

RADIO TEST REPORT

Report ID:

REP068146

Project number:

PRJ0066884

Type of assessment:

Modular transmitter integration

Applicant:

Clearpath Robotics Inc. dba OTTO Motors

Product:

Husky A300

Model:

Husky A300

Contains FCC ID:

PD9AX210NG

Contains IC Registration number:

1000M-AX210NG

Specifications:

- ◆ FCC 47 CFR Part 15 Subpart C, §15.247
- ◆ RSS-247, Issue 3, August 2023, Section 5 and 6
- ◆ FCC 47 CFR Part 15 Subpart E, §15.407
- ◆ RSS-248, Issue 3, October 2024, Section 4

Date of issue: November 22, 2024

Tarek Elkholy, EMC/RF Specialist

Tested by

David Duchesne, EMC/RF Lab Manager

Reviewed by



Signature



Signature

Nemko Canada Inc., a testing laboratory, is accredited by ANSI National Accreditation Board (ANAB).

The tests included in this report are within the scope of this accreditation.

The ANAB symbol is an official symbol of the ANSI National Accreditation Board, used under licence.

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, Ontario Canada K1V 1H2 Tel: +1 613 737 9680 Fax: +1 613 737 9691	Montréal site: 292 Labrosse Avenue Pointe-Claire, Québec Canada H9R 5L8 Tel: +1 514 694 2684 Fax: +1 514 694 3528	Cambridge site: 1-130 Saltsman Drive Cambridge, Ontario Canada N3E 0B2 Tel: +1 519 650 4811
Test site registration number:	– CA2040 (Ottawa) – CA2041 (Montreal) – CA0101 (Cambridge)		
Website	www.nemko.com		

Limits of responsibility

Note that this report's results 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 this report.

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

Copyright notification

Nemko Canada Inc. authorizes the applicant to reproduce this report, provided it is reproduced in its entirety and for use by the company's employees only. Any use that a third party makes of this report, or any reliance on, or decisions made based on it, is such third parties' responsibility.

Nemko Canada Inc. accepts no responsibility for damages, if any, suffered by any third party due to decisions made or actions based on this report.

© Nemko Canada Inc.

Table of Contents

Table of Contents	3
Section 1 Report summary	4
1.1 Test specifications	4
1.2 Test methods	4
1.3 Exclusions	4
1.4 Statement of compliance.....	4
1.5 Test report revision history.....	4
Section 2 Engineering considerations	5
2.1 Modifications incorporated in the EUT for compliance	5
2.2 Technical judgment	5
2.3 Model variant declaration	5
2.4 Deviations from laboratory tests procedures	5
Section 3 Test conditions	6
3.1 Atmospheric conditions	6
3.2 Power supply range	6
Section 4 Information provided by the applicant	7
4.1 Disclaimer	7
4.2 Applicant/Manufacturer	7
4.3 EUT information	7
4.4 Radio technical information.....	8
4.5 EUT setup details	8
Section 5 Summary of test results	10
5.1 Testing period.....	10
5.2 Sample information	10
5.3 FCC, Test results.....	10
5.4 ISED, Test results	10
Section 6 Test equipment.....	11
6.1 Test equipment list	11
Section 7 Testing data	12
7.1 Spurious (out-of-band) unwanted emissions.....	12
Section 8 EUT photos	22
8.1 External photos.....	22

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
RSS-247, Issue 3, August 2023, Section 5	Digital Transmission Systems (DTSSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
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-248, Issue 3, October 2024, Section 4	Radio Local Area Network (RLAN) Devices Operating in the 5925-7125 MHz Band

1.2 Test methods

KDB 996369 D04 Module Integration Guide v02	MODULAR TRANSMITTER INTEGRATION GUIDE GUIDANCE FOR HOST PRODUCT MANUFACTURERS
789033 D02 General U-NII Test Procedures New Rules v02r01 (December 14, 2017)	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
ANSI C63.10 v2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

1.3 Exclusions

Partial testing was performed on the product with the transmitter operating to confirm that the host product meets the FCC requirements. This investigation of the final product was done by spot checking emissions from the device while operating the host as a composite system. This testing was performed with the host product configured in typical operational modes to check the spurious emissions for compliance with all the applicable rules.

1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was performed against all relevant requirements of the test standard except as noted in section 1.3 above. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See “Summary of test results” 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
REP068146	November 22, 2024	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

None

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	Clearpath Robotics Inc. dba OTTO Motors
Applicant address	1425 Strasburg Rd., Suite 2A, Kitchener, ON, N2R 1H2, Canada
Manufacturer name	Same as applicant
Manufacturer address	Same as applicant

4.3 EUT information

Product	Husky A300	
Model	Husky A300	
Serial number	A300-00003	
Part number	032188	
Power requirements	Battery: 25.6 V _{DC}	
Description/theory of operation	This robot is a mobile indoor/outdoor platform that allows for the integration of a variety of sensors (lidars, cameras, etc.) for monitoring, recording, and analyzing various aspects of the environment. This robot can be navigated manually or autonomously, using the appropriate sensor data and analysis for navigation.	
Operational frequencies	DC/DC converters (12V)	0.234 MHz
	DC/DC converter (24V)	0.221 MHz
	DC/DC converter (5V)	0.299 MHz
	STM micro-controller clock	25.00 MHz
	Ethernet PHY	25.00 MHz
	I2C bus	0.400 MHz
	SPI Clock	1.300 MHz
	CPU	1100/3600/4800 MHz
	RAM	3200 MHz
	Onboard GPU	300/1600 MHz
Software details	FW: 891c2437fe1b446547ad44a948b2a88867cfa53e	
	SW: 2.0-RC	
Hardware version	Revision 1	

4.4 Radio technical information

Category of Wideband Data Transmission equipment	Other types of Wideband Data Transmission equipment (e.g. DSSS, OFDM, etc.).
Device type	Client device
Frequency band	2400–2483.5 MHz / 5150–5850 MHz / 5925–7125 MHz
Radio Technologies	BLE, Wi-Fi at 2.4 GHz, 5 GHz and Wi-Fi 6
Radio module information	Manufacturer: Intel Mobile Communications, Brand name: Intel® Wi-Fi 6E AX210 MN: AX210NGW
Antenna information	Manufacturer: Taoglas, PN: GW.48.A151, Peak gain: 1.82 dBi at 2.4 GHz, 3.28 dBi at 5 GHz and 4.23 dBi at 6 GHz

4.5 EUT setup details

Radio exercise details

Operating conditions	<ul style="list-style-type: none"> – EUT was powered by internal battery, the EUT was programmed to engage all motors at full speed, alternating between forward and reverse direction continuously. <ul style="list-style-type: none"> • All LEDs were operational and updating • HMI Display active and updating • CPUs were fully loaded using application software • IMU sensor active - The radio module was continuously connected over a BLE connection to the associated remote control. - Using a WLAN router the EUT radio module was continuously connected to one of the available Wi-Fi channels, the tested configurations were as follows. <ul style="list-style-type: none"> • BLE + 2.4 GHz Wi-Fi • BLE + 5 GHz Wi-Fi • BLE + 6 GHz Wi-Fi
Transmitter state	Transmitter set in to continuous mode.

EUT setup configuration

Table 4.5-1: EUT sub assemblies

Description	Brand name	Model
AC/DC adapter	Shenzhen Pengshengye Electronic	MN: PSY27710000

Table 4.5-2: EUT interface ports

Description	Qty.
DC power charging port	1
USB service port	1

Table 4.5-3: Support equipment

Description	Brand name	Serial number, Part number, Model, Revision level
Laptop	Dell	MN: Latitude E6420, DPN: VVF52 A01, SN: 28MCCS1
WLAN router	TP-Link	SN: 22455M3000030, PN: 0150504186, MN: BE9300

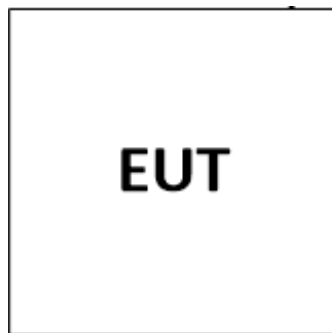


Figure 4.5-1: Radiated testing block diagram

Section 5 Summary of test results

5.1 Testing period

Test start date	November 11, 2024	Test end date	November 12, 2024
-----------------	-------------------	---------------	-------------------

5.2 Sample information

Receipt date	November 11, 2024	Nemko sample ID number(s)	PRJ00668840001, PRJ00668840002
--------------	-------------------	---------------------------	--------------------------------

5.3 FCC, 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)(1)	Undesirable emission limits for 5.15–5.25 GHz band	Pass
§15.407(b)(6)	Undesirable emission limits for 5.925-7.125 GHz band	Pass

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

5.4 ISED, Test results

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

Part	Test description	Verdict
ISED RSS-Gen, 7.3	Receiver radiated emission limits	Not applicable
ISED RSS-Gen, 8.8	AC power-line conducted emissions limits	Not applicable
ISED RSS-247, 5.5	Unwanted emissions	Pass
ISED RSS-247, 6.2.1.2	Unwanted emission limits for 5150–5250 MHz band	Pass
ISED RSS-248, 4.6.2	Unwanted emission limits	Pass

Notes: ¹According to sections 5.2 and 5.3 of RSS-Gen, Issue 5 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 fully charged batteries.

Section 6 Test equipment

6.1 Test equipment list

Table 6.1-1: Equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
Receiver/spectrum analyzer	Rohde & Schwarz	ESR26	FA002969	1 year	May 17, 2025
3 m EMI test chamber	TDK	SAC-3	FA003012	1 year	January 22, 2025
Flush mount turntable	SUNAR	FM2022	FA003006	—	NCR
Controller	SUNAR	SC110V	FA002976	—	NCR
Antenna mast	SUNAR	TLT2	FA003007	—	NCR
Bilog antenna (30–2000 MHz)	SUNAR	JB1	FA003009	1 year	April 24, 2025
Horn antenna (1–18 GHz)	ETS Lindgren	3117	FA002911	1 year	May 16, 2025
Preamp (1–18 GHz)	ETS Lindgren	124334	FA002956	1 year	April 2, 2025
Horn antenna (18–40 GHz)	EMCO	3116B	FA002948	1 year	April 4, 2025
Preamp 18-40 GHz	None	PA1840	FA003323	1 year	April 2, 2025
Notch filter (2.4-2.4835 GHz)	Microwave circuits	N0324413	FA003027	—	NCR
Notch filter (5150 - 5350 MHz)	Microwave circuits	N0452501	FA003030	—	NCR
50 Ω SMA coax cable	Huber + Suhner	None	FA003056	1 year	Mar 1, 2025
50 Ω coax cable	Huber + Suhner	None	FA003402	1 year	July 29, 2025
50 Ω coax cable	Huber + Suhner	None	FA003047	1 year	July 29, 2025

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
Radio/EMC test software	Rohde & Schwarz	EMC32, Software for EMC Measurements, Version 10.60.00

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

Measurement	Measurement uncertainty, ±dB
Radiated spurious emissions (30 MHz to 1 GHz)	4.27
Radiated spurious emissions (1 GHz to 6 GHz)	4.74
Radiated spurious emissions (6 GHz to 18 GHz)	5.04
Radiated spurious emissions (18 GHz to 26 GHz)	4.47
Radiated spurious emissions (18 GHz to 40 GHz)	4.78

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 Spurious (out-of-band) unwanted emissions

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 5.5:

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:

- 8.9 Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table below.
- 8.10 Restricted frequency bands are designated primarily for safety-of-life services (distress calling and certain aeronautical activities), certain satellite downlinks, radio astronomy and some government uses. The following conditions related to the restricted frequency bands apply:
- a The transmit frequency, including fundamental components of modulation, of licence-exempt radio apparatus shall not fall within the restricted frequency bands.
 - b Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in table below.
 - c Unwanted emissions that do not fall within the restricted frequency bands shall comply either with the limits specified in the applicable RSS or with those specified in table below.

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.
 - (6) For transmitters operating within the 5.925–7.125 GHz band: Any emissions outside of the 5.925–7.125 GHz band must not exceed an e.i.r.p. of –27 dBm/MHz.
 - (7) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
 - (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.
 - (10) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

References, definitions and limits, continued

RSS-247, Clause 6.2:

Power and unwanted emissions limits

The power and e.i.r.p. of the equipment unwanted emission shall be measured in peak value. However, the equipment is required to comply with the provisions in RSS-Gen with respect to emissions falling within restricted frequency bands which are listed in the same standard.

If the transmission is in bursts, the provisions of RSS-Gen for pulsed operation shall apply.

The outermost carrier frequencies or channels shall be used when measuring unwanted emissions. Such carrier or channel centre frequencies are to be indicated in the test report.

Frequency band 5150–5250 MHz

LE-LAN devices are restricted to indoor operation only in the band 5150–5250 MHz. However, original equipment manufacturer (OEM) devices, which are installed in vehicles by vehicles manufacturers, are permitted.

Unwanted emission limits

For transmitters with operating frequencies in the band 5150–5250 MHz, all emissions outside the band 5150–5350 MHz shall not exceed –27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250–5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250–5350 MHz band; however, if the occupied bandwidth also falls within the 5250–5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250–5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250–5350 MHz band.

RSS-248, Clause 4.6.2:

The following unwanted emission limits shall apply:

- a. any emissions outside of the 5925-7125 MHz frequency band shall not exceed –27 dBm/MHz e.i.r.p. spectral density
- b. the e.i.r.p. spectral density of unwanted emissions falling into the 5925-7125 MHz frequency band shall be attenuated below the reference power spectral density by at least:
 - i- 20 dB at 1 MHz away from the channel edges
 - ii- a value, linearly interpolated in a dB scale, between 20 dB and 28 dB at frequencies between 1 MHz outside of channel edges and 1 channel bandwidth away from the operating channel centre, respectively.
 - iii- 28 dB at 1 channel bandwidth away from the operating channel centre
 - iv- a value, linearly interpolated in a dB scale, between 28 dB and 40 dB at frequencies between 1 channel bandwidth away from the operating channel centre and 1.5 times the channel bandwidth away from the operating channel centre, respectively
 - v- 40 dB at 1.5 times the channel bandwidth and further away from the operating channel centre

Table 7.1-1: 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.

References, definitions and limits, continued

Table 7.1-2: ISED 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	
8.41425–8.41475	167.72–173.2	3500–4400	Above 38.6
12.29–12.293	240–285	4500–5150	
12.51975–12.52025	322–335.4	5350–5460	

Note: Certain frequency bands listed in Table 7.1-2 and above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

Table 7.1-3: 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			

Test summary

Verdict	Pass		
Test date	November 11, 2024	Temperature	23 °C
Tested by	Tarek Elkholy	Air pressure	987 mbar
Test location	Cambridge	Relative humidity	50 %

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. The EUT was transmitting on both MIMO chains simultaneously
- Radiated measurements were performed at a distance of 3 m, except for 26 – 40 GHz, the test was performed at distance of 30 cm, to maintain a low noise floor.
- 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.
- All emissions exceeding the limits noticed in the below 1 GHz spurious emissions scans were digital emissions, they were assessed against the applicable limits in the EMC assessment [REP068144 (FCC 47 CFR Part 15 and ICES-003)].

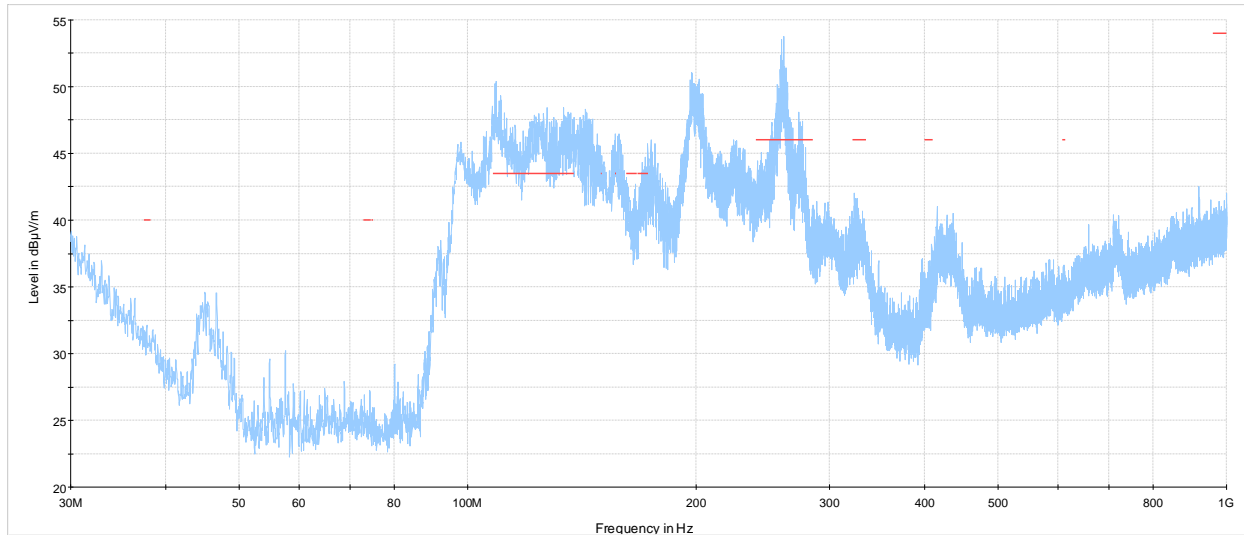
Spectrum analyser settings (Measurements within restricted bands)

Resolution bandwidth:	Measurements below 1 GHz: 100 kHz Peak or 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 or Q-Peak
Trace mode:	Max Hold

Spectrum analyser settings (Average Measurements within restricted bands above 1 GHz)

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

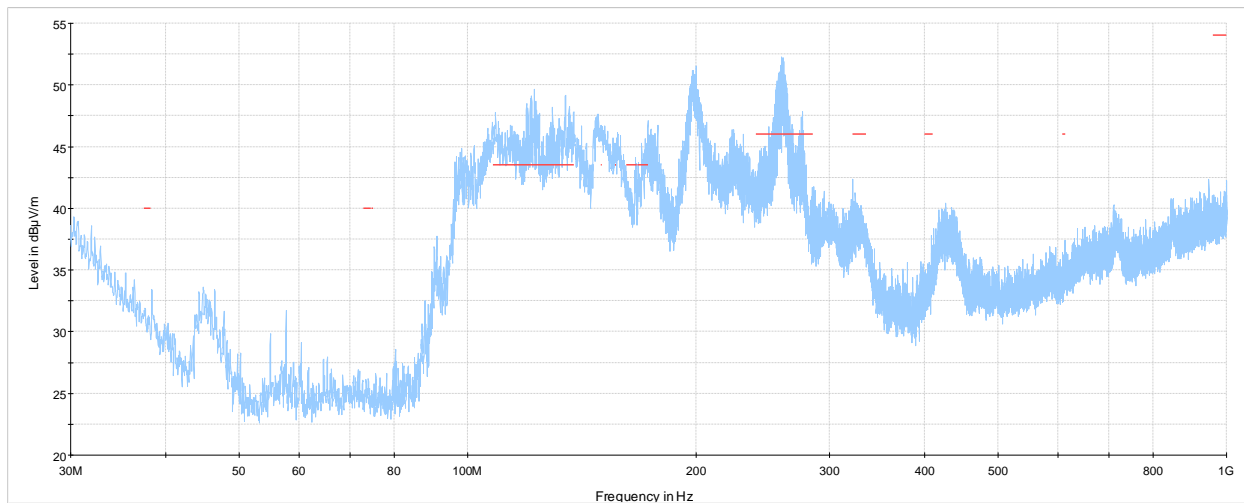
Test data



PRJ0066884, RE 30-1000 MHz, Host Integration, BLE + 2.4 GHz Wi-Fi

Preview Result 1-PK+
FCC 15.209 and RSS-Gen Restricted bands limits

Figure 7.1-1: Radiated spurious emissions 30-1000 MHz, BLE + 2.4 GHz Wi-Fi

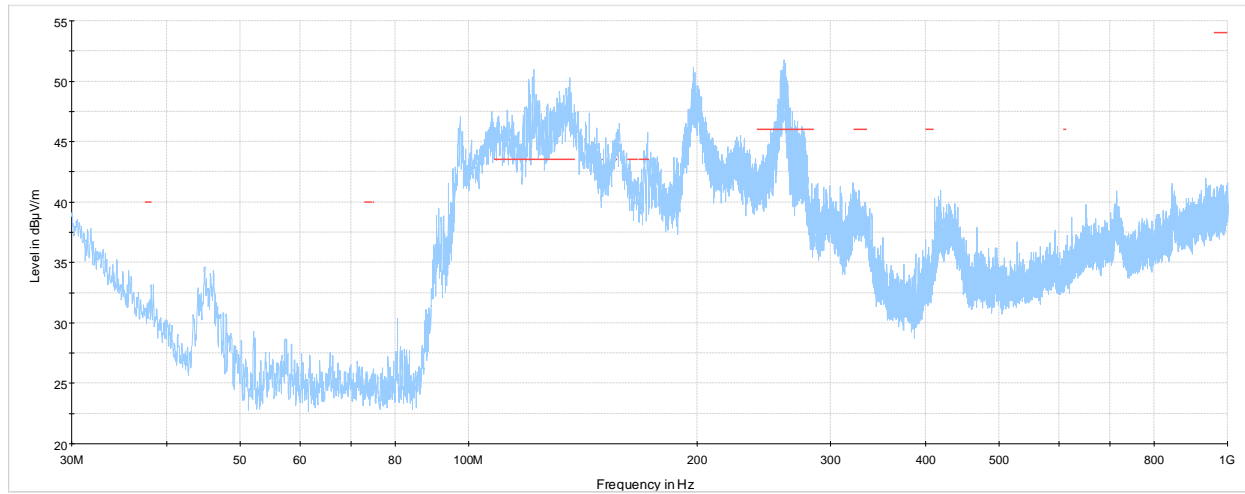


PRJ0066884, RE 30-1000 MHz, Host Integration, BLE + 5 GHz Wi-Fi

Preview Result 1-PK+
FCC 15.209 and RSS-Gen Restricted bands limits

Figure 7.1-2: Radiated spurious emissions 30-1000 MHz, BLE + 5 GHz Wi-Fi

Test data, continued

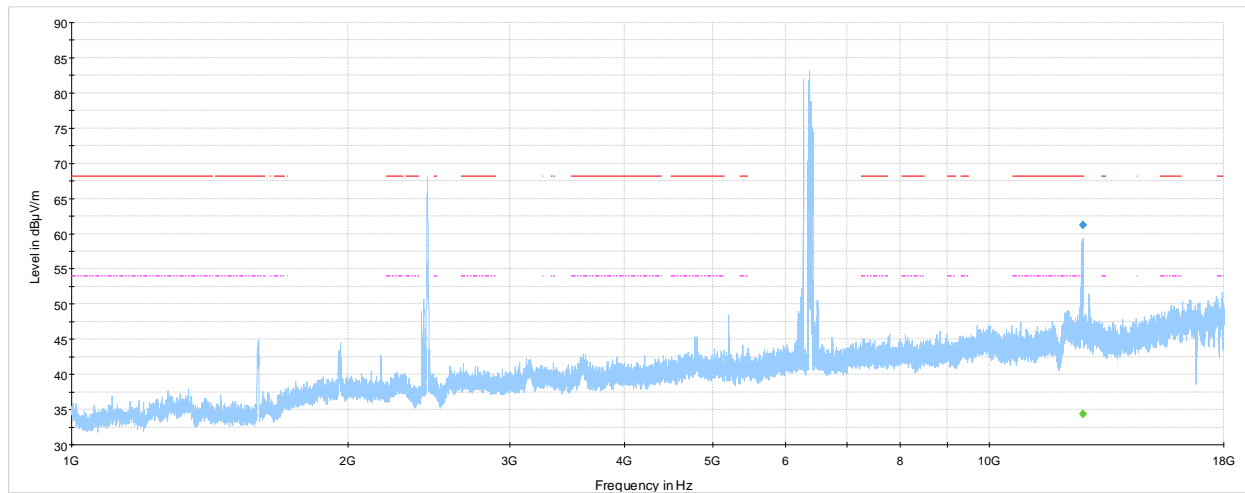


PRJ0066884, RE 30-1000 MHz, Host Integration, BLE + 6 GHz Wi-Fi

— Preview Result 1-PK+

— FCC 15.209 and RSS-Gen Restricted bands limits

Figure 7.1-3: Radiated spurious emissions 30-1000 MHz, BLE + 6 GHz Wi-Fi



PRJ0066884, RE 1 - 18 GHz, Host Integration, BLE + 2.4 GHz Wi-Fi

— Preview Result 1-PK+

— FCC 15.407 and RSS-247 U-NII 1 Restricted bands peak limits

— FCC 15.209 and RSS-Gen Restricted bands average limits

◆ Final Result PK+

◆ Final Result CAV

Figure 7.1-4: Radiated spurious emissions on 1 – 18 GHz, BLE + 2.4 GHz Wi-Fi

Test data, continued

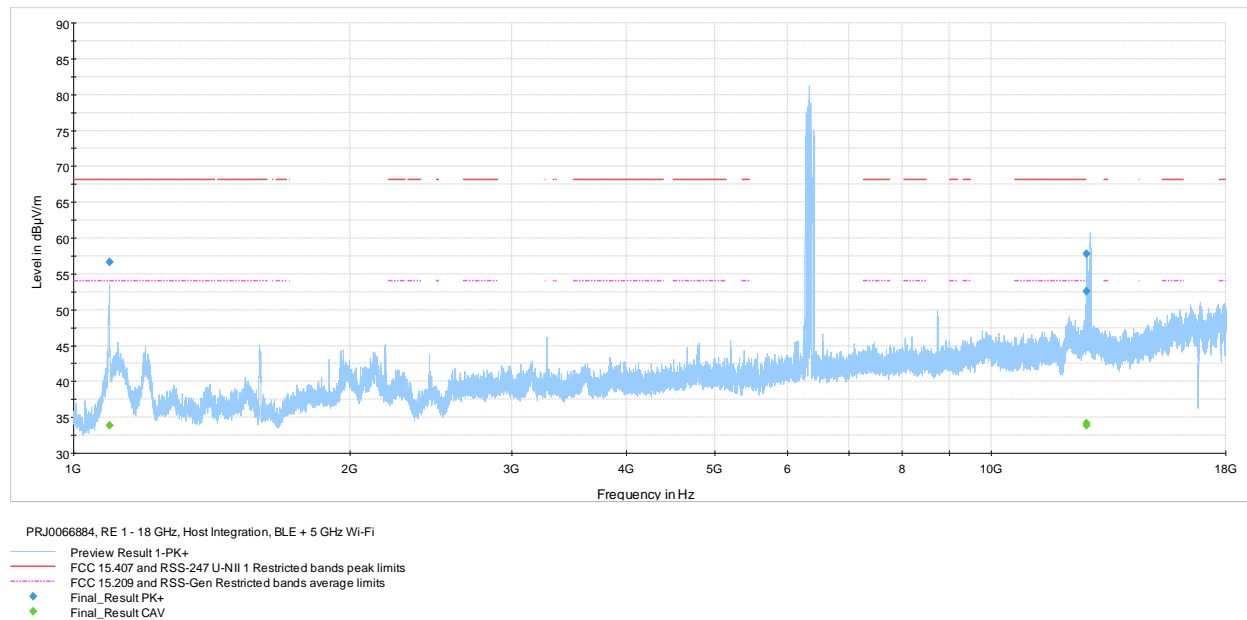


Figure 7.1-5: Radiated spurious emissions on 1 – 18 GHz, BLE + 5 GHz Wi-Fi

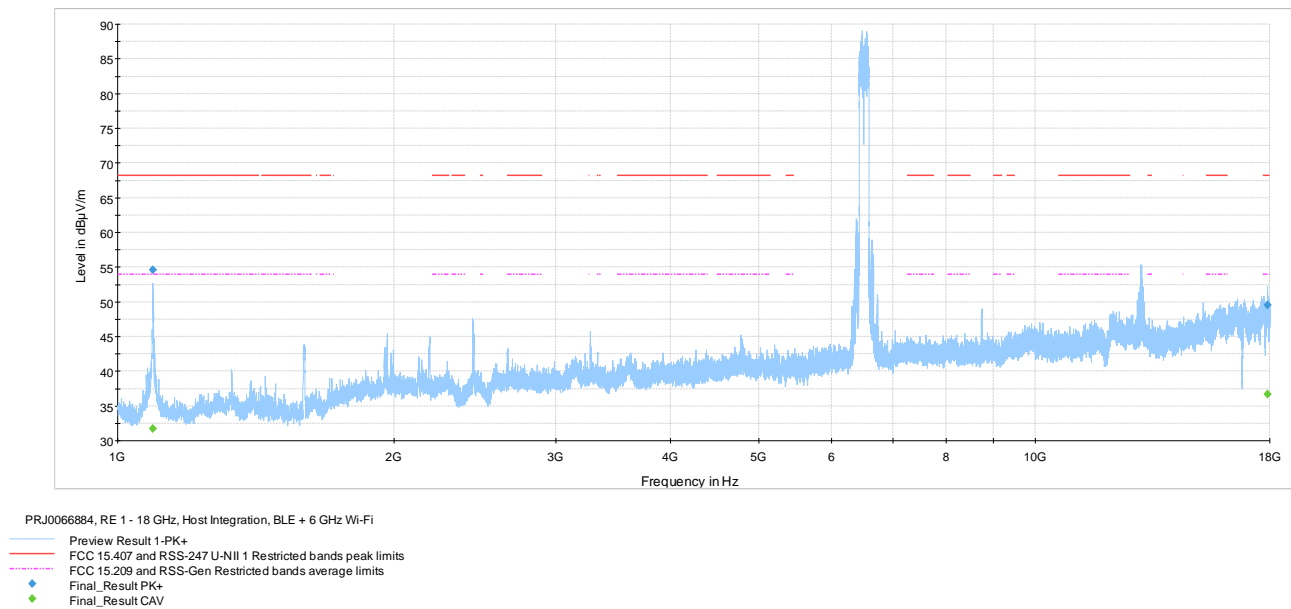


Figure 7.1-6: Radiated spurious emissions on 1 – 18 GHz, BLE + 6 GHz Wi-Fi

Test data, continued

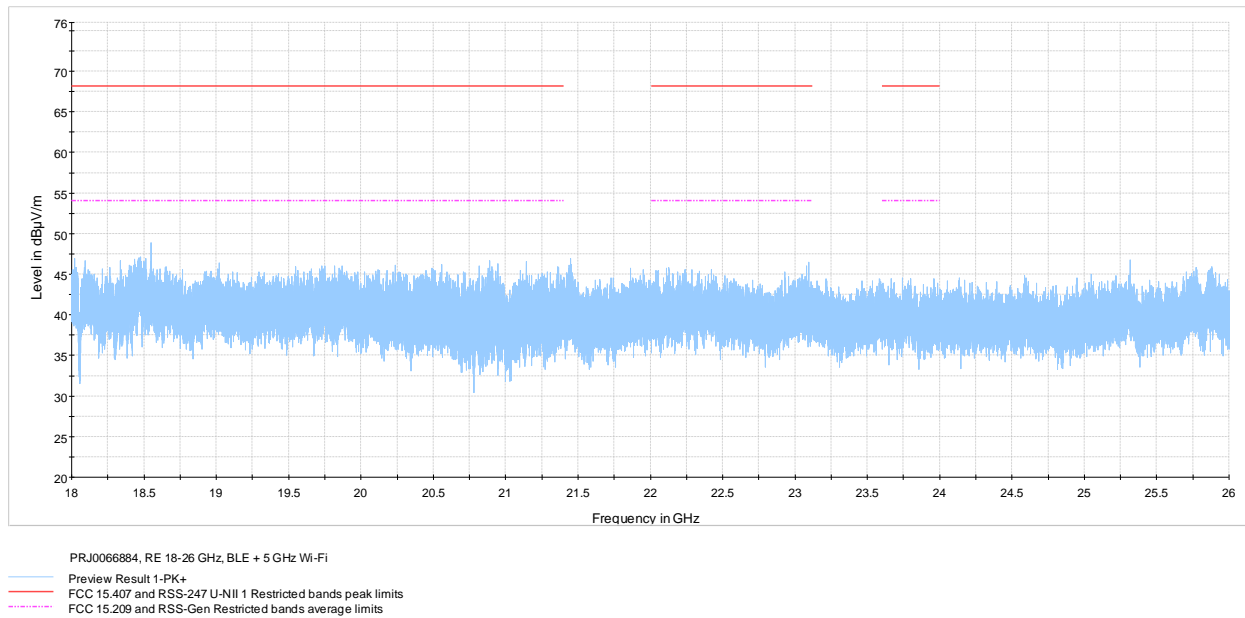


Figure 7.1-7: Radiated spurious emissions on 18 – 26 GHz, BLE + 5 GHz Wi-Fi

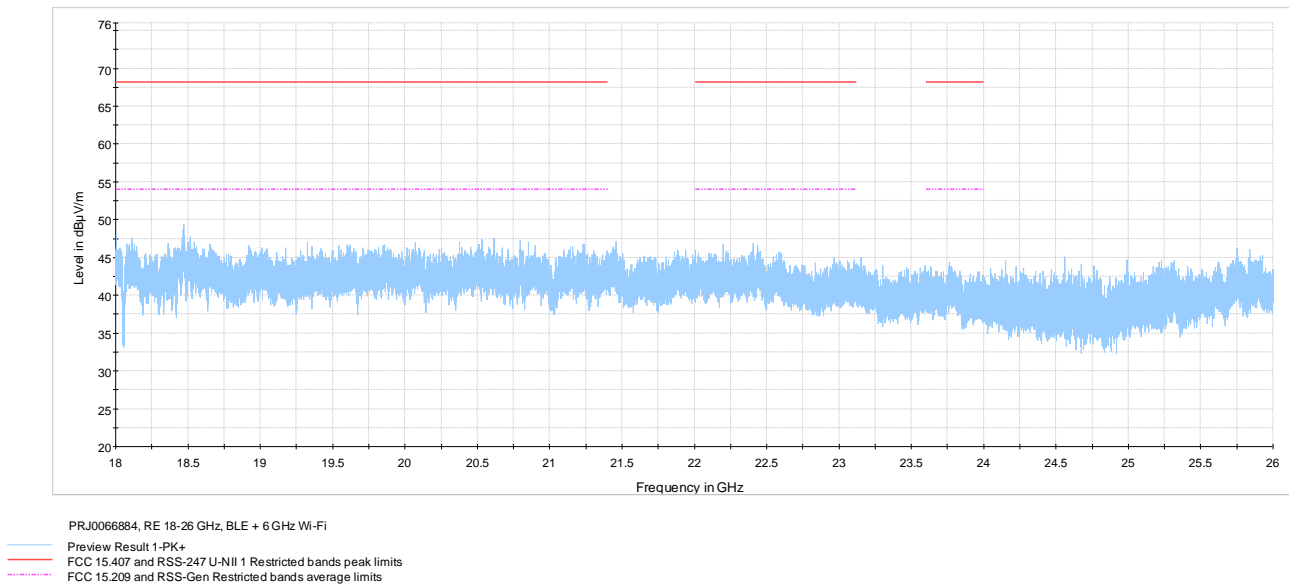
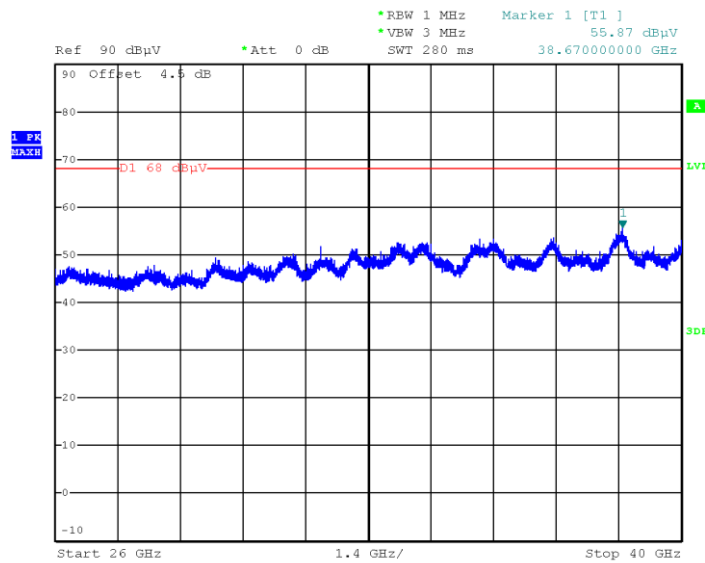


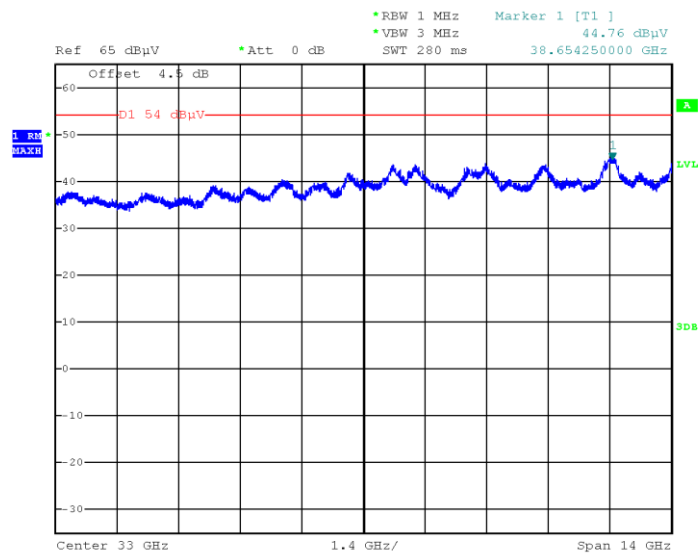
Figure 7.1-8: Radiated spurious emissions on 18 – 26 GHz, BLE + 5 GHz Wi-Fi

Test data, continued



Date: 12.NOV.2024 13:45:53

Figure 7.1-9: Radiated spurious emissions on 26 – 40 GHz, BLE + 6 GHz Wi-Fi, Peak



Date: 12.NOV.2024 13:44:00

Figure 7.1-10: Radiated spurious emissions on 26 – 40 GHz, BLE + 6 GHz Wi-Fi, Average

Setup photos



Figure 7.1-11: Radiated spurious emissions – below 1 GHz

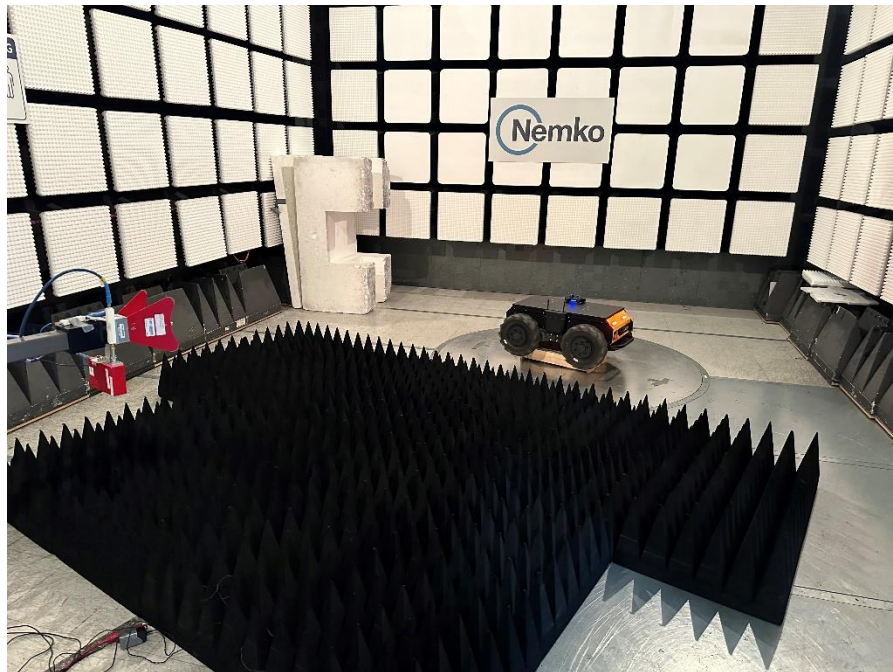


Figure 7.1-12: Radiated spurious emissions – above 1 GHz

Section 8 EUT photos

8.1 External photos



Figure 8.1-1: Front view photo



Figure 8.1-2: Rear view photo

External photos continued



Figure 8.1-3: Side view photo



Figure 8.1-4: Side view photo

External photos continued

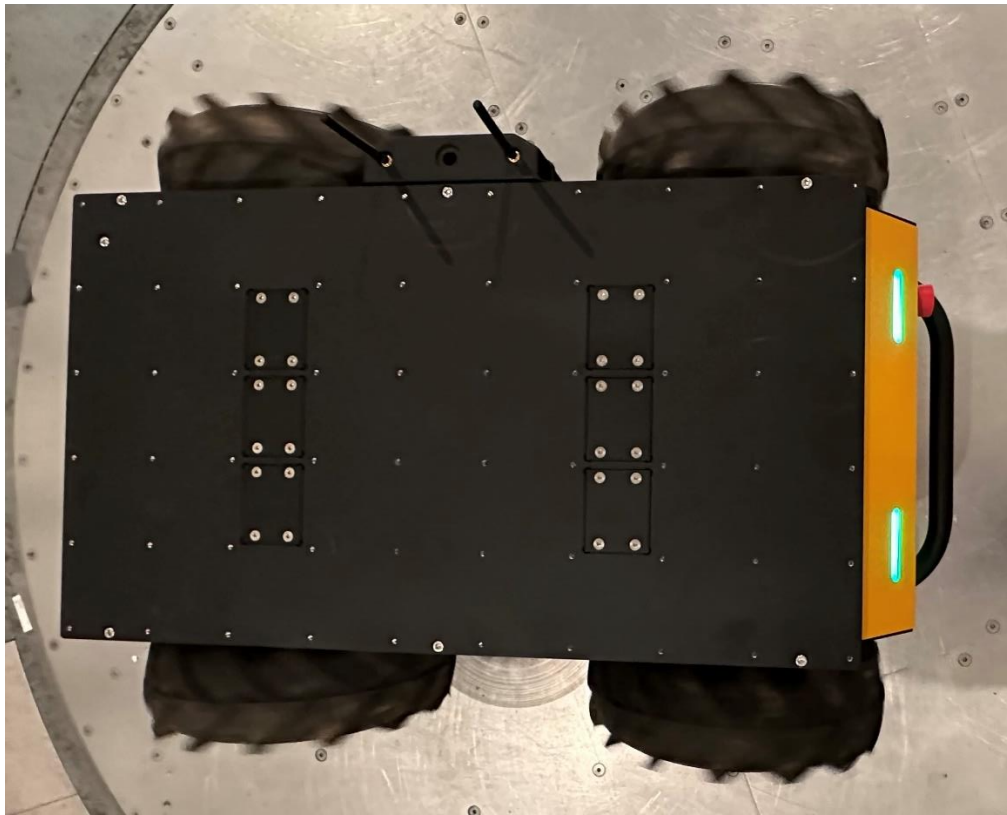


Figure 8.1-5: Top view photo

End of the test report