

Test Report

Report Number:

F250210E2

Equipment under Test (EUT):

**Liquiline CM42B
Rail mount device**

Applicant:

Endress+Hauser Conducta GmbH+Co.KG

Manufacturer:

Endress+Hauser Conducta GmbH+Co.KG



Deutsche
Akkreditierungsstelle
D-PL-17186-01-00

References

- [1] **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
Remark: Errata to C63.10a-2024 is not in the annex of the test laboratory yet
- [2] **FCC CFR 47 Part 15**, Radio Frequency Devices
- [3] **558074 D01 15.247 Meas Guidance v05r02 (April 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
- [4] **RSS-247, Issue 4 (2025-07)** 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
- [5] **RSS-Gen, Issue 5 Amendment 2 (2021-02)** General Requirements for Compliance of Radio Apparatus

Test Result

The requirements of the tests performed as shown in the overview (clause 4) were fulfilled by the equipment under test. The complete test results are presented in the following.

“Passed” indicates that the equipment under test conforms with the relevant limits of the testing standard without taking any measurement uncertainty into account as stated in [1]. However, the measurement uncertainty is calculated and shown in this test report.

Tested and written
by:



Bernward ROHDE
24.09.2026
Signature

Reviewed and
approved by:



Mohamed Yassine KHALEK
24.09.2026
Signature

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The test results herein refer only to the tested sample. NMI TESTLAB GmbH is not responsible for any generalisations or conclusions drawn from these test results concerning further samples. Any modification of the tested samples is prohibited and leads to the invalidity of this test report. Each page necessarily contains the NMI TESTLAB Logo and the TEST REPORT NUMBER.

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1 Identification

1.1 Applicant

Name:	Endress+Hauser Conducta GmbH+Co. KG
Address:	Dieselstrasse 24, 70839 Gerlingen
Country:	Germany
Name for contact purposes:	Mr. Henryk HOFMANN
Phone:	+49 7156 209 10211
eMail address:	henryk.hofmann@endress.com
Applicant represented during the test by the following person:	---

1.2 Manufacturer

Name:	Endress+Hauser Conducta GmbH+Co. KG
Address:	Dieselstrasse 24, 70839 Gerlingen
Country:	Germany
Name for contact purposes:	Mr. Henryk HOFMANN
Phone:	+49 7156 209 10211
eMail address:	henryk.hofmann@endress.com
Manufacturer represented during the test by the following person:	---

1.3 Test Laboratory

The tests were carried out by: **NMi TESTLAB GmbH**
Königswinkel 10
32825 Blomberg
Germany

accredited by Deutsche Akkreditierungsstelle GmbH (DAkkS) according to DIN EN ISO/IEC 17025:2018. The accreditation is only valid for the scope of accreditation listed in the annex of the certificate D-PL-17186-01-00. FCC Test Firm Designation Number DE0004, FCC Test Firm Registration Number 469623, CAB Identifier DE0003 and ISED# 3469A.

1.4 EUT (Equipment under Test)

Test object: *	Two Wire Transmitter rail mount device
Model name: *	Liquiline CM42B
Model number: *	CM42B
Order number: *	CM42B
FCC ID: *	2AKGY-CM42B (FCC Grantee Code: 2AKGY, Product Code: -CM42B)
IC certification number: *	22173-CM42B (IC company number: 22173, Product number: CM42B)
PMN: *	CM42B
HVIN: *	CM42B
FVIN: *	SoftDevice S132 Version: 7.2.0

* Declared by the applicant

			EUT number
			Type plate
Serial number: *			X7093105G00
PCB identifier: *	Board 1	VXCM1	
	Board 2	VICO1	
	Board 3	VD2W1	
Hardware version: *	Board 1	Vx.04.xx	
	Board 2	Vx.03.xx	
	Board 3	Vx.04.xx	
Software version: *			SoftDevice S132 Version: 7.2.0

* Declared by the applicant

One EUT was used for all tests.

Note: NMI TESTLAB GmbH does not take samples. The samples used for tests are provided exclusively by the applicant.

1.5 Technical Data of Equipment

General EUT data			
Power supply EUT: *	DC		
Supply voltage EUT: *	$U_{nom} = 24 \text{ V}_{DC}$	$U_{min} = 17 \text{ V}_{DC}$	$U_{max} = 30 \text{ V}_{DC}$
Temperature range: *	-30 °C to +70 °C		
Lowest / highest internal clock frequency:	32 kHz * / 2480 MHz		

* Declared by the applicant

Ports / Connectors				
Identification	Connector		Length during test	Shielding (Yes / No)
	EUT	Ancillary		
SA1 – Current output *	Fixed cable feed-through	4 mm laboratory plug	5 m	No
SA2 – Current output *	Fixed cable feed-through	Left open	-	No
Sensor input	Fixed cable feed-through	Left open	-	Yes
Cable feed-through 4 *	Left open	Left open	-	-
Cable feed-through 5 *	Left open	Left open	-	-
Functional earth	Customized screw connector	4 mm laboratory plug	5 m	No

* Declared by the applicant

Bluetooth® low energy frequencies			
Channel 00	2402 MHz	Channel 01	2404 MHz
Channel 02	2406 MHz	Channel 03	2408 MHz
...	...	...	...
...	...	...	...
Channel 18	2438 MHz	Channel 19	2440 MHz
...	...	...	...
...	...	...	...
Channel 36	2474 MHz	Channel 37	2476 MHz
Channel 38	2478 MHz	Channel 39	2480 MHz

Bluetooth® low energy radio mode	
Fulfil radio specification: *1	Bluetooth® low energy (BLE) 5.4
Radio chip: *1	Nordic nRF 52832
Antenna type: *1	PCB Trace Antenna
Antenna name: *1	Folded lambda / 4 monopole
Antenna gain: *2	-1.5 dBi
Antenna connector: *1	-
Supply voltage radio module: *1	$U_{nom} = 3.0 V_{DC}$ $U_{min} = 1.7 V_{DC}$ $U_{max} = 3.5 V_{DC}$
Type of modulation: *1	BLE (1 Mbps PHY) GFSK
Operating frequency range: *1	BLE (1 Mbps PHY) 2402 – 2480 MHz
Number of channels: *1	BLE (1 Mbps PHY) 40 (2 MHz channel spacing)

*1 declared by the applicant

*2 based on the antenna test report F240384E8 by NMi TESTLAB GmbH, see FCC ID 2AKGY-CM42B

1.5.1 Ancillary Equipment / Equipment used for testing

Equipment used for testing	
AC adapter *1	NMi CONTACT MINI-PS.100-240AC/24DC/1.3
Test laptop *1	Fujitsu Lifebook U748
USB-to-BLE-adapter *2	USB_BT_053
Test software *2	"MasterTestGUI"

*1 Provided by the laboratory

*2 Provided by the applicant

Ancillary Equipment	
-	-
-	-

* Provided by the applicant

1.6 Dates

Date of receipt of test sample:	09.12.2025
Start of test:	06.01.2026
End of test:	08.01.2026

2 Operational States

2.1 Description of function of the EUT

The device is a two-wire transmitter for connecting digital sensors with Memosens technology or analog sensors.

It is configurable and has a current output of 4...20 mA with optional HART communication. It can be operated via

a local display or optionally via smartphone or other mobile devices using Bluetooth (BLE).

The EUT is deliverable in three different variants, this test report contains only the results of the rail mount device.

2.1.1 Operation modes

Operation mode #	Radio technology	Frequency [MHz]	Channel / Band	Modulation / Mode	Data rate	Power setting
1	Bluetooth® LE	2402	0	GFSK	1 Mbps	*
3	Bluetooth® LE	2480	39	GFSK	1 Mbps	*

* power is not settable, default power used, as declared by the applicant +4 dBm

3 Additional Information

The EUT was not labeled as required by FCC / IC.

4 Overview

Application	Frequency range [MHz]	FCC 47 CFR Part 15 section [2]	RSS-247 [4] RSS-Gen [5]	Tested EUT	Status
Maximum peak conducted output power	2400.0 - 2483.5	15.247 (b) (3), (4)	6.3.2 [4]	1	Verified* ¹
Maximum conducted output power	2400.0 - 2483.5	15.247 (b) (3), (4)	6.3.2 [4]	-	_* ²
DTS Bandwidth / 99% Bandwidth	2400.0 - 2483.5	15.247 (a) (2)	6.3.1 [4]	-	_* ²
Peak Power Spectral Density	2400.0 - 2483.5	15.247 (e)	6.3.1 [4]	-	_* ²
Average Power Spectral Density	2400.0 - 2483.5	15.247 (e)	6.3.1 [4]	-	_* ²
Band edge compliance	2400.0 - 2483.5	15.247 (d) 15.205 (a) 15.209 (a)	6.6 [4]	1	Passed* ³
Maximum unwanted emissions	0.009 – 26,500 *	15.247 (d) 15.205 (a) 15.209 (a)	8.9 [5]	1	Passed* ³
Antenna Requirement	-	15.203 15.247 (b)	6.8 [5] 6.5 (c) (ii) [4]	-	_* ²
Conducted emissions on supply line	0.15 – 30	15.207 (a)	8.8 [5]	-	_ ²

- *: The highest operating radio frequency of the EUT is 2.480 GHz.
Therefore, the radiated emission measurement must be carried out up to 10th of the highest operating radio frequency in this case 26.5 GHz.
- *¹ Peak power verification done radiated, field strength conversion to power, antenna gain was subtracted
- *² Not tested, because not ordered by the applicant
- *³ Only worst cases were tested, worst cases were taken from FCC ID: 2AKGY-CM42B / IC: 22173-CM42B

5 Results

5.1 Test setups

5.1.1 Radiated: 30 MHz to 1 GHz

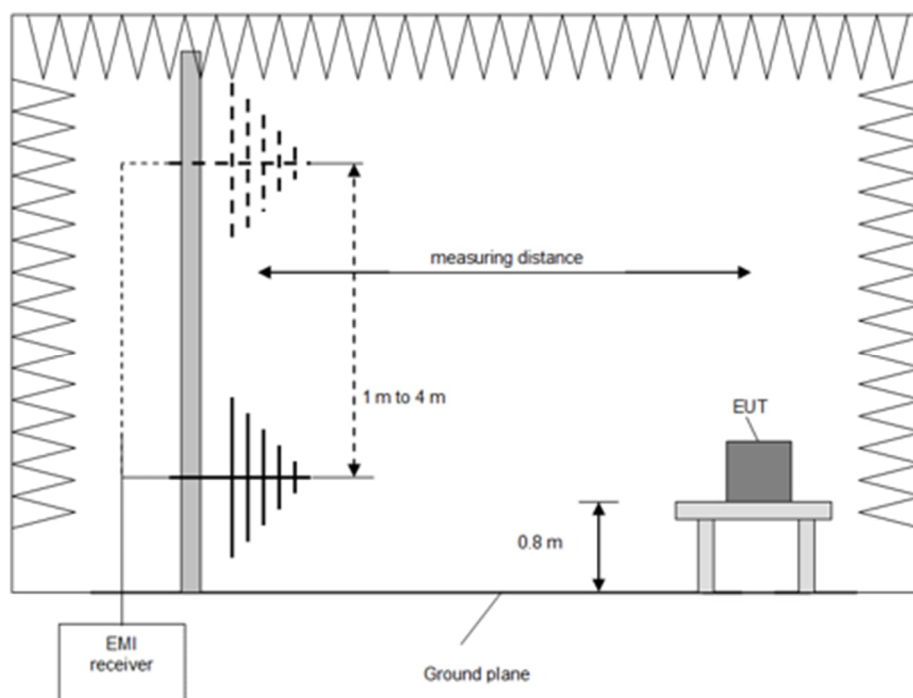
5.1.1.1 Preliminary and final measurement 30 MHz to 1 GHz

The preliminary and final measurements are performed in a semi-anechoic chamber with a metal ground plane at a measuring distance of 3 meters. Table-top devices are set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm. Floor-standing devices are placed directly on the turntable / ground plane. The setup of the equipment under test is in accordance with [1].

During the tests the EUT is rotated in the range of 0 ° to 360 °, the measuring antenna is set to horizontal and vertical polarization and raised and lowered in the range from 1 m to 4 m to find the maximum level of emissions.

The resolution bandwidth of the EMI receiver is set to the following values:

Test	Frequency range	Step-size	Resolution bandwidth	Measuring time	Detector
Preliminary measurement	30 MHz to 1 GHz	30 kHz	120 kHz	-	Peak Average
Frequency peak search	± 120 kHz	10 kHz	120 kHz	1 s	Peak
Final measurement	30 MHz to 1 GHz	-	120 kHz	1 s	QuasiPeak



Procedure preliminary measurement:

The following procedure is used:

- 1) Set the measuring antenna to 1 m height.
- 2) Monitor the frequency range at horizontal polarization of the measuring antenna and an EUT / turntable azimuth of 0 °.
- 3) Rotate the EUT by 360° to maximize the detected signals.
- 4) Repeat steps 2 to 3 with the vertical polarization of the measuring antenna.
- 5) Increase the height of the measuring antenna for 0.5 m and repeat steps 2 to 4 until the final height of 4 m is reached.
- 6) The highest values for each frequency are saved by the software, including the measuring antenna height and polarization and the turntable azimuth for that value.

Procedure final measurement:

The following procedure is used:

- 1) Select the highest frequency peaks (lowest margin to the limit) for the final measurement.
- 2) The software determines the exact peak frequencies by doing a partial scan with reduced step size of the pre-scan of the selected peaks.
- 3) If the EUT is portable or ceiling mounted, find the worst-case EUT orientation (x,y,z) for the final test.
- 4) The worst-case measuring antenna height is found via varying the height by +/- 0.5 m from the value obtained in the preliminary measurement while monitoring the emission level.
- 5) The worst-case turntable position is found via varying the turntable azimuth by +/- 30° from the value obtained in the preliminary measurement while monitoring the emission level.
- 6) The final measurement is performed at the worst-case measuring antenna height and the worst-case turntable azimuth.
- 7) Steps 2 to 6 are repeated for each frequency peak selected in step 1.

5.1.2 Radiated: 1 GHz to 40 GHz

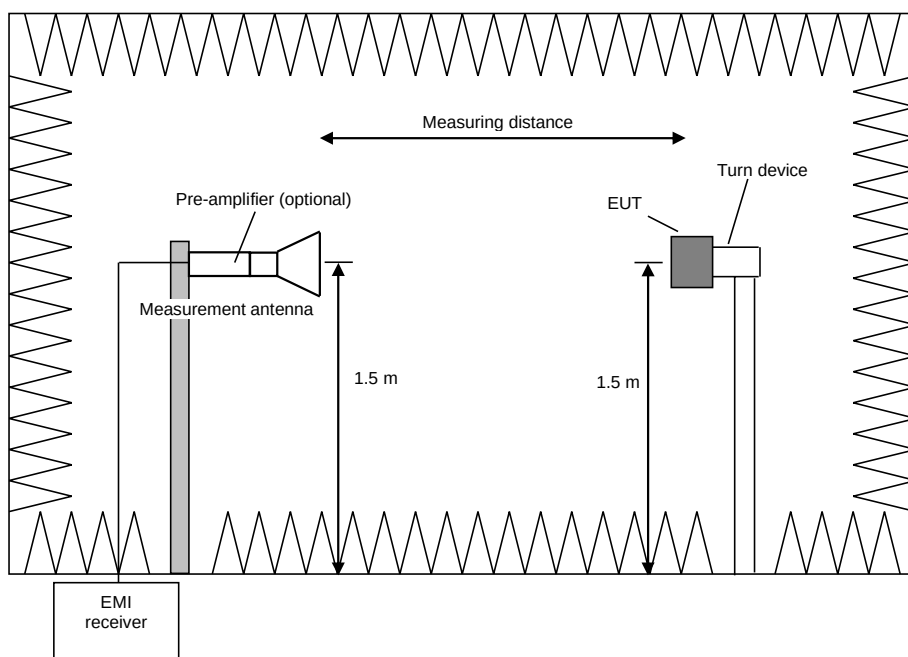
5.1.2.1 Preliminary and final measurement 1 GHz to 40 GHz

The preliminary and final measurements are performed in a fully anechoic chamber at a measuring distance of 3 meters. Table-top devices are set up on a non-conducting turn device at the height of 1.5 m. The setup of the equipment under test is in accordance with [1].

During the tests the EUT is rotated in the range of 0 ° to 360 ° and the measuring antenna is set to horizontal and vertical polarization to find the maximum level of emissions. After these steps, the measurement is repeated after reorientating the EUT in 30 ° steps.

The resolution bandwidth of the EMI receiver is set to the following values:

Test	Frequency range	Step-size	Resolution bandwidth	Measuring time	Detector
Preliminary measurement	1 GHz - 40 GHz	250 kHz	1 MHz	-	Peak Average
Final measurement	1 GHz - 40 GHz	-	1 MHz	100 ms	Peak Average



Procedure preliminary measurement:

The following procedure is used:

- 1) Monitor the frequency range at horizontal polarisation of the measuring antenna and an EUT / turntable azimuth of 0 °.
- 2) Rotate the EUT by 360° to maximize the detected signals.
- 3) Repeat steps 1 to 2 with the vertical polarisation of the measuring antenna.
- 4) Repeat steps 1 to 3 with the EUT reorientated by an angle of 30° (60°, 90°, 120° and 150°), according to 6.6.5.4 in [1].
- 5) The highest values for each frequency are saved by the software, including the measuring antenna polarization, the turntable azimuth and the turn device elevation for that value.

Procedure final measurement:

The following procedure is used:

- 1) Set the turntable and the turn device to the position which leads to the highest emission for the first frequency identified in the preliminary measurements.
- 2) Set the measurement antenna to the polarisation which leads to the highest emission for the first frequency identified in the preliminary measurements.
- 3) Set the spectrum analyser to EMI mode with Peak and Average detector activated.
- 4) The worst-case turntable position is found via varying the turntable azimuth by +/- 30° from the value obtained in the preliminary measurement while monitoring the emission level.
- 5) The final measurement is performed at the worst-case turntable azimuth.
- 6) Repeat steps 1 to 5 for each frequency detected during the preliminary measurements.

5.2 Output power verification

5.2.1 Test setup (DTS fundamental emission output power)

Test setup (DTS fundamental emission output power)			
Used	Setup	See sub-clause	Comment
☒	Radiated: 1 GHz to 40 GHz	5.1.2	-
☐	Conducted: Antenna port	-	-

5.2.2 Test method (DTS fundamental emission output power)

Test method (Maximum peak conducted output power)				
Used	Sub-Clause [1]	Name of method	Applicability	Comment
☒	11.9.1.1	RBW $\geq$ DTS bandwidth	-	Zero span mode
☐	11.9.1.2	PKPM1 Peak power meter method* ¹	-	-

*¹ VBW of the peak power meter must be > OBW of the fundamental.

Typical RBW (depending on technology)				
Used	Technology	RBW	Applicability	Comment
☒	Bluetooth® Low Energy	2 MHz		
☐	IEEE 802.15.4 (Zigbee, etc.)	5 MHz		
☐	IEEE 802.11 b/g/n20/ax20	20 MHz		
☐	IEEE 802.11 n40/ax40	40 MHz		
☐	Other	Tbd / specific		

Test method (Maximum conducted (average) output power)				
Used	Sub-Clause [1]	Name of method	Applicability	Comment
☐	11.9.2.2.2	Method AVGSA-1	D $\geq$ 98%	-
☐	11.9.2.2.3	Method AVGSA-1A (alternative)	D $\geq$ 98%	-
☐	11.9.2.2.4	Method AVGSA-2	Constant D ($\pm$ 2%)	-
☐	11.9.2.2.5	Method AVGSA-2A (alternative)	Constant D ($\pm$ 2%)	-
☐	11.9.2.2.6	Method AVGSA-3A	-	-
☐	11.9.2.2.7	Method AVGSA-3A (alternative)	-	-
☐	11.9.2.3.1	Method AVGPM	Constant D ($\pm$ 2%)	-
☐	11.9.2.3.2	Method AVGPM-G	-	-

The worst-case scenario with the highest field strength output must be obtained.
Herein the method described in 5.1.2 was used.

The measured field strength can be converted to an EIRP (dBm) as shown in [1] 10.3.9.

$$\text{Measurement result (dB}\mu\text{V/m)} - 95.3 = \text{EIRP (dBm)} @ 3\text{m measuring distance}$$

$$\text{EIRP (dBm)} - \text{Antenna gain (dBi)} = \text{DTS fundamental emission output power (dBm)}$$

The output power (dBm) shall not be higher than the original output power +/- measurement uncertainty of the test site.

5.3 Duty cycle

5.3.1 Test setup (Duty cycle)

Test setup (Duty cycle)			
Used	Setup	See sub-clause	Comment
☐	Radiated: 1 GHz to 40 GHz	5.1.3	-
☒	Conducted: Antenna port	5.1.4	-

5.3.2 Test method (Duty cycle)

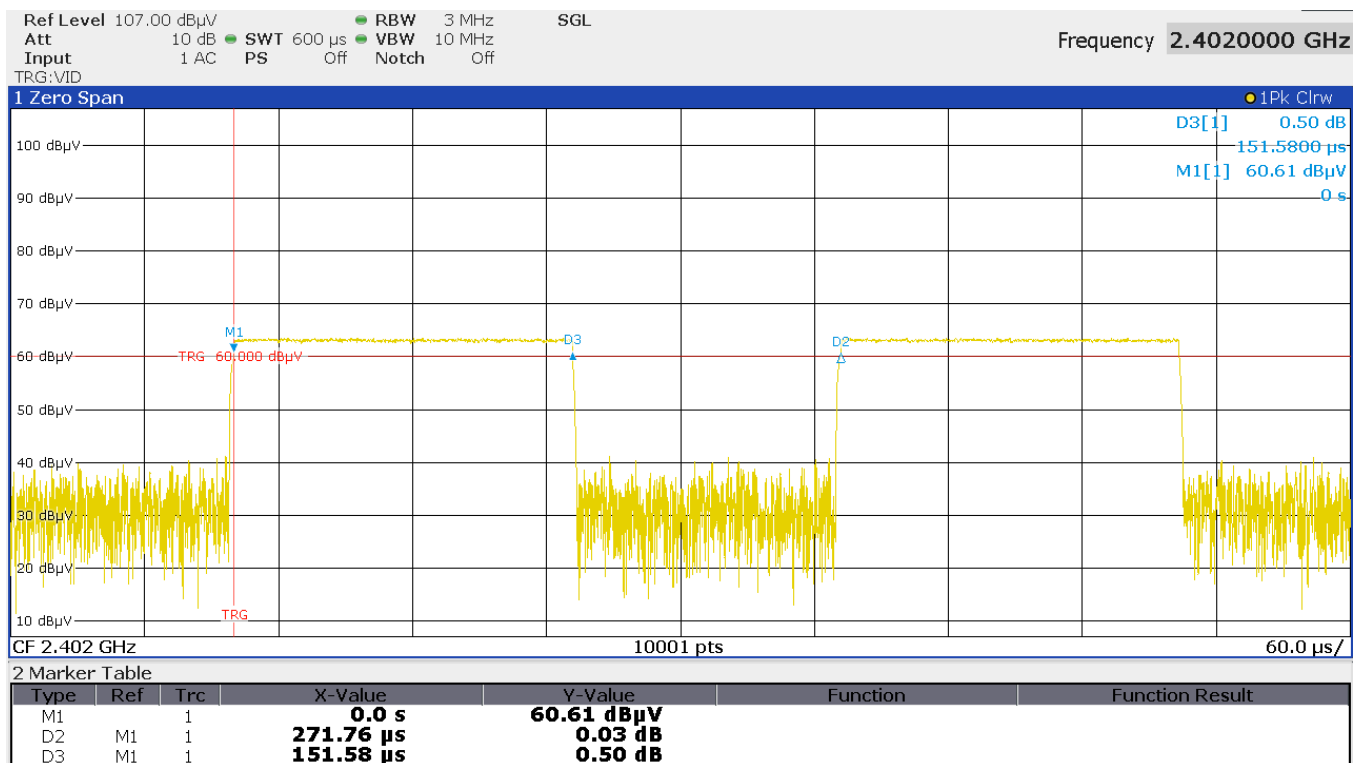
Test method (Duty cycle)				
Used	Sub-Clause [1]	Name of method	Applicability	Comment
☐	11.6. a)	Diode detector	No limitation	-
☒	11.6. b)	Zero span	No limitation	-

5.3.3 Test results (Duty cycle)

Ambient temperature:	21 °C
Relative humidity:	19 %

Date:	06.01.2026
Tested by:	B. ROHDE

Measurement plot (operation mode 1):



Operation Mode #	TX _{on} [μs]	TX _{ges} [μs]	RBW [MHz]	Sweep points	Sweep time [μs]	50/T [kHz]	50/T < RBW?
1-3	151.6	271.8	3	10001	600	330	Yes

Operation Mode #	Meas points TX _{on}	Meas points >100?	Duty cycle	DCCF _{Power} [dB]	DCCF _{Fieldstrength} [dB]
1-3	2527	Yes	56%	2.5	5.1

The DCCF (duty cycle correction factor) is calculated by:

$$DCCF_{Power} = 10 * \log_{10} \left(\frac{1}{Duty\ cycle} \right)$$

$$DCCF_{Fieldstrength} = 20 * \log_{10} \left(\frac{1}{Duty\ cycle} \right)$$

For fundamental related average results,

- DCCF_{Power} was used for conducted and the
- DCCF_{Fieldstrength} was used for radiated measurements

for the applicable operation mode 1-3

Test equipment (please refer to chapter 7 for details)
10, 16 - 17, 19 - 25

5.4 DTS band-edge emission measurements

5.4.1 Test setup (Band edge – restricted bands)

Test setup (Band edge – restricted bands)			
Used	Setup	See sub-clause	Comment
☒	Radiated: 1 GHz to 40 GHz	5.1.3	
☐	Conducted: Antenna port	5.1.4	

5.4.2 Test method (Band edge – restricted bands)

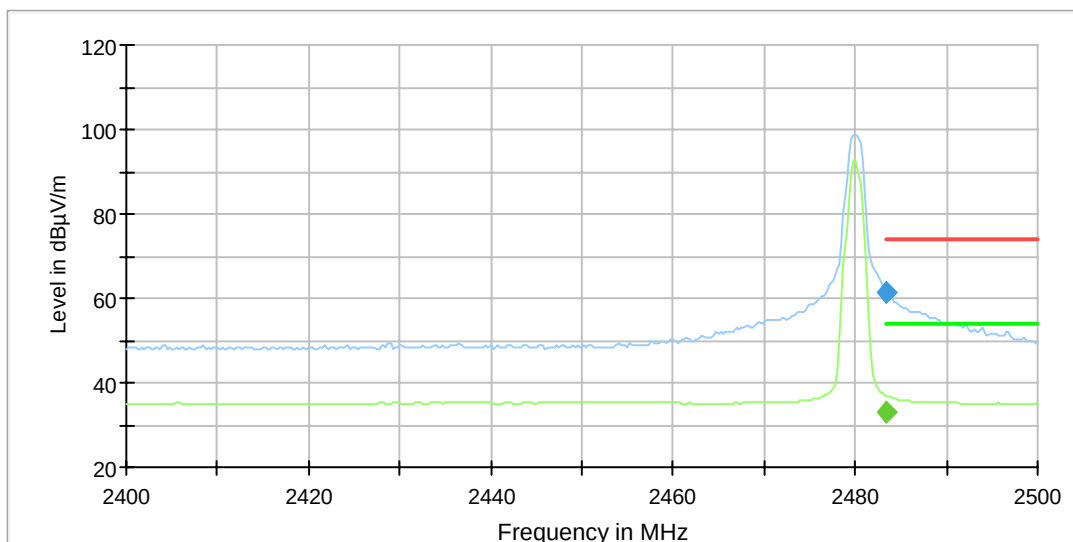
Test method (Band edge – restricted bands)				
Used	Sub-Clause [1]	Name of method	Applicability	Comment
☒	11.12.1	Standard method	No limitations	
☐	11.12.3.1	Marker-delta method		See 6.10.6 [3] 2 MHz from band
☐	11.12.3.2	Integration method		2 MHz from band

5.4.3 Test results (Band edge – restricted bands)

Ambient temperature:	21 °C
Relative humidity:	19 %

Date:	06.01.2026
Tested by:	B. ROHDE

Measurement plot upper band edge (operation mode 3, radiated measurement):



Upper band edge (operation mode 3, radiated measurement):

Frequency [MHz]	Result (Pk) [dB(μV/m)]	Result (Av) [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2483.50	61.26	---	74.00	12.74	V	58.0	0.0	33.7
2483.50	---	38.08*	54	15.92	V	58.0	0.0	33.7

* DCCF as calculated in 5.3 was applied

Test result: Passed

Test equipment (please refer to chapter 7 for details)

10, 16 - 17, 19 - 25

5.5 Radiated emissions

5.5.1 Test setup (Maximum unwanted emissions)

Test setup (Maximum unwanted emissions)			
Used	Setup	See sub-clause	Comment
☒	Radiated: 9 kHz to 30 MHz / 30 MHz to 1 GHz / 1 GHz to 40 GHz	5.1.1 / 5.1.2 / 5.1.3	-
☐	Conducted: Antenna port	5.1.4	-

5.5.2 Test method (Maximum unwanted emissions)

☒ Test method (radiated) see sub-clauses 5.1.1 to 5.1.3 as described herein

5.5.3 Test results (Maximum unwanted emissions)

5.5.3.1 Test results (30 MHz – 1 GHz)

Ambient temperature:	22 °C
Relative humidity:	17 %

Date:	08.01.2026
Tested by:	D. BRUSCHINSKI

Position of EUT: For tests for f between 30 MHz to 1 GHz, the EUT was set-up on a table with a height of 80 cm. The distance between EUT and antenna was 3 m.

Cable guide: For detail information of test set-up and the cable guide refer to the pictures in the annex A in the test report.

Test record: Plots for each frequency range are submitted below.

Remark: The EUT was tested in nominal position / standing.

Calculations:

Result [dBμV/m] = Reading [dBμV] + Correction [dB/m]

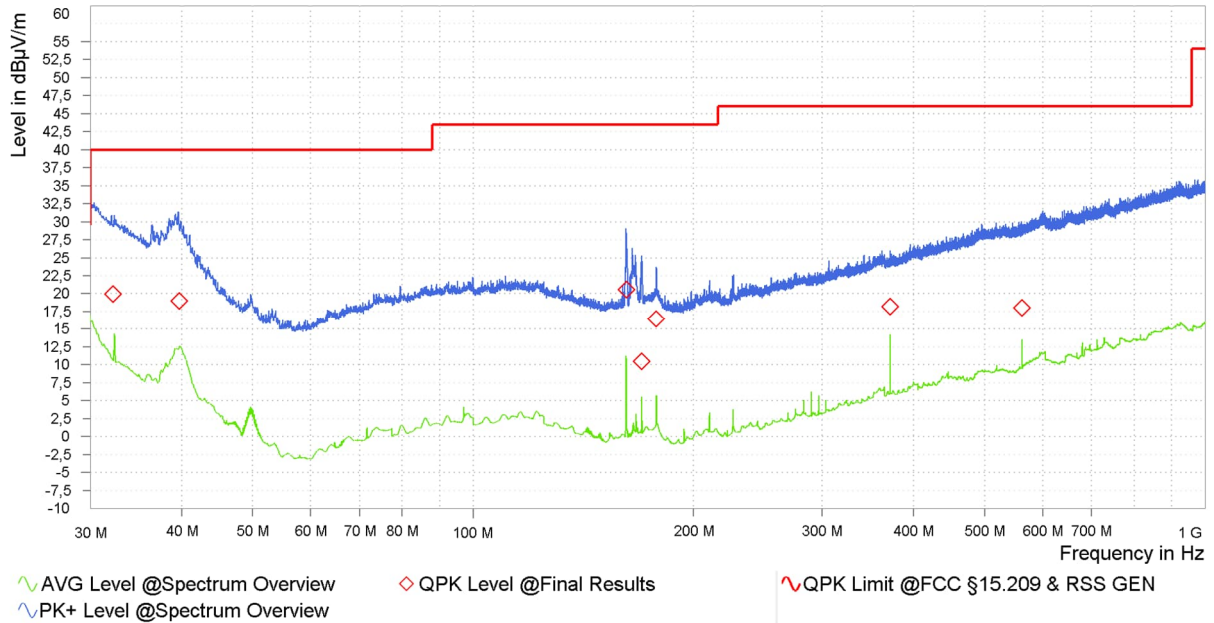
Correction [dB/m] = AF [dB/m] + Cable attenuation [dB] + optional preamp gain [dB]

Margin [dB] = Limit [dBμV/m] - Result [dBμV/m]

The measured points and the limit line in the following diagram refer to the standard measurement of the emitted interference in compliance with the above-mentioned standard. The measured points marked with "◇" are the measured results of the standard subsequent measurement in a semi-anechoic chamber.

Worst case plot:

Spurious emissions from 30 MHz to 1 GHz (operation mode 1 – position 1):



Result tables:

Operation mode 1 – position: standing:

Frequency [MHz]	Result (QP) [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Correction [dB/m]	Polarization (H/V)	Azimuth [deg]	Antenna height [m]
32.250	19.91	40.00	20.09	25.24	V	371	1.81
39.720	19.02	40.00	20.98	20.52	V	371	2.79
161.910	20.59	43.50	22.91	15.27	V	299	2.51
169.980	10.45	43.50	33.05	15.65	V	133	2.69
178.050	16.46	43.50	27.04	16.78	V	153	2.93
371.280	18.20	46.00	27.80	20.87	V	291	3.65

Test result: Passed

Test equipment (please refer to chapter 7 for details)
1 – 9

5.5.3.2 Test results (radiated 1 GHz to 40 GHz)

Ambient temperature:	21 °C
Relative humidity:	19 %

Date:	06.01.2026
Tested by:	B. ROHDE

Position of EUT: For tests for f between 1 GHz and the 10th harmonic, the EUT was set-up on a positioner device with a height of 150 cm. The distance between EUT and antenna was 3 m.

Cable guide: For detail information of test set-up and the cable guide refer to the pictures in the annex A in the test report.

Test record: Plots for each frequency range are submitted below.

Remark: -

Calculation:

Max Peak [dBμV/m] = Reading [dBμV] + Correction [dB/m]

Average [dBμV/m] = Reading [dBμV] + Correction [dB/m]

Correction [dB/m] = AF [dB/m] + Cable attenuation [dB] + optional preamp gain [dB] + DCCF* [dB]
* (if applicable – only for Average values, that are fundamental related)

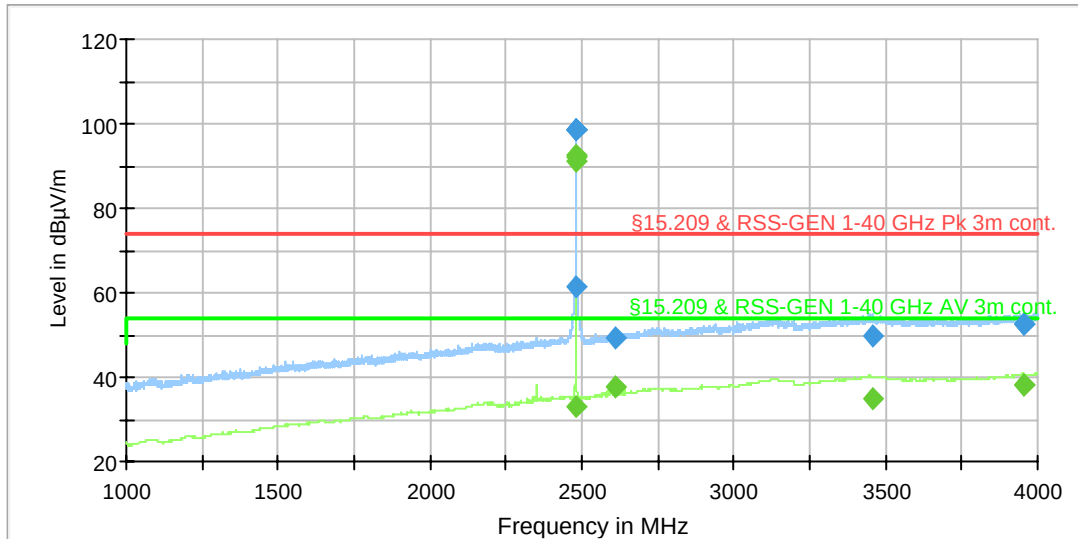
Margin [dB] = Limit [dBμV/m] – Max Peak | Average [dBμV/m]

The curves in the diagram only represent the maximum measured value for each frequency point of all preliminary measurements, which were carried out with various EUT and antenna positions.

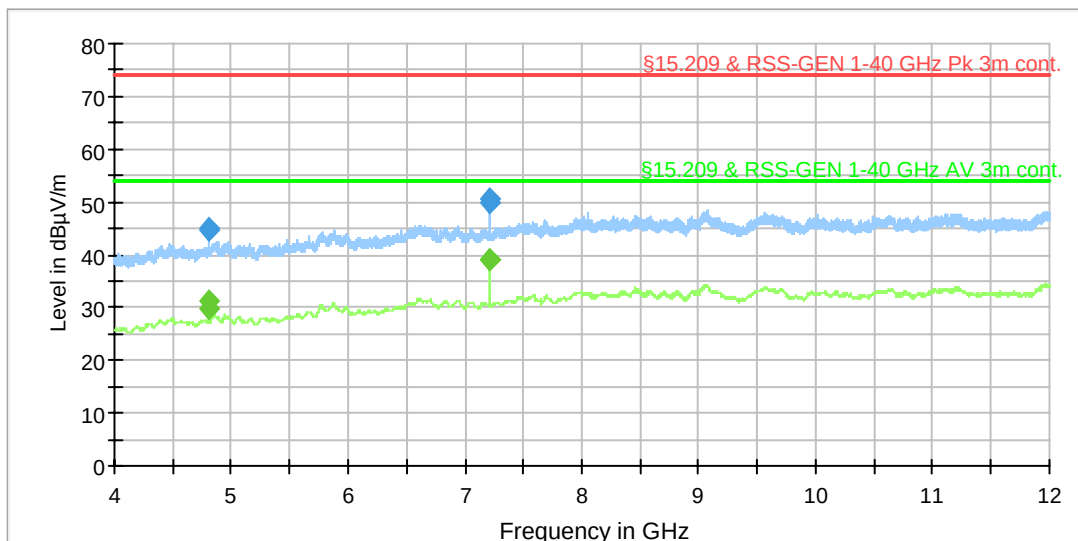
The top measured curve represents the peak measurement. The measured points marked with " ♦ " are frequency points for the final peak detector measurement. These values are indicated in the following table. The bottom measured curve represents the average measurement. The measured points marked with " ♦ " are frequency points for the final average detector measurement.

Worst case plots:

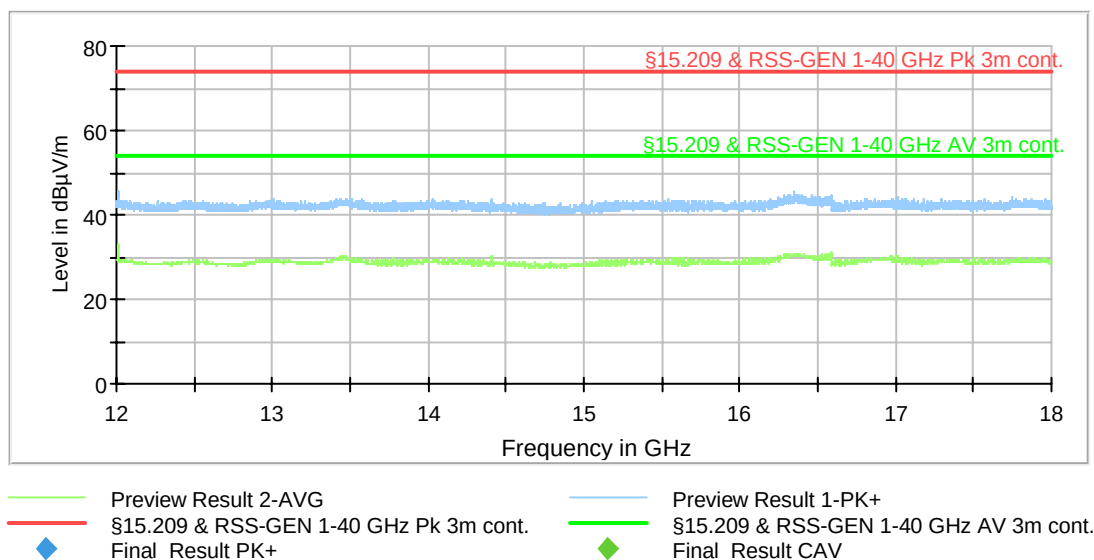
Spurious emissions from 1 GHz to 4 GHz (operation mode 3):



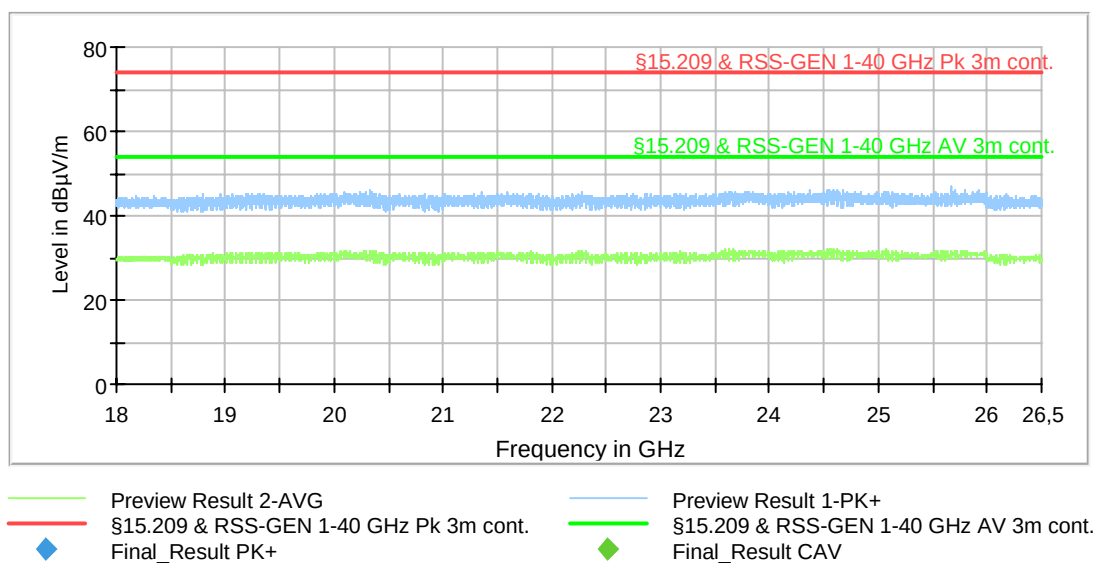
Spurious emissions from 4 GHz to 12 GHz (operation mode 1):



Spurious emissions from 12 GHz to 18 GHz (operation mode 1):



Spurious emissions from 18 GHz to 26.5 GHz (operation mode 1):



Result tables:

Operation mode 1:

Frequency [MHz]	MaxPeak [dB(μV/m)]	Average [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Pol [H/V]	Azimuth [deg]	Elevation [deg]	Corr. [dB/m]
4803.750000	44.86	---	74.00	29.14	V	4.0	30.0	-1.7
4803.750000	---	29.81	54.00	24.19	V	4.0	30.0	-1.7
4804.000000	44.67	---	74.00	29.33	H	118.0	30.0	-1.7
4804.000000	---	31.29	54.00	22.71	H	118.0	30.0	-1.7
7205.250000	---	38.89	54.00	15.11	H	316.0	60.0	4.3
7205.250000	50.78	---	74.00	23.22	H	316.0	60.0	4.3
7205.500000	---	39.15	54.00	14.85	H	316.0	60.0	4.3
7205.500000	49.99	---	74.00	24.01	H	316.0	60.0	4.3

Operation mode 3:

Frequency [MHz]	MaxPeak [dB(μV/m)]	Average [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Pol [H/V]	Azimuth [deg]	Elevation [deg]	Corr. [dB/m]
2479.750	---	91.87	Fundamental emission		V	57.0	0.0	33.7
2479.750	98.50	---			V	57.0	0.0	33.7
2480.000	---	92.71			V	57.0	0.0	33.7
2480.000	98.51	---			V	57.0	0.0	33.7
2480.250	98.53	---			V	57.0	0.0	33.7
2480.250	---	90.98			V	57.0	0.0	33.7
2483.500	61.26	---	74.00	12.74	V	58.0	0.0	33.7
2483.500	---	32.98	54.00	21.02	V	58.0	0.0	33.7
2608.000	49.23	---	74.00	24.77	H	157.0	150.0	34.2
2608.000	---	37.84	54.00	16.16	H	157.0	150.0	34.2
3455.500	49.56	---	74.00	24.44	V	252.0	0.0	38.0
3455.500	---	34.75	54.00	19.25	V	252.0	0.0	38.0
3955.500	52.63	---	74.00	21.37	V	64.0	150.0	38.4
3955.500	---	38.14	54.00	15.86	V	64.0	150.0	38.4
3956.250	52.78	---	74.00	21.22	H	154.0	150.0	38.4

Test result: Passed

Test equipment (please refer to chapter 7 for details)
10 – 26

6 Measurement Uncertainties

Conducted measurements		
Measurement method	Standard used for calculating measurement uncertainty	Expanded measurement uncertainty (95 %) U_{lab}
Frequency error	ETSI TR 100 028	4.5×10^{-8}
Bandwidth measurements	-	9.0×10^{-8}
Conducted emissions using a spectrum analyzer		
< 3.6 GHz	ETSI TR 100 028	2.3 dB
3.6 – 8 GHz	ETSI TR 100 028	2.8 dB
8 – 22 GHz	ETSI TR 100 028	3.2 dB
22 – 40 GHz	ETSI TR 100 028	3.6 dB
Power measurements		
Power meter	ETSI TR 100 028	0.9 dB
Conducted emissions from 150 kHz to 30 MHz with LISN		
	CISPR 16-4-2	2.8 dB

Radiated measurements		
Frequency error		
(Semi-) Anechoic chamber	ETSI TR 100 028	4.5×10^{-8}
OATS	ETSI TR 100 028	4.5×10^{-8}
Test fixture	ETSI TR 100 028	4.5×10^{-8}
Bandwidth measurements		
(Semi-) Anechoic chamber	-	9.0×10^{-8}
OATS	-	9.0×10^{-8}
Test fixture	-	9.1×10^{-8}
Radiated field strength M20		
CBL6112B @ 3 m 30 MHz – 1 GHz	CISPR 16-4-2	5.3 dB
R&S HL050 @ 3 m		
1 – 6 GHz	CISPR 16-4-2	5.1 dB
6 – 18 GHz	CISPR 16-4-2	5.4 dB
Flann Standard Gain Horns 12 – 40 GHz	-	5.9 dB
Radiated field strength M276		
R&S HL562E @ 3 m 30 MHz – 1 GHz	CISPR 16-4-2	4.8 dB
R&S HL050 @ 3 m		
1 – 6 GHz	CISPR 16-4-2	5.1 dB
6 – 18 GHz	CISPR 16-4-2	5.4 dB
Flann Standard Gain Horns 12 – 40 GHz	-	5.9 dB
OATS		
Field strength measurements below 30 MHz on OATS without ground plane	-	4.4 dB

7 Test Equipment used for Tests

No.	Test equipment	Type	Manufacturer	Serial No.	PM. No.	Cal. Date	Cal Due
1	Attenuator 6 dB	WA2-6	Weinschel		482793	Calibration not necessary	
2	Ultralog antenna 30 MHz - 6 GHz	HL562E	Rohde & Schwarz	101079	482978	24.04.2024	04.2027
3	EMC test software	Elektra V5.21	Rohde & Schwarz	---	483755	Calibration not necessary	
4	RF Switch Matrix	OSP220	Rohde & Schwarz	101391	482976	Calibration not necessary	
5	Turntable	TT3.0-3t	Maturo	825/2612/.01	483224	Calibration not necessary	
6	Antenna support tilt mast	BAM 4.5-P- 10kg	Maturo	222/2612.01	483225	Calibration not necessary	
7	Controller	NCD	Maturo	474/2612.01	483226	Calibration not necessary	
8	Semi Anechoic Chamber M276	SAC5-2	Albatross Projects	C62128-A540- A138-10-0006	483227	Calibration not necessary	
9	EMI receiver / Spectrum analyser	ESW44	Rohde & Schwarz	101828	482979	06.02.2026	02.2028
10	Log.-Per. antenna 850 MHz - 26.5 GHz	HL050	Rohde & Schwarz	100438	481170	10.10.2025	10.2028
11	Standard gain horn 12 GHz - 18 GHz	18240-20	Flann	483	480294	Calibration not necessary	
12	Preamplifier 12 GHz - 18 GHz	JS3-12001800- 16-5A	MITEQ Hauppauge N.Y.	571667	480343	03.02.2026	02.2028
13	Standard gain horn 18 GHz - 26 GHz	20240-20	Flann	411	480297	Calibration not necessary	
14	Preamplifier 18 GHz - 26 GHz	JS4-18002600- 20-5A	MITEQ Hauppauge N.Y.	658697	480342	03.02.2026	02.2028
15	High-pass filter	WHKX4.0/18G- 8SS	Wainwright	1	480587	Calibration not necessary	
16	RF-cable No.38	Sucoflex 106B	Suhner	0709/6B / Kabel 38	481328	Calibration not necessary	
17	HF-Cable	Sucoflex 104	Huber+Suhner	517402	482392	Calibration not necessary	
18	Microwave cable 2m	Insulated Wire Inc.	Insulated Wire	KPS-1533-800- KPS	480302	Calibration not necessary	
19	Fully anechoic chamber M20	B83117-E2439- T232	Albatross Projects	103	480303	Calibration not necessary	
20	Turntable	DS420 HE	Deisel	420/620/00	480315	Calibration not necessary	
21	Antenna support	AS620P	Deisel	620/375	480325	Calibration not necessary	
22	Multiple Control Unit	MCU	Maturo GmbH	MCU/043/97110 7	480832	Calibration not necessary	
23	Positioner	TDF 1.5- 10Kg	Maturo	15920215	482034	Calibration not necessary	
24	EMI receiver / Spectrum analyser	ESW44	Rohde & Schwarz	101635	482467	29.10.2025	02.2028
25	Software	EMC32 V10.60.20	Rohde & Schwarz	---	483261	Calibration not necessary	
26	Preamplifier 100 MHz - 16 GHz	AFS6- 00101600-23- 10P-6-R	Narda MITEQ	2011215	482333	03.02.2026	02.2028

8 Test site Verification

Test equipment	PM. No.	Frequency range	Type of validation	According to	Val. Date	Val Due
Semi anechoic chamber M276	483227	30 – 1000 MHz	NSA	ANSI C63.4-2014 ANSI C63.4a-2017	01.03.2023	28.02.2026
Fully anechoic chamber M20	480303	1 -18 GHz	SVSWR	CISPR 16-1-4 + Cor1:2010 + A1:2012 +A2:2017	04.02.2025	03.02.2028

9 Report History

Report Number	Date	Comment
F250210E2	23.09.2026	Initial Test Report
-	-	-
-	-	-

10 List of Annexes

Annex A	Test Setup Photos	6 pages
Annex B	EUT External Photos	8 pages
Annex C	EUT Internal Photos	10 pages
Annex D	Void	

----- end of test report -----