

TEST REPORT

APPLICANT

Eight Sleep, Inc.

MODEL NAME

10506

FCC ID

2AYXT61100005

IC

29927-61100005

REPORT NUMBER

HA260519-GGC-002-R02-01

TEST REPORT

Date of Issue
August 14, 2026

Test Site
HCT America, Inc.
840 Yosemite Way, Milpitas, CA 95035, USA

Applicant	Eight Sleep, Inc.
Applicant Address	915 Broadway, Suite 1301, New York, NY 10010, USA
FCC ID	2AYXT61100005
IC	29927-61100005
EUT Type	Smart Sleep System with Bluetooth, BLE, 2.4 GHz and 5 GHz WLAN
Modulation Type	GFSK
FCC Classification	Digital Transmission System (DTS)
FCC Rule Part(s)	Part 15.247
ISED Rule Part(s)	RSS-247 Issue 4 (July 24, 2025) RSS-Gen Issue 6 (July 30, 2026)
Test Procedure	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, KDB 558074 D01 v05r02

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures required. The results of testing in this report apply only to the product which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all people taking them.

Authorized & Released By:



Dan Corona
Technical Manager

Tested By:



Joe Vang
RF Engineer

REVISION HISTORY

The revision history for this document is shown in table.

TEST REPORT NO.	REVISION	DATE	DESCRIPTION
HA260519-GGC-002-R02	0	August 11, 2026	Initial Issue
HA260519-GGC-002-R02-01	1	August 14, 2026	Updated test procedure and added receiver plots

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1. GENERAL INFORMATION

EUT DESCRIPTION

Model	10506
Product Name	Smart Pod
Serial Number	Conducted: 6131A8AA Radiated: 6131A8AB
Power Supply	110–240 VAC
RF Specification	Zigbee, Bluetooth 5.1 LE (BR / EDR / 1M / 2M), WIFI 2.4 GHz: 802.11b /g/ n (HT20, HT40), WIFI 5 GHz: 802.11a/n(HT20/40)/ac (80)
Transmitter Chain	1

RF SPECIFICATION SUBJECT TO THE REPORT

RF Specification	Bluetooth LE(1M/2M)
Transmitter Chain	1
Frequency Range	2 400 MHz – 2 483.5 MHz
Max. RF Output Power	Peak: 13.09 dBm (20.37 mW)
Modulation Type	GFSK
Antenna Specification ¹⁾	Antenna Type: FPC flex antenna Peak Gain: 4.52 dBi
Firmware Version ²⁾	1b1d5b7efcbd0d4b999a4514ad6b24d9274d060
Hardware Version ²⁾	10506
Date(s) of Tests	July 21, 2026, ~ August 14, 2026
Test Environment	Temperature: 18.9°C ~ 25°C Humidity: 35% ~ 50% R.H.

Note:

1. Antenna information is based on the document provided.
2. Firmware and Hardware Version are as received by the client.

OPERATING FREQUENCY CHANNELS

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

2. METHODOLOGY

FCC KDB 558074 D01 DTS Measurement Guidance v05r02 dated April 2nd, 2019, entitled “Guidance for Performing Compliance Measurements on Digital Transmission Systems, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating Under Section 15.247 of the FCC Rules” and the measurement procedures described in ANSI C63.10 (Version: 2020) ‘the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices’.

EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of Section 15.207, 15.209 and 15.247 under the FCC Rule Part 15 Subpart C and the Section 2.1091 under the FCC Rule Part 2 / the RSS-GEN issue 6, RSS-247 issue 4.

GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version:2020) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz. Above 1GHz with 1.5m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find the highest emission. Also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. To find out the maximum emission, the relative positions of this hand-held transmitter (EUT) were rotated through three orthogonal axes according to the requirements in Section 8 of ANSI C63.10. (Version: 2020)

Conducted Antenna Terminal

KDB 558074 D01 v05r02

DESCRIPTION OF TEST MODES

The EUT has been tested at 2.4GHz ISM test mode. EUT’s test mode was used to control the channels, power setting, continuous TX and normal RX mode. EUT is equipped with 2.4GHz ISM.

3. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognize national standards. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version: 2017).

4. FACILITIES AND ACCREDITATIONS

FACILITIES

HCT America, Inc. holds A2LA accreditation (certificate no. 4201.01) covering all testing included in the scope of this report. All tests were conducted at the facilities listed below.

	Address	ISED CABID	ISED Company Number	FCC Registration	FCC Designation Number
☒	840 Yosemite Way, Milpitas, CA 95035 USA	US0198	25729	898494	US01202
☐	1177 Comstock Road, Hollister, CA 95023 USA	US0198	25729	898494	US01202



EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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.

- (1) The antenna of this E.U.T is permanently attached and there is no provision for connection to an external antenna.
- (2) The E.U.T Complies with the requirement of §15.203

According to RSS-Gen Issue 6 (Section 5.2):

In the case of transmitters with detachable antenna(s), a list of all antenna types that are permitted to be used with the transmitter, indicating the maximum permissible antenna gain (and unit, e.g., dBi) and the required impedance, shall be provided for equipment certification. If the transmitter has multiple antenna ports, this list shall indicate the allowed port for each antenna in the list. The test report shall demonstrate the compliance of the transmitter with the limits specified in the applicable RSS when the transmitter is equipped with any antenna type from this list. If the tests were performed only on worst-case configurations, the test report shall include the rationale for selecting the tested configurations and why they are worst-case.

6. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2020.

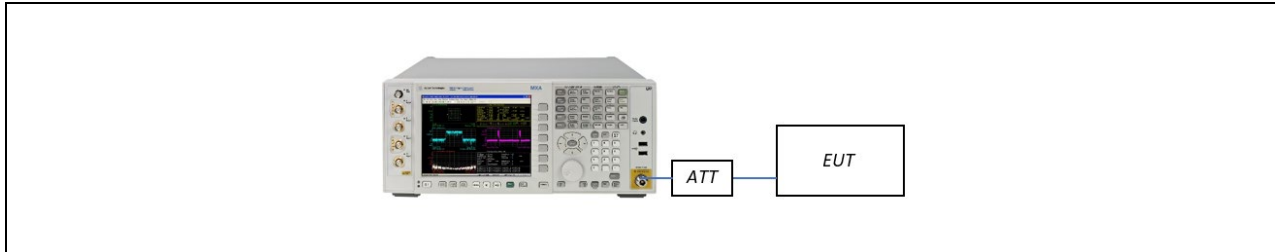
All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty
Output Power, Conducted	± 0.54 dB
Frequency Tolerance	± 16.78 kHz
Occupied Bandwidth	± 120.66 kHz
Unwanted Emissions, Conducted	± 0.54 dB
Radiated Emissions (below 1 GHz)	± 5.29 dB
Radiated Emissions (Above 1 GHz)	± 4.29 dB

7. DESCRIPTION OF TESTS

7.1. DUTY CYCLE

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer.
Zero-span measurement method was used, 6 (b) in KDB 558074 D01 v05r02.

The largest available value of RBW is 8 MHz and VBW is 50 MHz.

The zero-span method of measuring duty cycle shall not be used if $T \leq 6.25$ microseconds. ($50/6.25 = 8$)

The zero-span method was used because all measured T data are > 6.25 microseconds and both RBW and VBW are $> 50/T$.

- RBW = 8 MHz (the largest available value)
- VBW = 8 MHz ($\geq$ RBW)
- SPAN = 0 Hz
- Detector = Peak
- Number of points in sweep > 100
- Trace mode = Clear write
- Measure T_{total} and T_{on}
- Calculate Duty Cycle = $T_{\text{on}} / T_{\text{total}}$ and Duty Cycle Factor = $10 \cdot \log(1/\text{Duty Cycle})$

7.2. 6 dB BANDWIDTH / 99 % OCCUPIED BANDWIDTH

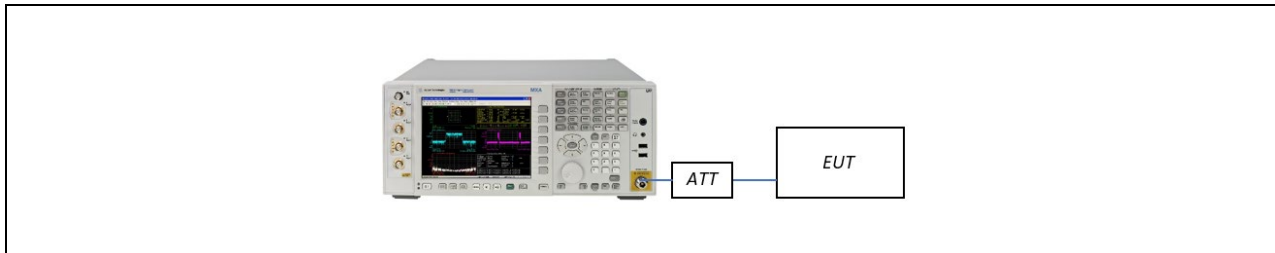
LIMIT

§15.247(a)(2) / RSS-247(Issue 4) Section 6.3.1(a)

The bandwidth at 6 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

The minimum permissible 6 dB bandwidth is 500 kHz.

TEST SETUP



TEST PROCEDURE (6 dB BANDWIDTH)

Section 8.2 in KDB 558074 D01 v05r02, Subclause 11.8 in ANSI 63.10-2020

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer setting:

- RBW = 100 kHz
- VBW $\geq 3 \times$ RBW
- Detector = Peak
- Trace mode = max hold
- Sweep = auto couple
- Allow the trace to stabilize
- Use X dB bandwidth measurement function from the spectrum analyzer by setting X dB to 6 dB

TEST PROCEDURE (99% Bandwidth) for ISED

The transmitter output is connected to the spectrum analyzer.

- RBW = 1% ~ 5% of the occupied bandwidth
- VBW $\approx 3 \times$ RBW
- Detector = Peak
- Trace mode = max hold
- Sweep = auto couple
- Allow the trace to stabilize

Note:

We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

7.3. OUTPUT POWER

LIMIT

§15.247(b)(3)

The maximum permissible conducted output power is 1 Watt.

RSS-247(Issue 4) Section 6.3.2

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W.

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to wideband gated RF power meter.

TX condition of the EUT is the actual operating mode by RF test program.

The power meter setting:

Peak Power (Section 8.3.1.3 in KDB 558074 D01 v05r02, Subclause 11.9.1.3 in ANSI 63.10-2020)

Measurements are performed using a wideband gated RF power meter, provided the gate parameters are configured to measure power exclusively when the Equipment Under Test (EUT) operates at its maximum power control level.

Average Power (Section 8.3.2.3 in KDB 558074 D01 v05r02, Subclause 11.9.2.3 in ANSI 63.10-2020)

Measurements are performed using a wideband gated RF power meter, provided the gate parameters are configured to measure power exclusively when the Equipment Under Test (EUT) operates at its maximum power control level. Because the measurement is captured only during the active (ON) state of the transmitter, a duty cycle correction factor is not required.

Sample Calculation

- Conducted Output Power (Peak) = Reading Value + ATT loss + Cable loss
- Conducted Output Power (Average) = Reading Value + ATT loss + Cable loss

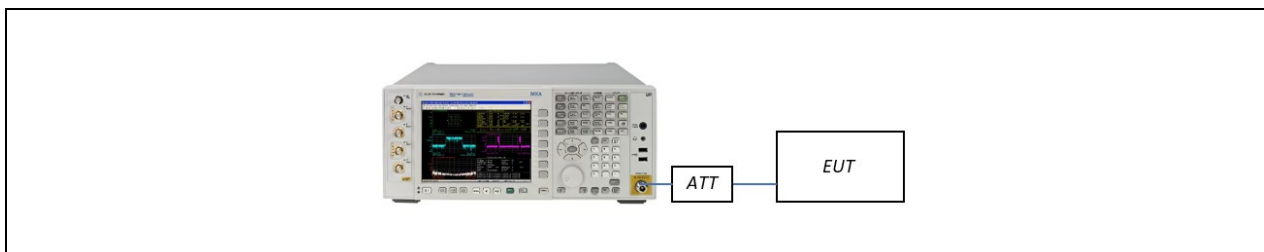
7.4. POWER SPECTRAL DENSITY

LIMIT

§15.247(e) / RSS-247(Issue 4) Section 6.3.1 (b)

The transmitter power density average over 1-second interval shall not be greater than 8dBm in any 3kHz BW.

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure 8.4 in KDB 558074 D01 v05r02, Procedure 11.10 in ANSI 63.10-2020.

The spectrum analyzer is set to:

- Set analyzer center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- $RBW = 3 \text{ kHz} \leq RBW \leq 100 \text{ kHz}$.
- $VBW \geq 3 \times RBW$.
- Sweep = auto couple
- Detector = power averaging (rms) or sample detector (when rms are not available).
- Ensure that the number of measurement points in the sweep $\geq [2 \times \text{span} / RBW]$.
- Employ trace averaging (rms) mode over a minimum of 100 traces
- Use the peak marker function to determine the maximum amplitude level.
- Use the peak marker function to determine the maximum amplitude level within the RBW. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
- If then duty factors should be added to adjust the result if the duty cycle is less than 98%

7.5. CONDUCTED BAND EDGE (OUT OF BAND EMISSIONS) / CONDUCTED SPURIOUS EMISSIONS

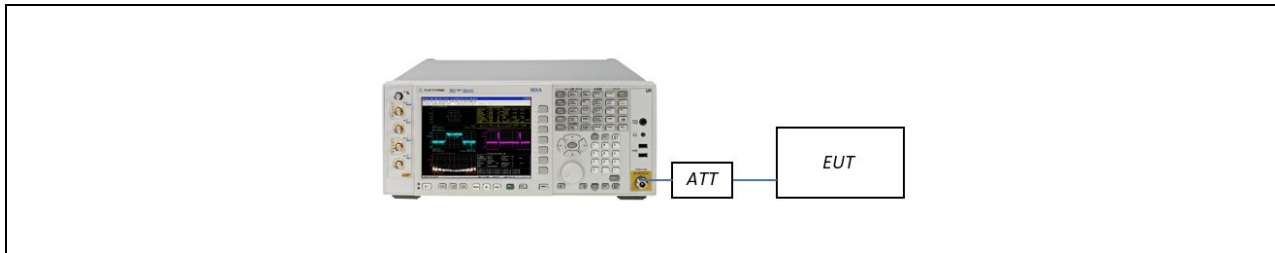
LIMIT

§15.247(d) / RSS-247(Issue 4) Section 6.6

The maximum conducted (peak) output power was used to demonstrate compliance, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

[Conducted > 20 dBc]

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer.

(Procedure 8.5 in KDB 558074 D01 v05r02, Procedure 11.11 in ANSI 63.10-2020)

- RBW = 100 kHz
- VBW $\geq 3 \times$ RBW
- Set span to encompass the spectrum to be examined.
- Detector = Peak
- Trace Mode = max hold
- Sweep time = auto couple
- Ensure that the number of measurement points $\geq 2 \times \text{Span} / \text{RBW}$
- Allow trace to fully stabilize.
- Use peak marker function to determine the maximum amplitude level.

Measurements are made over the 30 MHz to 25 GHz range with the transmitter set to the lowest, middle, and highest channels.

7.6. RADIATED EMISSIONS

RADIATION EMISSION LIMIT

FCC: 47 CFR § 15.209		
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

ISED: RSS-GEN Section 7.4.3		
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	6.37/F(kHz)	300
0.490 – 1.705	63.7/F(kHz)	30
1.705 – 30	0.08	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

RECEIVER RADIATED EMISSION LIMIT

ISED: RSS-GEN Section 7.4.3		
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

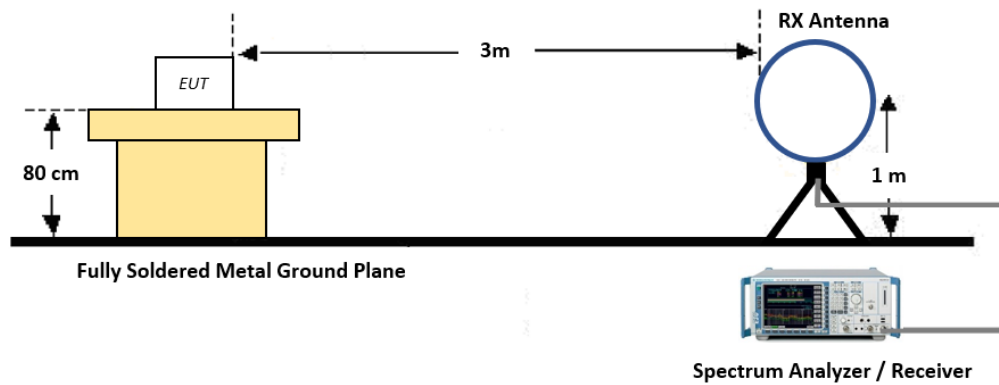
RESTRICTED BANDS OF OPERATION

FCC: 47 CFR § 15.205(a)				
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
0.090 - 0.110	12.29 - 12.293	149.9 - 150.05	1660.0 - 1710.0	8025 - 8500
0.495 - 0.505	12.51975 - 12.52025	156.52475 - 156.52525	1718.8 - 1722.2	9000 - 9200
2.1735 - 2.1905	12.57675 - 12.57725	156.7 - 156.9	2200.0 - 2300.0	9300 - 9500
4.125 - 4.128	13.36 - 13.41	162.0125 - 167.17	2310.0 - 2390.0	10600 - 12700
4.17725 - 4.17775	16.42 - 16.423	167.72 - 173.2	2483.5 - 2500.0	13250 - 13400
4.20725 - 4.20775	16.69475 - 16.69525	240.0 - 285.0	2690.0 - 2900.0	14470 - 14500
6.215 - 6.218	16.80425 - 16.80475	322.0 - 335.4	3260.0 - 3267.0	15350 - 16200
6.26775 - 6.26825	25.5 - 25.67	399.9 - 410.0	3332.0 - 3339.0	17700 - 21400
6.31175 - 6.31225	37.5 - 38.25	608.0 - 614.0	3345.8 - 3358.0	22010 - 23120
8.291 - 8.294	73 - 74.6	960.0 - 1240.0	3600.0 - 4400.0	23600 - 24000
8.362 - 8.366	74.8 - 75.2	1300.0 - 1427.0	4500.0 - 5150.0	31200 - 31800
8.37625 - 8.38675	108 - 121.94	1435.0 - 1626.5	5350.0 - 5460.0	36430 - 36500
8.41425 - 8.41475	123 - 138	1645.5 - 1646.5	7250.0 - 7750.0	Above 38600

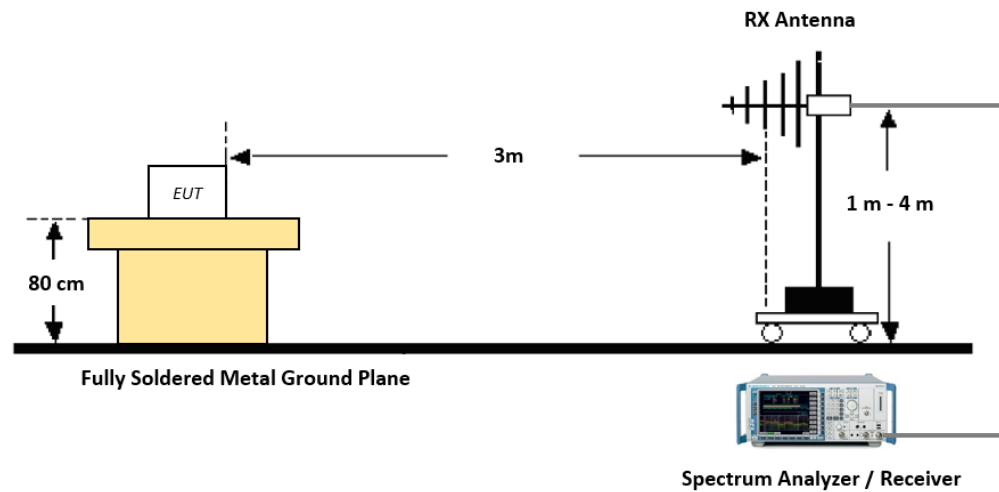
ISED: RSS-GEN Section 7.5				
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
0.090 - 0.110	8.37625 - 8.38675	108 - 138	1660 - 1710	8025 - 8500
0.495 - 0.505	8.41425 - 8.41475	149.9 - 150.05	1718.8 - 1722.2	9000 - 9200
2.1735 - 2.1905	12.29 - 12.293	156.52475 - 156.52525	2200 - 2300	9300 - 9500
3.020 - 3.026	12.51975 - 12.52025	156.7 - 156.9	2310 - 2390	10600 - 12700
4.125 - 4.128	12.57675 - 12.57725	162.0125 - 167.17	2483.5 - 2500	13250 - 13400
4.17725 - 4.17775	13.36 - 13.41	167.72 - 173.2	2655 - 2900	14470 - 14500
4.20725 - 4.20775	16.42 - 16.423	240 - 285	3260 - 3267	15350 - 16200
5.677 - 5.683	16.69475 - 16.69525	322 - 335.4	3332 - 3339	17700 - 21400
6.215 - 6.218	16.80425 - 16.80475	399.9 - 410	3345.8 - 3358	22010 - 23120
6.26775 - 6.26825	25.5 - 25.67	608 - 614	3500 - 4400	23600 - 24000
6.31175 - 6.31225	37.5 - 38.25	960 - 1427	4500 - 5150	31200 - 31800
8.291 - 8.294	73 - 74.6	1435 - 1626.5	5350 - 5460	36430 - 36500
8.362 - 8.366	74.8 - 75.2	1645.5 - 1646.5	7250 - 7750	Above 38600

TEST SETUP

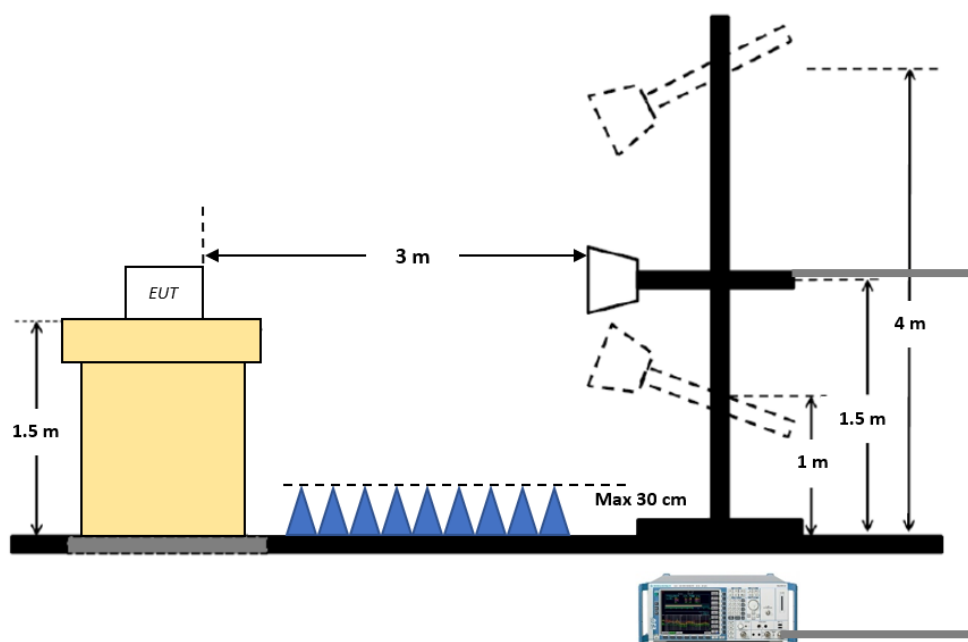
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



TEST PROCEDURE OF RADIATED SPURIOUS EMISSION (BELOW 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated to 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor (0.009 MHz – 0.490 MHz) = $40 \cdot \log(3 \text{ m}/300 \text{ m}) = -80 \text{ dB}$
Measurement Distance: 3 m
7. Distance Correction Factor (0.490 MHz – 30 MHz) = $40 \cdot \log(3 \text{ m}/30 \text{ m}) = -40 \text{ dB}$
Measurement Distance: 3 m
8. Spectrum Setting
 - Frequency Range = 9 kHz ~ 30 MHz
 - Detector = Peak
 - Trace = Max hold
 - RBW = 9 kHz
 - VBW $\geq 3 \cdot \text{RBW}$
9. Total = Reading Value + Antenna Factor (A.F) + Cable Loss (C.L)
10. There is a comparison data both open-field test site and alternative test site – semi-Anechoic chamber according to 414788 D01. And the results are properly calibrated.

TEST PROCEDURE OF RADIATED SPURIOUS EMISSION (30 MHz – 1 GHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The EUT is placed on a turntable, which is 0.8 m above ground plane.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. The turntable shall be rotated to 360 degrees to determine the position of maximum emission level.
5. Spectrum Setting

(1) Measurement Type (Peak):

- Measured Frequency Range: 30 MHz – 1 GHz
- Detector = Peak
- Trace = Max hold
- RBW = 100 kHz
- VBW $\geq 3 \cdot \text{RBW}$

(2) Measurement Type(Quasi-peak):

- Measured Frequency Range: 30 MHz – 1 GHz
- Detector = Quasi-Peak
- RBW = 120 kHz

6. Total = Reading Value + Antenna Factor (A.F) + Cable Loss (C.L)

TEST PROCEDURE OF RADIATED SPURIOUS EMISSION (ABOVE 1 GHz)

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated to 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which varies from 1m to 4m to reach the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting

(1) Measurement Type (Peak):

- Measured Frequency Range: 1 GHz – 25 GHz
- Detector = Peak
- Trace = Max hold
- RBW = 1 MHz
- VBW $\geq 3 \times$ RBW

(2) Measurement Type(Average): Duty cycle $\geq 98\%$

- Measured Frequency Range: 1 GHz – 25 GHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW $\geq 3 \times$ RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).

(3) Measurement Type(Average): Duty cycle $< 98\%$, duty cycle variations are less than $\pm 2\%$

- Measured Frequency Range: 1 GHz – 25 GHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW $\geq 3 \times$ RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).
- Correction factors should be added to the measurement results prior to comparing them to the emission limit to compute the emission level that would have been measured had the test been performed at 100 % duty cycle.
- Duty Cycle Factor (dB): Please refer to the please refer to section 9.1.

10. Measurement value only up to 6 maximum emissions noted or would be lesser if no specific emissions from the EUT are recorded (*i.e.*: margin > 20 dB from the applicable limit) and considered that is already beyond the background noise floor.

11. Sample Calculation

- (1) Total (Peak) = Reading Value + Antenna Factor (A.F) + Cable Loss (C.L) - Amp Gain(G)
- (2) Total (Average, Duty $\geq 98\%$) = Reading Value + Antenna Factor (A.F) + Cable Loss (C.L) - Amp Gain(G)
- (3) Total (Average, Duty $< 98\%$) = Reading Value + Antenna Factor (A.F) + Cable Loss (C.L) - Amp Gain(G) + Duty Cycle Factor
- (4) Alternative Method: Total (Average) = Total (Peak) + $20 \log(\text{Duty Cycle})$

TEST PROCEDURE OF RADIATED RESTRICTED BAND EDGE

1. Radiated test is performed with hopping off (if there is any)
2. The EUT is placed on a turntable, which is 1.5 m above ground plane.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. The turntable shall be rotated to 360 degrees to determine the position of maximum emission level.
5. EUT is set 3 m away from the receiving antenna, which varies from 1m to 4m to find out the highest emissions.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting

(1) Measurement Type (Peak):

- Detector = Peak
- Trace = Max hold
- RBW = 1 MHz
- VBW $\geq 3 \times$ RBW

(2) Measurement Type(Average): Duty cycle $\geq 98\%$,

- Measured Frequency Range: 2310 MHz – 2390 MHz / 2483.5 MHz – 2500 MHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW $\geq 3 \times$ RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).

(3) Measurement Type(Average): Duty cycle $< 98\%$, duty cycle variations are less than $\pm 2\%$

- Measured Frequency Range: 2310 MHz – 2390 MHz / 2483.5 MHz – 2500 MHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW $\geq 3 \times$ RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).
- Correction factors should be added to the measurement results prior to comparing them to the emission limit to compute the emission level that would have been measured had the test been performed at 100 % duty cycle.
- Duty Cycle Factor (dB): Please refer to the please refer to section 9.1.

9. Measurement value only up to 6 maximum emissions noted or would be lesser if no specific emissions from the EUT are recorded (*i.e.*: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

10. Sample Calculation

- (1) Total (Peak) = Reading Value + Antenna Factor (A.F) + Cable Loss (C.L)
- (2) Total (Average, Duty $\geq 98\%$) = Reading Value + Antenna Factor (A.F) + Cable Loss (C.L) - Amp Gain(G)
- (3) Total (Average, Duty $< 98\%$) = Reading Value + Antenna Factor (A.F) + Cable Loss (C.L) - Amp Gain(G) + Duty Cycle Factor

7.7. AC POWER LINE CONDUCTED EMISSIONS

LIMIT

47 CFR § 15.207, RSS-GEN Section 7.4.2

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).

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

*Decreases with the logarithm of the frequency.

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

TEST SETUP

See test photographs attached in Annex A for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT is situated on a wooden table 80 cm above the reference ground plane.
2. EUT is connected via LISN to test power supply.
3. The measurement results are obtained as described below:
4. Detectors: Quasi Peak and Average Detector.

According to FCC KDB 174176 D01 Line Conducted FAQ v01r01:

Devices Operating Above 30 MHz

For a device with a permanent or detachable antenna operating above 30 MHz, measurements must be performed with the antenna connected as specified in clause 6.2 of ANSI C63.10-2020 and must accommodate changes of ANSI C63.10 2020+Cor 1-2023.

Devices Operating Below 30 MHz

For a device with a permanent or detachable antenna operating at or below 30 MHz, the FCC will accept measurements performed with a suitable dummy load in lieu of the antenna under the following conditions:

- (1) Perform the AC powerline conducted tests with the antenna connected to determine compliance with Section 15.207 limits outside the transmitter's fundamental emission band;
- (2) Retest with a dummy load in lieu of the antenna to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network which simulates the antenna in the fundamental frequency band. All measurements must be performed as specified in clause 6.2 of ANSI C63.10-2020 and must accommodate changes of ANSI C63.10 2020+Cor 1-2023.

Sample Calculation

Quasi-peak (Final Result) = Reading Value + Correction Factor

8. SUMMARY OF TEST RESULTS

Test Description	FCC Part Section(s)	ISED Part Section(s)	Test Limit	Test Condition	Test Result
6 dB Bandwidth	§15.247(a)(2)	RSS-247, 6.3.1(a)	≥ 500 kHz	Conducted	PASS
Occupied Bandwidth	-	RSS-GEN	-		PASS
Conducted Maximum Peak Output Power	§15.247(b)(3)	RSS-247, 6.3.2	≤ 1 W		PASS
Maximum e.i.r.p.	-	RSS-247, 6.3.2	≤ 4 W e.i.r.p.		PASS
Power Spectral Density	§15.247(e)	RSS-247, 6.3.1(b)	≤ 8 dBm / 3 kHz		PASS
Band Edge (Out of Band emissions)	§15.247(d)	RSS-247, 7.5	≥ 20 dBc		PASS
AC Power line Conducted Emissions	§15.207	RSS-GEN, 7.4.2	cf. Section 7.4.2		PASS
Radiated Spurious Emissions	§15.247(d) §15.209	RSS-GEN, 8.9	cf. Section 7.4.3	Radiated	PASS
Radiated Restricted Band Edge	§15.247(d) §15.205(a)	RSS-GEN, 7.5	cf. Section 7.5		PASS

WORST CASE CONFIGURATION

RADIATED TEST

1. EUT Axis

All X and Y positions for horizontal / vertical antenna polarization were investigated to find the worst-case position. X position was selected for the final evaluation.

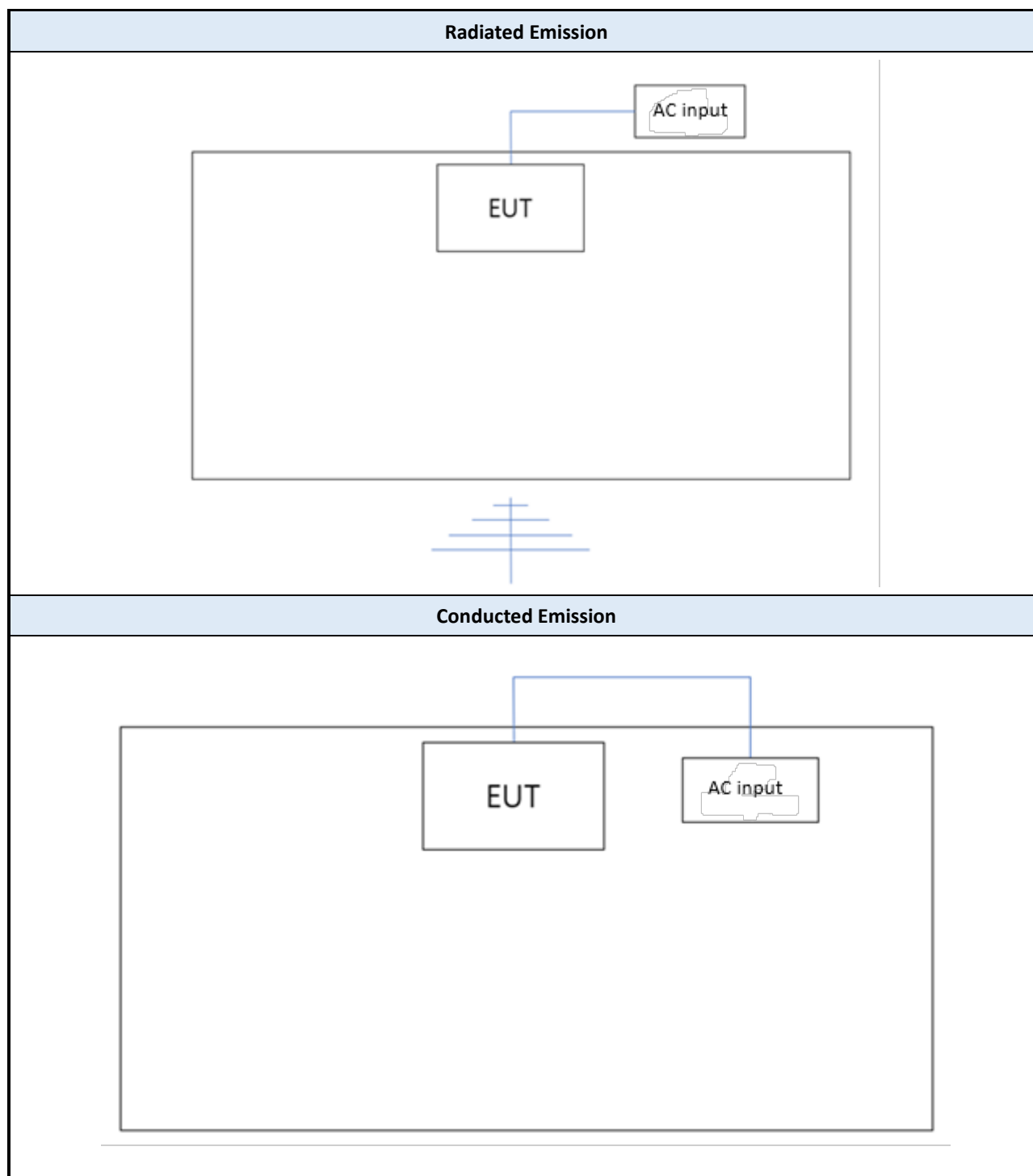
CONDUCTED TEST

1. AC line conducted emission test was performed at the worst-case channel

OUTPUT POWER SETTING

The output is preset as declared by the manufacturer

TEST CONFIGURATION



9. TEST RESULT

9.1. DUTY CYCLE

Mode	Data Rate	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Factor (dB)
BLE1M	1 Mbps	.381	.626	0.609	2.16
BLE2M	2 Mbps	1.068	1.875	0.570	2.44

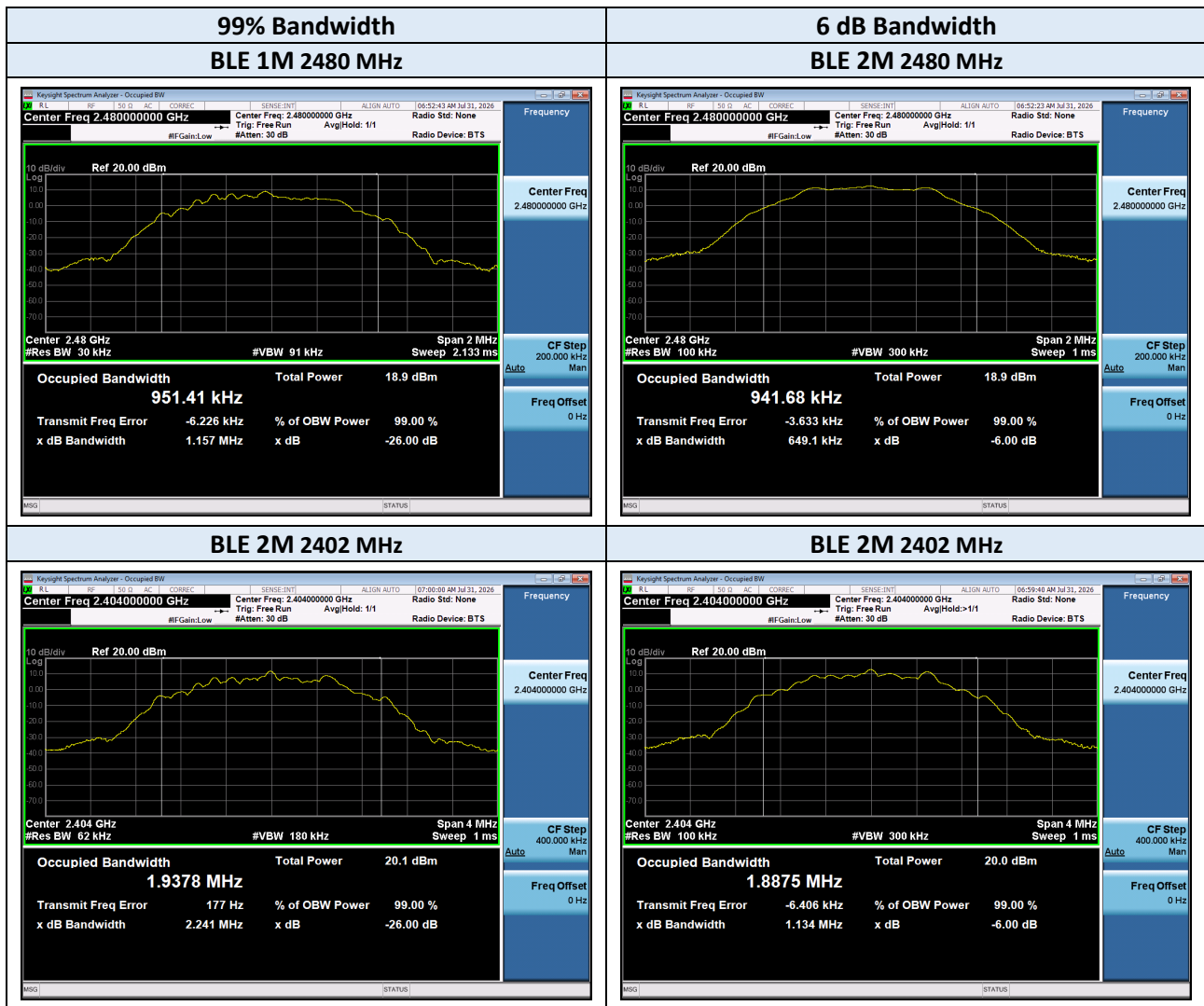


9.2. 6 dB BANDWIDTH / 99% BANDWIDTH MEASUREMENT

BLE 1M (GFSK)		99% Bandwidth (MHz)	6 dB Bandwidth (kHz)	
Frequency (MHz)	Channel	Result	Result	Limit
2 402	0	0.953	651	≥ 500
2 440	19	0.952	652	
2 480	39	0.951	649	

BLE 2M (GFSK)		99% Bandwidth (MHz)	6 dB Bandwidth (kHz)	
Frequency (MHz)	Channel	Result	Result	Limit
2 404	0	1.938	1134	≥ 500
2 440	19	1.935	1135	
2 478	39	1.936	1135	

TEST PLOTS



1. To simplify the report, attached plots were only the worst-case channel

9.3. OUTPUT POWER

Peak Power

BLE 1M (GFSK)		Test Result	
Frequency (MHz)	Channel No.	Measured Power(dBm)	Limit (dBm)
2402	0	13.09	≤ 30
2440	19	12.72	≤ 30
2480	39	12.74	≤ 30

BLE 2M (GFSK)		Test Result	
Frequency (MHz)	Channel No.	Measured Power(dBm)	Limit (dBm)
2404	0	12.97	≤ 30
2440	19	12.79	≤ 30
2478	39	12.83	≤ 30

Average Power

BLE 1M (GFSK)		Test Result		
Frequency (MHz)	Channel No.	Measured Power(dBm)	Total Power (dBm)	Limit (dBm)
2402	0	10.48	10.58	≤ 30
2440	19	10.17	10.17	≤ 30
2480	39	10.17	10.17	≤ 30

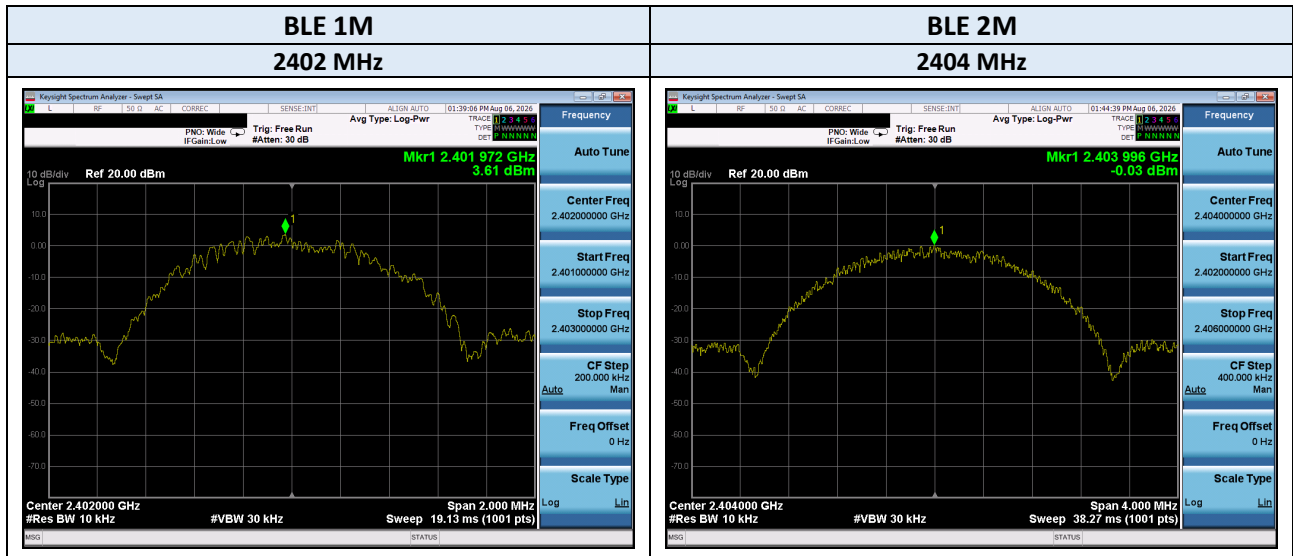
BLE 2M (GFSK)		Test Result		
Frequency (MHz)	Channel No.	Measured Power(dBm)	Total Power (dBm)	Limit (dBm)
2404	0	10.54	10.54	≤ 30
2440	19	10.34	10.34	≤ 30
2478	39	10.45	10.45	≤ 30

9.4. POWER SPECTRAL DENSITY

BLE 1M (GFSK)		Test Result			
Frequency (MHz)	Channel No.	Measured PSD (dBm)	D.C.F (dB)	Total PSD (dBm)	Limit (dBm/3 kHz)
2402	0	3.61	0.609	4.23	≤ 8.000
2440	19	2.79	0.609	3.40	≤ 8.000
2480	39	2.62	0.609	3.23	≤ 8.000

BLE 2M (GFSK)		Test Result			
Frequency (MHz)	Channel No.	Measured PSD (dBm)	D.C.F (dB)	Total PSD (dBm)	Limit (dBm/3 kHz)
2404	0	-0.03	0.570	0.54	≤ 8.000
2440	19	-0.22	0.570	0.35	≤ 8.000
2478	39	-0.48	0.570	0.09	≤ 8.000

TEST PLOTS



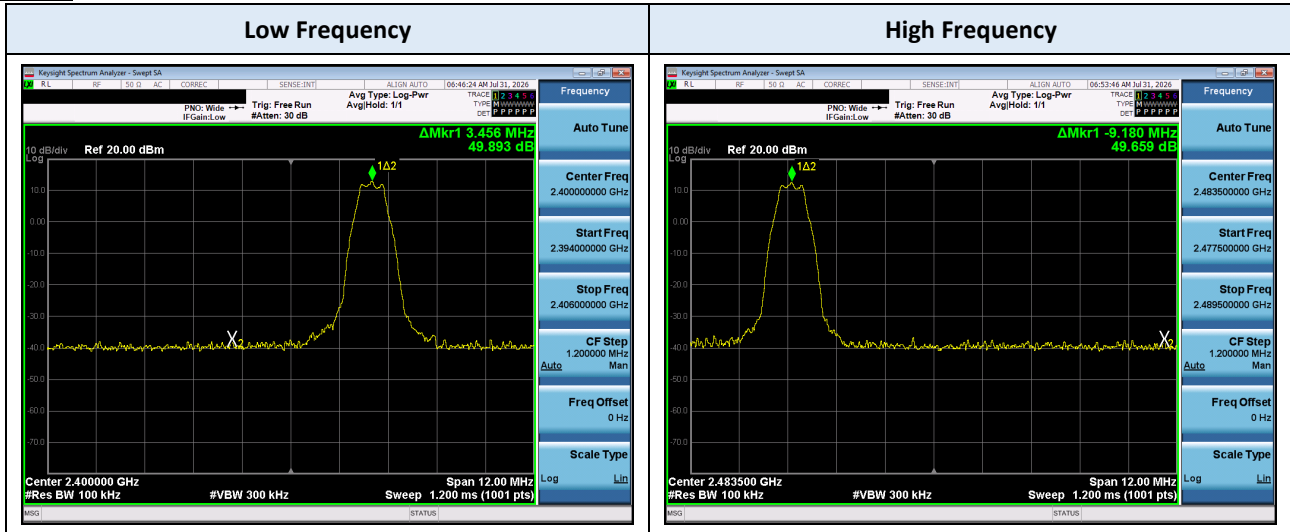
Note:

- Measurements were conducted under worse-case conditions, with duty cycle appropriately accounted for using a peak detector.

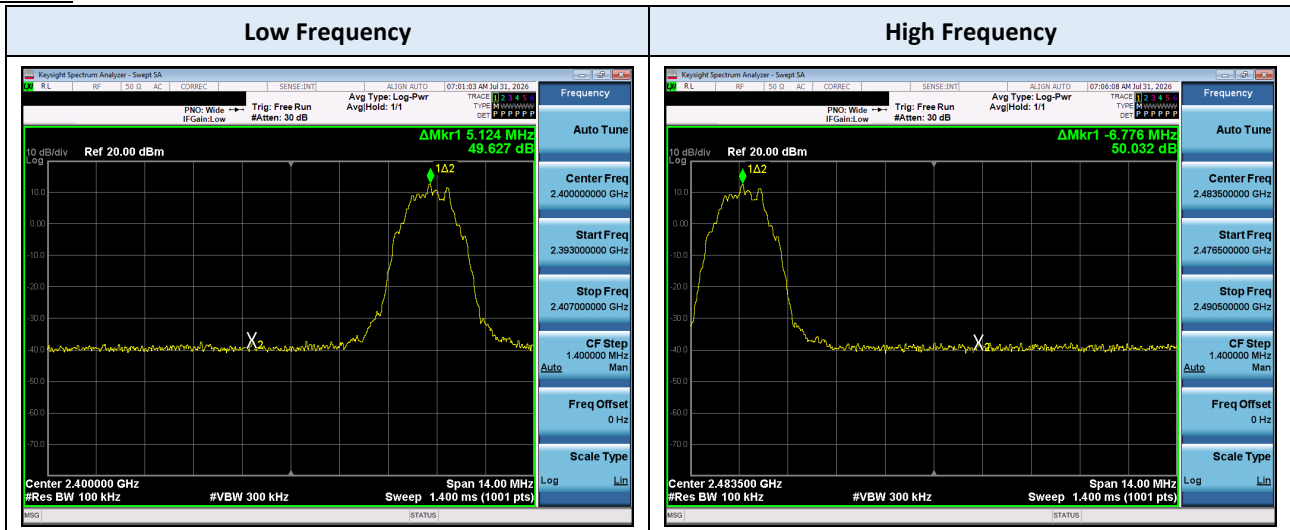
9.4. CONDUCTED BAND EDGE & SPURIOUS EMISSIONS

Out of Band Emissions at the Band Edge

BLE 1M



BLE 2M

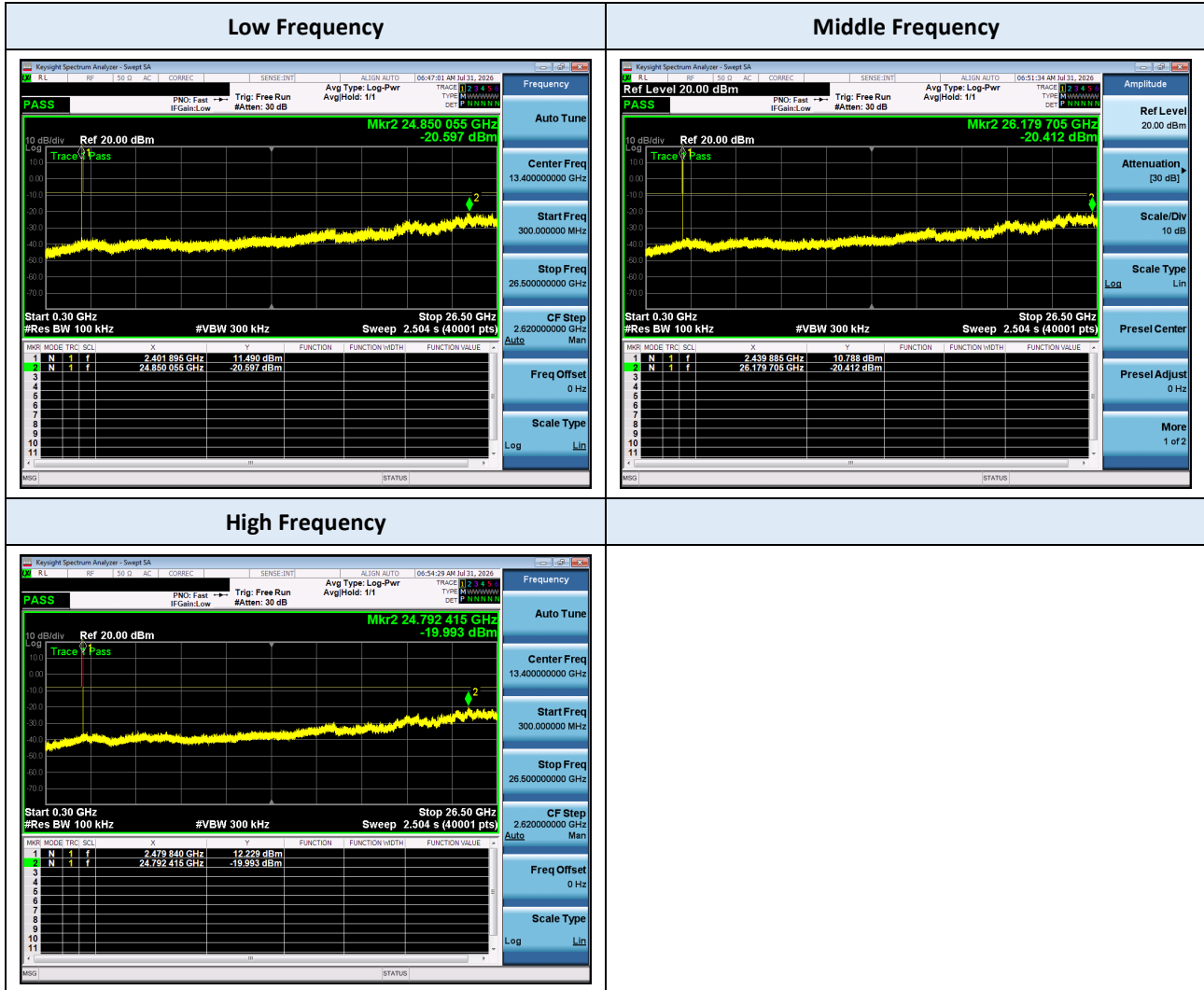


Note:

Conducted Spurious Emissions

TEST PLOTS

BLE 1M:

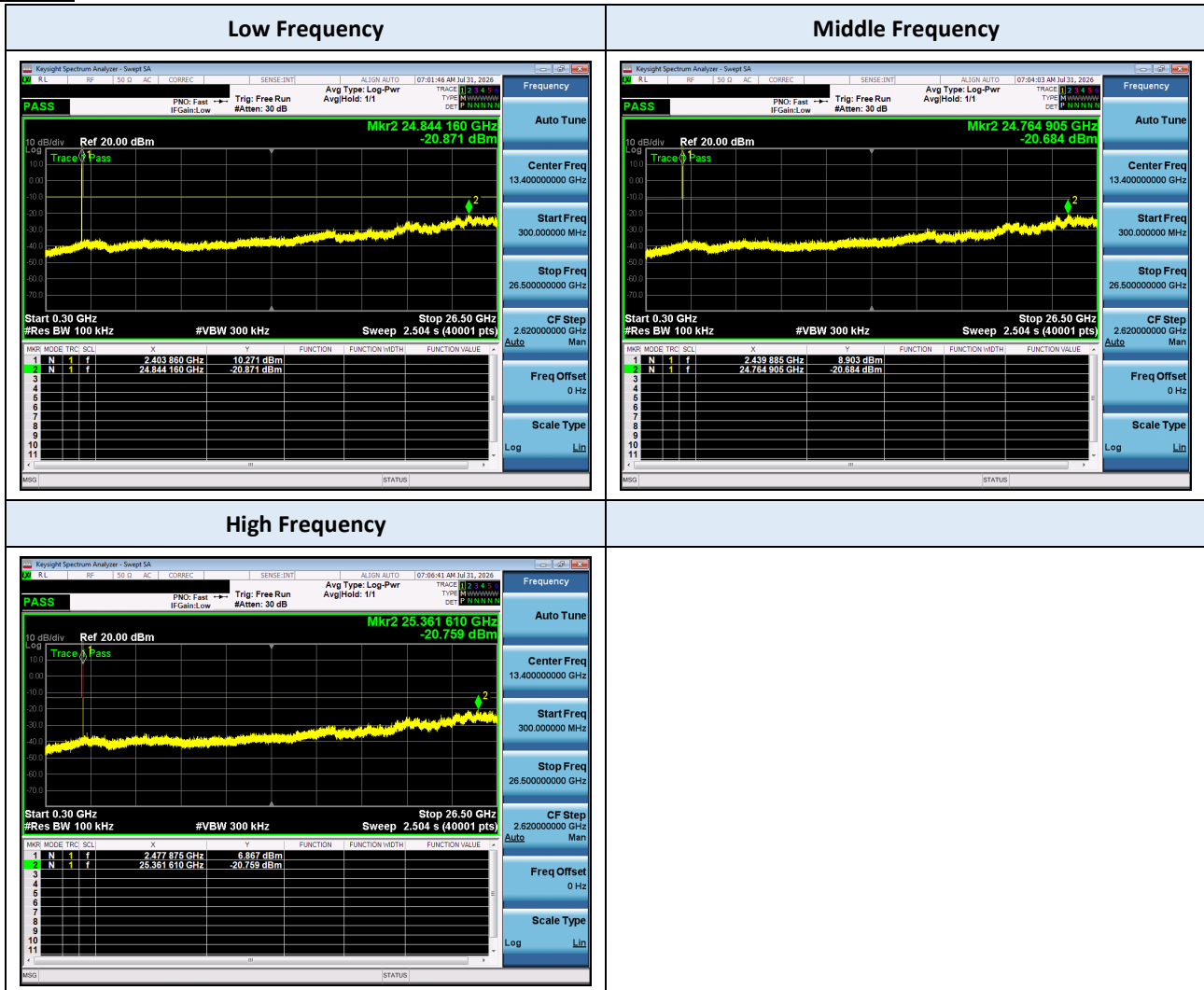


Note:

1. The plots included in this report are only at the worst-case channel.

TEST PLOTS

BLE 2M:



Note:

- The plots included in this report are only at the worst-case channel.

9.5. RADIATED SPURIOUS EMISSIONS

Frequency Range: 9 kHz ~ 30 MHz

Frequency (MHz)	Polarization	Reading (dBuV)	Corr. ¹⁾ (dB)	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Measurement Type
No major peaks found							

Note(s):

1. The Measured value of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
2. Distance extrapolation factor = $40\log(\text{specific distance} / \text{test distance})$ (dB)
3. Limit line = specific Limits (dBuV) + Distance extrapolation factor

Frequency Range: Below 1 GHz

Frequency (MHz)	Polarization	Reading (dBuV)	Corr. ¹⁾ (dB)	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Measurement Type
42.076	V	46.28	18.83	27.45	40.00	12.55	QPK
42.572	H	51.65	18.47	33.18	40.00	6.82	QPK

Note(s):

1. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.

Frequency Range: Above 1 GHz

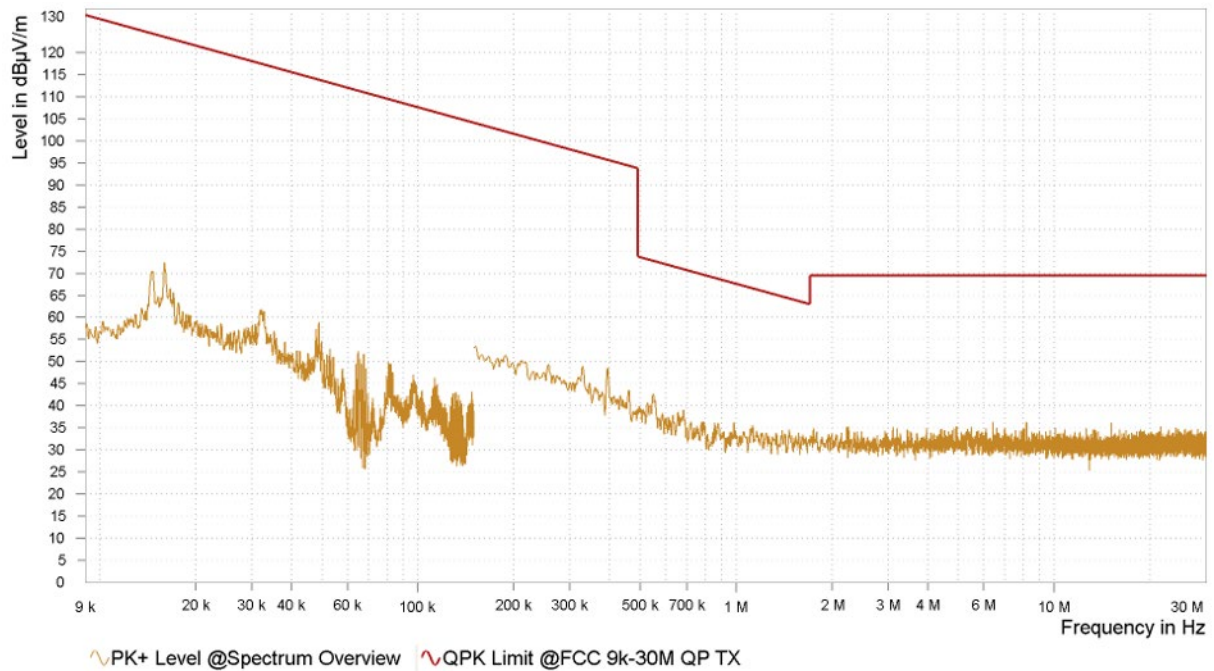
Band	Test Mode	Test Frequency (MHz)	Frequency (MHz)	PK Level	PK Limit	PK Margin	AV Level	AV Limit	AV Margin	Factor	Polarization
BLE	1Mbps	2402	4 803.81	45.19	74	28.81	35.35	54	16.49	-16.67	H
			4 804.36	43.78	74	30.22	32.76	54	19.08	-16.74	V
			7 199.44	45.64	74	28.36	33.94	54	17.90	-10.67	V
			7 209.15	45.47	74	28.53	34.07	54	17.77	-10.44	H
		2440	4 879.96	46.54	74	27.46	36.78	54	15.06	-16.32	V
			4 880.21	48.73	74	25.27	40.03	54	11.81	-16.24	H
			7 318.20	45.86	74	28.14	34.16	54	17.68	-10.32	H
			7 321.16	46.04	74	27.96	33.94	54	17.90	-10.48	V
		2480	4 959.63	44.48	74	29.52	33.77	54	18.07	-15.99	V
			4 959.67	47.9	74	26.1	38.55	54	13.29	-15.91	H
			7 432.87	45.4	74	28.6	33.75	54	18.09	-10.83	V
			7 434.75	46.14	74	27.86	34.02	54	17.82	-10.61	H
	2Mbps	2404	4 806.82	43.67	74	30.33	31	54	20.55	-16.71	V
			4 807.93	46.67	74	27.33	34.48	54	17.07	-16.62	H
			7 218.86	46.29	74	27.71	34.28	54	17.27	-10.43	H
			7 218.98	46.24	74	27.76	34.08	54	17.47	-10.61	V
		2440	4 878.99	48.56	74	25.44	37.14	54	14.41	-16.23	H
			4 880.06	47.29	74	26.71	36.52	54	15.03	-16.32	V
			7 310.76	46.03	74	27.97	34.15	54	17.40	-10.35	H
			7 329.26	45.99	74	28.01	34.12	54	17.43	-10.52	V
		2478	4 955.22	45.11	74	28.89	33.45	54	18.10	-16.04	V
			4 956.03	46.57	74	27.43	35.15	54	16.40	-15.95	H
			7 432.48	45.41	74	28.59	33.85	54	17.70	-10.83	V
			7 444.54	45.75	74	28.25	34.01	54	17.54	-10.63	H

Note:

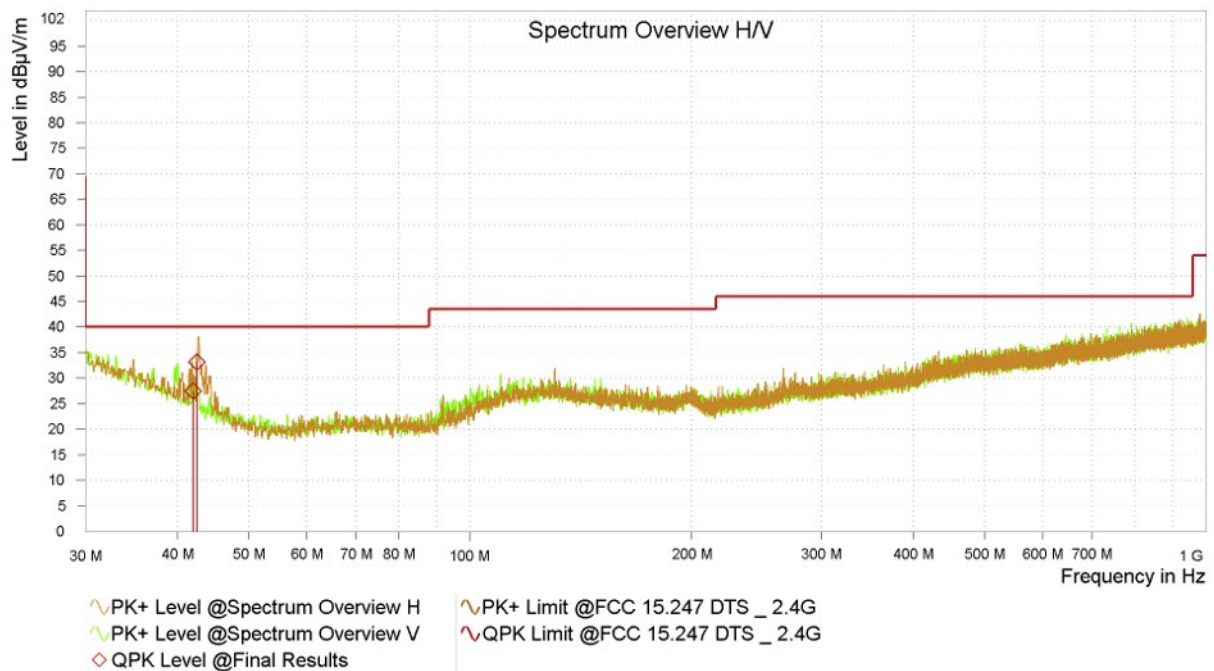
1. Correction Factor: Antenna Factor + Cable loss + Preamplifier Gain
2. AV Level = Measured Power(dBm) + Correction Factor(dB) + Duty Cycle Factor(dB).
3. The Duty Factor is applied only to harmonic components.

■ TEST PLOTS (TX Plot)

Radiated Spurious Emission 9 kHz – 30 MHz: Worst Case



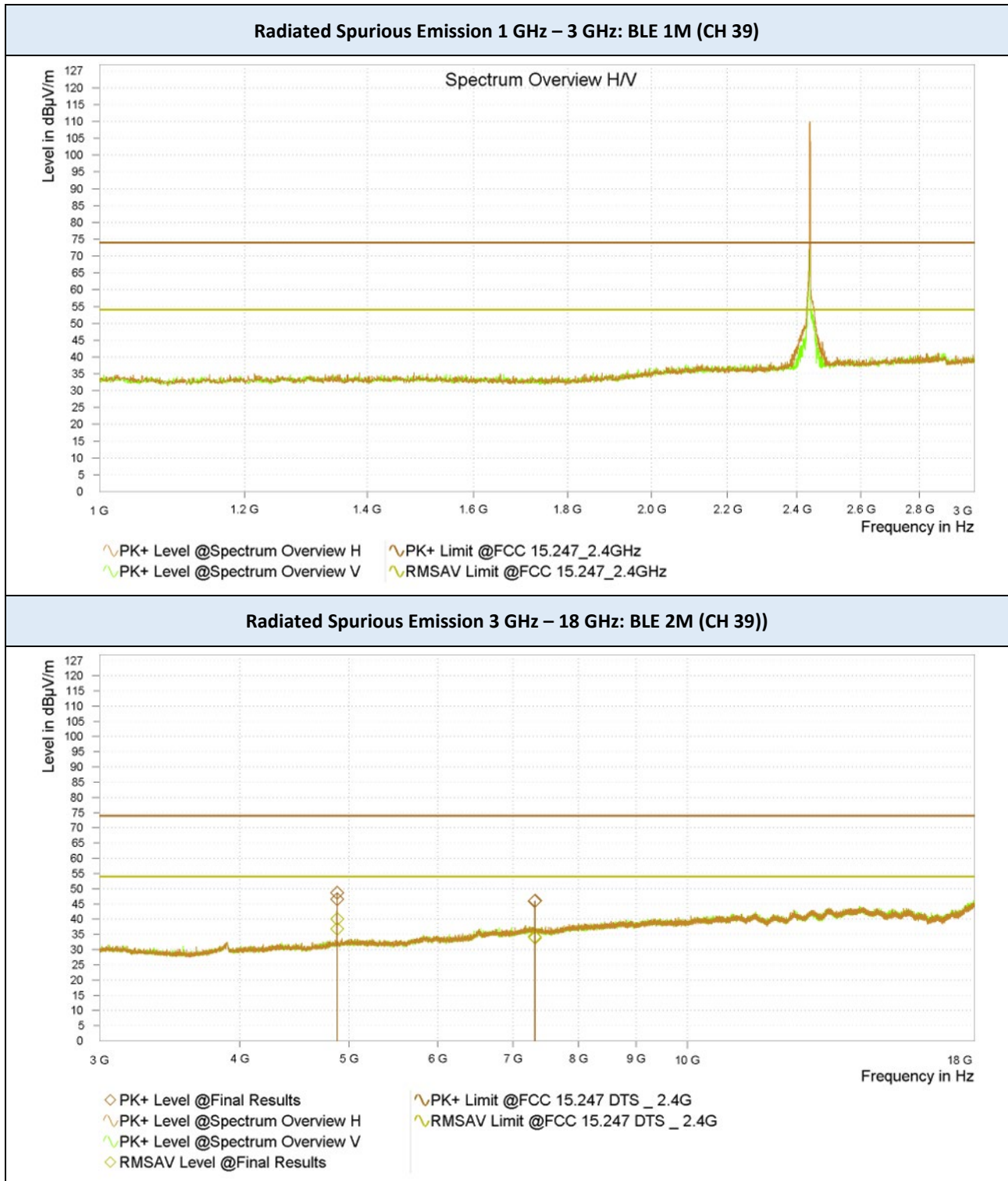
Radiated Spurious Emission 30 MHz – 1 GHz: Worst Case



Note:

1. The worst-case plot is included in this report.

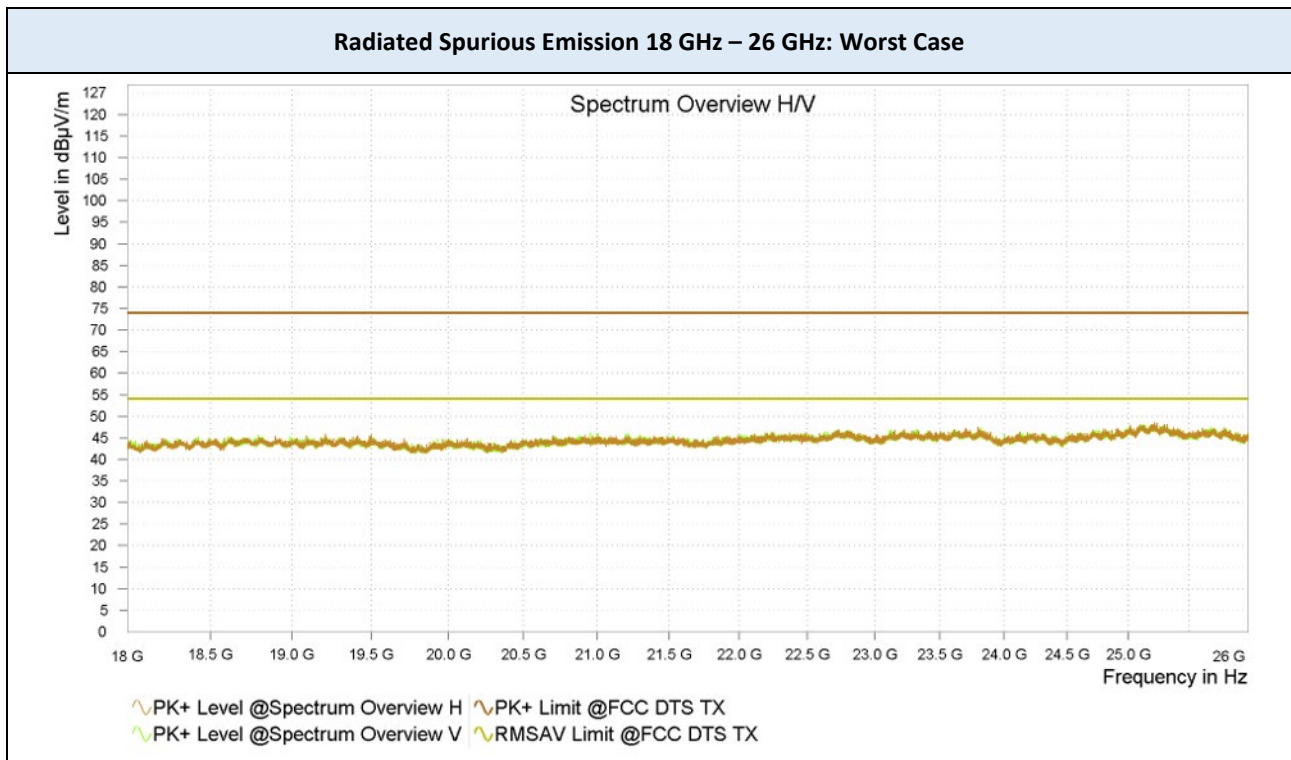
■ TEST PLOTS (TX Plot)



Note:

1. The worst-case plot is included in this report.

▣ TEST PLOTS (TX Plot)

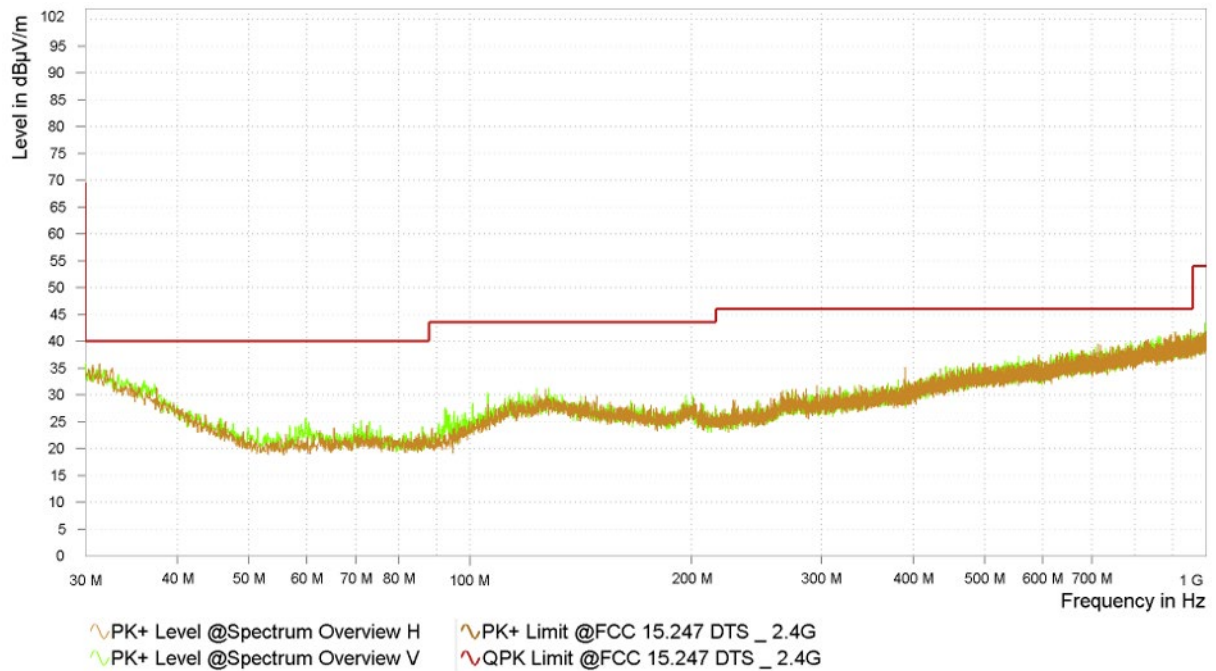


Note:

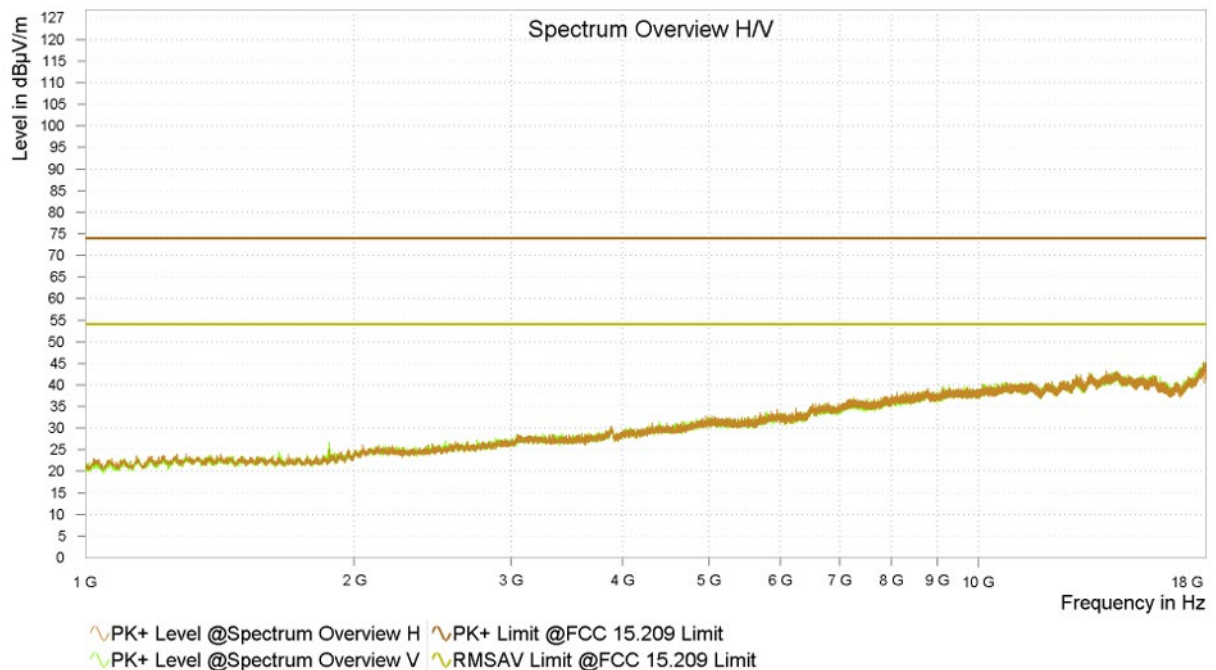
1. There were no major peaks, and representative plots are included in this report
2. The plots include all used factor values for cables, antenna, preamplifier, etc.

TEST PLOTS (RX Plot)

Radiated Spurious Emission 30 MHz – 1 GHz: Receiver Mode



Radiated Spurious Emission 1 GHz – 18 GHz: Receiver Mode



9.6. RADIATED RESTRICTED BAND EDGES

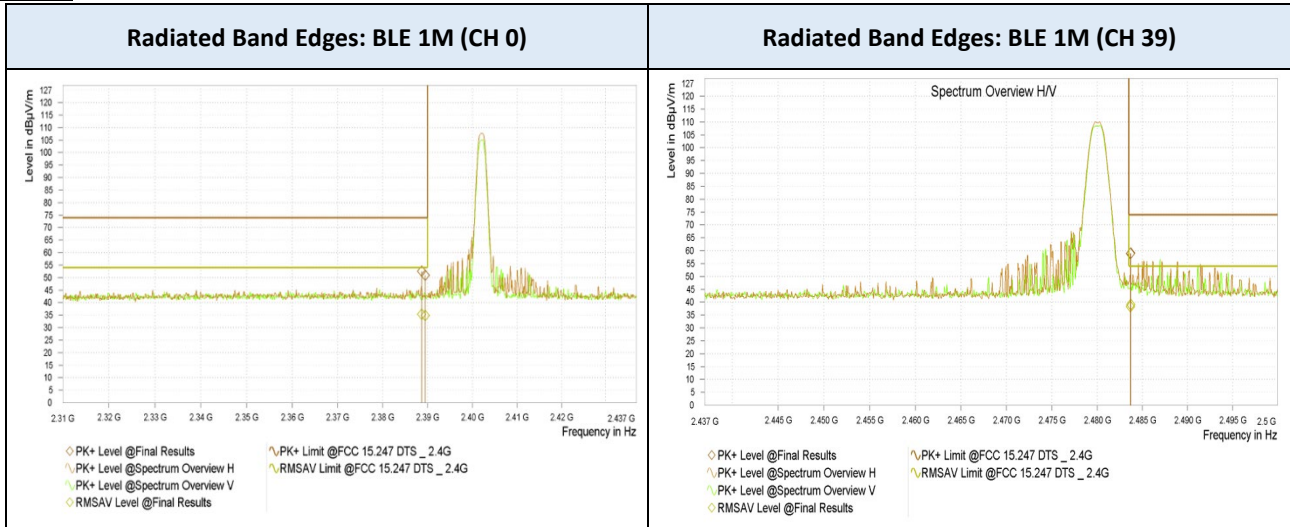
Band	Test Mode	Test Frequency (MHz)	Frequency (MHz)	PK Level	PK Limit	PK Margin	AV Level	AV Limit	AV Margin	Factor	Polarization
BLE Low Band-Edge	1Mbps	2402	2 388.69	52.55	74	21.45	35.33	54	16.50	-8.39	H
			2 389.50	50.98	74	23.02	34.89	54	16.94	-8.39	V
	2Mbps	2404	2 389.53	52.13	74	21.87	35.23	54	16.32	-8.37	H
			2 389.70	51.83	74	22.17	34.86	54	16.69	-8.38	V
BLE High Band-Edge	1Mbps	2480	2 483.70	59.07	74	14.93	39.08	54	12.75	-7.83	H
			2 483.69	58.91	74	15.09	38.29	54	13.54	-7.83	V
	2Mbps	2478	2 485.66	59.37	74	14.63	36.69	54	14.86	-7.82	H
			2 483.58	58.5	74	15.5	36.71	54	14.84	-7.83	V

Note:

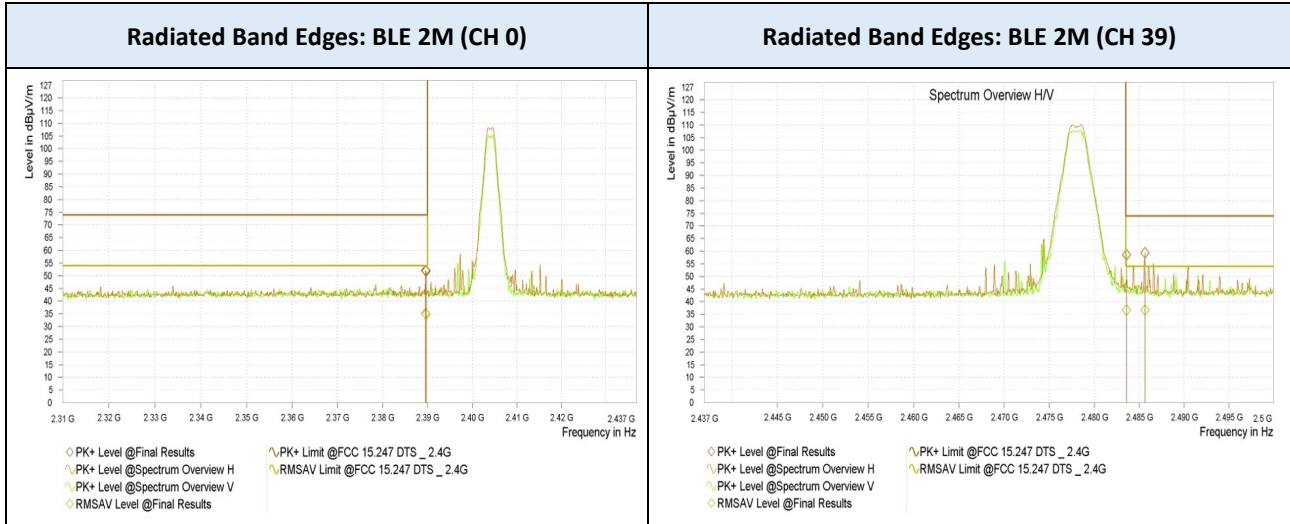
1. Correction Factor: Antenna Factor + Cable loss + Preamplifier Gain
2. AV Level = Measured Power(dBm) + Correction Factor(dB) + Duty Cycle Factor(dB).

TEST PLOTS

BLE 1M



BLE 2M



9.7. POWERLINE CONDUCTED EMISSIONS

Frequency (MHz)	Line	Reading (dBμV)		Corr. ¹⁾ (dB)	Level (dBμV)		Limit (dBμV)		Margin (dB)	
		QP	CAV		QP	CAV	QP	CAV	QP	CAV
0.168	N	25.9	11.6	9.6	35.5	21.2	65.1	55.1	29.6	33.9
0.257	N	24.4	9.4	9.6	34.0	19.0	61.5	51.5	27.5	32.5
0.324	N	22.3	10.5	9.6	31.9	20.1	59.6	49.6	27.7	29.5
0.434	N	21.8	6.7	9.6	31.4	16.3	57.2	47.2	25.8	30.9
17.112	N	26.3	17.3	10.3	36.6	27.6	60	50	23.4	22.4

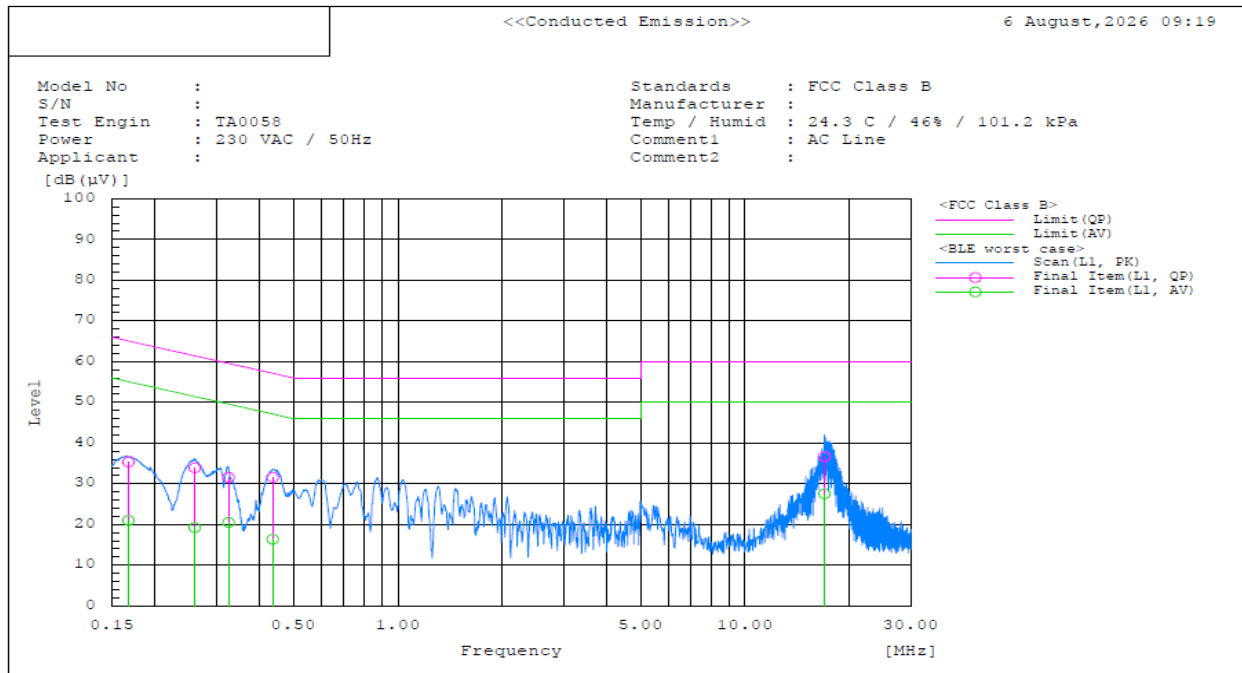
Frequency (MHz)	Line	Reading (dBμV)		Corr. ¹⁾ (dB)	Level (dBμV)		Limit (dBμV)		Margin (dB)	
		QP	CAV		QP	CAV	QP	CAV	QP	CAV
0.168	L1	25.8	11.4	9.6	35.4	21.0	65.1	55.1	29.7	34.1
0.260	L1	24.4	9.7	9.6	34.0	19.3	61.4	51.4	27.4	32.1
0.325	L1	22.0	10.9	9.6	31.6	20.5	59.6	49.6	28.0	29.1
0.436	L1	22.0	6.8	9.6	31.6	16.4	57.1	47.1	25.5	30.7
16.915	L1	26.4	17.3	10.3	36.7	27.6	60	50	23.3	22.4

Note:

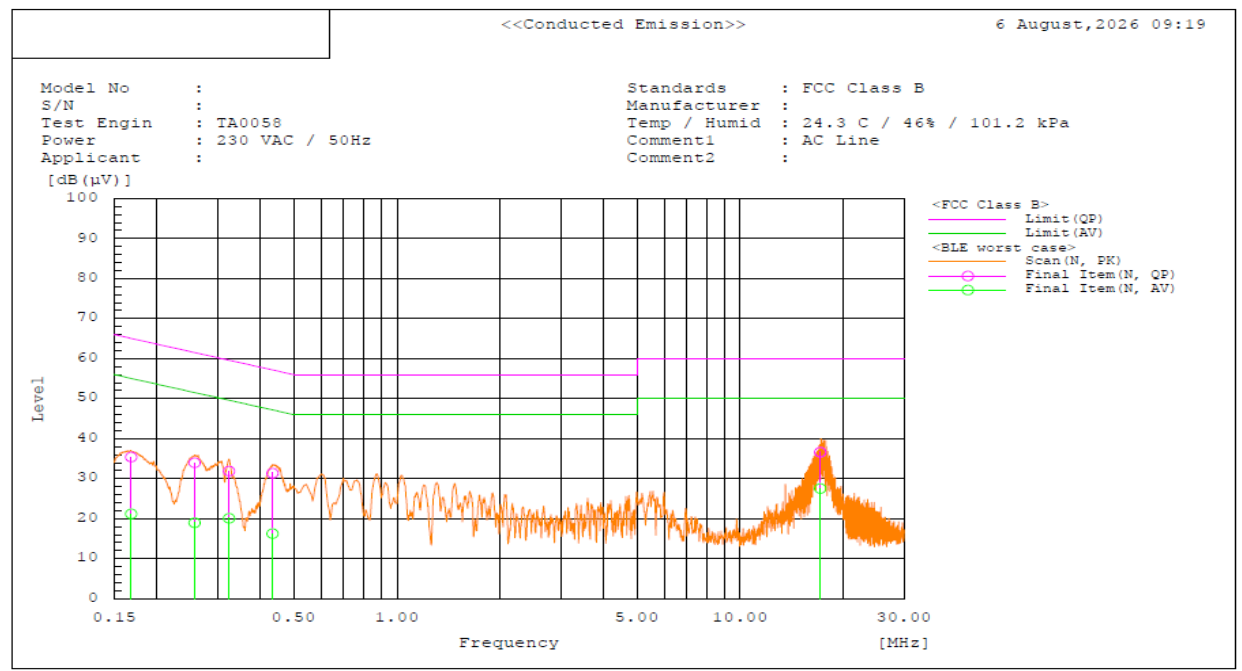
1. Quasi-peak (Final Result) = Reading Value + Correction Factor

■ TEST PLOTS

AC Line Conducted Emission (L1)



AC Line Conducted Emission (N)



10. LIST OF TEST EQUIPMENT

No.	Instrument	Model No.	Calibration Due (mm/dd/yy)	Manufacture	Serial No.
☒	Signal Analyzer (1 Hz ~ 44.0 GHz)	ESW44	08/05/2026	Rohde & Schwarz	103176
☒	Signal Analyzer (20 Hz ~ 26.5 GHz)	N9020A	10/09/2026	Keysight	MY53280148
☒	Attenuator (20 dB, DC ~ 26.5 GHz)	8493C 20 dB	10/14/2026	KEYSIGHT	9072
☒	Loop Antenna (0.009 ~ 30 MHz)	HLA 6121	03/03/2027	TESEQ	43964
☒	BI-LOG Antenna (30 MHz ~ 6 GHz)	JB6	02/27/2027	Sunol	A060916
☒	Horn Antenna (1 GHz ~ 18 GHz)	BBHA 9120 D	07/15/2027	Schwarzbeck	03023
☒	Horn Antenna (15 GHz ~ 40 GHz)	BBHA 9170	01/21/2027	Schwarzbeck	1342
☒	RF Switch Matrix System	HRSMS-VL	01/02/2027	HCT Ltd.	2-51-001
☒	Power Meter	OSP150+OSP-B157W8	06/26/2027	Rohde & Schwarz	100872
☒	EMI Test Receiver	ESR3	07/23/2027	Rohde & Schwarz	102363
☒	LISN	ENV216	08/28/2026	Rohde & Schwarz	101550
☒	Temperature & Humidity Chamber	SH-662	08/05/2026	ESPEC	93024017
☒	Test Software	R&S*ELEKTRA	-	Rohde & Schwarz	-

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

APPENDIX A. TEST SETUP PHOTOS

The setup photos are provided as a separate document.

APPENDIX B. PHOTOGRAPHS OF EUT

B.1. EXTERNAL PHOTOS

The external photos are provided as a separate document.

B.2. INTERNAL PHOTOS

The internal photos are provided as a separate document.

END OF TEST REPORT