

TEST REPORT

Ref. n.	FCCTR_186849-1	Issue Date:	21/11/2025	Pages:	26
Test object	Type test according to Standards FCC Cfr 47 part 15 - Subpart C - §15.249				
Applicant	Vodafone Automotive S.p.A. Via Astico 41 - 21100 Varese - Italy Tel.: +39 0332 825111; +39 0332 825238				
Trade mark					
Manufacturer	Vodafone Automotive S.p.A.				
Product	Driver card				
Testing model	2761				
FCC identification number	NWD2761				
Date of test samples receipt	01/09/2025				
No. of tested samples	1 – Sampled by the Manufacturer				
Test date	05/09/2025				
Testing site	PRSLAB S.r.l. Unipersonale - Via Campagna 92 - 22020 Faloppio - Como - Italy				
FCC designation number	IT0012				
Test results	PASS				
Verifications carried out by	Daniele Aosani Laboratory Engineer				
Approved by	Luana Parisi Reviewer				

The test results reported in this test report shall refer only to the samples tested.

The sample has been provided by the customer and the results apply to the sample as received.

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PRS refuses any responsibility about information provided by the customer contained in this test report.

Any not Accredited test methods are clearly identified in the test report.

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0. RELEASE CONTROL RECORD

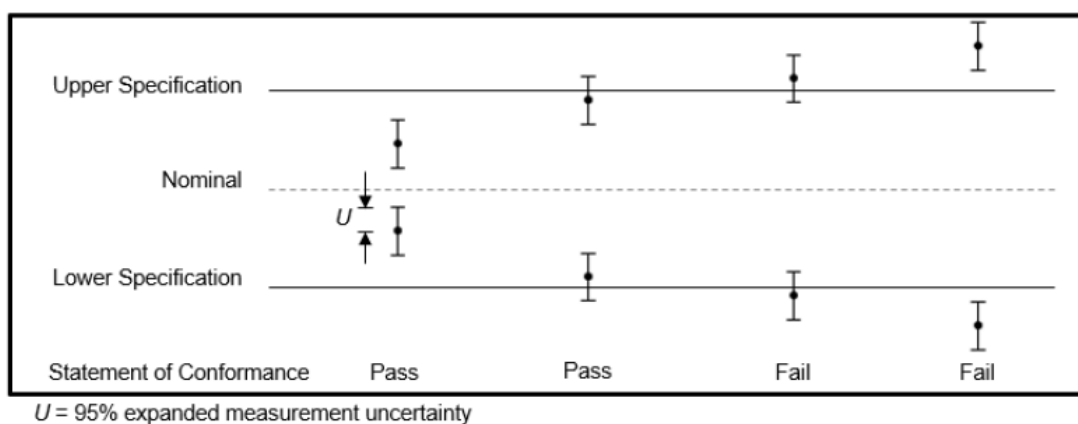
TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
FCCTR_186849-0	Original release	30/10/2025
FCCTR_186849-1	Corrected typo on page 8 and calculated limit on pages 18 and 19	21/11/2025

This document is valid in last revision that deletes and replaces the previous one

1. DECISION RULE

PRSLAB specifies that, if the decision rules of conformity of the test results are not indicated in detail in the standard/s object of tests, it takes as a decision rule for the declaration of conformity the simple binary system ($w = 0$) stated in the ILAC-G8-09:2019 document.

The decision rule is applicable for all parts of standard



Statements of conformity are reported as:

- Pass: the measured value is below the acceptance limit, $AL=TL$.
- Fail: the measured value is above the acceptance limit, $AL=TL$.

Definitions

- Guard Band (w): interval between a tolerance limit and a corresponding acceptance limit where length $w=|TL-AL|$.
- Tolerance Limit (TL) (Specification Limit): specified upper or lower bound of permissible values of a property.
- Acceptance Limit (AL): specified upper or lower bound of permissible measured quantity values.

2. INFORMATION PROVIDED BY CUSTOMER

- None

3. GENERAL REMARKS

- None

4. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

4.1 EUT Identification

DESCRIPTION	Driver card
MODEL NAME	2761
FCC ID	NWD2761
SERIAL NO.	NA
PRSLAB INTERNAL REFERENCE	BC 196/2025 6/8
TRADEMARK	
MANUFACTURER	Vodafone Automotive S.p.A.
COUNTRY OF MANUFACTURER	Italy
SINGLE UNIT OR SYSTEM	Single
POWER SOURCE	Internal battery CR2032
POWER SUPPLY NOMINAL VOLTAGE	3Vdc
MAX POWER or MAX ABSORBED CURRENT	Data not provided
OPERATING TEMPERATURE	-10°C ÷ +55°C
SOFTWARE VERSION (Information provided by Customer)	2761-102
HARDWARE VERSION (Information provided by Customer)	4C2761ACC
EUT STANDING	☐ WALL; ☐ CEILING; ☐ TABLE; ☐ FLOOR; ☐ RACK MOUNTED; ☐ BODY WORN; ☐ HANDELD; ☒ PORTABLE; ☐ MOBILE; ☐ VEHICLE
DIMENSIONS	40 mm x 55 mm x 6 mm
HIGHEST INTERNAL FREQUENCY (Information provided by Customer)	☐ F<108MHz; ☐ 108MHz<F<500MHz; ☐ 500MHz<F<1GHz; ☒ F>1GHz

4.2 Short range device module technical data

CHIP MANUFACTURER	 TEXAS INSTRUMENTS
CHIP MODEL	CC2510
ETS CATEGORY	Short range device (SRD)
TYPE OF RADIO DEVICE	Transmitter
FREQUENCY BAND	2400MHz ÷ 2483.5MHz
NUMBER OF CHANNELS	1
OPERATING FREQUENCY	2480MHz
CHANNEL BANDWIDTH	1MHz
CHANNEL SPACING	---
TYPE OF MODULATION	MSK
DATA RATE	12Mbps
ANTENNA TYPE (Information provided by Customer)	PCB printed antenna
ANTENNA GAIN (Information provided by Customer)	NA

4.3 Ports identification

	PORT	DESCRIPTION	CONNECTION	NOTES
☒	Enclosure	Plastic	Snaps	---
☐	AC power port	Port not present	---	---
☒	DC power port	Interna battery	---	---
☐	Signal/control port	Port not present	---	---
☐	Telecommunication port	Port not present	---	---
☒	Antenna port	☒ Internal; ☐ External	---	---

Note: During the tests all cables must be what provided the manufacturer or the same that used in the real employment of the EUT.

4.4 Modifications incorporated in E.U.T.

The following items are the modifications introduced in the equipment under test:

- None

4.5 Auxiliary equipment

- None

5. REFERENCE STANDARDS

REFERENCE STANDARD	DESCRIPTION
47 CFR FCC Part 15 Subpart C §15.249	Radio Frequency Devices – Intentional Radiators Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.
ANSI C63.10:2020	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
ANSI C63.4:2014	American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz

6. OPERATING TEST MODES AND TEST CONDITIONS

In the following table there are the operating conditions adopted during tests identified by an indicator (#) at which has been referred the item “Operating condition of the equipment under test”

Operating Condition	Description
#1	Continuous transmission

Special Test Software: None

Special Hardware Used: None

Transmitter Test Antenna: The EUT was tested with one antenna mounted in a typical manner for its normal intended use as external antenna equipment.

7. UNITS OF MEASUREMENTS

Conducted EMI Data is in dBμV; dB referenced to one microvolt

Radiated EMI Data is in dBμV/m; dB/m referenced to one microvolt per meter

Sample Calculation:

RFS = Radiated Field Strength,

FSM = Field Strength Measured,

A.F. = Receive antenna factor,

Gain = amplification gains and/or cable losses.

$$\text{RFS (dB}\mu\text{V/m @ 3m)} = \text{FSM (dB}\mu\text{V)} + \text{A.F. (dB/m)} - \text{Gain (dB)}$$

8. SUMMARY OF TEST RESULTS

Port	Test	Reference Standard	Operating Condition ¹	Results
Antenna	Antenna requirement	FCC Part 15 §15.203	---	PASS
	Transmitter Radiated Emissions <1GHz	FCC Part 15 § 15.249 (a) & § 15.209 (a)	#1	PASS
	Transmitter Radiated Emissions >1GHz	FCC Part 15 § 15.249 (a) & § 15.209 (a)	#1	PASS
	Band Edge	FCC Part 15 §15.249(d) & §15.209(a)	#1	PASS
AC main ²	Conducted emission	Title 47 Part 15 Subpart C § 15.207	Not Applicable ²	

¹ Ref. Tab. of Section 6

² Port not present, EUT is battery powered

9. TEST RESULTS

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TRANSMITTER RADIATED EMISSIONS < 1GHz	11
TRANSMITTER RADIATED EMISSIONS > 1GHz	16
BAND EDGE	24

TEST 1.	ANTENNA REQUIREMENTS
REFERENCE DOCUMENT	According to §15.203 / 15.204 An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sec. 15.211, Sec. 15.213, Sec. 15.217, Sec. 15.219, or Sec. 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Sec. 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded

Antenna Requirements
The EUT has PCB printed antenna and uses a proprietary coupling, ensuring compliance with the requirements.
RESULT: PASS

TEST 2.	TRANSMITTER RADIATED EMISSIONS < 1GHZ
REFERENCE DOCUMENT	According to § 15.249 (d) and § 15.209 (a) Emissions 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 §15.209, whichever is the lesser attenuation.

• TEST LOCATION	Semi-Anechoic Chamber					
• DISTANCE OF MEASUREMENT	3m					
• TYPE OF MEASUREMENT	Radiated					
• TEST EQUIPMENT USED FOR TEST	Instrument	Manufacturer	Model	Serial n°	Calibrated On	Due to
	MXE Emi Receiver	Keysight	N9038A	MY57290150	11/2024	11/2025
	Semi-Anechoic Chamber	Siemens	B83117-D6019-T232	003-005-134/94C	02/2025	02/2026
	Loop antenna	Rohde & Schwarz	HFH 2-Z2	841801/012	03/2023	03/2026
	Bi-log antenna	Chase	CBL6111C	2717	06/2025	06/2028
	Software EMC	Rohde & Schwarz	EMC32-E	V 8.40.0	N.A.	
• TESTED PORT	Enclosure					
• TEST METHOD	ANSI C63.10:2020 section 6.5 and 11.12					
• FREQUENCY RANGE	9kHz – 1GHz					
• LIMITS	Acc. To ref. Std.					
• UNCERTAINTY OF MEASURE	Level of confidence = 95% (k=2) Expanded uncertainty 9kHz – 30MHz = 4,39dB Expanded uncertainty 30MHz – 1GHz = 5.94dB					

TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	23°C
Ambient humidity	25 - 75%rH	39%
Pressure	86 - 106kPa (860mbar - 1060mbar)	1012mbar

OPERATING CONDITION: #1

RESULT: PASS

MEASUREMENT PARAMETER

Frequency Range:	9kHz – 30MHz	30MHz – 1GHz
Resolution bandwidth:	200Hz	100kHz
Video bandwidth:	1kHz	300kHz
Span:	See plots below	See plots below
Sweep time	Auto couple	Auto couple
Detector:	Peak	Peak
Trace-Mode:	Max. hold	Max. hold

TEST DESCRIPTION

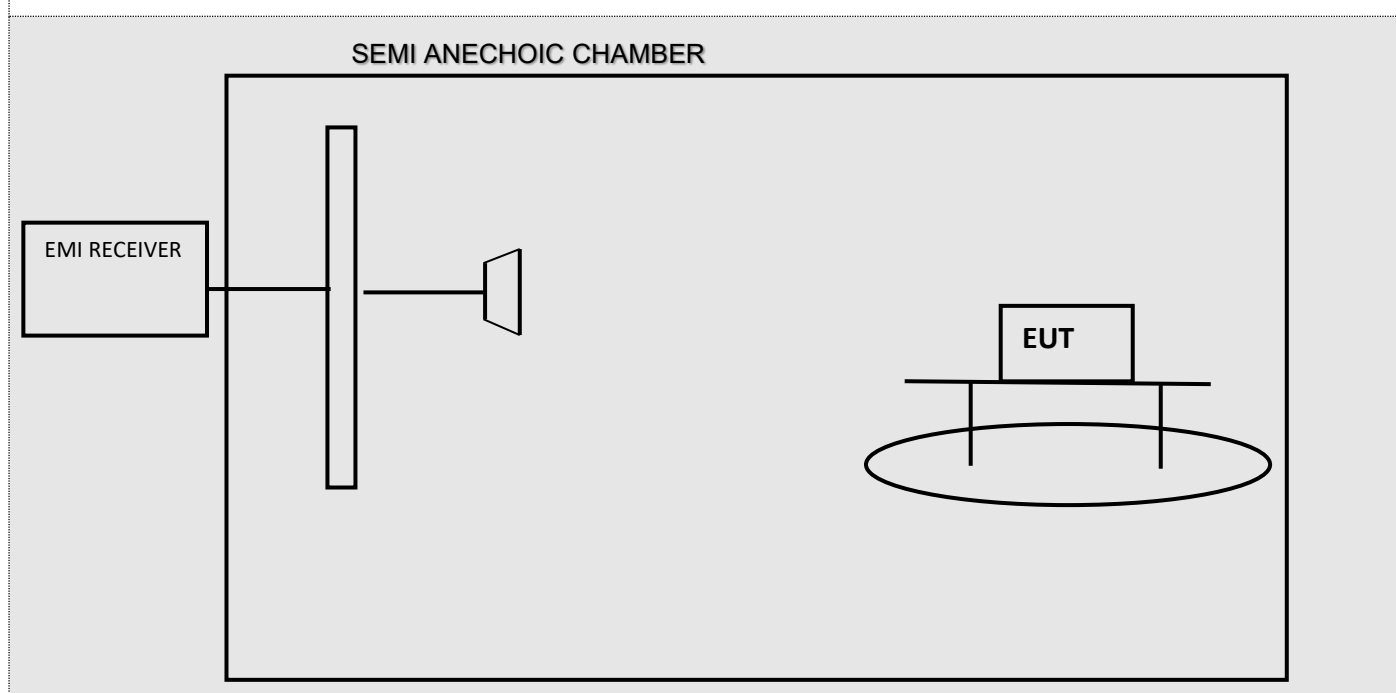
Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously - rotating, remotely - controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency.

The EUT is placed at test table height is 80 cm above the reference ground plane.

Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m~4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3m.

This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

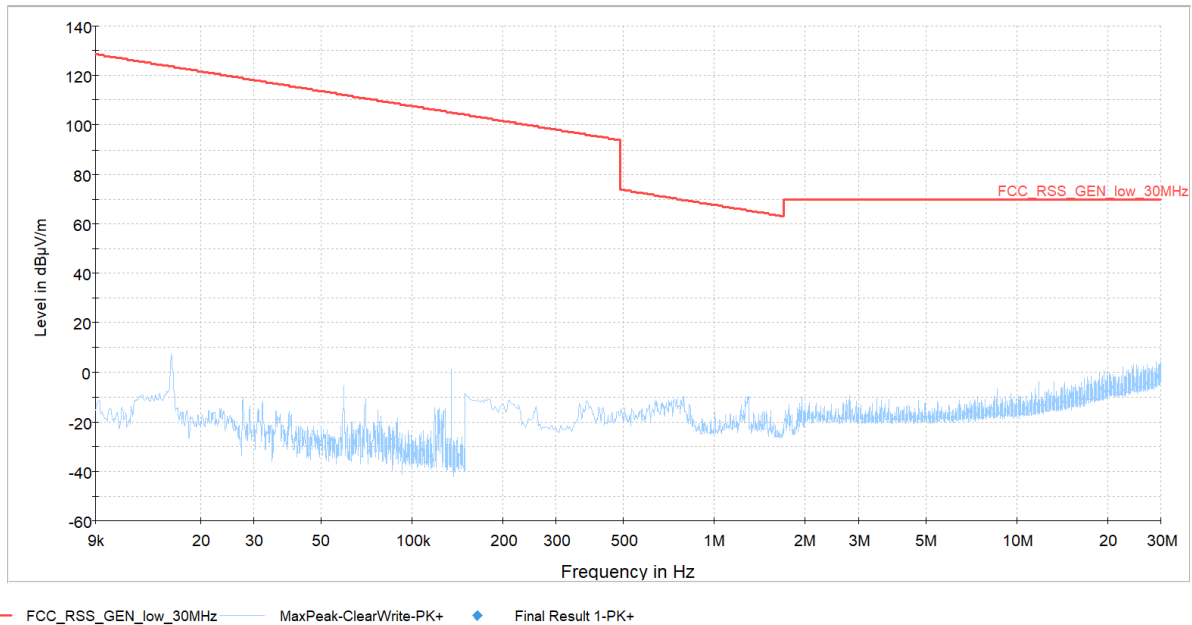
TEST SETUP BLOCK DIAGRAM



TEST RESULTS

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz

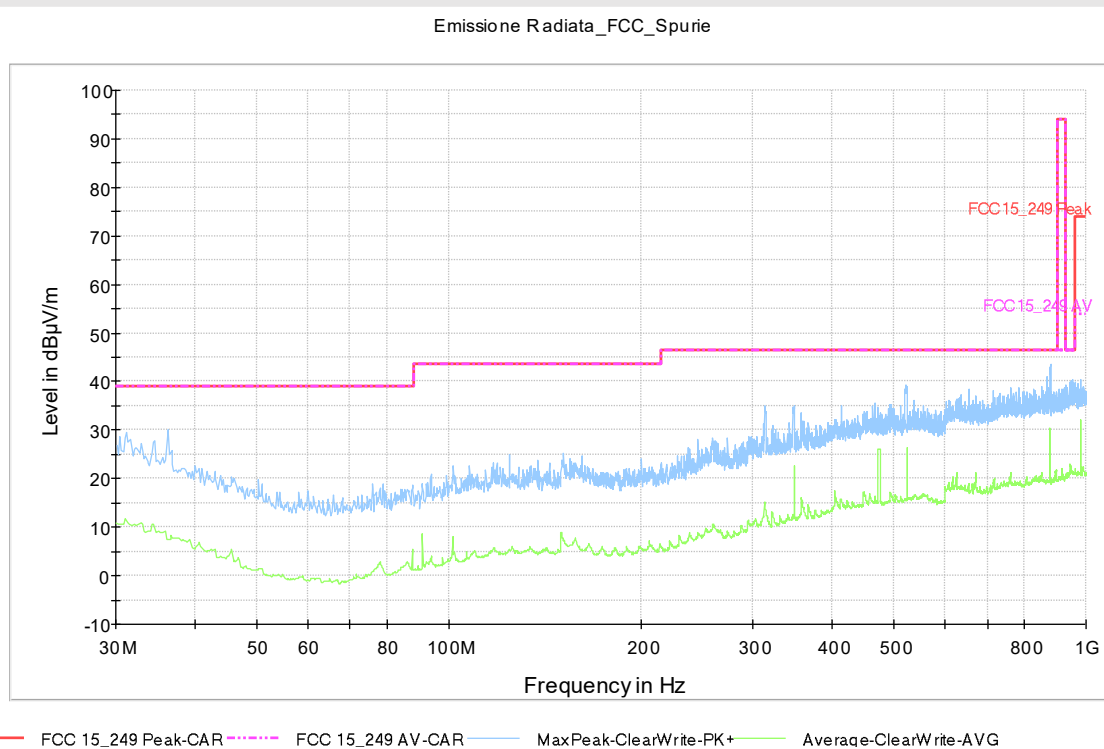


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Vertical

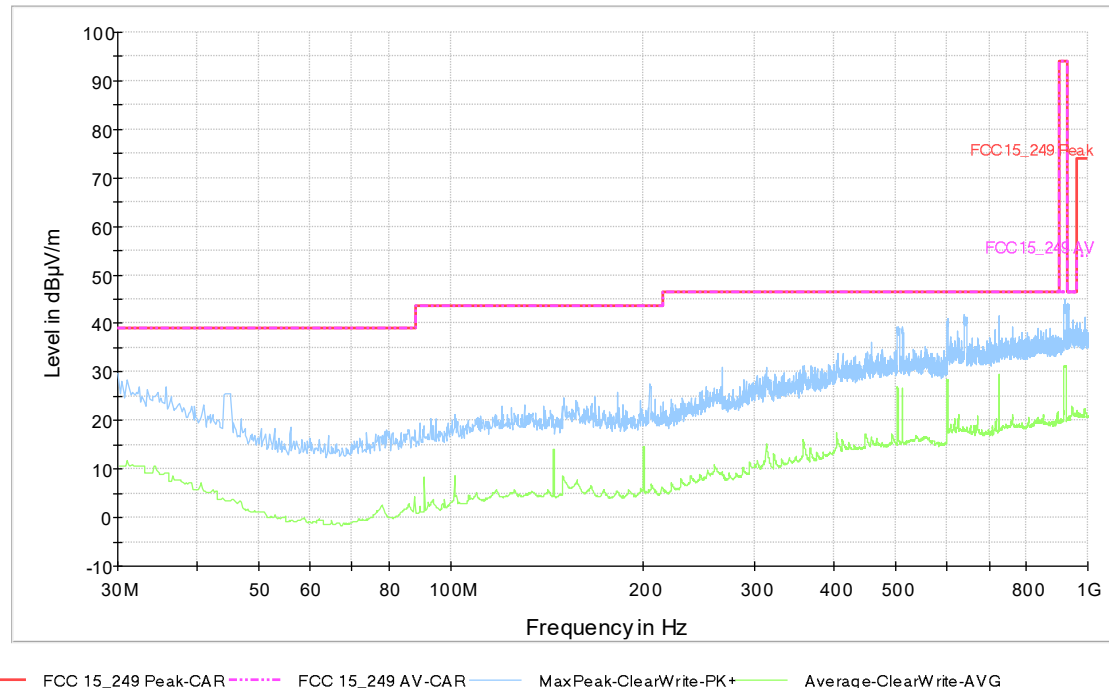
Frequency Range: 30MHz – 1GHz



Final Result:

RX Antenna Polarization: Horizontal

Frequency Range: 30MHz – 1GHz



Final Result:

TEST 3.	TRANSMITTER RADIATED EMISSIONS > 1GHZ
REFERENCE DOCUMENT	According to § 15.249 (d) and § 15.209 (a) Emissions 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 §15.209, whichever is the lesser attenuation.

• TEST SETUP	Acc. To ref. Std.					
• TEST LOCATION	Semi-Anechoic Chamber					
• DISTANCE OF MEASUREMENT	3m					
• TYPE OF MEASUREMENT	Radiated					
• TEST EQUIPMENT USED FOR TEST	Instrument	Manufacturer	Model	Serial n°	Calibrated On	Due to
	MXE Emi Receiver	Keysight	N9038A	MY57290150	11/2024	11/2025
	Semi-Anechoic Chamber	Siemens	B83117-D6019-T232	003-005-134/94C	02/2025	02/2026
	Horn antenna	Electro Metrics	EM-6961	100437	10/2023	10/2026
	Horn antenna + Low Noise Preamplifier	Bonn Elektronik	BLMA 1840-1A	087084B	09/2025	09/2027
	High pass filter	Waineright	WHK 2,8/15G	1	10/2023	10/2025
	Software EMC	Rohde & Schwarz	EMC32-E	V 8.40.0	N.A.	
• TESTED PORT	Antenna					
• TEST METHOD	ANSI C63.10:2020 section 6.6 and 11.12					
• FREQUENCY RANGE	1GHz – 26GHz					
• LIMITS	Acc. To ref. Std.					
• UNCERTAINTY OF MEASURE	Level of confidence = 95% (k=2) Expanded uncertainty 1GHz – 18GHz = 5.44dB Expanded uncertainty 18GHz – 26GHz = 5.89dB					

TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	23°C
Ambient humidity	25 - 75%rH	39%
Pressure	86 - 106kPa (860mbar - 1060mbar)	1012mbar

OPERATING CONDITION: #1

RESULT: PASS

MEASUREMENT PARAMETER 1GHz - 10GHz

Resolution bandwidth:	1MHz
Video bandwidth:	3MHz
Span:	See plots below
Sweep time	Auto couple
Detector:	Peak
Trace-Mode:	Max. hold

TEST DESCRIPTION

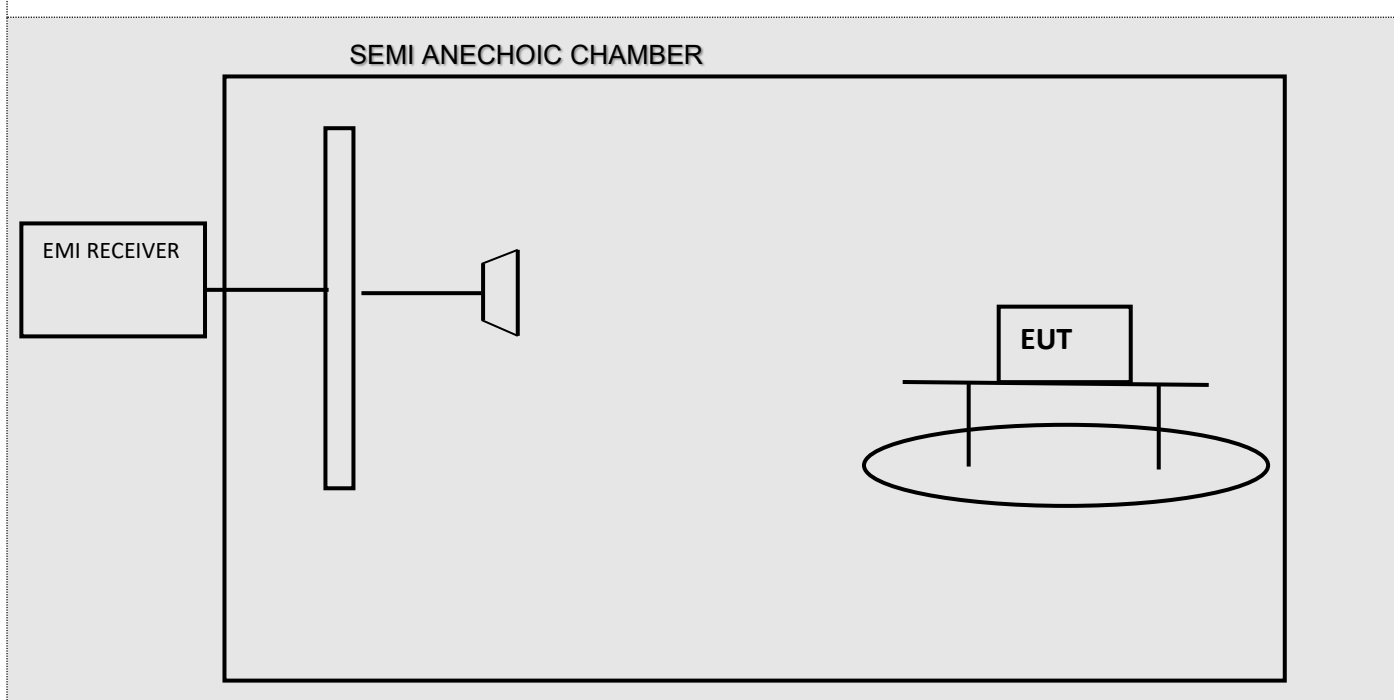
Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously - rotating, remotely - controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency.

The EUT is placed at test table height is 1.5 m

Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m~4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3m.

This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

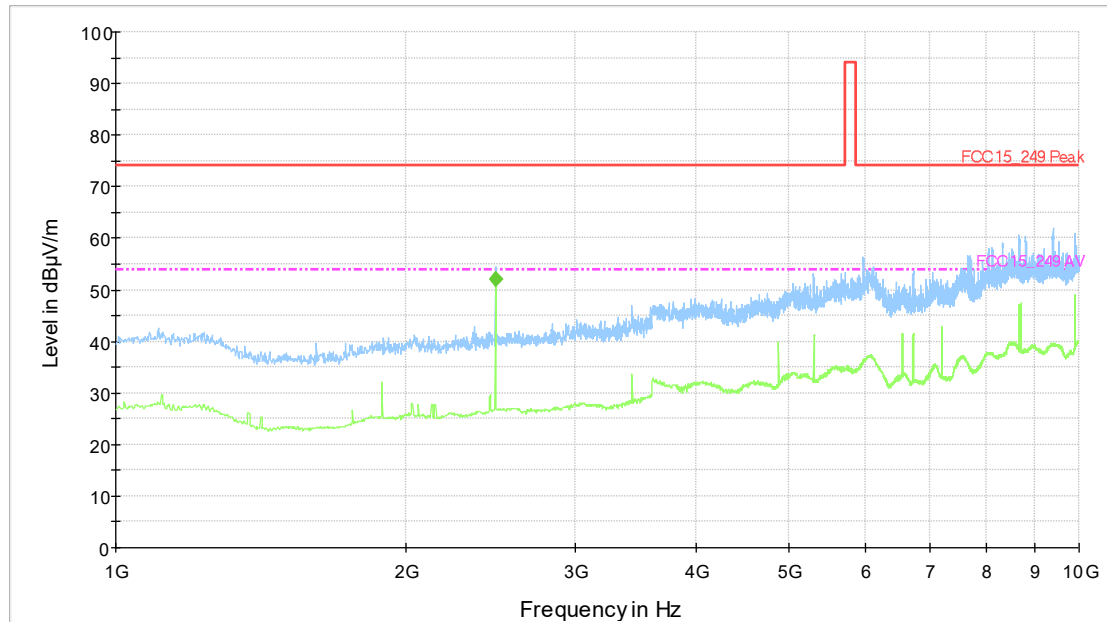
TEST SETUP BLOCK DIAGRAM



TEST RESULTS

RX Antenna Polarization: Vertical

Frequency Range: 1GHz – 10GHz

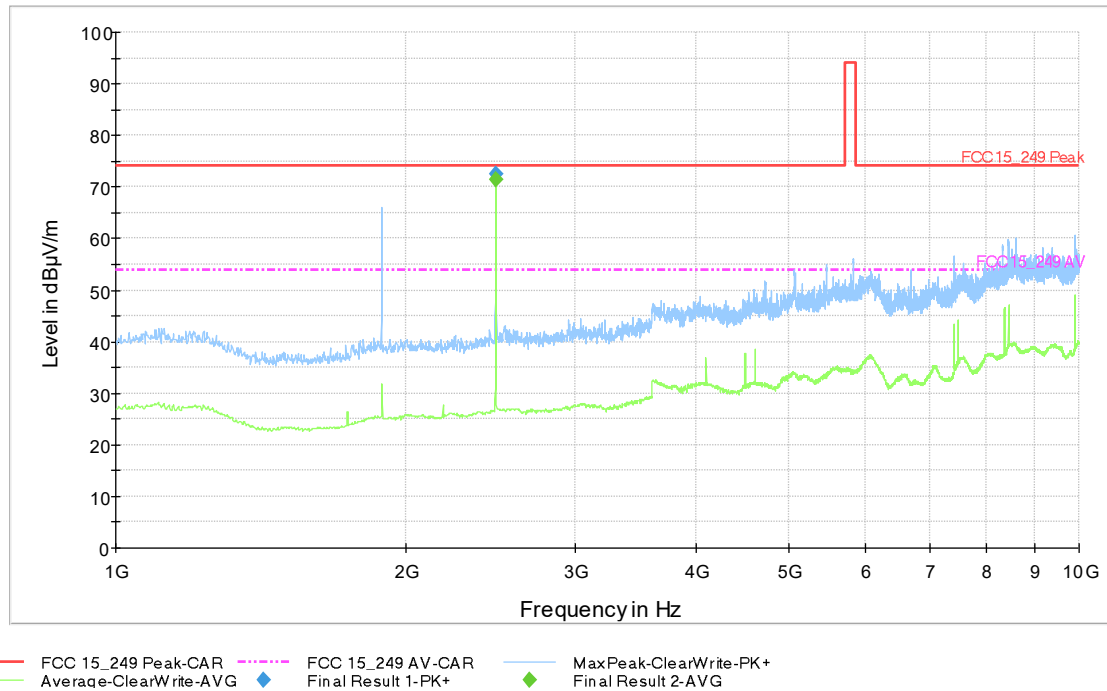


Final Result:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2479.750000	52.0	104.8	187.0	2.00	54.00

RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz



Final Result:

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2479.750000	72.6	180.3	180.0	1.40	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2479.750000	71.3	104.8	179.0	-17.31	54.00

NOTE: Peak out of limits are due to radio transmission carrier.

RX Antenna Polarization: Vertical

Frequency Range: 10GHz – 18GHz

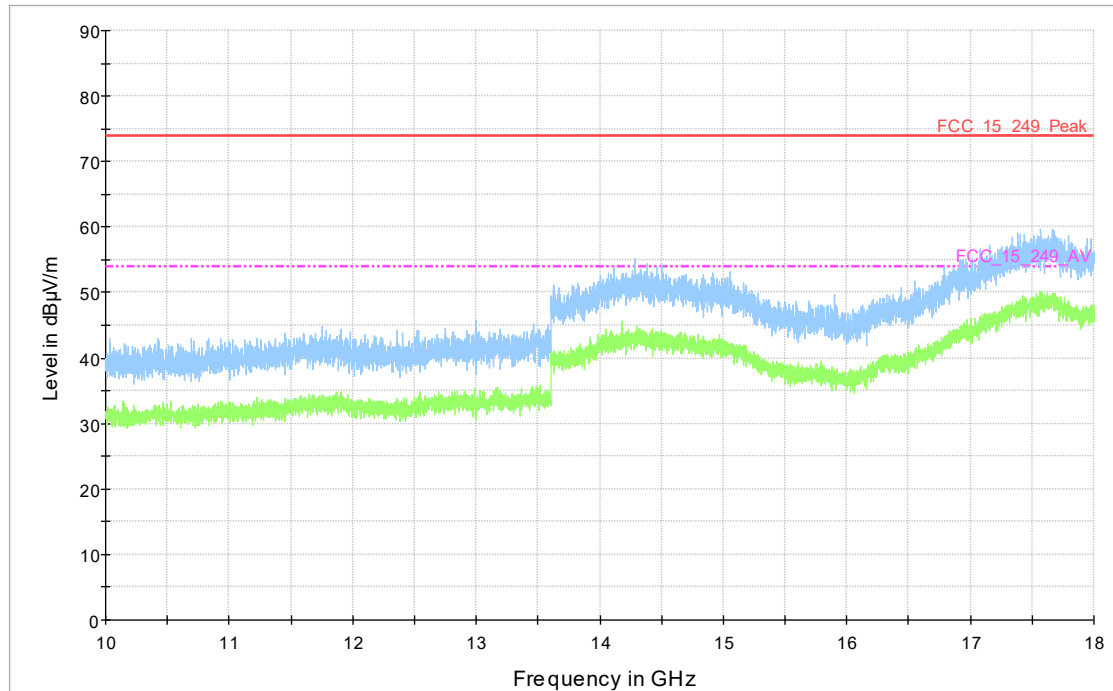


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 10GHz – 18GHz

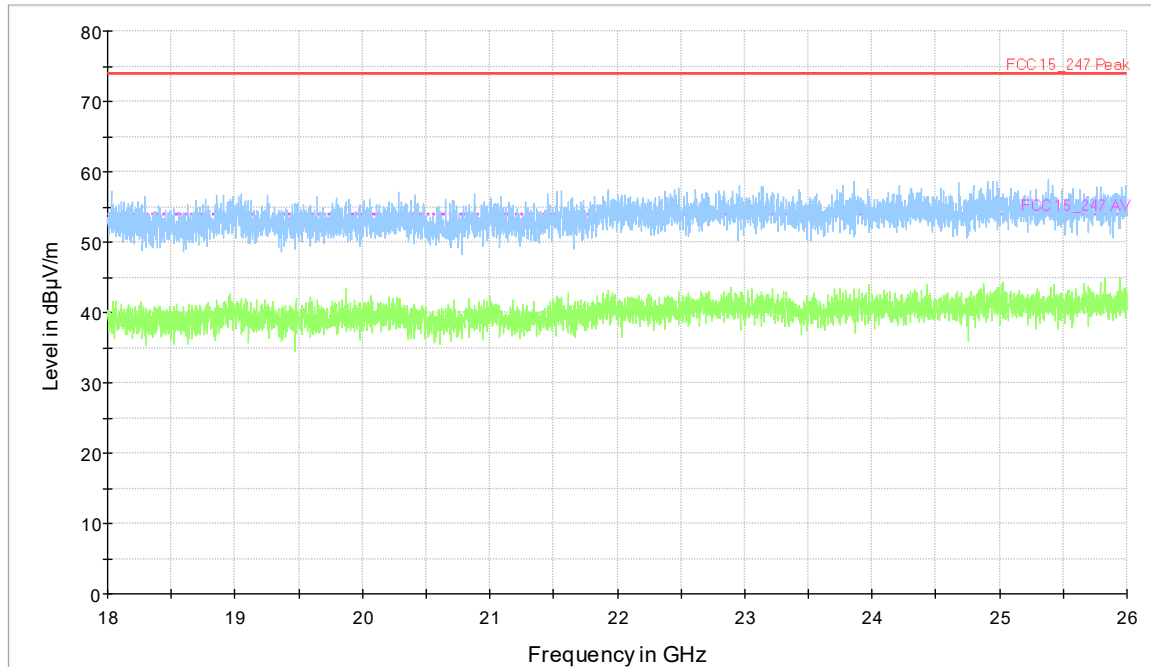


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Vertical

Frequency Range: 18GHz – 26GHz

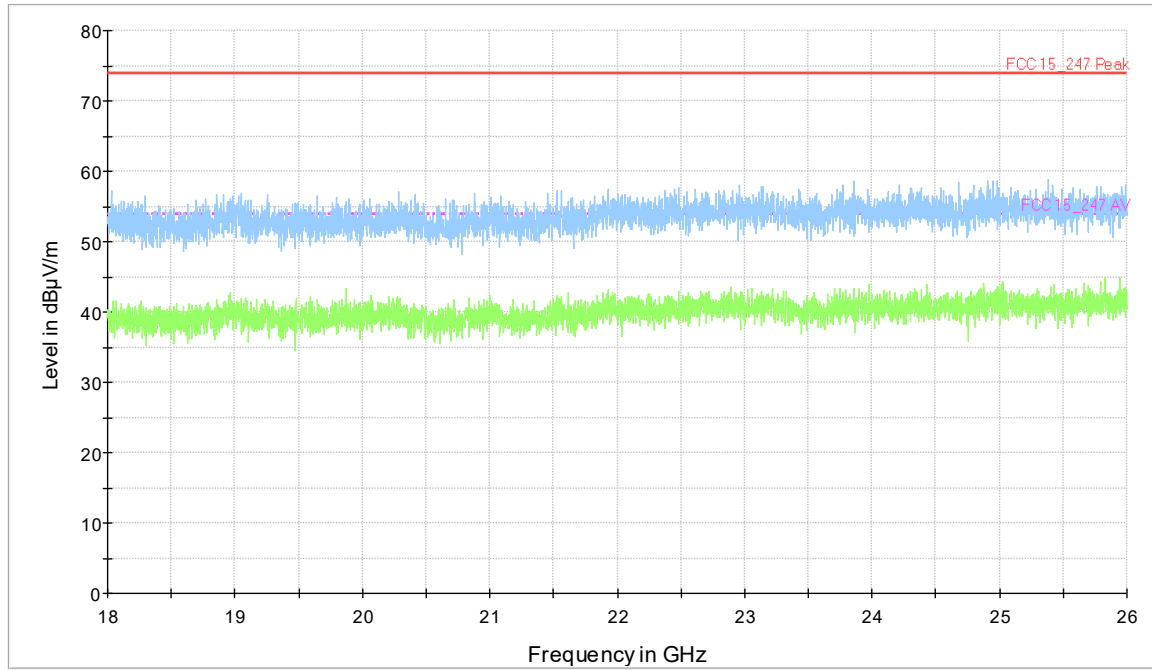


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 18GHz – 26GHz



Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

TEST 4.	BAND EDGE
REFERENCE DOCUMENT	According to §15,247(d) Emissions 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 § 15.209, whichever is the lesser attenuation.

• TEST LOCATION	Radio test area					
• TYPE OF MEASUREMENT	Conducted					
• TEST EQUIPMENT USED FOR TEST	Instrument	Manufacturer	Model	Serial n°	Calibrated On	Due to
	Emi Receiver	Rohde & Schwarz	ESU 40	100111	05/2025	05/2026
• TESTED PORT	Antenna					
• TEST METHOD	ANSI C63.10:2020 section 11.13					
• FREQUENCY RANGE	Carrier					

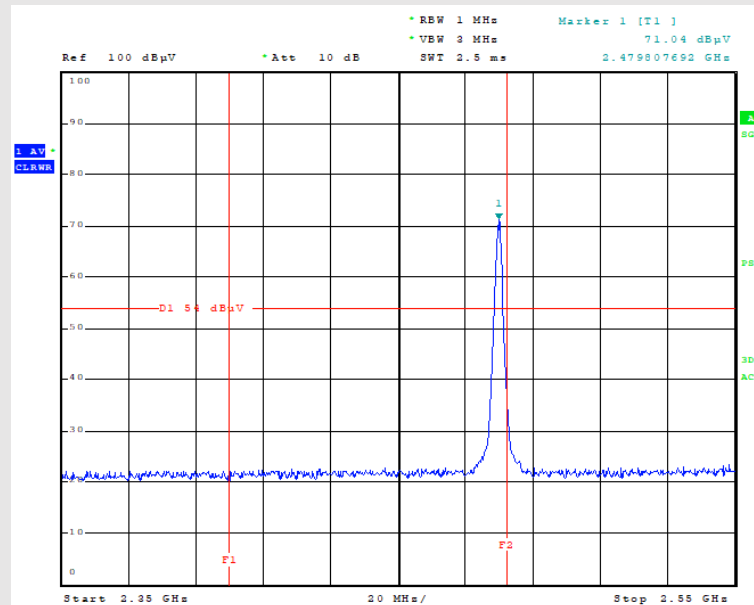
TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	23°C
Ambient humidity	25 - 75%rH	39%
Pressure	86 - 106kPa (860mbar - 1060mbar)	1012mbar

OPERATING CONDITION: #1

RESULT: PASS

TEST RESULTS

Band Edge



END OF TEST REPORT