

Björn Skönvall
Division Safety and Transport
+46 10 516 51 23
bjorn.skönvall@ri.se

2026-02-02

2026-05-12

P124946-F15C Rev.2

1 (15)

Saab AB, Training & Simulation
Jonas Bergman
Stensholmsvägen 20
SE-561 85 Huskvarna
SWEDEN

Rev.1, 2026-02-10: Test setup photos and EUT photos removed from test report.

Rev.2, 2026-05-12: Corrected a typo error of IC ID of integrated single module and added Block diagram of test setup

Radio testing of PCU 2

Product name: PCU 2

Product number: 8858 050-102

Product serial number: 021509

Hardware Version Identification number (HVIN) : 2689

FCC ID: R4A-PDDPCU2A

ISED: 4660D-PDDPCU2A

RISE Research Institutes of Sweden AB Electronics - EMC

Performed by



Björn Skönvall

Examined by



Daniel Lundgren

RISE Research Institutes of Sweden AB

Postal address

Box 857
SE-501 15 BORÅS
Sweden

Office location

Brinellgatan 4
SE-504 62 BORÅS

Phone / Fax / E-mail

+46 10 516 50 00
+46 33 13 55 02
info@ri.se

This report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.



Accred. No. 1002
Testing
ISO/IEC 17025

Table of Content

Commission

3

Summary

3

Client

4

Description of the test object.....

4

Justification measurements

5

Operational test mode

5

Ancillary and/or support equipment.....

5

Test facility.....

6

References

6

Uncertainties

7

Reservation.....

7

Test results

8

Field strength of fundamental measurements

8

Occupied bandwidth measurements.....

10

Radiated emission measurements

12

Commission

The tests were performed to verify that the test object meets the requirements of listed standards in the tables below.

Summary

Emission measurements as specified below have been performed.

Standard	Compliant	Remarks
FCC 47 CFR Part 15 C		
§15.249 (a) Field strength of fundamental	Yes	
§2.1049 Occupied bandwidth	-	
§15.249 Operation within the band: 902-928 MHz	Yes	
§15.249 (d) (e) Radiated emission	Yes	
§15.249 (d) (e), Band Edge	Yes	

Standard	Compliant	Remarks
ISED RSS-210 Issue 11 Section B.10	Yes	
§RSS-210 B.10 (a) Fundamental emission limits		
§RSS-Gen 6.7 Occupied bandwidth	-	
§RSS-210 B.10 (b) Radiated emission	Yes	
§RSS-210 B.10 (b) Out-of-band emissions	Yes	
§RSS-210 B.10 (b), Band Edge	Yes	

Client

Saab AB, Training & Simulation
Jonas Bergman
Stensholmsvägen 20
SE-561 85 Huskvarna
Sweden

Description of the test object

The Personnel Computer Unit (PCU 2) is a radio unit in a man worn Personal Detection Device (PDD) simulator system that simulates a casualty from direct and indirect fire. The user wearing the PDD will receive a feedback through the built-in speaker and all training data is stored for after action reviews.

The basic configuration is suited for initial laser assisted training. All events are recorded and time stamped. The data can be extracted after an exercise and turned into statistics for the unit.

Information declared by the client:

Transceiver model name:	mPM
Operational Frequency band:	902-928 MHz
Operating Frequency:	916.1 MHz
Antenna:	PCB trace antenna
Antenna manufacturer/ model name:	Ridgid Flex
Antenna gain, declared:	-7 dB
Power, maximum setting 3, conducted:	0 dBm $\pm$ 2 dBm
Modulation:	GFSK
Data rate:	25kbit/s
Supply voltage, nominal	1,5V DC – Battery type AA
Battery voltage end-point:	1,3V DC
Physical dimensions:	122x59x35(mm)

Note: Radio device also includes certified radio module, RS9116 (Silabs). The module were in non-transmitting mode during all tests.

FCC ID: XF6-M7DB7 (RS9116 (Silabs))
IC: 8407A-M7DB7 (RS9116 (Silabs))

Justification measurements

Justification measurements were performed with rotation of the EUT through three orthogonal axes to determine which orientation the EUT had the highest emission levels, see photos in the photo section in the end of the report.

Operational test mode

The EUT was mounted in a typical body harness during all tests.

During the tests, the test software K016 was used to configure the EUT for continuous transmission (100% duty cycle) at maximum output power (Power level: 3) at the operating frequency 916.1 MHz with normal modulation (GFSK, 25 kbit/s).

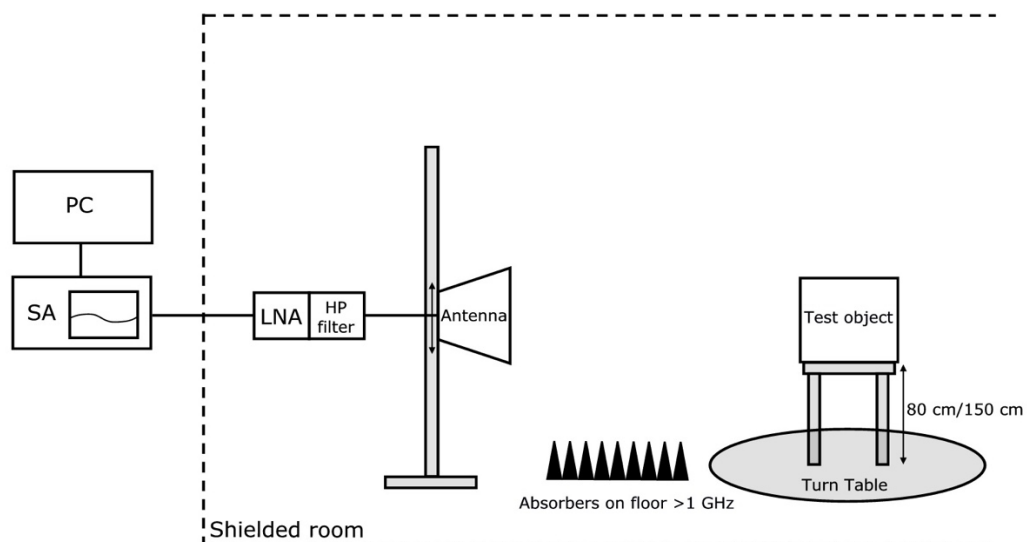
The EUT was powered with a new 1.5V battery during the tests. The voltage of the battery was checked regularly during the measurements.

The test equipment was connected to an external 10 MHz reference standard during measurements.

Ancillary and/or support equipment

Laptop PC, Dell with dedicated software	Client equipment
Body harness, PDD harness black: Product Number: 8858-000272 Serial number: 004185	Client equipment

Block diagram, Radiated tests



PC with Rohde & Schwarz emission software, Elektra

LNA and High Pass filter used only above 1 GHz

Absorbers on the floor between the measurement antenna and turntable above 1 GHz

Sample calculation

The transducer factors are stored in emission software/spectrum analyser as separate files and activated as applicable in the hardware setup, for each measurement configuration.

Radiated emission (dBuV/m):

General:

Final result (dBuV/m) = Spectrum analyser raw recording (dBuV) + Total Transducer Factor (dB/m)

Detailed:

The calculation of the measured radiated E-field signal level is given by:

$$E \text{ (dBuV/m)} = V \text{ (dBuV)} + Cl_1 \text{ (dB)} - \text{PAG (dB)} + \text{HPF (dB)} + Cl_2 \text{ (dB)} + \text{AF (dB/m)}$$

Where:

$E \text{ (dBuV/m)}$ = Measured E-field

$V \text{ (dBuV)}$ = Spectrum analyser raw recording

$Cl_1 \text{ (dB)}$ = Loss in cable 1

PAG (dB) = PreAmplifier Gain

HPF (dB) = High Pass Filter

$Cl_2 \text{ (dB)}$ = Loss in cable 2

AF (dB/m) = Antenna Factor

Test facility

The used semi-anechoic chamber is compliant with ANSI C63.4. RISE is an ISO 17025 accredited test facility for Electromagnetic Compatibility (EMC) and Radio testing. RISE is Recognized Lab under FCC (Designation number: SE0001) and ISED (CAB identifier: SE0002).

References

Measurements were done according to relevant parts of the following standards:

ANSI C63.4-2014

ANSI C63.4a-2017

ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024+Errata to C63.10a-2024

47 CFR Part 15 Subpart C

RSS-210, Issue 11, Annex B.10

RSS-Gen, Issue 5

Uncertainties

Measurement and test instrument uncertainties are described in the quality assurance documentation RISE – 3936. The uncertainties are calculated with a coverage factor $k=2$ (95% level of confidence). Compliancy evaluation is based on a shared risk principle with respect to the measurement uncertainty.

Method	Uncertainty (+/-)
Duty cycle	1.3 %
Occupied bandwidth	2.6 %
Radiated spurious emission, 30 – 1000 MHz	5.9 dB
Radiated spurious emission, 1 – 6 GHz	5.2 dB
Radiated spurious emission, 6-40 GHz	5.6 dB

Reservation

The test results in this report apply only to the particular test object as declared in the report.

Delivery date of EUT

2026-01-16

Test engineers

Wiktor Dobrzynski, RISE

Test participant

Jonas Bergman, Saab

Test results

Field strength of fundamental measurements

Date 2026-01-16	Temperature 22°C ± 2 °C	Humidity 32% ± 5 %
--------------------	----------------------------	-----------------------

Test setup and procedure

The measurements were performed according to FCC47 CFR part 15.249(a)/RSS-210 B10(a) and ANSI C63.10 clause 6.5.

The radiated output power measurements were performed in the semi-anechoic chamber. The test was also performed with rotation of the EUT through three orthogonal axes to determine the position that produces the highest emission relative to the limit.

The fundamental was scanned with PEAK-detector with the test antenna height 1-4 m and the turntable was varied between 0-360 degrees for maximum response. The antenna distance during the measurements was 3.0 m. EUT was placed at 0.8m height.

Final measurement was performed with detector according to the FCC rules.

Measurement equipment

Item	Name	Inv.no	Cal.due date
Semi Anechoic Chamber	TDK	504114	
	NSA	BX90692	2026-03-03
	SVSWR	BX90701	2027-05-08
Test Software	Rohde & Schwarz Elektra	KWP19663	
Spectrum analyzer	Rohde & Schwarz ESW44	KWP22741	2026-05
Antenna	Teseq CBL 6143A	504079	2027-07
RF Cable	Huber & Suhner Eacon 4C	BX91501	2026-08
RF Cable	Rosenberger	504102	2026-03
RF Cable	Huber & Suhner SF106	504103	2026-03
RF Cable	Huber & Suhner SF106	504104	2026-03
Thermohygrometer	Testo 625	504188	2026-05

Remarks

No remarks.

Limits

According to 47CFR 15.249(a), The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field strength of fundamental	Field strength of harmonics
902-928 MHz	50 mv/m = 94 dB μ V/m	500 μ v/m = 54 dB μ V/m

Results

Worst case plot – Pos Y



Frequency [MHz]	QPK Level [dB μ V/m]	QPK Limit [dB μ V/m]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Meas. Time [s]
916.140	81.02	46.00	29.58	V	218.8	2.00	120.000	15.000

Test engineers: Wiktor Dobrzynski.

Compliant?	Yes
------------	-----

Occupied bandwidth measurements

Date	Temperature	Humidity
2026-01-16	22°C ± 2 °C	32% ± 5 %

Test setup and procedure

The measurements were performed according to ANSI C63.10 procedures, clause 6.9.3 in accordance with FCC 47 CFR Part 15 and ISSED RSS-Gen requirements.

Measurement equipment

Item	Name	Inv.no	Cal.due date
Semi Anechoic Chamber	TDK	504114	
	NSA	BX90692	2026-03-03
	SVSWR	BX90701	2027-05-08
Test Software	Rohde & Schwarz Elektra	KWP19663	
Spectrum analyzer	Rohde & Schwarz ESW44	KWP22741	2026-05
Antenna	Teseq CBL 6143A	504079	2027-07
RF Cable	Huber & Suhner Eacon 4C	BX91501	2026-08
RF Cable	Rosenberger	504102	2026-03
RF Cable	Huber & Suhner SF106	504103	2026-03
RF Cable	Huber & Suhner SF106	504104	2026-03
Thermohygrometer	Testo 625	504188	2026-05

Remarks

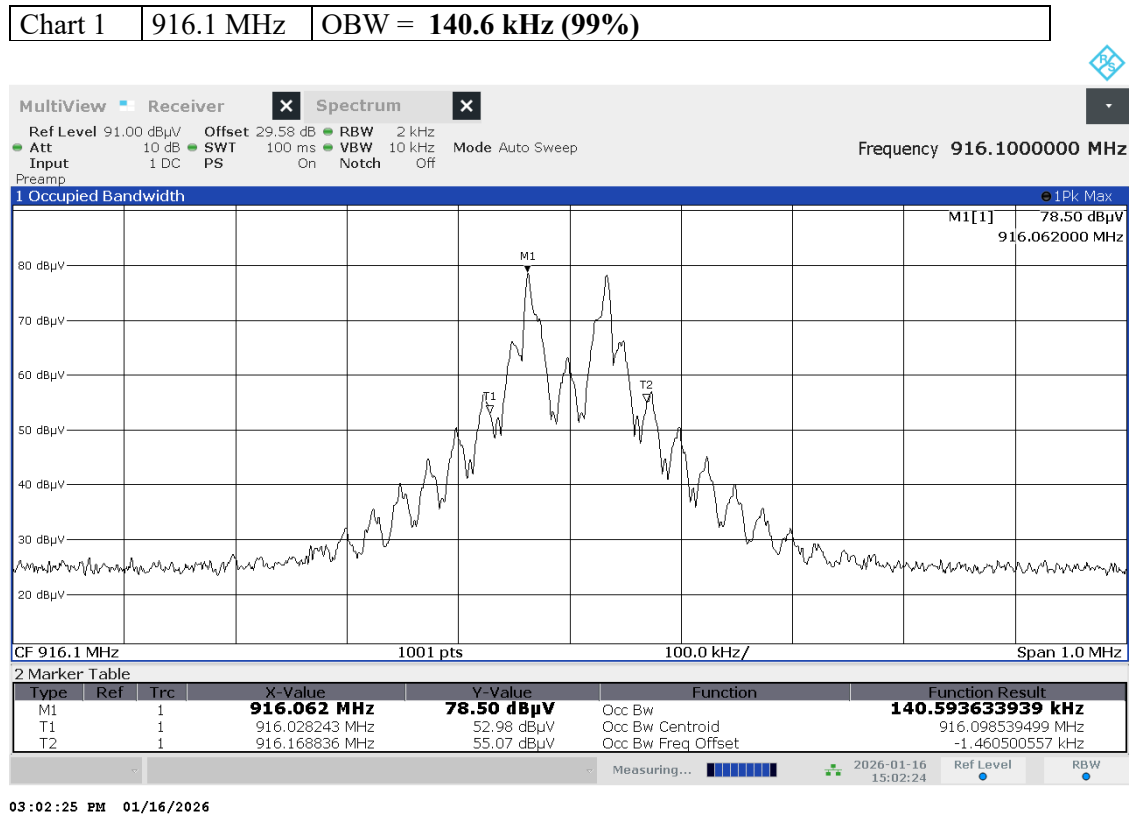
No remarks.

Limits

No limit specified in the Rules / standards.

Results

The bandwidth is with good margin within operating band 902-928 MHz.
The OBW measurements can be found in the table/chart(s) below:



03:02:25 PM 01/16/2026

Test engineers: Wiktor Dobrzynski.

Compliant?	N/A
------------	-----

Radiated emission measurements

Date 2026-01-16	Temperature 22°C ± 2 °C	Humidity 32% ± 5 %
--------------------	----------------------------	-----------------------

Test setup and procedure

The measurements were performed according to FCC 47 CFR Part 15.249 (d), (e), ISSED RSS-210 B.10 (b), and ANSI C63.10 clause 6.5 and 6.6.

The test of radiated emission was performed in a semi anechoic chamber. The measurements were performed with both horizontal and vertical polarizations of the antenna. The antenna distance was 3 m.

The measurement procedure is as the following:

1. A pre-measurement is performed with peak detector. The test object is measured in eight directions with the antenna at three heights, 1.0 m, 1.5 m and 2.0 m.
2. If the emission is close or above the limit during the pre-measurement, the test object is scanned 360 degrees and the antenna height scanned from 1 to 4 m for maximum response. Then the emission is measured with the quasi-peak detector on frequencies below 1 GHz and with the average detector above 1 GHz.

The measurement was first performed with peak detector.

The following RBW were used:

30 MHz-1 GHz: RBW=120 kHz

1-25 GHz: RBW=1 MHz

Measurement equipment

Item	Name	Inv.no	Cal.due date
Semi Anechoic Chamber	TDK	504114	
	NSA	BX90692	2026-03-03
	SVSWR	BX90701	2027-05-08
Test Software	Rohde & Schwarz Elektra	KWP19663	
Spectrum analyzer	Rohde & Schwarz ESW44	KWP22741	2026-05
Antenna	Teseq CBL 6143A	504079	2027-07
Antenna, Horn	ETS Lindgren 3115	902212	2027-09
Preamplifier	Miteq MCN-JS42-00101800-30-10P	504160	2027-01
RF Cable	Huber & Suhner Eacon 4C	BX91501	2026-08
RF Cable	Rosenberger	504102	2026-03
RF Cable	Huber & Suhner SF106	504103	2026-03
RF Cable	Huber & Suhner SF106	504104	2026-03
Highpass Filter	Wainwright WHNX1.0/26.5G-6SS	901501	2026-06
Thermohygrometer	Testo 625	504188	2026-05

Remarks

No remarks.

Limits

According to 47CFR 15.249(a), The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental	Field strength of
Frequency	harmonics
902-928 MHz	500 μ V/m = 54 dB μ V/m

According to 47CFR 15.249(d), Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in section 15.209, whichever is the lesser attenuation.

According to 47CFR 15.249(e), The peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

According to RSS-210 A2.9(b), Emissions radiated the outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to table 2 limits, whichever is the less stringent.

Results

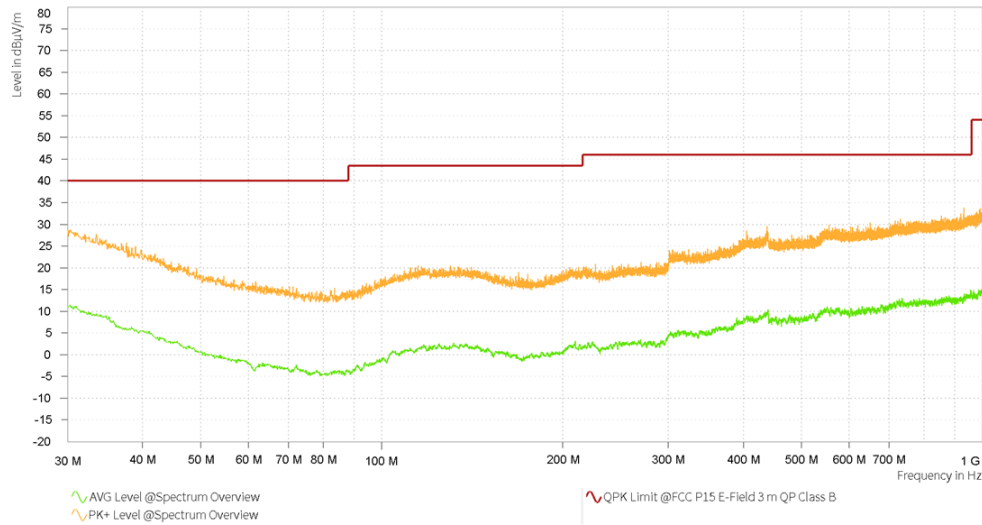
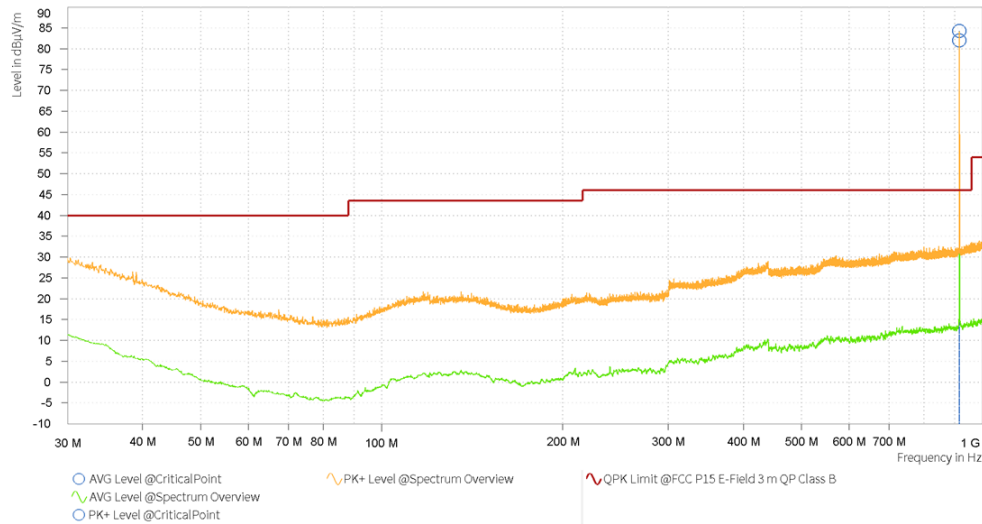
The emission spectra measurement can be found in the charts below:

Chart 1	30 - 1000 MHz Horizontal/Vertical – Ambient
Chart 2	30 - 1000 MHz Horizontal/Vertical – Pos Y
Chart 3	800-1000 MHz Band Edge – Pos Y
Chart 4	1 - 10 GHz Horizontal/Vertical – Ambient
Chart 5	1 - 10 GHz Horizontal/Vertical – Pos Y

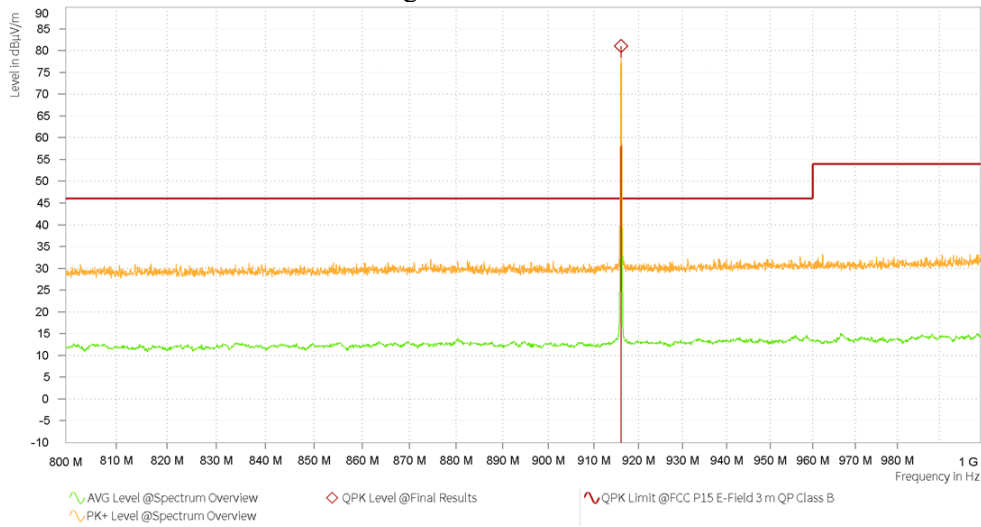
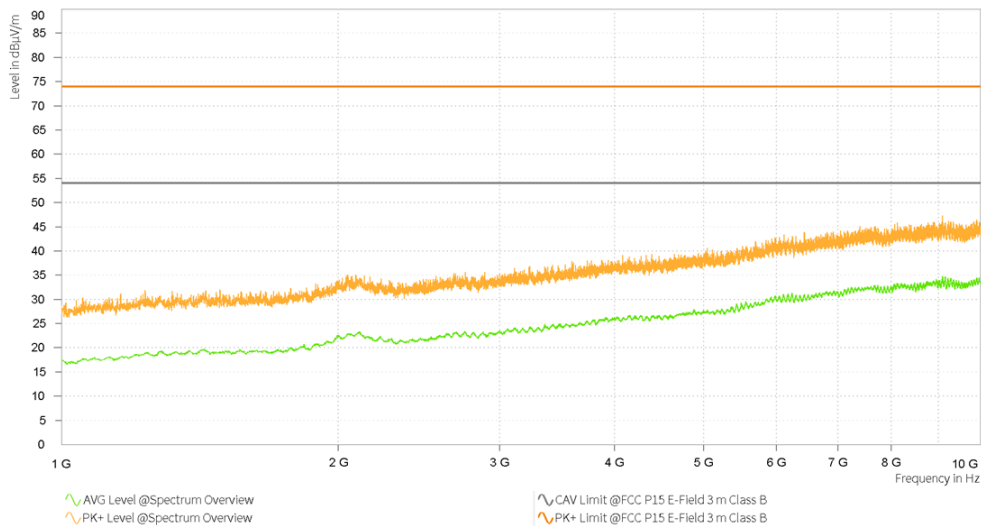
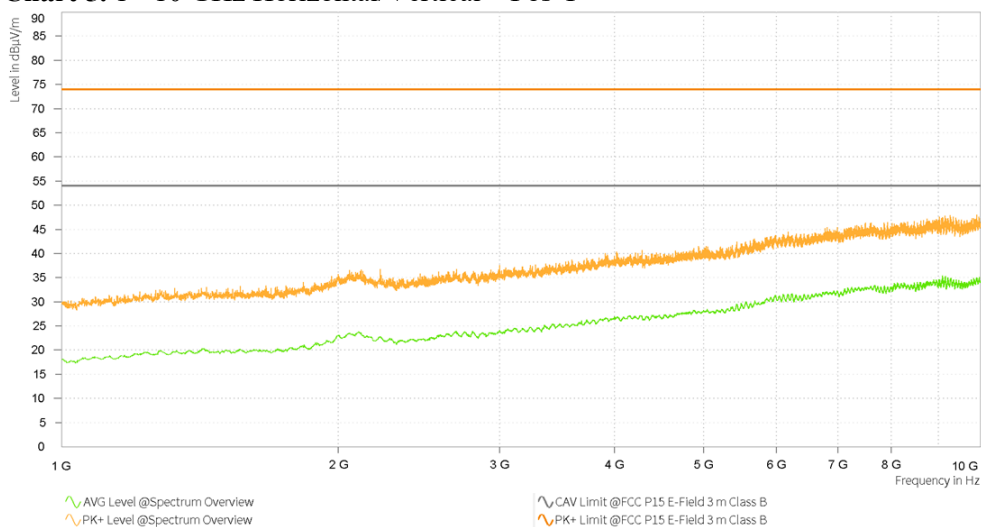
Note: Only worst-case plots are attached.

Test engineers: Wiktor Dobrzynski.

Compliant?	Yes
------------	-----

Chart 1. 30 - 1000 MHz Horizontal/Vertical – Ambient**Chart 2. 30 - 1000 MHz Horizontal/Vertical – Pos Y**

Note. The emission at 916.1 MHz corresponds to the fundamental frequency of the radio and shall be disregarded.

Chart 3. 800-1000 MHz Band Edge – Pos Y**Chart 4. 1 - 10 GHz Horizontal/Vertical – Ambient****Chart 5. 1 - 10 GHz Horizontal/Vertical – Pos Y**

End of the report

Verification

Document ID 09222115557577923511

Document

P124946-F15C Rev.2

Main document

15 pages

Initiated on 2026-05-12 16:25:01 CEST (+0200) by Björn Skönvall (BS)

Finalised on 2026-05-12 16:33:45 CEST (+0200)

Signatories

Björn Skönvall (BS)

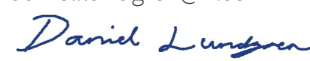
bjorn.skonvall@ri.se



Signed 2026-05-12 16:25:36 CEST (+0200)

Daniel Lundgren (DL)

daniel.lundgren@ri.se



Signed 2026-05-12 16:33:45 CEST (+0200)

This verification was issued by Scrive. For more information/evidence about this document see the concealed attachments. Use a PDF-reader such as Adobe Reader that can show concealed attachments to view the attachments. Please observe that if the document is printed, the integrity of such printed copy cannot be verified as per the below and that a basic print-out lacks the contents of the concealed attachments. The digital signature (electronic seal) ensures that the integrity of this document, including the concealed attachments, can be proven mathematically and independently of Scrive. For your convenience Scrive also provides a service that enables you to automatically verify the document's integrity at: <https://scrive.com/verify>

