTION		TEST TYPE AND LIMIT	APPLICABLE	RESULT
47CFR15	RSS			
15.207	Gen 8.8	AC Power Line Conducted Emissions	N/A	See Note 1
15.205 15.209	247 3.3 247 5.5 Gen 8.9 Gen 8.10	Radiated Spurious Emissions	Y	PASS
15.247(d)	247 5.5	Conducted Spurious Emissions	Y	PASS
15.247(a)(2)	247 5.2(a)	6dB Bandwidth	Y	PASS
--	Gen 6.7	99% Occupied Bandwidth	Y	PASS
15.247(b)(3)	247 5.4(d)	Conducted Output Power	Y	PASS
15.247(e)	247 5.2(b)	Power Spectral Density	Y	PASS
15.203	Gen 6.8	Antenna Requirement	Y	PASS

Note 1: EUT is battery powered.

2 MEASUREMENT UNCERTAINTY

The listed uncertainties are the worst-case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results. Values for measurement uncertainty are calculated per ETSI TR 100 028 (2001).

Measurement	Expanded Uncertainty k=2	Maximum allowable uncertainty
Radio frequency (@ 2.4GHz)	3.23×10^{-8}	1×10^{-7}
RF power, conducted	0.40dB	0.75dB
Maximum frequency deviation: Within 300Hz and 6kHz of audio frequency / Within 6kHz and 25kHz of audio frequency	3.4% 0.3dB	5% 3dB
Adjacent channel power	1.9dB	3dB
Conducted spurious emission of transmitter, valid up to 12.75GHz	2.39dB	3dB
Conducted emission of receivers	1.3dB	3dB
Radiated emission of transmitter, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of transmitter, valid up to 80GHz	3.3dB	6dB
Radiated emission of receiver, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of receiver, valid up to 80GHz	3.3dB	6dB
Humidity	2.37%	5%
Temperature	0.7°C	1.0°C
Time	4.1%	10%
RF Power Density, Conducted	0.4dB	3dB
DC and low frequency voltages	1.3%	3%
Voltage (AC, <10kHz)	1.3%	2%
Voltage (DC)	0.62%	1%
The above reflects a 95% confidence level		

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Nominal Voltage	3.0VDC
Modulation Technology	DTS
Modulation Types	GFSK
Data Rates	1Mbps (GFSK)
Operating Frequency	2402 – 2480MHz
EUT Power Setting	0dBm (Maximum Customer Declared Setting)
Measured Output Power	0.27mW (Average Conducted)
Antenna Type	Internal non-detachable SMT ceramic chip with 1.3dBi gain
Customer Supplied Information	

List of Models and Differences:

Model	Description	Tested
MX1105	With 4 external analog inputs. No on-board sensors. PCB is identical to MX1104 with component population differences. RF circuit is identical to MX1104.	Yes (Full testing)
MX1104	With on-board temperature, humidity and light intensity sensor, plus one channel for an external analog input.	Yes (Radiated pre-scans only)
CX460	Identical to MX1105. Labeled as CX460 for marketing purposes.	No

MX1105 Ports:

Port Label	Port Type	No. of ports	Populated	Cable Type	Shielded	Ferrites	Length	Max Length
Ch1	Analog	1	Yes	2-Wire	Yes	No	0.3m	0.3m
Ch2	Analog	1	Yes	2-Wire	Yes	No	0.3m	0.3m
Ch3	Analog	1	Yes	2-Wire	Yes	No	0.3m	0.3m
Ch4	Analog	1	Yes	2-Wire	Yes	No	0.3m	0.3m

MX1104 Ports:

Port Label	Port Type	No. of ports	Populated	Cable Type	Shielded	Ferrites	Length	Max Length
Ch1	Analog	1	Yes	2-Wire	Yes	No	0.3m	0.3m

Highest clock frequency in the device (used/generated): 2480MHz

For a more detailed description of the EUT, please refer to the manufacturer's specifications or the user's manual.

For photos of the EUT, please refer to External and Internal Photos exhibits.

3.2 DESCRIPTION OF TEST MODES

EUT has 40 operating channels as shown below:

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

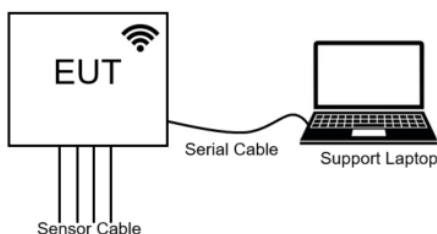
2 samples of MX1105 were provided for testing; 1 for radiated measurements and 1 with an SMA connector for conducted antenna port measurements. 1 radiated sample of MX1104 was provided for pre-scans. A support laptop with control software and a serial interface cable was supplied by the customer for the necessary test mode setup. Extra batteries were provided by the customer to maintain fresh battery levels during the tests.

EUT configuration modes:

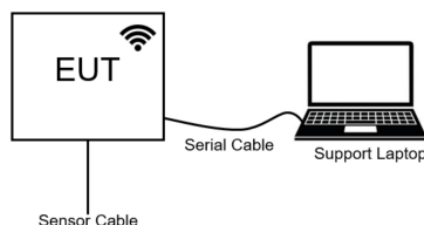
TEST MODE	DESCRIPTION
A	Transmit at 1Mbps (Duty-cycle: 63.26%)

EUT SETUP BLOCK DIAGRAMS

Radiated Emissions EUT Setup



MX1105 Setup



MX1104 Setup

Support laptop and serial cable were removed from the REMI chamber after necessary test modes were set up.

Following channels/modes were selected for the applicable tests below.

TEST	TEST MODE	AVAILABLE CHANNELS	TESTED CHANNEL	MODULATION TYPE	DATA RATE (Mbps)	Notes
COP	A	0 to 39	0,19,39	GFSK	1Mbps	1
PSD	A	0 to 39	0,19,39	GFSK	1Mbps	1
CBE	A	0 to 39	0,39	GFSK	1Mbps	1
6DB	A	0 to 39	0,19,39	GFSK	1Mbps	1
OBW	A	0 to 39	0,19,39	GFSK	1Mbps	1
CSE	A	0 to 39	0,19,39	GFSK	1Mbps	1
RSE<1G	A	0 to 39	0,19,39	GFSK	1Mbps	2, 3, 4
RSE≥1G	A	0 to 39	0,19,39	GFSK	1Mbps	2, 3
RBE	A	0 to 39	0,39	GFSK	1Mbps	2, 3
PLCE	-	-	-	-	-	5

Note 1: Since RF circuits are identical between MX1104 and MX1105, only MX1105 was tested for antenna port requirements.

Note 2: Based on pre-scan results of MX1104 and MX1105, MX1105 was identified as the worst-case model. All final radiated measurements as shown in this report were performed on MX1105.

Note 3: For radiated emissions, worst-case orientation was found when the EUT was positioned on Y axis as shown in the Test Setup Photos exhibit.

Note 4: Testing below 30MHz was limited to 1 channel only since no emissions were detected in this range.

Note 5: Not applicable since EUT is battery powered only.

COP: Conducted Output Power

PSD: Power Spectral Density

CBE: Conducted Band-edge

6DB: 6dB Bandwidth

OBW: 99% Occupied Bandwidth

CSE: Conducted Spurious Emissions

RSE<1G: Radiated Spurious Emissions Below 1GHz

RSE≥1G: Radiated Spurious Emissions Above 1GHz

RBE: Radiated Band-edge

PLCE: Power Line Conducted Emissions

TEST CONDITIONS:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY	DATE OF TEST
RE<1G	22.2°C, 50.4% RH, 1005 mbar	3VDC	NP	Oct 23, 2024
RE≥1G	20.7°C, 50.1% RH, 1016 mbar 22.2°C, 50.4% RH, 1005 mbar	3VDC	NP	Oct 22, 2024 Oct 23, 2024
Antenna Port	20.4°C, 53.1% RH, 1022 mbar	3VDC	YF	Oct 28, 2024



3.3 MEASUREMENT PROCEDURES USED

All tests were performed in accordance with the following measurement procedures:

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10-2013

3.4 DESCRIPTION OF SUPPORT EQUIPMENT

Support Equipment	Model #	Serial #	Comments
Laptop (Customer supplied)	Dell Latitude 5250	-	For necessary test mode setup

4 TEST RESULTS

4.1 RADIATED SPURIOUS EMISSIONS

4.1.1 LIMITS

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emissions limits specified in Section 15.209(a).

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/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

NOTE:

- Lower limit applies at the transition frequencies.
- As specified in 15.35(b), for frequencies above 1000MHz, field strength limits are based on the use of measurement instrumentation employing an average detector function. However, there is also a limit on the peak level of the emissions that is 20 dB above the maximum permitted average emission limit.
- Measurements above 6GHz or 18GHz can be performed at distances less than 3m from the EUT due to increased noise floor of the measurement system. Since such measurements produce higher amplitudes than what they would be if they were measured at 3 meters, this would be considered worst-case and no compensation back to 3 meters is needed. Limit conversion above 30MHz is done by using inverse linear distance extrapolation factor (20dB/decade) as allowed in FCC 15.31(f)(1).

$$\text{Limit}(1\text{m}) = \text{Limit}(3\text{m}) + 20 \cdot \log(3/1) = \text{Limit}(3\text{m}) + 9.5$$

$$\text{Limit}(0.1\text{m}) = \text{Limit}(3\text{m}) + 20 \cdot \log(3/0.1) = \text{Limit}(3\text{m}) + 29.5$$
- Limit conversion below 30MHz is done by using the square of an inverse linear distance extrapolation factor (40 dB/decade) as allowed in FCC 15.31(f)(2).

$$\text{Limit}(3\text{m}) = \text{Limit}(30\text{m}) + 40 \cdot \log(30/3) = \text{Limit}(30\text{m}) + 40$$

$$\text{Limit}(3\text{m}) = \text{Limit}(300\text{m}) + 40 \cdot \log(300/3) = \text{Limit}(300\text{m}) + 80$$
- Adjusted Reading (dBuV/m) = Raw Reading (dBuV) + Transducer(Correction) Factor (dB/m)
 Transducer Factor (dB/m) = Antenna Factor (dB/m) – PreAmp Gain (dB) + Cable Loss (dB) + Filter Loss (dB)
 Note: Filter loss only applies if a notch filter is used during testing.
- RSS-GEN Table 6 H-field limits are 51.5dB lower than FCC 15.209(a) E-field limits. Measurements are performed in terms of magnetic field and converted to electric field using the free space impedance of 377Ω (E-field = H-field + 51.5). Therefore resulting pass/fail margin would be the same if an E-field reading is compared to an E-field limit or an H-field reading is compared to an H-field limit.



Test Report for Onset Computer Corporation Report No. EY0826-1 Issue 5



4.1.2 TEST EQUIPMENT USED

Rev. 11/4/2024

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Asset	Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz	1685	I	9/19/2025	9/19/2024
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz	1685	I	9/19/2025	9/19/2024
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	1686	I	9/19/2025	9/19/2024
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz	1686	I	9/19/2025	9/19/2024
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	11/2/2025	11/2/2023
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	3/27/2025	3/27/2023
3116C Horn / PA	18-40GHz	3116C	ETS	258845	2852	I	3/21/2026	3/21/2024
2615 Active Loop Antenna	9KHz-30MHz	6502	EMCO	2049	2615	I	1/18/2025	1/18/2023
Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
8447F Rental PA	9KHz-1.3GHz	84477F	HP	3113A05395		II	10/14/2025	10/14/2024
2116 BRF	0.009-18000MHz	BRM50702	Micro-Tronics	G226	2116	II	12/5/2024	12/5/2023
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2054	9kHz - 18GHz		Florida RF			II	11/4/2025	11/4/2024
Asset #2466	9KHz-18GHz		MegaPhase			II	11/4/2025	11/4/2024
Asset #2608	9KHz-18GHz		Pasternack			II	10/29/2025	10/29/2024
Asset #2681	9KHz-18GHz		Pasternack			II	12/7/2024	12/7/2023
Asset #3011	9KHz-18GHz		Pasternack			II	10/28/2025	10/28/2024
Meteorological Meters/Chambers		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Asset 2848		SD700	EXTECH	A.115171	2848	I	1/13/2025	1/13/2023
Asset #2847		1235C97	Control Company	200435382	2847	I	8/18/2025	8/18/2022
Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gauss TDEMI Ultra 40	9kHz-40Ghz	TDEMI Ultra 40	Gauss	2305001	2712	1	7/23/2025	7/23/2024

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber.
- b. For below 30MHz, a loop antenna with its lowest point 1m above the ground was placed 3m away from the EUT and it was rotated 0 and 90 degrees around its vertical axis.
- c. In 30MHz-1GHz range, a biconilog antenna was mounted on a variable-height antenna tower and placed 3m away from the EUT. Antenna height was varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were investigated. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. In 1GHz-18GHz range, a horn antenna was mounted on a variable-height antenna tower and placed 3m away from the EUT. Antenna height was varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were investigated. The table was rotated 360 degrees to determine the position of the highest radiation.
- e. In 18-25GHz range, a smaller horn antenna was used to perform measurements at 1m away from the EUT.
- f. For battery operated equipment, tests were performed using fresh batteries.
- g. Following bandwidths were used during emissions testing:

Freq. (MHz)	RBW	VBW	Pre-scan	Final
0.009-0.15	200Hz	1kHz	Peak	Not performed based on pre-scan results
0.15-30	9kHz	30kHz	Peak	Not performed based on pre-scan results
30-1000	120kHz	300kHz	Peak	Quasi Peak
>1000	1MHz	3MHz	Peak	Peak Max Hold and RMS Power Avg (Max Hold)

Per FCC §15.209(d), limits §15.209(a) are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. If peak measurements in these frequency bands were below the applicable limits, QPk and RMS measurements were not performed.

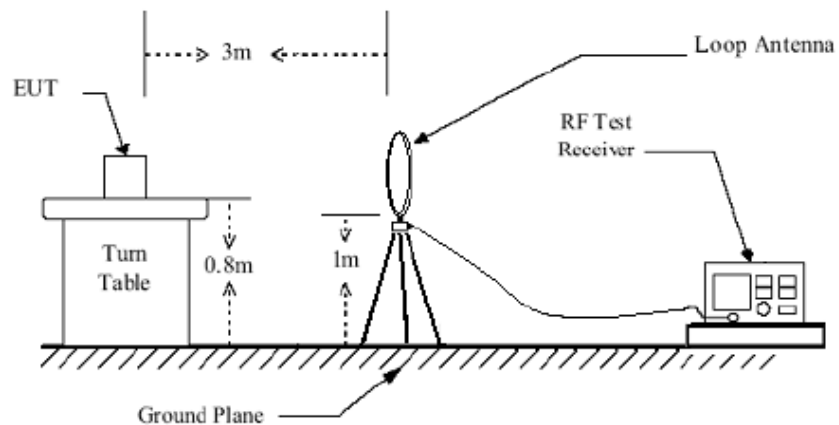
RMS power averaging default mode in measurement software is trace max-hold.

4.1.4 DEVIATIONS

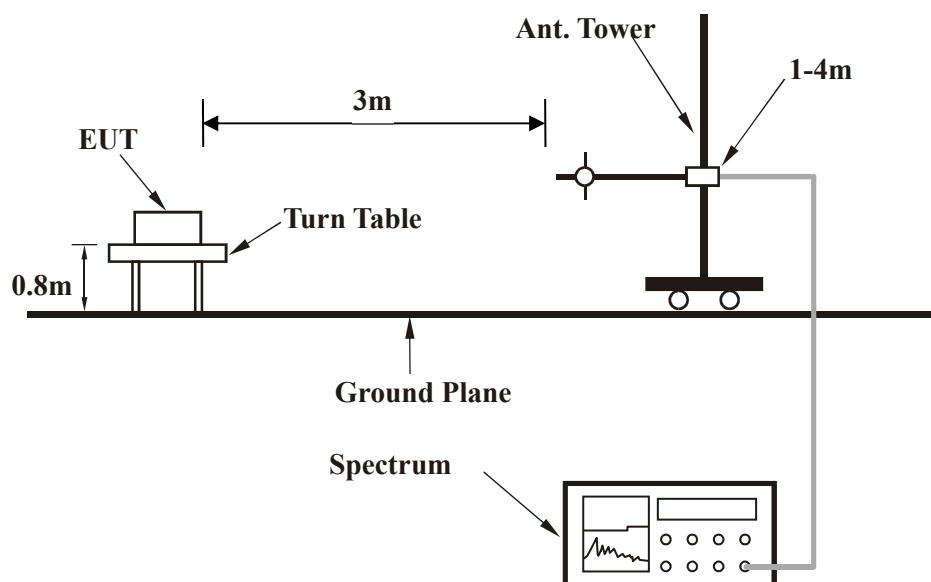
No deviations from the standard.

4.1.5 TEST SETUP

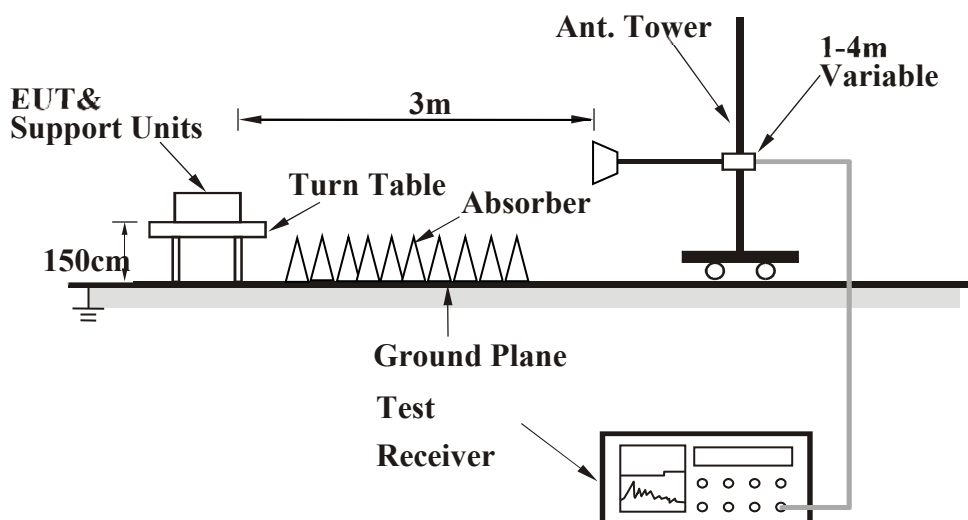
Below 30MHz Test Setup



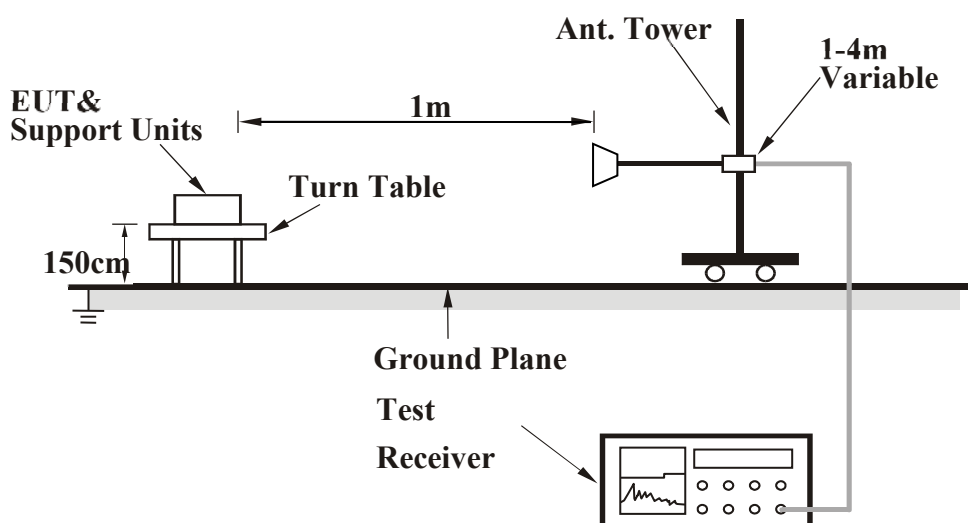
30MHz - 1GHz Test Setup



1GHz – 18GHz Test Setup



18GHz – 25GHz Test Setup



Note: For the actual test configuration, please refer to the Test Setup Photos exhibit.

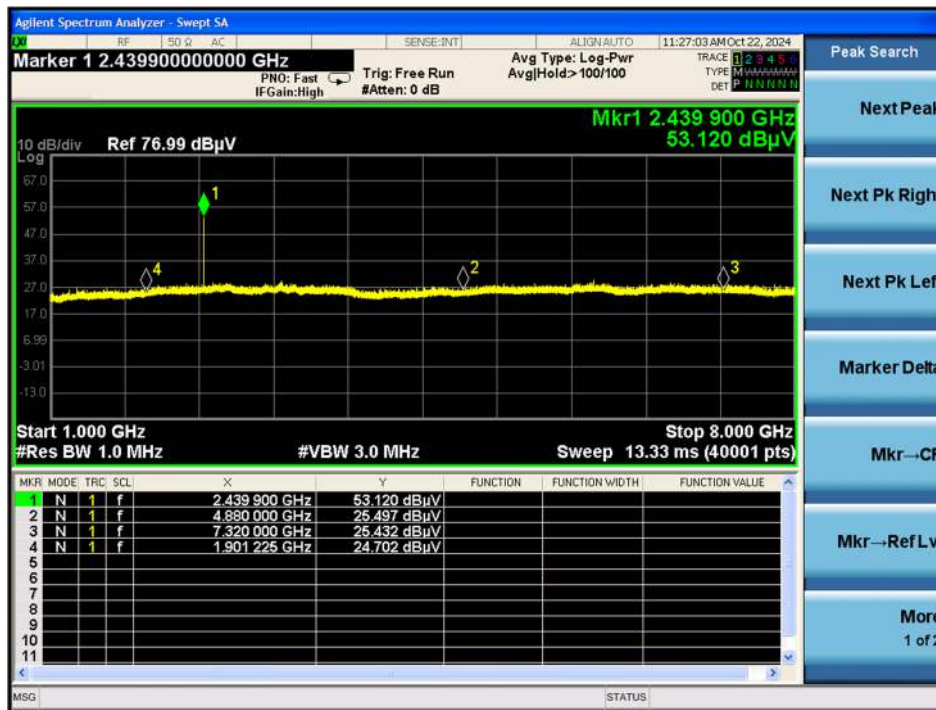
4.1.6 EUT OPERATING CONDITIONS

EUT was operated according to the manufacturer's specifications.

4.1.7 TEST RESULTS

Pre-Scans Only

Model: MX1104

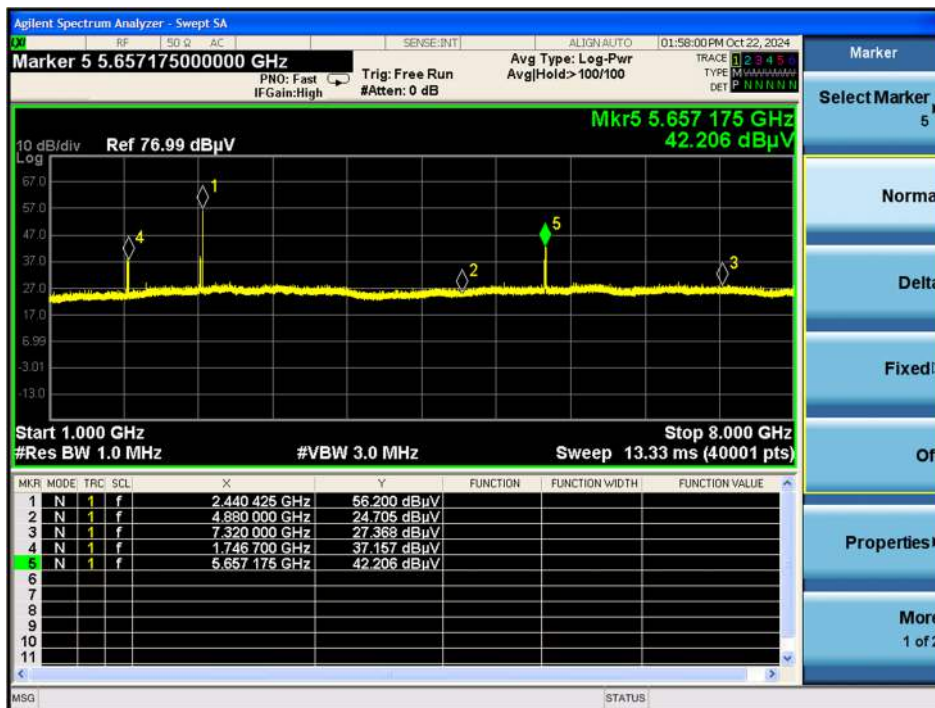


Vertical

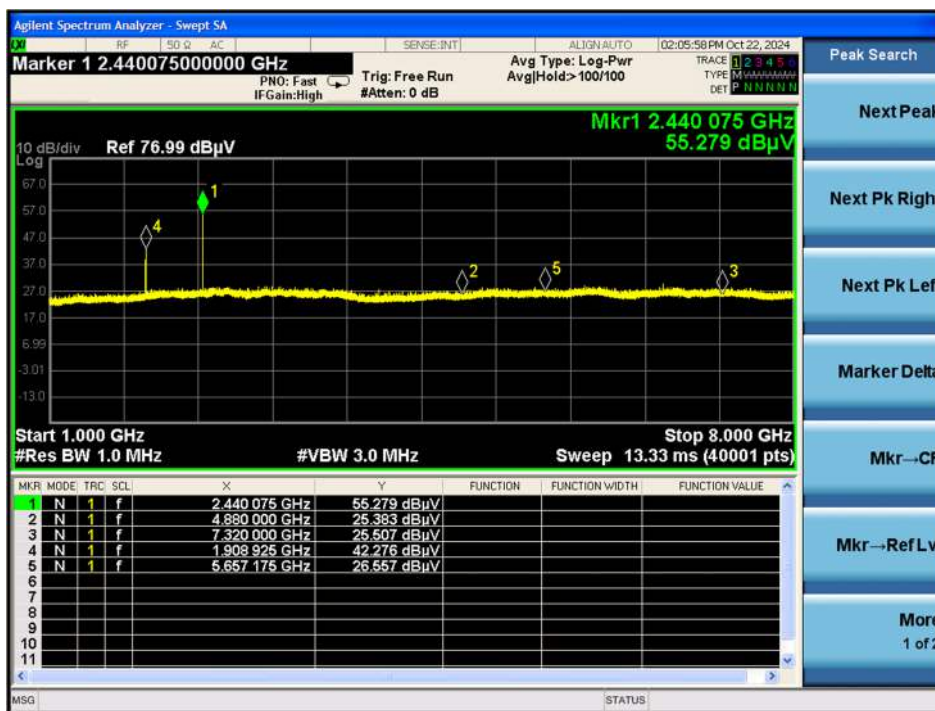


Horizontal

Model: MX1105



Vertical

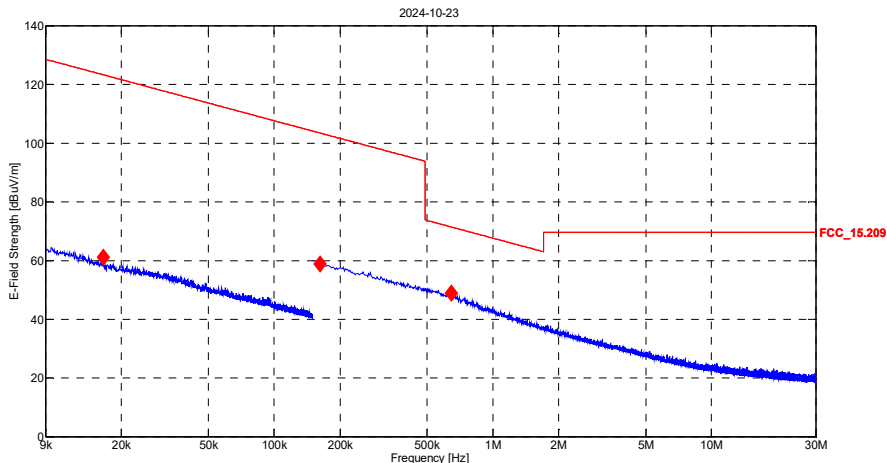


Horizontal

Final Measurements on Model MX1105

9kHz-30MHz

BLE 1Mbps Channel 19



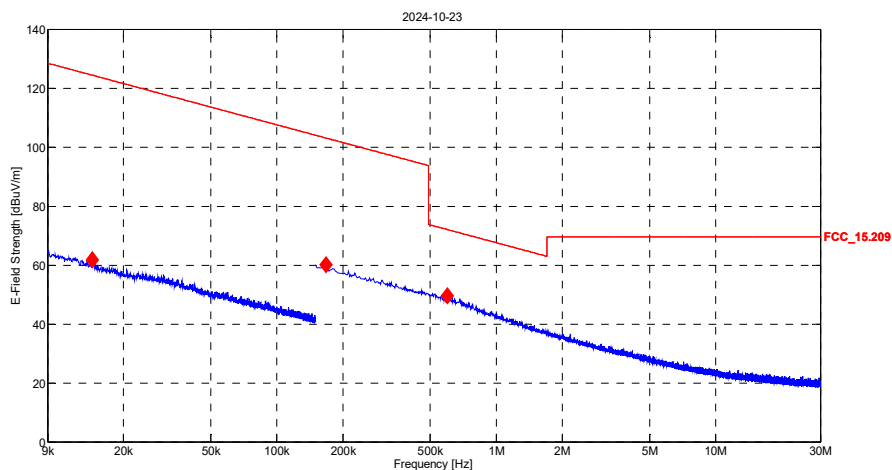
Scan1: 9.0 kHz, 100.0 Hz, 150.0 kHz; IF:200Hz, 100.0 ms MaxPeak, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Height [cm]	Angle [°]	Trans	Name	
16.5 kHz	61.07	123.25	62.17	Parallel	100	298.489	14.71	FCC 15.209	

Scan2: 150.0 kHz, 5.0 kHz, 30.0 MHz; IF:9kHz, 100.0 ms MaxPeak, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Height [cm]	Angle [°]	Trans	Name	
162.5 kHz	58.77	103.38	44.61	Parallel	100	21.435	10.00	FCC 15.209	
645 kHz	48.88	71.41	22.53	Parallel	100	262.778	10.31	FCC 15.209	

9kHz-30MHz Parallel



Scan1: 9.0 kHz, 100.0 Hz, 150.0 kHz; IF:200Hz, 100.0 ms MaxPeak, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Height [cm]	Angle [°]	Trans	Name	
14.45 kHz	61.80	124.40	62.60	Perpendicular	100	359.778	15.76	FCC 15.209	

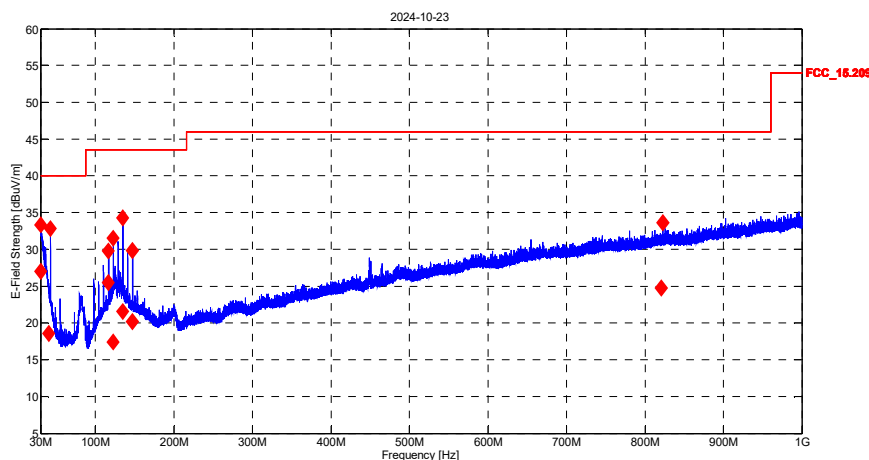
Scan2: 150.0 kHz, 5.0 kHz, 30.0 MHz; IF:9kHz, 100.0 ms MaxPeak, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Height [cm]	Angle [°]	Trans	Name	
167.5 kHz	60.14	103.12	42.98	Perpendicular	100	31.57	10.00	FCC 15.209	
600 kHz	49.47	72.04	22.57	Perpendicular	100	278.467	10.26	FCC 15.209	

9kHz-30MHz Perpendicular

30MHz-1GHz

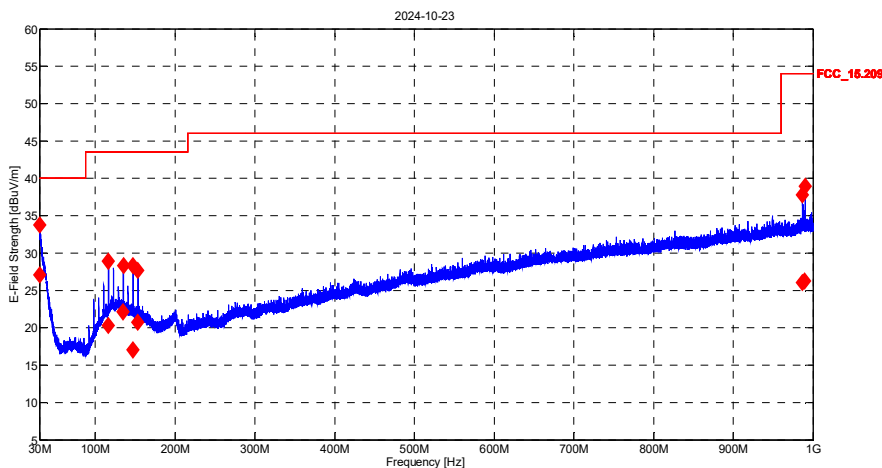
BLE 1Mbps Channel 0



Final 1: 30.0 MHz, 50.0 kHz, 825.0 MHz; IF:120kHz, 200.0 ms QP, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
30.175 MHz	27.02	40.00	12.98	V	344.006	100	0.60	FCC 15.209
40.85 MHz	18.56	40.00	21.44	V	212.98	149.8	-7.40	FCC 15.209
116.4 MHz	25.51	43.50	17.99	V	291.02	100	-7.72	FCC 15.209
122.525 MHz	17.44	43.50	26.06	V	294.581	118.9	-7.04	FCC 15.209
134.8 MHz	21.58	43.50	21.92	V	43.962	100	-6.74	FCC 15.209
147.05 MHz	20.20	43.50	23.30	V	312.924	143.2	-7.54	FCC 15.209
821 MHz	24.73	46.00	21.27	V	115.74	247.367	3.04	FCC 15.209

30MHz-1GHz Vertical

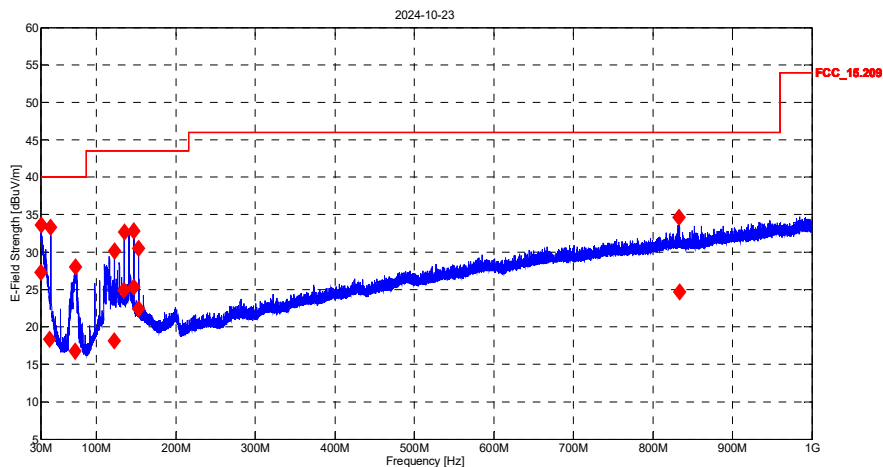


Final 1: 30.0 MHz, 50.0 kHz, 992.0 MHz; IF:120kHz, 200.0 ms QP, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
30.25 MHz	27.05	40.00	12.95	H	130.994	129.06	0.60	FCC 15.209
116.45 MHz	20.33	43.50	23.17	H	259.59	400	-7.75	FCC 15.209
134.8 MHz	22.10	43.50	21.40	H	65.644	200	-6.75	FCC 15.209
147.075 MHz	17.06	43.50	26.44	H	222.62	250.1	-7.53	FCC 15.209
153.175 MHz	20.78	43.50	22.72	H	222.62	250	-7.79	FCC 15.209
986.45 MHz	26.08	54.00	27.92	H	0	300	5.56	FCC 15.209
989.225 MHz	26.32	54.00	27.68	H	0	378.533	5.58	FCC 15.209

30MHz-1GHz Horizontal

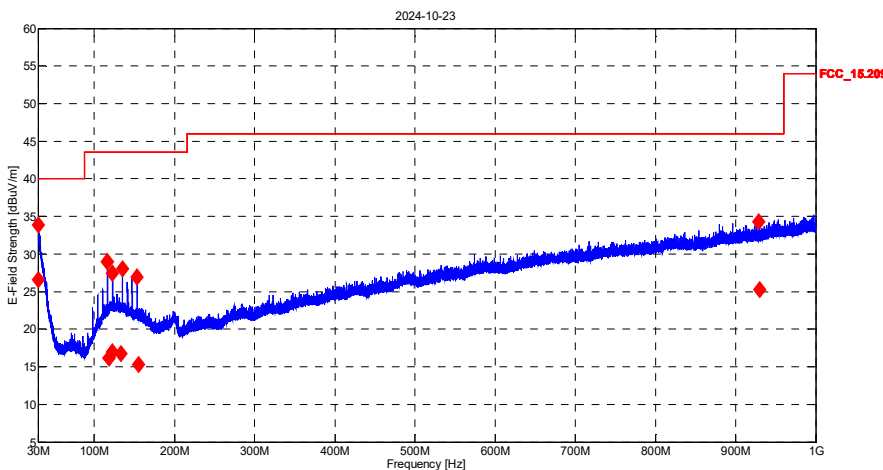
BLE 1Mbps Channel 19



Final 1: 30.0 MHz, 50.0 kHz, 835.4 MHz; IF:120kHz, 200.0 ms QP, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
30.175 MHz	27.26	40.00	12.74	V	167.024	129.08	0.60	FCC 15.209
40.925 MHz	18.37	40.00	21.63	V	210.181	168.6	-7.46	FCC 15.209
73.5 MHz	16.75	40.00	23.25	V	360	270.7	-13.30	FCC 15.209
122.55 MHz	18.15	43.50	25.35	V	348.73	100	-7.03	FCC 15.209
134.825 MHz	24.91	43.50	18.59	V	26.354	100	-6.75	FCC 15.209
147.075 MHz	25.33	43.50	18.17	V	11.318	100	-7.54	FCC 15.209
153.25 MHz	22.43	43.50	21.07	V	248.602	119.167	-7.79	FCC 15.209
834.1 MHz	24.71	46.00	21.29	V	76.3	398.967	3.04	FCC 15.209

30MHz-1GHz Vertical

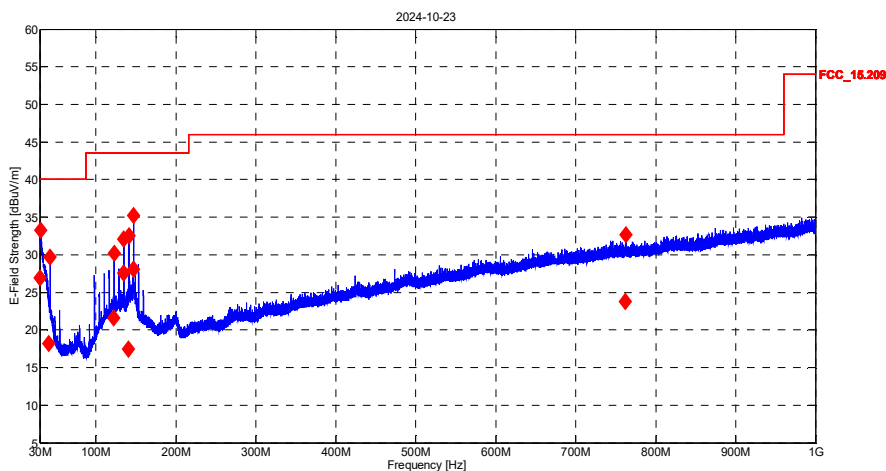


Final 1: 30.0 MHz, 50.0 kHz, 930.4 MHz; IF:120kHz, 200.0 ms QP, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
30.1 MHz	26.54	40.00	13.46	H	219.451	221.2	0.60	FCC 15.209
118.5 MHz	16.14	43.50	27.36	H	267.872	254.32	-7.73	FCC 15.209
122.75 MHz	16.99	43.50	26.51	H	260.42	249.033	-7.06	FCC 15.209
133.125 MHz	16.75	43.50	26.75	H	61.72	250.08	-6.75	FCC 15.209
155.45 MHz	15.27	43.50	28.23	H	223.56	150	-7.79	FCC 15.209
929.8 MHz	25.26	46.00	20.74	H	35.879	297.4	4.35	FCC 15.209

30MHz-1GHz Horizontal

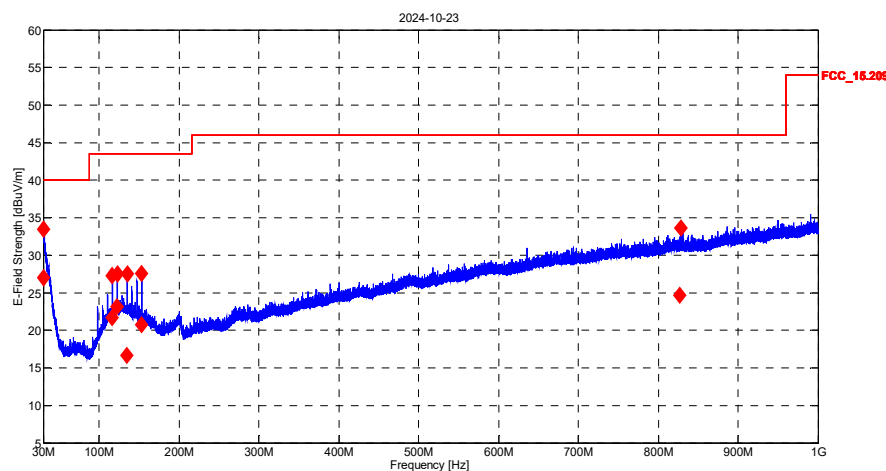
BLE 1Mbps Channel 39



Final 1: 30.0 MHz, 50.0 kHz, 764.8 MHz; IF:120kHz, 200.0 ms QP, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name	
30.1 MHz	26.92	40.00	13.08	V	212.489	330.867	0.60	FCC 15.209	
40.95 MHz	18.22	40.00	21.78	V	165.72	109.7	-7.48	FCC 15.209	
122.625 MHz	21.62	43.50	21.88	V	347.57	113.05	-7.03	FCC 15.209	
134.825 MHz	27.62	43.50	15.88	V	64.5	100	-6.75	FCC 15.209	
140.925 MHz	17.51	43.50	25.99	V	75.243	150.1	-7.20	FCC 15.209	
147.075 MHz	28.08	43.50	15.42	V	75.243	109.5	-7.54	FCC 15.209	
762.25 MHz	23.84	46.00	22.16	V	190.924	325.767	1.77	FCC 15.209	

30MHz-1GHz Vertical



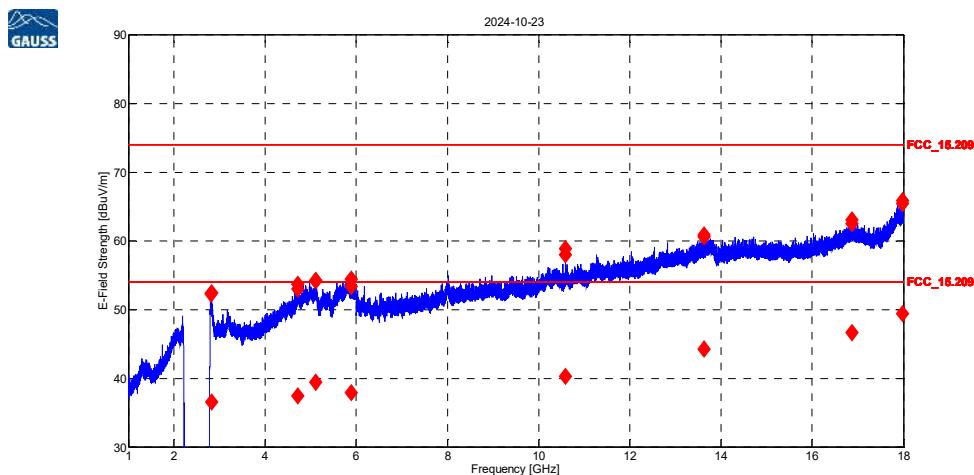
Final 1: 30.0 MHz, 50.0 kHz, 830.2 MHz; IF:120kHz, 200.0 ms QP, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name	
30.1 MHz	27.03	40.00	12.97	H	314.529	123.96	0.60	FCC 15.209	
116.45 MHz	21.72	43.50	21.78	H	269.991	295	-7.74	FCC 15.209	
122.6 MHz	23.17	43.50	20.33	H	262.583	384.235	-7.03	FCC 15.209	
134.8 MHz	16.64	43.50	26.86	H	71.072	150	-6.75	FCC 15.209	
153.25 MHz	20.72	43.50	22.78	H	247.848	250	-7.79	FCC 15.209	
827.1 MHz	24.66	46.00	21.34	H	228.66	109	3.02	FCC 15.209	

30MHz-1GHz Horizontal

1-18GHz

BLE 1Mbps Channel 0



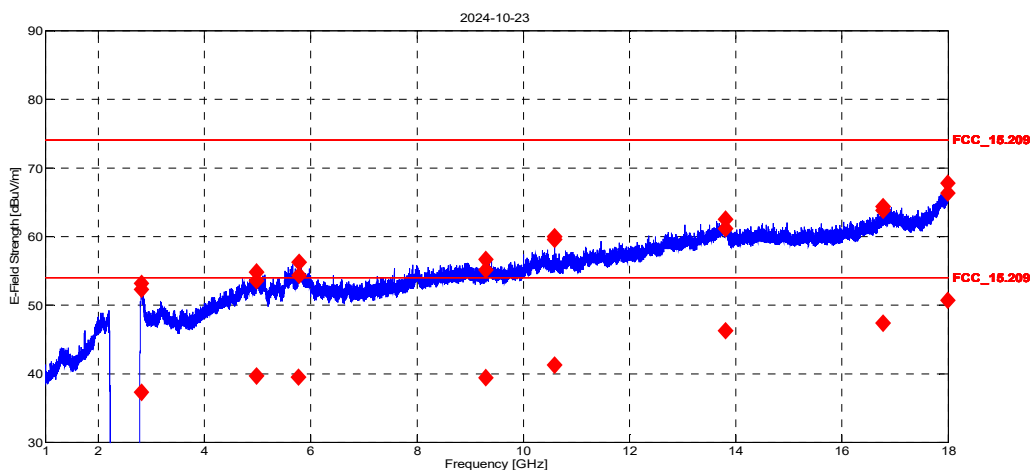
Final 1: 2.8 GHz, 50.0 kHz, 18.0 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.817 GHz	52.23	74.00	21.77	V	307.433	175.038	41.17	FCC 15.209
4.714 GHz	52.97	74.00	21.03	V	104.635	190.762	39.67	FCC 15.209
5.1125 GHz	54.21	74.00	19.79	V	37.612	225.83	39.66	FCC 15.209
5.8895 GHz	53.33	74.00	20.67	V	161.715	100	40.99	FCC 15.209
10.58775 GHz	58.83	74.00	15.17	V	321.967	162.208	45.25	FCC 15.209
13.6255 GHz	60.57	74.00	13.43	V	247.8	103.243	48.79	FCC 15.209
16.865 GHz	62.53	74.00	11.47	V	159.767	168.203	51.31	FCC 15.209
17.979 GHz	65.43	74.00	8.57	V	24.8	181.576	54.08	FCC 15.209

Final 2: 2.8 GHz, 50.0 kHz, 18.0 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.819 GHz	36.54	54.00	17.46	V	307.433	182.522	41.17	FCC 15.209
4.716 GHz	37.45	54.00	16.55	V	104.635	100	39.67	FCC 15.209
5.11175 GHz	39.43	54.00	14.57	V	37.612	126.751	39.66	FCC 15.209
5.8875 GHz	37.88	54.00	16.12	V	161.715	100	40.99	FCC 15.209
10.5885 GHz	40.28	54.00	13.72	V	321.967	115.885	45.25	FCC 15.209
13.62625 GHz	44.22	54.00	9.78	V	247.8	148.695	48.79	FCC 15.209
16.86375 GHz	46.60	54.00	7.40	V	159.767	100	51.31	FCC 15.209
17.98025 GHz	49.44	54.00	4.56	V	24.8	177.873	54.08	FCC 15.209

1-18GHz Vertical



Final 1: 2.8 GHz, 50.0 kHz, 18.0 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

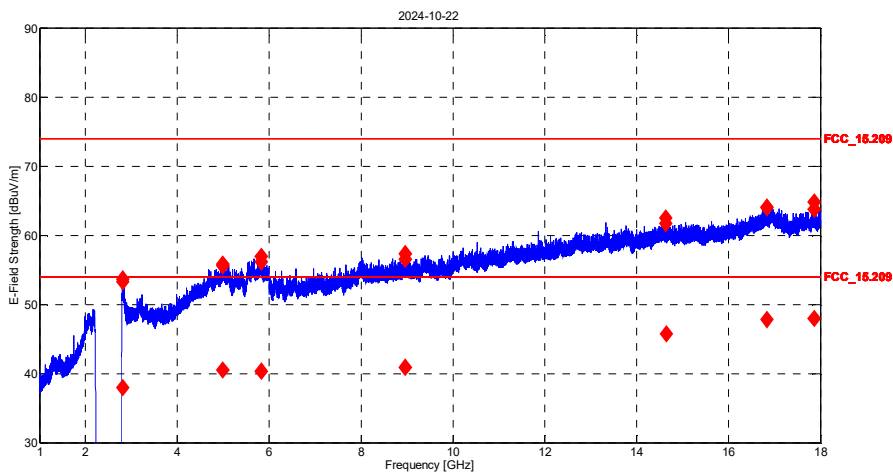
f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name	
2.80775 GHz	52.28	74.00	21.72	H	309.488	100.059	41.54	FCC 15.209	
4.977 GHz	53.57	74.00	20.43	H	116.677	120.769	39.37	FCC 15.209	
5.7735 GHz	54.32	74.00	19.68	H	75.765	119.511	40.90	FCC 15.209	
9.29475 GHz	55.11	74.00	18.89	H	0	292.407	43.25	FCC 15.209	
10.588 GHz	59.97	74.00	14.03	H	0	151.695	45.25	FCC 15.209	
13.8105 GHz	61.15	74.00	12.85	H	107.517	200	48.68	FCC 15.209	
16.7715 GHz	63.75	74.00	10.25	H	329.034	100	51.15	FCC 15.209	
17.991 GHz	66.32	74.00	7.68	H	189.1	116.585	54.05	FCC 15.209	

Final 2: 2.8 GHz, 50.0 kHz, 18.0 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name	
2.809 GHz	37.29	54.00	16.71	H	309.488	100.059	41.54	FCC 15.209	
4.97775 GHz	39.67	54.00	14.33	H	116.677	108.254	39.37	FCC 15.209	
5.772 GHz	39.52	54.00	14.48	H	75.765	100.027	40.90	FCC 15.209	
9.294 GHz	39.39	54.00	14.61	H	0	100	43.25	FCC 15.209	
10.5885 GHz	41.22	54.00	12.78	H	0	200	45.25	FCC 15.209	
13.8105 GHz	46.27	54.00	7.73	H	107.517	100	48.68	FCC 15.209	
16.772 GHz	47.31	54.00	6.69	H	329.034	177.038	51.15	FCC 15.209	
17.989 GHz	50.65	54.00	3.35	H	189.1	100	54.05	FCC 15.209	

1-18GHz Horizontal

BLE 1Mbps Channel 19



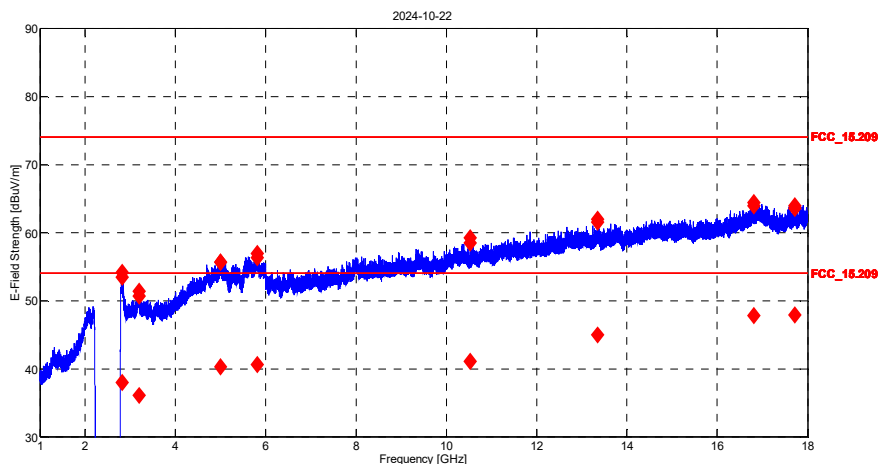
Final 1: 2.8 GHz, 50.0 kHz, 17.9 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.813 GHz	53.72	74.00	20.28	V	309.633	126.94	43.29	FCC 15.209
4.985 GHz	55.85	74.00	18.15	V	306.667	137.254	41.88	FCC 15.209
5.82475 GHz	56.12	74.00	17.88	V	80.967	100	43.51	FCC 15.209
8.961 GHz	56.58	74.00	17.42	V	340.496	163.6	46.13	FCC 15.209
14.6375 GHz	61.71	74.00	12.29	V	213.267	200	50.76	FCC 15.209
16.835 GHz	64.08	74.00	9.92	V	123.93	185.2	53.18	FCC 15.209
17.86775 GHz	64.79	74.00	9.21	V	213.267	100	52.94	FCC 15.209

Final 2: 2.8 GHz, 50.0 kHz, 17.9 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.815 GHz	37.99	54.00	16.01	V	309.633	120.705	43.29	FCC 15.209
4.98425 GHz	40.54	54.00	13.46	V	306.667	168.561	41.88	FCC 15.209
5.82475 GHz	40.33	54.00	13.67	V	80.967	100	43.51	FCC 15.209
8.96175 GHz	40.89	54.00	13.11	V	340.496	100	46.13	FCC 15.209
14.6395 GHz	45.76	54.00	8.24	V	213.267	186.069	50.76	FCC 15.209
16.83825 GHz	47.79	54.00	6.21	V	123.93	108.134	53.18	FCC 15.209
17.8665 GHz	47.97	54.00	6.03	V	213.267	182.77	52.94	FCC 15.209

1-18GHz Vertical



Final 1: 2.8 GHz, 50.0 kHz, 17.7 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

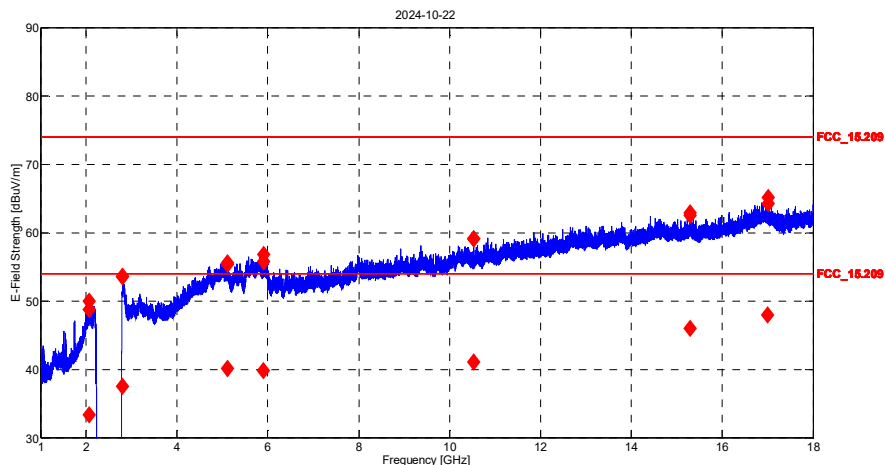
f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name	
2.82375 GHz	54.18	74.00	19.82	H	359	320.552	42.83	FCC 15.209	
3.194 GHz	50.69	74.00	23.31	H	309.4	185.84	39.42	FCC 15.209	
5.007 GHz	55.65	74.00	18.35	H	0	124.785	41.87	FCC 15.209	
5.812 GHz	56.30	74.00	17.70	H	306.353	120.713	43.54	FCC 15.209	
10.533 GHz	59.22	74.00	14.78	H	221.941	399.878	47.27	FCC 15.209	
13.35175 GHz	61.91	74.00	12.09	H	150.693	173.608	49.96	FCC 15.209	
16.80425 GHz	63.89	74.00	10.11	H	43.25	159.776	53.15	FCC 15.209	
17.72275 GHz	63.53	74.00	10.47	H	24.804	100	52.71	FCC 15.209	

Final 2: 2.8 GHz, 50.0 kHz, 17.7 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name	
2.823 GHz	37.99	54.00	16.01	H	359	200.146	42.83	FCC 15.209	
3.19475 GHz	36.07	54.00	17.93	H	309.4	100	39.42	FCC 15.209	
5.003 GHz	40.31	54.00	13.69	H	0	100	41.87	FCC 15.209	
5.81075 GHz	40.59	54.00	13.41	H	306.353	300	43.54	FCC 15.209	
10.531 GHz	41.09	54.00	12.91	H	221.941	259.53	47.27	FCC 15.209	
13.352 GHz	44.95	54.00	9.05	H	150.693	191.146	49.96	FCC 15.209	
16.8055 GHz	47.85	54.00	6.15	H	43.25	100	53.15	FCC 15.209	
17.72325 GHz	47.91	54.00	6.09	H	24.804	200	52.71	FCC 15.209	

1-18GHz Horizontal

BLE 1Mbps Channel 39



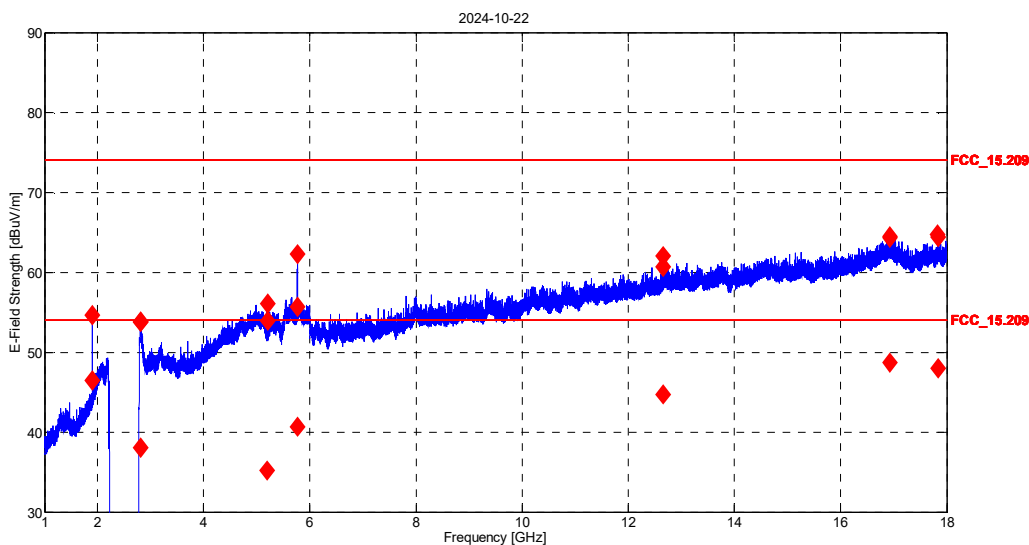
Final 1: 2.1 GHz, 50.0 kHz, 17.0 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.0695 GHz	48.73	74.00	25.27	V	260.803	145.305	38.39	FCC 15.209
2.80475 GHz	53.51	74.00	20.49	V	93.332	196.059	43.46	FCC 15.209
5.1145 GHz	55.34	74.00	18.66	V	359	226.29	42.09	FCC 15.209
5.9055 GHz	55.76	74.00	18.24	V	209.478	300	43.50	FCC 15.209
10.533 GHz	59.08	74.00	14.92	V	189.8	127.57	47.25	FCC 15.209
15.2875 GHz	62.54	74.00	11.46	V	323.708	134.859	51.16	FCC 15.209
17.0085 GHz	64.25	74.00	9.75	V	311.567	100.254	53.04	FCC 15.209

Final 2: 2.1 GHz, 50.0 kHz, 17.0 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.0695 GHz	33.34	54.00	20.66	V	260.803	100	38.39	FCC 15.209
2.80625 GHz	37.53	54.00	16.47	V	93.332	119.692	43.46	FCC 15.209
5.11475 GHz	40.10	54.00	13.90	V	359	129.897	42.09	FCC 15.209
5.90475 GHz	39.84	54.00	14.16	V	209.478	209.083	43.50	FCC 15.209
10.53225 GHz	41.09	54.00	12.91	V	189.8	200	47.25	FCC 15.209
15.28825 GHz	45.99	54.00	8.01	V	323.708	100	51.16	FCC 15.209
17.0065 GHz	48.01	54.00	5.99	V	311.567	200	53.04	FCC 15.209

1-18GHz Vertical



Final 1: 1.9 GHz, 50.0 kHz, 17.8 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
1.903 GHz	46.50	74.00	27.50	H	334.233	174.689	35.10	FCC 15.209
2.81625 GHz	53.74	74.00	20.26	H	199.583	161.377	43.25	FCC 15.209
5.2005 GHz	53.90	74.00	20.10	H	229.058	239.34	42.36	FCC 15.209
5.76675 GHz	55.69	74.00	18.31	H	238.783	244.55	43.40	FCC 15.209
12.657 GHz	60.64	74.00	13.36	H	245.563	120.905	49.45	FCC 15.209
16.93025 GHz	64.33	74.00	9.67	H	136.826	372.454	53.38	FCC 15.209
17.8335 GHz	64.39	74.00	9.61	H	116.581	357.234	53.04	FCC 15.209

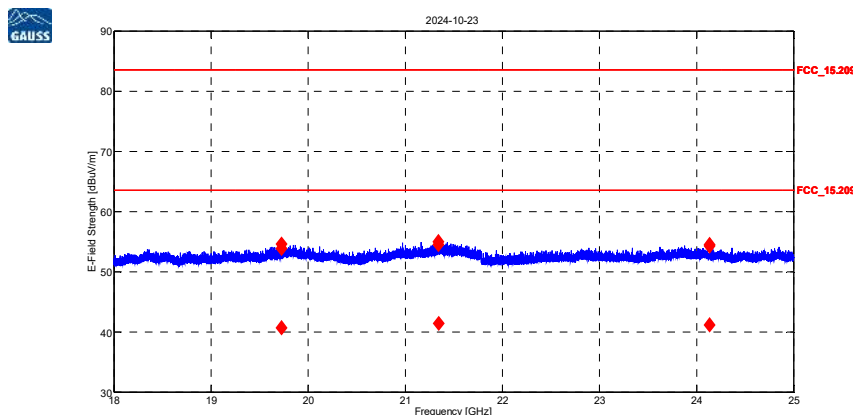
Final 2: 1.9 GHz, 50.0 kHz, 17.8 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
1.90225 GHz	29.44	54.00	24.56	H	334.233	100	35.10	FCC 15.209
2.81625 GHz	38.08	54.00	15.92	H	199.583	108.923	43.25	FCC 15.209
5.19725 GHz	35.18	54.00	18.82	H	229.058	100	42.36	FCC 15.209
5.76625 GHz	40.71	54.00	13.29	H	238.783	210.95	43.40	FCC 15.209
12.66025 GHz	44.75	54.00	9.25	H	245.563	191.919	49.45	FCC 15.209
16.931 GHz	48.68	54.00	5.32	H	136.826	300	53.38	FCC 15.209
17.83275 GHz	48.00	54.00	6.00	H	116.581	391.398	53.04	FCC 15.209

1-18GHz Horizontal

18GHz-25GHz

BLE 1Mbps Channel 0



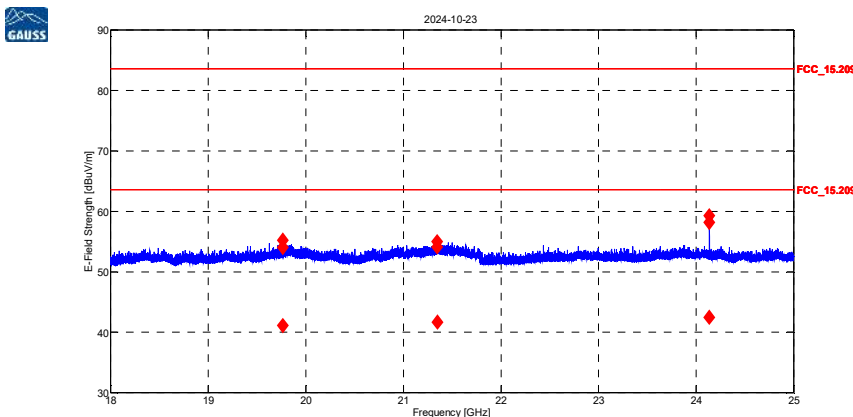
Final 1: 19.7 GHz, 50.0 kHz, 24.1 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.7255 GHz	53.83	83.50	29.67	V	323.731	101.3	12.98	FCC 15.209
21.34225 GHz	54.50	83.50	29.00	V	118.239	123.38	12.83	FCC 15.209
24.13775 GHz	54.52	83.50	28.98	V	112.669	166.778	12.68	FCC 15.209

Final 2: 19.7 GHz, 50.0 kHz, 24.1 GHz; IF:1MHz, 100.0 ms RMS, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.727 GHz	40.70	63.50	22.80	V	323.731	125	12.98	FCC 15.209
21.345 GHz	41.40	63.50	22.10	V	118.239	100	12.83	FCC 15.209
24.13775 GHz	41.12	63.50	22.38	V	112.669	164.065	12.68	FCC 15.209

18-25GHz Vertical



Final 1: 19.8 GHz, 50.0 kHz, 24.1 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 20dB

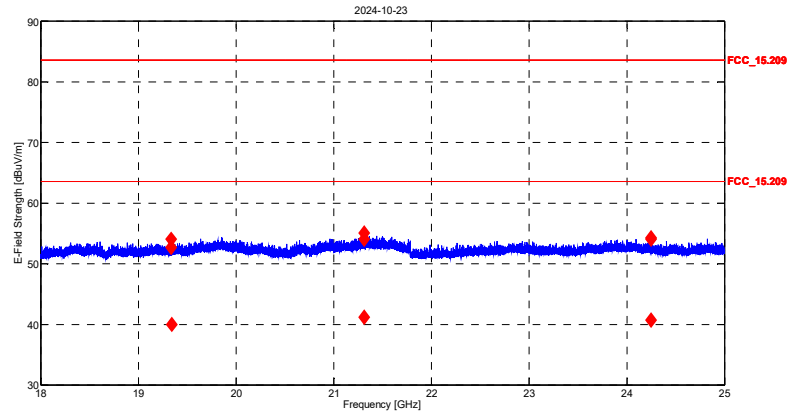
f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.765 GHz	53.97	83.50	29.53	H	250	112.233	12.99	FCC 15.209
21.3495 GHz	54.07	83.50	29.43	H	131.723	125	12.83	FCC 15.209
24.137 GHz	59.25	83.50	24.25	H	127.633	108.615	12.68	FCC 15.209

Final 2: 19.8 GHz, 50.0 kHz, 24.1 GHz; IF:1MHz, 100.0 ms RMS, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.76375 GHz	41.07	63.50	22.43	H	250	125	12.99	FCC 15.209
21.351 GHz	41.66	63.50	21.84	H	131.723	100	12.83	FCC 15.209
24.137 GHz	42.42	63.50	21.08	H	127.633	108.615	12.68	FCC 15.209

18-25GHz Horizontal

BLE 1Mbps Channel 19



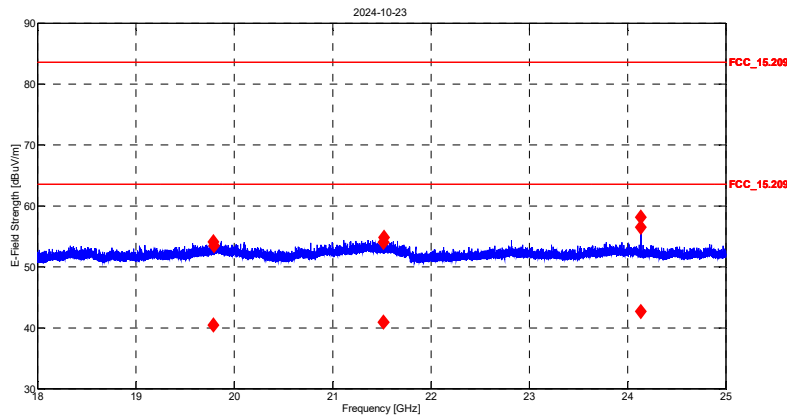
Final 1: 19.3 GHz, 50.0 kHz, 24.3 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name	
19.33825 GHz	52.63	83.50	30.87	V	98.223	113.647	12.07	FCC 15.209	
21.3115 GHz	54.00	83.50	29.50	V	108.215	105.4	12.81	FCC 15.209	
24.24925 GHz	54.25	83.50	29.25	V	360	122.76	12.52	FCC 15.209	

Final 2: 19.3 GHz, 50.0 kHz, 24.3 GHz; IF:1MHz, 100.0 ms RMS, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name	
19.341 GHz	39.95	63.50	23.55	V	98.223	100	12.07	FCC 15.209	
21.313 GHz	41.12	63.50	22.38	V	108.215	125	12.81	FCC 15.209	
24.24725 GHz	40.66	63.50	22.84	V	360	100	12.52	FCC 15.209	

18-25GHz Vertical



Final 1: 19.8 GHz, 50.0 kHz, 24.1 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 20dB

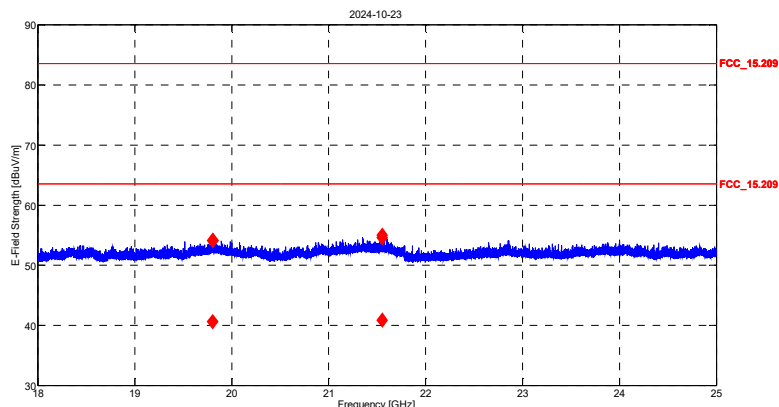
f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name	
19.79425 GHz	53.42	83.50	30.08	H	41.158	102.685	12.93	FCC 15.209	
21.52175 GHz	54.01	83.50	29.49	H	307.242	108.267	12.69	FCC 15.209	
24.1375 GHz	58.13	83.50	25.37	H	234	138.484	12.68	FCC 15.209	

Final 2: 19.8 GHz, 50.0 kHz, 24.1 GHz; IF:1MHz, 100.0 ms RMS, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name	
19.79025 GHz	40.47	63.50	23.03	H	41.158	125	12.93	FCC 15.209	
21.52175 GHz	40.92	63.50	22.58	H	307.242	100	12.69	FCC 15.209	
24.13775 GHz	42.67	63.50	20.83	H	234	138.484	12.68	FCC 15.209	

18-25GHz Horizontal

BLE 1Mbps Channel 39



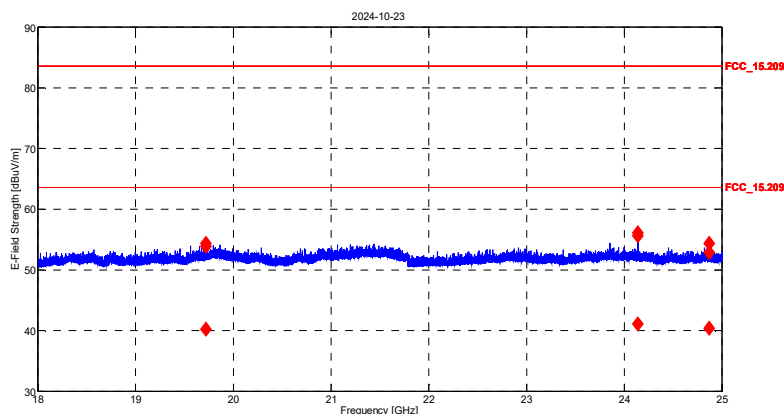
Final 1: 19.8 GHz, 50.0 kHz, 21.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.80625 GHz	54.06	83.50	29.44	V	214.431	100	12.90	FCC 15.209
21.55175 GHz	54.57	83.50	28.93	V	242.205	100	12.65	FCC 15.209

Final 2: 19.8 GHz, 50.0 kHz, 21.6 GHz; IF:1MHz, 100.0 ms RMS, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.8075 GHz	40.62	63.50	22.88	V	214.431	125	12.90	FCC 15.209
21.5525 GHz	40.82	63.50	22.68	V	242.205	108.726	12.65	FCC 15.209

18-25GHz Vertical



Final 1: 19.7 GHz, 50.0 kHz, 24.9 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.7195 GHz	53.83	83.50	29.67	H	13.328	100	12.97	FCC 15.209
24.13825 GHz	56.06	83.50	27.44	H	81.535	215.413	12.68	FCC 15.209
24.87 GHz	52.82	83.50	30.68	H	317.542	150	12.52	FCC 15.209

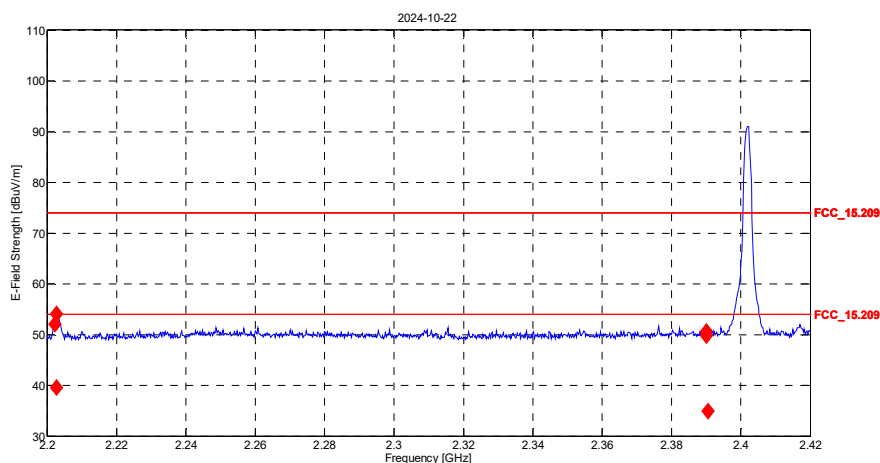
Final 2: 19.7 GHz, 50.0 kHz, 24.9 GHz; IF:1MHz, 100.0 ms RMS, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.72025 GHz	40.21	63.50	23.29	H	13.328	150	12.97	FCC 15.209
24.13825 GHz	41.06	63.50	22.44	H	81.535	215.413	12.68	FCC 15.209
24.8705 GHz	40.36	63.50	23.14	H	317.542	200	12.52	FCC 15.209

18-25GHz Horizontal

BLE 1Mbps Radiated Band-edges

Low Band-edge:



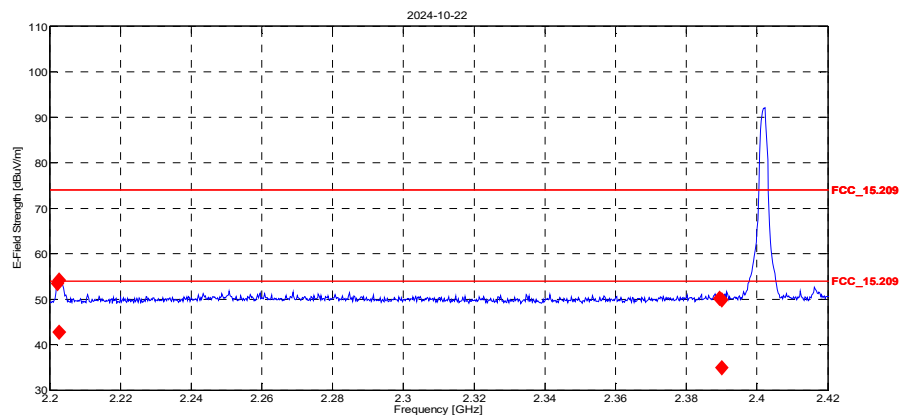
Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	52.06	74.00	21.94	V	327.64	169.452	35.98	FCC 15.209
2.39 GHz	50.57	74.00	23.43	V	138.703	100	36.08	FCC 15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	39.58	54.00	14.42	V	327.64	140.67	35.98	FCC 15.209
2.3905 GHz	34.96	54.00	19.04	V	138.703	137.292	36.08	FCC 15.209

Vertical



Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

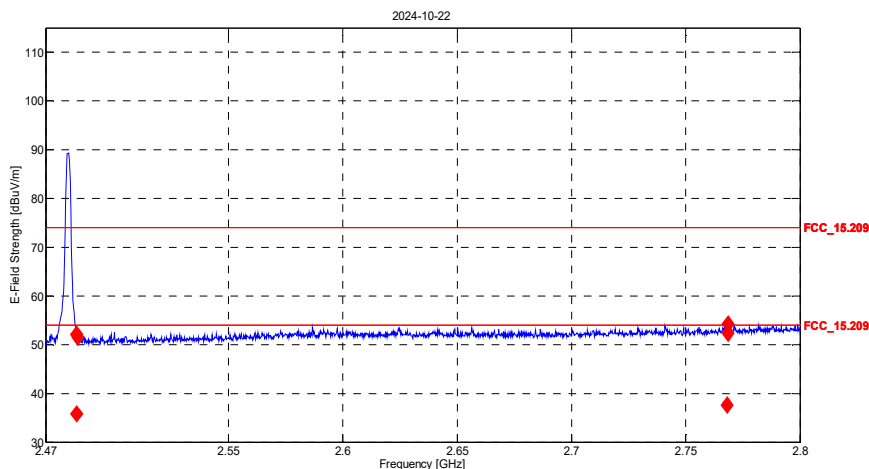
f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	53.47	74.00	20.53	H	216.292	190.587	35.98	FCC 15.209
2.3895 GHz	50.19	74.00	23.81	H	301.792	140.189	36.08	FCC 15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	42.80	54.00	11.20	H	216.292	131.846	35.98	FCC 15.209
2.39 GHz	34.96	54.00	19.04	H	301.792	147	36.08	FCC 15.209

Horizontal

High Band-edge:



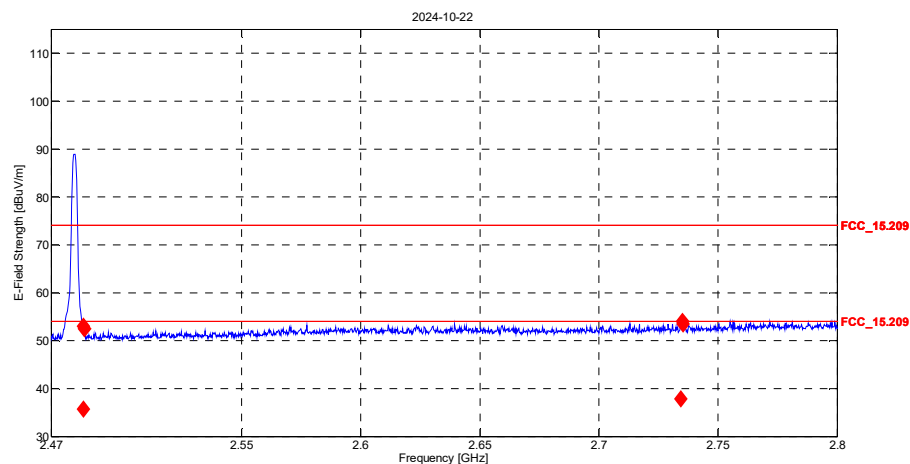
Final 1: 2.5 GHz, 50.0 kHz, 2.8 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.4835 GHz	52.12	74.00	21.88	V	246.603	240.892	36.67	FCC_15.209
2.7685 GHz	52.30	74.00	21.70	V	296.685	165.519	37.93	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.8 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.4835 GHz	35.80	54.00	18.20	V	246.603	164.8	36.67	FCC_15.209
2.768 GHz	37.63	54.00	16.37	V	296.685	198.192	37.93	FCC_15.209

Vertical



Final 1: 2.5 GHz, 50.0 kHz, 2.7 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.4835 GHz	52.97	74.00	21.03	H	301.371	100	36.67	FCC_15.209
2.73525 GHz	53.43	74.00	20.57	H	349.806	150.814	37.92	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.7 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.4835 GHz	35.64	54.00	18.36	H	301.371	100	36.67	FCC_15.209
2.7345 GHz	37.79	54.00	16.21	H	349.806	135.873	37.92	FCC_15.209

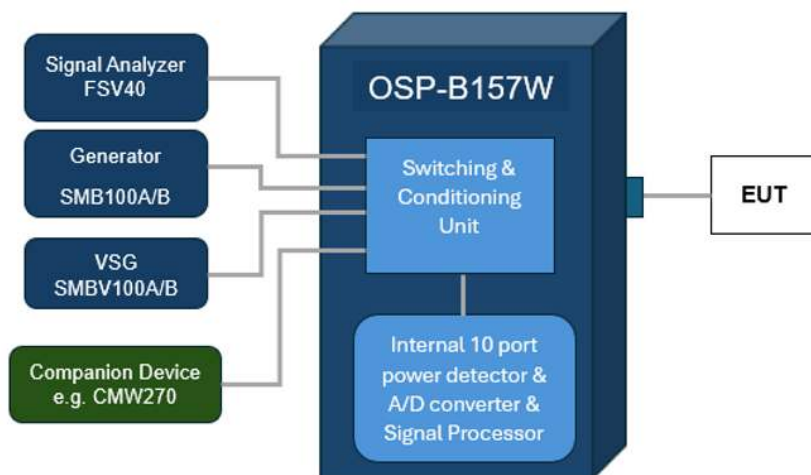
Horizontal

4.2 6dB CHANNEL BANDWIDTH & 99% OBW

4.2.1 LIMITS

The minimum 6 dB bandwidth shall be 500 kHz.

4.2.2 TEST SETUP



4.2.3 TEST EQUIPMENT USED

Rev. 11/4/2024

Spectrum Analyzers / Receivers / Presel selectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
FSV40 Spectrum Analyzer		10Hz-40GHz	FSV40	ROHDE & SCHWARZ	101551	2200	I	10/9/2025	10/9/2024
Signal Generators/Comparison Noise Emitter		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
OSP-B157W8			OSP-B157W8	ROHDE & SCHWARZ	100955	2558	I	2/14/2026	2/14/2024
Cables		Range		Mfr			Cat	Calibration Due	Calibrated on
Asset#2905		9KHz-26.5GHz		Mini-Circuits			II	4/22/2025	4/22/2024
Attenuators		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
10dB Attenuator-01 Brown		9KHz-18GHz		Mini Curcuits			II	2/17/2025	2/17/2024

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

4.2.4 TEST PROCEDURES

6dB CHANNEL BANDWIDTH (In accordance with ANSI C63.10-2013 Section 11.8.1)

- Set RBW = 100 kHz.
- Set the video bandwidth (VBW) ≥ 3 RBW.
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- Measure the maximum width of the emission that is constrained by the frequencies



associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

99% OBW (In accordance with ANSI C63.10-2013 Section 6.9.3)

- a. The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b. The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c. Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in ANSI C63.10-2013 4.1.5.2.
- d. Step a) through step c) might require iteration to adjust within the specified range.
- e. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f. Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

4.2.5 DEVIATIONS

No deviations from the standard.

4.2.6 EUT OPERATING CONDITIONS

EUT was operated according to manufacturer's specifications.

4.2.7 TEST RESULTS

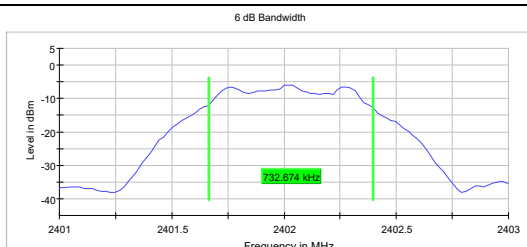
BLE 1Mbps

Test date: Oct 28, 2024

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (kHz)	99% OBW (MHz)	PASS / FAIL
0	2402	732.674	1.053	Pass
19	2440	712.872	1.053	Pass
39	2480	712.872	1.053	Pass

CH0

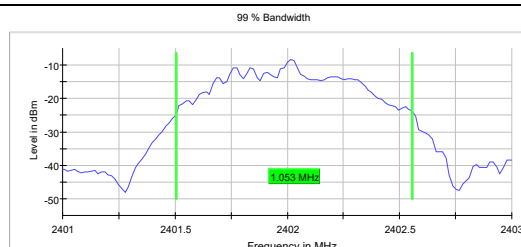
6dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000
VBW	300.000 kHz	~ 300.000
SweepPoints	101	~ 40
SweepTime	18.938 μ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	9 / max. 150	max. 150
Stable	5 / 5	5
Max Stable	0.10 dB	0.50 dB

99% OBW

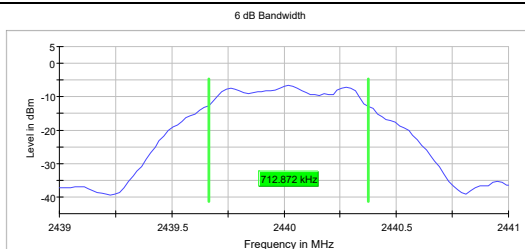


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	30.000 kHz	>= 30.000
VBW	100.000 kHz	>= 90.000
SweepPoints	133	~ 133
SweepTime	63.123 μ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	5 / max. 150	max. 150
Stable	3 / 3	3
Max Stable	0.21 dB	0.30 dB

CH19

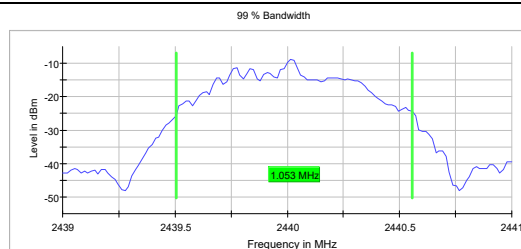
6dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43900 GHz	2.43900 GHz
Stop Frequency	2.44100 GHz	2.44100 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000
VBW	300.000 kHz	~ 300.000
SweepPoints	101	~ 40
SweepTime	18.938 μ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	7 / max. 150	max. 150
Stable	5 / 5	5
Max Stable	0.19 dB	0.50 dB

99% OBW

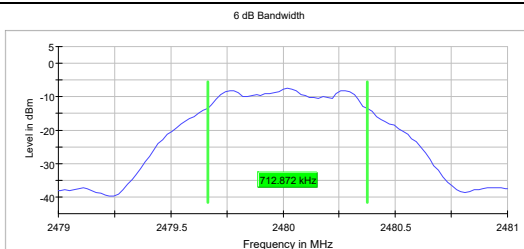


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43900 GHz	2.43900 GHz
Stop Frequency	2.44100 GHz	2.44100 GHz
Span	2.000 MHz	2.000 MHz
RBW	30.000 kHz	>= 30.000
VBW	100.000 kHz	>= 90.000
SweepPoints	133	~ 133
SweepTime	63.123 μ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	7 / max. 150	max. 150
Stable	3 / 3	3
Max Stable	0.07 dB	0.30 dB

CH39

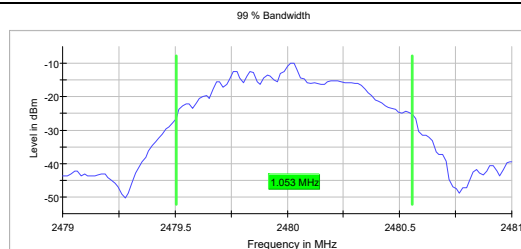
6dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000
VBW	300.000 kHz	~ 300.000
SweepPoints	101	~ 40
SweepTime	18.938 μ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	9 / max. 150	max. 150
Stable	5 / 5	5
Max Stable	0.14 dB	0.50 dB

99% OBW



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	30.000 kHz	>= 30.000
VBW	100.000 kHz	>= 90.000
SweepPoints	133	~ 133
SweepTime	63.123 μ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	6 / max. 150	max. 150
Stable	3 / 3	3
Max Stable	0.20 dB	0.30 dB



4.3 CONDUCTED OUTPUT POWER

4.3.1 LIMITS

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

4.3.2 TEST SETUP

Refer to section 4.2.2.

4.3.3 TEST EQUIPMENT USED

Refer to section 4.2.3.

4.3.4 TEST PROCEDURES

Average conducted output power was measured in accordance with ANSI C63.10 - 2013 Section 11.9.2.3.2 (Method AVGPM-G).

4.3.5 DEVIATIONS

No deviations from the standard.

4.3.6 EUT OPERATING CONDITIONS

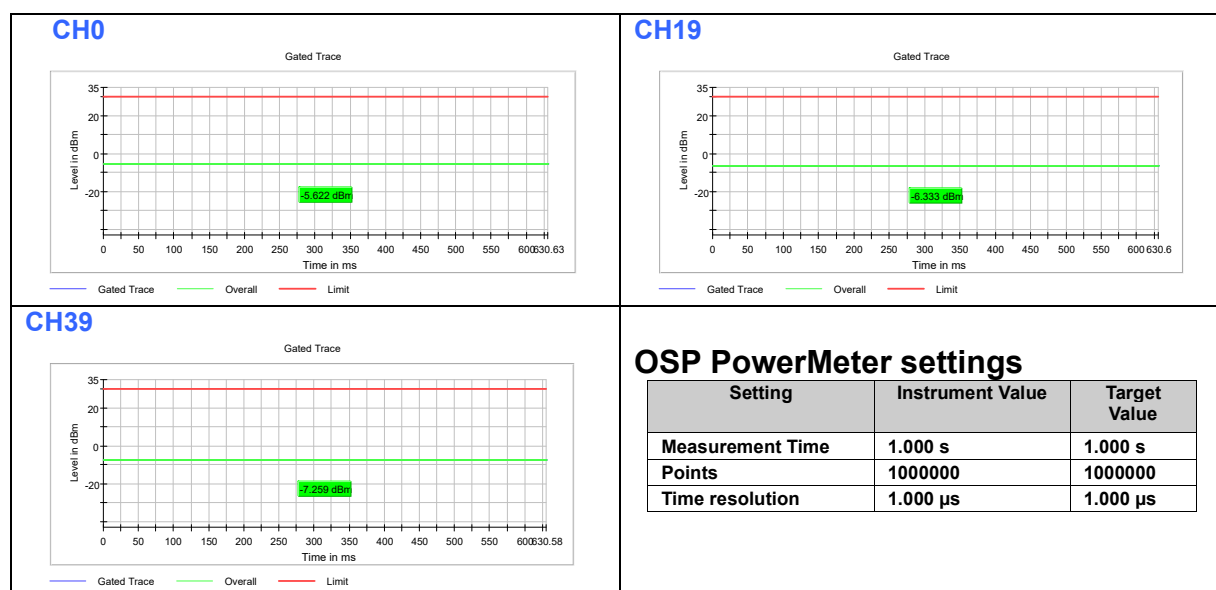
EUT was operated according to manufacturer's specifications

4.3.7 TEST RESULTS

BLE 1Mbps

Test date: Oct 28, 2024

CHANNEL	CHANNEL FREQUENCY (MHz)	RMS POWER (dBm)	RMS POWER (mW)	LIMIT (W)	PASS/FAIL
0	2402	-5.622	0.27	1	Pass
19	2440	-6.333	0.23	1	Pass
39	2480	-7.259	0.19	1	Pass





4.4 POWER SPECTRAL DENSITY

4.4.1 LIMITS

The limit for Power Spectral Density is 8dBm/3kHz.

4.4.2 TEST SETUP

Refer to section 4.2.2.

4.4.3 TEST EQUIPMENT USED

Refer to section 4.2.3.

4.4.4 TEST PROCEDURES

In accordance with ANSI C63.10-2013 Section 11.10.2 (Method PKPSD (Peak PSD)).

1. Set the span to 1.5 times the DTS bandwidth
2. Set the RBW = 3 kHz, VBW $\geq 3 \times$ RBW, Detector = peak.
3. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

4.4.5 DEVIATIONS

No deviations from the standard.

4.4.6 EUT OPERATING CONDITIONS

EUT was operated according to manufacturer's specifications.

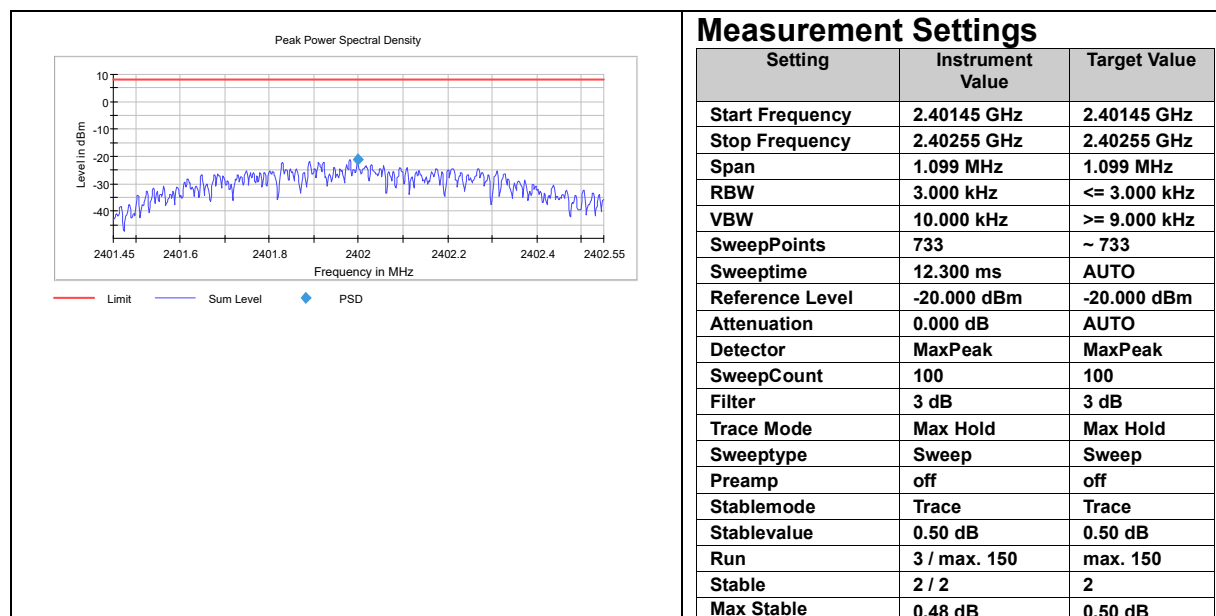
4.4.7 TEST RESULTS

BLE 1Mbps

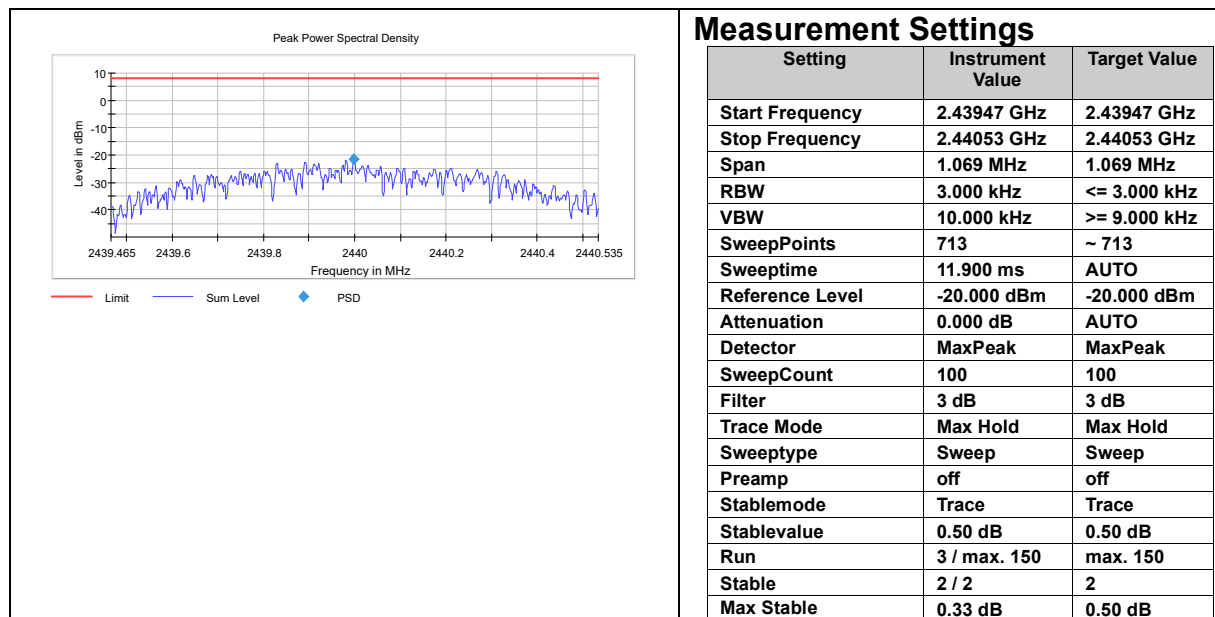
Test date: Oct 28, 2024

Channel	FREQ. (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
0	2402	-20.974	8	Pass
19	2440	-21.527	8	Pass
39	2480	-22.430	8	Pass

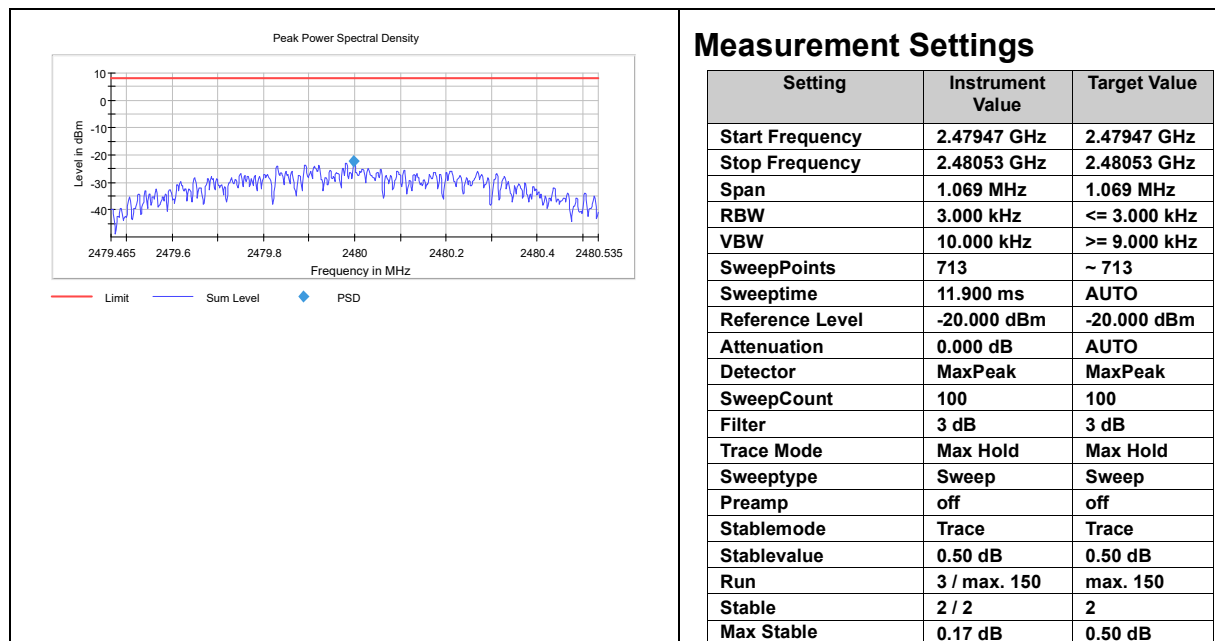
CH0



CH19



CH39





4.5 CONDUCTED SPURIOUS EMISSIONS AND BAND-EDGES

4.5.1 LIMITS

30dB below the highest emission level in the operating band (in 100kHz RBW).

4.5.2 TEST SETUP

Refer to section 4.2.2.

4.5.3 TEST EQUIPMENT USED

Refer to section 4.2.3.

4.5.4 TEST PROCEDURES

In accordance with ANSI C63.10-2013 Section 11.11.

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.



**Test Report for Onset Computer Corporation
Report No. EY0826-1 Issue 5**



MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.5.5 DEVIATIONS

No deviations from the standard.

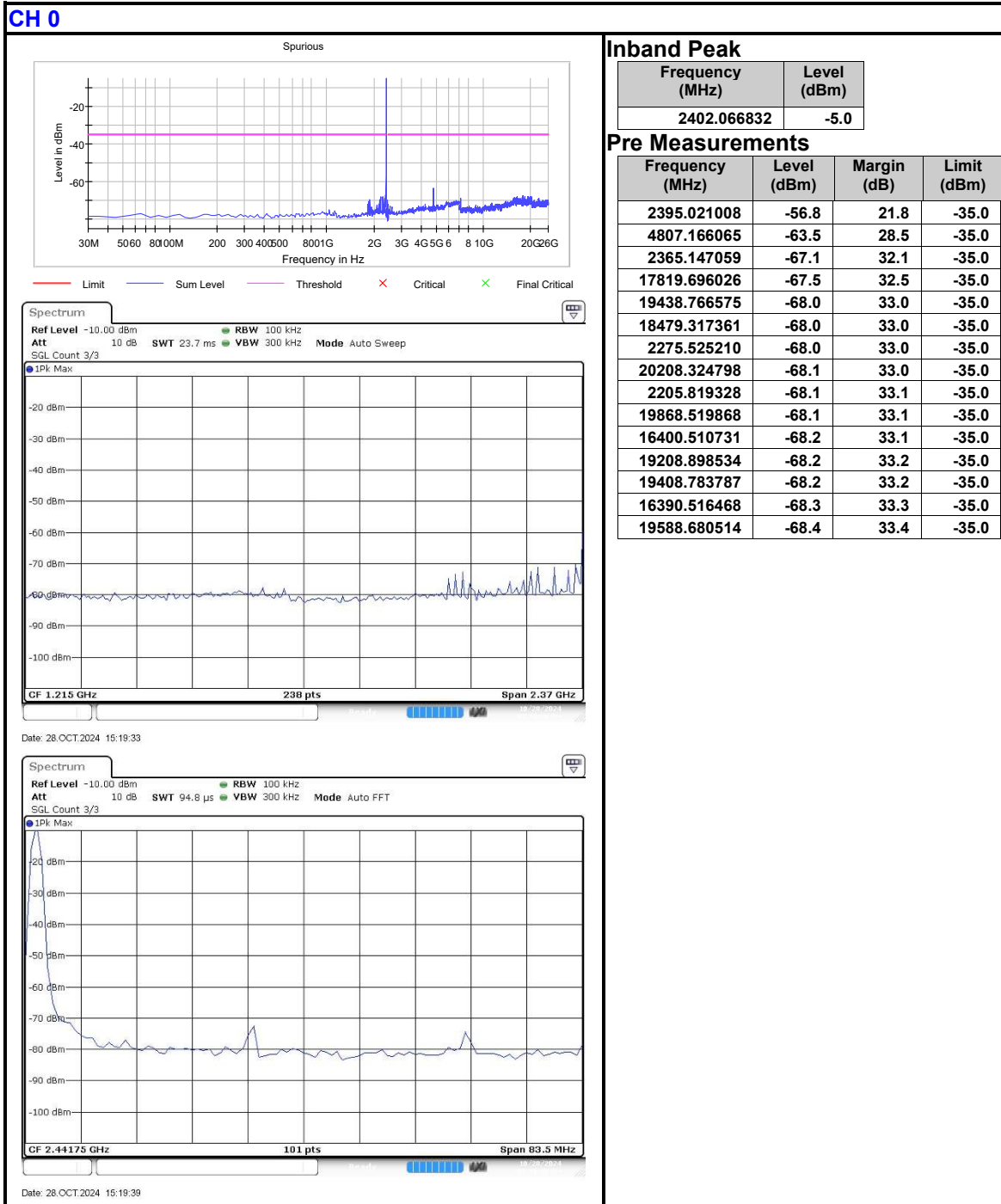
4.5.6 EUT OPERATING CONDITIONS

EUT was operated according to manufacturer's specifications.

4.5.7 TEST RESULTS

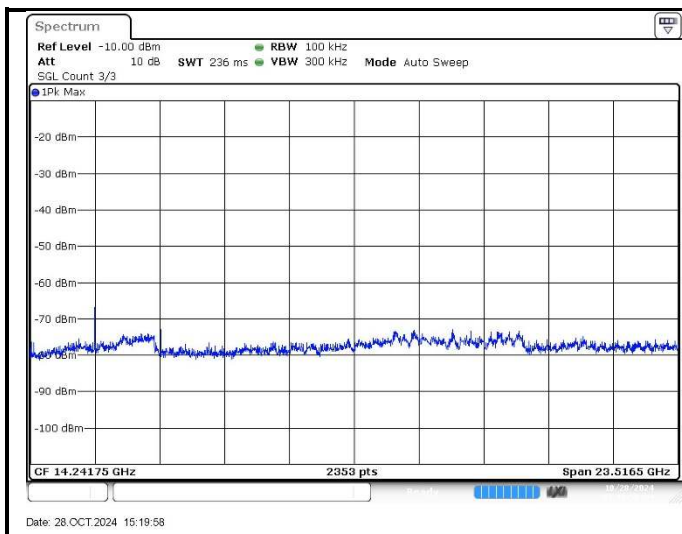
BLE 1Mbps Conducted Spurious Emissions:

Test date: Oct 28, 2024

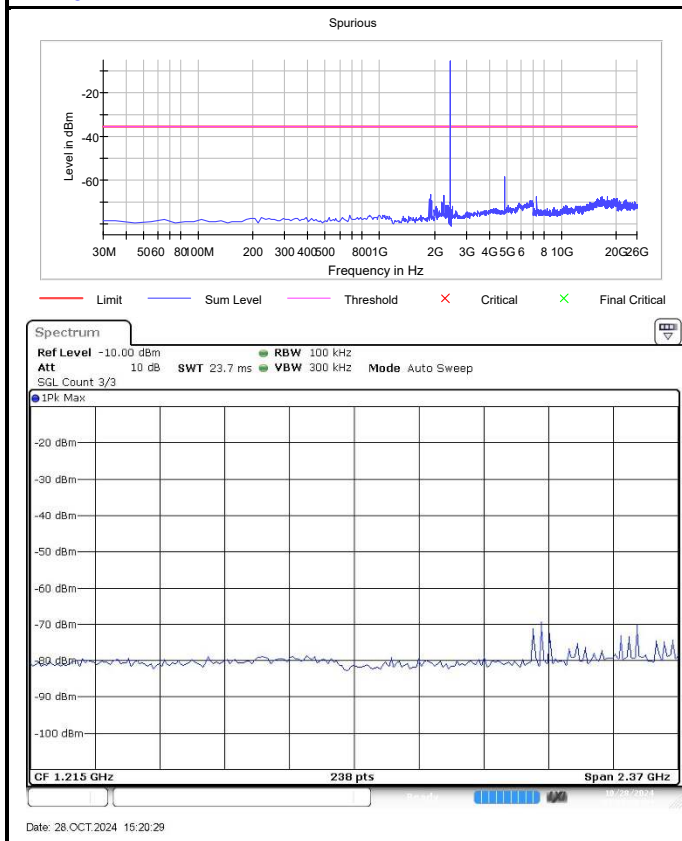




Test Report for Onset Computer Corporation Report No. EY0826-1 Issue 5



CH 19

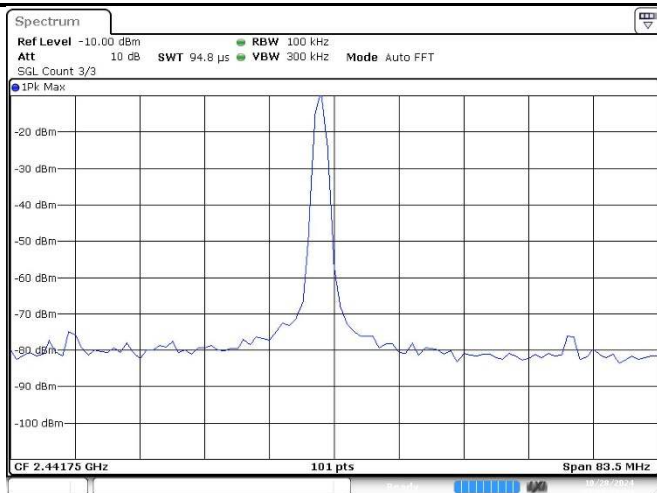


Inband Peak

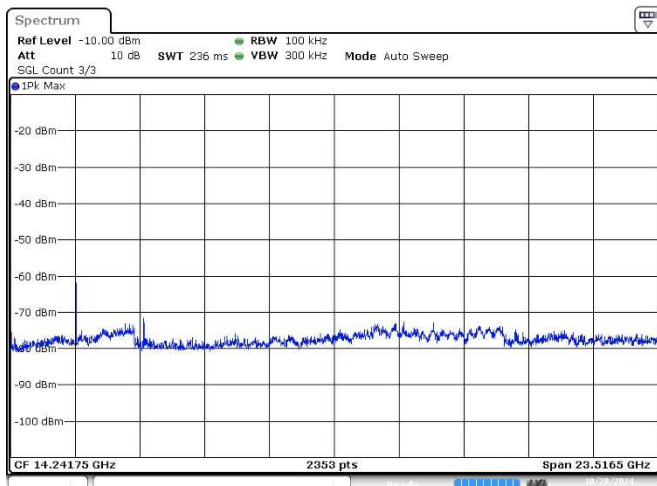
Frequency (MHz)	Level (dBm)
2440.096535	-5.6

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4877.125903	-58.3	22.7	-35.6
1897.121849	-66.4	30.8	-35.6
2245.651261	-67.0	31.4	-35.6
17839.684552	-67.4	31.9	-35.6
7315.725988	-67.5	31.9	-35.6
16760.304186	-67.6	32.0	-35.6
16480.464832	-68.0	32.4	-35.6
16430.493519	-68.1	32.5	-35.6
1867.247899	-68.3	32.7	-35.6
20238.307586	-68.3	32.8	-35.6
19468.749363	-68.4	32.8	-35.6
19518.720676	-68.4	32.8	-35.6
15740.889397	-68.5	32.9	-35.6
19538.709201	-68.6	33.0	-35.6
15820.843498	-68.6	33.0	-35.6

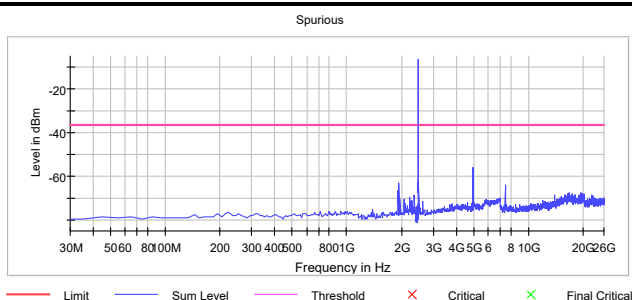


Date: 28.OCT.2024 15:20:34



Date: 28.OCT.2024 15:20:56

CH 39



— Limit — Sum Level — Threshold × Critical × Final Critical

Inband Peak

Frequency (MHz)	Level (dBm)
2479.779703	-6.6

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4957.080004	-55.8	19.2	-36.6
2488.497131	-62.6	26.0	-36.6
1936.953782	-63.1	26.6	-36.6
7435.657140	-64.0	27.4	-36.6
1907.079832	-66.6	30.0	-36.6
7445.651402	-67.3	30.7	-36.6
16760.304186	-67.6	31.0	-36.6
19538.709201	-67.7	31.1	-36.6
19838.537080	-67.9	31.3	-36.6
20138.364960	-67.9	31.3	-36.6
19818.548555	-68.0	31.4	-36.6
17309.988632	-68.1	31.5	-36.6
16400.510731	-68.2	31.6	-36.6
16010.734488	-68.3	31.7	-36.6
15710.906609	-68.3	31.7	-36.6

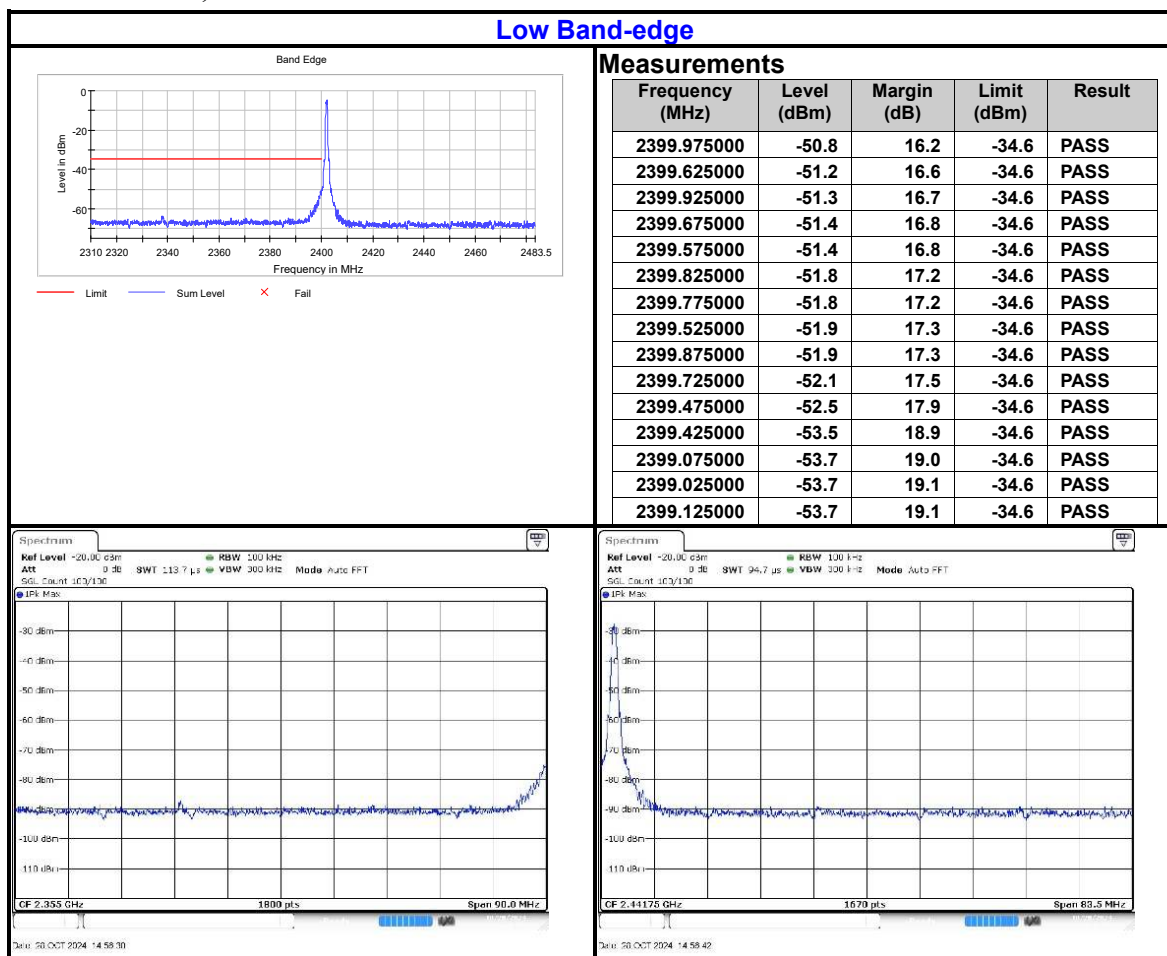


Test Report for Onset Computer Corporation
Report No. EY0826-1 Issue 5

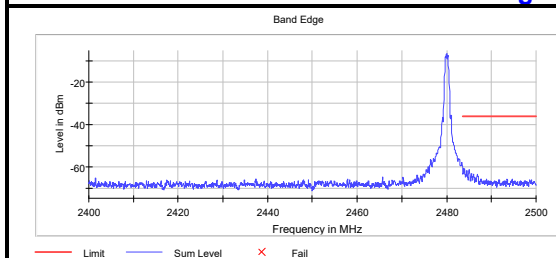


BLE 1Mbps Conducted Band-edge:

Test date: Oct 28, 2024

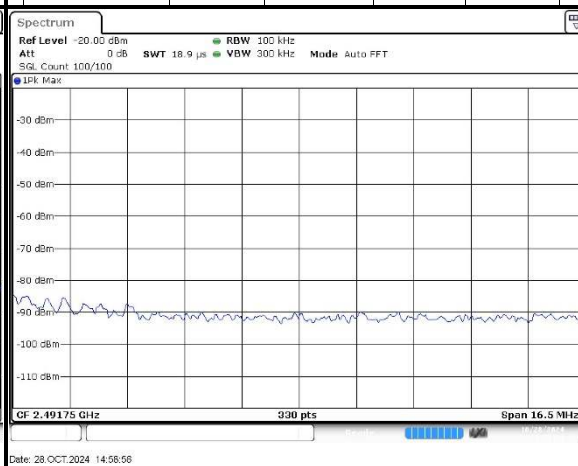
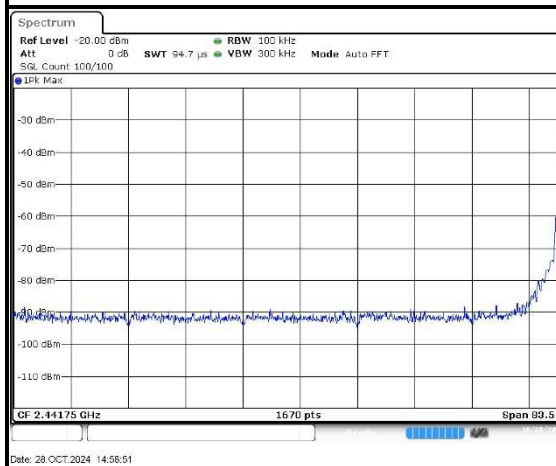


High Band-edge



Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.525000	-60.6	24.3	-36.3	PASS
2483.925000	-61.0	24.8	-36.3	PASS
2483.575000	-61.1	24.8	-36.3	PASS
2483.825000	-61.2	24.9	-36.3	PASS
2483.975000	-61.3	25.0	-36.3	PASS
2483.875000	-61.3	25.0	-36.3	PASS
2484.975000	-61.4	25.2	-36.3	PASS
2483.775000	-61.5	25.2	-36.3	PASS
2483.625000	-61.6	25.3	-36.3	PASS
2485.025000	-61.6	25.3	-36.3	PASS
2484.925000	-61.8	25.5	-36.3	PASS
2484.525000	-61.8	25.5	-36.3	PASS
2484.475000	-61.9	25.6	-36.3	PASS
2484.025000	-62.5	26.2	-36.3	PASS
2485.075000	-62.5	26.2	-36.3	PASS





5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the Test Setup Photos exhibit.



6 APPENDIX A – MODIFICATIONS

No modifications were made to the EUT during testing.

---END OF REPORT---