

RADIO TEST REPORT

Report ID:

REP184838

Project number:

PRJ0087493

Type of assessment:

Class II Permissive Change

Applicant:

Trellisware Technologies

Product:

**802.11a/b/g/n/ac Module with
Bluetooth 5.0**

Model (HVIN):

TW-750W

Host model (HMN):

TW-750

FCC ID:

2A6X2-750W

ISED certification number:

28565-750W

Specifications:

- ◆ FCC 47 CFR Part 15 Subpart C, §15.247
- ◆ FCC 47 CFR Part 15 Subpart E, §15.407
- ◆ RSS-247, Issue 4, July 2025, Sections 6 and 7

Date of issue: October 19, 2026

Sagarkumar Patel, EMC/RF Specialist

Tested by



Signature

Andrey Adelberg, Senior RF/EMC Specialist

Reviewed by



Signature

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ANAB File Number: AT-3195 (Ottawa); AT-3193 (Pointe-Claire); AT-3194 (Cambridge)

Lab locations

Company name	Nemko Canada Inc.
Facilities	Ottawa site: 303 River Road, Ottawa, ON, Canada, K1V 1H2 Tel: +1 613 737 9680 Test site registration number: CA2040 Montréal site: 292 Labrosse Avenue, Pointe-Claire, QC, Canada, H9R 5L8 Tel: +1 514 694 2684 Test site registration number: CA2041 Cambridge site: 1-130 Saltsman Drive, Cambridge, ON, Canada, N3E 0B2 Tel: +1 519 650 4811 Test site registration number: CA0101
Website	www.nemko.com

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contained in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

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Section 1 Report summary

1.1 Test specifications

FCC 47 CFR Part 15, Subpart C, Clause 15.247	Operation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz
FCC 47 CFR Part 15, Subpart E, Clause 15.407	Unlicensed National Information Infrastructure Devices operating in the 5.15–5.35 GHz, 5.47–5.725 GHz, 5.725–5.85 GHz, and 5.925–7.125 GHz bands.
RSS-247, Issue 4, July 2025, Sections 6 and 7	Digital Transmission Systems, Frequency Hopping Systems and Licence-Exempt Local Area Network Devices in 902-928 MHz, 2400-2483.5 MHz, 5150-5350 MHz, and 5470-5895 MHz bands

1.2 Test methods

KDB 558074 D01 15.247 Meas Guidance v05r02 (April 2, 2019)	Guidance for compliance measurements on digital transmission system, frequency hopping spread spectrum system, and hybrid system devices operating under section 15.247 of the FCC rules.
662911 D01 Multiple Transmitter Output v02r01 (October 31, 2013)	Emissions Testing of Transmitters with Multiple Outputs in the Same Band
DA 00-705, Released March 30, 2000	Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems
KDB 996369 D04 Module Integration Guide v02	MODULAR TRANSMITTER INTEGRATION GUIDE GUIDANCE FOR HOST PRODUCT MANUFACTURERS
ANSI C63.10-2020+Cor.1-2023+C63.10a-2024 + Errata to C63.10a-2024	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

1.3 Exclusions

This is partial assessment to prove compliance of the Wi-Fi radio module with the new antenna with the applicable FCC and ISSED rules and regulations. Only radiated spurious emissions tests at the restricted bands are performed in this assessment.

1.4 Statement of compliance

Statement of Conformity:

The reported results have been evaluated against the specified limits of the standard(s) listed in **Section 1.1** of this report.

Conformity with the specified requirements is determined by comparing the measured results directly to the applicable limits. Measurement uncertainty is not applied to adjust or attribute to the measured value for the purpose of compliance determination.

In the configuration tested, the **Equipment Under Test (EUT)** was found to be compliant. Unless otherwise noted in **Section 1.3**, all testing was performed against the relevant requirements of the applicable test standard(s).

The results obtained indicate that the product under test complies in full with the requirements tested, and the test results relate only to the items tested.

Refer to the **Summary of Test Results** section for full details.

1.5 Test report revision history

Table 1.5-1: Test report revision history

Revision #	Date of issue	Details of changes made to test report
REP184838	October 19, 2026	Original report issued

Section 2 Engineering considerations

2.1 Modifications incorporated in the EUT for compliance

There were no modifications performed to the EUT during this assessment.

2.2 Technical judgment

This assessment was performed to evaluate the addition of a new antenna configuration to the previously certified TW-750W transmitter module. The new antenna is an integral part of the TW-750 host enclosure and is not installed directly on the module as a stand-alone antenna. Although the TW-750W holds a single modular approval, radiated spurious emissions and applicable restricted-band emissions were evaluated with the module installed in its intended host and connected to the host-integrated antenna, thereby representing the final installation configuration. The transmitter hardware, RF circuitry, firmware, operating frequencies, modulation characteristics, channel bandwidths, and maximum conducted output power remain unchanged from the original certification. Testing was performed using the operating modes and channels selected to represent the worst-case configuration. The results demonstrate that integration of the module with the new host-enclosure antenna does not adversely affect compliance with the applicable FCC and ISSED requirements.

2.3 Model variant declaration

There were no model variants declared by the applicant.

2.4 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 3 Test conditions

3.1 Atmospheric conditions

Temperature	15 °C – 35 °C
Relative humidity	20 % – 75 %
Air pressure	86 kPa (860 mbar) – 106 kPa (1060 mbar)

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

3.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages $\pm 5\%$, for which the equipment was designed.

Section 4 Information provided by the applicant

4.1 Disclaimer

This section contains information provided by the applicant and has been utilized to support the test plan. Inaccurate information provided by the applicant can affect the validity of the results contained within this test report. Nemko accepts no responsibility for the information contained within this section and the impact it may have on the test plan and resulting measurements.

4.2 Applicant/Manufacturer

Applicant name	Trellisware Technologies
Applicant address	10641 Scripps Summit Drive, Suite 100, San Diego, CA, 92131, USA
Manufacturer name	Same as applicant
Manufacturer address	Same as applicant

4.3 EUT information

Product	802.11a/b/g/n/ac Module with Bluetooth 5.0
Serial number	N/A
Power supply requirements	Battery: -8-12 V(DC)
Product description and theory of operation	The subject device is a Bluetooth/WiFi module, which incorporates a radio frequency transmitter operating under the requirements of FCC Part 15 Subpart C and RSS-247. The device is powered by an external battery. The TW-750W wireless module is a small form factor 1x1 SISO 802.11 a/b/g/n/ac WLAN plus dual-mode Bluetooth® 5.2 Low Energy module that is optimized for low-power mobile devices.

4.4 Radio technical information

Category of Wideband Data Transmission equipment	☐ Frequency Hopping Spread Spectrum (FHSS) equipment
	☒ Other types of Wideband Data Transmission equipment (e.g. DSSS, OFDM, etc.).
Frequency band	2400–2483.5 MHz , 5470 – 5850 MHz
Type of modulation	BLE: GFSK Wi-Fi: CCK, BPSK, x-QAM, OFDM
Emission classification	F1D, W7D
Antenna information	Type: printed PCB, manufacturer: TrellisWare, model: NA Core radio: 900 MHz 3.0 dBi. WiFi: -2.21 dBi (2.4 GHz), 3.65 dBi (5 GHz)

4.5 EUT setup details

4.5.1 Radio exercise details

Operating conditions	EUT was powered up using rechargeable battery, fully charged. Worst-case channels have been selected for testing based on the radio module's original certification test report. Worst case channels: • BLE: 2402 MHz • Wi-Fi: 2.4 GHz (Low, Mid High) • Wi-Fi: 5 GHz at 5795 MHz (802.11ac VHT40)
Transmitter state	Transmitter set in to continuous mode.

4.5.2 EUT setup configuration

Table 4.5-1: EUT interface ports

Description	Qty.
RF	1
Power/Serial	1

Table 4.5-2: Support equipment

Description	Brand name	Model, Part number, Serial number, Revision level
Laptop	Hp	SN: 5CD9440CJK, PN: 6PL18UA#ABL, MN: 15-dy1
Antenna	Denke Laboratories, Inc.	SN: MPDP902-928AD (900 MHz)
Antenna	Trellisware Technologies	SN: TW-1158 (2.4GHz)

Table 4.5-3: Inter-connection cables

Cable description	From	To	Length (m)
USB to Audio/Data Cable	Laptop	EUT	<3

EUT setup configuration, continued

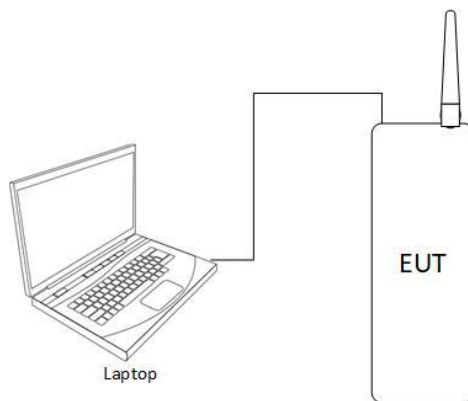


Figure 4.5-1: Radiated testing block diagram

Section 5 Summary of test results

5.1 Testing period

Test start date	August 19, 2026	Test end date	August 21, 2026
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5.2 Sample information

Receipt date	August 19, 2026	Nemko sample ID number(s)	PRJ00874930001
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5.3 FCC Part 15, Test results

Table 5.3-1: FCC requirements results

Part	Test description	Verdict
§15.207(a)	Conducted limits	Not applicable
§15.247(d)	Spurious emissions	Pass
§15.407(b)(4)	Undesirable emission limits for 5.725–5.85 GHz band	Pass

Notes: EUT is a battery operated device, the testing was performed using fresh batteries.

5.4 ISED RSS-Gen/ ISED RSS-247, Test results

Table 5.4-1: ISED RSS-Gen/RSS-247 requirements results

Part	Test description	Verdict
RSS-Gen, 6.2.2	Receiver radiated emission limits	Not applicable
RSS-Gen, 7.4.2	AC power-line conducted emissions limits	Not applicable
RSS-247, 6.6	Unwanted emissions	Pass
RSS-247, 7.3.4.4	Unwanted emission limits for 5725–5850 MHz band	Pass

Notes: ¹According to sections 6.1 and 6.2 of RSS-Gen, Issue 6 the EUT does not have a stand-alone receiver neither scanner receiver, therefore exempt from receiver requirements.
EUT is a battery operated device, the testing was performed using fresh batteries.

Section 6 Test equipment

6.1 Test equipment list

Table 6.1-1: Equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal./Ver. cycle	Next cal./ver.
3 m EMI test chamber	TDK	SAC-3	FA002047	1 year	July 7, 2027
Flush mount turntable	Sunol	FM2022	FA002082	—	NCR
Controller	Sunol	SC104V	FA002060	—	NCR
Antenna mast	Sunol	TLT2	FA002061	—	NCR
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 40	FA002071	1 year	February 10, 2027
Horn antenna (1-18 GHz)	ETS Lindgren	3117	FA002840	1 year	June 2, 2027
Preamplifier (1-18 GHz)	ETS Lindgren	124334	FA002877	1 year	January 21, 2027
50 Ω coax cable	Carlisle	WHU18-1818-072	FA002391	1 year	August 26, 2027
50 Ω coax cable	Huber+Suhner	104B11NX2/11000	FA003441	1 year	August 26, 2027
Horn antenna (18-40 GHz)	EMCO	3116	FA001847	3 year	May 21, 2027
Pre-amplifier (18-26 GHz)	Narda	BBS-1826N612	FA001550	1 year	March 11, 2027
Pre-amplifier (26-40 GHz)	Narda	DBL-2640N610	FA001556	1 year	March 12, 2027
Cable	Huber+Suhner	Sucoflex 101 PEA	FA003090	1 year	October 30, 2026
Cable	Huber+Suhner	Sucoflex 101 PEA	FA002032	1 year	October 30, 2026
Log periodic antenna (200-5000 MHz)	Sunol	LP5	FA002077	1 year	June 9, 2027
Biconical antenna (30-300 MHz)	Sunol	BC2	FA002078	1 year	June 9, 2027
2.4 GHz band Notch Filter	Microwave Circuits	N0324413	FA003306	1 year	March 10, 2027
High pass filter (1.2-12 GHz)	Microwave Circuits	H1G212G1	FA002342	1 year	May 11, 2027
Notch filter 5725-5850 MHz	Microwave Circuits	5725-5850 MHz	FA001921	—	NCR
Signal generator	Rohde & Schwarz	SMB100A	FA002174	1 year	April 29, 2027

Notes: NCR - no calibration required

All equipment related to the contribution of measurement has been included in this list. Such items include, but are not limited to, cables, attenuators, directional couplers, and pre-amps.

Table 6.1-2: Automation software details

Test description	Manufacturer of Software	Details
Spurious Emissions	Rohde & Schwarz	EMC32, Software for EMC Measurements, Version 11.20.00

Table 6.1-3: Measurement uncertainty calculations based on equipment list

Measurement	Measurement uncertainty, $\pm$ dB
Radiated spurious emissions (30 MHz to 200MHz)	4.4
Radiated spurious emissions (200 MHz to 1 GHz)	5.8
Radiated spurious emissions (1 GHz to 6 GHz)	4.7
Radiated spurious emissions (6 GHz to 18 GHz)	5.0
Radiated spurious emissions (18 GHz to 26 GHz)	5.3
Radiated spurious emissions (18 GHz to 40 GHz)	5.3
Notes:	UKAS Lab 34, TIA-603 and ETSI TR 100 028-1&2 have been used as guidance for measurement uncertainty reasonable estimations with regards to previous experience and validation of data. Nemko Canada Inc. follows these test methods in order to satisfy ISO/IEC 17025 requirements for estimation of uncertainty of measurement for wireless products. Measurement uncertainty calculations assume a coverage factor of K = 2 with 95% certainty.

Section 7 Testing data

7.1 E.i.r.p. requirements for DTS in 2.4 GHz

7.1.1 References, definitions and limits

FCC §15.247:

- (b) The maximum peak conducted output power of the intentional radiator shall not exceed the following:
- (3) For systems using digital modulation in the 2400–2483.5 MHz band: 1 W (30 dBm). As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
- (4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (c) Operation with directional antenna gains greater than 6 dBi.
 - (1) Fixed point-to-point operation:
 - (i) Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.
 - (iii) Fixed, point-to-point operation, as used in paragraphs (c)(1)(i) and (c)(1)(ii) of this section, excludes the use of point-to-multipoint systems, omnidirectional applications, and multiple co-located intentional radiators transmitting the same information. The operator of the spread spectrum or digitally modulated intentional radiator or, if the equipment is professionally installed, the installer is responsible for ensuring that the system is used exclusively for fixed, point-to-point operations. The instruction manual furnished with the intentional radiator shall contain language in the installation instructions informing the operator and the installer of this responsibility.
 - (2) In addition to the provisions in paragraphs (b)(1), (b)(3), (b)(4) and (c)(1)(i) of this section, transmitters operating in the 2400–2483.5 MHz band that emit multiple directional beams, simultaneously or sequentially, for the purpose of directing signals to individual receivers or to groups of receivers provided the emissions comply with the following:
 - (i) Different information must be transmitted to each receiver.
 - (ii) If the transmitter employs an antenna system that emits multiple directional beams but does not do emit multiple directional beams simultaneously, the total output power conducted to the array or arrays that comprise the device, i.e., the sum of the power supplied to all antennas, antenna elements, staves, etc. and summed across all carriers or frequency channels, shall not exceed the limit specified in paragraph (b)(1) or (b)(3) of this section, as applicable. However, the total conducted output power shall be reduced by 1 dB below the specified limits for each 3 dB that the directional gain of the antenna/antenna array exceeds 6 dBi. The directional antenna gain shall be computed as follows:
 - (A) The directional gain shall be calculated as the sum of 10 log (number of array elements or staves) plus the directional gain of the element or stave having the highest gain.
 - (B) A lower value for the directional gain than that calculated in paragraph (c)(2)(ii)(A) of this section will be accepted if sufficient evidence is presented, e.g., due to shading of the array or coherence loss in the beamforming.
 - (iii) If a transmitter employs an antenna that operates simultaneously on multiple directional beams using the same or different frequency channels, the power supplied to each emission beam is subject to the power limit specified in paragraph (c)(2)(ii) of this section. If transmitted beams overlap, the power shall be reduced to ensure that their aggregate power does not exceed the limit specified in paragraph (c)(2)(ii) of this section. In addition, the aggregate power transmitted simultaneously on all beams shall not exceed the limit specified in paragraph (c)(2)(ii) of this section by more than 8 dB.
 - (iv) Transmitters that emit a single directional beam shall operate under the provisions of paragraph (c)(1) of this section.

References, definitions and limits, continued

RSS-247, Clause 6.3:

DTS include systems that employ digital modulation techniques resulting in spectral characteristics similar to direct sequence systems.

6.3.2 For DTS operating in the band 902-928 MHz, the maximum peak conducted output power shall not exceed 1W, and the e.i.r.p. shall not exceed 4 W.

For DTS operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W, and the e.i.r.p. shall not exceed 4 W, except as provided in section 6.5 a) and b).

As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power.

6.5 FFTP systems in the bands 2400-2483.5 MHz and 5725-5850 MHz are permitted to have an e.i.r.p. higher than 4 W provided that the higher

a) e.i.r.p. is achieved by employing higher gain directional antennas and not higher transmitter output powers.

6.5 PTMP, omnidirectional applications and multiple co-located transmitters, in the bands 2400-2483.5 MHz and 5725-5850 MHz, transmitting the

b) same information are prohibited from exceeding an e.i.r.p. of 4 W. However, remote stations of PTMP systems shall be permitted to operate at an e.i.r.p. greater than 4 W under the same conditions as for FFTP systems under 6.5 a).

7.1.2 Observations, settings and special notes

The product was originally tested using conducted measurements at the antenna port. Because the new Wi-Fi antenna is a proprietary design and its gain was not known, an antenna gain characterization was performed. The EUT was configured to transmit at the same operating conditions used for the original conducted output power measurements, and the maximum fundamental field strength was determined in the anechoic chamber by varying the EUT orientation and receive-antenna polarization. At the position and polarization producing the maximum field strength, the EUT was replaced by a calibrated substitution antenna connected to a signal generator. The signal generator level was adjusted until the substituted field strength matched the level measured from the EUT. The EIRP was then calculated from the applied signal generator power, corrected for cable loss and the known gain of the substitution antenna. The gain of the proprietary Wi-Fi antenna was determined at each evaluated frequency as follows: Antenna gain (dBi) = measured EIRP (dBm) – original conducted output power at the antenna port (dBm). The resulting antenna gain values are reported in the test data tables.

7.1.3 Test summary

Verdict	Pass		
Test date	September 25, 2026	Temperature	23 °C
Tested by	Sagarkumar Patel	Air pressure	996 mbar
Test location	Ottawa	Relative humidity	48 %

7.1.4 Test data

Table 6.1-1: Output power and EIRP results (radiated measurement)

Frequency, MHz	Reference Field strength, dBμV/m	Measured EIRP, dBm	Antenna gain, dBi	Output power, dBm
2412	101.79	19.08	-2.59	21.67
2437	104.98	22.10	-2.53	24.63
2462	101.25	19.98	-2.21	22.19

Note: The signal substitution method is used to determine the EIRP of a device in dBm by matching its radiated power with a known signal generator output.
 Antenna gain, dBi = Measured EIRP, dBm - Output power, dBm

7.2 E.i.r.p. requirements for DTS in 5 GHz

7.2.1 References, definitions and limits

FCC §15.247:

- (b) The maximum peak conducted output power of the intentional radiator shall not exceed the following:
- (3) For systems using digital modulation in the 5725–5850 MHz band: 1 W (30 dBm). As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
- (4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (c) Operation with directional antenna gains greater than 6 dBi.
 - (1) Fixed point-to-point operation:
 - (ii) Systems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power.
 - (iii) Fixed, point-to-point operation, as used in paragraphs (c)(1)(i) and (c)(1)(ii) of this section, excludes the use of point-to-multipoint systems, omnidirectional applications, and multiple co-located intentional radiators transmitting the same information. The operator of the spread spectrum or digitally modulated intentional radiator or, if the equipment is professionally installed, the installer is responsible for ensuring that the system is used exclusively for fixed, point-to-point operations. The instruction manual furnished with the intentional radiator shall contain language in the installation instructions informing the operator and the installer of this responsibility.

RSS-247, Clause 7.3:

- 7.3.1.2 For Frequency band 5150-5250 MHz. For all other devices the maximum e.i.r.p. spectral density shall not exceed 10 dBm/MHz. The maximum e.i.r.p. shall not exceed the lesser of:
 200 mW (23 dBm); or
 $10 + 10 \log_{10} B$, dBm.
- 7.3.2.2 For Frequency band 5250-5350 MHz. All other devices shall comply with the following:
 the maximum power spectral density shall not exceed 11 dBm/MHz and the maximum conducted output power shall not exceed the lesser of:
 250 mW; or
 $11 + 10 \log_{10} B$, dBm.
 Devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.
- 7.3.3.2 For Frequency band 5470-5725 MHz. Equipment operating in the band 5470-5725 MHz band shall comply with the following power limits:
 the maximum conducted output power shall not exceed the lesser of:
 250 mW; or
 $11 + 10 \log_{10} B$, dBm.
 the maximum e.i.r.p. shall not exceed the lesser of:
 1.0 W; or
 $17 + 10 \log_{10} B$, dBm.
 equipment with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

References, definitions and limits, continued

- 7.3.4.2 For Frequency band 5725-5850 MHz. Equipment operating in the band 5725-5850 shall comply with the following power limits:
the maximum conducted output power shall not exceed 1 W; and
the maximum output power spectral density shall not exceed 30 dBm/500 kHz.
When using transmitting antennas with a directional gain exceeding 6 dBi, the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
However, FFTP devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter maximum conducted output power and the power spectral density. FFTP operations exclude the use of PTMP systems, omnidirectional applications and multiple collocated transmitters transmitting the same information. However, remote stations of PTMP systems shall be permitted to operate at e.i.r.p. greater than 4 W under the same conditions as for FFTP systems.

7.2.2 Observations, settings and special notes

The product was originally tested using conducted measurements at the antenna port. Because the new Wi-Fi antenna is a proprietary design and its gain was not known, an antenna gain characterization was performed. The EUT was configured to transmit at the same operating conditions used for the original conducted output power measurements, and the maximum fundamental field strength was determined in the anechoic chamber by varying the EUT orientation and receive-antenna polarization. At the position and polarization producing the maximum field strength, the EUT was replaced by a calibrated substitution antenna connected to a signal generator. The signal generator level was adjusted until the substituted field strength matched the level measured from the EUT. The EIRP was then calculated from the applied signal generator power, corrected for cable loss and the known gain of the substitution antenna. The gain of the proprietary Wi-Fi antenna was determined at each evaluated frequency as follows: Antenna gain (dBi) = measured EIRP (dBm) – original conducted output power at the antenna port (dBm). The resulting antenna gain values are reported in the test data tables.

7.2.3 Test summary

Verdict	Pass		
Test date	September 25, 2026	Temperature	23 °C
Tested by	Sagarkumar Patel	Air pressure	996 mbar
Test location	Ottawa	Relative humidity	48 %

7.2.4 Test data

Table 6.1-2: Output power and EIRP results (radiated measurement)

Frequency, MHz	Reference Field strength, dBμV/m	Measured EIRP, dBm	Antenna gain, dBi	Output power, dBm
5180	91.49	19.12	1.27	17.85
5260	93.45	22.3	2.81	19.49
5500	98.03	23.4	3.53	19.87
5825	103.02	23.69	3.65	20.04

Note: The signal substitution method is used to determine the EIRP of a device in dBm by matching its radiated power with a known signal generator output.
Antenna gain, dBi = Measured EIRP, dBm – Measured Output power, dBm

7.3 Spurious (out-of-band) unwanted emissions

7.3.1 References, definitions and limits

FCC §15.247:

- (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

RSS-247, Clause 6.6:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

RSS-Gen:

- 7.4.3 The radio apparatus shall comply with the field strength limits shown in table below. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.
- 7.5 Restricted frequency bands, identified in table below, are designated primarily for safety-of-life services (distress calling and certain aeronautical activities), certain satellite downlinks, radio astronomy and some government uses. Some of these frequency bands are also used for licence-exempt applications.
 The occupied bandwidth of licence-exempt radio apparatus shall be entirely outside the restricted bands and the prohibited TV bands of 54-72 MHz, 76-88 MHz, 174-216 MHz and 470-602 MHz.

FCC §15.407:

- (b) Undesirable emission limits.
 Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
 - (1) For transmitters operating in the 5.15–5.25 GHz band: All emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p. of –27 dBm/MHz.
 - (2) For transmitters operating in the 5.25–5.35 GHz band: All emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p. of –27 dBm/MHz.
 - (3) For transmitters operating in the 5.47–5.725 GHz band: All emissions outside of the 5.47–5.725 GHz band shall not exceed an e.i.r.p. of –27 dBm/MHz.
 - (4) For transmitters operating in the 5.725–5.85 GHz band:
 - (i) All emissions shall be limited to a level of –27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
 - (8) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in § 15.207.
 - (9) The provisions of § 15.205 apply to intentional radiators operating under this section.

References, definitions and limits, continued

Table 7.3-1: FCC §15.209 and RSS-Gen – Radiated emission limits

Frequency, MHz	Field strength of emissions		Measurement distance, m
	µV/m	dBµV/m	
0.009–0.490	2400/F	$67.6 - 20 \times \log_{10}(F)$	300
0.490–1.705	24000/F	$87.6 - 20 \times \log_{10}(F)$	30
1.705–30.0	30	29.5	30
30–88	100	40.0	3
88–216	150	43.5	3
216–960	200	46.0	3
above 960	500	54.0	3

Notes: In the emission table above, the tighter limit applies at the band edges.
For frequencies above 1 GHz the limit on peak RF emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

Table 7.3-2: ISSED restricted frequency bands

MHz	MHz	MHz	GHz
0.090–0.110	12.57675–12.57725	399.9–410	7.25–7.75
0.495–0.505	13.36–13.41	608–614	8.025–8.5
2.1735–2.1905	16.42–16.423	960–1427	9.0–9.2
3.020–3.026	16.69475–16.69525	1435–1626.5	9.3–9.5
4.125–4.128	16.80425–16.80475	1645.5–1646.5	10.6–12.7
4.17725–4.17775	25.5–25.67	1660–1710	13.25–13.4
4.20725–4.20775	37.5–38.25	1718.8–1722.2	14.47–14.5
5.677–5.683	73–74.6	2200–2300	15.35–16.2
6.215–6.218	74.8–75.2	2310–2390	17.7–21.4
6.26775–6.26825	108–138	2483.5–2500	22.01–23.12
6.31175–6.31225	149.9–150.05	2655–2900	23.6–24.0
8.291–8.294	156.52475–156.52525	3260–3267	31.2–31.8
8.362–8.366	156.7–156.9	3332–3339	36.43–36.5
8.37625–8.38675	162.0125–167.17	3345.8–3358	Above 38.6
8.41425–8.41475	167.72–173.2	3500–4400	
12.29–12.293	240–285	4500–5150	
12.51975–12.52025	322–335.4	5350–5460	

Exception: Operation at 101.4 kHz is permitted for cable-locating equipment in accordance with RSS-Gen, Issue 6, Amendment 1.

References, definitions and limits, continued

Table 7.3-3: FCC restricted frequency bands

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	Above 38.6
13.36–13.41			

7.3.2 Test summary

Verdict	Pass		
Test date	August 19, 2026	Temperature	23 °C
Tested by	Sagarkumar Patel	Air pressure	995 mbar
Test location	Ottawa	Relative humidity	45 %

7.3.3 Observations, settings and special notes

- Only radiated spurious emissions within restricted bands were evaluated.
- As part of the current assessment, the test range of 9 kHz to 10th harmonic has been fully considered and compared to the actual frequencies utilized within the EUT. Since the EUT contains a transmitter in the GHz range, the EUT has been deemed compliant without formal testing in the 9 kHz to 30 MHz test range, therefore formal test results (tabular data and/or plots) are not provided within this test report.
- EUT was set to transmit with 100 % duty cycle.
- Radiated measurements were performed at a distance of 3 m.
- DTS emissions in restricted frequency bands test was performed as per KDB 558074, section 8.6 with reference to ANSI C63.10 subclause 11.12.
- DTS band-edge emission measurements test was performed as per KDB 558074, section 8.7 with reference to ANSI C63.10 subclause 11.13.

Spectrum analyser settings (Measurements within restricted bands)

Resolution bandwidth:	Measurements below 1 GHz: 120 kHz Q-Peak, Measurements above 1 GHz: 1 MHz
Video bandwidth:	Measurements below 1 GHz: 300 kHz, Measurements above 1 GHz: 3 MHz
Detector mode:	Peak,Q-Peak
Trace mode:	Max Hold

Spectrum analyser settings (Measurements within restricted bands above 1 GHz) Method: 11.12.2.5.1 Trace average with continuous EUT transmission at full power

Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Detector mode:	RMS
Trace mode:	Average

7.3.4 Test data

- Must the EUT be professionally installed? ☐ YES ☒ NO
- Does the EUT have detachable antenna(s)? ☐ YES ☒ NO
- If detachable, is the antenna connector(s) non-standard? ☐ YES ☐ NO ☒ N/A

Table 7.3-4: Antenna information

Antenna type	Manufacturer	Model number	Maximum gain	Connector type
Printed PCB	TrellisWare	NA	-2.59 dBi at 2.4 GHz 3.65 dBi at 5 GHz 3 dBi at 900 MHz	NA

7.3.5 Test data

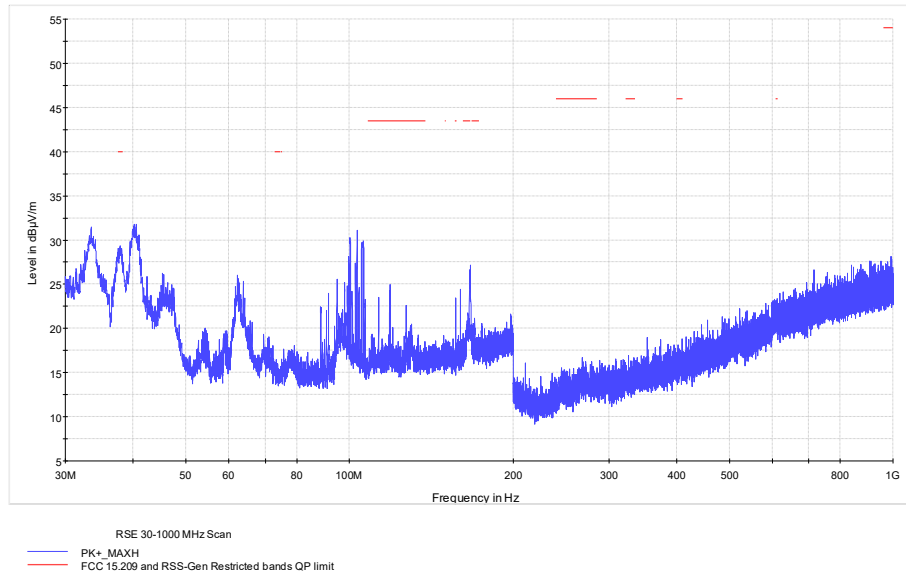


Figure 7.3-1: Radiated spurious emissions 30-1000 MHz (BLE + 2.4 GHz Wi-Fi Low Channel)

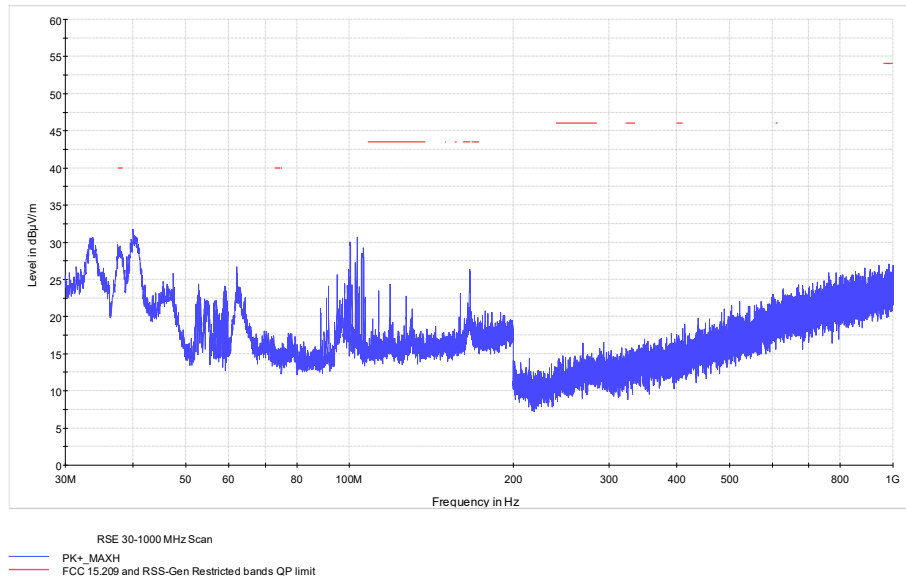


Figure 7.3-2: Radiated spurious emissions 30-1000 MHz (BLE + 2.4 GHz Wi-Fi Mid Channel)

Test data, continued

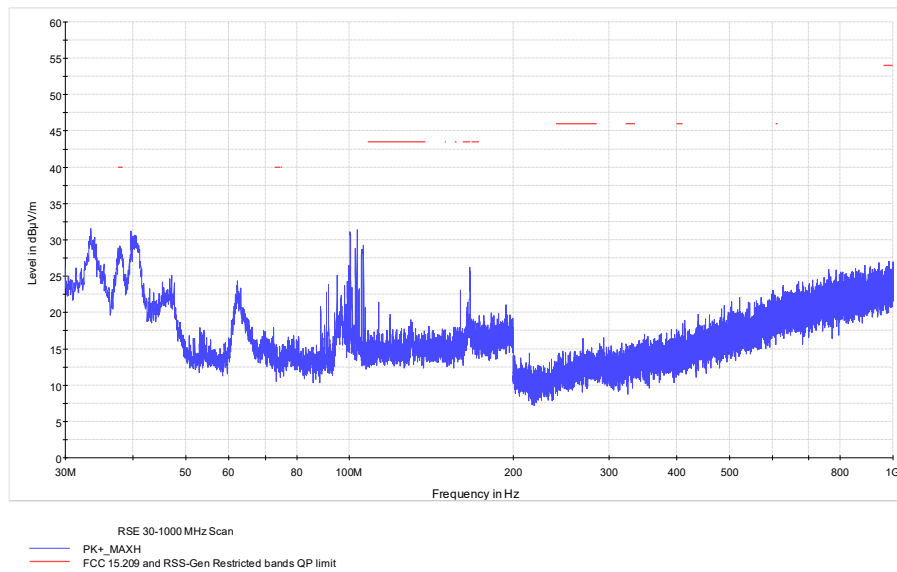


Figure 7.3-3: Radiated spurious emissions 30-1000 MHz (BLE + 2.4 GHz Wi-Fi High Channel)

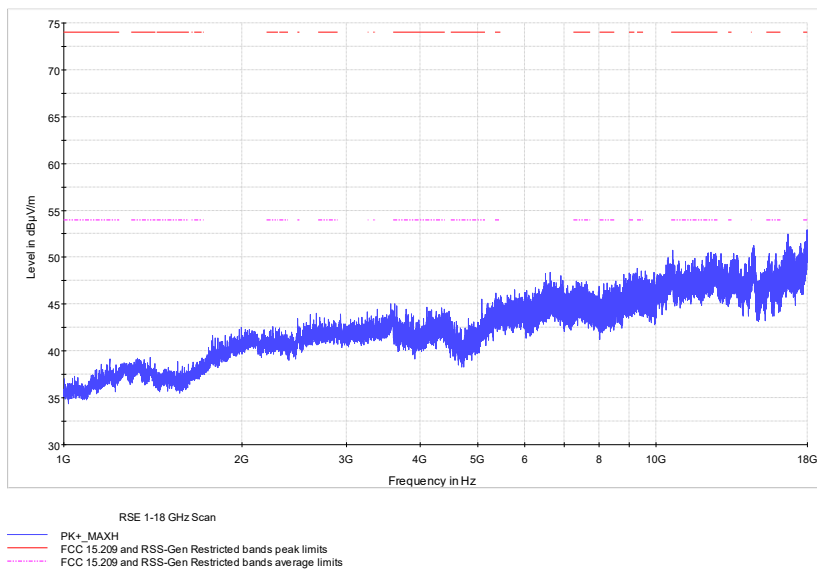


Figure 7.3-4: Radiated spurious emissions 1-18 GHz (BLE + 2.4 GHz Wi-Fi Low Channel)

Test data, continued

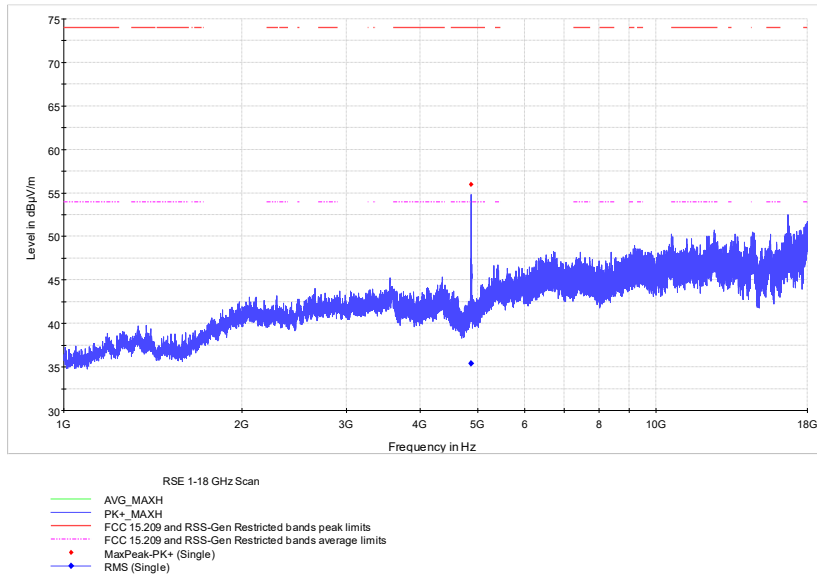


Figure 7.3-5: Radiated spurious emissions 1-18 GHz (BLE + 2.4 GHz Wi-Fi Mid Channel)

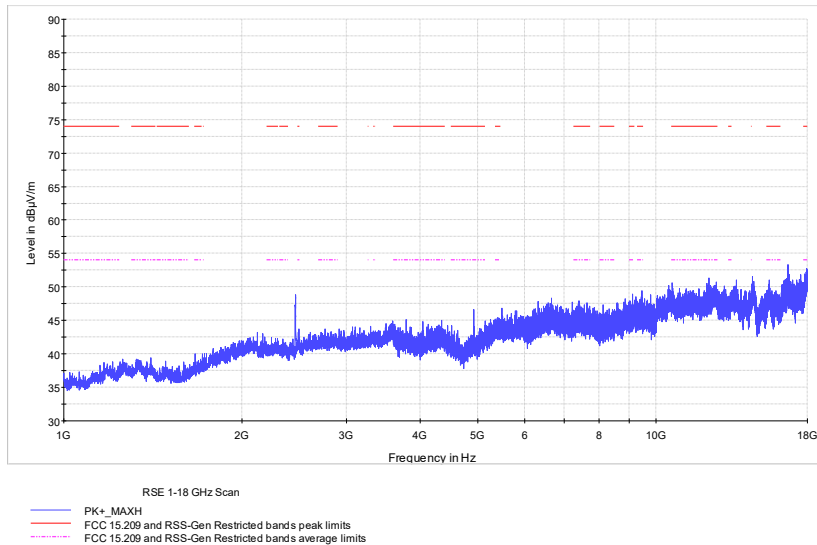


Figure 7.3-6: Radiated spurious emissions 1-18 GHz (BLE + 2.4 GHz Wi-Fi High Channel)

Test data, continued

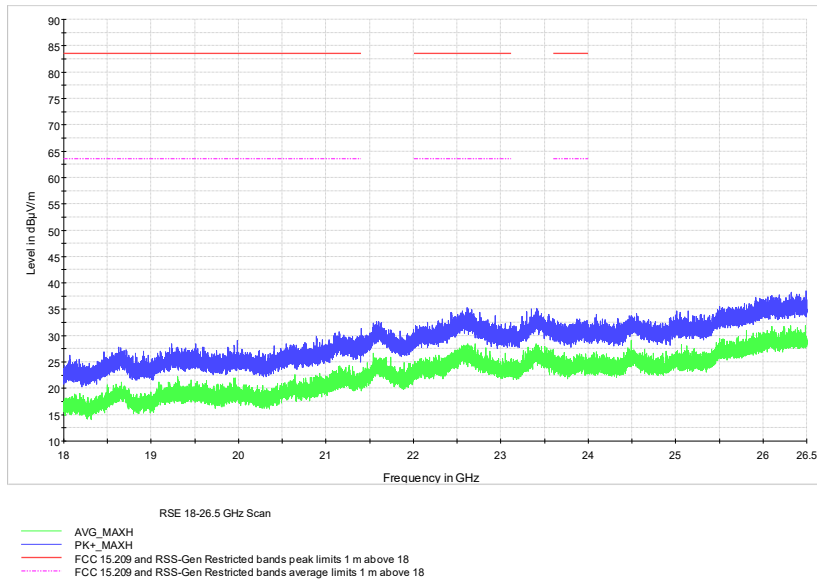


Figure 7.3-7: Radiated spurious emissions 18-26.5 GHz (BLE + 2.4 GHz Wi-Fi Low Channel)

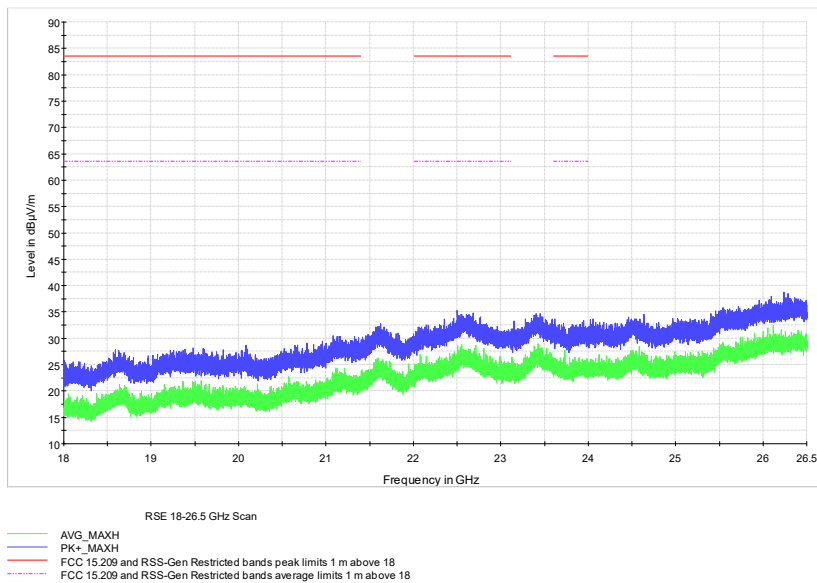


Figure 7.3-8: Radiated spurious emissions 18-26.5 GHz (BLE + 2.4 GHz Wi-Fi Mid Channel)

Test data, continued

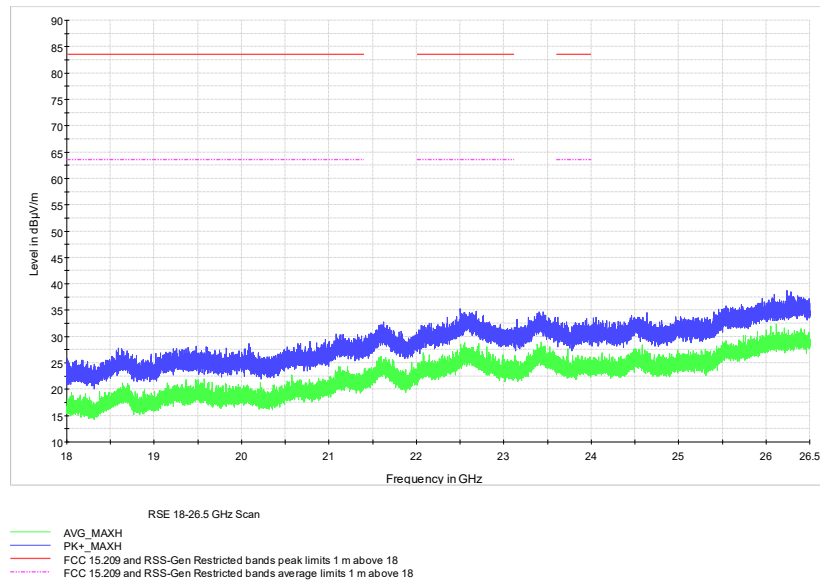


Figure 7.3-9: Radiated spurious emissions 18-26.5 GHz (BLE + 2.4 GHz Wi-Fi High Channel)

Test data, continued

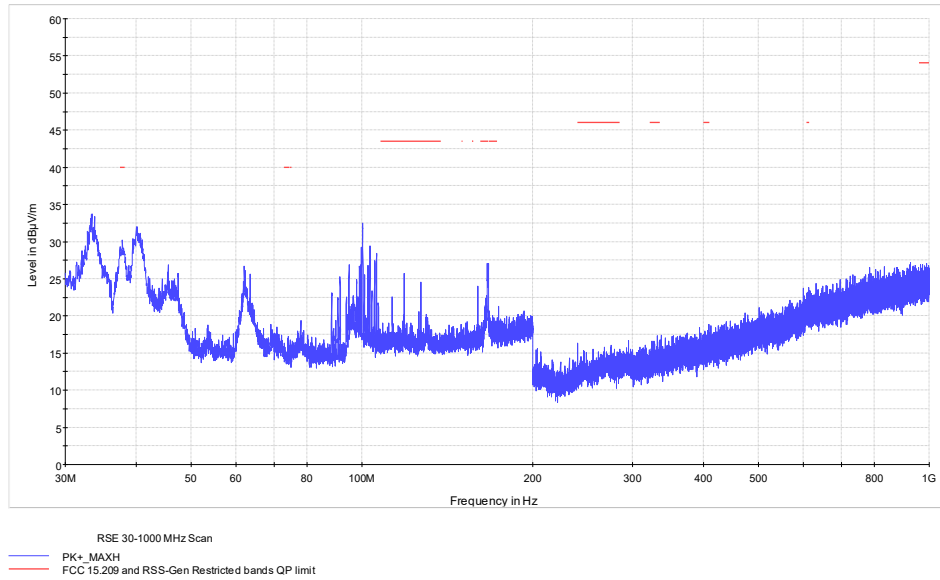


Figure 7.3-10: Radiated spurious emissions 30-1000 MHz (BLE + 5 GHz Wi-Fi)

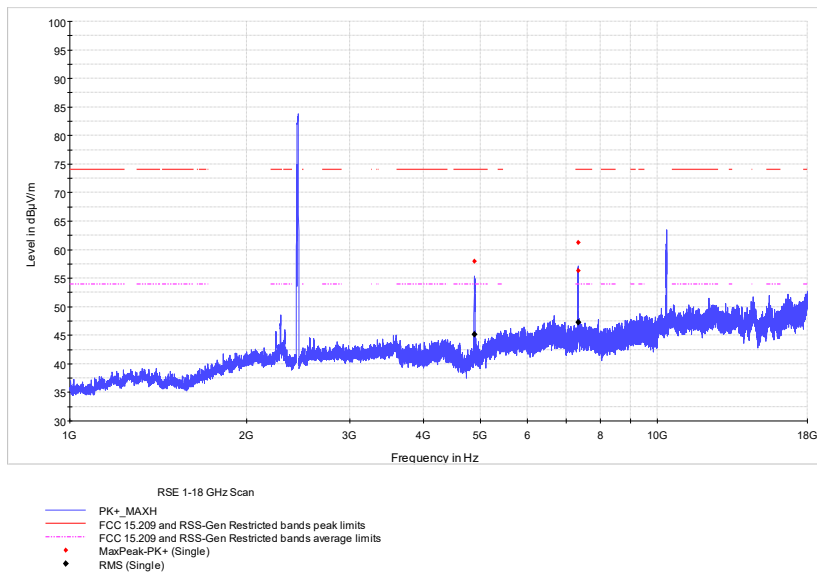


Figure 7.3-11: Radiated spurious emissions 1-18 GHz (BLE + 5 GHz Wi-Fi)

Test data, continued

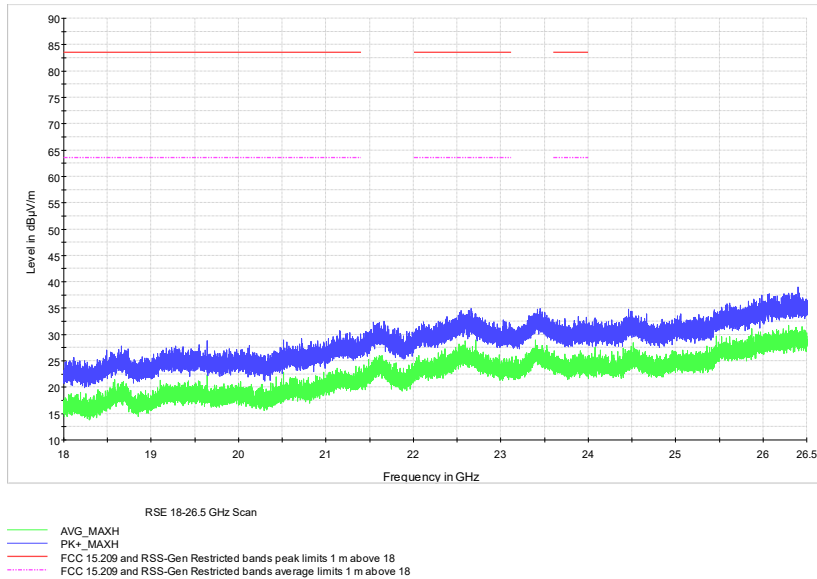


Figure 7.3-12: Radiated spurious emissions 18-26.5 GHz (BLE + 5 GHz Wi-Fi)

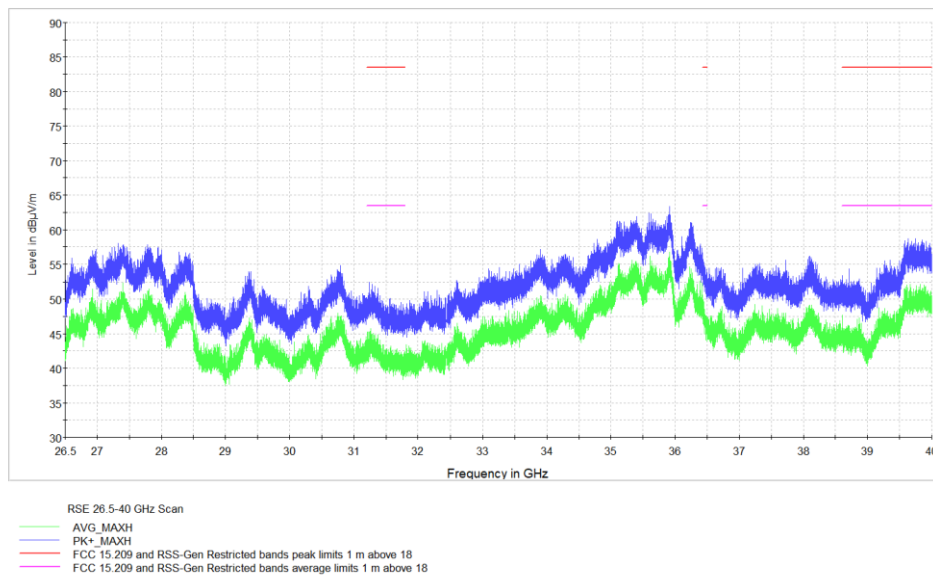


Figure 7.3-13: Radiated spurious emissions 26.5-40 GHz (BLE + 5 GHz Wi-Fi)

7.3.6 Setup photos

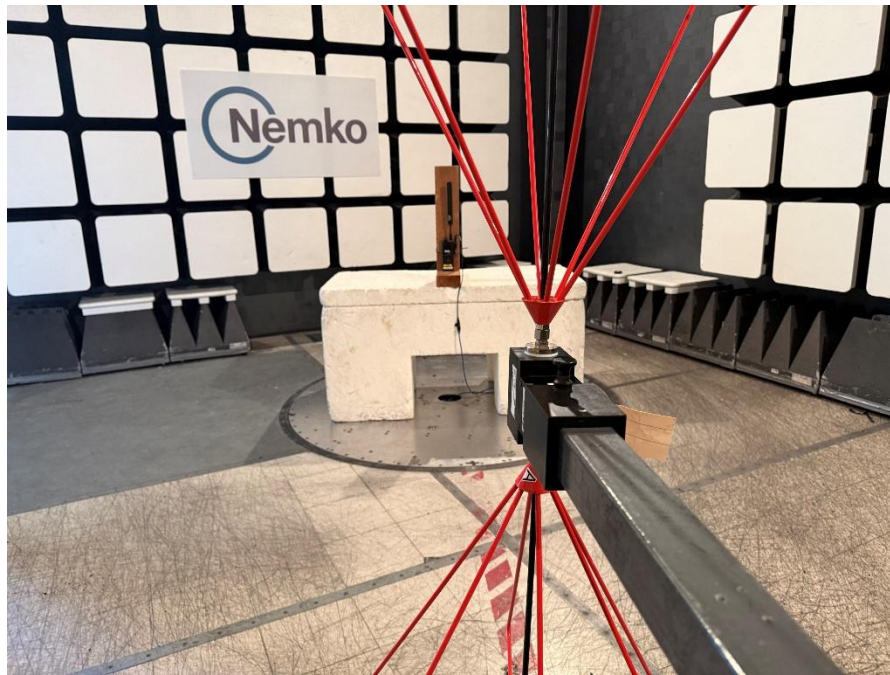


Figure 7.3-14: Radiated spurious emissions – below 1 GHz



Figure 7.3-15: Radiated spurious emissions – above 1 GHz

8.1 External photos

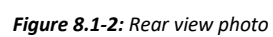




Figure 8.1-3: Side view photo



Figure 8.1-4: Side view photo



Figure 8.1-5: Top view photo



Figure 8.1-6: Bottom view photo

End of the test report